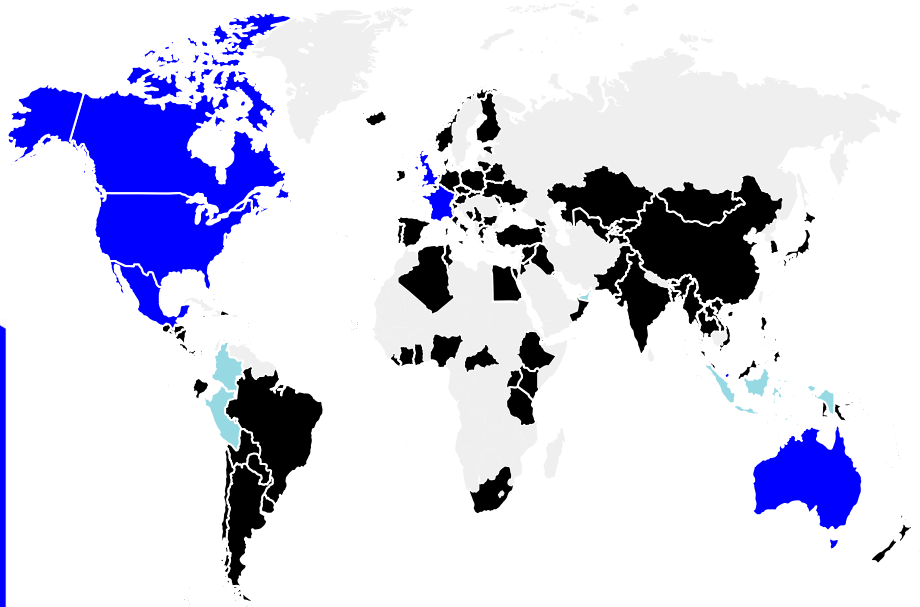


Behavioural insights in transport

Informing, testing and generating
practical evidence



At BIT, we combine a **deep understanding of human behaviour** with **evidence-led problem solving** to design better policies and public services.



9

International
offices

250+

Expert
staff

1,500+

Projects including
over 800 trials

60+

Academic publications

77

Countries where we have
worked

The structure of today's presentation

Focus Method	Project
Behavioural Systems Mapping	Bus safety innovation
Randomised Control Trials	Gig economy delivery drivers / riders
Waitlist Control Trials	Encouraging staff to use public transport
Rapid Online Trials	Public transport fare complexity

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T

TARGET

Define the problem and determine the measurable target outcomes.

E

EXPLORE

Map relevant behaviours and the wider context.

S

SOLUTION

Consider and design the intervention(s).

T

TRIAL

Design and launch trial, evaluate, learn and adapt.

S

SCALE

Increase adoption of effective interventions.

Behavioural systems mapping for solution design

Building behavioural evidence to map and prioritise bus safety risks

How do we identify the best areas for safety improvement?

Context:

We wanted to improve bus safety across a complex public transport system.

1. Aim to improve the safety of buses and coaches
2. Aim to reduce the number of CTP claims made in relation to injuries sustained on buses and coaches

Target:

What we did

- Reviewed academic + operational literature on predictors of bus incidents
- Analysed operator incident and claims data
- Consulted operational staff across three bus companies
- Conducted field observations across the bus network

What we learnt: 3 themes emerged as intervention targets

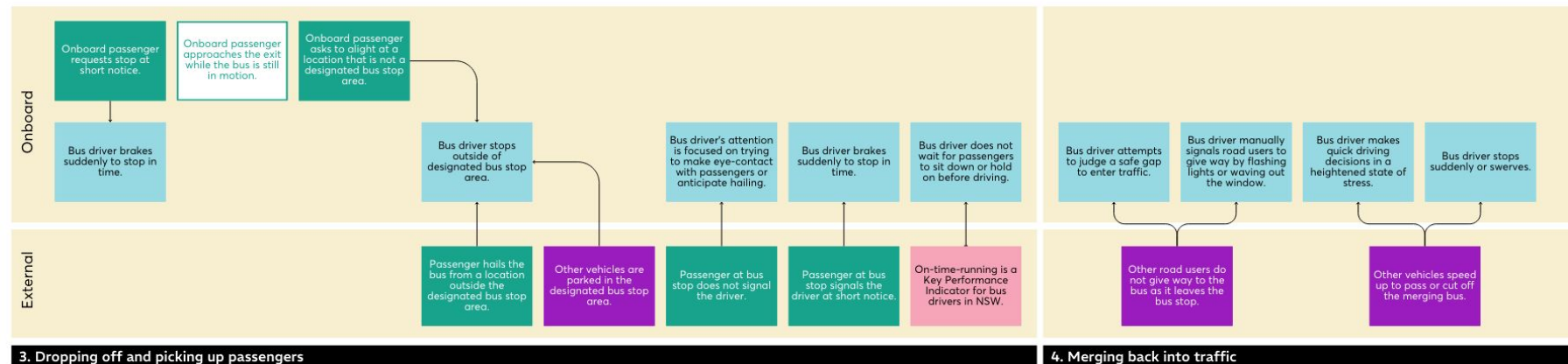
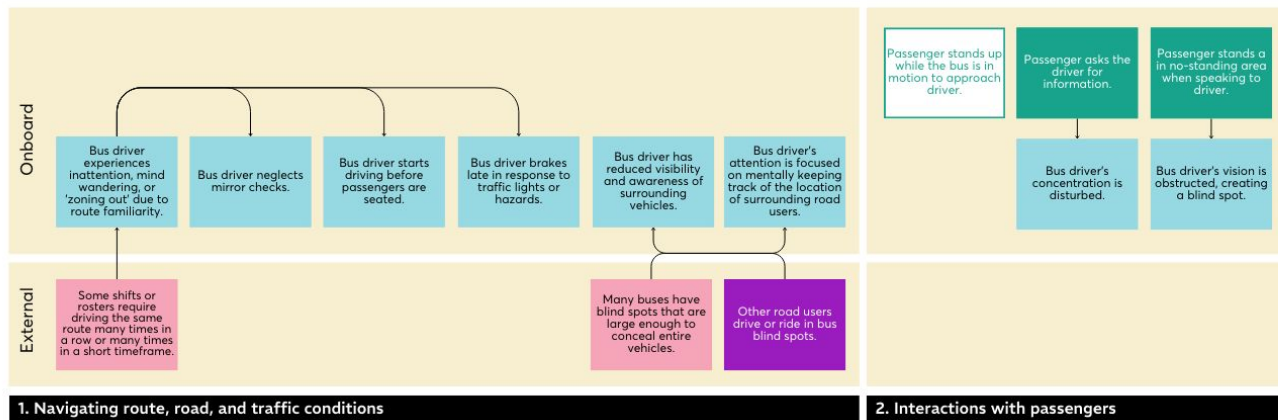
- **Passenger behaviours:** actions that distract drivers or worsen injury severity in incidents
- **Other road users:** behaviours of cars, cyclists and pedestrians that compromise driver safety
- **Driver inattention ("zoning out"):** experienced drivers crash at similar rates to new drivers, likely due to route familiarity

Bus driver risk landscape

This diagram represents four key moments of heightened risk during a bus journey. For each moment, it illustrates:

- The bus driver behaviours that may lead to a safety incident,
- The passenger behaviours, road user behaviours and other factors that contribute,
- The passenger behaviours that may exacerbate the risk of injury during a safety incident, and
- Whether each behaviour or factor occurs in the onboard or external environment.

This diagram was developed using insights from fieldwork, interviews with bus drivers, consultations with bus company personnel, and the literature and evidence scan.



Proposed solutions

To address the three key safety challenges identified in the research, we developed four potential solutions.

Proposed solution	Safety challenge
1. Flashing 'give way' signs on the back of buses that flash automatically when the bus is merging.	Road user behaviours 
2. Crowdsourced toolkit of strategies to prevent 'zoning out'	Driver inattention 
3. App-based bus hailing that allow passengers to hail in advance via their smartphones, rather than waiting until the bus is approaching the station.	Passenger behaviours 
4. Reducing demands on bus drivers while the bus is in motion.	Passenger behaviours 

Theory of change

Inputs	Mechanism	Short term outcomes	Long term outcomes	
Internal bus signage	Passengers are more aware of the dangers of standing while the bus is in motion	Fewer passengers leave their seats while the bus is in motion	Reduced passenger injuries arising from slips, trips and falls by passengers standing while the bus is in motion	Improved customer experience finding relevant journey information while on the bus
Resources and training for drivers to support with passenger interactions	Bus drivers are able to effectively redirect passenger questions when it would be unsafe to engage with them	Drivers have fewer and shorter interactions with passengers while the bus is in motion	Reduced CTP claims arising from slips, trips and falls from passengers standing while the bus is in motion	Fewer customer complaints arising from ineffective interactions with drivers
In-bus prompts that direct passengers to route information sources	Passengers have easily accessible sources of real-time route information	Fewer passengers stand in no-standing areas around the driver	Reduced CTP claims arising from crashes caused by driver distraction or visual obstruction of blind spots by passengers	Reduced WHS claims arising from driver stress

Randomised Control Trials for strong evidence

Decreasing risks for food delivery workers in the
gig economy



Slowing food delivery workers through in-app nudges

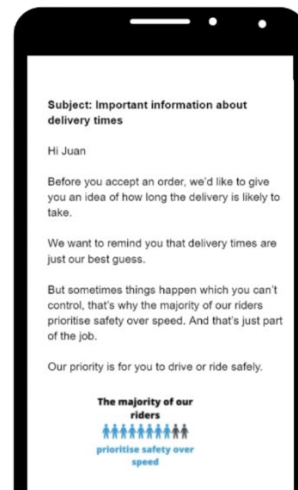
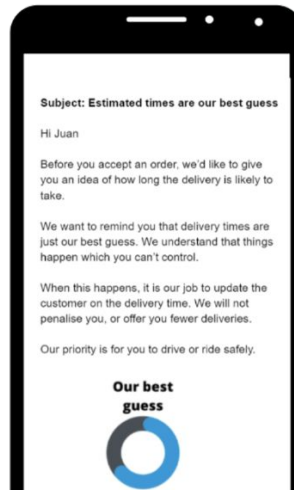
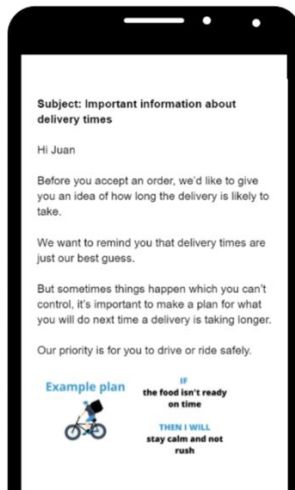
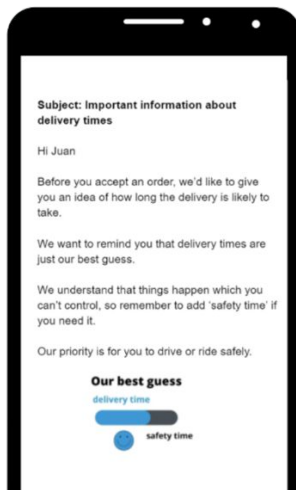
T Target

Reduce risky on-road behaviour by food delivery drivers, measured as average travel speed per delivery

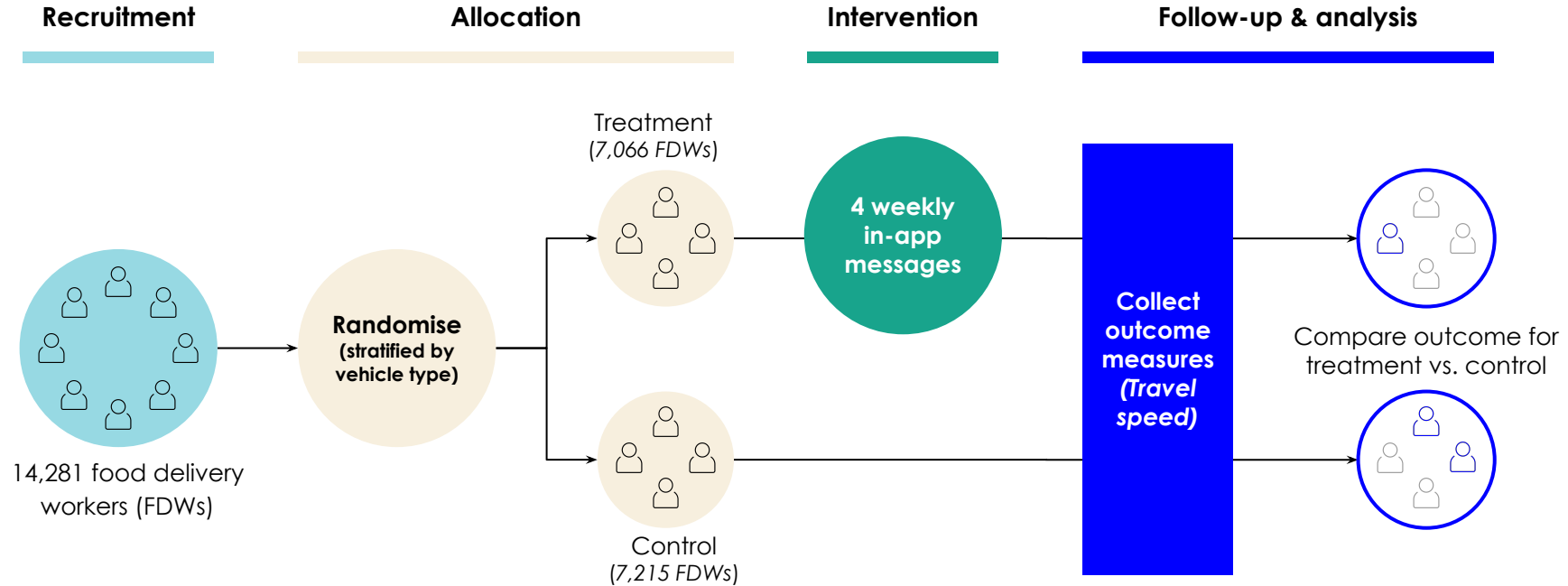
E Explore

Platforms set delivery times as rough estimates, but workers read them as hard deadlines they'll be penalised for missing, and that fear drives rushing.

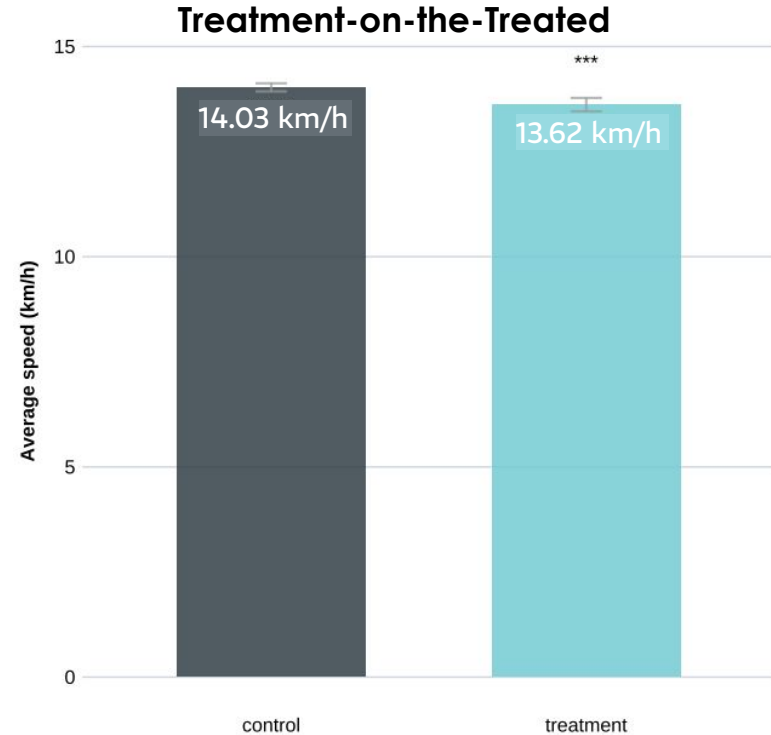
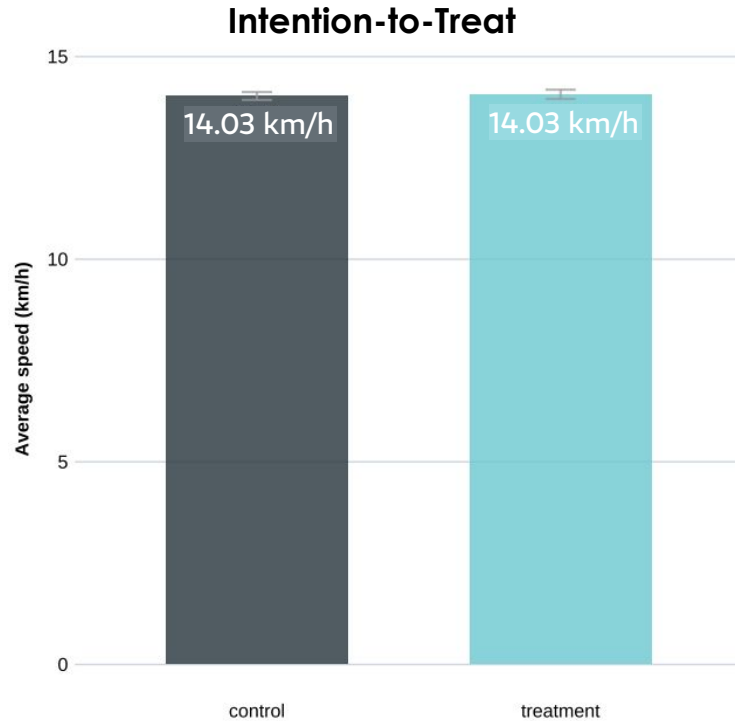
Solution: messages reframing delivery times as estimates built on different behavioural principles.



Trial: Designing an RCT



Results: ITT vs ToT



67% of the treatment group did not open the messages

Waitlist Control Trials for feasibility and equity

Encouraging shopping centre staff to use public
transport



We provided free PT travel to commuters

Our **Explore** work suggested that incentives were the highest impact solution, with longest-term effects on public transport use.



Challenge:

How can we run an equitable RCT if some people receive financial support and some don't?

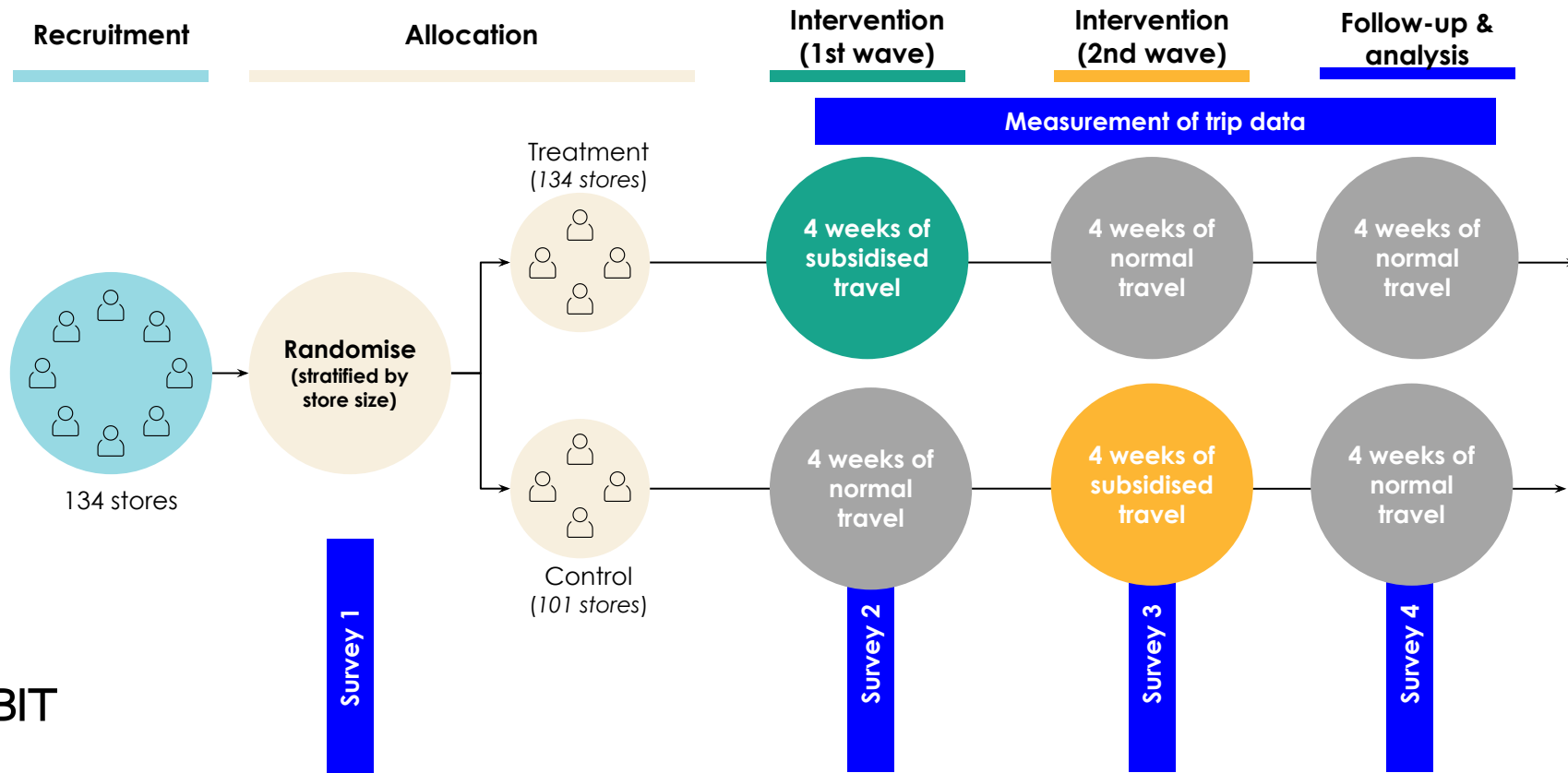
Easy, Attractive,
Social, Timely

Psychologically
Available

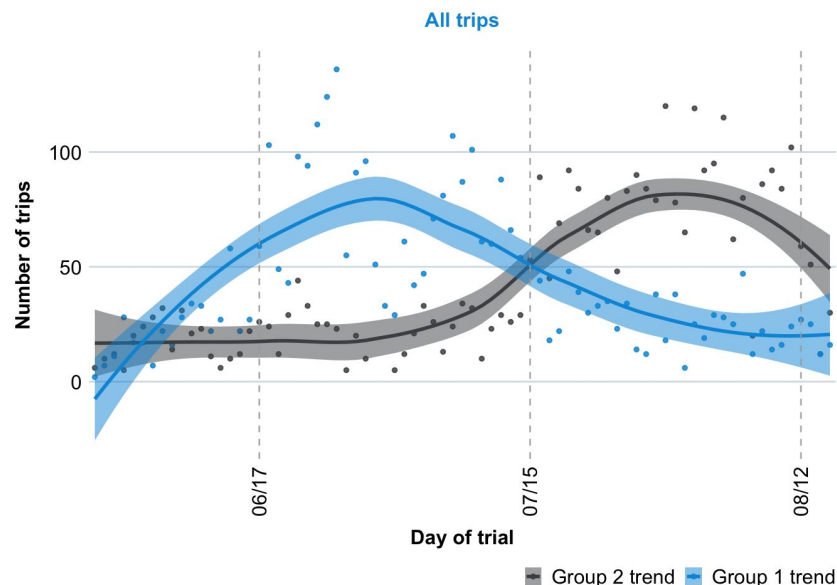
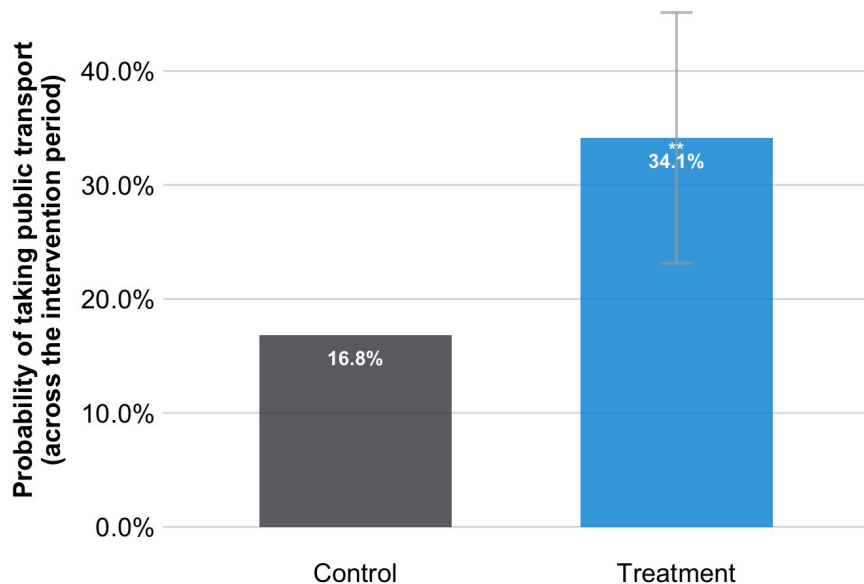
Viable

15	Sense of ownership and civic responsibility
14	Positive affect ("it's relaxing looking out of the window")
13	Habit and routine
12	PT is a convenience or price champion
11	PT normal and socially desirable to use
10	Front of mind (salient); reminded in the moment; physical cues
9	PT compatible with a positive self-identity (not "a bit shameful")
8	Confidence and transparency in reliability ("I know it's coming"; no anxiety)
7	Know how to use; can visualise every step; direct experience; SmartRider
6	Awareness of 1-5 (If they are true)
5	Safe ("some people are frightened")
4	In the price ballpark – PT no more than \$3 / day more than car
3	In the convenience ballpark – no more than 10-15 mins slower than car
2	Compatible with basic obligations – home in family emergency, picking up kids
1	Physically possible – e.g. bus stop within realistic walking distance (weather dependent)

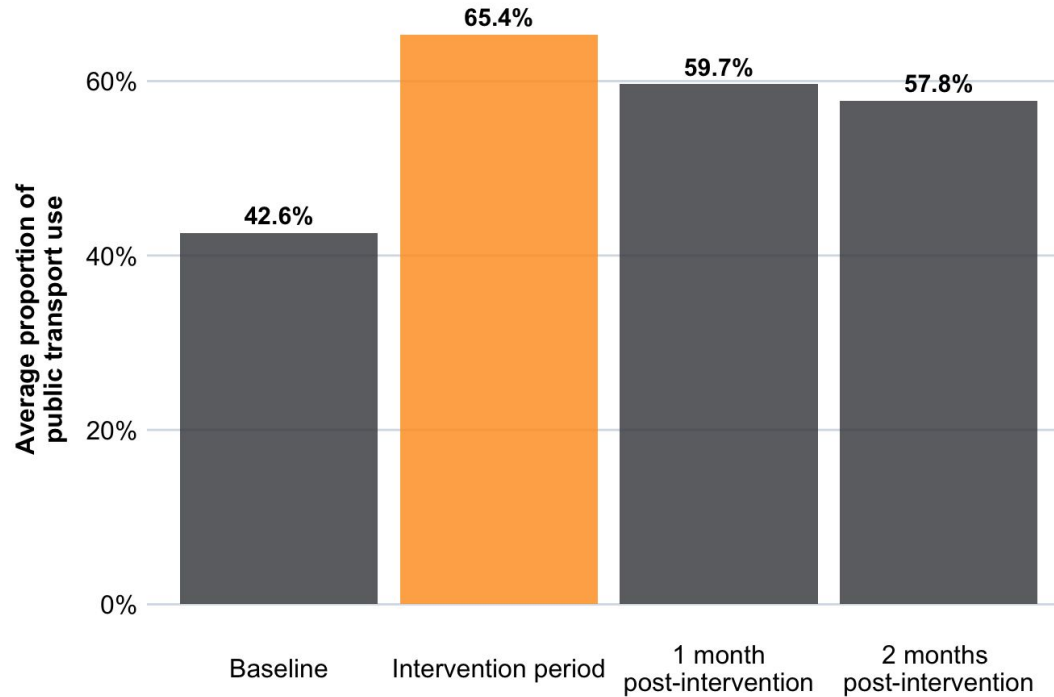
Trial: Designing a waitlist control trial



Results: We saw an increase in PT use alongside our intervention



Results: The effect appears to have lasting effects



Rapid Online Trials to de-risk and test tradeoffs

Understanding how travellers deal with fare
complexity



Transport fare pricing can be complicated

Context:

We wanted to understand how different ways of presenting fare information affected travellers decision making

1. How does complexity affect comprehension?
2. Does complexity have any other impacts (e.g., slower reaction times)?
3. Does complexity affect perceived difficulty?
4. Do some fare structures lead to faster learning than others?

Target:

What we did

- We surveyed 2011 respondents, broadly representative of the Victorian population via a panel provider
- We set up an experiment to see how they would respond to different fare structures in different scenarios
- This included factors for:
 - **Peak** timing (on / off peak),
 - **Mode** of transport (bus/train), and
 - **Distance** (0 - 10 km, 10 - 20 km, etc).

Trial: Designing a rapid online trial

Imagine your friend has found three options for a journey. They are:

A **bus** leaving at **8:30am**, travelling **30kms**

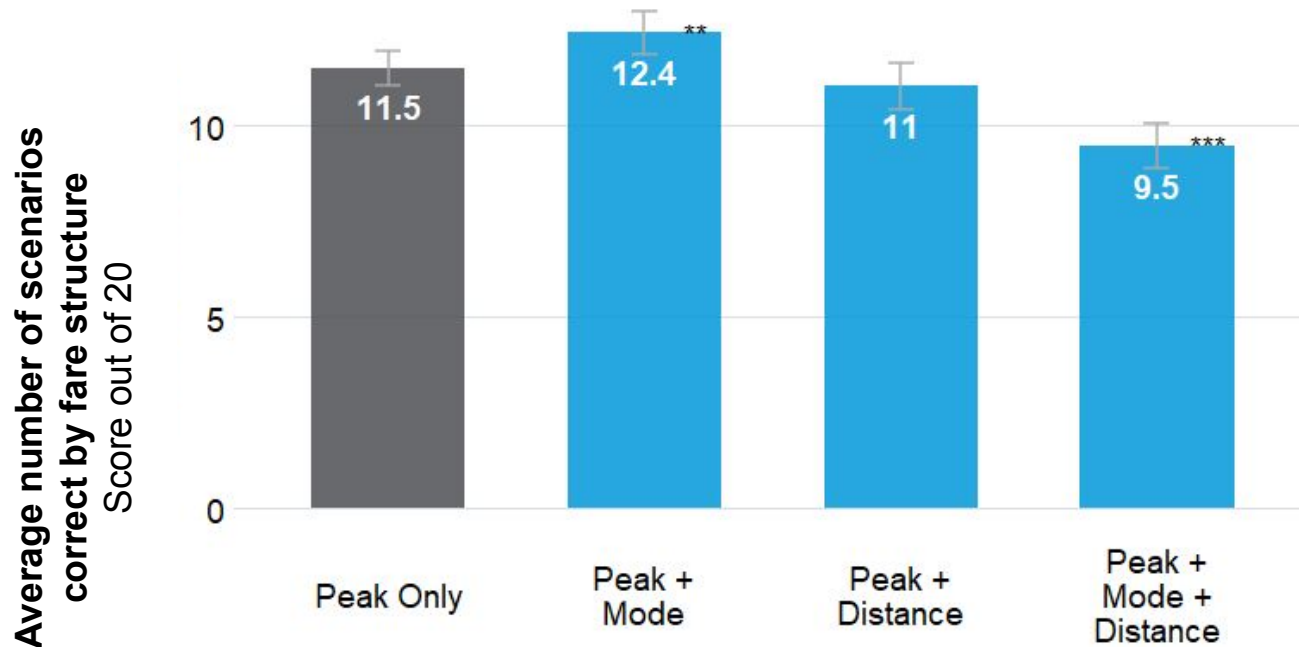
A **tram** leaving at **9:30am**, travelling **10kms**

A **train** leaving at **10am**, travelling **20kms**

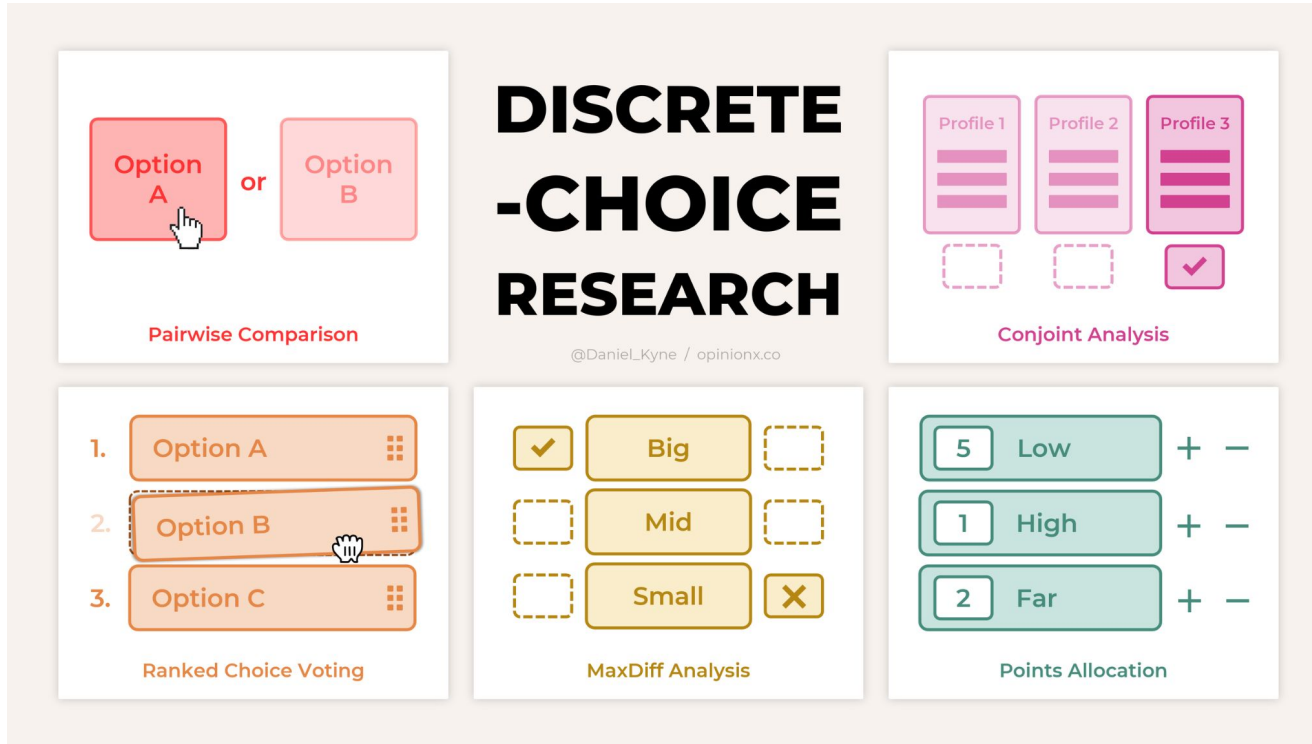
Which option do you think is the **cheapest**, based on the rules you saw earlier?

- a) The bus is cheapest
- b) The tram is cheapest
- c) The train is cheapest
- d) The tram and the train are both the cheapest options
- e) The bus and the tram are both the cheapest options
- f) Don't know

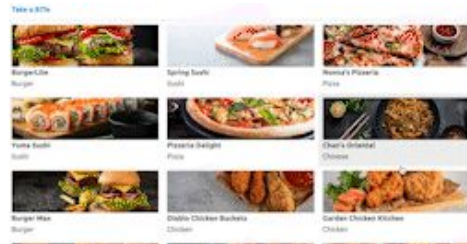
Results: More complexity leads to worse outcomes



Online trials come in all shapes and sizes



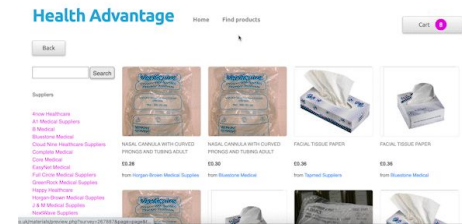
Online trials allow you to collect behavioural proxies



Online food delivery platform



Virtual slot machine



Online shopping websites



Social media newsfeed:
Facebook, Instagram, TikTok



Interactive email inbox



Online auction simulation

Takeaways

Focus Method	Strengths	Weaknesses
Behavioural Systems Mapping	Helps identify upstream drivers, feedback loops, and leverage points before selecting interventions.	Can become too broad or descriptive unless linked to clear prioritisation and decision-making.
Randomised Control Trials	Gold standard for estimating causal impact under controlled conditions.	Can be costly, slow, and requires careful attention to equity, feasibility, and implementation fidelity
Waitlist Control Trials	Accommodates equity and feasibility constraints by eventually offering the intervention to all groups.	Less suitable when outcomes may change over time or when delayed access creates spillovers or anticipation effects.
Rapid Online Trials	Fast, low-cost way to test messages, interfaces, or behavioural mechanisms before field rollout.	May have limited external validity if online responses do not translate to real-world behaviour.



If you would like to know more about behavioural insights and the work we do at BIT, email or call us.

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