2026 SAFE MOBILITY CONFERENCE

# 2026 Safe Mobility Conference Proceedings

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AAA FTS
FOUNDATION FOR TRAFFIC SAFETY

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## Title

2026 Safe Mobility Conference Proceedings

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## Foreword

The 2026 Safe Mobility Conference, hosted jointly by the AAA Foundation for Traffic Safety and the University of Washington, took place from March 30 to April 1 in Seattle, Washington. As our third conference, it convened more than 280 leaders and stakeholders from academia, government, industry, and nonprofit organizations to exchange ideas, share innovations, and advance the vision of *Safer Mobility*.

Centered on the theme *Smarter Solutions, Safer Mobility,* the conference fostered meaningful dialogue and collaboration across the transportation community. Plenary sessions featured thought leaders discussing emerging policies, research, and practical solutions to improve transportation mobility and safety. A new 'Meet the Leaders' series gave attendees direct access to decision-makers, encouraging deeper discussion and engagement. Workshops offered interactive platforms on topics such as effective AI-empowered solutions to tackle safety challenges and solutions to address rural transportation workforce challenges. Technical sessions showcased work spanning driving behavior, roadway operations, transportation policy, AI-enabled analytics, and more. Lastly, more than 30 graduate student posters highlighted the next generation of transportation research.

The 2026 Safe Mobility Conference Proceedings includes summaries of plenary sessions and abstracts prepared by presenters of technical sessions. We encourage you to use this document as a resource to spark continued collaboration, inform innovation, and help shape the transportation system in your community that is safer, smarter, and more efficient for all.

Together, we can continue advancing the path toward Safe Mobility.

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## Table of Abbreviations

| | |
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| ACC | Adaptive cruise control |
| ADAS | Advanced driver assistance systems |
| ADS | Autonomous driving system |
| AEB | Automatic emergency braking |
| COAST | Central Ohio Alliance for Safe Transportation |
| CV | Connected vehicle |
| DMS | Driver monitoring system |
| FARS | Fatality analysis reporting system |
| GDL | Graduated driver licensing |
| IIHS | Insurance Institute for Highway Safety |
| ISA | Intelligent speed assistance |
| LCA | Lane centering assistance |
| MUTCD | Manual on Uniform Traffic Control Devices |
| NHTSA | National Highway Traffic Safety Administration |
| PHB | Pedestrian hybrid beacon |
| SDMO | Slow down, move over |
| SHAP | SHapley Additive exPlanations |
| SHRP2 NDS | Second Strategic Highway Research Program Naturalistic Driving Study |
| SWZ | Smart Work Zone |
| USDOT | U.S. Department of Transportation |
| VMS | Variable message signs |
| WSDOT | Washington State Department of Transportation |

## Introduction

The 2026 Safe Mobility Conference aimed to advance smarter solutions for safer mobility by uniting safety practitioners and researchers, industry leaders, and policymakers to share strategies and forge collaborations.

This conference was held in Seattle, Washington, from March 30 to April 1, in partnership with the University of Washington. The 2026 Safe Mobility Conference offered a high-quality program featuring three plenary sessions, sixteen technical sessions, four engaging ‘Meet the Leader’ sessions, as well as workshops and posters by graduate students. The conference encompassed topics such as risky driving behaviors, innovations to protect roadside responders, safety of vulnerable road users, speed management, and vehicle technology and automation among other topics relevant to preventing traffic deaths on our roads.

This conference proceedings captures expert insights shared by speakers from the plenary sessions and valuable information and recommendations presented in technical sessions on ways to deliver safer mobility for road users.

## Plenary Sessions

### Plenary Session 1—Toward Safer Mobility: From Vision to Action

*Julie Meredith (Washington State Department of Transportation)*


Julie Meredith began by asserting the importance of safety for the Washington State Department of Transportation (WSDOT), stating that safety is embedded in all that they do. She focused on the Safe System approach in terms of reducing exposure to, likelihood of being in, and severity of dangerous crashes. This can be accomplished by making proactive changes in the design of roadways and with land use. She discussed how funding for these measures remains an ongoing issue and that the funding needs to be used for protecting vulnerable road users; reducing intersection conflict, lane departures, and vehicle speed; and operations enhancements. One example of this process involves the WSDOT's focus on Vision Zero, where they have worked on decreasing time and distance to crossroads, updating shoulders, reducing crash forces, and providing grants to local tribes for traffic safety. Another example would be the Complete Streets program, a legislative requirement that involves giving choices for transportation mobility by providing safe, comfortable, and convenient access for people using all types of transportation options, including driving, bicycling, public transportation, walking, and micromobility. In terms of safety planning considerations, Ms. Meredith discussed how speed management, safer land use, and multimodal planning can lead to smoother and safer travel for all. Finally, for improving worker safety, she highlighted how work zone speed cameras in Washington State have led to a 30% reduction in speed in work zones. Overall, the goal is to change behavior and improve traffic safety.

*Lorraine Martin (National Safety Council)*


Lorraine Martin began her remarks by pointing out that the United States lost 37,000+ on the road last year, which is the size of Fenway Park, and that all these fatalities are preventable. She highlighted how there is some evidence that the traffic safety community is making progress recently, but asked, “Where is that progress coming from? How do we hold onto that progress or double down?” One way to double down on that progress involves joining the Road to Zero Coalition, which includes about 2,000 organizations. According to Ms. Martin, doubling down on what works also involves speed management, roadway design and construction, and vehicle design and technology. In terms of accelerating advanced technology, she discussed how we are in a technological boom currently, but that it is important to include new technology in a safe manner. For example, impairment technologies that detects fatigue, distraction, and substance use needs to make it into the fleets once they are proven to work. Another important piece would be promoting the Safe System approach, such as through legislation that positively impacts the infrastructure of roads. Finally, Ms. Martin asked the attendees to, "Figure out what you can take home with you to your community. Safety means freedom to live our life to its fullest."

*Gregory Winfree (Texas A&M Transportation Institute)*


According to Gregory Winfree, mobility innovation is ultimately about people, i.e., improving the quality of life for communities everywhere. To advance safety, Mr. Winfree discussed how collaboration is key and that the focus needs to move from competition to co-creation. In terms of rural environments, mobility involves access to healthcare, connecting people to employment, social connectedness, and increasing access to alternate transportation modes and accessible public transportation. Mr. Winfree also discussed how there needs to be standard development, which is vital to harmonizing how technology works across different markets, and information sharing, which will build public trust. Another key aspect he discussed involved system integration, which is needed to integrate infrastructure, vehicles, and the global mobility ecosystem. Training sessions are important in terms of trust and building shared understanding that can help overcome differences and allow people to face traffic safety challenges. Finally, Mr. Winfree stated, "Connected transportation is our future: Safety should be suffused into everything we do." Importantly, he discussed how we need to keep people at the center of progress and be connected in purpose as well as with technology.

*Q&A Session*

1. **How much is the decline in fatalities related to a regression to the mean post-pandemic or a real shift?**

Ms. Martin stated that the decline in fatalities represented both a regression to the mean post-pandemic and a real shift. She mentioned how the fatality rate has significantly improved in terms of deaths per mile driven and that enforcement activities and increased technologies in cars are helping to decrease fatalities. In addition, Ms. Meredith described how there have been barriers to the adoption of the Complete Streets program and with underfunding and cultural issues to work through that may be impacting fatality numbers.

2. **Traffic safety stakeholders are not doing a good job of counting micromobility injuries and recreational cannabis laws have led to an increase in cannabis-impaired injuries and are problematic. Thoughts on how we get a better handle on those issues?**

Ms. Martin discussed how vulnerable road users are a key focus area and how design can help address some of the problems, but the public still needs education and that enforcement plays a critical role. In terms of impairment, Ms. Martin also highlighted how distraction is a form of impairment. Mr. Winfree observed that there needs to be better coordination hierarchically. In addition, law enforcement tools are needed for cannabis detection or for any other drugs as are available for alcohol. He highlighted how the challenge with vulnerable road users is categorization, as in how to make the distinction between someone using a scooter to go to work versus someone using it in a neighborhood versus mountain biking. He discussed how it is hard to parcel out the risk categories and injuries. Ms. Meredith suggested taking a Safe System approach, and that, by separating users from highway systems, it would shorten the time a vulnerable road user was exposed. She stated that it is important to have policies in place for how users use the roadways and how they are expected to behave.

3. **What can we do to improve teen driver safety?**

Ms. Martin discussed the Alive at 25 for Teen & Young Adult Drivers Program, which provides behavioral-based training for young drivers, and behavior-based resources for parents. These resources are intended to ensure that young drivers make smart decisions. Mr. Winfree described Texas A&M Transportation Institute's youth transportation safety peer program where students hold each other accountable and get rewards if they show improvement in driving.

4. **How can we make sure cities and people are not priced out of safety?**

Ms. Martin described this as a false narrative in that cars are expensive because many consumers are selecting to buy higher priced SUVs and luxury cars, but the safety features are available in lower priced vehicles as well. She mentioned the recent IIHS ratings that show a full range of priced vehicles with top safety ratings. Ms. Meredith discussed how land use and zoning are huge issues as people commute long distances to afford a house. She observed that addressing this would require a long-term change and that, though there is some transit in Washington State, mass transit may be an option instead of buying a car.

5. **Is Washington's difficulties with funding safety projects due to a lack of absolute funding or is it prioritization issue?**

Ms. Meredith stated that, in Washington State, funding is set by the legislature. She discussed how Washington State had its largest budget this year and it is still not enough. One example is that decrepit bridges shut down because of lack of investment. She discussed how there is a misalignment of priorities.

6. **To what extent are the U.S. safety issues related to needing more research versus needing more political will to address them?**

Mr. Winfree discussed how many traffic safety issues involve our culture in the United States, which focuses on independence. Due to this focus on independence, he suggested that legislators have difficulty overcoming cultural sentiment and that the United States needs a cultural awakening. For example, Scandinavian countries have almost eliminated drunk driving, but Mr. Winfree questioned whether it will happen here. Ms. Martin mentioned that there are some levers to pull for making cultural change, e.g., standards can help, such as those set by the Insurance Institute for Highway Safety. In addition, parents and employers can help by demanding safe technology in vehicles.

7. **With the Safe System approach, one barrier is that the existing skill set of practitioners in the fields need new skills. Are there any efforts to train existing professionals? Or, what needs to happen to train the next generation?**

Ms. Meredith stated that more training is needed, but that newer designers have a stronger background, so one option is to have different generations work together. Mr. Winfree discussed how an update on engineering education is needed because it is based on older technology and protocols.

**Plenary Session 2—Leveraging Technology to Advance Safe Mobility for All Users**

*David Noyce (University of Wisconsin–Madison)*

In his plenary talk, Professor Noyce discussed how he would be focusing on the infrastructure perspective. Dr. Noyce began his talk by highlighting how the number of crash fatalities in 1984 and today are both around 40,000 each year, leading to the question, "*Have our investments really improved safety?*" One aspect he focused on is that Americans drive a lot and America's driving tendencies are an outlier compared to peers. Common driving statistics include that 94% of crashes are due to driver error, 41% are due to recognition error, and 33% are due to decision error, but Dr. Noyce discussed how driver error is the wrong term because American drivers are making choices. For example, drivers choose to engage in distracting activities while driving. Dr. Noyce then focused on how we can move the needle when drivers are making these choices, stating that the system must safely accommodate everyone. An important aspect would be leveraging technology well, such as combining physical infrastructure and digital intelligence. Examples include left turn movement technologies that involve yellow flashing left turn arrows or freight movement having more infrastructure technology in combination with human monitoring. In considering whether to focus on smart infrastructure versus smart road users, Dr. Noyce discussed how investing in driver smartness is needed over smart infrastructure because smart intersections and sensing systems optimize flow, but do not change or improve behavior. Ultimately, Dr. Noyce concluded that driver-focused countermeasures are lower cost and could yield a higher impact than infrastructure approaches.

*David Harkey (Insurance Institute for Highway Safety)*


In his plenary talk, Dr. Harkey discussed safe mobility from the perspective of vehicle technology. Dr. Harkey discussed the evolution of safety and the need for partnerships amongst all stakeholders to advance safety further. The Insurance Institute for Highway Safety (IIHS) has been testing the crashworthiness of vehicles for 30 years and seen significant advances in occupant protection that has saved tens of thousands of lives during that time. Dr. Harkey spoke on Automatic Emergency Braking (AEB) systems and showed how the technology has been successful in decreasing insurance claims and police-reported crashes. The adoption of this technology by the auto industry was a partnership example that involved collaboration amongst IIHS, the National Highway Traffic Safety Administration (NHTSA) and auto manufacturers to commit to fitting AEB systems on passenger vehicles as standard technology by 2022. Further evolution of AEB technology has included AEB systems that can detect pedestrians both day and night, systems that can avoid different kinds of vehicles, such as motorcycles and bicyclists, and systems that can perform effectively at speeds up to 43 MPH. For over a decade, IIHS has been rating the ability of headlights to provide good driver visibility while minimizing glare for oncoming drivers. The automakers have evolved the technology over time, increasing visibility and decreasing glare. An important aspect of the safety and technology evolution that Dr. Harkey remarked that technology takes time. The average age of vehicles on the road is 13 years, and it will take time for the fleet to turn over and newer technologies to be seen throughout the fleet. For AEB technology, 90% of vehicles will have the technology after 2040. A growing area of technology is partial driving automation (Level 2) that combines throttle and braking control with lane keeping and includes some systems that are hands free. Dr. Harkey discussed how these systems are convenience rather than safety features. A key question is whether there are safety disbenefits from technology if they are designed to the point where they are enabling behaviors that increase risk. IIHS has safeguard ratings for partial driving automation that focus on how the vehicles keep drivers engaged in the driving task. These ratings have indicated poor results across a variety of metrics to date; automakers need to evolve these systems to ensure driver safety to support the convenience features. Dr. Harkey described IIHS's '30x30 Initiative,' which focuses on reducing fatalities by 30% by 2030. The emphasis areas are reducing risky behaviors, extending safety to everyone, and accelerating commercial vehicle safety. Of these areas, Dr. Harkey stated that the area with the largest lives saved benefit involves reducing risky behaviors, such as impairment, speeding, distraction, and not wearing seatbelts. Dr. Harkey discussed how IIHS will have a new paradigm for the 2028 Top Safety Pick Awards that focuses on interventions aimed at these risky behaviors. The first behavior to be addressed will be speed, and the technology to be evaluated will be on intelligent speed assistance (ISA). In conclusion, Dr. Harkey returned to the need for partnerships, noting the importance of convening to share, solve, and save lives is critical to ensure the power of the collective voice to make substantive changes in road safety in the real world.

**Plenary Session 3—Safe Mobility Initiatives from Asia, Europe, and North America**


*Xuesong Wang (Tongji University)*

Dr. Xuesong Wang of Tongji University in China presented real-world examples of broad, multilevel collaborations to improve data systems and analysis in support of implementation efforts. He first described a safety analysis project in Shanghai aimed at improving the quality of crash data. Tongji University has developed crash data standards designed to identify the precise locations of crashes and violations. Using a linear reference system, five key elements are used to pinpoint locations: road where the crash occurred, the reference point, direction from the reference point, distance from the reference point, and side of the road. These standards have already been implemented in many Chinese cities and provinces.

Dr. Wang next outlined a traffic safety analysis system that supports analysis across multiple dimensions, using Shanghai as an example. The system can analyze roadways at the macro, meso, and micro levels to identify significant contributors to crashes on different types of roads. This analysis system has already been implemented in 16 provinces.

Dr. Wang also described a four-stage procedure used to identify roads for safety improvements:

1. Identify hotspots
2. Identify countermeasures
3. Implement projects
4. Evaluate effectiveness

He presented several successful case studies demonstrating how these approaches have improved data quality, supported traffic safety analysis, and identified locations for countermeasure implementation in Shanghai, Suzhou, Guangdong, Jiangsu, and Guangzhou.

Finally, Dr. Wang described alternative simulation-based approaches for testing highway designs, as well as ongoing efforts to prepare for and plan around automated vehicles.

*Satu Innamaa (VTT Technical Research Centre of Finland Ltd.)*

The next speaker was Dr. Satu Innamaa, principal scientist at VTT Technical Research Centre of Finland. She provided a detailed overview of Hi-Drive, the European Union's flagship project on high automation for passenger vehicles. A key objective of the project was to test and demonstrate automated driving by improving intelligent vehicle technologies capable of operating in a broader range of traffic environments than those currently served by automated vehicles. The project included 53 partners across Europe and examined a wide range of evaluation components, including impacts on safety, efficiency, the environment, and personal mobility.

Dr. Innamaa outlined the project's safety assessment methodology, which included 40 different driving scenarios, three environments, and four vehicle types. Simulations of driving scenarios were used to assess changes in crash probabilities, while traffic simulations assessed changes in the frequency of safety critical situations. Injury risk functions were then applied to evaluate changes in crash severity.

She next described the project's efficiency and environmental impact assessment methodology. Multiple simulations across different road environments, road types, and traffic conditions were used to assess changes in travel time and $CO_2$ emissions, with results scaled to the European level. The mobility impact assessment methodology used questionnaires and global surveys to assess perceived travel time—specifically, how travel time is experienced when a person is driving compared with riding in an automated vehicle.

The study found substantial benefits, including reductions in crashes, improvements in travel quality, significant decreases in tractive energy use, small decreases in $CO_2$ emissions, slight increases in travel time, and negligible impacts on modal split. More broadly, the study concluded that increased autonomous vehicle connectivity could provide meaningful societal benefits.

*Roger Millar (Millar Consulting Services)*

The final speaker of the plenary session was Roger Millar, president of Millar Consulting Services and former Washington State Secretary of Transportation. Mr. Millar discussed the nuances of data, how it informs decision-making, and some frequently missed opportunities.

Mr. Millar first highlighted concerns with the phrase “data-driven decision-making,” arguing that the concept should instead be framed as “values-based, data-informed decision-making.” Data does not make decisions—people do. Even when people strive to be objective, their values shape the decisions they make. Mr. Millar advocated for making decisions based on societal values and priorities, while using data to inform those choices. He emphasized the importance of equity analysis to understand where change should be prioritized to address the impacts of past decisions.

Mr. Millar also noted that transportation agencies are often data-rich but rely primarily on readily accessible and digestible information when making decisions. He stated that approximately 70% of public safety data collected is never used because understaffed agencies often lack the capacity to process data into usable formats.

He next highlighted the potential for substantial economic and societal benefits from investments in safety. He illustrated a Safe Systems pyramid consisting of, from top to bottom: Education, Manual Measures, Automatic Measures, Built Environment, and Socioeconomic Factors. Mr. Millar argued that spending often focuses on education and manual measures, which require greater individual effort and tend to be less effective. Instead, he suggested that investments should focus more heavily on socioeconomic factors, such as affordable housing near transit and zoning reforms that reduce vehicle dependency.

Integrating land use and transportation planning, he argued, is essential. Mr. Millar called for a paradigm shift away from “building first and forcing people to adapt,” and toward understanding how people want to live and designing communities accordingly. He advocated for dense, mixed-use, walkable communities. Mr. Millar also discussed the concept of “stroads.” A stroad is a roadway that attempts to function both as a street — designed for access - shopping, social activity, and walking — and as a road designed for mobility - moving vehicles efficiently, ultimately performing neither function effectively.

Mr. Millar concluded by highlighting opportunities to improve economic vitality through transportation policy. He advocated for stronger integration of land use and transportation policy, increased funding for safety improvements, continued investment in preservation and maintenance, more efficient use of existing funding, and efforts to improve reliability across all transportation modes.

***Q&A Session***

1. **Vision Zero has been implemented in various places, what's the most important recommendation you have for reducing crashes/saving lives?**

Dr. Wang explained that we need to improve the quality of data in order to identify the problems. Once we understand the problems, we can solve them. In many parts of Asia, data quality remains a major challenge—in some cases, even the exact locations of crashes are unknown. In China, it is critical to collect accurate information on crash locations and contributing factors. We need to identify the most important information, analyze it, and learn from other countries about effective approaches to data collection. Location data, in particular, provides critical insights.

Dr. Innamaa added that a strong safety culture needs to be embedded everywhere. In Finland, safety culture is not promoted only by safety professionals—it is integrated throughout society. People are willing to accept small inconveniences in support of safety. For example, many parents choose not to drive their children to school when hundreds of children are walking.

Mr. Millar noted that we need to be honest with ourselves. Everyone believes they are a good driver, but the reality is that not everyone is. Most people are never involved in crashes, so they never recognize their own limitations as drivers. We also need to collect data that reflects what is truly important, rather than relying only on data that is easy and inexpensive to collect. We should first ask: "What problem are we trying to solve?" Advances in AI and computing now give us the ability to analyze data in ways that were previously very difficult.

2. **Regulators are major consumers of Hi-Drive evaluation findings. What follow-on questions still need to be answered?**

Dr. Innamaa replied that one important issue is behavioral adaptation. Does an increase in autonomous vehicles lead manual drivers to behave more cautiously, or could it increase frustration and road rage? We also need to understand what happens when autonomous vehicles are combined with improvements in public transportation. In addition, we need more data on the real-world use of ADAS systems and existing technologies to establish strong baseline measures.

3. **Can you share some success stories or strategies to engage private developers in being a good steward of safety?**

Mr. Millar commented that we need to demonstrate to private developers that safer development can also be profitable. One example involved a developer who separated apartment costs from parking costs, allowing residents more flexibility while supporting safer, less car-dependent design. There are successful models in places like Portland,OR, and Washington, DC, that show the private sector can embrace these approaches. We also need more talented professionals involved in development review within transportation agencies so that land use considerations receive greater attention, rather than focusing more talented staff only on large infrastructure projects.

4. **How can we improve community trust in public transportation?**

Mr. Millar explained that many organizations are working on this issue, including technology companies such as Google, and we are beginning to see benefits. Better use of data and improved information systems can help build public trust.

Dr. Innamaa noted that this can be achieved, and in many parts of Europe it is already standard practice.

5. **Is there a budget being put into the trust aspect of public transportation?**

Mr. Millar commented that there are many trust-related challenges, although progress is being made. Building trust requires sustained investment and long-term commitment. The United States is still not investing enough in this area. People often say they do not trust buses or transit, but we should also ask whether people truly trust the roadway system and other drivers. In many ways, trust is a broader issue across the entire transportation system.

## Technical Sessions

### Technical Session 1—Roadside Worker Safety: Putting Research into Action

[Session with Invited Speakers]

*William J. Horrey (AAA Foundation for Traffic Safety)—Moderator*

Service technicians, including towing and service patrols, are at high risk when responding to motorists stranded on the roadside. Between 2015 and 2021, over 120 service technicians were killed while working on the roadside (Tefft et al., 2024) and past research has shown that the occupational fatality rate for the towing industry is more than double that of other transportation incident management industries (Bunn et al., 2018). In addition to the tremendous toll of injuries and years of life lost, crashes involving roadside responders can cause further congestion and additional risks for other motorists. Like many road safety initiatives, efforts to improve the safety of roadside workers need to be multifaceted, targeting both workers in the towing industry as well as the driving public. This session brought together three speakers actively working on addressing the safety of roadside technicians through a variety of approaches. They discussed these avenues, some of the challenges faced, and how they were able to overcome these barriers. Dr. William J. Horrey, technical director at the AAA Foundation for Traffic Safety organized the session and served as its moderator.

#### *AAA Northeast's Road to VMS Approval*

*John Corlett (AAA Northeast)*

Mr. Corlett discussed recent and ongoing efforts to secure approval to deploy variable message signs (VMS) on their service vehicles across states in their territory. Research has shown that VMS can be effective in getting more approaching motorists to slow and down move over when approaching a breakdown location (Liu et al., 2023). Different states had different requirements and/or challenges, but one consistent requirement was that the VMS be compliant with the Manual on Uniform Traffic Control Devices (MUTCD).

- Securing approval in Connecticut required significant time and persistence. Initial outreach was made to the executive director of the Connecticut Department of Transportation's Office of State Traffic Administration. Some of the concerns that came up involved the distinction between fleet-owned vehicles versus independent contractors, which led to significant delays.

- Following a casual conversation at a conference and a formal follow-up email, Massachusetts Department of Transportation expressed no objections to implementing this safety measure, provided it did not conflict with MUTCD standards. They were also able to secure approval from the assistant administrator of traffic safety to include independent service providers as well.
- Approval in New Jersey was obtained through a meeting with the senior director of transportation mobility at NJ DOT. The NJ DOT official brought a VMS outfitted state-owned truck to the meeting to conduct a side-by-side comparison of the message boards. The department emphasized the importance of MUTCD compliance and provided specific guidelines for us to follow. NJ DOT requested that messages be limited to two screens to ensure the text is clear and visible to passing vehicles and to use only stationary directional arrows.
- The primary contact at the Rhode Island DOT was the director. They were extremely supportive and fully endorsed the idea following an in-person demo backed by AAA Foundation for Traffic Safety research.

### ***Slow Down, Move Over Laws Public Outreach***

*Marie Dodds (AAA Oregon/Idaho)*

Ms. Dodds focused her remarks on public outreach. Specifically, how do we get more drivers to slow down, move over (SDMO)? And how do we strengthen legislation in states that have weaker SDMO laws?

AAA has advocated for SDMO laws since 2007, and now all 50 states and the District of Columbia have SDMO laws. However, research done by the AAA Foundation for Traffic Safety finds that while two-thirds of drivers have heard of SDMO laws, most don't know if their state has one or what it requires. The AAA Foundation for Traffic Safety research also finds that there are low compliance rates for drivers—64% of drivers either slowed down or moved over, while 36% did nothing (Benedick et al., 2025).

Ways to get more drivers to comply with SDMO laws include the following:

- Clarifying and standardizing SDMO laws; currently, SDMO laws vary widely from state to state, different types of vehicles are covered, and there's no standard definition of what "slow down" means
- Having uniformity in fines or penalties; currently, fines vary significantly across states, from a $30 fine in Florida to a $2,500 fine in Virginia
- Increasing enforcement as drivers perceive little risk of being pulled over or ticketed
- Use of tech including dashcams and automated enforcement systems

- Partnering with HAAS Alert to deliver real-time roadside alerts to drivers
- Using vehicle-mounted VMSs on roadside assistance vehicles and other vehicles working on the roadside
- Using a variety of channels to communicate, including driver's education materials, navigation apps, roadway signage, and traditional and social media, and to tell emotionally compelling stories about the people who are tragically impacted when drivers don't comply with SDMO laws

Ms. Dodds also discussed ways to strengthen legislation in states that currently have weaker SDMO laws. She cited AAA Oregon's efforts to pass the SDMO law in Oregon, which is one of the most comprehensive in the country as it covers all vehicles that are stopped on the side of the road with hazard lights engaged. It is helpful to identify key legislators who are interested in traffic safety, and have them become "champions" for the SDMO efforts. Hearing from those impacted is powerful—sharing emotional stories of those who've been injured, or from family members who've lost a loved one who was struck and killed while working on the roadside.

### ***Challenges in Training Service Technicians***

*Scott Swann (Auto Club Enterprises)*

Mr. Swann discussed challenged in training roadside service technicians.

Auto Club Enterprises (ACE) faces the challenge of training nearly 8,000 roadside technicians across 21 states and 9 regional markets with only 11 instructors. To meet this need, ACE created flexible training options, including instructor-led, virtual, and self-paced computer-based training. These options allow technicians to receive critical safety instruction while respecting contractor schedules, response-time demands, and the realities of roadside operations.

The training is designed for hands-on, visual learners using videos, animations, and real-world examples that follow a technician's normal workday. It is practical, respectful, and focused on keeping technicians engaged while reinforcing lifesaving safety practices. ACE also recognizes completion with certificates, giving technicians a sense of pride and accomplishment.

Ultimately, the purpose of the training is simple: saving lives. ACE has made roadside safety the highest priority through training, equipment, and technology, including a major investment in VMSs for contractors. The message is clear: no roadside service call is worth a technician risking their life. The goal is simple: provide the training, tools, and technology needed to help every roadside technician make it home safely.

## References


Benedick, A., De Leonardis, D., Levi, S., Hickerson, K., Moscoso, R., Sadabadi, K., & Jacobs, T. (2025). *Slow Down, Move Over Laws: Investigating Factors Influencing Drivers' Behavior and Compliance* (Technical Report). Washington, D.C.: AAA Foundation for Traffic Safety.

Bunn, T. L., Slavova, S., Chandler, M., Hanner, N., & Singleton, M. (2018). Surveillance of traffic incident management-related occupational fatalities in Kentucky, 2005-2016. *Traffic Injury Prevention, 19*(4), 446–453. https://doi.org/10.1080/15389588.2018.1432042

Liu, J., Penmetsa, P., Yang, C., Hainen, A., & Barnett, T. (2023). *Protecting Roadside Workers: Field Evaluation of a Vehicle-Mounted Variable Message Sign and Examination of Worker Perceptions and Use of Countermeasures* (Technical Report). Washington, D.C.: AAA Foundation for Traffic Safety.

Tefft, B.C., Wei, A., & Steinbach, R. (2024). *Roadside Assistance Providers Fatally Struck by Vehicles at the Roadside: Incidence and Characteristics* (Technical Report). Washington, D.C.: AAA Foundation for Traffic Safety.

## Technical Session 2—From Pilot to Practice: Deploying Active Speed Prevention Technology in Municipal Fleets

[Session with Invited Speakers]

*Michael Travars (LifeSafer)—Moderator*

This panel moderated by Michael Travars, president of LifeSafer, explored how cities are moving from pilot programs to full-scale implementation of active Intelligent Speed Assistance (ISA)—a technology that uses speed limit and location data to reduce speeding, prevent injuries, and save lives.

The session began with a clear overview of how active ISA technology works. Panelists explained how ISA uses posted speed limit data, GPS, and onboard vehicle systems to actively prevent vehicles from exceeding the speed limit, rather than simply warning the driver. The discussion also clarified what ISA does not do: it does not replace driver judgment, law enforcement, or roadway design.

Panelists explained how ISA integrates into programs like the Safe System approach and the Safer Fleets Challenge to help cities take concrete steps toward speed management and road safety.

Then, panelists shared their first-hand insights from municipal fleet ISA pilot programs already underway, detailing how cities have integrated the technology into existing vehicles and operations. The conversation highlighted lessons learned around technology integration, system configuration, driver acceptance, and performance measurement, as well as outcomes related to speed compliance and safety.

Finally, building on these real-world experiences, the panel presented actionable strategies for designing, launching, and scaling ISA programs within local government fleet operations. Attendees gained practical guidance on developing fleet use cases, aligning ISA with operational goals, evaluating results, and using data to evaluate outcomes and support decision-making.

### *Intelligent Speed Assistance Is Transformative*

*Mike McGinns (America Walks)*

Mr. McGinns explained why ISA is important, laying out the groundwork for the injuries and deaths caused by speed, and noting that ISA provided a tool to save lives right now.

### *How Intelligent Speed Assistance Technology Works*

*Michael Travars (LifeSafer)*

Mr. Travars explained how ISA technology functions within existing vehicles, providing safety technology that is backwards compatible with fleets on the road today, allowing existing fleets to incorporate this technology as a new safety mechanism to reduce injuries and deaths on the roads.

### *Intelligent Speed Assistance in Practice*

*Leah Shahum (Vision Zero Network)*

Ms. Shahum discussed the benefits of outfitting fleets with ISA and shared suggestions for communities to pilot ISA on fleets, including funding opportunities, such as federal Safe Streets and Road for All grants (learn more here).

## Technical Session 3—Educating for Safety: ADAS Training Strategies and Outcomes

[Session with Invited Speakers]

*Justin Mason (University of Iowa)—Moderator*

Motor vehicle crashes remain a leading cause of death among teenagers in the United States, and the growing prevalence of Advanced Driver Assistance Systems (ADAS) in modern vehicles introduces new concerns around overreliance and misuse by inexperienced drivers. ADAS in production vehicles are sophisticated and therefore complicated. This complexity manifests across three critical domains: system capabilities and limitations, control interfaces and activation procedures, and information display design. It is unknown whether drivers' education can be used to train drivers on how to interact with ADAS. However, training and education are critical since not having an appropriate understanding of the capabilities and limitations associated with ADAS can be detrimental. The first half of the session provided the audience with the current state of ADAS training for teen drivers, insights into how ADAS training can be integrated into driver education curriculum, and the key components of ADAS training. The second half of the session was a panel discussion to promote audience engagement and provide the audience with insights they can take home. This session was organized and moderated by Dr. Justin Mason, research scientist at the University of Iowa.

### *Vehicle Automation and Operator Training: A Review*

*Anuj K. Pradhan (University of Massachusetts–Amherst)*

This presentation highlighted the critical need to study how drivers learn about ADAS; what elements of ADAS and their human–machine interfaces contribute to users' misunderstanding or misuse; and how to help lay users better understand and use ADAS. Dr. Pradhan made the case that ADAS operational procedures are unnecessarily complicated—comparing it to video games where arcane knowledge about controls and actions (cheat codes) is needed to succeed. Keeping this analogy, the presentation also critiqued the lack of standardization resulting in a wild west situation for human–machine interface displays in ADAS-equipped vehicles, with standard and expected elements like dials and gauges being replaced with unnecessarily complex and opaque Star Trek-esque displays. These deficiencies have prompted formal regulatory concern, as documented in Government Accountability Office findings and corresponding NHTSA recommendations to Congress. Dr. Pradhan then shared and discussed the outcomes of a systematic review conducted by the presenter's team on "training and ADAS" to examine questions related to training approaches, impact of training on drivers' understanding of ADAS, and impact of training on drivers' performance with ADAS. The review found that training approaches were diverse—ranging from text-based guides, to videos, and augmented reality/virtual reality training. The review also showed that any training was useful for gains in understanding, with immersive methods contributing more to these gains. Similarly, some training did show evidence of improved driver performance in terms of vigilance and takeover performance. Dr. Pradhan made recommendations for future research, including the need to understand the persistence of training effects, impact on different population subgroups, and scalability.

### *Evaluating the Effectiveness of Drivers' Education Modules on Safety*

*Shannon Roberts (University of Massachusetts–Amherst)*

The second presenter, Dr. Roberts, presented findings that provide support for integrating Adaptive Cruise Control (ACC) training within driver education curriculum for teen drivers.

The objective of this study was to examine how driver education and training programs can help improve teen drivers' use and understanding of ADAS. The study began by engaging stakeholders via interviews and surveys to understand perspectives about advanced technology in vehicles and technology that can be incorporated into the current driver education program. Next, a training program to teach teen drivers about ACC, a specific form of ADAS, was developed based on results of the stakeholder engagement as well as a literature review. The training program was implemented as a new module into an existing driver's education curriculum. To assess the effectiveness of the new ACC module, 90 teens completed a driving simulator experiment as well as a series of surveys. Preliminary analysis of the results indicate that the ACC training module has a moderate effect on behavior. Future research will continue to delve into the driving simulator results more deeply to truly ascertain the effect of training on teen driver behavior.

### *Teen Driver Safety: Evaluating ADAS Educational Interventions*

*Isabelle Wandenkolk (University of Massachusetts–Amherst) and Niloufar Shirani (University of Connecticut)*

Dr. Wandenkolk and Dr. Shirani compared the components of an interactive simulator-based training and the Mistakes, Mentoring, and Mastery (3M) PowerPoint-based training designed to train teen drivers to safely use Level 2 automation, including ACC and Lane Centering Assistance (LCA). This presentation introduced Phase I of a multisite collaborative study aimed at developing and evaluating educational interventions designed to improve teen drivers' understanding and appropriate use of Level 2 automation, specifically ACC and LCA. Phase I focuses on building the experimental foundation including the development of two training modules (an interactive simulator-based training and a 3M PowerPoint training). The upcoming Phase II will be the experimental core of the study, enrolling 102 licensed teen drivers (ages 16–18) who will be randomly assigned to one of three conditions: the 3M training module, simulator-based training, or a no-training control group. Findings from this study aim to inform teen driver education by providing empirical evidence on how different ADAS training methods influence young drivers' responses to automation disengagement events, while also under distracted conditions. This project aims to inform state-level driver education policies, support the development of standardized training materials, and ultimately reduce crash risk among novice drivers, thereby improving road safety and preparing teens for emerging vehicle technologies.

### Technical Session 4—Designing Complete Streets for Safe Speeds: Lessons from Bellevue and San José

[Session with Invited Speakers]

*Chris Breiland (Fehr & Peers)—Moderator*

Achieving safe operating speeds on urban arterials is a critical component of Complete Streets and Vision Zero strategies. Chris Breiland from Fehr & Peers moderated a session exploring how cities can implement effective speed management projects on high-volume corridors, highlighting Bellevue's comprehensive approach to safer speeds, and lessons learned from San José's Lincoln Avenue Road Diet.

#### *Case Study: City of Bellevue, Washington*

*John Murphy (City of Bellevue)*

Mr. Murphy of the City of Bellevue presented on Bellevue's approach to speed management. The city's Speed Management Plan informed a multipronged, citywide strategy that includes lowering local and arterial speed limits and expanding speed safety camera deployments. These initiatives are intended to reduce high-end speeding and improve safety outcomes through data-driven design.

#### *Case Study from San José, California*

*Taylor Whitaker (Fehr & Peers)*

Complementing this, Mr. Whitaker from Fehr & Peers presented on San José's Lincoln Avenue project, demonstrating how road diets can balance multimodal access with speed reduction, highlighting design trade-offs, community engagement, and performance evaluation. Together, these case studies provided practical insights into engineering, policy, and implementation strategies for creating safer arterials that support all road users.

**Technical Session 5—Micromobility Safety Through a Human Factors Lens**

[Session with Invited Speakers]

*Katie Becker (Exponent)*

*Hillary Dorton (Exponent)*

*Nicole Keller (Exponent)*

If you have been on a college campus or in a city recently, you have likely seen an e-scooter or e-bike zooming by! The use of micromobility devices, including e-scooters and e-bikes, has soared in recent years as an affordable, convenient, and eco-friendly option for short-distance urban travel. This rapid growth has also been accompanied by a rise in micromobility-related injuries and crashes, creating new safety challenges for riders, drivers, and pedestrians. This presentation provided an overview of micromobility, including the variability in rules and regulations, common operator behaviors, and injury and crash trends. Importantly, it examined human factors issues affecting safety, including perception, attention, expectancy, speed misperception, and drivers' detection of these emerging roadway users.

## Technical Session 6—Distracted Driving: Effectiveness of Countermeasures

[Session with Invited Speakers]

Distracted driving is a deadly traffic safety issue. According to the most recent analyses by NHTSA, in 2023, eight percent of fatal crashes and 13 percent of injury crashes were distraction-affected crashes. These crashes resulted in 3,275 fatalities and an estimated 324,819 people injured in motor vehicle traffic crashes involving distracted drivers. Engagement in non-driving-related tasks can take many forms, including more traditional forms (such as eating/drinking, grooming, and tuning a radio) and more recent forms related to the use of portable electronic devices (such as watching videos, text messaging, and engaging with social media and other apps). In order to combat distracted driving, countermeasures are needed that reduce or eliminate both traditional and newer forms of secondary task engagement.

Reducing the number of distraction-affected crashes and fatalities requires researchers to examine potential countermeasures for effectiveness of creating a safe driving environment. Possible countermeasures for distracted driving include driver monitoring systems that alert the driver when they may be distracted; do not disturb functions on smartphones that block incoming calls, text messages, and notifications (with specific features depending on the type of smartphone); technology within in-vehicle information systems that connect to smartphones and mirror their displays on vehicles' displays (such as Apple CarPlay or Android Auto); as well as non-technology-based solutions, such as legislation, education and messaging, enforcement, and mindfulness. This session with invited speakers had researchers present their findings on whether different countermeasures have the potential to reduce crash risk. This session provided researchers, practitioners, and safety advocates with a greater understanding of the potential for different countermeasures to combat distracted driving, as well as giving insight into what countermeasures require more research to better ascertain their likelihood of success for decreasing distracted driving crashes.

### *Drivers' Opinions of and Experiences Using DriverFocus*

*Aimee Cox (Insurance Institute for Highway Safety)*

Nearly 3,500 owners of Subarus equipped with DriverFocus, a camera-based system designed to detect signs of driver distraction and drowsiness outside of automation use, participated in an online survey. The goal of the study was to capture drivers' understanding of the system, along with their opinions of and experiences using it. Most owners were knowledgeable about DriverFocus and 87% had the system turned on most or every time they drove the vehicle. Seventy percent of the drivers sampled agreed they would want the system again, and of those who used it, over 60% agreed that it made them a safer driver and helped them to avoid distractions. Drivers were more likely to have received at least one distraction alert than to have received a drowsiness alert (97% vs 37%) in the 30 days prior to taking the survey. Drivers perceived some distraction alerts as false positives, but after asking drivers what they were doing when they received an alert that they felt they should not have, we uncovered that drivers had misconceptions about what behaviors should trigger an alert that appears to have distorted this perception. Manufacturers using camera-based monitoring limited to when partial automation is active could expand this functionality for use during normal driving.

### *Decreasing Cell-Phone Use While Driving: The Effect of Do Not Disturb Training and Exposure*

*Sheila "Charlie" Klauer (Virginia Tech Transportation Institute)*

Dr. Klauer presented results from a research project that investigated the use of the Do Not Disturb function that is present on most cell phones. While it is well-documented that driver distraction is pervasive in our society and interaction with cell phones, specifically, is associated with crash risk, the Do Not Disturb function on cell phones represents a simple and logical countermeasure that is largely ignored. This project set out to better understand why it is not used and if it could actually improve safety if it were to be used.

A national survey found that those who have used Do Not Disturb previously stopped using it because it was too difficult to still access some of the apps (maps, music) from their cell phone while driving. They would prefer to have it activated automatically but in high traffic demand environments, like bad weather and/or heavy traffic congestion. A naturalistic driving study with drivers who drove 5 weeks without Do Not Disturb and 5 weeks with the Do Not Disturb function active was conducted. Cell phone interactions were significantly less when Do Not Disturb was active, which suggests that this function can improve safety; however, users still felt that they were limited in their use of apps that they wanted while driving. Perhaps a better design of Do Not Disturb, where it turns on automatically in higher traffic demand would be beneficial for drivers.

### *Distracted Driving: Investigating the Role Mindfulness as a Protective Factor*

*Johnathon Ehsani (Johns Hopkins University)*

Most distracted driving research focuses on the behavior itself, which includes counting phone use events and measuring time with eyes off the road. This presentation takes a different approach, asking whether mindfulness, which is a positive psychological attribute associated with present-moment awareness, functions as a protective factor against distracted and risky driving. Using a positive psychology perspective, the question changes from counting what drivers do wrong, to what characterizes drivers who consistently drive safely.

Three studies were presented. The first, a nationally representative cross-sectional survey of U.S. teenagers (N=267, ages 16–19), found a significant inverse association between mindfulness scores and risky driving profiles, including distracted driving, using latent class analysis. The second, a large-scale survey of North American adults (N=13,956, ages 18–75+), replicated this finding across the lifespan, with higher mindfulness consistently associated with lower probability of engaging in a range of risky driving behaviors. The third was an observational study of South African adults (N=600) using telematics data from an insurance company; this study found no significant association between a Mindful Driving Scale and phone use while driving. The null finding in the observational study may be attributable to bias introduced by the insurance context. Together, the findings suggest that mindfulness is a promising but not yet fully characterized protective factor for distracted driving, and that observational studies using population-representative samples are needed to advance our understanding.

## Technical Session 7—Safe Mobility for Teen and Young Drivers

[Session Based on Submitted Abstracts]

### *Cognitive Wellness and Safe Driving: Teen Mental Health Risk and Protective Factors Behind the Wheel*

*Eliza Fitzpatrick (Students Against Destructive Decisions)*

Learning objectives:

- Identify mental health risk factors (i.e., depression, anxiety, attention-deficit/hyperactivity disorder) as they relate to teen drivers and a Safe System.
- Assess driving mental readiness and appropriately implement interventions.
- Utilize and demonstrate coping strategies as a mental health protective factor.
- Develop a driving safety plan to reduce risky driving behaviors.

This presentation is designed to provide an overview of the impact of cognitive wellness as it relates to an individual's readiness to drive. More specifically, how intense anxiety or stress behind the wheel contributes to cognitive distractions for younger drivers.

Mental health concerns continue to be a primary focus for adolescents for a myriad of different reasons. Though many young drivers are generally aware of mental health factors, they are often not equipped with coping strategies to manage high-stress situations. Students Against Destructive Decisions, in collaboration with national student leaders, developed mental health and driving grounding techniques designed to promote mindfulness and eliminate cognitive distractions behind the wheel.

These grounding techniques have been shared with hundreds of driver education students across North Carolina via an interactive presentation with the inclusion of pre- and post-survey data collection. This internal pre-survey data taken by North Carolina Students Against Destructive Decisions from nearly 600 driver education students in selected classes from June 2025 to October 2025 indicates that the surveyed population had little prior knowledge of the connection between mental health and readiness to drive. However, post-survey data from these same selected participants reveal an increase in self-reported confidence to identify mental health risk/protective factors and the ability to replicate coping strategies as needed.

A strengths-based approach to mental health and driving provides young drivers with the tools necessary to build their individual protective factors, contributing to the Safe System approach with safer and more mentally ready drivers on the road. This presentation similarly encourages participants to explore mindfulness and cognitive wellness as a contributing factor in the Safe System approach as a whole.

### *Attitude-Behavior Mismatches in Teen Driving: Insights from a National Survey on Risk Perception and Self-Reported Behavior*

*Christine Yager (Texas A&M Transportation Institute)*

Learning objectives:

- Help researchers and practitioners to move beyond prevalence and explore psychological and social dynamics behind behavior choices.

The Youth Transportation Safety Program at the Texas A&M Transportation Institute conducts an annual national survey of high school students to examine their driving experiences, traffic safety attitudes, and self-reported behaviors. This presentation shared findings from the 2025–2026 survey cycle, which includes responses from over 22,000 high school students across the United States.

The survey addresses a wide range of traffic safety behaviors, including several forms of distracted driving, impaired driving, speeding, seat belt use, and pedestrian actions. For each behavior, students first indicate how acceptable or unacceptable they believe it is, followed by a self-report of how frequently they engaged in that behavior over the past 30 days. To quantify these responses, attitude questions were coded on a five-point ordinal scale (1 = completely unacceptable to 5 = completely acceptable), and behavior questions on a three-point ordinal scale (1 = never to 3 = frequently). Mean scores were calculated for each risky behavior, allowing for direct comparison of overall attitudes and self-reported behaviors.

This presentation focused on attitude–behavior mismatches—instances where students' stated beliefs conflict with their reported actions. Specifically, it highlighted the following:

- Behaviors students rated as "Completely Unacceptable" yet still reported doing
- Behaviors students rated as "Completely Acceptable" yet did not engage in

These mismatches offer insight into cognitive dissonance, social norms, and behavioral restraint among teen drivers and pedestrians. By identifying which behaviors show the greatest divergence between attitude and behavior, the findings can inform the development of targeted messaging and educational campaigns tailored to specific risk profiles.

***Addressing the Teen Driver Safety Problem: Driver Monitoring for Consumer Vehicles and Recent Data Results***

*Bob Denaro (WingDriver Inc.)*

Learning objectives:

- Help practitioners know about the existence of a smartphone-based AI driver monitoring solution for existing consumer vehicles to address the teen driver safety problem
- Discuss the effectiveness of smartphone-based driver monitoring in preventing road accidents demonstrated by ride-hailing drivers
- Learn about statistics on driver performance and safety scores with driver monitoring

Driver monitoring to detect and intervene with driver distraction, driver drowsiness, driver fatigue, speeding and other dangerous driving behaviors is emerging in the commercial fleet segment and in the new car production segment. But, until now, there were no practical solutions for existing consumer vehicles such as rental vehicles, personally owned ride-hailing vehicles, and the broad segment of personally owned vehicles insured by automotive insurance carriers. This new development, implementing deep tech machine learning AI on smartphones, may be a significant contributor to improved driving safety by teenage and novice drivers by intervening and stopping key contributing factors to their accidents.

This presentation described the new technology and presented data from operational use of a smartphone-based driver monitoring solution by a ride-hailing company during normal operations. The data showed the measurements of driver safety including driver distraction (including smartphone distraction), driver drowsiness, driver fatigue, speeding, and unsafe maneuvers. Safety scores, derived from naturalistic data collected and analyzed by the Virginia Tech Transportation Institute, were analyzed to show safety score improvement over the usage period. In addition, subjective surveys of drivers showed the degree of driver acceptance and their perception of how the driver monitoring system enhanced their safety.

This democratization of driver monitoring for all vehicles on the road is an important development and now the task is to determine if this solution does in fact reduce crashes and whether any such safety improvements will persist with the drivers. Will these systems change driver behavior and increase safety? In addition, it is important to monitor driver acceptance and overcome perceptions of privacy incursions from such systems. And, specifically, what is the potential to reduce the unacceptably high injury and fatality rate of teenage drivers by providing an in-vehicle dangerous driving behavior mitigation solution along with a parent data dashboard coaching tool?

The early data from this study is a start in understanding these critical factors and the potential of the new solution.

### *Graduated Driver Licensing and the Future of Learning to Drive*

*Justin Owens (University of North Carolina)*

Learning objectives:

- Understand the history of the driver licensing process in the United States, particularly the transition to graduated driver licensing
- Become familiar with the successes of and challenges facing driver licensing and novice teen drivers
- Discuss ways in which new technology can prove both a challenge and opportunity for novice teen drivers, and ways that the driver licensing process can adapt to the changing roadways of the 21st century

Graduated driver licensing (GDL) has been the standard framework supporting teen driver training across the United States for more than 20 years. Building upon theories of learning and supported by a substantial body of evidence, the GDL process was designed to help new teen drivers build vehicle control and situation awareness skills in while gradually exposing them to more challenging and complicated situations.

This has traditionally been accomplished by implementing licensure in several stages. First, a novice teen driver will engage in classroom and behind the wheel training with an instructor to learn the rules of the road and basic vehicle control. Second, after passing a written knowledge test, they will obtain a learner's permit that allows them to practice driving with an adult supervisor (usually a parent or guardian) in the vehicle. This supervised practice driving period is critically important because it allows teens to develop skills over many hours and months of practice in a gradual and supervised manner with the people who know their learning style best. Following the practice driving period, a teen is generally eligible for a limited provisional license after an on-road vehicle control test, which allows them to drive alone in all but the most dangerous situations (e.g., at night and with other teen passengers). Finally, after a period of time or when they turn 18, a teen is eligible to receive their unrestricted driver's license.

The specifics of this process vary across states, but nearly all incorporate some form of GDL into their licensing program. However, while GDL has been associated with substantial and significant decreases in teen crash rates following implementation, teen driver-related crash fatalities remain unacceptably high, with more than 5,100 teen drivers involved in fatal crashes in 2023. This represents an increase of more than 1,000 more fatal teen-driver crashes compared to 2013 (National Highway Traffic Safety Administration, 2025).

This presentation provided an overview of the current state of the driver licensing process across the United States, including current best practices from across the country, ways that aspects of driver training may benefit from improvements to face our changing road environment and tackle ongoing safety concerns, and specific ways that technology may pose both challenges and opportunities for learning to drive.

In particular, the talk focused on:

- An introduction to the foundational research supporting GDL
- Data supporting the overall efficacy of GDL, as well as the relative effectiveness of each component of the process
- Areas that may benefit from updating to better address current and future road safety concerns
- Challenges and opportunities presented by modern technology, including in-vehicle interfaces, driver assistance/automation, and driving simulators
- What works, what doesn't, what needs improvement, and how new practices and technology may improve teen driver education to make safer roadways for all of us

***References***

National Highway Traffic Safety Administration. (2025). *Fatality and Injury Reporting System Tool (FIRST)*. UnitedStates Department of Transportation. https://cdan.dot.gov/query

**Technical Session 8—From Research to Real-World Impact: Advancing Safe System Strategies Through Behavioral Science, Crash Data Analytics, and Ohio's Redesigned Fatality Review Process**

[Session with Invited Speakers]

*Angela Harden (The Ohio State University)*

*Anna Piper (City of Columbus)*

*Brittany Shoots-Reinhard (The Ohio State University)*

*Katherine Swidarski (City of Columbus)*

In Columbus, Ohio, a few informal conversations over coffee have become the Central Ohio Alliance for Safe Transportation (COAST). Membership which includes academic, government, insurance, vehicle manufacturing, and other partners from the 15-county region with the goal of ending fatal traffic crashes. Meetings are held monthly with a focus on topics of interest, such as integrating behavioral science with system-level assessments. The guest presentations and discussion have led to better understanding among safety partners about both the risky behaviors that precede a crash and the structural conditions that shape those behaviors.

As one example, behavioral research conducted in Ohio by Dr. Shoots-Reinhard has consistently shown that speeding, inconsistent seatbelt use, distraction, and impaired driving are influenced by risk perception, motivational factors, social norms, and cognitive biases (e.g., overconfidence and misjudged risk). This reinforces the Safe System principle that humans are imperfect. Keeping people alive on the roadway network needs to consider those underlying influences on behavior, especially among young men, to deliver effective messaging and intervention.

COAST has also helped continue to shift the region toward an equitable Safe System approach to fatal crash prevention. Research conducted by Dr. Harden has demonstrated that crash data are an important tool for identifying the weakest components of our system at every level of analysis (state, region, county, and local jurisdiction). She explains how crash, vehicle, and other technology or related data sets allow us greater examination of upstream conditions.

The Franklin County Traffic Fatality Review led by Columbus Public Health is leveraging the insights from that research to apply the Safe System approach within the fatality review process. Fatal crashes in Franklin County (2021–2025) account for about 10% of all fatal crashes among the 88 counties of Ohio. Presentation of each fatality includes crash report, roadway, lighting, EMS, coroner, driving history, and other insights from a multidisciplinary membership. Short- and long-term recommendations are focused on life-saving ways to strengthen each component within the Safe System.

The Department of Public Service leads the Vision Zero Columbus initiative with the goal of ending fatal and serious injury crashes by 2035. As partners in this initiative, Columbus Public Health works closely with staff in other city departments to develop SMART goals for the Fatality Review Board that will advance the city—and county—in our effort to achieve zero traffic fatalities. Vision Zero Columbus and other Fatality Review Board members bring lessons from the monthly review back to COAST. The result of this cooperative work—in just the last two years—includes several million dollars in funding to conduct additional collaborative fatal crash prevention research.

## Technical Session 9—Data for Safe Mobility Solutions

[Session Based on Submitted Abstracts]

### *Can Connected Vehicle Data be Used for Proactive Safety Analysis? An Evaluation of the Correlation Between Observed Crash Locations and Vehicle-Based Surrogate Safety Measures*

*Jason Anderson (Portland State University)*

Learning objectives:

- Determine if connected vehicle data is a viable option for proactive safety analysis.
- Identify if correlation exists between crash locations and hard braking locations.
- Determine if speed measures are consistent with speeding-involved crashes and speed measurements given by the Regional Integrated Transportation Information System.

Traditional safety analysis has long depended on historical crash data to understand trends, identify high-risk locations, and prioritize countermeasures. While valuable, this approach is inherently reactive, as it relies on severe outcomes (injuries/fatalities) to have already occurred before action is taken. Crash data are often lagging by months or years, limiting agencies' ability to respond quickly to emerging safety issues. In addition, inconsistencies in data collection practices across jurisdictions, variations in reporting thresholds, and a lack of standardization in crash coding make it difficult to conduct comprehensive, comparable analyses at regional or national scales. These limitations are particularly pronounced for non-motorized users such as pedestrians and bicyclists, whose crashes are frequently underreported, resulting in small sample sizes and reduced statistical power to detect meaningful patterns.

To address these gaps, an emerging and increasingly important approach is the use of surrogate safety metrics, which focus on observable conflicts and near-miss events that occur far more frequently than crashes. Surrogate measures such as time-to-collision, post-encroachment time, hard braking, or evasive maneuvers provide earlier indicators of crash risk and allow agencies to assess safety proactively rather than waiting for crashes to occur. Traditionally, these metrics have been extracted from video analytics using manual or automated computer vision techniques. More recently, advances in sensing and connectivity have expanded data sources to include LiDAR, which offers precise trajectory and speed information, and connected vehicle data, which capture vehicle dynamics and driver responses in real time. Together, these technologies enable continuous, scalable, and more comprehensive safety assessments, supporting data-driven decision making and the development of proactive, preventive safety strategies aligned with Safe System principles.

Connected vehicle data enable the continuous, passive collection of detailed information on roadway conditions, vehicle dynamics, and driver behavior at a scale that was not previously possible. Unlike traditional data sources that rely on infrequent observations or reported crashes, connected vehicle data are generated during normal driving conditions and provide high-resolution insights into how vehicles operate across different roadway contexts, times of day, and environmental conditions. Metrics such as operating speed, acceleration and deceleration patterns, and vehicle motion characteristics can reveal subtle safety issues well before they manifest as crashes, creating significant opportunities for proactive safety management.

This presentation reports on findings from a study that uses connected vehicle data provided by Compass IoT to support proactive roadway safety analysis. The analysis focuses on vehicle-based surrogate safety metrics, including pitch, roll, yaw, longitudinal and lateral acceleration, and speed, which serve as indicators of driver response, roadway geometry, and potential conflict conditions. By spatially mapping these metrics and identifying locations with frequent or severe anomalous vehicle movements such as excessive braking, abrupt steering, or high roll and yaw rates, the study examines how these patterns correspond to known crash hotspots. The results demonstrate how connected vehicle data can complement traditional crash analyses by revealing risk patterns at a much finer temporal and spatial resolution, enabling agencies to identify emerging safety concerns, prioritize countermeasures, and evaluate roadway performance in a proactive, data-driven manner.

### ***Potential Safety Benefits Associated with Reduced Travel Speeds***

*Eamon Campolettano (Waymo)*

Vision Zero represents a road safety approach with aspirations toward eliminating serious and fatal injuries associated with traffic collisions. Within the United States, eliminating speeding represents a key challenge toward achieving the goals of Vision Zero and establishing a Safe System. Using data from vehicles equipped with an Autonomous Driving System (ADS) as a stand-in for roadway speed limit compliance, the objective of this paper was to estimate the potential safety benefits if all drivers in two U.S. cities (Phoenix and San Francisco) complied with roadway speed limits through an application of the traffic speed impact framework described by Elvik (2019).

Sensor data from a fleet of ADS-equipped vehicles operating a ride-hailing service were used to determine traffic speeds during free-flow conditions in Phoenix and San Francisco from over 1 million unique vehicle-road segment traversals. The current human driving speed distribution was estimated using the speed observations of opposite direction traffic to limit the influence of the ADS-equipped vehicle. The speed limit compliant driving fleet consisted of speed observations involving the ADS-equipped vehicles. To estimate the potential safety benefits from reduced travel speeds associated with speed limit compliance, an exponential model relating the effect of speed reduction on fatal and injury crashes was applied, stratified by roadway speed limit. Recent fatality data from these cities was then used to quantify an estimate for lives saved simply through speed limit compliance.

Human drivers exceeded the roadway speed limit in 33%–49% of observations, with the 85th percentile driver exceeding the speed limit by 3.6–7.2 mph. More than 12% of drivers were observed to travel 5 mph above the speed limit in San Francisco and more than 23% in Phoenix. The serious injury and fatality reductions associated with altering the current human-driven vehicle fleet speed distribution toward one that is speed limit compliant were observed to vary by roadway from 18%–30% and 27%–43%, respectively. As a point of comparison, speeding was reported as a factor in the Fatality Analysis Reporting System (FARS) for 36% of fatal collisions in San Francisco and 28% of Phoenix metro area fatalities. When considering these fatality reduction rates in conjunction with available fatality data from FARS, an estimated 82 lives could be saved annually on surface streets in Phoenix and San Francisco simply through speed limit compliance.

This study leveraged vehicle speed distribution data as measured by a fleet of autonomous ride-hailing vehicles in conjunction with the most current relationships between vehicle speed distributions and aggregate traffic fatalities and injuries to estimate the potential safety benefits associated with speed limit compliance. The results from this study indicate the potential for saving 82 lives annually on surface streets in San Francisco (7 lives) and the Phoenix metro area (75 lives) simply through compliance with roadway speed limits. The disproportionate relationship between increased speed and increases in injury risk highlights the tremendous opportunity to reduce serious and fatal outcomes through speed limit compliance. This analysis builds on the existing body of literature capturing the deleterious effects of speeding on traffic safety.

### *Evaluating AI-Based Video Analytics for Traffic Safety and Data Collection*

*Soheil Keshavarz (University of Washington)*

Learning objectives:

- Understand the challenges of validating near-miss detection in AI-based traffic safety systems, including the limitations of relying solely on objective surrogate safety measures
- Learn a structured, human-based ground-truthing approach for near-miss validation, using trained observer panels and consensus-based decision making to reduce subjectivity and bias

- Recognize how system performance for volumes, speeds, and near-misses varies across traffic, geometric, and environmental conditions, and why site context matters for AI safety analytics
- Interpret evaluation metrics such as precision, recall, and $F_1$-score in the context of safety analytics, with emphasis on minimizing false negatives for proactive safety applications
- Apply insights from this evaluation to inform agency decisions on deploying and configuring AI-based video analytics systems for operational and policy use

AI-based traffic sensing and video analytics are increasingly used in smart city initiatives to support traffic operations and proactive safety management. This study conducts an independent evaluation of real-world video analytics systems using ground-truth data collected at two signalized intersections in the Greater Seattle area. These sites differ in traffic demand, geometry, and camera configuration, enabling assessment of system performance under varied operational conditions.

Ground-truth data collection follows separate procedures for volumes, speeds, and safety events. Speed data are collected using pneumatic tubes deployed in the field. Multimodal volumes are obtained through manual review of video footage using a custom traffic counting toolbox designed to standardize workflows and reduce individual bias. Video data are sourced from two fisheye cameras installed at two corners of each intersection.

Safety evaluation focuses on near-miss validation, which is the most conceptually challenging component. Near-misses lack universally accepted operational definitions and cannot be reliably captured using surrogate safety thresholds alone. Near-miss ground truth is therefore established through a trained panel of reviewers who manually evaluate candidate conflicts flagged by the AI system and potential false negatives identified via raw video review. Panelists follow established traffic conflict observation practices and manuals (Hankey et al., 2016; Parker & Zegeer, 1989; Laureshyn & Varhelyi, 2018), and final classifications are determined by majority vote to mitigate subjectivity and inter-observer variability.

Analysis clustered traffic conditions into meaningful groups, compared distributions of observed and detected volumes and speeds, and reported error metrics by cluster. For near-miss events, true positives, false positives, and false negatives were identified to compute precision, recall, and $F_1$-scores. The presentation provided insights into the reliability and limitations of AI-based safety analytics across varying traffic, lighting, and weather conditions, supporting agencies in deployment and policy decisions.

***Rapid, High-Resolution, Large-Scale Risk Analysis with Telematics Data***

*Richard Sharp (Cambridge Mobile Telematics)*

Localized analysis of telematics data collected from billions of trips presents a big data challenge. AI models can extract risky driving behaviors from raw telematics data, but that data must then be spatially and temporally aggregated in order to understand location-based risk and trends. The use of a global grid system, in our case H3, can make this task computationally efficient, robust to road network changes, and easily expandable to additional data sources such as crash records, offers higher resolution understanding of traffic and risk behavior than a road segment–based approach. It is possible to rapidly model crash risk with much more, and much more detailed, data than before.

Telematics data from vehicles and devices provide road safety insights with unprecedented timeliness, coverage, and resolution. Telematics data is relatively new and presents a big data challenge, yet it is possible to efficiently visualize and analyze traffic, crash data, and risk factors such as hard braking, speeding, and phone distraction. One may rapidly analyze spatial and temporal patterns of risk and correlate risk behavior with crash and contextual data. Leveraging this data allows road safety professionals to discover high risk locations or sudden changes in behavior, diagnose likely causes, and rapidly evaluate the effects of interventions in order to prevent hazards and improve safety.

This presentation explained how we utilize spatial indexing to address the big data challenge of aggregating petabytes of data from billions of trips to yield a high-resolution, interactive analysis tool with broad coverage. Example analyses of intersection risk and characterization of post-intervention behavior change demonstrate the capability.

Telematics data are hierarchically indexed and spatially aggregated using the H3 global grid system for performance, resolution, and flexibility. H3 and other systems (e.g., quadbin) transform basic spatial data manipulation from a geometry problem to an index lookup at which modern big data tools excel. Telematics data must be associated with the road network and map databases represent the road network with road segments. Segments offer an alternative index; however, road segment indices often lack a hierarchical structure (inhibiting performance), are often hundreds of meters in length or more (limiting spatial resolution), meet at regions of concentrated risk (intersections) making it difficult to confine analysis as desired, and indices change over time as the representation of the network is refined and as infrastructure is modified (complicating longitudinal analysis). Of course, properties of the road network such as functional class or speed limit are highly significant. These are incorporated by associating them with the spatial indexing system (it becomes a property of the representation, not ground truth). The use of H3 also simplifies the addition of other spatial data, such as crashes, allowing analysts and researchers to correlate behavior with outcomes and enrich the approach with contextual data as it becomes available.

Our approach is significantly accelerating new analyses, for example characterization of the change in risk behavior following an intervention. Crashes are, thankfully, rare events, and it can take months or years to measure a change in crash rate in a small area with confidence. Risky behavior, however, is much more common and is shown to be a leading indicator of future crashes. This allows one to characterize the change in risk behavior following an intervention and reveal whether a new improvement is working in the weeks immediately following installation. A recent example reveals changes to acceleration and speed after adding stop signs to a partially controlled or uncontrolled intersection.

Understanding and improving safety on the road requires us to account for a wide range of factors and significant complexity. New data sources and tools are quickly expanding our ability to discover, diagnose, and improve our roadways.

### *AI-Enhanced Load-Dynamics Sensing for Overturn Prevention and Critical Stability Control of Articulated Heavy-Duty Autonomous Trucks*

*Heng Wei (University of Cincinnati)*

Learning objectives:

- To obtain an understanding of the underlying mechanisms and causal logic of cargo-induced safety risks on curved roadway segments.
- To understand stability-control challenges in articulated heavy-duty autonomous trucks, particularly those associated with excessive yaw response, operating speed, and geometric constraints of horizontal curves.
- To understand key limitations in autonomous trucks' intuitive perception of cargo weight and center-of-gravity distribution, and to explore potential approaches for addressing their impacts on overturning and roadway-departure risks under adverse operating conditions.

In the United States, truck overturns account for approximately 4% of all fatal large-truck crashes. Although excessive speed is widely recognized as the leading cause, cargo-induced shifts in a truck's center of gravity represent a critical and often under-addressed safety factor. When heavy-duty trucks operate on steep cross slopes or negotiate curves at high speeds, total vehicle weight, including payload, can become unevenly distributed among the tires while centrifugal forces increase. Under such conditions, the center of gravity may shift beyond the outer wheel's support point, resulting in rollover. These risks are further exacerbated by adverse weather conditions such as rain, ice, or snow.

Experienced human drivers can often perceive these hazardous conditions and compensate through speed or steering adjustments. In contrast, autonomous trucks lack intuitive perception and, without real-time load sensing, suffer from reduced situational awareness. This limitation constrains their ability to make safe control decisions on curved or sloped roadways. To fill in this gap, the presenter's team has developed an innovative onboard intelligent LOad–center-of-Gravity sensing (i-LOGs) perception system mounted on axle beams of autonomous trucks (or heavy-duty trucks) that integrates onboard weighing, vehicle dynamics, and road-friction information to support rollover-awareness planning and control.

The system employs strain-based sensors to measure axle loads and accelerometer-based waveform sensing to capture lateral acceleration and estimate centrifugal forces. An integrated signal-processing unit applies AI-enhanced data modeling to quantify real-time payload distribution and center-of-gravity shifts, enabling diagnosis of outward leaning and potential rollover or departure risks during high-speed curve negotiation or poor road conditions.

In addition, this study also focuses on the critical stability control of articulated heavy-duty autonomous trucks, where a ranging sensor is deployed to conduct real-time, high-precision measurements of the relative yaw angle between the tractor unit and the semi-trailer. It is a core technical challenge in autonomous braking systems that when the relative yaw angle exceeds the vehicle-specific dynamic stability threshold and the integrated vehicle speed enters the corresponding critical velocity range, any active braking intervention will trigger an irreversible loss of control, culminating in trailer swing and subsequent rollover accidents.

The research findings are expected to establish a theoretical foundation for optimizing stability and safety control algorithms in autonomous articulated truck systems under varying loading states and roadway geometric conditions on curves, while also providing practical guidance for defining braking-prohibition thresholds in real-world operating scenarios.

The system supports both human and autonomous driving decisions while enabling continuous weight and stability monitoring without weighing-station stops, thereby improving logistics efficiency and reducing fuel and compliance costs. Successfully tested on heavy-duty trucks, the system demonstrates strong technical readiness, modularity, and compatibility with future autonomous freight platforms. When deployed at scale, the i-LOGs system forms a fleet-level crowdsensing network through the Weigh2x platform that is under development at the Institute for Urban Resilience to provide high-frequency, geo-tagged data on truck loading and roadway geometry.

***References***


Elvik, R. (2019). A comprehensive and unified framework for analysing the effects on injuries of measures influencing speed. *Accident Analysis & Prevention, 125,* 63–69. https://doi.org/10.1016/j.aap.2019.01.033

Hankey, J. M., Perez, M. A., & McClafferty, J. A. (2016). *Description of the SHRP 2 naturalistic database and the crash, near-crash, and baseline data sets*. Virginia Tech Transportation Institute.

Laureshyn, A., & Varhelyi, A. (2018). *The Swedish Traffic Conflict Technique: Observer's manual*. Lund University.

Parker, M. R., & Zegeer, C. V. (1989). *Traffic conflict techniques for safety and operations: Observer's manual* (FHWA-IP-88-027). Federal Highway Administration.

## Technical Session 10—Infrastructure-Based Strategies to Achieve Safe Mobility

[Session Based on Submitted Abstracts]

### *Corridor-Wide Smart Work Zone Implementation, Mitigation Efforts, and Evaluation*

*Susan Paulus (Lakeside Engineers)*

The Connecting 41 Construction Project represents Wisconsin's first corridor-wide smart work zone (SWZ) initiative, setting a precedent for how large-scale, multi-year reconstruction efforts can be managed more safely and efficiently. Success came from layering Intelligent Transportation System tools (queue warning systems, speed sensors, speed wizards), targeted enforcement, and coordinated efforts with first responders and contractors to create a holistic traffic management approach. Monthly reporting and speed data analysis allowed for continuous monitoring, identification of problem areas, and adaptive deployment of resources, ensuring the system evolved with corridor conditions. Outreach to motorists, contractors, enforcement personnel, and emergency responders ensured that all stakeholders understood how to interact with new technologies and protocols, reinforcing safe mobility through training and communication. The project demonstrates how innovative tools and coordinated strategies can reduce crashes, improve incident clearance times, and enhance mobility, offering a replicable model for other long-term corridor projects nationwide.

The Connecting 41 Construction Project represents one of the largest and most complex infrastructure undertakings in northeast Wisconsin. Spanning 23 miles of interstate, the project encompasses reconstruction of one major system interchange and 11 service interchanges. Construction began in 2024 and is scheduled for completion in 2030, with more than 30 individual projects planned along the corridor. Recognizing the scale, duration, and potential disruption associated with this effort, the Wisconsin Department of Transportation launched the state's first corridor-wide SWZ initiative in 2025. This pioneering effort was designed to enhance safety, improve traffic operations, and minimize impacts on motorists throughout the extended construction period.

The SWZ project was guided by three primary objectives:

- Reduce crash risk and severity by mitigating sudden slowdowns and unsafe driver behaviors.
- Improve traffic flow and minimize congestion across multiple, overlapping construction sites.
- Establish a framework for continuous monitoring, evaluation, and adjustment of traffic management strategies over the life of the corridor reconstruction.

The SWZ deployment utilized a comprehensive suite of intelligent transportation system technologies, including queue warning systems, speed wizards, portable changeable message signs, and speed sensors. These tools were strategically placed along the corridor to provide real-time information to drivers and encourage compliance with safe speeds. Monthly reporting was established to evaluate corridor speeds and system performance. Speed data were analyzed to identify recurring slowdowns, bottlenecks, and areas of prevalent speeding. Findings were shared with the Wisconsin State Patrol, enabling targeted enforcement where risks were highest.

Complementary mitigation strategies were introduced to strengthen the SWZ framework. These included aerial enforcement to monitor compliance, push bumper implementation to safely remove disabled vehicles, deployment of a freeway service team to assist motorists and clear incidents quickly, regular coordination meetings with first responders to ensure preparedness, and construction project closure coordination to minimize overlapping disruptions. Together, these measures created a layered approach that combined technology, enforcement, and collaboration.

Preliminary evaluations indicate that the SWZ project successfully reduced the frequency and severity of crashes associated with sudden slowdowns. Queue warning systems proved particularly effective in alerting drivers to unexpected congestion, while speed sensors and reporting mechanisms identified persistent speeding zones that required additional enforcement. The integration of enforcement data with system performance metrics allowed for adaptive placement of queue warning systems and more efficient allocation of patrol resources. Mitigation strategies such as freeway service teams and coordinated closures further reduced secondary crashes and improved incident clearance times.

Beyond technology and enforcement, this project underscores the importance of education and training to achieve safe mobility. Outreach efforts were embedded into the I-41 project, ensuring that motorists, contractors, and enforcement personnel understood how to interact with new technologies and coordinated strategies. Training sessions for first responders and enforcement teams improved operational readiness, while public education campaigns helped drivers anticipate and respond to dynamic work zone conditions. These educational components were critical in achieving compliance, fostering trust, and sustaining safe mobility throughout the corridor.

Equally important, the project highlights innovations to protect road users and deliver safe mobility. The integration of advanced intelligent transportation system tools, adaptive enforcement strategies, and rapid incident response mechanisms represents a forward-looking approach to safeguarding motorists during long-term construction. By combining innovative technologies with human-centered strategies, the SWZ and I-41 corridor team created a safer, more predictable environment for all road users.

This presentation provided background on the Connecting 41 Project, detail the implementation and evaluation of Wisconsin's first corridor-wide SWZ, and highlight the complementary strategies, including education, training, and innovations, that collectively improved safety, reduced congestion, and enhanced operations across the corridor. The findings underscore the importance of integrating technology, enforcement, collaboration, and education to manage traffic effectively during long-term reconstruction, offering a blueprint for future corridor-wide work zone management initiatives.

### *Bus Stop Typology Reveals Crash Risk Environments*

*Tolu Oke (University of Massachusetts–Amherst)*

Learning objectives:

- The typology of 13 distinct bus stop types, each with a unique crash risk profile, provides a framework for replacing generic safety measures with targeted solutions.
- Bus stops on mixed-use arterial corridors and in dense urban core locations have the highest crash risk, driven by multimodal concentration, proximity to and density of major destinations, and crosswalk prevalence.
- The infrastructure–safety paradox demonstrates that while formal safety treatments, such as crosswalks and signals, remain necessary, they are often associated with high-risk environments and high crash rates. The safety infrastructure itself thus serves as a proxy indicator for greater exposure risk.
- The success of low-infrastructure typologies characterized by narrow roads in achieving superior safety outcomes suggests that constraining traffic through design, rather than attempting to manage high volumes through control devices, may be the most effective long-term strategy.

Bus stops are critical nodes in public transit networks, yet a significant portion of crashes involving vulnerable road users occur near them. Traditional analysis methods overlook the complex spatial and operational patterns around bus stops that contribute to crash risk. Prioritizing bus stop safety is essential to advancing Vision Zero and Safe System initiatives to eliminate traffic fatalities.

This study develops a typology framework that classifies bus stops into distinct safety profiles to predict crash risk and guide targeted interventions. First, we fused multisource data on transit operations, crashes, road design, demographics, and built environment characteristics for 1,773 bus stops, generating 313 crash-relevant features. Then we applied explanatory factor analysis to extract 13 underlying components of crash risk based on these features. Using these factors, we fitted a Gaussian mixture model, which resulted in 13 distinct bus stop types. Finally, we trained extreme gradient boosting models to predict crash risk for each type. Interpreting the models via SHapley Additive exPlanations (SHAP) values, we identified the most influential crash features, assessed their impact, and proposed targeted countermeasures to inform effective safety interventions.

Proven safety countermeasures were matched to each typology based on top predictive features from SHAP analysis, ensuring interventions directly address specific crash risk factors. Priority should be given to locations with dense activity and infrastructure, including mixed-use arterial corridors and urban core areas, which exhibit elevated crash risks across multiple typologies. This reveals an inherent tension between transportation system efficiency and safety performance. For bus stops in these high-risk environments, pedestrian-focused countermeasures are recommended, including crosswalk visibility enhancements (reducing pedestrian crashes by up to 40%), pedestrian hybrid beacons (55% crash reduction), leading pedestrian intervals (13% reduction), rectangular rapid flashing beacons (47% reduction), and pedestrian refuge islands (56% reduction).

A critical finding is the infrastructure–safety paradox, where formal safety treatments like crosswalks and signals, while necessary, are often associated with high-risk environments and high crash rates. These features typically represent a response to pre-existing hazardous conditions characterized by high traffic volume, elevated speeds, and complex conflict points. The safety infrastructure itself thus serves as a proxy indicator for greater exposure risk rather than direct causal factors. Conversely, in narrow road environments, the built environment naturally calms traffic speed and volume, reducing crash frequency and severity without other safety interventions. Indeed, road diets have been associated with up to 47% reduction in crashes.

Our findings confirm that bus stop safety is inherently context-dependent, requiring typology-informed solutions rather than generic approaches. The framework demonstrates that crash risks emerge from complex interactions among roadway design, land-use patterns, and other features that vary across bus stop types. This typology-based framework offers a foundation for further research on bus stop safety and provides planners and decision makers with actionable guidance for targeted safety improvements that address the specific risk profiles of different bus stop environments.

### *Evaluating Pedestrian Route Choice and Delay at Pedestrian Hybrid Beacons on an Arterial Corridor*

*Abbas Sheykhfard (University of New Mexico)*

Learning objectives:

- Understand how pedestrian route choice and tolerance for delay influence the likelihood of using pedestrian hybrid beacons (PHBs) on arterial corridors.

- Learn how observed pedestrian behavior differs from gap-acceptance–based theoretical delay estimates and how this mismatch affects real-world safety outcomes.
- Identify the conditions under which PHBs function effectively as spot treatments and why they may have limited impact when positioned far from pedestrian trip generators.
- Recognize behavioral barriers (such as unwillingness to detour or tolerate additional delay) that reduce pedestrian compliance with PHBs despite high driver yielding rates.

U.S. pedestrian fatalities are disproportionately located at uncontrolled midblock locations on arterial roadways. While PHBs were designed to provide pedestrians with controlled crossing opportunities in such situations and have been shown to have relatively high driver compliance, few studies have investigated pedestrian routing behavior and willingness to use PHBs. This observational study evaluates pedestrian route choice and delay before (389 routes) and after (393 routes) PHB installations at two locations on a seven-lane arterial in Albuquerque, NM. While pedestrian delays for uncontrolled midblock crossings at the two study locations were estimated at 64.4 seconds and 78.8 seconds using gap acceptance theory, pedestrians were observed to only tolerate a maximum PHB delay of 49.8 seconds (87.2 feet of deviation for the pedestrian) and a mean delay of 47.2 seconds (76.8 feet of deviation), with only 12 (10.2%) of the pedestrians that could have walked out of their way to use the PHB doing so. Of the 72 pedestrians that crossed the road and walked by one of the PHBs on their shortest path, only 15 pedestrians (20.8%) actually utilized a PHB. The findings emphasize that PHBs may be an effective spot treatment when placed in close proximity to pedestrian trip generators but may be less effective at improving pedestrian safety on the corridor level.

### *A Cross-Era Comparison of Roundabout Driving Behavior from SHRP2 NDS to Connected Vehicles Data*

*Minsoo Oh (National Academies)*

Learning objectives:

- Can we still trust decade-old trajectory data to represent today's roundabout driving behavior, or do we need to discard them when newer connected-vehicle data exist?

- Using a common route-alignment and profiling pipeline, we find that speed and longitudinal/lateral acceleration profiles along approaches and circulatory segments are highly and statistically similar across eras (high Pearson correlations), but the per-trip rate of risky maneuvers is much higher in the Second Strategic Highway Research Program Naturalistic Driving Study (SHRP2 NDS) than in connected-vehicle deployment (2025 CV) data.
- This implies that older trajectory datasets remain useful for typical behavior (speeds and accelerations) but can overestimate current risk levels, so they should be used cautiously for safety analysis and model calibration without temporal adjustment.

Are decade-old SHRP2 NDS data still informative for understanding today's driver behavior at roundabouts, or have recent connected-vehicle deployments rendered them obsolete? This study addresses this question by comparing driver behavior recorded during the early roundabout adoption era (SHRP2 NDS; 2010–2013) with vehicle trajectories from 2025 CV. We analyze speed and longitudinal/lateral acceleration profiles. In SHRP2 NDS case, trips are clustered by origin–destination geometry at each intersection to separate route variants and to distinguish pre- and post-roundabout adoption patterns. For both cases, we construct optimal route centerlines by median sampling of trip traces and define trip reliability by comparing individual trajectories to these centerlines (95th-percentile distance threshold). Reliable trips are snapped to optimal routes to estimate along-route distances and compute aggregated speed and acceleration profiles. Risky maneuvers defined by thresholds for longitudinal deceleration/acceleration, lateral acceleration, jerk, steering evasive maneuvers, and full stops or slow movement are detected at the trip level and localized along routes. Results indicate that speed and acceleration profiles along roundabout approaches and circulatory segments are broadly similar between the SHRP2 NDS era and the 2025 CV era, as confirmed by Pearson correlation analysis showing high and statistically significant correlations between the two periods. However, the per-trip occurrence rate of risky maneuvers was substantially higher in the SHRP2 NDS case than in the 2025 CV trajectories. The proposed pipeline offers a reproducible method for cross-dataset trajectory alignment, route-level behavioral profiling, and event localization, and it provides evidence on when and how older trajectory datasets can still be used to represent contemporary roundabout driving behavior.

### Technical Session 11—The Challenges of Implementing Large-Scale Self-Driving Vehicles

[Session with Invited Speakers]

*Daniel McGehee (University of Iowa)—Moderator*

Drawing on the analogy between automated driving and vaccination, this panel examined how society evaluates emerging safety technologies whose failures are highly visible despite growing benefits. Automated driving systems have demonstrated promising safety performance in a number of settings, yet public acceptance is often shaped less by aggregate safety outcomes than by rare, highly publicized failures. As crashes become less frequent, attention increasingly focuses on the remaining adverse events rather than the much larger number of crashes prevented. This panel explored how human psychology, media coverage, risk perception, and differing standards applied to human and automated drivers influences public trust in automation. Implications for safety policy, deployment strategies, risk communication, and the future evaluation of automated vehicle performance are discussed. Dr. McGehee, director and professor at the University of Iowa organized this session and served as its moderator.

*Jessica Cicchino (Insurance Institute for Highway Safety)*

Jessica Cicchino used the vaccine analogy to highlight four ways to interpret the current state of automated vehicle safety. First, early success in limited settings does not justify broad claims about overall safety, since current automated vehicle performance data come from constrained environments and do not yet represent the full range of real-world conditions. Second, like vaccines, automated vehicles are part of a larger system, and their impact depends on how they interact with other countermeasures and travel behavior. Prioritizing automated vehicles should not draw attention away from proven strategies, and changes like increased vehicle miles traveled or deadheading could reduce net safety benefits. Third, automated vehicle systems are not interchangeable, as safety and effectiveness vary across developers, and confusion about what qualifies as true automation can create additional risks. Finally, adoption will not be universal due to both user preferences and practical limitations of current deployment models, which constrains the overall population-level impact even as the technology improves.

*Information from other presentations by speakers participating in this session was not provided for inclusion in this conference proceedings.*

## Technical Session 12—Layered Speeds: Safe System Speed Management in Washington State

[Session with Invited Speakers]

*Alex DuVall (Toole Design)—Moderator*

Alex DuVall, deputy office director of Toole Design, served as the moderator and framing presenter for the session, introducing the concept of Safe System speed management and establishing the context for Washington State's leadership in this area. She explained the shift from traditional speed limit setting based on observed driver behavior (the 85th percentile speed) to a Safe System approach that prioritized survivability and injury minimization through context-sensitive target speeds. Ms. DuVall highlighted Washington's statewide efforts to integrate Safe System principles into transportation policy, design, and speed management, including the recent publication of WSDOT's *Safe System Approach for Speed Management*. Through examples from communities such as Bainbridge Island and Tacoma, she demonstrated how target-speed-based planning influenced roadway design, policy, and implementation, while outlining a practical process that local agencies could use to understand roadway context, establish target speeds, implement changes, and monitor outcomes.

### *Getting to Safe System Speeds: Programmatic Approach to Modifying Speed Limits*

*Jon Pascal (Transpo Group)*

Jon Pascal focused on the programmatic and policy-driven aspects of achieving Safe System speeds across local jurisdictions. Drawing on his experience as a transportation consultant and member of Washington's Active Transportation Safety Council, Mr. Pascal examined the relationship between vehicle speed and crash severity, and the need for communities to reconsider legacy speed limits that no longer reflected current land-use patterns or travel behaviors. Through case studies from Seattle, Bainbridge Island, Lake Forest Park, Bellingham, and Kirkland, he demonstrated how agencies adopted comprehensive speed limit methodologies that incorporated roadway context, multimodal activity, and safety outcomes rather than relying solely on speed data. Jon also discussed implementation barriers like public perception, agency capacity, outdated standards, and limited research, and concluded with recommendations for modernizing speed-setting policies, expanding training and guidance, and supporting jurisdiction-wide speed management efforts consistent with Safe System principles.

### *Tacoma Vision Zero and Safe Speeds*

*Carrie Wilhelme (City of Tacoma)*

Carrie Wilhelme presented Tacoma's experience implementing Safe System speed strategies through the city's Vision Zero program. She described how Tacoma translated its 2020 Vision Zero resolution into actionable speed management policies, including reducing residential street speed limits from 25 mph to 20 mph and lowering arterial speed limits within neighborhood business districts from 30 mph to 25 mph following engineering studies. Ms. Wilhelme explained the analytical framework used to support these decisions, combining speed and volume studies, crash analysis, high-risk network evaluations, and context-based methodologies such as the National Association of City Transportation Officials' City Limits approach. She shared measurable results showing reductions in 85th-percentile operating speeds and high-end speeding, demonstrating that signage and education alone could influence driver behavior when conditions were appropriate. Her presentation also highlighted Tacoma's broader commitment to Safe System principles through design manual updates, transportation policy changes, planned street redesigns, and expanded automated speed enforcement, emphasizing that speed reduction was an ongoing process requiring engineering, education, and policy alignment.

### *Getting to Zero: Saving Lives, Safe System Speeds*

*John Milton (Washington State Department of Transportation)*

John Milton provided the statewide perspective on Safe System speed management and WSDOT's efforts to reduce fatal and serious injury crashes through speed-related policy and design changes. He framed speed as a critical factor influencing crash severity and described how WSDOT's Safe System approach addressed exposure, crash likelihood, and injury severity, with speed management serving as a primary tool for reducing crash forces. Mr. Milton outlined several initiatives underway within WSDOT, including Safe System speed working groups, context classification systems, design manual updates, severity-based speed-setting methodologies, and the development of default Safe System target speeds tailored to different roadway and land use contexts. He emphasized that meaningful speed reductions often require incremental, system-wide changes that combine speed management, roadway redesign, and crash-type mitigation strategies. The presentation concluded with results from Washington's Highway Speed Camera Pilot Program, which demonstrated substantial reductions in excessive speeding, illustrating how policy, engineering, and technology worked together to advance the state's goal of eliminating traffic fatalities and serious injuries.

## Technical Session 13—The Impact of Vehicle Design on Driver Behavior, Visibility, and Safety Across Vehicle Sizes and Types

[Session with Invited Speakers]

*Liz Pulver (State Farm Insurance)—Moderator*

This panel, moderated by Liz Pulver from State Farm Insurance, presented recent research on how vehicle design impacts driver behavior and visibility to influence traffic safety outcomes. While larger vehicles are often perceived as safer for their occupants, research indicates they may contribute to higher overall fatality rates, reduced driver visibility, and changing driver behavior.

### *Driver Behavior and Crash Severity: A Comparative Analysis Between Light Pickup Trucks and Passenger Cars*

*John Lenneman (Toyota)*

A University of Iowa and Toyota Collaborative Safety Research Center project investigated the factors contributing to an observed discrepancy where light pickup trucks exhibit lower non-fatal injury rates but significantly higher fatal injury rates compared to passenger cars, SUVs, and vans. While the ratio of injuries to fatalities is similar for cars, SUVs, and vans, light pickups show a disproportionately high fatality rate relative to their injury rate. Using 2021 and 2022 FARS and Crash Report Sampling System data, rate ratios were computed for pickups relative to cars across levels of occupant injury severity. Variables were classified across driver behaviors, driver characteristics, and crash circumstances, with impairment, distraction, speeding, restraint use, weather conditions, and driver age all examined.

Sleep-impaired driving in light pickups increased with injury severity, reaching about 2.3 times the rate of passenger cars in fatal crashes. Alcohol involvement and unrestrained driving both climbed with crash severity, consistently showing higher rates for pickup drivers. Speeding, reckless driving, and careless driving did not occur at higher rates in pickups compared to cars. Young drivers in pickups had elevated rates of serious injury, and crashes in winter conditions were coded for pickups at much higher rates, with that gap more than doubling in serious and fatal outcomes. A multifactorial analysis would help disentangle the individual and combined contributions of these factors and clarify what is specifically driving the fatality rate mismatch in light pickups.

### *Analyzing Naturalistic Driving Data to Understand the Relationship between Vehicle Size, Specifications, and Driver Behavior*

*Sheila "Charlie" Klauer (Virginia Tech Transportation Institute)*

To further expand on the relationship between vehicle size, vehicle specifications, and driver behavior, a Virginia Tech Transportation Institute and Toyota Collaborative Safety Research Center project will utilize naturalistic driving data to conduct a deep dive into driver behavior by vehicle specifications. Specifically, this study used data from the Virginia Tech Transportation Institute Level 2 Naturalistic Driving Study (L2 NDS). The dataset included 233 participants who were enrolled across five locations. Data were collected from 2019 to 2022, with each vehicle initially being enrolled for around 18 months. Participants ranged from 18 to 76 years old and were generally balanced by gender.

Preliminary results indicated that significant crash and near-crash (CNC) rates were observed when using a threshold of 3,450 lbs. as an observed breakpoint for classifying vehicles by weight. When vehicles were classified as light vehicles below 3,450 lbs. and heavy vehicles at or above 3,450 lbs., the difference in CNC rates was most pronounced. Light vehicles had a CNC rate of 2.58 events per 1,000 hours, whereas heavier vehicles had 3.72 events per 1,000 hours. This represented a 44% higher CNC rate for the heavier class. This was a preliminary analysis where this threshold will now be used to compare the behaviors of the drivers of these vehicle groups to assess whether we also see significant differences in prevalence of driver behaviors such as: secondary task engagement, drowsiness, speeding behaviors, etc. Additionally other specifications such as blind zone areas as well as SAE Level 2 partial driving automation status will also be incorporated in future analyses.

### *Determining Real-World Safety Consequences of Expanding Blind Zones*

*Alex Epstein (Volpe Center)*

The risk of injury or death to vulnerable road users—such as pedestrians and cyclists—has rapidly increased over the past 20 years. In response, a collaborative safety research initiative involving the USDOT Volpe Center, IIHS, the Massachusetts Department of Transportation, and the Santos Family Foundation investigated how evolving vehicle designs structurally degrade direct driver visibility. Adapting blind zone measurement methodology developed by IIHS and advanced driving simulators, we measured and mapped the changes in physical blind zones of both heavy-duty commercial trucks and popular light-duty passenger vehicles. To determine the real-world safety consequences of these expanding blind zones, we applied an odds ratio methodology to multidecade crash data from FARS, the Not-In-Traffic Surveillance System, and national vehicle registration records. A longitudinal analysis spanning 1997 to 2023 revealed that direct visibility has dramatically worsened across successive generations of vehicle models due to changing body styles; the percentage of visible area within a 10-meter radius dropped from 56% to 28% for the Chevrolet Suburban and plummeted from 68% to 28% for the Honda CR-V. This systematic decrease in direct vision was found to correlate with intersection crash risk. Specifically, preliminary findings demonstrate that the odds of pickup trucks fatally striking pedestrians at intersections when turning—as opposed to traveling straight—have increased by more than threefold since the late 1990s ($p$ = 0.0001). Furthermore, our driving simulator testing established that commercial truck operators reacted to stop for a pedestrian in a signalized crosswalk at a full 100% rate compared to only 13% when the pedestrian was occluded by the vehicle's leading edge. While advanced 360-degree camera systems offer promising technological mitigations, the Hierarchy of Controls framework dictates that eliminating the blind zone hazard to the greatest extent possible through downsizing vehicles and mandating minimum levels of direct vision in vehicle design, are likely the most effective engineering solutions, even when drivers are actively distracted.

***Driver Visibility in Vehicle Design Over Time: Blind Zone Evaluation Methodology and Results***

*Becky Mueller (Insurance Institute for Highway Safety)*

In the United States, pedestrian fatalities have increased 78% from 2009 to 2023. Concurrently, U.S. consumers are choosing larger passenger vehicles, such as SUVs and pickups, more than ever. These larger vehicles are associated with a 94%–270% increase in left turn pedestrian crashes compared to passenger cars. IIHS engineers sought to determine if larger blind zones in SUVs and pickups may contribute to driver's inability to see and react to pedestrians in these kinds of crashes and developed a measurement method to provide comparative blind zone maps for different vehicle models. This method including rig and measurement protocols are being evaluated by other organizations such as the European New Car Assessment Programme, Transport Canada, NHTSA, and the USDOT Volpe Center for potential use in research and evaluations. An initial research study has found that longer distances to front visible ground, larger front left blind zones and smaller front fields of view on vehicles are associated with greater odds of a vehicle's involvement in a left turn pedestrian crash. IIHS plans to measure all new vehicles arriving at the Vehicle Research Center to build a library of blind zone maps that can be used by IIHS and other stakeholders for evaluating different kinds of real-world crashes where blind zones may play a role. In the future, IIHS plans to provide comparative blind zone map data to consumers and will also promote technologies that can give the driver insight into potential threats in their blind zones through indirect vision aids.

## Technical Session 14—Safe System for Safe Mobility

[Session Based on Submitted Abstracts]

### *Applying a Safe System Approach to Child and Youth Active Travel*

*Nancy Pullen-Seufert (University of North Carolina)*

Learning objectives:

- Describe the importance of disaggregating crash data by age group
- Articulate at least three outcomes by cities post-quickbuild installation
- List three considerations for state and local speed camera programs

Fundamental to the Safe System approach is the acknowledgment that humans make mistakes. Children, with their limited experience around traffic, particularly need environments that allow mistakes to be made that do not result in paying with a life. School zones, designated areas around schools where road owners permit reductions in traffic speeds, provide an important opportunity to slow speeds and create more space for walking and biking, and can ultimately serve to help shift safety culture.

This presentation described three strategies cities use to implement a Safe System approach to benefit children who are walking and biking. The first strategy is systemic safety analysis of child pedestrian crashes. The National Center for Safe Routes to School's demonstration project with the City of Philadelphia resulted in a prioritized list of road segments and intersections based on traffic volume, speed, and number of lanes. Importantly, disaggregating data by age group also revealed that the city's high injury network did not address the majority of child crashes.

Second, quick-build projects are used by communities around the country to address urgent safety needs, test materials and build public and elected official support. We have worked with eight communities ranging in size from a tribal community with 3,200 people to a city of 500,000 people, to implement low cost quickbuild projects in places where youth and families benefit. This presentation included an overview of project results and implications for other communities, both quantitative and qualitative in nature. For example, Macon-Bibb County, Georgia, measured a significant reduction in crash risk at the project site and also found that having the presence of both students and high-level education partners helped build trust and community buy-in for removing a travel lane using flexible delineator posts approaching a crossing.

Finally, a growing number of states are allowing use of safety speed cameras in school zones. This strategy effectively reduces both speeds and crash risk. An overview of issues with recent camera law adoption in North Carolina was presented. In summary, preventing youth pedestrian and bicyclist crashes requires specific strategies tailored to the developmental needs and travel patterns of this age group, all of which fits into the Safe System Approach.

### *Vision Zero, Innovation, and Progress: An Inspiring Example from Madison*

*Yang Tao (City of Madison, Wisconsin)*

Learning objectives:

- Innovation is key to making progress in Vision Zero initiatives.
- How to effectively advance the Safe System approach.
- How a Complete Streets framework can help make the mobility system safer.
- How advanced transportation technologies can/should be a critical part of safe mobility.
- Provide an inspiring example that Vision Zero is possible in the United States.

The City of Madison launched an innovative Vision Zero initiative in 2020 after working closely with Bloomberg Associates through a Havard Kennedy School grant program. Since that, Madison has been innovating to improve safety of its mobility system and moving towards its goal of eliminating all traffic fatalities and serious injuries while increasing safe, healthy, and equitable mobility for all road users.

Madison has been leading the country in promoting the Safe System approach, exchanging ideas and collaborating with other cities across the country, improving public engagement such as through its new Let's Talk Streets program, implementing a new infrastructure program called Safe Streets Madison, pioneering new speed limit setting and speed management practices, advancing its Complete Green Streets agenda, securing over $30 million of safety-related federal grants, and implementing advanced transportation technologies in improving safety.

Madison is making significant progress towards its goal of Vision Zero. Data show that traffic fatalities on City of Madison owned and controlled roadways have reduced by 58% since Vision Zero Madison started in 2020. Madison's achievements have been recognized by many national organizations such as the National League of Cities, National Association of City Transportation Officials, Institute of Transportation Engineers, and Vision Zero Network. Dr. Tao oversees Madison's Vision Zero work, and in the presentation, he covered Vision Zero, the innovation, the progress, and the lessons learned, using Madison as an inspiring example that Vision Zero is possible in the United States.

### ***Leveraging GPS-Based Probe Data to Accelerate System-Wide Safe Speed Management***

*Reetu Pethani (Vision Zero Network)*

Learning objectives:

- Understand the critical role of speed in crash severity and the importance of reducing excessive speeds to protect vulnerable road users
- Recognize the limitations of traditional crash data and the value of leveraging GPS-based probe data for proactive, system-wide speed management strategies
- Learn how data-driven methodologies can be applied to evaluate the effectiveness of traffic safety interventions, including before-and-after and comparative analyses using road segment speed profiles
- Explore how cities can use telemetry data to scale successful speed management interventions from localized high-injury areas to broader geographic regions, improving overall traffic safety

Speed is the most deterministic factor in the severity of a crash. It is well established that crash risk is a product of both the likelihood of a crash occurring and its resulting severity—and speed increases both. This relationship holds true for all crashes, including those that involve vulnerable road users such as pedestrians and bicyclists. Unfortunately, when a motor vehicle strikes a vulnerable road user, excessive speed is often deadly.

A Safe System approach to traffic safety calls for system-wide adoption of safety treatments that proactively mitigate the impact of motor vehicle crashes. This requires data-driven strategies, yet traditional reactive crash data is not sufficient to accelerate the implementation of proven speed-management interventions. To address this limitation, cities are increasingly turning to telemetry data sources, including anonymized GPS-based probe data from connected vehicles and connected devices.

The Vision Zero Network is partnering with INRIX; the City of Bellevue, Washington; and the City of Detroit, Michigan, on a research project to demonstrate the value of probe data. INRIX is providing road-segment-level data for both cities, including hourly vehicle volumes, speed-distribution profiles, and relative indices of vulnerable road-user activity. The two cities have implemented a range of safety interventions and are sharing detailed information on the locations of road reconfigurations, speed humps, roundabouts, mini traffic circles, parking striping, raised crosswalks, refuge islands, and reduced speed limits.

As a demonstration project, the methodology is straightforward. For example, speed-distribution data (such as the percentage of vehicles exceeding the posted speed limit and the 85th percentile speed) at 31 treatment road segments in Detroit will be compared with corresponding untreated segments. This analysis will indicate whether these safety interventions measurably reduced speeds relative to the comparison locations during the second quarter of 2025. Select pairs of these segments will also allow for before-and-after analyses to assess whether significant reductions in speed were achieved.

On the other hand, Bellevue implemented a reduction in speed limits—from 25 mph to 20 mph—on local streets in three neighborhoods (Surrey Downs, East Bellevue Greenway, and Eastgate) before 2022. Since INRIX data is not available before 2023, before-and-after analysis is not possible. However, published information shows that all three areas successfully prevented high-end speeding, defined as vehicles traveling at or above 30 mph. Therefore, we will conduct contemporary comparisons using two approaches: (a) speed-distribution comparisons between treatment and matched local road segments, and (b) neighborhood-level comparisons of overall speed distributions. This will help evaluate the broader dispersion effects of safe-speed strategies across larger areas.

In sum, this project illustrates how telemetry data such as GPS-based probe data can be used to validate whether speed-management strategies are achieving their intended purpose: reducing excessive speeds. By leveraging these data sources, cities can extend successful interventions beyond high-injury networks to broader geographic areas where probe data documents excessive speed, ultimately improving safety system-wide.

### *Effectiveness and Equity of California's First Automated Speed Enforcement Program: Evidence from the San Francisco Pilot*

*Matthew Raifman (University of California–Berkeley)*

Learning objectives:

- Preliminary results from a California's first speed camera pilot suggest that automated enforcement is highly effective at reducing speeds
- Preliminary results from the San Francisco pilot do not suggest that the program's cameras constitute an undue burden on residents living near the camera locations
- The program's speed camera placements are generally equitable with regard to median income and race/ethnicity demographics compared to the city at large
- Telematics can be used for evaluation of speed camera programs

Speeding is a leading cause of traffic crashes resulting in fatalities or serious injuries in the United States, as the probability of injury increases exponentially with striking vehicle speed. Automated speed enforcement cameras are increasingly recognized as a key intervention to reduce travel speeds. Following the passage of Assembly Bill 645 in 2023, San Francisco became the first city in California to implement a pilot speed camera program. It began issuing violations for vehicles traveling 11 mph or more over the posted limit on August 5, 2025. This study seeks to rigorously evaluate the effectiveness of San Francisco's speed camera program using telematics data in a quasi-experimental research design and assess the equity implications of the speed camera installation. In doing so, we hope to generate policy-relevant traffic behavior insights that will be of value to the subsequent rollout of speed camera programs in California and across the United States, as well as demonstrate how passively collected data can be used to conduct ex-post evaluations.

To evaluate the program, we utilize INRIX vehicle telematics data and speed camera citation records, including cited vehicle registration zip code. The analysis implements a difference-in-differences approach with time and location fixed effects to adjust for site-specific characteristics and systemwide activity shifts. Effectiveness is measured by changes in mean and median speed, as well as the share of vehicles exceeding the limit, and compared against both non-selected candidate locations and synthetic controls. Equity is assessed by comparing the income and demographics of the zip codes of camera locations to the city at-large and analyzing the share of citations issued to vehicles registered to locations near the camera locations.

Preliminary results from January to October 2025 indicate the program is effective at reducing the share of vehicles exceeding the speed limit. During the three months before the program was implemented, 33% of vehicles exceeded the posted speed limit at the camera treatment locations. During the initial citation period from August to October 2025, the share of vehicles that were speeding at these locations fell to 26%, a 21% decrease in speeding behavior. After adjusting for confounding using our quasi-experimental design, we found that the share of vehicles exceeding the speed limit decreased by 2.5 percentage points (95% CI: 1.6–3.2) during the warning period at camera locations and 5.2 percentage points (95% CI: 3.9–6.6) during the initial citation period relative to synthetic controls. The impact of the program on speed appears to be more substantial for camera locations on roads with higher posted speed limits.

Our equity analysis found that cameras were located in zip codes with a median income ($139k), similar to the city-wide average ($141k), though these areas tended to have a slightly smaller share of population that was non-Hispanic white (34.8% vs 37.5% for the city) and higher share of population that was non-Hispanic Asian (35.5% vs 34.7%) and Hispanic (18% vs 15.9%), however, these differences tended to be within the margin of error for Census surveying. Zip codes with camera locations did not appear to carry an undue burden; only 7% of violations occurred within the same zip code as the camera location on average. Approximately 50% of violating vehicles were registered within San Francisco city limits.

## Technical Session 15—Driving Behaviors and Safe Mobility

[Session Based on Submitted Abstracts]

### *Is In-Vehicle Technology Better Than Humans at Identifying Alcohol Impairment in Simulated Driving?*

*Angela Eichelberger (Insurance Institute for Highway Safety)*

Learning objectives:

- The audience gained an understanding of different approaches to measuring alcohol impairment in vehicles.
- The presentation discussed how specific eye metrics relate to breath alcohol levels and driving performance, as well as how these metrics compare to observed driving cues used by law enforcement in identifying impairment.

Currently, in-vehicle technology is being developed to identify alcohol impairment among drivers using one or more methods, such as measurement of alcohol in a driver's breath or tissue, physiological measures, and/or behavioral indicators. This study focus on the accuracy of eye metrics in identifying alcohol impairment and will compare eye-based predictions to those by law enforcement officers.

Thirty-six healthy adults participated in a baseline-controlled within-subjects study with five breath alcohol concentration (BrAC) conditions (0.000, 0.100, 0.085, 0.070, and 0.055 g/210 L). In each condition, participants drove on a simulator integrated with a Driver Monitoring System (DMS) camera that measured several eye metrics (e.g., eye opening, pupil size, gaze). Law enforcement officers reviewed videos of participants and evaluated them for indicators of impairment. Logistic regression models predicting alcohol thresholds (≥ 0.05 and ≥ 0.08 g/210 L) and general linear models predicting driving performance, measured as standard deviation of lane position, were used to evaluate three sets of predictors: observed driving cues and ratings by officers, eye metrics from the DMS, and all predictors.

Both the officer and DMS models provided a fair level of accuracy when predicting BrAC ≥ 0.05 (area under the receiver operating characteristic curve [AUROC] = 0.75), and both models had more difficulty predicting BrAC ≥ 0.08 (AUROC = 0.64 for officer and 0.63 for DMS). Models combining all predictors improved accuracy (AUROC = 0.81 for ≥ 0.05 and 0.69 for ≥ 0.08). Regarding the prediction of driving performance, the DMS model accounted for more variance compared with the officer model (36% vs. 22%), and the combined model accounted for 45% of variance.

Regarding the prediction of alcohol thresholds, the study demonstrated that eye metrics from a DMS camera provide a similar level of accuracy compared with driving cues and ratings by law enforcement officers. If a high level of accuracy is desired in making a determination of alcohol impairment, none of the models tested would be sufficient without additional confirmation.

### *Temporal Trends in Risky Driving Behavior: Insights from a National Representative Survey, 2019–2024*

*Xi Zhang (AAA Foundation for Traffic Safety)*

Learning objectives:

- Understand the temporal trends of different risky driving behaviors.
- Describe how latent class analysis can be used to identify driving profiles.
- Gain skills to use survey data to evaluate driver behavior.

Summary: Roadway fatalities continue to be a persistent challenge in the United States. NHTSA projected 39,345 traffic-related deaths in 2024 and 17,140 deaths in just the first half of 2025. While multiple factors contribute to these fatalities, risky driving behaviors stand out as a particularly significant contributor. Behaviors such as speeding, alcohol impairment, and failure to wear seat belts contribute to tens of thousands of fatalities each year.

Promoting safer behaviors offers significant potential to reduce deaths. Although transportation agencies have implemented various countermeasures to address risky driving behaviors, it is unclear whether the overall prevalence of these behaviors has shifted over time. Monitoring these patterns helps evaluate the effectiveness of collective safety efforts, identify emerging threats, and establish benchmarks for future interventions.

The objective of this study is to examine how risky driving profiles have changed over time using the nationally representative, probability-based Traffic Safety Culture Index survey. For more than a decade, the AAA Foundation for Traffic Safety has surveyed U.S. drivers annually to measure self-reported behaviors. Data from 2019 to 2024 were analyzed. Thirteen risky driving behaviors, including distracted driving, speeding, impaired driving, and other risky behaviors, were included. A latent class analysis with survey year as the covariate was conducted to identify underlying driving profiles and assess temporal changes.

The results indicated that phone use with hands-free technology was the most frequently reported behavior, cited by 55% to 64% of respondents across survey years. Speeding and aggressive driving behaviors also remained relatively widespread. In contrast, impairment-related behaviors were less common and remained stable, with fewer than 10% of drivers reporting them consistently from 2020 to 2024. Moreover, the latent class analysis identified five driving profiles based on self-reported frequency and

types of risky behaviors. The safest drivers, who reported no or very few risky behaviors, consistently represented the largest group. Drivers who engaged in almost all risky behaviors had the smallest profile and showed a declining trend. Speed-prone drivers made up the second-largest group. The likelihood of being classified as distracted increased slightly over time, and drivers became increasingly likely to fall into the distracted-and-aggressive driving profile.

Recognizing these trends helps policymakers and safety professionals better understand the collective effectiveness of current strategies. This understanding can inform future interventions aimed at reducing risky driving behaviors and improving roadway safety.

### *Beyond Anger: Exploring The Role of Fear, Anxiety, and Pleasure in Aggressive Driving*

*Rebecca Steinbach (AAA Foundation for Traffic Safety)*

Learning objectives:

- Gain a deeper understanding of the role of different emotions in aggressive driving behavior
- Recognize links between emotions and motivations for aggressive driving
- Appreciate the potential for aggressive driving countermeasures that address emotions other than anger

Aggressive driving is a serious threat to public safety and contributes to a substantial number of road crashes each year. Worryingly, recent work from the AAA Foundation for Traffic Safety found this social phenomenon is increasing. Much of the current literature regarding the relationship between emotions and aggressive driving largely focuses on anger and related emotions such as frustration and annoyance. However, AAA Foundation for Traffic Safety's report indicates a need to consider a broader range of emotions. Using qualitative data generated from eight focus groups with 53 drivers and quantitative data generated from a national survey of 3,020 drivers recruited from a probability-based panel, this presentation explores the role of emotions in aggressive driving. Implications for countermeasure design are discussed.

Among focus group participants, feelings of anger and frustration were universal, but beyond these usual suspects, drivers discussed a wide array of other emotions. These emotions mapped onto motivations for aggressive driving in ways that may be useful for countermeasure development. Many drivers reported feelings of fear due to the unpredictability of other drivers and perceived threats to safety. Avoiding these threats was an explicit motivation for driving aggressively. Relatedly, anxiety was a palpable emotion throughout focus group discussions. Participants reported feeling anxious due to a lack of control in chaotic driving environments. More implicitly, claiming control over these environments was a common motivation to engage in aggressive driving behaviors. Unexpectedly, drivers also spoke of the pleasure of aggressive driving; the "thrill" of cutting up another driver, the "fun" of racing friends on highways, and the "intoxication" of the open road.

In the national survey, drivers were asked to reflect on the last time they drove aggressively and report whether they felt certain emotions. While many drivers reported feelings of annoyance (72%) and anger (48%), feelings of anxiety (49%) and fear (35%) were also very common. A substantial proportion of drivers reported more positive emotions such as feeling calm (37%) or empowered (17%). Drivers were also surveyed on their motivations to drive aggressively. Drivers resonated with many motivations linked to emotions. The motivation to avoid dangerous situations, and its close links with fear, was particularly salient. Drivers also reported motivations compatible with anxiety and pleasure, with 15% of drivers indicating that "feeling more in control" was a reason they drove aggressively at least sometimes and 11% of drivers indicating they drove aggressively "because it's fun" at least sometimes.

These results have important implications for the development of countermeasures to reduce aggressive driving, which traditionally have focused on mitigating anger behind the wheel. Minimally, countermeasure development could consider addressing other emotions. Evidence on mindfulness practices in reducing anxiety is promising; however, more work is needed to examine whether these can be effective in reducing aggressive driving. Addressing pleasure in aggressive driving is more challenging, but countermeasures could potentially highlight the pleasures of calm, courteous driving, while re-directing thrill-seeking driving behaviors to other environments such as racetracks, simulators, or autocross events.

### *Slow Down Move Over Laws: National Survey of Drivers' Knowledge and Behavior*

*Xiaolu Bai (AAA Foundation for Traffic Safety)*

Learning objectives:

- Public knowledge on Slow Down Move Over law is poor
- In states that apply these laws to disabled vehicles, awareness is very low
- The awareness of requirements to slow down is much lower than the awareness of requirements to move over
- Self-reported behavior is largely unrelated to actual laws, but more strongly related to people's belief about the laws
- More public education is needed, especially highlighting the requirements to slow down and the types of vehicles the law applies to

FARS data showed that more than 2,000 people were struck and killed outside disabled vehicles between 2019 and 2023, including stranded motorists, roadside workers, and emergency responders. Slow Down, Move Over laws are intended to protect these groups by requiring drivers to change lanes and/or slow down when approaching a roadside vehicle or worker. Although specific provisions differ across states, all 50 states have enacted some form of this law. Yet substantial gaps remain in how drivers understand the law and how they behave in real roadside situations.

These issues were examined in a nationally representative survey of 5,887 U.S. drivers. In the survey, drivers were presented with short computer-generated videos depicting an Interstate scenario where traffic passed a disabled vehicle, tow truck, or police car on the shoulder. After viewing each video, drivers reported how they last behaved in a similar situation, how they believe other drivers behave, what they understand the law requires, and what actions they believe drivers should ideally take.

Overall, 95% of drivers reported either slowing down or moving over the last time they encountered a tow truck, 95% did so for a police car, and 89% did so for a disabled vehicle. However, move over behavior was far more common than slowing down. For police vehicles, 85% of drivers moved over, while only 48% slowed down. A similar pattern emerged for tow trucks, with 85% moving over but just 46% slowing down. For disabled vehicles, 75% moved over, whereas 48% slowed down. Drivers' perceptions of other motorists' behavior were noticeably lower. Sixty percent reported that other drivers typically move over for police vehicles, 52% for tow trucks, and 43% for disabled vehicles. Observed slowing down was even less frequent, with 58% reporting seeing others slow for police cars, 48% for tow trucks, and 40% for disabled vehicles. Two-thirds of drivers (66%) believed that a Slow Down, Move Over law applies to police vehicles in their state, 58% believed it applies to tow trucks, and 43% believed it applies to disabled vehicles (these laws apply to police and tow trucks in all states; laws regarding disabled vehicles vary by state). Among those who believed such a law exists, more than 90% correctly identified the "move over" requirement; however, only about 40% were aware that the law also included a requirement to reduce speed.

These results indicate that drivers have a much stronger understanding of the move over requirement than the slow down requirement. This gap matters because drivers who were unaware of the legal obligation to slow down were much less likely to do so. This gap between behavior, observation, and legal knowledge suggests that public communication around the slow down component of the law is not as effective as messaging around moving over, highlighting an opportunity to strengthen outreach and enforcement strategies. Additional findings regarding drivers' knowledge and behavior in relation to driver characteristics and the specific requirements of state laws are explored as well.

## Appendix A: 2026 Safe Mobility Conference Organizing Team

- Dr. John Ash, *Temple University*
- Dr. John Campbell, *Exponent*
- Dr. Jessica Cicchino, *Insurance Institute for Highway Safety*
- Dr. John Gaspar, *University of Iowa*
- Kellen Howell, *AAA, Inc.*
- Patricia Hu, *Bureau of Transportation Statistics (former)*
- Ansley Kasha, *AAA Foundation for Traffic Safety*
- Dr. Ruimin Ke, *Rensselaer Polytechnic Institute*
- Mellani McAleenan, *AAA Washington*
- Kristine Pham, *University of Washington*
- Dr. Alicia Romo, *AAA Foundation for Traffic Safety*
- Dr. Alyssa Ryan, *Michigan State University*
- Dr. Wei Sun, *AIWaysion, Inc.*
- Pamela Vasudeva, *Washington State DOT (former)*
- Dr. Yinhai Wang, *University of Washington*
- Dr. C. Y. David Yang, *AAA Foundation for Traffic Safety*

## Appendix B: 2026 Safe Mobility Conference Program



# SMARTER SOLUTIONS, SAFER MOBILITY

The 2026 Safe Mobility Conference is brought to you by the AAA Foundation for Traffic Safety and the University of Washington. This year's conference convenes stakeholders from public and private sectors to discuss transportation issues, share solutions, and establish collaboration opportunities under the theme of *Smarter Solutions, Safer Mobility*.

The plenary sessions for the 2026 Safe Mobility Conference feature leading experts who will share their perspectives on policies, research, and solutions related to safe mobility topics. The 2026 conference is debuting 'Meet the Leaders' sessions to allow participants to hold dialogues with difference makers on subjects related to safe mobility and beyond. Technical sessions at this year's conference will cover subjects that range from driving behaviors and roadway operations to transportation policy and AI-enabled analytics. Lastly, more than 30 posters that spotlight ongoing research will be showcased and presented by graduate students.

The 2026 Safe Mobility Conference could not have happened without the generous support from sponsors and exhibitors as well as volunteers who serve on the conference organizing team. Financial contributions enable us to plan and deliver a high-quality event at an affordable cost. The 2026 conference organizing team consists of transportation researchers and partitioners from academia, government, and industry who contributed their time and expertise in developing a thoughtful program. We invite you to use this event to share insightful information, identify collaboration opportunities, and establish partnerships so we can work together and deliver safer mobility for all road users.

**C. Y. David Yang, Ph.D.**
*President & Executive Director*
*AAA Foundation for Traffic Safety*
*Conference Co-Chair*

**Yinhai Wang, Ph.D.**
*Thomas and Marilyn Nielsen*
*Endowed Professor in Engineering*
*Civil & Environmental Engineering*
*University of Washington*
*Conference Co-Chair*

# PLEASE JOIN US IN THANKING OUR 2026 ORGANIZING COMMITTEE:

### Conference Manager

Alicia Romo, Ph.D., *AAA Foundation for Traffic Safety*

### Committee on Abstracts

John Gaspar, Ph.D., *University of Iowa*

John Campbell, Ph.D., *Exponent*

Patricia Hu, *Bureau of Transportation Statistics (Retired)*

Ruimin Ke, Ph.D., *Rensselaer Polytechnic Institute*

### Committee on Workshops

Jessica Cicchino, Ph.D., *Insurance Institute for Highway Safety*

Wei Sun, Ph.D. *AIWaysion, Inc.*

### Committee on Posters

Alyssa Ryan, Ph.D., *Michigan State University*

John Ash, Ph.D., *University of Cincinnati*

Pamela Vasudeva, *Washington Department of State (Former)*

### Committee on Communication & Marketing

Ansley Kasha, *AAA Foundation for Traffic Safety*

Kellan Howell, *AAA, Inc.*

Mellani McAleenan, *AAA Washington*

Kristine Pham, *University of Washington*

# CONFERENCE AGENDA

## MONDAY, MARCH 30

**8:00 am – 11:00 am**
**Optional Pre-Conference Tours**

**12:00 pm – 2:00 pm** ........ *Lyceum*
**Registration**

**1:00 pm – 5:00 pm**
**Workshop** ........ *Room 145*
AI-Enabled Smart Infrastructure for Safer Mobility

**Workshop** ........ *Room 332*
Driving Safety Forward:
Protecting Every Occupant on Every Ride

**Workshop** ........ *Room 334*
Rural Safe Mobility Workforce Crisis:
Building Capacity for Rural Agencies

**Workshop** ........ *Room 337*
From Data to Dialogue: Translating Traffic Safety
Data into Social-Media-Ready Narratives

## TUESDAY, MARCH 31

**8:00 am – 2:00 pm**
**Registration** ........ *Lyceum*

**8:00 am – 9:00 am** ........ *South Ballroom*
**Continental Breakfast**

**8:00 am – 5:00 pm**
**Exhibitor Hall Hours** ........ *North Ballroom*

**9:00 am – 9:30 am** ........ *Lyceum*
**Remarks & Welcome from 2026 Conference Co-Chairs**
David Yang, *AAA Foundation for Traffic Safety*
Yinhai Wang, *University of Washington*

**9:30 am – 10:30 am** ........................................ *Lyceum*

**Plenary Session**

Toward Safer Mobility: From Vision to Action

Lorraine Martin, *National Safety Council*

Julie Meredith, *Washington State Department of Transportation*

Gregory Winfree, *Texas A&M Transportation Institute*

**10:45 am – 11:45 am**

**Technical Session** ........................................ *Room 145*

Roadside Worker Safety: Putting Research into Action

**Technical Session** ........................................ *Room 332*

From Pilot to Practice: Deploying Active Speed Prevention Technology in Municipal Fleets

**Technical Session** ........................................ *Room 334*

Educating for Safety:
ADAS Training Strategies and Outcomes

**Technical Session** ........................................ *Room 337*

Designing Complete Streets for Safe Speeds:
Lessons from Bellevue and San José

**Technical Session** ........................................ *Room 340*

Micromobility Safety Through a Human Factors Lens

**11:45 am – 1:00 pm**

**Lunch** ........................................ *South Ballroom*

**12:20 pm – 12:40 pm**

**Luncheon Welcome Remarks** ........................................ *South Ballroom*

Gene Boehm, *AAA, Inc.*

**1:00 pm – 2:00 pm** ........................................ *Lyceum*

**Plenary Session**

Leveraging Technology to Advance Safe Mobility for All Users

David Noyce, *University of Wisconsin-Madison*

David Harkey, *Insurance Institute for Highway Safety*

**2:00 pm – 3:30 pm**............................................*North Ballroom*
**Student Poster Presentations & Exhibitor Networking**

**3:30 pm – 5:00 pm**
**Technical Session**........................................................ *Room 145*
Distracted Driving: Effectiveness of Countermeasures

**Technical Session**........................................................ *Room 332*
Safe Mobility for Teen and Young Drivers

**Technical Session**........................................................ *Room 334*
From Research to Real-World Impact:
Advancing Safe System Strategies Through Behavioral Science, Crash Data Analytics, and Ohio's Redesigned Fatality Review Process

**Technical Session**........................................................ *Room 337*
Data for Safe Mobility Solutions

**Technical Session**........................................................*Room 340*
Infrastructure-Based Strategies to Achieve Safe Mobility

**5:30 pm – 8:30 pm**.......................................*Graduate by Hilton*
**Conference Reception** *(Registration Required)*

## WEDNESDAY, APRIL 1

**8:00 am – 12:00 pm** ............ *Lyceum*
**Registration**

**8:00 am – 9:00 am** ............ *South Ballroom*
**Continental Breakfast**

**8:00 am – 2:00 pm** ............ *North Ballroom*
**Exhibitor Hall Hours**

**9:00 am – 10:30 am**
**Technical Session** ............ *Room 145*
The Challenges of Implementing Large-Scale Self-Driving Vehicles

**Technical Session** ............ *Room 332*
Layered Speeds: Safe System Speed Management in Washington State

**Technical Session** ............ *Room 334*
The Impact of Vehicle Design on Driver Behavior, Visibility, and Safety across Vehicle Sizes and Types

**Technical Session** ............ *Room 337*
Safe System for Safe Mobility

**Technical Session** ............ *Room 340*
Driving Behaviors and Safe Mobility

**11:00 am – 12:00 pm** ............ *Lyceum*
**Plenary Session**
Safe Mobility Initiatives from Asia, Europe, and North America
Xuesong Wang, *Tongji University*
Satu Innamaa, *VTT Technical Research Centre of Finland*
Roger Millar, *Millar Consulting Services*

**12:00 pm – 1:30 pm**

**Lunch** ........ *South Ballroom*

**1:30 pm – 2:15 pm**

**Meet the Leaders** ........ *Room 145*

Conversation with AAA Club CEOs

Heather Snavely, *AAA Washington*

Marke Dickson, *AAA Western and Central New York*

**Meet the Leaders** ........ *Room 332*

Conversation with Transportation Associations

Steve Kuciemba, *Institute of Transportation Engineers*

Leah Shahum, *Vision Zero Network*

**Meet the Leaders** ........ *Room 334*

Conversation with Transportation Infrastructure Owners and Operators

Dongho Chang, *Washington State Department of Transportation*

Rachel Carpenter, *California Department of Transportation*

**Meet the Leaders** ........ *Room 337*

Conversation with Transportation Technology Developers

Wei Sun, *AIWaysion*

Kristin Smith, *Uber*

**2:30 pm – 3:30 pm** ........ *Lyceum*

**Closing Session for the 2026 Safe Mobility Conference**

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CSAA Insurance Group

## SILVER

AAA Club Alliance

AAA Northeast

AAA Oregon/Idaho

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STOP

## Appendix C: List of Organizations that Participated in the 2026 Safe Mobility Conference

- AAA Auto Club Enterprises
- AAA Auto Club Group
- AAA Club Alliance
- AAA Foundation for Traffic Safety
- AAA Missouri
- AAA Mountain West Group
- AAA Northeast
- AAA Northern New England
- AAA Oregon/Idaho
- AAA Texas
- AAA Washington
- AAA Western & Central New York
- AAA, Inc.
- AIWaysion
- Alabama Transportation Institute
- Alta Planning + Design
- AM Signal LLC
- Amazon
- America Walks
- Arizona State University
- Association of Washington Cities
- Auburn University
- Blue Door Strategy and Research, LLC
- CA Department of Transportation–Caltrans
- Cambridge Mobile Telematics
- Carnegie Mellon University
- Champaign County (Illinois) Regional Planning Commission
- Chicago Metropolitan Agency for Planning

- City of Bellevue, Washington
- City of Columbus, Ohio
- City of Madison–Traffic Engineering Division
- City of Tacoma, Washington
- Cleveland State University
- Columbus Public Health
- CSAA Insurance Group
- CT Northwest
- Department of Civil and Environmental Engineering, University of Idaho
- Driving Safety Research Institute, University of Iowa
- Dunlap and Associates, Inc
- Eastern Washington University
- Exponent, Inc.
- Families for Safe Streets
- Federal Highway Administration
- Fehr & Peers
- Houston Galveston Area Council
- Human Factors Insights
- Independent Consultant
- Injury Biomechanics Research Center–Oregon State University
- Insurance Institute for Highway Safety
- Institute of Transportation Engineers
- Johns Hopkins University
- Lakeside Engineers
- Lawrence Technological University
- Lewis Consulting
- LifeSafer Intelligence Speed Assistance
- Massachusetts Institute of Technology
- Michigan State University
- Millar Consulting Services, LLC
- MNNIT Allahabad, India

- Mobilitas
- Mothers Against Drunk Driving
- National Academy of Science
- National Center for Safe Routes to School at University of North Carolina Highway Safety Research Center
- National Safety Council
- New Mexico Department of Transportation
- Northwest Insurance Council
- NTT Data Americas, Inc.
- Ohio State University
- Oregon State University
- PacTrans–University of Washington
- Portland State University
- Public Health Seattle & King County
- Rensselaer Polytechnic Institute
- Resource Systems Group, Inc.
- SADD, Inc.
- Seattle DOT
- Sound Transit
- South Carolina State University
- State Farm
- State University of New York–Buffalo
- Students Against Destructive Decisions
- Temple University
- Tennessee Highway Patrol
- Texas A&M Transportation Institute
- Tongji University
- Toole Design
- Toyota North America
- Transpo Group
- Twinkle Don't Blink

- Uber
- University of Alabama
- University at Buffalo
- University of Arizona
- University of California–Berkeley—SafeTREC
- University of Cincinnati
- University of Connecticut
- University of Hawaii
- University of Idaho
- University of Iowa–Driving Safety Research Institute
- University of Kansas
- University of Massachusetts–Amherst
- University of Memphis
- University of Mississippi
- University of New Mexico
- University of North Carolina–Highway Safety Research Center
- University of North Florida
- University of Tennessee–Highway Safety Office
- University of Tsukuba–Tokyo
- University of Washington
- University of Wisconsin
- University of Wyoming
- USDOT Volpe Center
- User Driven Strategies LLC
- Virginia Tech Transportation Institute
- Vision Zero Network
- VTT Technical Research Centre of Finland Ltd.
- Walkhorizon Technologies Co. Ltd
- Washington State Association of Counties
- Washington State Department of Transportation
- Washington State House of Representatives

- Washington State University
- Washington Traffic Safety Commission
- Waymo
- WingDriver Inc.
- Wisconsin Department of Transportation
- Wyoming Department of Transportation
- Yakama Nation Department of Natural Resources