

Insights: Financial Capability

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Is Financial Literacy Really Declining? What Smartphones Reveal

Summary

Despite expanding efforts to introduce effective financial education into high school curriculum,¹ measured financial literacy of adults has declined over the past 15 years, creating a puzzle. Using a randomized survey experiment, we examined whether smartphone use on surveys may be at least partly responsible for this decline.² We found that using a smartphone to answer survey questions leads to lower measured financial knowledge and more “don’t know” responses. We estimate that the smartphone expansion can explain between 23 percent and 83 percent of the decline in measured financial literacy observed between the 2009 and 2021 National Financial Capability Study (NFCS). Measuring and adjusting estimates for the smartphone penalty—that is, the score reductions that result from taking financial literacy assessments on a smartphone—is important to accurately assess people’s financial knowledge and how it changes over time.

Why This Matters

Over the past 15 years, across nationally representative surveys, adults’ financial literacy scores have declined while the proportion of “don’t know” responses has simultaneously increased.³ Why? One possible

¹ Pelletier, J. (2023, December). *Is your state making the grade? 2023 National report card on state efforts to improve financial literacy in high schools* (pp.22-23). Champlain College Center for Financial Literacy.

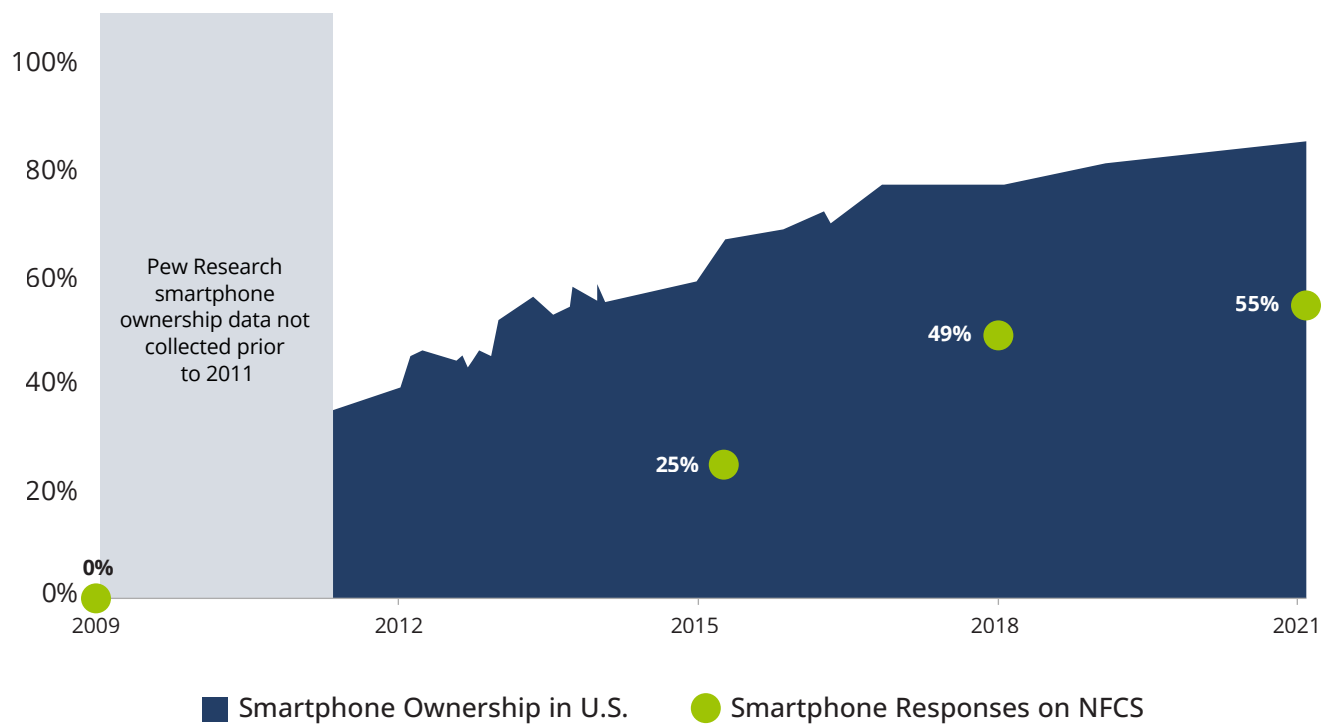
² This paper summarizes findings from a FINRA Investor Education Foundation funded working paper titled *Is Financial Literacy Really Declining: Randomized Evidence on the Effects of Smartphone Responses*, which is available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=6141406.

³ Urban, C. & Valdes, O. (2022). *Why is measured financial literacy declining and what does it mean? Maybe we just “don’t know.” Insights: Financial Capability*. FINRA Investor Education Foundation.

explanation is the increased proliferation of smartphones. From 2011⁴ to 2021, the proportion of U.S. adults who own a smartphone increased from 35 percent to 85 percent—more than doubling over a ten-year period.⁵ This rise in smartphone usage has changed how people take surveys. In the National Financial Capability Study (NFCS), an internet-based survey assessing financial capability that is administered triennially to U.S. adults, the proportion of respondents taking the survey on a smartphone grew from 0 to 55 percent between 2009 and 2021.

In this brief, we ask: Does using a smartphone to take surveys change how people answer financial literacy questions? If so, are they less attentive, less interested or exerting less effort? And has smartphone expansion opened surveys to a new population of respondents with different levels of financial knowledge? We explore whether one, both or neither contribute to the measured decline.

Figure 1. Expansion of Smartphones during the 2010s



Note: Smartphone ownership data obtained from “Demographics of Mobile Device Ownership and Adoption in the United States,” by Pew Research Center, 2025.

⁴ Pew Research Center began collecting smartphone ownership data in 2011.

⁵ Pew Research Center. (2025, November 20). [Demographics of mobile device ownership and adoption in the United States](#).

What We Did

To better understand the role of smartphones in the measurement of financial literacy, we conducted an experiment in which we randomly assigned a sample of 5,200 adults to complete a survey on (1) a smartphone or (2) another digitally connected device (a laptop, desktop or tablet). Respondents were drawn from the Understanding America Study (UAS), a nationally representative panel of U.S. adults. All had previously indicated they had access to a smartphone and a laptop, desktop or tablet. In the study invitation email, participants were told they would only be able to complete the survey on the type of device to which they were assigned. The surveys were designed to look similar across device types.

The six-minute survey included the Big 5 financial literacy questions on interest, inflation, diversification, mortgages and bonds (see Appendix A for full question wording). Nearly three-quarters (72 percent) of invited participants completed the survey.

What We Found

Smartphones reduce financial literacy scores

On average, respondents who were forced to answer financial literacy questions on a smartphone correctly answered 3 percent fewer financial literacy questions than those who answered on a laptop, desktop or tablet. Why? Smartphone users selected “don’t know” in response to the underlying questions more often. Specifically, “don’t know” responses were 11 percent more common among those taking the survey on a smartphone.

To understand what specifically led to worse performance on smartphones, we examined whether respondents a) were less attentive, b) found the survey less enjoyable and c) sped through the questions.

Attentiveness: Given that smartphones tend to be smaller and easier to travel with, we considered that those taking the survey on their smartphone might encounter more distractions or be less attentive to the survey questions. To examine whether smartphone respondents paid less attention to their responses, we included several attention checks. First, we asked a lengthy, albeit simple, question midway through the survey that required detailed reading to correctly answer.⁶ Second, we asked respondents whether they were interrupted or experienced any distractions while taking the survey. Finally, we gauged their attentiveness by examining whether participants correctly answered a demographic question about themselves. Specifically, we asked them to enter their birth year, which we could verify against prior data collections. In all cases, we found no evidence that respondents on their smartphones were any less attentive to the survey than those on another device.

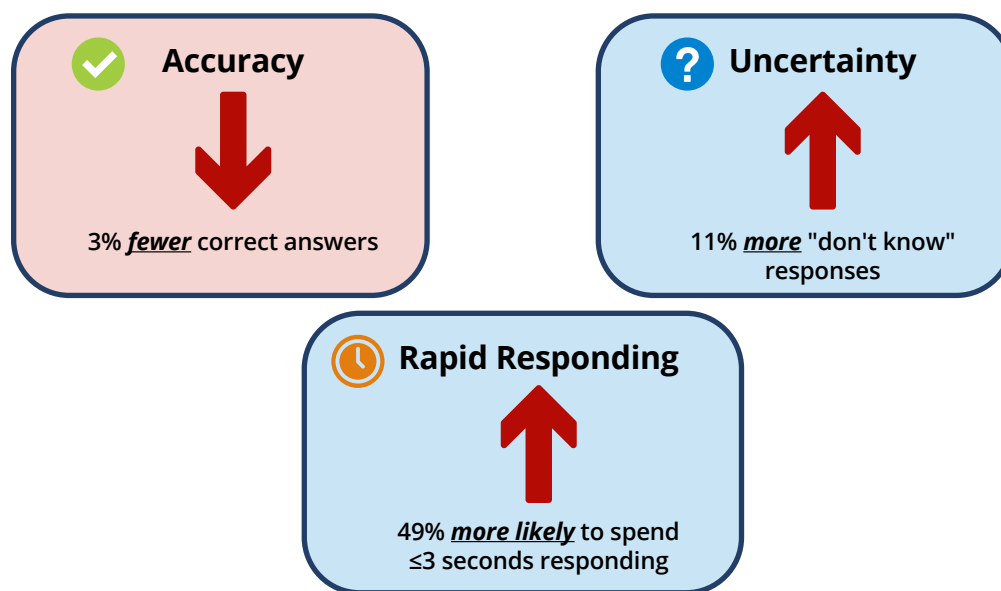
Enjoyment: Another consideration was that surveys might be less enjoyable on smartphones. To test this possibility, we examined differences in respondents’ self-reported interest in the survey after having completed it. We observed no differences between smartphone and non-smartphone participants.

⁶ We would like to get a sense of your general preferences. Most modern theories of decision making recognize that decisions do not take place in a vacuum. Individual preferences and knowledge, along with situational variables can greatly impact the decision process. To demonstrate you’ve read this much, just go ahead and select both red and green among the alternatives below, no matter what your favorite color is. Yes, ignore the question below and select both of those options.

What is your favorite color? {check all that apply}. White, Black, Green, Blue, Red, Pink, Other

Effort: We also considered that people might be less inclined to “give it their all” on smartphones. To examine whether smartphones led to less effortful responses, we examined the length of time participants took to answer the financial literacy questions. Specifically, we focused on rapid guessing—defined as spending 3 seconds or less providing an answer (or answering DK). Rapid guessing was significantly more common among smartphone users, with those on smartphones 49 percent more likely to rapidly guess on at least one of the five financial literacy questions.

Figure 2. Impact of Smartphones on Measured Financial Literacy

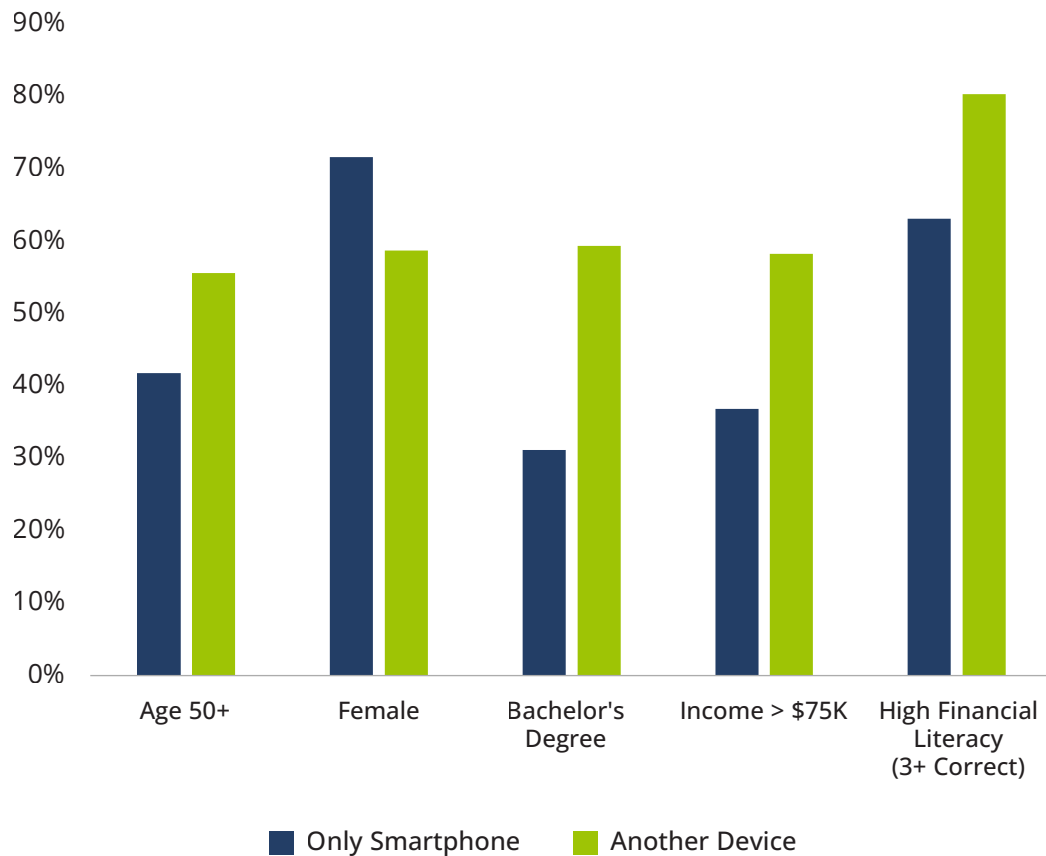


Newcomers

We also considered the possibility that some people are *only* willing to fill out surveys on a smartphone—and these individuals might differ from those who are willing to respond on other devices. To examine this possibility, at the end of the experiment we reopened the survey to allow invited panelists who had not yet responded to complete it on their chosen device. Of the 460 additional participants who responded—nearly all chose a device opposite to the one to which they were initially assigned. Most notably, most respondents who were initially assigned to a tablet, laptop or desktop overwhelmingly responded on a smartphone when given the option. Most of these late responses came from smartphones. Since all participants had previously indicated having access to both a smartphone and another digital device, this suggested that some individuals are *only willing* to take surveys on a smartphone, despite having access to another device.

Table 1 compares those who responded only after they were permitted to use a smartphone (despite being initially assigned to another device) to those who completed the survey on their assigned laptop, desktop or tablet. Those willing to respond via smartphone only were younger, more likely to be female, had lower educational attainment, lower income and considerably lower levels of measured financial literacy than those willing to respond on another device. These findings suggest that expansion of smartphones might have brought in a new population of survey respondents who would have otherwise not been captured in the data, particularly individuals with lower financial literacy.

Table 1. Characteristics of Participants Only Willing to Respond on a Smartphone vs. Those Willing to Respond on Another Device



One Reason Financial Literacy Scores Are Declining

Our findings suggest two ways in which the expansion of smartphones has led to lower measured financial literacy: (1) a smartphone penalty—participants exerted less effort on financial literacy questions when responding on a smartphone, and (2) drawing in a new population of survey participants who tended to have lower measured financial literacy. While we cannot establish exactly how the proportion of people who are only willing to respond on a smartphone has changed over time, we can estimate how much of the decline in financial literacy can be explained by the expansion of smartphones by constructing two bounding scenarios.

These two scenarios bracket the potential impact. If we assume that everyone who responded via smartphone to the NFCS survey in 2021 would have also responded to the survey in 2009 (when smartphones were not an option)—meaning that providing the option to answer the survey on a smartphone drew absolutely no newcomers, the expansion of smartphones would account for 23 percent of the decline in financial literacy from 2009 to 2021. This estimate isolates the device penalty alone: the reduction in measured knowledge that results from using a smartphone to answer financial knowledge questions. At the other extreme, if we assume no one who responded on a smartphone in 2021 would have responded to the survey in 2009 on another device (i.e. all smartphone users are newcomers), the expansion of smartphones would account for 83 percent of the observed decline in financial literacy. This upper bound captures compositional changes (that is, smartphones drawing in a lower-knowledge population). The true impact likely falls somewhere between these two bounds.

What Can We Do?

The findings provide compelling evidence that simply taking financial knowledge surveys on a smartphone can hurt performance, resulting in a “smartphone penalty.” Thus, when measuring financial knowledge in web-based surveys, it is important to track smartphone use and adjust for the smartphone penalty. To this end, we have created a [database](#) cataloging datasets across the world that include the Big 3 or Big 5 financial literacy questions and provide guidance on how to adjust for the smartphone penalty when analyzing these datasets.⁷

Practitioners conducting financial assessments should consider encouraging clients to use a desktop, laptop or tablet to complete surveys to better gauge financial knowledge. Alternatively, removing “don’t know” as a response choice may also help mitigate the smartphone penalty.⁸

⁷ This data can be accessed at https://papers.carlyurban.com/AllDatasetsBig3Big5_v1.xlsx.

⁸ When the “don’t know” option was removed for those who selected “don’t know” when first seeing the financial literacy questions, the smartphone penalty fell by 35 percent.

Appendix

Big 5 Financial Literacy Questions

Suppose you had \$100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow?

- (a) Less than \$102
- (b) Exactly \$102
- (c) More than \$102***
- (d) Don't know

Imagine the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account?

- (a) Less than today**
- (b) Exactly the same
- (c) More than today
- (d) Don't know

Buying a single company's stock usually provides a safer return than a stock mutual fund.

- (a) True
- (b) False**
- (c) Don't know

A 15-year mortgage typically requires higher monthly payments than a 30-year mortgage, but the interest paid over the life of the loan will be less

- (a) True**
- (b) False
- (c) Don't know

If interest rates rise, what will typically happen to bond prices?

- (a) They will fall**
- (b) They will stay the same
- (c) They will rise
- (d) Don't know

*Correct answers are indicated in bold.