2017

# Factors Affecting Student Loan Default in Proprietary Non-Degree Granting Colleges

Samuel Hanson Kelley
*Walden University*

# Walden University

College of Management and Technology

This is to certify that the doctoral dissertation by

Samuel Kelley

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

Review Committee
Dr. Steven Tippins, Committee Chairperson, Management Faculty
Dr. Thomas Spencer, Committee Member, Management Faculty
Dr. Bharat Thakkar, University Reviewer, Management Faculty

Chief Academic Officer
Eric Riedel, Ph.D.

Walden University
2017

Abstract

Factors Affecting Student Loan Default in Proprietary Non-Degree Granting Colleges

by

Samuel Hanson Kelley

MBA, Kent State University, 2000

BA, Free Will Baptist Bible College, 1988

Proposal Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Management - Finance

Walden University

June 2017

## Abstract

The significant problem addressed in this research was the increasing default rate among federal student loan borrowers who attended non-degree-granting proprietary colleges in Florida (i.e., career and technical colleges). The purpose of this study was to identify, better understand, and predict which borrower characteristics increased the likelihood of student loan default at proprietary non-degree-granting colleges. The research was based on the structural-functional and planned behavior theories and utilized a quantitative, non-experimental, cross-sectional design to explore the relationship between academic success, age, college graduation status, ethnicity, gender, high school class ranking, and federal student loan default. Self-reported data were obtained from students who attended private, for-profit, less than 2-year colleges in Florida. To determine which student borrower characteristics predicted an increase in the likelihood that borrowers would default on their student loan payments, one hypothesis was proposed to evaluate six borrower characteristics. Logistic regression analysis was used to explore the statistical relationships and found that academic success, age, and gender were statistically significant in predicting student loan default among students who attended private, for-profit, less than 2-year colleges in Florida. This study may facilitate positive social change by aiding educational institutions in identifying at-risk borrower characteristics and by providing various default prevention strategies that could be incorporated into specific counseling messages to reduce future student loan defaults and lower institutional cohort default ratings.

# Factors Affecting Student Loan Default in Proprietary Non-Degree Granting Colleges

by

Samuel Hanson Kelley

MBA, Kent State University, 2000

BA, Free Will Baptist Bible College, 1988

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Management - Finance

Walden University

June 2017

Table of Contents

List of Tables

# Chapter 1: Introduction to the Study

Student loan default is one of the largest financial problems currently facing the United States, with approximately one in seven borrowers defaulting (Federal Student Aid, 2014). The aggregate amount of student loan debt has exceeded the aggregate amount of auto loans ($730 billion) and aggregate credit card debt ($693 billion) in this country (Brown, Haughwout, Lee, Mabutas, & van der Klaauw, 2012). Since the early 1990s, student borrowing has more than quadrupled in real dollar terms (Avery & Turner, 2012), with the total student loan debt in the United States now exceeding $1 trillion and continuing to increase (Federal Reserve Bank of NY, 2014), making it the second largest category of household debt (Brown, Haughwout, Lee, Scally, & van der Klaauw, 2014; Corrigan, 2013). The Federal Reserve Bank stated that student loan debt increased at a rate of 13.9% between 2005 and 2012 (Edmiston, Brooks, & Shepelwich, 2012). The U.S. Department of Education reported that between October 1, 2008 and September 30, 2009, a total of 320,000 students defaulted on their loans, and an additional 3.6 million borrowers entered into repayment (U.S. Department of Education, 2011a). The Department of Education has defined student loan default as the borrower not having made a loan payment in 270 days (U.S. Department of Education, 2011b).

According to Brown et al. (2012) there are approximately 37 million student loan borrowers in the United States. Cellini and Darolia (2016) reported that the use of student loans has increased 75% over the last 20 years, with approximately 60% of full-time undergraduate students taking out student loans. American Student Assistance (2013) reported that 14% of borrowers, or approximately 5.2 million people, are past due

on at least one student loan amounting to approximately $85 billion in federal student loan arrearages. Additionally, 850,000 distinct private student loans were in default, totaling more than $8 billion as of 2012 (American Student Assistance, 2013).

Student loan default in non-degree-granting proprietary institutions (private, for profit, less than 2 years) is underrepresented in the literature and should be studied to increase understanding of the student loan default dilemma given the increasing size of the sector. The proprietary sector is the fastest growing sector in higher education, enrolling almost 11% of the nation's 2009 college students (Knapp, Kelly-Reid, & Ginder, 2011). This sector had an overall 2011 cohort default rate of 19.1%, and represented 55.7% of all defaults in the 2011 cohort nationwide (Federal Student Aid, 2014). In an effort to better understand student loan default among this segment of student loan borrowers, I focused this research on the relationship between student characteristics and default within the non-degree-granting proprietary sector (i.e., career and technical schools).

## Background of the Study

In 1965, the United States Congress passed the Higher Education Act and made student loans available to the public (Heller, 2011). Title IV of the Higher Education Act classified postsecondary educational institutions as either degree granting 2- and 4-year institutions or non-degree-granting institutions (e.g., career and technical schools). Title IV of the Higher Education Act also began the program known today as the federal student loans program, commonly referred to by the acronym FAFSA (Free Application for Federal Student Aid). This government program provided equal opportunity in higher

education by guaranteeing the repayment of education loans to lenders. Kuzma, Kuzma, and Thiewes (2010) reported that there were approximately 18.4 million students enrolled in colleges and universities for the 2009-10 academic year in the United States. The average estimated undergraduate cost of attendance (i.e., tuition, fees, meals and housing) for a fulltime student attending a four year institution was $16,789 at public institutions and $33,716 at private institutions for the 2011-12 academic year (U.S. Department of Education National Center for Educational Statistics, 2012). Currently postsecondary education costs are increasing at an average annual rate between 5% and 8%, or approximately double the inflation rate (FinAid, 2014a).

Implying that students have some expectation about future salaries, Christie and Munro (2003) noted that it is generally presumed that borrowers make informed decisions regarding the taking of student loans in expectation of higher incomes post-graduation. In 1998, Haiyang Chen and Ronald P. Volpe surveyed 1,800 college students across 14 college campuses and concluded that college students lack adequate knowledge of personal finance (Chen & Volpe, 1998). Furthermore, Chen and Volpe (1998) stated this lack of knowledge limited college student's ability to make informed financial decisions. Given this limited understanding of personal finance, Kuzma et al. (2010) found that college students optimistically assume they will have the resources to pay off their student loan debt. This optimism combined with inadequate knowledge of personal finance may help to explain student's confusion about repayment and their understanding of repayment obligations (Andruska, Hogarth, Needles Fletcher, Forbes, & Wohlgemuth, 2014).

## Problem Statement

The national cohort default rate has steadily increased from its historic low of 4.5% in 2003 (Stafford, 2012) to a high of 14.7% (U.S. Department of Education, 2013a). The general problem is the national cohort default rate is increasing and proprietary schools exhibit some of the highest cohort default rates in the United States (Field, 2010). The latest official cohort default rates published by the U.S. Department of Education (2012, as of this writing) indicate that the proprietary sector had the highest number of defaults at 15.8%, followed by public institutions at 11.7%, and private institutions at 6.8% (U.S. Department of Education, 2015a). The specific problem is that non-degree-granting proprietary colleges represent the majority of student loan defaults (17.7 %) occurring within the proprietary sector, according to the U.S. Department of Education (2015a). This is higher than the public less than two-year college cohort default rate of 12.2% (U.S. Department of Education, 2015a).

While I found various institutional factors associated with student loan default in the literature such as environment, mission, and size (Hall, 1991), and various borrower characteristics such as age, gender, and attitude (Herr & Burt, 2005), non-degree-granting proprietary institutions remain an understudied segment of the student loan population. Studies of these and other characteristics have yet to be applied to non-degree-granting proprietary schools to understand the relationship between student characteristics and the likelihood of student loan default.

## Purpose of the Study

The purpose of this quantitative study was to identify and better understand the borrower characteristics that contributed to an increase in the likelihood of student loan default at non-degree-granting proprietary colleges in Florida. In this study, I examined the borrower characteristics' of academic success, age, college graduation status, ethnicity, gender, and high school class ranking for their predictive contribution to student loan default among non-degree-granting proprietary college students in Florida. Gross, Cekic, Hossler, and Hillman (2009), writing on student loan default, indicated that it was necessary to simultaneously control for a range of variables when identifying the predictors of student loan default. While student loans are a force for positive social change by providing equal opportunity and equal access to higher education, the financial consequences of student loan default can be severe to the borrower, the educational institution, and the taxpayers. This study has practical application by identifying borrower characteristics at non-degree-granting proprietary colleges that indicate an increased likelihood of student loan default, thereby allowing the opportunity to manage those characteristics through the use of specific counseling messages aimed at modifying future behavior in such a way as to reduce future student loan defaults and lower the institutions cohort default rating.

## Research Questions and Hypothesis

To this end, I sought to answer the following research questions regarding the effect of various independent variables on student loan default among borrowers who

graduated, withdrew, or dropped out of a non-degree-granting proprietary school during 2010, 2011, and 2012.

**Central Research Question**

1. What are the characteristics of non-degree-granting proprietary college students that contribute to an increase in the likelihood of student loan default?

**Sub-Questions**

1. How does age contribute to student loan default?
2. How does gender contribute to student loan default?
3. How does academic preparedness contribute to student loan default?
4. How do ethnicity and race contribute to student loan default?
5. How does academic success contribute to student loan default?
6. How do college persistence and graduation contribute to student loan default?

**The Hypothesis**

Based on the above research questions and selected variables, the hypothesis tested in this study pertained to the relationship between non-degree-granting proprietary college borrower characteristics and student loan default. I used the hypothesis to test the validity of the relationship between borrower characteristics and student loan default for the sample period of academic years 2010 to 2012. This time period included the latest finalized 3-year cohort default rating (i.e., 2012) available from the U.S. Department of Education as of the time of this writing.

Hypothesis: The non-degree-granting proprietary college student loan borrower's characteristics of academic success, age, college graduation status, ethnicity, gender, and

high school class ranking can predict the likelihood of defaulting on federal student loans. Stated in statistical terms, the null and alternate hypothesis would be:

$H$o: $\beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = 0$

$H$a: At least one $\beta \neq 0$,

where β is the coefficient of the six predictor variables in the model (i.e., academic preparedness, age of the borrower, academic success, college graduation status, ethnicity, and gender).

## Theoretical Foundation

The theoretical foundation for this study was based the structural-functional theory (Hall, 1991), and the theory of planned behavior (Ajzen, 2012). The structural-functional theory maintains that an educational institution's characteristics influence student behavior and the repayment of loans. Hall noted that institutional factors such as mission, size, and environment may influence the values and behaviors of its borrowers (Hall, 1991; Flint, 1997). Furthermore, Hillman (2015) examined the contribution of sector, control, accreditation status, graduation rates, and enrollment profiles on an institution's cohort default rating. Additionally, the theory of planned behavior posits that an individual will generally attempt a behavior (e.g., student loan repayment) if the advantages of doing so outweigh the disadvantages of not doing so (e.g., defaulting) and if he or she believes that their normative peer group thinks they should perform the behavior (Ajzen, 2012). These theories are supported by Baum and O'Malley's (2003) assertion that student loan borrowers have different characteristics which influence the

likelihood of loan repayment or default. I discuss these theories and their application to the study of student loan default in detail in Chapter 2.

## Nature of the Study

This study was a non-experimental quantitative study that used borrower self-reported data. I used logistic regression analysis to examine the relationship between academic success, age, college graduation status, ethnicity, gender, high school class ranking, and student loan default status. Logistic regression is a probabilistic statistical method used to predict the outcome of a dichotomous dependent variable (e.g., defaulted, or not defaulted loan status). There was no data manipulation in this study. The population data fell into two groups, those who had defaulted on their student loans and those who had not. Additionally, I measured the dependent variable of student loan repayment status using the Department of Education's definition of having gone 270 days without having made a payment.

## Definition of Terms

The key terminology used throughout this study is defined below for the convenience of the reader:

*Accrued interest*: Interest that accumulates on the unpaid balance of a loan (U.S. Department of Education, 2011b).

*Borrower:* The person who received student loan funds and is legally obligated to repay those funds with interest per the terms and conditions set forth in the promissory note (U.S. Department of Education, 2011b).

*Cohort default rate:* A measurement of the percentage of an institution's borrowers who enter repayment in a given federal fiscal year and default on their loans within the next 3 federal fiscal years (U.S. Department of Education, 2011b).

*Default:* When a borrower fails to repay a student loan according to the terms stipulated in the promissory note. Default occurs when the borrower has not made a student loan payment in 270 days. Collection and legal actions may be taken by the school, lender, state, or federal government against the borrowers including a 15% wage garnishment to recover defaulted loan funds (U.S. Department of Education, 2011b).

*Deferment:* A period during which a borrower who meets certain criteria may suspend student loan payments (U.S. Department of Education, 2011b).

*Delinquency:* When a borrowers fails to make the required monthly student loan payments. Delinquency begins with the first missed payment (U.S. Department of Education, 2011b).

*Department of Education:* The United States Department of Education is the governmental regulatory agency which administers federal student loan programs (U.S. Department of Education, 2011b).

*Disbursement*: The process by which loan funds are paid out on behalf of the borrower (U.S. Department of Education, 2011b).

*Federal loan*: Educational loans guaranteed by the United States Government (U.S. Department of Education, 2011b).

*Financial need*: The difference between the institutions cost of attendance and the expected family contribution (U.S. Department of Education, 2011b).

*Forbearance*: An agreement to temporary delay or a reduction of loan payments by the lender and borrower. Interest continues to accrue during this time period (U.S. Department of Education, 2011b).

*Free Application for Federal Student Aid* (FAFSA): An educational financial aid application form that is completed by students and parents to apply for federal student financial aid (U.S. Department of Education, 2011b).

*Gainful employment:* A requirement that vocational programs lead directly to employment regardless of institutional type, and that all programs of study offered at proprietary institutions prepare students for "gainful employment in a recognized occupation" (U.S. Department of Education, 2011b).

*Master promissory note:* A legally binding document a borrower signs requiring him or her to repay the funds borrower (U.S. Department of Education, 2011b).

*Postsecondary institution:* Any school providing education beyond the high school level including technical and vocation schools, community colleges, and 4-year colleges and universities (U.S. Department of Education, 2011b).

*Proprietary school:* A legal, private, for-profit postsecondary school, the majority of which offer technical and vocational programs (U.S. Department of Education, 2011b).

*Reauthorization:* The process of reenacting expired legislation to continue and modify federal student aid. The Higher Education Act is reauthorized every 5 to 7 years (U.S. Department of Education, 2011b).

*Subsidized loan*: A loan in which the government pays the accrued interest as long as the borrower meets certain criteria such as deferment, or the in school grace period (U.S. Department of Education, 2011b).

*Title IV:* The section of the Higher Education Act referring to federal financial aid programs.

*Unsubsidized loan*: A loan that begins accruing interest from the point of disbursement (U.S. Department of Education, 2011b).

## Assumptions

I assumed that in order to lower default rates, attention needed to be directed to identifying and managing the variables that increased the propensity to default among borrowers. Further, I assumed that a link exists between certain borrower characteristics and student loan default. Studies have indicated that the borrower characteristics of age, gender, and attitude (Flint, 1997; Herr & Burt, 2005; Woo, 2002), grade point average, and graduation status (Nyahende, 2013; Steiner & Teszler, 2003) were important contributors to the propensity to default on student loans. Finally, I assumed that a link exists between certain institutional factors and student loan default. The literature indicated that environment, mission, and size contribute to student loan default (Hall, 1991).

## Scope and Delimitations

The specific research problem and selected characteristics I evaluated for their contribution to student loan default among non-degree-granting proprietary college students in Florida comprised the overall scope of this study. This study was further

delimited in two significant ways. First, the decision to study borrower's characteristics and default rates of non-degree-granting proprietary colleges in Florida limited the ability to generalize the findings to institutions outside of Florida or to degree granting institutions outside of or within Florida. Second, the study was delimited to the collection of 3-year cohort data for years 2010, 2011, and 2012.

## Limitations

This study was limited to the quality and quantity of the self-reported data set that was obtained from student loan borrowers who attended non-degree-granting proprietary schools in Florida for the federal fiscal years 2010 through 2012. All conclusions I have drawn should be considered limited to non-degree-granting proprietary schools located in Florida. The findings derived from this study may not necessarily generalize to non-degree-granting proprietary school outside of Florida, or to public or private degree granting institutions in the United States.

## The Significance of the Study

Educational policy has shifted over the past few decades from grants to loans as the primary means of federal aid for providing access to postsecondary education (Wells, 2007). Along with the shift to student loans came the problem of student loan default as obtaining a college degree became more financially difficult for students and families (Wells, 2007). As college costs continue to rise (Fuller, 2014), many borrowers are showing signs of financial distress as few students can afford to pay for college without some form of aid (FinAid, 2014a). FinAid (2014a) reported that 86.3% of graduating seniors who applied for financial aid did so to pay for their education, making student

loans a vital part of obtaining a postsecondary education. Chen and Volpe (1998) noted that society has a problem when its members cannot manage their finances.

**Positive Social Change**

Student loans have long been viewed as a vehicle for positive social change by providing equal access to higher education (Rani, 2011). Rani (2011) has noted that student loans enable low-income families to meet the cost of postsecondary education and help secure equal opportunity, social justice, and fairness (Rani, 2011). Furthermore, Shen and Ziderman (2009) posited that subsidized loans provide greater access to postsecondary education for underprivileged and minority groups, thereby contributing to social equity.

While student loans are a positive force for social change, there remains various reasons why borrowers default on their student loans, and few models exist that identify borrower and institutional characteristics that predict the likelihood of student loan default. Furthermore, student loans cannot be a positive force for social change by equalizing access to higher education if it delivers and an unequal product with unequal outcomes (Elliot & Lewis, 2014). As Gross et al. (2009) noted, the predictors of student loan default can only be determined using multivariate studies that control for a range of variables.

This study is significant because I identified variables that contribute to an increased likelihood of student loan default in non-degree-granting proprietary colleges; by doing so I add to the academic literature on predicting student loan default, specifically as related to understudied non-degree-granting proprietary colleges. The

results of this research may facilitate positive social change by aiding educational institutions and lenders in tailoring their debt management counseling messages for students who possess characteristics that contribute to default. Furthermore, this study may also increase awareness of the student loan default problem and provide relevant data to prompt changes in lending practices aimed at reducing overall borrower indebtedness and the financial burden of obtaining a college education.

## Summary

Using quantitative methodology, I examined the relationship between various student factors and student loan default within the proprietary college sector. The purpose of this study was to identify and better understand the borrower characteristics that contribute to an increase in the likelihood of student loan default at non-degree-granting proprietary colleges. My overall goal was to enable management of the characteristics that contribute to student loan default through the use of specific counseling messages aimed at modifying future behavior in such a way as to reduce future student loan defaults and lower the institutions' cohort default rating. The results of this study update the body of knowledge on predicting student loan default and increase understanding of the characteristics that contribute to student loan default at non-degree-granting proprietary institutions.

Chapter 2, the literature review, includes a summary of the currently available relevant research on predicting student loan default, institutional factors, and student characteristics, as well as an overview of the federal student loan program. Additionally, I discuss the possible penalties to borrowers who default on their federal student loans,

penalties to institutions that exceed the cohort default threshold, and the current repayment methods in use to avoid default are included.

# Chapter 2: Literature Review

## Introduction

The significant problem addressed in this research is the increase in federal student loan delinquency and default, and the characteristics associated with the likelihood of borrower default. As Hillman (2015) noted, the use of student loans to finance postsecondary education has grown dramatically. Geiger and Heller (2012) reported that in 1982 loans began to outpace grants as the primary means of federal and state financial aid. Greenstone, Looney, Patashnik, and Yu (2013) reported that loans comprised 50% of net tuition, fees, room, and board. The growing dependency on student loans and the increasing default rate highlight the need to better understand the characteristics that predict the likelihood of student loan default so that students, educational institutions, and society as a whole are made better, not worse by using student loan programs (Harrast, 2004).

In this chapter, I discuss the theoretical framework for the study and then provide a historical overview of the federal student loan program, currently authorized under Title IV of the Higher Education Act, and the subsequent development of the unintended student loan default dilemma. In the process, I address possible consequences of federal student loan default for individual borrowers and institutions of higher education. I conclude this chapter with a synthesis and critical analysis of the literature on predicting student loan default.

## Literature Search Strategy

I conducted a literature search on student loan default targeting peer-reviewed journals in the fields of higher education, economics, and finance. A variety of databases and search engines were used to identify scholarly articles and government reports relevant to this study including ABI/INFORM Complete, ERIC, EBSCO, Google Scholar, ProQuest Central, the National Association of Student Financial Aid Administrators, and Yahoo. Searches were conducted using the following keywords and key terms: *credit risk assessment, federal financial aid, financial aid, higher education act, loan default, student loans, student loan debt, student loan default, predicting student loan default,* and *proprietary college*. The majority of relevant research I found on the prediction of student loan default was published in the 1990s and the early part of the 2000s, resulting in my identification of a gap in the literature which I aimed to fill with this study. There are few published studies on proprietary colleges, and no published studies to date on student loan default at the targeted proprietary schools in this study.

## Theoretical Foundation

The body of literature related to the study of student loan default may be divided into four primary theoretical perspectives: human capital theory, theory of ability to pay, structural-functional theory, and theories of attitude formation (Flint, 1997) from which the theory of planned behavior was derived (Ajzen, 2012). These perspectives were drawn from the disciplines of economics, psychology, and sociology (Flint, 1997; Paulsen & Smart, 2013). The human capital theory views education as an investment in the acquisition of knowledge and skills for which the student expects to receive future

financial returns (Flint, 1997; Gillies, 2012; Paulsen & Smart, 2013; Volwein, Szelest, Cabrera, and Napierski-Prancl, 1998). Human capital theory is a useful framework for understanding the decision to attend college (such as obtaining career training) under which an individual would compare the present discounted value of the benefits of obtaining a college education to the present discounted cost of the same (Avery & Turner, 2012). However, it is less useful for studying student loan default because it does not provide useful insight into why borrowers default on their student loans after receiving such training (Flint, 1997). The theory of ability to pay focuses on the income levels of parents and students and their ability to repay student loans, it rationalizes the distribution of loans among all potential borrowers (Flint, 1997). This theory is useful for studying whether an individual is able to repay their student loans, but offers little insight into whether they are willing to repay their loan.

The last two theoretical perspectives focus on the relationship between attitude and behavior of student loan borrowers and serve as the framework for this study. Under the structural-functional theory, student values and behaviors may be influenced by an educational institution's characteristics such as mission, size, and environmental factors (Hall, 1991; Flint, 1997). The structural-functional theory serves as a useful lens for viewing whether an educational institution can influence student loan repayment or default through its organizational structure and campus environment. Additionally, the theory of planned behavior, a sub-theory in theories of attitude formation, maintains that individual student factors and the factors of their normative peer group explain repayment behavior (Flint, 1997). These theories are supported by Baum and O'Malley's (2003)

assertion that student loan borrowers have different characteristics which influence the likelihood of loan repayment or default.

When deciding on the appropriate theoretical framework to use for this study, I asked: (a) How do the theories provide an explanation of student loan default? (b) How do the theories provide support for an institutions influence on student values and behaviors as related to student loan default? The structural-functional theory (Hall, 1991) and the theory of planned behavior (Ajzen, 2012) connect to this study's problem statement regarding increasing student loan default (U.S. Department of Education, 2013a) by serving as the lens through which to view whether non-degree-granting proprietary schools could have impacted their high cohort default rates in 2009 (21.5%) and 2011 (14.1%) as compared to public schools, 2009 (7.2%) and 2011 (9.6%), placing proprietary sector schools under intense scrutiny and at risk of losing their federal guaranteed loan eligibility (U.S. Department of Education, 2015a). An analysis of the relationship between student characteristics and student loan default may lead to solutions that help solve this problem.

## Historical Overview of Federal Student Loan Program

The United States government initially became involved in supporting higher education through the passage of the Morrill Act in 1862 (Benson & Boyd, 2015). The Morrill Act encouraged each state to establish at least one public institutions of higher learning through the allocation of federal land. Each eligible state was given 30,000 acres of federal land which was sold to finance the development and growth of public colleges (Gordon, 2014). Furthermore, it provided for the purchase of books, materials,

machinery, payment of salaries for instructors, and most anything needed to provide education in the fields specified under the act (Gordon, 2014). However this land grant aid provided federal support to public educational institutions and did not provide support directly to students.

It was not until after World War II that the federal government began providing educational financial assistance to students with the passage of The Servicemen's Readjustment Act in 1944 (Heller, 2013). The bill was signed into law on June 22, 1944, by President Franklin D. Roosevelt. Popularly known as the G.I. Bill of Rights, this law provided veterans with funding for college tuition, fees, books, supplies, and living expenses (Heller, 2013). By July of 1956, 7.8 million veterans had used their educational benefits (Toby, 2010). The G.I. Bill was revised in 1984 and 2008; it continues to provide educational benefits to U.S. military personnel. The G.I. Bill provides approximately $1,400 per month of educational related benefits for a maximum of 36 months, or roughly $50,000 in total benefits (Barr, 2014).

Thirteen years after the initial passage of The Servicemen's Readjustment Act, the first federal student loan program was created as a part of the National Defense Education Act of 1958 (Heller, 2013). The launch of the first space satellite, Sputnik, by the Soviet Union raised concerns for national defense and the strength of U.S. technological capabilities (Heller, 2013). To better prepare students in math and science, Congress approved the National Defense Education Act which was signed into law by President Dwight D. Eisenhower in 1958 (Burke, 2014). This legislation contained provisions for low-interest loans to students in critical fields of study, and debt cancellation for those

who accepted teaching positions after graduation (U.S. Department of Education, 2012). Additionally, the law also contained provisions for the improvement of instruction in science, mathematics, and foreign language in elementary and secondary schools, established graduate fellowships in science, mathematics, and engineering, as well as vocational-technical training (U.S. Department of Education, 2012).

Federal aid to students received further support under the Johnson administration's War on Poverty (Paulsen & Smart, 2013). The Economic Opportunity Act of 1964 created the College Work-Study program to help financially needy students by providing employment opportunities (Madaus, Kowitt, & Lalor, 2012). In 1965, Congress passed the Higher Education Act making student loans available to the public (Heller, 2013). This law reauthorized existing student aid programs and created the Guaranteed Student Loan program and the Educational Opportunity Grant (Paulsen & Smart, 2103). Title IV of the Higher Education Act was the federal government's first explicit commitment to expand educational opportunities and equal access to postsecondary education for ethnic minorities and previously-excluded classes (Dwyer, McCloud, & Hodson, 2012). Furthermore, state loan guarantee agencies administered the guaranteed student loans, while the Department of Health, Education, and Welfare administered the Educational Opportunity Grant program, College Work-Study program, and Guaranteed Student Loan program through the Office of Education (Heller, 2013).

Typically, every 5 to 7 years existing federal student aid programs undergo reauthorization, the process of renewing and modifying the expired legislation (U.S. Department of Education, 2011b). The Higher Education Act saw extensive changes in

the reauthorization of 1972 including making federal funds available to for-profit schools (McGuire, 2012). The State Student Incentive Grant was authorized, which provided federal matching dollars to the states' need-based grant programs (Heller, 2013). The Student Loan Marketing Association (Sallie Mae) was established as a publically chartered private corporation to increase availability of loans to more people (Razaki, Koprowski, & Linburg, 2014).

Additionally, the National Defense Student Loan program was renamed the National Direct Student Loan program, and the Educational Opportunity Grant was renamed the Supplemental Educational Opportunity Grant as it was now a supplement to the new Basic Educational Opportunity Grant which later in 1981 became the Pell Grant (Dynarski & Scott-Clayton, 2013). The Pell grant offered assistance to financially needy students as a supplement to the campus-based programs (Fuller, 2014). An important change during this reauthorization was the substitution of the term postsecondary education for higher education, thus extending federal recognition and support to schools other than 4-year institutions (e.g., career and vocational schools, community colleges, and trade schools) allowing students to attend the accredited college or university of their choice in the United States (Paulsen & Smart, 2013). Furthermore, proprietary schools gained eligibility to participate in federal aid programs (McGuire, 2012).

Congress responded to the perceived pressure of financing college experienced by middle-income families by enacting additional aid measures. In 1978, Congress passed the Middle Income Student Assistance Act, widened eligibility for Pell grants, and made subsidized guaranteed student loans available to all students regardless of financial need

or income level (Dynarski & Scott-Clayton, 2013). In 1979, Congress moved to provide more funding for the guaranteed loan program from private lenders (Gicheva, 2011). The reauthorization of 1980 created the supplemental Parent Loans for Undergraduate Students borrowing program which expanded loan availability and continued shifting the cost away from grants towards loans (Dynarski & Scott-Clayton, 2013).

Under the Higher Education Amendments of 1986, the National Direct Student Loan program underwent another name change to the Federal Perkins Loan Program (Finaid, 2014a). Under the Perkins Loan Program, student intermediaries (i.e., accredited postsecondary institutions) administered federal loan funds to undergraduate and graduate students with exceptional financial need in accordance with regulations established and monitored by the U.S. Department of Education (Fuller, 2014). The Higher Education Act of 1965, the predecessor of the current student loan program, was reauthorized in 1968, 1972, 1976, 1980, 1986, 1992, 1998, 2008, and is currently undergoing the process of reauthorization (FinAid, 2014b; Fuller, 2014).

The reauthorizations of 1992, 1998, and 2008 brought about additional changes in federal student aid. However, the 1992 reauthorization of the Higher Education Act defined how the federal government would support postsecondary education going forward, and led to direct lending to students (Fuller, 2014). The 1992 reauthorization broadened eligibility for subsidized loans, created new unsubsidized student loans, and raised annual loan limits (Gicheva, 2011). Furthermore, the 1992 reauthorization allowed parents to borrow up to the full cost of attendance, including room and board through the

Parent Loans for Undergraduate Students loan program (Dynarski & Scott-Clayton, 2013).

The Guaranteed Student Loan Program, now known as the Direct Loan Program, came about to help students meet rising educational expenses. In the 2010-2011 academic year, private student loans accounted for only 7% ($7.9 billion) of the approximately $112 billion in student loans originated that year (Edmiston et al., 2012), indicating that federal student loans comprised the majority of student loan lending in the United States. In 2013, 75% of the U.S. Department of Education's budget request was for student aid, with 50% of students enrolled in 4-year public colleges and universities utilizing federal student loans, 63% in non-profit institutions, and 86% of students utilizing federal student loans at for-profit institutions (Edmiston et al., 2012). The shift in policy away from academic scholarships and grants towards student loans brought with it the problem of student loan default.

## The Default Dilemma

The transition away from federal, state, and private need based grants in 1982 (Geiger & Heller, 2012) along with increasing tuition costs has resulted in student loans becoming the primarily source for financing higher education. Hillman (2015) reported that approximately two thirds of undergraduate students take out loans and have an average debt of $25,250. Brown et al. (2014) found 30% of borrowers who entered repayment became delinquent, while Cunningham and Kienzl (2011) noted that 26% of the borrowers who entered repayment in 2005 became delinquent on their loans at some point without defaulting. Elliot and Lewis (2014) reported that student loans become

delinquent when the payment is more than 60 days past due, however the U.S. Department of Education stated that delinquency begins with the first missed payment (U.S. Department of Education, 2011b).

The problem of student loan default has grown to epidemic proportions with approximately $93 billion in student loan arrearages and 5.2 million borrowers being behind on student loan payments (American Student Assistance, 2013). According to the U.S. Secretary of Education, Arne Duncan, the FY 2011 3-year national cohort default rate was 13.7% (U.S. Department of Education, 2013a), while the State of Florida's FY 2012 cohort default rate is significantly higher at 14.1% (U.S. Department of Education, 2015b). Indicating that one in seven borrowers default on their student loans within three years after entering loan repayment (Federal Student aid, 2014). Cunningham and Kienzl (2011) found that almost 41% of student loan borrowers became delinquent or defaulted on their student loans during repayment years. They further found an additional 21% of borrowers avoided delinquency or default by utilizing deferment (a temporary suspension of student loan payments) or forbearance (an agreed upon temporary delay or reduction of loan payments by the lender and borrower in which interest still accrues) to avoid delinquency or default (Cunningham & Kienzl, 2011). In the first quarter of 2012, student loan borrowers had an average total debt of $82,994, including mortgages (Edmiston et al., 2012).

Student loan debt is not limited to traditional aged college students (18-24 years of age). Edmiston et al. (2012) reported that less than 40% of student loan borrowers were under age 30, approximately one-third were over age 40, with 3% of borrowers

having student loan debt levels above $100,000, and 0.5% over $200,000. The impact of delinquency and default can also affect parents who have cosigned student loans for their children; Greene (2012) reported that 9.5% of student loan borrowers, aged 60 and older, were at least 90 days delinquent owing more than $43 billion in federal and private student loans. The increase in loan volume has led to an increase in student loan default which has significant ramifications for both the borrower and the educational institution.

**Borrower Consequences of Default**

The consequences of student loan default in the United States can be severe for the borrower. Borrowers who default on federal student loans face such potential actions as the loss of deferment and forbearance eligibility, exclusion from a variety of repayment options, collection activities, delinquent reporting to the credit bureaus (i.e., damaged credit rating), federal and state tax return offsets, wage garnishment up to 15%, late fees, additional interest and penalties, collection costs including court costs and attorney fees, and loss of eligibility for additional federal student aid (Lochner, Stinebrickner, & Suleymanoglu, 2013; Ionescu & Ionescu, 2014). Furthermore, a defaulted borrower can experience multiple negative entries on their credit report as a result of subsequent reporting from collection agencies. Woo (2002) noted that defaulted borrowers may also experience lawsuits, collection calls, embarrassment, and humiliation; additionally Edmiston et al. (2012) noted that student loan default could result in denial or loss of professional license. Doyle (2012) stated that graduates do not need to ever experience default because of the current availability of repayment options, yet 14.7% of borrowers default (U.S. Department of Education, 2013a).

**Institutional Consequences of Default**

Likewise, the consequences of student loan default are no less damaging or severe for institutions of higher education. Congress began to impose penalties on institutions with high cohort default rates beginning in 1989 (Gross et al., 2009). Institutions with high default rates (i.e., a 3-year cohort default rate 30% or higher for any one federal fiscal year) are required to establish a default prevention task force and implement default prevention plans (Ed.gov., 2012). An institution of higher education having their three most recent official cohort default ratings 30% or higher, or if their current official cohort default rating is 40%, will lose direct loan and federal Pell grant program eligibility for the remainder of the year and for the 2 following fiscal years (Ed.gov., 2014). Flint (1997) noted that the loss of federal financial aid funds was devastating to an institute's revenues and enrollment.

The loss of eligibility to participate in the federal aid program is reciprocal in nature affecting both the student and the educational institution. FinAid.org (2014a) reported that 86.3% of 4-year undergraduate students who applied for federal student aid did so to pay for their education with an average cumulative debt of $24,651. Given the negative consequences of student loan default for both the borrower and the educational institution they attended, a study of the borrower characteristics associated with default may lead to solutions that prevent borrowers from defaulting and subsequently reduce the institutions cohort default rate.

**Default Avoidance Options**

In an effort to reduce federal student loan repayment burden, policymakers have enacted five measures to enable borrowers to reduce their monthly payments to a more affordable level (Consumer Financial Protection Bureau, 2013; National Association of Student Financial Aid Administrators, 2014). Borrowers with large debt burdens, above $30,000, may be able to extend the amortization period of their federal student loans from 10 to 25 years and reduce their monthly payment (Consumer Financial Protection Bureau, 2013; National Association of Student Financial Aid Administrators, 2014). Borrowers also have the option to have gradual increasing payments, where monthly payments start low and gradually increase over the repayment period (Consumer Financial Protection Bureau, 2013; National Association of Student Financial Aid Administrators, 2014). Furthermore, borrowers can enter into income contingent repayment plans on certain federal student loans that cap the monthly payment at a certain percentage of their income (Consumer Financial Protection Bureau, 2013; National Association of Student Financial Aid Administrators, 2014).

However, all of these options extend the repayment period and increase the total amount of interest paid over the life of the loan. Borrowers who have defaulted can pursue a rehabilitation option to remove the default from their credit report (Consumer Financial Protection Bureau, 2013). After they have successfully made nine out of ten consecutive on-time monthly payments according to the plan, the Department of Education will request removal of the default from the borrowers credit report (Consumer Financial Protection Bureau, 2013). Borrowers in unique circumstances may qualify for

a pay as you earn repayment plan which can extend the repayment terms for up to 20 years, after which any remaining balance is forgiven (National Association of Student Financial Aid Administrators, 2014).

In addition to the above repayment options borrowers can also enter into loan deferment, forbearance, or forgiveness. Deferment and forbearance are temporary periods in which student loan payments are suspended or reduced under special circumstances (such as active military duty, volunteer service in the Peace Corps, etc.) and agreed upon with the lender (National Association of Student Financial Aid Administrators, 2014). Additionally, programs exist under which the borrower, performing certain services, may have their outstanding loan balance and accrued interest forgiven. These programs are available for teaching in low income areas for five years, or working full-time in qualified public service for ten years (National Association of Student Financial Aid Administrators, 2014). Federal student loans may be discharged if the borrower becomes permanently and totally disabled, dies, or during bankruptcy proceedings if the court deems loan repayment would cause undue hardship (National Association of Student Financial Aid Administrators, 2014).

## Previous Research

Over 70 countries around the world have government sponsored student loan programs (Shen & Ziderman, 2009). The body of relevant literature on predicting student loan default dates from 1900 to the mid-2000s (Gross et al., 2009) and may be divided into three broad categories: pre-college measures, college experience measures, and post college measures (Flint, 1997; Nyahende, 2013). The relevant literature on

predicting student loan default includes a number of significant empirical studies that examined characteristics associated with student loan default (Barone, 2006; Cunningham & Kienzel, 2011; Dynarski, 1994; Flint, 1997; Harrast, 2004; Herr & Burt, 2005; Hillman, 2014; Kinsler & Pavan, 2011; Nyahende, 2013; Podgursky, Ehlert, Monroe, Watson, & Wittstruck, 2002; Steiner & Teszler, 2003; Volkwein & Szelest, 1995; and Volkwein, Szelest, Cabrera, & Napierski-Prancl, 1998). These studies examined student and institutional characteristics to determine the causes of student loan default. However, there remains a general lack of agreement in the literature as to which borrower characteristics lead to student loan default and whether the institution has the ability to influence these characteristics (Podgursky et al., 2002).

In the literature, the prominent rationale for the use of student loans was economic in nature (Christie & Munro, 2003; Rani, 2011; Shen & Ziderman, 2009). It was argued that taking education loans represents the student investing in themselves for which they alone will reap the economic benefits upon graduation (Christie & Munro, 2003; Elliot & Lewis, 2014). Furthermore, student loans were viewed as a means of shifting the burden of cost from governments to the parents and students (Christie & Munro, 2003; Hiltonsmith, 2014; Rani, 2011; Shen & Ziderman, 2009). This economic view assumed that all the benefits of postsecondary education are private and did not consider any public benefit of a highly educated workforce (Elliot & Lewis, 2014). However, there is also economic burden associated with the shift toward student loans as the average timeframe for repayment has increased from 7 to more than 13 years (Akers & Chingos, 2014). Furthermore, Elliot and Lewis (2014) noted that the usage of programs designed

to help prevent default, such as income-based repayment plans, can extend the repayment period up to 25 years, or most of the borrower's adult working life. Belfield (2013) reported that in the for-profit educational sector, 94% of students receive federal financial aid, whereas only 57% receive federal financial aid in public institutions, and 70% in private not-for-profit colleges.

An alternative to the assumed private benefit of student loans is the societal benefit view. Rani (2011) spoke directly to the wide recognition of the need for student loans to enable low income families to meet the cost of postsecondary education. His stated justification for the use of loans and grants was to guarantee equal access, equal equity, and social justice (Rani, 2011). Elliot and Lewis (2014) noted that higher education fostered upward mobility within society. Furthermore, Shen and Ziderman (2008) posited that subsidized loans provide greater access to postsecondary education for the under privileged and minority groups thereby contributing to social equity. However, the need to compete globally mandates higher skills and creativity in the workforce to bring about desired products and services. To this end the United States government has been investigating alternative methods of financing postsecondary education primarily on the demand side with a focus on default prevention (Rani, 2011) and thus ensuring global competiveness.

**Borrower Characteristics**

The literature on student loan default has categorized borrower characteristics as pre-college measures (background characteristics), college experience measures, and post college measures (Flint, 1997; Nyahende, 2013). The first category addressed student

loan default from the perspective of the student's background (Herr & Burt, 2005). The second category approached default by describing the characteristics a borrower developed while attending college (Nyahende, 2013; Steiner & Teszler, 2003). While the third category addressed student loan default from the perspective of characteristics developed by borrowers after leaving college (Dynarski, 1994; Flint, 1997; Nyahende, 2013; Volkwein & Szelest, 1995). The second category, college experience measures, best supports my line of inquiry because all else being equal, the literature indicated that students who were successful in their studies tended to have lower rates of student loan default than those who were unsuccessful (Steiner & Teszler, 2003). This would indicate that student loan default or repayment is at least partly under the control of the borrower, the educational institution, or both.

**Pre-College Characteristics**

Pre-college measures are characteristics attained by students prior to attending college which a postsecondary institution has little or no ability affect (Barone, 2006; Harrast, 2004; Kinsler & Pavan, 2011; Volkwein & Szelest, 1995). Pre-college characteristics evaluated in the literature for their association with student loan default include college entrance exam scores, high school class rank, and high school graduation (Podgursky et al., 2002; Steiner & Teszler, 2003; and Woo, 2002). Additionally, the characteristics of age, attitude, ethnicity, family income, and gender were also evaluated (Barone, 2006; Flint, 1997; Herr & Burt, 2005; Podgursky et al., 2002; Volkwein & Szelest, 1995; and Volkwein, Szelest, Cabrera, & Napierski-Prancl, 1998).

Academic preparedness was found to be associated with student loan default. It was noted the higher a borrower's high school class ranking the less likely they were to default on their student loans (Steiner & Teszler, 2003), or drop out of college (Paulsen & Smart, 2013). Borrowers who ranked at or above the 90$^{th}$ percentile had a default rate of 3.2% whereas those who ranked below the 25$^{th}$ percentile had defaults rates of 12.8% (Steiner & Teszler, 2003). They further found that students with combined verbal and math SAT equivalency scores above 900 on college entrance exams (e.g., SAT or ACT) had 2.5% lower student loan default rates than those with combined scores below 900 (Steiner & Teszler, 2003). Christman (2000) found that borrowers who possessed a GED instead of a high school diploma experienced higher rates of default than those with a high school diploma. However, Steiner and Teszler (2003) noted that merely completing the minimum high school course work requirements did not have a significant impact on a borrower's likelihood of default, indicating that merely graduating from high school was not a sufficient indicator of the likelihood of future student loan default.

Furthermore, age was found to be a factor in student loan default. Herr and Bert (2005) explained that older students typically have more financial obligations that compete for their limited financial resources. When evaluating age, Woo (2002) noted that older students are more likely to default than younger students, and Flint (1997) noted that default increased by 3% per year for every year beyond age 21. Podgursky et al. (2002) supported this finding in their study of Missouri student loan borrowers when they reported that students' age (being older) increased their default ratio. Harrast (2004) reported that on average each year of age added $312 to a student's cumulative debt, and

Choy and Li (2006) reported the likelihood of default increased with the total amount owed. Nearly all studies that considered age as a factor in default held the same conclusion except Steiner and Teszler (2003), they found that younger students were three times more likely to default than older students. These findings may indicate that older students have more financial commitments competing for their limited resources.

Volkwein and Szelest (1995) defined attitude as the borrower's thoughts and feelings towards loans, debt, and other financial responsibilities which could affect their propensity to default. Kinsler and Pavan (2011) defined attitude as the tendency of borrowers to respond negatively or positively toward loan repayment. Christman (2000) found that student borrowers possess certain characteristics independent from the institution they attend that caused them to default on their student loans. Woo (2002) equated high student loan debt levels as a proxy for higher education and more initiative, drive and success resulting in lower default rates. Additionally, Baum and O'Malley (2003) also concluded that attitude was associated with student loan default.

Researchers also indicated that differences among racial and ethnic groups were associated with student loan default. It was concluded that students of color were more likely to default than Caucasian students (Baum & O'Malley, 2003; Christman, 2000; Harrast, 2004), and African American students were at greatest risk of default (Herr & Bert, 2005; Steiner & Teszler, 2003). Being identified as African American, Hispanic, or American Indian from families with little formal education or having no high school diploma or a GED was associated with higher rates of default (Volkwein et al., 1998). In

contrast, being identified as Asian or Caucasian from families with college educated parents was found to be associated with lower default rates (Volkwein et al., 1998).

Researchers indicated that being identified as African American or American Indian usually meant having a higher default rate (Volkwein et al., 1998). Flint (1997) found that being African American increased the likelihood of default by 11.7%. Lochner and Monge-Naranjo (2014) found that default rates were similar among African Americans (13%), Hispanics (11%), and Asians (11%), while Caucasian default rates were only 5%. Additionally, Volkwein and Cabrera (1998) reported finding that African American and Hispanic defaulters had significantly higher rates of unemployment. They were frequently dissatisfied with their education, and had personal issues which affected their ability and willingness to repay their student loans (Volkwein & Cabrera, 1998). This finding may be related to underlying issues of a lack of academic preparedness limiting access to postsecondary institutions. Dynarski (1994) concluded that the relationship between ethnicity and the likelihood of student loan default held true regardless of the institutional type attended (2-year or 4-year college), but since non-degree-granting proprietary colleges were not included in the study remains unknown whether this relationship holds true for non-degree-granting proprietary colleges.

Borrowers in all ethnic groups with similar circumstances (e.g., degree earned, marital status, and family size) display essentially identical income and student loan default rates (Volkwein et al., 1998). This finding would indicate that the borrower's choice in institution attended, grades earned, and major field of study is less impactful on student loan default than is degree completion, marital status, and number of dependent

children. Lochner and Monge-Naranjo (2003) reported that borrowers owed approximately half of their original student loan amounts four years after graduation regardless of ethnicity. Volkwein et al. (1998) further noted that African Americans and Hispanics have lower levels of degree attainment, higher levels of separation and divorce, and a greater number of children, almost twice the rate of Caucasians, and that those variables rather than ethnicity better explain the difference in default rates.

Research on the impact of family income and student loan default yielded mixed results. Knapp and Seaks (1992) reported that parental income was associated with student loan default when they found that for every one thousand dollar increase in income the risk of default decreased by 0.02%, and every $10,000 increase in income decreased the likelihood of default by 2%. However, Flint (1997) reported that many borrowers with discretionary income having the ability to repay student loans choose not to pay. Woo (2002) noted that most student loan borrowers, even from poor families, do not default on their student loans. These findings indicated that economic status is not a reliable indicator of repayment.

Gender also played a significant role in student loan default. Woo (2002) concluded that being female decreased the likelihood of default by 36%. Podgursky et al. (2002) found that men were more likely to default than were women. Flint (1997) reported that being male increased the likelihood of default by 5.8%. Choy and Li (2006) noted that women take longer to repay their loans which Lochner and Monge-Naranjo (2014) concluded may be due in part to their comparatively lower average earnings. In contrast, Volkwein and Szelest (1995) found that gender did not significantly contribute

to student loan default rates, while Knapp and Seaks (1992) found no correlation between gender and default.

**College Experience Measures**

The college experience measures are characteristics attained by students after they have enrolled in, and while attending college or university which the institution has some ability to affect (Herr & Burt, 2005; Nyahende, 2013). The measures evaluated include: academic achievement (grade point average), college major, degree attainment, financial support, and type of institution attended (Steiner & Teszler, 2005; Volkwein & Szelest, 1995; Volkwein et al., 1998; and Woo, 2002).

Reporting on academic achievement, Steiner and Teszler (2003) found that Texas A&M students with a grade point average of 2.0 or less had a default rate of nearly 18%, while student with a grade point average of 2.5 or higher had a default rate less than or equal to 2%, and students with a grade point average above 3.0 defaulted less than 1% of the time indicating the importance of academic success to student loan default. Woo (2002) found that a 0.53 increase in grade point average on a 4.0 grade scale decreased the likelihood of default by 14%. Christman (2000) found community college students with cumulative grade point averages of less than 2.0 experienced higher student loan default rates. Furthermore, Flint's national study concluded that higher cumulative grade point averages were associated with a decrease in likelihood of default (Flint, 1997). These findings indicate that academic success, as measured by grade point average, significantly contributes to the likelihood of student loan default. However, grade point

average may be a proxy for ability and motivation, which also contribute to success not only while in college, but also later in life (Volkwein & Szelest, 1995).

The choice of college major was also found to have a moderate role in predicting default. Steiner and Teszler (2003) reported that general studies majors had a higher default rate than other majors at 14.7%, additionally Volkwein and Szelest (1995) found that scientific, engineering, and agricultural majors lowered the probability of default by over 4%. Steiner and Teszler (2003) also reported that borrowers with double majors had lower default rates than did borrowers with a single major and that changing college majors more than twice resulted in higher default rates. Gemici and Wiswall (2011) found that women were more likely to complete a college degree than men, but they were only 66% as likely to pursue business or scientific majors.

Degree attainment was found to be associated with a decrease in the likelihood of student loan default. Bailey and Dynarski (2011) reported that economically disadvantaged students suffered from inferior academic preparation which contributed to low completion rates. Cunningham and Kienzel (2011) reported that 26% of borrowers who failed to complete their degree defaulted on their student loans. Steiner and Teszler (2003) reported that as the length of time in college increased (i.e., above 111 hours) the default rate decreased. Successful completion of college course work and subsequent degree attainment was found to decrease the likelihood of student loan default (Knapp & Seaks, 1992; Steiner & Teszler, 2003; Volkwein et al., 1998; and Woo, 2002). Overall, college completion and degree attainment had a greater impact on the likelihood of

student loan default than did grade point average (Podgursky et al., 2002; Steiner & Teszler, 2003; Volkwein et al., 1998; and Woo, 2002).

**Post-College Measures**

In the literature, post-college measures referred to the characteristics a borrower obtained after leaving college whether by graduation or withdrawal. These characteristics were considered beyond the educational institutions ability to control. The post-college characteristics evaluated in the literature include: highest degree attained, income, marital and family status, amount of debt, and unemployment (Flint, 1997; Nyahende, 2013; Steiner & Teszler, 2003; Volkwein & Szelest, 1995; and Volkwein et al., 1998; Woo, 2002).

Post college income was found to affect student loan delinquency and default (Beanblossom & Rodriguez, 1989; Cross & Olinsky, 1986; Lochner & Monge-Naranjo, 2014; Lochner et al., 2013). Lochner and Monge-Naranjo (2013) concluded that repayment patterns across demographic groups could not easily be attributed to post college income countering Volkwein and Szelest (1995) earlier finding that post college income affected student loan defaults. Lochner and Monge-Naranjo (2014) found that 10 years after graduation, men earned approximately 70% more than women; Asians earned 15% more than Caucasians, while African-Americans earned 15% less than Caucasians, and Hispanic earnings were similar to Caucasian earnings. Rothstein and Rouse (2011) noted that high debt levels decreased a student's likelihood to choose a low paying profession (e.g., teacher).

In considering income and unemployment, Dynarski (1994) reported that 69% of 4-year graduates who defaulted were working, but had insufficient funds. Woo (2002) found that borrowers who were unemployed exhibited an 83% increase in the probability of default compared to their original probability. Flint (1997) found that 11.6% of borrowers with adequate disposable income (disposable incomes greater than the amount borrowed) defaulted on their loans, while 83% of borrowers with disposable incomes less than the amount borrowed were repaying their loans. Volkwein et al. (1998) concluded that income below $10,000 increased default rates, whereas income above $25,000 decreased default rates. Having sufficient income was not an indicator of a borrower's willingness to repay student loans. Woo (2002) supported the notion that having adequate disposable income does not necessarily equate to repayment when she noted that even poor families repay their student loans.

Intuitively the lack of income, as a result of sustained periods of unemployment, would explain the associated increase in the default rate, however counter to intuition, high debt levels were found to result in lower levels of student loan default. Woo (2002) reported that high levels of debt was not a predictor of high levels of student loan default. Student loan borrowers with lower debt levels exhibited higher rates of default (Steiner & Teszler, 2003; Woo, 2002). A possible explanation for this finding is that borrowers with lower levels of debt did not complete their program of study and did not graduate. Volkwein et al. (1998) supported this hypothesis when they noted that larger loan amounts were an indication of the length of time spent in school and the longer a borrower was in school the more likely they were to obtain a degree.

It was argued that obtaining a college degree resulted in higher income potential and reduced unemployment as compared to not having a college degree and therefore lower rates of default. Supporting this argument, Owen and Sawhill (2013) found that the rate of return on a bachelor's degree was between 6% and 12% depending on how competitive the institution was. However, Mishel, Bivens, Gould, and Shierholz (2013) reported that the unemployment rate for college graduates rose from 2% to 5.7% between 2000 and 2010 indicating that obtaining a college degree is not a guarantee against unemployment.

Marriage and family status was also found to be associated with student loan default in the literature. Gicheva (2011) noted that the probability of marriage decreased by 7% for every additional $10,000 of student loan debt. Volkwein and Szelest (1995) noted the impact of marital status on default when they reported that being separated, divorced, or widowed increased the probability of default by over 7%. They further reported that having dependent children increased the likelihood of default by 4.5% per dependent child (Volkwein & Szelest, 1995). This may help to explain the higher default rates amongst African American and Hispanics seeing that on average they have almost twice the number of children as Caucasians (Volkwein et al., 1998). Combining the marital status of single, divorced, or widowed with having dependent children resulted in borrower default rates above 40% (Volkwein et al., 1998). This may be due to increased competition for limited financial resources.

**Institutional Characteristics**

The type of institution attended is also associated with student loan default. Volkwein et al. (1998) noted that borrowers who attended doctoral granting institutions had lower default rates than those who attended proprietary (for profit) schools. Woo (2002) found students in shorter (2-year or less) programs had higher default rates than those who attended longer programs. Woo (2002) further indicated that this finding appeared to be the result of the type of students who enrolled in such programs. Knapp and Seaks (1992) found that smaller schools had a greater propensity for higher default rates than did larger institutions. In contrast, Volkwein and Szelest (1995) found that institutional type (2-year or 4-year) had an insignificant impact on whether students defaulted on their student loans. Lochner and Monge-Naranjo (2014) noted that for-profit institutions experienced default rates three to four times higher than public and not-for-profit institutions. Belfield (2013) found that for-profit colleges had the lowest student loan repayment rates. What was noticeably absent from the literature regarding the type of institution attended was the inclusion of non-degree-granting proprietary colleges (career and vocational colleges).

**Previous Methodologies**

Looney and Yannelis (2015) examined the rise in student loan default utilizing de-identified tax records and multiple regression analysis. They found the majority of the increase in student loan default was associated with borrowers who attended for-profit schools, 2-year, and certain non-selective schools (Looney and Yannelis, 2015). They further stated that the student loan default crisis is concentrated among borrowers

attending for-profit schools (Looney & Yannelis, 2015) emphasizing the need to study this sector. Importantly, they identified nontraditional borrowers as being older, lower income levels, enrolling less than full-time, living independently from their parents, and attending 2-year or less programs of study which, as Cellini and Darolia (2016) also noted, represented the demographic most often found attending for-profit institutions. Looney and Yannelis (2015) further noted that nontraditional borrowers have grown to represent almost half of all new student loan borrowers, and Cellini and Darolia (2016) noted that approximately 16% of for-profit borrowers will default on their loans within 3 years after entering repayment.

Lochner and Monge-Naranjo (2014) conducted a multivariate analysis of student loan repayment. Their study utilized data from the Baccalaureate and Beyond Longitudinal Study for American Students who received BA/BS degrees in 1993. The authors examined 4,304 students who received baccalaureate degrees utilizing standard multiple regression methods to determine the effects of background characteristics, college majors, and institutional characteristics on student loan repayment (Lochner & Monge-Naranjo, 2014). Their main conclusion was that ethnicity was the only consistently important background characteristics related to student loan repayment, with African Americans being 6% more likely to default 10 years after graduation than Caucasians (Lochner & Monge-Naranjo, 2014).

Also in 2014, Steiner and Barone conducted a study of community college default risk for the Texas Guaranteed Student Loan Corporation. In this study, Steiner and Barone examined the effects of grade point average, amount of Pell grant received,

academic preparedness (as indicated by state approved test scores for math and reading), gender, high school graduation status (diploma or GED), and residency status (in state in district, or out of state out of district) on student loan default (2014). The study analyzed 4,621 borrowers from Austin Community College, utilizing logistic regression, who entered student loan repayment between October 1, 2009 and September 30, 2010 (Steiner & Barone, 2014). The study contained a first semester model which analyzed the records after completion of the first semester college, and an exist model which analyzed records after the borrower had left the community college (Steiner & Barone (2014). The researchers concluded that the college should be able to detect differences in default risk as early as the end of the first semester (Steiner & Barone, 2014). They also found that grade point average (specifically low grade point average), academic preparedness (especially in math), gender (particularly men), and degree completion all contribute significantly to student loan default (Steiner & Barone, 2014).

In 2013, the effect of age, gender, and attitude on student loan default in Tanzania was examined (Nyahende, 2013). Framing the problem within the human capital theory in which education is viewed as an investment in developing human capital and not as a consumer item, the study utilized multiple regression and correlation to analyze the contribution of each variable to student loan default. The Nyahende examined 150 respondents, a 75% response rate, from 5 area colleges and universities (i.e., University of Dar es salaam, Dar es salaam University College of Education, Tumaini University Dar es salaam College, Institute of Finance Management, and College of Business Education) utilizing the Statistical Package for the Social Sciences (SPSS) software and

found that age, gender, and attitude all had a significant influence on student loan default in Tanzania (Nyahende, 2013). Specifically, every unit of change in age resulted in a 19.1% change in the default rate in the same direction (increase or decrease), women were less likely to default than men, and every unit of change in attitude resulted in a 33.1% change in the default rate in the same direction (Nyahende, 2013). This study however, only investigated 3 of the pre-college measures (those factors that characterize students prior to entering college) in a single geographical region and as such may not present a complete understanding of borrower characteristics that contribute to student loan default. Furthermore, this study did not address student loan default among non-degree-granting proprietary colleges.

In 2006, a multivariate study of student loan default at Prairie View A&M University (PVAMU) was conducted by Barone (Barone, 2006). This study examined 3,325 undergraduate borrowers who entered repayment between October 1, 2000 and September 30, 2002. The study included 3,325 borrowers, 624 borrowers of which (18.8%) were officially in default (Barone, 2006). The study utilized the statistical technique of logistic regression to examine the variables of grade point average, academic level (e.g., freshman, sophomore, junior, senior), high school class rank, expected family contribution, and the number of transferred credit hours for their contribution to the probability of student loan default (Barone, 2006). The key findings were that grade point average was strongly related to default, and borrowers leaving PVAMU with a 3.0 or higher grade point average were at least 7% less likely to default than those who exited with a 2.5 or lower grade point average. Additionally, obtaining a

degree was found to lower the likelihood of default by 5%, as did persistence beyond the freshman year, and helping to pay for their education; however the lack of academic preparedness as demonstrated by graduating in the bottom 25% of one's high school class was found to increase the likelihood of default by 4% (Barone, 2006). This study was institution specific and as such it did not include borrowers from non-degree-granting proprietary colleges.

In 2005, Herr and Burt conducted a multivariate study of student loan default at the University of Texas Austin (Herr & Burt, 2005). They examined University of Texas Austin student loan borrowers who entered repayment between 1996 and 1999 with the intent of preventing future defaults by identifying possible interventions for students still enrolled. The study included 23,418 borrowers of which 1,306, or 5.58%, were in default (Herr & Burt, 2005). This study also utilized the statistical technique of logistic regression to examine a host of borrower variables including gender, ethnicity, age, geographic location, parents educational levels, high school class rank, college class level, college grade point average, number of credit hours failed, financial need level, student dependency statue, and the total amount borrowed to develop a profile of student loan default at University of Texas Austin (Herr & Burt, 2005). The model correctly categorized 70% - 79% of borrowers as either defaulters or re-payers (Herr & Burt, 2005).

The key findings of this study indicated that borrower background characteristics, degree completion, and academic success were important factors in the prediction of student loan default (Herr & Burt, 2005). The study concluded that African-American

and Hispanic students were more likely to default than were Caucasian and Asian students indicating that African-American and Hispanic students would benefit from interventions (Herr & Burt, 2005). Furthermore, high school academic performance was linked to lower rates of default indicating that better academic preparedness contributed to lower rates of default which could be a factor in default for non-degree-granting proprietary colleges (career and vocational colleges) as they may attract lower ranked students because of their shorter length programs and open admission policies. The most important conclusion of this study was that degree completion lowered the likelihood of student loan default (Herr & Burt, 2005). This finding may be attributable to the fact that a college degree typically has more earning potential in the job market, $570,000 over a working lifetime for a bachelor's degree, and $170,000 over a working lifetime for an associate degree as compared to a high school diploma (Owen & Sawhill, 2013).

A national descriptive analysis of student loan defaulters was conducted using data from the National Postsecondary Student Aid Survey and the Student Loan Recipient Survey by Dynarski in 1994. This study analyzed a representative national sample consisting of 8,223 participants and described the characteristics of student loan borrowers who defaulted on their student loans. The key findings reported were: a) the majority of student loan borrowers were from low income, low education minority families, b) borrowers who had defaulted displayed characteristics associated with loan risk (e.g., low income households, high school or college dropout, and attended proprietary or community college), and c) had low earnings after leaving college (Dynarski, 1994). Dynarski (1994) reported that 83% of proprietary school defaulters

indicated that being unemployed was a significant factor in defaulting on their student loans. Additionally, he reported that few defaulters were unaware that they had to repay their student loans (Dynarski, 1994).

## The For-Profit Institution

The U.S. Department of Education (2011b) defines a proprietary school as a legal, private, for-profit, postsecondary school the majority of which offer technical and vocational programs. The term for-profit indicates that the institution is owned by a private individual or corporation shareholders (Morse, 2015). As such these schools are operated like other businesses in order to provide a return on investment for their owners (Cellini & Darolia, 2016) and by default have an operating model that equates higher enrollment with higher profits. In 2010 the for-profit sector had revenues of $29.2 billion with 86% of the revenue of the top 15 publically traded corporations coming from federal funds (Morse, 2015). Approximately 70% of a for-profit school's revenue comes from federal aid programs (Cellini & Darolia, 2016). For-profit schools typically have higher percentages of minority and low-income students (Morse, 2015) and their profit maximizing motives may not necessarily have the student's best interests in mind (Cellini & Darolia, 2016).

For-profit (proprietary) colleges have based their business model on growing the financial bottom line through rapid growth from aggressive recruiting techniques and the high use of federal student aid funding (Braucher, 2012). While their mission has been to improve employability by providing the necessary skills and training the job market desires this has produced large student loan debt burdens and higher than normal default

rates (Braucher, 2012). However, for-profit institutions have developed and demonstrated cost-efficient, consumer-oriented methods of delivering educational training programs (Turner, 2015). The for-profit institution serves to provide a convenient and expedited education while maximizing value for their shareholders (Turner, 2015).

## The Gainful Employment Rule

In an attempt to curb federal aid abuse and ensure students are receiving value for their tuition money, the U.S. Department of Education enacted the gainful employment rule in 2011. The gainful employment rule came about in response to high student loan default rates at for-profit postsecondary schools and the large proportion of revenue these institutions received from Title IV funds (Heller, 2011). The rule applies to all institutions offering programs designed to lead students directly into employment in a recognized field; however these programs primarily exist at for-profit institutions (Heller, 2011). The regulation utilizes a two-part test for determining a programs eligibility to receive Title IV funds: a) the proportion of the program's students who are actively repaying their federal student loans, and b) the ratio of the monthly student loan payment amount to the student's average earnings (Belfield, 2013; Heller, 2011). The rules currently define program eligibility as having a student loan repayment rate greater than or equal to 45%, and a debt to earnings ratio of less than or equal to 8% (or less than or equal to 20% of discretionary income) on a 3 year average (Heller, 2011).

**Critical Analysis**

A synthesis of the prior relevant literature on predicting student loan default provided an opportunity critically analyze the variables evaluated in prior research. An evaluation of the literature revealed many reasons for default and several characteristics that were associated with student loan default. Flint (1997) found nationally that age, gender, and cumulative grade point average were the prominent characteristics that identified the propensity for student loan default. Completing college and obtaining a college degree was found to be the most significant factor in reducing student loan default (Knapp & Seaks, 1992; Podgursky et al., 2002; Steiner & Teszler, 2003; Volkwein et al., 1998; and Woo, 2002), possibly due to increased employability and increased earnings. Other studies found that ethnicity, marital, and family status contributed to the likelihood of student loan default (Flint, 1997; Volkwein & Szelest, 1995; Volkwein et al., 1998; Volkwein & Cabrera, 1998). Significant characteristics in one study may have been insignificant in another study. There may be alternative explanations for characteristics associated with student loan default such as Volkwein and Szelest's (1995) suggestion that grade point average may be a proxy for ability and motivation.

Noticeably absent from the literature on predicting student loan default was the inclusion of non-degree-granting proprietary colleges (career and vocational colleges). Researchers revealed that the characteristics associated with student loan default may be either borrower or institutional related; however, the non-degree-granting proprietary segment of the student loan borrower population is understudied and underrepresented in

the current literature. While this segment of the population may be small, researchers indicated that it may be vulnerable to higher default rates (Ed.gov, 2014). Additionally, this segment of the student loan population needs to be further studied because non-degree-granting proprietary colleges predominately attract students shown to be vulnerable to student loan default (i.e., African American and Hispanic). Due to the expense of student loan default, it is imperative that the characteristics or combination of characteristics that have the greatest impact on present day student loan default be identified and studied in order to prevent the negative consequences of student loan default for the borrower, institution, and society.

**Gaps in the Literature**

The relevant literature on predicting student loan default is limited. Gross, Cekic, Hossler, and Hillman (2009) found that only 41 higher quality studies on student loan default were published from 1978 – 2007. They further stated that the best research on student loan default was written more than a decade ago under a different historical context (Gross et al., 2009). The majority of these studies examined student loan default from a univariate perspective and did not include non-degree-granting proprietary institutions.

A review of the recent literature (published within the last five years) did not reveal a multivariate predictive study of student loan default in the United States. Expansion of the literature search revealed 3 such studies were published in the late 1990s, one on predicting Perkins loan defaulters by Thobe and DeLuca (1997), Flint's (1997) national study on predicting Stafford loan defaulters, and "Student Loan Defaults

in Texas: Yesterday, Today, and Tomorrow" (Webster, Meyer, & Arnold, 1998). The General Accounting Office conducted two separate studies of its own on student loan default, also in 1997, which focused on default profiles among historically black colleges (GAO, 1997a) and default profiles of proprietary schools (GAO, 1997b). The question remains as to whether the findings in these studies hold true today, and if so, are they applicable to borrowers in the non-degree-granting proprietary sector.

## Summary

The goal of removing financial barriers and providing equal access to postsecondary education was achieved thru federal initiatives such as the G.I. Bill of Rights, Pell grants, and student loans. Increasing access to college education has come at a cost. The use of federal student loans resulted in student loan debt becoming the second highest form of house hold debt in America, surpassing that of auto loans and credit cards. Increasing the use of federal student loans has also had the unintended consequence of increasing the federal student loan default rate. Regardless of the causes of default, student loan default creates a substantial unfavorable burden for all stakeholders, the borrower, the institution, the federal government, and the taxpayer. There are several lenses thru which this problem has been viewed in the literature, pre-college, in-college, and post-college. In this study, I examined student borrower characteristics at a non-degree-granting proprietary college to identify and better understand which characteristics contributed to student loan default and whether those characteristics can be better managed to reduce future default when viewed thru the

structural-functional (Hall, 1991) and theory of planned behavior (Ajzen, 1985) frameworks thereby contributing to the literature on predicting student loan default.

Chapter 3 details the research design and methodology of this study. I began this chapter with an overview and justification of the research design used and described the nature and relationships of the variables studied. In chapter 3, I described the target population, type and sources of data, sampling frame, data collection process, and sampling design. I concluded this chapter by detailing the data analysis process including a description of the variables in the model, the hypothesis tested, and the type of statistical test used.

# Chapter 3: Research Method

## Introduction

In this chapter, I describe the research design and methodology used to identify and understand the characteristics that contributed to student loan default. In the first section, I present an overview of, and justification for the research design. In the second section, I describe the target population, sources of data, sampling frame, sampling design, and justification of sample size. The purpose of this study was to identify and better understand the borrower characteristics that contribute to an increased likelihood of student loan default at non-degree-granting proprietary colleges in Florida. The section concludes with an explanation of data collection, variables studied, specific research hypothesis investigated, and data analysis procedures.

## Research Design and Rationale

Quantitative research usually consists of pre-experimental, experimental, quasi-experimental, or cross-sectional designs, and the research question typically drives the researcher's choice of design. In this study, I sought to determine which borrower characteristics predicted the likelihood of student loan default among non-degree-granting proprietary college students, and asked, "What are the characteristics of non-degree-granting proprietary college students that contribute to an increase in the likelihood of student loan default?" I determined that an analytical cross-sectional design was most appropriate, given the question, because the data were to be drawn at a single time as opposed to other designs that obtain data at multiple times (e.g., before and after).

Cross-sectional design provides a point-in-time snapshot of the phenomena (Saint-Germain, 2010); therefore, I chose it for this study.

In this cross-sectional quantitative study, I used self-reported data from federal student loan borrowers who attended non-degree-granting proprietary schools in Florida during the federal fiscal years of 2010, 2011, and 2012. Given that I used archival data, this study can only show relationships between variables and cannot prove causality (see Bryman & Bell, 2015). The cross-sectional design is a method researchers use to examine two or more variables at the same time, usually to describe the relationship between the variables (Bryman & Bell, 2015). It is suitable for determining the pervasiveness of a behavior in a population (Sedgwick, 2014). Cross-sectional studies are used to examine the relationship between independent variables (risk factors) and the dependent variable (outcome of interest; Bryman & Bell, 2015).

I chose the cross-sectional design because the participants were not randomly assigned to groups, but rather assigned to groups according to the dependent variable (their student loan default status). This population data falls into two groups, students who have defaulted on their student loans and those who have not defaulted on their student loans. Additionally, I measured the dependent variable of student loan default as defined by the Department of Education as not having made a loan payment in 270 days (U.S. Department of Education, 2011b). These two conditions dictated that this study was non-experimental, therefore pre-experimental, experimental, and quasi-experimental designs do not fit with the concern investigated and I deemed them inappropriate for this study.

Cross-sectional design has characteristics that made it uniquely suitable to this study. The advantages of the cross-sectional design are that it requires minimal to perform the study, is inexpensive to conduct, produces results that are generalizable to the population, can address many variables simultaneously, is ethically safe, and answers the questions of who, what, when, and where (Mann, 2012; Saint-Germain, 2010). However, cross-sectional design has several disadvantages: it cannot measure change, it is difficult to rule out rival hypothesis, it has no control over independent variables, and it is static and time bound (Saint-Germain, 2010). Perhaps the most significant disadvantage is the difficulty in making casual inference (Bryman & Bell, 2015). Furthermore, cross-sectional design only provides a point-in-time description of the situation that may change over time (Gray, 2013; Saint-Germain, 2010). There are many variations of the cross-sectional design such as analytical, longitudinal, case-control, and observational.

## Population and Sampling

This quantitative study utilized self-reported data from federal student loan borrowers who attended non-degree-granting proprietary schools in Florida during the federal fiscal years of 2010, 2011, and 2012. The geographical location has a population of 20,271,272 (U.S. Census Bureau, 2015). The population is ethnically diverse: 16.8% African American, 2.8% Asian, 55.3% Caucasian, 24.5% Hispanic, and 0.6% Other (U.S. Census Bureau, 2015). Of the population, 19.6% are foreign born persons (U.S. Census Bureau, 2015). The population is almost equally divided between women (51.1%) and men (48.9%; U.S. Census Bureau, 2015). The median household income is $47,212

(U.S. Census Bureau, 2015). Following the Frankfort-Nachmias and Nachmias (2008) methodology for defining a population, I ensured that the population for this study was comprised of all undergraduate level students who (a) received federal financial aid ("content"), (b) while attending proprietary schools located in Florida ("extent"), (c) during the academic years of 2010, 2011, and 2012 ("time"). This population consisted of students who had either graduated, withdrawn, or dropped out of proprietary schools in Florida during the academic years of 2010, 2011, and 2012, and had entered repayment or default status on their federal student loans. Students who were in deferment status were excluded from this population. The individual student data was obtained directly from the borrowers via a questionnaire.

**Sampling Method**

As a part of planning a quantitative research study on student loan default, it was necessary to determine the appropriate sample size in order to generalize the findings to the population of student loan recipients who attended non-degree-granting proprietary schools in Florida. As Frankfort-Nachmias and Nachmias (2008) noted, generalizations are important for descriptive purposes as well as for testing hypotheses. Furthermore, Richard Lau noted that inconsistent sample strategy and size lead to variations in results (as cited in Frankfort-Nachmias & Nachmias, 2008), making the establishment of sample strategy and size paramount for any quantitative study. In this study, I utilized logistic regression to analyze six independent variables (academic success, age, college graduation status, ethnicity, gender, and high school class ranking) in order to determine their ability to predict the dichotomous, categorical dependent variable of student loan

default (defaulted, or not). Logistic regression is explained in more detail in the data analysis section of this chapter.

I used stratified simple random sampling. A stratified sample is one in which the population under study is subdivided into mutually exclusive groups (strata) based on shared attributes or characteristics (Rossi, Wright, & Anderson, 2013). In this case, I divided the population by cohort year and repayment status (defaulted, or not). The sampling frame was based on enrollment in proprietary schools during the years under study. I also analyzed the sampling frame for incomplete frames, cluster of elements, and blank foreign elements. Students in deferment were excluded from the sample. Due to the small sample size, I did not use a random sample of qualified sampling units, but rather included the entire sample population in the analysis. The data was sorted by the year in which the borrower entered repayment (i.e., 2010, 2011, and 2012) and by repayment status (e.g., 2012 defaulted, 2012 not defaulted), and the proportion of each strata to the total population calculated. I assigned a number to each sampling unit within a given strata. A table of random digits was not used to select each sampling unit because the entire sample size was small enough to be included in the calculation. The sample was representative of the multi-year population.

**Sample Size**

As with any statistical technique, the power of the statistical test may not be valid if the sample size is not large enough; logistic regression is no exception. Power analysis is the method of determining how large a sample needs to be in order to detect an effect between variables (Anthony, 2011), and may be conducted before (a priori) or after (post

hoc) a research study is completed. Power in statistical testing is the probability of correctly rejecting the null hypothesis (Anthony, 2011), or, simply put, making the correct decision regarding the null hypothesis. Effect size is related to power and may be defined as the strength (magnitude) of the relationship between two variables (Field, 2013).

For this study, I conducted an *a priori* power analysis during the design of this study to determine the minimum required sample size using G*Power software version 3.1.7 (Faul, Erdfelder, Bruchner, & Lang, 2013). I selected Logistic Regression from the test menu and changed the default input parameters to reflect two tails, an odds ratio of 2.48 for a large effect size, a probability of 0.2, and power of 80%. Given that the dependent variable is categorical (i.e., defaulted or not defaulted), I used a large effect size and determined that the minimum required sample size for this study was 196 participants (see Table 1). This minimum overall sample size was drawn proportionally from the population.

Table 1

*G*Power Protocol of Power Analysis for Sample Size Calculation*

| | Inputs | Outputs |
|---|---|---|
| Analysis: | Sample size | |
| Input: Tail(s) | Two | |
| Odds ratio | 2.48 | |
| Pr(Y=1\|X=1) H0 | 0.2 | |
| α err prob | 0.05 | |
| Power (1-β err prob) | 0.80 | |
| $R^2$ other X = 0 | 0 | |
| X distribution | Binomial | |
| X parm π | 0.5 | |
| Output: Critical z | 1.9599640 | |
| Minimum sample size | | 196 |
| Actual power | | 0.8008887 |

I considered using other sampling methods for this study. The non-probably sampling methods of convenience, purposive, and quota sampling might have been used since the population size is small enough that every student for the three academic years under study could have been included in this study. While it is convenient to draw the sample from a single geographic location, this method was not selected because the population parameters can be estimated, and it would lack generalizability to the larger population of proprietary schools in Florida. Furthermore, purposive or judgment sampling was not selected because I did not need to make choices about the sampling units. Quota sampling was not used because I had no prior knowledge as to the make-up of the student population, making it impossible to attempt to make the sample representative of the population. I chose a probability sampling method because non-probability samples are not considered to be fully representative of the population (Frankfort-Nachmias & Nachmias, 2008).

## Instrument

The instrument is the vehicle used to collect primary data for research studies and may include questionnaires, surveys, and tests (Harwell, 2011). One of the most commonly used instruments for gathering data in social science research is the survey (Butin, 2010). In this study, I developed and used a questionnaire that I administered via Qualtrics to obtain the study data directly from federal student loan borrowers who attended non-degree-granting proprietary schools in Florida during the academic years of 2010, 2011, and 2012. The questions created for the questionnaire were based solely on the academic literature from peer-reviewed journals contained within the literature review, and included screening questions to insure that participants met the requirements to be included in this study. No other documents were used as a source of data, and I collected no self-identifying data. By analyzing the self-reported data, I was able to better understand and predict which borrower characteristics increased the likelihood of student loan default.

## Data Collection

Upon review of the Department of Education data I noticed that non-degree-granting proprietary schools were the category with the highest cohort default rating. Several proprietary schools were invited to participate in this study of student loan default based on their 2012 cohort default rating. However, two such schools, after initially agreeing to participate withdrew from the study, therefore individual federal student loan borrowers were contacted via Qualtrics and asked complete the questionnaire in order to obtain the variables needed for this study. No data was

requested or collected prior to IRB approval. In accordance with IRB regulations, a request for anonymous borrower data (i.e., a complete list of variables required for this study) was sent to Qualtrics. The data came directly from the student loan borrower themselves. Qualtrics provided the completed questionnaires for inclusion in this study. No personally identifiable data was obtained from Qualtrics in order to prevent identification of any individual and to reduce potential bias.

## Data Analysis

Prior to drawing a sample from the population, the data I obtained from the questionnaires was screened and cleaned. While logistic regression does not require adherence to any assumptions about the distribution of independent, or predictor, variables (Mertler & Vannatta, 2013), each variable in the data set was checked for outliers (extreme values) by creating a frequency table and histogram of the standardized z-scores for that variable as outliers can influence the outcome of logistic regression (Mertler & Vannatta, 2013). If the elimination of outliers would have reduced the strata to the point that obtaining the proportional sample size was not possible, I could have winsorized the outliers and included them in the strata. Winsorizing data is a process to improve accuracy in which the data outliers, the extremes which are unrepresentative of the sample population, are replaced with the next highest score that is not an outlier and representative of the sample population (Field, 2013). I removed the outlying data point and still achieved the minimum required sample size, therefore Winsorizing was not necessary.

Furthermore, multicollinearity between independent variables in logistic regression makes it difficult to ascertain the importance of each independent variable (Field, 2013). Multicollinearity is a phenomenon that exists when two or more independent (predictor) variables are highly correlated (Field, 2013), and may cause problems in estimating the regression coefficients. Logistic regression assumes the absence of multicollinearity so I also tested the data for multicollinearity among independent (predictor) variables using linear regression analysis. If I would have found multicollinearity, one or more redundant variables would have been deleted from the model in order to eliminate the multi-collinear relationships (Dormann et al., 2013).

Measurement is the process whereby researchers assign numerals to variables in such a way as to reflect variation (Crano & Brewer, 2015). Due to the requirement of isomorphism (similar structure and similar relations), measurement contains a hierarchy of four levels, nominal, ordinal, interval, and ratio, lowest to highest respectively (Crano & Brewer, 2015). In this study nominal and ordinal levels of measurement were used. I used nominal measurement for the categorical independent (predictor) variables of college graduation status and gender, and the dependent (outcome) variable of student loan default status. Non-dichotomous ordinal measurements were used to classify levels of the independent (predictor) variable of age (group), collegiate grade point average by quartile, ethnicity, and high school class ranking by quartile.

I used logistic regression analysis to describe and explain the predictive effects of the above mentioned independent (predictor) variables on the dependent (outcome) variable of student loan default. The purpose of logistic regression is to classify

participants into groups (Mertler & Vannatta, 2013). Logistic regression analysis specifies the probabilities of the particular outcomes for each participant (Mertler & Vannatta, 2013). Logistic regression can be used to analyze a mix of variables (continuous, discrete and dichotomous) of differing variety and complexity (Mertler & Vannatta, 2013). I analyzed the data using SPSS software (version 21) according to the following model:

$$Y_i = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_6 + \varepsilon_i$$

where $Y_i$ is the dichotomous dependent variable of student loan repayment status (i.e., default, or not), $\beta_0$ is the Y intercept, and $\beta_1, \beta_2, \beta_3$ ... are the respective coefficients $x_1$, $x_2$, $x_3$ …are the independent variables thru *i* respectively, and $\varepsilon_i$ is the error term. The model was fitted to achieve parsimony by eliminating variables that do not have explanatory benefit. I reported the overall fit of the model, -2 log likelihood, Cox & Snell R Square, Nagelkerke R Square, classification of cases, B values for all predictor variables, the model constant, Wald statistic, significant values, Exp(B), confidence intervals, and the descriptive statistics for the population in Chapter 4. IBM SPSS Statistics version 23 was used for all data analysis (IBM Corp., 2015).

**The Variables**

This study included several categorical independent variables which have more than two outcome levels. The categorical independent variables included age, collegiate grade point average, ethnicity, gender, high school class ranking (a proxy for academic preparedness), and college graduation status at the time of entering repayment. These variables required dummy coding to create two levels of the variable. Dummy coding is

the process by which data is recoded so that categorical variables containing more than two levels can be represented using by using zeroes and ones (Field, 2013). In dummy coding the researcher counts the number of levels or groups contained within a single variable that need to be recoded and subtracts one from that number. From this value I created as many new variables as was needed to achieve two levels for each variable; these new variables are called *dummy variables* (Field, 2013). I then choose a level of the variable to be the baseline to which all the created dummy variables were compared (Field, 2013). For example, ethnicity has five values, African-American, Asian, Hispanic, Caucasian, and Other. Therefore ethnicity had four independent dummy variables which were compared against the baseline. Caucasian was dummy coded as 0 and African-American coded as 1 in the first group. Caucasian was dummy coded as 0 and Asian coded as 1 in the second group. Caucasian was coded as 0 and Hispanic was dummy coded as 1 in the third group. Finally, in the fourth group, Caucasian was coded as 0, and Other was dummy coded as 1 as a means to achieve the five levels of ethnicity prior to entering the data into the logistic regression model.

Based upon the research question, and in keeping with the literature, I chose the following student characteristics as independent variables for this study:

a. Proprietary college cumulative grade point average: The proprietary colleges use the standard four-point grading scale (i.e., an A equals 4.00; a B equals 3.00, etc.). This variable is the student borrower's cumulative grade point average obtained from the self-reported questionnaire. The data was coded as: Col_GPA1 for students with a cumulative grade point average less than 1.0, Col_GPA2 for

students with a cumulative grade point average between 1.1 and 2.0, and Col_GPA4 for students with a cumulative grade point average between 3.1 and 4.0.

b. Graduation status: This is the graduation status of the student borrower (i.e., yes or no). I defined graduation as having achieved a diploma or certificate from the proprietary college indicating successful completion of the chosen program of study, or the student borrower withdrew from the proprietary school prior to completion of the program requirements and did not obtain a diploma or certificate. Data was coded as follows; not graduated = 0, and graduated = 1.

c. Gender: was the self-identified birth gender (i.e., female or male) of the student on the questionnaire. Data was coded as follows; female = 0, and male = 1.

d. Ethnicity: was defined as one of the five ethnic categories student borrowers identified themselves as being on the self-reported questionnaire; African-American, Asian, Caucasian, Hispanic, and Other. Ethnicity was recoded to create 4 dummy independent variables. Caucasian was the baseline for all categories of ethnicity and coded as 0. The first dummy recoded independent variable, African-American, was recoded as E1 and given a code of 0 = not a member of the ethnic group, or 1 = a member of the ethnic group. The second dummy recoded independent variable, Asian, was recoded as E2 and given a code of 0 = not a member of the ethnic group, or 1 = a member of the ethnic group. The third dummy recoded independent variable Hispanic, was recoded as E3 and given a

code of 0 = not a member of the ethnic group, or 1 = a member of the ethnic group. The fourth dummy recoded independent variable, Other, was recoded as E4 and given a code of 0 = not a member of the ethnic group, or 1 = a member of the ethnic group.

e. High school class ranking (a proxy for academic preparedness): This variable defined the student borrower according to their high school quartile ranking. Four categories were utilized, 25%, 50%, 75%, and 100%, with 25% denoting the lowest quartile of class ranking, and 100% denoting the highest quartile class ranking. I coded the data as: class ranking of 0-25%, was given a code of 0 = not a member of the group, or 1 = a member of the group, and the class ranking of 26-50%, was recoded as CR2 and given a code of 0 = not a member of the group, or 1 = a member of the group (and was the baseline measurement). Furthermore, class ranking of 51-75%, was coded as CR3 and given a code of 0 = not a member of the group, or 1 = a member of the group, and the class ranking of 76-100%, was coded as CR4 and given a code of 0 = not a member of the group, or 1 = a member of the group.

f. Age of borrower at the time of entering repayment: Based on the sample population, I grouped age into 7 categories to best represent the population of student borrowers attending non-degree-granting proprietary schools in Florida. The 7 age categories were; less than 18 years old, 18-24 (representing traditional college students), 25-29, 30-34, 35-39, 40-49, and 50 or older. Age of the

borrower was recoded to create 6 dummy independent variables. The age group 18-24 was the baseline for all categories of age and coded as 0. The first dummy recoded independent variable, less than 18 years old, was recoded as Age1 and given a code of 0 = not a member of the group, or 1 = a member of the group. The second dummy recoded independent variable, ages 25-29, was recoded as Age2 and given a code of 0 = not a member of the group, or 1 = a member of the group. The third dummy recoded independent variable, ages 30-34, was recoded as Age3 and given a code of 0 = not a member of the group, or 1 = a member of the group. The fourth dummy recoded independent variable, ages 35-39, was recoded as Age4 and given a code of 0 = not a member of the group, or 1 = a member of the group. The fifth dummy recoded independent variable, ages 40-49, was recoded as Age5 and given a code of 0 = not a member of the group, or 1 = a member of the group. The sixth dummy recoded independent variable, 50 or older, was recoded as Age6 and given a code of 0 = not a member of the group, or 1 = a member of the group.

The variable hypothesized to be affected by changes in the independent, or predictor variables, is called the dependent, or outcome variable (Field, 2013). The dependent (outcome) variable for this study was student loan default status (i.e., defaulted or not).

**The Hypothesis**

My review of the literature indicated that a relationship existed between many of the above variables and student loan default. These relationships were discovered more

than a decade ago and may no longer hold true under current economic conditions and context (Gross et al., 2009). Furthermore, these relationships existed among 2- and 4-year degree seeking students and student loan default and these relationships were not examined for whether they existed between student borrowers who attended non-degree-granting proprietary colleges and student loan default (less than 2-year college students). The hypothesis I tested in this study sought to determine whether or not these relationships existed for non-degree-granting proprietary college students and to answer the question, "What are the characteristics of non-degree-granting proprietary college students that predict the likelihood that borrowers will default on their student loan payments?" Based on the above defined variables I hypothesized that:

*Ho*: $\beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = 0$

*Ha*: At least one $\beta \neq 0$,

where β is the coefficient of the six predictor variables in the model (i.e., academic preparedness, age of the borrower, academic success, college graduation status, ethnicity, and gender).

## Threats to Validity

During the design of this study I considered internal, external, and statistical conclusion validity. Internal validity asserts that the observed differences (variations) in the dependent or outcome variable are directly attributable to the independent or predictor variable(s), and are not caused by some other confounding factor, in other words there is a causal relationship (Crano, Brewer, & Lac, 2015; Yilmaz, 2013). Internal validity is threatened when alternate plausible explanations for the change in the dependent or

outcome variable cannot be eliminated (Crano, Brewer, & Lac, 2015). External validity is the extent to which a study's findings may be generalized to the populations, settings, and times (Crano, Brewer, & Lac, 2015; Yilmaz, 2013). When the effect of the independent variable is altered due to a change in the setting, time, or in the participant population, the study is said to lack external validity (Crano, Brewer, & Lac, 2015). Because a study can have high internal validity and not be generalizable outside of the study context, I gave consideration to both internal and external threats to validity. Statistical conclusion validity examines whether the stated relationship between variables actually exists (Drost, 2011).

**Internal Validity**

The most common threats to internal validity for quantitative studies are: self-selection effects, attrition, history effects, maturation effects, and communication among subjects (Crano, Brewer, & Lac, 2015; Drost, 2011). Self-selection occurs when the subjects are not randomly assigned to comparison groups. This can result in the groups not being representative of the population. In this study I sought to compare student characteristics based on their association student loan default; this was not a concern as the student loan default status determined the comparison groups (i.e., defaulted or not defaulted). Furthermore, a random stratified sampling was used to ensure the sample was representative of the population. Attrition occurs when participants withdraw from the study and this study used archival data which eliminated this possibility. History and maturation have to do with changes that occur over time and were not possible due to the use of archival data. Finally, communication among subjects was not a factor because

the participants had no knowledge of others who were invited to participate in this study precluding this as a possibility. The most common threats to internal validity in quantitative studies were controlled for by individually soliciting participants electronically and the use of a random stratified sampling procedure.

**External Validity**

Consideration was given to population validity, ecological validity, temporal validity, and specificity of variables as possible threats to external validity in this study. Population validity refers to the extent that the study participants represent that segment of the population and allow for the findings to be generalized to the target population (Crano, Brewer, & Lac, 2015). The study sample was a stratified random sample taken proportionally from the years under study in an effort to make the sample population as representative of the target population as possible. Furthermore, I compared the sample demographics to the overall target population proportionally to ensure population validity was attained. The extent to which the study findings are independent of the study's setting and may be generalized across locations is called ecological validity (Crano, Brewer, & Lac, 2015). Ecological validity was a concern in this study as the phenomena of student loan default has been demonstrated to occur under conditions typical for the population at large (Crano, Brewer, & Lac, 2015) even though postsecondary proprietary schools often differ substantiality with respect to variables such as ethnicity, gender, academic achievement, and socioeconomic status. Temporal validity, the extent to which the study findings can be generalized across time, was a concern in this study as it would be for any cross-section study.

This study was a cross-sectional design and as such it only studied one time period (i.e., 2010 – 2012). Specificity of variables is a threat to external validity in most studies because it refers to the uniqueness of participants and context of the study. To counter this threat the model variables were operationally defined in such a way as to have the same meaning outside of this study and therefore are not a threat to the external validity of this study. It was not surprising that this study had threats to external validity seeing that it studied one time period and one state making the generalization of the findings beyond the study population unlikely. However, it was my intent for the study's procedures and statistical methodology to be applicable and repeatable at other non-degree-granting postsecondary institutions in other states.

**Statistical Conclusion Validity**

The purpose of most inferential statistical tests is to assess the validity of hypotheses and to determine the likelihood of alternate rival explanations for the relationship (Crano, Brewer, & Lac, 2015). This likelihood, or probability, is traditionally noted by the two mistakes that can be made in hypothesis testing, namely a Type I or a Type II error. A Type I error of inference occurs when the null hypothesis is true and it is rejected (Crano, Brewer, & Lac, 2015). In other words, a relationship (i.e., effect) is said to exist between the dependent and independent variable, when in reality no relationship exists. The probability of making a Type I error is known as alpha. In social science research an alpha value of 0.05, or 5%, is usually used; indicating that the outcome could have occurred by chance (an alternate explanation) no more than 5 times per 100 (Crano, Brewer, & Lac, 2015). The opposite of a Type I error is the Type II

error, failing to reject the null hypothesis when it is in fact false (Crano, Brewer, & Lac, 2015). A Type II error claims that no relationship (i.e., effect) exists between the dependent and independent variable, when in reality a relationship does exist between the dependent and independent variables. The probability of making a Type II error is known as beta. Additional consideration was given to the threats of low statistical power and violation of test assumptions (Drost, 2011). To overcome these threats, I used G*power software (version 3.1.7) to calculate the minimum required sample size and power (see Table 1), and I tested the assumptions as outlined in the Data Analysis section.

## Ethical Concerns

This study used self-reported historical data. I did not contact individual student participants, rather a third party (Qualtrics) administered my questionnaire to participants and obtained the anonymous data; an informed consent notification was included with the questionnaire. The data supplied by the third party will be maintained in electronic disk and hard copy form for a period of 5 years following publication of my dissertation after which the data in both forms will be destroyed by shredding. No data was obtained until formal approval to do so was granted by Walden University's Institutional Review Board (IRB approval number: 02-10-16-0319626).

### Confidentiality Agreement Form

The participating federal student loan borrowers who attended non-degree-granting proprietary colleges were given a copy of the confidentiality agreement form

that explained my responsibility to maintain confidentiality of the information provided. The data was not disclosed to unauthorized individuals. Furthermore, the data supplied by the third party did not contain personal identifying information, and thus insured anonymity of the borrowers. I had no access to participant's personal identification information.

## Summary

This study was intended to aid in the reduction of the cohort default rating of non-degree-granting proprietary schools in Florida by using logistic regression analysis to predict which characteristics of proprietary school students increased the likelihood of student loan default. This research was about the existence and nature of the relationship between career and vocational student borrower characteristics and student loan default. Based on previous studies, a linkage between borrower characteristics and student loan default was assumed to exist. The identification of this linkage was necessary to direct appropriate attention to the characteristics contributing to student loan default in an effort to reduce future default. This study allowed for practical application by identifying the characteristics associated with student loan default enabling non-degree-granting proprietary schools to tailor specific counseling messages to at risk borrowers in an effort to reduce future student loan defaults.

Chapter 4 includes the statistical analysis of the data and is organized by research sub-question. The chapter includes a description of data collection process and descriptive demographics of the study population. This is followed by the presentation of the statistical analysis of the independent variables academic success, age, college

graduation status, ethnicity, gender, and high school class ranking and their suitableness as predictors of the likelihood of defaulting on federal student loans.

# Chapter 4: Results

## Introduction

The purpose of this quantitative study was to identify and better understand the borrower characteristics that increase the likelihood of student loan default in non-degree-granting proprietary colleges in Florida. In this study, I examined whether a relationship existed between academic success, age, college graduation status, ethnicity, gender, high school class ranking, and federal student loan default within the less than 2-year career and vocational school student population in Florida. Researchers have shown these characteristics to be significant predictors of an increased likelihood of student loan default for students at 2- and 4-year colleges and universities. In this chapter, I have included the results of the statistical analysis used to identify which characteristics of student loan borrowers increased the likelihood of student loan default within the non-degree-granting proprietary college sector in Florida. I also provide a demographic description of the non-degree-granting proprietary college study population, a review of the research questions, and the results of the statistical analysis.

## Research Questions and Hypothesis

### Central Research Question

1. What are the characteristics of non-degree-granting proprietary college students that contribute to an increase in the likelihood of student loan default?

### Sub-Questions

1. How does age contribute to student loan default?
2. How does gender contribute to student loan default?

3. How does academic preparedness contribute to student loan default?
4. How does ethnicity contribute to student loan default?
5. How does academic success contribute to student loan default?
6. How does college persistence contribute to student loan default?

**The Hypothesis**

I hypothesized those non-degree-granting proprietary college student loan borrowers' characteristics of academic success, age, college graduation status, ethnicity, gender, and high school class ranking could be used to predict an increase in the likelihood of defaulting on federal student loans. Stated in statistical terms, the null and alternate hypothesis was:

Ho: $\beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = 0$

Ha: At least one $\beta \neq 0$,

where β is the coefficient of the six predictor variables in the model (i.e., academic preparedness, age of the borrower, academic success, college graduation status, ethnicity, and gender).

**Chapter Organization**

This chapter is organized according to the statistical analysis of the research sub-questions, which are then combined to answer the central research question. This includes a description of data collection process and descriptive demographics of the study population. This is followed by the presentation of the statistical analysis of whether the student loan borrower characteristics of academic success, age, college

graduation status, ethnicity, gender, and high school class ranking can predict the likelihood of defaulting on federal student loans.

## Data Collection

The population of this study consisted of federal student loan borrowers who attended non-degree-granting proprietary colleges located in Florida during the academic years of 2010, 2011, and 2012. Qualtrics.com hosted my internet survey, and a total of 401 survey invitations were emailed to participants. A total of 220 participants logged on to the website and completed the survey, yielding a response rate of 54.86%. After excluding 17 survey questionnaires completed by participants who had attended non-degree-granting proprietary colleges outside of Florida, 6 responses from participants who did not use federal student loans, and replacing 1 outlying case, 196 responses were included in the statistical analysis. The survey was active for 45 days and closed once the required sample size was achieved.

## Descriptive Trends for the Study Population

The statistical analysis of this study consisted of data from 196 participants who had attended non-degree-granting proprietary colleges in Florida during the academic years of 2010, 2011, and 2012. These students used federal student loan monies and either dropped out, graduated from, or withdrew from the non-degree-granting proprietary college and entered the repayment phase of their federal student loans during this timeframe. The population consisted of 119 (60.7%) women and 77 (39.3%) men, as shown in Table 2. The study population was 14.8% African-American, 2.0% Asian, 61.2% Caucasian, 15.8% Hispanic, and 6.1% of participants classified as Other see Table

3). The racial mix of the study participants is representative of the overall population of Florida (U.S. Census Bureau, 2015). Table 4 shows the borrower age groups when they entered the repayment phase of their federal student loans. The largest group of participants (32.7%) who entered the repayment phase was between the ages of 18 and 29 (see Table 3). This was followed by participants age 25 - 29 (23.0%) and 30 - 34 (21.4%), respectively. The minimum age of student borrowers was less than 18 and the maximum age was over 50 (see Table 3).

Table 2

*Gender of Study Participants*

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Male | 77 | 39.3 | 39.3 | 39.3 |
| | Female | 119 | 60.7 | 60.7 | 100.0 |
| | Total | 196 | 100.0 | 100.0 | |

Table 3

*Ethnicity of Study Participants*

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | African-American | 29 | 14.8 | 14.8 | 14.8 |
| | Asian | 4 | 2.0 | 2.0 | 16.8 |
| | Caucasian | 120 | 61.2 | 61.2 | 78.1 |
| | Hispanic / Latino | 31 | 15.8 | 15.8 | 93.9 |
| | Other | 12 | 6.1 | 6.1 | 100.0 |
| | Total | 196 | 100.0 | 100.0 | |

Table 4

*Age Groups of Study Participants*

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Less than 18 | 7 | 3.6 | 3.6 | 3.6 |
| | 18 - 24 | 64 | 32.7 | 32.7 | 36.2 |
| | 25 - 29 | 45 | 23.0 | 23.0 | 59.2 |
| | 30 -34 | 42 | 21.4 | 21.4 | 80.6 |
| | 35 - 39 | 17 | 8.7 | 8.7 | 89.3 |
| | 40 -44 | 10 | 5.1 | 5.1 | 94.4 |
| | 45 - 49 | 7 | 3.6 | 3.6 | 98.0 |
| | 50 or Older | 4 | 2.0 | 2.0 | 100.0 |
| | Total | 196 | 100.0 | 100.0 | |

## Data Analysis

The dependent variable in this study was student loan repayment status (defaulted, or not) after the requisite cohort base year of graduating, withdrawing, or dropping out from the non-degree-granting proprietary college. I developed six sub-questions related to the relationship six independent categorical variables had with the student loan repayment status of non-degree-granting proprietary college student borrowers who graduated, withdrew, or dropped out of college and entered the loan repayment phase during years 2010, 2011, and 2012. The data was coded according to the coding description detailed in Chapter 3. Each of the categorical independent variables (age, collegiate grade point average, college graduation status at the time of entering repayment, ethnicity, and high school class ranking) required dummy coding to create two levels of the variable. Then I chose a level of the variable to be the baseline to which

all the created dummy variables were compared (see Field, 2013). The recoding of variables created 22 independent variables which I entered into a forward logistic regression after testing key assumptions for logistic regression.

**Test of Assumptions**

Logistic regression assumes the data contains no outliers (extreme cases) and no multicollinearity among independent variables; therefore, I examined the data for both outliers and multicollinearity. The residuals were checked for influential cases and outliers. Table 5 shows that only one case had standardized residuals greater than 2. Case 97 was replaced, retested, and no additional outliers were found; therefore I concluded that the data was reliable. Furthermore, I performed a preliminary linear regression analysis to test for the presence of multicollinearity among predictor variables. The tolerance values for all variables shown in Table 6 were greater than .1, indicating that multicollinearity was not present among the predictor variables.

Table 5

*Casewise List*[b]

| | | Observed | | | Temporary Variable | |
|---|---|---|---|---|---|---|
| Case | Selected Status[a] | Federal student loan default status | Predicted | Predicted Group | Resid | ZResid |
| 97 | S | D** | .179 | N | .821 | 2.142 |

a. S = Selected, U = Unselected cases, and ** = Misclassified cases.
b. Cases with studentized residuals greater than 2.000 are listed.

Table 6

*Coefficients*[a]

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. | Tolerance | VIF |
| 1 | (Constant) | .678 | .091 | | 7.423 | .000 | | |
| | Birth Gender | -.219 | .074 | -.214 | -2.949 | .004 | .812 | 1.232 |
| | African American | .043 | .100 | .031 | .432 | .667 | .853 | 1.173 |
| | Asian | -.250 | .239 | -.071 | -1.044 | .298 | .935 | 1.070 |
| | Hispanic/Latino | -.134 | .095 | -.098 | -1.410 | .160 | .884 | 1.132 |
| | Other | .021 | .146 | .010 | .147 | .884 | .874 | 1.145 |
| | 0% - 25% | .518 | .273 | .127 | 1.899 | .059 | .950 | 1.053 |
| | 26% - 50% | .023 | .104 | .016 | .220 | .826 | .836 | 1.196 |
| | 76% - 100% | .153 | .078 | .145 | 1.967 | .051 | .789 | 1.267 |
| | Less than 18 years of age | -.493 | .188 | -.183 | -2.618 | .010 | .873 | 1.145 |
| | 25 - 29 | .114 | .093 | .096 | 1.227 | .221 | .703 | 1.423 |
| | 30 - 34 | .102 | .094 | .083 | 1.078 | .282 | .715 | 1.400 |
| | 35 - 39 | -.174 | .129 | -.098 | -1.345 | .180 | .808 | 1.238 |
| | 40 - 49 | .091 | .128 | .052 | .715 | .475 | .825 | 1.212 |
| | 50 or older | -.500 | .243 | -.141 | -2.054 | .041 | .903 | 1.108 |
| | less than 1.0 | -.138 | .283 | -.034 | -.488 | .626 | .885 | 1.130 |
| | 1.1 - 2.0 | .174 | .132 | .103 | 1.317 | .190 | .699 | 1.431 |
| | 3.1 - 4.0 | -.222 | .085 | -.216 | -2.598 | .010 | .619 | 1.615 |

a. Dependent Variable: Federal student loan default status

## Overall Model

In logistic regression, when entering all independent variables at once, modern software packages fail to converge when there are more than approximately 12 independent variables. To overcome the software limitation, I used the forward stepwise method. I conducted a forward stepwise logistic regression to determine which independent variables (academic success, age, college graduation status, ethnicity,

gender, and high school class ranking) were statistically significant predictors of federal student loan default (defaulted or not defaulted) among borrowers who attended non-degree-granting proprietary colleges in Florida during the years 2010, 2011, and 2012. Data screening led to the elimination of one outlier. The regression results indicated that the overall model was statistically reliable in distinguishing between defaulting and not defaulting on federal student loans [-2 LL = 236.844, $\chi 2 = 34.543$, $p < .001$] (Tables 7 and 8 respectively). The model correctly classified 68.4% of the cases (Table 9). Table 10 shows the results of the Hosmer and Lemeshow goodness-of-fit test, $\chi 2 = 1.305$, $p > .05$, further implying that the model fits the data at an acceptable level.

Table 7

*Omnibus Tests of Model Coefficients*

| | | Chi-square | df | Sig. |
|---|---|---|---|---|
| Step 1 | Step | 14.873 | 1 | .000 |
| | Block | 14.873 | 1 | .000 |
| | Model | 14.873 | 1 | .000 |
| Step 2 | Step | 7.431 | 1 | .006 |
| | Block | 22.304 | 2 | .000 |
| | Model | 22.304 | 2 | .000 |
| Step 3 | Step | 7.523 | 1 | .006 |
| | Block | 29.828 | 3 | .000 |
| | Model | 29.828 | 3 | .000 |
| Step 4 | Step | 4.716 | 1 | .030 |
| | Block | 34.543 | 4 | .000 |
| | Model | 34.543 | 4 | .000 |

Table 8

*Model Summary*

| Step | -2 Log likelihood | Cox & Snell R Square | Nagelkerke R Square |
|---|---|---|---|
| 1 | 256.514[a] | .073 | .097 |
| 2 | 249.083[b] | .108 | .143 |
| 3 | 241.559[c] | .141 | .188 |
| 4 | 236.844[c] | .162 | .216 |

a. Estimation terminated at iteration number 3 because parameter estimates changed by less than .001.
b. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.
c. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

Table 9

*Classification Table*[a]

| | | | Predicted Federal student loan default status | | |
|---|---|---|---|---|---|
| | Observed | | Not defaulted or delinquent | Defaulted or delinquent | Percentage correct |
| Step 1 | Federal student loan default status | Not defaulted or delinquent | 76 | 26 | 74.5 |
| | | Defaulted or delinquent | 45 | 49 | 52.1 |
| | Overall Percentage | | | | 63.8 |
| Step 2 | Federal student loan default status | Not defaulted or delinquent | 81 | 21 | 79.4 |
| | | Defaulted or delinquent | 46 | 48 | 51.1 |
| | Overall Percentage | | | | 65.8 |
| Step 3 | Federal student loan default status | Not defaulted or delinquent | 65 | 37 | 63.7 |
| | | Defaulted or delinquent | 30 | 64 | 68.1 |
| | Overall Percentage | | | | 65.8 |
| Step 4 | Federal student loan default status | Not defaulted or delinquent | 72 | 30 | 70.6 |
| | | Defaulted or delinquent | 32 | 62 | 66.0 |
| | Overall Percentage | | | | 68.4 |

a. The cut value is .500

Table 10

*Hosmer and Lemeshow Test*

| Step | Chi-square | df | Sig. |
|---|---|---|---|
| 1 | .000 | 0 | . |
| 2 | .000 | 1 | .988 |
| 3 | .468 | 3 | .926 |
| 4 | 1.305 | 3 | .728 |

**Summary of Model Variables**

Table 11 shows the logistic regression coefficient, Wald test, odds ratio, and confidence interval for each independent variable included in the final model. Table 11 shows that Gender ($z = 7.489$, $p < .05$), Age1 ($z = 6.688$, $p < .05$), Age4 ($z = 4.283$, $p < .05$), and Col_GPA4 ($z = 11.912$, $p < .05$) were statistically significant predictors of federal student loan default among borrowers who attended non-degree-granting proprietary colleges in Florida during the time period under study.

Table 11

*Variables in the Equation*

| | | | | | | | | 95% C.I.for EXP(B) | |
|---|---|---|---|---|---|---|---|---|---|
| | | B | S.E. | Wald | df | Sig. | Exp(B) | Lower | Upper |
| Step 1[a] | Col_GPA 4(1) | 1.158 | .307 | 14.223 | 1 | .000 | 3.183 | 1.744 | 5.810 |
| | Constant | -.524 | .188 | 7.763 | 1 | .005 | .592 | | |
| Step 2[b] | Age1(1) | 2.497 | 1.115 | 5.016 | 1 | .025 | 12.144 | 1.366 | 107.972 |
| | Col_GPA 4(1) | 1.342 | .322 | 17.385 | 1 | .000 | 3.828 | 2.037 | 7.195 |
| | Constant | -3.009 | 1.129 | 7.106 | 1 | .008 | .049 | | |
| Step 3[c] | Gender(1) | .899 | .330 | 7.433 | 1 | .006 | 2.457 | 1.288 | 4.690 |
| | Age1(1) | 2.773 | 1.132 | 5.998 | 1 | .014 | 16.008 | 1.740 | 147.288 |
| | Col_GPA 4(1) | 1.112 | .336 | 10.964 | 1 | .001 | 3.039 | 1.574 | 5.869 |
| | Constant | -3.540 | 1.162 | 9.277 | 1 | .002 | .029 | | |
| Step 4[d] | Gender(1) | .919 | .336 | 7.489 | 1 | .006 | 2.508 | 1.298 | 4.845 |
| | Age1(1) | 2.944 | 1.139 | 6.688 | 1 | .010 | 18.999 | 2.040 | 176.952 |
| | Age4(1) | 1.224 | .591 | 4.283 | 1 | .038 | 3.400 | 1.067 | 10.836 |
| | Col_GPA 4(1) | 1.194 | .346 | 11.912 | 1 | .001 | 3.299 | 1.675 | 6.499 |
| | Constant | -4.861 | 1.336 | 13.242 | 1 | .000 | .008 | | |

a. Variable(s) entered on step 1: Col_GPA4.

b. Variable(s) entered on step 2: Age1.

c. Variable(s) entered on step 3: Gender.

d. Variable(s) entered on step 4: Age4.

**Result 1.1**

There were seven groups of ages, six of which were coded into dummy independent variables. The traditional college age group, students 18 – 24, was used as the baseline. The remaining age groups were dummy coded into the following categories; Age1 for borrowers less than 18 years of age, Age2 for borrowers age 25 –

29, Age3 for borrowers age 30 – 34, Age4 for borrowers age 35 – 39, Age5 for borrowers age 40 – 49, and Age6 for borrowers age 50 and older. Each of the dummy variables created was coded such that 0 = not a member of the group, and 1 = member of the group. Age1 was significant to repayment status in this model with a Wald $\chi 2 = 6.688$, $p = .01$, B=2.944, Exp(B) = 18.999 (95% CI = 2.04 to 176.95). Student borrowers who entered repayment at less than 18 years of age (Age1) were 18.99 times more likely to default when controlling for academic success, college graduation status, ethnicity, gender, and high school class ranking. Furthermore, Age4 was also significant to repayment status in this model with a Wald $\chi 2 = 4.283$, $p = .038$, B=1.224, Exp(B) = 3.40 (95% CI = 1.067 to 10.836). Student borrowers entering repayment between ages 35 to 39 were 3.40 times more likely to default when controlling for academic success, college graduation status, ethnicity, gender, and high school class ranking. The finding of Age1 is different from the findings reported in the literature.

**Result 1.2**

I defined gender as birth gender and therefore it contained only two groups. I coded the gender category as 0 = male, and 1 = female. I found gender to be related to student loan default. The statistically significant relationship between gender and federal student loan default in this model was indicated by a Wald $\chi 2 = 7.489$, $p = .006$, B=0.919, Exp(B) = 2.508 (95% CI = 1.298 to 4.845). This indicated that females were 2.508 times more likely to default on their federal student loans when controlling for academic success, age, college graduation status, ethnicity, and high school class ranking. This finding is different from the findings reported in the literature.

**Result 1.3**

Academic preparedness as measured by high school class ranking contained four groupings, three of which were coded into dummy independent variables. The upper middle class ranking of 51% - 75%, was used as the baseline. The remaining high school class ranking groups were dummy coded into the following categories; HS_Rank_CR1 for students ranked in the bottom quartile (0% - 25%) of their high school class, HS_Rank_CR2 for students ranked in the next higher quartile of their high school class (26% - 50%), HS_Rank_CR4 for students ranked in the highest quartile of their high school class (76% - 100%). Again, each of the dummy variables created was coded such that 0 = not a member of the group, and 1 = member of the group. I found a statistically significant relationship between academic preparedness as indicated by high school class ranking and federal student loan default when controlling for academic success, age, college graduation status, ethnicity, and gender. Each category of high school class ranking had *p* values > 0.05 indicating they were not significantly different from 0 and therefore not meaningful predictors of federal student loan default at the 95% confidence interval (see Table 12) in the forward stepwise logistic regression I conducted. Because I did not find high school class ranking statistically significant, academic preparedness as indicated by high school class ranking was not included in the final step of the model.

**Result 1.4**

Ethnicity contained five categories, four of which were coded into dummy independent variables. Caucasian was used as the baseline. The remaining ethnic groups were dummy coded into the following categories: Ethnicity_E1 for African American,

Ethnicity_E2 for Asian, Ethnicity_E3 for Hispanic, and Ethnicity_E4 for Other (non-Caucasian). I used the same coding practice for each of the dummy variables I created; 0 = not a member of the group, and 1 = member of the group. I did not find a statistically significant relationship between ethnicity and federal student loan default when controlling for academic success, age, college graduation status, gender, and high school class ranking. Each category of ethnicity had p values > 0.05 indicating they were not significantly different from 0 and therefore not meaningful predictors of federal student loan default at the 95% confidence interval (see Table 12). Because I did not find ethnicity to be statistically significant it was not included in the final step of the model. This finding is different from the findings reported in the literature.

**Result 1.5**

I divided academic success into four groups to represent the traditional grading scale. The "C - B" student (values 2.1 – 3.0) was used as the baseline. The remaining academic success groups were coded into the following categories: Col_GPA1 for students with a cumulative grade point average less than 1.0, Col_GPA2 for students with a cumulative grade point average between 1.1 and 2.0, and Col_GPA4 for students with a cumulative grade point average between 3.1 and 4.0. Again, I used the same coding practice for each of the dummy variables created: 0 = not a member of the group, and 1 = member of the group. I found that academic success was related to student loan default. A statistically significant relationship was found between academic success (Col_GPA4) and federal student loan default in this model with a Wald $\chi 2 = 11.912$, $p = .001$, B = 1.194, Exp(B) = 3.299 (95% CI = 1.675 to 6.499). Borrower's having a postsecondary

school grade point average between 3.1 and 4.0 (on a four point scale) were 3.29 times more likely to default on their student loans, when holding all other variables constant. This finding is different from the findings reported in the literature.

**Result 1.6**

College persistence was defined as having completed a less than 2-year program of study that culminated in the receipt of a certificate of completion or diploma and therefore contained only two groups (graduated, or not graduated). I coded the college persistence category as 0 = not graduated, and 1 = graduated. At the less than 2-year career and vocational school level, I did not find a statistically significant relationship between college persistence and federal student loan default in this model. Reviewing the results of the forward stepwise logistic regression, I found that college persistence, as measured by obtaining certificate of completion or diploma, had a $p$ value > 0.05 indicating that it was not significantly different from 0 and therefore not a meaningful predictor of federal student loan default at the 95% confidence interval (see Table 12). Because of this, I did not include college persistence (graduation status) in the final step of the model. This finding is different from the findings reported in the literature.

Table 12

*Variables not in the Equation*[a]

| | | | Score | df | Sig. |
|---|---|---|---|---|---|
| Step 4 | Variables | Ethnicity_E1(1) | .313 | 1 | .576 |
| | | Ethnicity_E2(1) | .953 | 1 | .329 |
| | | Ethnicity_E3(1) | 1.767 | 1 | .184 |
| | | Ethnicity_E4(1) | .404 | 1 | .525 |
| | | Ethnicity_Base(1) | .341 | 1 | .559 |
| | | HS_Rank_CR1(1) | 2.565 | 1 | .109 |
| | | HS_Rank_CR2(1) | .001 | 1 | .975 |
| | | HS_Rank_CR3(1) | 3.287 | 1 | .070 |
| | | HS_Rank_CR4(1) | 2.258 | 1 | .133 |
| | | Age_Base(1) | .400 | 1 | .527 |
| | | Age2(1) | .309 | 1 | .579 |
| | | Age3(1) | .130 | 1 | .719 |
| | | Age5(1) | .439 | 1 | .508 |
| | | Age6(1) | 3.525 | 1 | .060 |
| | | Col_GPA1(1) | .049 | 1 | .824 |
| | | Col_GPA2(1) | 1.940 | 1 | .164 |
| | | Col_GPA3(1) | 1.542 | 1 | .214 |
| | | Diploma_Cert(1) | .038 | 1 | .846 |

a. Residual Chi-Squares are not computed because of redundancies.

## Summary

In this chapter, I presented the results of a forward stepwise logistic regression analysis regarding which characteristics of non-degree-granting proprietary college students contributed to an increase in the likelihood of student loan default. Federal student loan default was the dependent variable in the forward stepwise logistic regression analysis. The independent variables I included in the analysis were: academic success, age, college persistence, ethnicity, gender, and high school class ranking. The analysis determined whether a statistically significant relationship existed between the

independent variables and federal student loan default. I tested a selection of independent variables that were found to be statistically significant predictors of an increased likelihood of student loan default at the 2- and 4-year collegiate level for their applicability to the less than 2-year non-degree-granting proprietary sector.

The analysis indicated that age, collegiate grade point average, and gender had a statistically significant relationship to an increased likelihood of federal student loan default among borrowers who attended non-degree-granting proprietary colleges in Florida during the years 2010, 2011, and 2012. Gender is significant at the 2- and 4-year level, however at that level being male is associated with a higher likelihood of default, whereas at the less than 2-year level being female is associated with a higher likelihood of default. Additionally, at 2- and 4-year institutions being older than 21 is associated with a higher likelihood of default, however the analysis at the less than 2-year level indicated that being less than 18, or between ages 35 to 39, borrowers were more likely to default on their student loans. In chapter 5 I discuss the findings of my research and focus on recommendations for future research related to the prediction of student loan default.

# Chapter 5: Discussion, Conclusions, and Recommendations

## Introduction

Literature published in the last 5 years on predicting federal student loan default in the United States is sparse and virtually non-existent for the less than 2-year postsecondary level. Most of the older studies were focused on determining predictors of student loan default at the associate and bachelor degree levels. Researchers in these studies examined three broad classifications of borrower characteristics denoted as pre-college measures (background characteristics), college experience measures (characteristics developed while in college), and post-college measures (characteristics developed after attending college; Flint, 1997; Nyahende, 2013).

I conducted this study to determine if the borrower characteristics of academic success, age, college persistence, ethnicity, gender, and high school class ranking contributed to an increased likelihood of federal student loan default among borrowers who attended non-degree-granting proprietary colleges in Florida during the academic years of 2010, 2011, and 2012, and whether these characteristics were the same as those at the associate and bachelor degree levels. In the study, I used a quantitative design to analyze 196 survey responses of non-degree-granting proprietary college attendees who utilized federal student loan monies to finance their postsecondary education.

## Interpretation of Findings

### Research Question

My objective throughout the entire study was to determine the relationship between the independent variables and student loan default. I used the main research

question to examine six independent variables in order to ascertain which variables were predictors of student loan default among students who attended private, less than 2-year career and vocational postsecondary schools in Florida. These six independent variables were reported in the literature as statistically significant predictors of student loan default at collegiate levels of associate degree and above. Using a forward stepwise logistic regression analysis, I found that only the variables of age, gender, and academic success were significant predictors of student loan default at this level.

Age contributed to federal student loan default among borrowers who attended private, for-profit, less than 2-year career and vocational postsecondary schools in Florida. The odds ratio for Age1 was 18.999 (95% CI = 2.04 to 176.95) and indicated that borrowers' under the age of 18 at the time of repayment were 18.99 times more likely to default on their student loans. However, upon careful examination, I found that the data only contained seven cases in which the borrower was less than 18 years of age. According to Tabachnick and Fidell (2007) logistic regression may produce errors and possibly failure to converge when the combination of variables results in to many cells with no cases—that is, when the sample size is too small relative to the number of variables. Therefore, more data is needed before concluding that being less than 18 is a reliable predictor of student loan default among students who attend private, less than 2-year career and vocational postsecondary schools.

However, if the borrowers were between 35 and 39 at the time of repayment (Age4), the odds ratio was 3.40 (95% CI = 1.067 to 10.836), indicating that, when holding all other variables constant, they were 3.40 times more likely to default on their

federal student loans (see Table 11). This finding is consistent with Herr and Bert's (2005) explanation that older students typically have more financial obligations that compete for their limited financial resources, and that older students are more likely to default than younger students (Flint 1997, Podgursky et al. 2002, Woo 2002).

Gender was found to be related to student loan default. I found a statistically significant relationship between gender and federal student loan default when controlling for academic success, age, college graduation status, ethnicity, and high school class ranking. The odds ratio for Gender was 2.508 (95% CI = 1.298 to 4.845) and indicated that, when holding all other variables constant, women were 2.5 times more likely to default on their federal student loans than men at this educational level. This finding was the opposite of what was reported in the literature. The studies reported in the literature found that men were more likely to default than women (Flint 1997, Podgursky et al., 2002, Woo 2002). However, my finding that women are more likely to default than men at the less than 2-year level may be supported by Lochner and Monge-Naranjo's (2014) conclusion that women have comparatively lower average earnings.

Academic success was also found to contribute to federal student loan default. I found a statistically significant relationship between higher grade point averages, an indication of academic success, and federal student loan default when controlling for age, college graduation status, ethnicity, gender, and high school class ranking. The odds ratio for Col_GPA4 was 3.299 (95% CI = 1.675 to 6.499) and indicated that, when holding all other variables constant, borrowers with a postsecondary school grade point average between 3.1 and 4.0 (on a four point scale) were 3.29 times more likely to default

on their student loans. Steiner and Teszler (2003) reported that students with higher grade point averages were less likely to default on their student loans. Christman (2002), Flint (1997), and Woo (2002) all reported similar findings that higher grade point averages resulted in lower rates of student loan default.

The findings of this study seemed to indicate that there is a significant difference between borrowers who attend private, for-profit, less than 2-year career and vocational postsecondary schools, and those who chose to attend traditional academically-oriented colleges and universities. While it has been a long held belief that traditional college is not for everyone, at the private, for-profit, less than 2-year career and vocational postsecondary school level, borrowers seem have a different set of life circumstances, interests, and motivating factors than do traditional college and university students.

## Limitations of the Study

This study was limited to the quality and quantity of the self-reported anonymous data obtained from student loan borrowers who attended private, for-profit, less than 2-year career and vocational postsecondary schools in Florida during the years 2010 through 2012. As such, any and all conclusions drawn should be considered limited to private, for-profit, less than 2-year career and vocational postsecondary schools located in Florida during the time period covered by this study. The findings derived from this study represent a snapshot is time and may not necessarily generalize to other private, for-profit, less than 2-year, career and vocational postsecondary schools outside of the state of Florida or to public or private degree granting institutions in the United States.

## Recommendations

Recommendations for future research are important given the requirement of periodic reauthorization of the Higher Education Act and subsequent changes in policy-making decisions such as enactment of gainful employment rules and heightened scrutiny of student loan debt and institutional cohort default rates. Hillman (2015) noted that the use of student loans to finance postsecondary education has grown dramatically. Student loan monies comprised 50% of net tuition, fees, room, and board (Greenstone, Looney, Patashnik, and Yu, 2013). The proprietary sector had an overall 2011 cohort default rate of 19.1%, and represented 55.7% of all defaults in the 2011 cohort nationwide (Federal Student Aid, 2014) with 86% of proprietary sector students utilizing federal student loans (Edmiston et al., 2012). This represented a significant taxpayer and student investment into the proprietary sector, and as such it deserves thorough examination to insure that the anticipated benefits from such an investment are realized by all parties involved.

This limited study focused on private, for-profit, less than 2-year career and vocational postsecondary schools in Florida. The findings of this study indicate that there was a significant difference between borrowers who attended academically-oriented colleges and universities, and those who attended career and vocational-oriented schools; future researcher should explore these differences for possible insights into student loan default dilemma within the career and vocational schools. Future research in this area should be expanded to include multiple states, and should include longer time periods to provide longitudinal data on a regional level. Research could be used to pinpoint which programs over time lend themselves to excessively high rates of default that could be

avoided by choosing comparable community college programs, given Morse's (2015) report that proprietary schools cost on average four times more than community colleges. This would raise the policy question of whether proprietary schools should be allowed funding for programs if established public, non-profit schools exist in the area (essentially relegating proprietary schools to geographically underserved areas).

Future research should also be expanded to include the program of study and expected salaries for each program in an effort to ascertain the payback for undertaking a particular program of study as this relates to the impact of the gainful employment requirement. The Department of Education utilizes individual salary data obtained from the Social Security Administration in its calculations of program eligibility under gainful employment (Heller, 2011). A correlational study of this data with the standard salary data published by the Department of Labor may provide a way for education executives to determine the viability of undertaking certain program offerings and in so doing reduce future student loan defaults if a program is deemed not to meet eligibility requirements by the executives.

Furthermore, future research should use continuous variables rather than categorical variables. Particular emphasis should be placed on the pre-college variables including academic preparedness (e.g., high school standardized test scores) and socio-economic background in order to ascertain the student's ability to succeed in advanced studies and complete a chosen program. Examination of variables such as these may provide insight and explanation of the significance of categorical variables such as ethnicity. For example, why do some African-Americans default more than Caucasians,

yet not all African-Americans default, what is the difference between those that default and those that do not default? As there is little information available on predicting student loan default at the private, for-profit, less than 2-year, career and vocational postsecondary level, future research should focus on replicating many of the quality quantitative studies that have been performed at traditional community college, college, and university levels.

## Implications

The results of this study emphasize the need for student borrowers to be aware of the consequences of student loan default brought about by over-borrowing to finance their postsecondary education. Students need to be aware of the higher default rates of proprietary postsecondary schools and the associated high tuition cost as compared to local community colleges for comparable programs. Students must exercise great care when selecting a postsecondary educational institution to insure that the appropriate return on investment is realized. Proprietary postsecondary institutions typically have a high tuition cost and attract students from relatively poor backgrounds (Cellini & Darolia, 2016). Researchers indicated that upon entering the repayment phase of their student loans, borrowers with low credit scores and monthly loan payment higher than 8% of their net income should enroll in income-driven repayment or loan modification programs (Mezza & Sommer, 2015) as a method of negating possible future delinquency or default. It is the borrower's responsibility to apply for such programs as the Department of Education typically does not have access to borrower's credit scores (Mezza & Sommer, 2015).

Knowledge of student loan default and the characteristics associated with increased likelihood of default provide an opportunity for positive social change. As with any indebtedness, the borrower is sacrificing tomorrow's cash flow in order to finance today's activities. While student loans have long been viewed as a vehicle for positive social change by providing equal access to higher education (Rani, 2011), servicing that debt has become a problem as indicated by the increase in student loan default rates. Policy makers continue to address the problem thru additional regulation such as gainful employment; however more information is needed to inform policy decision especially as it relates to the for-profit sector.

The results from this research may facilitate positive social change by informing private, for-profit, less than 2-year, career and vocational postsecondary schools of the characteristics associated with student loan default within their sector. This will enable them to identify at risk borrowers and construct specific targeted counseling methods, or develop new curriculum requirements (e.g., freshman orientation course work) to inform students of the consequences of student loan default and how to avoid default. Furthermore, this study may also aide private, for-profit, less than 2-year, career and vocational postsecondary schools in adjusting their lending policies in order to reduce the total amount of indebtedness of their student loan borrowers to assist with compliance to gainful employment requirements. They may also chose to continuously update student borrowers as to the total amount of their total student loan indebtedness and the anticipated monthly payment amount via email upon every disbursement rather than leaving it up to the student whether to monitor their debt level.

The Department of Education recommends that institutions, at a minimum, (a) provide entrance and exit counseling, (b) supply written and oral information on loan obligations, repayment, and forbearance, (c) offer education on financial literacy, (d) make reminder phone calls, and (e) dedicate staff to work on default prevention (Department of Education, 2012b). However, as a result of this study, proactive proprietary institutions may also choose to develop written default prevention plans, assign an executive champion, and establish performance metrics that provide data more frequently than the Department of Education does. A written default prevention plan is required by the Department of Education any time an institution is sanctioned and their Title IV eligibility is suspended due to their cohort default rate exceeding 30% (Hillman, 2015). Given that on average approximately 70% of a for-profit institution's revenue comes from federal aid programs, and individual institutions are allowed to receive up to 90% of their revenue from federal aid under the 90-10 rules, it is in the institutions best interest to be proactive in monitoring and actively working to reduce student loan default as suspension of eligibility to receive Title IV funding can result in bankruptcy.

## Conclusion

The reason for choosing to study predicting student loan default at private, for-profit, less than 2-year, career and vocational postsecondary schools was because this sector was underrepresented in the literature. Previous studies exist on predicting student loan default, however they were all conducted at higher levels of postsecondary education than this study leaving very little known about student loan default at the proprietary career and vocational postsecondary school level. The purpose of my

quantitative study was to identify and better understand the borrower characteristics that contribute to an increase in the likelihood of student loan default at private, for-profit, less than 2-year, career and vocational postsecondary schools in Florida. Academic success, age, and gender were found to be predictors of student loan default in this study. The population of this study included 196 participants who had attended non-degree-granting proprietary colleges in Florida during the academic years of 2010, 2011, and 2012.

## References

Ajzen, I. (2012). Theory of planned behavior. In P. Van Lange, A. W. Kruglanski, & E. T. Higgins (Eds.), *Handbook of theories of social psychology* Vol. 1; pp. 438-459). Thousand Oaks, CA: Sage.

Akers, B., & Chingos, M. M. (2014). *Is a student loan crisis on the horizon*? Washington, DC: The Brookings Institution. Retrieved from http://www.brookings.edu

American Student Assistance. (2013). Student loan debt statistics [Online forum content]. Retrieved from http://www.asa.org/policy/resources/stats/default.aspx

Andruska, E. A., Hogarth, J. M., Fletcher, C. N., Forbes, G. R., & Wohlgemuth, D. R. (2014). Do you know what you owe? Students' understanding of their student loans. *Journal of Student Financial Aid, 44*(2), 125-148. Retrieved from http://publications.nasfaa.org/cgi/viewcontent.cgi?article=1222&context=jsfa

Anthony, D. (2011). *Statistics for health, life and social sciences*. Ventus Publishing. Retrieved from http://bookboon.com.

Avery, C., & Turner, S. (2012). Student loans: Do college students borrow too much—or not enough? *The Journal of Economic Perspectives, 26*(1), 165-192. doi:10.1257/jep.26.1.165

Bailey, M. J., & Dynarski, S. (2011). Inequality in postsecondary education. In G. Duncan & R. Murnane (Eds.), *Whiter opportunity?* (pp. 117-132). New York: Russell Sage Foundation.

Barone, S. (2006). Multivariate analysis of student loan defaulters at Prairie View A&M University. Retrieved from http://www.tgslc.org/pdf/PVAMU.pdf

Barr, A. (2014). From the battlefield to the schoolyard: The impact of the post-9/11 GI Bill. *Journal of Human Resources*. Advance online publication. Retrieved from http://people.virginia.edu/~acb3u/A_Barr_GIBill_9_16.pdf

Baum, S., & O'Malley, M. (2003). College on credit: How borrowers perceive their education debt. *Journal of Student Financial Aid, 33*(3), 1-19. Retrieved from http://publications.nasfaa.org/jsfa/vol33/iss3/1

Beanblossom, G. F., & Rodriguez, B. R. (1989). Characteristics of Stafford loan program defaulters: A national sample. Retrieved from http://eric.ed.gov/?id= ED313942

Belfield, C. R. (2013). Student loans and repayment rates: The role of for-profit colleges. *Research in Higher Education, 54*(1), 1-29. doi:10.1007/s11162-012-9268-1

Benson, M. T., & Boyd, H. R. (2015). The public university: Recalling higher education's democratic purpose. *Thought & Action,* (pp. 69-84). Retrieved from https://www.nea.org/assets/docs/i-Benson_Boyd__SF.pdf

Braucher, J. (2012). Mortgaging human capital: Federally-funded subprime higher education. *Washington and Lee Law Review, 69*(2), 439-484. Retrieved from http://scholarlycommons.law.wlu.edu/cgi/viewcontent.cgi?article=4270&context=wlulr

Brown, M., Haughwout, A., Lee, D., Mabutas, M., & van Der Klaauw, W. (2012, March 05). Grading student loans [Liberty Street Economics blog]. Retrieved from http://libertystreeteconomics.newyorkfed.org/2012/03/grading-student-loans.html#.U436sSjtn-s

Brown, M., Haughwout, A., Lee, D., Scally, J., & van Der Klaauw, W. (2014). Measuring student debt and its performance. *Federal Reserve Bank of New York Staff Reports, no.668.*

Bryman, A., & Bell, E. (2015). *Business research methods* (4th ed.). Oxford, England: Oxford University Press.

Burke, L. (2014). Reauthorizing the Higher Education Act—Toward policies that increase access and lower costs. Retrieved from http://www.heritage.org/research /reports/2014/08/reauthorizing-the-higher-education-acttoward-policies-that-increase-access-and-lower-costs

Butin, D. W. (2010). *The education dissertation: A guide for practitioner scholars*. Thousand Oaks, CA: Corwin.

Cellini, S. R., & Darolia, R. (2016). Different degrees of debt: Student borrowing in the for-profit, nonprofit, and public sectors. Retrieved from https://www.brookings .edu/wp-content/uploads/2016/07/cellini.pdf

Chen, H., & Volpe, R. P. (1998). An analysis of personal financial literacy among college students. *Financial Services Review, 7*(2), 107-107. doi:10.1016/S1057-0810(99)80006-7

Choy, S. P., & Li, X. (2006). *Dealing with debt: 1992-93 bachelor's degree recipients 10 years later* (No. NCES 2006-156). Retrieved from http://files.eric.ed.gov/fulltext /ED492047.pdf

Christie, H., & Munro, M. (2003). The Logic of loans: Students' perceptions of the costs and benefits of the student loan. *British Journal of Sociology of Education, 24*(5), 621-636. doi:10.1080/0142569032000127170

Christman, D. E. (2000). Multiple realities: Characteristics of loan defaulters at two-year public institutions. *Community College Review, 27*(4), 16-32. doi:10.1177/009155210002700402

Consumer Financial Protection Bureau. (2013). *Student loan affordability: Analysis of public input on impact and solutions.* Washington, DC: Author.

Corrigan, Z. (2013). Average US student debt tops $20,000 [Web log post]. Retrieved from http://www.wsws.org/en/articles/2013/04/27/stud-a27.html

Crano, W. D., Brewer, M. B., & Lac, A. (2015). *Principles and methods of social research*. New York, NY: Routledge.

Cross, D., & Olinsky, A. (1986, February). *Student loan payers and defaulters*. Paper presented at the Annual Meeting of the Association for the Study of Higher Education, San Antonio, TX. Retrieved from http://eric.ed.gov/?id=ED268876

Cunningham, A. F., & Kienzl, G. S. (2011). Delinquency: The untold story of student loan borrowing. *Institute for Higher Education Policy.* Retrieved from http://files.eric.ed.gov/fulltext/ED517424.pdf

Dormann, C. F., Elith, J., Bacher, S., Buchmann, C., Carl, G., Carré, G., ... & Lautenbach, S. (2013). Collinearity: a review of methods to deal with it and a simulation study evaluating their performance. *Ecography, 36*(1), 27-46. doi: 10.1111/j.1600-0587.2012.07348.x

Doyle, W. R. (2012). Playing the numbers: The best bad option. *Change: The Magazine of Higher Learning, 44*(2), 49–51. doi:10.1080/00091383.2012.655235

Drost, E. A. (2011). Validity and reliability in social science research. *Education Research and Perspectives, 38*(1), 105-123. Retrieved from http://www.brown.uk.com/teaching/HEST5001/drost.pdf

Dwyer, R. E., McCloud, L., & Hodson, R. (2012). Debt and graduation from American universities. *Social Forces, 90*(4), 1133–1155. doi:10.1093/sf/sos072

Dynarski, M. (1994). Who defaults on student loans? Findings from the national postsecondary student aid study. *Economics of Education Review, 13*(1), 55-68. doi:10.1016/0272-7757(94)90023-X

Dynarski, S., & Scott-Clayton, J. (2013). Financial aid policy: Lessons from research (No. w18710). *National Bureau of Economic Research, 23*(1), 67-91 doi:10.1353/foc.2013.0002

Ed.gov. (2012). Default prevention plan submission overview for schools with 3-year cohort default rate 30% or greater. Retrieved from http://www.ifap.ed.gov/DefaultPreventionResourceInfo/attachments/DefaultPreventionPlanSubmissionOverview.pdf

Ed.gov. (2014). Cohort default rate guide. Retrieved from http://ifap.ed.gov/DefaultManagement/CDRGuideMaster.html

Edmiston, K. D., Brooks, L., & Shepelwich, S. (2012). Student loans: overview and issues. *Federal Reserve Bank of Kansas City Research Working Paper*, (12-05). doi:10.2139/ssrn.2137243

Eliot, W., & Lewis, M. (2014). *The student loan problem in America: It is not enough to say, "Students will eventually recover."* Lawrence, KS: Assets and Education Initiative (AEDI). Retrieved from http://aedi.ku.edu/sites/aedi.ku.edu/files /docs/publication/CD/reports/R2.pdf

Faul, F., Erdfelder, E., Bruchner, A., & Lang, A. G. (2013). G*Power (Version 3.1.7) [Computer software]. Dusselfdorf, Germany: Universitat Kiel. Retrieved from http://www.gpower.hhu.de/

Federal Reserve Bank of NY. (2014). *Quarterly report on household debit and credit, August 2014*. New York, NY: Federal Reserve Bank of NY.

Federal Student Aid. (2014). *National default rate briefing for FY 2011 3-year rates*. Washington, DC: Federal Student Aid, U.S. Department of Education.

Field, A. (2013). *Discovering statistics using IBM SPSS statistics*. Thousand Oaks, CA: Sage.

Field, K. (2010). Government vastly undercounts defaults. *The Chronicle of Higher Education*, *56*(40), A15-A20. Retrieved from http://chronicle.com/section /Home/5

Finaid. (2014a). The smart student guide to financial aid. Retrieved from http://www.finaid.org

Finaid. (2014b). Reauthorization of the Higher Education Act of 1965. Retrieved from http://www.finaid.org

Flint, T. A. (1997). Predicting student loan defaults. *Journal of Higher Education, 68*(3), 322-354. doi:10.2307/2960044

Frankfort-Nachmias, C., & Nachmias, D. (2008). *Research methods in the social sciences* (7th ed.). [CourseSmart version]. Retrieved from http://www.textbooks.com.

Fuller, M. B. (2014). A history of financial aid to students. *Journal of Student Financial Aid, 44*(1), 42-68. Retrieved from http://publications.nasfaa.org/jsfa/vol44/iss1/4

Geiger, R. L, & Heller, D. E. (2012). Financial trends in higher education: The United States. *Educational Studies, 48*(3), 5-29. Retrieved from http://ggufuture.pbworks.com/w/file/fetch/62111016/Financial%20Trends%E2%80%93article.pdf

Gemici, A., & Wiswall, M. (2011). Evolution of gender differences in post-secondary human capital investments: College majors. *International Economic Review, 55*(1), 23-56. doi:10.1111/iere.12040

Gicheva, D. (2011). *Does the student-loan burden weigh into the decision to start a family*. Retrieved from the University of North Carolina Greensboro website: http://www.uncg.edu/bae/people/gicheva/Student_loans_marriageAug11.pdf

Gillies, D. (2012). State education as high-yield investment: Human Capital Theory in European policy discourse. *Journal of Pedagogy*, *2*(2), 224-245. doi:10.2478/v10159-011-0011-3

Gordon, H. R. (2014). *The history and growth of career and technical education in America* (4th Ed.). Long Grove, IL: Waveland Press.

Government Accountability Office. (1997a). *Student loans: Default rates at historically black colleges and universities. Fact sheet for the Honorable Paul Simon, U.S. Senate (1993)* (Report No. 362091). Retrieved from http://eric.ed.gov/?id=ED362091

Government Accountability Office. (1997b). *Proprietary schools: Poorer student outcomes at schools that rely more on federal student aid* (Report No. GAO/HEHS-97-103). Retrieved from http://www.gao.gov/archive /1997/he97103.pdf

Gray, D. E. (2013). *Doing research in the real world* (3rd ed.). Thousand Oaks, CA: Sage.

Greene, K. (2012, October 26). New peril for parents: Their kids' student loans. *Wall Street Journal*. Retrieved from http://www.retirementdreams.org/files /New%20Peril%20for%20Parents%20Their%20Kids%27%20Student%20Loans. pdf

Greenstone, M., Looney, A., Patashnik, J., & Yu, M. (2013). *Thirteen economic facts about social mobility and the role of education*. Washington DC: The Brookings Institution. Retrieved from http://www.brookings.edu/research/reports/2013/06 /13-facts-higher-education

Gross, J. P. K., Cekic, O., Hossler, D., & Hillman, N. (2009). What matters in student loan default: A review of the research literature. *Journal of Student Financial Aid, 39*(1), 19–29. Retrieved from http://www.nasfaa.org/Default.aspx

Hall, R. H. (1991). *Organization: Structures, processes and outcomes* (5th ed.) (as cited in Flint). Englewood Cliffs, NJ: Prentice-Hall.

Harrast, S. A. (2004). Undergraduate borrowing: A study of debtor students and their ability to retire undergraduate loans. *Journal of Student Financial Aid, 34*(1), 21–37. Retrieved from http://www.nasfaa.org/Default.aspx

Harwell, M. R. (2011). Research design in qualitative/quantitative/mixed methods. In C. F. Conrad & R. C. Serlins (Eds.) (pp. 147-181). *The Sage handbook for research in education.* (2nd ed.). Thousand Oaks, CA: Sage.

Heller, D. E. (2011). The financial aid picture: Realism, surrealism, or cubism? In *Higher education: Handbook of theory and research* (pp. 125-160). New York, NY: Springer.

Heller, D. E. (2013). Does federal financial aid drive up college prices? [Monograph]. Washington, DC: American Council on Education: Leadership and Advocacy. Retrieved from http://www.acenet.edu/news-room/Documents/Heller-Monograph.pdf

Herr, E., & Burt, L. (2005). Predicting student loan default for the University of Texas at Austin. *Journal of Student Financial Aid, 36*(1), 34-52. Retrieved from http://www.nasfaa.org/Default.aspx

Hillman, N. W. (2015). Cohort default rates: Predicting the probability of federal sanctions. *Educational Policy, 29*(4), 559-582. doi:10.1177/0895904813510772

Hiltonsmith, R., & Draut, T. (2014). *The great cost shift continues: State higher education funding after the recession.* New York, NY: Demos.

IBM Corp. (2015). IBM SPSS Statistics for Windows (Version 23.0) [Computer software]. Armonk, NY: IBM Corp. Retrieved from http://www.waldenu.edu

Kinsler, J., & Pavan, R. (2011). Family income and higher education choices: The importance of accounting for college quality. *Journal of Human Capital, 54*(4), 453-477. doi:10.1086/663649

Knapp, L. G., Kelly-Reid, J. E., & Ginder, S. A. (2011). Enrollment in postsecondary institutions, fall 2009; graduation rates, 2003 & 2006 cohorts; and financial statistics, fiscal year 2009. First look. (NCES 2011-230). *National Center for Education Statistics.* Retrieved from http://files.eric.ed.gov/fulltext/ED515664.pdf

Knapp, L. G., & Seaks, T. G. (1992). An analysis of the probability of default on federally guaranteed student loans. *The Review of Economics and Statistics, 74*(3). 404-411. doi:10.2307/2109484

Kuzma, A. T., Kuzma, J. R., & Thiewes, H. F. (2010). An examination of business students' student loan debt and total debt. *American Journal of Business Education, 3*(4), 71-77. Retrieved from http://journals.cluteonline.com

Ionescu, A. F., & Ionescu, A. M. (2014). *The interplay between student loans and credit card debt: Implications for default in the Great Recession*. Retrieved from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2399182

Lochner, L., & Monge-Naranjo, A. (2003). *Education and default incentives with government student loan programs*. (NBER working paper No. 8815). Presented at the Society of Labor Economists (SOLE) meeting, San Antonio, Texas, April 30-May 1, 2004.

Lochner, L. J., & Monge-Naranjo, A. (2014). *Default and repayment among baccalaureate degree earners*. (NBER working paper No. w19882). National Bureau of Economic Research. Retrieved from https://econresearch.uchicago.edu/sites/econresearch.uchicago.edu/files/Lochner_Monge-Naranjo_2014_default-repayment-baccalaureat.pdf

Lochner, L., Stinebrickner, T., Suleymanoglu, U. (2013). *Analysis of the CSLP Student Loan Defaulter Survey and Client Satisfaction Surveys.* University of Western Ontario, CIBC Centre for Human Capital and Productivity. Retrieved from http://economics.uwo.ca/cibc/workingpapers_docs/wp2013/Lochner_ Stinebrickner_Suleymanoglu03.pdf

Looney, A., & Yannelis, C. (2015). A crisis in student loans?: How changes in the characteristics of borrowers and in the institutions they attended contributed to rising loan defaults. *Brookings Papers on Economic Activity, 2015*(2), 1-89.

Madaus, J. W., Kowitt, J. S., & Lalor, A. R. (2012). The higher education opportunity act: Impact on students with disabilities. *Rehabilitation Research, Policy, and Education, 26*(1), 33–41. doi:10.1891/216866512805000893

Mann, C. J. (2012). Observational research methods—Cohort studies, cross sectional studies, and case–control studies. *African Journal of Emergency Medicine, 2*(1), 38-46. doi:10.1016/j.afjem.2011.12.004

Mezza, A., & Sommer, K. (2015). A trillion dollar question: What predicts student loan delinquencies?. Retrieved from https://www.federalreserve.gov/econresdata /feds/2015/files/2015098pap.pdf

McGuire, M. A. (2012). Subprime education: For-profit colleges and the problem with Title IV federal student aid. *Duke LJ, 62*, 119-160. Retrieved from http://heinonlinebackup.com/hol-cgi-bin/get_pdf.cgi?handle=hein .journals/duklr62&section=6

Mertler, C. A., & Vannatta, R. A. (2013). *Advanced and multivariate statistical methods* (5th ed.). Los Angeles, CA: Pyrczak.

Mishel, L., Bivens, J., Gould, E., & Shierholz, H. (2012). *The state of working America* (12th edition). Ithaca, NY: Economic Policy Institute Book, Cornell University Press.

Morse, S. (2015). For-profit schools: A history of abuse and the need for reform. *Brigham Young University Education and Law Journal, 2*(585).

National Association of Student Financial Aid Administrators (2014). *National student aid profile: Overview of 2014 federal programs.* Washington, DC. Author. Retrieved from http://www.nasfaa.org/uploads/documents/2014_national_profile.pdf

Niche. (2014). Basic statistics [Web data post]. Retrieved from https://colleges.niche.com/

Nyahende, V. R. (2013). The influence of students' loans borrowers' characteristics on default rate in Tanzania. *Higher Education Studies, 3*(4), 26-49. doi:10.5539/hes.v3n4p26

Owen, S., & Sawhill, I. (2013). *Should everyone go to college?* (CCF Brief #50). Washington, DC: Center on Children and Families at Brookings. Retrieved from http://www.brookings.edu/~/media/research/files/papers/2013/05/07-should-everyone-go-to-college-owen-sawhill/08-should-everyone-go-to-college-owen-sawhill.pdf

Paulsen, M. B., & Smart, J. C. (Eds.). (2013). *Higher education: Handbook of theory and research*. New York, NY: Springer.

Podgursky, M., Ehlert, M., Monroe, R., Watson, D., & Wittstruck, J. (2002). Student loan defaults and enrollment persistence. *Journal of Student Financial Aid, 32*(3), 27-42. Retrieved from http://www.nasfaa.org/jsfa

Rani, P.G. (2011). An international perspective on the methods and practices of student loans: Its implications for India. *Economics, Management, and Financial Markets*, *6*(4), 105-125. Retrieved from http://addletonacademicpublishers.com

Razaki, K. A., Koprowski, W., & Lindberg, D. L. (2014). The student loan crisis: Background, motivations of participants, and regulatory issues. *Journal of Business and Accounting, 7*(1), 94-105. Retrieved from http://asbbs.org/files/2014/JBA_V7_2014.pdf#page=95

Rossi, P. H., Wright, J. D., & Anderson, A. B. (Eds.). (2013). *Handbook of survey research*. New York, NY: Academic Press.

Rothstein, J., & Rouse, C. E. (2011). Constrained after college: Student loans and early-career occupational choices. *Journal of Public Economics, 95*(1), 149-163. doi:10.1016/j.jpubeco.2010.09.015

Saint-Germain, M. A. (2010, May 7). Cross-Sectional design [Course notes]. Retrieved from http://web.csulb.edu/~msaintg/ppa696/696preex.htm#696preex

Sedgwick, P. (2014). Cross sectional studies: Advantages and disadvantages. *BMJ, 348*. doi.org/10.1136/bmj.g2276

Shen, H., & Ziderman, A. (2009). Student loans repayment and recovery: International comparison. *Higher Education 57*(3), 315-333. doi:10.1007/s10734-008-9146-0

Stafford, M. (2012, September). Default rate on federal student loans rises again. *The Chronicle of Higher Education*. Retrieved from http://chronicle.com/article /Default-Rate-on-Federal/134786/

Steiner, M., & Barone, S. (2014). Detecting early signs of default risk at Austin Community College. Retrieved from https://www.tgslc.org/pdf/Detecting-Early-Signs-of-Default-Risk.pdf

Steiner, M., & Teszler, N. (2003). The characteristics associated with student loan default at Texas A&M University. Retrieved from http://www.tgslc.org/pdf/TAMU _Default_Study.pdf

Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics*, (5th ed.). Needham Height, MA: Allyn & Bacon.

Thobe, T. M., & DeLuca, B. M. (1997). A model for predicting Perkins loan defaulters. *Journal of Student financial Aid, 24*(1), 31-43. Retrieved from Retrieved from http://www.nasfaa.org/Default.aspx

Toby, J. (2010). How scholarships morphed into financial aid. *Academic Questions, 23*(3), 298-310. doi:10.1007/s12129-010-9174-y

Turner, T. (2015). The profit in proprietary education: An exploratory examination of student loan rates. *International Journal of Global Education, 4*(2), 1-9. doi:10.17261/pressacademia.201519789

U.S. Census Bureau (2015). State and county quickfacts. Retrieved from http://www.census.gov/quickfacts/table/PST045215/12,00

U.S. Department of Education. (2011a). *Default rates for federal student loans.* Retrieved from http://www.ed.gov

U.S. Department of Education. (2011b). *Information for financial aid professionals*. Washington, DC: Author. Retrieved from http://ifap.ed.gov/ifap/helpGlossary.jsp

U.S. Department of Education. (2012). *The federal role in education*. Retrieved from http://www2.ed.gov/about/overview/fed/role.html?src=ln

U.S. Department of Education. (2012b). *Default prevention resource information*. Retrieved from http://www.ifap.ed.gov/DefaultPreventionResourceInfo /index.html.

U.S. Department of Education. (2013a). *Default rate continues to rise for federal student loans.* Retrieved from http://www.ed.gov/news/press-releases/default-rates-continue-rise-federal-student-loans

U.S. Department of Education. (2013b). *FY 2010 3-year official cohort default rates by state/territory national.* Retrieved from http://www2.ed.gov/offices/OSFAP /defaultmanagement/2010staterates3yr.pdf

U.S. Department of Education. (2015a). *Official cohort default rates for schools.* Retrieved from http://www2.ed.gov/offices/OSFAP/defaultmanagement/cdr.html

U.S. Department of Education. (2015b). *FY 2012 3-year official cohort default rates by state/territory national.* Retrieved from http://www2.ed.gov/offices/OSFAP /defaultmanagement/staterates.pdf

U.S. Department of Education National Center for Education Statistics. (2012). Tuition cost for colleges and universities. Retrieved from http://nces.ed.gov

Volkwein, J. F., & Cabrera, A. F. (1998). Who defaults on student loans? The effects of race, class, and gender on borrower behavior. In R. Fossey & M. Bateman (Eds.), *Condemning students to debt: College loans and public policy*, (pp. 105-126). New York: NY: Teachers College Press.

Volkwein, J. F., & Szelest, B. P. (1995). Individual and campus characteristics associated with student loan default. *Research in Higher Education, 36*(1), 41-72. doi:10.1007/BF02207766

Volkwein, J. F., Szelest, B. P., Cabrera, A. F., & Napierski-Prancl, M. R. (1998). Factors associated with student loan default among different racial and ethnic groups. *Journal of Higher Education, 69*(2), 206-237. doi:10.2307/2649206

Webster, J., Meyer, D., & Arnold, A. (1998). Student loan defaults in Texas: Yesterday, today, and tomorrow. Retrieved from http://www.tgslc.org/pdf/defaults_texas.pdf

Wells, C. (2007). Optimism, intertemporal choice, and college student debt. *Journal of Personal Finance, 5*(4), 44-66. Retrieved from http://www.journalofpersonalfinance.com

Woo, J. H. (2002). Factors affecting the probability of default: Student loans in California. *Journal of Student Financial Aid, 32*(2), 5-25. Retrieved from http://publications.nasfaa.org/jsfa/vol32/iss2/1/

Yilmaz, K. (2013). Comparison of quantitative and qualitative research traditions: epistemological, theoretical, and methodological differences. *European Journal of Education*, *48*(2), 311-325. doi:10.1111/ejed.12014

## Appendix A: Survey Questionnaire

1. Did you attend a private vocational college or trade school?
    a. Yes
    b. No
2. What state did you attend a private vocational college or trade school in?
    a. _____
3. Did you use federal student loans to pay for private vocational or trade school?
    a. Yes
    b. No
4. In what year did you graduate, withdraw, or drop out from this school?
    a. 2010
    b. 2011
    c. 2012
    d. 2013
    e. 2014
    f. 2015
    g. 2016
5. What is your birth gender?
    a. Female
    b. Male
6. What is your ethnicity?

a. African-American

b. Asian

c. Caucasian

d. Hispanic or Latino

e. Other

7. What was your age when you left this school either by graduating, withdrawing, or dropping out?

a. Younger than 18

b. 18 – 24

c. 25 – 29

d. 30 – 34

e. 35 – 39

f. 40 – 44

g. 45 – 49

h. 50 or older

8. Did you graduate from this school and receive a diploma or certificate of completion?

a. Yes

b. No

9. What was your grade point average from this school?

a. Less than 1.0

b. 1.1 – 2.0

c. 2.1 – 3.0

d. 3.1 – 4.0

10. Did you graduate from high school?

    a. Yes

    b. No

11. Did you drop out of high school?

    a. Yes

    b. No

12. If you dropped out of high school, did you obtain a general equivalent diploma (i.e., a GED)?

    a. Yes

    b. No

13. To the best of your knowledge, what was your high school class ranking?

    a. 0% - 25% (Bottom quartile)

    b. 26% - 50% (Lower quartile)

    c. 51% - 75% (Mid quartile)

    d. 76% - 100% (Upper quartile)

14. Have you ever been delinquent or defaulted on your federal student loans?

    a. Yes

    b. No