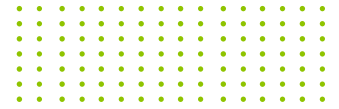




STATE OF AV



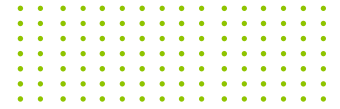
# STATE OF AV

2024





## S T A T E O F A V

**The Autonomous Vehicle Industry Association (AVIA) is proud to present our first-ever *State of AV* report.**

The content that follows demonstrates the exciting progress of the autonomous vehicle (AV) industry in creating safer roads, more resilient supply chains, and expanding accessibility opportunities for Americans.

In this inaugural report, AVIA showcases this innovative industry through interviews with industry leaders, geographic spotlights, and demonstrating AV use cases - whether by the private sector, federal government, or Americans in need of new transportation opportunities.

Through *State of AV* we are also publishing first-of-its kind data about the AV industry and its leaders. For example, we have updated our widely recognized stat on autonomous miles driven on U.S. roads, which shows the incredible progress of the industry in just the last 9 months.

It is awe inspiring to see the progress autonomous vehicles are making in the United States. What was once science fiction is now a reality on our roads and in our communities. From trucks to robotaxis to zero-occupancy delivery vehicles, AVs are changing the way we move people and goods.

As AVs roll forward, the industry is unified in its mission to deliver the many benefits of the technology. The unfortunate reality is our country loses far too many people to motor vehicle crashes, an unacceptable number of Americans are not served by current transportation options, and our farmers, ranchers, and manufacturers are held back by supply chain challenges. Autonomous vehicles will address all these areas and more.

**The future of transportation has truly arrived. Thank you for reading *State of AV*.**

**Jeff Farrah**

Chief Executive Officer

Autonomous Vehicle Industry Association

# OUR MISSION

The Autonomous Vehicle Industry Association's (AVIA) mission is to advocate for the safe and timely deployment of autonomous driving technology. AVIA is the unified voice of the diverse companies working toward a world where safe and trusted AVs increase road safety, boost supply chains, and improve mobility opportunities for all.

Autonomous vehicles (AVs) will dramatically improve safety on our roads and highways.



**Passengers & Other Drivers**

**Pedestrians & Cyclists**



In 2022, nearly **43,000 people** died on U.S. roads in crashes.

**That's over 117 PEOPLE every day.**

Equipped with advanced sensors and 360-degree views and programmed as model drivers, AVs do not drive drowsy, distracted, impaired or recklessly.

**Over 90%** OF MOTOR VEHICLE CRASHES ARE CAUSED BY HUMAN ERROR.

AVIA SURVEYED ITS MEMBERS TO UPDATE AV INDUSTRY DATA AND TRENDS. WE FOUND:



AVs HAVE DRIVEN NEARLY  
**70 MILLION MILES**  
 ON U.S. PUBLIC ROADS

**59%**

increase in miles driven since last reported in July 2023

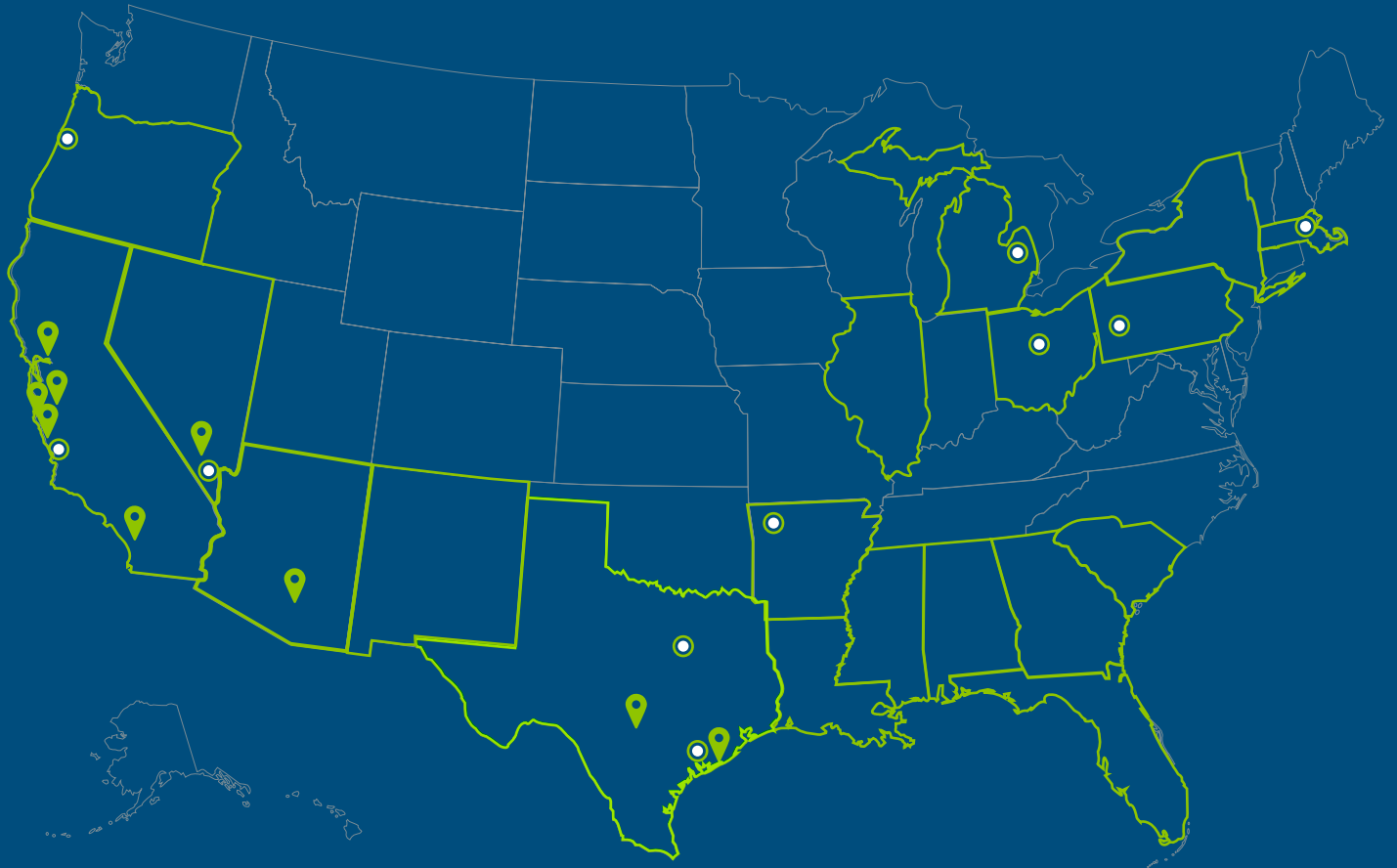


THAT'S EQUIVALENT TO

**293**  
 ROUND TRIPS  
 TO THE MOON



DRIVING ACROSS ROUTE 66  
 OVER 29,000 TIMES



Operations Testing



TOP STATES FOR AV EXPANSION

- |            |                |
|------------|----------------|
| Texas      | New Mexico     |
| New York   | Louisiana      |
| Arizona    | Alabama        |
| Georgia    | Mississippi    |
| California | South Carolina |
| Illinois   |                |
| Florida    |                |

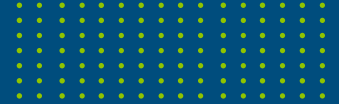
STATES WITH BEST REGULATORY ENVIRONMENTS FOR AVS

- Texas
- Arizona
- Florida

## AVIA SURVEYED THE CEOs OF MEMBER COMPANIES

WHEN ASKED ABOUT THE BIGGEST CHALLENGES FACING THEIR COMPANY, THE MOST CITED ANSWER WAS “PUBLIC POLICY CHALLENGES, SUCH AS THE CLARITY OF RULES GOVERNING AVS.”

*What would be the single most impactful item policymakers could do to support AV deployment and innovation in the United States?*



**36.4%**

FEDERAL AGENCIES ENACT RULES OF THE ROAD FOR AV COMPANIES

**27.3%**

STATES PROVIDE CLEAR LAWS AND REGULATIONS REGARDING AV DEPLOYMENT

**18.2%**

PASS FEDERAL LEGISLATION ENCOURAGING AV DEPLOYMENT

**100%**

of surveyed CEOs characterized commercial partnership interest in the AV industry as “POSITIVE” OR “VERY POSITIVE”



CEOs AGREED THAT POLICYMAKERS “NEED TO INCREASE THEIR ENGAGEMENT” WITH THE AV INDUSTRY

# DESTINATION

# NEVADA

**Almost 20 years ago, Nevada became the first state to enact an AV statute.**

*Since then, Nevada has been a leader in autonomous vehicle deployment, and state policymakers have proactively engaged with the AV industry. AVIA members Motional, Zoox, and Nuro are bringing the benefits of AVs to the Silver State.*



## Motional

Las Vegas is home to Motional's all-electric public robotaxi fleet, an extensive closed-course testing facility, and hundreds of Motional employees who support the company's testing and commercial operations out of the state-of-the-art Las Vegas Technical Center (LVTC).

**In 2018, Motional became the first company to offer autonomous rides in Las Vegas with the launch of its public robotaxi service.** The service is available through Motional's partnerships with AVIA member Uber, and has introduced hundreds of thousands of consumers to driverless technology. The vast majority of those riders have rated their ride five-out-of-five stars, with many passengers becoming repeat riders.

Motional's commercial and testing activity is made possible through the company's collaboration with local Las Vegas, Clark County, and Nevada government officials, first responders, and business representatives. Together, Motional aims to foster technology innovation in the region, support job growth, and use driverless technology to provide more equitable and accessible transportation options to community members.

Motional has continued to invest heavily in its Nevada operations, including the recent expansion of its closed course testing facility to enable four times the volume of testing, an expansion to double the workspace footprint within the LVTC, and ongoing hiring. Motional looks forward to continued growth, operationally and commercially, in Las Vegas as it helps make the region a hub for future mobility technology.

## Zoox

Based out of an operational facility south of the Las Vegas Strip, Zoox has recently expanded the operating routes and driving capabilities of their purpose-built autonomous vehicles on city roads. In January 2024, Zoox shared that they will welcome their first public riders in Las Vegas later this year.

**Along these routes, the vehicles travel at speeds up to 45 mph and navigate three-lane roads, following all rules of the road in complicated city driving scenarios.**

Las Vegas is one of Zoox's anchor cities to test, validate, and refine the technology rigorously. Exposed to enormous amounts of new examples from the city's diverse and dynamic urban landscape, Zoox gathers enormous amounts of real-world data to continually improve its AI systems.



Building a ground-up vehicle has allowed Zoox to carefully design and choose their own sensor suite to best solve self-driving. The company's Toyota Highlander test fleet is outfitted with this same sensor suite to gather large amounts of data from environments like Las Vegas and translate those learnings into the purpose-built Zoox vehicle.

## AVs WORKING WITH NEVADA

# First Responders

AV companies like Motional, Nuro, and Zoox are proactively and regularly engaged with local regulators, elected officials, first responders, and other community leaders to provide an overview of the technology and answer questions. These companies offer training resources for emergency responders to earn first-hand experience with understanding and interacting with the vehicles, along with sharing insights and providing feedback. For example, Motional also engages directly with community members through public events, school visits, and autonomous vehicle educational programming.

Nuro works with local law enforcement to validate the technical capabilities of their software through perception testing to ensure their vehicles detect and respond to emergency vehicles. Meanwhile, as Zoox collects data on local conditions, low visibility, and roads in need of maintenance, the company shares this valuable feedback with local officials. Zoox successfully integrated feedback from local officials into operations and vehicle features, such as enhanced external speakers to provide emergency responders with relevant information, such as autonomy status, when encountering the vehicle.



## Nuro

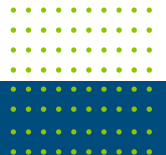
The Las Vegas Motor Speedway is delivering a different type of thrill as the home of Nuro's world-class test track. This forty-plus acre closed-course testing facility allows for the sophisticated development and validation of Nuro's autonomous on-road vehicles. At this facility, Nuro's vehicles, including its purpose-built, zero-occupant bots, are put through a battery of tests by employees, from avoiding pedestrians and pets to giving bicycles space on shared roadways, as well as environmental tests and vehicle systems validation.

Nuro has been developing Level 4 autonomous technology since 2016. The Nuro Driver™, their core technology, is a sophisticated autonomous driving system that combines scalable hardware and generalized self-driving software for multiple vehicle applications. Nuro is known for their custom vehicles, which are zero-emission and purpose-built for goods delivery without a human inside. Nuro's R3 - their third-generation vehicle - boasts the latest version

of the Nuro Driver™ and is the culmination of many years of development and testing. By redesigning how delivery works, Nuro's R3 vehicle is expected to be on public roads in 2024. Nuro can fit even more cargo (24 bags of groceries or 500 lbs) and has modular compartments to keep meals hot and drinks cold. One of the biggest safety features being tested for potential future use in the Nuro R3 is an external airbag — the first of its kind — designed to protect people outside the vehicle.

**Nuro has operated over 1 million autonomous miles**, across their fleet to date with no at-fault incidents. It has had several commercial partnerships over the years, such as FedEx, Kroger, UberEats, Walmart, Domino's and 7-Eleven.

Nuro is currently operating in Houston, Texas, and in the Bay area in California.



# Join AVIA

- Access the premier forum for educating state and federal policymakers on autonomous vehicles
- Network and learn from other AV industry leaders
- Keep up-to-speed on industry trends and analysis
- Join in-person and virtual AVIA events



### CONTACT

[membership@theAVindustry.org](mailto:membership@theAVindustry.org)

For more information on how you can get involved.



Nuro's purpose-built vehicle safely navigates the road.



# INTERVIEW WITH

AVIA sat down with Aurora CEO Chris Urmson to learn more about the company and the exciting road forward for AVs.



**Chris Urmson**  
CEO, Aurora

## **1. Tell us about Aurora and the focus of your company.**

Since the early days of self-driving technology, we've seen a tremendous opportunity to evolve our transportation systems for the better. We need to address the record fatalities and injuries on our roads, heal our ailing supply chain, and remedy the lack of accessible transportation options across the country.

We founded Aurora in 2017 to tackle these issues by delivering the benefits of self-driving technology safely, quickly, and broadly. Today, we deploy autonomous trucks and passenger vehicles on public roads in Texas, where we work with a broad ecosystem of partners and customers to help solve the tricky, persistent issues that hamper freight efficiency and passenger mobility.

Our focus is first on our autonomous trucking product, and we're already hauling freight for logistics leaders like FedEx, Uber Freight, Werner, Schneider, Hirschbach, and more. As we prepare to commercially launch this product late this year, we're working with each of them to build capabilities that suit their unique needs, and are partnering with manufacturers and suppliers like Volvo, PACCAR, and Continental to plan for mass production of these autonomous trucks.

**I am incredibly proud of the work our team has done to reach this point, and 2024 is slated to be our most exciting year yet.**

## **2. Let's talk about 2024 then – what do you have planned?**

2024 is going to be a big year. We've set an ambitious goal of driverless operations in our autonomous trucks by the end of the year, which will mark the beginning of a new era of safer, more efficient freight and logistics. Between now and then, we're looking forward to significant milestones with partners and customers as they prepare to integrate driverless vehicles into their fleets.

Over the course of this year, we'll be transparently sharing a view into how we approach verification and validation, which is how we know we've built the right capabilities to operate driverlessly and that they're advanced enough to deploy safely. It's a thorough, thoughtful process, and is part of how we're working to build trust with the communities in which we operate. All of this work is part of our safety case, which encapsulates our holistic approach to safety.

## **3. Tell me about that – what is Aurora's Safety Case Framework and why was it developed?**

It's one thing to say you're committed to safety, and it's another to deeply integrate safety across your business. Our Safety Case Framework is how we do just that – building and reinforcing safety's integral role in maturing our self-driving products and sharing them with the world.

At its core, a safety case is how you answer the hardest questions about developing self-driving technology. Can the vehicle do everything it needs to do? Is it safe even when something goes wrong? Is the vehicle protected from misuse by malicious actors?

When planning for Aurora's Dallas-Houston launch route, we asked ourselves hundreds of these difficult questions about how to safely develop and deploy our technology. Now, as we prepare for driverless operations, we're assembling thousands of pieces of evidence to answer these questions in a satisfying and safety-focused way. We've been outspoken about our commitment that we will only launch our driverless product when we have closed our safety case.

## **4. The AV industry is engaged with policymakers across government. From your perspective, what would be most impactful from a policy perspective to ensure the United States continues to lead on AV deployment?**

That's a great question.

**We're very grateful to partner with policymakers at all levels of government – from regulatory leaders at the Department of Transportation, to legislators in state governments, and local officials in the communities in which we operate.**

We're diligent in how we work transparently and openly with these folks, to support them learning about autonomous vehicles and developing policies that prioritize both safety and innovation. I was proud to testify before the House of Representatives Committee on Transportation and Infrastructure about autonomous vehicle safety alongside AVIA, and we're continuing to pursue opportunities for direct engagement with policymakers.

One key opportunity for government action is FMCSA approval of the pending warning device exemption application, which would allow autonomous trucks to use flashing lights to indicate when they are stopped on the side of the road – a meaningful step for increasing safety and welcoming this innovative technology.

Today, there are no regulatory blockers preventing us from launching our driverless trucking product in Texas. Still, there is a need for a unified, federal policy framework that clarifies and reinforces autonomous vehicle regulations throughout the country. This will not only hold companies to a high standard of safety and responsibility, it will provide regulatory certainty that helps self-driving developers invest in new jobs and opportunities that grow our economy and democratize access to this technology.

2024 is going to be the most exciting year for autonomous vehicles yet, and I look forward to continued work with federal leaders to deliver the benefits of autonomous vehicles safely, quickly, and broadly.

*One key opportunity for government action is FMCSA approval of the pending warning device exemption application, which would allow autonomous trucks to use flashing lights to indicate when they are stopped on the side of the road – a meaningful step for increasing safety and welcoming this innovative technology.*

**Chris Urmson**  
CEO, Aurora



# DESTINATION

# ARIZONA

*AVIA member Waymo has been operating in Arizona since 2020. The Waymo Driver has **over 40 million miles of real-world driving experience***

*through countless situations - the equivalent of driving to the Moon and back 80 times.*

With hardware and software that creates a constant 360 degree picture and can predict movements from other cars, cyclists, and pedestrians, Waymo is continuously calculating the safest route and maneuvers. Waymo's advanced technology safely transports riders to their destination – so riders can sit back and enjoy the ride.

**“The technology is already so much better than I expected it would be, and it’s only getting better,”** said David, a Downtown Phoenix rider, after nearly 2,000 minutes of riding with Waymo. According to research, the Waymo Driver significantly outperformed Phoenix’s human drivers, reducing police-reported crashes by 51%, and reducing crashes involving injuries by 80%. With over 10 million rider-only miles and years of experience in Phoenix, Waymo is not only making the city more accessible, it’s making the roads safer as well.



Phoenix Sky Harbor International Airport is the first airport in the world to offer Waymo’s rider-only autonomous vehicle service. Laura Pastor, then-Vice Mayor of the City of Phoenix, applauded this transformative partnership in an announcement:

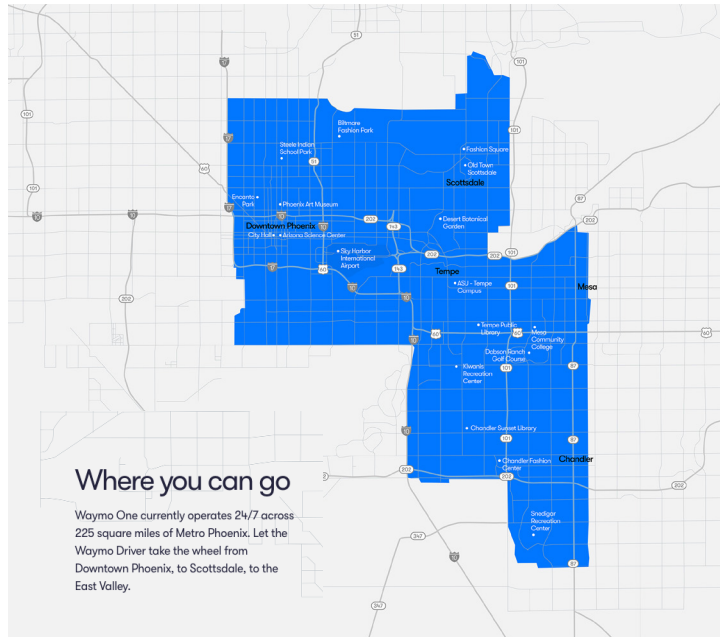
“During my time on the City Council, I have pushed the city to be flexible and focused on the value of technology to improve people’s lives. Autonomous vehicles have the potential to save money and provide safer transportation for all our residents, so this partnership with Waymo and Sky Harbor really helps to position us for the future.”

Committed to serving the communities they operate in, Waymo has partnered with several nonprofit and public education organizations in Phoenix. **Together, Waymo and its partners share the belief that autonomous vehicles can save lives, improve independence, and create new mobility options.**



### Local Phoenix partners include:

- ✓ **Phoenix Children's Hospital** to provide child passenger safety awareness;
- ✓ **Social Spin** to deliver clean laundry to Arizonans in transitional housing free-of-charge;
- ✓ **Arizona Best Buddies Friendship Walk** to support individuals with intellectual and developmental disabilities (IDD);
- ✓ **ONE Community**, a coalition of Arizona businesses, organizations, and individuals supporting diversity, inclusion and equity for all Arizonans.



For Phoenix riders like Ron, Waymo is a game changer: “It gives me, a person who’s blind, the opportunity to travel with the same spontaneity, the same independence, and the same autonomy as everyone else.”

And for Phoenix’s leaders, Waymo serves as a milestone of innovation. **“Phoenix is leading the future of mobility and modernizing how the world will experience travel,”** said Phoenix Mayor Kate Gallego. With Waymo’s partnership with Phoenix’s Sky Harbor Airport, “this exciting technology offers our customers an additional option for traveling to the airport in a clean, sustainable and technologically advanced mode of transportation. **The future has arrived in Phoenix!”**

Building upon their reputation for safety and reliability in cities like Phoenix, Waymo is working to bring its service to new cities across the country in order to provide safe, convenient, and more accessible rides to even more communities in the near future.



Phoenix Mayor Gallego steps out of a Waymo vehicle.

# INTERVIEW WITH

In an interview with AVIA, National Federation of the Blind President Mark Riccobono explained why his organization and blind individuals are excited about AVs' opportunities.



**Mark Riccobono**  
President  
National Federation of the Blind

## **1. Tell us about the National Federation of the Blind.**

The National Federation of the Blind advances the lives of its members and all blind people in the United States. Established in 1940, the Federation is America's membership organization "of" blind people. We have an affiliate in each of the fifty states, the District of Columbia, and Puerto Rico. As a leader in the World Blind Union, the Federation is the model for self-organization by blind people around the world. We know that blindness is not the characteristic that defines us or our future.

Every day we raise the expectations of blind people, because low expectations create obstacles between blind people and our dreams. Our collective power, determination, and diversity achieve the aspirations of all blind people.

## **2. Why are autonomous vehicles important to your organization and its members?**

The National Federation of the Blind is comprised of members from diverse backgrounds across the United States. Some have been blind from birth, while others have lost their sight over time.

In the United States, driving is considered a valued privilege. The vast majority of Americans cherish the freedom of movement and flexibility that comes with operating a motor vehicle. However, in the early 21<sup>st</sup> century, we reversed the conventional belief that only sighted individuals could drive. At the Daytona International Speedway in January 2011,



I shattered the misconception that vision is required in driving and demonstrated the power of accessible technology in the hands of capable humans by navigating a car independently as a blind person. Since that pivotal moment, we have redirected our resources toward autonomous vehicles.

Why? First, we recognized that an industry of new transportation was about to emerge and knew that by asserting the right of disabled people to participate from the beginning, we could enculturate the belief that the technology was for everyone. Second, we know that when the blind and others with disabilities are involved in design, the end product is better for everyone.

**Whether you're sighted or blind, autonomous vehicles empower individuals to travel independently to their chosen destinations.**

**The technology also provides other benefits to society—fewer accidents, better use of drive times, and greater control by those who do not drive currently.**

For the blind community, this represents a historic milestone—the first time we can enjoy equal access to motor vehicle transportation, just like the rest of society.

### ***3. You testified before the House Energy & Commerce Committee on autonomous vehicles. What is your message for policymakers on AVs?***

During my testimony before the House Committee on Energy & Commerce, I emphasized the transformative potential of autonomous vehicles for more than seven million blind Americans. Our community faces a staggering 67 percent underemployment and unemployment rate, and

one of the key contributing factors is the lack of affordable, reliable transportation—especially in rural areas across the United States.

Autonomous vehicle technology holds the promise of enhancing access to employment, recreation, and family life. However, this promise can only be fulfilled if the technology is nonvisually accessible to blind individuals. We are pleased to collaborate with Congress and our partners in the autonomous vehicle industry to ensure that blind people can operate this technology with the same equity as the broader population.

### ***4. What is the Autonomous Vehicle Accessibility Act, and why is it important?***

The proposed bill aims to safeguard the civil rights of blind or disabled individuals who operate autonomous vehicles. Currently, there is no explicit protection for these individuals if they are pulled over by the police while riding in an autonomous vehicle. In such cases, a blind person could potentially be charged with driving without a license.

**By passing this legislation, blind Americans would have equal rights to travel in autonomous vehicles, eliminating the need for a driver's license and ensuring their freedom of mobility.**

The legislation also contains a \$5 million appropriation to study the convergence of urban infrastructure, autonomous vehicle use, and disability. This is an affirmation that disabled Americans have value and an example of how we design our future with accessibility as a core value fulfilling the commitments codified by our nation in the Americans with Disabilities Act.

# TRANSFORMING LOGISTICS

## THE ECONOMIC IMPACT OF AVs ON THE MIDDLE MILE

*Gatik is a leader in autonomous middle mile logistics a **\$250B** market in North America alone.*

The company's fleet of medium duty, class 3-7 autonomous box trucks moves goods safely and efficiently between distribution centers, fulfillment centers, stores and warehouses to optimize regional distribution networks. Gatik transports freight for North America's largest grocers, retailers, distributors and e-commerce platforms - including Walmart, Kroger, Loblaw, Tyson Foods, and Pitney Bowes - across multiple markets including Texas, Arkansas and Ontario, Canada. With more than 60 trucks on the road today, Gatik operates the largest revenue-generating commercial fleet of autonomous trucks on the continent.

### ***We Own the Middle Mile™***

Increasing consumer expectations are reshaping the logistics landscape: decisions are converging around speed, choice and price. In response, shippers have been forced to create an elastic, multi-channel experience to make their supply chains more flexible, facilitated by storing inventory much closer to their customers. In turn, this has created a need for more medium-duty trucks, more trips and more drivers to move goods



on the middle mile, all at a time when an acute driver shortage and rising transportation costs are leading to bottlenecks and falling profits. This is where Gatik comes in.

Gatik transports high-priority shipments across a network of known, repeatable routes within urban, semi-urban and highway operating environments, creating a more reliable logistics network, increasing delivery frequency and reducing transportation costs. Gatik's Autonomous Transportation as a Service (ATaaS) model enables customers to optimize their hub-and-spoke operations, enhance inventory pooling across multiple locations and meet the growing demand for a variety of delivery options to serve communities with speed and efficiency. During a period of unrelenting pressure on North America's supply chain, Gatik's solution has emerged as fundamental to the long-term success of the 21<sup>st</sup> century logistics sector.

## ***Structured Autonomy: A Safety-First Approach to Autonomous Trucking***

Gatik's success in the development and deployment of its autonomous fleet is built upon "structured autonomy": transporting goods on known, repeatable, predictable routes. This approach enables Gatik to consistently achieve safe and reliable driverless operations, thereby maximizing the benefits of autonomous transportation in the near-term. Most importantly for the public, this means safer surface streets and highways for all road users.

**Gatik has taken a unique hybrid approach to the design and development of its autonomous technology, combining the strength of data-driven Artificial Intelligence (AI) algorithms with the inherent safety redundancies of classical robotics techniques.** It's a learning-first approach; one which provides a transparent framework for decision-making and enables Gatik to embed rules-based fallback and validation systems for maximum safety and efficiency.

Furthermore, Gatik's exclusive focus on short-haul, repeatable routes (up to 400 miles roundtrip) significantly limits the number of unusual events or "edge cases", enabling Gatik to further optimize safety and vehicle performance. It's an approach which allows for the consistent development, testing, validation and deployment of autonomous trucks, enabling commercial operations in a predictable and value-driven manner for Gatik's customers.

## ***Redefining the Future of Logistics in 2024***

In 2021, Gatik became the first company worldwide to operate daily commercial deliveries without a human in the driver's seat for Walmart in Arkansas, and in 2022 achieved this technological feat with Loblaw in Ontario. In 2024, Gatik will be deploying Freight-Only operations (no human operator in the cabin of the vehicle) for multiple customers at scale in the Dallas-Fort Worth market, signifying the true dawn of the autonomous trucking era.



Working in close partnership with state and local authorities including Texas Department of Transportation, Texas Department of Public Safety and the City of Dallas, Gatik's freight-only deployments will involve consistent, repeated delivery runs multiple times per day, seven days per week, unlocking the true advantages of autonomous delivery: increased speed and responsiveness when fulfilling orders, reduced costs and dedicated capacity across the supply chain's middle mile.

By reducing both cost and complexity on the middle mile, Gatik is redefining the logistics landscape as well as the consumer experience, and future-proofing North America's supply chain at scale.

# INTERVIEW WITH

Raquel Urtasun, founder and CEO of Waabi, spoke with AVIA about how the company is transforming AV truck development for a new era in logistics.



**Raquel Urtasun**  
Founder & CEO at Waabi

## **1. Tell us about Waabi and why you were motivated to work on self-driving.**

Waabi is a company unleashing the power of generative AI to build the next generation of self-driving technology. Our revolutionary approach is paving the path toward safer and smarter self-driving vehicles, starting with long-haul autonomous trucks.

**As a scientist, I'm always attracted to the most difficult problems that require innovative solutions. Self-driving certainly fits the bill: it's a challenging field that's fascinated me for years because once solved at scale, it will change the world as we know it.**

I'm also drawn to the safety aspect of self-driving technology. I personally know too many people who have had auto accidents, and the millions of deaths and injuries that happen on the road each year will only keep growing if a solution doesn't emerge soon.

Waabi is the culmination of my 20-year career in AI and 10 years of building self-driving solutions. The more time I've spent in this industry, the more certain I've become about what it actually takes to bring this technology to life.

**That is why I started Waabi.**



## 2. As an entrepreneur, what are some of the biggest challenges you need to work through?

My entrepreneurial career has been anything but simple. As a woman in science, I have always been somewhat of an outsider and encountered instances of discrimination and harassment throughout my entire career. Dealing with these challenges, it would have been easy to give up, but instead, I chose to use these experiences to push forward and prove them wrong.

## 3. In addition to being the CEO of Waabi, you are also a professor at the University of Toronto in Computer Science. How does your academic work inform your work at Waabi?

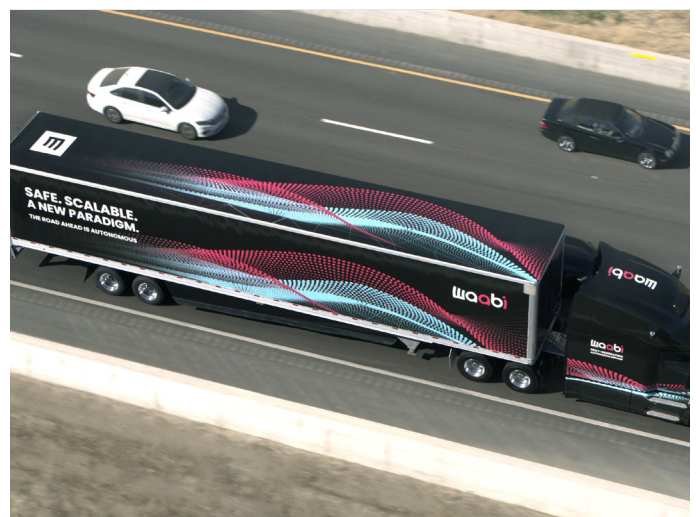
I'm an academic at heart, and my passion for science led me to enroll in an undergraduate degree in engineering. From there I continued my pursuit of academia and received my Ph.D. degree from the Computer Science department at Ecole Polytechnique Fédérale de Lausanne (EPFL) in 2006 and did my research postdoc at MIT and UC Berkeley.

My approach to academia goes hand-in-hand with the work we're doing at Waabi. This industry has long siloed research projects from main production stacks, and progress has plateaued as a result. That's why innovation and purposeful research are central to our company, working toward the same incentives and goals, and connected in a way this industry has never seen before to build technology that unlocks the transformative promise of self-driving.

## 4. What is Waabi World and how does it help your company?

Our approach to self-driving involves two distinct AI systems interacting similar to the way a teacher interacts with a student who is learning how to drive. In this example, Waabi World serves as the teacher, helping to "teach" our autonomous trucking system, the Waabi Driver, how to drive.

**Waabi World is a next generation closed-loop simulator.** At a high level, it creates digital twins of the real world and then builds countless digital scenarios in which the Waabi Driver can be trained and tested in an immersive and reactive manner. Waabi World allows us to develop our autonomous trucking system across common driving situations as well as safety-critical edge cases automatically and at scale, reducing the need to drive testing miles in the real world and resulting in a safer, more cost-effective approach to unlock autonomous driving. We believe it is a critical piece to finally allow for the widespread adoption of autonomous trucking on our roads.



**5. Autonomous trucking will be vital to the economy and goods movement. What recommendations do you have for policymakers that would support leading AV trucking companies like Waabi?**

As is the case with any emerging technology, new frameworks and guidelines are needed to ensure the safe and responsible deployment of autonomous trucks on our roads. These rules need to be flexible, allowing for experimentation and innovation, while also setting a strong floor for safety. We know that is a difficult balance to strike! We believe the best way to accomplish this is for regulators to continue engaging in a transparent dialogue with Waabi and the AV industry as a whole. Doing so allows companies like ours to give regulators the information they need to better understand how AV systems work, while also giving us the certainty we need to widely deploy a safe and scalable product. To best achieve this goal, it is important that we understand not only what the rules will be tomorrow, but what they will be five years from now.

At Waabi, we're doing our part to work with regulators on building this long-term framework and believe that we can arrive at an outcome that encourages the safe deployment of autonomous trucks around the world.

*As a scientist, I'm always attracted to the most difficult problems that require innovative solutions. Self-driving certainly fits the bill: it's a challenging field that's fascinated me for years because once solved at scale, it will change the world as we know it.*

**Raquel Urtasun**  
Founder & CEO at Waabi



# AVs STRENGTHEN AMERICAN NATIONAL SECURITY

AVIA member Kodiak was founded in 2018 with a focus on long-haul trucking. The company's fleet of 36 long-haul trucks delivers 50 loads a week between its Dallas hub and Houston, Austin, Oklahoma City, and Atlanta. Kodiak's customers include trucking industry giants like Werner, IKEA, CR England, Martin Brower, and many more. But the potential uses for Kodiak's technology goes far beyond the highway.

Autonomous vehicles have important applications for both civilians and national security. The Department of Defense (DoD) spearheaded most of the initial work on autonomous vehicles through initiatives like the famous DARPA Challenge, which kicked off the race to self-driving cars. Over the last decade, however, billions of dollars of investments in civilian self-driving technology has allowed commercial developers to leapfrog defense-focused contractors.

Recognizing this shift in technology leadership, leaders at the DoD began thinking about ways to leverage private sector autonomous technology developments to enhance U.S. national security. As part of this shift in strategy, in October 2022, the Defense Innovation Unit (DIU), which is responsible for accelerating the adoption of commercial technology for national security, awarded Kodiak a \$50 million contract to create an autonomy system for future U.S. Army ground vehicles. **This system will be designed to take humans out of reconnaissance, surveillance, and other high-risk military missions.**



Since beginning work on its contract with the DoD, Kodiak has adapted its autonomous long-haul trucking technology for national security purposes. The company is modifying its commercial self-driving solution to develop, test, and deploy autonomous capabilities for the U.S. Army, building the capability to navigate complex terrain, diverse operational conditions, and GPS-challenged environments, while also providing the Army the ability to operate vehicles remotely and flexibly when necessary, furthering the reduction of risk for soldiers. Kodiak's work on long-haul trucking gave it an enormous head-start in building off-road applications; simultaneously, Kodiak's work developing an off-road product has helped the company further harden its trucking technology for the challenging conditions encountered on-road.

Throughout 2023, Kodiak demonstrated the capabilities of its platform-agnostic autonomous technology. Kodiak built its first defense-focused vehicle, a Ford F-150 equipped with the Kodiak Driver, Kodiak's autonomous system. Kodiak's F-150s runs the same core technology as Kodiak's autonomous long-haul trucks, optimized for the needs of autonomous off-road military ground vehicles. They also feature Kodiak DefensePods, an adapted version of Kodiak's modular, swappable SensorPods. Kodiak's DefensePods are built to maximize operational availability.

They can be maintained with minimal training—even on the go, in the field—so vehicles are mission ready when they are needed most. Fast replacements mean more uptime to conduct mission-critical operations leveraging unmanned ground vehicles.

Kodiak is already autonomously driving the F-150 both on- and off-road, exhibiting the adaptability of the Kodiak Driver. Kodiak also had the opportunity to showcase its technology to both the Secretary of Defense and the Deputy Secretary of Defense in December of 2023, demonstrating the near-term viability of autonomous ground systems for military operations.



Secretary of Defense Lloyd Austin visits Kodiak.

**Autonomous ground vehicles will become indispensable in the next generation of security operations, offering enhanced survivability, endurance, and the ability to operate in hazardous environments, while protecting U.S. service members from harm.**

Kodiak's autonomous solutions are built to help military partners tackle autonomous movement throughout any ground mission.

As the future of warfare embraces the power of autonomy, Kodiak stands ready to lead the charge, ensuring American safety and maintaining American technological preeminence.



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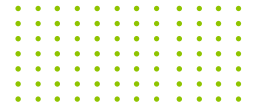
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# POLICY DEVELOPMENTS



## AVIA FEDERAL AND STATE EFFORTS

### *Demonstrated AV Policy Leadership Through Congressional Testimony, Advocacy Day, and Federal Policy Proposals*

In 2023, AVIA was again recognized by Congress for its leadership in autonomous vehicle policy, with CEO **Jeff Farrah** twice asked to testify before important House of Representatives hearings. The first hearing was before the House Energy & Commerce Committee's Subcommittee on Innovation, Data, and Commerce in February. AVIA's testimony focused on the need to maintain U.S. leadership in AV technologies, and the need for a national policy framework for AVs. In September 2023, AVIA appeared before the House Transportation & Infrastructure Committee's Subcommittee on Highways and Transit to explain the economic, safety, and supply chain benefits of AV adoption, emphasizing the need for autonomous truck testing and deployment. Farrah testified alongside Chris Urmson, the CEO of AVIA member Aurora. AVIA's inaugural federal Advocacy Day in May 2023 brought members and partners together for meetings with Congressional leaders and a Capitol Hill reception. AVIA's Advocacy Day provided a vital opportunity for in-depth discussions with Senators, Representatives, and staff members, giving them needed insight into AV technologies and the policy issues facing the AV industry.



AVIA members meet at the Department of Transportation

Additionally, in March 2023, AVIA launched its **Federal Policy Framework for Our AV Future** to provide a foundation for AVIA's federal priorities and serve as an important resource for lawmakers and policy staff looking to better understand the AV industry's policy positions.

### *Continued to Serve as the Voice of the AV Industry with the USDOT and Other Executive Branch Agencies*

In 2023, AVIA provided important AV industry insight and perspective to the U.S. Department of Transportation through meetings and conversations with the leadership of the National Highway Traffic Safety Administration (NHTSA) and the Federal Motor Carrier Safety Administration (FMCSA). AVIA was pleased to see NHTSA leadership announce progress on a new program, called AV STEP, to provide alternative pathways for the deployment of vehicles. In addition, FMCSA has submitted a proposal rule on autonomous trucking to the Office of Management and Budget following deep AVIA engagement on the need for regulatory clarity in the space.

## Opening Up I-10 and Making Progress Across the Country

State governments are critical partners in the deployment of autonomous vehicles. AVIA led the effort to enact a comprehensive AV framework in Mississippi in 2023, successfully closing a gap in the I-10 corridor across the U.S. As a result of AVIA’s efforts, AVs can now seamlessly operate from Arizona to Florida—creating further potential for AVs to mitigate supply chain issues impacting the country. The new Mississippi law reflects similar legislation in other states and permits AVs of all types to test and deploy in the state provided certain safety requirements are met. AVIA continues to make significant strides in establishing paths to deployment in 2024. South Dakota became the 24<sup>th</sup> state in the country to have an AV deployment statute in February 2024. AV deployment legislation is being actively considered in states such as Kentucky, New York, Washington, and Alabama. AVIA’s active engagement in these states, among others, has helped to position the industry to deploy across the country.

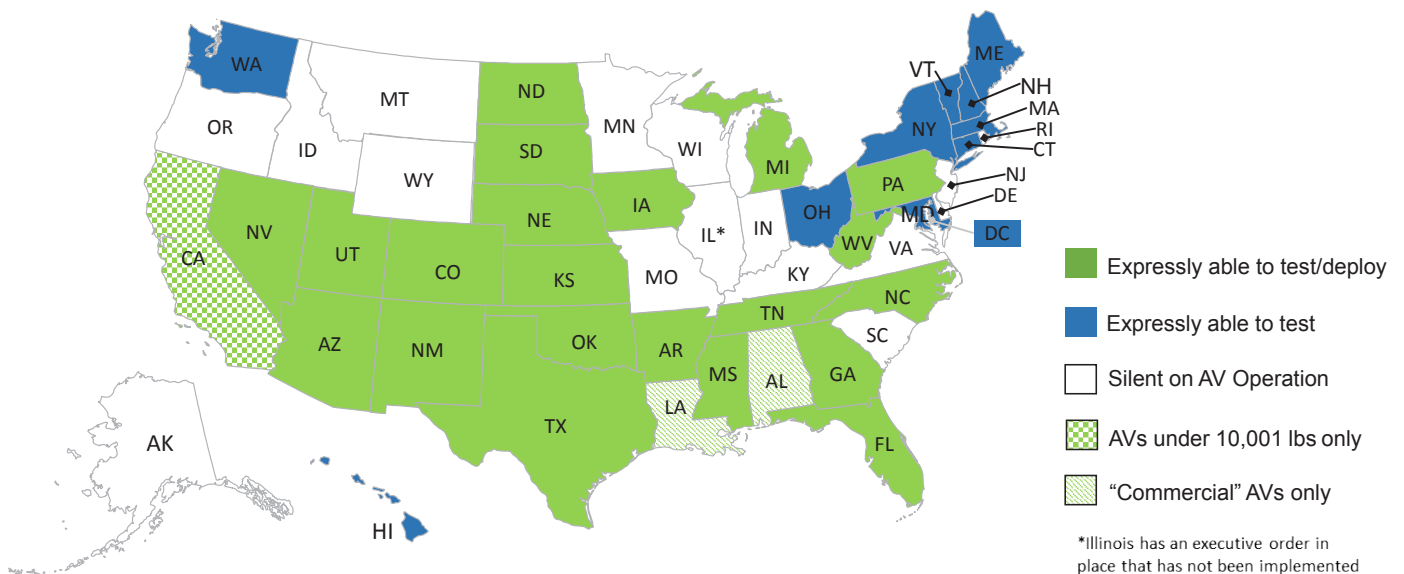
## Stopping AV Bans

In 2023, eight state efforts sought to require a human observer in an AV, and all eight were successfully defeated after significant industry, stakeholder, and regulatory opposition. These efforts marked a significant change in state dynamics. Fortunately, legislators and governors saw these proposals for what they are: effective bans on AVs that would have prevented new accessibility opportunities for people with disabilities; thwarted the ability of AVs to reduce traffic fatalities; and held back farmers, ranchers, and manufacturers who see AVs as a way to address supply chain challenges.



Mississippi Governor Tate Reeves signs AV deployment bill.

## U.S. State AV Laws & Regulations



## DMV Rulemaking Workshops

After a multi-year AVIA-led effort to encourage the California Department of Motor Vehicles (DMV) to initiate a rulemaking to authorize heavy-duty AVs, the DMV held two workshops on the topic last year, with the first in January and a second workshop in July 2023. Such workshops are common precursors to the formal rulemaking process, designed to elicit public comment on a broad set of topics under consideration.

AVIA actively participated in both workshops and coordinated with cross-industry organizations to provide input on the myriad benefits that heavy-duty AVs would bring to California. The next step for the DMV will be to initiate the formal rulemaking process to regulate the testing and deployment of heavy-duty AVs in California, which are currently prohibited under the DMV's existing regulations governing AVs under 10,001 pounds.



Reps. Dingell and Latta receive AV Champion awards.



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