

# UNDERSTANDING USER PERCEPTIONS AND EXPERIENCES WITH COOPERATIVE AND AUTOMATED VEHICLES

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## Abstract

With the increasing availability of vehicles with various levels of technology, many State transport agencies are investing in pilot programs and trials, designed to prepare for the arrival of cooperative and automated vehicles on their road networks.

The Queensland Department of Transport and Main Roads (TMR) sought to understand the perceptions, experiences and understanding of cooperative and automated vehicle technologies through an online survey. This paper discusses the methodology and results of this survey, and implications for the development of public education and participant recruitment materials.

## Background

TMR is delivering the Cooperative and Automated Vehicle Initiative (CAVI), with the purpose of preparing the department for the emergence of advanced vehicle technologies with safety, mobility and environmental benefits on Queensland roads. The Initiative incorporates four components, including the largest on-road testing trial in Australia of cooperative vehicles and infrastructure (C-ITS Pilot, around 500 participants), and the testing of a small number of cooperative and automated vehicles on public and private roads (CHAD Pilot). Both pilots will involve members of the public interacting with these new technologies.

## Method

In 2017, TMR conducted an online public survey, open to all Queensland road users, with either an open or provisional licence.

The survey was accessed by an open web link, and was distributed through 12 key organisational stakeholders. Participants who completed the survey were eligible for the survey incentive prize draw (10 x \$50 Myer Gift Cards).

The questionnaire was divided into five modules, covering general demographics (two modules), current driving, awareness and understanding of cooperative and automated vehicles and attitudes towards/willingness to use cooperative and automated vehicles.

For module four (attitudes towards/willingness to use), participants were randomly assigned to one of two sub-modules, the cooperative vehicles module (n=867) or the automated vehicles module (n=871). This was to limit the survey duration, and prevent survey fatigue.

## Results

1,738 complete responses were analysed (52% Female, 32% 45-54 years, 54% Brisbane resident, 35% Certificate/Trade qualification, 39% \$50,000-\$150,000 household income) for residents of South-east Queensland (SEQ). Data was weighted to Australian Bureau of Statistics population estimates by age, gender, and location.

The results reported here are a sub-set of the overall findings that are particularly applicable to future CAVI communication and pilot participant recruitment. The survey found that whilst nearly all drivers were aware of the term automated/autonomous vehicles (94%), only 28% were aware of the term cooperative/connected vehicles. Males, younger drivers, those with a post-graduate

education, and those in the upper income groups were more likely to have heard of cooperative vehicles.

More established technologies, such as GPS, Bluetooth, and reversing cameras, are most likely to be considered beneficial, whilst drivers may still be getting used to some of the newer vehicle technologies – such as lane keep assist and auto park – which are not yet considered as beneficial (11% and 5% respectively).

When asked to consider the importance of different aspects of cooperative and automated vehicles on encouraging willingness to use, safety and affordability were rated as having the most impact on the decision to use cooperative vehicles (average rating of 7.5 and 7 out of 8 respectively) or automated vehicles (7.5 and 6.8 out of 8 respectively). Supporting these findings, overall just over three-quarters of SEQ residents expressed a willingness to use a cooperative vehicle in the future (77%) whilst 73% of motorists expressed a willingness to use a partial/conditional automated vehicle (Level2/3). Willingness to use dropped off as the level of automation increased.

### **Conclusions**

From these results, and others from the survey, we confirmed that in order to maximise the success of recruiting participants for the C-ITS Pilot (around 500), further work needs to be done to develop appropriate recruitment and public education materials that address the differences in the Queensland public's awareness and understanding of cooperative and automated vehicles. In addition, materials would also need to address motorists experience with and understanding of the benefits of varying vehicle technologies, to encourage increased familiarity and comfort with vehicle technologies.

### **References**

Blogg, M., Ellis, B., Boddington, K. and McDonald, G., 2016, *Assessing the benefits and costs of C-ITS in Queensland*, Proceedings from the 2016 ITS World Congress Melbourne