ABSTRACT

Devon G. Hall, THE IMPACT OF TUITION, PELL GRANTS, AND STATE APPROPRIATIONS ON COMMUNITY COLLEGE ENROLLMENT DURING CHALLENGING ECONOMIC TIMES (Under the direction of Dr. Michael Poock). Department of Educational Leadership, August 2014.

This study presents the results of a quantitative analysis of the headcount enrollment of 97 community colleges in North and South Carolina and Virginia during the period fall 2003 through fall 2012, a period that included the "Great Recession." The study analyzes the relationship between three financial independent variables (in-state tuition and fees, annual Pell Grant limits, and state FTE appropriations) and one economic independent variable (county level unemployment) against the dependent variable - demographic headcount enrollment by subgroups: (1) gender, (2) enrollment status, and (3) race.

My analysis finds that while in-state tuition and fees, Pell Grant limits, and state FTE appropriations were associated with demographic enrollment patterns differently in North and South Carolina, only local unemployment had a measureable association with the enrollment patterns of community college students in Virginia, a state with relatively lower unemployment rates. The study also finds that during the period federal Pell Grants and state appropriations had a greater influence on the enrollment patterns of full-time students than on part-time students. Finally, the study discovered that in the state of North Carolina, state FTE appropriations had a greater influence on the enrollment of Hispanic students than any other racial subgroup. This study contains various implications for federal and state legislators as well as community college administrators. The study concludes with recommendations for future research.

THE IMPACT OF TUITION, PELL GRANTS, AND STATE APPROPRIATIONS ON COMMUNITY COLLEGE ENROLLMENT DURING CHALLENGING ECONOMIC TIMES

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by

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THE IMPACT OF TUITION, PELL GRANTS, AND STATE APPROPRIATIONS ON COMMUNITY COLLEGE ENROLLMENT DURING CHALLENGING ECONOMIC TIMES

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DEDICATION

I dedicate this dissertation to the memory of my deceased parents, Alfred and Verna Hall. Two people who were born at a time and place that did not allow them the opportunity to excel academically. Two individuals who although not formally educated possessed extraordinary wisdom. My loving parents who worked hard to provide opportunities for their children that they were not afforded.

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Most importantly, I thank God for his many blessings and endless love! *For I know the plans I have for you," declares the LORD, "plans to prosper you and not to harm you, plans to give you hope and a future. Jeremiah 29:11*

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER ONE: INTRODUCTION

Local community colleges have become a vehicle for many Americans in the United States to attain the American dream of financial independence. These institutions' relatively low cost of tuition coupled with the open door access has provided a way to higher education for many who otherwise might not have the resources to attend traditional four-year institutions (Carnevale, 2008). Over the past several decades there has been a significant increase in the growth in the total number of community colleges nationwide, as well as enrollment within community colleges (Fonte, 2011; Gilroy, 2001). More than 40% of all first-year college students who attend public institutions of higher education are enrolled in community colleges (Fonte, 2011). Moreover, during and immediately after the 2007-2009 recession, enrollment in community colleges nationwide experienced significant increases (Helliker, 2011a, 2011b). However, since 2011 there has been a decline in community college enrollment in several states (Dunbar et al., 2011). Several studies have been conducted that have identified a positive direct relationship between community college enrollment and retention (Betts & McFarland, 1995; Kienzl, Alfonso, & Melguizo, 2007; Stenberg & Westerlund, 2008). Yet, today there is a need to review prior assumptions about the relationship between community college enrollment in light of the recent and extraordinary long period of relatively high unemployment that continued to persist after the Great Recession which began in the fourth quarter of 2007 and ended in the second quarter of 2009 (National Bureau of Economic Research [NBER], 2013). Moreover, given demographic shifts in the country it is important to better understand the factors that impact enrollment of subgroups to better understand the factors that impact aggregate enrollment.

The direct relationship between community college enrollment and economic factors such as unemployment has already been established (Arkes, 2010; Betts & McFarland, 1995; Kleykamp, 2013). Researchers have found that as a general rule as unemployment increases headcount enrollment in community colleges tend to also increase. Also, as unemployment decreases headcount enrollment in community colleges tend to decrease. However, there has been little research that attempts to further analyze beyond the surface data and examine the impact that financial factors such as tuition, Pell Grants, and state appropriations—as well as economic factors such as recessions and unemployment—have on subcategories of students enrolled in community colleges. Therefore, there is a need to better understand the relationship between demographically segmented community college enrollment and interconnected independent variables such as in-state tuition and fees, Pell Grant limits, and state appropriations. The relationships among these variables are of particular interest during a period of relatively high unemployment that was experienced during the Great Recession. Additionally, it will be useful to understand the enrollment patterns of specific demographic segments (gender, race, and enrollment status), and the impact that changes in financial and economic factors have on enrollment of these subgroups. A better understanding of the enrollment patterns of demographic subgroups will contribute to the existing body of knowledge within academe and help community college administrators develop improved marketing, recruitment and retention programs. Many community college administrators are often challenged trying to reasonably predict the number of students that are likely to enroll in their institutions each academic semester. A better understanding of the factors that affect enrollment patterns will help administrators plan the deployment of limited resources. Thus, the purpose of this study was to examine how factors such as in-state tuition and fees, Pell Grant limits, and state government

FTE appropriations for community colleges may have impacted community college enrollment by gender, race and enrollment status. This study specifically examined community college enrollment in three southern states with differing community college enrollment patterns. The three states examined were North Carolina, South Carolina and Virginia.

It is important to recognize the distinction between the December 2007 through June 2009 recessionary period, and the period of high unemployment that started in late 2008 and continued through 2012 (Bureau of Labor Statistics [BLS], 2013; NBER, 2013). The recession contributed to the period of high unemployment; however, the period of high unemployment extended beyond the period when the recession officially ended (BLS, 2013). Furthermore, the recent recession had an impact on the level of available funds that state governments appropriated to their community college systems (Flynn, 2012). In 1995, Betts and McFarland brought attention to the notion that there is a substantial direct relationship between labor market conditions and enrollment in community colleges. In addition, Felix and Pope (2010) conclude that community colleges are more sensitive than four-year institutions to economic conditions. This sensitivity of community college enrollment to economic conditions relates to the notion that community college students tend to be members of the socioeconomic group that are generally more impacted by economic changes, particularly negative economic changes. Thus, changes in financial factors and economic conditions, such as unemployment, appear to have a greater impact on community colleges than on other forms of postsecondary education. Dunbar, Hossler, Shapiro, Chen, Martin, Torres and Ziskin (2011) confirm that community college enrollment nationwide has been notably affected by the recent Great Recession.

Despite persistent high national, and state, unemployment between 2008 and 2012, there has been stagnant and declining community college enrollment between fall 2011 and fall 2012.

The stagnant and declining community college enrollment in several states is contrary to national historical norms (Arkes, 2010; Betts & McFarland, 1995; Kleykamp, 2013). The historical norm suggests that as the economy declines, as evidenced by increasing regional and local unemployment rates, enrollment in community colleges increases. However, in the recent Great Recession, as unemployment in states such as North Carolina began to increase, there was an expectation of a corresponding increase in the enrollment in North Carolina community colleges, which initially occurred. Yet, while unemployment continued to be relatively high, community college enrollment in several North Carolina community colleges began to decline. The neighboring states of South Carolina and Virginia also experienced unusual enrollment patterns, but to a lesser extent than North Carolina.

While most prior research on the relationship between unemployment and community college enrollment had focused on the relationship between national unemployment and community college enrollment, Betts and McFarland (1995) found a relationship between regional labor market conditions and community college enrollment. Their study concluded that many newly unemployed workers enrolled in community colleges as a means to obtain the re-training needed for new career opportunities. Subsequently, when there is an increase in the regional unemployment rate there tends to also be an increase in enrollment in community colleges as displaced workers seek retraining (Betts & McFarland, 1995). The same study also concluded that during periods of rising regional unemployment, even among those individuals who are still employed, there tended to be an increase in community college enrollment. The increase in community college enrollment among people who remain employed is often a proactive move against future possible unemployment, particularly if there is a belief that

additional skills are needed to secure gainful employment in the job market (Jacobson, Lalonde, & Sullivan, 2005).

Traditionally for-profit educational institutions primarily provided vocational programs and therefore, to some degree, competed directly against non-profit institutions that also provided vocational programs. However, Morey (2004) found that in recent years there have been an increased number of for-profit educational institutions offering traditional curriculum programs. There is also research that suggests that many for-profit colleges are better able to quickly adopt curricula geared towards the changing demand for skills in the marketplace (Gilroy, 2003; Hassler, 2006), and the increase in these types of institutions generally competing for the same types of students as community colleges could also be a contributing factor to declining enrollments in some community colleges (Morey, 2004; Winston, 1999).

It is generally conceded that for-profit businesses are more adept at marketing to clearly defined target markets than are non-profit and government institutions (Andreasen, 2012; Kotler, 1979). Winston (1999) identified the types of traditional postsecondary educational institutions that were most vulnerable to competition from for-profit institutions. The vulnerable institutions included non-elite private institutions, many comprehensives institutions, doctoral universities, two-year colleges, and specialized institutions. To further frustrate the situation many traditional colleges and universities were offended with the notion that their students were customers and made little attempt to provide customer service indulgences to their potential students, or existing student body. Entrepreneurial for-profit institutions however increasingly prevailed against non-profit colleges forcing them to re-examine their programs and become more aggressive in recruitment and retention.

While several practitioners have speculated about the causes of the decline in community college enrollment, there remains a need for an empirical understanding of the relationships between demographically segmented community college enrollment and several financial and economic variables during the ten year period, 2003 through 2012. Included in this ten year period is a period of relatively high unemployment, 2008 through 2012.

Problem Statement

Due to the unusual length of the high unemployment period associated with the Great Recession, community college administrators do not yet know if the prior assumptions regarding the correlation between unemployment and community college enrollment remain valid during prolonged unemployment periods. Furthermore, administrators can not yet ascertain if higher education financial factors such as in-state tuition and fees, Pell Grant limits and state budgeted appropriations have different effects on the enrollment patterns of different demographic segments, particularly during economic recessionary periods. Of particular concern is the unique nature of both community college enrollment and economic factors deteriorating simultaneously, which differs from historical norms. This lack of a clear understanding contributes to the difficulty of planning during challenging economic times and lends credence to the need for expanded research.

Purpose Statement

Given the perplexing enrollment patterns, this study investigated the relationship between the demographically segmented community college enrollment and changes in in-state tuition and fees, annual Pell Grant limits, and state appropriations per full-time-equivalent (FTE) community college student. Furthermore, this study investigated community college enrollment trends in North Carolina, South Carolina and Virginia during a period that includes a period of

high unemployment. During this quantitative study I investigated the impact, if any, that changes in specific financial variables had on the enrollment of specific subgroups during challenging economic times. This study looked beyond aggregate enrollment to examining the enrollment patterns of specific demographic subgroups.

Research Question and Hypotheses

The overarching research questions that guided this study were:

RQ1 What are the financial and economic factors that have significantly affected public two-year college enrollment in North Carolina, South Carolina and Virginia during the period 2003 through 2012?

RQ2 Are there discernible demographic patterns in public two-year college enrollment by financial and economic factors over the 2003 to 2012 period in North Carolina, South Carolina and Virginia?

This study was influenced by the Betts and McFarland (1995) study of the impact of labor market conditions on community college enrollment. This study was, however, dissimilar to the Betts and McFarland (1995) study in three distinct ways: (1) this study was more focused, targeting a narrower population of community colleges, 97 colleges in three states; (2) this study included a period of relatively normal unemployment, 2003 through 2007 as well as a period of relatively long high local unemployment, the years 2008 through 2012, in order to gauge relationships among relevant factors during a period of normalcy as compared to a time of crisis; and (3) and this study sought to examine enrollment of demographic subgroups of gender, race and enrollment status. Two global hypotheses guided this study:

- Ho_1: There is no significant difference among financial factors (in-state tuition and fees, annual Pell Grant limits, state technical and community college FTE

appropriations), economic factors (local unemployment rates) and headcount enrollment of students during the period fall 2003 through fall 2012.

- Ho_2: There is no significant difference among financial factors (in-state tuition and fees, annual Pell Grant limits, state technical and community college FTE appropriations), economic factors (local unemployment rates) and headcount enrollment of students by demographic patterns during the period fall 2003 through fall 2012.

Theoretical Framework

The theoretical framework that informed this study was the human capital theory expanded upon by the Nobel Prize-winning economist, Gary Becker (1993), who divided the cost associated with higher education into two categories: direct costs and indirect costs. Direct costs represent the out-of-pocket expenses associated with attending institutions of higher education, such as tuition, required fees, and books. Indirect costs, or opportunity costs, include the potential earnings that college students give up to attend school and forgo the income that could have been earned while attending classes and doing coursework. Becker (1993) theorized that the likelihood of an individual attending a postsecondary institution increases as the cost of attending such an institution decreases. During periods of relatively high unemployment, the opportunity cost of attending college declines since the availability of employment opportunities as an alternative to attending college also decline. With declining indirect costs, the direct costs of attending college play an increasingly significant role. The direct cost of tuition can be offset by the availability of financial aid such as the Federal Pell Grant Program. Furthermore, since community colleges are state supported public institutions, the amount of state financial support

provided to community colleges has an effect on the amount of out-of-pocket tuition that students will be expected to pay.

The rapid increase in unemployment that occurred at the beginning of the Great Recession prompted many individuals to seek socioeconomic upward mobility through higher education. In addition, many recent high school graduates unable to find gainful employment in the dismal job market also turned to higher education in increasing numbers (Arkes, 2010; Schmitt & Boushey, 2012). Many of these individuals opted for community colleges as a means to attain the economic prosperity they sought through higher education (Fonte, 2011). These factors contributed to the belief that enrollment would trend upwards. Variables in this study that relate to community college enrollment included the indirect (opportunity) cost impacted by unemployment and the direct costs of in-state tuition and fees, Pell Grant limits, and state appropriations.

Significance of the Study

This study has the potential to add to academe's existing body of knowledge by providing community college administrators within three southern states, North Carolina, South Carolina and Virginia, with a better understanding of the factors that impact specific demographically segmented enrollment within their institutions. Furthermore, this study attempts to provide administrators with practical knowledge that they may use to recruit students, particularly during challenging economic times. The study may also be helpful to state legislators as they debate and plan the appropriate amount of state funding to provide to their state technical and community college systems. Finally, this study may help federal legislators understand the potential impact that federal financial aid policy has on specific demographic segments.

Overview of the Methodology

A quantitative analysis of secondary data was used for this study. A detailed explanation of the methodology is provided in Chapter Three with a thorough description of the design of the study, methods, data collection, and analysis. The study attempts to answer the primary question: how did in-state tuition and fees, Pell Grant limits, and state community college FTE appropriations impact the community college headcount enrollment of demographic subgroups in North Carolina, South Carolina and Virginia during an economically challenging period? Furthermore the study attempts to investigate the extent to which financial and economic factors can predict community college headcount enrollment by demographic subgroups.

Study Design

I used Pearson's correlation coefficient analysis, analysis of variance (ANOVA) and multiple regression analysis to determine the relationships among the dependent variables of demographically segmented headcount enrollment and the independent variables of in-state tuition and fees, Pell Grant limits, and state government FTE appropriations for community colleges. Pearson's correlation coefficient is a measure of the linear relationship between a dependent and independent variable (Field, 2009; Salkind, 2004). An ANOVA compares the means and variances of different groups of data to determine if differences are statistically significant (Field, 2009). Regression analysis is a statistical technique for estimating the relationships among variables (Salkind, 2004). Multiple regression analysis helps analysts to understand how the dependent variable changes when two or more of the independent variables are varied, while the other independent variables are held fixed (Field, 2009; Salkind, 2004). In addition to multiple regression analysis, several ANOVAs were calculated to determine if there

are statistical differences in the means of the enrollment patterns of demographic subgroups (gender, race and enrollment status) based on differences in financial and economic factors.

Data Collection

Existing secondary data were analyzed for this study. The secondary data included:

- Annual headcount enrollment data for fall 2003 through fall 2012 for each of the 58 North Carolina community colleges, 16 South Carolina technical colleges, and 23 Virginia community colleges.
- Annual federal Pell Grant limits for fall 2003 through fall 2012 were obtained from the U.S. Department of Education.
- Annual student in-state tuition and fees for fall 2003 through fall 2012 were obtained for each of the 58 North Carolina community colleges, 16 South Carolina technical colleges and 23 Virginia community colleges. This data were extracted from the Southeastern Regional Education Board (SREB).
- Annual state technical and community college FTE appropriations for the states of North Carolina and South Carolina and the commonwealth of Virginia for fiscal years 2003 through 2012 was obtained from the respective state governments, and extracted from SREB.

Definition of Terms

For purposes of this study, the following terms are defined:

Asian Students – Students who are of Asian or Pacific Island heritage (IPEDS, 2014).

Black Students – Students of African heritage who are non-Hispanic (IPEDS, 2014).

Community College – These institutions - also called technical colleges, technical community colleges, or city colleges - are primarily two-year public higher education institutions granting certificates, diplomas, and associate's degrees (Cohen & Brawer, 2008).

Enrollment – This represents the total headcount number of credit-seeking students officially registered and/or attending classes at a college (IPEDS, 2014).

Financial Aid – This is the monetary assistance provided directly to students attending postsecondary institutions primarily from the federal government, but also from state governments, to provide finances to fund the cost of attendance (Honeyman & Bruhn, 1996).

Hispanic Students – Students who are of Latino heritage (IPEDS, 2014).

In-State Tuition and Fees – This is the dollar amount assessed to students by the technical or community college – primarily related to credit hours attempted - for the benefit of attending a state government supported institution of higher education (Gilroy, 2010).

Native Students – Students who are of American Indian or Alaskan Native heritage (IPEDS, 2014).

Pell Grant – This represents funds provided by the U.S. federal government to students who need financial assistance to pay for college. Federal Pell Grants are limited to students with financial need, who have not yet earned their first bachelor's degree and are enrolled in an approved participating postsecondary institution (U.S. Department of Education, 2013).

Public institutions – These are colleges and universities founded and operated by a state government and whose operating funds are obtained primarily from state support, student tuition and fees, and grants (Alfred, 1996).

State Appropriations – This is the dollar amount of financial support that state governments provide to their community or technical college system each year. It is measured as

the total amount budgeted for community/technical colleges divided by the average full-time equivalent students enrolled each year (Foundation, 2010).

White Students – Students who are of non-Hispanic European heritage (IPEDS, 2014).

Assumptions

During this study certain assumptions were made. Since this study relies heavily on data collected by various state government entities, the U.S. Department of Education, the U.S. Department of Labor, the Integrated Post Secondary Education Data System (IPEDS), and Web Caspar, there was an assumption that the data used were collected accurately and without bias. Unlike North and South Carolina, in the commonwealth of Virginia a few community colleges are physically located in geographic areas that are technically not counties, therefore it is assumed in the very few instances that this occurs that the unemployment rates of the adjoining counties are representative of the unemployment rate of the college's service area.

A challenge of the study was the complexity of correctly identifying budget line items that are intended for community colleges. The budget format of each of the three states being examined differs considerably and this researcher was forced to either make certain assumptions about what specific budget line items should be included in calculating the annual state expenditure per community college student, or accept the FTE numbers provided by each state to SREB. I therefore decided to use the SREB FTE numbers, and assume that they fairly represented the state government community college appropriations.

Limitations and Delimitations of the Study

This research study has both limitations as well as delimitations. As an example, the study is limited to enrollment data sought, and collected, by Integrated Postsecondary Education Data System (IPEDS). One of the impacts of this type of limitation is the increasing number of

community college students who report their race/ethnicity as “Other” or “Unknown.” This limitation is a consequence of using secondary data because this researcher was limited to using the data that had actually been collected and does not allow the researcher to evaluate the data into more specific race/ethnicity categories. The study is also limited to financial and economic data that are published and made available to the public and therefore does not allow for additional scrutiny of the available data. The study only examined community colleges within three states. This is a delimitation because the study does not examine all fifty states. However, by specifically focusing on the three states selected for their variation in socioeconomic citizenry, yet located within the same geographic region, an understanding of community college enrollment pattern can be leveraged.

The study also only focuses on academic credit-seeking students. This is a limitation since community colleges enroll both credit-seeking and non-credit-seeking students; therefore the study is limited to only one segment of the total community college student population. Information on each state’s community colleges is limited to data collected and made available by the state systems. Statistics on the unemployment rates in each county is limited to data collected and published by the U.S. Department of Labor. This study was specifically designed to focus on the community and technical college systems of three specific states, and therefore the conclusions of this study cannot be directly applied to other states or four-year institutions.

Organization of the Study

This study is divided into five chapters. Chapter One provides the introduction and overview of the study. Chapter Two is a review of the literature. The literature review includes a review of the relationship between unemployment and community college enrollment, as well as a review of the demographics of community college students. In addition, Chapter Two

reviews the literature that addresses community college enrollment. Chapter Two also reviews the literature as it relates to in-state tuition and fees, Pell Grant funding, and the appropriations by state governments to their technical and community college systems. Furthermore, Chapter Two also provides an overview of the technical and community college systems in North Carolina, South Carolina and Virginia. Chapter Three covers the method and statistical procedures used to conduct the study. Chapter Four provides an analysis of the results of the study. A summary and discussion of the findings, implications and conclusions of the results, and recommendations for future research are included in Chapter Five.

Summary

Previous research has established a relationship between unemployment and enrollment in community colleges. This study addresses how in-state tuition and fees, annual Pell Grant limits, and state government community college FTE appropriations may have impacted specific demographic groups during an economically challenging ten year period that included a period of relatively high unemployment. This study attempts to determine the factors that may explain the phenomenon of stagnant and declining enrollment of some community college systems. Furthermore, this study goes beyond the aggregate totals, focusing on demographically segmented enrollment patterns.

CHAPTER TWO: LITERATURE REVIEW

In this chapter I present a review of literature that addresses the relationship between financial and economic conditions and community college enrollment with particular attention given to the impact that tuition, Pell Grants and state government appropriations have on community college enrollment. Specifically, enrollment literature is reviewed by gender, race and enrollment status. The review is presented in eight sections. The first section reviews the basic human capital theoretical framework that the likelihood of an individual attending a postsecondary institution increases as the cost of attending such an institution decreases (Becker, 1993). The human capital framework is then coupled to the research of Betts and McFarland (1995) regarding the relationship between unemployment and community college enrollment. The second section provides a review of the literature with regard to the financial returns of community college education. The third section addresses recent studies on the impact of the Great Recession on the returns to a community college education. The fourth section reviews the demographics of community college students. The fifth section reviews the literature that addresses the community college enrollment issues. The sixth section reviews the literature that addresses higher education funding and its impact on increasing tuitions. The seventh section reviews the literature from the perspective of the state and federal government financing of higher education and its impact on community college students. The eighth, and final, section provides information on the community college systems in North Carolina, South Carolina and Virginia.

Theoretical Framework

Theodore Schultz was one of the first to make a connection between education and economic growth (Schultz, 1971). He suggested that an individual's ability to use education to

enhance his or her personal financial situation should be viewed as an investment in human capital. Corazzini, Dungan, and Grabowski (1972) also used human capital theory as the framework for their enrollment model. In developing his theory in the third edition of his landmark book *Human capital: A theoretical and empirical analysis with special reference to education*, Becker (1993) expands upon these earlier works.

Although much has been written about enrollment in the university setting (Adelman, 2007; Tinto & Cullen, 1973), comparatively less is known about enrollment in the community college setting. Similarly, while much is known about academic and social factors that impact enrollment, relatively little is known about the role that economic business cycles play in higher education enrollment. One notable exception is the study that was conducted by Betts and McFarland (1995) that found a relationship between regional labor market conditions and community college enrollment. Their study concluded that many newly unemployed workers enroll in community colleges as a way to retrain themselves for different careers. Subsequently, when there is an increase in the regional unemployment rate, there also tends to be an increase in the community college enrollment (Betts & McFarland, 1995).

The Betts and McFarland (1995) study also concluded that during periods of rising unemployment, there also tended to be an increase in community college enrollment, even among those individuals who were still employed. The increase in community college enrollment among those still gainfully employed was thought to be a proactive move against future possible unemployment, particularly if there is a belief that additional skills are needed to secure or maintain gainful employment in the job market (Carnevale, 2008). Both cases suggest that during challenging economic times individuals seek training in skills that they perceived to be more marketable (Betts & McFarland, 1995).

The work of Betts and McFarland (1995) is consistent with the human capital theory of Becker (1993) which suggests that there is an indirect relationship between the cost of higher education and the demand for higher education. When people are unemployed and unable to find meaningful employment, enrollment in higher education tends to increase because of the decrease in the opportunity costs of working due to higher unemployment.

Using national community college attendance data for students aged 18 through 65 from the years 1969 through 1985 Betts and McFarland performed a regression analysis with the independent variable being the regional unemployment rates of individuals between the ages of 18 and 65. Based on the results of their national longitudinal study, Betts and McFarland (1995) concluded that "community college enrollments rise and fall remarkably in phase with the ups and downs of unemployment" (p. 749). Using econometric modeling, their study also examined the effects of unemployment rates between younger students and older students as well as between full-time students and part-time students. They found that the correlation between unemployment and community college enrollment was stronger for full-time students than it was for part-time students. There was also a stronger correlation between students 25 years and younger when compared to students over the age of 25 (Betts & McFarland, 1995).

The Betts and McFarland (1995) study also examined the relationship between enrollment and the average amount of state and local funding per full-time-equivalent (FTE) student between the years 1967 and 1985. Adjusting annual funding to 1987 dollars they found that state and local "appropriations fall just as enrollment demand surges" (Betts & McFarland, 1995, p. 762). Lower state appropriations generally force community colleges to increase their tuition and fees. Betts and McFarland (1995) pointed out that the lower cost of attending a community college when compared to four-year institutions is one of the factors that make

community colleges attractive to the recently unemployed. Arkes (2010) expanded on this conclusion by adding that the financial realities of higher unemployment rates result in a lower opportunity cost for potential students to acquire additional education and training. This is particularly the case for recent high school graduates who are more likely to find themselves unemployed during periods of high local unemployment (Arkes, 2010). With a lack of gainful employment many recent high school graduates who may not have been particularly interested in continuing their education become attracted to higher education due to the lack of feasible alternatives, and therefore a lower opportunity cost (Arkes, 2010). Betts and McFarland (1995) examined the impact of national unemployment on community college enrollment, with some consideration to regional differences. However, Kienzl et al. (2007) examined the impact of local unemployment on community college enrollment. Presenting a similar view of the opportunity cost of attending a community college, Kienzl et al. (2007) found that during periods of local economic growth, some students will withdraw from college in order to seek employment because the opportunity cost of staying in college has become too great. Additionally, community college students tend to be more sensitive to local labor market conditions than are students of four-year institutions (Kienzl et al., 2007). Therefore, the Becker (1993) hypothesis on human capital provides the theoretical framework of this study by bringing together established research models on the impact of unemployment on community college enrollment coupled with the changes in both the direct and indirect cost of a community college education.

The Returns to Community College Education

Carnevale (2008) points out that until World War II a good high school education was all that was needed to become part of the middle class in the United States. However, after World

War II, a postsecondary education gradually surpassed the value of a mere high school education as the ticket required to gain access to the middle class and the financial rewards that membership in this socioeconomic group provided (Barton, 2008; Carnevale, 2008). Barton (2008) contends that the decline in the economic status of high school graduates is due to a combination of a reduction in the earnings of high school graduates rather than an increase in the earnings of college graduates. After reviewing earnings data over a 25-year period, from 1980 to 2004, Barrow and Rouse (2006) found that although overall real wages had increased, when the data were analyzed it was determined that the increase was not distributed equitably. On average low income earners, as defined by the federal poverty levels, received lower percentage pay increases than did higher income earners (Barrow & Rouse, 2006). In fact, their research revealed that between 1980 and 1990, there was actually a decline in real wages for the population that fell at the bottom of the wage distribution while there was a significant increase in real wages of those who were at the 90^{th} percentile of earnings (Barrow & Rouse, 2006). Please see the Appendix F for a table of historical federal poverty levels and Appendix G for recent household earnings distribution tables.

Furthermore, since postsecondary education was associated with higher earnings, there was an increased effort by the public to encourage policy makers to boost funding for postsecondary education with the goal of using the vehicle of education to transfer more people from low-skill/low-wage occupations to higher-skill/higher-wage occupations (Barrow & Rouse, 2006). Carnevale (2008) therefore concluded that current unskilled young workers are severely handicapped in the modern job market without at least some postsecondary training or education, while Barton (2008) affirmed a bright employment outlook for those individuals who possess the skills and education that the modern workplace demands.

Community Colleges

Much has been written about the benefits of obtaining a four-year degree (Becker, 2003; Blackwell, Cobbs, & Weinberg, 2002; Thelin, 2004). However, historically community colleges have been the institutions that many members of the lower socioeconomic class have turned to as a means to acquire the training and education needed to provide entrance into the middle-class (Boggs, 2004). The reliance on community colleges by members of the economically challenged sector of society has particularly been true during periods of high unemployment and under-employment (Boggs, 2004). The ability of community colleges to adjust quickly to changing employment skill demands in the marketplace provides these institutions with a comparative advantage over typical four-year institutions due to their responsiveness and flexibility (Betts & McFarland, 1995; Felix & Pope, 2010). The lower cost of attendance, coupled with generally easier access, have resulted in community colleges becoming more socioeconomically diverse (Boggs, 2004; Simmons, 2001). Due to the important role of community colleges, higher education is no longer limited to the few with the financial means to "go away" to college (Blankenship, 2011; Boggs, 2004). The open door policy of community colleges has provided access to upward social mobility to the masses with limited financial means (Boggs, 2004).

The notion that there are two distinct groups of students who are more inclined to be attracted to curriculum courses at community colleges during economic downturns is consistent with the findings of Simmons (2001), who proposes that community colleges have become more diversified in their mission. The original mission of junior colleges, many of which evolved into community colleges, was primarily to prepare students for the first two years of college before transfer to four-year institutions to complete bachelor's degree programs (Cohen & Kisker, 2009). However, the modern community college has a dual mission. One part of the mission

continues to be the preparation of students for transfer to upper division institutions. Yet, the other part of the mission, to provide the skills and knowledge needed for students to enter or re-enter the workforce, becomes increasingly important (Simmons, 2001). The difference in the age distribution of community college students also manifests itself in social ways. As an example, Kienzl et al. (2007) discovered that many adult community college students view themselves as employees who are currently unemployed rather than college students. Thus when the local job market improves adult community college students are more likely to abandon their studies and return to the job market rather than staying to complete their education.

Although graduates of a four-year degree program will, on average, earn more than the graduates of a community college, there remains a significant number of jobs that pay good middle-class incomes that require only two years, or fewer, of postsecondary education provided by many local community colleges (Barrow & Rouse, 2006). The potential to increase individual earnings significantly using a relatively short training period is attractive to both the recent high school graduate and the older worker who suddenly find themselves unemployed with limited marketable skills. Jacobson et al. (2005) found that among individuals 35 years old and over, just one year of a community college education could increase long term earnings 7% for a man and 10% for a woman. Another study found that students who complete at least 30 credit hours at a community college, on average, increase their lifetime earnings from 5 to 11% (Felix & Pope, 2010). In addition, a study conducted by Hebbar (2006) concluded that displaced women who were re-trained in traditionally male dominated fields, such as engineering, experienced significantly higher wage recovery after returning to the workforce. Even in those situations where there was not a higher wage recovery, her study noted that participants in vocational re-training programs experienced a higher re-employment rate (Hebbar, 2006).

Societal Benefits of a Community College Education

Confirming the benefits of postsecondary preparation for the recently unemployed, Carnevale (2008) explained how a postsecondary *education*, as opposed to mere job specific *training*, helps unemployed individuals develop the cognitive skills necessary to keep pace with the changing skill requirements in the constantly evolving workplace. The development of an individual's cognitive and critical thinking skills result in increased self-reliance that helps to keep people off public dependency (Carnevale, 2008). However, the work of Marcotte (2010) suggests that there is no evidence that a person who enrolls in a vocational program gains any less benefit compared to a person who enrolls in an academic program. However, he did find that the process of earning community college credit contributed to the subsequent increased earnings of individuals regardless of whether the credit was considered vocational or academic (Marcotte, 2010).

Barton (2008) also points out that there are non-financial public benefits to society in having a greater percentage of the population possessing postsecondary educations. Similarly, The Association of Community College Trustees (ACCT) claim that citizens who have received some postsecondary education generally have higher earning, pay higher taxes, give more to charity, and are less likely to require public assistance or be incarcerated (ACCT, 2013). On the other hand, London (2005) indicated that when unemployed workers attend college during their period of unemployment there was an increase in the number of months that such an individual remained on government aid. Thus, her research indicated that the more public funded postsecondary education unemployed worker received, the longer they stayed on government aid because of the time commitment needed to obtain additional education. The goal of programs such as Temporary Assistance for Needy Families (TANF) is to help workers to return to the

workplace as quickly as possible. However, London (2005) understands the concern of policy makers if the data indicate that receiving postsecondary training appears to result in workers receiving government aid for a longer period of time. The longer time required on public assistance would appear to be in opposition to the primary goal of programs such as TANF (London, 2005).

Employment and a Community College Education

Barton (2008) reports an increase in educational requirements of many occupations over the past several decades which has resulted in a shortage of knowledge workers and an oversupply of unskilled workers. Additionally, in 2010 the Federal Reserve Bank of Kansas City in their Third Quarter Report, concluded that by the year 2020, the Tenth District would have a greater need for graduates of two-year institutions than for graduates of four-year institutions (Felix & Pope, 2010). The Tenth District of the Federal Reserve Bank came to this conclusion based on the types of jobs expected to be in demand and the skill and knowledge of the workers needed to fill these positions. The Tenth District includes the states of Colorado, Kansas, Missouri, Nebraska, New Mexico, Oklahoma and Wyoming.

Earlier, Kane and Rouse (1993) had presented an opposing argument to London (2005) by concluded that extending postsecondary training for dislocated workers provided greater employment marketability and higher re-entry wages to older adults, even when a two-year degree was not actually earned. The benefits of community college training for dislocated workers resulted in the Reemployment Act of 1994, which included a provision for the training of recently unemployed workers. Supporting the idea that displaced workers benefit from the education provided by community colleges, Leigh and Gill (1997) found that there was no significant difference in the earnings of returning adults when compared to the earnings of

continuing high school graduates, once both groups completed their postsecondary education. The similar earning patterns were found to be consistent even if the individual did not actually earn an associate's degree, but rather completed a non-degree training program (Leigh & Gill, 1997).

Gender, Age, and Employment

While Hebbar (2006) found that adult women retrained in non-traditional skills had greater earning, an earlier study by Leigh and Gill (1997) found that adult men who completed non-degree community college programs on average earned 8% higher wages than continuing male high school graduates of the same programs, thus again asserting the financial benefits to dislocated adults who seek postsecondary training during periods of high unemployment. Furthermore, Harrington and Sum (2010) realized that college graduates who worked in occupations that did not require a college education earned more than high school graduates who worked in the same occupation, thus providing additional evidence of the benefit of postsecondary education. However, Taniguchi (2005) found that when all postsecondary institutions were examined, students who graduate at the age of 25 or older have a lower starting income than those who graduate at an earlier age. The same study also found that among those who graduate after the age of 25, the disadvantage for late graduation is much less significant for women than it is for men (Taniguchi, 2005). This is described in Becker's theory of human capital as an individual completing education later has fewer years to reap the benefits of their educational investment (1993). In addition, a study by Stenberg, de Luna, and Westerlund (2012) indicated that the older a person was when he or she started the postsecondary education the longer the individual tended to stay in the workforce and the more likely they were to retire after the normal retirement age. One negative aspect of this phenomenon is a gradual increase in

the average retirement age, particularly during economic downturns. One unintended consequence of older students seeking higher education is younger workers' having a more difficult time finding jobs which normally would have been vacated by recent retirees (Stenberg et al., 2012).

Overall Community College Enrollment

In their 2010 report on the forecast of the Federal Reserve's Tenth District, Felix and Pope (2010) concluded that "in the short run, demand for community colleges is likely to remain strong as students remain cost-conscious and unemployment remains higher than pre-recession levels" (p. 88). Thus, they reinforced the notion that higher unemployment during recessionary times is reasonably expected to lead to increased enrollment in community colleges. This finding is consistent with the findings of Betts and McFarland (1995) and supports the human capital theory of Becker (1993). The importance of the affordability of community colleges during financially challenging times is supported by Mullin and Phillippe (2009). Felix and Pope (2010) essentially attribute increased community college enrollment to two groups. One group includes dislocated adult workers and the other group includes recent high school graduates who originally were planning on attending four-year institutions, but opted to complete their first two years at a community college primarily because of financial concerns.

Community colleges offer both curriculum (credit courses) as well as non-credit courses. Many of the studies that have dealt with enrollment, employment and community colleges have focused on credit courses and degree programs while relatively little is known about the relationship between local employment and non-credit community college courses (Frentzos, 2005). One of the issues that Frentzos (2005) investigated was whether during times of economic downturn there was an increase in enrollment in community college non-credit courses

just as there was an increase in enrollment in community college credit courses. Using Michigan's unemployment rate as an economic indicator, Frentzos (2005) discovered that between 1986 and 2002 there was a negative correlation between Michigan's unemployment rate and enrollment in one Michigan community college non-credit course. During the same period there was no significant correlation between the state's unemployment rate and enrollment in the community college's credit courses (Frentzos, 2005). One concern with this study, however, is that community college enrollment is more a function of local unemployment as opposed to statewide unemployment rates. Another concern is the danger of drawing any real conclusions about the relationship between unemployment and enrollment in non-credit courses based simply on the enrollment patterns of one class at one college in one state.

The Local Job Market and Community College Enrollment

Not only does there appear to be a difference in the employment sensitivity of community college students compared to the employment sensitivity of the typical four-year institution student, but there also appears to be a difference in the location of the jobs that graduates of these two different types of institutions gravitate towards (Grubb, 2002a). Whereas many four-year students perceive their future jobs not to be limited to the geographic location of the institution, Grubb (2002b) discovered that the pre-bachelor labor market tends to be much more local. Therefore, one might reasonably conclude that community college students are more sensitive to the local job market than students of four-year institutions since the four-year students tend to be more mobile in their employment opportunities.

Interestingly, Kienzl et al. (2007) also found that students who attend community colleges in relatively high tuition states tend to be less likely to leave school to enter the job market when there is a slight improvement in the local job market when compared to students

who attend college in relatively low tuition states. The presumption is that students in high tuition states have more of a vested interest to complete the degree (Kienzl et al., 2007). The problem with this presumption, however, is that it does not take into consideration exactly who is paying for the tuition. If the student is paying his or her own tuition, then the assumption appears reasonable. If, however, the tuition is being paid with federal or state funds, it can reasonably be assumed that the student does not have the same motivation to stay in school and complete the program of study. Further research is therefore needed in this area.

Returns to Community College Education and the Economic Cycle

As previously stated, the literature provides evidence that there is a positive relationship between unemployment and community college enrollment (Betts & McFarland, 1995; Frentzos, 2005; Kleykamp, 2013). There is also a relationship between economic recessions and unemployment (Bell & Blanchflower, 2011; Cho & Newhouse, 2013; Hoynes, Miller & Schaller, 2012). It is therefore beneficial to review the concepts of unemployment and recessions.

Employment and Unemployment

According to the United States Department of Labor's Bureau of Labor Statistics (BLS, 2013), people with jobs are considered to be employed; however, people who are jobless, who have *actively* looked for a job in the prior 4 weeks, and who are available for work are considered to be unemployed. People who are neither employed nor unemployed are not in the labor force. The sum of the employed and the unemployed comprise the civilian labor force (BLS, 2013). The unemployment rate is the percent of the civilian labor force that is unemployed.

The BLS defines “actively seeking employment” as consisting of activities such as: contacting an employer directly or having a job interview; contacting a public or private employment agency; contacting friends or relatives; or contacting a school or university employment center. According to the BLS, passive methods of job searches that do not have the potential to result in a job offer do not qualify as active job search methods. Furthermore, only individuals of working age, 16 years and above, can be considered to be unemployed. On the first Friday of each month, the BLS announces the previous month’s unemployment rate.

Economic Recession

The National Bureau of Economic Research (NBER)'s Business Cycle Dating Committee (BCDC) maintains a chronology of the U.S. business cycle (BCDC, 2013). The chronology comprises alternating dates of peaks and troughs in economic activity. An economic recession is a period between a peak and a trough, and an expansion is a period between a trough and a peak (NBER, 2013). During a recession, a considerable decline in economic activity spreads across the economy and can last from a few months to more than a year. Likewise, during an expansion, economic activity rises considerably, spreads across the economy, and can last for several years (NBER, 2013).

The BCDC does not have an exact definition of economic activity. Rather, it compares and contrasts the performance of various measures of broad activity: real Gross Domestic Product (GDP) measured on the product and income sides, economy-wide employment, and real income. The Committee also may consider indicators that do not cover the entire economy, such as real estate sales and the Federal Reserve's Index of Industrial Production. The Committee's use of these indicators in combination with the broad measures reduced the issue of possible double-counting of sectors (NBER, 2013). From an academic perspective, a recession occurs

when there are two or more consecutive calendar quarters of negative GDP growth (Mankiw, 2003). There have been ten economic recessions in the United States between January1980 and June, 2009 (BCDC, 2013; NBER, 2013).

It is generally acknowledged that economic recession normally leads to increasing unemployment which in turn results in an increase in the enrollment at community colleges (Betts & McFarland, 1995; Kienzl et al., 2007; Stenberg & Westerlund, 2008). In fact, Betts and McFarland (1995), in their nationwide study, found that as a general rule a 1% increase in the unemployment rate of recent high school graduates translated into a ½% increase in full-time community college enrollment.

The Great Recession

According to the U.S. NBER, the official authority on U.S. recessions, the Great Recession began in December 2007 and ended in June 2009 (NBER, 2013). The NBER's BCDC identified December 2007 as the peak month, after determining that the following decline in economic activity was large enough to qualify as a recession. The committee further identified June 2009 as the end of the recession after determining that the months that followed June 2009 had sufficient economic growth to qualify as a recovery (NBER, 2013). Recessions are defined by economic activity and not unemployment: however, the U.S. seasonally adjusted unemployment rate increased from 5% in December 2007 to 9 ½% in June 2009, the start and end of the recession (NBER, 2013).

In an attempt to stimulate economic growth during the Great Recession, the Emergency Economic Stabilization Act (EESA) of 2008, authorized the U.S. Treasury to invest up to $700 billion as part of the Troubled Asset Relief Program (TARP). One of the goals of TARP was to "promote job and economic growth" (EESA, 2008). TARP was followed in early 2009 by the

$800 billion American Recovery and Reinvestment Act (ARRA, 2009). Both programs provided federal funds to dislocated workers to seek retraining specifically at community colleges. However, some have argued that the effects of these federal programs on unemployment were short-term and modest (Neumark & Troske, 2012). Despite attempts at the federal level to create employment, many state governments have taken actions that have produced a negative impact on human capital creation. As an example, Neumark and Troske (2012) explained that California community colleges were forced to turn away over 100,000 students due to course reductions because of state budget cuts to the state's community college system. Many other states have imposed similar budget cuts to their community college systems (Johnson & Williams, 2010).

The Relationship between Recession and Unemployment

It is important to recognize the distinction between the recession period, December of 2007 through June 2009, and the period of high unemployment that started in late 2008 and continued through 2012 (BLS, 2013; NBER, 2013). The recession contributed to the period of high unemployment; however, the period of high unemployment extended beyond the period when the recession officially ended (BLS, 2013). Furthermore, despite TARP and ARRA, the Great Recession had a negative impact on the level of available funds that state governments appropriated to their community college systems (Flynn, 2012). Felix and Pope (2010) provided evidence that community college enrollment is more sensitive than four-year institutions to economic conditions. This sensitivity of community college enrollment to economic conditions relates to the notion that community college students tend to be members of the socioeconomic group that are generally more impacted by economic changes, particularly negative economic changes. Thus, changes in economic factors such as unemployment appear to have a greater

impact on community colleges than on other forms of postsecondary education. Dunbar et al. (2011) recognized that community college enrollment nationwide has been notably affected by the Great Recession.

The Recession's Impact on Community College Enrollment

Historically, recessions contribute to increased unemployment and higher unemployment results in higher community college enrollment. The national unemployment rate, as well as the unemployment rate within many individual states, remained relatively high between the years 2008 and 2012 (BLS, 2013), a period that extended beyond the official recession. High unemployment, coupled with other negative recessionary conditions, was expected to have some impact on community college enrollment as unemployed individuals sought alternatives to their situation. As an example, during the 2008 through 2012 period student headcount enrollment within the North Carolina Community College System (NCCCS) initially increased, but instead of flattening out as unemployment leveled off, there was a decline in headcount enrollment during fall 2011 and fall 2012 throughout the system (IPEDS, 2013). Thus, one example of a community college system that appears to have been impacted by the Great Recession is the North Carolina system (Okpala, Hopson, & Okpala, 2011).

The Great Recession's Impact on Community College Tuition

State higher education general fund appropriations, as a percentage of total state appropriation, for all sectors of higher education has been in decline for several decades (Ness & Tandberg, 2013). However, as stated earlier, the Great Recession had a particularly negative impact on state governments' budgets, thereby forcing several state administrations to reduce the financial support to many education systems, including community colleges. The reduction in state financial support resulted in higher tuition and fees at state supported institutions (Gilroy,

2010). High unemployment, declining college fund investment balances, and increasing tuition and fees at four-year as well as two-year institutions would logically indicate increased enrollment and retention among the nation's community colleges. However, recent research has indicated that this has not been the case (Cooper, 2013), with community college enrollment in some struggling states becoming stagnant, or in some cases even declining. The unusually long recession influenced other unfavorable fiscal factors such as declining state financial appropriations to community colleges that tend to negatively impact tuition and enrollment in these institutions (Campbell, 2010).

The Demographic Impact of the Recession

The effects of the Great Recession were not experienced equally by all workers (Hoynes et al., 2012). Men experienced significantly greater job losses during the Great Recession compared to women. Peterson (2012) states that there was a more rapid increase in men's unemployment rates relative to women's at the beginning of the Great Recession which led to a historic gender gap in employment rates. Men, Blacks, Hispanics, youth and those with lower levels of education experienced the greatest economic impact due to the recession, while women, Whites, middle-aged, and those with higher levels of education were less impacted (Hoynes et al., 2012). Hoynes et al. (2012) also stated that the economic impact to various demographic groups had remained relatively stable from the late 1970s up until the beginning of the Great Recession. They explained that the greater impact on male employment during both recessionary and recovery cycles is due to the greater likelihood of men being employed in sectors of the economy that are more sensitive to economic changes, such as the construction, manufacturing and transportation industries. They further found that women, on the other hand, were more likely to be employed in sectors that tend to be less sensitive to economic cycles, such

as in the education, government and healthcare sectors. A study by Sum and Khatiwada (2012), however, found that when viewing the impact of the recession from a household income perspective, those households at the lower end of the income spectrum experienced the greatest negative impact from the recession, compared to households with higher incomes.

When Hoynes et al. (2012) compared the Great Recession of 2007-2009 to the recessions of the 1980s, they noticed that although there were several similarities in the impact between the genders and among the races, the 2007-2009 recession showed a noticeably greater difference on the impact on the youth and older workers, with the 2007-2009 recession having a greater negative impact on youth and less of an impact on older workers (Hoynes et al., 2012). The negative impact of the recession on youth employment was also supported by the Cho and Newhouse (2013) study. Hoynes et al. (2012) conclude, however, that the Great Recession was different from other recessions in the past three decades in length and size, but not especially different in terms of the impact on gender and race. Nevertheless, Perry (2010) argues that the unemployment rate gender gap increased to 2 ½% in May 2009, as male unemployment increased to 10.5%, while female unemployment increased to only 8%. The 2 ½% gender difference in the unemployment rates in 2009, according to Perry (2010), set a new all-time record for the greatest male-female unemployment rate gap in history, up to that time.

Peterson (2012) credits Perry (2010) with coining the term “Mancession” which was used to signify the greater impact of the recession on male unemployment compared to female unemployment. However, a study by the United States Congress’ Joint Economic Commission (Commission, 2010), indicated that when compared to previous recessions working women were impacted by the Great Recession to a greater extent than working men and that increases in unemployment rates had been particularly steep for female heads of households. For example,

during the 2001 recession women lost 17 jobs for every 100 jobs lost by men, however in the Great Recession women lost 46 jobs for every 100 jobs lost by men (Commission, 2010). The Hoynes et al. (2012) findings regarding male-female employment gap during the recession were also confirmed by the Cho and Newhouse (2013) study. Furthermore, Marchand and Olfert (2013) concluded that in addition to the gender gap in the unemployment rate, in those states that had higher unemployment both youth and men who were able to find employment received lower wages primarily due to the declining labor demand and the oversupply of available workers. Also, male decline in hourly wages had a greater impact than the gender employment gap (Marchand & Olfert, 2013), since during the Great Recession the hourly wage gap between genders was seven to ten percentage points in states with higher concentrations of employment in male-dominant and cyclical industries, whereas the employment rate gap reduced by five to seven percentage points. An analysis by Schmitt and Boushey (2012) found that among 25- to 34-year-old men, one in five (19.4%) with a college degree actually earned less than the average male high school graduate. Additionally, one in seven women with a college degree (14.0%) earned less than the average female high school graduate (Schmitt & Boushey, 2012).

The Demographics of Community College Students

Given the connection between employment and community college enrollment and the subgroup differences in unemployment rates during the Great Recession, it is important to consider the diverse demographics of community college students as well. The percentage of high school graduates enrolling in college within two years of graduating from high school has risen appreciably over the past 30 years, from around 50% of students in the class of 1972 to almost 70% of students in the class of 2012 (NCES, 2013). Further, economically disadvantaged students who historically had limited access to higher education have been progressively more

likely to attend college. In fact, the rate of enrollment growth of traditionally disadvantaged students has outpaced that of their more advantaged counterparts (Kalogrides & Grodsky, 2011). Thus, college enrollments have risen considerably among racial and ethnic minorities as well as women (NCES, 2013).

Gender

After more than 300 years of male college enrollment exceeding that of females, beginning in the 1970s the trend began to reverse itself (Blackhurst & Auger, 2008; King, 2000). By 1978, the number of women attending college exceeded the number of men (Cohen & Brawer, 2008). In recent years women are more likely to attend college in general, and community college in particular, due in part to the perceived economic benefit derived from postsecondary education (King, 2000). Recently, gender studies have become common in the field of education in general but in higher education in particular. Researchers have identified differences between males and females on a variety of measures across numerous subject areas and aptitudes (e.g., Chambers & Sharpe, 2012; Combs et al., 2010). A study comparing pre-college academic performance found that boys performed at higher rates than girls, particularly in math, on college-ready indicators such as the Scholastic Aptitude Test (SAT) and the American College Testing (ACT) (Combs et al., 2010). However, the results of a 2008 study provide little evidence that the gender gap in college enrollment can be traced to differences in elementary school children's educational aspirations or expectations (Blackhurst & Auger, 2008). Studies have also shown that elementary school age girls are more likely than boys to desire careers that require a college education (Blackhurst & Auger, 2008). Researchers have concluded that lower income men in particular are more likely to be attracted to high-paying blue collar jobs than to pursue a community college education (Winter, 2009). Others contend that

high school boys are more likely to choose blue-collar jobs due to the short-term economic benefits of immediately working, rather than the delayed financial gains associated with attending college, including community colleges (Blackhurst & Auger, 2008). These notions about gender and higher education enrollment patterns help to explain why female students comprise 56% of all college students nationwide.

Still some contend that the gender gap in higher education in general is probably a by-product of the *boy crisis* in K-12 (California Postsecondary Education, 2007). The boy crisis has been described as the phenomena in all stages of education whereby male students succeed at a lower rate than female students, particularly male students from challenging socioeconomic environments (McGlynn, 2007). Furthermore, Black males are more likely than Black females to choose post-high school options other than college (Chambers & Sharpe, 2012; Kane, 1994). However, studies indicate that the gender gap is greater at community colleges than at four-year institutions (California Postsecondary Education, 2007). Between 1980 and 2001, it was reported that females earned 60% of all associate degrees nationwide (Peter & Horn, 2005). The projection for 2016 is that women are expected to earn 64% of all associate degrees (King, 2006). Furthermore, when comparing the academic year 2008-09 to the projections for academic year 2020-21, there is expected to be an increase of 23% of associate degrees earned by males and 28% increase in the number of associate degrees earned by females (NCES, 2011).

By the first decade of the 21st century, within the community college segment, female students comprised 60% of all enrolled students (King, 2006). Despite the actual enrollment numbers, both males and females expressed strong support for the value of a college education, and the majority of both male and female students stated a preference for attending college rather

than participating in the workforce when presented with an option between the two (Winter, 2009).

A small study conducted at a single urban community college found that male community college students tended to be employed more hours per week than their female counterparts; however, female students were more likely to have a dependent child (Winter, 2009). Additionally, today, male students who stay in college have a greater chance of graduating than they did several decades ago (California Postsecondary Education, 2007; Foundation, 2010). Furthermore, the graduation rate of female college students has increased significantly over the years, and when coupled with the increase in the number of female students applying to college, there are more female college graduates at all institutional levels than there are male college graduates (Mullen, 2012). The reasons for this phenomenon can vary. For instance, Winter (2009) found evidence that males may be less firmly engaged in academic work. Other studies indicate that low income men find it difficult to return to college, particularly if they are the primary income earner (California Postsecondary Education, 2007; King, 2000).

Nationwide, there is a gender enrollment gap at lower income levels; however, this does not appear to be the case at higher income levels (California Postsecondary Education, 2007; King, 2000). Historically, when household finances are limited, more high academically prepared males than females from low income households have attended community colleges rather than four-year institutions (Cohen & Brawer, 2008). In the early years after graduating, a woman with a college degree earned 55% more than a woman with a high school degree. However, for men, that difference was only 17%. Moreover, men with only a high school education earned a third more than women and were more likely to find work in traditionally

male blue-collar jobs that offered healthcare and other benefits which were not available in the sales and service jobs typically held by women. Even though women's salaries were lower than men's, women enjoyed a greater increase in income from graduating from college than men (Perna & Titus, 2004).

Race and Ethnicity

Black males face greater financial challenges than Black females with regards to affordability in enrolling in college (Kane, 1994; Smith & Fleming, 2006). Furthermore, college attendance aspirations of African American teenagers differ by gender, with girls perceiving college attendance as a requirement and boys perceiving college attendance as an option (Smith & Fleming, 2006). Additionally, while college-qualified Black girls were dedicated to the idea of attending a four-year institution, similarly qualified Black boys were more open to the possibility of attending a community college as only one of several options available to them (Smith & Fleming, 2006). One explanation of the disparity between Black male and female college students is the notion that Black males are more likely than Black females to have experienced discrimination in school discipline and being steered towards non-college tracts while in high school. Also, according to the qualitative research of Smith and Fleming (2006), African American parents generally tend to have higher academic expectations for their daughters than they do for their sons. These findings are consistent with the findings of Muhammad and Dixson (2008). Compounding the issue, beginning in the late 1980s, earnings for college educated Black women were greater than earnings for college educated Black men (Kane, 1994).

While access to all levels of postsecondary education has expanded since 1972 for all ethnic groups, Black and Hispanic students' likelihood of being enrolled in selective colleges has

declined relative to White and Asian American students (Posselt, Jaquette, Bielby, & Bastedo, 2012). Additionally, Blacks trail Whites in terms of academic attainment, even when controlling for differences in socioeconomic status (O'Hara, Gibbons, Weng, Gerrard, & Simons, 2012). Although high school graduation rates for Blacks began increasing in the late 1970s (Kane, 1994), the majority of Black college students are female (Bush, Chambers, & Walpole, 2009; Smith & Fleming, 2006). Furthermore, while both Hispanic and White girls have an advantage in enrollment rates compared to their male peers, racial and ethnic disparities in college attendance consistently surpass gender disparities (Riegle-Crumb, 2010). Among Whites, an obvious female majority has emerged since the mid 1990s, with the percentage of White male undergraduates dropping from 49% to 46% since 1996. This change is largely due to a decline in the percentage of low-income White male students from 48% to 44% (King, 2006). Additionally, it is interesting to note that in the year 1970, Black female college enrollment exceeded that of Black male college enrollment (Smith & Fleming, 2006).

According to Smith and Fleming (2006), prior to the end of the second World War, African Americans were obtaining postsecondary education primarily by means of Historically Black Colleges and Universities (HBCUs); however, the passage of the Serviceman's Readjustment Act of 1945 (The G.I. Bill) resulted in an increase of college enrollment of all racial groups, including Blacks. The G.I. Bill also resulted in many African American's enrolling in Predominantly White Institutions (PWIs). The increase in enrollment among Black youth during the 1980s to some extent can be explained by the fact that many African Americans who benefited from postsecondary education after World War II had children who became college age during the 1980s. These children of college educated parents were strongly

encouraged to attend college despite the increasing tuitions that were occurring during that period (Kane, 1994).

Since the 1970s, the number of Black female college students has increasingly surpassed Black male college enrollment (Chambers & Sharpe, 2012). In recent years Black men have found themselves at the bottom of the college enrollment ladder (California Postsecondary Education, 2007). Another possible explanation for the disparity between Black male and female college enrollment is the idea that young Black males have fewer Black male college educated role models to emulate (Smith & Fleming, 2006). As a result of these disparities, "African-American, Hispanic, and lower-income males lag behind their female peers in terms of educational attainment and are far outpaced by White, Asian-American, and middle-class men and women" (King, 2000, p. 2).

Although access to all segments of higher education has increased, some racial and ethnic groups remain underrepresented, and college success, as measured by persistence and degree completion, has not improved (Brock, 2010). Between 1980 and 1984, there was a decline in the college enrollment of Black students between the ages of 18 and 19. However, this temporary decline reversed itself after 1984 (Kane, 1994). The percentage of Black students enrolled in college, at all levels, has increased since 1998 from 10.9% to 12.1% in 2008 (Sharpe, 2010). Furthermore, some empirical studies have found that return to college is higher for Blacks than it is for Whites (Conrad & Sharpe, 1996). However, other studies have shown that low income Whites experienced college enrollment trends that were similar to Blacks (Kane, 1994).

Not surprisingly, since Black college students are more likely to come from low income households than White students, increases in the tuition of public higher educational institutions, such as community colleges, are more likely to have a negative impact on Black students than

White students (Kane, 1994). Over the past three decades, the higher education literature has pointed to the positive role of financial aid in promoting student access and success (Cabrera, Nora, & Castañeda, 1992; Heller & Rogers, 2006; St. John, 2006).

As such, community college students tend to be disproportionately members of racial and ethnic minorities and tend to have lower family incomes than those attending four-year institutions (Cohen & Brawer, 2008). Students' concerns for the increasing cost of college imply that this is more an issue of institutional choice as opposed to access to postsecondary education. Some researchers have found that there are no differences between non-college and two-year college students on this measure, but it is an important consideration between choosing a two-year versus a four-year college (Daun-Barnett, 2013).

Due to past racial discrimination, Black students are more likely to be first generation college students, a group less likely to complete their college education than students of college educated parents (Sharpe, 2005). However, one of the benefits of the Civil Rights Movement of the 1960s was an increase in college enrollment among Black students, and by 1970, there were more Black students enrolled in PWI than in HBCUs (Smith & Fleming, 2006). The issues regarding race can have further complications other than Blacks versus Whites. Researchers have found that Asian American students were less likely to choose no college even after additional background factors were considered. When consideration was included for family background, Black students were more likely to attend college, but once preparation for college was added to the model, these differences disappeared. These findings were consistent with the earlier NCES conclusions that differences by race disappear once qualifications are added to the model (Daun-Barnett, 2013).

Many Hispanic students, particularly those from working-class backgrounds, who are the first in their family to attend college, often, find the transition to college to be an overwhelming experience (Rendón, García, & Person, 2004). Therefore, Hispanics, and Mexican Americans in particular, tend to prefer community colleges over four-year colleges, and approximately half begin their postsecondary education at community colleges (Frye, 2002: Kurlaender, 2006). Thus, Hispanics enroll at public two-year colleges at a higher rate than the overall population (Bailey, Jenkins, & Leinbach, 2005). A study by Taggarty and Crisp (2011) found that Hispanic students were less likely to attend a 4-year institution if they experienced discrimination, or perceived others being discriminated against, during their high school years. Their study also found that discriminatory high school experiences may be a contributing factor in "tracking" Hispanic students to the community colleges (Taggart & Crisp, 2011).

At less than 1% of all college students, Native students have the lowest college enrollment. Furthermore, According to the U.S. Department of Education (2013), Native students earn 0.6% of all associate's, bachelors, and advanced degrees in the US. The factors that influence Native students to attend college are complex. However, a few studies of Native college students suggest that factors such as precollege academic preparation, family support, involved and supportive faculty, social support systems in the form of Native student associations, multicultural offices, peer mentoring programs, and academic counseling play a significant role (Guillory, 2009).

The federal, state, and college's role in recruiting Native students include offering sufficient financial resources for child and family care (Almeida, 1999; Day, Blue, & Raymond, 1998; Tate & Schwartz, 1993). In addition, a significant factor in the enrollment of Native students in colleges is their perceived measure on how the institution sees and appreciates their

ethnic identity (Huffman, 2008). The traditional role of native men on the reservation as hunter, provider, and gatekeeper has evolved.

Many Native men still view themselves as needing to quickly assume the financial responsibilities of their household. Therefore, many Native male high school graduates are more likely to join the military, or join the workforce after high school rather than attend college (Stuart, 2012). Some of the issues that prevent Native males from attending college including: the lack of money to pay for college, few peer and mentor incentives, and important family obligations. For those Native students who decide to enroll in college, there is a strong desire to be close to home, therefore making the local community college preferable to a more distance four-year institution (Stuart, 2012). Furthermore, many Native males are attracted to college programs that relate to the land, and its resources. Therefore, Native male students are often interested in training in fields that can lead to work quickly. Short programs in carpentry, welding, electrical work and operating heavy equipment are therefore attractive to these students (Stuart, 2012).

There is a perception in the United States that Asians represent a racial group with high levels of educational accomplishment and who attend selective four-year colleges. However, while a considerable number of Asians come to the United States already highly educated, a sizable number arrive from countries that have provided limited educational opportunities (Teranishi & Nguyen, 2011). There is therefore a sizable Asian population with very low educational attainment which has resulted in the reality that almost half of Asian American undergraduates attend community colleges (Park, 2012). Furthermore, while Asians consisted of less than 5% of the national population in 2007, they represented nearly 7% of all community college students (NCES, 2012; Teranishi & Nguyen, 2011). Additionally, between 1990 and

2000, Asian public two-year college enrollment increased by 73.3%, compared to an increase of 42.2% in the public four-year institutions (National Commission on Asian American and Pacific Islander Research in Education 2013).

Teranishi and Nguyen (2011) analysis indicated that 62.9% of Asian community college students enrolled as part-time students and 31.7% delayed attending by two or more years. Compared to Asian students at four-year colleges, Asian community college students are more likely to enter college with lower levels of academic preparation (Teranishi & Nguyen, 2011). Like many community college students, many Asian students are enrolled on a part-time basis, have dependent children, and work full time while enrolled (Teranishi & Nguyen, 2011). Additionally, the community college enrollment of Asian students is increasing at a faster rate than in 4-year colleges, particularly in the Midwest and the South (Kim & Gasman, 2011).

Part-time vs. Full-time Students

Uncertainty about how to pay for college has kept many young people from attending college, particularly on a full-time basis (Brock, 2010). The past two decades have seen an increase in enrollment on both a part-time and full-time basis; however, part-time attendance has grown more rapidly at community colleges than at four-year institutions (Nettles & Millett, 2013). Today, nationwide, more than 40% of all college students are enrolled part-time. However, 63% of community college students attend on a part-time basis compared to 22% at four-year institutions (Cohen & Brawer, 2008). Nontraditional students are much more likely to be enrolled in community colleges, many on a part-time basis (Brock, 2010).

Furthermore, Adelman (1999, 2006) found that students who attended community colleges on a part-time basis often did not enroll continuously, and were less likely to earn at least 20 credits by the end of the first calendar year. Additionally, Driscoll (2007) analyzed

community college students in California and discovered strong correlations between full-time enrollments during the first-term (fall) enrollment and the likelihood of students returning for the following spring semester. Moreover, Stratton, O'Toole, and Wetzel (2007), in an attempt to better understand why students enroll full-time or part-time theorized that older students and those in states with lower unemployment rates, were more likely to enroll part-time when compared to younger students and those in states with higher unemployment rates.

Stratton et al. (2007) investigated the differences in college dropout rates among students who begin postsecondary education on a part-time or full-time basis. Their analysis found that initial enrollment status correlated with the decision to drop out of college. Specifically, they found that parental education, timing of enrollment, college GPA, and local economic conditions had a greater correlation with dropout or stop-out for full- time students than for part-time students. Another contributing factor to the increase in part-time college enrollment is the need that many students have to maintain gainful employment while in college (Lang, 2012).

Enrollment Status and Employment

While a limited study by High (1999) found that 55% of all college students, from both two-year and four-year institutions, work in excess of 20 hours per week, Stern and Nakata (1991) found that students between the ages of 25 and 34 have historically been more likely to be employed than students between the ages of 20 and 24. Further, they found that students between the ages of 20 and 25 are more likely to have paid employment than students between the ages of 16 and 19. The positive relationship between student age and number of hours worked was also supported by the work of Canabal (1998). Research has established that the proportion of college students who work while in school has been steadily increasing since the 1960s (Henke, Lyons, & Krachenberg, 1993; Lang, 2012). In fact, Stern and Nakata (1991)

found that among full-time college students, White males have historically been more likely to be employed while in school than non-White males. They also noted that White females have historically been more likely to engage in paid employment than non-White females (Lang, 2012). However, Canabal (1998) found that Black and Hispanic students work more hours per week than White students (Lang, 2012). An earlier study by Ehrenberg and Sherman (1987) found that among all college students, those who worked within the first two years of college had higher drop-out rates (Lang, 2012).

Thus, there appears to be a negative correlation between the number of hours college students worked and their academic performance. Some have speculated that the more hours students work off-campus, the less time they have to socialize (Lang, 2012). However, more recent studies indicate that there are not any noticeable differences regarding the academic performance of students who work compared to those who do not work (Geel & Backes-Gellner, 2012; Lang, 2012). Conversely, an older study found that male students who worked and whose jobs were related to their academic majors earned higher grades than males who worked and whose jobs were unrelated to their academic major (Hay, Evans, & Lindsay, 1970; Lang, 2012).

Community College Enrollment

Having reviewed the literature on the impact of the recession on certain demographic groups and having observed that the demographic groups most impacted by the recession are the same groups that are more likely to enroll in community colleges, attention is now given to a review of the literature as it relates to enrollment. Particular attention will be paid to enrollment as it relates to the community college environment.

The increase in comprehensive public community colleges can be credited, in part, to the National Defense Education Act (NDEA) of 1958 (Tinto, 2004). The NDEA not only resulted in

increased access to higher education by military veterans, but the realization of an additional objective of the act, which was to increase access to higher education for members of the lower income groups of society (Tinto, 2004). The rapid geographic disbursement of comprehensive community colleges provided high school graduates with comparatively easy accessibility to their campuses and has contributed to an increase in the number of Americans who have been able to seek higher education (Tinto, 1972, NCER, 2013). Students in the lower socio-economic groups have particularly benefited from the popularity and open door policies of community colleges. Consequently, such students have a greater chance of attending a local comprehensive community college than attending a non-local four-year institution (Tinto, 1974, 2004).

During the later part of the 1990s there was a 15% increase in overall higher educational institution enrollment; however, during this same period, community college enrollment increased by 46% (Gilroy, 2001). Recently, the percentage increase in the number of students age 25 and over has been larger than the percentage increase in the number of younger students (NCES, 2012). Furthermore, Becker (2003) reported that the economic downturn of 2001-02 had not adversely affected enrollment when compared to the 1992-93 recession. The ability of community colleges to expand capacity to meet the increasing enrollment demand played a significant role in the democratization of the U.S. postsecondary system (Dowd, 2003). However, increasing tuition and fees threatens the open door, low-cost business model of the nation's community college system and had the unintended consequences of stratification of educational opportunities (Dowd & Melguizo, 2008). Generally, low-achieving high school graduates are more likely to attend community colleges while high-achieving high school graduates are more likely to attend four-year institutions (Stratton et al., 2007).

Bean and Metzner (1985) reported that institutional, curricular, political, economic, and social factors led to the increase in the enrollment of nontraditional students. Additionally, Perna and Titus (2004) made the argument that state government policies have had an impact on the type of postsecondary institutions that high school graduates chose to attend. In 1984, of the 12 million college students enrolled, over half of the undergraduate students were women, two out of five were over 25 years old, more than 40% attended college part-time, and one out of six was a member of an ethnic minority group (NCES, 2013). Today, community colleges rely significantly on older, part-time, and commuter students (OERI, 2012).

The research of Kleykamp (2010) suggests that the reduction in force of the U.S. military and the associated decline in employment opportunities within the military have resulted in an increase in students attending college, particularly community colleges. The decline in military options could possibly explain an increase in young men enrolling in higher education. However, Riegle-Crumb (2010) asserts that there has been an increase in young women enrolling in higher education due to perceived advantages with assistance with matriculation.

Higher Education Funding

Having established the impact of negative economic events on students most likely to enroll in community colleges, attention will now be given to the funding of higher education within the United States. Particular attention will be given to ways in which students from lower income households have historically obtained funds for higher education.

The Role of the Federal Government

With the Higher Education Act of 1965, the federal government provided monetary grants directly to students, and a government-guaranteed low-interest student loan system for students willing to borrow the funds necessary to attend institutions of higher education (Thelin,

2004). The 1972 reauthorization of the HEA resulted in the Pell Grant Program. These Pell Grants are federal funds provided directly to students who have financial need, are attending eligible participating postsecondary educational institutions, and have not yet earned a bachelor's degree. Unlike student loans, Pell Grant funds are generally not required to be repaid. Collectively, student grants and student loans provided by the federal government are contained in Title IV of the HEA; therefore, they are often referred to as Title IV Programs.

Morey (2004) states that in the 1970s, traditional higher education stakeholders were slow to respond to the need for formal training within corporations so many businesses established their own training centers and universities. In order to receive federal Title IV funds an institution must be accredited by an accreditation body recognized by the Secretary of the U.S. Department of Education (U.S. Dept, of Education, 2013). Several for-profit postsecondary institutions had been successful in obtaining accreditation by accrediting bodies that were recognized by the Secretary of Education (Hassler, 2006). Accrediting agencies recognized by the Secretary are required to meet certain criteria. The institutions accredited by recognized agencies meet standards that address the quality of an institution and its programs. An accrediting agency that meets the Department of Education's criteria for recognition is determined to be a reliable authority in measuring the quality of education or training provided by the institutions it accredits in the United States and its territories. Agencies that meet these criteria are placed on the Department's List of Nationally Recognized Accrediting Agencies (U.S. Dept. of Education, 2012).

One of the recognized accrediting agencies is the Commission of Career Schools and Colleges. This accrediting body provides the accreditation of private, postsecondary, non-degree-granting institutions and degree-granting institutions in the United States that are

predominantly organized to educate students for occupational, trade and technical careers, and including institutions that offer programs via distance education. (U.S. Dept. of Education, 2012). Although there are several other accrediting bodies that are recognized by the Secretary of Education, regional accreditation is generally considered to be the traditionally preferred form of accreditation (Hall, 2012). In recent years however, for-profit institutions have been successful in receiving regional accreditation and awarding college degrees in direct competition with traditional public and private non-profit institutions (Morey, 2004). The growing numbers of adults engaging in the pursuit of lifelong learning also helped to encourage the advancement of regionally accredited proprietary institutions (Morey, 2004).

Federal Support for Community Colleges

In 1947, The Truman Commission determined that at least 49% of the U.S. population at the time had "the mental ability to complete 14 years of schooling with a curriculum of general and vocational studies that should lead either to gainful employment or to further study at a more advanced level" (Truman, 1947, Vol. I, p. 41). Of the Truman Commission's recommendations regarding expanding access to higher education the elimination of financial barriers to higher education received the greatest attention (Gilbert & Heller, 2013). It took eighteen years after the Commission's report, for the passage of the Higher Education Act (HEA) of 1965. Title IV of the HEA spelled out the role the federal government would play in higher education (Gilbert & Heller, 2013). Furthermore, the language in the preamble to Title IV echoed the language of the Truman Commission report (Gilbert & Heller, 2013).

Gilbert and Heller (2013) argue that The Truman Commission firmly believed that its recommendations regarding access could not be fulfilled without a considerable growth in both the number of community colleges and the activities in which community colleges engaged (Vol.

I, p. 67). Community colleges were particularly attractive as a way of handling student expansion because public two-year colleges could be built rapidly and were viewed as being more cost-efficient to operate (Brubacher & Rudy, 1968). According to Gilbert and Heller (2013) the Commission intended that public community colleges would be free and accessible to all students as other parts of the K–12 school system (Vol. III, p. 15). However, the Commission's notion of funding arrangement for the two-year colleges and free tuition would not be provided through federal support but rather through funding by local communities with supplemental aid provided by the state (Vol. I, p. 67).

Once a plan was developed for community college financial support, a statewide planning effort was recommended. The plan involved locating colleges within state systems that would avoid costly duplication of efforts while providing comprehensive vocational training (Vol. III, p. 9). The Commission allowed states to determine locations for campuses while considering the educational needs of their citizens, although it did have some general recommendations about the scope of the education in which community colleges should engage (Gilbert & Heller, 2013). Federal financial support for community colleges has been slow to develop and the primary funding of community colleges comes from the states (Cohen, 2001). The primary means of federal support for community colleges is paid directly to the students who receive federal funds through Pell grants, student loans, and work study (Cohen, 2001).

The 1978 HEA reauthorization resulted in the establishment of the Middle Income Student Assistance Act (MISAA), which increased the income limits on Pell Grants and removed income caps entirely on federally subsidized loans. Some viewed this as a sign that Congress had moved away from the original access goals of the Truman Commission and the HEA, and was focusing more on affordability of college for middle- and upper-in-come students (Gilbert &

Heller, 2013). This has had a negative impact on low income community college student who depend more on grants than loans to finance the cost of their education

The HEA adjustment to modify Pell Grant eligibility to make the grants available to part-time students, however, had a positive impact on community college students (Cohen, 2001). In addition, the 2008 HEA reauthorization included provisions related to the creation and encouragement of matriculation agreements between community colleges and their four-year partners (National Association of Student Financial Aid Administrators [NASFAA], 2010). The Great Recession resulted in an influx of federal funding to higher education by way of the American Recovery and Reinvestment Act of 2009 (Gilbert & Heller, 2013). In 2009, President Barack Obama proposed a plan to invest nearly $12 billion into overhauling the community college system (Beam, 2009). This plan is part of President Obama's larger goal of returning the United States to the highest graduation rates in the world, an aim which would to some extent be achieved by increasing, by five million, the number of graduates of community colleges by the year 2020 (Jaschik, 2009).

Federal legislation passed as part of the healthcare reform in 2010 allocated $2 billion for increased Pell Grant funding for community colleges for job training (Fuller, 2010). In addition, in September 2011, President Obama proposed a $447 billion investment in jobs, of which $5 billion would be earmarked to community colleges for building modernization and construction (Gonzalez, 2011). The number of community college students receiving Pell grants increased by 18%, from 1.7 million students in the first quarter of 2010 to 2 million in 2011 (Mullin & Phillippe, 2011). Community college students receiving Pell Grants rose from 31% to 34% when compared to other sectors of higher education (Mullin & Phillippe, 2011). Despite the increased funding of Pell Grant for community college students, according to Gilbert and Heller

(2013) what has materialized has been an increased emphasis over time on federal student loans over federal Pell Grants. They contend that the increasing emphasis on student loans is not what the Commission would have wanted and has had a negative impact on Community College students.

The Role of State Government

Historically, state governments have provided significant portions of the operating funds for their state supported institutions of higher education (Cohen & Kisker, 2009). The North Carolina legislature, as an example, went so far as to include in the state constitution that the state legislature should fund state institutions of higher education to the point that as much as is practicable postsecondary education at state institutions should be as close as possible to being free for the citizens of North Carolina (NC State Const. art. IX § 8). Although no other state took their commitment to access to higher education to the extent that North Carolina did, many states were committed to the concept of increasing access to higher education by providing the funds necessary to operate these institutions while keeping the cost of tuition and fees to state residents at a minimal (Cohen & Kisker, 2009).

Despite the active role that the federal government, and various state governments, played in making access to higher education available to significantly more people, beginning in 1980, a series of events occurred that resulted in more challenges in acquiring a postsecondary education for low-income and disadvantaged students (Mumper, 1997). Mumper (2003b) describes how increases in state funding of social services, such as Medicaid, and law enforcement services, such as the cost of prison systems, competed for state education dollars. State educational spending is often viewed in two categories: K-12 spending and postsecondary spending. The funding competition between K-12 and postsecondary institutions was recognized

by Tandberg (2010), who suggested that compared to the overall state budget, the percentage of state budgets that was being allocated to higher education was "rapidly declining." Lawmakers of many states view K-12 education as a public "right," while postsecondary education is viewed as a privilege (Mumper, 1997). As a result of this thinking, the amount of annual state funding that has been appropriated to state public higher educational institutions, adjusted for inflation, has been declining since the 1980s (Mumper, 2003b). In the United States, public higher education institution finance policy is primarily a state government function, while the federal government primarily provides financial options to the student (Cheslock & Hughes, 2011).

It should also be noted that in most states the community college buildings and facilities are owned and operated by the counties that they serve (Barr & McClellan, 2011; Romano, 2012). Thus, the acquisition and maintenance of building and facilities are provided through county funds, while personnel and other operating expenses—such as technology and computer equipment—are provided through state funds. In this regard community colleges are funded similar to the way in which public school systems are funded.

Escalating Community College Tuition and Fees

Community colleges, for the most part, receive two categories of funds: (1) the occasional federal grants, state and local government allocated funding, and (2) student tuition and fees (Mumper, 2003b). While federal research funds are usually allocated to research universities, community colleges depend heavily on state funding and to a lesser extent on local government funding (Campbell, 2010). In fact, most community colleges receive a significantly greater portion of their operating funding from state government sources than from local government sources. Therefore, if the amount of funds that a public institution, including a community college, receives from the state is reduced, the institution's senior administrators

have only two options: reduce operating costs or increase tuition and fees (Mumper, 2003a). As an illustration of the rising community college tuition, in 1992 the average annual community college tuition and fees for families in the bottom income quartile was 50% of household annual income. By 2005, average annual community college tuition and fees for this segment of the population represented 58% of annual household income (Crookston & Hooks, 2012).

Beginning in the 1980s, at the same time that state funding began to decline, the number of students attending postsecondary institutions began to increase (Mumper, 2003a), which resulted in higher operating costs (Boggs, 2004). During this period, community colleges experienced an even greater increase in the number of students attending these institutions compared to the number of students attending four-year institutions (Kennen & López, 2008). Also, beginning in the 1980s, the federal government began to incur large budget deficits in an attempt to stimulate the national economy and build up the national defense system (Deaton, 2012). With higher federal spending, increasing national deficits, and escalating national debt, the amount of money that the federal government allocated for federal student financial aid such as Pell Grants, adjusted for inflation, began to decline (Heller & Rogers, 2006). Heller and Rogers (2006) assert that over the past two decades there has been a shift in the basic philosophy of higher education funding. Initially, the basic belief was that higher education was a public good and therefore federal and state governments should play a central role in the financing of higher education. However, in recent years, the thinking has shifted to the view that higher education is a private good and that since the individual students are the ones to gain the most from receiving a higher education, the students should therefore bear a greater portion of the cost of such an education in the form of increased tuition and fees (Heller & Rogers, 2006).

This shift in philosophy manifested itself in a gradual shift from government-funded student grants to government-subsidized student loans (Heller & Rogers, 2006). The difference in philosophy with regards to who should be responsible for paying for higher education also manifest itself along political lines. Republican members of the House of Representative Committee on Higher Education have stated that the HEA may be a waste of money with increasing costs in the long run (Pekow, 2005). The Republican Chairwoman of the U.S. House of Representatives Committee on Higher Education, North Carolina Congress Woman Virginia Foxx, has gone as far as to argue that since the U.S. Constitution does not contain the word "education," the federal government has no business being involved in education and its funding (Jones, 2011).

Student Financing of Higher Education

Many students faced with the higher tuition of public four-year institutions, and declining federal financial aid, increasingly turned to their local community college to satisfy the first two-years of their postsecondary education. Boggs (2004) notes that this "perfect storm" had a particular impact on community colleges which traditionally experienced increased enrollment during periods of economic downturn. Furthermore, the increase in tuition and fees that occurred over the 1980s and 1990s and the growing inequity in family household income have resulted in disparity in access which has adversely affected lower-income households (Smeeding & Haveman, 2006)

To fully appreciate the impact of a declining economy on the financial operations of a community college, it is important to understand how community colleges are funded. The funding model for community colleges varies from state to state. Some states have a centralized system wherein a central body sets the tuition for all community colleges within the state, while

other states use a decentralized system whereby the tuition and fees are established at the individual community college level (Barr & McClellan, 2011). It should also be noted that community colleges are funded differently than state supported four-year institutions. Whereas publicly supported four-year colleges receive their public support from the state, the public support of community colleges is shared by state as well as the local county government. The state government generally covers the cost of personnel and equipment, while the county government generally covers the cost of the physical infrastructure (Barr & McClellan, 2011).

State Government Community College Appropriations

Historically, when states using the centralized model increase the charges for tuition and fees, there is usually a corresponding increase in the amount of state grant funds provided to students to offset the impact of the tuition increase; however, Cheslock and Hughes (2011) found that when comparing the academic year 1989-90 with 2008-09, the relationship between state tuition levels at all institutions and the states' student financial aid award had declined over the period. Zhang (2009) found that there was a direct association between state funding of four-year institutions and the graduation rates of students attending four-year institutions. The study found that a 10% increase in FTE state appropriations at four-year institutions resulted in a 0.64% increase in graduation rates at these institutions (Zhang, 2009).

Additionally, Titus (2006) revealed that for traditional aged college students, 18 year-olds to 24 year-olds, successful degree completion is directly related to state education grants allocated per student as a percentage of state appropriations for higher educational operating expenses. The Titus study also revealed that college completion is associated with the region of the country that the institution is located. Based on the results of the study, students attending college in the Northwestern United States are less likely to complete their college degrees than

students who attend college in other regions of the country (Titus, 2006). The study further revealed that state need-based financial aid had a positive influence on student access and college choice within a state. In addition the study revealed that as institutions increase their dependence on tuition and fees as a source of revenue, institutions will increasingly focus on retaining their current students (Titus, 2006) .

As college completion becomes an increasing priority for state legislatures, more legislatures are challenging community college administrators to demonstrate progress by tying state funding to institutional performance (Hermes, 2012). Performance outcomes rather than student access has now become the barometer by which the legislatures of several states fund their community colleges (Mullin & Honeyman, 2007). Furthermore, in a comprehensive national analysis of state and local funding for community colleges, Roessler (2006) found that the percentage of institutional operating budget revenues from state appropriations declined, when adjusted for inflation, from 47.1% in 1981 to 34% in 2001. Only three states: Nebraska, New Mexico and Oregon, had increases during this 20-year period. During the same 20-year period, local government funding of community college budgets fell from 17.4% to 14.7%.

The argument for increased state appropriations for community colleges is to keep community college tuition affordable, since the fewer dollars states appropriate to community colleges the more there is pressure to increase tuitions (Toutkoushian & Hillman, 2012). Toutkoushian and Hillman (2012) also make the argument that lower in-state tuitions provide an incentive for residents of a state to remain in-state, which is one of the long term benefits to state governments as a more educated citizenry provides a more stable tax base.

Pell Grants

The Federal Pell Grant Program provides financial need-based grants to low-income undergraduate students and is intended to promote access to postsecondary education (FSA, 2013). With declining state support and the corresponding increase in tuition and fees, many financially disadvantaged community college students increasingly rely on Federal Pell Grants to cover the cost of their postsecondary education. In academic year 2011-12, approximately three million community college students received Pell Grants; this number represented roughly one-third of the 8.3 million Pell Grant recipients among all institutions of higher education (FSA, 2013). The Pell Grant plays a significantly greater role for community college students than for four-year institution students (Baime & Mullin, 2010). For academic year 2009-10, 71% of students receiving Pell Grant funds were from families with annual household incomes of $30,000 or less, while 56% of independent Pell Grant recipients had household incomes of $15,000 or less (Baime & Mullin, 2010). According to Baime and Mullin (2010), for academic year 2007-08, slightly less than 40% of dependent students with family incomes of $36,000 or less attended community colleges. They further stated that Pell Grants covered a greater percentage of the total cost of tuition and fees of a community college compared to the cost of attending a public or private four-year institution. Since Pell Grants cover a greater percentage of tuition and fees, the need for community college students to borrow from the federal student loan program is kept to a minimal level.

Prior to 1992, one of the limitations placed on the Pell Grant was that the amount that a student received should not exceed 60% of costs. However, the 1992 amendment to the HEA eliminated the 60% of cost limitation and significantly increased the participation of community college students in the Pell Grant program (Baime & Mullin, 2010). This increase in the

participation rate of community college students after 1992 is evidenced by the fact that the percentage of Pell Grant funds received by community college students increased from 18.7% in academic year 1986–87 to 30.1% in academic 2008–09. The largest share was in the 2001–02 award year, when community college students received 35% of total Pell Grant funds (Baime & Mullin, 2010). Compared to four-year institutions, community colleges receive only a small percentage of campus-based financial aid programs such as federal work-study, Supplemental Educational Opportunity Grants, and Perkins Loans. Baime and Mullin (2010) attribute the small percentage of these funds that community colleges receive to archaic campus allocation formulas. It should also be noted that in many states, including North Carolina, South Carolina and Virginia, the amount of the maximum annual Pell Grant is sufficient to cover the entire cost of community college's in-state tuition and fees (SREB, 2014).

The amount of funding that Congress allocated to the Federal Pell Grant program increased from $2,100 for a full-time student for the 1986-87 academic year to $5,350 for a full-time student for the 2009-10 academic year (Baime & Mullin, 2010). It has been estimated that for every $100 increase in the annual Pell Grant limit, there is an associated increase in the federal budget of $560 million (Baime, 2009). Furthermore, the economic recession that began in fall 2007 resulted in an increase in community college student enrollment along with an increase in the number of students who qualified for Pell Grant (Baime & Mullin, 2010). The declining national economy coupled with the increase in students eligible to receive Pell Grants has resulted in a renewed interest in the debate on the role of the federal government as it relates to the funding of higher education (Dervarics, 2011, 2012a, 2012b). The Obama Administration has therefore examined the role of the federal government in the financing of higher education, which had the result of modifying the federal student loan program and the Federal Pell Grant

Program (Dervarics, 2011). Figure1 provides a graphical representation of the annual Pell Grant limits for the years 2003 through 2012.

According to Stratton et al. (2007), students receiving a grant were less likely to withdraw from college than those students not receiving a grant, while those students who financed their education using student loans were more likely to withdraw from college than those who did not utilize a student loan. Interestingly, other non-financial factors were found to be determinants of persistence. These factors included: the timing of first enrollment, scholastic performance, and the level of education achieved by the student's parent. However, economic factors collectively had a substantially greater impact on those initially enrolled full-time, while racial and ethnic factors were a better predictor of those who were initially enrolled part-time (Stratton et al., 2007).

Review of Three Community College Systems

Having reviewed the literature regarding the relationship between community college enrollment and employment; the impact of the Great Recession on various demographic groups; the demographics of community college students; community college enrollment issues; higher education government funding; and student financing of higher education, attention is now given to the community college systems which are the subject of this proposed study.

North Carolina Community College System

The North Carolina Community College System (NCCCS) consists of 58 independently administered colleges and was founded in 1964 (NCCCS, 2013). Each college has its own administration and Board of Trustees. The 58 community colleges compete against each other for students, while at the same time working in partnership through their common link to the NCCCS Office which provides overall guidance and assistance to each of the 58 colleges

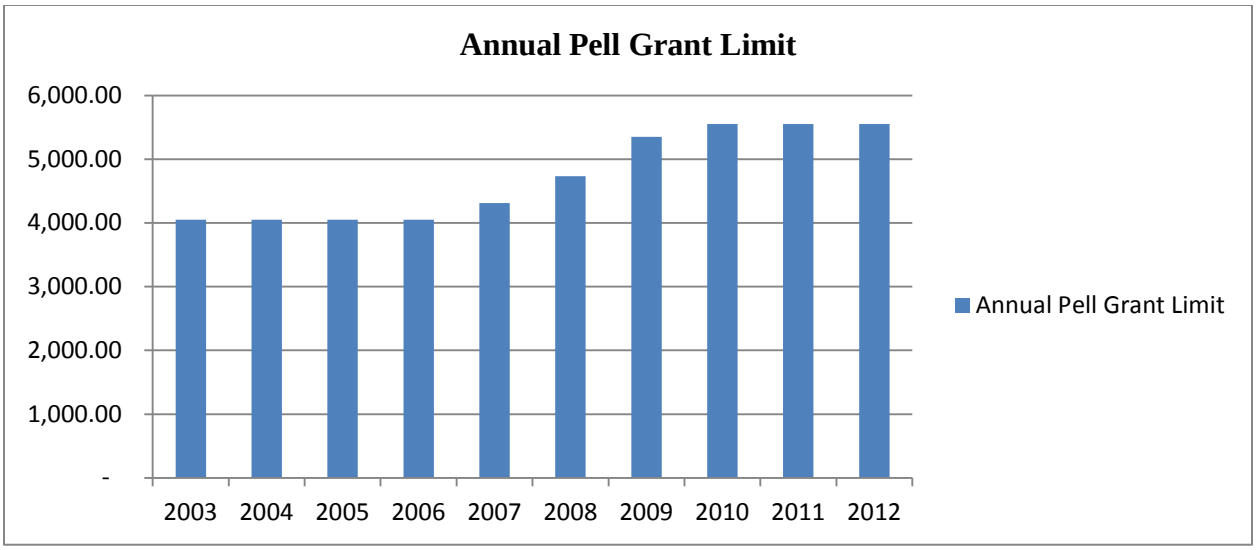

Figure 1. Annual Pell Grant limits: 2003-2012.

(NCCCS, 2013). North Carolina is geographically divided into 100 counties, and the U.S. Census Bureau estimated the state had a 2012 population of 9,752,073 residents (USCB, 2013). North Carolina community colleges were strategically located so that most residents of the state could drive to a community college in 30 minutes or less (NCCCS, 2013). Tuition rates within the North Carolina community college system are centralized, while required fees are decentralized at the individual college level.

Each NCCCS community college has at least one county that is considered its exclusive service area. Among the colleges, there is a general understanding among college presidents that colleges will not actively pursue students outside their service area (W.D. McInnis, personal communication, December 7, 2013). Therefore, each community college has a specific county (or counties) from which it actively recruits students. The rare exception to this general rule is if a particular college has a program that is not available in any of the nearby colleges, in which case it can market outside of its particular service area to attract students for that specific program. The marketing of a particular program is not generally frowned upon but rather viewed as cooperation among colleges.

The North Carolina state government funds its 58 community colleges by providing a fixed dollar amount for each Full-Time-Equivalent (FTE) student, as opposed to student headcount. Thus, the more FTE students a college has enrolled, the more funds the college receives from the NCCCS (NCCCS, 2013). North Carolina community colleges are required to remit all collected tuition to the state and are only permitted to retain the locally accessed fees (W.D. McInnis, personal communication, December 7, 2013). The 2010-11 spring enrollment censuses from the NCCCS indicated a total enrollment of 243,854 FTE. The spring 2011-12 spring enrollment census indicated an enrollment of 251,935 FTE, an increase of 8,081 FTE or

3.3%. However, while there was an increase in the FTE number of enrolled students, the state allocation to the NCCCS went from $1,087,875,214 for the 2010-11 academic year (FY11) to $985,000,000 for the academic year 2011-12 (FY12), a decline of $102,875,214 or 9.46% (The North Carolina State Budget, 2011-13, p.55). This decline in state support resulted in a tuition increase of $10 per credit hour for in-state students from $56.50 to $66.50 for academic year 2011-12 (The North Carolina State Budget, 2011-13, p. 56).

Collectively, in fall 2012, White and Black students were the largest racial groups enrolled in the NCCCS, comprising 58.4% and 25.2% of the total headcount, respectively. The remaining 16.4% of the total student headcount was composed of Hispanic, Asian, and Native ethnic groups. Table 1 provides a comparison of the racial breakdown of NCCCS students between fall 2003 and fall 2012.

As a group, female students comprised 63.0% and male students comprised 37% of the total student headcount enrollment in fall 2003. From fall 2003 to fall 2012, female student headcount enrollment in the NCCCS decreased to 61.2% and male student headcount enrollment increased to 38.8%. Table 2 illustrates the cumulative student headcount enrollment growth by gender.

In fall 2003 the NCCCS had 85,782 full-time students enrolled and 114,186 students enrolled part-time. By fall 2012 the full-time headcount student enrollment increased to 104,987 while the part-time headcount student enrollment increased to 139,247. The change over the period represented a 22% increase in full-time students and a 22% increase in part-time students. Table 3 provides the fall system-wide total headcount segmented by enrollment status for the years 2003 through 2012.

Table 1

Enrollment by Gender

State	North Carolina		South Carolina		Virginia	
Year	Female	Male	Female	Male	Female	Male
2003	125,883	74,085	51,023	28,831	90,407	61,846
2004	126,275	72,795	51,824	28,335	90,926	61,391
2005	126,955	73,085	51,750	28,452	90,794	62,736
2006	128,255	74,903	52,240	28,984	93,345	65,857
2007	126,017	75,186	54,166	30,661	97,925	69,238
2008	135,268	83,488	56,630	33,375	101,828	73,659
2009	150,581	96,830	62,999	37,382	109,467	79,808
2010	154,239	99,196	65,035	38,599	112,679	82,738
2011	154,039	96,221	65,693	38,908	113,941	83,285
2012	149,490	94,744	64,350	39,438	110,203	82,692

Table 2

Enrollment by Race/Ethnicity

	North Carolina		South Carolina		Virginia	
	2003	2012	2003	2012	2003	2012
Temporary Resident	3,586	4,214	284	88	1,688	2,009
Black, Non-Hispanic	49,707	61,600	26,078	33,755	29,499	41,951
American Indian or Alaska Native	3,203	3,987	464	579	1,495	849
Asian or Pacific Islander	2,922	3,969	985	1,470	7,334	11,417
Hispanic	4,427	13,719	1,322	3,435	6,075	15,575
White, Non-Hispanic	132,611	142,634	48,916	59,241	106,158	112,706
Other/Unknown	3,512	14,111	1,805	5,220	4	8,388

Table 3

Enrollment by Enrollment Status

	North Carolina		South Carolina		Virginia	
	F/T	P/T	F/T	P/T	F/T	P/T
2003	85,782	114,186	36,074	43,780	48,178	104,075
2004	80,847	118,223	36,615	43,544	47,764	104,553
2005	80,675	119,365	36,706	43,496	48,180	105,350
2006	77,058	126,100	37,326	43,898	50,026	109,176
2007	75,366	125,837	38,994	45,833	53,475	113,688
2008	82,010	136,746	41,349	48,656	56,074	119,413
2009	103,072	144,339	48,961	51,420	66,671	122,604
2010	110,637	142,798	50,431	53,203	69,588	125,829
2011	106,750	143,510	48,676	55,925	69,853	127,373
2012	104,987	139,247	47,307	56,481	66,375	126,520

South Carolina Technical College System

The technical college system of South Carolina consists of 16 colleges distributed into sixty centers and campuses (SCTCS, 2013). The state of South Carolina consists of 46 counties, and the U.S. Census Bureau estimated a 2012 population of 4,723,723 residents (USCB, 2013). On July 13, 1961 the South Carolina General Assembly established the South Carolina Advisory Committee for Technical Training, and Florence-Darlington TEC was founded in 1963, opening its doors to students in March 1964 (SCTCS, 2013). Like the North Carolina system, the SC centers and colleges were strategically located to meet the needs of most of the population of the state. Unlike the North Carolina system, the tuition and fees of South Carolina community colleges are decentralized and established at the local college level. Appendix C displays the counties served by each college, while Appendix B displays the fall 2012 curriculum headcount for each of the 16 colleges.

In fall 2012, the SCTCS had a total student headcount enrollment of 103,788. From fall 2003 to fall 2012, the headcount enrollment increased by 30%. Collectively, in fall 2012, White and Black students were the largest racial groups enrolled in the SCTCS, comprising 57.1% and 32.5% of the total headcount respectively. The remaining 10.4% of the total student headcount comprised the Hispanic, Asian, and Native ethnic groups.

As a group, female students comprised 63.9% and male students comprised 36.1% of the total student headcount enrollment in fall 2003. From fall 2003 to fall 2012, female student headcount enrollment in the SCTCS decreased to 62.0% and male student headcount enrollment increased to 38.0%.

In fall 2003 the SCTCS had 36,074 full-time students enrolled and 43,780 students enrolled part-time. By fall 2012 the full-time headcount student enrollment had increased to

47,307 while the part-time headcount student enrollment increased to 56,481. The change over the period represented a 31.0% increase in fulltime students and a 29.0% increase in part-time students.

Virginia Community College System

The Virginia General Assembly established the Virginia Community College System (VCCS) in 1966. The creation of the system was the result of decades of calls from leaders in government, business, professional sectors, and academia for a comprehensive system to present a new approach to providing educational opportunity (VCCS, 2013). By 1972, the last of the 23 community colleges in the Commonwealth was opened. Virginia had an estimated population in 2012 of 8,185,866 residents distributed among 95 counties (USCB, 2013). Similar to the systems in North and South Carolina, the mission of Virginia's system is to provide every resident of the Commonwealth the opportunity to learn and develop the right skills so lives and communities can be strengthened (VCCS, 2013). Similar to North Carolina, community college tuition and fees in Virginia are established centrally at the state level.

Collectively, in fall 2012, White and Black students were the largest racial groups enrolled in the VCCS, comprising 58.4% and 21.7% of the total headcount respectively. The remaining 19.9% of the total student headcount was composed of Hispanic, Asian, and Native ethnic groups. As a group, female students comprised 59.4% and male students comprised 40.6% of the total student headcount enrollment in fall 2003. From fall 2003 to fall 2012, female student headcount enrollment in the VCCS declined slightly to 57.1% and male student headcount enrollment increased slightly to 42.9%. In fall 2003 the VCCS had 48,178 full-time students enrolled and 104,075 students enrolled part-time. By fall 2012 the fulltime headcount student enrollment had increased to 66,375 while the part-time headcount student enrollment

increased to 126,520. The change over the period represented a 38.0% increase in full-time students and a 22.0% increase in part-time students.

It is therefore apparent that in all three states White students and Black students far out enroll the other racial/ethnic groups in the community college systems. Consistent with the literature female students outnumber male students. However, since 2003 there has been a change in the male-female student mix with male students making noticeable gains. This would appear to be consistent with the literature supporting the argument that the Great Recession had a greater negative impact on males than females and thus possibly resulting in an increase in the number of males seeking to enhance their skills through community college training. In all three states the number of part-time students exceeded the number of full-time students. However, North Carolina and Virginia had a noticeably larger gap between full-time students and part-time students than did South Carolina.

Summary

Community colleges have long provided a vehicle to social and economic upward mobility for many in the lower socioeconomic realms of society. The literature review presented in this chapter explored the research of Betts and McFarland (1995) regarding the relationship between unemployment and community college enrollment, which, along with the human capital theory of Becker (1993), establishes the foundation of the theoretical framework. This chapter also provided a review of the literature with regard to the impact of the Great Recession on students most likely to enroll in a community college. The history of community college education in the United States and the financing of higher education were also explored. The theoretical framework ties together various studies regarding community college enrollment and sets the stage for a quantitative study of the relationship between community college enrollment

by gender, race and enrollment status during a period that included a time of unusually long high unemployment. This study explores the impact, if any, that in-state tuition, Pell Grant limits, and state appropriations had on the community college enrollment of the various demographic subgroups.

CHAPTER THREE: METHODS

During the study I evaluated the financial and economic factors that may correlate with the enrollment patterns of demographically dissimilar cohorts of public two-year college students enrollment in North Carolina, South Carolina and Virginia over the ten-year period, fall 2003 through fall 2012. The study garnered an understanding about how financial and economic factors may affect enrollment patterns of different demographic subgroups. Data were gathered primarily from the Integrated Post Secondary Education Data System (IPEDS), the Southern Regional Education Board (SREB), and the U.S. Bureau of Labor Statistics (BLS). Statistical calculations were made using Statistic Package for the Social Sciences (SPSS).

This chapter will present an explanation of the research design and provide the overarching research questions. In addition, a justification of the site selection will be given as well as the sampling frame. An explanation of the data collection method will be provided as well as the identification and definition of the dependent and independent variables. Finally, this chapter will offer the rationalization of the data preparation and analysis.

Research Design

Betts and McFarland (1995) found that historically unemployment has impacted community college enrollment. The goal of this study was to determine if long-held and established theories about enrollment remained applicable before, during, and after the 2008-2009 Great Recession. This research also intended to discover if, in addition to unemployment, financial factors such as in-state tuition, Pell Grants and state appropriations influenced enrollment patterns, particularly among demographic subgroups. This research used quantitative methods because quantitative studies rely on data that can identify patterns showing relationships among variables (Field, 2009; Jaeger, 1990). Quantitative research also allows researchers to

make generalizations about numeric data obtained from various populations (Creswell, 2002; Field, 2009). Furthermore, Creswell (2002) explains that among researchers who seek to identify factors that influence or explain outcomes, a quantitative study is most appropriate.

Boslaugh (2007), Trzesniewski, Donnellan, and Lucas (2011) make a clear distinction between secondary data analysis and primary data analysis, emphasizing that researchers who analyze secondary data have no involvement in the data collection procedure. Secondary data has both advantages and disadvantages. In terms of advantages, secondary data is generally more readily obtainable and can therefore be more efficient and economical (Boslaugh, 2007). Secondary data usually allows for the study of an entire population as opposed to being limited to studying a smaller sample of a larger population (Trzesniewski et al., 2011). Secondary data also allows other researchers to more easily reproduce the research study to ensure reliability of the findings (Boslaugh, 2007). However, with regard to the disadvantages of secondary data, the proper analysis of secondary data usually requires a certain level of statistical proficiency (Boslaugh, 2007). The need for statistical ability of the researcher is particularly true of complicated analysis. Furthermore, available secondary data does not always neatly fit the research questions and secondary data may also be dated (Lewis-Beck, Bryman, & Liao, 2004).

The secondary data obtained was numerical in nature. Statistical correlation can be applied to data, including secondary data, when both the independent variable and the dependent variable are numerical (Jaeger, 1990; Salkind, 2004). When the goal of the researcher is primarily to identify relationships between variables, rather than trying to explain why one variable influences another variable, the use of correlation analysis is the most appropriate method (Creswell & Plano Clark, 2007).

Overarching Research Questions

The overarching research questions that guided this study were:

RQ1 What are the financial and economic factors that have significantly affected public two-year college enrollment in North Carolina, South Carolina and Virginia during the period 2003 through 2012?

RQ2 Are there discernible demographic patterns in public two-year college enrollment by financial and economic factors over the 2003 to 2012 period in North Carolina, South Carolina and Virginia?

This study was influenced by the Betts and McFarland (1995) study on the impact of labor market conditions on community college enrollment. This study is, however, dissimilar from the Betts and McFarland (1995) study in four distinct ways: (1) a different population was studied; (2) a different time period was studied, a period of relatively high local unemployment, the years 2008 through 2012 as well as a period of normal unemployment, 2003 through 2007; (3) this study examined the role of financial factors such as in-state tuition, annual Pell Grant limits and state FTE appropriations in addition to the economic factor of county level local unemployment rates; and (4) this study sought to examine student headcount enrollment by the demographic variables of gender, race and enrollment status.

Two global hypotheses guided this study:

- Ho_1: There is no significant difference between financial factors (in-state tuition and fees, annual Pell Grant limits, state technical and community college FTE appropriations), economic factors (local unemployment rates) and headcount enrollment of students during the period fall 2003 through fall 2012.

- Ho_2: There is no significant difference between financial factors (in-state tuition and fees, annual Pell Grant limits, state technical and community college FTE appropriations), economic factors (local unemployment rates) and headcount enrollment of students by demographic patterns during the period fall 2003 through fall 2012.

After obtaining descriptive statistics, each hypothesis was tested first by determining the correlation between each independent and dependent variable. Individual one-way ANOVA tests using a significance level of $p \leq 0.05$ were used to determine if there was a statistical difference among the means of each of the four separate independent variables (in-state tuition and fees, annual Pell Grant limits, state FTE appropriations, and local unemployment rates) and each dependent variable (headcount enrollment by gender, race, and enrollment status). Each independent variable was considered individually to see if there was a main effect of that independent variable. I also used a two-way ANOVA to determine the joint influence of two independent variables (e.g. in-state tuition and fees and annual Pell Grant limits) to determine if there was an interaction between variables. Another two-way ANOVA was used to determine if there was an interaction between two different independent variables: in-state tuition and fees and local unemployment rates. Yet another two-way ANOVA was conducted to determine if there was an interaction between the independent variables: state FTE appropriations and local unemployment rates. Finally, a multiple regression analysis was used to determine the predictability of in-state tuition, annual Pell Grant limits, state FTE appropriations, and local unemployment on headcount enrollment by the three demographic subgroups (gender, race, and enrollment status).

Site Selection

This research focused exclusively on public community and technical colleges. Furthermore, since a nationwide analysis was not feasible due to time and resource limitations, this research was limited in focus to a few states that possessed the following criteria: (1) a reasonable number of colleges exist within the state; (2) there are few barriers to entry into the state's colleges; and (3) the states to be selected have diverse populations. Based on these criteria the states of North Carolina, South Carolina and the Commonwealth of Virginia were selected. North Carolina was selected for several reasons. First, the North Carolina Community College System (NCCCS) is the third largest in the nation, based on the number of colleges (NCCCS, 2013). Second, North Carolina community colleges have historically had the lowest tuition in the southeast region and one of the lowest tuitions in the nation (NCCCS, 2013). Third, each of the 58 community colleges in North Carolina was strategically located to be within a 30-minute drive for most of its residents in order to provide easy access (NCCCS, 2013). Fourth, North Carolina has a relatively diverse population. Lastly, but very significant, like some other community college systems in the nation, North Carolina experienced declines in system-wide enrollment between fall 2010 and fall 2012 (IPEDS, 2014).

South Carolina was selected because it is a bordering state to North Carolina and has over the past decade experienced unemployment trends similar to that of North Carolina (BLS, 2013). Although South Carolina has a population that is approximately half the size of North Carolina, the population demographic distribution is similar to that of North Carolina, and the citizens of South Carolina share similar social and cultural norms with the residents of North Carolina (Lewis, 2012). Moreover, the mission of the 16 colleges that make up the South Carolina

Technical College System is similar to the mission of the North Carolina Community College System (NCCCS, 2013; SCTCS, 2013).

Virginia was selected because it is a border state to North Carolina and its residents share many of the socioeconomic characteristics of both North and South Carolina (Lewis, 2012). However, unlike the Carolinas' during the period 2003 through 2012 Virginia had an unemployment rate that was usually a full percentage point or two lower (BLS, 2013). Virginia was therefore included to provide a contrast to North and South Carolina and to help determine the extent to which unemployment may correlate to community college enrollment. Furthermore, the general mission of the 23 colleges that compose the Virginia system is similar to that of both the North and South Carolina systems (NCCCS, 2013; SCTCS, 2013; VCCS, 2013). Additionally, according to the U.S. Census Bureau the population of Virginia is slightly smaller than that of North Carolina and the demographic distribution is generally similar to the North and South Carolina systems (USCB, 2013).

Between 2003 and 2011 South Carolina and Virginia experienced an increase every year in their system wide community college enrollment (IPEDS, 2013). Between fall 2010 and fall 2012, Virginia's system-wide community college enrollment increased at a normal rate (IPEDS, 2014). Between fall 2010 and fall 2011, South Carolina's system-wide community college enrollment increased but only slightly (IPEDS, 2014). However, North Carolina's fall 2011 enrollment was actually lower than the fall 2010 system wide enrollment (IPEDS, 2014). Stagnating and declining enrollment is of concern to community college administrators in several states (Okpala et al., 2011). Due to the unusual length of relatively high unemployment period related to the Great Recession, many community college administrators do not yet know if the prior theory regarding the relationship between unemployment and community college

enrollment remains valid during prolonged unemployment periods. In addition, they do not yet know how financial factors such as in-state tuition and fees, annual Pell Grant limits, and state community college FTE appropriations funding impact the demographic subgroups of gender, race, and enrollment status, particularly during a period of relatively high unemployment.

Sampling Frame

For purposes of this study the sampling frame was limited to credit-seeking curriculum students enrolled in North Carolina, South Carolina and Virginia community and technical colleges. The community and technical colleges in all three states offer classes on both a curriculum (for-credit) and non-curriculum (not-for-credit) basis. Curriculum classes are generally part of an academic program leading to a degree, diploma or certificate (Gilroy, 2001; Munkvold, Tanner, & Herinckx, 2012). Students enrolled in curriculum classes generally do so as part of the process of advancing their career or furthering their formal education. Curriculum classes include vocational, technical and classes that transfer to upper division educational institutions. Vocational and technical degree programs (Associate in Applied Arts [AAA] and Associates in Applied Science [AAS]) are primarily terminal degrees intended for students who plan to enter the workforce after graduation. Academic degree programs (Associate in Arts [AA] and Associates in Science [AS]) are intended from students who plan to continue their education at a four-year college after graduation. Students enrolling in non-curriculum classes generally do so for reasons other than to advance their career or postsecondary education (Frentzos, 2005; Gilroy, 2001). Many non-curriculum students enroll in community college classes primarily for personal development (Frentzos, 2005). This study excluded non-curriculum students from consideration since the focus of the study was limited to curriculum students who are more likely to be impacted by financial and economic considerations.

The U.S. Bureau of Labor Statistics houses county-level unemployment data for North Carolina, South Carolina and Virginia (BLS, 2013). Annual Pell Grant limits were available from the United States Department of Education, and the percentage, and average Pell Grant received per student within North Carolina, South Carolina and Virginia community colleges can be obtained from the year 2000 to current from the Integrated Post Secondary Education Data System (IPEDS).

Data Collection

Existing secondary data were analyzed for this study. The following publicly available data sources were used:

- Annual fall enrollment data for fall 2003 through fall 2012 for each of the 58 North Carolina Community Colleges, the 16 South Carolina Technical Colleges, and the 23 Virginia Community Colleges were obtained from IPEDS and extracted through Web Caspar.
- Annual average county level unemployment data for North Carolina, South Carolina and the Commonwealth of Virginia for fall 2003 through fall 2012 were obtained from the U.S. Bureau of Labor Statistics.
- Annual federal Pell Grant limits for fall 2003 through fall 2012 were obtained from the U.S. Department of Education.
- Annual in-state tuition and fees for each of the 58 North Carolina Community Colleges for fall 2003 through fall 2012 were obtained from the North Carolina Community College System and extracted from data maintained by the Southern Regional Education Board (SREB).

- Annual in-state tuition and fees for each of the 16 South Carolina Technical Colleges for fall 2003 through fall 2012 were obtained from the South Carolina Technical College System and extracted from data maintained by the SREB.
- Annual in-state tuition and fees for each of the 23 Virginia Community Colleges for fall 2003 through fall 2012 were obtained from the Virginia Community College System and extracted from data maintained by the SREB.

The Integrated Science and Engineering Resources Data System's online Web CASPAR tool was used to extract the IPED data. The Web CASPAR database tool provides access to a large body of statistical data resources for U.S. higher education institutions. Web CASPAR extracts standardized data from the National Center for Education Statistics (NCES) Data Sources. The Higher Education General Information Survey (HEGIS) and IPEDS are conducted by the U.S. Department of Education's National Center for Education Statistics (NCES).

From 2000 to present, data has been collected from postsecondary institutions in the United States and its outlying areas. The NCES defines a postsecondary institution as an organization that is open to the public and has as its primary mission the presentation of postsecondary education. Participation in the IPEDS is a requirement for all institutions that participate in Title IV federal student financial aid programs such as federal Pell Grants or federal student loans. Institutions participating in Title IV programs are required to: (1) be accredited by an agency or organization recognized by the U.S. Department of Education; (2) have a program of over 300 clock hours or 8 credit hours; (3) be in operation for at least two years; (4) and have a signed Program Participation Agreement (PPA) with the Office of Postsecondary Education (OPE), within the U.S. Department of Education (webcaspar.nsf.gov).

Dependent and Independent Variables

Quantitative analysis requires an analysis of at least one independent variable and at least one dependent variable. The section that follows defines the dependent and independent variables that were used in this study.

Dependent Variables

In this study the dependent variables were aggregate enrollment and segmented enrollment based on the demographic traits of gender, race and enrollment status. Enrollment represents the total headcount number of students enrolled in a public two-year community or technical college during the fall semester of each year. IPEDS collects data annually on the number of students enrolled in the fall semester at postsecondary institutions, including two-year community and technical colleges. Institutions report the number of students that are enrolled in courses creditable toward a degree or other formal award; students enrolled in courses that are part of a vocational or occupational program, including those enrolled off-campus and high school students taking regular college courses for credit. This study attempted to identify the type of measures that appear to result in changes in community college enrollment by gender, race and enrollment status. Postsecondary institutions report annually to IPEDS the fall semester enrollment by gender, race and ethnicity, and enrollment status.

Gender: For purposes of this study gender was reported as either Male or Female.

Race and Ethnicity: Postsecondary institutions report enrolled students to IPED in the following seven standardized categories: White non-Hispanic; Black non-Hispanic; Hispanic; American Indian or Alaska Native; Asian or Pacific Islander; Temporary Resident; or Other/Unknown. For purposes of this analysis, Temporary Resident and Other/Unknown were

excluded due to their relatively low enrollment numbers. Also, for purposes of this study American Indian or Alaskan Natives were referred to as simply *Native*.

Enrollment Status: Postsecondary institutions report students enrollment status to IPED as either (1) Full-time – 12 or more semester hours, (2) Part-time – fewer than 12 semester hours, or (3) unknown. For purposes of this analysis, only full-time and part-time enrollment statuses were examined.

Independent Variables

An independent variable is the treatment variable that is manipulated in a statistical analysis (Field, 2009; Salkind, 2004). This study sought to discover the financial and economic circumstances (independent variables) that relate to changes in headcount enrollment (dependent variables). The following independent variables were studied:

In-state Tuition and Fees: The amount of money charged to documented residents of a state (or commonwealth) for the privilege of attending a state supported technical or community college. Within North Carolina the tuition portion is established by a state governing body while the amount of the fees is established by each individual college. In South Carolina both the tuition and fees are established at the local technical college level, while in Virginia both tuition and fees are established at the state level. For purposes of this study, the dollar amount of annual in-state tuition and required fees for a full-time student beginning in the fall semester of each academic year was used. This data was extracted from the Southern Regional Education Board (SREB).

Annual Pell Grant Limit: The United State Congress in collaboration with the U.S. Department of Education determines the maximum amount of Pell Grant that an individual student may be awarded each academic year. This study attempted to discover if changes in the

annual Pell Grant limit had any statistically significant effect on both the aggregate enrollment and demographically segmented enrollment in public two-year colleges.

State FTE appropriations per community college student: Public community colleges are supported with state government appropriated funds. The total amount of funds that the state legislature appropriates each fiscal year for each full-time (or full-time equivalent) student enrolled within the community college system provides the annual state FTE appropriation. The annual state FTE appropriations for each state for each of the ten years were extracted from the Southern Regional Education Board (SREB).

Local Unemployment Rate: The number of people in the service area, generally a county or set of counties, which are actively seeking employment divided by the total labor force of the geographic area (county). Annual average county unemployment data (the service area) for North Carolina, South Carolina and the Commonwealth of Virginia for fall 2003 through fall 2012 were obtained from the U.S. Bureau of Labor Statistics.

Data Preparation and Analysis

Data were gathered from the various sources mentioned above. The data sets were manually entered, or downloaded from Web CASPAR, into excel spreadsheets, which were formatted into columns with each column representing a specific variable. Dollar values for in-state tuition and fees, annual Pell Grant Limits and state FTE appropriations for the years 2003 and 2012 were recalculated using the inflation factor published by the Consumer Price Index (CPI). Please see the CPI Inflation Factor in Table 4. All dollar amounts were adjusted to 2012 constant year dollars.

Table 4

CPI Inflation Factor

Year	Index	CPI inflation factor
2003	184.000	0.80141
2004	188.900	0.82276
2005	195.300	0.85063
2006	201.600	0.87807
2007	207.342	0.90308
2008	215.303	0.93776
2009	214.537	0.93442
2010	218.056	0.94975
2011	224.939	0.97973
2012	229.594	1.00000

The software, SPSS, is a statistical tool often used in social science statistical calculations; therefore, data from the excel spreadsheets were imported into SPSS. The SPSS software was used to compute correlation coefficients, one-way ANOVAs, two-way ANOVAs and multiple regression analyses.

A correlation coefficient is a statistical measure that reflects the linear relationship between two variables, a dependent variable and an independent variable (Salkind, 2004). In the analyses the dependent variables were demographically segmented community college headcount enrollment (gender, race and enrollment status). The independent variables were in-state tuition and fees, annual Pell Grant maximum limits, state community college FTE appropriations, and the county level local unemployment rates. The value of the correlation coefficient varies from -1 to +1(Field, 2009). Positive correlations suggest a direct relationship between the dependent variable and the independent variable while a negative correlation suggests an indirect relationship between the two variables (Field, 2009; Salkind, 2004). A perfect relationship between two variables will result in a correlation coefficient of one (+1). The stronger the relationship between two variables the closer the correlation coefficient is to +1. Conversely, the weaker the relationship between two variables, the closer the relationship will be to zero (0).

An ANOVA is essentially an evaluation of group differences. An ANOVA determines if groups differ on some dependent variable, in this case headcount enrollment. When there are more than two groups, an ANOVA evaluates differences among the groups simultaneously. A one-way analysis of variance design examines the effect of one independent group, such as in-state tuition and fees, on the dependent variable, headcount enrollment. A two-way analysis of variance design examines the effect of two variables, such as in-state tuition and Pell Grant

limits. If there were different results in each group I then conducted a *between group* design test, for example comparing the differences between in-state tuition and fees and Pell Grant limits. I compared the groups on a single dependent variable (headcount enrollment) which is a ratio level of measurement. Ratio levels of measurement allow mean average scores within a particular group to be calculated (Salkind, 2004). The headcount enrollment of each set of groups (gender, race and enrollment status) will therefore also have a mean and a standard deviation. By comparing the means of each group a determination was made whether or not the means were different.

Different variances can be calculated *within* individual groups and the differences of means *among* groups. Differences in the variable within a group indicate that the result is not the result of random error (Salkind, 2004). I therefore conducted tests to determine if the group means differed more than what would be expected from random error. The ratio comparison of two variances provides a test statistic known as the F-test. If the differences in variances are large it suggests that the differences in the means are more than what one would expect from random error. The F statistic was then evaluated based on the degrees of freedom to determine if the null hypothesis should be accepted or rejected based on the 95% level of confidence.

Multiple regression is a method of data analysis that is appropriate whenever a quantitative dependent variable is examined in relationship to an independent, or predictor, variable (Field, 2009). In a multiple regression analysis the researcher can examine the effects of a single independent variable or multiple independent variables with or without the effects of other variables being taken into account (Field, 2009). Multiple regression analysis involves the relationship between a dependent, or criterion, variable (Y) and a set of independent variables or potential predictor variables (e.g. X_1, X_2, X_3, X_4), where the scores on all variables are measured

for N cases (Berger, 2003; Field, 2009). In this study I was interested in predicting aggregate segmented community college enrollment for each state (Y^e) using in-state tuition and fees (TF), annual Pell Grant limits (PG), state community college FTE appropriations (SA), and local unemployment rates (UE). The multiple regression equation for predicting Y can therefore be expressed as follows: $Y^e = A + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4$

In this specific case $Y^e = A + B_1(TF) + B_2(PG) + B_3(SA) + B_4(UE)$

Where, for a given set of data, the values for A and the B are determined mathematically to minimize the sum of squared deviations between the predicted Y^e and the actual Y scores. The correlation between the predicted Y^e and the actual Y value is also called the multiple correlation coefficient, or simply *R* (Berger, 2003). Therefore, *R* provides a measure of how well Y can be predicted from a set of X scores. For a statistical test to be correct, a set of assumptions must be satisfied. In this research project, the key assumptions were: the dependent variables (Y) are distributed approximately normally; that there was homogeneity of variance; there was an independence of errors; and that the independent variables (Xs) were linearly related to the dependent variable (Y). Furthermore, this research project used simultaneous regression. Simultaneous regression is also known as predictive regression and occurs when all independent variables are entered at the same time (simultaneously) into the regression model (Field, 2009).

Summary

The purpose of this study was to evaluate the effect that financial as well as economic factors have on the correlation of demographically segmented enrollment among technical and community college students during the period fall 2003 to fall 2012. The study gathered and used secondary data exclusively. Correlation coefficients, one-way, and two-way ANOVAs and multiple regression analyses, were conducted on the data using the statistical software package

SPSS. A significance level of $p<0.05$ was used. The results of this study will help researchers, community college administrators, as well as federal and state legislators to have a better understanding of how changes in the independent variables of in-state tuition and fees, annual Pell Grant limits, state community college FTE appropriations, and county level local unemployment rates relate to the dependent variables of headcount enrollment both at the aggregate level as well as by gender, race and enrollment status.

CHAPTER FOUR: RESULTS

This chapter presents the findings of my research study assessing the relationship between enrollments in the North Carolina, South Carolina and Virginia community college systems and: (1) in-state tuition and fees, (2) annual Pell Grant limits, (3) state government FTE community college appropriations and (4) local unemployment rates. These findings reflect the ten-year period from fall 2003 through fall 2012. Relationships between and/or among student headcount enrollment (aggregate and demographically segmented) and in-state tuition and fees, Pell Grants limits, state FTE appropriations and local unemployment rates and dependent variables were determined through the use of Pearson's correlation coefficient analysis, Analyses of Variances (ANOVA), and multiple regression analyses.

Descriptive Statistics

In the section that follows, I provide a review of the statistics that were obtained from my analysis. The descriptive statistics address demographic factors as well as an overview of the financial and economic factors.

Demographically Segmented Student Enrollment

Gender. Table 5 provides a summary of the average headcount, per institution, of community college students segmented by gender during the ten-year period, fall 2003 through fall 2012. Not surprisingly, on average, female students outnumbered male students in all three states during the period. However, while the differences between male and female students were somewhat similar in both North and South Carolina, Virginia had a noticeably smaller gap between the genders. Furthermore, while Virginia was home to the college with the largest enrollment of both genders, North Carolina was home to the college with the smallest enrollment

Table 5

Headcount Enrollment by Gender and Enrollment Status

	North Carolina			South Carolina			Virginia		
	Male	Female	*t*	Male	Female	*t*	Male	Female	*t*
Mean	1,449	2,374	35.62*	1,953	3,388	19.25*	3,145	4,398	15.79
StD	1,479	1,936		1,643	2,523		4,266	5,166	
Max	9,155	11,285		6,568	10,656		25,037	26,827	
Min	135	222		163	361		223	535	
	Full-time	Part-time		Full-time	Part-time		Full-time	Part-time	
Mean	1,564	2,259	-14.55*	2,455	2,886	-6.39	2,505	5,037	-13.92*
StD	1,384	2,118		1,835	2,370		3,428	6,019	
Max	9,042	13,684		7,557	9,667		19,209	32,655	
Min	145	197		200	182		226	543	

Note. *$p \leq 0.05$.

of either gender. Figures 2 and 3 provide a graphical representation of the enrollment trends by gender.

Enrollment Status. Table 5 also provides a summary of the average headcount per institution of community college students segmented by enrollment status during the ten-year period, fall 2003 through fall 2012. In all three states, the average number of part-time students outnumbered the average number of full-time students. Yet, notably in Virginia, on average, there were twice as many part-time students as full-time students per college over the ten-year period. South Carolina, on the other hand, had the smallest disproportion, on average, between part-time students and full-time students. Figures 4 and 5 provide a graphical representation of enrollment trends by enrollment status.

Race and Ethnicity. Table 6 provides a summary of the average headcount per institution of community college students segmented by race during the ten-year period, fall 2003 through fall 2012. While on average, White students represented the largest racial group in all three states, South Carolina had the greatest number of Black students, on average, enrolled in individual colleges, followed by Virginia and then North Carolina. Virginia colleges, on average, had the greatest number of Hispanic students enrolled. North Carolina, on average, had the second largest number of Hispanic students enrolled during the ten-year period followed by South Carolina. Interestingly, during the ten-year period, at some point, there were colleges in both North Carolina and South Carolina that did not have a single Hispanic student enrolled.

On average, North Carolina community colleges had the greatest number of Native students enrolled on any given campus during the ten-year period. Virginia had the second largest representation of Native students followed by South Carolina. Again, it is interesting to note that during the ten-year period, at some point, there were colleges in all three states that did

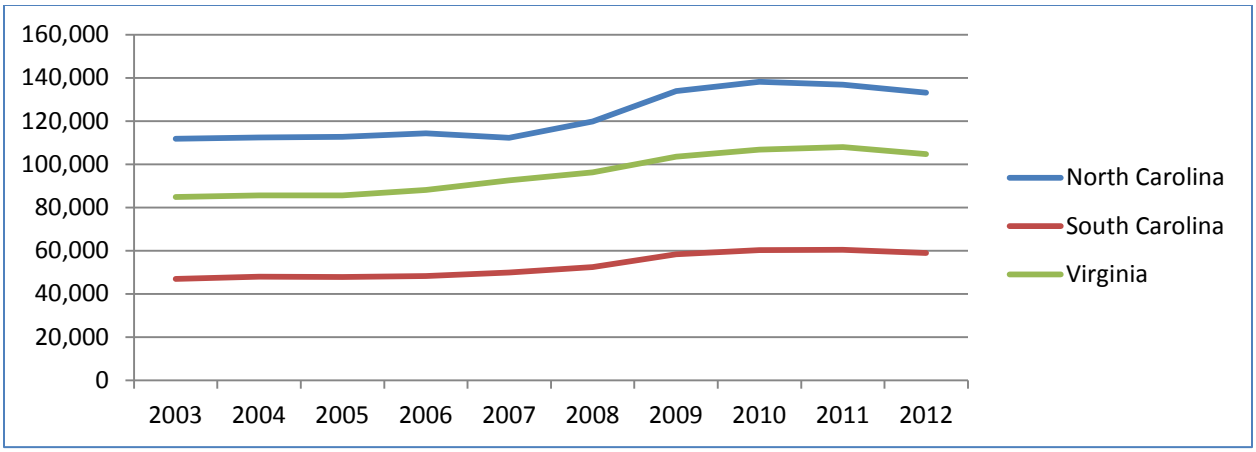

Figure 2. Enrollment trends of female students.

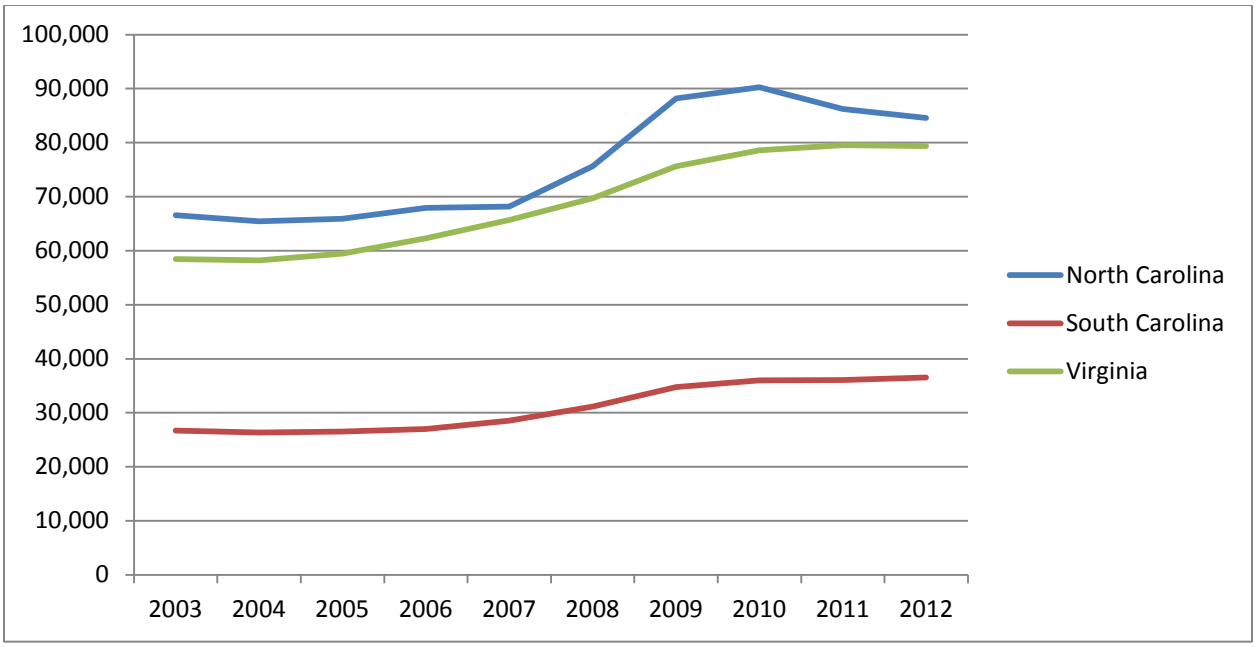

Figure 3. Enrollment trends of male students.

Table 6

Headcount Enrollment by Race

		North Carolina	South Carolina	Virginia
Number of Institutions		58	16	23
White				
	Mean Average	2,403	3,201	4,864
	Std. Deviation	1,864	2,773	4,477
	Maximum	10,800	9,916	21,827
	Minimum	189	31	438
Black				
	Mean Average	940	1,739	1,541
	Std. Deviation	1,125	1,140	2,263
	Maximum	6,920	5,507	11,462
	Minimum	5	409	33
Hispanic				
	Mean Average	142	123	431
	Std. Deviation	198	161	1,271
	Maximum	1,448	840	9,198
	Minimum	0	0	3
Natives				
	Mean Average	60	28	45
	Std. Deviation	147	28	98
	Maximum	1,233	178	993
	Minimum	0	0	0
Asian				
	Mean Average	62	75	421
	Std. Deviation	113	87	1,267
	Maximum	732	344	7,590
	Minimum	0	0	2

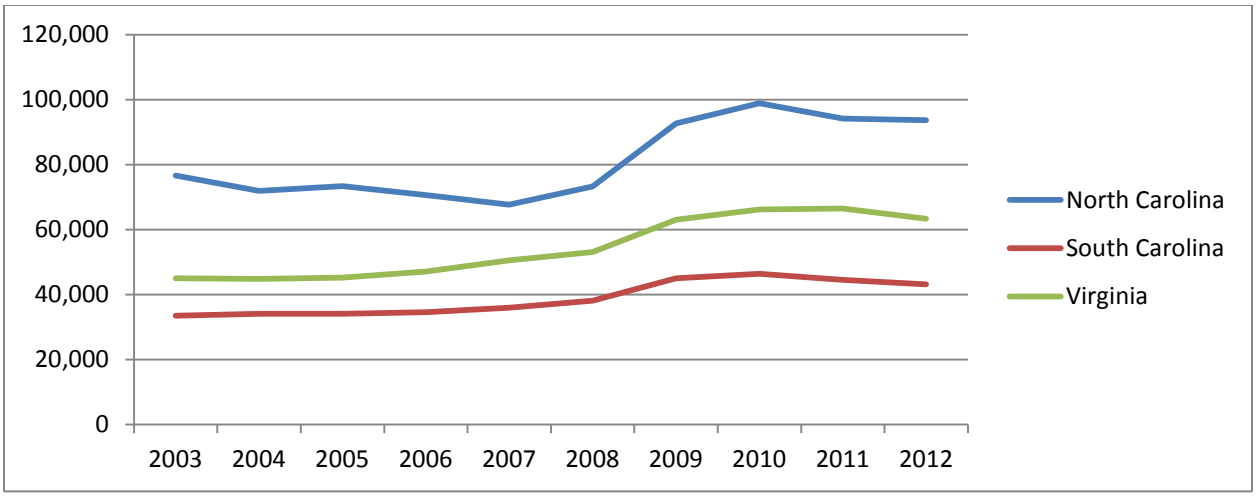

Figure 4. Enrollment trends of full-time students.

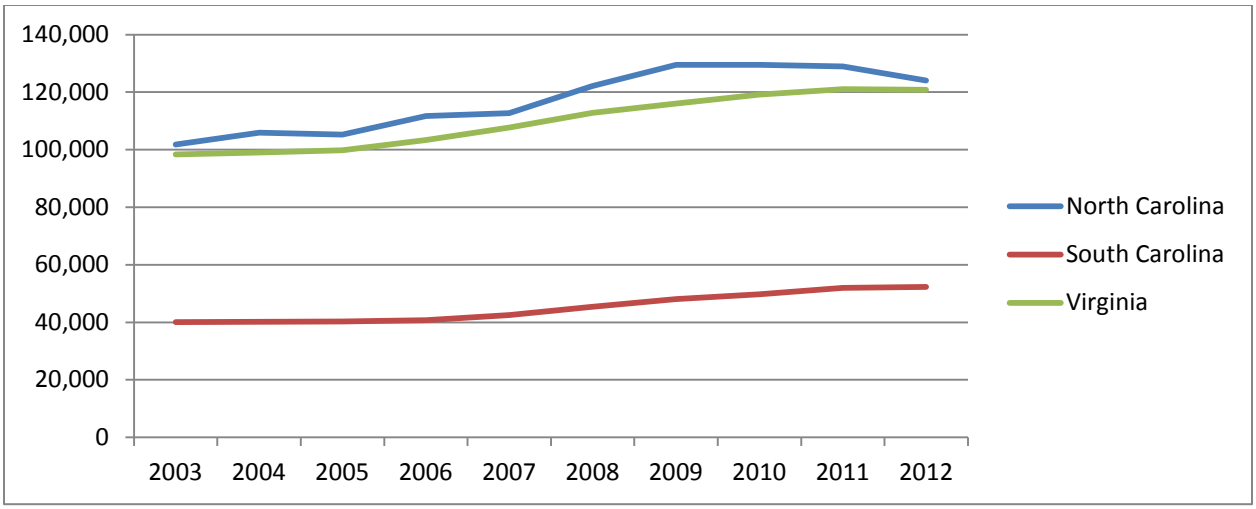

Figure 5. Enrollment trends of part-time students.

not have a single Native student enrolled. Virginia led in the number of Asian students enrolled, on average, during the ten-year period. Noticeably behind Virginia, in terms of the average number of Asian students, was South Carolina followed by North Carolina. Figures 6 and 7 provide graphical representation of the enrollment trends of White and Black students, both of which followed generally similar patterns.

Figure 8 depicts the obvious increase in Hispanic students particularly in North Carolina and Virginia. Figure 9 illustrates the vast difference in the enrollment patterns of Native students among the three states, while Figure 10 shows the extent to which Virginia led in the enrollment of Asian students. Table 7 provides a comparison of the racial makeup of community college students within each state compared to the overall makeup of each state for the year 2012. In each state White students enrolled in community colleges were underrepresented as a percentage of the White population of each state. Also, it is interesting to note that the percentage of Black students enrolled in community colleges in each state is greater than each state's Black population expressed as a percentage of the overall populations.

The percentage of Hispanic students enrolled in community colleges was however smaller than the Hispanic population composition of each state. This was particularly true for both North and South Carolina, but only slightly the case in the commonwealth of Virginia. Also, while North and South Carolina had a slightly greater representation of Native students than each state's Native population, Virginia's community college Native student makeup was slightly less than Natives representation in the state's population.

Interestingly, although Virginia led in the number of Asian community college students, the percentage of Asian students enrolled in the commonwealth community colleges was actually less than the Asian population overall. The same was also true for North Carolina, but to an even

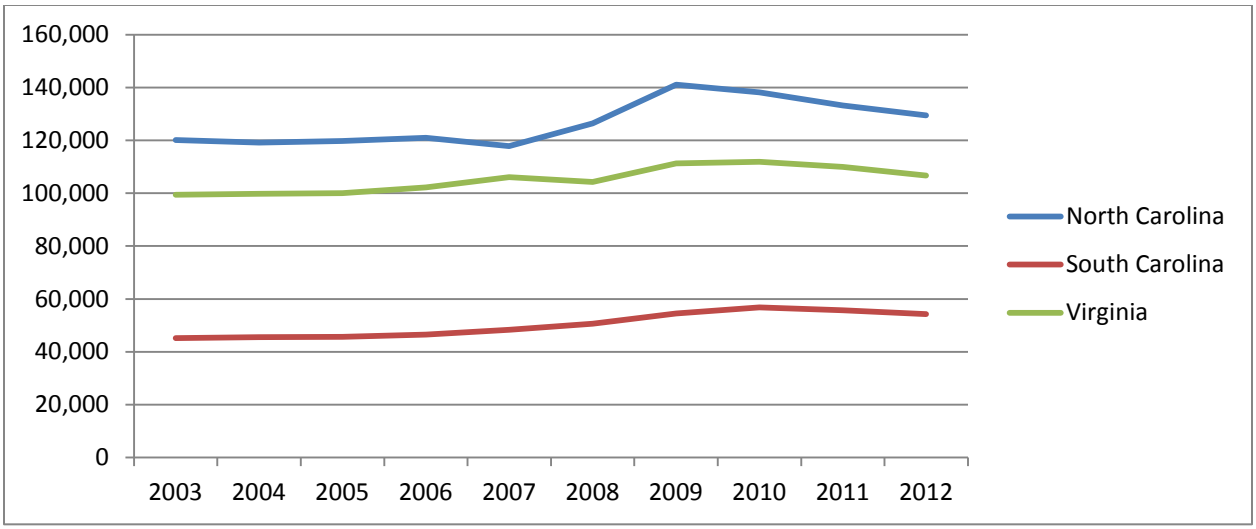

Figure 6. Enrollment trends of White students.

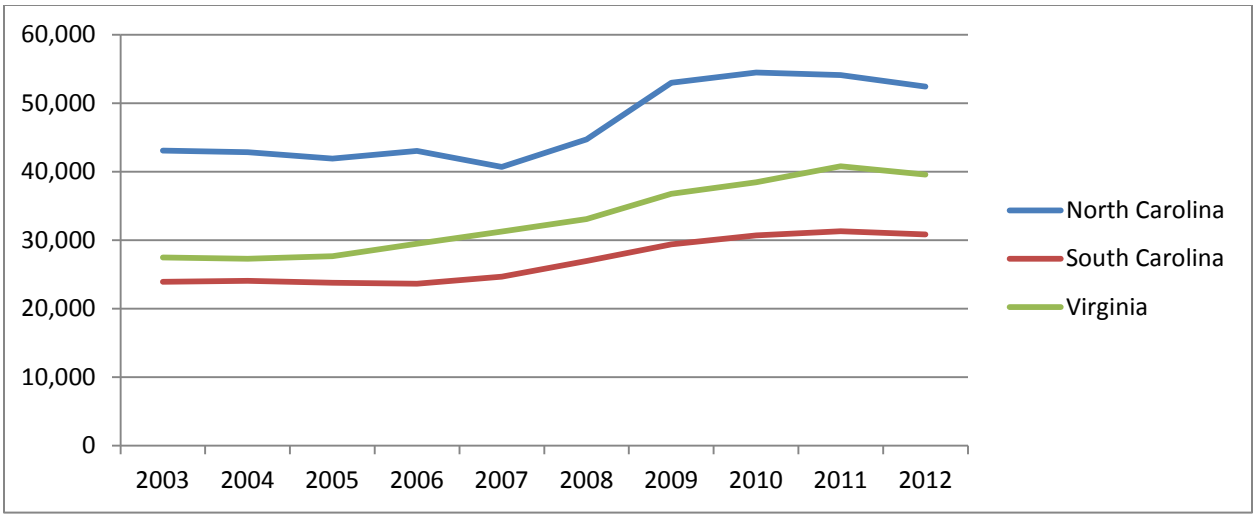

Figure 7. Enrollment trends of Black students.

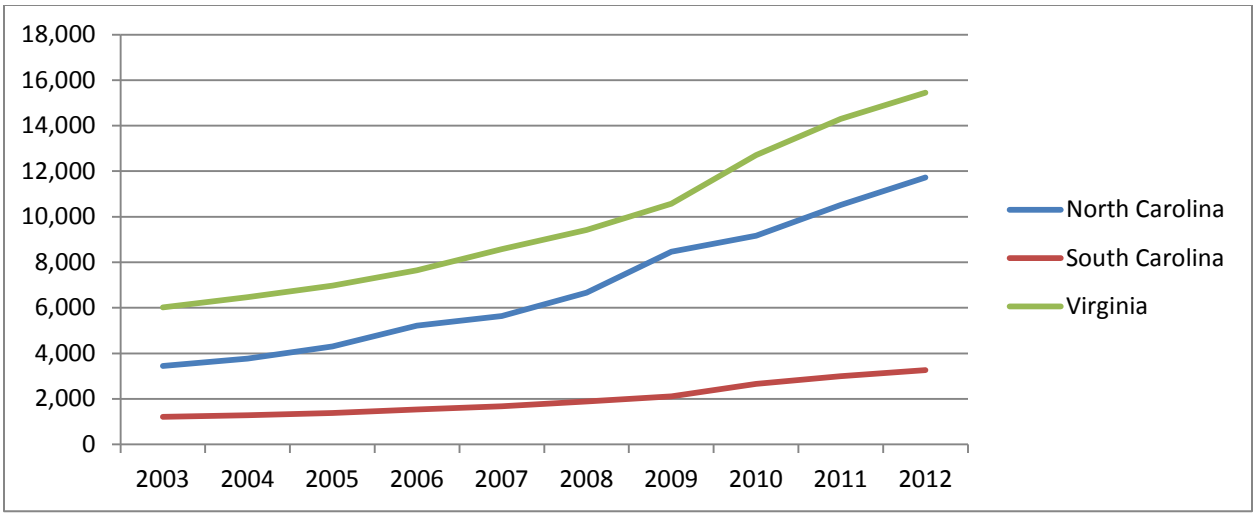

Figure 8. Enrollment trends of Hispanic students.

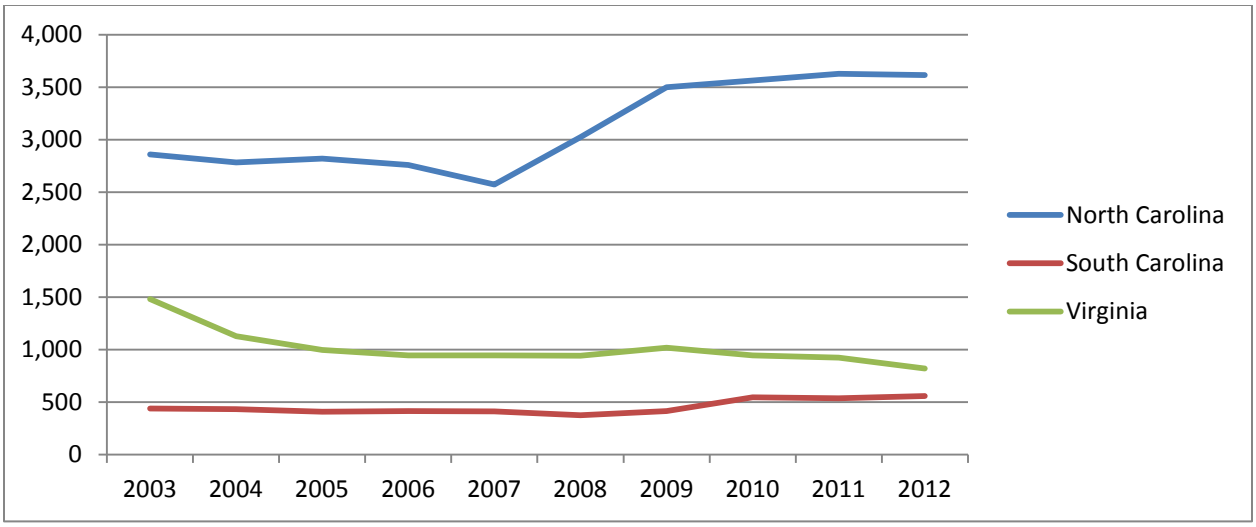

Figure 9. Enrollment trends of Native students.

Table 7

Comparison of Students by Race to Overall Demographics of Each State

	North Carolina		South Carolina		Virginia	
	State Wide	Community College System	State Wide	Technical College System	State Wide	Community College System
White	64.7%	58.4%	64.0%	56.9%	64.1%	58.4%
Black	22.0%	25.2%	28.0%	32.8%	19.7%	21.8%
Hispanic	8.7%	5.6%	5.3%	3.3%	8.4%	8.0%
Native	1.5%	1.6%	0.5%	0.6%	0.5%	0.4%
Asian	2.5%	1.6%	1.4%	1.4%	6.0%	5.9%
Other	0.6%	7.6%	0.8%	5.0%	1.3%	5.5%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Note. Data represents the year 2012.

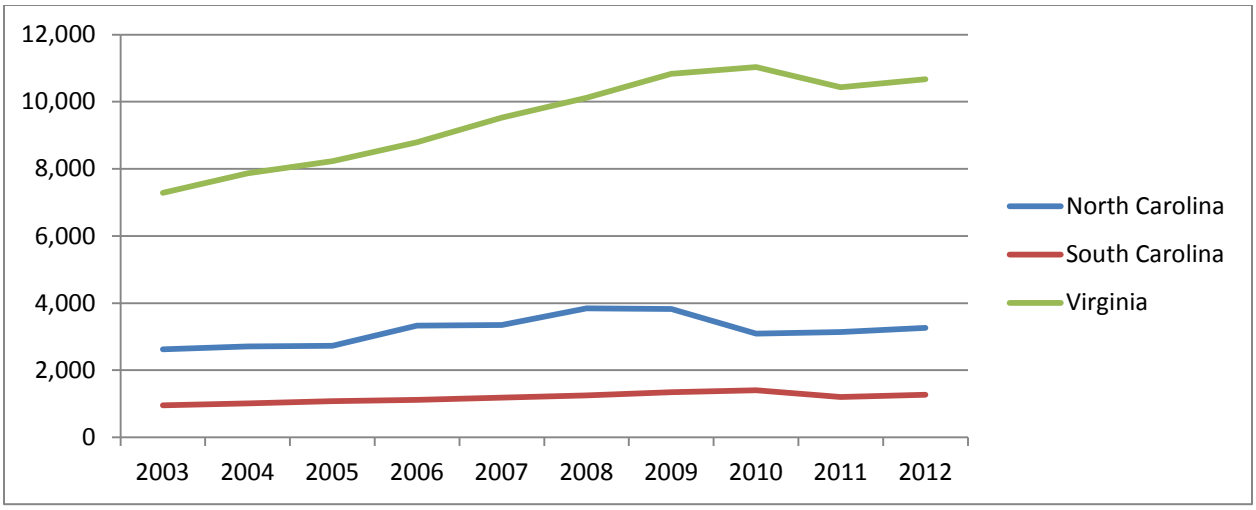

Figure 10. Enrollment trends of Asian students.

greater degree than Virginia. However, South Carolina's Asian students enrolled in community colleges in 2012 were actually similar to the state's Asian representation within the state overall.

Financial and Economic Factors

Tuition. Table 8 represents a summary of the annual average in-state tuition and fees, adjusted for inflation, for each of the three states during the ten-year period fall 2003 through fall 2012. As the table indicates, South Carolina colleges had the highest in-state tuition and fees during the period and North Carolina had the lowest. Although all three states had increases in annual in-state tuitions and fees during the ten-year period, North Carolina had the smallest increase in real dollars between the highest tuition and the lowest tuition; however, the state had the highest percentage increase between the highest and lowest annual tuition during the period. The changes between the highest and lowest tuition and fees for South Carolina and Virginia were similar both in terms of adjusted real dollars and the percentage change.

State appropriations. Table 8 also presents a summary of the annual FTE state government appropriations for community and technical colleges, adjusted for inflation, for each of the three states during the ten-year period from fall 2003 through fall 2012. As the table indicates, the North Carolina State Legislature, on average, provided the greatest financial support to community college students within their state during the period. Virginia's Legislators, on average, provided the second highest level of financial support to their community college students, with South Carolina providing the least. However, when viewed from the perspective of the differences in actual dollars from the minimum to the maximum, inflation adjusted state support, South Carolina showed the greatest percentage increase, followed by Virginia and then North Carolina.

Table 8

Financial and Economic Descriptive Summary

	North Carolina	South Carolina	Virginia
Number of Institutions	58	16	23
		Annual In-State Tuition	
Mean	$ 1,726.11	$ 3,420.68	$ 2,907.81
Standard Deviation	$ 291.46	$ 309.38	$ 504.68
Maximum	$ 2,708.90	$ 3,902.10	$ 3,735.00
Minimum	$ 1,394.00	$ 2,522.50	$ 2,349.60
		State FTE Appropriations	
Mean	$ 3,807.41	$ 2,151.40	$ 3,428.85
Standard Deviation	$ 534.03	$ 709.31	$ 675.89
Maximum	$ 4,866.60	$ 2,956.60	$ 4,438.10
Minimum	$ 3,196.60	$ 1,229.90	$ 2,411.90
		Local Unemployment Rate	
Mean	7.98%	9.16%	5.47%
Standard Deviation	2.89%	3.12%	2.24%
Maximum	15.60%	17.70%	13.40%
Minimum	3.50%	4.40%	2.20%
Range	12.10%	13.30%	11.20%

Local unemployment rates. Table 8 also presents a summary of the county-level local unemployment rates of the community college service area for the ten-year period, fall 2003 through fall 2012. As the table indicates, on average, Virginia community colleges experienced the lowest local unemployment. On average, North Carolina experienced the second lowest local unemployment rate followed by South Carolina. It is worth noting that Virginia had the lowest minimum rate and the lowest maximum local unemployment rate, while South Carolina experienced both the highest minimum and highest maximum local unemployment rates.

Figure 11 shows the change in inflation adjusted in-state tuition and fees for the three states over the ten-year period. It is evident that North Carolina's average in-state tuition and fees, adjusted for inflation, remained below that of South Carolina and Virginia. However, it is also apparent that over time Virginia's, inflation-adjusted, average in-state tuition and fees increased to the point that it rivaled the amount charged in the state of South Carolina. Also, although South Carolina's tuition has historically been higher than both the amounts charged by North Carolina and Virginia, the rate of increase has been slower than both of the other two states. It can also be noted that all three states had relatively stable tuition and fees between fall 2003 and fall 2008; however, all three states appeared to have noticeable increases in their in-state tuition and fees beginning in fall 2009. However, between fall 2011 and fall 2012 there was a decline in the rate of increase in North and South Carolina which resulted in relatively stable tuition, but this does not appear to have been the case in Virginia.

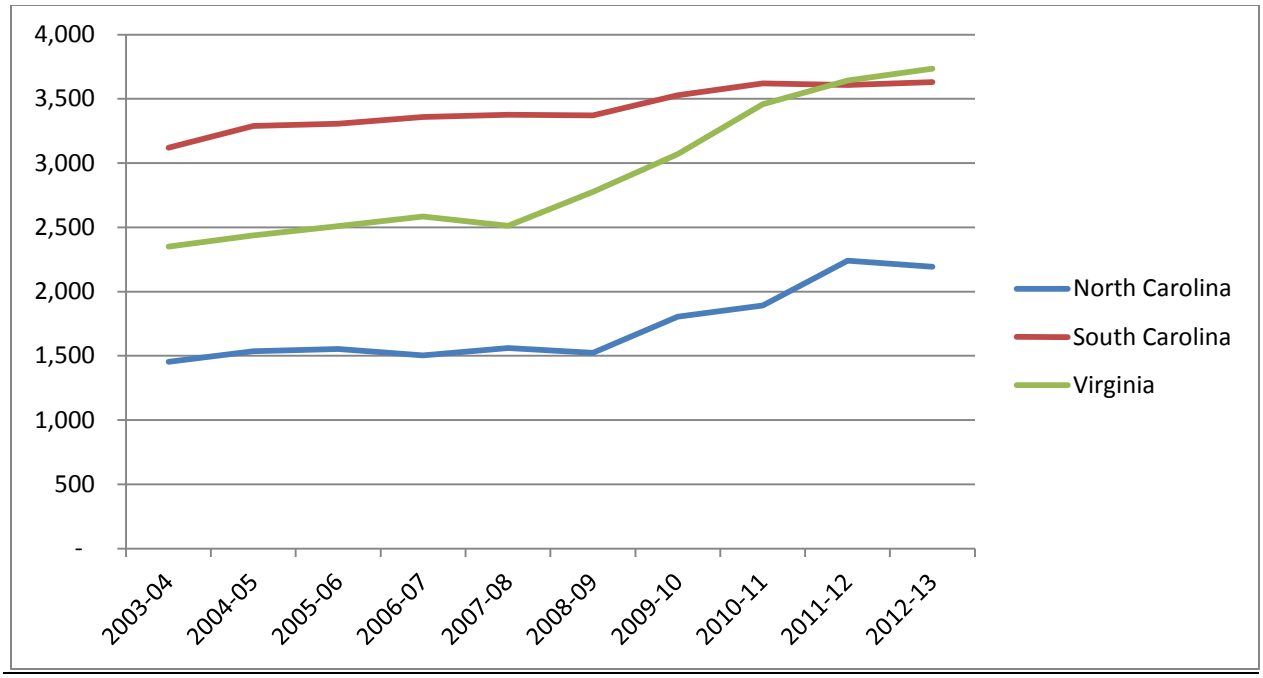

Figure 11. Inflation adjusted in-state tuition and fees over the ten-year period.

The Research Questions

This study was guided by two research questions and two global hypotheses.

RQ1 What are the financial and economic factors that have significantly affected public two-year college enrollment in North Carolina, South Carolina and Virginia during the period 2003 through 2012?

RQ2 Are there discernible demographic patterns in public two-year college enrollment by financial and economic factors over the 2003 to 2012 period in North Carolina, South Carolina and Virginia?

- H_o1: There is no significant difference between financial factors (in-state tuition and fees, annual Pell Grant limits, state technical and community college appropriations), economic factors (local unemployment rate) and headcount enrollment of students during the period fall 2003 through fall 2012.
- H_o2: There is no significant difference between financial factors (in-state tuition and fees, annual Pell Grant limits, state technical and community college appropriations), economic factors (local unemployment rate) and headcount enrollment of students by demographic patterns during the period fall 2003 through fall 2012.

The findings of this chapter are divided into two sections. The first section presents analyses related to each research question and the results derived from testing the null hypotheses. The second section provides a summary of the results from the analyses.

Null Hypotheses Question One

The first null hypothesis stated that there is no significant correlation between financial factors (in-state tuition and fees, annual Pell Grant limits, state FTE appropriations) economic factors (local unemployment rates) and headcount enrollment of students during the period fall

2003 through fall 2012. Table 9 provides a summary of the correlations between aggregate headcount enrollment and the financial and economic factors that were suspected to correlate to enrollment.

In-State Tuition and Fees

In considering the relationships between enrollment and in-state tuition and fees across the three states, I found that, for North Carolina, the Pearson's correlation between in-state tuition and fees and headcount enrollment was r_{NC} =.155, (p < .001). Alternatively stated, there was a small positive correlation of 15.5% between in-state tuition and fees and headcount enrollment in North Carolina. In South Carolina, the correlation coefficient was r_{SC} =.452, (p < .001) indicating a medium positive correlation. Yet, in Virginia, the relationship was not statistically significant with a correlation coefficient of r_{VA} = .077, (p = .244).

State FTE Appropriations

For North Carolina, the Pearson correlation between annual state FTE appropriation and headcount enrollment was r_{NC} = .061, (p = .145) indicating no statistically significant relationship. In South Carolina, the correlation coefficient was r_{SC} = -.144, (p = .069) also indicating no statistically significant relationship. Additionally, for Virginia, the correlation coefficient was r_{VA} = -.071, (p = .284), again indicating no statistically significant relationship.

Annual Pell Grant Limits

For North Carolina, the Pearson correlation between annual Pell Grant limits and headcount enrollment was r_{NC} = .111, (p = .008) indicating a small positive correlation. In South Carolina, the correlation coefficient was r_{SC} =.137, (p = .084) indicating no statistically significant relationship. This lack of a statistically significant relationship was also true for Virginia, where the correlation coefficient was r_{VA} = .074, (p = .266).

Table 9

The Correlation between Aggregate Headcount Enrollment and Financial/Economic Factors

	North Carolina	South Carolina	Virginia
In-State Tuition & Fees	.155**	.452**	.077
Annual Pell Grant Limits	.111*	.137	.074
State FTE Appropriations	.061	-.144	-.071
Local Unemployment	-.059	-.360**	-.224*

Note. *$p \leq 0.05$, **$p \leq 0.01$.

Local Unemployment Rates

For North Carolina, the Pearson correlation between local unemployment and headcount enrollment was r_{NC} = -.059, (p = .153) indicating no statistically significant relationship. In South Carolina, the correlation coefficient was r_{SC} = -.360, (p <.001), indicating a medium negative correlation. In Virginia, the correlation coefficient was r_{VA} = -.224, (p = .001), also indicating a small negative relationship. Table 9 provides a summary of the aforementioned financial and economic factors.

Null Hypotheses Question Two

The second null hypothesis stated that there is no significant correlation between financial factors (in-state tuition and fees, annual Pell Grant limits, state FTE appropriations), economic factors (local unemployment), and headcount enrollment of students by demographic patterns during the period fall 2003 through fall 2012. Below are the results of each of the financial and economic variables which are also summarized in Table 10.

In-State Tuition and Fees

Male students. For North Carolina, the Pearson correlation between in-state tuition and fees and male headcount enrollment was r_{NC} = .162, (p < .001), indicating a small positive relationship. Similarly, for South Carolina, the Pearson correlation between in-state tuition and fees and male headcount enrollment was r_{SC} = .436, (p < .001), indicating a medium positive relationship. For Virginia, the Pearson correlation between in-state tuition and fees and male headcount enrollment was r_{VA} = .083, (p = .209), indicating no statistically significant relationship.

Female students. For North Carolina, the Pearson correlation between in-state tuition and fees and female headcount enrollment was r_{NC} = .148, (p < .001) indicating a small positive

Table 10

Correlation Between Subgroup Headcount Enrollment and Financial/Economic Factors

	In-State Tuition and Fees			Pell Grant Limits			State FTE Appropriations			Local Unemployment Rate		
	NC	SC	VA	NC	SC	VA	NC	SC	VA	NC	SC	VA
Male	.162**	.436**	.083	.120**	.150	.078	.063	-.158*	-.076	-.057	-.343**	-.218**
Female	.148**	.461**	.072	.102*	.128	.070	.058	-.461**	-.067	-.060	-.370**	-.227**
Full-time	.201**	.436**	.106	.160**	.164*	.106	.083*	-.165*	-.101	.018	-.319**	-.168*
Part-time	.117**	.455**	.060	.073	.113	.055	.043	-.125	-.054	-.107*	-.384**	-.254**
White	.102*	.453**	.033	.076	.100	.038	.031	-.104	-.031	.113**	-.399**	-.268**
Black	.145**	.348**	.100	.093*	.169*	.090	.050	-.178*	-.090	.000	-.238**	-.148*
Hispanic	.297**	.476**	.107	.218**	.212**	.088	.133**	-.248**	-.095	.020	-.283**	-.175**
Native	.045	.393**	-.045	.047	.106	-.015	.025	-.112	.015	.107*	-.242**	-.231**
Asian	.065	.442**	.043	.025	.097	.038	.001	-.109	-.037	-.094*	-.359**	-.212**

Note. *p $\leq$ .05, **p $\leq$ .01

relationship. For South Carolina, the Pearson correlation between in-state tuition and fees and female headcount enrollment was $r_{SC} = .461$, ($p < .001$) indicating a medium positive relationship. For Virginia, the Pearson correlation between in-state tuition and fees and female headcount enrollment was $r_{VA} = .227$, ($p = .001$), indicating a small positive relationship.

Full-time students. For North Carolina, the Pearson correlation between in-state tuition and fees and headcount enrollment of full-time students was $r_{NC} = .201$, ($p < .001$) indicating a small positive relationship. Furthermore, for South Carolina, the Pearson correlation between in-state tuition and fees and the headcount enrollment of full-time students was $r_{SC} = .436$, ($p < .001$) indicating a medium positive relations. Conversely, for Virginia, the Pearson correlation between in-state tuition and fees and the headcount enrollment of full-time students was $r_{VA} = .106$, ($p = .110$) indicating no statistically significant relationship.

Part-time students. For North Carolina, the Pearson correlation between in-state tuition and fees and headcount enrollment of part-time students was $r_{NC} = .117$, ($p = .005$), indicating a small positive relationship. For South Carolina, the Pearson correlation between in-state tuition and fees and the headcount enrollment of part-time students was $r_{SC} = .455$, ($p < .001$), indicating a medium positive relationship. On the other hand, for Virginia, the Pearson correlation between in-state tuition and fees and the headcount enrollment of part-time students was $r_{VA} = .060$, ($p = .363$), indicating no statistically significant relationship.

White students. For North Carolina, the Pearson correlation between in-state tuition and fees and headcount enrollment of White students was $r_{NC} = .102$, ($p = .014$), indicating a small positive relationship. Similarly, for South Carolina, the Pearson correlation between in-state tuition and fees and the headcount enrollment of White students was $r_{SC} = .453$, ($p < .001$), indicating a medium positive relationship. However, for Virginia, the Pearson correlation

between in-state tuition and fees and the headcount enrollment of White students was r_{VA} = .033, (p = .620), indicating no statistically significant relationship.

Black students. For North Carolina, the Pearson correlation between in-state tuition and fees and headcount enrollment of Black students was r_{NC} = .145, (p < .001), indicating a small positive relationship. Similarly, for South Carolina, the Pearson correlation between in-state tuition and fees and the headcount enrollment of Black students was r_{SC} = .348, (p < .001), also indicating a small positive relationship. Conversely, for Virginia, the Pearson correlation between in-state tuition and fees and the headcount enrollment of Black students was r_{VA} = .100, (p = .132), indicating no statistically significant relationship.

Hispanic students. For North Carolina, the Pearson correlation between in-state tuition and fees and headcount enrollment of Hispanic students was r_{NC} = .297, (p < .001), indicating a small positive relationship. Similarly, for South Carolina, the Pearson correlation between in-state tuition and fees and the headcount enrollment of Hispanic students was r_{SC} = .476, (p < .001), indicating a medium positive relationship. However, for Virginia, the Pearson correlation between in-state tuition and fees and the headcount enrollment of Hispanic students was r_{VA} = .107, (p = .105), indicating no statistically significant relationship.

Native students. For North Carolina, the Pearson correlation between in-state tuition and fees and headcount enrollment of Native students was r_{NC} = .045, (p = .281), indicating no statistically significant relationship. However, for South Carolina, the Pearson correlation between in-state tuition and fees and the headcount enrollment of Native students was r_{SC} = .393, (p < .001), indicating a small positive relationship. For Virginia, the Pearson correlation between in-state tuition and fees and the headcount enrollment of Native students was r_{VA} = - .045, (p = .500), indicating no statistically significant relationship.

Asian students. For North Carolina, the Pearson correlation between in-state tuition and fees and headcount enrollment of Asian students was $r_{NC} = .065$, ($p = .119$), indicating no statistically significant relationship. Conversely, for South Carolina, the Pearson correlation between in-state tuition and fees and the headcount enrollment of Asian students was $r_{SC} = .442$, ($p < .001$), indicating a medium positive relationship. Meanwhile, for Virginia, the Pearson correlation between in-state tuition and fees and the headcount enrollment of Asian students was $r_{VA} = .043$, ($p = .514$), indicating no statistically significant relationship.

Annual Pell Grant Limits

Male students. For North Carolina, the Pearson correlation between annual Pell Grant limits and the headcount enrollment of male students was $r_{NC} = .120$, ($p = .004$) indicating a small positive relationship. However, for South Carolina, the Pearson correlation between annual Pell Grant limits and headcount enrollment of male students was $r_{SC} = .150$, ($p = .059$), indicating no statistically significant relationship. Also, for Virginia, the Pearson correlation between annual Pell Grant limits and the headcount enrollment of male students was $r_{VA} = .078$, ($p = .239$), indicating no statistically significant relationship.

Female students. For North Carolina, the Pearson correlation between annual Pell Grant limits and the headcount enrollment of female students was $r_{NC} = .102$, ($p = .014$), indicating a small positive correlation. Conversely, for South Carolina, the Pearson correlation between annual Pell Grant limits and headcount enrollment of female students was $r_{SC} = .128$, ($p = .107$), indicating no statistically significant relationship. For Virginia, the Pearson correlation between annual Pell Grant limits and the headcount enrollment of female students was $r_{VA} = .070$, ($p = .293$), indicating no statistically significant relationship.

Full-time students. For North Carolina, the Pearson correlation between annual Pell Grant limits and the headcount enrollment of full-time students was $r_{NC} = .160$, ($p < .001$), indicating a small positive relationship. For South Carolina, the Pearson correlation between annual Pell Grant limits and headcount enrollment of full-time students was $r_{SC} = .164$, ($p = .039$), also indicating a small positive relationship. However, for Virginia, the Pearson correlation between annual Pell Grant limits and the headcount enrollment of full-time students was $r_{VA} = .106$, ($p = .110$), indicating no statistically significant relationship.

Part-time students. For North Carolina, the Pearson correlation between annual Pell Grant limits and the headcount enrollment of part-time students was $r_{NC} = .073$, ($p = .080$), indicating no statistically significant relationship. In addition, for South Carolina, the Pearson correlation between annual Pell Grant limits and headcount enrollment of part-time students was $r_{SC} = .160$, ($p = .154$), also indicating no statistically significant relationship. Furthermore, for Virginia, the Pearson correlation between annual Pell Grant limits and the headcount enrollment of part-time students was $r_{VA} = .055$, ($p = .407$), also indicating no statistically significant relationship.

White students. For North Carolina, the Pearson correlation between annual Pell Grant limits and the headcount enrollment of White students was $r_{NC} = .076$, ($p = .069$), indicating no statistically significant relationship. For South Carolina, the Pearson correlation between annual Pell Grant limits and headcount enrollment of White students was $r_{SC} = .100$, ($p = .211$), also indicating no statistically significant relationship. Additionally, for Virginia, the Pearson correlation between annual Pell Grant limits and the headcount enrollment of White students was $r_{VA} = .038$, ($p = .570$), also indicating no statistically significant relationship.

Black students. For North Carolina, the Pearson correlation between annual Pell Grant limits and the headcount enrollment of Black students was $r_{NC} = .093$, ($p = .025$), indicating a small positive relationship. For South Carolina, the Pearson correlation between annual Pell Grant limits and headcount enrollment of Black students was $r_{SC} = .169$, ($p = .032$), also indicating a small positive relationship. However, for Virginia, the Pearson correlation between annual Pell Grant limits and the headcount enrollment of Black students was $r_{VA} = .090$, ($p = .175$), indicating no statistically significant relationship.

Hispanic students. For North Carolina, the Pearson correlation between annual Pell Grant limits and the headcount enrollment of Hispanic students was $r_{NC} = .218$, ($p < .001$), indicating a small positive relationship. For South Carolina, the Pearson correlation between annual Pell Grant limits and headcount enrollment of Hispanic students was $r_{SC} = .212$, ($p = .007$), also indicating a small positive relationship. For Virginia, the Pearson correlation between annual Pell Grant limits and the headcount enrollment of Hispanic students was $r_{VA} = .088$, ($p = .185$), indicating no statistically significant relationship.

Native students. For North Carolina, the Pearson correlation between annual Pell Grant limits and the headcount enrollment of Native students was $r_{NC} = .047$, ($p = .254$), indicating no statistically significant relationship. Furthermore, for South Carolina, the Pearson correlation between annual Pell Grant limits and headcount enrollment of Native students was $r_{SC} = .106$, ($p = .181$), indicating no statistically significant relationship. Additionally, for Virginia, the Pearson correlation between annual Pell Grant limits and the headcount enrollment of Native students was $r_{VA} = -.015$, ($p = .820$), also indicating no statistically significant relationship.

Asian students. For North Carolina, the Pearson correlation between annual Pell Grant limits and the headcount enrollment of Asian students was $r_{NC} = .025$, ($p = .547$), indicating no

statistically significant relationship. Additionally, for South Carolina, the Pearson correlation between annual Pell Grant limits and headcount enrollment of Asian students was r_{SC} = .097, (p = .222), indicating no statistically significant relationship. Furthermore, for Virginia, the Pearson correlation between annual Pell Grant limits and the headcount enrollment of Asian students was r_{VA} = .038, (p = .564), also indicating no statistically significant relationship.

State FTE Appropriations

Male students. For North Carolina, the Pearson correlation between annual state FTE appropriations and the headcount enrollment of male students was r_{NC} = .063, (p = .133), indicating no statistically significant relationship. However, for South Carolina, the Pearson correlation between annual state FTE appropriations and headcount enrollment of male students was r_{SC} = -.158, (p = .046), indicating a small negative relationship. For Virginia, the Pearson correlation between annual state FTE appropriations and the headcount enrollment of male students was r_{VA} = -.076, (p = .254), indicating no statistically significant relationship.

Female students. For North Carolina, the Pearson correlation between annual state FTE appropriations and the headcount enrollment of female students was r_{NC} = .058, (p = .161), indicating no statistically significant relationship. Also, for South Carolina, the Pearson correlation between annual state FTE appropriations and headcount enrollment of female students was r_{SC} = -.134, (p = .091), indicating no statistically significant relationship. Furthermore, for Virginia, the Pearson correlation between annual state FTE appropriations and the headcount enrollment of female students was r_{VA} = -.067, (p = .313), again indicating no statistically significant relationship.

Full-time students. For North Carolina, the Pearson correlation between annual state FTE appropriations and the headcount enrollment of full-time students was r_{NC} = .083, (p = .045)

indicating a small positive relationship. Similarly, for South Carolina, the Pearson correlation between annual state FTE appropriations and headcount enrollment of full-time students was r_{SC} = -.165, (p = .037), indicating a small negative relationship. Conversely, for Virginia, the Pearson correlation between annual state FTE appropriations and the headcount enrollment of full-time students was r_{VA} = -.101, (p = .128), indicating no statistically significant relationship.

Part-time students. For North Carolina, the Pearson correlation between annual state FTE appropriations and the headcount enrollment of part-time students was r_{NC}= .043, (p = .306), indicating no statistically significant relationship. Also, for South Carolina, the Pearson correlation between annual state FTE appropriations and headcount enrollment of part-time students was r_{SC} = -.125, (p = .116), indicating no statistically significant relationship. Furthermore, for Virginia, the Pearson correlation between annual state FTE appropriations and the headcount enrollment of part-time students was r_{VA} = -.054, (p = .419), indicating no statistically significant relationship.

White students. For North Carolina, the Pearson correlation between annual state FTE appropriations and the headcount enrollment of White students was r_{NC} = .031, (p = .463), indicating no statistically significant relationship. For South Carolina, the Pearson correlation between annual state FTE appropriations and headcount enrollment of White students was r_{SC} = -.104, (p = .191), also indicating no statistically significant relationship. The same was true for Virginia, where the Pearson correlation between annual state FTE appropriations and the headcount enrollment of White students was r_{VA} = -.031, (p = .638), also indicating no statistically significant relationship.

Black students. For North Carolina, the Pearson correlation between annual state FTE appropriations and the headcount enrollment of Black students was r_{NC} = .050, (p = .226),

indicating no statistically significant relationship. However, for South Carolina, the Pearson correlation between annual state FTE appropriations and headcount enrollment of Black students was r_{SC} = -.178, (p = .024), indicating a small negative relationship. For Virginia, the Pearson correlation between annual state FTE appropriations and the headcount enrollment of Black students was r_{VA} = -.090, (p = .175), indicating no statistically significant relationship.

Hispanic students. For North Carolina, the Pearson correlation between annual state FTE appropriations and the headcount enrollment of Hispanic students was r_{NC} = .133, (p = .001), indicating a small positive relationship. Conversely, for South Carolina, the Pearson correlation between annual state FTE appropriations and headcount enrollment of Hispanic students was r_{SC} = -.248, (p = .002), indicating a small negative relationship. While for Virginia, the Pearson correlation between annual state FTE appropriations and the headcount enrollment of Hispanic students was r_{VA} = -.095, (p = .149), also indicating no statistically significant relationship.

Native students. For North Carolina, the Pearson correlation between annual state FTE appropriations and the headcount enrollment of Native students was r_{NC} = .025, (p = .552), indicating no statistically significant relationship. Similarly, for South Carolina, the Pearson correlation between annual state FTE appropriations and headcount enrollment of Native students was r_{SC} = -.112, (p = .158), also indicating no statistically significant relationship. Consistent with the other two states, for Virginia, the Pearson correlation between annual state FTE appropriations and the headcount enrollment of Native students was r_{VA} = .015, (p = .817), again indicating no statistically significant relationship.

Asian students. For North Carolina, the Pearson correlation between annual state FTE appropriations and the headcount enrollment of Asian students was r_{NC} = .001, (p = .974),

indicating no statistically significant relationship. For South Carolina, the Pearson correlation between annual state FTE appropriations and headcount enrollment of Asian students was r_{SC} = -.109, (p = .170), also indicating no statistically significant relationship. Consistent with the other two states, for Virginia, the Pearson correlation between annual state FTE appropriations and the headcount enrollment of Asian students was r_{VA} = -.037, (p = .581), again indicating no statistically significant relationship.

Local Unemployment Rates

Male students. For North Carolina, the Pearson correlation between the local unemployment rate and the headcount enrollment of male students was r_{NC} = -.057, (p = .171), indicating no statistically significant relationship. For South Carolina, the Pearson correlation between the local unemployment rate and headcount enrollment of male students was r_{SC} = -.343, (p < .001), indicating a small negative relationship. For Virginia, the Pearson correlation between the local unemployment rate and the headcount enrollment of male students was r_{VA} = -.218, (p = .001), indicating a small negative relationship.

Female students. For North Carolina, the Pearson correlation between the local unemployment rate and the headcount enrollment of female students was r_{NC} = .060, (p = .147), indicating no statistically significant relationship. For South Carolina, the Pearson correlation between the local unemployment rate and headcount enrollment of female students was r_{SC} = -.370, (p < .001), indicating a small negative relationship. While for Virginia, the Pearson correlation between the local unemployment rate and the headcount enrollment of female students was r_{VA} = -.227, (p = .001), also indicating a small negative correlation.

Full-time students. For North Carolina, the Pearson correlation between the local unemployment rate and the headcount enrollment of full-time students was r_{NC} = .018, (p =

.667), indicating no statistically significant relationship. For South Carolina, the Pearson correlation between the local unemployment rate and headcount enrollment of full-time students was r_{SC} = -.319, (p < .001), indicating a small negative relationship. For Virginia, the Pearson correlation between the local unemployment rate and the headcount enrollment of full-time students was r_{VA} = -.168, (p = .011), indicating a small negative relationship.

Part-time students. For North Carolina, the Pearson correlation between the local unemployment rate and the headcount enrollment of part-time students was r_{NC} = - .107, (p = .010), indicating a small negative relationship. For South Carolina, the Pearson correlation between the local unemployment rate and headcount enrollment of part-time students was r_{SC} = -.384, (p < .001), indicating a small negative relationship. While for Virginia, the Pearson correlation between the local unemployment rate and the headcount enrollment of part-time students was r_{VA} = -.254, (p < .001), also indicating a small negative relationship.

White students. For North Carolina, the Pearson correlation between the local unemployment rate and the headcount enrollment of White students was r_{NC} = - .113, (p = .007), indicating a small negative relationship. For South Carolina, the Pearson correlation between the local unemployment rate and headcount enrollment of White students was r_{SC} = -.399, (p < .001), indicating a slightly medium negative relationship. While for Virginia, the Pearson correlation between the local unemployment rate and the headcount enrollment of White students was r_{VA} = -.268, (p < .001), indicating a small negative relationship.

Black students. For North Carolina, the Pearson correlation between the local unemployment rate and the headcount enrollment of Black students was r_{NC} = .000, (p = .996), indicating no relationship. For South Carolina, the Pearson correlation between the local unemployment rate and headcount enrollment of Black students was r_{SC} = -.238, (p = .002),

indicating a small negative relationship. While for Virginia, the Pearson correlation between the local unemployment rate and the headcount enrollment of Black students was r_{VA} = -.148, (p = .024), also indicating a small negative relationship.

Hispanic students. For North Carolina, the Pearson correlation between the local unemployment rate and the headcount enrollment of Hispanic students was r_{NC} = .020, (p = .634), indicating no statistically significant relationship. For South Carolina, the Pearson correlation between the local unemployment rate and headcount enrollment of Hispanic students was r_{SC} = -.283, (p < .001), indicating a small negative relationship. Similarly, for Virginia, the Pearson correlation between the local unemployment rate and the headcount enrollment of Hispanic students was r_{VA} = -.175, (p = .008), indicating a small negative relationship.

Native students. For North Carolina, the Pearson correlation between the local unemployment rate and the headcount enrollment of Native students was r_{NC} = .107, (p = .010), indicating a small positive relationship. Conversely, for South Carolina, the Pearson correlation between the local unemployment rate and headcount enrollment of Native students was r_{SC} = -.242, (p = .002), indicating a small negative relationship. Similarly, for Virginia, the Pearson correlation between the local unemployment rate and the headcount enrollment of Native students was r_{VA} = -.231, (p < .001), indicating a small negative relationship.

Asian students. For North Carolina, the Pearson correlation between the local unemployment rate and the headcount enrollment of Asian students was r_{NC} = -.094, (p = .024), indicating a very small negative relationship. For South Carolina, the Pearson correlation between the local unemployment rate and headcount enrollment of Asian students was r_{SC} = -.359, (p < .001), also indicating a small negative relationship. In tandem, for Virginia, the

Pearson correlation between the local unemployment rate and the headcount enrollment of Asian students was r_{VA} = -.212, (p = .001), indicating a small negative relationship.

Analysis of Variance

Given that changes in in-state tuition and fees, Pell Grants limits, state appropriations, and local unemployment rates between fall 2003 and fall 2012 may have contributed to the enrollment of various demographic subgroups, a series of one-way and two-way analyses of variance (ANOVA) tested the enrollment patterns of community college students by gender, enrollment status, and race.

One-Way ANOVA

A one-way Analysis of Variance (ANOVA) was conducted to evaluate the relationship between annual Pell Grant limits and demographic enrollment of students in each of the three states. The independent variables were low, medium, and high annual Pell Grant limits and the dependent variable was headcount enrollment of demographically segmented students in each of the three states (i.e. NC, SC VA).

Using the descriptive statistics mentioned earlier, a range for each state's college's in-state tuition and fees over the period was separated into three categories: low, medium, and high. Table 11 provides the upper and lower limits for each category of inflation adjusted in-state tuition and fees. Similarly, using the descriptive statistics, a range for the county-level local unemployment rate for the service of each public two-year community/technical college within the state over the period was separated into three categories: low, medium, and high. Table 11 also provides the upper and lower limits for each category of each state's local unemployment rate. Again, using the descriptive statistics, a range of the each state's FTE appropriations over the period was determined and separated into three categories: low, medium, and high. Table 11

Table 11

Inflation Adjusted Tuition, State FTE Appropriations Classifications and Local Unemployment Rate Classifications

	North Carolina		South Carolina		Virginia	
			In-State Tuition and Fees			
	Lower	Upper	Lower	Upper	Lower	Upper
Low	$1,394.00	$1,832.30	$2,522.50	$2,982.37	$2,349.60	$2,811.40
Medium	$1,832.31	$2,270.62	$2,982.38	$3,442.24	$2,811.41	$3,273.21
High	$2,270.63	$2,708.93	$3,442.25	$3,902.12	$3,273.22	$3,735.02
			State FTE Appropriations			
	Lower	Upper	Lower	Upper	Lower	Upper
Low	$3,196.60	$3,753.27	$1,229.90	$1,805.47	$2,411.9	$3,087.3
Medium	$3,753.28	$ 4,309.94	$1,805.48	$2,381.04	$3,087.31	$3,762.71
High	$4,309.95	$4,866.62	$2,381.05	$2,956.62	$3,762.72	$4,438.12
			Local Unemployment Rates			
	Lower	Upper	Lower	Upper	Lower	Upper
Low	3.5%	7.5%	4.4%	8.8%	2.2%	5.9%
Medium	7.6%	11.7%	8.9%	13.4%	6.0%	9.8%
High	11.8%	15.8%	13.5%	17.9%	9.9%	13.6%

Note. All dollar amounts adjusted to 2012 dollars.

also provides the upper and lower limits for each category of each state's inflation adjusted FTE appropriations.

Table 12 depicts the classification of the federal annual Pell Grant limits. In an attempt to provide a similar classification system as in-state tuition and fees, local unemployment rates, and state FTE appropriations; Pell Grants limits were also categorized as: low, medium, or high. The classification was based on finding the difference between the inflation adjusted lowest amount for the period and the highest amount for the period and dividing the range into three equal parts.

In-State Tuition and Fees

As indicated in Table 13, in the state of North Carolina in-state tuition and fees was found to be significant for both male students ($F[2,577] = 5.475$, $p \leq .01$) and female students ($F[2,577] = 4.142$, $p \leq .05$). Post hoc tests using Scheffe's test were used because the Scheffe's post hoc test is a parametric multi-comparison procedure which tests the hypotheses that the means of each pair of categories are equal (Fields, 2009). The post hoc comparisons using the Scheffe test indicated that the mean enrollments were significantly different between the *low* and *high* tuition levels, but the *medium* tuition level was not significantly different from the low or high. In addition, there was a difference between full-time and part-time student enrollment with in-state tuition having a main effect found for full-time students, ($F[2,577] = 9.776$, $p < .001$) and with no main effect found for part-time students. Post hoc comparisons using the Scheffe test indicated that the enrollment of full-time student was significantly different at all three tuition levels. With regard to race, in North Carolina, in-state tuition and fees was significant for Black and Hispanic students, but not for White, Native or Asian students. The post hoc comparison for Black students indicated that the main effect significance was between

Table 12

Inflation Adjusted Annual Pell Grant Limits

	Lower	Upper
Low	$ 4,612.40	$ 5,022.83
Medium	$ 5,022.84	$ 5,433.28
High	$ 5,433.29	$ 5,843.72

Note. All numbers adjusted to 2012 dollars.

Table 13

ANOVA Table of the Effect of In-State Tuition and Fees on Demographically Segmented Headcount Enrollment

	North Carolina				South Carolina				Virginia			
	Low	Medium	High	F	Low	Medium	High	F	Low	Medium	High	F
Males	1323.65	1668.56	1919.55	5.475*	609.44	1406.24	2461.12	14.791*	2865.64	3414.25	3604.57	.740
	(1262.51)	(1694.30)	(2226.95)		(291.38)	(1078.21)	(1798.71)		(3774.73)	(4556.09)	(5037.61)	
Females	2232.64	2611.53	2928.1	4.142*	1035.44	2591.2	4194.69	17.152*	4100.39	4705.79	4881.49	.570
	(1731.87)	(2118.29)	(2744.74)		(615.47)	(1674.67)	(2709.94)		(4718.38)	(5568.37)	(5867.46)	
Full-Time	1408.09	1838.37	2144.73	9.776*	992.44	1831.43	3022.93	14.599*	2204.73	2846.67	2982.84	1.319
	(1137.03)	(1618.82)	(2138.84)		(483.14)	(1229.04)	(1997.97)		(2903.22)	(3839.27)	(4156.75)	
Part-time	2148.2	2441.72	2702.92	2.141	652.44	2166.02	3632.88	16.898*	4761.3	5273.38	5503.22	.367
	(1916.25)	(2331.83)	(2118.42)		(585.06)	(1582.95)	(2546.59)		(5603.83)	(6278.67)	(6741.98)	
White	2307.61	2565.03	2766.43	1.973	377.56	2531.96	4021.78	16.608*	4734.99	5068.71	5047.97	.139
	(1730.01)	(2039.04)	(2356.70)		(594.59)	(2049.67)	(2921.14)		(4447.23)	(4552.12)	(4566.07)	
Black	862.44	1046.46	1306.08	4.263*	1232.63	1259.43	2071.96	11.257*	1360.02	1739.79	1832.32	1.104
	(954.25)	(1271.05)	(1768.13)		(540.62)	(679.97)	(1280.19)		(1948.73)	(2488.24)	(2718.05)	
Hispanic	111.81	187.21	269.20	19.709*	7.56	54.04	178.80	17.204*	331.28	448.13	621.51	1.200
	(150.02)	(230.01)	(334.79)		(13.06)	(61.14)	(184.61)		(973.65)	(1297.64)	(1709.27)	
Native	55.34	77.72	51.43	1.191	8.06	17.53	36.41	13.469*	47.88	44.33	40.33	.138
	(140.01)	(186.55)	(62.94)		(8.71)	(15.65)	(31.73)		(117.76)	(64.25)	(53.74)	
Asian	59.00	63.56	77.75	.651	4.81	43.82	102.98	15.664*	380.28	456.17	489.86	.181
	(107.44)	(119.35)	(134.49)		(8.77)	(53.67)	(96.04)		(1119.76)	(1378.01)	(1499.77)	

Note. Standard Deviation appears in parentheses below means. North Carolina *df* (2,577). South Carolina *df* (2,157). Virginia *df* (2,227). *$p \leq$ .05.

the *low* and *high* tuition levels. However, the post hoc comparison for Hispanic students indicated a main effect significant difference at all three levels.

Also, as indicated in Table 13, in the state of South Carolina in-state tuition and fees was found to be significant for both male and female students, as well as full-time and part-time public two-year technical college students. Post hoc comparisons for both male and female enrollment indicated differences in the means at all three tuition levels. Likewise, post hoc comparisons for both full-time and part-time enrollment indicated differences in the mean enrollment at all three tuition levels. Furthermore, unlike in North Carolina, in-state tuition and fees was found to be significant for all five racial groups in South Carolina. Post hoc comparisons on all five racial groups indicated main effect differences in the mean enrollment at all three tuition levels. However, in the state of Virginia, as indicated by Table 13, in-state tuition and fees was not found to be significant between genders nor enrollment status. Nor was in-state tuition and fees found to be significant among any of the five racial groups.

State FTE Appropriations

This study sought to determine if there was a statistically significant difference between the means of the independent variable, inflation-adjusted state FTE appropriation, and the mean of the dependent variable, headcount enrollment by gender, enrollment status, and race. The means of these variables were tested using a One-Way ANOVA with a significance level of $p \leq .05$.

With regard to the effect of state FTE appropriations, as indicated by Table 14, in the state of North Carolina, state appropriations were not significant for either gender. However, it was found that state FTE appropriations was significant for full-time students, but not for part-time students. Post hoc comparisons using the Scheffe test indicated that the enrollment of full-

time students was significantly different between the *medium* and *high* state FTE appropriation levels. However, when it came to the issue of race, it was found that in the state of North Carolina, state FTE appropriations were found to affect the enrollment of Hispanic students, but not that of White, Black, Native or Asian students. Post hoc comparisons using the Scheffe test indicated that the enrollment of Hispanic students was significantly different at all three state FTE appropriation levels.

Similar to North Carolina, South Carolina's state FTE appropriations did not have a main effect on enrollment of either gender, as indicated in Table 14. However, unlike North Carolina, there was also no effect of state appropriations on either full-time or part-time enrolled students. However, like North Carolina, there was only found to be a significant effect on the enrollment of Hispanic students, with no significant effect on the enrollment of White, Black, Native or Asian students. Post hoc comparisons using the Scheffe test indicated that the enrollment of South Carolina Hispanic students was significantly different between the *low* and *high* state FTE appropriation levels. Furthermore, as indicated by Table 14, there were no significant effect in the commonwealth of Virginia on any particular gender, enrollment status, or racial group.

Annual Pell Grant Limits

This study sought to determine if there was a statistically significant difference between the means of the independent variable, inflation-adjusted annual Pell Grant limits and the mean of the dependent variable, headcount enrollment by gender, enrollment status, and race. The means of these variables were tested using a One-Way ANOVA with a significance level of $p \leq .05$.

As evidenced by Table 15, in the state of North Carolina, the amount of the annual Pell Grant limit was found to have a significant effect on the enrollment of both male and female

Table 14

ANOVA Table of the Effect of State FTE Appropriations on Demographically Segmented Headcount Enrollment

	State FTE Appropriations				South Carolina				Virginia			
	Low	Medium	High	F	Low	Medium	High	F	Low	Medium	High	F
Males	1422.49	1293.87	1684.63	2.174	2262.09	1945.56	1707.00	2.056	3570.9	2945.76	2817.63	.778
	(1437.27)	(1297.33)	(1738.29)		(1795.81)	(1638.88)	(1487.68)		(4918.80)	(3901.94)	(3710.25)	
Females	2340.38	2192.00	2657.57	1.815	3796.59	3321.31	3073.86	1.474	4850.98	4179.02	4054.24	.596
	(1887.80)	(1799.58)	(2180.84)		(2742.15)	(2486.34)	(2324.88)		(5792.06)	(4855.03)	(4649.22)	
Full-Time	1544.18	1314.00	1874.03	4.907*	2826.80	2386.38	2171.25	2.32	2961.82	2266.35	2167.88	1.378
	(1319.25)	(1193.09)	(1673.87)		(2061.60)	(1843.40)	(1595.36)		(4076.99)	(2982.90)	(2863.01)	
Part-time	2218.7	2171.87	2468.17	.726	3231.89	2880.5	2609.61	1.229	5460.07	4858.43	4703.99	.386
	(2071.85)	(1967.56)	(2390.44)		(2520.94)	(2311.81)	(2247.13)		(6626.86)	(5783.19)	(5512.88)	
White	2392.21	2259.79	2576.32	.850	3545.84	3185.50	2928.43	.880	5073.05	4728.39	4722.02	.166
	(1847.64)	(1741.53)	(1863.54)		(2928.63)	(2863.42)	(2628.13)		(4558.55)	(4372.70)	(4486.35)	
Black	926.96	836.20	1085.30	1.487	1979.06	1719.31	1551.26	2.557	1804.23	1410.76	1343.74	1.049
	(1081.41)	(1005.86)	(1341.56)		(1289.51)	(1075.85)	(993.03)		(2661.84)	(2016.22)	(1916.07)	
Hispanic	132.44	112.94	197.94	6.424*	170.09	117.00	87.46	4.921*	582.27	338.74	324.71	1.095
	(191.86)	(147.36)	(244.18)		(199.26)	(150.54)	(114.90)		(161.07)	(1005.17)	(958.03)	
Native	59.36	51.34	69.26	.434	31.77	22.38	25.70	1.158	41.71	53.48	44.67	.224
	(149.96)	(122.28)	(158.59)		(33.57)	(18.74)	(24.61)		(56.51)	(151.52)	(96.75)	
Asian	61.23	63.24	61.14	.015	86.27	77.50	65.58	1.01	485.90	380.78	376.39	.199
	(109.64)	(119.31)	(115.13)		(95.05)	(88.98)	(79.87)		(1469.31)	(1127.28)	(1116.58)	

Note. Standard Deviation appears in parentheses below means. North Carolina *df* (2,577). South Carolina *df* (2,157). Virginia *df* (2,227). *$p \leq$ .05.

Table 15

ANOVA Table of the Effect of Pell Grant Limits on Demographically Segmented Headcount Enrollment

	North Carolina				South Carolina				Virginia			
	Low	Medium	High	F	Low	Medium	High	F	Low	Medium	High	F
Males	1275.73	1358.39	1668.06	4.403*	1708.23	1823.81	2262.09	1.965	2817.63	2945.76	3570.90	.778
	(1254.35)	(1331.55)	(1716.89)		(1498.44)	(1546.58)	(1795.81)		(3710.25)	(3901.94)	(4918.80)	
Females	2187.51	2251.30	2622.19	3.242*	3089.34	3166.63	3796.59	1.418	4054.24	4179.02	4850.98	.596
	(1737.56)	(1793.22)	(2160.50)		(2353.15)	(2352.54)	(2741.15)		(4649.22)	(4855.03)	(5792.06)	
Full-Time	1353.22	1446.48	1833.82	7.696*	2182.06	2257.19	2826.80	2.243	2167.88	2266.35	2961.82	1.378
	(1123.27)	(1218.82)	(1634.68)		(1625.74)	(1665.83)	(2061.60)		(2863.01)	(2982.90)	(4076.99)	
Part-time	2110.02	2163.21	2456.44	1.704	2615.52	2733.25	3231.89	1.167	4703.99	4858.43	5460.07	.386
	(1917.52)	(1974.77)	(2358.82)		(2253.80)	(2270.08)	(2520.94)		(5512.88)	(5783.19)	(6626.86)	
White	2265.44	2343.72	2569.07	1.615	2940.86	3032.09	3545.84	.834	4722.02	4728.39	5073.05	.166
	(1741.87)	(1774.12)	(2013.69)		(2652.34)	(2700.95)	(2928.63)		(4486.35)	(4372.70)	(4558.55)	
Black	840.22	877.87	1072.03	2.702	1548.41	1641.00	1979.06	2.478	1343.74	1410.76	1804.23	1.049
	(953.42)	(988.97)	(1321.84)		(998.90)	(1025.44)	(1289.51)		(1916.07)	(2016.22)	(2661.84)	
Hispanic	99.97	106.91	200.67	18.328*	90.88	95.41	170.09	4.682*	324.71	338.74	582.27	1.095
	(136.29)	(152.40)	(248.86)		(119.70)	(125.91)	(199.26)		(958.03)	(1005.17)	(1616.11)	
Native	52.73	56.53	68.37	.695	25.30	24.84	31.77	1.066	44.67	53.48	41.71	.224
	(131.46)	(142.21)	(162.32)		(23.56)	(24.29)	(33.57)		(96.75)	(151.52)	(56.51)	
Asian	57.45	61.58	65.79	.318	67.48	67.72	86.27	.883	376.39	380.78	485.90	.199
	(105.15)	(113.46)	(119.35)		(81.52)	(81.52)	(95.05)		(1116.58)	(1127.28)	(1469.31)	

Note. Standard Deviation appears in parentheses below means. North Carolina df (2,577). South Carolina df (2,157). Virginia df (2,227). *$p \leq$ .05.

community college students. Post hoc comparisons using the Scheffe test indicated that the enrollment of male students was significantly different between the *low* and *high* Pell Grant limit levels. Furthermore, in North Carolina, the effect of the annual Pell Grant limit was found to be significant for full-time community college students, but was not found to be significant for part-time community college students. Post hoc comparisons using the Scheffe test indicated that the enrollment of full-time students was significantly different at all three Pell Grant limit levels. In addition, with regard to the effect of the annual Pell Grant limit on community college enrollment by race in North Carolina, it was found that the annual Pell Grant limit was significant to the enrollment of Hispanic students, but not significant to the enrollment of other racial groups. Post hoc comparisons using the Scheffe test indicated that the enrollment of Hispanic students was significantly different at all three Pell Grant limit levels.

Additionally, as indicated by Table 15, in the state of South Carolina, the effect of annual Pell Grant limits was only found to be significant to the enrollment of Hispanic students. The annual federal Pell Grant limit was not found to be significant to the enrollment of White, Black, Native or Asian technical college students in South Carolina. Nor was there any significant effect of the annual Pell Grant limits on the enrollment of either gender or enrollment status in South Carolina during the ten-year period. Post hoc comparisons using the Scheffe test indicated that the enrollment of Hispanic students in South Carolina was significantly different between the *low* and *high* annual Pell Grant limit levels. Also, as indicated in Table 15, within the Commonwealth of Virginia, the effect of the amount of the annual Pell Grant limit had no significant effect on the enrollment of community college students either by gender, enrollment status, or race.

Local Unemployment Rates

This study sought to determine if there was a statistically significant difference between the means of the independent variable, county-level local unemployment rate of the service area, and the mean of the dependent variable, headcount enrollment by gender, enrollment status, and race. The means of these variables were tested using a One-Way ANOVA with a significance level of $p \leq .05$.

As indicated by Table 16, the effect of the local unemployment rate was found to be significant for both male and female community college students in North Carolina. Post hoc comparisons using the Scheffe test indicated that the enrollments of both male and female students were significantly different between the *medium* and *high* local unemployment rate levels. Also, the effect of the local unemployment rate was found to be significant on the enrollment of both full-time and part-time community college students within the state. Post hoc comparisons using the Scheffe test indicated that the enrollments of both full-time and part-time students were significantly different at all three local unemployment rate levels. However, while the effect of the local unemployment rate was found to be significant for White, Black, Hispanic and Native students within the state, it was not found to be significant for the enrollment of Asian students. Post hoc comparisons using the Scheffe test indicated that the enrollment of White students was significantly different among all three local unemployment rate levels. The post hoc comparison indicated that the enrollment of Black students was significantly different between the *medium* and *high* local unemployment rate levels. The post hoc comparison indicated that the enrollment of Hispanic students was significantly different among all three local unemployment rate levels. The post hoc comparison indicated that the

Table 16

ANOVA Table of the Effect of Local Unemployment on Demographically Segmented Headcount Enrollment

	North Carolina				South Carolina				Virginia			
	Low	Medium	High	F	Low	Medium	High	F	Low	Medium	High	F
Males	1421.01	1650.97	1002.89	5.287*	2306.64	1770.38	869.94	6.392*	3617.05	2442.53	1631.50	2.481
	(1407.99)	(1749.37)	(590.55)		(1711.40)	(1584.93)	(731.44)		(5006.90)	(2576.50)	(403.77)	
Females	2352.23	2620.11	1777.21	5.146*	3979.81	3115.83	1456.35	8.316*	4954.65	3580.84	2514.25	2.378
	(1905.56)	(2200.87)	(842.79)		(2580.36)	(2426.27)	(1168.78)		(5827.85)	(3858.83)	(625.85)	
Full-Time	1473.60	1800.58	1285.35	5.139*	2821.25	2293.12	1238.00	5.980*	2770.58	2111.10	1651.75	1.201
	(1259.12)	(1700.00)	(587.90)		(1827.37)	(1888.82)	(900.25)		(3909.79)	(2511.85)	(162.94)	
Part-time	2299.64	2470.49	1494.75	5.845*	3465.19	2593.1	1088.29	8.571*	5801.12	3912.27	2494.00	3.312*
	(2111.65)	(2375.56)	(859.67)		(2496.98)	(2162.98)	(1060.80)		(6935.78)	(3959.40)	(945.04)	
White	2466.20	2528.62	1778.32	4.741*	3947.92	2774.27	1061.35	9.749*	5417.85	4062.65	2868.88	3.215*
	(1858.57)	(2024.26)	(1192.95)		(2803.05)	(2648.68)	(1353.09)		(5079.15)	(3197.51)	(602.48)	
Black	892.96	1105.86	678.40	4.462*	1878.86	1726.23	1103.00	3.373*	1654.16	1381.23	1105.75	.522
	(1044.36)	(1359.13)	(500.19)		(1195.87)	(1130.38)	(579.45)		(2260.46)	(2366.79)	(815.98)	
Hispanic	118.42	198.04	82.08	14.225*	148.61	114.98	30.65	4.066*	576.20	202.58	77.88	2.55
	(167.61)	(248.32)	(91.48)		(179.15)	(145.26)	(54.73)		(1572.25)	(376.28)	(20.92)	
Native	48.87	61.59	100.76	3.713*	32.99	23.17	18.76	3.184*	55.66	29.80	11.63	2.307
	(118.00)	(141.53)	(237.43)		(29.85)	(26.74)	(19.05)		(118.51)	(42.67)	(4.69)	
Asian	67.06	59.77	43.64	1.304	93.99	64.62	19.35	6.250*	589.16	156.39	30.25	3.433*
	(117.75)	(110.26)	(94.04)		(91.34)	(84.09)	(32.64)		(1564.83)	(343.92)	(11.40)	

Note. Standard Deviation appears in parentheses below means. North Carolina df (2,577). South Carolina df (2,157). Virginia df (2,227). *$p \leq .05$.

enrollment of Native students was significantly different between the *low* and *high* local unemployment rate levels.

As evidenced in Table 16, the local unemployment rate had a significant effect on the enrollment of every demographic sub-group of technical college student in the state of South Carolina during the ten-year period that this research study addressed. The post hoc comparison indicated that the enrollment of male students was significantly different between the *low* and *high* local unemployment rate levels. The post hoc comparison indicated that the enrollment of female students was significantly different among all three local unemployment rate levels. The post hoc comparison indicated that the enrollments of both full-time and part-time students were significantly different between the *low* and *high* local unemployment rate levels. The post hoc comparison indicated that the enrollment of White students was significantly different among all three local unemployment rate levels. The post hoc comparison indicated that the enrollments of Black, Hispanic, and Asian students were all significantly different between the *low* and *high* local unemployment rate levels.

As depicted in Table 16, within the Commonwealth of Virginia, the local unemployment rate did not have a significant effect on the enrollment of either male or female community college students. However, while there was not found to be a significant effect on the enrollment of full-time students in Virginia, there was found to be a significant effect between the local unemployment rate and the enrollment of part-time students within the commonwealth. Furthermore, there was also found to be a significant effect between the local unemployment rate and enrollment of White and Asian community college students in Virginia, while there was no significant effect found for the enrollment of Black, Hispanic and Native community college students.

Two-Way ANOVAs

After obtaining the results of the One-Way ANOVAs, I then performed a series of Two-Way ANOVAs to discover the effect, if any, that the interaction of two independent variables had on the dependent variable. If a statistically significant interaction was found, a Post Hoc test was performed to determine which of the two independent variables had a greater main effect on the dependent variable, headcount enrollment. The following are my findings.

The Interaction of Tuition and Pell

The first interaction that I investigated was the interaction between in-state tuition and fees and the annual Pell Grant limits. What I found was that for the state of North Carolina data cells that had *low* tuition, also had *low*, *medium*, and *high* Pell Grant limits. However, for cells that had *medium* tuition, there were no corresponding *low* or *medium* Pell Grant limits, only *high* Pell Grant limits. Also, for North Carolina cells with *high* tuition, there were no corresponding *low* or *medium* Pell limits, only *high* Pell Limits.

The data revealed a similar interaction between in-state tuition and annual Pell Grant limits in the commonwealth of Virginia. Virginia data cells with *low* tuition corresponded to *low* and *medium* Pell Grant limits, but did not correspond to any *high* Pell limits. Furthermore, Virginia data cells with medium tuition had no corresponding *low* Pell limits. In addition, Virginia data cells with *high* tuition had no corresponding *low* or *medium* Pell Grant limits. It therefore became apparent that there was no interaction between in-state tuition and fees and annual Pell Grant limits in the state of North Carolina or the commonwealth of Virginia during the period studied. What this seems to suggest is that since the annual Pell Grant limits were sufficient to cover all required in-state tuition and fees, the interaction of the two variables did not impact headcount enrollment. This finding will be further explored in Chapter Five.

Table 17 provides a summary of the interaction between in-state tuition and fees and annual Pell Grant limits in the state of South Carolina during the researched period. The results indicate that although in-state tuition alone had a significant effect on headcount enrollment, there was no significant effect on headcount enrollment among any demographic subgroup between the interactions of in-state tuition and annual Pell Grant limits in the state of South Carolina.

The Interaction of Tuition and State Appropriations

Table 18 provides a summary of the results of the interactions between in-state tuition and fees and state annual FTE appropriations in the state of North Carolina. As the table indicates, there were no significant effects on the interaction of the two independent variables on the headcount enrollment of any demographic subgroup. Table 18 also indicates the interaction of in-state tuition and fees and annual state FTE technical college appropriations for the state of South Carolina. Like North Carolina, the results indicate no significant interactions on any demographic subgroup. Although there were no significant interactions, consistent with the results of the one-way ANOVA, in-state tuition and fees appeared to have a greater impact on headcount enrollment in South Carolina than the annual amount of state FTE appropriations to the state's technical college system.

The Interaction of Tuition and Local Unemployment

Table 19 depicts the effect of the interaction between in-state tuition and fees and local unemployment on the headcount enrollment of demographically segmented subgroups in North Carolina. As the table indicates, the interaction of these two independent variables had a statistically significant effect on the headcount enrollment of all demographic subgroups with the

Table 17

South Carolina Tests of Effects between Tuition and Pell

	Tuition[a]	Pell[a]	Tuition/Pell Interaction[b]
Male	11.041*	.417	.065
Female	13.603*	.472*	.057
Full-time	10.374*	.326	.094
Part-time	13.928*	.653	.058
White	14.173*	.447	.106
Black	7.487*	.362	.154
Hispanic	11.046*	.280	.041
Native	10.458*	.407	.078
Asian	13.408*	0.437	.045

Note. a = 2 df, b = 4 df. N = 160. *$p \leq .05$.

Table 18

Tests of Effects between In-State Tuition and Fees and State FTE Appropriations

	North Carolina			South Carolina		
	Tuition[a]	Appropriations[a]	Tuition/Pell Interaction[b]	Tuition[a]	Appropriations[a]	Tuition/Pell Interaction[b]
	F	*F*	*F*	*F*	*F*	*F*
Male	.588	.169	1.054	6.229*	.039	.027
Female	.447	.339	.917	7.928*	0.79	.005
Full-time	.942	.602	1.615	6.296*	.032	.026
Part-time	.248	.121	.580	7.709*	.195	.195
White	.168	.222	1.284	8.378*	.073	.045
Black	.877	.216	.477	4.461*	.357	.379
Hispanic	2.203	1.225	1.500	7.674*	.050	.092
Native	.867	.237	.001	6.732*	.471	.050
Asian	.107	.050	.158	9.359*	.121	.102

Note. *$p \leq .05$, NC N=580, SC N=160. a = 2 *df*, b = 4 *df*.

Table 19

Tests of Effects between In-State Tuition and Fees and Local Unemployment

	North Carolina			South Carolina			Virginia		
	Tuition[a] F	Unemployment[a] F	Tuition/ Unemployment Interaction[b] F	Tuition[a] F	Unemployment[a] F	Tuition/ Unemployment Interaction[b] F	Tuition[a] F	Unemployment[a] F	Tuition/ Unemployment Interaction[b] F
Male	14.954*	13.437*	7.331*	8.428*	2.880	.770	5.833*	8.844*	1.409
Female	11.565*	11.630*	5.582*	10.576*	4.459*	.882	5.200*	7.809*	1.026
Full-time	11.899*	8.619*	5.292*	8.213*	3.069*	1.113	5.533*	6.937*	1.330
Part-time	12.608*	14.106*	6.533*	10.586*	4.232*	.618	5.431*	9.053*	1.109
White	9.706*	10.071*	6.260*	11.106*	4.418	.722	4.196*	6.712*	.413
Black	8.124*	7.557*	2.783*	5.066*	2.262	1.102	3.685*	4.247*	.840
Hispanic	29.879*	25.889*	13.093*	7.742*	1.521	.662	6.409*	10.433*	2.971*
Native	.052	.599	1.057	9.532*	1.410	.264	1.033	2.754	.057
Asian	11.006*	10.807*	6.945*	8.335*	2.436	.633	4.382*	9.366*	1.884

Note. *$p \leq .05$, NC N=580, SC N=160, VA N=230. a = 2 *df*, b = 4 *df*.

exception of Native students. A Scheffe post hoc revealed that in-state tuition and fees had the main effect on the enrollment of most North Carolina community college students.

While the interaction of in-state tuition and fees was significant on headcount enrollment in North Carolina, the results in South Carolina were very different. Table 19 also indicates that the interaction of these two independent variables was not significant for any demographic subgroup in South Carolina during the period researched. The results of the test of interaction in Virginia were somewhat similar to that of South Carolina, the difference being that while the interactions were not significant for any demographic subgroup in South Carolina, as Table 19 indicates, the only subgroup in Virginia that resulted in a significant interaction was Hispanic students. The post hoc test of this subgroup revealed the local unemployment rate had the main effect on the enrollment of Hispanic students.

The Interaction of Pell Grant Limits and Local Unemployment

Table 20 indicates that when the interaction between the annual Pell Grant limits and local unemployment were examined for their joint effect on headcount enrollment in North Carolina, it was discovered that there was significant interactions for some subgroups, but not for others. As the table indicates, the interactions were not significant based on gender or enrollment status. However, there were significant differences based on race. The data indicated that while there was no significant interaction for White and Native community college students in North Carolina, significant interactions were found for Black, Hispanic and Asian students. The Scheffe post hoc review of these subgroups indicated that while the amount of the annual Pell Grant was the main effect on the enrollment of Black and Hispanic students, local unemployment was the main effect on the enrollment of Asian students.

Table 20

Tests of Effects between Annual Pell Grant Limits and Local Unemployment

	North Carolina			South Carolina			Virginia		
	Pell F	Unemployment F	Pell/ Unemployment Interaction F	Pell F	Unemployment F	Pell/ Unemployment Interaction F	Pell F	Unemployment F	Pell/ Unemployment Interaction F
Male	12.122*	12.090*	1.980	17.551*	22.050*	.048	6.727*	7.248*	2.324
Female	9.791*	10.391*	1.667	16.878*	23.938*	.389	5.826*	6.616*	1.684
Full-time	7.913*	6.679*	.649	17.419*	21.270*	.219	6.352*	5.318*	2.202
Part-time	11.888*	13.562*	2.677	16.172*	23.649*	.209	6.128*	7.867*	1.819
White	7.188*	8.009*	.189	15.601*	24.846*	.497	4.900*	7.066*	.714
Black	7.898*	9.244*	3.492*	12.138*	12.785*	.025	3.678*	2.824	1.264
Hispanic	26.710*	24.206*	5.881*	28.092*	26.709*	1.761	8.066*	7.498*	4.925*
Native	.294	.530	.953	9.998*	11.584*	.642	.900	2.940	.083
Asian	13.078*	14.331*	6.421*	11.404*	16.528*	.148	5.034*	6.379*	3.114*

Note. *$p \leq .05$, NC N=580, SC N=160, VA N=230. *Df = 2.*

When the interactions between annual Pell Grant limits and local unemployment rates were reviewed for South Carolina, as indicated in Table 20, there was no significant interaction between these two independent variables and the headcount enrollment of any demographic subgroup within the state during the period. When the interactions between annual Pell Grant limits and local unemployment were analyzed for Virginia, as was the case for North Carolina, there were significant interactions for some subgroups but not for others. As indicated in Table 20, similar to North Carolina, the data revealed that there was no significant interaction on headcount enrollment by gender or enrollment status. However, in Virginia the interaction of Pell and local unemployment was not significant for White, Black, or Native community college students, but was significant for Hispanic and Asian students. The Scheffe post hoc analysis of these two significant subgroups revealed the amount of the annual Pell Grant had the main effect on the enrollment of Black students, while the local unemployment rate had the main effect on the enrollment of Asian students.

The Interaction of State Appropriations and Local Unemployment

Table 21 indicates that the interaction between annual state FTE appropriations and the level of local unemployment rates had no significant effect on the enrollment of any demographically segmented subgroup of public two-year students in either North Carolina or South Carolina. However, this was not the case in Virginia. Furthermore, as also indicated by Table 21, the interactions between annual state FTE appropriations and the local unemployment rate did not have a significant effect on the enrollment of Virginia community college students based on gender or enrollment status. However, while the interaction of the two independent variables was not found to be significant on the headcount enrollment of White, Black, and Native students in Virginia, the interaction was significant for Hispanic and Asian students. A

Table 21

Tests of Effects between State FTE Appropriations and Local Unemployment

	North Carolina			South Carolina			Virginia		
	State Approp. *F*	Unemployment *F*	Appropriations/ Unemployment Interaction *F*	State Approp. *F*	Unemployment *F*	Appropriations/ Unemployment Interaction *F*	State Approp. *F*	Unemployment *F*	Appropriations/ Unemployment Interaction *F*
Male	2.606	6.854*	1.795	17.655*	20.433*	0.067	6.727*	7.248*	2.324
Female	2.016	6.635*	1.432	16.910*	22.496*	0.443	5.826*	6.616*	1.684
Full-time	2.891	4.717*	1.635	17.441*	20.153*	0.302	6.352*	5.318*	2.202
Part-time	1.736	7.631*	1.424	16.257*	21.888*	0.224	6.128*	7.867*	1.819
White	2.888	7.660*	1.880	15.617*	23.252*	0.585	4.900*	7.066*	0.714
Black	0.484	4.018*	0.668	12.301*	11.834*	0.033	3.678*	2.824	1.264
Hispanic	3.491*	9.113*	2.773	28.300*	25.911*	1.876	8.066*	7.498*	4.925*
Native	0.053	2.679	0.241	10.067*	9.949*	0.647	0.900	2.940	0.083
Asian	0.633	1.706	0.316	11.467*	15.771*	0.239	5.034*	6.379*	3.114*

Note. *$p \leq .05$, NC N=580, SC N=160, VA N=230, *Df = 2*.

Scheffe post hoc analysis of the interaction on Hispanic and Asian students revealed the local unemployment rate had the main effect in both cases.

Multiple Regression Analysis

Multiple regression analysis determines the magnitude of the relationship between an outcome variable and a combination of two or more predictor variables (Fields, 2009). In this study, headcount enrollment served as the criterion outcome variables and in-state tuition and fees, state FTE appropriations, annual Pell Grant limits, and the local unemployment rate served as the predictor variables. Three separate multiple regression analyses were performed, one for each of the three states.

With regards to North Carolina, in-state tuition and fees, state FTE appropriations, annual Pell Grant limits, and local unemployment rates had a weak association with total community college headcount enrollment (r = .358). The regression was a poor fit (R^2_{Adj} = 12.2%), which means that knowing in-state tuition and fees, state FTE appropriations, annual Pell Grant limits, and local unemployment is not enough to predict the number of community college students who will enroll in the state's community college system. The factors of in-state tuition and fees, state FTE appropriations, annual Pell Grant limits, and local unemployment jointly explain only 12.2 % of variation in total community college headcount enrollment within the state. The overall relationship was significant (F[4, 575] = 21.078, p <.001), with local unemployment being significant;(t[575] = -8.248, p<.001), in-state tuition and fees being significant; (t[575] = 3.700, p<.001), and annual Pell Grant limits being significant; (t[575] = 5.823, p<.001). However, state FTE appropriations were not significant. There was an inverse relationship between local unemployment and total headcount enrollment which would indicate that as unemployment increases, enrollment would decrease. This finding is not consistent with previous research regarding the effect of unemployment rates on community college enrollment (Betts & McFarland, 1995). Table 22 presents a summary of the

results of the multiple regression analyses for the criterion variable aggregate North Carolina student headcount enrollment.

With regards to South Carolina, in-state tuition and fees, state FTE appropriations, annual Pell Grant limits, and local unemployment had a medium association with total technical college headcount enrollment (R = .657). The regression was a more appropriate fit (R^2_{Adj} = 41.7%), which means that knowing in-state tuition and fees, state FTE appropriations, annual Pell Grant limits, and local unemployment can only partially predict the number of technical college students who will enroll in the state's technical college system. The factors of in-state tuition and fees, state FTE appropriations, annual Pell Grant limits, and local unemployment jointly explain only 41.7% of variation in total technical college headcount enrollment within the state. The overall relationship was significant (F[4, 155] = 29.447, p <.001), with local employment being significant;(t[155] = -7.741, p<.001), and annual Pell Grant limits being significant; (t[155] = 3.080, p<.001). However, state FTE appropriations and in-state tuition and fees were not significant. As in North Carolina, in South Carolina there was also an inverse relationship between local unemployment and total headcount enrollment which would indicate that as unemployment increases, enrollment would decrease. Table 22 presents a summary of the results of the multiple regression analyses for the criterion variable total South Carolina student headcount enrollment.

With regards to Virginia, in-state tuition and fees, state FTE appropriations, annual Pell Grant limits, and local unemployment rates had a weak association with total community college headcount enrollment (R = .446). The regression was a poor fit (R^2_{Adj} = 18.4%), which means that knowing in-state tuition and fees, state FTE appropriations, annual Pell Grant limits, and local unemployment is not enough to predict the number of community college students who will enroll in the state's community college system. The factors of in-state tuition and fees, state FTE appropriations, annual

Pell Grant limits, and local unemployment jointly explain only 18.4% of variation in total community college headcount enrollment within the state. The overall relationship was significant (F[4, 225] = 13.932, p <.001), with local employment being significant;(t[260] = -7.345, p<.001), and annual Pell Grant limits being significant; (t[260] = 3.662, p<.001). However, state FTE appropriations and in-state tuition and fees were not significant. As in the Carolinas, in Virginia there was also an inverse relationship between local unemployment and total headcount enrollment which would indicate that as unemployment increases, enrollment would decrease. Table 22 presents a summary of the results of the multiple regression analyses for the criterion variable total Virginia student headcount enrollment.

Summary of Findings

Correlation analyses were performed to determine if there were significant differences in the enrollment patterns of demographic subgroups. Table 23 summarizes the differences found by subgroups. The results indicate that financial and economic issues affect the enrollment patterns of different demographic subgroups differently within each state. For example, the enrollment in North Carolina is affected by in-state tuition and fees and the amount of the annual Pell Grant limit. In South Carolina the significant factors were in-state tuition and fees and the local unemployment rate, while in Virginia the only significant factor on overall enrollment was the local unemployment rate.

One-way and two-way ANOVAs were analyzed to determine if there were significant differences in the means and variability of demographic subgroup headcount enrollment based on financial and economic factors. The results of the ANOVAs were consistent with the results of the correlation analysis, and these results confirmed the notion that there are differences in the enrollment patterns of demographic subgroups based on financial and economic independent variables.

Table 22

Summary of Multiple Regression Analysis Results for Total Student Headcount by State

	North Carolina		South Carolina		Virginia	
Variable	Beta	SE *B*	Beta	SE *B*	Beta	SE *B*
Constant						
Local Unemployment	-0.640	90.993*	-.806	138.690*	-685	390.765*
In-State Tuition and Fees	.233	.731*	.112	1.135	.114	2.509
State FTE Appropriations	-.032	.292	-.080	1.101	.204	2.839
Annual Pell Grant Limits	.502	.675*	.578	1.795*	.692	4.095*

Note. *$p \leq .0001$.

Table 23

Summary of Financial/Economic Factors on Enrollment by Demographic Subgroups

	North Carolina				South Carolina				Virginia			
	T	P	A	U	T	P	A	U	T	P	A	U
Male	*	*			*		*	*				*
Female	*	*			*		*	*				*
Full-time	*	*	*		*	*	*	*				*
Part-time	*			*	*			*				*
White	*			*	*			*				*
Black	*	*			*	*	*	*				*
Hispanic	*	*	*		*	*	*	*				*
Native				*	*			*				*
Asian				*	*			*				*

Note. T = instate tuition and fees, P = annual Pell Grant limits, A = State Appropriations, U = local unemployment rate, * = significant relationship.

Based on the results of the correlation analyses it is evident that there were statistically significant differences between in-state tuition and fees and aggregate headcount enrollment in both North and South Carolina (see Table 9). Therefore, this null hypothesis is rejected for North Carolina and South Carolina. However, I cannot reject this null hypothesis for Virginia.

Based on the results of the correlation analyses it is evident that there were no statistically significant differences between annual Pell Grant limits and aggregate headcount enrollment in any of the three states (see Table 9). Therefore, I cannot reject this null hypothesis for North Carolina, South Carolina or Virginia.

Based on the results of the correlation analyses it is evident that there were statistically significant differences between annual state community college FTE appropriations and aggregate headcount enrollment in any of the three states (see Table 9). Therefore, I cannot reject this null hypothesis for North Carolina, South Carolina or Virginia.

Based on the results of the correlation analyses it is evident that there were statistically significant differences between local unemployment rates and aggregate headcount enrollment in both South Carolina and Virginia (see Table 9). Therefore, this null hypothesis is rejected for South Carolina and Virginia. However, I cannot reject this null hypothesis for North Carolina.

Based on the results of the correlation analyses and the ANOVA analyses it is evident that there were statistically significant differences between financial factors (in-state tuition and fees, annual Pell Grant limits, state technical and community college FTE appropriations), economic factors (local unemployment rates) and headcount enrollment of students by demographic patterns in North and South Carolina, but not in Virginia. Therefore, I reject the second null hypothesis for North and South Carolina, but do not reject this null hypothesis for Virginia.

Multiple regression analyses were performed to determine the ability to predict overall enrollment based on changes in in-state tuition and fees, Pell Grant limits, state FTE appropriations, and the local unemployment rate. The predictors differed by state, with in-state tuition and fees, annual Pell Grant limits and the local unemployment rate having a poor ability to predict enrollment in North Carolina. In South Carolina, local unemployment rates and Pell Grant limits provided a more appropriate indicator of enrollment. However, in Virginia, the only significant predictor was local unemployment rates, and even that was a poor predictor.

Having compiled the results of the research analysis, Chapter Five offers an exploration of the implications of these results and provides a discussion regarding how these results can impact practice. Chapter Five also includes recommendations for future researchers interested in the potential impact that financial and economic forces may have on the demographic enrollment patterns of community and technical college students.

CHAPTER FIVE: DISCUSSION, IMPLICATIONS, AND RECOMMENDATIONS

The purpose of this study was to investigate the extent, if any, to which higher education financial and local economic factors relate to community college enrollment in North Carolina, South Carolina and Virginia, especially during economically challenging times. Previous chapters introduced this study, provided a summary of the previous research on the topic, outlined the methodology used, and provided the results of the research. This chapter includes a review of the findings, a discussion of the outcomes as they relate to the theoretical framework, and an interpretation of the results. In this chapter I also review the research questions from the point of view of the implication of the findings for current and future practitioners. The conclusion includes recommendations for future researchers interested in the impact that financial and economic forces have on the demographic enrollment patterns of community and technical college students.

Summary of Findings

According to the findings in Chapter Four, the enrollment patterns of community and technical college students in North Carolina, South Carolina and Virginia are associated with changes in certain financial and economic variables. More specifically, in-state tuition and fees influenced the aggregate number of students enrolled in community colleges in North and South Carolina, while the local unemployment rate influenced the aggregate number of students enrolled in South Carolina and Virginia. However, when examined from the perspective of demographic subgroups more interesting patterns emerged, particularly in North and South Carolina. The theoretical framework that guided this study was Becker's (1993) human capital theory that brings together established research models on the impact of unemployment on community college enrollment coupled with the changes in both the direct (e.g. tuition) and indirect cost (e.g. the local unemployment rate) of a community college education.

Financial and Economic Factors

This study focused on the financial and economic factors that may have affected headcount enrollment in the three states. The results of each of the three financial factors (in-state tuition and fees, annual Pell Grant limits, and state FTE appropriations), as well as the economic factor (local unemployment rate) with respect to headcount enrollment will now be reviewed and discussed.

In-state tuition and fees. Over the ten-year period examined, all three states' experienced increases in their inflation adjusted in-state tuition and fees. However, Virginia's inflation adjusted tuition and fees had the greatest percentage increase to the point that they became similar to the amount charged in South Carolina, the state with consistently high tuition and fees over the period. Nevertheless, across most demographic groups the headcount student enrollment tended to be more responsive to changes in the local unemployment rate in South Carolina and Virginia. Both South Carolina and Virginia were states with relatively high tuition and fees, compared to North Carolina, a state with relatively low in-state tuition and fees. However, when only considering tuition and fees without the influence of unemployment rates, the enrollment of students in South Carolina, the high tuition state, were more responsive to changes in in-state tuition. This means that as in-state tuition and fees increased, there was a corresponding increase in student headcount enrollment. South Carolina, the high tuition state, was the most responsive, followed by North Carolina, the low tuition state, and then Virginia.

Of the three states examined, South Carolina consistently had the highest in-state tuition and fees, while North Carolina consistently had the lowest. Interestingly, Kienzl et al. (2007) found that students who attend community colleges in relatively high tuition states tend to be less likely to leave school to enter the job market when there is a slight improvement in the local job market compared to students who attend college in relatively low tuition states. The findings of this study are therefore

consistent with previous research in the sense that relatively high tuition states tend to have higher student retention and therefore, higher overall enrollment. It is also interesting to note that over the ten-year period, the North Carolina Community College System's average in-state tuition and fees was among the three lowest public-two year colleges systems in the nation, while South Carolina's average in-state tuition and fees was consistently among the top ten highest in the nation. During this period of time Virginia's average in-state tuition and fees fell from 16th lowest in the nation in 2003 to 25th lowest by 2012 while still being able to maintain enrollment.

It should be noted that the relationships between in-state tuition and student headcount enrollment were positive rather than negative, as would be reasonably expected. One possible explanation may be that tuitions across all types of institutions generally increase at a similar rate. Therefore, as tuition increased at two-year colleges they were also increasing at four-year colleges. Since public four-year colleges tend to charge higher tuition and fees than public two-year colleges, by comparison the public two-year colleges continued to remain more affordable. Consequently, it may be possible that some students who may have otherwise opted to attend public four-year college, during difficult economic times may have chosen to attend their local community college, thus explaining the positive relationship.

Another possible explanation for increasing enrollment during a period of increasing tuition may relate to the median household income of each state. Virginia's median household income over the ten-year period has been above the national average, while both North and South Carolina have experienced median household income below the national average (USCB, 2014). The assumption is that families living in states with lower median household incomes may have viewed the increasing public two-year college tuition as a more affordable option than the increasing public four-year

option (please see Appendix I). Therefore, even while tuitions were increasing at community colleges, enrollment was also increasing.

Annual Pell Grant limits. In all three states, the annual maximum Pell Grant was sufficient to cover the cost of community and technical colleges' in-state tuition and fees. Therefore, unlike states such as Vermont and Pennsylvania where in-state tuition and fees are greater than the maximum annual Pell Grant, one can assume that as long as the maximum Pell Grant was greater than the amount of in-state tuition and fees, changes in the Pell Grant should not have a meaningful connection to student headcount enrollment in most states. However, this study found that the amount of the annual Pell Grant limit had a greater impact on the headcount enrollment of students in North and South Carolina than in Virginia. While no demographic subgroup in Virginia appeared to be impacted by changes in the annual Pell Grant limit, there were noticeable impacts on the enrollment of select demographic groups in North and South Carolina. The enrollment of community and technical college students on a full-time basis was linked to changes in Pell Grant limits, while the enrollment of part-time students did not appear to be related to the annual Pell Grant limits. Cohen (2001) found that the Higher Education Act Pell Grant eligibility modification to make Pell Grants available to part-time students had a positive impact on community college enrollment; the result of this study indicated that in the Carolinas, Pell Grant limits appeared to have a greater association with the enrollment of full-time students than on part-time students. This may be possible because part-time students are available to work more hours and consequently may be able to finance part, or all, of their education, whereas, full-time students, who have limited availability for potential working hours to generate income, are more dependent on Pell Grant funds to complete their education. The results also indicated that the amount of the annual Pell Grant limit has a greater connection to the enrollment of Black and Hispanic students in the Carolinas than any other

racial group. This may also be due to the idea that Blacks and Hispanics generally have higher unemployment rates, and when employed earn lower wages than other ethnic groups. Thus, Black and Hispanic community college students, particularly in low income states, may have a greater need for Pell Grant funds to cover not only the cost of their tuition and fees, but also to supplement their living expenses while in college.

State FTE appropriations. The amount of annual FTE appropriations did not have any noticeable association with the enrollment of any subgroup in Virginia. However, in both North and South Carolina, the changes in state FTE appropriations were associated with enrollment patterns of specific demographic subgroups. Campbell (2010) contends that declining state financial appropriations to community colleges tend to negatively impact tuition and enrollment. However, the results of this study indicate that changes in state appropriations in the Carolinas appeared to impact some groups more than others. For example, in both North and South Carolina there were positive associations between the amount of state appropriations and the enrollment of full-time students, but not part-time students. The presumption is that the lack of adequate state funding to community colleges may force colleges to reduce the availability of college funded services such as childcare supplements that are more likely to affect students who are enrolled full-time compared to students who are enrolled on a part-time basis.

The enrollment of Hispanic students in both states also appears to be associated with changes in state appropriations. Thus, the more state funding provided to colleges the more likely Hispanic students are to enroll. Likewise, the less state funding, the fewer Hispanic students are likely to enroll in community colleges. There was also an association between the enrollment of Black students and state appropriations in South Carolina, but no such association in North Carolina. Interestingly, while the groups in North Carolina had a positive association, South Carolina indicated

a negative association. Therefore, when there was a decline, in inflation adjusted dollars, in state support technical college enrollment of the associated subgroups in South Carolina appeared to have actually increased. This observation is somewhat perplexing on the surface and would appear to indicate that the less financial support South Carolina provides to its public two-year college system the more likely students are to enroll. However, similar to the speculation regarding increasing tuitions, it is possible that the state is also providing declining financial support to the public four-year institutions. Therefore, when comparing one higher education option to the other, the public two-year institution is still more practical and better able to provide certain services with smaller class sizes than the public four-year alternative and is better able to recruit and retain students who may be struggling financially.

Local unemployment rates. The study revealed measurable associations between the local unemployment rates and student headcount enrollment of all demographic subgroups in South Carolina and Virginia, and some demographic subgroups in North Carolina. Surprisingly, all associations between the local unemployment rate and student headcount enrollment were negative. Therefore, as the local unemployment rates decline enrollment in public two-year institutions may be expected to increase, and vice versa. The work of Felix and Pope (2010) found that higher unemployment during recessionary times is reasonably expected to lead to increased enrollment in community colleges. However, the results of this study do not confirm their hypothesis. This study's findings are however consistent with the findings of Rivers (2010), who found a small negative correlation, between state-wide unemployment rates in Virginia and community college enrollment, indicating that unemployment rates and enrollment moved in opposite directions during the eight year period from 2001 through 2008. The negative relationship, in all three states, between local unemployment rates and headcount enrollment is probably the most surprising finding of this

study. This result is not consistent with the Kienzl et al. (2007) study that found that during periods of local economic growth, some students will withdraw from college in order to seek employment because the opportunity cost of staying in college has become too great. One possible explanation for this observation could be that the unusually persistent relatively high unemployment among all education levels of the workforce may have caused some potential students to be unconvinced that a college education will likely lead to improved employment prospects, and they were not willing to take the risk of obtaining additional training and education which may not increase their chances of obtaining employment commensurate with the sacrifice of time and financial resources.

Demographic Factors

Having reviewed the possible financial and economic implications on aggregate student headcount enrollment in public two-year public colleges, attention is now turned to specific demographic subgroups and how financial and economic factors may have affected the enrollment of particular subgroups.

Gender. In all three states, there was a slight but steady increase in the enrollment of male community college students. Given Peterson's (2012) findings that there was a more rapid increase in male unemployment rates relative to female at the beginning of the Great Recession which led to a historic gap between the gender employment rates, it was expected that the data would find differences in enrollment patterns between the genders related to financial and economic variables. However, the data reveals that in all three states, the enrollment patterns of both males and females, within the same state, responded similarly to changes in financial and economic factors, and that there was no real difference between the genders.

In North Carolina, for example, between fall 2007 and fall 2009 there was a noticeable change in the enrollment of male community college students, increasing from 37.4% in fall 2007 to

39.1% in fall 2009 and then declining to 38.8% by fall 2012. However, when the entire ten-year gender grouped enrollment patterns were analyzed against financial and economic data, the relationships were not found to be statistically significant. Despite the fact that the gender gap is greater at community colleges compared to four-year institutions (California Postsecondary Education, 2007), the data from this study indicated that over the ten-year period examined, the differences did not appear to be related to financial or economic variables.

Enrollment status. In all three states there was a slightly stronger relationship between unemployment rate and part-time students, compared to full-time students. In South Carolina and Virginia the connection between the unemployment rate and enrollment was evident; however, in North Carolina the data did not reveal evidence of a connection for full-time students, while a very weak connection was evident for part-time students. The Betts and McFarland (1995) study found that the correlation between unemployment and community college enrollment was stronger for full-time students than it was for part-time students; however, those findings were not confirmed by this study. The fact that the results of this study are not consistent with the significant body of documented research would appear to be an indication that the Great Recession resulted in unusual enrollment patterns. One speculation for this unexpected enrollment pattern is the idea that during the challenging financial period many public two-year colleges were not provided with the financial resources to expand their facilities and infrastructures, thus often not being able to offer sufficient number of classes that would allow many students to enroll in classes on a full-time basis. The lack of adequate facilities and limited faculty may have forced many students who would have preferred to take a full-time course load to reluctantly settle for a part-time load.

This study also revealed that in both North and South Carolina there was a relationship between the annual Pell Grant limits as well as state FTE appropriations and the enrollment of full-

time students, but not for part-time students. This finding appears to support the Brock (2010) study that revealed that the uncertainty about how to pay for college has a greater impact on full-time students than part-time students. Despite the fact that part-time enrollment has grown more rapidly at community colleges than at four-year institutions (Nettles & Millett, 2013), this study reveals that there was a noticeable increase in the enrollment of full-time community college students in all three states beginning in fall 2009. The data confirm that, particularly in North and South Carolina, federal Pell Grants and state appropriations appear to have a greater impact on the enrollment of full-time students. The data also confirm Stratton et al.'s (2004) findings that students in states with lower unemployment rates, were more likely to enroll part-time when compared to students in states with higher unemployment rates. In Virginia, the state with relatively lower unemployment rates, there was a slightly stronger relationship between the enrollments of part-time students compared to full-time students.

Race and ethnicity. The enrollment patterns of White students were similar in North and South Carolina. In both states the enrollment of White students was associated with tuition and unemployment, but not Pell Grant limits or state appropriations. In Virginia, the only observable financial/economic relationship to the enrollment of White students was the local unemployment rate. Since Black college students are more likely to come from low-income households than White students, increases in community college tuition are most likely to have a negative impact on Black students than White students. However, the data reveal that although both groups were sensitive to changes in tuition Black students were only slightly more sensitive in North Carolina and Virginia, but slightly less sensitive in South Carolina. While there were no real differences between the enrollment patterns of White and Black students in Virginia, there were financially related differences in North and South Carolina. In both states, the enrollment of Black students were

sensitive to changes in the Pell Grant limits, while such changes did not appear to affect the enrollment of White students.

Consistent with much of the literature, in all three states, enrollment patterns of Hispanic students were similar to those of Black students. The only exception was in North Carolina where enrollment of Hispanic students was relative to the amount of state FTE appropriations, while there was no such association with the enrollment of Black students in the state. In recent years North Carolina experienced legislative debates regarding the enrollment of undocumented immigrants in the state's community college system. One possible speculation is that the state's wavering position on whether undocumented individuals should be admitted to the state's community college system may have created the perception of a hostile environment among members of the Hispanic community who may have tended to stay away from community colleges because they may have felt unwelcomed.

Although North Carolina clearly has more Native students than South Carolina and Virginia combined, the data did not reveal differences in enrollment patterns among the states with the local unemployment rate being the consistent financial/economic influencer. Interestingly, in-state tuition and fees appeared to only relate to the enrollment of Native students in South Carolina, while neither Pell Grants nor state appropriations played a meaningful role in any of the three states. The low enrollment rate relative to the Native population could be an indication that factors, other than financial and economic factors, are influencing the enrollment of this group.

The enrollment patterns of Asian students in all three states were similar to the enrollment patterns of White students and closely associated to the enrollment patterns of Native students. The matching enrollment patterns of Asian and Native community college students are interesting and provide some support to recent studies in the field of educational psychology that focus on the

psychological characteristics of these two groups (Reynolds, Sodano, Ecklund & Guyker, 2012). While tuition was a factor that appeared to influence the enrollment of White students in North Carolina, it did not appear to relate to the enrollment of Asian students in that state. In all three states local unemployment had an apparent relationship to enrollment. However, Asian and Native students reacted differently to changes in the local unemployment, with Asian students having a negative association and Native students having a positive association. Thus, when local unemployment increased there was a slight increase in the enrollment of Native students and a slight decrease in the enrollment of Asian students. One possible explanation could be that Native students are more likely to enroll in community colleges than Asian students, therefore when there is an increase in the local unemployment rate Native students will opt for community colleges, while Asian students will opt for four-year colleges. The data indicated that Pell Grants and state appropriations had no noteworthy impact on the enrollment of Asian students. As with all demographic groups in the relatively high tuition state of South Carolina, the enrollment of Asian students in the state's technical college system was associated with changes in in-state tuition and fees.

Despite the findings revealed here, it should be cautioned that most research indicates that differences within groups are usually greater than differences between groups. Therefore, it is inadvisable to make general assumptions about the likely enrollment pattern of any particular individual. Rather, the above information should be used simply as a guide to better understand the likely responses of *groups* of people to changes in financial and economic variables.

Implications for Practitioners

Community colleges play an important role as people, particularly in the lower rungs of the socioeconomic ladder, attempt to acquire the skills and knowledge needed to compete in the

increasingly challenging global workplace. The federal government, as well as several state governments, has identified community colleges as the vehicle best prepared to quickly and economically deliver the training and education needed to place young people in livable wage jobs, and return dislocated workers to the workplace. Historically, access to higher education has been a barrier due primarily to cost and location. The nation's community college system has played a major role in reducing barriers and increasing access. Since 2001 the United States' economy has struggled, hampered by two wars and a major recession. The reality for many families is that times are more financially challenging today compared to the 1970s and 80s. Furthermore, a college education has become almost mandatory to enter and remain in the American middle class (Barton, 2013; Deaton, 2012). Enrollment in a state supported community or technical college is the only practical way that many Americans can access higher education and cross the bridge to the American dream. At the same time, in order for the nation and individual states to remain economically competitive, a highly trained available workforce is required. Several federal and state programs have been developed to assist those with financial need to attend college. The following implications for practitioners are presented:

1. As Congress prepares to renew the reauthorization of the Higher Education Act it is important that there is a recognition that full-time students from states like North and South Carolina, students with below national median household incomes, depend on the Pell Grant not only to pay for tuition and fees, purchase books, and supplies, but also for transportation and childcare. Black and Hispanic students from less affluent states are also more dependent on Pell Grant funds.
2. State legislatures need to understand that appropriations for higher education are an investment, and not an expense. When states like South Carolina fail to provide adequate

financial support to their technical colleges they are potentially depriving many, particularly full-time students, the opportunity to attend a college at an affordable tuition level. The failure of South Carolina to adequately fund their technical colleges has forced these colleges to increase their tuition and fees to a point that the enrollment of every demographic subgroup was influenced by the amount charged. The data suggest that increasing tuition and fees plays a greater role in the enrollment of low median household income states than the more fortunate states. The cruel irony is that lower income states generally have fewer tax revenues and greater needs for competing social programs such as K-12 education, Medicaid, and prison systems. Yet, failure to adequately invest in higher education today may mean such states may be unable to properly compete in the new global economy of the future because they failed to invest in their number one resource, their people.

3. Despite having the lowest tuition and highest state FTE appropriations over the period examined, North Carolina's community college enrollment continues to be troubling. Of the three states examined North Carolina's recent enrollment trends have been declining among almost all demographic subgroups. While individual colleges continue to market programs within their service areas, there appears to be a need for a system wide effort to inform the public of the benefits of a postsecondary education and the affordability of community colleges within the state. At the system level, marketing efforts should be targeted to specific subgroups. North Carolina should also reexamine the idea of consolidating smaller colleges with declining enrollments in order to provide operational efficiencies and stronger recruitment efforts. North Carolina may also benefit by

exploring the idea of gradually transforming high enrollment colleges within the system to four-year institutions similar to the trend that is occurring in Florida and other states.

4. College administrators need to recognize that given the economic realities imposed upon them from their state legislatures it is now more important than ever to keep operating costs down in order to slow the growth of tuition and fees. Alternative sources of funding that will allow more need based scholarships to be available should be aggressively pursued. Explorations into more public-private partnerships need to be made, as well as new creative ways to continue to offer a high quality postsecondary education at an affordable price. As an example, some states have developed partnerships with their public school systems such as *Duel Enrollment* and *Early Colleges* where qualified high school students can begin to receive college level classes with the cost being shared by the local community college and the local public school system. Such systems create a win-win arrangement and more efficient use of state funding allocations.
5. It has been estimated that by the year 2050 there will be a considerable change in the racial makeup of the United States (USCB, 2014). There is expected to be a decrease in the proportion of the White population and increases in the Hispanic, Asian and Black population. It is therefore important that college administrators begin to develop a better understanding of the factors that impact the enrollment patterns of each racial subgroup and design the fiscal support to sustain college enrollment and completion.

Access to higher education is only part of the overall equation. Retention and graduation rates have become an increasing priority for the federal Department of Education as well as state legislatures, and more federal and state legislatures are challenging community college senior administrators to demonstrate improvement by tying federal and state funding to institutional

performance (Hermes, 2012). Performance outcomes rather than student access has now become the gauge by which the legislatures of several states fund their community colleges (Mullin & Honeyman, 2007). Therefore, college administrators need to start to take action today on improving their retention and graduation outcomes.

Recommendations for Future Research

As is often true in academic research, more questions sometime arise than are answered. While conducting this research the data indicated certain relationships and apparent main effects that sometimes appeared to be contradictory. Therefore, in order to continue to build on the existing body of knowledge I would suggest the following areas for further exploration:

1. Compare community college enrollment patterns of students from states with median household incomes above the national average to the enrollment patterns of students from states with median household income below the national average.
2. An investigation into the relationship between financial and economic factors and enrollment patterns in for-profit two-year institutions should be conducted to determine if the for-profit segment of higher education are being faced with similar challenges as the public sector.
3. A qualitative study should be conducted to better understand the financial and economic factors that influence the decisions of part-time community college students to enroll.
4. Investigate the relationship between the availability of government student loans and the enrollment of part-time verses full-time students in public two-year postsecondary institutions.
5. Perform a quantitative study to investigate the relationship between economic factors and enrollment in non-credit courses offered at community and technical colleges.

Limitations of the Study

This study contained several limitations. First, the study was limited to the enrollment data that were available for only three southeastern states. This was a limitation because the three states studies are not necessarily representative of community college enrollment issues nationwide. Second, the study exclusively used secondary data. One problem with secondary data is the lag time from the time of collection until the data is in a uniform format that can be published and made available. Therefore analysis using secondary data is often dated. This is a limitation because it is often difficult for college administrators to make future decisions based on past information, and often incomplete information at best. Third, since community colleges are government supported institutions it is almost impossible to negate the role that local politics and other local factors may have in influencing enrollment patterns in any given college, or among any given demographic subgroup of students. This is a limitation because it is possible that there may be some extenuating circumstances that influenced headcount enrollment but were not accounted for by the independent variables used in the analysis.

Conclusion

In conclusion, this study sought to add to the existing body of knowledge on the relationships between headcount enrollment in the North Carolina, South Carolina, and Virginia public two-year postsecondary systems and the independent variables of in-state tuition and fees, annual Pell Grant limits, state FTE appropriations, and county level local unemployment over a ten-year period from fall 2003 through fall 2012, a period that included a particularly challenging time in the recent economic history of the United States. The findings revealed some striking similarities among the states of North and South Carolina regarding the relationship between demographically segmented student headcount enrollments. The findings confirm that while in-state tuition and fees, Pell Grant

limits, and state FTE appropriations influenced the enrollment patterns of different demographic subgroups differently in North and South Carolina, only local unemployment had a measureable influence on the enrollment patterns of community college students in Virginia, a state with relatively lower unemployment rates and higher median household income.

Because of this study several important findings were discovered. Contrary to several prior research studies, during this particularly challenging period there was a negative relationship between local unemployment and headcount enrollment among many demographic subgroups. It was also discovered that during the period federal Pell Grants and state appropriations had a greater influence on the enrollment patterns of full-time students than on part-time students. Lastly, it was discovered that within the state of North Carolina, state FTE appropriations had a greater influence on the enrollment of Hispanic students than any other racial group.

In the final analysis, the large majority of the results indicated major differences among states with differing economic situations. Therefore, it can be concluded that in-state tuition, Pell Grant limits, and state FTE appropriations affected enrollment in two economically challenged states differently than in a state that was less economically challenged during the period. These differences suggest the need for further research, in additional states, to examine how financial and economic factors influence enrollment of public two-year postsecondary students. This study therefore provides a framework that can be used to analyze the relationships in other states on the potential impact that higher education financial factors, and the local economy, have on various demographic subgroups community college enrollment trends.

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APPENDIX A: INSTITUTIONAL REVIEW BOARD APPROVAL

EAST CAROLINA UNIVERSITY
University & Medical Center Institutional Review Board Office
4N-70 Brody Medical Sciences Building·
Mail Stop 682 600 Moye Boulevard ·
Greenville, NC 27834
Office 252-744-2914 · Fax 252-744-2284 · www.ecu.edu/irb

Not Human Subject Research Certification

From:	**Social/Behavioral IRB**
To:	**Devon Hall**
CC:	**Michael Poock**
Date:	**4/14/2014**
Re:	**UMCIRB 14-000701** **Social/Behavioral IRB**

On 4/14/14, the IRB Chairperson (or designee) reviewed your proposed research and determined that it does not meet the federal definitions of research involving human participants, as applied by East Carolina University.

Therefore, it is with this determination that you may proceed with your research activity and no further action will be required. However, if you should want to modify your research activity, you must submit notification to the IRB before amending or altering this research activity to ensure that the proposed changes do not require additional UMCIRB review.

The UMCIRB appreciates your dedication to the ethical conduct of research. It is your responsibility to ensure that this research is being conducted in accordance with University policies and procedures, the ethical principles set forth in the Belmont Report, and the ethical standards of your profession. If you have questions or require additional information, please feel free to contact the UMCIRB office at 252-744-2914.

The Chairperson (or designee) does not have a potential for conflict of interest on this study.

APPENDIX B: TUITION AND FEES BY COLLEGE: 2003-2012

	NC Tuition & Fees Adjusted to 2012 Dollars										
		2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
NC	Alamance Community College	1,436	1,506	1,521	1,474	1,521	1,465	1,744	1,832	2,113	2,160
NC	Asheville-Buncombe Technical Community Colleg	1,447	1,508	1,518	1,470	1,523	1,492	1,771	1,877	2,201	1,939
NC	Beaufort County Community College	1,452	1,512	1,561	1,512	1,559	1,501	1,781	1,931	2,243	2,272
NC	Bladen Community College	1,441	1,478	1,566	1,517	1,564	1,509	1,800	1,874	2,201	2,281
NC	Blue Ridge Community College	1,436	1,478	1,568	1,519	1,569	1,526	1,814	1,890	2,225	2,293
NC	Brunswick Community College	1,441	1,479	1,572	1,523	1,569	1,539	1,819	1,906	2,256	2,308
NC	Caldwell Community College & Technical Institute	1,457	1,517	1,524	1,476	1,524	1,492	1,772	1,868	2,207	2,274
NC	Cape Fear Community College	1,465	1,563	1,568	1,519	1,566	1,579	1,859	1,945	2,331	2,345
NC	Carteret Community College	1,432	1,552	1,546	1,498	1,561	1,548	1,783	1,870	2,186	2,271
NC	Catawba Valley Community College	1,431	1,478	1,527	1,479	1,526	1,479	1,786	1,892	2,229	2,381
NC	Central Carolina Commuity College	1,462	1,478	1,566	1,517	1,564	1,527	1,806	1,893	2,231	2,296
NC	Central Piedmont Community College	1,465	1,685	1,686	1,633	1,688	1,548	1,924	2,028	2,709	2,481
NC	Cleveland Community College	1,465	1,478	1,531	1,483	1,530	1,572	1,782	1,869	2,243	2,222
NC	Coastal Carolina Community College	1,455	1,478	1,521	1,474	1,521	1,465	1,744	1,832	2,113	2,238
NC	College of the Albemarle	1,460	1,478	1,568	1,519	1,566	1,508	1,809	1,907	2,258	1,998
NC	Craven Community College	1,452	1,750	1,593	1,543	1,566	1,519	1,836	1,923	2,288	1,772
NC	Davidson County Community College	1,442	1,480	1,571	1,522	1,569	1,521	1,830	1,916	2,317	1,786
NC	Durham Technical Community College	1,452	1,531	1,538	1,490	1,566	1,593	1,798	1,885	2,239	1,840
NC	Edgecombe Community College	1,447	1,478	1,571	1,522	1,568	1,513	1,789	1,876	2,199	2,280
NC	Fayetteville Technical Community College	1,452	1,478	1,556	1,508	1,555	1,561	1,777	1,895	2,235	2,298
NC	Forsyth Technical Community College	1,440	1,643	1,562	1,514	1,557	1,508	1,779	1,866	2,170	1,728
NC	Gaston College	1,447	1,483	1,556	1,508	1,683	1,621	1,901	1,986	2,301	2,480
NC	Guilford Technical Community College	1,465	1,569	1,574	1,525	1,640	1,606	1,897	1,983	2,431	2,382
NC	Halifax Community College	1,442	1,575	1,580	1,531	1,597	1,559	1,839	1,929	2,301	2,325
NC	Haywood Community College	1,465	1,478	1,518	1,470	1,528	1,541	1,820	1,907	2,268	2,234
NC	Isothermal Community College	1,452	1,478	1,519	1,471	1,530	1,474	1,753	1,840	2,129	2,262
NC	James Sprunt Community College	1,465	1,563	1,568	1,519	1,566	1,508	1,787	1,874	2,194	2,278
NC	Johnston Community College	1,465	1,563	1,531	1,483	1,530	1,537	1,816	1,903	2,250	2,305
NC	Lenoir Community College	1,465	1,569	1,574	1,525	1,571	1,543	1,823	1,688	2,295	2,327
NC	Martin Community College	1,465	1,524	1,531	1,483	1,530	1,478	1,753	1,840	2,129	1,394
NC	Mayland Community College	1,457	1,494	1,521	1,474	1,530	1,521	1,815	1,902	2,286	2,337
NC	McDowell Technical Community College	1,436	1,596	1,556	1,508	1,544	1,487	1,785	1,872	2,190	1,716
NC	Mitchell Community College	1,455	1,553	1,559	1,510	1,566	1,508	1,787	1,874	2,201	2,281
NC	Montgomery Community College	1,441	1,614	1,552	1,503	1,560	1,503	1,782	1,869	2,205	2,283
NC	Nash Community College	1,457	1,517	1,561	1,512	1,595	1,570	1,849	1,912	2,288	2,328
NC	Pamlico Community College	1,436	1,478	1,504	1,457	1,516	1,471	1,750	1,837	2,125	2,246
NC	Piedmont Community College	1,455	1,518	1,525	1,477	1,525	1,479	1,764	1,852	2,241	2,301
NC	Pitt Community College	1,457	1,478	1,575	1,526	1,579	1,525	1,804	1,891	2,197	1,979
NC	Randolph Community College	1,457	1,556	1,561	1,512	1,559	1,570	1,783	1,870	2,203	1,730
NC	Richmond Community College	1,462	1,527	1,531	1,483	1,530	1,474	1,774	1,862	2,170	2,272
NC	Roanoke-Chowan Community College	1,460	1,563	1,568	1,519	1,566	1,562	1,820	1,907	2,258	2,309
NC	Robeson Community College	1,452	1,551	1,556	1,508	1,555	1,497	1,777	1,895	2,207	2,132
NC	Rockingham Community College	1,465	1,682	1,579	1,529	1,591	1,681	1,836	1,923	2,288	1,772
NC	Rowan-Cabarrus Community College	1,457	1,478	1,524	1,476	1,559	1,501	1,821	1,918	2,270	2,340
NC	Sampson Community College	1,447	1,561	1,567	1,518	1,565	1,515	1,794	1,849	2,176	2,285
NC	Sandhills Community College	1,452	1,513	1,568	1,519	1,566	1,537	1,816	1,903	2,250	2,322
NC	South Piedmont Community College	1,457	1,545	1,551	1,502	1,572	1,559	1,860	1,946	2,354	2,356
NC	Southeastern Community College	1,442	1,527	1,558	1,509	1,565	1,535	1,818	1,905	2,254	2,416
NC	Southwestern Community College	1,457	1,533	1,562	1,514	1,560	1,468	1,782	1,869	2,248	2,016
NC	Stanly Community College	1,465	1,587	1,592	1,542	1,592	1,561	1,841	1,927	2,297	2,328
NC	Surry Community College	1,457	1,556	1,561	1,512	1,559	1,509	1,823	1,911	2,272	2,419
NC	Tri-County Community College	1,437	1,548	1,555	1,507	1,554	1,496	1,775	1,863	2,172	2,267
NC	Vance-Granville Community College	1,465	1,525	1,531	1,483	1,557	1,519	1,804	1,904	2,252	1,766
NC	Wake Technical Community College	1,432	1,512	1,519	1,471	1,557	1,521	1,800	1,887	2,219	2,380
NC	Wayne Community College	1,457	1,702	1,524	1,476	1,550	1,501	1,789	1,876	2,239	2,300
NC	Western Piedmont Community College	1,447	1,511	1,518	1,470	1,518	1,474	1,741	1,924	2,107	2,235
NC	Wilkes Community College	1,460	1,547	1,553	1,504	1,577	1,549	1,840	1,926	2,297	2,328
NC	Wilson Community College	1,460	1,524	1,531	1,483	1,535	1,501	1,805	1,905	2,266	2,313
	Average	1,453	1,537	1,553	1,504	1,560	1,525	1,804	1,891	2,242	2,193

NC	Pamlico Community College	1,436	1,478	1,504	1,457	1,516	1,471	1,750	1,837	2,125	2,246
NC	Piedmont Community College	1,455	1,518	1,525	1,477	1,525	1,479	1,764	1,852	2,241	2,301
NC	Pitt Community College	1,457	1,478	1,575	1,526	1,579	1,525	1,804	1,891	2,197	1,979
NC	Randolph Community College	1,457	1,556	1,561	1,512	1,559	1,570	1,783	1,870	2,203	1,730
NC	Richmond Community College	1,462	1,527	1,531	1,483	1,530	1,474	1,774	1,862	2,170	2,272
NC	Roanoke-Chowan Community College	1,460	1,563	1,568	1,519	1,566	1,562	1,820	1,907	2,258	2,309
NC	Robeson Community College	1,452	1,551	1,556	1,508	1,555	1,497	1,777	1,895	2,207	2,132
NC	Rockingham Community College	1,465	1,682	1,579	1,529	1,591	1,681	1,836	1,923	2,288	1,772
NC	Rowan-Cabarrus Community College	1,457	1,478	1,524	1,476	1,559	1,501	1,821	1,918	2,270	2,340
NC	Sampson Community College	1,447	1,561	1,567	1,518	1,565	1,515	1,794	1,849	2,176	2,285
NC	Sandhills Community College	1,452	1,513	1,568	1,519	1,566	1,537	1,816	1,903	2,250	2,322
NC	South Piedmont Community College	1,457	1,545	1,551	1,502	1,572	1,559	1,860	1,946	2,354	2,356
NC	Southeastern Community College	1,442	1,527	1,558	1,509	1,565	1,535	1,818	1,905	2,254	2,416
NC	Southwestern Community College	1,457	1,533	1,562	1,514	1,560	1,468	1,782	1,869	2,248	2,016
NC	Stanly Community College	1,465	1,587	1,592	1,542	1,592	1,561	1,841	1,927	2,297	2,328
NC	Surry Community College	1,457	1,556	1,561	1,512	1,559	1,509	1,823	1,911	2,272	2,419
NC	Tri-County Community College	1,437	1,548	1,555	1,507	1,554	1,496	1,775	1,863	2,172	2,267
NC	Vance-Granville Community College	1,465	1,525	1,531	1,483	1,557	1,519	1,804	1,904	2,252	1,766
NC	Wake Technical Community College	1,432	1,512	1,519	1,471	1,557	1,521	1,800	1,887	2,219	2,380
NC	Wayne Community College	1,457	1,702	1,524	1,476	1,550	1,501	1,789	1,876	2,239	2,300
NC	Western Piedmont Community College	1,447	1,511	1,518	1,470	1,518	1,474	1,741	1,924	2,107	2,235
NC	Wilkes Community College	1,460	1,547	1,553	1,504	1,577	1,549	1,840	1,926	2,297	2,328
NC	Wilson Community College	1,460	1,524	1,531	1,483	1,535	1,501	1,805	1,905	2,266	2,313
	Average	1,453	1,537	1,553	1,504	1,560	1,525	1,804	1,891	2,242	2,193

	SC CC Tution & Fees adjusted to 2012 Dollars										
		03-04	04-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12	12-13
SC	Aiken Technical College	3,244	3,447	3,412	3,633	3,652	3,739	3,880	3,902	3,799	3,866
SC	Central Carolina Technical College	2,932	3,039	3,174	3,303	3,233	3,220	3,540	3,559	3,548	3,584
SC	Northeastern Technical College	2,927	2,851	2,970	3,013	3,302	3,487	3,577	3,519	3,509	3,534
SC	Denmark Technical College	2,930	2,769	2,796	2,594	2,522	2,536	2,667	2,727	2,552	2,568
SC	Florence-Darlington Technical College	2,957	3,629	3,569	3,501	3,532	3,402	3,534	3,713	3,734	3,766
SC	Greenville Technical College	3,244	3,525	3,527	3,633	3,643	3,621	3,737	3,807	3,826	3,866
SC	Horry-Georgetown Technical College	2,987	3,257	3,174	3,353	3,448	3,406	3,431	3,588	3,603	3,530
SC	Midlands Technical College	3,539	3,534	3,532	3,530	3,592	3,583	3,861	3,875	3,783	3,788
SC	Orangeburg-Calhoun Technical College	3,115	3,209	3,104	3,225	3,136	3,250	3,444	3,616	3,628	3,650
SC	Piedmont Technical College	3,302	3,330	3,292	3,366	3,461	3,280	3,568	3,727	3,646	3,714
SC	Spartanburg Technical College	3,319	3,410	3,412	3,524	3,537	3,534	3,675	3,765	3,817	3,820
SC	Technical College of the Low Country	3,244	3,525	3,586	3,474	3,488	3,487	3,619	3,744	3,752	3,772
SC	Tri-County Technical College	3,057	3,094	3,104	3,253	3,295	3,263	3,390	3,538	3,644	3,648
SC	Trident Technical College	3,052	3,267	3,532	3,546	3,566	3,551	3,692	3,717	3,674	3,712
SC	Willamsburg Technical College	2,635	3,245	3,165	3,223	3,134	3,137	3,255	3,437	3,509	3,540
SC	York Technical College	3,414	3,508	3,569	3,558	3,459	3,459	3,587	3,681	3,703	3,712
	Average	3,119	3,290	3,307	3,358	3,375	3,372	3,529	3,620	3,608	3,629

	VA CC Tuition and Fees Adjusted to 2012 Dollars										
		2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
VA	Blue Ridge Community College	2,350	2,438	2,509	2,584	2,513	2,756	3,070	3,459	3,644	3,735
VA	Central Virginia Community College	2,350	2,438	2,509	2,584	2,513	2,756	3,070	3,459	3,644	3,735
VA	D.S. Lancaster Community College	2,350	2,438	2,509	2,584	2,513	2,756	3,070	3,459	3,644	3,735
VA	Danville Community College	2,350	2,438	2,509	2,584	2,513	2,756	3,070	3,459	3,644	3,735
VA	Eastern Shore Community College	2,350	2,438	2,509	2,584	2,513	2,756	3,070	3,459	3,644	3,735
VA	Germanna Community College	2,350	2,438	2,509	2,584	2,513	2,756	3,070	3,459	3,644	3,735
VA	J.S. Reynolds Community College	2,350	2,438	2,509	2,584	2,513	2,756	3,070	3,459	3,644	3,735
VA	John Tyler Community College	2,350	2,438	2,509	2,584	2,513	2,756	3,070	3,459	3,644	3,735
VA	Lord Fairfax Community College	2,350	2,438	2,509	2,584	2,513	2,756	3,070	3,459	3,644	3,735
VA	Mountain Empire Community College	2,350	2,438	2,509	2,584	2,513	2,756	3,070	3,459	3,644	3,735
VA	New River Community College	2,350	2,438	2,509	2,584	2,513	2,756	3,070	3,459	3,644	3,735
VA	Northern Virginia Community College	2,350	2,438	2,509	2,584	2,513	2,756	3,070	3,459	3,644	3,735
VA	Patrick Henry Community College	2,350	2,438	2,509	2,584	2,513	2,756	3,070	3,459	3,644	3,735
VA	Paul D. Camp Community College	2,350	2,438	2,509	2,584	2,513	2,756	3,070	3,459	3,644	3,735
VA	Piedmont Virginia Community College	2,350	2,438	2,509	2,584	2,513	2,756	3,070	3,459	3,644	3,735
VA	Rappahannock Community College	2,350	2,438	2,509	2,584	2,513	2,756	3,070	3,459	3,644	3,735
VA	Southside Virginia Community College	2,350	2,438	2,509	2,584	2,513	3,250	3,070	3,459	3,644	3,735
VA	Southwest Virginia Community College	2,350	2,438	2,509	2,584	2,513	2,756	3,070	3,459	3,644	3,735
VA	Thomas Nelson Community College	2,350	2,438	2,509	2,584	2,513	2,756	3,070	3,459	3,644	3,735
VA	Tidewater Community College	2,350	2,438	2,509	2,584	2,513	2,756	3,070	3,459	3,644	3,735
VA	Virginia Highlands Community College	2,350	2,438	2,509	2,584	2,513	2,756	3,070	3,459	3,644	3,735
VA	Virginia Western Community College	2,350	2,438	2,509	2,584	2,513	2,756	3,070	3,459	3,644	3,735
VA	Wytheville Community College	2,350	2,438	2,509	2,584	2,513	2,756	3,070	3,459	3,644	3,735
	Average	2,350	2,438	2,509	2,584	2,513	2,777	3,070	3,459	3,644	3,735

APPENDIX C: COMMUNITY COLLEGE SERVICE AREA

LOCAL UNEMPLOYMENT RATE

North Carolina Community College Service Area by County

County Name	2010 Population	Community College	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
			County Average Annual Unemployment Rate									
Alamance County, NC	151,131	Alamance Community College	7.2	6.3	6.0	5.5	5.1	6.6	11.5	11.6	10.3	9.4
Alexander County, NC	37,198	Catawba Valley Community College	7.1	6.0	5.4	4.8	5.3	7.2	13.6	13.1	11.1	10.1
Alleghany County, NC	11,155	Wilkes Community College	9.3	6.3	5.6	5.0	5.2	7.7	11.6	11.9	12.1	10.6
Anson County, NC	26,948	South Piedmont Community College	9.6	8.6	7.5	7.5	7.4	9.1	14.6	13.9	12.2	11.9
Ashe County, NC	27,281	Wilkes Community College	6.8	5.4	5.8	5.6	5.1	6.9	11.8	12.8	11.7	11.5
Avery County, NC	17,797	Mayland Community College	5.9	5.1	5.4	4.9	4.8	5.9	9.1	11.1	11.2	11.2
Beaufort County, NC	47,759	Beaufort County Community College	8.6	6.9	6.4	5.7	5.7	7.3	11.2	11.8	11.0	10.9
Bertie County, NC	21,282	Martin Community College	7.4	7.7	7.1	6.5	5.7	7.8	10.7	12.3	12.3	12.1
Bladen County, NC	35,190	Bladen Community College	8.5	7.1	7.4	6.4	6.2	7.9	12.0	12.8	12.7	12.4
Brunswick County, NC	107,431	Brunswick Community College	6.4	5.4	5.0	4.5	4.6	6.5	10.5	11.6	11.3	10.6
Buncombe County, NC	238,318	Ashville-Buncombe Technical Community College	4.8	4.3	4.4	3.7	3.6	4.8	8.2	8.6	8.1	7.5
Burke County, NC	90,912	Western Piedmont Community College	7.8	6.7	6.3	5.7	6.0	8.3	13.9	13.6	12.4	10.8
Cabarrus County, NC	178,011	Rowan-Cabarrus Community College	7.3	6.2	4.6	4.1	4.5	5.9	10.8	11.2	9.9	8.8
Caldwell County, NC	83,029	Caldwell Community and Technical Institute	8.5	7.5	8.2	7.5	7.1	8.0	14.8	14.4	12.9	11.4
Camden County, NC	9,980	College of the Albemarle	4.1	3.9	4.1	4.3	4.0	5.5	8.2	8.1	8.3	7.8
Carteret County, NC	66,469	Carteret Community College	5.3	4.7	4.6	4.1	4.1	5.5	8.5	9.2	9.1	8.6
Caswell County, NC	23,719	Piedmont Community College	8.8	7.9	7.8	7.1	6.7	8.3	12.3	12.1	10.6	9.7
Catawba County, NC	154,358	Catawba Valley Community College	8.0	6.5	6.2	5.4	5.6	7.3	13.7	13.7	12.3	11.0
Chatham County, NC	63,505	Central Carolina Community College	5.2	4.0	4.0	3.9	3.8	5.1	7.8	7.8	7.7	7.4
Cherokee County, NC	27,444	Tri-County Community College	8.2	6.0	6.0	5.4	6.3	9.4	15.0	14.7	13.4	12.8
Chowan County, NC	14,793	Roanoke-Chowan Community College	5.3	4.6	4.9	5.0	6.2	8.9	11.6	11.3	11.3	10.4
Clay County, NC	10,587	Tri-County Community College	4.9	4.2	4.2	3.9	4.1	6.6	11.4	11.3	10.3	9.6
Cleveland County, NC	98,078	Cleveland Community College	8.7	7.5	7.0	6.3	6.0	8.4	14.8	13.8	11.4	10.4
Columbus County, NC	58,098	Southeastern Community College	7.9	6.3	6.4	5.6	5.5	7.9	12.6	13.2	13.3	12.6
Craven County, NC	103,505	Craven Community College	5.7	4.8	4.7	4.4	4.3	6.1	10.2	10.8	10.7	9.7
Cumberland County, NC	319,431	Fayetteville Technical Community College	6.3	5.3	5.4	5.4	5.4	6.3	8.8	9.6	10.1	10.3
Currituck County, NC	23,547	College of the Albemarle	3.2	2.9	3.1	3.4	3.2	4.5	6.7	6.9	6.7	6.9
Dare County, NC	33,920	Beaufort County Community College	5.1	4.7	4.7	4.5	4.9	6.5	9.8	10.8	11.6	11.3
Davidson County, NC	162,878	Davidson Community College	7.2	6.5	6.0	5.9	5.6	7.3	12.6	12.7	11.3	10.2
Davie County, NC	41,240	Davidson Community College	6.1	5.0	4.2	4.2	4.9	6.2	11.2	10.8	10.1	8.7
Duplin County, NC	58,505	James Sprunt Community College	6.8	5.7	6.1	5.2	4.5	6.0	9.2	9.5	9.7	9.7
Durham County, NC	267,587	Durham Technical Community College	5.6	4.5	4.4	3.9	3.8	4.9	7.6	8.4	8.2	7.6
Edgecombe County, NC	56,552	Edgecombe Community College	9.9	8.6	8.4	8.0	7.6	10.4	15.6	15.5	15.6	14.7
Forsyth County, NC	350,670	Forsyth Technical Community College	5.6	5.0	4.7	4.3	4.4	5.8	9.3	10.0	9.8	9.0
Franklin County, NC	60,619	Vance-Granville Community College	6.3	5.2	4.8	4.2	4.5	6.4	10.1	10.4	10.3	9.0
Gaston County, NC	206,086	Gaston College	7.3	6.4	6.1	5.5	5.7	7.8	13.5	12.6	11.4	10.6
Gates County, NC	12,197	College of the Albemarle	4.2	4.0	4.1	4.0	4.3	5.5	7.3	7.9	7.5	7.3
Graham County, NC	8,861	Tri-County Community College	8.4	7.9	6.9	6.4	7.2	10.9	16.8	16.1	16.6	16.8
Granville County, NC	59,916	Vance-Granville Community College	7.8	6.8	6.1	5.2	5.2	6.9	10.3	11.0	10.1	9.6
Greene County, NC	21,362	Lenoir Community College	6.7	6.2	6.2	5.5	5.5	6.8	10.3	10.6	10.1	9.5
Guilford County, NC	488,406	Guidord Technical Community College	6.2	5.4	5.1	4.6	4.8	6.2	10.5	11.1	10.5	9.8
Halifax County, NC	54,691	Halifax Community College	8.6	7.7	7.2	6.5	6.5	9.2	13.3	13.9	13.7	13.2
Harnett County, NC	114,678	Central Carolina Community College	6.6	5.4	5.3	4.9	4.9	6.8	11.2	11.4	11.4	10.8
Haywood County, NC	59,036	Haywood Community College	5.3	4.6	4.5	4.0	4.1	5.7	9.4	9.9	9.8	8.7
Henderson County, NC	106,740	Blue Ridge Community College	4.9	4.2	4.2	3.6	3.5	4.9	8.7	8.6	8.1	7.3
Hertford County, NC	24,669	Roanoke-Chowan Community College	6.1	5.9	5.9	5.6	5.3	6.8	9.5	10.3	10.7	10.4
Hoke County, NC	46,952	Sandhills Community College	7.5	5.9	5.8	5.3	5.1	5.9	7.9	9.0	9.5	9.4
Hyde County, NC	5,810	Beaufort County Community College	7.5	6.4	5.9	5.3	5.7	7.1	8.5	8.7	10.3	10.9
Iredell County, NC	159,437	Mitchell Community College	6.5	5.4	5.0	4.4	4.6	6.6	12.5	12.6	11.0	9.7
Jackson County, NC	40,271	Southwestern Community College	4.9	4.3	4.1	3.6	3.7	5.2	8.7	9.5	9.4	9.2
Johnston County, NC	168,878	Johnston Community College	5.4	4.5	4.5	4.0	4.2	5.8	9.7	10.0	9.5	8.4
Jones County, NC	10,153	Lenoir Community College	5.6	4.8	4.9	4.6	4.5	6.6	10.6	11.4	10.7	10.5
Lee County, NC	57,866	Central Carolina Community College	7.2	5.8	5.6	5.4	5.7	7.7	13.9	13.1	12.6	11.8
Lenoir County, NC	59,495	Lenoir Community College	7.5	5.9	5.8	5.6	5.3	7.4	11.6	11.7	10.7	10.0
Lincoln County, NC	78,265	Gaston College	7.0	6.0	5.6	5.0	5.0	7.4	13.6	13.0	11.5	10.1
McDowell County, NC	44,996	McDowell Community College	7.3	6.5	7.1	6.1	5.6	8.4	15.0	13.5	12.5	11.1
Macon County, NC	33,922	Southwestern Community College	5.0	4.7	4.7	4.4	4.1	6.1	10.8	11.3	11.0	10.7
Madison County, NC	20,764	Ashville-Buncombe Technical Community College	5.2	5.2	5.1	4.2	4.0	5.8	9.2	9.8	9.7	9.2
Martin County, NC	24,505	Martin Community College	7.2	6.7	5.9	5.5	5.4	6.6	10.5	11.7	11.3	11.3
Mecklenburg County, NC	919,628	Central Piedmont Community College	5.8	5.1	5.0	4.5	4.6	6.2	10.4	11.1	10.4	9.4
Mitchell County, NC	15,579	Mayland Community College	7.9	6.9	7.4	6.2	7.2	8.3	12.2	12.0	11.3	11.8
Montgomery County, NC	27,798	Montgomery Community College	8.9	7.2	6.8	6.7	6.4	8.4	13.2	12.8	12.2	11.3
Moore County, NC	88,247	Sandhills Community College	6.5	5.6	5.1	4.8	4.6	6.3	9.9	9.9	9.2	8.8
Nash County, NC	95,840	Nash Community College	7.2	6.4	6.0	5.5	5.4	7.6	11.8	12.9	12.7	12.0
New Hanover County, NC	202,667	Cape Fear Community College	5.7	4.5	4.1	3.7	3.8	5.3	9.1	9.8	9.9	9.2
Northampton County, NC	22,099	Roanoke-Chowan Community College	8.0	7.1	6.7	5.7	6.0	8.0	11.1	11.8	11.8	11.0
Onslow County, NC	177,772	Coastal Carolina Community College	6.5	5.4	5.3	4.5	4.5	5.8	8.3	8.4	8.8	8.7
Orange County, NC	133,801	Durham Technical Community College	4.3	3.8	3.8	3.3	3.3	4.1	6.3	6.6	6.6	6.2
Pamlico County, NC	13,144	Pamlico Community College	5.5	4.6	4.5	4.6	4.3	6.1	9.8	10.3	10.1	9.7
Pasquotank County, NC	40,661	College of the Albemarle	5.2	4.6	4.8	5.0	5.1	7.1	9.7	10.4	10.5	10.6
Pender County, NC	52,217	Cape Fear Community College	6.7	4.9	4.8	4.2	4.3	6.2	10.7	11.3	11.8	10.8
Perquimans County, NC	13,453	College of the Albemarle	5.1	4.7	4.8	5.3	5.3	6.9	10.4	9.7	10.1	9.8
Person County, NC	39,464	Piedmont Community College	7.7	6.6	6.4	6.2	6.8	7.4	11.1	11.2	10.2	9.7
Pitt County, NC	168,148	Pitt Community College	6.5	5.7	5.8	5.2	5.1	6.7	9.9	10.4	10.2	9.3
Polk County, NC	20,510	Isothermal Community College	4.8	4.4	4.2	3.5	3.5	5.0	8.9	9.2	8.2	7.6
Randolph County, NC	141,752	Randolph Community College	6.2	5.1	4.8	4.6	4.8	6.5	11.0	11.1	10.4	9.6
Richmond County, NC	46,639	Richmond Community College	9.9	8.1	7.7	7.6	7.5	9.5	13.7	13.9	13.4	12.8
Robeson County, NC	134,168	Robeson Community College	8.6	7.2	6.8	6.2	6.2	8.2	11.7	13.0	13.5	13.0
Rockingham County, NC	93,643	Rockingham Community College	8.9	7.4	6.6	5.9	6.2	7.7	12.4	13.1	12.0	11.3
Rowan County, NC	138,428	Rowan-Cabarrus Community College	7.6	7.3	5.4	5.0	6.1	7.0	12.5	12.9	11.2	9.9
Rutherford County, NC	67,810	Isothermal Community College	8.6	9.1	8.7	7.8	6.5	8.3	16.0	16.5	14.3	13.3
Sampson County, NC	63,431	Sampson Community College	5.8	4.9	4.9	4.6	4.0	5.5	8.6	8.9	8.7	8.6
Scotland County, NC	36,157	Richmond Community College	11.5	10.8	9.7	8.9	10.1	11.3	16.5	17.0	17.1	16.9
Stanly County, NC	60,585	Stanley Community College	7.3	6.2	5.4	5.1	4.9	6.7	11.8	12.5	11.1	9.6
Stokes County, NC	47,401	Forsyth Technical Community College	6.1	5.3	5.0	4.3	4.4	6.0	10.4	10.6	9.6	8.9
Surry County, NC	73,673	Surry Community College	7.7	6.0	5.9	5.1	5.4	8.0	12.2	12.2	10.9	10.1
Swain County, NC	13,981	Southwestern Community College	8.0	7.3	6.9	5.6	6.4	8.0	11.7	13.9	14.4	13.8
Transylvania County, NC	33,090	Blue Ridge Community College	8.8	7.0	5.3	4.2	3.7	5.3	9.1	10.4	10.0	9.6
Tyrrell County, NC	4,407	Beaufort County Community College	8.9	6.9	7.3	5.8	5.8	7.2	10.6	11.1	10.5	9.7
Union County, NC	201,292	South Piedmont Community College	5.2	4.8	4.5	4.0	4.0	5.6	9.8	10.0	9.1	8.2
Vance County, NC	45,422	Vance-Granville Community College	10.8	9.7	8.6	7.5	6.7	9.1	13.4	13.6	14.1	13.2
Wake County, NC	900,993	Wake Technical Community College	5.3	4.4	4.1	3.6	3.5	4.7	8.1	8.6	8.2	7.5
Warren County, NC	20,972	Vance-Granville Community College	8.3	7.3	7.1	6.4	6.3	8.6	12.9	13.3	13.3	12.3
Washington County, NC	13,228	Beaufort County Community College	8.1	7.0	6.7	6.7	6.5	7.9	11.6	11.2	13.1	12.2
Watauga County, NC	51,079	Caldwell Community and Technical Institute	4.4	4.1	4.0	3.7	3.4	4.9	7.8	8.7	8.7	8.3
Wayne County, NC	122,623	Wayne Community College	6.2	5.3	5.2	4.7	4.6	5.9	8.6	9.3	9.2	8.9
Wilkes County, NC	69,340	Wilkes Community College	7.4	6.1	5.7	5.4	5.5	7.7	12.5	13.8	12.0	10.8
Wilson County, NC	81,234	Wilson Community College	8.2	8.2	8.0	7.1	6.3	7.9	12.4	13.1	13.1	12.5
Yadkin County, NC	38,406	Surry Community College	6.2	5.3	4.6	4.3	4.3	5.8	10.2	10.2	9.7	8.9
Yancey County, NC	17,818	Mayland Community College	7.1	6.5	7.2	5.6	5.9	7.8	11.7	12.0	11.5	11.1

Hertford County, NC	24,669	Roanoke-Chowan Community College	6.1	5.9	5.9	5.6	5.3	6.8	9.5	10.3	10.7	10.4
Hoke County, NC	46,952	Sandhills Community College	7.5	5.9	5.8	5.3	5.1	5.9	7.9	9.0	9.5	9.4
Hyde County, NC	5,810	Beaufort County Community College	7.5	6.4	5.9	5.3	5.7	7.1	8.5	8.7	10.3	10.9
Iredell County, NC	159,437	Mitchell Community College	6.5	5.4	5.0	4.4	4.6	6.6	12.5	12.6	11.0	9.7
Jackson County, NC	40,271	Southwestern Community College	4.9	4.3	4.1	3.6	3.7	5.2	8.7	9.5	9.4	9.2
Johnston County, NC	168,878	Johnston Community College	5.4	4.5	4.5	4.0	4.2	5.8	9.7	10.0	9.5	8.4
Jones County, NC	10,153	Lenoir Community College	5.6	4.8	4.9	4.6	4.5	6.6	10.6	11.4	10.7	10.5
Lee County, NC	57,866	Central Carolina Community College	7.2	5.8	5.6	5.4	5.7	7.7	13.9	13.1	12.6	11.8
Lenoir County, NC	59,495	Lenoir Community College	7.5	5.9	5.8	5.6	5.3	7.4	11.6	11.7	10.7	10.0
Lincoln County, NC	78,265	Gaston College	7.0	6.0	5.6	5.0	5.0	7.4	13.6	13.0	11.5	10.1
McDowell County, NC	44,996	McDowell Community College	7.3	6.5	7.1	6.1	5.6	8.4	15.0	13.5	12.5	11.1
Macon County, NC	33,922	Southwestern Community College	5.0	4.7	4.7	4.4	4.1	6.1	10.8	11.3	11.0	10.7
Madison County, NC	20,764	Ashville-Buncombe Technical Community College	5.2	5.2	5.1	4.2	4.0	5.8	9.2	9.8	9.7	9.2
Martin County, NC	24,505	Martin Community College	7.2	6.7	5.9	5.5	5.4	6.6	10.5	11.7	11.3	11.3
Mecklenburg County, NC	919,628	Central Piedmont Community College	5.8	5.1	5.0	4.5	4.6	6.2	10.4	11.1	10.4	9.4
Mitchell County, NC	15,579	Mayland Community College	7.9	6.9	7.4	6.2	7.2	8.3	12.2	12.0	11.3	11.8
Montgomery County, NC	27,798	Montgomery Community College	8.9	7.2	6.8	6.7	6.4	8.4	13.2	12.8	12.2	11.3
Moore County, NC	88,247	Sandhills Community College	6.5	5.6	5.1	4.8	4.6	6.3	9.9	9.9	9.2	8.8
Nash County, NC	95,840	Nash Community College	7.2	6.4	6.0	5.5	5.4	7.6	11.8	12.9	12.7	12.0
New Hanover County, NC	202,667	Cape Fear Community College	5.7	4.5	4.1	3.7	3.8	5.3	9.1	9.8	9.9	9.2
Northampton County, NC	22,099	Roanoke-Chowan Community College	8.0	7.1	6.7	5.7	6.0	8.0	11.1	11.8	11.8	11.0
Onslow County, NC	177,772	Coastal Carolina Community College	6.5	5.4	5.3	4.5	4.5	5.8	8.3	8.4	8.8	8.7
Orange County, NC	133,801	Durham Technical Community College	4.3	3.8	3.8	3.3	3.3	4.1	6.3	6.6	6.6	6.2
Pamlico County, NC	13,144	Pamlico Community College	5.5	4.6	4.5	4.6	4.3	6.1	9.8	10.3	10.1	9.7
Pasquotank County, NC	40,661	College of the Albemarle	5.2	4.6	4.8	5.0	5.1	7.1	9.7	10.4	10.5	10.6
Pender County, NC	52,217	Cape Fear Community College	6.7	4.9	4.8	4.2	4.3	6.2	10.7	11.3	11.8	10.8
Perquimans County, NC	13,453	College of the Albemarle	5.1	4.7	4.8	5.3	5.3	6.9	10.4	9.7	10.1	9.8
Person County, NC	39,464	Piedmont Community College	7.7	6.6	6.4	6.2	6.8	7.4	11.1	11.2	10.2	9.7
Pitt County, NC	168,148	Pitt Community College	6.5	5.7	5.8	5.2	5.1	6.7	9.9	10.4	10.2	9.3
Polk County, NC	20,510	Isothermal Community College	4.8	4.4	4.2	3.5	3.5	5.0	8.9	9.2	8.2	7.6
Randolph County, NC	141,752	Randolph Community College	6.2	5.1	4.8	4.6	4.8	6.5	11.0	11.1	10.4	9.6
Richmond County, NC	46,639	Richmond Community College	9.9	8.1	7.7	7.6	7.5	9.5	13.7	13.9	13.4	12.8
Robeson County, NC	134,168	Robeson Community College	8.6	7.2	6.8	6.2	6.2	8.2	11.7	13.0	13.5	13.0
Rockingham County, NC	93,643	Rockingham Community College	8.9	7.4	6.6	5.9	6.2	7.7	12.4	13.1	12.0	11.3
Rowan County, NC	138,428	Rowan-Cabarrus Community College	7.6	7.3	5.4	5.0	6.1	7.0	12.5	12.9	11.2	9.9
Rutherford County, NC	67,810	Isothermal Community College	8.6	9.1	8.7	7.8	6.5	8.3	16.0	16.5	14.3	13.3
Sampson County, NC	63,431	Sampson Community College	5.8	4.9	4.9	4.6	4.0	5.5	8.6	8.9	8.7	8.6
Scotland County, NC	36,157	Richmond Community College	11.5	10.8	9.7	8.9	10.1	11.3	16.5	17.0	17.1	16.9
Stanly County, NC	60,585	Stanley Community College	7.3	6.2	5.4	5.1	4.9	6.7	11.8	12.5	11.1	9.6
Stokes County, NC	47,401	Forsyth Technical Community College	6.1	5.3	5.0	4.3	4.4	6.0	10.4	10.6	9.6	8.9
Surry County, NC	73,673	Surry Community College	7.7	6.0	5.9	5.1	5.4	8.0	12.2	12.2	10.9	10.1
Swain County, NC	13,981	Southwestern Community College	8.0	7.3	6.9	5.6	6.4	8.0	11.7	13.9	14.4	13.8
Transylvania County, NC	33,090	Blue Ridge Community College	8.8	7.0	5.3	4.2	3.7	5.3	9.1	10.4	10.0	9.6
Tyrrell County, NC	4,407	Beaufort County Community College	8.9	6.9	7.3	5.8	5.8	7.2	10.6	11.1	10.5	9.7
Union County, NC	201,292	South Piedmont Community College	5.2	4.8	4.5	4.0	4.0	5.6	9.8	10.0	9.1	8.2
Vance County, NC	45,422	Vance-Granville Community College	10.8	9.7	8.6	7.5	6.7	9.1	13.4	13.6	14.1	13.2
Wake County, NC	900,993	Wake Technical Community College	5.3	4.4	4.1	3.6	3.5	4.7	8.1	8.6	8.2	7.5
Warren County, NC	20,972	Vance-Granville Community College	8.3	7.3	7.1	6.4	6.3	8.6	12.9	13.3	13.3	12.3
Washington County, NC	13,228	Beaufort County Community College	8.1	7.0	6.7	6.7	6.5	7.9	11.6	11.2	13.1	12.2
Watauga County, NC	51,079	Caldwell Community and Technical Institute	4.4	4.1	4.0	3.7	3.4	4.9	7.8	8.7	8.7	8.3
Wayne County, NC	122,623	Wayne Community College	6.2	5.3	5.2	4.7	4.6	5.9	8.6	9.3	9.2	8.9
Wilkes County, NC	69,340	Wilkes Community College	7.4	6.1	5.7	5.4	5.5	7.7	12.5	13.8	12.0	10.8
Wilson County, NC	81,234	Wilson Community College	8.2	8.2	8.0	7.1	6.3	7.9	12.4	13.1	13.1	12.5
Yadkin County, NC	38,406	Surry Community College	6.2	5.3	4.6	4.3	4.3	5.8	10.2	10.2	9.7	8.9
Yancey County, NC	17,818	Mayland Community College	7.1	6.5	7.2	5.6	5.9	7.8	11.7	12.0	11.5	11.1

South Carolina Technical College Service Area by County

County Name	2010 Population	Technical College	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
			County Average Annual Unemployment Rate									
Abbeville County, SC	25,417	Piedmont Technical College	8.8	8.2	7.8	8.7	8.0	8.0	14.4	13.0	11.7	10.2
Aiken County, SC	160,099	Aiken Technical College	5.2	5.7	5.9	6.3	5.3	5.8	9.4	8.8	8.8	8.2
Allendale County, SC	10,419	Denmark Technical College	8.5	9.7	10.7	10.0	10.2	16.4	21.0	19.2	18.3	16.9
Anderson County, SC	187,126	Tri-County Technical College	7.1	7.1	7.4	6.7	5.7	6.7	12.2	11.4	9.9	8.6
Bamberg County, SC	15,987	Denmark Technical College	7.6	7.3	8.7	9.8	9.0	11.2	15.9	15.7	15.8	15.4
Barnwell County, SC	22,621	Denmark Technical College	9.4	9.5	9.1	9.9	9.2	10.8	17.4	17.6	16.0	14.6
Beaufort County, SC	162,233	Technical College of the Lowcountry	4.8	5.0	4.9	4.7	4.3	5.3	8.9	9.0	9.2	7.9
Berkeley County, SC	177,843	Trident Technical College	5.4	5.5	5.4	5.5	4.7	6.1	10.4	9.8	9.2	8.0
Calhoun County, SC	15,175	Orangeburg-Calhoun Technical College	6.8	6.6	7.4	7.1	6.2	7.6	12.5	11.6	12.3	10.7
Charleston County, SC	350,209	Trident Technical College	5.3	5.4	5.5	5.0	4.3	5.3	8.9	9.1	8.4	7.3
Cherokee County, SC	55,342	Spartanburg Community College	8.6	8.8	7.9	7.6	6.7	9.0	16.1	14.5	13.4	11.7
Chester County, SC	33,140	York Technical College	10.9	9.8	9.2	10.1	10.8	11.7	20.2	18.4	16.2	13.8
Chesterfield County, SC	46,734	Northeastern Technical College	9.9	10.0	9.5	9.4	7.7	8.9	16.8	15.7	13.9	12.4
Clarendon County, SC	34,971	Central Carolina Technical College	8.6	8.9	9.8	9.1	8.3	9.7	15.3	15.2	15.6	14.0
Colleton County, SC	38,892	Technical College of the Lowcountry	7.2	7.3	7.2	6.4	6.0	8.2	13.3	13.1	13.4	11.5
Darlington County, SC	68,681	Florence-Darlington Technical College	8.1	8.2	8.7	7.6	6.5	8.5	13.2	12.7	12.3	10.7
Dillon County, SC	32,062	Northeastern Technical College	9.4	9.7	9.5	9.2	9.0	10.2	15.6	16.0	15.8	14.3
Dorchester County, SC	136,555	Trident Technical College	5.1	5.1	5.3	5.0	4.3	5.6	9.9	9.0	8.2	7.3
Edgefield County, SC	26,985	Piedmont Technical College	5.0	5.8	7.2	7.6	6.3	6.7	10.3	9.8	9.3	9.1
Fairfield County, SC	23,956	Midlands Technical College	10.5	8.0	7.9	8.9	8.4	10.6	13.4	13.4	12.8	12.0
Florence County, SC	136,885	Florence-Darlington Technical College	7.7	8.4	9.0	7.2	6.0	7.0	11.3	11.5	11.1	9.7
Georgetown County, SC	60,158	Horry-Georgetown Technical College	9.8	9.5	8.7	7.0	6.1	7.4	12.1	12.2	11.3	9.8
Greenville County, SC	451,225	Greenville Technical College	5.5	5.9	5.5	5.3	4.6	5.5	10.0	9.3	8.2	7.1
Greenwood County, SC	69,661	Piedmont Technical College	9.3	8.7	9.1	7.9	6.8	7.6	12.7	11.9	11.4	10.4
Hampton County, SC	21,090	Technical College of the Lowcountry	9.3	9.4	8.4	7.1	6.6	8.9	15.0	14.2	14.2	12.3
Horry County, SC	269,291	Horry-Georgetown Technical College	5.7	5.9	5.8	5.5	5.0	7.0	11.9	12.2	11.7	10.2
Jasper County, SC	24,777	Technical College of the Lowcountry	5.9	5.5	5.2	4.8	4.5	6.0	10.5	10.1	10.3	8.6
Kershaw County, SC	61,697	Central Carolina Technical College	6.3	6.2	6.6	6.3	5.3	6.5	10.8	10.4	9.6	8.4
Lancaster County, SC	76,652	York Technical College	8.9	8.9	8.4	8.9	9.5	11.4	17.7	15.8	14.2	11.8
Laurens County, SC	66,537	Piedmont Technical College	7.5	7.1	6.7	6.8	7.1	7.3	11.9	11.7	10.6	9.1
Lee County, SC	19,220	Central Carolina Technical College	8.4	8.7	9.5	9.5	8.0	9.3	14.5	13.7	13.6	12.1
Lexington County, SC	262,391	Midlands Technical College	4.5	4.9	4.9	4.6	4.1	4.8	8.2	8.2	7.9	6.9
McCormick County, SC	10,233	Piedmont Technical College	12.5	11.1	11.2	10.9	9.9	10.7	16.4	15.3	14.7	12.9
Marion County, SC	33,062	Florence-Darlington Technical College	12.8	13.5	13.7	11.9	11.4	13.6	20.7	20.5	19.9	18.1
Marlboro County, SC	28,933	Northeastern Technical College	12.9	12.9	11.4	11.1	11.8	12.4	19.4	19.5	18.0	16.7
Newberry County, SC	37,508	Piedmont Technical College	7.4	7.3	7.0	6.4	5.5	6.9	11.6	10.6	10.1	8.6
Oconee County, SC	74,273	Tri-County Technical College	7.5	7.4	8.7	8.8	6.8	7.3	13.5	11.8	10.3	9.1
Orangeburg County, SC	92,501	Orangeburg-Calhoun Technical College	9.9	9.4	9.7	9.1	8.0	10.0	15.5	15.1	14.9	13.6
Pickens County, SC	119,224	Tri-County Technical College	6.7	6.8	6.6	6.2	5.0	6.0	10.7	10.0	9.0	8.2
Richland County, SC	384,504	Midlands Technical College	5.6	6.0	6.0	5.8	5.2	6.1	9.4	9.7	9.3	8.4
Saluda County, SC	19,875	Piedmont Technical College	6.3	7.4	6.7	6.2	5.2	5.9	9.7	9.3	9.0	7.6
Spartanburg County, SC	284,307	Spartanburg Community College	7.2	7.6	7.5	6.6	5.6	6.8	12.1	11.5	10.5	9.0
Sumter County, SC	107,456	Central Carolina Technical College	7.5	7.8	8.5	7.7	6.9	8.2	12.5	12.1	11.5	10.3
Union County, SC	28,961	Spartanburg Community College	11.2	12.1	10.9	10.8	8.9	10.7	19.5	18.7	16.4	14.0
Williamsburg County, SC	34,423	Williamsburg Technical College	12.7	12.0	11.2	9.8	8.9	10.3	14.8	14.4	13.8	13.1
York County, SC	226,073	York Technical College	7.4	7.2	6.7	6.3	5.3	7.0	13.7	15.4	13.8	10.9

James City County, VA		Thomas Nelson Community College	3.3	3.3	3.1	2.6	2.5	3.2	5.6	5.6	5.4	5.1
King and Queen County, VA	7,046	Rappahannock Community College	4.5	3.7	3.9	3.3	3.5	4.6	8.3	8.8	7.6	6.8
King George County, VA	24,500	Rappahannock Community College	3.2	3.1	3.3	3.3	3.5	5.1	7.8	8.3	7.6	7.0
King William County, VA	15,981	Rappahannock Community College	3.6	3.4	3.5	2.7	2.7	3.8	7.3	7.5	6.9	6.3
Lancaster County, VA	11,236	Rappahannock Community College	5.5	5.5	5.6	4.4	4.4	5.7	9.6	9.9	9.3	8.2
Lee County, VA	25,474	Mountain Empire Community College	6.0	5.5	5.0	4.3	4.2	5.3	7.5	8.4	7.7	8.3
Loudoun County, VA	336,898	Northern Virginia Community College	3.2	2.6	2.4	2.1	2.1	2.8	4.9	4.9	4.4	4.2
Louisa County, VA	33,430	J. Sargeant Reynolds Community College	4.2	3.7	3.6	3.1	2.9	4.2	8.1	8.3	7.2	6.4
Lunenburg County, VA	12,588	Southside Virginia Community College	5.6	4.8	5.2	4.4	4.6	6.0	9.6	10.4	9.4	8.4
Madison County, VA	13,200	Germanna Community College	3.8	3.0	3.0	2.6	2.7	3.8	6.4	6.4	5.3	4.7
Mathews County, VA	8,884	Rappahannock Community College	3.2	3.0	3.0	2.6	2.6	3.6	5.7	6.1	6.2	5.4
Mecklenburg County, VA	31,749	Southside Virginia Community College	9.3	6.7	6.1	5.2	5.1	6.6	11.3	12.1	10.8	9.8
Middlesex County, VA	10,822	Rappahannock Community College	3.5	3.3	3.5	3.2	3.0	3.8	6.9	7.5	6.6	6.3
Montgomery County, VA	95,194	New River Community College	3.8	3.6	3.5	3.1	3.2	4.1	7.2	7.5	6.6	6.1
Nelson County, VA	14,827	Piedmont Virginia Community College	3.6	3.6	3.2	2.7	2.7	3.6	6.6	6.5	5.6	5.4
New Kent County, VA	19,169	Rappahannock Community College	3.7	3.4	3.2	2.7	2.7	3.6	7.2	7.6	6.6	5.6
Northampton County, VA	12,226	Eastern Shore Community College	4.8	4.6	5.1	4.4	4.1	5.4	8.0	7.8	8.2	8.8
Northumberland County, VA	12,346	Rappahannock Community College	5.6	4.9	4.8	4.1	4.4	5.7	9.0	8.9	9.1	8.5
Nottoway County, VA	15,830	Southside Virginia Community College	4.4	4.4	4.5	4.1	3.9	5.5	8.3	8.5	7.9	7.2
Orange County, VA	34,246	Germanna Community College	4.0	3.3	3.2	3.0	3.2	4.6	8.0	8.0	7.5	6.6
Page County, VA	23,895	Lord Fairfax Community College	7.0	5.4	5.1	4.6	5.1	6.9	12.2	12.0	11.2	10.1
Patrick County, VA	18,451	Patrick Henry Community College	7.6	7.6	6.5	4.6	4.1	6.5	11.5	11.6	9.7	8.0
Pittsylvania County, VA	62,807	Danville Community College	6.5	6.2	6.3	5.4	5.8	6.7	11.0	10.4	8.5	7.3
Powhatan County, VA	28,123	J. Sargeant Reynolds Community College	3.2	2.9	2.8	2.6	2.4	3.4	6.5	6.9	6.0	5.4
Prince Edward County, VA	23,238	Southside Virginia Community College	5.7	5.5	5.7	4.8	4.6	5.5	9.2	10.3	9.5	8.7
Prince George County, VA	36,941	John Tyler Community College	4.2	3.6	3.8	3.3	3.2	4.3	7.2	7.2	6.9	6.5
Prince William County, VA	430,289	Northern Virginia Community College	3.4	2.9	2.7	2.4	2.5	3.3	5.7	5.8	5.3	4.9
Pulaski County, VA	34,736	New River Community College	6.1	5.8	4.5	3.9	5.5	6.4	11.3	9.8	7.2	6.5
Rappahannock County, VA	7,456	Lord Fairfax Community College	3.0	2.6	2.6	2.3	2.5	3.5	6.0	5.9	5.2	5.0
Richmond County, VA	9,059	Rappahannock Community College	6.2	5.2	4.7	4.8	4.4	5.0	8.0	8.6	8.2	8.7
Roanoke County, VA	92,901	Virginia Western Community College	3.4	3.2	3.0	2.6	2.5	3.2	6.1	6.5	5.7	5.2
Rockbridge County, VA	22,394	Dabnewy S. Lancaster Community College	3.7	3.2	3.1	2.7	2.9	4.1	6.7	7.4	6.6	5.9
Rockingham County, VA	77,391	Blue Ridge Community College	3.2	3.0	3.0	2.4	2.5	3.4	6.1	6.4	5.6	5.3
Russell County, VA	28,445	Southwest Virginia Community College	6.2	5.7	5.7	5.9	5.2	5.8	10.9	10.5	9.6	8.8
Scott County, VA	22,781	Mountain Empire Community College	5.4	5.5	5.2	4.9	4.7	5.4	9.9	9.7	8.2	8.4
Shenandoah County, VA	42,583	Lord Fairfax Community College	3.9	3.3	3.0	3.0	3.2	4.7	8.5	8.5	7.2	6.6
Smyth County, VA	31,718	Virginia Highlands Community College	7.5	5.1	4.6	4.6	5.5	6.1	11.5	11.2	9.9	8.8
Southampton County, VA	18,409	Paul D. Camp Community College	4.4	4.2	4.1	3.6	3.6	4.8	8.3	9.8	8.8	7.1
Spotsylvania County, VA	125,684	Germanna Community College	3.0	2.8	2.7	2.4	2.6	3.4	5.8	6.0	5.6	5.0
Stafford County, VA	134,352	Germanna Community College	3.1	2.8	2.7	2.4	2.6	3.4	5.7	5.9	5.4	4.9
Surry County, VA	6,844	John Tyler Community College	4.6	4.1	4.8	3.4	3.4	4.5	7.8	8.2	8.1	7.3
Sussex County, VA	11,972	John Tyler Community College	6.9	5.9	5.8	4.5	4.5	5.8	10.5	10.9	9.4	8.3
Tazewell County, VA	44,268	Southwest Virginia Community College	5.4	4.6	4.5	3.9	4.5	4.4	7.8	7.1	6.7	7.0
Warren County, VA	38,070	Lord Fairfax Community College	4.0	3.3	3.0	2.8	3.1	4.4	7.8	7.4	6.7	5.9
Washington County, VA	55,190	Virginia Highlands Community College	5.4	4.7	4.5	4.1	4.6	4.9	8.8	8.9	8.0	7.1
Westmoreland County, VA	17,524	Rappahannock Community College	4.8	4.6	4.5	3.9	4.2	5.1	7.9	8.1	7.7	7.5
Wise County, VA	40,918	Mountain Empire Community College	5.7	5.1	4.7	4.5	4.0	4.6	6.9	7.6	6.8	7.7
Wythe County, VA	29,251	Wytheville Community College	5.3	4.7	4.3	4.1	4.5	5.4	10.8	10.1	8.1	6.7
York County, VA	66,146	Thomas Nelson Community College	3.2	3.0	3.0	2.7	2.5	3.3	5.5	5.5	5.6	5.1

Virginia Community College Service Area by County

County Name	2010 Population	Community College	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
			County Average Annual Unemployment Rates									
Accomack County, VA	33,341	Eastern Shore Community College	4.3	4.6	4.6	4.2	4.1	5.0	6.7	7.1	7.3	6.9
Albemarle County, VA	102,251	Piedmont Virginia Community College	3.4	3.0	2.8	2.4	2.3	3.0	5.3	5.5	5.0	4.8
Alleghany County, VA	16,230	Dabnewy S. Lancaster Community College	4.6	4.6	4.7	4.8	4.4	5.4	9.4	9.5	8.6	7.4
Amelia County, VA	12,759	John Tyler Community College	3.9	3.5	3.4	3.0	2.8	4.5	8.0	8.0	7.1	5.7
Amherst County, VA	32,384	Central Virginia Community College	5.0	4.5	4.1	3.2	3.5	4.1	8.0	8.7	7.5	6.9
Appomattox County, VA	15,128	Central Virginia Community College	5.6	4.5	4.7	3.6	3.9	4.5	8.2	9.2	7.7	7.2
Arlington County, VA	221,045	Northern Virginia Community College	2.7	2.4	2.3	2.0	1.9	2.5	4.4	4.4	3.9	3.6
Augusta County, VA	73,658	Blue Ridge Community College	3.4	3.1	3.0	2.6	2.7	3.6	6.7	7.0	6.2	5.5
Bath County, VA	4,652	Dabnewy S. Lancaster Community College	4.6	3.6	3.5	3.2	3.2	4.1	6.5	6.7	5.5	5.2
Bedford County, VA	69,590	Central Virginia Community College	4.1	3.7	3.4	2.9	2.9	3.5	6.9	7.0	6.4	5.8
Bland County, VA	6,738	Wytheville Community College	5.0	4.5	3.9	3.7	3.8	4.8	7.7	7.1	6.1	5.9
Botetourt County, VA	33,154	Virginia Western Community College	3.6	3.3	3.0	2.6	2.7	3.3	6.5	6.5	5.7	5.4
Brunswick County, VA	17,010	Southside Virginia Community College	7.0	6.4	5.1	4.8	4.8	6.6	11.6	12.1	10.9	10.6
Buchanan County, VA	23,859	Southwest Virginia Community College	7.0	5.6	5.3	4.9	4.9	5.0	8.8	8.9	7.3	7.8
Buckingham County, VA	17,088	Piedmont Virginia Community College	4.4	4.2	4.3	3.6	3.5	4.9	8.4	9.9	8.9	7.8
Campbell County, VA	55,163	Central Virginia Community College	5.0	4.3	3.9	3.2	3.5	4.0	7.5	7.5	6.9	6.0
Caroline County, VA	28,972	Germanna Community College	4.3	3.9	3.8	3.4	3.8	4.8	8.7	9.2	8.1	7.1
Carroll County, VA	29,851	Wytheville Community College	5.6	4.9	5.6	5.2	5.7	6.7	11.2	11.5	9.5	8.4
Charles City County, VA		John Tyler Community College	5.0	5.0	4.3	3.9	3.9	5.0	9.3	9.9	8.5	7.7
Charlotte County, VA	12,404	Southside Virginia Community College	6.5	5.9	8.1	6.6	5.3	5.9	9.5	9.8	9.4	8.5
Chesterfield County, VA	323,856	John Tyler Community College	3.5	3.3	3.1	2.8	2.6	3.7	6.9	7.0	6.3	5.7
Clarke County, VA	14,323	Lord Fairfax Community College	3.1	2.8	2.6	2.4	2.7	3.4	6.5	6.0	5.3	5.1
Craig County, VA	5,213	Virginia Western Community College	4.1	3.9	3.9	3.4	3.8	4.0	7.6	8.0	7.7	6.8
Culpeper County, VA	47,911	Germanna Community College	4.0	3.5	3.3	3.2	3.6	4.8	8.2	8.2	7.1	6.4
Cumberland County, VA	9,849	Southside Virginia Community College	4.0	3.9	3.9	3.4	3.2	4.8	7.6	8.0	7.3	6.8
Dickenson County, VA	15,690	Southwest Virginia Community College	8.4	6.1	6.3	5.1	5.3	5.7	9.0	8.9	8.3	9.2
Dinwiddie County, VA	27,994	John Tyler Community College	4.1	3.8	4.1	3.1	3.5	4.5	8.3	7.8	6.9	6.5
Essex County, VA	11,233	Rappahannock Community College	5.4	4.2	4.6	3.9	3.7	5.2	8.4	9.2	8.3	7.7
Fairfax County, VA	1,118,602	Northern Virginia Community College	3.1	2.7	2.5	2.2	2.2	2.8	4.9	5.0	4.5	4.2
Fauquier County, VA	66,542	Lord Fairfax Community College	3.1	2.7	2.6	2.4	2.5	3.3	5.7	5.9	5.1	4.7
Floyd County, VA	15,390	New River Community College	4.0	4.0	3.7	3.2	3.5	4.4	7.9	7.8	7.0	6.2
Fluvanna County, VA	25,967	J. Sargeant Reynolds Community College	3.4	3.0	3.0	2.4	2.4	3.3	5.9	6.0	5.4	4.7
Franklin County, VA	56,411	Virginia Western Community College	4.4	3.8	3.6	3.2	3.4	4.8	8.5	7.9	6.8	5.9
Frederick County, VA	80,317	Lord Fairfax Community College	3.6	3.0	2.8	2.6	3.0	4.2	7.8	7.3	6.1	5.3
Giles County, VA	16,928	New River Community College	5.4	5.0	5.1	3.7	4.5	5.4	9.5	9.7	7.7	6.9
Gloucester County, VA	36,886	Rappahannock Community College	3.2	3.0	3.1	2.6	2.5	3.5	6.2	6.7	6.0	5.4
Goochland County, VA	21,347	J. Sargeant Reynolds Community College	3.3	3.3	3.0	2.4	2.4	3.3	6.7	6.5	5.5	4.9
Grayson County, VA	15,183	Wytheville Community College	6.3	4.8	4.6	5.4	5.1	6.5	11.1	12.3	10.7	9.2
Greene County, VA	18,771	Piedmont Virginia Community College	4.1	3.1	2.9	2.3	2.2	3.3	6.0	6.1	5.3	4.9
Greensville County, VA	11,851	Southside Virginia Community College	5.2	6.3	5.3	4.2	4.5	5.5	9.3	10.0	9.1	9.3
Halifax County, VA	35,849	Danville Community College	10.2	7.6	6.1	5.8	6.4	6.9	11.7	12.3	10.9	9.4
Hanover County, VA	100,668	J. Sargeant Reynolds Community College	3.2	3.0	2.9	2.5	2.5	3.4	6.8	6.7	6.0	5.5
Henrico County, VA	314,932	J. Sargeant Reynolds Community College	3.7	3.4	3.4	2.9	2.8	3.6	7.1	7.0	6.3	5.6
Henry County, VA	52,969	Patrick Henry Community College	10.0	9.2	6.6	4.7	5.5	8.0	14.1	13.9	11.4	9.9
Highland County, VA	2,245	Blue Ridge Community College	4.2	3.4	3.4	3.2	3.4	5.1	7.8	8.2	7.0	6.1
Isle of Wight County, VA	35,399	Tidewater Community College	3.6	3.4	3.6	3.1	2.9	3.7	6.4	7.3	6.7	6.0
James City County, VA		Thomas Nelson Community College	3.3	3.3	3.1	2.6	2.5	3.2	5.6	5.6	5.4	5.1
King and Queen County, VA	7,046	Rappahannock Community College	4.5	3.7	3.9	3.3	3.5	4.6	8.3	8.8	7.6	6.8
King George County, VA	24,500	Rappahannock Community College	3.2	3.1	3.3	3.3	3.5	5.1	7.8	8.3	7.6	7.0
King William County, VA	15,981	Rappahannock Community College	3.6	3.4	3.5	2.7	2.7	3.8	7.3	7.5	6.9	6.3
Lancaster County, VA	11,236	Rappahannock Community College	5.5	5.5	5.6	4.4	4.4	5.7	9.6	9.9	9.3	8.2
Lee County, VA	25,474	Mountain Empire Community College	6.0	5.5	5.0	4.3	4.2	5.3	7.5	8.4	7.7	8.3
Loudoun County, VA	336,898	Northern Virginia Community College	3.2	2.6	2.4	2.1	2.1	2.8	4.9	4.9	4.4	4.2
Louisa County, VA	33,430	J. Sargeant Reynolds Community College	4.2	3.7	3.6	3.1	2.9	4.2	8.1	8.3	7.2	6.4
Lunenburg County, VA	12,588	Southside Virginia Community College	5.6	4.8	5.2	4.4	4.6	6.0	9.6	10.4	9.4	8.4
Madison County, VA	13,200	Germanna Community College	3.8	3.0	3.0	2.6	2.7	3.8	6.4	6.4	5.3	4.7
Mathews County, VA	8,884	Rappahannock Community College	3.2	3.0	3.0	2.6	2.6	3.6	5.7	6.1	6.2	5.4
Mecklenburg County, VA	31,749	Southside Virginia Community College	9.3	6.7	6.1	5.2	5.1	6.6	11.3	12.1	10.8	9.8
Middlesex County, VA	10,822	Rappahannock Community College	3.5	3.3	3.5	3.2	3.0	3.8	6.9	7.5	6.6	6.3
Montgomery County, VA	95,194	New River Community College	3.8	3.6	3.5	3.1	3.2	4.1	7.2	7.5	6.6	6.1
Nelson County, VA	14,827	Piedmont Virginia Community College	3.6	3.6	3.2	2.7	2.7	3.6	6.6	6.5	5.6	5.4
New Kent County, VA	19,169	Rappahannock Community College	3.7	3.4	3.2	2.7	2.7	3.6	7.2	7.6	6.6	5.6
Northampton County, VA	12,226	Eastern Shore Community College	4.8	4.6	5.1	4.4	4.1	5.4	8.0	7.8	8.2	8.8
Northumberland County, VA	12,346	Rappahannock Community College	5.6	4.9	4.8	4.1	4.4	5.7	9.0	8.9	9.1	8.5
Nottoway County, VA	15,830	Southside Virginia Community College	4.4	4.4	4.5	4.1	3.9	5.5	8.3	8.5	7.9	7.2
Orange County, VA	34,246	Germanna Community College	4.0	3.3	3.2	3.0	3.2	4.6	8.0	8.0	7.5	6.6
Page County, VA	23,895	Lord Fairfax Community College	7.0	5.4	5.1	4.6	5.1	6.9	12.2	12.0	11.2	10.1
Patrick County, VA	18,451	Patrick Henry Community College	7.6	7.6	6.5	4.6	4.1	6.5	11.5	11.6	9.7	8.0
Pittsylvania County, VA	62,807	Danville Community College	6.5	6.2	6.3	5.4	5.8	6.7	11.0	10.4	8.5	7.3
Powhatan County, VA	28,123	J. Sargeant Reynolds Community College	3.2	2.9	2.8	2.6	2.4	3.4	6.5	6.9	6.0	5.4
Prince Edward County, VA	23,238	Southside Virginia Community College	5.7	5.5	5.7	4.8	4.6	5.5	9.2	10.3	9.5	8.7
Prince George County, VA	36,941	John Tyler Community College	4.2	3.6	3.8	3.3	3.2	4.3	7.2	7.2	6.9	6.5
Prince William County, VA	430,289	Northern Virginia Community College	3.4	2.9	2.7	2.4	2.5	3.3	5.7	5.8	5.3	4.9
Pulaski County, VA	34,736	New River Community College	6.1	5.8	4.5	3.9	5.5	6.4	11.3	9.8	7.2	6.5
Rappahannock County, VA	7,456	Lord Fairfax Community College	3.0	2.6	2.6	2.3	2.5	3.5	6.0	5.9	5.2	5.0
Richmond County, VA	9,059	Rappahannock Community College	6.2	5.2	4.7	4.8	4.4	5.0	8.0	8.6	8.2	8.7
Roanoke County, VA	92,901	Virginia Western Community College	3.4	3.2	3.0	2.6	2.5	3.2	6.1	6.5	5.7	5.2
Rockbridge County, VA	22,394	Dabnewy S. Lancaster Community College	3.7	3.2	3.1	2.7	2.9	4.1	6.7	7.4	6.6	5.9
Rockingham County, VA	77,391	Blue Ridge Community College	3.2	3.0	3.0	2.4	2.5	3.4	6.1	6.4	5.6	5.3
Russell County, VA	28,445	Southwest Virginia Community College	6.2	5.7	5.7	5.9	5.2	5.8	10.9	10.5	9.6	8.8
Scott County, VA	22,781	Mountain Empire Community College	5.4	5.5	5.2	4.9	4.7	5.4	9.9	9.7	8.2	8.4
Shenandoah County, VA	42,583	Lord Fairfax Community College	3.9	3.3	3.0	3.0	3.2	4.7	8.5	8.5	7.2	6.6
Smyth County, VA	31,718	Virginia Highlands Community College	7.5	5.1	4.6	4.6	5.5	6.1	11.5	11.2	9.9	8.8
Southampton County, VA	18,409	Paul D. Camp Community College	4.4	4.2	4.1	3.6	3.6	4.8	8.3	9.8	8.8	7.1
Spotsylvania County, VA	125,684	Germanna Community College	3.0	2.8	2.7	2.4	2.6	3.4	5.8	6.0	5.6	5.0
Stafford County, VA	134,352	Germanna Community College	3.1	2.8	2.7	2.4	2.6	3.4	5.7	5.9	5.4	4.9
Surry County, VA	6,844	John Tyler Community College	4.6	4.1	4.8	3.4	3.4	4.5	7.8	8.2	8.1	7.3
Sussex County, VA	11,972	John Tyler Community College	6.9	5.9	5.8	4.5	4.5	5.8	10.5	10.9	9.4	8.3
Tazewell County, VA	44,268	Southwest Virginia Community College	5.4	4.6	4.5	3.9	4.5	4.4	7.8	7.1	6.7	7.0
Warren County, VA	38,070	Lord Fairfax Community College	4.0	3.3	3.0	2.8	3.1	4.4	7.8	7.4	6.7	5.9
Washington County, VA	55,190	Virginia Highlands Community College	5.4	4.7	4.5	4.1	4.6	4.9	8.8	8.9	8.0	7.1
Westmoreland County, VA	17,524	Rappahannock Community College	4.8	4.6	4.5	3.9	4.2	5.1	7.9	8.1	7.7	7.5
Wise County, VA	40,918	Mountain Empire Community College	5.7	5.1	4.7	4.5	4.0	4.6	6.9	7.6	6.8	7.7
Wythe County, VA	29,251	Wytheville Community College	5.3	4.7	4.3	4.1	4.5	5.4	10.8	10.1	8.1	6.7
York County, VA	66,146	Thomas Nelson Community College	3.2	3.0	3.0	2.7	2.5	3.3	5.5	5.5	5.6	5.1

APPENDIX D: ANNUAL STATE FULL-TIME-EQUALVALENT

ADJUSTED FOR INFLATION

		North Carolina			South Carolina			Virginia	
		State Funded			State Funded			State Funded	
		FTE			FTE			FTE	
Year		Adjusted for Inflation			Adjusted for Inflation			Adjusted for Inflation	
2003-04		3,511.31			1,762.30			2,235.13	
2004-05		3,480.97			1,864.37			2,633.65	
2005-06		3,350.46			2,024.50			2,899.80	
2006-07		3,859.60			2,180.25			3,421.84	
2007-08		3,805.86			2,411.22			3,282.70	
2008-09		3,633.13			1,831.45			3,292.48	
2009-10		3,196.64			1,416.58			2,671.51	
2010-11		4,746.51			1,110.26			2,467.45	
2011-12		4,866.65			1,180.57			2,315.10	
2012-13		3,623.00			1,268.00			2,496.00	

APPENDIX E: ANNUAL ENROLLMENT BY COLLEGE

Year: 2012, 2011, 2010, 2009, 2008, 2007, 2006, 2005, 2004, 2003
State: North Carolina
Institutional Control (survey-specific): Public Institutions
Highest Degree (survey-specific): Associate's Degree
Academic Institution (standardized): All values

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Academic Institution (standardized)										
Alamance Community College	4,601	4,511	4,576	4,629	3,925	4,620	5,508	5,524	5,222	4,706
Anson Community College	1,829	1,940	1,967	2,078	2,250	2,398	2,736	2,797	2,596	2,591
Asheville Buncombe Technical Community College	6,003	6,048	6,337	6,408	6,408	6,408	7,542	8,059	8,056	8,078
Beaufort County Community College	1,698	1,679	1,461	1,482	1,476	1,763	1,966	1,911	1,954	1,964
Bladen Community College	1,415	1,364	1,468	1,356	1,226	1,431	1,708	1,857	1,556	1,393
Blue Ridge Community College (Flat Rock, NC)	2,084	1,961	2,089	2,093	1,968	2,146	2,488	2,482	2,501	2,412
Brunswick Technical College	1,109	1,003	1,033	1,011	1,162	1,365	1,558	1,482	1,587	1,471
Caldwell Community College and Technical Inst	3,680	3,613	3,744	3,878	3,728	3,950	4,895	4,965	4,902	4,476
Cape Fear Community College	7,010	7,073	7,501	7,473	7,570	7,866	9,001	9,065	9,247	9,154
Carteret Community College	1,721	1,707	1,642	1,612	1,628	1,659	1,872	1,854	1,744	1,681
Catawba Valley Community College	4,796	4,776	4,930	4,869	4,765	4,709	5,528	5,502	5,121	4,786
Central Carolina Community College	4,837	4,714	4,707	4,875	4,603	3,866	5,381	5,267	4,773	4,900
Central Piedmont Community College	16,245	16,400	16,636	17,942	18,052	18,608	19,364	19,921	19,840	19,498
Cleveland Community College	2,793	2,944	3,047	3,341	2,064	3,662	4,279	4,033	3,484	3,398
Coastal Carolina Community College	4,231	4,158	4,111	4,135	4,349	4,857	5,415	5,182	4,634	4,556
College of the Albemarle	2,373	2,166	2,175	2,152	2,117	2,641	2,796	3,002	2,987	2,605
Craven Community College	3,009	3,074	3,039	3,018	3,032	3,136	3,458	3,681	3,609	3,278
Davidson County Community College	2,920	3,202	3,123	2,881	3,399	3,500	4,101	4,431	4,386	4,100
Durham Technical Community College	5,609	5,534	5,495	5,094	5,170	5,417	5,578	5,933	5,232	5,104
Edgecombe Community College	2,498	2,553	2,426	2,489	1,687	2,377	3,249	3,690	3,395	3,056
Gaston College	5,030	5,082	5,033	4,773	5,718	5,334	6,507	6,468	6,464	6,008
Guilford Technical Community College	9,380	8,491	8,984	9,851	10,571	11,226	13,432	14,789	15,134	14,793
Halifax Community College	1,729	1,694	1,484	1,401	1,142	1,374	1,711	1,777	1,559	1,510
Haywood Community College	1,972	1,894	2,023	2,278	2,127	2,305	2,342	2,478	2,467	2,285
Isothermal Community College	2,005	2,077	2,124	2,139	2,131	2,324	2,674	2,981	2,540	2,555
James Sprunt Community College	1,405	1,324	1,390	1,192	1,118	1,254	1,534	1,558	1,587	1,572
Lenoir Community College	2,488	2,494	2,579	2,532	2,733	3,091	3,561	3,793	3,507	2,983
Martin Community College	861	927	956	866	755	613	843	755	831	778
Mayland Community College	1,396	1,459	1,502	1,638	1,472	1,621	1,719	1,565	1,327	1,359
McDowell Technical Community College	1,209	1,189	1,209	1,203	1,134	1,285	1,556	1,519	1,264	1,316
Mitchell Community College	2,243	2,399	2,283	2,642	2,687	2,982	3,557	3,768	3,811	3,439
Montgomery Community College	891	827	850	951	954	1,053	1,036	896	756	837
Nash Community College	2,567	2,542	2,491	2,760	2,916	2,988	3,219	3,235	3,435	3,222
Piedmont Community College	2,186	2,432	2,594	2,600	2,575	2,628	2,874	2,714	2,304	1,805
Pitt Community College	5,920	6,207	6,091	6,303	6,499	7,076	7,512	8,468	8,023	8,422
Randolph Community College	2,287	2,290	1,988	2,319	2,521	2,527	3,044	3,082	2,967	2,894
Richmond Community College	1,690	1,579	1,472	1,510	1,799	1,776	1,969	2,162	2,464	2,523
Roanoke-Chowan Community College	989	1,014	953	952	384	1,021	963	986	963	898
Robeson Community College	2,452	2,346	2,527	2,313	1,788	2,358	2,729	2,605	2,566	2,786
Rockingham Community College	2,060	2,141	2,055	2,073	2,013	2,125	2,636	2,631	2,435	2,254
Rowan-Cabarrus Community College	5,200	5,588	5,235	5,005	5,158	5,392	7,330	7,383	6,924	6,764
Sampson Community College	1,574	1,490	1,452	1,550	1,278	1,471	1,613	1,623	1,574	1,513
Sandhills Community College	3,609	3,327	3,636	3,698	3,826	3,968	4,266	4,557	4,199	4,189
Southeastern Community College (Whiteville, NC)	1,990	2,011	1,814	1,888	1,811	2,030	2,393	2,074	1,923	1,728
Southwestern Community College (Sylva, NC)	1,939	2,014	1,925	2,065	2,040	2,450	2,698	2,304	2,687	2,612
Stanly Community College	1,994	1,990	2,033	2,513	2,390	2,109	3,245	3,093	3,099	2,988
Surry Community College	3,368	3,062	2,910	3,072	3,201	3,541	3,599	3,503	3,497	3,476
Tri-County Community College	1,166	1,084	1,119	1,108	1,079	1,267	1,386	1,483	1,448	1,486
Vance-Granville Community College	4,322	4,333	4,057	3,930	4,135	4,633	4,645	4,352	4,314	4,040
Wake Technical Community College	11,095	11,322	11,832	12,046	12,238	14,747	15,203	17,071	19,158	20,440
Wayne Community College	3,221	3,272	3,166	3,262	2,988	3,183	3,585	3,977	3,714	3,822
Western Piedmont Community College	2,891	2,838	2,823	2,754	2,448	2,826	3,322	3,195	2,941	2,598
Wilkes Community College	2,741	2,532	2,617	2,407	2,476	2,558	2,855	2,811	2,519	2,660
Wilson Technical Community College	2,103	2,077	1,925	1,849	1,642	1,938	2,119	2,132	1,899	1,865

Sandhills Community College	3,609	3,327	3,636	3,698	3,826	3,968	4,266	4,557	4,199	4,189
Southeastern Community College (Whiteville, NC)	1,990	2,011	1,814	1,888	1,811	2,030	2,393	2,074	1,923	1,728
Southwestern Community College (Sylva, NC)	1,939	2,014	1,925	2,065	2,040	2,450	2,698	2,304	2,687	2,612
Stanly Community College	1,994	1,990	2,033	2,513	2,390	2,109	3,245	3,093	3,099	2,988
Surry Community College	3,368	3,062	2,910	3,072	3,201	3,541	3,599	3,503	3,497	3,476
Tri-County Community College	1,166	1,084	1,119	1,108	1,079	1,267	1,386	1,483	1,448	1,486
Vance-Granville Community College	4,322	4,333	4,057	3,930	4,135	4,633	4,645	4,352	4,314	4,040
Wake Technical Community College	11,095	11,322	11,832	12,046	12,238	14,747	15,203	17,071	19,158	20,440
Wayne Community College	3,221	3,272	3,166	3,262	2,988	3,183	3,585	3,977	3,714	3,822
Western Piedmont Community College	2,891	2,838	2,823	2,754	2,448	2,826	3,322	3,195	2,941	2,598
Wilkes Community College	2,741	2,532	2,617	2,407	2,476	2,558	2,855	2,811	2,519	2,660
Wilson Technical Community College	2,103	2,077	1,925	1,849	1,642	1,938	2,119	2,132	1,899	1,865

Year: 2012, 2011, 2010, 2009, 2008, 2007, 2006, 2005, 2004, 2003

State: South Carolina

Institutional Control (survey-specific): Public Institutions

Highest Degree (survey-specific): Associate's Degree

Academic Institution (standardized): All values

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Academic Institution (standardized)										
Aiken Technical College	2,503	2,476	2,506	2,442	2,529	2,704	3,268	3,128	3,071	2,905
Central Carolina Technical College	3,191	3,259	3,244	2,931	3,283	3,206	4,137	4,382	4,522	4,577
Chesterfield-Marlboro Technical College	1,098	1,114	1,043	964	976	1,010	1,030	1,219	1,223	1,134
Denmark Technical College	1,464	1,423	1,408	1,377	1,571	2,277	1,105	1,033	1,607	2,003
Florence Darlington Technical College	4,009	4,241	4,241	3,957	3,956	4,505	5,242	5,855	6,011	6,002
Greenville Technical College	12,516	13,498	13,357	13,893	14,300	14,414	15,089	14,879	14,453	13,965
Horry-Georgetown Technical College	5,172	5,029	5,362	5,433	5,800	6,187	7,252	7,826	7,487	7,698
Midlands Technical College	10,925	10,710	10,779	10,849	10,706	11,234	11,890	12,078	12,224	11,949
Orangeburg Calhoun Technical College	2,491	2,488	2,448	2,377	2,399	2,737	3,219	3,200	3,003	3,004
Spartanburg Technical College	4,123	4,095	4,409	4,278	4,459	4,701	5,713	5,871	6,008	6,036
Technical College of the Lowcountry	1,796	1,683	1,689	1,814	1,893	2,105	2,565	2,792	2,633	2,434
Tri-County Technical College	4,548	4,709	4,645	4,753	5,223	5,730	6,758	6,941	6,800	6,622
Trident Technical College, All Campuses	11,791	11,795	11,407	11,808	12,076	12,763	14,834	15,790	16,781	17,224
Williamsburg Technical College	595	579	585	578	601	640	732	723	661	641
York Technical College	4,171	3,937	4,153	4,263	4,731	5,098	6,034	6,000	5,621	4,849

Year: 2012, 2011, 2010, 2009, 2008, 2007, 2006, 2005, 2004, 2003										
State: Virginia										
Institutional Control (survey-specific): Public Institutions										
Highest Degree (survey-specific): Associate's Degree										
Academic Institution (standardized): All values										
Year	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Academic Institution (standardized)										
Blue Ridge Community College (Weyers Cave, VA)	3,678	3,942	3,804	3,979	4,084	4,466	4,883	4,983	4,836	4,694
Central Virginia Community College	4,582	4,480	4,787	4,721	4,926	5,412	5,420	5,466	5,461	4,906
College of William and Mary, All Campuses	1,342	1,409	1,437	1,374	1,402	1,634	1,579	1,587	1,629	1,532
Dabney S Lancaster Community College	1,446	1,487	1,316	1,373	1,295	1,272	1,582	1,521	1,538	1,463
Danville Community College	4,089	4,060	3,946	3,884	4,016	4,026	4,387	4,534	4,390	4,420
Eastern Shore Community College	807	1,017	769	835	907	939	987	1,052	1,022	990
Germanna Community College	4,520	4,799	5,018	5,167	5,899	6,515	7,035	7,582	7,779	7,520
J Sargeant Reynolds Community College	11,132	11,678	11,671	12,213	12,557	13,079	12,729	12,629	13,367	12,846
John Tyler Community College	6,054	6,092	6,314	7,165	8,082	8,776	9,692	10,518	10,797	10,145
Lord Fairfax Community College	5,070	5,416	5,492	5,856	5,655	5,867	6,644	7,005	7,270	7,288
Mountain Empire Community College	2,875	2,906	2,974	2,956	3,017	3,075	3,383	3,404	3,219	3,089
New River Community College	4,327	4,103	3,915	4,029	4,586	4,889	5,229	5,178	5,207	5,083
Northern Virginia Community College	38,097	37,392	37,740	38,166	41,266	42,663	46,619	48,996	50,044	51,864
Patrick Henry Community College	3,492	3,341	3,228	2,840	2,948	3,109	3,501	3,289	3,251	3,079
Paul D Camp Community College	1,636	1,468	1,525	1,563	1,544	1,628	1,579	1,656	1,661	1,493
Piedmont Virginia Community College	4,343	4,358	4,163	4,451	4,674	4,874	5,401	5,551	5,684	5,693
Rappahannock Community College	2,824	2,691	2,870	2,930	3,206	3,307	3,406	3,757	3,734	3,711
Thomas Nelson Community College	7,889	8,515	8,595	9,718	9,368	10,557	10,606	11,086	10,999	10,942
Tidewater Community College	23,088	22,691	23,718	24,938	25,857	26,898	30,447	31,308	32,101	30,134
Virginia Highlands Community College	2,345	2,299	2,425	2,431	2,580	2,650	2,875	2,948	2,823	2,570
Virginia Western Community College	8,124	8,361	8,243	8,365	8,653	8,532	8,927	8,778	8,557	8,440
Wytheville Community College	2,948	2,700	2,488	2,880	3,072	3,363	3,783	4,068	3,792	3,717

APPENDIX F: POVERTY LEVEL TABLE

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
One Person (unrelated individual)	9,393	9,645	9,973	10,294	10,590	10,991	10,956	11,139	11,484	11,720
Under 65 years.....	9,573	9,827	10,160	10,488	10,787	11,201	11,161	11,344	11,702	11,945
65 years and over.....	8,825	9,060	9,367	9,669	9,944	10,326	10,289	10,458	10,788	11,011
Two persons.....	12,015	12,334	12,755	13,167	13,540	14,051	13,991	14,218	14,657	14,937
Householder under 65 years.....	12,384	12,714	13,145	13,569	13,954	14,489	14,439	14,676	15,139	15,450
Householder 65 years and over....	11,133	11,430	11,815	12,201	12,550	13,030	12,982	13,194	13,609	13,892
Three persons.....	14,680	15,067	15,577	16,079	16,530	17,163	17,098	17,374	17,916	18,284
Four persons.....	18,810	19,307	19,971	20,614	21,203	22,025	21,954	22,314	23,021	23,492
Five persons.....	22,245	22,831	23,613	24,382	25,080	26,049	25,991	26,439	27,251	27,827
Six persons.....	25,122	25,788	26,683	27,560	28,323	29,456	29,405	29,897	30,847	31,471
Seven persons.....	28,544	29,236	30,249	31,205	32,233	33,529	33,372	34,009	35,085	35,743
Eight persons.....	31,589	32,641	33,610	34,774	35,819	37,220	37,252	37,934	39,064	39,688
Nine persons or more.....	37,656	39,048	40,288	41,499	42,739	44,346	44,366	45,220	46,572	47,297
Source:U.S. Census Bureau										

APPENDIX G: HOUSEHOLD INCOME DISTRIBUTION

Average Income and Income Shares, and Income Category Minimums for All Households, by Household Income Category, 1979-2010

Year	Lowest Quintile	Second Quintile	Middle Quintile	Fourth Quintile	Highest Quintile	All Quintiles	81st - 90th Percentiles	91st - 95th Percentiles	96th - 99th Percentiles	Top 1%
Average Before-Tax Income (2010 dollars)										
1979	17,200	35,000	52,500	71,000	134,500	61,200	92,200	113,800	164,800	517,000
1980	16,700	33,800	50,800	69,000	130,800	59,500	90,100	111,700	159,100	494,000
1981	16,400	33,600	50,400	69,800	130,200	59,600	89,800	111,800	157,300	493,700
1982	16,200	32,900	49,500	69,000	131,300	59,700	89,800	110,800	158,100	519,800
1983	15,700	31,700	48,700	68,500	136,000	60,100	90,800	113,800	162,900	570,000
1984	16,300	34,100	51,500	72,200	147,500	63,400	96,700	122,800	176,700	631,200
1985	16,500	33,800	51,600	72,300	149,400	64,400	96,000	122,100	178,600	674,200
1986	16,600	34,400	52,700	74,800	167,700	68,900	100,800	128,100	195,400	881,100
1987	16,600	33,100	52,500	75,200	158,800	66,900	102,000	130,700	193,500	713,800
1988	17,000	33,600	53,300	76,000	169,900	69,700	103,300	132,600	200,600	893,500
1989	17,600	34,300	53,900	76,900	169,500	70,300	104,900	135,400	204,200	833,400
1990	18,500	35,600	54,200	76,300	165,600	70,100	103,600	132,600	198,800	805,300
1991	18,800	35,100	53,400	75,900	159,900	68,500	102,100	131,600	194,900	722,400
1992	18,900	35,100	53,700	76,500	167,100	70,400	103,500	134,000	202,400	818,800
1993	19,300	35,700	54,200	77,300	167,100	70,800	104,800	135,200	203,300	787,000
1994	19,400	35,800	54,400	78,400	170,700	71,700	106,800	137,500	207,900	810,500
1995	20,200	37,600	56,300	80,100	179,200	74,700	110,000	141,600	219,000	904,000
1996	20,100	37,900	57,200	81,900	189,400	77,500	112,200	147,000	228,100	999,400
1997	20,500	38,700	58,300	83,800	201,200	80,900	114,900	152,400	243,600	1,152,300
1998	21,400	40,400	59,900	87,400	214,800	85,200	119,800	158,800	257,500	1,308,100
1999	21,800	41,800	61,800	90,000	228,700	89,400	124,400	165,700	269,600	1,426,300
2000	21,200	41,400	61,900	91,600	239,900	91,500	127,100	170,900	277,600	1,566,700
2001	21,900	42,300	63,300	90,600	218,800	87,500	125,900	166,300	262,200	1,249,200
2002	21,400	41,400	62,000	89,200	208,600	84,100	124,400	163,400	252,000	1,107,600
2003	21,300	41,300	62,100	90,400	215,400	85,600	125,800	166,500	260,600	1,177,800
2004	21,900	42,700	64,500	93,500	235,000	90,800	130,900	173,000	277,100	1,406,800
2005	22,600	43,800	65,500	95,300	255,100	95,800	133,700	179,900	299,000	1,704,000
2006	23,400	44,400	66,300	97,100	266,500	99,300	137,300	184,600	308,600	1,846,600
2007	24,200	46,100	68,300	99,600	276,200	102,200	139,600	189,500	319,500	1,939,600
2008	23,900	44,400	66,400	97,000	250,000	94,900	136,800	183,000	294,600	1,580,400
2009	23,800	44,000	65,200	95,100	227,100	89,800	134,000	178,400	276,700	1,237,300
2010	24,100	44,200	65,400	95,500	239,100	92,200	134,600	181,600	286,400	1,434,900

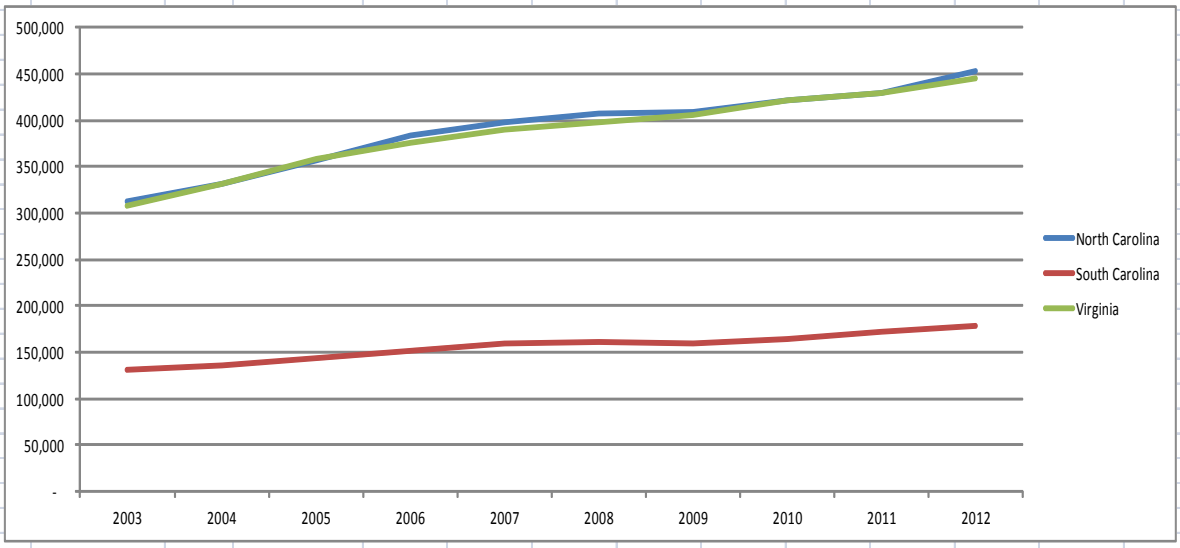
Source: Congressional Budget Office, http://www.cbo.gov/publication/44604

Number of Households										
Minimums for All Households, by Household Income Category, 1979-2010										
Year	Lowest Quintile	Second Quintile	Middle Quintile	Fourth Quintile	Highest Quintile	All Quintiles	81st - 90th Percentiles	91st - 95th Percentiles	96th - 99th Percentiles	Top 1%
Number of Households (Millions)										
1979	18.0	15.9	15.0	15.4	16.6	81.1	8.1	4.2	3.4	0.9
1980	18.2	16.1	15.2	15.7	17.0	82.6	8.3	4.3	3.5	0.9
1981	18.0	16.3	15.7	15.8	17.5	83.8	8.5	4.4	3.7	0.9
1982	17.6	16.4	16.0	16.1	17.7	84.3	8.6	4.5	3.7	0.9
1983	17.5	16.9	16.4	16.7	17.9	85.8	8.7	4.5	3.7	0.9
1984	18.7	16.9	16.6	16.9	17.7	87.2	8.7	4.5	3.6	0.9
1985	18.5	17.3	16.9	17.2	18.4	88.8	9.0	4.7	3.8	1.0
1986	18.6	17.6	17.3	17.4	18.5	89.9	9.0	4.7	3.8	1.0
1987	17.9	18.7	17.8	17.9	18.6	91.4	9.2	4.7	3.8	0.9
1988	18.1	19.2	18.1	18.3	19.0	93.1	9.4	4.8	3.9	0.9
1989	18.1	19.2	18.4	18.4	19.1	93.6	9.4	4.8	3.9	1.0
1990	18.6	19.1	18.4	18.7	19.5	94.6	9.6	4.9	4.0	1.0
1991	18.8	19.3	18.9	18.7	19.8	96.0	9.8	5.0	4.1	1.0
1992	18.5	19.6	19.0	18.9	20.0	96.3	9.8	5.0	4.1	1.0
1993	18.8	19.7	19.2	19.1	20.1	97.3	9.9	5.1	4.1	1.0
1994	18.8	20.3	19.9	19.5	20.3	99.1	10.0	5.2	4.1	1.0
1995	19.4	20.1	19.8	19.6	20.5	99.7	10.0	5.2	4.2	1.0
1996	19.5	20.5	20.1	19.9	20.9	101.1	10.3	5.3	4.3	1.1
1997	19.8	20.7	20.4	20.0	21.3	102.6	10.6	5.4	4.3	1.0
1998	20.2	20.8	20.9	20.3	21.5	104.0	10.7	5.5	4.3	1.0
1999	20.5	20.8	21.0	20.5	21.7	104.8	10.7	5.5	4.4	1.1
2000	21.4	21.5	21.7	21.1	22.3	108.3	11.0	5.6	4.6	1.1
2001	21.5	21.8	21.5	21.8	22.4	109.4	11.1	5.7	4.5	1.1
2002	21.9	22.3	22.0	22.0	22.6	111.4	11.1	5.7	4.7	1.1
2003	22.0	22.6	22.3	22.0	22.7	112.1	11.3	5.7	4.6	1.1
2004	22.4	23.0	22.4	22.3	22.8	113.3	11.3	5.8	4.6	1.1
2005	22.7	22.9	22.8	22.6	23.1	114.5	11.4	5.9	4.6	1.1
2006	22.4	23.4	23.4	23.0	23.5	116.1	11.6	6.0	4.8	1.1
2007	23.4	23.2	23.3	22.9	23.6	116.9	11.7	6.0	4.8	1.2
2008	23.4	23.5	23.3	23.0	23.5	117.3	11.6	6.0	4.8	1.1
2009	22.7	23.6	23.7	23.3	23.6	117.6	11.8	5.9	4.8	1.1
2010	23.3	23.9	23.8	23.4	23.7	118.7	11.8	6.0	4.8	1.1
Source: Congressional Budget Office, http://www.cbo.gov/publication/44604										

APPENDIX H: GROSS DOMESTIC PRODUCT BY STATE

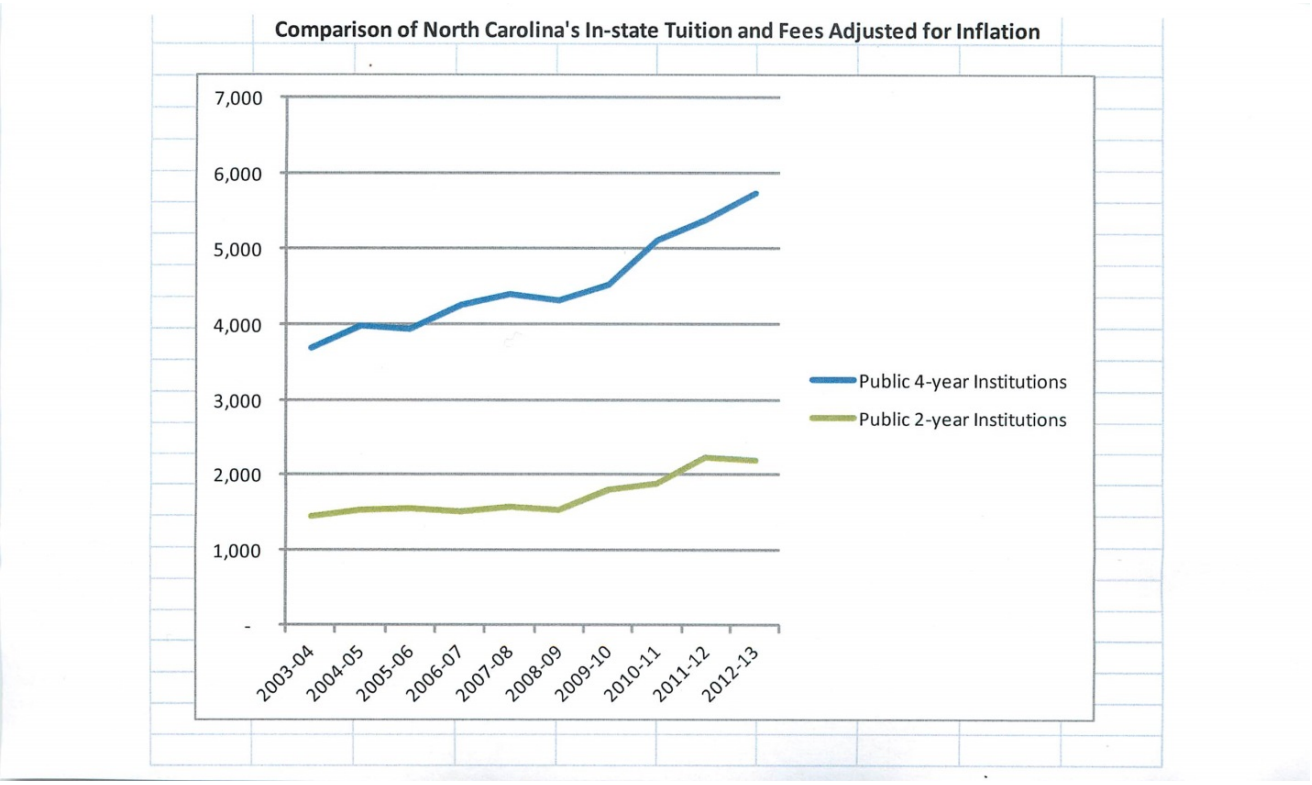
(millions of current dollars)

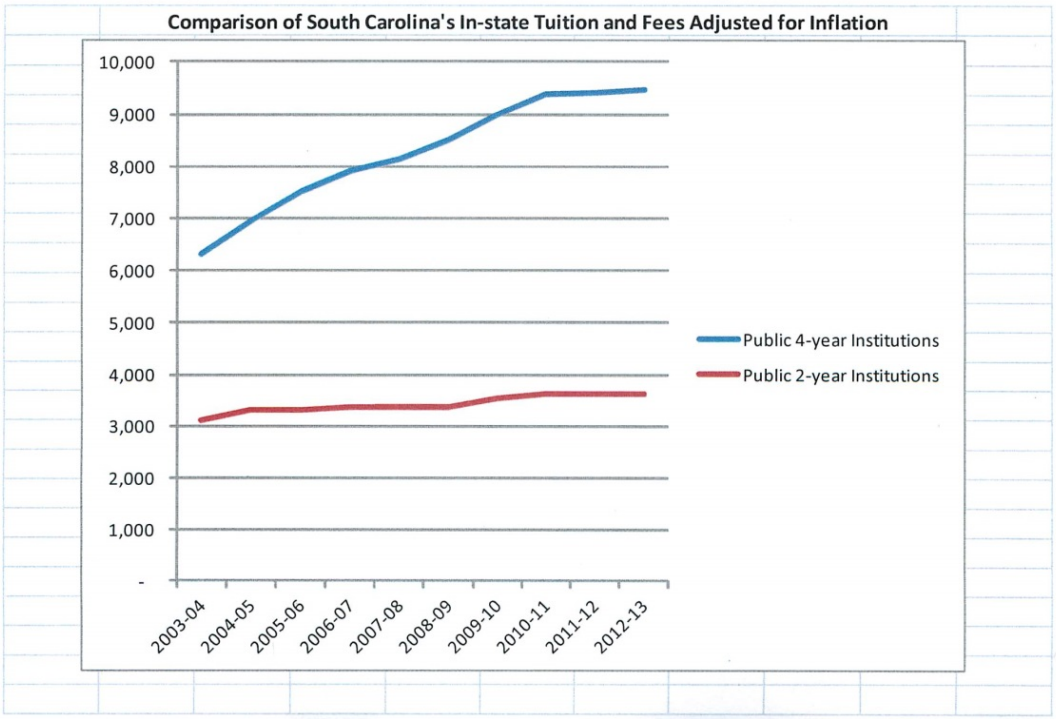
Fips	Area	IndCode	Industry	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
37000	North Carolina	1	All industry total	313,181	331,603	357,241	383,966	397,609	407,008	409,453	420,876	429,793	452,358
45000	South Carolina	1	All industry total	131,900	136,184	143,937	152,084	160,038	161,779	160,046	163,836	171,546	177,985
51000	Virginia	1	All industry total	307,208	332,160	357,708	375,955	389,984	398,120	406,066	421,325	430,103	445,090

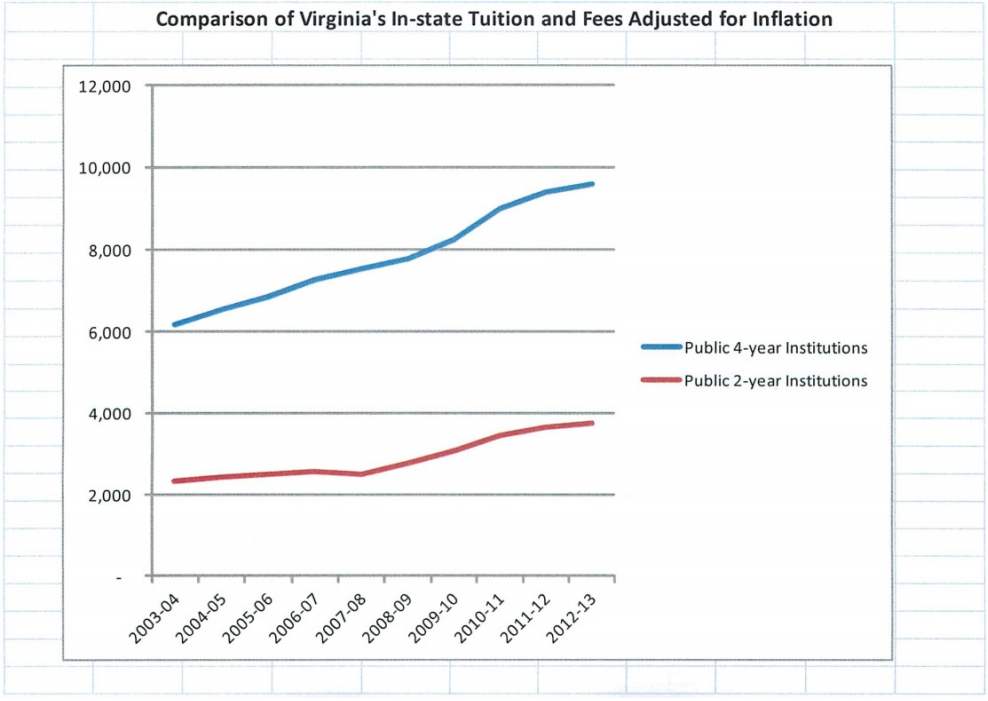


Source: Bureau of Economic Analysis

APPENDIX I: COMPARING 2-YEAR AND 4-YEAR TUITION INCREASES




Comparison of South Carolina's In-state Tuition and Fees Adjusted for Inflation
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
-
2003-04
2004-05
2005-06
2006-07
2007-08
2008-09
2009-10
2010-11
2011-12
2012-13
Public 4-year Institutions
Public 2-year Institutions


Comparison of Virginia's In-state Tuition and Fees Adjusted for Inflation
12,000
10,000
8,000
6,000
4,000
2,000
-
2003-04
2004-05
2005-06
2006-07
2007-08
2008-09
2009-10
2010-11
2011-12
2012-13
Public 4-year Institutions
Public 2-year Institutions