



September 24, 2025

[Mr. Shaz Umer](#)

Director, Strategic Initiatives

Office of the Assistant Secretary for Research and Technology

Response to U.S. Department of Transportation Request for Information—Research Ideas to Support Nationwide Automated Vehicle (AV) Deployment [Docket No. DOT-OST-2025-1029]

Submitted by: The American Association of Motor Vehicle Administrators (AAMVA)

Dear Director Umer:

The American Association of Motor Vehicle Administrators (AAMVA) appreciates the opportunity to provide input to the U.S. Department of Transportation's Office of the Assistant Secretary for Research and Technology (OST-R) on research priorities to support nationwide Automated Vehicle (AV) deployment. AAMVA offers the following research recommendations based on almost a century of documented experience dealing with the administrative and regulatory requirements associated with managing state vehicle fleets.

These recommendations are largely guided by AAMVA's voluntary and bipartisan state membership who have collectively developed AAMVA's ["Guidelines for Regulating Vehicles with Automated Driving Systems \(Edition 4\)."](#) AAMVA additionally draws on previous comments submitted to federal agencies regarding automated vehicle policy, testing frameworks, and deployment considerations. Our recommendations emphasize the critical importance of state-federal coordination, communication of essential vehicle performance characteristics, standardized data frameworks, and operational design domain (ODD) clarity to ensure successful nationwide AV deployment.

A. Respondent Information

Name of Responding Entity: The American Association of Motor Vehicle Administrators (AAMVA)

Contact Information: Cian Cashin, Vice President, Government Affairs, 4250 Fairfax Drive, Suite 1000, Arlington, VA 22203. 571-435-2937. ccashin@aamva.org.

C. Research Planning Input

1. Data Standards and Integration

Research Priority: Comprehensive Federal-State Data Coordination Framework

Based on AAMVA's extensive experience with motor vehicle data systems and our previous comments on federal automated vehicle policy, we recommend research to develop a unified data framework that eliminates redundancies between federal and state data collection requirements. Our past comments have consistently emphasized the need for standardized data reporting to prevent jurisdictions from implementing disparate requirements that create compliance burdens and data inconsistencies.

(a) Statistical Methodologies for AV Performance Benchmarking

Research Recommendation: Develop standardized metrics that account for the unique operational characteristics of ADS-equipped vehicles while providing meaningful comparison baselines with human-driven vehicle performance.

Key research areas should include:

- Development of a baseline safety equivalency formula or threshold to compare ADS systems against human drivers.
- A consistently applied testing process to ensure safety thresholds are being met.
- A clear process for designation and application of true vehicle capabilities by the appropriate federal agency (preferably NHTSA).
 - This primary designation should be unalterable with very clear and established process for consideration of over-the-air updates.
- Development of confidence intervals that account for varying Operational Design Domain (ODD) parameters.
- Definition of identifying standards for differing ODD limitations and uniform communication of those limitations to safety stakeholders (state and local).
- Statistical methods that differentiate between ADS disengagements due to system limitations versus external factors (weather, construction, pedestrian behavior).
- How to capture, by data, any cause of disengagement or operational defect.
- Negative control event analysis to identify when ADS performance exceeds human driver capabilities.
- Methodology for establishing appropriate human driver baselines across different geographic regions, traffic densities, and road types.

AAMVA has previously noted the importance of collecting "positive outcomes" data in addition to incident reporting. Research should focus on metrics that capture safety improvements attributable to ADS operation.

(b) Open Data Protocols and Publication Methods

Research Recommendation: Establish standardized data publication protocols that serve multiple stakeholder needs while protecting proprietary information.

Building on AAMVA's emphasis on data sharing between federal and state agencies, research should address:

- Real-time data feeds communicating vehicle performance capabilities and limitations for state and local vehicle fleet safety officials and law enforcement agencies.
- Standardized cross-sector communication protocols.
- How to capture, by data, any cause of disengagement or operational defect.
- Privacy-preserving data aggregation methods for (potential) public transparency
 - AAMVA notes that the primary data use case should be safety, so if there are proprietary reservations, the essential communication of safety data should be prioritized.
- Consideration of integration with existing state motor vehicle information systems.

AAMVA recommends that this research specifically addresses how data can be made accessible to state motor vehicle agencies – with the hope of leveraging existing data structures and reporting requirements.

(c) Automated Fleet Operations Research

Research Recommendation: Develop comprehensive understanding of operational needs for commercial AV fleets, particularly addressing interstate commerce and jurisdictional coordination.

Research priorities should include:

- Standardized data exchange for cross-border AV operations leveraging existent system data protocols for those exchanges.
- Interoperable digital infrastructure for fleet inspection, maintenance, and emergency response.

- In terms of fleet inspection, consideration of how any federal program interacts with the [CVSA Inspection Program](#) for Autonomous Truck Motor Carriers.
- Remote operators and their impact on legal and safety issues to include:
 - Jurisdictional primacy of legal implications in the event an operator is not physically located in the jurisdiction where an event like a crash takes place.
 - The safety and credential (CDL) requirements of a remote operator.
 - Accountability aspects, including contact name for specific individuals, for remote operation.
 - Limitations on the number of vehicles managed by a single operator.
 - Direct ability to contact a human remote operator at all times.
- Protocols for law enforcement interaction with driverless commercial vehicles
 - To include a detailed first responder interaction plan.
- Data standards for tracking AV fleet compliance across multiple state jurisdictions.
- How to capture, by data, any cause of disengagement or operational defect.

This research should build upon AAMVA's Guidelines for commercial motor vehicle oversight and our previously submitted [comments](#) on FMCSA regulations for ADS-equipped CMVs.

(d) Infrastructure Data Needs for AV Deployment

Research Recommendation: Identify critical infrastructure data requirements and establish standardized information exchange protocols between state DOTs, motor vehicle agencies, and AV operators.

Key research areas:

- Standardized road condition and construction data formats compatible with AV systems.
- Infrastructure status communication protocols.
- Integration of reporting data, both internal and external to the vehicle, with AV operational and oversight systems.
- Standardized methods for communicating temporary road restrictions and detours.
- Ability for infrastructure to capture, by data, any cause of disengagement or operational defect.

2. Edge Case Characteristics Identification

(a) Longitudinal AV Impact Tracking

Research Recommendation: Develop methodologies for tracking AV operational impacts across varied roadway environments with emphasis on jurisdictional coordination and data standardization.

AAMVA's Guidelines emphasize the importance of understanding AV performance across different ODDs. Research should focus on:

- Standardized data collection methods for comparing AV performance across similar road segments in different jurisdictions.
- Longitudinal tracking systems that account for infrastructure improvements and changes in ODD parameters.
- Methods for correlating AV performance data with traffic safety outcomes.
- Statistical approaches for identifying emerging patterns in AV-infrastructure interactions.
- Sharing of data that could impact nationwide ODD designations or operations, including security events, critical freight routing as a result of natural disasters, and for extreme weather events.

3. Supervision Dynamics and Human Interaction

(a) Standardized Processes for Transportation Planning

Research Recommendation: Establish research frameworks that support long-term transportation planning while incentivizing AV operator transparency.

Research priorities based on AAMVA's experience:

- Sampling strategies that provide representative data across urban, suburban, and rural ODDs.
- Methods for standardizing the definitions for specific vehicle capabilities.
- Methods for standardizing ODD definitions across jurisdictions.
- Protocols for sharing operational data between AV manufacturers and state transportation agencies.
- Frameworks for integrating AV deployment planning with traditional transportation planning processes.
- How to capture, by data, any cause of disengagement or operational defect.

(b) Data Integrity and Evidence Act Compliance

Research Recommendation: Research advanced data management architectures that ensure legal admissibility and long-term preservation of AV operational data for safety evaluations and policy development. Ensure law enforcement and state access to safety critical data throughout the vehicle lifecycle but especially in the event of a crash.

Building on AAMVA's emphasis on law enforcement interaction and crash investigation protocols, research should address:

- Data access protocols for law enforcement and state and local public safety agencies.
- Record retention requirements and the need for investigatory analysis of specific data elements.
- Transparency of AV operational data.
- Chain of custody protocols and accountability for data used in crash investigations and legal proceedings.
- Technical considerations for ensuring data authenticity across in-vehicle systems, edge servers, and central repositories.
- Write-once/read-many storage techniques for tamper-proof regulatory compliance data.
- How to capture, by data, any cause of disengagement or operational defect.

(c) Human-Machine Interface Optimization

Research Recommendation: Develop comprehensive understanding of HMI requirements for diverse user groups, with particular emphasis on law enforcement and first responder interactions.

Research priorities should include:

- Standardized communication protocols between AV systems and law enforcement.
- Consideration of universal placement or advisements on where to access data or communication terminals.
- Accessibility requirements for diverse passenger populations.
- Emergency response protocols for ADS-dedicated vehicles to include a detailed first-responder interaction plan.
- Provision of training and resources for law enforcement interaction with AV systems.

[AAMVA's Guidelines](#) include extensive recommendations for Law Enforcement Interaction Plans (LEIP) and Law Enforcement Protocols (LEP). This research should build upon these frameworks to establish standardized approaches nationwide.

4. Evidence-Based Evaluation

(a) Safe, Transparent, and Equitable Evaluation Framework

Research Recommendation: Develop comprehensive evaluation methodologies that support transparent assessment of AV operational impacts while ensuring equitable access to AV benefits across different communities and geographic regions.

Research should address:

- Standardized metrics for evaluating AV safety performance across different operational environments.
- Transparent reporting frameworks that emphasize specific public accountability.
- Required frequency and standardization of reporting safety metrics.
- Retention requirements of safety data to build a safety profile of the vehicle.
- Evaluation protocols that can be applied independently but cover the same consistent safety equivalencies as determined by USDOT.
- How to capture, by data, any cause of disengagement or operational defect.

5. Transparency and Building Public Understanding

(a) Data Standards for Public Research Hubs

Research Recommendation: Establish standardized data formats and APIs that enable consistent edge-case mapping and support integration with existing DOT data hubs.

Key research areas:

- Integration standards for AV operational data and emphasized safety data reporting available to the public.
- Standardized formats for post-disengagement data reporting.
- How to capture, by data, any cause of disengagement or operational defect.
- Required reporting of crash and event data.
 - Transparency of this data in a publicly available format.
- Data standards that enable consistent nationwide mapping of AV operational challenges.
- Sharing of cyber-event data that may impact AV operations.

(b) Statistical Methods for Anomalous Behavior Detection

Research Recommendation: Develop statistical approaches for identifying and analyzing rare-event factors and emerging anomalous behaviors in AV operations.

Research should focus on:

- Early warning systems for detecting emerging AV operational issues.
- Statistical methods for differentiating between acceptable operational variations and concerning anomalies.
- Approaches for sharing anomalous behavior data across jurisdictions at all levels of government.
- Integration of anomalous behavior detection with existing traffic safety monitoring systems.
- Ability to share detected anomalous behavior in real time with law enforcement and public safety officials.

- Ability to share detected anomalous behavior in real time with occupants, operators, or owners.
- How to capture, by data, any cause of disengagement or operational defect.

(c) Nationwide Mapping Requirements

Research Recommendation: Establish comprehensive mapping standards that support AV operations while addressing cost-effectiveness and data accessibility concerns.

Research priorities:

- Mapping requirements that account for different AV operational needs and the unique needs of passenger vehicles vs. commercial vehicles.
- Mapping considerations relevant to specific weight and structure limitations.
- Standardized data references that ensure consistency across jurisdictions.
- Data distribution methods that balance accessibility with infrastructure costs.

AAMVA's recommendations for USDOT research priorities are grounded in five key principles:

1. **Coordination Between Federal and State Authorities:** Research should address how to communicate and standardize data collection requirements across jurisdictions.
2. **Standardized ODD Definitions:** Clear, standardized operational design domain parameters are essential for effective regulation and public understanding.
3. **Law Enforcement and First Responder Preparedness:** Research must address the practical needs of law enforcement and first responders who will interact with AV systems.
4. **Data Standardization and Accessibility:** Comprehensive data frameworks should serve multiple stakeholder needs and be both accessible and available to all safety stakeholders in as near to real time as possible.
5. **Data Consistency:** Research should support development of consistent data approaches that respect state authority while facilitating interstate commerce and AV deployment.

AAMVA appreciates the opportunity to provide feedback on this critical research. Where applicable, we again encourage USDOT to reference AAMVA's comprehensive [Guidelines for Regulating Vehicles with Automated Driving Systems \(Edition 4\)](#) and our [previous comments](#) to federal agencies as foundational documents for this research agenda. The safe deployment and appropriate research considerations will play a critical role in getting life-saving technologies onto the nation's roadways. AAMVA remains committed to supporting safe, coordinated, and effective deployment of automated vehicle technologies across all jurisdictions.