



# Is Financial Knowledge Associated with Past-Due Medical Debt?

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**Medical debt is one of the most common forms of debt in collections. Is financial knowledge an important factor in having unpaid medical bills? Though the average American has low financial knowledge, we find that that financially knowledgeable people have a lower risk of past-due medical debt (FINRA Investor Education Foundation 2013). Yet, spreading financial knowledge remains a challenge: we find no evidence that receiving formal financial education is associated with lower past-due medical debt.**

This brief uses the National Financial Capability Study (NFCS) to estimate the relationship between financial knowledge and past-due medical debt. It also examines the elusive relationship between formal financial education and past-due medical debt.

Key findings include these two:

- **Financially knowledgeable nonelderly adults are less likely to have past-due medical debt.** Individuals who answer four or five questions correctly on a five-question financial knowledge quiz are 7 percentage points less likely to have past-due medical debt than similar individuals who answer zero or one question correctly, even after accounting for differences in health insurance coverage, permanent disability status, and socioeconomic characteristics.
- **Self-reported formal financial education is not associated with a reduced likelihood of having past-due medical debt.** In addition, having attended high school in a state where financial education is mandated is not statistically significantly related to having past-due medical debt.

About half of all debt in collections is medical debt, and nearly one-fifth of all consumers with a credit file have some form of medical debt in collections (CFPB 2014). This prevalence suggests that medical debt could keep families from meeting their financial goals, such as preparing adequately for retirement. A clearer understanding of the relationship between medical debt and potential risk factors is especially relevant as the US health care system undergoes major changes.

The literature on factors associated with past-due medical debt mostly focuses on the effect of health insurance. Finkelstein and colleagues (2012) estimate that Medicaid coverage of low-income adults in Oregon reduced the likelihood of borrowing money or skipping bills to pay for medical care. Mazumder and Miller (2016) find that the health insurance expansion associated with the Massachusetts health reform led to a decline in the amount of third-party debt in collections. Consistent with the existing literature, this brief finds that people with health insurance are less likely to have past-due medical debt.

Financial knowledge might be especially important for medical debt because it is often the result of an unplanned event, unlike credit card debt, student loans, and other types of debt. Weathering unexpected negative financial shocks can require making difficult decisions and relying on a cushion of resources that not all consumers have. For example, a medical bill might lead individuals to face an unexpected choice between accessing retirement savings and selling a car. Financial knowledge can help consumers prepare for these shocks. In particular, financial knowledge may help consumers understand the value of health insurance as a risk mitigation tool.

Balancing these priorities may require uncomfortable choices that challenge people's senses of stability and their ingrained budgeting habits. It may also require crossing mathematical barriers, such as calculating compound interest, that can be difficult or intimidating (Lusardi and Mitchell 2009).

## Results

### **More-Financially Knowledgeable Adults Are Less Likely to Have Past-Due Medical Debt**

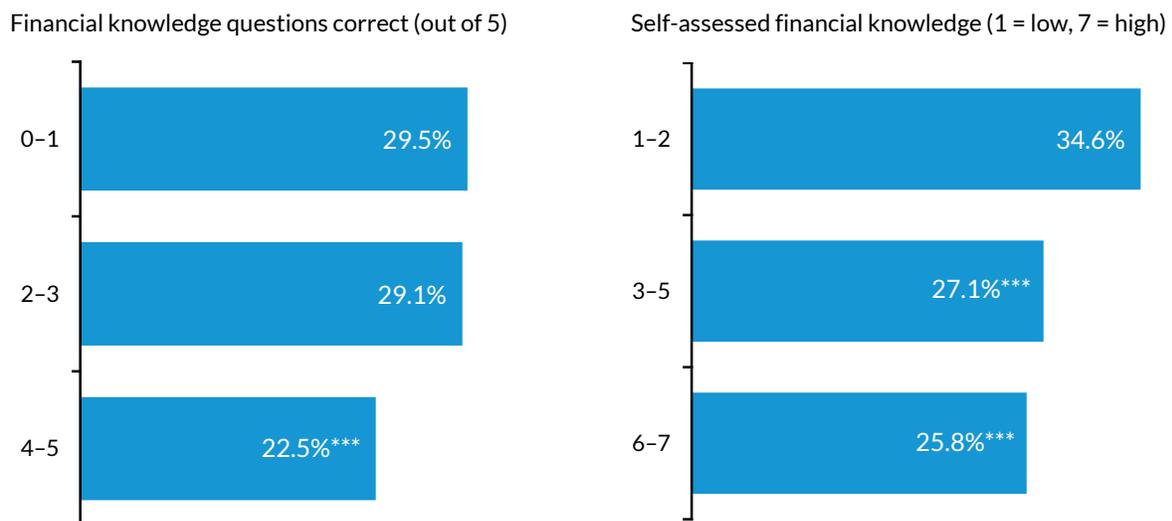
Nonelderly adults who correctly answer financial knowledge questions are less likely to have past-due medical debt (figure 1, left chart). We estimate that a nonelderly adult with average characteristics who answers zero or one financial knowledge question correctly on the five-question quiz has a 29.5 percent likelihood of past-due medical debt. A similar adult who answers four or five questions correctly has a 22.5 percent likelihood of having reported past-due medical debt. The 7 percentage-point difference between these two groups is both statistically significant and economically meaningful. In comparison, we estimate nonelderly adults with health insurance are 5 percentage points less likely to have past-due medical debt than similar adults without health insurance.

Controlling for differences in observable characteristics, we also estimate that nonelderly adults who report higher self-assessed financial knowledge are less likely to have past-due medical debt (figure 1,

right chart). An average nonelderly adult is 34.6 percent likely to report past-due medical debt if he or she reports low financial knowledge (one or two points out of seven). An average nonelderly adult is 27.1 percent likely to have past-due medical debt if he or she reports medium financial knowledge (three to five points) and 25.8 percent likely if he or she reports high financial knowledge (six to seven points).

These models suggest that people with higher financial knowledge, measured as either the number of correct questions or a self-assessment, are less likely to have past-due medical debt. Though not causal, this finding suggests that financial knowledge may help consumers make better financial decisions and avoid the financial distress associated with past-due medical debt.

**FIGURE 1**  
**Financial Knowledge Is Strongly Associated with Past-Due Medical Debt**  
*Share with past-due medical debt*



**Source:** National Financial Capability Study (NFCS), 2012 and 2015.

**Notes:** Share with past-due medical debt at each financial knowledge level is predicted using regression models for individuals with average observable characteristics. Regressions control for health insurance coverage, disability status (permanently sick or disabled or unable to work), age bracket, sex, race/ethnicity, family income bracket, homeownership status, employment status, military service, education level, marriage history, presence of dependent children, and state and year fixed effects. Sample is restricted to adults ages 18–64. Data are weighted to the national population using NFCS individual weights.

\*\*\* Share with past-due medical debt differs from the share with the lowest self-assessed knowledge (the topmost bar) at the 0.01 level. No differences are significant at the 0.10 (\*) or 0.05 (\*\*) level.

## Adults Who Received Formal Financial Education Are Not Less Likely to Have Past-Due Medical Debt

A potential policy implication of our first finding is that states could expand financial education to increase consumer knowledge and therefore reduce past-due medical debt. But, whether formal financial education promotes knowledge that protects consumers from past-due medical debt remains an open question (Fernandes, Lynch, and Netemeyer 2013). We take advantage of financial education questions available in the NFCS to investigate whether people who report receiving financial education are less likely to have past-due medical debt.

Using self-reported financial education, we find no evidence that receiving formal financial education is associated with less past-due medical debt. In fact, people who report receiving formal financial education are slightly more likely to have past-due medical debt (figure 2, left chart). A potential concern in such estimations is that respondents might fail to remember attending a financial education class. Another potential concern is that receiving financial education is correlated with important unobservable characteristics. For example, consumers in financial distress might take financial education classes to help solve their financial problems.

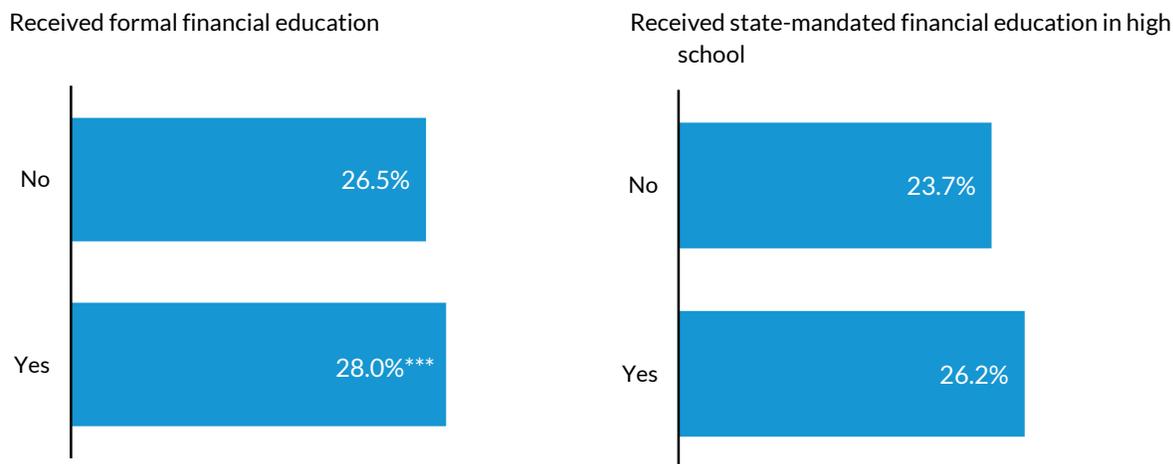
To address these concerns, we created a variable that is a proxy for whether someone graduated from a high school with mandatory financial education. To adjust for the fact that we don't know where a respondent attended high school, we restrict the sample to individuals who are ages 18 to 24 at the time of the interview and so are more likely to be still living in the state where they went to high school.

Receiving mandated high school financial education is unlikely to be correlated with unobservable consumer characteristics. We continue to find no evidence in these data that graduates from high schools with mandatory financial education are less likely to have past-due medical debt (figure 2, right chart). We find similar results (not shown) when restricting the analysis to people who graduate from high schools in states considered to have stronger financial education curriculums (Georgia, Idaho, and Texas).<sup>1</sup> Formal financial education as measured appears to have little power in changing past-due medical debt.

FIGURE 2

### Formal Financial Education Is Not Associated with Lower Past-Due Medical Debt

Share with past-due medical debt



Source: National Financial Capability Study (NFCS), 2012 and 2015.

Notes: Share with past-due medical debt at each financial education level is predicted using regression models for individuals with average observable characteristics. Regressions control for health insurance coverage, disability status (permanently sick or disabled or unable to work), age bracket, sex, race/ethnicity, family income bracket, homeownership status, employment status, military service, education level, marriage history, presence of dependent children, and state and year fixed effects. Sample receiving formal financial education is restricted to people ages 18–64; sample receiving state-mandated financial education in high school is restricted to people ages 18–24. Data are weighted to the national population using NFCS individual weights.

\*\*\* Share with past-due medical debt among those who received education differs from share among those who did not receive education at the 0.01 level. No differences are significant at the 0.10 (\*) or 0.05 (\*\*) level.

## Discussion

It may appear contradictory that we find increasing financial knowledge may be a pathway to reducing past-due medical debt, but financial education in its current form—at least as we measure it—is not. While we don’t find a strong correlation between self-reported financial education and number of correct financial knowledge questions in our sample, one might expect people receiving financial education to have higher financial knowledge.<sup>2</sup> There are several potential explanations for this apparent contradiction. First, formal financial education may be falling short of its potential effectiveness, perhaps because it is delivered to consumers at the wrong times in their lives for avoiding medical debt or because the topics covered are not relevant to avoiding past-due medical debt. Second, financial knowledge may reflect characteristics that are hard to change with financial education, such as inherent numeracy skills. Finally, this finding may reflect difficulty measuring financial education; we do not believe it precludes the possibility that other financial education measures could demonstrate a stronger effect.

Nonetheless, our finding that financial education as we measure it is not associated with reduced past-due medical debt is not inconsistent with earlier studies. The literature finds mixed results for the

effects of classroom-based financial education on consumer behavior (Brown et al. 2014; Collins 2013; Fernandes, Lynch, and Netemeyer 2013), though more behavioral approaches like financial coaching have demonstrated greater success (Theodos et al. 2015). Financial education classes could be more effective if modified; for instance, high school financial education could cover medical debt. Topics to address might include the costs and benefits of health insurance and the wisdom of selling assets to cover unplanned medical expenses.

Beyond this possibility, the execution and context of financial education may play a large role in its success or failure, since students' learning experiences depend on many factors. Repetition and reinforcement may help, perhaps across multiple classes or years, as may improving the quality and consistency of teachers and curricula. However, financial education is unique (compared with, say, history or literature) because its major goals are real-life habit formation and retention of specific technical content. Thus, abstract discussion of a broad range of financial topics may be less useful than behavior modification or intensive drilling on a few targeted topics.

Further, it may not be worthwhile for high school courses to focus on medical debt because students tend to have other immediate concerns, such as managing income from a first job, saving and borrowing for higher education, or acquiring a credit card (Fernandes, Lynch, and Netemeyer 2013). The best times to explain and reinforce topics relating to medical debt could be during doctor visits (e.g., by talking with billing departments) or employers' benefit enrollment periods.

## Data and Approach

### National Financial Capability Study Data

For our analysis, we use pooled data from the 2012 and 2015 NFCS state-by-state surveys.<sup>3</sup> These are nationwide online surveys of more than 25,000 American adults (roughly 500 per state plus the District of Columbia). We focus on adults ages 18–64 because older adults are generally eligible for Medicare and thus face different risks of incurring medical debt. We further limit our sample to nonelderly adults without missing information about their past-due medical debt, health insurance coverage, financial knowledge, financial education, and disability status. This leaves a final sample of 41,470.

The outcome variable we examine is a self-reported indicator for having past-due medical debt.<sup>4</sup> Having past-due medical debt reflects someone's inability or unwillingness to pay a past medical bill. Since NFCS data are self-reported, this variable includes only past-due medical debt of which someone is aware. Thus, the variable is more likely to reflect actual financial distress because it excludes old or forgotten bills that may no longer have a tangible impact or may have long ago been factored into an individual's credit score.

## Financial Knowledge Measures

To determine the relationship between financial knowledge and past-due medical debt, we rely on two measures of financial knowledge. Our first explanatory variable of interest is the number of questions answered correctly on a five-question financial knowledge quiz included in the NFCS (table 1).<sup>5</sup> This summary variable objectively measures individual financial knowledge, and it has been used in a wide array of recent research on the subject (Lusardi and Mitchell 2009).

TABLE 1

Financial Knowledge Questions

Variable	Question
Compound interest on savings	Suppose you had \$100 in a savings account and the interest rate was 2 percent a year. After five years, how much do you think you would have in the account if you left the money to grow? (i) More than \$102, (ii) Exactly \$102, (iii) Less than \$102, (iv) Don't know (DK), (v) Prefer not to say.
Interest offsetting inflation	Imagine that the interest rate on your savings account was 1 percent a year and inflation was 2 percent a year. After one year, how much would you be able to buy with the money in this account? (i) More than today, (ii) Exactly the same, (iii) Less than today, (iv) DK, (v) Prefer not to say.
Interest rates and bond prices	If the interest rate falls, what should happen to bond prices? (i) Rise, (ii) Fall, (iii) Stay the same, (iv) There is no relationship between bond prices and the interest rate, (v) DK, (vi) Prefer not to say.
Total costs of mortgages	A 15-year mortgage typically requires higher monthly payments than a 30-year mortgage, but the total interest paid over the life of the loan will be less. (i) True, (ii) False, (iii) DK, (iv) Prefer not to say.
Stock diversification	Buying a single company's stock usually provides a safer return than a stock mutual fund. (i) True, (ii) False, (iii) DK, (iv) Prefer not to say.

Our second explanatory variable of interest is a self-assessed measure of financial knowledge, in which respondents report their level of agreement with the statement, “I am good at dealing with day-to-day financial matters, such as checking accounts, credit and debit cards, and tracking expenses” on a scale from one to seven, where greater numbers indicate stronger agreement. This variable, while not objective, may measure financial knowledge more holistically because it measures whether respondents have put their knowledge into practice. Financial knowledge has been shown to correlate with positive financial behavior, and it is helpful to consider them together (Theodos et al. 2014).

## Financial Education Measures

We also examine two explanatory variables to measure the relationship between formal financial education and past-due medical debt. The first is a self-reported indicator of whether respondents have ever taken any formal financial education. The study also asks if that education was in high school, in college, in the military, or through an employer, although we do not use these indicators in our analysis.

The second variable is a proxy for whether a respondent attended high school when his or her state mandated high school financial education. To construct this variable, we use the database created by Carly Urban and Maximilian Schmeiser that lists when state financial education mandates were implemented (Urban and Schmeiser 2015).<sup>6</sup> One potential caveat is that the NFCS does not ask about the state an individual attended high school. To deal with this potential issue we take two steps, just for this indicator: we restrict the data to 18–24-year-olds, and we assume that individuals within this age range live in the same state where they attended high school.

In table A.1, we present descriptive statistics for all five variables of interest (past-due medical debt and the four explanatory variables) and the controls (health insurance coverage, permanent disability, and all other demographic and socioeconomic variables). We present means for the 2012 and 2015 samples as well as the pooled sample. Between 2012 and 2015, the portion of individuals reporting past-due medical debt fell 5.8 percentage points (19.5 percent),<sup>7</sup> and the portion reporting having health insurance coverage rose 10 percentage points (13.1 percent). This could reflect changes associated with the implementation of the Affordable Care Act or other factors such as the recovery from the 2008 financial crisis.

## Empirical Approach

We estimate the relationship between past-due medical debt and financial knowledge using regression models that control for individual-level characteristics, including health insurance coverage, disability status, family income, and employment status. This approach takes into account that financially knowledgeable people often have other characteristics associated with being less likely to have past-due medical debt. For example, individuals with high financial knowledge are more likely to be employed and have health insurance and less likely to be disabled. These variables are also associated with past-due medical debt.

Using regression models, we predict the likelihood that someone with average characteristics has past-due medical debt for different levels of financial knowledge and financial education. In other words, we compare the likelihood of past-due medical debt for a similar individual. We report the results from the regression estimations in tables A.2 and A.3. While we cannot interpret our results as causal, these values inform how financial knowledge relates to past-due medical debt.

# Appendix

TABLE A.1

## Descriptive Statistics

Variable	Year		Combined
	2012	2015	
<b>Outcome of interest (%)</b>			
Has past-due medical debt	29.8	24.0	26.8
<b>Main explanatory variables</b>			
Number of correct financial knowledge questions (0-5)	2.85	2.77	2.81
Self-assessment of overall financial knowledge (1-7)	5.08	5.18	5.13
Received any formal financial education (%)	19.8	21.8	20.8
Received state-mandated financial education in high school (%) <sup>a</sup>	32.7	42.7	37.9
<b>Main controls (%)</b>			
Covered by health insurance	76.6	86.6	81.7
Permanently sick or disabled or unable to work	6.1	5.4	5.8
<b>Additional controls (%)</b>			
Family income < \$15,000	15.2	13.6	14.4
Family income \$15,001-\$25,000	12.2	11.4	11.8
Family income \$25,001-\$35,000	11.6	11.0	11.3
Family income \$35,001-\$50,000	14.6	14.9	14.8
Family income \$50,001-\$75,000	18.5	19.6	19.1
Family income \$75,001-\$100,000	11.6	12.5	12.1
Family income \$100,001-\$150,000	10.3	11.7	11.0
Family income greater than \$150,000	6.0	5.3	5.7
Homeowner	54.1	56.2	55.2
Unemployed	10.3	7.5	8.8
Military (active or reserve)	12.0	11.2	11.6
Non-Hispanic white	62.6	62.1	62.3
Non-Hispanic black	12.9	12.5	12.7
Hispanic	16.7	17.2	16.9
Non-Hispanic Asian	7.8	8.3	8.0
Did not receive high school diploma or GED	8.7	2.6	5.6
Highest degree is high school diploma or GED	29.1	25.8	27.4
Attended some college, but did not graduate	35.0	31.3	33.1
Highest degree is college diploma	17.5	30.2	24.0
Received postgraduate education	9.7	10.0	9.9
Never married	33.1	36.6	34.9
Does not have financially dependent child	55.2	57.8	56.6
Female	50.9	50.6	50.7
Age 18-24	13.8	14.4	14.1
Age 25-34	21.6	21.9	21.8
Age 35-44	19.3	20.0	19.7
Age 45-54	23.7	22.2	22.9
Age 55-64	21.6	21.5	21.5
Number of observations	20,117	21,353	41,470

Source: National Financial Capability Study (NFCS), 2012 and 2015.

Notes: Sample restricted to adults ages 18-64. Data are weighted to the national population using NFCS individual weights.

<sup>a</sup> For this variable, the sample is restricted to adults ages 18-24.

TABLE A.2

**Financial Knowledge Is Strongly Associated with Past-Due Medical Debt***Dependent variable is an indicator for past-due medical debt*

	Model 1	Model 2
<b>Number of correct financial knowledge questions (omitted: 0 or 1)</b>		
2 or 3	-0.004 (0.006)	
4 or 5	-0.071 (0.006) ***	
<b>Self-assessment of financial knowledge (omitted: score 1-2)</b>		
Score 3-5		-0.075 (0.011) ***
Score 6-7		-0.088 (0.011) ***
<b>Main controls</b>		
Covered by health insurance	-0.052 (0.006) ***	-0.054 (0.006) ***
Permanently sick or disabled or unable to work	0.150 (0.009) ***	0.154 (0.009) ***
<b>Other controls</b>		
Demographic and socioeconomic characteristics	Yes	Yes
Year fixed effects	Yes	Yes
State fixed effects	Yes	Yes
Observations	41,470	41,470
R-squared	0.112	0.109

**Source:** National Financial Capability Study (NFCS), 2012 and 2015.

**Notes:** Models 1 and 2 are estimated using linear least squares. Demographic and socioeconomic characteristics include age bracket, sex, race/ethnicity, family income bracket, homeownership status, employment status, military service, education level, marriage history, presence of dependent children, and state and year fixed effects. Sample restricted to adults ages 18-64. Data are weighted to the national population using NFCS individual weights. Standard errors are in parentheses.

\*\*\* Difference significant at the 0.01 level. No differences are significant at the 0.10 (\*) or 0.05 (\*\*) level.

TABLE A.3

**Formal Financial Education Is Not Associated with Lower Past-Due Medical Debt***Dependent variable is an indicator for past-due medical debt*

	<b>Model 1</b>		<b>Model 2</b>	
Received any formal financial education	0.015 (0.005)	***		
Received state-mandated financial education in high school			0.026 (0.029)	
<b>Main controls</b>				
Covered by health insurance	-0.055 (0.006)	***	-0.053 (0.014)	***
Permanently sick or disabled or unable to work	0.155 (0.009)	***	0.211 (0.050)	***
<b>Other controls</b>				
Demographic and socioeconomic characteristics	Yes		Yes	
Year fixed effects	Yes		Yes	
State fixed effects	Yes		Yes	
Observations	41,470		5,069	
R-squared	0.108		0.135	

**Source:** National Financial Capability Study (NFCS), 2012 and 2015.

**Notes:** Models 1 and 2 are estimated using linear least squares. Demographic and socioeconomic characteristics include age bracket, sex, race/ethnicity, family income bracket, homeownership status, employment status, military service, education level, marriage history, presence of dependent children, and state and year fixed effects. Model 1 sample is restricted to adults ages 18–64; model 2 samples is restricted to adults ages 18–24. Data are weighted to the national population using NFCS individual weights. Standard errors are in parentheses.

\*\*\* Difference significant at the 0.01 level. No differences are significant at the 0.10 (\*) or 0.05 (\*\*) level.

## Notes

1. These results are available upon request.
2. Self-reported financial education and number of correct financial knowledge questions are weakly correlated (0.14).
3. Although this brief estimates the prevalence of self-reported past-due medical debt and the average values of other self-reported characteristics of the US population, it is possible that some values are underreported or otherwise subject to recall bias. For instance, people may forget about unpaid bills or may be reluctant to discuss them. However, it is unlikely that such measurement error changes systematically over time. In addition, the nonprobability sampling design used in the NFCS introduces more risk of generating biased estimates than a probability sampling design because under the former method each person's probability of selection is unknown. Respondents for the NFCS were selected from among those who volunteered to participate in online surveys and polls through panels maintained by Survey Sampling International, EMI Online Research Solutions, and Research Now. The data have been weighted to reflect the demographic composition of US adults nationally. Because the sample is based on those who initially self-selected for participation in these panels rather than a probability sample, as stated in the American Association for Public Opinion Research guidelines, no estimates of sampling error can be calculated. All sample surveys and polls may be subject to multiple sources of error, including, but not limited to, sampling error, coverage error, and measurement error. However, assuming the relationship between financial knowledge and past-due medical debt is homogeneous in the whole population, we can still estimate this relationship for a non-representative sample.
4. Adults are defined as having past-due medical debt if they answered yes to the following question: "Do you currently have any unpaid bills from a health care or medical service provider (e.g., a hospital, a doctor's office, or a testing lab) that are past due?"
5. Because we pool the 2012 and 2015 study samples, we drop a sixth question introduced in the 2015 NFCS data.
6. Following a method described by Carly Urban, we do not count financial education programs mandated at the substate level or offered optionally. Using this methodology, no state had a financial education mandate before Illinois instituted one in 1970.
7. For a description of the prevalence of past-due medical debt by state, see Karpman and Caswell (2017).

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