

How Do Older Drivers Perceive Autonomous Vehicle (AV) Technology?

(STRIDE Project D2: Older Driver Experiences with Autonomous Vehicle Technology)

PROJECT OVERVIEW

Older adults (≥ 65 years) account for 20% of the US population but are over-represented in multiple-vehicle crashes. At the same time, driving cessation has been shown to lead to poor health outcomes. Automated vehicles (AVs) may provide safety benefits, prolong independent mobility, promote community involvement, and enhance quality of life for older adults. However, these outcomes are dependent on older users' engagement, trust, and acceptance of this emerging technology.

GOALS

The project had three goals: 1) develop and validate an Autonomous Vehicle User Perception Survey (AVUPS) to assess users' perceptions of AVs, 2) develop and validate a simulated driving scenario, and 3) assess older drivers' perceptions after being exposed to a simulator and an automated shuttle.

FINDINGS

The study surveyed 104 older drivers in Florida to assess their perceptions of AV technology. Participants' perceptions were measured at the beginning of the study (baseline), after their first exposure to the technology (shuttle or simulator), and again after their second exposure to the technology (shuttle or simulator). Fifty-four of the participants experienced the shuttle first and the other 50 experienced the simulator first.

Results showed that there was no difference between the perceptions of participants who experienced the shuttle first and those that experienced the simulator first. Participants' perceptions about *safety*, *trust*, and *perceived usefulness* improved significantly the more they were exposed to the AV technology. These results provide initial evidence that exposing older drivers to an automated simulator or an on-road autonomous shuttle may promote their acceptance and adoption of AV technology.

PRODUCTS

1. **Autonomous Vehicle User Perception Survey (AVUPS)** - Assesses participants' intentions to use AV technology based on their perceptions of safety, trust, perceived usefulness, control/driving efficacy, and external variables.
2. **Autonomous Simulation Scenario** – Provides a simulated experience of riding in an autonomous vehicle comparable to a real-life experience.

IMPACTS

The operator of the autonomous shuttle made modifications including shuttle ramps and wheelchair securements based on feedback from the study participants. These modifications enabled the shuttle, originally manufactured in France, to be compliant with the America with Disabilities Act (ADA).

EQUITY IMPACTS

The study provides a broader understanding of the factors affecting the acceptance and adoption of AV technology among older adults who may be medically at risk, disadvantaged, vulnerable, or disabled.

WHO BENEFITS?

- Engineers, city planners, policy makers
- Healthcare professionals
- AV industry

RESEARCH TEAM

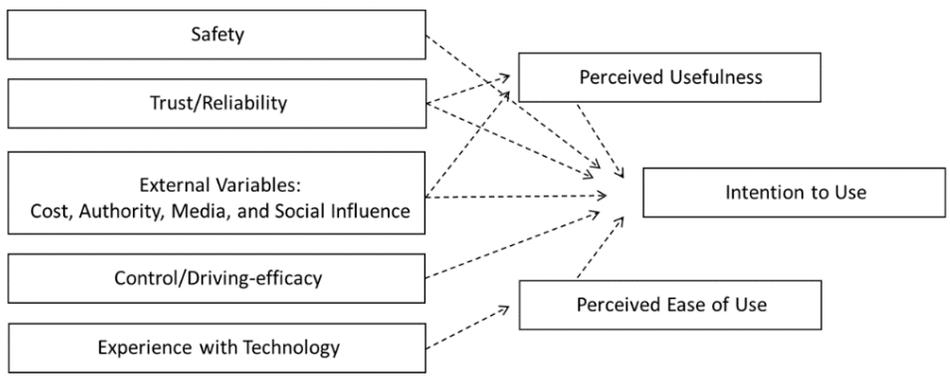
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PRODUCTS

Autonomous Vehicle User Perception Survey (AVUPS)

A 28-question survey was developed based on a conceptual model to assess participants' intention to use autonomous vehicle technology.



Twenty-four questions used a visual analogue scale (VAS) ranging from disagree to agree and four questions were open-ended. Face, content, and construct validity and test-retest reliability were established. The survey can be downloaded from the supplementary material in an open-access [publication in Frontiers](#).

Autonomous Simulation Scenario

A driving simulation scenario was developed for the Realtime Technologies Inc. (RTI) driving simulator. This simulation scenario was built to broadly represent geographic features to emulate the route of the autonomous shuttle. Five team members with experience in transportation, simulators, occupational therapy, engineering, driving rehabilitation, computer science, and exercise physiology developed the simulation. A video of the simulation scenario may be found on [YouTube](#). Face and content validation of the simulation ensured congruence with the real-life scenario. The validation process is described in an open-access [publication in Frontiers](#).

For more information on Project D2 (Older Driver Experiences with Autonomous Vehicle Technology), visit the [STRIDE Project page](#).

About STRIDE

The Southeastern Transportation Research, Innovation, Development & Education Center (STRIDE) is the 2016 Region 4 (Southeast) U.S. Department of Transportation University Transportation Center headquartered at the University of Florida Transportation Institute (UFTI).

