



Is Financial Knowledge Really Declining? Randomized Evidence on the Effects of Smartphone Responses

Jeremy Burke
USC CESR

Carly Urban
Montana State

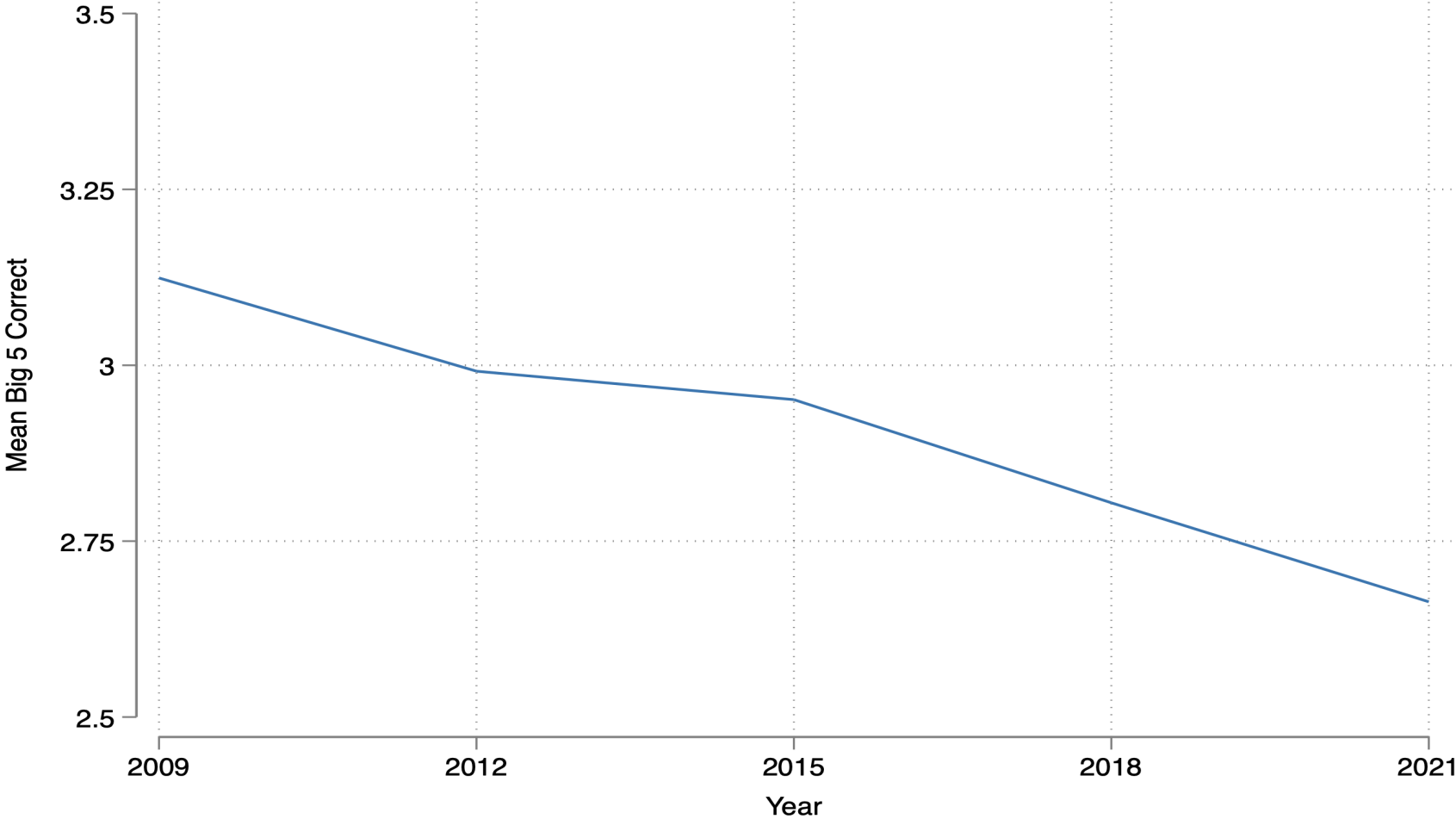
Olivia Valdes
FINRA Foundation

Disclaimer

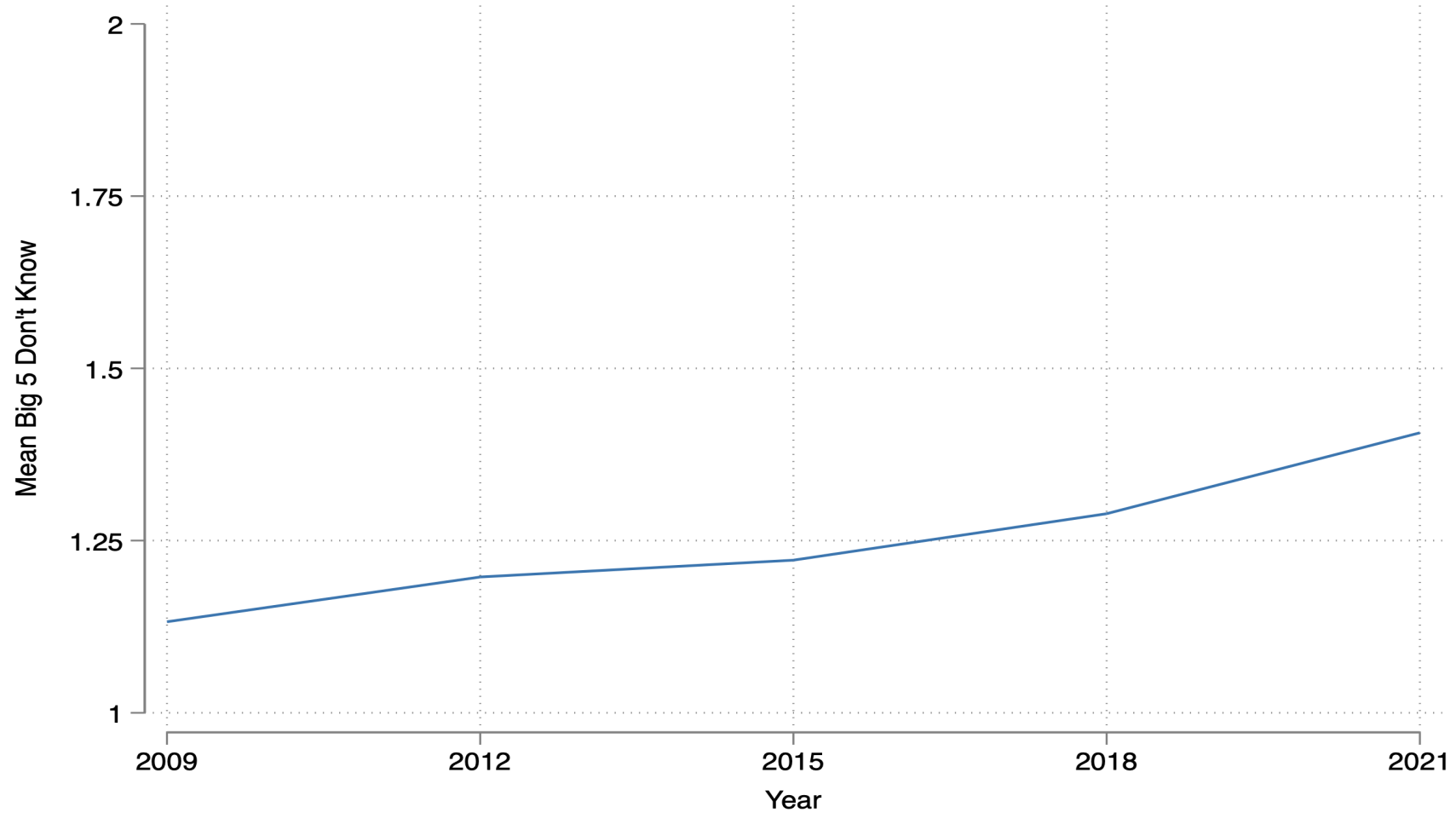


This research was funded by the FINRA Investor Education Foundation. The views expressed are those of the authors and should not be attributed to the FINRA Investor Education Foundation, FINRA, or any of its affiliated companies.

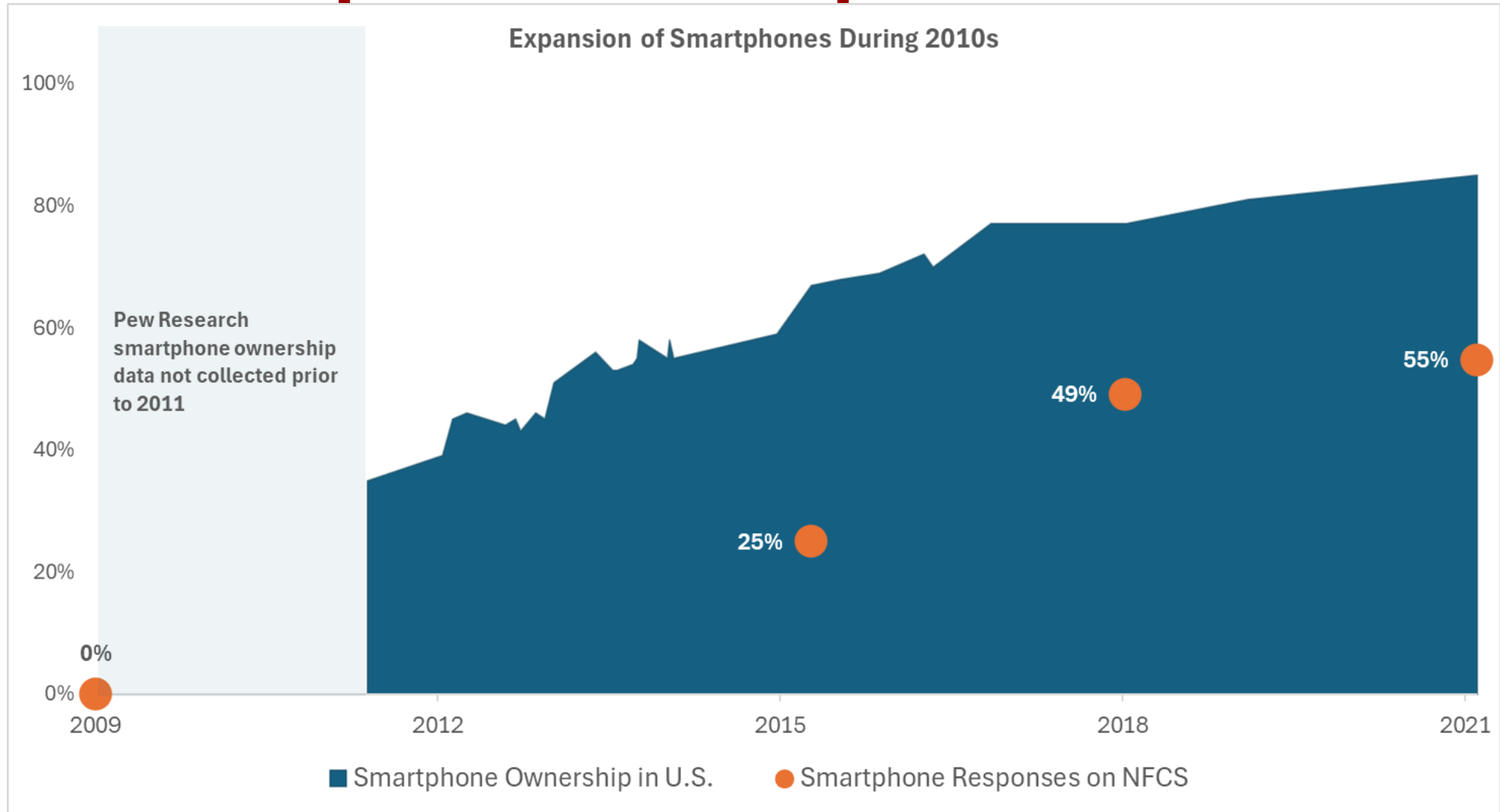
Declining Financial Literacy (NFCS)



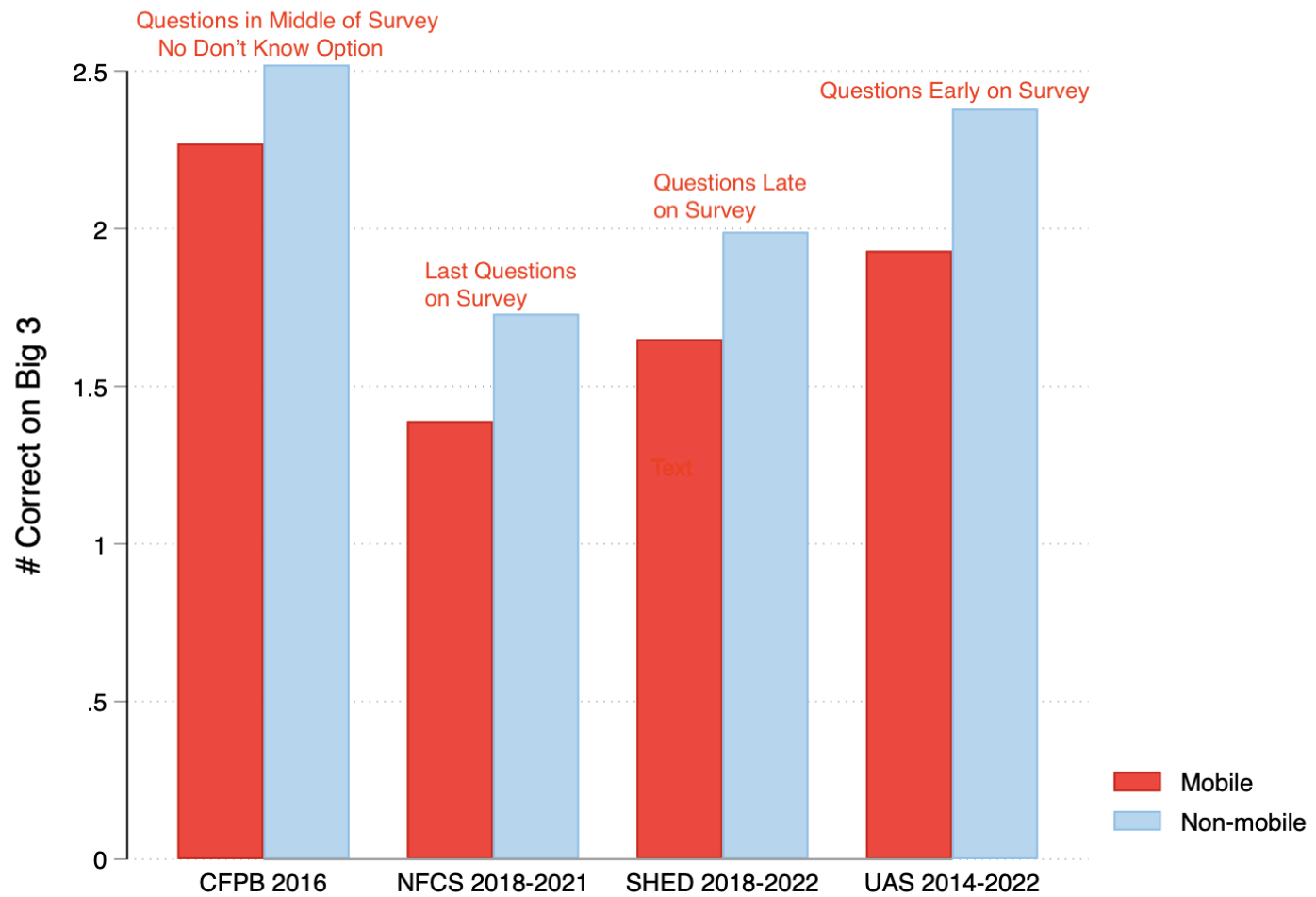
Increased “Don’t Know”s (NFCS)



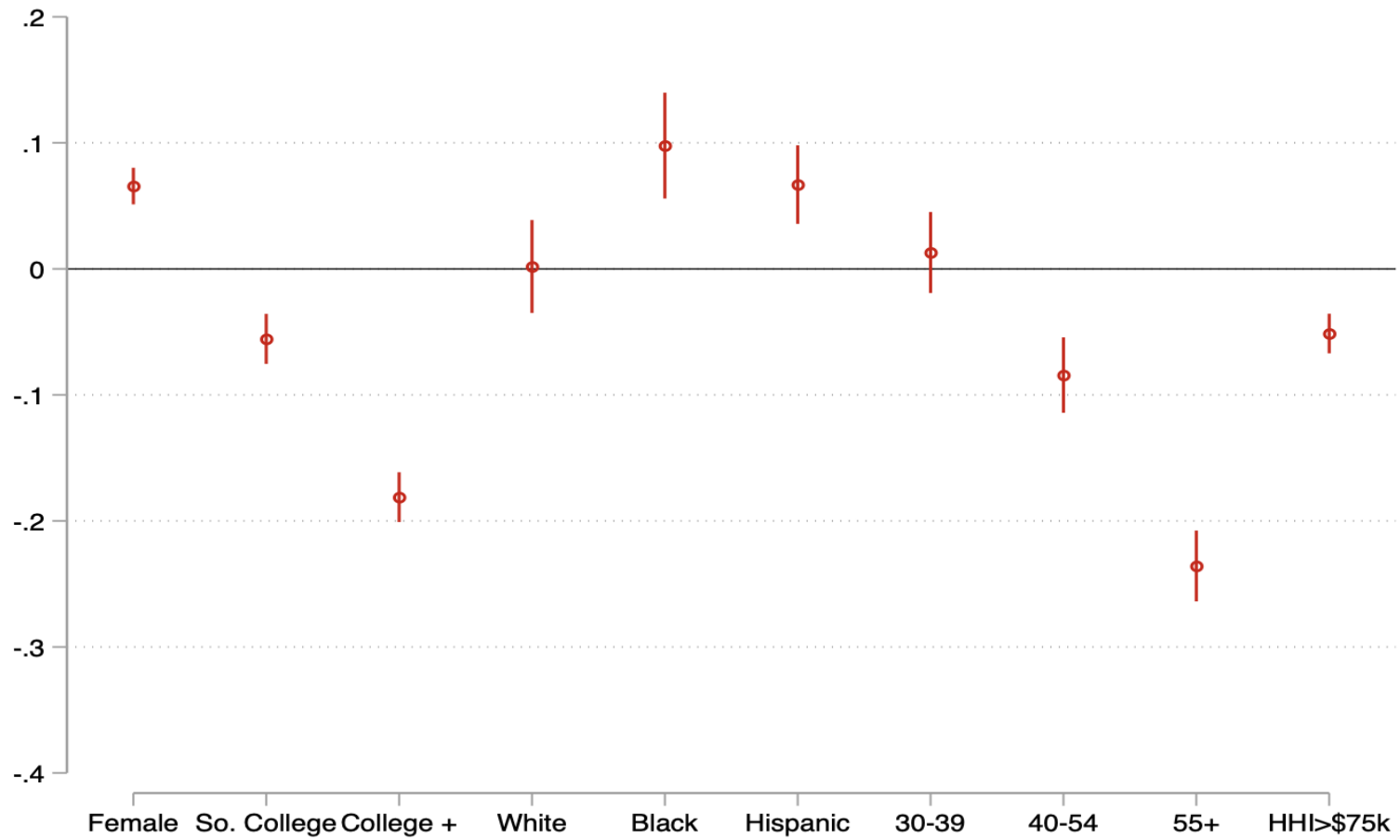
Increased Smartphone Ownership



Mobile Responses and Financial Literacy



Who Answers Surveys on Smartphones?



Our Study



- Two approaches to isolate the effects of smartphones on measured financial knowledge:
 - Use UAS to see if individuals do worse on FK questions when they use a smartphone vs. answer on another type of device
 - Randomize device type: among people with both a smartphone and another device, randomize the type of device they use to answer a UAS survey

Observational Analysis



- Over 2014 – 2021, 5,046 UAS respondents answered (4 of the Big 5) financial literacy questions at least twice
- 30% used both a smartphone and another web-connected device (desktop/laptop/tablet)
- Of switchers, 76% used another device in an earlier year than their smartphone

$$Y_{it} = \alpha_0 + \alpha_1 \text{Mobile}_{it} + \delta_i + \gamma_t + \varepsilon_{it}$$

Observational Results



| <u>Panel A: Correct Responses</u> | | | | | |
|--------------------------------------|----------------------|-------------------|---------------------|----------------------|----------------------|
| | (1) | (2) | (3) | (4) | (5) |
| | # Big 4 Correct | Q1-Int | Q2 - Inf | Q3 - Bond | Q4 - Stock |
| Mobile | -0.111*** (0.025) | -0.015 (0.011) | -0.022* (0.012) | -0.037*** (0.012) | -0.035*** (0.013) |
| N | 13,381 | 13,381 | 13,381 | 13,381 | 13,381 |
| Mean DV | 2.55 | 0.88 | 0.74 | 0.29 | 0.64 |
| <u>Panel B: Don't Know Responses</u> | | | | | |
| | (1) | (2) | (3) | (4) | (5) |
| | # Big 4 DK | Q1-Int | Q2 - Inf | Q3 - Bond | Q4 - Stock |
| Mobile | 0.115*** (0.025) | 0.007 (0.006) | 0.039*** (0.009) | 0.031** (0.013) | 0.037*** (0.013) |
| N | 13,381 | 13,381 | 13,381 | 13,381 | 13,381 |
| Mean DV | 0.66 | 0.037 | 0.094 | 0.25 | 0.28 |

Experiment



- 5,200 UAS participants that had a smartphone AND laptop/desktop/tablet randomized to complete survey on
 - Smartphone
- OR
- Laptop/desktop/tablet
- Forced compliance
- Randomized placement of the financial literacy questions

Main Results



| | (1) | (2) | (3) |
|-----------|----------------------|---------------------|--------------------|
| | Fin Lit | Total DKs | Any DKs |
| Mobile | -0.117*** (0.036) | 0.083*** (0.031) | 0.036** (0.015) |
| N | 3,742 | 3,742 | 3,742 |
| Mean DV | 3.639 | 0.745 | 0.449 |
| R-squared | 0.243 | 0.179 | 0.157 |

Placement X Device



| | (1) | (2) | (3) |
|----------------|----------------------|----------------------|---------------------|
| | Fin Lit | Total DKs | Any DKs |
| Mobile × Early | -0.066 (0.051) | 0.020 (0.045) | 0.021 (0.022) |
| Mobile × Late | -0.166*** (0.049) | 0.142*** (0.043) | 0.051** (0.021) |
| Late | 0.141*** (0.051) | -0.118*** (0.044) | -0.047** (0.021) |
| N | 3,742 | 3,742 | 3,742 |
| Mean DV | 3.639 | 0.745 | 0.449 |
| R-squared | 0.245 | 0.180 | 0.159 |

Mechanisms



| | (1) Attn Check | (2) Was Distracted | (3) Fin Lit Seconds | (4) Rapid Guess | (5) Birth Year Correct | (6) Interesting |
|-----------|----------------------|--------------------------|---------------------------|-----------------------|------------------------------|--------------------|
| Mobile | -0.013 (0.014) | -0.006 (0.013) | -4.366** (2.070) | 0.042*** (0.009) | 0.003 (0.005) | 0.010 (0.026) |
| N | 3,742 | 3,740 | 3,661 | 3,661 | 3,738 | 3,739 |
| Mean DV | 0.732 | 0.212 | 99.963 | 0.085 | 0.976 | 4.109 |
| R-squared | 0.050 | 0.005 | 0.070 | 0.046 | 0.006 | 0.017 |

Discussion



- Measured financial literacy is lower when responding on a smartphone
 - Particularly when questions appear late in a survey
- Individuals who will only respond on a mobile have markedly lower financial literacy
- Device effects and sample expansion may account for up to 83% of measured decline since 2009
- Important to account for smartphone use/question placement in cross-country and longitudinal comparisons