Oral statement of Cathy Chase, as delivered on July 13, 2026, before the District of Columbia Committee on Transportation and the Environment during the public hearing on B26-0684, the "Autonomous Vehicle Deployment Authorization Amendment Act of 2026"

Good afternoon, Chair Allen and Councilmembers Crawford, Henderson, George and Parker. I'm Cathy Chase, president of Advocates for Highway and Auto Safety. Advocates is an alliance of consumer, medical, public health, law enforcement, safety groups, and insurance companies and agents working to advance policy, laws and regulations to prevent crashes, save lives, curb injuries and reduce associated costs.

Thank you for holding today's hearing and for the opportunity to testify on B26-0684, the Autonomous Vehicle Deployment Authorization Amendment Act of 2026. I would like to say at the outset that Advocates is not for or against the deployment of autonomous vehicles, or AVs. Our focus is on ensuring that they are safe for all road users and deliver on promised societal benefits including accessibility, equity, preserving consumer and worker rights, and ensuring sustainable transportation, among others.

Currently, AV safety performance and reliability are largely unknown to the public. Our main data sources are the National Highway Traffic Safety Administration's, or NHTSA, Standing General Order 2021-1, or SGO, and the media. According to data collected by the SGO, there have been approximately 2,574 crashes involving automated driving systems, or ADS, and 3,896 with advanced driver assistance systems, or ADAS, through May 15, 2026. These include 59 crashes resulting in a fatality. Some of these are under investigation by NHTSA or the National Transportation Safety Board, or NTSB.

From media sources, we know that in San Francisco, AVs have caused congestion, crashes and consternation. They have driven into work zones, emergency responders and active police scenes. Most recently over the July 4th holiday, an AV drove into live fireworks with passengers on board, another caught on fire after driving over fireworks and a swarm of AVs caused massive congestion by blocking a key parking area. City officials, emergency responders and local transportation leaders have raised serious safety concerns. And, this was all during a planned holiday event. As you're well aware, the District has numerous similar planned events as well as many unique to the District such as parades, protests, motorcades and national celebrations resulting in road closures. Other cities have experienced AVs illegally passing stopped school buses and blocking an ambulance response to a mass shooting.

Just last week, NHTSA issued a call to action noting numerous documented incidents of AVs that "blocked the paths of ambulances and firefighters, or failed to recognize and respond to basic safety conditions like flashing lights, flares, smoke, fire, and traffic cones." The letter noted, "An AV that cannot safely interact with first responders is a danger to the general public." We agree.

The collection of data is essential to make informed policy decisions. We cannot rely on claims by the AV industry that their vehicles will be safer than humans. As the saying goes, "Trust but verify."

Additionally, AV proponents often claim that AVs are safer because they don't get tired, distracted or drive impaired. While some AVs may avoid these types of crashes, they also may cause crashes that sober, alert and engaged human drivers would easily avoid. AVs, which are essentially billion-dollar pieces of equipment with years of research, should be compared to the best drivers, not the worst or average drivers.

In addition to comprehensive data collection, necessary policy to safeguard AV operations which must include setting minimum safety standards for ADS performance has not been set. This inaction underscores the vital role of states, cities and the District in taking action to protect their road users. It also informs our policy position against preemption on localities' rights to do so, and especially in the absence of robust federal standards.

With regards to B26-0684, we submitted a letter to the hearing record with recommendations to improve the level of safety including:

- DDOT should determine an appropriate threshold for assessing AV risk;
- Testing should be done in a representative and appropriate sample of locations, times and conditions;
- Crash and incident reporting and transparency should be improved;
- Any permit for driverless operation should be predicated on safe operation during the testing phase that requires a human operator. Similarly, authorization for commercial operations should be predicated on safe operation during the driverless testing phase; and,
- Providing more information regarding remote personnel and what safety deficiencies they are addressing along with restrictions on the number of vehicles an individual is managing and limits on hours of service.

Absent these minimum protections, we risk both the safety of road users and their acceptance of what AVs may be able to accomplish.

In closing, advancing safety and technological innovation can and must be compatible goals, and not trade-offs. Thank you.

ADVOCATES
FOR HIGHWAY
& AUTO SAFETY

July 13, 2026

The Honorable Charles Allen, Chair
Committee on Transportation and the Environment
Council of the District of Columbia
1350 Pennsylvania Avenue, NW
Washington, District of Columbia 20004

Dear Chair Allen:

Thank you for convening today's hearing on B26-0684, the Autonomous Vehicle Deployment Authorization Amendment Act of 2026 (AVDAAA). Headquartered in the District of Columbia (District), Advocates for Highway and Auto Safety (Advocates) is an alliance of consumer, safety, medical, public health and law enforcement groups and insurance companies and agents working together to pass highway and auto safety laws that prevent crashes, save lives, reduce injuries, and contain costs. We respectfully request your and the Committee's consideration of the following information and recommendations to address safety issues in the District. We also request this letter and accompanying attachments be included in the hearing record.

Current Status of Autonomous Vehicles (AVs) in the District

Currently the District allows autonomous vehicles (AVs) but only for testing *and* requires a human operator to be behind the wheel. Levels 3, 4 and 5 systems as defined by the Society of Automotive Engineers (SAE) are considered automated driving features. Ten (10) business days of notice to the District Department of Transportation (DDOT) are required prior to testing, and crashes which occur when an autonomous system is in use must be reported.

Only Waymo and Zoox have vehicles on District roads via testing permits. Previously Beep, Nuro and Perrone Robotics had short-term testing permits.

Recommendations to Enhance Safety in the AVDAAA

Our review of the legislation has identified several areas where the level of safety can be enhanced.

- Commercial AVs and Trucks

We recommend defining "commercial AVs" to clarify that driverless trucks are not being legalized. The legislation should further guard against that risk by adding a maximum weight limit of 10,000 pounds for AVs.

- Unreasonable Risk

The bill, in Section 2(a), defines "unreasonable risk to public safety" as greater than the risks presented by an average human driver. If the standard is breached, DDOT can deny a permit application or suspend, revoke or restrict a permit. However, comparing AVs to the average human driver sets the bar too low given that AVs are equipped with sensors, radars and other technologies, backed by billions of

dollars of research, and teams of engineers and (likely) expensive artificial intelligence (AI) analyzing all its driving. Meanwhile, of the more than 39,000 fatalities on U.S. roads in 2024, 30 percent involved at least one driver who was alcohol impaired, 29 percent involved at least one driver who was speeding, and 8 percent involved a distracted driver (this issue is underreported). If AVs are, as claimed, to never be drunk, never tired, never distracted, and will comply with all laws, their performance should not be compared against the worst drivers on our roads. While sober, alert, engaged and well-trained drivers can and are involved in crashes, their rate is likely significantly lower than the "average driver" and that is the bar against which AVs should be compared. There is no guarantee that AVs will only replace drunk, distracted, fatigued, or law-breaking drivers. To create an appropriate threshold, we recommend DDOT conduct a study to determine a more appropriate threshold for assessing AV risk based on DC traffic data.

- Minimal Risk Condition

The provision in Section 3a-1(b)(2)(E)(ii) requiring applicants for a commercial AV permit to submit technical documentation showing how a minimal risk condition would be achieved in the event of a system failure should be strengthened to require submission of a plan to achieve minimal risk condition.

- Testing Mileage

The AVDAAA, in Section 3a-1(b)(3)(A)(i), would require 250,000 miles of testing in the District. However, not all miles are equal. Testing should cover a representative sample of District streets, cover all eight wards, have an appropriate mix of night and day driving, cover a representative sample of the District's weather and include experience with special events. Moreover, a safety case should be required as well as documentation on what they experienced in their operational design domain (ODD), including scenarios for which they did not plan but encountered and took corrective action.

We recommend these upgrades to ensure that AVs demonstrate a proficiency to drive safely at all times and places in their ODD and cannot cherry-pick where testing is done.

- AV Parking

The legislation, in Section 3a-1(b)(6), requires a description of the strategies or technologies used to ensure that the AVs are lawfully parked. Instead, a plan to ensure safe parking should be required.

- AV Legal Exemptions

The bill, in Section 3a-2(c)(1)(2)(A), exempts AVs from laws deemed specific to humans. There must also be requirements to ensure that the task formerly assigned to a human is being safely assumed by the automated driving system (ADS). The District should be required to specify these laws to avoid unintended consequences instead of granting a broad exemption. Alternatively, the District could require AVs to adhere to all traffic laws.

For example, a human driver is required to pass a vision test to ensure that they can see and respond to all people, vehicles and infrastructure in the roadway environment. An ADS should be required to pass this critical benchmark prior to being allowed to operate on District roads.

- Public Input

The legislation, in Section 3a-1(l)(B), says DDOT shall not be required to hold a public hearing or receive public comment on a permit application. Given the novel nature of AVs, we recommend amending the legislation to provide for public input.

- Standards for Testing and Human Safety Operators

Given the importance of demonstrating safe testing to the framework created by the bill, we recommend amending the legislation to task the DDOT to create a clear standard for AV testing.

Furthermore, if the District creates a pathway for driverless vehicle operation, any permit for driverless operation should be predicated on safe operation during the testing phase that requires a human operator. Similarly, authorization for commercial operations should be predicated on safe operation during the driverless testing phase.

All testing should be required to account for the unique characteristics of operating in the District. These include unplanned street closures, large scale events, security operations, public assemblies, etc. Information provided by AV companies should be verified by DDOT and be made available to the public to allow for independent analysis.

- AVs Prior to Comprehensive Plan Submissions

The legislation includes several requirements in order to receive authorization to expand an AV fleet beyond 200 vehicles. Specifically, in Section 3a-2(d), these include where AVs will be parked, identification of parking facilities, minimize passenger-less trips and balancing fleets across wards. Given the value of those requirements, they should be required up front to guard against issues with AV parking, traffic congestion and equity.

- Crash Data and Crash Reports

While AV manufacturers are, in Section 3j(e)(2), required to preserve all crash-related data (for at least three years) and make that data available to DDOT, District police and the courts, similar requirements do not apply to AV permittees. To harmonize the law and maximize insight into crashes, the legislation should be amended to require the same of AV permittees. We further suggest that the legislation, in the same Section, clarifies that sensor data includes all video recorded prior to, during and after a crash for a specified time period. Similarly, we recommend adding a requirement to submit such video evidence of a crash when a crash is reported to DDOT. The protection of individual privacy and the need for transparency for oversight, enforcement and independent research for evaluation should be the focus of policies developed around data collection and dissemination.

Additionally, current bill language, in Section 3(c)(h)(2), allows DDOT to get more crash information from AV permittees if DDOT submits a "reasonable request" for information. We suggest striking "reasonable" from the bill to foreclose any grounds a company may invoke to not share data.

- Public Reporting of Crashes

While the quarterly reports permittees must submit to DDOT include crash information and are required to be published on DDOT's website, for ADS manufacturers there is no similar mechanism to inform

the public of individual AV crashes outside of commercial AV fleets. We recommend requiring such crash reporting for ADS and posting it on the DDOT website for easy public access.

- Vulnerable Road Users (VRU)

Given the District's density, we believe permittees and ADS manufacturers should be required to include a breakdown of injuries to drivers, pedestrians, bicyclists, micromobility users and people who use wheelchairs or other assistive devices in crash reports.

- Special Incidents

Reporting requirements for permittees and ADS manufacturers should include reporting first responder incidents, AVs driving into police scenes, work zones, flooded areas, motorcades, protests, parades, etc., issues arising from power outages and any similar incidents specific to AVs.

- Property Damage Threshold

The requirement for ADS manufacturers, in Section 3j(c)(1), to report crashes resulting in property damage should be upgraded to cover all such crashes, not just those with property damage exceeding $5,000. Doing so would make the requirement the same as for permittees.

- Shutdown Authority

While the AVDAAA, in Section 3f(c), creates a process whereby DDOT can suspend, revoke or cancel permits, the legislation does not provide for an immediate shutdown of unsafe operations. If the safety risk of an AV is great enough to cause DDOT to take such a drastic measure, those vehicles should immediately be grounded, and we recommend amending the legislation to explicitly allow for that.

Similarly, while the legislation requires AV manufacturers to notify DDOT of material changes to AV systems, there is no mechanism for DDOT to get vehicles off streets if such changes render vehicles unsafe. We recommend amending the bill to provide for such authority.

- Transit and Accessibility

From the history of transportation network companies, and similar promises of accessibility, if AVs are not required to be accessible, it is highly probable that they will not be. Furthermore, they may divert from transit use and resultingly from transit options moving forward. We suggest that the DDOT requires that AVs operating in the District be accessible, including for wheelchair users, and closely studies impacts on transit and accessible transportation options to ensure accessibility within the Metro system.

- Remote Personnel

AV operations are using remote personnel, often referred to as remote operators (ROs) and remote assistants (RAs), to overcome deficiencies in their systems or unforeseeable circumstances and bolster their operations. Information on the scope of remote personnel and the safety shortcomings they are addressing should be required to appropriately understand the safety and readiness of AVs. Moreover, safety issues related to use of remote personnel should be addressed including but not limited to restrictions on the number of vehicles each remote personnel is managing, limitations on hours of

service (HOS) and experience operating related vehicles. Additionally, there are concerns about latency and situational awareness for these remote personnel. While the sensors on a vehicle (such as cameras) may be well positioned for an ADS, they may not provide adequate situational awareness for remote personnel to fully comprehend and instruct or undertake the appropriate response to a request for assistance from a stranded or confused ADS. Added to this is the potential for delay in sensor signals from the vehicle to the remote personnel wherever they are stationed. During any delay in transmission of situational information and the return of control signals or directional recommendations, the actual situation surrounding the vehicle could change. (See Attachment A for additional recommendations, Cummings, M.L., "What self-driving companies should learn from drone remote operations," 2026 IEEE Internation Conference on Human-Machine Systems, Singapore.) These issues should be addressed in the bill.

- Cybersecurity

While Advocates is not an expert on cybersecurity, we suggest that permittees and/or AV manufacturers certify to DDOT that the vehicles meet industry standards for cybersecurity, as is the requirement in California.

For your consideration, we also recommend the principles identified by Phil Koopman, and an expert on AVs and Emeritus Professor, Electrical and Computer Engineering at Carnegie Mellon University, (See Attachment B.) namely:

1. Have a broad definition of what is safe enough
2. Earn trust through transparent actions, not platitudes
3. Have a clear and transparent division of roles between the computer driver and people
4. Have a realistic plan for handling safety-critical 'edge cases'
5. Respect the limitations of both people and machines

The State of AV Technology

Many promises have been touted about AVs bringing reductions in motor vehicle crashes and resultant deaths and injuries, lowering traffic congestion and vehicle emissions, expanding mobility and accessibility, improving efficiency, and creating more equitable transportation options and opportunities.[i] However, as auto industry leaders have acknowledged, these outcomes are far from certain.[ii]

Currently, AV safety performance and reliability are largely unknown to the public. Our main data sources are the National Highway Traffic Safety Administration's (NHTSA) Standing General Order 2021-1 (SGO) and the media. According to data collected by the SGO, there have been approximately 2,574 crashes involving ADS and 3,896 with advanced driver assistance systems (ADAS) through May 15, 2026. These include 59 crashes resulting in a fatality. Some of these are under investigation by NHTSA or the National Transportation Safety Board (NTSB).

As mentioned in the Unreasonable Risk recommendation above, AV manufacturers and proponents of the technology often claim that AVs are safer because they don't get tired, distracted or drive impaired. While some AVs may be readily able to avoid crashes caused by those human drivers who operate impaired, fatigued or distracted, they also may cause crashes that sober, alert and engaged drivers would routinely avoid. AVs, which are essentially billion-dollar pieces of equipment with years of research, should not drive better than only the worst drivers on the road.

Additionally, supporters of AVs often assert that these vehicles will improve roadway safety by inaccurately stating that 94 percent of crashes are due to human error pointing to a report from NHTSA as support for this misleading claim. However, the agency stated in the same document with this statistic that "[a]lthough the critical reason is an important part of the description of events leading up to the crash, **it is not intended to be interpreted as the cause of the crash nor as the assignment of the fault to the driver, vehicle, or environment."**[iii] [*Emphasis added*.] In addition, NTSB Chair Jennifer Homendy has declared that using the statistic in such a manner is "dangerous" and "[a]t the same time it relieves everybody else of responsibility they have for improving safety, including DOT."[iv] Proponents of AVs also have made the claim that these vehicles will prevent 90 percent of crash fatalities.[v] Yet, as NHTSA states in the AV STEP Notice of Proposed Rulemaking, "[t]his proposal recognizes that the potential of ADS is still largely unproven."[vi]

Often, claims made about the safety of AV operations do not provide a complete picture. For example, as of December 2025, "Waymo has driven 170.7 million rider-only miles without a human driver."[vii] Human beings drove 3.29 trillion miles on U.S. roads in 2024 alone. Thus, in its entire history from approximately 2019 to December 2025, Waymo vehicles have operated without a human driver for less than 0.005% of the mileage driven on U.S. roads by human drivers in a single year.[viii]

Waymo claims reductions in "serious injury or worse crashes," "airbag deployment in any vehicle crashes," and "injury-causing crashes."[ix] However, over 45 percent of the crashes reported by Waymo pursuant to the NHTSA SGO had no human occupants in the vehicle. The absence of passengers in a Waymo vehicle in a crash by default lowers the injury rate and could be unrelated to the safety performance of the vehicle given that there was no occupant available to be injured. Moreover, if the goal of AV operations is to transport people, claiming a safety benefit from crashes where no occupant is present is incongruous. Additionally, the majority of the incidents reported by Waymo pursuant to the SGO involved the Waymo vehicle being struck in the rear on roads with speed limits of 25 mph or less, conditions not generally associated with airbag deployments. In sum, Waymo vehicles are operating on roads with lower speed limits and are over involved in rear end crashes, with a large number of incidents not involving passengers in the vehicle.

AVs at the Federal Level (Congress and NHTSA)

There are no federal minimum performance standards for the ADS to ensure the self driving systems will operate as needed to safely detect and respond to all people, vehicles and infrastructure in the roadway environment. Nor are there minimum requirements for related issues including remote personnel safety, accessibility for all, cybersecurity, etc.

NHTSA is currently undertaking several regulatory actions related to AVs. (See Attachment C.) The agency has released several pending notices of proposed rulemaking to make limited revisions to the Federal Motor Vehicle Safety Standards (FMVSS) to "accommodate" the development of AVs rather than ensure their safety in the roadway environment. For example, the agency has proposed amending FMVSS to eliminate the requirements that AVs be equipped with windshield defrosting and defogging systems and removing the mandate for brake controls for vehicles designed never to be operated by a human. In addition, currently pending at the Office of Information and Regulatory Affairs (OIRA) is a notice that would provide interim guidance and enhanced application instructions for manufacturers seeking an exemption to the FMVSS under 49 CFR Part 555.

NHTSA also has indicated that it is working on updating federal AV policy that was last released in 2016 as well as a FMVSS on AV performance focusing on behavioral competencies. The agency will be

hosting a workshop at the SAE Automated Transportation Symposium (ATS) taking place from July 27–30 in San Diego.

Related Federal Legislation
Advocates Supports:

- AV Safety Data Act (S. 3742 / H.R. 4376) Sen. Ed Markey (D-MA) and Rep. Kevin Mullin (D-CA) to improve incident reporting for vehicles equipped with an ADS.
- Know Before You Drive Act (H.R. 7377) Rep. Kim Schrier (D-WA) to upgrades ADS safety by prohibiting misleading claims on the performance of features or components of vehicles equipped with a partial ADS. Included in Motor Vehicle Modernization Act.
- Magnus White and Safe Streets For Everyone Act (H.R. 7353) Reps. Yvette Clarke (D-NY) and Joe Neguse (D-CO) to improve vulnerable road user (VRU) safety by enhancing the performance of automatic emergency braking (AEB) in light vehicles to include bicycle and motorcycle rider detection, in day and low light conditions, at a range of speeds and for a range of colors and complexions of skin, clothing and protective gear. Sets a compliance date. Included in Motor Vehicle Modernization Act.
- SAFE Exit Act (H.R. 6947) Rep. Robin Kelly (D-IL) to improve occupant safety and first responder access by requiring vehicles that are equipped with electronic door latch systems to have a manual door release to overcome potential issues with electrical systems in a crash. Included in Motor Vehicle Modernization Act.
- Stay in Your Lane Act (S. 3536) Sens. Ed Markey (D-MA) and Richard Blumenthal (D-CT) to compel manufacturers of vehicles equipped with an ADS to identify the operation ODD for which the systems can safely operate and restrict operations to such.
- Stop Frontovers Act (S. not yet numbered) Sen. Richard Blumenthal (D-CT) to direct standards to address blind zones and equip vehicles with crash avoidance technology.

Advocates Opposes:
See Attachments D and E on the SELF DRIVE Act (H.R. 7390) and the autonomous commercial motor vehicle (ACMV) section in the BUILD America 250 Act (H.R. 8870).

- Autonomous Mobility Ensuring Regulation, Innovation, Commerce, and Advancement Driving Reliability in Vehicle Efficiency and Safety Act (AMERICA DRIVES) Act (H.R. 4661) Rep. Vince Fong (R-CA) to preempt state laws requiring a human driver or a remote operator in commercial motor vehicles (CMV) operating with an ADS Level 4 or 5 (ACMVs). The bill would also update regulations as well as inform future regulations to make them favorable for ACMV operations including for emergency beacons.
- Autonomous Vehicle Acceleration Act (S. 1798) Sen. Cynthia Lummis (R-WY) to modify existing safety standards to support mass deployment of autonomous vehicles (AV) as outlined in a 2016 Volpe Center Report, *Review of Federal Motor Vehicle Safety Standards (FMVSS) for Automated Vehicles*.

Media Coverage

The Washington Post Editorial Board has repeatedly supported faster robotaxi deployment. (See Attachments F, G, H.) These editorials have argued that they could improve safety and have criticized local resistance in the District and other cities like Boston. Advocates responded with several letters to the editor (LTEs) which offer counterpoints by urging transparency, accountability and comprehensive federal safety standards before driverless cars are deployed onto public roads. We also successfully placed LTEs recently in the *Sacramento Bee* (CA), the *Houston Chronicle* (TX) and the *San Antonio News-Express* (TX).

Our concerns have been reinforced by a steady stream of national and local coverage of safety issues involving primarily Waymo robotaxis. These include:

- A Waymo striking a child near an elementary school in Santa Monica, California (See Attachment I);
- Waymo vehicles illegally passing stopped school buses in Austin, Texas, and Atlanta, Georgia (See Attachments J and K);
- A Waymo blocking an ambulance responding to a mass shooting in Austin, Texas (See Attachment L);
- A Waymo being swept away after entering floodwaters in San Antonio, Texas, prompting a recall and service suspensions (See Attachment M);
- Waymo vehicles entering closed freeway construction zones in California and Arizona, prompting another recall (See Attachment N);
- A Waymo blocked a road as police and fire crews were responding to an apartment explosion in Dallas, Texas (See Attachment O);
- A Waymo drove into live fireworks in San Francisco (See Attachment P); and,
- A miscommunication with San Francisco officials led Waymos to not realize that there were road closures and causing major traffic congestion (See Attachment Q).

Public Opinion

A public opinion poll commissioned by Advocates in March 2026 found that Americans want stronger AV requirements. (See Attachment R.) It found that 81 percent of respondents are concerned about sharing the road with driverless cars, including 42 percent who are "very concerned." Trepidation is even higher for driverless tractor-trailer and delivery trucks, with 85 percent expressing concern, including 54 percent who are "very" concerned. The survey also found that 61 percent said their concerns would be addressed if companies had to meet minimum government safety requirements.

The public also strongly backs specific federal safeguards. The poll found 76 percent support requiring a driverless car "vision test," while among those with a stated position, support rises to 92 percent. It found 74 percent support requiring AV manufacturers to disclose the conditions in which their driverless vehicles can safely operate and ensure the vehicles do not operate outside those limits; among those with a stated position, 89 percent support that requirement. Additionally, 79 percent agree there should be safety standards for remote personnel who provide guidance to driverless vehicles; among those with a stated position, 94 percent agree.

Lastly, the survey found 78 percent support requiring companies to report crash and incident information to the U.S. Department of Transportation (DOT), rising to 93 percent among those with a stated position.

Conclusion

If the District is going to allow deployment of driverless AVs, it should do so in the safest manner possible to protect all road users. While not all encompassing, we believe our recommendations to the AVDAAA would enhance the level of safety for the deployment of AVs in the District.

Additionally, to identify a people-and-safety-first path forward on AVs, Advocates and numerous stakeholders developed the "AV Tenets."[x] (See Attachments S and T.) These sound and sensible policy positions should be a foundational part of AV policy. The AV Tenets are based on expert analysis, real-world experience, and public opinion. They have four main categories including: 1) prioritizing safety of all road users; 2) guaranteeing accessibility and equity; 3) preserving consumer and worker rights; and,

4) ensuring local control and sustainable transportation. They are supported by a coalition of more than 65 organizations representing consumers, public health and safety experts, pedestrians, bicyclists, disability rights activists, emergency responders, law enforcement, labor and others. While the AV Tenets were first established in 2020, the approach remains relevant today as progress in advancing key safeguards to ensure safety and the purported societal benefits of AVs has not been met.

Thank you for your consideration of this information and your focus on ensuring the safety of the public traveling on public roads in the District of Columbia. We are more than glad to be of assistance in any way in furtherance of this shared goal.

Sincerely,

Catherine Chase, President

cc: Members of the Committee on Transportation and the Environment

Encls.:

Attachment A: Cummings, M.L., "What self-driving companies should learn from drone remote operations," 2026 IEEE Internation Conference on Human-Machine Systems, Singapore
Attachment B: "Five Rules of the Road for Automated Vehicle Success", Junko Yoshida & Phil Koopman, Substack, June 20, 2026
Attachment C: "Trump Rips Up Rules", Axios Mobility Newsletter, July 1, 2026
Attachment D: Safety Concerns With Autonomous Commercial Motor Vehicle (ACMV) Language in BUILD America 250 Act, H.R. 8870, Advocates for Highway and Auto Safety
Attachment E: Safety Concerns with the SELF DRIVE Act, H.R. 7390, Advocates for Highway and Auto Safety
Attachment F: *Washington Post* Letter to the Editor, Joan Claybrook, February 7, 2025
Attachment G: *Washington Post* Letter to the Editor, Joan Claybrook, April 4, 2025
Attachment H: *Washington Post* Letter to the Editor, Joan Claybrook, October 26, 2025
Attachment I: "Federal officials investigate after Waymo self-driving vehicle strikes child near elementary school", ABC News, January 29, 2026
Attachment J: "Austin ISD parents concerned after Waymo cars caught illegally passing school buses", Fox 7 Austin, January 15, 2026
Attachment K: "Federal agency investigating how Waymos handle stopped school buses after viral incident in Atlanta", CBS News, October 22, 2025
Attachment L: "Waymo blocks ambulance after mass shooting, raising safety concerns", *USA Today*, March 6, 2026
Attachment M: "Waymo Suspends Service in Six Cities After Cars Drove Into Flooded Roads", *New York Times*, March 22, 2026
Attachment N: "Waymo recalls thousands of robotaxis after some vehicles entered freeway construction zones", CBS News, June 18, 2026
Attachment O: "Waymo blocks Dallas road as first responders rush to explosion", Fox 4, June 4, 2026
Attachment P: "Terrified passengers film Waymo autonomous vehicle driving into live fireworks in San Francisco", Fox News, July 6, 2026
Attachment Q: "Road closure miscommunication with Waymo spoils San Francisco's July 4", SF Gate, July 6, 2026

Attachment R: The Public is Concerned About What is Happening on Our Roadways and Are Demanding Action, Results from Online CARAVAN Survey March 2026
Attachment S: Autonomous Vehicle (AV) Tenets
Attachment T: AV Tenets Supporters List

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[i] Autonomous Vehicle Industry Association, State of AV Report 2026.

[ii] Kristopher Brooks, *The main reason why self-driving cars are not ready for prime time*, CBS News (May 1, 2024); Nilay Patel and Andrew J. Hawkins, P*ete Buttigieg is Racing to Keep Up with Self Driving Cars*. The Verge (Jan. 6, 2022); Rebecca Fannin*, Where the billions spent on autonomous vehicles by U.S. and Chinese giants is heading*, CNBC (May 23, 2022).

[iii] Singh, S. (2015, February). Critical reasons for crashes investigated in the National Motor Vehicle Crash Causation Survey. (Traffic Safety Facts Crash Stats. Report No. DOT HS 812 115). Washington, DC: National Highway Traffic Safety Administration.

[iv] Hope Yen and Tom Krisher, NTSB chief to fed agency: Stop using misleading statistics, Associated Press (Jan. 18, 2022).

[v] Iyad Rahwan and Azim Shariff, *Self-Driving Cars Could Save Many Lives. But Mental Roadblocks Stand in the Way*. Wall Street Journal (Apr. 6, 2021).

[vi] 90 FR 4132.

[vii] https://waymo.com/safety/impact/.

[viii] Traffic Safety Facts, Research Note: Overview of Motor Vehicle Traffic Crashes In 2024, NHTSA, DOT HS 813 791, Apr. 2026.

[ix] https://waymo.com/safety/.

[x] See: https://saferoads.org/autonomous-vehicle-tenets/.

What self-driving companies should learn from drone remote operations

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***Abstract*—Self-driving vehicles have demonstrated impressive performance in structured and low-complexity environments but struggle in uncertain and dynamic situations. Consequently, deployed self-driving systems rely on human oversight through remote operations. This paper argues that remote operations are a safety-critical capability whose design will strongly influence the near-term viability of self-driving vehicle deployments. Drawing on more than 35 years of U.S. military experience with unmanned aerial vehicle (UAV) remote operations, this paper synthesizes five lessons directly applicable to self-driving cars: latency constraints, the importance of human-centered workstation design, the challenges of managing operator workload, the need for systematic operator training, and the necessity of robust contingency planning. Military UAV operations demonstrate that failures in any of these areas can lead to catastrophic outcomes. Recent self-driving vehicle incidents are examined through this lens, revealing critical gaps in current industry practices and offering evidence-based guidance for safer, more resilient remote operations.**

Keywords—self-driving, remote operations, UAV, drone, lessons

I. Introduction

While developers of self-driving cars have made many impressive advances, onboard artificial intelligence (AI) continues to struggle when making decisions in novel situations [2]. While such systems may perform well in low complexity scenarios and do not get distracted or fatigued like humans, scenarios with significant uncertainty often result in self-driving vehicles behaving in unpredictable ways. Recently Waymo's fleet of self-driving cars froze in place when San Francisco experienced a power outage [3]. Cruise's self-driving car operations ended when one of its vehicles could not cope with the uncertainty of a jaywalking pedestrian, causing severe injury [4]. Because of such events and gaps in self-driving vehicle capabilities, all these cars currently require some degree of human oversight and intervention in the form of remote operators who supervise and direct the cars via a digital connection.

Remote operations for unmanned vehicles have a long history. With the rise of Unmanned Aerial Vehicles (UAVs), aka drones, it was recognized by the Department of Defense (DoD) in the 1980s that humans would need to supervise drone operations through video and telemetry data links [5]. The DoD experienced a sharp learning curve for UAV remote supervision due to many accidents caused by inadequate designs of both the remote operations stations but also in the design of training programs for UAV operators. The military's more than 35 years of remote control and supervision lessons learned for UAV operations, often in blood, could inform remote operations of self-driving cars so safety can be expedited.

II. Human Supervisory Control

Remote human oversight of autonomous vehicles has a formal name, which is human supervisory control [6]. For self-driving cars, supervisory control can happen in one of four ways, as outlined in Table 1. Teleoperation is a classic and low-level form of supervisory control where remote humans have a set of controls that allow them to directly control speed, heading and turn rates. As seen Table 1, teleoperation can be done remotely using a proxy driving simulator, but it can also be executed in or near a vehicle. As will be discussed in a later section, teleoperation is especially sensitive to any time delays of the control signals.

TABLE 1: DIFFERENT TYPES OF SUPERVISORY CONTROL IN SELF-DRIVING OPERATIONS

Remote Driving	Remote Assistance	In-vehicle Teleoperation	In-situ Teleoperation
An operator directly makes longitudinal (acceleration or deceleration) and turning/heading changes through a dedicated communication channel. Most companies use controls seen in car racing video game simulations that include a steering wheel and brake and acceleration pedals.	An operator issues goal-based commands to a vehicle through a point-and-click paradigm to control speed and path planning, often called laying breadcrumbs. This mode also includes humans interpreting the world for the car due to computer vision limitations, e.g., hand signals and construction zone signage.	A set of physical or digital controls located *inside* the vehicle, which allows an operator to directly control speed and heading. This mode of control typically is used intermittently when the onboard autonomy cannot safely operate, such as an operator sitting in the right passenger seat.	A set of physical or digital controls located *outside* the vehicle and within line of sight, allowing for either rate control of speed & heading changes (the use of a trailing chase car to provide emergency oversight), or 2) goal-based control, similar to remote assistance, e.g., Tesla Smart Summon.

A more robust form of remote operations is remote assistance. By providing, for example, a breadcrumb trail of dots to follow on a screen, a remote operator can instruct a vehicle which path to follow and also specify a speed, so that the car does the actuation. While not as time sensitive as teleoperation, this mode is still affected by time delays. In-vehicle teleoperation (Table 1) typically occurs in early-stage testing for self-driving cars and in-situ teleoperation only works at slow speeds in very limited environment. Fleets are controlled through remote driving and assistance, so these modes are more aligned with extensive military UAS operations and are the focus of this paper.

III. The Five Lessons

Since the US military has been operating with remote operations centers where humans have performed both remote teleoperation and remote assistance for 35 years, there is a large body of literature on these remote operations. In this research about military UAV remote operations, five themes are dominant: Latency, workstation design workload, training and contingency operations. The following sections detail these lessons learned.

A. Latency in the Elephant in the Room

When any type of vehicle is remotely operated, latency of the command and video signals to and from the remote center is a primary concern. In the early days of UAV operations, the Air Force allowed their pilots, located in Las Vegas, to remotely take off and land using teleoperations in the middle east. With a typical delay of 2s [7], their accident rate was so high, that these operations were replaced with local operations (short range, line-of-sight) [8] and eventually completely automated [9]. Even beyond take-off and landing, the fragility of the data-link made it very difficult for aircrew to adequately perform their missions [10].

The problems with control and signal latency are exacerbated by a well-known human-induced latency called the neuromuscular lag, which means that humans cannot reliably respond to incoming information less than 200-500ms [11]. Thus, any remote operator cannot be expected to correctly respond to external stimuli that requires a response in less than that time, which have led to many UAV crashes. For self-driving teleoperation, any operations requiring a remote operator to take control in less than .2 s to avoid an accident (assuming no delay in the signal, which is never true for remote operations) is very unsafe.

In terms of signal latency, the typical approach for self-driving car companies is to use the best of three cell phone signals to transmit messages, with the best meaning the one with the shortest delay. Cell phone signals are notoriously unreliable, particularly in urban canyons and dead zones so it is generally recognized that self-driving teleoperations are not robust to signal problems. Instead, companies like Waymo prefer the remote assistance option where operators interpret signs AI cannot understand and to assist in situations of high uncertainty.

While remote assistance is more robust to latency than teleoperations, self-driving vehicles can still suffer from latency issues. A Waymo vehicle was struck broadside when a remote operator gave a command to a vehicle to make a left turn on a yellow light, which was actually red due to the delay in communications [12]. These delays are dramatically worsened by Waymo's choice to move its remote operations center from the US to the Philippines [13], which was very much on display in the San Francisco power outage in 2025. In addition to problems with remote assistance signal delays and operator neuromuscular lag, there is an inherent cognitive switching cost when remote assistance operators switch between tasks, which can cause even further delays. Such switching costs are well established in UAV operations and discussed further in the workload section.

B. Workstation Design Matters

Another major lesson learned from UAV operations is that poor workstation design, both controls and interfaces, can undermine efficiency and safety. The US military has lost many UAVs because basic human factors considerations were not applied to the design of cockpit controls, decision interfaces, and issues with mode confusion. Mode confusion occurs when an operator does not understand the current mode of automation. This lack of understanding can cause catastrophic human-system failure due to confusion over who is in control (the human or system). This is a pervasive problem in manned and unmanned system, leading to UAV crashes [14, 15]. The lack of human factors considerations and finger-in-the dyke approaches to the development of procedures to help operators combat uncertainty are significantly contributors to unmanned system crashes [10, 16-19].

Fig. 1 illustrates that for the first 18 years of military UAV operations for four different platforms, human factors issues were a significant cause of crashes [1]. The Air Force's Predator had the most human factors-caused crashes (67%). These crash causes include display design, procedure design, operator fatigue and training issues. To further elucidate the problems caused by poor workstation design, Fig. 1 also depicts how many of the human factors-caused crashes were due to poor interface design (both visual and aural), as well as crashes caused by poor procedure design.

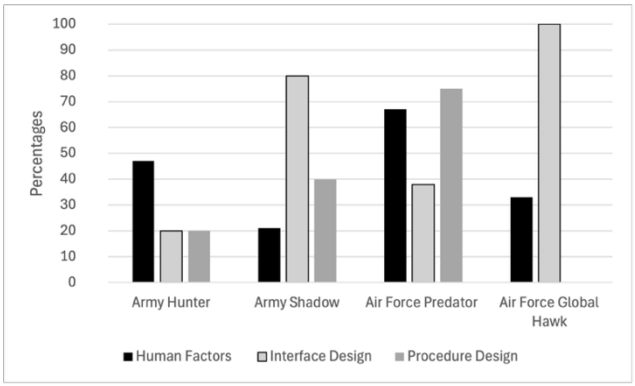

Fig. 1. UAV crashes (1986-2004) caused by human factors issues, including poor interface and procedure design. These categories do not sum to 100% because both factors could be present in an accident [1].

The Air Force's Global Hawk, a highly automated aircraft, only lost a single aircraft because of human factors problems, which was caused by a poor interface that allowed the aircraft to taxi at 155 kts. The Army's Shadow had a high number of crashes due to poor interface design (80%). Lastly, poor procedure design was a factor for 75% of Predator accidents, but the US Army also experienced these problems as well.

Because companies have been very opaque about self-driving remote operations, it is difficult to know whether and to what degree their designs suffer from similar problems. However, recent reports of self-driving shuttle accidents provide some insight into possible poor control designs. Many slow speed shuttles have onboard operators that use gaming devices like an Xbox or PS5 controllers to control the vehicle *in situ* (Table 1) through intersections or other complex scenarios. These are considered nonstandard devices and there is a strong likelihood there could be a negative transfer of training if gamers become shuttle operators. In addition, such devices require very little pressure to move and operators who are not secure and stable in their control positions can experience inadvertent control actuation. In the military, force feedback was inserted into digital controls forty years ago to prevent accidental misapplications. In terms of remote operations, Waymo's inability to operate during the 2025 power outage, not even to recall their vehicles, suggests there are problems in the design of their workstations.

C. *Operator Workload*

Military UAV remote operators are often overworked and paradoxically, also suffer from intense boredom, depending on the operations. For example, if remote operators teleoperate during missions, their workload is extremely high and fatigue becomes a significant factor in crashes [20]. On the flip side, during periods of remote assistance where the onboard autonomy performs well, such as holding to wait for a person of interest to emerge from a building, boredom has been a major contributor to degraded performance [10, 21]. Vigilance, the ability to sustain attention in low workload scenarios, has been shown to cause high stress and exhaustion to remote operators of such systems. Complacency, a common outcome when vigilance is an issue, plays a large role in many operators' inability to sustain attention and has been cited in past [22] and recent UAV crashes [23].

Little is known about the workload levels of remote operators of self-driving cars, as companies have been very opaque. Their tasks appear to range from interpreting signs to assisting self-driving cars when they get stuck in a dead end and even figure out what to do when they drive into a flood zone. When the scenarios are simply and relatively straightforward, workload and stress are low. Indeed, in these scenarios, boredom and complacency may become factors. However, when scenarios are complex and real emergencies, like during a power outage or when a car drives into an active shooter scene, just like the UAV operators, self-driving remote operators can find themselves quickly overwhelmed. Research has shown that emergency remote operations for can cause remote operator workload to spike and that staffing levels under nominal conditions will likely not be sustainable under emergency conditions [24]. Waymo's inability to cope with the power outage in San Francisco further validates this concern.

Workload levels are directly tied to staffing, and companies are incentivized to maximize remote operator utility to save money. Given reports that Waymo has 70 operators on duty in the Philippines to supervise around 2000 cars [25], these remote operators are supervising around 29 cars each. Research has shown it is possible to have one person supervise multiple autonomous vehicles [26], but controlling high numbers of vehicles results in high stress and cognitive switching costs that undermine system performance [27]. This means that operators must spend additional time gaining situation awareness about the new vehicle after a switch. Chinese regulators have recognized this and have mandated that a single remote operator can only supervise three vehicles [28].

There is very little data about the performance of Waymo's remote operators but one recent stream of data provides some insight into how well remote operators are handling such high workload. Recently the San Francisco Municipal Transportation agency provided data that shows how often Waymo vehicles block city busses and trains [29]. Based on this data, Fig. 2 illustrates that since 2023, there has been a dramatic rise primarily in the number of Waymo blocking and freezing events, especially between 2024 and 2025. The near-miss and illegal behaviors for Waymo exceeded the number of collisions in 2025, which is important because such events are leading indicators of collisions.

The blocking and freezing events occur when Waymo's software is incapable of handling the current situation and these situations exemplify where a remote operator must be called to provide assistance to determine the correct course of action. Waymo expanded operations in San Francisco through 2023-2025 so the rise in events is not unexpected. To determine how well the Waymo remote operators are coping with this increased number of events, the delay times associated with these events are instructive.

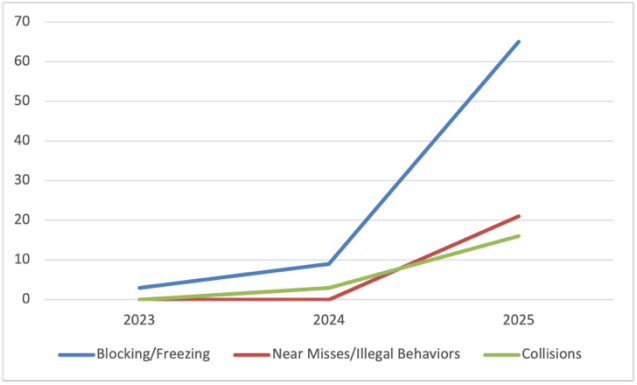

Fig. 2. From 2023-2025, the number of events where Waymo self-driving cars froze in place or either blocked San Francisco busses and trains, engaged in near misses or other illegal behaviors, and collided with busses or trains.

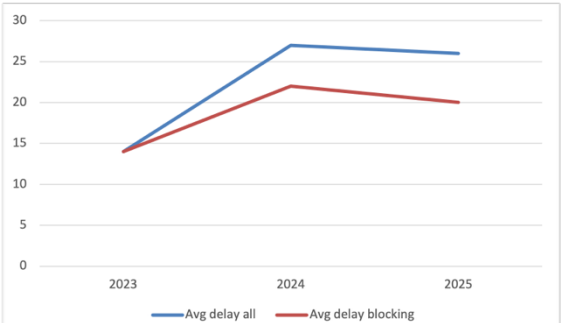

Fig. 3. From 2023-2025, the average delay time in minutes when Waymo self-driving cars collided and froze in place or blocked San Francisco busses or trains, compared to just delay times due to freezing and blocking (no collisions).

Figure 3 demonstrates how average delay times have changed between 2023-2025 for all incidents involving collisions and freezing and blocking events, as well as the average delay times for just blocking and freezing events [29]. As expected, when the data includes collisions, the time to clear an event for remote operators is, on-average, 5-6 minutes higher than just for blocking and freezing events. However, what is critical to note is that the blocking and freezing averages between 2024 and 2025 (M = 21.5 m, SD = 9.2 m and M = 20.3 m, SD = 15.1 m, respectively) are statistically the same (t_{55} = -0.217, p = 0.82). This means that for this one sample, delay times are not improving,

While it is a positive result that delay times are not getting worse as operations ramp up (for both numbers of vehicles and remote operators), the flat delay times suggest that there is little-to-no maturation occurring for the quality of remote operations in trying to clear delays. There should be a noticeable decline in delays over time - no congested city like San Francisco can tolerate self-driving cars blocking roads for 20 minutes at a time. The data in Figs. 2 and 3 suggest Waymo needs to take a hard look at the quality of its remote operations, especially as it relates to possible high levels of workload. The US military has been trying to invert staffing from multiple people controlling a single medium or large UAV to a single person controlling multiple UAVs since the early 2000s. Despite hundreds of millions of dollars in research and development, the U.S. military still requires multiple people to supervise a single UAV, primarily because of workload and cognitive switching costs.

D. Operator Training

In a perfect world, an organization would conduct a knowledge, skills, and abilities (KSAs) assessment prior to operations in order to determine the most effective training program. Especially for vehicles controlled by autonomy and/or artificial intelligence, it is important to ensure operators are trained so that they understand the modes of autonomy and AI so that mode confusion does not result. Unfortunately, many organizations consider training as a low priority item and are more reactive instead of proactive. In terms of military UAV operations, the first formal KSA analysis was not performed until well after UAV operations were established [30]. The result of this lack of training preparation for a new field of supervisors of autonomy and AI was a string of UAV accidents [19].

Since there are no regulations regarding the training or certification of self-driving cars and companies are very secretive about their practices, little is known about the training programs for remote operators. There are no published studies about the required KSAs for remote operators of self-driving cars and there are few indications that the self-driving industry has been proactive in determining minimum training requirements. One exception is recent research by Vay remote driving technologies, who demonstrated that experience and training are critical for effective remote driving and as expected, latency can cause controllability issues [31]. Beyond this sliver of information, there is still a significant amount of needed research in determining the core KSAs for both remote assistance and driving.

Certification is also a key element of training in that operators must be certified by independent authorities to ensure the highest preparedness for operations in safety-critical environments. Military personnel are held to a strict checkride assessment policy that should be emulated in self-driving remote operations. Moreover, such checkrides also should reflect major upgrades in any system capability. For example, if a new end-to-end learning system is put in a self-driving car stack, new remote operator training programs and certifications are also needed to ensure the human supervisors are not caught off guard with new software upgrades.

E. Contingency Operations

Contingency planning is a core element of both military and commercial aviation. Prior to every flight for both manned and unmanned flights, there is a brief about what to do if radios fail. Global Hawk UAVs land themselves if they lose link and other less capable UAVs fly themselves to safe areas over unpopulated terrain to attempt to reestablish contact [32]. However, the U.S. RQ-170 Sentinel downed by Iran in 2011 using GPS spoofing highlights what can happen when companies cut corners. There were no onboard protections for GPS hacking, even though this was a well-known capability at that time [33]. Cybersecurity is a critical threat to both unmanned aviation assets and self-driving cars, especially GPS spoofing, but there is no indication from self-driving companies that they are prepared for such attacks, which are not difficult to launch.

Waymo's inability to operate during the power outage in San Francisco in 2025 also signals a lack of proper contingency planning. The military addresses such possibilities by having onsite generators, as well as multiple physically disparate remote ground control stations so that if one station goes down, UAV supervision can be very quickly transferred to another remote operations center. Supposedly self-driving cars can execute a minimum risk maneuver such as pulling to the side of the road if there is a problem that prevents the car from continuing a trip. However, the power outage resulted in cars frozen in place on the road, blocking both regular traffic and first responders, so it is clear more needs to be done to ensure these minimum risk maneuvers are not performative.

IV. Relating These Factors to Accidents

To better understand how these five factors relate to accidents for UAVs, they are placed into the Swiss Cheese accident framework (Fig. 4). The Swiss Cheese framework, originating from aircraft accident research [34], illustrates that accidents occur in complex systems when multiple layers of defense—organizational policies, supervision, working conditions, and operator actions—have weaknesses, i.e., holes, that align. These layers are notionally intended to prevent hazards from leading to harm, but failures can and do occur. These weaknesses are often systemic rather than the fault of one person, so that even when a pilot or remote operator makes a mistake, i.e., an unsafe act, failures in the other layers can significantly contribute to severe consequences from a human mistake.

Figure 4 illustrates which layers the five key considerations for effective remote operations influence in the Swiss Cheese framework. Inadequate training, poor workstation design and significant latency all are preconditions for unsafe acts for both UAVs and self-driving, as previously discussed. What is very concerning is that for self-driving remote operations, if these hazards are not explicitly addressed, it is just a matter of time before all three factors contribute to a crash.

Operator workload sits between the unsafe supervision and the preconditions for unsafe acts layer in Fig. 4. This is because in remote operator centers, there should be two layers of supervision for the humans controlling the vehicles, managers on duty whose directly oversee operations and managers who do the medium-to-long range staffing planning. The US military has spent significant money on developing both the real-time management and overarching staffing models. However, it is not clear to what degree self-driving car companies are engaging in these best practices. For example, did Waymo organically develop the practice of requiring humans to supervise 29 vehicles or was there a first-principles approach that determined this was the best approach?

At the organizational end of the Swiss Cheese framework, contingency planning sits between the unsafe supervision and organizational layers because this function should be dictated by leadership and executed by supervisors. For example, it was clear that real-time human supervision was inadequate in the massive power outage that caused havoc for self—driving cars in San Francisco, but it was also a leadership failure for Waymo.

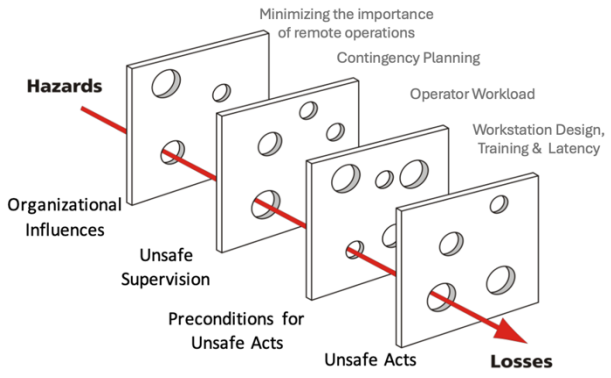

Fig. 4. Remote Operations and the Swiss Cheese Model

Lastly, the summative lesson that should be learned from these factors is that the importance of grounded and well-resourced remote operations cannot be trivialized. Remote operations have been the critical lynchpin for US drone successes, but many aircraft were lost until the lessons laid out in this article were learned. Self-driving car leaders should heed these lessons and embrace the fact that remote operators are not a temporary fix for artificial intelligence software problems. They are and will continue to be for some time an integral part of the self-driving ecosystem

V. Conclusion

The history of military UAV remote operations offers a cautionary but instructive roadmap for the self-driving car industry. These lessons are unequivocal: minimizing latency is paramount, poor workstation design amplifies human error, operator workload can fluctuate between dangerous overload and performance-degrading boredom, inadequate training can lead to crashes, and insufficient contingency planning can paralyze an entire fleet during foreseeable disruptions. Each of these factors alone, and especially in combination, can lead to accidents.

Self-driving car companies may be repeating many of the same early mistakes made in military UAV programs more than 30 years ago. Reliance on remote human intervention with long latencies, combined with opaque staffing models, unclear training standards, and limited evidence of robust contingency planning, suggests that remote operations have been treated as an operational afterthought rather than a safety-critical subsystem. If self-driving vehicles are to scale safely in the real world, remote operations must not be trivialized and should be approached with the same rigor applied to flight-critical systems in aviation. The military UAV community learned these lessons at great cost. The self-driving industry has the opportunity— and the responsibility —to learn them faster, before similar failures cause public harm.

Acknowledgment

Support from US Air Force, US Navy, US Army and US Marine Corps UAV squadrons was the cornerstone for this effort. The anonymous reviewers were also very helpful in shaping this article.

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Attachment B

Five Rules of the Road for Automated Vehicle Success

Where does the AV safety stand today? Put more bluntly, is AV safety a solved problem? We review our discussions so far in this series.

JUN 20, 2026

(Image: iStock)

By Junko Yoshida & Phil Koopman

Before robotaxis started wheeling around public roads, people with virtually no exposure to Autonomous vehicles (AVs) wondered if computer drivers could navigate an entire trip without crashing into something.

As robotaxi deployment scales up, its observers—while impressed with AV progress—now wonder whether there might be AV safety issues beyond an apparent reduction in collisions.

The AV industry has relentlessly pursued a narrative that reduction in collision rates is the only safety metric that matters. Typically that is accompanied by a position that any remaining hesitation can be resolved by familiarity and education.

Statistics such as fewer collisions per mile and (when enough data eventually becomes available) fewer fatalities per mile are table stakes. They offer evidence for some aspects of the safety of AVs. But is that enough? Is net statistical collision reduction the metric that will make AVs socially acceptable?

It turns out, there is more to public acceptance than net statistical collision rate data and education. A recent JD Powers consumer study found that a "persistent gap continues between growing awareness of automation and rising expectations for safety

and transparency." So education is happening, but the confidence gap is growing rather than shrinking.

Perhaps the AV industry needs to rethink their safety measurement and messaging strategy, because it doesn't seem to be working as they thought it would.

We believe that the crux of this confidence gap is the mounting evidence that autonomous vehicles, insufficiently schooled in contextual awareness, are too often found to be shockingly clueless.

Do robotaxis know better than to plow into a flooded road? Can they learn to discern the nuanced differences in the appearance of stop signs? Can they negotiate the chaos of a school drop-off zone? Based on news stories and social media videos, apparently not.

We're assured that AVs are "learning." So, one option is to simply keep faith in technology progress. But after hundreds of millions of miles of experience, and promised fixes that don't really work, that faith has worn thin for many.

Some consumers are already sensing that AVs, after all, might not be as smart as they're cracked up to be. The other option is to keep asking questions, pressing to understand what AVs can and cannot do today. Rather than requiring infinite patience, perhaps figure out what can be done to mitigate the continual, embarrassing stream of AV incidents.

So, the $64 billion+ question is: Where does the AV safety stand today? Put more bluntly, is AV safety a solved problem?

We think not.

To understand why, we present five rules we've come to understand for a robotaxi to succeed. All five of these areas need more work before the AV industry can justifiably claim success.

1. Rule One: Have a broad definition of how safe is safe enough.

For years, people have longed for simple metrics to determine AV safety. Fatalities and injuries per mile seem like an an obvious starting point for determining if AVs are making roads safer than human drivers. The promise (and lobbying premise) has always been that AVs will inevitably save lives.

But this stat has proven impractical. We are still hundreds of millions of miles from knowing whether robotaxis will actually save lives based on statistical outcomes. The challenges to collecting data include how to account for major changes in software tending to invalidate previously accumulated operational miles, dealing with the nuances of the human driver baseline including vehicle age, definition of an "average" human driver, whether a merely average driver is even the right baseline, different driving conditions, weather conditions, and so on. But even if all these challenges had

been solved, there still is nowhere near enough data to know whether AVs will save lives compared to a reasonable human driver in comparable conditions.

Nonetheless, challenges with credible statistical net safety measures have not stopped the AV industry from proclaiming victory on being dramatically safer than human drivers.

More importantly, however, debating the validity of the statistical analysis was always a distraction as far as public perception is concerned. Deep understanding of the meaning of a failure to reject a null hypothesis and what exactly a 95% confidence interval might be are both rare and largely irrelevant to public acceptance. In the end, they matter as predictors of what will become obvious at larger scale. But those are not what you hear about in general discussions.

Rather, the cognitive dissonance appears when someone hears both: (1) robotaxi companies claiming they are safer than human drivers, and (2) pervasive news and social media reports of AVs misbehaving by driving on light-rail tracks, running red lights, heading into incoming traffic, driving into flood waters, blowing past stopped school buses, or blocking emergency vehicles. Asking people to ignore the evidence of their eyes and ears is a heavy lift when the counter-argument is based on abstruse statistical analysis.

It turns out there is more to societally acceptable safety than counting up crashes. An interesting list can be found at the UK police web page describing dangerous, careless,

and inconsiderate driving, including issues that go beyond obvious traffic law offenses such as: misusing lanes to gain advantage over other drivers, unnecessarily braking, driving through a red light by mistake, and turning into the path of another vehicle. What society wants is careful and competent drivers, with that characterization extending far beyond counting up crashes, last-second maneuvering to attempt to avoid impeding crashes, or narrow claims of "absence of unreasonable risk".

In short, credible safety isn't about just achieving a certain net statistical number. For AVs to become socially acceptable, they must meet the expectations of all stakeholders. That includes acceptably low crash rates. But it also includes avoiding reckless driving even if the AV is good (or lucky) enough to avoid too many at-fault crashes.

For more on what it means to be safe enough, see: Phil's Essay, Junko's Essay, and our podcast.

2. Rule Two: Earn trust through transparent actions, not platitudes.

By now, every AV mishap triggers the mantra from robotaxi companies that "safety is our top priority." But we know that can't possibly be true.

A slogan—Safety First—is obviously incorrect, because investors rightfully want profits. Safety First can too easily be seen as a cynical public relations ploy rather than an actual company commitment to attend to the very serious topic of mitigating

freshly discovered operational risks that have resulted in an incident. And that erodes credibility.

But a more disturbing issue with "Safety First" is that it is neither an explanation nor a valid excuse for why no explanation is needed. Why did the incident happen? What is being done to fix it? Why did the previously promised fix not prevent the next dozen similar incidents? And so on.

"Safety First" is neither an explanation nor a transparent commitment to safety improvement. Rather, it amounts to a "trust us bro" deflection that substitutes a slogan for action.

A better approach is transparent explanations and tracking improvements. An incident happened because of some specific reason. The following specific steps are being taken to prevent future incidents. Here is a tracking dashboard of how things are improving and what is being learned about the challenges of operational environments along the way.

Transparency and visible improvement will build trust that slogans never will.

For more on the issues of "safety first" messaging strategies, see: Phil's Essay, Junko's Essay, and our podcast with historian guest Prof. Peter Norton.

3. Rule Three: Have a clear and transparent division of roles between the computer driver and people.

While the dream for decades has been completely driverless cars, it turns out that today's robotaxis still need to turn to people for help with driving. While the conventional role of normal operational driving might be turned over to a computer, people are still very much involved when the computer needs some help.

Defining the various roles that humans play in a clear and transparent way is crucial for building public acceptance and ensuring safe operational outcomes. The continuing reluctance of the AV industry to embrace the role of people in their robotaxi operations falls apart (and degrades public trust) when confronted by revelations of dozens of remote operators, police having to move stuck robotaxis at emergency scenes, an hour-long wait for passenger extraction from a few inches of flood water, and city-wide strandings of confused robotaxis in a power blackout when insufficient remote help is available.

In the first piece of this season, Phil broke down into six types of roles played by humans in autonomous vehicles: Operation, Supervision, Decision, Response, Standby, and Maintenance. He outlined that for each activity, the person might be on-site (in, near, or able to travel to the system to manually access system controls), or might be remotely connected by data link. Contrary to protestations by AV CEOs, all of those roles carry important safety considerations.

On the other hand, the argument that "it's not fully autonomous if an AV hands off tasks to a person" is an irrelevant preconception. The hard reality is that AVs will need

human help for the foreseeable future, extending easily a decade or more. That does not make them useless.

Needing help is not a barrier to commercially successful deployment if safety can be handled properly. And the first step of doing that is admitting that humans contributing to AV operations are here to stay.

Hiding the human role in operational safety while insisting that the computer is solely "responsible" for safety won't provide the transparency and engineering honesty required for long-term safe operations. (As if a computer can be "responsible" for anything.)

It is absolutely necessary to clarify when, how and who makes safety critical decisions in AVs. Companies must define when the computer driver has to cede authority and have the humility to acknowledge that current AV technology cannot operate successfully without humans playing critical parts in the decision process when needed.

At the same time, humans have limitations, and in particular can take a while to establish situational awareness when a robotaxi has gotten itself into a mess. Ensuring that remote operation sessions end with happy customers and no adverse media stories (much less harm to people) requires designing the remote operational strategy to respect the boundaries and limitations of both machines and humans.

People very much play an increasingly small, but nonetheless critical role in safe AV operation. That does not make a robotaxi not a robotaxi. But pretending the role is zero won't get us to societally acceptable at-scale operations.

For more on the roles humans play in robotaxi operations, see: see: Phil's Essay, Junko's Essay, and our podcast.

4. Rule Four: Have a realistic plan for handling safety-critical 'edge cases.'

Since the early days of trying to commercialize AV technology, it has been apparent that the biggest technical safety challenge would be chasing down the long tail of "edge cases." They are said to form a long tail because the AV needs to be trained on a huge number of different situations, each of which is individually rare, but in aggregate present too big a residual risk to ignore.

The robotaxi company plan has always been to accumulate miles, find, catch, and fix the long tail edge cases problems, sometimes with road miles, later with extensive simulation. But the industry is still loath to admit what has been obvious all along — you can't catch them all. And even if you did catch them all today (which you can't), there will be newly-minted edge cases to chase tomorrow.

The AV industry has tacitly conceded defeat on the edge case-chasing search to catch them all. That admission comes in the form of using remote assistants to provide

decision support, remote supervisors to monitor operations, incident response teams, and various other roles people play in getting robotaxis un-stuck.

The good news on edge cases is you don't have to catch them all and train on them to be able to operate. But what you must do is to make sure your AV can understand when it needs help.

Since an AV can presumably drive safely enough in situations it has been trained for, that means that ensuring acceptable safety boils down to safely handling edge cases.

Safe edge case handling has two main parts. The first part is the AV has to know it has wandered into an untrained-for situation before it gets itself too deep into trouble. It needs to be capable enough to recognize it is facing a situation it has not been adequately trained for (i.e., an edge case), and get itself into a temporarily safe situation, then phone home for help. The second part is that the human support team needs to have the skills, situational awareness, and control authority to extricate the AV from whatever dilemma it has got itself into. For the most part, every embarrassing robotaxi news and social media story is a study in how one or both of those to parts went wrong.

AV deployment outcomes will fare better if everyone candidly acknowledges that edge cases are a forever problem, and that addressing them will require human support for the foreseeable future. Rather than worrying about whether this means robotaxis are or aren't truly "autonomous" is beside the point. What we need to make sure of is that

the collaboration of a most-automated, but sometimes-human-guided vehicle system is safe.

For more on the how edge cases figure into automated vehicle operations, see: Phil's Essay, Junko's Essay, and our podcast.

5. Rule Five: Respect the limitations of both people and machines.

Despite recent growth in robotaxi deployments, they are still a drop in the proverbial bucket in the US, much less the world. Scaling up to the point that any realized safety benefits move the needle in a public health sense is decades away.

We're seeing more and more cars with computers that mostly drive. So-called Level 2 driving automation features have a human driver that acts as a spectator and referee while a computer tries its darndest to perform the driving task.

Capabilities vary widely, starting with basic models that are in essence cruise control for lane following in addition to speed. Human drivers don't have to wait long in such systems to be reminded that they are hardly capable of more than following a well-marked open lane, following a well-behaved leading car, and not a lot else.

However, more capable so-called Level 2+ vehicles have evolved to the point that they are almost — but not quite — a robotaxi. They might read road signs, interpret traffic lights, navigate turns, and so on. They have become highly capable drivers, sometimes able to go for many miles or even entire trips with no actions by the driver.

But to say that they do not need a driver is fundamentally wrong. Fatally wrong in some cases.

Ensuring that a human supervisor maintains the engagement, situational awareness, and skills needed to determine when and how to intervene when a Level 2 vehicle misbehaves is a crucial problem for safety. A problem that still needs a lot of work.

The situation is made worse by marketing and social narratives that such a vehicle "drives itself." There is a big difference between driving safely and not-quite safely. Sometimes that corresponds to the difference between someone being alive and not-quite alive.

The big issues here are (1) defining a role for a human supervisor that respects human cognitive, reaction time, and other limits, and (2) ensuring that automation works in a way that supports rather than ignores those limits.

Some of these issues also apply to remote assistants for Level 4 robotaxi and autonomous truck vehicles as well. Humans have amazing strength in muddling through unstructured novel situations. But they have a tough time paying attention to boring tasks, and they need time to figure out how to manage when they are suddenly presented with an automated driver that has gotten itself into a mess.

For more on the issues with humans supervising vehicle automation, see: Phil's Essay, Junko's Essay, and our podcast with NTSB Deputy Director (Office of Highway Safety)

Kristin Poland.

Bottom line

As designed today, AVs face minimal technical and operational scrutiny. They can deploy and scale up in secrecy, being held to account only in response to dramatic incidents. Even significant public safety concerns have been at times shrugged off with a comment that amounts to they are willing to accept the risk they are imposing on other, vulnerable road users.

In any other industry there would be dramatically more regulatory oversight, independent assessment, and requirements to conform to industry consensus safety standards before members of the general public were subjected to risks imposed by novel, still-maturing life-critical technology.

Given so much freedom to operate on public roads, the AV and highly automated vehicle industries owe the public a higher level of safety care and transparency than we have been seeing. That should include a broad definition of safety responsive to societal stakeholder concerns, earning trust through transparent actions, establishing a clear and transparent division of roles between computers and people, coming clean about the role of edge cases in safety, and respecting the limitations of both people and machines.

Attachment C

Axios Future of Mobility

July 01, 2026

Joann Muller

CA **Happy Canada Day** to all who celebrate! Here in Detroit, we love our neighbors to the south! (Look at a map.)

⚠️ The Trump administration's plan to eliminate brake pedals in driverless cars is part of a larger effort to modernize outdated vehicle safety standards.

- **Plus,** Rivian CEO RJ Scaringe hopes to avoid a recurring nightmare.

I hope you enjoy a long holiday weekend! 🎆 US

1 big thing: Trump's new vehicle standards

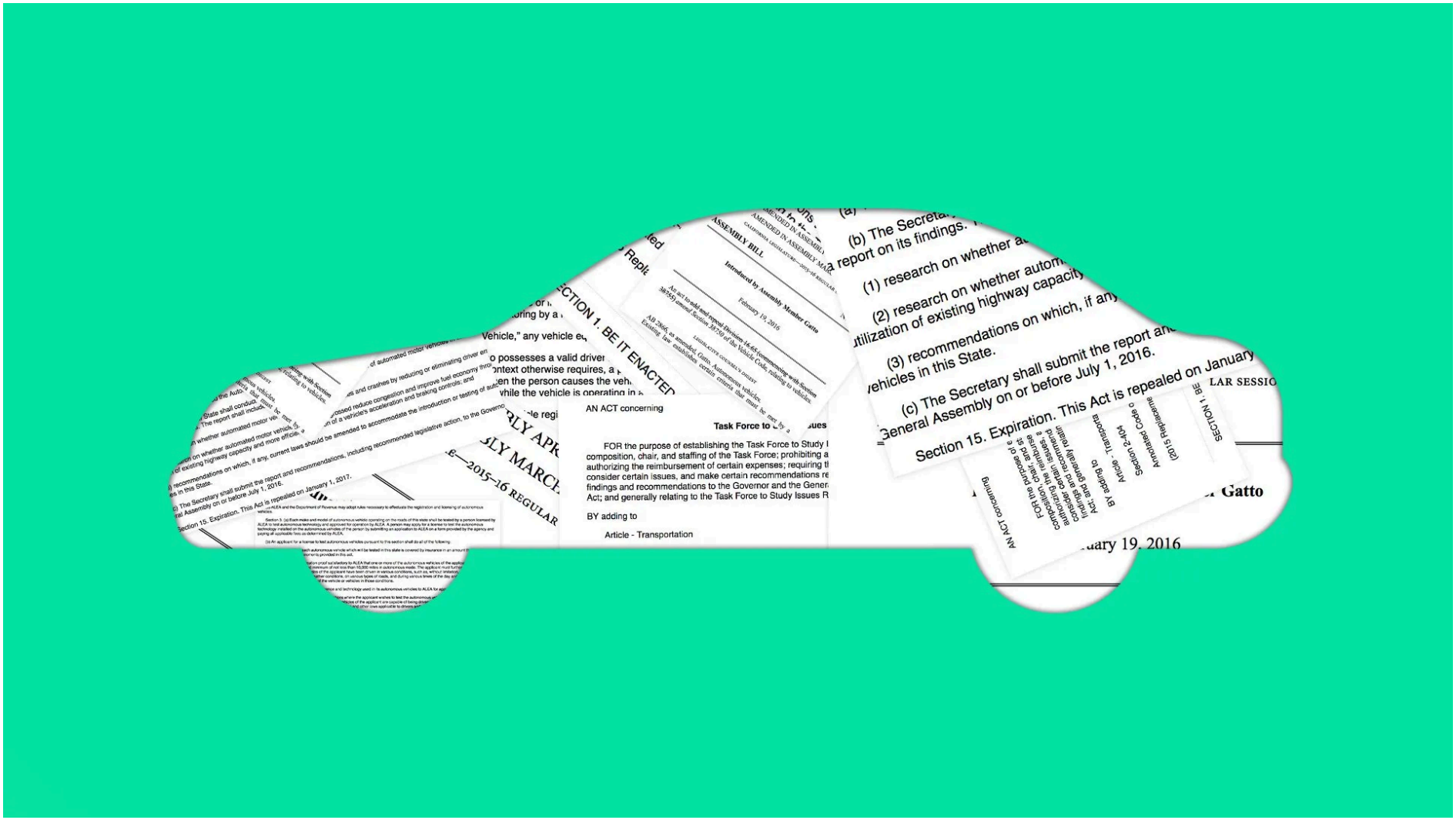

Illustration: Rebecca Zisser/Axios

Why it matters: Decades-old safety standards on the books today were written for cars with human drivers.

- As autonomous vehicles proliferate, President Trump — who once called them "crazy" — is rushing to create new rules to accommodate them.

The big picture: Transportation Secretary Sean Duffy, an enthusiastic supporter of AVs, is moving faster and more deliberately on the issue than any of his predecessors, including Elaine Chao, who was transportation secretary during Trump's first term.

- Duffy, like Trump, sees AVs as part of the larger race to lead the world in artificial intelligence.
- "This is a national security issue. This is an economic issue. This is a safety issue," Duffy said earlier this year at the inaugural National AV Safety Forum in Washington, D.C.

State of play: There are currently no regulations for purpose-built AVs that lack human controls like Tesla's Cybercab or Zoox's bidirectional robotaxi.

- Instead, manufacturers must seek limited exemptions for small fleets of noncompliant vehicles, which the companies say is holding them back from full-scale deployment.

Catch up quick: Previous administrations largely tried to fit AVs into a regulatory framework written for conventional cars.

- The Obama administration relied heavily on voluntary guidance for AVs.

- The Biden administration pursued broader oversight by implementing a new crash reporting system for AVs.

Trump 2.0 is taking a different approach: rewriting the rulebook itself.

- Last week, the National Highway Traffic Safety Administration proposed scrapping the requirement for a physical brake pedal in fully autonomous vehicles.

- NHTSA is already drafting new rules that would ditch requirements for windshield defrosters and wipers, transmission shifters and tire-information placards in self-driving cars.

- Steering wheels, still required for now, could be next.

Zoom in: While AVs would no longer require physical brake pedals under the new rule, they must still meet the same stopping distance requirements, NHTSA said.

- The proposal, still open to public comment, is an effort to tear down "pointless barriers to innovative designs," NHTSA Administrator Jonathan Morrison said in a statement.

The AV industry welcomes the new regulations as robotaxis and self-driving trucks begin to roll out across America.

- "We're in the commercialization age of autonomous vehicles," says Jeff Farrah, CEO of the Autonomous Vehicle Industry Association (AVIA). "If the federal government didn't step in and write these rules for the modern era, it would be a dereliction of duty."

- "We don't have independent assurances that the technology is ready for primetime," says Cathy Chase, president of Advocates for Highway and Auto Safety.
- They're also concerned about how passengers and emergency responders would operate an AV if something goes wrong. And remote operators have their own set of safety concerns.
- "There needs to be a mechanism to say, 'I want off of this ride,' before you start taking away controls," says Shaun Kildare, the group's senior director of research.

What we're watching: NHTSA is reviewing petitions from Zoox and Holon, an automated bus company, to deploy noncompliant vehicles. Tesla has not applied for an exemption to deploy its innovative Cybercab.

- Longer term, NHTSA is also working on dedicated performance standards for AVs so such exemptions won't be necessary in the future.

Share this story.

2. Not chips again?

Attachment D

ADVOCATES FOR HIGHWAY & AUTO SAFETY

Safety Concerns With Autonomous Commercial Motor Vehicle (ACMV) Language in BUILD America 250 Act, H.R. 8870

Advocates for Highway and Auto Safety (Advocates) does not oppose the advancement of vehicles equipped with an automated driving system (ADS). We are opposed to actions, including the identified below, which fail to proactively address the developing technology to ensure the safety of road users. According to data collected by the National Highway Traffic Safety Administration's (NHTSA) Standing General Order (SGO, 2021-1) requiring manufacturers to report certain crashes involving vehicles equipped with ADS or SAE Level 2 advanced driver assistance systems (ADAS), there have been approximately 2,574 crashes involving ADS and 3,896 with ADAS. These include 59 crashes resulting in a fatality.[i] The majority of this data is related to AVs. Safeguards and improvements to ensure that vehicles equipped with an ADS only operate on roadways and in scenarios for which they are designed to safely do so must be advanced. Drivers should be required behind the wheel and ready to take over until the technology can prove its capability and reliability in safely assuming the entire driving task. For ACMVs, which are larger and heavier and capable of greater damage, additional safeguards must be implemented.

The ACMV language (Title V, Subtitle E) includes many of the issues with AV legislation that Advocates has previously documented including, in Secs. 5402 and 5403:

- **Fails to ensure that the deployment of ACMVs is supported by key minimum performance standards for the automated driving system (ADS).** Rather, the legislation overrelies on the establishment of a "Safety Case" as the only immediately mandated standard to ensure safety.
    - A safety case may be helpful to demonstrate how a system is developed and its capability, but it does not require minimum performance standards to ensure a level of safety is met.
    - The concept of a safety case is not new. Certain ADS operations may already provide Voluntary Safety Self-Assessments and others may already be using a safety case. Yet, some systems continue to malfunction when faced with foreseeable issues.[ii]
    - Requiring ACMV manufacturers submit a safety case and assigning significant operational and safety issues to a future rulemaking committee (Transportation Rulemaking Committee (TRC) (See below on TRCs) falls far short and does not ensure sensible guardrails are in place for the safe deployment of ACMVs.
- **Doesn't ensure adequate safety data and public accessibility to determine the safety and readiness of ACMVs sharing public roads**. While the bill aligns with SGO requirements, aspects of data collection are also assigned to a TRC. Instead, the SGO to compel reporting of safety data and incidents must be improved and made permanent.
- **May preempt states from taking certain actions, including requiring a driver in the driver's seat for ACMVs**, and directed actions are unlikely to result in ensuring the safety of ACMVs due to the discretion given to a TRC.
- **Relies on a TRC in place of agency expertise** to address many of the pressing safety issues at a later time. Outcomes could be focused on rescinding existing rules and other changes to prematurely mass deploy ACMVs.
- **Fails to comprehensively ensure remote personnel oversight and safe operations.** Remote personnel in ACMV operations must be trained, have appropriate working conditions and be able to respond effectively to support safe operations at a minimum.
- **Permits unnecessary risk by allowing operations with our most vulnerable passengers and most dangerous cargo**. Allows ACMV school bus and hazmat operations if a human operator is "in" the vehicle, not necessarily "in" the driver's seat, among other issues.

June 29, 2026

[i] Standing General Order on Crash Reporting: For Incidents Involving ADS and Level 2 ADAS, NHTSA, available at https://www.nhtsa.gov/laws-regulations/standing-general-order-crash-reporting. Last accessed June 25, 2026, for data through May 15,2026.

[ii] Mary Cunningham, *Waymo recalls more than 3,000 vehicles over faulty software following school bus violations*, CBS News (Dec. 11,2025); Grace Eliza Goodwin, *Waymo robotaxis stop in the streets during San Francisco power outage*, BBC News (Dec. 22, 2025); Mickaela Castillo, *Waymo passenger flees after car drives on Phoenix light rail tracks*, AZ Family News (Jan. 8, 2026); Angeline Jane Bernabe, *Empty Waymo vehicles swarm Atlanta cul-de-sac*, ABC News, May 15, 2026; NHTSA Part 573 Safety Recall Report 26E035, Waymo LLC, June 17, 2026. Available here: https://static.nhtsa.gov/odi/rcl/2026/RCLRPT-26E035-7637.pdf, and Isaiah Richard, *Waymo Has Not Fixed the Problem of Its Robotaxis Driving Through Flood*, Tech Times (May 22, 2026).

ADVOCATES FOR HIGHWAY & AUTO SAFETY

Attachment E

Safety Concerns with the SELF DRIVE Act, H.R. 7390

Advocates for Highway and Auto Safety (Advocates) does not oppose the advancement of vehicles equipped with an automated driving system (ADS). We are opposed to actions, including the identified below, which fail to proactively address the developing technology to ensure the safety of road users. According to data collected by the National Highway Traffic Safety Administration's (NHTSA) Standing General Order (SGO) 2021-1 requiring manufacturers to report certain crashes involving vehicles equipped with ADS or SAE Level 2 advanced driver assistance systems (ADAS), there have been approximately 2,357 crashes involving ADS and 3,682 with ADAS. These include 58 crashes resulting in a fatality.[i] The SGO safety data collection and access must be strengthened, and safeguards and improvements to ensure that vehicles equipped with an ADS only operate on roadways and in scenarios for which they are designed to safely do so must be advanced.

No New Safety Standards for Foundational Safety Technologies or the ADS

- The legislation does not establish safety standards to ensure that the ADS will "see" and safely respond to all road users, vehicles and infrastructure in the roadway environment (aka a "Vision Test"). These basic protections are needed for all road users on America's public roadways.
- The language focuses on the manufacturers establishing a "safety case" which will neither be required to be submitted (rather, submitted upon request by the U.S. Department of Transportation (U.S. DOT) Secretary), nor are there requirements to independently verify the safety case and operations of the ADS.
- Regulatory directives for the safety case are not required as the legislative language uses "may" rather than "shall."

State Preemption For manufacturers that establish a safety case, states are broadly preempted from taking actions that can be interpreted as hampering operations. These may include state level requirements to report safety and crash data and to limit operations due to safety deficiencies.

- This unprecedented provision would result in a state being preempted from taking action to protect its citizens on its roads in the absence of federal action or conflict and would be predicated on the development of a "safety case" that is not required to be submitted to any regulatory body.

Restricts Public Access to Safety Data, Weakens Data Collection and Repeals the Standing General Order (SGO)

- The language proposes a new safety data collection which is more limited than the National Highway Traffic Safety Administration's (NHTSA) SGO and needlessly applies confidential business information (CBI) protections to data submitted to NHTSA which have been used previously to keep critical basic crash information out of public view.
- Allows state DOTs to potentially review data from AV manufacturers but restricts them from discussing what they learn about potential safety issues due to CBI restrictions.
- Repeals the SGO once the data repository is established. This will enshrine a system in which NHTSA and the public are not getting sufficient information about the operations of AVs on public roads. The SGO should be strengthened, not repealed.

Expands Allowances for Testing and Demonstration

- Under current law, motor vehicle manufacturers can introduce vehicles that do not comply with federal safety standards into interstate commerce for the sole purposes of testing and evaluation. The bill expands the current law to allow manufacturers of ADS, ADS-equipped vehicles and components of ADS which may result in more vehicles equipped with unproven ADS, absent minimum safeguards on our roadways.

- Expands current law to also allow manufacturers using this provision to engage in commercial operations including the carrying of members of the public as passengers and the transportation of freight.

No Workforce Protections Are Included

- The bill allows for payment for testing operations potentially exacerbating workforce issues for certain working drivers.

No Accessibility Requirements Are Established

- While the AV industry has consistently included accessibility and mobility improvements for people with disabilities as a top priority, the SELF DRIVE Act does not advance such and may hamper states' ability to uphold such protections already established.

No Establishment of Safety Considerations for Remote Personnel

- AV operations are using remote personnel, often referred to as remote operators (ROs) and remote assistants (RAs), to overcome deficiencies in their ADS and bolster their operations.
- Information on the scope of remote personnel and the safety deficiencies they are addressing is currently undocumented, yet needs to be, to understand the safety and readiness of related ADS.
- Safety issues related to use of remote personnel must be addressed including but not limited to restrictions on the number of vehicles each remote personnel is managing, limitations on hours of service (HOS), requirements for a commercial drivers license (CDL) and experience operating related vehicles.

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[i] Standing General Order on Crash Reporting: For Incidents Involving ADS and Level 2 ADAS, NHTSA, available at https://www.nhtsa.gov/laws-regulations/standing-general-order-crash-reporting, last accessed June 2, 2026.

Attachment F

The Washington Post

February 7, 2025

The Feb. 2 editorial, "Let the robot drive," enthusiastically endorsed the use of autonomous vehicles to reduce the scourge of motor vehicle crashes in the United States. This view overwhelmingly relied on data released by Waymo, an autonomous vehicle company that has a huge financial stake in this debate. The company claims that data from just 33 million miles shows the superiority of the technology over human drivers. However, the Transportation Department reported that more than 3 trillion miles were driven in 2023 alone. It is preposterous to compare outcomes related to such a huge data disparity. Even chipmaker Nvidia's automotive chief predicts that autonomous vehicles won't be ready for wide-scale use in this decade.

Waymo and all other autonomous vehicle companies should be transparent about the current technological limitations. For instance, these vehicles have been found by experts to have unacceptable deficiencies when performing in reduced visibility conditions involving snow, sun glare, fog and even dust.

Autonomous vehicles are being bandied about like a one-size-fits-all solution to the roughly 6 million annual collisions, even as federal safety rules are on the chopping block in Washington. The Alliance for Automotive Innovation just sued the Transportation Department over its rule last year requiring lifesaving automatic emergency braking on all new cars by 2029. The group claims it's not possible to meet the required stopping distances at highway speeds. Won't autonomous vehicles also have to brake at these high speeds?

I agree that the 40,000 people killed and 2 million injured in crashes every year represent a national crisis, but we should focus on what is proven to reduce crash risk, such as the exciting automatic emergency braking technology. We can welcome autonomous vehicles into the mix when the technology is ready. A weak "policy framework" proposed by an industry group is no substitute for strong government safety requirements. The Editorial Board also should have added a disclaimer notifying readers of Post owner Jeff Bezos's financial stake in the autonomous vehicle company Zoox, which is owned by Amazon.

I don't believe trillion-dollar tech companies will put our safety over their profits.

Joan Claybrook, *Washington*
The writer is a former administrator of the National Highway Traffic Safety Administration at the Transportation Department.

Attachment G

The Washington Post

April 4, 2025

The March 26 Metro article "Waymo aims to put its taxis in the District" reported that Waymo, an autonomous vehicle company, plans to bring its "robotaxis" to the streets of D.C. for paying customers next year. While covering the company's claims of superiority over human drivers in terms of safety, the article smartly noted that the foundation of this claim relies on a small dataset of miles traveled by Waymo vehicles relative to the trillions of miles driven by humans in the United States every year.

In addition to this flimsy comparison, how these machines perform should not be compared against average human drivers but rather against the best human drivers. Human drivers are not provided with billions of dollars in development, millions of miles of testing and training, or an array of cameras, radar and lidar sensors, and still most manage to drive safely.

Just days before this announcement, two Waymo vehicles in Austin stopped and blocked a local roadway, halting traffic flow. Though no crash was reported, a similar scenario during an emergency could cause delays with serious consequences for safety. In fact, San Francisco has experienced numerous incidents in which robotaxis have impeded police and fire response, including driving through emergency tape and blocking firehouse driveways.

Of note, numerous public opinion surveys, including one we commissioned a few months ago, show people have significant concerns and trepidation about riding in and sharing the road with driverless cars. Even the head of the automotive division at advanced chipmaker Nvidia believes that fully self-driving technology is a "next-decade marvel."

While we certainly hope that the promises of safety, accessibility, reduced congestion and environmental sustainability offered by the autonomous vehicle industry come to fruition, transparency and accountability — including what data actually reveal — are essential to ensure that the public understands not only self-driving cars' capabilities but also their limitations. Safeguards and regulations are needed. We should not rush driverless cars onto public roads before they're safe and reliable.

Cathy Chase, *Washington*
The writer is president of Advocates for Highway and Auto Safety.

Attachment H

The Washington Post

Safety first

The Oct. 19 editorial "Why D.C. is stalling on self-driving cars" criticized Charles Allen, chair of the D.C. Council's transportation committee, for delaying the rollout of Waymo's robotaxis until a safety study in D.C. can be completed. But companies putting a relatively unproven technology with no applicable federal safety standards onto city streets is a serious matter, and Allen should be commended for taking this into account.

Waymo is being investigated by the National Highway Traffic Safety Administration after one of its robotaxis was filmed illegally passing a school bus in Atlanta. The company issued a recall in May of more than 1,200 of its vehicles because a software issue caused them to crash into chains, gates and other roadway barriers. They also have been filmed driving into oncoming traffic and blocking emergency vehicles.

The company prefers to tout the millions of miles its vehicles have driven without safety incidents. In fact, safety experts contend this is not a fair comparison when taking into account the more than 3 trillion miles driven by humans on American roads annually.

Autonomous vehicles eventually might be commonplace, but that should not happen until they comply with comprehensive federal safety standards. Until those standards are developed, cities should prioritize the safety of all road users. Not doing so would be a serious disservice to public safety.

Joan Claybrook, *Washington*

The writer is a former National Highway Traffic Safety Administration administrator.

Attachment I

Federal officials investigate after Waymo self-driving vehicle strikes child near elementary school

By Meredith Deliso
January 29, 2026

Federal officials are investigating after a Waymo self-driving vehicle struck a child near an elementary school in California, resulting in minor injuries.

The incident occurred on Jan. 23 in Santa Monica, within two blocks of an elementary school during school drop-off hours, according to the National Highway Traffic Safety Administration (NHTSA). The vehicle was being operated by its automated driving system and there was no safety operator in it at the time, according to the agency.

The child "ran across the street from behind a double parked SUV towards the school and was struck by the Waymo AV," the NHTSA said in a statement.

Other children and a crossing guard were in the area at the time, as well as several double-parked vehicles, the agency said.

"Our technology immediately detected the individual as soon as they began to emerge from behind the stopped vehicle," Waymo said in a statement, adding that the autonomous driver "braked hard, reducing speed from approximately 17 mph to under 6 mph before contact was made."

After the vehicle made contact, the child stood up and walked to the sidewalk, according to Waymo. The company said it called 911 and the vehicle "remained stopped, moved to the side of the road, and stayed there until law enforcement cleared the vehicle to leave the scene."

Waymo reported that the child, whose age was not released, sustained minor injuries, according to the NHTSA.

Waymo said it reported the incident to the NHTSA the day it occurred and will "cooperate fully with them throughout the process of its investigation."

The investigation will look into whether the self-driving vehicle "exercised appropriate caution given, among other things, its proximity to the elementary school during drop off

hours, and the presence of young pedestrians and other potential vulnerable road users," the NHTSA said.

Waymo and the NHTSA did not release any details on where the vehicle was traveling and if it had any passengers at the time of the collision.

The National Transportation Safety Board, in coordination with the Santa Monica Police Department, said it is also conducting a safety investigation into the crash.

Austin ISD parents concerned after Waymo cars caught illegally passing school buses

By Meredith Aldis
January 15, 2026

AUSTIN, Texas - Parents in Austin are concerned after self-driving Waymo vehicles were caught illegally passing school buses while children were getting on and off.

Austin ISD reported dozens of violations, even after software updates the company said were meant to fix the problem.

What they're saying:

Austin ISD is asking Waymo to cease operations in the mornings and afternoons during school days when students are using school buses.

Every Austin ISD school bus has multiple cameras on it, designed to catch drivers who illegally pass a bus when the red lights are activated.

"The footage is automatically sent to Bus Patrol anytime it's capturing what it believes are violations through its programming and then the Bus Patrol has staff on the back end that will filter all the captured video to ensure that they're only sending us what they believe through our meetings and their understanding of Texas Transportation Code are legitimate offenses as it's defined under the Texas Transportation code," Austin ISD PD Assistant Chief Travis Pickford said.

If Austin ISD police determine it is a violation, a citation is mailed to the registered owner of the vehicle.

Timeline:

Since the start of the school year, AISD said Waymo vehicles have received 24 stop-arm violations.

"We've issued more than 7,000 violations to vehicles passing our school buses, and 12, or in this case now, 24 violations does seem like a small drop in the bucket, but I think it's important to point out that, based on the statistics that we run of everybody that received

or was issued, a stop arm violation for the first semester, approximately 98% of people who received one did not receive a second one," Assistant Chief Pickford said.

AISD said violations are still happening even after Waymo implemented a software update in November and recall in December. The most recent violations occurred on Dec. 11, 13, 19, and Jan. 12.

"We want to make sure that when parents send their children out the front door to go to school, whether they're riding a bicycle or riding a bus, we want our parents and our kids to feel safe," Assistant Chief Pickford said. "I think it's safe to say that we're seeing that our children, through the videos that we're capturing on our stop arm safety program, are less safe when a Waymo is passing by one of our buses and violating our stop-arm program."

A Waymo spokesperson provided a statement below:

"Our vehicles have 12x fewer crashes involving injuries to pedestrians compared to human benchmarks, and we're invested in demonstrating exceptional driving performance around school bus interactions that exceed human-driven vehicles. We have met with Austin ISD, including on a collaborative data collection of various light patterns and conditions, and are reviewing these learnings. We have seen material improvement in our performance since our software update."

Austin ISD parents react

Concerned parents said technology is failing when it matters most.

"There's definitely outrage from the community," Amber White said.

"When you're driving through a school zone you kind of look both ways because you are you know as human that kids could be around, and they don't react as we do," Rogelio Perez said.

"Thank goodness no one is getting hurt, that people are aware, but you know, one day, you know you just wonder about the what if, what if one day it does happen?" Natalie Hernandez said.

Dig deeper:

The National Highway Traffic Safety Administration said their investigation into Waymo vehicles' behavior around stopped school buses remains open.

"NHTSA reminds everyone that passing a stopped school bus with a stop arm extended is illegal in all 50 states and U.S. territories. It's the law for good reason: 36 children were struck and killed by other vehicles near school buses from 2014-2023."

CBS NEWS

Federal agency investigating how Waymos handle stopped school buses after viral incident in Atlanta

By Dan Raby
October 22, 2025

The National Highway Traffic Safety Administration has announced that it has opened an investigation after a self-driving Waymo vehicle was caught passing a stopped school bus in metro Atlanta last month.

Video shared on social media showed the Waymo vehicle passing a school bus that had stopped with its red lights flashing and stop arm deployed. Students were disembarking at the time.

In their summary of the situation, the NHTSA reports that the Waymo AV initially stopped, but then drove around the bus, turning to avoid hitting the vehicle's front end before turning left to pass it.

"During this maneuver, the Waymo AV passed the bus's extended crossing control arm near disembarking students," the report reads.

The NHTSA's Office of Defects Investigation says it has opened a preliminary evaluation to see how Waymo's system handles stopped school buses.

A spokesperson for Waymo tells CBS News that the bus's lights and stop sign were not visible to the autonomous vehicle at the time it was making the turn and maintained a slow speed to keep a safe distance from any children exiting the bus.

"Safety is our top priority, as we provide hundreds of thousands of fully autonomous paid trips every week in some of the most challenging driving environments in the U.S. The data shows we are improving road safety in the communities in which we operate, achieving a fivefold reduction in injury-related crashes compared to human drivers, and 12 times fewer injury crashes involving pedestrians," the Waymo spokesperson said. "NHTSA plays a vital role in road safety, and we will continue to work collaboratively with the agency as part of our mission to be the world's most trusted driver."

Atlanta police did not issue a citation in the case and told CBS News that they had not received a report on the incident.

Waymo expanding robotaxi services

Waymo's self-driving taxis have been operating in the United States for years, and currently serve Atlanta as well as the cities of Phoenix, San Francisco, Los Angeles, and Austin. The company is currently testing its services in New York City and hopes to be in Washington, D.C., Miami, Dallas, London, and parts of Japan next year.

While the company touts its safety data showing 91% fewer serious injury crashes compared to human drivers, driving mistakes by the autonomous vehicles have gone viral multiple times.

On Sept. 27, police in San Bruno, California, pulled over a Waymo after it made an illegal U-turn. Officers said that since there was no human driver, a ticket could not be issued, saying their citation books "don't have a box for 'robot.'"

"Hopefully the reprogramming will keep it from making any more illegal moves," the San Bruno Police Department wrote on Facebook.

A Waymo spokesperson says the company has already made some software updates to improve the system's performance and is working to implement additional improvements.

Attachment L

Waymo blocks ambulance after mass shooting, raising safety concerns

By Charles Singh
March 6, 2026

A recent incident just exposed why Waymo self-driving cars could affect traffic and safety more than some Americans have anticipated.

TMZ obtained footage of a Waymo autonomous vehicle obstructing the path of ambulance crews in Austin who were responding to a tragic mass shooting on March 1.

Austin police officers arrived on the scene and were able to enter the vehicle, moving it out of the way to a garage, Fox News says. Did this mishap expose a larger flaw in the designs of autonomous vehicles, and was this an isolated incident?

Does the Waymo incident in Austin hint at a larger potential issue?

Waymo's recent Austin incident is far from the only mishap that the company's autonomous vehicles have encountered thus far.

On March 3, Reuters reported on a National Transportation Safety Board investigation into an incident in January involving Waymo vehicles accused of illegally passing school buses. Waymos were recalled in December 2025 "after Texas officials said they had illegally passed school buses at least 19 times since the start of the school year," Reuters says.

A Waymo driverless vehicle also drove through an active, potentially dangerous Los Angeles police scene in December 2025, according to a story from NBC News. In recent months, there have been several reported instances of Waymo vehicles performing hazardous actions that could have been avoided by normal drivers.

Some of these incidents like the recent ambulance issue called for immediate human intervention.

How do Waymo vehicles drive themselves?

An autonomous vehicle from Waymo "takes the information it gathers in real time, as well as the experience it has built over its 20+ million miles of real-world driving and 20+ billion miles in simulation, and leverages AI to anticipate what other road users might do," the company website says.

These vehicles rely on cameras, remote sensing, advanced imaging radars and AI-powered perception to understand where they are geographically. The Waymo cars move riders to and from their intended destinations using this advanced technology while predicting the movements of motorists and pedestrians.

Like human drivers, the Waymo Driver isn't infallible, based on recent mishaps, and can malfunction in some real-world scenarios.

Where does Waymo operate in 2026?

Waymo operates "24 hours a day and 7 days a week" in major cities like San Francisco, Phoenix, Los Angeles, Dallas, Houston, San Antonio, Miami and Orlando, Florida. It's also available via the Uber app in Austin and Atlanta, according to its Google support page.

The global autonomous vehicle market size is estimated to be valued at around $364 billion in 2026, according to data from Precedence Research, a global market insights firm. Companies like Waymo and Tesla are aiming for a national expansion of their "robotaxi" services in the next few years.

Waymo and Tesla Robotaxi vehicles can improve over time, learning from data and real-world driving situations. On the other hand, both services aren't immune to software and AI errors that cause awkward, illegal and potentially dangerous situations for passengers and pedestrians on the road.

The New York Times

Waymo Suspends Service in Six Cities After Cars Drove Into Flooded Roads

By Michael Levenson
May 22, 2026

Waymo said it was pausing its driverless taxi service in six cities in Texas, Tennessee and Georgia amid concerns that its cars might drive into flooded roads.

The temporary shutdowns came after the National Highway Traffic Safety Administration said in a letter this month that Waymo was fixing software in thousands of its taxis that could allow the cars to drive into standing water on some roads.

Waymo said it had decided to repair the software last month after an unoccupied taxi entered a flooded road during a heavy downpour in San Antonio on April 20. Earlier this month, Waymo said the software could be fixed without interrupting taxi service.

But on Friday, Waymo, which is owned by Alphabet, the parent company of Google, confirmed that it was temporarily suspending taxi service in Austin, Dallas, Houston, San Antonio, Nashville and Atlanta. There have been strong storms in those cities, some leading to flash floods.

The company took the action after videos emerged showing that two Waymo cars had stopped on flooded roads in Atlanta on Wednesday, when the city received 2 to 3.5 inches of rain, inundating some streets and the Downtown Connector, a highway in the city core.

Waymo said that while its cars can drive in heavy rain, it wanted to improve service. It said it expected to resume taxi operations in the six affected cities soon.

Separately, Waymo said it was temporarily pausing the ability of its taxis to travel on highways as it works to improve the way they navigate certain highway construction zones. It said it expected to restart that service — which it offers in Miami, Phoenix, Los Angeles and the San Francisco Bay Area — soon.

“We are committed to being good neighbors for our riders and our communities,” Chris Pappas, a Waymo spokesman, said in a statement on Friday. “As part of that commitment, we make proactive decisions including temporarily pausing aspects of our service.”

One of the videos from Atlanta was posted by The Atlanta Journal-Constitution and recorded by one of its journalists, Rachael Knudsen. She told the paper that the Waymo car she was riding in amid heavy rain on Wednesday drove onto several flooded streets and then “gave up.” She had to order an Uber to get home instead. (Uber and Waymo have a partnership and share some services in Atlanta and other cities.)

Ms. Knudsen said she wasn’t sure she would ride in a Waymo taxi again in bad weather.

“I was taken aback at how the Waymo was not able to sense the water that was ahead,” she told the paper.

A second video showed a different Waymo car stopped on a flooded Atlanta street on Wednesday, in water almost up to its headlights. Waymo said the vehicle was unoccupied at the time.

The incidents came as self-driving cars have proliferated in major American cities, giving people a new way to get around while also resulting in safety concerns.

Waymo is facing federal investigations into traffic violations, and the company said it planned to update its software last year after reports that its taxis had illegally passed stopped school buses.

Its cars have also been involved in more serious incidents, including instances in which an ambulance was blocked from getting to the scene of a shooting in Austin, a cat was killed in San Francisco and a child was struck in Santa Monica, Calif.

Waymo says it provides half a million fully autonomous trips to riders across the country every week. The company said its technology statistically outperforms human drivers, reducing the chance of crashes and serious injuries.

“Safety is Waymo’s top priority, both for our riders and everyone we share the road with,” Mr. Pappas said.

CBS NEWS

Waymo recalls thousands of robotaxis after some vehicles entered freeway construction zones

By Aimee Picchi
June 18, 2026

Waymo is recalling nearly 3,900 robotaxis after their self-driving software repeatedly failed to recognize ramp closures and construction zones in incidents in Arizona and California, according to a recall notice posted by the National Highway Traffic Safety Administration.

The recall comes after Waymo reviewed incidents that occurred in April and May in Phoenix and the San Francisco Bay Area. The autonomous driving company temporarily restricted robotaxis from driving on freeways while it investigated the issue.

The recall impacts Waymo's so-called 5th Generation Automated Driving System (ADS), which powers its fleet of Jaguar vehicles. The NHTSA said all of the recalled vehicles are believed to have the software defect.

"Under certain circumstances, the [autonomous vehicle] may enter and drive at speed in freeway construction zones due to inappropriately prioritizing the avoidance of other freeway hazards and/or failing to recognize the construction zone," the recall notice states.

Waymo, a subsidiary of Alphabet, expanded freeway driving last year, adding the capability to its vehicles in San Francisco, Phoenix and Los Angeles.

The incidents included six in Phoenix, where Waymo robotaxis failed to recognize ramp-closure signs and drove into freeway construction zones. In May, another seven Waymo vehicles entered freeway lanes with active construction in the San Francisco area, driving between cones marking closures in adjacent lanes, according to the notice.

"Driving at speed in a freeway construction zone increases the potential for collisions," NHTSA said.

"We're done"

In one May incident, Elliot Slade told CBS San Francisco that he and his fiancée were in a Waymo vehicle traveling from San Mateo, California, to their San Francisco home when the car sped through a construction zone and was chased by police.

"The Waymo started freaking out as we got closer to the merge cause the lanes were kind of all merging," Slade said. "One lane was gone, another lane was, who knows where it was. Cars were all over the place going in."

Slade said he worried that they wouldn't survive the trip.

"There were construction signs," he added. "There were lights going on. Police in the distance, and it sped up. That's when I looked at my fiancée, we're done. This is it. We're dead. We're going to die right here in the Waymo."

The robotaxi eventually veered from the highway into a residential neighborhood. Slade said Waymo gave him three free rides, each worth up to $40, but he wasn't sure he would use them.

Reached for comment about the recall, a Waymo spokesperson said the company "identified an area of improvement regarding performance around freeway construction zones. We voluntarily restricted freeway operations last month while making improvements, proactively notified state and federal regulators and decided to file a voluntary software recall with NHTSA."

The spokesperson added, "We continue to safely serve riders on surface streets in all the cities where we operate."

Waymo blocks Dallas road as first responders rush to explosion

By Tracy DeLatte
June 4, 2026

DALLAS - Newly released body camera video following an apartment explosion shows a Dallas County deputy constable trying to move a Waymo vehicle that appeared to be blocking the way of first responders.

Waymo blocks Dallas firefighters

What we know:

The body camera video that was released to the public on Thursday shows what happened in the moments following a natural gas explosion and five-alarm fire that killed three people and injured five others.

Dallas County Precinct 5 Deputy Constable Jonathan Banda found the empty Waymo partially blocking the route fire trucks needed to take to get to the burning apartment building.

With no driver behind the wheel, the deputy constable had to get inside the vehicle to clear the street so emergency crews could reach the scene.

What they're saying:

In the video, Deputy Constable Banda can be heard trying to get the car to move.

"You've got to get out the way," he said. "Go forward. Go!"

After pressing a button for rider support, he talked to a Waymo employee who told him the "system seems to be having a minor issue."

"If I can manually move it, I'll move it," Banda told him. "Come on man, we need you to move it."

The Waymo employee ultimately unlocked the vehicle, allowing Banda to get in and drive the vehicle to a safe location.

"I knew I had to clear the way for the firefighters coming in. I could hear the sirens coming in," Banda told FOX 4. "He released it to me and, at that point, another engine was coming down the street with the hoses they needed to deploy out there."

The other side:

In a statement, Waymo gave credit to the law enforcement officer for working with its employee.

"Safety is fundamental to everything we do, and that includes how our vehicles are designed to interact with law enforcement and first responders. In this instance, the vehicle was in the process of completing a three-point turn to leave the area like other cars were doing. While the vehicle was yielding to other traffic passing by, the police officer approached the vehicle. While the officer was engaging with our vehicle and our remote assistance team, the street remained clear and other vehicles passed by unimpeded. We remain committed to working closely with Dallas law enforcement and first responders to ensure they have the tools, training, and information they need," the company said in a statement.

Waymo also said it has a team dedicated to ensuring first responders are trained on how to engage with the vehicles in an emergency situation.

What they're saying:

"There is some logic built in as to how the vehicle should operate in traffic."

Dr. Gopal Gupta, the co-director at the Center for Applied AI and Machine Learning at UT Dallas, says Waymo's technology may struggle in a dynamic environment.

"It does not recognize the situation it is in, and doesn't know how to react," Gopal tells FOX 4's Shaun Rabb. "In many situations when it doesn't recognize the situation it is in, it just basically stops."

"There are human monitors who monitor these robo-taxis, and then if such a situation arises where a taxi is stuck, then they will come on, but for a large number of taxis, there is one human monitor."

Attachment P

Print Close

Terrified passengers film Waymo autonomous vehicle driving into live fireworks in San Francisco

By Louis Casiano

Published July 06, 2026

Fox News

Passengers in a Waymo vehicle were terrified as the car drove into lit fireworks in the middle of a San Francisco street during Independence Day celebrations over the weekend.

Video footage of the incident shows a group of passengers who were shocked as the driverless car seemingly approaches lit fireworks in the middle of a street as the explosives are about to launch.

As the car gets closer, someone on the street appears to warn the vehicle to stop by waving their hand.

"No, no, no, don’t go, don’t go, don’t go," one of the passengers is heard saying off-camera. The autonomous vehicle then passes over the colorful flames and sparks.

"Our Waymo just drove into a firework," a passenger says in the clip.

"Are we on fire, dude?" a fellow passenger asks.

A Waymo spokesperson told Fox News Digital that the company "is committed to keeping our riders safe and earning the trust of he communities where we operate."

"We take situations like this seriously and are committed to evaluating and learning from these events," the statement continued. No injuries were reported to either the passengers or the vehicle, and the company reached out to the riders after their trip. The possession of fireworks, even "Safe and Sane" explosives, is illegal in San Francisco, the city's fire department said.

No injuries were reported to either the passengers or the vehicle, and the company reached out to the riders after their trip. The possession of fireworks, even "Safe and Sane" explosives, is illegal in San Francisco, the city's fire department said.

One woman was killed and two other adults and a child were injured Saturday in a separate fireworks explosion, the San Francisco Chronicle reported.

Elsewhere in San Francisco, some Waymo vehicles were towed when their batteries died after vehicles became stuck in traffic for hours.

"Our priority is keeping San Francisco moving safely, especially during major city celebrations," the Waymo spokesperson said. "On the Fourth of July, extreme traffic congestion in northern San Francisco disrupted normal operations for several Waymo vehicles."

"In coordination with local authorities and emergency services, our roadside assistance team worked quickly to clear our vehicles from the area," the statement continued.

SFGATE

Road closure miscommunication with Waymo spoils San Francisco's July 4

By Silas Valentino
July 6, 2026

In the hour leading up to the Fourth of July fireworks show off the Golden Gate Bridge on Saturday, the sky turned violet in the fog. Tens of thousands of people hurried through the Presidio, where snarled roadways transformed one of San Francisco's signature parks into a parking lot.

Traffic on Girard Road reached a standstill, and a line of cars were illegally parked in the bicycle lane. The short road connects an off-ramp for Highway 101 with a roundabout in the Presidio. First, movement there trickled, and then everything came to a halt around 8:30 p.m. The backup began to bleed deeper onto the highway. The root of the traffic jam was that Lincoln Boulevard roundabout, which had become clogged with Waymos. Several autonomous vehicles became stuck in the circle as a constant stream of pedestrians passed by on their way to the waterfront.

An officer with park police directed traffic away from the roundabout as the holiday horde placed much of the Presidio in a state of disarray. After congestion cleared early Sunday morning, some Waymo vehicles required a tow after running out of battery.

For many of the estimated 100,000 people who descended on the northwest corner of the city to celebrate the country's semiquincentennial, the spectacle wasn't in the sky but on the streets. Since the fireworks show was mostly shrouded in fog, attention now turns to what the San Francisco Municipal Transportation Agency described as "unprecedented crowds & traffic in SF" in a social media post early Sunday morning.

In response to the major disruptions, the mayor's office, Presidio Trust and Waymo said they have started evaluating how to better plan for the next large-scale event in San Francisco.

Mayor Daniel Lurie announced the fireworks show June 15. Over the next 20 days, through July 4, the public learned of extensive road closures in multiple neighborhoods, including Halleck Street in the Presidio. That road connects Crissy Field with the Main Post area and is located near the roundabout.

Waymo coordinated with the city and Presidio Trust in advance of the holiday, and the company installed an employee at the San Francisco Department of Emergency Management during the event.

However, notice of the Presidio road closures appears to have missed Waymo. A spokesperson for Waymo confirmed to SFGATE that the company was not informed of any road closures and that this impeded its response to traffic congestion.

The information also wasn't easy for the public to source.

Neither the mayor's office nor SFMTA noted that Halleck Street would close in their public notices about the event. A post from the Presidio Trust, updated on July 2, did announce the road closure.

The mayor's office quarterbacked the event. Charles Lutvak, spokesperson for the mayor, did not respond directly to questions about the city's preparedness and coordination with Waymo. Instead, he wrote that public safety was their top priority and thanked first responders, transit operators and others for their part in putting on the event.

"We understand that with more than 100,000 people in the area, some people experienced delays getting home, and we will have conversations with our public and private partners to ensure the experience is smoother next time," Lutvak wrote in a statement to SFGATE.

Lisa Petrie, spokesperson for the Presidio Trust, explained that the park established drop-off zones for Waymo and other ride-hailing companies to smooth the influx of traffic.

"We will continue to evaluate best operational practices for autonomous vehicle companies during large scale events to ensure that traffic flow is as safe and efficient as possible," she wrote in an email.

On Sunday, Lurie visited the Marina District to promote small businesses that benefited from the crowds the day before. In a video, he speaks with a representative of Lobalita, which just opened on Chestnut Street in the former Tipsy Pig location. "You told me it was wild down here," Lurie said.

Results from Online CARAVAN Survey March 2026

SafeRoads.org
@SafeRoadsNow
@saferoadsnow.bsky.social

Introduction

Attachment R

Americans demand safety standards for autonomous vehicles, advanced safety technology and heavy trucks.

This online Caravan® public opinion survey commissioned by Advocates for Highway and Auto Safety (Advocates) shows that a large majority of Americans are concerned with the state of safety on the nation's roadways.

The poll results clearly illustrate that people have significant trepidations about autonomous vehicles and are demanding federal safety standards to ensure they operate safely among the traveling public. They also want advanced safety technologies like automatic emergency braking to be required to detect all road users and they want intelligent speed assistance to be used to stop "super speeders." Another significant concern is sharing the road with large trucks whose drivers, they believe, should be required to complete a minimum number of training hours.

The online survey was conducted with 2,023 respondents in March 2026. The complete methodology can be found at the end of this report. Note: Due to rounding, the sum of individual subsets may differ from the displayed total.

Each year, motor vehicle crashes kill tens of thousands of people and injure millions more at a current economic cost of $439 billion. According to the latest statistics from the National Highway Traffic Safety Administration (NHTSA), 39,254 people were killed on our Nation's roads in 2024. Early estimates for 2025 find that 36,640 people were killed in traffic crashes. While these decreases are welcome, traffic fatalities remain high.

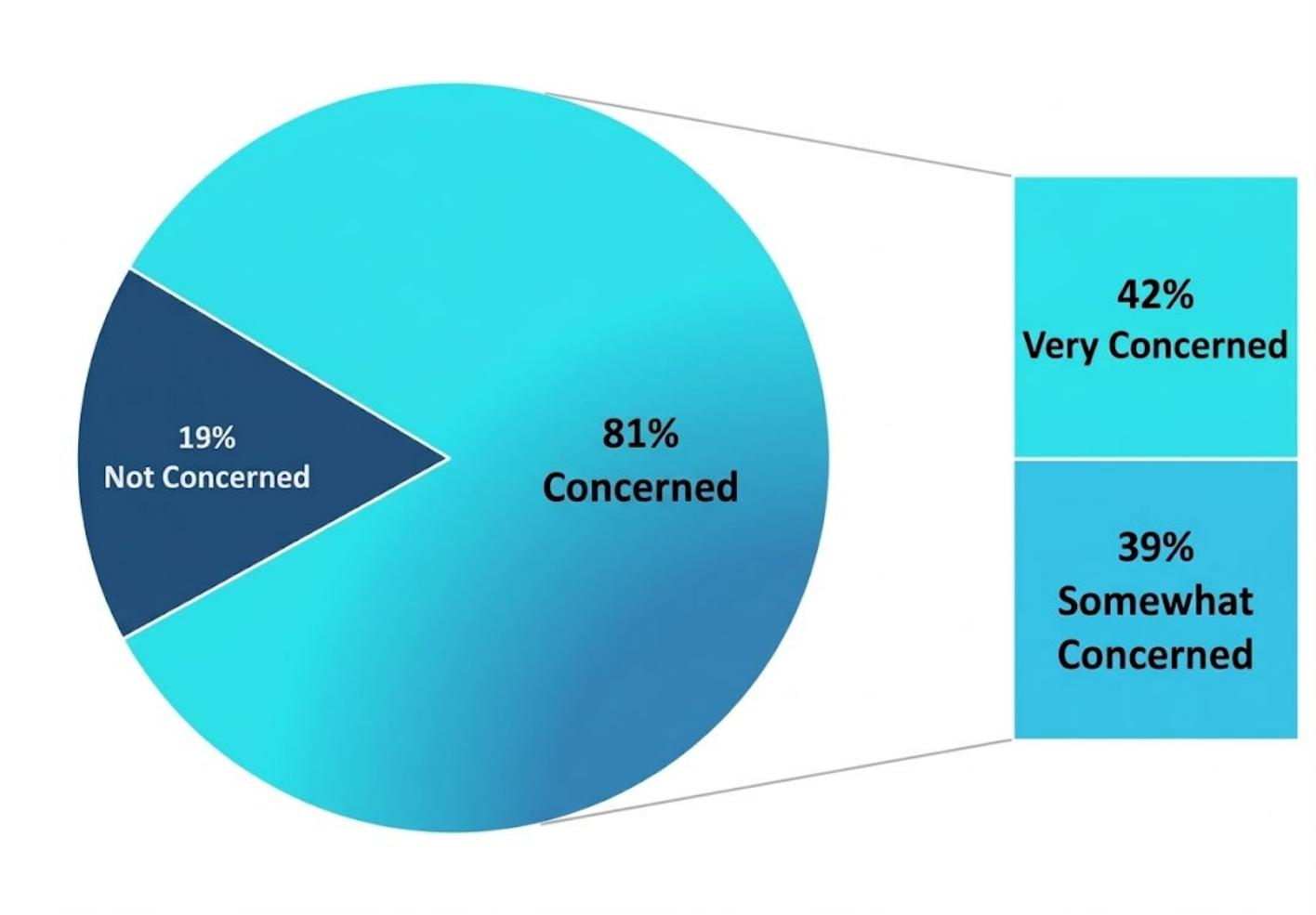
Advocates for Highway and Auto Safety is an alliance of consumer, medical, public health, law enforcement and safety groups and insurance companies and agents working together to make America's roads safer. Advocates' mission is the adoption of federal and state laws, policies and programs that prevent motor vehicle crashes, save lives, reduce injuries, and contain costs.

ADVOCATES FOR HIGHWAY & AUTO SAFETY

Autonomous Vehicles

Americans have serious concerns about sharing the road with autonomous cars and trucks and they want the federal government to take action to ensure they are safe.

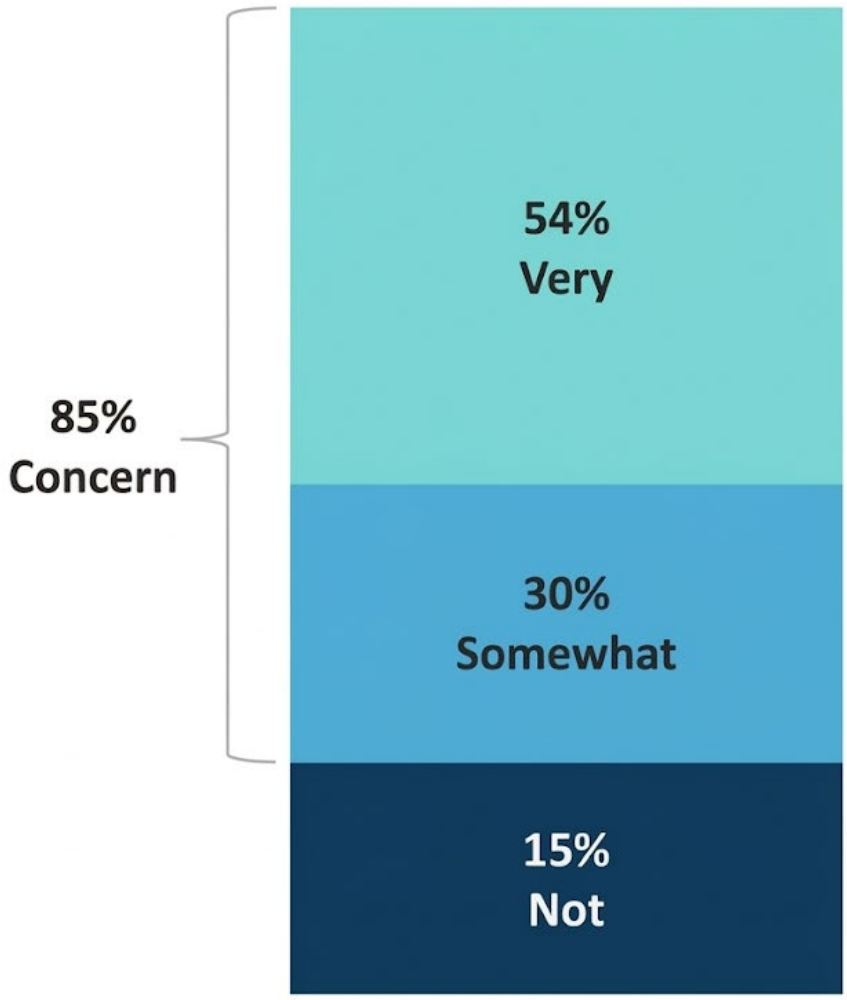
The public continues to express their trepidation with still developing driverless car technology on public roads. Over 80% responded with concern, including 42% who are “very” concerned.



How concerned are you about sharing the road with driverless cars?

ADVOCATES
FOR HIGHWAY
& AUTO SAFETY

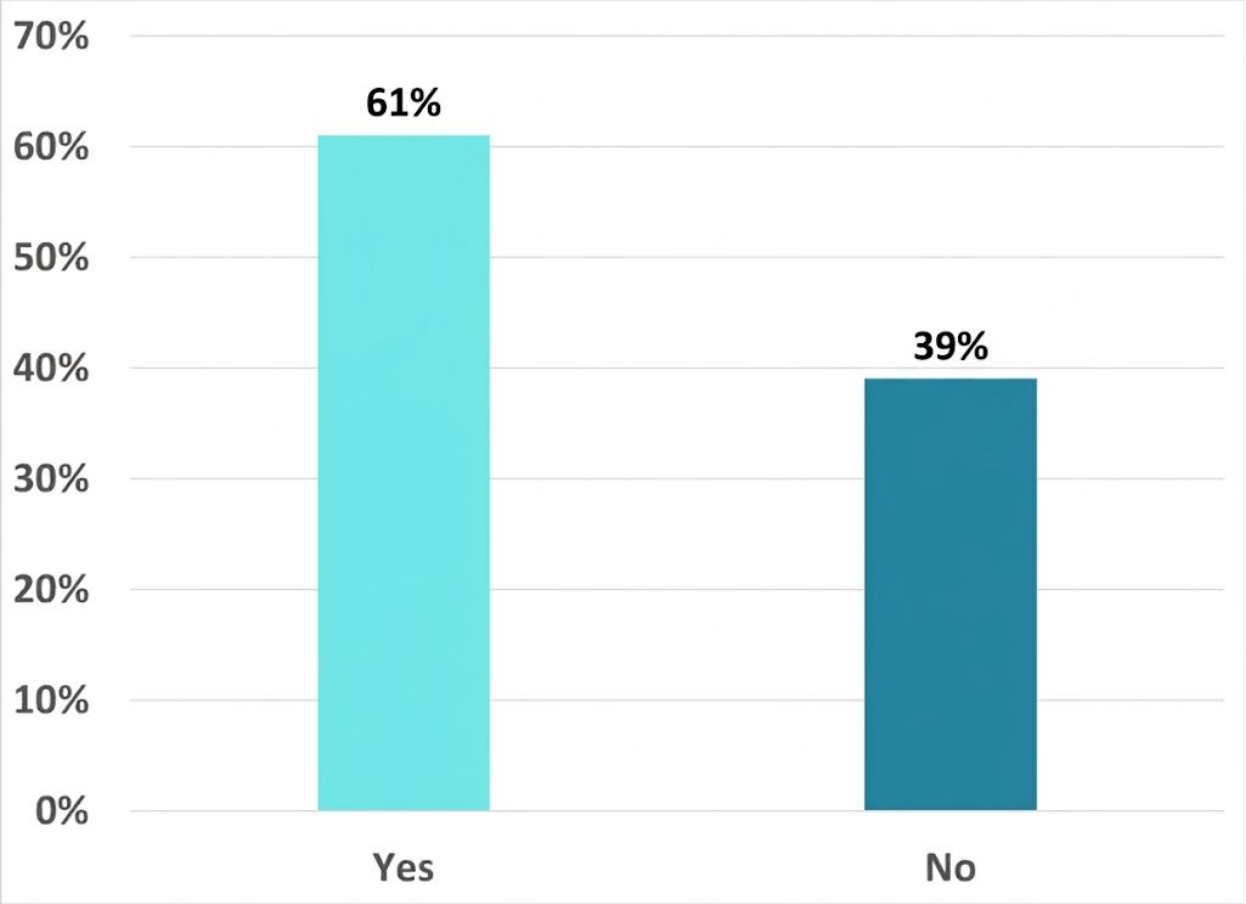
Sharing the roads with driverless trucks presented similarly high levels of concern, 85% responded affirming such.



How concerned are you about sharing the road with driverless tractor-trailer and delivery trucks as a motorist, bicyclist or pedestrian?

ADVOCATES FOR HIGHWAY & AUTO SAFETY

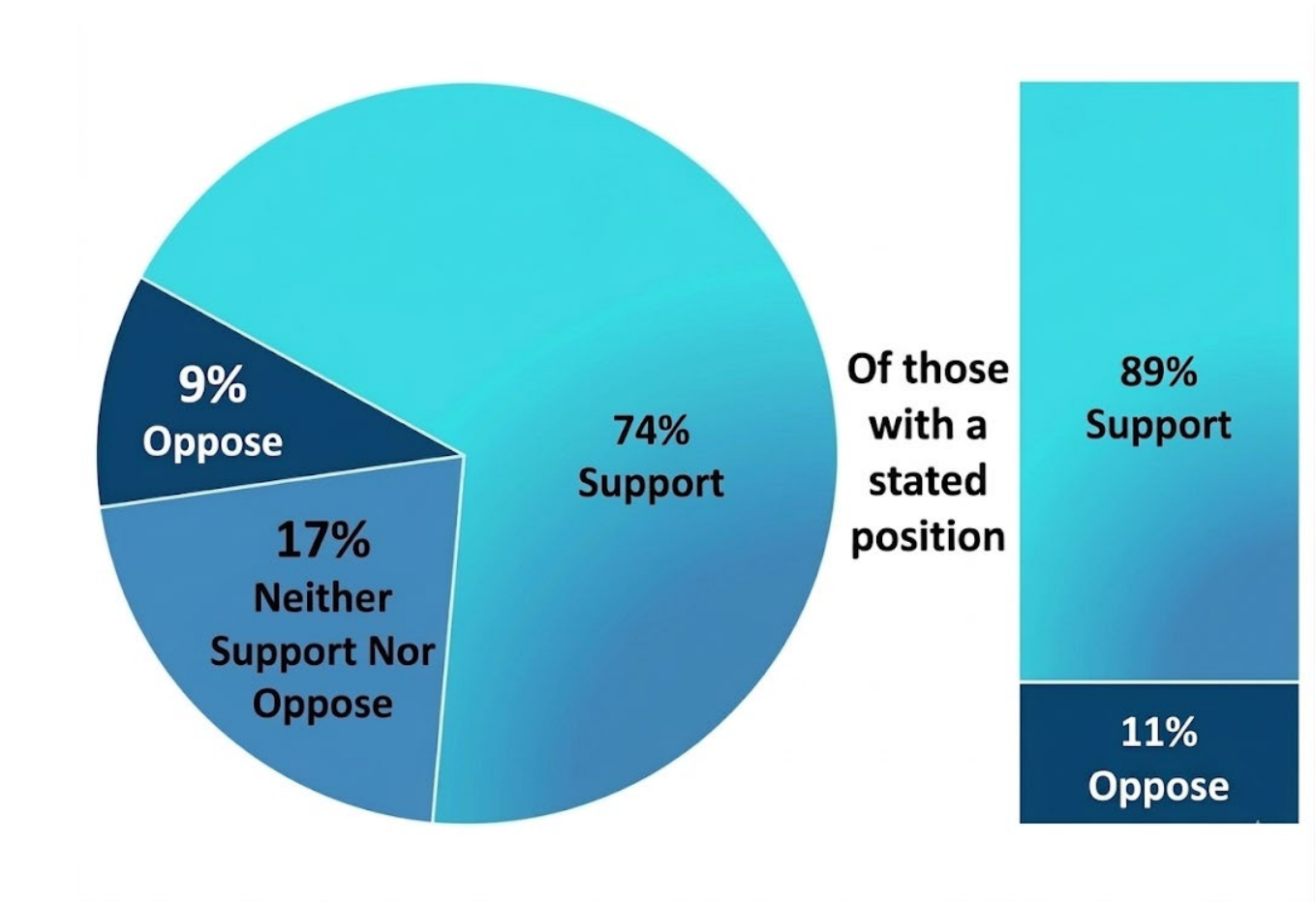
A strong majority say their concerns would be addressed if companies had to meet minimum government safety requirements.



If you knew that companies had to meet minimum government safety requirements for their driverless cars and trucks, would that address your concerns?

ADVOCATES FOR HIGHWAY & AUTO SAFETY

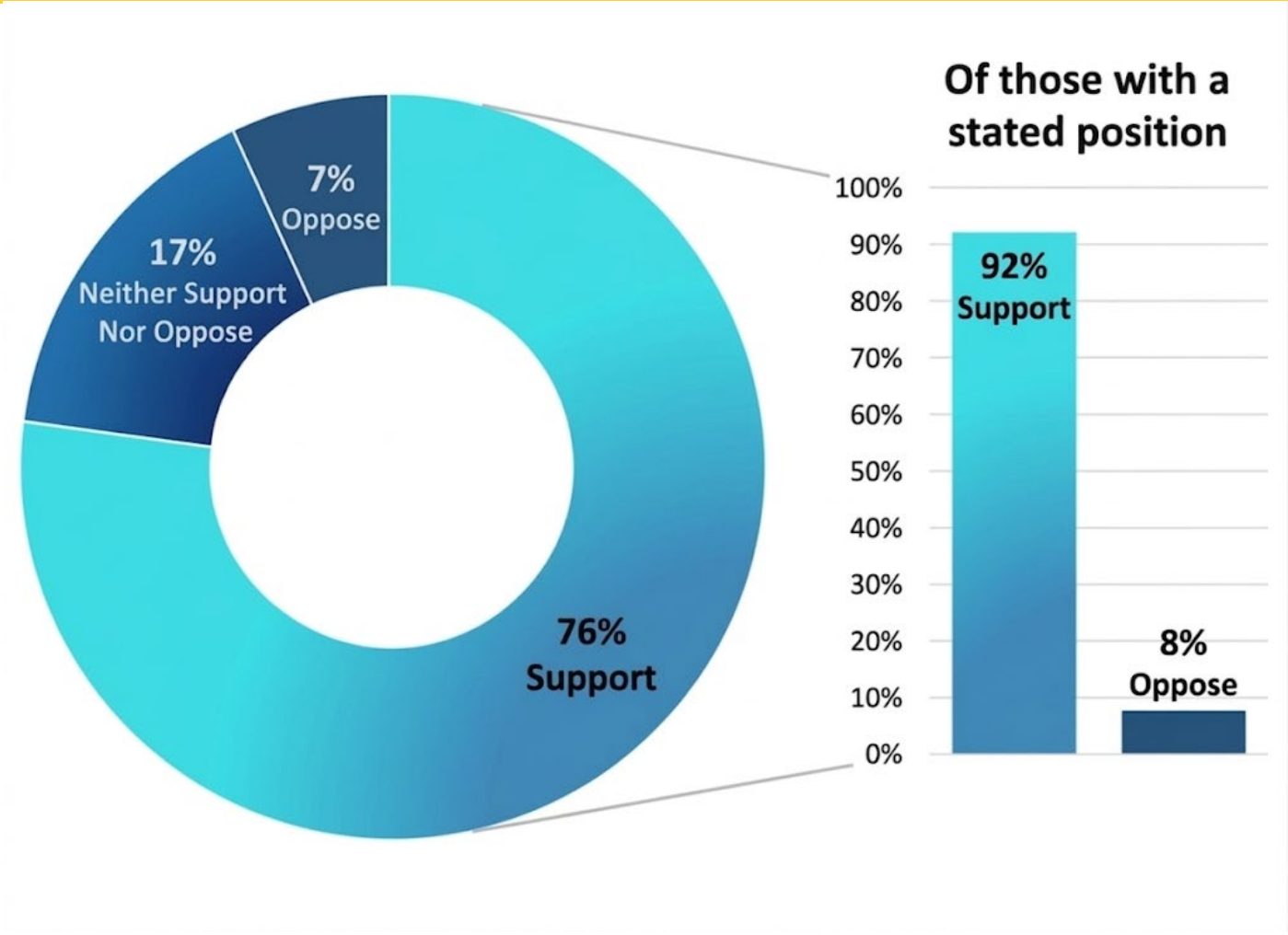
Nearly 90% of those with a stated position support requiring manufacturers of driverless cars to affirm the conditions in which they can safely drive and bar them from operating outside those conditions.



To what extent do you support or oppose a requirement for manufacturers of driverless cars to provide information about the conditions they can safely drive in (such as certain roads, speeds and weather conditions) and to ensure that the driverless cars don't operate outside of those conditions?

ADVOCATES
FOR HIGHWAY
& AUTO SAFETY

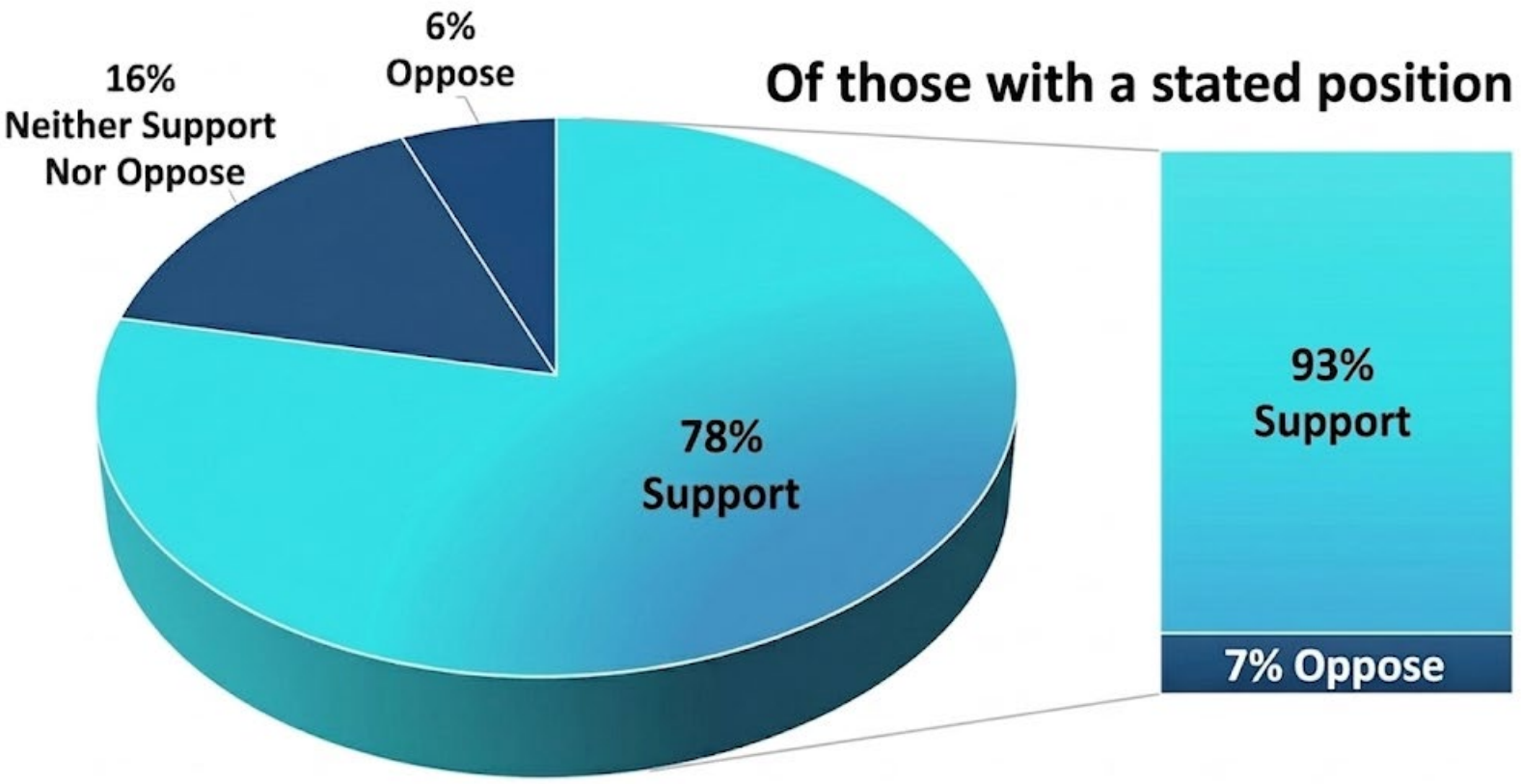
There is overwhelming support to require a ‘vision test’ for driverless cars to ensure they can operate safely in all weather and road conditions.



Would you support or oppose government officials requiring a 'vision test' to make sure driverless cars can operate safely in different weather and road conditions, and correctly identify or 'see' all people and objects on the road?

ADVOCATES
FOR HIGHWAY
& AUTO SAFETY

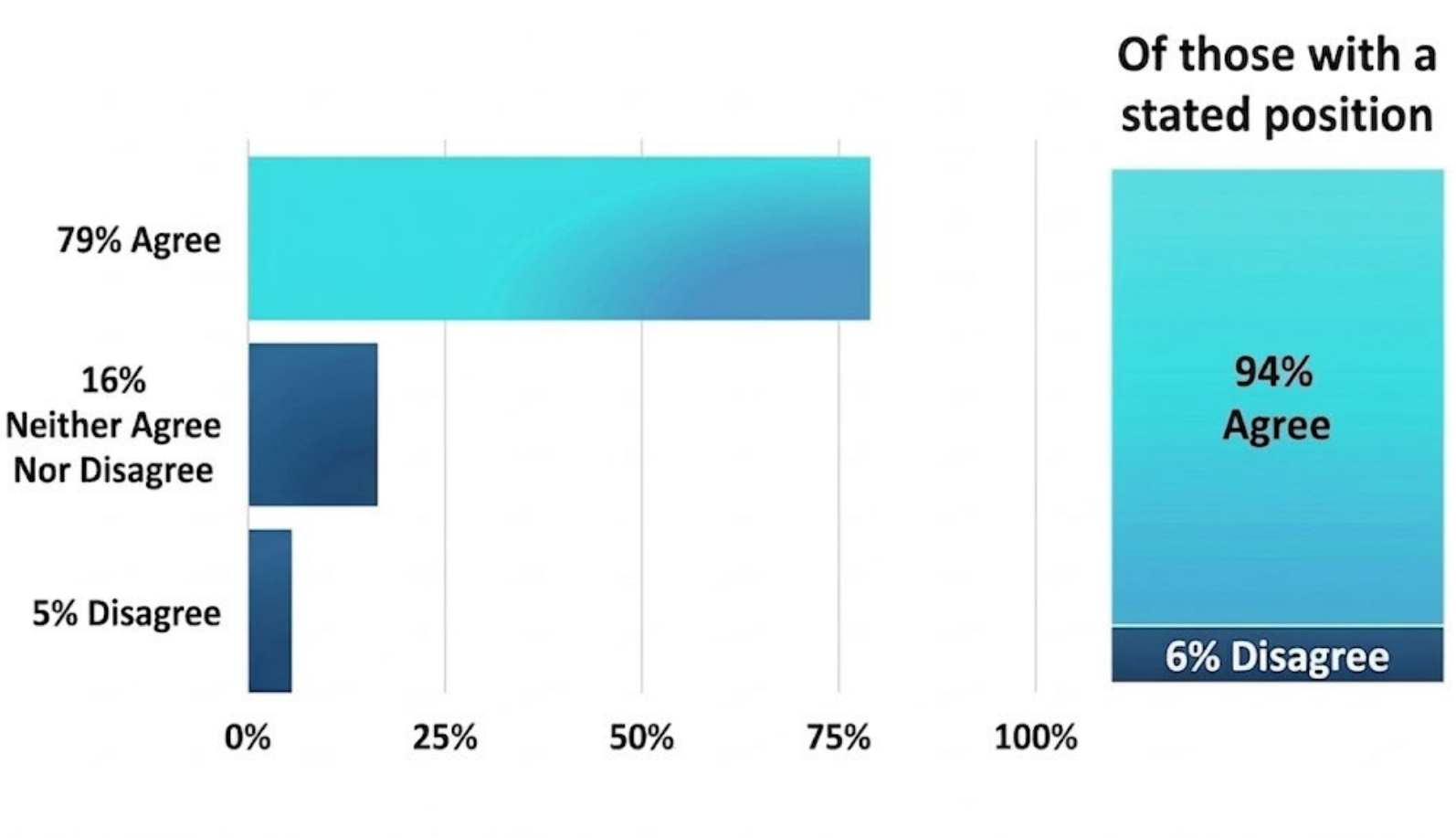
Nearly 80% want to require driverless car manufacturers to report details of crashes that cause injury or property damage to the U.S. Department of Transportation.



Do you support or oppose requiring manufacturers of driverless cars to report certain information to the U.S. Department of Transportation, such as the number of miles their vehicles drive/crash that injure someone or cause property damage/instances when the vehicle stops unexpectedly.

ADVOCATES FOR HIGHWAY & AUTO SAFETY

A large majority want remote personnel who provide guidance to driverless cars to be subject to minimum federal safety standards.



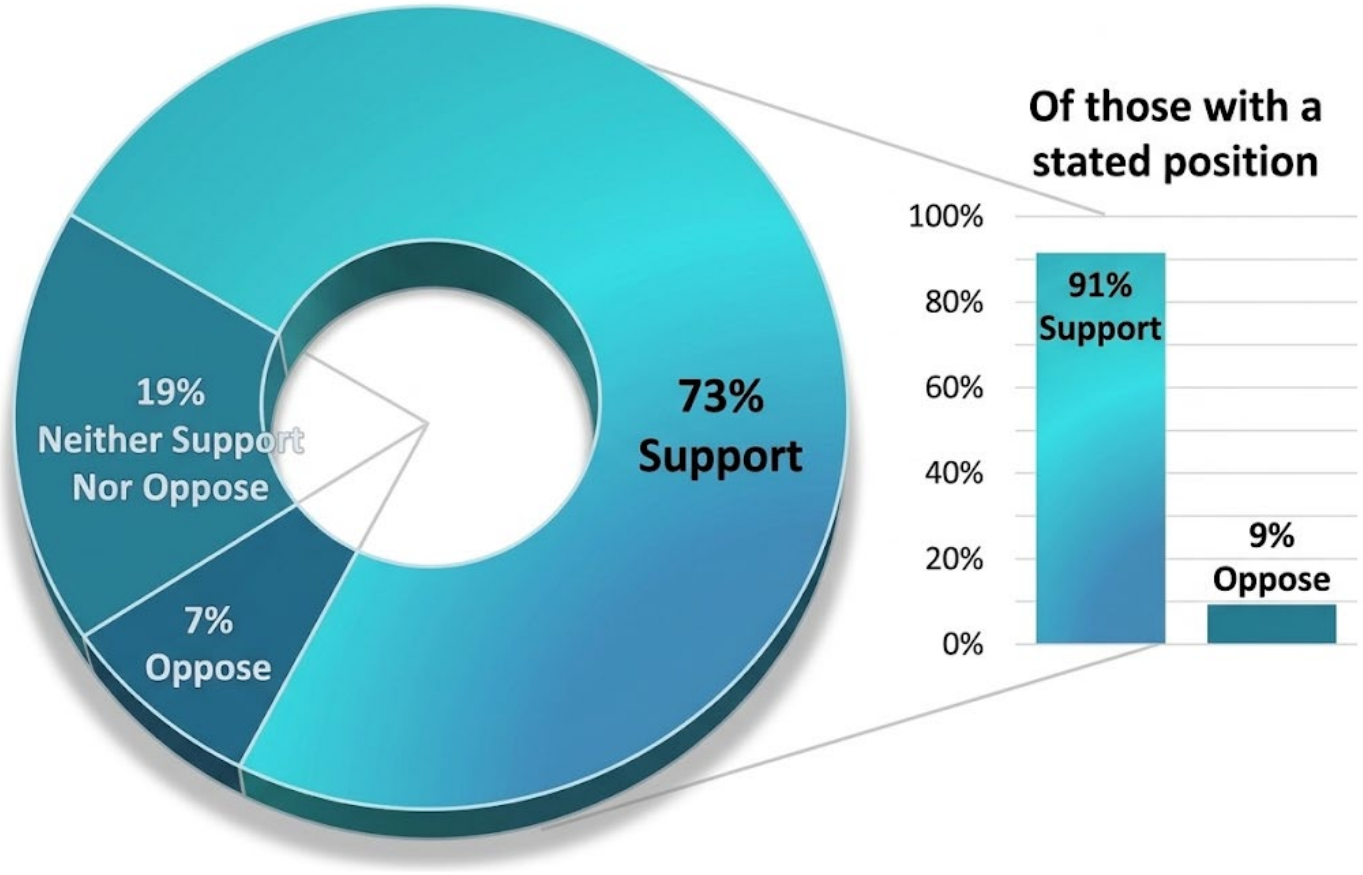
To what extent do you agree or disagree that there should be safety standards for these remote personnel of driverless cars?

ADVOCATES FOR HIGHWAY & AUTO SAFETY

Advanced Safety Technology

There is strong support to require vehicle safety technologies proven to reduce crashes with other vehicles and vulnerable road users.

Most want to require automatic emergency braking technology to respond to bicyclists and motorcyclists in addition to pedestrians.



Do you support or oppose having AEB also being required to respond to bicyclists and motorcyclists?

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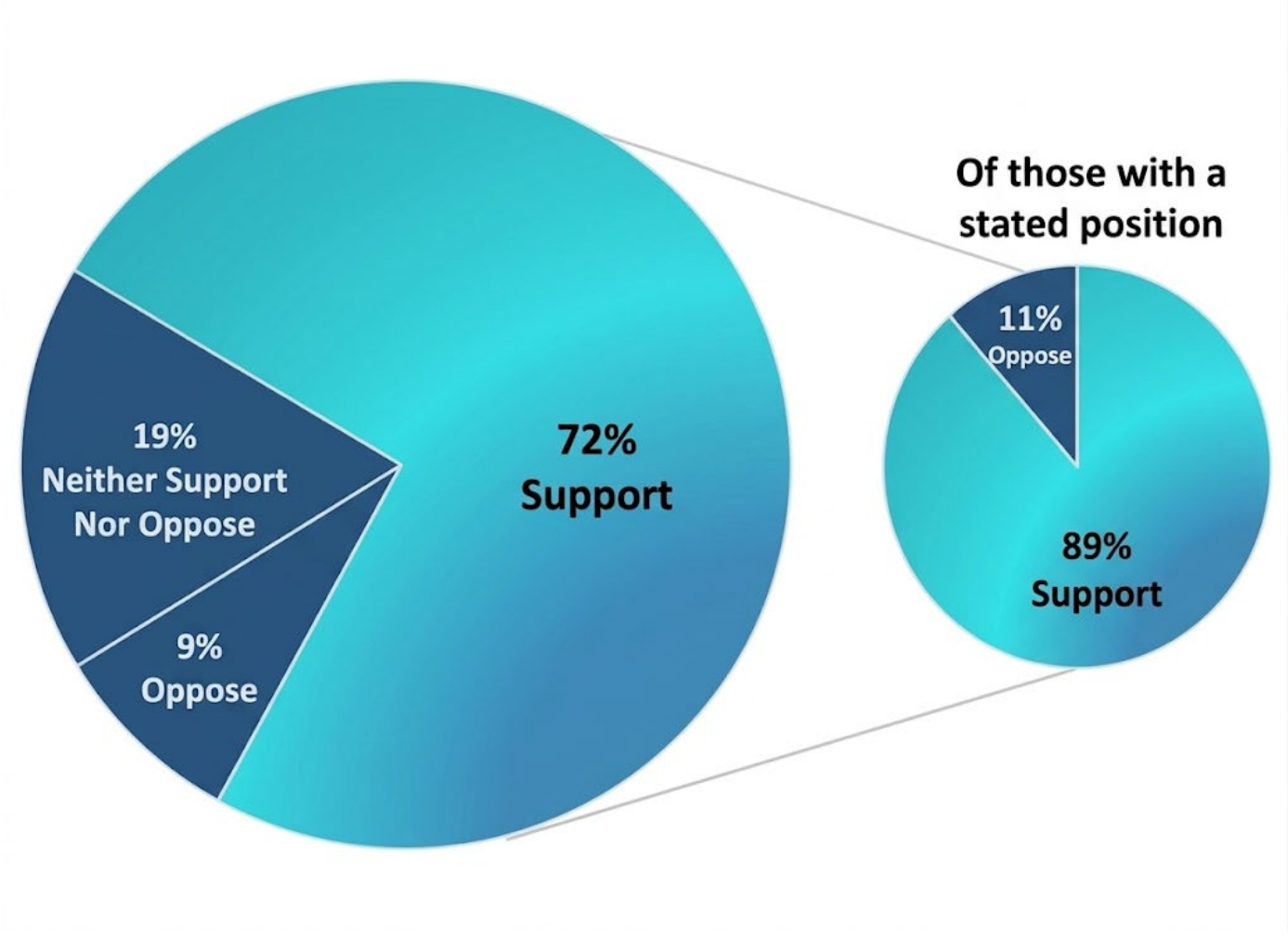
There is strong support for states to enact laws requiring convicted ‘super speeders’ to install intelligent speed assistance (ISA) technology in their vehicles to prevent them from driving at high speeds for a set amount of time.



Do you support or oppose these types of ISA laws?

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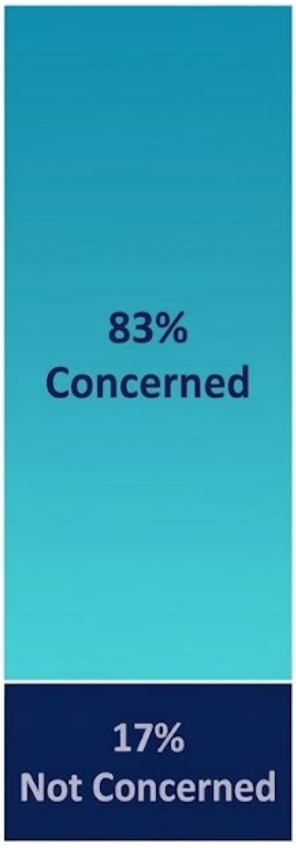
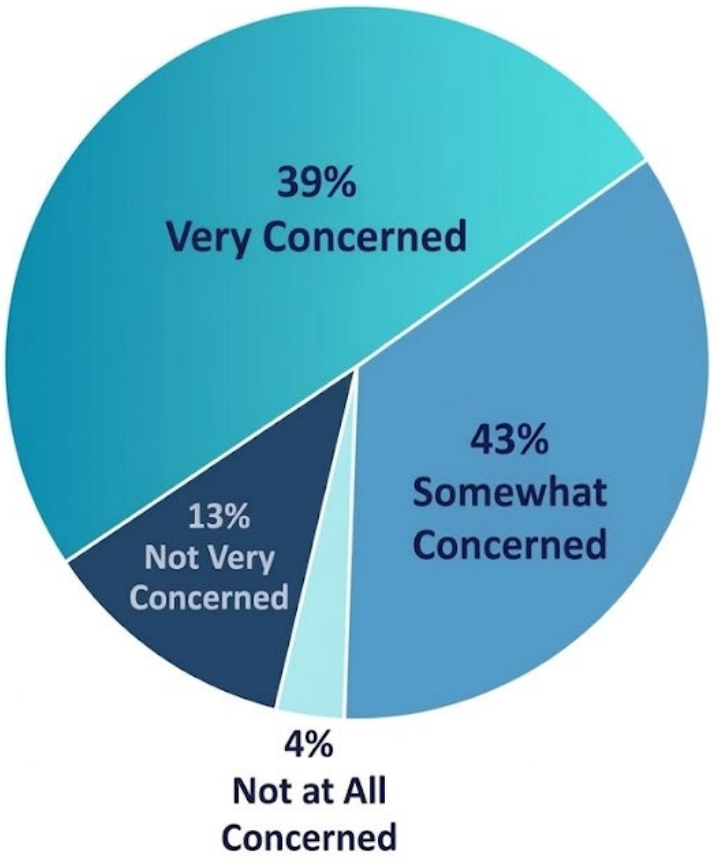
& AUTO SAFETY

Truck Safety

A large majority are concerned about sharing the road with tractor-trailers and want to ensure drivers have adequate training.

When given the number of annual crash fatalities involving tractor-trailers, most people are concerned about sharing the road with them.





How concerned are you about sharing the road with large and heavy tractor-trailer trucks?

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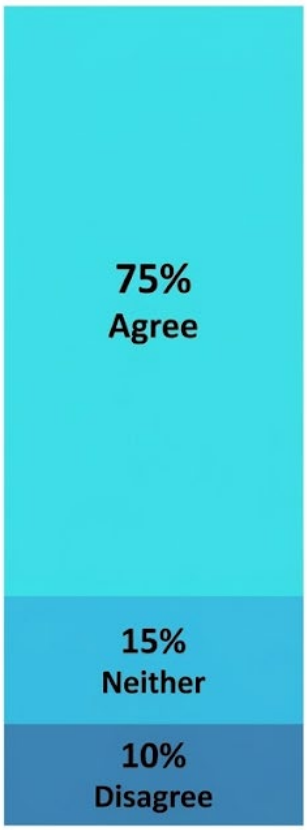
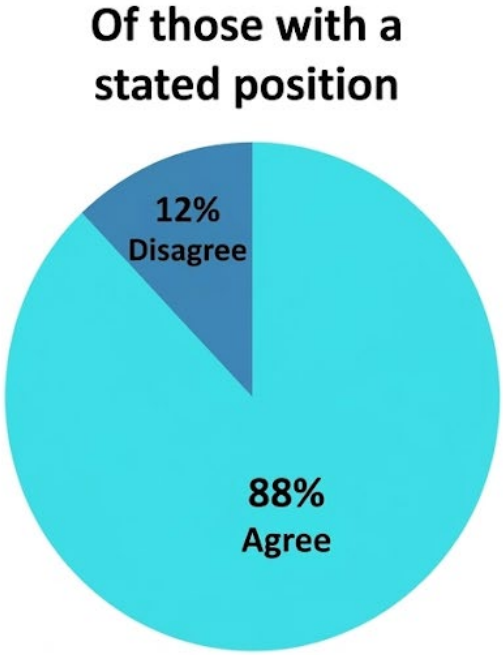
A large majority believe that individuals seeking a commercial driver's license (CDL) should complete a minimum number of hours of behind-the-wheel training in a large truck.





To what extent do you agree or disagree that there should be a behind-the-wheel driver training requirement?

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Methodology

Attachment R

The material contained in this report was drawn from a 2026 public opinion poll commissioned by Advocates for Highway and Auto Safety.

This CARAVAN survey was conducted by Big Village among a sample of 2,023 adults 18 years of age and older. The online omnibus study is conducted three times a week among a demographically representative U.S. sample of 1,000 adults 18 years of age and older. This survey was live on March 4-8, 2026.

Completed interviews are weighted by five variables: age, sex, geographic region, race and education to ensure reliable and accurate representation of the total U.S. population, 18 years of age and older. The raw data are weighted by a custom designed program which automatically develops a weighting factor for each respondent. Each respondent is assigned a single weight derived from the relationship between the actual proportion of the population based on U.S. Census data with its specific combination of age, sex, geographic characteristics, race and education and the proportion in the sample. Tabular results show both weighted and unweighted bases.

Respondents for this survey were selected from among those who have volunteered to participate in online surveys and polls. The data have been weighted to reflect the demographic composition of the 18+ population. All sample surveys and polls may be subject to multiple sources of error, including, but not limited to sampling error, coverage error, error associated with nonresponse, error associated with question wording and response options, and post-survey weighting and adjustments.

Big Village *is a collaborative and consultative research partner to hundreds of organizations around the globe. We possess a wide variety of resources, tools and technologies to collect and analyze information for our clients. As a member of the Insights Association and ESOMAR (the European Society for Opinion and Marketing Research), Big Village adheres to industry ethics and best practices, including maintaining the anonymity of our respondents. Our authorization is required for any publication of the research findings or their implications. Big Village has exercised its best efforts in the preparation of this information. In any event, the company assumes no responsibility for any use which is made of this information or any decisions based upon it.*

ADVOCATES FOR HIGHWAY & AUTO SAFETY

Contacts:

For more information about this poll
and traffic safety, visit our website at
saferoads.org

Follow us on X and Bluesky
@SafeRoadsNow
@saferoadsnow.bsky.social

For Media Inquiries:
Contact: Shane Austin
Director of Communications
saustin@saferoads.org
202.425.2776

Thank you for your interest.

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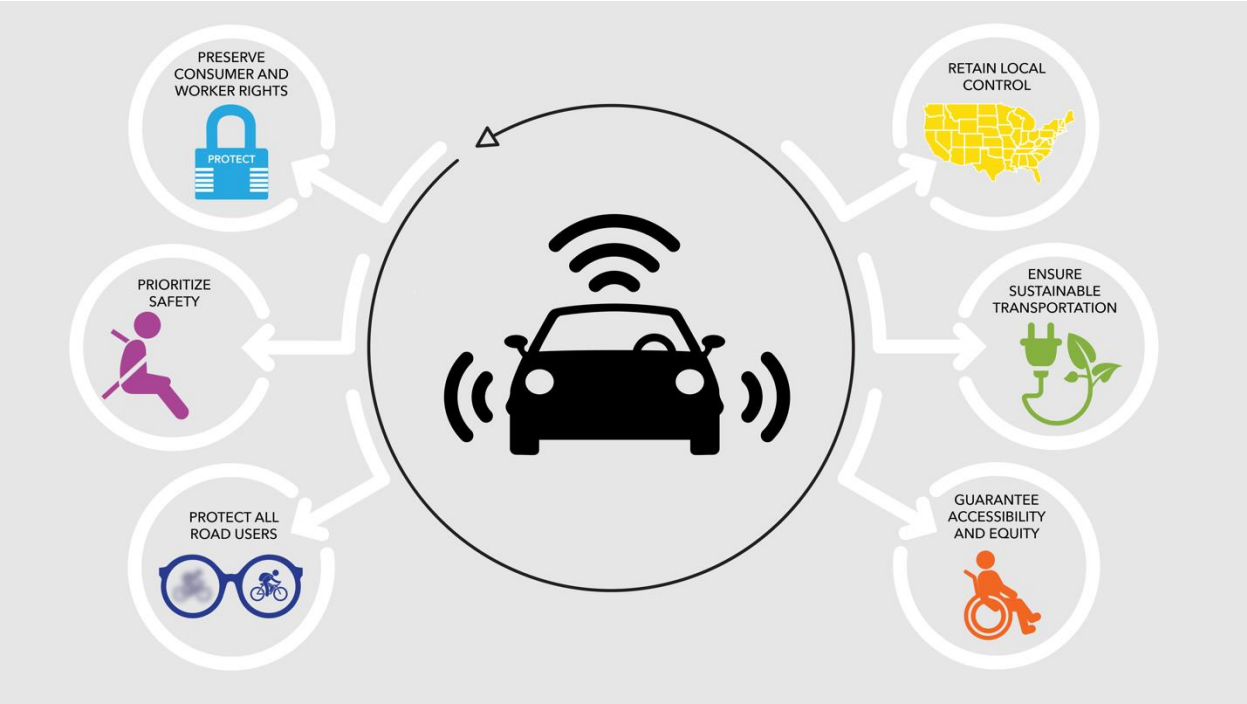
Attachment S

November 2020 – Data Update August 2024



Prioritizing Safety of All Road Users

Safety Rulemakings: All levels of automated vehicles[ii] must be subject to comprehensive and strong federal standards ensuring they are safe and save lives. While the U.S. Department of Transportation (DOT) has the authority to issue motor vehicle safety standards for all levels of automated vehicles, it has abrogated this responsibility by focusing its efforts on inadequate voluntary initiatives. When Congress considers legislation on AVs, it is imperative that the protection of all road users is the guiding principle, and that legislation requires the DOT to commence rulemakings on safety standards and issue final rules by a date certain with a reasonable compliance date. The rulemakings must address known and foreseeable safety issues, many of which have been identified by the National Transportation Safety Board (NTSB) and other research institutions, including:

- ***Revising Federal Motor Vehicle Safety Standards*:** Any actions by the National Highway Traffic Safety Administration (NHTSA, Agency) to revise or repeal existing Federal Motor Vehicle Safety Standards (FMVSS) in order to facilitate the introduction of AVs must be preceded by and conducted in a public rulemaking process and cannot be undertaken by internal Agency actions. Any revision must meet the safety need provided by current standards.
- ***Collision Avoidance Systems:*** Certain advanced safety technologies, which may be foundational technologies for AVs, already have proven to be effective at preventing and mitigating crashes across all on-road modes of transportation and must be standard equipment with federal minimum performance requirements. These include automatic emergency braking (AEB) with pedestrian and cyclist detection, lane departure warning, and blind spot warning, among others. A lack of performance standards has contributed to

instances of dangerous malfunctions of this technology, highlighting the need for rulemakings for collision avoidance systems and other fundamental AV technologies. As collision avoidance technology continues to improve and evolve, it should also be required to detect and prevent collisions with all vulnerable road users (VRUs) and objects in the operating environment.

- ***"Vision Test" for AVs**:* Driverless cars must be subject to a "vision test" to guarantee an AV will operate on all roads and in all weather conditions and properly detect and respond to other vehicles, all people and objects in the operating environment including but not limited to Black and Brown people, pedestrians, bicyclists, wheelchair users and people with assistive technology, children and strollers, motorcycles, roadway infrastructure, construction zones and roadside personnel, and interactions with law enforcement and first responders. Any algorithm that will inform the technology must be free of bias. Risk assessments for AVs must ensure adequate training data which is representative of all users of the transportation system. Manufacturers and developers must be required to meet basic principles in the development and use of algorithms including: the use of algorithms should be transparent to the end users; algorithmic decision-making should be testable for errors and bias while still preserving intellectual property rights; algorithms should be designed with fairness and accuracy in mind; the data set used for algorithmic decision-making should avoid the use of proxies; and, algorithmic decision-making processes that could have significant consumer consequences should be explainable. The DOT must review algorithms and risk assessment procedures for potential issues, and any identified problems must be then corrected by the developer or manufacturer and verified by the DOT. Coordination and oversight should be led by the Office of the NHTSA Civil Rights Director in partnership with the Office of the Assistant Secretary for Research and Technology, NHTSA Office of Vehicle Safety Research, NHTSA Office of Automation Safety, and NHTSA Chief Counsel's office. The Office of the NHTSA Civil Rights Director should be given adequate resources, expertise and authority to accomplish this role.
- ***Human-Machine Interface (HMI) for Driver Engagement**:* Research demonstrates that even for a driver who is alert and performing the dynamic driving task, a delay in reaction time occurs between observing a safety problem, reacting and taking needed action. For a driver who is disengaged from the driving task during autonomous operation of a vehicle (i.e., sleeping, texting, watching a movie), that delay will be longer because the driver must first be alerted to re-engage, understand and process the situation, and then take control of the vehicle before taking appropriate action. Therefore, an AV must provide adequate alerts to capture the attention of the human driver with sufficient time to respond and assume the dynamic driving task for any level of vehicle automation that may require human intervention. This mechanism must be accessible to all occupants, including people with disabilities and vulnerable populations.
- ***Cybersecurity Standard:*** Vehicles must be subject to cybersecurity requirements to prevent hacking and to ensure mitigation and remediation of cybersecurity events. The Federal Aviation Administration (FAA) has a process for the certification and oversight of all U.S. commercial airplanes, including avionics cybersecurity, although improvement is needed according to a recent Government Accountability Office (GAO) study.[iii] The DOT should be directed, in cooperation with the National Institute of Standards and Technology (NIST), to develop a cybersecurity standard for automated driving systems. The DOT should then require

the cybersecurity standard be applied to all new vehicles. The DOT must be engaged in all relevant discussions on artificial intelligence.

- ***Electronics and Software Safety Standard:*** Vehicles must be subject to minimum performance requirements for the vehicle electronics and software that power and operate vehicle safety and driving automation systems individually and as interdependent components.
- ***Operational Design Domain (ODD):*** The NHTSA must issue federal standards to ensure safeguards for driving automation systems to limit their operation to the ODD in which they are capable of functioning safely. An ODD includes elements such as: the type of roadway, geographical area, speed range, vehicle operating status, and environmental and temporal conditions in which the vehicle is capable of operating safely; any roadway or infrastructure asset required for the operation of the vehicle, such as roadside equipment, pavement markings, signage, and traffic signals; and, the means by which the vehicle will respond if the defined ODD changes or any circumstance which causes vehicle to operate outside of its defined ODD. The rule shall also: specify requirements for how the vehicle will safely transition to a minimal risk condition as a result of a malfunction or when operating outside of the ODD, including the necessity for human intervention that is accessible to all occupants including people with disabilities and vulnerable populations; and, the ability of the vehicle to comply with local laws as part of whether the vehicle is operating inside the ODD.
- ***Functional Safety Standard:*** Requires a manufacturer to ensure the design, development, verification and validation of safety-related electronics or software demonstrates to NHTSA that an AV will perform reliably and safely under the conditions the vehicle is designed to encounter. Additionally, NHTSA must validate that the manufacturer's certifications of functional safety are accurate and reliable by conducting their own testing as needed.
- ***Safe Fallback:*** Every driving automation system must be able to detect a malfunction, a degraded state, or operation outside of ODD and safely transition to a condition which reduces the risk of a crash or physical injury. In the event of a failure, it is essential that the occupants of a driverless car have the ability to assume manual control to complete or command a safe transition to reach a safe location and safely exit the vehicle. This mechanism must be accessible to all occupants, including people with disabilities and vulnerable populations. Commercial vehicles, including those used for public transportation or freight, present distinct challenges, such as the need to identify qualifications necessary to operate, that will need to be addressed separately.
- ***Crash Procedures Standard:*** Requires manufacturers to have procedures in place, including proper shutdown protocols, for when an AV is involved in a crash to ensure the safety of all occupants of the AV, other road users and emergency responders.
- ***Standard for Over-the-Air (OTA) Updates:*** Requires consumers be given timely and appropriate information on the details of the OTA update and ensures any needed training or tutorials are provided. Limits the circumstances in which manufacturers can update a vehicle OTA and provides requirements for OTA updates that necessitate a recall or an additional demonstration of safety. OTA updates that enhance the safety of a vehicle should not be optional or require the consumer to incur any additional expense. During the update process cybersecurity must be maintained. In developing the OTA standard, NHTSA should develop rigorous testing around the most effective way to push out OTA updates to owners and operators of vehicles. Updates must be accessible for all users, including people with disabilities. In addition, information on OTA updates should be available in multiple

languages, similar to compliance with Section 508 of the Rehabilitation Act of 1973 (Pub. L. 93-112), and via video with closed captioning as appropriate, as well as other means of communication to promote access. In a commercial setting, it will be especially critical for there to be clear protocols for how and when OTA updates are carried out.

Safety and Performance Data: With the increasing number of vehicles with different automated driving systems (ADS) being tested and some being sold to the public, standardized data elements, recording, and access to safety event data are necessary for the proper oversight and analysis of the performance of the driving automation systems. Vehicles on the road today are already producing enormous amounts of data, and the amount and type of data will only increase as driving automation evolves. There are many stakeholders who need that data for numerous and varied reasons, most importantly safety. The DOT must issue a FMVSS requiring all vehicles to be equipped with technology that captures all necessary data to understand and evaluate the safety performance of AVs on the road. Moreover, following best practices, data on disengagements and near-misses would help to identify flaws in the technology and may allow cities and states to proactively invest in infrastructure improvements or update the design of dangerous intersections and corridors to ensure safety for all street users. Real-time data on vehicle speeds, travel times, and volumes enables states, cities, and communities to manage congestion and speed, uncover patterns of excessive speeds, evaluate the success of street design projects, and ultimately improve productivity and quality of life. It could also facilitate emergency response by summoning and providing important information to emergency personnel, assist in the safe extraction of occupants, and provide a way for first responders to safely disable and secure the vehicle. Safety and performance data should be made available to relevant stakeholders such as state and local governments, federal agencies, operators or dispatchers of the vehicle itself, independent research bodies, law enforcement, first responders, insurers, and the public, with appropriate privacy protections.

Manufacturer Submissions to NHTSA: Any submission to NHTSA by AV manufacturers or developers must be mandatory, publicly available and include thorough and adequate data and documentation. Additionally, NHTSA must be directed to review and evaluate all submissions to assess whether an approach to ADS development and testing includes appropriate safeguards for operation on public roads. Moreover, submissions should be substantive and include, but not be limited to the following issues: ADS control capabilities; ODD; other limitations and constraints; methods and timing of driver engagement (if applicable); data definitions; recording; and, accessibility. Miles accumulated by simulation, as opposed to on-road testing, cannot substitute for on-road testing or serve as the sole basis for the data included in the submission (See section below on Proper Oversight of Testing). If NHTSA finds information indicating further operation of these vehicles on public streets poses a danger, the Agency must be able to intervene and enforce the law[iv] effectively, which will require not just the greater use of its existing authority but also new, stronger enforcement authorities that should be enacted by Congress (See section below on Additional Resources and Enforcement Authorities for NHTSA). If the Agency determines that a submission is deficient, manufacturers must be required to submit any additional information requested. The legislation should clarify that the Agency has civil and criminal penalty authority for false, fictitious or fraudulent submissions under 18 United States Code (USC) 1001. This submission process cannot be a substitute for NHTSA promptly issuing minimum performance standards through a public rulemaking process.

Proper Oversight of Testing: AV testing is already underway in many states and localities. Fundamental and commonsense safeguards must be instituted for testing on public roads including the establishment of independent institutional review boards (IRBs) to certify the safety of the protocols and procedures for testing of AVs on public roads. The IRB requirements established by the Department of Health and Human Services (HHS) in 45 Code of Federal Regulations (CFR) 46 should serve as a basis for the requirements for IRBs overseeing AV road testing and be modified as needed for this particular use. Test vehicles should be prohibited from providing a service for compensation. In Section 24404 of the Fixing America's Surface Transportation Act (FAST) Act (Pub. L. 114-94), Congress excluded test vehicles from having to comply with federal standards as long as those vehicles are not sold to the public.

NHTSA actions required:

- Develop empirical data reporting standards and metrics for such data;
- Mandate developer reporting of the metrics to the public to enable comparison of AV safety performance among developers;
- Require manufacturers to provide data on the safety and performance of test vehicles and systems and to report safety-critical events including crashes and incidents that occur during testing that result in death, injuries or property damage;
- Verify developer compliance with all applicable laws;
- Make safety-critical event information publicly available with the rebuttable presumption in favor of disclosure, unless it is deemed proprietary or confidential in accordance with federal law;
- Determine which safety-critical events must result in the suspension of testing until a thorough review is completed and additional safeguards are implemented and verified by the Agency, as necessary; and,
- Prior to the introduction of the AV into commerce, review and analyze testing for oversight and research purposes, including but not limited to rulemaking.

Additional Resources and Enforcement Authorities for NHTSA: Ensuring NHTSA has adequate resources, funds, staff, and enforcement authority is essential for the Agency to successfully carry out its statutory mission and address the multiple challenges presented by the testing and deployment of self-driving technologies. The Agency also should be given additional enforcement powers including imminent hazard authority, and enhanced authority to pursue criminal penalties and levy larger civil penalties to ensure industry accountability and thwart misconduct.[v]

Guaranteeing Accessibility for All

Access for Individuals with Disabilities and Older Adults: Nearly one in five people in the U.S. has a disability (more than 57 million), and 18 percent of the U.S. population is over the age of 65 in 2024.[vi] [vii] Yet, significant barriers to accessible, affordable and reliable transportation remain across all modes, and many people with disabilities are unable to obtain a driver's license and cannot afford to purchase an accessible vehicle. Autonomous driving technology has the potential to increase access and mobility for older adults and individuals with disabilities, including those with sensory, cognitive, and physical disabilities, wheelchair users, and people with neurological conditions, who have varying needs as well as traditionally underserved communities. This goal can

be realized by Congressional directive ensuring access for everyone, including accessible HMI, and ramps and securement for wheelchair users. Discrimination on the basis of disability in licensing for SAE International level 4 and 5 AVs must also be prohibited. In addition, the diverse needs of all members of the disability community and older adults must be accommodated for systems that require human engagement as well as when developing a safe fallback.

Access for Underbanked Populations: Access to on-demand transport services is often predicated on the ability to make digital payments. Nearly twenty percent of U.S. households were unbanked (4.5 percent) or underbanked (14 percent) in 2021, with higher incidence in working-age disabled households, lower-income households, less-educated households, younger households, Black and Hispanic households, and households with volatile income.[viii] AV-based transport services must consider a variety of ways in which payment for service can be made in order to ensure that this technology supports equitable access and the inclusion of all.

Equity: Transportation is an imperative part of life. It is the connector for people's work, medical care, worship, recreation, essentials for life and all other tasks. As new modes of transportation continue to grow and evolve, investment and development must include a process where all people can safely participate.

Accessibility, Passenger Safety, and Transportation Services: The safety of passengers is not a monolith, and the measurement and descriptions of safety differ for all people in particular for those who are part of marginalized communities. The use of public transportation safely is currently partially in control of the operators of the modes and vehicles. Human interaction remains essential even when there is an AV and no operators. There must be clear plans that coordinate the safe transportation for all people including the need for delivery of medical care as well as laws that embrace social equity to protect those who are marginalized (Black and Brown people, Indigenous people, lesbian, gay, bisexual, transgender, queer, + (LGBTQ+) people, people with disabilities, women, older adults, and all other groups) in the implementation of these transportation services.

Preserving Consumer and Worker Rights

Consumer Information: Consumer information regarding AVs should be available at the point of sale, in the owner's manual, including publicly accessible electronic owner's manuals, and in any OTA updates. The vehicle identification number (VIN) should be updated to reflect whether certain features were built into the vehicle, either as standard or optional equipment. Additionally, similar to the user-friendly safercar.gov website, NHTSA must establish a website accessible by VIN with basic safety information about the AV level, safety exemptions, and limitations and capabilities of the AV driving system including those resulting from OTA updates. The U.S. New Car Assessment Program (NCAP) was the first government program to provide the public with comprehensive auto safety ratings, including crash test results. It is vital that Congress require NHTSA to act upon consumer and stakeholder recommendations to modernize U.S. NCAP (See Claybrook/Advocates for Highway and Auto Safety paper) and include ratings on how vehicles perform in crashes with motorcyclists, pedestrians and bicyclists. This enhancement of NCAP will be especially crucial as AVs are introduced into the marketplace. Consumer information should be available in multiple languages, similar to compliance with Section 508 of the Rehabilitation Act of 1973 (Pub. L. 93-112), and via

video with closed captioning as appropriate, as well as other means of communication to promote access.

Privacy: Passenger vehicles have the potential to collect significant amounts of data that could interfere with personal privacy rights. Therefore, all manufacturers of passenger motor vehicles, including AVs, should be required to comply with robust data privacy safeguards and policies. Any personally identifiable information (PII) should only be collected or shared for purposes of delivering the services a consumer has requested or affirmatively opted-in to, with appropriately tailored exceptions for essential public purposes, safety, data security, compliance with regulatory requirements, and analytics/performance monitoring, among other purposes. Companies should be required to be transparent with consumers and workers operating a vehicle about the collection and sharing of information, protect information associated with the vehicle and the vehicle itself from data breaches, obtain consumers' express permission to sell or disclose their PII to third parties, and provide consumers the ability to access and delete PII that is not needed to support essential public purposes, safety, data security, compliance with regulatory requirements, and analytics/performance monitoring. The ability of NHTSA, the NTSB, and local law enforcement to access critical safety performance data, while preserving the integrity of personal, private or identifying data, in a timely manner for research, crash investigation and other governmental purposes must be preserved. In addition, radio spectrum needed for traffic safety purposes including vehicle-to-everything communications must be limited to non-commercial use.

Workforce Protections: The deployment of AV technology will have a significant impact on our Nation’s workforce. While these technologies will create new business and employment opportunities, they will also lead to displacement and major shifts in jobs and job functions that will not necessarily be linked to those new opportunities, especially for those same individuals who are being displaced. Policymakers have a major role to play in determining whether AV deployment will help or harm working people and whether the benefits from these technologies will be broadly shared. Absent strong leadership, AV technology risks worsening severe inequalities already inherent in our society, predominantly for blue collar workers. Existing and foreseeable issues which stand to be greatly exacerbated by this technology must be addressed before this technology is broadly deployed on our roads. Similarly, unforeseeable issues throughout deployment will need to be resolved with input from affected stakeholders. Congress must ensure that workers and unions are partners in the development and implementation of AV technology and policy. It must recognize the projected negative effects of a transition to AVs, including but not limited to ensuring strong worker protections in federal funding and procurements, and providing worker support programs for current and future workers including training and re-skilling to ensure that displaced and otherwise affected workers are able to move into middle class jobs created by technological change. In order to achieve these goals, Congress must also take action to require companies and government agencies that plan to transition to AV fleets to be transparent and honest with their workers regarding budgets, plans - including training programs - and timelines for the implementation of new technology. In workplaces where the employees are unionized and thus bargain collectively, these issues should be negotiated.

Whistleblower Protections: Employees or contractors of any manufacturer, supplier, or operator of software or hardware for AVs who want to report safety defects to NHTSA should not be prevented from doing so as the result of a non-disclosure agreement (NDA). The type of protections afforded

whistleblowers in Section 31307 of the Moving Ahead for Progress in the 21st Century (MAP-21) Act (Pub. L. 112-141) as well as Section 24352 in the FAST Act (Pub. L. 114-94) must be extended in any AV bill. In addition, the Department of Labor prohibits a NDA that prevents an individual from providing information to the federal government. However, only a limited number of cases have been filed with the Occupational Safety and Health Administration. Therefore, more must be done to inform employees as to their rights and responsibilities when such a situation arises.

Consumer and Worker Rights[ix]: The well-established rights of consumers to seek accountability in a court of law for injuries suffered as a result of AVs must be preserved. Nothing in this bill shall exempt a person from liability under common law or under a state law or permit a consumer to be required to forgo their rights by a manufacturer or provider of AVs. Moreover, exploitative independent contractor relationships that shield AV companies from liability and deny workers basic workplace rights should be explicitly prevented.

Ensuring Local Control and Sustainable Transportation

Local, State and Federal Regulatory Roles: The statutory mission of the DOT established by Congress in 1966 is to regulate the performance of motor vehicles to ensure public safety, which now includes AVs. In keeping with existing law and practice, the federal government should prescribe regulations for the performance of these vehicles, leaving regulation of the operation of these vehicles to the states. Even after federal regulations are in place regarding AVs, existing federalism practices demand that states retain a legal right and a duty to their residents to develop proposals and implement solutions to ensure public safety. In addition, state and local governments have the authority to manage the operation of vehicles on their streets to address concerns such as safety, noise, local air quality, and congestion. Any action on the regulation of AVs shall not preempt states and localities from regulating the operation of these vehicles just as they do for traditional motor vehicles.

In-Depth Study of AV Impacts on Transportation Systems and Environment: AVs could have direct and indirect negative impacts on safety, congestion, pollution, land use, accessibility, transportation infrastructure capacity and needs, energy consumption, public transit, jobs and job functions, mobility and equity. DOT must be directed to undertake a comprehensive study to inform policymakers and the public about how these vehicles will impact our existing transportation systems and ensure effective mitigation of problems identified.[x] Implementation of infrastructure to support the safe operations of AVs, such as placement of electric vehicle charging stations, visible lane striping, and uniform and unobstructed signage, must be equitable for all communities to ensure equal opportunity for people of all racial and socioeconomic backgrounds.

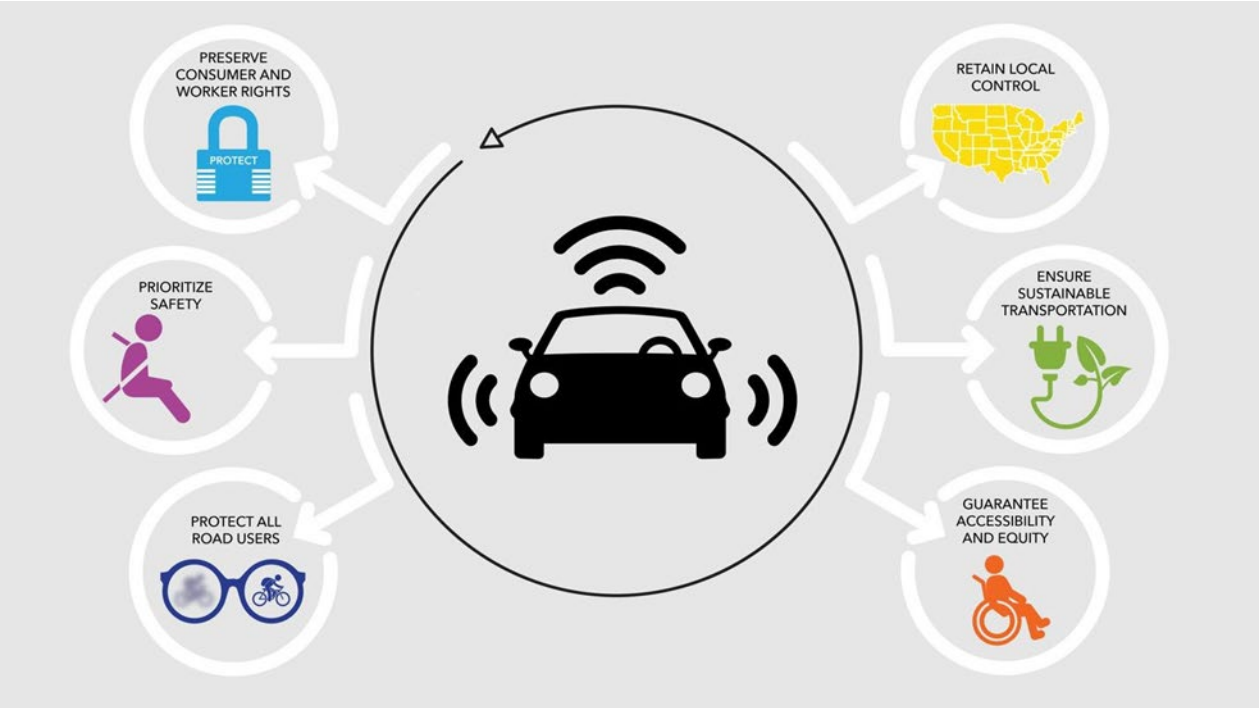
NOTE: **The AV Tenets outlined in this document do not constitute the entirety of each supporting organization's policy priorities related to AVs.**

Glossary of Acronyms

ADS – Automated Driving System
AV – Autonomous Vehicle
CFR – Code of Federal Regulations
DOT – Department of Transportation
FAA – Federal Aviation Administration
FAST – Fixing America's Surface Transportation Act, Pub. L. 114-94
FMVSS – Federal Motor Vehicle Safety Standard
GAO – Government Accountability Office
GVWR – Gross Vehicle Weight Rating
HHS – Health and Human Services
HMI – Human-Machine Interface
IRB – Institutional Review Board
LGBTQ+ -- Lesbian, Gay, Bisexual, Transgender, Queer, +
MAP-21 – Moving Ahead for Progress in the 21st Century Act, Pub. L. 112-141
NCAP – New Car Assessment Program
NDA – Non-Disclosure Agreement
NHTSA – National Highway Traffic Safety Administration
NIST – National Institute of Standards and Technology
NTSB – National Transportation Safety Board
ODD – Operational Design Domain
OTA – Over-the-Air
PII – Personally Identifiable Information
SAE – Society of Automotive Engineers
USC – United States Code
VIN – Vehicle Identification Number

[i] These tenets are limited to vehicles with a gross vehicle weight rating (GVWR) of 10,000 pounds or less unless otherwise noted; however, it is imperative that automated delivery vehicles (including those used on sidewalks and other non-roadways) and commercial motor vehicles be subject to comprehensive regulations, including rules regarding the presence of a licensed, qualified driver behind the wheel.
[ii] Partially automated vehicles (SAE International Level 2) and conditional / highly automated vehicles (SAE International Levels 3, 4, 5).
[iii] United States Government Accountability Office, Aviation Cybersecurity, FAA Should Fully Implement Key Practices to Strengthen Its Oversight of Avionics Risks, GAO-21-86 (Oct. 2020).
[iv] Motor Vehicle Safety Act, Pub. L. 89-563 (1966).
[v] If NHTSA is not to have authority over the commercial operation of an AV, these same oversight powers must be conveyed to the respective modal agency responsible for overseeing the deployment of commercial AVs.
[vi] Disability Justice. Available here: https://disabilityjustice.org/justice-denied/disability-demographics/#:~:text=Definition%20of%20Disability,with%20one%20or%20more%20disabilities.
[vii] Pew Research Center, Available here: https://www.pewresearch.org/short-reads/2024/01/09/us-centenarian-population-is-projected-to-quadruple-over-the-next-30-years/#:~:text=There%20are%20currently%20roughly%2062,estimated%2023%25%20of%20the%20population.
[viii] Federal Deposit Insurance Corporation (FDIC), 2021 FDIC National Survey of Unbanked and Underbanked Households (October 2022).
[ix] Advocates for Highway and Auto Safety does not take a position on this issue.
[x] IIJA P.L. 117-58, Section 11504, Study of Impacts on Roads From Self-Driving Vehicles.

Attachment T



Active Transportation Alliance (Metro Chicago)
Advocates for Highway and Auto Safety
America Walks
American Academy of Pediatrics
American Association for Justice
American Motorcyclist Association
American Public Health Association
American Trauma Society
Association of Pedestrian and Bicycle Professionals
Bicycle Coalition of New Mexico
BikeNWA
BikeOklahoma
Bike Pittsburgh
BikeSD
BikeWalkKC
Brain Injury Association of America
California Association of Bicycling Organizations
Cascade Bicycle Club

Center for Auto Safety
Center for Disability Rights, Inc.
Citizens for Reliable and Safe Highways
Consumer Action
Consumer Federation of America
Consumers for Auto Reliability and Safety
Consumer Reports
Detroit Greenways Coalition
Disability Rights Education and Defense Fund
Emergency Nurses Association
Empire State Consumer Project, Inc.
Environmental Law & Policy Center
Families for Safe Streets
Federal Law Enforcement Officers Association
GorgePedal.com
Health by Design
Idaho Walk Bike Alliance
International Brotherhood of Teamsters
Joan Claybrook, President Emeritus, Public Citizen, Former Administrator, National Highway Traffic Safety Administration
KidsAndCars.org
LA Walks
League of American Bicyclists
Missouri Bicycle and Pedestrian Federation
National Association of City Transportation Officials (NACTO)
National Coalition for Safer Roads
New Urban Mobility Alliance
Parents Against Tired Truckers
Public Citizen
Owner-Operator Independent Drivers Association
Rails-to-Trails Conservancy
Ride Illinois
Safety Research & Strategies, Inc.
San Francisco Families for Safer Streets
Shenandoah Valley Bicycle Coalition
Skilled Motorcyclist Association–Responsible, Trained and Educated Riders (SMARTER) Inc.

SoCal Families for Safe Streets
Stopdistractions.org
The Daniel Initiative
Transport Workers Union
Transportation Alternatives
Transportation for America
Transportation Trades Department, AFL-CIO
Trauma Foundation
Truck Safety Coalition
Virginia Citizens Consumer Council
Walk SF
Washington Area Bicyclist Association
Washington Bikes
Whirlwind Wheelchair International
Wyoming Pathways