



October 17, 2025

Michael “Rocket” Halem
Principal Deputy Assistant Secretary and
Acting Assistant Secretary for Research and Technology
US Department of Transportation
1200 New Jersey Avenue, SE
Washington, DC 20590

Re: Response to U.S. DOT OST-R Request for Information: Research Ideas to Support
Nationwide Automated Vehicle Deployment

Dear Assistant Secretary Halem,

The United Spinal Association is pleased to respond to the Request for Information: Research Ideas to Support Nationwide Automated Vehicle Deployment. For the nation’s 5.5 million wheelchair users, autonomous vehicles will be a game-changer, not only in meeting daily transportation needs but in vastly improving quality of lives. That includes fulfilling employment or education needs, healthcare and fitness needs but also civic and recreational opportunities. It will enrich families and social activities.

United Spinal has almost 70,000 members, 38 chapters, 107 support groups, and over 120 rehabilitation facilities and hospital partners nationwide. Founded by paralyzed veterans in 1946, we are dedicated to enhancing the quality of life of all people living with spinal cord injuries and disorders (SCI/D), paralysis, neurological conditions and other mobility disabilities, including veterans, and providing support and information to loved ones, care providers and professionals. We also work collaboratively with Spinal Cord Injury Model (SCI) System Centers and the Model Systems Knowledge Translation Center that provide innovative research and support in the field of SCI, traumatic brain and burn injuries.

- 1. (c) What additional research is needed to improve understanding of operational needs related to automated fleet operations (including both commercial motor vehicles and non-CMV fleets such as ride hailing), e.g. transcontinental automated truck trips, including fueling, inspection, emergency maintenance and other services. What interoperable digital data would be valuable in supporting these services for automated fleets?**

United Spinal, along with many other disability organizations, especially those that represent wheelchair users, continue to be concerned that purpose-built wheelchair accessible autonomous vehicles are not even on the drawing boards of major companies in the autonomous vehicle (AV) space. Nevertheless, research is desperately needed to assess and evaluate the impact wheelchair accessible vehicles will have on the operational needs of automated fleet operations.

Considerations must be made for the safe boarding and departure from an AV, the safe securement of wheelchairs and wheelchair users.¹ The amount of time consumed in both these processes must be researched and kept to a safe minimum. Likewise, a wheelchair's footprint is much larger than a typical pedestrian passenger so research on adequately sized pick up and drop off (PUDO) zones is essential to ease the impact on fleet operations across passenger AV fleets.

2. (d) What are the near-term infrastructure-related data needs for deployment of AVs, including roadway operations, maintenance, and planning? Which data needs require standardized information exchange, and how should this occur?

As referenced above, a national inventory of potential PUDO zones for wheelchairs users must be developed in the near term to assist localities in planning to develop a sufficient number of such PUDO zones to effectively and efficiently serve wheelchair users' transportation needs. As with other accessibility accommodations, these zones will also become favorites of other AV passengers.

Primarily because of the enhanced safety, but also because of added convenience, these zones will also require research in order for them to handle the large number of passengers that will prefer to use the enhanced zones, as well as accommodate the larger footprint of wheelchair users. As one research survey concluded, "Designing the PUDO zones and vehicles to be accessible for the mobility-challenged population will provide an advantage to any ride service or personal vehicle as many of these components are also relevant to the aging population as well as individuals with other disabilities."²

Given the myriad of local emergency responders, without question, emergency stops and other vehicle emergencies must be addressed with uniformed protocols for passenger, traffic and pedestrian safety. This is especially true for wheelchair users and others with disabilities. Extensive research will be needed to address each of these vulnerable communities.

And as has been pointed out, AV technology is constantly changing, presumably evolving with a growing capacity to optimally respond to on-road emergencies of all types. Further, the Texas A&M Transportation Institute's recent evaluation of first responders needs found that, "First responders favor standardized, certified AV training and procedures over company-specific approaches."³ However, public and private resources would generate efficiencies through information sharing. Research to find the optimal public-private partnership to create such an information flow is needed.

The Institute's Texas First Responders Guide for Interactions with Automated Vehicles provides significant guidance to first responders, but researchers there understand more information can

¹ For a discussion on ramp and vehicle designs, see: <https://www.access-board.gov/files/usab-av-forum-summary-report.pdf>

² See: <https://www.maxapress.com/data/article/dts/preview/pdf/dts-0025-0012.pdf> p.168.

³ See: <https://library.ctr.utexas.edu/hostedpdfs/tti/0-7199-psr.pdf>

and should be incorporated into the Guide.⁴ For example, information on various disabilities would inform first responders about how they can more safely address our medical and or mobility needs, particularly if we need to be extricated from our wheelchairs in an autonomous vehicle.⁵ We are happy to work with the Institute on this project, but this also clearly points to a national need for similar information. We would welcome working with the Department and the Institute to better serve our community.

3. (c) What research is needed to optimize human-machine interfaces for diverse user groups, including emergency responders, pedestrians, cyclists, other human drivers and passengers, to enhance safety, accessibility, and trust in mixed traffic environments?

For millions of wheelchair users, transportation isn't a simple choice—it is a daily challenge. Outdated and inconsistent securement systems lead to preventable injuries, limit travel, and isolate wheelchair users. It is time to move beyond the manual, four-strap system and embrace a modern solution for a modern world.

The current standard, a cumbersome four-strap tie-down system, is not a solution built for independence. This method requires a driver or caregiver to manually secure the wheelchair by reaching behind and underneath it, a physically demanding process that is impossible for a wheelchair user to perform alone. The system is time-consuming, requires extensive training to be done correctly, and is frequently administered improperly, putting lives at risk.

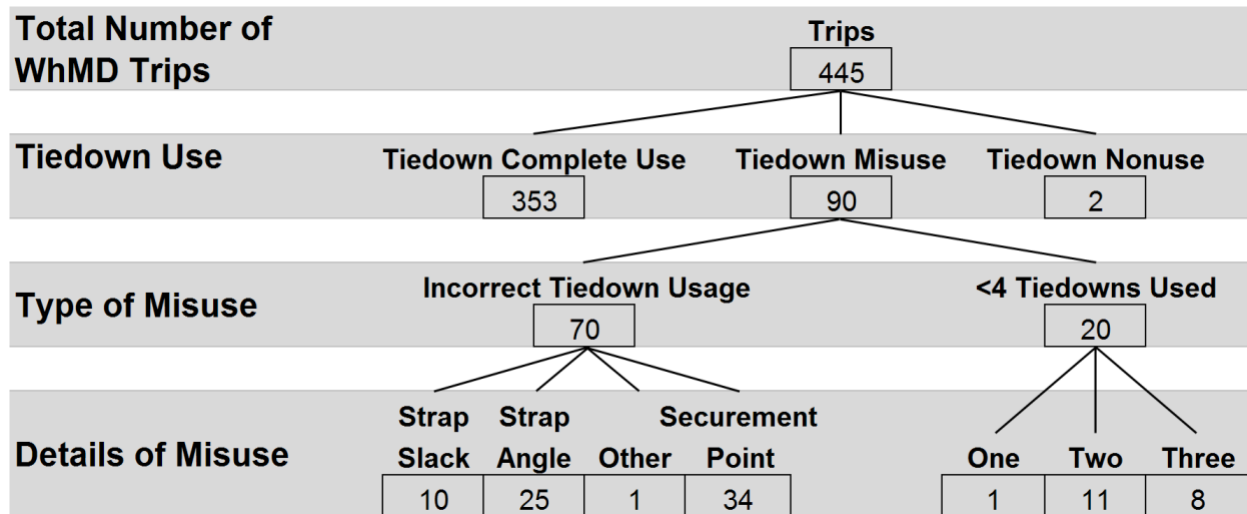
One survey found that, “The use of all four tie downs was observed during the majority of trips (n = 353, 75%). Tie down nonuse was observed in only two trips. Misuse was observed during 90 trips (19%) and is detailed in Fig 3. Among WhMDs [wheeled mobility devices = wheelchairs and scooters] having elevated footrests (n = 76), incorrect placement of front tiedowns on the casters or footrest bar was observed in 7% of cases. Tie down usage could not be classified for 30 trips (6%) in which obstructions prevented observation of tie down usage and/or securement locations on the WhMD.

⁴ See:

<https://library.ctr.utexas.edu/Presto/content/Detail.aspx?ctID=OWE3NjYzNTktYzJmNC00ZTAwLTNmMjltYzhmNzNiYTFmNzdhd&rID=MzgwMTc=&qrs=RmFsc2U=&ph=VHJ1ZQ==&rrtc=VHJ1ZQ==>

⁵ Ibid. pp. 18-19.

Figure 3.



While some advanced docking systems exist, they often only work for a single, specific wheelchair in a single, dedicated vehicle. These proprietary solutions are not standardized, meaning a wheelchair user with such a system in their personal car cannot use it in a ride share, on public transit, or in a different vehicle without a costly and inconvenient modification. This lack of interoperability severely limits travel options and prevents true, independent freedom.

The SecureRide Coalition⁶ is advocating for a universal docking system standard that would create a new era of independent travel. This solution is simple yet transformative: it would establish a standardized interface on all wheelchairs—a single, universal docking point. This universal design would allow a wheelchair to be used seamlessly across a variety of transportation modes, from buses and trains to ride shares and planes. Once inside a vehicle, the wheelchair user would simply align with a docking station—a process they can perform completely on their own—and the system would lock into place, providing a secure and reliable ride without the need for assistance from a driver or caregiver. This system would not only align with the safety standards of the Rehabilitation Engineering and Assistive Technology Society of North America (RESNA)⁷ WC19, but would also eliminate the hassle and risk associated with outdated securement methods, making spontaneous, independent travel a reality.

To date, testing and development of the Universal Docking Interface Geometry (UDIG)⁸ wheelchair securement standard has generally been limited to wheelchair users backing into a fixed anchor in order to automatically and safely secure their wheelchairs in a motor vehicle. To expand the use of UDIG in vehicles in which a wheelchair user would need to secure their

⁶See: <https://unitedspinal.org/secureride/>

⁷ See: <https://www.resna.org>

⁸ See: <https://wc-transportation-safety.umtri.umich.edu/udig-universal-docking-interface-geometry/#:~:text=On%20wheelchairs%2C%20UDIG%20specifies%20the,who%20are%20experienced%20wheelchair%20users.>

wheelchairs by moving forward, the anchor would need to be deployed from the vehicle floor or from a side (lateral) position. This would provide safer automated securement in side and rear-entry wheelchair accessible vans and would enable wheelchair users to employ UDIG in driving their personal wheelchair accessible vehicles.

Research Request: The Department of Transportation should conduct research to test and develop a deployable anchor to safely secure wheelchairs within a motor vehicle utilizing an automated wheelchair securement system within a universal docking interface geometry standard.


4. Evidence Based Evaluation: (a) What research is needed to support safe, transparent, and equitable nationwide evidence-based evaluation of AV operational impacts on the transportation system?

As discussed above, the disability community transportation needs, especially those individuals using wheelchairs and scooters must be addressed and included in future research. To this end, we would request a meeting with the disability community to discuss research needs with you. As a member of the Consortium for Constituents with Disability Transportation, we would specifically like to discuss the need for research related to the AV Accessibility Principles⁹ the Task Force has compiled. As an overview of the current accessibility issues with AV, the National Council on Disability (“NCD”), Ground Transportation for People with Mobility Disabilities 2025¹⁰ offers significant insight.

United Spinal appreciates the accelerated attention AVs are receiving from the current Administration as well as President Trump’s first administration. We are enthusiastic about the Department of Transportation’s focus on advancing AVs that accommodate people with disabilities, especially wheelchair users,¹¹ but more can and must be done to keep pace with the deployment of AVs that everyone else can use and benefit from that promising transportation option.

If we can provide additional information, please contact Kent Keyser, Public Policy Fellow, at: Kkeyser@unitedspinal.org, phone: 703-379-6381. United Spinal’s local address is: 1660 L Street, NW Suite 504, Washington, D. C. 20036.

Sincerely,



Stephen Lieberman

Senior Director, Advocacy & Policy

⁹ See: <https://www.c-c-d.org/fichiers/CCD-Transp-TF-TI-AV-Hearing-Letter-021722.pdf>

¹⁰ See: <https://www.ncd.gov/assets/uploads/reports/2025/ncd-ground-transportation-mobility-disabilities-2025.pdf>

¹¹ See: https://www.nhtsa.gov/sites/nhtsa.gov/files/2022-12/Report-to-Congress-Research-on-the-Accessibility-of-Automated-Vehicles-tag_0.pdf