Undersum Bias as an Impediment to Precautionary Saving

Dr Shane Timmons
Dr Féidhlim McGowan
Behavioural Research Unit
esri.ie/bru

Undersum Bias

- A 'multiple discovery' phenomenon?
  - Scheibehenne (2019) – grocery shopping
  - Goswami et al. (2022) – 10 experiments!

- Systematic underestimation of accumulation, even without compound interest.

- Implications for:
  - Saving (why bother?!)
  - Spending forecasts
  - Risk forcecasts?

Diagnostic Analysis of Saving Behaviour
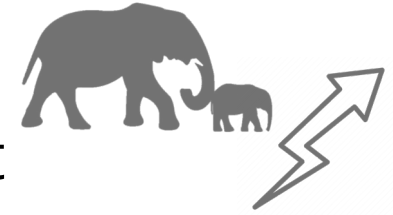
Review of previous trials

- Mental accounting
- Pre-commitments
- Inattention

Interventions
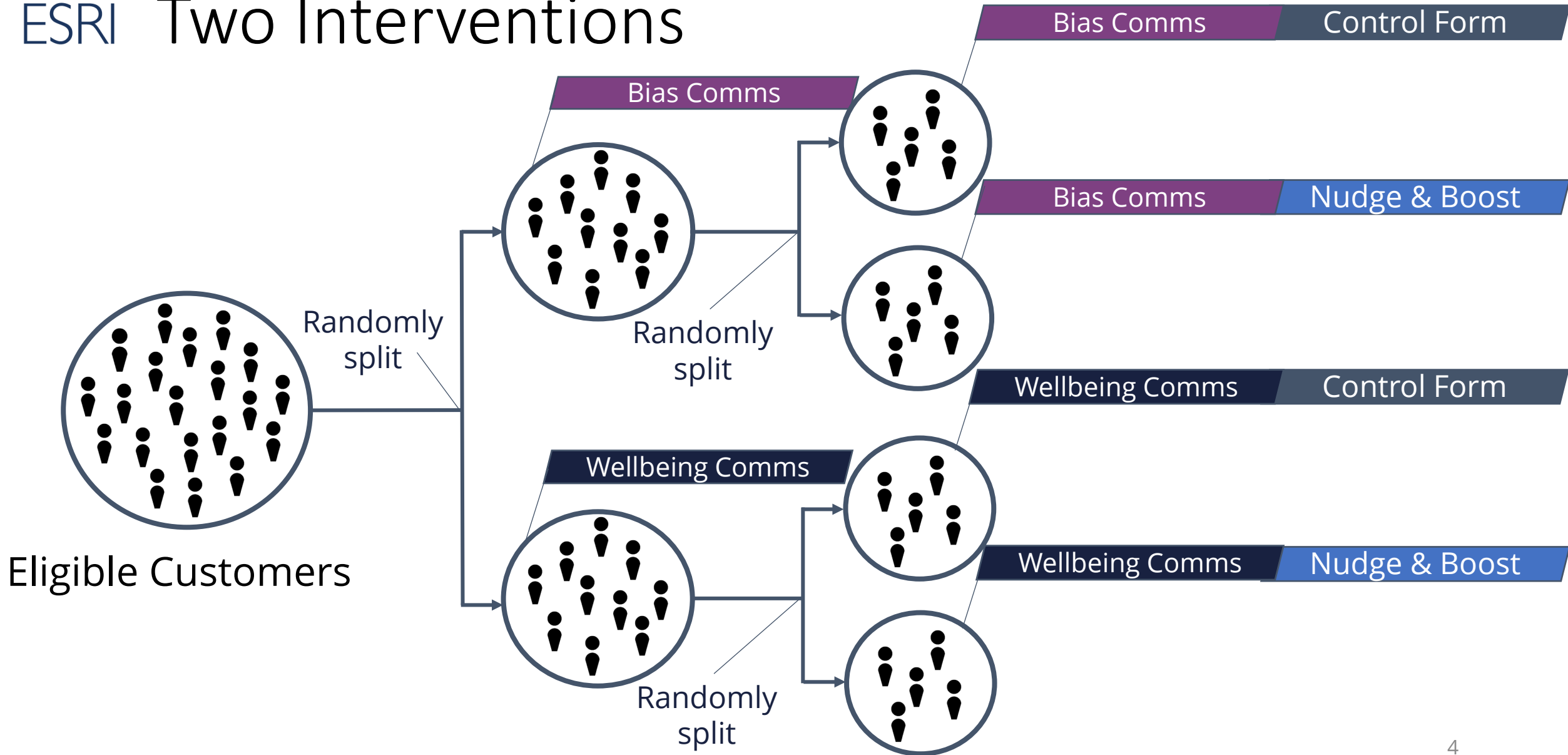
Nudge & Boost

Analysis of CCPC Microdata

- Future-thinking
- Impulsivity

Cognitive Bias

Two Interventions

Eligible Customers

Randomly split

Randomly split

Randomly split

Bias Comms

Wellbeing Comms

Bias Comms | Control Form

Bias Comms | Nudge & Boost

Wellbeing Comms | Control Form

Wellbeing Comms | Nudge & Boost

1. "Nudge & Boost" Application Form

You're planning to start saving on **27th January 2022** and you want to save **€6,000.00**. Our interactive calculator can help you figure out how much t... how quickly you want to reach your savings target.

Would you like to use our interactive calculator *

● Yes

○ No

Interactive Savings Calc...

Do you have a date in mind for when you would like to...

○ Yes

○ No

Calculate Monthly Savings Amount

Do you have a date in mind for when you would like to reach your savings target? *

● Yes

○ No

When do you
save each mo...

30/11/2022

Calculate Mo...

If you save €...

"Undersum" Bias

Do you have a date in mind for when you would like to reach your savings target? *

○ Yes

● No

How much do you want to save each month? We'll tell you when you'll reach your savings target based on this amount *
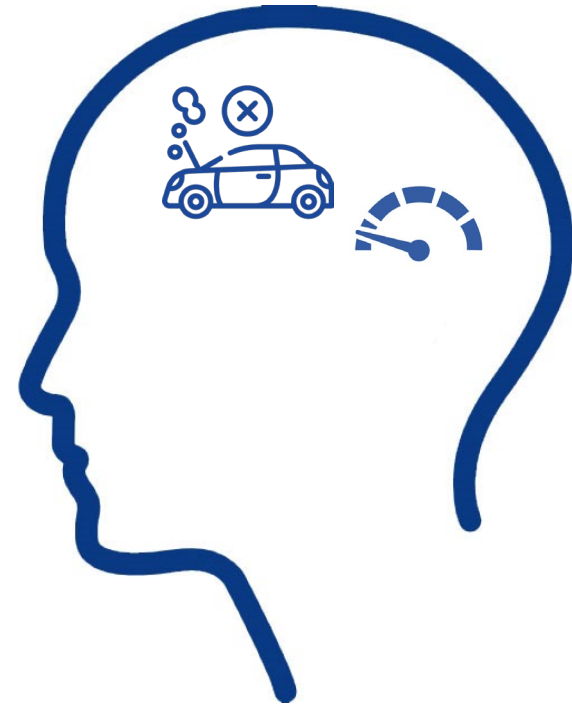
€ 250

Calculate Savings Target Date

If you save **€250** each month you will reach your savings target by **27/1/2024**

2. "Cumulative Risk" Communication

- Focus on one bad outcome

- Underweight probability it occurs

2. "Cumulative Risk" Communication

- Focus on one bad outcome

- Underweight probability it occurs

- Ignore cumulative risk

2. "Cumulative Risk" Communication

2. "Cumulative Risk" Communication

6 out of 10 people face unexpected expenses each year

2. "Cumulative Risk" Communication

6 out of 10 people face unexpected expenses each year

We know saving isn't easy. And saving for the unexpected is harder still…

But it is easy for expenses to stack up!
Household repairs, medical bills, laptops crashing, car breakdowns…

2. "Cumulative Risk" Communication

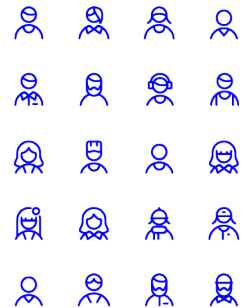**6 out of 10 people face unexpected expenses each year**

We know saving isn't easy. And saving for the unexpected is harder still…

But it is easy for expenses to stack up!
Household repairs, medical bills, laptops crashing

And 3 in 10 face

All of these add up, **meaning most people face at least one unexpected expense each year**
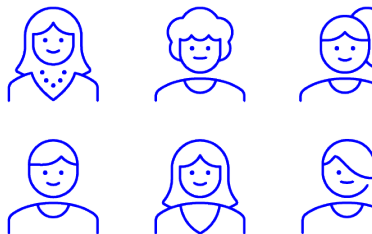
Don't get caught out by the unexpected. Putting aside a small amount each month can help make sure you're able to handle any unplanned costs that crop up.

Get flexibility in how much you save, when you start and when you can withdraw.

Start Saving

RCT Design

2x2 RCT:

No financial difficulties (arrears)
No GoalSaver account
Marketing consent

Timing:
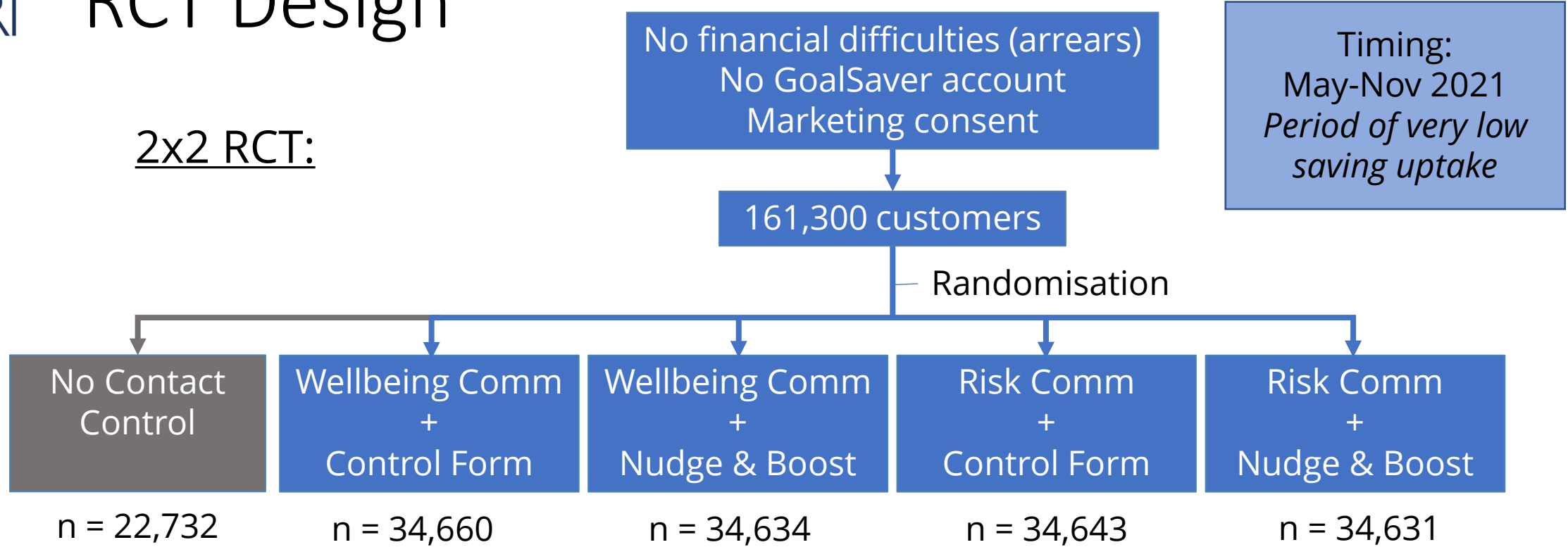May-Nov 2021
*Period of very low
saving uptake*

161,300 customers

Randomisation

No Contact Control	Wellbeing Comm + Control Form	Wellbeing Comm + Nudge & Boost	Risk Comm + Control Form	Risk Comm + Nudge & Boost
n = 22,732	n = 34,660	n = 34,634	n = 34,643	n = 34,631

Organic A/B Test:

Randomisation

Organic GoalSaver Openings

Control Form

Nudge & Boost

Results

2x2 RCT: Accounts Opened

25%↑

"business as usual"

% issued EDM

- No contact
- Wellbeing Comms
- Risk Comms

■ Control Form ▨ Nudge & Boost
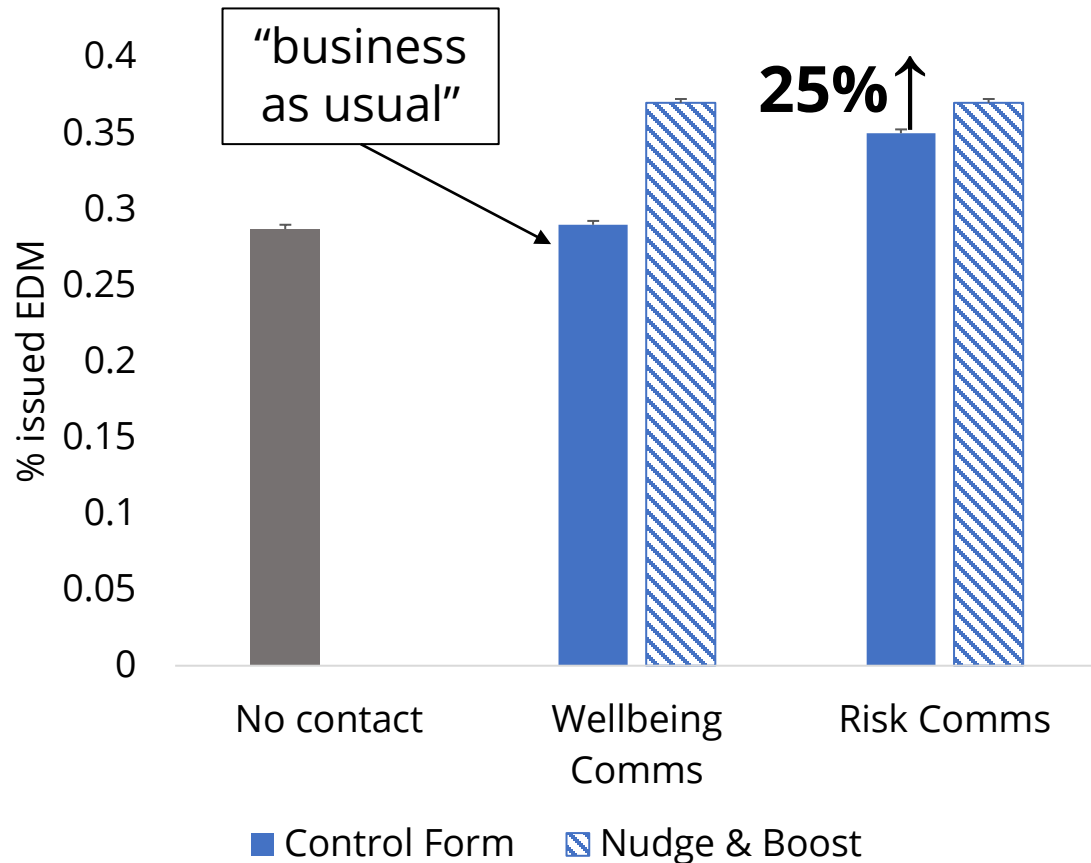
→ Both interventions increased saving rates

Penalised Likelihood Models of Account Uptake

	1	2
Treatment		
(Ref: Wellbeing + Control App.)		
No Contact	0.00	0.22
	(0.16)	(0.21)
Wellbeing + Nudge & Boost	0.25**	0.48***
	(0.15)	(0.18)
Risk Comm + Control App.	0.20*	0.43***
	(0.15)	(0.18)
Risk Comm + Nudge & Boost	0.25**	0.54***
	(0.15)	(0.18)
Socio-Demographic Controls	No	Yes
N	161,300	71,671

*p < .1; **p < .05; ***p < .01

2x2 RCT: Accounts Opened & Amount Saved

Median deposit (scaled to 1SD) bar chart — No contact: €300 (Control Form); Wellbeing Comms: €250 (Control Form), €200 (Nudge & Boost); Risk Comms: €230 (Control Form), €250 (Nudge & Boost). Legend: Control Form, Nudge & Boost.
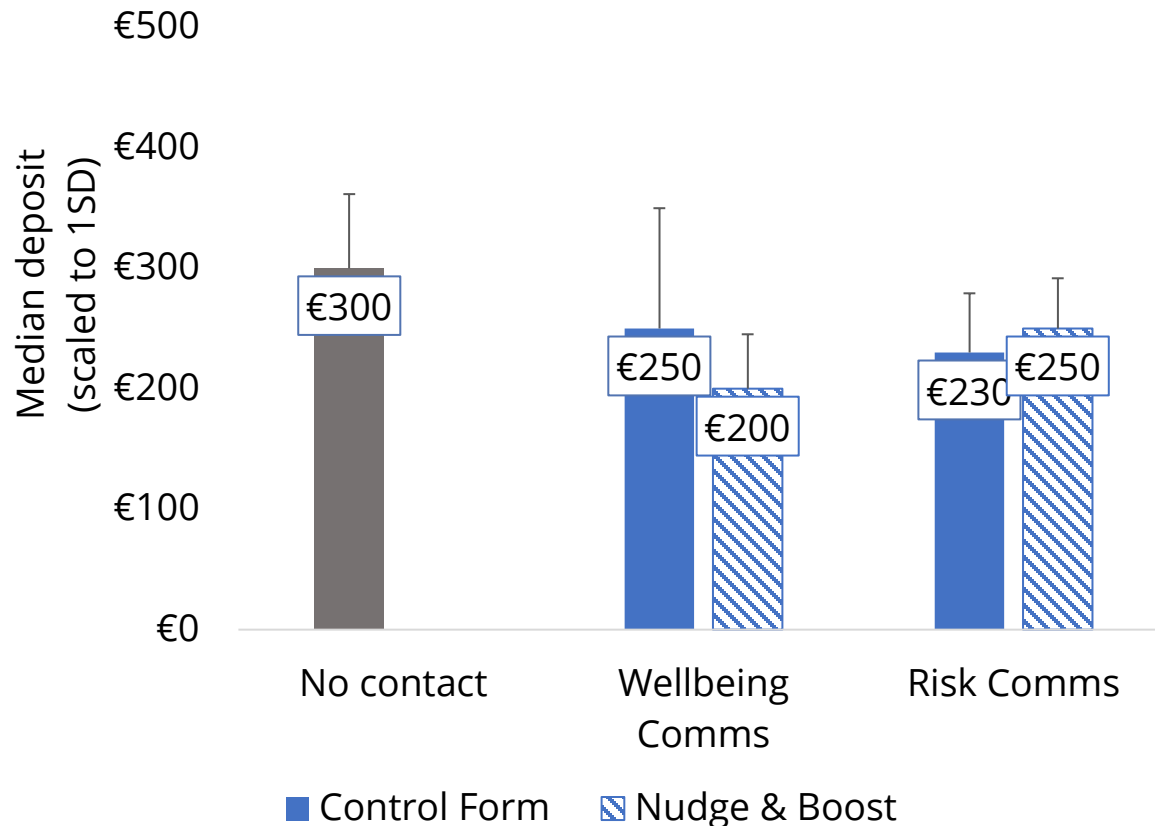
→ All groups saved the same amount

OLS Models Predicting Log_{10}(Initial Deposit)

	1	2
Treatment		
(Ref: Wellbeing + Control App.)		
No Contact	0.11	0.14
	(0.21)	(0.27)
Wellbeing + Nudge & Boost	-0.08	-0.29
	(0.18)	(0.23)
Risk Comm + Control App.	0.13	-0.23
	(0.18)	(0.23)
Risk Comm + Nudge & Boost	0.06	-0.03
	(0.18)	(0.24)
Socio-Demographic Controls	No	Yes
N	540	271

Organic Uptake & Amount Saved

Conversion Rate

$Z = 2.89$, $p = .004$

39.5%↑

% sessions started

Control Form   Nudge & Boost

Median deposit (sclaed to 1SD)

€500
€400
€300
€200
€100
€0

€250
€200

Organic
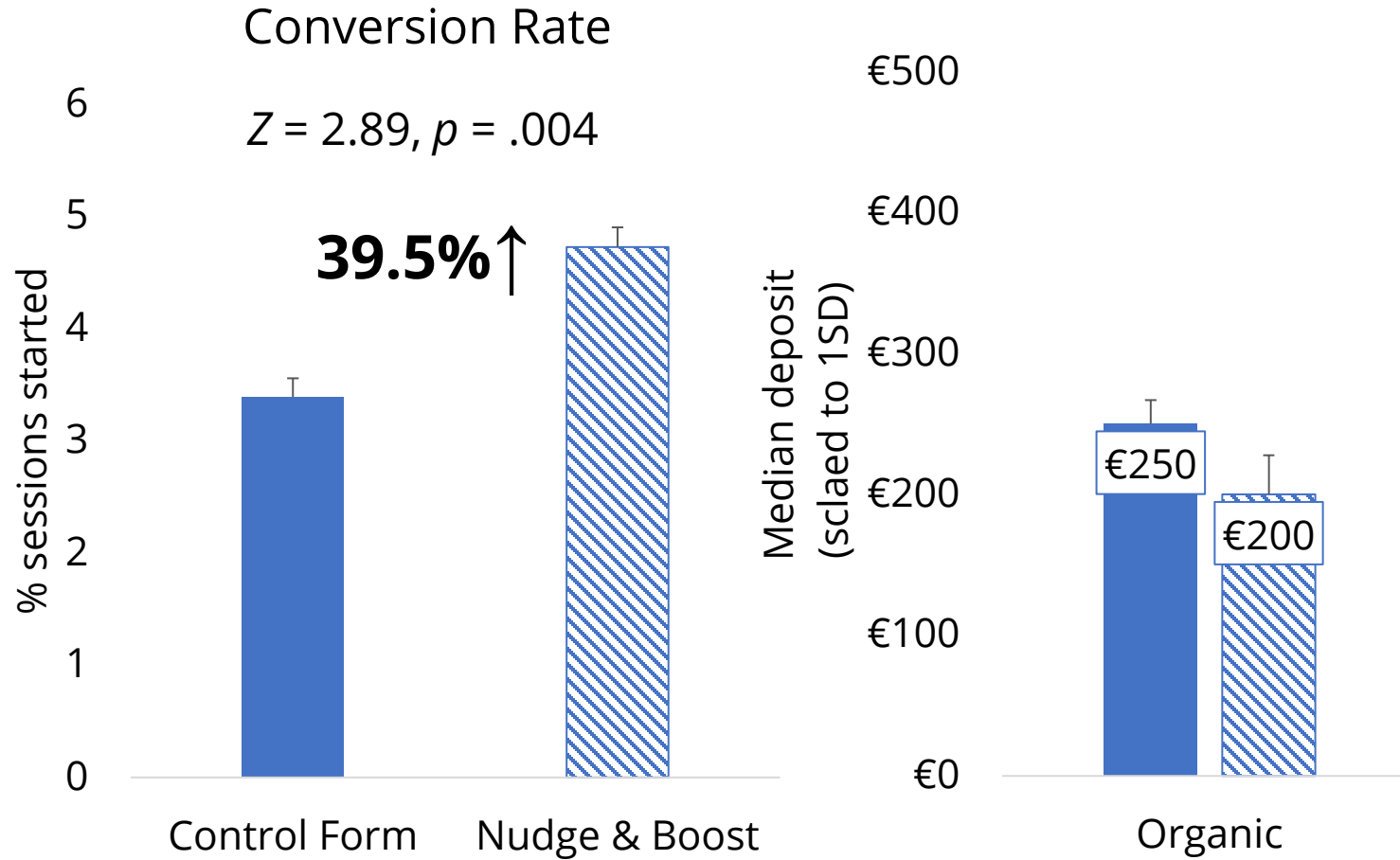
OLS Models Predicting Log_{10}(Initial Deposit)

	1
Nudge & Boost	-0.24**
(Ref: Control)	(0.09)
Income Controls	No
N	993

*p < .1; **p < .05; ***p < .01

→ Completion rate of savings applications far higher, but amount saved lower…

Scaling Up Differences in Income

Number of accounts if all were...

■ Control Form   ▨ Nudge & Boost
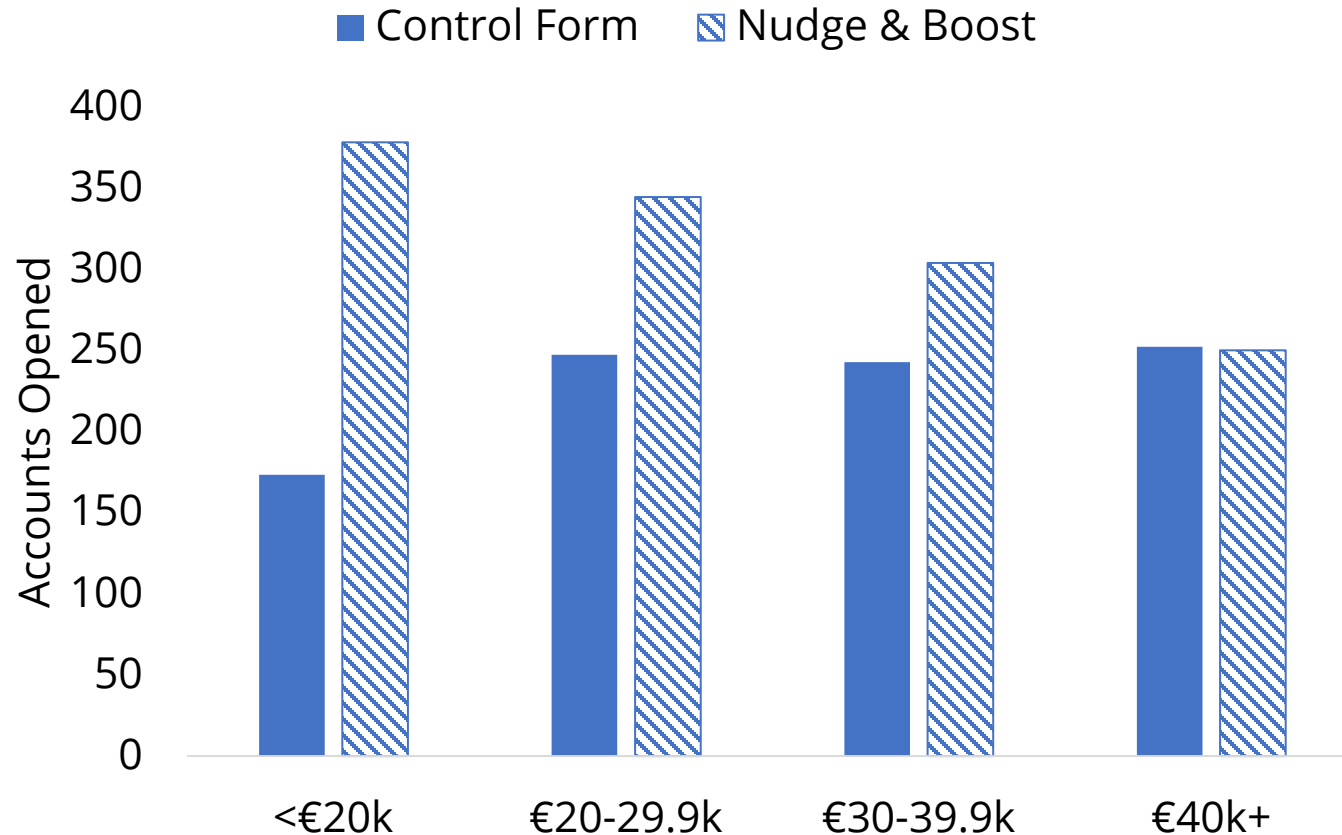
→ Nudge & Boost shows stronger benefit for those on lower incomes, with potential to more than double saving account uptake
→ No detriment to those on higher incomes

Spillover Effects

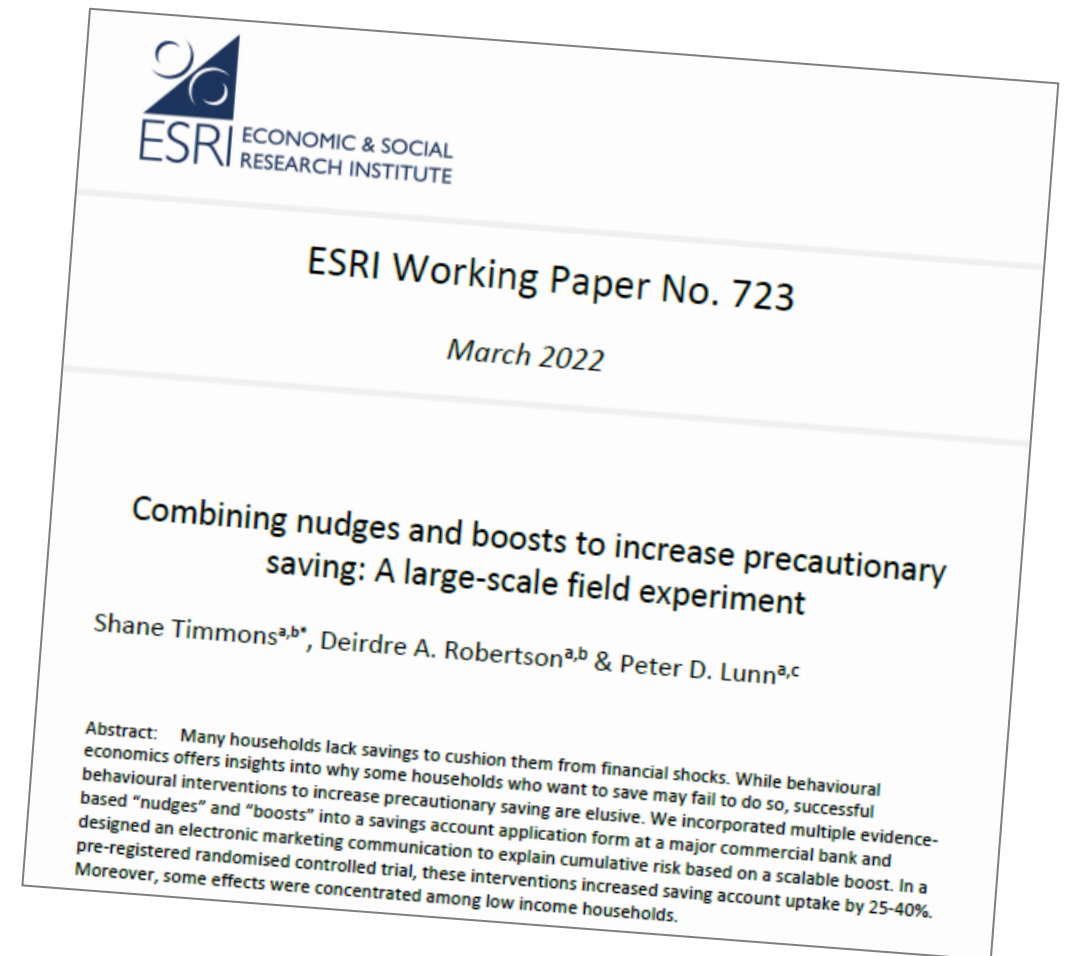*Concern: Saving more might lead to borrowing to cover other expenses*

	Main Trial	Organic Uptake
Overdrafts		
Loans & credit card balances		
Other savings accounts opened		
Current account balance		

Summary

- Combining Nudges & Boosts led to larger-than-expected increase in saving account uptake (over 25%)

- Nudge & Boost especially helpful for those on lower incomes

- Infographics explaining cumulative probability of financial shocks can motivate saving

ECONOMIC & SOCIAL RESEARCH INSTITUTE

ESRI Working Paper No. 723

March 2022

Combining nudges and boosts to increase precautionary saving: A large-scale field experiment

Shane Timmons[a,b*], Deirdre A. Robertson[a,b] & Peter D. Lunn[a,c]

Abstract: Many households lack savings to cushion them from financial shocks. While behavioural economics offers insights into why some households who want to save may fail to do so, successful behavioural interventions to increase precautionary saving are elusive. We incorporated multiple evidence-based "nudges" and "boosts" into a savings account application form at a major commercial bank and designed an electronic marketing communication to explain cumulative risk based on a scalable boost. In a pre-registered randomised controlled trial, these interventions increased saving account uptake by 25-40%. Moreover, some effects were concentrated among low income households.

esri.ie/bru   ✉ shane.timmons@esri.ie   Ψ A X PsyArXiv   psyarxiv.com/kqh4t

1. "Nudge & Boost" Application Form

What goal are you saving for? *

Unexpected need ▼

'Point of sale' financial advice

➡ Tip: Your Unexpected Need fund should help you get by for 3 to 6 months if your income were to drop. So, if your mortgage/rent, food, bills, etc. add up to €2,000 per month, you would ideally try to save €6,000 to €12,000.

How much would you like to save overall? *

€

➡ When would you like to start saving? *

dd/mm/yyyy

Decision Order

➡ Tip: Choosing a date soon after your regular payday can help make saving easier.

1. "Nudge & Boost" Application Form

**Psychological
Pre-Commitment**

Pledge tool

You chose to save for an Unexpected Need. Research shows that you'll be
to stick to your savings goal if you think now about the kinds of things that
count as an unexpected need. You can also think about what you might be
to spend your savings on that you might later regret. Our pledge tool is av
assist customers in thinking about these reasons ahead of time.

Would you like to use our Pledge tool to help you stick to your savings goal
have instant access to your funds when you need it. *

○ Yes

● No

Your unexpected need fund should try to cover unexpected or emergency costs so
that you don't need to borrow money for something that is essential.

**Which of the following are reasons you might need to withdraw from your Unexpected
Need fund? Select all that apply.** *

☐ Something in the house (e.g. fixing the boiler, replacing a broken appliance or
essential repairs)

☐ Something to do with the car (e.g. unexpected repairs)

☐ Something to do with the family (e.g. a new baby, vets bills, helping a family member)

☐ Something health related (e.g. unexpected doctors visit)

☐ A sudden loss of income (e.g. extended unemployment)

**Which of the following are things you might be tempted to withdraw from your
Unexpected Need fund for, but that you might later regret? Select all that apply.** *

☐ Non-essential shopping (e.g. unnecessary technology upgrade)

☐ Socialising (e.g. unnecessary restaurant trip, a night out)

☐ Concert or event tickets

☐ Gym or club membership

☐ Travel Expenses (e.g. holiday flights, a hotel)

Application Features*

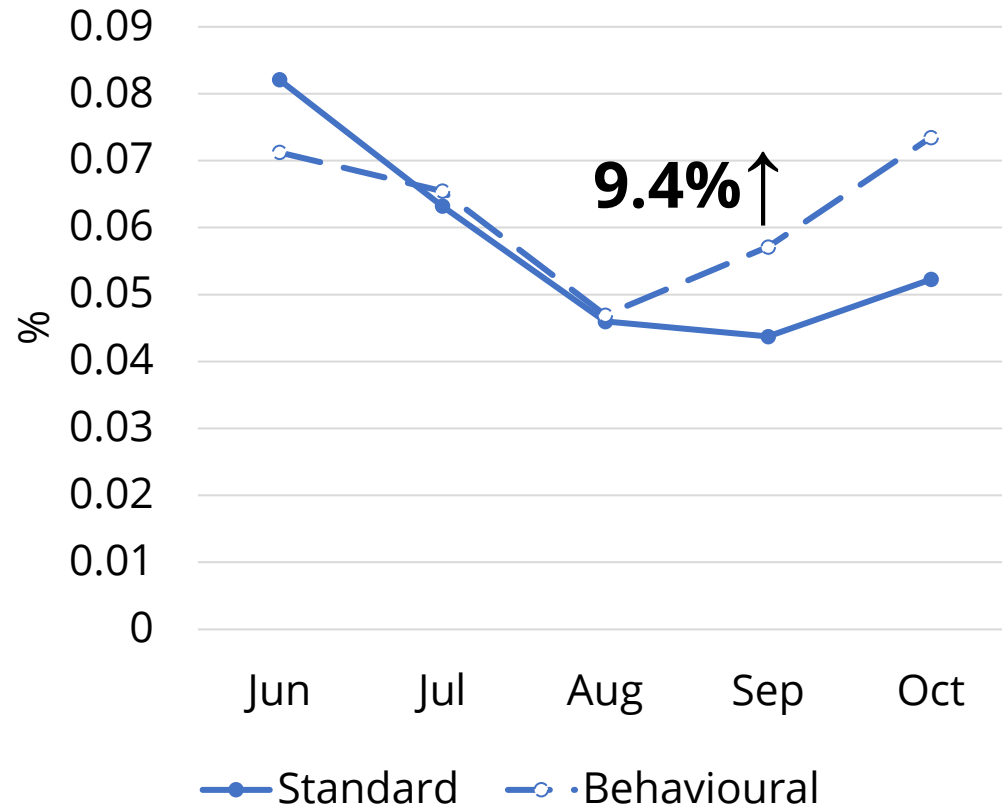**Non-Completes**   **Completes**
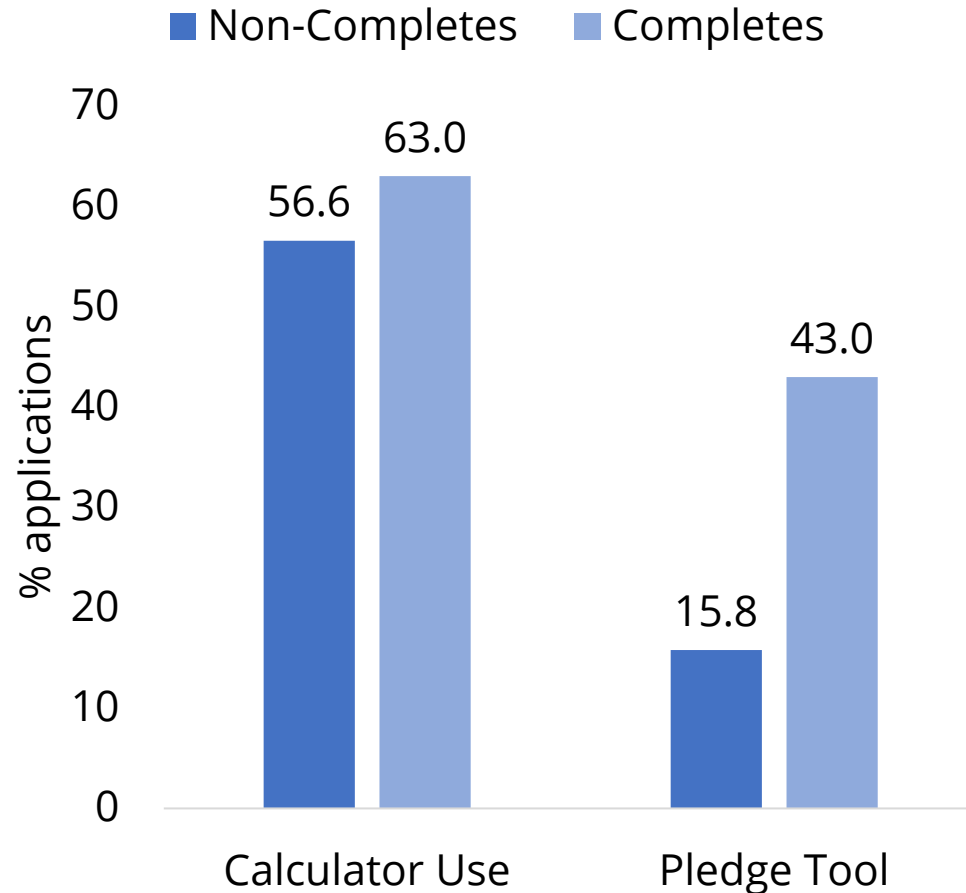
→ Significantly higher use of behavioural features among completes compared to non-completes and compared to all applications (*p*s < .001)
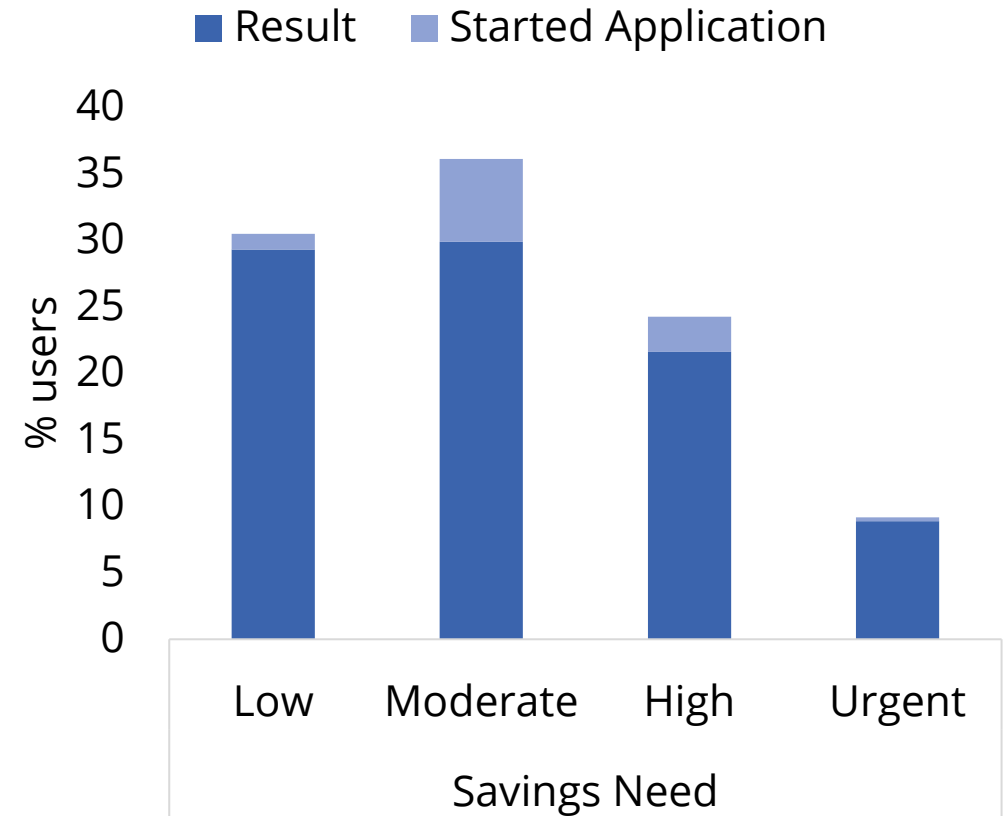
*NB. Data are based on Google Analytics and are incomplete

EDM Engagement*

Click-Thru Rates

9.4%↑

● Standard   ○ Behavioural

→ Significantly higher CTR (*p* < .001)

Quiz Results

■ Result   ■ Started Application

Savings Need: Low, Moderate, High, Urgent

% users

*NB. Data are based on Google Analytics and are incomplete