

The cost of personal investment: Assessing the impact of student loan debt on financial outcomes
before and during the federal payment and interest pause

by

Nathan Collier

B.S., Eastern Washington University, 2019
M.B.A. Gonzaga University, 2021

AN ABSTRACT OF A DISSERTATION

submitted in partial fulfillment of the requirements for the degree

DOCTOR OF PHILOSOPHY

Department of Personal Financial Planning
College of Health and Human Sciences

KANSAS STATE UNIVERSITY
Manhattan, Kansas

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Abstract

This study analyzes the impact of student loan borrowing on retirement savings, homeownership, and financial stress. Most prior literature focuses on student loan payments as opposed to the total amount of debt when testing the effects of student loan borrowing. The Human Capital Theory developed by Becker (1962) assumes that humans invest in their education to increase their earnings and overall economic outcomes. This research used this framework to test the effectiveness of this investment by focusing on the ratio of total student borrowing to the annual income received. During the COVID-19 pandemic, the interest and payments of federal student loans were paused. This research uses data from the 2019 and 2022 waves of the Survey of Consumer Finances to compare the effects of student loan borrowing before and during the forbearance. This research adds to the body of knowledge regarding student loan debt by assessing the impact of the pandemic-induced forbearance, as well as providing further analysis of measuring student loan debt by total amount.

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Approved by:

Major Professor
Dr. Mindy Joseph

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Abstract

This study analyzed the impact of student loan borrowing on retirement savings, homeownership, and financial stress. Prior literature primarily focused on the dollar amount of student loan payments. This research considered the total amount of debt compared to income. The Human Capital Theory developed by Becker (1962) states that humans invest in their education to increase their earnings and overall economic outcomes. Human Capital framework tested the effectiveness of investment in education by focusing on the ratio of total student borrowing to the annual income received. During the COVID-19 pandemic, the interest and payments of federal student loans were paused. This research used data from the 2019 and 2022 waves of the Survey of Consumer Finances to compare the effects of student loan borrowing before and during the payment forbearance. This research adds to the body of knowledge regarding student loan debt by assessing the impact of the pandemic-induced forbearance, as well as providing further analysis of measuring student loan debt by total amount.

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Dedication

This dissertation is dedicated to my Lord and Savior, Jesus Christ. Hard work, discipline, and faith are the building blocks of a meaningful life.

Chapter 1 - Introduction

Introduction and Statement of the Problem

A college degree has long been the most attainable path toward attaining the American Dream. Every level of education achieved is associated with significantly higher wages earned throughout a working career (Quadlin et al., 2023). However, the cost of education has skyrocketed over the decades, making it harder for the majority of Americans to afford to pursue the dream (Archibald & Feldman, 2018). These cost increases caused around half of first-time undergraduate students to take on student loan debt to attend college (Baker et al., 2017). High levels of student loan debt may have increased financial stress, decreased continued enrollment, and impacted future career and life choices (Cho et al., 2015). The dichotomy between the positives of higher education and the negatives of student loan debt provides a dynamic of interest for researchers.

The traditional Human Capital Framework suggested that the higher the level of investment in completed education, the better the return in the form of positive financial outcomes (Becker, 1962). However, the increase in education costs and the recent prominence of student loan burdens have caused many discussions on the balance of education versus debt (Avery & Turner, 2012; Elliott, 2014; Nuckols et al., 2020). Prior research has focused primarily on the student loan payment instead of the total debt accrued (Clayton et al., 2015; Hoeve et al., 2014; Kim & Chatterjee, 2021). This bias toward payment analysis may stem from traditional mortgage financing, which looks at various debt-to-income ratios for underwriting criteria. Auto financing is another area where dealerships push consumers into financing based on the payment instead of the total debt amount. This focus on the lower amount is an intentional psychological framing technique that may lead to decisions not in a person's best interest. This paper suggests

that financial planners should suggest a holistic evaluation of investing in education to include projected income increases and the estimated ratio of total student loan debt to that income amount. Financial planners giving advice should focus on total student loan debt and income to allow for a more informed decision-making process.

This research uses two waves of the Survey of Consumer Finances (SCF) to test the total student loan debt-to-income ratio to measure student loan debt burden. The SCF is a publicly available data set released on a triennial basis. Data from the 2022 SCF were collected when student loan payments and interest were paused due to the COVID-19 pandemic (Briones & Turner, 2025), whereas the 2019 SCF data comes from a period before the student loan payment pause. By running the same testing on both periods, this research compared how student loans affect positive and negative financial outcomes with and without student loan payments. If the respective periods yield similar results, the findings may suggest that payments are less impactful on these outcomes than the overall debt amount. Significantly different results would suggest the payment pause, and therefore, the payments themselves significantly impact higher education returns.

Research Questions and Hypotheses

A primary research question is whether student loan payment pauses were significantly related to financial outcomes. The answer to this question is examined in detail based on the differences in outcomes between the two time periods. This dissertation hypothesized that there will be no significant difference between the periods examined, as total debt is expected to be a bigger driver of outcomes than loan payment. Another research question for both periods is at what level does the student loan debt-to-income ratio significantly affect financial outcomes? This study hypothesized that high ratios of student loan debt will negatively affect each financial

outcome tested. This study used structural equation modeling and path analysis to measure the direct and indirect effects between the variables. Model one utilized retirement savings as the endogenous variable, model two tested the path to homeownership, and model three examined financial stress. The research hypothesized that education has a positive direct effect on retirement savings and homeownership and an adverse direct effect on financial stress. Further, this research hypothesizes that income will mediate the effect between education and the endogenous variable in each of the models. The student loan debt-to-income ratio is hypothesized to moderate the direct effect between education and the endogenous variables. High student loan debt may decrease retirement savings and homeownership and increase financial stress. However, a high student loan debt ratio may have less of an effect on homeownership, retirement savings, and financial stress at certain income levels. The complete list of hypotheses tested in each of the models is listed below:

H₁: Education levels will have positive direct effects on retirement savings and homeownership.

H₂: Education levels will have a negative direct effect on financial stress.

H₃: Income will mediate the path between education and retirement savings, homeownership, and financial stress.

H₄: High student loan debt-to-income ratios will moderate the direct effects between income and retirement savings, homeownership, and financial stress.

H₅: The impact of student loan debt on retirement savings, homeownership, and financial stress will not significantly differ between the 2019 and 2022 results.

Specific Research Objectives

The main research objective was to understand better how high levels of student loan debt impact financial outcomes. Education is an investment, and the individual can measure the success of that investment by income compared to the total student loan debt accumulated. This study builds on the minimal amount of literature that measures student loan debt in this way. The existing research either focuses on extremely high-income earners or analyzes data from many decades in the past (Amin et al., 2020; Baum & Saunders, 1998; Chisholm-Burns et al., 2019). This research analyzed the student loan debt-to-income ratio across all income earners, during recent periods, and use multiple levels of this ratio.

Testing student loan borrowers before and during the pause on federal student loan payments and interest allows several layers of analysis. First, this research analyzed the differences between the period before the pause on interest and payments for federal student loan borrowers and the period during that pause. If there are significant differences between the results of the two time periods, it could be due to the extraordinary economic fallout associated with the pandemic, or the effectiveness of the interest rate and payment pause. However, there may not be significant differences between the time periods. In that case, a lack of discrepancy may suggest that the pause did not provide significant relief to loan borrowers. That result could enhance the case for evaluating student loans in total relative terms, such as the total debt as a percentage of annual income.

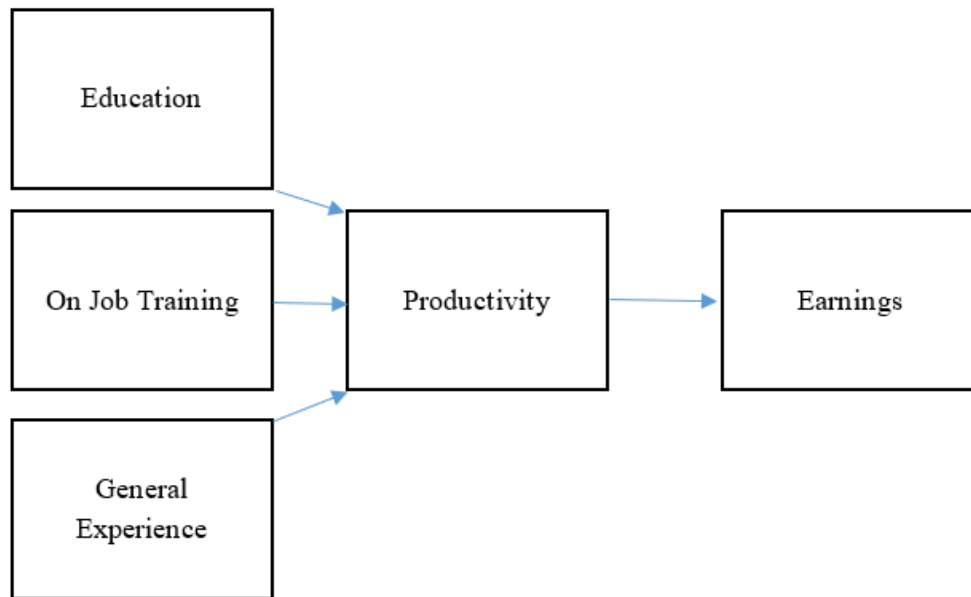
Theoretical Framework

Human Capital Theory (Becker, 1962) provided the theoretical framework for this research. The framework suggests that people can invest in themselves in several ways, such as formal education, specific and general on-the-job training and experience, health, migration, and

having and raising children (Bryant & Zick, 2005). The higher education component of the framework was the focus, which suggests that rational individuals will continue to invest in higher education until the internal rate of return of education is no longer more than the rate of returns from working in the marketplace (Becker, 1962). This study tested the path between the student loan debt-to-income ratio, positive and negative financial outcomes, and various levels of educational achievement. This project initially examined the path between education achieved and financial outcomes to assess the framework's fundamentals. The research then suggests that income mediates the relationship between education and financial outcomes. Explaining the financial outcome through mediation would validate Human Capital Theory, as the framework suggests that income is the main reason to invest in higher education. These results would support the premise that investing in education leads to higher income and better financial outcomes. Different levels of student loan debt-to-income ratio were then tested as a moderator. The moderating analysis tested whether high levels of student loan debt negatively impact the positive results typically associated with investing in higher education. Figure 1.1 provides a visual representation of the Human Capital Framework.

Figure 1.1

Human Capital Framework (Becker, 1962)



While Human Capital Theory's origins date back to the 1960s, researchers in financial planning still use the framework in modern research. A recent study found that investing in human capital led to higher participation in cryptocurrency, better retirement preparation, and greater investment knowledge (Brockbank, 2023). Human Capital Theory was used as a framework to estimate the potential economic effects of student loan forgiveness, concluding that it would have only short-term effects (Serra, 2022). The framework was also used in research looking to quantify the negative impacts of student loan borrowing, which concluded that higher student debt led to lower levels of graduate school participation (Chakrabarti et al., 2017). Human Capital Theory was used as a framework for research on student loans, suggesting that the lack of payment flexibility may be contributing to the student loan crisis (Kapadia, 2015). However, Human Capital Theory is not without its critics, as research suggested its shortcomings stem from oversimplifying a complex topic (Marginson, 2017).

This research expanded on the original theory using mediation testing, moderation testing, and endogenous variables. It is important to differentiate between higher income levels and better economic outcomes. The endogenous variables in each of the outcomes represent

positive and negative financial outcomes. Retirement savings are a primary driver of economic stability, especially for older Americans (Huang, 2016). Homeownership has many economic advantages, with the most important being cost-of-living stabilization throughout a person's ownership of the property (Goodman & Mayer, 2018). Financial stress negatively affected a vast number of Americans across different economic backgrounds (Assari, 2019). Economic outcomes are a key component of the models. Ideally, an investment in education will go beyond earnings and positively affect the overall economic outcome of the individual.

Human Capital Theory suggests that investing in human development will yield positive financial returns throughout life (Becker, 1962). College graduates enjoy positive returns from increased income levels associated with higher education (Oreopoulos & Petronijevic, 2013). Human Capital Theory accounts for investments in human capital skills, knowledge, and abilities. The framework assumes that education improves productivity, increasing wages after school completion. The present value of the future benefits, less the cost of education, can be used to calculate the internal rate of return for the educational investment (Bryant & Zick, 2005). The rate of return intends to compare the rate of return on education to the rate of return from a financial asset such as a mutual fund. If the return on education is higher, an individual will prefer to continue their education. If the return is higher for the financial investment, the individual will prefer to stop education. Equilibrium is when the rate of return is equal, and the individual has no preference. There is diminishing marginal productivity for education as each year in school reduces the remaining working years and increases the opportunity cost of workforce earnings. One of the main criticisms of Human Capital Theory is the oversimplification of the economic decision-making process (Li et al., 2019). Student loans are an example of a factor not accounted for within the original framework. The significant increase

in education costs and payment structure has prompted extensive research on the higher education borrowing decision-making. The expensive price tag may highlight the value of paying for education without incurring loans.

Additionally, the wage premium of those with higher education degrees has flattened over recent years, calling into question a pursuit-at-all-costs approach to higher education (Valletta, 2018). When a student signs off on an educational loan, there are default risks around the debt repayment, which vary depending on the borrower (Soederberg, 2014). There are also significant economic risks around borrowing and not completing the degree, which leads to participation in the debt repayment but not in the benefits of college completion (Baker et al., 2017). Additionally, adverse consequences may be associated with student loan debt, including life satisfaction, health, and overall psychological well-being (Kim & Chatterjee, 2018).

More specifically, this research tested the potential moderating effect of relative levels of student loan debt on the path between completed education and positive and negative financial outcomes. The negative outcome variable was financial stress, which has impacted many Americans across different backgrounds (Assari, 2019). The positive outcomes in this research are homeownership and retirement savings. Homeownership allows families to build wealth and achieve economic security superior to renting (Goodman & Mayer, 2018). Unfortunately, many Americans also lacked the retirement savings necessary to replace their current level of income (Huang, 2016). Addressing this potential shortfall goes a long way towards obtaining sustainable long-term financial success. One of the most significant financial decisions facing Americans is whether to pursue higher education, often paid for with student loan debt. Research around these education and career decisions is essential because of the responsibility the financial planning

community should share in making sure those entering adulthood make a decision that is in their best interests, both now and in the future.

Chapter 2 - Review of the Literature

Literature Review

Student Loans

Borrowing for a college education is a hot topic for research, and not all prior literature comes to the same conclusions. For example, Avery and Turner (2012) concluded that because of the economic benefits of college, students are not overborrowing for college and should borrow more for additional education. However, a similar study by Froidevaux et al. (2020) concluded that student loan borrowers showed robust levels of financial strain and job search strain, which led the authors to question whether education is worth the debt in all cases. Without a doubt, student loans have opened significant opportunities for many students who would not otherwise be able to afford continuing education (Baker et al., 2017). However, there are many possible downsides associated with student loan debt. Researchers found that student loan borrowers often struggled to repay their debt, invest in a home, continue their education, and may be more likely to drop out of college (Baker et al., 2017). Student loan borrowers may also suffer from psychological perils, such as increases in financial stress (Gicheva & Thompson, 2015). Without a clear conclusion on this topic, this study aims to test whether high levels of student debt significantly impacted the positive returns of higher education.

The Perks of Investing in Human Capital through Education

Higher education attainment has long represented the best path in pursuing the American Dream (Banks-Santilli, 2014). Historically, the purpose of college was to educate the public and shape future public servants and leaders in all areas of society through education (Chan, 2016). However, the current motivation for pursuing higher education is the monetary value of return that a student will receive over a lifetime (Trostel, 2015). Education beyond high school

increased wages significantly throughout a working career (Tamborini et al., 2015). Students who completed a bachelor's degree earn 65% higher wages, which translates to an after-tax increase in earnings of 60% (Ma & Pender, 2023). Attaining a degree lowered the probability of that individual spending a significant amount of time unemployed in the labor market (Mincer, 1991). Education can significantly boost overall economic success and is largely viewed positively by the general public, with 73% of those with no degree indicating they regretted not pursuing more education (The Federal Reserve, 2019). Further, prior research suggested that student loan debt is manageable and did not significantly impact students' return on investment (Baker et al., 2017).

The benefits of education go well beyond a straight monetary return. Those holding degrees have better access to healthcare and are more likely to engage in healthy behaviors, pursue civic roles, and provide better opportunities for their children (Ma & Pender, 2023). The return from education was measured in three ways: saving for retirement, homeownership, and financial stress. Saving for retirement is a critical component of supporting oneself after years of earning a paycheck. Around half of today's working families may not be able to continue the standard of living established during their working careers (Munnell et al., 2014). While young adults have historically been the least likely to save for retirement, they also have the most to gain by starting retirement savings early, since they have the longest time to contribute and benefit from their investment compounded over time (Foster, 2015). Many Americans view homeownership as a status symbol of attainment (McCabe, 2018). This achievement goes hand in hand with stability, perception, and access to economic opportunities and financial resources (Rohe et al., 2002). Most of the United States population favors buying over renting by a wide margin, as 80% of renters say they plan to own in the future, and 90% of homeowners are

satisfied with their decision (McCabe, 2018). Governments worldwide incentivize homeownership, believing it is a favorable decision for the population and society (Elsinga & Hoekstra, 2005).

Funding Education

While on the surface, an investment in college seems like a rational decision, the increasing cost of tuition has raised questions about the cost-benefit analysis (Finley et al., 2021). From 2010 to 2022, college costs increased by an average of 12% per year, with total inflation of 748% since 1963 (Hanson, 2023). Students make decisions based on their ability to pay as they go or their awarded financial aid package, which includes grants and scholarships that do not require repayment and private and federal student loans that do require repayment (Cappelli & Won, 2016). Federal student loans have lower fixed rates than private student loans, which are typically offered through banks and credit unions (Zhang & Fan, 2022). Federal student loans make up 92% of the total loans in the United States and will be the focus of this research (Hanson, 2023).

Education financing decisions may impact education returns, as those who borrow for their education have significantly underperformed in the classroom compared to those who did not have to borrow (Cappelli & Won, 2016). However, due to the cost of tuition, the federal student loan program has significantly increased access to college for students who would otherwise be unable to afford it (Heller et al., 2008). Within the last ten years, federal student loans made up the most significant percentage of financial aid at 33%, followed by institutional grants at 23% and Pell Grants at 15% (Baker et al., 2017). Most undergraduates accepted loans, with 54.1% taking on student debt at some point in their bachelor's degree studies (Hanson,

2023). However, there is currently limited literature on the moderating effect of student loans on the financial returns of education.

The Negative Impact of Debt

Accumulating significant debt levels has been shown to cause harm to adults in many ways. While young adults consider debt problematic, there has been a significant shift toward viewing debt as inevitable and usual in today's society (Horton, 2017). Debt may be correlated with criminal behavior, low self-esteem, a lack of perceived behavior control, poor social functioning, and financial stress (Hoeve et al., 2014). The overall mental health of young adults appears to be affected by debt incurred (Kim & Chatterjee, 2021). In addition to mental health, a person's physical health, such as blood pressure, may be affected by significant amounts of debt (Sweet et al., 2013). The type of debt may also affect health outcomes, as unsecured debt significantly impacted health more than shorter-term debt obligations (Clayton et al., 2015). Financial hardships, poverty, and life satisfaction correlated with overspending and over-indebtedness (Achtziger, 2022). Prior research has shown a clear connection between debt and negative financial, psychological, and physical well-being, calling into question the long-term impact of student loan debt.

The Perils of Investing in Human Capital through Education: Student Loans

With so many students taking on loans, the amount of student loan debt in the United States has grown substantially since the Higher Education Act of 1965 introduced the federal student loan program (Brown et al., 2016). There are 43.2 million federal student loan borrowers, each with an average debt of \$37,088, resulting in a total federal student loan debt of \$1.602 trillion as of Q4 2023 (Hanson, 2023). It is important to note that, despite this trend, not all students achieve their desired level of education. Those who do not complete their education are

particularly susceptible to the financial distress of student loan borrowing (Gicheva & Thompson, 2015). Data from the National Center for Education Statistics (2021) showed that of those who borrowed for their degree in 2012, 39% had not received a diploma by 2017.

Even with degree attainment, student loans have many adverse effects. High levels of student loans negatively impacted the enrollment persistence of low-income students (Herzog, 2017). Student loan borrowing may have negatively impacted life satisfaction, health, and psychological well-being (Kim & Chatterjee, 2018). Young adult borrowers aged 25-31 and current students who had previously taken out loans had significantly lower psychological functioning than their non-borrowing counterparts (Walsemann et al., 2015). Research has also shown that student loan debt levels may be associated with delays in life achievements such as marriage, particularly for men pursuing graduate-level attainment (Gicheva, 2016). Further, prior research concluded that undergraduate debt may limit the ability of students to pursue a master's degree after completing their undergraduate studies (Findeisen, 2015). High levels of student loan borrowing often led to decades of debt payments. For example, those borrowing less than \$7,500 may only finance for up to 10 years, less than \$20,000 for up to 20 years, and more than \$40,000 for up to 30 years (Lochner & Monge-Naranjo, 2015).

Investing in Education, Borrowing, and Retirement Savings

Retirement savings can be positively affected by education, but it can also be negatively affected by student loan debt. A lack of college education can lead to a more narrow-framing perspective that is not concerned with savings for retirement (Shin et al., 2018). College-educated households have six times more retirement savings than their high school-educated counterparts (Morrissey & Sabadish, 2013). However, significant student loan payments may severely threaten retirement savings. Previous research showed that households with no student

loan debt have over double the median retirement savings compared to households with student loan debt (Elliott et al., 2013). Once again, not all researchers agree, as Rutledge et al. (2018) concluded that student loan debt does have a significant impact on 401(k) balance and retirement savings success. Those who hold student loans later in life are likely to have less savings than those without loans in the same stage of life (Dettling et al., 2022). Many Americans carry student loan debt into retirement, which, unsurprisingly, has been shown to hurt overall life satisfaction (Korankye, 2023). There becomes a dichotomy between the adverse effects of student loan debt and the positive effects of college education. Students must decide whether to pursue higher education and higher future wages despite the costs. For many, significant debt accumulation is necessary to complete their education. Younger Americans must successfully navigate these decisions to enjoy financial success later in life.

Prior research has found that retirees with significant retirement savings have significantly higher retirement satisfaction than those relying heavily on Social Security (Smith & Kessler, 2020). Retirement confidence may correlate with long-term financial planning (Ghafoori et al., 2021). Saving for retirement and self-efficacy are shown to be highly correlated among working employees (Peter & Ambilikumar, 2021). Personal financial satisfaction increased in respondents who had a retirement savings goal, created a financial plan, and made regular contributions to their retirement accounts (Wang et al., 2021). Satisfaction may be magnified in later stages of life as older adults with higher economic resources reported significantly higher levels of well-being and financial satisfaction (Bender & Jivan, 2005).

Investing in Education, Borrowing, and Homeownership

Those with more education enjoy many benefits in today's society, including access to homeownership. More education likely increased the chances of homeownership, while those

with high school or less attainments have seen a significant drop in ownership from 61.3% in 1985 to 44.6% in 2015 (Goodman & Mayer, 2018). Student loan debt, the Great Recession, and tightening credit led to declining homeownership rates between 2005 and 2015 (Goodman & Mayer, 2018). Education borrowing may cause several years of delay for Millennials looking to purchase a house, even when the desire to purchase is prevalent (Mountain et al., 2020).

However, not all researchers agree that student loans are hindering homeownership. Houle and Berger (2015) found no association between student loans and homeownership using the National Longitudinal Survey of Youth. Cantrell (2018) found a negative path between student loans and homeownership, but the path was insignificant. Whether a student takes on federal or private loans may also make a difference in homeownership. Research has shown that a \$1,000 increase in federal loans does not significantly impact homeownership, but a \$1,000 increase in private loan balance lowers the likelihood of homeownership by 5% (Robb et al., 2019).

Individuals who owned a home showed a higher probability of planning for the future, while those planning for the future showed significantly higher levels of financial satisfaction (Xiao & O'Neill, 2018). Homeowners owing a mortgage between the ages of 25 and 50 showed higher signs of financial satisfaction compared to renters. In support of a better path, Tharp et al. (2019) also found that homeowners have higher financial satisfaction than renters. Prior research also showed that homeownership may be associated with higher overall life satisfaction than renting (Zumbro, 2013). A path analysis showed that social capital investment and residential stability were key indicators of overall housing satisfaction (Tan & Khong, 2012).

Investing in Education, Borrowing, and Financial Stress

A significant amount of prior literature has linked student loan debt to financial stress (Britt et al., 2017; Heckman et al., 2014; Montalto et al., 2018). Financial self-efficacy and

problem-solving orientation may have contributed to the stress related to the student loan burden (Shim et al., 2018). This stress caused high levels of student loans to be negatively associated with overall life satisfaction, health, and well-being over time (Kim & Chatterjee, 2018). However, many studies looked exclusively at currently enrolled or recently graduated student loan borrowers. The focus on younger Americans may stem from this demographic being more susceptible to financial stress than older generations (Britt et al., 2015). Financial stress may have led to high dropout rates in college for those taking on student loans (Britt et al., 2017). For example, among those who graduated from pharmacy school, higher amounts of student loan debt were associated with financial stress and a greater fear of the debt that had already accumulated (Chisholm-Burns et al., 2017). In the first-year post-graduation, higher levels of student loan debt correlated with higher levels of financial stress, which is the inability to fulfill all financial obligations (Zimmerman et al., 2025). Financial stress may be higher in younger adults than in other age groups (Raveendran et al., 2021). This study takes a more holistic view of student loans by testing the impact on adults up to age 65.

A path analysis study of white-collar clerical workers showed that financial stress is a significant factor in determining financial satisfaction and holds an inverse path (Joo & Grable, 2004). Among married individuals, financial stress significantly negatively impacts the household's financial satisfaction (Lee & Dustin, 2021). Financial stress showed a negative correlation to overall life satisfaction, but the study did not find a difference in life satisfaction between women and men (Tariq, 2012). Research shows that 50% of the variation in overall stress and 30% of the variation in personal and work satisfaction may be explained by financial stress (Bailey et al., 1998). According to the same study, financial satisfaction may be negatively

associated with financial stress, while debt appears to be positively associated with financial stress (Archuleta et al., 2013).

Missing Mortgage or Rent Payment

Several financial factors were used to represent financial stress. The first of these situations is missing a mortgage or rent payment. Prior research showed that missing rent or mortgage payments are associated with financial stress during the COVID-19 pandemic (Garvin et al., 2025). Unsurprisingly, missing mortgage or rent payments led to evictions and foreclosures throughout the business cycle (Ahmad & Livshits, 2024). Housing-related stress negatively affected household investment decisions, including expenditure, employment, and housing (Waldron & Redmond, 2016). Homeowners facing foreclosure and renters facing eviction both reported lower levels of mental and physical health (Alley et al., 2011).

Overspending

Overspending behavior is the second financial stress indicator in this research. One definition of financial stress is when a person or household cannot cover all their economic expenses (Raveendran et al., 2021). Overspending can cause a decrease in retirement savings, especially in younger adults (Achtziger, 2022). A higher level of anxiety around payday may be associated with overspending throughout the month (Lea, 2020). Financial stress, such as the loss of a job, contributed to overspending and led to depression, self-blame, and arguments with family and friends (Davis & Mantler, 2004).

Revolving Credit Card Debt

Lastly, revolving debt on a credit card is a behavior indicating financial stress. Financial stress and credit card debt are positively associated with each other (Xiao & Kim, 2021). Credit card debt is a significant problem for Americans, starting as early as college, when many are sold

credit cards on campus, leading to higher over-indebtedness (Norvilitis & Santa, 2002). Credit card debt is particularly damaging to the economic and mental health of those in the middle class (Hodson et al., 2014). Both student loans and credit card debt showed a correlation to lower overall life satisfaction (Bialowolski & Weziak-Bialowolska, 2021). Self-control, financial stress, and credit card debt all showed correlation (Limerick & Peltier, 2014).

Demographic Factors

Marital Status

Marital status is a key control variable in retirement savings, homeownership, and financial stress models. Among younger adults, married people are more likely to view retirement as important, have an individual retirement account, and participate in defined contribution plans through their jobs (Knoll et al., 2012). It is important to note that this study compared married couples to single and cohabitating couples. Throughout multiple age groups, marital status could be a significant predictor of retirement savings (Lee et al., 2018). Marital status may be more important than gender in predicting economic savings goals (Agunsoye et al., 2022).

Marital status is a significant factor in homeownership as the couple can naturally combine their economic resources (Hendershott et al., 2008). The correlation is accurate across various economic backgrounds, as low-income married couples are more likely to buy a home than their low-income single counterparts (Grinstein-Weiss et al., 2011). When analyzing parental impacts on homeownership, the parents' marital status was significantly associated with child homeownership (Henretta, 1984). While family and marital structure are shifting, these factors are still significant in the family's ability to own their residence (Gyourko & Linneman, 1996).

Being married also has benefits, such as limiting the household's financial stress. For example, Lutfi et al. (2022) found that marriage directly limited financial stress and that married couples with financial knowledge are more likely to have used that knowledge to reduce financial stress than their single counterparts (Lutfi et al., 2022). The unmarried, divorced, and widowed all may have higher levels of poor mental health compared to married couples (Lindström & Rosvall, 2012). Marital quality and satisfaction may be associated with financial stress (Archuleta et al., 2011). Compared to married individuals, single people may be more likely to have perceived stress around money and economic issues (Ta et al., 2017).

Gender

Prior research suggests that gender may contribute to retirement savings and preparation. In general, women tended to be more susceptible than men to poverty during normal retirement years (Bernasek & Shwiff, 2001). Women tended to have lower wages during their working years and lower average retirement savings balances than men (Clare, 2004). Women may be more risk-averse with their investments, which could have contributed to lower savings balances at retirement as compared to their male counterparts (Neelakantan & Chang, 2010). Prior research suggested that men are more likely to have a retirement account than women (Hira et al., 2009). Women may have lower levels of financial literacy, be less likely to plan for retirement, and be successful with their financial planning (Lusardi & Mitchell, 2008).

Prior research shows that women in college suffered significant financial stress regardless of their family's support level (Tran et al., 2018). A recent study supported these results by suggesting that college females suffer more from financial stress than their male counterparts (Roque-Reimate et al., 2025). However, males and females with financial stress may be more likely to have experienced depression (González & Vives, 2018). Both males and females may

be at higher risk for significant health issues, given they are under significant financial stress (Kuo et al., 2020).

In a recent study, Park et al. (2021) found that homeowners enjoyed higher life satisfaction compared to renters. When comparing gender differences, men showed significantly higher life satisfaction from homeownership as compared to women. Traditional social norms may play a role in men being encouraged to pursue homeownership more strongly than women (Adu-Gyamfi & Antoh, 2019). Previous research also finds that among the never married, gender differences showed a significant gap in homeownership rates (Mundra & Oyelere, 2018).

Race

A person's race can contribute to the likelihood of having enough savings for retirement. A recent study found that Black and Hispanic workers are less likely to participate in defined contribution plans than White workers; however, Asian workers were more likely to contribute to these retirement plans as compared to White workers (Tamborini & Kim, 2019). Unsurprisingly, the lack of retirement savings has led to a growing number of African American and Latino households with less savings at retirement to supplement their social security (Francis & Weller, 2021). The lack of savings has led to many minorities retiring later in life as compared to their White counterparts among educated and non-educated comparisons (Assari et al., 2024). Among those retired or semi-retired, minorities are more likely to deal with higher levels of psychological stress during their later years of life (Nkwata et al., 2021).

Overall, black and white Americans have a significant gap in terms of homeownership (Allen, 2002). While Black women are less likely to own homes compared to white women, from 1970 to 1990, this gap declined significantly in rural areas, but there was less progress seen

in urban areas (Allen, 2002). However, Collins and Margo (2011) found that between 1910 and 2007, the racial gap between African Americans and White Americans had primarily remained the same. Homeownership may be one of the key ways that America can close the racial wealth gap for many minority groups (Shapiro, 2006). However, in addition to being less likely to own a home, minorities who do own homes are likely to be in less desirable neighborhoods with their overall home values below those of White homeowners (Hirschl & Rank, 2010).

Homeownership is a significant positive predictor of overall health, but race significantly and negatively moderated the path between homeownership and health for minorities (Ortiz & Zimmerman, 2013). Additionally, minorities may be more likely to have mortgage debt on their homes as opposed to having them paid off (Hirschl & Rank, 2010).

Research on the Great Recession showed that Black and Hispanic individuals who owed student loan debt during that time were significantly more susceptible to higher levels of financial stress (Martin & Dwyer, 2021). Racial differences may moderate the path between financial stress and financial behavior, indicating a higher level of undesirable financial behavior when facing financial stress (Lee et al., 2022). African Americans may be susceptible to higher levels of financial stress as well as depressive episodes, which showed signs of being correlated in the study (Assari, 2019). Research on minorities showed that African Americans may carry higher levels of credit debt as well as higher levels of financial stress (Grable & Joo, 2006). Prior research found evidence linking race and financial stress with postpartum depression (Hill & Hettinger, 2019).

Age

As people age, they will have an increased retirement balance. However, this is not universally true across the board. A study from the 2010 SCF showed that 47.2% of 25–34-year-

olds, 52.2% of 35–44-year-olds, 60.0% of 45-54-year-olds, and 59.8% of 55-64-year-olds owned a retirement account according to the respondents (Rhee, 2013). Compared to adults in their 60s, those aged 25-34 are between 2- and 4-times less likely to save for retirement (Pieńkowska-Kamieniecka, 2019). Prior research found that for a broad range of 25-64-year-olds, 48% were participating in workplace retirement accounts, and 92% have retirement balances below what the financial services industry recommends for their age (Rhee, 2013). The gender gap in retirement savings appears to be relatively small early in life but may compound later in life as savings fall behind (Feng et al., 2018). As a person ages, retirement savings tend to become a greater priority.

It is well-documented that young people worldwide struggle with obtaining homeownership (Lennartz et al., 2015). The Great Recession of 2007-2008 and the surrounding economic downturn led to declining homeownership attainment among 18–34-year-olds (Lennartz et al., 2015). Research suggests that changes in socio-demographic characteristics, such as marital and family status, have driven down homeownership rates in young adults aged 25-34 (Drew, 2015). Unsurprisingly, as age increases, so did homeownership, which can be explained by income increasing and expanding economic opportunities later in one's career (Haines & Goodman, 1991). Homeownership is significant in successful retirement planning, especially when a household can eliminate its mortgage payment. Unfortunately, many Americans are turning to reverse mortgages to support their financial needs in retirement (Whait et al., 2019). Recent literature concluded that those renting in retirement face significantly more housing costs than homeowners (Alcántara & Vogel, 2021).

Financial stress can impact adults at any age along the life cycle. Research on young adults ages 18-35, middle-aged adults ages 36-55, and older adults ages 56 and older showed a

statistically significant difference in financial stress, with younger and middle-aged groups having much higher levels of stress (Vyshak et al., 2022). That is not to say that financial stress does not affect older adults with limited time to improve their financial situation. Older individuals with financial stress were at higher risk of lower self-reported health, quality of life, lower life satisfaction, and increased chances of depression (Huang et al., 2020). Research examining financial stress among older adults showed that women are more susceptible to financial stress than men (Keith, 1993). Across all age groups, there remains a strong path between financial stress and depression, which is common among lower-income groups (Guan et al., 2022).

Financial Knowledge

Significant prior literature exists on financial knowledge and its effects on retirement savings. Prior literature generally suggests a positive path between financial knowledge and retirement planning (Bucher-Koenen & Lusardi, 2011). Positive financial savings behavior and financial knowledge appear to be closely associated (Alkhawaja & Albaity, 2020). Both subjective and objective financial knowledge play a significant role in predicting the investment vehicle of choice, such as stock market participation in non-retirement accounts, traditional 401(k) plans, and pension plans (Lee et al., 2021). High levels of subjective financial knowledge without reciprocal levels of objective financial knowledge can indicate overconfidence in a person's financial decision-making and lead to negative financial decisions, such as early withdrawals from retirement accounts, without realizing the ramifications of those actions (Lee & Hanna, 2020).

Financial knowledge can also play a role in attaining homeownership. A study looking specifically at homeowners concluded that financial knowledge passed down from parents was

an important factor in positive financial outcomes for children (Grinstein-Weiss et al., 2010). Homeownership may be positively associated with life satisfaction, while financial knowledge may correlate with higher levels of life satisfaction (Tharp et al., 2019). A recent study estimated that between 30% and 40% of all wealth inequality at retirement can be attributed to financial knowledge (Lusardi et al., 2017). A significant portion of wealth at retirement is in homeownership.

A study of college students revealed that higher financial knowledge may be associated with higher financial stress (Britt et al., 2016). The path to stress may come from subjective financial knowledge signaling overconfidence in one's ability to make financial decisions. However, both financial stress and financial knowledge impacted overall financial wellness, and financial education to improve financial knowledge would lead to a decline in financial stress (Ismail & Zaki, 2019). Another study found that financial strain negatively impacted financial well-being, while financial knowledge positively affected well-being (Sabri et al., 2021). Alternatively, Peach and Yuan (2017) found that financial knowledge did not influence self-reported financial stress.

Summary

In summary, investing in higher education has long been the most effective way to prosper economically in the United States (Banks-Santilli, 2014). The Human Capital Framework suggests that rational human beings will continue to invest in education until the return on investment is higher in other areas (Becker, 1962). However, significant tuition costs have led many Americans to take on large student loan debt burdens to continue their higher education journey (Heller et al., 2008). These student loans can have significant financial and emotional negative impacts (Achtziger, 2022).

One common way to measure the overall impact of borrowing is by debt-payment-to-income ratio (Ahn et al., 2018). A less common approach is the total student loan debt-to-income ratio, which this research argues should be used by students to make loan decisions. The literature that acknowledges this method of evaluating student loans suggests that a ratio over 1.0 is highly leveraged (Chisholm-Burns et al., 2019). This study compared three levels of student debt-to-income ratios, which goes beyond the original study.

Additionally, in March 2020, student loan interest and payments were paused due to the COVID-19 pandemic (Briones & Turner, 2025). Data from the 2019 and 2022 Survey of Consumer Finances allows us to test the ratio before and during the payment pause to examine the potential impact on borrowers. The endogenous variables in the three models were retirement savings, homeownership, and financial stress. Retirement savings are a key indicator of the economic stability of a person in their later years (Wang et al., 2021). Similarly, homeownership has been the longstanding representation of the American Dream and provides considerable stability in retirement by maintaining consistent housing costs (Goodman & Mayer, 2018). Financial stress should be lower for those with better economic outcomes, but stress can be significantly higher for those with student loan debt if not repaid quickly (Bhutta et al., 2012).

Chapter 3 - Methodology

Overview

This research examined the path between education and financial outcomes while testing the potential negative impacts of student loan debt. There is significant prior research on the student loan debt-to-income ratio in terms of monthly payments (Zainal & Ismail, 2012). However, there has been little research on total student loan debt as a percentage of income. As a theoretical baseline, Human Capital assumes that people will continue to invest in education if they receive a positive financial return. This study looked to quantify this financial return in terms of total student loan debt-to-income earned. As with any investment, a central component of educational decision-making should be viewed regarding the total cost invested and the dollar value of additional income earned.

This chapter describes the methodology behind testing the impact of student loan debt on the path between education and financial outcomes. Chapter 3 outlines the SCF data sets and the time comparisons tested within the research. The chapter also details the variables used, how they are coded from the original data set, and various questions and options by which the coding is derived. Many questions are summarized within tables to show precise details. Each model is described in detail, and differences and similarities are outlined. The hypotheses associated with each model are listed, along with the statistical tests used to test the direct effects on the variables in the model.

Data

This study used data from the nationally representative 2019 Survey of Consumer Finances and the 2022 Survey of Consumer Finances data sets which are available to the public. The Survey of Consumer Finances (SCF) is administered triennially by the IRS, the Statistics of

Income Division, and the Board of Governors of the Federal Reserve. The 2019 SCF interviewed 6,500 households while selecting 5,248 in the final data set. The 2022 study interviewed approximately 5,300 households and included 4,595 in the final data set. The SCF is known for being one of the most detailed secondary data sets for household balance sheets and financial information (Kennickell, 2017). Extensive information regarding income, debt, savings, investments, demographics, and more details were provided.

Each data set addresses missing data using a multiple imputation technique stored in five separate implicate. The five implicate multiple imputation approach expands the 2019 data set to 26,240 and the 2022 data set to 22,975. The multiple-imputation method replaces each missing answer with simulated answers derived from overall estimates and standard errors (Gelman et al., 1998). This modern technique is one of the most effective ways of dealing with missing answers in secondary data sets. Respondents over age 65 were dropped from the study as this research was only focused on working-aged Americans, as they are most likely to make decisions or feel the effects of student loans, education, and career decisions. The final data set included 21,800 respondents in the 2019 wave and 16,655 in the 2022 wave.

Endogenous Variables

The Human Capital Framework argued that increased education will lead to positive financial outcomes. This study measured these outcomes in three distinct ways. The first of these endogenous variables is retirement savings, a positive financial outcome. Human Capital Theory suggested that the higher the education level, the more significant retirement savings one should have throughout a career. Several questions within the SCF are used to represent the respondent's retirement asset level accurately. Each question prompted respondents to estimate the dollar value of various retirement accounts. The numerical responses to those questions are

aggregated together to have a total retirement savings value. The questions used to calculate retirement savings are listed in Table 3.1.

Table 3.1

Retirement Savings Questions

How much (in total) is in your Roth IRA account(s)?
How much (in total) is in your roll-over IRA account(s)?
How much (in total) is in your regular or other IRA account(s)?
Section of questions regarding “pension” accounts which include 401(k), 403(b), profit sharing plan, supplemental retirement annuity, thrift/savings plan, “cash balance” plan, and SEPs. What is the balance of your pension account now?

The second endogenous variable representing a positive financial outcome is whether the respondent owns a home. Higher levels of income have been shown to lead to better rates of homeownership, which has long represented the American Dream (Goodman & Mayer, 2018). Homeownership also allows financial stability in terms of keeping housing costs relatively stable. Homeownership can have significant advantages over renting, especially for retirees (Smith & Kessler, 2020). The answers to this question are coded as a binary yes or no outcome, with owning a home being coded as 1 and not owning a home being coded as 0. In the 2019 SCF data set, 73% of respondents owned their residence, while 27% did not. Within the 2022 SCF data set, 62% of respondents owned their residence, while 38% did not own their residence.

The financial outcome tested in the last model takes a different approach by looking at a negative outcome. Financial stress is the final endogenous variable in the study and should decrease as education increases. Stress tends to be the representation of adverse financial

outcomes. In this case, the research measured financial stress to test whether student loans impact the psychological well-being of American households. Without student loans, Human Capital Theory suggested that increased education leads to better financial outcomes and, presumably, lower stress levels (Becker, 1962). The financial stress variable was coded with a binary response for those who indicated they were facing various financial hardships. The overspending variable was coded a 1 for those whose spending exceeded income. Overspending was coded as a 0 for respondents whose spending was the same as their income and for those whose spending was less than their income. For revolving credit, a 1 was coded for those who sometimes had revolving credit, as well as those who always or mostly always had revolving credit. A 0 was coded for respondents indicating they hardly ever had revolving credit. If the respondents did not indicate financial stress in any of the questions, they are labeled with *no financial stress*. If they indicate stress in one question, they are labeled *little stress*, two questions, *some stress*, three questions, *significant stress*, and if respondents indicate stress in all four questions, they are labeled *high stress*. These hardships included questions about missed mortgage payments, overspending, and carrying revolving credit. Missing mortgage payments can be a key indicator of financial stress, foreclosure, and bankruptcy (McCue, 2010). Previous literature has also closely associated financial stress and overspending (McNair et al., 2016). Finally, revolving credit card debt is associated with higher levels of financial stress (Haurin et al., 2020), which supports the use of the measures to capture financial stress. Each question used to code the levels of hardship is listed in Table 3.2.

Table 3.2

Financial Stress Questions

Variable	Question	Response Options
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Missed Mortgage Payment	Now thinking of all the various loan or mortgage payments you made during the last year, were all the payments made the way they were scheduled, or were payments on any of the loans sometimes made later or missed?	All paid as scheduled or ahead of schedule. Sometimes got behind or missed payments.
Overspending	Over the past year, would you say that your (family's) spending exceeded your (family's) income, that it was about the same as your income, or that you spent less, than your income?	Spending exceeded income. Spending the same as income. Spending was less than income.
Revolving Credit	Thinking only about Visa, MasterCard, Discover, American Express cards you can pay off over time, and store cards, do you almost always, sometimes, or hardly ever pay off the total balance owed on the account each month?	Always or almost always Sometimes Hardly ever

Exogenous Variables

The Human Capital Framework establishes various ways to invest in personal development. These investments include education, health, experience, and on-the-job training (Becker, 1962). This research focused on the investment in formal education leading to positive

financial outcomes. Within all testing, the level of education completed is the exogenous variable. The SCF data set explicitly asked respondents to identify the highest level of education completed. This variable is created, coded, and categorized based on the respondent's answer. Respondents who did not complete high school education represent Category 1. Category 2 includes respondents whose high school graduation was the highest education level completed. Category 3 represents those who completed some college but did not earn a degree. Those with a community college or junior college degree represent Category 4. Category 5 includes respondents whose highest education level completed is a four-year degree. Respondents with a master's degree are represented in Category 6. Professional and Doctoral degrees earned comprise the final Category 7. Table 3.3 details the questions and response options for the education categories.

Table 3.3

Education Categories

Question	Response
What is the highest level of	< High School
school completed or the	High School
highest degree you have	Some College
received?	2-Year Degree
	4-Year Degree
	Master's Degree
	Professional/Doctorate

Control Variables

This study included several control variables within the path and SEM analyses. Marital status is included in all models and was coded as a binary *yes* or *no* response variable.

Respondents who answered yes to marital status are coded as 1, and those who answered no are coded as 0. Prior research suggests a broad correlation between marriage and positive views on retirement savings and retirement account ownership (Knoll et al., 2012). Marriage has also been a primary predictor of homeownership, as most homeowners have been married, allowing for a traditional pooling of assets (Mundra & Oyelere, 2018). Since marriage has been found to be a key predictor of financial stability (Dew, 2016), this study controlled for marital status when testing financial stress as the outcome variable.

Age is significant in the Human Capital Framework and overall educational decision-making timeline, as the longer a person waited to invest in education, the shorter the timeframe for earning a positive return. Retirement savings have also been shown to increase with age (De Nardi et al., 2016), although many Americans face a significant savings shortfall in retirement (Biggs, 2017). The older a working American is, the more likely they are to own a home, as homeownership rates tend to peak near or at retirement age (Goodman & Mayer, 2018). At the same time, there is some evidence that financial stress drops during the life cycle. A Federal Reserve study revealed a prominent issue with stress among all working age groups. Respondents indicated overwhelming stress levels at 25% for 30-44-year-olds, 20% for 45-54-year-olds, and 11% for 54-65-year-olds (Federal Reserve, 2013). The respondents are categorized into age groups under 25 years old, those between 26 and 35 years old, those between 36 and 45 years old, those between 46 and 55 years old, and those between 56 and 65 years old. Respondents older than 65 were removed from the study.

Gender is a mainstay control variable in financial planning research, as men and women often have different financial life experiences. The respondent's gender is coded as binary *male* or *female*. When comparing never-married men, never-married women tend to be less likely to achieve homeownership than men (Mundra & Oyelere, 2018). Prior literature showed that women may save less for retirement than their male counterparts (Feng et al., 2018). A recent study looking at financial stress and depression reported that there was no statistical difference between financial stress in men and women. However, women were more likely to report depression, which was closely associated with financial stress (Guan et al., 2022).

Race is also a control variable in all three models. Minority Americans, including African Americans, Latinos, and some Asian Americans, find themselves with fewer retirement savings as compared to Whites (Francis & Weller, 2021). As of 2015, homeownership rates for black households have fallen every decade for 30 years (Goodman & Mayer, 2018). During the Great Recession, Black and Hispanic minorities with student loan debt showed significantly higher levels of financial stress as compared to White respondents (Martin & Dwyer, 2021). Race is categorized into White and minority respondents.

Financial knowledge can be a key control variable when testing financial outcomes. The subjective financial knowledge assessment asked respondents to rank their financial knowledge on a 0-10 scale. This paper categorized the responses with 0 having the lowest level of knowledge and 10 having the highest level of financial knowledge based on answering all questions correctly. Financial knowledge is positively associated with overall financial satisfaction, and financial satisfaction was positively associated with homeownership (Tharp et al., 2019). Financial literacy courses have been shown to help limit financial distress and

economic uncertainty (Lee et al., 2019). The control variables, questions used to measure each construct, and response options are listed in Table 3.4.

Table 3.4

Control Variables

Variable	Question	Response Options
Marital Status	(Are you/Is your [pathway] currently married or living with a partner, separated, divorced, widowed, or (have you/has [he/she]) never been married?	Married Not Married
Age	Respondent: Age computed from date of birth. So, you are (Computed age) years old?	Groupings Age 18-25 Age 26-35 Age 36-45 Age 46-55 Age 56-65
Race	Which of these categories do you feel best describe you:	White (Include Middle Eastern/Arab with White). Black/African American Hispanic/Latino Asian American Indian /Alaska Native Native Hawaiian / Pacific Islander

Return	Do you think that the following statement is	True
	true or	False
	false: buying a single company's stock	Don't know
	usually provides a safer return than a stock	Refused
	mutual fund?	
Interest	Suppose you had \$100 in a savings account	More than \$102
	and the interest rate was 2% per year. After	Exactly \$102
	5 years, how much do you think you would	Less than \$102
	have in the account if you left the money to	Don't know
	grow: more than \$102, exactly \$102, or less	Refused
	than \$102?	
Inflation	Imagine that the interest rate on your	More than today
	savings account was 1% per year and	Exactly the same as today
	inflation was 2% per year. After 1 year,	Less than today
	would you be able to buy more than today,	Don't know
	exactly the	Refused
	same as today, or less than today with the	
	money in this account?	

Note. Race is coded as binary White and Non-White in Mplus for the path analysis and structural equation models.

Income Mediator

A mediating variable in the path analysis explains the path between the predictor and endogenous variables. The mediating variable in each of the three models is annual income. The Human Capital Framework suggests that higher levels of education will lead to more earning opportunities (Becker, 1962). These additional opportunities should lead to better financial outcomes, all else being equal. This study used a series of path analyses to establish income as a mediating variable. Income was coded categorically in order to eliminate extremely high outliers in the data set. This concern was related to the SCF disproportionately sampling higher-income earners compared to the U.S. general population (Kennickell, 2006).

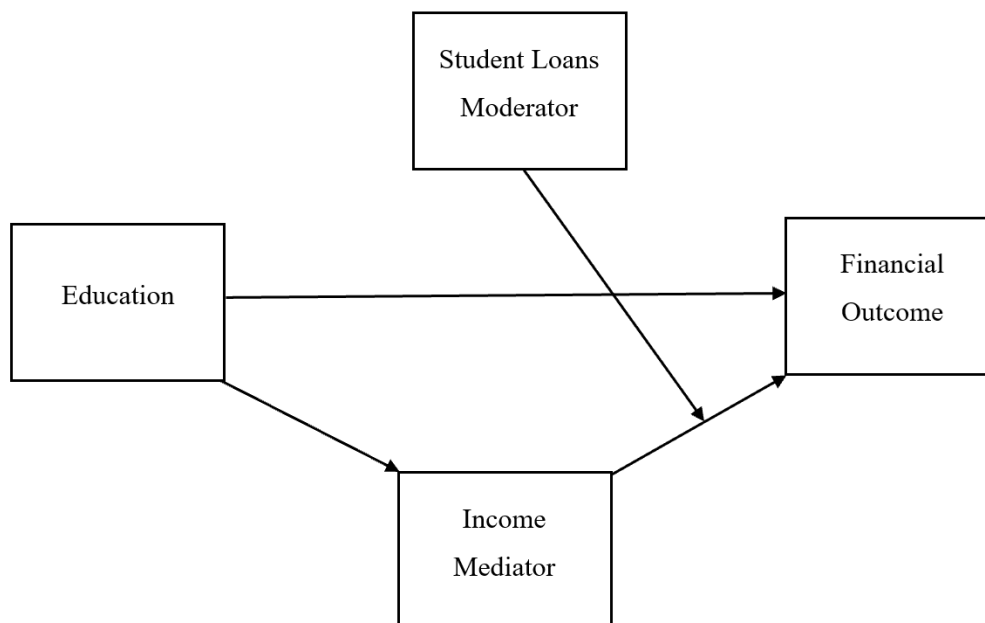
Student Loan Debt-to-Income Ratio Moderator

In path analysis and SEM, a moderating variable affects the strength or direction of the path between the predictor and outcome variables. The three models in this dissertation tested the moderating effect of the total student loan debt-to-income ratio on the effect of income on the endogenous variables. This study tested whether relative levels of student loan debt affect the strength or direction of the path between education and the positive and negative financial outcomes. The moderating variable in the three models is the student loan debt-to-income ratio. There is a significant amount of prior literature examining the student loan debt-to-income ratio from a payment perspective (Kantrowitz, 2015; Lee et al., 2018; Zainal & Ismail, 2012). However, very little research has looked at the debt-to-income ratio from a total student loan perspective. Most of this research specifically tested pharmacists, dentists, and doctors, noting that a ratio of over 100% student loan debt-to-income is troubling (Chisholm-Burns et al., 2019; Amin et al., 2020; Baum & Saunders, 1998). This research acknowledged the need to evaluate the total student loan debt-to-income ratio to view the total return of the student loan investment.

However, this study's average student loan borrower for an undergraduate degree had a balance of just \$11,400, well below the current average of \$37,000 (Hanson, 2023). A student loan debt-to-income ratio greater than 100% was used to define high student loan debt. Prior research supports this assumption (Baum & Saunders, 1998). Those without student loan debt have a ratio of zero. Respondents between the high ratio of 1.00 and 0 are considered a low ratio. Having three categories allows for analysis of the impact of multiple debt ratio levels within the model. The range of measures allows for increased testing for potential impact among various education and debt level combinations. Figure 3.1 shows the whole model.

Figure 3.1

Full Model



Analysis

This study used three outcome variables to test the effectiveness of education investment with the potential impacts of relative student loan debt levels. This paper tested each of these

three models in two periods. The 2019 SCF represented period one and examines student loans' impacts on retirement savings, homeownership, and financial stress before the COVID-19 pandemic. During the pandemic, many borrowers had their payments and interest paused due to the unprecedented economic circumstances and uncertainty (Briones & Turner, 2025). The 2022 SCF represents period two, when payments were paused. The comparison of these periods allowed us better to understand the impacts of the payment and interest pause. Substantial increases in positive outcomes or decreases in adverse outcomes suggest the payment pause was highly successful, decreasing the burden on student loan holders. However, little to no change in the outcomes of the tests would point towards total student loan debt as an important factor in the Human Capital Framework. High levels of student loan debt may significantly impact the return on investment, as explained by the Human Capital Framework. Differences in outcomes between the groupings may suggest that a student-loan-debt-to-income ratio is a more appropriate way to analyze investment in higher education.

Model 1

Model 1 used path analysis to test the path between education and retirement savings. The total student loan debt-to-income ratio is tested as a moderator, and income is tested as a mediator. In Model 1, retirement balance is the endogenous variable in the model. The analysis establishes a path between education and retirement savings using path analysis. Within the model, income is considered as a mediator that explains the direct effect between education and retirement savings. The student loan debt-to-income ratio is also tested as potentially moderating the relationship between income and retirement savings. The three levels of student loan debt-to-income ratio are compared and tested as potentially moderating the direct effect between income and retirement savings. In this case, high relative student loan debt may change the direction of

the path between education and retirement savings as compared to low or no student loan debt ratio categories.

Model 1 Hypotheses

H₁: Education levels have a positive direct effect on retirement savings.

H₂: Income mediates the direct effect between education and higher retirement savings.

H₃: High student loan debt-to-income ratios will moderate the direct effect between education levels and retirement savings.

Model 2

The second model utilized the same tests as the original model, but the endogenous variable representing a financial outcome is owning a home. Path analysis was used to test the effects of completed education on homeownership. Next, this analysis tested whether income mediates the path between education and homeownership. Finally, the complete path analysis tested whether high levels of student loan debt moderate the path between income and homeownership. If the results from the high-loan group differ from those in the no- and low-loan groups, the results would suggest that high student loan debt is impacting the positive returns from investment in education.

Model 2 Hypotheses

H₄: Education levels have a positive direct effect on homeownership

H₅: Income mediates the path between education and homeownership

H₆: High student loan debt-to-income ratios will moderate the positive path between education levels and homeownership

Model 3

The last model used SEM to test the relationship between education and financial stress. This analysis differs from the other models, using a negative outcome as the endogenous variable, a latent endogenous variable, and SEM analysis. Human Capital Theory suggests that adverse financial outcomes, such as financial stress, should decrease as education increases. The first path tested the path between education and financial stress. Next, this study tested whether income mediates the path between education and financial stress. Lastly, relative student loan groups are tested as potentially moderating the path between education and financial stress in the full SEM model.

Model 3 Hypotheses

H₁: Education levels have a negative direct effect on financial stress

H₂: Income mediates the path between education and financial stress

H₃: High student loan debt-to-income ratios will moderate the negative path between education levels and financial stress

Chapter 4 - Results

This research investigated the potential impact of student loans on financial outcomes by analyzing data across two time periods. This paper compared the impact of student loans on financial outcomes using the 2019 SCF and the 2022 SCF data sets. The 2019 data represent a period before the COVID-19 pandemic, when student loan payments were required. The 2022 data set coincides with the payment pause for federal student loan borrowers, as repayment activity had significantly stalled.

This chapter presents the study's results, beginning with demographic information from the 2019 and 2022 SCF data sets. Next, this chapter outlines the descriptive statistics of the key variables, including education, income, student loans, retirement savings, homeownership, and financial stress. This study examined the direct effect of education on retirement savings, homeownership, and financial stress, which are considered endogenous variables. Each model also tested whether income mediated the path between education and the endogenous variables. In the first model, this research tested whether income mediates the path between education and retirement savings. In the second model, this research examined whether income mediates the path between education and homeownership. Lastly, the third model tested whether income mediates the direct effects between education and financial stress using SEM. Three categories of student loan debt-to-income ratios were tested as potential moderators of the direct effects between income and retirement savings, homeownership, and financial stress. This study tested each of the three models in period one (2019) and period two (2022), using SCF data in both cases.

Demographic Characteristics of the Sample

Table 4.1 below provides an overview of the descriptive statistics for the study variables. Additionally, this research excluded respondents over the age of 65, as this study focused on adults aged 18 to 65. After dropping older respondents, the 2019 SCF data set contained 21,800 responses, while the 2022 SCF data set contained 16,655 responses. The gender distribution of both samples was remarkably similar, with the 2019 data sets comprised 78.69% males, and the 2022 data set comprised 76.58% males.

Both datasets include significantly more older individuals. Respondents' ages are categorized as 18- to 25-year-olds, and then in 10-year increments up to the age of 65. In both samples, the smallest group was the 25 and under, comprising just 5.78% of the sample in 2019 and 4.56% of the sample in 2022. The second smallest group was the 26–35-year-olds, comprising 16.38% of the 2019 sample and 16.00% of the 2022 sample. In 2019, 36 to 45-year-olds comprised 21.90% of the sample, and similarly, they made up 23.03% of the sample in 2022. In the 2019 sample, 26.77% of respondents were between the ages of 46 and 55, compared with 24.59% in 2022. In both samples, respondents aged 56 to 65 years comprised the highest concentration, at 29.17% in 2019 and 31.82% in 2022.

White respondents were 67.56% of the sample in 2019 but dropped to 56.53% in 2022. Reciprocally, the proportion of respondents identifying as Black increased from 14.48% in 2019 to 16.87% in 2022. This trend is also true among Hispanics, who increased from 11.54% of the sample in 2019 to 16.09% in 2022, as well as among Asian and other respondents, who rose from 6.42% in 2019 to 10.51% in 2022.

Education is a key component of this study. Therefore, an individual's level of education falls into one of seven different categories. Across all categories, there was very little change

from 2019 to 2022. The proportion of individuals who did not complete high school increased slightly from 8.67% in 2019 to 9.07% in 2022. The percentage of people who completed high school but did not pursue further education slightly decreased from 21.76% in 2019 to 20.74% in 2022. Those who completed some college but did not finish decreased from 14.96% in 2019 to 12.43% in 2022. Respondents completing a two-year degree decreased only slightly, from 10.60% to 9.85%, between 2019 and 2022. Those who completed a four-year degree were the largest group in both samples at 24.15% in 2019 and 25.61% in 2022. Master's degree recipients were 12.8% of the sample in 2019 but increased to 14.62% in 2022. In 2019, professional and doctoral degree recipients comprised 7.06% of the sample. This number increased to 7.69% in 2022.

Married respondents comprised 52.73% of the sample in 2019, while single respondents comprised 47.27%. The 2022 SCF data produced similar results, with married respondents making up 53.17% of the sample, while single individuals made up 46.83%. This variable was one of many with very few changes between the 2019 SCF and the 2022 SCF data sets.

Borrowers are categorized based on their student loan debt-to-income ratio. Approximately 76% of respondents had no student loans in both the 2019 and 2022 SCF data sets. Similarly, 19% of respondents reported student loan debt-to-income ratios ranging from 0.01 to 0.99. Both data sets also report just under 5% of respondents with student loan debt-to-income ratios of 1.00 or above.

Financial stress is measured by summing the responses indicating stress in the three questions about financial peril. These three questions include revolving credit card debt, spending more than earnings, and missing a mortgage or rent payment. Respondents received one point for each stress point, such as missing a mortgage or rent payment, spending more than

they made, and always or sometimes carrying revolving credit. The binary stress points cumulate so that zero stress is the lowest level, and three is the highest level of stress. In 2019, 56.09% of survey participants had zero stress points. This number decreased to 54.79% in the 2022 SCF survey. In 2019, 31.58% of respondents fell into the one stress category, which decreased to 29.58% of respondents in 2022. The category representing two stress points included 10.24% of respondents in 2019, which increased to 11.34% of respondents in 2022. The highest level of stress, as measured by three stress points, was 2.09% in 2019, but this number doubled to 4.28% of respondents in 2022. The results may represent the financial effects of the COVID-19 pandemic.

The SCF data sets skewed toward higher-income individuals. Therefore, a categorical variable was used to represent various income-earning levels in both datasets. In 2019, those earning less than \$50,000 comprised 34.09% of the survey respondents, which decreased to 30.29% in the 2022 survey. Respondents earning between \$50,000 and \$99,999 with 23.89% in 2019. A similar percentage of the group earned that amount in 2022, at 22.37% of the sample. In 2019, 11.61% of respondents earned between \$100,000 and \$149,999. This number increased to 13% in the 2022 version of the survey. Respondents earning between \$150,000 and \$199,999 were virtually the same in both datasets, at 6.82% and 6.87%, respectively. In 2019, just 3.67% of the group earned between \$200,000 and \$249,999, while this number increased slightly to 4.26% in 2022. The highest income category, those earning over \$250,000, makes up a significant portion of the sample at 19.93% in 2019 and 23.21% in 2022.

Table 4.1

Sample Characteristics

Variable	2019		2022	
	n	%	N	%
Gender				
Male	17,155	78.69%	12,755	76.58%
Female	4,645	21.31%	3,900	23.42%
Age Categories				
25 And under	1,260	5.78%	760	4.56%
26-35	3,365	16.38%	2,665	16.00%
36-45	4,240	21.90%	3,835	23.03%
46-55	5,350	26.77%	4,095	24.59%
56-65	5,695	29.17%	5,300	31.82%
Race				
White	14,729	67.56%	9,415	56.53%
Black	3,156	14.48%	2,810	16.87%
Hispanic	2,516	11.54%	2,680	16.09%
Asian/Other	1,399	6.42%	1,750	10.51%
Education				
< High School	1,891	8.67%	1,510	9.07%
High School	4,743	21.76%	3,455	20.74%
Some College	3,262	14.96%	2,070	12.43%
2-Year Degree	2,310	10.60%	1,640	9.85%
4-Year Degree	5,265	24.15%	4,265	25.61%
Master's Degree	2,790	12.80%	2,435	14.62%
Professional/Doctorate	1,539	7.06%	1,280	7.69%
Marital Status				
Married	11,495	52.73%	8,855	53.17%
Single	10,305	47.27%	7,800	46.83%
Student Loan Debt-to-Income				
0.00 Ratio	16,605	76.17%	12,645	75.92%
< 1.00 Ratio	4,170	19.13%	3,233	19.41%
> 1.00 Ratio	1,025	4.70%	777	4.67%
Financial Stress				
0 Stress Points	12,228	56.09%	9,126	54.79%
1 Stress Point	6,885	31.58%	4,927	29.58%
2 Stress Points	2,232	10.24%	1,889	11.34%
3 Stress Points	455	2.09%	713	4.28%
Income Categories				
< \$50,000	7,431	34.09%	5,045	30.29%
\$50,000-\$99,999	5,209	23.89%	3,725	22.37%
\$100,000-\$149,999	2,531	11.61%	2,165	13.00%
\$150,000-\$199,999	1,486	6.82%	1,145	6.87%
\$200,000-\$249,999	799	3.67%	710	4.26%
>\$250,000	4,344	19.93%	3,865	23.21%

Note. 2019 N = 21,800; 2022 N = 16,655

A subjective financial knowledge measure was used to capture respondents' level of financial knowledge. Respondents are asked to rate their financial knowledge on a 0-10 scale. Subjective financial knowledge has been shown to be closely associated with financial decision making across a broad spectrum of consumer choices (Hadar et al., 2013). The subjective financial knowledge scale offers 11 levels and should act more like a continuous variable when compared to the 4-category objective financial knowledge scale (Lusardi, 2015).

Table 4.2. Financial Knowledge Question

Financial Knowledge Question

Question

Some people are very knowledgeable about personal finances,
while others are less knowledgeable about personal finances.

On a scale from zero to ten, where zero is not at all
knowledgeable about personal finance and ten is very
knowledgeable about personal finance, what number
would you (and your {husband/wife/partner}) be on the scale?

This research measured retirement balance in logarithmic form because the samples heavily weight towards those with higher savings balances. From a raw data perspective, the mean retirement balance in 2019 was \$196,044, which increased to \$234,393 in 2022. The standard deviation of the retirement balance is high in both datasets, at \$776,864 in 2019 and \$727,437 in 2022. Each sample has a minimum value of 0, with the maximum retirement savings being \$29,800,000 in 2019 and \$16,700,000 in 2022. It is also worth mentioning that respondents were likely to round to larger round numbers based on the way the SCF asked the question.

This study categorized income, rather than testing it in its raw form, as the SCF data set skews towards higher income earners. In 2019, the mean income of the respondents was

\$811,012, and in 2022, it was \$944,265. These metrics underscore the importance of categorization, as the SCF data tends to skew toward higher-income earners. Unsurprisingly, standard deviations for both datasets are very high with respect to income. In 2019, the standard deviation was \$811,012, while the standard deviation in 2022 was \$7,889,060. The minimum income earned by each data set was zero, with a maximum of 704 million in 2019 and 273 million in 2022.

Table 4.3

Sample Characteristics of Continuous Variables

Variable	M	SD	Min	Max
Financial Knowledge (0-10)				
2019	7.24	2.13	0	10
2022	7.33	2.14	0	10
Log Retirement Balance				
2019	5.52	5.83	0	17.21
2022	5.78	5.92	0	16.30
Income				
2019	\$811,012	\$1,1100,000	0	\$704,000,000
2022	\$944,265	\$7,889,060	0	\$273,000,000

Missing Data

Survey data from the 2019 and 2022 SCF data sets are nationally representative of US households. The SCF uses multiple imputation to address missing data within the sample. The multiple imputation creates five versions of the data with imputed values across all variables. As a result, none of the key variables used in the models have missing data. The variables were created within Stata 19 software. Each data set was then exported from Stata 19 into Mplus 9, where the SEM and path analysis were conducted.

Path Analysis – Retirement Savings 2019

This study tested whether there was a significant positive path between education and retirement savings balances within the 2019 data set. This study will present the results from each model for the 2019 data, followed by the results from the 2022 SCF data. Table 4.4 summarizes the standardized results from the analysis examining the path between education and retirement savings, while controlling for marital status, gender, age, race, and financial literacy. In Model 1's path analysis model, education was specified as an exogenous variable, predicting income, which in turn predicted retirement savings. Education had a positive direct effect on retirement savings ($\beta = 0.323$, $SE = 0.006$, $p < .001$). These results suggested that higher levels of education are associated with higher levels of retirement savings. Unsurprisingly, age had a positive direct effect on higher retirement savings ($\beta = 0.126$, $SE = 0.006$, $p < .001$). Older Americans have had more time in the workforce to save and grow their retirement savings. Compared to white respondents, those from minority groups showed negative direct effects on retirement savings ($\beta = -0.090$, $SE = 0.006$, $p < .001$). Gender was also statistically significant, with women showing less retirement savings compared to men ($\beta = -0.029$, $SE = 0.007$, $p < .001$). Married households showed positive direct effects on retirement savings as compared to single households ($\beta = 0.141$, $SE = 0.007$, $p < .001$). Higher levels of financial knowledge had a positive direct effect on higher levels of retirement savings ($\beta = 0.154$, $SE = 0.006$, $p < .001$). These results suggest a statistically significant path between education and retirement savings, and they support all control variables included in the model. The study then examined income as a mediator of the path between education and retirement savings.

Table 4.4

Path analysis for Education to Retirement Savings 2019

Predictor	β	Std. Error	Est./S.E.	p-value
-----------	---------	------------	-----------	---------

Education	0.323	0.006	53.543	<.001
Age	0.126	0.006	21.559	<.001
Race	-0.090	0.006	-15.181	<.001
Gender	-0.029	0.007	-4.374	<.001
Married	0.141	0.007	20.342	<.001
Financial Knowledge	0.154	0.006	23.994	<.001

Note. CFI = 1.000, TLI = 1.000, RMSEA = 0.000, SRMR = 0.000, $\chi^2[6] = 7,880.42$, $p < .001$

Mediation Analysis Retirement Savings 2019

The mediation model tested whether income mediates the path between education and retirement savings. The model was just-identified ($df = 0$), as it fits perfectly with the observed data (Finch, 2019). Consequently, the model fit indices reflect perfect fit (Root Mean Square Error of Approximation (RMSEA) = 0.000, Comparative Fit Index (CFI) = 1.000, Tucker-Lewis Index (TLI) = 1.000, Standardized Root Mean Square Residual = 0.000, Chi-squared [6] = 7,880.42, $p < .001$). To test this potential mediation, this research established a positive path between education and income, as well as between income and retirement savings. This model hypothesized that both of those paths would be positive and significant, and income would mediate the path between education and retirement savings.

Table 4.5 summarizes the standardized results for the path between education and income, as well as between the control variables and income. Every path tested showed statistical significance for the direct effect. Education showed a positive direct effect on income ($\beta = 0.380$, $SE = 0.005$, $p < .001$). For the control variables, age ($\beta = 0.169$, $SE = 0.005$, $p < .001$), being married ($\beta = 0.283$, $SE = 0.006$, $p < .001$), and financial knowledge ($\beta = 0.117$, $SE = 0.005$, $p < .001$) showed positive direct effect on income. Compared to their white counterparts, minorities showed a negative direct effect on income ($\beta = -0.086$, $SE = 0.005$, $p < .001$). In comparison to men, women also had a negative direct effect on income ($\beta = -0.129$, $SE = 0.006$, $p < .001$).

Table 4.5*Path analysis for Education to Income*

Predictor	β	Std. Error	Est./S.E.	p-value
Education	0.380	0.005	77.441	<.001
Age	0.169	0.005	34.098	<.001
Race	-0.086	0.005	-17.415	<.001
Gender	-0.129	0.006	-22.994	<.001
Married	0.283	0.006	48.557	<.001
Financial Knowledge	0.117	0.005	22.982	<.001

Based on these results, we conclude that compared to white respondents, black, Hispanic, and other minorities earn less income, and compared to men, women also earn less income. We also conclude that there is a strong positive path between education and income. This study then considered whether income has a strong positive path to retirement savings.

As shown in Table 4.6, income had a positive direct effect on retirement savings ($\beta = 0.403$, $SE = 0.007$, $p < .001$). For the control variables, education ($\beta = 0.209$, $SE = 0.006$, $p < .001$), age ($\beta = 0.065$, $SE = 0.006$, $p < .001$), being married ($\beta = 0.025$, $SE = 0.007$, $p < .001$), and financial knowledge ($\beta = 0.042$, $SE = 0.006$, $p < .001$) all show positive direct effects with retirement savings. Compared to white respondents, minority groups had negative direct effects on retirement savings ($\beta = -0.053$, $SE = 0.006$, $p < .001$). Only gender showed insignificant direct effects with retirement savings. Overall, these paths show strong direct effects and are consistent across education, income, and retirement savings.

Table 4.6*Path Analysis for Income to Retirement Savings*

Predictor	β	Std. Error	Est./S.E.	p-value
Income	0.403	0.007	54.878	<.001
Education	0.209	0.006	31.942	<.001

Age	0.065	0.006	11.223	<.001
Race	-0.053	0.006	-13.059	<.001
Gender	0.002	0.006	1.185	0.236
Married	0.025	0.007	3.238	0.001
Financial Knowledge	0.042	0.006	7.415	<.001

Based on the results, we concluded that there is a positive path between income and retirement savings, as well as between education and retirement savings. All control variables except for gender were significant at the .05 significance level. Table 4.7 presents the total, indirect, and direct effects of the standardized results to determine whether income mediates the path between education and retirement savings. Education showed a positive direct effects on retirement balance, with a significant total effect in the model ($B = 0.356$, $SE = 0.006$, $p < .001$). The total indirect effect of education on income on retirement balance is also significant, indicating mediation ($B = 0.153$, $SE = 0.003$, $p < .001$). However, income only partially mediates, as the direct effects of education on retirement balance remain significant at the .05 alpha level. These results suggested that income mediates a significant portion of the path between education and retirement savings. However, a significant path remains outside of mediation between education and retirement savings ($B = 0.203$, $SE = 0.006$, $p < .001$).

Table 4.7

Income as a Mediator Between Education and Retirement Savings 2019

Effect Type	Path	β	Std. Err.	Est./S.E.	p-value
Total Effect	Edu $\rightarrow$ Retirement Balance	0.356	0.006	61.643	<.001
Total Indirect	Edu $\rightarrow$ Income $\rightarrow$ Retirement Balance	0.153	0.003	44.758	<.001
Direct Effect	Edu $\rightarrow$ Retirement Balance	0.203	0.006	31.942	<.001

Note. CFI = 1.00, TLI = 1.000, RMSEA = 0.000, SRMR = 0.000, $\chi^2[13] = 25569.18$, $p < .001$

In summary, education has a direct effect on retirement savings. Education has a positive direct effect on income, and income, in turn, has a positive direct effect on retirement savings.

Income partially mediates the path between education and retirement savings. However, with all else held constant and income mediation, education continues to have a significant direct effect on retirement savings. The remaining direct effect suggested that other factors within education impact retirement savings beyond the increase in earning potential.

Moderation Analysis Retirement Savings 2019

Next, this paper tested whether the relative level of student loans moderates the path between income and retirement savings. Specifically, student loans were measured by dividing the student loan balance by the amount of income earned, creating a student loan-to-income ratio. Each respondent has a student loan-to-income ratio. Respondents fall into three groups: no-loan groups, low-loan groups, and high-loan groups. If a respondent has no student loans, their student loan-to-income ratio is 0. Low-loan groups are those with a loan-to-income ratio of less than 1.00. High-loan groups are those with loan-to-income ratios of 1.00 and above. The moderation model was just identified (TLI = 1.00, CFI = 1.00, RMSEA = 0, SRMR = 0.000, $\chi^2[21] = 9897.60, p < .001$).

No-Loan Group

Table 4.8 shows the results of the moderation model for each of the three student loan ratio groups. For the no-loan group, all paths showed little change from the mediation model when testing the impact of relative student loan debt as a moderator. Income continues to have a positive direct effect on retirement savings within the model ($\beta = 0.396, SE = 0.009, p < .001$). Higher levels of education have a direct effect on retirement savings ($\beta = 0.210, SE = 0.008, p < .001$). Older respondents had a positive direct effect on retirement savings ($\beta = 0.052, SE = 0.006, p < .001$). Being married had a positive direct effect on retirement savings ($\beta = 0.022, SE = 0.008, p = 0.005$). Financial knowledge also showed positive direct effects on retirement

savings ($\beta = 0.045$, $SE = 0.007$, $p < .001$). Gender did not have a significant direct effect on retirement savings within the no-loan group. Compared to their white counterparts, minority respondents showed negative direct effects on retirement savings ($\beta = -0.095$, $SE = 0.006$, $p < .001$). Based on these results, we conclude that there is no moderation effect for the group without student loan debt. While this is intuitive, it enables us to establish a baseline for comparison with the low-loan group and the high-loan group.

Low-Loan Group

For the low-loan group, income continues to have a direct effect on higher retirement savings ($\beta = 0.351$, $SE = 0.017$, $p < .001$). Higher levels of completed education also have a significant direct effect on retirement savings ($\beta = 0.189$, $SE = 0.015$, $p < .001$). Also, age ($\beta = 0.089$, $SE = 0.014$, $p < .001$), being female ($\beta = 0.054$, $SE = 0.016$, $p = 0.001$), and financial knowledge ($\beta = 0.033$, $SE = 0.014$, $p = 0.018$) have a positive direct effect on retirement. Being a minority had a negative direct effect on retirement savings ($\beta = -0.030$, $SE = 0.014$, $p = 0.033$). The direct effect of gender went from insignificant to significant when comparing the no-loan to low-loan groups ($\beta = 0.054$, $SE = 0.016$, $p = 0.001$). Being married had significant effects in the no-loan group but showed insignificant direct effects on the low-loan group.

High-Loan Group

The high-loan group also showed little difference in their results compared to the low-loan and no-loan groups. Income continued to have a positive direct effect on retirement savings, indicating very little change based on the level of the student loan-to-income ratio ($\beta = 0.250$, $SE = 0.030$, $p < .001$). Likewise, education continued to have a positive direct effect on retirement savings ($\beta = 0.227$, $SE = 0.029$, $p < .001$). Not surprisingly, age had a positive direct effect on retirement savings even in the highest category of student loan-to-income ratio ($\beta = 0.102$, $SE =$

0.030, $p = .001$). In comparison to their white counterparts, minority groups had a positive direct effect on retirement savings within the higher loan group ($\beta = 0.068$, $SE = 0.029$, $p = .020$). Minorities showing higher levels of retirement savings were unique only to the highest student loan group. Gender also showed different results within the high-loan group, as being female had a positive direct effect on retirement savings than men ($\beta = 0.073$, $SE = 0.033$, $p = .030$). Surprisingly, financial knowledge did not show a significant direct effect within the high-loan group. Married couples within the high-loan group had a positive direct effect on retirement savings ($\beta = 0.142$, $SE = 0.036$, $p < .001$). The results showed a modest change among some of the control variables when comparing the no-loan and low-loan groups. For the 2019 SCF data set, we conclude that student loan groups do not moderate the path between income and retirement savings.

Figure 4.1

Student Loan Ratio Moderating Income to Retirement Savings 2019

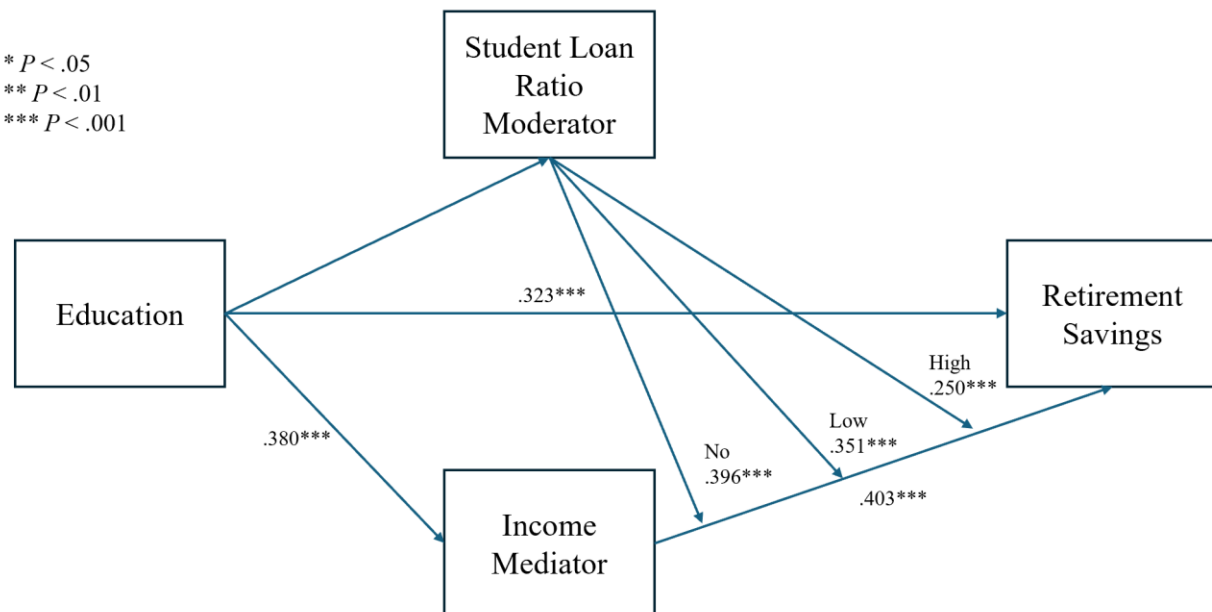


Table 4.8*Student Loan Groups Moderating Retirement Savings 2019*

Predictor	β	Std. Error	Est./S.E.	p-value
No Loans				
Income	0.396	0.009	45.728	<.001
Education	0.210	0.008	27.935	<.001
Age	0.052	0.006	8.097	<.001
Race	-0.095	0.006	-14.964	<.001
Gender	-0.006	0.007	-0.843	0.399
Marital Status	0.022	0.008	2.795	0.005
Financial Knowledge	0.045	0.007	6.856	<.001
Low Loans				
Income	0.351	0.017	21.216	<.001
Education	0.189	0.015	13.028	<.001
Age	0.089	0.014	6.177	<.001
Race	-0.030	0.014	-2.135	0.033
Gender	0.054	0.016	3.320	0.001
Marital Status	0.013	0.017	0.745	0.456
Financial Knowledge	0.033	0.014	2.362	0.018
High Loans				
Income	0.250	0.030	8.415	<.001
Education	0.227	0.029	7.858	<.001
Age	0.102	0.030	3.439	0.001
Race	0.068	0.029	2.332	0.020
Gender	0.073	0.033	2.170	0.030
Marital Status	0.142	0.036	4.003	<.001
Financial Knowledge	-0.005	0.030	-0.158	0.874

Note. CFI = 1.00, TLI = 1.000, RMSEA = 0.000, SRMR = 0.000, $\chi^2[21] = 9897.60$, $p < .001$

Path Analysis Homeownership – 2019

Next, this study employed the same modeling and methodology as in the retirement savings model to evaluate whether education impacts homeownership, whether income mediates the path between education and homeownership, and whether a relative student loan debt burden moderates the path between income and homeownership. First, we tested the path between education and homeownership. The results of the path analysis are in Table 4.9.

Education showed a significant direct effect on homeownership ($\beta = 0.158$, $SE = 0.006$, $p < .001$). Unsurprisingly, age showed a positive direct effect on homeownership ($\beta = 0.239$, $SE = 0.006$, $p < .001$). Compared to non-married respondents, married individuals also showed a positive direct effect on the chances of being homeowners ($\beta = 0.279$, $SE = 0.007$, $p < .001$). Lastly, financial knowledge had positive direct effects on homeownership ($\beta = 0.070$, $SE = 0.006$, $p < .001$). Compared to white respondents, minority groups showed negative direct effects on homeownership ($\beta = -0.096$, $SE = 0.006$, $p < .001$). Compared to male respondents, female respondents also showed negative direct effects on homeownership ($\beta = -0.047$, $SE = 0.007$, $p < .001$).

Table 4.9

Path Analysis for Education to Homeownership 2019

Predictor	β	Std. Error	Est./S.E.	p-value
Education	0.158	0.006	26.419	<.001
Age	0.239	0.006	41.205	<.001
Race	-0.096	0.006	-16.365	<.001
Gender	-0.047	0.007	-6.992	<.001
Marital Status	0.279	0.007	40.464	<.001
Financial Knowledge	0.070	0.006	11.574	<.001

Note. CFI = 1.00, TLI = 1.000, RMSEA = 0.000, SRMR = 0.000, $\chi^2[6] = 7760.12$, $p < .001$

Mediation Analysis Homeownership 2019

Results showed a significant direct effect between education and homeownership. This direct effect enabled us to investigate further whether income mediates the positive path between education and income. Table 4.10 shows a positive direct effect between education and income ($\beta = 0.380$, $SE = 0.005$, $p < .001$). Education, as well as all the control variables, were significant at the .05 level. Age ($\beta = 0.169$, $SE = 0.006$, $p < .001$), marriage ($\beta = 0.283$, $SE = 0.006$, $p < .001$), and financial knowledge ($\beta = 0.117$, $SE = 0.006$, $p < .001$) all showed positive direct

effects on income. Minority groups showed a negative effect on higher income levels ($\beta = -0.086$, $SE = 0.005$, $p < .001$). Women also showed a negative direct effect on higher income levels as compared to men ($\beta = -0.129$, $SE = 0.007$, $p < .001$).

Table 4.10

Path Analysis for Education to Income

Predictor	β	S.E.	Est./S.E.	p-value
Education	0.380	0.005	83.045	<.001
Age	0.169	0.006	30.738	<.001
Race	-0.086	0.005	-16.160	<.001
Gender	-0.129	0.007	-18.685	<.001
Marital Status	0.283	0.006	49.626	<.001
Financial Knowledge	0.117	0.006	20.939	<.001

Income had a positive direct effect on homeownership ($\beta = 0.325$, $SE = 0.009$, $p < .001$). Education ($\beta = 0.077$, $SE = 0.008$, $p < .001$), being older ($\beta = 0.237$, $SE = 0.007$, $p < .001$), being married ($\beta = 0.216$, $SE = 0.009$, $p < .001$), and financial knowledge ($\beta = 0.049$, $SE = 0.008$, $p < .001$) all showed positive direct effects on homeownership. Being a minority ($\beta = -0.085$, $SE = 0.007$, $p < .001$) and being female ($\beta = -0.017$, $SE = 0.009$, $p = .046$) were both negatively associated with homeownership. These results are summarized in Table 4.11 and reflect a positive path between income and homeownership. All control variables showed significance with p-values less than the alpha level of .05.

Table 4.11

Path Analysis for Income to Homeownership

Predictor	β	S.E.	Est./S.E.	p-value
Income	0.325	0.009	34.503	<.001
Education	0.077	0.008	9.246	<.001
Age	0.237	0.007	31.803	<.001

Race	-0.085	0.007	-11.842	<.001
Gender	-0.017	0.009	-1.995	0.046
Married	0.216	0.009	25.352	<.001
Financial Knowledge	0.049	0.008	6.497	<.001

The results in Table 4.12 suggest that income mediates the path between education and homeownership. The total effect of the path between education and homeownership was significant ($\beta = 0.148$, $SE = 0.006$, $p < .001$). However, most of that path is explained by the indirect effects of income as the mediator in the model ($\beta = 0.091$, $SE = 0.003$, $p < .001$). A significant positive path remains between education and homeownership at the direct effect level. However, the remaining path lowers to a level below the indirect effects ($\beta = 0.057$, $SE = 0.006$, $p < .001$). The results suggest that income partially mediates the path between education and homeownership. In other words, much of the positive association between education and homeownership is explained by the indirect role of education through income on homeownership. Having found significance in this model, this study tested the moderating effects of student loans on the path between income and homeownership.

Table 4.12

Income as a Mediator Between Education and Homeownership 2019

Effect Type	Path	β	S.E.	Est./S.E.	p-value
Total Effect	Education $\rightarrow$ Homeownership	0.148	0.006	25.632	<.001
Total Indirect	Edu $\rightarrow$ Income $\rightarrow$ Homeownership	0.091	0.003	32.341	<.001
Direct Effect	Education $\rightarrow$ Homeownership	0.057	0.006	9.114	<.001

Note. CFI = 1.00, TLI = 1.000, RMSEA = 0.000, SRMR = 0.000, $\chi^2[13] = 14153.76$, $p < .001$

Moderation Analysis Homeownership 2019

No-Loan Group

This research examined whether the student loan debt-to-income ratio moderates the path between income and homeownership. The results of this moderation analysis are in Table 4.13.

When analyzing the no loan group, income ($\beta = 0.257$, $SE = 0.009$, $p < .001$), education ($\beta = 0.066$, $SE = 0.008$, $p < .001$), age ($\beta = 0.188$, $SE = 0.007$, $p < .001$), marital status ($\beta = 0.212$, $SE = 0.008$, $p < .001$), and financial knowledge ($\beta = 0.043$, $SE = 0.007$, $p < .001$) all showed positive direct effects on homeownership. Only race showed negative direct effects on homeownership when comparing minorities to their white counterparts ($\beta = -0.082$, $SE = 0.007$, $p < .001$). Gender did not have a significant direct effect on homeownership. While the results of the no-loan group tell us very little, they do provide a baseline for comparison with the low-loan and high-loan groups.

Low-Loan Group

For the low-loan group, income shows minor change in its positive direct effects on homeownership as compared to the no-loan group ($\beta = 0.215$, $SE = 0.017$, $p < .001$). Education ($\beta = 0.069$, $SE = 0.014$, $p < .001$), age ($\beta = 0.190$, $SE = 0.014$, $p < .001$), marital status ($\beta = 0.206$, $SE = 0.017$, $p < .001$), and financial knowledge ($\beta = 0.041$, $SE = 0.014$, $p = .003$) all showed positive direct effects on homeownership. Race ($\beta = -0.057$, $SE = 0.014$, $p < .001$), showed negative direct effects on homeownership. Gender did not have a significant effect in this model. The results suggest that the low-loan ratio did not moderate the path between income and retirement savings and had a minimal impact on the control variables outside of gender.

High-Loan Group

However, the high-loan group had a significant impact on the model. The direct effects of income on homeownership were not significant for the high-loan group. Additionally, gender and financial knowledge were both statistically insignificant at the .05 alpha level. Education continued to have a positive direct effect on homeownership ($\beta = 0.086$, $SE = 0.030$, $p = .004$). Age ($\beta = 0.284$, $SE = 0.030$, $p < .001$) and marital status ($\beta = 0.153$, $SE = 0.036$, $p < .001$)

continued to show positive effects on homeownership. Race showed a significant direct effect on lower homeownership rates ($\beta = -0.064$, $SE = 0.030$, $p = .033$) The results suggest that for those with high student loan-to-income ratios, being older, married, or both, is a key indicator of whether a household can afford a home. Race shows a negative direct effect on homeownership among all three groups. However, the results suggest that high relative student-loan levels significantly impact the ability of income, gender, and financial knowledge to predict homeownership. The moderation effect stands in stark contrast to both the no-loan and low-loan groups.

Figure 4.2

Student Loan Ratio Moderating Income to Homeownership 2019

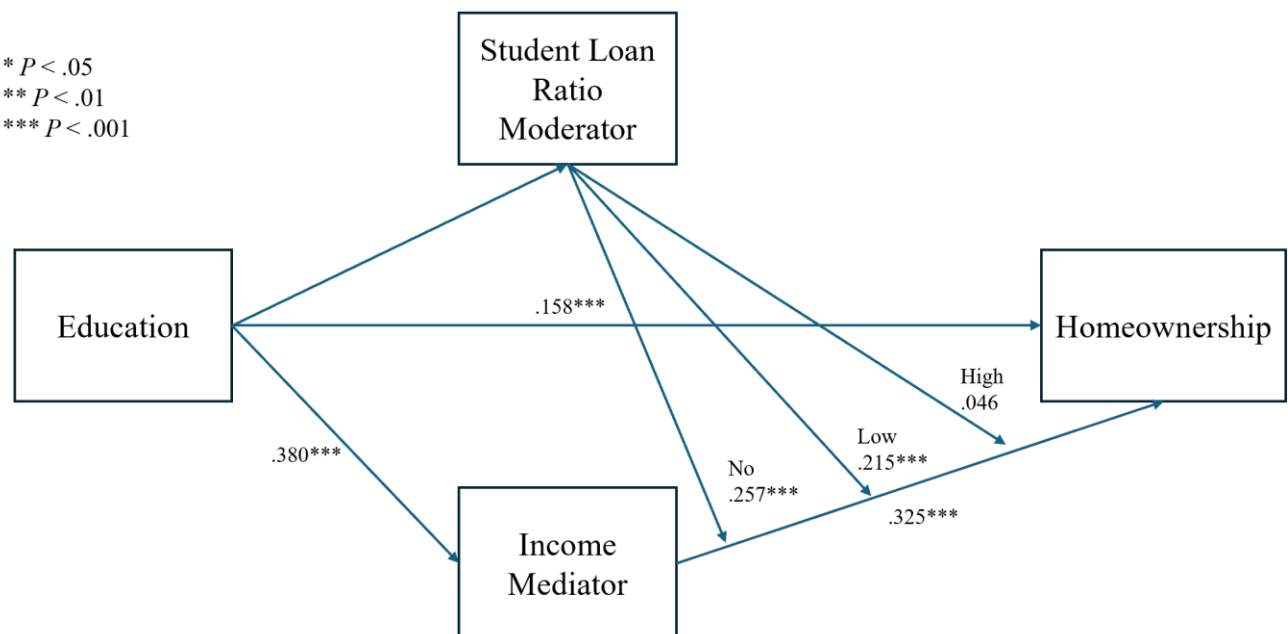


Table 4.13

Student Loan Groups Moderating Homeownership 2019

Predictor	β	Std. Error	Est./S.E.	p-value
No Loans				
Income	0.257	0.009	27.873	<.001

Education	0.066	0.008	8.298	<.001
Age	0.188	0.007	28.411	<.001
Race	−0.082	0.007	−12.339	<.001
Gender	−0.009	0.007	−1.241	0.215
Marital Status	0.211	0.008	25.847	<.001
Financial Knowledge	0.043	0.007	6.247	<.001
Low Loans				
Income	0.215	0.017	12.873	<.001
Education	0.069	0.014	4.737	<.001
Age	0.190	0.014	13.532	<.001
Race	−0.057	0.014	−4.113	<.001
Gender	−0.031	0.016	−1.948	0.051
Marital Status	0.206	0.017	12.345	<.001
Financial Knowledge	0.041	0.014	3.022	0.003
High Loans				
Income	0.046	0.031	1.466	0.143
Education	0.086	0.030	2.865	0.004
Age	0.284	0.030	9.602	<.001
Race	−0.064	0.030	−2.132	0.033
Gender	−0.024	0.034	−0.700	0.484
Marital Status	0.153	0.036	4.196	<.001
Financial Knowledge	0.000	0.031	0.005	0.996

Note. CFI = 1.00, TLI = 1.000, RMSEA = 0.000, SRMR = 0.000, $\chi^2[21] = 8502.11$, $p < .001$

Education to Financial Stress 2019

Confirmatory Factor Analysis (CFA) Latent Variable

For the last model using the 2019 SCF data set, this paper tested financial stress as the primary outcome variable. To begin, we first established the financial stress variable, which is a summation of three SCF questions. The data set asked respondents whether they had missed a mortgage or rent payment within the last 12 months, whether they spent more than they earned, and whether they had revolving credit card debt from month to month. Each yes response to these questions is coded as a 1, with no coded as 0. Financial stress is derived from adding the scores of these three questions, with zero indicating no stress and three indicating the highest amount of stress. The latent variable results are listed in Table 4.14 below. Each of these

questions demonstrates significance at the .05 alpha level and makes a significant contribution to the latent variable. The model fit of the latent variable was just identified (CFI = 1.000, TLI = 1.000, RMSEA = 0.000, SRMR = 0.000, $\chi^2[21] = 8502.11$, $p < .001$). The composite reliability of the latent variable was 0.884, which is above the recommended minimum threshold of .60 (Sarstedt et al., 2011). The average variance extracted is .722, well above the minimum threshold of .50 (Shrestha, 2021). Cronbach's alpha is not reported as it struggles to adequately measure reliability when the underlying questions are binary and not normally distributed (Peterson & Kim, 2012). Composite reliability accounts for different item loadings and error variances, making the measure more flexible than Cronbach's Alpha (Peterson & Kim, 2012).

Table 4.14

Confirmatory Factor Analysis - Financial Stress 2019

Indicator	β	Std. Error	Est./S.E.	p-value
Factor Loadings				
Missed Mortgage/Rent	0.625	0.025	25.007	<.001
Overspending	0.499	0.021	23.855	<.001
Revolving Credit	0.455	0.019	23.823	<.001
Thresholds				
Missed Mortgage/Rent	1.123	0.011	104.470	<.001
Overspending	1.040	0.010	100.113	<.001
Revolving Credit	0.515	0.009	57.785	<.001

Note. CFI = 1.00, TLI = 1.000, RMSEA = 0.000, SRMR = 0.000, $\chi^2[3] = 1258.64$, $p < .001$

Education to Financial Stress 2019

This analysis first tested the path between education and financial stress. The model fit statistics showed acceptable results, with CFI equal to 0.931, TLI equal to 0.880, and RMSEA equal to 0.022. The chi-square goodness of fit test yielded non-significant results with 21 degrees of freedom and $p < 0.001$. These results indicate acceptable model fit, with a CFI greater than

0.9, RMSEA less than 0.05, and SRMR less than .10 (Kline, 2016). The TLI is less than .9, which could indicate model fit that is less than ideal (Finch, 2019).

Table 4.15

Suggested Thresholds for Model Fit Indices

Index	Suggested Threshold	Source
TLI	< .9	(Finch, 2019)
CFI	< .9	(Finch, 2019)
RMSEA	< .5	(Finch, 2019)
SRMR	<.8	(Kline, 2016)

The path between education and the control variables, as well as financial stress, is listed in Table 4.16. The results find that education had a negative direct effect on financial stress ($\beta = -0.210$, $SE = 0.013$, $p < .001$). Likewise, age ($\beta = -0.118$, $SE = 0.013$, $p < .001$) and financial knowledge ($\beta = -0.170$, $SE = 0.012$, $p < .001$) had negative direct effects on financial stress. Marital status did not significantly show a direct effect on financial stress. However, women reported higher levels of financial stress compared to men ($\beta = 0.157$, $SE = 0.113$, $p < .001$). Additionally, minorities showed higher financial stress as compared to their white counterparts ($\beta = 0.094$, $SE = 0.012$, $p < .001$). Overall, these results show that education has a significant negative effect on financial stress, and all but one control variable showed a significant path as well. The following section reports on the mediation model testing financial stress as the endogenous variable.

Table 4.16

Structural Equation Modeling for Education to Financial Stress 2019

Path	β	Std. Error	Est./S.E.	p-value
Measurement Model				
Missed Mortgage/Rent	0.669	0.018	36.384	<.001
Overspending	0.497	0.017	29.706	<.001

Revolving Credit	0.447	0.015	30.357	<.001
Structural Model				
Education	-0.210	0.013	-16.246	<.001
Age	-0.118	0.013	-9.345	<.001
Race	0.094	0.012	7.970	<.001
Gender	0.157	0.113	11.838	<.001
Marital Status	-0.025	0.014	-1.751	0.080
Financial Knowledge	-0.170	0.012	-14.336	<.001

Note. CFI = 0.931, TLI = 0.880, RMSEA = 0.022, SRMR = 0.035, $\chi^2[21] = 1860.87$, $p < .001$

Mediation Analysis Financial Stress 2019

The mediation analysis showed an acceptable model fit, with CFI = 0.985, TLI = 0.967, RMSEA = 0.031, SRMR = 0.035 (Finch, 2019). All fit metrics indicate that the model fits well above its respective minimum thresholds in each category. The results of education on income and the impact of income on financial stress are summarized in Table 4.17 below. Education showed a positive direct effect on higher income levels ($\beta = 0.380$, $SE = 0.005$, $p < .001$). Additionally, age ($\beta = 0.169$, $SE = 0.005$, $p < .001$), marital status ($\beta = 0.283$, $SE = 0.006$, $p < .001$), and financial knowledge ($\beta = 0.117$, $SE = 0.005$, $p < .001$) all showed significant positive direct effects on income levels. Minorities reported lower levels of income compared to whites ($\beta = -0.086$, $SE = 0.005$, $p < .001$), and women also reported lower levels of income compared with men ($\beta = -0.129$, $SE = 0.006$, $p < .001$).

Table 4.17

Structural Equation Modeling for Education to Income

Variable	β	Std. Error	Est./S.E.	p-value
Measurement Model				
Missed Mortgage/Rent	0.415	0.010	39.737	<.001
Overspending	0.359	0.010	35.592	<.001
Revolving Credit	0.350	0.010	34.559	<.001
Structural Model Income				
Education	0.380	0.005	77.444	<.001
Age	0.169	0.005	34.099	<.001

Race	-0.086	0.005	-17.414	<.001
Gender	-0.129	0.006	-22.993	<.001
Marital Status	0.283	0.006	48.579	<.001
Financial Knowledge	0.117	0.005	22.983	<.001

Table 4.18 displays the path from education to financial stress, as well as the control variables to financial stress. Income showed significant negative effects on financial stress, supporting the moderation path ($\beta = -0.422$, $SE = 0.016$, $p < .001$). Education ($\beta = -0.030$, $SE = 0.013$, $p = .023$), age ($\beta = -0.039$, $SE = 0.012$, $p = 0.001$), and financial knowledge ($\beta = -0.126$, $SE = 0.012$, $p < .001$) showed a negative direct effect on financial stress. Gender ($\beta = 0.123$, $SE = 0.014$, $p < .001$), race ($\beta = 0.062$, $SE = 0.012$, $p < .001$), and marital status ($\beta = 0.106$, $SE = 0.015$, $p < .001$) all showed positive direct effects on higher levels of financial stress.

Table 4.18

Structural Equation Modeling for Income to Financial Stress

Variable	β	Std. Error	Est./S.E.	p-value
Structural Model Financial Stress				
Income	-0.422	0.016	-25.675	<.001
Education	-0.030	0.013	-2.269	0.023
Age	-0.039	0.012	-3.224	0.001
Race	0.062	0.012	5.274	<.001
Gender	0.123	0.014	9.089	<.001
Marital Status	0.106	0.015	7.200	<.001
Financial Knowledge	-0.126	0.012	-10.343	<.001

The total effect of education on financial stress was negative and significant ($\beta = -0.015$, $SE = 0.001$, $p < .001$). Of that effect, the vast majority is explained by the path between income and financial stress ($\beta = -0.013$, $SE = 0.001$, $p < .001$). A significant yet greatly diminished direct effect remained between education and financial stress after accounting for income ($\beta = -0.002$, $SE = 0.001$, $p = 0.024$). The results suggest income mediates the majority of the path between

education and financial stress relative to the size of the total effect. By itself, education remains a significant predictor of financial stress. The majority of the total effect is mediated by the pathway between income and financial stress. This income increase is the primary driver of the negative impact on financial stress within the model. Since the results show significance, this research tested whether student loan groups moderate the path between income and financial stress.

Table 4.19.

Income as a Mediator Between Education and Financial Stress 2019

Effect Type	β	Std. Error	Est./S.E.	p-value
Total Effect	-0.015	0.001	-14.958	<.001
Income → Financial Stress	-0.013	0.001	-23.249	<.001
Direct Effect	-0.002	0.001	-2.260	0.024

Note. CFI = 0.985, TLI = 0.967, RMSEA = 0.031, SRMR = 0.016, $\chi^2[13] = 307.01$, $p < .001$

Moderation Analysis Financial Stress 2019

The results from the moderation analysis reveal some issues with the overall model fit. Both TLI and CFI show results well below the 0.9 thresholds (Finch, 2019). In the model, CFI is 0.763, and TLI is 0.658. RMSEA is 0.049, right below the 0.05 threshold for good model fit, and SRMR = 0.039, also below the .10 minimum threshold for model fit (Finch, 2019). The overall fit of the moderation model, as measured by CFI and TLI, is a limitation of this research. RMSEA and SRMR indicates that the model fit meets the minimum threshold to continue. Additionally, the chi-square test of model fit was significant at ($p < .001$), with 72 degrees of freedom. The standardized results of the moderation model are reported in Table 4.19 below.

No-Loan Group

Within the no-loan group model, income showed a negative direct effect on financial stress ($\beta = -0.375$, $SE = 0.020$, $p < .001$). Likewise, education ($\beta = -0.132$, $SE = 0.016$, $p < .001$)

and financial knowledge ($\beta = -0.159$, $SE = 0.014$, $p < .001$) also showed negative direct effects on financial stress. Gender ($\beta = 0.059$, $SE = 0.015$, $p < .001$) and marital status ($\beta = 0.126$, $SE = 0.017$, $p < .001$), and race ($\beta = 0.040$, $SE = 0.014$, $p = 0.003$) showed positive direct effects on financial stress. Interestingly, age did not show significant direct effects on financial stress in the model.

Low-Loan Group

For the low-loan group, income continued to have a negative direct effect on financial stress ($\beta = -0.464$, $SE = 0.048$, $p < .001$). Education ($\beta = -0.184$, $SE = 0.038$, $p < .001$) and financial knowledge ($\beta = -0.133$, $SE = 0.035$, $p < .001$) yielded results very similar to those of the no loan model. Marital status had no significant direct effects on financial stress among the low-loan group. Age ($\beta = 0.130$, $SE = 0.037$, $p < .001$), race ($\beta = 0.106$, $SE = 0.036$, $p = .003$), and gender ($\beta = 0.231$, $SE = 0.042$, $p < .001$) all showed positive direct effects on financial stress.

High-Loan Group

However, the results significantly changed for the high-loan group. Income does not have a significant direct effect on financial stress. Education also showed an insignificant direct effect on financial stress in the high-loan group model. Of the control variables, age ($\beta = 0.218$, $SE = 0.053$, $p < .001$) and marital status ($\beta = -0.141$, $SE = 0.064$, $p = .028$) have significant direct effects in the model. Being older had a positive direct effect, whereas being married had an adverse direct effect on financial stress. The results suggest that, for high-loan-level respondents, being married significantly reduces financial stress; however, older high-loan-level respondents have significantly higher financial stress burdens. The results also suggest that strong predictors of financial stress, such as income, education, and financial knowledge, are significantly

moderated by higher levels of student loan debt. These results show a clear pattern. A student loan-to-income ratio of over 1.00 significantly moderates the paths between income and financial stress, as well as between many of the control variables and financial stress. The groups with no loans and low loans did not moderate these paths in the same manner.

Figure 4.3

Student Loan Ratio Moderating Income to Financial Stress 2019

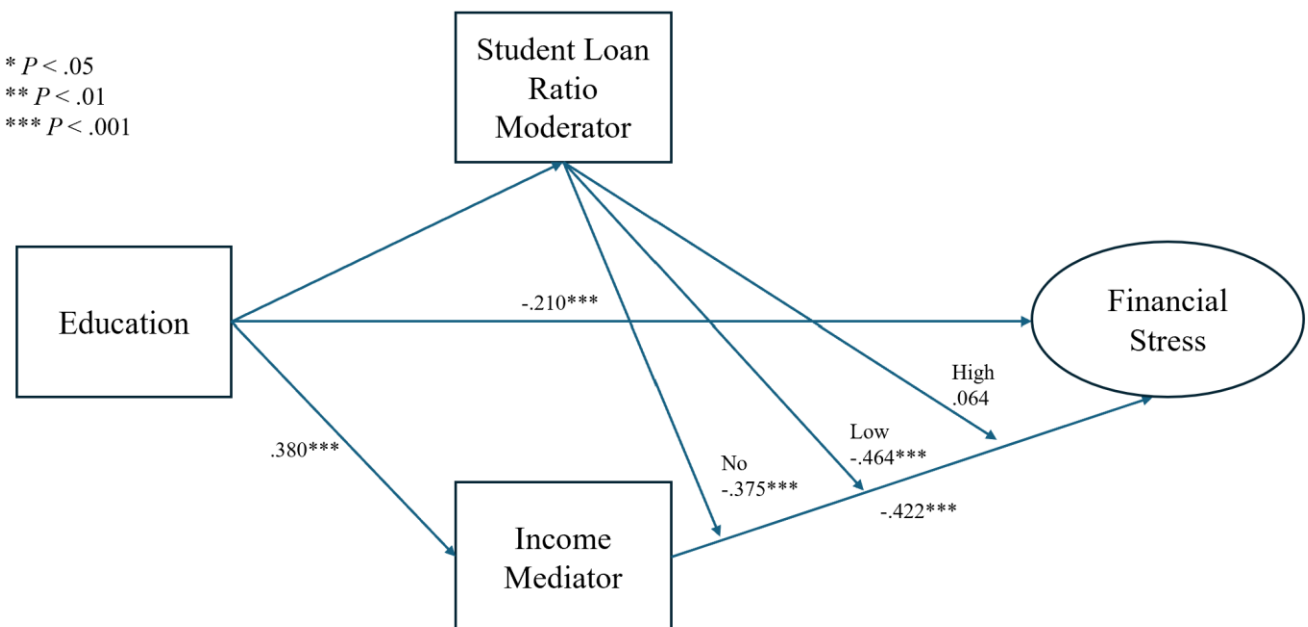


Table 4.20

Student Loan Groups Moderating Financial Stress 2019

Variable	β	SE	Est./S.E.	p-value
Measurement Model				
Missed Mortgage	0.443	0.011	40.415	<.001
Overspending	0.290	0.010	29.424	<.001
Revolving Credit	0.370	0.011	34.519	<.001
Structural Model No Loans				
Income	-0.375	0.020	-18.874	<.001
Education	-0.132	0.016	-8.123	<.001

Age	0.010	0.014	0.698	0.485
Race	0.040	0.014	2.957	0.003
Gender	0.059	0.015	3.813	<.001
Marital Status	0.126	0.017	7.451	<.001
Financial Knowledge	-0.159	0.014	-11.167	<.001
Structural Model Low Loans				
Income	-0.464	0.048	-9.635	<.001
Education	-0.184	0.038	-4.815	<.001
Age	0.130	0.037	3.536	<.001
Race	0.106	0.036	2.973	0.003
Gender	0.231	0.042	5.485	<.001
Marital Status	0.051	0.043	1.182	0.237
Financial Knowledge	-0.133	0.035	-3.750	<.001
Structural Model High Loans				
Income	0.064	0.055	1.162	0.245
Education	-0.054	0.053	-1.022	0.307
Age	0.218	0.053	4.114	<.001
Race	0.091	0.052	1.737	0.082
Gender	0.048	0.060	0.791	0.429
Marital Status	-0.141	0.064	-2.197	0.028
Financial Knowledge	-0.083	0.055	-1.528	0.126

Note. CFI = 0.763, TLI = 0.658, RMSEA = 0.049, SRMR = 0.039, $\chi^2[72] = 927.22$, $p < .001$

Path Analysis - Education on Retirement Savings 2022

This paper tested the path between education, income, retirement savings, and student loan debt. The model first examines whether education is a strong predictor of homeownership in the 2022 dataset. The analysis focuses on these relationships during the student loan pause period.

Table 4.21 shows that education directly affects retirement savings ($\beta = 0.360$, SE = 0.007, $p < .001$). Being older ($\beta = 0.097$, SE = 0.007, $p < .001$), being married ($\beta = 0.125$, SE = 0.008, $p < .001$), and having higher financial knowledge ($\beta = 0.106$, SE = 0.007, $p < .001$) all showed positive direct effects on retirement savings. Minorities had negative direct effects on retirement savings compared to whites ($\beta = -0.143$, SE = 0.007, $p < .001$). Also, women had a negative direct effect on retirement savings compared with men ($\beta = -0.061$, SE = 0.008, $p < .001$).

.001). The results support a positive path between education and retirement savings, suggesting that all control variables are statistically significant in predicting the likelihood of retirement savings.

Table 4.21

Path Analysis for Education to Retirement Savings 2022

Predictor	B	Std. Error	Est./S.E.	p-value
Education	0.360	0.007	54.398	<.001
Age	0.097	0.007	14.555	<.001
Race	-0.143	0.007	-21.304	<.001
Gender	-0.061	0.008	-7.859	<.001
Marital Status	0.125	0.008	15.344	<.001
Financial Knowledge	0.106	0.007	15.503	<.001

Note. CFI = 1.00, TLI = 1.000, RMSEA = 0.000, SRMR = 0.000, $\chi^2[13] = 20986.85$, $p < .001$

Mediation Analysis Retirement Savings 2022

Next, this analysis tested whether income mediates the path between education and retirement savings. As in previous models, we first test the paths from education to income and from income to retirement savings. The standardized results of the path analysis between education and income are presented in Table 4.21 below. Education shows a positive direct effect on income in the model ($\beta = 0.390$, $SE = 0.006$, $p < .001$). Additionally, being older ($\beta = 0.118$, $SE = 0.006$, $p < .001$), being married ($\beta = 0.255$, $SE = 0.007$, $p < .001$), and having higher financial knowledge ($\beta = 0.137$, $SE = 0.006$, $p < .001$) show positive effects on income. Being a minority has a negative direct effect on income relative to whites ($\beta = -0.101$, $SE = 0.005$, $p < .001$), and women have lower incomes than men ($\beta = -0.156$, $SE = 0.007$, $p < .001$).

Table 4.22

Path Analysis for Education to Income

Predictor	B	Std. Error	Est./S.E.	p-value
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Education	0.390	0.006	69.568	<.001
Age Category	0.118	0.006	21.015	<.001
Race	-0.101	0.006	-17.956	<.001
Gender	-0.156	0.007	-23.891	<.001
Married	0.255	0.007	37.765	<.001
Financial Knowledge	0.137	0.006	23.971	<.001

This paper analyzes the path between income and retirement savings. Income shows a substantial direct effect on retirement savings ($\beta = 0.431$, $SE = 0.008$, $p < .001$). Education ($\beta = 0.192$, $SE = 0.007$, $p < .001$), being older ($\beta = 0.047$, $SE = 0.006$, $p < .001$), being married ($\beta = 0.015$, $SE = 0.008$, $p < .001$), and higher financial knowledge levels ($\beta = 0.047$, $SE = 0.007$, $p < .001$) all showed positive direct effects on higher retirement savings. However, minorities showed a negative direct effect on retirement savings ($\beta = -0.099$, $SE = 0.006$, $p < .001$). Gender and marital status did not show significant direct effects on retirement savings. These results are summarized in Table 4.23 below. The path analysis suggests that income strongly correlates with higher levels of retirement savings.

Table 4.23

Path Analysis for Income to Retirement Savings

Predictor	β	Std. Error	Est./S.E.	p-value
Income Category	0.431	0.008	52.082	<.001
Education	0.192	0.007	26.448	<.001
Age Category	0.047	0.006	7.350	<.001
Race	-0.099	0.006	-15.641	<.001
Gender	0.006	0.007	0.790	0.430
Married	0.015	0.008	1.860	0.063
Financial Knowledge	0.047	0.007	7.196	<.001

Table 4.24 below shows the total direct and indirect effects when testing whether income mediates the path between education and retirement savings. The total effect of education on

retirement savings shows a strong positive correlation ($\beta = 1.172$, $SE = 0.023$, $p < .001$). Just under half of that strong correlation is explained by income mediating through the total indirect effect ($\beta = 0.584$, $SE = 0.014$, $p < .001$). The remaining direct effects account for over half of the estimate, indicating that income only partially mediates the path between education and retirement savings ($\beta = 0.624$, $SE = 0.024$, $p < .001$). Results show partial yet significant mediation. This research adopts a moderation model to test whether student loan groups moderate the path from income to retirement savings.

Table 4.24

Income as a Mediator Between Education and Retirement Savings 2022

Effect Type	Path	B	Std. Error	Est./S.	p-value
Total Effect	Education → Retirement Savings	1.172	0.023	51.755	<.001
Total Indirect	Education → Income → Retirement Savings	0.548	0.014	40.035	<.001
Direct Effect	Education → Retirement Savings	0.624	0.024	26.222	<.001

Note. CFI = 1.00, TLI = 1.000, RMSEA = 0.000, SRMR = 0.000, $\chi^2[13] = 20986.85$, $p < .001$

Moderation Analysis Retirement Savings 2022

No-Loan Group

The results of the moderation analysis are summarized in Table 4.25 below. In the moderation model, income shows a positive direct effect on retirement savings ($\beta = 0.456$, $SE = 0.010$, $p < .001$). Other results from the no loan model show that education ($\beta = 0.196$, $SE = 0.008$, $p < .001$), age ($\beta = 0.028$, $SE = 0.007$, $p < .001$), being married ($\beta = 0.030$, $SE = 0.009$, $p = 0.001$), and having higher levels of financial knowledge ($\beta = 0.026$, $SE = 0.007$, $p < .001$) all show positive direct effects on retirement savings at the .05 alpha level. Minorities experience greater adverse direct effects on retirement savings than their white counterparts ($\beta = -0.101$, $SE = 0.007$, $p < .001$). Gender did not show a significant direct effect on retirement savings. The no-

loan model provides baseline results by which we can compare both the low-loan and high-loan groups.

Low-Loan Group

For the low-loan group, income continued to have a positive direct effect on retirement savings ($\beta = 0.368$, $SE = 0.020$, $p < .001$). Education ($\beta = 0.157$, $SE = 0.017$, $p < .001$), being older ($\beta = 0.059$, $SE = 0.016$, $p < .001$), and having higher levels of financial knowledge ($\beta = 0.096$, $SE = 0.016$, $p < .001$) all showed significant direct effects on retirement savings at the .05 alpha level. Minorities showed negative direct effects on retirement savings compared to whites ($\beta = -0.107$, $SE = 0.016$, $p < .001$). Married households also showed negative direct effects on retirement savings compared to their single counterparts ($\beta = -0.105$, $SE = 0.020$, $p < .001$). Gender was not a significant predictor of retirement savings. These results suggest minimal discrepancy between the no-loan and low-loan groups. The results suggest a clear conclusion: the low-loan and no-loan groups do not mediate the path between these variables and retirement savings.

High-Loan Group

The moderation effect of the high-loan group, however, showed significantly different results. For the high-loan group, income did not have a significant direct effect on retirement savings, a sharp contrast with the other groups. A high student loan-to-income ratio significantly moderates the path between income and retirement savings, to the point where it becomes statistically insignificant. Education ($\beta = 0.278$, $SE = 0.032$, $p < .001$), age ($\beta = 0.113$, $SE = 0.034$, $p < .001$), being married ($\beta = 0.238$, $SE = 0.040$, $p < .001$), and financial knowledge ($\beta = 0.139$, $SE = 0.033$, $p < .001$) all show positive direct effects on retirement savings. Gender and race did not show a significant direct effect on student loan group within the high group model.

The direction of the path between race and retirement savings is reversed, given the high moderating effect of loans. The effect of education is arguably the only variable that is not significantly affected by the high loan moderation effect. Being married saw a significant increase, and its correlation with retirement savings was particularly notable in the high-loan group. Marriage may be a significant factor in the ability to save for retirement.

Figure 4.4

Student Loan Ratio Moderating Income to Retirement Savings 2022

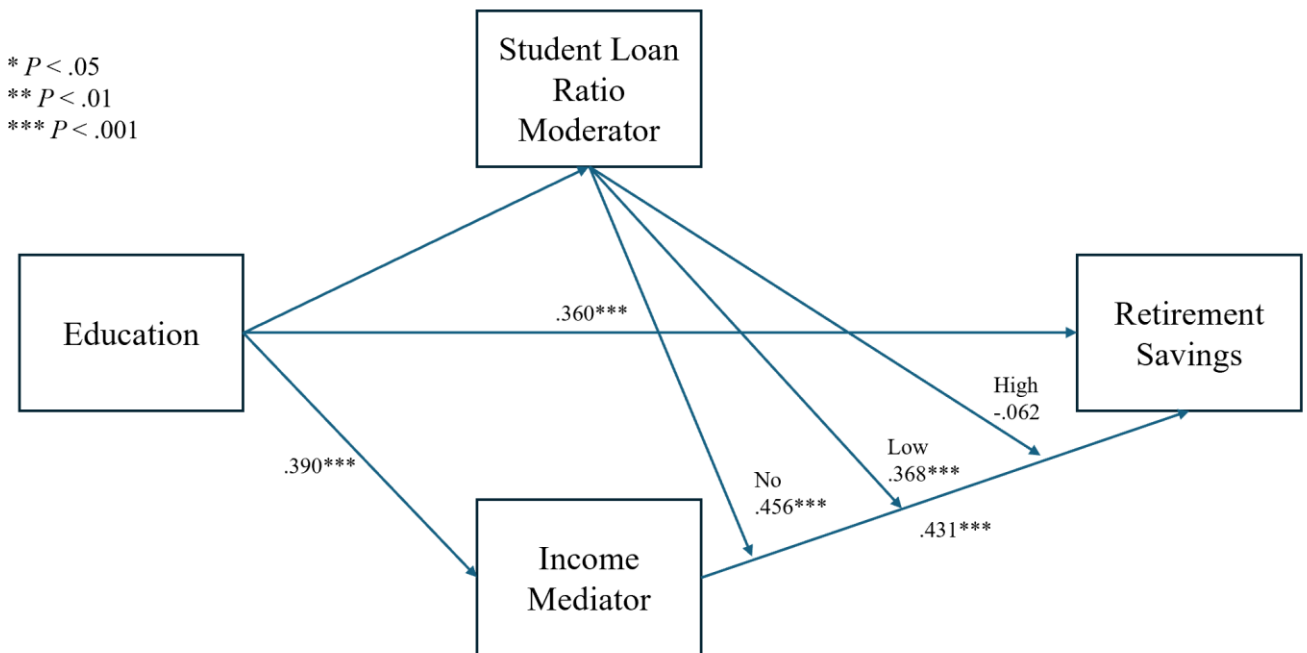


Table 4.25

Student Loan Groups Moderating Retirement Savings 2022

Predictor	β	Std. Error	Est./S.E.	p-value
No Loans				
Income	0.456	0.010	47.788	<.001
Education	0.196	0.008	23.225	<.001
Age	0.028	0.007	3.946	<.001

Race	-0.101	0.007	-14.304	<.001
Gender	0.011	0.008	1.365	0.172
Marital Status	0.030	0.009	3.429	0.001
Financial Knowledge	0.026	0.007	3.637	<.001
Low Loans				
Income	0.368	0.020	18.453	<.001
Education	0.157	0.017	9.049	<.001
Age	0.059	0.016	3.574	<.001
Race	-0.107	0.016	-6.681	<.001
Gender	-0.010	0.020	-0.482	0.630
Marital Status	-0.105	0.020	-5.127	<.001
Financial Knowledge	0.096	0.016	6.087	<.001
High Loans				
Income	-0.062	0.034	-1.809	0.070
Education	0.278	0.032	8.676	<.001
Age	0.113	0.034	3.239	0.001
Race	-0.048	0.033	-1.475	0.140
Gender	0.016	0.038	0.435	0.664
Marital Status	0.238	0.040	5.964	<.001
Financial Knowledge	0.139	0.033	4.195	<.001

Note. CFI = 1.00, TLI = 1.000, RMSEA = 0.000, SRMR = 0.000, $\chi^2[21] = 8689.08$, $p < .001$

Path Analysis - Education on Homeownership 2022

This paper next tested the path between education, income, student loan debt, and homeownership using the 2022 SCF data set. The results of the simple path analysis from education to homeownership are presented in Table 4.26 below. According to the 2022 data, education shows a positive direct effect on homeownership ($\beta = 0.160$, $SE = 0.007$, $p < .001$). Age ($\beta = 0.239$, $SE = 0.007$, $p < .001$), being married ($\beta = 0.297$, $SE = 0.008$, $p < .001$), and financial knowledge ($\beta = 0.087$, $SE = 0.007$, $p < .001$) were all positively associated with homeownership. Being a minority ($\beta = -0.075$, $SE = 0.007$, $p < .001$) and being female ($\beta = -0.056$, $SE = 0.008$, $p < .001$) showed negative direct effects on homeownership. Both education and all control variables were significant in the expected path at the .05 alpha level. Based on

these results, which showed strong paths between the variables, this analysis tested whether income mediates the path between education and homeownership in the 2022 data set.

Table 4.26

Path Analysis of Education to Homeownership 2022

Predictor	β	Std. Error	Est./S.E.	p-value
Education	0.160	0.007	23.297	<.001
Age	0.239	0.007	36.618	<.001
Race	-0.075	0.007	-11.198	<.001
Gender	-0.056	0.008	-7.249	<.001
Marital Status	0.297	0.008	37.526	<.001
Financial Knowledge	0.087	0.007	12.752	<.001

Note. CFI = 1.00, TLI = 1.000, RMSEA = 0.000, SRMR = 0.000, $\chi^2[21] = 8689.08$, $p < .001$

Mediation Analysis Homeownership 2022

Table 4.27 below presents the unstandardized results comparing education and income, as well as the results comparing the control variables and income. Education showed a strong positive effect on homeownership ($\beta = 0.390$, $SE = 0.005$, $p < .001$). Being older ($\beta = 0.118$, $SE = 0.006$, $p < .001$), being married ($\beta = 0.255$, $SE = 0.006$, $p < .001$), and financial knowledge ($\beta = 0.137$, $SE = 0.006$, $p < .001$) are strongly associated with higher levels of homeownership. Being female ($\beta = -0.156$, $SE = 0.008$, $p < .001$) and being a minority ($\beta = -0.101$, $SE = 0.006$, $p < .001$) showed negative direct effects on the chances of homeownership. All variables were significant at $p < 0.05$.

Table 4.27

Path Analysis for Education to Income

Predictor	β	Std. Error	Est./S.E.	p-value
Education	0.390	0.005	72.755	<.001
Age Category	0.118	0.006	19.985	<.001

Race	-0.101	0.006	-18.183	<.001
Gender	-0.156	0.008	-20.712	<.001
Marital Status	0.255	0.006	40.378	<.001
Financial Knowledge	0.137	0.006	21.508	<.001

Table 4.28 below presents the path analysis of income and homeownership, along with the standardized paths between the control variables and homeownership. Income shows a positive direct effect on homeownership ($\beta = 0.320$, $SE = 0.011$, $p < .001$). Education ($\beta = 0.075$, $SE = 0.009$, $p < .001$), age ($\beta = 0.253$, $SE = 0.008$, $p < .001$), being married ($\beta = 0.244$, $SE = 0.010$, $p < .001$), and financial knowledge ($\beta = 0.062$, $SE = 0.008$, $p < .001$) all show positively direct effects homeownership. Being a minority showed negative direct effects on homeownership ($\beta = -0.061$, $SE = 0.008$, $p < .001$). Gender did not show a significant direct effect on homeownership. Once again, all variables were significant predictors of homeownership. The results showed a clear path between education and income, and between income and retirement savings. Based on these results, this research investigated whether income mediates the path between education and homeownership.

Table 4.28

Path Analysis for Income to Homeownership

Predictor	β	Std. Error	Est./S.E.	p-value
Income Category	0.320	0.011	29.654	<.001
Education	0.075	0.009	7.980	<.001
Age Category	0.253	0.008	31.092	<.001
Race	-0.061	0.008	-7.419	<.001
Gender	-0.017	0.010	-1.726	0.084
Marital Status	0.244	0.010	25.492	<.001
Financial Knowledge	0.062	0.008	7.446	<.001

The total effects of education and homeownership were significant and positive ($\beta = 0.148$, $SE = 0.006$, $p < .001$). However, most of the total effect is explained by the total indirect effect of income, which mediates the path between education and homeownership ($\beta = 0.092$, $SE = 0.003$, $p < .001$). The direct effect that remains between education and homeownership, accounting for mediation, is still significant but significantly reduced ($\beta = 0.055$, $SE = 0.007$, $p < .001$). The results show an intense mediation in the model, as nearly two-thirds of the estimate is explained by the total indirect effect of income moderating the path. Based on these results, this paper investigated whether student loan debt moderates the path between education and homeownership.

Table 4.29

Income as a Mediator Between Education and Homeownership 2022

Effect Type	Path	β	Std. Error	Est./S.E.
Total Effect	Education $\rightarrow$ Homeownership	0.148	0.006	22.767
Total Indirect	Edu $\rightarrow$ Income $\rightarrow$ Homeownership	0.092	0.003	27.903
Direct Effect	Education $\rightarrow$ Homeownership	0.055	0.007	7.851

Note. CFI = 1.00, TLI = 1.000, RMSEA = 0.000, SRMR = 0.000, $\chi^2[13] = 20986.85$, $p < .001$

Moderation Analysis Homeownership 2022

No-Loan Group

In the moderation model for the no-student-loan group, findings showed that income had a positive direct effect on homeownership ($\beta = 0.350$, $SE = 0.013$, $p < .001$). Education ($\beta = 0.072$, $SE = 0.012$, $p < .001$), age ($\beta = 0.235$, $SE = 0.009$, $p < .001$), being married ($\beta = 0.244$, $SE = 0.011$, $p < .001$), and financial knowledge ($\beta = 0.056$, $SE = 0.010$, $p < .001$) all showed positive direct effects on higher levels of homeownership at the alpha 0.05 level. Being a minority ($\beta = -0.053$, $SE = 0.010$, $p < .001$) had a direct adverse effect on homeownership.

Gender did not significantly affect homeownership levels within the no-loan group. The results of the no-loan group provide a baseline against which we can compare the low-loan and high-loan groups to identify any material changes.

Low-Loan Group

For the low-loan group, income showed positive direct effects on homeownership ($\beta = 0.252$, $SE = 0.025$, $p < .001$). Education ($\beta = 0.092$, $SE = 0.023$, $p < .001$), age ($\beta = 0.270$, $SE = 0.019$, $p < .001$), being married ($\beta = 0.250$, $SE = 0.023$, $p < .001$), and financial knowledge ($\beta = 0.043$, $SE = 0.019$, $p = .024$) all showed positive direct effects with homeownership at a significant level for the low-loan group. Minorities showed negative direct effects on owning a home ($\beta = -0.085$, $SE = 0.020$, $p < .001$). Gender became an insignificant predictor of homeownership in the low-loan group. These results suggest that low level student loans do not significantly moderate the path between the variables and homeownership. The results between the no-loan and low-loan groups were very similar except for gender, which became insignificant in the low-loan model.

High-Loan Group

At the high-loan level, the results were significantly different. Income still showed direct effects towards homeownership ($\beta = 0.107$, $SE = 0.041$, $p = .009$). However, education did not show significant direct effects in the high-loan model. Age ($\beta = 0.303$, $SE = 0.047$, $p < .001$), being married ($\beta = 0.292$, $SE = 0.041$, $p < .001$), and financial knowledge ($\beta = 0.147$, $SE = 0.038$, $p < .001$) all show positive direct effects on homeownership. Minorities did not show a significant direct effect on homeownership within the high-loan group. Being female showed negative direct effects ($\beta = -0.266$, $SE = 0.042$, $p < .001$). The results suggest that high student

loan debt does not moderate the path between income and homeownership. However, high level of student loans does moderate the path between education and homeownership.

Figure 4.5

Student Loan Ratio Moderating Income to Homeownership 2022

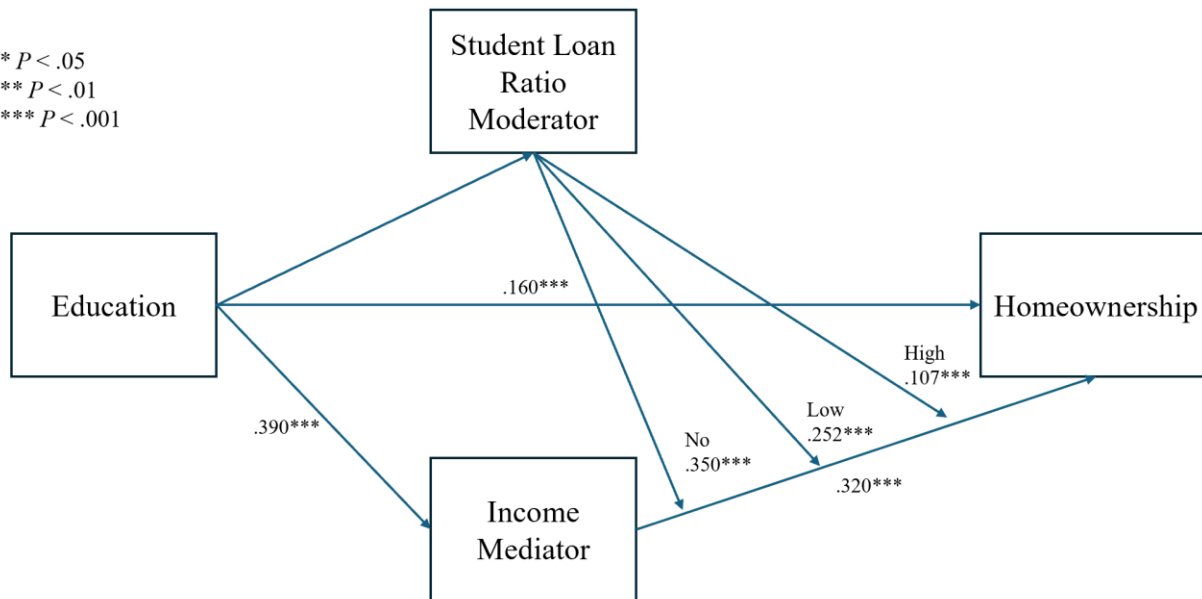


Table 4.30

Student Loan Groups Moderating Homeownership 2022

Predictor	β	Std. Error	Est./S.E.	p-value
No Loans				
Income	0.350	0.013	26.889	<.001
Education	0.072	0.012	6.137	<.001
Age	0.235	0.009	24.771	<.001
Race	-0.053	0.010	-5.424	<.001
Gender	0.013	0.011	1.200	0.230
Marital Status	0.244	0.011	22.862	<.001
Financial Knowledge	0.056	0.010	5.625	<.001
Low Loans				
Income	0.252	0.025	10.213	<.001
Education	0.092	0.023	4.4042	<.001
Age	0.270	0.019	14.353	<.001
Race	-0.085	0.020	-4.208	<.001
Gender	-0.024	0.025	-0.956	0.339

Marital Status	0.250	0.023	10.862	<.001
Financial Knowledge	0.043	0.019	2.250	0.024
High Loans				
Income	0.107	0.041	2.598	0.009
Education	-0.004	0.046	-0.096	0.923
Age	0.303	0.047	6.497	<.001
Race	-0.065	0.039	-1.658	0.097
Gender	-0.266	0.042	-6.320	<.001
Marital Status	0.292	0.041	7.156	<.001
Financial Knowledge	0.147	0.038	3.885	<.001

Note. CFI = 1.00, TLI = 1.000, RMSEA = 0.000, SRMR = 0.000, $\chi^2[13] = 8689.08$, $p < .001$

SEM Analysis Financial Stress 2022

This paper tested the relationship between education and financial stress. This analysis first established financial stress as a latent variable using a confirmatory factor analysis for the 2022 data. The results of the CFA analysis are summarized in Table 4.30 below. In general, missing a mortgage or rent payment, overspending, and having revolving credit card debt all fit well within the latent variable construct and are significant at the alpha level of 0.05. The model fit for this latent variable is just-identified, with CFI = 1.00, TLI = 1.00, and RMSEA = 0.00. The estimates and p-values are provided with every results summary throughout this model. The composite reliability of the latent variable was 0.952, which is above the recommended minimum threshold of .60 (Sarstedt et al., 2011). The average variance extracted is .870. This is well above the minimum threshold of .50 (Shrestha, 2021). Cronbach's alpha is not reported as it struggles to adequately measure reliability then the underlying questions are binary and not normally distributed (Peterson & Kim, 2012).

Table 4.31

CFA Financial Stress 2022

Indicator	B	Std. Error	Est./S.E.	p-value
Factor Loadings				
Missed Mortgage/Rent	0.742	0.022	33.675	<.001
Overspending	0.569	0.018	31.337	<.001
Revolving Credit	0.522	0.017	30.791	<.001
Thresholds				
Missed Mortgage/Rent	1.108	0.012	90.669	<.001
Overspending	0.840	0.011	75.892	<.001
Revolving Credit	0.532	0.010	52.008	<.001

Note. CFI = 1.00, TLI = 1.000, RMSEA = 0.000, SRMR = 0.000, $\chi^2[3] = 2137.39, p < .001$

Within the financial stress model, this study first tested whether education showed a negative direct effect on financial stress. The results of this path, along with the control variables, are listed in the standardized version in Table 4.32. The results showed that education had a negative direct effect on financial stress ($\beta = -0.205, SE = 0.012, p < .001$). For the control variables, age ($\beta = -0.105, SE = 0.012, p < .001$) and financial knowledge ($\beta = -0.177, SE = 0.012, p < .001$) also showed negative direct effects on financial stress. Minorities ($\beta = 0.186, SE = 0.012, p < .001$) and women ($\beta = 0.199, SE = 0.013, p < .001$) showed positive direct effects on financial stress. Marital status did not have a significant direct effect on the model. Overall, age is inversely related to financial stress, and all control variables also show statistically significant paths. This research next tested whether income mediates the path between education and financial stress.

Table 4.32

Sem Analysis for Education to Financial Stress 2022

Path	β	Std. Error	Est./S.E.	p-value
Measurement Model				
Missed Mortgage/Rent	0.500	0.011	46.881	<.001
Overspending	0.476	0.010	45.534	<.001
Revolving Credit	0.371	0.010	35.879	<.001

Structural Model

Education	-0.205	0.012	-17.153	<.001
Age	-0.105	0.012	-9.097	<.001
Race	0.186	0.012	16.071	<.001
Gender	0.199	0.013	14.793	<.001
Marital Status	0.022	0.014	1.588	0.112
Financial Knowledge	-0.177	0.012	-15.002	<.001

Note. CFI = .990, TLI = .979, RMSEA = 0.027, SRMR = 0.012, $\chi^2[30] = 16778.50$, $p < .001$

Mediation Analysis Financial Stress 2022

The model fit for the mediation model was sound across the board. Both the CFI (0.990) and the TLI (0.979) were well above the minimum acceptable threshold of .9. The RSA (0.027) was less than .05, and the chi-squared test of model fits was significant with a p-value less than .001, with degrees of freedom of 30. Education showed a positive direct effect on income ($\beta = 0.390$, $SE = 0.006$, $p < .001$). Additionally, age ($\beta = 0.118$, $SE = 0.006$, $p < .001$), being married ($\beta = 0.255$, $SE = 0.007$, $p < .001$), and financial knowledge ($\beta = 0.137$, $SE = 0.006$, $p < .001$) showed positive direct effects on income. Being the minority ($\beta = -0.101$, $SE = 0.005$, $p < .001$) and being female ($\beta = -0.156$, $SE = 0.007$, $p < .001$) showed negative direct effects on financial stress levels. All variables were statistically significant predictors of financial stress at the $\alpha = 0.05$ level.

Table 4.33

Structural Equation Modeling for Education to Income

Variable	β	Std. Error	Est./S.E.	p-value
Measurement Model				
Missed Mortgage/Rent	0.474	0.010	46.757	<.001
Overspending	0.484	0.010	48.679	<.001
Revolving Credit	0.388	0.010	38.611	<.001
Structural Model Income				

Education	0.390	0.006	69.567	<.001
Age	0.118	0.006	21.015	<.001
Race	-0.101	0.006	-17.955	<.001
Gender	-0.156	0.007	-23.891	<.001
Marital Status	0.255	0.007	37.764	<.001
Financial Knowledge	0.137	0.006	23.970	<.001

Income showed negative direct effects on financial stress ($\beta = -0.348$, $SE = 0.016$, $p < .001$). Education ($\beta = -0.069$, $SE = 0.013$, $p < .001$), age ($\beta = -0.063$, $SE = 0.012$, $p < .001$), and financial knowledge ($\beta = -0.129$, $SE = 0.012$, $p < .001$) also showed negative direct effects on financial stress. Marital status ($\beta = 0.114$, $SE = 0.015$, $p < .001$), being a minority ($\beta = 0.152$, $SE = 0.012$, $p < .001$), and being female ($\beta = 0.148$, $SE = 0.014$, $p < .001$) all showed positive direct effects on higher levels of financial stress. All variables were statistically significant in their respective paths.

Table 4.34

Structural Equation Modeling for Income to Financial Stress

Variable	β	Std. Error	Est./S.E.	p -value
Measurement Model				
Missed Mortgage/Rent	0.474	0.010	46.757	<.001
Overspending	0.484	0.010	48.679	<.001
Revolving Credit	0.388	0.010	38.611	<.001
Structural Model Financial Stress				
Income	-0.348	0.016	-21.983	<.001
Education	-0.069	0.013	-5.190	<.001
Age	-0.063	0.012	-5.435	<.001
Race	0.152	0.012	13.125	<.001
Gender	0.148	0.014	10.945	<.001
Marital Status	0.114	0.015	7.824	<.001
Financial Knowledge	-0.129	0.012	-10.893	<.001

Table 4.35 below shows the total, indirect, and direct effects of the mediation analysis. The total effect shows education was strongly associated with lower levels of financial stress ($\beta = -0.205$, $SE = 0.012$, $p < .001$). The effect that income explains through mediation is significant and accounts for most of the path between education and financial stress ($\beta = -0.136$, $SE = 0.006$, $p < .001$). After accounting for the mediating income variable, the remaining direct effect remained significant but was significantly diluted ($\beta = -0.069$, $SE = 0.013$, $p < .001$). These results suggest that income is a strong, but partial mediator of the path between education and financial stress. Income explains most of the effect between the two variables. This paper then examined whether the levels of the student loan debt-to-income ratio moderate the path between income and financial stress.

Table 4.35

Income as a Mediator Between Education and Financial Stress 2022

Effect Type	Path	β	Std. Error	Est./S.E.	p -value
Total Effect	Education $\rightarrow$ Financial Stress	-0.205	0.012	-17.138	<.001
Total Indirect	Edu $\rightarrow$ Income $\rightarrow$ Financial Stress	-0.136	0.006	-20.900	<.001
Direct Effect	Education $\rightarrow$ Financial Stress	-0.069	0.013	-5.190	<.001

Note. CFI = .990, TLI = .979, RMSEA = 0.027, SRMR = 0.012, $\chi^2[30] = 16778.50$, $p < .001$

Moderation Analysis Financial Stress 2022

The model fit for the moderation analysis was mixed. CFI (0.842) and TLI (0.772) were well below their respective minimum thresholds of .9 (Finch, 2019). However, RMSA (0.05) was right at the minimum required threshold of model fit (Finch, 2019). The chi-square test of model fit yielded a significant result ($p < .001$), with 72 degrees of freedom. This research acknowledges that the model fits the moderation models, which yield mixed results throughout,

and lists this as a limitation of the study. However, since RMSEA and chi-square were within acceptable thresholds, this study proceeded with testing (Finch, 2019).

No-Loan Group

The results of the no-loan group provide excellent data for testing the low-loan and high-loan groups. Income showed negative direct effects on financial stress ($\beta = -0.319$, $SE = 0.019$, $p < .001$). Additionally, education ($\beta = -0.141$, $SE = 0.016$, $p < .001$), age ($\beta = -0.029$, $SE = 0.013$, $p = .024$), and financial knowledge ($\beta = -0.128$, $SE = 0.014$, $p < .001$) also had negative direct effects on financial stress. Being a minority ($\beta = 0.107$, $SE = 0.013$, $p < .001$), being female ($\beta = 0.081$, $SE = 0.015$, $p < .001$), and being married ($\beta = 0.108$, $SE = 0.016$, $p < .001$) all showed positive direct effects on higher levels of financial stress.

Low-Loan Group

For the low-loan group, there were minimal changes in the results. Income showed negative direct effects on financial stress ($\beta = -0.364$, $SE = 0.040$, $p < .001$). Education ($\beta = -0.190$, $SE = 0.033$, $p < .001$) and financial knowledge ($\beta = -0.214$, $SE = 0.030$, $p < .001$) also showed negative direct effects on financial stress. Being a minority ($\beta = 0.222$, $SE = 0.031$, $p < .001$), being female ($\beta = 0.233$, $SE = 0.038$, $p < .001$), and being married ($\beta = 0.127$, $SE = 0.039$, $p = 0.001$) showed positive direct effects on financial stress in the low-loan group. Age is the only variable that the low-loan group appears to moderate by changing its path direction. Being older is now associated with higher levels of financial stress ($\beta = 0.101$, $SE = 0.031$, $p = .001$).

High-Loan Group

For the high-loan group, the results were strikingly different. Income did not show a significant direct effect on higher levels of financial stress within the high-loan group. Only gender ($\beta = 0.379$, $SE = 0.085$, $p < .001$), financial knowledge ($\beta = 0.160$, $SE = 0.073$, $p =$

0.029), and race ($\beta = 0.336$, $SE = 0.075$, $p < .001$) show significant direct effects on financial stress. All other variables in the model become statistically insignificant with p-values greater than 0.05. These results suggest that a high level of student loan debt moderates the effects of income, education, age, race, marital status, and financial knowledge on the ability to predict the outcome variable, financial stress. The results strongly suggest that the no-loan and low-loan groups have minimal moderating effects on the paths between the variables and financial stress. However, when the loan-to-income ratio exceeds 1.00, this factor significantly moderates almost every aspect of the model.

Figure 4.6

Student Loan Ratio Moderating Income to Financial Stress 2022

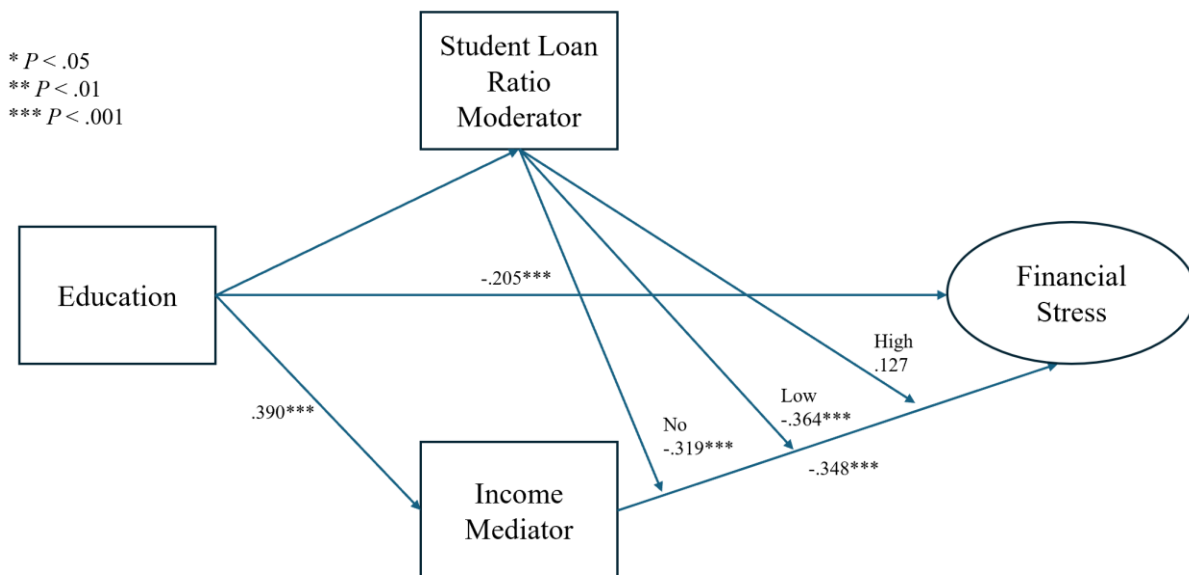


Table 4.36

Student Loan Groups Moderating Financial Stress 2022

Variable	β	SE	Est./S.E.	p-value
Measurement Model				

Missed Mortgage	0.501	0.010	47.863	<.001
Overspending	0.445	0.010	43.037	<.001
Revolving Credit	0.456	0.011	42.591	<.001
Structural Model – No Loans				
Income	–0.319	0.019	–17.102	<.001
Education	–0.141	0.016	–8.932	<.001
Age	–0.029	0.013	–2.256	0.024
Race	0.107	0.013	8.073	<.001
Gender	0.081	0.015	5.349	<.001
Marital Status	0.108	0.016	6.599	<.001
Financial Knowledge	–0.128	0.014	–9.428	<.001
Structural Model Low Loans				
Income	–0.364	0.040	–9.202	<.001
Education	–0.190	0.033	–5.728	<.001
Age	0.101	0.031	3.239	0.001
Race	0.222	0.031	7.238	<.001
Gender	0.233	0.038	6.197	<.001
Marital Status	0.127	0.039	3.276	0.001
Financial Knowledge	–0.214	0.030	–7.113	<.001
Structural Model High Loans				
Income	0.127	0.076	1.675	0.094
Education	0.139	0.073	1.909	0.056
Age	–0.016	0.074	–0.212	0.832
Race	0.336	0.075	4.483	<.001
Gender	0.379	0.085	4.442	<.001
Marital Status	–0.083	0.088	–0.940	0.347
Financial Knowledge	0.160	0.073	2.187	0.029

Note. CFI = .842, TLI = .772, RMSEA = 0.050, SRMR = 0.044, $\chi^2[72] = 4914.55$, $p < .001$

Chapter 5 - Discussion of the Findings

This research tests the Human Capital Theory (Becker, 1962), which posits that individuals who invest in higher education will reap returns on that investment in the form of improved financial and economic outcomes. This study aims to investigate whether student loan debt hinders the attainment of positive returns at a certain level. This analysis categorizes student loan borrowers into two groups: those with more debt than income in a given year and those with less debt than income in the same year. Two groups of student loan borrowers are compared to those without student loans. The study compares data from the 2019 SCF to the 2022 SCF to examine the post-COVID period, focusing on a time when student loan payments were paused and student loan forgiveness was at the forefront of people's minds. The study seeks to account for relative levels of student loan debt. The increased cost of tuition has led to the average amount of student loan debt exploding in recent years (Hanson, 2023). The results of this study suggest that low amounts of student loan debt relative to income do not moderate the relationship between education and financial outcomes. However, once student debt borrowing increases as a ratio of income above 1.00, relative levels of student loan debt significantly moderate the relationship between income and financial outcomes. Education, income, age, race, gender, marital status, and financial knowledge each showed different effects within the models for the high-loan group. This moderation is stronger in the 2022 data set compared to the 2019 data set, suggesting that the student loan payment pause may not have successfully mitigated the negative impact of high student loan debt.

Summary of the Results

Table 5.1 provides a summary of both the mediating and moderating models for the 2019 and 2022 time periods. When comparing the results between 2019 and 2022, there are more

similarities than differences. In the direct path analysis, education had significant effects on retirement savings, homeownership, and lower financial stress in both periods. These results align with the Human Capital Theory, which suggests that investing in education leads to better economic outcomes (Becker, 1962). Examining the mediation analysis, each model reveals a partial mediation of income on the relationship between education and the financial outcome. In every case, income explains a significant portion of the total effect between education and the financial outcome; however, a significant relationship remains when accounting for this mediation. The results support the conclusion that income is not the only benefit from investing in higher education. However, in some cases, it does explain the majority of the benefits of investing in higher education.

For the moderation models, neither the no-loan nor the low-loan groups moderate the relationship between education and any of the endogenous variables. The results do not change significantly when the high-loan group is the moderating variable for the 2019 retirement savings model. For retirement savings, there is no evidence to suggest that high-loan debt moderates the relationship in the 2019 data. However, for the 2022 data, high-loan debt significantly moderates the relationship. These results suggest that between 2019 and 2022, the effect of having a high student loan debt-to-income ratio of greater than 1.00 shifted from being insignificant to having a significant negative impact. The results support the conclusion that the student loan payment pause during the COVID-19 pandemic did not mitigate the adverse effects of taking out student loan debt at that level. While this could be attributed to other economic factors, these results suggest that high levels of student loan debt had a more significant impact during this period.

For the homeownership model, both the 2019 and 2022 datasets show that there is no moderation effect between the low- and no-loan groups. However, high-loan groups during 2019

moderate the path between education and homeownership. For the 2022 data set, no significant changes are reported for the high-loan group as compared to the other groups. However, high loans moderate the path between education and homeownership. These results suggest that relative student loan debt levels impact both the income-to-homeownership path and the education-to-homeownership path, but consistency between the time periods is lacking. This paper concludes that a high student loan debt ratio moderates the availability of homeownership to some degree.

The financial stress model shows that low- and no-loan groups have no significant impact on education's ability to lower financial stress. However, for the 2019 and 2022 models, this study finds that high student loan ratios eliminate the direct effects between income and lower levels of financial stress. The path between education and financial stress was insignificant during both time periods. Once again, this suggests that the student loan payment pause may not have led to a significant drop in financial stress compared to the 2019 time period. No-loan and low-loan groups showed direct effects between income and financial stress, but this path became insignificant given the presence of high relative levels of student loan debt.

Table 5.1

Summarized Path Results

Model Type	Path	2019	2022
Retirement Savings Model			
Direct Path	Education → Retirement Savings	Education has a direct effect on Retirement Savings	Education has a direct effect on Retirement Savings
Mediation Model	Education → Income → Retirement Savings	Partially mediates; income explains majority of the effect	Partially mediates; income remains dominant path

Moderation Model	Loans moderate Income → Retirement Savings	Loans do not moderate income to financial stress	Income predictive only under low loan and no loan burden; effect disappears under high loans
Homeownership Model			
Direct Path	Education → Homeownership	Education directly effects homeownership	Education directly effects homeownership
Mediation Model	Education → Income → Homeownership	Partially mediates education's effect on ownership; accounts for majority of effect	Partially mediates education's effect on ownership; accounts for majority of effect
Moderate Model	Loans moderate Income → Homeownership	Income predictive only under low loan and no loan burden; effect disappears under high loans	High loans did not moderate education to income in 2022; but they did moderate education to homeownership
Financial Stress Model			
Direct Path	Education → Financial Stress	Education significantly reduces stress	Direct effect persists across models
Mediation Model	Education → Income → Financial Stress	Income partially mediates stress reduction; explains majority of effect	Income partially mediates stress reduction; explains majority of effect
Moderate Model	Loans moderate Income → Financial Stress	Income predictive only under low loan and no loan burden; effect disappears under high loans	Income predictive only under low loan and no loan burden; effect disappears under high loans

Hypotheses Results

In both time periods, this research confirms H₁, H₄, and H₇ that education has a positive direct effect on retirement savings, homeownership, and lower financial stress. Additionally, the results of this study support H₂, H₅, and H₈ which state that income mediates the relationship between income and retirement savings, homeownership, and financial stress. The results of the mediation model are consistent across 2019 and 2022. In the 2019 moderation model for retirement savings, the H₃ hypothesis is rejected which states that high student loan debt-ratio

moderates the relationship between income and retirement savings. Across all groups of debt-ratio, income consistently shows a positive direct effect on retirement savings. However, the 2022 results suggest that while the no debt-ratio and low debt-ratio groups show no moderation, the high debt-ratio does moderate the relationship between income and retirement savings. In the 2019 results, we accept H₆ that the high-debt-ratio group moderates the relationship between income and homeownership. For 2022, we reject H₅ as the high-debt-ratio does not moderate the relationship between income and homeownership. However, it is worth noting that high debt-ratio does moderate the relationship between education and homeownership. In the financial stress model, the 2019 and 2022 results accept H₉ that high-debt-ratio moderates the relationship between income and financial stress.

Table 5.2

Hypotheses Summary

Hypothesis	Statement	2019	2022
H ₁	Education has a positive direct effect on retirement savings	Accept	Accept
H ₂	Income mediates education to retirement savings	Accept	Accept
H ₃	High debt-ratio moderates education to retirement savings	Reject	Accept
H ₄	Education levels have a positive direct effect on homeownership	Accept	Accept
H ₅	Income mediates education to homeownership	Accept	Accept
H ₆	High debt-ratio moderates education to homeownership	Accept	Reject
H ₇	Education has a positive direct effect on financial stress	Accept	Accept
H ₈	Income mediates education to financial stress	Accept	Accept
H ₉	High debt ratio moderates education to financial stress	Accept	Accept

Implications of the Findings

These findings suggest that neither the no-loan group nor the low-loan group has a significant impact on retirement savings, homeownership, and financial stress. Those with no student loan debt or student loan debt below a 1.00 ratio of their current income tend to enjoy

higher retirement savings, a better chance of homeownership, and lower financial stress. These findings support the Human Capital Theory, suggesting that an investment in education leads to better financial outcomes.

However, once the student loan debt-to-income ratio expands beyond 1.00, the benefits of higher education dissipate. The only instances where there is no evidence of this is during the 2019 retirement savings model, where high levels of student loan debt did not negatively impact the relationship between education and retirement savings. Income also did not moderate the path between income and homeownership in 2022, but it did moderate the path between education and homeownership in that time. The results suggest that the impact of student loan debt was consistent between the 2019 and 2022 data sets, despite the government's best efforts to help student loan borrowers by pausing their payment program. Uncertain economic outcomes, the increased cost of education, and various other factors could have led to this change over time.

Homeownership is likely more readily available to those who complete more education, as long as their student-loan-debt-to-income ratio is zero or less than 1.00. However, high-earning borrowers saw the advantages of higher education dissipate in terms of their ability to purchase a home. In conclusion, education was found to be a strong predictor of homeownership, provided the student loan-debt-to-income ratio does not exceed the high category, defined as a ratio of 1.00 and above.

Likewise, education is inversely related to financial stress. However, higher levels of student loan debt tend to mute those benefits. The relationship between education and lower financial stress becomes insignificant when student-loan-debt-to-loan borrowers exceed a ratio of 1.00. Those who are married tend to do better than their unmarried peers, even if there is a high level of debt borrowing. Married couples experience significantly lower financial stress than

single households, particularly when the debt-to-income ratio exceeds 1.0. The trend is accurate mainly across both homeownership and retirement savings models, which highlights the economic benefits of combining resources. Married couples can weather the negative impact of high debt borrowing better than their single counterparts.

Additionally, minority groups and women tend to have higher financial stress, lower retirement savings, and a lower probability of homeownership. However, high borrowing levels moderate these paths in both time periods. The results indicate that student loan debt affects men and women, as well as Caucasians and minorities, at comparable levels. Marriage and age tend to be the only control variables that significantly impact the endogenous variable when student loan debt is categorized as high.

For practitioners, guiding clients and the younger generation on education decisions is very important. Clients are often interested in helping the younger generation with their tuition costs. The student loan debt-to-income ratio of 1.00 can serve as a guide for those decisions. Practitioners can model the costs associated with college and compare them to a realistic salary for graduates of different degree programs. Helping young people view college as an investment can transform their perspectives on these important decisions. If a practitioner is working with someone who is over the 1.00 ratio, they can help establish goals and actionable steps to address their student loans while balancing the importance of saving for retirement. Overall, the student loan debt-to-income ratio of 1.00 provides practitioners with a benchmark for estimating the cost-benefit analysis for investing in higher education.

Limitations

There were several limiting factors to note. First, path analysis does not imply causation, and this paper does not claim that one variable is solely responsible for another variable's result.

The study attempts to strengthen its results by comparing two different time periods and using path analysis and structural equation modeling. The SCF data set skews toward sampling higher-income earners. The results of this study are generalized and may differ significantly from what the average American experiences in their day-to-day life. Using a student loan debt-to-income ratio of 1.00 was based on prior research (Amin et al., 2020; Baum & Saunders, 1998; Chisholm-Burns et al., 2019). However, the low-loan and high-loan groups are broad and may not accurately represent an actual high-loan scenario. For example, a 0.95 ratio and a 1.05 ratio may have very similar impacts, even though they are categorized differently. The broad nature of these cutoffs is a limitation of this study.

Multiple imputation is a robust technique for handling missing data; however, it is not foolproof, and some variability will inevitably result from the missing data. The model fit of the moderation models regarding financial stress shows weaker results based on TLI and CFI statistics. This study relies on RMSEA and chi-squared to assess model fit, as these measurements can disagree; they examine model fit from different perspectives, although cut-off values are somewhat arbitrary (Lai & Green, 2016).

Additionally, when comparing the period 2019 to the period 2022, several factors are not quantifiable within the dataset. For example, the overall economic environment was very different in those two years. During the 2020 pandemic, many Americans lost their jobs, relocated to different parts of the country, and had life experiences that differed from those in the past (Altig et al., 2020). This economic shift likely impacted the 2022 data. The results across the two time periods show similar patterns. Path analysis and SEM serve as tools that help explain, rather than fully explain, the direct effects on the levels of retirement savings, homeownership, and stress. The SCF data sets used also have some irregularities as compared to the US

population. For example, men were also more likely to be included in the survey than women. The participants interviewed in the 2019 SCF and 2022 SCF are different individuals. Causation is beyond the scope of this research. Additional debt factors, such as car loans, credit card debt, and business debt, could all play a role in financial outcomes. However, this research focuses on student loan debt as opposed to other forms of borrowing. The forbearance on student loan debt applies to the federal student loan program, which is independent of the private student loans. Private borrowers may have needed to continue their payments during the pandemic.

Recommendations for Future Studies

Future research could build on these results by expanding the models to include more categories of the student loan-to-debt ratio. This paper builds upon previous research, establishing a cutoff point between low and high loan debt at 1.00 (Chisholm-Burns et al., 2019). Future research could break the loan-to-income categories into smaller or different segments. The 1.00 cutoff between the low-loan and high-loan groups can be improved with greater accuracy. There is also little within the survey for post-graduation decision-making. Clearly, achieving education is one decision of many that lead Americans to positive or negative financial outcomes. Their choice of career, the country they live in, and many other factors contribute to these results. Future research should examine as many of these factors as possible, while holding them constant, to assess the impact of student loan debt.

Student loan debt forgiveness and payment pauses are no longer topics of discussion. Regular student loan payments have resumed, and debt forgiveness is not being discussed in Congress. Significant efforts are now made to ensure that students make their loan payments on time. The current policy includes sending delinquent borrowers to collections, an experience the

student loan borrower has not previously encountered. Future analysis could use this study as a framework to test results for the current or ever-changing landscape of student loan debt borrowing. With political and legislative changes, student loan debt is likely to impact borrowers at an increasing rate in the future.

Conclusion

Attaining a college degree has long been a symbolic measure of achieving the American dream. Americans have looked toward higher education for generations to provide a better future economic outcome. These outcomes are being called into question due to the increasing cost of higher education and the ensuing student loan debt. This analysis confirms that certain levels of student loan debt raise questions about the positive financial outcomes of investing in education. Lawmakers, legislatures, and educators need to understand, and perhaps more importantly, help young people understand how significantly student loan debt can hinder their economic success. It is also important for financial planners as they help their clients manage their desires to support their children's and grandchildren's education costs.

Ensuring that student loan debt does not become burdensome for young Americans is a great way for retirees and wealthy individuals to help a young person begin adulthood on the right path. In the absence of student loan debt, several positive outcomes are likely to occur, including higher retirement savings, higher homeownership rates, and lower financial stress. This paper finds that a debt-to-income ratio over 1.00 is a significant distinction in determining whether that debt is at a burdensome level. Higher education is a sound investment in one's economic future, as higher income levels partially, but not entirely, explain those benefits. Younger Americans struggle to save for retirement, own a home, and manage day-to-day financial stress. Those with no or low student loan debt levels are more likely to succeed. While

it is one of the first decisions that younger Americans make in their lives, the cost of higher education is a key factor in setting people on the right path for economic prosperity.

References

- Achtziger, A. (2022). Overspending, debt, and poverty. *Current Opinion in Psychology*, 46, Article 101342. <https://doi.org/10.1016/j.copsyc.2022.101342>
- Adu-Gyamfi, A., & Antoh, E. F. (2019). Complexities in homeownership: An exploration of socio-religious and gender dimensions. *Urban Forum*, 31(2), 215–235. <https://doi.org/10.1007/s12132-019-09383-3>
- Agunsoye, A., Monne, J., Rutterford, J., & Sotiropoulos, D. P. (2022). How gender, marital status, and gender norms affect savings goals. *Kyklos*, 75(2), 157–183. <https://doi.org/10.1111/kykl.12294>
- Ahmad, O., & Livshits, I. (2024). *Missed rent: Path to eviction or loan from landlord?* Technical report, Federal Reserve Bank of Philadelphia. <https://www.philadelphiafed.org/the-economy/missed-rent-path-to-eviction-or-loan-from-landlord>
- Ahn, S. Y., Kuo, Y., Serido, J., & Shim, S. (2018). Direct and interaction effects of cognitive bias and anxiety on credit misuse among U.S. college students. *Family and Environment Research*, 56(5), 447–460. <https://doi.org/10.6115/fer.2018.033>
- Alcántara, A. L., & Vogel, C. (2021). Rising housing costs and income poverty among the elderly in Germany. *Housing Studies*, 38(7), 1220–1238. <https://doi.org/10.1080/02673037.2021.1935759>
- Alkhawaja, S. A., & Albaity, M. (2022). Retirement saving behavior: evidence from UAE. *Journal of Islamic Marketing* 13(2): 265–286. <https://doi.org/10.1108/JIMA-03-2020-0072>

- Allen, B. L. (2002). Race and gender inequality in homeownership: Does place make a difference?*. *Rural Sociology*, 67(4), 603–621. <https://doi.org/10.1111/j.1549-0831.2002.tb00121.x>
- Alley, D. E., Lloyd, J., Pagán, J. A., Pollack, C. E., Shardell, M., & Cannuscio, C. (2011). Mortgage delinquency and changes in access to health resources and depressive symptoms in a nationally representative cohort of Americans older than 50 years. *American Journal of Public Health*, 101(12), 2293–2298. <https://doi.org/10.2105/ajph.2011.300245>
- Altig, D., Baker, S., Barrero, J. M., Bloom, N., Bunn, P., Chen, S., Davis, S. J., Leather, J., Meyer, B., Mihaylov, E., Mizen, P., Parker, N., Renault, T., Smietanka, P., & Thwaites, G. (2020). Economic uncertainty before and during the covid-19 pandemic. *Journal of Public Economics*, 191, 104274. <https://doi.org/10.1016/j.jpubeco.2020.104274>
- Amin, K. A., Ulbrich, T. R., Kirk, L. M., & Gothard, M. D. (2020). Investigating the impact of student loan debt on new practitioners. *Journal of the American Pharmacists Association*, 61(2), 191–197. <https://doi.org/10.1016/j.japh.2020.11.007>
- Archibald, R. B., & Feldman, D. H. (2018). Drivers of the rising price of a college education. *Midwestern Higher Education Compact*. <http://files.eric.ed.gov/fulltext/ED588510.pdf>
- Archuleta, K. L., Dale, A., & Spann, S. M. (2013). College students and financial distress: exploring debt, financial satisfaction, and financial anxiety. *Journal of Financial Counseling and Planning*, 24(2), 50–62. <https://files.eric.ed.gov/fulltext/EJ1043230.pdf>
- Assari, S. (2019). Race, depression, and financial distress in a nationally representative sample of American adults. *Brain Sciences*, 9(2), 29. <https://doi.org/10.3390/brainsci9020029>

- Assari, S., Najand, B., Zare, H., & Sonnega, A. (2024). Unequal returns: Education fails to fully prepare black and latino americans for retirement. *Open Journal of Educational Research*, 4(6), 392–401. <https://doi.org/10.31586/ojer.2024.1104>
- Avery, C., & Turner, S. (2012). Student loans: Do college students borrow too much or not enough? *The Journal of Economic Perspectives*, 26(1), 165–192. <https://doi.org/10.1257/jep.26.1.165>
- Bailey, W. C., Woodiel, D. K., Turner, M. J., & Young, J. (1998). The pathway of financial stress to overall stress and satisfaction. *Personal finances and worker productivity*. <http://www.creditojusto.org/files/43.pdf>
- Baker, A. R., Andrews, B. D., & McDaniel, A. (2017). The impact of student loans on college access, completion, and returns. *Sociology Compass*, 11(6) <https://doi.org/10.1111/soc4.12480>
- Banks-Santilli, L. (2014). First-generation college students and their pursuit of the American dream. *Journal of Case Studies in Education*, 5. <https://doi.org/10.19030/jcse.v5i1.12345>
- Baum, S., & Saunders, D. (1998). Life after debt: Results of the national student loan survey selected text from the final report. *Journal of Student Financial Aid*, 28(3). <https://doi.org/10.55504/0884-9153.1102>
- Becker, G. S. (1962). Investment in human capital: A theoretical analysis. *Journal of Political Economy*, 70(5, Part 2), 9-49. <https://doi.org/10.1086/258724>
- Bender, K. A., & Jivan, N. A. (2005). What makes retirees happy. *Boston College*. https://crr.bc.edu/wp-content/uploads/2005/02/ib_28_508.pdf
- Bernasek, A., & Shwiff, S. (2001). Gender, risk, and retirement. *Journal of Economic Issues*, 35(2), 345–356. <https://doi.org/10.1080/00213624.2001.11506368>

- Bialowolski, P., & Weziak-Bialowolska, D. (2021). Good credit, bad credit: The differential role of the sources of debt in life satisfaction. *Journal of Consumer Affairs*, 55(3), 967–994. <https://doi.org/10.1111/joca.12388>
- Biggs, A. G. (2017). How hard should we push the poor to save for retirement? *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3001397>
- Briones, D., & Turner, S. E. (2025). Labor, Loans and Leisure: The impact of the student Loan Payment pause. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.5172096>
- Britt, S. L., Ammerman, D. A., Barrett, S. F., & Jones, S. (2017). Student loans, financial stress, and college student retention. *Journal of Student Financial Aid*, 47(1). <https://doi.org/10.55504/0884-9153.1605>
- Britt, S. L., Canale, A., Fernatt, F., Stutz, K., & Tibbetts, R. (2015). Financial stress and financial counseling: Helping college students. *Journal of Financial Counseling and Planning*, 26(2), 172–186. <https://doi.org/10.1891/1052-3073.26.2.172>
- Britt, S. L., Mendiola, M. R., Schink, G. H., Tibbetts, R. H., & Jones, S. H. (2016). Financial stress, coping strategy, and academic achievement of college students. *Journal of Financial Counseling and Planning*, 27(2), 172–183. <https://doi.org/10.1891/1052-3073.27.2.172>
- Brockbank, A. M. (2023). *Human capital investment & financial planning decision-making* (Master's thesis, Texas Tech University). Texas Tech University Libraries. <https://ttu-ir.tdl.org/handle/2346/97592>
- Brown, D., Collier, D. A., Herman, R., & Umbricht, M. R. (2016). Reauthorization of the higher education act. *Higher Education in Review*, 12(1), 1-7. <https://doi.org/10.12345/her.2016.001>

- Bryant, W. K., & Zick, C. D. (2005). *The economic organization of the household*. Cambridge University Press. <https://doi.org/10.1017/CBO9780511754395>
- Bucher-Koenen, T., & Lusardi, A. (2011). Financial literacy and retirement planning in Germany. *Journal of Pensions Economics and Finance*, 10(4), 565–584. <https://doi.org/10.1017/s1474747211000485>
- Cantrell, C. A. (2018). The effect of student loan debt on homeownership. *University of Tennessee, Knoxville*. https://trace.tennessee.edu/cgi/viewcontent.cgi?article=3255&context=utk_chanhonoproj
- Cappelli, P., & Won, S. (2016). How you pay affects how you do: Financial aid type and student performance in college. *National Bureau of Economic Research*. <https://doi.org/10.3386/w22604>
- Chan, R. Y. (2016). Understanding the purpose, aim, and function of higher education. *Journal of Education Policy, Planning and Administration*, 65, 1-40. <https://doi.org/10.13140/RG.2.2.36567.70563>
- Chakrabarti, R., Fos, V., Liberman, A., & Yannelis, C. (2017). Debt and human capital: Evidence from student loans. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.2901631>
- Chisholm-Burns, M. A., Spivey, C. A., Jaeger, M. C., & Williams, J. (2017). Associations between pharmacy students' attitudes toward debt, stress, and student loans. *American Journal of Pharmaceutical Education*, 81(7), 5918. <https://doi.org/10.5688/ajpe8175918>
- Chisholm-Burns, M. A., Spivey, C. A., Zivin, J. G., & Stallworth, S. (2019). Analysis of educational debt and income among pharmacists and other health professionals.

- American Journal of Pharmaceutical Education*, 83(9), 7460.
<https://doi.org/10.5688/aipe7460>
- Cho, S. H., Xu, Y., & Kiss, D. E. (2015). Understanding student loan decisions: A literature review. *Family and Consumer Sciences Research Journal*, 43(3), 229–243.
<https://doi.org/10.1111/fcsr.12099>
- Clayton, M., Liñares-Zegarra, J., & Wilson, J. O. (2015). Does debt affect health? Cross country evidence on the debt-health nexus. *Social Science & Medicine*, 130, 51–58.
<https://doi.org/10.1016/j.socscimed.2015.02.002>
- Clare, R. (2004, November). Why can't a woman be more like a man—gender differences in retirement savings. In *ASFA 2004 National Conference* (pp. 10-12).
- Collins, W. J., & Margo, R. A. (2011). Race and home ownership from the end of the civil war to the present. *American Economic Review*, 101(3), 355–359.
<https://doi.org/10.1257/aer.101.3.355>
- Davis, C. G., & Mantler, J. (2004). The consequences of financial stress for individuals, families, and society. *Centre for Research on Stress, Coping and Well-being. Carleton University, Ottawa*.
- De Nardi, M., French, E., & Jones, J. B. (2016). Savings after retirement: A survey. *Annual Review of Economics*, 8(1), 177–204.
- Dettling, L. J., Goodman, S., & Reber, S. (2022). Saving and wealth accumulation among student loan borrowers: Implications for retirement preparedness. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.4191960>
- Dew, J. P. (2016). *Revisiting financial issues and marriage*. In Springer eBooks (pp. 281–290).
https://doi.org/10.1007/978-3-319-28887-1_23

- Drew, R. B. (2015). Effect of changing demographics on young adult homeownership rates. *Joint Center for Housing Studies Harvard University*.
https://www.jchs.harvard.edu/sites/jchs.harvard.edu/files/w15-2_drew.pdf
- Elliott, W. (2014). Student loans: Are we getting our money's worth? *Change the Magazine of Higher Learning*, 46(4), 26–33. <https://doi.org/10.1080/00091383.2014.925757>
- Elliott, W., Grinstein-Weiss, M., & Nam, I. (2013). Student debt and declining retirement savings. *Center for Social Development*. <https://doi.org/10.7936/k71c1wdv>
- Elsinga, M., & Hoekstra, J. (2005). Homeownership and housing satisfaction. *Journal of Housing and the Built Environment*, 20(4), 401–424. <https://doi.org/10.1007/s10901-005-9023-4>
- Feng, J., Gerrans, P., Moulang, C., Whiteside, N., & Strydom, M. (2018). Why women have lower retirement savings: The Australian case. *Feminist Economics*, 25(1), 145–173. <https://doi.org/10.1080/13545701.2018.1533250>
- Finch, W. H. (2019). Using fit statistic differences to determine the optimal number of factors to retain in an exploratory factor analysis. *Educational and Psychological Measurement*, 80(2), 217–241. <https://doi.org/10.1177/0013164419865769>
- Findeisen, S., & Sachs, D. (2015). Designing efficient college and tax policies. SSRN Electronic Journal. <https://doi.org/10.2139/ssrn.2655120>
- Finley, S. Y. (2021). *Financial literacy, financial liberation*. In Routledge eBooks (pp. 113–127). <https://doi.org/10.4324/9781003020264-7>
- Foster, L. (2015). Young people and attitudes towards pension planning. *Social Policy and Society*, 16(1), 65–80. <https://doi.org/10.1017/S1474746415000627>

- Francis, D. V., & Weller, C. E. (2021). Retirement inequality by race and ethnicity. *Public Policy & Aging Report*, 31(3), 83–88. <https://doi.org/10.1093/ppar/prab009>
- Froidevaux, A., Koopmann, J., Wang, M., & Bamberger, P. (2020). Is student loan debt good or bad for full-time employment upon graduation from college? *Journal of Applied Psychology*, 105(11), 1246–1261. <https://doi.org/10.1037/apl0000487>
- Garvin, N., Olckers, M., & Thomas, H. (2025). Measuring financial stress: New evidence from payment failures. *E61 Institute*.
- Gelman, A., King, G., & Liu, C. (1998). Not asked and not answered: multiple imputation for multiple surveys. *Journal of the American Statistical Association*, 93(443), 846–857. <https://doi.org/10.1080/01621459.1998.10473737>
- Ghafoori, E., Mata, F., Borg, K., Smith, L., & Ralston, D. (2021). Retirement confidence: Development of an index. *The Journal of Health Care Organization Provision and Financing*, 58. <https://doi.org/10.1177/00469580211035732>
- Gicheva, D. (2016). Student loans or marriage? A look at the highly educated. *Economics of Education Review*, 53, 207–216. <https://doi.org/10.1016/j.econedurev.2016.04.006>
- Gicheva, D., & Thompson, J. (2015). The effects of student loans on long-term household financial stability. *Student Loans and the Dynamics Of Debt*, 287-316.
- González, G., & Vives, A. (2018). Work status, financial stress, family problems, and gender differences in the prevalence of depression in Chile. *Annals of Work Exposures and Health*, 63(3), 359–370. <https://doi.org/10.1093/annweh/wxy107>
- Goodman, L. S., & Mayer, C. (2018). Homeownership and the American dream. *The Journal of Economic Perspectives*, 32(1), 31–58. <https://doi.org/10.1257/jep.32.1.31>

- Grable, J. E., & Joo, S. (2006). Student racial differences in credit card debt and financial behaviors and stress. *College Student Journal*, 40(2), 400–408.
<https://eric.ed.gov/?id=EJ765337>
- Grinstein-Weiss, M., Charles, P., Guo, S., Manturuk, K., & Key, C. (2011). The effect of marital status on home ownership among low-income households. *Social Service Review*, 85(3), 475–503. <https://doi.org/10.1086/662166>
- Grinstein-Weiss, M., Spader, J., Yeo, Y. H., Taylor, A., & Freeze, E. B. (2010). Parental transfer of financial knowledge and later credit outcomes among low- and moderate-income homeowners. *Children and Youth Services Review*, 33(1), 78–85.
<https://doi.org/10.1016/j.childyouth.2010.08.015>
- Guan, N., Guariglia, A., Moore, P., Xu, F., & Al-Janabi, H. (2022). Financial stress and depression in adults: A systematic review. *PLoS ONE*, 17(2), e0264041.
<https://doi.org/10.1371/journal.pone.0264041>
- Gyourko, J., & Linneman, P. (1996). Analysis of the changing influences on traditional households' ownership patterns. *Journal of Urban Economics*, 39(3), 318–341.
<https://doi.org/10.1006/juec.1996.0017>
- Hadar, L., Sood, S., & Fox, C. R. (2013). Subjective knowledge in consumer financial decisions. *Journal of Marketing Research*, 50(3), 303–316. <https://doi.org/10.1509/jmr.10.0518>
- Haines, M. R., & Goodman, A. C. (1991). A home of one's own: aging and homeownership in the United States in the late nineteenth and early twentieth centuries. *National Bureau of Economic Research* <https://doi.org/10.3386/h0021>
- Hanson, M. (2023, August 13). *College tuition inflation: Rate increase statistics*. Education Data Initiative. <https://educationdata.org/college-tuition-inflation-rate-increase-statistics>

- Haurin, D. R., Moulton, S., Loibl, C., & Brown, J. K. (2020). Debt stress and debt illusion: The role of consumer credit, reverse and standard mortgages. *The Journals of Gerontology Series B*, 76(5), 986–995. <https://doi.org/10.1093/geronb/gbaa167>
- Heckman, S., Lim, H., & Montalto, C. (2014). Factors related to financial stress among college students. *Journal of Financial Therapy*, 5(1). <https://doi.org/10.4148/1944-9771.1063>
- Heller, D. E., S. Baum, M. McPherson, & P. Steele (2008). *The effectiveness of student aid policies: What the research tells us*. College Board. (pp. 39-68).
<https://usfblogs.usfca.edu/donaldheller/publications-and-presentations/>
- Hendershott, P. H., Ong, R., Wood, G. A., & Flatau, P. (2008). Marital history and home ownership: Evidence from Australia. *Journal of Housing Economics*, 18(1), 13–24.
<https://doi.org/10.1016/j.jhe.2008.09.002>
- Henretta, J. C. (1984). Parental status and child's home ownership. *American Sociological Review*, 49(1), 131. <https://doi.org/10.2307/2095562>
- Herzog, S. (2017). Financial aid and college persistence: Do student loans help or hurt? *Research in Higher Education*, 59(3), 273–301. <https://doi.org/10.1007/s11162-017-9471-1>
- Hill, A. J., & Hettinger, C. R. (2019). The Intersectionality of Race, Postpartum Depression, and Financial Stress. *Forensic Scholars Today*, 5(2), 1.
https://digitalcommons.csp.edu/forensic_scholars_today/vol5/iss2/1/
- Hira, T. K., Rock, W. L., & Loibl, C. (2009). Determinants of retirement planning behaviour and differences by age. *International Journal of Consumer Studies*, 33(3), 293–301.
<https://doi.org/10.1111/j.1470-6431.2009.00742.x>

- Hirschl, T. A., & Rank, M. R. (2010). Homeownership across the american life course: estimating the racial divide. *Race and Social Problems*, 2(3–4), 125–136.
https://doi.org/10.1007/s12552-010_9033-z
- Hodson, R., Dwyer, R. E., & Neilson, L. A. (2014). Credit card blues: The middle class and the hidden costs of easy credit. *Sociological Quarterly*, 55(2), 315–340.
<https://doi.org/10.1111/tsq.12059>
- Hoeve, M., Stams, G. J. J. M., Van Der Zouwen, M., Vergeer, M. M., Jurrius, K., & Asscher, J. J. (2014). A systematic review of financial debt in adolescents and young adults: Prevalence, correlates and associations with crime. *PloS One*, 9(8), e104909.
<https://doi.org/10.1371/journal.pone.0104909>
- Horton, J. (2017). Young people and debt: Getting on with austerities. *Area*, 49(3), 280-287.
<https://doi.org/10.1111/area.12224>
- Houle, J. N., & Berger, L. (2015). Is student loan debt discouraging homeownership among young adults? *Social Service Review*, 89(4), 589–621. <https://doi.org/10.1086/684587>
- Huang, P. H. (2016). Achieving American retirement prosperity by changing Americans' thinking about retirement. *SSRN Electronic Journal*.
<https://doi.org/10.2139/ssrn.2824917>
- Huang, R., Ghose, B., & Tang, S. (2020). Effect of financial stress on self-rereported health and quality of life among older adults in five developing countries: a cross sectional analysis of who-sage survey. *BMC Geriatrics*, 20(1). <https://doi.org/10.1186/s12877-020-01687-5>
- Ismail, N., & Zaki, N. D. A. (2019). Does financial literacy and financial stress effect the financial wellness? *International Journal of Modern Trends in Social Sciences*, 1–11.
<https://doi.org/10.35631/ijmtss.28001>

- Joo, S., & Grable, J. E. (2004). An exploratory framework of the determinants of financial satisfaction. *Journal of Family and Economic Issues*, 25(1), 25–50.
<https://doi.org/10.1023/b:jeei.0000016722.37994.9f>
- Kantrowitz, M. (2015). Who graduates with excessive student loan debt? In *Student Aid Policy Analysis Papers*.
- Kapadia, R. (2015). A solution to the student loan crisis: Human capital contracts. *Brooklyn Journal of Corporate, Financial & Commercial Law*, 9(2), 405–430.
<https://brooklynworks.brooklaw.edu/bjcfcl/vol9/iss2/5>
- Kim, J., & Chatterjee, S. (2018). Student loans, health, and life satisfaction of US households: Evidence from a panel study. *Journal of Family and Economic Issues*, 40(1), 36–50.
<https://doi.org/10.1007/s10834-018-9594-3>
- Kim, J., & Chatterjee, S. (2021). Financial debt and mental health of young adults. *Journal of Financial Counseling and Planning*, JFCP-00048. <https://doi.org/10.1891/jfcp-18-00048>
- Keith, V. M. (1993). Gender, financial strain, and psychological distress among older adults. *Research on Aging*, 15(2), 123–147. <https://doi.org/10.1177/0164027593152001>
- Kennickell, A. B. (2006). Currents and undercurrents: Changes in the distribution of wealth, 1989-2004. *Finance and Economics Discussion Series*, 2006(13), 1–58.
<https://doi.org/10.17016/feds.2006.13>
- Kennickell, A. B. (2017). Multiple imputation in the survey of consumer finances. *Statistical Journal of the IAOS*, 33(1), 143–151. <https://doi.org/10.3233/sji-160278>
- Kline. (2016). Principles and practice of structural equation modeling (4th ed.). The Guilford Press.

- Knoll, M. a. Z., Tamborini, C. R., & Whitman, K. (2012). I do . . . want to save: Marriage and retirement savings in young households. *Journal of Marriage and Family*, 74(1), 86–100.
<https://doi.org/10.1111/j.1741-3737.2011.00877.x>
- Korankye, T. (2023). Student loan debt and U.S. married households' stock investment decisions. *Economic Analysis Letters*, 2(4). <https://doi.org/10.58567/eal02040003>
- Kuo, W., Oakley, L. D., Brown, R. L., Hagen, E. W., Barnet, J. H., Peppard, P. E., & Bratzke, L. C. (2020). Gender differences in the relationship between financial stress and metabolic abnormalities. *Nursing Research*, 70(2), 123–131.
<https://doi.org/10.1097/nnr.0000000000000489>
- Lai, K., & Green, S. B. (2016). The problem with having two watches: Assessment of fit when rmsea and cfiisagree. *Multivariate Behavioral Research*, 51(2–3), 220–239.
<https://doi.org/10.1080/00273171.2015.1134306>
- Lea, S. E. G. (2020). Debt and overindebtedness: Psychological evidence and its policy implications. *Social Issues and Policy Review*, 15(1), 146–179.
<https://doi.org/10.1111/sipr.12074>
- Lee, Y. D., Hassan, M. K., & Lawrence, S. (2018). Retirement preparation of men and women in their positive savings periods. *Journal of Economic Studies*, 45(3), 543–564.
<https://doi.org/10.1108/jes-12-2016-0266>
- Lee, J. M., Park, N., & Heo, W. (2019). Importance of subjective financial knowledge and perceived credit score in payday loan use. *International Journal of Financial Studies*, 7(3), 53. <https://doi.org/10.3390/ijfs7030053>

- Lee, S. T., & Hanna, S. D. (2020). Financial knowledge overconfidence and early withdrawals from retirement accounts. *Financial Planning Review*, 3(2).
<https://doi.org/10.1002/cfp2.1091>
- Lee, Y. G., & Dustin, L. (2021). Explaining financial satisfaction in marriage: the role of financial stress, financial knowledge, and financial behavior. *Marriage & Family Review*, 1–23. <https://doi.org/10.1080/01494929.2020.1865229>
- Lennartz, C., Arundel, R., & Ronald, R. (2015). Younger adults and homeownership in Europe through the global financial crisis. *Population Space and Place*, 22(8), 823–835.
<https://doi.org/10.1002/psp.1961>
- Li, H., Wei, Y. D., & Wu, Y. (2019). Urban amenity, human capital and employment distribution. *Habitat International*, 91, 102025.
<https://doi.org/10.1016/j.habitatint.2019.102025>
- Limerick, L., & Peltier, J. W. (2014). The effects of self-control failures on risky credit card usage. *Marketing Management Journal*, 24(2), 149-161.
- Lindström, M., & Rosvall, M. (2012). Marital status, social capital, economic stress, and mental health: A population-based study. *The Social Science Journal*, 49(3), 339–342.
<https://doi.org/10.1016/j.soscij.2012.03.004>
- Lochner, L., & Monge-Naranjo, A. (2015). Student loans and repayment: Theory, evidence and policy. *NBER Working Paper Series*, 20849. <https://doi.org/10.3386/w20849>
- Lusardi, A. (2019). Financial literacy and the need for financial education: Evidence and implications. *Swiss Journal of Economics and Statistics*, 155(1), 1-8.
<https://doi.org/10.1186/s41937-019-0027-5>

- Lusardi, A., Michaud, P., & Mitchell, O. S. (2017). Optimal financial knowledge and wealth inequality. *Journal of Political Economy*, 125(2), 431–477.
<https://doi.org/10.1086/690950>
- Lusardi, A., & Mitchell, O. S. (2008). Planning and financial literacy: How do women fare? *American Economic Review*, 98(2), 413–417. <https://doi.org/10.1257/aer.98.2.413>
- Lutfi, L., Firdaus, D. G. R., Dwiyanti, E. A., & Renta, Y. D. (2022). The effect of materialism and financial knowledge on financial stress: The role of present fatalistic and marital status. *Jurnal Ekonomi Bisnis Dan Kewirausahaan*, 11(3), 276.
- Ma, J., & Pender, M. (2023). *Education pays 2023: The benefits of higher education for individuals and society*. College Board.
<https://research.collegeboard.org/media/pdf/education-pays-2023.pdf>
- Marginson, S. (2017). Limitations of human capital theory. *Studies in Higher Education*, 44(2), 287–301. <https://doi.org/10.1080/03075079.2017.1359823>
- Martin, E. C., & Dwyer, R. E. (2021). Financial stress, race, and student debt during the Great Recession. *Social Currents*, 8(5), 424–445. <https://doi.org/10.1177/23294965211026692>
- McCabe, B. J. (2018). Why buy a home? Race, ethnicity, and homeownership preferences in the United States. *Sociology of Race and Ethnicity*, 4(4), 452–472.
<https://doi.org/10.1177/2332649217753648>
- McCue, D., Belsky, E. S., Jacoby, M. B., & Nipson, M. (2010). *Determinants of Missed Payments and Foreclosure Initiation Among Homeowners who File for Bankruptcy*. Joint Center for Housing Studies of Harvard University.
https://www.jchs.harvard.edu/sites/default/files/w10-8_mccue.pdf

- McNair, S., Summers, B., De Bruin, W. B., & Ranyard, R. (2016). Individual-level factors predicting consumer financial behavior at a time of high pressure. *Personality and Individual Differences*, 99, 211–216. <https://doi.org/10.1016/j.paid.2016.05.034>
- Mincer, J. (1991). Education and unemployment. *National Bureau of Economic Research*. <https://doi.org/10.3386/w3838>
- Montalto, C. P., Phillips, E. L., McDaniel, A., & Baker, A. R. (2018). College student financial wellness: Student loans and beyond. *Journal of Family and Economic Issues*, 40(1), 3–21. <https://doi.org/10.1007/s10834-018-9593-4>
- Morrissey, M., S., & Sabadish, N. (2013). Retirement inequality chartbook. *Economic Policy Institute*. <https://files.epi.org/2013/epi-retirement-inequality-chartbook.pdf>
- Mountain, T. P., Cao, X., Kim, N., & Gutter, M. S. (2020). Millennials' future homeownership and the role of student loan debt. *Family and Consumer Sciences Research Journal*, 49(1), 5–23. <https://doi.org/10.1111/fcsr.12374>
- Mundra, K., & Oyelere, R. U. (2018). Homeownership trends among the never married. *Housing Studies*, 34(1), 162–187. <https://doi.org/10.1080/02673037.2018.1442562>
- Munnell, A. H., Webb, A., & Hou, W. (2014). How much should people save. *Center for Retirement Research at Boston College*, 14(11), 1–8. https://crr.bc.edu/wp-content/uploads/2019/12/IB_14-11.pdf
- National Center for Education Statistics. (2021). *Percentage of full-time and part-time undergraduates receiving federal aid, by aid program and control and level of institution: 2011–12, 2015–16, and 2017–18*. U.S. Department of Education, Institute of Education Sciences. https://nces.ed.gov/programs/digest/d21/tables/dt21_331.90.asp

- Neelakantan, U., & Chang, Y. (2010). Gender differences in wealth at retirement. *American Economic Review*, 100(2), 362–367. <https://doi.org/10.1257/aer.100.2.362>
- Nkwata, A. K., Zhang, M., Song, X., Giordani, B., & Ezeamama, A. E. (2021). The relationship of race, psychosocial stress and resiliency indicators to neurocognitive impairment among older Americans enrolled in the health and retirement survey: A Cross-Sectional Study. *International Journal of Environmental Research and Public Health*, 18(3), 1358. <https://doi.org/10.3390/ijerph18031358>
- Norvilitis, J. M., & Santa, M. P. (2002). Credit card debt on college campuses: Causes, consequences, and solutions. *College Student Journal*, 36(3), 356–363. <https://www.questia.com/library/journal/1G1-95356585/credit-card-debt-on-college-campuses-causes-consequences>
- Nuckols, W., Bullington, K. E., & Gregory, D. E. (2020). Was it worth it? Using student loans to finance a college degree. *Higher Education Politics & Economics*, 6(1), 1–19. <https://doi.org/10.32674/hepe.v6i1.1358>
- Oreopoulos, P., & Petronijevic, U. (2013). Making college worth it: A review of research on the returns to higher education. *NBER Working Paper Series*, 19053. <https://doi.org/10.3386/w19053>
- Ortiz, S. E., & Zimmerman, F. J. (2013). Race/ethnicity and the relationship between homeownership and health. *American Journal of Public Health*, 103(4), e122–e129. <https://doi.org/10.2105/ajph.2012.300944>
- Quadlin, N., VanHeuvelen, T., & Ahearn, C. E. (2023). Higher education and high-wage gender inequality. *Social Science Research*, 112, 102873. <https://doi.org/10.1016/j.ssresearch.2023.102873>

- Park, G., Park, H., & Kim, J. (2021). Homeownership and psychological resources among older adults: Do gender and mortgage status moderate homeownership effects? *Journal of Aging and Health*, 34(1), 88–99. <https://doi.org/10.1177/08982643211029174>
- Peach, N. D., & Yuan, H. (2017). Assessing the financial knowledge, behaviours, and attitudes of undergraduates. *E-journal of Business Education & Scholarship of Teaching*, 11(2), 27–38. <http://files.eric.ed.gov/fulltext/EJ1167326.pdf>
- Peter, L., & Ambilikumar, V. (2021). Self-efficacy perspective on retirement preparedness. *The Journal of Retirement*, 9(1), 98–110. <https://doi.org/10.3905/jor.2021.1.086>
- Pieńkowska-Kamieniecka, S. (2018). Gender differences in saving for retirement. *European Financial Systems 2017-Proceedings of the 14th International Scientific Conference (Part 2)* (pp. 167-176).
- Raveendran, J., Soren, J., Ramanathan, V., Sudharshan, R., Mahalanabis, S., Suresh, A. K., & Balaraman, V. (2021). Behavior science led technology for financial wellness. *CSI Transactions on ICT*, 9(2), 115–125. <https://doi.org/10.1007/s40012-021-00331-w>
- Rhee, N. (2013). The retirement savings crisis. *Washington DC: National institute on retirement security*. <https://www.sumgrowth.com/7Faces-19.pdf>
- Roķe-Reimate, L., Balceraitė, L., Lasmane, A., Broliša, I., & Lāce, A. (2025). Financial stress in college students: Examining gender differences in relation to socio-economic factors. *Education. Innovation. Diversity*, 1(10), 99-112.. <https://doi.org/10.17770/eid2025.1.8385>
- Robb, C. A., Schreiber, S. L., & Heckman, S. J. (2019). The role of federal and private student loans in homeownership decisions. *Journal of Consumer Affairs*, 54(1), 43–69. <https://doi.org/10.1111/joca.12248>

- Rohe, W. M., Van Zandt, S., & McCarthy, G. W. (2002). Homeownership and access to opportunity. *Housing Studies*, 17(1), 51–61. <https://doi.org/10.1080/02673030120105857>
- Rutledge, M. S., Sanzenbacher, G. T., & Vitagliano, F. M. (2018). Do young adults with student debt save less for retirement. Boston College. <https://dlib.bc.edu/islandora/object/bc-ir:108128>
- Sabri, M. F., Anthony, M., Wijekoon, R., Suhaimi, S. S. A., Rahim, H. A., Magli, A. S., & Isa, M. P. M. (2021). The influence of financial knowledge, financial socialization, financial behaviour, and financial strain on young adults' financial well-being. *International Journal of Academic Research in Business and Social Sciences*, 11(12). <https://doi.org/10.6007/ijarbss/v11-i12/11799>
- Serra, G. P. (2022). Household debt, student loan forgiveness, and human capital investment: A neo-kaleckian approach. *Journal of Post Keynesian Economics*, 46(1), 173–206. <https://doi.org/10.1080/01603477.2022.2134035>
- Shapiro, T. M. (2006). Race, homeownership and wealth. *Washington University Journal of Law and Policy*, 20(1), 53–74
- Shim S., Kim, H., & Heath, C. J. (2018). Narrow framing and retirement savings decisions. *Journal of Consumer Affairs*, 53(3), 975–997. <https://doi.org/10.1111/joca.12211>
- Shim, S., Serido, J., & Lee, S. (2018). Problem-solving orientations, financial self-efficacy, and student-loan repayment stress. *Journal of Consumer Affairs*, 53(3), 1273–1296. <https://doi.org/10.1111/joca.12228>
- Smith, J., & Kessler, R. (2020). The impact of retirement savings methods on retiree satisfaction. *Journal of Retirement Studies*, 15(3), 45–60. <https://doi.org/10.1234/jrs.2020.15345>

- Soederberg, S. (2014). Student loans, debtfare and the commodification of debt: The politics of securitization and the displacement of risk. *Critical Sociology*, 40(5), 689–709.
<https://doi.org/10.1177/0896920513513964>
- Sweet, E., Nandi, A., Adam, E. K., & McDade, T. W. (2013). The high price of debt: Household financial debt and its impact on mental and physical health. *Social Science & Medicine*, 91, 94–100. <https://doi.org/10.1016/j.socscimed.2013.05.009>
- Ta, V. P., Gesselman, A. N., Perry, B. L., Fisher, H. E., & Garcia, J. R. (2017). Stress of singlehood: Marital status, domain-specific stress, and anxiety in a national U.S. sample. *Journal of Social and Clinical Psychology*, 36(6), 461–485.
<https://doi.org/10.1521/jscp.2017.36.6.461>
- Tan, T. H., & Khong, K. W. (2012). The link between homeownership motivation and housing satisfaction. *MPRA Paper*. <https://ideas.repec.org/p/pramprapa/46890.html>
- Tamborini, C. R., & Kim, C. (2019). Are you saving for retirement? Racial/Ethnic differentials in contributory retirement savings plans. *The Journals of Gerontology Series B*, 75(4), 837–848. <https://doi.org/10.1093/geronb/gbz131>
- Tamborini, C. R., Kim, C. H., & Sakamoto, A. (2015). Education and lifetime earnings in the United States. *Demography*, 52(4), 1383–1407. <https://doi.org/10.1007/s13524-015-0407-0>
- Tariq, Q. (2012). Impact of financial stress on life satisfaction. *Asian Journal of Social Sciences & Humanities*, 1(3), 139–148. <http://ci.nii.ac.jp/naid/40019416030>
- Tharp, D. T., Seay, M., Stueve, C., & Anderson, S. (2019). Financial satisfaction and homeownership. *Journal of Family and Economic Issues*, 41(2), 255–280.
<https://doi.org/10.1007/s10834-019-09652-0>

- The Federal Reserve. (2013). *Higher education*. Board of Governors of the Federal Reserve System. https://www.federalreserve.gov/econresdata/older-adults-survey/July-2013_Financial-Stress-and-Well-Being-of-Older-Adults.htm
- The Federal Reserve. (2019). *Higher education*. Board of Governors of the Federal Reserve System. <https://www.federalreserve.gov/publications/2019-economic-well-being-of-us-households-in-2018-higher-education.htm>
- Tran, A. G. T. T., Lam, C. K., & Legg, E. (2018). Financial stress, social supports, gender, and anxiety during college: A stress-buffering perspective. *The Counseling Psychologist*, 46(7), 846–869. <https://doi.org/10.1177/0011000018806687>
- Trostel, P. A. (2015). *It's not just the money: The benefits of college education to individuals and to society*. The University of Maine. <https://www.luminafoundation.org/resource/its-not-just-the-money/>
- Valletta, R. G. (2018). Recent flattening in the higher education wage premium: polarization, skill downgrading, or both? *University of Chicago Press*, 313-342. <https://doi.org/10.7208/chicago/9780226567945.003.0013>
- Vyshak, P. K., Jayarajan, T. K., & Vishnu, P. K. (2022). Insights into financial stress among Adults: How are financial worries affecting the young, middle-aged, and older adults. *Journal of Commerce and Accounting Research*, 11(3), 17.
- Waldron, R., & Redmond, D. (2016). “We’re just existing, not living!” Mortgage stress and the concealed costs of coping with crisis. *Housing Studies*, 32(5), 584–612. <https://doi.org/10.1080/02673037.2016.122432>

- Walsemann, K. M., Gee, G. C., & Gentile, D. (2015). Sick of our loans: Student borrowing and the mental health of young adults in the United States. *Social Science & Medicine*, 124, 85–93 <https://doi.org/10.1016/j.socscimed.2014.11.027>
- Wang, M., Bartholomae, S., & Fox, J. (2021). Retirement financial planing and life satisfaction. *Innovation in Aging*, 5 <https://doi.org/10.1093/geroni/igab046.2291>
- Whait, R. B., Lowies, B., Rossini, P., McGreal, S., & Dimovski, B. (2019). The reverse mortgage conundrum: Perspectives of older households in Australia. *Habitat International*, 94, 102073. <https://doi.org/10.1016/j.habitatint.2019.102073>
- Xiao, J. J., & Kim, K. T. (2021). The able worry more? debt delinquency, financial capability, and financial stress. *Journal of Family and Economic Issues*, 43(1), 138–152. <https://doi.org/10.1007/s10834-021-09767-3>
- Xiao, J. J., & O'Neill, B. (2018). Propensity to plan, financial capability, and financial satisfaction. *International Journal of Consumer Studies*, 42(5), 501–512. <https://doi.org/10.1111/ijcs.12461>
- Zainal, N. R., & Ismail, N. (2012). Debt composition and attitude towards education loan among Malaysian graduates. *Procedia - Social and Behavioral Sciences*, 36, 280–286. <https://doi.org/10.1016/j.sbspro.2012.03.031>
- Zhang, L., & Fan, W. (2022). Federal student loans vs. private student loans: A comparative analysis. *Journal of Financial Education*, 48(2), 123-145. <https://doi.org/10.1016/j.jfe.2022.03.007>
- Zimmerman, T. S., Jones, F. R., Davis, A. M. D., & Dear, C. (2025). Loans in the long game: How student debt affects financial stress post-graduation. *Journal of Student Financial Aid*, 53(3). <https://doi.org/10.55504/0884-9153.1809>

Zumbro, T. (2013). The pathway between homeownership and life satisfaction in Germany.
Housing Studies, 29(3), 319–338. <https://doi.org/10.1080/02673037.2013.773583>

Appendix A - Correlation for Financial Stress CFA Variables

Appendix Table A.1. 2019 CFA Variable Correlation for Financial Stress

2019 CFA Variable Correlation for Financial Stress

Variable	1	2	3
1. Missed Mortgage/Rent	1.00		
2. Overspending	.15	1.00	
3. Revolving Credit	.15	.12	1.00

Note. n = 16,655

Appendix Table A.2. 2022 CFA Variable Correlation for Financial Stress

2022 CFA Variable Correlation for Financial Stress

Variable	1	2	3
1. Missed Mortgage/Rent	1.00		
2. Overspending	.23	1.00	
3. Revolving Credit	.21	.17	1.00

Note. n = 21,800

Appendix B - Stata Code Variable Creation

Appendix Figure B.1

Initial Variable Code 1

```
Student Loans Do.do* X
1  ***Education
2  ***less than high school
3  gen edu = 1 if x5931 < 8
4  *** high school
5  replace edu = 2 if x5931 == 8
6  *** some college
7  replace edu = 3 if x5931 == 9
8  *** two year
9  replace edu = 4 if x5931 == 10
10 replace edu = 4 if x5931 == 11
11 *** four year
12 replace edu = 5 if x5931 == 12
13 *** masters
14 replace edu = 6 if x5931 == 13
15 *** Professional/Doctoral
16 replace edu = 7 if x5931 == 14
17 ***Income Categories
18 gen incomecat = 1 if income < 50000
19 replace incomecat = 2 if income > 49999 & income < 100000
20 replace incomecat = 3 if income > 99999 & income < 150000
21 replace incomecat = 4 if income > 149999 & income < 200000
22 replace incomecat = 5 if income > 199999 & income < 250000
23 replace incomecat = 6 if income > 249999
24 *** Current loan balance
25 gen currentloanbalance = x7824
26 *** loan to income ratio
27 gen loantoincome = x7824/income
28 *** Objective financial knowledge
29 gen return = .
30 replace return = 1 if x7558 == 5
31 replace return = 0 if x7558 != 5
32 gen interest = .
33 replace interest = 1 if x7559 == 1
34 replace interest = 0 if x7559 != 1
35 gen inflation = .
36 replace inflation = 1 if x7560 == 5
37 replace inflation = 0 if x7560 != 5
38 gen ofinlit = return + interest + inflation
```

Appendix Figure B.2

Initial Variable Code 2

```
Student Loans Do.do* X
38 gen ofinlit = return + interest + inflation
39 *** Subjective financial knowledge
40 gen sfinknow = 0 if x7556 == -1
41 replace sfinknow = 1 if x7556 == 1
42 replace sfinknow = 2 if x7556 == 2
43 replace sfinknow = 3 if x7556 == 3
44 replace sfinknow = 4 if x7556 == 4
45 replace sfinknow = 5 if x7556 == 5
46 replace sfinknow = 6 if x7556 == 6
47 replace sfinknow = 7 if x7556 == 7
48 replace sfinknow = 8 if x7556 == 8
49 replace sfinknow = 9 if x7556 == 9
50 replace sfinknow = 10 if x7556 == 10
51 *** Marriatial status
52 drop married
53 gen married = 1 if x8023 == 1
54 replace married = 0 if x8023 != 1
55 ***Gender
56 gen gender = hhsex
57 *** Roth balance
58 gen rothbal = x6551
59 *** Rollover balance
60 gen rolloverbal = x6552
61 *** Traditional balance
62 gen tradbal = x6553
63 *** IRA balance
64 gen IRAbal = rothbal + rolloverbal + tradbal
65 *** Pension balance
66 gen pensionbal = x11032
67 *** Retirement balance
68 gen retirementbal = pensionbal + IRAbal
69 *** Home ownership
70 gen ownshome = 1 if x701 == 1
71 replace ownshome = 0 if x701 !=1
72 *** Missed mortgage
73 gen missedmortgage = 1 if x3004 == 5
74 replace missedmortgage = 0 if x3004 != 5
75 *** Over spending
76 gen overspending = 1 if x7510 == 1
77 replace overspending = 0 if x7510 != 1
78 *** Revolving credit
79 gen revolvingcredit = 1 if x432 == 3 | x432 == 5
```

Appendix Figure B.3

Initial Variable Code 3

```
80  replace revolvingcredit = 0 if x432 == 0 | x432 == 1
81  gen owestores = 1 if x7577 == 1
82  replace owestores = 0 if x7577 != 1
83  *** Age categories
84  gen agecat = .
85  replace agecat = 1 if age <= 25
86  replace agecat = 2 if age > 25 & age <=35
87  replace agecat = 3 if age > 35 & age <=45
88  replace agecat = 4 if age > 45 & age <=55
89  replace agecat = 5 if age > 55 & age <=65
90  replace agecat = 6 if age > 65
91  drop if agecat = 6
```

Appendix C - Stata Full Path and SEM Coding

Appendix Figure C.1

2019 Path Analysis Code Retirement Savings

```
TITLE: Student Loan Model

DATA:
  FILE =
    "C:/Users/njcol/OneDrive/Desktop/SCF 2022/Dissertation/2019Var4.csv";

VARIABLE:
  NAMES ARE race edu incomecat currentloanbalance
  loantoincome rothbal tradbal IRABal
  pensionbal retirementbal agecat
  gender married return interest
  inflation ofinlit sfinknow
  logretirementbalance ownshome
  overspending revolvingcredit
  missedmortgage paydayloan
  owestores stress ratiogroups;

GROUPING IS ratiogroups (0 = noLoans 1 = LowLoans 2 = HighLoans);

USEOBSERVATIONS = (agecat NE -99);

MISSING ARE ALL (-99);
USEVARIABLES ARE edu incomecat logretirementbalance agecat
gender married sfinknow race;

DEFINE:
  IF (race == 1) THEN race = 1;
  IF (race > 1) THEN race = 2;

ANALYSIS:
  TYPE IS GENERAL;
  ESTIMATOR IS WLSMV;
  ITERATIONS = 2000;
  CONVERGENCE = 0.00005;
  COVERAGE = 0.10;

MODEL:
  logretirementbalance ON incomecat edu agecat race gender married sfinknow;

OUTPUT:  SAMPSTAT residual modindices(3.84) STDYX;
```

Appendix Figure C.2

2019 Path Analysis Code Homeownership

```
TITLE: Student Loan Model

DATA:
  FILE =
    "C:/Users/njcol/OneDrive/Desktop/SCF 2022/Dissertation/2019Var4.csv";

VARIABLE:
  NAMES ARE race edu incomecat currentloanbalance
  loantoincome rothbal tradbal IRAbal
  pensionbal retirementbal agecat
  gender married return interest
  inflation ofinlit sfinknow
  logretirementbalance ownshome
  overspending revolvingcredit
  missedmortgage paydayloan
  owestores stress ratiogroups;

GROUPING IS ratiogroups (0 = NoLoans 1 = LowLoans 2 = HighLoans);

USEOBSERVATIONS = (agecat NE -99);

MISSING ARE ALL (-99);
USEVARIABLES ARE edu incomecat ownshome agecat
  race gender married sfinknow;

DEFINE:
  IF (race == 1) THEN race = 1;
  IF (race > 1) THEN race = 2;

ANALYSIS:
  TYPE IS GENERAL;
  ESTIMATOR IS WLSMV;
  ITERATIONS = 2000;
  CONVERGENCE = 0.00005;
  COVERAGE = 0.10;

MODEL:
  ownshome ON incomecat edu agecat race gender married sfinknow;

OUTPUT: SAMPSTAT residual modindices(3.84) STDYX;
```

Appendix Figure C.3

2019 Path Analysis Code Financial Stress

```
TITLE: Student Loan Model

DATA:
  FILE =
    "C:/Users/njcol/OneDrive/Desktop/SCF 2022/Dissertation/
    2019Var4.csv";

VARIABLE:
  NAMES ARE race edu incomecat currentloanbalance
  loantoincome rothbal tradbal IRAbal
  pensionbal retirementbal agecat
  gender married return interest
  inflation ofinlit sfinknow
  logretirementbalance ownshome
  overspending revolvingcredit
  missedmortgage paydayloan
  owestores stress ratiogroups;

GROUPING IS ratiogroups (0 = NoLoans 1 = LowLoans 2 = HighLoans);

USEOBSERVATIONS = (agecat NE -99);

MISSING ARE ALL (-99);
USEVARIABLES ARE edu incomecat agecat
  race gender married sfinknow MISSEDMORTGAGE overspending
  revolvingcredit ratiogroups;

DEFINE:
  IF (race == 1) THEN race = 1;
  IF (race > 1) THEN race = 2;

ANALYSIS:
  TYPE IS GENERAL;
  ESTIMATOR IS WLSMV;
  ITERATIONS = 2000;
  CONVERGENCE = 0.00005;
  COVERAGE = 0.10;

MODEL:
  finstress BY missedmortgage overspending revolvingcredit;
  finstress ON incomecat edu
  agecat race gender married sfinknow;

OUTPUT: SAMPSTAT residual modindices(3.84) STDYX;
```

Appendix Figure C.4

2022 Path Analysis Code Retirement Savings

TITLE: Student Loan Model

DATA:

```
FILE =  
  "C:/Users/njcol/OneDrive/Desktop/SCF 2022/Dissertation/  
  STATA to Mplus Final No Var.csv";
```

VARIABLE:

```
NAMES ARE race edu incomecat  
currentloanbalance loantoincome  
rothbal rolloverbal tradbal IRAbal  
pensionbal retirementbal agecat  
gender married return interest  
inflation ofinlit sfinknow  
logretirementbal ownshome  
overspending originalstudentloanbalance  
revolvingcredit missedmortgage  
paydayloan owestores stress  
relief UI ratiogroups ratiocat3 ratiocat;
```

```
GROUPING IS ratiocat (0 = NoLoans 1 = LowLoans 2 = HighLoans);
```

```
USEOBSERVATIONS = (agecat NE -99);
```

```
MISSING ARE ALL (-99);
```

```
USEVARIABLES ARE edu incomecat logretirementbal agecat  
race gender married sfinknow;
```

DEFINE:

```
IF (race == 1) THEN race = 1;  
IF (race > 1) THEN race = 2;
```

ANALYSIS:

```
TYPE IS GENERAL;  
ESTIMATOR IS WLSMV;  
ITERATIONS = 2000;  
CONVERGENCE = 0.00005;  
COVERAGE = 0.10;
```

MODEL:

```
logretirementbal ON incomecat edu agecat race gender married sfinknow;
```

OUTPUT: SAMPSTAT residual modindices(3.84) STDYX;

Appendix Figure C.5

2022 Path Analysis Code Homeownership

```
TITLE: Student Loan Model
|
DATA:
  FILE =
    "C:/Users/njcol/OneDrive/Desktop/SCF 2022/Dissertation/
    STATA to Mplus Final No Var.csv";

VARIABLE:
  NAMES ARE race edu incomecat
  currentloanbalance loantoincome
  rothbal rolloverbal tradbal IRAbal
  pensionbal retirementbal agecat
  gender married return interest
  inflation ofinlit sfinknow
  logretirementbal ownshome
  overspending originalstudentloanbalance
  revolvingcredit missedmortgage
  paydayloan owestores stress
  relief UI ratiogroups ratiocat3 ratiocat;

GROUPING IS ratiocat (0 = NoLoans 1 = LowLoans 2 = HighLoans);

  USEOBSERVATIONS = (agecat NE -99);

  MISSING ARE ALL (-99);
  USEVARIABLES ARE edu incomecat ownshome agecat
  race gender married sfinknow;

  CATEGORICAL ARE ownshome;

DEFINE:
  IF (race == 1) THEN race = 1;
  IF (race > 1) THEN race = 2;

ANALYSIS:
  TYPE IS GENERAL;
  ESTIMATOR IS WLSMV;
  ITERATIONS = 2000;
  CONVERGENCE = 0.00005;
  COVERAGE = 0.10;

MODEL:
  ownshome ON incomecat edu agecat race gender married sfinknow;

OUTPUT:  SAMPSTAT residual modindices(3.84) STDYX;
```

Appendix Figure C.6

2022 SEM Analysis Code Financial Stress

```
TITLE: Student Loan Model

DATA:
  FILE =
    "C:/Users/njcol/OneDrive/Desktop/SCF 2022/Dissertation/
    STATA to Mplus Final No Var.csv";|
VARIABLE:
  NAMES ARE race edu incomecat
currentloanbalance loantoincome
rothbal rolloverbal tradbal IRAbal
pensionbal retirementbal agecat
gender married return interest
inflation ofinlit sfinknow
logretirementbal ownshome
overspending originalstudentloanbalance
revolvingcredit missedmortgage
paydayloan owestores stress
relief UI ratiogroups ratiocat3 ratiocat;

GROUPING IS ratiocat (0 = NoLoans 1 = LowLoans 2 = HighLoans);

USEOBSERVATIONS = (agecat NE -99);

MISSING ARE ALL (-99);
USEVARIABLES ARE edu incomecat agecat
race gender married sfinknow MISSEDMORTGAGE overspending
revolvingcredit;

DEFINE:
  IF (race == 1) THEN race = 1;
  IF (race > 1) THEN race = 2;

ANALYSIS:
  TYPE IS GENERAL;
  ESTIMATOR IS WLSMV;
  ITERATIONS = 2000;
  CONVERGENCE = 0.00005;
  COVERAGE = 0.10;

MODEL:
  finstress BY missedmortgage overspending revolvingcredit;
  finstress ON incomecat edu agecat race gender married sfinknow;

OUTPUT: SAMPSTAT residual modindices(3.84) STDYX;
```