COMMONWEALTH of VIRGINIA

AUTONOMOUS DRIVING WORK GROUP

Nicholas Donohue
Secretary of Transportation

1221 East Broad Street
Richmond, Virginia 23219

(804) 786-8032

Autonomous Driving Workgroup

2025 Va. Acts ch. 498 (HB2627)

April 24, 2026 Meeting

Location:
VDOT Lockwood Auditorium
9120 Lockwood Blvd, Mechanicsville, VA 23116

Agenda

1:00 – 1:05 pm	Welcome / Opening Remarks *(Office of the Secretary of Transportation)*
1:05 – 1:10 pm	2026 Legislative Session Summary *(VDOT – Joshua Heslinga)*
1:10 – 1:15 pm	Work Group Organizational Update *(VDOT – Joshua Heslinga)*
1:15 – 1:40 pm	Summary of Areas of Interest from Legislative Review *(VTTI – Tammy Trimble)*
1:40 – 2:25 pm	Work Group Issues and Goals / What's Needed for 2027 Session *(discussion)*
2:25 – 2:50 pm	Data and Safety Presentation *(VTRC – Noah Goodall)*
2:50 – 3 pm	Public Comment *(in-person only, sign up at the meeting)*

Notes:

- Meeting information is posted on the Commonwealth Calendar and LIS.
- Will be livestreamed on YouTube.com/@VDOTLIVE
- Written comments may be submitted and viewed at https://publicinput.com/autonomousdriving


VDOT
Virginia Department of Transportation

2026 LEGISLATIVE SESSION SUMMARY

Autonomous Vehicles / Autonomous Driving

Joshua Heslinga
Director, Governance & Legislative Affairs

April 24, 2026

Substantial legislative debate

Several bills (or versions) were introduced:

- SB670 (Sen. Salim) & HB1125 (Del. Reid)
  - To establish a general legal framework in Virginia for commercial operations of autonomous vehicles, transporting passengers or property
- HB582 (Del. Glass) & SB320 (Sen. Srinivasan)
  - To create a VDOT pilot program for use of autonomous truck-mounted attenuators (ATMAs) in work zones
- HB1124 (Del. Clark)
  - Initially about general framework, then focusing on labor & workforce

Many stakeholders lobbied and testified.

Legislative results

- **General framework bills continued to 2027**
- **ATMAs pilot program enacted**
- **Work group scope expanded to include labor / workforce:**
  - conduct an assessment of the labor / workforce impacts created by autonomous vehicles, including an overview of job losses and gains;
  - identify and include stakeholders and representatives from the auto manufacturing industry and labor representatives from the passenger and product carrier business; and
  - report by November 1, 2026.

ORGANIZATIONAL UPDATE

Autonomous Driving Work Group

Joshua Heslinga
Director, Governance & Legislative Affairs

April 24, 2026

Work Group's Charge (2025 Va. Acts ch. 498)

- "identify operational, technical, and legal issues presented by the operation of autonomous driving systems in the Commonwealth for the purpose of developing draft legislation addressing governance of such systems"
- "examine and take into consideration developments in the regulation of autonomous driving systems at the federal level and in other states, as well as recommendations by the American Association of Motor Vehicle Administrators and the American Association of State Highway and Transportation Officials relating to such systems"
- Complete meetings by September 1, 2026
- Report by November 1, 2026

2026 Plans

- **Monthly public meetings of the work group through August**
- **Organizing for added focus on labor & workforce**
- **Stakeholder engagement and input welcome, on an ongoing basis**
  - Stakeholders who are not yet known: please reach out so we can include you!
- **Lots to do, many stakeholders, and limited time**
  - Inclusion and practical considerations weigh against naming members of the workgroup


VDOT
Virginia Department of Transportation

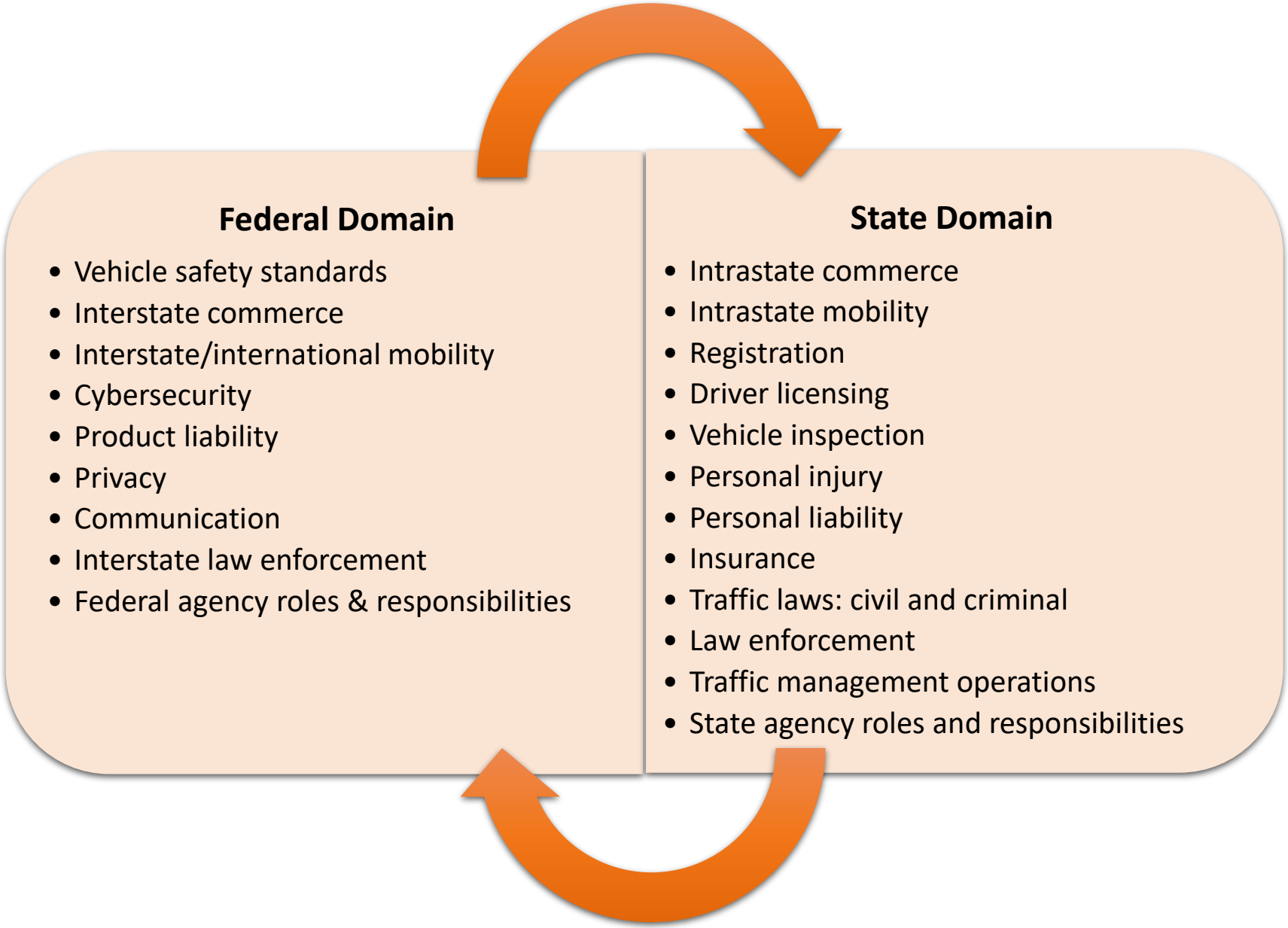
VIRGINIA TECH TRANSPORTATION INSTITUTE

Summaries of Areas of Interest from Automated Vehicle Legislative and Regulatory Landscape Review

Tammy Trimble, Ph.D., Research Scientist

April 24, 2026

Interplay Between Federal and State Domains for Automated Vehicles (AVs)



Federal Domain

- Vehicle safety standards
- Interstate commerce
- Interstate/international mobility
- Cybersecurity
- Product liability
- Privacy
- Communication
- Interstate law enforcement
- Federal agency roles & responsibilities

State Domain

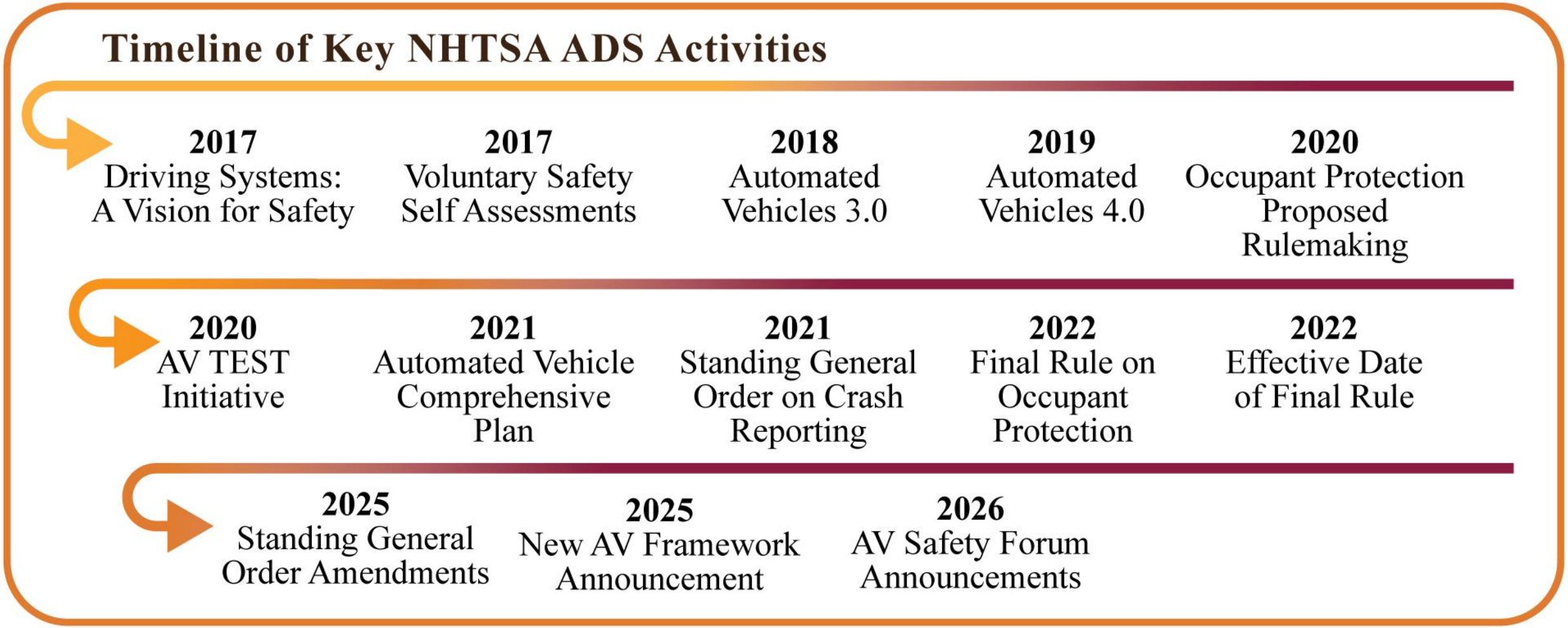
- Intrastate commerce
- Intrastate mobility
- Registration
- Driver licensing
- Vehicle inspection
- Personal injury
- Personal liability
- Insurance
- Traffic laws: civil and criminal
- Law enforcement
- Traffic management operations
- State agency roles and responsibilities

Municipal Domain

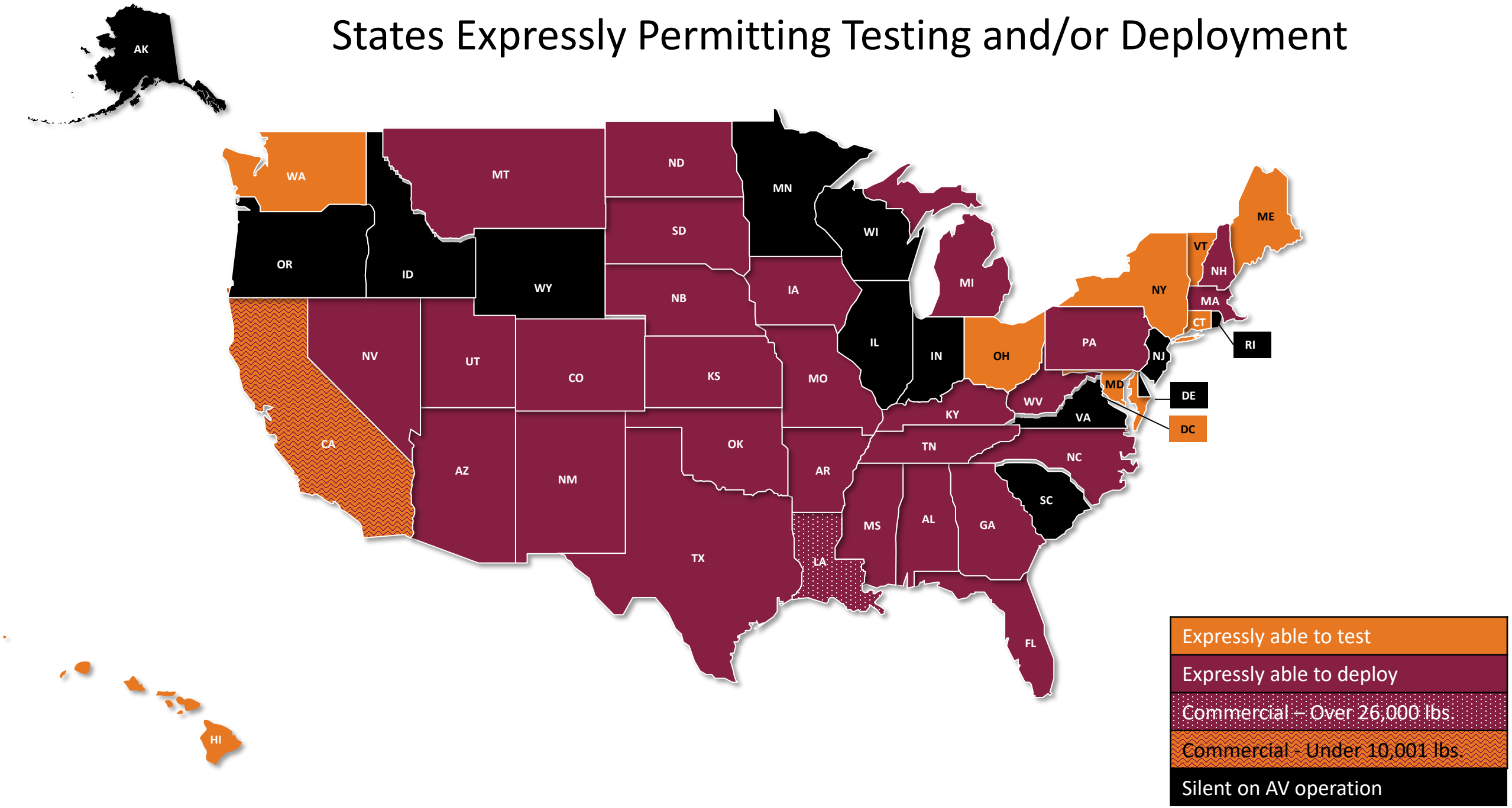
- Curb management
- Digital infrastructure and digital twins
- Infrastructure
- Operations permitting

Adapted from Buckley, 2026 and Loftus-Otway & Gallun, 2024

Federal Landscape



States Expressly Permitting Testing and/or Deployment



Governor Terry McAuliffe | Building a *New* Virginia Economy

About The Governor ▾ | The Administration ▾ | Constituent Services ▾ | Policy Priorities ▾ | Newsroom ▾ | Executive Actions

Home > Newsroom > Proclamations > Proclamation > Support for Virginia Tech Transportation Institute and Automated and Autonomous Vehicles

Support for Virginia Tech Transportation Institute and Automated and Autonomous Vehicles

Archive

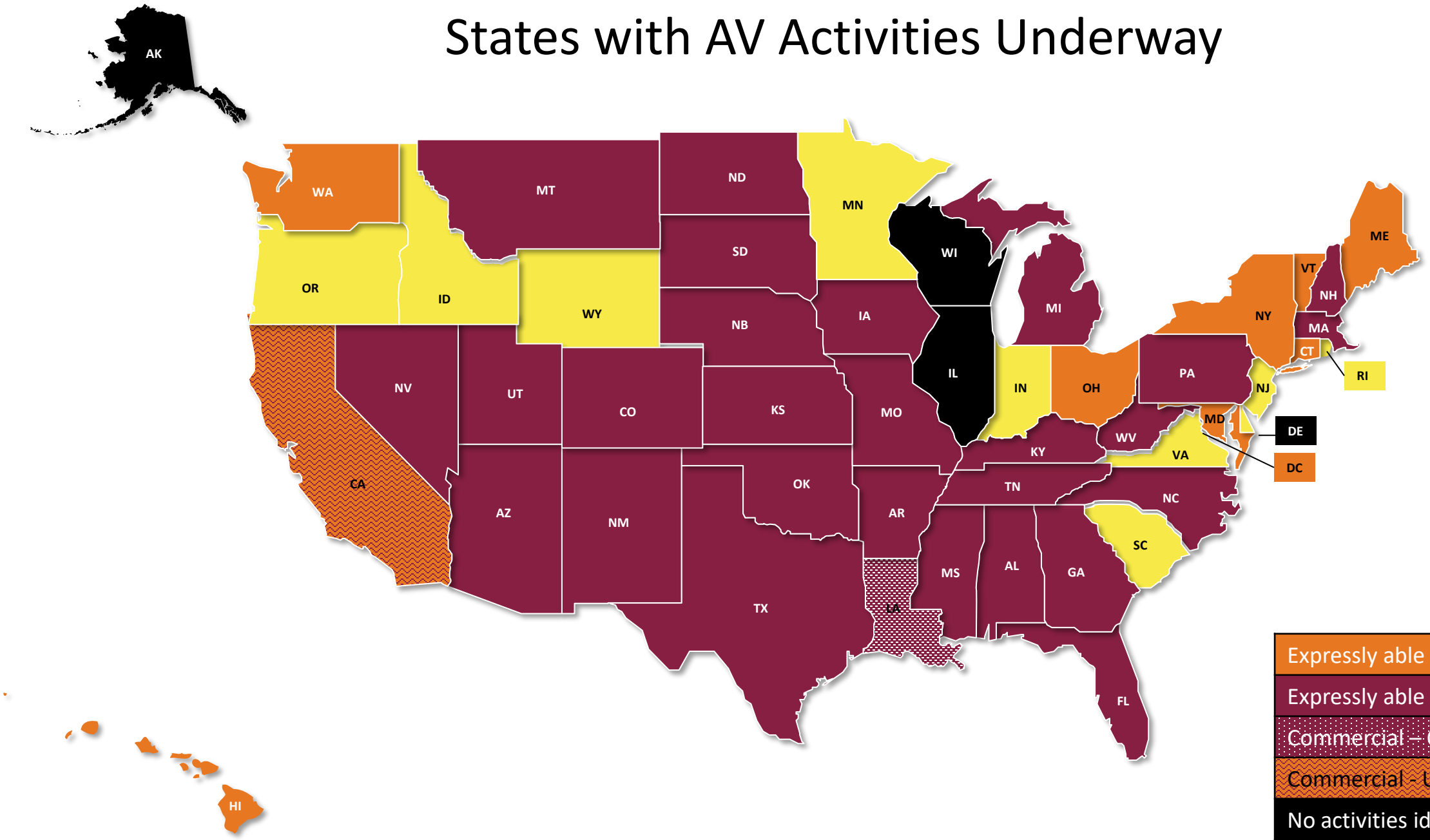
2015

NOW, THEREFORE, I, Terence R. McAuliffe, do hereby declare that the **COMMONWEALTH OF VIRGINIA** supports the mission of the Virginia Tech Transportation Institute Center for Automated Vehicle Systems and its self-driving on-road studies, and is open for business for the vehicle and technology manufacturers and researchers committed to the development, testing and deployment of automated and autonomous vehicles, and I call this observance to the attention of all our citizens.

Virginia Automated Corridors

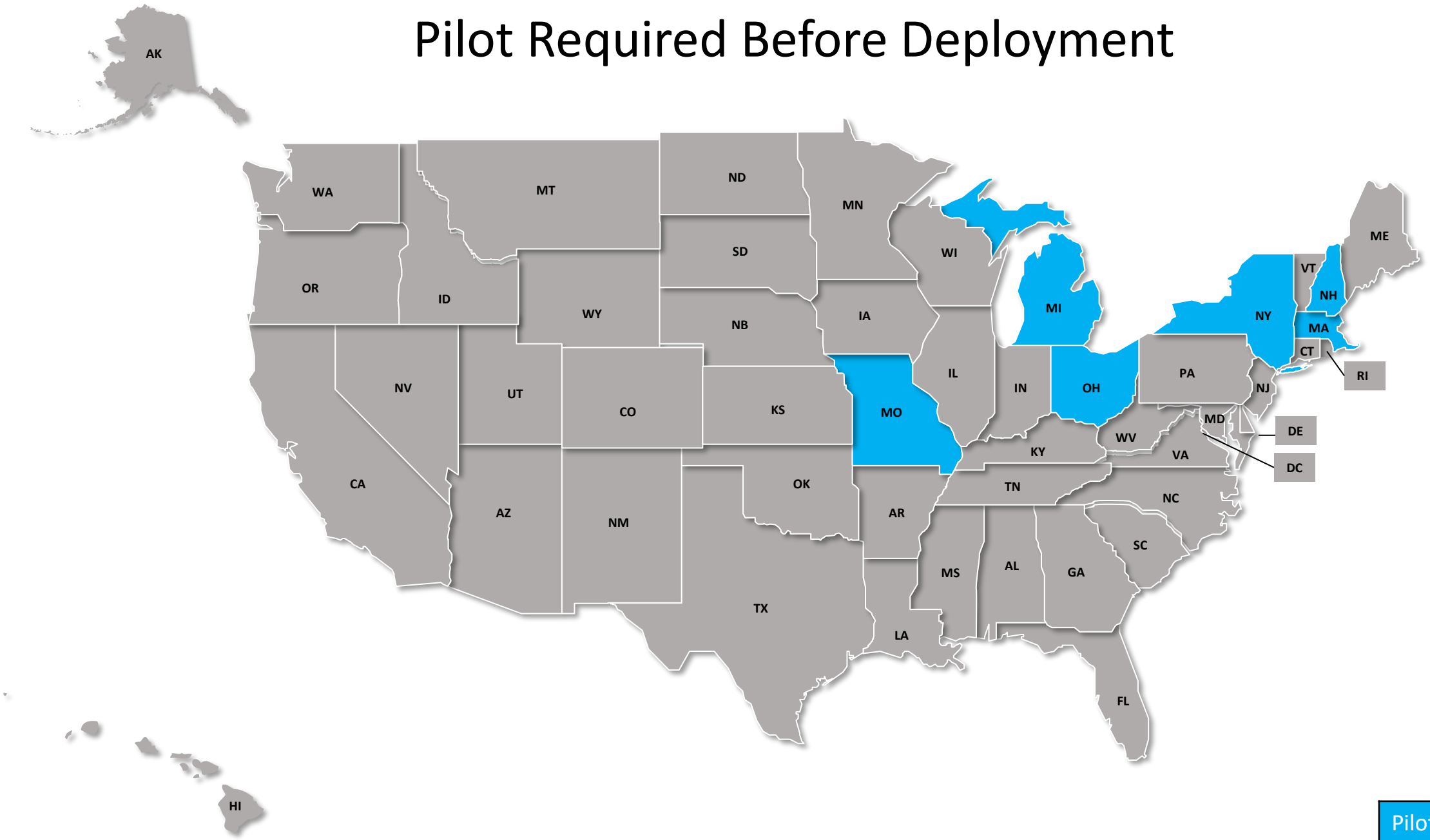
Virginia Connected Corridors

States with AV Activities Underway

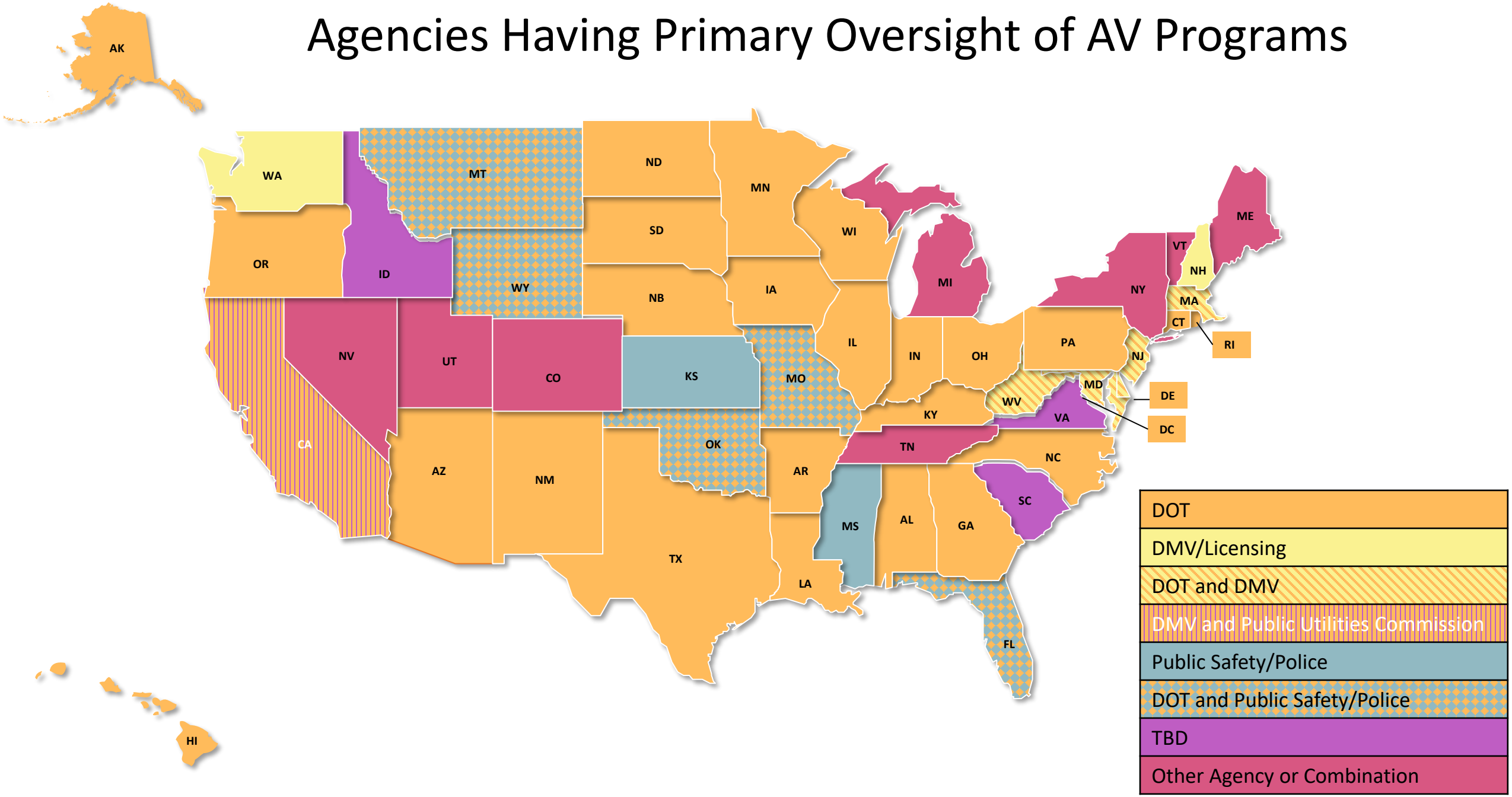


- Expressly able to test
- Expressly able to deploy
- Commercial – Over 26,000 lbs.
- Commercial - Under 10,001 lbs.
- No activities identified
- AV activities underway

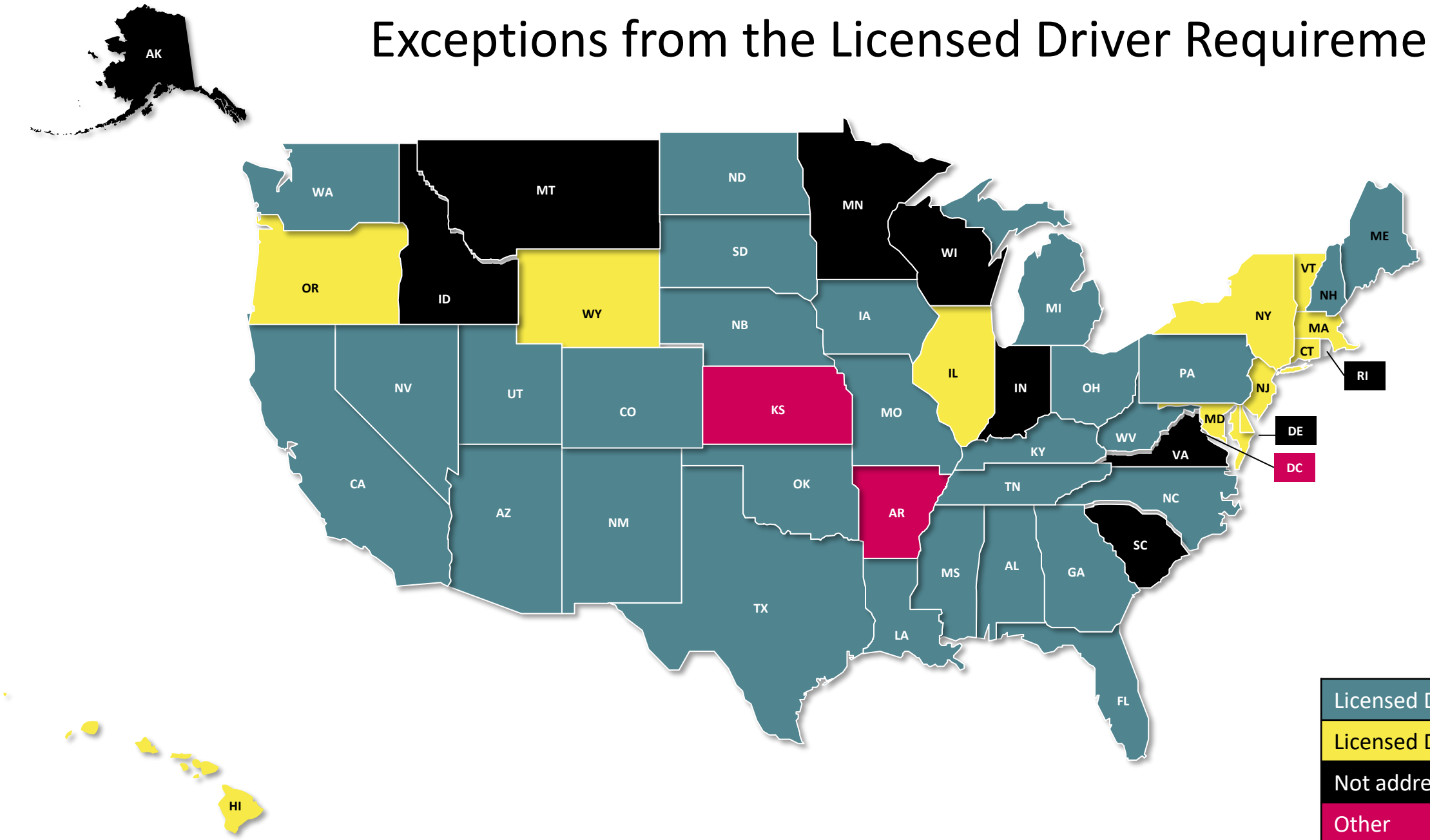
Pilot Required Before Deployment



Agencies Having Primary Oversight of AV Programs

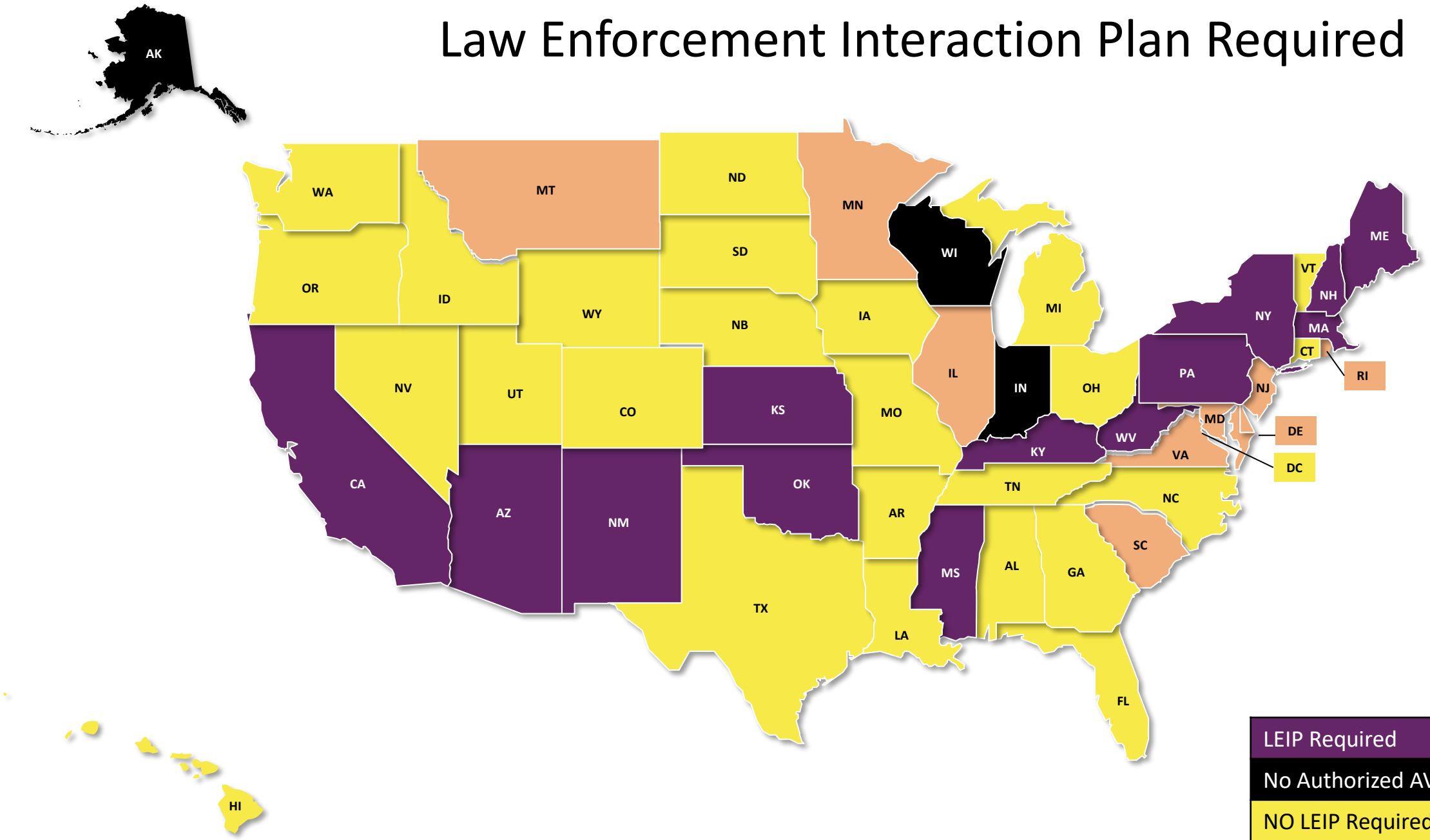


Exceptions from the Licensed Driver Requirements



Adapted from IIHS

Law Enforcement Interaction Plan Required



Adapted from Bradley et al., 2025

LEIP Required
No Authorized AV Use Under Law
NO LEIP Required
No Specific Legislation/Regulation

States Requiring Special Vehicle Markers

Colorado

- Special Event AV Testing Plate

Nevada

- Special red plate for testing and additional vehicle markings

Alabama

- SAE J3134: ADS Marker Lamp

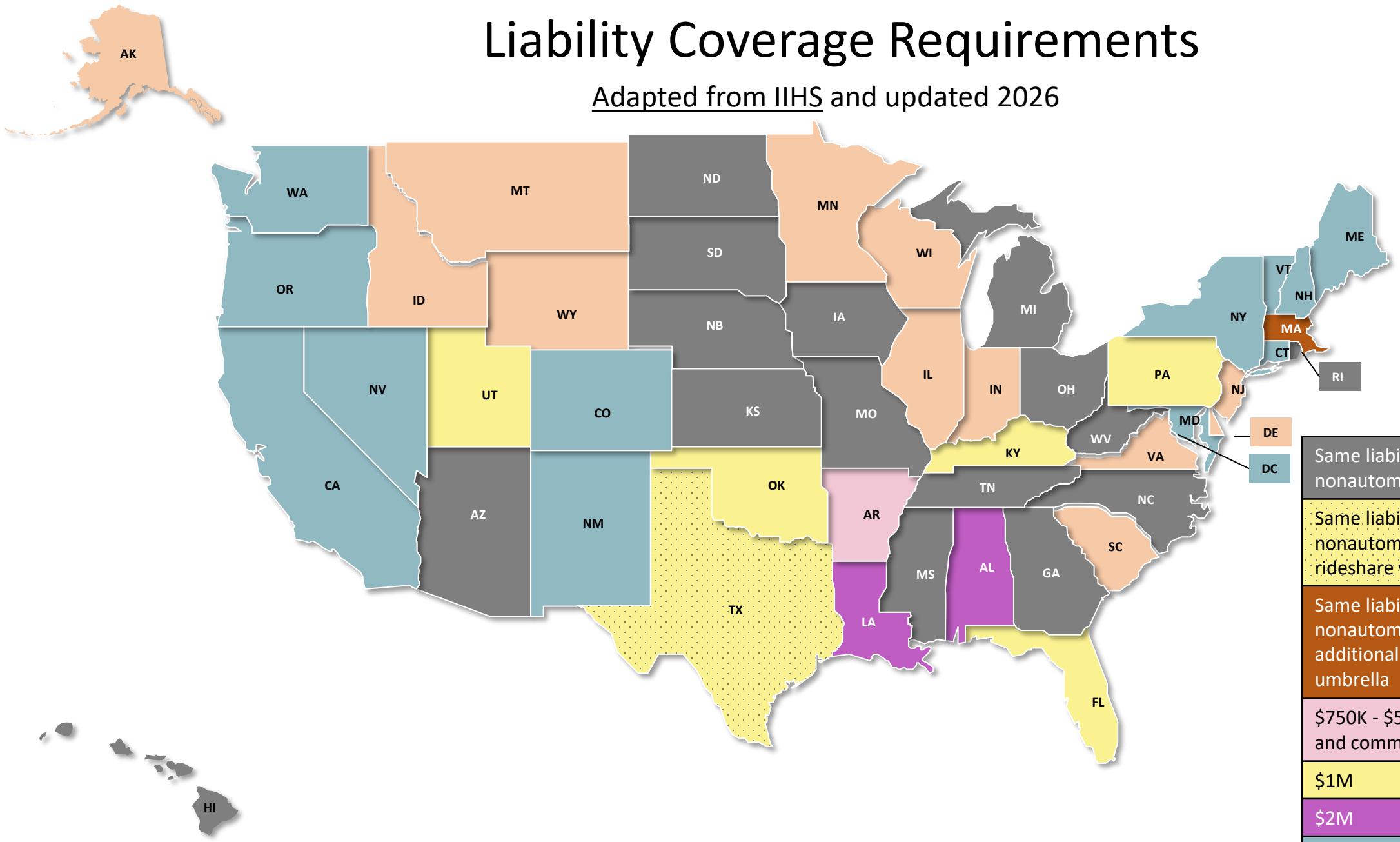
Florida

- Visual indicator to show the AV is operating in autonomous mode

Mercedes-Benz Indicator Lights; Source: Motortrend, 2023

Liability Coverage Requirements

Adapted from IIHS and updated 2026



Same liability coverage as nonautomated vehicles
Same liability coverage as nonautomated vehicles plus $1M for rideshare vehicles
Same liability coverage as nonautomated vehicles plus additional coverages including $10M umbrella
$750K - $5M based on vehicle type and commercial purpose
$1M
$2M
$5M
Not specifically addressed

VIRGINIA TECH

TRANSPORTATION INSTITUTE

Tammy Trimble, Ph.D.
Emerging Technologies and Policy
Virginia Tech Transportation Institute
ttrimble@vtti.vt.edu


VTRC
Virginia Transportation
Research Council


VDOT

Automated Driving Systems Safety Scan

Virginia Transportation Research Council

Noah Goodall, Ph.D., P.E.
Senior Research Scientist
April 24, 2026

Background

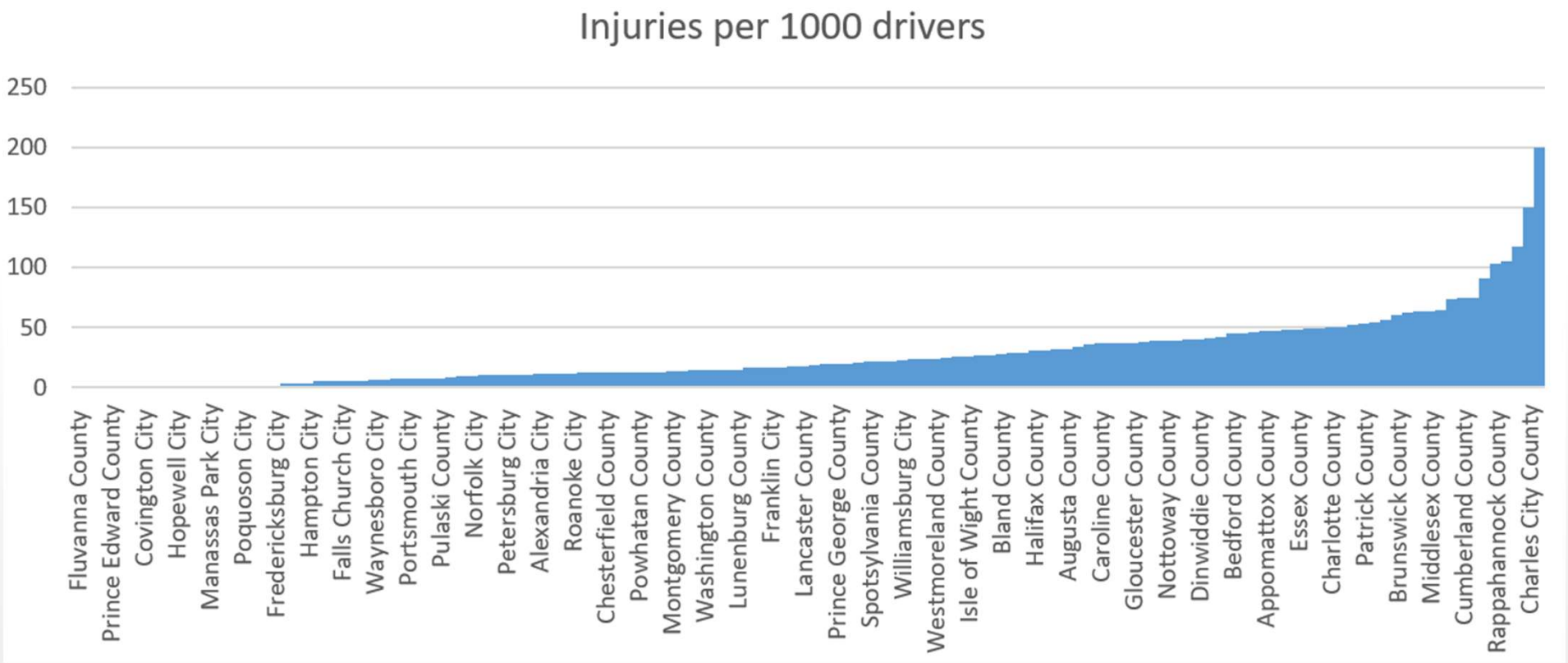
- **As part of HB2627, VTRC was asked to investigate recent safety evaluations of automated driving systems (ADS)**
  - General comparisons with human driving
  - Specific operational or environmental areas of concern
  - Passenger vehicles and commercial vehicles separate
- **Emphasis on independent evaluations**

Virginia's Crash Rates

Jurisdiction	Police-reported crashes per 1000 drivers	Injuries per 1000 drivers	Deaths per 1000 drivers
Virginia	**21.7**	**14.3**	**0.15**
Arlington	12.1	2.7	0.01
Fairfax County	17.0	9.9	0.07
Alexandria	7.1	10.8	0.04

Virginia Department of Motor Vehicles, *2024 Virginia Traffic Crash Facts.*
https://www.dmv.virginia.gov/sites/default/files/documents/VA-traffic-crash-2024.pdf

Variation across Virginia



Potential Benchmarks

Table 4. Potential Crash, Injury, and Fatality Rate Safety Benchmarks for Automated Vehicles

Exposure metric	Safety metric	Passenger cars	20% safer (*13*)	Model driving, 33% safer	Tolerable, 80% safer (*25*)	Broadly acceptable, 99% safer (*25*)	Buses for comparison
100 M VMT	All crashes	2,020	1,616	1,347	404	20	–
	PR crashes	214	171	137	43	2.1	408
	Non-occupant injuries	36	29	24	7.3	0.36	70
	Non-occupant fatalities	0.8	0.6	0.5	0.2	0.008	1.6
100 M VHT	PR crashes	5,946	4,757	3,964	1,189	59	4,656
	Non-occupant injuries	1,013	810	675	203	10	803
	Non-occupant fatalities	21	17	14	4.2	0.21	18
100 M PMT	Occupant injuries	30	24	20	6.0	0.3	4.9
	Occupant fatalities	0.28	0.23	0.19	0.057	0.003	0.015
100 M PHT	Occupant injuries	832	665	554	166	8.3	56
	Occupant fatalities	7.9	6.3	5.3	1.6	0.079	0.18

Note: PHT = person-hours traveled; PMT = person-miles traveled; VHT = vehicle-hours traveled; VMT = vehicle-miles traveled; PR = police-reported.

Goodall, N. J. (2021). Potential Crash Rate Benchmarks for Automated Vehicles. *Transportation Research Record: Journal of the Transportation Research Board*, *2675*(10), 31–40. (Sage CA: Los Angeles, CA). https://doi.org/10.1177/03611981211009878

General evaluations

- **It is not definitively known if ADSs are safer than comparable humans**

"I would say that there is growing evidence that AVs crash less often per mile than human drivers. **But it's still too early to say with any kind of confidence that they are safer than human drivers overall.** They just have not been deployed sufficiently across the various situations that humans encounter."

-David Kidd, Insurance Institute for Highway Safety, February 23, 2026

Zipper, D. (2026, February 23). *An Insurance Expert Appraises the Safety Record of Self-Driving Cars*. Bloomberg. https://www.bloomberg.com/news/articles/2026-02-23/how-a-car-insurance-expert-rates-the-safety-record-of-robotaxis

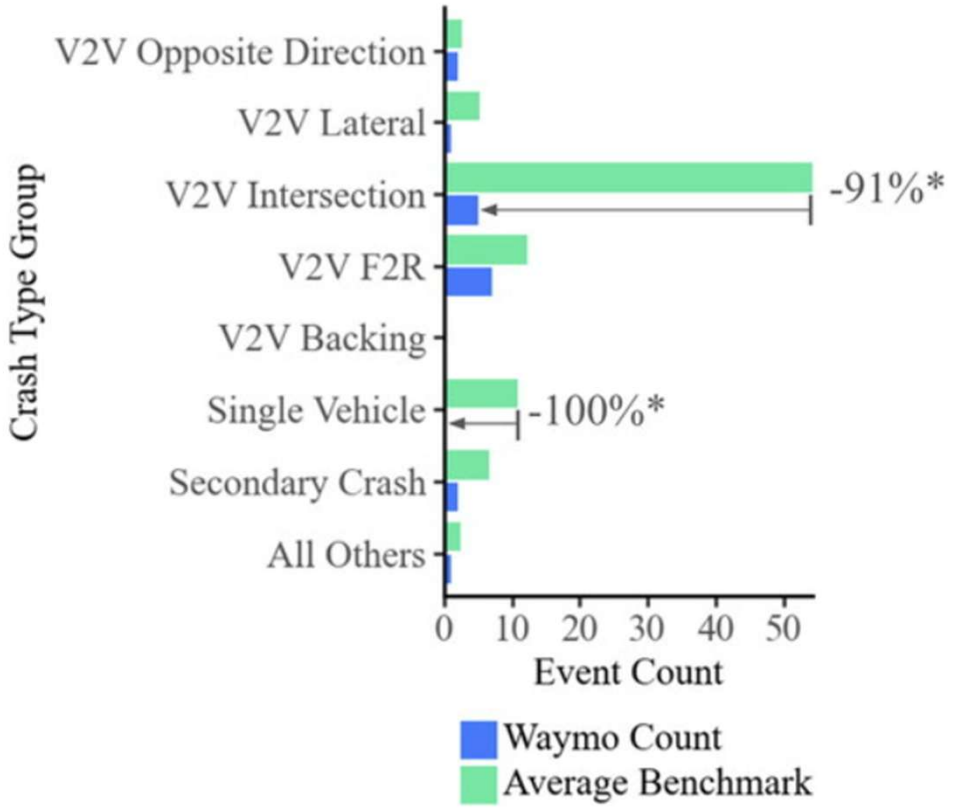
What is missing from ADS data

- **Mileage data**
  - NHTSA Standing General Order collects crashes, but not mileage, so can't determine crash rates
  - Mileage is voluntarily self-reported and varies by manufacturer
    - Waymo – self-posted on their website for some cities, updated periodically
    - Tesla – rolling one-year totals, published quarterly
    - Others – major milestones ("1 million miles," etc.)
  - California DMV requires mileage data from those operating in CA, updated annually
- **Crash data**
  - Inconsistent crash thresholds ("police-reportable" varies between jurisdictions)
  - Benchmark (human) crash rates vary by geography, time of day, day of week, road type, etc.
  - Injury crashes biased towards ADS that often drive empty

Recent assessments: Waymo

- **Waymo at 56.7 million miles**
- **Two types of airbag crash reductions were significant**

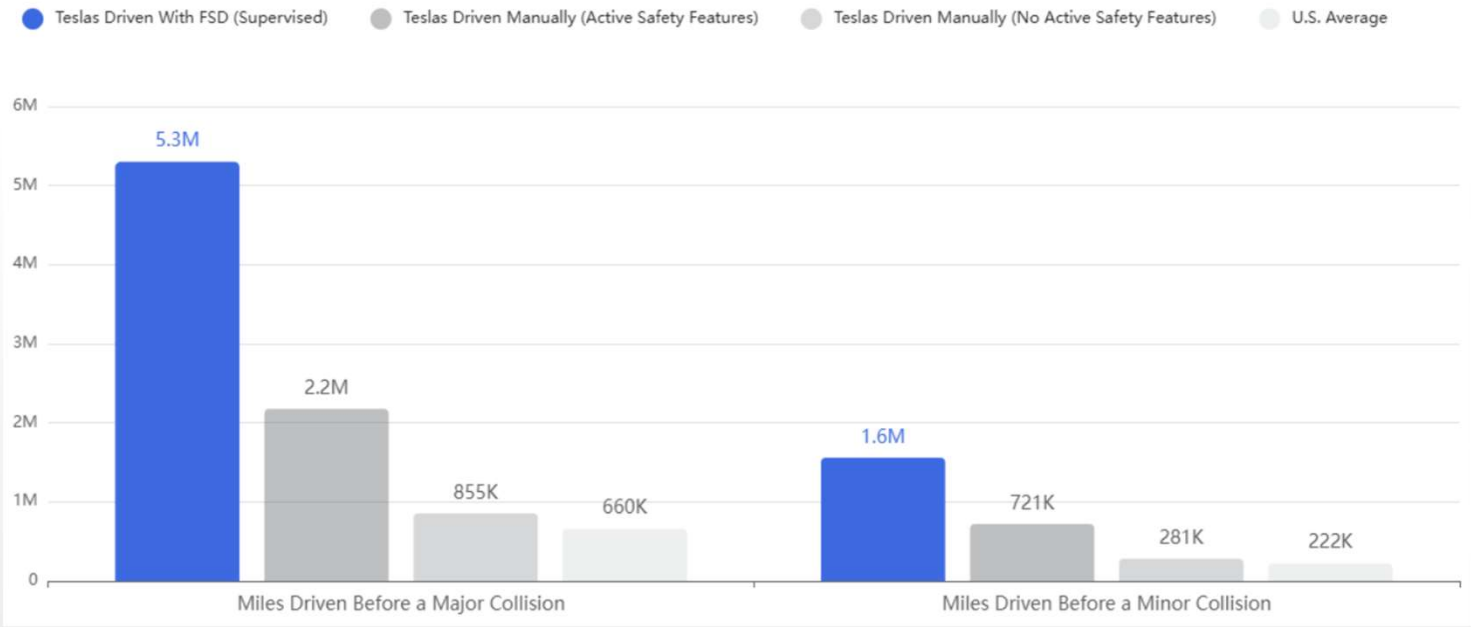
Waymo airbag crashes. * indicates statistical significance.



Kusano, K. D., Scanlon, J. M., Chen, Y.-H., McMurry, T. L., Gode, T., & Victor, T. (2025). Comparison of Waymo Rider-Only crash rates by crash type to human benchmarks at 56.7 million miles. *Traffic Injury Prevention*, *26*(sup1), S8–S20. https://doi.org/10.1080/15389588.2025.2499887

Recent assessments: Tesla

- **Reporting since 2018, with major enhancements in December 2025**
- **Some uncertainty regarding equivalent thresholds for Tesla and U.S. crash rates[1] and equivalent driver populations[2]**



https://www.tesla.com/fsd/safety

[1]Goodall, N. J. (2025). Comparability of driving automation crash databases. *Journal of Safety Research*, *92*, 473–481. https://doi.org/10.1016/j.jsr.2025.01.004

[2]Goodall, N. J. (2024). Normalizing crash risk of partially automated vehicles under sparse data. *Journal of Transportation Safety & Security*, *16*(1), 1–17. https://doi.org/10.1080/19439962.2023.2178566

Evaluating Safety

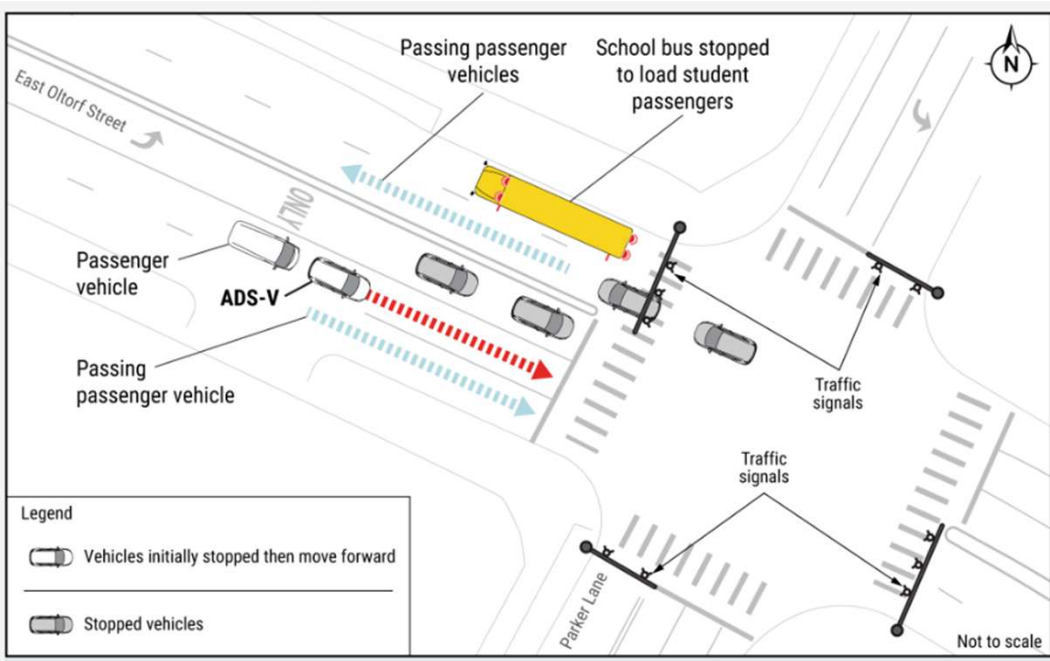
- **What are we comparing ADS to?**
  - Human-driven vehicles?
  - Taxis, transportation network companies (Uber/Lyft)?
- **What metric should we use?**
  - Police-reported crashes – up to 60% that should be reported are not
  - Injury crashes – ADS do not have drivers, lessening the probability of injury
  - Airbag crashes
- **What factors should we control for?**
  - Road type (arterial/intersection/freeway, etc.)
  - Time of day, day of week
  - Locality

Specific ADS Challenges

- **Aside from general crash rates, ADS have specific operational challenges**
  - Passing school buses
  - Remote operator staffing
  - First responder interactions
  - Unsafe stopping
  - Others

Passing school buses

- **Waymo is under investigation by NHTSA and NTSB for multiple instances of passing school buses when stop arm deployed**



Map of the incident showing the actions of the ADS-equipped vehicle (ADS-V) and other vehicles in the area of the stopped school bus.

NTSB, March 3, 2026, investigation HWY26FH007.

Remote operations staffing

- **Remote assistants provide high level guidance for stuck vehicles, but generally do not provide steering/throttle/brake control**
- **A 2025 San Francisco power outage affected 7,000 traffic signals, freezing Waymos at intersections due to remote assistant shortage[1]**
- **Waymo staffs approximately 70 remote assistants per shift, most based in the Philippines[2]**
- **October 2023, Cruise strikes a pedestrian in San Francisco. Remote assistant was supposed to be notified, but appears the vehicle moved to the shoulder without authorization, dragging the pedestrian.[3]**

1. Ming, L. C. (2025, December 24). *Waymo explains why its robotaxis clogged San Francisco streets during a power outage*. Business Insider. https://www.businessinsider.com/waymo-explains-robotaxis-stalled-san-francisco-power-outage-scale-2025-12
2. Waymo LLC. (2026, February 17). *Letter to Senator Ed Markey*. https://assets.ctfassets.net/7ijaobx36mtm/7E5uOzS5F7Z1yuFoz27BIc/680a27f89a3aae48977db655a5f45005/Sen._Markey_RA_Letter_Waymo__Response.pdf
3. Cummings, M. M., Wheeler, B., & Kliem, J. (2024). A Root Cause Analysis of a Self-Driving Car Dragging a Pedestrian. *Computer*, *57*(11), 31–40. https://doi.org/10.1109/MC.2024.3429276

First responder interactions

- **Review of literature on first responder interactions with AVs showed:**
  - No standardized protocols for approaching or interacting with an AV at a crash scene or during a traffic stop
  - Inability to disengage a vehicle from the exterior — officers can't shut down an ADS without physically entering the locked vehicle
  - ADSs continue to fail at recognizing and yielding to emergency vehicles
  - 55 incidents of AVs obstructing fire and rescue operations in San Franscisco prior to August 2023
  - ADS running past emergency tape and blocking fire station access

Almaskati, D., Pamidimukkula, A., Kermanshachi, S., Rosenberger, J. M., & Foss, A. (2025). A review of first responders and autonomous vehicles. *Transportation Research Procedia, VSI: TIS ROMA 2024*, *90*, 903–910. https://doi.org/10.1016/j.trpro.2025.06.024

Unsafe stopping

- **ADS in California were struck from behind at 4.8x the national rate[1]**
- **Phantom braking**
- **In a 2026 NHTSA webinar, first responders from Austin and San Francisco noted that ADS tend to stop whenever encountering unknown situations**
  - Stop locations can be dangerous
  - Restarting can take a few minutes

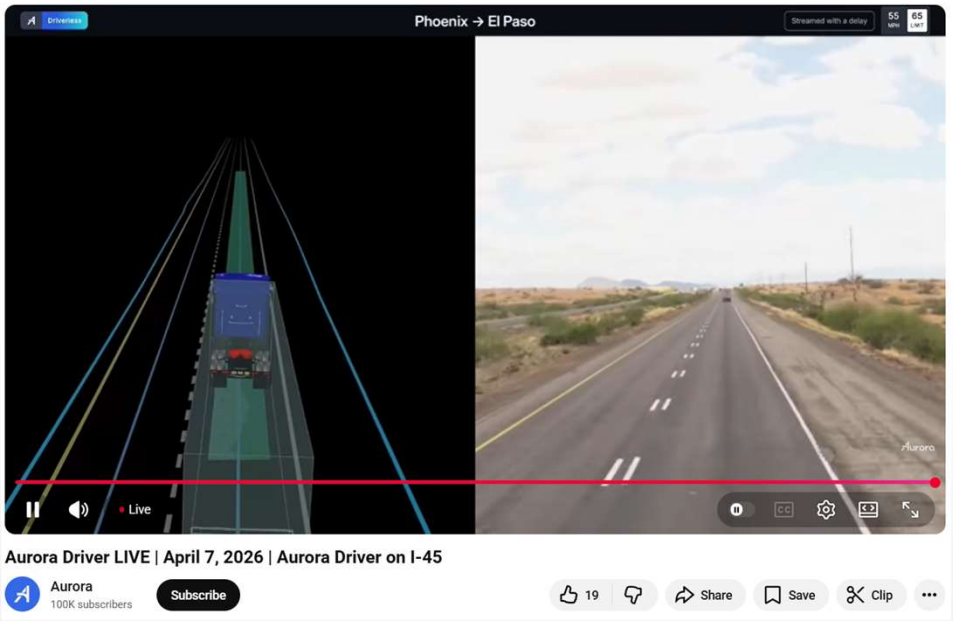
1. Goodall, N. J. (2021). Comparison of automated vehicle struck-from-behind crash rates with national rates using naturalistic data. *Accident Analysis & Prevention*, *154*, 106056. https://doi.org/10.1016/j.aap.2021.106056

Others

- **One-way streets**
  - Waymo has multiple recorded incidents of wrong way driving
- **Glare**
  - Can impact camera-based systems
- **Fog**
  - Can impact camera-based systems
- **Dust/debris**
  - Can affect lidar systems
- **Snow (although NYC launch may test this)**
- **Unexpected events or pavement markings**

Commercial vehicle operations

- **Limited studies as testing is mostly on private facilities**
  - Only public road incidents are reported under SGO
- **One instance of on-road testing, Aurora on I-45 in Texas**
- **Assumed to be challenging at speed**
  - A loaded semi can require 10 seconds of braking to stop from 65mph, double that of a car
  - It is significantly more difficult for software to predict positions of other vehicles 10 seconds into the future



Questions

Noah Goodall
434-293-1905
noah.goodall@vdot.virginia.gov

Appendix

VTTI Handouts

Summary of Key State Legislative and/or Regulatory Requirements Related to Automated Vehicles (AVs)/Automated Driving Systems (ADSs)

SAE J3016 Levels of Driving Automation

Summary of Key State Legislative and/or Regulatory Requirements Related to Automated Vehicles (AVs)/Automated Driving Systems (ADSs)

State	Type of AV or ADS Operation	Exceptions from the Licensed Driver Requirement	Liability Coverage Requirements	Law Enforcement Interaction Plan (LEIP) Required	Responsible for Oversight[1]
Alabama	Deployment - commercial	Level 4 and Level 5 vehicles do not require licensed driver in vehicle	Liability coverage of at least $100,000 (Level 4 and Level 5 private vehicles), $1 million (Level 4 and Level 5 vehicles operated by commercial entity), or $2 million (automated commercial motor vehicle)	No LEIP required[2]	ALDOT
Alaska	None			No authorized AV use under law[3]	Alaska Department of Transportation & Public Facilities
Arizona	Deployment	Level 4 and Level 5 vehicles do not require licensed driver	Level 4 and Level 5 vehicles must have the same liability coverage required for nonautomated vehicles under existing insurance law	Required	AZDOT
Arkansas	Deployment[4]	Licensed driver required in vehicle for first 6 months of ADS program operation	Liability coverage of $750,000–$5 million, depending on vehicle type and commercial purpose	No LEIP required	ARDOT
California	Deployment[5]	Level 4 and Level 5 vehicles do not require licensed driver in vehicle	Liability coverage of at least $5 million	Required	California DMV and Public Utilities Commission
Colorado	Deployment; Level 4 and Level 5 vehicles	Not addressed	1) Umbrella insurance of no less than $5 million; 2) Commercial general liability insurance of no less than $1 million; 3) Vehicle insurance of no less than $1 million; and 4) If necessary, a surety bond of no less than $5 million. (Note: surety bond is required if excess/umbrella insurance is not included or limits are lower than above)[6]	No LEIP required	Autonomous Mobility Task Force which includes CDOT, Colorado State Police & Colorado Department of Revenue, Division of Motor Vehicles
Connecticut	None	None	Liability coverage of at least $5 million	No LEIP required	CTDOT

[1] When legislation and/or regulations did not expressly identify an agency, where possible, the agencies noted in proposed legislation and/or with oversight of current connected and automated vehicle program are listed.
[2] No LEIP required means that the state has legislation or a regulatory framework authorizing the use of AVs, but the law does not currently prescribe the publication of interaction plans as a requirement for testing, operating, or selling a vehicle.
[3] No authorized AV use under law means that the state does not currently have legislation or a regulatory framework authorizing the use of AVs; they are thus prohibited from testing or operating on public roadways in all or most circumstances.
[4] Arkansas requires a person seeking approval for an "autonomous vehicle program" to include a statement of the program's commercial purpose in the application.
[5] California requires a manufacturer to submit an application, including attestation to multiple requirements, before deployment.
[6] Requirements noted in Colorado's Autonomous Mobility Task Force Application Packet.

State	Type of AV or ADS Operation	Exceptions from the Licensed Driver Requirement	Liability Coverage Requirements	Law Enforcement Interaction Plan (LEIP) Required	Responsible for Oversight[1]
Delaware	None			No specific legislation/regulation[7]	DelDOT Advisory Council
District of Columbia	Testing only	Licensing not addressed; vehicle with ADS initially requires a "test operator" in vehicle; "autonomous vehicle testing entity" may request and receive authority to use "remote operator"	Liability coverage of at least $5 million	No LEIP required	District Department of Transportation
Florida	Deployment	Level 4 and Level 5 vehicles do not require licensed driver	Level 4 and Level 5 vehicles operating in on-demand network must have primary liability coverage of at least $1 million and additional benefits as required for nonautomated vehicles under existing insurance law	No LEIP required	Florida Department of Highway Safety and Motor Vehicles and FDOT
Georgia	Deployment; Level 4 and Level 5 vehicles	Level 4 and Level 5 vehicles do not require licensed driver	Level 4 and Level 5 vehicles must have the same liability coverage required for nonautomated vehicles under existing insurance law	No LEIP required	GDOT
Hawaii	Testing only; Level 4 and Level 5 vehicles	None; Level 4 and Level 5 vehicles require licensed driver in vehicle	Same liability coverage requirements as for nonautomated vehicles under existing insurance law	No LEIP required	HIDOT
Idaho	None			No LEIP required	
Illinois	None	None		No specific legislation/regulation	IDOT
Indiana	None			No authorized AV use under law	INDOT
Iowa	Deployment	Vehicle with ADS does not require licensed driver in vehicle	Same liability coverage requirements as for nonautomated vehicles under existing insurance law	No LEIP required	Iowa DOT

[7] No specific legislation/regulation means that the state does not currently have legislation or a regulatory framework authorizing the use of AVs; however, their use for testing or operating is authorized de facto on public roadways in all or most circumstances.

State	Type of AV or ADS Operation	Exceptions from the Licensed Driver Requirement	Liability Coverage Requirements	Law Enforcement Interaction Plan (LEIP) Required	Responsible for Oversight[1]
Kansas	Deployment	Level 4 and Level 5 vehicles require licensed driver in vehicle for first 12 months unless vehicle is not intended to carry human occupants or if vehicle lacks manual controls for driver operation	Same liability coverage requirements as for nonautomated vehicles under existing insurance law	Required	Kansas Highway Patrol
Kentucky	Deployment	Level 4 and Level 5 vehicles do not require licensed driver in vehicle[8]	Level 4 and Level 5 vehicles must have the same liability coverage required for nonautomated vehicles under existing insurance law (motor carriers); Level 4 and Level 5 vehicles must have liability coverage of at least $1 million that satisfies existing insurance law (others)	Yes	Kentucky Transportation Cabinet
Louisiana	Deployment; commercial motor vehicles only[9]	Level 4 and Level 5 commercial motor vehicles do not require operator to be present in vehicle	Liability coverage of at least $2 million	No LEIP required	Department of Transportation and Development
Maine	Testing only	Vehicle with ADS does not require licensed driver in vehicle	Liability coverage of at least $5 million	Required	Commission on AVs
Maryland	Testing	None; vehicle with ADS requires licensed driver in vehicle	Same liability coverage requirements as for nonautomated vehicles under existing insurance law plus at least $5 million	No specific legislation/regulation	MDDOT Motor Vehicle Administration
Massachusetts	Testing only	None; vehicle with ADS requires licensed driver in vehicle	Same liability coverage requirements as for nonautomated vehicles under existing insurance law plus $1 million per occurrence and $2 million annual aggregate commercial general liability, $1 million auto liability, and $10 million umbrella liability	Required	MassDOT

[8] From July 15, 2024, until July 31, 2026, Kentucky does require a "fully autonomous vehicle" for which the gross weight and any towed unit is more than 62,000 pounds to have a licensed driver physically present in the vehicle.

[9] Although Louisiana does not have a law that specifically authorizes deployment of ADS-equipped noncommercial motor vehicles, effective August 2022, Louisiana law states that a vehicle with "autonomous technology" designed to be operated exclusively by ADS is not subject to equipment laws or regulations that relate to or support vehicle operation by a human driver.

State	Type of AV or ADS Operation	Exceptions from the Licensed Driver Requirement	Liability Coverage Requirements	Law Enforcement Interaction Plan (LEIP) Required	Responsible for Oversight[1]
Michigan	Testing of any "automated motor vehicle" and deployment of "on-demand networks"[10]	Vehicle with ADS appears not to require licensed driver in vehicle	Same liability coverage requirements as for nonautomated vehicles under existing insurance law	No LEIP required	MDOT working with the Office of Future Mobility and Electrification
Minnesota	None			No specific legislation/regulation	MNDOT
Mississippi	Deployment	Level 4 and Level 5 vehicles do not require licensed driver	Level 4 and Level 5 vehicles must have the same liability coverage required for nonautomated vehicles under existing insurance law	Required	MS Department of Public Safety
Missouri	None	Level 4 and Level 5 vehicles do not require licensed driver present in vehicle	Proof of insurance or surety bond	No LEIP required	MoDOT, MO Department of Public Safety
Montana	Deployment	Not addressed	Not addressed	No specific legislation/regulation	MDT
Nebraska	Deployment	Level 4 and Level 5 vehicles do not require operator to be present in vehicle	Same liability coverage requirements as for nonautomated vehicles under existing insurance law	No LEIP required	NDOT
Nevada	Deployment	Level 4 and Level 5 vehicles do not require licensed driver in vehicle	Liability coverage of at least $5 million	No LEIP required	Nevada DMV under the authority of the DOT, the Nevada Transportation Authority, & the Governor's Office of Economic Development
New Hampshire	Deployment; Level 4 and Level 5 vehicles	Level 4 and Level 5 vehicles do not require licensed driver in vehicle	Liability coverage of at least $5 million (testing); same liability coverage requirements as for nonautomated vehicles under existing insurance law (deployment)	Required	New Hampshire Department of Safety, Division of Motor Vehicles
New Jersey	None	None; vehicle with ADS requires licensed driver in vehicle		No specific legislation/regulation	New Jersey Vehicle Commission in consultation with NJDOT

[10] Michigan allows only a "motor vehicle manufacturer" to offer an "on-demand automated motor vehicle network."

State	Type of AV or ADS Operation	Exceptions from the Licensed Driver Requirement	Liability Coverage Requirements	Law Enforcement Interaction Plan (LEIP) Required	Responsible for Oversight[1]
New Mexico	Deployment[11]	Level 4 and Level 5 vehicles do not require licensed driver in vehicle	Same liability coverage requirements as for nonautomated vehicles under existing insurance law, plus Level 4 and Level 5 vehicles must have liability coverage of at least $5 million	Required	NM DOT
New York	Testing only	None; vehicle with ADS requires licensed driver in vehicle	Liability coverage of at least $5 million per vehicle	Required	NYDMV and NYC DOT
North Carolina	Deployment	Level 4 and Level 5 vehicles do not require licensed driver	Level 4 and Level 5 vehicles must have the same liability coverage required for nonautomated vehicles under existing insurance law	No LEIP Required	NCDOT
North Dakota	Deployment	Level 4 and Level 5 vehicles do not require licensed driver	Same liability coverage requirements as for nonautomated vehicles under existing insurance law	No LEIP required	NDDOT
Ohio	Testing only	Vehicle with ADS does not require licensed driver in vehicle	Same liability coverage requirements as for nonautomated vehicles under existing insurance law	No LEIP required	DriveOhio
Oklahoma	Deployment	Level 4 and Level 5 vehicles do not require licensed driver	Level 4 and Level 5 vehicles must have liability coverage of at least $1 million	Required	ODOT & Department of Public Safety
Oregon	None	None; licensed driver required	Liability coverage of at least $5 million	No LEIP required	ODOT
Pennsylvania	Deployment	Vehicle with ADS does not require a licensed driver[12]	Liability coverage of at least $1 million	Required	PennDOT
Rhode Island	None		Same liability coverage requirements as for nonautomated vehicles under existing insurance law	No authorized AV use under law	RIDOT
South Carolina	None			No specific legislation/regulation	
South Dakota	Deployment	Level 4 and Level 5 vehicles do not require licensed driver	Level 4 and Level 5 vehicles must have the same liability coverage required for nonautomated vehicles under existing insurance law	No LEIP required	SD Transportation Commission (within DOT)

[11] Although New Mexico laws address testing, regulations appear to authorize deployment as well, specifically stating that "testing or operation of vehicles that do not have a person present in the vehicle shall be allowed only if such vehicles are fully autonomous, and if prior to commencing testing or operation of the fully autonomous motor vehicles, an autonomous motor vehicle testing statement and certification has been submitted to the New Mexico department of transportation."

[12] Pennsylvania allows the operation of a "highly autonomous vehicle," which includes Levels 3-5, on the roads without a "highly autonomous vehicle driver," which is defined as a licensed driver in the vehicle or operating remotely.

State	Type of AV or ADS Operation	Exceptions from the Licensed Driver Requirement	Liability Coverage Requirements	Law Enforcement Interaction Plan (LEIP) Required	Responsible for Oversight[1]
Tennessee	Deployment; Level 4 and Level 5 vehicles	Level 4 and Level 5 vehicles do not require licensed driver	Level 3 vehicles must have the same liability coverage required for nonautomated vehicles under existing insurance law	No LEIP required	TDOT, Department of the Revenue, Tennessee Highway Patrol
Texas	Deployment	Level 4 and Level 5 vehicles do not require licensed driver	Same liability coverage requirements as for nonautomated vehicles under existing insurance law	No LEIP required	TxDMV
Utah	Deployment	Level 4 and Level 5 vehicles do not require licensed driver	Same liability coverage requirements as for nonautomated vehicles under existing insurance law	No LEIP required	UDOT, UDMV, Utah Transit Authority
Vermont	Testing only	None; vehicle with ADS requires licensed driver in vehicle	Liability coverage of at least $5 million	No LEIP required	VT Traffic Committee
Virginia	Development, testing, deployment			No specific legislation/regulation	
Washington	Testing only; Level 4 and Level 5 vehicles	Level 4 and Level 5 vehicles do not require a licensed driver if testing or operating without "human operator" present	Liability coverage of at least $5 million	No LEIP required	WA State Department of Licensing
West Virginia	Deployment	Level 4 and Level 5 vehicles do not require licensed driver	Level 4 and Level 5 vehicles must have the same liability coverage required for nonautomated vehicles under existing insurance law	Required	WVDOT, WVDMV
Wisconsin	None			No authorized AV use under law	WisDOT
Wyoming	None	None		No LEIP required	WYDOT, WY Highway Patrol

Adapted from:

Insurance Institute for Highway Safety & Highway Loss Data Institute (2026). *Highly automated vehicles: Laws and regulations*. https://www.iihs.org/research-areas/advanced-driver-assistance/highly-automated-vehicle-laws

Bradley, A. T., et al. (2025). *First responder interactions with automated vehicles: An identification of needs and strategies* (FHWA/TX-25/0-7199-R1). https://static.tti.tamu.edu/tti.tamu.edu/documents/0-7199-R1.pdf

Loftus-Otway, L. & Gallun, S. (2024). *Multistate coordination and harmonization for AV legislation*. https://doi.org/10.17226/27867

SAE J3016™ LEVELS OF DRIVING AUTOMATION™

Learn more here: sae.org/standards/content/j3016_202104

	SAE LEVEL 0™	SAE LEVEL 1™	SAE LEVEL 2™	SAE LEVEL 3™	SAE LEVEL 4™	SAE LEVEL 5™
What does the human in the driver's seat have to do?	**You are driving** whenever these driver support features are engaged – even if your feet are off the pedals and you are not steering			**You are not driving** when these automated driving features are engaged – even if you are seated in "the driver's seat"		
	You must constantly supervise these support features; you must steer, brake or accelerate as needed to maintain safety			When the feature requests, you must drive	These automated driving features will not require you to take over driving	
	These are driver support features			**These are automated driving features**		
What do these features do?	These features are limited to providing warnings and momentary assistance	These features provide steering **OR** brake/ acceleration support to the driver	These features provide steering **AND** brake/ acceleration support to the driver	These features can drive the vehicle under limited conditions and will not operate unless all required conditions are met		This feature can drive the vehicle under all conditions
Example Features	• automatic emergency braking • blind spot warning • lane departure warning	• lane centering **OR** • adaptive cruise control	• lane centering **AND** • adaptive cruise control at the same time	• traffic jam chauffeur	• local driverless taxi • pedals/ steering wheel may or may not be installed	• same as level 4, but feature can drive everywhere in all conditions

Level 0: **No Driving Automation**

Level 1: **Driver Assistance**

Level 2: **Partial Driving Automation**

Level 3: **Conditional Driving Automation**

Level 4: **High Driving Automation**

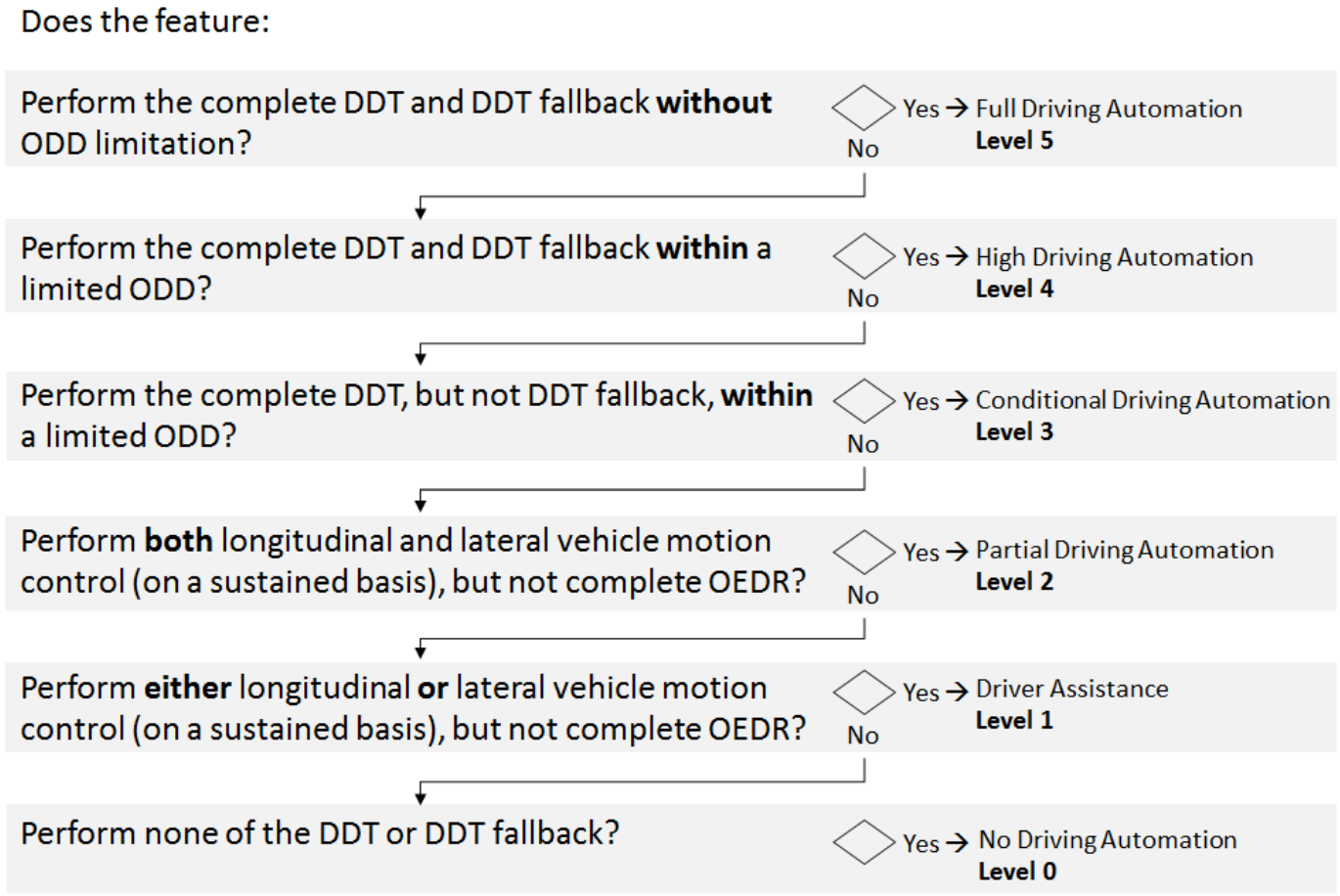
Level 5: **Full Driving Automation**

Automated Driving System (ADS)

The hardware and software that are collectively capable of performing the entire *DDT* on a *sustained* basis, regardless of whether it is limited to a specific *operational design domain* (*ODD*); this term is used specifically to describe a Level 3, 4, or 5 *driving automation system*.

Note: *Active safety systems*, such as electronic stability control (ESC) and automatic emergency braking (AEB), and certain types of *driver* assistance systems, such as lane keeping assistance (LKA), are excluded from the scope of this *driving automation* taxonomy because they do not perform part or all of the *DDT* on a *sustained* basis but rather provide momentary intervention during potentially hazardous situations.

Assigning driving automation level to a feature: Key terms



Deprecated Terms	Suggested Terms to Use Instead
Autonomous, Driving Mode(s), Self-Driving, Unmanned, Robotic	ADS
Automated Vehicle	ADS-equipped vehicle
Engaged system	ADS-operated
Control	DDT performance or Operate

Dynamic Driving Task (DDT)
All of the real-time *operational* and tactical functions required to *operate* a *vehicle* in on-road traffic, excluding the strategic functions such as *trip* scheduling and selection of destinations and waypoints.

DDT Fallback
The response by the *user* to either perform the *DDT* or achieve a *minimal risk condition* (1) after occurrence of a *DDT* performance-relevant *system failure*(s), or (2) upon *operational design domain* (*ODD*) exit, or the response by an *ADS* to achieve *minimal risk condition*, given the same circumstances.

Object and Event Detection and Response (OEDR)
The subtasks of the *DDT* that include monitoring the driving environment (detecting, recognizing, and classifying objects and events and preparing to respond as needed) and executing an appropriate response to such objects and events (i.e., as needed to complete the *DDT* and/or *DDT fallback*).

Operational Design Domain (ODD)
Operating conditions under which a given *driving automation system* or *feature* thereof is specifically designed to function, including, but not limited to, environmental, geographical, and time-of-day restrictions, and/or the requisite presence or absence of certain traffic or roadway characteristics.