



Does Financial Education Improve Financial
Literacy and Long-Term Financial Behavior?
Evidence from Financial Education State-Mandated
Requirements in the United States

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Dissertation written under the supervision of Professor Hugo Reis

Dissertation submitted in partial fulfilment of requirements for the MSc in Economics –
Major in Banking and Finance, at the Universidade Católica Portuguesa, March 2025

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Abstract

This dissertation examines the causal impact of financial education on financial literacy and long-term financial behavior in the United States, exploiting policy-driven variations in financial education curriculum requirements across states and years. While research on financial education effectiveness remains somewhat limited and inconclusive, its relevance has grown due to rising concerns about financial literacy levels, particularly among younger individuals, both in the United States and globally.

The analysis is based on data from the National Financial Capability Study, between 2012 and 2021, which is a triannual survey assessing financial knowledge and behaviors. Using an Instrumental Variable (IV) approach, accounting for the timing and structure of state-mandated financial education policies, the study first analyzes a full sample including individuals of all ages across states with and without mandates, then narrows the focus to specific age groups and policy contexts for clearer interpretation. The analysis reveals that, among those who only received financial education driven by the state-mandated requirements, the overall impact on financial literacy and long-term financial behaviors is positive. However, statistical significance is only maintained for two outcomes throughout the study: stock diversification knowledge and savings account behavior, though these effects become less pronounced when restricting samples by age. Financial literacy and behavior gaps persist among women, the unemployed, and individuals with lower education levels, even after receiving financial education.

Keywords: Financial Education, Financial Literacy, Financial Behavior, Instrumental Variable Approach.

Educação Financeira Melhora Literacia Financeira e Comportamento Financeiro a Longo-Prazo? Evidência dos Requisitos de Educação Financeira Impostos pelos Estados nos Estados Unidos

Sara Margarida Gomes Câmara

Resumo

Esta dissertação analisa o impacto causal da educação financeira na literacia financeira e no comportamento financeiro a longo-prazo nos Estados Unidos, explorando variações impulsionadas pelas políticas em matéria de requisitos de educação financeira entre estados e anos. Embora os estudos sobre a eficácia da educação financeira continuem a ser algo limitados e inconclusivos, a sua relevância tem vindo a aumentar devido às crescentes preocupações com os níveis de literacia financeira, em particular entre os mais jovens, tanto nos Estados Unidos como mundialmente.

A análise baseia-se no Estudo Nacional de Capacidade Financeira, um inquérito trianual que avalia os conhecimentos e comportamentos financeiros, entre 2012 e 2021. Utilizando uma abordagem da variável instrumental, considerando o momento e a estrutura das políticas de educação financeira impostas pelos estados, o estudo analisa primeiro uma amostra com todos indivíduos de estados com e sem mandatos, restringindo depois o foco a grupos etários e contextos específicos do requerimento. A análise mostra que, entre aqueles que só receberam educação financeira devido aos requisitos impostos pelo Estado, o impacto global na literacia e nos comportamentos financeiros a longo-prazo é positivo. No entanto, a significância apenas se mantém para dois resultados ao longo do estudo: conhecimento sobre diversificação de risco e comportamento relativo a contas-poupança, embora menos pronunciados quando restringidas as amostras por idades. As lacunas de literacia e de comportamentos financeiros persistem entre as mulheres, os desempregados e os indivíduos com níveis de escolaridade mais baixos, mesmo depois de receber educação financeira.

Palavras-Chave: Educação Financeira, Literacia Financeira, Comportamento Financeiro, Abordagem da Variável Instrumental.

Acknowledgments

First and foremost, I would like to express my deepest gratitude to my dissertation advisor, Professor Hugo Reis, for all the invaluable guidance, patience, encouragement and unwavering support throughout this journey. His insightful feedback and availability for regular meetings were crucial in shaping this research, and for that I am truly grateful.

I am profoundly thankful to my parents, whose unconditional love and support have been the foundation of both my academic and personal growth. Without them, I would not have had the opportunity to leave home and chase my dreams, nor the strength to persevere when challenges arose, especially when things got tougher and when '*saudade*' became a constant presence in our lives. I am equally grateful to my amazing brother, who is my role model and best friend. His achievements have set the bar so high that they have inspired me to push myself every day, striving to become even a small reflection of the person he is. If I manage to make them as proud of me as I am of them, for everything they have accomplished in life, then I will consider my mission fulfilled.

To my friends, thank you for being my pillars of strength, always ready to listen, even when you had no idea what I was talking about, and for reminding me to take breaks when needed, trust myself and believe in how capable I was of reaching this milestone. A special thank you to my boyfriend for his patience, encouragement and constant reassurance, especially during the most challenging moments in this journey. You know it meant the world to me.

I would also like to extend my sincere appreciation to Gary Mottola and Olivia Valdes from FINRA for their kindness and generosity in sharing their time and expertise whenever I reached out.

Finally, to everyone who has crossed my way throughout these 17 years of academic pursuit – thank you. Each of you has, in some way, contributed to shaping the person I am today. A special mention goes to Professor Carmo Vieira, from Escola Secundária Francisco Franco, whose passion for economics first sparked my own interest and set me on the path that led me here.

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1. Introduction

The impact of financial education on individuals' financial outcomes has been a longstanding topic of debate, particularly regarding its effectiveness in shaping financial behavior and decision-making. It has the potential to influence savings habits, investment choices, and overall financial well-being, which can have significant long-term implications. At the same time, policies mandating financial education have sparked discussions, with many viewpoints on their necessity, effectiveness, and implementation, leading to different approaches across regions and educational systems.

According to the S&P Global FinLit Survey, only one in three adults worldwide are financially literate, with significant disparities across demographics, reflecting differences in economic conditions, financial systems, and educational frameworks. Even in advanced economies, knowledge gaps persist especially among vulnerable groups – such as the unemployed and those with lower education levels – and women. These deficits can lead to suboptimal financial decisions, such as overreliance on high-cost credit and poor investment decisions, ultimately exacerbating financial vulnerability and deepening wealth inequalities.

In response to these challenges, policymakers and educators have increasingly promoted some form of financial education to be included in school curricula as a means to improve financial literacy and, by extension, financial well-being. However, evidence on the effectiveness of such policies remains a subject of debate. While some studies suggest that it enhances financial decision-making skills, others indicate that its long-term impact on financial knowledge and behavior is limited. For example, Mandell (2008b) found that high school financial education programs did not significantly improve American students' financial literacy, whereas Carpena et al. (2011) observed that a financial education initiative in India raised awareness of financial products but did not improve numeracy-based financial decision-making. Similarly, Fernandes et al. (2014) conducted a meta-analysis concluding that its long-term effects are often weak unless continuously reinforced over time. Despite these mixed findings, research consistently shows that individuals with higher financial literacy tend to engage in more prudent financial behaviors. Van Rooij et al. (2011a) found that individuals with lower financial literacy in the Netherlands were less likely to invest in stocks and more likely to rely on informal financial advice, while Hilgert et al. (2003) showed that Americans with greater financial knowledge were more likely to budget, save and use

credit responsibly. Likewise, Lusardi and Mitchell (2014) show that more financially literate individuals are more likely to plan for retirement, accumulate wealth and make informed decisions. Given the substantial costs associated with implementing financial education programs, it is fundamental to study its effectiveness in improving financial literacy and behavior, especially among those that are required to take such programs.

This dissertation studies the causal impact of financial education policies on financial literacy and long-term financial behavior in the U.S. for individuals that only took personal finance courses because they were required to do so, leveraging a natural experiment where policy variation across states and graduation years create exogenous differences in financial education exposure. It builds on data from the National Financial Capability Study (NFCS) in a triannual analysis, from 2012 to 2021, and on Carly Urban's (2022) work to account for the timing and structure of personal finance education mandates across states. We begin by considering a full sample, which includes individuals of all ages across both mandatory and non-mandatory states. To refine the analysis, we then narrow the sample based on age and state criteria. The between-states sample compares individuals of the same age in states with and without financial education mandates, offering insights into how different regulatory environments influence the outcomes for individuals of same age. The within mandatory-states sample compares adjacent birth cohorts within mandatory states, isolating policy's impact within a more comparable group, minimizing cross-state heterogeneity. This setting provides complementary perspectives for identifying the causal effect of financial education on financial literacy – as measured by the widely used “Big Three” questions (Lusardi and Mitchell, 2011b) – and long-term financial behavior among the compliers, i.e., those who received such education solely due to the state-mandated requirements. To identify this causal impact, the main analysis employs a Two-Stage Least Squares (2SLS) approach with a linear specification, leveraging state-mandated requirements as an instrumental variable. For completeness and comparability, a Linear Probability Model (LPM) was also estimated. To validate the reliability of these estimates, they were cross-validated against a probit model, which confirmed their consistency and robustness.

The full-sample analysis shows that, among those who solely received financial education driven by the state-mandated requirements, the overall impact on financial literacy and long-term financial behavior is positive. However, statistical significance remains limited to two financial concepts –

inflation (29.8 percentage points (p.p.)), and stock diversification (31.7 p.p.) – as well as to two financial behaviors – holding a savings account (19.2 p.p.) and having 3-month emergency funds (28.1 p.p.). When narrowing the sample by age, statistical significance becomes less pronounced, though the magnitude of effects increases. The between-states analysis finds a significant improvement in risk diversification knowledge (by 26.4 p.p.) and an increase in the likelihood of planning for retirement (by 21.3 p.p.). The within mandatory-states analysis further supports the significantly positive effect on retirement planning (by 46.5 p.p.), besides holding a savings account (by 43.9 p.p.). Overall, excluding 2021, due to potential disruptions caused by the COVID-19 pandemic, does not change the main conclusions drawn from these results.

This dissertation makes two main contributions to the financial education literature. First, it adds to the limited body of research on the causal impact of financial education on financial literacy but especially on long-term financial behavior, an area that remains underexplored. Then, as far as my knowledge, this dissertation is the first to leverage state-mandated financial education requirements as an instrumental variable, employing a framework similar to that used in the returns to education literature, where compulsory schooling laws serve as an instrument.

The rest of the dissertation is structured as follows. Section 2 reviews the relevant literature around the topic. Section 3 shows the empirical evidence on financial literacy in the United States and globally. Section 4 describes the data used, sample selection, data cleaning procedures and descriptive statistics. Section 5 outlines the empirical model and methodology. Section 6 presents the results on the causal impact of financial education on both financial literacy and long-term financial behaviors, across the three distinct samples. Section 7 presents and discusses the robustness checks, and Section 8 concludes.

2. Research Literature

2.1. Definition of Financial Literacy

The concept of financial literacy has been studied extensively, as financial systems grow increasingly complex, yet its definition varies. The Jump\$tart Coalition first popularized the term in 1997, though its roots date back to consumer education efforts in the early 20th century (Jelley,

1958). Over time, several conceptual definitions of financial literacy have emerged, and Remund (2010) categorizes them into four areas:¹

Knowledge of financial concepts

Hilgert, Hogarth and Beverley (2003) link financial knowledge directly with better financial practices. FINRA (2003) defined it as understanding market principles and financial instruments. Studies show that specific financial knowledge, rather than general, has a greater impact on financial decision-making. Lusardi and Mitchell (2008) focus their perspective of knowledge on a more specific approach with the comprehension of different financial notions, like compounding interest and risk diversification.

For the purposes of this analysis, we focus on this definition, which emphasizes the understanding of financial concepts as foundational to informed decision-making and effective financial practices.

Ability to manage personal finances

Emmons (2005) presents an extensive definition that includes tasks such as tracking cash resources, and applying for loans, rather than just a measure of knowledge. Remund (2010) highlights it as understanding key concepts and managing personal finances to make informed decisions in real-life contexts, Vitt et al. (2000) defines it as the ability to analyze and communicate about personal finances to improve wellbeing, and Huston (2010), similarly, looks at it as the ability to use financial information effectively in a daily basis.

Skill in making financial decisions

Noctor et al. (1992) defines it as making informed financial judgments, a definition adopted by other researchers (Beal and Delpachitra, 2003; Worthington, 2004). Different interpretations are discussed, such as making smart choices (Mandell, 2008a), focusing on critical thinking (Kozup and Hogarth, 2008) and processing economic information (Lusardi and Mitchell, 2014).

Confidence in future financial planning

Programs like WiseUp (U.S. Labor Department, 2008) and the Jump\$tart Coalition (2007) emphasize developing responsible saving habits as a component of financial literacy. Others argue

¹ For more detail, refer to Kimiyaghalam and Safari (2015) and J. Wagner (table 2.1., 2015).

that combining skills in decision-making promotes long-term financial security (Huston, 2010; Johnson and Sherraden, 2007).

2.2. Measures of Financial Literacy

Three main challenges in measuring financial literacy were identified – the lack of conceptual clarity, the need for a precise definition, and the need for standardized instruments (Huston, 2010). Early efforts to measure it date back to the Consumer Federation of America surveys in the 1990s.

Many studies focus primarily on knowledge-based assessments, using both objective and subjective measures. Volpe et al. (1996) and Chen and Volpe (2002) designed multiple-choice knowledge questions, while Lusardi and Mitchell (2011a) introduced a standard of widely used and adapted financial literacy questions, the so called “Big Three”, which assess (1) numeracy and capacity to do calculations related to interest rates, (2) understanding of inflation, and (3) understanding of risk diversification, accounting for simplicity, relevance, brevity and capacity to differentiate in each question (Lusardi and Mitchell, 2014). These were later expanded to the “Big Five” in the NFCS, including mortgage and bond-related questions.

Researchers debate whether financial literacy should be measured through comprehensive assessments or specific financial knowledge areas. Some focus on broader topics, like budgeting and saving (NEFE, 2006; Jump\$start Coalition, 2008), others, such as Worthington (2004), emphasize individualized assessments based on financial needs, like investments (Volpe et al., 1996) and credit (Jones, 2005). Some studies also assess it through numeracy and mathematical skills, since those are key to making reliable financial decisions (Lusardi and Tufano, 2015). For further insights, please refer to Hung et al. (2009) and Wagner (2015).

2.3. Importance of Financial Literacy

Prior research highlights the crucial role financial literacy plays in making informed decisions as a consumer in different contexts. Studies have shown that individuals with higher levels of financial knowledge (for instance, those that answered the “big three” financial literacy questions correctly) are more likely to plan for retirement, not only in the U.S. (Lusardi and Mitchell 2008, 2009b, 2011b), but also in Canada – particularly relevant since it has one of the lowest levels of poverty

among seniors – (Boisclair et al., 2017), Germany (Bucher-koenen and Lusardi, 2011) and the Netherlands (van Rooij et al., 2011a). Research has shown that planning affects wealth accumulation (Ameriks et al., 2003; Lusardi, 2000; Lusardi and Mitchell, 2007b) and, so, lack of retirement planning translates into low levels of retirement wealth accumulation (Lusardi and Mitchell 2009b, 2011b). It also correlates with higher stock market participation (van Rooij et al., 2011b; Yoong, 2011; Christelis et al., 2010), better investment choices (Hastings and Tejada-Ashton, 2008), and lower-cost pension plans (Hastings and Mitchell, 2018). Conversely, less financially literate individuals are more likely to hold expensive mortgages (Moore, 2003), engage in high-cost borrowing (Lusardi and Tufano, 2015), and save less (Stango and Zinman, 2009). Mottola (2013) reports that low financial literacy is associated with poor financial decisions, particularly among vulnerable populations who often face more complex financial decisions related to retirement.

2.4. Financial Education and Its Connection with Financial Literacy

Research on the relationship between financial education (F.E.) and financial literacy is somewhat limited and not as promising as one would expect. Both Jump\$tart Coalition (2006) and Mandell (2008b) found a surprisingly weak link between high school students' financial knowledge and whether they took a financial education course, which brings, inevitably, problems for causal inference. Carpena et al. (2011) found that, while a randomized financial education program in India had a positive impact on raising awareness about financial products and shaping individuals' attitudes toward decision-making, it did not enhance numerical decision-making skills.

2.5. Financial Literacy/Education and Its Connection with Financial Behavior

Research consistently shows that financial literacy is closely linked to positive financial behaviors. For example, Mandell (2006) found that high school seniors with higher financial literacy scores managed their checkbooks more effectively. Similarly, a study by van Rooij, Lusardi and Alessie (2011a) in the Netherlands showed that adults with lower financial literacy relied more on informal advice from friends and were less inclined to invest in stocks. Hilgert, Hogarth and Beverly (2003) found that financially literate individuals were more likely to engage in prudent financial behaviors, such as effective cash-flow management, credit use, and investing.

However, while financial literacy correlates with sound financial behavior, the effectiveness of various forms of F.E. is not so certain. For instance, retirement seminars have produced different outcomes in various studies. Bayer et al. (2009) found that employer-sponsored seminars increased both participation and contributions to voluntary savings plans, while Duflo and Saez (2003) observed improvements only in participation. Lusardi and Mitchell (2007c) found that such seminars increased wealth, particularly for less wealthy or less educated individuals. In contrast, Choi et al. (2005) and Madrian & Shea (2000) noted that, despite participants' intentions after attending retirement seminars, actual follow-through on financial behaviors was often lacking. In other areas, research suggests that F.E. can influence behavior, though outcomes depend on the context. Credit counselling has been linked to improved borrowing behavior and creditworthiness (Elliehausen et al., 2007), and pre-purchase homebuyer counselling significantly reduced delinquency rates (Hirad and Zorn, 2001). Drexler et al. (2014) also found that simplified F.E. methods improved business financial management practices in the Dominican Republic. Berheim et al. (2001) found that individuals who received such education in high school had higher savings rates in adulthood, though Cole and Shastry (2008) argued that the observed relationship is not truly causal, since rapidly growing states were more likely to implement the mandates.

While financial education can yield benefits, its impact depends on program structure and duration. Fernandes et al. (2014) emphasize that, without follow-up or reinforcement, long-term effects tend to be weak, underscoring the need for continuous engagement.

3. Empirical Evidence on Financial Literacy

3.1. Across the United States

Financial knowledge levels in the U.S. have been consistently low among both young people and adults, as evidenced by a wide range of research conducted since mid-1990s (Chen and Volpe, 1998, and Volpe et al., 2006). For instance, the OECD's PISA Financial Literacy Assessment 2012 showed that 15-year-old Americans performed below the OECD average, scoring in the lower third of participating countries, highlighting early F.E. deficiencies to deal with these concepts effectively. Another source of evidence comes from the Federal Reserve's Survey of Consumer Finances that emphasizes knowledge gaps in understanding basic financial concepts like interest rates and credit management, particularly among lower-income and less educated individuals. In

fact, only around 40% of households could cover a \$400 emergency expense without needing to borrow or sell something.

These knowledge gaps contribute to broader financial inequality. Lusardi, Michaud and Mitchell (2013) estimate that financial knowledge accounts for 30% to 40% of retirement wealth inequality in the U.S. This aligns with earlier findings from Lusardi and Mitchell (2011b) which showed only 65% of respondents could answer a basic interest rate question, 64% understood inflation, and fewer than half grasped risk diversification. These gaps were particularly pronounced among specific demographic groups – the young, elderly, the less educated, and women. Low literacy among women is also confirmed in other surveys covering younger or representative groups of the U.S. population (Lusardi and Mitchell, 2007b; Lusardi and Tufano, 2009).

Lusardi (2011) emphasized that low-income and less-educated Americans struggle with managing liquidity, borrowing and retirement savings. For example, a considerable portion of the unbanked (36% of those being the least educated) rely on expensive alternatives, like payday loans or check-cashing services, which indicate a lack of awareness about more affordable financial options. Credit card users, particularly the younger and low-income, also show lower financial literacy by engaging in behaviors that lead to interest charges and fees. Many mortgage borrowers lack understanding of key terms, with 16% holding interest-only mortgages and 20% unaware of their mortgage type. Regarding retirement planning, 37% of those with self-directed accounts do not know how much is invested in stocks. Mandell (2008a) also found that particularly high school students performed poorly on financial literacy assessments, with scores below 60%.

3.2. Around the World

The low financial literacy levels observed in the U.S. are not unique to its stage of economic development – similar trends are widespread across countries worldwide, regardless of their economic status. It is found, in the S&P Global FinLit Survey, that, worldwide, only one in three adults are financially literate (Klapper and Lusardi, 2020), meaning nearly 3.5 billion adults worldwide lack basic financial knowledge, with the lowest literacy rates observed in developing countries. While over 65% of adults in countries like Australia, Canada and Germany are financially literate, only 25% or fewer in South Asia possess similar knowledge. Significant disparities exist between advanced economies (55% literacy on average) and emerging countries

(28% on average), with the BRICS showing wide variation. Financial literacy also varies within regions, such as the European Union, where northern countries outperform southern and newer EU members. However, global studies reveal that financial illiteracy is still a widespread issue, prevalent across different age groups and regions, affecting not only developing nations but also those with highly developed financial markets, as reported by OECD in a 2005 report. For instance, countries like the Netherlands, Sweden, Japan or New Zealand confirm that, even in economies with robust financial systems, many citizens lack the necessary knowledge to manage their finances effectively.

Economic conditions within each country also shape financial knowledge. In Italy, for example, where inflation has been a pressing issue, individuals tend to have a better understanding of inflation. Contrarywise, in Japan – a country with a history of deflation –, fewer individuals answer inflation-related questions correctly. Similarly, financial literacy is higher in Sweden, which has undergone pension reforms, but much lower in Russia or East Germany, regions where there was less exposure to financial markets (Lusardi and Mitchell, 2011a). In many countries there are also notable regional differences – northern and central Italy, as well as urban Russia, exhibit higher financial literacy, compared to their southern and rural counterparts, respectively.

In Portugal – which holds the worst financial literacy score in Western Europe² –, efforts to improve financial literacy have been marked by significant political division, with varying opinions on how and whether such education should be integrated into schools. In December 2023, a proposal to include basic F.E. elements in the primary school curriculum was presented, but ultimately did not pass as it faced opposition and abstention from several parties. Progress was made more recently, in November 2024, when a proposal to establish a national financial literacy program, tailored to students' age and abilities, was approved as part of the government's budget for 2025, despite still facing resistance from some parties. This reflects broader reluctance or lack of political consensus on integrating F.E. into the standard curriculum, even in light of Portugal's critical need for improved financial awareness among its youngest population.

² According to the S&P Global FinLit Survey.

4. Data

The main dataset of the dissertation is the National Financial Capability Study (NFCS) from the United States, a triannual survey conducted by the Financial Industry Regulatory Authority (FINRA) Investor Education Foundation. It seeks to assess the financial capability of Americans (aged above 18) across all 50 states and the District of Columbia, covering key aspects such as their ability to manage day-to-day finances, plan for the future, and navigate financial products and services. It was first conducted in 2009, initially intended to assess financial knowledge and behavior of American adults right after the 2008 financial crisis, providing an in-depth look at how they engaged with their personal finances. The core questions in each wave of the survey since then remained consistent, but some underwent slight alterations and updates over the years, allowing for the introduction of emerging issues. It includes five waves with a total of 135429 observations and several variables used in this dissertation, such as the NFCS ID, survey year, state of residence, gender, age, ethnicity, education level, employment status, whether financial education was received, and the outcome variables analyzed (explained in more detail below).³ The analysis focuses on data spanning four survey years between 2012 and 2021, excluding 2009 because of unavailability of the continuous age variable and self-reported F.E. The variables used for each individual were the following: survey year, NFCS identification, state of residence, census region, gender, exact age and age group, ethnicity, highest education level achieved, employment status, self-reported F.E., as well as responses to seven distinct questions assessing both financial literacy and behavior (see Tables 1 and 2 for the specific questions).

Additionally, data collected by Carly Urban (2020, 2022) was used to construct the instrumental variable of state-mandated exposure, identifying states with standalone or hybrid F.E. requirements and the graduation years when these policies went into effect.

The analysis will be divided into three distinct samples based on age and state-level policy criteria. The detailed sample selection process and corresponding descriptive statistics will be discussed in Section 4.5.

³ For more detailed information regarding the weights and how responses were collected, visit <https://finrafoundation.org/knowledge-we-gain-share/nfcs/data-and-downloads>.

4.1. Outcome Variables

Big Three Financial Literacy Outcomes

To measure individuals' level of financial literacy, we follow the approach developed by Lusardi and Mitchell (2011b), using the widely recognized "Big Three" questions, which were designed to assess individuals' understanding of compound interest, inflation and risk diversification (see Table 1). In the survey, respondents were presented with three different questions, each aimed at testing their knowledge of one of these topics, providing a comprehensive measure of their financial literacy. Responses were categorized as either correct or incorrect, depending on the accuracy of the answer. Answers marked as "don't know" were retained for analysis in the descriptive statistics, as they may provide valuable insights into individuals' uncertainty and even lack of understanding regarding the question made⁴, while "prefer not to say" responses were treated as missing data and excluded from the dataset.

Table 1: The Big Three Questions

The Big Three Questions	Questions from the NFCS
Interest	Suppose you had \$100 in a savings account and the interest rate was 2% per year. After 5 years how much do you think you would have in the account if you left the money grow? 1. More than \$102 2. Exactly \$102 3. Less than \$102 4. Don't Know 5. Prefer not to say
Inflation	Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year how much would you be able to buy with the money in the account? 1. More than today 2. Exactly the same 3. Less than today 4. Don't know 5. Prefer not to say
Stock Diversification	Buying a single company's stock usually provides a safer return than a stock mutual fund. 1. True 2. False 3. Don't know 4. Prefer not to say

Note: The Table presents the exact questions that were made in each NFCS wave (*correct answers shown in bold).

⁴ However, for the regression analysis, conducted in section 6, the "don't know" responses were considered as incorrect answer, because there are no reasons to believe that individuals that knew the correct answer would not select it.

Long-Term Financial Behavior Outcomes

To assess long-term financial behavior, we follow the same questions employed by Wagner (2015) in her dissertation paper, which aim to understand whether an individual has a savings account, emergency funds covering three months of expenses, has tried to calculate how much they would need for retirement, and has non-retirement investments (see Table 2), i.e. decisions individuals take to manage their financial resources with a focus on achieving future goals and ensuring financial stability. In the survey, respondents were presented with four distinct questions, each aimed at testing their behavior towards each topic.

Table 2: The Long-Term Financial Behavior Questions

Long-Term Financial Behavior	Questions from the NFCS
Savings Account	Do you have a savings account, money market account, or CDS? 1. Yes 2. No 3. Don't know 4. Prefer not to say
Emergency Funds	Have you set aside emergency or rainy-day funds that would cover your expenses for 3 months, in case of sickness, job loss, economic downturn, or other emergencies? 1. Yes 2. No 3. Don't know 4. Prefer not to say
Retirement Savings Plan	Have you ever tried to figure out how much you need to save for retirement? 1. Yes 2. No 3. Don't know 4. Prefer not to say
Non-Retirement Investments	Not including retirement accounts, do you [does your household] have any investments in stocks, bonds, mutual funds, or other securities? 1. Yes 2. No 3. Don't know 4. Prefer not to say

Note: The Table presents the exact questions that were made in each NFCS wave.

Responses were categorized as either positive or negative, depending on the nature of the answer provided. Answers marked as “don't know” were interpreted as an absence of inclination towards

the financial behavior in question (hence, as a negative answer), while “prefer not to say” responses were treated as missing data and subsequently removed from the dataset.

4.2. Individual Characteristics

Covariates in this study include age, gender, ethnicity, education level, employment status and survey year. For a more precise analysis, the exact ages of the individuals were used instead of the predefined age group categories provided in the original dataset available.⁵ Gender and ethnicity are used to explore demographic disparities in financial literacy, while education level and employment status provide context for socioeconomic influences. The survey year variable ensures that temporal trends and shifts in financial literacy levels are accurately captured. Age is a continuous variable, gender and ethnicity are binary variables in the study, from which individuals were categorized as either “Male” or “Female”, and “White Non-Hispanic” or “Non-White”, respectively. Some variables underwent recoding to enhance interpretability and facilitate analysis. Education level was categorized into three groups: "High School or Less", "Some College", and "College or More", while employment status was recoded into "Employed," "Not in Labor Force", and "Unemployed".

4.3. Financial Education Variable

The key variable of interest in this study is financial education, which indicates whether individuals have received formal F.E. at some point in their lives. This variable serves as the basis for analyzing its influence on financial knowledge and long-term behavior. In the survey, respondents were asked whether F.E. was offered by a school, college, or workplace they attended. Responses such as “Yes, but I did not participate”, “No”, and “Don’t Know” were categorized as not having received such education⁶, while responses as “Yes, and I did participate” were categorized as having received it. “Prefer not to say” responses were treated as missing data and subsequently dropped.

⁵ This exact age information was provided by FINRA upon request.

⁶ There are no reasons to believe that individuals that indeed received F.E. would not remember about it or answered that they didn’t know, hence it was considered as they did not receive.

4.4. Policy Variation

To study policy variation, we follow primarily Carly Urban’s research (2020, 2022) – see table A1 in Appendix. It carefully documents which states require a standalone personal finance course for high school graduation, compared to those that embed personal finance content within broader subjects.⁷ To complement this data, we cross-referenced other key resources, including the 2023 National High School Report Card from the Center for Financial Literacy at Champlain College, updates from Ramsey Solutions, and information from the National Council for Economic Education.⁸

States with a standalone personal finance course requirement

A subset of states, composed of Alabama, Missouri, Tennessee, Utah and Virginia, mandates a standalone personal finance course as part of the H.S. graduation requirement. These states have achieved A scores on the National Report Card (NRC), reflecting their commitment to financial education, typically equivalent to a one-semester, half-year course.

States with embedded personal finance in other subjects

Most states (30 in total, such as Georgia, New York or Ohio) integrate personal finance education within broader subjects like economics, math, or social studies. Despite offering F.E. instruction, these states achieved mostly B and C scores on the NRC, as the integration of such education often limits the depth and engagement with key financial concepts, as teachers face challenges in allocating time for it, and “if personal finance is not guaranteed as a standalone course, it doesn't always get taught because of overcrowding in curriculum”.⁹ In fact, research shows that, in states where personal finance is embedded into broader subjects, only 44% of schools actually meet this requirement (Carly Urban, 2022).

⁷ Additionally, Urban provides an Excel file on her website, which further supports this classification. Visit http://www.montana.edu/urban/Policies_Panel.xlsx for more detail.

⁸ However, there is no well-defined information on each state’s policy implementation, which is one of the problems with studies that involve F.E. policies at the state level.

⁹ Christian Sherrill, director of partnerships and advocacy at Next Gen Personal Finance, said to *Forbes Advisor*, <https://www.forbes.com/advisor/personal-finance/states-mandating-personal-finance-in-school/>

States with no requirement for personal finance

This group consists of 15 states – Alaska, California, Connecticut, Delaware, Hawaii, Maryland, Massachusetts, Mississippi, Montana, New Mexico, Pennsylvania, Rhode Island, South Dakota, Vermont, Washington – that do not mandate any form of F.E. These states have earned D and F grades on the NRC, indicating that finance concepts are either only offered in elective courses or not covered at all in H.S. curricula and, as a result, students in these states can graduate without having the chance to take a course that provides financial education.

The analysis of this dissertation is restricted to comparing the two most contrasting policy settings, i.e., states with standalone personal finance course requirements and states with no requirements at all. Specifically, we study the likelihood of correctly answering financial questions and engaging in financial behaviors across individuals in states mandating a standalone personal finance course for H.S. graduation and those in states with no such requirements ever in place. As a result, the sample used for the analysis is narrowed to a total of 20 states.

To ensure a precise analysis, it is necessary to determine whether individuals from these groups of states should be treated uniformly. Using Urban’s detailed timelines on policy implementation, eligibility criteria were established to identify those affected by the mandates in each state, as outlined in Table 3 below. The key idea is to verify who was affected by the mandate in each survey year. Individuals who graduated under the mandate would have completed H.S. with exposure to F.E. requirements.

Table 3: Eligibility criteria for exposure to F.E. requirement

	<i>Graduation Year</i>	2012	2015	2018	2021
Utah	2008	18-22	18-25	18-28	18-31
Missouri	2010	18-20	18-23	18-26	18-29
Tennessee	2011	18-19	18-22	18-25	18-28
Virginia	2015	x	18-19	18-22	18-25
Alabama	2017	x	x	18-19	18-22

The graduation year serves as the starting point for identifying the first cohort of students affected by the mandate. For each survey year, it was necessary to determine the age of individuals who graduated H.S during a mandate-affected year and were surveyed later. To calculate the ages of these individuals the following steps were followed:

1. Subtract the graduation year from the survey year to determine how many years had passed since the cohort graduated: **Years Since Graduation = Survey Year - Graduation Year**.
2. Add 18 years, which is the typical age at H.S. graduation¹⁰, to determine the age of individuals affected by the mandate: **Age at Survey Year = Years Since Graduation + 18**.

For example, Utah's mandate applied to students graduating with the class of 2008. During the 2012 survey year, there had been 4 years since graduation. Individuals affected by the mandate would then range in age from 18 (those who had just graduated) to 22 (those who had graduated 4 years prior). As time progresses, older cohorts who graduated under the mandate are included in subsequent years, expanding the age range. It is worth noting that, for some states, mandates were implemented after a particular survey year so that there were no eligible individuals exposed to the mandate by that time, as they had not yet graduated under the requirement.

Based on this, we then assigned individuals to either treatment or control groups. The treatment group included individuals identified as the ones exposed to the mandate (represented in Table 3), and the control group comprised both the remaining individuals that were not eligible for exposure from the mandatory states and all individuals from the states without any mandate. A binary variable, *ExposedToMandate*, was created, which is equal to one in the case of treated individuals and zero otherwise. This variable will serve as an instrument for financial education, as further discussed in section 5.

4.5. Sample Selection and Characteristics

Building on this classification, the data has been divided into three distinct samples, each providing a complementary perspective in the analysis. Table 4 summarizes the selection criteria for each sample, specifying the states included, the conditions for defining treated and control groups in each one, and the corresponding age ranges. Further details, along with the descriptive statistics, are presented in the following subsections.

¹⁰ This assumption was applied to all states, including those with school retention laws.

Table 4: Sample Selection Criteria

SAMPLE	STATES INCLUDED	TREATED INDIVIDUALS	CONTROL INDIVIDUALS
Full Sample	Mandatory and Non-Mandatory States	Individuals exposed to the F.E. requirements in the mandatory states (defined in Table 3) (18-31 years)	Remaining individuals in mandatory states, and all individuals in non-mandatory states (18-100 years)
Between-States Sample	Mandatory and Non-Mandatory States	Individuals exposed to the F.E. requirements in the mandatory states (defined in Table 3) (18-31 years)	Individuals in non-mandatory states of the same age as the exposed (18-31 years)
Within-Mandatory States Sample	Mandatory States Only	Individuals exposed to the F.E. requirements in the mandatory states (defined in Table 3) (18-31 years)	Individuals in mandatory states from adjacent birth cohorts (20-34 years)

Note: The Table presents the selection criteria used to define each sample, detailing the states included in the analysis, the conditions for being classified as treated or control, and the corresponding age ranges.

4.5.1. Full Sample

The full sample is constructed by selecting the individuals from the five states that mandate a standalone personal finance course and the fifteen states with no such requirement – as detailed in section 4.4. This approach aligns with Carly Urban’s methodology (see figure A1 in Appendix). The treated group in this sample consists of those represented in Table 3, which are the ones that belong to the mandatory states who fall within the eligible age range for exposure to the F.E. requirement. The control group includes all other individuals from mandatory states, along with all individuals from states without any personal finance requirement, resulting in an initial sample of 42135 individuals. After excluding 319 observations due to the “prefer not to answer” responses in self-reported F.E., the sample size was reduced to 41816 individuals.

As observed in Table 5 below, the sample is broadly representative of the U.S. population, with women consistently making up slightly over half of the population, and most individuals aged 25-64. Over time, there has been a gradual rise in individuals with higher education levels and a decline in unemployment, with around 55% of the sample employed, as well as predominantly white NH. Those who received financial education tend to have higher education levels and employment rates, and are more often younger and with NH. While the gender distribution is similar among those without financial education, a slightly higher proportion of men received it.¹¹

¹¹ For a detailed overview of the descriptive statistics of the respondents for each survey year, please refer to table A2 in Appendix.

Table 5: Descriptive Statistics of Respondents (Full Sample)

(%)	Full Sample	Financial Education	
		Not Received	Received
F.E. Received	21.65	-	-
Female	51.17	52.79	45.17
[18-24]	11.72	10.31	16.94
[25-34]	18.48	17.9	20.63
[35-44]	15.82	15.98	15.21
[45-54]	17.45	17.94	15.67
[55-64]	18.09	18.63	16.11
[65+]	18.44	19.24	15.44
H.S or Less	29.4	32.67	17.25
Some College	32.09	31.75	33.38
College or More	38.5	35.58	49.37
Employed	55.47	54.11	60.54
Not in Labor Force	37.66	38.54	34.38
Unemployed	6.87	7.35	5.08
Non-White	32.13	31.26	35.36
Observations	41 816	32 763	9053

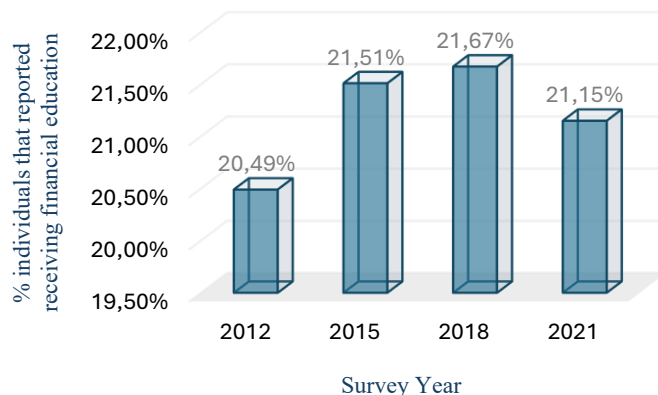
Note: The Table presents the descriptive statistics on all variables used in the estimation of the impact of F.E. on financial outcomes, for the entire full sample and among both the ones that received and did not receive F.E. The statistics were computed using individual state-level weights.

Regarding the missing values from the financial literacy questions¹² that were dropped, we lost 545 observations¹³, with the sample for these regressions hence including 41271 individuals – see Table 6. Figure 1 displays the trend in the percentage of individuals reporting F.E. across survey years. It remained quite stable over time, showing a slight upward trend from 20.9% in 2012 to 21.67% in 2018, before decreasing in 2021.

¹² Refer to section 4.1. for a recap of these questions.

¹³ The main characteristics of the respondents in the sample (observed in table 4) remain consistent even after these observations are excluded.

Figure 1: Financial Education Received by Survey Year (Full Sample)



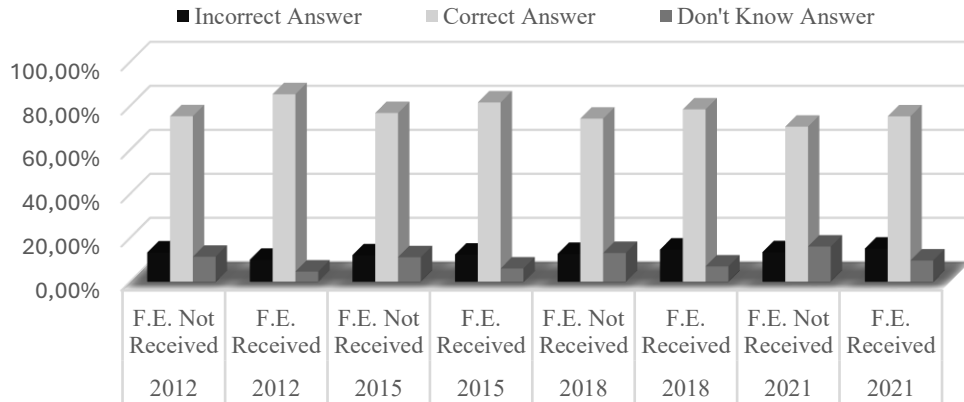
Note: The Figure presents the weighted percentage of individuals in the full sample that reported having received F.E. some time in their lives, for each survey year. It was used the state-level weight.

This subsection examines the distribution of responses to the big three questions, focusing on the differences between correct and uncertain answers while briefly exploring their correlation with receiving F.E. This is particularly relevant given the high number of respondents who selected “don’t know”, even among those who reported receiving F.E., though with a notable reduction in uncertainty in this group. Figures 2, 3 and 4 present the weighted percentage of individuals that responded incorrectly, correctly or uncertain to each financial literacy question, according to whether they received F.E. or not, for each year that the survey was conducted.

Across all survey years, a consistent pattern in all three financial literacy questions is observed, with non-financially instructed individuals showing higher uncertainty and lower accuracy, especially women (reflecting both lower confidence and knowledge (BucherKoenen et al., 2017)), the younger and the unemployed.¹⁴ In 2021, for instance, 21.22% of those without F.E. said they didn't know the answer to the inflation question and 63.07% answered it correctly, compared to 9.93% and 73.13% of their financially educated counterparts, respectively.

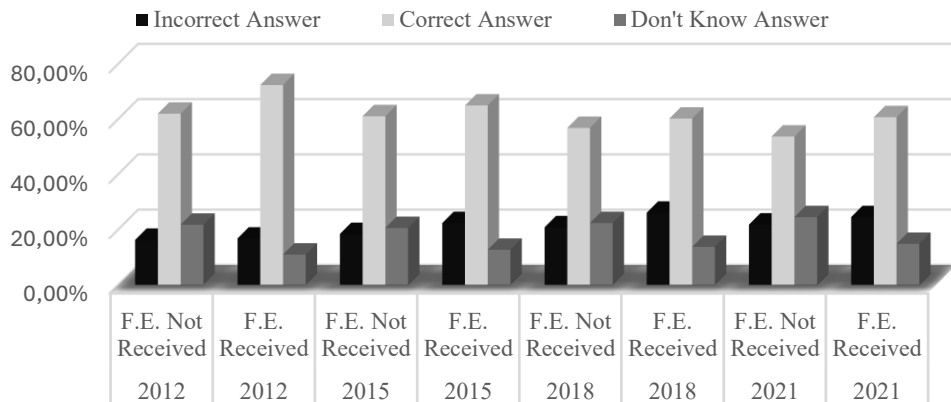
¹⁴ Due to appendix length constraints, tables on individual characteristics and response patterns are not included in the study but are available upon request.

Figure 2: Response Distribution for the Compound Interest Question (Full Sample)



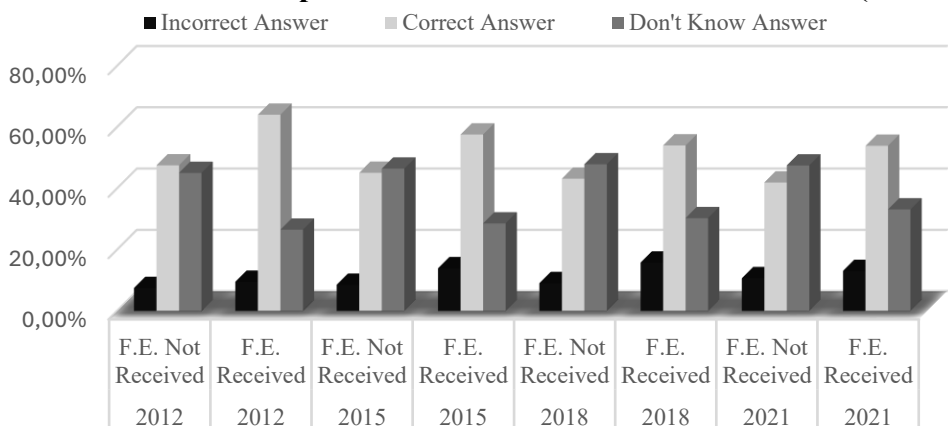
Note: The Figure presents the weighted distribution of individuals in the full sample that responded incorrectly, correctly or uncertain to the compound interest question according to whether they received F.E., for each survey year. It was used the individual state-level weight.

Figure 3: Distribution of Responses to Inflation Question (Full Sample)



Note: The Figure presents the weighted distribution of individuals in the full sample that responded incorrectly, correctly or uncertain to the inflation question according to whether they received F.E., for survey year. It was used the individual state-level weight.

Figure 4: Distribution of Responses to Stock Diversification Question (Full Sample)

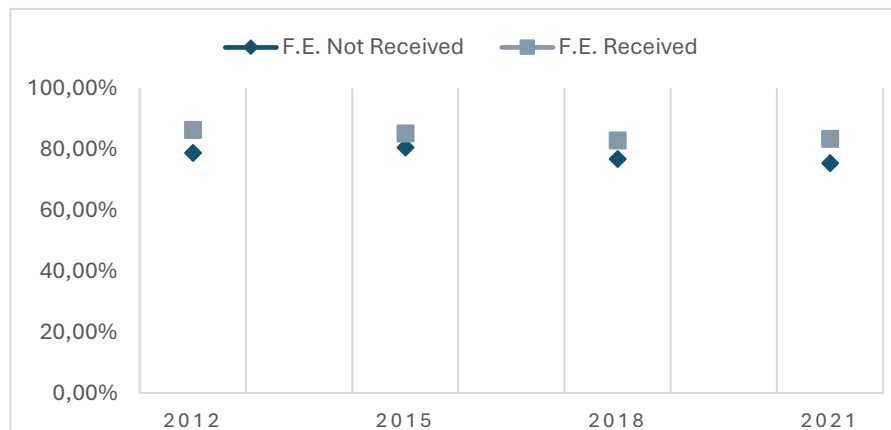


Note: The Figure presents the weighted distribution of individuals in the full sample that responded incorrectly, correctly or uncertain to the risk diversification question according to whether they received F.E., for each survey year. It was used the individual state-level weight.

Regarding the long-term financial behavior questions¹⁵, 11482 observations were dropped due to missing answers, resulting in 29789 individuals in the sample for these regressions¹⁶ – see Table 6. This subsection analyzes the distribution of responses to the four questions, emphasizing the differences in positive financial behaviors and their relationship with F.E. This is particularly relevant given the significant proportion of respondents exhibiting negative attitudes towards these behaviors, even among those who received F.E., though with a noticeable decline in those. Figures 5, 6, 7 and 8 present the weighted percentage of individuals that responded positively to each behavior, according to whether they received F.E. or not, for each year that the survey was conducted.

A consistent pattern is verified, showing that individuals who received F.E. consistently reported a more positive attitude towards each behavior than those without it. For instance, the proportion of individuals that reported having a savings account was consistently higher among those financially educated, ranging from 85.85% in 2012 to 81.07% in 2021, compared to 77.92% to 74.93% among their counterparts.

Figure 5: % Individuals Reporting a Savings Account by Survey Year (Full Sample)

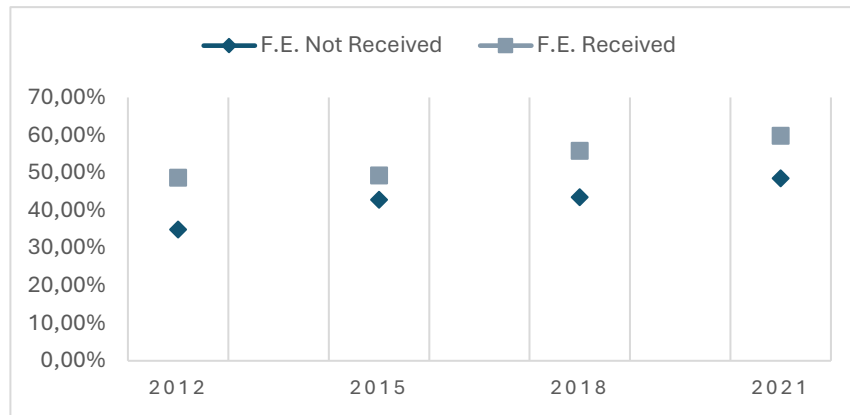


Note: The Figure presents the weighted distribution of individuals in the full sample that responded positively to the savings account behavior according to whether they received F.E., for each survey year. It was used the individual state-level weight.

¹⁵ Refer to section 4.1. for a recap of these questions.

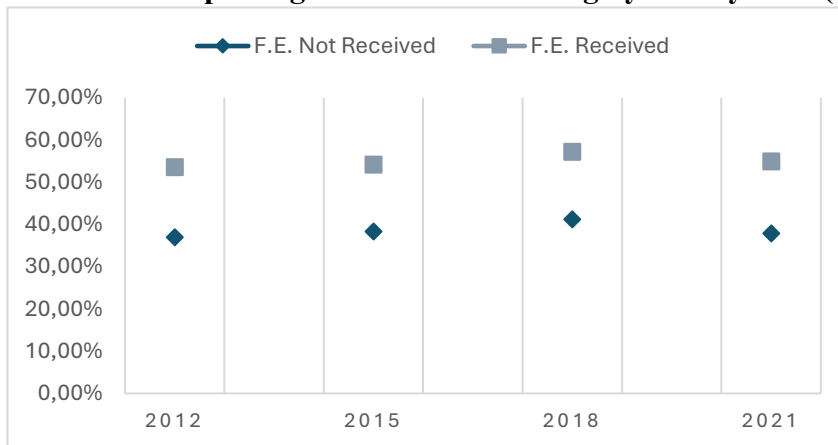
¹⁶ The overall characteristics of the respondents in the sample (observed in Table 4) are largely preserved after the exclusion of these observations. While some minor demographic variations exist, the overall patterns across variables remain comparable – see Table A3 in Appendix. These differences are not substantial enough to compromise the representativeness of the sample regression, which can, therefore, be considered representative of the initial full sample for analytical purposes.

Figure 6: % Individuals Reporting Emergency Funds by Survey Year (Full Sample)



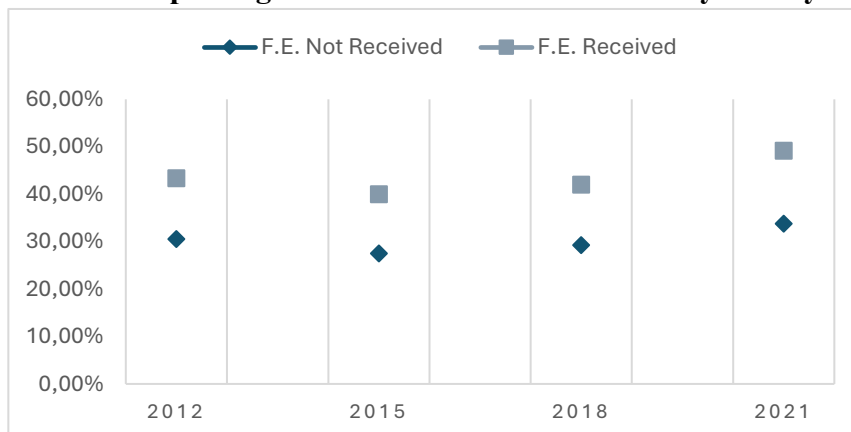
Note: The Figure presents the weighted distribution of individuals in the full sample that responded positively to the emergency funds behavior according to whether they received F.E., for each survey year. It was used the individual state-level weight.

Figure 7: % Individuals Reporting Retirement Planning by Survey Year (Full Sample)



Note: The Figure presents the weighted distribution of individuals in the full sample that responded positively to trying to figure out how much they would need to save for retirement according to whether they received F.E., for each survey year. It was used the individual state-level weight.

Figure 8: % Individuals Reporting Non-Retirement Investments by Survey Year (Full Sample)



Note: The Figure presents the weighted distribution of individuals in the full sample that responded positively to the non-retirement investments behavior according to whether they received F.E., for each survey year. It was used the individual state-level weight.

Before delving into the regression analysis and consequent results, it is essential to provide an overview of the sample regressions used in the analysis of the full sample. The weighted statistics in Table 6 summarize all the covariates used in each model for both the financial literacy and long-term financial behaviors, highlighting any notable differences between the ones that received and did not receive financial education.¹⁷

Table 6: Descriptive Statistics for Regressions (Full Sample)

	Financial Literacy Questions			L.T. Financial Behavior Questions		
	Full Sample	Financial Education		Full Sample	Financial Education	
		Not Received	Received		Not Received	Received
(%)						
F.E. Received	21.22	-	-	22.67	-	-
Female	51.04	52.66	45.00	50.01	51.66	44.39
[18-24]	11.73	10.32	16.94	14.23	12.44	20.35
[25-34]	18.48	17.90	20.63	23.22	22.77	24.77
[35-44]	15.85	16.01	15.23	19.91	20.38	18.28
[45-54]	17.48	17.96	15.69	21.1	21.95	18.2
[55-64]	18.10	18.64	16.12	16.55	17.28	14.09
[65+]	18.36	19.17	15.38	4.98	5.18	4.31
H.S or Less	29.30	32.58	17.12	27.68	30.76	17.19
Some College	32.10	31.77	33.33	32.29	32.03	33.16
College or More	38.60	35.65	49.56	40.03	37.21	49.65
Employed	55.51	54.17	60.50	72.66	71.82	75.49
Not in Labor Force	37.61	38.49	34.37	20.12	20.38	19.22
Unemployed	6.88	7.35	5.13	7.22	7.79	5.29
Non-White	32.08	31.19	35.41	35.15	34.4	37.73
Observations	41271	32513	8758	29789	23036	6753

Note: The Table presents the descriptive statistics on all variables used in the estimation of the impact of F.E. on both financial literacy and L.T. behavior, respectively. It is shown the statistics on the entire full sample and among the ones that received and did not receive F.E. They were computed using individual state-level weights.

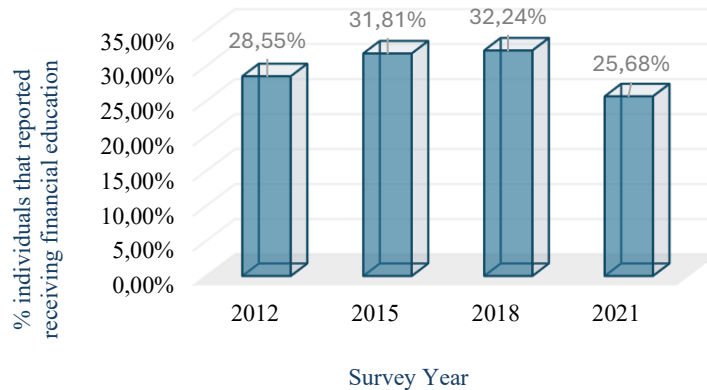
At this point, however, a question arises: to what extent is it accurate to include in the study all individuals from both these groups of states? To enhance the interpretability of the results, we will narrow the focus in the next two sections by restricting the sample in terms of age and states. First, we compare individuals that would be considered eligible from mandatory and non-mandatory states, which we refer to as the ‘between-states sample’. Then, we focus on eligible individuals and their adjacent older cohorts only within mandatory states, which we refer to as the ‘within mandatory-states sample’.

¹⁷ For a detailed overview of the regressions’ descriptive statistics for the full sample across each survey year, please refer to tables A4 and A5 in Appendix.

4.5.2. Between-States Sample

As in the full sample, the treated group consists of individuals who live in a state with a F.E. requirement and belong to the cohort of students likely to have been exposed to the mandate, as outlined in Table 3. However, the control group in this case includes individuals who (1) live in states without any F.E. requirement and (2) fall within the broadest age range defined for eligibility in each survey year. This age range is consistently aligned with the eligibility criteria for Utah, since it was the first state to implement the mandate, as this ensures the inclusion of individuals of comparable ages across all survey years. Hence, the initial sample used for the between-states analysis consists of 5519 observations. After excluding 66 individuals with missing responses to whether they received F.E. and 72 who selected “prefer not to answer” for the Big Three questions, the final sample for these regressions has 5381 individuals. Figure 9 shows that the proportion of those reporting financial education steadily increased from 28.55% in 2012 to 32.24% in 2018, before declining in 2021.

Figure 9: Financial Education Received by Survey Year (Between States)



Note: The Figure presents the weighted percentage of individuals in the between-states sample that reported having received F.E. some time in their lives, for each survey year. It was used the individual state-level weight.

More observations are excluded due to missing and “prefer not to respond” answers to the long-term financial behavior questions, resulting in a sample including 4840 observations for these regressions. Tables 7 and 8 present the descriptive statistics of all covariates used in each model for both the Financial Literacy Big Three and L.T. Financial Behavior regressions in the between-states sample to better understand and interpret the results in section 6.^{18, 19}

¹⁸ The patterns observed in Figures 2 to 8 for the full sample closely mirror those in the between states-sample. Due to appendix length constraints, these figures were not included but are available upon request.

¹⁹ For a detailed overview of the regression samples’ descriptive statistics for the between-states across each survey year, please refer to tables A6 and A7 in Appendix.

Table 7: Descriptive Statistics for Financial Literacy Regressions (Between States)

<i>(%)</i>	Between-States Sample	Financial Education	
		Not Received	Received
F.E. Received	29.15	-	-
Female	51.38	53.32	46.67
[18-24]	68.45	66.02	74.35
[25-34]	31.55	33.98	25.65
H.S or Less	38.95	41.55	32.64
Some College	34.85	32.99	39.36
College or More	26.20	25.46	28.00
Employed	58.75	58.43	59.55
Not in Labor Force	29.28	27.86	32.73
Unemployed	11.97	13.72	7.72
Non-White	49.26	50.05	47.36
Exposed	16.91	13.71	24.69
Observations	5381	3812	1569

Note: The Table presents the descriptive statistics on all variables used in the estimation of the impact of F.E. on Financial Literacy. It is shown the statistics on the entire between-states sample and among the ones that received and did not receive F.E. They were computed using individual state-level weights.

Table 8: Descriptive Statistics for L.T. Financial Behavior Regressions (Between States)

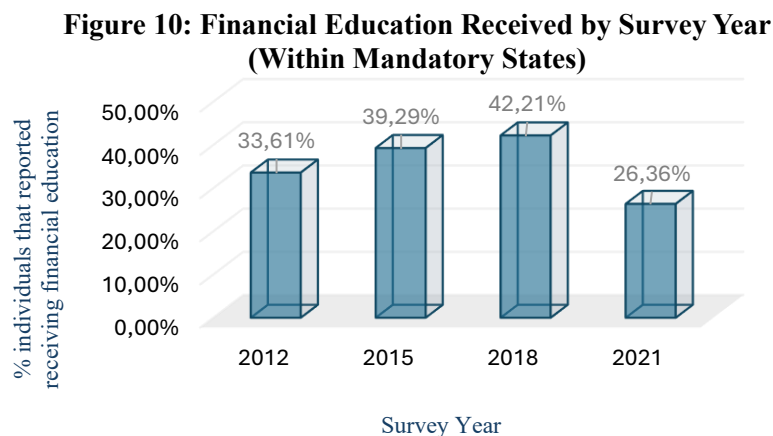
<i>(%)</i>	Between-States Sample	Financial Education	
		Not Received	Received
F.E. Received	30.19	-	-
Female	51.71	53.95	46.51
[18-24]	67.40	64.38	74.37
[25-34]	32.60	35.62	25.63
H.S or Less	35.81	37.95	30.87
Some College	36.13	34.52	39.87
College or More	28.06	27.53	29.27
Employed	60.79	60.73	60.94
Not in Labor Force	29.08	27.64	32.40
Unemployed	10.13	11.63	6.66
Non-White	48.19	48.43	46.70
Exposed	16.86	13.67	24.26
Observations	4840	3379	1461

Note: The Table presents the descriptive statistics on all variables used in the estimation of the impact of F.E. on L.T. Financial Behavior. It is shown the statistics on the entire between-states sample and among the ones that received and did not receive F.E. They were computed using individual state-level weights.

4.5.3. Within Mandatory-States Sample

As in the previous cases, the treated group consists of individuals who live in a state with a F.E. requirement and belong to the cohort of students likely to have been exposed to the mandate, as outlined in Table 3. However, the control group differs, including individuals who (1) live in states with a personal finance course requirement but (2) fall within an age range that makes them ineligible for exposure to the mandate. The lower bound of this control range starts immediately above the upper limit of the treated group in each survey year and state. For instance, if the treated group in a given state and year includes individuals aged 18-22, the control group begins with individuals aged 23. The upper bound of the control group includes the oldest eligible individuals in that state – those that were too old to have been exposed to the mandate. In 2021, this upper bound was extended to include individuals up to age 34 to ensure adequate sample sizes. In Tennessee, the oldest individuals exposed to the mandate had 28 years by the time of the 2021 survey. This means that, in 2015, the control individuals were aged between 23 (age immediately above the treated group) and 28. In 2021, the control group expanded to also include individuals aged between 29 and 34.

Thus, the initial sample used for the within-mandatory states analysis consists of 1880 observations. Excluding observations from missing responses to the F.E. question, and from the “prefer not to respond” answers to the financial literacy questions, the final sample for these regressions has 1832 individuals. Figure 10 shows that the proportion of individuals reporting financial education steadily increased, reaching a peak of 42.21% in 2018. However, this trend reversed sharply to 26.36% in 2021, possibly due to the COVID-19 pandemic that disrupted educational systems and potentially deprioritized financial education initiatives.



Note: The Figure presents the weighted percentage of individuals in the within-states sample that reported having received F.E. some time in their lives, for each year that the survey was conducted. It was used the individual state-level weight.

We end up with a sample of 1632 individuals for the L.T. financial behavior regressions, due to the “prefer not to respond” and blank answers in these questions. Tables 9 and 10 present the descriptive statistics of all covariates used in each model for the Financial Literacy Big Three and L.T. Financial Behavior regressions in the within-states sample to better understand and interpret the results later on.^{20, 21}

Table 9: Descriptive Statistics for Financial Literacy Regressions (Within Mandatory States)

<i>(%)</i>	Within Mandatory-States Sample	Financial Education	
		Not Received	Received
F.E. Received	34.07	-	-
Female	50.46	53.07	45.41
[18-24]	54.69	48.93	65.84
[25-34]	45.31	51.07	34.16
H.S or Less	36.99	39.78	31.58
Some College	33.12	30.88	37.44
College or More	29.90	29.34	30.98
Employed	61.59	60.59	63.53
Not in Labor Force	28.54	28.51	28.60
Unemployed	9.87	10.90	7.87
Non-White	36.31	36.19	36.54
Exposed	53.39	46.52	66.69
Observations	1822	1201	621

Note: The Table presents the descriptive statistics on all variables used in the estimation of the impact of F.E. on financial literacy. It is shown the statistics on the entire within mandatory-states sample and among the ones that received and did not receive F.E. They were computed using individual state-level weights.

²⁰ The patterns observed in Figures 2 to 8 for the full sample closely mirror those in the within mandatory states-sample. Due to appendix length constraints, these figures were not included but are available upon request.

²¹ For a detailed overview of the regression samples’ descriptive statistics for the within mandatory-states across each survey year, please refer to tables A8 and A9 in Appendix.

Table 10: Descriptive Statistics for L.T. Financial Behavior Regressions (Within Mandatory States)

(<i>%</i>)	Within Mandatory-States Sample	Financial Education	
		Not Received	Received
F.E. Received	35.19	-	-
Female	50.74	53.83	45.05
[18-24]	54.09	48.26	64.83
[25-34]	45.91	51.74	35.17
H.S or Less	33.62	35.65	29.89
Some College	33.95	31.89	37.75
College or More	32.43	32.46	32.36
Employed	63.49	63.07	64.25
Not in Labor Force	27.93	27.28	29.11
Unemployed	8.59	9.65	6.63
Non-White	36.02	36.10	35.86
Exposed	53.24	46.47	65.72
Observations	1632	1058	574

Note: The Table presents the descriptive statistics on all variables used in the estimation of the impact of F.E. on financial behavior. It is shown the statistics on the entire within mandatory-states sample and among the ones that received and did not receive F.E. They were computed using state-level weights.

5. Empirical Strategy/Methodology

This study aims to investigate the causal impact of financial education on the key outcome variables: an individual’s ability to correctly answer a financial literacy question, and the likelihood of reporting a positive response towards a L.T. financial behavior.

To estimate these relationships, we employ a Linear Probability Model as the baseline approach, which is specified as follows:

$$Y_{ist} = \alpha_0 + \alpha_1 \text{FinancialEducation}_{ist} + \beta X_{ist} + \Upsilon_t + \varepsilon_{ist}$$

Where Y_{ist} represents the binary financial outcome variable for individual i in state s in time t . The key independent variable, $\text{FinancialEducation}_{ist}$, indicates whether the individual received financial education at some point in their life, hence α_1 is our parameter of interest, representing the impact of F.E. on the financial outcome. X_{ist} represents a vector of individual-level covariates, such as gender, age, ethnicity, employment status, and education level. Survey year fixed effects, Υ_t , are included to account for time-specific shocks, and ε_{ist} is the error term.

Using the LPM model specified above, we estimate the relationship between *FinancialEducation* and the outcome variables. However, these estimates may not yield causal estimates due to potential sources of endogeneity. First, there is the issue of omitted variable bias, where unobserved factors, such as innate cognitive ability, parental financial literacy or prior exposure to financial concepts, could influence both the likelihood of receiving F.E. and the financial outcomes. If individuals with a predisposition toward financial literacy are more likely to seek out or benefit from F.E., the estimated relationship would be upwardly biased. Furthermore, measurement errors in self-reported F.E. could also introduce additional bias if respondents misremember or inaccurately classify their exposure to such education, potentially leading to attenuation bias in the estimates. This would result in biased and inconsistent estimates. In this case, the expected value of $\widehat{\alpha}_{1OLS}$ would be different from the true value of α_1 , since financial education is correlated with the error, i.e., $Cov(\text{FinancialEducation}_{ist}, \varepsilon_{ist}) \neq 0$.

To address this issue, an Instrumental Variable (IV) estimation is applied. In this case, *ExposedToMandate* serves as the instrument for F.E., leveraging variation across time and states. It draws inspiration from previous research on compulsory schooling laws, such as the paper by Angrist and Krueger (1991), but applying it in a novel context. Just as these laws have been shown to increase years of schooling, the instrument in this context is expected to positively affect the likelihood of receiving F.E. in an exogenous way.

To determine when an IV estimator can be interpreted as an average causal effect estimator, Imbens and Angrist (1994) developed a framework that classifies individuals based on their response to an instrument.²² Specifically, when both the treatment variable D (*FinancialEducation*) and the instrument Z (*ExposedToMandate*) are binary, as in the case of this study, the population can be divided into four distinct groups – as outlined in Table 11.

²² Please refer to Muller et al. (2009) for more details on this matter.

Table 11: Compliance Types

		Assigned to control ($Z_i = 0$)	
		Not treated ($D_i = 0$)	Treated ($D_i = 1$)
Assigned to treatment ($Z_i = 1$)	Not treated ($D_i = 0$)	Never taker (N)	Defier (D)
	Treated ($D_i = 1$)	Complier (C)	Always taker (A)

Source: Andy Eggers, Oxford DPIP (2018)

The observed treatment assignment can then be defined as $D = D^{Z=0} + (D^{Z=1} - D^{Z=0})Z = D^{Z=0} + kZ$, where $k = D^{Z=1} - D^{Z=0}$. By definition, $k = 1$ for compliers, $k = -1$ for defiers, and $k = 0$ for always takers and never takers, as neither group responds to the instrument.

To ensure that the instrument *ExposedToMandate* is valid for identifying the Local Average Treatment Effect (LATE) it must satisfy three key assumptions: independence, relevance, and monotonicity.

The independence assumption requires that *ExposedToMandate* influences financial outcomes only through its effect on *FinancialEducation*, meaning that it must be uncorrelated with unobserved factors that directly affect financial literacy and behavior – equivalent to the assumption that $Cov(ExposedToMandate, \epsilon) = 0$ in the traditional IV literature. It is reasonable in this context because, unlike self-reported F.E., state-mandated requirement is policy-driven and exogenously assigned, meaning that individuals do not self-select into F.E. based on their pre-existing financial knowledge or behavior. Hence, financially literate individuals cannot influence the presence or absence of F.E. requirements, ensuring that the direction of causality runs from the mandate to F.E. received, and then to financial outcomes, not the other way around.

The relevance (non-zero effect of instrument) assumption requires that *ExposedToMandate* is strongly correlated with the endogenous variable *FinancialEducation*, meaning that it must effectively predict whether an individual received F.E. The policy acts as an exogenous shock, ensuring that at least some individuals (compliers) receive such education because of the state-mandated requirement.

The monotonicity assumption ensures that *ExposedToMandate* affects all individuals in a consistent direction, meaning there are compliers (who receive F.E. due to the mandate) but no defiers (who would have received F.E. otherwise but avoid it due to the policy). Given the nature of state-mandate requirements, it is unlikely that individuals in mandatory states would systematically avoid receiving F.E. If anything, it should either increase F.E. exposure or have no effect for those who would have received it anyway.

Since the instrument satisfies these conditions, it identifies the LATE, which is the average causal effect of receiving F.E. conditional to the subpopulation that was influenced by the exposure to F.E. requirements. When $k \geq 0$ for all individuals, as expected in this context – similar to the logic of compulsory schooling laws –, the Wald estimator converges to $LATE = E[Y^1 - Y^0 | D^{Z=1} = 1, D^{Z=0} = 0]$, which therefore represents the average causal effect for compliers.

We proceed with the IV estimation using a Two-Stage Least Squares (2SLS) approach. This method isolates the variation in *FinancialEducation* that is exogenous to individual characteristics, allowing for an unbiased estimation of its causal impact on financial outcomes. In the first stage, the endogenous variable, *FinancialEducation*, is regressed on the instrument, *ExposedToMandate*, along with other variables in the model using LPM. Hence, the relationship is estimated as follows:

$$FinancialEducation_{ist} = \pi_0 + \pi_1 ExposedToMandate_{ist} + \pi_2 X_{ist} + \delta_t + v_{ist}$$

Where *ExposedToMandate*_{ist} is the instrumental variable equal to one if individual *i* in state *s* is exposed to the requirement of completing one semester of personal finance education before H.S. graduation in survey year *t*, and zero otherwise. This equation includes the same controls and fixed effects as the LPM model, and *v*_{ist} is the error term.

In the second stage, we replace the endogenous variable *FinancialEducation*_{ist} by its predicted values $\widehat{FinancialEducation}_{ist}$. This equation provides an unbiased estimate of the causal impact of F.E. on the financial outcomes among the compliers.

$$Y_{ist} = \alpha_0 + \alpha_1 \widehat{FinancialEducation}_{ist} + \beta X_{ist} + \Upsilon_t + \varepsilon_{ist}$$

In the estimation, we used sample weights at the individual state-level to ensure that each respondent's input reflects their representativeness in the analysis.

6. Results

This section presents the results of the estimated models of the samples, focusing on the IV regressions, as these provide the relevant and interpretable measures of the causal relationship between F.E. and the financial outcomes for the compliers. To ensure robustness of the analysis and account for potential biases from extraordinary circumstances, a comparative analysis excluding 2021 was conducted. The decision comes from the counterintuitive trends observed in self-reported F.E. levels and the exceptional disruption caused by the COVID-19 pandemic. As schools adapted to online learning formats, certain curriculum components, including F.E., may have been deprioritized, affecting the delivery and accessibility of such education, potentially explaining the sharp decline in reported F.E. that year. Since the survey was conducted during school closures and constraints, responses may not reflect typical conditions. By excluding 2021, the analysis avoids mixing pandemic-related effects with broader trends under analysis, ensuring more generalizable results to other time periods. Both specifications will be presented to understand the extent of this year's potential impact on the results. The main findings from the regressions, presented in Tables 12 to 17, are reported in this section.²³

6.1. Full Sample Analysis

For the full sample analysis, besides the IV regression results, we will also present the LPM estimation despite its susceptibility to endogeneity, as they allow for a perspective of the relationship across the entire sample, rather than focusing solely on compliers.

Impact of Financial Education on Financial Literacy Outcomes

Financial education is essential for equipping individuals with the knowledge to navigate an increasingly complex financial landscape. This is particularly evident in the context of the big three questions, which assess understanding of basic but essential financial concepts. Understanding interest rates is critical to evaluating loan offers or maximizing returns on savings accounts, inflation awareness allows to maintain the purchasing power of their money over time, and risk diversification mitigates potential investment losses.

²³ For comparison, the probit results are provided in tables A11, A15, A19, A22, A25, A28 in Appendix. While the estimates vary slightly, the overall qualitative conclusions remain consistent.

The results in Table 12 show a consistently positive and statistically significant relationship between F.E. and financial literacy in the LPM estimates across all outcomes, regardless of whether 2021 is included. Among all individuals of the sample, receiving such education increased the likelihood of correctly answering the big three questions by 3.7 p.p. for compound interest, 5.1 p.p. for inflation, and 10.2 p.p. for stock diversification (when including 2021), with the highest impact being observed for the stock diversification knowledge in both model specifications.

Table 12: The impact of Financial Education on the Big Three Outcomes (Full Sample)

	Including 2021		Excluding 2021	
	(1) OLS Coefficients	(2) IV Coefficients	(3) OLS Coefficients	(4) IV Coefficients
Compound Interest	0.037*** (0.005)	-0.012 (0.088)	0.042*** (0.006)	0.058 (0.083)
Inflation	0.051*** (0.006)	0.298*** (0.090)	0.052*** (0.007)	0.278*** (0.089)
Stock Diversification	0.102*** (0.006)	0.317*** (0.090)	0.107*** (0.007)	0.302*** (0.089)
Observations	41271	41271	30668	30668
First-Stage F Test (Instrument)		117.221 (0.000)		119.401 (0.000)

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The Table presents the weighted LPM and 2nd stage results on the F.E. variable used in the estimation of its impact on Financial Literacy outcomes, in the full-sample analysis. Both results including and excluding 2021 are presented.

Due to the potential endogeneity in the LPM estimates discussed earlier, we proceed with the IV estimation. The instrument is both strong and valid, as evidenced by the high first stage F-test reported in Table 12.²⁴ The IV estimates hence show the causal impact of financial education among the compliers, i.e., a subpopulation of the sample. The results reveal a particularly strong and statistically significant impact on inflation (29.8 p.p.) and stock diversification (31.7 p.p.) among compliers. However, no significant impact is observed for the compound interest outcome, which may be attributed to the fact that many individuals struggle with numeracy, particularly in understanding percentages and the concept of interest compounding on both principal and accrued

²⁴ For further details on the 1st stage regression results for Financial Literacy outcomes in the full-sample analysis, please refer to table A12 in Appendix.

interest. It broadly aligns with the literature around the topic, namely Lusardi and Mitchell (2009a), who highlight the common difficulties people face in comprehending exponential growth in financial contexts. Overall, excluding 2021 does not change the major takeaways of the results.

Impact of Financial Education on L.T. Financial Behavior Outcomes

Many poor financial decisions stem from a lack of understanding of financial concepts. For instance, estimating the amount of money required for retirement is a complex task that demands careful consideration and long-term planning to ensure efficient savings, where miscalculations can lead to irreversible consequences. Since early mistakes are difficult to correct later, financial education plays a crucial role in equipping individuals with essential skills early on. Furthermore, given the limited opportunities to acquire these behaviors through experience alone, formal financial education becomes the primary means of learning these concepts.

The results in Table 13 indicate a consistently positive and statistically significant relationship between F.E. and long-term financial behavior in the LPM estimates across all outcomes, regardless of whether 2021 is included. Among all individuals of the sample, receiving such education increased the likelihood of engaging in each of these behaviors, with the strongest effect observed in retirement planning, where individuals were more likely to calculate how much they would need to save for retirement by 14.3 p.p. (including 2021).

Table 13: The impact of Financial Education on the L.T. Financial Behavior Outcomes (Full Sample)

	Including 2021		Excluding 2021	
	(1) OLS Coefficients	(2) IV Coefficients	(3) OLS Coefficients	(4) IV Coefficients
Savings Account	0.044*** (0.006)	0.192** (0.086)	0.040*** (0.007)	0.137* (0.081)
Emergency Funds	0.086*** (0.007)	0.281*** (0.099)	0.088*** (0.009)	0.249*** (0.094)
Retirement Plan	0.143*** (0.007)	0.053 (0.091)	0.145*** (0.008)	0.007 (0.087)
Non-Retirement Investments	0.105*** (0.007)	0.133 (0.088)	0.104*** (0.008)	0.012 (0.080)
Observations	29789	29789	22181	22181
First-Stage F Test (Instrument)		101.589 (0.000)		106.152 (0.000)

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The Table presents the weighted LPM and 2nd stage results on the F.E. variable used in the estimation of its impact on L.T. Financial Behavior outcomes, in the full-sample analysis. Both results including and excluding 2021 are presented.

Due to the potential endogeneity in the LPM estimates discussed earlier, we proceed with the IV approach. The instrument is both strong and valid, as evidenced by the high first stage F-test reported in Table 13.²⁵ The IV estimates indicate a positive and statistically significant impact on emergency funds and savings account behaviors. The coefficients observed indicate that, among compliers, receiving financial education increased the likelihood of having 3-month emergency funds by 28.1 p.p. and holding a savings account by 19.2 p.p. In contrast, no significant effects were found for calculating retirement savings needs or holding non-retirement investments. This may be because these behaviors require more time, planning, and financial stability to implement, making it more challenging to adopt compared to more immediate and accessible actions, like opening a savings account. Once again, similar effects persist when excluding 2021.

²⁵ For further details on the 1st stage regression results for L.T. Financial Behavior in the full-sample analysis, please refer to table A16 in Appendix.

6.2. Between-States Analysis

Impact of Financial Education on Financial Literacy Outcomes

The IV results in Table 14 show that the estimated effect on stock diversification is the only statistically significant coefficient, suggesting that receiving financial education increases the likelihood of correctly answering this question by 26.4 p.p. (when including 2021) and 29.1 p.p. (excluding it) among compliers. This is likely due to the concept of stock diversification being more financially abstract and not requiring complex calculations. Also, the younger age group in this sample may contribute to the results, as they are less likely to have established rigid financial habits (like the idea of placing all their funds into a single investment) and were born into an already more complex financial environment. The effects on compound interest and inflation are not strong enough to confirm a robust causal relationship. The instrument used is valid, as evidenced by the high first stage F-test reported in Table 14.

Table 14: The impact of Financial Education on the Big Three Outcomes (Between States)

	Including 2021	Excluding 2021
	(1)	(2)
	IV Coefficients	IV Coefficients
Compound Interest	0.015 (0.123)	0.086 (0.111)
Inflation	0.115 (0.125)	0.172 (0.117)
Stock Diversification	0.264** (0.125)	0.291** (0.118)
Observations	5381	3214
First-Stage F Test (Instrument)	61.229 (0.000)	69.105 (0.000)

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The Table presents the weighted 2nd stage results on the F.E. variable used in the estimation of its impact on Financial Literacy outcomes, in the between-states analysis. Both results including and excluding 2021 are presented.

Impact of Financial Education on L.T. Financial Behavior Outcomes

The IV results reveal a significant positive association between financial education and one long-term financial behavior when including 2021. Among compliers, receiving such education made them more likely to calculate how much they would need to save for their retirement, by 21.3 p.p. Financial education often raises awareness about financial aspects such as the importance of retirement planning. Given that the sample is composed of young individuals, they are more likely to use financial apps or online retirement calculators, for instance, due to technological familiarity, making it easier for them to engage in such behavior, which is of easy access and does not imply financial costs. All the other outcomes show no statistical significance, indicating that no meaningful inferences can be drawn from these estimated coefficients. The instrument used is valid, as evidenced by the high first stage F-test reported in Table 15.

Table 15: The impact of Financial Education on the L.T. Financial Behavior Outcomes (Between States)

	Including 2021 (1) IV Coefficients	Excluding 2021 (2) IV Coefficients
Savings Account	0.140 (0.120)	0.132 (0.107)
Emergency Funds	0.090 (0.137)	0.122 (0.124)
Retirement Plan	0.213* (0.129)	0.189 (0.116)
Non-Retirement Investments	-0.054 (0.122)	-0.109 (0.106)
Observations	4480	2877
First-Stage F Test (Instrument)	52.694 (0.000)	60.601 (0.000)

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The Table presents the weighted 2nd stage results on the F.E. variable used in the estimation of its impact on L.T. Financial Behavior outcomes, in the between-states analysis. Both results including and excluding 2021 are presented.

6.3. Within Mandatory-States Analysis

Impact of Financial Education on Financial Literacy Outcomes

The estimated coefficients in this case indicate an apparent positive relationship, however, without statistical significance, definitive conclusions on a causal relationship between such education and knowledge on these areas cannot be drawn. Excluding 2021 does not alter the key conclusions of the analysis. The high value of the first stage F-test, reported in Table 16, confirms the strength of the instrument used in the estimation of these regressions.

Table 16: The impact of Financial Education on the Big Three Outcomes (Within Mandatory States)

	Including 2021 (1) IV Coefficients	Excluding 2021 (2) IV Coefficients
Compound Interest	0.206 (0.244)	-0.108 (0.231)
Inflation	0.409 (0.125)	0.371 (0.258)
Stock Diversification	0.154 (0.254)	0.218 (0.244)
Observations	1822	1077
First-Stage F Test (Instrument)	16.093 (0.000)	16.998 (0.000)

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The Table presents the weighted 2nd stage results on the F.E. variable used in the estimation of its impact on Financial Literacy outcomes, in the within mandatory-states analysis. Both results including and excluding 2021 are presented.

Impact of Financial Education on L.T. Financial Behavior Outcomes

Among compliers, receiving F.E. is associated with a statistically significant increase in the likelihood of holding a savings account (by 43.9 p.p.), and in the likelihood of calculating how much to save for retirement (by 46.5 p.p.). Conversely, emergency funds and non-retirement investments show a statistically insignificant relationship, suggesting that such education did not meaningfully influence these behaviors among compliers. Overall, excluding 2021 does not alter the key conclusions. The high value of the first stage F-test, reported in Table 17, confirms the strength of the instrument used in the estimation of these regressions.

Table 17: The impact of Financial Education on the L.T. Financial Behavior Outcomes (Within Mandatory States)

	Including 2021	Excluding 2021
	(1)	(2)
	IV Coefficients	IV Coefficients
Savings Account	0.439* (0.254)	0.275 (0.212)
Emergency Funds	0.039 (0.266)	0.161 (0.124)
Retirement Plan	0.465* (0.282)	0.433* (0.116)
Non-Retirement Investments	-0.165 (0.243)	-0.088 (0.207)
Observations	1632	967
First-Stage F Test (Instrument)	14.297 (0.000)	16.012 (0.000)

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The Table presents the weighted 2nd stage results on the F.E. variable used in the estimation of its impact on L.T. Financial Behavior outcomes, in the within mandatory-states analysis. Both results including and excluding 2021 are presented.

6.4. Overall discussion of other covariates

As expected, given the descriptive statistics in Section 4 and the prior research literature on the financial literacy topic, females, the unemployed and non-white respondents consistently perform worse across all financial outcomes, regardless of whether 2021 is included.²⁶ Conversely, higher education levels (particularly those with a college degree or higher) are strongly associated with better performance and greater participation in financial behaviors, reinforcing the intuitive link between financial knowledge and educational attainment.

Despite the importance of financial education, the low R-Squared values (below 20%²⁷) across all models and specifications suggest that other factors may play a more significant role in explaining the overall variation in these financial outcomes.

²⁶ Please refer to the complete regression tables A10, A13, A14, A17, A18, A20, A21, A23, A24, A26, A27 and A29 in Appendix for all details on these findings.

²⁷ As can be seen in the complete regression tables in Appendix.

7. Robustness Checks

To enhance the robustness of our findings, we have conducted three additional exercises. First, we excluded the survey year 2021, as discussed and presented in Section 6. Since this exclusion did not substantially affect the magnitude or significance of the results, this section focuses only on the findings including 2021. Second, we re-estimated the models without controlling for education level across the three samples. Third, going in line with Urban's work (2022), we used hybrid states as the treated ones in the full-sample analysis.

7.1. Excluding Education Level (Full Sample, Between-States and Within Mandatory-States Samples)

Recognizing that the education level might be extremely correlated with the likelihood of receiving financial education, estimations without including it as a control using the full, between- and within mandatory-states samples were performed. Tables 18 to 23 present the relevant findings.²⁸

In the full sample, the exclusion of education level reduces precision, slightly weakening the magnitude of most effects, however statistical significance remains unaltered. In contrast, in the between- and within mandatory-states samples, where educational differences are less pronounced due to age restrictions, both statistical significance and coefficients magnitude slightly increase in most estimates. Overall, the key conclusions remain consistent across specifications, indicating that the results are generally robust to the inclusion or exclusion of education level as a control.

²⁸ Due to appendix length constraints, the complete regression tables for this robustness across the three samples were not included but are available upon request.

Table 18: The impact of Financial Education on the Financial Literacy Outcomes Excluding Education Level (Full Sample)

	Excluding Education	Including Education (section 6)
	(1)	(2)
	IV Coefficients	IV Coefficients
Compound Interest	-0.064 (0.094)	-0.012 (0.088)
Inflation	0.245*** (0.094)	0.298*** (0.090)
Stock Diversification	0.249*** (0.093)	0.317*** (0.090)
Observations	41271	41271
First-Stage F Test (Instrument)	106.860 (0.000)	117.221 (0.000)

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The Table presents the weighted 2nd stage results on the F.E. variable used in the estimation of its impact on Financial Literacy outcomes, excluding education level, in the full-sample analysis. It also presents the 2nd stage results previously discussed in section 6, for comparison. These results are the ones including 2021.

Table 19: The impact of Financial Education on the L.T. Financial Behavior Outcomes Excluding Education Level (Full Sample)

	Excluding 2021	Including 2021 (section 6)
	(1)	(2)
	IV Coefficients	IV Coefficients
Savings Account	0.147 (0.091)	0.192** (0.086)
Emergency Funds	0.215** (0.105)	0.281*** (0.099)
Retirement Plan	-0.023 (0.097)	0.053 (0.091)
Non-Retirement Investments	0.060 (0.093)	0.133 (0.088)
Observations	29789	29789
First-Stage F Test (Instrument)	91.991 (0.000)	101.589 (0.000)

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The Table presents the weighted 2nd stage results on the F.E. variable used in the estimation of its impact on L.T. Financial Behavior outcomes, excluding education level, in the full-sample analysis. It also presents the 2nd stage results previously discussed in section 6, for comparison. These results are the ones including 2021.

Table 20: The impact of Financial Education on the Financial Literacy Outcomes Excluding Education Level (Between States)

	Excluding Education	Including Education (section 6)
	(1) IV Coefficients	(2) IV Coefficients
Compound Interest	0.018 (0.124)	0.015 (0.123)
Inflation	0.129 (0.125)	0.115 (0.125)
Stock Diversification	0.276** (0.124)	0.264** (0.125)
Observations	5381	5381
First-Stage F Test (Instrument)	61.547 (0.000)	61.229 (0.000)

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The Table presents the weighted 2nd stage results on the F.E. variable used in the estimation of its impact on Financial Literacy outcomes, excluding education level, in the between-states analysis. It also presents the 2nd stage results previously discussed in section 6, for comparison. These results are the ones including 2021.

Table 21: The impact of Financial Education on the L.T. Financial Behavior Outcomes Excluding Education Level (Between States)

	Excluding 2021	Including 2021 (section 6)
	(1) IV Coefficients	(2) IV Coefficients
Savings Account	0.153 (0.120)	0.140 (0.120)
Emergency Funds	0.127 (0.138)	0.090 (0.137)
Retirement Plan	0.234* (0.130)	0.213* (0.129)
Non-Retirement Investments	-0.029 (0.123)	-0.054 (0.122)
Observations	4840	4840
First-Stage F Test (Instrument)	53.228 (0.000)	52.694 (0.000)

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The Table presents the weighted 2nd stage results on the F.E. variable used in the estimation of its impact on L.T. Financial Behavior outcomes, excluding education level, in the between-states analysis. It also presents the 2nd stage results previously discussed in section 6, for comparison. All these results are the ones including 2021.

Table 22: The impact of Financial Education on the Financial Literacy Outcomes Excluding Education Level (Within Mandatory States)

	Excluding Education	Including Education (section 6)
	(1) IV Coefficients	(2) IV Coefficients
Compound Interest	0.070 (0.238)	0.026 (0.244)
Inflation	0.470* (0.267)	0.409 (0.267)
Stock Diversification	0.194 (0.247)	0.174 (0.254)
Observations	1822	1822
First-Stage F Test (Instrument)	16.838 (0.000)	16.093 (0.000)

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The Table presents the weighted 2nd stage results on the F.E. variable used in the estimation of its impact on Financial Literacy outcomes, excluding education level, in the within mandatory-states analysis. It also presents the 2nd stage results previously discussed in section 6, for comparison. These results are the ones including 2021.

Table 23: The impact of Financial Education on the L.T. Financial Behavior Outcomes Excluding Education Level (Within Mandatory States)

	Excluding 2021	Including 2021 (section 6)
	(1) IV Coefficients	(2) IV Coefficients
Savings Account	0.471* (0.256)	0.439* (0.254)
Emergency Funds	0.111 (0.270)	0.039 (0.266)
Retirement Plan	0.505* (0.284)	0.465* (0.282)
Non-Retirement Investments	-0.130 (0.239)	-0.165 (0.243)
Observations	1632	1632
First-Stage F Test (Instrument)	14.578 (0.000)	14.297 (0.000)

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The Table presents the weighted 2nd stage results on the F.E. variable used in the estimation of its impact on L.T. Financial Behavior outcomes, excluding education level, in the within-states analysis. It also presents the 2nd stage results previously discussed in section 6, for comparison. These results are the ones including 2021.

7.2. Using Hybrid States as Treated Instead of Mandatory States (Full Sample)

This analysis considers “hybrid” states – those where personal finance is embedded within other subjects – as the treated states for the full sample, instead of those where it is a mandatory standalone course. This adjustment addresses potential concerns about underpowered analysis due to the limited standalone states (only five). In this case, the 30 embedded requirement states are compared to states with no policies, excluding the five standalone states – as in Carly Urban’s work (2022). Following the same reasoning in defining the main full sample, treated individuals are those eligible for exposure to the F.E. requirements in the hybrid states, while the control individuals are the remaining ones from these states, alongside all others from states without any mandate.

The results in Table 24 show that, as the sample size increases, the magnitude and statistical significance of the estimates shift compared to the original full sample analysis. Notably, stock diversification is the only financial outcome that maintains its pattern across both models. This may be because it is a more complex financial concept, making it more directly influenced by financial education, i.e., individuals who receive such education are likely to experience greater improvements in their understanding of this topic compared to more basic financial concepts, as compound interest and inflation, which may require less formal instruction to grasp.

Table 24: The impact of Financial Education on the Financial Literacy Outcomes (Full Sample with Hybrid States as Treated)

	Hybrid States as Treated	Standalone States as Treated (section 6)
	(1)	(2)
	IV Coefficients	IV Coefficients
Compound Interest	-0.563*** (0.172)	-0.012 (0.088)
Inflation	-0.014 (0.154)	0.298*** (0.090)
Stock Diversification	0.310** (0.155)	0.317*** (0.254)
Observations	93272	41271
First-Stage F Test (Instrument)	50.634 (0.000)	117.221 (0.000)

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The Table presents the weighted 2nd stage results on the F.E. variable used in the estimation of its impact on Financial Literacy outcomes, with hybrid states classified as the treated, in the full-sample analysis. It also presents the 2nd stage results previously discussed in section 6, for comparison. These results are the ones including 2021.

Table 25 shows that none of the financial outcomes maintained their patterns when considering the embedded states as the treated, compared to the original full sample. This may be because long-term financial behaviors take time to develop, requiring individuals not only to understand financial concepts but also to adopt, implement and sustain these behaviors over time. Hence, the results of financial education on engaging in such financial behaviors may not be immediately observable.²⁹

Table 25: The impact of Financial Education on the L.T. Financial Behavior Outcomes (Full Sample with Hybrid States as Treated)

	Hybrid States as Treated	Standalone States as Treated (section 6)
	(1)	(2)
	IV Coefficients	IV Coefficients
Savings Account	0.084 (0.157)	0.192** (0.086)
Emergency Funds	-	0.281*** (0.099)
Retirement Plan	-0.046 (0.170)	0.053 (0.091)
Non-Retirement Investments	0.368** (0.164)	0.133 (0.088)
Observations	66873	29789
First-Stage F Test (Instrument)	39.173 (0.000)	101.589 (0.000)

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The Table presents the weighted 2nd stage results on the F.E. variable used in the estimation of its impact on L.T. Financial Behavior outcomes, with hybrid states classified as the treated, in the full-sample analysis. It also presents the 2nd stage results previously discussed in section 6, for comparison. These results are the ones including 2021.

Overall, even though one must be careful interpreting these findings given the non-consistency of the significant results, they appear to indicate that, for individuals whose decision to receive such education was driven by exposure to the mandate, standalone F.E. programs may be more effective in improving financial knowledge and behavior than programs where F.E. is integrated into other subjects.³⁰

²⁹ The IV coefficient for the emergency funds outcome yielded an implausible result that fell outside the support, therefore it was not considered in the analysis.

³⁰ Please refer to the complete 2nd stage regression results table A30 in Appendix for all details on these robustness findings.

8. Concluding Remarks

Analyzing data from the NFCS between 2012 and 2021, and building on policy variations across states and years, this dissertation aimed to estimate the causal impact of financial education on financial literacy and long-term financial behaviors in the U.S., focusing on individuals who only received such education due to exposure to the state-mandated requirements (“compliers”).

The main analysis employed an IV approach with a linear specification, using state-mandated requirements as an instrument for financial education. For completeness, an LPM was also estimated, with its consistency being assured by similarity to the probit results. While a probit approach may be more suitable given the nature of the study, its application with a binary endogenous variable remains relatively underexplored in literature.

The findings indicate that financial education does not have a consistently significant impact across all financial outcomes analyzed, though at least two to three outcomes in each sample, like stock diversification knowledge and savings account behavior, show a positive and statistically significant relationship. These mixed results align with broader research suggesting that the effectiveness of F.E. policies may depend on factors such as curriculum design, implementation quality, and the socioeconomic characteristics of targeted populations. When analyzing the full sample – which includes middle-aged and older individuals –, the evidence of a statistically significant positive effect is stronger. However, when restricting age in the between- and within mandatory-states analysis, the impact becomes less evident. Moreover, excluding 2021, to account for the pandemic-related disruptions, leads to not very different takeaways overall. Finally, the analysis confirms that women, the unemployed and those with lower education levels continue to face financial literacy (and, consequently, financial behavior) gaps, even when receiving financial education.

One primary limitation of the analysis in this dissertation is the restricted number of years of available data. While the data remains representative, a larger number of observations within each year would possibly enhance the strength of the findings. Additionally, the relatively short time since the implementation of the financial education mandates may not yet capture its full long-term impact among compliers. Otherwise, the results could potentially be more robust and significant. In addition, implementation delays due to curriculum development and teacher training may further affect the observed impact. It is also assumed that eligible individuals in mandatory and hybrid

states were actually exposed to such education in high school, and that no one had prior exposure to it, yet the absence of data on where individuals attended H.S. complicates verification. Furthermore, potential policy spillovers could weaken the estimated effects, as individuals in the control states might still gain financial knowledge through informal channels.

Future research should explore the variation in F.E. curricula across states, as differences in content, quality and delivery methods may significantly influence the effectiveness of such programs. A deeper understanding of these disparities could help refine policies and interventions, ensuring that financial education initiatives are as effective as possible. Moreover, it would also be interesting to consider the role of informal financial education, such as parental guidance or peer influence, to provide a more comprehensive perspective of how individuals possibly acquire financial literacy beyond formal schooling. Finally, future research could also investigate other determinants of financial outcomes besides financial education, as its explanatory power seems limited. Identifying such determinants could contribute to developing models with greater predictive accuracy.

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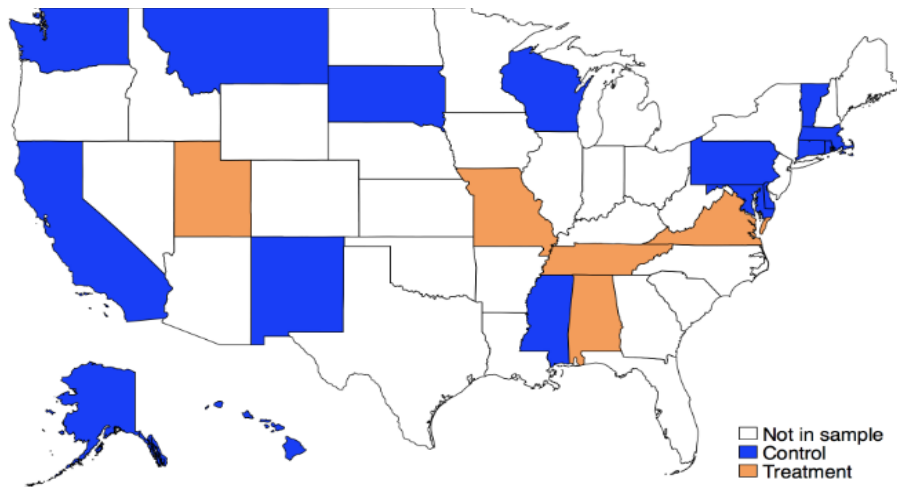
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Appendix

Figure A 1: Map of Treatment vs Control States (Full Sample)



Source: Carly Urban (2022)

Table A 1: Graduation Requirements

State	Graduation year	State	Graduation year
AL	2017	ND	2011
AR	2005	NE	2014
AZ	2005	NH	1993
CO	2009	NJ	2014
FL	2018	NV	2022
GA	2007	NY	1996
IA	2011	OH	2014
ID	2007	OK	2014
IL	1970	OR	2013
IN	2013	SC	2009
KS	2012	TN	2011
KY	2024	TX	2007
LA	2005	UT	2008
ME	2017	VA	2015
MI	1998	WI	2018
MN	2017	WV	2020
MO	2010	WY	2002
NC	2005		

Source: Carly Urban (2022).

Note: Graduation year represents the first cohort required to complete personal finance coursework prior to graduation. Bold indicates states requiring a full semester of personal finance for graduation. The remainder of the states are not included in the main analysis of the study.

Table A 2: Descriptive Statistics of Respondents, by Survey Year (Full Sample)

	Full Sample	Financial Education		Full Sample	Financial Education	
		Not Received	Received		Not Received	Received
2012 (%)				2015 (%)		
F.E. Received	20.49	-	-	21.51	-	-
Female	51.34	52.63	46.35	51.14	52.61	45.79
[18-24]	12.08	10.95	16.46	12.20	10.75	17.48
[25-34]	18.33	17.96	19.76	18.56	18.14	20.08
[35-44]	15.81	15.93	15.36	15.53	15.66	15.03
[45-54]	19.67	19.95	18.58	18.06	18.75	15.56
[55-64]	18.18	18.83	15.66	17.93	18.51	15.82
[65+]	15.92	16.37	14.17	71.72	18.19	16.01
H.S or Less	35.26	39.55	18.57	26.14	29.11	15.31
Some College	37.96	37.23	40.78	32.76	32.72	32.90
College or More	26.78	23.21	40.64	41.10	38.17	51.79
Employed	53.32	52.1	58.07	56.47	55.56	59.81
Not in Labor Force	37.94	38.62	35.29	37.94	38.41	36.21
Unemployed	8.74	9.28	6.64	5.59	6.03	3.97
Non-White	29.51	28.84	32.13	32.11	31.06	35.93
Observations	9916	7884	2032	10468	8216	2252
	Full Sample	Financial Education		Full Sample	Financial Education	
		Not Received	Received		Not Received	Received
2018 (%)				2021 (%)		
F.E. Received	21.67	-	-	21.15	-	-
Female	51.08	53.05	43.92	51.14	52.85	44.78
[18-24]	10.98	9.22	17.37	11.64	10.36	16.40
[25-34]	19.02	17.26	25.40	18.00	18.25	17.05
[35-44]	15.97	16.11	15.45	15.97	16.22	15.02
[45-54]	16.41	17.11	13.88	15.86	16.09	14.99
[55-64]	18.19	19.10	14.88	18.07	18.07	18.04
[65+]	19.43	21.20	13.02	20.47	21.00	18.49
H.S or Less	28.04	31.25	16.43	28.54	31.14	18.84
Some College	29.89	29.43	31.53	28.23	27.99	29.12
College or More	42.07	39.32	52.04	43.23	40.87	52.04
Employed	56.92	55.06	63.64	55.04	53.63	60.29
Not in Labor Force	38.29	39.93	32.35	36.49	37.20	33.83
Unemployed	4.80	5.02	4.01	8.47	9.16	5.88
Non-White	31.82	30.47	36.70	34.88	34.50	36.32
Observations	10696	8378	2318	10736	8465	2271

Note: The Table presents the descriptive statistics on all variables used in the estimation of the impact of F.E. on financial outcomes, for the entire full sample and among both the ones that received and did not receive F.E., for each survey year. The statistics were computed using state-level weights.

Table A 3: Descriptive Statistics of Respondents, Without the Missing Answers from the L.T. Financial Behavior Questions, by Survey Year (Full Sample)

	Full Sample	Financial Education		Full Sample	Financial Education	
		Not Received	Received		Not Received	Received
2012 (%)				2015 (%)		
F.E. Received	22.12	-	-	22.43	-	-
Female	50.35	51.71	45.54	50.12	51.74	44.53
[18-24]	13.92	12.42	19.19	14.92	12.90	21.93
[25-34]	21.98	21.50	23.66	23.37	23.18	24.02
[35-44]	19.53	19.85	18.41	19.58	20.00	18.13
[45-54]	23.56	24.13	21.54	21.23	22.11	18.18
[55-64]	16.25	17.14	13.12	16.02	16.75	13.49
[65+]	4.77	4.96	4.08	4.88	5.06	4.26
H.S or Less	32.45	36.28	18.96	23.97	26.55	15.02
Some College	38.46	38.04	39.95	33.16	33.23	32.92
College or More	29.08	25.68	41.09	42.87	40.21	52.05
Employed	68.57	67.86	71.09	73.30	72.77	75.15
Not in Labor Force	22.41	22.70	21.40	21.19	21.22	21.07
Unemployed	9.02	9.44	7.52	5.51	6.01	3.78
Non-White	32.40	31.76	34.66	34.36	33.43	37.54
Observations	7135	5557	1578	7669	5949	1720
	Full Sample	Financial Education		Full Sample	Financial Education	
		Not Received	Received		Not Received	Received
2018 (%)				2021 (%)		
F.E. Received	23.96	-	-	22.17	-	-
Female	49.94	52.04	43.24	49.65	51.15	44.39
[18-24]	13.72	11.60	20.47	14.34	12.80	19.73
[25-34]	24.60	22.85	30.15	22.90	23.48	20.90
[35-44]	20.15	20.85	17.92	20.35	20.82	18.69
[45-54]	20.03	21.56	15.19	19.70	20.11	18.27
[55-64]	16.64	17.89	12.68	17.29	17.35	17.09
[65+]	4.85	5.25	3.59	5.42	5.45	5.33
H.S or Less	26.25	29.52	15.88	28.31	30.93	19.12
Some College	30.19	29.76	31.56	27.66	27.35	28.72
College or More	43.56	40.72	52.56	44.03	41.72	52.16
Employed	75.93	75.23	78.15	72.64	71.36	77.16
Not in Labor Force	19.19	19.44	18.39	17.80	18.27	16.17
Unemployed	4.88	5.33	3.45	9.55	10.37	6.67
Non-White	35.61	34.28	39.81	38.10	37.96	38.59
Observations	7377	5609	1768	7608	5921	1687

Note: The Table presents the descriptive statistics on all variables used in the estimation of the impact of F.E. on financial outcomes, for the entire full sample (after dropping the missing responses from the L.T. Financial Behavior Questions) and among both the ones that received and did not receive F.E., for each survey year. The statistics were computed using state-level weights.

**Table A 4: Descriptive Statistics for Financial Literacy Regressions, by Survey Year
(Full Sample)**

	Full Sample	Financial Education		Full Sample	Financial Education	
		Not Received	Received		Not Received	Received
2012 (%)				2015 (%)		
F.E. Received	20.44	-	-	21.53	-	-
Female	51.21	52.46	46.35	50.90	52.38	45.47
[18-24]	12.08	10.99	16.32	12.22	10.74	17.59
[25-34]	18.35	17.97	19.81	18.60	18.18	20.16
[35-44]	15.84	15.93	15.51	15.61	15.75	15.07
[45-54]	19.70	19.94	18.75	18.10	18.80	15.55
[55-64]	18.16	18.81	15.64	17.86	18.41	15.83
[65+]	15.86	16.35	13.96	17.62	18.12	15.79
H.S or Less	35.17	39.41	18.66	26.13	29.08	15.37
Some College	37.97	37.32	40.47	32.70	32.67	32.81
College or More	26.86	23.27	40.87	41.17	38.25	51.81
Employed	53.34	52.10	58.19	56.58	55.68	59.84
Not in Labor Force	37.88	38.60	35.07	37.83	38.29	36.17
Unemployed	8.78	9.30	6.74	5.59	6.03	3.99
Non-White	29.58	28.89	32.28	32.03	30.94	36.03
Exposed	0.94	0.57	2.39	1.83	1.11	4.44
Observations	9798	7795	2003	10356	8126	2230

	Full Sample	Financial Education		Full Sample	Financial Education	
		Not Received	Received		Not Received	Received
2018 (%)				2021 (%)		
F.E. Received	21.72	-	-	21.16	-	-
Female	51.03	53.06	43.71	51.02	52.73	44.64
[18-24]	10.97	9.20	17.35	11.66	10.38	16.44
[25-34]	19.03	17.26	25.41	17.94	18.19	16.98
[35-44]	15.97	16.13	15.38	15.96	16.22	15.00
[45-54]	16.41	17.12	13.84	15.89	16.14	14.97
[55-64]	18.28	19.20	14.95	18.13	18.15	18.03
[65+]	19.34	21.09	13.07	20.42	20.91	18.59
H.S or Less	27.85	31.11	16.11	28.39	31.05	18.50
Some College	29.95	29.49	31.61	28.23	27.97	29.21
College or More	42.20	39.40	52.28	43.37	40.98	52.29
Employed	56.91	55.08	63.49	55.08	53.72	60.16
Not in Labor Force	38.29	39.92	32.44	36.47	37.16	33.92
Unemployed	4.80	5.00	4.07	8.44	9.12	5.92
Non-White	31.78	30.37	36.86	34.74	34.38	36.11
Exposed	2.89	1.88	6.52	4.09	3.54	6.16
Observations	10514	8230	2284	10603	8359	2244

Note: The Table presents the descriptive statistics on all variables used in the estimation of the impact of F.E. on Financial Literacy. It is shown the statistics on the entire full sample and among the ones that received and did not receive F.E., for each survey year. They were computed using state-level weights.

**Table A 5: Descriptive Statistics for L.T. Financial Behavior Regressions, by Survey Year
(Full Sample)**

	Full Sample	Financial Education		Full Sample	Financial Education	
		Not Received	Received		Not Received	Received
2012 (%)				2015 (%)		
F.E. Received	22.12	-	-	22.43	-	-
Female	50.35	51.71	45.54	50.12	51.74	44.53
[18-24]	13.92	12.42	19.19	14.92	12.90	21.93
[25-34]	21.98	21.50	23.66	23.37	23.18	24.02
[35-44]	19.53	19.85	18.41	19.58	20.00	18.13
[45-54]	23.56	24.13	21.54	21.23	22.11	18.18
[55-64]	16.25	17.14	13.12	16.02	16.75	13.49
[65+]	4.77	4.96	4.08	4.88	5.06	4.26
H.S or Less	32.45	36.28	18.96	23.97	26.55	15.02
Some College	38.46	38.04	39.95	33.16	33.23	32.92
College or More	29.08	25.68	41.09	42.87	40.21	52.05
Employed	68.57	67.86	71.09	73.3	72.77	75.15
Not in Labor Force	22.41	22.70	21.40	21.19	21.22	21.07
Unemployed	9.02	9.44	7.52	5.51	6.01	3.78
Non-White	32.40	31.76	34.66	34.36	33.43	37.54
Exposed	1.19	0.71	2.89	2.34	1.42	5.54
Observations	7135	5557	1578	7669	5949	1720
	Full Sample	Financial Education		Full Sample	Financial Education	
		Not Received	Received		Not Received	Received
2018 (%)				2021 (%)		
F.E. Received	23.96	-	-	22.17	-	-
Female	49.94	52.04	43.20	49.65	51.15	44.39
[18-24]	13.72	11.60	20.47	14.34	12.80	19.73
[25-34]	24.60	22.85	30.15	22.90	23.48	20.90
[35-44]	20.15	20.85	17.92	20.35	20.82	18.69
[45-54]	20.03	21.56	15.19	19.70	20.11	18.27
[55-64]	16.64	17.89	12.68	17.29	17.35	17.09
[65+]	4.85	5.25	3.59	5.42	5.45	5.33
H.S or Less	26.25	29.52	15.88	28.31	30.93	19.12
Some College	30.19	29.76	31.56	27.66	27.35	28.72
College or More	43.56	40.72	52.56	44.03	41.72	52.16
Employed	75.93	75.23	78.15	72.64	71.36	77.16
Not in Labor Force	19.19	19.44	18.39	17.80	18.27	16.17
Unemployed	4.88	5.33	3.45	9.55	10.37	6.67
Non-White	35.61	34.28	39.81	38.10	37.96	38.59
Exposed	3.55	2.31	7.48	5.01	4.39	7.18
Observations	7377	5609	1768	7608	5921	1687

Note: The Table presents the descriptive statistics on all variables used in the estimation of the impact of F.E. on L.T. Financial Behavior. It is shown the statistics on the entire full sample and among the ones that received and did not receive F.E., for each survey year. They were computed using state-level weights.

**Table A 6: Descriptive Statistics for Financial Literacy Regressions, by Survey Year
(Full Sample)**

	Between-States	Financial Education		Between-States	Financial Education	
		Not Received	Received		Not Received	Received
2012 (%)				2015 (%)		
F.E. Received	28.07	-	-	31.96	-	-
Female	52.27	52.41	51.91	53.38	56.28	47.23
[18-24]	100.00	71.93	28.07	87.50	86.94	88.69
[25-34]	-	-	-	12.50	13.06	11.31
H.S or Less	53.41	57.60	42.66	35.38	37.63	30.59
Some College	41.05	37.58	49.94	42.42	41.29	44.84
College or More	5.54	4.82	7.40	22.20	21.08	24.57
Employed	38.51	38.07	39.62	50.70	50.26	51.63
Not in Labor Force	44.79	41.42	53.41	38.46	36.73	42.13
Unemployed	16.71	20.51	6.97	10.84	13.01	6.24
Non-White	43.31	43.65	42.43	51.96	53.09	49.54
Exposed	13.07	8.77	24.10	14.81	10.39	24.24
Observations	556	400	156	1165	793	372

	Between-States	Financial Education		Between-States	Financial Education	
		Not Received	Received		Not Received	Received
2018 (%)				2021 (%)		
F.E. Received	32.27	-	-	25.68	-	-
Female	51.08	54.20	44.53	50.25	51.54	46.51
[18-24]	64.10	61.50	69.57	51.70	48.65	60.51
[25-34]	35.90	38.50	30.43	48.30	51.35	39.49
H.S or Less	33.79	35.67	29.83	40.27	42.69	33.28
Some College	34.24	32.88	37.11	29.30	27.60	34.22
College or More	31.97	31.45	33.06	30.43	29.71	32.51
Employed	63.34	62.51	65.10	65.92	65.75	66.43
Not in Labor Force	27.59	27.36	28.10	20.82	19.81	23.76
Unemployed	9.06	10.14	6.81	13.26	14.45	9.81
Non-White	47.88	49.91	43.61	50.59	50.48	50.91
Exposed	17.92	13.49	27.20	18.48	16.95	22.90
Observations	1439	1011	482	2167	1611	556

Note: The Table presents the descriptive statistics on all variables used in the estimation of the impact of F.E. on Financial Literacy. It is shown the statistics on the entire between-states sample and among the ones that received and did not receive F.E., for each survey year. They were computed using state-level weights.

**Table A 7: Descriptive Statistics for L.T. Financial Behavior Regressions, by Survey Year
(Between States)**

	Between-States	Financial Education		Between-States	Financial Education	
		Not Received	Received		Not Received	Received
2012 (%)				2015 (%)		
F.E. Received	31.34	-	-	33.49	-	-
Female	50.86	50.84	50.91	54.65	58.07	47.87
[18-24]	100.00	68.66	31.34	86.88	85.79	89.05
[25-34]	-	-	-	13.12	14.21	10.95
H.S or Less	49.47	52.22	43.45	31.67	32.89	29.25
Some College	44.18	41.71	49.58	44.49	44.22	45.02
College or More	6.35	6.07	6.97	23.84	22.88	25.73
Employed	40.28	40.15	40.56	51.9	51.56	52.56
Not in Labor Force	45.69	42.58	52.49	39.48	38.1	42.21
Unemployed	14.04	17.27	6.95	8.63	10.34	5.23
Non-White	42.05	42.02	42.12	49.91	50.08	49.57
Exposed	14.50	9.81	24.77	15.37	10.85	24.35
Observations	463	318	145	1069	711	358
	Between-States	Financial Education		Between-States	Financial Education	
		Not Received	Received		Not Received	Received
2018 (%)				2021 (%)		
F.E. Received	33.03	-	-	26.04	-	-
Female	51.64	55.34	44.15	50.38	51.84	46.24
[18-24]	63.46	60.28	69.91	50.51	47.34	59.53
[25-34]	36.54	39.72	30.09	49.49	52.66	40.47
H.S or Less	31.00	32.93	27.09	37.73	40.02	31.22
Some College	35.11	33.57	38.24	30.06	28.51	34.48
College or More	33.89	33.51	34.66	32.21	31.48	34.30
Employed	65.79	65.08	67.25	67.77	67.72	67.90
Not in Labor Force	27.03	26.63	27.84	20.26	19.31	22.95
Unemployed	7.18	8.29	4.91	11.97	12.96	9.15
Non-White	47.64	50.06	42.74	49.35	49.18	49.82
Exposed	17.39	12.86	26.59	17.96	16.57	21.92
Observations	1345	901	444	1963	1452	511

Note: The Table presents the descriptive statistics on all variables used in the estimation of the impact of F.E. on L.T. Financial Behavior. It is shown the statistics on the entire between-states sample and among the ones that received and did not receive F.E., for each survey year. They were computed using state-level weights.

**Table A 8: Descriptive Statistics for Financial Literacy Regressions, by Survey Year
(Within Mandatory States)**

	Within-States	Financial Education		Within-States	Financial Education	
		Not Received	Received		Not Received	Received
2012 (%)				2015 (%)		
F.E. Received	33.37	-	-	39.14	-	-
Female	51.47	53.56	47.30	51.56	56.36	44.09
[18-24]	54.18	44.66	73.20	62.57	59.82	66.86
[25-34]	45.82	55.34	26.80	37.43	40.18	33.14
H.S or Less	42.52	44.59	38.39	26.27	27.07	25.03
Some College	40.67	40.56	40.89	39.08	38.19	40.47
College or More	16.81	14.86	20.72	34.65	34.74	34.50
Employed	52.27	54.27	48.27	58.42	54.03	65.24
Not in Labor Force	34.82	32.98	38.49	34.85	38.15	29.71
Unemployed	12.91	12.75	13.24	6.73	7.82	5.05
Non-White	26.44	26.77	25.78	36.00	32.47	41.49
Exposed	27.78	20.12	43.07	46.70	36.60	62.39
Observations	276	184	92	396	241	155

	Within-States	Financial Education		Within-States	Financial Education	
		Not Received	Received		Not Received	Received
2018 (%)				2021 (%)		
F.E. Received	42.73	-	-	26.51	-	-
Female	49.84	53.05	45.54	49.76	51.37	45.30
[18-24]	67.04	62.35	73.33	43.32	39.56	53.73
[25-34]	32.96	37.65	26.67	56.68	60.44	46.27
H.S or Less	32.89	36.60	27.92	42.80	45.07	36.49
Some College	30.59	25.96	36.79	27.92	25.85	33.65
College or More	36.52	37.44	35.29	29.29	29.08	29.86
Employed	61.96	59.36	65.44	67.33	66.73	68.99
Not in Labor Force	29.22	29.95	28.25	21.83	21.62	22.40
Unemployed	8.82	10.69	6.31	10.84	11.65	8.61
Non-White	38.55	39.15	37.74	39.62	40.39	37.50
Exposed	70.11	62.44	80.39	58.80	54.55	70.60
Observations	405	232	173	745	548	197

Note: The Table presents the descriptive statistics on all variables used in the estimation of the impact of F.E. on Financial Literacy. It is shown the statistics on the entire within mandatory-states sample and among the ones that received and did not receive F.E., for each survey year. They were computed using state-level weights.

**Table A 9: Descriptive Statistics for L.T. Financial Behavior Regressions, by Survey Year
(Within Mandatory States)**

	Within-States	Financial Education		Within-States	Financial Education	
		Not Received	Received		Not Received	Received
2012 (%)				2015 (%)		
F.E. Received	36.69	-	-	39.56	-	-
Female	48.80	50.67	45.57	52.06	56.70	44.96
[18-24]	54.79	45.06	71.58	62.49	59.22	67.49
[25-34]	45.21	54.94	28.42	37.51	40.78	32.51
H.S or Less	38.23	38.24	38.22	23.08	23.42	22.56
Some College	43.18	44.75	40.47	39.90	39.20	40.97
College or More	18.59	17.01	21.32	37.02	37.38	36.47
Employed	55.55	59.76	48.29	59.76	55.94	65.59
Not in Labor Force	32.55	29.21	38.33	34.81	38.11	29.78
Unemployed	11.89	11.03	13.39	5.43	5.95	4.64
Non-White	26.83	28.00	24.82	35.48	32.15	40.55
Exposed	29.88	21.92	43.60	46.82	36.38	62.76
Observations	235	149	86	373	225	148

	Within-States	Financial Education		Within-States	Financial Education	
		Not Received	Received		Not Received	Received
2018 (%)				2021 (%)		
F.E. Received	43.86	-	-	26.97	-	-
Female	52.06	57.61	44.95	50.07	51.97	44.92
[18-24]	66.36	60.93	73.32	41.80	38.57	50.56
[25-34]	33.64	39.07	26.68	58.20	61.43	49.44
H.S or Less	28.20	30.30	25.52	40.86	42.91	35.30
Some College	32.28	28.22	37.49	27.47	25.18	33.66
College or More	39.51	41.49	36.99	31.67	31.91	31.04
Employed	63.58	61.25	66.56	69.04	68.54	70.38
Not in Labor Force	29.70	30.10	29.17	20.91	20.11	23.06
Unemployed	6.73	8.65	4.27	10.05	11.35	6.56
Non-White	37.32	38.10	36.32	39.56	40.15	37.96
Exposed	69.10	60.93	79.56	57.89	54.07	68.22
Observations	359	202	157	665	486	179

Note: The Table presents the descriptive statistics on all variables used in the estimation of the impact of F.E. on L.T. Financial Behavior. It is shown the statistics on the entire within mandatory-states sample and among the ones that received and did not receive F.E., for each survey year. They were computed using state-level weights.

Table A 10: LPM Results for Financial Literacy Outcomes (Full Sample)

	Including 2021			Excluding 2021		
	(1) Compound Interest	(2) Inflation	(3) Stock Diversification	(1) Compound Interest	(2) Inflation	(3) Stock Diversification
F.E. Received	0.037*** (0.005)	0.051*** (0.006)	0.102*** (0.006)	0.042*** (0.006)	0.052*** (0.007)	0.107*** (0.007)
Female	-0.081*** (0.004)	-0.138*** (0.005)	-0.155*** (0.005)	-0.073*** (0.005)	-0.129*** (0.006)	-0.148*** (0.006)
Not in Labor Force	-0.035*** (0.005)	-0.014** (0.006)	-0.035*** (0.006)	-0.036*** (0.006)	-0.021*** (0.006)	-0.039*** (0.007)
Unemployed	-0.069*** (0.010)	-0.051*** (0.010)	-0.070*** (0.010)	-0.072*** (0.012)	-0.058*** (0.013)	-0.073*** (0.012)
Exact Age	0.003*** (0.000)	0.008*** (0.000)	0.006*** (0.000)	0.003*** (0.000)	0.009*** (0.000)	0.006*** (0.000)
Non-White	-0.051*** (0.005)	-0.070*** (0.006)	-0.056*** (0.006)	-0.051*** (0.006)	-0.070*** (0.007)	-0.071*** (0.007)
Survey Year=2015	-0.016** (0.006)	-0.048*** (0.007)	-0.064*** (0.007)	-0.015** (0.006)	-0.048*** (0.007)	-0.064*** (0.007)
Survey Year=2018	-0.044*** (0.006)	-0.097*** (0.007)	-0.091*** (0.007)	-0.043*** (0.006)	-0.097*** (0.007)	-0.091*** (0.007)
Survey Year=2021	-0.078*** (0.006)	-0.121*** (0.007)	-0.101*** (0.007)			
Some college	0.116*** (0.006)	0.127*** (0.007)	0.119*** (0.007)	0.113*** (0.007)	0.126*** (0.008)	0.125*** (0.008)
College or More	0.169*** (0.006)	0.207*** (0.006)	0.242*** (0.006)	0.162*** (0.007)	0.205*** (0.007)	0.250*** (0.007)
Constant	0.616*** (0.010)	0.239*** (0.010)	0.222*** (0.011)	0.629*** (0.011)	0.233*** (0.012)	0.215*** (0.012)
R Squared	0.069	0.167	0.137	0.061	0.162	0.139
Observations	41271	41271	41271	30668	30668	30668

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The Table presents the weighted LPM results on all variables used in the estimation of the impact of F.E. on Financial Literacy outcomes, in the full-sample analysis. Both results including and excluding 2021 are presented. It was used the state-level weight.

Table A 11: Marginal Effects of Probit Results for Financial Literacy Outcomes (Full Sample)

	Including 2021			Excluding 2021		
	(1) Compound Interest	(2) Inflation	(3) Stock Diversification	(1) Compound Interest	(2) Inflation	(3) Stock Diversification
F.E. Received	0.040*** (0.005)	0.053*** (0.006)	0.103*** (0.006)	0.045*** (0.006)	0.055*** (0.007)	0.108*** (0.007)
Female	-0.084*** (0.004)	-0.141*** (0.005)	-0.155*** (0.005)	-0.075*** (0.005)	-0.132*** (0.006)	-0.148*** (0.006)
Not in Labor Force	-0.031*** (0.005)	-0.006 (0.006)	-0.034*** (0.006)	-0.033*** (0.006)	-0.012* (0.006)	-0.038*** (0.007)
Unemployed	-0.059*** (0.009)	-0.045*** (0.010)	-0.074*** (0.011)	-0.062*** (0.011)	-0.052*** (0.012)	-0.077*** (0.013)
Exact Age	0.003*** (0.000)	0.008*** (0.000)	0.006*** (0.000)	0.003*** (0.000)	0.008*** (0.000)	0.006*** (0.000)
Non-White	-0.051*** (0.005)	-0.069*** (0.005)	-0.055*** (0.006)	-0.051*** (0.006)	-0.069*** (0.006)	-0.070*** (0.007)
Survey Year=2015	-0.016** (0.006)	-0.047*** (0.007)	-0.064*** (0.007)	-0.016** (0.006)	-0.048*** (0.007)	-0.064*** (0.007)
Survey Year=2018	-0.043*** (0.006)	-0.094*** (0.007)	-0.090*** (0.007)	-0.043*** (0.006)	-0.095*** (0.007)	-0.091*** (0.007)
Survey Year=2021	-0.076*** (0.006)	-0.118*** (0.007)	-0.100*** (0.007)			
Some college	0.113*** (0.006)	0.125*** (0.007)	0.118*** (0.007)	0.111*** (0.007)	0.125*** (0.008)	0.124*** (0.008)
College or More	0.169*** (0.006)	0.208*** (0.006)	0.242*** (0.006)	0.162*** (0.007)	0.206*** (0.007)	0.250*** (0.007)
Observations	41271	41271	41271	30668	30668	30668

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The Table presents the weighted marginal effects of probit results on all variables used in the estimation of the impact of F.E. on Financial Literacy outcomes, in the full-sample analysis. Both results including and excluding 2021 are presented. It was used the state-level weight.

Table A 12: 1st Stage Results for Financial Literacy Outcomes (Full Sample)

	Including 2021	Excluding 2021
	(1)	(2)
	F.E. Received	F.E. Received
Exposed To Mandate=1	0.187*** (0.017)	0.255*** (0.023)
Female	-0.043*** (0.004)	-0.041*** (0.005)
Not in Labor Force	0.015*** (0.005)	0.016*** (0.006)
Unemployed	-0.040*** (0.008)	-0.036*** (0.010)
Exact Age	-0.002*** (0.000)	-0.002*** (0.000)
Non-White	0.014*** (0.005)	0.017*** (0.006)
Some college	0.098*** (0.005)	0.100*** (0.006)
College or More	0.156*** (0.005)	0.166*** (0.006)
Constant	0.238*** (0.009)	0.242*** (0.011)
Survey Year F.E.	Yes	Yes
Observations	41271	30668
F Test (Instrument)	117.221 (0.0000)	119.401 (0.0000)

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: The Table presents the weighted 1st stage results on all variables used in the estimation of the impact of F.E. on Financial Literacy outcomes, in the full-sample analysis. Both results including and excluding 2021 are presented. It was used the state-level weight.

The estimated 1st stage results both in the between-states and within mandatory-states sample closely aligns with the values observed in the 1st stage regression full-sample analysis. Due to appendix length constraints, they were not included but are available upon request.

Table A 13: 2nd Stage Results for Financial Literacy Outcomes (Full Sample)

	Including 2021			Excluding 2021		
	(1) Compound Interest	(2) Inflation	(3) Stock Diversification	(1) Compound Interest	(2) Inflation	(3) Stock Diversification
F.E. Received	-0.012 (0.088)	0.298*** (0.090)	0.317*** (0.090)	0.058 (0.083)	0.278*** (0.089)	0.302*** (0.089)
Female	-0.083*** (0.006)	-0.128*** (0.006)	-0.146*** (0.007)	-0.073*** (0.006)	-0.120*** (0.007)	-0.140*** (0.007)
Not in Labor Force	-0.034*** (0.005)	-0.018*** (0.006)	-0.039*** (0.006)	-0.036*** (0.006)	-0.026*** (0.007)	-0.043*** (0.007)
Unemployed	-0.071*** (0.011)	-0.041*** (0.011)	-0.062*** (0.011)	-0.071*** (0.013)	-0.050*** (0.013)	-0.066*** (0.013)
Exact Age	0.003*** (0.000)	0.009*** (0.000)	0.006*** (0.000)	0.003*** (0.000)	0.009*** (0.000)	0.007*** (0.000)
Non-White	-0.050*** (0.005)	-0.073*** (0.006)	-0.058*** (0.006)	-0.051*** (0.006)	-0.074*** (0.007)	-0.074*** (0.007)
Survey Year=2015	-0.016*** (0.006)	-0.047*** (0.007)	-0.062*** (0.007)	-0.015*** (0.006)	-0.046*** (0.007)	-0.063*** (0.007)
Survey Year=2018	-0.044*** (0.006)	-0.097*** (0.007)	-0.090*** (0.007)	-0.043*** (0.006)	-0.097*** (0.007)	-0.091*** (0.007)
Survey Year=2021	-0.078*** (0.006)	-0.120*** (0.007)	-0.099*** (0.007)			
Some college	0.121*** (0.011)	0.103*** (0.011)	0.098*** (0.011)	0.112*** (0.011)	0.104*** (0.012)	0.105*** (0.012)
College or More	0.177*** (0.015)	0.169*** (0.015)	0.209*** (0.015)	0.159*** (0.015)	0.168*** (0.016)	0.218*** (0.016)
Constant	0.629*** (0.025)	0.175*** (0.026)	0.166*** (0.026)	0.625*** (0.025)	0.173*** (0.027)	0.163*** (0.027)
R Squared	0.067	0.127	0.107	0.061	0.127	0.114
Observations	41271	41271	41271	30668	30668	30668

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The Table presents the weighted 2nd stage results on all variables used in the estimation of the impact of F.E. on Financial Literacy outcomes, in the full-sample analysis. Both results including and excluding 2021 are presented. It was used the state-level weight.

Table A 14: LPM Results for L.T. Financial Behavior Outcomes (Full Sample)

	Including 2021				Excluding 2021			
	(1) Savings Account	(2) Emergency Funds	(3) Retirement Plan	(4) Non-Retirement Investments	(1) Savings Account	(2) Emergency Funds	(3) Retirement Plan	(4) Non-Retirement Investments
F.E. Received	0.044*** (0.006)	0.086*** (0.007)	0.143*** (0.007)	0.105*** (0.007)	0.040*** (0.007)	0.088*** (0.009)	0.145*** (0.008)	0.104*** (0.008)
Female	-0.004 (0.005)	-0.067*** (0.006)	-0.056*** (0.006)	-0.106*** (0.006)	0.005 (0.006)	-0.072*** (0.007)	-0.052*** (0.007)	-0.084*** (0.006)
Not in Labor Force	-0.120*** (0.007)	-0.108*** (0.008)	-0.157*** (0.007)	-0.130*** (0.007)	-0.120*** (0.008)	-0.097*** (0.009)	-0.154*** (0.009)	-0.120*** (0.008)
Unemployed	-0.143*** (0.012)	-0.172*** (0.011)	-0.181*** (0.010)	-0.160*** (0.009)	-0.153*** (0.014)	-0.156*** (0.014)	-0.185*** (0.013)	-0.159*** (0.011)
Exact Age	0.001*** (0.000)	0.003*** (0.000)	0.005*** (0.000)	0.003*** (0.000)	0.001*** (0.000)	0.003*** (0.000)	0.005*** (0.000)	0.003*** (0.000)
Non-White	-0.012** (0.006)	-0.008 (0.007)	0.002 (0.006)	-0.017*** (0.006)	-0.017** (0.007)	-0.015* (0.008)	-0.005 (0.007)	-0.025*** (0.007)
Survey Year=2015	-0.009 (0.007)	0.034*** (0.008)	-0.014* (0.008)	-0.059*** (0.008)	-0.009 (0.007)	0.036*** (0.008)	-0.014* (0.008)	-0.059*** (0.008)
Survey Year=2018	-0.045*** (0.007)	0.050*** (0.008)	0.011 (0.008)	-0.045*** (0.008)	-0.045*** (0.007)	0.053*** (0.008)	0.011 (0.008)	-0.044*** (0.008)
Survey Year=2021	-0.048*** (0.007)	0.103*** (0.008)	-0.015* (0.008)	0.012 (0.008)				
Some college	0.095*** (0.007)	0.031*** (0.008)	0.098*** (0.008)	0.066*** (0.007)	0.093*** (0.008)	0.033*** (0.009)	0.100*** (0.009)	0.067*** (0.008)
College or More	0.149*** (0.007)	0.185*** (0.008)	0.192*** (0.007)	0.193*** (0.007)	0.144*** (0.008)	0.177*** (0.009)	0.192*** (0.009)	0.198*** (0.008)
Constant	0.722*** (0.012)	0.229*** (0.013)	0.159*** (0.013)	0.219*** (0.012)	0.729*** (0.014)	0.237*** (0.015)	0.149*** (0.015)	0.175*** (0.014)
R Squared	0.060	0.090	0.112	0.106	0.057	0.078	0.111	0.102
Observations	29789	29789	29789	29789	22181	22181	22181	22181

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The Table presents the weighted LPM results on all variables used in the estimation of the impact of F.E. on L.T. Financial Behavior outcomes, in the full-sample analysis. Both results including and excluding 2021 are presented. It was used the state-level weight.

**Table A 15: Marginal Effects of Probit Results for L.T. Financial Behavior Outcomes
(Full Sample)**

	Including 2021				Excluding 2021			
	(1) Savings Account	(2) Emergency Funds	(3) Retirement Plan	(4) Non-Retirement Investments	(1) Savings Account	(2) Emergency Funds	(3) Retirement Plan	(4) Non-Retirement Investments
F.E. Received	0.046*** (0.006)	0.086*** (0.007)	0.142*** (0.007)	0.102*** (0.007)	0.042*** (0.007)	0.088*** (0.009)	0.144*** (0.008)	0.101*** (0.008)
Female	-0.004 (0.005)	-0.067*** (0.006)	-0.055*** (0.006)	-0.104*** (0.006)	0.005 (0.006)	-0.072*** (0.007)	-0.051*** (0.007)	-0.082*** (0.006)
Not in Labor Force	-0.116*** (0.007)	-0.108*** (0.008)	-0.159*** (0.008)	-0.137*** (0.007)	-0.117*** (0.008)	-0.097*** (0.009)	-0.156*** (0.009)	-0.126*** (0.008)
Unemployed	-0.136*** (0.011)	-0.176*** (0.012)	-0.189*** (0.011)	-0.168*** (0.010)	-0.147*** (0.014)	-0.160*** (0.014)	-0.193*** (0.014)	-0.170*** (0.012)
Exact Age	0.001*** (0.000)	0.003*** (0.000)	0.005*** (0.000)	0.003*** (0.000)	0.001*** (0.000)	0.003*** (0.000)	0.005*** (0.000)	0.003*** (0.000)
Non-White	-0.013** (0.006)	-0.008 (0.007)	0.002 (0.006)	-0.017*** (0.006)	-0.017*** (0.006)	-0.014* (0.008)	-0.004 (0.008)	-0.026*** (0.007)
Survey Year=2015	-0.008 (0.007)	0.035*** (0.008)	-0.014* (0.008)	-0.059*** (0.008)	-0.009 (0.007)	0.037*** (0.009)	-0.014* (0.008)	-0.059*** (0.008)
Survey Year=2018	-0.045*** (0.007)	0.051*** (0.008)	0.011 (0.008)	-0.045*** (0.008)	-0.045*** (0.007)	0.053*** (0.008)	0.011 (0.008)	-0.044*** (0.008)
Survey Year=2021	-0.047*** (0.007)	0.103*** (0.008)	-0.015* (0.008)	0.011 (0.008)				
Some college	0.091*** (0.007)	0.032*** (0.008)	0.101*** (0.008)	0.070*** (0.007)	0.089*** (0.008)	0.034*** (0.009)	0.102*** (0.009)	0.071*** (0.008)
College or More	0.148*** (0.007)	0.185*** (0.008)	0.192*** (0.007)	0.193*** (0.007)	0.143*** (0.008)	0.176*** (0.009)	0.192*** (0.009)	0.197*** (0.008)
Observations	29789	29789	29789	29789	22181	22181	22181	22181

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The Table presents the weighted marginal effects of probit results on all variables used in the estimation of the impact of F.E. on L.T. Financial Behavior outcomes, in the full-sample analysis. Both results including and excluding 2021 are presented. It was used the state-level weight.

Table A 16: 1st Stage Results for L.T. Financial Behavior Outcomes (Full Sample)

	Including 2021	Excluding 2021
	(1)	(2)
	F.E. Received	F.E. Received
Exposed To Mandate=1	0.186*** (0.018)	0.255*** (0.025)
Female	-0.045*** (0.005)	-0.046*** (0.006)
Not in Labor Force	0.006 (0.007)	0.007 (0.008)
Unemployed	-0.042*** (0.009)	-0.039*** (0.011)
Exact Age	-0.002*** (0.000)	-0.003*** (0.000)
Non-White	0.011* (0.006)	0.015** (0.007)
Some college	0.092*** (0.007)	0.093*** (0.008)
College or More	0.148*** (0.006)	0.157*** (0.007)
Constant	0.264*** (0.012)	0.273*** (0.014)
Survey Year F.E.	Yes	Yes
Observations	29789	22181
F Test (Instrument)	101.589 (0.0000)	106.152 (0.0000)

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: The Table presents the weighted 1st stage results on all variables used in the estimation of the impact of F.E. on L.T. Financial Behavior outcomes, in the full-sample analysis. Both results including and excluding 2021 are presented. It was used the state-level weight.

The estimated 1st stage results both in the between-states and within mandatory-states sample closely aligns with the values observed in the 1st stage regression full-sample analysis. Due to appendix length constraints, they were not included but are available upon request.

Table A 17: 2nd Stage Results for L.T. Financial Behavior Outcomes (Full Sample)

	Including 2021				Excluding 2021			
	(1) Savings Account	(2) Emergency Funds	(3) Retirement Plan	(4) Non-Retirement Investments	(1) Savings Account	(2) Emergency Funds	(3) Retirement Plan	(4) Non-Retirement Investments
F.E. Received	0.192** (0.086)	0.281*** (0.099)	0.053 (0.091)	0.133 (0.088)	0.137* (0.081)	0.249*** (0.094)	0.007 (0.087)	0.012 (0.080)
Female	0.003 (0.007)	-0.058*** (0.008)	-0.060*** (0.007)	-0.105*** (0.007)	0.010 (0.007)	-0.065*** (0.008)	-0.059*** (0.008)	-0.088*** (0.007)
Not in Labor Force	-0.121*** (0.007)	-0.110*** (0.008)	-0.156*** (0.007)	-0.130*** (0.007)	-0.121*** (0.009)	-0.098*** (0.009)	-0.153*** (0.009)	-0.119*** (0.008)
Unemployed	-0.137*** (0.012)	-0.164*** (0.012)	-0.184*** (0.011)	-0.159*** (0.010)	-0.150*** (0.015)	-0.150*** (0.014)	-0.190*** (0.013)	-0.162*** (0.011)
Exact Age	0.001*** (0.000)	0.004*** (0.000)	0.005*** (0.000)	0.003*** (0.000)	0.001*** (0.000)	0.004*** (0.000)	0.005*** (0.000)	0.003*** (0.000)
Non-White	-0.014** (0.006)	-0.010 (0.007)	0.002 (0.006)	-0.017*** (0.006)	-0.018*** (0.007)	-0.017** (0.008)	-0.003 (0.008)	-0.024*** (0.007)
Survey Year=2015	-0.007 (0.007)	0.037*** (0.009)	-0.016* (0.008)	-0.059*** (0.008)	-0.008 (0.007)	0.039*** (0.009)	-0.017** (0.008)	-0.060*** (0.008)
Survey Year=2018	-0.045*** (0.007)	0.050*** (0.009)	0.011 (0.008)	-0.045*** (0.008)	-0.045*** (0.007)	0.053*** (0.008)	0.011 (0.008)	-0.044*** (0.008)
Survey Year=2021	-0.047*** (0.007)	0.105*** (0.008)	-0.016* (0.008)	0.012 (0.008)				
Some college	0.082*** (0.011)	0.013 (0.012)	0.107*** (0.011)	0.063*** (0.011)	0.084*** (0.011)	0.018 (0.013)	0.113*** (0.012)	0.076*** (0.011)
College or More	0.127*** (0.014)	0.157*** (0.016)	0.205*** (0.015)	0.189*** (0.015)	0.129*** (0.015)	0.152*** (0.017)	0.214*** (0.016)	0.212*** (0.015)
Constant	0.679*** (0.028)	0.172*** (0.032)	0.185*** (0.030)	0.210*** (0.028)	0.700*** (0.028)	0.188*** (0.032)	0.191*** (0.030)	0.202*** (0.028)
R Squared	0.037	0.064	0.106	0.105	0.047	0.060	0.098	0.095
Observations	29789	29789	29789	29789	22181	22181	22181	22181

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The Table presents the weighted 2nd stage results on all variables used in the estimation of the impact of F.E. on L.T. Financial Behavior outcomes, in the full-sample analysis. Both results including and excluding 2021 are presented. It was used the state-level weight.

Table A 18: LPM Results for Financial Literacy Outcomes (Between States)

	Including 2021			Excluding 2021		
	(1) Compound Interest	(2) Inflation	(3) Stock Diversification	(1) Compound Interest	(2) Inflation	(3) Stock Diversification
F.E. Received	0.044*** (0.015)	0.059*** (0.016)	0.079*** (0.016)	0.069*** (0.019)	0.080*** (0.021)	0.090*** (0.020)
Female	-0.053*** (0.014)	-0.150*** (0.014)	-0.113*** (0.014)	-0.037** (0.018)	-0.144*** (0.019)	-0.111*** (0.018)
Not in Labor Force	0.031* (0.016)	0.076*** (0.017)	0.010 (0.016)	0.028 (0.020)	0.074*** (0.021)	0.015 (0.021)
Unemployed	-0.050** (0.024)	-0.009 (0.022)	-0.055*** (0.021)	-0.036 (0.032)	0.010 (0.031)	-0.037 (0.029)
Exact Age	0.008*** (0.002)	-0.001 (0.002)	0.001 (0.002)	0.005 (0.004)	-0.004 (0.004)	-0.003 (0.004)
Non-White	-0.065*** (0.014)	-0.091*** (0.014)	-0.021 (0.014)	-0.061*** (0.018)	-0.094*** (0.019)	-0.038** (0.018)
Survey Year=2015	0.002 (0.026)	-0.000 (0.027)	-0.024 (0.026)	0.005 (0.026)	0.008 (0.028)	-0.015 (0.026)
Survey Year=2018	-0.087*** (0.026)	-0.035 (0.027)	-0.014 (0.025)	-0.080*** (0.027)	-0.020 (0.028)	0.003 (0.026)
Survey Year=2021	-0.116*** (0.026)	-0.029 (0.026)	-0.016 (0.025)			
Some college	0.113*** (0.017)	0.117*** (0.017)	0.063*** (0.017)	0.100*** (0.022)	0.118*** (0.022)	0.068*** (0.021)
College or More	0.094*** (0.019)	0.172*** (0.019)	0.132*** (0.018)	0.100*** (0.026)	0.154*** (0.027)	0.129*** (0.026)
Constant	0.510*** (0.057)	0.412*** (0.055)	0.282*** (0.053)	0.562*** (0.088)	0.463*** (0.085)	0.368*** (0.083)
R Squared	0.038	0.063	0.040	0.033	0.061	0.041
Observations	5381	5381	5381	3214	3214	3214

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The Table presents the weighted LPM results on all variables used in the estimation of the impact of F.E. on Financial Literacy outcomes, in the between states-sample analysis. Both results including and excluding 2021 are presented. It was used the state-level weight.

Table A 19: Marginal Effects of Probit Results for Financial Literacy Outcomes (Between States)

	Including 2021			Excluding 2021		
	(1) Compound Interest	(2) Inflation	(3) Stock Diversification	(1) Compound Interest	(2) Inflation	(3) Stock Diversification
F.E. Received	0.045*** (0.015)	0.058*** (0.016)	0.078*** (0.016)	0.070*** (0.019)	0.079*** (0.021)	0.088*** (0.020)
Female	-0.054*** (0.014)	-0.150*** (0.014)	-0.113*** (0.014)	-0.038** (0.018)	-0.143*** (0.019)	-0.111*** (0.018)
Not in Labor Force	0.031* (0.016)	0.076*** (0.017)	0.010 (0.016)	0.030 (0.020)	0.074*** (0.021)	0.014 (0.021)
Unemployed	-0.047** (0.024)	-0.012 (0.023)	-0.058*** (0.022)	-0.033 (0.032)	0.007 (0.032)	-0.042 (0.030)
Exact Age	0.008*** (0.002)	-0.001 (0.002)	0.001 (0.002)	0.005 (0.004)	-0.004 (0.004)	-0.004 (0.004)
Non-White	-0.065*** (0.014)	-0.090*** (0.014)	-0.020 (0.014)	-0.061*** (0.018)	-0.093*** (0.019)	-0.036** (0.018)
Survey Year=2015	0.004 (0.025)	-0.002 (0.027)	-0.025 (0.026)	0.006 (0.025)	0.006 (0.028)	-0.015 (0.026)
Survey Year=2018	-0.085*** (0.025)	-0.036 (0.027)	-0.016 (0.026)	-0.080*** (0.027)	-0.021 (0.028)	0.002 (0.027)
Survey Year=2021	-0.114*** (0.025)	-0.030 (0.026)	-0.017 (0.026)			
Some college	0.113*** (0.017)	0.116*** (0.017)	0.063*** (0.016)	0.100*** (0.022)	0.116*** (0.022)	0.067*** (0.021)
College or More	0.094*** (0.019)	0.173*** (0.019)	0.132*** (0.018)	0.099*** (0.026)	0.154*** (0.027)	0.130*** (0.026)
Observations	5381	5381	5381	3214	3214	3214

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The Table presents the weighted marginal effects of probit results on all variables used in the estimation of the impact of F.E. on Financial Literacy outcomes, in the between states-sample analysis. Both results including and excluding 2021 are presented. It was used the state-level weight.

Table A 20: 2nd Stage Results for Financial Literacy Outcomes (Between States)

	Including 2021			Excluding 2021		
	(1) Compound Interest	(2) Inflation	(3) Stock Diversification	(1) Compound Interest	(2) Inflation	(3) Stock Diversification
F.E. Received	0.015 (0.123)	0.115 (0.125)	0.264** (0.125)	0.086 (0.111)	0.172 (0.117)	0.291** (0.118)
Female	-0.055*** (0.017)	-0.147*** (0.017)	-0.101*** (0.017)	-0.036* (0.021)	-0.137*** (0.022)	-0.097*** (0.021)
Not in Labor Force	0.031* (0.016)	0.075*** (0.017)	0.007 (0.017)	0.028 (0.020)	0.074*** (0.022)	0.013 (0.021)
Unemployed	-0.052** (0.027)	-0.004 (0.025)	-0.039 (0.024)	-0.034 (0.035)	0.021 (0.034)	-0.014 (0.033)
Exact Age	0.008** (0.003)	-0.000 (0.003)	0.004 (0.003)	0.005 (0.005)	-0.002 (0.005)	0.001 (0.005)
Non-White	-0.066*** (0.014)	-0.090*** (0.015)	-0.016 (0.014)	-0.060*** (0.019)	-0.091*** (0.019)	-0.031* (0.019)
Survey Year=2015	0.004 (0.027)	-0.003 (0.028)	-0.032 (0.027)	0.004 (0.027)	0.003 (0.029)	-0.024 (0.027)
Survey Year=2018	-0.085*** (0.028)	-0.039 (0.028)	-0.027 (0.027)	-0.081*** (0.029)	-0.027 (0.030)	-0.012 (0.029)
Survey Year=2021	-0.115*** (0.026)	-0.032 (0.027)	-0.023 (0.026)			
Some college	0.115*** (0.020)	0.113*** (0.020)	0.049** (0.020)	0.099*** (0.024)	0.111*** (0.024)	0.053** (0.024)
College or More	0.096*** (0.022)	0.167*** (0.022)	0.114*** (0.022)	0.098*** (0.029)	0.144*** (0.029)	0.107*** (0.029)
Constant	0.529*** (0.098)	0.376*** (0.098)	0.164* (0.097)	0.549*** (0.121)	0.396*** (0.123)	0.220* (0.124)
R Squared	0.037	0.060	0.008	0.033	0.054	0.001
Observations	5381	5381	5381	3214	3214	3214

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The Table presents the weighted 2nd stage results on all variables used in the estimation of the impact of F.E. on Financial Literacy outcomes, in the between states-sample analysis. Both results including and excluding 2021 are presented. It was used the state-level weight.

Table A 21: LPM Results for L.T. Financial Behavior Outcomes (Between States)

	Including 2021				Excluding 2021			
	(1) Savings Account	(2) Emergency Funds	(3) Retirement Plan	(4) Non- Retirement Investments	(1) Savings Account	(2) Emergency Funds	(3) Retirement Plan	(4) Non- Retirement Investments
F.E. Received	0.056*** (0.015)	0.086*** (0.017)	0.115*** (0.016)	0.088*** (0.016)	0.060*** (0.018)	0.085*** (0.022)	0.111*** (0.020)	0.081*** (0.019)
Female	-0.003 (0.014)	-0.054*** (0.016)	-0.083*** (0.014)	-0.148*** (0.014)	0.017 (0.018)	-0.062*** (0.021)	-0.084*** (0.018)	-0.121*** (0.017)
Not in Labor Force	-0.040** (0.016)	-0.062*** (0.018)	-0.068*** (0.016)	-0.069*** (0.016)	-0.025 (0.020)	-0.048** (0.023)	-0.066*** (0.020)	-0.028 (0.019)
Unemployed	-0.108*** (0.026)	-0.167*** (0.024)	-0.142*** (0.020)	-0.176*** (0.019)	- 0.137*** (0.037)	-0.162*** (0.033)	-0.157*** (0.025)	-0.151*** (0.021)
Exact Age	0.003 (0.002)	-0.005* (0.003)	0.009*** (0.002)	-0.002 (0.002)	0.006* (0.004)	-0.001 (0.004)	0.016*** (0.004)	0.004 (0.004)
Non-White	-0.023* (0.014)	0.009 (0.015)	0.039*** (0.014)	0.008 (0.014)	-0.035* (0.018)	0.000 (0.020)	0.032* (0.018)	-0.018 (0.017)
Survey Year=2015	-0.050* (0.026)	-0.019 (0.030)	0.034 (0.024)	-0.004 (0.025)	-0.053** (0.027)	-0.013 (0.030)	0.031 (0.025)	-0.001 (0.025)
Survey Year=2018	-0.092*** (0.026)	-0.018 (0.029)	0.064*** (0.024)	0.007 (0.024)	- 0.100*** (0.027)	-0.013 (0.031)	0.052** (0.026)	0.008 (0.025)
Survey Year=2021	-0.074*** (0.026)	0.051* (0.029)	0.061** (0.024)	0.119*** (0.025)				
Some college	0.068*** (0.017)	0.026 (0.019)	0.032* (0.017)	0.031* (0.016)	0.053** (0.022)	0.001 (0.024)	0.009 (0.021)	0.020 (0.020)
College or More	0.123*** (0.018)	0.197*** (0.020)	0.126*** (0.019)	0.138*** (0.018)	0.111*** (0.025)	0.144*** (0.028)	0.085*** (0.027)	0.097*** (0.024)
Constant	0.712*** (0.056)	0.467*** (0.059)	0.010 (0.054)	0.309*** (0.053)	0.640*** (0.085)	0.411*** (0.091)	-0.106 (0.084)	0.171** (0.078)
R Squared	0.031	0.059	0.074	0.095	0.034	0.042	0.078	0.061
Observations	4840	4840	4840	4840	2877	2877	2877	2877

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The Table presents the weighted LPM results on all variables used in the estimation of the impact of F.E. on L.T. Financial Behavior outcomes, in the between states-sample analysis. Both results including and excluding 2021 are presented. It was used the state-level weight.

Table A 22: Marginal Effects of Probit Results for L.T. Financial Behavior Outcomes (Between States)

	Including 2021				Excluding 2021			
	(1) Savings Account	(2) Emergency Funds	(3) Retirement Plan	(4) Non- Retirement Investments	(1) Savings Account	(2) Emergency Funds	(3) Retirement Plan	(4) Non- Retirement Investments
F.E. Received	0.057*** (0.015)	0.085*** (0.017)	0.115*** (0.016)	0.087*** (0.015)	0.061*** (0.018)	0.084*** (0.022)	0.110*** (0.020)	0.078*** (0.019)
Female	-0.003 (0.014)	-0.055*** (0.016)	-0.083*** (0.014)	-0.148*** (0.014)	0.017 (0.018)	-0.062*** (0.020)	-0.083*** (0.018)	-0.120*** (0.017)
Not in Labor Force	-0.039** (0.016)	-0.062*** (0.018)	-0.067*** (0.017)	-0.068*** (0.016)	-0.025 (0.020)	-0.047** (0.023)	-0.065*** (0.021)	-0.026 (0.019)
Unemployed	-0.103*** (0.025)	-0.172*** (0.025)	-0.149*** (0.021)	-0.180*** (0.019)	-0.132*** (0.036)	-0.166*** (0.034)	-0.167*** (0.027)	-0.164*** (0.022)
Exact Age	0.003 (0.002)	-0.005* (0.002)	0.008*** (0.002)	-0.002 (0.002)	0.006* (0.004)	-0.001 (0.004)	0.015*** (0.004)	0.004 (0.003)
Non-White	-0.024* (0.014)	0.009 (0.015)	0.040*** (0.014)	0.006 (0.013)	-0.034* (0.018)	0.000 (0.020)	0.032* (0.018)	-0.019 (0.017)
Survey Year=2015	-0.044* (0.024)	-0.018 (0.030)	0.046* (0.027)	-0.001 (0.025)	-0.047* (0.024)	-0.012 (0.031)	0.041 (0.027)	-0.001 (0.026)
Survey Year=2018	-0.087*** (0.024)	-0.018 (0.029)	0.075*** (0.026)	0.009 (0.025)	-0.095*** (0.025)	-0.014 (0.031)	0.059** (0.027)	0.007 (0.026)
Survey Year=2021	-0.069*** (0.023)	0.051* (0.030)	0.073*** (0.026)	0.120*** (0.025)				
Some college	0.068*** (0.017)	0.027 (0.019)	0.033* (0.017)	0.033** (0.016)	0.053** (0.022)	0.002 (0.024)	0.009 (0.022)	0.021 (0.020)
College or More	0.123*** (0.017)	0.197*** (0.020)	0.121*** (0.018)	0.135*** (0.018)	0.110*** (0.024)	0.145*** (0.028)	0.080*** (0.025)	0.096*** (0.024)
Observations	4840	4840	4840	4840	2877	2877	2877	2877

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The Table presents the weighted marginal effects of probit results on all variables used in the estimation of the impact of F.E. on L.T. Financial Behavior outcomes, in the between states-sample analysis. Both results including and excluding 2021 are presented. It was used the state-level weight.

Table A 23: 2nd Stage Results for L.T. Financial Behavior Outcomes (Between States)

	Including 2021				Excluding 2021			
	(1) Savings Account	(2) Emergency Funds	(3) Retirement Plan	(4) Non- Retirement Investments	(1) Savings Account	(2) Emergency Funds	(3) Retirement Plan	(4) Non- Retirement Investments
F.E. Received	0.140 (0.120)	0.090 (0.137)	0.213* (0.129)	-0.054 (0.122)	0.132 (0.107)	0.122 (0.124)	0.189 (0.116)	-0.109 (0.106)
Female	0.003 (0.017)	-0.054*** (0.019)	-0.076*** (0.017)	-0.159*** (0.017)	0.023 (0.021)	-0.059** (0.024)	-0.078*** (0.021)	-0.137*** (0.020)
Not in Labor Force	-0.040** (0.017)	-0.062*** (0.018)	-0.069*** (0.017)	-0.068*** (0.016)	-0.025 (0.020)	-0.048** (0.023)	-0.066*** (0.020)	-0.028 (0.020)
Unemployed	-0.100*** (0.029)	-0.167*** (0.027)	-0.133*** (0.023)	-0.189*** (0.022)	- 0.128*** (0.040)	-0.157*** (0.036)	-0.148*** (0.029)	-0.175*** (0.025)
Exact Age	0.004 (0.003)	-0.005 (0.004)	0.011*** (0.003)	-0.005 (0.003)	0.008* (0.005)	-0.000 (0.005)	0.017*** (0.005)	-0.001 (0.004)
Non-White	-0.022 (0.014)	0.009 (0.016)	0.041*** (0.014)	0.005 (0.014)	-0.033* (0.018)	0.001 (0.020)	0.034* (0.018)	-0.023 (0.018)
Survey Year=2015	-0.052** (0.027)	-0.019 (0.030)	0.031 (0.025)	0.000 (0.025)	-0.056** (0.027)	-0.014 (0.030)	0.028 (0.025)	0.006 (0.026)
Survey Year=2018	-0.097*** (0.027)	-0.018 (0.030)	0.059** (0.026)	0.014 (0.025)	- 0.104*** (0.028)	-0.016 (0.032)	0.047* (0.027)	0.020 (0.026)
Survey Year=2021	-0.076*** (0.026)	0.051* (0.029)	0.059** (0.025)	0.122*** (0.025)				
Some college	0.063*** (0.019)	0.026 (0.021)	0.026 (0.019)	0.041** (0.018)	0.049** (0.023)	-0.001 (0.025)	0.004 (0.022)	0.031 (0.021)
College or More	0.115*** (0.021)	0.196*** (0.023)	0.117*** (0.022)	0.151*** (0.021)	0.104*** (0.027)	0.140*** (0.031)	0.078*** (0.029)	0.116*** (0.027)
Constant	0.653*** (0.102)	0.464*** (0.114)	-0.059 (0.106)	0.410*** (0.101)	0.581*** (0.122)	0.381*** (0.137)	-0.170 (0.127)	0.326*** (0.115)
R Squared	0.023	0.059	0.064	0.074	0.028	0.040	0.071	0.016
Observations	4840	4840	4840	4840	2877	2877	2877	2877

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The Table presents the weighted 2nd stage results on all variables used in the estimation of the impact of F.E. on L.T. Financial Behavior outcomes, in the between states-sample analysis. Both results including and excluding 2021 are presented. It was used the state-level weight.

Table A 24: LPM Results for Financial Literacy Outcomes (Within Mandatory States)

	Including 2021			Excluding 2021		
	(1) Compound Interest	(2) Inflation	(3) Stock Diversification	(1) Compound Interest	(2) Inflation	(3) Stock Diversification
F.E. Received	0.036 (0.024)	0.106*** (0.025)	0.128*** (0.025)	0.034 (0.029)	0.115*** (0.032)	0.126*** (0.031)
Female	-0.054** (0.022)	-0.173*** (0.023)	-0.139*** (0.023)	-0.035 (0.028)	-0.158*** (0.031)	-0.161*** (0.030)
Not in Labor Force	0.019 (0.026)	0.050* (0.027)	0.008 (0.027)	0.000 (0.031)	0.011 (0.034)	-0.013 (0.033)
Unemployed	-0.089** (0.042)	-0.063 (0.039)	-0.166*** (0.034)	-0.064 (0.057)	-0.045 (0.057)	-0.211*** (0.047)
Exact Age	0.007** (0.003)	0.003 (0.003)	0.003 (0.003)	0.006 (0.004)	0.000 (0.005)	0.004 (0.005)
Non-White	-0.086*** (0.024)	-0.065*** (0.025)	-0.048** (0.024)	-0.093*** (0.031)	-0.063* (0.033)	-0.063* (0.032)
Survey Year=2015	-0.008 (0.034)	-0.049 (0.039)	-0.063 (0.038)	-0.009 (0.035)	-0.052 (0.040)	-0.068* (0.038)
Survey Year=2018	-0.069* (0.035)	-0.105*** (0.038)	-0.048 (0.038)	-0.072** (0.036)	-0.112*** (0.039)	-0.053 (0.038)
Survey Year=2021	-0.157*** (0.033)	-0.100*** (0.035)	-0.089** (0.035)			
Some college	0.111*** (0.028)	0.151*** (0.028)	0.005 (0.027)	0.097*** (0.036)	0.142*** (0.037)	0.021 (0.037)
College or More	0.139*** (0.029)	0.232*** (0.029)	0.160*** (0.029)	0.155*** (0.038)	0.243*** (0.040)	0.186*** (0.040)
Constant	0.564*** (0.082)	0.340*** (0.082)	0.331*** (0.080)	0.566*** (0.116)	0.412*** (0.124)	0.338*** (0.120)
R Squared	0.066	0.101	0.087	0.050	0.089	0.101
Observations	1822	1822	1822	1077	1077	1077

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The Table presents the weighted LPM results on all variables used in the estimation of the impact of F.E. on Financial Literacy outcomes, in the within mandatory states-sample analysis. Both results including and excluding 2021 are presented. It was used the state-level weight.

**Table A 25: Marginal Effects of Probit Results for Financial Literacy Outcomes
(Within Mandatory States)**

	Including 2021			Excluding 2021		
	(1) Compound Interest	(2) Inflation	(3) Stock Diversification	(1) Compound Interest	(2) Inflation	(3) Stock Diversification
F.E. Received	0.038 (0.024)	0.105*** (0.025)	0.126*** (0.025)	0.035 (0.029)	0.115*** (0.032)	0.123*** (0.031)
Female	-0.054** (0.022)	-0.170*** (0.023)	-0.138*** (0.023)	-0.036 (0.028)	-0.156*** (0.031)	-0.160*** (0.030)
Not in Labor Force	0.018 (0.025)	0.049* (0.027)	0.010 (0.027)	-0.000 (0.030)	0.011 (0.034)	-0.011 (0.033)
Unemployed	-0.087** (0.041)	-0.062 (0.040)	-0.170*** (0.035)	-0.063 (0.054)	-0.041 (0.057)	-0.212*** (0.046)
Exact Age	0.006** (0.003)	0.003 (0.003)	0.003 (0.003)	0.006 (0.004)	0.000 (0.005)	0.004 (0.005)
Non-White	-0.086*** (0.024)	-0.064*** (0.025)	-0.048** (0.024)	-0.093*** (0.031)	-0.061* (0.033)	-0.063** (0.032)
Survey Year=2015	-0.009 (0.034)	-0.049 (0.039)	-0.065* (0.038)	-0.010 (0.034)	-0.052 (0.040)	-0.070* (0.039)
Survey Year=2018	-0.071** (0.035)	-0.104*** (0.038)	-0.051 (0.038)	-0.073** (0.035)	-0.112*** (0.039)	-0.055 (0.039)
Survey Year=2021	-0.158*** (0.032)	-0.101*** (0.035)	-0.091** (0.035)			
Some college	0.110*** (0.028)	0.150*** (0.028)	0.003 (0.027)	0.096*** (0.036)	0.142*** (0.037)	0.020 (0.036)
College or More	0.140*** (0.028)	0.232*** (0.029)	0.158*** (0.029)	0.155*** (0.037)	0.243*** (0.040)	0.185*** (0.041)
Observations	1822	1822	1822	1077	1077	1077

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The Table presents the weighted marginal effects of probit results on all variables used in the estimation of the impact of F.E. on Financial Literacy outcomes, in the within mandatory states-sample analysis. Both results including and excluding 2021 are presented. It was used the state-level weight.

Table A 26: 2nd Stage Results for Financial Literacy Outcomes (Within Mandatory States)

	Including 2021			Excluding 2021		
	(1) Compound Interest	(2) Inflation	(3) Stock Diversification	(1) Compound Interest	(2) Inflation	(3) Stock Diversification
F.E. Received	0.026 (0.244)	0.409 (0.267)	0.154 (0.254)	-0.108 (0.231)	0.371 (0.258)	0.218 (0.244)
Female	-0.054* (0.029)	-0.150*** (0.032)	-0.137*** (0.029)	-0.047 (0.035)	-0.136*** (0.038)	-0.153*** (0.035)
Not in Labor Force	0.018 (0.026)	0.058** (0.029)	0.008 (0.027)	-0.007 (0.033)	0.025 (0.037)	-0.008 (0.035)
Unemployed	-0.090* (0.046)	-0.039 (0.047)	-0.164*** (0.040)	-0.079 (0.062)	-0.017 (0.066)	-0.201*** (0.056)
Exact Age	0.006 (0.007)	0.011 (0.007)	0.004 (0.007)	0.002 (0.009)	0.009 (0.010)	0.007 (0.010)
Non-White	-0.087*** (0.025)	-0.057** (0.027)	-0.048* (0.026)	-0.094*** (0.031)	-0.061* (0.035)	-0.062* (0.033)
Survey Year=2015	-0.008 (0.036)	-0.059 (0.043)	-0.063 (0.039)	-0.007 (0.035)	-0.056 (0.042)	-0.069* (0.039)
Survey Year=2018	-0.068* (0.039)	-0.125*** (0.045)	-0.050 (0.041)	-0.065* (0.037)	-0.125*** (0.043)	-0.057 (0.040)
Survey Year=2021	-0.157*** (0.033)	-0.094** (0.038)	-0.089** (0.035)			
Some college	0.112*** (0.035)	0.124*** (0.038)	0.003 (0.036)	0.111*** (0.043)	0.117** (0.046)	0.012 (0.044)
College or More	0.140*** (0.036)	0.204*** (0.039)	0.158*** (0.038)	0.174*** (0.049)	0.209*** (0.054)	0.174*** (0.052)
Constant	0.573** (0.236)	0.060 (0.257)	0.306 (0.245)	0.730** (0.289)	0.115 (0.322)	0.231 (0.308)
R Squared	0.066	0.021	0.086	0.028	0.030	0.093
Observations	1822	1822	1822	1077	1077	1077

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The Table presents the weighted 2nd stage results on all variables used in the estimation of the impact of F.E. on Financial Literacy outcomes, in the within mandatory states-sample analysis. Both results including and excluding 2021 are presented. It was used the state-level weight.

Table A 27: LPM Results for L.T. Financial Behavior Outcomes (Within Mandatory States)

	Including 2021				Excluding 2021			
	(1) Savings Account	(2) Emergency Funds	(3) Retirement Plan	(4) Non- Retirement Investments	(1) Savings Account	(2) Emergency Funds	(3) Retirement Plan	(4) Non- Retirement Investments
F.E. Received	0.028 (0.023)	0.073*** (0.027)	0.064** (0.025)	0.068*** (0.024)	0.020 (0.028)	0.072** (0.033)	0.078** (0.032)	0.064** (0.029)
Female	-0.017 (0.022)	-0.085*** (0.025)	-0.105*** (0.024)	-0.128*** (0.022)	0.005 (0.028)	-0.096*** (0.033)	-0.110*** (0.031)	-0.109*** (0.027)
Not in Labor Force	-0.036 (0.026)	-0.018 (0.029)	-0.092*** (0.027)	-0.083*** (0.025)	-0.054* (0.031)	-0.011 (0.035)	-0.065** (0.032)	-0.047 (0.029)
Unemployed	-0.115** (0.048)	-0.188*** (0.042)	-0.153*** (0.038)	-0.169*** (0.034)	-0.184*** (0.065)	-0.126** (0.062)	-0.168*** (0.049)	-0.136*** (0.042)
Exact Age	-0.004 (0.003)	-0.007** (0.003)	0.008*** (0.003)	-0.004 (0.003)	-0.001 (0.004)	-0.006 (0.005)	0.014*** (0.005)	-0.004 (0.004)
Non-White	-0.021 (0.024)	0.035 (0.027)	0.054** (0.025)	0.009 (0.023)	-0.049* (0.030)	0.031 (0.035)	0.006 (0.033)	-0.007 (0.029)
Survey Year=2015	-0.004 (0.035)	-0.039 (0.041)	0.000 (0.038)	0.020 (0.033)	-0.013 (0.035)	-0.032 (0.042)	0.004 (0.039)	0.018 (0.033)
Survey Year=2018	-0.035 (0.036)	0.036 (0.042)	0.013 (0.039)	0.038 (0.034)	-0.042 (0.036)	0.040 (0.042)	0.022 (0.040)	0.038 (0.034)
Survey Year=2021	-0.050 (0.034)	0.079** (0.039)	0.002 (0.036)	0.182*** (0.031)				
Some college	0.146*** (0.029)	0.042 (0.031)	0.009 (0.028)	0.022 (0.026)	0.158*** (0.039)	0.004 (0.040)	0.034 (0.037)	0.019 (0.031)
College or More	0.168*** (0.029)	0.240*** (0.031)	0.147*** (0.031)	0.109*** (0.028)	0.213*** (0.039)	0.224*** (0.043)	0.154*** (0.042)	0.126*** (0.036)
Constant	0.797*** (0.083)	0.464*** (0.088)	0.111 (0.083)	0.319*** (0.081)	0.733*** (0.114)	0.458*** (0.129)	-0.039 (0.124)	0.296*** (0.112)
R Squared	0.048	0.082	0.077	0.091	0.072	0.072	0.085	0.060
Observations	1632	1632	1632	1632	967	967	967	967

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The Table presents the weighted LPM results on all variables used in the estimation of the impact of F.E. on L.T. Financial Behavior outcomes, in the within mandatory states-sample analysis. Both results including and excluding 2021 are presented. It was used the state-level weight.

Table A 28: Marginal Effects of Probit Results for L.T. Financial Behavior Outcomes (Within Mandatory States)

	Including 2021				Excluding 2021			
	(1) Savings Account	(2) Emergency Funds	(3) Retirement Plan	(4) Non- Retirement Investments	(1) Savings Account	(2) Emergency Funds	(3) Retirement Plan	(4) Non- Retirement Investments
F.E. Received	0.030 (0.023)	0.073*** (0.026)	0.064** (0.025)	0.068*** (0.024)	0.022 (0.028)	0.071** (0.033)	0.077** (0.031)	0.063** (0.028)
Female	-0.014 (0.022)	-0.084*** (0.025)	-0.104*** (0.024)	-0.127*** (0.022)	0.004 (0.028)	-0.096*** (0.032)	-0.109*** (0.030)	-0.108*** (0.027)
Not in Labor Force	-0.036 (0.026)	-0.019 (0.029)	-0.094*** (0.027)	-0.087*** (0.025)	-0.055* (0.031)	-0.012 (0.035)	-0.066** (0.033)	-0.050* (0.029)
Unemployed	-0.108** (0.045)	-0.192*** (0.043)	-0.156*** (0.040)	-0.164*** (0.034)	-0.171*** (0.062)	-0.124** (0.061)	-0.177*** (0.051)	-0.134*** (0.043)
Exact Age	-0.003 (0.003)	-0.007** (0.003)	0.008*** (0.003)	-0.005* (0.003)	-0.000 (0.004)	-0.006 (0.005)	0.014*** (0.005)	-0.005 (0.004)
Non-White	-0.023 (0.024)	0.036 (0.027)	0.057** (0.025)	0.009 (0.023)	-0.051* (0.030)	0.032 (0.035)	0.008 (0.033)	-0.007 (0.028)
Survey Year=2015	0.001 (0.035)	-0.034 (0.041)	0.002 (0.039)	0.023 (0.033)	-0.008 (0.034)	-0.029 (0.042)	0.006 (0.039)	0.020 (0.033)
Survey Year=2018	-0.032 (0.036)	0.037 (0.042)	0.016 (0.040)	0.040 (0.033)	-0.039 (0.034)	0.041 (0.043)	0.026 (0.040)	0.037 (0.034)
Survey Year=2021	-0.051 (0.033)	0.079** (0.039)	0.004 (0.037)	0.185*** (0.032)				
Some college	0.144*** (0.029)	0.044 (0.031)	0.011 (0.029)	0.027 (0.026)	0.155*** (0.039)	0.008 (0.040)	0.037 (0.037)	0.023 (0.030)
College or More	0.166*** (0.029)	0.239*** (0.031)	0.145*** (0.030)	0.110*** (0.027)	0.210*** (0.038)	0.226*** (0.043)	0.152*** (0.042)	0.130*** (0.036)
Observations	1632	1632	1632	1632	967	967	967	967

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The Table presents the weighted marginal effects of probit results on all variables used in the estimation of the impact of F.E. on L.T. Financial Behavior outcomes, in the within mandatory states-sample analysis. Both results including and excluding 2021 are presented. It was used the state-level weight.

Table A 29: 2nd Stage Results for L.T. Financial Behavior Outcomes (Within Mandatory States)

	Including 2021				Excluding 2021			
	(1) Savings Account	(2) Emergency Funds	(3) Retirement Plan	(4) Non- Retirement Investments	(1) Savings Account	(2) Emergency Funds	(3) Retirement Plan	(4) Non- Retirement Investments
F.E. Received	0.439* (0.254)	0.039 (0.266)	0.465* (0.282)	-0.165 (0.243)	0.275 (0.212)	0.161 (0.246)	0.433* (0.255)	-0.088 (0.207)
Female	0.021 (0.033)	-0.088** (0.035)	-0.068* (0.035)	-0.149*** (0.032)	0.031 (0.035)	-0.087** (0.041)	-0.073* (0.040)	-0.124*** (0.035)
Not in Labor Force	-0.031 (0.028)	-0.018 (0.029)	-0.087*** (0.029)	-0.086*** (0.026)	-0.045 (0.033)	-0.008 (0.037)	-0.052 (0.036)	-0.052* (0.031)
Unemployed	-0.078 (0.058)	-0.192*** (0.049)	-0.117** (0.050)	-0.190*** (0.042)	-0.160** (0.072)	-0.118* (0.065)	-0.136** (0.057)	-0.151*** (0.046)
Exact Age	0.006 (0.007)	-0.007 (0.007)	0.017** (0.007)	-0.010 (0.006)	0.007 (0.008)	-0.003 (0.009)	0.025*** (0.010)	-0.009 (0.008)
Non-White	-0.010 (0.027)	0.034 (0.028)	0.065** (0.029)	0.003 (0.025)	-0.046 (0.031)	0.032 (0.035)	0.010 (0.036)	-0.008 (0.029)
Survey Year=2015	-0.008 (0.039)	-0.039 (0.041)	-0.003 (0.041)	0.022 (0.035)	-0.012 (0.036)	-0.032 (0.041)	0.005 (0.040)	0.018 (0.034)
Survey Year=2018	-0.056 (0.042)	0.038 (0.044)	-0.008 (0.045)	0.050 (0.037)	-0.052 (0.038)	0.036 (0.043)	0.008 (0.043)	0.044 (0.035)
Survey Year=2021	-0.034 (0.039)	0.078** (0.040)	0.018 (0.039)	0.173*** (0.034)				
Some college	0.118*** (0.035)	0.044 (0.035)	-0.018 (0.035)	0.038 (0.031)	0.141*** (0.041)	-0.002 (0.043)	0.010 (0.043)	0.029 (0.034)
College or More	0.141*** (0.036)	0.242*** (0.036)	0.120*** (0.038)	0.125*** (0.032)	0.186*** (0.046)	0.215*** (0.050)	0.117** (0.054)	0.142*** (0.041)
Constant	0.409 (0.255)	0.496* (0.263)	-0.268 (0.280)	0.539** (0.244)	0.434 (0.274)	0.354 (0.313)	-0.455 (0.327)	0.475* (0.266)
R Squared	0.048	0.081	0.053	0.031	0.015	0.065	0.041	0.028
Observations	1632	1632	1632	1632	967	967	967	967

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The Table presents the weighted 2nd stage results on all variables used in the estimation of the impact of F.E. on L.T. Financial Behavior outcomes, in the within mandatory states-sample analysis. Both results including and excluding 2021 are presented. It was used the state-level weight.

**Table A 30: 2nd Stage Results for Financial Literacy and L.T. Financial Behavior Outcomes
(Full Sample with Hybrid States as Treated)**

	(1) Compound Interest	(2) Inflation	(3) Stock Diversification	(1) Savings Account	(2) Emergency Funds	(3) Retirement Plan	(4) Non-Retirement Investments
F.E. Received	-0.563*** (0.172)	-0.014 (0.154)	0.310** (0.155)	0.084 (0.157)	-	-0.046 (0.170)	0.368** (0.164)
Female	-0.106*** (0.008)	-0.137*** (0.007)	-0.146*** (0.008)	-0.008 (0.008)	-0.012 (0.014)	-0.070*** (0.009)	-0.094*** (0.008)
Not in Labor Force	-0.029*** (0.004)	-0.018*** (0.004)	-0.038*** (0.004)	-0.119*** (0.005)	-0.114*** (0.008)	-0.149*** (0.005)	-0.119*** (0.005)
Unemployed	-0.075*** (0.010)	-0.045*** (0.009)	-0.058*** (0.009)	-0.164*** (0.010)	-0.125*** (0.015)	-0.180*** (0.009)	-0.147*** (0.009)
Exact Age	0.002*** (0.000)	0.009*** (0.000)	0.006*** (0.000)	0.001*** (0.000)	0.007*** (0.001)	0.004*** (0.000)	0.003*** (0.000)
Non-White	-0.055*** (0.005)	-0.087*** (0.005)	-0.064*** (0.005)	-0.015*** (0.004)	-0.013* (0.008)	-0.002 (0.005)	-0.028*** (0.005)
Some college	0.170*** (0.017)	0.130*** (0.015)	0.094*** (0.015)	0.087*** (0.016)	-0.091*** (0.027)	0.099*** (0.017)	0.038** (0.016)
College or More	0.250*** (0.026)	0.211*** (0.023)	0.203*** (0.023)	0.148*** (0.022)	-0.011 (0.040)	0.212*** (0.024)	0.157*** (0.024)
Constant	0.761*** (0.043)	0.248*** (0.038)	0.178*** (0.039)	0.696*** (0.043)	-0.123* (0.075)	0.216*** (0.046)	0.142*** (0.045)
Survey Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R Squared	0.089	0.167	0.104	0.061	-	0.084	0.053
Observations	93272	93272	93272	66873	66873	66873	66873

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The Table presents the weighted 2nd stage results on all variables used in the estimation of the impact of F.E. on Financial Literacy and L.T. Financial Behavior outcomes, respectively, with hybrid states classified as the treated, in the full-sample analysis. These results are the ones including 2021. It was used the state-level weight.