Institute of Transportation Studies
UNIVERSITY OF CALIFORNIA

Shared Automated Vehicles Could Greatly Benefit Visually Impaired Travelers if Designed and Operated with Their Needs in Mind

Peggy Wang, PATH, University of California, Berkeley

August 2025

Issue

Automated vehicles (AVs) are one of the most significant technological advances in transportation. The benefits of AV technologies could be maximized by increasing vehicle occupancy through pooling and ridesharing, integrating AV use with high-capacity transit systems (e.g., using AVs to complement existing transit), and promoting multimodality (e.g., connecting travelers to public transit). Additionally, shared automated vehicles (SAVs), in which ridesharing companies (similar as today's Uber or Lyft) offer driverless on-demand mobility services to customers, could enhance transportation access for visually impaired travelers who face unique challenges navigating current transportation systems including public transit and rideshare services. To this point, we interviewed 15 visually impaired individuals to understand their current transportation experience (e.g., what challenges they face and how they cope with these challenges); how SAVs might address their transportation needs and challenges; potential issues and solutions for using SAVs; how their travel behavior may change due to SAVs; and how much they would pay for SAV rides.

Key Research Findings

Visually impaired travelers experience similar challenges using public transit. Those interviewed for this research all mentioned similar challenges with public transit, including difficulty locating a bus stop, difficulty transferring between buses, and difficulty getting off at the correct stop. They also had trouble navigating and exiting subway stations, buses being late, using buses in bad weather, and safety concerns.

Rideshare services provide visually impaired travelers increased convenience and timesaving benefits, especially compared to public transportation, however, there are drawbacks. Visually impaired travelers identified several challenges with rideshare services, such as being denied service due to their guide dogs. Another significant challenge was pinpointing their exact location during pick up, identifying their designated vehicle, communicating their location to the driver, and needing to know how to get to their final destination from the drop-off location. Communicating with rideshare drivers, particularly with drivers who do not speak English well, was also a problem. Several female interviewees felt pressure to engage in forced conversations with the drivers.

SAVs could potentially address some of the concerns raised related to public transit and rideshare services. SAVs offer the potential for more safe and reliable service and greater flexibility to travel at different times of the day, along with the possibility of having greater control over the ride compared to traditional rideshare services. SAVs could also allow visually impaired travelers access to areas that might be difficult to reach with buses, or even rideshare

services. SAVs could avoid the problem of communicating with drivers, or who may cancel rides for no apparent reasons, or may not follow the recommended route because they do not like to drive on certain streets. SAVs could also reduce human interaction, which could be particularly appealing to those who wish to avoid uncomfortable conversations or who value their private time during their ride. Some of the individuals we interviewed were optimistic about the potential benefits for increased independence, convenience, and reliability, while others had concerns about accessibility, safety, and the cost of using SAVs.

Several design and operational features could make SAVs more accessible to visually impaired travelers. All interviewees emphasized the need for clear and accessible ways to locate the SAV upon pick-up, especially at busy locations, through audio cues (e.g., honking, unique sounds), or being able to give precise directions to the vehicle through the mobile app. Interviewees also desired confirmation that they were entering the correct vehicle, similar to using existing rideshare services. They also wanted to feel safe during the ride, with features like emergency buttons and a way to communicate with a remote human operator or the car itself in case of unexpected events or when they might require assistance. They also wanted accurate drop-offs at the correct location with verbal confirmation of the drop-off point, and detailed descriptions of the surroundings. A few wanted the ability to guide the vehicle to a precise drop-off location and clear instructions on how to reach their final destination from the drop-off point.

SAVs could improve mobility for visually impaired travelers, though cost is a key consideration. With access to SAVs, those interviewed said they would go out more often, travel more, and take spontaneous trips that they were currently unable to do due to lack of transportation. Most interviewees explicitly stated though that SAVs would have to be cheaper than current rideshare options like Uber and Lyft for them to use them regularly but given the cost few interviewees expressed any intention to reduce their use of public transit.

Conclusion

For SAVs to effectively serve visually impaired travelers they need to be accessible throughout the entire user journey, from pick-up to drop-off, and consider both the in-vehicle experience and the use of interfaces to communicate with the vehicle or a human agent in case of problems or emergencies. Ensuring that automated vehicles used for passenger service are accessible to all travelers, especially those with different abilities, will be important to SAV deployment.

More Information

This policy brief is drawn from the research report "Accessibility of Shared Automated Vehicles for Visually Impaired Travelers" available at https://escholarship.org/uc/item/58w5v9x1. For more information about the findings presented in this brief, please contact Peggy Wang at peggywang@berkeley.edu.

Research presented in this policy brief was made possible through funding received by the University of California Institute of Transportation Studies (UC ITS) from the State of California through the Public Transportation Account and the Road Repair and Accountability Act of 2017 (Senate Bill 1). The UC ITS is a network of faculty, research and administrative staff, and students dedicated to advancing the state of the art in transportation engineering, planning, and policy for the people of California. Established by the Legislature in 1947, the UC ITS has branches at UC Berkeley, UC Davis, UC Irvine, and UCLA.

Project ID UC-ITS-2023-26 | DOI: 10.7922/G2N29V9P