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LOOKING UNDER THE HOOD: THE STATE OF NHTSA AND MOTOR VEHICLE SAFETY

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TESTIMONY OF JEFF FARRAH, CHIEF EXECUTIVE OFFICER,
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SUMMARY OF TESTIMONY

Over the past two decades, autonomous vehicles ("AVs") have gone from science fiction to aspirational to commonplace on America's roads and highways. Across the country AVs are providing valuable transportation services, moving both passengers through autonomous ride-hailing fleets and goods through trucking fleets and middle- and last-mile delivery operations. By removing opportunities for human error, AVs are positioned to help significantly reduce roadway crashes and deaths at a time when both are at near record highs. The further adoption of AVs will also bring significant economic benefits, help support and grow supply chains, and expand transportation access to those who are unable to drive—like elderly individuals or individuals experiencing physical challenges— or who lack full access to a vehicle, letting them participate in the economy in ways they could not before.

However, continuing this progress will require a federal policy framework for AVs that provides U.S. companies the ability to compete with competitors in other countries, especially those in China, where the national government has prioritized and supported AV development through legislative and regulatory actions for years. The Autonomous Vehicle Industry Association has laid out a U.S. federal policy framework in our recent publication, *Securing American Leadership in Autonomous Vehicles*, and we urge Congress to build on our recommendations.

Congress can and should lead the way on a federal policy framework that both answers key questions on vehicle design, construction, and performance and facilitates safer roads, more accessible vehicles, and strengthened supply chains. A federal AV policy framework will allow the continued growth of America's AV industry and ensure we retain leadership over China in a vital emerging technology.

TESTIMONY OF JEFF FARRAH, CHIEF EXECUTIVE OFFICER, AUTONOMOUS VEHICLE INDUSTRY ASSOCIATION

I. Introduction

Chairman Bilirakis, Vice Chair Fulcher, Ranking Member Schakowsky, and members of the Subcommittee, thank you for the opportunity to testify before the Subcommittee on this incredibly important topic. The autonomous vehicle ("AV") industry appreciates the strong engagement of members of this Subcommittee on AV policy and is committed to American leadership on autonomous technology.

The Autonomous Vehicle Industry Association ("AVIA") is the unified voice of the AV industry, and we represent the world's leading technology, ridesharing, automotive, trucking, and transportation companies.[1] Our mission is to bring the tremendous safety, mobility, transportation, and economic benefits of AVs—otherwise known as SAE International Levels 4- and 5-capable vehicles—to consumers and businesses in a safe, responsible, and expeditious manner and ensure the U.S. is the global leader on AVs.[2] Vehicles operated by AVIA members have driven over 145 million autonomous miles on U.S. public roads, a distance roughly equivalent to the average distance between the Earth and Mars or driving around the Earth over 5,600 times.[3] The number

[1] AVIA members include Aurora, Bot Auto, Cavnue, Discount Tire, Ford, Gatik, General Motors, International, J.D. Power, Kodiak, Lyft, Motional, NGV, Nuro, Plus, Stack, Tier IV, Torc Robotics, TaskUs, Uber, UPS, Volkswagen Group of America, Volvo Cars, Volvo Autonomous Solutions, Waabi, Waymo, and Zoox. *See Our Mission and Members*, AUTONOMOUS VEHICLE INDUS. ASS'N, https://theavindustry.org/ (last visited June 24, 2025).

[2] SAE International's J3016 standard, which has been adopted industry wide, establishes a taxonomy for vehicle automation technologies that includes six levels of driving automation, rising from "No Driving Automation" (Level 0) to "Full Driving Automation" (Level 5). Level 2 systems (often called advanced driver assistance systems or "ADAS") are available on vehicles today and are capable of "partial driving automation," require human supervision at all times. Level 3 vehicles have "conditional driving automation," where the vehicle requires human interaction only in specific situations. Level 4 vehicles are defined as having "High Driving Automation." Only Level 3, 4, and 5 vehicles are equipped with automated driving systems ("ADS"). *See* SAE INT'L, TAXONOMY AND DEFINITIONS FOR TERMS RELATED TO DRIVING AUTOMATION SYSTEMS FOR ON-ROAD MOTOR VEHICLES, J2016_202104 (2021).

[3] *New Report: AV Industry Surges Past 145 Million Autonomous Miles as AVIA Urges Policymakers to Act*, AUTONOMOUS VEHICLE INDUS. ASS'N (May 19, 2025), https://www.theavindustry.org/press-release/avia-releases-2025-state-of-av/.

of autonomous miles driven by AVIA members on U.S. public roads has more than *doubled* in the past year, which underscores the tremendous progress our industry has made.

Over the past two decades, AVs have gone from science fiction to aspirational to commonplace on America's roads and highways, using advanced technology to perform all aspects of the driving task. In states as diverse as Arizona, Arkansas, California, Florida, Michigan, and Texas, AVs provide valuable transportation services, transporting both passengers through autonomous ride-hailing fleets and goods through trucking fleets and middle- and last-mile delivery operations. The U.S. Department of Defense has also embraced autonomous technology, including technology developed by AVIA member company Kodiak, to keep America's soldiers safer.[4]

But I will be frank: this progress has occurred in the absence of a federal policy framework for AVs and is therefore leaving U.S. companies at a disadvantage to competitors in China and other countries. For that reason, earlier this year AVIA released detailed federal policy recommendations in a publication called *Securing American Leadership in Autonomous Vehicles*.[5] Today, policymakers are faced with a choice. We can continue to leave a void at the federal level, which supports China's ambitions to dominate the global AV market and puts U.S. states at the forefront of policymaking that is in need of federal direction. In the last several years, U.S. states have raced ahead on AV policy, and today twenty-six states have AV deployment statutes. While AVIA appreciates this progress by states, it is essential for the U.S. Department of Transportation

[4] *See Accelerating Autonomous Vehicle Technology for the DoD*, DEF. INNOVATION UNIT (Apr. 3, 2024), https://www.diu mil/latest/accelerating-autonomous-vehicle-technology-for-the-dod. AVIA member Kodiak Robotics is currently working with the U.S. Army's Army Robotic Combat Vehicles program. *See U.S. Army Robotic Combat Vehicle (RCV Program)*, KODIAK ROBOTICS (Nov. 9, 2023), https://kodiak.ai/news/us-army-robotic-combat-vehicle-program.

[5] *See Securing American Leadership in Autonomous Vehicles*, AUTONOMOUS VEHICLE INDUS. ASS'N (Jan. 19, 2025), https://cdn.prod.website-files.com/67ee365c25e6530594bd40c2/683d8d2fa60ac22d542b1049_Securing%20American%20Leadership%20in%20Autonomous%20Vehicles1.pdf.

("USDOT," "Department") to set nationally applicable design, construction, and performance standards for AVs, which is an authority the federal government—and the federal government alone—possesses. This committee can lead the way on a federal policy framework that both answers key questions on vehicle design, construction, and performance and facilitates safer roads, more accessible vehicles, and strengthened supply chains.

Putting in place a federal policy framework will have the support of an American public that is increasingly riding in AVs and loving the experience. Below I detail data that demonstrates what we have long known to be true: those who are passengers in AVs quickly become comfortable with the technology and want to experience it again and again. Even those who have not yet ridden in an AV but live in an area where AVs are active become convinced of their safety and benefits. Therefore, as we see more AV deployments we can anticipate higher levels of public acceptance of the technology.

Our industry is eager to engage with Congress on AV-specific federal policies that supplement the broad authority to regulate vehicles on public roads that is currently held by the USDOT. We commend Secretary Duffy and his team at the Department for their early and significant attention to AVs. In April, Secretary Duffy announced a new Automated Vehicle Framework as part of the Department's Innovation Agenda, and this framework included early action items that are a welcome first step.[6] It is imperative that this progress continues and we are optimistic that with confirmed administrators at the National Highway Traffic Safety Administration ("NHTSA") and Federal Motor Carrier Safety Administration ("FMCSA") more is yet to come.

[6] *See Trump's Transportation Secretary Sean P. Duffy Unveils New Automated Vehicle Framework as Part of Innovation Agenda*, U.S. DEP'T OF TRANSP. (Apr. 24, 2025), https://www.transportation.gov/briefing-room/trumps-transportation-secretary-sean-p-duffy-unveils-new-automated-vehicle-framework.

II. The State of Roadway Safety

A federal AV policy framework is especially needed at a time when the United States continues to face epidemic levels of fatalities on our nation's roads. 2024 saw over 39,000 people die on America's roads, a decrease from 2023, which recorded 40,901 deaths in motor vehicle traffic incidents.[7] 2023 was the third year in a row to see traffic deaths above 40,000,[8] a number of fatalities that previously had not occurred since 2007.[9] To put this in context, the number of traffic fatalities each year is equivalent to the amount of people at a sold-out baseball game at Nationals Park.

Pedestrian deaths have also risen; 2022 was the deadliest year for American pedestrians since 1981, with 7,508 people killed.[10] That trend continued into 2024, with an estimated 3,304 pedestrians killed in the first half of the year, a 48% increase over the past ten years.[11] The increase in roadway fatalities is consistent across vehicle types. In 2022, 5,969 people died in crashes involving large trucks.[12] This increase is part of a decade-long 40% increase in such crashes.[13] Further, in 2023, 114,552 large trucks were involved in crashes that resulted in an injury, an 12% increase since 2016.[14] The toll of these crashes on families and communities is immeasurable, but the toll of motor vehicle crashes is not measured in fatalities and injuries alone. According to the

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[7] NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., U.S. DEP'T OF TRANSP., DOT HS 813 710, EARLY ESTIMATE OF MOTOR VEHICLE TRAFFIC FATALITIES IN 2024, 1 (2025), https://crashstats nhtsa.dot.gov/Api/Public/ViewPublication/813710.
[8] *Id.*
[9] *Fatality Facts 2021: Yearly Snapshot*, INS. INST. FOR HIGHWAY SAFETY (2023), https://www.iihs.org/topics/fatality-statistics/detail/yearly-snapshot.
[10] GOVERNORS HIGHWAY SAFETY ASS'N, PEDESTRIAN TRAFFIC FATALITIES BY STATE 2022 PRELIMINARY DATA (JAN.-DEC.) (2023), https://www.ghsa.org/sites/default/files/2024-12/2022-ped-report.pdf.
[11] *Id.* at 3.
[12] NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., U.S. DEP'T OF TRANSP., DOT HS 813 705, OVERVIEW OF MOTOR VEHICLE TRAFFIC CRASHES IN 2023, 7 (2025), https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813705.
[13] Nat'l Safety Council, *Large Trucks*, NSC INJURY FACTS, https://injuryfacts nsc.org/motor-vehicle/road-users/large-trucks/ (last visited June 24, 2025).
[14] *Id.*

National Safety Council, "the total motor vehicle injury costs" in 2023 were estimated at $513.8 billion.[15]

Research continues to confirm that human behavior is overwhelmingly the most common factor in fatal accidents on our roads. A NHTSA study found that over 55% of all people injured or killed in a roadway incident tested positive for one or more drugs (including alcohol).[16] Drivers are also frequently distracted by electronics; during daylight in 2022, 6.4% of all drivers are looking at or using their handheld device.[17] Studies have also found that drivers manipulating cell phones are two to six times more at risk for a crash.[18] Several categories of behavior-related fatalities have increased in the past few years, including police-reported alcohol-involved crashes and deaths of unrestrained passengers.[19]

Roadway safety is an issue that impacts each community differently. Roadway crashes, and the resulting injuries and deaths, are not evenly distributed across socioeconomic, racial, or ethnic groups. Census tracts within low-income metropolitan areas have recorded pedestrian fatality rates approximately twice that of more affluent neighborhoods.[20] These patterns are echoed in a City of Chicago report revealing that Black residents and those living in communities with high levels of economic hardship were more at risk of dying in a traffic crash compared to white residents and those living in communities with low and medium levels of economic hardship,

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[15] Nat'l Safety Council, *Motor Vehicles: Introduction*, NSC INJURY FACTS, https://injuryfacts nsc.org/motor-vehicle/overview/introduction/ (last visited June 24, 2025).
[16] NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., U.S. DEP'T OF TRANSP., DOT HS 813 399, ALCOHOL AND DRUG PREVALENCE AMONG SERIOUSLY OR FATALLY INJURED ROAD USERS, 2 (2022), https://rosap.ntl.bts.gov/view/dot/65623/dot_65623_DS1.pdf.
[17] NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., U.S. DEP'T OF TRANSP., DOT HS 813 531, DRIVER ELECTRONIC DEVICE USE IN 2022, 11 (2024), https://crashstats nhtsa.dot.gov/Api/Public/ViewPublication/813531.pdf.
[18] *Distracted driving*, INS. INST. FOR HIGHWAY SAFETY, https://www.iihs.org/research-areas/distracted-driving (last visited June 24, 2025).
[19] NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., U.S. DEP'T OF TRANSP., DOT HS 813 298, EARLY ESTIMATES OF MOTOR VEHICLE TRAFFIC FATALITIES AND FATALITY RATE BY SUB-CATEGORIES IN 2021, 1 (2022), https://www.nhtsa.gov/press-releases/early-estimate-2021-traffic-fatalities.
[20] GOVERNING, AMERICA'S POOR NEIGHBORHOODS PLAGUED BY PEDESTRIAN DEATHS 1 (2014), https://www.governing.com/archive/pedestrian-deaths-poor-neighborhoods-report html.

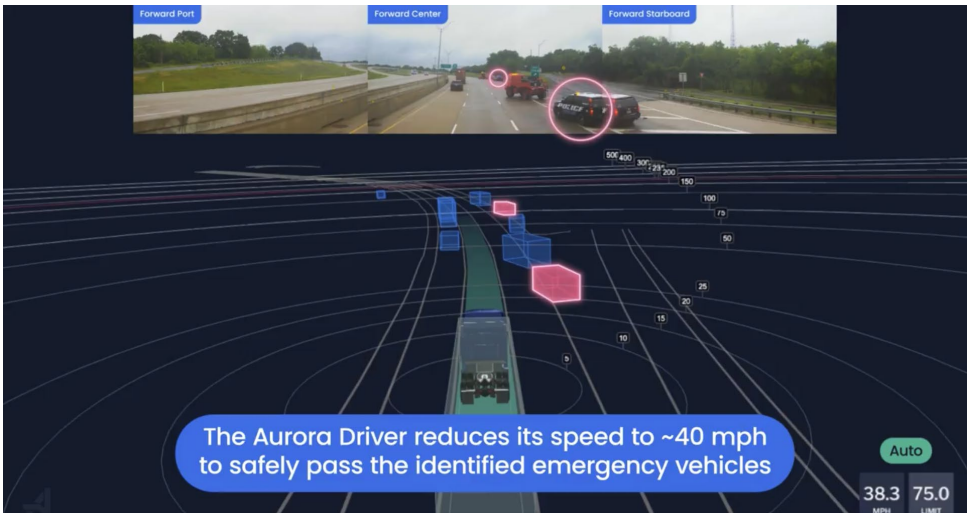
respectively.[21] By reducing crashes across the board, AVs can reduce these inequities and improve the quality of life for all communities.

America's roads remain a dangerous place for drivers, passengers, and other road users, in large part due to the deficiencies of human drivers. However, the United States does not need to accept this status quo. By removing human error from the equation, AVs offer a vital tool for improving roadway safety.

III. AV Technology as a Vital Tool for Improving Roadway Safety

Improving road safety is the primary goal of the AV industry. Automated driving systems ("ADS") are the heart and brain of an AV and are equipped with suites of sensor systems (including lidar, radar, and cameras) with sensitivities, capabilities, and reaction times well beyond those of a human driver. These sensors grant an ADS a 360-degree field of vision which can detect, track, and react to objects and people even when hidden from human perception due to vehicles, buildings, and other obstructions. For example, AVs are developed to specifically detect vulnerable road users–such as motorcycles, pedestrians, and cyclists–and then predict and safely respond to their unique behavior (e.g., motorcycle lane splitting). Included below are examples of what an AV "sees" when it encounters a vulnerable road user:

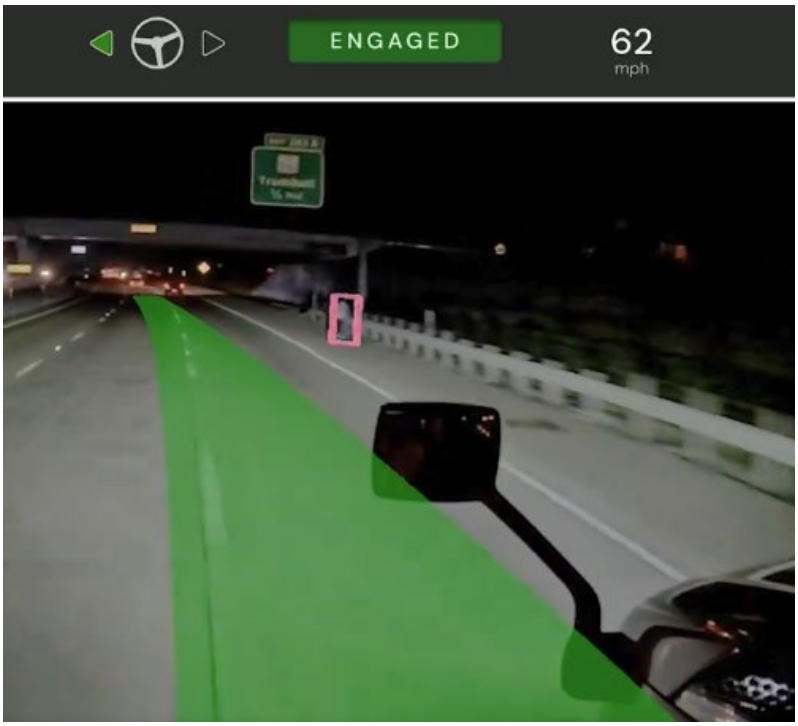
[21] VISION ZERO CHICAGO, ACTION PLAN 2017–2019 17 (2017), https://visionzerochicago.org/wp-content/uploads/2016/05/17_0612-VZ-Action-Plan_FOR-WEB.pdf.



An Aurora autonomous truck safely and accurately detects an emergency vehicle, slows down and changes lanes.[22]

A Waymo vehicle recognizes and adheres to a police officer directing traffic at a Los Angeles intersection.[23]

[22] Aurora (@aurora_inno), X (Jan. 18, 2024, 5:01 PM), https://twitter.com/aurora_inno/status/1748103257128374548.
[23] Dmitri Dolgov (@dmitri_dolgov), X (Jan. 18, 2024, 7:04 PM), https://twitter.com/dmitri_dolgov/status/1748134215265456444.



A Kodiak autonomous truck recognizes a pedestrian on a highway from over 130m away at night, shifting to another lane to give the pedestrian extra space.[24]

Today, human error, including speeding, unfamiliarity with the roadway, and fatigue, is a major contributor to roadway incidents. AVs are designed to remove that error from the equation, as they do not drive distracted or tired. AVs have built a significant safety record through more than a decade of development, testing, and deployment, and ADS-equipped vehicles have now driven millions of miles autonomously, with vehicles operated by AVIA members driving over 145 million autonomous miles on public roads in the U.S. alone.[25] Reinsurer Swiss Re published an analysis of 3.8 million autonomous miles driven by passenger AVs operated by AVIA member Waymo. The analysis found that when compared to baseline human drivers, Waymo AVs reduced

[24] Kodiak (@KodiakRobotics), X (Mar. 21, 2024), https://twitter.com/KodiakRobotics/status/1770870645116833872.
[25] AUTONOMOUS VEHICLE INDUS. ASS'N, *supra* note 3.

bodily injury claims by 100 percent, and reduced property damage claims by 76 percent.[26] These results led Swiss Re to conclude that Waymo's AVs are "significantly safer towards other road users than human drivers are."[27] Waymo's own review of over 56.7 million rider-only autonomous miles found that the company's AVs demonstrated a 96% reduction of injury-involving intersection crashes and a 85% reduction in crashes with suspected serious or worse injuries, when compared to human drivers.[28] A recent Chamber of Progress study found that replacing even 1.3% of California drivers with an AV could have prevented 411 fatalities between 2020 and 2022, while replacing 13% of California drivers could have prevented 1,342 lives in that same three year period.[29] Another study by the Virginia Tech Transportation Institute found that the full scale deployment of occupantless AVs for delivery services could reduce roadway deaths by 58.2%.[30]

AVs are poised to improve roadway safety and help combat the glut of roadway deaths facing the United States today. By removing human error, AVs avoid the risks that come from driver distraction, fatigue, and incapacitation. Through ongoing AV deployments, AVIA members are refining their technologies and generating valuable data supporting the safety benefits of AVs. The wider deployment of AVs will bring these benefits to communities across the country and help bring an end to thousands of unnecessary and tragic roadway deaths.

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[26] LUIGI DI LILLO ET AL., COMPARATIVE SAFETY PERFORMANCE OF AUTONOMOUS- AND HUMAN DRIVERS: A REAL-WORLD CASE STUDY OF THE WAYMO ONE SERVICE (2023), https://arxiv.org/ftp/arxiv/papers/2309/2309.01206.pdf.
[27] *Id.*
[28] *New Study: Waymo is Reducing Serious Crashes and Making Streets Safer for Those Most at Risk*, WAYMO (May 1, 2025), https://waymo.com/blog/2025/05/waymo-making-streets-safer-for-vru.
[29] KAITLYN HARGER, ANALYSIS: AVS IN CALIFORNIA COULD HAVE SAVED UP TO 1,300 LIVES, PREVENTED UP TO 5,000 MAJOR INJURIES OVER PAST THREE YEARS (2024), https://progresschamber.org/wp-content/uploads/2024/03/AV-Safety-Research-California-Traffic-Fatality-Analysis-03-24.pdf.
[30] CHRISTINA WITCHER ET AL., ESTIMATING CRASH CONSEQUENCES FOR OCCUPANTLESS AUTOMATED VEHICLES (Feb. 2021), https://vtechworks.lib.vt.edu/server/api/core/bitstreams/a28aa936-8f89-4302-8859-ee54d34358e2/content.

IV. Social and Economic Benefits of Widespread AV Deployments

In addition to increasing safety, the continued expansion of AV deployments will also bring economic, supply chain, and social benefits to American communities. For example, by 2050, the value of public and consumer benefits of AV deployment, including reduced congestion, avoided accidents, and saved time, could add up to $796 billion annually.[31] The wider deployment of AVs could also create over three million new jobs by 2035, while driving down the cost of consumer goods, reducing delivery costs, and raising annual earnings for all U.S. workers by between $203 and $267 per worker per year.[32] AVs additionally represent a key solution to supply chain challenges, all while decreasing transportation costs, creating jobs, and improving safety. For millions of elderly Americans and individuals with travel-limiting disabilities, AVs also can provide greater independence compared to mass transit or paratransit systems, opening the door for new employment opportunities, improved access to medical care, and better connection to their communities. AVs are poised to bring economic benefits at both societal and individual levels, and they can help grow the U.S. economy and support the economic competitiveness of American businesses across many industries, in turn supporting the continued growth of the U.S. economy.[33]

A. Connecting People and Protecting Communities

By increasing transportation access and improving safety, AVs can serve American communities of all kinds. Today, millions of Americans have their ability to travel limited by mobility challenges or disabilities. USDOT has estimated that 25.5 million Americans face travel-

[31] SECURING AMERICA'S FUTURE ENERGY, AMERICA'S WORKFORCE AND THE SELF-DRIVING FUTURE 9 (2018), https://avworkforce.secureenergy.org/wp-content/uploads/2018/06/SAFE_AV_Policy_Brief.pdf.
[32] *Id.*
[33] Jack Caporal, William O'Neil, and Sean Arrieta-Kenna, *Bridging the Divide: Autonomous Vehicles and the Automobile Industry*, CSIS (Apr. 14, 2021), https://www.csis.org/analysis/bridging-divide-autonomous-vehicles-and-automobile-industry.

limiting disabilities,[34] and roughly 560,000 people with disabilities never leave their homes due to transportation difficulties.[35] Over 7.6 million Americans live with significant vision impairment,[36] conditions which can leave them unable to operate a vehicle. This lack of mobility contributes to a lack of economic opportunity, and only 22.7% of people with disabilities are employed, compared to 65.5% of people without a disability.[37] A study by the National Disability Institute found that the wider deployment of AVs could lead to an increase in 4.4 million jobs for people with disabilities, which could create a 3.8% increase in U.S. GDP (nearly $867 billion).[38] Whether personally owned, serving as on-demand taxis, or as part of local paratransit services, AVs can provide disabled Americans with greater autonomy, letting them dictate how, where, and when they move through the world.

AVs can also provide vital connections to areas with high demand but low supply of transportation, otherwise known as "transit deserts." Access to transportation and average length of commute are connected to upward mobility,[39] and studies have found links between public transit access, income, and unemployment.[40] A 2011 study showed that an average person can access only about 30% of all jobs and 25% of low- and middle-skilled jobs in a given metropolitan

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[34] *ADA at DOT: Accessibility Initiatives*, U.S. DEP'T OF TRANSP. (Feb. 13, 2025) https://www.transportation.gov/accessibility.
[35] BUREAU OF TRANSP. STAT., TRANSPORTATION DIFFICULTIES KEEP OVER HALF A MILLION DISABLED AT HOME (2012), https://www.bts.gov/archive/publications/special_reports_and_issue_briefs/issue_briefs/number_03/entire.
[36] *Blindness Statistics*, NAT'L FED'N OF THE BLIND, https://nfb.org/resources/blindness-statistics (last visited June 24, 2025).
[37] Economic News Release, U.S. Bureau of Labor Stat., Persons with a Disability: Labor Force Characteristics Summary (Feb. 25, 2025), https://www.bls.gov/news.release/disabl.nr0.htm.
[38] DOMINIC MODICAMORE, ET AL, NATIONAL DISABILITY INSTITUTE, ECONOMIC IMPACTS OF REMOVING TRANSPORTATION BARRIERS TO EMPLOYMENT FOR INDIVIDUALS WITH DISABILITIES THROUGH AUTONOMOUS VEHICLE ADOPTION (Dec. 30, 2022), https://www nationaldisabilityinstitute.org/wp-content/uploads/2023/02/ndi-economicimpactsofremovingtransportationbarriers.pdf.
[39] Mikayla Bouchard, *Transportation Emerges as Crucial to Escaping Poverty*, N.Y. TIMES (May 7, 2015), https://www.nytimes.com/2015/05/07/upshot/transportation-emerges-as-crucial-to-escaping-poverty html.
[40] Gillian D. White, S*tranded: How America's Failing Public Transportation Increases Inequality*, THE ATLANTIC (May 16, 2015), https://www.theatlantic.com/business/archive/2015/05/stranded-how-americas-failing-public-transportation-increases-inequality/393419/.

area via public transit within 90 minutes.[41] AVs have the potential to reduce or eliminate gaps in transportation access by improving integration with mass transit, whether by providing both first mile and last mile connections to transit, servicing direct trips to workplaces and other endpoints, or by broadly increasing supply that helps free up other conventional and AV transportation options to build those linkages. Projections indicate that the transportation connections facilitated by the adoption of AVs would increase access to jobs within a metropolitan area by 45% by 2040.[42]

Access to food is another area of inequality that AVs can help alleviate. Transit deserts often overlap with food deserts, which are defined as areas with high poverty (20% or greater) and low access to food (at least 33% of people living more than one mile from a grocery store or supermarket).[43] A 2017 report by the U.S. Department of Agriculture's Economic Research Service ("ERS") estimates that 54 million individuals, or 17.1 percent of the total U.S. population, had limited access to a supermarket or grocery store between 0.5 and 10 miles from their home.[44] Further, a 2009 ERS report found that, at the time, 2.3 million people lived more than one mile from a supermarket and did not have access to a vehicle.[45]

AVs can prove particularly useful for improving access to food, both by transporting people to previously inaccessible or difficult to access supermarkets and grocery stores, and by bringing food directly to their doors. With greater widespread deployment, AVs could improve access to fresh food for fourteen million low-income households, roughly 70% of the total low-

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[41] Adie Tomer et al., *Missed Opportunity: Transit and Jobs in Metropolitan America*, BROOKINGS (May 11, 2011), https://www.brookings.edu/research/missed-opportunity-transit-and-jobs-in-metropolitan-america/.
[42] RICHARD EZIKE ET. AL., UNION OF CONCERNED SCIENTISTS, WHERE ARE SELF-DRIVING CARS TAKING US? 6 (2019), https://ucsusa.org/sites/default/files/attach/2019/02/Where-Are-Self-Driving-Cars-Taking-Us-web.pdf.
[43] Michele Ver Ploeg et al., *Mapping Food Deserts in the United States*, U.S. DEP'T OF AGRIC.: ECON. RSCH. SERVS., (Dec. 1, 2011), https://www.ers.usda.gov/amber-waves/2011/december/data-feature-mapping-food-deserts-in-the-us/.
[44] Alana Rhone et al., *Low-Income and Low-Supermarket-Access Census Tracts, 2010–2015*, U.S. DEP'T OF AGRIC.: ECON. RSCH. SERVS. 12 (2017), https://www.ers.usda.gov/webdocs/publications/82101/eib-165.pdf?v=3395.3.
[45] Michele Ver Ploeg et al., *Access to Affordable and Nutritious Food: Measuring and Understanding Food Deserts and Their Consequences*, U.S. DEP'T OF AGRIC.: ECON. RSCH. SERVS. iii (2009), https://www.ers.usda.gov/webdocs/publications/42711/12716_ap036_1_.pdf?v=8423.6.

income population, living in food deserts.[46] The addition of safe and affordable options in the transportation ecosystem will expand the capacity to execute on these trips.

B. Moving Goods and Growing the American Economy

The integration of AVs into America's commercial fleets will help optimize the transportation of freight nationwide, bringing goods directly to consumers faster and strengthening at-risk supply chains. At present, the United States is not hauling all the freight it could, holding back our nation's farmers, ranchers, and manufacturers. Autonomous trucking offers a means to address supply chain inefficiencies by filling workforce gaps, enhancing fleet flexibility, and reducing travel times.

The growth in autonomous trucking is poised to run in parallel with an ever-growing market for freight trucking, with the Bureau of Transportation Statistics estimating that freight activity in the United States alone will grow fifty percent from 2020 to 2050, reaching a projected value of $36.2 trillion.[47] With trucking representing roughly 72% of all freight transportation tonnage,[48] the number of trucks on the road, autonomous and human driven, will need to grow as well. As demand for freight hauling continues to grow, AVs can help shippers keep up with that demand, supplementing and augmenting human driven fleets. With AVs hauling more long-haul freight, more opportunities will be created for truck drivers in their communities. This will also allow companies to strategically place their drivers where they are needed most and ensure America's truck drivers can remain in and near their communities and sleep in their own beds.

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[46] Sola Lawal, *Serving America's Food Deserts*, MEDIUM (July 15, 2020), https://medium.com/nuro/serving-americas-food-deserts-a7442e922053.
[47] *Freight Activity in the U.S. Expected to Grow Fifty Percent by 2050*, BUREAU OF TRANSP. STATS. (Nov. 22, 2021), https://www.bts.gov/newsroom/freight-activity-us-expected-grow-fifty-percent-2050.
[48] *ATA Truck Tonnage Index Increased 2.4% in May*, AM. TRUCKING ASS'NS (July 20, 2023), https://www.trucking.org/news-insights/ata-truck-tonnage-index-increased-24-may.

For consumers, AVs are positioned to reduce general transportation costs and the cost of goods, and ensure goods are made more readily available and closer to home. Sixty-five percent of U.S. consumable goods are brought to market by trucks, and the implementation of autonomy in the trucking sector stands to decrease operating costs by about 45%—resulting in savings between $85 billion and $125 billion, which can be passed on to consumers and transportation workers.[49] Finally, through the introduction of shared AV fleets, transportation costs—which amount to the second-largest expense for most households—could be reduced by as much as $5,600 per year.[50]

C. Providing New Jobs

American workers also stand to benefit from the greater adoption of AV technologies. A USDOT-funded study found that autonomous trucking will increase U.S. employment by up to 35,000 jobs per year on average.[51] AVs will coexist with America's truck drivers, and the goal of the industry is to create more opportunities for all in our country. A growing AV industry will continue to create new job opportunities for workers with a range of educational backgrounds and experiences, including local drivers, technicians, operations center workers, and more. Indeed, the same USDOT study found that most autonomous trucking adoption scenarios would not lead to layoffs for existing truckers.[52]

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[49] Aisha Chottani et al., *Distraction or Disruption? Autonomous Trucks Gain Ground in US Logistics*, MCKINSEY & CO. (Dec. 10, 2018), https://www mckinsey.com/industries/travel-logistics-and-infrastructure/our-insights/distraction-or-disruption-autonomous-trucks-gain-ground-in-us-logistics.

[50] SECURING AMERICA'S FUTURE ENERGY, *FOSTERING ECONOMIC OPPORTUNITY THROUGH AUTONOMOUS VEHICLE TECHNOLOGY* (2020), https://safe2020.wpenginepowered.com/wp-content/uploads/2020/07/Fostering-Economic-Opportunity-through-Autonomous-Vehicle-Technology.pdf.

[51] ROBERT WASCHIK ET AL., JOHN A. VOLPE NAT'L TRANSP. SYS. CTR., FHWA-JPO-21-847, MACROECONOMIC IMPACTS OF AUTOMATED DRIVING SYSTEMS IN LONG-HAUL TRUCKING 1 (2021), https://rosap.ntl.bts.gov/view/dot/54596.

[52] *Id.*

The AV industry has already created new jobs and brought new investment, tax revenue, resources, and human capital to states across the country, including Arkansas, California, Alabama, Arizona, Arkansas, Kansas, Nevada, New Mexico, Oklahoma, Pennsylvania, Michigan, Florida, Washington, Colorado, and Texas. In communities throughout states like these, the AV industry is providing opportunities for workers with a wide array of expertise and educational backgrounds, including many jobs that do not require a college degree. These jobs include auto technicians, fleet managers, safety operations specialists, sensor calibrators, transportation planners, and many others to serve the growing needs of AV fleets and AV manufacturers. As the industry continues to expand, delivery workers and grocery store employees will be involved in selecting, packing, and delivering goods to consumers, among other jobs and roles. The wider deployment of AVs can create over three million new jobs by 2035, all while expanding access to affordable delivery services, according to a study conducted by Steer.[53]

As explained above, the wider deployment of AVs will bring myriad benefits to communities and individuals across the country. From connecting underserved communities and people with disabilities to new opportunities for employment and independence, to boosting the economy by lowering transportation costs, AVs can help address a diverse set of problems. To ensure the many benefits of AVs are realized, what is needed now more than ever is a supportive federal policy framework that unlocks further pathways to widespread AV deployments nationwide.

V. Competition with China for AV Leadership

America's leadership role is integral to securing the economic growth, job creation, safety, and societal benefits offered by AVs. But this leadership is not unchallenged, and faces

[53] STEER, ECONOMIC IMPACTS OF AUTONOMOUS DELIVERY SERVICES IN THE U.S. XI (2020), https://www.steergroup.com/sites/default/files/2020-09/200910_%20Nuro_Final_Report_Public.pdf.

considerable foreign competition, especially from China. The Chinese government has invested heavily in AV development in recent years as part of its strategy to overtake and replace foreign market leaders. Indeed, the Chinese market for AVs is estimated to grow from $17.23 billion in 2024 to $170.57 billion by 2033.[54] Reflecting this potential, the Chinese government has supported the growth of the Chinese AV industry. A 2020 national strategy prioritized AV development and called for at least 20% of all new vehicles sales to have SAE Level 4 capabilities by 2030.[55] Then, in 2022, China's Ministry of Transportation released rules in an effort to commercialize driverless mobility.[56]

This support has led to AV testing being authorized in more than 50 different Chinese cities, with more than 20 cities actively testing both robotaxis and autonomous buses.[57] In August 2024, the Chinese government announced it had issued a total of 16,000 test licenses for AVs and approved 32,000 kilometers of roadway for AV testing.[58] Chinese technology company Baidu operates the world's largest fleet of about 1,700 vehicles, with roughly 400 robotaxis being tested in Wuhan alone and over 900 AVs deployed in Beijing, and with further plans to expand into Southeast Asia and the Middle East. Another Chinese robotaxi company, Pony.ai, currently

[54] RENUB RESEARCH, CHINA AUTONOMOUS VEHICLES MARKET REPORT BY LEVEL OF DRIVING, HARDWARE, SOFTWARE, VEHICLE TYPE, APPLICATION, PROPULSION, AND COMPANIES ANALYSIS 2025–2033 1 (2025), https://www.researchandmarkets.com/reports/5562699/china-autonomous-vehicles-market-report-by-level.
[55] Takashi Kawakami & Naoshige Shimizu, *China's self-driving car push hits legal and cost roadblocks*, NIKKEI ASIA (Jan. 19, 2023), https://asia nikkei.com/Business/Automobiles/China-s-self-driving-car-push-hits-legal-and-cost-roadblocks.
[56] *Id.*
[57] *Autonomous Driving Shifts into High Gear in China*, CHINA DAILY (Aug. 13, 2024), https://global.chinadaily.com.cn/a/202408/13/WS66bace6da3104e74fddb9b9e.html; Cao Yingying, *Testing on Public Roads a Leap Forward for L3 Autonomous Vehicles in China*, CHINA DAILY (June 17, 2024), https://www.chinadaily.com.cn/a/202406/17/WS666f8a64a31095c51c5092fb.html.
[58] Press Release, State Council of the People's Republic of China, 16,000 Test Licenses for Autonomous Vehicles Issued in China (Aug. 27, 2024), https://english.www.gov.cn/news/202408/27/content_WS66cd745ac6d0868f4e8ea485 html#:~:text=At%20a%20press%20conference%20in,senior%20official%20from%20the%20ministry.

provides over 26,000 trips every week in China, and have also announced partnerships to provide service in Saudi Arabia alongside other Chinese AV companies.

Avoiding being outpaced by the Chinese AV industry and ensuring the U.S. can reap the full benefits of AV technology will require partnership between American AV developers and federal and state governments. This includes not only the creation of a federal AV policy framework, as laid out in AVIA's *Securing American Leadership in Autonomous Vehicles*, but efforts on the part of developers and regulators alike to grow public trust in AV technologies, to ensure that Americans understand how the widespread deployment of AVs will improve their daily lives.

VI. Building Public Trust in AVs

Public trust in AVs and AV safety is also critical to expanding AV deployments and bringing the technology's benefits to communities across the United States. AV deployments across the U.S. have shown that public trust is built from greater public exposure to the technology, and encouraging AV developers to pursue continued transparency in their operations and technologies can further build this trust.

A. Growing Public Trust in AVs

As AV deployments have expanded, they have brought with them growing public trust in AV technologies. This growth can be seen in a recent study by J.D. Power, which surveyed residents of cities where AVs have been deployed and sought information from "riders" who had used an AV, and non-riders who had not. The study found that 77% of riders were comfortable with AV technology being tested on streets and highways, compared to 35% of non-riders, whose comfort was still higher than the national average of 21%. Overall, 60% of riders were comfortable with full self-driving, compared to 27 % of nonriders and 13 % of the national average. The study

also shows interest in AV technologies even from non-riders, with 76% of non-riders expressing a desire to hear about others' experiences with AVs.[59] This opens new opportunities for AV developers to educate the public on the technology, and shows that initial skepticism of AVs can be countered by exposure to deployments in one's community.

B. AVIA's TRUST Principles

The AV industry believes that public trust in AVs goes hand-in-hand with their deployment and that we must earn and maintain that trust. To help build trust in AV technologies and AV deployments, AVIA has created a set of TRUST Principles to guide our work with government, communities, and the public at large.[60] The TRUST Principles, when combined with the policy proposals in *Securing American Leadership in Autonomous Vehicles*,[61] will help develop that trust and ensure benefits of AV technologies can reach every corner of our country. The TRUST Principles are:

- **Transparent Interactions with Government Officials and the Public.** This includes responding in a timely manner to appropriate questions and data requests from lawmakers and regulators, making experts available to hear and address potential concerns, sharing incident information with regulatory officials as required under state and federal regulatory frameworks, and disclosing crash-related information as required by law and fully participating in formal crash investigations conducted by government officials. This also includes making safety evaluation reports public, engaging communities prior to commencing AV operations and on an ongoing basis and providing public education about

[59] J.D. POWER, 2024 U.S. ROBOTAXI EXPERIENCE STUDY (Oct. 2024).
[60] *See Trust Principles*, AUTONOMOUS VEHICLE INDUS. ASS'N, https://theavindustry.org/trust-principles (last visited June 24, 2025).
[61] AUTONOMOUS VEHICLE INDUS. ASS'N, SECURING AMERICAN LEADERSHIP IN AUTONOMOUS VEHICLES (2025), https://theavindustry.org/resources/Securing%20American%20Leadership%20in%20Autonomous%20Vehicles.pdf.

the safety of AVs through a variety of channels. AVIA's federal policy proposals, which are detailed further below, include the creation of a National AV Safety Data Repository to aid in data transparency and provide federal and state regulators, along with the public, a single-stop location for information on AV incidents.

- **Responsible Integration into Communities and Deep Engagement with Law Enforcement and First Responders.** This includes early engagement with law enforcement and first responders prior to operating on public roads and creating first responder interaction plans. To further this effort, AVIA has formed the Law Enforcement and First Responder Engagement Council, designed to strengthen collaboration between the AV industry and first responders.[62] The Council is comprised of law enforcement officials, first responders, and AV industry representatives, all of whom share the goal of ensuring AVs are deployed in a safe, responsible manner.
- **Upholding the Highest Cybersecurity and Privacy Standards.** AV developers should review and implement relevant cybersecurity and privacy best practices and standards for autonomous vehicle design, testing, and deployment, including conducting regular risk assessments, as appropriate. To further this principle, AVIA's federal policy proposals include requiring AV manufacturers to develop cybersecurity and privacy plans for their vehicles.
- **Safety-First Culture and Governance.** By building safety-first cultures, AV developers further enhance the safety benefits of the vehicles they are designing. This can be supported through the development of regulatory standards for ADS design and performance,

[62] *Autonomous Vehicle Industry Association Introduces Law Enforcement and First Responder Engagement Council*, AUTONOMOUS VEHICLE INDUS. ASS'N (Sept. 25, 2024), https://web.archive.org/web/20250214080234/https://theavindustry.org/newsroom/press-releases/avia-introduces-law-enforcement-engagement-council.

including the development of safety cases and behavioral competency testing, both of which AVIA has put forward in our proposed federal framework.

- **Transportation Policies that will Increase Safety and Public Trust of AVs.** AVIA supports state and federal policies that will increase public trust in AV technologies, including state laws creating a meaningful role for state transportation regulators to have oversight of AV deployments, requiring first responder interaction plans, and requiring AVs be capable of complying with all applicable traffic laws. This can also include crash reporting (and the creation of a National AV Safety Data Repository), increased funding for NHTSA and the FMCSA to reinforce their ability to administer federal regulatory processes, and funding for the continuing study of the impacts AVs will have on existing transportation systems.

VII. Building a Strong AV Policy Framework

To promote roadway safety, protect American leadership in the AV industry, and maximize the economic benefits of AV technology, a supportive and uniform nationwide federal policy framework is essential. As referenced above, in January 2025, AVIA released *Securing American Leadership in Autonomous Vehicles*,[63] which details a comprehensive set of federal policy recommendations that would accelerate the safe and timely deployment of AV technology and solidify the U.S. as the global leader in this transformative field.

As outlined in that publication, to maintain and strengthen American leadership in the AV industry, Congress should enact federal legislation that outlines the necessary statutory and regulatory elements that are critical to the industry's success. To best support the further development of the AV industry, federal AV legislation should:

[63] *Id.*

- **Require ADS Behavioral Competency Tests**. As directed by Congress, NHTSA should initiate a rulemaking on a new Federal Motor Vehicle Safety Standard ("FMVSS"), informed by industry and the work of existing standards setting bodies, that requires an ADS manufacturer to self-certify their ADS's basic level of proficiency on a core set of ADS behavioral competency tests. These tests should include accurately detecting and responding to relevant road users, transferring control back to human driver when necessary for Level 3 systems, achieving "minimal risk condition" as defined by SAE J3016 for Level 4 systems, detecting the limits of the ADS's ODD and appropriately responding to it, and detecting and responding to active emergency vehicles.
- **Require an "ADS Safety Case."** As directed by Congress, NHTSA should initiate rulemaking on an FMVSS to require commercially deployed ADS manufacturers to develop, and provide upon request, a detailed record of the basis for the manufacturer's conclusion that the design, construction, and performance of an ADS protects against an unreasonable risk to motor vehicle safety, as defined in 49 U.S.C. § 30102(a)(9). Often described as a "safety case," this record would include: (1) a technical description of the ADS's parts, capabilities, and integration into the vehicle platform, (2) explanation of how the ADS performs all elements of the driving task, (3) engineering methodologies used to design and assess the ADS's performance and ensure the absence of unreasonable risk to motor vehicle safety, (4) a description of ADS's safety performance, (5) evidence supporting the manufacturer's claim for validating the ADS's performance competencies, and (6) an explanation of how the ADS detects and responds to crashes.
- **Establish a National AV Safety Data Repository**. As directed by Congress, NHTSA should establish, implement, and maintain a National AV Safety Data Repository, to collect

safety-relevant data about AV incidents and expand AV data reporting to include state-level location of AVs. This repository would provide timely information to the public and regulators to promote AV transparency and accountability. The database should include only material and relevant data and specify a meaningful minimum damage threshold for reportable crashes. NHTSA should further ensure that all information shared in the repository is subject to strict confidential business information protections to encourage manufacturers to cooperate fully.

- **Clarify and Modernize the FMVSS**. Whether by legislation or through Congressionally directed action by NHTSA (by interpretation and/or regulatory changes) it should be clarified that the FMVSS requirements for manually operated driving controls and certain indicators and telltales are not applicable to Level 4 or Level 5 ADS-dedicated vehicles, since they are intended for an in-vehicle human driver only. Such action will support AV innovation by avoiding imposing requirements that do not advance safety and hamper the opportunity to re-imagine what motor vehicles look like and how they are designed, paving the way for greater accessibility, safety, and societal utility.
- **Revise the "Make Inoperative" Prohibition.** Existing federal law prevents manufacturers, dealers, distributors, and repair businesses from disabling any safety-related device or design element required by an FMVSS in a vehicle for any purpose after its first sale. To ensure that innovative safety and technical developments can be adopted into vehicles in autonomous operation, AV legislation should clarify that making a vehicle's manual controls inaccessible or altering their functionality for safety reasons during autonomous operation does not run afoul of the "make inoperative" provision of the Motor Vehicle Safety Act (49 U.S.C. § 30122).

- **Expand the FAST Act Testing Exception.** An exemption included in the FAST Act (49 U.S.C. § 30112(b)(10)) permits only qualifying original equipment manufacturers to test and evaluate vehicles that do not conform to the FMVSS. AV legislation should not restrict the use of the exception in ways that preclude AV developers from testing and evaluating all aspects of AV operation, including assessing commercial viability through public participation and goods movement.
- **Move Forward with an AV Demonstration Program**. Direct NHTSA to move forward with a voluntary AV demonstration program that is an enhanced pathway to the deployment of AVs whose designs require exemptions from current FMVSSs, but which achieve at least an equivalent level of safety. Such a program should not come at the expense of maintaining and improving existing exemption processes, as NHTSA has begun to do,[64] self-certification, or rulemaking.
- **Advance AV Cybersecurity and Privacy**. Congress should include in its comprehensive AV legislation language requiring AV manufacturers to develop cybersecurity and privacy plans for their technologies. For cybersecurity such a plan should include a written cybersecurity policy with respect to the practices of the manufacturer for detecting and responding to cyberattacks, unauthorized intrusions, and false and spurious messages or vehicle control commands. For privacy, AV manufacturers should be required to develop a plan with respect to the collection, use, sharing, and storage of information about vehicle owners or occupants collected by an AV and a method for providing notice to vehicle owners or occupants about the privacy policy.

[64] *See U.S. Transportation Secretary Sean P. Duffy Streamlines Exemption Process for Noncompliant Automated Vehicles*, NAT'L HIGHWAY TRAFFIC SAFETY ADMIN. (June 13, 2025), https://www.nhtsa.gov/press-releases/streamline-exemption-process-noncompliant.

- **Promote AV Accessibility**. AVs present an exciting development in accessibility in the United States, and it is important that Congress support access to AVs for people with disabilities by passing the AV Accessibility Act.[65] The act would prohibit states from issuing motor vehicle operator licenses in a manner that prevents individuals who qualify as disabled under the Americans with Disabilities Act, or other individuals without a driver's license, from riding as a passenger in an ADS-equipped vehicle. This act also requires the Secretary of Transportation, in collaboration with the National Academies of Science, to conduct an accessible infrastructure study to determine the best practices for public transportation to be modified to improve the ability of Americans with blindness and other disabilities to find, access, and use ride-hail autonomous vehicles, including during pickup and drop off.

VIII. Conclusion

The further deployment of AV technologies will vastly increase safety on our roadways and generate economic benefits across the country. However, to ensure those benefits are realized here in the United States, we must preserve American leadership in the AV industry and build out a forward-looking federal policy framework for AVs. I thank the Subcommittee for its leadership on these important issues. AVIA looks forward to serving as a resource for technical and policy questions on this subject, and to working with you to make safe autonomous vehicles a reality for Americans nationwide.

[65] Autonomous Vehicle Accessibility Act, H.R. 7126, 118th Congress (2024).