



Rebuilding lives after sight loss

# Autonomous Vehicle User Experience on Sighted and Visually Impaired Passengers - the "Arthur" trial

Full peer review publication is now here: <https://doi.org/10.1016/j.jth.2020.100906>

## What did we do?



1 Autonomous Vehicle 'Arthur'



Over 419 passengers on Arthur



419 questionnaire responses



250 passenger video recordings

- Video recordings of passengers were analysed using FACS (Facial Actions Coding System).
- Those were then compared to the self-reported results of the Questionnaire.

## The FACS assesses six emotions



Happiness



Fear



Surprise



Disgust

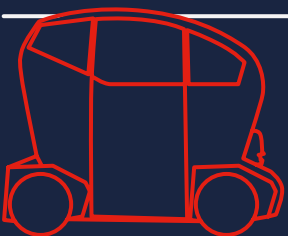


Anger



Sadness

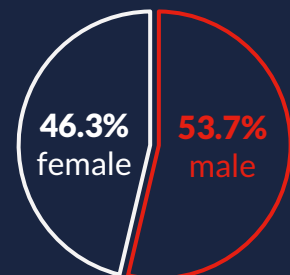
## Who completed the survey?



98% of the passengers were first time users



mean age was 65.28



- 0.7% had a chronic illness
- 3% had a coordination or dexterity impairment
- 4% had a hearing and/or speech difficulty
- 15% had a mobility-related disability

- 56.3% reported having a VI
- 43.9% considered themselves disabled

# What did we find?



Results from the questionnaire showed a positive experience for participants, and reduced anxiety from the time prior to the journey to the end of the journey.

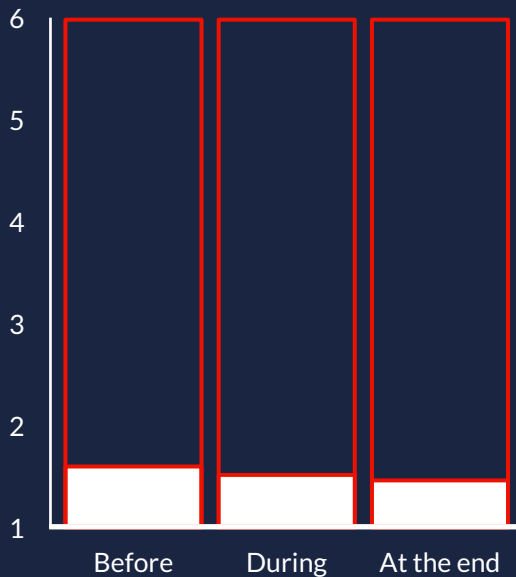
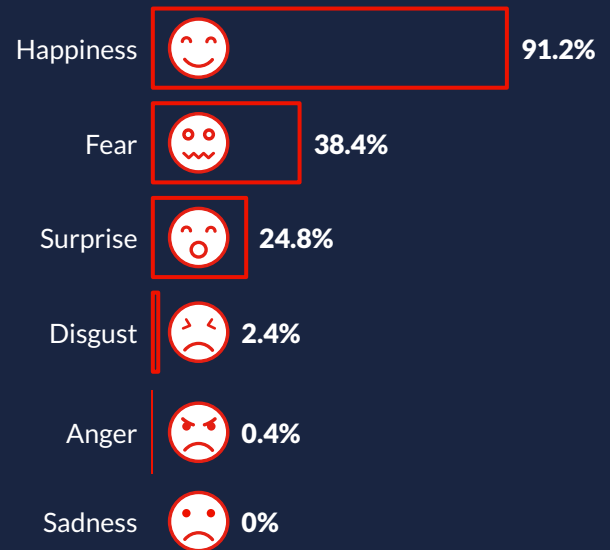


Figure 1: Means for the responses to the 'Did you feel nervous, anxious or on edge before/during/at the end of the journey? [1, 2, 3, 4, 5, 6 (1=not at all, 6= very much)]'. The means for the responses to each question were 1.51 for 'before the journey' (SD=0.85), 1.31 for 'during the journey' (SD=0.55), and 1.18 for 'at the end of the journey' (SD=0.34). (SD = Standard Deviation).



FACS analysis showed happiness as the predominant emotion expressed by passengers; a smaller number expressed surprise or fear, but these were mainly identified early during the journey or as the result of an emergency stop.

Percentage % of journeys during which the emotion each was identified (n=250)



The majority felt safe during their journey and would use it again. Fear of the unknown may have contributed to feelings of anxiety prior to their use of the vehicle, but once participants had experienced riding in the AV, they appeared to be less concerned.



The results from both data sets showed that both for a sighted or VI individual, travel in an AV is largely a positive experience and individuals who have a VI would benefit from AV services in the future.

## What does this mean for Blind Veterans?

The results from the current study shows that AVs may offer a positive and beneficial service to VI users. The benefits associated with the opportunity for independent mobility has important implications for the well-being of the sample population, and all individuals whose mobility may be limited by other sensory or physical impairments.

The results obtained from this study are a useful contribution to making evidence based legislation for the operation of autonomous vehicles. For any research enquiries please contact [research@blindveterans.org.uk](mailto:research@blindveterans.org.uk) For any press enquiries please contact [pressoffice@blindveterans.org.uk](mailto:pressoffice@blindveterans.org.uk)



AURRIGO

A collaborative project with Aurrigo Ltd