Public preferences for testing and trialling of CAV technologies

iMOVE Conference 2022

Collaborating our way to a sustainable transport future

15 November 2022

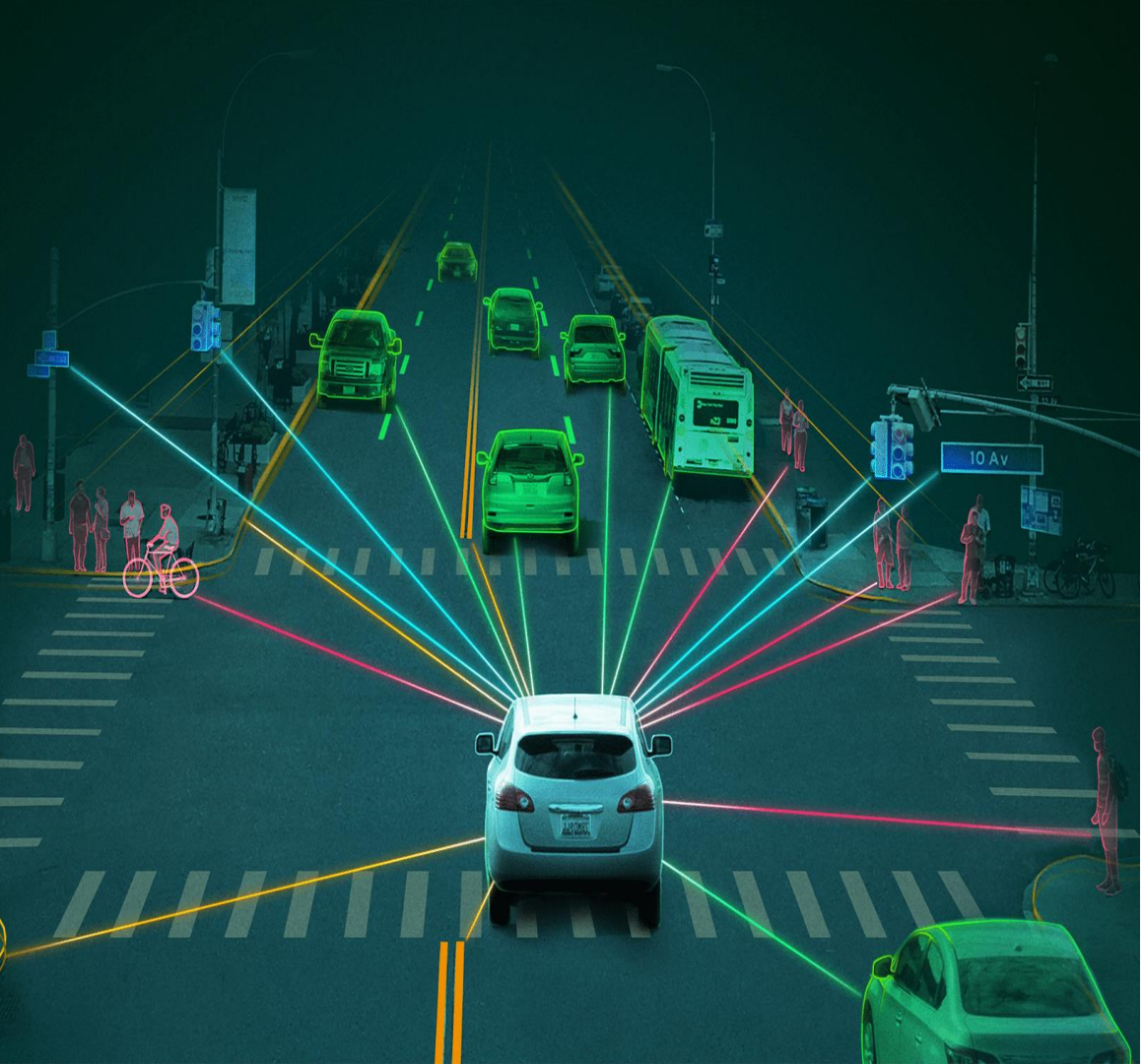
Ali Ardeshiri

Research Fellow, University of South Australia

Akshay Vij

Associate Professor, University of South Australia

** This study was funded by the by iMOVE CRC and supported by the Cooperative Research Centres program, an Australian Government initiative; and the Commonwealth Department of Infrastructure, Transport, Regional Development, Communications and the Arts (DITRDCA)*



Connected & autonomous vehicles

- ✓ CAV technologies could offer additional ***health and wellbeing benefits*** through increased mobility and accessibility (*Meyer et al., 2017*).
- ✓ CAV technologies could improve ***access*** to critical infrastructure and services in Victoria by up to 23 per cent (*Deloitte Access Economics, 2018).*
- ✓ CAV technologies could mitigate some of the adverse impacts of traffic-related ***stress*** by reducing the need for human input (*Ding et al., 2014).*
- ✓ *BITRE estimates the **social cost** of road **crashes** in Australia to be in the range of $18-27 billion annually (BITRE, 2014).*
- ✓ Automation could reduce **trucking costs** by 15-23 per cent in the UK (*Wadud, 2017)*.
- ✓ *"*A 10% market penetration of CAVs in the U.S., can result in approximately of $27 billion in annual **economic benefits** with the potential to increase to roughly $450 billion annually" *(Fagnant and Kockelman, 2015).*

Governments in action

1. Protecting public safety from undue risks posed by immature and inadequately engineered automated driving systems that could cause crashes; and

2. Encouraging innovations in vehicle technology that could produce better performing and safer vehicles in the long run’s.

Shladover and Nowakowski (2019)

Government approaches to balance the competing goals

- Australia, Japan and European countries approach, prioritise short-term public safety over long-term technological innovation.

- US & Singapore approach is placing greater importance on long-term technological innovation.

Qualitative engagement

When it comes to testing and trialling CAVs, Governments are being ***cautious***, and ***risk averse***.

One-on-one interview

Focus groups

Study objectives

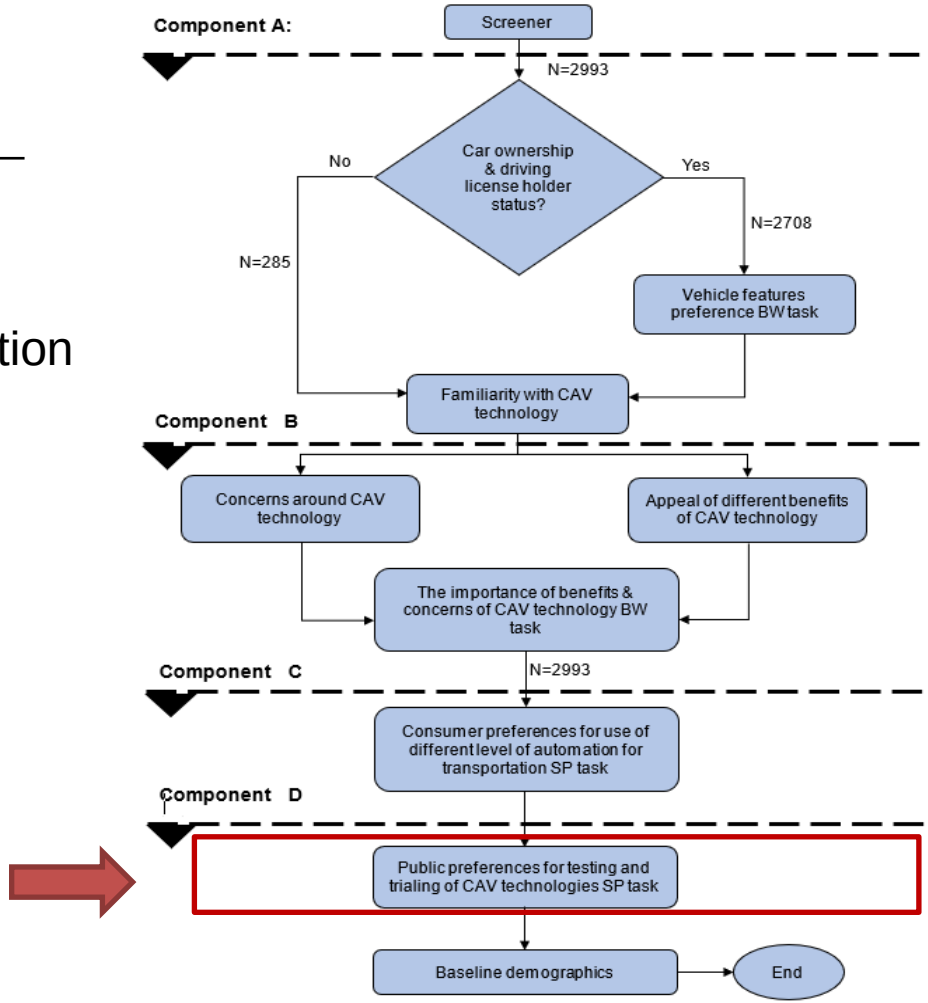
Examined public preferences for how CAV technologies and service models ought to be tested and trialled in order to understand the followings:

1. *Trade-off between **short-term public safety** and **long-term technological innovation** in the context of CAV technologies and service models,*

2. *Government approaches are **reflective of the preferences of the populations** that these governments purport to represent.*

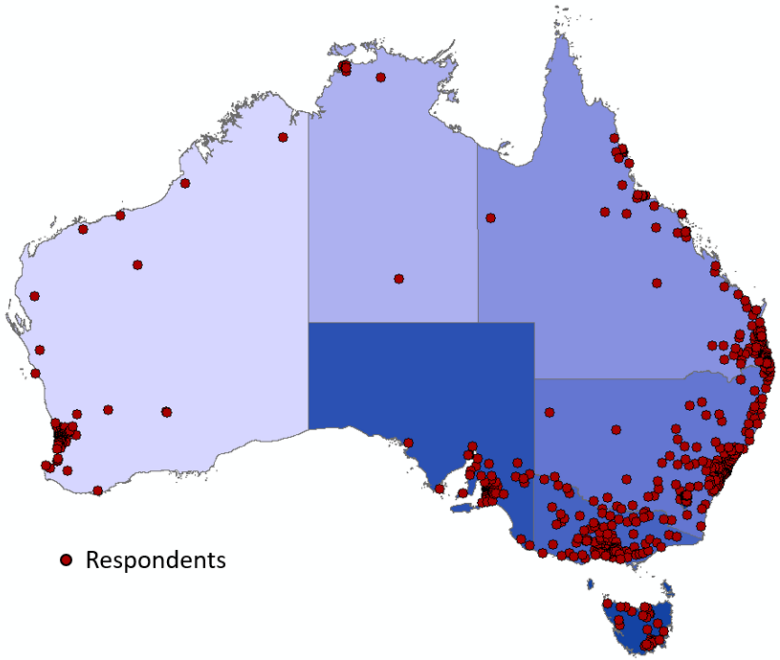
Research design

a) A familiarity component
b) An evaluation component
c) A consumer preference transportation component
d) A policy preference component

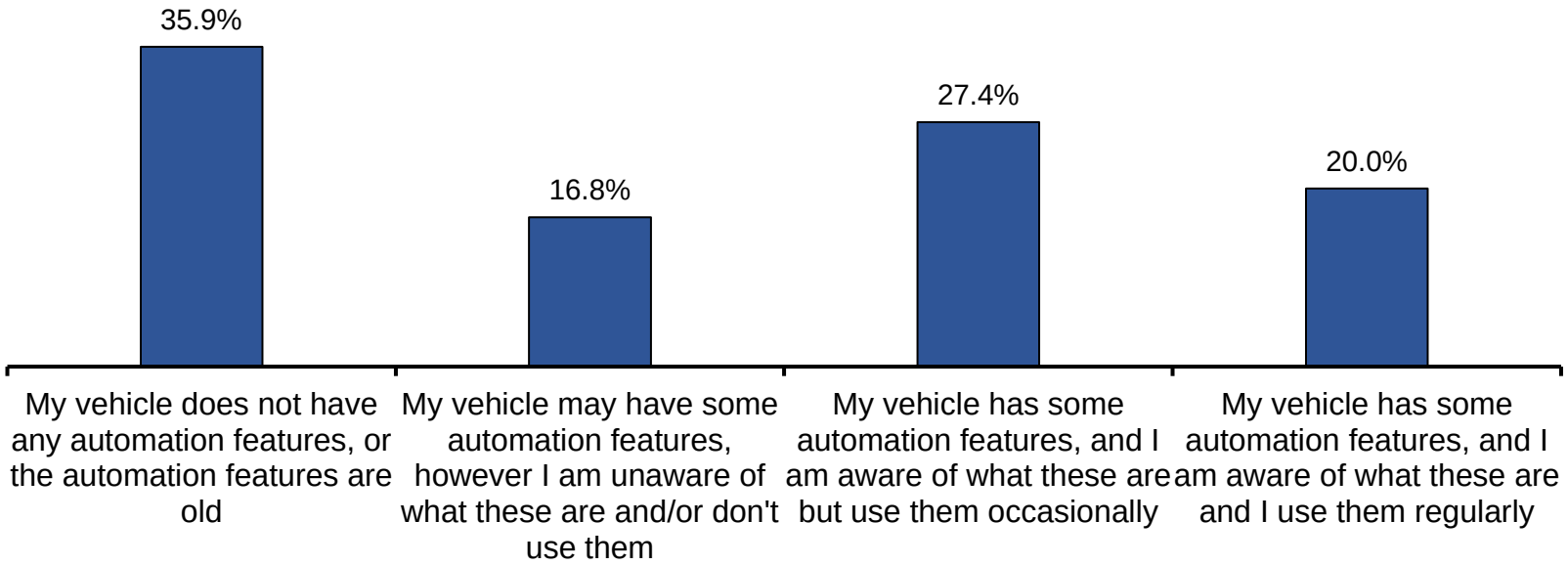


Data

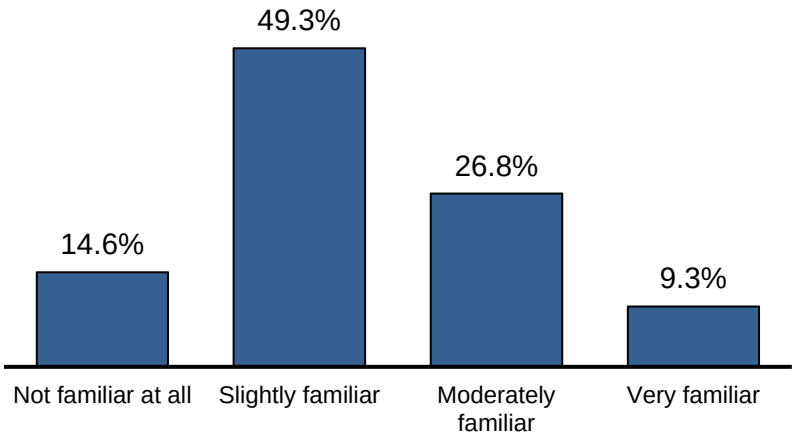
- ***2993*** Australian aged 18 years and over
- Administered online in ***January 2022***
- Average completion time was ***23:40*** minutes
- Sample is ***weighted*** based on:
    - ***gender,***
    - ***age,***
    - ***state of residents,***
    - ***city category,***
    - ***employment status,***
    - ***highest education level, and***
    - ***household income category***



Degree of penetration and use of existing vehicle automation technologies



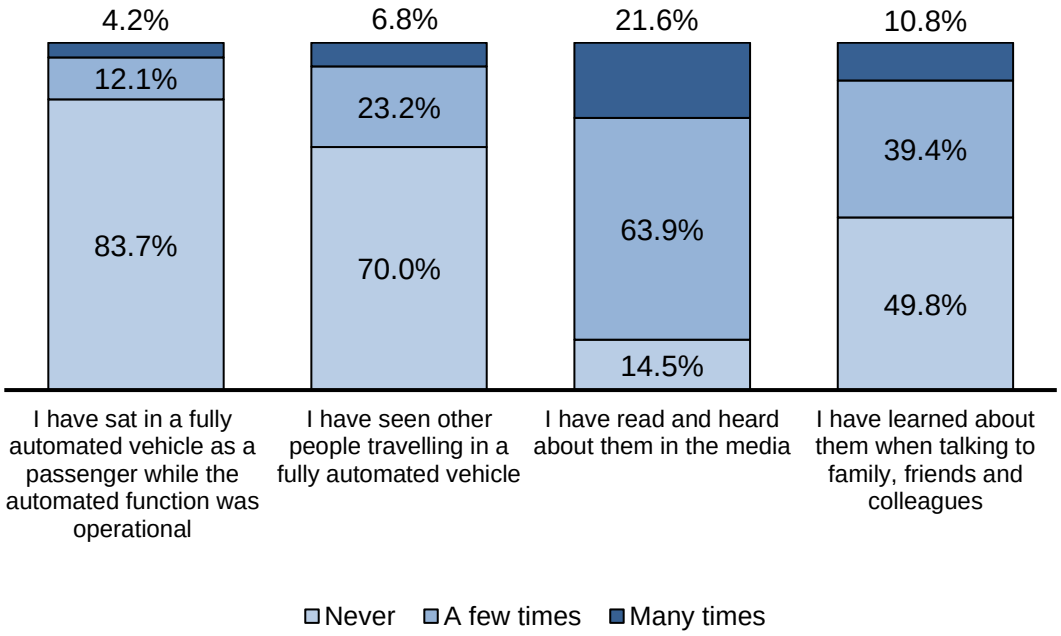
Levels of familiarity and previous experience



Familiarity with fully automated vehicles

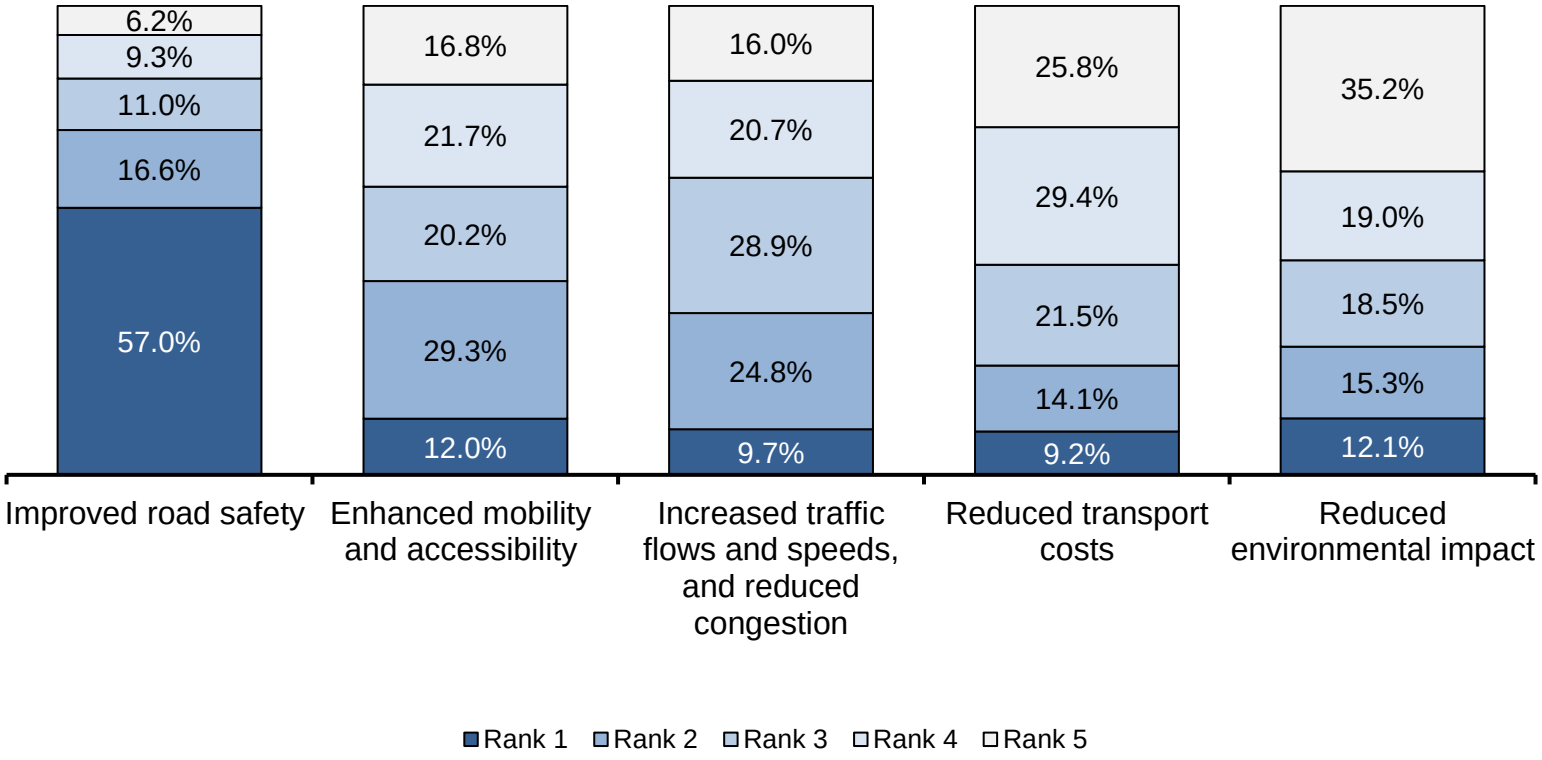
		How familiar are you with the concept of fully automated vehicles?				Total
		Not familiar at all	***Slightly familiar***	***Moderately familiar***	***Very familiar***	
Gender	*Male*	4.5%	23.8%	16.0%	6.1%	**50.5%**
	Female	10.1%	25.4%	10.8%	3.2%	**49.5%**
	Total	***14.6%***	***49.3%***	***26.8%***	***9.3%***	***100.0%***
Age category	*18-24*	0.8%	2.9%	2.7%	2.1%	**8.4%**
	25-29	0.6%	4.6%	2.8%	0.4%	**8.4%**
	30-34	1.0%	6.4%	3.6%	1.2%	**12.1%**
	35-39	1.5%	4.9%	3.3%	0.9%	**10.7%**
	40-44	0.8%	3.8%	2.4%	1.4%	**8.4%**
	45-49	1.0%	4.2%	3.2%	1.0%	**9.5%**
	50-54	1.3%	5.2%	2.1%	0.8%	**9.4%**
	55-59	1.2%	3.6%	2.2%	0.6%	**7.6%**
	60-64	1.3%	3.0%	1.5%	0.5%	**6.2%**
	65+	5.0%	10.8%	3.0%	0.4%	**19.2%**
	Total	***14.6%***	***49.3%***	***26.8%***	***9.3%***	**100.0%**

Levels of familiarity and previous experience

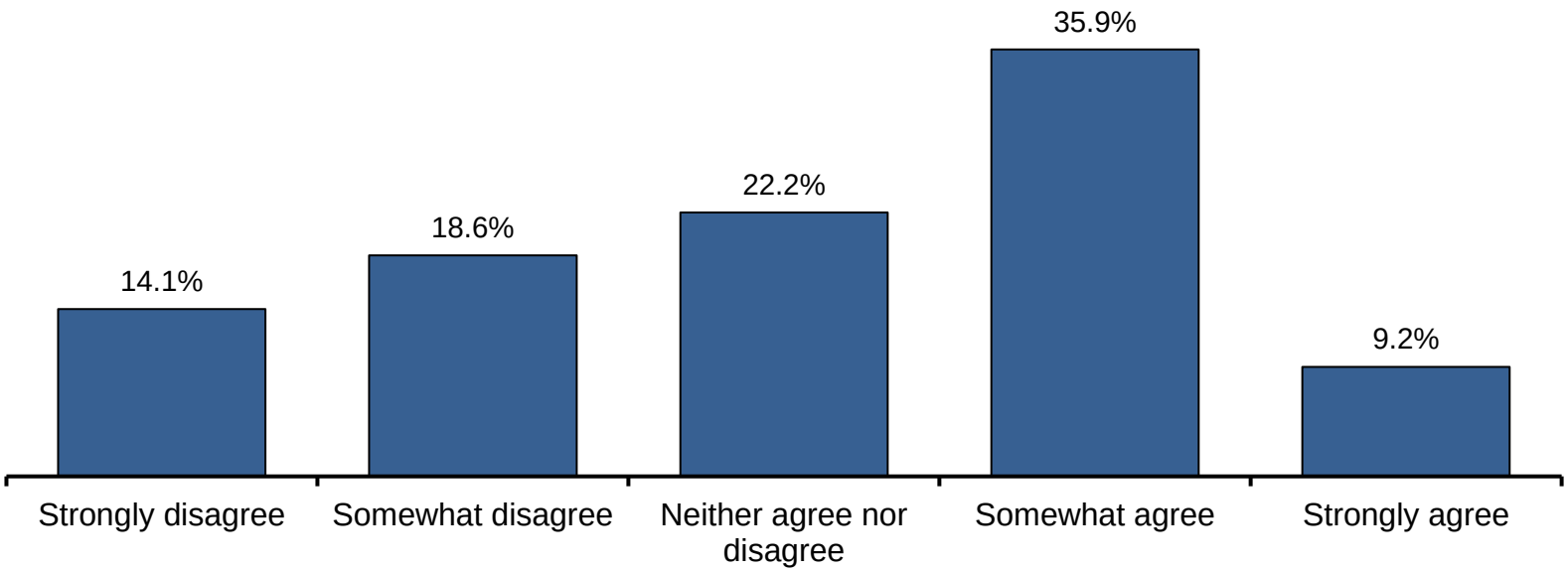


Previous experience with fully automated vehicles

Ranking of CAV benefits to the society

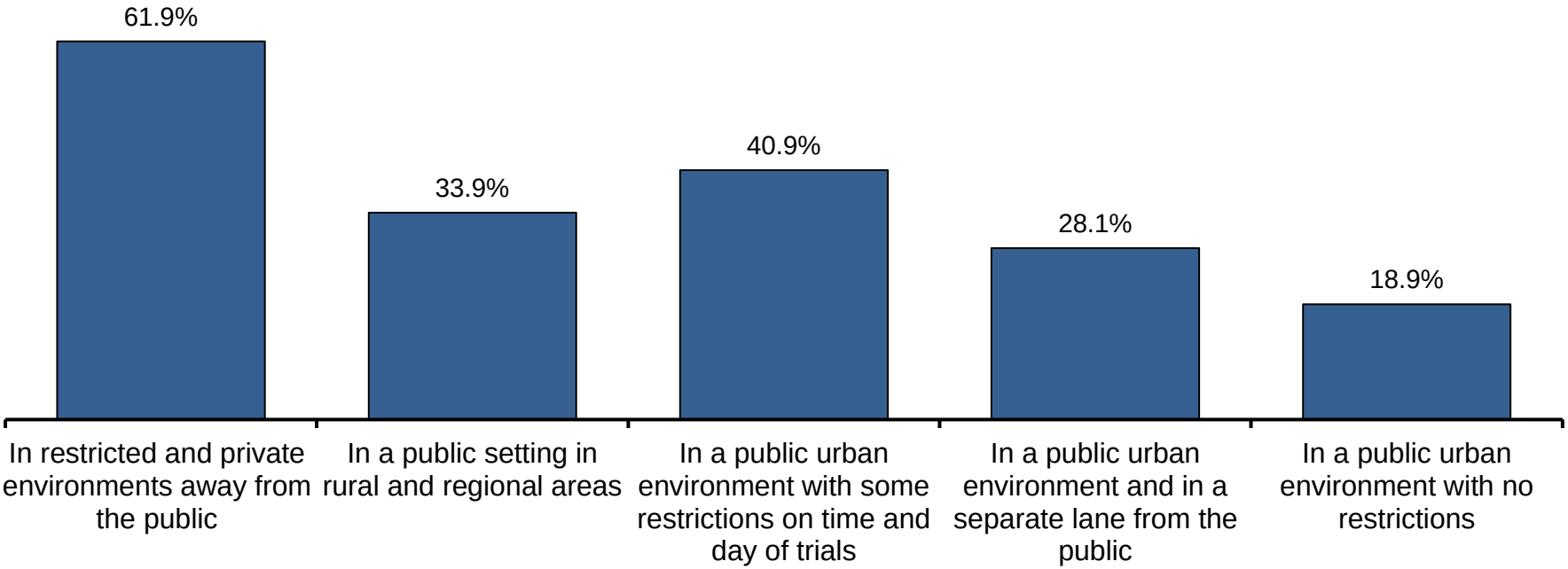


CAV reliability



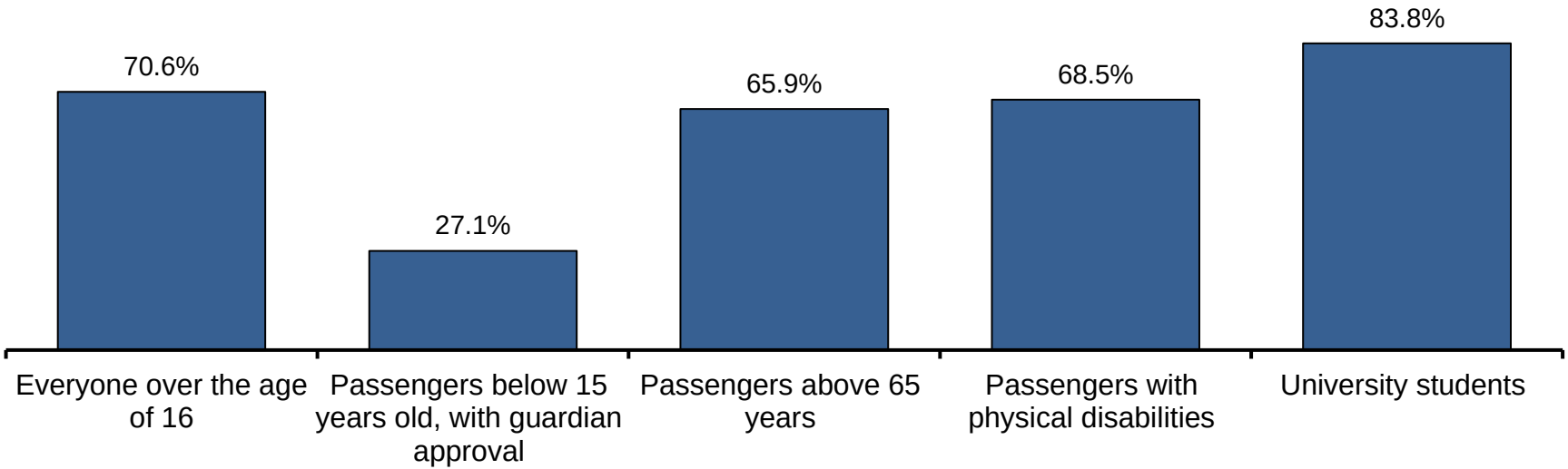
I would be comfortable entrusting the safety of a close family member to a CAV, if deemed safe by the Australian government.

CAV testing and trialling environment



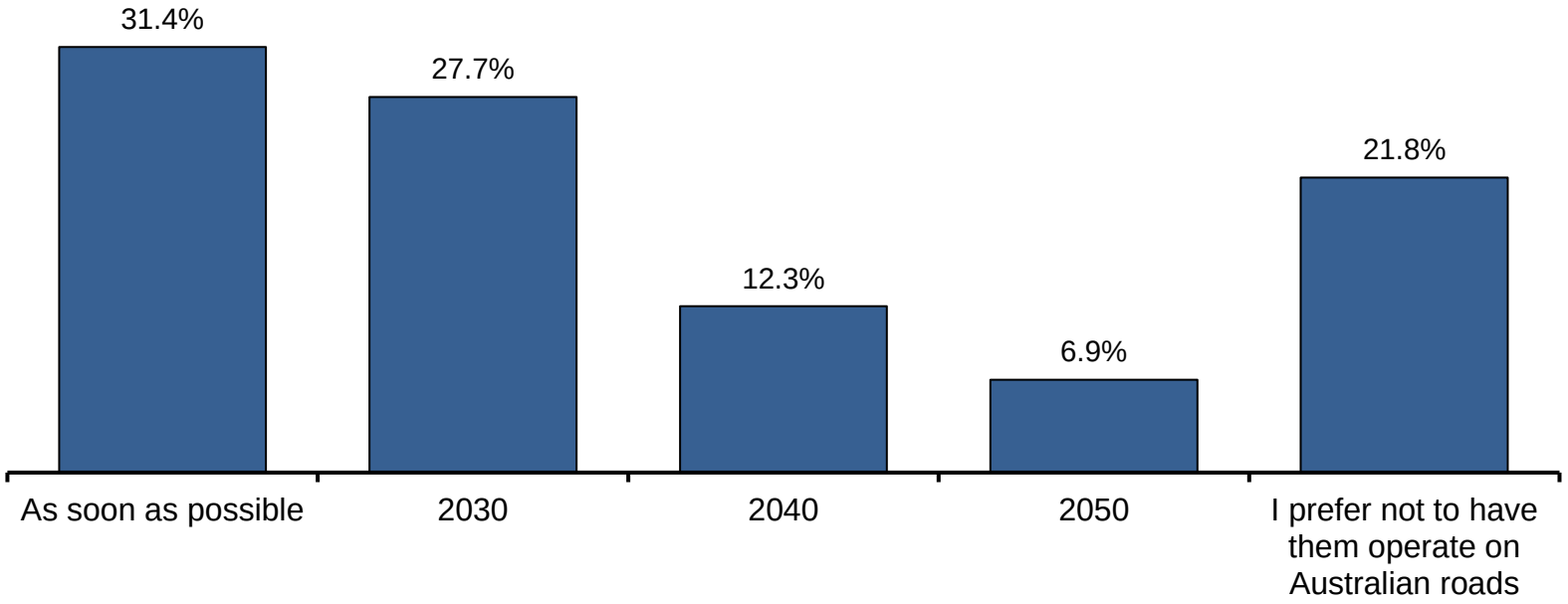
In which of the following environments do you think automated vehicles should be tested and trialled?

CAV testing and trialling participants



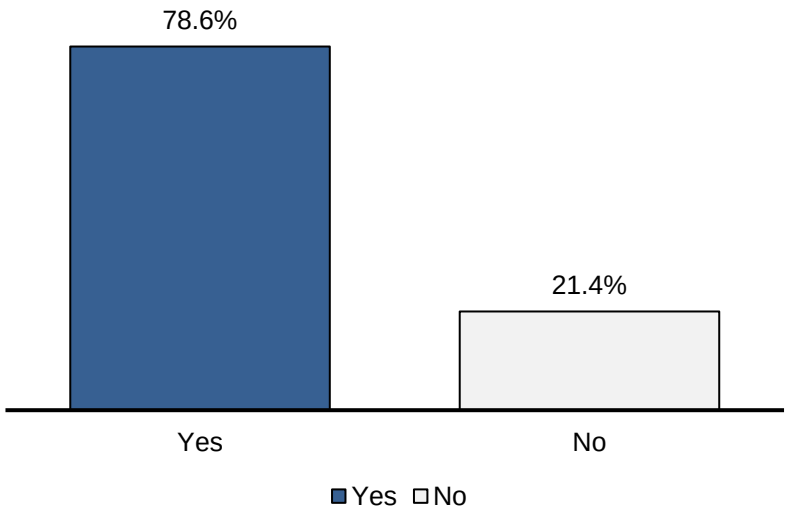
Who should be able to participate in automated vehicle trials?

CAV’s expected operation time



When would you like to see automated vehicles operate on Australian roads?

Support of CAVs trial in Australia



Would you support the trials of CAVs in Australia?

		Would you support the trials of automated vehicles in Australia?		Total
		Yes	*No*	
Gender	*Male*	40.6%	9.8%	50.5%
	Female	37.9%	11.6%	49.5%
	Total	***78.6%***	***21.4%***	***100.0%***
Age category	*18-24*	8.0%	0.5%	8.4%
	25-29	7.4%	1.0%	8.4%
	30-34	10.5%	1.7%	12.2%
	35-39	8.9%	1.8%	10.6%
	40-44	7.0%	1.4%	8.4%
	45-49	7.7%	1.8%	9.5%
	50-54	7.0%	2.3%	9.4%
	55-59	5.2%	2.4%	7.6%
	60-64	4.9%	1.4%	6.3%
	65+	12.1%	7.1%	19.2%
	Total	***78.6%***	***21.4%***	***100.0%***
Household income category	*Low income* *(below $52k per annum)*	18.3%	8.1%	26.4%
	Mid income *(between $52 and $104k p.a)*	19.8%	4.7%	24.5%
	High income *(more than $104k per annum)*	40.5%	8.6%	49.1%
	Total	***78.6%***	***21.4%***	***100.0%***

EXAMPLE SCENARIO

Imagine that a vote is being held on when and how automated vehicle technologies can be tested on Australian roads. Below, we present two policy options, and their expected impacts on public safety and technology development.

If a vote were held on this issue today, and these were the only two policy options, which policy option would you VOTE for today?

	Policy A	Policy B
Testing conditions - Where	Any private or public road	Private roads, and selected public roads in low-traffic suburban and regional areas
Testing conditions - When	Weekends anytime	Both weekends and weekdays at any time
Standby driver	Always required	Not required
Public safety risk assessment	5-10 fatalities and 50-100 serious injuries per year	Less than 1 fatality and 10 serious injuries per year
Automated vehicles expected to be commercially available by	2035	2040
I would VOTE for	○	◉

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Results

	Class I CAV sceptics	Class II	Class III	Class IV CAV enthusiasts
Sample share	21 per cent	51 per cent	19 per cent	9 per cent
Preferences for CAV testing and trialling	Would prefer the technology to be available later rather than sooner	Would like the technology to be available soon, but zero tolerance for any risk to safety	Willing to wait, on average, 5 years longer, to keep fatalities due to testing under 5 per year and serious injuries under 50 per year	They are indifference about the impacts on road safety, want to see technology available ASAP
Testing conditions - where	No testing on public roads	Prefer testing on public roads in low traffic suburban and regional areas	No preferences	Strong preference for testing on public roads
Testing conditions - when	Outside of weekends	Both weekdays and weekends	No preferences	Both weekdays and weekends
Standby driver during testing	Standby driver should be required during testing		No preferences	Standby driver should be required during testing
Demographic characteristics	More likely to be female, older and not in the workforce, have lower incomes and education levels, and live in regional areas.		More likely to be male, younger and employed, have higher incomes and education levels, and live in metropolitan areas.	

Conclusion

- **From the public's perspective, safety is paramount, even if it slows technology development and deployment**

  We estimate that roughly 20 per cent of Australians do not want any testing on Australian roads. An additional 50 per cent have a zero tolerance for risks to public safety, and do not want to see any injuries or deaths caused by testing. Most Australians would prefer to see the inclusion of standby drivers in any tests or trials, and for testing and trialling to be limited to low traffic suburban and regional areas.

- **Interestingly, these public views are in contrast to the views of industry stakeholders who criticised the government's present approach of prioritising short-term public safety over long-term technological innovation.**

  Our survey findings indicate that the current government approach is consistent with public sentiment. However, that does not imply that the current government approach is necessarily "correct" -such normative judgments are beyond the scope of the present study.