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ProspectSV

Valley Transportation Authority
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Gaps and Opportunities in Accessibility Policy for Autonomous Vehicles

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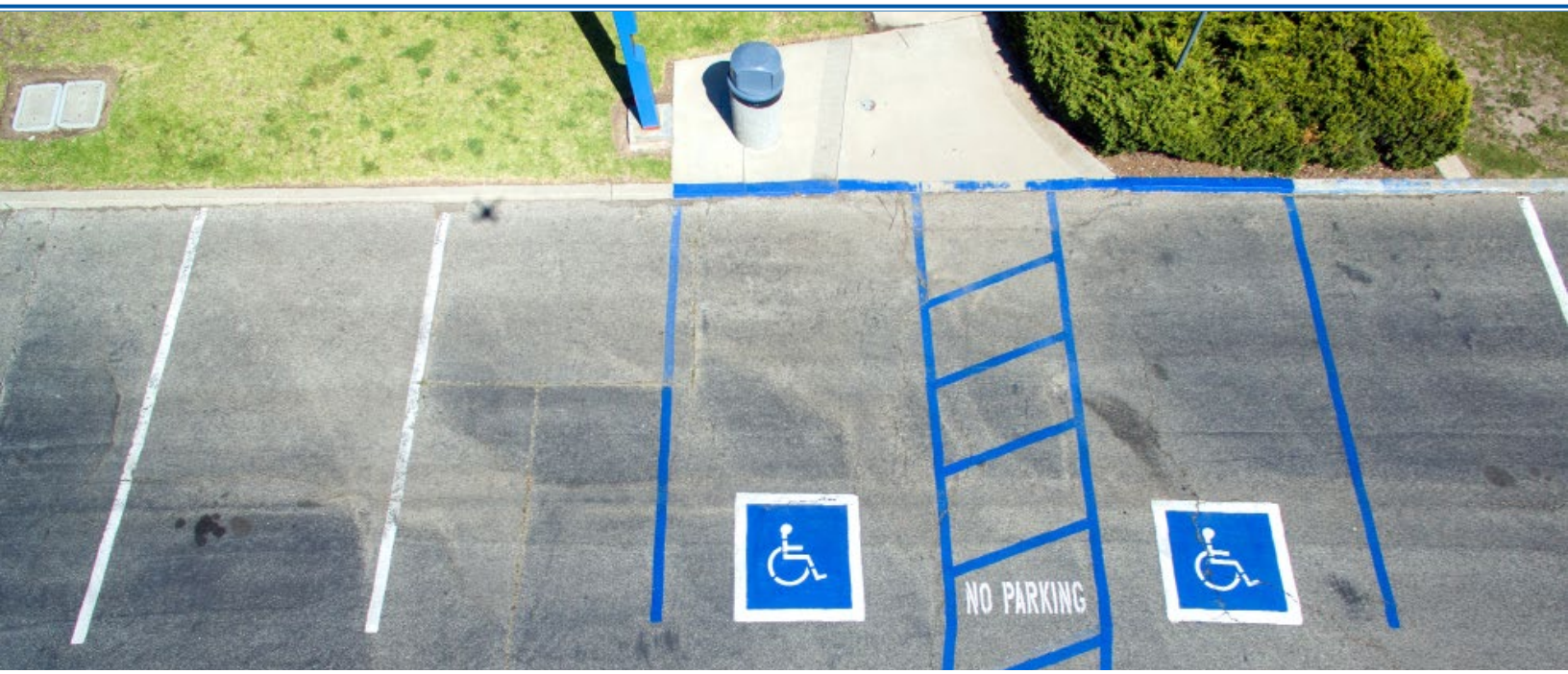


Nearly 1 in 5 people in the US have a disability, and people aged 18 to 64 with disabilities make 28% fewer trips per day (2.6 v. 3.6 trips) on average than people without disabilities. These statistics highlight the considerable suppressed demand for travel by the disabled individual that is currently not being met.

While autonomous vehicles are being built with the purpose of curbing people's need to operate the vehicles, lack of ability to drive is not the only barrier people with disabilities face while traveling. The simple acts of entering and getting out of the vehicle might pose difficulties for many disabled people, not just wheelchair users. This makes well-thought-out considerations for people with disabilities essential at the early stages of design and development.

This white paper documents ideas on how the AV technology as deployed by the Santa Clara VTA (Valley Transportation Authority) for AAV (Autonomous Accessible Vehicle) pilot demonstration project (and other similar deployments) may be made more responsive to the needs of the people with disabilities.

Study Methods

The work involved a two-step process. First, we evaluated numerous sources and developed a rigorous background of how the Americans with Disabilities Act (ADA) and relevant research could inform development and deployment of autonomous vehicles—particularly autonomous transit and paratransit. Building on this background, we develop a rating framework to evaluate how and to what extent vendors and technological frameworks (itemized as Case Studies), including VTA AAV, address accessibility requirements. The two-step process provided insights beyond an assessment of a specific project or technology and allowed for a detailed exploration of the gaps and opportunities for these advancing technologies.

Integrating access in AAV development now provides an opportunity to develop a transportation system that treats accessibility as a guiding principle, not as an afterthought.

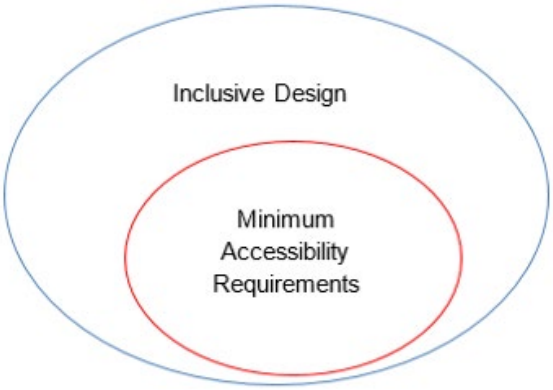
Findings

At full vehicle autonomy resulting in the absence of an onboard operator, tasks such as ingress-egress, securement of passengers and carry-on items, and the communications with passengers will need to be safe,

efficient, and independent. The biggest challenges in this area may be i) the need to handle these tasks for a wide range of disability types, most of them currently supported by the vehicle operator and ii) to put appropriate governance on data as individual information for those with cognitive and physical disabilities, which will be increasingly prevalent and subject to potential breaches of privacy.

AAVs may increase the service availability and quality of experience for passengers, with better service at stops and more significant onboard information available (or even possible) at present. To ensure that the disabled individuals are appropriately served at each trip-making stage identified in the AAV playbook, the design of transportation facilities, sidewalks, and street crossings are also essential to consider. Moreover, many vehicle innovations should be standardized around best practice (e.g. slope standards for wheelchairs and a universal standard to allow for the elimination of fare boxes from the vehicle/vehicle vestibule).

To expand the limited body of research in this area, we recommend two research approaches: i) A series of focus groups with persons with varying types of disabilities who experienced a ride on the AAV, and ii) Observing the individuals with disabilities using the AAV system in a naturalistic environment. These items will ensure that vehicles balance safety and accommodation and that regulators are most prepared so that they not only guide deployment that meets the intent of the ADA Accessibility Specifications, but deployment that potentially exceeds them.



Minimum accessibility requirements as a subset of inclusive design principles

Policy Recommendations

ADA standards can be used as one tool in addition to universal design principles and assistive technologies in order to maximize accessibility in future autonomous and automated vehicles. From a practical standpoint, opportunities exist for policy partnerships and collaborations between public and private entities / providers including:

- Enhancement of infrastructure (curb ramps, bus stops, etc.) for AAV travel, particularly for mobility-impaired riders.
- Coordination, collaboration, prioritization and sharing of established transit of more curb availability for accessible services (including, but not limited to, AAVs) that can create a greater density of established pick up and drop off locations, and more collaboration in using limited space in urban areas.
- Multimodal integration for AAV service, facilitated by digitization of transit trip data and transportation infrastructure.

About the Authors

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To Learn More

For more details about the study, download the full report at transweb.sjsu.edu/research/2106

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