

# Does State-mandated Financial Education Affect Financial Well-being?\*

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## Abstract

This paper estimates the causal effect of required high school financial education on the financial well-being of young adults. Financial well-being includes people's subjective sense of financial management, as well as their confidence in achieving their unique financial goals. Using variation in state financial education mandates for high school students across space and time, this study shows that financial education improves financial well-being, though benefits accrue primarily to men and those who obtain college degrees. Our results suggest that individuals who end their education with a high school diploma show no improvements in subjective financial well-being at best, and benefit differentially less than their peers who go on to attend college. Instead, exposure to financial education seems to result in people without college degrees reporting they are less likely to have the things they want in life due to money. Current financial education policies and curricula may exacerbate inequalities between individuals who do and do not go on to attend college.

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# 1 Introduction

Many people struggle with personal financial management—from managing money to keeping up with bills. According to the Federal Reserve Board’s 2018 Survey of Household Economics and Decisionmaking (SHED), 39 percent of households reported not being able to cover a \$400 unexpected expense (using cash, savings, or a credit card to be paid off in full the subsequent month). Further, 18 percent of households reported that they are just getting by financially, and another 7 percent said they are finding it difficult to get by when asked about their current financial situation.

These statistics paint a bleak portrait of American’s financial security. There is the potential, however, that people could have stronger financial well-being if they had higher levels of financial knowledge and skills. With stronger personal financial capability, people may have more confidence and ability to achieve their financial goals. One policy response is to provide financial education as a part of public education curriculum. With greater exposure to financial education classes in school, people may enter adulthood on a stronger trajectory for their long-run financial status. Indeed, such education may do more than teach people how to balance a budget; financial knowledge may give people confidence that they can take control of their finances. A 2015 US Consumer Financial Protection Bureau (CFPB) report even suggests that financial education programs should ultimately improve financial well-being or specifically “how well your current money situation is providing you with financial security and freedom of choice, today and for the future.” This begs the question: Does requiring financial education in high school curricula improve later life financial well-being?

This question may be particularly important to explore for two targeted populations: non-college goers and women. Young people today navigate an increasingly complex financial marketplace, especially relative to those reaching young adulthood in previous generations. Given this increased complexity, those with a college degree might be better able to confidently make financial decisions. However, a large segment of the population never attends college. One-in-three high school graduates in 2017, roughly 970,000 young adults, did not attend a post-secondary school, such as a college or university (Bureau of Labor Statistics, 2018). Without a college education, young people may find financial decision-making more challenging. While college-goers have to manage foregone earnings and potentially student loan debt, the benefits of college may outweigh these costs. Financial education could especially aid the development of young people who never attend college.

Meanwhile, several studies show that women have lower levels of financial knowledge than men, controlling for other factors (Lusardi, 2008; Hung and Yoong, 2009). Women tend to live longer than men but tend to earn less over a lifetime, are more likely

to work part-time, and have fewer working years (Mottola, 2013; Munnell and Soto, 2007; Wettstein and Zulkarnain, 2019). These factors suggest that women might differentially benefit from financial education, especially at younger ages in order to plan ahead for future income and expenditure shocks.

This study estimates the effect of high school financial education courses on financial well-being using data from the FINRA Investor Education Foundation’s National Financial Capability Study (NFCS). We measure financial well-being (FWB) based on a scale developed by the CFPB with four components: (1) having control over one’s finances, (2) having the capacity to absorb a financial shock, (3) being on track to meet financial goals, and (4) being able to make choices that allow one to enjoy life.

Prior studies show that state high school financial education requirements have positive effects on a variety of outcomes, at least based on requirements enacted in the last 20 years.<sup>1</sup> For example, Stoddard and Urban (2019) find that graduation requirements make college students more strategic borrowers, shifting from high-cost to low-cost borrowing. Mangrum (2019) builds on this, showing that colleges and universities where greater fractions of their students come from high schools with financial education requirements have higher repayment rates on student loans. While these two papers focus exclusively on the college-going population, other work has looked at the population as a whole. For example, Brown et al. (2016) show that financial education improves credit scores, reduces delinquencies, and reduces non-student debt. Urban et al. (2018) corroborate these results in two states with rigorous financial education requirements, showing increased credit scores and lower credit delinquencies. Harvey (2019) finds that financial education requirements reduce payday borrowing.

We make three main contributions to the literature. First, we study the effects of financial education on subjective outcomes. We use a new dependent variable—financial well-being. FWB more closely mimics a measure of utility than measures of financial behavior, making it a compelling outcome to study. The prior literature documents an improvement in objective financial situations, but does financial education improve how people feel about their finances and ability to achieve their financial goals?

Second, we are able to detect the long-run effects of personal finance education requirements on objective financial outcomes.<sup>2</sup> While authors like Bernheim, Garrett and Maki (2001) and Cole, Paulson and Shastry (2013) document the long-run effects of 13

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<sup>1</sup>An earlier literature examined the effects of financial education mandates from 1957-1982 (Bernheim, Garrett and Maki, 2001; Tennyson and Nguyen, 2001; Cole, Paulson and Shastry, 2013), though these policies were quite different. States required schools to do anything relating to personal finance, and only one state required coursework.

<sup>2</sup>Mangrum (2019) looks at long-run effects in studying student-loan repayment, though he does not have individual-level data and thus cannot give the specific ages of those the results are reflecting.

personal finance education policies before 1982, only one state in that period actually required a course in personal finance. The remainder had very basic requirements or recommendations embedded into other curricula. In this time period, education policies simply encouraged schools to include limited personal finance material in classes. Many of these policies were unevenly implemented or enforced. In the last two decades, states have shifted to education mandates that require a full high school course, require personal finance curricula in an existing course, or require students to meet standards in personal finance prior to graduation. We are able to study these more recent and rigorous policies on young and middle-aged adults after graduating from high school.

Third, we study the effects of financial education for women and people who do not attend college. There are two studies that examine differences in the effects of school-based financial education by gender. Frisanco (2019) considers differences across gender in a randomized control trial in Peruvian schools, finding no difference. Similarly, Harvey (2019) finds no difference in the effects of financial education graduation requirements on payday lending by gender. While previous papers described focus exclusively on the overall population (Cole, Paulson and Shastry, 2013; Bernheim, Garrett and Maki, 2001; Tennyson and Nguyen, 2001; Urban et al., 2018; Brown et al., 2016) or the college-going population (Stoddard and Urban, 2019; Mangrum, 2019), no research has yet studied the impacts of financial education on the population who end their education at high school. If state-mandated financial education improves outcomes for the college-going population but leaves outcomes unchanged for those who end their education with high school diplomas, these policies may be unintentionally increasing inequality across the two groups. Only one study examines education levels, and only tangentially. Harvey (2019) studied the effects of financial education on alternative financial services (AFS) use by race. Though Harvey did not specifically study the high school only population, under-represented minorities<sup>3</sup> are more likely to be non-college goers. Harvey's study finds that financial education decreases AFS use for her groups of interest, though the effect size is not different across race.<sup>4</sup>

The overall effects of high school financial education graduation requirements on FWB are positive, between 0.75 and 0.80 points, or roughly 1.5 percent of mean levels. The overall effects are driven almost entirely by males, for whom financial education increases FWB by 1.86 points, or 3.8 percent of mean FWB. There is no change for women within the overall sample. Strikingly, we find that, if anything, financial education may

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<sup>3</sup>Harvey categorizes those who identify as Black/African American, Hispanic/Latino, or American Indian/Alaska Native as under-represented minorities.

<sup>4</sup>Harvey also has a 2020 working paper that does a subgroup analysis for the population of high school only young adults using the Survey of Income and Program Participation. Here, she finds that financial education increases the propensity to save for this group.

lower FWB for those who end their schooling with a high school diploma. Drilling down further into the components of FWB that change due to the education, the sample with high school diplomas are more likely to say they will not have the things they want in life due to their financial situation. Non-college goers who receive financial education may be more in tune with their financial reality, resulting in a different (and potentially lower) sense of financial well-being. In contrast, we find positive effects of financial education on FWB among college-educated populations. In particular, individuals who attend college experience differentially larger increases in FWB relative to their counterparts who end their education after high-school.

The heterogeneity in effects is instructive for financial education policy. Prior studies on financial education in high school have shown positive impacts for credit and financial management behaviors among young adults writ large (Urban et al., 2018; Harvey, 2019, 2020; Stoddard and Urban, 2019; Mangrum, 2019; Brown et al., 2016). This may not result in all high school graduates feeling more financially in control, however, especially those who face greater financial precarity. For these populations, financial education may not improve subjective financial well-being in the absence of programs and services that can tangibly reduce financial risk and hardships, or educational content that more explicitly targets their needs. While policies requiring financial education in high school are designed, in part, to improve outcomes explicitly for the non-college going population, our results suggest that, paradoxically, they may exacerbate inequalities in outcomes across educational attainment.

## **2 Financial Well-being Scale**

The financial status of families is typically expressed using a measure such as income—families are labeled well-off if their income levels are well above the median, and labeled poor if below certain cutoffs. These measures do not capture how much financial strain people feel. Most readers can reflect on people who have relatively little income, yet appear to be financially secure, as well as those with relatively robust incomes who are financially stressed. Yet, in the household finance literature, financial well-being is generally not well measured, in part because there is a lack of standardized instruments to use in research.

More broadly, subjective well-being is a measure of individual happiness (Deaton, 2008) and life satisfaction (Diener, 1984; Diener et al., 1999). Income and wealth are correlated with subjective well-being, but economic resources alone do not seem to determine general well-being—lower income (or wealth) households can have high subjective well-being (or vice versa) (Diener and Biswas-Diener, 2002). Financial well-being can be

construed as a subset of overall well-being, within the domain of financial management.

As a proxy for financial security, studies often use measures ranging from savings, debt levels, credit scores, financial mistakes,<sup>5</sup> financial knowledge (or literacy), or the incidence of hardships. While important, these are indirect indicators of how people perceive their situation. Understanding the financial well-being of households requires more holistic measures than account balances or paystubs can capture. This study explores a relatively new, subjective measure of financial perceptions called the financial well-being (FWB) scale. This broader measure of financial well-being can offer insights beyond traditional measures and can potentially deepen our understanding of households' financial security.

The CFPB developed the FWB scale based on qualitative research to comprehensively measure subjective financial well-being, including (1) control over day-to-day, month-to-month finances; (2) the capacity to absorb a financial shock; (3) being on track to meet financial goals; and (4) having the financial freedom to make the choices that allow one to enjoy life. Being in control includes feeling confident about being able to pay bills on time, not having unmanageable debt, and being able to make ends meet. Absorbing a shock includes resilience by having a financial cushion, savings, health insurance, access to credit, or friends and family who can provide financial assistance. Financial goals, which can vary based on the individual and his or her needs, are related to resource planning and being confident to make financial decisions. Financial freedom includes aspects of autonomy, where a lack of financial resources can limit basic life choices.

The FWB scale is a ten-question battery, where each item is measured on a five-point Likert response scale.<sup>6</sup> These items are not simply summed, but instead scored using item response theory (IRT). With IRT, each item response has unique weights and contributes in different ways to the score (Edelen and Reeve, 2007).<sup>7</sup> The FWB score is transformed into a score ranging from about 20 to 90.<sup>8</sup> The CFPB also has an abbreviated five-item FWB scale that performs similar to the longer set of questions.

Figure 1 plots the FWB scale over the life course by gender and education, where we separate those who end their education with a high school diploma, those who attend at least some college (or are in college at the time of the survey), and those who have a four-year degree or additional higher education. These graphs display patterns that are

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<sup>5</sup>Financial mistakes refer to situations when individuals choose a strictly dominated option.

<sup>6</sup>See the CFPB website: <https://www.consumerfinance.gov/consumer-tools/financial-well-being/>

<sup>7</sup>The FWB score is estimated using a bi-factor graded response model with one factor related to the latent financial well-being construct and one factor to account for whether each question was phrased negatively or positively.

<sup>8</sup>The FWB score IRT procedure is weighted separately for people in working ages (18-61) and those who are retired or close to retiring from work (62 and older).

consistent with our general expectations. People have low financial well-being when just starting out as young adults, and show improvements as they age, with relatively stronger financial well-being in later middle ages, when careers plateau. Two clear trends emerge from these plots. First, the top panel shows that women have lower levels of FWB than men at all ages, with the largest gaps from ages 35-54 and age 70 onward. Second, the bottom panel shows that individuals with only a high school diploma and those with some college education have nearly indistinguishable FWB over the life-cycle. Those with college degrees or higher have FWB scores nearly five points higher at almost every age cohort when compared to the other two education levels plotted. This gap is larger than the gender gap in FWB scores plotted in the top panel. These figures motivate the exploration of heterogeneity in the effects of financial education across gender and education.

### 3 Data

We use the 2012, 2015, and 2018 waves of the FINRA Investor Education Foundation’s National Financial Capability Study (NFCS) for our analysis. The 2018 NFCS includes the actual five-item FWB scale developed by the CFPB. For prior years, we build a pseudo financial well-being (PFWB) measure that mimics the actual financial well-being measure to allow us to use the 2012 and 2015 NFCS. We also use data from the 2016, 2017, and 2018 survey waves of the Understanding America Survey (UAS) as a secondary estimate.<sup>9</sup>

Further, we update the financial education graduation requirements data from Urban and Schmeiser (2015) to correct the mandate status information for several states and years. There are two main corrections: (1) states that intended to have graduation requirements that were delayed or not implemented as intended, and (2) states that have implemented graduation requirements after the Urban and Schmeiser (2015) data ended in 2014. The current mandates are in Table 2.

The NFCS data are repeated cross sections. In addition to being nationally representative, the data include samples of at least 500 individuals per state each year. The NFCS data include many questions on types of debt, credit, assets, and financial decisions in addition to the demographic characteristics of households. While the NFCS data have many advantages, the data do not contain the state in which the respondent attended high school. This makes it challenging to assign the policy environment for each respondent. For this reason, we restrict the sample to adults under age 45, where the probability of leaving the state of residence since high school (at the most about 27 years prior) is relatively low.

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<sup>9</sup>While the Federal Reserve Board’s Survey of Household Economics and Decisionmaking (SHED) is another dataset that has both state of residence and financial well-being, the data only include FWB in one year and the samples are too small to employ our empirical strategy for that one year of data alone.



Brown et al. (2015) show that the probability of living in the same state from 18-29 is 82 percent. Molloy, Smith and Wozniak (2011) report that 4 percent of 18-24 year olds moved to another state, and 3 percent of 25-44 year olds moved to a new state over the same period. Geographic mobility is lower for individuals who end their education with a high school diploma, one of the key sub-groups we examine (Molloy, Smith and Wozniak, 2011; Schouten, 2020). For example, the average annual migration rate from 1981 to 2010 was 1.5 percent for individuals who ended their education with high school (Molloy, Smith and Wozniak, 2011).

To create the PFWB scale, we pair survey questions asked in the 2012, 2015, and 2018 NFCS with survey items from the FWB scale.<sup>10</sup> Table 1 matches these questions, based on prior research (Collins and Urban, 2020). Each FWB question ranges from one to five, where responses are “completely,” “very well,” “somewhat,” “very little,” and “not at all.”<sup>11</sup> All responses are re-scaled such that increases in the number represent improved well-being.

The overall correlation between the FWB and PFWB measures in our sample is 0.613, and the correlation within gender is 0.624 and 0.571 for females and males, respectively. We further plot the average FWB and PFWB by gender and education in Figure A.1, as well as the distribution of each in Figure 2.<sup>12</sup> In both cases, the FWB measure is scaled slightly lower on average than the PFWB measure, but both follow similar, normal distributional patterns. For example, the distribution is shifted to the left for both men and women in Figure 2. Overall, the PFWB can serve as a reasonable measure in the NFCS from 2012 to 2018. Since the PFWB question items tend to be more objective than the original FWB scale, we also present results individually from each question included in the scales, as well as the overall scores.

In Figure 3, we examine the correlates of (P)FWB in the NFCS. Specifically, we regress (P)FWB on state fixed effects, survey year fixed effects (for PFWB only), demographic characteristics, income categories, homeownership, and use of alternative financial services. When compared to households making over \$100,000 annually, lower income households tend to have lower (P)FWBs. In all income classifications except for those earning under \$25,000, the estimates for FWB and PFWB overlap confidence intervals. This suggests the measures capture similar trends. While income is correlated with (P)FWB, the measure is intended to be independent of income itself. Indeed, Collins and

<sup>10</sup>For code that creates the FWB and PFWB measures, please visit [http://www.montana.edu/urban/NFCS\\_PseudoFWB\\_forposting.do](http://www.montana.edu/urban/NFCS_PseudoFWB_forposting.do).

<sup>11</sup>Note that the FWB and PFWB scales are estimated even if one or more items are missing—this is another feature of the IRT scoring method. A non-response to an item is used as information to contribute to the composite score.

<sup>12</sup>Table A.1 reports the average FWB and PFWB, as well as the answers to each question by whether or not the state had financial education requirements over our time period of interest.

Table 1: Financial Well-being and Pseudo Financial Well-being Measures

Number	CFPB FWB Question	NFCS Proxy Question
Q1	I am just getting by financially	How confident are you that you could come up with \$2,000 if an unexpected need arose within the next month?
Q2	I am concerned that the money I have or will save won't last	Over the past year, would you say your household's spending was less than, more than, or equal to your household's income?
Q3	Because of my money situation, I feel like I will never have the things I want in life	Overall, thinking of your assets, debts and savings, how satisfied are you with your current personal financial condition?
Q4	My finances control my life	I have too much debt right now
Q5	I have money left over at the end of the month	In a typical month, how difficult is it for you to cover your expenses and pay all your bills?

Notes: Each question is re-scaled such that higher values represent positive outcomes. For example, “I am just getting by financially” is the specific question asked, but we recode the answers such that those who strongly agree with that statement would have the lowest values.

Urban (2020) show that there is a full distribution of FWB for each income category, and each of those distributions is similar in shape. Homeownership is correlated with higher (P)FWB scores and use of alternative financial services in the last five years is correlated with lower (P)FWB scores.<sup>13</sup>

## 4 Empirical Strategy

After validating the FWB and PFWB as measures of financial well-being in the NFCS, we estimate how these measures vary based on exogenous high school financial education mandates. Our identification relies on observing the year of birth and state of residence for each respondent. Based on age, we can match the timing of financial education requirements to compare those people graduating before and after financial education was required in high school across states with and without graduation requirements. We use a two-way fixed-effect difference-in-difference strategy, where the fixed effects capture state and graduation year.

We estimate Equation 1 for our dependent variable of interest  $FWB_{i,s,t}$ , for individual

<sup>13</sup>For more on the correlates of FWB scores, see the CFPB's 2017 report on the FWB of Americans and the Consumer Financial Protection Bureau (2019) report that shows average FWB is not very different by state.

$i$  living in state  $s$  at the age someone is typically graduating from high school (18) in year  $t$ . Our independent variable,  $PF_{i,s,t}$ , equals one if individual  $i$  in state  $s$  graduated from high school in a year  $t$  after the state mandated a personal finance graduation requirement. We further control for individual-level characteristics ( $\mathbf{X}_i$ ), which include race and gender indicators, as well as state fixed effects ( $\delta_s$ ) and graduation year fixed effects ( $\gamma_t$ ). When we expand our analysis to 2012, 2015, and 2018 NFCS samples, we additionally control for survey year fixed effects. In those specifications, our dependent variable of interest is PFWB. Standard errors are clustered at the state level, the level of policy variation, throughout the analysis.

$$FWB_{i,s,t} = \alpha_0 + \alpha_1 PF_{i,s,t} + \beta \mathbf{X}_i + \delta_s + \gamma_t + \varepsilon_{i,s,t} \quad (1)$$

We also show event study graphs to visually inspect the plausibility of the parallel trend assumption required for a difference-in-differences estimate. We further note that school districts in states without mandates can require personal finance courses be completed prior to graduation. Indeed, using 2019–2020 data, Urban (2020) shows that 23 percent of schools within states without graduation requirements still require personal finance coursework. It is also a possibility that before implementing a graduation requirement, many school districts within a state already require personal finance. In both cases, our estimates will understate the true effect of personal finance graduation requirements on (P)FWB.

## 5 Results

This section shows the event study specification and documents the results of the difference-in-difference estimations. We then focus on the results by gender and educational attainment. The splits by education are valid, as Stoddard and Urban (2019) show that financial education graduation requirements do not change whether students attend college or where they go to school if they choose to attend (2-year vs. 4-year, public vs. private, in-state vs. out-of-state, higher or lower cost, and part-time vs. full-time). Throughout, the dependent variables are scaled such that higher numbers reflect improvements in (P)FWB; the same is true for each individual question within the (P)FWB scales.

We begin with event studies to show the plausibility of the parallel trends assumption in Figure 4 for all 18–45 year olds, where the period before the graduation requirement goes into effect is the excluded group. For both the full sample and the sample split by gender, there is no clear trend in FWB before the start of the graduation requirement. This is consistent with inspections of parallel pre-trends in prior work in this literature (Stoddard and Urban, 2019; Brown et al., 2016; Urban et al., 2018; Mangrum, 2019). After the

intervention, FWB seems to rise slightly, though that rise appears to be completely driven by males, with no real change for females. If we replicate our results with state-specific linear trends, our results remain robust throughout (Table A.2). The second column of Figure 4 replicates this exercise for the PFWB score. Again, there is no clear pre-trend for the overall or specific samples. However, PFWB does seem to increase for those impacted by the financial education graduation requirement. The rise is again more pronounced for men but suggestively positive for women as well. Finally, Figure 5 shows pre-trends split by education level, where there is no clear evidence of pre-trends for any sample for either (P)FWB measures.

We provide our estimates of  $\alpha_1$  in Table 3. As mentioned earlier, we only have actual FWB for one year in the NFCS, 2018, while we have PFWB from the 2012-2018 surveys. This gives us additional power in the PFWB sample, though we replicate our PFWB results using only 2018 and our results remain consistent (Table A.3 and Figure A.2). While our overall coefficients on FWB and PFWB are both positive and similar in magnitude, only PFWB is statistically different from zero at the 90 percent level due to the increased precision in the PFWB sample. The magnitude suggests financial education increases PFWB by 0.76 points, a 1.5 percent increase relative to the mean of 51.

We also find evidence of heterogeneous impacts by gender. For men, the effect on FWB is 1.86 points (3.7 percent) and statistically different from zero at the 95 percent level, while the estimated effect for women is actually negative (though close to zero and imprecisely estimated). Moreover, we find evidence that men benefit differentially from the education. The difference between the estimates for men and the estimates for women is marginally significant ( $p\text{-value} = 0.065$ ). Similarly, we observe larger increases from financial education on PFWB for men - PFWB increases on average for men by 1.22 points (2.3 percent), yet we find no statistical evidence of an increase for women.

We find evidence that, on average, financial education is improving financial well-being more for men than women. To examine possible drivers of this heterogeneity, we first plot the overall and by gender effects of financial education on each component of FWB in the top panel of Figure 6. These results suggest that the answers to questions 1 (I am just getting by financially) and 5 (I have money left over at the end of the month) remain unchanged for all groups. All FWB questions show precisely estimated null effects for women. At the same time, Figure 6 suggests that men's responses to questions 2 (I am concerned the money I have or will save won't last), 3 (Because of my money situation, I feel like I will never have the things I want in life), and 4 (My finances control my life) all increase due to financial education. Since these are all subjective matters, this is suggestive evidence that men may become more confident due to financial education.

The bottom panel of Figure 6 replicates the question-by-question results for the PFWB measure. Recall that in general, the PFWB measures tend to be more objective than sub-

jective in nature. For women, the questions about coming up with \$2,000 if an unexpected need arose within the next month is lower (Q1), which could mean they are more likely *to know or admit* that they do not have emergency savings than similar women who did not receive financial education in high school. Women with financial education did not show different responses about spending relative to household income (Q2), or about having too much debt (Q4). Women do show higher levels of overall satisfaction with their current personal financial condition (Q3), as well as higher responses to being able to cover expenses and paying bills (Q5) if they were exposed to a financial education mandate. This suggests that women with financial education are reporting better day-to-day budgeting and planning, but they remain cautious about their financial futures, which may be a rational response given historic gender trends in income and wealth. However, these estimates are only marginally statistically significant (at the 90 percent level) in each case.

Next, we split our sample by the highest level of education respondents completed: high school, some college, and college or more. While financial education policy is often pitched to policymakers as differentially benefiting those that will end formal education with high school, research has not determined the overall effects for this group. Table 4 shows the result for this population, when compared to other education levels.<sup>14</sup> While we caution that sample sizes do shrink, the overall effect of financial education on (P)FWB flips sign for those ending their education after high school. Requiring financial education in high school reduces FWB by 1.4 points (3 percent) for those whose highest level of education is a high school diploma, and our 95 percent confidence intervals can rule out large positive effects on FWB. Strikingly, individuals who do not attend college experience differentially lower effects of financial education on FWB than those who attend some college (p-value = 0.044) or complete college (p-value = 0.040). We find qualitatively similar, though less stark, results when analyzing our PFWB measure. Our results are consistent if we drop 18-22 year olds who are most likely to still be in school, and the effects for the high school only sample are even more negative when we use the FWB measure (Table A.5). Despite seeking to improve outcomes particularly for individuals who do not attend college, our results suggest that financial education requirements (as currently implemented) may actually increase disparities across the educational gradient.

Why might subjective financial well-being be lower among those with only a high school education after being exposed to financial education? Figure 7 shows that this largely comes from lower responses to feeling prevented from having the things in life due to money (Q3), though there is also a negative estimate for just getting by financially (Q1), on finances controlling life (Q4), and having money left over at the end of the month (Q5). Looking at the PFWB measure, only being confident about coming up with \$2,000 for an unexpected need (Q1) has a negative estimate. These results could mean that financial

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<sup>14</sup>We note that the sample with “some college” could also be in college when surveyed.

education makes those who end education with high school more aware of, more focused on, or more willing to admit to, financial shortcomings. Financial education may make salient that some financial goals are out of reach given one's financial circumstances, at the expense of subjective well-being.

The effects of financial education on (P)FWB for those with at least some college appear more positive, though only statistically different from zero for the college plus sample when we use the PFWB measure due to the increased precision in this specification. However, the 95 percent confidence intervals also rule out large negative effects even for the FWB specification. These findings are consistent with previous literature on similar populations, where financial education improves student loan borrowers' financing decisions (Stoddard and Urban, 2019; Mangrum, 2019). Figure 7 shows that the only improvements for the some college population come from the FWB question pertaining to having money left over at the end of the month (Q5). None of the subjective outcomes change for this group. For individuals with college degrees or even more education, the overall estimates of financial education show higher levels of FWB and PFWB.

## 5.1 Understanding Potential Mechanisms

These estimates point to two main findings. First, state-mandated financial education results in higher financial well-being for men but not women. Second, state-mandated financial education improves financial well-being for college graduates but does not improve financial well-being for those who do not engage in higher education. In this section, we discuss the potential mechanisms behind these findings.

We begin by ruling out other factors that may result in differential financial well-being. For example, Appendix Figure A.3 shows that financial education does not change income levels for any group. There is a small negative estimate on making under \$35,000 per year for women, though this is only statistically different from zero at the 90 percent level.

Next, we examine if financial education changes financial literacy. We measure financial literacy with the Lusardi and Mitchell (2014) five-item scale. Since women are more likely to answer "don't know" than men, we also provide an additional specification where we randomize a guess for each "don't know" answer.<sup>15</sup> As in Mangrum (2019), we find some evidence that financial education improves financial literacy in Table 5 for the overall sample, though this is only statistically different from zero when we simulate guesses. Estimates on financial literacy by gender and education are all positive, but the

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<sup>15</sup>We provide an alternate specification in Table A.6 where we instead use factor analysis as in Lusardi, Maarten van Rooij and Alessie (2011) to accommodate the "don't know" responses. The findings are consistent with our overall findings: the magnitudes are all positive but none are statistically different from zero at the 90 percent level.

standard errors are large, and there are no systematic differences between men and women or the most and least educated.

We examine the extent to which our data show that financial education changes objective financial situations in Table 6. For the overall sample (Column 1), there is some evidence of increased ownership of checking or savings accounts, holding rainy day accounts, and figuring out how much money is needed for retirement.<sup>16</sup> While some point estimates are larger for the male or female samples (Columns 2 and 3, respectively), none of the sub-group coefficients are statistically different from the average overall effect. For the high school only sample (Column 4), the overall effects on holding checking and savings accounts are positive as is the effect on maintaining a rainy day account, though neither is statistically different from zero. Estimated effects on figuring out how much is needed for retirement is a more precisely estimated null effect. There is little evidence of differences in the effects of financial education on objective outcomes across individuals with only a high school diploma and those with at least a college degree.<sup>17</sup>

Finally, we examine whether results differ across the FWB distribution. Table A.7 shows the effects at the median, 25th percentile, and the 75th percentile by gender. The effects at the median are comparable to the average effects, but the confidence intervals are more precise. The effects at the 25th percentile and 75th percentile are not statistically different from each other, suggesting that there is not a clear part of the distribution that our effects come from. If anything, the effects of financial education on FWB for females are more likely to be positive for those from the bottom of the FWB distribution (25th percentile). Table A.8 replicates this exercise but splits the sample by education. While the effects are again not statistically different from each other across the 25th, 50th, and 75th percentiles, the 25th percentile shows the largest coefficient magnitudes (meaning improvements) across all education levels.<sup>18</sup> These results should be interpreted with caution given the large standard errors.

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<sup>16</sup>Harvey (2020) uses the Survey of Income and Program Participation to show that state-mandated financial education increases liquidity and the likelihood of having savings over \$400 for a high school-only sample of low-income 18-24 year old respondents. While our sample covers a larger range of ages and incomes, our results are largely consistent with the signs and magnitudes in her study.

<sup>17</sup>In an additional specification, we control for household income. Table A.4 shows that controlling for income does not change the effects of financial education on (P)FWB. This lends additional evidence to the fact that objective situations are not driving the effect, but subjective well-being is changing.

<sup>18</sup>For the sample of individuals whose highest education is a high school diploma, this means the effect is the least negative for the 25th percentile.

## 5.2 Robustness

We carry out four robustness checks to validate our results. First, we probe the robustness of including state-specific linear trends in high school graduation year in Table A.2; results remain consistent. Second, to be sure that some form of household formation is not driving our estimates, we restrict our sample to only never-married respondents and confirm that our results remain consistent (Table A.9). Third, to be sure that our estimates are not driven by a single state, Figures A.4-A.5 plot the coefficient estimates from Tables 3 and 7 dropping one state at a time. There is little evidence that our results are driven by a single state. Fourth, we replicate our results in the Understanding America Survey (UAS) in Appendix B. The UAS uses the FWB scale for a sample of respondents in recent years. One advantage of using the UAS is that the data also includes the state where individuals attended high school. The UAS sample is much smaller than the NFCS, which results in estimates with large standard errors. However, using the UAS data we do not see any evidence that would counter the estimates from the NFCS sample.

## 5.3 Magnitudes and Discussion

To better understand the magnitude of the effects reported, we compare it to another event, job loss. Using a panel component for a subset of the UAS from 2018–2019, as in Burke and Perez-Arce (2020), we run an analysis examining how job loss influences one’s level of FWB, controlling for FWB prior to job loss to account for unobserved heterogeneity. Restricting to UAS respondents under the age of 45 (a sample of 1,768 individuals), we find that job loss is associated with a reduction in FWB of 4.2 points for the full population. The effect of financial education on FWB for men we find is 1.86, which is 44 percent of the magnitude of the change due to job loss. We do not mean to compare a job loss—which is an immediate negative shock—to not having financial education in high school. The education likely has lifelong effects, while the job loss is more episodic. Still, the relative size of these two estimates is helpful to position financial education effects, controlling for other factors. Our results suggest that state-mandated financial education does have meaningful effects on financial well-being, but only for men and college graduates.

Our difference-in-difference estimates assume that all people who likely attended high school in states with a financial education policy are likely to have been exposed to a financial education course. This means our estimates would be attenuated if schools failed to fully implement the education program. Urban (2020) collected local high school course requirements for the 2019–2020 academic year, which may shed light on how frequently schools comply with state mandates. Data from school course catalogs show that only 48 percent of schools within states that have graduation requirements have either a stand-alone personal finance course or a course with personal finance content that is required for



graduation. This means that the treatment effect on the treated could be as much as twice the size estimated.

## 6 Conclusion

Young people transitioning into adulthood develop financial independence as they make decisions about borrowing for schooling or consumption and are in the earliest phases of establishing a career and earnings trajectory. Young adults who enter the workforce with no further education beyond high school will have income sooner than those who attend college full-time but also will be more susceptible to income shocks and lower average lifetime earnings. Prior studies show that financial education helps young people better manage cash flows and pay bills on time (Brown et al., 2016; Urban et al., 2018; Harvey, 2019; Mangrum, 2019), which should result in short-run improvements in personal financial well-being. However, little research has examined how state-mandated high school financial education influences outcomes across the educational distribution.

Using data from the National Financial Capability Study, we show that financial education delivered in high school tends to increase the financial well-being of people under age 45, though there is substantial heterogeneity across the population. In particular, we find that financial education requirements result in (at least directionally) *lower* financial well-being for individuals who do not go to college, yet results in improvements for men and those who attain a college degree. While policies promoting financial education in high school explicitly seek to improve (the relative) outcomes for the non-college going population, as they are less likely to receive financial education subsequently, our results suggest that current implementation may actually *increase* perceptions of inequalities across education levels. While financial education may help some individuals improve financial outcomes, it may also simply raise awareness of financial fragility and result in lower expectations about one's financial future for others, particularly for individuals from economically disadvantaged groups. Despite their goals, policies promoting financial education in high school may be increasing the FWB gap between those with and without a college education by contributing to differences in aspirations and disparities in life trajectories.

The financial issues of non-college going young adults warrant special attention. This group is likely to face greater financial risks and lower chances of objective financial status—all factors that might suggest financial education would be more important and more impactful. The fact that our results suggest that financial education may lower financial well-being for non-college goers and lead to differentially worse subjective well-being than for their peers who also do not attend college suggests that current curricula may not

be sufficiently tailored for this population. Financial education for this group may need to stress the realities of potential shocks, labor market returns to education, and better prepare people for financial stresses. It may be advantageous for state-mandated financial education to focus more on topics that pertain to young adults who will not pursue education beyond high school, such as credit use (Harvey, 2019), managing budgets, juggling expenses, understanding costs associated with parenting and childcare, and paying taxes, as opposed to extensive curricula on postsecondary education financing (Stoddard and Urban, 2019; Mangrum, 2019). These elements may not increase their financial well-being, however. Doing this may require programs that can effectively reduce the risks of financial shocks, support emergency savings, and help people to manage debt.

Required financial education in high school does not change financial well-being for women, and these results are informative for research and policy. Women objectively face added risks in the labor market, as well as greater longevity. The measures of financial well-being we use may reflect women understanding the reality of their context and being honest in their self-assessments. It is also possible men and women incorporate information differently as they develop a sense of financial well-being. Men may be overconfident relative to women (Barber and Odean, 2001), in which case having higher financial well-being may not be a positive outcome. For example, studies show women take fewer financial risks (Bannier and Neubert, 2016), which could be prudent but could also reduce lifetime wealth. More research on gender differences in household finance could help expand our understanding of the interactions between financial education and gender. This research might also inform innovations in financial products and services to better serve women and other sub-populations.

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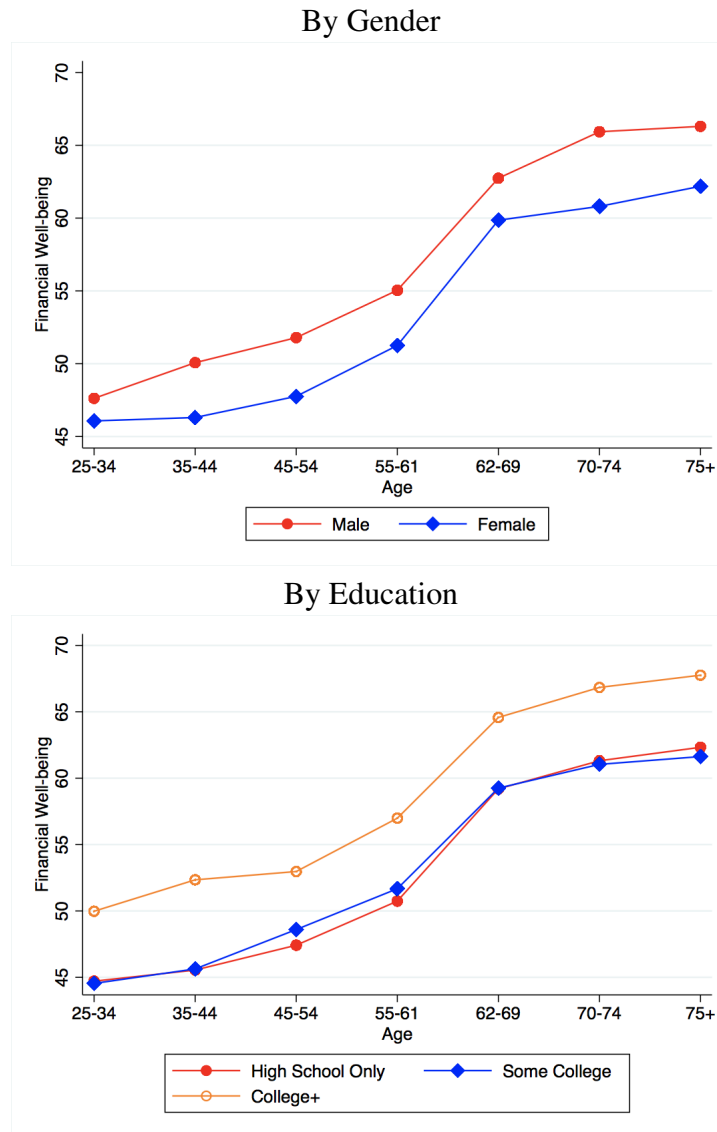
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## 7 Tables and Figures

Figure 1: Financial Well-being Across Education and Gender



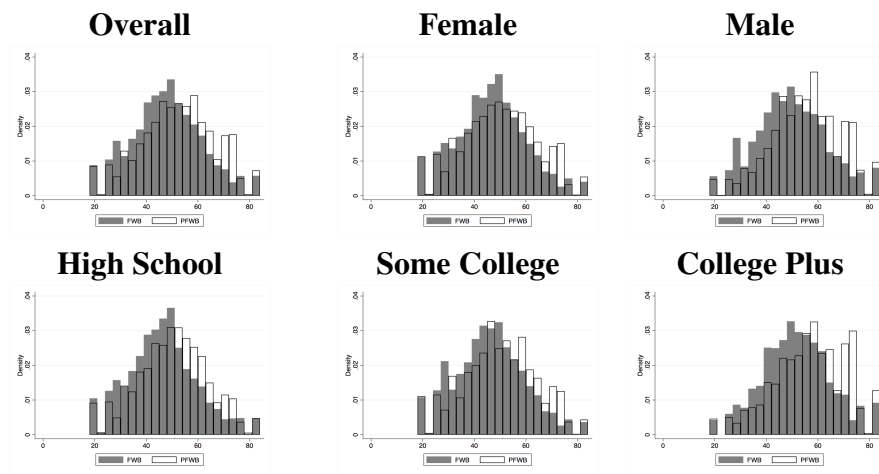
Notes: Data from 2018 NFCS.

Table 2: Graduation Requirements

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

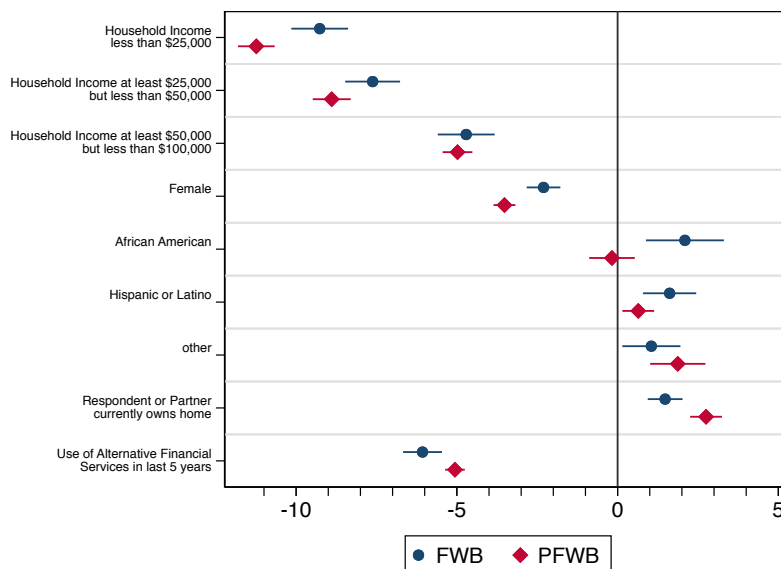
Notes: Hand collected data updating Urban and Schmeiser (2015). Graduation years represent the first cohort required to complete personal finance coursework prior to graduation. However, some of the states have since repealed their requirements. For the full dataset, visit [http://www.montana.edu/urban/Policies\\_Panel.xlsx](http://www.montana.edu/urban/Policies_Panel.xlsx).

Figure 2: Histograms of Financial Well-being and Pseudo Financial Well-being



Notes: Data from 2018 NFCS.

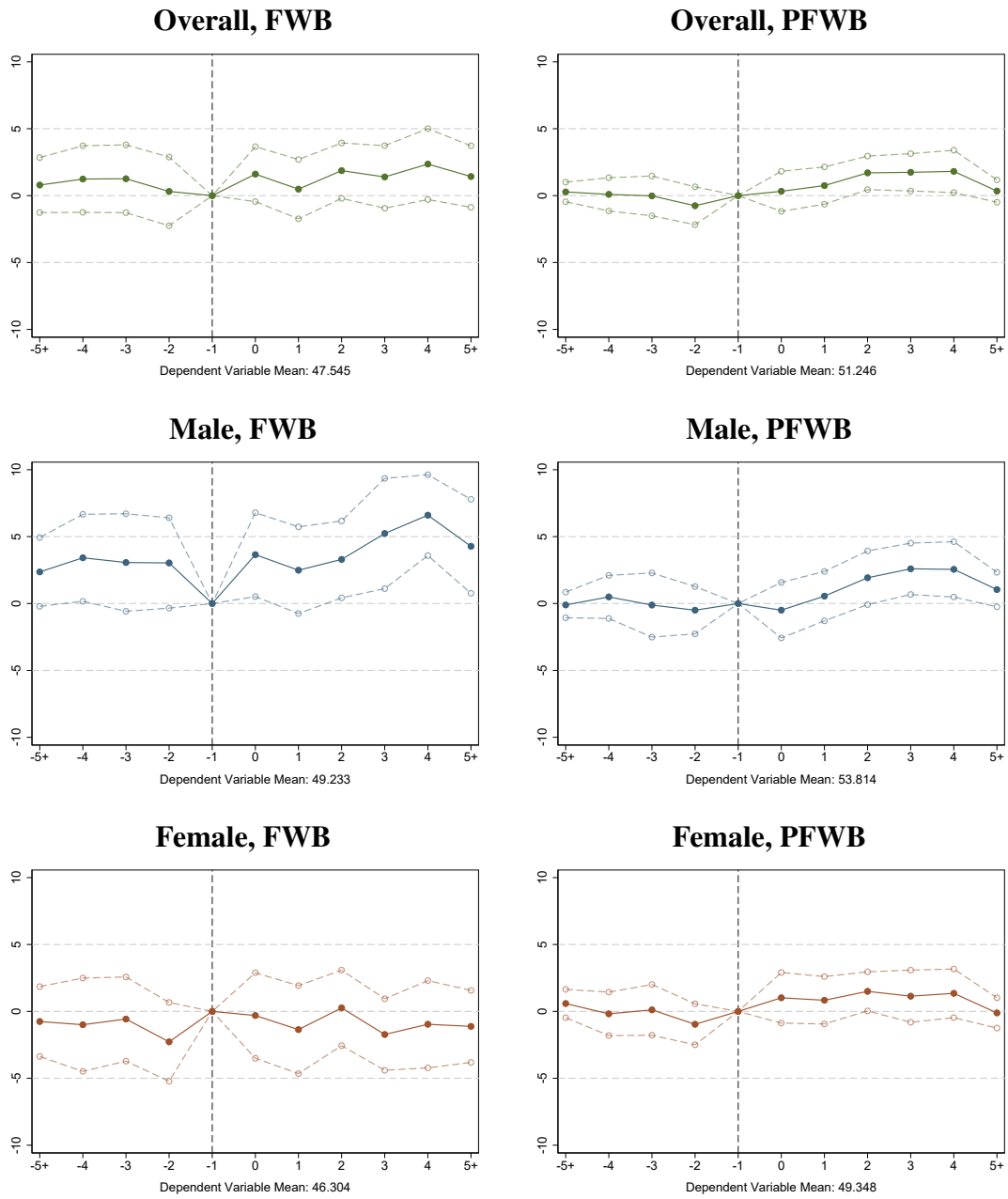
Figure 3: Factors that Predict (P)FWB



Notes: The income group coefficients are relative to those making \$100,000 or above. The demographic coefficients are relative to those that do not fall in any of the displayed groups. Data from 2018 NFCS for FWB and 2012, 2015, and 2018 NFCS for PFWB.

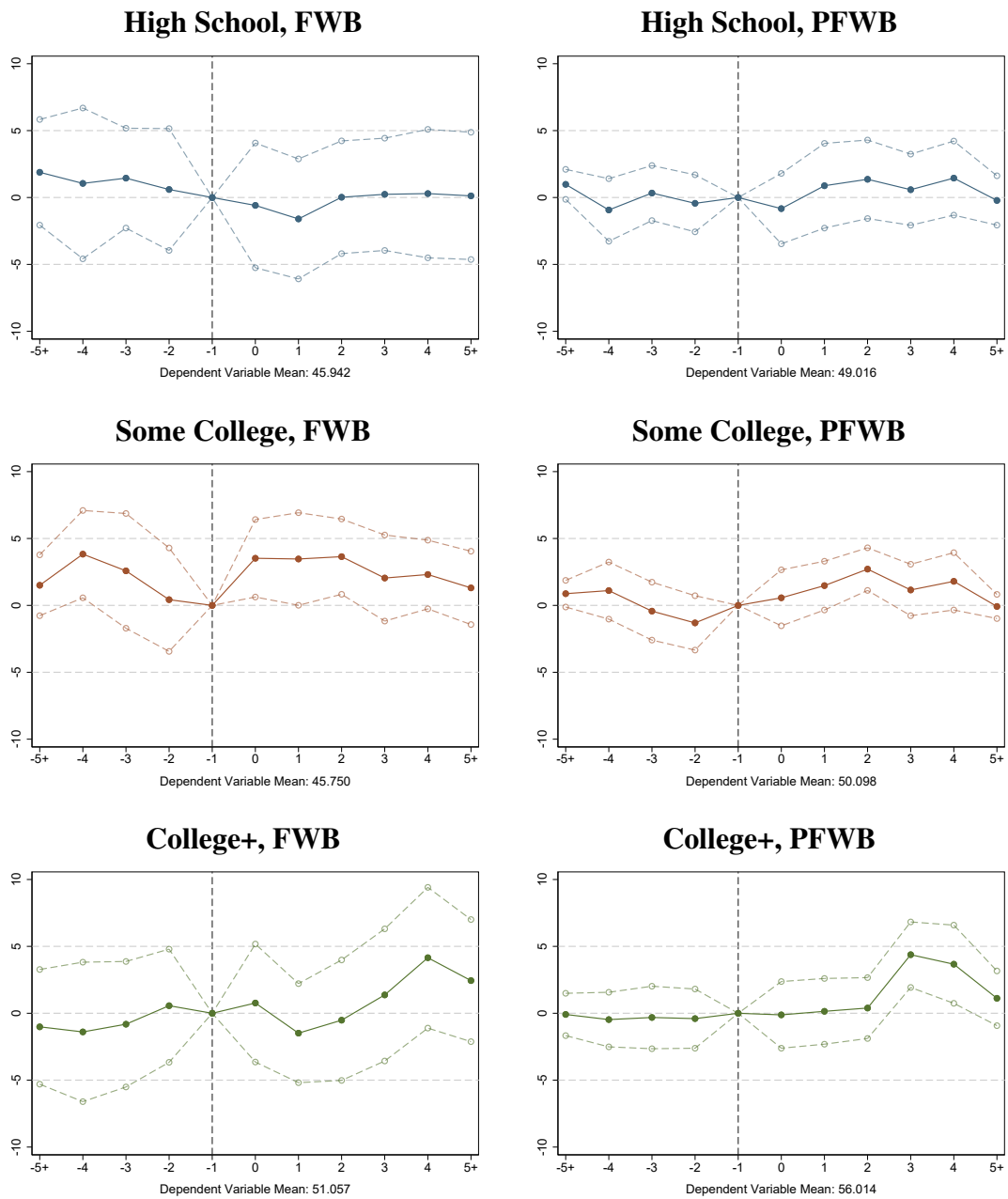


Figure 4: Financial Well-being Event Studies



Notes: 95% confidence intervals displayed from robust standard errors clustered at the state-level. Data from 2018 NFCS (FWB) and 2012, 2015, and 2018 NFCS (PFWB). The y-axis represents the difference in (P)FWB across the treatment and control groups in each period. The sample includes 18-45 year olds of all education levels.

Figure 5: Financial Well-being Event Studies (Split by Education)



Notes: 95% confidence intervals displayed from robust standard errors clustered at the state-level. Data from 2018 NFCS (FWB) and 2012, 2015, and 2018 NFCS (PFWB). The y-axis represents the difference in (P)FWB across the treatment and control groups in each period. The sample includes 18-45 year olds of all education levels.

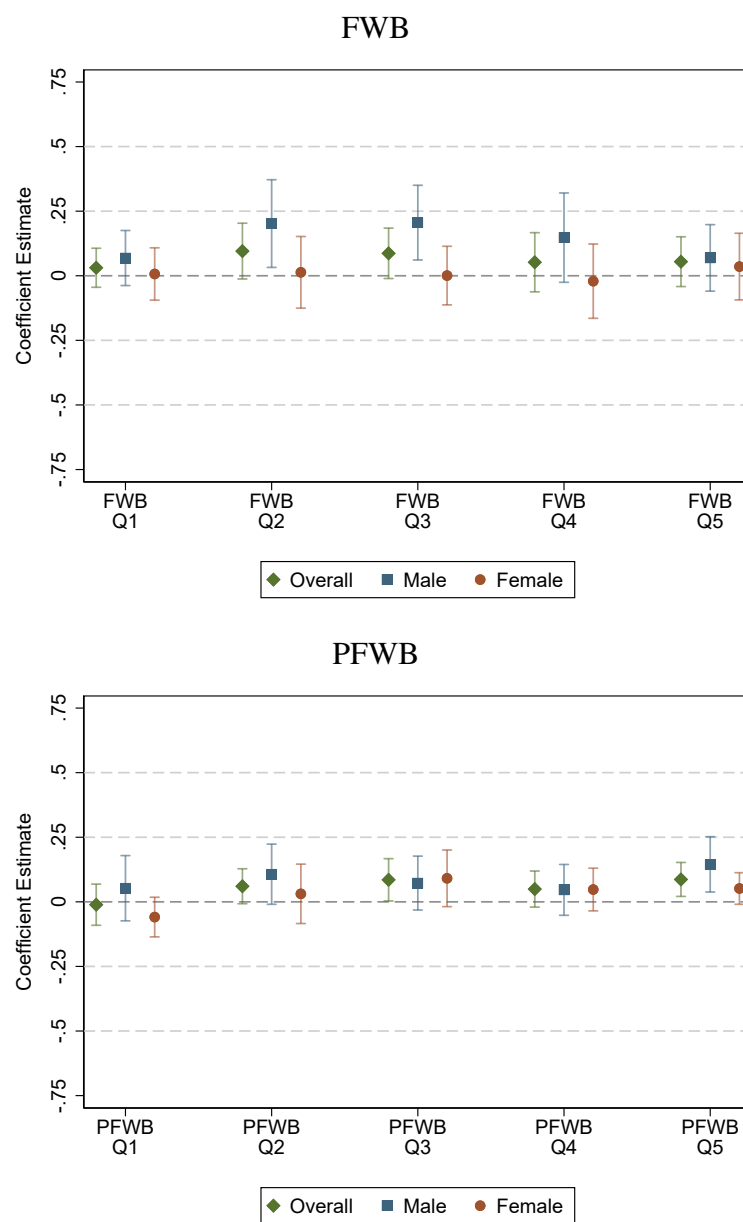
Table 3: Effects of Financial Education Requirements on (P)FWB

	FWB			PFWB		
	(1) Overall	(2) Male	(3) Female	(4) Overall	(5) Male	(6) Female
Fin Ed	0.777 (0.532)	1.858** (0.735)	-0.049 (0.714)	0.755** (0.358)	1.220*** (0.453)	0.421 (0.423)
N	12,228	5,182	7,046	37,086	15,762	21,324
$R^2$	0.019	0.018	0.009	0.038	0.017	0.018
DV Mean	47.54	49.23	46.30	51.25	53.81	49.35
Birthyear FE	X	X	X	X	X	X
Survey Year FE				X	X	X
Controls	X	X	X	X	X	X

Notes: Robust standard errors clustered at the state-level are in parentheses. Data from 2018 NFCS for FWB and 2012, 2015, and 2018 NFCS for PFWB. We report estimates of  $\alpha_1$  in Equation 1.

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

Figure 6: Effects of Financial Education Requirements on (P)FWB Components



Notes: 95% confidence intervals displayed from robust standard errors clustered at the state-level. Data from 2018 NFCS for FWB and 2012, 2015, and 2018 NFCS for PFWB. We report estimates of  $\alpha_1$  in Equation 1. Each question is reported in Table 1.

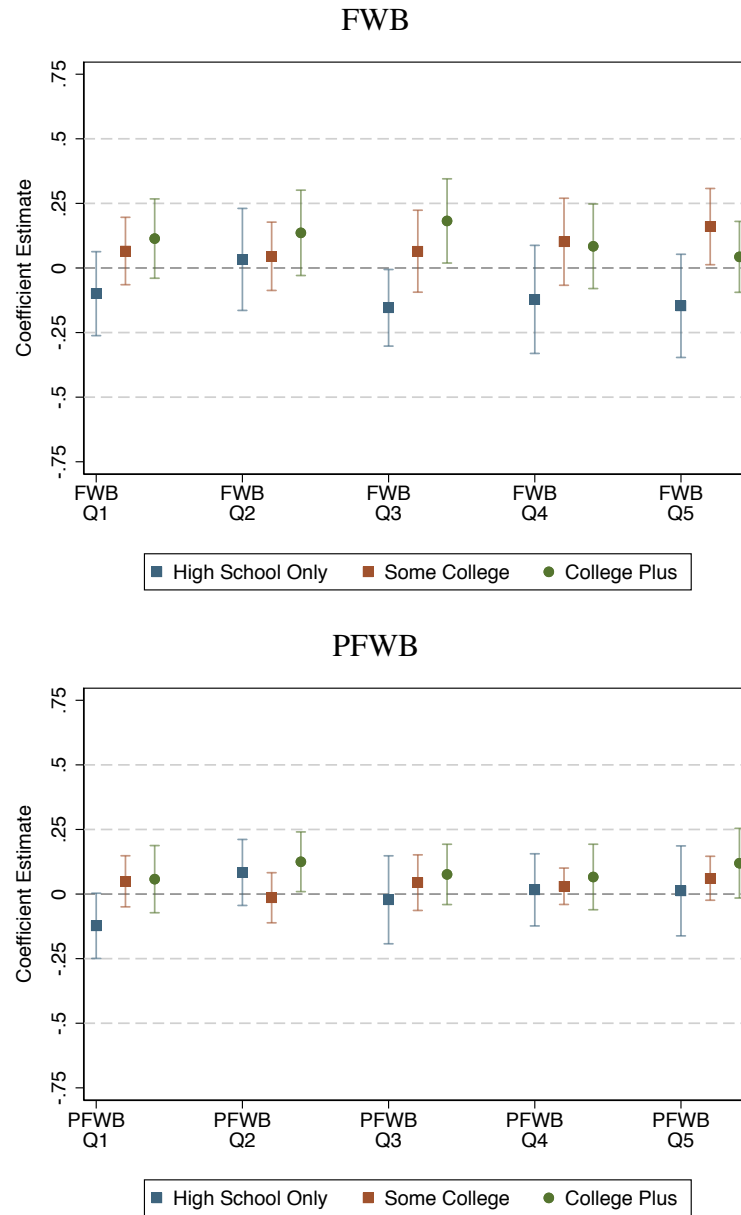
Table 4: Effects of Financial Education Requirements on P(FWB) by Education

	FWB			PFWB		
	(1) High School	(2) Some College	(3) College+	(4) High School	(5) Some College	(6) College+
Fin Ed	-1.390 (0.945)	1.021 (0.801)	1.577 (0.959)	-0.132 (0.724)	0.517 (0.403)	1.321* (0.702)
N	2,925	4,698	4,168	8,620	16,132	10,412
$R^2$	0.045	0.035	0.018	0.041	0.040	0.039
DV Mean	45.94	45.75	51.06	49.02	50.10	56.01
Birthyear FE	X	X	X	X	X	X
Survey Year FE				X	X	X
Controls	X	X	X	X	X	X

Notes: Robust standard errors clustered at the state-level are in parentheses. Data from 2018 NFCS for FWB and 2012, 2015, and 2018 NFCS for PFWB. We report estimates of  $\alpha_1$  in Equation 1.

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

Figure 7: Effects of Financial Education Requirements on (P)FWB Components by Education



Notes: 95% confidence intervals displayed from robust standard errors clustered at the state-level. Data from 2018 NFCS for FWB and 2012, 2015, and 2018 NFCS for PFWB. We report estimates of  $\alpha_1$  in Equation 1. Each question is reported in Table 1.

Table 5: Effects of Financial Education Requirements on Financial Knowledge

(a) Overall Effects						
	No Response = 0			No Response = Random Guess		
	(1) Overall	(2) Male	(3) Female	(4) Overall	(5) Male	(6) Female
Fin Ed	0.056 (0.038)	0.057 (0.049)	0.060 (0.052)	0.092*** (0.032)	0.099** (0.045)	0.092* (0.047)
N	37,175	15,796	21,379	37,175	15,796	21,379
$R^2$	0.083	0.086	0.044	0.093	0.088	0.097
DV Mean	2.50	2.74	2.31	3.00	3.14	2.89

(b) Split by Education						
	No Response = 0			No Response = Random Guess		
	(1) High School	(2) Some College	(3) College+	(4) High School	(5) Some College	(6) College+
Fin Ed	0.038 (0.063)	0.025 (0.047)	0.027 (0.055)	0.007 (0.050)	0.102** (0.044)	0.032 (0.055)
N	8,654	16,163	10,427	8,654	16,163	10,427
$R^2$	0.062	0.112	0.085	0.097	0.078	0.052
DV Mean	1.95	2.56	3.03	2.58	3.01	3.50

Notes: Robust standard errors clustered at the state-level are in parentheses. Data from 2018 NFCS for FWB and 2012, 2015, and 2018 NFCS for PFWB. We report estimates of  $\alpha_1$  in Equation 1. All models include birth year FE, survey year FE, state FE, gender, and demographic controls.

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

Table 6: Effects of Financial Education on Objective Financial Situation

(a) <b>Checking/Savings Account</b>						
	Overall Effects			Split by Education		
	(1)	(2)	(3)	(4)	(5)	(6)
	Overall	Male	Female	High School	Some College	College+
Fin Ed	0.018** (0.007)	0.014 (0.012)	0.022** (0.010)	0.014 (0.021)	0.006 (0.009)	0.001 (0.008)
N	36,188	15,341	20,847	8,285	15,841	10,252
R <sup>2</sup>	0.019	0.027	0.018	0.020	0.008	0.010
DV Mean	0.89	0.89	0.89	0.80	0.92	0.97
(b) <b>Rainy Day Account</b>						
	Overall Effects			Split by Education		
	(1)	(2)	(3)	(4)	(5)	(6)
	Overall	Male	Female	High School	Some College	College+
Fin Ed	0.027** (0.011)	0.036** (0.018)	0.020 (0.013)	0.039 (0.025)	-0.002 (0.019)	0.040 (0.026)
N	35,371	14,991	20,380	8,110	15,488	10,018
R <sup>2</sup>	0.025	0.016	0.014	0.027	0.020	0.023
DV Mean	0.40	0.47	0.35	0.29	0.37	0.56
(c) <b>Figure How Much You Need For Retirement</b>						
	Overall Effects			Split by Education		
	(1)	(2)	(3)	(4)	(5)	(6)
	Overall	Male	Female	High School	Some College	College+
Fin Ed	0.027** (0.012)	0.042** (0.020)	0.016 (0.013)	-0.003 (0.022)	0.043** (0.018)	0.023 (0.019)
N	35,217	14,971	20,246	8,053	15,425	9,973
R <sup>2</sup>	0.040	0.035	0.025	0.019	0.045	0.032
DV Mean	0.38	0.44	0.33	0.25	0.37	0.52

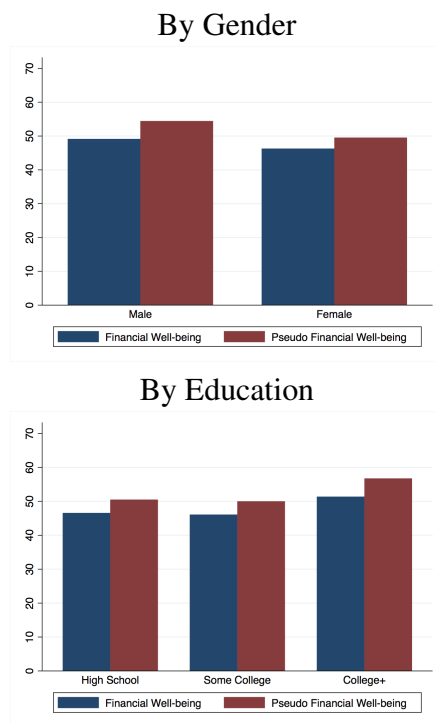
Notes: Robust standard errors clustered at the state-level are in parentheses. Data from 2012, 2015, and 2018 NFCS. Each outcome is a dummy variable, and we estimate linear probability models. Our models report  $\alpha_1$  from Equation 1 but change the dependent variables. All models include birth year FE, survey year FE, state FE, gender, and demographic controls.

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



## Appendix A: Summary Statistics and Robustness Checks

Figure A.1: Financial Well-being and Pseudo Financial Well-being



Notes: Data from 2018 NFCS.

Table A.1: Financial Well-being Summary Statistics

	States with Fin Ed		States without Fin Ed		Overall		
	Mean	N	Mean	N	Difference	Mean	N
<b>FWB</b>	47.85	2,627	47.46	9,601	-0.38	47.54	12,228
<i>FWB Q1</i>	1.74	2,577	1.74	9,412	-0.00	1.74	11,989
<i>FWB Q2</i>	2.19	2,594	2.09	9,495	-0.09***	2.11	12,089
<i>FWB Q3</i>	1.75	2,549	1.73	9,379	-0.02	1.73	11,928
<i>FWB Q4</i>	1.86	2,561	1.88	9,379	0.02	1.87	11,940
<i>FWB Q5</i>	1.59	2,558	1.54	9,329	-0.05*	1.55	11,887
<b>PFWB</b>	52.51	5,197	51.04	31,889	-1.47***	51.25	37,086
<i>PFWB Q1</i>	2.07	5,101	1.77	31,387	-0.30***	1.81	36,488
<i>PFWB Q2</i>	2.36	4,927	2.33	30,469	-0.03	2.33	35,396
<i>PFWB Q3</i>	2.16	4,970	2.23	30,538	0.08***	2.22	35,508
<i>PFWB Q4</i>	1.99	5,112	1.89	31,375	-0.10***	1.91	36,487
<i>PFWB Q5</i>	2.57	5,008	2.49	31,049	-0.08***	2.50	36,057

Notes: Data from 2018 NFCS for FWB and 2012, 2015, and 2018 NFCS for PFWB. Difference reports the difference across individuals who lived in a state with and without a financial education graduation requirement when they were in their teen years \*\* and \*\*\* depict that the difference is statistically different at the 5% and 1% levels, respectively. The remainder are not statistically different at the 10% level.

Table A.2: Effects of Financial Education Requirements on (P)FWB Including State Specific Linear Trends

(a) Overall Effects						
	FWB			PFWB		
	(1) Overall	(2) Male	(3) Female	(4) Overall	(5) Male	(6) Female
Fin Ed	0.559 (0.669)	1.624 (0.975)	-0.193 (0.995)	0.814* (0.410)	1.106** (0.462)	0.592 (0.527)
N	12,228	5,182	7,046	37,086	15,762	21,324
$R^2$	0.024	0.026	0.018	0.041	0.021	0.021
DV Mean	47.54	49.23	46.30	51.25	53.81	49.35

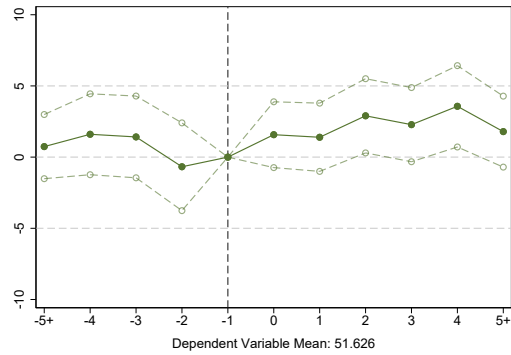
(b) Split by Education						
	FWB			PFWB		
	(1) High School	(2) Some College	(3) College+	(4) High School	(5) Some College	(6) College+
Fin Ed	-1.489 (1.292)	1.276 (0.936)	0.071 (1.211)	0.475 (0.873)	0.601 (0.464)	0.861 (0.917)
N	2,925	4,698	4,168	8,620	16,132	10,412
$R^2$	0.064	0.045	0.036	0.047	0.043	0.047
DV Mean	45.94	45.75	51.06	49.02	50.10	56.01

Notes: Robust standard errors clustered at the state-level are in parentheses. Data from 2018 NFCS for FWB and 2012, 2015, and 2018 NFCS for PFWB. We report estimates of  $\alpha_1$  in Equation 1, and this model additionally includes state-specific linear trends.

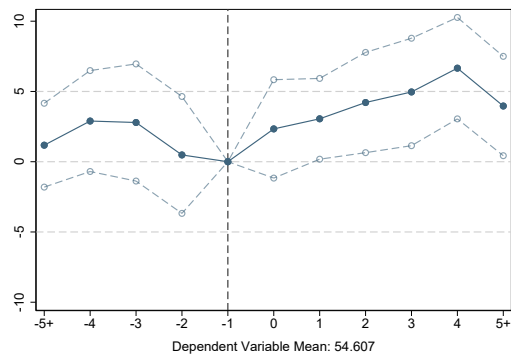
\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Figure A.2: PFWB Event Studies (Survey Year 2018 Only)

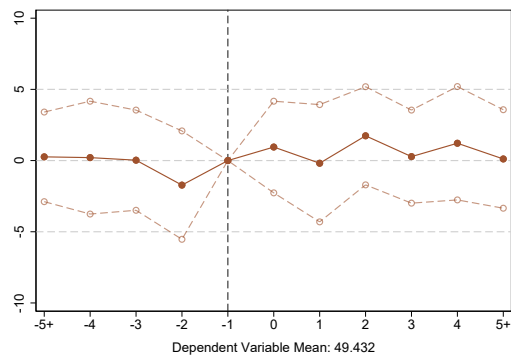
(a) Overall



(b) Male



(c) Female



Notes: 95% confidence intervals displayed from robust standard errors clustered at the state-level. Data from 2018 NFCS.

Table A.3: Effects of Financial Education Requirements on (P)FWB (Survey Year 2018 Only)

(a) Overall Effects						
	FWB			PFWB		
	(1) Overall	(2) Male	(3) Female	(4) Overall	(5) Male	(6) Female
Fin Ed	0.777 (0.532)	1.858** (0.735)	-0.049 (0.714)	1.511** (0.566)	2.780*** (0.679)	0.605 (0.801)
N	12,228	5,182	7,046	12,361	5,241	7,120
$R^2$	0.019	0.018	0.009	0.043	0.018	0.017
DV Mean	47.54	49.23	46.30	51.63	54.61	49.43
(b) Split by Education						
	FWB			PFWB		
	(1) High School	(2) Some College	(3) College+	(4) High School	(5) Some College	(6) College+
Fin Ed	-1.390 (0.945)	1.021 (0.801)	1.577 (0.959)	-0.493 (0.918)	1.636** (0.732)	2.302** (1.018)
N	2,925	4,698	4,168	2,976	4,739	4,202
$R^2$	0.045	0.035	0.018	0.057	0.055	0.044
DV Mean	45.94	45.75	51.06	49.72	49.24	56.17
Birthyear FE	X	X	X	X	X	X
Controls	X	X	X	X	X	X

Notes: Robust standard errors clustered at the state-level are in parentheses. Data from 2018 NFCS for FWB and PFWB. We report estimates of  $\alpha_1$  in Equation 1. These specifications restrict the sample NFCS survey year 2018. Since FWB is only available in 2018, this is only a binding restriction for the PFWB measure.

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

Table A.4: Effects of Financial Education Requirements Controlling for Income

(a) Overall Effects						
	FWB			PFWB		
	(1) Overall	(2) Male	(3) Female	(4) Overall	(5) Male	(6) Female
Fin Ed	0.483 (0.465)	1.618** (0.664)	-0.350 (0.639)	0.675** (0.322)	1.219*** (0.441)	0.288 (0.382)
N	12,228	5,182	7,046	37,086	15,762	21,324
R <sup>2</sup>	0.108	0.082	0.131	0.165	0.135	0.158

(b) Split by Education						
	FWB			PFWB		
	(1) High School	(2) Some College	(3) College+	(4) High School	(5) Some College	(6) College+
Fin Ed	-1.001 (0.895)	0.950 (0.740)	0.951 (0.944)	-0.131 (0.659)	0.631* (0.350)	1.153* (0.679)
N	2,925	4,698	4,168	8,620	16,132	10,412
R <sup>2</sup>	0.099	0.089	0.114	0.107	0.140	0.158
Birthyear FE	X	X	X	X	X	X
Survey Year FE				X	X	X
Controls	X	X	X	X	X	X

Notes: Robust standard errors clustered at the state-level are in parentheses. Data from 2018 NFCS for FWB and 2012, 2015, and 2018 for PFWB. We report estimates of  $\alpha_1$  in Equation 1. These specifications additionally control for household income with dummies accounting for the eight bins.

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

Table A.5: Effects of Financial Education Requirements on P(FWB) Ages 23-45

(a) Overall Effects						
	FWB			PFWB		
	(1)	(2)	(3)	(4)	(5)	(6)
	Overall	Male	Female	Overall	Male	Female
Fin Ed	0.838 (0.658)	1.616* (0.895)	0.262 (0.805)	0.733 (0.455)	1.336** (0.543)	0.297 (0.549)
N	10,852	4,615	6,237	32,634	13,992	18,642
R <sup>2</sup>	0.018	0.017	0.009	0.038	0.016	0.019

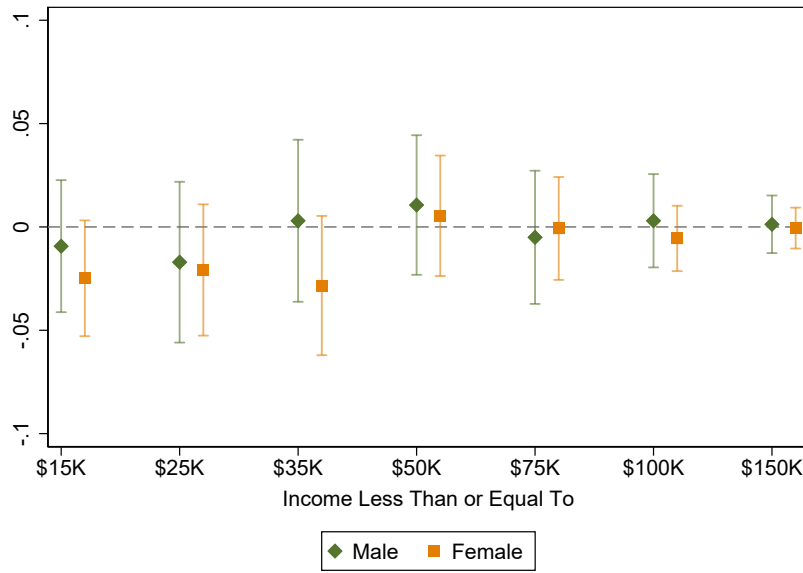
(b) Split by Education						
	FWB			PFWB		
	(1)	(2)	(3)	(4)	(5)	(6)
	High School	Some College	College+	High School	Some College	College+
Fin Ed	-2.795** (1.298)	1.535 (0.917)	2.012** (0.990)	-0.246 (1.003)	0.571 (0.596)	1.500** (0.717)
N	2,371	4,064	4,072	6,897	14,058	10,232
R <sup>2</sup>	0.039	0.031	0.018	0.033	0.034	0.038
Birthyear FE	X	X	X	X	X	X
Survey Year FE				X	X	X
Controls	X	X	X	X	X	X

Notes: Robust standard errors clustered at the state-level are in parentheses. Data from 2018 NFCS for FWB and 2012, 2015, and 2018 for PFWB. We report estimates of  $\alpha_1$  in Equation 1. These specifications drop 18-22 year olds.

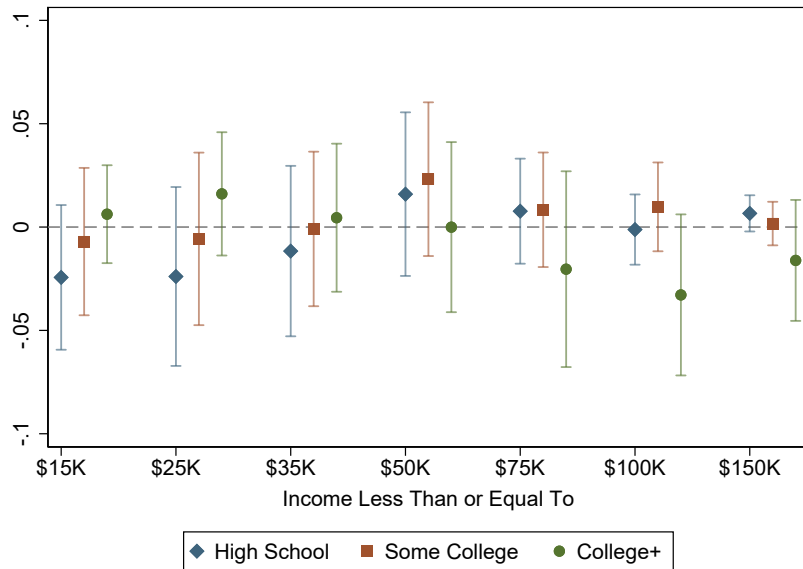
\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Figure A.3: **Effect of Financial Education Requirement on Annual Household Income**

(a) **By Gender**



(b) **By Education**



Notes: 95% confidence intervals displayed from robust standard errors clustered at the state-level. Data from 2012, 2015, and 2018 NFCS. Each estimate represents a separate regression where the outcome variable equals 1 if the respondent's reported household income is  $\leq Z$  where  $Z = \{15, 25, 35, 50, 75, 100, 150\}$ . High school means the individual did not continue formal education beyond a high school diploma; some college means that the individual did not complete a four-year college degree; college plus means the individual completed a bachelors degree and could have had additional education beyond that. These regressions are of the exact same format as Equation 1.



Table A.6: Effects of Financial Education Requirements on Financial Knowledge - Using Factor Analysis

(a) Overall Effects						
	No Response = 0			Factor Analysis (1 Factor)		
	(1) Overall	(2) Male	(3) Female	(4) Overall	(5) Male	(6) Female
Fin Ed	0.056 (0.038)	0.057 (0.049)	0.060 (0.052)	0.032 (0.023)	0.029 (0.032)	0.036 (0.032)
N	37,175	15,796	21,379	37,175	15,796	21,379
$R^2$	0.083	0.086	0.044	0.070	0.054	0.033
DV Mean	2.50	2.74	2.31	-0.00	0.18	-0.13

(b) Split by Education						
	No Response = 0			Factor Analysis (1 Factor)		
	(1) High School	(2) Some College	(3) College+	(4) High School	(5) Some College	(6) College+
Fin Ed	0.038 (0.063)	0.025 (0.047)	0.027 (0.055)	0.022 (0.046)	0.009 (0.026)	0.018 (0.033)
N	8,654	16,163	10,427	8,654	16,163	10,427
$R^2$	0.062	0.112	0.085	0.048	0.090	0.076
DV Mean	1.95	2.56	3.03	-0.31	0.04	0.31

Notes: Robust standard errors clustered at the state-level are in parentheses. Data from 2018 NFCS for FWB and 2012, 2015, and 2018 NFCS for PFWB. We report estimates of  $\alpha_1$  in Equation 1. All models include birth year FE, survey year FE, state FE, gender, and demographic controls.

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

Table A.7: Effects of Financial Education Requirements on (P)FWB – Estimated at 25/50/75th Quantiles

(a) Quantile: 50

	FWB			PFWB		
	(1) Overall	(2) Male	(3) Female	(4) Overall	(5) Male	(6) Female
Fin Ed	0.785* (0.454)	1.853** (0.720)	-0.045 (0.586)	0.755*** (0.280)	1.231*** (0.419)	0.423 (0.374)
N	12,228	5,182	7,046	37,086	15,762	21,324
DV Mean	47.54	49.23	46.30	51.25	53.81	49.35
Birthyear FE	X	X	X	X	X	X
Survey Year FE				X	X	X
Controls	X	X	X	X	X	X

(b) Quantile: 25

	FWB			PFWB		
	(1) Overall	(2) Male	(3) Female	(4) Overall	(5) Male	(6) Female
Fin Ed	1.073* (0.583)	1.779* (0.919)	0.417 (0.754)	0.780** (0.372)	1.047* (0.568)	0.656 (0.494)
N	12,228	5,182	7,046	37,086	15,762	21,324
DV Mean	47.54	49.23	46.30	51.25	53.81	49.35
Birthyear FE	X	X	X	X	X	X
Survey Year FE				X	X	X
Controls	X	X	X	X	X	X

(c) Quantile: 75

	FWB			PFWB		
	(1) Overall	(2) Male	(3) Female	(4) Overall	(5) Male	(6) Female
Fin Ed	0.501 (0.601)	1.933** (0.982)	-0.491 (0.766)	0.730** (0.365)	1.406*** (0.533)	0.184 (0.498)
N	12,228	5,182	7,046	37,086	15,762	21,324
DV Mean	47.54	49.23	46.30	51.25	53.81	49.35
Birthyear FE	X	X	X	X	X	X
Survey Year FE				X	X	X
Controls	X	X	X <sup>42</sup>	X	X	X

Notes: Robust standard errors clustered at the state-level are in parentheses. Data from 2018 NFCS for FWB and 2012, 2015, and 2018 NFCS for PFWB. We report estimates of  $\alpha_1$  in Equation 1.

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

Table A.8: Effects of Financial Education Requirements on (P)FWB – Estimated at 25/50/75th Quantiles – Split by Education

(a) Quantile: 50						
	FWB			PFWB		
	(1) High School	(2) Some College	(3) College+	(4) High School	(5) Some College	(6) College+
Fin Ed	-1.366 (0.869)	1.034 (0.720)	1.578* (0.840)	-0.135 (0.532)	0.517 (0.426)	1.310** (0.558)
N	2,925	4,698	4,168	8,620	16,132	10,412
DV Mean	45.94	45.75	51.06	49.02	50.10	56.01
Birthyear FE	X	X	X	X	X	X
Survey Year FE				X	X	X
Controls	X	X	X	X	X	X
(b) Quantile: 25						
	FWB			PFWB		
	(1) High School	(2) Some College	(3) College+	(4) High School	(5) Some College	(6) College+
Fin Ed	-0.919 (1.083)	1.382 (0.925)	1.928* (1.093)	0.139 (0.704)	0.352 (0.561)	1.462* (0.782)
N	2,925	4,698	4,168	8,620	16,132	10,412
DV Mean	45.94	45.75	51.06	49.02	50.10	56.01
Birthyear FE	X	X	X	X	X	X
Survey Year FE				X	X	X
Controls	X	X	X	X	X	X
(c) Quantile: 75						
	FWB			PFWB		
	(1) High School	(2) Some College	(3) College+	(4) High School	(5) Some College	(6) College+
Fin Ed	-1.828 (1.171)	0.686 (0.964)	1.243 (1.091)	-0.398 (0.696)	0.689 (0.563)	1.169 (0.712)
N	2,925	4,698	4,168	8,620	16,132	10,412
DV Mean	45.94	45.75	51.06	49.02	50.10	56.01
Birthyear FE	X	X	X	X	X	X
Survey Year FE				X	X	X
Controls	X	X	X	X	X	X

Notes: Robust standard errors clustered at the state-level are in parentheses. Data from 2018 NFCS for FWB and 2012, 2015, and 2018 NFCS for PFWB. We report estimates of  $\alpha_1$  in Equation 1.

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

Table A.9: Effects of Financial Education Requirements on (P)FWB - Singles Only

(a) Overall Effects						
	FWB			PFWB		
	(1) Overall	(2) Male	(3) Female	(4) Overall	(5) Male	(6) Female
Fin Ed	0.912 (0.720)	1.935** (0.779)	-0.130 (1.057)	1.123** (0.483)	2.037*** (0.644)	0.477 (0.589)
N	5,877	2,638	3,239	17,121	7,832	9,289
$R^2$	0.038	0.027	0.029	0.053	0.024	0.028
DV Mean	46.60	48.56	45.00	50.46	53.12	48.21

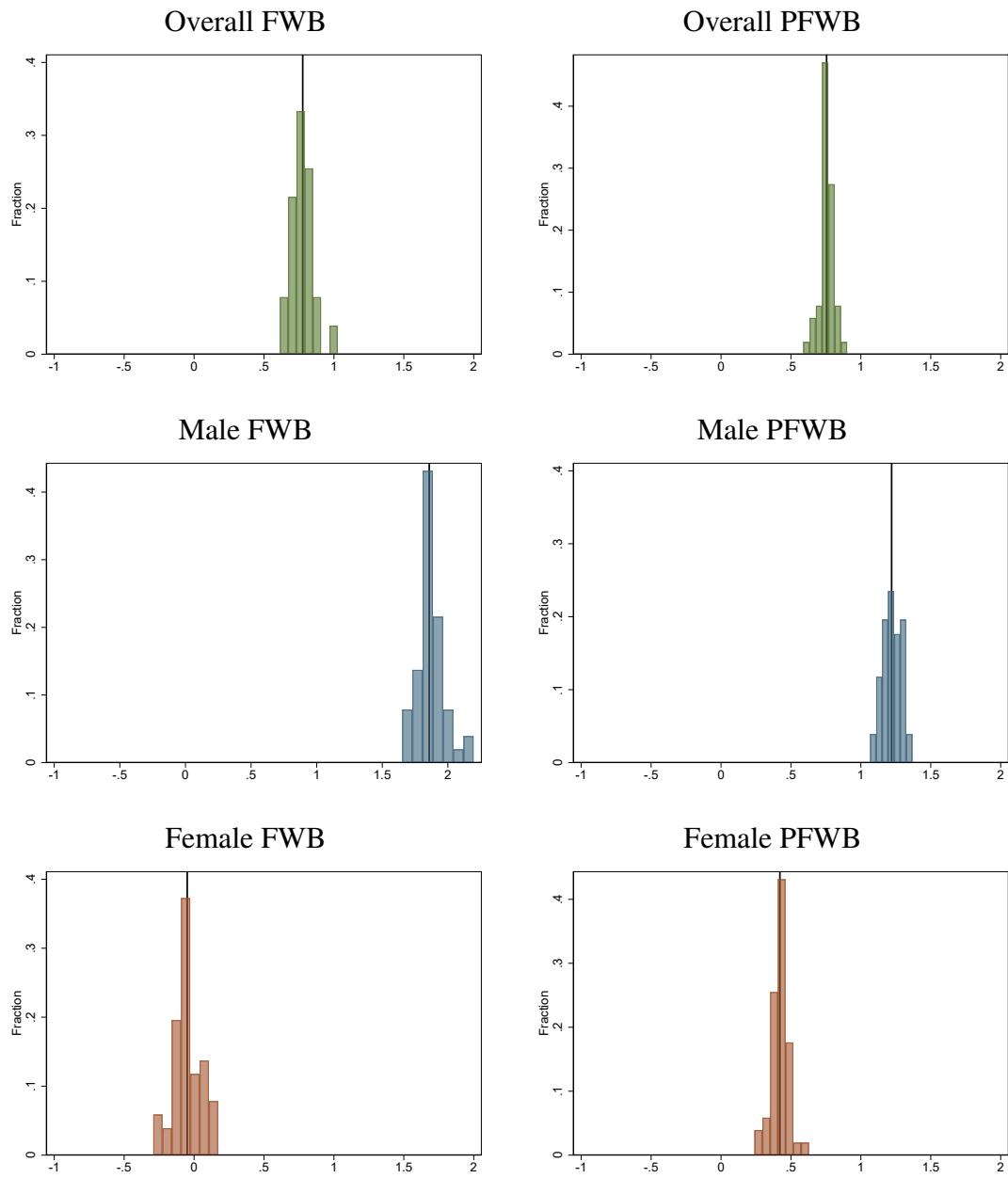
  

(b) Split by Education						
	FWB			PFWB		
	(1) High School	(2) Some College	(3) College+	(4) High School	(5) Some College	(6) College+
Fin Ed	-0.278 (1.123)	0.692 (1.004)	1.765 (1.616)	0.001 (0.873)	1.212*** (0.448)	1.460 (1.036)
N	1,528	2,415	1,672	4,480	7,646	3,904
$R^2$	0.086	0.069	0.036	0.067	0.074	0.061
DV Mean	45.98	44.95	49.95	49.56	49.61	54.47

Notes: Robust standard errors clustered at the state-level are in parentheses. Data from 2018 NFCS for FWB and 2012, 2015, and 2018 NFCS for PFWB. We report estimates of  $\alpha_1$  in Equation 1. The sample drops all married, widowed, divorced, and separated individuals, keeping only those who have never been married.

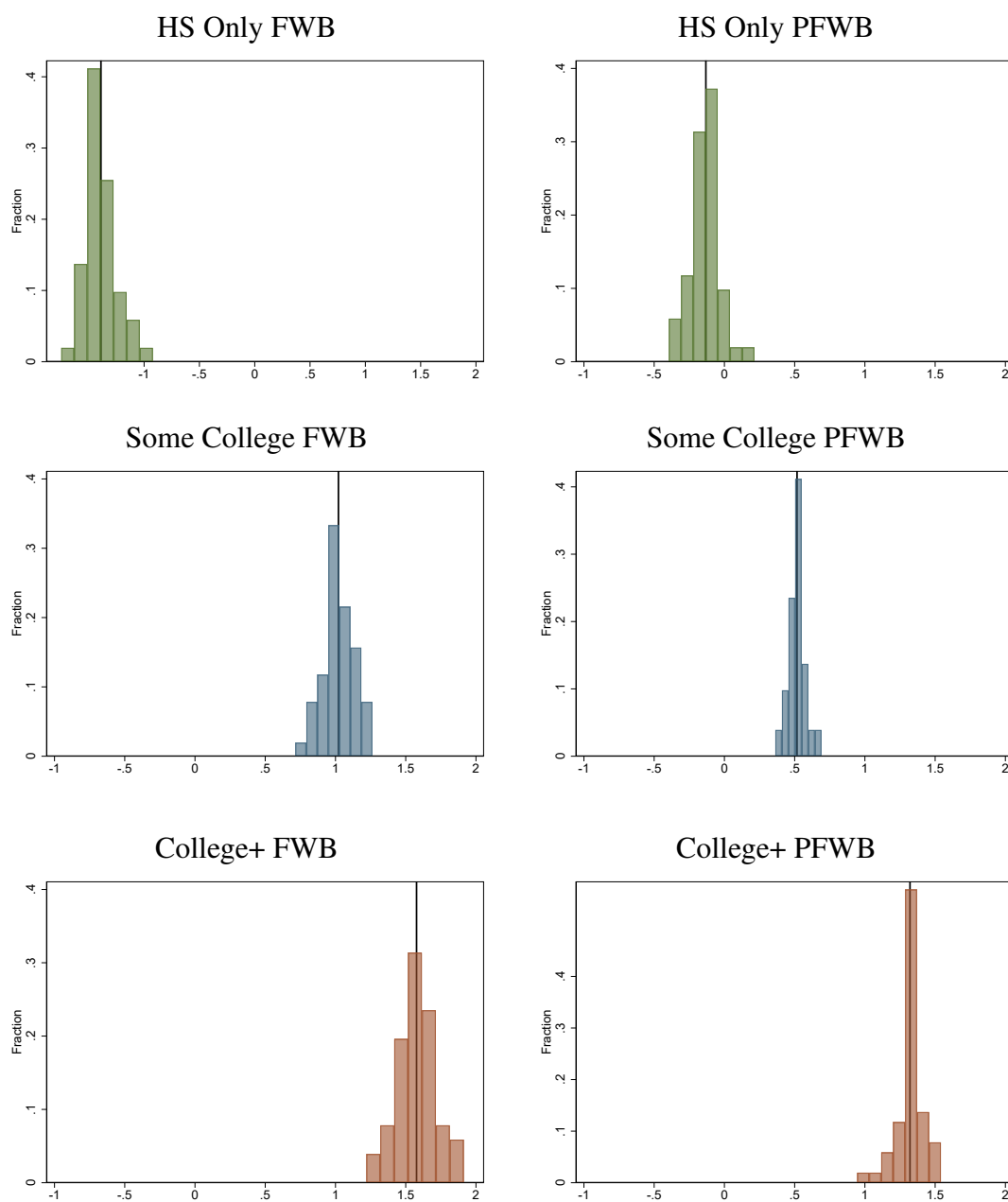
\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Figure A.4: Results, Dropping One State at a Time



Notes: Histogram of coefficients reported after dropping one state at a time, where the vertical black line shows the overall effect from Table 3.

Figure A.5: Results, Dropping One State at a Time (Split by Education)



Notes: Histogram of coefficients reported after dropping one state at a time, where the vertical black line shows the overall effect from Table 4.

## Appendix B: Results in the UAS

We employ data from the Understanding America Survey (UAS) to investigate the robustness of our findings in the NFCS. While the UAS is a smaller sample than the NFCS, it includes the full ten-item scale across three survey years—2016, 2017, and 2018—and also includes a question on the state in which the respondent lived in high school, although it is not completed for all individuals.<sup>19</sup> This allows us to estimate financial well-being for people who may have had financial education earlier in life to determine more long-run effects. Here we focus on each item in the FWB scale, as well as the composite score.

Table B.1 shows summary statistics for the UAS sample for the 18-45 population. The UAS samples are smaller than the NFCS samples, and the UAS contains each of items from the ten-item CFPB scale. Table B.2 reports the effects of financial education on FWB for the overall sample and gender splits in panel (a) and the sample split by education in panel (b). No estimate is statistically different from zero at the 90% level for the overall sample, the gender splits, the high school only sample, and the college or more sample, and all confidence intervals are wide. There is a positive effect of financial education on FWB for those with some college. Table B.3 shows the effect for the five-item scale, to liken it closer to the NFCS results. Only the coefficients for the some college population are statistically different from zero at the 90% level, and no other coefficients are statistically different from the main analysis using the NFCS in Tables 3 and 4. Importantly, in both tables, 90% confidence intervals cannot rule out large effects in either direction. Tables B.4-B.5 show the results for each component of the FWB measure when splitting the sample by gender and education, respectively. These results are also inconclusive and have wide confidence intervals.

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<sup>19</sup> Results remain consistent if we use current state of residence for missing values.

Table B.1: UAS FWB Summary Statistics

	States with Fin Ed		States without Fin Ed		Overall		
	Mean	N	Mean	N	Difference	Mean	N
<b>FWB</b>	50.83	428	52.29	2,930	1.46**	52.10	3,358
<i>UAS Q1</i>	1.59	422	1.80	2,888	0.20***	1.77	3,310
<i>UAS Q2</i>	1.97	421	2.05	2,888	0.08	2.04	3,309
<i>UAS Q3</i>	1.96	421	1.98	2,891	0.01	1.97	3,312
<i>UAS Q4</i>	1.74	422	1.81	2,889	0.07	1.80	3,311
<i>UAS Q5</i>	2.27	422	2.34	2,889	0.07	2.33	3,311
<i>UAS Q6</i>	1.91	421	2.04	2,892	0.12**	2.02	3,313
<i>UAS Q7</i>	2.54	422	2.60	2,900	0.06	2.59	3,322
<i>UAS Q8</i>	2.16	421	2.19	2,900	0.03	2.18	3,321
<i>UAS Q9</i>	2.22	421	2.47	2,898	0.26***	2.44	3,319
<i>UAS Q10</i>	2.08	421	2.15	2,902	0.07	2.14	3,323

Notes: Data from the Understand America Survey 2016-2018. Difference reports the difference across individuals who lived in a state with and without a financial education graduation requirement when they were in their teen years \*\* and \*\*\* depict that the difference is statistically different at the 5% and 1% levels, respectively. UASQ1-UASQ10 reflect the 10-items of the CFPB FWB scale.



Table B.2: UAS Effects of Financial Education Requirements on 10-item FWB Scale

(a) Overall Effects			
	FWB		
	(1) Overall	(2) Male	(3) Female
Fin Ed	0.012 (1.013)	-1.045 (1.671)	0.711 (1.258)
N	3,358	1,228	2,130
$R^2$	0.025	0.033	0.026
DV Mean	52.10	53.65	51.21

(b) Split by Education			
	FWB		
	(1) High School	(2) Some College	(3) College+
Fin Ed	0.441 (2.292)	2.133* (1.196)	-1.873 (1.777)
N	607	1,281	1,244
$R^2$	0.090	0.041	0.050
DV Mean	49.07	50.28	56.22

Notes: Robust standard errors clustered at the state-level are in parentheses. Data come from the Understanding America Survey (2016-2018). These results use the 10-item FWB scale as opposed to the 5-item scale in the NFCS.

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

Table B.3: UAS Effects of Financial Education Requirements on 5-item FWB Scale

(a) Overall Effects			
	FWB		
	(1) Overall	(2) Male	(3) Female
Fin Ed	0.378 (1.006)	-0.584 (1.618)	1.007 (1.176)
N	3,358	1,228	2,130
$R^2$	0.022	0.023	0.024
DV Mean	51.68	53.12	50.85

(b) Split by Education			
	FWB		
	(1) High School	(2) Some College	(3) College+
Fin Ed	1.685 (2.058)	2.182 (1.360)	-1.765 (1.882)
N	607	1,281	1,244
$R^2$	0.096	0.037	0.042
DV Mean	48.94	50.13	55.21

Notes: Robust standard errors clustered at the state-level are in parentheses. Data come from the Understanding America Survey (2016-2018). These results use the 5-item FWB scale identical to the 5-item scale in the NFCS.

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

Table B.4: UAS Effects of Financial Education Requirements on (P)FWB Components

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	UAS Q1	UAS Q2	UAS Q3	UAS Q4	UAS Q5	UAS Q6	UAS Q7	UAS Q8	UAS Q9	UAS Q10
<b>Panel A: Overall</b>										
Fin Ed	0.060 (0.093)	-0.032 (0.103)	0.084 (0.078)	0.025 (0.113)	-0.001 (0.095)	-0.093 (0.110)	0.013 (0.091)	0.136 (0.100)	-0.037 (0.087)	0.011 (0.075)
N	3,310	3,309	3,312	3,311	3,311	3,313	3,322	3,321	3,319	3,323
R <sup>2</sup>	0.030	0.023	0.026	0.014	0.019	0.017	0.018	0.013	0.033	0.031
DV Mean	1.77	2.04	1.97	1.80	2.33	2.02	2.59	2.18	2.44	2.14
<b>Panel B: Female</b>										
	UAS Q1	UAS Q2	UAS Q3	UAS Q4	UAS Q5	UAS Q6	UAS Q7	UAS Q8	UAS Q9	UAS Q10
Fin Ed	0.074 (0.093)	0.026 (0.122)	0.089 (0.072)	0.083 (0.113)	0.044 (0.127)	-0.018 (0.099)	0.086 (0.136)	0.193 (0.120)	-0.003 (0.117)	0.041 (0.087)
N	2,095	2,096	2,096	2,096	2,096	2,096	2,105	2,103	2,101	2,103
R <sup>2</sup>	0.014	0.022	0.021	0.021	0.024	0.018	0.024	0.019	0.033	0.032
DV Mean	1.65	1.95	1.88	1.76	2.29	1.96	2.54	2.14	2.37	2.03
<b>Panel C: Male</b>										
	UAS Q1	UAS Q2	UAS Q3	UAS Q4	UAS Q5	UAS Q6	UAS Q7	UAS Q8	UAS Q9	UAS Q10
Fin Ed	0.070 (0.171)	-0.104 (0.160)	0.080 (0.158)	-0.101 (0.200)	-0.108 (0.161)	-0.233 (0.177)	-0.146 (0.193)	0.056 (0.182)	-0.048 (0.166)	-0.021 (0.115)
N	1,215	1,213	1,216	1,215	1,215	1,217	1,217	1,218	1,218	1,220
R <sup>2</sup>	0.036	0.024	0.030	0.036	0.030	0.030	0.033	0.026	0.053	0.024
DV Mean	1.98	2.19	2.13	1.88	2.38	2.13	2.68	2.26	2.57	2.33

Notes: Robust standard errors clustered at the state-level are in parentheses. Data come from the Understanding America Survey (2016-2018). These results use the 10-item FWB scale, depicting the results of each question one at a time.

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

Table B.5: UAS Effects of Financial Education Requirements on (P)FWB Components, Split by Education

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	UAS Q1	UAS Q2	UAS Q3	UAS Q4	UAS Q5	UAS Q6	UAS Q7	UAS Q8	UAS Q9	UAS Q10
<b>Panel A: High School Only</b>										
Fin Ed	0.374 (0.209)	0.078 (0.199)	0.347 (0.179)	0.159 (0.212)	0.180 (0.208)	-0.018 (0.244)	0.107 (0.239)	0.201 (0.232)	-0.230 (0.236)	-0.032 (0.177)
N	588	587	589	587	589	589	590	590	589	590
R <sup>2</sup>	0.086	0.078	0.140	0.066	0.063	0.076	0.080	0.096	0.069	0.100
DV Mean	1.39	1.84	1.67	1.61	2.02	1.78	2.36	2.06	2.19	1.86
<b>Panel B: Some College</b>										
	UAS Q1	UAS Q2	UAS Q3	UAS Q4	UAS Q5	UAS Q6	UAS Q7	UAS Q8	UAS Q9	UAS Q10
Fin Ed	0.138 (0.120)	0.094 (0.143)	-0.005 (0.120)	0.127 (0.155)	0.175 (0.116)	-0.039 (0.128)	0.124 (0.134)	0.213 (0.149)	0.245* (0.104)	0.176 (0.139)
N	1,265	1,265	1,265	1,266	1,265	1,267	1,270	1,270	1,269	1,271
R <sup>2</sup>	0.037	0.029	0.042	0.035	0.050	0.027	0.038	0.033	0.058	0.039
DV Mean	1.57	1.88	1.83	1.71	2.24	1.88	2.42	2.07	2.31	1.99
<b>Panel C: College+</b>										
	UAS Q1	UAS Q2	UAS Q3	UAS Q4	UAS Q5	UAS Q6	UAS Q7	UAS Q8	UAS Q9	UAS Q10
Fin Ed	-0.160 (0.154)	-0.234 (0.162)	0.054 (0.177)	-0.112 (0.178)	-0.118 (0.191)	-0.358** (0.109)	-0.242 (0.121)	-0.039 (0.158)	-0.056 (0.147)	-0.104 (0.167)
N	1,240	1,240	1,241	1,240	1,240	1,240	1,242	1,242	1,242	1,242
R <sup>2</sup>	0.067	0.049	0.048	0.035	0.029	0.044	0.041	0.031	0.053	0.050
DV Mean	2.23	2.33	2.36	2.00	2.61	2.33	2.96	2.40	2.76	2.52

Notes: Robust standard errors clustered at the state-level are in parentheses. Data come from the Understanding America Survey (2016-2018). These results use the 10-item FWB scale, depicting the results of each question one at a time.

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