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**Working Paper**

## Does State-Mandated Financial Education Reduce High School Graduation Rates?

IZA Discussion Papers, No. 15402

**Provided in Cooperation with:**

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*Suggested Citation:* Urban, Carly (2022) : Does State-Mandated Financial Education Reduce High School Graduation Rates?, IZA Discussion Papers, No. 15402, Institute of Labor Economics (IZA), Bonn

This Version is available at:

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DISCUSSION PAPER SERIES

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**Carly Urban**

*Montana State University and IZA*

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ISSN: 2365-9793

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## ABSTRACT

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# Does State-Mandated Financial Education Reduce High School Graduation Rates?\*

Concerned about low levels of financial literacy among teens and the importance of their looming financial decisions as emerging adults, state policymakers have expanded high school personal finance graduation requirements. Did these added requirements create an additional barrier for students? Comparing students in states with and without standalone personal finance course requirements before and after the requirements went into place, there is no evidence that these requirements reduced graduation rates overall, by race, by gender, or by family income. Existing research quantifies improvements in debt and credit behaviors, and these findings suggest there are not simultaneous adverse effects overall or for at-risk students.

**JEL Classification:** G53, D14, I24

**Keywords:** high school graduation, personal finance, financial education

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\* This work was supported by a grant from Next Gen Personal Finance (4W9566). At no point were the results or draft edited by anyone other than the author. Sambath Jayapregasham provided excellent research assistance.

# 1 Introduction

Well-intentioned policies aiming to solve a clear societal problem often have unintended consequences. These exist in a wide array of contexts. For example, banning smoking in bars increases drunk driving traffic fatalities (Adams and Cotti, 2008), and restricting employers from asking about criminal records reduces employment among Black men (Agan and Starr, 2018). As young adults make complex financial decisions with little information, state policymakers have added personal finance course requirements in high school curricula. Do these policies also have unintended consequences?

Prior literature shows that requiring personal finance in high schools improves young adults' credit and debt outcomes (Brown et al., 2016; Harvey, 2019; Stoddard and Urban, 2020; Mangrum, 2019; Urban et al., 2020).<sup>1</sup> These papers sit within a larger literature showing that overall, financial education is effective at improving behaviors (Kaiser et al., 2021) and this is particularly true when financial education sits within K-12 schooling (Kaiser and Menkhoff, 2020).<sup>2</sup> However, introducing school-based requirements could increase barriers for vulnerable students at risk for not completing high school. This paper asks: does a state policy requiring a standalone personal finance course for high school graduation limit students' abilities to remain on-time for receiving their high school diploma.

I estimate a two-way-fixed effects model to compare on-time graduation rates among students in states with standalone personal finance graduation requirements before and after the passage to students in states where no requirement was ever in place. In this setting, I throw out all states that require personal finance to be embedded into another course. I later compare students in these embedded requirement states to those with no policy to confirm my results among a sample with a less stringent requirement.

The findings show that requiring a semester of personal finance coursework in high school—when compared to states with no personal finance coursework in their standards—does not reduce graduation rates. In addition to not reducing graduation rates overall, these course requirements do not have heterogeneous effects by race or gender. Though standalone personal finance courses pose the greatest potential barrier, the findings suggest that the added barrier does not restrict high school completion. I further verify that

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<sup>1</sup>Earlier work by Cole, Paulson and Shastry (2013), Bernheim, Garrett and Maki (2001), and Tennyson and Nguyen (2001) find mixed effects, but these papers study earlier policies in the 1980s that did not change graduation requirements in educational standards and were never implemented. The latter two also do not use state fixed effects.

<sup>2</sup>Findings from an earlier meta-analysis suggested null and unimportant effects of financial education on behaviors (Fernandes, Lynch and Netemeyer, 2014). Kaiser et al. (2021) showed that newer experimental evidence changed this trend, and the earlier results from Fernandes, Lynch and Netemeyer (2014) did not replicate even within their sample.

requiring any personal finance coursework for high school graduation—not specifically as a standalone course—also does not change graduation rates.

Is it surprising that adding a graduation requirement does not reduce graduation rates? This finding is consistent with recent work showing that graduation rates did not suffer due to requirement to complete the Free Application for Federal Student Aid (FAFSA) prior to high school graduation in Louisiana (Deneault, 2022). Similarly, other work studying the expansion of math requirements shows no change in high school completion rates (Cortes, Goodman and Nomi, 2015; Goodman, 2019). Thus, because many states are careful to either (1) remove content that has become obsolete from standards when the graduation requirement goes into effect or (2) not overburden students with total requirements, adding personal finance does not impose a large enough barrier to reduce graduation rates.

## 2 Data

The main data come from the Current Population Survey (CPS) March survey from 2000-2021, where the full sample includes 16- through 19-year-old respondents. The main dependent variable of interest will consider the individual’s stage of educational attainment. First, I construct a variable that equals one if the individual has received their high school diploma and zero otherwise. This first variable is particularly relevant for the 19-year-old sample, though I also consider early graduation among 18-year-olds. I do not include GEDs, as this indicates less engagement with the school system and personal finance requirement.

Second, I develop a variable called “on-track,” which captures whether or not the individual is progressing steadily towards high school graduation based on their age and expected grade. An 18-year-old is considered on-track if they are in the 12th grade or have received their diploma; a 17-year-old is considered on-track if they are in at least the 11th grade; a 16-year-old is considered in track if they are in at least the 10th grade. This way, I can determine if the new graduation requirement inhibits progress towards one’s diploma by over-burdening student time.

### 2.1 Policy Variation

I pair the individual-level data with data on policy variation from (Burke, Collins and Urban, 2020). Table 3 documents the states that require personal finance for high school graduation and the first graduating class that was subject to the mandate. The states in bold require the equivalent of a semester-long course in personal finance, and the remaining states require personal finance content within another required class (e.g., economics) or

greater content area (e.g., Social Studies). In the states where personal finance is embedded within other areas, research that uses high school-level course catalogs shows that only 44% of schools actually fulfill the requirement (Urban, 2022). For this reason, I compare the most stringent two policy options: states with standalone course requirements and states with no personal finance requirements. I do this because requiring a new course could be the greatest burden for students. No state has removed a one-semester standalone personal finance course requirement.<sup>3</sup>

For the main analysis, I compare the likelihood of being at a specific point in one’s schooling among students of the same age across states where a standalone personal finance course is required for high school graduation and states where no personal finance requirements were ever in place. The Appendix verifies that the results are comparable if I compare states with embedded requirements to those with no requirements.

What goes when a state adds personal finance as a standalone personal finance course? In Alabama, a full unit on typing was condensed and put into another class. In Virginia, students are required to complete a CTE elective and personal finance can count. In Utah, a few different courses count in the standalone personal finance course, and they can count towards overall credits in different content areas depending on the choice of course. Missouri allows students to opt out if they successfully complete an assessment on the content.

### 3 Empirical Strategy

I use a two-way-fixed effects difference-in-difference (TWFE) strategy to compare students in states with and without standalone personal finance course requirements before and after the requirements went into place. An important feature of the design is that nearly all of the variation comes from comparing never treated and newly treated states. Figure 3 plots the bacon decomposition, showing the weight given to newly treated compared to never treated states accounts for nearly all (95%) of the treatment effect (Goodman-Bacon, 2021). This helps to overcome recent critiques to TWFE strategies (Goodman-Bacon, 2021; Sun and Abraham, 2020; Baker, Larcker and Wang, 2022; Callaway and Sant’Anna, 2020).

$$Y_{i,s,t} = \alpha_0 + \alpha_1 PF_{s,t} + \beta X_i + \delta_s + \gamma_t + \varepsilon_{i,s,t} \quad (1)$$

I estimate Equation 1 for individual  $i$  in state  $s$  and year  $t$  separately by age. The independent variable,  $PF_{i,s,t}$ , equals one if individual  $i$  in state  $s$  would be subject to the requirement of completing one semester of personal finance education before high school

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<sup>3</sup>Louisiana removed and then reinstated its embedded requirement; Florida removed its embedded requirement in 2019 but passed legislation requiring a standalone personal finance course requirement in 2022.

graduation in year  $t$ . The dependent variable of interest,  $Y_{i,s,t}$ , alternates between whether the individual has a high school diploma (e.g., completed high school) and making regular progress for high school graduation. I use the high school diploma outcome for 18- and 19-year-olds and the on-time variable for 16-, 17-, and 18-year-olds.

Equation 1 further includes state-level fixed effects ( $\delta_s$ ), year fixed effects ( $\gamma_t$ ), and individual level-controls ( $X_i$ ) including gender and race/ethnicity. Standard errors are clustered at the state level, the level of policy variation, throughout the analysis.

TWFE requires that in the absence of the policy, treatment and control states would have had parallel trends. While not directly testable, I show that there is no clear trend prior to treatment in Figure 2. This event study uses a flexible approach that includes interactions for every period pre and post implementation, though I only plot the more recent periods, as the endpoints are noisy with fewer observations.

## 4 Results

Table 1 documents the effects of requiring personal finance education on completing high school. For 19-year-olds, requiring personal finance does not change the likelihood of obtaining a diploma for the overall sample (Column (1)). The effect is not statistically different from zero, and it is small in magnitude: requiring a standalone personal finance course increases the likelihood of earning a high school diploma by 0.3 percentage points (or 0.37 percent). Columns (2)-(4) look at the effect by subgroups based on race and gender. Across specifications, the effect remains statistically indistinguishable from zero. When instead looking at 18-year-olds, the null effect still holds.

Table 2 next looks at the results of financial education on being on track for graduation by age. There is no clear evidence to support the hypothesis that adding the requirement makes students less likely to progress towards high school graduation. For Black students, I find that the graduation requirement increases the likelihood of being on track, though this result is from a smaller sample of treated observations and is no longer statistically different from zero for 18-year-olds.

Students from the lowest income families may be most impacted by greater barriers for high school graduation. When considering the students from families in the lowest 25th percentile (those from families earning less than \$27,301), there is still no overall effect of the added course requirement on graduation rates (Column (5)).

To probe the robustness of the results, I drop the 2020 and 2021 sample years to ensure that the pandemic did not affect the results. I do this for two reasons. First, the treated states are disproportionately in the southern United States, which responded to the pandemic in different ways than some of the control states. This could have resulted



in different progress towards graduation across the treatment and control states. Second, the results will be more generalizable to other time periods without these years included. Tables 4 and 5 document these results, where all findings remain consistent.

Next, I verify that the results are robust to dropping each treated state one at a time in Table 6.

Concern may arise that there are only five treatment states, and thus, the study may be under-powered. I instead assign treatment to all states with embedded requirements, meaning that personal finance content must appear in another required course or content area prior to high school graduation. I compare the 29 embedded requirement states (those colored white in Figure 1) to states with no policies, omitting the five states with standalone requirements. I then conduct the same TWFE model.<sup>4</sup> Event studies provide evidence for the parallel trends assumption in Figure 4. The results using this sample increase the sample size and statistical power, while the null effects remain consistent and become more precise (Tables 7-8).

## 5 Conclusion

In any educational intervention, policymakers must consider unintended consequences. In this study, I find no evidence that requiring personal finance in high schools—either as a standalone course or as content embedded into another required class—reduces graduation rates overall or by race and gender. The research studying recent personal finance graduation requirements documents improvements in debt and credit outcomes (Brown et al., 2016; Harvey, 2019; Stoddard and Urban, 2020; Mangrum, 2019; Urban et al., 2020). This does not mean the policy is costless. Legislators and state departments of education need to continue to be vigilant to not over-burden students with requirements. Further, teacher training is often cited as an important component of an effective financial education program (Consumer Financial Protection Bureau, 2013).

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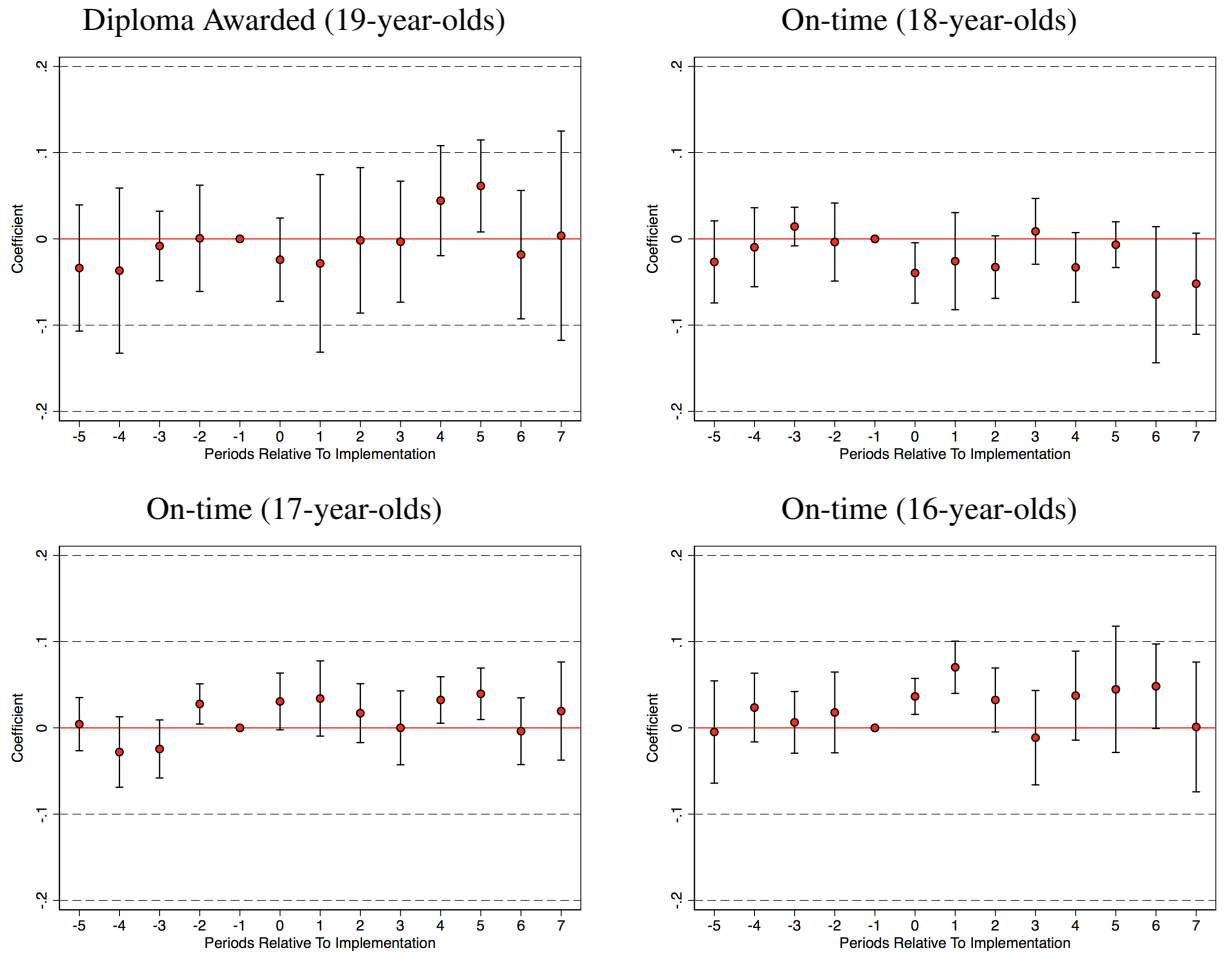
<sup>4</sup>In this model, a Bacon decomposition reveals that 55 percent of the variation comes from newly treated versus never treated observations, 15 percent comes from earlier treatment versus later controls, 11 percent comes from later treatment versus earlier controls, and 18 percent comes from treatment versus already treated observations. The estimates for newly versus never treated comparisons are the closest to zero in magnitude.

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Figure 2: Event Study



Notes: Data from CPS.

Table 1: Effects of Financial Education Requirements on Being Awarded a Diploma

	Dependent Variable=Diploma Awarded				
	(1) Overall	(2) White	(3) Black	(4) Female	(5) Low Income
<u>19 Year-Olds</u>					
PF	0.003 (0.015)	-0.013 (0.016)	0.059 (0.046)	-0.005 (0.015)	-0.002 (0.017)
Observations	22175	16331	2763	26887	14481
Treated Observations	1671	1323	235	825	327
DV Mean	0.807	0.813	0.751	0.839	0.692
<u>18 Year-Olds</u>					
PF	-0.004 (0.018)	-0.009 (0.021)	0.012 (0.026)	0.004 (0.014)	-0.019 (0.018)
Observations	27489	20913	3084	33158	14568
Treated Observations	2456	1940	333	1142	412
DV Mean	0.392	0.383	0.395	0.434	0.350

Notes: Robust standard errors clustered at the state-level are in parentheses. I report estimates of  $\alpha_1$  in Equation 1. PF equals one if the individual was subject to a state-level requirement to complete a semester of personal finance instruction prior to high school graduation and zero otherwise. Diploma awarded equals one if the individual completed high school with a diploma and zero otherwise. Low income indicates that the teen's family income was in the bottom 25th percentile (less than \$27,301). \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table 2: Effects of Financial Education Requirements on Being “On Track” For High School Graduation

	Dependent Variable= On Track				
	(1) Overall	(2) White	(3) Black	(4) Female	(5) Low Income
<u>16 Year-Olds</u>					
PF	0.011 (0.015)	-0.003 (0.014)	0.045*** (0.015)	-0.003 (0.006)	0.007 (0.012)
Observations	30123	22920	3451	36463	15227
Treated Observations	3228	2598	454	1578	491
DV Mean	0.932	0.938	0.898	0.944	0.870
<u>17 Year-Olds</u>					
PF	0.015 (0.014)	0.010 (0.016)	0.024* (0.014)	0.001 (0.006)	0.001 (0.012)
Observations	30088	22834	3467	36436	14918
Treated Observations	2866	2300	373	1406	444
DV Mean	0.919	0.924	0.886	0.931	0.842
<u>18 Year-Olds</u>					
PF	-0.007 (0.014)	-0.012 (0.014)	0.015 (0.015)	0.007 (0.007)	-0.012 (0.011)
Observations	27489	20913	3084	33158	14568
Treated Observations	2456	1940	333	1142	412
DV Mean	0.905	0.911	0.867	0.922	0.815

Notes: Robust standard errors clustered at the state-level are in parentheses. I report estimates of  $\alpha_1$  in Equation 1. PF equals one if the individual was subject to a state-level requirement to complete a semester of personal finance instruction prior to high school graduation and zero otherwise. On track equals one if the individual was in a grade that would indicate being “on track” for high school graduation (e.g., at least in 12th grade by age 18, 11th grade by age 17, and 10th grade by age 16). Low income indicates that the teen’s family income was in the bottom 25th percentile (less than \$27,301). \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

## 7 Appendix

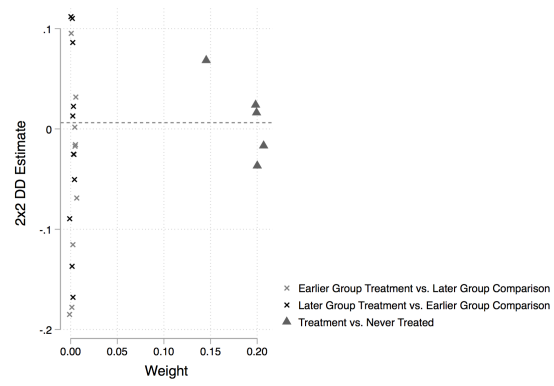
Table 3: Graduation Requirements

State	Graduation year	State	Graduation year
<b>AL</b>	<b>2017</b>	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	<b>TN</b>	<b>2011</b>
KY	2024	TX	2007
LA	2005	<b>UT</b>	<b>2008</b>
ME	2017	<b>VA</b>	<b>2015</b>
MI	1998	WI	2018
MN	2017	WV	2020
<b>MO</b>	<b>2010</b>	WY	2002
NC	2005		

Notes: Hand collected data updating [Burke, Collins and Urban \(2020\)](#). Graduation years represent 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 study.



Figure 3: Bacon Decomposition



Notes: Data from CPS.

Table 4: Effects of Financial Education Requirements on Being Awarded a Diploma (Dropping 2020 and 2021)

	Dependent Variable=Diploma Awarded				
	(1) Overall	(2) White	(3) Black	(4) Female	(5) Low Income
<u>19 Year-Olds</u>					
PF	-0.007 (0.015)	-0.017 (0.017)	0.027 (0.045)	0.001 (0.016)	-0.002 (0.018)
Observations	20728	15290	2579	23927	13802
Treated Observations	1132	912	150	564	281
DV Mean	0.803	0.809	0.745	0.835	0.688
<u>18 Year-Olds</u>					
PF	-0.015 (0.019)	-0.019 (0.019)	-0.019 (0.023)	-0.001 (0.014)	-0.020 (0.019)
Observations	25742	19643	2882	29826	13906
Treated Observations	1836	1490	232	866	355
DV Mean	0.391	0.382	0.395	0.434	0.347

Notes: Robust standard errors clustered at the state-level are in parentheses. I report estimates of  $\alpha_1$  in Equation 1. PF equals one if the individual was subject to a state-level requirement to complete a semester of personal finance instruction prior to high school graduation and zero otherwise. Diploma awarded equals one if the individual completed high school with a diploma and zero otherwise. Low income indicates that the teen's family income was in the bottom 25th percentile (less than \$27,301). These estimates drop 2020 and 2021 data. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table 5: Effects of Financial Education Requirements on Being “On Track” For High School Graduation (Dropping 2020 and 2021)

	Dependent Variable= On Track				
	(1) Overall	(2) White	(3) Black	(4) Female	(5) Low Income
<u>16 Year-Olds</u>					
PF	0.003 (0.014)	-0.010 (0.014)	0.039** (0.017)	-0.004 (0.006)	0.006 (0.012)
Observations	28262	21525	3236	32858	14567
Treated Observations	2518	2050	338	1235	438
DV Mean	0.931	0.937	0.895	0.944	0.868
<u>17 Year-Olds</u>					
PF	0.010 (0.015)	0.006 (0.017)	0.011 (0.016)	0.002 (0.007)	-0.002 (0.012)
Observations	28183	21432	3243	32824	14237
Treated Observations	2171	1771	264	1082	375
DV Mean	0.917	0.923	0.883	0.930	0.840
<u>18 Year-Olds</u>					
PF	-0.010 (0.015)	-0.017 (0.015)	0.014 (0.018)	0.008 (0.006)	-0.015 (0.012)
Observations	25742	19643	2882	29826	13906
Treated Observations	1836	1490	232	866	355
DV Mean	0.904	0.910	0.862	0.923	0.812

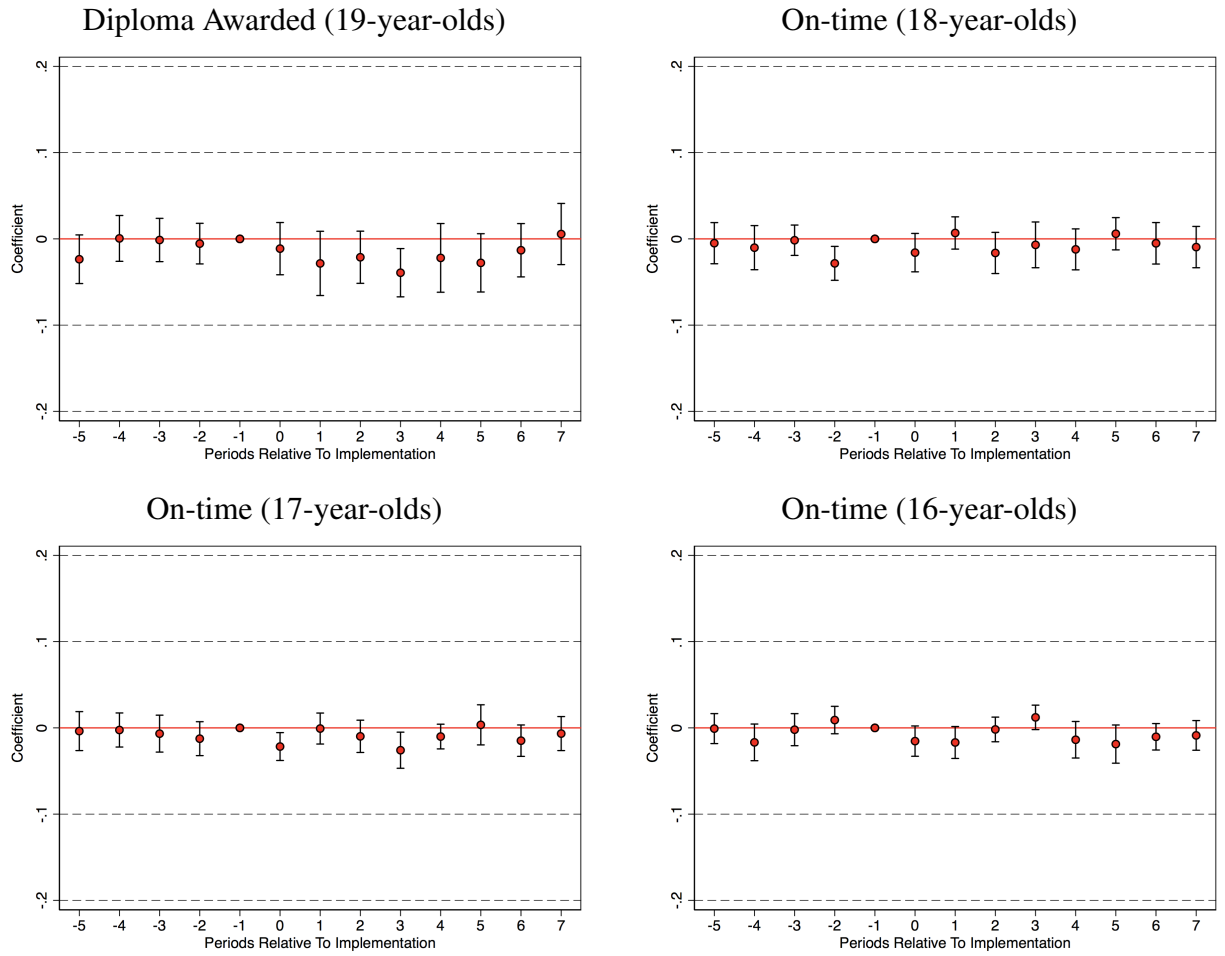
Notes: Robust standard errors clustered at the state-level are in parentheses. I report estimates of  $\alpha_1$  in Equation [1](#). PF equals one if the individual was subject to a state-level requirement to complete a semester of personal finance instruction prior to high school graduation and zero otherwise. On track equals one if the individual was in a grade that would indicate being “on track” for high school graduation (e.g., at least in 12th grade by age 18, 11th grade by age 17, and 10th grade by age 16). Low income indicates that the teen’s family income was in the bottom 25th percentile (less than \$27,301). These estimates drop 2020 and 2021 data. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table 6: Effects of Financial Education Requirements on Being Awarded a Diploma, Leave One Out

	Dependent Variable=Diploma Awarded				
	(1) No UT	(2) No TN	(3) No MO	(4) No AL	(5) No VA
<u>19 Year-Olds</u>					
PF	0.013 (0.017)	-0.002 (0.018)	0.012 (0.016)	-0.006 (0.014)	-0.000 (0.017)
Observations	21411	21456	21417	21475	21213
Treated Observations	1257	1337	1362	1545	1455
DV Mean	0.807	0.807	0.807	0.809	0.806

Notes: Robust standard errors clustered at the state-level are in parentheses. I report estimates of  $\alpha_1$  in Equation 1. PF equals one if the individual was subject to a state-level requirement to complete a semester of personal finance instruction prior to high school graduation and zero otherwise. Diploma awarded equals one if the individual completed high school with a diploma and zero otherwise. These estimates drop each of the five treated states one at a time. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Figure 4: Event Study for Embedded Requirements



Notes: Data from CPS.

Table 7: Effects of Embedded Financial Education Requirements on Being Awarded a Diploma

	Dependent Variable=Diploma Awarded				
	(1)	(2)	(3)	(4)	(5)
	Overall	White	Black	Female	Low Income
<u>19 Year-Olds</u>					
PF	-0.005	-0.011	0.017	-0.005	-0.007
	(0.012)	(0.016)	(0.021)	(0.015)	(0.011)
Observations	50875	39078	6399	26887	38250
Treated Observations	17755	13682	2646	8730	12138
DV Mean	0.799	0.810	0.722	0.831	0.692
<u>18 Year-Olds</u>					
PF	0.003	0.005	-0.009	0.004	0.008
	(0.012)	(0.012)	(0.028)	(0.014)	(0.012)
Observations	63134	49977	7105	33158	51517
Treated Observations	23280	18561	3075	11352	17263
DV Mean	0.370	0.365	0.364	0.410	0.350

Notes: Robust standard errors clustered at the state-level are in parentheses. I report estimates of  $\alpha_1$  in Equation 1. PF equals one if the individual was subject to a state-level requirement to complete any level of coursework in personal finance instruction prior to high school graduation and zero otherwise. Diploma awarded equals one if the individual completed high school with a diploma and zero otherwise. Low income indicates that the teen's family income was in the bottom 25th percentile (less than \$27,301). \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table 8: Effects of Embedded Financial Education Requirements on Being “On Track” For High School Graduation

	Dependent Variable= On Track				
	(1) Overall	(2) White	(3) Black	(4) Female	(5) Low Income
<u>16 Year-Olds</u>					
PF	-0.003 (0.005)	-0.004 (0.005)	-0.023 (0.017)	-0.003 (0.006)	-0.002 (0.005)
Observations	69183	54639	7884	36463	57271
Treated Observations	28386	22690	3694	13814	21320
DV Mean	0.925	0.930	0.893	0.939	0.870
<u>17 Year-Olds</u>					
PF	-0.004 (0.005)	0.001 (0.005)	-0.021 (0.018)	0.001 (0.006)	-0.002 (0.004)
Observations	68878	54273	7918	36436	57131
Treated Observations	26781	21251	3564	13035	20153
DV Mean	0.911	0.917	0.875	0.926	0.841
<u>18 Year-Olds</u>					
PF	0.007 (0.006)	0.004 (0.006)	0.003 (0.015)	0.007 (0.007)	0.005 (0.005)
Observations	63134	49977	7105	33158	51517
Treated Observations	23280	18561	3075	11352	17263
DV Mean	0.896	0.902	0.857	0.912	0.815

Notes: Robust standard errors clustered at the state-level are in parentheses. I report estimates of  $\alpha_1$  in Equation [1](#). PF equals one if the individual was subject to a state-level requirement to complete any level of coursework in personal finance instruction prior to high school graduation and zero otherwise. On track equals one if the individual was in a grade that would indicate being “on track” for high school graduation (e.g., at least in 12th grade by age 18, 11th grade by age 17, and 10th grade by age 16). Low income indicates that the teen’s family income was in the bottom 25th percentile (less than \$27,301). \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$