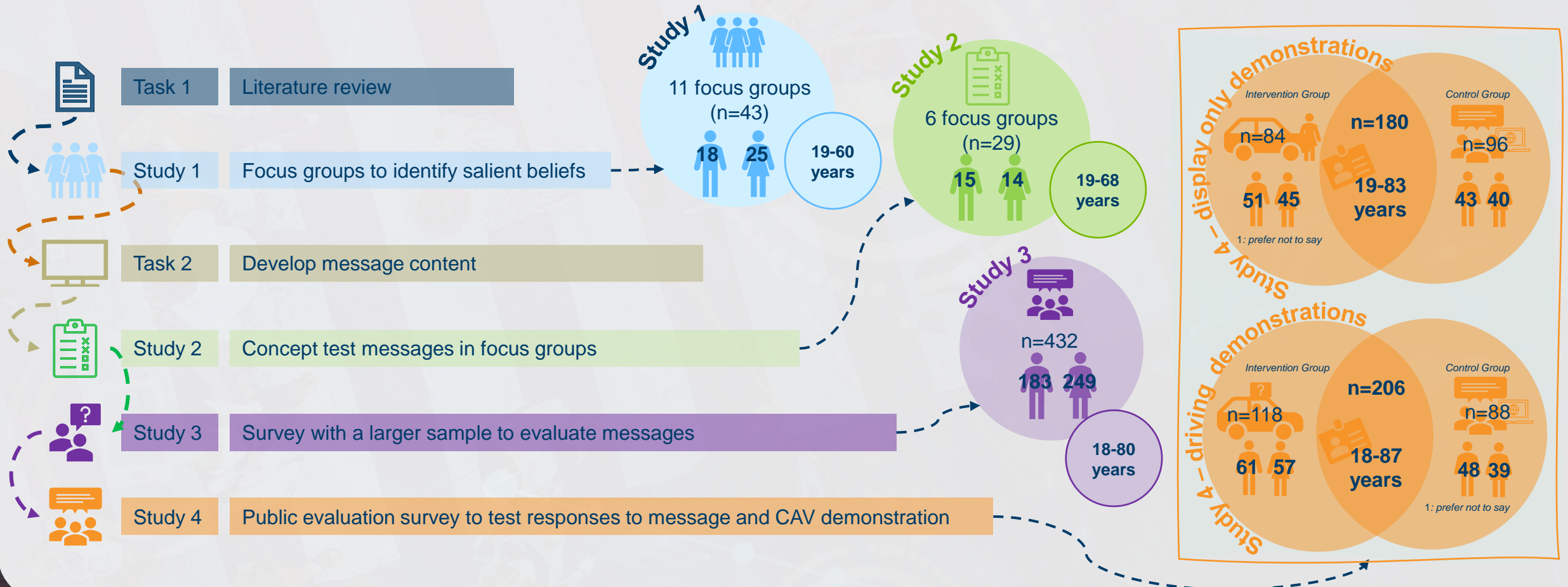
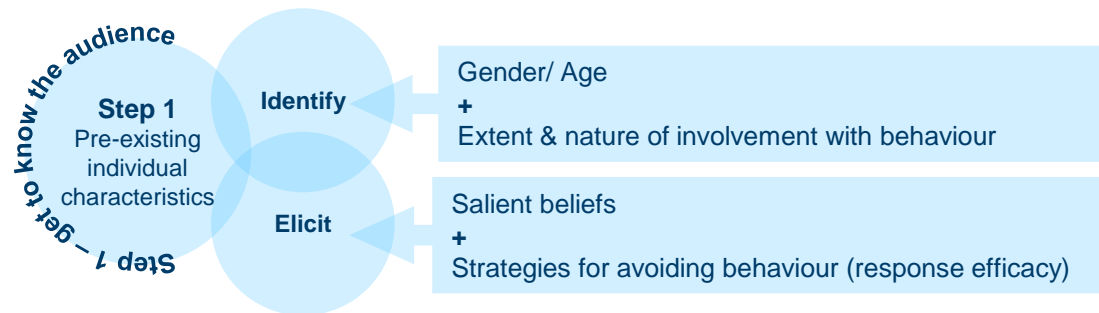
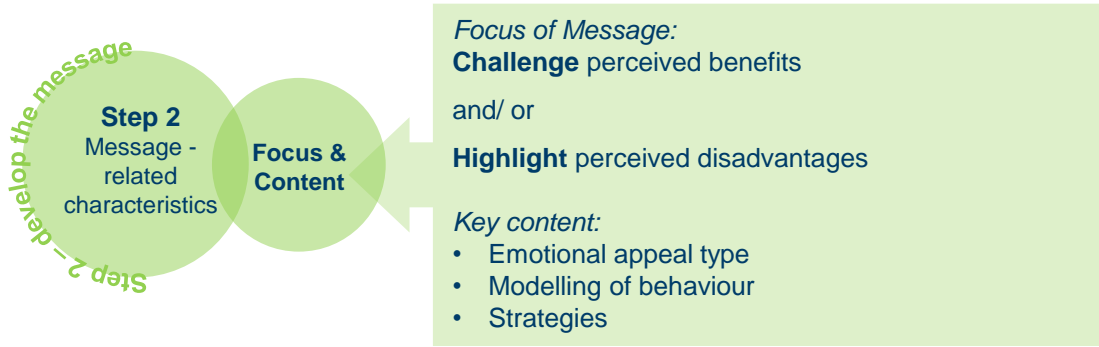


Public perceptions of Connected and Automated Vehicles

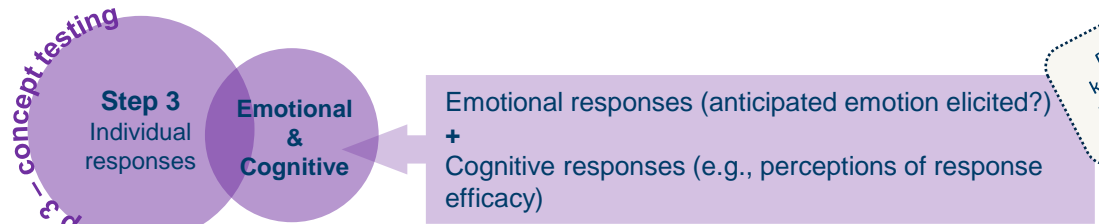




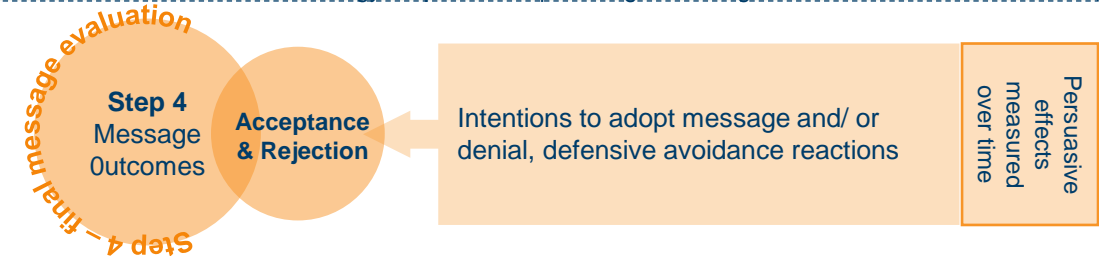
Methodology Step 1: Pilot work



Methodology Step 2: Message exposure



Methodology Step 3: Concept testing & message checks



Methodology Step 4: Qualitative-based assessment of persuasive effects

Do you know there are levels of automation?

Overall implications

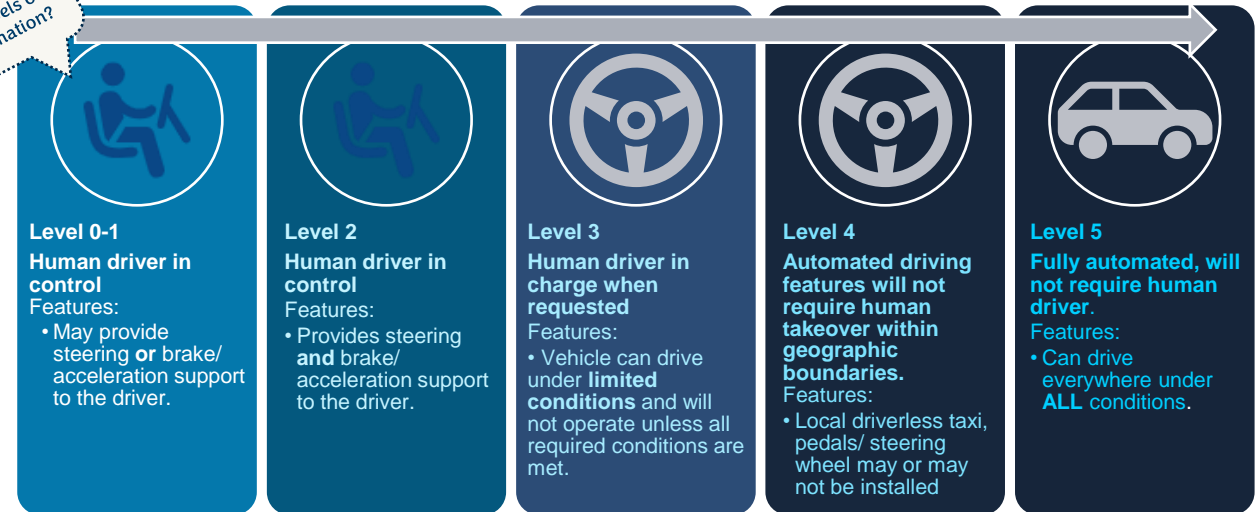
In line with the SatMDT, the formative studies in Work Package 4 (i.e., Studies 1 and 2) identified potential barriers and facilitators to the public's intended future use of automated vehicle (AV) technology. These findings guided the development of a range of message concepts tested in Study 3.

Study 4, found that there are positive effects of messaging and public demonstrations in helping to raise awareness and acceptance of CAVs, both in general as well as regarding Level 4 CAVs. Across various measures of effectiveness, when comparing intervention groups' pre- versus post-viewing of the messaging responses as well as differences between intervention and control groups, the findings highlighted that the message and the demonstrations, both static and dynamic, were well-received by the public.

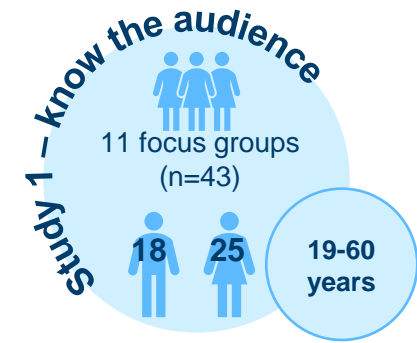
For the foreseeable future, both static and dynamic demonstrations will likely represent important components of public awareness raising efforts given each approach offers its relative strengths.

The "Steps and Levels" message tested in the current program of research was associated with positive effects and could be expected to do so also for the foreseeable future. As technology continues to evolve and public awareness and knowledge increases, there will be need for new and innovative messaging to ensure that the message remains current and engaging.

The findings also provide support for the value of applying the conceptual framework, the SatMDT, in developing and evaluating awareness raising messaging. Messaging that is targeted at specific beliefs regarding CAVs will help to ensure its effectiveness.



Results – Study 1: Belief Elicitation

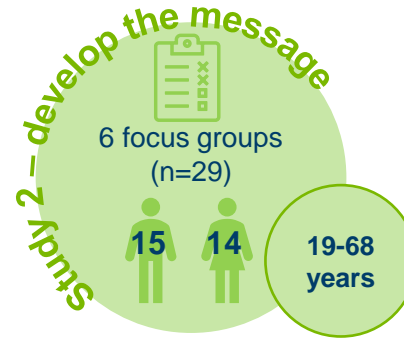


Step 1
Pre-existing individual characteristics

Focus groups conducted in Brisbane and Toowoomba to elicit individuals' salient behavioural, normative, and control beliefs regarding Level 4 and 5 Cooperative and Automated Vehicles.

	Level 4 CAV (Private)	Level 5 CAV (Private)	Level 5 CAV (Shared)
Behavioural beliefs	Advantages	Increased safety Convenience for drivers with mobility issues or long commutes	Increased trust in the safety of the technology Reduced traffic congestion and fuel efficiency Potentially low vehicle/transport costs
	Disadvantages	Liability Driver complacency	Potential ethical dilemmas Lack of vehicle control Limited usefulness for long distance drives
Normative beliefs	Approve	Younger drivers	
	Disapprove	Older drivers Car enthusiasts	
Control beliefs	Facilitators	Affordability	
	Barriers	Rigorous testing and demonstrations/test drives Safety/ trust issues in technology Would current infrastructure support its use	Increased safety Perceived lack of control Expensive costs Feelings of safety Vehicle speed/ distance Security and privacy issues

Results – Study 2: Concept testing

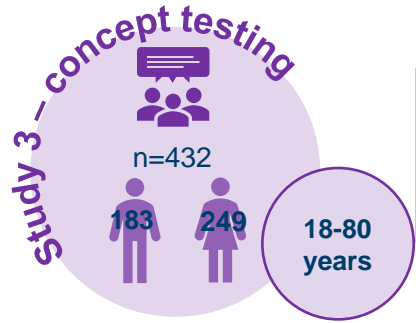


Step 2
Message-related characteristics

Develop messaging concepts and conduct focus groups in Brisbane to pilot the messaging.

Concept	Notable feedback	Overall sentiment
Message Concept 1 (Option A) Scenario: Fatigue Featured person: a business professional CAV action depicted: coming to safe stop on roadside.	<i>Showing a driver fall asleep behind the wheel was raised as a concern among some participants. Despite concern with this aspect, participants found the message clear but further implications would need to be considered going forward when depicting appropriate activities to engage in when using CAVs.</i>	✓
Message Concept 1 (Option B) Scenario: Fatigue Featured person: a business professional CAV action depicted: CAV requesting human takeover.	<i>Message Concept 1 (Option A) above was preferred where CAV comes to a safe stop on roadside.</i>	✓
Message 2 Scenario: Mobility as a Service Featured person: Older adult CAV action depicted: Automated taxi-service	<i>Could be revised to make it clearer that the focus of this message was on Level 4 CAVs.</i>	✓
Message 3 Scenario: Distracted driving Featured person: Young adult CAV action depicted: Automated private driving	<i>Noted message may need to be revised, given that showing a young person sketching/drawing while driving reflects distracted driving.</i>	✓
Message 4 Scenario: Educational Featured person: Government educator CAV action depicted: Static display	<i>Found to be too technical and, could instead be used as a source of information to accompany other messaging rather than a message concept in and of itself.</i>	✗
Message 5 Scenario: Past to the future Featured person: Various CAV action depicted: Nil	<i>Would benefit from including more information about Level 4 CAVs.</i>	✓

Results – Study 3: Assessing effectiveness of messaging



Step 3
Individual responses

Online surveys to test effectiveness of messaging with a larger sample of Queensland drivers.

Mobility vs Safety benefits

Perceived safety and mobility benefits: For all six concepts, participants rated the message as having significantly stronger emphasis on mobility compared to safety.

Perceptions towards message concepts

Response efficacy: All six concepts were considered as offering a similar degree of useful information about using a highly automated Level 4 vehicle.

Message self-efficacy: All six concepts were considered as offering a similar degree of information that participants found personally helpful regarding their use of a highly automated Level 4 vehicle.

Direct measures of effectiveness

Message effectiveness: All concepts were perceived as “somewhat effective” based on response scale provided and participants tended to perceive the concepts would influence them personally more than others.

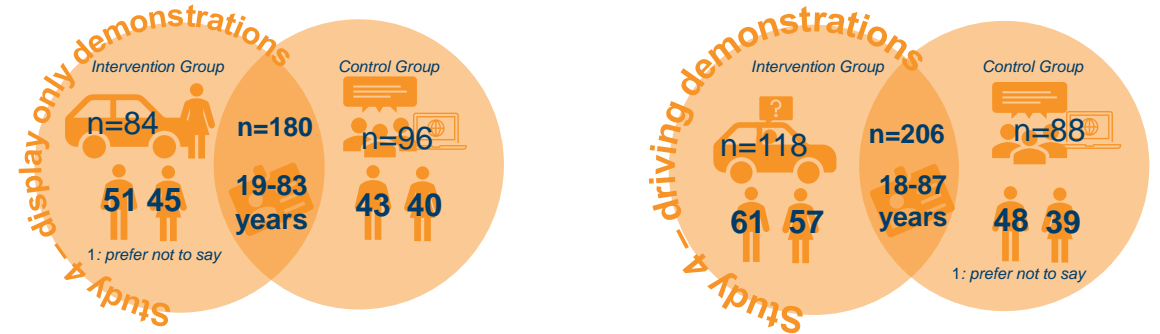
Message rejection: For all six concepts, results indicated that participants were unlikely to reject any of the messaging.

Indirect measures of effectiveness

Intentions: The results revealed some differences between the concepts and demographic subgroups in terms of the concepts’ influence on participants’ intentions to use a high AV in the future. Overall, however, intentions were relatively high on the given scale suggesting the messaging was associated with participants’ reported intentions to use such vehicles in the future.

Factors predicting intentions to use in future: For all six concepts, the constructs examined explained more than half of participants’ reported variance to use a highly automated Level 4 vehicle in the future. Of the significant predictors, normative influences influenced drivers’ reported intentions to use highly automated AVs in the future in relation to Concepts 1, 2, and 3. Such findings highlight the important role that the approval from important others may play in influencing individuals’ intent to use highly automated AVs in the future.

Results – Study 4: Public evaluation at demonstrations



Intervention group completed surveys at demonstrations & Control group completed online surveys

Step 4

Message outcomes

Evaluation of messaging at two public demonstrations of a Level 4 CAV prototype: Gold Coast (display only demonstration) and Bundaberg (driving demonstration).

Across various measures of effectiveness, the messaging and the demonstrations (both static and dynamic) were well-received by the public.

- The intervention group in both static and dynamic demonstrations reported:
 - improved knowledge about AVs,
 - positive increases in attitudes towards, intentions and willingness to use, as well as trust in, AV’s.
- Intervention group at both demonstrations reported significantly higher scores on all the acceptance measures than the control groups*.
- Dynamic demonstration intervention group participants reported significantly higher scores in message effectiveness compared with the static demonstration intervention group participants.
- Dynamic demonstration intervention group participants rated the perceived helpfulness and usefulness of the dynamic demonstration in increasing knowledge about AVs significantly higher than static demonstration intervention group participants had rated the static demonstration**.
- The results found 96.4% of the static demonstration intervention group participants and 98.3% of the dynamic intervention group participants reported they would recommend others attend the demonstration they had attended to increase their knowledge about AVs.

**It is acknowledged, that there is a self-selection bias in those who choose to partake in a demonstration about AVs (and associated research).*

***On inspection of the mean scores between the two groups, although significantly different, results indicated that scores were still high on these measures irrespective of the demonstration type.*