

## **Examining drivers' a priori acceptance of Level 4 automated cars: An exploration of drivers in Australia, France, and Sweden**

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### **Abstract**

There have been rapid advances in cooperative and automated vehicle (CAV) technologies in recent years. This study, underpinned by the Theory of Planned Behaviour and the Unified Theory of Acceptance and Use of Technology, examined whether there were differences in the intentions to adopt Level 4 automated cars reported by drivers from Australia, France, and Sweden. N = 1563 drivers completed an online survey. The results revealed drivers from France reported significantly higher intentions than drivers from Australia and Sweden. In understanding the factors which influence intentions, insights are provided for future efforts aimed at encouraging adoption of such technologies.

### **Background**

Rapid advances in cooperative and automated vehicle technologies have seen many on-road trials of such technologies occurring throughout the world. This study sought to understand individuals' a priori acceptance of Level 4 automated cars. Level 4 is high automation where a vehicle can drive itself and an individual is not required to take action but can choose to drive (SAE International Standard J3016). The extent of one's exposure to such technologies may influence individuals' intentions to use such vehicles. This study explored whether drivers from Australia, France, and Sweden differed in their reported intentions to adopt Level 4 automated cars. Without trials of automated cars in Australia or Sweden, but there being trials in France, a difference was expected in drivers' intentions between the three countries. The study also sought to understand the factors that predicted intentions in accordance with factors from the Theory of Planned Behaviour ([TPB; Ajzen, 1991]) and the Unified Theory of Acceptance and Use of Technology ([UTAUT]; Venkatesh, Morris, Davis, & Davis, 2003).

### **Method**

An online survey, comprising items based on the TPB and UTAUT, was administered to drivers in Australia, France, and Sweden. Key predictors from these models were measured in addition to the key outcome measure of intentions to use Level 4 automated cars in the future when they become publicly available. Most items were measured on a 7-point Likert scale with higher scores indicating more of the construct. A definition of a level 4 high automated car was provided early in the survey.

The survey took 20 minutes to complete. Participants in Australia were offered either partial course credit if they were a university undergraduate at QUT or the chance to go in the draw to win one of 5 A\$50 Coles/Myer vouchers. Participants in France and Sweden were not offered an incentive.

An ANOVA tested for differences in intentions between the three countries and separate regressions were conducted to determine the significant predictors of intentions in each country.

## Results

Useable data was provided by a N = 1563 participants (n = 558 in Australia, n = 625 in France, and n = 380 in Sweden). Participants were aged 17-89 years ( $M_{age} = 43.86$ ,  $SD = 17.18$ ) with n = 971 (62%) males. A significant difference in intentions reported between drivers of the three countries,  $F(2, 1562) = 46.86$ ,  $p < .001$ , with drivers in France ( $M = 4.53$ ,  $SD = 1.87$ ) reporting significantly higher intentions than drivers from Australia ( $M = 3.43$ ,  $SD = 2.08$ ) or Sweden ( $M = 3.73$ ,  $SD = 2.08$ ). No other differences were significant. A series of regressions were then conducted based on the TPB and UTAUT to understand the factors that influenced intentions in each of the three countries. Results revealed some similarities yet also some differences in the factors that predicted intentions in each country.

## Conclusion

This study provides insights into individuals' intentions to use automated cars in the future including the factors which influence such intentions. Such insights may help to inform future public education to encourage greater use as implementation of automated vehicles becomes more widespread.

## References

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