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A Quantitative Analysis of Financial Literacy at The University of Mississippi

By
Jackson Gunn

A thesis submitted to the faculty of The University of Mississippi in partial fulfillment of
the requirements of the Sally McDonnell Barksdale Honors College.

Oxford
May 2016

Approved by

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Abstract

Jackson Gunn: A Quantitative Analysis of Financial Literacy at The University of Mississippi
(Under the direction of Dr. Bonnie Van Ness)

This thesis examines why financial literacy is important and what factors can influence students' financial literacy at the University of Mississippi. Financial literacy is important and can affect many aspects of life, whether it is political, financial, educational or personal. Students enrolled in EDHE 105 participated in the multiple-choice survey, which included socioeconomic, demographic and financial literacy questions. Participants' answers were analyzed using four statistical models: ordinary least squares regression, univariate analysis or means by differences analysis, interactions and probit analysis. The study found that the average score, 2.02 out of five, to the financial literacy quiz for all participants was comparable to the national average, 2.30 out of five, for 18-to-34 year olds. The study also found that there are three dominant factors that can influence one's financial literacy level: being a male, being Caucasian and having either a part-time or full-time job.

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Chapter 1: Introduction

Financial literacy is an important skill for one to have in order to achieve economic security. Financial literacy is defined as the ability to make informed judgments and take effective actions regarding the current and future use of the management of money (Dodaro, 2011). It would be ideal for all people to be rational and make informed decisions because consumers are presented with a multitude of innovative financial tools and products in today's marketplace. In particular, members of the millennial generation and those who follow will be the ones who are most affected by such innovation in the financial marketplace. Millennials have come of age in an environment in which the frontiers of technology have appeared unlimited (White House Council of Economic Advisors, 2014). Because millennials will be the leaders of tomorrow, it is in the best interests of municipalities, policymakers, universities and businesses that the millennial generation and following generations are properly educated to have the foundations to make rational financial decisions.

The millennial generation consists of individuals born between 1982 and 2000. Over 80 million millennials live in the United States, exceeding the baby boomer population of 75 million (United States Census Bureau, 2015). Millennials are also more racially and ethnically diverse than previous generations. Such diversity leads to new challenges as it relates to financial literacy. Lusardi (2008) writes, "there are major differences in financial literacy across racial groups, with African-Americans and

Hispanics displaying much lower levels of financial literacy than whites.” The gap between the financial knowledge of these three racial groups is troubling. One reason why it is troubling is due to the changing demographics in the United States. Minority groups now represent over 44% of the population and will represent a majority of the population in the near future. Further, these demographic changes are not only occurring at a national level but also are occurring at a university level, too. A National Center for Education Statistics report projects a 25% increase in African-American students, a 42% increase in Hispanic students, but only a 4% increase in white students at the college level by 2021 (Azziz, 2014). However, such demographic changes create the opportunity for universities to increase financial literacy.

The University of Mississippi continues to see unprecedented growth in student enrollment and a continual increase in diversity on its Oxford campus and satellite campuses. Enrollment has grown by 59.3% since 2004 (Ole Miss, 2016). The University, in coordination with the Mississippi Institutes of Higher Learning, established a diversity plan in 2013. The first goal of the plan was to increase enrollment of minorities (University of Mississippi, 2013). Minority enrollment, as a percentage of total enrollment, increased from 19% in 2008 to 25% in 2012 and has remained at a similar level since then (University of Mississippi, 2013). Specifically, from 2008-2013, African-American enrollment increased 57.2%, and Hispanic or Latino enrollment increased 152.5% (University of Mississippi, 2013). An increase in ethnic diversity is important because it allows students to have a multi-cultural perspective, fosters students’ interactions with others who likely have different goals for what they want to accomplish while attending Ole Miss, but this diversity also results in students having more varied

levels of financial literacy. The primary purpose of my thesis is to examine the financial literacy of freshman students enrolled in EDHE 105 courses at the University of Mississippi and determine what factors influence these students' financial literacy.

Chapter 2: Why Financial Literacy is Important in the Current Business Environment

Millennials need to have a basic financial knowledge for a multitude of reasons. One reason for why financial literacy is important related to the U.S. social security system. As the baby-boomers continue to age and retire, more will begin to draw social security benefits. The cost of providing these benefits will fall onto millennials who are in the workforce. Such a structure where younger generations provide the financing for older generations' benefits is not new. However, millennials face challenges not experienced by baby-boomers and current retirees. According to Desilver (2015), social security's cash expenses have exceeded cash receipts since 2010, and social security's combined reserves will most likely be depleted by 2034. Further, 61% of millennials believe social security benefits should not be reduced (Desilver, 2015). It is imperative that millennials have the financial capability to understand that future social service programs, such as social security, will most likely need to be restructured and that one should not be fully dependent on such programs for future benefits.

Financial literacy becomes more important when estimating the true cost of retirement. The cost of retirement is how much savings is needed at retirement but is highly personalized based on each individual's or household's facts and circumstances (Blanchett, 2013). As stated above, social security retirement benefits are underfunded, and reserves will most likely be depleted in the next two decades. One change to address underfunding is increasing the eligibility age to draw social security benefits from 67 to

69 for individuals born after 1959 (Social Security, 2016). The change in eligibility requirements only increases the cost of retirement for millennials. The reason why it increases the true cost of retirement is because one will have to wait two more years to be eligible for social security compensation, if there is any compensation to be had. In fact, 51% of millennials believe they will never receive social security benefits (Desilver, 2015). Further increasing the need for millennials to be financially literate and to understand the importance of saving for retirement is that corporations began to shift from using defined benefit plans to using defined contribution plans in the 1980s (Marcks, 2015). A defined benefit plan, better known as a pension plan, provides one with a continual retirement benefit until death. The benefit amount is determined by different factors, such as average salary during employment and length of employment. It is the employer's liability that the pension plan is sufficiently funded when the employee retires and begins to receive benefits from it. The percentage of the private workforce covered by a defined benefit plan decreased from 83% in 1980 to 18% in 2011 (Marcks, 2015).

A defined contribution plan, better known as a 401-K plan, is a plan in which the employee contributes a portion of his or her paycheck to the plan in order to save for retirement. The employer normally contributes to the employee's plan in some manner as well, but the employee assumes the liability and risk of funding the plan. Liability means it is the employee's responsibility that the plan has adequate capital to sufficiently cover his or her retirement costs. It is important to understand the shift to defined contribution plans and how the cost of retirement can increase when life expectancy rates rise. Irving (2015) writes, "The odds are that millennials and the generations that follow will

experience significantly longer lives... But by planning responsibly and effectively, and investing early, millennials can be better prepared than their parents for longer lives.”

The cost of retirement increases when individuals live longer because they will need additional savings to cover their living expenses. The best way to increase one’s retirement savings is to have the financial knowledge to know that it is better to begin investing sooner rather than later. Millennials who are financially illiterate will not understand such differences and how the choice to invest sooner can drastically affect having the money needed to retire or not.

Millennials need to have the financial knowledge to understand that it is never too early to save for retirement. A report issued by BNY Mellon notes “millennials report they are spending today on non-essential, discretionary and luxury items they will be unlikely to be able to afford when they retire ” (Mellon, 2015). On the other hand, many millennials are increasing their savings too. A Fidelity report shows that millennials are now saving 7.5% of income compared to 5.8% of income in 2013 (Mondalek, 2016). Such spending and saving habits prove that many individuals do, but many do not, know the importance of making financially wise decisions.

Financial literacy is imperative, as post-secondary tuition costs continue to rise. Between 2005-06 and 2015-16, published in-state tuition and fees at public four-year institutions increased at an average rate of 3.4% per year beyond inflation (College Board, 2016). This increase is actually smaller than the tuition increases over the previous two decades. However, unlike the previous two decades of positive income growth, median family income declined at an average rate of 0.2% per year, after adjusting for inflation (College Board, 2016). Even though wages have remained

stagnant, the cost of not obtaining a post-secondary education has increased as jobs have become more specialized and require advanced degrees (Goodman, 2015).

According to the College Board (2016), the majority of students and their families do not have adequate capital to finance post-secondary education. Therefore, students access debt, in the form of student loans, to finance their educations. However, student loan debt has risen at twice the rate of inflation upon graduation (TICAS, 2015). Total student loan debt has tripled over the past decade to \$1.2 trillion (Mitchell, 2015). Millennials who have adequate financial knowledge can make strategic decisions to decrease student loan debt. Many, however, are financially illiterate and default on their student loans. The government classifies one in default when he or she does not make a payment for over a year. 17%, or seven million borrowers, defaulted in 2015, an increase from 6% in 2014 (Mitchell, 2015). Failure to decrease one's debt burden leads to economic insecurity and forces many millennials to access alternative financing solutions.

The movie *Spent: Looking for Change* casts light onto the highly profitable, yet highly controversial, alternative financial sector in the United States. The film documents three families and one individual and shows what can happen when one loses access to the traditional banking system. The statistics in the following two paragraphs are presented in *Spent: Looking for Change*. Roughly 70 million Americans lack access to a traditional financial system, which translates into almost a quarter of the population either not having a checking account or savings account at a commercial bank, such as Bank of America, or not being able to obtain debt financing. One reason why individuals do not have checking or savings accounts is continual overdraft fees, and one reason why

individuals do not have access to debt financing is poor credit history. When individuals cannot access a bank, they use alternative banking services, such as check-cashing services. It is estimated that 30 million Americans regularly use check-cashing facilities. Others use prepaid cards, which resemble a debit card but have a fixed amount of money pre-loaded onto them. A transaction fee is charged each time the prepaid card is used, and once the balance is \$0, the prepaid card cannot be further used. Those who need more capital than their paychecks provide may turn to payday loans and title loans.

Payday loans are small denomination loans, usually \$1000 or less, and are to paid back when the borrowers receive their next paychecks. However, many who use this type of financing arrangement do not have the capital to pay off the principal of the loan plus interest with the next paycheck. If principal and interest cannot be paid, the borrower is required to pay an extension fee and a personal financial crisis frequently ensues. Interest continues to accrue, but generally, the borrower's paycheck does not grow, which leads to an eventual decrease in the borrower's credit history. Title loans are similar to payday loans, but borrowers use the titles of their cars as collateral against the loans. Like payday loans, title loans are small denomination loans with a term of, at most, a month. Borrowers who do not have the capital to repay the principal plus interest at maturity can opt to extend the term of the loan and pay an extension fee. Nonpayment of a title loan will lead to the lender eventually seizing one's car. Americans who use alternative financing, such as check cashing, payday loans and title loans, spend \$89 billion a year in interest and fees. Further, the average person using these services will spend almost \$40,000 in his or her lifetime on fees from using a nontraditional banking system.

Millennials need to have the financial knowledge to understand how each of the factors stated above can adversely affect one's economic security. Millennials need to be proactive in learning how to successfully manage one's finances and need to realize the true cost of his or her retirement. Therefore, it is important to save sufficiently and make rational spending decisions. Further, millennials need to understand the true cost of borrowing when accessing debt markets and the importance of maintaining a good credit history. In summary, banks do not see where one is going but only where one has been, which is why financial literacy is incredibly important.

Chapter 3: The Financial Literacy Movement

The Jump\$tart Coalition “Jumpstart” is the leader in providing financial education to students primarily in middle school and high school. Founded in 1995, Jumpstart’s mission is to educate and prepare the nation’s youth for life-long financial success (Jump\$tart, 2015). Jumpstart provides its *National Standard in K-12 Personal Finance Education* to local chapters of the coalition, schools and financial education advocacy groups. Every other year, Jumpstart administers a financial literacy survey to high school students throughout the country. Jumpstart administered their financial literacy survey to college students in 2008. The survey was performed at the national level and unlike my survey, was not only given to freshmen but also given to sophomores, juniors, and seniors. Results of the survey are also relatively old, considering current college students were in middle school when the survey was administered in 2008.

Moneythink is an organization that provides financial education to high school students. Moneythink’s mission is the following: we build the financial health of Americans by equipping youth and young adults to believe in themselves, navigate the financial decisions of adulthood, and achieve financial independence (Moneythink, 2016). Moneythink mentors teach students lessons on personal finance but do not test students’ financial literacy levels.

The US Treasury established the Office of Financial Education in 2002 to develop and implement financial education policies. The Financial Literacy and Education

Improvement Act of 2003 established the Financial Literacy and Education Commission. The commission's role is to coordinate financial education efforts between the federal government and the private sector (Treasury, 2016). State legislators vote, amend and pass bills each year to further promote financial literacy. For example, Virginia enacted legislation to develop a plan in which its citizens will be provided with information on free financial literacy courses (NCSL, 2016). Other states that enacted similar legislation include Connecticut, Delaware, Michigan and Illinois. In Mississippi, seven bills regarding financial education were presented before legislators but all died in committee (NCSL, 2016). None of these bills directly addressed financial literacy, but each had amendments attached that indirectly addressed the topic.

The Council for Economic Education (2016) publishes its *Survey of the States* biennially. The data below pertains to findings in the 2016 report. 20 states require students to take an economics course, and 17 states require students to take a personal finance course. Mississippi and most southeastern states require students to take economics. Mississippi requires schools to offer a personal finance course but does not require students to take it. As state leaders have begun to realize, financial education is extremely beneficial to success in the globalized economy.

Chapter 4: Key Variables and Explanation of the Study

Millennials are the near-term leaders of the country. As the baby-boomer generation continues to age, the millennial generation will be the primary wage earners, consumers and taxpayers. My study's sample set consists of millennials who are enrolled in a four-year university. I am studying only college-going millennials because of uncertainties surrounding the effectiveness of financial education at the K-12 level. Financial education efforts at the K-12 level have inconclusive, null and counterproductive results (Harnisch, 2010). It should be noted that, although my sample consists of university students, to an extent, I am looking at the effectiveness of K-12 education as my sample, university freshman, have been in college only one semester. However, I believe that the majority of students continue to live under their parent's umbrella in high school and do not generally have to make independent financial decisions until they come to college.

I analyzed the financial literacy of freshman students enrolled in EDHE 105: Freshman Year Experience at the University of Mississippi. The survey was given to 67 students in the three sections of EDHE 105. The first section had 20 students, the second section had 21 students and the third section had 26 students.

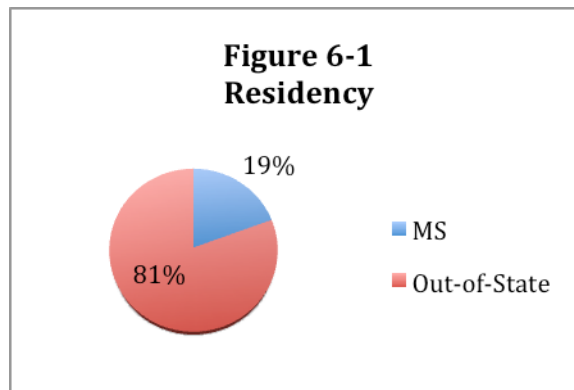
The survey was anonymous and administered to students who were 18 years of age and older. No photographs, audio and video recording were taken. All participants arrived in the classroom and were given an informed consent form. Students then

listened to the instructions, which informed them that the study was focused on analyzing financial literacy levels. The survey consisted of 21 demographic, socioeconomic and basic background questions and five financial literacy questions. All questions had multiple-choice answers, except for the state of residency question. A scantron was provided to all students. The study did not take longer than 15 minutes.

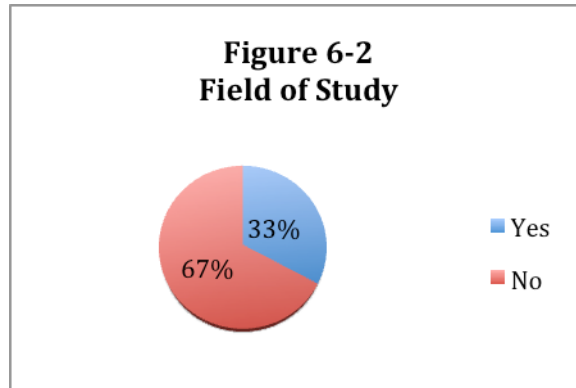
The five financial literacy questions were from the Financial Industry Regulatory Authority's "FINRA" financial capability study (FINRA, 2016). I used these questions because FINRA publishes its findings not only at the national level but also at the state level. FINRA conducts the survey every three years but has not yet released data from the 2015 survey. I am using data from the 2012 report as a basis for analyzing students' answers. The 2012 survey sampled over 25,000 adults from across the United States and had a margin of error of one-half of a percentage point.

Chapter 5: Survey Analysis: Socioeconomic and Demographic Questions

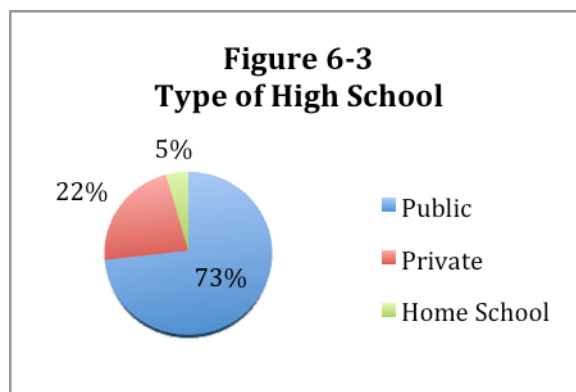
The following responses come from the financial literacy survey in Appendix A. All respondents, except for one, were 18 years or older. The answers from the under-aged respondent were omitted. 13 students were from Mississippi, and 54 students were from out-of-state or from another country. Of the 54 out-of-state and international residents, 13 were from Texas. Figure 6-1 shows the percentage of in-state students versus the percentage of out-of-state students in the sample set.



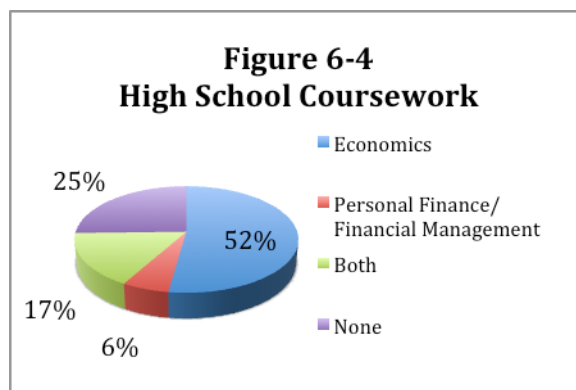
22 respondents are either majoring in or planning to major in the School of Business Administration or in the Patterson School of Accountancy, and 45 respondents are not planning to major in either school (Figure 6-2).



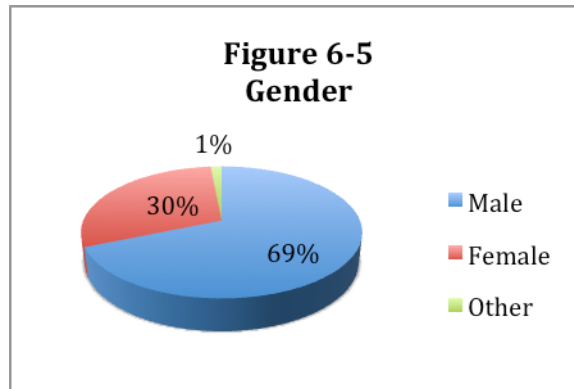
49 students graduated from a public high school, 15 students graduated from a private high school and three students were home-schooled (Figure 6-3).



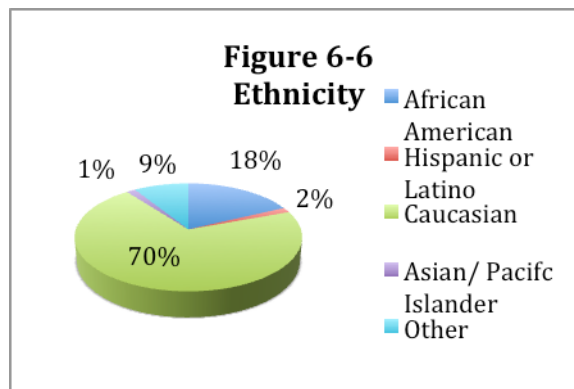
35 students took an economics course in high school, four students took either a personal finance course or a financial management course in high school, 11 students took both courses in high school and 17 students did not take any economics, personal finance or financial management courses in high school (Figure 6-4).



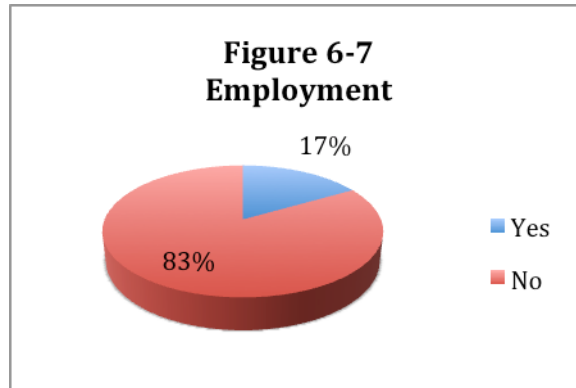
46 respondents identified as male, 20 respondents identified as female and one respondent identified as other (Figure 6-5).



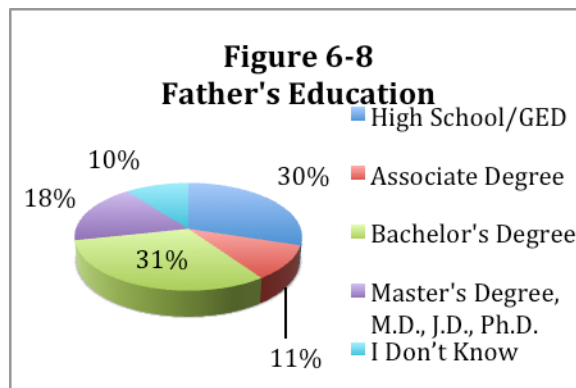
When asked about his or her ethnicity, 12 respondents identified as African-American, one respondent identified as Hispanic or Latino, 47 respondents identified as Caucasian, one respondent identified as Asian/Pacific Islander and six respondents identified as other (Figure 6-6).



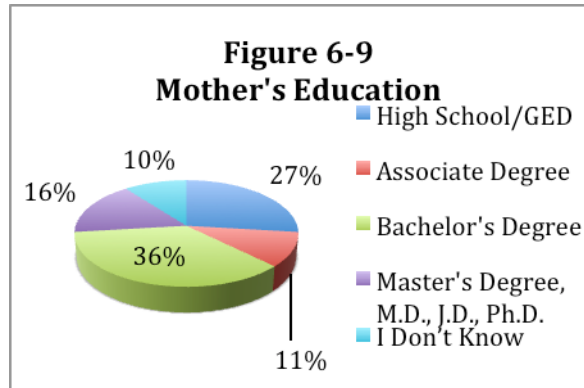
11 respondents work either a part-time job or a full-time job in addition to being a student, and 55 students are not employed (Figure 6-7).



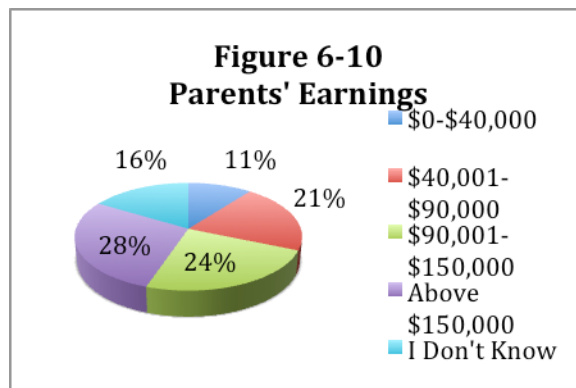
When asked about their father’s educational level, 20 students answered High School/GED, seven students answered Associate Degree, 21 students answered Bachelor’s Degree, 12 students answered Master’s Degree, M.D., J.D., Ph.D. and seven students did not know their fathers’ educational level (Figure 6-8).



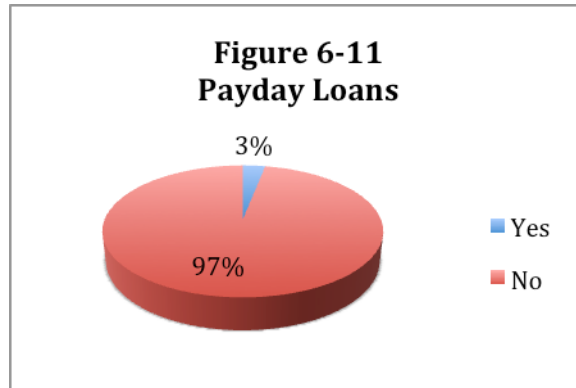
When asked about their mother’s educational level, 18 students answered High School/GED, seven students answered Associate Degree, 24 students answered Bachelor’s Degree, 11 students answered Master’s Degree, M.D., J.D., Ph.D. and seven students did not know their mothers’ educational level (Figure 6-9).



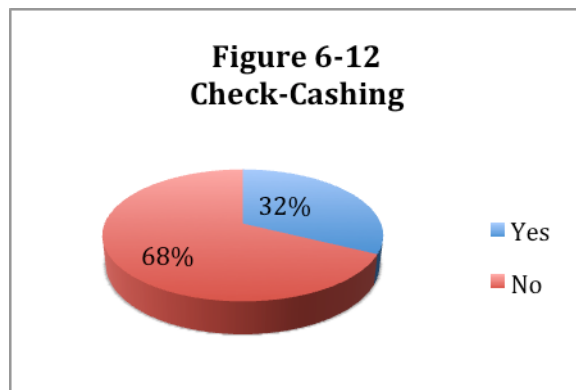
When asked about their parents' earnings, seven participants answered \$0-\$40,000, 14 participants answered \$40,001-\$90,000, 16 participants answered \$90,001-\$150,000, 19 participants answered above \$150,000 and 11 participants did not know their parents' earnings (Figure 6-10).



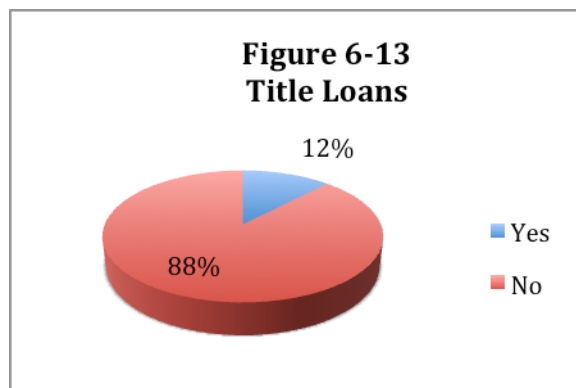
Two students have used payday loans, and 63 students have not used payday loans (Figure 6-11).



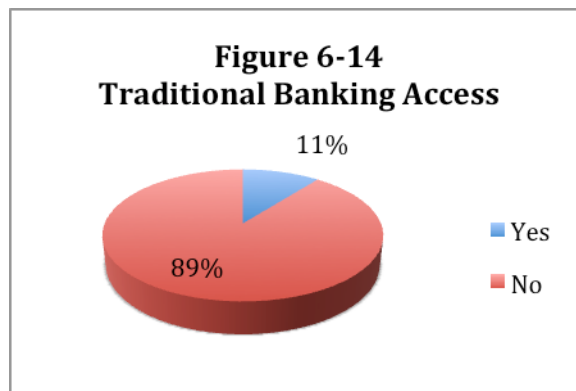
21 students have used check-cashing services, and 44 students have not used check-cashing services (Figure 6-12).



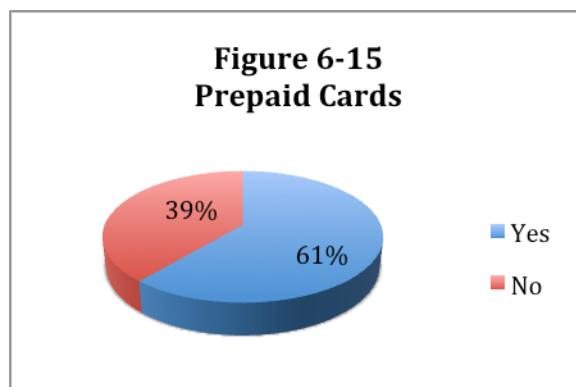
Eight students have used title loans, and 58 students have not used title loans (Figure 6-13).



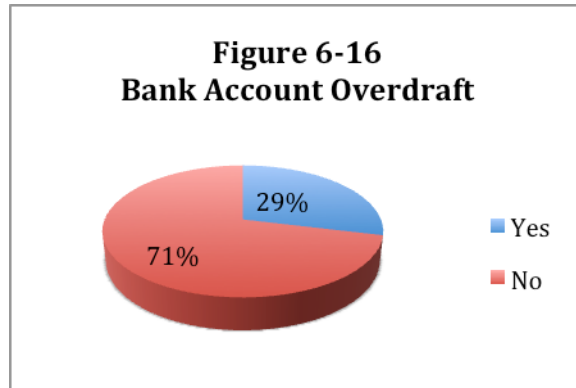
Seven respondents do not have access to the traditional banking system, and 59 respondents do have access to the traditional banking system (Figure 6-14).



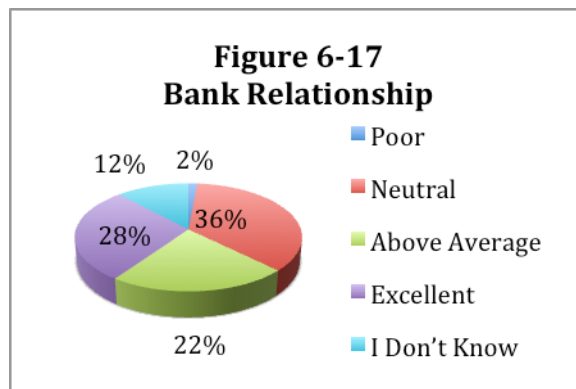
41 students have used prepaid cards, and 26 students have not used prepaid cards (Figure 6-15).



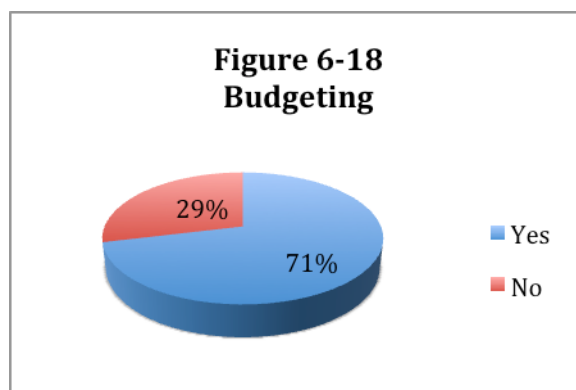
19 individuals have over-drafted their bank account, and 47 individuals have never over-drafted their bank account (Figure 6-16).



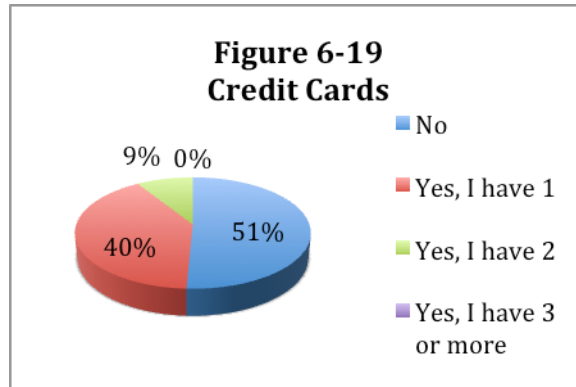
When asked to rate his or her relationship with his or her primary bank, one student answered “poor”, 24 students answered “neutral”, 15 students answered “above average”, 19 students answered “excellent” and 8 students answered, “I don’t know” (Figure 6-17).



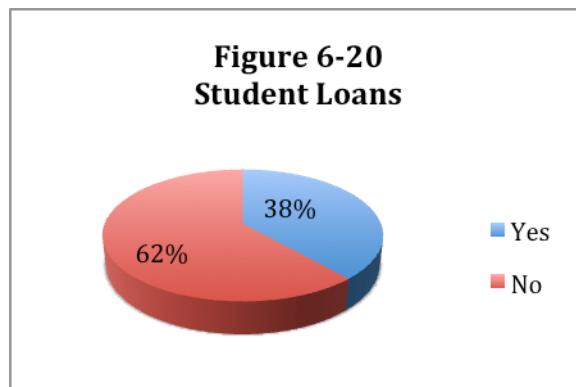
47 students have a budget, and 19 students do not have a budget (Figure 6-18).



34 respondents do not have a credit card, 27 students have one credit card, six students have two credit cards and no one in my sample has three or more credit cards (Figure 6-19).

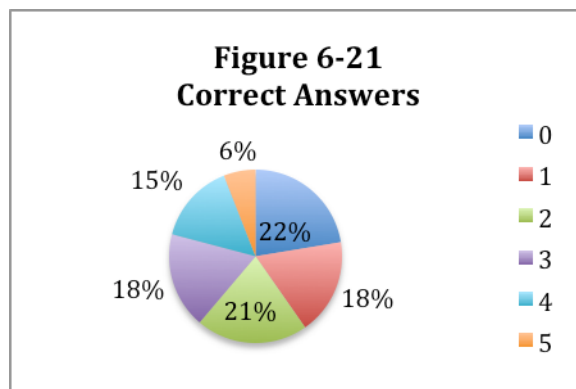


25 survey participants have student loans, and 40 survey participants do not have student loans (Figure 6-20).

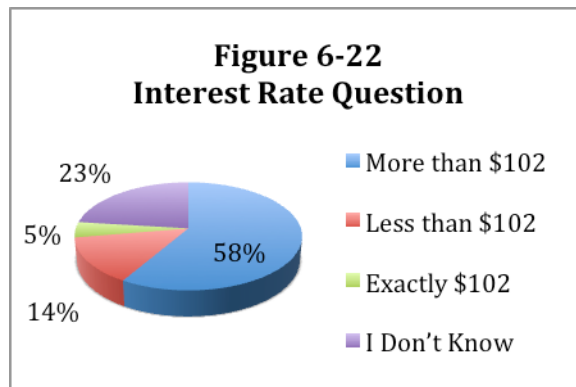


Chapter 6: Survey Analysis: Financial Literacy Quiz

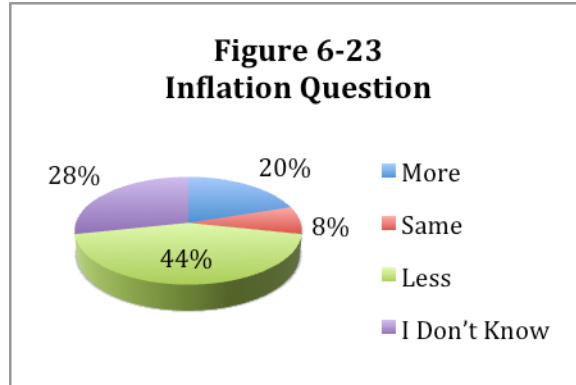
The five financial literacy questions came from the Financial Industry Regulatory Authority's national survey. Of the 67 respondents, 15 answered no questions correctly, 12 answered one question correctly, 14 answered two questions correctly, 12 answered three questions correctly, 10 answered four questions correctly and five answered every question correctly (Figure 6-21). The national average to the quiz in 2012 was 2.9 out of 5, but the national average for 18 to 34 year olds was 2.3 out of five (FINRA, 2016). The average of the 67 respondents answers to the quiz was 2.02 out of five, which is not substantially different from the national average for 18 to 34 year olds (Figure 6-21). In my opinion, with a larger sample size, the quiz average would increase and be closer to the national average for 18 to 34 year olds. Further, the national average for those with a high school educational level or less was also 2.30 out of five, but for those with some college experience, the average increases to three out of five (FINRA, 2016). With more time in college, the financial literacy levels of the Ole Miss respondents will most likely increase and be more comparable to the national average.



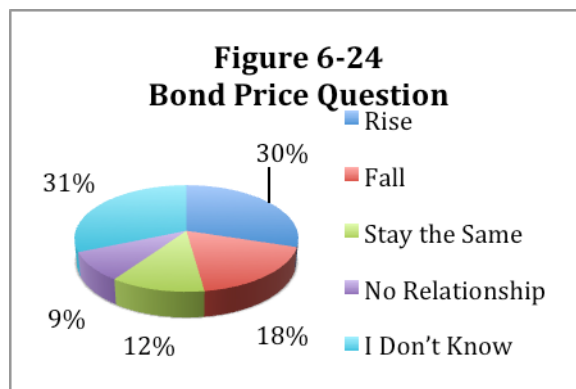
The interest rate question is as follows: “Suppose you have \$100 in a savings account earning two percent interest a year. After five years, how much would you have?” 38 (58%) students selected the correct answer “More than \$102”. Nine (14%) students answered “Less than \$102”, three (5%) students answered “Exactly \$102”, and 15 (23%) students answered “I Don’t Know” (Figure 6-22). Nationally, 75% of survey respondents correctly answered the interest rate question in 2012 (FINRA, 2016). 13% of survey respondents answered either “Less than \$102” or “Exactly \$102”, and 11% of survey respondents answered “I Don’t Know” (FINRA, 2016).



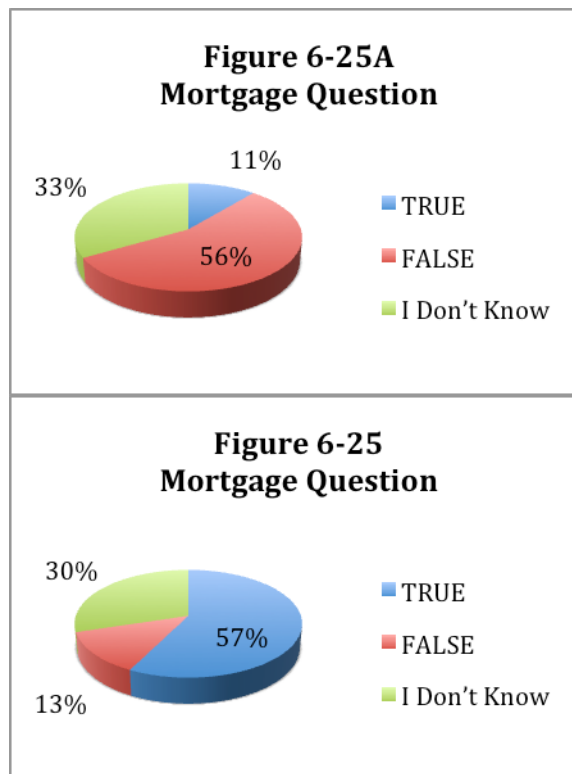
The inflation question is as follows: “Imagine that the interest rate on your savings account is one percent a year, and inflation is two percent a year. After one year, would the money in the account buy more than it does today, exactly the same or less than today?” 26 (44%) students selected the correct answer of “Less”, 12 (20%) students answered “More”, five (8%) students answered “Same” and 17 (28%) students answered “I Don’t Know” (Figure 6-23). In the FINRA study, 61% of those surveyed answered the inflation question correctly, 17% were incorrect and 20% did not know the answer.



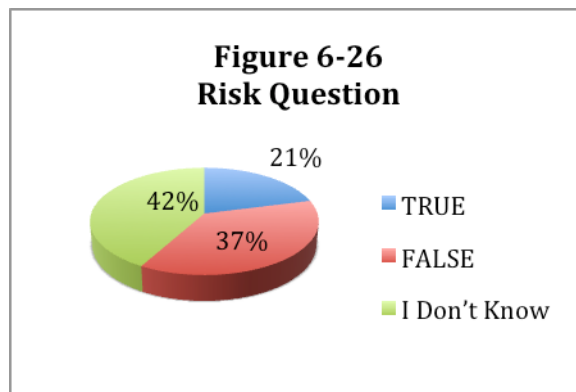
The bond price question is as follows: “If interest rates rise, what will typically happen to bond prices? Rise, fall, stay the same or is there no relationship?” 12 (18%) respondents selected the correct answer, “Fall”. 20 (30%) respondents answered, “Rise”, eight (12%) respondents answered “Stay the same”, six (9%) respondents answered “No Relationship” and 21 (31%) respondents answered “I Don’t Know” (Figure 6-24). The bond price question is the statistically most difficult question in the FINRA study. 28% of respondents answered the question correctly, 33% answered the question incorrectly and 37% did not know the answer. Like the national study, the bond price question was the most missed question in my survey.



The mortgage question is as follows: “True or False: A 15-year mortgage typically requires higher monthly payments than a 30-year mortgage but the total interest over the life of the loan will be less.” 27 (57%) survey participants chose the correct answer “True”, six (13%) survey participants answered “False” and 14 (30%) survey participants answered “I Don’t Know” (Figure 6-25). I mistakenly gave the first section of respondents this question with “15-year mortgage” labeled as “115-year mortgage”. This mistake made the correct answer “False”. 10 (56%) students selected “False”, two (11%) students selected “True” and six (33%) students selected “I Don’t Know” (Figure 6-25A). Nationally, 75% of respondents answered the mortgage question correctly, 9% of respondents answered the mortgage question incorrectly, and 15% of respondents did not know the answer to the mortgage question (FINRA, 2016).



The risk question is as follows: “True or False: Buying a single company’s stock usually provides a safer return than a stock mutual fund.” 23 (37%) respondents selected the correct answer “False”, 13 (21%) respondents selected “True”, and 26 (42%) respondents selected “I Don’t Know” (Figure 6-26). Nationally, the risk question was answered correctly by 48% of survey participants; 9% of survey participants answered the question incorrectly, and 42% of participants did not know the answer.



Chapter 7: Statistical Analysis

I. Ordinary Least Squares Analysis

I used the Statistical Analysis System, “SAS”, to analyze the survey data. Ph.D. candidate, Violetta Davydenko, read in the data I provided her from the scantron machine and entered the data into the SAS software. I first analyzed the data using the ordinary least squares, “OLS”, regression model.

The number of observations read and used in the analysis was 61, which is smaller than the sample set of 67. The reason six observations were not used was because of insufficient responses. For example, students whose data was not analyzed either did not answer multiple questions in the survey or did not bubble in valid responses on the scantron. Multivariate OLS regression analysis takes into account all of the variables in the model. All answer choices to the demographic and socioeconomic questions were analyzed against the five financial literacy questions to test for significance. There were 38 total variables to the 21 demographic and socioeconomic questions. Therefore, the OLS analysis had 38 independent variables that were analyzed against the dependent variable, financial literacy, which was the total number of correct responses to the five financial literacy questions. The value of “Pr > [t]” or p-value is the estimate of a variable’s level of significance and is dependent on the “t” value. If “t” is approximately two or greater than two, the p-value will be less than ten percent, which means the

variable is significantly different from its hypothesized value, which in my case is zero. A variable can have three levels of significance, which are indicated by stars. Three-stars means less than a one percent level of significance, two-stars means the level of significance is between one percent and five percent and one-star means the level of significance is between five percent and ten percent. Six variables proved to be significant in the OLS output: gender, ethnicity, employment, father's educational level, mother's educational level and having a credit card (Table 1, 2).

The following statistical data is presented in full detail in Table 1. The regression coefficient for gender, which is a dummy variable equal to one if the respondent is male, is 0.9647. A coefficient of 0.9647 means that being a male is associated with an increase of 0.9647 in the number of questions answered correctly. The level of significance for gender is 0.0696. This statistic means that in the presence of all other variables, gender matters. Being a male is statistically significant when compared against being a female. Only one person chose "other" when asked his or her gender, but that individual's responses were not analyzed because of insufficient responses to the remainder of the survey. Therefore, the gender question was analyzed with two variables, male and female.

Ethnicity was analyzed using a series of dummy variables. Q7AA was set equal to one if the respondent was African American and zero otherwise. Q7HL, Q7C, and Q7API were similarly defined- each were set equal to one if the respondent's race was relayed as Hispanic or Latino, Caucasian, and Asian/Pacific Islander, respectively. Race of 'other' was omitted and is captured in the intercept. The way to interpret the dummy variables is in relation to 'other.' Being Caucasian is statistically different than being of 'other' race.

The coefficient of Q7C, 1.8217, has a p-value of 0.0507. None of the other ethnicity dummy variables representing African American, Hispanic or Latino and Asian/Pacific Islander are significantly different from the ethnicity ‘other.’

In an additional OLS analysis in Table 2, the dummy variables were compared against the ethnicity Caucasian instead of the ethnicity ‘other.’ In this case, ethnicities African American, Hispanic or Latino and Asian/Pacific Islander ethnicities were not significantly different from the ethnicity Caucasian.

Question eight dealt with employment (Table 1). Q8 was a dummy variable equal to one if the respondent had full- or part-time employment and was zero if the respondent was not employed while in college. The coefficient of question eight of 1.4185 was statistically different from zero at the five percent level (p-value of 0.034, which is a two-star level of significance). The significant coefficient of 1.4185 means that being employed, either full- or part-time, while attending college was associated with answering almost one and one-half more questions (1.4185 questions) correctly.

The educational level of one’s father was analyzed using a series of dummy variables (Table 1). Q9AD was set equal to one if the respondent’s father had an associate degree and zero otherwise. Q9BD, Q9MD, and Q9DK were similarly defined- each were set equal to one if the respondent’s father’s educational level was relayed as bachelor’s degree, master’s degree, M.D., J.D. or Ph.D. or ‘I don’t know’ respectively. A father’s educational level of ‘high school/GED’ was omitted and is captured in the intercept. The way to interpret the dummy variables is in relation to ‘high school/GED.’ The number of financial literacy questions answered correctly by a respondent whose father has a bachelor’s degree is almost one more than a respondent whose father has a

high school/GED degree. The coefficient of Q9BD, 0.95553, has a p-value of 0.0991 (Table 2). Further, the number of questions answered correctly by a respondent whose father has a master's degree is statistically different than the number of questions answered correctly by a respondent whose father has a high school/GED degree. The coefficient of Q9MD, 1.68021, has a p-value of 0.042 (Table 2), which means that a respondent whose father has a master's degree would, holding other things constant, answer 1.68 more questions correctly than would a respondent whose father graduated from high school. The dummy variables representing father's educational level of an associate degree or 'I don't know' were not statistically different from a father's educational level 'high school/GED.'

The educational level of one's mother was also analyzed using a series of dummy variables (Table 2). Q10AD was set equal to one if the respondent's mother had an associate degree and zero otherwise. Q10BD, Q10MD, and Q10DK were similarly defined- each were set equal to one if the respondent's mother's educational level was relayed as bachelor's degree, master's degree or 'I don't know', respectively. A mother's educational level 'high school/GED' was omitted and is captured in the intercept. The way to interpret the dummy variables is in relation to 'high school/GED.' The coefficient for a respondent whose mother has an associate degree answered about 1.5 more questions correctly than did a respondent whose mother has a high school education. The coefficient of Q10AD has a p-value of 0.676 (Table 2). Further, a respondent whose mother has a bachelor's degree correctly answered slightly more than one additional question than did a respondent whose mother has a high school/GED degree (Table 2). The dummy variables representing mother's educational level of a master's degree or 'I

don't know' were not statistically different from a mother's educational level 'high school/GED.'

Question 20 dealt with having a credit card and was analyzed using two dummy variables (Table 1,2). 'Q20CC: Have One' was set equal to one if the respondent had one credit card and zero otherwise. 'Q20CC: Have Two' was similarly defined- it was equal to one if the respondent had two credit cards and zero otherwise. However, having two credit cards proved to not be statistically significant (p-value of .7254). No one had three or more credit cards. Not having a credit card was omitted and is captured in the intercept. The way to interpret the dummy variables is in relation to 'having no credit cards.' The coefficient for a respondent who has one credit card answered 1.11058 more questions correctly than did a respondent who does not have a credit card. The coefficient of 1.11058 was statistically different from zero at a ten percent level (p-value of 0.0646, which is a one-star level of significance).

II. Univariate Analysis

A difference in means analysis is a type of univariate analysis, which captures only data from a specific variable, such as gender. The following data pertaining to means by gender is listed in Table 3. 43 males participated in the survey, and 18 females participated in the survey. The mean sum for males is 2.6047 out of five, and the mean sum for females one out of five. The mean sum is the average score of correct answers for all males' answers and all females' answers to the five financial literacy questions. The national average score is 3.2 correct answers for males and is 2.6 correct answers for females (FINRA, 2016). In my opinion, the differences in the averages are a result of survey limitation. The national averages for males and for females encompass all ages,

whereas my survey is strictly limited to college-going millennials in a freshman-level class. As noted above, the national average score for 18 to 34 year olds is below the national average score for participants. Therefore, the average scores for college-going males and females should be lower than the national average for all males and females. There is a 95 percent confidence level that the mean is between 2.1244 and 3.0849 correct answers for males and between 0.6186 and 1.3814 correct answers for females.

The standard sum measures the standard deviation from the mean and is 1.5605 for males and 0.7670 for females. Standard deviation is the square root of the variance and is a measure of the dispersion of data from the mean. There is a 95 percent confidence level the standard deviation is between 1.2867 and 1.9834 for males and between 0.5755 and 1.1498 for females. Further, when analyzing the means by gender, the p-value is 0.0001, which means gender not only matters when comparing it against itself but also matters when holding constant all other variables in the multivariate OLS analysis.

In regards to employment (Table 4), 10 respondents work either full- or part-time in addition to going to school. 51 respondents do not have any type of employment. The mean sum for those who do work is 2.70 correct answers on the financial literacy quiz. The average for those who do not work is 2.0196 correct answers on the financial literacy quiz. At a 95 percent confidence interval, the mean number of correct answers for those who work is between 1.8046 and 3.5954 and is between 1.5714 and 2.4678 for those who do not work. The standard sum, which is the standard deviation from the mean, is 1.2517 for those who work either full- or part-time and is 1.5936 for those who do not work. At 95 percent confidence interval, the standard deviation for those who work is between

0.8609 and 2.2851 and is between 1.3334 and 1.9810 for those who do not work.

However, the p-value is 0.2083, which means it is not statistically significant when analyzed on its own, even though it is statistically significant when analyzed holding all other variables constant in multivariate OLS analysis.

47 respondents identified as Caucasian, and 17 respondents identified as African American, Hispanic or Latino, Asian/Pacific Islander or other (Table 5). The mean for Caucasians is 2.6136 correct answers on the quiz, and the mean for all others is 0.8824 correct answers on the quiz. The mean for Caucasians on the national quiz was three out of five, but Asians had the highest average of 3.2 out of five (FINRA, 2016). However, only one Asian participated in my survey (Figure 6-6). Caucasian's average on my survey was lower than the national average for the group but again, a smaller average is expected because my survey did not test individuals of all ages. At a 95 percent confidence interval, the mean number of correct answers for Caucasian's is between 2.11776 and 3.0496 and is between 0.3109 and 1.4538 for all other ethnicities. The standard deviation from the mean for Caucasians is 1.4341 and for all other ethnicities is 1.1114. At a 95 percent confidence interval, the standard deviation is between 1.1849 and 1.8170 for Caucasians and is between 0.8278 and 1.6915 for all other ethnicities. The p-value is less than 0.0001 percent, which means that Caucasians, on average, answer 2.6 questions correctly, and 2.6 is significantly different from zero (Table 5).

24 respondents have one credit card, and 37 respondents have either more than one credit card or do not have a credit card (Table 6). The mean sum of correct answers for those who have one credit card is 2.4583 and for all others is 1.9189. At a 95 percent confidence interval, the mean is between 1.7880 and 3.1286 correct answers for those

who have one credit card and is between 1.4134 and 2.4244 correct answers for those who have more than one credit card or do not have a credit card. The standard deviation is 1.5874 for those who have one credit card and is 1.5162 for all others. At a 95 percent confidence interval, the standard deviation is between 1.2338 and 2.2268 for those who have one credit card and is between 1.2330 and 1.9695 for all others. The p-value is 0.1878, which means having one credit is not statistically significant in a univariate setting but does matter when holding other factors constant (Table 6).

18 respondents identified their father's highest degree completed as a high school/GED degree (Table 7). All other respondents identified their father's highest degree earned as follows: 7 associate degree, 19 bachelor's degree, 10 master's degree/M.D./J.D./Ph.D. and 7 'I don't know.' The mean number of correct answers for those whose father has only a high school degree is 1.4444. The mean number of correct answers for all other degrees is 2.4186. At a 95 percent confidence interval, the mean is between 0.6404 and 2.2485 correct answers for high school/GED degree and is between 1.9720 and 2.8653 correct answers for all other degrees. The standard deviation for those whose father has only a high school degree is 1.6169 and at a 95 percent confidence interval, is between 1.2133 and 2.4240. The standard deviation for all other degrees is 1.4513. At a 95 percent confidence interval, the standard deviation is between 1.1967 and 1.8446. The p-value is 0.0243, which means a father's educational level is both statistically significant in a univariate setting and when holding other factors constant in multivariate analysis (Table 7).

17 respondents identified their mother's highest degree completed as high school/GED degree (Table 8). All other respondents identified their mother's highest

degree earned as follows: 7 associate degree, 21 bachelor's degree, 9 master's degree/M.D./J.D./Ph.D. and 7 'I don't know.' The mean number of correct answers for those whose mother has only a high school degree is 2.0588. The mean number of correct answers for all other degrees is 2.1591. At a 95 percent confidence interval, the mean is between 1.2364 and 2.8813 correct answers for high school/GED degree and is between 1.6865 and 2.6317 correct answers for all others degrees. The standard deviation for those whose mother has only a high school degree is 1.5995 and at a 95 percent confidence interval, is between 1.1914 and 2.4345. The standard deviation for all other degrees is 1.5543 and at a 95 percent confidence interval, the standard deviation is between 1.2842 and 1.9694. The p-value is 0.8235, which means a mother's educational level is not statistically significant in a univariate setting, even though it is statistically significant in the multivariate OLS regression analysis (Table 8).

III. Interactions

Interactions allow one to analyze whether there are correlations between two variables and one's score on the financial literacy quiz. Like multivariate OLS analysis and univariate analysis, the p value is the measure used to determine if an interaction is statistically significant. There are three levels of significance as measured by the p value: one percent, five percent and ten percent.

Eight variables were used to analyze the interactions: male; Caucasian; part- or full-time job; fathers who have bachelor's degree; fathers who have a master's degree or higher; mothers who have an associate degree; mothers who have a bachelor's degree; having one credit card. I chose these eight variables because they proved to be

statistically significant in the multivariate OLS regression. These eight variables produced 22 interactions, and each statistically significant interaction is discussed below.

Being a white male is statistically significant at a one percent level (p value <0.001). There were 35 white males in the sample set. On average, white males scored 2.9714 out of five on the financial literacy quiz compared to one out of five for all other individuals (Table 9). Being a male with a part-time or full-time job is significant at a five percent level, p value 0.0356 (Table 10). Seven males in the survey are employed in addition to going to college. 54 people in the survey did not meet the criteria of being a male who is employed. The average score for males who work is 3.2857 out of five, compared to 1.9815 out of five for all others. 19 men have one credit card in the survey (Table 11). The p value for the coefficient is 0.015, which is at a one percent level of significance. The average score on the quiz for a male who has one credit card is 2.8421 out of five, compared to 1.8095 out of five for all others. Being Caucasian with a job is statistically significant (p value 0.0515); Caucasians who work had an average score of 3.125 out of five on the financial literacy quiz compared to 1.9811 out of five for all others (Table 12).

Being Caucasian and having one credit card is significant at a one percent level (p value 0.0043). 16 people in the survey are Caucasian and have one credit card, and their average score to the financial literacy questions was 3.0625 out of five compared to 1.8 out of five for all others (Table 13). Three survey respondents have a job and have one credit card. The average score for those who have a job and have one credit card is 4.0 out of five, compared to 2.0345 out of five for all others. The p value for having a job and a credit card is 0.0315, which is at a five percent level of significance (Table 14). 15

males have fathers who have earned a bachelor's degree. The average score for males whose fathers have earned a bachelor's degree is 2.8667 out of five, which is statistically significant at a five percent level significance (p value 0.0336), compared to 1.8913 out of five for all other respondents (Table 15). A male whose father has earned a master's degree, M.D., J.D. or Ph.D. had an average score on the financial literacy quiz of 3.50 out of five, compared to 1.9819 out of five for all others (Table 16). The coefficient for this interaction is at a five percent level of significant ((p value 0.0218). Six people are male and have a father who has earned a master's degree, M.D., J.D. or Ph.D.

13 survey respondents are male and have a mother who has earned a bachelor's degree. The interaction between males and mothers with a bachelor's degree is a one percent level of significance (p value 0.0015). The average score for males, whose mother has a bachelor's degree, is 3.3077 out of five, compared to 1.8125 out of five for all others (Table 17). 15 people are Caucasian and have a father who has earned a bachelor's degree. Their score on the survey was 2.80 out of five, compared to 1.913 out of five for all others (Table 18). The interaction between being a Caucasian and having a father with a bachelor's degree is a five percent level of significance (p value 0.0542). Being Caucasian and having a mother who has earned a bachelor's degree is statistically significant. The p value is 0.0159, which a five percent level of significance (Table 19). 14 respondents are Caucasian and have a mother who has earned a bachelor's degree. Their average score on the financial literacy quiz is three out of five, compared to 1.8723 out of five for all others. Four people have one credit card and have a father who has earned a master's degree, M.D., J.D. or Ph.D. These four people had an average score on

the financial literacy quiz of four out of five, compared to two out of five for all others (Table 20). This interaction is at a five percent level of significance (p value 0.0116).

Of the 22 interactions analyzed, 10 interactions proved not to be statistically significant. They were the following: male and have a mother with an associate degree; Caucasian and have a father with a master's degree, M.D., J.D. or Ph.D.; Caucasian and have a mother with an associate degree; work a full- or part-time job and have a father with a bachelor's degree; work a full- or part-time job and have a father with a master's degree M.D., J.D. or Ph.D.; work a full- or part-time job and have a mother with a bachelor's degree; work a full- or part-time job and have a mother with an associate degree; have one credit card and a mother with a bachelor's degree; have one credit card and a mother with an associate degree.

No one in the sample, whose father had earned a master's degree, M.D., J.D. or Ph.D., worked a part-time or full-time job. In my opinion, this lack of outside employment is not surprising because fathers with advanced degrees most likely earn a higher level of income and hence, can provide funds for higher education for their family. Only one person had a full- or part-time job and had a mother with an associate degree. Additionally, only one person had one credit card and a mother with an associate degree. Therefore, these interactions could not be sufficiently analyzed. Even though 10 interactions were not found to be statistically significant, these interactions could become significant with further testing of students' financial literacy in a larger sample. My sample size for the statistical analysis consists of only 61 observations. This sample size is relatively small but with increased samples, the interactions that are currently statistically insignificant could become significant.

IV. Probit Analysis

Probit analysis is a regression analysis of binomial response variables (Vincent). A binomial response variable can only have two outcomes, such as “true or false” and “right or wrong”. The binomial response variable for my analysis is the five questions to the financial literacy quiz. The dependent variable is answering more than two questions, the median, correctly. Further, all five questions are analyzed against the socioeconomic and demographic variables. The probit analysis determines whether an individual with a specific characteristic, such as being male or having a full- or part-time job, is more or less likely to answer more than the median number of questions correctly. The estimated coefficient is used to determine whether a significant variable means one is more likely or less likely to answer the median number of questions correctly (Table 21). When the estimated coefficient is positive, one is more likely to answer the median number of questions correctly, but when the estimate coefficient is negative, one is less likely to answer the median number of questions correctly.

When compared to OLS regression analysis, OLS is perhaps more intuitive, as a (significant) coefficient tells one how an independent variable influences the dependent variable, financial literacy. For example, being male, with a dummy variable of one versus zero for female, means that males tend to answer $((\text{dummy}=1 * \text{coefficient}))$ more financial literacy questions correctly than do females (where $\text{dummy}=0$). However, the validity of the results of probit analysis is superior when the dependent variable is discrete, although the coefficients are not as intuitive.

The statistically significant predictor variables that have positive estimate coefficients are being Caucasian, working either part-time or full-time, having a father

with a graduate level degree and having a mother with a bachelor's degree (Table 21). The predictor variables that mean one is less likely to correctly answer more than two questions are over-drafting on a bank account and having a budget (Table 21). Although statistically significant in all other statistical analyses, being a male is not significant in the probit analysis. With a larger sample size, probit analysis would further validate (or invalidate) the statistical significance of the above predictor variables and could make other variables, such as gender, statistically significant. In summary, probit analysis is a useful model for determining who is more likely to answer two or more financial literacy questions correctly and proved that the most dominant predictor variables are being Caucasian and having either a full-time or part-time job.

Chapter 8: Conclusion

Financial literacy is an imperative skill for one to have. But, many times, individuals are not prepared when first asked, whether in high school, in college or after graduation, to make independent financial decisions. As part of my thesis, I discussed why people should care about financial literacy and how poor short-term financial decision-making can result in adverse long-term consequences. Additionally, I gave a survey to college-going millennials enrolled in EDHE 105 in order to analyze their financial literacy levels and to better understand what factors impact one's financial literacy. The survey consisted of 21 demographic and socioeconomic questions and five financial literacy questions that were adopted from the FINRA Financial Capability Study of 2012. The average score for my sample set of 67 was 2.02 out of five questions, which is close to the national average score for 18-to-34 year olds of 2.30 out of five questions. This average shows that freshman students at Ole Miss have comparable financial literacy levels to millennials surveyed in the FINRA study.

To see what factors were significant in determining one's score on the quiz, I used multivariate OLS analysis. Six variables proved to be statistically significant: being a male; being Caucasian; having a full- or part-time job; having one credit card; having a father with at least a college education; having a mother with either an associate degree or bachelor's degree. I further manipulated these statistically significant variables using univariate analysis, interactions and probit analysis. When the results from these four

models are analyzed together, I conclude that there are three key factors that affect the financial literacy level of freshman at the University of Mississippi: being a male, being Caucasian and having either a part-time or full-time job.

I hope that my research will help the University of Mississippi better understand the factors that influence students' financial literacy levels and will start a dialog among faculty, students and administration on how best to address the issue of how to adequately educate current and prospective students on the importance of financial literacy.

APPENDIX A

Financial Literacy Survey:

*Do not include your name, student ID number or any other identifying information on the scantron

1. Are you 18 years or older?
 - a. Yes
 - b. No, please return this survey to the investigator
2. Which state are you from: _____
3. Are you in either the School of Business Administration or in the School of Accountancy?
 - a. Yes
 - b. No
4. Which of the following best describes your high school?
 - a. Public
 - b. Private
 - c. Home School
5. Did you take any of the following courses in high school?
 - a. Economics
 - b. Personal Finance/Financial Management
 - c. Both
 - d. None
6. What is your gender?
 - a. Male
 - b. Female
 - c. Other
7. What is your ethnicity?
 - a. African American
 - b. Hispanic or Latino
 - c. Caucasian
 - d. Asian/ Pacific Islander
 - e. Other
8. Do you work a part-time job or a full-time job in addition to being a student?
 - a. Yes
 - b. No
9. What is the highest degree completed by your father?
 - a. High School/GED
 - b. Associate Degree
 - c. Bachelor's Degree
 - d. Masters Degree, MD, JD, Doctorate
 - e. I Don't Know
10. What is the highest degree completed by your mother?
 - a. High School/GED
 - b. Associates Degree
 - c. Bachelors Degree

- d. Master's Degree, MD, JD or Doctorate
 - e. I Don't Know
11. Which of the following best describes your parents earnings?
- a. \$0-40,000
 - b. \$40,001-\$90,000
 - c. \$90,001-\$150,000
 - d. Above \$150,000
 - e. I Don't Know
12. Have you used payday loans?
- a. Yes
 - b. No
13. Have you used check-cashing services?
- a. Yes
 - b. No
14. Have you used title loans?
- a. Yes
 - b. No
15. Are you under-banked? i.e. do not have access to the traditional banking system
- a. Yes
 - b. No
16. Have you used prepaid cards?
- a. Yes
 - b. No
17. Have you ever over drafted on your bank account?
- a. Yes
 - b. No
18. Please rate your relationship with your primary bank:
- a. Poor
 - b. Neutral
 - c. Above Average
 - d. Excellent
 - e. I don't know
19. Do you have a budget?
- a. Yes
 - b. No
20. Do you own credit card?
- a. No
 - b. Yes, I own 1
 - c. Yes, I own 2
 - d. Yes, I own 3 or more
21. Do you have student loans?
- a. Yes
 - b. No
22. Suppose you have \$100 in a savings account earning 2 percent interest a year. After five years, how much would you have?
- a. More than \$102

- b. Less than \$102
 - c. Exactly \$102
 - d. Less than \$102
 - e. Don't know
23. Imagine that the interest rate on your savings account is 1 percent a year and inflation is 2 percent a year. After one year, would the money in the account buy more than it does today, exactly the same or less than today?
- a. More
 - b. Same
 - c. Less
 - d. Don't Know
24. If interest rates rise, what will typically happen to bond prices? Rise, fall, stay the same, or is there no relationship?
- a. Rise
 - b. Fall
 - c. Stay the Same
 - d. No Relationship
 - e. Don't Know
25. True or False: A 15-year mortgage typically requires higher monthly payments than a 30-year mortgage but the total interest over the life of the loan will be less.
- a. True
 - b. False
 - c. Don't know
26. Buying a single company's stock usually provides a safer return than a stock mutual fund
- a. True
 - b. False
 - c. Don't Know

APPENDIX B

Table 1: Ordinary Least Squares Regression Output, Part I

Variable	Parameter Estimate	Pr > |t|
Intercept	-0.31	0.8759
Q3 Field of Study	0.63433	0.2113
Q4 Public High School	-0.0969	0.9429
Q4 Private High School	-0.0245	0.9859
Q5 Course Work: Economics	0.43066	0.4621
Q5 Course Work: Finance	-1.4781	0.1357
Q5 Course Work: Both	0.44646	0.6103
Q6 Gender: Male	0.9647	0.0696

Q7 Ethnicity: African American	0.5585	0.6057
Q7 Ethnicity: Hispanic or Latino	0.69468	0.7684
Q7 Ethnicity: Caucasian	1.8217	0.0507
Q7 Ethnicity: Asian/Pacific Islander	0.02015	0.9914
Q8 Employment	1.4185	0.034
Q9 Father's Education: High School/GED	-0.7107	0.4519
Q9 Father's Education: Associate Degree	-0.5861	0.5846
Q9 Father's Education: Bachelor's Degree	0.24485	0.8023
Q9 Father's Education: Master's Degree	0.96953	0.3684
Q10 Mother's Education: High School/GED	0.19038	0.8698
Q10 Mother's Education: Associate Degree	1.7309	0.1918

Q10 Mother's Education: Bachelor's Degree	1.19695	0.2591
Q10 Mother's Education: Master's Degree	-0.0037	0.9976
Q11 Parents' Earnings: \$0-\$40,000	-0.6087	0.5424
Q11 Parents' Earnings: \$40,001-\$90,000	-0.4108	0.5985
Q11 Parents' Earnings: \$90,001-\$150,000	-0.2441	0.7874
Q11 Parents' Earnings: Above \$150,000	-1.5285	0.1634
Q12 Payday Loans	0.04079	0.9823
Q13 Check Cashing	0.49014	0.4261
Q14 Title Loans	-1.0312	0.282
Q15 Under-banked	0.14243	0.8888
Q16 Prepaid Cards	0.44042	0.421

Q17 Bank Overdraft	-0.7157	0.2233
Q18 Relationship with Bank: Poor	1.17224	0.6284
Q18 Relationship with Bank: Neutral	-0.4308	0.5992
Q18 Relationship with Bank: Above Avg.	-0.9567	0.3369
Q18 Relationship with Bank: Excellent	-0.2135	0.8178
Q19 Budget	-0.551	0.2995
Q20 Credit Card: Have One	1.11058	0.0646
Q20 Credit Card: Have Two	0.32507	0.7254
Q21 Student Loans	0.13098	0.8412

Table 2: Ordinary Least Squares Regression Output, Part II

Variable	Parameter Estimate	Pr > |t|
Intercept	1.45802	0.5537
Q3 Field of Study	0.63433	0.2113
Q4 Public High School	0.09693	0.9429
Q4 Private High School	0.07246	0.904
Q5 Course Work: Economics	0.43066	0.4621
Q5 Course Work: Finance	-1.4781	0.1357
Q5 Course Work: Both	0.44646	0.6103
Q6 Gender: Male	0.9647	0.0696
Q7 Ethnicity: African American	-1.2632	0.1473
Q7 Ethnicity: Hispanic or Latino	-1.127	0.6284
Q7 Ethnicity: Asian/Pacific Islander	-1.8016	0.3152
Q7 Ethnicity: Other	-1.8217	0.0507
Q8 Employment	1.4185	0.034

Q9 Father's Education: Associate Degree	0.12463	0.8714
Q9 Father's Education: Bachelor's Degree	0.95553	0.0991
Q9 Father's Education: Master's Degree	1.68021	0.042
Q9 Father's Education: I Don't Know	0.71068	0.4519
Q10 Mother's Education: Associate Degree	1.54053	0.0676
Mother's Education: Bachelor's Degree	1.00657	0.0968
Q10 Mother's Education: Master's Degree	-0.1941	0.8207
Q10 Mother's Education: I Don't Know	-0.1904	0.8698
Q11 Parents' Earnings: \$40,001-\$90,000	0.19791	0.8289
Q11 Parents' Earnings: \$90,001-\$150,000	0.36462	0.718
Q11 Parents' Earnings: Above \$150,000	-0.9198	0.3703

Q11 Parents' Earnings: I Don't Know	0.60869	0.5424
Q12 Payday Loans	0.04079	0.9823
Q13 Check Cashing	0.49014	0.4261
Q14 Title Loans	-1.0312	0.282
Q15 Under-banked	0.14243	0.8888
Q16 Prepaid Cards	0.44042	0.421
Q17 Bank Overdraft	-0.7157	0.2233
Q18 Relationship with Bank: Neutral	-1.603	0.4682
Q18 Relationship with Bank: Above Average	-2.129	0.3444
Q18 Relationship with Bank: Excellent	-1.3857	0.5233
Q18 Relationship with Bank: I Don't Know	-1.1722	0.6284
Q19 Budget	-0.551	0.2995
Q20 Credit Card: Have One	1.11058	0.0646
Q20 Credit Card: Have One	0.32507	0.7254
Q21 Student Loans	0.13098	0.8412

Table 3: Difference in Means: Gender

The SAS System

The TTEST Procedure

Variable: sum

Q6	N	Mean	Std Dev	Std Err	Minimum	Maximum
0	18	1.0000	0.7670	0.1808	0	2.0000
1	43	2.6047	1.5605	0.2380	0	5.0000
Diff (1-2)		-1.6047	1.3795	0.3873		

Q6	Method	Mean	95% CL Mean	Std Dev	95% CL Std Dev
0		1.0000	0.6186 1.3814	0.7670	0.5755 1.1498
1		2.6047	2.1244 3.0849	1.5605	1.2867 1.9834
Diff (1-2)	Pooled	-1.6047	-2.3796 -0.8297	1.3795	1.1693 1.6825
Diff (1-2)	Satterthwaite	-1.6047	-2.2030 -1.0063		

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	59	-4.14	0.0001
Satterthwaite	Unequal	57.31	-5.37	<.0001

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	42	17	4.14	0.0026

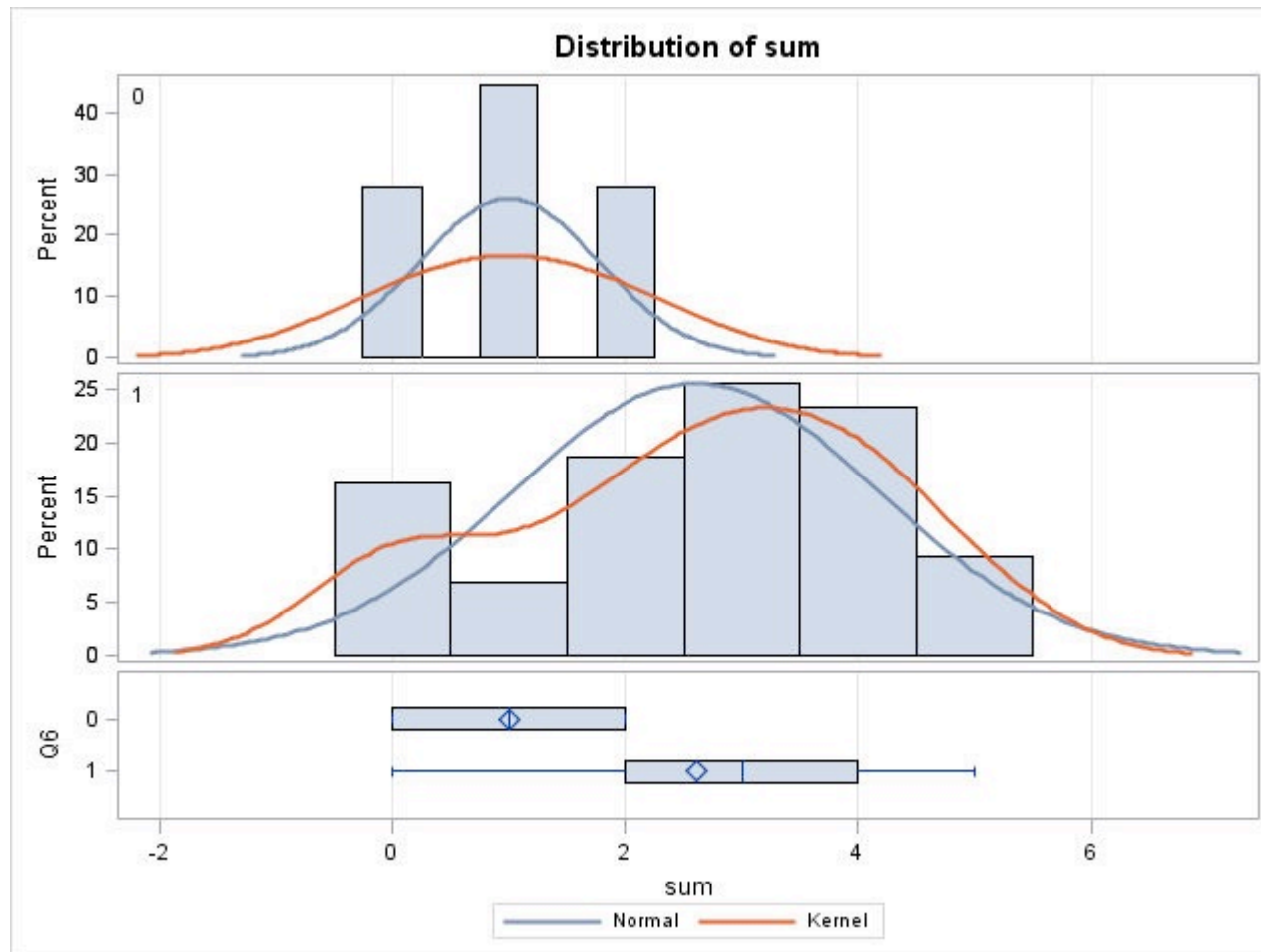


Table 4: Difference in Means: Employment

The SAS System

The TTEST Procedure

Variable: sum

Q8	N	Mean	Std Dev	Std Err	Minimum	Maximum
0	51	2.0196	1.5936	0.2232	0	5.0000
1	10	2.7000	1.2517	0.3958	0	4.0000
Diff (1-2)		-0.6804	1.5463	0.5348		

Q8	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
0		2.0196	1.5714	2.4678	1.5936	1.3334	1.9810
1		2.7000	1.8046	3.5954	1.2517	0.8609	2.2851
Diff (1-2)	Pooled	-0.6804	-1.7505	0.3897	1.5463	1.3107	1.8860
Diff (1-2)	Satterthwaite	-0.6804	-1.6470	0.2862			

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	59	-1.27	0.2083
Satterthwaite	Unequal	15.351	-1.50	0.1546

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	50	9	1.62	0.4462

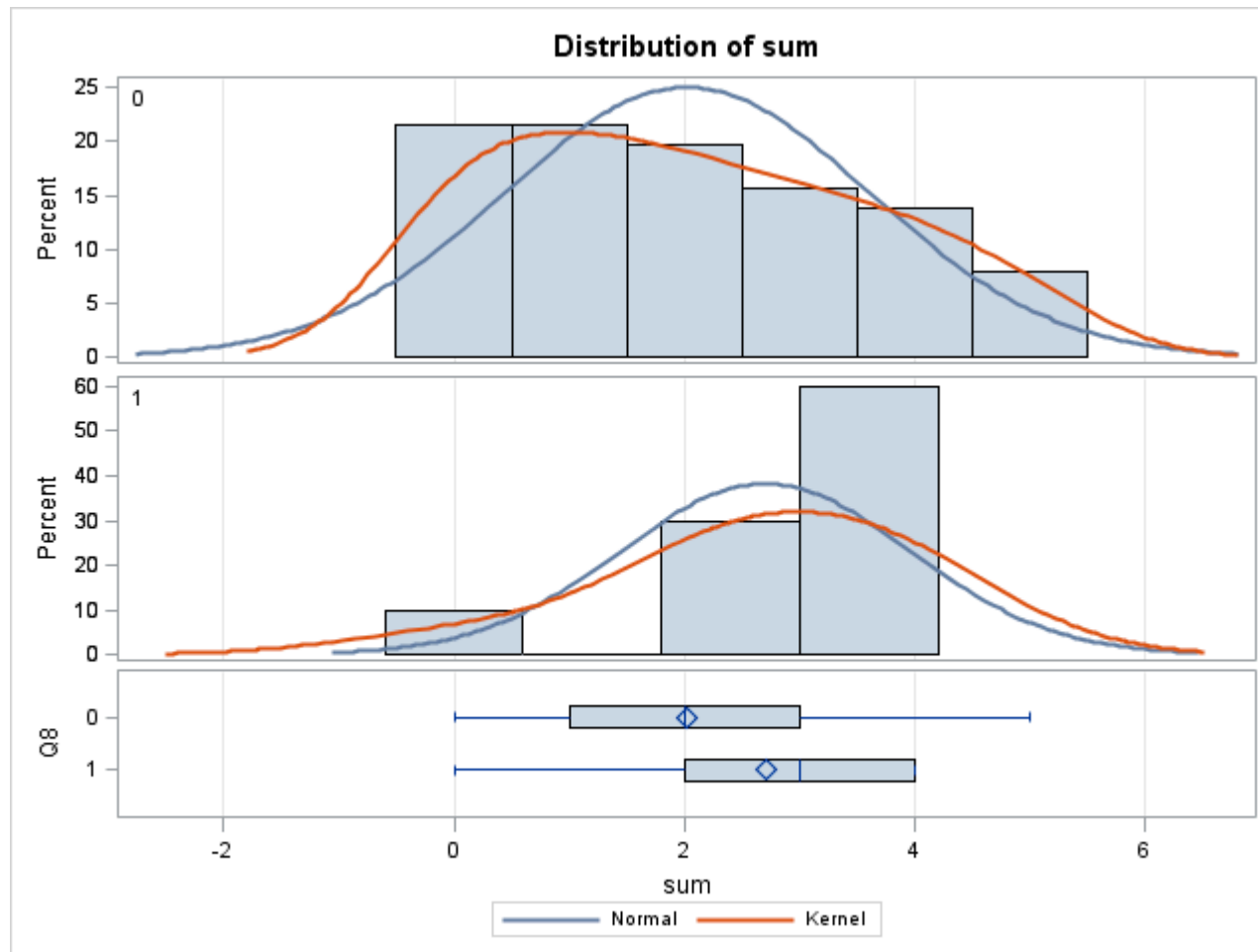


Table 5: Difference in Means: Ethnicity

The SAS System

The TTEST Procedure

Variable: sum

Q7C	N	Mean	Std Dev	Std Err	Minimum	Maximum
0	17	0.8824	1.1114	0.2696	0	4.0000
1	44	2.6136	1.4341	0.2162	0	5.0000
Diff (1-2)		-1.7313	1.3542	0.3867		

Q7C	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
0		0.8824	0.3109	1.4538	1.1114	0.8278	1.6915
1		2.6136	2.1776	3.0496	1.4341	1.1849	1.8170
Diff (1-2)	Pooled	-1.7313	-2.5051	-0.9575	1.3542	1.1479	1.6517
Diff (1-2)	Satterthwaite	-1.7313	-2.4312	-1.0314			

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	59	-4.48	<.0001
Satterthwaite	Unequal	37.439	-5.01	<.0001

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	43	16	1.66	0.2688

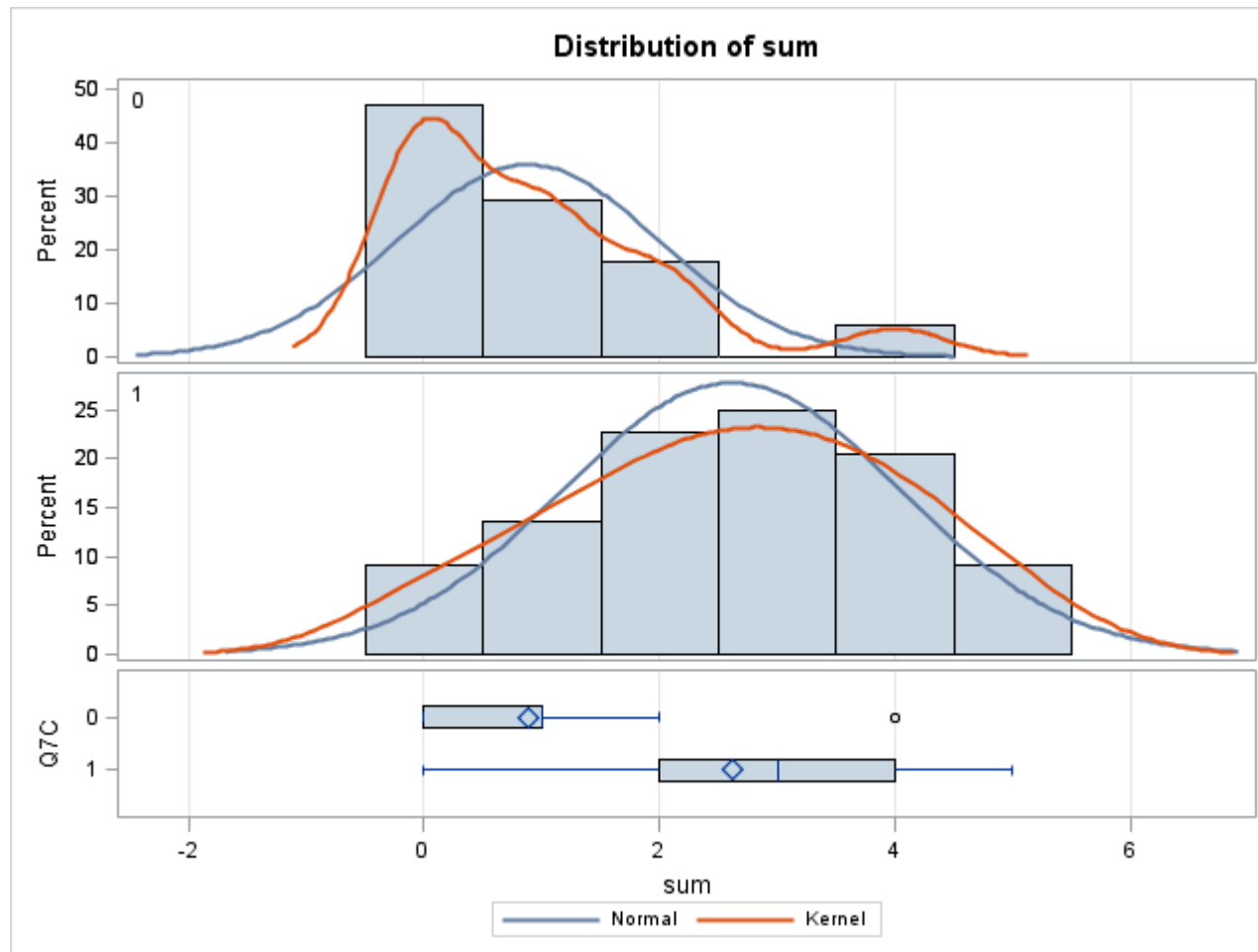


Table 6: Difference in Means: Having a Credit Card

The SAS System

The TTEST Procedure

Variable: sum

Q20Yes1	N	Mean	Std Dev	Std Err	Minimum	Maximum
0	37	1.9189	1.5162	0.2493	0	5.0000
1	24	2.4583	1.5874	0.3240	0	5.0000
Diff (1-2)		-0.5394	1.5443	0.4048		

Q20Yes1	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
0		1.9189	1.4134	2.4244	1.5162	1.2330	1.9695
1		2.4583	1.7880	3.1286	1.5874	1.2338	2.2268
Diff (1-2)	Pooled	-0.5394	-1.3493	0.2705	1.5443	1.3090	1.8836
Diff (1-2)	Satterthwaite	-0.5394	-1.3616	0.2827			

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	59	-1.33	0.1878
Satterthwaite	Unequal	47.62	-1.32	0.1933

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	23	36	1.10	0.7873

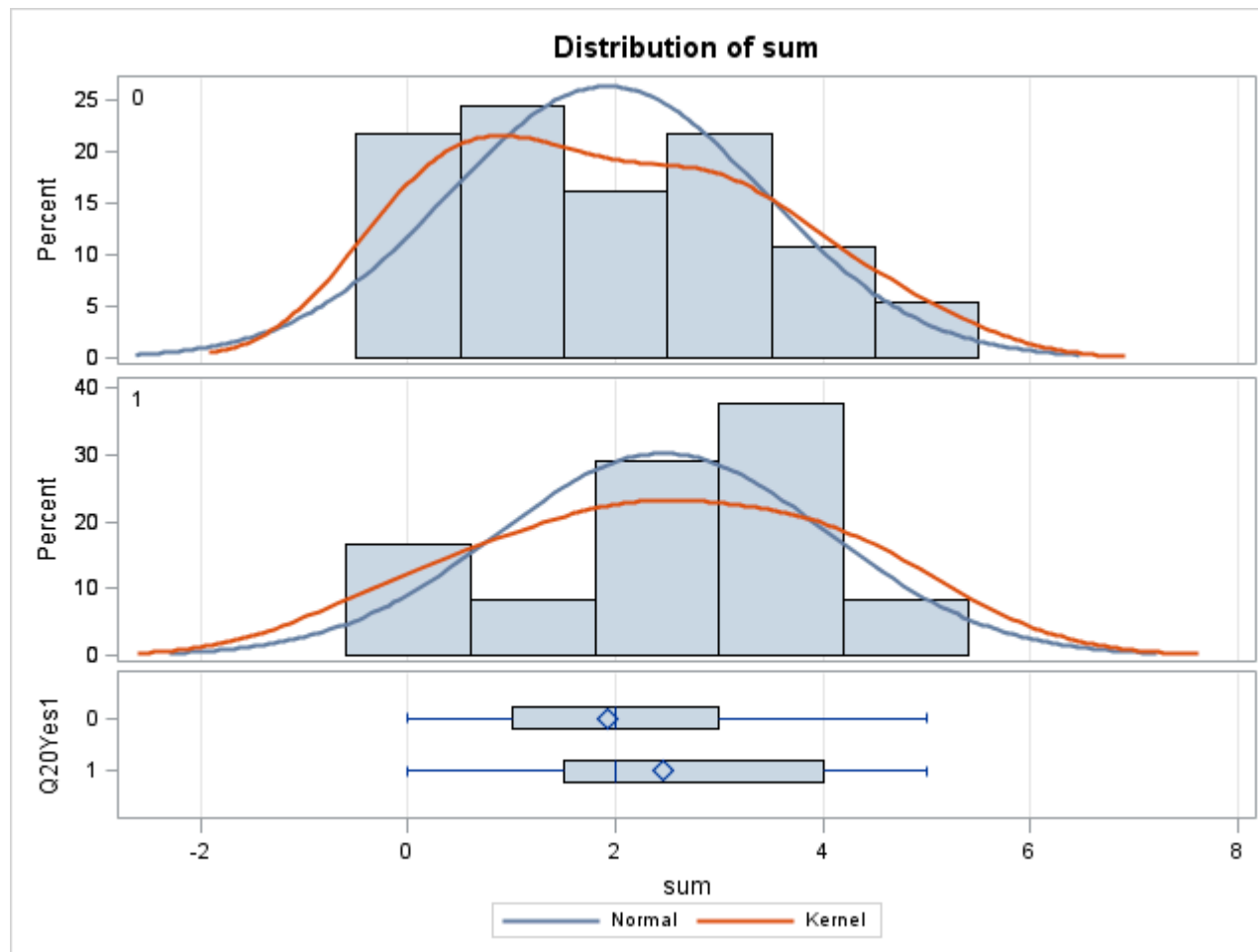


Table 7: Difference in Means: Father's Educational Level

The SAS System

The TTEST Procedure

Variable: sum

Q9HSGED	N	Mean	Std Dev	Std Err	Minimum	Maximum
0	43	2.4186	1.4513	0.2213	0	5.0000
1	18	1.4444	1.6169	0.3811	0	5.0000
Diff (1-2)		0.9742	1.5009	0.4214		

Q9HSGED	Method	Mean	95% CL Mean	Std Dev	95% CL Std Dev
0		2.4186	1.9720 2.8653	1.4513	1.1967 1.8446
1		1.4444	0.6404 2.2485	1.6169	1.2133 2.4240
Diff (1-2)	Pooled	0.9742	0.1310 1.8173	1.5009	1.2722 1.8306
Diff (1-2)	Satterthwaite	0.9742	0.0729 1.8754		

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	59	2.31	0.0243
Satterthwaite	Unequal	29.062	2.21	0.0351

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	17	42	1.24	0.5538

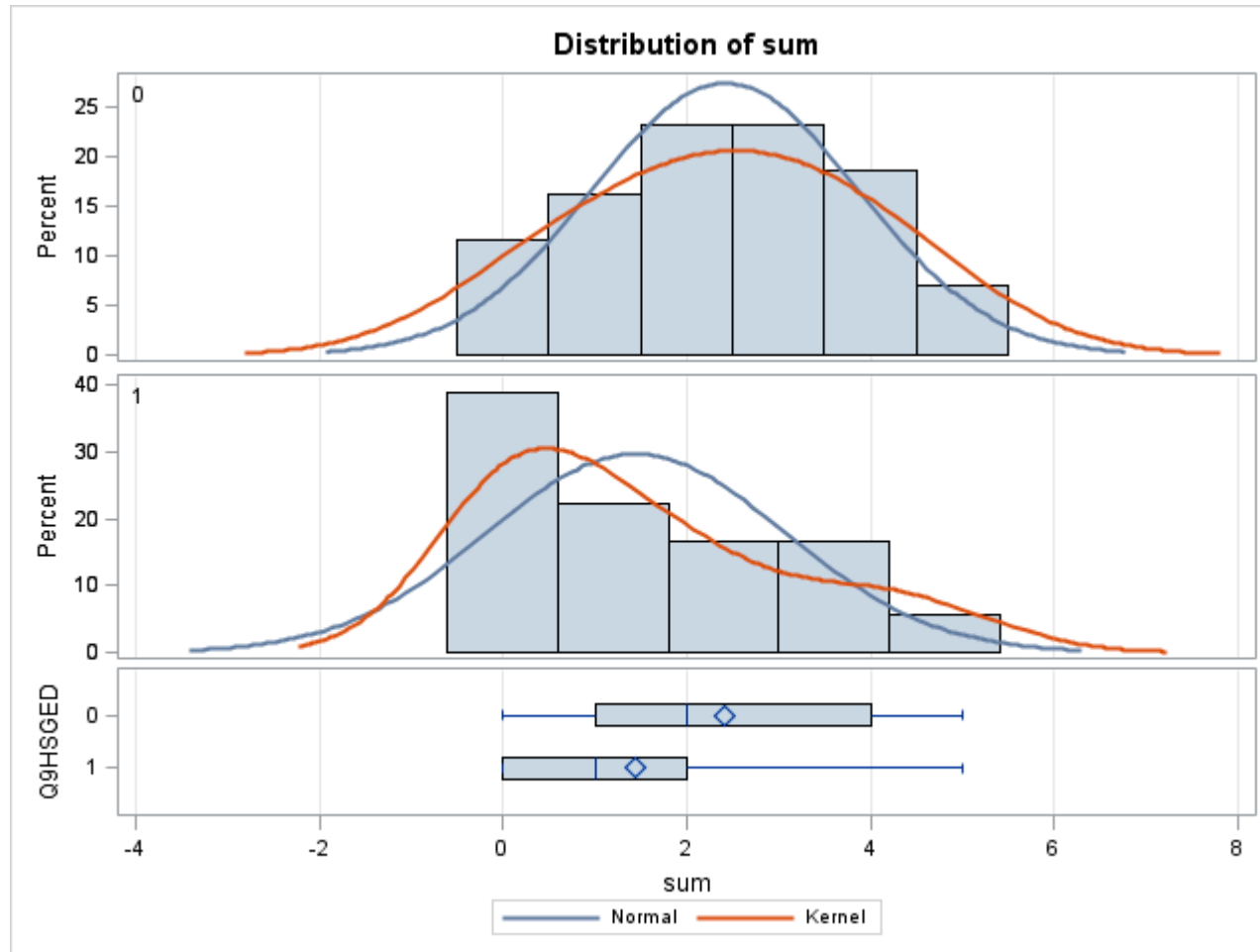


Table 8: Difference in Means: Mother's Educational Level

The SAS System

The TTEST Procedure

Variable: sum

Q10HSGED	N	Mean	Std Dev	Std Err	Minimum	Maximum
0	44	2.1591	1.5543	0.2343	0	5.0000
1	17	2.0588	1.5996	0.3880	0	5.0000
Diff (1-2)		0.1003	1.5667	0.4474		

Q10HSGED	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
0		2.1591	1.6865	2.6317	1.5543	1.2842	1.9694
1		2.0588	1.2364	2.8813	1.5996	1.1914	2.4345
Diff (1-2)	Pooled	0.1003	-0.7950	0.9955	1.5667	1.3280	1.9109
Diff (1-2)	Satterthwaite	0.1003	-0.8276	1.0281			

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	59	0.22	0.8235
Satterthwaite	Unequal	28.396	0.22	0.8265

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	16	43	1.06	0.8403

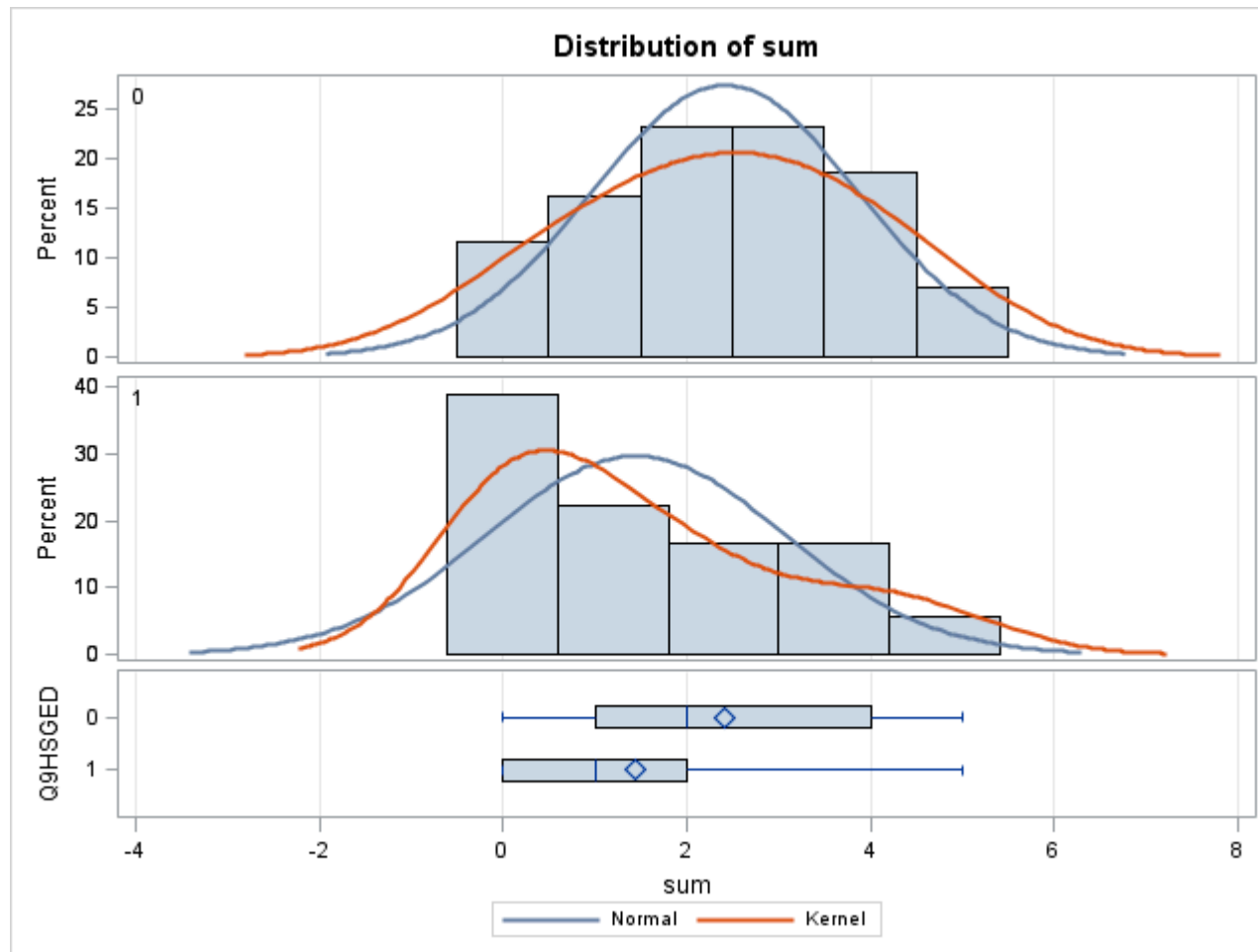


Table 9: Interaction Between Caucasians and Males

whitemale=Q6*Q7C							
whitemale	N	Mean	Std Dev	Std Err	Minimum	Maximum	
0	26	1	0.9798	0.1922	0	4	
1	35	2.9714	1.3609	0.23	0	5	
Diff (1-2)		-1.9714	1.2141	0.3143			
whitemale	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
0		1	0.6043	1.3957	0.9798	0.7684	1.3525
1		2.9714	2.5039	3.4389	1.3609	1.1008	1.7831
Diff (1-2)	Pooled	-1.9714	-2.6004	-1.3424	1.2141	1.0291	1.4808
Diff (1-2)	Satterthwaite	-1.9714	-2.5712	-1.3717			
Method	Variances	DF	t Value	Pr > |t|			
Pooled	Equal	59	-6.27	<.0001			
Satterthwaite	Unequal	58.961	-6.58	<.0001			
Equality of Variances							
Method	Num DF	Den DF	F Value	Pr > F			
Folded F	34	25	1.93	0.0916			

Table 10: Interaction Between Males and Having a Job

malewithjob=Q6*Q8							
malewithjob	N	Mean	Std Dev	Std Err	Minimum	Maximum	
0	54	1.9815	1.5721	0.2139	0	5	
1	7	3.2857	0.7559	0.2857	2	4	
Diff (1-2)		-1.3042	1.5093	0.6063			
malewithjob	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
0		1.9815	1.5524	2.4106	1.5721	1.3215	1.9407
1		3.2857	2.5866	3.9848	0.7559	0.4871	1.6646
Diff (1-2)	Pooled	-1.3042	-2.5175	-0.091	1.5093	1.2794	1.8409
Diff (1-2)	Satterthwaite	-1.3042	-2.0692	-0.5393			
Method	Variances	DF	t Value	Pr > |t|			
Pooled	Equal	59	-2.15	0.0356			
Satterthwaite	Unequal	14.111	-3.65	0.0026			
Equality of Variances							
Method	Num DF	Den DF	F Value	Pr > F			
Folded F	53	6	4.32	0.0708			

Table 11: Interaction Between Males and Having One Credit Card

malewith1CC=Q6*Q20Yes1							
malewith1CC	N	Mean	Std Dev	Std Err	Minimum	Maximum	
0	42	1.8095	1.4855	0.2292	0	5	
1	19	2.8421	1.5005	0.3442	0	5	
Diff (1-2)		-1.0326	1.4901	0.412			
malewith1CC	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
0		1.8095	1.3466	2.2724	1.4855	1.2223	1.8943
1		2.8421	2.1189	3.5653	1.5005	1.1338	2.219
Diff (1-2)	Pooled	-1.0326	-1.857	-0.2082	1.4901	1.2631	1.8174
Diff (1-2)	Satterthwaite	-1.0326	-1.8726	-0.1926			
Method	Variances	DF	t Value	Pr > |t|			
Pooled	Equal	59	-2.51	0.015			
Satterthwaite	Unequal	34.521	-2.5	0.0175			
Equality of Variances							
Method	Num DF	Den DF	F Value	Pr > F			
Folded F	18	41	1.02	0.9187			

Table 12: Interaction Between Caucasians and Having a Job

whitewithjob=Q7C*Q8							
whitewithjob	N	Mean	Std Dev	Std Err	Minimum	Maximum	
0	53	1.9811	1.5871	0.218	0	5	
1	8	3.125	0.8345	0.295	2	4	
Diff (1-2)		-1.1439	1.5174	0.5756			
whitewithjob	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
0		1.9811	1.5437	2.4186	1.5871	1.3321	1.9637
1		3.125	2.4273	3.8227	0.8345	0.5518	1.6985
Diff (1-2)	Pooled	-1.1439	-2.2956	0.00784	1.5174	1.2862	1.8508
Diff (1-2)	Satterthwaite	-1.1439	-1.9212	-0.3665			
Method	Variances	DF	t Value	Pr > |t|			
Pooled	Equal	59	-1.99	0.0515			
Satterthwaite	Unequal	16.084	-3.12	0.0066			
Equality of Variances							
Method	Num DF	Den DF	F Value	Pr > F			
Folded F	52	7	3.62	0.0792			

Table 13: Interaction Between Caucasians and Having One Credit Card

whitewith1CC=Q7C*Q20Yes1							
whitewith1CC	N	Mean	Std Dev	Std Err	Minimum	Maximum	
0	45	1.8	1.5015	0.2238	0	5	
1	16	3.0625	1.3401	0.335	0	5	
Diff (1-2)		-1.2625	1.4622	0.4256			
whitewith1CC	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
0		1.8	1.3489	2.2511	1.5015	1.243	1.8967
1		3.0625	2.3484	3.7766	1.3401	0.9899	2.074
Diff (1-2)	Pooled	-1.2625	-2.1141	-0.4109	1.4622	1.2394	1.7833
Diff (1-2)	Satterthwaite	-1.2625	-2.0861	-0.4389			
Method	Variances	DF	t Value	Pr > |t|			
Pooled	Equal	59	-2.97	0.0043			
Satterthwaite	Unequal	29.384	-3.13	0.0039			
Equality of Variances							
Method	Num DF	Den DF	F Value	Pr > F			
Folded F	44	15	1.26	0.6505			

Table 14: Interaction Between Having One Credit Card and Having a Job

job1CC=Q8*Q20Yes1							
job1CC	N	Mean	Std Dev	Std Err	Minimum	Maximum	
0	58	2.0345	1.5329	0.2013	0	5	
1	3	4	0	0	4	4	
Diff (1-2)		-1.9655	1.5067	0.8921			
job1CC	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
0		2.0345	1.6314	2.4375	1.5329	1.2959	1.8767
1		4	4	4	0	.	.
Diff (1-2)	Pooled	-1.9655	-3.7506	-0.1805	1.5067	1.2771	1.8376
Diff (1-2)	Satterthwaite	-1.9655	-2.3686	-1.5625			
Method	Variances	DF	t Value	Pr > |t|			
Pooled	Equal	59	-2.2	0.0315			
Satterthwaite	Unequal	57	-9.77	<.0001			
Equality of Variances							
Method	Num DF	Den DF	F Value	Pr > F			
Folded F	57	2	Infty	<.0001			

Table 15: Interaction Between Males and Fathers with a Bachelor's Degree

malefatherBD=Q6*Q9BD							
malefatherBD	N	Mean	Std Dev	Std Err	Minimum	Maximum	
0	46	1.8913	1.5948	0.2351	0	5	
1	15	2.8667	1.1872	0.3065	0	5	
Diff (1-2)		-0.9754	1.5081	0.4484			
malefatherBD	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
0		1.8913	1.4177	2.3649	1.5948	1.3228	2.0087
1		2.8667	2.2092	3.5241	1.1872	0.8692	1.8724
Diff (1-2)	Pooled	-0.9754	-1.8726	-0.0781	1.5081	1.2783	1.8394
Diff (1-2)	Satterthwaite	-0.9754	-1.7624	-0.1883			
Method	Variances	DF	t Value	Pr > |t|			
Pooled	Equal	59	-2.18	0.0336			
Satterthwaite	Unequal	31.888	-2.52	0.0168			
Equality of Variances							
Method	Num DF	Den DF	F Value	Pr > F			
Folded F	45	14	1.8	0.2292			

Table 16: Interaction Between Males and Fathers with a Master's Degree, M.D., J.D. or Ph.D.

malefatherMD=Q6*Q9MD							
malefatherMD	N	Mean	Std Dev	Std Err	Minimum	Maximum	
0	55	1.9818	1.4592	0.1968	0	5	
1	6	3.5	1.8708	0.7638	0	5	
Diff (1-2)		-1.5182	1.4985	0.6443			
malefatherMD	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
0		1.9818	1.5873	2.3763	1.4592	1.2285	1.7975
1		3.5	1.5367	5.4633	1.8708	1.1678	4.5884
Diff (1-2)	Pooled	-1.5182	-2.8073	-0.229	1.4985	1.2702	1.8276
Diff (1-2)	Satterthwaite	-1.5182	-3.4744	0.4381			
Method	Variances	DF	t Value	Pr > |t|			
Pooled	Equal	59	-2.36	0.0218			
Satterthwaite	Unequal	5.6834	-1.92	0.1053			
Equality of Variances							
Method	Num DF	Den DF	F Value	Pr > F			
Folded F	5	54	1.64	0.3285			

Table 17: Interaction Between Males and Mother's with a Bachelor's Degree

malemotherBD=Q6*Q10BD							
malemotherBD	N	Mean	Std Dev	Std Err	Minimum	Maximum	
0	48	1.8125	1.4389	0.2077	0	5	
1	13	3.3077	1.4367	0.3985	0	5	
Diff (1-2)		-1.4952	1.4385	0.4498			
malemotherBD	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
0		1.8125	1.3947	2.2303	1.4389	1.1979	1.8024
1		3.3077	2.4395	4.1759	1.4367	1.0302	2.3716
Diff (1-2)	Pooled	-1.4952	-2.3951	-0.5952	1.4385	1.2193	1.7544
Diff (1-2)	Satterthwaite	-1.4952	-2.4355	-0.5549			
Method	Variances	DF	t Value	Pr > |t|			
Pooled	Equal	59	-3.32	0.0015			
Satterthwaite	Unequal	19.047	-3.33	0.0035			
Equality of Variances							
Method	Num DF	Den DF	F Value	Pr > F			
Folded F	47	12	1	1			

Table 18: Interaction Between Caucasians and Fathers with a Bachelor's Degree

whitefatherBD=Q7C*Q9BD							
whitefatherBD	N	Mean	Std Dev	Std Err	Minimum	Maximum	
0	46	1.913	1.5892	0.2343	0	5	
1	15	2.8	1.2649	0.3266	0	5	
Diff (1-2)		-0.887	1.5185	0.4515			
whitefatherBD	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
0		1.913	1.4411	2.385	1.5892	1.3182	2.0017
1		2.8	2.0995	3.5005	1.2649	0.9261	1.9949
Diff (1-2)	Pooled	-0.887	-1.7904	0.0165	1.5185	1.2872	1.8521
Diff (1-2)	Satterthwaite	-0.887	-1.7082	-0.0657			
Method	Variances	DF	t Value	Pr > |t|			
Pooled	Equal	59	-1.96	0.0542			
Satterthwaite	Unequal	29.676	-2.21	0.0352			
Equality of Variances							
Method	Num DF	Den DF	F Value	Pr > F			
Folded F	45	14	1.58	0.3548			

Table 19: Interaction Between Caucasians and Mothers with a Bachelor's Degree

whitemotherBD=Q7C*Q10BD							
whitemotherBD	N	Mean	Std Dev	Std Err	Minimum	Maximum	
0	47	1.8723	1.4981	0.2185	0	5	
1	14	3	1.4676	0.3922	1	5	
Diff (1-2)		-1.1277	1.4914	0.4541			
whitemotherBD	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
0		1.8723	1.4325	2.3122	1.4981	1.2449	1.8816
1		3	2.1526	3.8474	1.4676	1.0639	2.3644
Diff (1-2)	Pooled	-1.1277	-2.0363	-0.219	1.4914	1.2642	1.819
Diff (1-2)	Satterthwaite	-1.1277	-2.0595	-0.1958			
Method	Variances	DF	t Value	Pr > |t|			
Pooled	Equal	59	-2.48	0.0159			
Satterthwaite	Unequal	21.73	-2.51	0.02			
Equality of Variances							
Method	Num DF	Den DF	F Value	Pr > F			
Folded F	46	13	1.04	0.9937			

Table 20: Interaction Between Fathers with a Master's Degree, M.D., J.D. or Ph.D. and Having One Credit Card

fatherMD1CC=Q20Yes1*Q9MD							
fatherMD1CC	N	Mean	Std Dev	Std Err	Minimum	Maximum	
0	57	2	1.488	0.1971	0	5	
1	4	4	1.4142	0.7071	2	5	
Diff (1-2)		-2	1.4844	0.7678			
fatherMD1CC	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
0		2	1.6052	2.3948	1.488	1.2563	1.8255
1		4	1.7497	6.2503	1.4142	0.8011	5.273
Diff (1-2)	Pooled	-2	-3.5363	-0.4637	1.4844	1.2582	1.8104
Diff (1-2)	Satterthwaite	-2	-4.1631	0.1631			
Method	Variances	DF	t Value	Pr > |t|			
Pooled	Equal	59	-2.6	0.0116			
Satterthwaite	Unequal	3.4831	-2.72	0.0613			
Equality of Variances							
Method	Num DF	Den DF	F Value	Pr > F			
Folded F	56	3	1.11	1			

Table 21: Probit Analysis of All Five Financial Literacy Questions

Analysis of Maximum Likelihood Parameter Estimates								
Parameter		DF	Estimate	Standard Error	95% Confidence Limits		Chi-Square	Pr > ChiSq
Intercept		1	-5.7636	3.0971	-11.8337	0.3066	3.46	0.0627
Q6	0	1	32.5554	225203	-441357	441422.4	0	0.9999
Q6	1	0	0	.	.	.	.	.
Q7C	0	1	4.4209	1.9862	0.528	8.3137	4.95	0.026
Q7C	1	0	0	.	.	.	.	.
Q8	0	1	3.8505	2.191	-0.4438	8.1447	3.09	0.0788
Q8	1	0	0	.	.	.	.	.
Q9BD	0	1	0.5438	1.0864	-1.5855	2.6731	0.25	0.6167
Q9BD	1	0	0	.	.	.	.	.
Q9MD	0	1	3.2022	1.7697	-0.2664	6.6709	3.27	0.0704
Q9MD	1	0	0	.	.	.	.	.
Q10BD	0	1	3.1238	1.5931	0.0014	6.2461	3.84	0.0499
Q10BD	1	0	0	.	.	.	.	.
Q17	0	1	-3.0923	1.4396	-5.9139	-0.2707	4.61	0.0317
Q17	1	0	0	.	.	.	.	.
Q19	0	1	-3.2017	1.6541	-6.4437	0.0402	3.75	0.0529
Q19	1	0	0
Q21	0	1	-1.6308	1.3084	-4.1952	0.9336	1.55	0.2126

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