They Just Add Up:

Math Knowledge + Financial Knowledge = **Better Financial Outcomes**

2024 Jump$tart NEC | Louisville, KY

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Background

- Many adults in the US experience financial difficulties – with trouble making ends meet
- Education is an important avenue to improving financial wellbeing

1 in 3
adults are **financially fragile**

43%
lack **emergency savings**

But what type of knowledge is most effective?

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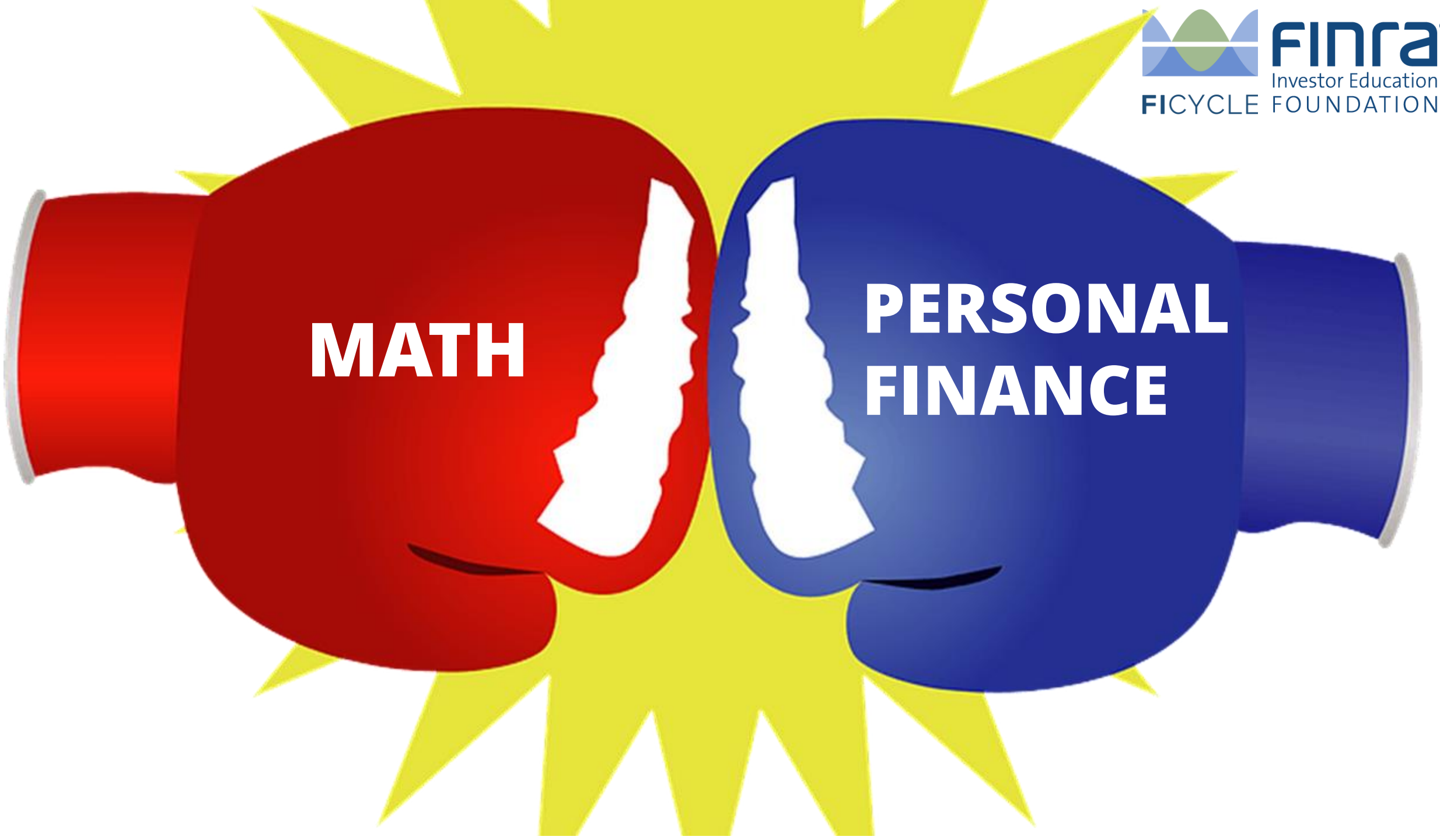

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Financial Education

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Does Education Work?

- Effectiveness of financial education thoroughly assessed by Kaiser and colleagues in 2021.
- Meta-analysis of 76 randomized-controlled trials, across 33 countries.

Questions Asked

1. Does it increase financial knowledge?
2. financial behaviors?
3. Is it cost-effective?

Kaiser, T., Lusardi, A., Menkhoff, L., & Urban, C. (2021). Financial education affects financial knowledge and downstream behaviors. *Journal of Financial Economics*. https://doi.org/10.1016/j.jfineco.2021.09.022.

Findings and Implications

Financial Education → Knowledge? Yes!

- Largest effect on knowledge, similar effect to math and reading interventions

Financial Education → Behaviors? Yes!

- Positive effects on nearly all behaviors studied - improves budgeting, savings and credit
- Similar effect to tailored health interventions – like those for smoking

Is Financial Education Cost-Effective? Yes!

- On average, a low cost for positive, overall medium effect

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Math Education

Does Education Work?

- Math Education may also be important.
- Numeracy skills tied to better financial outcomes
- Math training can improve financial outcomes – like increasing creditworthiness, greater asset accumulation – and lessen poor outcomes – like credit card delinquency and foreclosure.

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Our Study

Examined the individual and combined roles of math and financial knowledge on a series of positive and adverse financial behaviors.

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Methodology

Survey

- 1,668 Respondents
- NORC's AmeriSpeak Panel
- Surveyed May to April 2021

Instruments

- Financial Knowledge
- Math Knowledge
- Positive Financial Behaviors
- Adverse Financial Behaviors

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Methodology

Math Knowledge

- Three questions
- Probability, Percentages, Algebra

High Math Knowledge: 2+ of 3 correct

What is the value of 6x + y, if x=3 and y=6?

a) 9 b) 18 c) 63 d) 24 e) Don't Know

Financial Knowledge

- Three questions
- Interest, Inflation, Investment Risk

High Fin. Knowledge: 2+ of 3 correct

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) More than $102
b) Exactly $102
c) Less than $102
d) Don't Know

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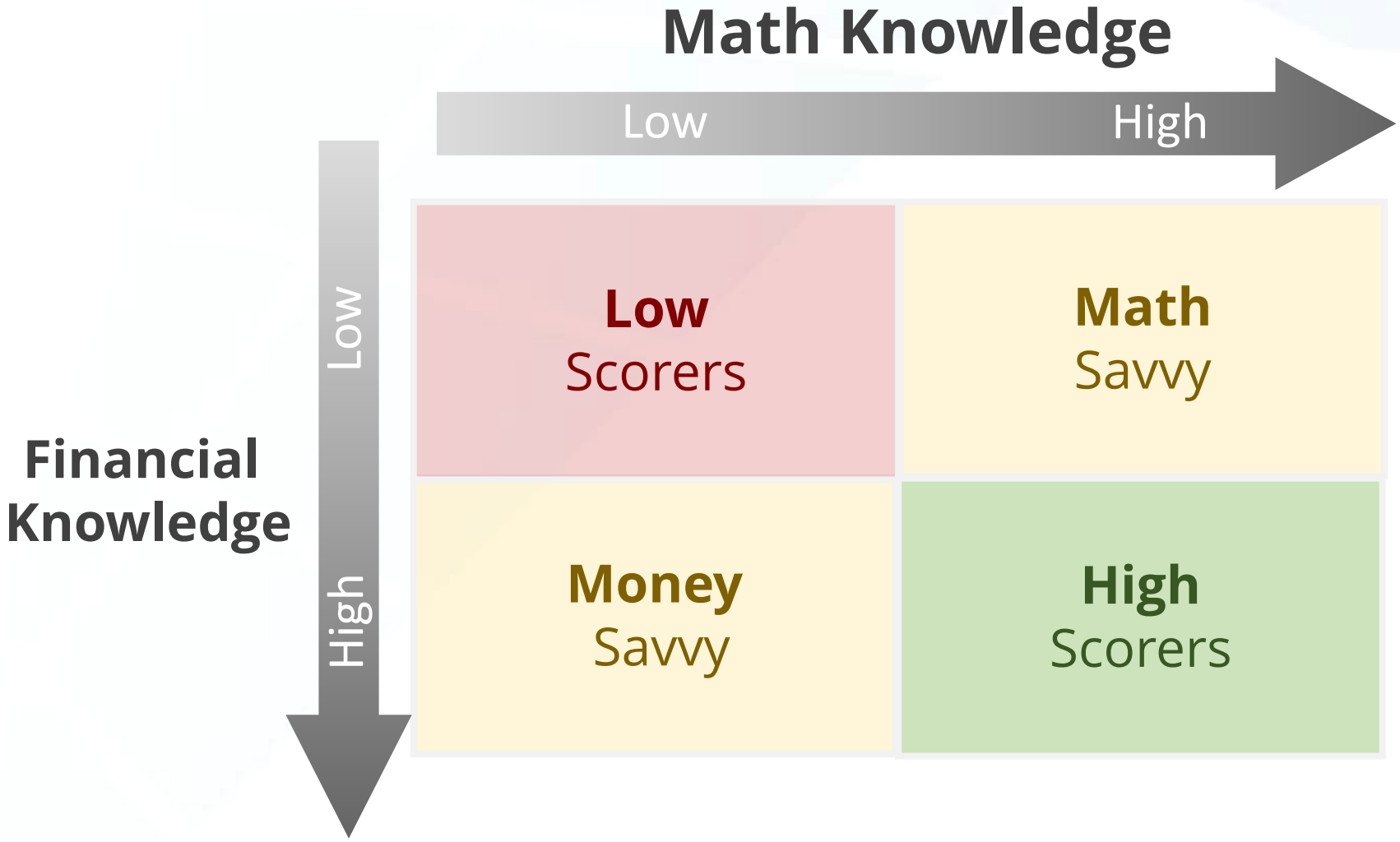
Four Knowledge Groups:



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Methodology

Positive Financial Behaviors

Low Scorers

1. Has savings account
2. Has a plan for saving
3. Retirement Account
4. Non-retirement Investment Account

% of total positive financial behaviors
(out of 4)

Larger numbers indicate ***more positive*** *behaviors*

Adverse Financial Behaviors

1. Used Check Cashing Service
2. Taken out Pay Day Loan
3. Unbanked
4. No surplus income at end of month

% of total adverse **financial behaviors**
(out of 4)

Smaller numbers indicate ***fewer adverse*** *behaviors*

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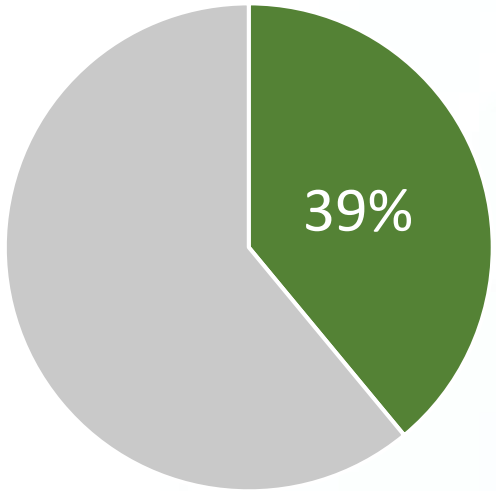
Findings

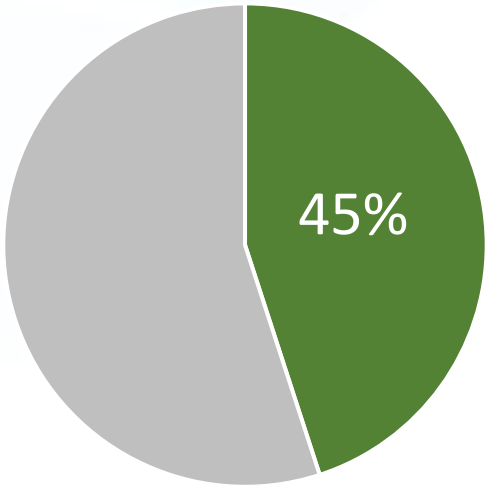
Positive Behaviors Assessed

- Has savings account
- Has a plan for saving
- Retirement Account
- Non-retirement Investment Account

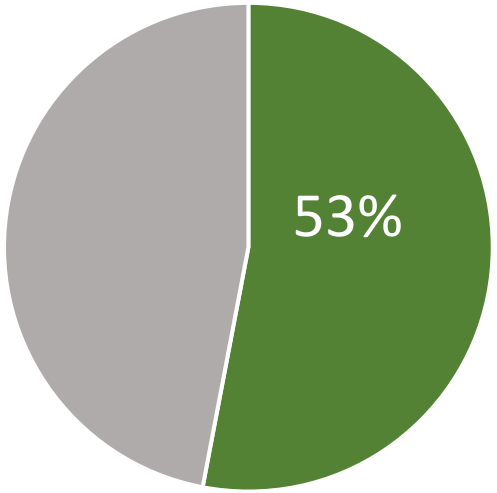
Percent of total positive behaviors taken (on average)



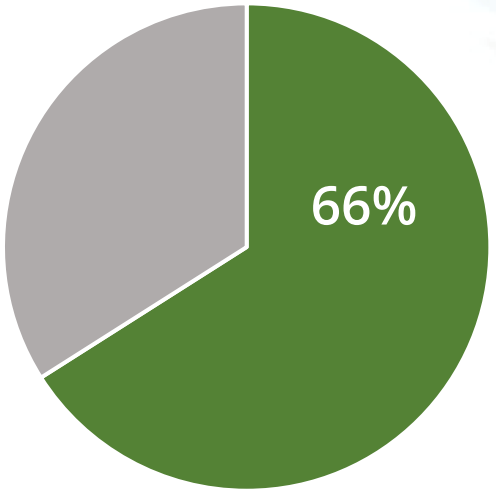
Low Scorers



Math Savvy



Money Savvy*



High Scorers*

*Significantly more positive actions taken than low scorers (even after adjusting for demographics)

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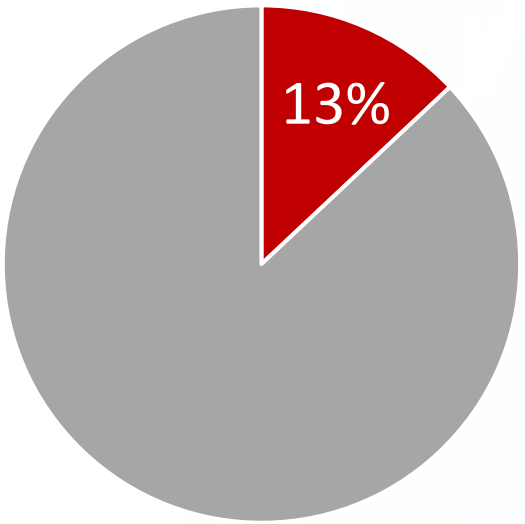
Findings

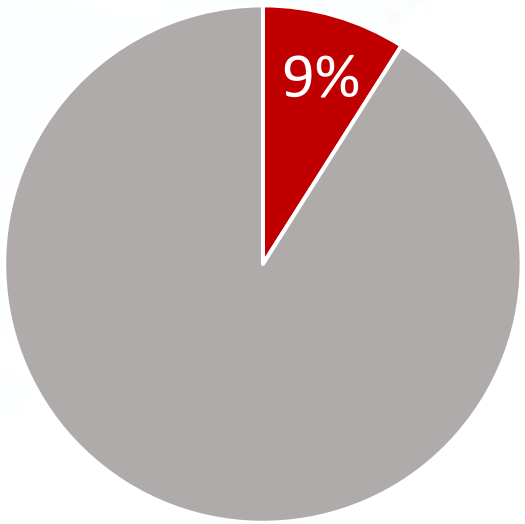
Adverse Behaviors Assessed

- Used Check Cashing Service
- Taken out Pay Day Loan
- Unbanked
- No surplus income at end of month

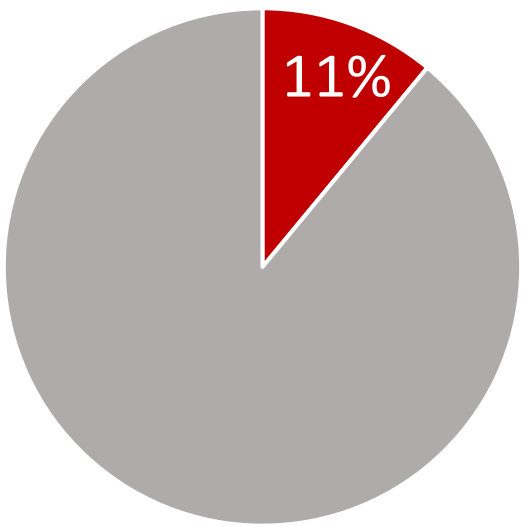
Percent of total adverse behaviors taken (on average)



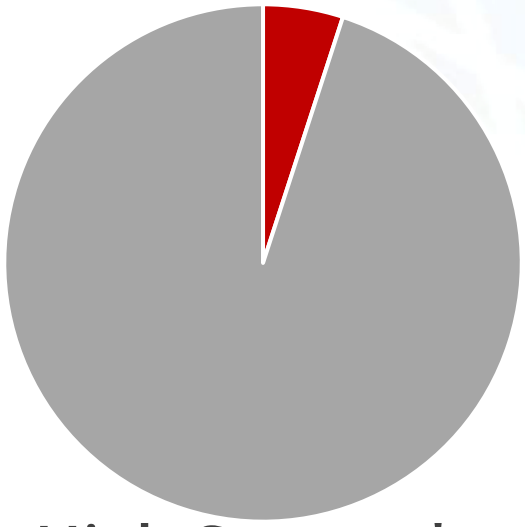
Low Scorers



Math Savvy



Money Savvy



High Scorers*

*Significantly fewer actions taken than low scorers (even after adjusting for demographics)

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Findings

What about the role of *education?*

- Separately examined the role math and financial education played on the same financial behaviors.
- On average, those reporting ***both*** **financial education and intensive math education** reported the most positive behaviors and fewest adverse behaviors.

	Math Education
Intensive Math	• Calculus (in High School/College) • Another College Math Course
Foundational Math	• High School Algebra or Precalculus • None of the above listed choices

	Financial Education
Financial Education	• Took a course that covered personal finance topics
No Financial Education	• Did not take course covering personal finance topics

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Summary

- Those with both **high math and financial knowledge had most engagement in positive behaviors** and least engagement with adverse behaviors – more than those with only high math or financial knowledge.

- The **benefits** associated with having both high math and financial knowledge **extend further than any demographic factor** studied, including income level.

- **Similar findings** emerge when examining the role of **financial and math education** on financial behaviors.

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Main Takeaways

- Math and financial knowledge (and education) should be thought of as **complements and not competitors**.

- As financial education continues expanding, **implementing this coursework within a mathematical framework** may be helpful.

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FINRA Foundation Research Center

Topics Covered

- Financial Capability & Inclusion
- Retail Investing
- Consumer Financial Fraud
- Aging & Financial Decision Making
- Evaluation Studies

Teaching Investing Concepts

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Gen Z are entering the investment ecosystem

56%

Of US Gen Z own at least one primary investment type

25%

Of US Gen Z started investing before they turned 18

$4,000

Median amount invested by US Gen Z investors

They're eager to learn!

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1. Introduce the Concept of Risk…

Basic Concepts:

- *All* investment carry risk
- Markets fluctuate – investments go up AND down over time
- Helpful to invest incrementally rather than “time the market”

Mini-course on FINRA.org

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… and Diversification (to Manage Risk)

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Playing the Field

Select six investment options to create a well-diversified portfolio.

Hint: Your portfolio should be diversified both across and within major categories of investments.

If you choose an investment option by mistake, select it again to de-select it.
Select Submit to see how your investment portfolio measures up.

S&P 500 Fund	Growth Stocks	Dividend-Paying Stocks	International Stock Fund
AAA-Rated Bonds	High-Yield Bonds	Treasury Bonds	Municipal Bonds
Treasury Bills	Money Market Fund	Real Estate Trust	Precious Metals

Back Submit

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Illustrating Risk

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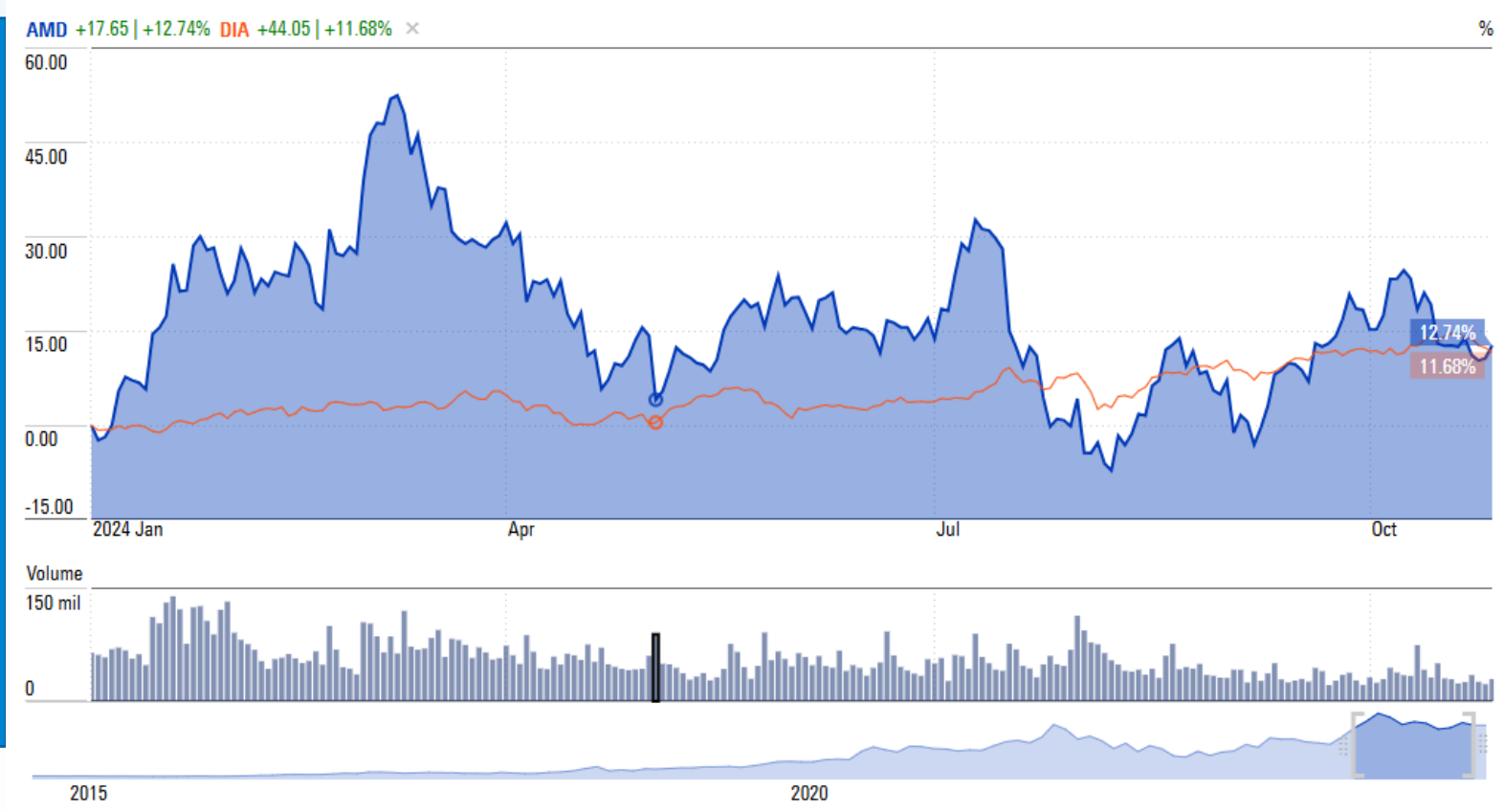
Try this:

Use FINRA's Market Data Center to graph stock, bond, or mutual funds over the short- or long-term.



FINRA.org/MarketData

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Risk Tolerance: Does Perception = Reality?

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Risk Tolerance: Reality

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24

2. Educate Students About Fees

Basic Concepts:

Fees matter because they impact return

AND

They are something investors can control

Mini-course on FINRA.org

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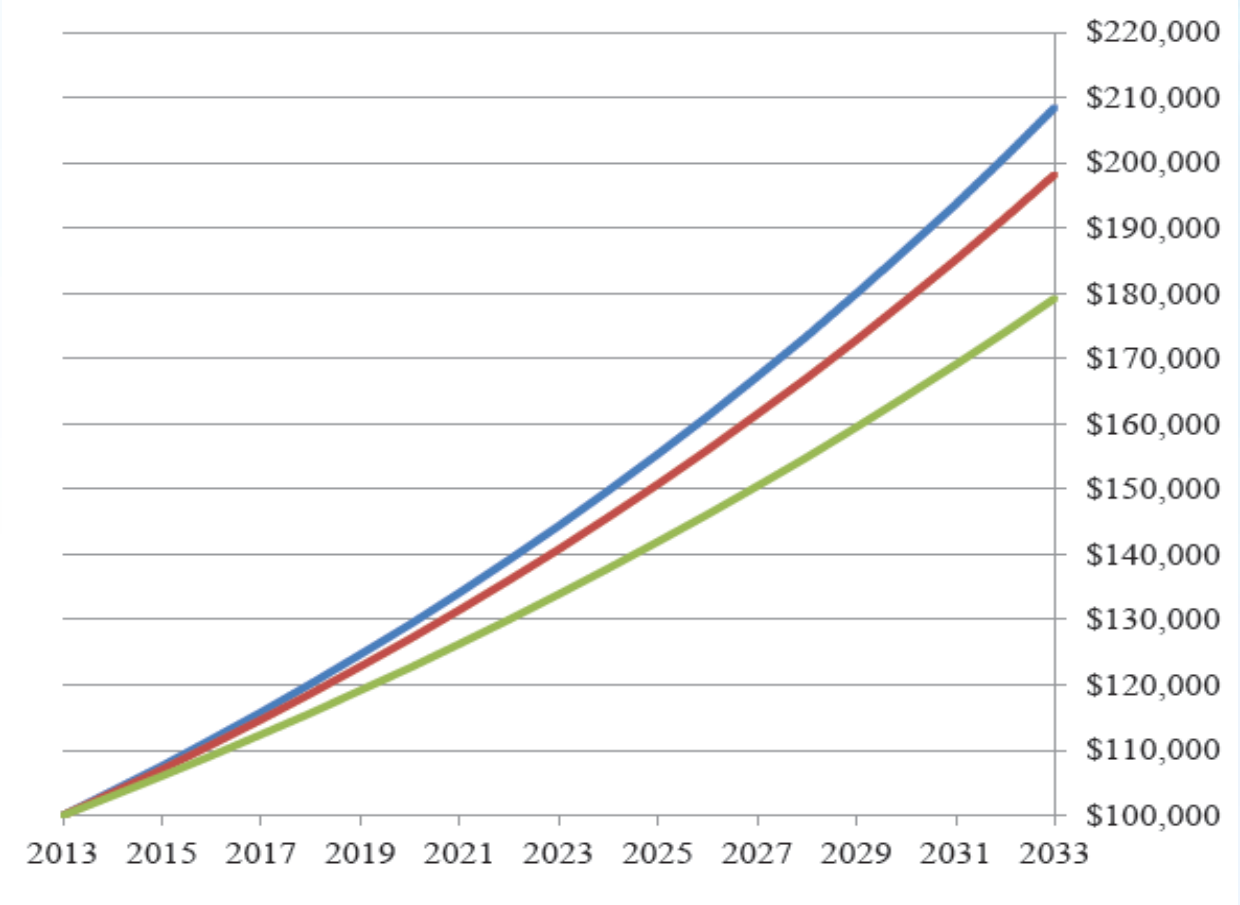
Why Fees Matter

Just a 0.75% increase in fees can reduce account value by tens of thousands of dollars over the long term



0.25% fee

0.50% fee

1.00% fee

Assumptions:

- $100,000 initial investment
- 4% annual return

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Illustrating Fees

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Try this:

Use FINRA's Fund Analyzer to compare fees for two mutual funds – or have them download a prospectus and search for fee information

FINRA.org/FundAnalyzer

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3. Integrate Financial Concepts into Math

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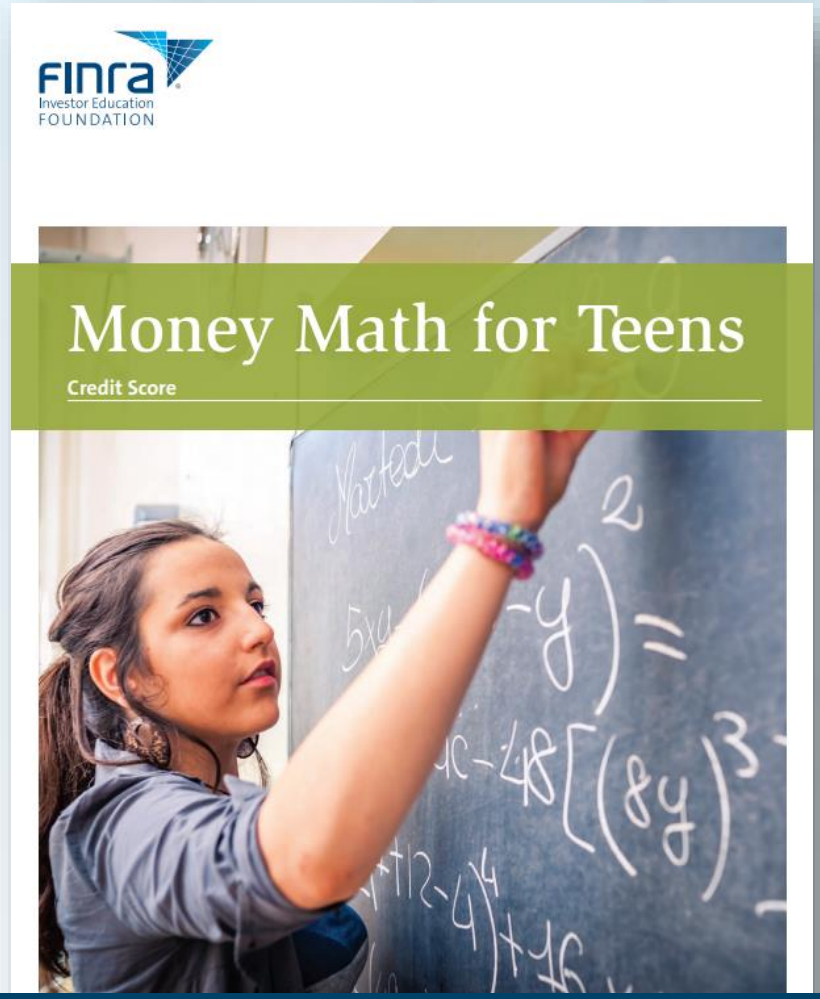
Basic Concept:

- Financial capability benefits from strong math skills
- Explore compound interest, opportunity costs and more—all in a way that's practical and relevant to teens (middle & high school)



Money Math: FINRAFoundation.org

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4. Warn Students About Fraud

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Basic Concept:

Social media and websites can be fraught with fraud

Most people who lose money to scams have a tough time identifying *persuasion*

ConEmIfYouCan.org

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Additional Resources

FINRAFoundation.org - People We Help - Educating Youth

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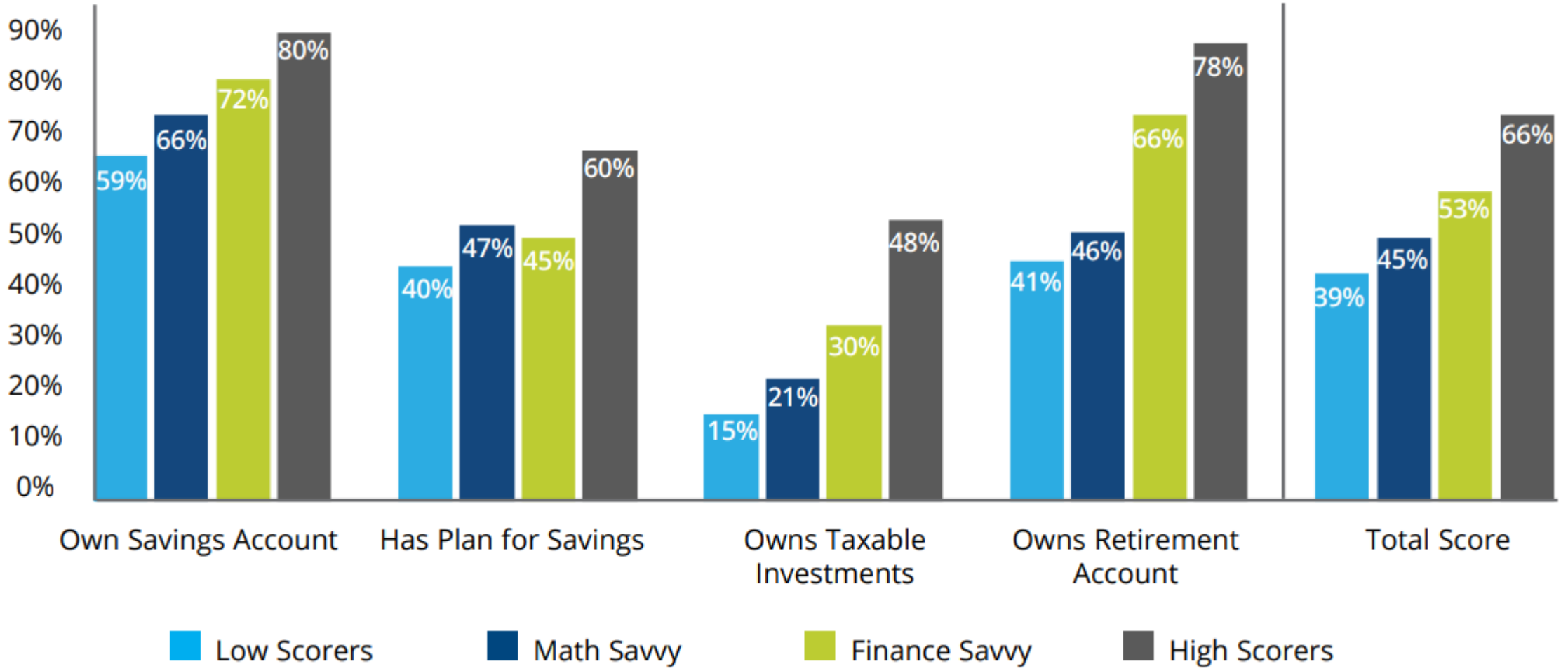
Appendix. Results

Association between Knowledge Level and Positive Scores



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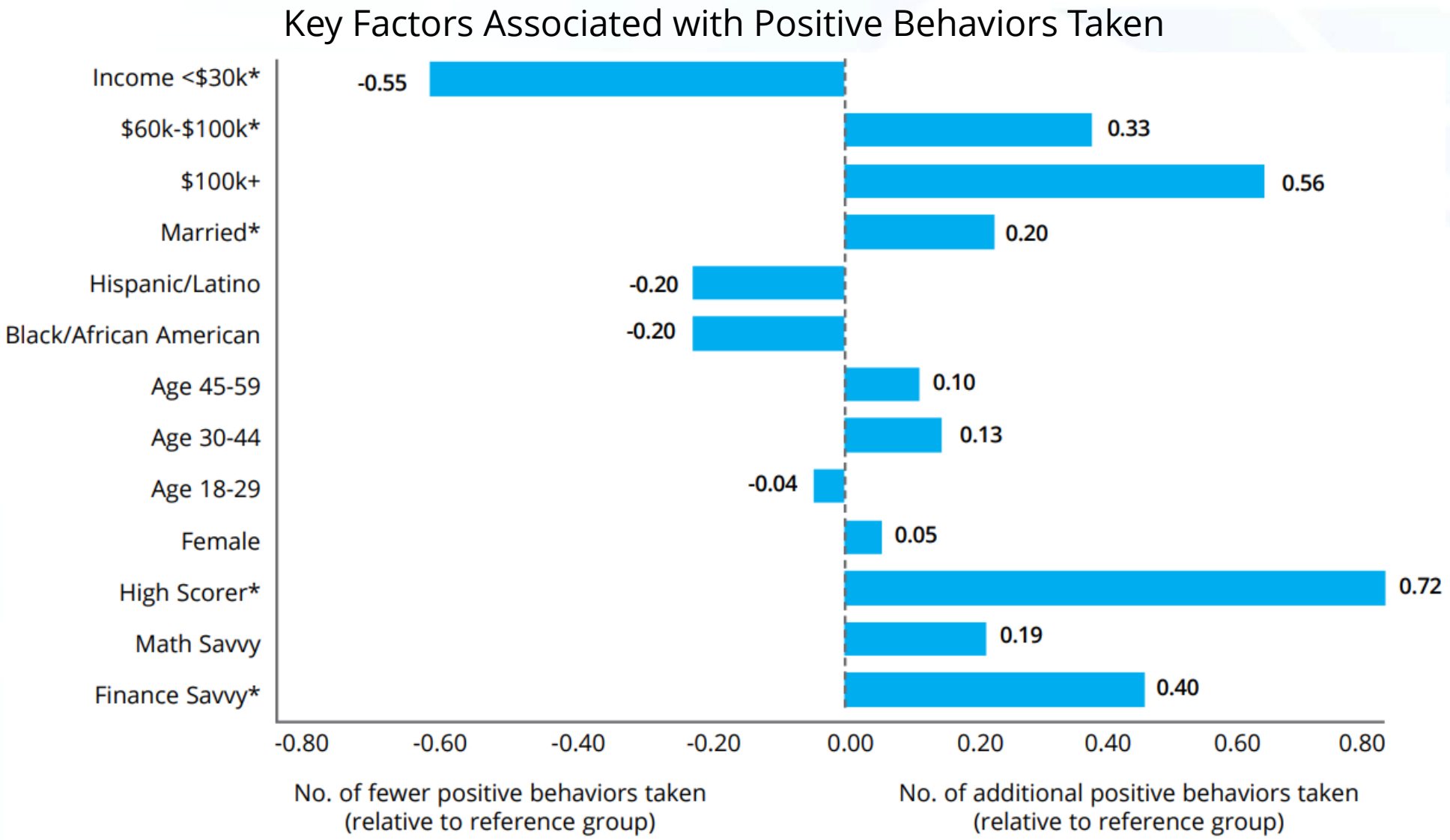
Appendix. Results



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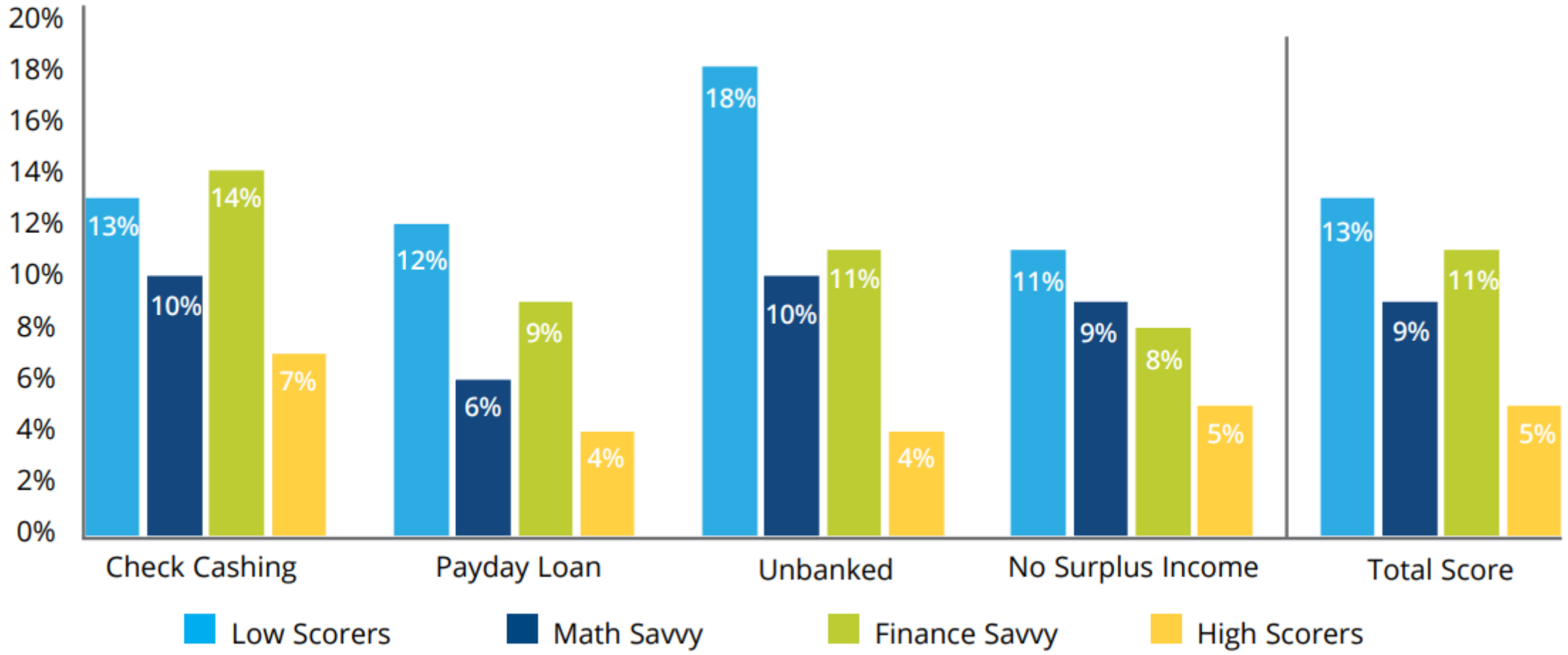
Appendix. Results

Association between Knowledge Level and Negative Scores



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Appendix. Results

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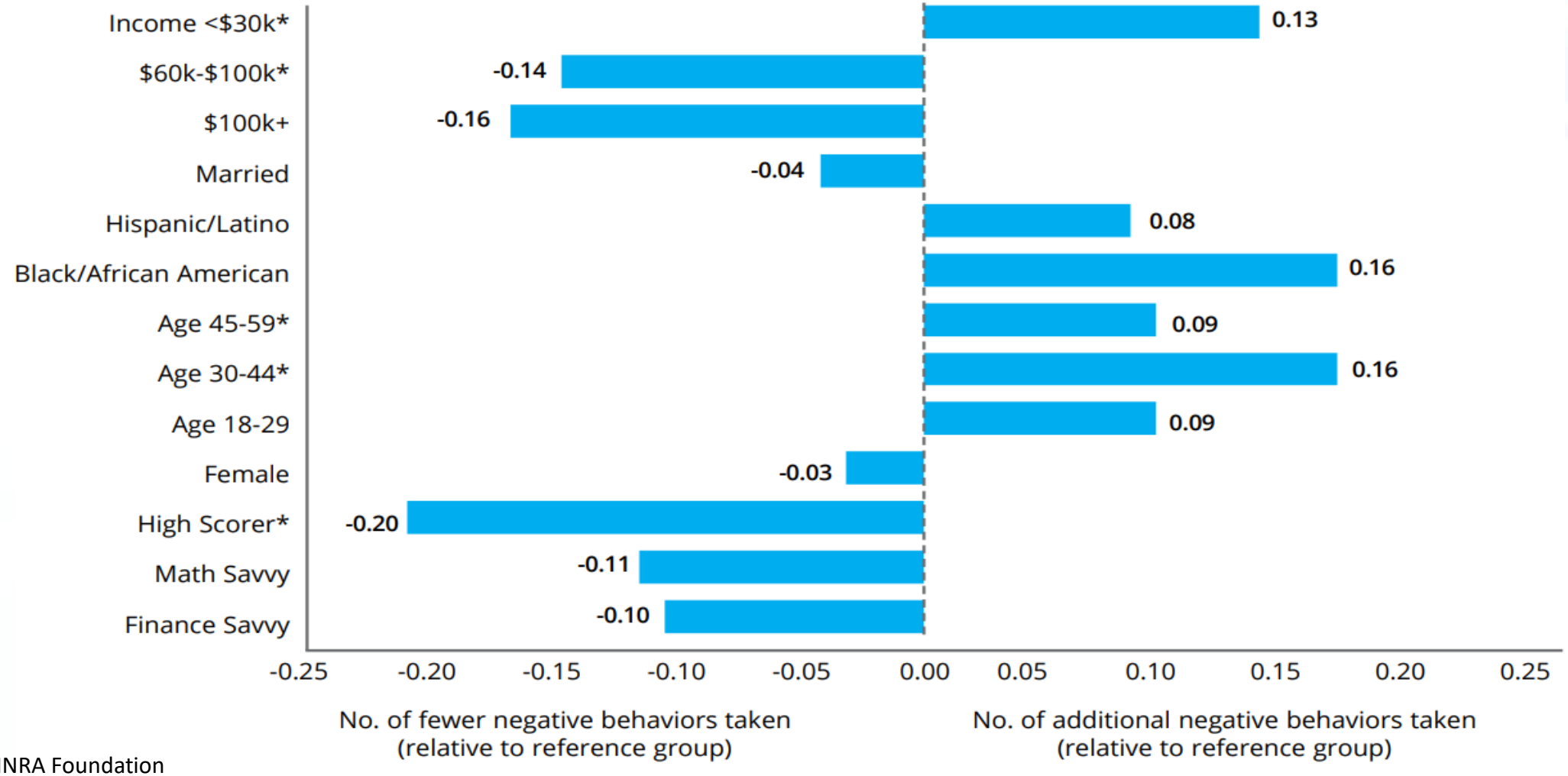
Key Factors Associated with Negative Behaviors Taken



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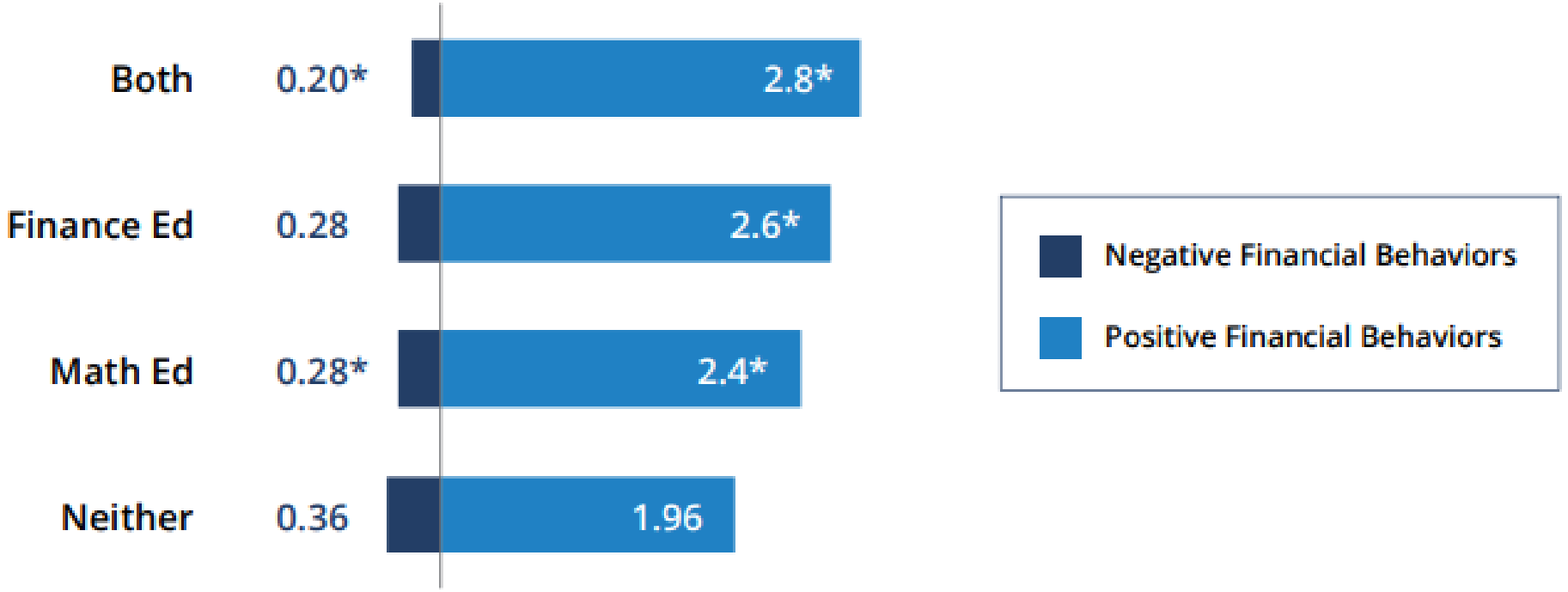
Appendix. Results

Key Factors Associated with Negative Behaviors Taken
(Financial and Math Education)



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