

# From Intent to Action: Nudging Users Towards Secure Mobile Payments

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# Experts' Advice $\neq$ Users' Behavior

- Low adoption of secure mobile payments in the United States
- We investigated interventions with the potential to increase adoption



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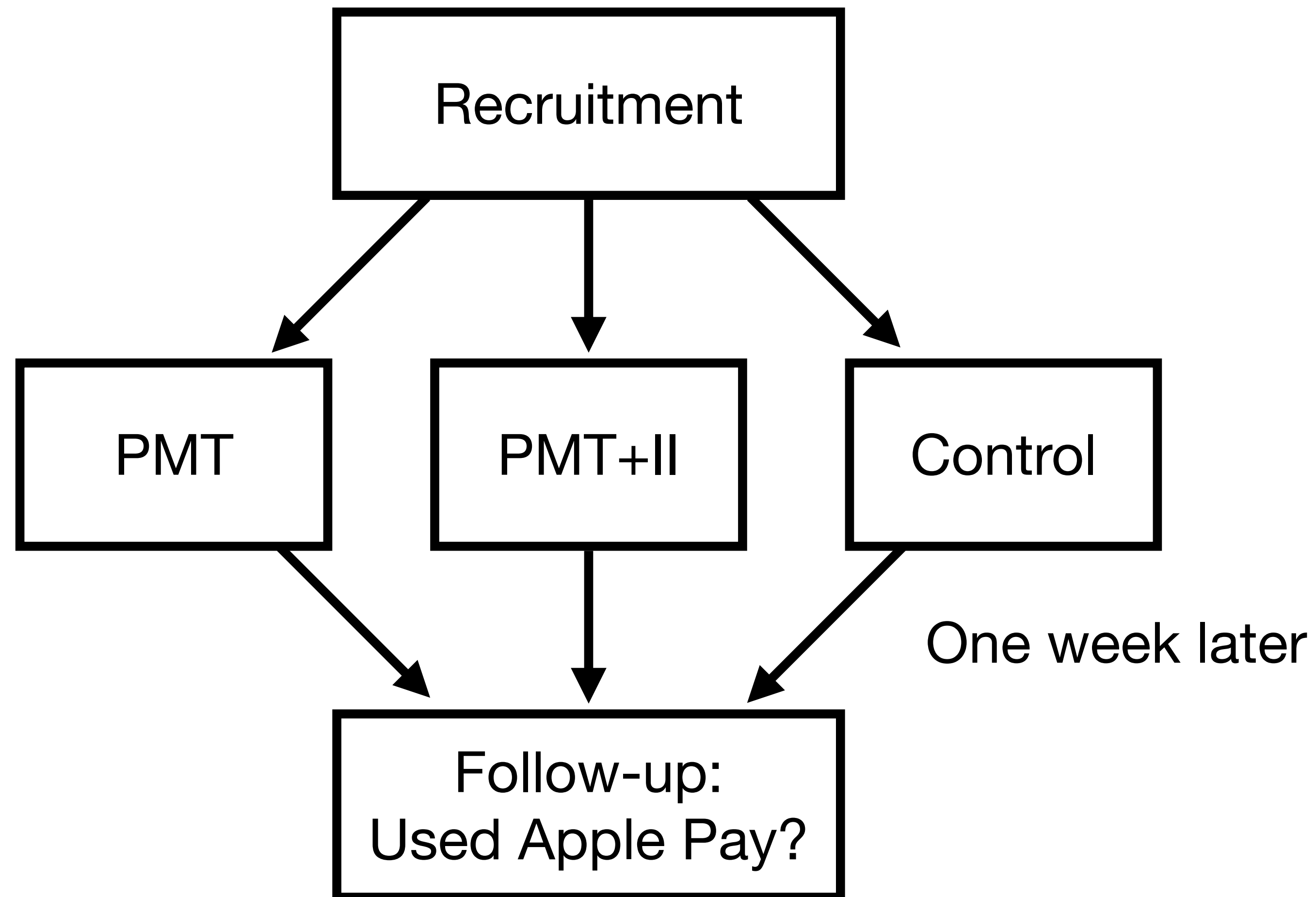
# Nudges

- Nudges help people act as they say they want to
- In our study:
  - Protection Motivation Theory (PMT) nudge
  - Implementation Intentions (II) nudge

# Methodology

- Longitudinal interviews (n=20)
- Longitudinal experiment (n=411)

# Experimental Design



# Protection Motivation Theory Nudge

- Threat susceptibility
- Threat severity
- Response efficacy
- Self-efficacy

*S. Milne, P. Sheeran, and S. Orbell, "Prediction and Intervention in Health-Related Behavior: A Meta-Analytic Review of Protection Motivation Theory," Journal of Applied Social Psychology, vol. 30, no. 1, pp. 106–143, Jan. 2000.*

# Threat Susceptibility: Recent Cases of Card Information Theft

There have been many big hacks where credit and debit card information was stolen from retailers. For example, **Target** was hacked in 2013, **Home Depot** was hacked in 2014, and **Saks Fifth Avenue** was hacked in 2018. Information about millions of cards was stolen in these hacks. If criminals get your credit or debit card information, they might use that information to make fraudulent purchases. If you notice fraudulent purchases on your credit card, you can probably get refunded. But if the purchases are made on your debit card, **you might not be able to get your money back**. In any case, you would need to get a replacement card with a new number, which would be inconvenient.

# Threat Severity: The Consequences of Card Fraud

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# Response Efficacy:

## The Security Protections of Mobile Payments

Thankfully, there are steps you can take to prevent your card information from being stolen and to protect yourself from card fraud. One of the best things you can do is to start using Apple Pay. Instead of paying by swiping or inserting your card, you can make payments through your phone, which adds an extra layer of security. Payments made with Apple Pay will still be charged to your credit or debit card, but **because the payments go through Apple Pay, your card number is not shown to or recorded by retailers**. This means that your card number cannot be stolen from transactions made with Apple Pay. If your phone is stolen, the thief will not be able to make payments because Apple Pay is protected by your Face ID and lock screen PIN. Although no system is perfectly secure, **security experts generally agree that Apple Pay is more secure than paying with credit or debit cards**. Apple Pay takes just a few minutes to set up, and is widely accepted. As of this year, **Apple Pay is accepted in 65% of retail locations** in the United States. For example, ALDI grocery, CVS pharmacy, and Starbucks all accept Apple Pay.

# Self-efficacy: Instructions for Using Mobile Payments

Please review these materials about Apple Pay.

## How To Use Apple Pay



With your iPhone, you can use Apple Pay wherever you see one of these symbols:



You can pay with Apple Pay in stores, restaurants, taxis, vending machines, and many other places.

1. To use your default card, **double-click the side button**, then glance at your iPhone to authenticate with Face ID, or enter your passcode.
2. Hold the top of your iPhone within a few centimeters of the contactless reader until you see Done and a checkmark on the display.

## How to Set Up Apple Pay

1. Open the Wallet app  and tap .
2. Follow the steps to add a new card.
3. Your bank or card issuer will verify your information and decide if you can use your card with Apple Pay. (If your bank or card issuer needs more information to verify your card, they'll ask you for it.)
4. You are ready to use Apple Pay.

Please watch this short video  demonstrating how to use Apple Pay.



# Implementation Intentions Nudge

- A concrete, contextually activated plan to achieve a goal
- Designed to help people remember to take an action

*P. M. Gollwitzer, "Implementation intentions: strong effects of simple plans," American Psychologist, vol. 54, no. 7, 1999.*

# Implementation Intention Template

If you want to use Apple Pay to protect yourself from card fraud, it can still be challenging to remember to use it. Research shows that people are more likely to follow through on their intentions if they make a concrete plan.

You can use this template to make a plan for using Apple Pay. If you want to use Apple Pay in the coming week, **we encourage you to fill out the plan**, since it may help you remember to use Apple Pay.

## My Plan for Using Apple Pay

I will try to use Apple Pay instead of swiping or inserting my card when I visit these stores and/or restaurants in the coming week.

*List up to three stores and/or restaurants you<sup>12</sup> are likely to visit this coming week, where you*

intentions if they make a concrete plan.

# Implementation Intention Template

the coming week, we encourage you to fill out the plan, since it may help you remember to use Apple Pay.

## My Plan for Using Apple Pay

I will try to use Apple Pay instead of swiping or inserting my card when I visit these stores and/or restaurants in the coming week.

*List up to three stores and/or restaurants you are likely to visit this coming week, where you have previously paid by swiping or inserting your card into a payment terminal:*

1)

2)

3)

2)

# Implementation Intention Template

*Check the boxes below as you do each of the following activities:*

- Picture yourself at **the first location**, using Apple Pay to make a payment: taking out your phone, double-clicking the side button, glancing at your phone to authenticate with Face ID, and holding the top of your phone within a few centimeters of the contactless reader.
- Picture yourself at **the second location**, using Apple Pay to make a payment: taking out your phone, double-clicking the side button, glancing at your phone to authenticate with Face ID, and holding the top of your phone within a few centimeters of the contactless reader.
- Picture yourself at **the third location**, using Apple Pay to make a payment: taking out your phone, double-clicking the side button, glancing at your phone to authenticate with Face ID, and holding the top of your phone within a few centimeters of the contactless reader.

*Check the box below if you agree:*

# Implementation Intention Template

- Picture yourself at **the second location**, using Apple Pay to make a payment: taking out your phone, double-clicking the side button, glancing at your phone to authenticate with Face ID, and holding the top of your phone within a few centimeters of the contactless reader.
- Picture yourself at **the third location**, using Apple Pay to make a payment: taking out your phone, double-clicking the side button, glancing at your phone to authenticate with Face ID, and holding the top of your phone within a few centimeters of the contactless reader.

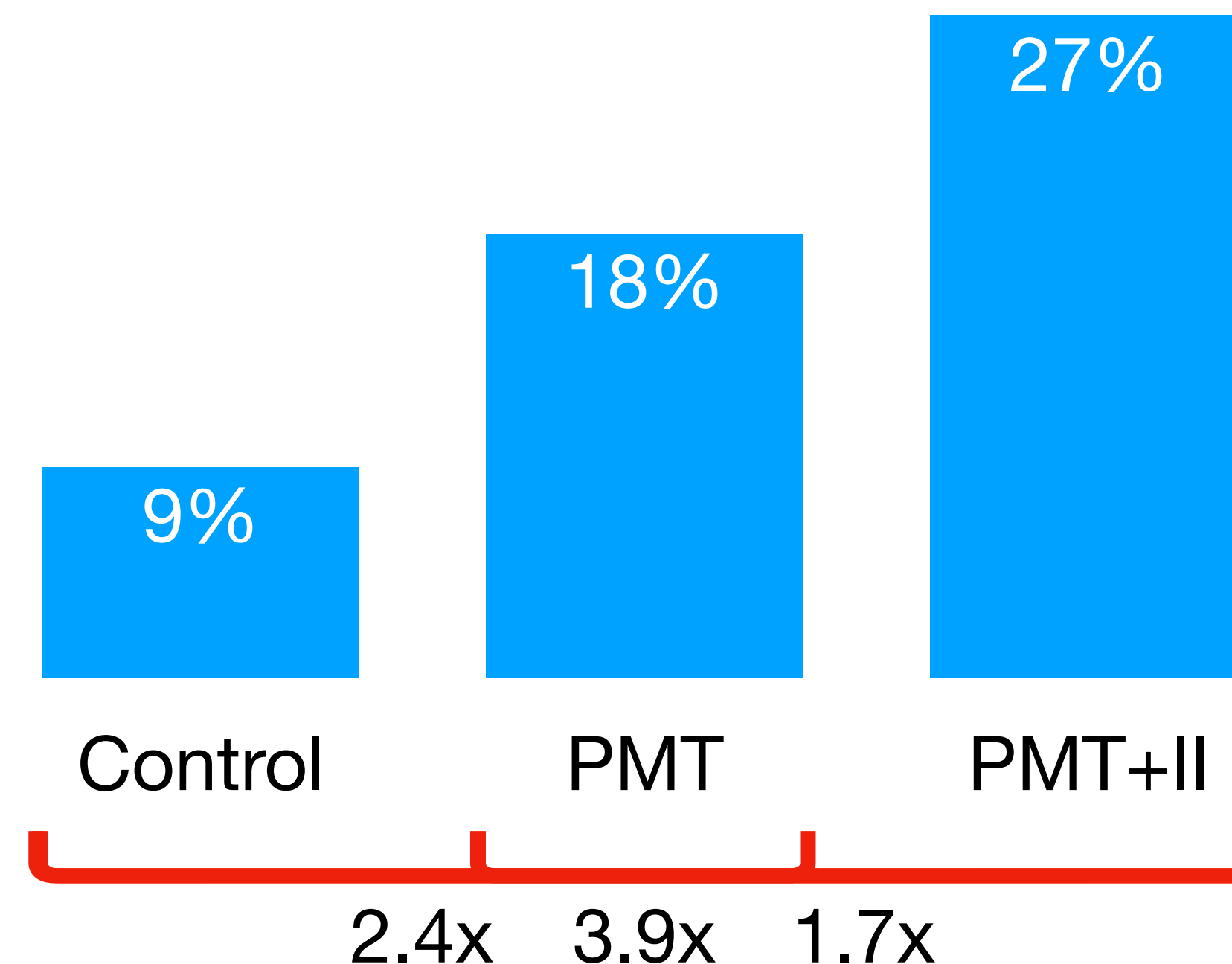
*Check the box below if you agree:*

- I strongly intend to try to use Apple Pay at these locations!

# Treatments Made Participants More Likely To Use Apple Pay

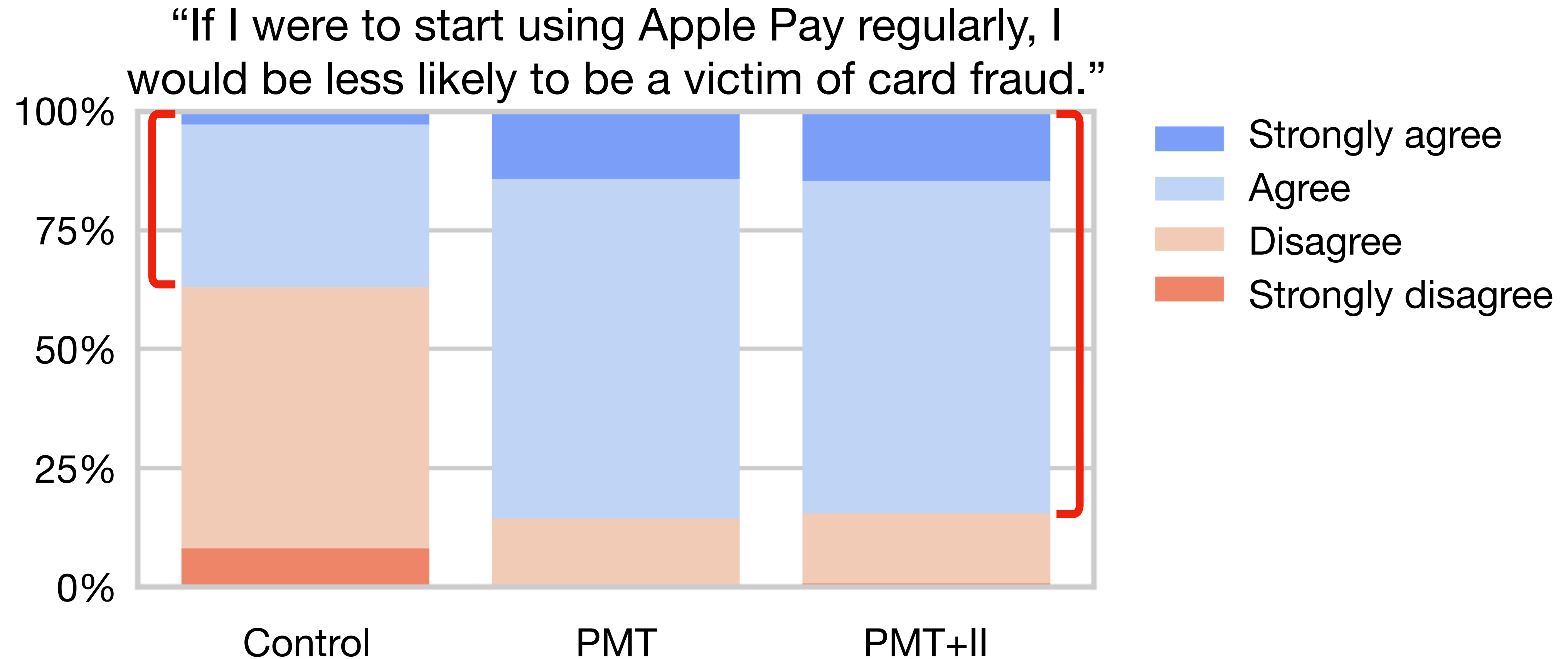
- Use of Apple Pay was significantly more likely in the PMT and PMT+II groups than in the control
- Difference between PMT and PMT+II was not statistically significant

Percent that used Apple Pay





# Treatments Made Participants More Likely To Agree That Apple Pay Would Protect Them



# Conclusion

- Our PMT nudge corrected misconceptions about mobile payments and our II nudge helped people plan to use mobile payments
- Both PMT and PMT+II treatments increased adoption of Apple Pay
- PMT and II nudges may help increase adoption of other tools and practices

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