Factors Influencing the Timing of FASFA Application and the Impact of Late Filing on Student Finances

Feride Daku

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Steven M. Janosik, Chair
Kimberly L. Filer
Rachel L. Holloway
Claire K. Robbins
Kenneth S. Smith

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Abstract

A college degree provides benefits to individuals and society, but education is an expensive endeavor. College costs are high and they continue to rise while the median family income shows only modest increases. By lowering the cost of attendance, financial aid makes it possible for many students, especially those from low and middle-income families to attend college. FAFSA is the main instrument used in distributing financial assistance although completing the form is not an easy task. Each year, many students do not file the FAFSA or file it too late, missing valuable financial resources. The focus of this research was on students who file FAFSA late. The purpose of the study was two-fold: to explore the relationship between the timing of FASFA filing and the characteristics of financial aid applicants, and to assess the impact of late filing on student finances.

Logistic regression analysis was used to examine how much of the variation in timing of FAFSA filing could be explained by students characteristics. The findings indicate late FAFSA filers tend to be in-state, male students, coming from single households, with weak high school academic performance. Focusing on low-income group, the study found the odds of filing late were nearly 2.8 times higher for in-state students than they were for out-of-state students. Being male increased the chances of late filing; the odds of filing late for low-income male students were 1.53 times higher than they were for low-income females. The impact of late FAFSA filing on student finances was assessed through linear regression analyses. The results show late filers received less grant aid but larger loan amounts. Compared to on time filers, late FAFSA filers received, on average, $2,815 less in grant aid and $662 more in loans.

The current study shed light on several key factors that make students more likely to miss the FAFSA deadlines. In addition, it demonstrated that late filing has major financial consequences for students and their families. The findings can be used by high school guidance offices, college administrators, state and federal governments, and higher education leaders concerned with improving college affordability.

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General Audience Abstract

Higher education provides benefits to individuals and society. Benefits aside, education is expensive, and most students need financial assistance to offset the college price. By lowering the cost of attendance, financial aid makes it possible for many students, especially those from low and middle income families to attend college. Financial assistance is key for a successful degree completion, while FAFSA remains the main instrument used to distribute the aid. Filing a FAFSA is a critical step in securing financial assistance, although completing the form is not an easy task. The combination of several barriers such as complexity of the form, confusing deadlines, low predictability, and lack of information about the student aid system make the FAFSA application process challenging. Because of that, many students fail to complete or file the FAFSA on time. However, due to limited resources, the timing of the FAFSA filing matters.

The purpose of this study was to explore the relationship between the timing of FAFSA filing and characteristics of financial aid recipients. Logistic regression analysis was used to examine how much of the variation in timing of FAFSA filing could be explained by students demographic and socioeconomic characteristics. The findings indicate late FAFSA filers tend to be in-state, male students, coming from single households, with weak high school academic performance. Additionally, the current study assessed the impact of late FAFSA filing on the amount of grants and loans received by the applicants in their first year in college. The results of the impact assessment show late FAFSA filers received significantly more loans and less grant aid.

The current study identified key factors that make students more likely to file a late FAFSA. It also demonstrated that late filing has major financial consequences for students and their families. The findings can be used by high school guidance offices, college administrators, state and federal governments, and higher education leaders concerned with improving college affordability.

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Table of Contents

List of Tables

List of Figures

Chapter One

Introduction

Higher education provides benefits to individuals obtaining the degree, the economies in which those educated individuals work and live, and society in general. For students attending institutions of higher education, the benefits of college completion, particularly the economic ones, are clear. Individuals with a college degree earn more than high school graduates and enjoy better working conditions. While there are a variety of ways to estimate lifetime earnings of a college degree, the data consistently show that higher levels of education are associated with higher earnings (Baum & Payea, 2004, 2005, 2010; College Board, 2011; Fergus & FitzGibbon, 2011; Leslie & Brinkman, 1988; Johnstone, 2010; Long & Rely, 2007; Michael & Kretovics, 2005; U.S. Census Bureau, 2012). In the U.S., the decision to attend college is often characterized as the "million dollar decision" because individuals with a college degree will earn one million dollars more during the course of their lifetimes than those with a high school diploma, and the gap is growing. According to the U.S. Census Bureau, in 2012, median earnings of bachelor's degree recipients with no advance degree working full time was $21,300 higher than those with high school diploma. During their lifetimes, college graduates earn on average 65% more than high school graduates, while those with advanced degrees earn two to three times as much as high school graduates (College Board, 2013).

Although earnings are often emphasized as the primary benefit of higher education, higher salaries are certainly not the only reason for getting a post-secondary degree. There are non-monetary benefits from a college education as well, and for some students, those benefits could easily exceed the expected financial rewards. College graduates are more

likely than others to be employed and have a more fulfilling work environment. In 2012, the unemployment rate for four-year college graduates ages 25 to 34 was 7.1 percentage points below that for high school graduates (College Board, 2013). Well-educated individuals have greater flexibility within the workforce, and generally, a college education prepares students to make more-informed lifetime decisions (Baum & Ma, 2010; Cunningham & Santiago, 2008; Goldrick-Rab, et al. 2009; Institute for Higher Education Policy, 2004; Johnstone, 2009; Watts, 2001). Although a college degree does not carry a guarantee of a good life, evidence is overwhelming that for most people, education beyond high school is a perquisite for a financially secure lifestyle and better health. By helping its participants attain social success, college plays a vital role in creating the conditions of upward mobility (Baum & Ma, 2010). Education also has a positive effect on happiness and life satisfaction, independent of its effect through income. Students attending institutions of higher education realize short-term consumption benefits such as involvement in extracurricular activities and participation in social and cultural events (Bettinger, et al., 2009; Perna, 2003, 2006).

Likewise, society as a whole derives a multitude of direct and indirect benefits when citizens have access to postsecondary education. Among the societal benefits of higher education are increased state and national workforce productivity as well as improved economic activity in the communities in which colleges are located (Baum & Ma, 2007; Leslie & Brinkman, 1988; Tinto, 2004). College educated employees contribute to economic growth by helping create a larger economic pie for all to share, and by generating higher taxes at the local, state, and federal level. National data shows that four-year college graduates pay on average 78% more in taxes each year than high school grads (College Board, 2013). Overall, college recipients require less financial assistance from the

government and tend to rely less on government social programs such as Medicare and unemployment compensation (Baum, Ma, & Payea, 2010; Institute for Higher Education Policy, 2004).

Recognized as an engine of economic growth, education is critical in maintaining economic prosperity and global competitiveness. The economic well-being of a nation is in many ways determined by the quality and educational level of its population. As the Spellings' Commission on the future of higher education puts it, "America's global competitiveness depends on the ability of our high school graduates to earn at least a bachelor's degree" (Commission on the Future of Higher Education, 2006, p. iii). Higher education is a dominant, if not decisive factor in preparing workers with the robust skills needed to adapt to changing job requirements and competitive global markets. Further, the role of education is expected to increase along with changes in technology, globalization, and the demographics of our nation (Johnstone, 2010; Orozco & Cauthen, 2009; Tinto, 2004). The projected demographic trends in the U.S indicate demand for college educated workers will continue to increase in the near future. The findings of the Current Population Survey suggest that the educational requirements of all jobs are increasing, and new jobs will demand at least some level of postsecondary education (U.S. Census Bureau, 2013). Education is important; nations that fail to adequately and appropriately educate their citizenry cannot and will not optimize their work-force returns or maximize their leverage in a global marketplace (Michael & Kretovics, 2005).

Beyond the economic returns, higher education contributes to society in a variety of ways such as the governance of the nation and civic services. Although civic learning outcomes are difficult to document, they are one of the most important contributions

universities provide to the American society. College education promotes higher levels of civic engagement such as participation in community service, voting in elections, and increased understanding of other racial and ethnic groups. In general, higher levels of education correspond to lower levels of poverty and incarceration rates (Bowen, 1997; Cunningham, 2002; Institute for Higher Education Policy, 2007; Nora, et al., 2006; Wellman 1999).

The Cost of College Education

Regardless of its benefits, higher education is an expensive endeavor. College costs are both monetary and nonmonetary. Monetary costs include the direct costs of attendance such as tuition, fees, room, board, books, supplies, and transportation. The opportunity cost, otherwise known as the foregone earnings - the income a person gives up to acquire an education - is an important element of the total cost. Included in this equation are also the nonmonetary costs of education such as the "psychic" costs incurred in the learning process. College costs represent a barrier *en route to* a bachelor's degree for many students; making some of them unable to attend institutions of higher education while others start but never complete their degrees. Recent increases in tuition and fees, accelerated by declining state support for higher education, have made it difficult for many students to finance their education (Baum et. al, 2012).

American higher education is becoming more expensive. For over half century, the average price, and the average net price of a year in college has been increasing faster than the underlying rate of inflation (NCES, 2017; Zemsky, 2010). With college prices rising nation-wide during the last two decades, college affordability has been declining. Another indicator of affordability is the share of a family's income required to pay the cost of

attendance at a particular type of institution after grant aid. College Board data show that regardless of the institution type, cost of attendance less grant aid represents a substantially higher share of income for dependent, full-time undergraduates in the lowest income bracket (College Board, 2005, 2012, 2013). Therefore, a decline in a family's standard of living, suggesting that even with no change in college prices, the ability of low and middle-income families to pay for college has deteriorated during the last two decades. Given the key role of higher education in our society, keeping college prices reasonable is a matter of great significance to the whole country while lack of college affordability is a concern for students, parents, and policymakers (Altbach & Gumport, 2005; Archibald & Feldman, 2011; Baum, et al. 2010).

While many factors affect the costs and the overall college affordability, for public institutions, the level of state support is essential. In the U.S., state support for higher education has declined during the past two decades. Public funding for colleges and universities has not kept pace with enrollment growth, inflation, escalating financial aid needs, and the expansion of capital projects. Trying to accommodate the financial needs of other public entities, state governments are allocating a smaller share of their total operating budgets towards higher education (Johnstone, 1999; Priest & John, 2006; Chronicle of Higher Education, 2008). The days of predictable public support for higher education are long gone. Colleges and universities are faced with budget cuts, and it seems that no public institution, from the smallest community college to the largest doctoral-granting university is safe from the reductions (Altbach, et. al, 2005; Heller 2006; Hossler, 2006).

Although state funding remains a significant source of support, and in absolute terms, state commitments to higher education have increased, public funding constitutes a declining

percentage of higher education budgets (College Board 2010, 2011; Inside Higher Ed, 2012; SHEEO, 2007, 2012, 2013). In 1987, states provided 76% of total educational revenues (excluding research and independent operations) of public higher education. State support decreased to 63% of total educational revenues in 2005 and further, down to 53% in 2012. Allocations per full-time equivalent (FTE) student have been also declining, falling to $6,451 in 2010, and reaching a 25 year low in inflation adjusted terms (College Board 2012).

While public support for higher education has been declining, college prices kept increasing. In the last decades, rising tuition and fees have outpaced inflation and the growth in family income. For example, in a two-year period (2002 – 2004), the average tuition price among four-year public institutions increased 26% while the Consumer Price Index increased just 4% (Heller, 2006). From 1982 to 2012, inflation-adjusted average cost of tuition and fees of a four-year public institution increased by 270%, from $2,318 to $8,557 (College Board, 2013). During the same period, growth in family income was modest: inflation-adjusted median family income rose by 16%, from $53,534 to $62,241 (U.S. Census Bureau, 2013). The increase in college prices, accelerated by states' declining support, has contributed to a substantial shift in the burden of paying for college: from governments to students and their families. Clearly, pursuing higher education has become an expensive undertaking; many students cannot afford to pay for their college without some form of financial assistance (Long, 2007; Zumeta, 2004).

Financial Aid and College Affordability

As our nation's colleges and universities get pricier, financial aid becomes increasingly important. Authorized under Title IV of the Higher Education Act of 1965, student aid programs were intended to ensure that inadequate financial resources would not

limit college access. For more than half a century, the program has been used as a key instrument by federal and state governments encouraging college access, persistence, and degree completion (Cunningham & Santiago, 2008; FAFSA.ed.gov; Guide to federal student aid, 2013). By offsetting the direct cost of education and reducing the out-of-the-pocket expenses, the support enables students, especially those from low income families to obtain a college degree. Indirectly, financial aid is known to influence other factors related to college success such as academic preparation and time spent studying while in college (Boatman & Long, 2009; Johnson, et al., 2010). By working fewer hours, students can afford to spend more time studying while in college. Even though funding types have shifted over the years, the true mission of the federal aid program remains unchanged: providing financial support for those who cannot afford a college education.

American college students depend heavily on financial assistance to pay for their education. Grants, loans, work study, and tax credits have helped millions of students achieve their college dreams. According to the National Center for Educational Statistics, in 2007-08, two-thirds of all undergraduate students received some type of financial aid. As the economy shrunk and college costs increased, the need for financial assistance increased. In 2009-10, the percentage of first-time, full-time undergraduate students receiving financial aid went to 85% at all 4-year colleges: 82% at public colleges and 92% at for-profit schools (Chronicle of Higher Education, May 24, 2012; NCES, 2012). The current student aid program represents an enormous enterprise. In 2015-16, a total of $241 billion in student financial aid was distributed to undergraduate and graduate students in the form of grants, federal work study, loans, and federal tax credits and deductions (College Board, 2017). The majority of that amount, $184.1 billion, went to undergraduate students who received on average $14,460

per FTE student, including $8,390 in grant aid from all sources, and $4,720 in loans. As far as the composition of aid packages goes, grants remain the largest type of funding. In 2015-16, total aid package consisted of 52% grants, 40% loans, and 8% other funding options (College Board, 2017).

Regardless of the type of aid a student receives, completing the Free Application for Federal Student Aid (FAFSA) is a critical step in securing financial support. FAFSA is the primary mechanism used in distributing federal assistance, and almost always, the process begins with completing and filing of the form. The importance of FAFSA filing is more than simply accessing federal aid; states and most colleges and universities throughout the country use the form to distribute their limited financial aid dollars (College Board, 2011; Dynarski, 2008, 2010; Feeney & Heroff, 2010, 2013; U.S. Department of Education, 2013). Given the critical role FAFSA plays in accessing student aid, each year millions of students complete and file the form expecting to receive financial support. National data show the total number of the FAFSA forms received by the U.S. Department of Education has significantly increased. Over a four-year period, 2007-08 to 2010-11, the number of FAFSA filers increased by 45% (Kantrowitz, 2011). In 2011-12, more than 20 million students completed and filed the FAFSA (Student Aid data, 2014). However, research indicates the upward trend of FAFSA filers is caused mainly by an increase in the number of college-going students, and not necessarily due to improved filing rates. The general student population that does not file a FAFSA has remained relatively flat during the last decade (Davidson, 2013; Kantrowitz, 2009, 2011; King, 2004, 2006).

Despite the critical role FAFSA plays with the student aid programs, there are challenges with the existing form as well as the larger financial aid system. Among others,

the form is long, complex, and cumbersome; completing the FAFSA requires a significant amount of financial information, social capital, and knowledge about the aid process. FAFSA has a low predictability rate; even after taking the time to complete and file the form, students are unable to predict the exact amount of aid they would expect to receive. Also, there seems to be some consensus that the financial aid system is poorly understood by many students and their families. That, combined with lack of information about the overall college costs - appear to be major obstacles to the program. Additionally, the student aid process has confusing deadlines: the existence of state, federal, and institutional deadlines often represents a challenge for many, especially for low-income, first generation students who also need it the most. Some argue not just the FAFSA, but the entire financial aid system, including the need-analysis federal formula is too complex and in need for reform (Davidson, 2013; Dynarski, 2003, 2005, 2008; Dynarski & Scott-Clayton 2008; Feeney & Heroff, 2010, 2013; Long, 2007, 2008; Bettinger et al., 2007; Heller, 2006; Kantrowitz, 2011).

The issues surrounding the FAFSA form and the overall financial aid system make the application process difficult for many students. Faced with these challenges, some of them choose not to apply for financial assistance. Every year, millions of students who would have qualified for student aid, do not complete the FAFSA, missing out significant financial resources (King, 2004; Romano & Millard 2006; Feeney & Heroff, 2010; Kantrowitz, 2009). Research by the American Council on Education (ACE) found that half of all undergraduates, or approximately eight million students enrolled in 1999-2000 at institutions participating in federal student aid programs did not complete the FAFSA (King, 2004). Of those eight million, 1.7 million were low- and moderate-income students, and about 850,000 were likely to have been eligible for Pell Grants. The same study revisited in 2006 discovered that the

number of low and moderate-income undergraduate students who did not file the FAFSA increased slightly. It was further estimated that in 2003-04 approximately 1.5 million students who would have been eligible for Pell Grants did not complete the FAFSA (King, 2006). King's report found that a substantial and rising number of students are missing out on needed financial assistance. It was further stated the issue persists beyond college entry as the returning students face the same FAFSA challenges.

Recent data confirm similar results. Kantrowitz's (2009) study revealed that 2.3 million students would have qualified for the Pell Grants in 2007-08 had they applied for student financial aid. Data from the U.S. Department of Education show that nationwide, only 55% of high school graduates completed their FAFSA in 2012. FAFSA problems also persists at the state level. In the same academic year, 24 states in the U.S. had statewide completion rates below 50%, and four states had statewide completion rates below 40%. These findings are a clear indication that many students, especially those from low income, first-generation families are not receiving the financial support to pay for their education. On the other hand, lack of funding is often cited as one of the main reasons many eligible students do not attend institutions of higher education or leave school before completing their degrees (Johnson, et al., 2010; Minnesota Office of Higher Ed, 2011).

The Timing of FAFSA Application

Filing the FAFSA provides major benefits for students and their families, yet many of them fail to complete the form or complete it too late (Romano & Millard 2006; Feeney & Heroff, 2010; Kantrowitz, 2009). While the most significant concern is that students who need financial support do not complete the FAFSA, another critical issue involves students who file the FAFSA, but do so after important deadlines have passed. According to King

(2004), in the spring-summer of 1999, less than half of all college students had filed the FAFSA on time. More recently, Cannon & Goldrick-Rab (2016) found that 46% of Pell-eligible students living in states with deadlines completed a late FAFSA, submitting the form after the deadlines had passed.

Late FAFSA filing is a widespread phenomenon with major financial consequences for students who do so. Although the Pell federal grant is awarded to eligible students regardless of the date of their application, that is not the case for other federal grants as well as most state and institutional aid programs. Faced with limited budgets and the need to increase spending on other public-supported programs, states are under pressure to establish funding priorities that often take the form of FAFSA deadlines. To reconcile limited funding with an increasing number of students with financial need, most colleges and universities also establish a priority FAFSA date. The majority of state and institutional funds are distributed to students who complete the FAFSA by a certain deadline/priority date. The entering freshmen and continuing students who file the FAFSA by that date, otherwise known as **On time Filers (OF),** are provided full access to the program, receiving the highest priority in awarding need-based grant and scholarship aid. With very few exceptions, those who do not file the FAFSA –also known and **Non-Filers (NF),** are excluded from the financial aid program. Students who file the FAFSA late, also known as the **Late Filers (LF),** are given only partial access to grants and scholarships.

Completing the FAFSA on time is very important. Students who file their FAFSA late typically are not considered for full financial aid benefits, and often receive less support than they might have had they filed their application on time. Late filers receive only what is left over from grants and scholarships, if at all. A late FAFSA can result in less aid for students

with equal need simply because fewer funds are available to later applicants (LaManque, 2009). Almost all state and institutional scholarships and grants are awarded on a *"first come, first served"* basis. Except for the Pell grant, students who file a late FAFSA do not have equal access to aid compared to students who file financial aid application on time. Also, late filers have only limited access to some federal programs since those programs often run out of money.

A significant body of research has examined the FAFSA form, the required steps for completing it, the complexity of the form itself as well as strategies for increasing the efficiency of the aid process. Several studies have discussed the issue of the FAFSA filing, mainly focusing on non-filers and the consequences of not filing the form (Dynarski, 2004; 2006; 2010; Dynarski & Scott-Clayton, 2006). However, very little is known about the FAFSA late filers. No known research has been conducted in the past two decades to understand why a large number of students with demonstrated financial need file the FAFSA late. Additionally, researchers have not examined the factors influencing the timing of the FAFSA filing. There is a need to quantify the financial impact of late filing, including the influence of late filing on student debt levels.

Using the Human Capital Model as a foundation, the current study considered key factors affecting the timing of FAFSA filing. The basic human capital framework, attributed to Becker (1962, 1964, 1975, & 1994) defines human capital as the collective skills that enable individuals to become more productive in the workplace. To Becker, human capital investments are designed to enhance individual's mental and physical abilities to increase their productivity. The theory claims that human capital is interchangeable, but not transferrable like land, labor, or fixed capital. Human capital is either endowed at birth or

acquired through training and education, hence an investment in human capital. According to the model, investments in education lead to increased skills, which promote increases in workers' productivity; across time, productivity increases will be rewarded by higher earnings. Education, and more specifically, higher education is thought to increase human capital, a set of skills that can be "rented out" to employers for income (Becker 1993; Bettinger, 2004; Bettinger & Bridget, 2010; Boatman & Long, 2009; DesJardins & Toutkoushian, 2005; Goldrick-Rab, Harris, & Trostel, 2009; Paulsen 2001; Regan, Burghardt, & Oaxaca, 2007; Tan, 2014). The theory postulates that spending on education and training is costly, and since it is undertaken with a view to increase personal incomes, it should be considered an investment.

Schultz (1961) also describes education as an investment and claims direct expenditures in education take advantage of better job opportunities. Expenditures that enhance skills and knowledge affect human capabilities, increase the value productivity of human effort (labor) and yield a positive rate of return. In his work, Schultz distinguishes among five categories of important activities that improve human capabilities: (a) health facilities and services, including expenditures that increase life expectancy; (b) on-the-job training organized by the firms; (c) formally organized education at the elementary, secondary, and higher levels; (d) study programs for adults that are not organized by firms; and (e) migration of individuals and families to adjust to changing job opportunities. Recent studies have further investigated the benefits as well as the costs of education, and the findings reaffirm the value of college education. These studies conclude educational investment is not only crucial for individuals, it is also a key factor to economic growth of a country since it generates higher productivity, improved labor quality, lower unemployment,

and greater social mobility (Altonji & Dunn, 1996; Avery & Turner, 2012; Behram & Birdsall, 1983; Krueger, 1992; Tan, 2014).

Economists have long used the model to explain how individuals make decisions regarding the amount of education they plan to acquire. The decision to invest in human capital in the form of a college degree involves comparing the benefits of receiving a degree to the cost of education. A decision to get a college education is made only if the expected benefits exceed the expected costs (Avery, 2012; Chen & Zerquera, 2009; Cohen & Huches, 1994; Dynarski, 2008; DesJardins & Toutkoushian, 2006; Goldrick-Rab, et. al, 2009; Paulsen, 2001). The conventional definition of rational behavior usually holds that individuals have a well-defined set of preferences and when faced with a set of choices, they will select the option that maximizes their benefit, otherwise known as utility. Defined as the amount of satisfaction a person receives from consuming a particular good or service, the term "utility" is used to represent consumer preferences, and is further considered to vary from person to person. In a nutshell, the theory claims students will choose to go to college only if the utility of expected benefits outweighs the costs.

The model could be applied to multiple steps of college decision-making process, including decisions as to whether prepare for college academically, to apply to certain colleges and universities, to initially enroll in college, to persist each year in college, and to graduate from college (Bettinger & Bridget, 2010). One of the main applications of human capital theory is that subsidizing the cost of education raises the optimal level of schooling. The model predicts that reducing college costs will make students more likely to attend and finish school, and further, a reduction in college net price would improve the overall college success rates. Clearly, price matters, and since student aid can be viewed as strategy for

reducing the college net price, financial aid plays a critical role in the overall college decisions.

Statement of the Problem

A college degree provides benefits to individuals as well as societies. The private benefits of higher education are mainly associated with individuals achieving higher salary, better health, longer life, and more fulfilling work environment. The benefits to society include higher taxable revenues, increased civic participation, more charitable donations, lower crime rates, and an improved position for global competitiveness (Baum & Payea, 2004; College Board, 2010; Cunningham, 2002; Institute for Higher Education Policy, 2007; Johnstone, 2010; Long & Riley, 2007; Perna, 2000, 2006; Wellman 1999). Recognized as both, an engine of economic growth and a gatekeeper to individual positions of high remuneration and status, higher education is a major contributor to the economic well-being of the country.

Benefits aside, earning a college degree is expensive. College costs include direct charges such as tuition, fees, room, board, books and other living expenses, as well as the indirect cost of forgone earnings. During the last two decades, college prices have increased while public support for higher education has declined. Today, states provide a smaller share of the higher education total revenues than they did 30 years ago. The FTE student allocations are also down (College Board, 2013; SHEEO, 2013). Compounding the problem is the fact that while college costs have increased, the median family income in the U.S. has remained flat (or only minor increases). Because of that, many students are unable to pay for their degrees without some sort of financial assistance, which is largely governmental support (Altbach & Gumport, 2005; Archibald & Feldman, 2011; Heller, 2006).

Financial aid is critical in ensuring college access and success. Many students depend on financial assistance to pay for their education. As colleges get pricier, financial aid becomes even more important. With millions of students applying for and receiving support each year, financial aid program has become an enormous enterprise. The main instrument used for distributing student aid is the FAFSA. Completing the FAFSA is challenging due to several issues surrounding the form as well as the overall student aid process. Although the number of the FAFSA filers has increased, the upward trend is mainly associated with an increase in the student population, and not necessarily due to improved filing rates. The number of students who do not file the FAFSA has remained relatively flat during the last decade (Kantrowitz, 2009, 2011; Davidson, 2013; King, 2006).

Filing the FAFSA can provide major benefits for students and their families yet many of them fail to file it. Each year, many college students do not complete the form, or complete it too late to qualify for need-based financial aid. Students who do not file the FAFSA miss out on significant financial resources. However, simply completing the FAFSA is not enough. Filing the FAFSA by the priority deadlines set by states and institutions is very important. Due to limited financial resources, most state and institutional financial aid programs operate on a *"first come first served basis*". Additionally, certain federally funded programs lack funding to provide aid to all eligible students (Cannon & Goldrick-Rab, 2016; Feeney & Heroff, 2013; Romano & Millard 2006). FAFSA filing time is critical in ensuring students have full access to the financial aid programs as late filers miss out on available resources to pay for their college education.

When it comes to FAFSA filing status, three major groups of students emerge: (a) those who file on time; (b) those who do not file; and (c) those who file a FAFSA, but do so

after the priority deadlines have passed. The first group is usually granted access to all of the state, federal, and institution funds. This is not the case for students who do not file as well as those who file their FAFSAs late. Governments and policymakers seem to be mostly concerned with students who need aid but do not complete the FAFSA. The issue of not filing the form has received special attention from higher education stakeholders. Significant research has been conducted to show the impact of not filing the FAFSA (Dyrnaski, 2003, 2005, 2010; Dynarski & Scott-Clayton 2008; King 2004, 2006; Romano & Millard 2006). However, another student population, those who file the FAFSA, but do so after important deadlines have passed, is also important. Very little research has been conducted in regard to students who file the FAFSA late, and further, not much is known about the financial impacts of the late FAFSA filing.

There are many benefits from a postsecondary degree. Individuals as well as societies are better off by well-educated citizens. Benefits aside, education is an expensive endeavor. College costs continue to rise while the median family income shows only modest increases. Because of that, few can afford to pay for their own degree; most students need some financial help to offset the college price. By lowering the cost of attendance, financial aid makes it possible for many students, especially those from low and middle income families to attend college. FAFSA is the main instrument used in distributing financial assistance. Viewed as a gateway to financial aid, the form is critical in receiving most types of support, although completing it is not an easy task. The combination of several barriers such as confusing deadlines, complexity of the form, low predictability, and lack of information about the student aid system make the application process challenging. Therefore, many students fail to file the FAFSA or file it too late, missing out on valuable financial resources.

A significant number of studies have examined the group of the FAFSA non-filers (Baum & Payea, 2004; College Board, 2010; Cunningham, 2002; Dynarski, 2002, 2008, 2010; Institute for Higher Education Policy, 2007; Long & Riley, 2007; Hefoff & Feeney, 2010; Perna, 2006; Wellman 1999). However, very little is known about the FAFSA late filers as well as the effect of late filing on students' finances, thus a need for this study.

Purpose Statement

The purpose of this study was to explore the relationship between the timing of FAFSA filing (on time versus late) and characteristics of financial aid recipients. Specifically, the study examined how much of the variation in timing of the filing could be explained by student characteristics. Student characteristics included demographic characteristics (gender, race/ethnicity, household size, number in college, residency, and citizenship) and socioeconomic characteristics (family income, expected family contribution, student financial need, underrepresented minority status, dependency, single household, first-generation status, high school GPA, and SAT scores). Additionally, the current study assessed the impact of late FAFSA filing on the amount of grants and loans received by the applicants in their first year in college.

The sample for this study focused on first-time, full-time, degree-seeking freshmen students who applied for financial aid at a large, research extensive public university. The entering cohorts included first-time freshmen that matriculated in five consecutive academic years, specifically in fall 2009, 2010, 2011, 2012, and 2013. The five-year period was selected as a reasonable time-frame for the analysis. All participants in this study had to meet several selection criteria. The sample was limited to students who filed a FAFSA, had financial need, received a financial aid award, and enrolled full-time for an entire year (two

consecutive semesters). A binary logistic regression model was used to evaluate the influence of student characteristics and socioeconomic factors on the timing of FAFSA applications. The impact of late filing on student finances was disaggregated by residency, expected family contribution, gender, race/ethnicity and so forth.

Research Questions

The present study was designed to address the following research questions:

1. Are there statistically significant differences between on time filers (OFs) and late filers (LFs) in terms of demographic factors (gender, race/ethnicity, household size, number in college, residency, and citizenship)?
2. Are there statistically significant differences between on time filers (OFs) and late filers (LFs) in terms of socioeconomic factors (family income, expected family contribution, student financial need, underrepresented minority status, dependency, single household, first-generation status, high school GPA, and SAT scores)?
3. Does the timing of FAFSA filing influence the amount of student grants and loans?

Significance of the Study

The current study was significant for future practice, research, and policy. In regards to practice, the study provided results that might benefit several constituencies including financial aid administrators, high school guidance counselors, and higher education leaders. First, the results of this study provided financial aid officers with information about factors that predict the timing of FAFSA filing. Administrators may use the findings to assess what programs they put in place to better target those students who need to be prompted to file their FAFSAs on time. Setting up workshops for high school counselors and college advisors

regarding the FAFSA and the overall financial aid system – are some strategies that may be used by financial aid administrators.

Second, the results of this study were significant for high school guidance offices. High school counselors play a major role in assisting students with college applications, FAFSA filing, and overall college preparation. The results provide research-based information about the demographic and socioeconomic factors associated with late filers. Counselors may use the findings of this study to design outreach programs aimed at increasing the portion of high school graduates who complete and file their FAFSAs on time.

Finally, understanding the effects of late filing was important to higher education leaders across the nation. Often, students graduate with large amounts of debt although state and institutional funds would have been available to them had they completed the FAFSA on time. College administrators can target at-risk students, make them aware of the available financial resources, and assist them with the FAFSA filing process. FAFSA deadlines vary from state to state and even from one school to another – within the same state. Administrators can use multiple channels of communications such as emails, phone messages, and home/campus letters to remind students of the deadlines. Also, campus leaders may consider integrating college-going activities with FAFSA completion, and ensure admission officers are knowledgeable about the financial aid process.

With regards to policy, the current study may be of significance for state policymakers. If they are to achieve a high impact on educational attainment, states should target their limited financial aid dollars at students with the greatest financial need. To accomplish that, a clear understanding of the student population who file a late FAFSA is necessary. Focusing on the characteristics of late filers, the study could be useful to state

policymakers in targeting late filers. It might also help state leaders to better understand the consequences of the late filing. In return, states could design and implement strategies for increasing the number of on time filers, such as one-on-one personal assistance with FAFSA completion.

Increasing the number of on time FAFSA filers is closely related to the primary mission of the financial aid program, which is making college affordable for those who are unable to pay for it. By shedding light on the factors associated with late FAFSA filing, the current study was significant to federal legislators, encouraging them to find new approaches for reducing the number of late filers. One way the government could assist is by preloading tax information into the FAFSA form for each student. The process modification would significantly reduce the amount of time spent for completing the form and minimizing the number of filing errors, thus, increasing the overall number of on time FAFSA filers.

Finally, this study was significant in terms of future policy. Students' ability to pay for the increasing college costs is an issue often discussed among state policymakers, and almost all states have their own policies on financial aid program. The study shed light on the relationship between student characteristics and FAFSA filing time. Policymakers may find this information useful while formulating future policies about income levels and aid eligibility.

The research also looked at the impact of late filing on the student debt levels. Policymakers at federal and state level are concerned about the consequences of growing student indebtedness for individuals as well as society. The study can be helpful while designing financial aid strategies as coordinated efforts among different entities and groups of administrations usually yield successful results.

Finally, the study had significance for future research. Current research focused on freshmen students. Future studies could focus on returning students by exploring the recurring late FAFSA filing during all college years for a given cohort. Also, future research may explore the effects of late filing on other college outcomes such as college persistence and time to degree completion.

While this study examined student-related factors that predict the timing of the FAFSA filing, there are undoubtedly other factors that influence the filing time. Future studies might look at how institutional characteristics affect FAFSA completion time.

Delimitations

There were several limitations in the current study. The first is related to the use of a pre-existing data set. Using an existing database, I was constrained to the items in the dataset when defining factors such as the socioeconomic status (SES). It is possible that the items did not capture everything I needed to adequately define SES, and that might have skewed the results. The second delimitation is related to the sample used in the study. All students in the sample attended the same 4-year public institution. The unique characteristics of students at the institution may have affected the results in some unforeseen manner, thus findings may not be widely generalized to other types of schools such as 2-year colleges or private universities. Additionally, qualitative research studies examining the perceptions as well as the expectations of the students who complete a late FAFSA would help provide a better understanding of the late filing issue.

Organization of the Study

The study is organized around five chapters. Chapter one introduced the topic of the study, the research questions as well as the significance of the study. The second chapter

provides a review of the literature relevant to the study. Chapter three describes the methodology of the study, including the sample design as well as the methods and procedures used to collect and analyze the data. The results of the study are reported in Chapter four, while the final chapter discusses those results and their implications for future practice, research, and policy.

Chapter Two

Literature Review

This study examined the relationship between the timing of FAFSA filing (on time vs. late) and pre-college characteristics of financial aid recipients. Specifically, the study investigated how much of the variation in the timing of filing could be explained by student characteristics. Additionally, the research looked at the impact of late filing on grant aid and students' debt level. There were three bodies of literature relevant to the current analysis. The first included studies on the impact of financial aid on college outcomes. Two subsets of studies were relevant in the literature: those that focus on the effects of student aid on college attendance, and those that look at the impact of financial aid on persistence and degree completion. FAFSA is the primary instrument used by colleges across the nation for distributing student financial assistance, therefore, the study examined prior research regarding the FAFSA. Issues surrounding the form as well as the larger student aid system were the focus of the second body of work in the review. Finally, it was necessary to examine the literature on the timing of FAFSA filing, students who file the FAFSA on time and those who file the form late, after the priority deadline has passed. One subcategory included studies related to FAFSA On time Filers (OT) and the other comprised studies regarding the Late Filers (LT). This chapter is organized around these three major bodies of literature and their respective subcategories.

The Role of Student Aid on College Outcomes

Financial aid plays a major role in many aspects of higher education enterprise: college access, student's choice, college persistence, and degree completion (Dynarski, 2002, 2007; Dynarski & Scott-Clayton, 2008; Long, 2008; DesJardins et al., 2006, 2009; Hossler et

al., 2009; Novak & McKinney, 2011). By lowering the cost of attendance, financial assistance makes it possible for many students, especially for those from low income, first-generation families to attend college. It is often argued that access to higher education is achieved not solely by admitting students to college, but also by improving their odds of earning a degree (Dynarski & Scott-Clayton, 2008; Long, 2008). Therefore, financial aid plays a critical role in students' success.

The Impact of Financial Aid on College Attendance

College cost is one of the biggest barriers to higher education, and generally, the lower the cost, the greater the likelihood of completing a degree. Studies exploring the effects of financial aid have found student assistance to positively influence college attendance (Alon, 2005; Nora, et al., 2006; Bettinger, 2004; DesJardines et al., 2006, 2009; Feeney & Heroff, 2010; Hossler et al., 2009; Kane, 1994; Singell & Stater, 2006). Heller (1999) examined the extent to which financial aid as well as tuition levels influence college enrollments, and whether those effects differ by student groups. The findings indicate that enrollments in public colleges are negatively affected by increases in tuition and fees. On the other hand, direct state support in the form of student financial assistance positively influenced college attendance, while a decrease in state grant aid produced a significant reduction in enrollments. Further, the effects of financial aid varied by student group, with minority students being significantly more sensitive to tuition increases. Other studies (Dynarski, 2000; Kane, 2003; Long, 2008) have also shown that low-income minority students are highly responsive to financial aid awards.

Economic theory holds that the quantity of a particular good or service is a function of the price, the income of the buyer, and the prices of other goods or services. When it

comes to higher education, the theory suggests that enrollments will be affected by both, college prices and the amount of financial support students receive. Kane (1994) explored the effect of college prices on enrollments and concluded that tuition and fees as well as financial aid affect college attendance. Reviewing within-state tuition variation, the study found that grant aid increased college attendance by three to four percentage points. The program affected students' college choice as well.

Focusing on prices, Leslie & Brinkman (1987, 1988) reviewed several college attendance studies and suggested that tuition charges significantly affect participation rates while financial aid helped offset the effect of high tuition rates. Researchers found that college attendance increases by three to five percent for every $1,000 decrease in college net price. Overall, financial aid grants had a positive influence on enrollments, but the effects of aid were especially strong on two student categories: low-income and adult students. Enrollments for adult students grew by nearly 25% for every $1,000 tuition decrease. Seftor and Turner (2002) also explored the relationship between financial aid and college access for older adults, and established that Pell grants improve access, while Deming and Dynarski (2009) indicated that an additional $1,000 of grant aid increases college enrollments by four percent.

Consistent with human capital theory that lowering the cost of education would make students more likely to attend college, studies suggest grants have a positive influence on enrollments. Overall, state grants have been found to have the strongest effect (Alon, 2005, 2007; Ahlburg, & McCall, 2006; DesJardines at al., 2002; Dynarski, 2003; Long 2008; Perna, 1998; Scot-Clayton, 2012). Since the early 90s, many states have established merit aid programs, with Arkansas and Georgia having the most recognizable programs. Arkansas'

program was established in 1991, while Georgia's - also known as Georgia Helping Outstanding Pupils Education (HOPE) was introduced in 1993. Both programs waive tuition and fees for students who achieve a minimum GPA in high school and maintain a certain GPA in college. Dynarski (2000, 2004) found a large and significant impact of state grants on college entry. By comparing changes in college attendance rates in states that had the programs to changes in other southern states during the same time period, Dynarski concluded state merit programs significantly increase college attendance. In Georgia's case, the increase was four to six percentage points for every $1,000 dollars in student financial aid. The findings provide strong evidence that subsidies to the direct costs of education are an effective tool for increasing college persistence and completion.

Few can dispute the fundamental role of federal financial aid in American higher education. However, findings regarding the effectiveness of the federal dollars show mixed results. While most studies indicate a positive impact, some researchers find no effect or even a small negative influence of federal aid on college attendance. Generally, federal grants tend to be less effective than state grants in promoting college access, and there is a reason for that. Eligibility for the two largest federal aid programs, the Pell Grant and Stafford Loan, is determined by a complex formula that establishes financial need based on income, assets, and family size. Several factors such as complex application process and large amount of paperwork required for application undermine the efficacy of the federal programs (Bettinger, 2004; Dynarski & Scott-Clayton, 2006; Seftor & Turner, 2002). Unlike the federal aid process, state programs are usually easy to understand, require a small amount of information, and have a short application process. In addition, state programs have high predictability rate: when applying for grants, students and their families know exactly the

amount of aid they will receive. In summary, scholarships with straightforward application process, transparent eligibility criteria, and low transaction costs are usually most effective in increasing the number of young people attending college (Dynarski, 2005, 2008).

Although federal programs tend to have complex application process, not all federal programs are established with the same criteria. Dynarski (2003) examined the impact that the elimination of the Social Security Student Benefit program had on college enrollments. For nearly 20 years (from 1965 to 1982), Social Security Administration paid the college costs for children of deceased parents and helped millions of students go to college. In 1981, Congress voted to eliminate the program. By comparing students who were eligible in the last year of the program to students who would have been eligible had the program continued, Dynarski found large effects on college access. The study found college enrollments of the affected population were significantly reduced by the elimination of the Social Security Student Benefit program. The loss of financial aid led to a drop of almost 25 percentage points in the likelihood that students would attend college. Dynarski estimated that an offer of $1,000 in grant aid increases the probability of attending college by 3.6 percentage points. The study concluded that transparent financial aid grant programs with low transaction costs and clear application guidelines have a substantial impact on college entry (Dynarski, 2003).

Institutions of higher education across the country use another type of financial support, merit-based aid. A discount to college costs contingent upon academic performance, merit aid is not new to the American higher education. Private colleges have long rewarded high achieving high school students with merit-based scholarships (Dynarski, 2002). However, until recently, merit aid played only a minor role in public sector since states

historically distributed little merit aid. The majority of state funds were awarded based on financial need, mainly to low-income students. The rules of the game have recently changed. Currently, states as well as institutions of higher education spend a significant amount of their allocations towards merit-aid programs. Dynarski (2002) focused on the effects of merit aid on the decision to attend college, and found that merit aid moderately increased college enrollments. Merit-aid affected college attendance in another way: by shifting students from two-year schools to four-year institutions, and by increasing the probability of students attending college in their home states. Similarly, Perna's research (2002) found that financial aid influences the type of college or university a student chooses to attend.

Research suggests that not just the actual amount of the financial aid received by students, but also aid expectations have an effect on decisions to attend college (DesJardins et al., 2009; Heller, 2006; Perna, 2006; St. John, 2003). DesJardins et al. (2006) examined how the change in financial aid expectations affected college applications and student enrollments, and found that aid anticipations positively influence college attendance. However, students' disappointment due to receiving less financial aid than expected had a negative effect on college enrollments. Kim et al. (2009) investigated how the expectations of different types of financial aid affect students' college choice process, from application through enrollment, and found similar results. The study revealed that student expectations of aid significantly influence application and enrollment decisions. The effect of aid anticipations was especially strong for underrepresented students: when the awarded aid amounts were less than the expected, a very large decrease in enrollments took place. The researcher concluded that relative to their counterparts, underrepresented students might place considerable value on the availability and adequacy of financial aid while choosing a college.

Rational economic behavior suggests that persons will act in their own best interest, given the information known to them. Thus, the better students understand the benefits of early financial aid application, the sooner they will complete and file the FAFSA. Early knowledge of the financial aid system is critical, especially for first generation, low-income students as they face greater challenges while navigating the landscape of higher education (Heller, 2006; Tierney & Venegas, 2009). Unaware of the process and assuming they cannot afford to pay for college, often, those students do not prepare academically. They do not take the right high school courses, prepare for exams, or plan for college. On the other hand, students who believe college is affordable are more likely to prepare academically and seek out the information necessary to enroll in college. Long (2007) concluded that when students are well informed about financial support, they would generally take the necessary steps to prepare for and attend college. The study called for more outreach programs to help educate American youth about college costs and student aid programs. Stater's research (2009) also established a direct link between financial aid and college choice. Clearly, by reducing the cost of attendance, financial assistance makes it possible for many students to attend the institutions of their choice.

The Role of Student Aid on Persistence and Degree Completion

College entry is the first step towards a degree, but persistence beyond initial arrival is necessary for a successful degree completion. Although several factors such as high school GPA, pre-college academic preparation, and educational aspirations contribute to student success, financial support is key. Findings from several studies show financial assistance have a positive influence on both, college persistence and degree completion (DesJardins & McCall, 2010; Chen, 2008; George-Jackson et al., 2012; Hossler et al., 2009; Singell &

Stater, 2006; Stater, 2009). Bettinger (2004) explored how financial aid affects persistence, and more specifically, the role of Pell Grants on student endurance after the first year of college. Using student-level data from all public colleges and universities in Ohio, the study established that Pell Grants reduced college dropout behavior, playing a key role in increasing college persistence.

Dynarski (2002) and Turner & Bound (2002) have explored the effects of student aid on college outcomes, and found a significant relationship between need-based aid and college success rates. Stater (2005) indicated that financial aid positively influences the decision to persist; the more funds students receive for college, the more likely they would remain enrolled. DesJardins, et al., (2002) established that merit aid enables students to remain continuously enrolled, thus, increasing their chances of attaining a college degree. Dynarski (2005) also confirmed the effects of merit aid on college completion. The study found merit aid to increase college degree attainment by three to four percentage points.

Examining the effects of need-based aid on academic progress, Goldrick-Rab & Harris (2009) found a direct relationship between grant aid received and the number of credits completed. Students who received an extra financial aid grant for a two-year period were more likely to finish at least 60 college credits. Other studies such as Bettinger (2010) and Dynarski (2008) reveal similar findings: grant aid increases college persistence and degree completion, while unmet financial need deters college success. Chen & Zerquera's (2011) research shows that insufficient financial support negatively affects student enrollments. They indicated that holding everything else constant, for a $1,000 increase in unmet financial need, the odds of students staying in or returning to college was approximately 7% lower.

Financial aid influences college performance in multiple ways, and student GPA is certainly one of them. Generally, research indicates that financial assistance positively influences the GPA. Using the data on students enrolled at three flagship public institutions in Indiana, Colorado, and Oregon, Stater (2009) examined the impact of financial aid on college GPA. The researcher explored both, the GPA in the first year, and then in the second through fourth-year of college. The findings showed that need-based and merit-based financial assistance positively impact student's GPA throughout college. However, the effect of merit aid was significantly larger than the effect of need-based aid. This may be due to GPA requirements that are typically attached to merit awards. To receive merit-based aid, students have to maintain a minimum GPA and that can be a direct incentive to students. Singell and Stater (2006) found need-based aid positively influences graduation rates. After controlling for unobserved student heterogeneity, an additional $1,000 of merit aid per year was predicted to increase the probability of graduation by approximately 3-6 percentage points. Other studies have also confirmed the role of student aid on college success. Goldrick-Rab et al. (2012) examined the impacts of a private need-based grant distributed at 13 public institutions in Wisconsin and found that need-based financial grants improve college retention, help students earn slightly more credits, and earn somewhat better grades. A $1,000 increase in total aid to freshman students was associated with 2.8 to 4.1 percentage point increase in retention in the second year of college.

In addition to its direct impact on performance, financial aid influences other factors related to student success such as time dedicated to studying, student engagement, and a variety of academic-related activities. The effect of aid is two-folded: it reduces the chances that students will drop out of college due to lack of funds, and also decreases the need for

students to work long hours while in college (Adelman, 2006; Alon, 2005; Johnson, J. et al., 2010; Nora, Barlow & Crisp, 2006; Long & Riley, 2007; Orozco & Cauthen, 2009). Focusing on Gates' Millennium Scholarships Program, a generous grant program that provides a renewable scholarship to talented undergraduate students of color with financial need, Boatman & Long (2009) observed the effects of financial assistance on students' social behavior. Aid had a positive influence on a wide range of non-academic measures such as student engagement with campus-wide activities, interactions with faculty/other students, and participation in community services. The study concluded that financial assistance enables students to work less, thereby allowing them more time for non-academic pursuits and engagements.

Research indicates that student financial aid influences college decisions. However, not all types of aid are equally effective in promoting college success, and generally, loans are found to be less successful than grants. Student loans are the largest and also the fastest growing source of funding for postsecondary education in the U.S. According to the Pew Research Center (2010), graduates who received a degree in 2008 borrowed 50% more (in inflation-adjusted dollars) than their counterparts who graduated in 1996. The increased borrowing is driven by: (a) a growing number of student borrowers; (b) larger amount of borrowing; and (c) an increase in the number of students attending private colleges and universities, where the average loan size is significantly higher than public universities. Research exploring loan impacts shows mixed results: some studies indicate a small positive influence of college borrowing on academic outcomes while others show a non-significant or even negative effect.

Studies show the role of loans on college success may vary by the type of institution. Cofer and Somers (2000) estimated that loans have a positive impact on persistence for both private and public school students. On the other side, Herzog (2005) found student debt had no impact on academic outcomes. Conducting a multiyear freshman analysis at the University of Nevada, Herzog found that loans do not contribute to student retention although debt might have a small effect on year-to-year persistence within the selective sector of higher education. Federal work-study is another important component of the student aid programs, and generally, research shows that work-study exerts a positive impact on student's performance. One of the most significant effects of the work-study program is that it helps students integrate into higher education communities, thus increasing their chances for college persistence. (St. John et al., 2001; DesJardins et al., 2002; Hossler et al., 2009).

Challenges with the FAFSA Form and the Student Aid System

FAFSA is the main instrument used by colleges and universities across the country for distributing federal, state, and institutional financial aid. Despite its critical role in the financial aid program, there are challenges associated with the existing FAFSA form and the larger student aid system. First, the form is long and cumbersome. Standing at more than 100 questions, FAFSA takes several hours to complete. The application for student financial aid is longer and more confusing than the average tax return. FAFSA's length has been identified as one of the challenges confronting the financial aid program (Bettinger et al., 2007, 2009; Council of Economic Advisors, 2009; Dynarski & Scott-Clayton, 2006, 2008; Feeney & Heroff, 2010, 2013; Minnesota Office of Higher Education, 2012; Perna, 2006; Executive Office of the President, 2009). It is often argued the length of the FAFSA may discourage

some students and parents from filling the form, while for others, it could lead to more errors while completing it.

Complexity is another barrier. Completing the FAFSA requires considerable amount of social capital, financial information, and knowledge about the aid process. Often, students and their parents find the process of applying for financial aid confusing (ACSFA, 2005; Dynarski, 2008; Feeney & Heroff, 2013; Long, 2008). As the Advisory Committee on Student Financial Assistance (2005) stated, "Millions of students and adult learners who aspire to college are overwhelmed by the complexity of student aid. Uncertainty and confusion rob them of its significant benefits. Rather than promote access, student aid often creates a series of barriers" (p.2). Complexity of the financial aid system represents a big hurdle for many, especially for low-income, first generation students. Lack of social capital while completing the form might be an issue for those students. Therefore, financial aid system appears to be more challenging for those who need it the most (Bettinger, Long, & Oreopoulos, 2009; Perna, 2006).

Complexity comes with a cost. Studies show the complexity of the system does little to improve the targeting of the financial aid while the costs to taxpayers and society are quite large. The Council of Economic Advisors (2009) indicated the complexity of the system yields minimum improvements in targeting aid while requiring great efforts for applicants, institutions, and the federal government. Along with streamlining the FAFSA form, the study called for simplifying the federal formula used in calculating the EFC. Dynarski and Scott-Clayton (2007) recommended the system could be easily approximated by using only a few pieces of information on family income, while Bettinger et al. (2009) demonstrated that tax data could be used to populate the majority of required FAFSA fields. Some researchers

argue that FAFSA form could be simplified or even eliminated altogether if imperfections in measuring the ability to pay could be tolerated (Dynarski & Scot-Clayton, 2006; Daun-Barnett & Mabry, 2012). In that case, eligibility for student aid would be determined by the existing tax information. Clearly, simplifying the aid process would benefit students as well as the American taxpayers.

Uncertainty in projecting the amount of aid represents another challenge with the financial assistance system. Complexity aside, FAFSA does little to predict the amount of support received by individual students. Filing the FAFSA yields no information about the student aid eligibility. Even after putting in hours of work and completing the form, upon its completion, students and their families know little about the actual amount of aid they will receive. In fact, a definitive answer about aid eligibility does not come in until months after the students submit their FAFSA (Dynarski, 2004, 2005; Dynarski & Scott-Clayton, 2007; Perna, 2006; Heller, 2006). It is often argued that the expected amount of aid influences students' college choice, thus the sooner they know the amount of aid the better it is. As the Council of Economic Advisors (2009) pointed out, for financial aid to be effective in increasing college enrollments, students must be able to predict how much aid they will receive. However, under the current system students are unable to do so.

In addition to being long, complex, and unable to predict the amount of student aid, FAFSA has confusing deadlines. The application for federal financial aid becomes available on January 1st of each year for the upcoming academic year, and the form is usually accepted till June 30th of the following year[1]. Many states and higher education institutions have

[1] Due to application of the "prior-prior year" system, starting with financial aid year 2017-18, FAFSA became available on October 1, 2016.

financial aid priority deadlines that are months earlier than the deadline for submitting the FAFSA to the Department of Education (Dynarski, 2004, 2007; Feeney & Heroff, 2010; Heller, 2006; Perna, 2006; Roderick et al., 2008; Feeney & Heroff, 2103). Most colleges and universities request that students file the FAFSA by March 31st. Some schools even have two sets of the FAFSA deadlines: a preferred deadline and a regular deadline, which often creates confusion for many students. The mismatch in deadlines may lead some students to believe they have missed the opportunity to apply for student aid altogether, while indeed they might have missed only state or institutional deadlines. Moreover, college and state deadlines come before parents file their taxes, and although FAFSA regulations allow parents to use their prior year taxes, families might not be aware of this option (Roderick, et al., 2008). For some families, the previous year financial situation may not be a good representation of their income, especially in times of economic downturn and high unemployment rates.

FAFSA assumes parents can and will support their college bound students, which is not always the case (ACSFA, 2005; Dynarski & Scott-Clayton, 2007; Heller, 2006). Students whose parents do not help cover the college costs can try to declare themselves independent, but achieving that status is not easy. For those students, applying to multiple schools is often challenging since they have to prove to each college they are financially independent. The current financial aid system does not easily adjust to changes in student's financial circumstances, although the Department of Education allows students and their parents to do so. Further, the process is intimidating and it may discourage some students from attempting to rework their FAFSAs (ACSFA, 2005; Advisory Committee on Student Financial Assistance, 2005; Perna, 2006).

Many argue that not just the FAFSA, but the entire student aid system, including the formula used to establish financial aid eligibility is inefficient and in need of reform. Research indicates the federal formula for determining financial need is complex and changes over time (Dynarski & Scott-Clayton, 2008; Dynarski, 2008; Dynarski & Scott-Clayton, 2006; Perna, 2006; Heller, 2006; Kane 1999; Long, 2008). As the Commission on the Future of Higher Education (2006) put it, the financial aid system is confusing, complex, inefficient, and duplicative. Complexity in the aid system arises mainly from efforts to precisely measure the students' ability to pay for college. The detailed financial questions in the FAFSA form are intended to target student aid to those most in need. However, studies show that complexity yields only minimal improvements in targeting while requiring a great deal of time and effort for applicants, institutions, and the federal government (Council of Economic Advisors, 2009; Dynarski, 2008). Although the costs of complexity are difficult to measure precisely, studies show that managing the student aid system is an expensive endeavor. Dynarski (2008) estimated the total cost of the financial aid system, including time spent completing the FAFSA as well as salaries of college staff who administer the student aid to be approximately four billion dollars per year.

Finally, evidence suggests students and their families poorly understand the financial aid system. Although there seems to be an abundant amount of information about college prices and financial aid, many students underestimate the college costs and are misinformed about the possible sources of financial assistance. Simply making the information "available" is not sufficient. Often, the general public does not know what opportunities for aid exist, how to access the various programs, and what amounts one can expect to receive. Research indicates the use of financial aid is shaped not only by the availability of resources, but also

by how well students and their families understand the aid process. Low visibility of financial aid system, combined with lack of information about the process, appear to be major obstacles to the program. Students cannot respond to a price subsidy if they do not know it exists (Avery & Kane, 2004; DesJardins et al., 2006; Dynarski & Scott - Clayton, 2008; Fergus & FitzGibbon, 2011; Ikenberry & Harlte, 1998; Perna, 2004, 2006; Scott - Clayton, 2012; Tierney & Venegas, 2009). For a successful aid program, it is necessary to ensure the information is not just available, but also accessible and relevant to different student groups. Therefore, more outreach programs informing students about the availability of aid as well as the application process – are needed (Avery & Turner, 2012; Feeney & Heroff, 2013; Goldrick-Rab & Roksa, 2008; Cabrera & La Nasa, 2000; Rothstein & Rouse, 2011; Scott - Clayton, 2012).

Increasing awareness about financial aid and providing support with FAFSA filing are critical steps for a successful student aid program. Studies show that students who receive support filling the form are more likely to complete and submit it by the deadline, especially if the assistance is provided by financial coaches and/or other experts (Bettinger et al., 2009; Davidson, 2013). Working with H&R Block, an accounting firm that provides tax assistance, Bettinger's study targeted students who were most likely to have little information about the financial aid process and more difficulties navigating the system. Assistance with FAFSA increased the likelihood of high schools students submitting the aid application by 39%. Following a random assignment, students in the treatment group (receiving FAFSA application assistance) were 24% more likely to attend college in the first year, and 29% more likely to attend college for two consecutive years, compared to control group (receiving only basic info about the importance of the financial aid program). Additionally, students

who received assistance filed the FAFSA more than a month earlier. Daun-Banet & Mabry (2012) also explored integrating tax info with FAFSA completion, as a way of helping students complete the form. Reporting on a comprehensive analysis of three different strategies with FAFSA assistance, the study claims IRS-FAFSA partnership and data transfer positively influence the filing rates. Therefore, combined efforts from state, federal and institutional leaders in assisting students completing and filing the forms may be necessary for increasing the FAFSA completion rates.

FAFSA Filing Status: On time, Late, and Non-Filers

Financial aid plays a major role in reducing student debt levels and improving college success rates. FAFSA is the main instrument used for distributing federal, state and institutional funds, and the relationship between the FAFSA completion status and college outcomes has been the focus of several studies (Bettinger, 2004, 2011; Cannon & Goldrick-Rab, 2016). Generally, the findings indicate filing the form has a positive influence on attendance, persistence and degree completion, and further, the majority of college students complete and file the FAFSA by the deadlines. Focusing on Chicago Public Schools data, Roderick et al. (2008) found that filing a FAFSA enhances students' likelihood of being accepted to and enrolling in a four-year college. On the other side, not filing might be a significant barrier to college enrollments. Students who had been accepted into a four-year college, and had completed their FAFSA by May, were 50% more likely to enroll than students who had not completed the FAFSA. The relationship held even after controlling for differences in students' qualifications, family background, neighborhood characteristics as well as support from teachers, counselors, and parents. Also, completing the FAFSA was found to play a key role in college persistence, especially for low- income students.

The importance of FAFSA filing seems obvious given its critical role with financial aid program yet not all students complete and file the form on a timely manner. Each year, many students who would normally qualify for financial assistance, do not file the FAFSA or file it late, missing out on significant financial resources (Dynarski, 2002, 2004; Dynarski & Scot-Clayton, 2006; King, 2004, 2006). When it comes to filing status, three major groups of students emerge: those who complete and file the FAFSA on time; those who do not file the form; and those who file the form but do so after the major deadlines have passed. These groups of students are known as non-filers (NF), on time filers (OT), and late filers (LF). Completing the FAFSA is not an easy task as it requires a significant amount of human resources and social capital, but the benefits of filing the form significantly outweigh the costs. Therefore, the majority of college-going students who need financial assistance complete and file the form by the deadline(s). The on time FAFSA filers are provided full access to federal, state, and institutional financial aid resources. However, this is not the case for other student groups; generally, the non-filers as well as the late filers receive less financial support.

The FAFSA Non-Filers

Although filing the FAFSA is a necessary step for receiving aid, each year, millions of students in need for financial assistance do not file the form. King (2006) found that in 2004 academic year, 29% of full-time and 42% of half-time undergraduate students did not file a FAFSA. The study estimated that 1.5 million (low-income) students would have qualified for Pell Grant had they applied for financial aid. From a nationally representative sample, Kofoed (2013) found that approximately 14% of eligible students who attend college do not complete the FAFSA. Those students tend to be low income, white and male. The

study estimated that non-filers forgo $9,741 in total aid, which aggregates to $24 billion nationwide. The complexity of the form, low visibility of aid programs, and lack of information are major blocks to the FAFSA filing process (ACSFA, 2005; Kane & Avery, 2004; Davidson, 2013; Long, 2007, 2008; Heller, 2006). Debt-aversion is also cited as challenge since many students prefer not to take out loans. Using the 2007-08 National Postsecondary Student Aid Study (NPSAS), Kantrowitz (2011) found debt-avoidance was the main reason for not completing the FAFSA for both undergraduate and graduate students. The study concluded that a significant number of students shy away from loans as a means of covering the educational costs.

Students who do not file the FAFSA miss out on financial support that makes it possible for them to go to school. Attendance is only one of the problems since non-filing affects other college outcomes. By exploring the relationship between FAFSA filing and college persistence for first year, full-time undergraduate students, Novak & McKinney (2011) found students who filed a FAFSA had 72% higher odds of persisting than their peers who did not file. The findings held true even after controlling for background characteristics and college experience variables. The effects of non-filing were more significant among low-income Pell Grant eligible students: the group of FAFSA filers had 122% higher odds of persisting compared to their low-income peers who did not file the form. The results are a clear indication that failure to complete the FAFSA negatively affects college success rates.

The FAFSA Late Filers

College cost is a major barrier for many students aspiring to complete a degree while FAFSA is the gatekeeper for federal, state, and institutional aid programs. Although completing the FAFSA enables students to receive financial support, earlier completion of

the form is strongly preferable because often the aid programs run out of money. Timely FAFSA completion is even more important for low-income, first-generation students since in many cases financial aid dollars are distributed on *"first-come, first-serve bases."* Using the Illinois Monetary Assistance Program (MAP) as a case study, Heroff & Feeney (2010) investigated the relationship between geographic, social and economic factors and FAFSA completion. MAP is the state's largest need-based program, awarding grants to students based on the EFC and the cost of attending a particular college. Due to limited funding, many students who qualify for the MAP grant are denied the support. Therefore, early FAFSA completion is critical to receiving the grant aid. The study established a positive relationship between EFC and FAFSA filing, and further, family income was found to be a strong predictor of timely FAFSA completion. Also, social capital in the form of knowledgeable adults assisting with the filing process affected the filing time. Having a parent who graduated from college significantly increased the likelihood of students completing their FAFSA early. This confirms the critical role of the socioeconomic status in timely FAFSA completion. Similarly, Feeney & Heroff (2013) examined the relationship between academic factors and timely FAFSA completion. The findings indicate a significant relationship between high school performance and the FAFSA filing time: students who had a higher academic performance in highs school were more likely to complete and file the form before the deadline.

Knowledge about student aid process is key for a timely FAFSA completion. Aimed at understanding why some students delay their FAFSA, LaManque (2009) assumed that variance in knowledge about the financial aid system affects the timing of financial aid applications. Focusing on the survey results for a large community college in California, the

study found a direct relationship between FAFSA knowledge and FAFSA application time. A significant portion of students missed the major FAFSA deadlines; approximately one-third of students who filed a FAFSA in 2007-08 academic year, did so late. The difference in the percentage of students receiving aid was even more striking: only 40% of late filers received financial assistance compared to 66% of early filers. The study indicates that variations in financial aid knowledge affect the timing of FAFSA applications, and highlights the fact that awareness about financial aid system is key to the overall success of the program. Most recently, Cannon & Goldrick-Rab (2016) found that nation-wide a large portion of students complete the FAFSA late. Nearly half (46%) of Pell-eligible students living in states with deadlines submitted the form late.

Clearly, the timing of FAFSA filing matters. Students who complete and file their FAFSA on time are provided full access to all types of financial aid. However, that is not the case for late filers, as they generally do not receive the same support. Except for Pell Grants, which is an entitlement, students who file a late FAFSA do not have equal access to financial aid resources (Dynarski, 2003, 2004, 2007; King, 2004; Scott-Clayton, 2012). A late financial aid application could result in less aid awarded to students with equal need because fewer funds are available to later applicants. Almost all financial aid scholarships and grants are awarded on a "first come, first served" basis. Therefore, late filing can have major consequences for many students, especially for those from low-income, first generation families. Not just federal aid, but applying late also reduces students' chances of receiving state financial assistance. Late filers usually receive less state support than on time filers with the same socioeconomic status. The statement is often true for institutional grants as well. Since late filers are subject to less grant aid, many of them turn to student loans to pay for

their college education. Therefore, upon college graduation, those students carry out the debt-burden that comes with student borrowing.

A significant number of studies have looked at the importance of FAFSA filing as well as the role of financial aid on college choice, attendance, persistence, and degree completion. The challenges associated with the FAFSA form and the larger student aid process are well documented. Other researchers have explored the relationship between the financial aid grants and student indebtedness. However, no studies have systematically examined the factors that influence the timing of the FAFSA filing. Most importantly, no known research studies have explored the effects of late FAFSA filing on student debt levels. This study addressed these two important gaps in the literature.

Literature concerning the timing of the FAFSA filing status is thin while research focusing on the group of later filers is even thinner. No known studies have explored the impact of late FAFSA filing on financial aid grants and student borrowing levels. The purpose of this research was to examine the relationship between the timing of FAFSA filing (on time versus late) and characteristics of financial aid recipients. In particular, the research investigated the relationship between FAFSA filing status and demographic and socioeconomic characteristics, highlighting the factors that influence the filing time. Additionally, the study looked at the impact of late filing on the level of financial aid grants and student borrowing. The current research sought to determine if filing the FAFSA form after the deadline(s) had passed resulted in larger borrowing among first-time, full-time, undergraduate students. Therefore, the current study will fill this gap in the literature.

Chapter Three

Methodology

The purpose of this study was to explore the relationship between the timing of FAFSA filing (on time versus late) and characteristics of financial aid recipients. Specifically, the study examined how much of the variation in timing of the filing could be explained by student characteristics. Student characteristics included demographic characteristics (gender, race/ethnicity, household size, number in college, residency, and citizenship) and socioeconomic characteristics (family income, expected family contribution, student financial need, underrepresented minority status, dependency, single household, first-generation status, high school GPA, and SAT scores). Additionally, the current study assessed the impact of late FAFSA filing on the amount of grants and loans received by the applicants in their first year in college. Grants were defined as any gift aid received by the student from the government, state, institutional, and external sources during their first year of college. Borrowing was expressed as total amount of federal, state, institutional, and private loans over the same time period. Specifically, the study was designed to address the following research questions:

1. Are there statistically significant differences between on time filers (OFs) and late filers (LFs) in terms of demographic factors (gender, race/ethnicity, household size, number in college, residency, and citizenship)?
2. Are there statistically significant differences between on time filers (OFs) and late filers (LFs) in terms of socioeconomic factors (family income, expected family contribution, student financial need, underrepresented minority status, dependency, single household, first-generation status, high school GPA, and SAT scores)?

3. Does the timing of FAFSA filing influence the amount of student grants and loans?

This chapter describes the methodology employed in the study to answer the research questions. It includes a narrative of the sample selection process, the instrument used to collect the data, the data set, the validity and reliability of the data set, the data collection procedures, and the data analysis procedures.

Sample Selection

An overview of the institution at which the current study was conducted is helpful in understanding the sample selection. The study institution is a large, four-year, public, research-extensive, land-grant University that enrolls more than 30,000 students. The undergraduate student population is approximately 25,000. Once students are admitted to the University, the financial aid office begins the financial aid awarding process. The process starts with downloading the FAFSA student data from the U.S. Department of Education database, continues with verification of student records and financial aid processing, and concludes with aid packaging and student award notification letters.

This study focused on first-time, full-time, degree-seeking freshmen that applied for financial aid. The entering cohorts included first-time freshmen that matriculated in five consecutive academic years, specifically in fall 2009, 2010, 2011, 2012, and 2013. The five-year period was selected as a reasonable timeframe for the analysis. All participants in this study had to meet several selection criteria. The sample was limited to students who filed a FAFSA, had financial need, were packaged, and enrolled full-time for an entire year (two consecutive semesters). Specifically, the five cohorts totaled 26,297 unduplicated student records, of which 18,349 were in-state and were 7,948 out-of-state. Next, the student population of interest was reduced to only those filing a FAFSA and that brought the data set

to 20,203 records. Further, those FAFSA filers who had no financial need as well as those with financial need but not enrolled full-time in both fall and spring semesters were excluded. Additionally, students with incomplete FAFSA data as well as student athletes were excluded from the sample since both of those student groups represent unique circumstances regarding the amount of grants and scholarships; generally, the first groups of students does not get aid while student athletes may receive full financial support regardless of the FAFSA filing time. Subsequently, the final sample size was 10,877 unduplicated student records.

The first-time, degree-seeking freshmen are the focus of this study because this subgroup of undergraduate students has the most complete data, representing the traditional path to a college degree. Additionally, unlike upper classmen, the financial aid first-time freshmen receive is not subject to meeting the satisfactory academic progress (SAP) requirements. The SAP requirements begin after the first year is completed. Not meeting the SAP requirements adversely affects the amount of the need-based financial aid a student receives in spite of the FAFSA filing status. Another reason continuing students were not included in the study is because that subgroup of student population represents its own special challenges related to the FAFSA as well as the broader issue of financial aid. If continuing students were included, there could be many cases in which the same student would be an on time filer for one year, and a late filer in another year; at times, the student may not have even filed FAFSA at all. Moreover, some students may have significant changes in their family income from one year to another, which directly affect the EFC and the need status: one year the student may have financial need while in subsequent year the same student indicates no need. Including such cases in the study would affect the analysis because being a late filer for a student with no financial need has no financial implications.

The sample was limited to those enrolled full-time for several reasons. The financial aid data are accurate for students who matriculated in a fall semester and enrolled in both, fall and spring semesters of the academic year. The amount of financial aid disbursed depends on full-time enrollment status. Usually, students are budgeted assuming full-time enrollment in fall and spring semesters. By taking a lighter course load, part-time students pay less in tuition and fees each semester, which in turn affects their EFC and the financial need. As a result, a student who only enrolled for one semester would have the budget estimated for an entire year but would have received aid for only one semester, thereby incorrectly inflating financial need. An on time FAFSA filer, enrolled part-time is likely to receive less need-based financial aid than a late FAFSA filer enrolled full-time. The same holds for cases of one-term enrollment versus enrollment in both terms. Late filers enrolled in both fall and spring semesters could potentially receive more need-based aid than on time filers enrolled in one term only despite their timing of FAFSA filing. The one-term only and the part-time enrollment skew the data. Therefore, the full-time enrollment in both semesters improves data consistency and helps estimate more precisely the impacts that the timing of FAFSA filing has on the amount of financial aid received.

The sample was further limited to those who filed a FAFSA, and who were determined to have financial need. The amount of need-based grants and loans from federal, state, and institutional sources depends on whether a student has demonstrated financial need. Subsequently, students with no financial need are not eligible to receive the need-based grant and loan aid no matter their FAFSA filing status, i.e. on time vs. late filers. Therefore, students who were determined to have no financial need, were excluded from the study.

Finally, a small group of entering freshmen who filed a FAFSA but were not packaged financial aid due to incomplete or missing FAFSA data, were dropped from the sample. Student athletes were also excluded from the sample because, in most cases, these students receive full institutional scholarships and grants despite their FAFSA filing status. The final sample size of the current study was 10,877 students (7,449 in-state and 3,428 out-of-state). Of the 10,877 sampled students, 9,726 (89%) were on time filers and 1,151 (11%) were late filers.

Instrumentation

The main survey instrument used to collect the data for this research study was the FAFSA form. Designed by the U.S. Department of Education and filed annually by first-time and continuing college students who seek financial assistance, FAFSA is the gatekeeper to the federal financial aid program. However, the importance of completing the FAFSA is more than simply accessing federal aid. The majority of states as well as institutions of higher education uses the form to allocate their limited financial aid resources.

Organization of the FAFSA Form

To collect the necessary information about students and their families, FAFSA is organized as steps, each consisting of a group of related questions (College Board, 2011; Dynarski, 2008, 2010; Edvisors, 2015; Federal Student Aid, 2013; Feeney & Heroff, 2010, 2013; Gillen, 2010; Heller, 2006; NASFAA, 2012; Kantrowitz & Levy, 2015; U.S. Department of Education 2014). The current form contains 106 questions assembled into seven steps: general student information, income and assets, dependency status, parent's information (dependent students only), independent student data, school information, and the signatures

Step One: General Student Information. This section identifies the student and establishes aid eligibility based on factors such as citizenship, educational level, and Selective Service registration. Questions 1-17 cover personal basics regarding student's name, e-mail address, permanent address, social security number, date of birth, phone number, driver's license, citizenship, and marital status. Questions 18-31 deal with the student's legal residence, gender, drug convictions, name high school where the student will receive his/her high school diploma, student's educational plans, the highest level of education completed by the student's mother and father, and the types of aid for which the student wants to be considered.

Step Two: Student/Spouse Income and Assets. The first three questions (32-34) inquire information about the tax filing status; students have to disclose whether they completed the tax return and which tax return they filed/will file. Questions 35 - 44 cover income and assets. Students report their (and spouse's) earnings, adjusted gross income for the prior-prior year, current balance of cash, savings and checking account, and total net worth of the student (and spouse's) investments including real estate. The FAFSA asks for income and taxes paid according to the lines on the IRS tax form and collects information for certain investments and other assets. Some of the income and asset questions in this FAFSA step are not applicable to the dependent students (Edvisors, 2015).

Step Three: Dependency Status. Questions 45–57 address the student's dependency status. FAFSA is based on the premise that family is the first source of student's support, and federal law provides several criteria to decide if students are considered independent of their parents for aid eligibility. If a student is considered a dependent of his parents, their income and assets must be included on the FAFSA. Those who answered "yes" to any of the

questions listed in this section are classified as “independent students”; their eligibility for financial aid is determined without consideration of their parents’ income and assets. Generally, students are considered independent if they are 24 years or older by December 31 of the award year, is a graduate or professional student, is married (or separated), is a parent or have other dependents who currently receive more than half of their support from them, is an orphan, or a veteran of the U.S. Armed Forces.

Step Four: Dependent Student Information. The purpose of this step is to collect information about the students’ parents and their households. In questions 58–73, dependent students must provide information about their parents’ marital status, social security numbers, state of legal residence, parents’ email address, parents’ age, number of household members, and number of people in household who will be enrolled in college at least half time. Each of these elements affects the EFC calculation. Questions 74-78 are designed as an alternative for the tax return requirements of the simplified needs and automatic zero EFC. Students report whether they, their parents or anyone in their household received benefits from federal programs such as food stamps, reduced/free lunch, temporary assistance for needy families, and special supplemental nutrition programs for women, infants and children (WIC).

In the next three questions (79-81), dependent students report their parents’ tax filing status: have the parents completed their taxes, and what type of tax return they filed/will file. Students have to disclose if their parents are eligible to file a 1040A or 1040EZ. The U.S. Department of Education uses this information in part to identify if a student is eligible for the auto-zero EFC. If the parents answer, “yes” to these questions and their annual income is below the filing threshold, family’s assets will be entirely excluded from consideration.

Federal law allows students to file the FAFSA even if the parents have yet to complete their taxes. In all those cases, FAFSA corrections may be needed before college financial aid officers put together aid packages.

Questions 82–92 cover parental income and family assets. The U.S. Department of Education combines income, financial assets such as stocks, cash, savings, and information on government benefits to calculate the EFC. Although EFC calculation is based primarily on the family's adjusted gross income, the analysis is designed to reflect the financial strength of the household. Therefore, the formula takes into account the untaxed income as well. Parents report their earnings, adjusted gross income, current cash balance, savings account, investment - including real estate, and any additional support from the government, child support received because of divorce or separation, veterans' non-education benefit, and allowances paid to the members of the military. FAFSA filers indicate whether earned income is from two or only one workers. If from two workers, the family receives an additional allowance, which increases the applicant's eligibility for aid. FAFSA takes into account the number of dependents in a household, and the number of family members attending college or university. The resulting EFC is assumed to be a good indicator of the family's ability to pay for college

Step Five: Independent Student Data. Questions 93-100 collect information about independent students. Only students who answered, "yes" to one or more questions in *Step Three c*omplete this step. Independent students have to answer questions about the number of people in their household, any benefits that the student or another family member might be receiving from the government (such as food stamps, reduced lunch), and the number of

household members who will be enrolled as college students during the upcoming academic year. Answers to these questions affect the student's EFC.

Step Six: School Information. FAFSA collects information about which colleges the student is considering to attend (question 101). Students list colleges and universities that are to receive the processed FAFSA data, and also indicate their housing plans at each one of those schools: if they intend to live on campus, off campus, or with a parent. This information enables school administrators to view the individual FAFSA data and determine the cost of attendance. To ensure the data go to the correct college or university, students must enter school's federal school code.

Step Seven: Signature(s). Questions 102-106 require both students and their parents to read, sign, and date the form. By signing the FAFSA, applicants are assuming responsibility of the accuracy of the information reported, and certifies that if requested, they will provide information to verify any recorded data. The applicants also declare that they are not in default on any federal student loans and promise to use any federal student aid for educational purposes only. If the FAFSA form was completed by someone outside the immediate family that person must sign and date the form as well.

Financial Need Components

Cost of Attendance (COA). Cost of attendance is the total amount of money it will cost a student to go to school, usually expressed as a yearly figure. The law specifies the cost of attendance includes tuition and fees; on-campus room and board (or a housing and food allowance if the student lives off campus); and allowances for books, supplies and transportation costs. The cost of attendance also includes miscellaneous and personal expenses, such as payments for renting or purchasing a personal computer. Additionally, the

law provides allowance for loan fees, expenses for disabled students, and if applicable, dependent care (the guide to federal student aid, 2013; NASFAA, 2012; U.S Department of Education)

Expected Family Contribution EFC. The EFC is the amount of money a student and the student's parents are expected to contribute toward the cost of college[2].

Need analysis. Need analysis is the process of analyzing a student's financial need and determining how much the family can reasonably be expected to contribute toward the student's education. According to the U.S. Department of Education, at its simplest form, a student's financial need is defined as the difference between the cost of attendance at a given school and the amount the family is expected to contribute to the student's education: *Financial Need = Cost of Attendance (COA) – Expected Family Contribution (EFC).* Determination of an applicant's need is done by considering information regarding family's income, assets, living expenses, family size, and number of people attending college or career school simultaneously. While COA varies from school to school, the EFC does not change based on the school of attendance. The U.S. Department of Education calculates the EFC and shares it with the students as well as the schools they have chosen in FAFSA. To calculate a student's financial need, financial aid administrators subtract the EFC from the cost of attendance at that particular school (Kantrowitz & Levy, 2015; NASFAA, 2012; Guide to federal student aid, 2013; Edvisors, 2015).

College net price. College net price is the total cost of one year of a college education for a first time, full-time undergraduate student, minus any grant aid they might receive from federal, state, and institutional sources. By a federal mandate, since 2012, all colleges and

[2] The EFC is described in greater detail under the variable section of this chapter.

universities are required to provide a net price calculator on their websites (studentaid.ed.gov; collegeboard.org). These calculators estimate the amount of need-based and merit-based aid a student will receive from a given school. Students and their families can use the net price calculator to estimate how much they will pay for college. Mainly because of different inputs used in calculation, the estimate given by one school may be different from the estimate of another school. Financial aid policies and programs are highly complex, and often different from one school to the other, which adds to the variability of the projected aid amount. Net price calculation is only an estimate of what students will pay if they enroll at a given school.

Financial aid package. The aid package is the total amount of financial support a student is offered by a particular college or university. Using all available federal and nonfederal funds, college administrators construct a financial aid package that comes as close as possible to meeting the student's demonstrated financial need. The amount of federal aid in the package is affected by other sources of aid received such as state and institutional aid. While the U.S. Department of Education does not regulate how a postsecondary school packages its aid, it requires that schools inform their students about all federal, state, local, private, and institutional funds available at that institution (studentaid.ed.gov). Award letters, listing the types as well as the amounts of aid are sent to students by college financial aid administrators. Finally, students decide which aid they want to accept before they register for, and begin the classes.

***Unmet Financial Need*.** While putting the financial aid offers together, school administrators try to come up with packages that cover a student's total educational costs. However, due to limited funding, the amount of aid students receive can be less than the amount for which they are eligible, thus unmet need. The difference between the financial

need a student has and the amount of aid offered is considered unmet need. Unmet need can be defined as the total cost of attendance net of the student aid amount (all forms of aid) and the EFC.

Data Collection Procedures

Data collection began after receiving approval from the Institutional Review Board (IRB) of the institution at which the current study was undertaken. A request detailing the purpose statement, research questions, sample selection, and methodology of the study was submitted to the IRB Office, and further, IRB approval was granted (see Appendix A). To initiate the data collection process, a request was sent to the Vice Provost overseeing the enrollment management units at the study institution. The request enlisted all the data fields of interest. The Vice Provost coordinated with the Banner Student Data Administrators and other central offices as needed to create the Dataset. To create the data set, the Banner Student Data Administrators pulled the data from Banner Financial Aid and Banner Student modules.

The FAFSA data downloaded from the U.S Department of Education included student social security numbers while the study institution uses a nine-digit number to identify each student. However, the file provided from the school administrator contained neither the SSNs nor the institution numbers. Banner Student Data Administrators had removed both of those numbers from the dataset assigning a random ID number to each student instead. Additionally, student names and other identifiable information had been removed from the dataset. The final dataset, called STUDYSET, was loaded into the Institution's secure/password protected site called Canvas. I received a notification the dataset was ready, and I was provided instructions on how to log in the system and view the

data. After downloading the data to my computer, I begin the process of setting up the data file: data screening, cleaning, coding, and the analysis process.

Validity and Reliability

Elements of reliability and validity are among the top most concerns for quantitative researchers. Reliability is related to the consistency of the measurement while validity refers to the accuracy of the measurement. The reliability of a scale indicates how free it is from random error. In other words, reliability is concerned with ensuring the method of data gathering leads to consistent results, and has been described as the extent to which an instrument is internally consistent during a given period of time (Corbetta, 2003; Pallant, 2007). A reliable survey instrument should produce consistent responses. To determine the reliability of an instrument, researchers look at both, the internal consistency of the instrument as well as the consistency of responses across time. Internal consistency refers to whether responses to similar questions within the questionnaire are similar. Consistency across time or test-retest reliability checks to see if the responses to the questionnaire are the same during a specified time. Unless the survey is intended to measure changes in attitudes over time, the same questions should elicit similar responses when asked at a later date (Creswell, 2009; Suskie, 1996).

Before the analysis could proceed, it was necessary to address the reliability of the instrument. Introduced by the Higher Education Amendments of 1992 and administered by the U.S. Department of Education, FAFSA is a valid and reliable instrument. In accordance with the federal laws, the U.S. Department of Education has established rules and regulations applicable to all steps of the FAFSA process: from student application till aid distributions. To ensure consistency of answers for all applicants, the government provides guidelines via

the Federal Student Aid Handbook as well as the Department of Education website. FAFSA on-web is designed in such a way that prevents students from making certain types of errors while filling in the forms. As described in the handbook, consistency of the FAFSA data is critical for student aid processing. If the data are inconsistent, the U.S. Department of Education may not be able to calculate the student EFC, or calculate an erroneous one.

Students complete and file the FAFSA (typically) on-line each academic year, and student data are sent directly to the U.S. Department of Education, the Central Processing System (CPS). The CPS performs a series of predetermined data edits to ensure consistency of information provided on the FAFSA forms. For example, it would be inconsistent for independent students to report that they are single and have no dependents but then to report a household size of two or more people. If discrepancies are present, the student report is flagged, and the student might not be able to receive financial aid until the discrepancy is resolved. Settling such inconsistencies usually requires students to submit additional documentation to the school where they are applying. At the end of this process, the CPS produces a detailed Student Aid Report (SAR) for each student that filed a FAFSA. SAR reports are transmitted electronically to the students as well as the schools they have chosen. If the FAFSA contains errors, those errors are indicated in the SAR, and the student is asked to make the necessary corrections and resubmit the form. In addition to the federal-level checking, colleges and universities perform their own data examination to ensure reliability of the FAFSA data. Federal regulations require that all schools develop an adequate system ensuring consistency of data related to a student's application or eligibility for federal student aid. These procedures help ensure the reliability of the data (https://studentaid.ed.gov/sa/).

Validity is the extent to which the instrument measures what it is supposed to measure, and refers to whether "one can draw meaningful and useful inferences from scores on the instruments" (Creswell, 2009, p. 149). A valid measurement is well founded, and corresponds accurately to the real world. The three traditional forms of validity to look for while conducting research are: content validity, predictive validity, and construct validity. Content validity is the degree to which an instrument measures the content it intended to measure (Howell, 2007; Suskie, 1996; Creswell, 2009). Predictive or concurrent validity is mostly concerned with whether the instrument can predict scores against another objective criteria. In other words, predictive validity is a measurement of how well a given test predicts future performances. Construct validity addresses the degree to which an instrument measures the concepts or the characteristics being investigated (Creswell, 2009). As far as the significance goes, content and predictive liability were most relevant to the FAFSA instrument and the current study.

In addition to checking the FAFSA data against predetermined edits as previously described, as part of overall validity testing, the CPS performs several matches with other national databases. The FAFSA data are matched against the Social Security Administration (SSA) records to check the validity of a student's social security number (SSN). If the student's SSN is invalid, the student will receive a SAR with comments as well as instructions on how to resolve the discrepancy. Also, FAFSA records are matched against the Department of Homeland Security (formerly Immigration and Naturalization Services) to ensure the student citizenship records are correct. Another check performed by the CPS is running the FAFSA data against the National Student Loan Data Systems (NSLDS). The goal here is to identify which students have already defaulted in any of the federal student loan

programs. If a student is found to be in default and has not made satisfactory arrangements to repay, he/she will receive a comment on the SAR. The student will not be eligible for federal student aid until the default status is resolved. Other database matches performed by the Department of Education include information maintained by the Selective Services System, the Department of Defense, the Department of Justice, and the U.S. Department of Veterans Affairs (https://studentaid.ed.gov/sa/). At the end of the process, the FAFSA is electronically transmitted from the U.S. Department of Education to the financial aid offices of the colleges the student has chosen.

Before sending the data, as the final step of editing-checking process, the CPU selects some students for a further review by schools as a part of the verification process. The Department of Education flags individual students and then sends their names to colleges and universities students have applied for admission. Verification intends to collect additional documentations from students, which are necessary to determine if information submitted on the student's FAFSA is correct. During this process, students are usually asked to provide the financial aid office evidence of adjusted gross income, taxes paid, household size, untaxed income, and other specific documents. Verification is a critical step of the process as it affects the eligibility of millions of students; above all, the effectiveness of the federal aid programs depends on the accuracy of the data reported by students (https://studentaid.ed.gov/sa/). In addition to the data matching performed by the U.S. Department of Education, institutions of higher education perform their own data checking for quality assurance purposes. The law specifies that the basic eligibility records be available in a consistent, comprehensive, and verifiable format for program review and audit purposes (https://studentaid.ed.gov/sa/).

Data Cleaning Procedures

Preliminary data screening is a critical step that precedes the data analysis. Real datasets may contain errors, inconsistences in responses or measurements, outliers, and missing values. Analysis based on a dataset that contains errors, or data that seriously violate the assumptions required for the analysis, can yield misleading results (Warner, 2008). Therefore, prior to running the analysis, the preliminary data screening was necessary to identify and remedy potential data problems.

Initially, the STUDYSET data set was examined for missing values, irregularities, and outliers. Scatterplot graphs and histograms of data distribution were built to check the data distribution and to ensure the data used in the study did not violate major assumptions of the models used in the analysis. Special efforts were made to evaluate the data in the context of the major assumptions of the regression model used at a later stage of the analysis. For example, through data visualization, major outliers of grants and scholarship awards were identified. After further examinations, it was revealed that some of those award outliers were related to student athletes. Therefore, the student athlete records were excluded from the sample because, in most cases, those students had received full institutional scholarships and grants despite their FAFSA filing status.

One of the data problems encountered prior to running the analysis was the issue of missing data. The STUDYSET data used for the analysis had missing values for a number of variables. Missing/not reported values included 231 records (race/ethnicity), 41 records (number of family members), 117 records (number in college), 121 records (parent marital status) and 60 records (high school GPA). All cases with one piece of missing data were kept in the STUDYSET, and missing values were replaced either with the mean value of the

variable or by some other value consistent with the nature of the variable. Any data transformation, along with the assumptions made regarding missing values, are described under the variable selection, screening, and coding section.

Data Analysis Procedures

Secondary data analysis was employed for this study. The analysis was conducted on previously collected data, and the researcher attempted to answer new research questions with pre-existing data. There are several advantages of using this approach, such as minimizing the time as well as the cost of data collection. The breadth of the data available to the researcher is another benefit. However, the most important advantage of secondary data analysis is that data collection process often maintains an expertise and professionalism that may not be present with individual/small research projects (Corbetta, 2003; Creswell, 2009).

A four-step analysis process was undertaken to answer the research questions of the study. First, variable selection, coding and recoding. All variables from the STUDYSET that represented student characteristics identified by the review of literature were selected. The selected variables were screened and recorded as necessary to best address the research questions presented in the study. Second, a descriptive statistics analysis was conducted for the selected variables. To demonstrate the distribution of continuous independent variables histograms were also employed. Third, the selected variables were further tested for strong correlations. Correlation analysis indicating the extent to which two or more variables show a tendency to vary together were performed. Finally, those variables that were significantly different in the analysis were entered into a regression model to determine the degree to which they predicted the FAFSA filing status (On time vs. Late). These steps are described in detail in the following sections: (a) data cleaning procedures, (b) variable selection,

screening, and coding, and (c) data analysis methods. Statistical analysis was conducted using SPSS version 24 and Excel spreadsheets.

Variable Selection, Screening and Coding

The variable selection for this study was guided by the literature review and the research questions of the study. The process started with a broad list of factors that relate to the timing of FAFSA filing and the effects of late filing on student finances, as identified in the review. The following is a description of the variables chosen for the analysis.

Dependent Variable. The dependent variable of interest for the first two research questions is the FAFSA filing status, specifically defined as on time (OT) or late filers (LF). The filing status is based on students' FAFSA completion date and the institutions' applicable FAFSA priority deadline. Generally, institutions establish priority deadlines because the grant and scholarship funds are limited. The priority deadline is the date by which students must file the FAFSA to receive the strongest consideration for need-based grants, work-study, and loans in the financial aid awarding process. Priority funding may include state, federal and institutional grants as well as work-study and loan funds. Students who meet the deadline are considered for all types of financial aid available given their EFC. Students who do not meet the deadline are only considered for limited forms of financial aid, mainly loans. For the given institution, the priority deadline was March 11 (2009 cohort) and March 1 (2010-2013 cohorts). For the purpose of this study, all students who filed the FAFSA by the institution's priority deadline were defined as on time filers (OT). Those filing FAFSA after the priority deadline were defined as late filers (LF). The variable *FAFSA Filing Status* is a categorical variable coded as follows: 1 = FAFSA completed late (LF), 0 = FAFSA completed on time (OT).

Independent Variables. The independent variables of interest included demographic as well as socioeconomic characteristics. Under demographic characteristics, the focus was on gender, race/ethnicity, household size, number in college, residency, and citizenship. Socioeconomic variables included family income, expected family contribution, student financial need, underrepresented minority status, dependency, single household, first-generation status, high school GPA, and SAT scores. The following is a detailed description of the independent variables included in the study.

Gender. Gender is a categorical variable coded as: 1 = male and 0 = female.

Race/Ethnicity. The race/ethnicity records follow the National Center for Education Statistics/IPEDS new aggregate categories that include: American Indian or Alaska Native, Asian, Black or African American, Hispanics of any race, Native Hawaiian or Other Pacific Islander, Two or more races, White, and Nonresident Alien. By definition, the sample did not include any nonresident alien because this race/ethnic category is not eligible to file a FAFSA and receive federal and state financial aid. Also, the sample included 231 freshmen that had not reported their race/ethnicity. Dummy variables were created for each race/ethnicity category with the "White" considered as the baseline not-coded group. Specifically, the dummy variables for race/ethnicity included: (1) American Indian or Alaska Native (AI): 1 = AI, 0 = Not AI, (2) Asian (AS): 1 = AS, 0 = Not AS, (3) Black or African American (AA): 1 = AA, 0 = Not AA, (4) Hispanics of any race (HI): 1 = HI, 0 = Not HI, (5) Native Hawaiian or Other Pacific Islander (NH): 1 = NH, 0 = Not NH, and (6) Two or more races/Not reported (RR): 1 = RR, 0 = Not RR.

Household Size. According to FAFSA, *dependent student's* household consists of the student, student's parents, and the student's siblings (if they will receive more than half their

support from the student's parents during the award year). The student's siblings do not need to be students or to live at home to be included, but they have to be classified as dependent under the FAFSA rules. Other people may be included if they live with and receive more than half their support from the student's parents, and will continue to receive more than half their support from the student's parents (https://studentaid.ed.gov/sa/). Foster children are not included in the household size. For *independent students*, household includes: the student, student's spouse, and the student's children (if they will receive more than half their support from the student's parents during the award year). The student's children do not need to be students or to live at home to be included but they have to be classified as dependent. The household size was based on what students reported on FAFSA. There were 33 dependent student records with missing number of parent family members. Twenty-four of those records came from single parent households and the rest from two-parent households. For the former group, a family size of two was assumed while for the latter, a family size of three. Also, there were nine independent students with missing number of family members. This small group was assumed to have a family size of one. The household size is a discrete variable that ranged from 2 to 12 (dependent students) and from 1 to 8 (independent students).

Number in College. Number in college indicates the number of people in the student's parents' household, including the student, who will be in college during the year in which the student is applying for financial aid. The student is always included in the number of family members in college. Other members of the household, except the parents, may be included if they are or will be enrolled at least half time in a program that leads to a college degree, certificate, or recognized education credential at a Title IV institution and for whom

the family may reasonably be expected to contribute to their postsecondary education. Parents are included at the discretion of the financial aid administrator if they are or will be enrolled at least half time in a program that leads to a college degree, certificate, or recognized education credential at a Title IV institution. The number in college is based on what students reported on FAFSA. There were 117 student records with missing number in college. Because the student is always included, the number in college for this group was assumed one. The data was reviewed to make sure number in college did not exceed the corresponding household size. There were nine independent student records with household size of one whose number in college was greater than one. Subsequently, the number in college for these records was changed to one. Like household size, number in college is a discrete variable that ranged from 1 to 6.

Residency. Residency is determined based on the tuition status. Financial need is always affected by whether the student is in-state or out-of-state. This is because the COA for out-of-state students is much higher compared to in-state students due to higher out-of-state tuition rates. If two students have the same EFC, the out-of-state student will always have a higher financial need. Those paying in-state tuition are considered residents, the rest are non-residents. The residency status is a categorical variable coded as follows: 1 = Resident, 0 = Nonresident.

Citizenship. Students must be U.S. citizens or eligible noncitizens to receive federal student financial aid and state grants. For financial aid purposes, eligible noncitizens include: permanent residents, refugees/asylees, as well as persons holding a special status as determined by law. The citizenship status is based on what students reported on FAFSA by selecting one of the following responses: (1) U.S. citizen, (2) eligible noncitizen, or (3)

neither U.S. citizen nor eligible noncitizen. The citizenship status is a categorical variable coded as follows: 1 = U.S. citizen, 0 = Noncitizen (responses "2" and "3").

Family Income. Family income includes parents' and students' income earned from work/businesses. There are also several components of other untaxed income and benefits that are considered while determining student's eligibility for financial aid. Income earned from working combines wages, salary and tips with any business or farm income. This is reported on tax forms as adjusted gross income (AGI). For dependent students, the total AGI is calculated as the sum of parent's AGI and student's AGI. For independent students, only student's AGI is considered whereas the parent's AGI and any other parent income are not included in the AGI calculations. Looking at the sample data, there were a number of cases with negative AGIs. The negative AGIs may be due to business and farm loss as well as other reasons. The negative AGIs mean no income and therefore those negative AGIs were converted to zero. The family income is a continuous variable.

Expected Family Contribution. The Expected Family Contribution (EFC) is the amount of money a student and the student's parents are expected to contribute toward the cost of college. The EFC is a measure of the family's ability to pay, and is calculated according to a formula established by federal law, using the information students report on the FAFSA form. The U. S. Department of Education calculates each student's EFC based on family's taxed and untaxed income, assets, family size, number of students in household, and so forth. The purpose of the formula, which is often called the federal methodology, is to ensure that each applicant's eligibility is evaluated in a uniform way for applicants in a similar situation. Also, student's dependency status affects EFC calculations. If the student is independent, the EFC is calculated based on student's data only. For dependent students, both

parents' and student's income as well as other data elements are considered in the EFC calculations.

Colleges and universities use the EFC to calculate the amount of federal student aid the student is eligible to receive. Often, schools use the EFC to determine student eligibility for selected institutional and state aid programs. To address students with unusual and extenuating circumstances, federal law authorizes financial aid administrators to make adjustments to the federal methodology data elements. As appropriate, school administrators may adjust applicant's cost of attendance, dependency status, or other data elements that could justify independent status. The EFC is a standard measure for capturing a student's economic status because it represents the household's financial strength and its ability to pay for college. The lower the EFC, the neediest a student is. The EFC is a continuous variable, which ranges from $0 to $50,024 with a mean value of $11,640 and a standard deviation of $9,669.

Student Financial Need. Financial need is the difference between the Cost of Attendance (COA) and the Expected Family Contribution (EFC). The financial need is determined by the institution using the federal methodology and/or the institution's own methodology. If the difference is a positive, then the student has financial need; if zero or negative, then the student has no financial need. Financial need is always affected by whether the student is in-state or out-of-state due to higher out-of-state tuition rates. Student financial need is a continuous variable.

Underrepresented Minority Status. For the purpose of this study, the underrepresented minorities were defined as those falling into one of the following race/ethnicity categories: American Indian or Alaska Native, Black or African American,

Hispanics of any race, and Native Hawaiian or Other Pacific Islander. Students whose race/ethnicity was Asian, White, Two or more races, or Not Reported were considered as not being underrepresented. The two or more races category might potentially include race combinations from the underrepresented races only. However, the data did not include the list of races for the cases with two or more races. Therefore, this race category was assumed to be not underrepresented due to the lack of disaggregated data. The underrepresented categorical variable is coded as follows: 1 = underrepresented student, and 0 = not an underrepresented student.

Dependency. The FAFSA asks a series of questions to determine whether the student is dependent or independent. These include age, marital status and the level of education being pursued. It also asks about military service, children and other dependents, emancipation and if the student's parents are deceased. If one or more questions are answered with a yes, the student is considered an independent student. If every question is answered with a no, the student is dependent and must provide information about their parents. Undergraduate students who are under the age of 24 are generally considered dependent unless they satisfy other criteria. The student's dependency status can affect the amount and types of financial aid available. In most cases, independent students will qualify for more financial aid since their parents' financial information is not taken into account. The *Dependency Status* is a categorical variable coded as follows: 1 = Dependent, 0 = Independent.

Single Household. The household status is determined according to parent marital status for dependent students and student marital status for independent students. The parent marital status indicates the student's legal parents' (biological and/or adoptive) marital status

as of the date the FAFSA was completed. The parent/student marital status is based on what students report on FAFSA by selecting one of the following responses: (1) married/remarried, (2) never married, (3) divorced/separated, (4) widowed, and (5) unknown/missing. A single parent household was defined if one of the following responses was reported on the FAFSA: "2", "3", "4", and "5". Students who selected response "1" on their FAFSA were considered as not coming from a single parent household. The single household status is a categorical variable coded as follows: 1 = Single parent household, 0 = Not a single parent household.

First-Generation Status. A student is defined as first generation if his/her parent(s)/legal guardian(s) have not completed a bachelor's degree. The first generation status is determined based on the level of parent's education, as reported by the student on FAFSA application. The possible responses about father and mother level of education, as reported on FAFSA, include (1) middle school/junior high, (2) high school, (3) college or beyond, and (4) other/unknown/missing. A student was classified as first generation if both parents did not have a college degree (possible response combinations: {1,1}, {1,2}, {1,4}, {2,2}, and {2,4}). On the other hand, a student was classified as non-first-generation if either or both parents had a college degree (possible response combinations: {1,3}, {2,3}, {3,3}, and {3,4}). In cases where the response for both parents were other/unknown/missing {4,4}, the assumption was made that particular student is **not** first generation. *First Generation* is a categorical variable coded as follows: 1 = First generation, 0 = Not first generation.

High School Grade Point Average (GPA). The high school GPA is a measure of academic achievement used by colleges as one of the major admission criteria. The GPA data came from what first-time freshmen reported on their college admission applications. GPA

data are well defined, widely understood, and easily obtainable from university records. However, there are reliability issues with GPA data as to missing records and the variety of grading standards among various high schools within a given state as well as across different states. The study sample included 25 in-state freshmen records and 35 out-of-state freshmen records with missing GPA. The missing GPA records constituted only one half percentage point of the sampled freshmen. There are many techniques used for dealing with missing GPA data (Smits et. al., 2002). The missing GPA data were replaced with the mean GPA by residency due the low occurrence rate. That is, the missing GPAs were replaced with the mean in-state GPA (3.95) for in-state freshmen and with the mean out-of-state GPA (3.85) for out-of-state freshmen. The variation in grading standards across high schools directly affect the HSGPA reliability for predicting the college academic performance. The HSGPA data for the study institution were not adjusted for variations in grading standards. The HS GPA is a continuous variable, ranging from 1.14 to 5.00 with a mean of 3.92 and standard deviation of 0.34.

SAT Scores. The Scholastic Aptitude Test (SAT) scores were obtained from college admission applications of the sampled freshmen. The majority of students had reported SAT scores only. Some students had reported both SAT and the American College Testing (ACT) scores and a few ACT scores only. To ensure consistency across freshmen included in the sample, the ACT scores were converted to SAT scores using the ACT to SAT concordance tables (www.collegeboard.org). For the cases when students had reported both SAT and ACT scores, the maximum of SAT and converted ACT scores was used. In this study, the SAT scores included SAT Math, SAT Verbal, and Total SAT scores (sum of SAT Math and SAT Verbal). The SAT scores is a continuous variable. The SAT Math scores ranged from 350 to

800 with a mean value of 622 and a standard deviation of 74. The SAT Verbal scores ranged from 370 to 800 with a mean value of 596 and a standard deviation of 74. The SAT Total scores ranged from 780 to 1,600 with a mean value of 1,296 and a standard deviation of 126. There were no records with missing SAT scores. SAT score is a continuous variable.

Financial Aid Award Variables

The list of variables that follows refers to all types of need-based and merit-based aid awarded to sampled students from the five cohorts included in the study. The financial aid awarded is grouped by type (grants and scholarships, loans, and work study) and by funding source (federal, state, institutional, and private).

Federal Grants. Federal grants include Pell and Supplemental Educational Opportunity Grant (SEOG) grants awarded to eligible students. These are both need-based grants. Pell grant is an entitlement and is awarded according to an EFC/COA-based payment schedule established by the U.S. Department of Education annually. If a student meets the Pell EFC cutoff, he/she receives Pell grant. Whereas the SEOG is awarded to students with need and the average SEOG award is determined by institutions according to the SEOG annual allocation from Federal government and the number of students with need. Federal grants is a continuous variable.

State Grants. These are mainly need-based grants awarded to in-state eligible students. The maximum award is determined by institutions based on the state allocations and number of students with financial need. There are also some small state grants that are awarded based on merit or some other criteria. State grants is a continuous variable.

Institutional Grants/Scholarships. These grants and scholarships are funded either from university's internal resources or from private donations managed by the university's

Foundation. Institutional grants and scholarships from university's internal resources are awarded based on need and/or merit or a combination of several criteria. Institutional scholarships from private donations are primarily awarded according to criteria specified in fund agreements as established by the donors. Often, these scholarships, especially those from private donations, may be awarded without regard to the timing of FAFSA filing. Institutional grants/scholarships is a continuous variable.

Institutional Waivers. These are need-based tuition waivers awarded to students with financial need. The maximum award is established by the institution according to the annual university budget allocation and the targeted number of students. Due to insufficient resources, these waivers are usually limited to students with the highest need and who filed FAFSA by priority deadline. It is for this reason that these waivers were treated as a separate group from other types of institutional aid. Institutional waivers is a continuous variable.

Other Grants. These are grants funded by external agencies, local government, and other entities. All private financial aid is subject to state and federal regulations requiring student's total award not exceed the institution's cost of attendance, and whenever possible, private grants supplant government aid. Other grants is a continuous variable.

Federal Work-Study (FWS). FWS is funded by Federal government to provide part-time jobs for students with financial need, allowing them to earn money to help pay education expenses. The award varies by institution depending on Federal allocation and the number of students with financial need participating in FWS employment. Often, the FWS award is limited to only those students who file FAFSA by priority deadline. FWS is a continuous variable.

Federal Student Loans. Federal loans include Direct Subsidized loans, Direct Unsubsidized loans, and Perkins loans. Direct Subsidized and Unsubsidized loans are also called Stafford loans. These federal loan programs allow students to obtain financing for higher education at better terms than those available in the private market. The federal government subsidizes the cost of loan for the borrower and establishes borrowing limits for each student class. Unsubsidized loans are available to students at fixed interest rate. Subsidized loans are the same as unsubsidized loans, except that interest does not accrue while the borrower is in school and the borrowing limit is lower. The Perkins Loan program is separate and distinct from direct loan programs. Perkins loans are made to students from lower-income families by a participating university. Schools have some discretion in determining which students receive a Perkins loan and the size of the loan offered. The federal government provides funding directly to colleges and universities for Perkins loans. The funding establishes a revolving loan fund, from which new loans are made as older loans are repaid. Federal student loans is a continuous variable.

Federal PLUS Loan. Parents of undergraduate students who attend college are eligible for federal PLUS loans and may borrow an amount up to the student's cost of attendance. Unlike Stafford loans, parents must satisfy a limited credit check. PLUS loans are not subject to a specific dollar limit like Stafford loans and are awarded at a fixed interest rate. These loans are treated as a separate group in this study because as the name indicates they are parent rather than student loans. Federal PLUS loan is a continuous variable.

Private Loans. Private student loans are nonfederal alternative loans made by a lender such as a bank, credit union, or some other agencies. Many of the benefits offered by Federal student loans such as fixed interest rates and income-based repayment plans are not

typically offered with private loans. Interest for private loans accrues after disbursement and during deferments. Interest rates are usually variable, and vary by lender. Private loans are generally more expensive than federal student loans. As a general rule, students should only consider obtaining a private education loan if they have maxed out the Federal Stafford loans. Private student loans may require the student to demonstrate an established credit record. The cost of a private student loan will depend on student's credit score and other factors. Often, student may need a cosigner to get a private loan. Private loans is a continuous variable.

Unmet Need. Unmet need is the difference between the student's financial need and the financial aid award. In other words, it represents the amount students and families must pay themselves in addition to the expected family contribution. In many situations, a student could have a negative unmet need if he/she received merit-based grants or scholarships. In those cases, the negative unmet need was converted to zero. Unmet need is a continuous variable.

A summary of the main variables and their coding is presented in Table 1.

Table 1

List of Variables, Response Options, and Variable Coding

Variables	Source	Type	Response Options	Collapsed Category/Code
FAFSA Filing Status	FAFSA	Dummy	FAFSA Completion Date, Priority Deadlines: March 11 (2009 cohort) March 1 (2010-2013 cohorts)	1 = Late FAFSA (LF) 0 = On time FAFSA (OT)
Gender	FAFSA	Dummy	Male, Female	1 = Male, 0 = Female
Race/Ethnicity	FAFSA	Dummy	American Indian or Alaska Native (AI) Asian (AS) Black or African American (AA) Hispanics of any race (HI) Native Hawaiian/Other Pac Islander (NH) Two or more races/Not Reported (RR) White (Baseline Race)	1 = AI, 0 = Not AI 1 = AS, 0 = Not AS 1 = AA, 0 = Not AA 1 = HI, 0 = Not HI 1 = NH, 0 = Not NH 1 = RR, 0 = Not RR
Household Size	FAFSA	Discrete	Number of family members	Number of family members
Number in College	FAFSA	Discrete	Number of family members in college	Number in college
Residency	FAFSA	Dummy	In-state, Out-of-state	1 = Resident, 0 = Nonresident
Citizenship	FAFSA	Dummy	U.S. citizen (1) Eligible noncitizen (2) Neither U.S. citizen nor eligible noncitizen (3)	1 = U.S. Citizen (1) 0 = Non U.S. Citizen (2, 3)
Family Income	FAFSA	Continuous	Dollar Amount > 0	Dollar Amount

Table 1 (Continued)

List of Variables, Response Options, and Variable Coding

Variables	Source	Type	Response Options	Collapsed Category/Code
Expected Family Contribution (EFC)	FAFSA	Continuous	Dollar Amount > 0	Dollar Amount
Underrepresented Minority Status	FAFSA	Dummy	American Indian or Alaska Native (AI) Black or African American (AA) Hispanics of any race (HI) Native Hawaiian/Other Pac Islander (NH)	1 = Underrepresented, if Race/Ethn {AI, AA, HI, NH} 0 = Not Underrepresented, if otherwise
Dependency Status	FAFSA	Dummy	Dependent student Independent student	1 = Dependent 0 = Independent
Single Household	FAFSA	Dummy	Married/Remarried (1) Never married (2) Divorced/Separated (3) Widowed (4) Unknown/Missing (5)	1 = Single Parent HH if marital status {2, 3, 4, 5} 0 = Not a Single Parent HH if marital status {1}
First Generation	FAFSA	Dummy	Parent's Level of Education	1 = First Generation 0 = Not First Generation
High School GPA	College Application	Continuous	Values between "0" and "5"	GPA Value
SAT Total Score	College Application	Continuous	Scores between 400 and 1,600	Scores

Table 1 (Continued)

List of Variables, Response Options, and Variable Coding

Variables	Source	Type	Response Options	Collapsed Category/Code
SAT Math Score	College Application	Continuous	Scores between 200 and 800	Scores
SAT Reading Score	College Application	Continuous	Scores between 200 and 800	Scores
Federal Grants	FAFSA	Continuous	Dollar Amount > 0	Dollar Amount
Institutional Grants/Scholarships	FAFSA	Continuous	Dollar Amount > 0	Dollar Amount
Institutional Waivers	FAFSA	Continuous	Dollar Amount > 0	Dollar Amount
Other Grants	FAFSA	Continuous	Dollar Amount > 0	Dollar Amount
Federal Work Study (FWS)	FAFSA	Continuous	Dollar Amount > 0	Dollar Amount
Federal Student Loans	FAFSA	Continuous	Dollar Amount > 0	Dollar Amount
Federal PLUS Loans	FAFSA	Continuous	Dollar Amount > 0	Dollar Amount
Private Loans	FAFSA	Continuous	Dollar Amount >= 0	Dollar Amount
Unmet Need	FAFSA	Continuous	Dollar Amount >= 0	Dollar Amount

Data Analysis Methods

Once the checking and recoding was completed for all variables, data were analyzed to address the research questions posed in the study. Initially, an SPSS analysis of descriptive statistics such as mean, median, standard deviation, range, skewness, and kurtosis was performed. Summary statistics were generated for both continuous and categorical variables in the study. Histograms demonstrating the distribution of continuous independent variables were also completed (Howell, 2007). For categorical variables, descriptive statistics were obtained by computing the frequencies of those variables (Pallant, 2007). Next, correlation analysis of the variables included in the study was carried out. Finally, logistic regression analysis was conducted to identify the characteristics that make students more or less likely to file the FAFSA late. A series of linear regression analyses were performed to address the final research question, which assessed the impact of late FAFSA filing on student grant and debt levels.

Correlation Analysis. After obtaining the descriptive summary of the study predictors, the next step of the process involved correlation analysis. Correlation is used to describe the strength as well as the direction of the relationship between two variables (Howell, 2007; Pallant, 2007). Correlation coefficients (r) can take on values from -1 to +1. The sign in front of the correlation coefficient indicates whether there is a positive correlation (as one variable increases, so does the other) or a negative correlation (as one variable increases, the other decreases). The size of the absolute value provides an indication of the strength of the relationship between the two variables (Howell, 2007; Pallant, 2007). Depending on the type of the independent variable, the following tests were performed: Pearson Correlation to display correlation between continuous variables; Spearman's rho and Kendall's tau Correlation to display correlation between dichotomous variables, and Point-Biserial Correlation to display correlation between continuous and dichotomous variables. Correlation between continuous

variables in the study were also shown via the scatterplots. The variables that showed some level of correlation were entered into the final logistic regression model to determine the degree to which they predicted a student's FAFSA filing status: on time vs. late.

Logistic Regression Analysis. The first two research questions asked whether demographic characteristics (gender, race/ethnicity, household size, number in college, residency, and citizenship) and socioeconomic characteristics (family income, expected family contribution, student financial need, underrepresented minority status, dependency, single household, first-generation status, high school GPA, and SAT scores) of on time filers differ from those of late filers. To answer both of those questions, logistic regression analysis was conducted. Regression builds of correlation and deals with the degree of the relationship between two variables, but it goes a step further to predict the value of one variable if the other is known. Regression methods have become an integral component of data analysis concerned with describing the relationship between a response variable and one or more explanatory variables. When the outcome variable is binary, logistic regression, also known as the logit model, is the most used method for data analysis. Binary outcome variables represent two categories indicating that an event has occurred or that a characteristic is present (e.g. 1 = student filed FAFSA late, 0 = student filed FAFSA on time).

The goal of logit analysis is the same as that of other regression models, which is to find the best fitting and most interpretable model to describe the relationship between an outcome variable and one or more independent variables (Hosmer et. al, 2013). What distinguishes a logistic regression model from the linear regression is that the outcome variable in logistic regression is binary or dichotomous. By design, the logit model overcomes many of the restrictive assumptions of linear regression such as linearity, normality and equal variances. Logistic regression makes no assumptions about the distribution of independent variables; they

do not have to be normally distributed, linearly related, or of equal variance within each group (Garson, 2010).

The logistic function estimates the odds/probability of the dependent variable occurring as the values of the independent variable change. In a linear probability model, probabilities are bound by 0 and 1, but linear functions are inherently unbounded. Transforming the probability to an odds removes the upper bound. Additionally, taking the logarithm of the odds removes the lower bound (Allison, 2012). A logit is the natural log of the odds of the dependent variable, where odds express the likelihood of an occurrence relative to the likelihood of a nonoccurrence. To get the odds, the first step is to divide the probability of "*the event happening*" by the probability of "*the event not happening*." Next, it is necessary to calculate the ratio of those odds, which is continuous but cannot be negative. The final step is to take the natural logarithm of the odds. The dependent variable is expressed as the log of the odds or logit: ***ln (p/1-p)).*** The process is often referred to as logit, and creates a continuous criterion as a transformed version of the dependent variable. The model assesses the odds of a certain event occurring by calculating changes in the log odds of the dependent variable, *not changes in the dependent variable itself*. The maximum likelihood approach is used to estimate the logistic regression model (Garson, 2010; Lemeshow & Sturdivant, 2013; Pallant, 2007; Tabachnick & Fidell, 2012).

Variable selection for the final logistic regression model was done via the stepwise regression, which is a combination of forward and backward selection methods. The goal of the variable selection was to reduce the set of predictor variables to those that are necessary by eliminating noise variables while retaining the important ones (Keller & Warrack, 2000; Tabachnick & Fidell, 2006). The decision to keep a variable in the logistic model was based on

statistical significance. Steps taken as well as the final logistic regression model chosen for the current study are presented in chapter 4.

One key assumption of regression models is a low level of interaction among the independent variables. Ideally, the predictor variables will be strongly correlated to the dependent variable but not strongly correlated to each other. On the other hand, when the independent variables are highly correlated to each other, multicollinearity exists. Multicollinearity is a high degree of correlation among the independent variables of the study. The logit model is sensitive to high levels of multicollinearity (Garson, 2010; Pallant, 2007). Tabachnick & Fidell (2012) indicate that as long as correlation coefficients among independent variables are less than 0.90, the logit assumption is met. Therefore, before the analysis could proceed, it was necessary to check the Collinearity Statistics. Two measures: Tolerance and Variance Inflation Factor (VIF) were used to identify multicollinearity among the predictor variables in the current study. Tolerance is one way to measure multicollinearity, and generally, high tolerance values indicate a strong regression model (Allison, 2012; Pallant, 2007). The tolerance of a variable is estimated by $1 - R^2$, where R^2 is squared correlation of this variable with all other independent variables in the regression equation. Tolerance values that are very low (less than 0.1) indicate a variable has high correlation with other variables in the model. Thus, not a good model. VIF was other test used to identify multicollinearity among the independent variables of the study. The VIF estimates how much the variance of a regression coefficient is inflated due to multicollinearity in the model. Low VIF values are preferred, and generally, VIF values above 10 indicate multicollinearity.

Several goodness-of-fit tests, including the Omnibus Tests of Model Coefficients, Hosmer and Lemeshow Test, Model Summary, and the Classification Table were used to

measure the overall performance of the final selected logistic regression model. The final model developed was evaluated for significance compared to model containing no predictors, also known as the null model (Lemeshow & Sturdivant, 2013; Pallant, 2007). The overall fit of the binary logistic regression model was evaluated using the Omnibus Test of Model Coefficients. Relevance of the model was determined by using the Cox & Snell R Square (lower limit) and Nagelkerke R Square (higher limit) tests (Lemeshow & Sturdivant, 2013). The findings of the binary logistic analysis are presented in chapter four.

Linear Regression Analysis. The final research question of the study explored the effect of the FAFSA filing status on the amount of student grants and debt levels at the end of first year in college. Statistical analysis for addressing the final research question included a simple linear regression model with one binary/categorical independent variable (FAFSA filing status). Linear regression is used to predict the values of one variable from another, in cases when variables are thought to be systematically connected by a linear relationship (Howell, 2007). Simple linear regression explores the effect of an independent variable (X) on a dependent variable (Y). The regression equation is expressed: $Y = a + bX$, where, *Y* is the dependent variable, *X* is the independent variable, *a* is the constant coefficient representing the Y intercept (when the value of X is equal zero), and b represents the regression coefficient or the slope of the regression line (Lemeshow & Sturdivant, 2013).

The dependent variable of interest for the third research question was the total amount of grants and loans students received by the end of their freshman year. The variables included: federal grants, state grants, institutional scholarships, institutional waivers, other grants, federal work-study (FWS), federal student loans, federal PLUS loan, and private loans. The independent variable of interest was FAFSA filing status, coded as '1' = late filers (LF), and '0' = on time filers (OT).

Chapter Four

Findings

This chapter presents the results of the current study and is organized by the three research questions posed in it. The first two questions explored the relationship between the timing of the FAFSA filing and the characteristics of financial aid recipients, using a logistic regression model. Linear regression analysis was conducted for the final research question, to assess the impact of late FAFSA filing on the amount of student grants and loans. Specifically, the study addressed the following research questions:

1. Are there statistically significant differences between on time filers (OFs) and late filers (LFs) in terms of demographic factors (gender, race/ethnicity, household size, number in college, residency, and citizenship)?
2. Are there statistically significant differences between on time filers (OFs) and late filers (LFs) in terms of socioeconomic factors (family income, expected family contribution, student financial need, underrepresented minority status, dependency, single household, first-generation status, high school GPA, and SAT scores)?
3. Does the timing of FAFSA filing influence the amount of student grants and loans?

Descriptive Summary

The project examined what factors are highly related to timing of the FAFSA filing, making students more or less likely to file on time, among 18 potential variables. Additionally, the study attempted to quantify the effects of a late FAFSA filing on student finances.

Descriptive Statistics, Continuous Variables

Based on the review of literature, the study identified eight continuous variables of interest: High school GPA, SAT math, SAT verbal, SAT total, financial need, unmet need, expected family contribution (EFC), and the adjusted gross income (AGI). Additionally, two

discrete variables of interest - family size and number of dependents in college - were also included the study. Table 2 presents a descriptive summary of numeric variables including sample size, mean, median, standard deviation, skewness, kurtosis, minimum, and maximum. The results show high school GPA had a mean score of 3.92, with a minimum = 1.14 and maximum = 5, indicating that students admitted to the study institution represent a wide range of high school achievements. The variable SAT math had a mean score of 623, with minimum = 350. On the other hand, SAT verbal had a lower mean than SAT math, but higher minimum score ($\bar{x}$ = 596; min = 370). The maximum score is 800 for both SAT math and SAT verbal. Therefore, the range for SAT verbal is smaller than the range for SAT math. Data show SAT total had a mean of 1,219; minimum score of 780 and maximum score of 1,600.

The financial background of students attending the study institution, as expressed by financial need and the unmet need variables, varies significantly. Financial need had a mean value of $16,845 while the mean of unmet need was $6,538. This is because unmet need takes into account the amount of financial assistance already offered to students. Defined as the amount of money a student has to pay after accounting for all aid, large amounts of unmet need are a concern for students and their families. The EFC variable, often considered a measure of a family's financial wealth, had a mean of $11,640 ($\bar{x}$ = $11,640; min = $0; max = $50,024). In general, the stronger a family's financial position, the larger the EFC amount. The other variable related to student finances, AGI, has a mean score of $85,212 ($\bar{x}$ = $85,112; min = $0; max = $500,000). The descriptive summary table shows that students attending the study university come from a variety of family sizes, ranging from one (independent students living alone) to 12 family members. The mean family size was 4.1 members. The number of family members enrolled in college also varied significantly. As indicated by NRCollege variable, the

Table 2

Descriptive Summary of Continuous Variables (N = 10,877)

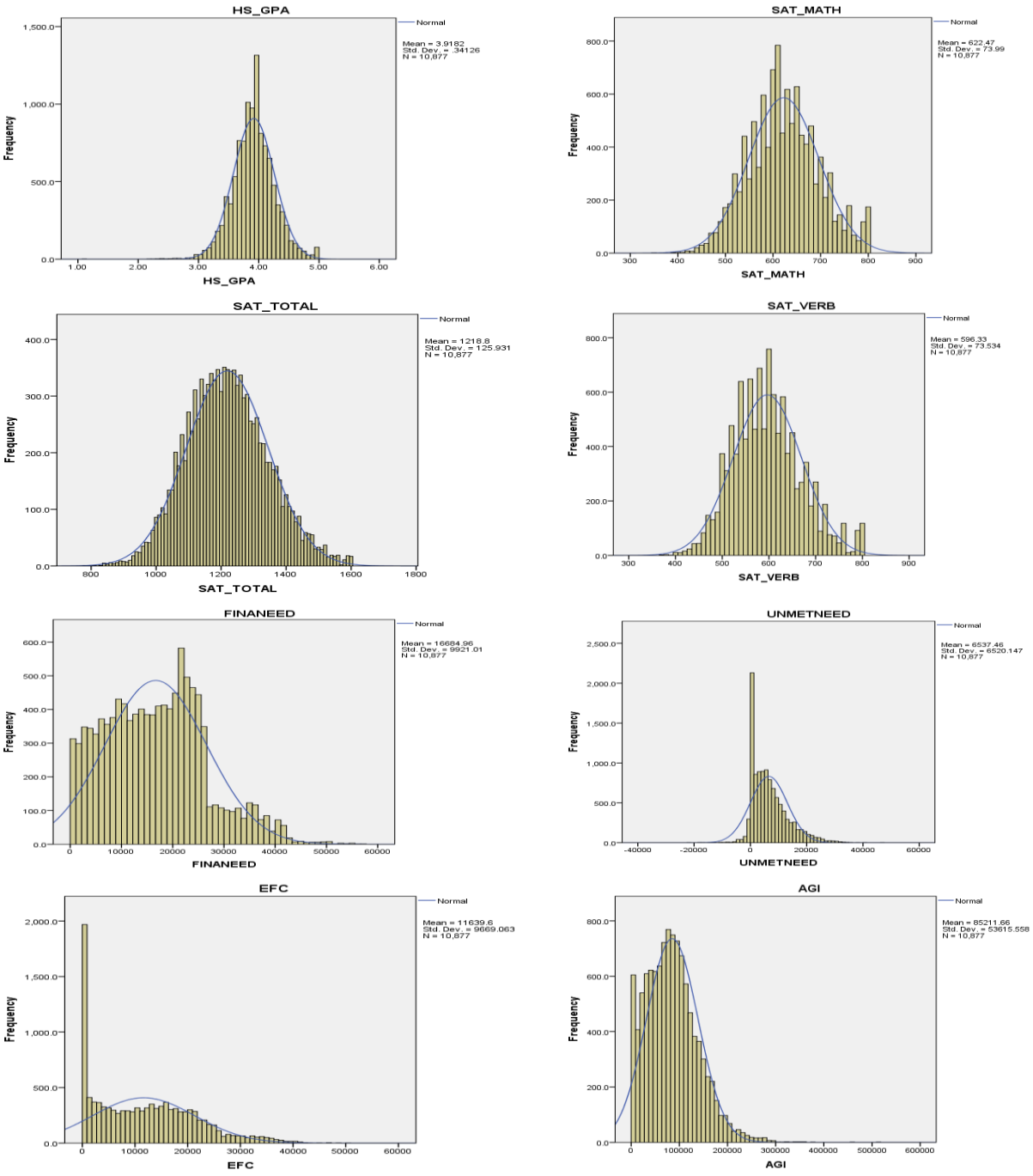
Variables	Mean	Median	Std. Deviation	Skewness	Kurtosis	Min.	Max.
HS GPA	3.92	3.92	0.34	-0.03	1.38	1.14	5
SAT MATH	622.50	620.00	73.99	0.16	-0.20	350.00	800
SAT VERB	596.30	590.00	73.53	0.38	0.07	370.00	800
SAT TOTAL	1,218.80	1,210.00	125.93	0.19	-0.03	780.00	1,600
FIN NEED	16,685.00	16,490.00	9,921.01	0.46	-0.10	1.00	57,420
UNMETNEED	6,537.50	5,206.00	6,520.15	1.11	1.56	0.00	46,420
EFC	11,639.60	10,748.00	9,669.06	0.62	-0.28	0.00	50,024
AGI	85,211.70	80,806.00	53,615.56	0.79	1.33	0.00	500,000
FAMILY SIZE	4.10	4.00	1.22	0.56	2.09	1.00	12
NRCOLL	1.60	1.00	0.67	1.03	1.30	1.00	6

mean was 1.6, with a minimum of one and maximum of six family members enrolled in college simultaneously.

To demonstrate the distribution of continuous independent variables, histograms were employed. By indicating the number of data points that lie within a range of values, histograms provided an accurate visual interpretation of numerical data (Howell, 2007). Figure 1 shows histograms for academic variables (SAT math, SAT verbal, and SAT total) as well as histograms related to income and financial need variables (financial need, unmet need, EFC, and AGI). Overall, high school GPA, SAT math, SAT verb, and SAT total approximated to the normal distribution, with the exception of the GPA having a higher peak than normal. All these four variables were symmetrically distributed; their skewness scores were close to zero and far away from '1'. However, other variables such as Financial need, Unmet need, EFC, and AGI were not approximated to the normal distribution (see figure 1). Their skewness scores were large and close to '1', and two out of four kurtosis scores were greater than '0', which means the slope was sharper than the normal. Since logistic regression makes no assumptions about the distribution of independent variables, and further, predictors are not required to be normally distributed, linearly related, or of equal variance within each group (Garson, 2010), I concluded there was no need for data transformation.

Figure 1

Histograms of Continuous Academic and Financial Need Variables



Descriptive Statistics, Categorical Variables

The current study identified seven dichotomous variables of interest: gender, underrepresented, residency, dependency status, citizenship, single family, and first generation. Additionally, there was one categorical variable of interest, race with eight levels. Table 3 shows the descriptive statistics for categorical variables, indicating that 56% of students were male, 12% were underrepresented, 68% were in-state, 99% were classified as dependent students, 96% were U.S. citizens, 23% came from single family homes, and 20% were first generation - out of a total of 10,877 students. Both dependency status and citizenship variables had dominant factor level (mean > 95%), implying that they may fail to represent well the entire student population.

Table 4, the frequency for variable race, indicated that: 70.2% of students were White, 12.3% were Asians, 5.8% were Black or African Americans, 5.8% were Hispanics of any race, 2.9% were students with Two or More Races, 2.1% of students did not report their race, 0.6% were American Indian or Alaska Natives, and 0.2% were Native Hawaiian or Other Pacific Islanders. The majority subgroup was the White category, which was also treated as the reference group. American Indian and Native Hawaiian subgroups had small sample size (< 1%), and there was a chance they might not represent well their respective subgroups.

Table 3

Descriptive Summary of Dichotomous Variables (N = 10,877)

Variables	Mean	Skewness	Kurtosis
GEND	0.56	-0.252	-1.937
UNDERREPRESENTED	0.12	2.283	3.212
RESID	0.68	-0.796	-1.367
DEPSTAT	0.99	-9.284	84.206
CITIZENSHIP	0.96	-5.008	23.082
SINGLE HOUSEHOLD	0.23	1.317	-0.266
FIRST GENERATION	0.20	1.491	0.224

Table 4

Frequency of Variable Race (N = 10,877)

Race	Frequency	Percent
AMERICAN INDIAN OR ALASKA NATIVE	60	0.6%
ASIAN	1,341	12.3%
BLACK OR AFRICAN AMERICAN	634	5.8%
HISPANIC OF ANY RACE	630	5.8%
NATIVE HAWAIIAN/OTHER PACIFIC ISLANDER	24	0.2%
NOT REPORTED	231	2.1%
TWO OR MORE RACES	319	2.9%
WHITE	7,638	70.2%

Correlation Analysis

Correlation indicates the size and direction of the linear relationship between two variables, and is used to measure the extent to which scores of two variables go up together, or one goes up while the other goes down. The correlation coefficients values vary from -1 to +1; the closer to either end of those limits, the stronger the relationship between the two variables (Keller & Warrack, 2000; Howell, 2007;Tabachnick & Fidell, 2006).

Pearson Correlation: Continuous Variables

To measure the strength as well as the direction of the relationship between pairs of continuous variables, Pearson correlation analysis was conducted for all predictors in the study. The findings are presented in Table 5. Overall, the results showed that academic performance variables (High school GPA, SAT math, SAT verbal, SAT total) are weakly correlated with other variables, including financial variables (financial need, unmet need, EFC, AGI), family size, and NRcollege. Within academic variables, findings indicated: [1] high school GPA had a low correlation with all three SAT variables (SAT math, SAT verbal, and SAT total); [2] there was a moderate positive correlation between SAT math and SAT verbal (r = 0.457); [3] SAT total was highly correlated to both, SAT math (r = 0.855) and SAT Verb (r = 0.853). Mainly because of its high correlation to SAT math and SAT verbal, the SAT total variable was not included in the final regression model.

Within financial variables, Table 5 showed: [1] financial need was strongly correlated with several other variables, including unmet need (r = 0.582), EFC (r = -0.694), and AGI (r = -0.599). Judging by the correlation signs, it is clear that financial need and EFC was negatively

Table 5

Pearson Correlation Coefficients for Continuous Variables (N = 10,877)

Variables	HS GPA	SAT MATH	SAT VERB	SAT TOTAL	FIN NEED	UNMET NEED	EFC	AGI	FAM SIZE	NRCOLL
HS GPA	1.000	.255**	.250**	.296**	-.133**	-.098**	.015	.014	-.002	-.003
SAT MATH	.255**	1.000	.457**	.855**	-.040**	.056**	.136**	.105**	.036**	.031**
SAT VERB	.250**	.457**	1.000	.853**	-.105**	-.037**	.111**	.072**	-.007	-.018
SAT TOTAL	.296**	.855**	.853**	1.000	-.085**	.011	.145**	.103**	.017	.008
FIN NEED	-.133**	-.040**	-.105**	-.085**	1.000	.582**	-.694**	-.559**	-.084**	.011
UNMETNEED	-.098**	.056**	-.037**	.011	.582**	1.000	-.251**	-.170**	-.016	.070**
EFC	.015	.136**	.111**	.145**	-.694**	-.251**	1.000	.795**	.117**	.024*
AGI	.014	.105**	.072**	.103**	-.559**	-.170**	.795**	1.000	.339**	.374**
FAM SIZE	-.002	.036**	-.007	.017	-.084**	-.016	.117**	.339**	1.000	.428**
NRCOLL	-.003	.031**	-.018	.008	.011	.070**	.024*	.374**	.428**	1.000

**$p \leq 0.01$
*$p \leq 0.05$

correlated, meaning as one variable goes up the other comes down. Similarly, the correlation between financial need and AGI was negative; [2] there was a strong, positive correlation between AGI and EFC (r = 0.795), indicating that as the adjusted family income goes up, the expected family contribution also increases; [3] Family Size and NR college variables had low correlation with both, academic and financial variables. However, there was a moderate, positive correlation between these two variables (r = 0.428).

Correlation between the continuous variables in the study was also shown via the scatterplots. When collecting measures on two variables for the purpose of examining the relationship between those two variables, a scatterplot is one of the most useful techniques for gaining insight into that relationship (Howell, 2007). A simple scatterplot could be used to: (a) determine whether a relationship is linear, (b) detect outliers, and (c) graphically present a relationship. In a scatterplot, the predictor variable is usually represented on x-axis while the dependent variable is shown on the y-axis. Figure 2 shows scatterplots for academic variables (SAT math, SAT verbal, and SAT total). Scatterplots for financial variables are presented in Figure 3 (financial need, unmet need, EFC, and AGI), and the findings are similar to those presented in the descriptive summary table.

Figure 2

Scatterplots of Academic Related Variables

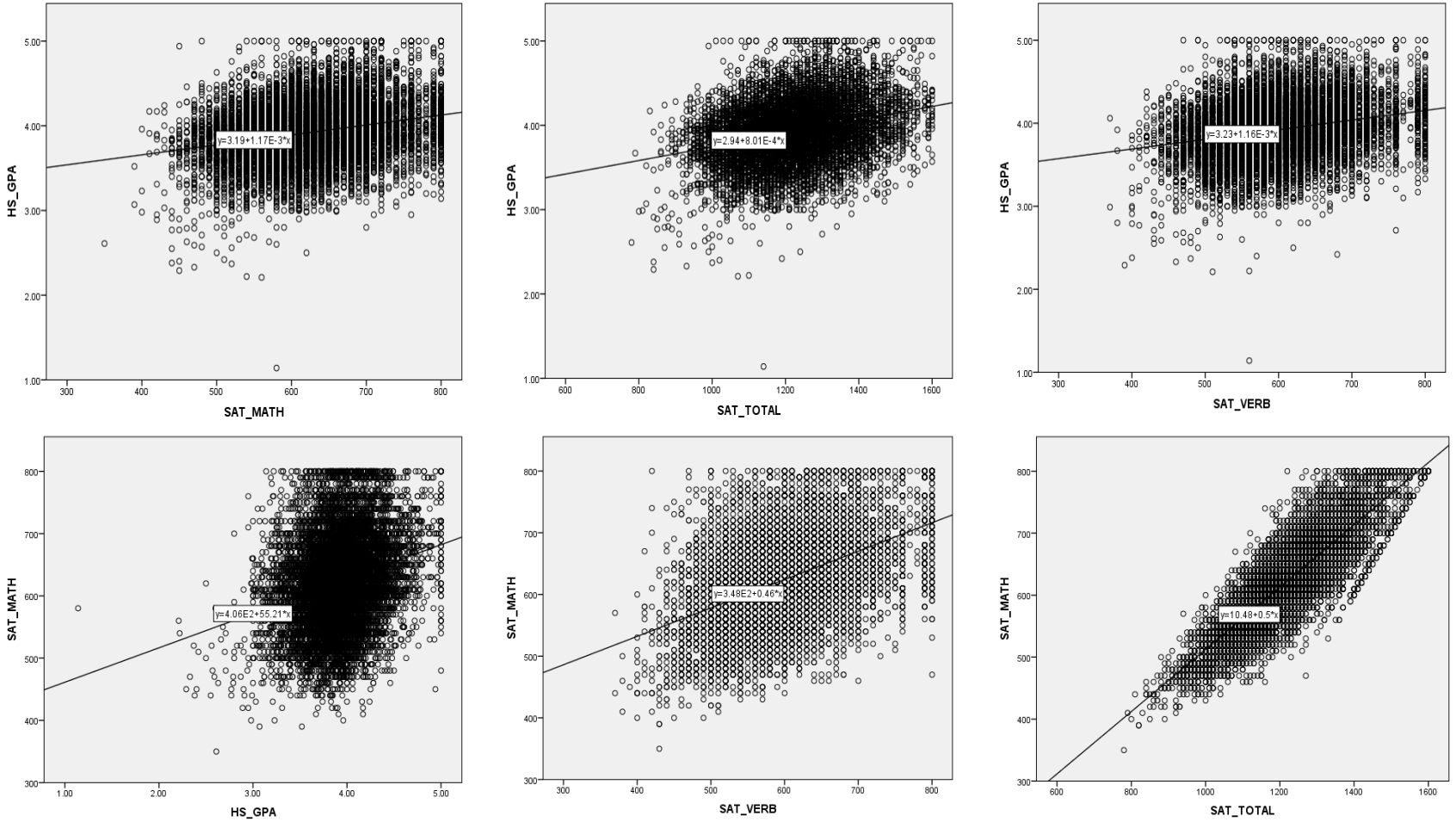


Figure 2 (Continued)

Scatterplots of Academic Related Variables

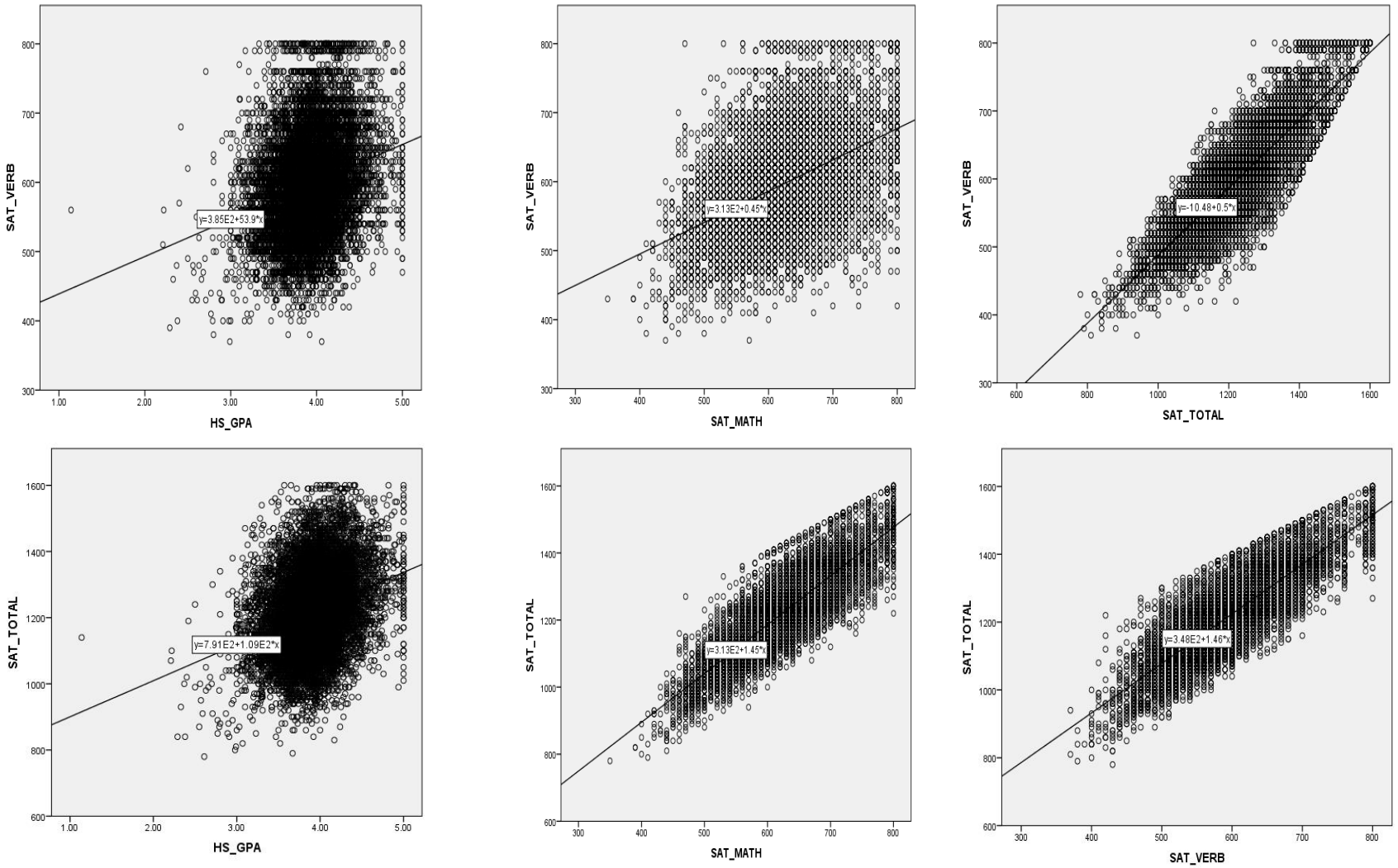


Figure 3

Scatterplots of Financial Aid Related Variables

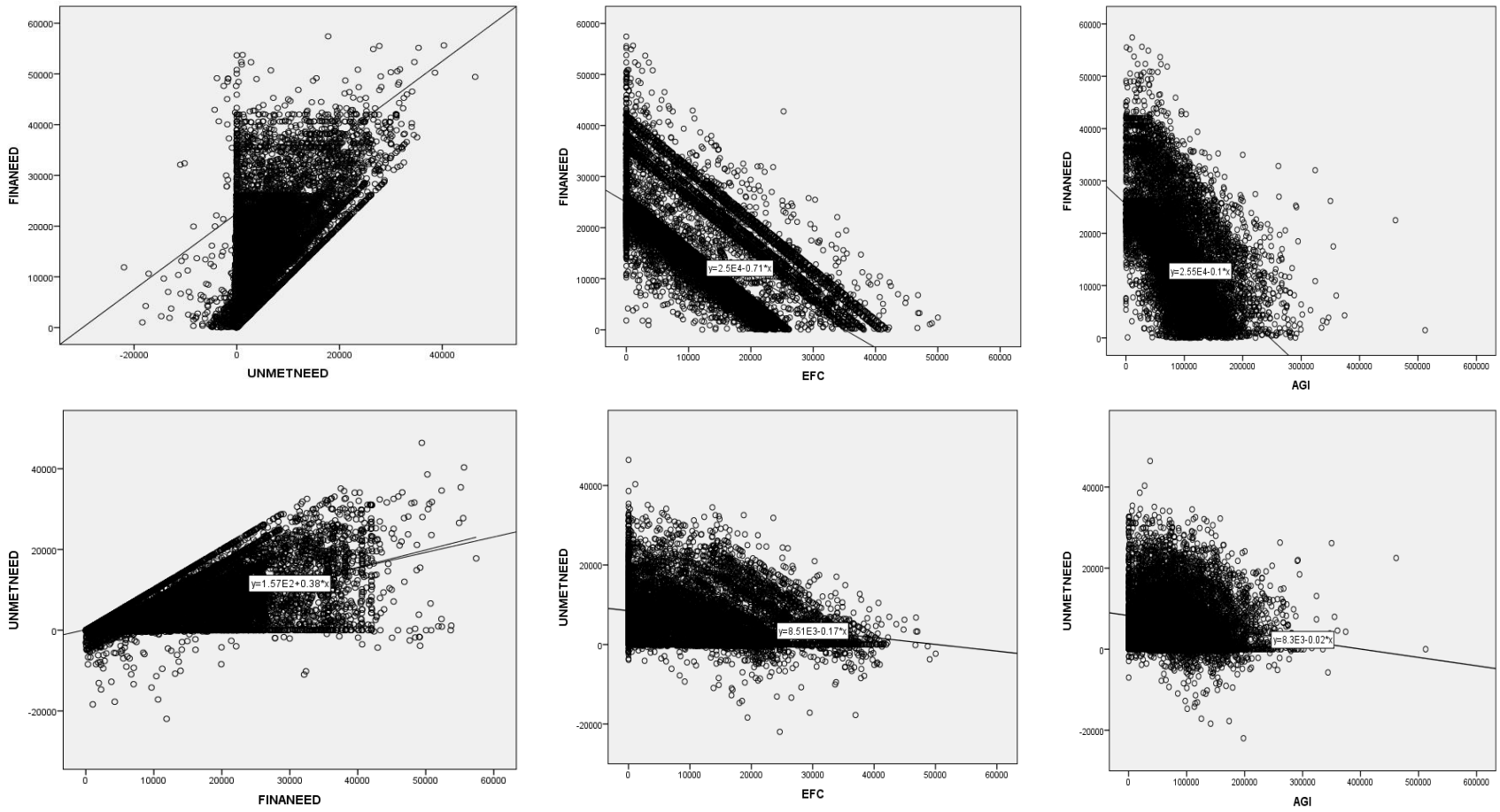
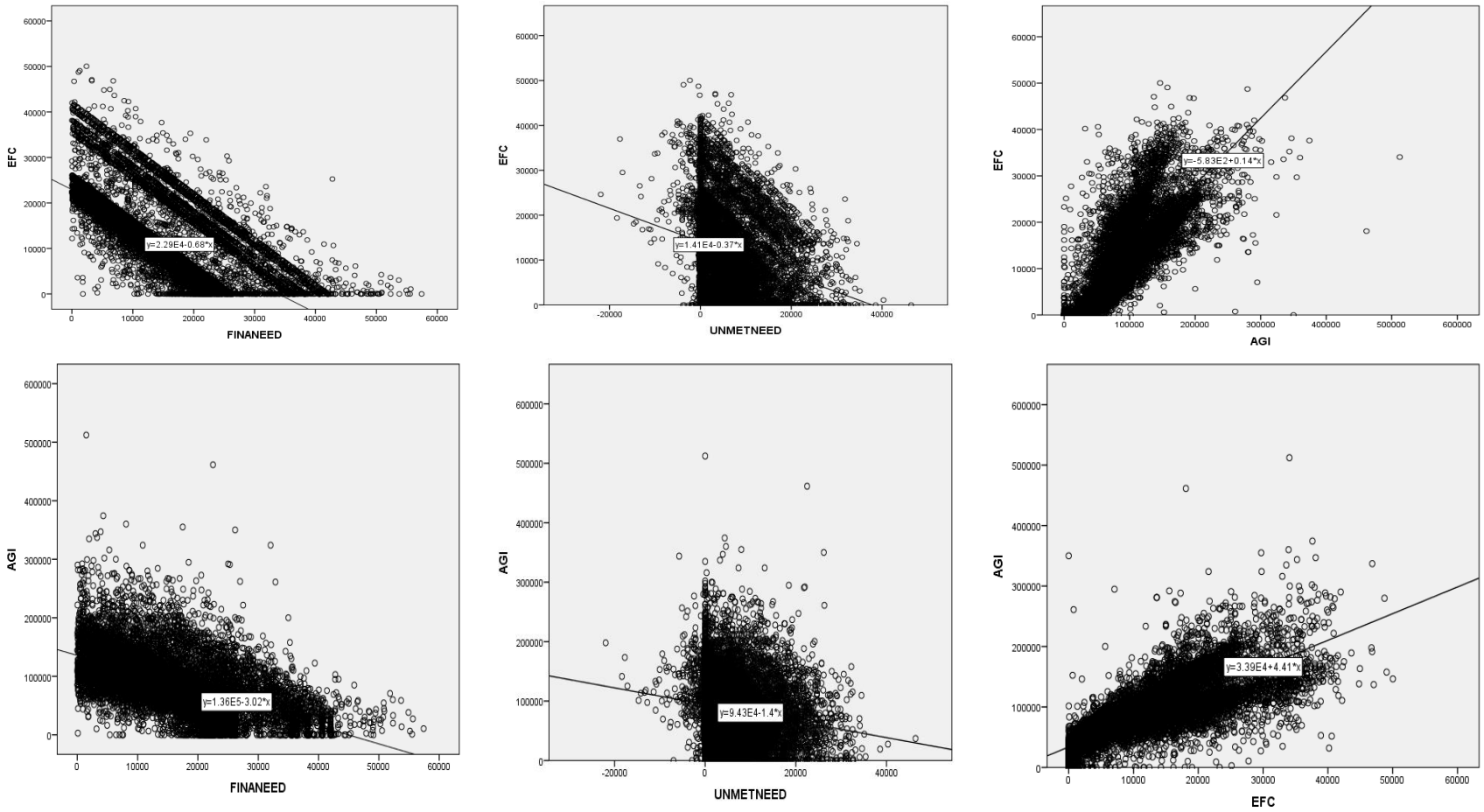


Figure 3 (Continued)

Scatterplots of Financial Aid Related Variables



Spearman's rho and Kendall's *t*au Correlation: Dichotomous Variables

Frequently, variables are measured in the form of dichotomy, such as on time-late, pass-fail, male-female. Using Pearson's *r* (which assumes an approximation of normality) to measure correlation for dichotomous variables represents a challenge. Two methods, Spearman's rho and Kendall's *t*au were used in the analysis of dichotomous variables, given that the variables do not come from a bivariate normal distribution. When data naturally occurs in the form of ranks, Spearman's rho is an appropriate correlation coefficient (Keller & Warrack, 2000). The Spearman's rho correlation coefficient (r_s) quantifies the degree of association between the ranks of both variables, and the easiest way to calculate it is to apply Pearson's original formula to ranked data (Howell, 2007). Initially, the data is ranked, and then Pearson correlation coefficient of the ranks is calculated. While Spearman's rho is based on the ranks of data, Kendall's *t*au statistic is based on the number of inversions in the rankings. The Kendall's *t*au correlation coefficient (τ_b) measures the association based on the number of concordances and discordances in paired observations. Both methods provided similar correlation results, with a slight difference since Kendall's Tau usually has smaller values than Spearman's rho correlation. Table 6 shows that there is *very low* correlation between any two categorical variables in the current study. The only exception is family size and single household variables, which have negative, moderate correlation (r_s = -0.449) for Spearman's rho, and (r_t = -0.446) for Kendall's *t*au.

Point-Biserial Correlation: Continuous and Dichotomous Variables

A Point-biserial correlation, which is a special case of Pearson's product-moment correlation is often used to measure the strength as well as the direction of the association between one continuous variable and one dichotomous variable. The Point-Biserial Correlation (r_{pb}) is *"*simply Pearson's r applied to a special kind of data*"* (Howell, 2007 p. 277).

Table 6

Correlation Coefficients for Dichotomous Variables (N = 10,877)

Variables	GEND	UNDER REP	RESID	DEPSTAT	CITIZENSHIP	SINGLE H'HOLD	FAMILY SIZE	FIRST GEN
Kendall's Tau-b								
GEND	1.000	-.005	-.098**	.001	-.002	-.040**	.032**	-.011
UNDERREP	-.005	1.000	.062**	-.018	-.050**	.104**	-.029**	.111**
RESID	-.098**	.062**	1.000	-.035**	-.074**	.050**	-.040**	.117**
DEPSTAT	.001	-.018	-.035**	1.000	.017	.043**	.155**	-.062**
CITIZENSHIP	-.002	-.050**	-.074**	.017	1.000	.042**	.017*	-.030**
SINGLE H'HOLD	-.040**	.104**	.050**	.043**	.042**	1.000	-.446**	.065**
FAMILY SIZE	.032**	-.029**	-.040**	.155**	.017*	-.446**	1.000	-.111**
FIRST GEN	-.011	.111**	.117**	-.062**	-.030**	.065**	-.111**	1.000

**$p \leq 0.01$
*$p \leq 0.05$

Table 6 (Continued)

Correlation Coefficients for Dichotomous Variables (N = 10,877)

Variables	GEND	UNDER REP	RESID	DEPSTAT	CITIZENSHIP	SINGLE H'HOLD	FAMILY SIZE	FIRST GEN
Spearman's Rho								
GEND	1.000	-.005	-.098**	.001	-.002	-.040**	.035**	-.011
UNDERREP	-.005	1.000	.062**	-.018	-.050**	.104**	-.032**	.111**
RESID	-.098**	.062**	1.000	-.035**	-.074**	.050**	-.044**	.117**
DEPSTAT	.001	-.018	-.035**	1.000	.017	.043**	.171**	-.062**
CITIZENSHIP	-.002	-.050**	-.074**	.017	1.000	.042**	.019*	-.030**
SINGLE H'HOLD	-.040**	.104**	.050**	.043**	.042**	1.000	-.492**	.065**
FAMILY SIZE	.035**	-.032**	-.044**	.171**	.019*	-.492**	1.000	-.122**
FIRST GEN	-.011	.111**	.117**	-.062**	-.030**	.065**	-.122**	1.000

**$p \leq 0.01$
*$p \leq 0.05$

Mathematically, $r_{pb} = r$, where one variable is dichotomous and the other continuous approximately normally distributed. The difference between the two of them is related to the type of variables: the Pearson's correlation coefficient measures the linear relationship between two continuous variables, while the Point-biserial correlation coefficient is used in cases when one variable is dichotomous. This method was employed for all categorical variables in the study, except for the variable Race. Table 7 indicates that correlation between any one continuous variable and one dichotomous variable were in general low. The only exception was the single household - family size variables. There was a negative, moderate correlation between these two variables ($r_{pb} = -0.453$).

Table 7

Pearson Correlation Coefficients between Continuous and Dichotomous Variables (N = 10,877)

Variables	HS GPA	SAT MATH	SAT VERB	SAT TOTAL	FIN NEED	UNMET NEED	EFC	AGI	FAM SIZE	NRCOLL
GEND	-.109**	.276**	.009	.168**	.033**	.043**	.047**	.030**	.038**	.004
UNDERREP	-.126**	-.175**	-.152**	-.192**	.071**	-.048**	-.121**	-.109**	-.027**	-.046**
RESID	.140**	-.116**	.001	-.068**	-.341**	-.362**	-.346**	-.269**	-.040**	-.046**
DEPSTAT	.045**	.050**	.043**	.054**	-.093**	-.025**	.122**	.165**	.245**	.084**
CITIZENSHIP	.002	-.102**	.069**	-.020*	-.088**	-.034**	.131**	.129**	.023*	.041**
SINGLE H'HOLD	-.038**	-.063**	.002	-.036**	.243**	.080**	-.288**	-.363**	-.453**	-.144**
FIRST GEN	-.027**	-.122**	-.119**	-.141**	.153**	-.051**	-.251**	-.260**	-.114**	-.170**

**$p \leq 0.01$
*$p \leq 0.05$

Logistic Regression Model

The first two research questions to be answered were whether the demographic and socioeconomic characteristics of students who file a late FAFSA differ from those of on time filers. To answer both of these questions, a logistic regression analysis was performed. In general, the logistic regression model could be expressed as (Allison, 2012):

$$\log(odds) = \log\left(\frac{\widehat{\pi_i}}{1-\widehat{\pi_i}}\right) = \beta_0 + \beta_1 X_{i1} + \beta_2 X_{i2} + \cdots + \beta_p X_{ip}$$

Variable Selection

In many model-building situations, the main problem is to choose from a large set of variables those that should be included in the model. Variable selection is intended to select the best subset of predictors. The aim of the selection is to reduce the set of predictor variables to those that are necessary while accounting for nearly as much of the variance as is accounted for by the total set of predictors (Keller & Warrack, 2000; Tabachnick & Fidell, 2006). Model building procedures include several steps: (a) identify the dependent variable; (b) list potential predictors; (c) gather the required observations for potential models; (d) identify several possible models; (e) use statistical software to estimate the model; (f) determine whether the required conditions are satisfied; and (g) use your judgment and the statistical output to select the best model (Keller & Warrack, 2000). Several methods can be used in variable selection for the regression model. The simplest, also known as backward selection method, starts with all predictors in the model; non-significant predictors are removed. The forward selection method starts with no variables in the model; significant predictors are added "one-at-a-time" to the model. Stepwise regression, which is a combination of backward and forward selection methods, was used in the current study. Stepwise regression is an "interactive procedure that adds and

deletes one independent variable at a time*"* (Keller & Warrack, 2000, p. 758). The decision to add or delete a variable is made on the basis of whether that variable improves the overall model.

While building the logistic regression model of the current study, the decision to keep a variable in the model was based on the statistical significance, and further, variables that were strongly correlated with other variables were deleted from the model. At the end of step 4 of the selection process, the Hosmer and Lemeshow Test was 0.074. This implies there is strong evidence to reject the null hypotheses, which states that the predictions in the model fit perfectly with observed data. It was concluded the existing model does not fit well; therefore, it was necessary to continue searching for and adding other variables.

Variables deleted from the model included: GRS Need, at step 5 (strong correlation with all three other financial variables) and the AGI at step 6 (strong correlation with EFC). In the final step of the process, the First Generation variable was added in the model because it is an interesting variable to study, and it also improved the overall model fit. The logistic regression model summary is presented in Table 8. The overall performance of the model is measured by several goodness-of-fit tests, including the Omnibus Tests of Model Coefficients, Hosmer and Lemeshow Test, Model Summary, and the Classification Table. The following is a brief description for each one of them.

The *Omnibus Tests of Model Coefficients* is one of the tests used to measure the overall performance of the selected model. The Omnibus Tests gives an indication of how well the selected regression model performed over and above the results obtained in block 0, with none of the predictors entered in the model (Pallant, 2007). As shown in Table 9, the selected model of the current study was highly significant ($p < 0.0005$), with a Chi-square value of 298.797 and 18 degrees of freedom.

Table 8

Model Selection (N = 10,877)

Step	Model ($X_1,\ldots X_p$)	Removed/ Added	Model Summary			Hosmer & Lemeshow Test		
			-2 Log	Cox & Snell	R^2	χ^2	df	Sig.
1	$FAFSA \sim HS\ GPA + SAT\ Math + SAT\ Verb + GRS\ need + Unmet\ Need + EFC + AGI + Family\ Size + NRcoll + Gender + Race + Resid + Dep\ Stat + Citizenship + Single\ H\ Hold + First\ Generation$		7013.336[a]	.030	.061	17.817	8	.023
2	$FAFSA \sim HS\ GPA + SAT\ Math + SAT\ Verb + GRS\ need + Unmet\ Need + EFC + AGI + Family\ Size + NRcoll + Gender + Race + Resid + Dep\ Stat + Single\ H\ Hold + First\ Generation$	$- Citizenship$	7013.406[a]	.030	.061	18.038	8	.021
3	$FAFSA \sim HS\ GPA + SAT\ Math + SAT\ Verb + GRS\ need + Unmet\ Need + EFC + AGI + Family\ Size + NRcoll + Gender + Race + Resid + Dep\ Stat + Single\ H\ Hold$	$- First\ Generation$	7014.364[a]	.030	.061	15.225	8	.055

Table 8 (Continued)

Model Selection (N = 10,877)

Step	Model ($X_1,\ldots X_p$)	Removed/ Added	Model Summary			Hosmer & Lemeshow Test		
			-2 Log	Cox & Snell	R^2	χ^2	df	Sig.
4	$FAFSA \sim HS\ GPA + SAT\ Math + SAT\ Verb + GRS\ need + Unmet\ Need + EFC + AGI + Family\ Size + NRcoll + Gender + Race + Resid + Single\ H\ Hold$	$- Dep\ Stat$	7016.511[a]	.030	.061	14.312	8	.074
5	$FAFSA \sim HS\ GPA + SAT\ Math + SAT\ Verb + Unmet\ Need + EFC + AGI + Family\ Size + NRcoll + Gender + Race + Resid + Single\ H\ Hold$	$- GRS\ need$	7040.084[a]	.028	.056	11.749	8	.163
6	$FAFSA \sim HS\ GPA + SAT\ Math + SAT\ Verb + Unmet\ Need + EFC + Family\ Size + NRcoll + Gender + Race + Resid + Single\ H\ Hold$	$- AGI$	7047.718[a]	.027	.055	6.724	8	.567
7	$FAFSA \sim HS\ GPA + SAT\ Math + SAT\ Verb + Unmet\ Need + EFC + Family\ Size + NRcoll + Gender + Race + Resid + Single\ H\ Hold + First\ Generation$	$+ First\ Generation$	7047.202[a]	.027	.055	5.665	8	.685

Table 9

Estimated Logistic Model - Omnibus Tests of Model Coefficients (N = 10,877)

Step 1	Chi-square	df	Sig.
Step	298.797	18	0.001
Block	298.797	18	0.001
Model	298.797	18	0.001

The *Hosmer and Lemeshow Test* also supported the selected logistic regression model as being worthwhile. This test is interpreted differently from the Omnibus Tests. For the Hosmer and Lemeshow Test, a poor fit is indicated by a significance value of less than 0.05. To support the model, a significance value of greater than 0.05 is required (Pallant, 2007). The results presented in Table 8 show the chi-square value for the Hosmer and Lemeshow Test as 5.665 with a significance level of 0.685. This value is larger than 0.05, indicating the selected regression model is a good fit.

Model Summary, showing the Cox & Snell R-Square and the Nagelkerke R-Square values give an indication of the amount of variation in the dependent variable (FAFSA filing status) explained by the model. The selected regression model had Cox & Snell R-Square value of 0.027 while the Nagelkerke R-Square value was 0.055 (Table 10). Therefore, it was concluded the model accounted for approximately 5.5% of the variance in the timing of the FAFSA filing. The Classification Table, which shows how well the model is able to predict the correct category for each case, is another indicator of the usefulness of the model (Pallant, 2007). The results are presented in Table 11. The findings indicate that as whole, the selected regression model of the current study correctly classified 89.4% of cases.

Table 10

Estimated Logistic Model - Model Summary (N = 10,877)

Step	-2 Log Likelihood	Cox & Snell R Square	Nagelkerke R Square
1	7047.202[a]	0.027	0.055

[a]Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.

Table 11

Estimated Logistic Model – Classification Table[a] (N = 10,877)

		Predicted		
		FAFSA ST		
	Observed	0	1	Percentage Correct
Step 1	0	9726	0	100.0
	1	1151	0	0.0
	Overall Percentage			89.4

[a]The cut value is .500.

Selected Model for the Current Study

Logistic regression analysis was performed to assess the impact of a number demographic and socioeconomic student characteristics on the timing of the FAFSA filing. The final model contained 12 independent variables: HS GPA, SAT Math, SAT Verb, Gender, Race, Residency, Unmet Need, EFC, Single House Hold, Family Size, Number in College, and First Generation. The full model containing all the predictors was statistically significant: $\chi 2(18) = 298.797$, $p < .0005$. The final logistic regression for the current study is expressed as:

$$\begin{aligned} log(odds) = &-.689 - .510\ HS\ GPA - .002\ SAT\ Math - .001\ SAT\ Verb + .330\ Gender \\ &+ .645\ Race(White) + .073\ Race(Asian) - .323\ Race(Black\ or\ African\ A) \\ &+ .225\ Race(Hispanic) - .810\ Race(Native\ H) + .221\ Race(Not\ Reported) \\ &- .121\ Race(Two\ or\ M) + .762\ Resid + .000067\ Unmet\ Need \\ &+ 0.000041\ EFC + .381\ Single\ H\ Hold + .087\ Family\ Size + .184\ NRcoll \\ &+ .063\ First\ Generation \end{aligned}$$

Check for Multicollinearity

Logistic regression does not make assumptions about the distribution of independent variables; however, it is sensitive to high correlation among the predictor variables. In regression analysis, ideally, the independent variables would be strongly correlated to the dependent variable, but not to each other (Allison, 2012; Pallant, 2007). Multicollinearity refers to the relationship among the independent variables, and exists when the independent variables are highly correlated. If two or more variables are highly correlated with one another, then it is hard to measure their distinct effects on the dependent variable regression.

Two measures, Variance Inflation Factor (VIF) and Tolerance were used to identify multicollinearity among the predictor variables in the current study. The VIF estimates how much the variance of a regression coefficient is inflated due to multicollinearity in the model.

Tolerance, a related concept, is the proportion of a variable's variance that is *not* accounted for by the other independent variables in the model. Low levels of Tolerance might adversely affect the results of the logistic regression (Allison, 2012; Pallant, 2007). On the other hand, low VIF values are preferred, and generally, VIF values above 10 indicate the presence of multicollinearity. As presented in Table 12, all variables in the model showed a high tolerance for each other (tolerance values were found to be between 0.60 and 0.90), and further, all the VIF values were less than 10. Therefore, it was concluded that the final estimated regression model did not contain high multicollinearity.

Table 12

Multicollinearity Test for the Final Selected Model (N = 10,877)

	Collinearity Statistics	
Model	Tolerance	VIF
HS GPA	0.852	1.174
SAT MATH	0.652	1.534
SAT VERB	0.737	1.356
GEND	0.875	1.143
RACE	0.899	1.113
RESID	0.640	1.562
UNMETNEED	0.691	1.446
EFC	0.600	1.666
SINGLE H'HOLD	0.729	1.373
FAMILY SIZE	0.659	1.518
FIRST GEN	0.882	1.134
NRCOLL	0.789	1.268

Results of Logistic Regression Analysis

The Wald Chi-Square statistic was performed to test the unique contribution of each predictor variable in the model (Allison, 2012; Pallant, 2007). All predictors, except for the dummy variable of First Generation, made a statistically significant contribution to the model, at significance level of 0.05. The results of the logistic regression analysis are presented in Table 13. The strongest predictor of the timing of the FAFSA filing is residency status, with in-state students' odds of filing a late FAFSA being nearly 2.2 times higher than the odds of out-of-state students. Student test scores (SAT math and SAT verbal) were among the weakest predictors of the FAFSA filing status while the predictive power of the socioeconomic variables (UnMetNeed, EFC) fell in between those two categories.

Regression Coefficients and Odds Ratios

The regression coefficients beta (β) show the strength of the effect of each predictor variable on the dependent variable; the higher the absolute value of beta the stronger the effect. Additionally, beta coefficients indicate the direction of the relationship between any explanatory variable and the dependent variable in the model (Allison, 2012; Keller & Warrack, 2000). As shown in Table 13, several predictors had a negative beta. High school GPA had a negative value (β = -0.510) indicating the higher the GPA, the less likely students were to file a late FAFSA. In other words, students with strong high school GPA were more likely to file on time. Other predictors with negative beta coefficient include SAT math (β = -0.002); SAT verbal (β = -0.001). These results indicate that as the SAT math and SAT verbal sores go up, the chances of students filing a late FAFSA decrease.

Table 13

Logistic Regression Coefficients and Odds Ratios: FAFSA Filing Status (N = 10,877)

Model	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B) Lower	Upper
HS GPA	-0.510	0.103	24.339	1	0.000	0.601	0.491	0.736
SAT MATH	-0.002	0.001	10.641	1	0.001	0.998	0.997	0.999
SAT VERB	-0.001	0.001	7.529	1	0.006	0.999	0.998	1.000
GEND	0.330	0.069	22.571	1	0.000	1.390	1.214	1.593
RACE/ETHNICITY			14.363	7	0.045			
Race (American Indian)	0.645	0.356	3.280	1	0.070	1.907	0.948	3.834
Race (Asian)	0.073	0.104	0.491	1	0.483	1.076	0.877	1.320
Race (Black of African A)	-0.323	0.154	4.415	1	0.036	0.724	0.536	0.979
Race (Hispanic)	0.225	0.127	3.140	1	0.076	1.253	0.976	1.607
Race (Native Hawaiian)	-0.810	1.028	0.621	1	0.431	0.445	0.059	3.334
Race (Not Reported)	0.221	0.198	1.235	1	0.267	1.247	0.845	1.840
Race (Two or More Races)	-0.121	0.193	0.393	1	0.531	0.886	0.606	1.294

Table 13 (Continued)

Logistic Regression Coefficients and Odds Ratios: FAFSA Filing Status (N = 10,877)

Model	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B) Lower	Upper
RESID	0.762	0.095	64.752	1	0.000	2.144	1.780	2.581
UNMETNEED	0.001	0.001	129.462	1	0.000	1.001	1.001	1.008
EFC	0.001	0.001	81.691	1	0.000	1.001	1.001	1.005
SINGLE H'HOLD	0.381	0.088	18.573	1	0.000	1.464	1.231	1.741
FAMILY SIZE	0.087	0.031	7.676	1	0.006	1.091	1.026	1.160
NRCOLL	0.184	0.051	13.078	1	0.000	1.202	1.088	1.328
FIRST GEN	0.063	0.087	0.520	1	0.471	1.065	0.898	1.262
CONSTANT	-0.689	0.485	2.020	1	0.155	0.502		

The beta coefficient for variable gender has a positive value (β = 0.330) indicating that compared to women, male students have higher chances of filing late. Similarly, residency (β = 0.762) shows that in-state students have higher chances of filing late. Other predictors with positive beta coefficient are: unmet need (β = 0.067); EFC (β = 0.041); single household (B = 0.381); family size (β = 0.087); and number in college (β = 0.184). The chances of filing a late FAFSA increase as the amount of Unmet need goes up, implying that students coming from lower socioeconomic status families have a slightly higher chance of filing late; also, those in single household have higher chances of filing a late FAFSA. Students coming from larger families have higher chances of filing late. Also, as the number of students in a family attending college increases, so do the chances of them filing a late FAFSA.

The contribution of each predictor variable included in the model can be described via the odds ratio, Exp(β). The odds of an event is the ratio of the expected number of times the event will occur to the expected number of times it will not occur (Allison, 2012), and is calculated as: O = P/(1-P). The odds ratio, Exp(β) represents the change in odds of being in one of the categories of outcome when the value of an independent variable increases by one unit (Tabachnick & Fidell 2006). For categorical predictors, the odds ratio compares the odds of the two categories of the independent variable (Pallant, 2007). The Exp(B) values for the predictors in the current study are presented in Table 13. To add interpretation, all odds ratios less than 1 were inverted.

- The odds ratio of 0.601 for High School GPA indicates that the odds of filing a late FAFSA drops by 40% for one point increase in student's GPA score.
- The odds ratio of 0.998 for SAT Math indicates that the odds of filing a late FAFSA drops by 20% for 100 point increase in student's SAT Math scores.

- The odds ratio of 0.999 for SAT Verbal indicate that the odds of filing a late FAFSA drops by 10% for 100 point increase in student's SAT Verbal scores.
- The odds ratio of 1.390 for gender indicates that the odds of filing a late FAFSA are 1.39 times higher for male students than for female students.
- For variable Race/Ethnicity, White is used as reference group, and the findings indicate that:
    - The odds of filing a late FAFSA are 1.907 times higher for American Indian students than they are for White students.
    - The odds of filing a late FAFSA for Black or African American students are .724 times those for White students.
    - The odds of filing a late FAFSA are 1.253 times higher for Hispanic students than they are for White students.
    - Although Race/Ethnicity variable overall was found a significant predictor of FAFSA filing status, the following race categories were found insignificant: Native Hawaiian (Pacific Islander), Asian, Race not Reported, and Two or More Races.
- The odds ratio of 2.144 for Residency indicates that the odds of filing a late FAFSA are 2.144 times higher for in-state students than they are for out-of-state students.
- The odds ratio for UNMET Need indicates that the odds of filing a late FAFSA increases by 6.7% for each $1,000 increase in student's UNMET Need.
- The odds ratio for EFC indicates that the odds of filing a late FAFSA increases by 4.1% for each $1,000 increase in student's EFC.

- The odds ratio of 1.464 for Single Household indicates that the odds of filing a late FAFSA are 1.464 times higher for students from single family household than for other students.
- The odds ratio of 1.091 for Family Size indicates that the odds of filing a late FAFSA increases by 9.1% for each one person increase in student's family.
- The odds ratio of 1.202 for Number in College indicates that the odds of filing a late FAFSA increases by 20.2% for every additional family member enrolled in college.
- The First Generation variable - a dummy variable representing cases where both parents did not have a college degree - was the only variable in the logistic regression model that was found to be insignificant. The test failed to determine the odds of filing a late FAFSA based on First Generation variable. Therefore, it was concluded that First Generation status is not a significant predictor of the timing of FAFSA filing.

Marginal Effects

Logistic regression coefficients indicate a one-unit change in an independent variable results in a b-unit change in the log-odds (*ln(P/(1-P))* of the dependent variable. Often, such coefficients are difficult to interpret. This is due to the fact that natural logarithms are not a very intuitive concept. For this reason, many studies that use logistic regression analysis report another statistic, called marginal probability or marginal effect. Marginal effect is a statistic that reflects what effect a one unit change in an independent variable will have directly on the probability that the dependent variable is one, keeping other independent variables fixed. Because marginal effects are more intuitively interpretable than logistic regression coefficients, they are considered a more useful statistic (Allison, 2012; Lemeshow & Sturdivant, 2013). Marginal effects are obtained by computing the derivative of the conditional mean function with

respect to *x*. To evaluate the average or overall marginal effect, two approaches are frequently used (Allison, 2012). One approach is to compute the marginal effect at the sample means of the data. The other approach is to compute marginal effect at each observation and then to calculate the sample average of individual marginal effects to obtain the overall marginal effect. For large sample sizes, both approaches yield similar results (Lemeshow & Sturdivant, 2013).

Marginal effects were calculated using the *R command* $logitmfx()$. The findings, presented in Table 14, indicate:

- For each one point increase in students' High School GPA, the probability of filing a late FAFSA decreases by 4.38%.
- For each 100-point increase in SAT Math sore, the probability of filing a late FAFSA decreases by 2%.
- For each 100-point increase in SAT Verbal score, the probability of filing a late FAFSA decreases by 1%.
- For Male (instead of Female) students, the probability of filing a late FAFSA increases by 2.80%.
- For variable Race/Ethnicity, White is used as reference group, the results indicate that:
    - For American Indian students the probability of filing a late FAFSA increases by 7.16%.
    - For Black or African American, the probability of filing a late FAFSA decreases by 2.48%.
    - For Hispanic students, the probability of filing a late FAFSA increases by 2.10%.
    - For Native Hawaiian (Pacific Islander) students, the probability of filing a late FAFSA decreases by 5.05%.

- For in-state students, the probability of filing a late FAFSA increases by 5.92%.
- For each $1,000 increase in Unmet Need, the probability of filing a late FAFSA increases by 0.59%.
- For each $1,000 increase in EFC, the probability of filing a late FAFSA increases by 0.35%.
- For Single household students, the probability of filing a late FAFSA increases by 3.58%.
- For each member increase in the family size, the probability of filing a late FAFSA increases by 0.75%.
- For each additional family member attending college, the probability of filing a late FAFSA increases by 1.58%.

Table 14

Logistic Regression Marginal Effects (N = 10,877)

Variables	dF/dx	Std. Err.	z	P>|z|
HS GPA	-0.0438	0.00880	-4.9692	0.001**
SAT MATH	-0.0002	0.00005	-3.2705	0.001**
SAT VERB	-0.0001	0.00005	-2.7505	0.006*
GEND	0.0280	0.00580	4.8406	0.001**
RACE/ETHNICITY				
Race (American Indian)	0.0716	0.04930	1.4531	0.146
Race (Asian)	0.0064	0.00940	0.6857	0.493
Race (Black of African A)	-0.0248	0.01040	-2.3746	0.017*
Race (Hispanic)	0.0210	0.01280	1.6406	0.101
Race (Native Hawaiian)	-0.0505	0.04400	-1.1488	0.251
Race (Not Reported)	0.0207	0.02020	1.0240	0.306
Race (Two or More Races)	-0.0100	0.01520	-0.6573	0.511
RESID	0.0592	0.00650	9.0740	0.001**
UNMETNEED	0.0000	0.00000	11.8046	0.001**
EFC	0.0000	0.00000	9.2915	0.001**
SINGLE H'HOLD	0.0358	0.00900	3.9814	0.001**
FAMILY SIZE	0.0075	0.00270	2.7762	0.006**
NRCOLL	0.0158	0.00440	3.6259	0.001**
FIRST GEN	0.0055	0.00770	0.7106	0.477

**$p \leq 0.001$
*$p \leq 0.01$

Logistic Regression Grouped by Income

Research indicates that socioeconomic status has an impact on academic performance, persistence, and degree completion (Baum & Ma, 2010; DesJardins et al., 2009; Dynarski, 2002, 2007; Dynarski & Scott-Clayton, 2008; Kane, 2003; Long, 2008; Hossler et al., 2009; Novak & McKinney, 2011). Thus, to further explore the relationship between family income and the timing of FAFSA filing, the second step of the process involved logistic regression analysis disaggregated by several income groups. In the analysis, student EFC was used a proxy for income. EFC is the amount of money a student and the student's parents are expected to contribute toward the cost of college, and is generally considered a measure of the family's ability to pay.

Descriptive Summary of the EFC Groups

Based on the review of literature and the cost of attendance at the study institution, three categories of EFC were created. To run the regression analysis based on income, students were grouped into three categories: low, middle, and high income – depending on the EFC (Table 15). Table 16 shows the descriptive summary of each group indicating that 5,184 (47.7%) were low-income students; 4,700 (43.2%) were from middle-income families; and 993 students (9.1%) had high EFC - out of a total 10,877 students (Table 16). Nearly half of all students having an EFC less than $10,000 while only a small portion of students come from EFC more than $25,000. After that, a logistic regression analysis was performed within each subgroup.

Table 15

Student Groups Based on EFC (N = 10,877)

EFC	Income Level	Group
$1 - $10,000	Low	1
$10,001 - $25,000	Middle	2
Over $25,000	High	3

Table 16

Student Groups Based on EFC – Case Processing Summary (N = 10,877)

EFC Group	Selection	N	Percent
Group 1	Included in Analysis	5,184	
Low - Income	Missing Cases	0	
	Unselected Cases	0	
	Total	5,184	47.7%
Group 2	Included in Analysis	4,700	
Middle - Income	Missing Cases	0	
	Unselected Cases	0	
	Total	4,700	43.2%
Group 3	Included in Analysis	993	
High - Income	Missing Cases	0	
	Unselected Cases	0	
	Total	993	9.1%
Total Number of Unweighted Cases		10,877	100.0%

The results are presented in Table 17. To add interpretation, all odds ratio of less than 1 were inverted. The findings indicate:

- High school GPA is a strong predictor of the FAFSA filing status, in all three income groups. The odds of filing FAFSA late decreases as the students' GPA increases. For low-income group, the odds ratio of 0.545 indicates that the odds of filing a late FAFSA drops by 46% for one point increase in student's GPA score.
- SAT Math affects the FAFSA filing status of low-income and middle-income students, but does not have a significant effect on the high-income group. Low and middle-income students' chances of filing a late FAFSA increase as the SAT scores decrease. For low-income group, the odds ratio of 0.998 implies that the odds of filing a late FAFSA drops by 20% for 100 point increase in student's SAT Math scores.
- SAT Verbal was found to have a significant effect only on high-income students.
- The effect of gender on FAFSA filing was significant in low-income and middle-income groups. For both of those groups, being male significantly increases the odds of filing a late FAFSA. For low-income group, the odds ratio of 1.531 indicates that the odds of filing a late FAFSA are 1.531 times higher for male students than for female students.
- For Race/Ethnicity variable the results show:
    - Middle-income American Indian students have significantly higher chances of filing a late FAFSA. The findings were insignificant for the low-income American Indian students. For middle-income American Indian students, the odds of filing a late FAFSA are 3.5 times higher than they are for White students.
    - Both, middle-income and high-income Asian students have higher chances of filing a late FAFSA. For middle-income Asian students, the odds of filing a late FAFSA are

1.5 times higher than they are for White students. The findings were insignificant for low-income group.

  - Low-income Black/African American students are significantly more likely to file on time. The odds of filing a late FAFSA for low-income Black or African American students are .603 times those for White students.

- Residency is a strong predictor of the FAFSA filing status for low-income and middle-income groups; being an in-state student with low-to-moderate family income significantly increases the chances of filing a late FAFSA. For low-income group, the odds ratio of 2.737 indicates that the odds of filing a late FAFSA are 2.737 times higher for in-state students than for out-of-state students.
- Unmet need has a significant effect on the FAFSA filing status of low-income and middle-income groups. The larger the unmet need the higher the chances students from both those groups will file late. However, unmet need has no significant effect in high-income group.
- Single Household is a strong predictor of the FAFSA filing status for low-income and middle-income students, but it has no significant effect on high-income group. For low-income group, the odds ratio of 1.304 indicates that the odds of filing a late FAFSA are 1.304 times higher for students from single family household than for other students.
- Family size significantly affects the middle-income student only.
- Number of family members enrolled in college has a significant effect on the FAFSA filing time for middle-income and high-income groups; both groups indicating the chances of late filing increase as the family size goes up.

Table 17

Logistic Regression Models Grouped by Income Level (N = 10,877)

Variables	Low Income Model			Middle Income Model			High Income Model		
	B	Exp(B)	Sig.	B	Exp(B)	Sig.	B	Exp(B)	Sig.
HS GPA	-0.607	0.545	0.001	-0.315	0.730	0.044	-0.760	0.467	0.005
SAT MATH	-0.002	0.998	0.016	-0.002	0.998	0.034	-0.001	0.999	0.689
SAT VERB	-0.001	0.999	0.246	-0.002	0.998	0.046	-0.005	0.995	0.005
GEND	0.426	1.531	0.001	0.225	1.253	0.028	0.383	1.466	0.105
RACE/ETHNICITY			0.082			0.088			0.024
Race (American Indian)	0.081	1.085	0.895	1.247	3.481	0.009	-18.882	0.000	0.999
Race (Asian)	-0.267	0.766	0.071	0.356	1.427	0.028	1.402	4.062	0.001
Race (Black of African A)	-0.505	0.603	0.014	-0.133	0.876	0.606	0.217	1.242	0.729
Race (Hispanic)	0.218	1.244	0.208	0.202	1.224	0.323	-0.152	0.859	0.786
Race (Native Hawaiian)	-18.619	0.000	0.999	-18.915	0.000	0.999	2.798	16.406	0.091
Race (Not Reported)	0.114	1.121	0.694	0.077	1.080	0.810	0.831	2.296	0.169
Race (Two or More Races)	-0.249	0.779	0.380	0.098	1.103	0.729	-0.549	0.577	0.480

Table 17 (Continued)

Logistic Regression Models Grouped by Income Level (N = 10,877)

Variables	Low Income Model			Middle Income Model			High Income Model		
	B	Exp(B)	Sig.	B	Exp(B)	Sig.	B	Exp(B)	Sig.
RESID	1.007	2.737	0.001	0.526	1.692	0.001	0.441	1.555	0.268
UNMETNEED	0.000	1.000	0.001	0.000	1.000	0.001	0.000	1.000	0.488
SINGLE H'HOLD	0.266	1.304	0.021	0.670	1.954	0.001	-0.274	0.761	0.557
FAMILY SIZE	0.057	1.059	0.187	0.172	1.188	0.001	-0.041	0.959	0.750
NRCOLL	0.065	1.067	0.394	0.296	1.345	0.001	0.586	1.797	0.001
FIRST GEN	0.073	1.076	0.508	0.061	1.063	0.695	0.397	1.488	0.333

Linear Regression Analysis

The first two research questions examined whether late FAFSA filers differ from on time filers in regards to several demographic and socioeconomic characteristics. Understanding factors that make students more or less likely to file late is important. However, quantifying the effects of late filing is equally important. The bigger question is: what is the impact of late FAFSA filing, if any? Does late filing have any financial consequences? The last research question of the current study explored whether the timing of the FAFSA filing influences the amount of grants and loans students receive. To examine the issue, several linear regression models were estimated.

Regression analysis is a set of statistical techniques used to assess the relationship between a dependent variable and a set of predictors (Keller & Warrack, 2000). While correlation shows the association between two variables, but not causality, regression focuses on the relationship between predictor variables and a dependent variable and tries to determine how one or more predictor variables effect the independent variable. The goal of the regression is to find an equation that best predicts the Y variable as a linear function of the X variables (Garson, 2010; Tabachnick & Fidell, 2006). Linear regression is used to predict the values of one variable from another, in cases when variables are connected by a linear relationship (Howell, 2007). Simple linear regression explores the effect of an independent variable (X) on a dependent variable (Y), and the predictive equation is:

$$Y' = b_0 + b_1*X_1 + b_2*X_2 + b_3*X_3 + b_4*X_4 + b_5*X_5$$

Where b_0 represents the intercept; b_1, b_2, b_3, b_4, and b_5 represent the regression coefficients; and X_1, X_2, X_3, X_4, and X_5 represent the explanatory variables.

The independent variable of interest for the current study was the FAFSA filing status (On time vs. Late) while the dependent variables of interest were grants and loans. The grant variables included: federal grants, state grants, institutional grants, institutional waivers, other grants, federal work-study, and total grants, while the loan variables involved federal student loan, federal PLUS, private loans, and total loans. The model identified the effect of each explanatory variable on the average grants and student debt amounts, holding everything else constant. The results indicated that grants as well as loans were not equally distributed across on time and late FAFSA filers; overall, late filers received statistically less grant aid but larger loan amounts than on time FAFSA filers.

Grant Aid and Late FAFSA Filers. Students who filed a late FAFSA received significantly less grant aid than on time filers. The largest effect was found to be in institutional waivers, with late filers receiving on average $810 less than on time filers. Overall, compared to on time filers, students who filed a late FAFSA received $2,815 less in grant aid. The results of the linear regression analysis related to student grants are presented in Table 18, and the findings indicate that, compared to on time filers, on average, the late filers received:

- $313.64 less in federal grant aid.
- $1,262.18 less in state grant aid.
- $408.31 less in institutional grant aid.
- $809.13 less in institutional waivers aid.
- $602.74 less in federal work study program.

Overall, compared to on time filers, at the end of their first year in college, the late filers received on average $2,815.00 less in grant aid from all sources. Differences in other Grants were not significant.

Table 18

Linear Regression Model Coefficients – Grants and Federal Work Study (N = 10,877)

		Unstandardized Coefficients		Standardized Coefficients		
Dependent Variable	Model	B	Std. Error	Beta	t	Sig.
Federal Grants	Intercept	1583.120	24.723		64.033	0.001
	FAFSA STATUS	-313.640	76.002	-0.040	-4.127	0.001
State Grants	Intercept	2028.799	25.285		80.239	0.001
	FAFSA STATUS	-1262.180	77.727	-0.154	-16.239	0.001
Institutional Grants	Intercept	1044.888	30.168		34.635	0.001
	FAFSA STATUS	-408.310	92.741	-0.042	-4.403	0.001
Institutional Waivers	Intercept	1321.827	23.076		57.281	0.001
	FAFSA STATUS	-809.130	70.939	-0.109	-11.406	0.001
Other Grants	Intercept	73.527	5.917		12.425	0.001
	FAFSA STATUS	-21.730	18.191	-0.011	-1.195	0.232
FWS	Intercept	1848.620	28.893		63.981	0.001
	FAFSA STATUS	-602.740	88.821	-0.065	-6.786	0.001
Total Grants	Intercept	6052.161	58.963		102.643	0.001
	FAFSA STATUS	-2815.000	181.258	-0.147	-15.530	0.001

Student Loans and Late FAFSA Filers. Although late filers received less grant aid, at the end of their first year in college, students who filed a late FAFSA had taken significantly larger amount of loans than on time filers. The results of the linear regression analysis related to student loans are presented in Table 19. The findings indicate that, compared to on time filers, on average, the late filers received:

- $709.37 more in federal PLUS loans.
- $444.48 more in federal private loans.

Overall, compared to on time filers, at the end of their first year in college, the late filers received, on average, $661.30 more in loans. Federal student loans were found not significant.

In summary, the logistic regression analysis answered the first and the second question demonstrating that FAFSA later filers do differ significantly from on time filers across several demographic and socioeconomic related characteristics. A series of linear regression analysis answered the third research question establishing that late FAFSA filing has financial consequences: late filers miss out on significant resources/grants to pay for their college education, carrying larger amounts of student debt.

Table 19

Linear Regression Model Coefficients – Loans (N = 10,877)

		Unstandardized Coefficients		Standardized Coefficients		
Dependent Variable	Model	B	Std. Error	Beta	t	Sig.
Federal Student Loans	Intercept	3434.090	51.534		66.638	0.001
	FAFSA STATUS	110.180	158.419	0.007	0.695	0.487
Federal Parent PLUS Loans	Intercept	1852.488	58.507		31.663	0.001
	FAFSA STATUS	709.370	179.855	0.038	3.944	0.001
Private Loans	Intercept	499.610	30.805		16.219	0.001
	FAFSA STATUS	444.480	94.697	0.045	4.694	0.001
Total Loans	Intercept	7634.811	89.143		85.647	0.001
	FAFSA STATUS	661.300	274.033	0.023	2.413	0.016

Chapter Five

Discussion

The purpose of the study was two-fold: to explore the relationship between the timing of FAFSA filing and the characteristics of financial aid applicants, and to assess the impact of late filing on student finances. This chapter summarizes the major findings of the study within the framework provided by current literature. Study limitations as well as implications for future practice, research and policy are also discussed.

Discussion of the Findings

The first two research questions of the study examined how much of the variation in the timing of the FAFSA filing could be explained by student characteristics. Question one explored whether the demographic characteristics of students who file a late FAFSA significantly differed from those who file on time. The second question examined the socioeconomic differences of late filers and on time filers. To answer these questions, a logistic regression analysis was conducted. Variable selection for the logistic model was made via the stepwise selection, a combination of forward and backward methods. The decision to keep a variable in the model was based on the statistical significance, and stepwise regression was terminated when no further effect could be added to the model. Multicollinearity analysis was also performed with both tests, variance inflation factor and tolerance, indicating the selected regression model contained low level of multicollinearity. Twelve independent variables were chosen for the final regression model.

The Wald statistic was used to test the contribution of individual variables in the model. The results indicated that all predictors, except for the dummy variable of first generation made a significant contribution to the model. Predictive values of the individual variables in the

model ranged from 0.1% to 7.16%. Student residency, high school GPA, and gender were the strongest predictors of the timeliness of the FAFSA filing. Test scores (SAT math, SAT verbal) were found to be among the weakest predictors of the FAFSA filing status, while the predictive power of the socioeconomic variables (UnMetNeed, EFC) fell between those two categories. Overall, the analysis found both demographic and socioeconomic characteristics were associated with differences in FAFSA filing time.

The final research question explored the impact of late FAFSA filing on the amount of grants and loans students received. Grants were defined as any gift aid received by the student from the government, state, institutional, and external sources during their first year of college, while borrowing was expressed as total amount of federal, state, institutional, and private loans over the same time period. To answer this question, a series of linear regression analyses were performed. The results showed that students who filed a late FAFSA received significantly less grant aid, and they finished their first year of college with larger loan amounts than on time filers.

Demographic Characteristics

The first research question posed in this study examined the demographic characteristics (gender, race/ethnicity, household size, number in college, residency, and citizenship) that make students more or less likely to file a late FAFSA. A logistic regression analysis was conducted based on the belief that demographic characteristics might be influencing student's decision to file the FAFSA on time. The analysis revealed significant findings with respect to five demographic characteristics: (a) residency, (b) gender, (c) race/ethnicity, (d) family size, and (e) number in college.

Of those significant demographic factors that are related to a late filing status, the study found that late FAFSA filers tend to be in-state, male students, coming from families that have more than one person enrolled in college. The inverse is also true, female students tend to file on time; out-of-state students are more likely to file the FAFSA by the deadline.

Family size and number of students enrolled in college were also found to predict the FAFSA filing status. The chances of filing a late FAFSA increase along with an increase in the family size. Generally, students coming from large families are more likely to file the FAFSA late, while those coming from smaller families tend to file on time. Similarly, the number of students enrolled in college affects the timing of FAFSA filing. Students coming from homes where fewer family members are simultaneously attending college tend to file on time. As the number of the college-going children in the family increases, so do the chances that those students will file a late FAFSA.

When examining student race/ethnicity, the findings indicated that being a minority has differential effects depending on the subgroup. In this sample, Hispanic, Asian, and American Indian students have higher chances of filing a late FAFSA. The results indicated that African American/Black students were more likely to file the FAFSA on time than white students. Being a black student at this particular institution significantly reduced the chances of filing late.

Socioeconomic Characteristics

The second research question explored the relationship between the timing of FAFSA filing (on time versus late) and the socioeconomic factors that make students more or less likely to file on time. Socioeconomic student characteristics included: family income, expected family contribution, student financial need, underrepresented minority status, dependency, single

household, first-generation, high school GPA, and SAT scores. The analysis showed significant findings with respect to six socioeconomic characteristics: (a) high school GPA, (b) SAT math, (c) SAT verbal, (d) unmet need, (e) EFC, and (f) single household.

Overall, the results indicated the stronger the academic performance of students while in high school, the higher the chances they will complete and file the FAFSA on time. Both variables measuring high school performance, the GPA and the SAT had a positive impact on FAFSA filing status. Strong high school performers, as expressed by the GPA, were more likely to file the FAFSA on time. On the other hand, those students who had lower high school GPA are more likely to be late filers. Similarly, the results indicated there was a significant relationship between student test scores and the timely FAFSA completion; students who scored high on SAT (both math and verbal sections) tended to complete and file the form on time.

One key finding of the logistic regression analysis was that students coming from single households have significantly higher chances of filing a late FAFSA. The inverse also held true: those coming from families with both parents, were more likely to complete and file the FAFSA by the deadline. Additionally, the results indicated that late FAFSA filers were more likely to have higher EFC and larger unmet financial need. Generally, students from backgrounds with higher financial means, as expressed by the EFC, tended to file late while low-EFC students tended to complete and file the FAFSA on time.

Low Income Students

The logistic regression grouped by income explored the relationship between family income and the FAFSA filing status. EFC was used as a proxy for income since it is often viewed as a comprehensive measure of a family's wealth, and its ability to pay for college.

Based on the EFC amounts, students were placed into three distinct groups: low, middle, and high income (Table 11). While all three groups were important, the main goal of the analysis was to better understand the filing patterns of low-income students. After all, it is those students who need financial assistance the most. Focusing on the low-income group, results showed high school academic performance is a strong predictor of the FAFSA filing time; the higher the GPA, the lower the chances of filing a late FAFSA. Test scores also were found to be significant predictors of the FAFSA filing status, and generally, students who scored high on SAT (math and verbal) had higher chances of filing on time.

One interesting finding of the analysis was regarding low-income, male students. While the gender effect on the timing of FAFSA filing was significant across three income levels, the strongest impact was found to be in low-income category. The odds ratio of 1.531 for gender indicates that the odds of filing a late FAFSA are 1.531 times higher for low-income male students than they were for low-income females. Similarly, the residency variable was significant across three income levels, with the strongest effect on the low-income group. The odds of filing a late FAFSA for low-income, in-state students were 2.737 times higher than the odds of out-of-state students in the same income group.

The Impact of Late Filing on Student Grants and Loans

The findings of this study indicated that several demographic and socioeconomic factors were strong predictors of the FAFSA filing status. The next question was: what is the impact of FAFSA filing on long-term student finances in the form of scholarships and loans? To explore this question, a series of linear regression models were estimated. The linear regression analysis assessed the impact of late FAFSA filing on the amount of grants and loans students received during their first year in college. The findings are a clear indication that late

FAFSA filers were awarded less grant aid. Compared to those who completed and filed their FAFSA on time, late filers received: $313 less in federal grants; $1,262 less in state grants; $408 less in institutional grants; $809 less in institutional waivers; and $603 less in federal work study.

Receiving significantly less grant aid due to the late filing status is only part of the equation impacting how students pay for college. With less grant support, late FAFSA filers were found to carry significantly larger loan amounts. Being unable to receive adequate grant aid to cover the tuition and fees, often, those students rely on loans, as an alternative way of funding their college education. The findings of linear regression analysis held true for all grant and loan categories except for other grants, implying students who missed the FAFSA deadline will graduate with more debt. On average, late FAFSA filers took on the following debt compared to on time filers: $110 more in federal student loans; $709 more in federal PLUS loans; and $448 more in private loans.

Interpretation of the Findings

This section attempts to interpret the relationship between the student characteristics and the FAFSA filing status for the students included in the sample. It also reflects on the findings regarding the impact of late filing on student finances, even though some of the findings will require additional research to understand fully. Research question one, which investigated the relationship between the timing of FAFSA filing and demographic characteristics of financial aid recipients, among others, found residency to be a strong predictor of the FAFSA filing status. Chances of filing a late FAFSA were significantly higher for in-state than for out-of-state students. One possible explanation for this finding could be the cost of attendance. Out-of-state tuition and fee rates at the particular institution are

approximately 2.5 times higher than in-state rates. Given the cost of attendance is high, and knowing that FAFSA is the gatekeeper of the student aid program, out-of-state students might pay close attention to FAFSA deadlines. Also, it is likely that parents encourage their out-of-state students to file on time, mainly because they have to pay significantly more than in-state parents. On the other side, because the in-state tuition and fees are significantly lower at the study institution, in-state students may be less inclined to complete and file the form by the deadlines, mistakenly thinking that financial aid will be there to support them regardless of the FAFSA filing status.

Compared to female students, male students are most likely to file a late FAFSA. The finding is difficult to interpret, but it appears that female college students may have better knowledge of the student aid system and the FAFSA timeline, not just at the institutional level, but also federal and state deadlines. It might be that female students have greater awareness of the overall college costs. Being male significantly increases the chances of filing late. It is likely that male college students do not invest sufficient time to complete and file the forms by the deadline. Perhaps, male students are less knowledgeable about the role of FAFSA in getting financial assistance. It could also be that male students are not receiving sufficient support from parents and school administrators in completing and filing the FAFSA.

Generally, students coming from large families tend to file a late FAFSA: the larger the family size, the higher the chances of late filing. This could be related to the complexity of the FAFSA form, and the challenges associated with the student aid system. Clearly, filing the FAFSA is not an easy task; completing the form requires knowledge and support, especially parental support. As the family size increases and parents stay busy with other children in the household (in addition to their jobs and other commitments), their college-going students might

be getting fewer reminders from the parents and/or less assistance completing the form. Likewise, the chances of filing a late FAFSA increase as the number of students attending college goes up. One reason may be lack of sufficient family time since parents have to divide their time among many children in the household. It might also be that in a large household, parents might encourage more independence or self-reliance.

The second research question explored the socioeconomic factors that may affect the FAFSA filing status. Among others, results showed that high school academic performance significantly affects the FAFSA filing status. Strong performers, as indicated by both, high school GPA and SAT scores (math and verbal) were more likely to file their FAFSA on time. The inverse was also true: students with lower GPA and lower test scores tended to file late, after major deadlines had passed. One possible explanation could be that strong performers have better time management skills, pay close attention to deadlines, and tend to comply more with the school requirements. Most likely, those students had strong family support and better knowledge of the financial aid system. It could also be that the lower performing group was not receiving proactive support and intervention from high school guidance and counselors.

One finding from the logistic regression analysis was that students coming from single households had significantly higher chances of filing a late FAFSA. Time and knowledge about the FAFSA could be an issue for that group of students. Perhaps, those students received less support from both, the parent at home and the school system. Additionally, lack of knowledge about the FAFSA may be an issue, especially in cases when the single household head may not have attended college.

Both, EFC and unmet financial need were found to be likely predictors of the FAFSA filing status. The results indicated that late filers tended to have higher EFC and large unmet

need. Given that EFC measures a family's financial strength and their ability to pay for college, this seems a logical finding. The majority of federal and state financial aid is need-based, intended for students coming from low-income families. High EFC/income students would normally anticipate receiving less financial aid even if they completed the FAFSA on time. Therefore, those students have less incentive to file the form by the deadline. The unmet need finding is somewhat unexpected because the normal assumption would be that if a student anticipated a large gap to meet financial need, then they would take the necessary steps to file the FAFSA on time. One reason for late filing might be insufficient knowledge about the student aid program; perhaps, students with large unmet need are unaware of the process and most importantly, do not understand the benefits of timely FAFSA completion.

The logistic regression analysis based on the EFC, among others found that for *low-income group*, high school academic performance was a strong predictor of FAFSA filing status. Students who do well academically had significantly higher chances of filing on time, while low performers (expressed by GPA and SAT math) were more likely to file late. Otherwise, as the student's academic performance gets weaker, the chances of late filing increase. This may be partly due to students not focusing on deadlines and partly due to lack of support from high school guidance counselors. It is also possible that low-income, low performing students come from less educated parents, therefore lack of social capital.

For low-income students, residency and gender were strong predictors of the filing status, meaning in-state, male, low-income students were significantly more likely to file late. One way to explain the finding is that low-income male students are less focused on the deadlines. It might be that they do not fully understand the implications of late filing. Perhaps, those students underestimate the college costs simply because the in-state tuition and fees are

lower than out-of-state rates. The complexity of the FAFSA form might also play a role; those students simply find the FAFSA process too complicated and postpone filing the form until after the deadline.

Relationship of the Findings to Prior Research

The results of the current study are significant when considered in the context of prior research. For the most part, the findings support prior research related to factors influencing the timing of FAFSA filing and the impact of late filing on student finances, although in a few cases, current findings contradict previous studies. The study found gender and family income to be significant predictors of the FAFSA filing status. Male students in the low and middle-income groups had higher chances of filing late. These results are in line with prior research findings by Kofoed (2015) indicating that FAFSA non-filers tend to be lower to middle income, white, and male. Even though Kofoed's study focused on the non-filers, there seems to be some similarities between the two groups of students: FAFSA late filers, and FAFSA non-filers. Another common finding in these two research studies is minority student filing patterns; both studies concluded that black students are significantly more likely to file on time than white students.

Prior research has established a positive relationship between a family's financial status and the FAFSA filing time. Heroff and Feeney (2013) found family income to be a strong predictor of timely FAFSA completion; among low-income students, those with slightly higher EFC were found to be significantly more likely to complete the FAFSA on time. Using the EFC as a proxy for family income, current study found that chances of filing a late FAFSA increase along with the increases in the family income. So, the larger the EFC, the higher the

chances students will file a late FAFSA. In that respect, the current study contradicts prior research findings.

The study was able to confirm prior findings regarding high school academic performance and FAFSA completion. Feeney and Heroff (2013) demonstrated that students who had high academic achievement expressed by high school GPA and college entrance exam scores (ACT), were more likely to complete and file the FAFSA earlier. Moreover, existing research maintains that high school performance has long-lasting effects on student's college performance, persistence, degree attainment, earning power, and overall career trajectory (DesJardins et al., 1999; Dynarksi, 2003; Starter, 2009). As presented in table 12, the current study found high school GPA and SAT scores have a significant, positive effect on the FAFSA filing time. By establishing a direct link between high school academic performance and the FAFSA filing status, the current study adds to the existing research, showing how high school academic performance might affect student's finances while in college. Above all, the findings of the current study show that students with lower high school GPA may need additional support understanding the college costs, family finances, as well as ways to meet college financial needs.

The current study was unable to confirm prior research findings regarding the role of parental education on the timing of FAFSA completion. While Heroff and Feeney (2010) found that having a parent, who graduated from college, significantly increases the likelihood of students competing their FAFSA early. The current study was inconclusive in that regard. The dummy variable "first generation" was created to examine the effect of parents' education on the FAFSA filing status. However, as discussed in chapter four, that variable was found to be insignificant. In addition, the study was also unable to confirm prior research findings

regarding the effect of dependency status on the FAFSA filing time because that variable was excluded from the final regression model. The decision is related to the nature of the study institution, where the overwhelming majority of students are "traditional" college-going students. In the initial dataset, independent students represented a small percentage of the student population (less than 1%). Therefore, it was concluded that keeping the variable would bring little, if any, relevant finding to the study.

With respect to exploring the impact of late filing on grants and loans students received during their first year in college, the current study was able to confirm most prior research. LaManque (2009) found that only 40% of late FAFSA filers, compared to 66% of on time filers, received financial assistance. It is important to clarify that the current study measured financial impact differently. LaManque examined the percentage of late filers who received aid while the current study measured the amount of grants received by late filers. However, both studies reached similar conclusions: a smaller percentage of late filers (compare to on time filers) received financial assistance in the form of grant and scholarship aid.

There was some similarity between the results of the current study indicating male students tend to file late with prior research conducted by Davidson (2013). Although Davidson focused on students who did not file a FAFSA, the study concluded that the typical student who do not complete the FAFSA were "male, independent." It appears both studies found that male students are more likely to file a late FAFSA or not apply at all. Therefore, the research points out a need for intervention to improve the FAFSA filing rates for that group of students.

Implications of the Study

Findings from the current study have implications for future practice, research, and policy. The findings indicate that to encourage timely FAFSA completion and minimize the

financial consequences of late filing, specific steps should be taken by high school guidance counselors, academic advisors, and college administrators. To be successful in providing student financial support to get a college degree, combined efforts and a shared responsibility among students and their families, institutions of higher education, state, and federal government are needed.

Implications for Practice

One key finding of the study is that students who file a late FAFSA differ from the on time filers in several demographic and socioeconomic factors. High school academic performance affects the FAFSA filing status; clearly, the stronger the academic performance while in high school, the lower the chances of filing late. Students who file a late FAFSA have lower high school GPA, lower SAT math, and lower SAT verbal sores. This points to the need for additional assistance from high school guidance counselors in facilitating timely FAFSA completion. High school guidance should work with college-bound students to ensure they understand the role FAFSA in obtaining financial support, and most importantly, the consequences of late filing. These efforts should not only be aimed at the high achieving students.

Clearly, completing the FAFSA is not an easy task. Doing so requires both knowledge and time, and unless students are aware of the FAFSA role, they will not take the necessary steps to file on time. Parents also need to understand the FAFSA since family income and parental information are a key part of the FAFSA form. The findings of the current study regarding the financial impact of a late filing call for coordinated efforts between college administrators and high schools guidance counselors. Schools and government can play a bigger role in educating parents about the FAFSA filing process and the deadlines. Sending

financial aid administrators to high schools to speak with students and their parents about the FAFSA might be one way to approach the issue.

Even though some FAFSA training is currently taking place at the high school level, clearly, the approach of *"come join us for the FAFSA night"* is not sufficient for all groups of students. When it comes to FAFSA filing status, efforts should consider students' misunderstanding of college costs and unawareness about the availability of financial aid. Unless students are made aware of the college costs, they will not take steps to complete and file the FAFSA on time. However, simply making them aware of the costs is not enough. Students need to know what financial resources are available to them, and most importantly, how to obtain those resources. To improve the on time filing rates, better coordination between colleges and high schools is needed; early intervention and increased FAFSA knowledge are key steps.

Once the students are admitted to the university, college financial aid administrators can and should play a bigger role in ensuring timely FAFSA completion. One-on-one personal assistance is found to be the best approach in increasing the number of on time filers (Bettinger, et. al, 2009; Davidson, 2013), but the approach tends to be time consuming. Mainly because of that, many financial aid administrators shy away from providing personal assistance to students. However, if improving the filing rates is a concern, then colleges and universities should devote time and resources for personal interactions with students.

The results of the current study showed that late filers are most likely to be male, in-state, low-income students with large unmet need. Educational programs targeted specifically for those students could improve the overall FAFSA filing rates. Another way to increase the completion rate might be by reminding students of the upcoming FAFSA deadlines. Using

multiple channels of communication may yield better results. The issue of educating students about the FAFSA should not be viewed as *something that belongs to the financial aid office.* Instead, it should be a continuous and collaborative process: from the admissions officers, to the new student orientation programs, to on-line training, to faculty in the classroom, to college administrators and the entire support staff.

One of the most compelling findings of this study is related to the finances of late filers. The study found clear evidence that late filers receive significantly less grant aid, missing out on financial support needed to pay for their college education. While this is a significant finding for all FAFSA filers, it is especially important for low-income students. With less grant aid assistance, often, these students have challenges paying the bills. In many cases, the alternative is to take additional loans. However, research regarding the effects of loans on college outcomes shows mixed results, some suggesting loans help students and others indicating that loans negatively impact college outcomes (DesJardins, et al., 2002; Chen, 2008; Singell, 2002). Carrying too much debt might have financial consequences for borrowers. School administrators can use this information to redesign some of the current grant aid distribution policies, and allow funds for low-income late filers. Although colleges have no input on most of the state and federal financial aid policies, they control their own funds, and can certainly create policies that allow low-income late filers to receive grant aid.

In light of the findings from the current study, colleges and universities might need to enhance existing programs and also revise some of the current financial aid practices – especially as it relates to communication. In addition to the mass communications, which are widely used at many universities, schools can create programs that target specifically at-risk

students such as those who had lower academic performance while in high school, come from single households, are from low-income families, and those classified as in-state students.

Implications for Research

Along with the implications for practice, findings from the current study have implications for future research. These implications include the integration of qualitative data, performing research focusing on returning students, employing a longitudinal analysis, and examining other forms of academic success. A qualitative research study may help to better understand some of the reasons why students file late: is it lack of knowledge, insufficient support from their families and guidance counselors while in high school, or simply negligence by colleges and universities? Conducting student surveys and studying students' perspective on why they missed the deadline will allow the institutions of higher education to formulate strategies for dealing with the issue and improve the overall FAFSA on time filing rates.

Future research may explore the topic of late FAFSA filing using a different type of data. The current study used the data for first year, first time, entering college students, but first year data may not represent the FAFSA filing patterns of returning students. Compared to first year students, it is possible that returning students are more or less likely to file the form on time. It would be of interest if future research focused on returning students to understand the factors influencing the filing status, and the impact of late filing. In addition, future analysis should explore the issue of late filing at the national level to see if there are any significant differences by the type of institutions.

When it comes to student race/ethnicity, the current study found that both Black and Native Hawaiian students were significantly more likely to file the FAFSA on time. It is important to mention that Native Hawaiian students were represented by low numbers in the

sample. Hispanic, American Indians, and Asian students were also less likely to file on time. Given the key role of FAFSA in distributing student financial aid, understanding what causes these differences in student behavior will be an important direction for future research.

Although significant, the logistic regression model completed in the study accounted for a small portion of the overall variability in the FAFSA filing time. Other variables such as student perceptions of the college costs and knowledge about the financial aid system may play a role and are worth investigating. Research has consistently found that students and their parents are misinformed about the college cost and the availability of financial aid. Future studies can build on current research and further explore those factors to see if they affect the FAFSA filing status.

The findings of the current study indicate gender is a significant predictor of the FAFSA filing status; male students tend to file late. To better understand some of the reasons that make male students more likely to file a late FAFSA, qualitative research focusing on gender and exploring the filing patterns of male and female students may be a good direction for future research. The study also found students coming from large families with many children attending college simultaneously tend to file late. It would be of interest to know if the filing patters of the second or third child going to college are different from those of the first child. The question could be addressed by conducting a qualitative study on behavioral change that may occur as the second and the third child become college age.

Implications for Policy

Providing financial assistance to low and middle income students remains one of the top priorities for policymakers at state level. This research suggest that if states are interested in distributing financial aid to students, they should provide additional assistance to both students

and their families completing the FAFSA. State governments can use programs to target eligible students, ensuring those students understand the FAFSA role as well as the financial consequences of late filing.

The findings of this study are a strong indicator that in-state, male students tend to file the FAFSA late, missing significant grant aid needed to offset college costs. With state policymakers concerned with the financial wellbeing of state residents, they can establish new policies that better assist parents and students with FAFSA filing. Having FAFSA training/classes, distributing brochures, and emailing are some of the interventions that may improve the filing rates. Communicating with students and parents and providing one-on-one assistance to students who have challenges with the forms – are important. Having designated FAFSA days and extending financial aid office hours may also improve the filing rates. The majority of research studies show that personal assistance with FAFSA is a very effective way of increasing the filing rates.

The study findings are a clear indication that late FAFSA filers miss out on significant grant aid, and to make up for the loss of funds, those students take on more debt. The issue is critical for low-income students. Prior research has shown that low-income students who enroll are not graduating at the same rates as their upper- and middle-income students, but grant aid can help. In that respect, the findings of the current study can be used as a tool by college administrations concerned with increasing student debt load. Schools should examine their current policies with the goal of improving the on time filing rates. One way to do that would be to provide more education to students and parents about the cost of attendance and the availability of financial aid. Reminding them about the federal, state and institutional deadlines could also improve the filing rates.

Financial aid helps millions of students achieve their college dream each year. However, it is widely accepted that lack of knowledge about the financial aid programs and the complexity of the FAFSA form represent a major challenge for many students. Simplifying the form and promoting timely FAFSA completion may be some of the policy changes the federal and state governments can make if they want to increase access to an affordable college education.

Limitations of the Study

It is important to note some of the limitations of the current study. The first limitation is related to the data and the ability to generalize the findings. The current study used the data from a single, large, comprehensive, selective, research-intensive public institution whose students were affluent. Therefore, the results of the study cannot easily be generalized to draw conclusions about the impact of late FAFSA filing at other types of institutions. The impact of late filing on student's finances may be stronger or weaker at other colleges depending on the socioeconomic and demographic characteristic of the student population in those schools.

One of the shortcomings of the study is related to the definition of academic performance. The study used high school GPA and SAT scores as a measure of academic performance. Although high school academic performance may predict college performance, the two of them are not the same. If we ran the analysis using students' academic performance while in college, there is a chance that the findings may be different. In that case, the definition of success can be expanded to include other indicators such as college persistence and time to degree. It is also possible that other variables may interact or contribute to the FAFSA filing status and the effects of late filing.

Another limitation of current inquiry on the impact of FAFSA filing status on student loans is that the study did not examine the effects of late filing on debt levels longitudinally. The current study examined only first year, first time college students. Future research could use longitudinal data for the analysis to see if the findings hold true. While the current study showed that at the end of first year late FAFSA filers received significantly more loans than on time filers, it would be of interest to understand how loan amounts change as students progress through college. Many believe debt might impact students' career choices and lifetime decisions, calling for improved understanding of the loan issue.

Due to the use of the secondary data, the analysis was limited to the variables already available in the data set. As discussed in chapter 4, the overall regression model accounted for approximately 5.5% of the variance in the timing of the FAFSA filing. Merging the current dataset with other variables in other databases might make for a more robust study.

Despite these limitations, the results of the current study add to our understanding in terms of the characteristics of FAFSA late filers, and the impact that late filing has on student finances. The study provided a perspective on the characteristics that make students more or less likely to complete the FAFSA on time. Understanding those characteristics is important to the higher education stakeholders concerned with improving the filing rates. Late FAFSA filing has major consequences: filers receive significantly less grants aid than on time filers. Under these circumstances, many students turn to student loans as the only option to pay for their college education.

During the last few decades, the United States has made progress in increasing college access, enabling millions of students to attend the institutions of higher education. Admitting students to the university is important, but ensuring they graduate from college is even more

important. Financial assistance is key for a successful degree completion, while FAFSA remains the main instrument used to distribute the aid. Completing the FAFSA is a critical step in securing financial assistance. However, simply filing the form is not enough. Due to limited resources, the timing of the FAFSA filing matters. The current study shed light on several key factors that make students more likely to miss the FAFSA deadlines. In addition, it demonstrated that late filing has major financial consequences for students and their families. The findings can be used by high school guidance offices, college administrators, state and federal governments, and higher education leaders concerned with improving the on time FAFSA filing rates, and reducing student debt levels.

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Appendix A

The Student Aid Process

FAFSA Process at the Federal Level. To be considered for federal financial aid, students must complete and submit the FAFSA to the U.S. Department of Education. FAFSA is also the main instrument used in distributing state and institutional financial assistance, and current and prospective students can prepare the form annually. FAFSA processing cycle lasts 21 months: the U.S. Department of Education begins accepting the FAFSA applications on October 1 of each year - for the upcoming academic year, and the form is accepted till June 30 of the following award year[1]. Although paper applications are accepted, students are strongly advised to file an electronic FAFSA. On-web FAFSA is the quickest and easiest method of applying, offering several advantages such as: detailed online help with filling the form, real-time online assistance with a customer service representative, built-in edits to detect errors and reduce the number of rejected applicants, and instant access to the expected family contribution. The U.S. Department of Education indicates that more 90% of the FAFSA are completed on-line (https://studentaid.ed.gov/sa/).

The FAFSA data are transmitted to the Central Processing Unit (CPU) of the U.S. Department of Education, and processed in accordance with federal law requirements. Once the FAFSA is processed, a Student Aid Report (SAR) is created and sent to the student for their review and verification. SAR summarizes all the information the student provided in the FAFSA form, and usually shows the EFC. Student and their family review the report carefully for errors; if deemed incorrect, they can resubmit the FAFSA. As the final step of the process, U.S. Department of Education sends the EFC information to the school(s) the students have chosen, and provides them totals reflecting federal grants, loans, and work-study assistance amounts for which the student is qualified for (Guide to federal student aid, 2013; Heller, 2006; NASFAA, 2012).

FAFSA Process at the Institutional Level. The final step of FAFSA processing occurs at the institutions of postsecondary education. After students are admitted to a college or university, financial aid administrators handle the aid distribution process. The activity,

[1] Until fall 2016, FAFSA became available on January 1. With the introduction of prior-prior year starting fall 2017, FAFSA became available on October 1, approximately about eight months before the applicant starts the academic year.

also known as *FAFSA Processing*, starts with downloading the student data from the U.S. Department of Education, continues with verification of the information submitted on the FAFSA (as/when needed), and concludes with financial aid offers.

While checking the FAFSA student data, the U.S. Department of Education flags some applications for colleges and universities to "verify". The verification is intended to improve the accuracy of the information provided by students, and requires them to resubmit and document some or all of the information they put in their FAFSA. Financial aid administrators have the right to ask for any documentation they feel is necessary to complete the verification process. Generally, students are asked to supply copies of income tax returns, W-2 statements, and 1099 forms. Although it is not intended to function like a forensic audit, financial aid officers hold off federal student aid disbursement until the verification process is complete. Schools are prohibited from distributing federal student aid to those students who refuse to supply the required documents. Historically, colleges were required to verify a standard set of five verification items for 30% of their FAFSAs. Beginning with the 2012-13 award year, the U.S. Department of Education transitioned to a targeted verification system which uses a risk-based model to identify FAFSA data elements that are prone to error, appear anomalous, or seem inconsistent (https://studentaid.ed.gov/sa/). Additionally, the set of data elements potentially subject to verification was significantly expanded, and may even change from one year to the next.

Using all available federal and non-federal aid, college administrators construct a financial aid package that comes as close as possible to meeting the student's demonstrated financial need. While putting the packages together, institutions of higher education can use whatever criteria they choose for distributing their own resources in support of student aid. The packages vary for each student, and they may include support from all funding groups: federal, state, and institutional aid; also, they may include aid from three types: grants, loans and work-study. The amount of aid received by any student depends on the type of institution they attend. Therefore, among students with the same EFC, those attending most expensive/private schools will qualify for larger amounts of aid (NASFAA, 2012; Federal aid guide, 2013; Institute for college access & success, 2010).

Office of Research Compliance
Institutional Review Board
North End Center, Suite 4120, Virginia Tech
300 Turner Street NW
Blacksburg, Virginia 24061
540/231-4606 Fax 540/231-0959
email irb@vt.edu
website http://www.irb.vt.edu

MEMORANDUM

DATE: August 31, 2017

TO: Steven M Janosik, Feride Daku

FROM: Virginia Tech Institutional Review Board (FWA00000572, expires January 29, 2021)

PROTOCOL TITLE: Factors Influencing the Timing of the FASFA Application and the Impact of Late Filing on Student Finances

IRB NUMBER: **13-171**

Effective August 31, 2017, the Virginia Tech Institution Review Board (IRB) Chair, David M Moore, approved the Amendment request for the above-mentioned research protocol.

This approval provides permission to begin the human subject activities outlined in the IRB-approved protocol and supporting documents.

Plans to deviate from the approved protocol and/or supporting documents must be submitted to the IRB as an amendment request and approved by the IRB prior to the implementation of any changes, regardless of how minor, except where necessary to eliminate apparent immediate hazards to the subjects. Report within 5 business days to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

All investigators (listed above) are required to comply with the researcher requirements outlined at:

http://www.irb.vt.edu/pages/responsibilities.htm

(Please review responsibilities before the commencement of your research.)

PROTOCOL INFORMATION:

Approved As:	**Exempt, under 45 CFR 46.110 category(ies) 4**
Protocol Approval Date:	**February 25, 2013**
Protocol Expiration Date:	**N/A**
Continuing Review Due Date*:	**N/A**

*Date a Continuing Review application is due to the IRB office if human subject activities covered under this protocol, including data analysis, are to continue beyond the Protocol Expiration Date.

FEDERALLY FUNDED RESEARCH REQUIREMENTS:

Per federal regulations, 45 CFR 46.103(f), the IRB is required to compare all federally funded grant proposals/work statements to the IRB protocol(s) which cover the human research activities included in the proposal / work statement before funds are released. Note that this requirement does not apply to Exempt and Interim IRB protocols, or grants for which VT is not the primary awardee.

The table on the following page indicates whether grant proposals are related to this IRB protocol, and which of the listed proposals, if any, have been compared to this IRB protocol, if required.