

THE IMPACT OF FINANCIAL AID ON PERSISTENCE AND GRADUATION RATES FOR
FIRST-YEAR DEVELOPMENTAL COMMUNITY COLLEGE STUDENTS
IN NORTH CAROLINA

by

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Liberty University

A Dissertation Presented in Partial Fulfillment
of the Requirements for EDUC 990 Course
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ABSTRACT

One of the most significant issues in post-secondary education is persistence. In community colleges, retention and graduation rates are very low. This is especially true for students enrolled in developmental English, reading, and/or math courses. The low cost of community college tuition and fees combined with financial need-based programs in the form of Pell Grants give all students, including students academically unprepared who require developmental courses, access to a college education and the means to persist and complete a degree program. However, despite the financial resources, these students are not persisting and completing a degree program. This study will be a causal-comparative design using data measuring the persistence and graduation rates of developmental students that received a Pell Grant compared to the persistence and graduation rates of developmental students that self-pay. In this study, Pell Grants will be used as the level to determine if there is a difference between receiving financial aid and persistence and graduation rates among students enrolled in one or more developmental courses.

Dedication

I am very thankful to the Lord for helping me persevere throughout this process. I had to constantly remember why I was doing this. This doctoral program at first started as a way to further my career in education. In other words, it became about me. He taught me many lessons throughout the process of pushing through all barriers and doing things correctly, but most importantly, that I could use this to further His plan for me.

There are so many people I would like to dedicate this dissertation. First, I need to dedicate this to my loving wife Danielle who stood by me patiently. This doctoral program has been a huge part of our marriage over the last six years. I appreciate you sticking by me and encouraging me to finish. I know it wasn't easy, and know I owe you many date nights. My family has also been a huge part of this process to me. My parents have also encouraged me in so many ways to finish this dissertation.

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Finally, I'd like to dedicate this to my new daughter Madeline, who is now nine months old. I hope when the time comes you reads this, you can understand that you can accomplish anything with God's help. Madeline has been with me for the past twelve months of work and has been the inspiration for your daddy to finally cross the finish line.

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CHAPTER 1: INTRODUCTION

Background

The United States has a very high participation rate in post-secondary institutions. During the academic year 2008-2009, over eighteen million undergraduates were enrolled in post-secondary institutions (National Center for Educational Statistics, 2010). In 2014 over 21 million, or 42.3% of Americans aged 18-24 were enrolled in either a two-year college or a four-year institution as compared to 39.1% in 2010 (National Center for Educational Statistics 2015). This compares to a rate of 24% enrollment rate in 1970 and a 16.8% enrollment rate in 1950 (NCES, 2010). Prior to 1950, the enrollment rate never reached 9%. While the U.S. may be a world leader in the number of students who are able to gain access and participate in college, the same cannot be said for degree completion rates. Recent data from the Organization for Economic Co-operation and Development (2008) indicate that the U.S. is average to below average in degree completion rates when compared to other industrialized nations.

One of the best avenues to provide this post-secondary training should be the community college system, which provides a way for students to get the skills they need affordably and conveniently. Community colleges in the United States are located in a service area of 90-95% of the country's population (Hagedorn and Kuznetsova, 2016). One of the missions of the North Carolina Community College System is to accept and educate any student over the age of eighteen with a high school diploma or adult high school equivalency (North Carolina Community College System, 2014). Some students may not have received the necessary skills while in high school or high school equivalency, or they may have had a long lapse of time since graduating high school and entering college. For these reasons, many

students enter post-secondary education underprepared to begin college-level courses and must take developmental courses in reading, English, and math prior to matriculating to a degree or certificate program. Developmental education is a comprehensive process. Ideally, developmental education would be an effective tool for students to become academically prepared and then move onto college courses. Unfortunately, this is not the reality of the situation. Developmental education, which was meant to enable access to higher education, has become a great barrier to college completion. Studies show low completion rates for students in remedial courses, which indicate that students who do not pass a remedial course are more likely to drop out of college than retake the course (Jenkins, Smith Jaggars, & Roksa, 2009).

Developmental education, the supposed gateway to rigorous college work, is broken (Bailey, 2009). So many incoming students, particularly at the community college-level, require this developmental preparation, yet so few complete the developmental sequence and persist to college-level coursework. This issue has implications at all levels. At the student level, developmental education increases students' time and costs, has additional opportunity costs of lost wages, and results in potential frustration or discouragement from having to retake what are essentially high school courses (Bailey, 2009). Developmental education can increase time to degree by up to a year or more, depending on whether students attend part-time or full-time. Students must pay for these developmental courses even though they do not count as credit toward the degree.

In the fall 2007 semester, forty-two percent of students in the United States entering two-year learning institutions required remedial courses, while twenty percent of students entered four-year universities academically underprepared to enroll in undergraduate coursework and

were required to enter remedial education programs; however, during the fall of 2013, sixty percent of students entering classes at community colleges were not academically prepared for college-level courses (Bailey, Jeong, and Cho, 2010 and Adams, 2013). Bailey, Jeong, and Cho (2010) identified factors that prevent the matriculation of secondary students from secondary education to post-secondary credit or degree programs. The general problem is that entry-level community college and university students in the United States require remedial courses. Bettinger and Long (2009) stated that these developmental students are required to spend more time and money developmental courses, which delays their ability to enter directly into the required coursework for their degree programs. According to Boatman and Long (2010), these students often have substantially fewer credits than peers who were not put on remedial tracks

Federal-need-based financial aid is capped to a certain amount over a certain time period. Thus, developmental education is using up valuable financial assistance that students should be applying toward courses that are required for their degree in their program. It is described as “the most important educational problem in America today.” The main focus of developmental education is to help students meet academic standards through courses, tutoring, and other types of academic support (National Association of Developmental Education, 2010). In North Carolina community colleges, students are given a placement test called the *Accuplacer* once they enroll to determine whether or not they need developmental courses. Once completing the required developmental education, students should then have similar academic outcomes with those students who did not require developmental education before entering college level courses (Boylan, 2002).

The need for postsecondary developmental education is particularly disconcerting as the economic and social value of the high school diploma declines (Astin, 1999, p. 12). In

other words, many career paths require some post-secondary education and training. There are approximately 2.2 million students enrolled in developmental courses of which 98% are enrolled in community colleges (NCES, 2004). In 2010, North Carolina community colleges (the focus of this study) had 61% of students taking at least one developmental course, while 33% took two or more developmental courses. The state of North Carolina spent approximately \$125 million in the 2007-2008 academic year for remediation (Hunt Institute, 2012). Over the past few decades there has been much disagreement on whether the benefits of developmental education outweigh the increased cost and time for an associate's or bachelor's degree. For high school graduates not ready for the college curricula, developmental education enables students to enroll in post-secondary education. Unfortunately, developmental education also has the undesired consequence of increased time and cost to obtain a college degree, therefore possibly negatively impacting educational results such as perseverance, choice of major, and eventual job opportunities.

Metz (2002) noted that placement in these courses hindered student persistence because these developmental programs increase the time a student must attend the two-year college, thus adding further costs and delaying the time when students can begin the jobs of their choice. This same observation has been made since 2002 by Clotfelter, Ladd, Muschkin, and Vigdor (2014) who advocated for revamping the developmental education programs in North Carolina and Edgecombe (2016) who was part of the Virginia redesign. Attewell, Lavin, Domina, and Levey (2006) argued that approximately 40% of traditional college students enrolled in at least one developmental course in English, reading, or math in 2004. The NCES (2003) placed the number at 42%. In 2011, Le, Rogers, and Santos put the number at 60%. In the last five years 2013, the percent of students entering community colleges in the United States has remained

60% (Edgecombe, 2014). With the large numbers of students in need of developmental programs, in 2014, community colleges in North Carolina, Texas, and Virginia began course redesigns and used multiple measures in placing students in developmental courses. Data on these new redesigns have not been released by the individual state systems. For example, in 2013, North Carolina implemented changes in developmental education that included combining developmental reading and English, and altering the developmental math courses from three sixteen-week courses into eight four-week developmental courses. The goal was to decrease the amount of time a student was enrolled in these classes. The courses placed a heavy emphasis on self-pacing and technology rather than the previous traditional lecture model. The community college systems in Texas and Virginia did similar adjustments (Edgecombe, Kalamkarian, and Raufman, 2015). The need for more data on these redesigns as well as investigating other parts of developmental education like awarding financial aid are crucial to helping the students, colleges, and states.

All fifty states now offer developmental education in some post-secondary institutions. However, twenty-five states have eliminated funding for developmental education at four-year institutions; therefore, the burden of educating students in need of these courses fall to the community colleges. The primary reason for the elimination of developmental courses in four-year institutions was to keep costs down. North Carolina has two separate systems for postsecondary education. They are the University of North Carolina (UNC) system, which consists of sixteen universities, and the North Carolina Community college system, which consists of fifty-eight community colleges. Recently, in 2013, the two systems passed an articulation agreement that specify the course requirements necessary for students to transfer from community colleges to a UNC system college. North Carolina has long been a leader

among the states in the use of community colleges. As of 2010, about 40% of college enrollments in the state were in community colleges compared to 35% nationally (Snyder & Dillow, 2010).

Four-year colleges and universities in the UNC System still offer developmental math, reading, and English courses. The rate of students placed in these courses at four-year institutions for freshman who graduated from high school the previous year has declined from 14.6% in the 1993/94 school year to 8.4% in the 2010/11 academic school year (UNC General Administration, 2012). The reason for the decline, as in many states, is due to the fact that the North Carolina Legislature wants to shift all of the burden of developmental education to the community colleges. Thus, in 2010, 61% of first-time students enrolled in a North Carolina community college were placed in at least one developmental course in either English, reading or math, and 33% were enrolled in two or more (Loney, 2011). The problem is that only 40% of students that completed a developmental math course went on to complete a college-level math course, and only 60% of students that completed a developmental reading or English course completed a college-level English or literature course. The data for graduation rates for these students enrolled in one or more developmental courses is even lower. Reasons given for these low graduation rates by developmental students are still being researched; however, one reason might be that lengthening the process of completion by having to take one or more developmental courses would make it more expensive since Pell Grant eligibility is now only eight semesters. High dropout rates at community colleges make remedial education a pressing policy concern. In other words, is there a better way for the state to allocate resources that would increase persistence and graduation rates of under-prepared students that require developmental courses? Even though academically underprepared students are receiving

financial aid that covers the cost of tuition and books at North Carolina community colleges, the data is showing that the financial resources are not enough to increase persistence and graduation rates. As previously discussed, North Carolina, Texas, and Virginia are currently doing redesigns to decrease the amount of time needed to complete developmental education courses.

There are two types of students that enroll in community colleges: traditional and non-traditional. Traditional students are labeled as such for the following reasons: They began college less than a year after graduating high school, and they are under 24 years old. They are also single and financially dependent, and they depend on their parents and guardians to subsidize their educations (Bailey, 2004). Within the community college setting, these traditional students are most likely seeking to transfer to a four-year college. Non-traditional students do not meet these requirements according to Bailey (2004). The non-traditional student enrolled in college over a year after graduating high school or obtaining a GED. Most non-traditional students are older than 24 and many are married or have children and are financially independent, but their income levels put them in the bottom two socioeconomic quartiles. Another factor that separates traditional and non-traditional students is that non-traditional students are typically low-income and in need of financial aid. Non-traditional students attending community colleges are employed and require further training and qualifications to maintain their jobs or for advancement. According to St. John et al. (2005), 73% of these non-traditional students are considered low-income even though they may have some part-time or full-time employment. Likewise, whether a specific student is considered traditional or non-traditional, 62% of students placed in developmental courses are considered low-income and require partial or full federal need-based aid in order to attend a community

college in North Carolina (Snyder & Dillow, 2010). Students that self-pay do not receive any federal need-based assistance. Students that self-pay are in a household with two dependent children with a combined income of over \$50,000 (studentaid.gov, 2014). For families with no dependent children, the cut-off to receiving need based assistance is \$36,000. They must pay for the full amount of tuition, fees, and textbooks themselves.

Access and affordability have been part of the mission of community colleges. They are seen as the pathway to providing skills certificates, vocation and technical training, or further higher education for many low-income students. Moreover, community colleges are considered open-door institutions. They provide instruction and programs to students regardless of their academic preparedness. Academic preparedness often involves developmental education. According to the literature, many developmental students require more time to complete a degree program, which makes the time allocation and the cost of a degree program increase. Very few developmental college students complete a degree program which makes the resources allocated to these students difficult to justify. Some financial aid resources like Pell Grants provide the full amount for tuition, fees, and textbooks. Other types of aid can assist a North Carolina community college student with living expenses. Yet, these students are not persisting and graduating with an associate's degree. Students are not taking advantage of these opportunities presented to them, and the state is not getting the return on the investment in the form of an educated workforce. The need-based assistance in the form of Pell Grants is not encouraging students to graduate from the community colleges. They are merely providing access. It is vital that state policymakers and the community colleges come up with a better financial aid type (other than strictly need-based) that can increase graduation and retention among students requiring developmental courses.

Those few developmental students that do persist are unable to do so without the help of financial assistance. There are many financial aid types that can cover the cost of expenses for a community college education. However, low graduation rates among developmental community college students has become a problem for the state of North Carolina. Enormous resources are subsidizing the education of the community college students, but the students are not completing the associates' degree, diploma, or skill certificate programs in which they are enrolled in high enough numbers. Regardless of the tract or program, students must pass at least one higher level English and one math course. A deeper understanding of the effects of financial aid packaging on developmental community college students will hopefully lead to a better use of resources devoted to these students: higher persistence, and higher graduation rates (Mendoza et al., 2009).

Problem Statement

In the fall 2007 semester, 42% percent of students in the United States entering two-year learning institutions require remedial courses, while twenty percent of students entering four-year universities are not prepared to enroll in undergraduate coursework and must enter remedial education programs; however, during the fall of 2013, sixty percent of students entering classes at community colleges were not academically prepared for college-level courses (Bailey, Jeong, and Cho, 2010 and Adams, 2013). Bailey, Jeong, and Cho (2010) identified factors that prevent the matriculation of secondary students from secondary education to post-secondary credit or degree programs. The general problem is that entry-level community college and university students in the United States require remedial courses. Bettinger and Long (2009) stated that these developmental students are required to spend more time and money developmental courses, which delays their ability to enter directly into the required coursework for their degree

programs. According to Boatman and Long (2010), these students often have substantially fewer credits than peers who were not put in developmental courses.

These factors contribute to low persistence for these students. Nationally, 42% of first-year undergraduates at two-year public institutions in 2009-10 reported taking at least one remedial course after high school graduation and 23.9% were enrolled in at least two remedial courses in that year (Aud et al. 2011). Since 1999–2000, the percentage of North Carolina community college students requiring remediation has ranged from 48.6% to 54.3% (Ralls, 2008 and Clotfelter, et al. 2012). It is important to note that among non-traditional community college students nationwide, 46% leave in their first year (48% in North Carolina) compared with 23% of traditional students (Clotfelter, et al. 2012). Of those classified as non-traditional, 62% of these students leave within three years without obtaining a degree, compared to 19% of the traditional community college students. Research has shown that besides being academically underprepared, there are also financial and time barriers that prevent these students from persisting and completing a degree program.

According to the United States Department of Education (2014), 15.2 million students received over \$155 billion in federal financial aid in the form of Pell Grants, Stafford Loans, and College Work Study programs. In North Carolina for the 2007-2008 academic year, \$120 million was spent on developmental education, and this amount peaked in 2010-2011 academic year at \$135 million. Thus, enormous sums of money are being spent on teaching basic skills to academically unprepared students so that they may matriculate into a degree program.

Allocating the vast amounts of money to these students to encourage graduation is crucial for the state and the country. The purpose of this study is to compare the graduation rates of these developmental students who receive financial aid to those developmental students that self-

pay. The point of this is to determine if receiving a Pell Grant produces significant higher graduation rates for developmental students in North Carolina community colleges than those that self-pay. In other words, this study hopes to determine whether removing an economic barrier that may prevent enrollment can also increase persistence and eventually graduation rates. Another goal is to add to the body of literature to determine if there is a better way to disburse financial aid to developmental students to encourage completion.

Purpose Statement

The purpose of this causal-comparative study is to evaluate the graduation rates of community college students that require developmental courses and receive a Pell Grant. The methodology for this causal-comparative study will be discussed in Chapter 3 of the research proposal. The independent variable is whether the developmental student received a Pell Grant. The dependent variable is whether developmental students enrolled in North Carolina community colleges in the 2007-2008 school year completed a diploma or associate's degree within six years.

Significance of the Study

One factor that influences the economic health of a state or nation is having a well-trained and educated workforce. One of President Obama's goals for higher education placed "a reliance on community colleges to boost the U.S. economy. At the same time, states and higher education systems have looked to the community colleges to provide remedial instruction as a way to cut costs while improving graduation rates" (Parker, Bustillos, & Behringer, 2010, p. 19). As so many developmental students fail to complete their education, they miss out on the increase in human capital they could have gained from the degree, which includes increased earnings, productivity, and other personal and social benefits (Astin, 1999).

At the institutional level, the high attrition rate of developmental students is problematic due to the resources invested in developmental education with little results to show for it. Financial aid from the federal level and state funding for community colleges are dedicated to achieve what should have been accomplished in high school, yet the investment does not lead to good outcomes at the college level. Developmental education is considered a necessary component to facilitate student academic success at the college-level for traditional and non-traditional students. However, the lack of persistence and completion has institutions working frantically to find better ways to structure and offer the courses to improve outcomes (Bailey, 2009; Zachry-Rutschow & Schneider, 2011). Colleges have also come under criticism from state governments and policy makers, particularly community colleges, for their low graduation rates. There is pressure on community colleges to increase graduation rates, and developmental education is a major part of that effort (Goldrick-Rab, 2007).

At the national level, the implications for high developmental attrition rates are severe. There is a growing need for jobs that require middle skills, that is, some college but less than a bachelor's degree, and these skills are expected to be in high demand into the foreseeable future (Holzer & Lerman, 2009). These middle skills often require two-year associate's degrees, diplomas, or skill certificates. Historically, these jobs have been known by the terms vocations or trades (Porter and Rivken, 2014). Community colleges provide the training for these types of jobs. However, many of these degree, diploma or certificate programs often require college-level English and math. In other words, many students, both traditional and non-traditional, enter these programs academically underprepared and require developmental education. These students that require developmental education are unable to persist and graduate. Thus, the loss of these developmental community college students due to a lack of persistence from the

educational pipeline means the loss of potential future employees, which has a direct impact on the economy (Holzer & Lerman, 2009). Porter and Rivken (2014) noticed a huge gap in available applicants with the demand from companies in the United States. In conjunction with the Harvard Business School, Porter and Rivken (2014) claimed that forty-six percent of companies surveyed had problems filling these middle positions despite the high underemployment following the 2008 Recession. There are also societal implications when students who intend to gain a college credential do not complete it. Many efforts are under way to improve developmental education. Community colleges around the country are working to improve completion rates by evaluating the approach, structure, and role that developmental education plays (Zachry et al., 2011).

As previously discussed, community colleges are viewed as a more cost-effective way of earning a post-secondary degree, therefore, increasing earning power. Many of the students are considered low-income. Thus, most qualify for the maximum Pell Grant award of \$5,500 which covers the tuition cost, fees, and textbooks of two semesters of community college education in most states. However, only 17% of community college students graduated with an associate's degree from 2001-2007 (Snyder & Dillow, 2010 and Goldrick-Rab, 2007). The influx of federal aid to low-income students is increasing accessibility to a post-secondary education; however, the graduation rates are not there to justify the cost. What is even more troubling is that national data shows that students who enroll in developmental courses are far less likely to complete a degree than those not in developmental courses (Zachry et al., 2011). Only a few recent studies have examined the effects of remedial courses on college persistence or graduation and none of these involve financial aid packages.

Carey (2005) discussed how community colleges have a wide variance in graduation

rates for students. The NCES (2005) concluded that rates for associate-degree granting institutions range anywhere from 0% to 70%. The problem is that the body of research for the factors influencing the variance in graduation rates is small. Moreover, research literature for factors affecting graduation rates in community college is inadequate according to the Community College Research Center (Jenkins, Bailey, Crosta, Leinbach, Marshall, Soonachan, and Van Noy 2006).

Pell Grants are not producing the results (graduation and retention) that justify the cost despite their removal of financial barriers that would otherwise prevent students from attending a North Carolina community college. This is especially true for students who require one or more developmental courses. Mendoza et al. (2009) have found that “[s]everal studies have investigated the effects of specific financial aid programs on student access and retention, but none have sought to determine which model or combination of financial aid packages is more effective among community college students” (p. 113). Moreover, the need for developmental courses is of great concern in that taxpayers are already paying twice for high school graduates to take remedial courses before working on college credits: once with courses taken in high school and then twice with the same courses offered in college

Financial aid packages that result in higher persistence and graduation rates produce a more educated and qualified workforce that can contribute to the state’s economy. Financial aid packages are based on household income. As previously discussed, need-based aid is available to low-income students in the form of a financial aid package determined by the Financial Application for Federal Student Aid (FAFSA). The full amount of a Pell Grant is \$5,800. In North Carolina 73% of students in developmental courses qualify for these full amounts.

Considering the level of spending on financial aid and community colleges by both federal and state governments for students who do not graduate, gaining a better understanding of the relationship between financial aid, persistence, and likelihood of degree attainment, especially among under-prepared groups, will make a meaningful contribution to the existing literature. Researchers have previously examined the comparison between financial aid programs and persistence and determined that financial aid does indeed have an impact on persistence and likelihood of graduation (Chen & DesJardins, 2008). However, research focused on developmental students, for whom most federal and state financial aid programs were originally created is scarce. Consequently, it is unclear whether federal and state financial aid programs actually promote persistence among developmental students and improve the likelihood of degree attainment among this group.

Research Question

As previously discussed, the research is designed to study the impact of financial aid on first-year community college enrollees, specifically graduation rates. To properly determine the impact of financial aid on first-year North Carolina community college enrollees the following research question will be discussed:

RQ1: Is there a difference in graduation rates of community college students who receive financial aid and students who self-pay?

Definitions

1. *Associate's Degree* – Associate in Arts Degree or Associate of Science Degree. These represent the completion of a two-year from a community or junior college (LCC, 2010).

2. *Federal College Work Study* – A federally funded work-study program designed to provide on-the-job training in a designated field or college service (Student Aid Handbook, 2011).
3. *Degree-Seeking Student* – A student who seeks an AA or AS in an approved program prior to enrollment. The credits earned can be transferrable to state four-year institutions (LCC, 2010).
4. *Developmental students* – After taking a placement test prior to enrolling at a community college, these students are placed into basic courses in reading, English, and/or mathematics that are classified below college-level courses. A developmental program may last for two semesters (NADE, n.d.).
5. *Federal Stafford Loan* – Federally guaranteed loans authorized by private lenders to students to assist with the cost of attending college (Student Aid Handbook, 2011).
6. *Financial Aid Package* – A combination of grants, scholarships, and loans for which a student is eligible. A student may accept all or parts of the package (Student Aid Handbook, 2011).
7. *Full-time Students* – A student who is taking at least 12 credit hours per semester at a community college or four-year institution (LCC, 2010).
8. *Full-time Equivalent (FTE)* – The equivalent of one student enrolled full time for one academic year. Total FTE is the calculation of full-time students plus part-time students. Community colleges are funded through the FTE system by the state governments. Each school is given a certain amount of money per FTE (LCC, 2010).
9. *Grade Point Average (GPA)* – A formula that computes letter grades (A, B, C, D, F) in courses to an overall number from 0.0 – 4.0. A 2.0 is needed to successfully complete a

course and transfer the credit to another institution. A 2.0 is also needed cumulatively to graduate with an AA or AS (LCC, 2010).

10. *Low-income students* – Students who earn \$20,000 or less in annual income. These students qualify for a full Pell Grant of \$5,500 (Financialaid.org, 2010).
11. *Non-traditional students* – students who meet at least one of the following criteria:
employed full-time (at least 35 hours), delays enrollment (does not enter college the same academic calendar year as high school graduation), has dependents other than a spouse, is considered financially independent, or is a single parent (NCES, 1996).
12. *Pell Grant* – A federally funded grant for degree-seeking student to assist with the cost of attending college. In 2011, the total amount was \$2,750 per semester with a maximum of two semesters per year (Student Aid Handbook, 2011).
13. *Persistence* – The ability to complete a semester (12 or more hours) with a 2.0 GPA in all courses and then progress to the next level. For the purposes of this study, first-year enrollees begin in the fall semester and advance to the spring semester.
14. *Skill Certificate* – A certificate program that requires fewer credits than an AA or AS. These programs are meant to train students for trades and other occupation (LCC, 2010).

CHAPTER 2: LITERATURE REVIEW

Introduction

Much of the literature dealing with higher education and financial aid has dealt with access to college; however, there has been little research done on whether financial aid affects college persistence and graduation for developmental community college students. Chapter 2 of this dissertation reviews the literature related to this study on financial aid and persistence rates for developmental community college students. The first section discusses the historical perspective of community college and financial aid. The second section will consist of the history of developmental education and the graduation rates and persistence of developmental students in community college students. The third section focuses on persistence theories for both four-year institutions and community colleges. Also, the theoretical framework is addressed in this section. The fourth section will discuss the effectiveness of financial aid packages and community college student persistence. The fifth section will discuss the enrollment of students in developmental courses and their ability to persist and graduate.

Theoretical Framework

There are several coordinated parts to understanding this study. A researcher must analyze the reasons why a certain individual enrolls in a degree program at a community college. Then the researcher needs to understand the decision-making process as to why a student applies for and accepts a certain financial aid package. Factors for enrollment may include high school grades, SAT or ACT scores, resources provided by the high school for college-prep students, and family. A student whose parents obtained a bachelor's degree is more likely to persist and graduate from a four-year institution (Ruiz, 2008). Also, the financial burden associated with higher education is one of the main factors that impact a student's decision to enroll in college.

Therefore, students who self-pay are those whose parents finance their education or are working full-time as well as attending college. Thus, the combination of work, school, and family may affect academic achievement and persistence.

The theoretical framework addressed in this study comes from literature discussing the reasons why students pursue higher education. The main factor is that students view higher education as an opportunity for more economic opportunities (Ruiz, 2008). As previously stated, students choose community college as a more financially feasible option to obtaining a higher education. Moreover, since a community college education is more cost effective than attending a four-year institution, many students from lower SES (Socioeconomic Strata) attend the community college. Ruiz (2008) also discusses how financial aid, to students in the lower SES, is considered financial aid as the gateway to obtaining a degree and more earning potential. Students in the lower SES are also more likely to persist knowing that financial aid in the form of grants and loans are available.

Students in the middle and higher SES quartiles use financial aid for slightly different reasons. According to the NCES (2004), these students are comfortable accepting financial aid packages including student loans because they view education as an investment. Moreover, these students are less inclined to enroll in community colleges than lower-income students for socioeconomic status reasons. Moreover, very few community colleges in North Carolina participate in federal loan programs. Therefore, students in the middle and higher SES quartiles are likely to attend the college of their choice. Also, these same middle and higher SES students do not view borrowing the same as lower-income students. For lower-income community college students, the uncertainty of degree completion and the negative component of indebtedness are the reasons they rely on grants to fund a community college education.

The final theory to be addressed is that policy from the college, community, state, and nation affect decisions to enroll, persist, and eventually graduate. For example, as previously discussed, students that feel that financial aid is available are more likely to enroll in college courses. Likewise, other institutional policies like programs offered, registration processes, academic qualifiers, and extracurricular activities also affect the individual student's ability to enroll and persist. Tinto's Theory of Student Departure (1993) developed a theoretical model that associates student persistence with the integration into an institution. This model emphasizes academic and social integration as keys to student persistence. Integration can include a variety of areas like campus jobs, clubs, extracurricular interaction with faculty, or other networking. Tinto theorized a student's decision to persist or depart is affected by integration, which in turn is influenced by the student's characteristics such as background variables, which include a student's financial situation. Moreover, he concluded that a package involving work-study would be the most effective because it involved integration in the college.

Also, students who spend less time focusing on finances can spend more time putting effort into institutional integration. Tinto (1993) theorized that finances are a central concern to students when considering the decision to persist (Tinto, 1993). However, Tinto does not take into account the diversity of colleges. For example, some colleges are limited in the amount of activities or groups where a student can integrate. Community colleges offer less in this area than four-year institutions.

Alexander Astin also developed a theory of student retention that concentrated on student involvement as an explanation of student development and retention (1993) mainly, the environment that affect student development and retention. Astin defined student involvement as "the amount of physical and psychological energy that the student devotes to the academic

experience” (1999, p. 518). In other words, involvement was proportional to retention. Exposure to information and studying are not enough to ensure the success of students; regardless, fundamentally, Astin’s theory dealt with *how* the student develops and the effects that this development has on the student’s long-term retention (1999).

He later discovered in his study *What Matters in College* that academic involvement, student-faculty involvement, and peer involvement are the three most important types of participation (1993). What he fails to acknowledge is the impact that financial funding (or lack of funding) has on a student’s desire to integrate himself or herself into a college. Both Astin (1993) and Tinto (1993) discussed environmental factors that increase persistence across all socioeconomic levels. Yet, the focus of their studies did not factor in socio-economic status or financial need.

Empirical Evidence

Astin (1999) argued that policy-makers should allow institutions more authority in how to allocate these resources to influence higher academic performance and higher graduation rates. This research will result in the maximization of financial resources that the federal government, states, and institutions allocate to community college students. A redistribution of funds may help close the achievement gap between college students from different financial backgrounds, lower class, lower-middle class, and upper-middle class. A study was conducted among students enrolled in college to determine if this method was successful. It was concluded that the funds distributed should be awarded by a more detailed set of guidelines than those currently in place. Students who come from households in the top two SES quintiles have higher graduation rates than those who are in the bottom two SES quintiles. From the top of the spectrum, 72% graduated and only 40% from the very bottom (Advisory Committee on Student

Financial Assistance (ACSFA), 2010). From year to year, household income determines the graduation rates college students. The inequality should be addressed to increase these rates in the U.S. Means-tested financial aid can help improve student's success in college and decrease the drop-out rate.

In the mid-1990s, a study was conducted with a nationally representative data set, the National Postsecondary Student Aid Study (NPSAS), and the Beginning Postsecondary Students Longitudinal Study (BPS) to show the fund distribution of need-based funds and federal grants. Means-tested grants improved student success in college by increasing access and removing certain financial barriers that prevented persistence such as having a career or dependents to support. Financial aid determines a student's success in college from year-to year. In the estimation, eligibility relates directly to student performance (Bailey, 2005).

Another study was conducted to determine the connection between financial aid and student success rate. In the study, a larger financial aid award including grants and subsidized loans improved student success during the first year and increased graduation rates of students enrolled in private colleges by increasing access and removing financial barriers that prevented qualified students from attending traditionally more expensive private institutions. The number of students who received Pell grants decreased dramatically, including students who have siblings attending college. 45% of students received grants, as opposed to 55% who had siblings enrolled in college. Other factors determining financial aid distribution are the characteristics of the four-year institution, individual demographics, academic preparation, and socioeconomic level of high school attended, and student motivation. Merit-based grant eligibility has not changed and has showed consistency.

Institutional grants are a large part of an entire award package, over half, while federal and state are both around 20%. Schools use Expected Family Contribution (EFC) to grant financial aid and include the total need for expenses but use need-based funds to attract students from higher socio-economic backgrounds to their schools (Duffy and Goldberg, 1998). In the first year of college, the gap in the distribution of Pell Grants for students from lower-economic backgrounds decreases. However, the gap in the distribution among students receiving merit-based grants in the first year widens (Ruiz, 2008).

In their 2002 report, the Advisory Commission on Student Financial Aid (ACCSFA), which was commissioned by Congress to conduct a report on the status of student financial assistance, stated that 43% of qualified young people do not enter a four-year college within two years of completing high school and 16% never attempt college at all because of financial reasons (2002, p. 25). In 2002, \$60 billion a year was budgeted; however, only \$12 billion was for critical grant programs. It was the strong conclusion and recommendation of the ACCSFA report that the federal government should increase amounts of need-based grant aid (Pell): Pell Grants, as previously discussed would be more effective in a community college setting due to lower costs and tuition.

Unfortunately, Pell Grants are losing their purchasing power due to higher tuition costs and fees (Chen & DesJardins, 2008). Students and their families are being forced to finance larger portions of their education through loans (Chen & DesJardins, 2010). The original purpose of the Pell Grant was to remove the barrier that put the student from a lower socioeconomic group at risk of being unable to achieve his or her potential.

Since the ACCSFA report was published, Congress increased the maximum Pell grant from \$5,350 in fall 2009-spring 2010 to the scheduled \$5,550 for fall 2013 through spring 2014.

The full Pell Grant amount for students in 2017 is \$5,920, but this research tracked students from the fall semester 2007 through the spring of 2013. For the academic year 2008, tuition at a North Carolina community college was \$110 per credit, while the tuition at the state's four-year institutions was more than \$300 per credit the same year. Thus, a student receiving a full Pell grant for \$5,500, with a full 24-credit tuition bill for the year totaling \$2,640 received just under \$3,000 in a refund check for textbooks, summer courses, and other education expenses. Thus, the Pell grant meets the costs of education at the two-year school level, but this grant may not cover university level tuition costs. Despite the benefits of a Pell Grant, as previously discussed, low persistence and graduation rates continue at the community college-level.

There is a possibility that funds have been provided because of the determined likelihood of higher graduation rates of students in the lower-middle SES groups as opposed to the very low-SES students who are less likely to be academically ready for college. The study shows that financial aid determines whether lower-economic leveled students will drop out of college, but has no effect on the enrollment of higher-economic leveled students.

Community College Students

Community colleges were established in in the early 1900s to increase the availability of post-secondary education to academically and financially disadvantaged students (Cohen & Brawer, 2003). Early community colleges mainly focused on liberal arts programs. These early colleges usually used public school facilities and relied on public school teachers for the programs. During the Great Depression, community colleges began to transition to job training to solve high unemployment. Open admission policies allowed students who were not admissible to four-year institutions to gain an education and increase economic opportunities changing 20th Century. Lavin (1986) explains that the "community college was designed to

reverse the effects of prior economic and educational disadvantages that had been especially severe for minorities and to place the responsibility on the community colleges” (p. 2). Thus, community colleges become the most affordable means of obtaining training, certification, or a degree.

The mission of community colleges continued to evolve as the twentieth century progressed and enrollment increased. President Franklin Roosevelt passed the GI Bill in 1944 to provide financial assistance to over two million World War II veterans who wished to be trained at colleges and universities (McCabe and Day, 1998). Because of the large influx of aid following World War II, more states established community colleges to provide degree and training programs for veterans. By 1950 veterans became nearly half of all students enrolled at colleges and universities. Four-year institutions in the 1950s observed that many students lacked the skills and preparation to finish a bachelor’s degree program at a four-year institution. Thus, many universities advocated for community colleges to assume some responsibility of teaching general and developmental courses causing more of an increase in enrollment. By the end of the 1950s, most four-year institutions began formatting degree programs and making students complete two years of general courses before matriculating into degree program courses. Four-year institutions in the Northeast wanted to focus on research as the basis for their institutions. By the 1970s and 1980s community colleges expanded their curricula and began to offer technical, vocational, and occupational training as well as adult basic education for G.E.D.’s (General Equivalency Diplomas). Today’s community colleges offer many types of training and post-secondary educational opportunities for all students, especially low-income and minority students (Nora, 1990). They meet the business and training needs of the communities in which they serve (Levin, 1993).

Although community college students comprise 60% of all postsecondary students in the United States, they are not necessarily the traditional college student (Bailey et al., 2004). Miller et al. (2005) concluded that the demographics of community colleges differ greatly from those of four-year institutions. The student bodies are more female, from a minority population, and are usually first-generation college students. Moreover, that they have delayed entry into college by at least a year after high school, are 25 or older, are enrolled part-time, are single with a dependent status, and have a lower income. They may also be using the community college as a transfer tool, seeing these institutions as a stepping stone to additional education or a career instead of a final educational goal (Miller et al., 2005). These students are defined as non-traditional students are more likely to have other obligations and priorities other than school work like children and employment. Also, finances are cited as major obstacles to education.

Financial Aid

In 1965 President Lyndon Johnson signed the Higher Education Act which provided federal funding to colleges and universities to include the Federal Pell Grant, Work Study, Stafford Loans, as well as Direct Loans for students. This influx of federal aid increased the student population of community colleges because low-income and middle-income students had more opportunities for post-secondary education. Perna (1998) states that that these programs were initially created to assist academically qualified low-income students in enrolling in four-year institutions. However, they would later provide these advantages to students enrolling in community colleges. Thus, the community colleges became a different means to obtain a bachelor's degree rather than enrolling in expensive four-year institutions.

State governments, likewise, since the 1960s have subsidized public institutions. However, state funding of higher education has undergone significant changes. Traditionally,

states funded public institutions to maintain low tuition for students and promote equal access. However, a national report in 1973 from the Carnegie Commission on Higher Education recommended that states shift from a low-tuition policy to one based on the notion of cost-sharing between the states and students (St. John, 2003). In other words, state funding became need-based aid to equalize opportunity. However, state funding for community colleges (as well as four-year institutions) still was not sufficient for low-income and minority students. Following the Carnegie report, an increase in federal Pell Grants helped equalize opportunity through 1978.

Pell Grant Program

As previously discussed, The Higher Education Act (HEA) of 1965 created a federal grant program which was renamed into the federal Pell grant program by 1976 during Lyndon Johnson's Great Society. Financial aid programs, such as federal need-based grants, federal loans, and Work-Study, are considered Title IV aid programs. Since 1976, students qualify for Title IV types of financial aid by passing two-thirds of their classes and keeping an adequate GPA also known as meeting the Satisfactory Academic Progress Standards of the school (Brooks & NASFAA, 1986). These changes brought more accountability to the Title IV and were needed because students who were not achieving a degree in a timely fashion could not continue to qualify for aid indefinitely (U.S. Department of Education, 2010). Title IV eligibility is limited to students who have less than 150% of the credits they need to graduate from their program of study or to 18 continuous semesters of enrollment activity (Federal Student Financial Aid Handbook, 2009). The Pell grant program has been well-studied by many others as well as by The Pell Institute itself (The Pell Institute, 2004). In most of the studies related to federal financial aid and the Pell grant program, the conclusion and recommendations are predictable -

increase grant aid and allow students to lower the amounts of loans they borrow (Tierney, et al., Rogers, 2005).

Community colleges are an option for students who cannot rely as fully on Pell Grants to finance the cost of traditional universities. Since federal funding applies to the community college system as well as to the universities, the comparable value of the community college fees makes the choice fiscally attractive. Moreover, articulation agreements between state four-year institutions and community college aim to make the transition from a community college to a four-year institution easier. With the Pell Grant covering most community college expenses, this financial aid type has been more attractive to students (St. John, 2002).

Developmental Education

According to Bailey and Cho (2010), about 60% of community college entrants required at least one developmental course even though many of the entrants were high school or GED graduates. Among minority and low-income students, the number jumps to 90% (Bailey and Choo (2010). In 2014 in North Carolina, forty-two percent of community college students required one or more developmental courses including over 10,000 recent high school graduates. Many students are entering college underprepared in math, reading, and English courses. Much of the efforts to eliminate this problem revolve around student placement. The goal is to use a variety of measures (high school GPA and placement tests) to place students out of the courses. The NCCCS recently adopted this “multiple measures” approach in 2013 for all colleges; however, data on the success of these new placement measures has not been released.

Much discussion has taken place regarding developmental education at state and national levels in the last thirty years (Boylan and Bonham, 2007). Lawmakers, especially recently have talked the most about it, usually regarding eliminating developmental courses or offering them

only at community colleges. The reason for this is that previous research on remediation has primarily examined student outcomes and new models and practices to improve outcomes (Bailey, 2009). Community colleges nationally are diligently striving to improve remedial student outcomes. Best practices are being generated, researched, and shared. For example, in North Carolina there is an effort to accelerate the remedial sequence, integrate college-level courses, contextualize content, modularize content based on skills needed, offer additional student supports such as mentoring and advising, increase the use of technology, and provide additional professional development for instructors (Loney, 2012). Many efforts have shown some level of success, though problems arise related to scaling up and expanding such models (Zachry et al., 2011).

Research on the value of developmental courses is mixed. Several studies found limited to no gains of traditional remediation in increasing degree completion and others indicated the difficulties of expanding or scaling up new remedial approaches that have proven effective (Bailey et al., 2009). Another example was a study done by Martorell and McFarlin (2011) that found no positive correlation in enrollment in developmental courses and higher degree completion or even job attainment rates. Kreysa (2007) discovered similar outcomes for graduation rates between remedial and non-remedial students, but that research was conducted at a highly selective research institution and is not likely comparable to the community college context and did not see gains in remedial students. Calcagno and Long (2008) concluded that Florida college students enrolled in developmental mathematics and reading courses varied in persistence and graduation rates. Students enrolled in developmental courses their first year likely persisted to the second year; however, only 8% graduated with an associate's degree. Boylan and Bonham (2007) studied developmental education at an institution of higher

education in Louisiana. Their research indicated that after a seven-year period, only 16% of students who enrolled in developmental courses graduated, 9% were still enrolled, and 75% were not enrolled at the school. Similarly, Scott-Clayton and Rodriguez (2012), who examined data in six community colleges, found no evidence that developmental math courses successfully prepared students for college-level math courses. For example, they found that students enrolled in developmental math courses were less likely to pass college-level math than were students not assigned to developmental courses.

On the other hand, some research has found positive attributes related to remediation. The Community College Survey of Student Engagement (2005) surveyed more than 133,000 community college students across 38 states and found that more than 50% of developmental students were more engaged than students that placed out of developmental courses in terms of class preparation, faculty interaction, and use of support services. Bailey, Jeong, and Cho (2010), showed similar engagement from a smaller study. They concluded that 46% of developmental students tended to be more engaged than students that did not previously take developmental courses. However, these studies do not show whether the developmental students persisted and completed a program. Bettinger and Long (2009) compared students who took developmental education to those that had the same skill level but did not enter remediation and found that students in remediation were more likely to persist. Such contradictory outcomes reflect that developmental education is a complex issue.

Some question its effectiveness and inconsistent standards, while others continue to insist it must remain as an access tool. Some have gone so far as to recommend ending it altogether (North Carolina), while others stringently argue for the need to maintain the function (Spann, 2000). In 2015, a proposal was made by the North Carolina House of Representatives, NCGA

Bill 754, to move remedial education to the high schools (North Carolina General Assembly, 2015). The bill proposes that students be given a college exam following their sophomore year in high school. Those deficient in English, reading, or math would be enrolled in remediation courses their junior or senior year of high school, rather than the first two years of college.

Implications at the student, institutional, and national level have already been explored; however, faculty and staff have a role to play in the developmental education experience. Low expectations, particularly by the faculty, can be injurious to students' experience. Deil-Amen (2006) noted that faculty expectations can affect a self-fulfilling prophecy of students not achieving their greatest potential. Oudenhoven (2002) looked at three community colleges and their approach to remediation. He found that the expectations of the faculty and staff played a significant role in student success. One institution took the position that it gave students the opportunity to succeed, but many would not take that opportunity; while another institution took the responsibility on itself to ensure that students were able to complete the courses (Oudenhoven, 2002). The community college, with its open admissions, seeks to provide opportunities for disadvantaged individuals who might otherwise not attend college (Bryant, 2001). According to Guffey, Rampp and Mitchell (1998), "Community colleges in the United States attempt at least three important missions: the transfer function, the adult education function, and the technical/vocational preparation (terminal degree) programs" (p. 34). Cohen and Brawer (2003) state that these missions are becoming more difficult to effectively implement as community colleges have seen an increasing number of students apply for admission with less than college-level skills. Increasing ethnic and linguistic diversity is combining to make developmental education critically important for individuals who wish to participate in postsecondary education (Perin, 2002).

States have seen these results and have begun taking steps to remove developmental education. Even though community colleges have also historically played an important role in higher education by offering instruction in basic reading, writing and math skills to enable students academically under prepared students to master the college curriculum; the community college is the only institution among other types of higher education that has a legal and social mandate for remedial education (Levine, 2001). Several states have also begun eliminating the state funding of developmental education from four-year institutions. These states have already limited the amount of financial aid available to these students. Remediation has proven to be too expensive for many states' budgets. In *Education Week* (2008), the author stated the average cost of remediation per student in the North Carolina runs to as much as \$2,000 in community colleges per student per developmental course.

As of 2012, thirty-five states have mandatory entrance exams to determine whether a student requires developmental courses (Bailey et al., 2013). The other fifteen states rely on SAT and ACT scores. In these states without entrance exams, if a student scores less than a 19 on the ACT, the student is required to take developmental courses at a community college prior to transferring to a four-year institution. North Carolina is one of these states that has an exam for the placement of these students. These states like North Carolina have relied on diagnostic tests like Accuplacer to place students in these developmental courses. Recently in 2012, the North Carolina Community College System implemented new diagnostic assessments called the NC Diagnostic Assessment and Placement test (NC DAP). Moreover, the system adopted a system called the Multiple Measures as a new placement policy that considers recent high school graduates' high school grade point average. These new standards are more likely to decrease the number of students that need to enroll in developmental courses, which may hinder the students'

abilities to be to do college-level math and English courses. The goal in the reduction of the number of developmental students is to save money.

At the national level, the future of developmental courses is in flux. Some states want to completely dissolve developmental education from post-secondary institutions. Others want to move these services to the community colleges. Moreover, the financial implications for students (35-40%) nationally are another issue that needs addressing.

Once North Carolina eliminated developmental education in the 1990s from four-year institutions, community colleges in North Carolina assumed the task of teaching developmental courses. Addressing the lack of student success related to remediation has been a core part of The Bill and Melinda Gates Foundation. The foundation announced a commitment of \$110 million to transform remediation, urging community college presidents to boost graduation rates by replacing weak remedial programs with new technologies and fresh ideas that could be scaled. The foundation criticized traditional remedial programs at most community colleges and claimed that “these low-quality programs that are supposed to help students catch up academically are actually the biggest obstacles students must overcome in their pursuit of a college degree,” finding that “academic catch up should be a launching point for students, not a roadblock” (Bill and Melinda Gates Foundation, 2010, p. 1). The focus on improving remediation has grown significantly, which has shed light on its components and effectiveness.

Some of the measures taken by the states to improve developmental education focus on decreasing the amount of time the academically unprepared students are enrolled in these classes. For example, many states, including North Carolina, have revamped their developmental courses to include an emphasis on technology and self-pacing rather than the traditional classroom lecturing style. The new measures also combined English and reading into a one course,

Developmental Reading and English, and reduced the term from sixteen weeks to eight weeks in order to move students more quickly through the developmental program in hopes of having the students complete their desired programs and as a cost-saving measure (NCCCS, 2014). The average cost of educating one student in one developmental course is over \$2,000 (Loney, 2012). The same was done for Developmental Math. The program went from three levels (Math 60, 70, and 80) that were sixteen weeks long to eight developmental math courses that were four weeks long each. There is not enough data to see whether these courses created more success (persistence) for students (*SuccessNC*, 2013). Success for these courses is measured in students receiving a grade “C” or higher in English 111 (freshman English) and college algebra. It is unclear how shortening the length of the developmental English, reading, and math courses is to increase student success in college-level courses due to the lack of results and data available from the course redesigns.

Scott-Clayton and Rodriguez (2012) believe that developmental education in North Carolina Community Colleges has three main purposes. One is the developmental function which is intended to develop the skills that students need to succeed in college-level math and English courses. Secondly, however, developmental courses may discourage students from taking more challenging courses. By signaling to students that they are not ready for college-level work, enrollment in developmental courses may lower the student’s self-esteem and stigmatize them. It could even add more barriers to students in completing a specific program (Hacker, 2012). This second function leads to the third function of developmental education. This third purpose is that developmental courses are there to keep students that are not academically prepared from enrolling in more challenging college courses. This is to ensure that the rigors of these courses are not removed due to the presence of students unable to do

the work. Scott-Clayton and Rodriguez (2012) observe that this negative function can serve high-achieving students by keeping college-level courses rigorous since low performing students are not enrolled. Data on the revamped curricula for developmental education is ongoing.

Related Literature

Other studies by Cabrera et al. (2003) and Perna (1998) were conducted at four-year universities. Research like this may not be effective in analyzing financial aid's impact on persistence of community college students because of admission policies. Community colleges have open enrollment where most four-year universities do not. Community colleges accept students regardless of their academic preparedness, whereas four-year institutions may accept students who are prepared for rigorous college work. In other words, most students enrolled in four-year institutions have been deemed academically prepared and do not require developmental education. These students are more likely to persist because of their academic preparedness than those entering community colleges. Other research involving community colleges have found mixed results on the impact of financial aid on graduation and persistence from semester to semester.

Moreover, the Middle-Income Student Assistance Act was passed increasing the number of students eligible for Pell Grants by funding more middle-class students, leaving less funding for the poor (St. John, 2003). Following these changes in state funding, student aid policy after 1980 shifted more to individual responsibility (St. John, 2003). Thus, the Federal government began reallocating aid from Pell grants and work study to Federal Subsidized Stafford Loans. This occurred when the federal government began decreasing its investment in Pell Grants and increasing the amount of money available for subsidized loans. This shifted responsibility for

higher education away from taxpayers, and it allowed tuition to increase without increasing investment in need-based grants. Also, due to the involvement in funding for higher education, state funding has declined 40% from 1978-2006 (Weerts & Ronca, 2006). However, from 2006 through 2014 there has been a slight increase in funding from the state level in North Carolina at 6.6% (Pernsteiner and King, 2015). At the same time, tuition rates have increased substantially (Heller, 2006). Recently, *The College Board* (2016) did a study that the rate of tuition has increased 29% from 2011 through 2016 at public universities nationwide.

The financial aid opportunities are reviewed by Congress every five years and reauthorized. With any federal aid program, there are those that question their effectiveness. Community college officials and students view federal and state aid as beneficial to low-income and minority students. According to a study done by the GAO (2001), most students enrolled in community colleges since 1965 are considered low SES. In a study done by the NCES (2005), nearly 48% of all post-secondary students have used one or more federal or state aid programs. However, there is no definitive quantitative research that shows that these aid programs translate into higher graduation rates or if they provide benefits to the local, state, or national economies (St. John, 2001, Bailey, 2005). The purpose of this study is to determine their effectiveness by analyzing graduation and persistence rate for students who take advantage of these federal programs.

The conditions of higher tuition and lower need-based grants have increased the importance of coordinating state and federal finance policies. Initially, the goal was to optimize state funding per student while also ensuring access to low-income students. Even though the influx of federal aid increased access, there has been little evidence showing that it has had any effect on persistence and graduation rates, especially at community colleges. The National

Center for Education Statistics (NCES, 2004) reports that the college enrollment rate of high school graduates has risen from 50.9 to 65.2% between 1965 and 2002, suggesting that aid policy has been successful in increasing access. From 2004 through 2014, the number of students enrolled in post-secondary institutions increased another 17% (NCES, 2014). However, persistence disparities in college student outcomes have also been observed across racial and socioeconomic groups. Studies have consistently found that low-SES students have significantly lower persistence rates than their peers from higher SES backgrounds (Tinto, 1992). The gaps in persistence rates between whites and minorities have actually widened over time (Cook & Cordova, 2006). It is important to examine whether state finance policies relate to these gaps among different subgroups to help policymakers develop state finance policies to promote equal opportunity in higher education. The impact of federal financial aid programs is still a new field in the social sciences. Even though financial aid programs have been around since the 1960s to subsidize education, the effectiveness of the programs was rarely analyzed until the 1990s. Since the late 1990s, more research has been conducted on the topic (Advisory Commission on Student Financial Aid, 2002; The Pell Institute, 2004; Pekow, 2006; Rothstein & Rouse, 2007).

In today's economy, college-educated people find themselves in higher demand and earning better wages than those whose highest level of education is a high school diploma. The United States is no longer one of the top five countries whose young adults (ages 25 to 34) have earned a postsecondary degree (Baum & Ma, 2007). The United States having only about 40 percent of these young adults earning an Associate degree or better is behind Canada which has about 56 percent with at least an Associate degree (Baum & Ma, 2007). College persistence rates at American four-year institutions and community colleges are low.

Had the sources been redirected, the gap would not be in question. Need-based grants will help students from different economic backgrounds be on an equal path to graduation. A new financial aid plan, including considerations among federal, state, and institutional funds; can have a positive impact on the attainment of college degrees. The formula used to determine eligibility is positive, but could be improved by a larger Pell Grant award. A higher commitment to acknowledge the unmet needs of students can greatly impact the future of the US economy and the country,

The benefits of earning a college degree are quantifiable and identifiable; earning potential, health, quality of life, and economic development are linked to educational attainment. There is a positive correlation between obtaining college degrees and achieving higher income over an individual's working lifetime. Without a certificate or degree, low income students are less likely to achieve upward socioeconomic mobility (Baum & Ma, 2007).

Students who enter college immediately after high school with good grades (above a 3.0 GPA) and SAT or ACT score; who attend full-time, without interruption; and who come from high-income families with parents who attended college are most likely to graduate (Bailey, 2005). That description does not match the characteristics of community college students. For the developmental student, graduating with a post-secondary credential impacts individuals and society with benefits that are both economic and social. These students who do not graduate will be less likely to enjoy the benefits that achieving a post-secondary credential can provide. The importance of post-secondary education was emphasized by

The low college completion rate of students has been labeled an "ongoing crisis" in the United States and particularly so in community colleges. During 2010, more than six million

students enrolled in community colleges; however, low persistence and low completion rates were still common (Schneider & Yin, 2011). According to Tinto (2011), over the past forty years, access to higher education improved, but the completion rate of students was increasing only slightly. Tinto (2011) also indicated that there was evidence showing that the United States was lagging behind other countries in its efforts to graduate its college students. Only 53% of students who began at a four-year institution in 2001 had completed a bachelor's degree by 2007, and only 25% of community college students who started in 2005 had completed a degree four years later (National Center for Education Statistics, 2011). Only 36% of community college students obtain a degree six years after enrollment (Bailey, Leinbach, & Jenkins, 2006).

Student retention is viewed as an institutional effectiveness issue, a financial issue, and an enrollment issue. Moreover, it continues to be a challenge for community college administrators and researchers (Summers, 2003). The high number of students requiring developmental courses now establishes a fourth mission for community college: to provide developmental studies in English, reading, and math for students wanting to enter any of the traditional programs of the institution, be they transfer, adult education, or terminal programs (Almeida, 1992). Community colleges began offering remedial courses in the 1960's. The goal of these courses was to better train students who were not able to matriculate into a degree program at a four-year institution. However, little research has been done to determine their effectiveness in persistence and graduation. Hammons and Matthews (1999) looked at the effects of different variables on persistence in community colleges with a large population of low-income and minority students. Enrollment in developmental courses was one of these variables. They found that there was no significant difference in enrollment in developmental courses and graduation rates. Moreover, their study found that there was no significant

relationship between financial aid and graduation rates either. Having to take developmental courses adds time and further monetary costs to completing a two-year degree or certification program; however, there was no significant difference between these variables and persistence and graduation.

For students who qualify for financial aid, there are differences in success rates associated with the different financial aid types. Recent findings on this research are contradictory and difficult to draw conclusions. Thomas Bailey (2005) notes that students that are considered low-income have lower GPA's than community college students who work only part-time or none at all. Also, Paulsen and St. John (2002) found that financial aid packages consisting of Stafford Loans and Pell Grants have a negative effect on persistence among poor students but not among higher-income students. Despite the financial aid disbursements available to lower-income students, other barriers existed for them. The authors concluded that the students did not persist or graduate due to academic unpreparedness. Titus (2000) found that aid is not sufficient to promote the retention of low-income students. In general, research has indicated that Pell Grants and other need-based financial assistance increases the likelihood that an individual will enroll in postsecondary education although not necessarily persist. Chen and DesJardins (2008) examined the effect of financial aid on persistence to graduation across different income groups. Low-income students were likely to persist, but not graduate, while middle-income students were more likely to not persist after the first year.

As previously discussed, the few studies involving financial aid's impact on persistence and graduation are mixed. Perna (1998), Desjardins et al. (2003), Metz (2002) did conclude that receiving financial aid combined with other variables like involvement or GPA did contribute to the student's ability to persist and graduate. In other words, financial aid alone was not a

significant factor in persistence. Cabrera et al. (2003) found that participation in school activities, consistent dialogue with advisors, and on-campus employment increased graduation rates at four-year institutions by 8%. The study done by Perna (1998) did show that students receiving Pell Grants or a package of Stafford Loans, Pell Grants, and College Work Study had higher graduation rates than those that did not. The American Association of Community Colleges conducted a study that did show the benefits of financial aid on graduation rates, especially to minority students.

Access and affordability have been part of the mission of community colleges. They are seen as the pathway to higher education for many low-income students. However, even though community colleges provide a less expensive educational experience than four-year public and private institutions, a community college faces enormous educational expenses. In fact, Mendoza, Mendez and Malcolm (2009) stated, “Full-time community college students who do not live with their parents, face educational budgets of approximately \$12,300, including transportation and other expenses in addition to room and board” (p. 117). A study done by Dowd and Coury (2006) shows that cost and financial burdens are a factor in the decrease of enrollment at community colleges and the high drop-out rates.

Community colleges are educating 44 percent of all United States undergraduates. Thus, they need to respond to the challenge with greater focus on student persistence and completion (American Association of Community Colleges, 2012). Since over 60 percent of incoming community college students require some form of developmental education, in order for community colleges to accomplish these graduation goals, they will need to improve their remediation rates, thereby improving persistence and graduation rates for community college students (American Association of Community Colleges, 2012). Far too few students

successfully navigate the developmental education sequence into college-level courses. As a consequence, students in developmental courses find themselves unable to complete their degree or certificate programs in a timely manner. The fact that students only receive Pell Grant benefits for eight semesters may also play a role in a lack of persistence.

Persistence measures both student and institutional success. Tinto (1987) has performed several studies on persistence and retention programs that both community colleges and four-year universities have tried. His conclusion was that there was no single formula for increasing persistence or retention rates at community colleges. These programs must be determined by the local colleges themselves. Persistence is usually measured as a student progressing from the fall to spring semester and then again to the fall semester of the following year.

Most community college students are unable to persist without the help of financial assistance. Therefore, low graduation rates and low persistence among community college students should be addressed by institutions and policy makers. A deeper understanding of the effects of financial aid packaging on community college students will hopefully lead to a better use of resources devoted to these students, higher persistence, and higher graduation rates (Mendoza et al., 2009). Mendoza et al. (2009) also state, “Several studies have investigated the effects of specific financial aid programs on student access and retention, but none have sought to determine which model or combination of financial aid packages is more effective among community college students” (p. 113).

As previously discussed, studies have shown the need for higher education in order to help low-income students take advantage of economic opportunities. Financial aid and community college systems are both necessary for low-income students to attain this goal. Ruiz (2008) states, “Fiscal resources are vital to many minority and low-income students who attend

two-year institutions” (p. 59). However, there is still a problem with low graduation rates and persistence at community colleges. These problems affect both the students, colleges, and the national and state economies. For example, Baum and Ma 2007 results stated the following:

Of the students who began their studies at community colleges in 1995-1996 with the intention of earning a bachelor’s degree, only 23% had accomplished that goal within six years; 39% had not earned a degree or certificate and were no longer enrolled. (p. 26)

Thus, a research study that shows the benefits of Pell Grant is needed. Most of the other literature focuses only on specific local populations. This research proposal will focus on a broader population that can be generalized.

Another factor impacting community college persistence and graduation is that many of the students are considered non-traditional and/or have dependents. Even though a community college education is considered more economical than direct enrollment into a four-year institution, there are still many financial costs that can hinder a student from earning a degree. Many of the students are considered low income. Thus, most qualify for the maximum Pell Grant award of \$5,500 which covers the tuition cost, fees, and textbooks of two semesters of community college education in most states. Moreover, the federally funded Stafford Loans (\$9,500) are also made available to students. Only eight community colleges in North Carolina offer the Stafford Loans. Due to recent accountability measures from the Department of Education, colleges are now penalized financially for students that do not pay off the loans. Thus, beginning in 2006, community colleges in North Carolina removed loans from financial aid packages. Financial aid resources available to community college students vary in amount, qualifications, and benefits to the students. Financial aid resources include Pell grants, institutional scholarships, and in some cases, Stafford Loans.

Metz (2002) conducted a similar study that analyzed variables for students who enrolled in 1993 at a Midwestern community college. It included enrollment in developmental courses as a variable to determine persistence. Metz determined that enrollment in developmental courses had a negative influence on graduation rates because of the increased amount of time taken to complete a degree program and the potential financial costs of this additional time. Also, other factors contributing to these lower graduation rates were the stigma attached to the student who had to take the developmental courses. It lowered the morale of the students. In some states, schools have tried to remove the stigma by renaming the developmental courses to make them sound like the college-level courses. GPA was found to be the variable with a positive influence on persistence, as found in Cabrera et al. (2003) and St. John's (2000) study. Turley's (2003) study also found similar results to those of Metz (2002). Students that enrolled in at least two developmental courses had lower graduation rates than those that did not. Moreover, both Turley (2003) and Metz (2002) found that Pell Grants had a more positive effect on persistence and graduation than did Stafford Loans. The idea of having to repay the loans after completing a program became a burden and strain even during college (Bailey, 2011). All studies discussed in this section also showed that the College Work Study program was also beneficial, especially to those students enrolled in developmental courses because students were able to become more involved with the college. Students that are invested in the campus, whether it be with through a job, club, or interaction with the faculty and students tend to persist at higher rate, and College Work Study programs are a vehicle to become invested in the college (St. John, 2011).

As in four-year institutions, retention is an issue in the community college. In the 1990s, approximately half of students who departed from college institutions did so in their first year, and this percentage is estimated to be even higher for community college students (Tinto, 1993).

These rates have increased since then. Jamelski (2009) reported the average retention rate of all United States institutions of higher learning from a student's first year to second year to be 68.7%. This percentage is estimated to be lower for community colleges. According to Clotfelter et. al (2012), the number of students persisting from the first year to the second year was 67%. Attrition has a negative impact on the institutions in lost tuition, fees, and government dollars. Retention can also be linked to financial burden. Students who do not possess the financial resources to pay for college are much more likely to depart which further widens the gap between high and low-income families concerning education attainment even with the increased amount of financial aid available (Chen & Des Jardins, 2008). The fact that students themselves will most likely lose earnings from departure has already been established (Long, 2010).

In terms of retention for students in developmental education, its significance has been found dependent upon when the developmental education occurs. Adelman (2004) while studying a cohort of students who graduated high school in 1982, found that compared to students not requiring developmental education, graduation rates were significantly lower for students requiring developmental education. Adelman (2004) replicated this pattern with a cohort of students from the high school class of 1992. Adelman's studies (2004) reveal that due to the increased time and costs, along with possible lowered self-efficacy, developmental education students exhibit a greater risk of dropping out.

Persistence Theories

The studies on whether a student persists or does not persist vary greatly. Prior to the 1970s, theories on college student retention were based on psychology. Theorists ascribed characteristics of students entering colleges and universities, such as academic preparation and

lack of engagement, as the catalysts for student dropout. Educators considered students who did not stay as less capable, an early belief allowing institutions to be relatively fault-free in the role of student retention (Tinto, 2011). Recently, student persistence has become a measure of success of community colleges. Therefore, the view on persistence has changed from psychology to sociology. This caused researchers and administrators to focus on the college environment for students as much as they were on the pre-entry characteristics of students. This shift was important to the role of retention in higher education because the college environment was something that the community colleges had control over, which meant accountability for student retention became a shared responsibility between institution and student. Research credited Vincent Tinto (1993) for formulating a new paradigm to introduce higher education to a theoretical model of retention to explain the processes of interaction between the student and the institution (Tinto, 1993).

Despite the resource available, only 17% of community college students attain a degree or skill certificate within six years (Baun and Ma, 2007). St. John (2000) notes that financial pressures are the main source for low persistence. Ozden (1996) concludes that persistence and graduation rates were influenced by a variety of factors. These factors included SAT scores, class rank, parental involvement in their children's future goals, and SES. Other factors influencing persistence included enrollment in developmental course, tuition, college GPA, and finally financial aid access. One common influence on student persistence is campus involvement. Astin (1999) proposes the theory that involvement in the college environment heavily influences persistence and graduation rates. This involvement can include participation in student government, intramural sports, clubs, and campus jobs. Astin (1999) finds that the amount of time a student spends in the college environment greatly increases the likelihood of

student persistence. Thus, institutional factors play a much bigger role in student persistence than do the policies of government. For example, the more opportunities the institution provides for student involvement, the more likely a student will become involved and achieve academic success. Cabrera et al. (2003) also draws similar conclusions.

Involvement theory also includes campus employment or work-study programs. Students receive money or tuition discounts for working. These work opportunities greatly increase the likelihood of persistence because there is an increased attachment to the college. Perna et al. (2002) conducted research on the effects of the college work study program and graduation rates at four-year institutions in the Midwest. He concluded that students who worked on campus had higher graduation rates than students who worked off campus or did not work at all. Along with Pell grants, and Stafford Loans, this study will measure the effects of the Federal Work Study program on persistence for developmental students at the community college-level.

In an earlier study, Astin (1999) found that when packaged with other financial support, work-study programs yielded a positive correlation between campus employment and student persistence because of campus involvement. The implications of this study suggest that working while on campus while attending college, if balanced properly, can provide opportunities for student development that may as a result increase persistence rates at some institutions. Through his theory of student departure, Tinto suggested that for a retention theory to be relevant to both students and post-secondary institutions, it must integrate well with student education (Tinto, 1993). Researchers Nora, Barlow, and Crisp (2006) agree with Tinto (1993) with the link between persistence and campus integration. Moreover, Chen and DesJardins (2008) found that students involved in the Federal Work Study Program were found to have higher persistence and graduation rates, regardless of socio-economic status, because of campus integration. For

example, work-study students were more likely to participate in orientation, to receive encouragement from their families to continue their enrollment, to report more positive interactions with their peers, and to report a higher degree of involvement in campus clubs and organizations (Chen and Desjardins, 2008.)

Tinto (1993) discussed and analyzed a variety of components that factor into student persistence. He concluded that financial aid programs on student persistence factors into enrollment but is not identified as playing a significant role after the “point of entry into higher education” (Tinto, 1993, p. 65). The interesting part about Tinto’s study was that financial aid emerges during the college choice process and has a higher impact on student persistence when a student uses all family and personal finances. Tinto (1993) also felt that if there were emphasis placed on degree attainment prior to college, that financial aid would have more of an impact. Yet, he concludes that financial situations do not play a huge factor in persistence following enrollment. Finally, Tinto concluded that financial aid removes concerns of finance in regards to persistence. Low-income students were the only group where financial aid was significantly positive to persistence and graduation. Similar to Tinto, Astin (1993) found only a mild positive difference between student financial aid programs. Astin (1993) discussed how under the current complex system, financial aid by itself has “few significant effects” on persistence (p. 368).

CHAPTER 3: METHODS

Introduction

Studies have shown the need for higher education to help low-income students take advantage of economic opportunities. Financial aid and community college systems are both necessary for low-income students to attain this goal. Ruiz (2008) states, “Fiscal resources are vital to many minority and low-income students who attend two-year institutions” (p. 59). However, there is still a problem with low graduation rates and persistence at community colleges. Community colleges began offering remedial courses in the 1960s. The goal of these courses was to better train students who were not able to matriculate into a degree program at a two-year or four-year institution. These developmental courses have been revamped several times since they time they were first offered.

These problems affect both the students, colleges, and the national and state economies. According to a study done by Baum and Ma (2007), “Of the students who began their studies at community colleges in 1995-1996 with the intention of earning an associate’s degree, only 23% had accomplished that goal within six years; 39% had not earned a degree or certificate and were no longer enrolled” (p. 12). More recent studies show that the trend has not improved, Adams (2010) concluded that only 21% of developmental students nationwide graduated with a degree, diploma, or skill certificate. A research study that shows the benefits of financial aid in persistence and graduation rates for these developmental students and which types of financial aid are the most effective is needed. Most of the other literature focuses only on specific local populations. This research proposal will focus on a broader population that can be generalized.

Design

The researcher adopted a causal-comparative study in order to investigate the difference between the graduation and persistence rates of first-time community college enrollees. As previously discussed, the causal-comparative design allows the researcher to use historical data to measure the impact and difference of these variables. The causal-comparative design is used because it allows the researcher to examine historical academic and financial data from community college databases. These databases come from the colleges' financial aid departments and departments of institutional advancement.

The causal-comparative design was chosen because there is not a way to do this research experimentally since experimental research requires manipulation of the independent variable to determine its effect on the dependent variable. Therefore, choosing an academic year to start the data analysis is the ideal method. Historical data can show its impact on the dependent variables, persistence, and graduation rates to determine whether there is a difference. Much of the research done on financial aid's impact on academic performance has used ex post facto designs.

Research Question

RQ1: Is there a difference in graduation rates of community college students who receive financial aid and students who self-pay?

Null Hypothesis

H₀1: There is no significant difference in the percentage of graduates for first-year developmental community college students that receive financial aid and those students who self-pay.

Participants and Setting

The population of this study will come from first-year developmental community college students in different community colleges. The colleges chosen will represent different parts of the state of North Carolina to ensure diverse populations. The sample size will be 1,462 developmental students in North Carolina that enrolled in 2007-2008 school year. The sample was determined through a power analysis from the G*Power 3.1.9.2 software program (See Appendix 1). This analysis used a 22% hypothesized proportion with a significance level of 5% and a power of .85. According to Cohen's *d* (1988) for *t*-tests, which was used for this power analysis, the effect size is moderate at .07. The start point will be used to ensure that the students in the study will have adequate time to complete a certificate, diploma, or associates degree program. The research will measure both full-time and part-time developmental students' persistence and completion. Since this is not an experiment, the groups are not randomized. The students will be grouped based on those that self-pay and those awarded Pell Grants of financial aid. Subgroups representing students that received the different forms of financial aid are also created. The socioeconomic status of the students receiving financial aid has already been determined during the FAFSA application process. Therefore, it is assumed that there is no external threat to the validity because of the socioeconomic status of the students in the study.

The research will focus on community colleges in different regions of a Southern state so that the conclusions are not localized toward one population. Since North Carolina is broken up geographically into three parts, the coastal plains, the urban Piedmont, and the mountains, there will be a community college representing each of these three regions. Students enrolled in a degree program for the Fall Term for the 2007-2008 academic year were tracked for the next six

years so that they had ample time to complete their associate's degrees, diplomas, or certificate programs.

Each of these locations follows the same standards set forth by the Southern Association of Colleges and Schools (SACS). Therefore, their developmental academic rules, standards, and procedures are uniform and will not harm the reliability or validity of the study. Moreover, each of these community colleges accepts the same forms of financial aid previously discussed: Pell Grants, Stafford Loans, and College Work Study. Performing an interstate study would present challenges because the developmental academic programs and the financial aid rules would differ.

Instrumentation

The data from the various institutions: financial aid (Pell Grants), graduation rates, and promotion to the next semester will come from each institution. Graduation rates are measured by the successful completion of an academic program, or a two-year degree. These Associate Degrees can come in two forms, an Associates of Arts or an Associates of Science. Persistence will be determined by enrollment in two out of three semesters (Fall, Spring, and Summer semesters) per academic year.

After running a power of the test, the proper sample size for this experiment is $n=1,462$ students. The study is tracking academic progress for first-year developmental students enrolled at a community college for six years. All students that enroll in community college take a placement exam, *Accuplacer*, NCDAP, or an institutional exam usually to determine whether they are ready for college-level courses. However, as previously discussed, the new multiple measures tool is now in place to determine the academic preparedness of these students. Those that are not must enroll in and pass developmental or remedial courses.

Also, some students may have external personal factors like family and employment that will impact how much they grow academically. Therefore, isolating the impact of financial aid's impact on academic growth would be challenging since there are other factors that may contribute to persistence as discussed in the literature review. Thus, a causal-comparative study would be appropriate in this case since it is attempting to determine if there is a difference between the variables.

The previously stated sample size of 1,755 North Carolina community college students should help control threats to external validity. The results cannot be generalized to one certain population or demographic group. History and maturation are also factors because the students have different life experiences and perceptions. Moreover, some students in the control group that are not receiving financial aid may have external factors like full-time employment that may affect academic performance. A final threat to validity involves student mobility, which can be categorized as experimental mortality. Students may transfer to other community colleges for reasons such as distance, online program availability, military service, or having to move for employment or family reasons. Thus, these transfer students will be removed from the study. The reason for this is that if students transfer to other institutions, the criteria for enrollment in developmental courses and financial aid eligibility may change; thus, the data would not be as accurate.

The measures in this research project are reliable since the institutions keeping and recording the data are held accountable by accrediting agencies. Since this is an analysis of historical data, the researcher should do everything to ensure the data is accurate. For example, the colleges that are chosen must represent all demographics and populations. The data is objective and consistent since each college must follow the standard set by SACS for record

keeping and maintenance; thus, the data will be reliable. The researcher will not manipulate any of the variables since the independent variable has already been assigned.

Procedures

Obtaining permission for the Liberty University Institutional Review Board (IRB) is necessary prior to beginning the research. A written submission of the methodology and data collection was approved by the dissertation chair. Next, the researcher must complete the application. The application was mailed and emailed to the IRB for approval. For this research, an exempt form is adequate since there are no disruptions to the practices of the subjects. Also, the researcher presented a plan to ensure that no confidential personal, financial, or academic information is disclosed to anyone other than the researcher. This plan involved assigning the students a number rather than using their names. Also, only the researcher would have access to the data to ensure confidentiality. Moreover, none of this data would be used for anything else other than the research. This ensured that no harm comes to the participants or institutions involved in the study. Any revisions requested by the IRB would be done and the application and plan resubmitted to the IRB.

Permission was sought from the selected schools to use the requested data. The data used numbers instead of students' names to ensure confidentiality. Descriptive data such as age, gender, race, academic information, method of payment, and financial aid was compiled for data analysis. Each college has a department that accumulates financial aid information, and a department that measures institutional advancement and effectiveness. The data would be acquired from these databases.

Data Analysis

A *t*-test was performed to examine the difference between the graduation rates of students enrolled in developmental courses that received a Pell Grant and those that self-paid. The reason for this test is because there was a comparison of two groups: those developmental students that received a Pell Grant and those that did not. The dependent variable was the graduation rates of each group. The *t*-test determined the statistical difference between the two groups.

CHAPTER 4: FINDINGS

Introduction

The results of the causal-comparative study outlined in Chapter 3 are presented in this chapter. The purpose of this study was to analyze graduation rates among first-time developmental financial aid recipients, as compared to the first-time part-time students who did not receive financial aid. These developmental students received aid for up to twelve semesters from the Fall 2007 through the Spring 2013 Semesters. The independent variable is the Pell Grant awarded to developmental students enrolled in North Carolina community colleges in the 2007-2008 school year. Pell Grants are the most common form of financial aid for community college students. In North Carolina, most community colleges in the state system no longer accept Stafford Loans as a form of financial aid. The dependent variables are the graduation rates and persistence rates of the developmental community college enrollees for the Fall 2007 through Spring 2013 academic semesters.

The results of the study are intended to respond to the research question and related hypothesis. The data was collected from the Institutional Effectiveness offices of three different community colleges in the North Carolina Community College System. The names of each have been changed for confidentiality purposes. They will be addressed as Eastern College, Southern College, and Western College to reflect geographical locations in the state and range. As previously discussed, a sample size of $n=1,462$ students was needed to have an analysis using a 22% hypothesized proportion with a significance level of 5% and a power of .85. The medium effect size (an estimated minimum sample size) was .07 (Cohen, 1988). After acquiring the data from the three community colleges, the sample was 1,755 students, which is over the necessary 1,462 student sample needed to conduct the study with a 95% confidence interval.

Results

Table 4-1 is a breakdown of the number of students at each college who self-paid and received aid. The total represents the sample size of 1,755 students.

Table 4-1	Western Region	Eastern Region	Central Region	Total
Self Pay	194	163	212	569
Received Aid	257	330	599	1186
Total	451	493	811	1755

Table 4-2 is a breakdown of the number of developmental students at each college who did and did not graduate and identifies the number of students who received financial aid. As previously discussed, the students were given six years to complete a degree or diploma program. There were two reasons for this: Federal Pell Grants are awarded for only eight semesters (four years); however, students may receive a Pell Grant for more semesters if they are considered part time. Also, many similar studies done on this issue (St. John, 1991, and Tinto 2005) allow students six years to complete a program.

The intent of this study was to determine whether a difference exists between receiving federal financial aid and graduation of students enrolled in developmental courses. Table 4.2 represents the total number of first-year developmental students from each of the three community colleges participating in the study who entered in the Fall Semester of 2007 who graduated and did not graduate and how many received financial aid or self-paid. Of the 1,186 students that did receive a Pell Grant, 264 graduated within six years with a diploma or

associate's degree. Of the 569 students that self-paid, 168 graduated within six years with a diploma or associate's degree.

Table 4-2

		Western Region	Eastern Region	Southern Region	
Self Pay	Did Not Graduate	125	114	162	401
	Graduate	69	49	50	168
	Total	194	163	212	569
Received Aid	Did Not Graduate	177	271	474	922
	Graduate	80	59	125	264
	Total	257	330	599	1186
Total	Did Not Graduate	302	385	636	1323
	Graduate	149	108	175	432
	Total	451	493	811	1755

Table 4-3 shows the graduation rates for each college for those that self-paid and those that received federal aid. It also shows a total graduation rate of 24.6% for all students in the study. A much higher percentage of self-paying students graduated than those that received financial aid since 2007. In the colleges located in the Eastern and Central Region, the graduation rates of developmental students that received a Federal Pell Grant were extremely low. The largest difference between developmental students that self-paid and those that received aid occurred in the college in the Eastern Region. Further studies are needed to explain these trends.

Table 4-3

Graduation Rates	Western Region	Eastern Region	Central Region	Total
Self Pay	35.5%	30.0%	23.5%	29.5%
Received Aid	31.1%	17.9%	20.9%	22.3%
Total				24.6%

The data were analyzed utilizing a two-sample *t*-test between percents. The *t*-test yielded a two-tailed probability of .0011 which is a significant difference. In the Fall 2007 term, 1,755 developmental students entered the three North Carolina community colleges that provided data for the research. The 1,755 students consisted of two separate groups: The first group, totaling 1,186 students, included developmental students that received financial aid; and the second group, totaling 569, was identified as developmental students that self-paid. The type of aid the 1,186 students received were Federal Pell Grants.

Table 4-4

T-Test	Total Students	Graduation Rates
Self- Pay	569	29.5%
Received Aid	1186	22.3%
t-statistic	3.277	
df	1753	
Two-tailed Probability	.0011	

From the low significance rate of .0011, the developmental students that self-paid graduated at statistically significantly higher rates than the students that received a Pell Grant. From the data, H_0 can be rejected. The data shows that there is a statistically significant

difference in the percentage of graduation rates for first-year developmental community college students that receive financial aid and those students who self-pay. The results from the data also answers Research Question 1, The significance level of .001 illustrates that there was a difference based on the causal comparative test done in Chapter 4 of the 1,755 developmental students. The students that self-paid had a graduation rate of 29.5%; however, students that received a Pell Grant had a graduation rate of 22.3%. As previously stated, three community colleges out of the fifty-eight North Carolina community colleges agreed to assist the researcher in obtaining data. Gathering data from these colleges involved using the statewide DataTel program, but that program is severely limited in what academic and financial data can be extracted. Tracking student persistence became impossible. Moreover, privacy concerns from each of the colleges assisting in the research prevented obtaining other files for a more in-depth analysis.

CHAPTER 5: CONCLUSIONS

Discussion

The data for this study were extracted from three different North Carolina Community Colleges using the same *Colleague* (formerly called *DataTel*) system. The data collected included enrollment, year of completing an associate's degree or Diploma, and if the student received Federal Financial Aid. Using a *t*-test, the results demonstrated a significant difference between developmental students who enrolled in the Fall 2007 Semester who graduated and self-paid and those that received financial aid. The difference is that the developmental students that self-paid graduated at significantly higher rates than those that received financial aid. Table 4-1 and 4-2 show that of the 1,186 students that did receive a Pell Grant, 264 graduated within six years with a diploma or associate's degree. However, of the 569 students that self-paid, 168 graduated within six years with a diploma or associate's degree. As previously discussed in Table 4-3, 29.5% of developmental students that self-paid graduated with a diploma or associate's degree compared to only 22.3% of developmental students that received a Pell Grant, producing a low significance level of .0011. Thus, a significant difference can be shown in graduation rates and receiving a Federal Pell Grant for developmental students.

The data contradicts other previous studies that found that need-based aid, such as the Pell Grant, has been found to positively affect graduation rates for community college students. For example, McKinney & Novak (2013) found a strong statistically positive significant difference in the graduation rates of community college students that received a Pell Grant and those that self-paid. Also, Bettinger (2004) found similar results if the student received aid during his or her first two years of college. Dowd and Coury (2006) studied the effects of different types of financial aid on community college persistence and degree attainment and

found that Pell Grants had slightly significant positive results on persistence. They used a longitudinal 1990 National Postsecondary Student Aid Study. Chen and DesJardins (2008) examined the effect of financial aid on persistence to graduation across different income groups. Low-income students were likely to persist, but not graduate, while middle-income students were more likely to not persist after the first year.

The research question was intended to assess primarily the difference between first-time developmental community college graduates who received federal financial aid as compared to first-time developmental community college graduates without financial aid. H_01 could be rejected. The conclusion that can be drawn from this analysis is that students that self-pay graduate at higher rates than those students that receive financial aid, specifically a Pell Grant. The researcher can only infer that students that self-pay and do not qualify for federal financial aid have more at stake in taking these courses since they are paying hard-earned money. Moreover, these students do not qualify for Pell Grants due to being in a higher SES quintile than those that receive aid. Students that receive Pell Grants come below the income level established by the federal government and may have more barriers hindering their success. This research is contradictory to earlier research from earlier in the decade (Perna, 1998 and St. John, 2004). Earlier research showed that financial aid helped students persist and graduate because it removed financial barriers that hindered students.

More data are needed to explain this contradiction. Due to the rise of community college enrollment (NCES, 2010 and the North Carolina Community College System, 2014), Pell Grants have made access to a post-secondary education at a community college in North Carolina much easier; however, completion remains a major issue. There is a difference between receiving financial aid and graduating with a degree or a diploma. Perhaps the problem with low

persistence and graduation rates for developmental students enrolled in developmental education courses, could be solved by simply revamping developmental programs as many states are doing. Bailey, Jagers, and Jenkins (2015) studied a cohort beginning in 2008 through 2014 of American community college students enrolled in developmental education courses, and the results found that 31% of students nationwide graduated with a certificate, diploma, or associate's degree. However, in this study of North Carolina community college students enrolled in developmental courses, only 24.6% graduated with a diploma or associate's degree. The point of the research done by Bailey, Jagers, and Jenkins (2015) was to express the need for revamping developmental education in America's community colleges. Their research showed that the added time needed to complete a certificate, diploma, or degree program greatly decreased persistence and graduation.

Implications

However, without the necessary means to acquire data, understanding why students enrolled in developmental education courses did not persist and graduate becomes nearly impossible. One implication would be that institutions could do exit interviews with students to gather qualitative data on the reasons for their inability to persist and graduate. The institutions that provided data for the research insisted on anonymity for their students making a qualitative analysis difficult to do in this situation. Another major implication of this study shows the difficulty to make any policy based on data. In having a more organized data system, the NCCCS could help developmental students persist and complete a program in a more economic manner. Moreover, the developmental students, if they progress, could positively impact the state's economy.

Despite the obstacles in obtaining usable data, the findings and process of this research lead to several recommendations for practice for all North Carolina community colleges who are given the responsibility of educating all students, including developmental students, through the system's open-door policy. Leaders of local school districts in the state of North Carolina must continue to study, refine existing programs, and develop and implement new programs to ensure that high school graduates are academically prepared to succeed in college-level studies. The new multiple measures placement has reduced the number of students enrolled in developmental courses over the last three years, and developmental English, reading, and math courses have been restructured in a way to reduce the time students spend in developmental courses. However, this does not address the fact that many North Carolina students are ill-prepared for college level courses as noted by Boylan (2003), Le, Rogers & Santos (2011) and the NCES (2013). Between 2003 and 2011 the number of community college enrollees in North Carolina needing developmental education courses went from 42% to 58%. North Carolina community colleges should work with local leaders to understand the barriers developmental students that qualify for Pell grants and those that are forced to self-pay to gain a post-secondary education. The findings of this study may have implications for the community college in which the study was conducted as the institution strives to increase retention and graduation rates of their students.

As previously discussed, the new developmental education programs are new and there is not a lot of data on whether the revamped courses are increasing persistence and graduation rates. Edgecombe, Kalamkarian, and Raufman (2015) showed that the Virginia Community College System was able to decrease the number of students enrolling in developmental courses; however, the success of these students in persisting and graduating is unknown. These same

authors attempted to study the new developmental education system in North Carolina, but the data was not yet available.

Limitations

As with any research study, there are some limitations to the study. There were very few threats to internal validity because anonymous data was acquired for the research project. The fact that students had similar academic backgrounds in that they placed into developmental education courses prior to enrollment, helped remove threats like having background knowledge and more academic preparation prior to enrollment in a community college that would have impacted persistence and graduation rates. Other threats previously mentioned like SES and other circumstances were limited as well because the students met the same income qualifications for receiving a full Pell Grant. According to the *Student Aid Report* from the United States Department of Education (2017), Pell Grants are awarded to households with incomes of less than \$50,000. As determined by FAFSA, everyone within this study's cohort are classified in the bottom two SES quintiles (NCES, 2015). This also meets Bailey's (2004) definition of the traditional developmental community college student discussed in Chapter 1 that required some form of financial aid to enroll and persist through college. Even though, many of the threats to the validity were minimized due to the sample size required for a 95% confidence interval, teacher quality could be an issue. More effective teachers may have a stronger impact in student knowledge and motivation for developmental students as they progress through their programs.

Bobko (2001) stated that threats to validity decrease as the size of the sample increases. Yet, even though the researcher acquired data from a sample size larger than the required 1,462 students needed based on the power analysis, the major limitation was the availability of specific

data for research. There are fifty-eight community colleges in the North Carolina Community College System. However, only three schools agreed to provide data for this project. Even though the sample size was larger, the threats to external validity became a concern because very few conclusions could be drawn in other types of financial aid such as Stafford loans and the Federal Work-Study Program. Acquiring data, any data, became a large undertaking for the various Research and Institutional Effectiveness Departments at each college unless it was a simple query. The researcher had to write a query for each department to run to make the process easier, which can be seen in Appendix 2. Therefore, there was no available data on the types of financial aid awarded to the developmental students, withdrawal dates of the students that did not graduate with a degree or diploma, or which developmental courses a student took.

Secondly, the database used by each college, known as *Colleague*, was unable to provide the data required for the researcher. *Colleague* was able to provide the students enrolled in developmental courses for the Fall 2007 semester; however, it was unable to tell the researcher how many developmental courses, or what courses the student was taking. It was also unable to track the students or provide a withdrawal date or what type of degree program the student completed (associate's degree, or diploma). Also, the data collection became multiple steps: one involving the graduation data, and the other involving the financial aid data. The financial aid data was limited in that it would not discuss what type of financial aid was used by the students that received an aid package. The only way to determine this was to go through each student's file by hand, and this would have violated the IRB agreement because the identity of the students' personal records would have been disclosed.

Another issue affecting the external validity became the fact that all but eight community colleges in North Carolina have eliminated the Stafford Loan in financial aid packages for

students. With new accountability measures implemented by the NCCCS, colleges would be required to reimburse the federal government if a certain percentage of students did not persist and graduate. Thus, the Stafford Loan became a burden to local colleges. Therefore, measuring its impact on graduation and persistence became impossible due to the difficulty in getting this data from the schools that still award the Stafford Loan.

A final delimitation of the study involved the pursuit of more demographic data such as cultural barriers, race, gender, and other types of academic data. Had the researcher had access to this data, a clearer understanding of the difference between financial aid and graduation would have been available. Moreover, the researcher could have determined the reason why graduation rates for students receiving financial aid were so low in the Eastern and Southern colleges used in this study. This data was not made available to the researcher because the colleges would not provide it. The directors of the departments of Research and Institutional Effectiveness wanted to protect the identities of the students as much as possible. Moreover, it proved extremely challenging to extract this type of data from the *Colleague*.

Recommendations for Future Research.

The limited studies on the effects of financial aid on developmental students illustrate a strong need for additional research, especially in the areas of graduation, persistence, and aid types. In fact, further research is critical. It is recommended that data be made available to researchers to understand why financial aid awards contribute negatively to graduation rates for developmental students in North Carolina. A reevaluation will allow postsecondary institutions to assess the impact of financial aid packaging on both access and completion in order to modify policies to strategically enhance, promote, and encourage continuous enrollment among postsecondary students.

The study could assess the impact of financial aid packaging examined in this study. An important finding in this study showed that developmental students that self-paid graduated at much higher rates than the students who received Pell grants and graduated. The finding for first-time developmental graduates who received Pell grants graduated compared to developmental students who self-paid were significant at the confidence interval of 95%. A more comprehensive study is needed evaluating why so many financial aid recipients failed to graduate. An additional opportunity for further research should include a more comprehensive study on the demographics of North Carolina community colleges as well. As discussed in the Chapter 2 literature review, the goal of many of the studies was to determine the extent to which financial aid influenced student access and completion for all students regardless of academic preparedness. By using a mixed-methods approach combining financial aid data, completion data and qualitative research, a researcher could understand more as to why developmental students who receive financial aid failed to persist and graduate and if there was an effect from receiving need-based financial aid by the developmental student.

Federal regulations mentioned in Chapters 1 and 2 provide opportunities for North Carolina to exercise flexibility in allocating and awarding aid to developmental students. Unfortunately, institutions are often influenced by policy makers at the state and federal level who continue to press for higher graduation rates. For much of the previous decade, the goal of policymakers has emphasized access to an affordable postsecondary education. Now, recent laws are emphasizing completion for those seeking a two-year degree, diploma, or transfer to a four-year institution. While access to Pell Grants has increased the access to a community college education, there is little evidence in this research that it has improved completion rates compared to the students that self-paid. More data is needed to understand why graduation

levels are low for the under-prepared developmental students. In an era of accountability and performance-based funding implemented by state legislators, community colleges may be forced to modify aid policies to generate a higher number of graduates. Policies such as preferential packaging could only hinder access and success among low-income developmental students.

This study is one of the studies assessing the impact of financial aid to student access and student success. It highlights the importance of providing financial support to students enrolled in developmental education to reduce or eliminate the financial barriers to postsecondary education and more training for the twenty-first century economy. The aid programs created to assist underprepared students to enter or reenter the workforce, have not proven quantitatively to contribute to the overall success of the students graduating from a post-secondary institution (Vaughn, 2006). Until, North Carolina community colleges can come up with a system to provide data to understand why completion and graduation rates are so low, researchers may never know why. Bailey and Cho (2010) even mentioned the lack of research on the topic of developmental education and the low persistence and graduation rates. Their research concluded that cost, timeliness, and poor assessments were reasons for the low rates. As previously discussed, many states, including North Carolina, have revamped their entire developmental programs to decrease the time and cost of educating these students. However, no data from these revamped programs is available since they were instituted in 2013 or later. State legislators and university administrators advocate for higher graduation rates which are low as shown in Table 4-2; however, there is no data-driven solution on how that is to be done. This research attempted to measure student's ability to graduate from a program of study as well as positively influence a student's ability to persist from term to term. However, the data and the means to acquire the data were not available for this study or any other for North Carolina community colleges.

However, from being able to answer RQ1 and rejecting H_01 , the methods of providing students with financial aid resources to adequately pay for developmental education courses and later college-level courses is not enough for the academically underprepared students to persist and graduate. In reviewing literature about academically underprepared students going back to Tinto (1975), Astin (1984), Bailey (2005, 2009), Boylan (2007), and more recent research from Edgecombe (2015) and Hagedorn and Kuznetsova (2016), the authors place a significant amount of importance on these students overcoming economic barriers. What this research project can show is that there are more factors in these students not persisting and completing their programs that need to be addressed by the colleges and states. For example, as more research on the course redesigns and the new financial aid regulations mentioned in Chapter 1 become available, researchers can see if removing the time added by these developmental courses makes a difference in persistence and graduation. The institutional effectiveness offices at the community colleges in North Carolina can then address other barriers affecting these students. More rigorous studies need to be done on this very important topic so that the fifty-eight North Carolina community colleges can better serve these students.

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Appendix 1: IRB Approval

LIBERTY UNIVERSITY

INSTITUTIONAL REVIEW BOARD

December 8, 2016

Eric Barnes

IRB Exemption 2610.120816: The Impact of Financial Aid on Persistence and Graduation Rates for First-Year Developmental Community College Students in North Carolina

Dear Eric Barnes,

The Liberty University Institutional Review Board has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research with the data safeguarding methods mentioned in your approved application, and no further IRB oversight is required.

Your study falls under exemption category 46.101(b)(4), which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46.101(b):

(4) Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects.

Please note that this exemption only applies to your current research application, and any changes to your protocol must be reported to the Liberty IRB for verification of continued exemption status. You may report these changes by submitting a change in protocol form or a new application to the IRB and referencing the above IRB Exemption number.

If you have any questions about this exemption or need assistance in determining whether possible changes to your protocol would change your exemption status, please email us at irb@liberty.edu.

Sincerely,



Administrative Chair of Institutional Research
The Graduate School

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