



U.S. Department of Transportation
Federal Transit Administration



An Evaluation of the Valley Metro–Waymo Automated Vehicle RideChoice Mobility on Demand Demonstration

Final Report

Background

The Valley Metro–Waymo Automated Vehicle RideChoice project was a part of Valley Metro's Mobility on Demand (MOD) Sandbox Demonstration, one of 11 MOD Sandbox Demonstrations funded by the Federal Transit Administration (FTA). Valley Metro and Waymo partnered to pilot the use of Waymo autonomous vehicles (AVs) as certified vehicles for Valley Metro's RideChoice program, a subsidized curb-to-curb individual mobility service (via taxi or ride-hailing services) for paratransit-certified people under the Americans with Disabilities Act (ADA) and for older adults age 65 and over living in the Phoenix area. Project partners designed the pilot to understand the potential for AVs to meet the daily needs of otherwise mobility-disadvantaged citizens.

Objectives

The objective of this six-month demonstration was to understand the potential behavioral impacts of AV MOD services for mobility-disadvantaged persons, including perceptions and attitudes of users and non-users towards such new technologies and services as gauged through surveys, focus groups, and analysis of trip data, and to understand how availability of an AV option and real-world experience riding AVs might affect perceptions of safety, rider comfort and satisfaction, and travel behavior.

Findings and Conclusions

Results of the Valley Metro–Waymo AV RideChoice MOD demonstration provide an evidence base for further exploration into how agencies might facilitate and subsidize point-to-point mobility through AVs for mobility-disadvantaged residents.

The project engaged current RideChoice participants and offered Waymo AVs as a mobility service option that study participants could summon and use via a smartphone app. Data were collected between September 2019 and March 2020, and the pilot ended in March 2020, partly because of the COVID-19 pandemic. Three surveys were conducted to measure evolution in perceptions, attitudes, and behaviors prior to, during, and after the AV service demonstration. Focus groups with riders and roundtable discussions with planners and policymakers in the region also were held to understand their perspectives on implications of AVs for mobility in the region.

The evaluation revealed that the project had positive impacts on user perceptions in terms of safety, convenience, comfort, and wait times. Key findings are as follows:

- **Participants felt safe** and felt that AVs would improve safety on the roads and meet the mobility needs of all people and agreed that it would be good to see more AVs on the roads.
- **Participants found the service more convenient than typical RideChoice options**, indicating strong satisfaction with the wait time, travel time, and comfort of their AV rides. For wait and travel times, AV rides were rated as providing greater satisfaction compared to non-AV RideChoice services (taxi and ride-hailing services).
- **Participants made new trips as a result of the new AV option**. Nearly 60% of study participants indicated that they were making more trips in the RideChoice program since AVs had been introduced and had used AVs significantly more compared to non-AV options during overnight hours.
- **Participants embraced AVs as a mobility option**. AV services were used considerably more than non-AV RideChoice options during the core months of the pilot program, and participants indicated they would take longer trips if the service area was expanded.
- **Participants were interested in riding without a safety operator**. Although participants in the demonstration always rode AVs with a safety operator present, 70–80% indicated that they were willing to ride without a safety operator.
- **Participants overwhelmingly preferred the option of riding with friends or family** rather than riding alone or with strangers in an AV.
- **Participants would like to be among the first to use AVs** when such services become widely available.

Benefits

The demonstration provided valuable travel behavior and attitudinal data for stakeholders to understand the implications and potential adoption/acceptance of AV-based mobility-on-demand services, showing the potential for AV MOD services to meet mobility needs. Regional stakeholders and policymakers expressed a need to explore more use cases for AV MOD services within the region on perceptions of AVs when no safety operator is present in the vehicle, first/last mile connectivity for transit service in low density areas, infrastructure needs for AV operations, collaboration to provide seamless mobility across modes and jurisdictions, and mitigation of data-sharing, privacy, and cybersecurity issues/concerns.

Project Information

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This research project was conducted by Valley Metro, Waymo, and Arizona State University. For more information, contact FTA Project Manager Steven Mortensen at (202) 493-0459 or Steven.Mortensen@dot.gov. All research reports can be found at <https://www.transit.dot.gov/about/research-innovation>.