Florida Department of Transportation Research

Develop, Refine, and Validate a Survey to Assess Adult's Perspectives of Autonomous Ride-Sharing Services

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Current Situation

Autonomous vehicles (AVs) have generated great excitement for the future of transportation. The promise of self-driving vehicles offers a valuable transportation option to those who do not drive, own a car, or are exploring how to get around their community without driving. For older adults, AVs might provide a vital link to shopping, entertainment, and health care to help preserve mobility independence. However, acceptance of AVs by users such as older adults is key to the success of this rapidly evolving technology. It must be evaluated from both the viewpoint of those who have used – or might use – autonomous vehicles and the other road users who encounter them.

Research Objectives

University of Florida researchers, with support from FDOT's Safe Mobility for Life Program/Coalition, designed a validated survey specifically to evaluate autonomous ride-sharing services. They also examined the reactions of road users along the path of an autonomous shuttle operating in the Lake Nona community.

This autonomous shuttle has been operating for two years along a one-mile route in Lake Nona.

Project Activities

In the first project task, the researchers developed a survey intended to be used as a standardized tool to evaluate adult perceptions of AV ride-share services. Possible survey items were compiled from several sources: recent literature on older adults and their practices in technology adoption; user surveys, including previous surveys conducted for the Florida Department of Transportation (FDOT); and theoretical frameworks for surveys on these topics with these populations. The draft survey was revised after input from focus groups comprising individuals 50 years of age and older.

To validate the survey, the researchers performed a series of tests, including reviews by non-specialists (face validity) and specialists (content validity) and more technical tests for inter-test repeatability and the relationship of survey items to underlying theory (construct validity). The final result was the FDOT Autonomous RideShare Services Survey (ARSSS). The availability of ARSSS was publicized in a targeted effort through professional organizations and advocacy groups with interests in the safety and mobility of aging road users.

In the second project task, the researchers analyzed interactions between a regularly operating AV shuttle in the Lake Nona community with other vehicles, bicyclists, and pedestrians. The researchers observed and categorized road user behaviors along the one-mile track of the AV shuttle's route and correlated them with traffic features, including a crosswalk, signalized intersection, and an all-way stop-controlled intersection. Interactions with the AV shuttle were recorded by fixed video cameras and a dash cam in a vehicle that followed the shuttle along its route. Specific questions of interest included how the shuttle responded to pedestrians, both in its lane and in the opposite lane as well as the effect of the shuttle on vehicle queues and discharge rates. There were too few encounters with bicyclists in the study period to draw meaningful conclusions.

Project Benefits

Ongoing studies of potential users of AV ride-sharing services and its interaction with other road users will help guide implementation of this new technology.

For more information, please see www.fdot.gov/research/.