

# EXAMINING THE ROADWAY SAFETY CRISIS AND HIGHLIGHTING COMMUNITY SOLUTIONS

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## HEARING

BEFORE THE

SUBCOMMITTEE ON SURFACE TRANSPORTATION,  
MARITIME, FREIGHT, AND PORTS

OF THE

COMMITTEE ON COMMERCE,  
SCIENCE, AND TRANSPORTATION  
UNITED STATES SENATE

ONE HUNDRED EIGHTEENTH CONGRESS

SECOND SESSION

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MAY 21, 2024

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SENATE COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION

ONE HUNDRED EIGHTEENTH CONGRESS

SECOND SESSION

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## CONTENTS

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Hearing held on May 21, 2024 .....	Page 1
Statement of Senator Peters .....	1
Letter dated May 20, 2024 to Hon. Gary Peters and Hon. Todd Young from families regarding roadway safety .....	1
Letter dated May 21, 2024 to Hon. Gary Peters and Hon. Todd Young from Rana Abbas Taylor, Northville, MI .....	10
Prepared statement from the International Brotherhood of Teamsters .....	77
Letter dated May 21, 2024 to Hon. Gary Peters and Hon. Todd Young from John Samuelsen, International President, Transport Workers Union of America .....	79
Statement of Senator Young .....	23
Statement of Senator Cruz .....	24
Statement of Senator Klobuchar .....	82
Statement of Senator Capito .....	84
Statement of Senator Fischer .....	86
Statement of Senator Markey .....	92
Statement of Senator Luján .....	94

### WITNESSES

Samuel Krassenstein, Chief of Infrastructure, City of Detroit .....	26
Prepared statement .....	28
Laura Chace, President and CEO, Intelligent Transportation Society of Amer- ica .....	35
Prepared statement .....	37
Jacob Nelson, Director, Traffic Safety Advocacy and Research, American Automobile Association .....	49
Prepared statement .....	50
Laura Sandt, Ph.D., Co-Director, Research Strategy and Implementation, Highway Safety Research Center; Director, Pedestrian and Bicycle Informa- tion Center; Director, Collaborative Sciences Center for Road Safety, Senior Research Associate, Highway Safety Research Center, The University of North Carolina at Chapel Hill .....	55
Prepared statement .....	56
Jeff Farrah, Chief Executive Officer, Autonomous Vehicle Industry Associa- tion .....	62
Prepared statement .....	64

### APPENDIX

Letter dated May 20, 2024 to Hon. Gary Peters and Hon. Todd Young from Catherine Chase, President, Advocates for Highway and Auto Safety .....	99
Letter dated May 21, 2024 to Hon. Gary Peters and Hon. Todd Young from Garrick Francis, Vice President of Federal Affairs, Alliance for Automotive Innovation .....	105
Prepared statement from the American Motorcyclist Association .....	106
Letter dated May 21, 2024 to Hon. Maria Cantwell and Hon. Ted Cruz from Clarence E. Anthony, CEO and Executive Director, National League of Cities .....	108
Response to written questions submitted to Sam Krassenstein by:	
Hon. Brian Schatz .....	110
Hon. Gary Peters .....	111
Response to written questions submitted to Laura Chace by:	
Hon. Brian Schatz .....	112
Hon. Gary Peters .....	114

# IV

	Page
Response to written questions submitted to Laura Chace by—Continued	
Hon. Ted Cruz .....	117
Response to written questions submitted to Jake Nelson by:	
Hon. Brian Schatz .....	119
Hon. Gary Peters .....	122
1Response to written questions submitted to Laura Sandt by:	
Hon. Brian Schatz .....	123
Hon. Gary Peters .....	125
Hon. Ted Budd .....	126
Response to written questions submitted to Jeff Farrah by:	
Hon. Brian Schatz .....	126
Hon. Gary Peters .....	130
Hon. Ted Cruz .....	130
Hon. Ted Budd .....	134

## **EXAMINING THE ROADWAY SAFETY CRISIS AND HIGHLIGHTING COMMUNITY SOLUTIONS**

**TUESDAY, MAY 21, 2024**

U.S. SENATE,  
SUBCOMMITTEE ON SURFACE TRANSPORTATION,  
MARITIME, FREIGHT, AND PORTS,  
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION,  
*Washington, DC.*

The Subcommittee met, pursuant to notice, at 2:30 p.m., in room SR-253, Russell Senate Office Building. Hon. Gary Peters, Chairman of the Subcommittee, presiding.

Present: Senators Peters [presiding], Cantwell, Klobuchar, Markey, Warnock, Young, Cruz, Fischer, Moore Capito, Luján.

### **OPENING STATEMENT OF HON. GARY PETERS, U.S. SENATOR FROM MICHIGAN**

Senator PETERS. The Subcommittee will come to order.

Today, the Subcommittee for Surface Transportation, Maritime, Freight, and Ports will examine the roadway safety crisis and the solutions that we must implement in response.

I would certainly like to thank my Ranking Member, Senator Young, as well as Chair Cantwell and Ranking Member Cruz, for their help in convening this, a very important hearing.

Every day, unfortunately, more than 100 Americans lose their lives on our roads. If trends continue, we expect more than 40,000 fatalities this year and hundreds of thousands of serious injuries.

That means thousands of families are going to be torn apart by preventable crashes. Those families deserve our recognition as we work to address this problem. And that's why I'd like to enter into the record statements made by victims' families who have written to this committee to urge further action on roadway safety.

Without objection, those letters will be entered into the record.

[The information referred to follows:]

*May 20, 2024*

Hon. GARY PETERS, Chair,  
Hon. TODD YOUNG, Ranking Member,  
Committee on Commerce, Science, and Transportation,  
Subcommittee on Surface Transportation, Maritime, Freight, and Ports,  
United States Senate,  
Washington, DC.

Dear Chair Peters and Ranking Member Young:

Our families have endured the loss of a loved one or sustained serious, lifelong injuries as a result of preventable motor traffic crashes and incidents. And, we are far from alone. More than 42,000 people were killed, and nearly 2.4 million people were injured in traffic crashes in 2022, according to the National Highway Traffic

Safety Administration (NHTSA). While people are killed and families' lives are forever changed by the simple act of traveling on public roadways, solutions to stop this pain and suffering are known and available, yet remain under-used, delayed and sidelined. We must prioritize their implementation with urgency.

A comprehensive approach is needed to protect all road users and prevent or mitigate the deadly outcomes due to crashes. The U.S. Department of Transportation (DOT) adopted a Safe System Approach (SSA) in 2022 to address the roadway crisis. By focusing on advancing policies that will engender safer people, safer roads, safer vehicles, safer speeds and post-crash care, meaningful improvements can be realized. The SSA has been implemented in other similar countries for decades, and significant reductions in traffic fatalities have been attained.

The Infrastructure Investment and Jobs Act (Pub. L. 117-58) directed robust funding for roadway safety infrastructure improvements consistent with the SSA and timely vehicle safety rulemakings and upgrades. Less than one month ago, the DOT released the final rule for automatic emergency braking (AEB) with pedestrian detection and response for passenger motor vehicles. This vital technology will prevent or mitigate crashes due to distraction, impairment, drowsy driving and speeding, and it is conservatively estimated to save at least 360 lives and prevent 24,000 injuries annually. Yet, improvements should be made to expand the utility of AEB systems including to detect and respond to bicyclists, motorcyclists and other vulnerable road users.

This advancement must be followed by rulemakings to require AEB for heavy vehicles, advanced impaired driving technology, systems to detect and alert to unattended children in vehicles, technology to curb driver distraction and automation complacency, lane departure warning and lane keeping assist systems, adaptive driving beam headlamps, upgrade hoods and bumpers to better protect vulnerable road user safety, updates to the New Car Assessment Program (NCAP) seat belts for limousine passengers, strengthen seatback safety standards and automatic shut-off and keyless ignition systems as also directed in the IIJA. The technology to solve these issues is available.

Conversely, we are deeply concerned about the safety of automated driving system (ADS) technology operating on our roads. According to the NHTSA Standing General Order (SGO, 2021-01) data on crashes involving vehicles equipped with ADS which includes autonomous vehicles (AV), and Level 2 advanced driver assistance systems (L2 ADAS, partially automated driving systems), nearly 600 crashes involving ADS driven vehicles and more than 1,400 crashes involving L2 ADAS driven vehicles have been reported between July 2021 and April of this year. Absent comprehensive Federal safety regulations, everyone in or sharing the roads with vehicles equipped with ADS is at risk.

We urge the Subcommittee to again prioritize roadway safety in the next transportation reauthorization, ensure robust funding for roadway safety upgrades, and direct new rulemakings for vehicle safety technologies. Whether you are a driver, a passenger, or outside a vehicle standing, walking, biking or rolling, everyone deserves safe travel on U.S. roadways.

Sincerely,

Cheryle Adams (Washington, DC), I was injured in a near-fatal crash in 1993 when a car crashed into me while I was a pedestrian standing at a crosswalk in Washington, D.C. I continue to live with permanent scarring to my right leg as a reminder of this kind of traffic violence as well as daily chronic pain. DC Pedestrian Advisory Council

Dillon Angulo (Miami, FL), Dillon and his girlfriend, Naibel Benavides, were standing beside his parked vehicle off a Florida roadside with when a Tesla Model S operating on Autopilot sped past a stop sign, through additional warning signs and eventually struck the vehicle. Naibel was killed and Dillon suffered a traumatic brain injury as a result of the collision.

Sherri Arrington (Palmer, AK), my husband and I were traveling on I95 north of Boston when a concrete screed came out of a commercial landscape truck. It pierced our windshield severing Tom's spinal cord, 3 vertebrae and his mandible killing him instantly. Family Advocate Families for Safe Streets and Truck Safety Coalition

Patty Avery (Evansville, IN), In January 2019, my daughter Bethany Schklar's car was hit as she turned left onto a busy road in Chattanooga, Tennessee, by a speeding driver who ran a red light. Bethany died four days later from her injuries. Families for Safe Streets, Executive Committee

Patty Banks (Bay Village, OH), severely injured in a hit-and-run crash on May 15, 2019, in Avon Lake, Ohio. My carotid artery was severed, my pelvis fractured in

two places, I had a brain hemorrhage, a clavicle fracture and a broken patella. The hit-and-run driver lied to the police when they found her and only received one year probation at sentencing. Advocate for Bike Cleveland and Families for Safe Streets

Laura Beck (Midlothian, VA), mother of Anderson who died in a hot car and wife of Aaron, who took his own life after discovering he had inadvertently left their son in the car and went to work. Kids and Car Safety Family Advocate

Lisa Berry (Huntsville, AL), mother and father of Lexi Berry who died at 2 years old in a hot car. Kids and Car Safety Family Advocate

Pam Biddle (Waverly Hall, GA), Pam's son, Aaron Lee, was in their car with his father, Brian, and Brian's partner, Stephanie Swaim, stopped in slowed traffic when a speeding semi failed to stop and rear-ended their vehicle pushing it under the semi in front of them. The vehicles burst into flames, killing Aaron, Brian and Stephanie. Board Member, Citizens for Reliable and Safe Highways (CRASH)

Deona Bien (Tucson, AZ), mother of Aslyn Ryan who died in a hot car while running errands with sitter. Kids and Car Safety Family Advocate

Stephen Bingham (San Rafael, CA), My daughter Sylvia Bingham was killed biking to work in Cleveland by a box truck's right hook into her path September 15, 2009. Had the truck had side guards, she would have been injured but not killed when the 25,000 lb. truck's wheels crushed her. Ride of Silence, Families for Safe Streets, Marin County Bicycle Coalition

Sue Boe (Odessa, FL), grandmother of Kate who died in a hot car at 5-months-old. Kids and Car Safety Family Advocate

Clay Blackburn (Shreveport, LA), parents of Addyson who died in a hot car at 6 months old, dad forgot her in the backseat while he was at work. Kids and Car Safety Family Advocate

Delyla Blackburn (Shreveport, LA), parents of Addyson who died in a hot car at 6 months old, dad forgot her in the backseat while he was at work. Kids and Car Safety Family Advocate

Brittany Borgess (Duboisstown, PA), step-mother of Samaria who died in a hot car at 4-years-old. Kids and Car Safety Family Advocate

Demetrius Branca (Tallahassee, FL), Demetrius's son Anthony, 19, was riding his motorcycle from community college classes to work on a Friday afternoon. He was using all the correct gear and driving safely. He slowed down to make a left turn and the driver of a large commercial van behind him did not see him because he was distracted. He did not slow down, swerve or hit the brakes; the van filled with thousands of pounds of equipment crushed Anthony. It took about half an hour for Anthony to succumb to his wounds. Founder of the Anthony Phoenix Branca Foundation

Beth Brown (Chandler, AZ), mother of Amberlee who died in a hot car. Kids and Car Safety Family Advocate

Kyle Brown (Chandler, AZ), father of Amberlee who died in a hot car. Kids and Car Safety Family Advocate

Kelli Brown (Chandler, AZ), sister of Amberlee who died in a hot car. Kids and Car Safety Family Advocate

Emma Brown (Chandler, AZ), sister of Amberlee who died in a hot car. Kids and Car Safety Family Advocate

Lindee Brown (Chandler, AZ), sister of Amberlee who died in a hot car. Kids and Car Safety Family Advocate

Camille Brown (Chandler, AZ), sister of Amberlee who died in a hot car. Kids and Car Safety Family Advocate

Latanya Byrd (Philadelphia, PA), my niece, Samara Banks, and my three nephews were killed on Roosevelt Boulevard on July 16, 2013, by speeding drivers. Families for Safe Streets Greater Philadelphia, Co-Chair

Tyler Cestia (New Iberia, LA), father of Thomas who died at 2-years-old in his father's GM truck that had a simple rear-seat reminder alert, not occupant detection. Kids and Car Safety Family Advocate

Pamela Cestia (New Iberia, LA), mother of Thomas who died at 2-years-old in his father's GM truck that had a simple rear-seat reminder alert, not occupant detection. Kids and Car Safety Family Advocate

Amy Cohen (Brooklyn, NY), my 12-year-old son was struck and killed in front of our home by a driver going too fast operating a commercial van. Families for Safe Streets, Co-Founder

Dr. Norman Collins, Sr. (Raleigh, NC), grandfather of Norman Collins II ("Bishop") who died at 3 months-12 days old after being accidentally left in a hot car in a church parking lot. Kids and Car Safety Family Advocate

Melody Costello (Medina, OH), mother of 9 month old who died in a hot car on July 29, 2002. Kids and Car Safety Family Advocate

Todd Costello (Medina, OH), father of 9 month old who died in a hot car on July 29, 2002. Kids and Car Safety Family Advocate

Emily Costello (Medina, OH), sister of 9 month old who died in a hot car on July 29, 2002. Kids and Car Safety Family Advocate

Kacey Costello (Medina, OH), sister of 9 month old who died in a hot car on July 29, 2002. Kids and Car Safety Family Advocate

Chanda Crutcher (Decatur, AL), mother of Kingston who survived in a hot car. Kids and Car Safety Family Advocate

Joan Dean (New York, NY), my Grandson, Sammy Cohen Eckstein, was killed by a reckless driver. Founding Member, Families for Safe Streets

Amish Desai (Chicago, IL) and Karishma Desai (Philadelphia, PA), our beloved Mom, Renuka "Renu" Desai, was struck and killed by a negligent driver on January 5, 2023. She was taking her daily walk, her respite while caring for our dying Father, on a clearly designated pedestrian crosswalk that was supposed to protect her. She was taken from us by an act of traffic violence.

Dr. Andrew Dill (Evansville, IN), father of Oliver Dill who died at 3 years old in a hot car. Kids and Car Safety Family Advocate

Jamie Dill (Evansville, IN), mother of Oliver Dill who died at 3 years old in a hot car. Kids and Car Safety Family Advocate

Michael Doyle (Alexandria, VA), a driver of an SUV turned left without looking into the turn and crashed into me as I was more than halfway through the crosswalk. The crash fractured my forehead, broke other bones and damaged nerves in my leg, but the most serious consequence of the crash was the subdermal hematomas in my brain. If AEB technology had been installed on the SUV that crashed into me, my injuries could have been avoided or at least minimized. Founded the Northern Virginia Families for Safe Streets with its three chapters in Alexandria (AFSS), Arlington (Arl FSS) and Fairfax (Ffx FSS)

Amie Duemer (Lubbock, TX), mother of Josef who died in a hot car at 12 months old in 2005. Kids and Car Safety Family Advocate

Jodie Edwards (Liberty Township, OH), mother of Jenna who died in a hot car at 11-months-old. Kids and Car Safety Family Advocate

Cindi Enamorado (Los Angeles, CA), brother Raymond Stephen Olivares was killed and his girlfriend Maria Rivas Cruz injured while walking by a fleeing driver. SoCal Families for Safe Streets—Co Chair

Nicole Engler (Oregon), daughter Remi lost due to hot car tragedy at 21 months. Kids and Car Safety Family Advocate

Peter Engler (Oregon), daughter Remi lost due to hot car tragedy at 21 months. Kids and Car Safety Family Advocate

Lindsay Caron Epstein (West Palm Beach, FL though I was hit while cycling in San Diego, CA), I was cycling in a suburban neighborhood, a few blocks from the ocean. This street had two lanes in each direction, with parking along the curb, speed limit was 45 mph, and no bike lane. A driver hit me from behind and took off. It was a hit-and-run. My skull split open I was in the hospital for 5 months and acquired permanent disabilities. *Adapt2Play*, founder

Meagan Everett (Shreveport, LA), mother of Josiah Gene Everett who died in a hot car at 1 year old. Kids and Car Safety Family Advocate

Laura Fredricks (Becket, MA), Our daughter, Emily Claire Fredricks, was 24 years old when she was killed by the driver of a private sanitation truck while cycling to her job as a french pastry chef in Philadelphia on November 28, 2017. The driver did not use his turn signal, did not yield to Emily as indicated by signage, was fumbling with paperwork and had ear buds in. There was dash cam video and street video. He was not held accountable for killing Emily. Families for Safe Streets Greater Philadelphia, Co-Chair

Jena Frost (Lyman, ME), Jena's son, Wyatt, was 5 years old when he was killed by a box truck unequipped with automatic emergency braking (AEB). Board Member, Parents Against Tired Truckers (P.A.T.T.)

James Gersing (Miami, FL), grandfather of Sammy Joseph Schnall, 1, who died in a hot car. Kids and Car Safety Family Advocate

Vanessa Goolsby (Miami, FL), mother of Micayla who died in a hot car in 2016. Kids and Car Safety Family Advocate

Michael Goolsby (Miami, FL), father of Micayla who died in a hot car in 2016. Kids and Car Safety Family Advocate

Richie Gray (Hartsville, SC), parent of Sophia Jane Goyeneche-Gray who died in a hot car at 13 months old in 2014. Kids and Car Safety Family Advocate

Seth Grimes (Washington, DC), Hit while in a bike lane by the driver of a large pickup truck who said he didn't see me. He was cited for failure to yield. Washington Area Bicyclist Association

Doug Grote (Moore, SC), father of Kristen who died in a hot car at 3 years old. Kids and Car Safety Family Advocate

Diana Grote (Moore, SC), mother of Kristen who died in a hot car at 3 years old. Kids and Car Safety Family Advocate

Anna Guardipee (Salem, VA), Anna and her best friend Jenny were returning to Virginia from North Carolina for Anna's granddaughter's baptism. They were stopped in traffic on I-77 when a distracted semi-driver failed to notice the stopped traffic and slammed into the back of their car, pushing them into the semi they were stopped behind. Jenny and Anna were airlifted to the hospital. Jenny fought hard but never regained consciousness. Anna survived and is paralyzed from the waist down. Board Member, Citizens for Reliable and Safe Highways (CRASH)

Steven Hardy-Braz (Farmville, NC), While cycling, I was struck from behind by a driver operating a car travelling at an estimated 60-65 mph. This driver was operating her car with a revoked drivers license, no insurance, expired license tags, and more.

Carol Harrison (Purcellville, VA), mother of Chase who died in a hot car at 21-months-old. Kids and Car Safety Family Advocate

Miles Harrison (Purcellville, VA), father of Chase who died in a hot car at 21-months-old. Kids and Car Safety Family Advocate

Jessica Hart (Washington, DC), my 5-year-old daughter Allison (Allie) Hart was killed on September 13, 2021, when she was struck and killed while riding her bike in a crosswalk. The crosswalk was at a four-way stop and in a school zone. The driver did not make a complete stop and failed to look for anyone on the sidewalk. Advocate for Families for Safe Streets

Jay Hightman (Charlottesville, VA), It will be five years, on June 24th, 2024, that my 20-year-old daughter Robyn Avril Hightman lost their life doing bicycle messenger work in New York City, when a for-hire driver blocked the bicycle lane and the speeding distracted driver of a box truck knocked them to the ground and then crushed them into the road. Measures such as automatic emergency braking and side underride guards on combination truck trailers as well as single-unit trucks, such as the one responsible for my daughter's death, should be required on these types vehicles. In addition to this, infrastructure design changes need to be made which prioritizes the safety for all road users, but especially the most vulnerable such as bicyclist, pedestrians and the disabled. The Robyn Hightman Foundation, President, Families for Safe Streets

Erin Holley (Charleston SC), mother of Finn who survived being left in a hot car at five weeks old in 2017. Kids and Car Safety Family Advocate

Jane Horal (Brighton, MI), my husband Daniel Horal was bicycling in Island Lake Recreational Park and was hit by a distracted driver on his phone April 24, 2019.

Dan died two days later from his severe injuries. Chief Officer, GoLivCo-Horal Family Foundation

Latanya Hull (Los Angeles, CA), my son was killed by hit and run driver. Advocate for SoCal Families for Safe Streets

Daphne & Steve Izer (Lisbon, ME), Daphne and Steve's son, Jeff, and three of his friends were killed in 1993 when a semi-truck driver fell asleep at the wheel and ran over their parked car. Founders, Parents Against Tired Truckers

Lee Jackson (Arlington, TX), Lee survived a crash with a commercial motor vehicle (CMV). Board Member, Citizens for Reliable and Safe Highways (CRASH)

Amanda Jaczkowski (Detroit, MI), Essentially, I was riding in a bike lane through an intersection and was right hooked by a large gravel hauler (under the wheels). Even after 7 years and about 30 surgeries, I'm permanently disabled. It has made the career trajectory I was on impossible, not to mention the rest of the opportunities an active, high achieving individual who was disabled at 25 miss out on for the rest of my life.

Erin Johnson (Rockwall, NC), mother of Bridget Leigh who died in a hot car. Kids and Car Safety Family Advocate

Scott Jones (Gilbert, AZ), father of Charlotte who died at 3 years old in a hot car. Kids and Car Safety Family Advocate

Angela Jones (Gilbert, AZ), mother of Charlotte who died at 3 years old in a hot car. Kids and Car Safety Family Advocate

Steve Kiefer (Naples, FL), lost his son Mitchel Kiefer in a distracted driving crash in Michigan. Chairman of the Kiefer Foundation

Christy King (Williamsburg, VA), lost her son Christopher King due to a crash caused by a reckless, impaired and distracted driver. Founder, Christopher King Foundation

Dawn King (Davisburg, MI), Dawn's father, Bill Badger, was killed in 2004 while slowed in traffic when he was hit from behind by a truck driver who had fallen asleep at the wheel. Board Member and Vice President, Citizens for Reliable and Safe Highways & Truck Safety Coalition

Judith Kottick (Jersey City, NJ), my 23 year old daughter, Ella Bandes, was tragically killed by a reckless MTA bus driver in 2013 at the Myrtle Wyckoff intersection on the border of Brooklyn and Queens. Families for Safe Streets NY, Founding Member

Gina LaBlanc (San Jose, CA), my son Kyle was a pedestrian hit and killed by a tow truck driver. Kyle stepped into the bike lane to avoid a puddle and was hit by the tow truck driver driving 45 mph in the bike lane to get onto the freeway. Advocate for San Francisco Bay Area Families for Safe Streets

Matilde Larson (Stamford, CT), my 24-year-old daughter Nina Larson was struck and killed by a driver in a crosswalk, in broad daylight in Washington, DC on November 13, 2021. The driver who killed her remained on the scene but has never been charged. Families for Safe Streets—DC Chapter/Steering Committee Member

Todd and Rosa Linder (Garden City, KS), lost their 16-year-old daughter, Cassandra Kay Linder, on March 13 2023, due to a distracted/fatigued commercial motor vehicle (CMV) driver. We believe had the truck been equipped with a driver facing camera, the driver would have been more alert and cautious about how he drove the vehicle.

Nora Lopez (San Leandro, CA), lost her son Dominic Lopez-Toney, a medical student, when he was hit by a semi-truck that attempted an illegal U-turn and struck him. The crash occurred in broad daylight. Truck Safety Coalition Victim Volunteer

John Alexander Lowell (San Francisco, CA), In San Francisco on March 23, 2001, a speeding north bound van on Mission Street hit me as was jogging within the crosswalk to cross Mission Street. The driver had run through the red light. I sustained many injuries, including TBI. Advocate for San Francisco Bay Area Chapter of Families for Safe Streets

Jeri Lynch (Sherman Oaks, CA), son Conor was killed by distracted hit and run driver speeding on October 19, 2010, in Sherman Oaks, while crossing the street for cross-country training with Notre Dame high school. He was 16 years old. Founder, The Conor Lynch Foundation

Alan Lyon (Dolgeville, NY), father of Sophia Lea Marie who died in a hot car at 15 months old. Kids and Car Safety Family Advocate

Carla Lyon (Dolgeville, NY), mother of Sophia Lea Marie who died in a hot car at 15 months old. Kids and Car Safety Family Advocate

Carol MacDonald (Staunton VA), grandmother of Robbie MacDonald who died at 3 years old in a hot car. Kids and Car Safety Family Advocate

Marta Magellan (Miami, FL), grandmother of Sammy Joseph Schnall, 1, who died in a hot car. Kids and Car Safety Family Advocate

Vibha Marks (Dallas, Texas), mother of Victoria Marks who died at 1 year old in a hot car. Kids and Car Safety Family Advocate

Joe Martinez (Fresno, CA), in 2013, Paul Martinez, age 21; my only son was struck and killed by a speeding driver in Fresno. Advocate for Families for Safe Streets

Ken Mercurio (Middletown, OH), Car passing me did not provide sufficient clearance, and hit my left handlebar. It sent me into the pavement, breaking my pelvis and hip socket, requiring two surgeries. Ohio Bicycle Federation

Stephanie Mitchell (St. Louis, MO), mother of Tate Mitchell who died 3 days after his first birthday when left unknowingly by his mother in a hot car. Kids and Car Safety Family Advocate

Rachel Morris (Locust Grove, GA), mother of Savannah Morris who had a near miss in 2018 after being forgotten in a vehicle at a park. Kids and Car Safety Family Advocate

Janice Mott (Ocean City, NJ), my only daughter was killed when riding a bike to work on the upper East side in NYC. There are no crosstown bike paths to allow cyclists to get to the west side to get to the n/s bike lanes into mid Manhattan. Advocate for Families for Safe Streets

Jessie Muckley (Medina, OH), loved one of 9 month old who died in a hot car on July 29, 2002. Kids and Car Safety Family Advocate

Trisha Nicolas (Bellwood, NE), mother of Weston Nicolas who died at 23 months old in a hot car. Kids and Car Safety Family Advocate

Chris Nicolas (Bellwood, NE), father of Weston Nicolas who died at 23 months old in a hot car. Kids and Car Safety Family Advocate

Julie Nicholson (Walnut Creek, CA), I was hit by a speeding driver who also ran a red light in San Francisco in 2020. Advocate for San Francisco Bay Area Families for Safe Streets

Louise Olin (Woodland Hills, CA), My husband, Milt Olin, was riding his bike safely and legally in a bike lane on Mulholland Hwy when he was stuck from behind and killed by LA County Sheriff. The evidence showed that the sheriff had received or sent over 100 text messages from the time he began work until the time of the crash. Milt Olin Foundation/President & CEO

Gabriela O'Shea (New Paltz, NY), I am the lucky survivor of a hit and run car crash on a route called a bicycle route even though it has a crumbling non-existent shoulder. But my great aunt, Maria Jesus, did not survive the crash that took her life as she was on a walk with her daughter. 1 person killed is too many. The infrastructure and information already exists for safe streets. Do it, you must do it in the best possible way. Advocate Families for Safe Streets

Nick Parent (Salt Lake City, UT), younger brother injured by a motorist failing to yield, and cutting him off. Families for Safe Streets, Regional Liaison

Dawn and Wes Peabody (Phoenix, AZ), parents of Maya Moo who died in a hot car. Kids and Car Safety Family Advocate

Stephanie Pinon (Albuquerque, NM), mother of Jahzel Pinon, 2, who died in a hot car. Kids and Car Safety Family Advocate

Israel Pinon (Albuquerque, NM), father of Jahzel Pinon, 2, who died in a hot car. Kids and Car Safety Family Advocate

Judith Proctor (Southport, CT), our beloved son Charle was killed by a driver while riding his bike to get Thai takeout during covid, May 5, 2020. Advocate for Families for Safe Streets & Watch for Me CT

Raymond Pryer Sr. (Houston, TX), Proud father of Raymond Darnell Pryer Jr. whom was left in a daycare bus on July 19, 2018, for 4 hours the temperature reached a 118 degrees he died of a Heatstroke which is preventable. Kids and Car Safety Family Advocate

Nereda Jones Pugh (Philadelphia, PA), my son, Nyier, was 28 when he was killed in a hit and run in Philadelphia, while riding his bike. He was struck by a tow truck driver on July 22, 2022, 2 blocks from our home. Advocate for Families for Safe Streets Greater Philadelphia

Dikeisha Whitlock-Pryer (Houston, TX), Proud mother of Raymond Darnell Pryer Jr. whom was left in a daycare bus on July 19, 2018, for 4 hours the temperature reached a 118 degrees he died of a Heatstroke which is preventable. Kids and Car Safety Family Advocate

Rosemary Quinn (Kingston, NY), lost partner John Host Lynch who was struck by a car while riding his bicycle in Kingston. Safe Pass Ulster Founder—Families For Safe Streets

John Ramsey (Medina, OH), grandfather of 9 month who died in a hot car on July 29, 2002. Kids and Car Safety Family Advocate

Carol Ramsey (Medina, OH), grandmother of 9 month who died in a hot car on July 29, 2002. Kids and Car Safety Family Advocate

JoAnne Ramsey (Medina, OH), loved one of 9 month old who died in a hot car on July 29, 2002. Kids and Car Safety Family Advocate

Sarah Risser (Portland, OR), I was driving with my son Henry Zietlow in rural WI when a negligent driver who was towing illegally crossed the center line and hit our car head on. Henry was behind the wheel, suffered severe head trauma, and died at the scene. I survived with injuries. Families for Safe Streets, BikeLoudPDX

Marissa Rodriguez (New City, NY), mother of Luna and Phoenix, 1 year old twins who passed due to being left in a hot car. Kids and Car Safety Family Advocate

Juan Rodriguez (New City, NY), father of Luna and Phoenix, 1 year old twins who passed due to being left in a hot car. Kids and Car Safety Family Advocate

Amber Rollins (Olathe, KS), mother who had a near miss with her 3-month-old. Director and Family Advocate Kids and Car Safety

Stephanie Salvilla, (Orlando, FL), Mother of Gannon Werking who died July 23, 2009 at 5 months old in a hot car. Kids and Car Safety Family Advocate

Lindsey Rogers-Seitz (Morrisville, NC), mother of Benjamin who died in a hot car. Kids and Car Safety Family Advocate

Fletcher Ross (Hickory, NC), father of Andrew who survived being left in a hot car. Kids and Car Safety Family Advocate

Paul Selden (Portage, MI), I was side-swiped by a drunk driver who veered into the striped/marked shoulder of the road I was bicycling within. My bike was damaged but fortunately I was not injured. If the driver had been one more inch to the right I would have been hit more seriously, thrown over a guard rail, pitched into a heavily wooded ravine and seriously injured. I believe improved driver assistance technology could have avoided the crash entirely. Bike Friendly Kalamazoo

Michel Shane (Malibu, CA), my life was forever altered on April 3, 2010, when my youngest daughter, Emily Rose Shane, was tragically killed by an enraged driver on Pacific Coast Highway in Malibu. This senseless act of violence stole her life and changed our family's trajectory. Advocate with Families for Safe Streets

David Shephard (Linden, NJ), my finance was killed by a hit and run driver in the Bronx NYC. Advocate for Transportation Alternatives/Families for Safe Streets

Leanna Simmons (Florence, AL), mother of Cooper Harris who died at 22 months old in a hot car. Kids and Car Safety Family Advocate

Loren Sidnt (Mexico Beach, FL), mother of Joziah who died in a hot car. Kids and Car Safety Family Advocate

Patricia Small (Fischer, TX), on November 25, 2007, my daughter Megan Small (21) was killed by a distracted driver (texting) while returning to Baylor University from Houston, Texas.

Jacob Smith (Denver, CO), involved a head-on collision in 2014 due to an impaired driver; suffered from TBI, facial reconstruction and a life-long disability. Executive Director, National Organizations for Youth Safety (NOYS)

Jennifer Smith (Woodbridge, IL), I lost my mother in a distracted driving crash in Oklahoma. CEO/President of Stopdistractions.org

Latasha (Tasha) Hairston Springs (Winston Salem, NC), I was texting and driving in NC and collided with the overpass and a separate vehicle carrying two passengers inside. I was seriously injured and the other victims were treated and released with minor injuries. Mindfully Aware Driving Solutions MAD Solutions CEO/Founder & African American Women Trucking Association AAWTA Outreach and Advocacy Director

Marietta Squire (Upper Marlboro, MD), My daughter Kayla Williams-Rawlinson was killed in a car crash by a driver driving 80 mph in a 30 mph school zone. The driver has history of DUIs, driving recklessly, and driving on a suspended license. At the time of the crash his license had been revoked since 2020! Advocate for Families for Safe Streets

Mike Stanley (currently Alpharetta GA. death occurred in Evans, GA), father of Sydney Stanley who died at 6 years of age in a hot car. Kids and Car Safety Family Advocate

Jenny Stanley (currently Alpharetta GA. death occurred in Evans, GA), mother of Sydney Stanley who died at 6 years of age in a hot car. Kids and Car Safety Family Advocate

Emily Stein (Medford, MA), my father, Howard Stein, was killed in Acton, MA in 2011 because of a distracted driver who was programming her GPS while driving. My dad was 61 and about to become a grandfather. Safe Roads Alliance, Executive Director

Russell Swift (Port St. Lucie, FL), Russ' son, Jasen, was killed instantly, as was a fellow Marine, while they drove in the dark to work in 1993, by a seventeen-year-old truck driver on an invalid learner's permit whose truck was stuck across two lanes after trying a U-turn, causing the car to drive into and under the side of the trailer, causing a fatal underride crash. Vice President, Truck Safety Coalition and Chair, Parents Against Tired Truckers

Michele Terry (Grandview, TX), mother of Mika who died in a hot car at only 6-months-old. Kids and Car Safety Family Advocate

Jennifer M. Tierney (Kernersville, NC), Jennifer's father, James Mooney, was killed on a dark, rural road in 1983 when he crashed into a truck with no visible lights blocking the roadway. Chair, Citizens for Reliable and Safe Highways (CRASH) and Truck Safety Coalition Board Member Barbara Toth (Las Cruces, NM), Her husband was hit as a cyclist in New Mexico.

Tami Friedrich Trakh (Corona, CA), Tami's sister, Kris, brother-in-law, Alan, and two of their children, Brandie and Anthony, were killed in 1989 when a tanker truck overturned in front of them and exploded. President, Truck Safety Coalition

Samantha Trumbull (Washington, DC), permanently disabled by a crash in 2012. Advocate for DC Families for Safe Streets

Beatriz Viera (Somerset, NJ), mother of Adriana who died in a hot car. Kids and Car Safety Family Advocate

Tim Vogel (Downingtown, PA), His father was hit in 2007 by an impaired and distracted driver.

Melissa Wandall (Bradenton, Florida), Husband Mark was killed and brother Phil suffered permanent, debilitating injuries when a speeding driver ran a red light and crashed into their car. Melissa was nine months pregnant at the time. President, National Coalition Safer Roads

Roger Weimer (Medina, OH), relative of 9 month who died in a hot car on July 29, 2002. Kids and Car Safety Family Advocate

Haley & Rich Wesley (Angwin, CA), parents of Maddison who died in a hot car. Kids and Car Safety Family Advocate

Kristin Whitaker (Tampa, FL), mother of Lawson Whitaker who died at 2 years after he was undetected in the family vehicle during routine drop off at daycare. Kids and Car Safety Family Advocate

Kristina Wilcoxson (Midwest City, OK), mother of James Swindle who had a “near miss” in 2008

Nancy Cavanaugh-Wilson (LaMesa, CA), My husband, Kevin Wilson, was killed by a hit and run drunk driver on January 20, 2020. A protected bike lane may have saved his life. There’s a forever hole in my heart. Advocate for Families for Safe Streets

Connie and Keith Worl (Anaconda, MT), our daughter Chloe Worl, age 25, was killed instantly in 2021 in Dillon, Montana when a lady crossed the center line and hit Chloe’s truck head on. The lady was on Snap Chat and was texting. She was so distracted that she ignored the rumble strips in the road and drove in Chloe’s lane for the length of a football field. She never hit the brakes.

Ken Yamamoto (Santa Barbara, CA), a van broadsided me while biking through a T-intersection, threw me off my bike, I rolled a couple of times, sustained knees and shoulders tendon and ligament damage. Santa Barbara Move (formerly bicycle coalition)

cc: The Honorable Maria Cantwell, Chair  
The Honorable Roger Wicker, Ranking Member  
Members of the Senate Committee on Commerce, Science, and Transportation

MADD—NO MORE VICTIMS  
May 21, 2024

Hon. GARY PETERS, Chairman,  
Hon. TODD YOUNG, Ranking Member,  
Subcommittee on Surface Transportation, Maritime, Freight and Ports,  
Committee on Science, Commerce and Transportation,  
U.S. Senate,  
Washington, DC.

Dear Chairman Peters and Ranking Member Young:

Thank you for convening today’s hearing “Examining the Roadway Safety Crisis and Highlighting Community Solutions.” As someone who has experienced unimaginable loss due to the preventable crime of drunk driving, I commend the bipartisan leadership, led by Chair Peters, and Senators Ben Ray Lujan, Shelley Moore Capito and Rick Scott, that resulted in the passage of the Honoring Abbas Family Legacy to Terminate (HALT) Drunk Driving Act, named in honor of my family. In 2019, a wrong-way drunk driver killed my sister and only sibling Rima (38), my brother-in-law Issam (42), my nephew Ali (13), and my two nieces Isabella (12) and Giselle (7) as they drove home to Michigan from a family vacation in Florida. In an instant, I lost my entire world.

The HALT Act, included in the Bipartisan Infrastructure Law (BIL), requires a new Federal Motor Vehicle Safety Standard (FMVSS) for passive, advanced impaired driving prevention technology in all new vehicles. When fully implemented, the Insurance Institute for Highway Safety estimates that the law will save more than 10,000 lives every year. Let me repeat, more than 10,000 lives will be saved each and every year.

Since 2019, the U.S. has experienced a 33 percent increase in alcohol-related crash deaths, and a rising number of drivers in fatal and serious-injury crashes are testing positive for other drugs. The National Highway Traffic Safety Administration (NHTSA) estimated 13,524 people died in alcohol-related crashes in 2022. Additionally, drunk driving costs the U.S. economy \$58 billion a year.

In January 2024 NHTSA released an Advance Notice of Proposed Rulemaking (ANPRM) to begin implementation of the HALT Act. Comments to the docket show that there is significant support from auto suppliers and original equipment manufacturers for implementation of advanced impaired driving prevention technology. General Motors CEO Mary Barra publicly shared her support in December 2023, stating that the technology exists and will be “good for everyone.” The BIL was signed into law two and a half years ago, and we are now just 6 months away from the Congressionally-mandated due date for the issuance of a HALT Act final rule—November 15, 2024. Victims and survivors urge the Committee to strongly encourage NHTSA to issue a Notice of Proposed Rulemaking by November 15, 2024. We must not lose momentum—we must act now. I am attaching Mothers Against Drunk Driving’s comments to NHTSA’s ANPRM docket for submission to the hearing record.

Drunk driving crashes occur every day, in Michigan, Indiana, and all across the country. Recent headlines in my home state of Michigan serve as stark reminders

of the urgent need for HALT Act implementation: “Two Young Siblings Killed, Several People Hurt When Suspected Drunk Driver Crashes into Michigan Birthday Party;” “Pregnant Mom of 4 Charged in Drunk Driving Hit-And-Run That Killed 2, Hurt 13.” In Indiana we see similar recent headlines: “Indianapolis-Area Trooper Hit by Alleged Drunk Driver;” and “Two Killed on I-69 After Suspected Drunk Driver Crashes into Oncoming Traffic.” These crashes are happening every day, in every single state, and they are 100 percent preventable.

The HALT Act will someday be known as one of the most successful public health policy initiatives in our Nation’s history. On behalf of hundreds of thousands of victims and survivors across the country, thank you for this Committee’s continued oversight to ensure full implementation of the HALT Act. The landmark law provides hope to those of us who continue to live without our loved ones. Victims and survivors see a future of no more drunk driving and we are forever grateful to the bipartisan coalition for setting us on a path to No More Victims.

Thank you,

RANA ABBAS TAYLOR,  
Northville, MI.

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MOTHERS AGAINST DRUNK DRIVING (MADD)

SUBMISSION TO THE NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

DOCKET No. NHTSA–2–2022–0079

ADVANCED IMPAIRED DRIVING PREVENTION TECHNOLOGY ADVANCE NOTICE OF  
PROPOSED RULEMAKING

MARCH 5, 2024

Mothers Against Drunk Driving (MADD) appreciates the opportunity to submit comments to the Rulemaking Docket (NHTSA–2022–0079) in response to the Advance Notice of Proposed Rulemaking (ANPRM) on Advanced Impaired Driving Prevention Technology. MADD is the Nation’s voice of victims and survivors affected by a drunk or drug-impaired driving crash, providing services to those in need, helping individuals, families and loved ones through the court process and the healing process, and empowering victims and survivors to create change to prevent others from going through the same preventable trauma. MADD sees a future free of drunk and drugged driving with no more victims. Eliminating drunk and drugged driving is no longer a “moonshot” goal—it is a reality that is well within reach today.

Technology to stop impaired driving is available now, and a bipartisan law will ensure that a new Federal Motor Vehicle Safety Standard (FMVSS) is established for impaired driving prevention technology as mandated by Congress in the Infrastructure Investment and Jobs Act (IIJA). The Honoring Abbas Family Legacy to Terminate (HALT) Drunk Driving Act requires that all new vehicles come equipped with smart technology to prevent impaired driving. The HALT Act is named in honor of a Michigan family of five—Rima and Issam Abbas, and their three children Ali, 13; Isabella, 12; and Giselle, 7—killed by a wrong-way drunk driver while on their way home from a family vacation. Thousands of other victims and survivors have shared their stories of grief and pain to ensure enactment of the HALT Act, working with a bipartisan group of Members of Congress to end this public health crisis once and for all.

The Insurance Institute for Highway Safety estimates that 10,158 lives will be saved every year when drunk driving prevention technology, as required by the HALT Act, is fully implemented. This estimate is based on preventing impaired drivers at .08 BAC or above from illegally operating their motor vehicles. As acknowledged in the ANPRM, “NHTSA believes that Congress did not intend to limit NHTSA’s efforts under [the Bipartisan Infrastructure Law] BIL to alcohol impairment.” Including other forms of impaired driving technology capability as part of this rulemaking, as Congress intended, translates to even more tangible public health and safety benefits on our Nation’s roadways.

*The Advanced Impaired Driving Prevention Technology rulemaking, when fully implemented, will be celebrated as one of the most significant public health initiatives in U.S. history in terms of lives saved and injuries prevented.*<sup>1</sup>

### **Nation Experiences Historic Increases in Traffic Fatalities and Injuries: Impaired Driving Crisis Worsens**

In 2021, 42,939 people were killed in motor vehicle crashes—up 10 percent over 2020 fatalities and the largest spike in the history of NHTSA’s Fatality Analysis Reporting System that dates back to 1975. An estimated 2.5 million people were injured in traffic crashes, a 9.4 percent increase over 2020. Alcohol-impaired-driving fatalities jumped to more than 13,000 deaths for the first time since 2007, marking the second year in a row of alarming increases in these preventable tragedies.<sup>2</sup> NHTSA reports:

- In 2021 there were 13,384 fatalities in motor vehicle traffic crashes in which at least one driver was alcohol-impaired. This represented 31 percent of all traffic fatalities in the United States for the year.
- Fatalities in alcohol-impaired-driving crashes increased by 14.2 percent (11,718 to 13,384 fatalities) from 2020 to 2021.
- One alcohol-impaired-driving fatality occurred every 39 minutes in 2021, on average.<sup>3</sup>

Alcohol-impaired driving, distracted driving and speeding all contributed to a 16-year high in traffic deaths, with reported historic increases in all three categories.<sup>4</sup> Alcohol-impaired driving fatalities increased—for the second year in a row—by 14 percent, distracted driving fatalities increased by 12 percent, and speeding-related fatalities increased by 7.9 percent. Additionally, the number of pedestrians killed went up 13 percent, bicycle fatalities increased 2 percent, and the number of unbelted passengers killed rose 8.1 percent. Of the 13,384 people who died in alcohol-impaired-driving crashes in 2021, more than 1,600 fatalities were nonoccupants (12 percent), comprised of pedestrians and cyclists.

Two years in a row of historic traffic fatality increases, after a decade of stagnation, highlight the urgent need for NHTSA to promulgate a safety standard that would require lifesaving Advanced Impaired Driving Prevention Technology in all new motor vehicles. As NHTSA states in the ANPRM, the lifesaving potential of this rulemaking impels the agency to move forward. There is only one other countermeasure that compares in terms of annual lives saved: the seat belt. Currently, seat belts are the best defense motorists have against a drunk driver.

### **Technology Exists to Prevent Drunk and Impaired Driving**

The technology to save lives and prevent injuries due to drunk and impaired driving is here. Thanks to bipartisan leadership from Members of Congress directly impacted by drunk driving, and in response to victim and survivor constituents impacted by drunk and drug-impaired driving, collaborative government and auto industry research has been ongoing for 15 years. Simultaneously, auto suppliers and original equipment manufacturers have continued to develop additional technology solutions to impaired driving.

“The Federal government and the automotive industry have jointly backed a research partnership into alcohol detection technology since 2008, exploring systems that use breath or touch sensors to determine the level of alcohol in a driver’s blood. Robert Strassburger, chief executive of the Automotive Coalition for Traffic Safety, said the group has tested an initial version of its technology and aims to have a device that would comply with the law by the end of 2025.”<sup>5</sup>

In December 2023, one day after the U.S. DOT announced this ANPRM and in response to a question on the announcement posed by DC *Economic Club* chair, David Rubenstein, General Motors CEO Mary Barra stated: “We’ve been working

<sup>1</sup>Centers for Disease Control and Prevention (CDC) Morbidity and Mortality Weekly Report (MMWR) “Ten Greatest Public Health Achievements—United States,” May, 2011. <https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6019a5.htm>

<sup>2</sup>National Highway Traffic Safety Administration (NHTSA) Traffic Safety Facts 2021 Data, October 2023. <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813515>

<sup>3</sup>Traffic Safety Facts: 2021 Data, Alcohol-Impaired Driving, NHTSA, June 2023. <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813450>

<sup>4</sup>Associated Press, “Distraction, speeding and alcohol contribute to a 16-year high in traffic deaths,” April 3, 2023. <https://www.npr.org/2023/04/03/1167786510/distraction-speeding-and-alcohol-contribute-to-a-16-year-high-in-traffic-deaths>

<sup>5</sup>Duncan, Ian. “Car Safety Agency Takes Step Toward Requiring Anti-Drunk Driving Tech” December 12, 2023. <https://www.washingtonpost.com/transportation/2023/12/12/nhtsa-drunk-driving-technology-mandate/>

with regulators on that . . . We have technology to do that . . . I think that's technology that's coming that I think is going to be good for everyone."<sup>6</sup> The automotive industry is ready for this rulemaking. NHTSA must meet this moment.

*After 15 years of research and testing, it is time for NHTSA to create an FMVSS, provide a DADSS reference design package to auto suppliers and original equipment manufacturers, and propel this lifesaving technology, or equivalent technologies, into all vehicles.*

In January 2024 at the Consumer Electronics Show, multiple Tier 1 and Tier 2 auto suppliers and original equipment manufacturers showcased new technologies designed to prevent impaired driving. In addition to multiple examples of driver monitoring systems focused on driver distraction and fatigue, several companies demonstrated drunk and impaired driving prevention technologies, including breath-based technologies used in combination with driver monitoring systems.

*MADD has included with this docket submission a list of technologies that exist or are in development from auto suppliers and original equipment manufacturers.* This extensive list, in addition to the DADSS Federal research program that has been active for 15 years, provides justification for NHTSA to meet its legal obligation to implement the bipartisan Congressional mandate that all new vehicles are equipped with drunk and impaired driving prevention technology.

Auto industry engineers have been developing technology to prevent impaired driving for decades, and what was once viewed as exploratory research to determine the feasibility of impaired driving prevention technology is viewed today as achievable and inevitable.

Advanced impaired driving prevention technology is the only solution to ending the scourge of drunk and impaired driving crashes on our roadways. The bipartisan mandate from Congress is clear: NHTSA must expeditiously write a final rule, without further delay, that will put an end to drunk and impaired driving.

### **Do Not Let Perfect Be the Enemy of the Good: Pathways Forward Exist to End Illegal Impaired Driving, and Prevent Driver Distraction and Fatigue**

While impaired driving prevention technologies exist today, there are still detractors who continue to raise rare, potential problems which serve to delay implementation of this lifesaving, preventative technology. ***For every potential roadblock to implementing the HALT Act, reasonable solutions exist.***

After 15 years of raising and debating the same potential roadblocks, policy questions and "what if" scenarios, industry, government, victims and survivors, public health and traffic safety advocates, privacy experts, and other stakeholders must now come together to find common ground and real solutions forward. Every day we delay, more are needlessly killed and seriously injured.

The Technical Working Group on Advanced Impaired Driving Prevention Technology (TWG) points out in its recently released docket submission: "The ANPRM discusses two important rulemaking approaches that can help us get where we need to be. One of these is that technology does not need to be fully developed and ready for deployment at the time a standard is promulgated. Safety standards can incentivize and lead technology development and encourage investments for public benefit . . . [T]he other approach described in the ANPRM is the potential of a phased approach to implementing the impairment prevention requirement. A phased or incremental approach could be an essential tool for achieving near-term benefit along with commitment to longer term progress."

NHTSA can write a final rule that allows for an iterative rulemaking process to implement impaired driving prevention technology, requiring technology that is available now in the early phase of the final rule, and creating a roadmap outlining an additional phase to prevent all types of impaired driving. As our Nation continues to see historic increases in roadway fatalities, NHTSA must take deliberate action to end this public health crisis, starting with what works now, charting a course for innovation and progress toward the achievable goal of no more victims.

The deadline for the final rule for implementing advanced impaired driving prevention technology is November 2024. MADD urges NHTSA to issue a final rule that includes a rulemaking roadmap that can detect and prevent ALL dangerous impairments—drunk, drugged, distracted, and drowsy driving—and mitigate serious risk on our roadways.

<sup>6</sup>Laforest, Audrey. "General Motors CEO: Anti-Drunken Driving Tech Is Coming" Automotive News, December 13, 2023. <https://www.autonews.com/executives/gm-ceo-mary-barra-says-anti-drunken-driving-tech-good-everyone>

Vehicles can and must be able to respond to numerous driver impairments, including pre-start and during the driving process. NHTSA must issue a Final Rule that builds toward comprehensive function.

#### **Defining Impaired Driving and the Scope of the Impaired Driving Problem**

Euro NCAP describes driver impairment as a disconnection from the driving task or not in a physical state that is sufficient for safe driving (see box below). Recent research has gone “one step further, complementing this idea of disconnection with the presence of dangerous/reckless driving.”<sup>7</sup>

Driver State Monitoring (DSM) – Driver State Monitoring system that is able to (in)directly determine the state of the driver.

- Impaired driving – A driver who is disconnected from the driving task or not in a physical state that is sufficient for safe driving
- Fatigue – State of the driver where he/she is not awake enough to properly perform the driving task
- Distraction – Anything (e.g. secondary tasks) that prevents the driver from focusing on the primary task of driving/controlling the vehicle
- DUI – Driving Under the Influence of alcohol or drugs
- Sudden sickness – An instant and unexpected illness wherein the driver is not able to perform the driving task

It is well established that various substances can dangerously impair driving, resulting in significant crash risk for the driver, vehicle occupants, surrounding motorists and passengers, pedestrians and bicyclists. Alcohol reduces coordination, concentration, ability to track moving objects, and negatively impacts steering and the ability to maintain lane position. Alcohol can also cause drowsiness. Cannabis affects psychomotor skills and cognitive functions critical to driving including drowsiness, time and distance perception, reaction time, lane tracking, and coordination. Opioids can cause drowsiness and impair cognitive function. Cocaine and methamphetamine can cause drivers to become more aggressive and reckless, resulting in increased risk-taking. Poly-substance use is when a driver is impaired from using two or more drugs, including alcohol, at the same time. Poly-substance use is a growing concern, particularly with the advent of cannabis legalization. Research shows that two or more drugs combined can amplify the impairing effects of each drug in a person's system.<sup>8</sup>

<sup>7</sup>Lie, Anders et al; “Vision Zero and Impaired Driving: Near and Longer-Term Opportunities for Preventing Death and Injuries,” January 2024. <https://www.sciencedirect.com/science/article/pii/S0001457523003913#f0005>

<sup>8</sup>National Highway Traffic Safety Administration, Drug-Impaired Driving Overview, June 2021. <https://www.nhtsa.gov/risky-driving/drug-impaired-driving>

*Alcohol-Impaired Driving and BAC Levels: The Legal Limit*

Research has demonstrated repeatedly that a driver's crash risk increases exponentially as BAC levels rise, as NHTSA indicates in the ANPRM, Table 1—Effects of Alcohol on Driving. MADD's message to the motoring public is clear and simple: if you drink, don't drive. Alcohol consumption and driving a motor vehicle should be two separate activities. In the 1990s MADD victims and survivors successfully advocated for the national .08 BAC per se standard, which became law in October 2000. All states and the District of Columbia, except Utah (.05 BAC) now have a .08 BAC legal limit.

As NHTSA states in the ANPRM, impairment begins before .08 BAC. In 2020, there were 2,041 people killed in alcohol-related crashes where a driver had a BAC level of .01 to .07 BAC. The agency also acknowledges that "In the United States, in general, a BAC of .08 and higher in drivers is defined as legally impaired and is a condition for arrest." NHTSA continues "However, alcohol-impairment of various driving-related skills can occur at lower concentrations, and alcohol-impaired drivers can pose serious injury risks to themselves and others with any amount of alcohol in their bodies."

MADD represents victims and survivors impacted by drivers with a BAC between .01 and .07 BAC, just as we represent victims and survivors impacted by drivers with a BAC at or above .08 BAC. During negotiations on the HALT Act, MADD was asked to support the inclusion of .08 BAC in the law. While MADD represents victims and survivors where an offender's BAC was below .08 BAC, we also understand the need to base alcohol detection technology on a legal threshold, clearly delineating when a driver is illegally impaired and therefore not able to safely operate a vehicle as defined by law.

MADD would like to specifically address an agency comment in the ANPRM that is concerning and in direct opposition to previous statements made by the U.S. Department of Transportation and NHTSA under numerous Administrations. The ANPRM states that "BAC levels provide an imperfect measurement of probable impairment."

In a legislative history of .08 BAC per se laws, NHTSA states the following:

"... the President called for the promotion of a national limit, under which it would be illegal to operate a motor vehicle with a blood alcohol concentration (BAC) of .08 or higher . . . The Federal agency charged with implementing the President's directive is the National Highway Traffic Safety Administration (NHTSA) of the U.S. Department of Transportation. Long before the President issued his directive in 1998, NHTSA had sponsored several studies on the effectiveness of .08 per se laws. In a 1992 Report to Congress, the agency recommended that all states should enact .08 per se laws for drivers 21 years of age or older. In 1997, NHTSA established an action plan to reduce alcohol-related driving fatalities on U.S. highways to 11,000 by the year 2005. NHTSA's plan, titled Partners in Progress: An Impaired Driving Guide for Action, recommended that all states pass a wide range of measures to combat DWI, including the enactment of illegal per se laws, and illegal limits of .08 BAC."<sup>9</sup>

NHTSA's report goes on to include reasons that built the case for a national .08 BAC per se legal limit, including: 1) Virtually all drivers are substantially impaired at .08 BAC; 2) The risk of being involved in a crash increased substantially at .08 BAC; 3) Lowering the per se limit is a proven effective countermeasure that will reduce alcohol-related fatalities; 4) A BAC of .08 is a reasonable level at which to set the illegal limit; 5) The public supports BAC levels below .10; 6) Most other industrialized nations have set BAC limits at .08 or lower and have had these laws in place for many years.

*Cannabis and Other Drugs (Besides Alcohol)*

After alcohol, cannabis is the drug most often found in the blood of drivers involved in motor vehicle crashes.<sup>10</sup> Cannabis use can affect psychomotor skills and cognitive function critical to safe driving, including drowsiness, time and distance perception, reaction time, divided attention, lane tracking and coordination. Other drugs are shown to pose significant risks to safely operating a motor vehicle.

According to the Centers for Disease Control and Prevention (CDC), during 2018, approximately 12 million (4.7 percent) U.S. residents aged 16 years and older reported driving under the influence of cannabis, and 2.3 million (0.9 percent) re-

<sup>9</sup>"Legislative History of .08 BAC Per Se Laws" DOT HS 809 286, July 2001. <https://one.nhtsa.gov/people/injury/research/pub/alcohol-laws/08history/>

<sup>10</sup>National Institute on Drug Abuse (NIDA). Drugged Driving Facts, December 2019. <https://nida.nih.gov/publications/drugfacts/drugged-driving#ref>

ported driving under the influence of illicit drugs other than marijuana during the previous 12 months.<sup>11</sup> Driving under the influence was most prevalent among males and among persons aged 16–34 years. Research has determined that co-use of alcohol with other drugs increases driver impairment and crash risk.

According to the National Institute on Drug Abuse (NIDA), in 2021, 13.5 million people aged 16 and over drove under the influence of alcohol in the past year and 11.7 million drove under the influence of selected illicit drugs, including marijuana.<sup>12</sup>

It is challenging to measure how many crashes are due to drugs other than alcohol for several reasons. NIDA summarizes these challenges as follows:

1. A good roadside test for drug levels in the body does not exist yet;
2. Some drugs can stay in a person’s system for days or weeks after use, making it difficult to determine when the drug was used, and therefore how and if it impaired driving;
3. Law enforcement does not usually test for drugs if drivers have an illegal BAC level because there is already enough evidence for a DUI charge;
4. Many drivers who cause crashes are found to have both alcohol and another drug in their system, or a combination of two or more drugs, making it challenging to know which substance had the greater effect.

More research is needed on crash causation linked to drugs other than alcohol, as well as poly-substance use, and solutions to the challenges identified above are urgently needed. MADD acknowledges that due to the above challenges, NHTSA has stated in the ANPRM that “Drugged driving, though important to prevent, is not included in the scope of this advance notice of proposed rulemaking.” The agency shares much of the same information provided by NIDA above and adds “Today’s knowledge about the effects of any drug other than alcohol on driving performance remains insufficient to draw connections between their use, driving performance, and crash risk.”

*However, current vehicle-based safety technologies could be deployed to prevent significant risks posed by drug-impaired driving, and drug-impaired driving prevention technologies are currently in development and on the horizon. MADD urges NHTSA to include safety technologies in its final rule that consider some of the most common and dangerous characteristics of drug-impaired driving to mitigate significant crash risk. Technology can identify certain drug-impaired driving traits, regardless of the impairing substance. Vehicle-safety technologies can respond, particularly in the most egregious scenarios where the motoring public is put at significant risk.*

When operating a motor vehicle, regardless of the impairing substance, impairment is impairment. Researchers and auto industry engineers continue to identify common characteristics of substance-impaired drivers and are getting closer every day to identifying real solutions, regardless of the drug. As part of an iterative rule-making process, NHTSA’s roadmap to eliminate substance-impaired driving could include the identification of common signs of dangerous drug-impaired driving with various driver inputs, and appropriate vehicle responses when illegal impairment is detected.

Measuring a driver’s BAC level is one data point, albeit a critically important one. Alcohol remains the number one impairing substance on our Nation’s roads, and as BAC levels rise research shows increased and deadly impairing effects. But what about a driver with a .04 BAC who has just gotten high in the bar parking lot before heading home? That driver will show significant signs of impairment well above the BAC data point alone and may in fact be operating a vehicle in an equivalent manner to drivers with a significantly higher BAC (swerving in and out of his or her lane, exhibiting slowed reaction times to environmental factors, driving the wrong way down a highway, etc.).

MADD has participated in meetings with several government agencies for several decades to discuss the issue of drug-impaired driving beyond alcohol. As research continues to attempt to identify per se impairment levels, roadside testing, impairment versus presence, and accurate data collection on this critical issue, MADD urges NHTSA to create a roadmap to eliminate drug-impaired driving where ad-

<sup>11</sup>Centers for Disease Control and Prevention Morbidity and Mortality Weekly Report (MMWR) December 20, 2019. [https://www.cdc.gov/mmwr/volumes/68/wr/mm6850a1.htm?cid=mm6850a1\\_w](https://www.cdc.gov/mmwr/volumes/68/wr/mm6850a1.htm?cid=mm6850a1_w)

<sup>12</sup>NIDA, Drugged Driving Drug Facts <https://nida.nih.gov/publications/drugfacts/drugged-driving#ref>

vanced driver assistance technologies can be activated to reduce crash risk and severity, regardless of the impairing substance.

#### **HALT Act: Bi-Partisan Law Ushers in New Era of Vehicle Safety**

The HALT Act was signed into law on November 15, 2021. The historic, bipartisan mandate, led by Senators Ben Ray Lujan, Rick Scott, Gary Peters, and Shelley Moore Capito in the Senate, and Representatives Debbie Dingell, Jan Schakowsky, David McKinley, and Kathleen Rice in the House of Representatives, requires NHTSA to create a FMVSS for advanced impaired driving prevention technology. The HALT Act was included in the Infrastructure and Investment and Jobs Act (IIJA) following 15 years of conceptualization, research, federal funding, dedicated victim and survivor leadership and advocacy, publicly stated auto industry commitment, alcohol industry and insurance industry support, and various public health and traffic safety stakeholder involvement.

MADD first began collaborative discussions on advanced technology solutions with the auto industry and other stakeholders starting in 2006, when we convened the *International DUI Technology Symposium: A Nation Without Drunk Driving (the Symposium)*. The Symposium explored the role of technology as the ultimate solution to the persistent public health crisis of alcohol-impaired driving. More than 100 representatives participated, including leadership from DOT and NHTSA, technology experts, researchers, automobile manufacturers, insurers, law enforcement, courts, Federal and state legislators—all with the goal of creating a future of no more victims.

Later that same year, in November 2006, MADD, U.S. DOT Secretary Mary Peters, NHTSA Administrator Nicole Nason, the Insurance Institute for Highway Safety, the Alliance of Automobile Manufacturers, the Governors Highway Safety Association, the International Association of Chiefs of Police, the Century Council, and the Distilled Spirits Council of the United States announced the Campaign to Eliminate Drunk Driving. A main pillar of the announcement included the exploration and commitment to developing advanced, in-vehicle technologies to eliminate drunk driving.

*MADD has included with this docket submission a timeline of events and milestones, spanning two decades, that led up to the enactment of the HALT Act and the release of the Advanced Impaired Driving Prevention Technology ANPRM, officially beginning the rulemaking process to implement this historic law and ushering in a new era in vehicle safety and traffic safety.*

It is worth noting again that the Insurance Institute for Highway Safety (IIHS) estimates that 10,158 lives will be saved every year when the technology required by the HALT Act is fully implemented.<sup>13</sup> IIHS's estimate focuses solely on alcohol-impaired driving fatalities. Incorporating drug-impaired driving prevention technology beyond alcohol, driver distraction and fatigue would increase the life-saving potential of this historic motor vehicle safety standard. As NHTSA states in the ANPRM, "The enormous safety potential of addressing the three states of impaired driving considered here impels NHTSA's activities relating to driver impairment."

Drunk driving prevention technology has been conceptualized and developed in some form by auto suppliers and original equipment manufacturers for decades, with the first known onboard experimental alcohol and drug impairment detection device developed and evaluated by General Motors engineers in the 1970s.<sup>14</sup> <sup>15</sup> There are countless other examples of industry public announcements, diagrams and patents, demonstrating thoughtful approaches to solving the impaired driving crisis on our roads.

*MADD has also included with this docket submission a summary of impaired driving technology, focused mainly on substance-impaired driving. There are many other examples of technologies designed to prevent distracted driving and fatigued driving, and many other vehicle safety systems that, once impairment is detected, can take specific action to prevent crashes, fatalities and injuries.*

After years of patience and persistence, voices of victims and survivors sharing their stories of loss and life-altering injuries galvanized Federal action in a bipar-

<sup>13</sup> IIHS "Potential lives saved by in-vehicle alcohol detection systems" January 2021. <https://www.iihs.org/topics/bibliography/ref/2209>

<sup>14</sup> The New York Times—G.M. Testing a Car to Bar Drunken Driver, December 22, 1972. <https://www.nytimes.com/1972/12/22/archives/gm-testing-a-car-to-bar-drunken-driver.html>

<sup>15</sup> Hemmings—A GM onboard experimental alcohol and drug impairment detection device of the 1970s, January 16, 2019. <https://www.hemmings.com/stories/2019/01/16/a-gm-onboard-experimental-alcohol-and-drug-impairment-detection-device-of-the-1970s>

tisan victory for all road users. There must be no further delay: the time to end drunk and impaired driving is now.

### **Consumer Acceptance**

On March 14, 2019, before the House Energy and Commerce Subcommittee on Consumer Protection and Commerce at a hearing titled “Enhancing Vehicle Technology to Prevent Drunk Driving” Congresswoman Debbie Dingell, still reeling from the recent Abbas family crash, and having attended the family’s funeral along with 7,000 others in mourning, stated:

“[The Abbas family] deaths, and the thousands just like them each year, are avoidable and preventable. The technology exists to save lives. A little girl at the funeral came up to me—she was a classmate—and said ‘There is technology. Why are you not using it? Why won’t Congress act? My friend should be here today.’ That statement is my heart. So, my question to each Member, witness, and all the public watching today is simple: why aren’t we using it? We need to explore every possible solution. . .and get the DADSS technology in cars as fast as we can.”

Representative Dingell, in response to hearing industry representatives continuously use the 1970s seat belt interlock as a potential reason to delay implementation of the DADSS technology to prevent drivers from operating motor vehicles at .08 BAC or above, also stated:

“ . . . we still to this day hear about that campaign to require seat belts being buckled. And it is used as an excuse for everything. And we have got to stop using it. It is now 2019, not the 1970s. And people are dying and the technology exists.”

The 1970s example Representative Dingell refers to is cited by NHTSA and the auto industry time and time again as a reason for concern and delay. We must move past this example, and recognize that this occurred nearly 50 years ago, that seat belt use at the time was at best in the low teens, and victims and survivors had not yet organized to galvanize change.

A consumer education campaign is an essential part of this rulemaking and should be developed and implemented as soon as possible.

A report by researchers with Johns Hopkins Bloomberg School of Public Health, published in the Journal of the American Medical Association (JAMA) Network Open on April 20, 2023, found that nearly two-thirds of respondents, or 64.9 percent, either agreed or strongly agreed that vehicle impairment prevention technology should be available on all new vehicles. Nearly the same percentage of respondents (63.4 percent) said they support the mandate for the technology that is included in the Infrastructure Law.

### **NHTSA’s Authority to Implement Advanced Impaired Driving Prevention Technology**

Section 24220 of the Infrastructure Investment and Jobs Act directs the Secretary of Transportation, through NHTSA, to establish a Federal motor vehicle safety standard (FMVSS) that requires all new motor vehicles to be equipped with “advanced drunk and impaired driving prevention technology.” This section, known as the HALT Act, requires NHTSA to complete its rulemaking within three years of enactment, subject to conditional extensions, and further provides industry with two to three additional years to comply with the new FMVSS.

Key to the implementation of the HALT Act is the law’s definition of “advanced drunk and impaired driving prevention technology.” Specifically, the term is defined under statute as a “system” that can “passively monitor the performance of a driver of a motor vehicle to accurately identify whether that driver may be impaired; and prevent or limit motor vehicle operation if impairment is detected.” The law further states that technology must, “passively and accurately detect whether the blood alcohol concentration of a driver of a motor vehicle is equal to or greater than the blood alcohol concentration described in section 163(a) of title 23, United States Code; and prevent or limit motor vehicle operation if a blood alcohol concentration above the legal limit is detected; or is a combination of systems.”

The law is very clear: NHTSA has an obligation to fulfill the mandate required by Congress to promulgate an FMVSS that requires a passive monitoring system that (a) detects and prevents or limits impaired driving, (b) detects and prevents or limits the operation of a vehicle when a driver has a blood alcohol concentration (BAC) above the Federal threshold of 0.08 percent, or (c) is a combination of both (a) and (b).

Furthermore, the HALT Act directs NHTSA to promulgate the new FMVSS in accordance with its usual authority under the Motor Vehicle Safety Act (specifically 49 USC § 30111), which requires NHTSA to consider whether the proposed standard

is “reasonable, practicable and appropriate” for new motor vehicles (as contemplated under HALT). NHTSA is further directed to “consider the extent to which the standard will carry out section 30101 of this title,” which states the fundamental purpose of the Motor Vehicle Safety Act, *i.e.*, to “reduce traffic accidents and deaths and injuries resulting from traffic accidents.” It is our contention that NHTSA can provide an FMVSS that is reasonable, practicable and appropriate, and results in far fewer drunk and impaired driving deaths and injuries resulting from preventable motor vehicle crashes.

#### **Substance-Impaired Driving Prevention: Stopping the Crime Before It Happens and Rolling Tests**

MADD contends NHTSA’s rulemaking must achieve two objectives: First, incorporating available technologies into vehicles that can passively detect the equivalent of a .08 blood alcohol content (BAC) and prevent the movement of a vehicle if the driver is above the threshold for impaired driving. When a vehicle detects a driver is impaired with a BAC of .08 or above, or equivalent, the driver must be unable to drive the vehicle.

Second, NHTSA must determine as part of its final rule what action or actions the vehicle must take if impairment is detected while the car is in motion. Many of the victims and survivors MADD represents share stories of what was found in their offenders’ vehicles, including open, half-full alcohol containers, empty alcohol containers on the car floorboards and/or drug paraphernalia they were using as they drove the vehicle. When a vehicle detects driver impairment while the vehicle is in motion, the vehicle can and must take action to prevent death and injury on our roadways. Actions to mitigate significant fatality and serious injury risk can include a “limp home mode,” which could include limiting vehicle speed, lane keeping assist, and/or identifying a safe location and pulling the vehicle over. These solutions are well within reach and must be included in a final rule.

Congress specifically provided NHTSA with the option to combine multiple systems that detect and prevent various scenarios of impaired driving, which can also provide a system of redundancies. NHTSA could require cars to be equipped with technologies that detect and prevent BOTH drunk driving (through, for instance, a BAC detection system) AND impaired driving (through, for example, a driver monitoring system.) Given that NHTSA’s specific statutory authority under HALT is coupled with NHTSA’s general mandate to “reduce traffic accidents and deaths and injuries resulting from traffic accidents,” MADD urges the agency to be aggressive and ambitious in fulfilling its statutory obligations. The bipartisan HALT Act directs NHTSA to change the behavior of millions of drivers who choose to get behind the wheel drunk or impaired. HALT Act’s directed and mandatory rulemaking complements NHTSA’s general statutory mission and presents the agency with a historic opportunity to save thousands of lives every year, and prevent hundreds of thousands of injuries, changing transportation and traffic safety as we know it.

#### **Data and Privacy Protections**

The benefits of the HALT Act are not at odds with driver and passenger privacy. NHTSA can promulgate an effective FMVSS that meets the requirements of the HALT Act, while concurrently protecting consumer data from unauthorized or improper collection and/or use. In fact, as noted by NHTSA in its AMPRM, because the agency must factor in consumer acceptance (as part of its statutory mandate to consider the practicability of the FMVSS), it is imperative that NHTSA establishes privacy protections as part of the rulemaking process. “Privacy by design” is a long, well-established best practice that infuses data protection into the design and execution of any technology or protocol. NHTSA should aggressively incorporate this principle throughout its regulatory deliberations.

While NHTSA does not have extensive regulatory or policy experience protecting consumer privacy, other agencies do. Most notably, the Federal Trade Commission (FTC) is the Nation’s premier consumer protection agency with a long-established and well-regarded history of enforcement and regulatory actions protecting consumer privacy. MADD recommends that NHTSA consult with the FTC and other well-regarded and relevant government entities when deliberating on privacy and data protections in its rulemaking process. Also, see answers to questions below regarding privacy.

#### **Conclusion**

For 15 years, the auto industry and the Department of Transportation through the bipartisan DADSS program have researched and prepared for advanced impaired driving prevention technology in vehicles. Simultaneously, auto suppliers and original equipment manufacturers have been developing additional technologies to address impaired driving. NHTSA has the authority and is obligated to meet the

rulemaking timeline outlined in the bipartisan Congressional mandate for advanced impaired driving prevention technology as a standard safety feature in all new vehicles and provide a final rule by November 2024. This law has encouraged continued innovation, which will allow NHTSA to write a flexible rule to accommodate various kinds of life-saving technologies. MADD victims and survivors will continue to work with the Administration and bipartisan leaders in Congress to ensure HALT Act implementation. We look forward to a day when drunk and impaired driving is a thing of the past. A world with no more victims is here.

#### ANSWERS TO ANPRM QUESTIONS

##### Question 8.1.

MADD believes that there are numerous technology-neutral practices that can effectively protect driver and passenger data.

First, whatever system is in place, that system should only collect and use data that is absolutely essential for the purpose of effectuating the purpose of the HALT Act, *i.e.*, to detect drunk and/or impaired driving and prevent or limit the operation of the vehicle upon detection. The collection and use of consumer data for any other purpose should be strictly prohibited. This concept, known as “data minimization”, is another well-established concept in privacy public policy circles. For example, consumer data should not be used for marketing or advertising purposes; nor should it be used by law enforcement. On this latter point, the purpose of the HALT Act is NOT to aid in the prosecution of a drunk or impaired driver, but to prevent the operation of a vehicle by a drunk or impaired driver. The law is meant to save lives, not be punitive.

Second, any and all data that a motor vehicle system collects and uses should be anonymized or de-identified in order to protect the identity of the driver or vehicle. Such de-identification protocols should also prevent the re-identification of such data so that it cannot be linkable to an individual or vehicle.

Third, any data collection that occurs to detect and prevent impaired driving should be strictly confined to the vehicle; data should not be transmitted outside the vehicle to, for example, a remote server. In fact, all data transfers to third parties, no matter the means or vector, should be strictly prohibited. Prohibiting and preventing the migration of driver data to outside sources minimizes the risk of improper use of driver data for purposes other than the mandates of the HALT Act.

Lastly, MADD would like to emphasize that such privacy protective practices are technology neutral. That is, they can apply to any technology or system that an eventual FMVSS establishes to fulfill the HALT Act’s legal mandate. Given this, NHTSA should not rule out any technology or system because it is deemed to be more privacy invasive than others. Whether a car is equipped with a driver monitoring system or a BAC detection system, the best practices outlined above can readily and effectively apply to all of them. In short, NHTSA should take nothing off the table.

##### Question 8.2

MADD rejects the premise of Questions 8.2. If NHTSA promulgates a rule that embraces privacy-by-design and requires certain best practices while prohibiting other improper practices, there shouldn’t be any “potential for different privacy impacts associated with different types of systems and information used in those systems.” As noted earlier, these practices are tech-neutral. For instance, requiring the de-identification of all driver data eliminates any privacy distinction between, say, a driver monitoring system and a BAC detection system. If all of the data is de-identified and, further, cannot be reconstituted to identify an individual, it doesn’t matter whether that data pertains to facial features or blood alcohol levels.

Furthermore and related, MADD rejects the premise of the ANPRM’s example question, “how should accuracy be weighed against privacy?” If a final rule incorporates well-established, tech-neutral privacy practices and prohibitions (as outlined in our answer to Question 8.1), accuracy and privacy should not be at odds. As stated earlier, MADD does not believe that public safety and privacy are a zero-sum game.

##### Question 8.3

We are not clear to what NHTSA is referring when it references “performance-based security controls”. However, MADD does not believe that NHTSA should rely on “any industry or voluntary standards” in its deliberations. In fact, state governments have passed their own privacy and security laws—and Congress is currently deliberating on a comprehensive Federal law—precisely because the private sector has done such a poor job of adhering to meaningful voluntary privacy standards on

its own. In fact, the automobile industry has been specifically cited as a particularly egregious stakeholder group in terms of their data privacy practices.<sup>16</sup> Like other sectors of the economy, the automobile industry has embraced “Big Data” and collects, uses, and monetizes vast amounts of consumer data, often without consumer knowledge or consent. Other industry stakeholders, such as insurance companies and rental car companies, similarly have commercial interests in vehicle-generated data.

Consequently, MADD believes that NHTSA should largely rely on its relevant partners in the Federal government, most notably the FTC, as well as stakeholders with well-established public interest credentials, such as privacy advocacy groups. Industry input can prove vital in understanding the technical nature of data collection and use, but how that data can be collected and used outside of the narrow confines of HALT’s public safety mandate should be largely insulated from commercial, for-profit interests and motivations.

#### **Question 8.4**

MADD does not believe that technological systems required under a HALT-promulgated FMVSS pose any significant or “additional security vulnerabilities” than systems that are currently embedded in modern motor vehicles. Today’s automobiles are largely rolling computers that are already collecting vast amounts of consumer data. They already have connectivity to sources outside of the vehicle—including to the open Internet—that already pose significant security risks and compromise consumer privacy. As noted in Question 8.3, the automobile industry has been specifically cited as a particularly poor steward of consumer data. Modern vehicles feature connectivity through smartphones, which in turn, feature connectivity to specific mobile applications and platforms. This connectivity and functionality pose far greater dangers to vehicle security and/or driver privacy than any system that would be contemplated under this ANPRM. In fact, if NHTSA establishes regulatory guardrails on how those systems may collect and use data (as MADD urges), then these systems will be far more privacy protective and secure than the myriad of largely unregulated technologies that currently reside in motor vehicles.

#### **Question 8.5**

If NHTSA promulgates a rule that incorporates strong, privacy-by-design principles in its FMVSS, MADD believes NHTSA’s primary task in education and outreach should be to reassure the public that these life-saving technologies pose no danger to their privacy or security. Unfortunately, too much misinformation about the HALT Act has already been spread—including misinformation peddled by Members of Congress who are hostile to the law—and NHTSA should aggressively work to debunk these harmful myths. As noted earlier, modern day motor vehicles are already computers on wheels that collect vast amounts of consumer data. To single out the HALT Act and impaired driving technology as somehow being a unique threat to consumer privacy is either naively ignorant at best or disingenuous at worst. NHTSA and media outlets must push back against this false narrative.

Again, public safety and privacy are not at odds. NHTSA can craft a rule that effectively detects and prevents impaired driving while concomitantly protecting driver and passenger privacy. In so doing, NHTSA must also play the vital role of informing the public of this basic, complementary duality, while vehemently rejecting the false dichotomy that consumers must somehow sacrifice their personal privacy in order to save lives on our roads. This is simply not true, and NHTSA must unequivocally and aggressively debunk these harmful myths.

Senator PETERS. I also dedicate today’s discussion to them. As these families know all too well, the safety situation on our roads constitutes a national crisis. In 2021, the National Highway Safety Traffic Administration estimated that the U.S. had the highest number of fatalities since 2005.

Unfortunately, the trend has not significantly improved over the past two years. According to NHTSA’s most recent estimates, roadway deaths remain elevated, with only a three percent reduction in 2023.

<sup>16</sup> Mozilla—It’s Official: Cars Are the Worst Product Category We Have Ever Reviewed for Privacy, September 2023. <https://foundation.mozilla.org/en/privacynotincluded/articles/its-official-cars-are-the-worst-product-category-we-have-ever-reviewed-for-privacy/>

These numbers do not reflect the harm done to our drivers and passengers, but also vulnerable pedestrians, bicyclists, and motorcyclists who continue to be disproportionately harmed on our roads. Also overrepresented in these tragedies are Black, Hispanic, and Native Americans, as well as Americans living in rural areas.

We need a strong and comprehensive response, and today we'll discuss a holistic, Safe Systems approach to addressing the roadway safety crisis, and how we can implement that approach all across our country.

The Safe Systems approach ensures that all aspects of our roadways account for inevitable human error. It emphasized building multiple layers of protection so that even when mistakes are made, death and injury are unlikely.

This framework focuses on five key categories: safer people and behaviors, safer vehicles, safer speeds, safer roads, and improving the post-crash care.

I believe emerging technologies are going to play an important role in this endeavor. New interventions from digital infrastructure that improves crash response, to predictive road maintenance and active traffic management, are absolutely essential to achieving Safe System goals.

That also includes the safe and accountable development, testing, and deployment of autonomous vehicles, which can help us reduce serious injuries and death on our roadways.

I expect our witnesses today to discuss the principles and data behind the Safe Systems approach, as well as how we can better support communities implementing these solutions on the ground.

We have already made important progress. Congress took one key step toward supporting roadway safety with the passage of the Bipartisan Infrastructure Law in 2021. The law provides \$5 billion in Safe Streets for All grants for local, regional, and tribal communities to prevent roadway deaths and injuries using a Safe Systems approach, and requires them to measure their success along the way.

The Bipartisan Infrastructure Law is also the first piece of legislation to establish requirements for complete street standards. These ensure that our roadways can safely accommodate all traffic; that includes vulnerable road users like pedestrians, bicyclists, motorcyclists, and people with disabilities, as well as the elderly.

And finally, with the help of Michigander Rana Abbas Taylor, the Bipartisan Infrastructure Law included the Honoring the Abbas Family Legacy to Terminate Drunk Driving Act, a requirement for the inclusion of impaired driving prevention technology in our vehicles.

Today, we will learn more about the challenges and the opportunities these provisions are posing for communities on the ground. But the Bipartisan Infrastructure Law was just the beginning. There is still so much more that we can and we must do in order to address this crisis.

Our witnesses will also help us examine what solutions need to come next. I would like to thank each of you for being here today, and for the expertise that you're going to share with this committee, and for all you do each and every day to make our streets and our highways safer

I would now invite Ranking Member Young for any opening remarks that you have.

**STATEMENT OF HON. TODD YOUNG,  
U.S. SENATOR FROM INDIANA**

Senator YOUNG. Well, thank you, Mr. Chairman, and I want to thank all of our witnesses for joining us today to discuss a topic of paramount importance, roadway safety in the United States.

Today, I want to highlight our Nation's alarming roadway fatality and crash statistics, discuss the significance of innovation in enhancing roadway safety, and call attention to the important role that tried-and-true infrastructure investments play in keeping our roads safe.

Every year, thousands of lives are tragically cut short due to vehicle crashes. In 2023 alone, nearly 41,000 people lost their lives on American roads. This statistic is not just a number, it represents parents, children, friends, and colleagues whose absence leaves a void in their families and communities.

Additionally, millions of crashes occur annually, leading to severe injuries and substantial economic losses.

These staggering figures underscore the urgent need for innovative solutions to make our roads safer. If we all come together on a bipartisan basis to prioritize human lives over political and parochial interests, we can significantly leverage technology to create safer roadways for everyone.

One of the most promising areas of technological innovation lies in the development of autonomous vehicles, which have the potential to revolutionize roadway safety. Unlike human drivers, autonomous vehicles do not get distracted, tired, or impaired. They can react to hazards more quickly and make split-second decisions based on vast amounts of data that no human could process.

Widespread adoption of autonomous vehicles could reduce traffic fatalities by up to 90 percent, potentially saving tens of thousands of lives each year in the United States. This technology isn't just futuristic, it's a tangible solution that can transform how we think about road safety and massively reduce the number of deaths on our roads every year.

However, the benefits of innovation extend beyond autonomous vehicles. Smart infrastructure is another critical component of a safer transportation ecosystem. Intelligent traffic signals, for example, can adjust in real time to traffic conditions, reducing congestion and minimizing the likelihood of accidents.

Connected vehicle technology allows cars to communicate with each other and with infrastructure, providing drivers with real-time information about road conditions, hazards, and traffic patterns. This interconnected network can significantly enhance situational awareness and reduce the risk of collisions.

Furthermore, public education and awareness campaigns are essential to ensuring that drivers, pedestrians, cyclists, and other road users can understand and embrace these new technologies. Public acceptance and trust are crucial for the successful integration of innovative solutions into our daily lives.

Public awareness and education efforts are also vital to addressing certain longstanding roadway safety issues in a cost-effective

way, not the least of which is one that any parent should be extremely concerned about, and that is school bus safety, specifically related to illegal school bus passings. School bus safety should be at the top of our list when it comes to roadway safety; and unfortunately, it hasn't received the attention it deserves.

Estimates show that more than 43 million violations occur during every 180-day school year. My Stop for School Buses Act, which Chairman Peters co-led with me, was signed into law in 2021 and directed the Department of Transportation to review illegal passing laws and potential technological solutions, along with developing a public safety messaging campaign.

But with all of these things said, public safety campaigns and technological innovation on their own are not enough. We must also focus on improving our roadway infrastructure to improve safety. This includes maintaining road quality and focusing Federal funding to—focused Federal funding to leverage state, local, and private funding for infrastructure projects that will vastly improve roadway safety.

Indiana is home to over 97,000 miles of public roadways, and as the Crossroads of America, Hoosiers rely heavily on transportation infrastructure. In Evansville, Indiana, I've been working hard for years to secure Federal funding for the I-69 Ohio River Crossing project to fill a crucial gap in the Nation's transportation infrastructure, as it links I-69 between Indiana and Kentucky over the Ohio River.

This type of project, which will mitigate traffic congestion, improve overall roadway safety, and significantly leverage non-Federal dollars, is where Federal infrastructure dollars should be focused.

While these statistics on roadway fatalities and crashes are alarming, they also serve a powerful motivator for change. By embracing technological innovation and investing in our infrastructure, we have the opportunity to significantly improve roadway safety in the United States. Autonomous vehicles, smart infrastructure, and hard infrastructure investments hold immense potential to save lives and prevent injuries.

So let us commit to supporting an all-of-the-above approach to advancing roadway safety innovations, working together to create safer roads for everyone.

Thank you, Mr. Chairman.

Senator PETERS. Thank you, Ranking Member Young.

We're also joined by the Ranking Member of the Full Committee; Senator Cruz, you're recognized for any opening remarks.

**STATEMENT OF HON. TED CRUZ,  
U.S. SENATOR FROM TEXAS**

Senator CRUZ. Thank you, Mr. Chairman.

Last year, 40,990 people died on roads in the United States. I expect that we will hear that number multiple times today, and that's because it's a tragic number, especially for all of those who lost loved ones.

There are many reasons that go into this, one of which is lack of adequate infrastructure, lack of sufficient freeways, lack of sufficient space—that creates more traffic.

Unfortunately, the Biden administration has consistently failed to prioritize new freeways; has consistently failed to prioritize infrastructure; and instead, the Biden administration has allowed itself to be distracted by political pet projects, things like bike lanes, and things like the allegation that there are racist roads we need to be worried about, instead of focusing on the important task of building more damn roads.

On this committee, I'm proud to have led the way on multiple pieces of bipartisan legislation that have been signed into law to expand our critical infrastructure.

I-14, a new interstate that will run from the Permian Basin in Texas east all the way to the Atlantic Ocean, that legislation I introduced with Raphael Warnock, a Democrat who serves on this committee, and Cruz-Warnock passed unanimously and was signed into law. That interstate is critically needed throughout west Texas, east Texas, and each of the states that I-14 will run through, all the way to the Atlantic Ocean.

Likewise, I was the lead author of legislation designating I-27 the Ports to Plains Corridor. That bill was introduced with Ben Ray Lujan, another Democrat, another member of this committee. I-27 will run from Laredo, Texas, up north through west Texas, up through the panhandle of Texas, up into New Mexico, ultimately all the way up to Canada. It will be a major artery for north-south trade and commerce, just like I-14 will be a major artery for east-west trade and commerce.

Likewise, I was the lead author of legislation to build and expand four new bridges from south Texas to Mexico across the Rio Grande River. Those bridges were being delayed by bureaucratic roadblocks put up by the Biden administration. Repeatedly I went to the Secretary of Transportation, to the Secretary of State, asked them to stop those bureaucratic roadblocks. They refused to do so. Every one of those projects was delayed three, four, 5 years, until I authored legislation streamlining the permitting of that legislation—of those bridges. That legislation was signed into law in December of last year, and the result will produce tens of thousands of high-paying jobs in Texas and billions of dollars of additional trade and commerce between Texas and Mexico.

Infrastructure is one critical way to protect safety. Another way is public safety. And sadly, we have seen Democrats spend much of the past few years disparaging law enforcement.

And we're learning that less enforcement of traffic safety potentially leads to more traffic crashes. That makes sense. If you think the police are not going to enforce laws, then people are going to be more likely to break the laws.

In his written testimony for today's hearing, Mr. Nelson notes that "Rising traffic fatalities are correlated with drops in the enforcement of lifesaving traffic safety laws," and that parts of the country have seen a decrease in citations by as much as 50 percent for dangerous activities like speeding or impaired driving.

An article from October 2023 titled, quote, "The Decline in Police Traffic Stops Is Killing People" points out that cities like Seattle, New York City, and St. Louis saw traffic stops decline and saw a significant increase in traffic fatalities. Previous research has also drawn a link between declines in traffic enforcement and accidents.

Another notable issue is drugged driving. A 2022 research paper found that from 2009 to 2019, legalization of recreational marijuana was, quote, “associated with a 6.5 percent increase in injury crash rates, and a 2.3 percent increase in fatal crash rates.”

And yet, the Biden administration, rather than working to keep our families safe on the roadways, has instead decreed that it will reclassify marijuana from a Schedule 1 substance to Schedule 3. The American Trucking Association quickly followed this news with a letter highlighting that rescheduling marijuana without an explicit allowance for a test for its use would create confusion and result in, quote, “serious safety impacts to safety sensitive industries.”

I look forward to hearing from the witnesses on each of these topics.

Senator PETERS. Our first witness is Sam Krassenstein. Sam Krassenstein serves as the Chief of Infrastructure for the City of Detroit under Mayor Mike Duggan. He is responsible for leading the city’s infrastructure and transportation priorities, collaborating with state and Federal partners, executing major projects, and overseeing grant funding. He has an MBA and a master’s in urban planning from the University of Michigan.

Welcome, Mr. Krassenstein. Please proceed with your opening comments.

#### **STATEMENT OF SAMUEL KRASSENSTEIN, CHIEF OF INFRASTRUCTURE, CITY OF DETROIT**

Mr. KRASSENSTEIN. Good afternoon. Chair Cantwell, Chairman Peters, Ranking Member Young, and Ranking Member Cruz, and members of the Senate Subcommittee, I am humbled at the opportunity to appear today at this important hearing to represent the City of Detroit and the state of Michigan as a transportation official, proud Detroit resident, motorcyclist, husband, and father.

I’m here because Detroit has the unenviable position of having the second-highest traffic fatality rate and the third-highest rate for pedestrians in the country. Last year alone, we lost 132 lives to traffic violence amidst the 40,990 people killed nationwide.

Our street network was built for a city of nearly 2 million people, almost three times our current population. Like many urban areas nationwide, overbuilt streets creates the perfect scenario for speeding, dangerous driving, and treacherous conditions for our most vulnerable residents trying to catch the bus or cross the street on foot.

With the passage of the IIJA, we had an opportunity to make real change on these overbuilt streets with new programs like Safe Streets for All. We’ve been extremely fortunate to receive two grants through SS4A totaling \$49.6 million across 2022 and 2023.

The first grant allows us to make systematic infrastructure improvements across 30 miles of city jurisdiction roads on our high-injury network: basically, the roads with the highest rate of crashes resulting in injuries.

The second grant focuses on high-crash intersections near transit stops, where data shows most of our pedestrians are getting hit. Many of these intersections are either partially or fully under coun-

ty or state jurisdiction, and required close collaboration with our partners to even be able to apply.

Last week, in partnership with Michigan DOT, we submitted another SS4A request, this time for a pilot for safety countermeasures on our most dangerous roadway, Gratiot Avenue. Gratiot, at least the part within Detroit, is one of the most dangerous roadways in the state for drivers and pedestrians alike.

Gratiot is the perfect example of the road safety challenges that City of Detroit and other cities across the country face. It's a nine-lane surface arterial street that cuts through the heart of Detroit's east side, not far from where I live. The road design has been virtually unchanged since 1956, when streetcars stopped running in the city.

While the posted speed is 30 miles an hour, the actual speeds are likely closer to 60. I say "likely," because we're discouraged from completing a speed study, as state law would require the speed limit to then be updated to the 85th percentile of prevailing speeds, which is not exactly in the name of safety.

Since 2017, this eight-mile stretch of road has had 159 pedestrian and/or cyclist involved crashes, 45 fatalities, and nearly 1,200 injury crashes. These aren't the result of drunk drivers or people texting, but rather the result of a road that no longer meets the needs of the population that it claims to serve.

While Gratiot is also one of the busiest bus transit corridors in the state, there are multiple sections of the road that don't have as much as a marked crosswalk for at least half a mile—which may not seem like a lot, but when someone gets off the bus after a long day at work and needs to get to their house in the neighborhood on the other side of the street, we're asking them to walk more than a mile to avoid crossing 100 feet at an unprotected location.

A hundred feet is wider than some sections of 395. Unsurprisingly, people don't do this, and take their lives into their hands on a daily basis. The data on Gratiot reflects this, with 33 pedestrian fatalities or serious injuries occurring at these unsignalized and unmarked crossings.

In spite of all this, there's little that the city can do without our state DOT, since it's their road. For years, we've been working with our state DOT to figure out a plan for roads like Gratiot, only to be given outdated vehicle-centric design criteria, maintenance obligations that would be placed on the city, and lack of funding as obstacles preventing us from addressing the sobering number of crashes, injuries, and fatalities.

While the SS4A program has created an opportunity for cities to seek funding to address safety challenges on larger-tier corridors like Gratiot, its success is dependent on not just having the funding available, but also having the continued cooperation of state DOTs and county road agencies that historically have done little to prioritize safety or funding in urban areas, and have little incentive from the Federal Government to do so.

However, there's more that you can do to change this. The IIA and the updates to the MUTCD, or the "Manual on Uniform Traffic Control Devices"—basically the Bible for traffic design, if you're unfamiliar with the acronym—are a welcome start, and the pending Complete Streets, and Building Safer Streets legislation, have the

potential to provide tremendous value to local governments, making it easier to add safety elements to projects.

As I close today, I request you to consider how many lives can be saved by funding programs like Safe Streets for All. As we all seek to reduce fatalities and serious injuries on our roadways, it's critical to have dedicated safety funding that does not have to compete with maintaining roads and bridges.

We've gotten used to not treating streets as public spaces, but only as ways to move traffic. If 40,990 people were killed annually in any other setting, there would rightfully be public outrage and a demand for immediate change. We have normalized the traffic violence that we see in our streets as accidents that just happen, rather than crashes that can be avoided.

As stewards of this space, we have a responsibility at all levels to change that and make these spaces safer for the people that use them. I appreciate the work of this Subcommittee and the Committee as a whole on this important subject.

Thank you again for the opportunity to testify today on behalf of the City of Detroit and local governments across the country. Thank you.

[The prepared statement of Mr. Krassenstein follows:]

PREPARED STATEMENT OF SAMUEL KRASSENSTEIN, CHIEF OF INFRASTRUCTURE,  
CITY OF DETROIT

### **Introduction**

Good afternoon, Chair Cantwell, Chairman Peters, Ranking Member Young, Ranking Member Cruz, and members of the Subcommittee. I am humbled at the opportunity to appear today at this important hearing to represent the City of Detroit and the State of Michigan.

My name is Sam Krassenstein, and I serve as Detroit Mayor Mike Duggan's Chief of Infrastructure. I am honored to testify on behalf of the City of Detroit as both a transportation official and proud resident. I want to focus my testimony on the nationwide transportation safety crisis on local roadways, the importance of continued Federal funding to address these issues, and how community solutions are improving safety and quality of life for vulnerable road users.

Each and every traffic death and serious injury represents a preventable tragedy with far-ranging impacts on individuals, families, and communities. Those who lose their lives in traffic crashes are our loved ones, our children, parents, siblings, neighbors, or co-workers. I am a city resident of Detroit and a father of a young child with another on the way. I want my children to enjoy the experience of childhood and to have a sense of safety for our family when walking through our neighborhood streets. I have both a personal and professional commitment to ensuring the future of Detroit includes safe streets for all users, especially the most vulnerable.

### **Safety Crisis**

Traffic deaths rose 9 percent between 2020 and 2022 nationwide, constituting a public health crisis on our roadways, according to the National Highway Traffic Safety Administration (NHTSA). As you're aware, in 2023, an estimated 40,990 people died in roadway crashes in the United States<sup>1</sup> including 132 just within the City of Detroit limits along with another 600 who sustained serious injuries.

I am here today because Detroit has the second-highest traffic crash fatality rate per capita among large cities in the United States and the third-highest pedestrian fatality rate.<sup>2</sup> We lose 108 people annually by traffic crashes within the City of Detroit—or about one person every three days. Our fatal crash rate has continued to rise steadily and rapidly over the past few years, out of pace with the Nation and other large cities at nearly 4x the national average.<sup>3</sup> Fatal traffic crashes resulting

<sup>1</sup>NHTSA

<sup>2</sup>Michigan State Police through the Michigan Traffic Crash Facts (MTCF) portal

<sup>3</sup>MTCF portal

in death or serious injury have increased nearly every year since 2014, resulting in a 53 percent net increase through 2021.<sup>4</sup> This safety crisis compounds other disparities experienced by Detroit's low-income residents and communities of color every day.

We have gotten used to not treating streets as public spaces but only as ways to move traffic. If 40,990 people were killed annually in any other setting like in our public buildings or parks, there would rightfully be public outrage and a demand for immediate change. We've normalized and contextualized the traffic violence we see on our streets as accidents that just happen rather than as crashes that can be avoided. As stewards of this space, we have a responsibility to change that and make these spaces safer for the people that use them.

Detroit's street network was built for a City of nearly two million people, almost three times the current population. Like many urban areas nationwide, overbuilt streets create the perfect scenario for speeding, dangerous driving behavior, and treacherous conditions for our most vulnerable residents trying to catch the bus or cross a street on foot. Meeting the needs and activity levels of the city as it is today while realizing the vision for safer Detroit streets in the future requires a comprehensive overhaul of our roadways. Wide roads with few cars have led to excessive speeding and high pedestrian and bicycle fatality rates. From 2017 to 2021, Detroit had 608 motor-vehicle-involved roadway fatalities.<sup>5</sup> As we look to improve roadway safety, targeted, data-driven changes to roadway design can substantially improve safer roads for all users.

Crashes Involving Vulnerable Users, City of Detroit

User	2017	2018	2019	2020	2021
<i>Pedestrian</i>	448	520	524	399	369
<i>Work Zone</i>	265	379	304	427	533
<i>Elderly</i>	2,905	2,957	2,986	2,333	2,712
<i>Motorcycle</i>	215	209	233	312	297
<i>Bicycle</i>	174	183	149	129	118
<i>Young</i>	2,570	2,575	2,519	2,780	2,897
<b>TOTAL</b>	<b>6,577</b>	<b>6,823</b>	<b>6,715</b>	<b>6,380</b>	<b>6,926</b>

Source: SEMCOG

Crashes Involving Vulnerable Users, Fatal and Serious Injuries, City of Detroit

Type	2017	2018	2019	2020	2021	TOTAL
<i>Fatal</i>	95	101	103	173	136	608
<i>Serious-A</i>	486	480	491	552	565	2574

Source: SEMCOG

Crashes Involving Vulnerable Users, Fatalities and Serious Injuries, City of Detroit

User	Type	2017	2018	2019	2020	2021	TOTAL
<i>Pedestrian</i>	Serious-A	78	81	94	77	65	395
<i>Pedestrian</i>	Fatal	27	36	28	40	43	174
<i>Work Zone</i>	Serious-A	6	2	4	7	13	32
<i>Work Zone</i>	Fatal	2	2	2	-	1	7
<i>Elderly</i>	Serious-A	37	43	49	33	44	206
<i>Elderly</i>	Fatal	13	12	8	4	4	41
<i>Motorcycle</i>	Serious-A	34	42	38	64	61	239
<i>Motorcycle</i>	Fatal	12	6	19	30	19	86
<i>Bike</i>	Serious-A	24	10	17	18	14	83
<i>Bike</i>	Fatal	-	2	2	8	1	13
<i>Young (15-20)</i>	Serious-A	49	58	44	69	78	298
<i>Young (15-20)</i>	Fatal	10	12	12	15	16	65

Source: SEMCOG

<sup>4</sup> MTCF portal

<sup>5</sup> Southeast Michigan Council of Governments

### Detroit's Safety Initiatives

It needs to prioritize the needs of all, emphasize sustainability, minimize negative environmental impacts, and provide an efficient use of resources while maximizing the economic benefits of the transportation investment. In this mindset, Detroit is working on a multifaceted approach to solving safety problem.

In 2017, we looked at a dozen neighborhoods around Detroit to focus on rebuilding our commercial corridors. A key part of our economic development strategy was investing in Streetscape projects to serve as a backbone for placemaking. These streetscape projects were all built on complete streets principles with a very simple objective, make the streets safer for the people that use them to create a corridor where neighborhood businesses can thrive. We developed a *Complete Streets* team to ensure Detroit's design and safety standards follow an approach that enables safe access by considering how our streets build community and benefit people of all ages and abilities. Detroit invested \$80M in bond funding and made improvements that ranged from improving lighting quality, fixing broken sidewalks, and doing road diets to slow traffic down and make places that people want to be. Safer streets support local businesses and commercial corridors. On every corridor where we've made these investments and safety improvements, small businesses are opening and the neighborhoods surrounding them are thriving. While bond funding has been helpful to fund capital projects that bring tangible and direct benefits to residents including increasing road safety, it's not a sustainable funding solution for the safety crisis we're facing day in and day out.

As the Streetscape program got under way, we also started working on our Streets for People Master Transportation Plan to build a road map for road safety in Detroit. During this planning effort, traffic safety was the #1 issue that Detroiters raised by a wide margin. *Detroit's Streets for People Master Transportation Plan*, *Street Design Guidelines*, and *Comprehensive Safety Action Plan* are a family of documents that outline citywide approaches that will be implemented by multiple departments over the coming years with Equity, Dignity, and Transparency as its guiding star and through line.

One of the things to come out of the Streets for People plan was the creation of Detroit's High Injury Network (HIN) to give us a clear priority of where to direct our investments toward the most dangerous streets and work with partners to increase safety on streets the City does not own. In Detroit, 80 percent of all crashes occur on 3 percent of streets, and 34 percent of those crashes resulted in death or serious injury from 2017 to 2020.<sup>6</sup> The streets that make up the HIN tend to be wide, with high speeds, lots of traffic, and few opportunities for people to cross the street safely. These also tend to be streets not under our jurisdiction but that belong to Wayne County or Michigan DOT.

It's a simple idea that our streets are here to serve the Detroiters who use them. The Streets for People plan recognizes that streets are some of our most valuable public spaces that serve multiple purposes. Like any public space, our streets should be beautiful, economically vibrant, comfortable, and safe for all community members regardless of age, ability, or how they choose to get around. Detroit is committed to streets that get you where you need to go safely and give you places where you enjoy spending your time. Overall, Detroit's vision is that everything we do on streets, from roadway design to the use of the curb, ties back to safety.

### Federal Funding

As a priority community within the Federal DOT Thriving Communities Network, Federal funding is critical to meeting Detroiters' safety needs. The Streets for People Plan and Comprehensive Safety Action Plan allow us to identify our funding needs, and the Detroit HIN helps us prioritize requests. The bi-partisan Infrastructure Investment and Jobs Act (IIJA) has provided stable, long-term policy and funding opportunities critical for communities to meet their safety goals. However, we have a long way to go, and continued prioritization of this funding for local roads is critical.

The United States Department of Transportation's (USDOT) programs, such as Safe Streets and Roads for All (SS4A)—focused on preventing roadway deaths and serious injuries—and the Active Transportation Infrastructure Investment Program (ATIIIP)—focused on providing safe and connected active transportation facilities—are providing significant value at local levels. SS4A has provided the City of Detroit with the promise of some relief from this complex safety issue. Being exclusively designed to help local communities, the available funds will have a significant impact in making roadway safety a priority. Awarded communities comprise about 70 per-

<sup>6</sup>MTCF portal

cent of the Nation’s population.<sup>7</sup> The Planning and Demonstration funding pushes communities to prioritize safety by outlining and piloting approaches, and the Implementation funding provides physical safety countermeasures visible on the roads today, addressing the preventable death crisis.

Detroit’s Streets for People Plan was already in the works when the first SS4A Notice of Funding Opportunity was issued back in 2022. This prompted the development of our Comprehensive Safety Action Plan to allow the City to seize the opportunities that SS4A provided to address the safety crisis. We have been fortunate to receive two Implementation grants through the SS4A program totaling \$49.6 million across the 2022 and 2023 fiscal year cycles.

1. The first will allow for infrastructure improvements to city-jurisdiction streets on the High Injury Network with the highest crash rates. This will help reduce severe crashes by implementing evidence-based safety countermeasures, systematically upgrading areas with high numbers of vulnerable roadway users, deploying emerging safety technologies to supplement engineering engineering countermeasures, and executing a robust engagement and evaluation framework.
2. The second focuses on high-crash intersections near transit stops, where data shows that a majority of pedestrian crashes took place within proximity to these stops. Specifically, we targeted intersections with a transit usage that five (5) or more pedestrian involved crashes or five (5) or more fatal or serious injury crashes. Many of these intersections are partially or fully under County or State jurisdiction and required close collaboration with our partners to be able to seek funding. Implementation of this project will substantially reduce the risk of countless vulnerable roadway users being killed or injured in Detroit and help realize the region’s vision for improved transit by dramatically increasing safety and quality of the bus stops, improving ADA compliance, modeling a culture of safety through training for bus operators and staff that encourages safe operations around people walking and biking, and plan for future improvements to promote safe connections between modes.

We can all agree that everyone should be able to get to work, school, healthcare, wherever they need to go safely. This funding is essential for the City of Detroit to continue this work as the national leader in addressing traffic violence, make progress on moving towards a Vision Zero future, and create safer and more welcoming streets for our residents.

### Collaboration

It is important to recognize that cities also have state-and county-owned roadways running through them. In addition to 2,588 city miles, Detroit has 325 state miles and 122 county miles on its road network, which makes up 52 percent of Detroit’s High Injury Network,<sup>8</sup> where high numbers of traffic deaths and serious injuries are occurring. Therefore, safety measures need to be collaborative to be successful.

Last week, in partnership with Michigan Department of Transportation we submitted another SS4A funding request, this time for a Demonstration pilot—for safety countermeasures on the city’s most dangerous roadway, Gratiot Avenue, which is state-owned and not covered by previous funding awards. Gratiot is one of the most dangerous roadways in Michigan for drivers and pedestrians alike, with its entire length on the City’s High Injury Network. Gratiot is the longest contiguous segment of the HIN, representing the greatest opportunity to reduce the number of fatal and serious injury crashes in Detroit. The corridor accounts for the largest proportion of crashes on the HIN, with 147 out of 857.<sup>9</sup>

Gratiot is the perfect example of the road safety challenges that the City of Detroit and other cities across the country face. Gratiot is a 9-lane surface arterial street that cuts through the heart of Detroit’s east side. The road design has been virtually unchanged since 1956 when streetcars stopped running in Detroit. While the posted speed is 30mph, the actual speeds average closer to 60mph (though we are prevented and discouraged from completing a speed study as State law would require the speed limit to be updated to the 85 percent percentile of prevailing speeds). Since 2017, this 8-mile stretch of road has had 159 pedestrian or bicycle involved crashes, 45 fatal injuries, and nearly 1200 injury crashes. These largely aren’t the result of drunk drivers or people texting, but rather they are the result of a road that doesn’t meet the needs of the population it serves. While Gratiot is one of the busiest bus transit corridors in the State, there are multiple sections of the road that don’t have as much as a marked crossing for at least half a mile which

<sup>7</sup>USDOT

<sup>8</sup>Detroit Streets For People Plan

<sup>9</sup>SEMOG Analysis

means that when someone gets off the bus from work and needs to get to their house on the other side of the street, we're asking them to walk more than 1 mile to get to the other side to avoid trying to cross 100' at an unprotected location. Unsurprisingly, people don't do this and regularly take their lives into their hands on a daily basis. The data on Gratiot reflects this with 33 pedestrian fatalities or serious injuries occurring at unsignalized or marked crossings since 2017. In spite of all this, there is little the City can do without our State DOT since it's their road.

While the SS4A program has allowed us to strengthen our partnership and collaboration with our local partners and other stakeholders around the shared safety crisis in our community, we need to be doing more to incentivize safety measures by road owners. For years, we have been working with our State DOT to figure out a plan for roads like Gratiot only to be given outdated design criteria and funding excuses for addressing a sobering number of crashes, injuries, and fatalities. While the SS4A program has created an opportunity for cities to seek funding to address the safety challenges on corridors like Gratiot, its success towards addressing our most dangerous streets are solely dependent on not just having the funding available, but also having the continued cooperation of State DOTs and County road agencies that historically have done little to prioritize safety or funding within urban areas and have little incentive from the Federal government to do so. Even if funding materializes for Gratiot, we expect an uphill battle on finding consensus on exact safety countermeasures and the need to deviate from outdated design standards not in line with today's best practices.

#### **SS4A Reauthorization**

As I've highlighted, the IIJA provides increased funding and flexibility, allowing cities to expand their efforts to identify and implement improvements to our surface transportation infrastructure, which counteracts the daily tragedies occurring on our roads.

The investments in infrastructure safety activities and programs, such as the Safe Streets and Roads for All Grant Program, continue to provide funding opportunities for local and state governments to collaborate in addressing this road safety crisis throughout the planning, design, operation, and maintenance of all public roads.

The IIJA has helped DOTs and communities address our aging transportation infrastructure in an expansive way. The bill's prioritization of funding to various programs has allowed the bill to provide the resources needed to address critical infrastructure needs at the local level. I ask that you continue programs that allow us to address safety issues on local streets and roads for all users. It is crucial as we address the pressing safety crisis on our roadways with the attention it desperately needs.

As we continue to look at the opportunities to create safer roads, this program should continue to be a bi-partisan priority. For future authorizations, I recommend Congress apply more of the funding allocation to the Implementation Grant or allow Planning and Demonstration Grant funding to be used for Implementation Projects to provide a greater impact in the communities now that action plans are in place at regional and local levels. I also recommend that incentives such as waived match requirements in disadvantaged communities be added to encourage cross-agency collaboration for addressing dangerous streets under State or County jurisdiction.

#### **Vision Zero and Safe System Approach**

The transportation industry has evolved in recent years, and new and updated standards on road safety, such as Vision Zero, Safety System Approach, and the Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD), 11th edition, have been widely supported.

##### **1. Vision Zero<sup>10</sup>**

I mentioned Detroit's vision zero goal earlier. This global safety strategy has gained momentum to eliminate all traffic fatalities and severe injuries while increasing safe, healthy, and equitable mobility for all. People sometimes make mistakes, so the road system and related policies must be designed to ensure those inevitable mistakes do not result in severe injuries or fatalities. System designers and policymakers can participate by improving the roadway environment and policies, such as speed management, to lessen the severity of crashes. The strategy acknowledges that many factors contribute to safe mobility—including roadway design, speeds, behaviors, technology, and policies—and sets clear actions to achieve the shared goal of zero fatalities and severe injuries.

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<sup>10</sup> Vision Zero Network



Source: Vision Zero Network

## 2. Safe System Approach<sup>11</sup>

Thanks to your leadership, the IIJA calls out the principles of the Safe System Approach: that no death or serious injury is acceptable; people make mistakes and are vulnerable; we all share responsibility in preventing serious crashes; we need to be proactive in our efforts, and we need to have redundant safety strategies in place. Improving roadway safety requires a Safe System Approach combined with advancements in technology. No one solution will solve this problem. The transportation community has embraced the Safe System Approach as an effective way to address and mitigate the risks inherent in our enormous and complex transportation system. It works by building and reinforcing multiple layers of protection to both prevent crashes from happening in the first place and minimize the harm caused to those involved when crashes do occur. It is a holistic and comprehensive approach that provides a guiding framework to make places safer for people. (*What Is a Safe System Approach?* | U.S. Department of Transportation) This supports a combination of roadway safety countermeasures focusing on human mistakes and vulnerability to design a system with many redundancies to protect everyone.



Source: USDOT

<sup>11</sup> USDOT

### Federal Policy

This year, states are beginning to adopt the 11th edition of the Federal Highway Administration's Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD), the first major update since 2009. The MUTCD serves as the governing document for accepted safety design principles and standards that Departments of Transportation and agencies follow for all traffic control devices installed on any street, highway, bikeway, or private road open to public travel and must be adopted within two years.

The updates address the evolving challenges of modern traffic and provide guidelines for meeting the safety infrastructure needs of pedestrians and bicyclists. The manual ensures a standardized approach to traffic control nationwide and underscores the urgency of implementing the latest and best practices in safety measures on our roads. Thank you for mandating that the manual be updated every four years in the IIJA to keep pace with innovation and current practices.

However, there is more that the Federal government and Congress can be doing to support road safety around the country. Both the pending Complete Streets and Building Safer Streets Acts have the potential to provide tremendous merit and value to local governments. The *Building Safer Streets Act* would help to speed up delivery of common-sense safety countermeasures by giving local governments more flexibility on working around outdated and restrictive design standards. The *Complete Streets Act*

would ensure that projects using Federal money be required to incorporate best practice complete streets design standards into construction projects. Even on our own Federally funded road projects, we are disincentivized from adding safety improvements beyond pavement markings at the perceived risk of being held up in State and FHWA reviews. Requirements for engineered drawings on basic project elements, such as ADA ramps and sidewalk replacements, put an onerous burden on municipalities and threaten the obligation date requirements each funding cycle.

Local agencies shouldn't be put in a position where safety is second to budget and schedule or have to ask other road jurisdiction owners to prioritize safety in their communities and welcome support from the Federal government to figure out ways to incentivize change.

### ITS

As I've mentioned, Detroit takes a multifaceted approach to safety. This approach is centered around creating safer roads from the way we design and maintain them, but it also includes Intelligent Traffic System (ITS) modernizations. ITS improvements benefit Detroiters through increased safety, mobility, and connectivity. In 2017, FHWA granted the city an Advanced Transportation and Congestion Management Technologies Deployment (ATCMTD) grant that kickstarted efforts to continue advancing ITS as another mechanism to save lives. The City of Detroit's Traffic Management Center (TMC) provides for the remote monitoring of these traffic signalized intersections using a central platform, Econolite Centrac's Advanced Traffic Management System (ATMS). This intuitive GUI-based enterprise-class traffic software solution provides powerful and flexible ITS management, traffic control, and data sharing in one ATMS platform. In addition to real-time monitoring, the City utilizes its ATMS remote capable systems to deploy optimal signal timing plans in response to planned or unplanned events. The recent 2024 NFL Draft, in which we set a record of attendance with over 775,000 fans converging in the downtown environment throughout the three-day event, was closely monitored using the ATMS system.

In 2023, the City of Detroit won a \$2 million "Strengthening Mobility and Revolutionizing Transportation" (SMART) USDOT grant to improve traffic safety and equity in the city for the Detroit "Mobility Optimization through Data for Equity and Safety" (Detroit MODES). The Detroit MODES initiative will use existing smart intersection technology to collect contextual and environmental data on crashes from a variety of sources, use advanced analytics to identify dangerous areas and measure the effectiveness of construction and City interventions, and summarize findings on a cloud-based platform with high-level summaries and focus zones. This type of technology allows us to identify dangerous intersections with near misses sooner so we can intervene before a crash or fatality takes place. We are actively exploring other technologies with an overarching goal of developing ITS technologies that are sustainable and compatible with the City's current infrastructure.

### Conclusion

As I close today, I request that you consider how many lives funding programs like Safe Streets for All can save by making it easier for local governments to plan, pilot, and implement common sense safety countermeasures and proven safety de-

sign standards. As we all seek to reduce fatalities and serious injuries on our roadways, it is critical to have dedicated safety funding that does not have to compete with maintaining roads and bridges. I understand that we are more than halfway through the IIJA, and discussions on the next iteration of the bill will begin shortly. As you engage in these crucial discussions around funding authorizations and allocations, please consider what those funds can do for our communities by creating safer streets and saving lives. Unsafe roadways affect users but disproportionately impact the most vulnerable. Let's seize the opportunity to pave the way towards a future where our streets are not just conduits of transportation, but pathways to safety for all.

I appreciate the work of this subcommittee and committee as a whole. Thank you again for the opportunity to testify today on behalf of the City of Detroit and local governments across the Country, I am happy to answer any questions.

Senator PETERS. Thank you, Mr. Krassenstein.

Our second witness is Laura Chace, and she's President and CEO of The Intelligent Transportation Society of America.

She also currently serves as an advisor on the United States Department of Transportation's Transforming Transportation Advisory Committee to help the department navigate how to incorporate advanced technology, safety, and responsibility into our transportation system.

Ms. Chace, thank you for being here today. You may proceed with your opening remarks.

**STATEMENT OF LAURA CHACE, PRESIDENT AND CEO,  
INTELLIGENT TRANSPORTATION SOCIETY OF AMERICA**

Ms. CHACE. Thank you. Thank you, Chairman Peters, Ranking Member Young, Full Committee Chairwoman Cantwell, Ranking Member Cruz, and members of the Subcommittee. I appreciate the opportunity to speak on this important topic of roadway safety.

In addition to the roles that Chairman Peters just mentioned, I'm also a mother of three children, including two teenage drivers. So the topic of transportation safety is near to my heart.

In every facet of my life, I see opportunities to make transportation safer so kids going to school, parents returning home, and a routine trip to the grocery store doesn't end in tragedy.

ITS America is a nonprofit association, which for over 30 years has been at the forefront of bringing together government, industry, and research to advance our vision of a better future transformed by technology and innovation, one that is safer, greener, and smarter for all.

The status quo approach to addressing transportation safety is insufficient. Doing the same thing we have always done will yield only incremental results. It is clear we need a mindset shift to address the more than 40,000 transportation fatalities each year. We need to embrace a comprehensive, all above—all-of-the-above approach to improving safety on our roadways, which includes fully leveraging technology solutions that are available today.

These solutions, including digital infrastructure, artificial intelligence, V2X communications, and automation, are not just nice to have, they are essential to improving safety and achieving our goals of Vision Zero.

The U.S. spends billions of dollars every year on transportation and infrastructure, yet we don't see meaningful progress on lowering traffic fatalities. Of the \$673 billion in spending in the IIJA, only \$800 million was dedicated specifically for technology deploy-

ment, totaling around one-tenth of one percent of total infrastructure funding, even though technology investments can often provide more cost-effective solutions. Clearly, the amount of funding currently directed toward transportation technology is inadequate.

The U.S. also needs to adopt a proactive approach to improving safety, rather than the often standard approach of reacting to tragic events that could have been prevented. To be proactive, we must move from focusing solely on physical assets such as roads, bridges, guardrails, and speed bumps, to harnessing the power of innovation, data, and technology to improve safety. Fully deploying a layered approach of both physical and digital infrastructure assets is the way we will achieve Vision Zero.

Technology provides the opportunity to proactively address safety in myriad ways: at intersections, on highways, in congested urban environments, and in rural areas. Digital infrastructure and artificial intelligence can recognize and predict dangerous conditions that were previously unidentified, helping road users and transportation agencies address these situations ahead of time.

V2X communications provides drivers and other road users with more information about hazardous conditions around them, or impending collisions—and key, things beyond their line of sight, so that it gives them more time to react and make better decisions that improve safety.

Automation is another proactive solution to enhance safety. ADAS technologies are already responding to driver action or inaction to correct vehicle positioning, brake for pedestrians, and more.

Technology can also make static infrastructure dynamic, such as changing speed limits in the event of congestion or adverse weather, or extending traffic signals in real time when a pedestrian is in a crosswalk and needs more time.

Technology can take us from a reactive system to a proactive system that addresses issues before they result in a death. The good news is we can do more today to integrate technology into our programs to ensure that these tools being developed right here in the U.S. are also deployed here at home to improve safety.

This includes finalizing USDOT's national V2X deployment plan to help advance this lifesaving technology at speed and scale. It also includes prioritizing technology into the Safe Systems approach, Complete Streets, the New Car Assessment program, and other USDOT policies and guidance; and prioritizing technology deployment under other discretionary grants, such as Safe Streets and Roads for All and RAISE.

Congress also has an opportunity to reimagine the future of transportation technology when it reauthorizes surface transportation programs in 2026. This includes incorporating technology at every step in the process, from planning to construction to operations; and rethinking how we approach technology, from policy to funding to procurement.

Deployers need substantial and certain funding for technology that's incorporated at the beginning of a project's life cycle. We must also update our policies and best practices for procuring new kinds of technology and software.

American innovation continues to lead the world. We have the opportunity to harness this innovation in the communities where

we live, work, and play to realize better safety outcomes for all. As a mother, I long for the day when I don't have to say to my children, "Call me when you get there safely." We can make that day a reality faster by leveraging technology in a more holistic way.

Thank you for the opportunity to appear today, and I look forward to your questions.

[The prepared statement of Ms. Chace follows:]

PREPARED STATEMENT OF LAURA CHACE, PRESIDENT AND CEO, INTELLIGENT  
TRANSPORTATION SOCIETY OF AMERICA

Chairman Peters, Ranking Member Young, full committee Chairwoman Cantwell, Ranking Member Cruz, and members of the subcommittee, thank you for the opportunity to speak today on the important topic of roadway safety.

My name is Laura Chace, and I serve as the President and CEO of the Intelligent Transportation Society of America (ITS America). In addition to that role, I currently serve as an advisor on the United States Department of Transportation's (USDOT) Transforming Transportation Advisory Committee (TTAC) to help the Department navigate how to incorporate advanced technology safely and responsibly into our transportation system. Importantly for this conversation, I am also a mother of three children, including two teenage drivers, so the topic of transportation safety is something I think about every day and is near to my heart. In every facet of my life—as the leader of a transportation technology organization, as a mother, and as a user of the transportation system—I see opportunities to make transportation safer so that kids get to school safely, parents get home safely, and a trip to the grocery store or to visit relatives doesn't end in tragedy.

ITS America is the Nation's leading advocate for the technological modernization of our transportation system by focusing on advancing research and deployment of intelligent transportation technology. ITS America was founded in 1991 as an advisory council to USDOT on technology innovation and emerging transportation technologies. ITS America is the only organization in the country that represents all sectors—public, private, research and academia,—to advance transportation technology in support of societal goals. Our vision is one of a better future transformed by transportation technology and innovation. One that is Safer, Greener, and Smarter for all. Our membership includes state and city departments of transportation, transit agencies, metropolitan planning organizations, automotive manufacturers, technology companies, engineering firms, automotive suppliers, and research and academic universities.

Our work accelerates the deployment of technology that saves lives, promotes sustainability, and advances more efficient and equitable transportation of people and goods. ITS America's work focuses on connected and automated technologies, smart and digital infrastructure, artificial intelligence, technologies that improve sustainability and resiliency, and other technologies that support on demand mobility, integrated multimodal transportation, public transportation, and freight.

### **I. The Status Quo Approach to Safety is Not Working**

It is well known that far too many people are injured or die on our Nation's roads each year. In 2023, the National Highway Traffic Safety Administration (NHTSA) estimated that there were 40,990 deaths on American roads.<sup>1</sup> This number continues to outpace pre-pandemic road deaths and we must take significant action to make our roadways safer. Vulnerable road users (VRUs), such as pedestrians and bicyclists, are particularly at risk of injury and death in traffic collisions. NHTSA estimated that in 2022, 8,952 vulnerable road users were killed in crashes, an increase from the previous year.<sup>2</sup> Pedestrians and bicyclists are also increasingly vulnerable to serious injury on our roadways.

In addition, roadway fatalities disproportionately impact people of color. According to research from the Governors Highway Safety Association (GHSA), African Americans were killed in traffic crashes at a rate almost 25 percent higher than Caucasian pedestrians in recent years, and African American pedestrians were killed at

<sup>1</sup>National Highway Traffic Safety Administration <https://www.nhtsa.gov/press-releases/2022-traffic-deaths-2023-early-estimates>

<sup>2</sup>National Highway Traffic Safety Administration <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813560>

a rate twice as high.<sup>3</sup> These numbers demonstrate the scale of the problem, but we know that this is not just a number. Each of these fatalities causes a tragic impact on the lives of the family members and friends who knew the victims. Even in my own neighborhood in Bethesda, Maryland, two teenage cyclists and an elementary school aged child waiting at a bus stop have been killed in the past few years. This does not even count the near misses and injuries that we do not see, and I am sure my fellow witnesses and members of this subcommittee have their own personal story when it comes to tragedies on our roads.

It is appropriate that these tragedies have garnered attention and generated a response, and we are grateful for this Subcommittee's attention to the issue. But I am tired of seeing the same outcomes: even with reductions in roadway fatalities in the past few years, the numbers are still too high. Furthermore, these numbers do not capture the millions of Americans that are injured on our roads every year, nor the estimated \$800 billion in financial costs that such crashes cost our country annually. These numbers demonstrate the scale of the problem and the need for a multi-pronged solution.

The status quo approach to addressing transportation safety is insufficient, and innovative solutions are required. In any other industry, we would not accept the sheer number of injuries and deaths that we see in the transportation sector, particularly caused by vehicle crashes. These road fatality rates are far from inevitable—we only have to look at our Canadian and European partners to see countries with road fatalities decreasing across the board. From 2010 to 2020, deaths on American roads rose 19 percent per capita, and Canada's rate fell at twice the pace.<sup>4</sup> In 2021, France's number of deaths per capita from vehicle crashes was three times lower than the U.S.<sup>5</sup>

It is clear that the U.S. needs a mindset shift on how we address transportation fatalities, and we need to embrace a comprehensive, all-of-the-above approach to improving safety on our roadways.

Technology is a key tool to solving our traffic safety problems, and it is more apparent than ever that we need to prioritize investments in technology solutions, such as Vehicle-to-Everything (V2X) communications, digital infrastructure, artificial intelligence (AI), and automation that will improve safety outcomes for all road users. The U.S. spends billions of dollars every year on transportation and infrastructure, yet we do not see real progress on meaningfully lowering traffic fatalities. While the Infrastructure Investment and Jobs Act (IIJA) included \$673 billion in spending for transportation and infrastructure, only \$800 million was dedicated specifically for technology (\$500 million for SMART and \$300 million for ATTAIN), totaling around one-tenth of one percent of total infrastructure funding. Clearly, the amount of funding currently directed towards transportation technology is inadequate relative to the outsized impact such funding can create.

## II. We Need a Proactive Approach to Safety, Not a Reactive Approach

The U.S. needs a proactive approach to improving safety for all road users, rather than reacting to tragic events that could have been prevented. Too often, the standard approach has relied on making safety improvements after a traffic death has occurred. We have the tools today to be more proactive in how we address safety. We do not have to wait for a death to occur to implement needed safety improvements across our transportation system.

Historically, our transportation system has focused on physical assets, such as roads, bridges, guardrails, and speed bumps. However, in this modern era, we should also be harnessing the power of innovation, data, and technology to address the safety crisis. Roadway safety requires a layered approach of both physical and digital infrastructure assets, and fully deploying both is the only way we will be able to achieve Vision Zero.

Technology provides the opportunity to proactively address safety challenges in myriad ways. Technology can recognize and predict dangerous conditions that were previously unidentified, helping road users and transportation agencies understand and address dangerous situations ahead of time. These tools also provide drivers with more information about the hazardous conditions around them on the roadway, allowing more time to react and make better decisions that improve safety. We can have a dynamic infrastructure with technology, such as changing speed limits in the event of congestion and adverse weather or extending traffic signals when a pedes-

<sup>3</sup> Governors Highway Safety Association, *ghsa.org/sites/default/files/2021-06/An%20Analysis%20of%20Traffic%20Fatalities%20by%20Race%20and%20Ethnicity.pdf*

<sup>4</sup> Why Canada Isn't Having a Traffic Safety Crisis, Bloomberg, <https://www.bloomberg.com/news/articles/2022-07-01/why-canada-isn-t-having-a-traffic-safety-crisis>

<sup>5</sup> <https://data.oecd.org/transport/road-accidents.htm>

trian is in a crosswalk. Technology can take us from a reactive system whose tools are largely focused on reacting to fatalities to a proactive system that addresses issues before they result in a death or serious injury.

Today, many technologies are being deployed, and even more are emerging, that will reduce crashes and fatalities. This testimony focuses on four key technologies that will make our transportation system safer for the traveling public: digital infrastructure, artificial intelligence, V2X technologies, and automation.

Only recently have we seen more emphasis at the Federal level on integrating technology into the Nation's transportation system. Recent investments in safety-critical technology for our roads through grant funding and formula program eligibility, as well as efforts such as USDOT's draft National V2X Deployment Plan, are significant and welcome steps toward beginning to scale transportation technology on our roads.<sup>6</sup> It is imperative that Congress, USDOT, and other agencies proactively support continued investments in safety-critical technology and develop strategies to advance national deployment.

### **Digital Infrastructure and Artificial Intelligence**

Our transportation system is evolving, it is no longer just concrete, asphalt, and steel. Today, our transportation system includes sensors, software, data, and algorithms. In this new era of infrastructure, we will link the physical transportation system with a digital layer, allowing us to gather, transmit, store, analyze, communicate, and share information in real time, and to use that information to increase safety, reduce congestion, reduce emissions, and enhance mobility for every transportation user.

Digital infrastructure helps us gather information about our transportation system and infrastructure, providing agencies with crucial tools to make planning decisions, enact safety countermeasures, and monitor the status of their system. Artificial intelligence allows us to maximize the use of this information, processing and analyzing data at a speed that would be impossible without this technology, providing predictions and actionable insights from the data.

Below, we identify several solutions that are available today that capitalize on the opportunities that digital infrastructure and/or artificial intelligence can provide. Many of these technologies are already deployed in communities across the country, beginning to provide safety and other benefits to our transportation system.

#### *Intersection Safety and AI*

Each year, crashes at intersections are responsible for roughly one-quarter of all traffic fatalities and one-half of all injuries.<sup>7</sup> Fortunately, there are several technologies that can be deployed now to increase safety at these intersections. A combination of radar, lidar, cameras, along with edge computing, including mobile edge computing (MEC) with AI capabilities, and connectivity can provide broad opportunities for transportation systems while greatly improving safety for all road users, but particularly VRUs. As USDOT recognized in its Intersection Safety Challenge, by leveraging these solutions, we can both improve VRU safety in intersections specifically, as well as take the next step in improving the functionality and safety of the Nation's transportation system across the board.<sup>8</sup>

Rather than reacting to crashes, changing signals or intersection design proactively based on near miss data can improve safety outcomes before another injury or fatality takes place. In one example, ITS America member Rekor helped the Regional Transportation Commission of Southern Nevada (RTCSV) identify near miss hotspots by showing the agency data that they did not know existed about wrong way driving and dangerous pedestrian crossings. This allowed the agency to make improvements to physical infrastructure to immediately enhance safety. Additionally, Rekor's AI tools detect crashes well in advance of the traditional method of receiving a 9-1-1 call, automatically alerting first responders. This has allowed EMS crash response to respond to incidents by an average of 9 to 10 minutes faster. As recognized in USDOT's National Roadway Safety Strategy (NRSS), the timing of the arrival of ambulances and emergency responders is a major factor in whether an injured person survives a crash. Responding to and clearing incidents faster has also reduced secondary crashes, which make up 20 percent of overall crashes.

In Florida, Osceola County is diagnosing safety issues and implementing mitigation measures through an AI platform from the company Derq. By analyzing video

<sup>6</sup> [https://www.its.dot.gov/research\\_areas/emerging\\_tech/pdf/Accelerate\\_V2X\\_Deployment.pdf](https://www.its.dot.gov/research_areas/emerging_tech/pdf/Accelerate_V2X_Deployment.pdf)

<sup>7</sup> Federal Highway Administration <https://highways.dot.gov/safety/intersection-safety/about>

<sup>8</sup> Additional context on how ITS America recommends approaching intersection safety technologies can be found in our response to FHWA's Inter Request for Information. Available at: <https://itsa.org/wp-content/uploads/2022/11/VRU-Intersection-Safety-RFI-ITSA-Comments.pdf>

data from traffic cameras installed at intersections, the county can identify near-misses and other dangerous pre-crash scenarios. These predictive analytics platforms provide insights that help agencies address safety proactively and inform future infrastructure planning.

Technology can simplify and optimize the process of retiming intersections to better manage existing traffic patterns and congestion, significantly reducing the burden this costly and time-consuming process places on public agencies across the country. There are over 350,000 traffic signals in the U.S., and data shows that it takes 70 manual hours to retime one intersection.<sup>9</sup> There are tools today, such as those from Flow Labs, that can optimize traffic signal timing almost instantaneously generating optimized timing plans with a click of a button and integrating directly with traffic signal controllers for updates. Traffic signal timing that is responsive to real-time conditions can improve safety.

While these solutions may not be visible to the public, like restriping or resurfacing a road, they are transformative, cost-effective tools that improve safety in communities by providing valuable insights to local transportation authorities on how to best manage their system and target investments where they are needed most. Broader deployment of these technologies would lead to measurable and meaningful safety outcomes.

#### *Protecting Vulnerable Road Users*

Pedestrians are increasingly vulnerable to injuries and fatalities, in both rural and urban environments alike, with fatalities rising at a rate of 14 percent since 2019.<sup>10</sup> Common sense solutions, like pedestrian detection technology, can help stop the trend of rising pedestrian deaths in its tracks. In 2024, our infrastructure should be smart enough to detect when a person is still in the crosswalk and requires more time to finish crossing a street, allowing the infrastructure to automatically extend the light so that a person can safely complete the crossing. For example, lidar can detect slow-moving or static objects on the roadway like humans or those with increased needs, particularly at night when most pedestrian fatalities occur, and provide the opportunity to extend crossing time. The technology also does not collect biometric data, meaning cities get rich traffic data without compromising privacy. Using fixed lidar technology, adaptive signals, and AI algorithms, cities like Bellevue, Washington have demonstrated success when deploying pedestrian detection technology with the help of private sector companies like AWS and Ouster.<sup>11</sup>

Additionally, data from thermal cameras, high-definition cameras, and wireless micro-radar sensors determine the presence of pedestrians and bicyclists and can be used to extend green phases for safe crossing. The insights derived from processing this data through AI algorithms can help cities across the country identify problem areas, select appropriate safety countermeasures, and invest in improvements.

#### *Rural Community Safety*

Rural communities face a disproportionately higher burden of traffic fatalities. According to NHTSA, the fatality rate per 100 million vehicle miles traveled was 1.5 times higher in rural areas than in urban areas in 2021.<sup>12</sup> In rural regions, the absence of essential infrastructure such as broadband Internet and fiber optics impedes the deployment of advanced data collection systems. Moreover, these regions often lack the technical personnel and technologies required for effective data management, visualization, and analysis. The infrastructure disparity becomes even more stark when considering Native American populations. Native American/Alaskan Native persons have the highest annualized, age-adjusted traffic-related pedestrian death rates of all races/ethnicities.<sup>13</sup>

The Yakama Nation in the state of Washington has installed AI-powered roadside units at an intersection where the highway meets a local road, as part of a pilot project to improve traffic safety on U.S. Highway 97. These devices are equipped with multi-sensing (*i.e.*, camera, environment sensors, etc.), computing, and communication capabilities, making them ideal for monitoring traffic, detecting dangerous events, and providing real-time warning messages to road users. These devices can operate without relying on extensive infrastructure support, such as a broadband

<sup>9</sup> Flow Labs <https://www.flowlabs.ai/solutions/traffic-signal-operations>

<sup>10</sup> Governors Highway Safety Association <https://www.ghsa.org/resources/news-releases/pedestrians-preliminary24>

<sup>11</sup> City of Bellevue, WA *Passive Pedestrian Detection Real-Time Safety Application Phase Extension Pilot.pdf* ([bellevuewa.gov](https://bellevuewa.gov))

<sup>12</sup> National Highway Traffic Safety Administration <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813488.pdf>

<sup>13</sup> Governors Highway Safety Association *An Analysis of Traffic Fatalities by Race and Ethnicity\_0.pdf* ([ghsa.org](https://www.ghsa.org))

connection. Small infrastructure upgrades such as this can have tremendous impacts on rural communities with vulnerable populations who often do not have access to broadband connections.

#### *Supporting Dynamic Infrastructure*

Variable speed limits (VSL) are another digital tool that can be used to manage speed dynamically on highways in urban and rural areas alike, adjusting to real-time conditions and stabilizing traffic flow especially when crashes, work zones, or poor weather conditions are present. Virginia DOT has deployed VSL on northbound I-95 in Spotsylvania, pairing LED signs displaying variable speed limits between 40 mph and 70 mph with dynamic message boards. Data from June 2022 to February 2023 showed reduced crash rates for all types of crashes compared with the same period a year earlier, including a 22 percent reduction in fatal and injury crash rates and a 9 percent reduction in rear-end crash rates.<sup>14</sup> Widespread deployment of VSL or similar digital tools can improve safety by adjusting speed limits to real-time conditions, reducing rear-end and secondary crashes, and inducing better driver behavior.

#### *Predictive Maintenance*

Using AI, transportation agencies can predict maintenance needs proactively for infrastructure assets and fleets.

AI tools can help agencies identify structural issues in bridges and roads early on and monitor for further wear-and-tear. Traditional methods involve manual inspection, which can be costly and time consuming for public agencies. New innovations use computer vision AI, virtual reality tools, and drones to collect images and video of roads and bridges. While the cameras continually monitor the site, software processes and analyzes the collected data, providing engineers with a safety assessment that includes information about structural changes and weaknesses, as well as immediate damage.

With machine learning capabilities, we can now identify and predict vehicle and fleet maintenance with precision, improving not only vehicle performance but also maintenance operations and costs. New York City's MTA is using AI technology to predict bus breakdowns and maintenance needs, which has increased maintenance productivity and lowered material costs.<sup>15</sup>

Maintenance through software-enabled assets is a key area where USDOT should focus, bringing more cutting-edge AI tools to monitor our transportation system's physical assets and improve safety outcomes.

#### **V2X Technologies**

V2X technologies enable vehicles and infrastructure to exchange messages wirelessly and very quickly with other vehicles, roadside infrastructure, and vulnerable road users—like bicyclists and pedestrians. Sharing key information between the various parties in the transportation network allows responses that can improve safety, prevent crashes, optimize system performance, and reduce congestion. Specifically, NHTSA has estimated that these technologies have the potential to eliminate or mitigate up to 80 percent of non-impaired crashes.<sup>16</sup>

The National Transportation Safety Board (NTSB) has long recognized the impact these technologies could have if deployed in vehicles at scale, having first identified the potential of V2X to save lives in 1995.<sup>17</sup> NTSB first recommended in 2013 that NHTSA require V2X in new vehicles after identifying additional fatal crashes that could have been prevented by these technologies and has continued to call for the technology's inclusion in new vehicles.<sup>18</sup>

State DOTs understand the safety benefits of V2X, and many are deploying this technology in their transportation networks. Georgia DOT has deployed the largest network of V2X technologies, covering 1,200 signalized intersections. Georgia is now deploying fiber, V2X roadside units, cameras, and traffic sensors across their interstate system.

Many V2X applications are enabled by cellular vehicle-to-everything (C-V2X) devices, a communications method which utilizes dedicated spectrum to reliably de-

<sup>14</sup> National Operations Center of Excellence <https://transportationops.org/case-studies/interstate-95-variable-speed-limit-system>

<sup>15</sup> NYC Transit Presentation to MTA Finance Committee [new.mta.info/document/115371](https://new.mta.info/document/115371)

<sup>16</sup> NHTSA NPRM on V2V Communications, 2016

<sup>17</sup> Multiple Vehicle Collision With Fire During Fog Near Milepost 118 on Interstate 40, Menifee, Arkansas, January 9, 1995, and Special Investigation of Collision Warning Technology, <https://www.nts.gov/investigations/AccidentReports/Reports/HAR9503.pdf>

<sup>18</sup> NTSB Safety Recommendation H-13-031 <https://data.nts.gov/carol-main-public/sr-details/H-13-031>

live instant alerts to drivers from other vehicles, infrastructure, and other road users. These messages contain key information about the location, direction, and speed of vehicles and other travelers, traffic conditions—including the state of traffic signals—and prevailing roadway conditions—such as weather, pavement conditions, work zones, and other disruptions.

Additionally, contemporary solutions already in deployment across the country are demonstrating how communities can effectively deploy certain V2X use cases through diverse means beyond dedicated spectrum, such as cloud-based V2X solutions over cellular networks and localized mobile edge computing.

These methods are not mutually exclusive and, in fact, serve as complementary avenues for transportation ecosystem stakeholders to extend the reach, reliability, and resilience of V2X applications.

#### *Preventing Vehicle Crashes*

Once deployed in vehicles at scale, V2X technologies will provide numerous safety benefits with the potential to eliminate or mitigate most crashes.

While on-board sensors have improved the safety capabilities of vehicles, V2X addresses a key limitation in those capabilities—they are limited to line of sight. V2X technology can play a greater role by providing drivers and other road users with critical information and improved awareness about roadway, traffic, and weather conditions before a user encounters them through the deployment of connected vehicles and infrastructure. The information exchange enabled by V2X communications can warn drivers about sudden braking, wrong way drivers, and other dangerous roadway scenarios, allowing them to take action to avoid vehicle pileups and other associated crash risks.

#### *Protecting Vulnerable Road Users*

V2X technologies alert drivers about road conditions, road users, or pre-crash scenarios in real-time, these technologies are particularly poised to reduce the likelihood of pedestrian and cyclist crashes. By alerting drivers to the presence of pedestrians and cyclists outside of their line of sight but inside their intended travel path, drivers can take action to avoid a potential collision. Similarly, V2X alerts can warn cyclists about the presence of oncoming vehicles, providing critical safety warnings to help cyclists take action to avoid collisions. Because of these opportunities to improve cyclist safety, ITS America is proud to be a member of the Cyclist Safety Coalition, joining with numerous private sector and transportation safety organizations (including the League of American Bicyclists, People for Bikes, and GHSA) to rapidly deploy V2X solutions in order to mitigate the nearly 1,000 fatalities and 130,000 injuries suffered by cyclists on American roads each year.<sup>19</sup> The ITS sector has moved quickly to develop and deploy V2X applications specific to this use case, with Spoke, Audi, Commsignia, and Qualcomm partnering to provide V2X devices directly intended for cyclist use, establishing an additional digital layer of safety support for cyclists in a V2X-enabled environment.

#### *Protecting Emergency Responders*

HAAS Alert's collision prevention service Safety Cloud enhances emergency alerting on the road by alerting nearby motorists inside their vehicle that an emergency vehicle is nearby. When activated, Safety Cloud delivers real-time digital alerts over cellular networks to nearby approaching motorists. These alerts, called R2V (Responder-to-Vehicle) alerts, are received through navigation apps and connected car systems already in use by hundreds of millions of drivers, including Waze. In addition to alerting drivers, Safety Cloud could also alert other responders about potential crash scenarios. When Safety Cloud detects a likely or imminent intersection collision between two equipped emergency vehicles, the system provides the vehicle operator with early warning of the potential conflict so that they can reduce speed and prevent a collision.

#### *School Bus Safety*

C-V2X technologies are being deployed in school buses to provide critical alerts to both oncoming vehicles and bus drivers, adding a digital layer of safety to keep students safe getting to and from school. In the 2018–2019 school year, one study found that these illegal passings took place roughly 17 million times in the United States, and that six students were killed by illegally passing drivers over a six-day

<sup>19</sup> Center for Disease Control, Pedestrian, Bicycle, and Motorcycle Safety. Available at: <https://www.cdc.gov/pedestrian-bike-safety/about/bicycle-safety.html>

period in October 2018 alone.<sup>20</sup> With these technologies, the driver of an oncoming vehicle receives a direct message alert in the dashboard of their vehicle, providing an early notification that they are approaching a stopped school bus with its stop arm extended, even when the bus is not visible to the other driver. Additionally, the school bus driver receives an alert of the approaching vehicle during a school bus stop and a warning if a vehicle is potentially approaching too quickly to stop in time. This provides the school bus driver with critical information to make informed decisions to keep students safe. The bus driver can delay opening the door if the vehicle cannot stop or alert children outside the bus to remain on the curb and avoid the oncoming vehicle.

#### *Mitigating Hazardous Weather*

When weather adversely affects road conditions, connected vehicle technologies and supporting digital infrastructure can create a safer environment for drivers of all types of vehicles, large and small, by timely alerting drivers about upcoming hazards.

These weather alerts are already being utilized on I-80, a major freight transport corridor that runs 402 miles along southern Wyoming. This rural section of I-80 is known for severe weather conditions, including ice, snowpack, reduced visibility from blowing snow, and severe winds, along with steep grades up to 7 percent. These conditions, coupled with the high percentage of truck traffic, are the reason for many primary and secondary crashes with fatalities and serious injuries on I-80, as well as frequent road closures that cause safety and economic challenges for the state. Wyoming has introduced connected vehicle alerting for drivers, including the introduction of a centralized data exchange with roadside unit and onboard unit deployments. A Wyoming DOT report indicates that since the introduction of the project, the project has increased speed limit compliance on I-80, especially during severe weather conditions, and reduced the average crashes per year by up to 42 percent for all vehicles and up to 28 percent for trucks.

#### *Other Transportation Benefits*

Beyond safety, this technology also has the potential to lower transportation-related emissions, reduce congestion, and improve efficiency for all travelers. Transportation agencies are already deploying V2X solutions to enable automatic traffic signal prioritization, reducing emergency response times, increasing transit reliability, and increasing efficiency for freight.

#### **Automation**

Automation is another proactive solution in our technology toolkit for enhancing safety. Both Advanced Driver Assistance Systems (ADAS) and Highly Automated Vehicles (HAV) have the potential to significantly reduce crashes on our roadways. ITS America supports policies and regulatory frameworks that facilitate the safe testing, deployment, and integration of these technologies into the transportation system while simultaneously developing strategies to support our existing and future workforce.

While not the only factor in many fatal traffic crashes, the actions that people take directly influence safety outcomes on our roadways. ADAS technologies are already responding to driver action or inaction to correct vehicle positioning, brake for pedestrians, and more. Over the years, automakers have made significant investments in ADAS, and these tools are probably what people are most familiar with in their vehicle today. ADAS includes Lane Assist, Automatic Emergency Braking, Adaptive Cruise Control, Blind Spot Monitoring, Collision Avoidance alerts, and more. These features rely on a combination of sensors, like cameras, radars, lidar, ultrasonics, and onboard computers to perceive the surrounding environment, process data, and make informed decisions in real-time. These solutions can be particularly impactful for drivers on rural roads. For example, in Iowa, about 49 percent of all crash-related fatalities over the last five years involved lane departure, and ADAS can help mitigate these crashes.<sup>21</sup>

The continued development of HAVs and automated driving system (ADS) technologies provides an opportunity to remove driver behavior from the equation in some or all situations, and in particular to mitigate or eliminate crashes caused by distracted driving (3,308 fatalities in 2022), impaired driving (13,524 fatalities annu-

<sup>20</sup> Annual NASDPTS Survey Highlights Danger of Passing School Buses. Available at: <https://nasdpts.org/resources/Documents/2019%20NASDPTS%20Illegal%20Passing%20Results%20Press%20Release-7-24-19.pdf>

<sup>21</sup> Iowa Department of Transportation

ally), and fatigue (thousands of crashes each year).<sup>22</sup> Automated technologies do not get distracted, drunk, or tired, offering the potential to prevent thousands of fatalities each year.

ADAS falls into automation Levels 0–2 where drivers maintain responsibility for the vehicle, ranging from the driver always maintaining control to the vehicle taking control of speed and lanes in certain conditions, with drivers ready to take control quickly at any moment. The term ADS refers to Levels 3–5 of autonomy, with Levels 4 and 5 operating without the need for a human driver present. These AVs are meant to operate without human input, designed to strictly obey traffic laws, follow speed limits, and come to complete stops at red lights or stop signs. Public education regarding the capabilities, limitations, appropriate uses, and differences in driver responsibilities surrounding ADAS and ADS will enhance the safety benefit of those technologies while preventing misuse.

Autonomy has great potential for the freight industry as well, and further deployment of automated trucks is expected to lower the rate of crashes and injuries on our highways involving heavy-duty trucks. In 2021, there were close to 5,800 fatalities from large truck crashes in the U.S., a number that can be lowered through AV freight technologies.<sup>23</sup> Automated trucking can help alleviate distracted or drowsy driving, especially when considering the long hours drivers spend on the road. Additionally, automated freight technologies extend beyond the driver's seat, including applications that can assist with freight logistics, cargo safety, and predictive maintenance.

### III. Integrating Technology: A Modern Approach to Infrastructure

IIJA was an historic investment in our Nation's infrastructure, providing much needed funding to upgrade infrastructure to improve safety, decrease congestion, improve physical bridge and road conditions, promote climate resiliency, and increase connectivity between communities. However, there is still much more to be done to bring U.S. infrastructure into the 21st century and modernize it in a way that improves safety outcomes for all transportation modes and users.

Historically, our transportation policy and programs have focused on building or maintaining physical infrastructure such as roads, bridges, railways, and transit systems. Now, we have the opportunity to add a digital layer to the physical infrastructure, which will allow us to realize transformative safety benefits, maximize the benefits and usability of our existing infrastructure, reduce the cost of maintaining that infrastructure, and show us how and where new or modified physical infrastructure will have the most impact. While some work has been done to encourage the development and deployment of transportation technology, more must be done now and in the future to harness the power to innovation and technology to achieve our shared transportation priorities, increasing safety and addressing the fatality crisis, enhancing resiliency, increasing efficiency while reducing environmental impact, making limited investment dollars go farther, and expanding mobility, access, and opportunity.

IIJA was a visionary national commitment to ensuring that the United States remains the international leader in the research and development of transportation technologies—this commitment is evidenced through programs like ARPA-E, investment in our University Transportation Centers, and continued support for research into innovative transportation technology solutions. Still, while IIJA contains some deployment opportunities, namely through the SMART grant program, we must ensure that the attention that we pay to development of these solutions is matched in our resolve to deploy these technologies. Without dedicated support for ITS technology deployment, we risk a situation where the United States develops innovative transportation tools, only to see our global competitors out-produce and out-deploy those same tools. Chief among those competitors is China, who has already demonstrated a strong resolve to focus significant national funding on re-envisioning their transportation network from the top-down with technology improvements. It is critical that we continue to robustly invest in ITS solutions to ensure that these innovative safety and mobility products and solutions are deployed right here at home to improve safety for all road users in the United States.

The good news is that there are steps that can be taken today, under existing programs, to advance technology in a more strategic and comprehensive way, allowing all communities to take advantage of IIJA funding to deploy technology on their systems. This includes work that is ongoing at USDOT to create a National V2X Deployment Plan; updates to the National Roadway Safety Strategy, the New Car As-

<sup>22</sup> National Highway Traffic Safety Administration

<sup>23</sup> Federal Motor Carrier Safety Administration <https://www.fmcsa.dot.gov/safety/data-and-statistics/large-truck-and-bus-crash-facts-2021>

assessment Program (NCAP), and Complete Streets; opportunities for NHTSA to advance ADAS and ADS in a safe manner; and prioritizing technology deployment under other discretionary grant programs such as Safe Streets and Roads for All (SS4A) and the Rebuilding American Infrastructure with Sustainability and Equity (RAISE) programs.

Congress also has an opportunity to reimagine the future of transportation technology when it reauthorizes surface transportation programs in 2026. This provides the opportunity to incorporate technology at every step in the infrastructure program process, from planning to construction to operations, but requires us to rethink how we approach technology in our transportation system from policy to funding to procurement.

### **Integrating Technology into Existing Transportation Programs**

Historically, our transportation system has favored developing physical infrastructure, and our existing transportation programs reflect this focus. IIJA made considerable progress in recognizing the potential impact of technology and innovation, establishing the new Strengthening Mobility and Revolutionizing Transportation (SMART) grant program, expanding eligibility for technology projects across several discretionary and formula programs, and infusing much-needed funding support for transportation agencies during COVID-related budget constraints. However, more can be done to advance technology under the existing programs governed by IIJA.

#### *V2X Technologies*

As discussed above, V2X technologies will have a significant impact on the safety of our transportation system. While many of our members are at the forefront of deploying these tools in communities across the country, continued Federal leadership is necessary to guide and support V2X deployment efforts at a national scale. We commend the Federal Highway Administration and the ITS Joint Program Office (JPO) for its work on a draft National V2X Deployment Plan and we encourage USDOT to issue a final plan, which will provide crucial guidance to V2X stakeholders in the public and private sectors. We also encourage USDOT to advance awards under the V2X Accelerator Grant Program, which will show the benefits of V2X and help deploy this lifesaving technology at speed and at scale.

However, more work is needed to advance V2X and provide the regulatory certainty necessary to spur public and private sector investment. The transportation community continues to wait for the Federal Communications Commission (FCC) to issue a Second Report and Order governing the rules for V2X technologies in the 5.9 GHz band. It is critical that the FCC issue this Second Report and Order before the end of this year to provide regulatory certainty to OEMs and IOOs looking to deploy V2X devices, and that the FCC take the steps that USDOT has been clearly articulating in order to protect these safety messages from harmful interference from unlicensed devices and limit the use of adjacent spectrum in the U-NII-4 and U-NII-5 bands until the potential impacts of such use are fully understood. We would encourage the FCC, NTIA, and other Federal policymakers to ensure that V2X technologies are provided the regulatory certainty and unencumbered spectrum necessary to realize the full promise that these technologies can deliver—foremost among them being a significant reduction of fatalities on American roads.

Another area where regulatory action is needed to support V2X deployment relates to NCAP. As the motor vehicle safety regulator, NHTSA is uniquely positioned to provide leadership in the deployment of these technologies in vehicles, and the inclusion of recognition within NCAP for V2X would be a clear way in which NHTSA could signal support to automakers for the inclusion of V2X in new vehicle models. The necessity of V2X inclusion in NCAP is already accepted in Euro NCAP, which “recognizes the safety potential of V2V and V2X technologies, for car occupants, vulnerable road users and powered two wheelers.”<sup>24</sup> They stated that to “support the availability of technology on the vehicle side, new incentives will be introduced in the rating scheme for V2X technology that support and enhance important safety functions.”<sup>25</sup> China is also set to incorporate V2X into its own CNCAP, and global automakers have already begun incorporating V2X into their vehicles sold in the Chinese market. The data on these technologies is clear enough for global regulators, and the benefits associated with V2X deployment are not new to NHTSA. It is time that NHTSA fully signal their support for V2X deployment by including these technologies in NCAP.

<sup>24</sup>Euro NCAP 2025 Roadmap. Available at: <https://cdn.euroncap.com/media/30700/euroncap-roadmap-2025-v4.pdf>

<sup>25</sup>Euro NCAP 2025 Roadmap.

We commend Chair Peters, Ranking Member Young, and members of the Senate Commerce Committee who have advocated for the advancement of V2X and encourage this Committee to urge USDOT and the FCC to provide the Federal leadership needed to make national scale deployment of V2X a reality.

#### *Discretionary Grant Programs*

USDOT grants provided under the SMART and ATTAIN grant programs are a major tool to spur technology deployment by piloting new technologies, helping others learn lessons and best practices, and developing key insights for new research and policy. ITS America proudly supports these discretionary grant programs and many of our members have obtained funding through these programs to deploy transportation technology such cloud-based V2X technology, open data standards for rural transit needs, wrong way driving countermeasures, and audio warnings at intersections for pedestrians.

However, there are several other discretionary grant programs in which technology is an eligible activity, but USDOT could do more to inform the public sector about the opportunity to use technology under these programs and prioritize the selection of projects which have considered or incorporated technology.

For example, Congress provided \$5 billion over five years for the SS4A grant program, which seeks to fund projects to prevent roadway deaths and serious injuries. While IIJA directed that Comprehensive Safety Action Plans (Vision Zero Plans) under the program may include “a data-driven approach . . . such as those involving . . . new vehicle or other transportation-related technologies” and that USDOT should consider the extent to which an applicant “seeks to adopt innovative technologies or strategies to promote safety”,<sup>26</sup> ITS America had to encourage USDOT to be explicit in its Notices of Funding Opportunity about the opportunities to incorporate technology into these projects and more could be done to prioritize the selection of projects that incorporate technology.

Similarly, technology is eligible under the RAISE program and Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT) grant programs, in which USDOT could prioritize the selection of projects which incorporate technology.

#### *USDOT Policies and Guidance*

ITS America is grateful for USDOT’s leadership in incorporating references to technology in the updated NRSS, but more can be done to prioritize the inclusion of technology into the Safe Systems Approach, Complete Streets, and other USDOT policies and guidance. USDOT can also support technology deployment by the continued development of best practices and technical assistance to aid states and local governments in understanding how best to deploy technology.

In the NRSS, USDOT adopted a Safe System Approach as the guiding paradigm to address roadway safety, acknowledging both human mistakes and human vulnerability, while designing a redundant system to protect everyone. Specifically, the NRSS identifies a Safe System Approach that incorporates six principles: (1) death and serious injuries are unacceptable, (2) humans make mistakes, (3) humans are vulnerable, (4) responsibility is shared, (5) safety is proactive, and (6) redundancy is crucial. Some of these principles state obvious facts that we can all agree on, including crashes involving deaths and serious injuries should be eliminated, that a transportation system should be designed to accommodate human vulnerabilities, and that all stakeholders share in the responsibility of advancing safety.

To address the other three principles—humans make mistakes, safety is proactive, and redundancy is crucial—transportation technology must be incorporated. Technology provides the opportunity to prevent or mitigate human mistakes by providing more complete information to drivers or taking corrective action when crashes are imminent. Technology is proactive and can be used to identify and address safety concerns before they arise, such as with digital twinning technologies and the use of artificial intelligence. Finally, technology can fill the critical need of redundancy as a fallback protection should education, roadway design, traffic regulation, and enforcement fail. Transportation technology is the digital layer of protection that provides first level and redundant safety benefits by preventing and mitigating crashes, fatalities, and injuries, all while making our transportation system more equitable and sustainable.

USDOT identified five complementary objectives within its NRSS: (1) Safer People, (2) Safer Roads, (3) Safer Vehicles, (4) Safer Speeds, and (5) Post-Crash Care. Transportation technology can contribute to enhancing safety within each of these

<sup>26</sup> Infrastructure Investment and Jobs Act, Pub. L. 117–58 § 24112 135 Stat 429 (2021)

five objectives. ITS America developed a resource identifying this in our *National Roadway Safety Strategy—ITS America Response*.<sup>27</sup>

Complete Streets is an approach that requires streets to be planned, designed, operated and maintained to enable safe, convenient and comfortable travel and access for users of all ages and abilities regardless of their mode of transportation. Given the importance and applicability to road user safety, technology must be included and prioritized in Complete Streets projects. In 2024, it is time we modernize the Complete Streets concept to include technology as an integral part of the safety layer. Specifically, ITS America recommends the inclusion of five distinct technology elements into how Complete Streets is currently defined: (1) integration of smart/digital infrastructure, (2) access to charging stations and electric vehicle (EV) infrastructure, (3) data-driven decision-making, (4) consideration of shared mobility options, and (5) emphasizing multimodal connectivity.<sup>28</sup>

Technology plays a crucial role in achieving the vision of Complete Streets and should be specifically called out under eligible activities, particularly to improve the safety of bicyclists and pedestrians. Smart traffic management systems, for instance, utilize real-time data and sensors to monitor traffic flow and adjust signal timings accordingly. This reduces congestion, enhances traffic efficiency, and improves safety by minimizing interactions between vehicles and vulnerable road users. Moreover, digital tools and mapping applications allow for the integration of accurate and up-to-date information on pedestrian and cyclist infrastructure, enabling users to plan their routes with confidence. Furthermore, connected vehicles (CVs) and V2X technologies hold immense potential to create safer and more efficient Complete Streets. With their ability to communicate with each other and with infrastructure, CVs can enhance safety and reduce congestion.

The concept of Complete Streets is centered on prioritizing the safety and accessibility of all road users. Technology plays a pivotal role in realizing this vision by integrating real-time data, digital tools, and emerging technologies, ultimately creating a transportation system that is more efficient, equitable, and sustains the wellbeing of all community members. ITS America encourages USDOT to expand their efforts to assist state and local transportation agencies in identifying ways to incorporate these technology solutions as part of their Complete Streets efforts, including by building off ITS JPO's Smart Community Resource Center (SCRC).

The SCRC serves as a compilation of resources that can be used by practitioners to advance ITS and smart community transportation projects. The ITS JPO developed the SCRC to provide states, tribal governments, and localities with resources to help develop smart community transportation projects and programs nationwide. The website provides information and tools about smart communities and ITS technologies, deployment support, and links to USDOT funding opportunities that support the development of smart communities nationwide. This resource is an excellent blueprint for providing much-needed technical resources for states and localities looking to deploy technologies.

### **Reimagine the Future of Transportation Technology**

To fully access these benefits and realize a safer, greener, and smarter transportation system, Federal transportation policy needs to be updated and modernized to include transportation technology at every step of the process, from planning to construction to operations. Technology cannot be a “nice to have” and must be holistically incorporated into transportation budgets and operations.

This requires a fundamental shift in our approach to how we plan, fund, and procure infrastructure and technology. From the policymaker to traffic engineer to the traveling public, this calls for a different mindset on how we approach infrastructure and prioritize safety.

#### *Policy and Planning*

It is critical that decisionmakers at the Federal, state, regional, and local levels include digital infrastructure and broader technology solutions in planning and agency-wide initiatives. This means policy which incorporates technology throughout Federal surface transportation programs under Title 23 and Title 49, prioritizing the inclusion of technology in USDOT initiatives, expanding eligibility for technology deployments through existing funding programs, incorporating technology into planning and asset management processes, strengthening the research and de-

<sup>27</sup> National Roadway Safety Strategy, ITS America Response. Available at: <https://itsa.org/wp-content/uploads/2022/05/ITS-America-National-Roadway-Safety-Strategy-Response-5-19-22.pdf>

<sup>28</sup> ITS America: Incorporating Technology into Complete Streets. Available at: <https://itsa.org/wp-content/uploads/2024/03/ITSA-Complete-Streets-with-Tech.pdf>

velopment of digital technologies, and advancing technology workforce development programs. These changes will allow investment in digital infrastructure and technology to be appropriately considered alongside physical infrastructure.

#### *Funding*

Funding stability and certainty are critical to deploying technology on our roads. Transportation technologies of today were not even contemplated when much of our country's infrastructure was constructed, and the Nation's economy and the mobility needs of our country have changed considerably in recent decades and will continue to change rapidly in the coming years. ITS deployers at the state and local level need substantial and certain funding for technology, and that funding needs to be incorporated at the beginning of a project's lifecycle, not as an afterthought.

ITS America encourages Congress to reevaluate how technology is funded under Federal transportation programs, which is currently designed for physical infrastructure and does not adequately consider the procurement, maintenance, and operations needs of a technology-inclusive infrastructure system.

Current technology funding primarily comes from limited discretionary grant programs, which are insufficient to achieve the scale of deployment needed to make a measurable impact on the country's transportation system. Technology deployments under these programs are often limited in size, scope, and location, and if we are to truly reap the safety benefits of transportation technology, we must move beyond pilots and demonstrations.

We need to move beyond focusing on technology only through discretionary grant programs, ensuring that all transportation and infrastructure projects consider and incorporate technology when appropriate.

#### *Procurement*

Procuring technology and software as infrastructure assets has been a challenge to public agencies, and it is critical that the transportation industry develops updated policies and best practices for procuring new kinds of digital infrastructure. Data streams, software licenses, and even cloud storage services are key to a transportation system today but were not core parts of our infrastructure procurement thirty years ago. These solutions are distinctly unique from physical assets—they are not one-time purchases and may require annual fees or licenses, require ongoing maintenance to ensure cybersecurity and data integrity, and can improve performance over time unlike a static physical asset.

The current transportation technology procurement process can be lengthy and onerous, especially for localities that may lack the resources and expertise, slowing down projects and threatening the efficiency of investment in technology solutions for safety. State and local transportation agencies would benefit from additional Federal guidance on standards, definitions, and best practices around transportation technology procurement.

ITS America encourages Congress to develop robust technology procurement policy, which will aim to reduce the challenges currently associated with transportation technology procurement. When considering amendments to our current procurement process, we would recommend that Congress prioritize enhancing coordination between Federal, state, and local transportation policymakers, as well as improving procurement flexibility within Federal grant opportunities.

### **IV. Conclusion**

American innovation continues to lead the world. We have the opportunity to harness American innovation and ingenuity in the communities where we live, work, and play to realize better safety outcomes for all who use our transportation system. As a mother, I long for the day when I don't have to say to my children "call me when you get there safely". While it will take time, we can make that day a reality by leveraging technology in a more holistic way as we plan, build, and operate infrastructure.

We can be proactive rather than reactive when it comes to safety, creating a layered approach that marries physical and digital infrastructure to protect all users and meet the needs of future mobility while delivering better safety outcomes. This means reimagining Federal transportation policy to include transportation technology at every step of the process, ensuring that transportation technology operations and maintenance challenges are adequately addressed, and updating procurement methods to meet 21st century technology.

ITS America is grateful for this Subcommittee's desire to talk about safety solutions, and we look forward to working with policymakers to ensure a policy and regulatory environment that allows for scaled deployment of these safety-enhancing technologies.

Senator PETERS. Thank you, Ms. Chace.

Our third witness is Jake Nelson, who serves as the Traffic Safety Advocacy and Research Director at the American Automobile Association, probably better known as AAA.

Mr. Nelson is an epidemiologist who applies research and the sciences of public health to AAA's public policy development, governmental advocacy, and consumer education activities. Mr. Nelson holds an undergraduate degree from the University of Michigan, graduate degrees in public health and public policy from George Washington University and the University of Chicago.

Mr. Nelson, welcome to the Committee. You may proceed with your opening remarks.

**STATEMENT OF JACOB NELSON, DIRECTOR,  
TRAFFIC SAFETY ADVOCACY AND RESEARCH,  
AMERICAN AUTOMOBILE ASSOCIATION**

Mr. NELSON. Thank you, Chairman Peters and Ranking Member Young, for the opportunity to testify today.

In the time I have today, I want to focus on a few key points from the more detailed testimony submitted for the record: why the spike in highway deaths, and what we can do about it.

Here's what AAA research has uncovered about what's happening on our roadways and to whom. Since the pandemic, speeding, drunk driving, and non-use of safety belts account for most of the increase in traffic deaths. The post-COVID spike in fatalities has predominantly hit disadvantaged populations, particularly people with no education beyond high school and Black and Hispanic populations.

Urban traffic deaths have increased by 66 percent since 2013, which has major implications for pedestrians and cyclists, who are more concentrated in urban areas. Since 2013, pedestrian deaths have increased 81 percent in urban areas and dropped 10 percent in rural areas.

This shift in traffic mortality has happened mostly on urban and suburban arterial roads. These are typically multi-lane, medium to high speed, and high-volume roads, originally designed to quickly move vehicles in and out of cities. And today, their use has changed. People live, work, and shop all along these roads.

A note on enforcement. As you heard from Senator Cruz, traffic deaths have spiked in the U.S. at the same time that citations for dangerous behaviors like speeding and drunk driving have dropped by as much as 50 percent in some parts of the Nation. We know labor shortages across the profession and negative perceptions of law enforcement are factors here. And research is crystal clear that when perceived risk of apprehension for breaking laws drops, we see risk-taking behaviors go up.

AAA survey research found that most drivers reduced their driving during the pandemic, but a small proportion increased their driving and appeared to be riskier than average, even after accounting for their age, their gender, and how much they drive. Nationally, drivers admit to engaging more regularly in behaviors like speeding, red light running, and driving within an hour of using cannabis. Most alarming was a 24 percent increase in self-reported drunk driving.

The bottom line is that highly visible enforcement of traffic laws tied to things like speeding and impaired driving saves lives. Period. If we enhance the trust between police and the communities they serve and protect, we stand a much better chance of police confidently enforcing lifesaving laws with strong community support.

What got us to this point will not move us closer to zero deaths. My written testimony identifies five key recommendations to help move the needle, and I encourage the Committee's consideration of all five. I'm going to focus on three.

First, support for law enforcement. Congress can increase funding for states through Section 1906 Racial Profiling Prohibition Grant program and establish a U.S. center of excellence for equitable traffic enforcement.

AAA believes a key limiting factor to state-level demand for existing funding is the lack of guidance and technical support available to them to properly standardize, analyze, and interpret traffic stop data, and also to effectively collaborate with law enforcement agencies to address inequities illuminated by these data without impeding non-driving related crime. We all benefit from making traffic enforcement more equitable, using police resources more efficiently, and maximizing road safety.

Number two, require better coordination between state and local governments when determining changes to maximum posted speed limits on higher-speed state-owned roadways.

AAA research shows that speeding-related crashes jump on surrounding roadways when speed limits are raised on nearby highways or highway segments. Stronger coordination would allow local road authorities to prepare for this spillover effect, and protect pedestrians and bicyclists who are more concentrated near arterials and local roads.

Number three, stronger congressional oversight over HALT Act implementation. NHTSA will fail to issue a final rule by the congressionally mandated deadline, but Congress can ensure that NHTSA issues an NPRM by that same deadline, November 15th of this year. Once this tech penetrates the U.S. passenger vehicle fleet, it will save an estimated 10,000 lives annually, making it the single most effective safety countermeasure since the safety belt.

AAA recognizes the challenges before you are not easy, but it's time to lean in on what's working and pursue opportunities to maximize the potential public good. That's how the U.S. can sprint instead of crawl toward saving lives on our Nation's roadways.

Thank you for the opportunity to testify, and I look forward to your questions.

[The prepared statement of Mr. Nelson follows:]

PREPARED STATEMENT OF JACOB NELSON, DIRECTOR, TRAFFIC SAFETY ADVOCACY  
AND RESEARCH, AMERICAN AUTOMOBILE ASSOCIATION

Chairman Peters, Ranking Member Young, and Members of the Subcommittee, thank you for inviting AAA to be here today to share our perspective on roadway safety.

As you may know, AAA is a federation of motor clubs in North America serving over 64 million members. Our members are users of the Nation's surface transportation system. They are drivers, passengers, pedestrians, cyclists, and public trans-

portation users. Transportation plays a vital role in their lives and, of course, underpins the economic well-being of this Nation.

AAA's interest in transportation safety and personal mobility began more than 120 years ago. We remain committed to these goals today as the United States faces record-breaking traffic deaths despite advances in vehicle safety technology, infrastructure safety investments, and lifesaving traffic laws.

As a public health practitioner and epidemiologist, I consider traffic injuries and deaths an overlooked public health threat to Americans, an entirely preventable threat. In my testimony today, I would like to spend a little time highlighting some of the reasons the U.S. traffic safety experience is poor as compared to other developed nations around the world, and then offer some recommendations for how we can maximize the safety impact of the historic investments Congress recently made in the Nation's transportation system.

### **Factors Contributing to Increased Highway Fatalities**

As the United States continues to recover from the COVID-19 pandemic, traffic fatalities remain unacceptably high. Risky driving behaviors play a critical role in traffic crashes and contribute to an unsafe transportation environment for Americans traveling both inside and outside vehicles.

AAA has worked to understand what drove traffic deaths to a 16-year high in the years immediately following the COVID-19 pandemic. We believe that unpacking this issue is an important first step in saving lives on our roadways. Over the last few years, researchers at the AAA Foundation for Traffic Safety have used data from a variety of sources to help illuminate what is happening on U.S. roads. Let me walk you through some of what we uncovered.

*Behavioral Risk Factors in Fatal Crashes.* The most recent data available through the Fatality Analysis Reporting System (FARS) managed by the National Highway Traffic Safety Administration (NHTSA), told us that behavioral factors such as speeding, alcohol impairment, and non-use of seatbelts account for a considerable proportion of the increased fatalities.<sup>1</sup> Notably, the post-COVID-19 spike in vehicle occupant fatalities was almost entirely among people not wearing seatbelts.<sup>2</sup>

Other important factors worth noting include the rural-to-urban shift relative to where most traffic deaths occur. Historically, we saw more fatalities on rural roads, with higher speeds, run-off road crashes, head-on collisions and delayed access to medical care for the injured as contributing factors. According to NHTSA, more people have been killed annually on urban roadways as compared to rural roadways since 2016. Between 2013 and 2022, urban traffic deaths increased by 66 percent and rural traffic deaths decreased by 2.6 percent. Urban and rural roadways saw small decreases in traffic deaths between 2021 and 2022.

Though this shift began well before the pandemic, it has major implications for vulnerable road users like pedestrians and cyclists who are more concentrated in urban areas and thus have greater exposure to motor vehicles. For example, pedestrian deaths increased by 81 percent since 2013 in urban areas but dropped in rural areas by 10 percent during the same period.

The rural-to-urban shift has impacted traffic death rates mostly on urban and suburban arterial roads, which are typically multi-lane, medium-high speed, high-volume roads originally designed to move vehicles in and out of cities quickly. Development along these roads has changed the way they are predominantly used. They were built for "through traffic", but now people live, work, and shop along them creating more potential for crashes.

Pedestrians and cyclists are not the only vulnerable road users to note. In 2021, motorcyclists represented 14 percent of traffic fatalities despite comprising only 3.5 percent of registered vehicles, highlighting their vulnerability. They are nearly 24 times more likely to die in crashes per vehicle miles traveled compared to occupants of passenger vehicles, according to the National Highway Traffic Safety Administration.

The post-COVID spike in fatalities has been disproportionately among disadvantaged populations, particularly among low socioeconomic status (*i.e.*, no college de-

<sup>1</sup>National Center for Statistics and Analysis. (2024, April). Overview of motor vehicle traffic crashes in 2022 (Traffic Safety Facts Research Note. Report No. DOT HS 813 560). National Highway Traffic Safety Administration.

<sup>2</sup>Tefft, B.C. & Wang, M. (2022). *Traffic Safety Impact of the COVID-19 Pandemic: Fatal Crashes Relative to Pre-Pandemic Trends, United States, May–December 2020* (Research Brief). Washington, D.C.: AAA Foundation for Traffic Safety.

gree) populations.<sup>3</sup> Additionally, AAA’s analysis of CDC data shows that the excess mortality since the pandemic was disproportionately among the Black and Hispanic populations.

The high degree of risk faced by vulnerable users of the Nation’s roadways makes much more sense when we look at what kinds of risky behaviors drivers admit to engaging in while behind the wheel.

*Self-Reported Risk-Taking Behaviors Among Motorists.* The AAA Foundation for Traffic Safety is committed to deepening its understanding of America’s behavior behind the wheel and conducts the Traffic Safety Culture Index survey annually. As the impacts of traffic safety on public health have worsened, responses from this annual survey offer important insights into understanding public perceptions of, attitudes toward, and engagement in unsafe driving behaviors. They are aspects that should be considered when developing countermeasures.

To understand the rise in dangerous driving behaviors, the AAA Foundation for Traffic Safety combined data from its Traffic Safety Culture Index with data from its American Driving Survey, which records the daily driving patterns of the U.S. population. Our researchers explored whether the pandemic changed the composition of drivers on the road. They found that while most drivers (60 percent) reduced their driving during the pandemic, a small proportion (4 percent) increased their driving. Making matters worse, those who increased their driving appeared to be riskier than average, even after accounting for their age, gender, and how much they drove.<sup>4</sup>

Digging deeper, our researchers found that unsafe driving behaviors, including speeding (+12 percent), red-light running (+10 percent), drowsy driving (+8 percent), and driving impaired on cannabis (+14 percent), rose from 2020 to 2021. The most alarming increase was among drivers admitting to getting behind the wheel after drinking enough that they felt they were over the legal limit—an increase of nearly 24 percent.<sup>5</sup>

Using self-reported data on specific motorist behaviors, AAA researchers were able to group drivers according to which risky behavior they *predominantly* engage in. The most common dangerous behaviors were speeding (23 percent), distracted driving (15 percent), and aggressive driving (17 percent). Upon further examination, researchers found that many risky drivers in this study were classified into profiles that involved speeding behavior. The major implication here is that increased enforcement of speed limit laws will deter other risky driving behaviors like impaired driving and red-light running. This law enforcement measure can be expected to have the greatest impact on safety through general deterrence and apprehension of drivers who break traffic laws proven to save lives.

*Challenges in Traffic Enforcement.* Rising traffic fatalities are correlated with drops in the enforcement of lifesaving traffic safety laws. Citations for dangerous behaviors like speeding and driving under the influence have decreased by as much as 50 percent in some parts of the country.

A 2019 survey of law enforcement agencies by the International Association of Chiefs of Police<sup>6</sup> found national labor shortages across the profession. The survey cited challenges related to increased retirements and resignations and decreased recruitment tied to negative perceptions of law enforcement.

Over the last two years, AAA has worked to understand potential approaches to achieve the dual goals of improved traffic safety and more equitable traffic enforcement. During this time, we have discussed research-based recommendations with over 25 national and state-level organizations and government agencies. Research literature has not yet uncovered a single policy, training program, or other intervention that serves as a panacea for addressing racial disparities in traffic enforcement. However, there are promising approaches that evidence has shown to help mitigate these disparities and improve traffic safety outcomes. Examples include, but are not limited to:

- *Continuous collection and proper use of traffic stop data.* At least 23 states plus D.C. mandate the collection of traffic stop data (albeit non-standardized) to detect racial profiling. Most states and law enforcement agencies lack the exper-

<sup>3</sup>Brian C Tefft, Rebecca Steinbach, COVID–19 Pandemic Exacerbated Socioeconomic Disparities in Motor Vehicle Traffic Fatalities, *American Journal of Epidemiology*, 2024

<sup>4</sup>Tefft, B. C., Villavicencio, L., Benson, A., Arnold, L. S., Kim, W., Anorve, V., Horrey, W. J. (2022). Self-Reported Risky Driving in Relation to Amount of Driving During the COVID–19 Pandemic (Research Brief). Washington, D.C.: AAA Foundation for Traffic Safety.

<sup>5</sup>AAA Foundation for Traffic Safety. (2023). 2022 Traffic Safety Culture Index (Technical Report). Washington, D.C.: AAA Foundation for Traffic Safety.

<sup>6</sup>International Association for Chiefs of Police. (2019). The State of Recruitment: A Crisis for Law Enforcement. Alexandria, V.A.: International Association for Chiefs of Police.

tise to properly analyze it, leverage it for intervention purposes, or use it for evaluation of implemented countermeasures, but several states including Connecticut<sup>7</sup> and California have good practices and support programs in place.

- *Re-prioritization of traffic stops.* Evidence shows that reducing traffic stops for vehicle equipment or administrative violations and prioritizing safety-oriented moving violations like speeding, impaired, distracted, and aggressive driving can mitigate racial disparities in traffic enforcement, without increases in non-traffic crimes, and may bring *reductions* in traffic crashes, injuries, and deaths.<sup>8</sup> A recent analysis of Federal crash data conducted by the Center for Policing Equity showed that of the 272,921 vehicles involved in fatal crashes nationally between 2017 and 2021, only 638 (0.2 percent) involved vehicle maintenance or equipment issues (*e.g.*, defective lighting, wipers, defective mirrors or windshields) as contributing factors to the crashes.

In short, traffic enforcement is one of several important strategies for preventing traffic deaths. To achieve the dual goals of safety and equity we need to explore pathways to enhancing trust between police and the communities they serve and protect. Through efforts like these, we will gain community support for the kind of traffic enforcement that targets risky driving behaviors like speeding and impaired driving.

### AAA Recommendations for Change

AAA acknowledges the need for fresh approaches to move toward zero traffic fatalities. Continuing with past approaches will not yield different outcomes. AAA proposes the following recommendations for your consideration as you assess current programs and explore novel avenues to enhance transportation safety.

Through the *Infrastructure Investment and Jobs Act*, Congress made funding available to states via the Section 1906 Racial Profiling Prohibition Grant program. This grant program has offered significant support to several state efforts to start or enhance their police stop data programs. AAA believes a key limiting factor to greater demand among states to tap into 1906 funding is the lack of guidance and technical support available to them to understand how to properly standardize and analyze these data to draw accurate conclusions from them. Equally as important is guidance for states relative to effective collaboration with law enforcement agencies to address inequities illuminated by these stop data.

1. *Recommendation*—Increase funding for states via the Section 1906 Racial Profiling Prohibition Grant program and establish a U.S. Center of Excellence for Equitable Traffic Enforcement to help states effectively navigate this important issue and help police confidently enforce traffic laws that save lives with community understanding and support. Most police departments do collect some form of stop data but do not analyze or use it. We all benefit from making traffic enforcement more equitable and efficient to maximize road safety.

AAA is a strong supporter of adopting the Safe System Approach (SSA) to roadway safety. The SSA uses effective countermeasures to create multiple layers of protection for transportation network users. It has been leveraged by other developed nations to achieve huge gains in transportation safety driving down traffic deaths—47 percent (Australia) and 80 percent (Spain).

As you know, the U.S. Department of Transportation has already committed to adopting this approach, and the Federal Highway Administration has already issued a Notice of Proposed Rulemaking (NPRM) to better integrate the SSA into state highway safety planning processes. This is significant progress.

2. *Recommendation*—Roadway engineers, but especially behavioral highway safety practitioners and policymakers would benefit from more guidance and technical assistance relative to the proper adoption of SSA principles to maximize measurable safety gains. The AAA Foundation is currently developing such guidance, but widespread adoption of this or similar guidance is critical.

Through grant programs like *Safe Streets and Roads for All*, Congress directed \$5 billion to local communities, especially historically underinvested locations where such investment can help close significant disparities in traffic safety outcomes. Critical to the success of this kind of community-level investment is garnering the support of residents. An unintended consequence of modernizing roadway infra-

<sup>7</sup> Connecticut Racial Profiling Prohibition Project. (<https://www.ctrp3.org/>)

<sup>8</sup> Fliiss MD, Baumgartner F, Delamater P, Marshall S, Poole C, Robinson W. Re-prioritizing traffic stops to reduce motor vehicle crash outcomes and racial disparities. *Inj Epidemiol.* 2020 Jan 20;7(1):3.

structure in a historically underinvested community is fear of displacement, or worse, this fear being fully realized. The IIJA already requires States to pursue meaningful public participation and engagement, particularly in communities most significantly impacted by traffic crashes resulting in injuries and fatalities. 23 U.S.C. 402(b)(1)(B). The *Safe Streets and Roads for All* grant program would benefit from a similar requirement.

3. *Recommendation* While the *Safe Streets and Roads for All* grant program encourages an analysis of community input, AAA believes that State and local transportation leaders would benefit from more guidance and technical assistance relative to the appropriate outreach, education, solicitation of input, and adoption of local preferences for infrastructure investments made where they live. To ensure that community residents are the same people who benefit from this historic Congressional investment in roadway safety, careful attention must be paid to garnering local support for the infrastructure-based solutions to the safety challenges that exist locally. This front-end work will help drive greater demand for current and future investments made possible by Congress.

The AAA Foundation for Traffic Safety recently published new research documenting the “spillover effect” whereby traffic crash experiences on surrounding roadways can be exacerbated unintentionally when speed limits are raised on nearby highways or highway segments.<sup>9</sup> To minimize unintended safety consequences, it is important for transportation departments, at all levels, to coordinate and work closely together when considering posted speed limit adjustments.

4. *Recommendation*—Require state/local coordination when determining changes to maximum posted speed limits on higher speed state-owned highways. Since vulnerable populations like pedestrians and bicyclists are more concentrated near arterials and local roads, close coordination between state and local road authorities is needed to account for the “spillover effect.”

According to an analysis conducted by the Insurance Institute for Highway Safety, Alcohol-detection systems that stop people from driving with BAC levels of 0.08 or higher would save about 10,000 lives annually, once penetration of the technology in the U.S. passenger vehicle fleet is complete. By integrating the HALT Act into the *Infrastructure Investment and Jobs Act*, Congress took the first step toward saving more lives in the U.S. since the implementation of the safety belt. Unfortunately, the National Highway Traffic Safety Administration (NHTSA) is expected to miss the Congressionally mandated deadline for issuance of a final rule by November 15, 2024.

5. *Recommendation*—Ensure strong Congressional oversight of HALT Act implementation. Though NHTSA is likely unable to reasonably issue a final rule by the required deadline, Congress can ensure that NHTSA issues an NPRM by that same deadline, November 15, 2024.

## Conclusion

AAA recognizes that the challenges before you are not easy. But, what Congress has made possible through the *Infrastructure Investment and Jobs Act* and the *Safe Streets and Roads for All* grant program has the potential for a significant boon for safety. The task moving forward ought to be leaning in on what is working well and actively pursuing the opportunities available to maximize the potential public good.

Through this work, we can maximize safety for the communities that bear a disproportionate burden of traffic injury and death on our roadways. Targeting disparities in transportation safety is how the U.S. can sprint instead of crawl toward saving as many lives as possible on our Nation’s roadways.

Thank you for the opportunity to testify today and I look forward to answering any questions you may have.

Senator PETERS. Well, thank you, Mr. Nelson.

Our fourth witness is Dr. Laura Sandt. Dr. Sandt is the Co-Director of the University of North Carolina Highway Safety Research Center. She also serves as Co-Director for the Pedestrian and Bicycle Information Center, as well as Director of the Collaborative Science Center for Road Safety, whose mission is to advance

<sup>9</sup>Romo, A., McDonough, J., Wei, A. & Yang, C.Y.D. (2024). *Uncovering the Spillover Effect from Posted Speed Limit Changes: A Tool to Examine Potential Safety Concerns* (Technical Report). Washington, D.C.: AAA Foundation for Traffic Safety.

transportation safety through a multidisciplinary, systems-based approach.

Dr. Sandt has a Ph.D. in epidemiology from UNC Chapel Hill Gillings School of Global Public Health with a concentration in injury prevention. She also holds a master's in regional planning from UNC Chapel Hill with a concentration in transportation and land use.

Dr. Sandt, thank you for being here today. You may proceed with your opening remarks.

**STATEMENT OF LAURA SANDT, PH.D., CO-DIRECTOR,  
RESEARCH STRATEGY AND IMPLEMENTATION, HIGHWAY  
SAFETY RESEARCH CENTER; DIRECTOR, PEDESTRIAN AND  
BICYCLE INFORMATION CENTER; DIRECTOR,  
COLLABORATIVE SCIENCES CENTER FOR ROAD SAFETY,  
SENIOR RESEARCH ASSOCIATE, HIGHWAY SAFETY RESEARCH  
CENTER, THE UNIVERSITY OF NORTH CAROLINA  
AT CHAPEL HILL**

Dr. SANDT. Thank you Chairman Peters, Ranking Member Young, and distinguished members of the Committee. Thank you for the opportunity to speak today.

My name is Laura Sandt, and I'm co-director of the Highway Safety Research Center at the University of North Carolina at Chapel Hill. As an epidemiologist with a background in transportation planning, my guiding light is to improve the wellbeing of our communities through the prevention of roadway injuries and fatalities.

It is tragic to see that the roadway fatality rate in the U.S. has been steadily increasing since 2010, moving in the opposite direction of other high-income nations. Traffic injuries now require millions of emergency department visits each year and create significant burdens for families, healthcare providers, employers, and the broader community. Our economy and our public health depend on our people and families arriving safely at their jobs, in schools, and returning safely to their homes and communities each day.

Roadway crashes are preventable, and we have many available tools and practices that can be applied to improve safety. The Safe System approach is one such practice. It focuses on five key objectives: safer people, safer roads, safer vehicles, safer speeds, and post-crash care. Key to its effectiveness is that the Safe System approach places a clear focus on the primary mechanism of injury in roadway crashes, kinetic energy above human tolerance levels.

"Kinetic energy" can seem like an abstract term, but everyone knows what excess kinetic energy looks like on our roads. We know it when we see pictures of vehicles torn in half from a T-bone crash. We know it when we see pedestrians literally knocked out of their shoes and thrown hundreds of feet from the site of impact.

And we know a lot about how speed is playing a role in our road safety crisis. We know that the faster we drive, the more prone we become to making errors, and the more time and distance we need to respond to a hazard and avoid a crash. Most importantly, we know that higher speeds, in concert with larger vehicles, are a key factor behind the spike in fatalities that we are seeing among pedestrians, bicyclists, motorcyclists, and construction workers, whose

bodies are simply not designed to withstand impact speeds above 20 miles per hour.

Fortunately, research indicates that even relatively small changes in speed can improve safety for all road users significantly. Just a 5 percent reduction in average speed can cut the number of fatal crashes by 30 percent, making a significant step toward our goal of zero.

We have many well established treatments that can be applied to help naturally cue drivers to adopt context-appropriate speeds. Many states and local agencies have created ambitious speed management plans; and while progress is being made, there remains a critical need to build local capacity and political will to enhance cross-sector coordination, streamline delivery of speed management tools, and ensure that safe and appropriate speeds are inherently baked into our roadway design, operation, and maintenance practices.

Opportunities also exist for vehicle designs and technologies to help us reduce the kinetic energy in our system. Features like intelligent speed adaptation are now becoming standard practices in other countries. We need to be ready and willing to apply global innovations to also save lives in the U.S.

As we improve our safety plans and infrastructure, and test out new technologies, we must further invest in modernizing our safety data systems. We can't manage what we don't measure, and we need data to be timely, accurate, consistent, accessible, and complete. We must enhance our data requirements and standards, put in place sustained funding and dedicated coordinating units, and establish clear performance metrics related to speed management to show accountability in our implementation of Safe System efforts.

As we adopt new technologies, we need better data related to usage, compliance, and failures to help us understand and improve their safety performance and public acceptance. We need a safer system in the U.S., one in which people can make mistakes and be human and still make it home on our roads. A focus on addressing kinetic energy as the root cause of roadway fatalities offers tremendous promise for creating a transportation system that is safe for people of all ages and abilities.

University researchers are well positioned to support this work in collaboration with the many partners dedicated to community safety and wellbeing.

Thank you for your time and leadership, and I welcome the discussion on these critical issues.

[The prepared statement of Dr. Sandt follows:]

PREPARED STATEMENT OF LAURA SANDT, PH.D., CO-DIRECTOR, RESEARCH STRATEGY AND IMPLEMENTATION, HIGHWAY SAFETY RESEARCH CENTER; DIRECTOR, PEDESTRIAN AND BICYCLE INFORMATION CENTER; DIRECTOR, COLLABORATIVE SCIENCES CENTER FOR ROAD SAFETY, SENIOR RESEARCH ASSOCIATE, HIGHWAY SAFETY RESEARCH CENTER, THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL

### **Biography**

Dr. Laura Sandt was appointed co-director of the University of North Carolina (UNC) *Highway Safety Research Center* (HSRC), focused on research strategy and implementation, in November 2023. She has been with HSRC since 2004 and is active in a variety of research areas, including the development and evaluation of com-

munity-involved health and injury prevention programs and studies focusing on pedestrian and bicycle safety, mobility, and access.

Dr. Sandt serves as co-director for the *Pedestrian and Bicycle Information Center*, a Federal clearinghouse that provides leadership and technical guidance to communities across the U.S. She also serves as director for the *Collaborative Sciences Center for Road Safety*, a *National University Transportation Center* funded in 2016 by the U.S. Department of Transportation (USDOT). In this role, she has oversight responsibilities for the Center, whose mission is to advance transportation safety through a multidisciplinary, *systems-based* approach.

She has been involved in the development of several seminal Federal Highway Administration (FHWA) and National Highway Traffic Safety Administration (NHTSA) resources, including the *Pedestrian Road Safety Audit Guidelines and Prompt Lists*, the guide *How to Develop a Pedestrian Safety Action Plan*, *Countermeasures that Work: 7th Edition*, and a toolkit for community members, *A Resident's Guide for Creating Safer Communities for Walking and Biking*. She has also led projects working directly with states and local communities to develop, implement, and evaluate programs aimed at improving pedestrian and bicycle safety and access to affordable travel options and health opportunities. Most recently, she participated in FHWA's Office of International Programs study team examining Safe System innovations to improve pedestrian safety on urban arterial roads.

Dr. Sandt has led or supported numerous projects related to transportation safety data improvement and systemic safety analysis. She served as Principal Investigator on NCHRP projects 17–73 (*Report 893*), and BTSCR project 10 (*Research Report 9*), and has conducted several studies utilizing both healthcare and police data records to examine the quality and potential application of various data sources.

Dr. Sandt has a Ph.D. in epidemiology from the UNC-Chapel Hill Gillings School of Global Public Health, with a concentration in injury prevention. She also holds a Masters in Regional Planning (M.R.P.) from UNC-Chapel Hill with a concentration in transportation and land use. Her undergraduate degree is from Texas A&M University. Dr. Sandt is an active member of the Association of Pedestrian and Bicycle Professionals, the Institute of Transportation Engineers, the Road to Zero Coalition, and the Transportation Research Board, serving as former Chair of the Pedestrians Committee (ACH10), and co-chair of the Subcommittee on Automated Vehicles, Pedestrian, and Bicycle Interaction.

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Chairman Peters, Ranking Member Young, and distinguished members of the Committee:

Thank you for the opportunity to speak today on the critical issues surrounding our roadway safety crisis. My name is Laura Sandt, and I am a Senior Research Associate and Co-Director of the Highway Safety Research Center at the University of North Carolina at Chapel Hill. The UNC Highway Safety Research Center was established in 1965 at the directive of the then Governor of North Carolina to provide policy makers with research needed to improve road safety—a very big concern in the 1960s. You may not be familiar with my Center in name, but I am confident that you are familiar with the impactful work of my HSRC colleagues, which has informed the creation of nationally adopted safety efforts such as Graduated Driver Licensing systems for novice drivers that have helped countless teens become safer drivers, and public engagement programs like *Click It or Ticket* that have helped to drive seat belt use to record high levels.

My work at UNC over the last 20 years has been to further advance this mission of saving lives on our roadways. My work is focused on better understanding the patterns and causes of roadway injuries and estimating the effectiveness of various approaches designed to prevent severe and fatal injuries. Further, as an epidemiologist and transportation planning and safety researcher, my guiding light is to improve the quality of life and wellbeing of our communities. I am just one out of a large community of safety researchers, so I will focus my comments today on topics related to my own research priorities rather than try and address the full set of existing and emerging road safety issues. My focus will be on:

- *The Growing Crisis of Roadway Fatalities*
- *The Value of the Safe System Approach*
- *Policy Opportunities to Further Strengthen Injury Prevention Efforts*

#### **The Growing Crisis of Roadway Fatalities**

*The roadway fatality rate in the U.S. has been steadily increasing since 2010. In sharp contrast, over the same time period we have seen the fatality rate per capita consistently declining in countries adopting rigorous road safety programs, such as*

the Safe System Approach. For example, the U.S. fatality rate is three to five times that of the Netherlands, United Kingdom, Sweden, Norway, Australia, and New Zealand.<sup>1,2</sup> According to the National Safety Council,<sup>3</sup> the “U.S. ranks 41st in worst traffic fatality rate among 49 high-income nations.”

*The consequences of this epidemic are dire.* Traffic deaths are a leading cause of death in the U.S., and the top cause of death among youth. According to the Centers for Disease Control and Prevention,<sup>4</sup> each year there are over 2.1 million emergency department visits for injuries, and more than 41,000 people killed, from motor vehicle crashes. Notably, vehicle-related fatalities and injuries significantly impact the hardworking people building our infrastructure. There were 891 people killed and 37,701 people injured in work zone crashes in 2022, representing a 52 percent increase in work zone fatalities since 2010.<sup>5</sup>

It is not just the loss of life that is concerning, but treating and recovering from injuries creates significant burdens for families, health care providers, employers, and the broader community. For crash survivors, transportation injuries have been associated with longer-term health concerns including arthritis, chronic pain, depression, anxiety, and the rise in opioid use. *Our economy and our public health depend on people and families arriving safely at their jobs and schools and returning safely to their homes and communities each day.*

As a nation, we are aging. More Americans are experiencing physical, medical, or mental conditions that limit their ability to drive, or make them uncomfortable driving in all conditions, such as at night. Having choices for safe and affordable forms of transportation is critical for community members to access employment, healthcare, education, and other opportunities. Given this need, the 58 percent increase in pedestrian deaths we have seen over the last decade has been particularly alarming.<sup>6</sup> *There is much work to be done to provide safe transportation options for all road users, of all ages and abilities.*

In the roadway safety and public health research community that I represent, we feel that it is important to acknowledge that this is a public health crisis affecting community members’ lives, mobility, and access to the places they need to travel to safely. We also want to acknowledge that *roadway crashes are preventable, and we have many available tools and practices that can be applied to reduce the rate of severe and fatal injuries and the trends we’re seeing.*

### The Value of the Safe System Approach

The USDOT, in its *National Roadway Safety Strategy*, promotes the Safe System Approach, which focuses on five key objectives: safer people, safer roads, safer vehicles, safer speeds, and post-crash care. The Safe System Approach is an evidence-based strategy that specifically acknowledges the primary mechanism of injury in roadway related crashes: kinetic energy above human tolerance levels.<sup>7</sup> *Fundamentally, the Safe System Approach is a public health approach, focusing on population-level ways to prevent and manage exposure to injury risks.*

In contrast to commonly used traffic safety frameworks, the *Safe System Approach places a strong emphasis on the importance of managing speeds across the network to increase the chances of survival of all types of crashes.* This is a shift from many past safety initiatives, which have largely focused on the issue of *individual driver speeding* (i.e., driving too fast for conditions or exceeding the posted speed

<sup>1</sup> Collaborative Sciences Center for Road Safety. 2023. “Vision for a Safer Road System.” Chapel Hill, NC: CSCRS. [https://www.roadsafety.unc.edu/wp-content/uploads/2022/09/CSCRS\\_6YR.pdf](https://www.roadsafety.unc.edu/wp-content/uploads/2022/09/CSCRS_6YR.pdf).

<sup>2</sup> Chiarenza, J., Borah, A., Geschwindt, M., Ireland, L., Kim, Y.J., Levine, N., and Tran, H. 2023. “Global Benchmarking Program: Improving Pedestrian Safety on Urban Arterials.” FHWA-PL-23-006. Washington, DC: Federal Highway Administration. <https://international.fhwa.dot.gov/programs/mrp/docs/FHWA-PL-23-006.pdf>.

<sup>3</sup> National Safety Council. 2021. “Zero Traffic Deaths: A Roadmap to Get There.” ArcGIS StoryMaps. March 31, 2021. <https://storymaps.arcgis.com/stories/b30d2c5754a3474bbecf7d46b6586469>.

<sup>4</sup> U.S. Centers for Disease Control and Prevention. 2024. “About Transportation Safety.” CDC: Transportation Safety. <https://www.cdc.gov/transportation-safety/about/index.html>.

<sup>5</sup> National Safety Council. 2024. “Motor Vehicle Safety Issues: Work Zones.” NSC: Injury Facts. 2024. <https://injuryfacts.nsc.org/motor-vehicle/motor-vehicle-safety-issues/work-zones/>.

<sup>6</sup> Governors Highway Safety Association. 2024. “U.S. Pedestrian Deaths Fall Slightly in First Half of 2023, but Remain Above Pre-Pandemic Levels.” GHSA. <https://www.ghsa.org/resources/news-releases/pedestrians-preliminary24>.

<sup>7</sup> Ederer, D.J., Panik, R.T., Botchwey, N., and Watkins, K. 2023. “The Safe Systems Pyramid: A New Framework for Traffic Safety.” Transportation Research Interdisciplinary Perspectives 21 (September): 100905. <https://doi.org/10.1016/j.trip.2023.100905>.

<sup>8</sup> World Health Organization. 2017. “Managing speed.” No. WHO/NMH/NVI/17.7. World

limit), rather than the injury mechanism of kinetic energy transfer that is driven by the mass and velocity of the parties involved in a crash.

A large body of evidence has documented vehicle speed, and not necessarily speeding, as a root cause of traffic-related injuries and deaths. This is because speed affects:

- 1) the driver's ability to detect potential hazards on the road and avoid making driving errors;
- 2) road user reaction time and stopping distance needed to avoid a crash;
- 3) the performance of vehicle crash avoidance systems and safety equipment; and
- 4) the severity of injuries resulting from a crash and likelihood of survival.<sup>8,9</sup>

*Traveling at higher speeds has been associated with driver errors and poor judgment.* For example, research has found that high-speed operations led to stop sign and traffic signal violations amongst motorcycle riders.<sup>10</sup> My own research has shown that drivers on higher speed roads are less likely to comply with laws requiring them to yield to pedestrians at crosswalks, compared to drivers on lower speed roads.<sup>11</sup>

*Many of our current safety interventions, equipment, and vehicle technologies are insufficient in mitigating injuries when speeds (and kinetic energy transfer) are high.* For example, "Shibata 1994 found that when motorcyclists crashed at lower speeds, helmets significantly decreased the risk of death, but at speeds greater than 50 kilometers per hour (kph), there was no significant benefit from wearing a helmet."<sup>12</sup> Similarly, a study of automatic emergency braking (AEB) systems with pedestrian detection found that while AEB was associated with a 32 to 34 percent reduction in the odds of a pedestrian crash on roads with speed limits below 35 miles per hour (mph), there was no reduction in the pedestrian crash odds on roads where the speed limit was 50 mph or higher.<sup>13</sup>

*High vehicle operating speed is a particular concern for people outside of the vehicle,* including adults and children walking or using assistive devices, bicyclists and motorcyclists, and workers in construction zones. For example, research has shown that most pedestrians can survive a crash at an impact speed of 19 mph, but survivability plummets as speeds increase beyond that.<sup>14,15</sup> As our population ages, our tolerance for kinetic energy also decreases. One study found that older people (age 70+) are roughly five times more likely to die when struck by an impact speed of 20 mph than are 20-year-olds.<sup>16</sup>

Fortunately, research indicates that *even relatively small changes in speed can significantly improve safety for all road users.*<sup>17</sup> The World Health Organization estimates that just a 5 percent reduction in average speed can cut the number of fatal crashes by 30 percent, making a significant step toward our goal of zero roadway deaths.<sup>8</sup> The Safe System Approach therefore holds great promise in reducing exposure to injury risks by managing vehicle operating speeds so that impact forces ex-

<sup>8</sup>World Health Organization. 2017. "Managing speed." No. WHO/NMH/NVI/17.7. World Health Organization. <file:///C:/Users/lssandt/Downloads/WHO-NMH-NVI-17.7-eng.pdf>.

<sup>9</sup>National Association of City Transportation Officials. 2020. "City Limits: Setting Safe Limits on Urban Streets." NACTO. <https://nacto.org/safespeeds/>.

<sup>10</sup>Lee, C., Karimi, B., Jang, S., Salow, V. 2018. "Understanding emerging motorcyclist segments in crashes using Florida crash data and statewide survey." Transportation Research Record 2672(34), 106–121. <https://doi.org/10.1177/0361198118798177>.

<sup>11</sup>Sandt, L.S., Marshall, S.W., Rodriguez, D.A., Evenson, K.R., Ennett, S.T., and Robinson, W.R. 2016. "Effect of a Community-Based Pedestrian Injury Prevention Program on Driver Yielding Behavior at Marked Crosswalks." Accident Analysis and Prevention 93 (August): 169–78. <https://doi.org/10.1016/j.aap.2016.05.004>.

<sup>12</sup>Liu, B., Ivers, R., Norton, R., Blows, S., and Lo, S.K. 2004. "Helmets for Preventing Injury in Motorcycle Riders." Cochrane Database of Systematic Reviews, no. 2: CD004333. <https://doi.org/10.1002/14651858.CD004333.pub2>.

<sup>13</sup>Cicchino, J.B. May 2022. "Effects of automatic emergency braking systems on pedestrian crash risk." Accident Analysis & Prevention (AAP). <https://doi.org/10.1016/j.aap.2022.106686>.

<sup>14</sup>Johansson, R. 2009. "Vision Zero—Implementing a policy for traffic safety." Safety Science, 47: 826–831. <https://doi.org/10.1016/j.ssci.2008.10.023>.

<sup>15</sup>Dumbaugh, E., Merlin, L.A., Signor, K., Kumfer, W., LaJeunesse, S., and Carter, D.L. 2019. "Implementing Safe Systems in the United States: Guiding Principles and Lessons from International Practice." Final report CSCRS-R3. Chapel Hill, NC: Collaborative Sciences Center for Road Safety. [https://www.roadsafety.unc.edu/wp-content/uploads/2019/07/CSCRS\\_R3\\_Final-Report.pdf](https://www.roadsafety.unc.edu/wp-content/uploads/2019/07/CSCRS_R3_Final-Report.pdf).

<sup>16</sup>Tefft, B.C. 2013. "Impact Speed and a Pedestrian's Risk of Severe Injury or Death." Accident Analysis and Prevention 50 (January): 871–78. <https://doi.org/10.1016/j.aap.2012.07.022>.

<sup>17</sup>Kumfer, W., Martin, L., Turner, S., and Broshears, L. 2023. "Safe System Approach for Speed Management." FHWA SA 23 002. Washington, DC: Federal Highway Administration. [https://highways.dot.gov/sites/fhwa.dot.gov/files/Safe\\_System\\_Approach\\_for\\_Speed\\_Management.pdf](https://highways.dot.gov/sites/fhwa.dot.gov/files/Safe_System_Approach_for_Speed_Management.pdf).

perienced in the event of a crash are within physical tolerance levels<sup>18</sup> and the likelihood of severe and fatal injuries is minimized.

### **Policy Opportunities to Further Strengthen Injury Prevention Efforts**

Due to the role of speed in traffic-related injuries and deaths, the USDOT's *National Road Safety Strategy* has placed a strong emphasis on speed management and adoption of the Safe System Approach. Specifically, it calls out the need for a “multi-faceted approach that leverages road design and other infrastructure interventions, speed limit setting, education, and enforcement.”<sup>19</sup>

Speed management requires a broad spectrum of agencies working in coordination across jurisdictional levels. In a 2017 study, the National Traffic Safety Board (NTSB) stated that “Current federal-aid programs do not ensure that states fund speed management activities at a level commensurate with the national impact of speeding on fatalities and injuries.”<sup>20</sup> The discretionary grants under the Infrastructure Investment and Jobs Act (IIJA) and the formula programs offer opportunities to further invest in speed management efforts that could significantly reduce fatal and severe crashes. *Importantly, there is a need to enhance cross-sector coordination, address jurisdictional barriers to speed management, and incentivize implementation of speed management tools.*

#### *Update Speed Limit Setting Processes and Speed Targets*

In contrast to other countries adopting a Safe System Approach, there is no national maximum speed limit law in the U.S., with states instead having speed-limit setting authority. In most states, maximum operating speed limits have increased since 1995, and roadway design guidance has been modified over time to accommodate higher speed traffic, to disastrous effect on roadway safety.

Many state strategic highway safety plans include ambitious goals to reduce speed-related fatalities and lay out numerous strategies and supporting actions, including evaluating speed limits, identifying needed low speed zones, and developing a statewide speed management plan. While progress is being made, few of these plans have been funded, staffed, and implemented to the level necessary to address the magnitude of the issue. Cities, towns, and rural villages are also increasingly seeking ways to manage speeds but may be limited in their power to effect change, particularly in cases where state-owned roads run through local communities.

*States need Federal leadership and support to help overhaul speed limit setting practices.* Many states have legislation mandating certain speed percentiles be used as a criterion for setting speed limits. Others have entrenched practices relying on driver operating speeds at free-flow conditions to inform speed limit setting. Still others have requirements for engineering studies to be performed prior to changing speed limits, but no capacity at the state or local levels to perform such studies. These challenges impede both state and local efforts to create speed limits and set target speeds designed for human tolerance levels.

There are several recently developed resources, guidance documents, and training resources available for context-sensitive speed limit setting aligned with the Safe System Approach. These tools describe the importance of developing target speeds (*i.e.*, the maximum speed considered safe and appropriate for a specific roadway condition) for different contexts, and ways to align the posted speed and operating speed with those targets. *Critically, there is a need to support local efforts to build the capacity and resources available to identify speed management needs and effectively coordinate efforts with regional and state authorities.*

#### *Accelerate Delivery of Self-Enforcing Roads and Speed-Managing Infrastructure*

Posted speed limits send an important message to drivers about what speed is appropriate and safe. Beyond speed limit signs, there are many well-established safety treatments that can create “self-enforcing” roads that naturally cue drivers to adopt context-appropriate speeds. For example:

- Roundabouts to manage speeds at intersections
- Gateway treatments at speed transition zones

<sup>18</sup> Doecke, S.D., Kloeden, C.N., Dutschke, J.K., and Baldock, M.R. 2018. “Safe Speed Limits for a Safe System: The Relationship between Speed Limit and Fatal Crash Rate for Different Crash Types.” *Traffic Injury Prevention* 19 (4): 404–8. <https://doi.org/10.1080/15389588.2017.1422601>.

<sup>19</sup> U.S. Department of Transportation. 2022. “National Roadway Safety Strategy.” Washington, DC: USDOT. <https://www.transportation.gov/sites/dot.gov/files/2022-02/USDOT-National-Roadway-Safety-Strategy.pdf>.

<sup>20</sup> National Transportation Safety Board. 2017. “Safety Study: Reducing Speeding-Related Crashes Involving Passenger Vehicles.” Public Information Meeting. <https://www.ntsb.gov/news/events/Documents/2017-DCA15SS002-BMG-Abstract.pdf>.

- Vertical and horizontal deflections
- Treatments designed to separate vulnerable road users from higher speed traffic (such as raised medians, separated bike lanes, separated paths, etc.)

In addition to documented safety benefits, many of these roadway treatments can also address goals related to improving mobility, accessibility, stormwater management, and other human and environmental health interests. As the usage of these treatments gains popularity in the U.S., we are seeing more public acceptance and demand for this infrastructure. *To further accelerate adoption of lifesaving infrastructure, there is a need to streamline delivery of these projects on existing roads, and to develop processes to ensure that future roadway design, operation, and maintenance practices incorporate these safety features where needed.*

#### *Adopt Lifesaving Vehicle Technologies to Curb Kinetic Energy Transfer*

In the U.S., vehicles are getting larger, heavier, and capable of reaching higher operating speeds more quickly. The increasing weight and height of vehicles has been linked to the increasing rate of pedestrian fatalities that we have seen in the past decade.<sup>21</sup> The weight and acceleration capacity of motorcycles has also been linked to an increase in roadway fatalities.<sup>22,23</sup>

*Opportunities exist for vehicle designs and technologies, as well as vehicle fleet management practices, to reduce kinetic energy, manage speeds, and provide feedback on speed to the driver that can reduce the risks of severe and fatal injuries.*

Features like Intelligent Speed Assistance and Intelligent Speed Adaptation (ISA) are designed to help drivers stay within the speed limit.<sup>24</sup> ISA is now required on new vehicles in other countries, such as in countries within the European Union and in the United Kingdom, and is increasingly being incorporated into Safe System initiatives in other localities, such as New South Wales in Australia. Many Vision Zero cities are adopting fleet management practices that leverage opportunities to incorporate lifesaving technologies. For example, New York City has seen success in its fleet safety pilot program, reporting a 99 percent compliance rate with the speed parameters set.<sup>25</sup> States, too, are finding value in fleet vehicle technologies aimed at improving driver safety and traffic safety culture.

#### *Enhance Safety Data and Safety Performance Metrics*

We can't manage what we don't measure. Practitioners, the private sector, and safety researchers alike rely on data to investigate crashes, identify system failures, develop goals and plan for safety, evaluate the effectiveness of safety measures, and communicate risks to the public. These data need to be timely, accurate, consistent, accessible, and complete. Unfortunately, *our current transportation and health data systems are often siloed, under-funded, and in desperate need of modernization to help them meet these goals.* The distributed system of data ownership and funding for data improvements across transportation agencies, divisions of motor vehicles, healthcare providers, and Federal entities means that data improvement efforts are often piecemeal, disconnected, inconsistent, and slow.

Several studies have documented data improvements that could greatly enhance our collective capacity to improve safety planning, deployment of projects and programs, and research and evaluation. For example, we need:

- *Enhanced requirements, definitions, and standards* for non-fatal injury reporting and geocoding (*i.e.*, spatially referencing), including roadway and trail-related injuries involving pedestrians, bicyclists, and micromobility users that may or may not involve motor vehicles.
- *More routine collection of National Household Travel Survey data*, including more state-level sampling to support more localized and granular analysis.
- *Comprehensive training for all primary collectors* of injury data, including state and local enforcement agencies and university/campus police, to include training on coding incidents involving emerging vehicle technologies and devices.

<sup>21</sup> Hu, W., Monfort, S.S., Cicchino, J.B. 2023. "The association between passenger-vehicle front-end profiles and pedestrian injury severity in motor vehicle crashes." Insurance Institute for Highway Safety. <https://www.iihs.org/topics/bibliography/ref/2294>.

<sup>22</sup> Teoh, E.R., Campbell, M., 2010. "Role of motorcycle type in fatal motorcycle crashes." Journal of Safety Research 41(6), 507–512. <https://doi.org/10.1016/j.jsr.2010.10.005>.

<sup>23</sup> Jou, R.C., Yeh, T.H., Chen, R.S., 2012. "Risk factors in motorcyclist fatalities in Taiwan." Traffic Injury Prevention 13(2), 155–162. <https://doi.org/10.1080/15389588.2011.641166>.

<sup>24</sup> European Commission. 2018. "Speed and Speed Management." European Commission, Directorate General for Transport. <https://road-safety.transport.ec.europa.eu/system/files/2021-07/ersosynthesis2018-speedspeedmanagement-summary.pdf>.

<sup>25</sup> Automotive Fleet. 2022. "NYC Fleet Presents Preliminary Data on Speed Limiter Pilot." <https://www.automotive-fleet.com/>.

- *Technical resources and model practices* detailing how to obtain, document, process, securely store, and link or integrate data sources needed for safety assessment while protecting data privacy.
- *Sustained, long-term funding and dedicated coordinating units* for safety data collection, management, and usage across multiple data sources, as well as support to create data dashboards and accountability tools.

As more communities create Safe Streets for All and Vision Zero plans and embrace Safe System approaches to reduce roadway injuries, there is an urgent need to enhance our safety data and performance measurement efforts and integrate them with these activities. We currently lack standards and routine collection and reporting tools related to crash impact speed, facility or system design and operating speed, and indicators of how often and where repeat speeding offenders are traveling. As we increasingly look to in-vehicle safety technologies, we will need more data related to system usage, compliance, and failures to help us understand and improve their performance and public acceptance.

*Many Safe System adopting countries have made great strides in developing data standards and safety performance measures related to speed and other safety outcomes.* They are taking steps to systematically track safety metrics, such as the proportion of speed-compliant vehicles, roads/intersections in the network where the design speed matches the target speed, the proportion of roads in the network where the posted speed matches the human tolerance, and the proportion of the network that has been modified to align with safe and appropriate speeds. These data practices are easily replicable in the U.S. and could significantly advance our ability to set benchmarks related to speed management, show accountability in the implementation of Safe System efforts, and identify successful practices that result in safer speeds and reduced risks.

University-based researchers are well positioned to offer support in this work. Universities often have the skills, infrastructure, and capacity that private firms and state and local agencies lack to serve as independent data stewards, to securely protect sensitive data, to develop tools and repositories for data management, and to support efforts that make data products available and accessible for research and planning.

Similarly, public health agencies are key partners that could be further engaged in this work. The field of public health holds great expertise in developing near real-time injury surveillance systems, engaging with communities on safety and health issues, and developing sound injury prevention programs.

*Engaging universities with cross-sector partners and bringing public health agencies to the table to enhance our safety data and performance measures can serve to bridge research and education with the ongoing safety work within our communities.*

In closing, I thank you again for your time and your consideration of our road safety challenges and the opportunities we have for strengthening our injury prevention efforts together, and I welcome your questions and thoughts on these issues.

Senator PETERS. Well, thank you, Dr. Sandt.

Our fifth witness is Jeff Farrah, Chief Executive Officer of the Autonomous Vehicle Industry Association. The association represents more than 20 of the leading companies developing autonomous vehicle technologies.

Mr. Farrah, good to have you at the Committee here. You may proceed with your opening remarks.

**STATEMENT OF JEFF FARRAH, CHIEF EXECUTIVE OFFICER,  
AUTONOMOUS VEHICLE INDUSTRY ASSOCIATION**

Mr. FARRAH. Chairman Peters, Ranking Member Young, members of the Subcommittee, it is an honor to testify today, particularly as a former staffer for the Senate Commerce Committee.

My written testimony provides detail on the unacceptable number of fatalities and injuries on U.S. roads. I want to spend my time this afternoon talking about solutions, and specifically how autonomous technology can help address our Nation's roadway safety crisis.

What was once an aspiration for our country is now a reality. Today, autonomous vehicles are here, and AVIA reported last month that our members have driven nearly 70 million autonomous miles on U.S. public roads. That is equivalent to 293 round trips to the moon.

Autonomous vehicles can play an important role in addressing roadway safety. Our country has hit a wall in reducing roadway deaths, and it is a wall built on human behavior like speeding and impaired or distracted driving. These human errors are the overwhelming cause of the more than 40,000 deaths on our roads; but fortunately, AVs do not engage in any of these behaviors.

It is essential to define what we are referring to when we say “autonomous vehicles.” These are not vehicles using driver assist features that we increasingly see rolled out on our roads. With driver assist technology, the human driver must constantly be engaged to take over at a moment’s notice.

With truly autonomous vehicles, the human has no responsibility for the driving task. Autonomous driving is a marriage between hardware and software, and deliver sensitivities, capabilities, and reaction times well beyond that of a human driver. The sensors on an AV give the vehicle a 360-degree view to detect, track, and react to objects and people, even when hidden from human perception due to other vehicles, buildings, and obstructions.

Particularly relevant to this hearing is how AVs are specifically developed to detect vulnerable road users, such as motorcycles, pedestrians, cyclists, and construction workers, and then safely respond to their unique behavior. We have all been in situations where a pedestrian steps off a curb and was not visible due to a parked car, or a motorcycle was lane-splitting and approached from behind and was undetected until a split second before the motorcycle went by.

Now imagine a world where vehicles do not have human limitations, because they can see through objects and a few hundred meters in every direction, including beyond the vehicle’s headlights. This is the promise of autonomous vehicles to America’s vulnerable road users.

The AV industry recognizes this is a new technology to most Americans, and we are strongly committed to building public trust in AVs. We believe that public trust in AVs is essential to their acceptance, and that public trust must be earned and maintained by the industry.

To achieve that objective, last month, AVIA announced its TRUST Principles. Through this initiative, AVIA is articulating the importance of transparent interactions with government officials and the public, deep engagement with law enforcement and first responders, and upholding the highest cybersecurity and privacy standards.

Autonomous vehicles are very much an American success story, and our country can and must lead on this area globally. But we need the support of policymakers. I want to turn to a couple of policy recommendations that will help industry address the roadway safety crisis.

Federal leadership on AVs is imperative. Competitor countries are moving forward with policy frameworks, and states are increas-

ingly taking the lead on AV policy. Twenty-five U.S. states now have AV deployment statutes and are welcoming the technology.

I encourage Federal action in a couple of areas.

First, Congress should act on Federal legislation like the AV START Act from Senators Peters and Thune. Our industry is incredibly grateful to both senators for their longstanding leadership on AV policy and their recognition that the technology will help make our roads safer.

Our organization was especially excited to see AV specifically called out by the bipartisan Senate AI working group that is led by Senators Schumer, Rounds, Heinrich, and Young. The working group encouraged committee action on a Federal framework for the testing and deployment of AVs across all modes of transportation, and noted that this is particularly important as strategic competitors, like the Chinese Communist Party, are acting.

Second, the AV industry has appreciated strong interest from the Department of Transportation on how AVs can increase safety on American roads. But we need action from DOT in key areas.

For example, NHTSA should issue a proposed rule on its AV STEP program, which was first announced in July 2023. AVs present an opportunity to reimagine how vehicles are designed, and promote safety and accessibility. According to NHTSA, AV STEP will encourage deployment of next-generation vehicles, and open up a wealth of data to help make progress toward establishing an effective governance structure for autonomous technology.

Another example where DOT should take immediate action is by FMCSA granting the still-pending industry exemption request that will allow AV trucks to use alternative warning devices to signal when a vehicle is stopped on the roadside.

Thank you again for the opportunity to testify today, and I look forward to any questions you may have.

[The prepared statement of Mr. Farrah follows:]

PREPARED STATEMENT OF JEFF FARRAH, CHIEF EXECUTIVE OFFICER,  
AUTONOMOUS VEHICLE INDUSTRY ASSOCIATION

## I. Introduction

Chairman Peters, Ranking Member Young, members of the Subcommittee, it is my honor to testify before the Subcommittee on this incredibly important topic. The autonomous vehicle industry appreciates the strong engagement of members of this Subcommittee on autonomous vehicle (“AV”) policy and shares your dedication to improving safety on U.S. roads.

The Autonomous Vehicle Industry Association (“AVIA”) is the unified voice of the AV industry, and we represent the world’s leading technology, ridesharing, automotive, trucking, and transportation companies.<sup>1</sup> Our mission is to bring the tremendous safety, mobility, transportation, and economic benefits of AVs—otherwise known as SAE International Levels 4- and 5-capable vehicles—to consumers and businesses in a safe, responsible, and expeditious manner and ensure the U.S. is the global leader on AVs.<sup>2</sup> Vehicles operated by AVIA members have driven nearly

<sup>1</sup> AVIA members include more than 20 leading companies developing autonomous vehicle technologies. See *Our Mission and Members*, AUTONOMOUS VEHICLE INDUS. ASS’N, <https://theavindustry.org/> (last visited May 17, 2024).

<sup>2</sup> SAE International’s J3016 standard, which has been adopted industry wide, establishes a taxonomy for vehicle automation technologies that includes six levels of driving automation, rising from “No Driving Automation” (Level 0) to “Full Driving Automation” (Level 5). Level 2 systems (often called advanced driver assistance systems or “ADAS”) are available on vehicles today and are capable of “partial driving automation,” require human supervision at all times. Level 3 vehicles have “conditional driving automation,” where the vehicle requires human interaction only in specific situations. Level 4 vehicles are defined as having “High Driving Automa-

70 million autonomous miles on U.S. public roads, a distance roughly equivalent to 293 round trips to the Moon or driving across Route 66 over 29,000 times.<sup>3</sup>

For decades, AVs have been a technological aspiration for our country's most brilliant innovators. Today, AVs are a reality and are increasingly being deployed on America's roads and highways, using advanced technology to perform all aspects of the driving task. In states as diverse as Arizona, Arkansas, California, Florida, Michigan, and Texas, AVs provide valuable transportation services, transporting both passengers as part of autonomous ride-hailing fleets and goods as part of trucking fleets and middle-and last-mile delivery operations. The U.S. Department of Defense has also embraced autonomous technology, including technology developed by AVIA member company Kodiak, to keep America's soldiers safer.<sup>4</sup>

In recent years, the United States has faced unacceptably high levels of roadway crashes and fatalities. We cannot accept these fatalities as the cost of mobility in our country. AVs are poised to significantly improve roadway safety, as they do not speed, they do not text, and they do not drive while impaired by alcohol, drugs, or fatigue. Tragically, human drivers do all those things, leading to an epidemic of deaths on America's roads, with over 40,000 traffic fatalities recorded each year since 2021, according to National Highway Traffic Safety Administration's ("NHTSA") estimates.<sup>5</sup> In the first half of 2023, the Governors Highway Safety Association estimates 3,373 pedestrians were killed on U.S. roads, a 14 percent increase over 2019.<sup>6</sup> When compared to peer countries, road deaths in the U.S. remain much higher, and have risen over the past decade.<sup>7</sup> By removing human error as a cause of roadway incidents, AVs can help reduce roadway deaths, saving the lives of countless Americans.

When discussing AVs and roadway safety, it is critical to distinguish autonomous vehicles from vehicles from other types of technology. "Driver-assistance technology"—which can be found in tens of millions of cars and trucks on our roads today—is important and helpful, but it is not *autonomous* driving. Rather, the term "autonomous vehicle," or "AV," indicates that the vehicle is capable of driving on its own, without relying on or having any expectation that a human will be supervising the vehicle's actions. With an AV, the vehicle performs *all* aspects of the driving task on a sustained basis. This is the technology that is being developed and deployed by AVIA's members, and it will transform the way people and goods move in the world.

Today, the United States is the global leader in the AV industry, with a robust ecosystem of American companies developing all aspects and applications of the technology. However, China and other global competitors are pressing forward with the advancement of AVs, with Chinese AV companies beginning wider deployments in major cities.<sup>8</sup> Continued American leadership will depend on the continued support for the AV industry by stakeholders across government, including this Subcommittee.<sup>9</sup> The AV industry remains dedicated to improving the safety of our roads, and looks forward to continued cooperation with our partners in government as we work to do so.

tion." Only Level 3, 4, and 5 vehicles are equipped with automated driving systems ("ADS"). See SAE INT'L TAXONOMY AND DEFINITIONS FOR TERMS RELATED TO DRIVING AUTOMATION SYSTEMS FOR ON-ROAD MOTOR VEHICLES, J2016 202104 (2021).

<sup>3</sup>Autonomous Vehicle Industry Association Releases First-Ever "State of AV" Report, AUTONOMOUS VEHICLE INDUS. ASS'N (Apr. 10, 2024), <https://theavindustry.org/newsroom/press-releases/first-ever-state-of-av-report>.

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

<sup>5</sup>NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., U.S. DEPT OF TRANSP., DOT HS 813 561, EARLY ESTIMATE OF MOTOR VEHICLE TRAFFIC FATALITIES IN 2023, <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813561>.

<sup>6</sup>GOVERNORS HIGHWAY SAFETY ASS'N, PEDESTRIAN TRAFFIC FATALITIES BY STATE JANUARY–JUNE 2023 PRELIMINARY DATA, 3 (2023), <https://www.ghsa.org/resources/Pedestrians24>.

<sup>7</sup>Road accidents, OECD DATA, <https://data.oecd.org/transport/road-accidents.htm> (last visited May 17, 2024).

<sup>8</sup>See Edward White, *China challenges the west for driverless car supremacy*, FIN. TIMES (Jan. 30, 2024), <https://www.ft.com/content/3a649978-69df-46eb-94c8-eee23a69e6bb>. China's progress on AVs is visible. In March 2024, Chinese technology giant Baidu launched China's first 24/7 AV ride-hailing service in Wuhan. Press Release, Baidu, Inc., Baidu Launches China's First 24/7 Robotaxi Service (Mar. 8, 2024), <https://www.prnewswire.com/news-releases/baidu-launches-chinas-first-247-robotaxi-service-302084097.html>.

<sup>9</sup>See *Explainer: U.S. Must Maintain Global Leadership on AVs*, AUTONOMOUS VEHICLE INDUS. ASS'N, <https://theavindustry.org/resources/testimony/explainer> (last visited May 17, 2024).

## II. The State of Roadway Safety

The United States continues to face epidemic levels of fatalities on our Nation's roads. In 2023, 40,990 people were killed across the country in motor vehicle traffic incidents.<sup>10</sup> 2023 was the third year in a row to see traffic deaths rise above 40,000,<sup>11</sup> a number of fatalities that previously had not occurred since 2007.<sup>12</sup> Pedestrian deaths have also risen; 2022 was the deadliest year for American pedestrians since 1981, with 7,508 people killed.<sup>13</sup> That trend continued into 2023, with an estimated 3,373 pedestrians killed in the first half of the year, a 14 percent increase over 2019.<sup>14</sup> The increase in roadway fatalities is consistent across vehicle types. In 2022, 5,887 people died in crashes involving large trucks, a 1.8 percent increase in fatalities from 2021.<sup>15</sup> This increase is part of a decade-long 49 percent increase in such crashes.<sup>16</sup> Further, 2022 saw large trucks involved in over 120,200 crashes that resulted in an injury, an 18 percent increase since 2016.<sup>17</sup> The toll of motor vehicle crashes is not measured in fatalities and injuries alone. According to the National Safety Council, "the total motor vehicle injury costs" in 2022 were estimated at \$481.2 billion."<sup>18</sup>

Research continues to confirm that human behavior is overwhelmingly the most common factor in fatal accidents on our roads. A recent study by the NHTSA found that over 55 percent of all people injured or killed in a roadway incident tested positive for one or more drugs (including alcohol).<sup>19</sup> Drivers are also frequently distracted by electronics; at any given time, almost 3 percent of all drivers are looking at or using their handheld device.<sup>20</sup> Studies have also found that drivers manipulating cell phones are two to six times more at risk for a crash.<sup>21</sup> Several categories of behavior-related fatalities have increased in the past few years, including police-reported alcohol-involved crashes and deaths of unrestrained passengers.<sup>22</sup>

Roadway safety is an issue that impacts each community differently. Roadway crashes, and the resulting injuries and deaths, are not evenly distributed across socioeconomic, racial, or ethnic groups. An analysis published by the Governors Highway Safety Association highlights the disproportionate number of traffic fatalities experienced by Black, Indigenous, and People of Color ("BIPOC").<sup>23</sup> In particular, per capita rates of traffic fatalities among American Indian/Alaskan Natives and Black populations were all higher than the national average,<sup>24</sup> and pedestrian death rates per capita were higher than the national average for American Indian/Alaska Natives, Black, and Hispanic individuals.<sup>25</sup> Estimates published by NHTSA indicate that these discrepancies have become exacerbated in recent years, with traffic fatali-

<sup>10</sup>NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., *supra* note 5.

<sup>11</sup>*Id.*

<sup>12</sup>*Fatality Facts 2021: Yearly Snapshot*, INS. INST. FOR HIGHWAY SAFETY (May 2023), <https://www.iihs.org/topics/fatality-statistics/detail/yearly-snapshot>.

<sup>13</sup>GOVERNORS HIGHWAY TRAFFIC SAFETY ASS'N, PEDESTRIAN TRAFFIC FATALITIES BY STATE 2022 PRELIMINARY DATA (JAN.-DEC.) (2023), <https://www.ghsa.org/sites/default/files/2023-06/GHSA%20-%20Pedestrian%20Traffic%20Fatalities%20by%20State%2C%202022%20Preliminary%20Data%20-%2028January-December%29.pdf>.

<sup>14</sup>GOVERNORS HIGHWAY SAFETY ASS'N, *supra* note 6, at 3.

<sup>15</sup>NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., U.S. DEP'T OF TRANSP., DOT HS 813 448, EARLY ESTIMATE OF MOTOR VEHICLE TRAFFIC FATALITIES AND FATALITY RATE BY SUB-CATEGORIES IN 2022, 1 (2023), <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813448>.

<sup>16</sup>Nat'l Safety Council, *Large Trucks*, NSC INJURY FACTS, <https://injuryfacts.nsc.org/motor-vehicle/road-users/large-trucks/> (last visited May 15, 2024).

<sup>17</sup>*Id.*

<sup>18</sup>Nat'l Safety Council, *Motor Vehicles: Introduction*, NSC INJURY FACTS, <https://injuryfacts.nsc.org/motor-vehicle/overview/introduction/> (last visited May 15, 2024).

<sup>19</sup>NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., U.S. DEP'T OF TRANSP., DOT HS 813 399, ALCOHOL AND DRUG PREVALENCE AMONG SERIOUSLY OR FATALY INJURED ROAD USERS, 2 (2022), [https://rosap.nhtl.bts.gov/view/dot/65623/dot\\_65623\\_DS1.pdf](https://rosap.nhtl.bts.gov/view/dot/65623/dot_65623_DS1.pdf).

<sup>20</sup>NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., U.S. DEP'T OF TRANSP., DOT HS 813 184C, DRIVER ELECTRONIC DEVICE USE IN 2020, 1 (2021), <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813184.pdf>.

<sup>21</sup>*Distracted driving*, INS. INST. FOR HIGHWAY SAFETY, <https://www.iihs.org/topics/distracted-driving> (last visited May 17, 2024).

<sup>22</sup>NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., U.S. DEP'T OF TRANSP., DOT HS 813 298, EARLY ESTIMATES OF MOTOR VEHICLE TRAFFIC FATALITIES AND FATALITY RATE BY SUB-CATEGORIES IN 2021, 1 (2022), <https://www.nhtsa.gov/press-releases/early-estimate-2021-traffic-fatalities>.

<sup>23</sup>GOVERNORS HIGHWAY SAFETY ASS'N, AN ANALYSIS OF TRAFFIC FATALITIES BY RACE AND ETHNICITY 18 (2021), <https://www.ghsa.org/sites/default/files/2021-06/An%20Analysis%20of%20Traffic%20Fatalities%20by%20Race%20and%20Ethnicity.pdf>.

<sup>24</sup>*Id.* at 8.

<sup>25</sup>*Id.* at 13.

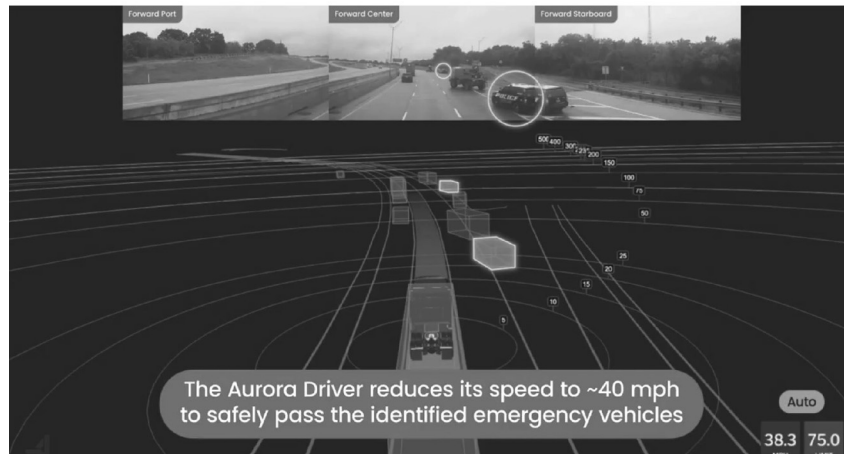
ties of Black people up 23 percent in 2020 compared to 2019, while American Indian deaths rose 11 percent.<sup>26</sup>

Census tracts have recorded pedestrian fatality rates within low-income metropolitan areas approximately twice that of more affluent neighborhoods.<sup>27</sup> These patterns are echoed in a City of Chicago report revealing that Black residents and those living in communities with high levels of economic hardship were more at risk of dying in a traffic crash compared to white residents and those living in communities with low and medium levels of economic hardship, respectively.<sup>28</sup> By reducing crashes across the board, AVs can reduce these inequities and improve the quality of life for all communities.

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

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

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



*An Aurora autonomous truck safely and accurately detects an emergency vehicle, slows down and changes lanes.<sup>29</sup>*

<sup>26</sup>*Id.* at 18; NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., U.S. DEP'T OF TRANSP., DOT HS 813 118, EARLY ESTIMATES OF MOTOR VEHICLE TRAFFIC FATALITIES AND FATALITY RATE BY SUB-CATEGORIES IN 2020 8 (2021), <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813118>.

<sup>27</sup> GOVERNING, AMERICA'S POOR NEIGHBORHOODS PLAGUED BY PEDESTRIAN DEATHS 1 (2014), [http://media.navigatored.com/documents/Governing\\_Pedestrian\\_Fatalities\\_Report.pdf](http://media.navigatored.com/documents/Governing_Pedestrian_Fatalities_Report.pdf).

<sup>28</sup> VISION ZERO CHICAGO, ACTION PLAN 2017–2019 17, [https://visionzerochicago.org/wp-content/uploads/2016/05/17\\_0612-VZ-Action-Plan\\_FOR-WEB.pdf](https://visionzerochicago.org/wp-content/uploads/2016/05/17_0612-VZ-Action-Plan_FOR-WEB.pdf).

<sup>29</sup> Aurora (@aurora\_inno), X (Jan. 18, 2024, 5:01 PM), [https://twitter.com/aurora\\_inno/status/1748103257128374548](https://twitter.com/aurora_inno/status/1748103257128374548).



A Waymo vehicle recognizes and adheres to a police officer directing traffic at a Los Angeles intersection.<sup>30</sup>



A Kodiak autonomous truck recognizes a pedestrian on a highway from over 130m away at night, shifting to another lane to give the pedestrian extra space.<sup>31</sup>

<sup>30</sup> Dmitri Dolgov (@dmitri dolgov), X (Jan. 18, 2024, 7:04 PM), [https://twitter.com/dmitri\\_dolgov/status/1748134215265456444](https://twitter.com/dmitri_dolgov/status/1748134215265456444).

<sup>31</sup> Kodiak (@KodiakRobotics), X (Mar. 21, 2024), <https://twitter.com/KodiakRobotics/status/1770870645116833872>.

AVIA members are committed to building the safest vehicles possible. To that end, AVIA recently debuted a set of TRUST Principles to guide our work with government, communities, and the public at large.<sup>32</sup> Among these principles is support for the establishment of safety-first culture and governance for AV developers.<sup>33</sup> By building safety-first cultures, AV developers further enhance the safety benefits of the vehicles they are designing. The AV industry believes that public trust in AVs goes hand-in-hand with their deployment and that we must earn and maintain that trust.

Today, human error, including speeding, unfamiliarity with the roadway, and fatigue, is a major contributor to roadway incidents. AVs are designed to remove that error from the equation, as they do not drive distracted or tired. AVs have built a significant safety record through more than a decade of development, testing, and deployment, and ADS-equipped vehicles have now driven millions of miles autonomously, with vehicles operated by AVIA members driving nearly 70 million autonomous miles on public roads in the U.S. alone.<sup>34</sup> Reinsurer Swiss Re recently published an analysis of 3.8 million autonomous miles driven by passenger AVs operated by AVIA member Waymo. The analysis found that when compared to baseline human drivers, Waymo AVs reduced bodily injury claims by 100 percent, and reduced property damage claims by 76 percent.<sup>35</sup> These results led Swiss Re to conclude that Waymo's AVs are "significantly safer towards other road users than human drivers are."<sup>36</sup> Waymo's own review of over 7 million rider-only autonomous miles found that the company's AVs demonstrated a 85 percent reduction in crashes involving any injury, and a 57 percent reduction in police-reported crashes, when compared to human drivers.<sup>37</sup> A recent Chamber of Progress study looking at California alone found that replacing even 1.3 percent of drivers with an AV could have prevented 411 fatalities between 2020 and 2022, while replacing 13 percent of drivers could have prevented 1,342 lives in that same three year period.<sup>38</sup> Another study by the Virginia Tech Transportation Institute found that the full scale deployment of occupantless AVs for delivery services could reduce roadway deaths by 58.2 percent.<sup>39</sup>

Looking deeper into the AV industry, autonomous trucks have already demonstrated a remarkable safety record, without a single fatality in more than seven years of operations and millions of miles driven on public roads. This safety record is supported by data collected by NHTSA. For almost three years, NHTSA has required AV companies to report every incident—no matter how minor or who is at fault—that occurs while an ADS is engaged as part of Standing General Order 2021-01 ("SGO").<sup>40</sup> During this period, only one reported incident involving an autonomous truck resulted in injuries, and the cause of that incident was a human-driven vehicle that collided with an autonomous truck. Autonomous trucks will help address the spate of fatalities caused by truck crashes. Reacting to newly released crash data from NHTSA, the Institute of Safer Trucking and Road Safe America said:

This data highlights a critical problem within the United States: a 76 percent increase in truck crash fatalities since 2009, with the total reaching a devastating 5,936 lives lost in 2022 alone . . . All of this occurred against a 15 per-

<sup>32</sup> See *Trust Principles*, AUTONOMOUS VEHICLE INDUS. ASS'N, <https://theavindustry.org/trust-principles> (last visited May 17, 2024).

<sup>33</sup> *Id.*

<sup>34</sup> AUTONOMOUS VEHICLE INDUS. ASS'N, *supra* note 3.

<sup>35</sup> LUIGI DI LILLO ET AL., COMPARATIVE SAFETY PERFORMANCE OF AUTONOMOUS- AND HUMAN DRIVERS: A REAL-WORLD CASE STUDY OF THE WAYMO ONE SERVICE (2023), <https://arxiv.org/ftp/arxiv/papers/2309/2309.01206.pdf>.

<sup>36</sup> *Id.*

<sup>37</sup> *Waymo Significantly Outperforms Comparable Human Benchmarks Over 7 Million Miles of Rider-Only Driving*, WAYMO (Dec. 20, 2023), <https://waymo.com/blog/2023/12/waymo-significantly-outperforms-comparable-human-benchmarks-over-7-million/>.

<sup>38</sup> KAITLYN HARGER, ANALYSIS: AVS IN CALIFORNIA COULD HAVE SAVED UP TO 1,300 LIVES, PREVENTED UP TO 5,000 MAJOR INJURIES OVER PAST THREE YEARS (2024), <https://progresschamber.org/wp-content/uploads/2024/03/AV-Safety-Research-California-Traffic-Fatality-Analysis-03-24.pdf>.

<sup>39</sup> CHRISTINA WITCHER ET AL., ESTIMATING CRASH CONSEQUENCES FOR OCCUPANTLESS AUTOMATED VEHICLES (Feb. 2021), <https://vtechworks.lib.vt.edu/server/api/core/bitstreams/a28aa936-8f89-4302-8859-ee54d34358e2/content>.

<sup>40</sup> See NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., SECOND AMENDED STANDING GENERAL ORDER 2021-01 (2023), [https://www.nhtsa.gov/sites/nhtsa.gov/files/2023-04/Second-Amended-SGO-2021-01\\_2023-04-05\\_2.pdf](https://www.nhtsa.gov/sites/nhtsa.gov/files/2023-04/Second-Amended-SGO-2021-01_2023-04-05_2.pdf).

cent increase in truck vehicle miles traveled, which means that trucking continues to get more dangerous in the United States.<sup>41</sup>

As the autonomous trucking industry continues to grow, so will the roadway safety improvements the technology provides.

AV safety is also subject to detailed requirements and multiple layers of regulatory oversight at the Federal level. Both passenger AVs and autonomous trucks are regulated by NHTSA, which administers broadly applicable motor vehicle safety standards and collects incident data from AV companies under the SGO. NHTSA also has authority to recall vehicles that present an unreasonable risk to safety, removing such vehicles from the road when necessary. This structure ensures room for innovation in motor vehicle technologies while retaining rigorous oversight over manufacturers.

Autonomous trucks are also subject to an additional legal framework established by the Federal Motor Carrier Safety Administration (“FMCSA”), a regulatory structure for which there is no parallel for passenger vehicles. FMCSA administers standards for commercial motor vehicles (“CMV”) related to safety, inspections, hazardous materials, drivers, and enforcement. With respect to interaction with weigh stations and the commercial vehicle inspection system, AVIA members have worked closely with the Commercial Vehicle Safety Alliance (“CVSA”), motor carriers, and law enforcement to develop a robust inspection process applicable to autonomous trucks, which CVSA calls the Enhanced CMV Inspection Program for autonomous trucks.<sup>42</sup>

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

#### IV. Additional Benefits of American AV Leadership

In addition to increasing safety, the continued expansion of AV deployments will also bring economic, supply chain, and social benefits to American communities. By 2050, the value of public and consumer benefits of AV deployment, including reduced congestion, avoided accidents, and saved time, could add up to \$796 billion annually.<sup>43</sup> The wider deployment of AVs can create over three million new jobs by 2035, while driving down the cost of consumer goods, reducing delivery costs, and raising annual earnings for all U.S. workers by between \$203 and \$267 per worker per year.<sup>44</sup> By 2026, AVs could represent not only a potential \$1 trillion market,<sup>45</sup> but also a key solution to supply chain troubles, all while decreasing transportation costs, creating jobs, and improving safety. For millions of elderly Americans and individuals with travel-limiting disabilities, AVs can provide greater independence compared to mass transit or paratransit systems, opening the door for new employment opportunities, improved access to medical care, and better connection to their communities. AVs are poised to bring economic benefits at both societal and individual levels, and they can help grow the U.S. economy and support the economic competitiveness of American businesses across many industries, in turn supporting the continued growth of the U.S. economy.<sup>46</sup>

##### A. Connecting People and Protecting Communities

By increasing transportation access and improving safety, AVs can serve American communities of all kinds. Today, millions of Americans have their ability to

<sup>41</sup>Institute for Safer Trucking and Road Safe America Call for Collaboration in Response to New Data Showing Truck Crash Fatalities Continue to Rise in 2022, INST. FOR SAFER TRUCKING, <https://www.safertrucking.org/news-blog/ist-statement-on-2022-fars-data-release> (last visited May 17, 2024).

<sup>42</sup>See COMMERCIAL VEHICLE SAFETY ALLIANCE, CVSA ANNOUNCES NEW ENHANCED CMV INSPECTION PROGRAM FOR AUTONOMOUS TRUCK MOTOR CARRIERS (Oct. 4, 2022), <https://www.cvsa.org/news/new-enhanced-cmv-inspection-program/>.

<sup>43</sup>SECURING AMERICA’S FUTURE ENERGY, AMERICA’S WORKFORCE AND THE SELF-DRIVING FUTURE 9 (2018), [https://aworkforce.secureenergy.org/wp-content/uploads/2018/06/SAFE\\_AV\\_Policy\\_Brief.pdf](https://aworkforce.secureenergy.org/wp-content/uploads/2018/06/SAFE_AV_Policy_Brief.pdf).

<sup>44</sup>*Id.*

<sup>45</sup>TECONOMY PARTNERS, FOREFRONT: SECURING PITTSBURGH’S BREAK-OUT POSITION IN AUTONOMOUS MOBILE SYSTEMS ES-1-2 (2021), <https://ridec.org/wp-content/uploads/2021/10/PGH-Autonomy-Report-Executive-Summary.pdf>.

<sup>46</sup>Jack Caporal, William O’Neil, and Sean Arrieta-Kenna, *Bridging the Divide: Autonomous Vehicles and the Automobile Industry*, CSIS (Apr. 14, 2021), <https://www.csis.org/analysis/bridging-divide-autonomous-vehicles-and-automobile-industry>.

travel limited by mobility challenges or disabilities. The U.S. Department of Transportation (“USDOT”) has estimated that 25.5 million Americans face travel-limiting disabilities,<sup>47</sup> and roughly 560,000 people with disabilities never leave their homes due to transportation difficulties.<sup>48</sup> Over 7.6 million Americans live with significant vision impairment,<sup>49</sup> conditions which can leave them unable to operate a vehicle. This lack of mobility contributes to a lack of economic opportunity, and only 22.5 percent of people with disabilities are employed, compared to 65.8 percent of people without a disability.<sup>50</sup> A study by the National Disability Institute found that the wider deployment of AVs could lead to an increase in 4.4 million jobs for people with disabilities, which could create a 3.8 percent increase in U.S. GDP (nearly \$867 billion).<sup>51</sup> Whether personally owned, serving as on-demand taxis, or as part of local paratransit services, AVs can provide disabled Americans with greater autonomy, letting them dictate how, where, and when they move through the world.

AVs can also provide vital connections to areas with high demand but low supply of transportation, otherwise known as “transit deserts.” Access to transportation and average length of commute are connected to upward mobility,<sup>52</sup> and studies have found links between public transit access, income, and unemployment.<sup>53</sup> A 2011 study showed that an average person can access only about 30 percent of all jobs and 25 percent of low-and middle-skilled jobs in a given metropolitan area via public transit within 90 minutes.<sup>54</sup> AVs have the potential to reduce or eliminate gaps in transportation access by improving integration with mass transit, whether by providing both first mile and last mile connections to transit, servicing direct trips to workplaces and other endpoints, or by broadly increasing supply that helps free up other conventional and AV transportation options to build those linkages. Projections indicate that the transportation connections facilitated by the adoption of AVs would increase access to jobs within a metropolitan area by 45 percent by 2040.<sup>55</sup> Access to food is another area of inequality that AVs can help alleviate. Transit deserts often overlap with food deserts, which are defined as areas with high poverty (20 percent or greater) and low access to food (at least 33 percent of people living more than one mile from a grocery store or supermarket).<sup>56</sup> A 2017 report by the U.S. Department of Agriculture’s Economic Research Service (“ERS”) estimates that 54 million individuals, or 17.1 percent of the total U.S. population, had limited access to a supermarket or grocery store between 0.5 and 10 miles from their home.<sup>57</sup> Further, a 2009 ERS report found that, at the time, 2.3 million people lived more than one mile from a supermarket and did not have access to a vehicle.<sup>58</sup>

<sup>47</sup> ADA at DOT: Accessibility Initiatives, U.S. DEP’T OF TRANSP. (Feb. 10, 2023) <https://www.transportation.gov/accessibility>.

<sup>48</sup> BUREAU OF TRANSP. STAT., TRANSPORTATION DIFFICULTIES KEEP OVER HALF A MILLION DISABLED AT HOME (2012), [https://www.bts.gov/archive/publications/special\\_reports\\_and\\_issue\\_briefs/issue\\_briefs/number\\_03/entire](https://www.bts.gov/archive/publications/special_reports_and_issue_briefs/issue_briefs/number_03/entire).

<sup>49</sup> Blindness Statistics, NAT’L FED’N OF THE BLIND, <https://nfb.org/resources/blindness-statistics> (last visited May 17, 2024).

<sup>50</sup> Economic News Release, U.S. Bureau of Labor Stat., Persons with a Disability: Labor Force Characteristics Summary (Feb. 22, 2024), <https://www.bls.gov/news.release/disabl.nr0.htm>.

<sup>51</sup> DOMINIC MODICAMORE, ET AL., NATIONAL DISABILITY INSTITUTE, ECONOMIC IMPACTS OF REMOVING TRANSPORTATION BARRIERS TO EMPLOYMENT FOR INDIVIDUALS WITH DISABILITIES THROUGH AUTONOMOUS VEHICLE ADOPTION (Dec. 30, 2022), <https://www.nationaldisabilityinstitute.org/wp-content/uploads/2023/02/ndi-economicimpactsofremovingtransportationbarriers.pdf>.

<sup>52</sup> Mikayla Bouchard, *Transportation Emerges as Crucial to Escaping Poverty*, N.Y. TIMES (May 7, 2015), <https://www.nytimes.com/2015/05/07/upshot/transportation-emerges-as-crucial-to-escaping-poverty.html>.

<sup>53</sup> Gillian D. White, *Stranded: How America’s Failing Public Transportation Increases Inequality*, THE ATLANTIC (May 16, 2015), <https://www.theatlantic.com/business/archive/2015/05/stranded-how-americas-failing-public-transportation-increases-inequality/393419/>.

<sup>54</sup> Adie Tomer Et Al., *Missed Opportunity: Transit and Jobs in Metropolitan America*, BROOKINGS (May 11, 2011), <https://www.brookings.edu/research/missed-opportunity-transit-and-jobs-in-metropolitan-america/>.

<sup>55</sup> RICHARD EZIKE ET. AL., UNION OF CONCERNED SCIENTISTS, WHERE ARE SELF-DRIVING CARS TAKING US?, 6 (2019), <https://ucsusa.org/sites/default/files/attach/2019/02/Where-Are-Self-Driving-Cars-Taking-Us-web.pdf>.

<sup>56</sup> Michele Ver Ploeg, Et. Al., *Mapping Food Deserts in the United States*, U.S. DEP’T OF AGRIC.: ECON. RSCH SERV., (Dec. 1, 2011), <https://www.ers.usda.gov/amber-waves/2011/december/data-feature-mapping-food-deserts-in-the-us/>.

<sup>57</sup> ECONOMIC RESEARCH SERVICE, EIB-165, U.S. DEP’T OF AGRIC. LOW-INCOME AND LOW-SUPERMARKET-ACCESS CENSUS TRACTS, 2010-2015 12 (2017), <https://www.ers.usda.gov/webdocs/publications/82101/eib-165.pdf?v=3395.3>.

<sup>58</sup> ECONOMIC RESEARCH SERVICE, ACCESS TO AFFORDABLE AND NUTRITIOUS FOOD: MEASURING AND UNDERSTANDING FOOD DESERTS AND THEIR CONSEQUENCES iii (2009) [https://www.ers.usda.gov/webdocs/publications/42711/12716\\_ap036\\_1\\_.pdf?v=8423.6](https://www.ers.usda.gov/webdocs/publications/42711/12716_ap036_1_.pdf?v=8423.6).

AVs can prove particularly useful for improving access to food, both by transporting people to previously inaccessible or difficult to access supermarkets and grocery stores, and by bringing food directly to their doors. With greater widespread deployment, AVs could improve access to fresh food for 14 million low-income households, roughly 70 percent of the total low-income population, living in food deserts.<sup>59</sup> The addition of safe and affordable options in the transportation ecosystem will expand the capacity to execute on these trips.

#### *B. Moving Goods and Growing the American Economy*

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

The growth in autonomous trucking is poised to run in parallel with an ever-growing market for freight trucking, with the Bureau of Transportation Statistics estimating that freight activity in the United States alone will grow fifty percent from 2020 to 2050, reaching a projected value of \$36.2 trillion.<sup>60</sup> With trucking representing roughly 72 percent of all freight transportation tonnage,<sup>61</sup> the number of trucks on the road, autonomous and human driven, will need to grow as well. As demand for freight hauling continues to grow, AVs can help shippers keep up with that demand, supplementing and augmenting human driven fleets. With AVs hauling more long-haul freight, more opportunities will be created for truck drivers in their communities. This will also allow companies to strategically place their drivers where they are needed most and ensure America's truck drivers can remain in and near their communities and sleep in their own beds.

For consumers, AVs are positioned to reduce general transportation costs and the cost of goods, and ensure goods are made more readily available and closer to home. Sixty-five percent of U.S. consumable goods are brought to market by trucks, and the implementation of autonomy in the trucking sector stands to decrease operating costs by about 45 percent—resulting in savings between \$85 billion and \$125 billion, which can be passed on to consumers and transportation workers.<sup>62</sup> In California alone, the knock on effects of the introduction of autonomous trucking could increase that state's real GDP and welfare by at least \$6 billion a year.<sup>63</sup> Finally, through the introduction of shared AV fleets, transportation costs—which amount to the second-largest expense for most households—could be reduced by as much as \$5,600 per year.<sup>64</sup>

#### *C. Providing New Jobs*

American workers also stand to benefit from the greater adoption of AV technologies. A USDOT-funded study found that autonomous trucking will increase U.S. employment by up to 35,000 jobs per year on average.<sup>65</sup> AVs will coexist with America's truck drivers, and the goal of the industry is to create more opportunities for all in our country. A growing AV industry will continue to create new job opportunities for workers with a range of educational backgrounds and experiences, including local drivers, technicians, operations center workers, and more. Indeed, a USDOT

<sup>59</sup> Sola Lawal, *Serving America's Food Deserts*, MEDIUM (July 15, 2020), <https://medium.com/nuro/serving-americas-food-deserts-a7442e922053>.

<sup>60</sup> *Freight Activity in the U.S. Expected to Grow Fifty Percent by 2050*, BUREAU OF TRANSP. STAT. (Nov. 22, 2021), [https://www.bts.gov/newsroom/freight-activity-us-expected-grow-fifty-percent-2050#:~:text=New%20long%2Dterm%20projections%20released,trillion%20\(in%202017%20dollars\)](https://www.bts.gov/newsroom/freight-activity-us-expected-grow-fifty-percent-2050#:~:text=New%20long%2Dterm%20projections%20released,trillion%20(in%202017%20dollars)).

<sup>61</sup> *ATA Truck Tonnage Index Increased 2.4 percent in May*, AM. TRUCKING ASS'N (July 20, 2023), <https://www.trucking.org/news-insights/ata-truck-tonnage-index-increased-24-may>.

<sup>62</sup> Aisha Chottani, Greg Hastings, John Murnane, and Florian Neuhaus, *Distraction or Disruption? Autonomous Trucks Gain Ground in U.S. Logistics*, MCKINSEY & CO., (Dec. 10, 2018), <https://www.mckinsey.com/industries/travel-logistics-and-infrastructure/our-insights/distraction-or-disruption-autonomous-trucks-gain-ground-in-us-logistics>.

<sup>63</sup> *Autonomous Long-Haul Trucking Stands to Grow the Golden State's Economy While Creating Jobs and Raising Wages Without Mass Driver Layoffs*, SILICON VALLEY LEADERSHIP GROUP (Apr. 13, 2022), <https://www.svlg.org/study-shows-autonomous-trucking-will-grow-californias-economy/>.

<sup>64</sup> *SECURING AMERICA'S FUTURE ENERGY, FOSTERING ECONOMIC OPPORTUNITY THROUGH AUTONOMOUS VEHICLE TECHNOLOGY* (July 2020), <https://safe2020.wpenginepowered.com/wp-content/uploads/2020/07/Fostering-Economic-Opportunity-through-Autonomous-Vehicle-Technology.pdf>.

<sup>65</sup> ROBERT WASCHIK ET AL., JOHN A. VOLPE NAT'L TRANSP. SYS. CTR., FHWA-JPO-21-847, *MACROECONOMIC IMPACTS OF AUTOMATED DRIVING SYSTEMS IN LONG-HAUL TRUCKING*, 1 (2021), <https://rosap.ntl.bts.gov/view/dot/54596>.

study has found that most autonomous trucking adoption scenarios would not lead to layoffs for existing truckers.<sup>66</sup>

The AV industry has already created new jobs and brought new investment, tax revenue, resources, and human capital to states across the country, including Arkansas, California, Alabama, Arizona, Arkansas, Kansas, Nevada, New Mexico, Oklahoma, Pennsylvania, Michigan, Florida, Washington, Colorado, and Texas. In communities throughout those states, the AV industry is providing opportunities for workers with a wide array of expertise and educational backgrounds, including many jobs that do not require a college degree. These jobs include auto technicians, fleet managers, safety operations specialists, sensor calibrators, transportation planners, and many others to serve the growing needs of AV fleets and AV manufacturers. As the industry continues to expand, delivery workers and grocery store employees will be involved in selecting, packing, and delivering goods to consumers, among other jobs and roles. The wider deployment of AVs can create over three million new jobs by 2035, all while expanding access to affordable delivery services, according to a study conducted by Steer.<sup>67</sup>

The AV industry is also investing in partnerships to create the jobs of tomorrow. These investments not only move AV technology forward, but also prepare the American workforce to compete globally. For example, AVIA member Aurora has partnered with Pittsburgh Technical College to create and launch a new associate degree program that trains autonomous service engineer technicians.<sup>68</sup> Similarly, AVIA member Nuro has developed programs with De Anza Community College in California and San Jacinto Community College in Texas that offer a new career pathway to prepare the next generation of autonomous fleet technicians.<sup>69</sup> These initiatives include a free tuition option, access to paid internships and part time work, and preference for full time jobs with and benefits upon graduation.

#### *D. Environmental Benefits of Autonomous Vehicles*

The wider deployment of AVs stands to bring important environmental benefits as well, including by reducing emissions through greater fuel efficiency and reduced congestion, among other improvements. Many AV developers rely on battery electric vehicles (“EVs”) or gasoline-electric hybrids for their AV fleets, and further adoption of EVs is increasing. A study by Steer found that autonomous, electric local delivery vehicles could avoid more than 400 million tons of CO<sub>2</sub> from 2025–2035.<sup>70</sup>

Autonomous trucking specifically is poised to provide immense environmental benefits. 29 percent of U.S. total greenhouse gas emissions are attributed to transportation, with medium-and heavy-duty trucks accounting for 23 percent of all transportation-related emissions.<sup>71</sup> In states such as California, that figure is even higher, with transportation representing approximately 50 percent of all greenhouse gas emissions.<sup>72</sup> ADS-equipped heavy trucks can reduce fuel consumption by at least 10 percent as a result of more efficient driving, resulting in a significant reduction of CO<sub>2</sub> emissions.<sup>73</sup> Additionally, AVIA member Aurora recently released a white paper demonstrating that autonomous trucking has the potential for a 13–32 percent net energy efficiency improvement per loaded miles relative to human-driven trucks.<sup>74</sup> These benefits emanate from limiting peak speeds, reducing “dead-

<sup>66</sup> *Id.*

<sup>67</sup> STEER, ECONOMIC IMPACTS OF AUTONOMOUS DELIVERY SERVICES IN THE U.S., XI (2020), [https://www.steergroup.com/sites/default/files/2020-09/200910\\_%20Nuro\\_Final\\_Report\\_Public.pdf](https://www.steergroup.com/sites/default/files/2020-09/200910_%20Nuro_Final_Report_Public.pdf).

<sup>68</sup> *Pittsburgh Technical College Launches Robotics and Autonomous Engineering Technology Program*, Pittsburgh Technical College (Aug. 29, 2022), [https://www.pgtech.org/news-and-publications/PTC\\_Robotics](https://www.pgtech.org/news-and-publications/PTC_Robotics).

<sup>69</sup> *Autonomous and Electric Vehicle Technician Pathway*, DE ANZA COLLEGE, <https://www.deanza.edu/autotech/av> (last visited May 9, 2024); Press Release, San Jacinto College and Nuro, San Jacinto College and Nuro Announce First AV Technician Certificate Program in Texas (Feb. 24, 2023), <https://www.newsfilecorp.com/release/156026/San-Jacinto-College-and-Nuro-Announce-First-AV-Technician-Certificate-Program-in-Texas>.

<sup>70</sup> STEER, *supra* note 67, at XV.

<sup>71</sup> *Fast Facts on Transportation Greenhouse Gas Emissions*, ENV’T PROT. AGENCY (Oct. 31, 2023), <https://www.epa.gov/greenvehicles/fast-facts-transportation-greenhouse-gas-emissions>.

<sup>72</sup> *Transforming Transportation*, CA ENERGY COMM’N, <https://www.energy.ca.gov/about/core-responsibility-fact-sheets/transforming-transportation> (last visited May 17, 2024).

<sup>73</sup> Ryan Gehm, *Self-driving trucks cut fuel consumption by 10 percent*, SAE INT’L (Dec. 19, 2019), <https://www.sae.org/news/2019/12/tusimple-autonomous-trucks-cut-fuel>.

<sup>74</sup> Dr. Garrett Bray, Aurora, *The Sustainability Opportunity of Autonomous Trucking 3* (2024), [https://downloads.ctfassets.net/8byw6jksp7h2/4W2yp42p921nrZXjWGKQRt/278c2eaa0f474a3ae6d75802d0d92a63/The\\_Sustainability\\_Opportunity\\_of\\_Autonomous\\_Trucking.pdf](https://downloads.ctfassets.net/8byw6jksp7h2/4W2yp42p921nrZXjWGKQRt/278c2eaa0f474a3ae6d75802d0d92a63/The_Sustainability_Opportunity_of_Autonomous_Trucking.pdf); See also Research & Discoveries (R&D): Autonomous Trucks Can Reduce Emissions, AUTONOMOUS VEHICLE

head” miles, increasing vehicle utilization and off-peak driving, reducing idling, and programmed eco-driving behavior.<sup>75</sup>

In addition, AVs can serve an important role in achieving environmental goals that advance public health.<sup>76</sup> Emissions from motorized vehicles are a major source of air pollution, which is a leading risk factor for mortality and morbidity.<sup>77</sup> Although the American Lung Association has found that 39 percent of Americans are living in places with unhealthy air, the effects of poor air quality are disproportionately experienced by BIPOC.<sup>78</sup> Specifically, the American Lung Association’s most recent “State of the Air” report demonstrates that BIPOC were 61 percent more likely to live in a county with unhealthy air than white peers.<sup>79</sup>

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

## V. Policy Recommendations for Promoting AV Deployments

Preserving American leadership in the AV industry is key to ensuring that the safety and benefits of AV deployment reach drivers, companies, and consumers in communities across the country. Despite holding the lead in AV development at the moment, the United States is at risk of falling behind the rest of the world on AV public policy, which would deny Americans the technology’s lifesaving mobility and efficiency benefits and harm the United States’ global economic competitiveness. The American AV industry is at an inflection point, as the technology is now being commercialized and the benefits of AVs are beginning to accrue. Now is the time for policymakers to establish a national AV policy framework that prioritizes American leadership and has Congress, the USDOT, and the private sector acting in partnership. While Federal efforts to establish such a framework have stalled in the last several years, a majority of states have recognized the benefits of AVs by expressly approving AV operations on their roads.

Make no mistake: the United States can continue to lead the way on AVs if policymakers support the safe commercialization of AVs and do so with urgency. The United States must commit itself to AV leadership to ensure that the safety, economic, mobility, and efficiency benefits of AVs can be realized not only in the states where AVs are already on the road, but nationwide. Key steps to create an AV Federal policy framework include:

- Congressional action on Federal legislation, like the AV START Act previously introduced by Sens. Peters and Thune.<sup>80</sup> Such a bill should encompass all vehicle types and include statutory and regulatory changes to support the wider deployment of AVs across the U.S. AVIA’s own Federal policy framework, published last year, details a number of components such a law should include.<sup>81</sup> AVIA was pleased to see the Bipartisan Senate AI Working Group—led by Senators Schumer, Rounds, Heinrich, and Young—encourage continued “work on developing a Federal framework for testing and deployment of autonomous vehicles across all modes of transportation to remain at the forefront of this critical space. This effort is particularly critical as our strategic competitors, like the

INDUS. ASS’N, <https://theavindustry.org/resources/blog/research-discoveries-rd-autonomous-trucks-can-reduce-emissions> (last visited May 17, 2024).

<sup>75</sup> *Id.*

<sup>76</sup> See David Rojas-Rueda, *et al.*, *Autonomous Vehicles and Public Health*, 41 ANN. REV. OF PUB. HEALTH 329 (2020), <https://www.annualreviews.org/doi/10.1146/annurev-publhealth-040119-094035>.

<sup>77</sup> *Id.* at 333 (citing HEALTH EFFECTS INST., STATE OF GLOBAL AIR 2018 1 (2018), <https://www.stateofglobalair.org/sites/default/files/soga-2018-report.pdf>).

<sup>78</sup> *State of the Air: Key Findings*, AM. LUNG ASS’N, <https://www.lung.org/research/sota/key-findings> (last visited May 17, 2024).

<sup>79</sup> Press Release, Am. Lung Ass’n, More Than 4 in 10 Americans Breathe Unhealthy Air, People of Color 3 Times as Likely to Live in Most Polluted Places (Apr. 21, 2021), <https://www.lung.org/media/press-releases/sota-2021>.

<sup>80</sup> See American Vision for Safer Transportation through Advancement of Revolutionary Technologies Act, S. 1885, 115th Cong. (2017), <https://www.congress.gov/bill/115th-congress/senate-bill/1885>.

<sup>81</sup> AUTONOMOUS VEHICLE INDUS. ASS’N, FEDERAL POLICY FRAMEWORK FOR OUR AV FUTURE (March 2023), <https://theavindustry.org/resources/AVIA-Federal-Policy-Framework-for-Our-AV-Future.pdf>.

Chinese Communist Party (CCP), continue to race ahead and attempt to share the vision of this technology.”<sup>82</sup>

- FMCSA granting the still-pending industry exemption request that will allow ADS-equipped vehicles to use alternative warning devices to signal when an ADS-equipped CMV is stopped on the roadside.<sup>83</sup> This common-sense and data-backed application, filed in January 2023, has been pending for 16 months when we have seen several equipment and lighting-related petitions over the past several years be acted on, on average, within 8 months.<sup>84</sup> FMCSA should act expeditiously to ensure autonomous trucking companies can help ease supply chain challenges and support America’s economy.
- Move forward with a proposed rule on AV STEP. First announced in July 2023, under AV STEP NHTSA “would consider applications for deploying noncompliant ADS vehicles subject to review processes, terms and conditions that the agency would require to ensure public safety and transparency.”<sup>85</sup> According to then Acting Administrator Ann Carlson, “By allowing the deployment of exempt ADS vehicles under conditions that include requirements to demonstrate safety and provide information about vehicle operation and deployment, we believe AV STEP would open up a wealth of data [and] hasten NHTSA’s progress toward establishing an effective governance structure for ADS performance.”<sup>86</sup>
- FMCSA completing the rulemaking process on the “Safe Integration of Automated Driving Systems (ADS)-Equipped Commercial Motor Vehicles (CMVs).”<sup>87</sup> This includes enacting regulations that codify FMCSA’s interpretation that the Federal Motor Carrier Safety Regulations do not require a human driver to operate or be present in a commercial motor vehicle operated by a SAE Level 4 or Level 5 ADS.<sup>88</sup>

## VI. Conclusion

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

Senator PETERS. Thank you, Mr. Farrah.

Mr. Krassenstein, I want to thank you again for being here, and also thank you for all the great work that you’re doing in the City of Detroit.

But as you mentioned in your opening comments, unfortunately, Detroit has historically struggled with high numbers of roadway injuries and deaths, especially among the Black community.

So my question for you, sir, is can you speak to the importance of Safe Streets for All funding in the City of Detroit in terms of enabling various safety interventions that would otherwise not simply be possible?

<sup>82</sup> BIPARTISAN SENATE AI WORKING GROUP, DRIVING U.S. INNOVATION IN ARTIFICIAL INTELLIGENCE 12–13 (May 2024), <https://www.politico.com/f/?id=0000018f-79a9-d62d-ab9f-f9af975d0000>.

<sup>83</sup> See AURORA & WAYMO, FMCSA–2023–0071–0011, JOINT WAYMO-AURORA APPLICATION FOR EXEMPTION (Jan. 10, 2023), <https://www.regulations.gov/document/FMCSA-2023-0071-0011>.

<sup>84</sup> FMCSA’s own regulations state that the agency will attempt to issue a final decision on any exemption application within 180 days of receipt. 49 C.F.R. § 381.320.

<sup>85</sup> Ann Carlson, Acting Adm’r, Nat’l Highway Traffic Safety Admin., Keynote Address at the Automated Road Transportation Symposium (ARTS2023) (July 12, 2023), <https://www.nhtsa.gov/speeches-presentations/automated-road-transportation-symposium-arts23-keynote-address>.

<sup>86</sup> *Id.*

<sup>87</sup> Safe Integration of Automated Driving Systems (ADS)-Equipped Commercial Motor Vehicles (CMVs), 88 Fed. Reg. 6691 (Feb. 1, 2023).

<sup>88</sup> U.S. DEPT OF TRANSP., PREPARING FOR THE FUTURE OF TRANSPORTATION: AUTOMATED VEHICLES 3.0 (AV 3.0) 9 (Oct. 2018), <https://www.transportation.gov/sites/dot.gov/files/docs/policy-initiatives/automated-vehicles/320711/preparing-future-transportation-automated-vehicle-30.pdf>; Safe Integration of Automated Driving Systems-Equipped Commercial Motor Vehicles, 84 Fed. Reg. 24449, 24453 (May 28, 2019).

And two, can you speak to how Detroit is addressing some of the socioeconomic and racial disparities in roadway safety using this grant program?

Mr. KRASSENSTEIN. Thank you for that question, Chairman. So for the first part of the question on the importance of the Safe Streets for All program, the program is vitally important for cities like Detroit, where within the city limits we have 3,100 linear miles of road, some of which are under our jurisdiction.

But many of our larger roads, our most dangerous roads, are not. The Safe Streets for All program gives us a dedicated funding stream that we don't need to worry about making the hard choices between state of good repair and saving lives on safety projects. This gives us the opportunity to have dedicated funding to just focus on safety on streets that have been overbuilt in Detroit, and like, frankly, have had way too many crashes, injuries, and fatalities.

To the second part of your question, Chairman, on how we're addressing socioeconomic factors into this, that's frequent in all the work that we do on everything from which roads that we pave to where we do safety projects and handle interventions. We're proud to be taking a very equity-based approach across both our public works teams and our planning and development teams, and how we engage neighborhood groups looking at commercial corridors and looking at the data as well. So we do try to take a very balanced approach with where we make those types of investments throughout the city.

Senator PETERS. Great. Thank you.

Ms. Chace, in addition to serving as Chair of the Subcommittee, I'm also the Founder and Chair of the Senate Motorcycle Caucus. I'm an avid motorcyclist myself and I share that with a number of my colleagues here.

May is also Motorcycle Safety Month, where we raise awareness of motorcycle fatalities. Motorcyclists unfortunately perish on our roads at a rate 22 times the rate of motor vehicle occupants.

So my question for you is, what sort of technology interventions are most likely to benefit motorcyclists as well as other vulnerable road users, and how can we get those up and running as quickly as possible?

Ms. CHACE. Thank you for the question, Chairman. Probably the most effective safety technology would be Vehicle-to-Everything technologies, V2X technologies, for motorcyclists. These technologies, as you know, provide situational awareness to both drivers of cars, motorcyclists, and other road users to alert them—the drivers or the users of the vehicles—of impending collisions or hazards that go beyond their line of sight, so that the drivers can make better decisions, avoid a crash, and improve safety on the roads.

And this is really critical when you're talking about motorcyclists or other road users who do not have the protection of a vehicle. So I would say Vehicle-to-Everything technologies would be the top technology solution.

There are also technology solutions being developed by BMW and Bosch, who are very active in the motorcycle safety space with what we call networked V2X and digital alerting. So alerting of

maybe other key information about the roadway conditions or weather, things that wouldn't essentially be a safety of life issue, but could be really critical information to a motorcyclist or a cyclist. And so those solutions are being developed by those companies.

And in addition, the American Motorcyclists Association was a part, and has been a part, of a larger V2X coalition for many years now, supporting scaled deployment of these technologies so that we can in fact protect not only drivers, but also motorcyclists, bicyclists, and other vulnerable road users using our system.

Senator PETERS. Thank you.

Mr. Farrah, as you know, I strongly believe and support AVs, and I believe that they can play a major role in achieving our goals of preventing roadway fatalities. And I appreciate you mentioning the bill that I'm working on with Senator Thune. But in order for that to be the case, self-driving vehicles and their developers need to gain and keep public trust, as you mentioned, and the acceptance and ensure that there's also a transition for affected workers with this new technology.

The Committee is in receipt of some letters from unions representing workers who work in and around vehicles that share their priorities and concerns with self-driving cars. And without objection, I will be entering those into the record.

[The information referred to follows:]

PREPARED STATEMENT OF THE INTERNATIONAL BROTHERHOOD OF TEAMSTERS

Dear Chair Peters and Ranking Member Young,

On behalf of the 1.3 million members of the International Brotherhood of Teamsters, we write today regarding the Subcommittee's hearing entitled "Examining the Roadway Safety Crisis and Highlighting Community Solutions". The Teamsters are the largest union representing members whose workplace is our Nation's roadways, including both the commercial truck and bus drivers who operate on them, as well as construction and state Department of Transportation employees who build, maintain, and inspect them. Ultimately, safety on our roadways impacts all our members as they and their families travel within their communities, expecting to arrive at their destinations safely.

According to the most recent data from the National Highway Traffic Safety Administration, the agency estimates that 40,990 people died in motor vehicle traffic crashes in 2023, a slight decrease from 2022, even as Americans drove more miles overall last year.<sup>1</sup> However, this figure has still substantially increased over the last decade, including both in terms of total fatalities, and on a per vehicle miles travelled basis.

We appreciate the Subcommittee's focus on reducing these tragedies, for drivers of any vehicle type, roadway workers, bicyclists, and pedestrians. The Teamsters have always been, and remain, committed to working with Congress to improve safe driving conditions and ensure that we are using all available resources at a Federal and local level to reduce motor vehicle accidents and fatalities.

One of the most powerful tools Congress has at its disposal is the power of the purse. Just last month, the Department of Transportation announced 99 awards totaling nearly \$64 million for Safe Streets and Roads for All (SS4A) Planning and Demonstration Grants—following the announcement last December of 385 awards under the program delivering \$813 million to local communities to improve roadway safety.<sup>2</sup> These awards, along with billions of dollars made available through the Infrastructure Investment and Jobs Act for the purposes of repairing, expanding, and maintaining roads, highways and bridges will undoubtedly continue to have positive impacts on motor vehicle accident and fatality rates. With the expiration of the cur-

<sup>1</sup> National Highway Traffic Safety Administration, Early Estimate of Motor Vehicle Traffic Fatalities in 2023.

<sup>2</sup> U.S. Department of Transportation. (2024). SS4A-FY24 Planning and Demo Awards by State: Round 1. Retrieved from [https://www.transportation.gov/sites/dot.gov/files/2024-05/SS4A-FY24\\_Planning-and-Demo-Awards-by-State\\_Round-1.pdf](https://www.transportation.gov/sites/dot.gov/files/2024-05/SS4A-FY24_Planning-and-Demo-Awards-by-State_Round-1.pdf)

rent surface transportation authorization in September 2026, Congress will have the ability to examine lessons learned from these investments and build on them in the next authorization.

While the Teamsters are prepared to discuss specific safety proposals at length, including as they relate to key issues impacting our members including CDL licensure, drug and alcohol testing, equipment standards, and fatigued driving and hours of service, it is equally essential that Congress does not take actions which will unnecessarily lead to more fatalities and accidents. In particular, we object in the strongest possible terms to efforts to increase maximum truck weight limits for the sole purpose of moving cargo more expeditiously including the MOVE Act (HR 7496), the SHIP IT Act (HR 471) or the proposed 91,000 LB pilot program for commercial trucks (HR 3372). None of these bills have made progress in the Senate, and we thank the Committee for ensuring this remains the case. The enactment of any of these bills undoubtedly runs contrary to the interests of today's hearing.

Finally, it is increasingly apparent that autonomous vehicle proponents continue to point to the deployment of driverless vehicles of all stripes as a panacea for the future of roadway safety. We urge this subcommittee to adopt a more cautious approach. First, we must be unambiguous that the current state of affairs of regulation of autonomous vehicles is deeply deficient. Today, if the developer of an autonomous vehicle seeks to deploy a driverless 80,000 LB truck in fully commercialized revenue service, they must only comply with existing regulations, including Federal Motor Vehicle Safety Standards (FMVSS) which have little to no bearing on AV technology, and report crashes to NHTSA via Standing General Order 2021-01.

Given that Congress and regulators have spent decades expressing substantial oversight over drivers and their vehicles, it is deeply concerning that the approach to AVs to date has been to allow them to operate in a de facto unregulated environment. The Federal government has largely left states and municipalities to figure out how to deal with testing and deployment on their own, creating a 50 plus jurisdiction Wild West.

To make matters worse, some of the essential regulatory duties involved in this conversation, including vehicle manufacturing standards, are inherently Federal powers. The absence of Federal activity thereby guarantees that no oversight of any kind is being performed over components over autonomous operations, and that our roadways will continue to serve as the test track for AV corporations and their backers.

We are encouraged that there may be some momentum towards ending this status quo, including the impending completion of FMCSA's Safe Integration of Automated Driving Systems (ADS)-Equipped Commercial Motor Vehicles (CMVs) rule-making. We note the Department of Transportation comments contained within its 2024 Progress Report on the National Roadway Safety Strategy, in which it states that:

"As the technologies continue to develop and mature, the Department is committed to conducting the research, analysis, outreach, and oversight needed to fulfill its overall mission, especially our role in furthering the safety of the transportation system. It is of the utmost importance that new technologies are introduced safely into the transportation system and, as the technology matures, actively increase the overall safety of the system as they are deployed. The Department will be deliberate in moving forward with its regulatory actions, understanding the risks of both over- and under-regulation, and maintaining a balanced approach that focuses on improving safety".<sup>3</sup>

It is our hope that FMCSA's final rule, and other regulatory actions by DOT's modal agencies will adhere to this pledge to prioritize safety, and DOT's responsibilities when it comes to overseeing adoption of new technology.

However, adequately addressing the totality of the issues and impacts posed by autonomous vehicles will require a Congressional approach, and we encourage legislators to consider the principles outline in the Teamsters Autonomous Vehicle Federal Policy Principles, the first of its kind document published by our union.<sup>4</sup>

We also urge members to use caution when considering claims made by the autonomous vehicle industry given that these claims are verifiable by no one but themselves, and on occasion do not hold up to greater scrutiny. For example, it is a common refrain that a certain number of miles travelled, supposedly without incident, is inherently a guarantee that the technology is safe and ready for prime time. Today's witness, the Autonomous Vehicle Industry Association (AVIA) has previously stated that its members have driven more than 44 million miles on public roads to

<sup>3</sup> U.S. Department of Transportation. (2024). 2024 NRSS Progress Report.

<sup>4</sup> <https://teamster.org/2023/09/teamsters-autonomous-vehicle-federal-policy-principles/#::-text=A520human%20operator%20must%20remain,to%20non%20autonomous520CDL%20drivers.>

date, which is “equivalent to 184 trips to the moon—or 1,767 trips around the world”.<sup>5</sup>

By AVIA’s own admission, this includes miles travelled by vehicles of all types, including vehicles with human safety operators present as opposed to a truly driverless vehicle. It is perhaps more important to contextualize this number—in 2023, the American public drove approximately *3.19 trillion miles*, and has driven over a trillion miles every year since 1971.<sup>6</sup> Performing an infinitesimally small amount of driving, and claiming to do so safely by only their own internal metrics should not be interpreted by Congress and regulators that autonomous vehicles are ready today, or in the near future, to be our salvation to roadway deaths and injuries.

Addressing these tragedies as well as new technologies which seek to address them, autonomous vehicles, or otherwise, will require well-considered and thoughtful legislative and regulatory efforts. We thank Chair Peters and Ranking Member Young for having this important conversation on roadway safety today, and the Teamsters look forward to continuing to be a partner going forward.

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TRANSPORT WORKERS UNION OF AMERICA  
May 21, 2024

Hon. GARY PETERS, Chair,  
Hon. TODD YOUNG, Ranking Member,  
Subcommittee on Surface Transportation, Maritime, Freight, and Ports,  
U.S. Senate Committee on Commerce, Science, and Transportation,  
Washington, DC.

RE: Hearing on Examining the Roadway Safety Crisis and Highlighting Community Solutions

Dear Chair Peters and Ranking Member Young,

On behalf of more than 155,000 members of the Transport Workers Union of America (TWU), I am writing to offer the following statement for the record as part of your hearing on Examining the Roadway Safety Crisis and Highlighting Community Solutions. This topic deeply effects every TWU member across the country—including bikeshare workers who maintain systems built for vulnerable road users and transit operators who maneuver through our communities. We appreciate your work to address not just the safety of individuals within a car, but that of the workers, riders, bikers, commuters, and others along who share our roads.

TWU workers operate, service, and maintain transportation systems across the country benefitting from the Safe Streets and Roads for All grant program. These communities are redesigning busy intersections to prioritize transit vehicles; building bikeshare infrastructure to prevent roadway accidents; adding physical protections for pedestrians to reduce bus knockdowns; and reconfiguring sidewalks to better separate vulnerable road users from motor vehicles. Our members are the essential layer of safety tying together the mechanical, behavioral, and physical preventions necessary to reduce road deaths.

Technology is an essential part of this work. The TWU is proud to vociferously advocate for new equipment, software, and practices that raise the level of safety on our roads. Our locals regularly use their own voice through the collective bargaining process to force our employers to purchase and implement advanced driver assistance systems and other technology to increase safety on our properties. Automatic emergency braking, rear view cameras, and many other advanced features would not exist in our transit systems today absent the work of the TWU. These proven safety features come with immediate increased costs in procurement, maintenance, and training that cash-strapped transit agencies do not prioritize unless forced to by frontline workers and their riders.

While we work hard to implement functional, market-ready technology with proven safety benefits, we are often forced to fight back against bad, but richly funded, new technologies. Expensive marketing campaigns from the companies who profit off these technologies ignore existing dangers and over-sell future potential in an effort to rush deployment—a process that makes the travelling public effectively guinea pigs for the technology and undermines the safety of our streets. Most recently, autonomous vehicle companies have been the main perpetrators of these high-gloss, low-substance campaigns.

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<sup>5</sup> <https://theavindustry.org/resources/blog/data-44million-miles>

<sup>6</sup> Federal Highway Administration monthly *Traffic Volume Trends* report

As of today, autonomous vehicles are a public safety menace on our roads. The autonomous vehicle industry has presented no real solutions, just unproven talking points that serve to bolster the bottom line of billion-dollar tech companies who want zero accountability when their robotaxis hit and injure people. Their safety record for vulnerable road users is especially terrible—a *pedestrian dragged under a car, hitting a pet, and the death of a cyclist*. Communities in San Francisco and Los Angeles have come together in massive demonstrations to reduce the number of AVs on their streets. Many other communities have actively opposed their introduction. A Federal framework to regulate these vehicles is urgently needed to ensure that these vehicles are meeting the same standards we place on comparable vehicles.

This is especially true for commercial vehicles. Buses, trucks, and other commercial motor vehicles are operated by licensed professionals and have a SIGNIFICANTLY better safety record than personal car operators. We have often seen AV companies reference a false narrative of human-caused accidents—an *incredibly misleading and disingenuous argument*—but they simultaneously ignore the reality that commercial motor vehicles go farther between accidents, cause fewer deaths, and generally have better safety outcomes when accidents do occur. An AV company seeking to perform the job of a commercial bus operator or truck driver should be held to the same standard our members are held to before their technology is widely deployed.

We appreciate your commitment to ensuring the safety of our roads. Protecting the traveling public outside of cars is an essential topic to address—but the AV industry has zero goods to back up their claims that driverless cars will lead to safer streets. The TWU strongly believes that a Federal framework that would hold AV manufacturers accountable to their marketing claims, collect the data necessary to enable regulators to make informed safety decisions, recognize that commercial vehicles must be held to their own standard, and prioritize workers' involvement in the deployment of these vehicles is urgently needed.<sup>1</sup>

Sincerely,

JOHN SAMUELSEN,  
*International President.*

Senator PETERS. But Mr. Farrah, how are you and your members working with transportation workers, affected communities, and the public to build trust and transparency? And what do you think the best approach is to dealing with this challenge as this industry continues to develop? And unfortunately, incidents will inevitably occur, and something you need to be thinking about.

Mr. FARRAH. Senator, thank you very much for the question. I appreciate, again, your leadership.

As I mentioned in my opening statement, a recent industry initiative of AVIA was the release of our TRUST Principles. And one of the things that really comes through in that document is that we are articulating our very strong belief that we need to have an incredible amount of local engagement.

This means prior to companies going into cities, speaking with local leaders, with law enforcement, with public—first responders. With leaders, whether in labor and other walks of life, it's very important that we be meeting people where they are, explaining what our intentions are, how it is that we can increase safety, how it is that we can help with supply chain challenges, how we can assist, especially city leaders, with accessibility opportunities and what-not.

And so this very, very localized operation is something that we're very proud of, and it's something that the industry has devoted a significant amount of resources toward.

Senator PETERS. Well, thank you.

<sup>1</sup>The TWU has endorsed the *Advocates for Highway & Auto Safety's AV Tenets*

We're in the process of voting right now, so I am going to go vote real quickly. I'm going to hand the Chair over to—or the gavel to the Ranking Member, and I'll go vote and be back to relieve you.

Senator YOUNG. Great. Works for me. Thank you, Chairman.

Mr. Farrah, thank you for that reply. And thank you also for mentioning the AI roadmap that Senators Rounds, myself, Heinrich, and Schumer released last week.

In that bipartisan roadmap, we encourage committees to continue their work on developing a Federal framework for testing and deployment of autonomous vehicles. And we highlight that it's particularly critical as our strategic competitors, most notably the Chinese Communist Party, continue to race ahead and attempt to shape the vision of this technology.

Just yesterday, in fact, the U.K., their AV Act became law. And they'll have driverless cars on their roads within two years, says current reporting.

So Mr. Farrah, where does the U.S. stand in the global AV competition to your mind? And what are other countries doing differently in support of innovation and deployment?

Mr. FARRAH. Senator, thank you very much for the question.

The way I think about this is that over the course of the last dozen or so years, you've had an incredible American success story in terms of bringing autonomous driving to where it is.

But the reality is that this has gone noticed by many other countries around the world that also want to have safer roads. They want to have more accessibility, they want to have supply chain benefits, and so they are racing to keep up, and certainly China is one of those countries.

And while our country—right now we are firmly in the lead. We have the best companies in the world, we have the deepest capital markets, we're ahead in technological innovation.

We are struggling when it comes to public policy. We need to have a Federal framework put in place that supports the development of autonomous vehicles. We need to have action on legislation such as AV START. We need to have action on rules at the Department of Transportation.

The Federal Government is behind where a lot of the states are, where they have really taken a lot of action in recent years.

Senator YOUNG. Well, it's incumbent upon us to listen to these entreaties, and to act after duly studying the facts and consulting with all stakeholders. And we have been involved in such consultation and preparing for action for some period of time. So it does seem like if the U.K. is prepared to go ahead, it seems like we ought to be, especially seeing as we're leading in innovating in many of these technology areas. Is that consistent with your assessment of where the technology is?

Mr. FARRAH. Senator, yes, we absolutely have the best companies in the world here, but we need to make sure we have a policy framework that can support those companies going forward.

Senator YOUNG. Mr. Farrah, to move on to another important topic that many of you touched on in your opening remarks, and I'll get to many of you.

Nearly 41,000 people died on our roads last year. It's just a massive, massive number. And I was trying to contextualize this num-

ber, because I believe this goes underreported, at least as compared to a lot of other sort of disasters that afflict families and communities.

The CDC reports that every year, the number of U.S. murders involving a firearm. It's half that number. It's half that number. So I actually think it was completely accurate when Secretary Buttigieg recently said, "Human drivers aren't just problematic. They're murderous." Again, he was talking about the opportunity cost for not adopting the latest technologies. "They're murderous," and "we have been bathed in this level of carnage all our lives." He put it more pointedly, more graphically than I think I would.

But nonetheless, can you tell us, Mr. Farrah, how AVs will help decrease the number of fatalities, and share any projections on how significantly it will decrease by your estimates?

Mr. FARRAH. Senator, I appreciate the question. I think the reality is that we've been desensitized to this as a country, and it's not acceptable. It's going to take committee hearings like this. It's going to take action at a Federal and a state level to be able to address this.

For our part in the industry of the development of autonomous vehicles, we believe, is going to be one of the suite of solutions that is out there. The reality is that human behavior is what's driving a lot of the deaths and other types of crashes that we are seeing. And autonomous vehicles don't suffer from a lot of those human frailties. They don't text while drive, they don't drive impaired, they don't drive distracted. And we don't have to accept any longer all of these types of human conditions that are there.

And so we will continue to see autonomous vehicles roll out deliberately in American communities. That is great news. And our expectation is that correspondingly, we'll see a reduction in crashes. And that's something, again, we need Federal partners on.

Senator YOUNG. Yes, we certainly have—we've got to lay a predicate of trust in order to enable that to happen. I absolutely understand that.

I'm going to recognize Senator Klobuchar, and we'll get back to our other witnesses.

**STATEMENT OF HON. AMY KLOBUCHAR,  
U.S. SENATOR FROM MINNESOTA**

Senator KLOBUCHAR. Thank you very much, Mr. Chair. Thank you.

It is wonderful to be here with all of you. And I think—you know, I've cared a lot about this issue for quite a while, starting out with when I was a prosecutor on DWIs and we had to change our law in Minnesota for repeat felons driving with repeat DWIs. We actually had a guy that had, I think, 17 DWIs, and he told the officer he moved to Minnesota, because we didn't have enhanced penalties when Colorado did. That was good evidence for me.

But then when I got here, I started doing a lot of work on distracted driving. And our transportation system in Minnesota is consistently one of the best in the country, I think number four for transportation infrastructure. Yet we still have so many fatalities due to driving.

And Mr. Chace, in your testimony, you note how in 2021—Ms. Chace—how in 2021, rural communities had a fatality rate 1.5 times higher than the urban rate. Can you speak to how infrastructure investments in rural areas like broadband can improve safety in our transportation system?

Ms. CHACE. Thank you for the question, Senator.

Yes, rural communities do face the brunt of traffic fatalities. We have seen there are significant positive impacts from technologies like ADAS systems, in particular Lane Keep, which—in Iowa, lane departure is one of the leading causes of crashes in rural areas. So these advanced driver assist systems, Level 2, partial automation, to assist drivers staying in their lane, not crossing the median strip, is actually a critical safety intervention.

In addition, in the physical world, you know, many of the rural states do put rumble strips, right? to help drivers understand, right? with a haptic response when they might be drifting from the lane.

And then with regard to broadband, communications really is the backbone of transportation in the 21st century. It will continue to become even more important as we move forward and incorporate more advanced technologies into our system. And really at its base level, what it allows us to do is to transmit and share critical information in various different ways to road users.

And that is key. And we need to be investing in that backbone of broadband and the communications infrastructure as part of our transportation programs and funding.

Senator KLOBUCHAR. Thank you. Thank you.

Mr. Farrah, what I was referencing before on distracted driving, it takes just 5 seconds to drive across an entire football field. I say with my friend here, Senator Young, he and I are both—we once competed on a Vikings Indianapolis game. I remember.

I think the Vikings had the biggest—the biggest comeback in the history of the NFL, but it happened. OK, so, but almost as good as the Timberwolves against Colorado this week.

But the football field. So to get more serious here. Five seconds to drive across a football field at 55 miles per hour. Five seconds. In 2022, when you think about people who are looking at their phone, looking away; in 2022, over 3,300 people died in accidents involving distracted drivers.

Nineteen-year-old Shreya Dixit from Eden Prairie, Minnesota, tragically died in 2007—her dad is a huge advocate, as you know, on this stuff—when the driver of the car she was riding in reached to grab something in a back seat.

And this happens over and over and again. And your testimony notes how almost 3 percent of all drivers are looking at or using their handheld device. In your view, how important can new technologies be for combating distracted driving?

Mr. FARRAH. Senator, thank you very much for sharing the information you just did. It's obviously tragic, and it's something that's happening nationwide, and it's happening every single day. I think distracted driving is a huge national problem.

This is something that our expectation is with autonomous vehicles that we can very much help to address that, because the reality is that the autonomous driving system does not get distracted.

And you don't have to have this situation now, where for many people, the temptation is too great to look at their phone at that traffic light, or to look at it when they're going it at a certain speed, and then we all know what ends up happening.

And so this is something where we're trying to fundamentally remove that human error, that distraction, that is persistent across our country. We're trying to remove that from the equation and allow technology to help to drive down those deaths.

Senator KLOBUCHAR. While at the same time enforcing the laws we have on the books, I will add; because not everyone's going to be doing that. And so it's just, it is really a balance. And it—to me that you've got to do both things. We've tried to put a lot of incentives in place for getting laws passed to help on distracted driving. And going way back to Secretary LaHood, actually. So thank you very much for your work.

And with that, I will turn it back to you, Mr. Chair.

Senator YOUNG. Well, thank you, Senator Klobuchar. I'll recognize Senator Capito now.

**STATEMENT OF HON. SHELLEY MOORE CAPITO,  
U.S. SENATOR FROM WEST VIRGINIA**

Senator CAPITO. Thank you, Senator.

And I thank you all for being here. And I didn't get to hear all the testimony, but I did get to hear quite a bit. I had some other questions.

But here's the one thing that I haven't heard. I haven't heard one person mention the increased weight of an electric vehicle. The President has said that by 2030 we are going to have—50 percent of our cars are going to be electric vehicles.

So I just did some brief stuff on my phone here. A GMC Hummer EV weighs 9,000 pounds. The battery itself weighs 2,900 pounds. A gas GMC Sierra, which is, I guess, comparable to a Hummer, if anything's comparable to a Hummer, weighs 6,000 pounds.

There's a study out there that says baseline fatality possibility increases 47 percent for every 1,000 pounds added to a car. So we can't regulate—or we can't legislate if we reach these goals, which are doubtful, but going in that direction.

If we're looking at heavier vehicles, I mean, this has been brought to my attention by our own West Virginia DOT. Can the guardrails withstand the impacts? Dr. Sandt said that when you talked about fatalities, it's mass versus velocity. People aren't slowing down. And if you've been in an electric car, those things get up and go pretty daggone fast.

What are we going to do about this? And does anybody have suggestions?

And I'll just start with Ms. Chace.

Ms. CHACE. Thank you for the question, Senator. I do think it is a question that we have to address collectively as we move forward.

At ITS America, our north star is safety. And while we appreciate the significant climate impacts of transportation, and we understand that we need to move to a more sustainable transportation system, we need to be prioritizing safety.

As I mentioned in my opening remarks and my written testimony, we believe we need to move to a more proactive approach. And to me, part of that means preventing crashes before they even happen, as opposed to mitigating the impact. Obviously, we need to do both. But if we take an approach that is proactive to prevent the crash from happening, that is where ITS America believes we can leverage our technology tools in the best possible way.

Senator CAPITO. Mr. Nelson?

Mr. NELSON. Thank you for the question, Senator.

At AAA we support consumer choice and what kind of vehicle people choose to drive—

Senator CAPITO. I'm not really debating EVs versus gas.

Mr. NELSON. Understood.

Senator CAPITO. I'm saying—

Mr. NELSON. Yup.

Senator CAPITO.—these are heavier vehicles that are going to result in more fatalities. And we're talking about safety.

Mr. NELSON. Understood. But you're speaking our language, because we've been giving a lot of thought to the potential safety implications of a proliferating passenger vehicle fleet involving EVs. And you highlighted issues about stopping distance, how quickly these vehicles can reach higher speeds, potential degradation of the built infrastructure. Just think of a parking garage full of EVs.

Senator CAPITO. Right. Well, one, yes, the collapse in New York City. Yes.

Mr. NELSON. Right. And then just size and weight issues. An ICE vehicle—

Senator CAPITO. So but I'm not hearing any solutions here to how we're going to—

Mr. NELSON. Well, I don't think we have solutions yet, because we don't have a high penetration of EVs in the U.S. fleet. But certainly, we should be approaching this as a first-do-no-harm kind of a policy move. And we haven't seen at AAA much effort into thinking through how to proactively address these implications on our infrastructure, but also on safety. We've seen no action.

Senator CAPITO. Right. I mean, I just think it would be smart to be talking about this right now in terms of these types of vehicles, because if any of the goals are actually met, this is going to be a large part of our fleet.

Doctor, do you have a comment?

Dr. SANDT. Yes. Thank you, Senator.

Senator CAPITO. Mm-hmm.

Dr. SANDT. Yes. As I've spoken about in my earlier remarks, kinetic energy is a product of mass times velocity squared.

Senator CAPITO. Right.

Dr. SANDT. And so the mass is a critical factor, but also the speed at which these vehicles can travel. And so a lot of the tools we have in our existing tool belt are really to address the speed side of the equation.

Senator CAPITO. OK.

Dr. SANDT. We have, with all of our infrastructure investment, opportunities for a lot of the built environment to address speed management, to create safe and appropriate speeds for different vehicle types in different contexts.

We also have some technologies on the vehicular side as well, related to intelligent speed assistance and intelligent speed supportive devices.

Senator CAPITO. So I'm not being confrontational here. I'm just clarifying on myself. So that means you would have Governors in your specific vehicle that wouldn't let you go a certain mileage—or a certain speed? I mean, I know there's a—there have been bills out there that say trucks shouldn't go more than what the actual—the semis shouldn't go more than 70 miles per hour if that's the posted speed limit. Is that what you're talking about there, when you talk about technology?

Dr. SANDT. There are technologies that exist on large truck fleets, yes—

Senator CAPITO. Right.

Dr. SANDT. But also what we're seeing in other countries is intelligent speed adaptation systems. So they can provide—

Senator CAPITO. Well, what does that mean?

Dr. SANDT. They can provide warnings to drivers—

Senator CAPITO. OK.

Dr. SANDT. When they're over the speed, or they can actually address the pressure that needs to be applied to accelerate a vehicle, to give sort of a physical feedback to the driver, so that they don't continue to accelerate over the rate of the posted speed.

Senator CAPITO. So they're doing that now in Europe?

Dr. SANDT. They are.

Senator CAPITO. OK.

And Mr. AV over there—I mean, West Virginia has a great AV law that we passed, but I wonder what you see the future—and I might be out of time, so—I actually am. Thank you.

Because we have a vote. I better go.

Mr. FARRAH. Thank you.

Senator PETERS. Thank you. Senator Fischer, recognized for your questions.

#### **STATEMENT OF HON. DEB FISCHER, U.S. SENATOR FROM NEBRASKA**

Senator FISCHER. Thank you, Senator Peters.

Senator Capito, I have an answer to your question.

Senator CAPITO. Well, good.

Senator FISCHER. You were asking, has there been any testing that's gone on about accidents and the safety there. Well, last year, the University of Nebraska conducted a first-of-its-kind crash assessment. They crashed an all-electric pickup truck against a standard highway guardrail to investigate the efficacy of current safety measures in light of the increased presence of heavier EVs.

During the test, this EV plowed through the guardrail and traveled into the opposite lane of traffic. In January, a group of engineers warned that increasing EVs' weights, combined with reduced structural design requirements, will result in reduced infrastructure safety, especially for parking structures.

So testing has been done. I assume there'll be more done in the future.

You brought up also with trucks and the weight of trucks. Their batteries, obviously, are much, much heavier than 3,000 or 4,000

pounds. So yes, there are a lot of research needs to be done there. Right.

Let's see. Ms. Chace, a recent NHTSA report found that 20 percent of the U.S. population lived in rural communities. And Senator Klobuchar addressed this about rural areas account for about 40 percent of all traffic fatalities. Nebraska, I am sorry to say, holds the second-highest ratio of rural to urban fatality rates in this country.

You mentioned that rural areas have rumble bars. We do—you know, on our highways in Nebraska, have a number of those on every highway. It helps.

You mentioned technology; you mentioned some infrastructure changes. But in the near term, do you have any ideas on upgrades that we could see for infrastructure that maybe could have some big safety gains there? I mean, it's very, very concerning when we see that continued growth in the percentage.

Ms. CHACE. Thank you for the question.

Senator, I do think that rural areas, we know that they can benefit from Vehicle-to-Everything technologies. And this is technology that an agency, a state DOT, or other public agency, can deploy today. And there are grants available today through the Infrastructure Law to access these funds.

But they can deploy these roadside units to be able to communicate with fleets and then other drivers, if they're deployed in the vehicles. They can provide curve speed warning alerts, right? if a vehicle is going too fast into a curve.

Weather warning alerts. We've seen great success in Wyoming using primarily weather warning alerts, because it's—the freight corridor there has such spot weather impacts—

Senator FISCHER. Wind.

Ms. CHACE. Mm-hmm. And wind, and a risk of semis tipping over. So those—and actually they have a lot of data that shows that there has been significant reduction in crashes.

So I think that's an important technology to be deploying and investing in today, understanding that some of the safety benefits will come immediately, and more will come in the long term, as this technology gets deployed more ubiquitously and scaled throughout the transportation system.

Senator FISCHER. Thank you.

Mr. Nelson, I was interested to see that in your testimony you said that rising traffic fatalities correlate with drops in the enforcement of life-saving traffic safety laws. And you noted that citations for DUIs and other types of dangerous driving have decreased by as much as 50 percent in some regions.

I noticed that you attributed much of this to the staffing challenges that law enforcement agencies are facing right now. And I have a bill that I hope the President will be signing. It recently passed the Senate and the House, and it addresses that staffing concern. It also contains a new GAO study to assess the law enforcement staffing crises at departments nationwide. And this includes the impacts this issue is having on public safety.

Do you believe that traffic fatalities should be among the public safety impacts that my bill—hopefully soon, law—that study

should evaluate? Is that something that once we get this signed, we can recommend that that be included?

Mr. NELSON. Absolutely. Because I think we need to underscore the importance, the important role that law enforcement plays in enforcing proven life-saving laws. Research is crystal clear that when risk of perceived apprehension goes down, that risk-taking behaviors go up. And the International Association of Chiefs of Police did a survey of law enforcement agencies nationwide, confirming the concerns with staffing shortages, and tied it to negative perceptions of law enforcement profession overall throughout the United States.

And so as I noted in my testimony, one of the ways that we can help address that is to offer more support to law enforcement through accessing better data, stop data, to increase transparency and to communicate to the communities that they serve and protect.

Senator FISCHER. Could I have my staff reach out to you for information on that, and some more ideas that we could hopefully help guide where the Committee will be looking, that study will be going then?

Mr. NELSON. Senator, we would love that.

Senator FISCHER. Great. Thank you.

Mr. NELSON. Thank you.

Senator PETERS. Thank you, Senator Fischer. Well, we'll start a second round. I know there are a couple other members on their way here, but Senator Young will need to vote, so he needs to ask questions now. I'll defer to Senator Young and to your questions.

Senator YOUNG. Well, thanks for our amazing witnesses. I've already learned a lot today.

You know, one of the things I'm struck by, Mr. Farrah, when we talk about autonomous vehicles is just not only the ability to save lives year-on-year, but it's also the amazing impact that they could have on changing the quality of life on countless individuals who today rely on friends, family, and others to drive them around their communities.

Mr. Farrah, how will the development of AVs and their deployment impact the disabled, the blind, the elderly, and others that are unable to drive?

Mr. FARRAH. Senator, thank you so much for the question. This is something that's very near and dear to my heart, and we work very closely with a number of organizations that are in the spaces that you mentioned, because they're so interested in how AVs are going to be transformative for their communities.

You mentioned the elderly. My grandmother's 94 years old. She hasn't driven in more than 10 years. She's completely reliant on, fortunately, the fact that she has sons and daughters that live locally, that can take her to places and do those things.

Many people are not fortunate to have those situations. They have lost the liberation that comes with being able to drive. This is something where you can redeliver this to people that have had that be a fact of life.

You also talked about the visually impaired. I think it's very important to note that you have massive amounts of underemployment and unemployment in the blind community, because they're

not able to get to as many occupations as many other Americans are able to do. And so you look at organizations like the National Federation of the Blind that looks with great excitement toward autonomous vehicles, because this is an opportunity to be able to move around more freely, to be able to have, again, that independence that so many people take for granted.

Senator YOUNG. Thank you.

Ms. Chace, I'm going to turn to you, in recognition of the fact that neither Congress nor the Executive Branch have provided regulatory standards for safely deploying autonomous vehicles. And I'd like to get your perspective on what impact the lack of a clear Federal standard has on state and local governments?

Ms. CHACE. Thank you for the question.

So our state and local public agency members have expressed continued frustration with inaction, from NHTSA in particular, because what it's done is it's transferred the risk and responsibility for assessing the safety systems of these autonomous vehicles to the state and the localities. And that is decidedly a Federal role.

And so there's great desire from the community, both public and private sector, for NHTSA to move forward with their AV safety framework, AV STEP, that was mentioned earlier.

Senator YOUNG. Thank you. I'm going to turn for my final question to Dr. Sandt, and it pertains to a type of infrastructure that's been around for generations.

My dear mother lives in the town that is now known as the roundabout capital of the world, Carmel, Indiana. The City of Carmel, Indiana has installed roughly 150 roundabouts over the last 30 years. And while the city's population has quadrupled during that time—it's actually grown a lot more than that, but we're playing it safe. The conversion to roundabouts has resulted in a 47 percent reduction in injury crashes overall, and a 90 percent reduction in traffic fatalities.

Additionally, the annual average amount of time saved in 2020 was 5 days, or 120 hours per motorist, as roundabouts provide for increased flow without stopping.

Dr. Sandt, can you talk about the safety benefits of roundabouts that not only improve roadway safety, but increase efficiency in our transportation network?

Dr. SANDT. Thank you, Senator Young. Yes, it's fantastic to hear the success stories that you've had in Carmel, Indiana.

I think roundabouts are one of a suite of success stories that we can claim with our speed management tools. With roundabouts, we see the research pointing to up to an 88 percent reduction in severe and fatal injury crashes.

And the key to roundabouts is that they really do reduce conflict points at those intersections, where injuries can be most severe. They reduce the approach speed so that we're managing that kinetic energy in our system. And as you said, they do reduce delay at intersections, and so they can have benefits beyond safety.

But what's really fantastic about the roundabouts that we're seeing in the United States is that they have versatility of design in different contexts. So we've seen successes, for example, in school zones in Wisconsin; in Kansas DOT, they worked with their freight community to make roundabouts work for the trucking industry.

And they really are a tool for safety and mobility.

So thank you for sharing your story.

Senator YOUNG. Well, thank you very much, Doctor, for speaking to that question.

And I'll tell the Chairman, because I know he's captivated by my inquiries related to roundabouts, that you can access a 30-minute tutorial on roundabouts. If you go to the "Freakonomics" episode in which former Carmel Mayor Jim Brainard talks at great length about the safety benefits, about the fuel benefits, they are cheaper to maintain. So we're preaching the gospel in Carmel, Indiana. Thank you, Chairman.

Senator PETERS. Well, very good. It sounds like must-see TV, so I will be sure to tune in.

[Laughter.]

Senator PETERS. Mr. Krassenstein and Mr. Nelson, I've got a question for both of you. If each of you could speak to potential improvements that you think we can make to the Safe Streets for All grant program to improve our community's ability to make the most of them? They've been out, but love to have your input as to how we can make them better. We'll start with you, Mr. Nelson.

Mr. NELSON. Thank you for the question, Senator.

One of the benefits of the SS4A grant program is that it targets communities. And one of the benefits of that is that if we're really serious about driving the number of highway fatalities in the Nation closer to zero, we need to follow the fatality data. And it's going to tell a story pretty quickly that it's predominantly in lower-income, underserved communities. One of the benefits of bringing these kinds of funds to the local community is addressing the very population that is bearing the predominant brunt of the highway safety problem.

One of the ways that we can improve the SS4A grant is by improving the requirements on states and localities to engage in public engagement and participation. And so this is more than just a listening session of local residents. It's more about making sure that they understand what the safety experience is in their community, that they understand what the various infrastructure countermeasure solutions are available to them, and the considerations relative to each.

And that their input about which of those countermeasures they would welcome most into the community I think should be adopted and implemented into sort of the outcome of that project. It's how we are going to build demand and support for these kinds of investments from the people who live in those communities, and we can foster more investment like this in the future.

Senator PETERS. Very good.

Mr. Krassenstein.

Mr. KRASSENSTEIN. Thank you for the question, Chairman.

Well, to start, we are extremely supportive of the Safe Streets for All program, and I think that the current design for benefiting local governments is extremely important. So off the bat we're very happy that the program exists.

In terms of changes we would propose to make to the Safe Streets for All program going forward, a couple things come to mind. I think one of the big opportunities is how do we incentivize

collaboration between cities and other road jurisdiction owners that may not be eligible to apply.

So in my testimony, I talked a lot about the value of state DOTs and the larger roads that they own. Right now, state DOTs are not eligible to be able to participate in the Safe Streets for All program, and I think that's a good thing.

But I think where we need to get really creative is, well, our state DOTs also own the most dangerous streets.

So knowing that they're not eligible to apply, and that there's still a match requirement where it's difficult for cities to justify spending its own dollars on someone else's roadway, I think we need to be really creative on how we address those larger arterial roads that right now fall outside of the purview of Safe Streets for All, unless you're applying on behalf of another jurisdiction.

The second area that I would look at is whether or not that there is—I would look carefully at the balance between implementation funding, and the planning and demonstration project funding. I think both are incredibly valuable.

But as more and more communities go forward and have safety action plans, I think it will be very important to have flexibility in how those planning and demonstration dollars can be spent to allow new safety countermeasures to be tried out, to be piloted, before doing a full-scale project.

So I think between two of those, I think there's opportunity to do a little fine tweaking to an otherwise overall great program.

Senator PETERS. Right. Thank you.

Dr. Sandt, you are an epidemiologist by training; and in your testimony, you discussed taking a public health approach to roadway safety in order to improve outcomes. So if you could please describe exactly what you mean by a "public health approach," and specifically when it comes to how we improve both data collection as well as education related to roadway safety?

Dr. SANDT. Yes, thank you for that question.

In public health, I think the approach is very compatible with what we've been talking about with the Safe System approach. It means that we take a holistic and proactive approach to prevent and reduce the likelihood of risk of injury or any other negative health outcome.

And another important parallel is that in public health, we follow what's known as the socioecological framework for much of our intervention development. And what that means is that we recognize that individual behaviors stem, and often are influenced by, a broader social environment and a broader environmental physical environment.

And so we can change human health and human behavior by recognizing the systems in which the people are operating, and looking at those social and physical environments. And so by the Safe System approach, taking that holistic view, it's very much aligned with the approach that public health practitioners use for other health issues.

With respect to your question around data, we see that the public health community offers tremendous resources and knowledge around how we can improve our injury data systems. There are a lot of complementary data sources from our health data sets, in-

cluding our trauma registries, our emergency department data, our EMS data, that can really supplement the data that we collect from our law enforcement officers.

We also see really great examples of timeliness in data collection within the public health community, and opportunities to link that data and really understand the nature of our risks.

And with respect to the question about communications, public health does a fantastic job in many ways of engaging the community and having really strong messaging around health communications and health behaviors. And so that's a really great opportunity to coordinate and build partnerships with the transportation community as well.

Senator PETERS. Thank you.

Senator Markey, you're recognized for your questions.

**STATEMENT OF HON. EDWARD MARKEY,  
U.S. SENATOR FROM MASSACHUSETTS**

Senator MARKEY. Thank you, Mr. Chairman, very much.

We've heard a lot today about how technology can potentially make cars safer. But we don't just need safe cars, we need safe streets not only for drivers, but for our pedestrians, cyclists, and public transit riders.

These road users are particularly vulnerable. Just look at the numbers. In 1994, 21 percent of people killed in motor vehicle accidents were outside the vehicle. Twenty-one percent. In 2022, that number rose to 36 percent of those killed were outside the vehicle.

Pedestrian death tolls tell a similar story. In 2011, 4,400 pedestrians were killed by motor vehicles. In 2022, that number was 7,500 people.

And that's why I introduced my Complete Streets Act. The bill mandates that all new construction along dangerous roads must include Complete Streets elements, like bicycle and pedestrian paths.

Mr. Krassenstein, Detroit works hard to include Complete Street design elements in its road structure. Do you agree that we must prioritize Complete Streets at the Federal level in order to make our roads safer?

Mr. KRASSENSTEIN. Thank you, Senator, for your question, for your support on road safety, and Complete Streets.

Absolutely. I think that for any street design, having a context-appropriate Complete Street is critically important. That doesn't necessarily mean that the right solution is to put bike lanes on every single street, but to have the types of solutions that are appropriate for the road.

So that could be looking at things to slow down traffic to allow pedestrians to cross safer. It could be using bike lanes in order to do traffic calming measures. Or it could just be like having painted crosswalks so that pedestrians can safely cross the street. I think there are a variety of types of countermeasures that can be used.

But anything we can do to support the Complete Streets and safer streets-type actions on any new street, especially streets that receive Federal funding, I think is extremely valuable.

Senator MARKEY. Excellent.

Now I would like to pivot to another important topic, autonomous vehicle safety. Automakers are increasingly including new software

in vehicles that can assist drivers with accelerating, braking, and turning. Yet these driver assistance features are only designed for use under certain road conditions, and with an alert driver behind the wheel.

These features are especially dangerous when automakers give them misleading names that lull drivers into a false sense of security.

The worst offender is, of course, Tesla, which has created an Autopilot mode that at best should be called semi-pilot. Mr. Farrah, in your view, do Tesla drivers generally understand that Autopilot mode can only be operated on certain roads, and requires active driver engagement? Or do they get misled into thinking they can just push the button and they can go to sleep?

Mr. FARRAH. Senator, thank you very much for the question.

As I mentioned in my opening statement, as well as my written statement, I think that it's imperative that we distinguish between driver-assist vehicles versus actual autonomous vehicles that are operating at Level 4. In the latter, the human, insofar as there's a human in the vehicle, has no responsibility for the dynamic driving task.

When you do have a driver-assist feature, it is absolutely imperative that the driver understands what their obligations are. They need to be prepared to be able to take over at a moment's notice. Many people have had confusion that has led to a number of situations, and I certainly appreciate the spirit of what you're getting at.

Senator MARKEY. Well, thank you. So that's why I've urged both the National Highway Traffic Safety Administration and the Federal Trade Commission to investigate Tesla's misleading Autopilot system, and have directly demanded Tesla to stop using this dangerous branding.

And I'd also like to discuss a critical safety issue with driver assistance features like Tesla's Autopilot and full autonomous vehicles. These systems can only be safely operated under certain conditions and in certain locations, such as highways in sunny weather.

In the autonomous vehicle industry, these conditions are known as the Operational Design Domain, which identifies where and under what conditions a driving assistance feature like Tesla's Autopilot or a true autonomous vehicle can safely operate.

By contrast, these automated features, or autonomous vehicles, are specifically not designed to be operated in other road conditions, such as dangerous winding roads with cross traffic.

So again, Mr. Farrah, you represent many manufacturers who are testing full autonomous vehicles. Can those vehicles operate outside their Operational Driving Domain?

Mr. FARRAH. Senator Markey, again, thank you for that question.

The state of the industry, the state of the technology right now, is that our members are operating at Level 4. That does mean, as you said, that they are confined to an Operational Design Domain. That is a set of safety limitations that are put on the vehicle, whether geographic or weather that you mentioned.

Right now, those vehicles remain within the ODD. The ODD can be something like the City of San Francisco or the City of Phoenix

and Scottsdale. It could be a stretch of highway for things like autonomous trucking. And that's where we are from a technology perspective, and we'll make sure that we continue to roll out the technology deliberately and safely.

Senator MARKEY. Thank you. And should autonomous vehicles, or vehicles with driver assistance features engaged, be able to operate outside their Operational Design Domain, Mr. Farrah?

Mr. FARRAH. I cannot speak to the driver assistance features in terms of what it is, the state of the technology is there. I can only speak to Level 4 technology where our members are now.

Senator MARKEY. Well, again, my view is that there's absolutely no reason that driving features like Tesla's Autopilot or full autonomous vehicles should be operating outside of their Operational Design Domain.

Thank you for this hearing, Mr. Chairman, and thank all the witnesses for their expert testimony.

Senator PETERS. Thank you, Senator Markey.

Senator Luján, you're recognized for your questions.

**STATEMENT OF HON. BEN RAY LUJÁN,  
U.S. SENATOR FROM NEW MEXICO**

Senator LUJÁ. Thank you, Mr. Chairman. Mr. Nelson, I wanted to start by thanking you for highlighting the importance of the HALT Act in your testimony. I was proud to work with a bipartisan coalition of colleagues, Senators Rick Scott, Shelley Moore Capito, and our Chairman, Senator Gary Peters, who is also a champion for road safety, to get this landmark provision included in the Bipartisan Infrastructure Law.

Now once implemented, based on statistics that we see across the country, as many as 10,000 lives a year could be saved by the inclusion of this technology. Over the past few years, I've been encouraged to see industry partners stand up and become part of the solution to get impaired driving technology in vehicles.

In December of last year, General Motors CEO Mary Barra said that technology to passively detect alcohol in cars exists, and that it's coming soon.

At CES this year, Tier 1 automotive supplier Magna introduced their latest test car with new safety technology, combining a number of interior sensing technologies to detect driver impairment.

Mr. Nelson, since the President signed the HALT Act into law in 2021, how has the technology available on the market changed?

Mr. NELSON. Thank you for the question, Senator. And before I respond to your question, I want to, on behalf of the safety community and especially victims and survivors, thank you and your colleagues for getting HALT over the finish line.

Relative to your question about how technology has evolved since implementation of the IIJA, to your point, these technologies existed already before the IIJA became law. But certainly the HALT making it into that legislation has spurred innovation.

There's no question that the technology to make this happen, whether it be just alcohol or the passive detection of alcohol plus vehicle monitoring, are combined together. All of those options exist right now. OEMs are already working at ways to implement it.

And NHTSA issuing its final rule is the only way we're going to make sure that we stop allowing 37 people to die on our roads in impaired driving crashes every day that it's delayed.

Senator LUJÁN. So let me ask you a follow up to that, pertaining to the rule. Why is it so important that NHTSA issue their notice of public rulemaking by November 15, 2024?

Mr. NELSON. Again, I think every day that we delay that rule-making, we allow 37 people to die on our roads in impaired driving crashes. It's a life-or-death situation.

Senator LUJÁN. I appreciate that. And having had—now have sat in many vehicles, including the test vehicles that Magna was showing, who's one of the largest suppliers to GM, if I'm not mistaken, it was impressive to me to see what people have already developed, and to positively learn the number of patents that have been filed by American auto manufacturers, as well as American major suppliers, is encouraging.

That was one of the goals of this, was to encourage the market to respond to providing these solutions as well. So thank you very much for that as well.

Now Ms. Chace, I appreciate you highlighting the importance of another key technology in transportation safety. Yes or no: will future innovations in transportation safety rely on technology like broadband to keep drivers and vulnerable road users safe?

Ms. CHACE. Thank you for the question, Senator.

The answer is there's more than one way to communicate. So broadband is a key solution. But there's also dedicated spectrum for safety, critical collision avoidance, V2X communications. There's also wireless communication options. And particularly with advances in 5G technology and others, there are many ways to communicate core safety information to road users. Broadband is a key backbone of our system, but it's not the only way to communicate.

Senator LUJÁN. Is broadband needed for wireless towers to work?

Ms. CHACE. Broadband is needed for ubiquitous communication and infrastructure.

Senator LUJÁN. So I'm not trying to be cute here, but the way that I understand a tower that, well, that mobile phone providers depend on, there's fiber that goes to a tower, and then that tower has antennas, and it provides a canopy to coverage, things of that nature. So the hard wire to that tower, that's a necessity, correct?

Ms. CHACE. So I can't speak to the exact specifications of what's needed for a tower—

Senator LUJÁN. OK, let me go on, then. The reason I'm asking this question—let me ask the question the way that you answered. If there's no connectivity in rural communities, is that going to prevent some of the benefits to accessing future roadway safety technologies?

So if they don't have wireless, there's no broadband, there's no canopy in a rural community, do they get the benefit from the same technologies available in a big city that has robust connectivity with wireless providers or broadband canopies built by folks in the community?

Ms. CHACE. So those technologies need to be prioritized in rural areas, for sure. For more reasons just than transportation safety,

of course. Right? There's significant economic and other benefits that come from having that type of connectivity.

Those solutions will enhance some of the more modern technological advances in transportation safety. But there are solutions even right now.

There's an example of an AI-based—a sensor- and an AI-based solution being used on an Indian reservation, Yakima Nation, who does not have robust connectivity. And they're able to then actually track and understand dangerous situations, near-misses and such, at an intersection using this contained solution that is not dependent on a broadband connection.

So I would say to you there are additional ways to bring those solutions to rural communities. But I agree with you that broadband connectivity and cellular connectivity, building that out in the future to all of our communities, is important.

Senator LUJÁN. And Mr. Chairman, I don't disagree that whether it's Lidar or other sensors participating with some AI sensor capability in a hard drive is going to help a rural community. The problem I have is all the other bells and whistles that require Internet access or wireless access? If there's not connectivity in the community, then they don't get that.

And people living in rural communities deserve the same safety that's going to be in a vehicle in the biggest cities in America. That's the point that I was trying to make.

And Mr. Chairman, if you'd indulge me quickly.

Is it Mr. Farrah, Jeff? Farrah? Because of the question that Mr. Markey was asking with the Level 3 vehicles, which—if I'm correct with these things, when they're—that when it's a Level 3, it'll alert you if your hands aren't on the steering wheel at a certain state or something, like you have to touch it; or even with a Tesla, it says, "OK, your session is turned off," you have to use your hands the whole time until you turn off the car, park it, and all the rest. Is that correct?

Mr. FARRAH. Senator, yes. We refer to that as "conditional automation."

Senator LUJÁN. So is it legal or illegal for someone to buy a weight and strap it to a steering wheel in a Level 3 vehicle and let the thing drive itself?

Mr. FARRAH. Senator, I don't know the exact law. We don't represent manufacturers that do that. We're a Level 4, Level 5 organization.

Senator LUJÁN. So you don't represent all self-driving platforms of vehicles? Only Level 4, Level 5?

Mr. FARRAH. We represent truly autonomous vehicle companies, Level 4, Level 5—

Senator LUJÁN. I appreciate that. I'll say my question for someone else, Gary—or sorry, Mr. Chairman.

The question I have is, it's my understanding now for folks that have Level 3 cars, that there are manufacturers that sell gizmos that hook onto a steering wheel—there are some people nodding head—yes, here. I'm not saying that they've done it.

[Laughter.]

Senator LUJÁN. But you attach this thing to the steering wheel, and then the steering wheel thinks that your hand is on it. I don't

know if that's good or bad. Someone found a loophole, and so they're selling these things.

It's just something that the smart people should take a look at, is all that I'm suggesting, Mr. Chairman. Thank you.

Senator PETERS. Very good. Well, thank you, Senator Luján.

And I want to thank each of our witnesses. Thank you for being here today. Thank you for taking time out of your busy schedules to provide testimony and help us work through these issues.

The hearing record will remain open for four weeks. Any senators who wish to submit questions or statements for the hearing record should do so within two weeks, by June 4. Witnesses will then have two weeks or until June 18 to respond to the Committee questions.

This hearing is now adjourned.

[Whereupon, at 4:11 p.m., the hearing was adjourned.]



## A P P E N D I X

ADVOCATES FOR HIGHWAY AND AUTO SAFETY  
May 20, 2024

Hon. GARY PETERS, Chair,  
Hon. TODD YOUNG, Ranking Member,  
Committee on Commerce, Science and Transportation,  
Subcommittee on Surface Transportation, Maritime, Freight and Ports,  
United States Senate,  
Washington, DC.

Dear Chairman Peters and Ranking Member Young:

Thank you for holding tomorrow's hearing, "Examining the Roadway Safety Crisis and Highlighting Community Solutions." With deaths and injuries on our Nation's roads at historically high levels, we urge the Subcommittee to advance proven solutions to enhance public safety. Advocates for Highway and Auto Safety (Advocates) respectfully requests this letter be included in the hearing record.

### **Motor Vehicle Crashes are a Devastating and Costly Public Health Crisis**

The carnage and expense borne from crashes on our roadways are at historic highs. On average, 116 people were killed every day on roads in the U.S. in 2022, totaling just over 42,500 fatalities.<sup>1</sup> An additional 2.38 million people were injured.<sup>2</sup> This represents a 29 percent increase in deaths in just a decade.<sup>3</sup> Early projections for 2023 traffic fatalities remain at a similar level.<sup>4</sup>

In addition to vehicle occupants, other road users experienced upturns in deaths. Approximately 7,522 pedestrians and 1,105 bicyclists were killed in 2022, representing a one percent and 13 percent increase respectively, from 2021.<sup>5</sup> In 2022, 6,218 motorcyclists were killed, accounting for 15 percent of all traffic fatalities.<sup>6</sup> This is the highest number of motorcyclists killed since at least 1975.<sup>7</sup>

Conservatively, the annual economic cost of motor vehicle crashes is approximately \$340 billion (2019 dollars).<sup>8</sup> This means that every person living in the U.S. essentially pays an annual "crash tax" of over \$1,000. Moreover, the total value of societal harm from motor vehicle crashes in 2019 was nearly \$1.4 trillion.<sup>9</sup>

### **Federal Safety Standards Have Saved Hundreds of Thousands of Lives**

The National Highway Traffic Safety Administration (NHTSA) has estimated that between 1960 and 2012, over 600,000 lives have been saved by motor vehicle safety technologies.<sup>10</sup> Advocates always has enthusiastically championed rulemaking for innovative vehicle safety technologies shown to prevent injuries and deaths because it is effective. In 1991, Advocates led the coalition that supported enactment of the

<sup>1</sup> Overview of Motor Vehicle Traffic Crashes in 2022, NHTSA, Apr. 2024, DOT HS 813 560. (Overview 2022).

<sup>2</sup> Overview 2022.

<sup>3</sup> Traffic Safety Facts 2021: A Compilation of Motor Vehicle Crash Data, NHTSA, Dec. 2023, DOT HS 813 527, (Annual Report 2021); and Overview 2022; [comparing 2013 to 2022].

<sup>4</sup> Traffic Safety Facts: Crash Stats, Early Estimate of Motor Vehicle Traffic Fatalities in 2023, NHTSA, Apr. 2024, DOT HS 813 561.

<sup>5</sup> Overview 2022.

<sup>6</sup> NHTSA, Motorcycle Safety, Overview, available at: <https://www.nhtsa.gov/road-safety/motorcycles#:~:text=Overview,killed%20since%20at%20least%201975>.

<sup>7</sup> *Id.*

<sup>8</sup> The Economic and Societal Impact of Motor Vehicle Crashes, 2019, NHTSA, Dec. 2022, DOT HS 813 403. (Economic and Societal Impact 2019).

<sup>9</sup> Economic and Societal Impact 2019.

<sup>10</sup> Lives Saved by Vehicle Safety Technologies and Associated Federal Motor Vehicle Safety Standards, 1960 to 2012, DOT HS 812 069 (NHTSA, 2015); See also, NHTSA AV Policy, Executive Summary, p. 5 endnote 1.

bipartisan Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991<sup>11</sup> which included a mandate for front seat airbags as standard equipment. As a result, by 1997, every new car sold in the United States was equipped with this technology and the lives saved have been significant. Airbags have saved an estimated 50,457 lives from 1987 to 2017, according to NHTSA.<sup>12</sup>

Advocates continued to support proven lifesaving technologies as standard equipment in all vehicles in other Federal legislation and regulatory proposals. These efforts include: tire pressure monitoring systems;<sup>13</sup> rear outboard 3-point safety belts;<sup>14</sup> electronic stability control;<sup>15</sup> rear safety belt reminder systems;<sup>16</sup> brake transmission interlocks;<sup>17</sup> safety belts on motorcoaches;<sup>18</sup> rear-view cameras;<sup>19</sup> safer power window switches;<sup>20</sup> advanced driver assistance systems (ADAS);<sup>21</sup> impaired driving prevention technology;<sup>22</sup> enhanced vehicle hood and bumpers to better protect vulnerable road users;<sup>23</sup> systems to address the issue of unattended children in vehicles;<sup>24</sup> and, advanced head lamps.<sup>25</sup>

Requiring proven safety technologies as standard equipment in vehicles also promotes traffic safety equity for new car buyers, the next generation of used car buyers, other vehicle occupants and road users outside the vehicle when the rulemaking includes them, as it should when applicable. Rulemaking accelerates fleet penetration and amplifies the safety benefits of the technology while curbing its cost due to economies of scale.

Advocates also publishes an annual *Roadmap to Safety* report. This comprehensive tool provides a guide for communities, state legislatures, governors, Congress, and the U.S. Department of Transportation (DOT) on how to reverse the trend of skyrocketing deaths and injuries on U.S. roads.

### **The Infrastructure Investment and Jobs Act (IIJA) Must be Implemented with Expediency and Thoroughness**

Commonsense solutions were advanced by the Committee on Commerce, Science, and Transportation during the consideration of the Infrastructure Investment and Jobs Act (IIJA).<sup>26</sup> These include provisions and robust appropriation levels to advance the Safe System Approach (SSA) and Complete Streets which undertake a holistic method to improve safety for all in the roadway environment. Vehicle safety technology and roadway infrastructure improvements designed to upgrade safety have great potential to complement each other and collaboratively save lives. For example, the IIJA authorizes safety upgrades to the Highway Safety Improvement Program (HSIP) which will help to protect vulnerable road users, such as infrastructure features that calm traffic and reduce vehicle speeds, separate road users to minimize conflicts, and deter dangerous driving. It also includes provisions requiring automatic emergency braking (AEB) for passenger motor vehicles and large trucks.<sup>27</sup> According to the Insurance Institute for Highway Safety (IIHS), AEB has the capability to reduce car front-to-rear crashes with injuries by 56 percent and large truck front-to-rear crashes by 41 percent.<sup>28</sup> NHTSA estimates that requiring AEB on light vehicles will save at least 362 lives and mitigate 24,321 non-fatal injuries annually.<sup>29</sup> In addition to curbing the physical and emotional toll on families, the ripple effect of crash reductions is wide-ranging and results in less damage to

<sup>11</sup> Pub. L. 102–240 (Dec. 18, 1991). Statistics are from the U.S. Department of Transportation unless otherwise noted.

<sup>12</sup> Traffic Safety Facts 2018, A Compilation of Motor Vehicle Crash Data, DOT HS 812 981, NHTSA (Nov. 2020).

<sup>13</sup> Transportation Recall Enhancement, Accountability, and Documentation (TREAD) Act, Pub. L. 106–414 (Nov. 1, 2000).

<sup>14</sup> Anton’s Law, Pub. L. 107–318 (Dec. 4, 2002).

<sup>15</sup> Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA–LU), Pub. L. 109–59 (Aug. 10, 2005).

<sup>16</sup> *Id.*

<sup>17</sup> *Id.*

<sup>18</sup> Moving Ahead for Progress in the 21st Century (MAP–21) Act, Pub. L. 112–141 (Jan. 3, 2012).

<sup>19</sup> Cameron Gulbransen Kids Transportation Safety Act of 2007, Pub. L. 110–189 (Feb. 28, 2008).

<sup>20</sup> *Id.*

<sup>21</sup> Infrastructure Investment and Jobs Act, Pub. L. 117–58 (Nov. 15, 2021).

<sup>22</sup> *Id.*

<sup>23</sup> *Id.*

<sup>24</sup> *Id.*

<sup>25</sup> *Id.*

<sup>26</sup> Pub. L. 117–58 (2021).

<sup>27</sup> Pub. L. 117–58, § 24208 (2021).

<sup>28</sup> IIHS, Real World Benefits of Crash Avoidance Technologies (Dec. 2020).

<sup>29</sup> 89 FR 39686, 39687 (May 9, 2024).

infrastructure, less congestion caused by crashes, less crash related costs, and less expenditure of first responder and health care resources, among others.

While Advocates lauds NHTSA for recently issuing a Final Rule that requires passenger vehicles be equipped with an AEB system that detects pedestrians, the agency must promptly complete the rulemaking requiring AEB on heavy vehicles as well as other required rules to save lives and meet the deadlines set by Congress.<sup>30</sup> These include rulemakings involving advanced impaired driving technology; systems to address the issue of unattended children in vehicles leading to pediatric heat-stroke; technology to curb driver distraction and automation complacency; lane departure warning and lane keeping assist systems; adaptive driving beam headlamps; upgrades to hoods and bumpers to better protect vulnerable road user safety; updates to the New Car Assessment Program (NCAP); seat belts for limousine passengers; strengthening seatback safety standards; and, automatic shutoff and keyless ignition systems. Additionally, numerous safety rulemakings mandated by Congress in laws preceding the IIJA are exceedingly overdue.<sup>31</sup> Advocates looks forward to working with the Subcommittee and the U.S. DOT to optimize safety outcomes in a robust, expeditious and equitable manner.

#### **Additional Safety Solutions Must be Advanced**

Several bills introduced in this Congress would help address the unacceptable death and injury toll on our Nation's roads and should be enacted without delay. These include: Booster Seat Safety Act (H.R. 607); Complete Streets Act (S. 3670/H.R. 7082); DOT Victim and Survivor Advocate Act; End DWI Act (H.R. 8213); Mail Traffic Deaths Reporting Act (HR 7527); Pedestrian Hazard, Awareness and Safety Expansion (PHASE) Act (HR 6111); Save Our Pedestrians Act of 2024 (H.R. 7191); School Bus Safety Act (S. 2746); Shielding All Federal Employees and Consumers from Actionable Recall Situations (SAFE CARS) Act (H.R. 799); Used Car Safety Recall and Repair Act (S. 4053); and, She Develops Regulations In Vehicle Equality and Safety (She DRIVES) Act.

There are additional actions that Congress can take to address the public safety crisis on our Nation's roads. These include directing NHTSA to require promising vehicle safety technologies including blind spot detection (BSD), intelligent speed assistance (ISA) and rear AEB with cross traffic alert on all new vehicles. Moreover, AEB systems that can detect and respond to vulnerable road users such as bicyclists can help to mitigate and prevent additional crashes. The IIJA permitted Federal funding for automated enforcement (speed and red-light cameras) in work and school zones.<sup>32</sup> Congress should continue to encourage the use of this technology to address dangerous driving behaviors. Further, drugged impaired driving poses a significant threat to roadway users. Establishing roadside testing technology, accelerating research to determine a causal link and a standard for cannabis impaired driving, and substantial funding for law enforcement training can all help to address this deeply concerning and growing issue.

Unfortunately, several misguided measures introduced in this Congress would harm public safety and thus, should not become law. These include: No Kill Switches in Cars Act (HR 6563); the MOVE Act (HR 7496); Safer Highways and Increased Performance for Interstate Trucking (SHIP IT) Act (H.R. 471); Ceasing Age-Based (CAB) Trucking Restrictions Act (H.R. 267); Deregulating Restrictions on Interstate Vehicles and Eighteen Wheelers (DRIVE) Act (H.R. 3039); Licensing Individual Commercial Exam-takers Now Safely and Efficiently (LICENSE) Act (S. 1649/H.R. 3013); and, Safe Routes Act of 2023 (S. 1818/H.R. 2493).

#### **Experimental Autonomous Driving Technology Remains Unproven**

In stark contrast to the effectiveness of Federal standards and proven safety technology, cars equipped with automated driving system (ADS) technology, which includes autonomous vehicles (AV) and is unregulated, have been involved in numerous serious and deadly crashes.

Many of these incidents have been subject to investigation by the National Transportation Safety Board (NTSB) and NHTSA. Recently, NHTSA has announced investigations of Tesla's Autopilot System, Ford's Blue Cruise and the autonomous vehicle operations of Waymo and Zoox.<sup>33</sup> Furthermore, according to data collected by

<sup>30</sup> 89 FR 39686 (May 9, 2024).

<sup>31</sup> See Attachment A.

<sup>32</sup> Pub. L. 117-58, §24102 (2021).

<sup>33</sup> Tom Krisher, *US probes whether Tesla Autopilot recall did enough to make sure drivers pay attention*, AP Apr. 26, 2024). Natalie Neysa Alund, Mike Snider, *Feds open preliminary investigation into Ford's hands-free driving tech BlueCruise*, USA Today (Apr. 29, 2024); Peter

NHTSA's Standing General Order (SGO) 2021–1 requiring manufacturers to report certain crashes involving vehicles equipped with automated driving systems (ADS) or SAE Level 2 ADAS, approximately 598 crashes have involved ADS and 1,444 have involved ADAS. These include 33 crashes resulting in a fatality.<sup>34</sup>

In addition, several San Francisco transportation agencies submitted comments to the California Public Utilities Commission last year detailing numerous dangerous incidents involving AVs operating in the city.<sup>35</sup> These events include:

- Interfering with emergency response operations including 18 incidents documented by the San Francisco Fire Department in which AVs put firefighters and the public at risk.
- Making planned and unplanned stops in travel lanes that have interfered with transit service and blocked traffic.
- Intrusions into construction zones where City employees were working.
- Obstructions caused by AVs having to interpret and respond to human traffic control officers.
- Erratic driving.<sup>36</sup>

What San Francisco has been experiencing must not be replicated across the Nation by continuing to allow for the proliferation of AVs that do not comply with any Federal safety regulations setting minimum performance standards for the driverless technology and related systems. Many promises have been touted about AVs bringing reductions in motor vehicle crashes and resultant deaths and injuries, lowering traffic congestion and vehicle emissions, expanding mobility and accessibility, improving efficiency, and creating more equitable transportation options and opportunities. However, as Transportation Secretary Buttigieg and others within the auto industry have acknowledged, these outcomes are far from certain.<sup>37</sup> Last week, Secretary Buttigieg also noted that AVs need to be held to a higher standard, “The standard should be, don’t just be as good as a human driver. Be much, much better.”<sup>38</sup>

Supporters of AVs often assert that these vehicles will improve roadway safety by inaccurately stating that 94 percent of crashes are due to human error pointing to a report from NHTSA as support for this misleading claim. However, the agency stated in the same document with this statistic that “[a]lthough the critical reason is an important part of the description of events leading up to the crash, *it is not intended to be interpreted as the cause of the crash nor as the assignment of the fault to the driver, vehicle, or environment (emphasis added).*”<sup>39</sup> In addition, NTSB Chair Jennifer Homendy has declared that using the statistic in such a manner is “dangerous” and “[a]t the same time it relieves everybody else of responsibility they have for improving safety, including DOT.”<sup>40</sup> Proponents of AVs also have made the claim that these vehicles will prevent 90 percent of crash fatalities.<sup>41</sup> Yet, there is no credible research cited supporting such an assertion.

In sharp contrast to what is happening in the U.S., other countries are taking a more calculated, careful, and cautious approach to the development of AVs.<sup>42</sup> Often-repeated claims about the U.S. “falling behind” other countries in the “race” for AVs are simply not true nor supported by research. For example:

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Valdes-Dapena, *Waymo and Zoox are under Federal investigation as self-driving cars allegedly behave erratically*, CNN (May, 14, 2024).

<sup>34</sup> Totals by severity.

<sup>35</sup> San Francisco Comments to the Draft Resolution Approving Authorization for Waymo Autonomous Vehicle Passenger Service Phase I Driverless Deployment Program, R.12–12–011 (May 31, 2023). Available at: <chrome-extension://efaidnbmnnnnibpcajpcgclefindmkaj/https://sfstandard.com/wp-content/uploads/2023/06/SF-Comments-on-Waymo.pdf>.

<sup>36</sup> *Id.* at pgs. 9–11.

<sup>37</sup> Nilay Patel and Andrew J. Hawkins, Pete Buttigieg is Racing to Keep Up with Self Driving Cars. *The Verge* (Jan. 6, 2022); Rebecca Fannin, Where the billions spent on autonomous vehicles by U.S. and Chinese giants is heading, *CNBC* (May 23, 2022).

<sup>38</sup> Keith Laing, Bloomberg News, “Pete Buttigieg Says Robotaxis Must Become Safer Drivers Than Humans,” May 16, 2024.

<sup>39</sup> Singh, S. (2015, February). Critical reasons for crashes investigated in the National Motor Vehicle Crash Causation Survey. (Traffic Safety Facts Crash Stats. Report No. DOT HS 812 115). Washington, DC: National Highway Traffic Safety Administration.

<sup>40</sup> Hope Yen and Tom Krisher, NTSB chief to fed agency: Stop using misleading statistics, *Associated Press* (Jan. 18, 2022).

<sup>41</sup> Iyad Rahwan and Azim Shariff, Self-Driving Cars Could Save Many Lives. But Mental Roadblocks Stand in the Way. *Wall Street Journal* (Apr. 6, 2021).

<sup>42</sup> Autonomous vehicles: cross jurisdictional regulatory perspectives update, Oct. 7, 2022.

- China continues to require permits or restricts operations of AVs on its roads to only those areas approved by the authorities.<sup>43</sup>
- Germany continues to require permits, approvals, and limits areas of operation for AVs.<sup>44</sup>
- In Japan, the introduction of Level 4 vehicles is controlled and limited to specific areas, operations, and oversight.<sup>45</sup>
- The latest United Nations Economic Commission for Europe (UNECE) regulations limit operations to restrict risks and oversee approval through testing and other requirements.<sup>46</sup>

In sum, no country is selling fully automated vehicles for unfettered use to the public and by many accounts, none will be for a significant amount of time.<sup>47</sup> According to the most recent KPMG analysis, the U.S. ranks fourth in the world for AV readiness, while China stands at number twenty. In sum, the U.S. is not lagging other countries in allowing AVs to go to market, but we are behind in establishing comprehensive regulations to ensure public safety will not be jeopardized or diminished.

Considering the current inadequate performance of partial automation and fully autonomous technologies, it is unsurprising that the public has significant concerns. In February 2023, Advocates commissioned a public opinion poll which found that 83 percent of respondents were concerned with sharing the road with driverless cars. This number increased to 86 percent of respondents regarding driverless trucks.<sup>48</sup> Yet, 64 percent of respondents indicated that their concerns would be addressed if the vehicles were required to meet minimum government standards.<sup>49</sup>

#### **Autonomous Driving Technology Policy: Protecting Public Safety Must be First and Foremost**

Currently, AVs are being tested throughout the country, and companies are collecting data on their performance every day. AVs used solely for testing do not have to comply with current FMVSS, including those that provide occupant protection.<sup>50</sup> Additionally, companies already can apply for exemptions from FMVSS.<sup>51</sup>

Any Federal legislation that is advanced by Congress likely will set AV policy for decades to come and must include minimum standards to improve safety on our Nation's roads before these vehicles are sold in the marketplace. In the meantime, it is essential that NHTSA continues to collect and evaluate the data obtained through the SGO involving these technologies, as well as improve the reporting requirements in the SGO as enumerated in letters from members of Congress to the U.S. DOT.<sup>52</sup>

Additionally, state and local regulatory action on AVs, even though the Federal government has not taken regulatory action, must not be prohibited. As the incidents noted above in San Francisco demonstrate, fundamental and commonsense safeguards must be instituted for testing on public roads including the establishment of independent institutional review boards to certify the safety of the protocols and procedures for testing of AVs on public roads.

To identify a people-and-safety-first path forward on AVs, Advocates and numerous stakeholders developed the "AV Tenets." These sound and sensible policy positions should be a foundational part of any national AV policy. The AV Tenets are based on expert analysis, real-world experience, and public opinion. They have four main categories including: 1) prioritizing safety of all road users; 2) guaranteeing accessibility and equity; 3) preserving consumer and worker rights; and, 4) ensuring

<sup>43</sup> China drafts rules on use of self-driving vehicles for public transport; Aug. 8, 2022, Reuters; and Baidu bags China's first fully driverless robotaxi licenses, Aug. 7, Reuters. Real driverless cars are now legal in Shenzhen, China's tech hub, Jul. 25, 2022, TechCrunch+.

<sup>44</sup> Germany completes legal framework for autonomous driving | Federal Cabinet approves new ordinance, Apr. 2022, Malterer, M.

<sup>45</sup> Japan to open roads to autonomous vehicles in 2023, Nov. 28, 2022, Wessling, B., The RobotReport.

<sup>46</sup> New rules to improve road safety and enable fully driverless vehicles in the EU, Jul. 6, 2022, UNECE.

<sup>47</sup> Lawrence Ulrich, Driverless Still a Long Way From Humanless, N.Y. Times (Jun. 20, 2019); Level 5 possible but "way in the future", says VW-Ford AV boss, Motoring (Jun. 29, 2019).

<sup>48</sup> ENGINE'S CARAVAN SURVEY, Public Concern About Driverless Cars and Trucks (Feb. 2023).

<sup>49</sup> *Id.*

<sup>50</sup> 49 USC 30112(b)(10).

<sup>51</sup> 49 CFR 555.

<sup>52</sup> Letter from Reps. Schakowsky, Castor and Trahan to NHTSA Acting Administrator Ann Carlson (Feb. 28, 2023); Letter from Reps. Mullin, Eshoo, Pelosi, Diaz Barragan, Lee, DeSaulnier, Carson, Doggett, Peters and Carbajal to NHTSA Deputy Administrator Sophie Shulman (Apr. 11, 2024).

local control and sustainable transportation. They are supported by a coalition of more than 65 organizations representing consumers, public health and safety experts, pedestrians, bicyclists, disability rights activists, emergency responders, law enforcement, labor and others. Requiring that AVs meet minimum performance standards, including for cyber security, and that operations are subject to adequate oversight, including a comprehensive database accessible by vehicle identification number (VIN) with basic safety information, are fundamental prerequisites and will save lives and boost consumer confidence in this burgeoning technology.

### Conclusion

Thank you for your consideration of these critically important issues. All levels of government can and must do more to protect all road users by implementing the proven solutions afforded by a Safe Systems Approach. Conversely, any legislation to erode current safety protections must be rejected. As always, we are ready and willing to be of assistance to you in furtherance of our shared goal of improving safety.

Sincerely,

CATHERINE CHASE,  
*President.*

cc: Members of the U.S. Senate Committee on Commerce, Science, and Transportation

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### OVERDUE & AT-RISK SAFETY REGULATIONS

Statutory deadlines to issue final rules are in red.

All dates provided by agency for rulemaking actions are per the Fall 2023 Semi-Annual Regulatory Agenda and February 2024 Significant Rulemaking Report.

#### ***National Highway Traffic Safety Administration (NHTSA)***

- ***Rear Seat Belt Reminders (DUE—October 1, 2015)***
  - Advocates and Public Citizen filed Petition for Rulemaking on November 21, 2007.
  - NHTSA issued Request for Comments on Petition on June 29, 2010.
  - Mandated in MAP-21 (Sec. 31503).
  - Final Rule to be issued 3 years from date of enactment—October 1, 2015.
  - NHTSA granted Petition and issued NPRM on September 27, 2019.
  - NHTSA issued NPRM on September 7, 2023.
- ***Improved Child LATCH Restraint System (DUE—October 1, 2015)***
  - Mandated in MAP-21 (Sec. 31502).
  - Final Rule to be issued 3 years from date of enactment—October 1, 2015.
  - NHTSA issued NPRM on January 23, 2015.
  - NHTSA estimated that a Final Rule would be issued in December 2023.
- ***Crash Avoidance Technologies on Vehicle Label (DUE—December 4, 2016)***
  - Mandated in FAST Act (Sec. 24322).
  - Congressional deadline for issuance of Final Rule—December 4, 2016.
  - NHTSA estimated that a NPRM will be issued in 2023.
- ***Motorcoach Anti-Ejection Countermeasures (DUE—October 1, 2014)***
  - Mandated in MAP-21 (Sec. 32703(b)(2)).
  - Congressional deadline for issuance of Final Rule—October 1, 2014.
  - Final Rule requiring seat belts on intercity buses issued in November 2013.
  - NPRM issued regarding emergency exits, window retention and release and glazing for portals on May 6, 2016.
  - NHTSA estimates that a Final Rule will be issued in June 2024.
- ***Notification of Vehicle Safety Recalls Via E-mail (DUE—August 29, 2016)***
  - Mandated in FAST Act (Sec. 24104).
  - Congressional deadline for issuance of Final Rule—August 29, 2016.
  - NHTSA issued NPRM on September 1, 2016.
  - NHTSA estimated that a Supplemental NPRM would be issued in April 2024.

- *Corporate Responsibility For NHTSA Reports (DUE—December 4, 2016)*
  - Mandated in FAST Act (Sec. 24112).
  - NHTSA estimated that a NPRM would be issued in November 2023.
- *Retention of Safety Records by Manufacturers (DUE—June 4, 2017)*
  - Mandated in FAST Act (Sec. 24403).
  - Congressional deadline for issuance of Final Rule—June 4, 2017.
  - NHTSA issued NPRM on May 15, 2019.
  - NHTSA estimated that a Supplemental NPRM would be issued in December 2023.

#### ***Joint NHTSA/FMCSA Rulemakings***

- *Heavy Vehicle Speed Limiters*
  - Grant of Petition for Rulemaking—Mar. 18, 2011.
  - NPRM was issued on August 26, 2016.
  - FMCSA issued Supplemental ANPRM on May 4, 2022
  - FMCSA estimates that Supplemental NPRM will be issued in May 2024.

#### ***Federal Motor Carrier Safety Administration (FMCSA)***

- *New Entrant Assurance Process Proficiency Exam (DUE—April 1, 2014)*
  - Congress originally sought action in § 210 of the 1999 MCSIA.
  - FMCSA published an ANPRM in 2009.
  - MAP–21 (Sec. 32101(b)) requires a final rule be issued in 18 months—by April 1, 2014.
  - FMCSA estimates that Supplemental ANPRM will be issued in July 2024.

#### ***Rulemakings Withdrawn***

- *Mandatory Event Data Recorder Requirements*
  - NHTSA initiated rulemaking on Feb. 22, 2011.
  - NPRM issued on Dec. 13, 2012.
  - Rulemaking withdrawn February 8, 2019.
- *State Inspection of Passenger Carrying Vehicles*
  - Mandated in MAP–21 (Sec. 32710).
  - Requires FMCSA complete rulemaking to consider requiring states to annually inspect passenger carrying vehicles.
  - ANPRM published in April 2016.
  - Rulemaking withdrawn May 1, 2017.
  - RFC on withdrawal issued on May 10, 2022.
- *Evaluation of Drivers for Obstructive Sleep Apnea (OSA)*
  - FMCSA was considering regulatory actions that address the safety risks associated with drivers afflicted with non-treated OSA.
  - ANPRM was issued on March 10, 2016.
  - Rulemaking withdrawn August 8, 2017.

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ALLIANCE FOR AUTOMOTIVE INNOVATION  
Washington, DC, May 21, 2024

Hon. GARY PETERS,  
Chairman,  
Subcommittee on Surface  
Transportation, Maritime, Freight,  
and Ports,  
Committee on Commerce, Science, and  
Transportation,  
U.S. Senate,  
Washington, DC.

Hon. TODD YOUNG,  
Ranking Member,  
Subcommittee on Surface  
Transportation, Maritime, Freight,  
and Ports,  
Committee on Commerce, Science, and  
Transportation,  
U.S. Senate,  
Washington, DC.

Dear Chairman Peters and Ranking Member Young,

As you know, in 2023, almost 41,000 people died on American roadways. While we are grateful that the number of deaths on our roadways is slowly decreasing

after an increase during the pandemic, our goal remains to reduce this number to zero. As the leading voice of the auto industry, the Alliance for Automotive Innovation (Auto Innovators) appreciates the Subcommittee's focus on "Examining the Roadway Safety Crisis and Highlighting Community Solutions".<sup>1</sup>

Advocates, academics, and experts all recognize that a safe system approach to roadway safety is the best way to address the epidemic of roadway deaths. That system has five components: Safer Vehicles, Safer People, Safer Speeds, Safer Roads, and Safer Post Crash Care. This is a holistic approach to a complicated and multifaceted problem.

Automakers and automotive suppliers are doing their part to develop and advance innovations that make vehicles safer for occupants and other road users.

Our members continue to develop life-saving crash avoidance and crash worthiness technologies. This includes safety innovations such as seat belts, air bags, Automated Emergency Braking, camera-and GPS-based systems to detect speed limits and alert drivers if they exceed the posted speed limit, lane departure warnings, and lane keeping assist. Without these technologies in vehicles, deaths and serious injuries on our roads would be significantly higher.

However, vehicles must also operate within a system which, in some cases, is not designed with the safety of drivers, passengers, or vulnerable road users (pedestrians or cyclists) in mind. The traffic system may have poor signage or lighting, deteriorating or non-existent lane markings, or lack sidewalks or cycling lanes.

In addition, the vehicles must operate in a system where speed limits, reckless driving, or impaired driving may not be always enforced. The vehicles are operated by individuals who may not be fully informed about the safety technologies on their vehicles or on other vehicles. This problem requires all of us—local, state and Federal government, manufacturers and roadway users—to do our part to improve the system for roadway safety. Auto Innovators applauds the Subcommittee for focusing on this crucial topic. There is a public health crisis on our Nation's roadways. Only by working together to create a safe system will we be able to achieve a roadway system with zero deaths.

Sincerely,

GARRICK FRANCIS,  
Vice President of Federal Affairs.

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AMERICAN MOTORCYCLIST ASSOCIATION  
Washington, DC, May 21, 2024

Chairman Gary Peters and Ranking Member Todd Young:

Autonomous vehicle (AV) safety remains a significant concern for road users. Rulemaking from the National Highway Traffic Safety Administration (NHTSA) and the Department of Transportation (DOT) continues to sacrifice safety for technological flexibility. Further, these agencies often reject pressure from manufacturers to bring products to market without adequate testing.

The American Motorcyclist Association (AMA) has worked on the issue of autonomous vehicles with Congress and Federal agencies since the 1990s. Most recently, the AMA connected with NHTSA during rulemaking on the New Car Assessment Program and Automatic Emergency Braking (AEB). In 2015, the AMA submitted comments to NHTSA regarding implementing automatic emergency braking into its New Car Assessment Program (NCAP). These comments outlined concerns for NHTSA, including tests with motorcycles, size and weight calculations, and acceptable standards for AEB systems registering motorcycles. In 2022, the AMA again engaged with NHTSA on the NCAP AEB issue to outline motorcycle fatality data and urge NHTSA to include motorcycles in testing these systems.

*Throughout this rulemaking process, NHTSA admits it "does not have data on how AEB systems would respond to other vehicle types such as heavy vehicles or motorcycles."* Despite Congress allowing NHTSA to determine the appropriate effective date for this requirement, the agency moved forward without guaranteeing AEB technology will not negatively impact motorcyclists.

Overreliance on autonomous systems that integrate Advance Drive-Assistance Systems (ADAS)—along with advertising that fails to make the limitations of these features clear to drivers—is to blame for the dangerous situations we see on the road today. Tragic crashes are often a result of driver overconfidence in the capa-

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<sup>1</sup>Auto Innovators is the singular, authoritative, and respected voice of the automotive industry, representing motor vehicle manufacturers responsible for nearly 98 percent of cars and light trucks sold in the U.S., original equipment suppliers, technology companies, and others within the automotive ecosystem.

bility of autonomous systems to react. This technology also contributes to the increase in distracted driving accidents when operators allow the vehicle to assume the driving tasks. The rush to market AV technology creates concerns regarding readiness for real-world driving scenarios. Autopilot systems are under scrutiny, with Federal investigations initiated following issues involving autonomous systems in Tesla, Ford, Zoox and Waymo vehicles.

Recently, the Washington Post reported that according to NHTSA data, there have been 17 fatal incidents, five serious injuries and 736 crashes involving Tesla vehicles operating in Autopilot mode since 2019. Additional data from July 2021 to April 2023 by NHTSA from manufacturers show 281 crashes involving automated driving systems and 916 with ADAS. These include 21 crashes resulting in a fatality. These incidents highlight the challenge of ensuring driver attention given the limits of available technology. These systems must have the ability to identify and respond to various road conditions, including the presence of emergency vehicles.

AMA President and CEO Rob Dingman recognizes the potential of AV technology to enhance safety but expressed concerns about the rush to market without ensuring the highest safety standards throughout the development and implementation process.

“It is astounding that, despite clear and sensible safety recommendations and countless concerns raised by a large variety of stakeholders calling for regulations on this technology, it has taken a slew of recent accidents involving first responders to finally prompt the NHTSA to look at the severity of the issue,” Dingman said.

“The AMA and its Board believe that this technology can bring a greater measure of safety to motorcyclists and drivers, but we remain greatly concerned that the rush to market of driver-assist systems, semi-autonomous vehicles and highly-automated vehicles poses a significant threat to motorcyclists when the developers of this technology and the vehicle manufacturers are not held to the highest safety standards throughout the entire development and implementation process,” Dingman added.

There are currently approximately 9 million registered motorcycles in the U.S. The AMA feels strongly that AV legislation must include comprehensive safety standards, appropriate Federal government oversight and industry accountability. At a minimum, performance standards must include requirements that ensure driverless vehicles can properly identify and respond to roadway surroundings. This includes other cars, motorcycles, pedestrians and cyclists, and road markings and traffic signs.

We recommend, at minimum, proposed autonomous vehicle legislation include the following:

- Rulemaking—Set new standards specific to seeing, detecting and properly reacting to motorcycles;
- Testing—Ensure motorcycles are part of testing and development procedures;
- Advisory committees—Public user advisory committees should include a representative from the motorcycle community and a manufacturer or a separate motorcycle-specific advisory committee;
- Consumer education—Require a public, easily accessible, and searchable database where consumers can look up important safety information such as the limitations and capabilities of different products offered by AV manufacturers or service providers, as well as clarifications for marketing terms such as autopilot, super cruise, etc. For example, the database should inform consumers what each relevant automakers’ systems AutoPilot can and cannot do in terms of the driving task;
- Safety Evaluation Reports—AV manufacturers must be required to detail and make public how their vehicles identify motorcycles among other road users. Manufacturers must also include human error analysis in safety reports;
- Crash data/reporting—AV manufacturers must report incidents between AVs and motorcycles just as they would incidents between AVs and other road users. Manufacturers must also include human error analysis in crash data and reporting.

As the landscape of transportation evolves with the introduction of AV technology, addressing concerns surrounding safety, regulatory oversight and inclusion of motorcycles is paramount. Collaborative efforts between stakeholders, Federal agencies and advocacy groups are essential to mitigate risks and ensure the safe integration of AVs into the transportation ecosystem. Comprehensive data collection and analysis, along with proactive regulatory measures, are vital to fostering public trust and ensuring the safety of all road users amidst the advancement of AV technology. Considering motorcycles in regulatory frameworks and testing procedures is crucial

for enhancing road safety and preventing potential hazards associated with AV technology. The AMA urges legislators and Federal agencies to prioritize motorcycle safety in AV policy and guidelines.

Founded in 1924, the AMA is a nonprofit organization with 214,000+ members and represents more than 10 million motorcycling households in America. Our mission is to promote the motorcycle lifestyle and protect the future of motorcycling.

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NATIONAL LEAGUE OF CITIES  
Washington, DC, May 21, 2024

Hon. MARIA CANTWELL,  
Chair,  
Committee on Commerce, Science, and  
Transportation,  
United States Senate,  
Washington, DC.

Hon. TED CRUZ,  
Ranking Member,  
Committee on Commerce, Science, and  
Transportation,  
United States Senate,  
Washington, DC.

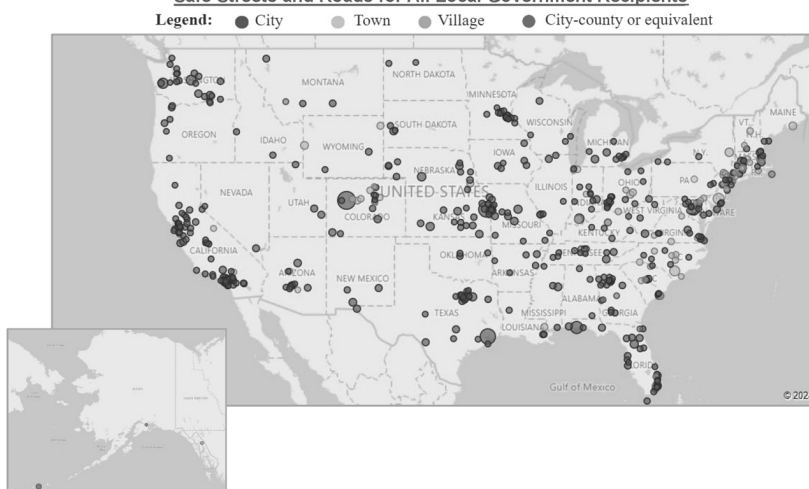
Dear Chair Cantwell and Ranking Member Cruz:

On behalf of America's 19,000 cities, towns, and villages, the National League of Cities (NLC), greatly appreciates the Committee's leadership in supporting the safety improvements in the Infrastructure Investment and Jobs Act (IIJA) such as the Safe Streets and Roads for All (Safe Streets) program and the Rail Crossing Elimination (RCE) program. Thank you for hosting today's hearing, *Examining the Roadway Safety Crisis and Highlighting Community Solutions*, to explore how we can continue to work together to address our Nation's transportation safety issues. Local governments of all sizes and states applaud your focus and commitment to transportation safety.

America loses more than 100 people each day in traffic crashes which is why NLC has committed to work to highlight safety improvements with local elected officials through our safety challenge, Federal application bootcamps, and extensive training sessions. With the Safe Streets program now available, local governments are able to honor the *more than 44,000 lives lost last year* by applying to be part of a national movement to solve this challenge that touches every state. While the Safe Streets program is a relatively small funding program by comparison to Federal highway safety programs, the 663 local governments who are participating in the Safe Streets program continue to share the significant value of solving safety challenges on all of the road network and working alongside state and Federal transportation partners to continue to reduce crashes and deaths nationally through a *safe system approach*.

It is notable that among the IIJA programs, the Safe Streets grants have attracted many smaller, disadvantaged, and mid-sized communities who are fiscally conscientious with their budgets and Federal grants. While local governments do not all have the same resources, we must reiterate strongly that having substantial resources to navigate the Federal maze of contracts and obligations should not be a prerequisite to partnering with the Federal government to meet a national need. Otherwise, Federal policy will continue to leave out a lot of pockets of America that need balanced resources the most. Congress proved that balance was possible when they utilized streamlined processes for the Treasury's *State and Local Fiscal Recovery Funds* which has contributed greatly to U.S. economic stability today. NLC continues to welcome bipartisan bills like Sen. Peters, Lankford, Cornyn, Braun and Sinema's—S.2286—*Streamlining Federal Grants Act of 2023*—which will improve the Federal administrative burden of applications to accomplish Congress' objectives. NLC also continues to highlight the need for Congress' support for the Federal technical assistance support programs, such as the *Thriving Communities program*, and intergovernmental outreach efforts to connect with communities consistently and directly.

**NLC Rebuilding America: Tracking Federal Investment in Local Infrastructure Projects –  
Safe Streets and Roads for All Local Government Recipients**



As with all sectors, technology offers great promise for transportation safety, but NLC must request this Committee's oversight of safety challenges in both semi-autonomous vehicles today and future autonomous vehicles (AVs) as well as your support for National Highway Transportation Safety Administration (NHTSA) staff capacity to address this expanding area. The current environment of AVs on the road injuring pedestrians, hitting buses, and disrupting emergency personnel makes it abundantly clear that more safety checks are needed. Deployment of AVs could move faster and more safely with *collaborative testing relationships with cities and regions that enhance mobility options* while reducing emissions, crashes and congestion. Local officials widely support a competitive American economy that *embraces technology like AVs*, but we must integrate them in a manner that ensures safe operations if we want to reduce road deaths and injuries.

NLC thanks the Committee for creating the Rail Crossing Elimination program and also for passing the Railway Safety Act of 2023 (S.576) out of Committee swiftly. America's *cities, small towns, governors, counties, first responders, and railroad customers* have spent the last year sharing with Congress how helpful rail safety legislation would be as we learn from train derailments not just East Palestine, but *Paulsboro, NJ; Maryville, TN; and so many others*. The RCE program continues to show great progress in improving transportation safety at rail crossings like in *Fairfield, OH*, but not all communities can cost effectively build overpasses or underpasses. More communities remain concerned about the safety of rail crossings where overpasses and underpasses may not be feasible so more innovative solutions may be needed especially where trains consistently *block road crossings* without consequences. Additionally, it is notable that the costs for rail crossing infrastructure improvements have *increased* along with highly volatile railroad project estimates so continuing to cost-stabilize and advance rail safety improvements remains a key opportunity for further collaboration for Congress, the Federal Railroad Administration, and communities with our railroad partners.

We look forward to continuing to work with this Committee to advance safer roads and save lives together.

Sincerely,

CLARENCE E. ANTHONY,  
*CEO and Executive Director,*  
National League of Cities.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. BRIAN SCHATZ TO  
SAM KRASSENSTEIN

*Question 1.* The National Highway Traffic Safety Administration (NHTSA) is currently working on a number of rulemakings, including some that were mandated as part of the *Infrastructure Investment and Jobs Act*. Which rules will have the greatest impact on safety and should be prioritized by NHTSA?

Answer. I am not deeply familiar with the specifics of NHTSA's rulemakings, but the agency has number of ongoing rulemakings that appear to have strong potential to save lives on our roads. We are supportive of rules that encourage more equitable uses of Federal funds and create incentives to address the most critical and dangerous road segments, not to just spend funding where convenient and easy. For example, the proposed changes to HSIP to require community participation in funding decisions have the potential to shift the impact of those funds away from thinly veiled state of good repair projects to projects that truly address road safety.

*Question 2.* The *Infrastructure Investment and Jobs Act* includes a provision that I authored to require that states publish vulnerable road user safety assessments, which reports on incidents involving vulnerable road users and on countermeasures. How should public and private sector actors use this information to improve road safety?

Answer. Vulnerable road users—including pedestrians, bicyclists, and others outside of motor vehicles—account for a concerning and growing share of fatalities on our roadways. Across the country, even as traffic fatalities in 2022 decreased by 1.7 percent as compared to 2021, fatalities for people walking still increased by 0.7 percent. See *NHTSA's Traffic Safety Facts: Overview of Motor Vehicle Traffic Crashes in 2022*. The Vulnerable Road User Safety Assessments required under the Infrastructure Investment and Jobs Act (IIJA) require each state to meaningfully analyze vulnerable road user fatalities and serious injuries by evaluating the data associated with those serious and fatal crashes and by considering the demographics of the locations where these crashes occurred. As part of the assessment, IIJA also requires the states to identify areas that are high risk to vulnerable road users and to include a program of projects or strategies that will reduce the risk to vulnerable road users in the identified high-risk areas.

Both the public and private sectors may then use the results from these data-driven assessments when identifying projects for implementation. Planners, agency decisionmakers, the community at large, and others all can use the results of these assessments to select projects that will have the biggest impact on saving lives and that will provide communities with roadways where vulnerable road users feel safe and comfortable when moving about. Moreover, IIJA added a new vulnerable road user "special rule," requiring States with annual vulnerable road user fatalities that make up 15 percent or more of the State's total annual crash fatalities to use at least 15 percent of their Highway Safety Improvement Program (HSIP) formula funds for safety projects that address vulnerable road user safety. See 23 U.S.C. 148(g)(3). The States that trigger that special rule may find projects to fund with their HSIP funds in the list of projects developed under the Vulnerable Road User Safety Assessment. These VRU assessments are critical for cities like Detroit that have a high number of State-owned roadways with a disproportionate number of road fatalities and serious injuries by Vulnerable Road Users to advocate for funds to be used to address those challenges directly.

*Question 3.* How can Federal transportation funding programs better incentivize safer infrastructure design?

Answer. The City of Detroit supports the continuation of transportation funding that is dedicated to safety and specifically supports the tremendous value of the Safe Streets and Roads for All program and its impact on road safety. We would like to see Congress and the USDOT develop additional incentives to incorporate road safety into all road projects. Efforts that incorporate the Safe System Approach—such as complete streets design principles—should be required for all projects using Federal funding, including projects that use funding annually apportioned to the States by formula. For many cities like Detroit with thousands of miles of legacy road infrastructure, the majority of investment comes in the form of state of good repair projects often funded through Federal formula apportionment funds. Under the current funding structure, road agencies are often left with an impossible choice of prioritizing state of good repair versus road safety. Building in safety requirements (which could include things as basic as 11-foot lane widths, high-visibility continental style crosswalks, and other low-cost pavement marking improvements) and community participation requirements as conditions of using Federal funding can help increase road safety and reduce road crashes and fatalities.

*Question 4.* What role does infrastructure design have in making autonomous vehicles safer? How should responsibility for this role be divided between levels of government?

Answer. Safe infrastructure design is critical for all road users, including those using autonomous vehicles. Continued coordination among multiple parties will be important as this new technology continues to evolve.

*Question 5.* Some vehicles are marketed as fully autonomous but do not yet have that capability. Do drivers of such vehicles adequately understand the limitations and capabilities of their vehicle's autopilot systems? If not, what should be done to increase consumer awareness of their responsibilities when behind the wheel of such vehicles?

Answer. The City of Detroit does not have a position on this issue.

*Question 6.* Autonomous vehicles (AVs) have the ability to collect and report detailed safety data. What additional data should NHTSA collect to assess AV safety? How can NHTSA better compare the safety of AVs and other vehicles?

Answer. Data is a key part of understanding safety issues on our roadways and in making improvements to address those issues. I do not have the background to recommend the data to collect from AVs and the methods of comparing safety of AVs and other vehicles. However, any opportunity to increase data collection that allows road agencies to address infrastructure challenges is a benefit. For example, there would be value to knowing where near miss incidents are occurring between Connected & Autonomous Vehicles and Vulnerable Road Users.

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RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. GARY PETERS TO  
SAM KRASSENSTEIN

*Question 1.* In your testimony you mentioned some of the engagement of local Detroit small businesses in your roadway safety strategy. Can you speak to the local economic impacts that roadway safety improvements have had in Detroit neighborhoods that receive them? What strategies for engaging private stakeholders in roadway safety planning have been more effective?

Answer. Roadway safety improvements completed through the Detroit's Streetscape program have created vibrant corridors of small businesses throughout the City. The idea behind the streetscape program was to create commercial corridors that were comfortable for people to walk around in order to spur economic development. Corridors like Livernois, McNichols, Kercheval, and Bagley where the City invested in traffic calming and streetscaping resulted in increased private investment for residential and commercial development ranging from new apartment buildings, restaurants, and art galleries. Before each streetscape project, the City completed extensive community engagement through surveys, stakeholder interviews, and public meetings to determine what type of improvements were most suitable for each neighborhood.

*Question 2.* We discussed Safe Streets for All grants in the hearing, and I think they are essential for expanding state and local capacity to improve safety on existing roads. But it's not enough to do safety after the fact—we need to be building safe systems approaches into our streets the first time around. What are some suggestions you have for how Congress and the Department of Transportation can ensure that new roads and transportation systems are designed with safety in mind?

Answer. The City of Detroit agrees with the tremendous value of the Safe Streets for All program and its impact on road safety. Congress and USDOT should develop ways to continue to incentivize road safety for all road projects. Safe systems approaches such as complete streets design principles should be required for all projects using Federal funding including projects funded through annual formula appropriations. For many cities like Detroit with thousands of miles of legacy road infrastructure, the majority of investment comes in the form of state of good repair projects often funded through Federal apportionment funds. Road agencies are often left with an impossible choice of prioritizing state of good repair versus road safety. Building in safety requirements (which could include things as basic as 11-foot lane widths, high-visibility continental style crosswalks, and other low-cost pavement marking improvements) and community participation requirements as conditions of using Federal funding can help increase road safety and reduce road crashes and fatalities.

*Question 3.* As Chair of the Motorcycle Caucus, I am concerned with local and Federal efforts to improve motorcycle safety. How has motorcycle safety factored into Detroit's roadway safety planning? Has the City undertaken any educational or awareness-raising efforts regarding sharing the road?

Answer. Motorcycle Safety is an extremely important issue within Detroit. Between 2017 and 2022, 325 people were killed or seriously injured in motorcycle crashes in Detroit. We created a transportation plan called Streets for People based on creating safe streets for all road users, including motorcyclists. The City of Detroit is also paying attention to the recent creation of the NHTSA Motorcyclist Advisory Council for recommendations on education and awareness-raising efforts we could implement in Detroit. We're supportive of programs that improve motorcycle awareness and promote training of riders.

*Question 4.* In your testimony you discuss the importance of inter-jurisdictional collaboration in safe street interventions. One recommendation you have is including flexibility on Safe Streets For All Grant match requirements to incentivize interest and cooperation. Can you expand on that recommendation and any other steps you think Congress could take to better support and incentivize inter-jurisdictional collaboration on roadway safety priorities?

Answer. Detroit, like many cities, has roads within its boundaries that are not under its jurisdiction, belonging to either the County or the State Road Agencies. Often these streets are the largest arterial roads where the most dangerous crashes occur. As noted in my written testimony, 80 percent of all crashes in Detroit occur on 3 percent of streets, and 34 percent of those crashes resulted in death or serious injury from 2017 to 2020. The streets making up Detroit's High Injury Network tend to be wide, overbuilt streets that encourage speeding with few opportunities for people to cross the street safely. These also tend to be streets not under Detroit's jurisdiction but instead belonging to Wayne County or Michigan DOT. As for the match requirements, I recommend that incentives, such as waived the match requirements in disadvantaged communities, be added to encourage cross-agency collaboration for addressing dangerous streets under State or County jurisdiction. I would also recommend building safety & community participation requirements into Federal Road funding programs to encourage collaboration between road jurisdiction owners and localities.

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RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. BRIAN SCHATZ TO  
LAURA CHACE

*Question 1.* The National Highway Traffic Safety Administration (NHTSA) is currently working on a number of rulemakings, including some that were mandated as part of the *Infrastructure Investment and Jobs Act*. Which rules will have the greatest impact on safety and should be prioritized by NHTSA?

Answer. It is critical that NHTSA act as quickly as possible to finalize all rulemakings, including crash avoidance and impaired driving technology, that will improve the safety of all road users. ITS America has been supportive of the four additional technologies that NHTSA proposed updating the New Car Assessment Program (NCAP), including blind spot detection, blind spot intervention, lane keeping support, and pedestrian automatic emergency braking.<sup>1</sup> Furthermore, NHTSA should finalize the proposed rule and Federal Motor Vehicle Safety Standard (FMVSS) requiring the inclusion of lane departure warnings and lane-keep assist systems in new passenger motor vehicles.

NHTSA should also focus more attention on safety technologies such as vehicle-to-everything (V2X) communications and should prioritize inclusion of V2X in NCAP. Importantly, this regulatory action to support V2X deployment would signal support for the technology to American automakers. NHTSA should also consider developing an "if-equipped" standard for V2X in passenger vehicles. The National Transportation Safety Board (NTSB) first recommended in 2013 that NHTSA require V2X in new vehicles after identifying additional fatal crashes that could have been prevented by these technologies, and it continues to call for the technology's inclusion in new vehicles.

*Question 2.* The *Infrastructure Investment and Jobs Act* includes a provision that I authored to require that states publish vulnerable road user safety assessments, which reports on incidents involving vulnerable road users and on countermeasures. How should public and private sector actors use this information to improve road safety?

Answer. Vulnerable road users (VRUs) are increasingly at-risk on our roads, and we must use every tool in our toolbox to proactively address this safety crisis. VRU safety assessments are an important way for state and local transportation agencies to gather information about injuries and fatalities on their roads and devise data-

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<sup>1</sup> Docket No. NHTSA-2021-0002; <https://www.nhtsa.gov/sites/nhtsa.gov/files/2022-03/NCAP-ADAS-RFC-03-03-2022-web.pdf>

driven plans and countermeasures to prevent future harm. ITS America is grateful for Senator Schatz's leadership on this important issue.

The VRU safety assessments should be used to help inform future planning decisions, roadway design, and any other changes to physical or digital assets to make roadways safer for all users. For example, public and private sector entities should be using the data from the assessments to determine which technology tools would be helpful in preventing future injuries and fatalities—such as retiming traffic and crosswalk signals, installing sensors near bike lanes, or investing in V2X communication technology.

*Question 3.* How can Federal transportation funding programs better incentivize safer infrastructure design?

Answer. To reach Vision Zero, we must reimagine Federal transportation funding programs and how we prioritize infrastructure investments. In the 21st century, our transportation system is no longer just asphalt, concrete, and steel—it is made up of sensors, cameras, data, and software. Federal transportation funding programs can incentivize safer infrastructure design by providing substantial and certain funding for transportation technology and incorporating technology into USDOT policies and infrastructure planning processes.

Safe infrastructure and road design are key elements to reducing injuries and fatalities on our roads. Our transportation system requires a layered approach, combining hard and digital infrastructure, and technology can play a critical role in designing, building, and maintaining infrastructure.

ITS America members are using computer vision and machine learning tools to identify near-misses at intersections and dangerous patterns, giving agencies key insights into how they should redesign their roadway infrastructure to proactively prevent injuries and deaths. Transportation agencies are using AI to predict maintenance needs on bridges and identify potholes and cracks on asphalt roads, helping agencies make the most out of their limited resources to keep roads safe for all users. ITS America member Blynscy is working with Hawaii DOT to survey roads for cracks, striping issues, and physical damage using computer vision and cameras, then using AI machine learning to analyze imagery to make roadways safer and detect road degradation.

Given technology's integral role in a safe transportation and infrastructure system, Federal transportation policy must be updated and modernized to include transportation technology at every step of the process, from planning to construction to operations and maintenance. Safer infrastructure design starts with planning, and we can plan better by using AI and digital tools that help agencies collect data, design intersections, and plan future infrastructure construction. Digital infrastructure tools provide valuable insights to local transportation authorities on how to best manage their system and design safer roads in a cost-effective way. Broader deployment of these technologies would lead to measurable and meaningful safety outcomes.

Safer infrastructure and roadway design can come in the form of Complete Streets that go beyond just the physical elements and use technology to reduce congestion, enhance traffic efficiency, and improve safety by minimizing interactions between vehicles and vulnerable road users. Smart traffic management systems, for instance, utilize real-time data and sensors to monitor traffic flow and adjust signal timings accordingly. AI-powered decision support tools for state, local, and tribal transportation agencies can help assist in the siting and deployment of Complete Streets.

*Question 4.* What role does infrastructure design have in making autonomous vehicles safer? How should responsibility for this role be divided between levels of government?

Answer. Automated vehicles (AVs) rely on collecting and processing information about their surrounding environment quickly and accurately to drive safely on the road. Without sufficient and maintained infrastructure, AVs may not have the correct or sufficient information to make informed driving decisions. Infrastructure needs to support communication between vehicles (V2V) and infrastructure (V2I), allowing AVs to exchange information with each other and traffic signals, in effect making them connected automated vehicles. AVs rely on cameras, lidar, and radar to perceive surroundings, so it is critical that infrastructure is designed in a clear, visible way for AVs (*i.e.*, lane markings, traffic signs, signals).

NHTSA and the Federal government have the capability to be the leading regulators on AV safety and infrastructure, but their inaction has transferred responsibility to state and local governments who should not be responsible for regulating the safety of vehicles. Local governments can and should continue to ensure that local road infrastructure can support AV deployment. ITS America supports the release of a Federal AV safety framework such as NHTSA's AV STEP, though we are

uncertain about the status of this framework. We encourage NHTSA to meaningfully engage with public sector regulators and private sector technology developers to develop such a framework. A national standard for infrastructure design and communication requirements for AVs would assist with deploying AVs safely at a wider scale.

*Question 5.* Some vehicles are marketed as fully autonomous but do not yet have that capability. Do drivers of such vehicles adequately understand the limitations and capabilities of their vehicle's autopilot systems? If not, what should be done to increase consumer awareness of their responsibilities when behind the wheel of such vehicles?

*Answer.* It is important that language describing a vehicle's capabilities be clear and transparent to its occupants. Public education regarding the uses, differences, and driver responsibilities surrounding Advanced Driver Assistance Systems (ADAS) and Automated Driving Systems (ADS) will enhance the safety benefit of those technologies while preventing misuse. Further consumer awareness about ADAS and ADS is needed to ensure that drivers know their responsibilities when getting behind the wheel. NHTSA is well positioned to lead a public education campaign on the differences between ADAS and ADS that speaks to a consumer audience in clear, non-technical, non-marketing terms.

ADAS falls into automation Levels 0–2 where drivers maintain responsibility for the vehicle, ranging from the driver always maintaining control to the vehicle taking control of speed and changing lanes in certain conditions, with drivers ready to take control quickly at any moment. The term ADS refers to Levels 3–5 of autonomy, with Levels 4 and 5 operating without the need for a human driver present. These AVs are meant to operate without human input, designed to strictly obey traffic laws, follow speed limits, and come to complete stops at red lights or stop signs.

The absence of Federal leadership on AVs from NHTSA has further increased the possibility for misuse and misunderstanding of automated technologies in vehicles. To increase consumer awareness and acceptance, NHTSA needs to provide leadership by working with industry and state and local governments on an AV safety framework and not relying on a patchwork on state and local laws.

*Question 6.* Autonomous vehicles (AVs) have the ability to collect and report detailed safety data. What additional data should NHTSA collect to assess AV safety? How can NHTSA better compare the safety of AVs and other vehicles?

*Answer.* Data collection is vital to the safety of AVs and their passengers, and it provides valuable insights for surrounding infrastructure improvement. Measuring the impact of AVs and ADS technology in real-world scenarios will require greater collection of publicly accessible data about automated driving operations. NHTSA issued the Standing General Order (SGO) for AV safety data nearly two years ago and should seek more public input by issuing a Request for Information (RFI) to update the SGO reporting requirements. Data collection should also clearly differentiate between road classifications and local conditions, particularly incidents involving Level 2 ADAS and Level 4 ADS. By issuing an RFI, NHTSA will be able to confer with various stakeholders on what should be added and/or removed from the current SGO process to create the most informed environment when addressing ADAS and ADS safety.

The current SGO crash reporting requirements do not include vehicle miles traveled (VMT) or crash location data, which limits the ability to estimate crash occurrence rates and fully understand crash causes. Collecting this type of data would not only help assess AV safety but also provide a better understanding of the safety comparisons between AVs and human-operated vehicles.

The safety benefits of AVs compared to other types of vehicles are well established. AVs do not get drowsy, drunk, or distracted like human drivers often do behind the wheel. Fatigue, distraction, and impairment cause thousands of preventable crashes, injuries, and deaths every year on American roads. It is important that NHTSA recognize these inherent safety benefits of AVs and take a stronger leadership role in the regulation and deployment of AVs on the road. Continuing to make progress on the AV STEP program and safety frameworks would be a great way forward for broader deployment and more regulatory certainty.

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RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. GARY PETERS TO  
LAURA CHACE

*Question 1.* As you know, Ranking Member Young and I have advocated for connected vehicle technology and the many safety applications it can offer—from school bus safety to collision warnings for vulnerable road users. I know ITSA has been

engaged on the Department of Transportation's draft National V2X Deployment Plan. Furthering adoption of C-V2X technology requires leadership and coordination from within the Department. In your testimony, you discuss the role of the Federal Highway Administration's ITS Joint Program Office on connected technologies. What more can and should NHTSA specifically be doing to promote deployment of connected technologies?

Answer. ITS America is grateful for Chairman Peters' and Ranking Member Young's leadership on the issue of V2X and steadfast support for deploying transportation technology. ITS America is also grateful for the efforts of the Federal Highway Administration, ITS Joint Program Office, and OST-R in championing V2X across the Administration and creating the draft National V2X Deployment Plan. However, NHTSA has not been an active participant in the public conversation on V2X and must engage more robustly to spur deployment at-scale. In its position as the motor vehicle safety regulator, NHTSA should provide more leadership to the transportation industry, and the automotive sector in particular, through clear communication that V2X should be a priority. NHTSA should continue to collaborate with the industry on V2X and ensure strong participation in the implementation of USDOT's soon-to-be-published National V2X Deployment Plan. The National Transportation Safety Board (NTSB) first recommended in 2013 that NHTSA require V2X in new vehicles after identifying additional fatal crashes that could have been prevented by these technologies, and continues to call for the technology's inclusion in new vehicles. NHTSA has the opportunity to step forward and play a significant role in deploying V2X at scale.

Through the New Car Assessment Program (NCAP), NHTSA can take regulatory action to support V2X deployment. The inclusion of V2X within NCAP would be a clear way for NHTSA to signal support to American automakers for incorporation within new vehicle models. The necessity of V2X inclusion has already been accepted by global automakers in the Chinese market, and Europe's Euro NCAP has recognized the safety potential for V2X technologies. The data on the safety, efficiency, and environmental benefits provided by these technologies has been made clear to global regulators, and the benefits associated with V2X deployment are not new to NHTSA. Harnessing the innovation of connected technologies could produce better safety outcomes for all road users. It is time that NHTSA fully signal their support for V2X deployment by including these technologies in NCAP. As another signal to automakers and the public, NHTSA should also consider developing an "if-equipped" standard for V2X in passenger vehicles.

*Question 2.* In your testimony you point out that transportation stakeholders are still waiting for a final rule from the FCC outlining how C-V2X technologies should be deployed to maximize effectiveness and reduce interference in the 5.9 giga-Hertz band. What challenges do you believe a forthcoming FCC rule on this issue needs to address in order to better facilitate deployment? What role can and should the Department of Transportation play in working with the FCC on this?

Answer. USDOT has been working very closely with the FCC on key issues for the Second Report and Order, including interference. It is critical that the FCC takes the steps that the Department has been clearly articulating to protect safety messages from harmful interference from unlicensed devices and limit the use of adjacent spectrum on either side of the 5.9 GHz until potential impacts are fully understood.

The FCC should issue the Second Report and Order before the end of the year to provide regulatory certainty to OEMs and IOOs looking to deploy C-V2X technology. Regulatory certainty is necessary to spur public and private sector investment in V2X technologies. When deployed, V2X technologies have the potential to produce better safety outcomes for road users and significantly reduce the number of fatalities. ITS America encourages the FCC to continue to have productive, engaging conversations with USDOT, NTIA, and other Federal policymakers to fully understand and address the needs of the transportation safety community, provide regulatory certainty, and allow unimpeded spectrum access that is necessary to reach the full potential of these technologies.

*Question 3.* In your testimony you discuss ITSA's efforts to ensure that certain advanced transportation technologies are included as eligible expenditures under Bipartisan Infrastructure Law programs. As you also noted, under the B-I-L, Congress created the SMART grant program specifically aimed at incorporating advanced technology into transportation systems. Over the next 2 years, as we begin to consider the next Surface Transportation Reauthorization bill, how would you recommend Congress approach balancing tailored discretionary programs with more integrated eligibility for technology in formula funds?

Answer. Transportation technologies that are seen today were not even contemplated when our country's infrastructure was constructed. Funding levels and policies need to be updated and modernized to include transportation technology at every step of the process to meet our country's economic and mobility needs. Funding stability for ITS and transportation technology is crucial to fully accessing safety benefits and improving the Nation's infrastructure.

ITS America proudly supports current discretionary grant programs, such as SMART and ATTAIN, which have helped spur the growth of safety-enhancing ITS technology. Many of our members have obtained funding through these programs to deploy transportation technology such as direct and networked V2X technology, open data standards for rural transit needs, wrong way driving countermeasures, and audio warnings at intersections for pedestrians. However, discretionary grant programs are insufficient to achieve the scale of deployment needed to make a measurable impact on the country's transportation system, as technology pilots and demonstrations are often limited under these programs in size, scope, and location.

While it is important that technology remains eligible under transportation formula programs, just expanding eligibility is not enough. ITS deployers at the state and local level need substantial and certain funding for technology to allow for deployment at scale. We must move to incorporate technology throughout the lifecycle of projects and into planning and asset management processes, strengthening the research and development of technologies, and advancing technology workforce development programs to reap the full safety benefits of transportation technology. This means providing Federal formula funding dedicated to transportation technology that can save lives and improve outcomes for road users.

ITS America encourages Congress to reevaluate how technology is funded under the Federal transportation programs, which is currently designed for physical infrastructure and does not adequately consider the procurement, maintenance, and operations needs of a technology-inclusive infrastructure system.

*Question 4.* I have been proud to work with Ranking Member Young on improving school bus safety—including the passage of the STOP for School Buses Act. Can you speak to what technological solutions to illegal passing of stopped school buses that have emerged, such as radar detection warning systems, audible warning systems, extended stop arms, and more?

Answer. School bus safety is paramount for children across the country. Far too many children are injured or killed each year by vehicles which illegally pass school buses on roads. ITS America is grateful for Chairman Peters and Ranking Member Young's efforts in the STOP for School Buses Act. This is a significant step forward in making sure students are safe when getting onto and off school buses.

Technology can play an important role in preventing injuries and fatalities with school buses, including onboard warning systems and extended stop arms with LED lights, adding another visual cue to nearby drivers.

V2X technology is another solution which can prevent student injuries and fatalities. V2X communications in school buses can give bus drivers advanced audible or visual warnings of oncoming traffic that may not be slowing down for the stopped bus. The bus driver can then delay opening the door if the vehicle cannot stop or alert children outside the bus to remain on the curb and avoid the oncoming vehicle. In each of these scenarios, connected vehicle technologies provide a digital layer of safety to keep students safe getting to and from school. Additionally, V2X communications within passenger vehicles can alert drivers when a school bus is present and/or stopped on the road, giving the driver advanced warning to slow down and come to a stop. V2X communications are especially important for objects that are out of the driver's line of sight, so a driver may receive alerts even when the school bus is not visible to them.

Sustained, widespread deployment of lifesaving V2X technology in school buses will help to significantly decrease the number of illegal school bus passings each year, while reducing the number of associated tragedies that occur on our roads.

*Question 5.* Many localities that are under resourced or lacking expertise may be less likely to adopt technology interventions as part of roadway safety planning. Do you believe there is a need for DOT to be involved in developing a clearinghouse of best practices for certain proven technology interventions or providing technical assistance to communities to suggest solutions that may work for them?

Answer. Absolutely. Education, workforce development, and technical assistance are key to upskilling transportation agencies today. Small, local agencies may not have the manpower or knowledge base to understand the benefits of the technology, how to procure it, how to deploy it, and how to navigate grant program applications like SMART, ATTAIN, and Safe Streets and Roads for All.

To that end, USDOT should work with stakeholders like ITS America to develop best practices and resources for deploying and procuring technology solutions that will bring safety benefits to communities of all sizes across the country. We must meet communities where they are in terms of their literacy regarding transportation technology and provide the resources to support them. We must prioritize continued investment in education, workforce development, and technical assistance to make sure localities understand the technology and how to deploy it. It is important the USDOT continue to be a leader in encouraging the adoption of proven technology tools and providing assistance to communities who want to adopt them.

We are grateful for the work of the USDOT's ITS Joint Programs Office (JPO) for their efforts to educate our transportation workforce through professional capacity building programs and other training initiatives. The ITS JPO's Smart Community Resource Center (SCRC) is a great resource that provides information and tools about smart communities and ITS technologies, deployment support, and links to USDOT funding opportunities that support deployment. This resource is an excellent blueprint for providing much-needed technical resources for states and localities looking to deploy technologies. As the adoption of AI technologies grows, it is more important than ever that Congress and USDOT put our transportation workforce ahead of the curve on using AI to make our transportation system safer, smarter, and more resilient.

The current transportation technology procurement process can be lengthy and onerous, especially for localities that may lack the resources and expertise, slowing down projects and threatening the efficiency of investment in technology solutions for safety. We have seen through our own members that procurement of ITS technology can be a barrier to deployment. Local transportation agencies need additional Federal guidance on standards, definitions, and best practices around technology procurement so that they are more likely to incorporate technology into roadway safety planning. When considering amendments to our current procurement process, we would recommend that Congress prioritize enhancing coordination between Federal, state, and local transportation policymakers, as well as improving procurement flexibility within Federal grant opportunities.

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RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. TED CRUZ TO  
LAURA CHACE

### **Connected Vehicles ANPRM**

On March 1, 2024, the Commerce Department's Bureau of Industry and Security released an advance notice of proposed rulemaking (ANPRM) requesting comments on issues related to connected vehicles (CVs) equipped with information and communications technology and services (ICTS) systems. The ANPRM proposes defining "connected vehicle" as "an automotive vehicle that integrates onboard networked hardware with automotive software systems to communicate via dedicated short-range communication, cellular telecommunications connectivity, satellite communication, or other wireless spectrum connectivity with any other network or device." Further, such vehicles "integrate hardware that enables connectivity within the vehicle and/or external connectivity."

*Question 1.* Please describe whether, in your view, it would be possible to manufacture such a vehicle exclusively of U.S. components.

Answer. The complexity of the global supply chain makes the production of connected, automated, and electric vehicles in the United States (or even North America) extremely challenging at present. Factors for this include extraction and refining of critical materials, consolidation of components manufacturing, speed of innovation in China vs. Western economies, and a concentration of chip-level technology in the Pacific Rim.

Any strategy focused on restoring America's technological edge in this vital sector for economic or national security reasons must focus on component level manufacturing deficits. There must also be an awareness that reshoring these capabilities will take several years in the best-case scenario and must remain nimble to retain pricing and innovation competitiveness with other regions of the world.

*Question 2.* Please describe whether, in your view, there are any vehicle types—such as electric vehicles—that would *not* meet the ANPRM's proposed definition.

Answer. The broad descriptions used in the wording of the ICTS ANPRM have the potential to apply to virtually every new vehicle on the road today.

*Question 3.* The ANPRM specifically focuses on ICTS products and services from persons "owned by, controlled by, or subject to the jurisdiction or direction of" cer-

tain foreign adversaries, including China, Cuba, Iran, North Korea, Russia, and Venezuela.

a. To what degree do your member companies utilize ICTS components from the countries listed above?

Our response depends on which component or system is in question. For technologies like Cellular Vehicle-to-Everything (C-V2X) technologies, a key aspect of ITS America's transportation connectivity efforts, the supply chain links can be more specifically articulated. There is no sole source Chinese supplier for C-V2X devices. In fact, the majority of Tier 1 and 2 suppliers in the C-V2X ecosystem are based outside of China. European, Japanese, and Korean suppliers are key players in the supply chain for C-V2X components.

b. Please describe any measures taken by your member companies to ensure the security and safety of vehicles containing ICTS components from the countries listed above.

Answer. Many component suppliers undergo rigorous and continuous third-party testing that includes binary analysis; integrated testing and remediation throughout the software development lifecycle; penetration testing (manual and automated); independent risk assessments; and comprehensive software transparency and reporting measures, such as the generation of Software Bill of Materials (SBOMs) and Vulnerability Exploitability eXchange (VEX) for software products. Components that undergo such tests prior to deployment would significantly eliminate any opportunities that might otherwise exist for foreign adversaries to leverage their influence to insert vulnerabilities allowing for future backdoor attacks once deployed in connected vehicles. Many component suppliers also voluntarily comply with the FCC's Cyber Trust Mark program and have obtained the Cyber Trust Mark designation.

*Question 4.* In general, how would restricted access to foreign-made components or systems impact the American automobile industry, including vehicle costs, employment, and overall competitiveness?

a. How would such restrictions potentially impact the tripartite auto manufacturing supply chain throughout the U.S., Mexico, and Canada?

Answer. Given the limited domestic manufacturing capabilities of many of the components needed in the automotive sector, as well as the components needed to supply life-saving transportation technologies, overly-broad component importation regulations in this space could significantly hamper our capabilities in both sectors. ITS America recommends that the Department of Commerce work with other Federal stakeholders to create a program in which Federal partners and industry can collaborate on identifying potential vulnerabilities and react to them in a practical way that doesn't cripple supplies of vehicles or lifesaving technologies to consumers. There needs to be practical glide paths to extricate systems or vehicles from vulnerabilities that weren't known in advance.

Any additional regulations pertaining to OEMs or the transportation industry writ large should be structured in a way which would account for the lengthy production cycle associated with automotive product design and manufacturing, which connectivity technologies are subject to. When considering an application for a temporary authorization as described in question 27 of the ANPRM, the Department should review whether the automotive manufacturer has demonstrated commitment to and compliance with particular privacy and security best practices, particularly as it relates to any ICTS components that have been supplied by persons owned by, controlled by, or subject to the jurisdiction or direction of 15 CFR 7.4 countries.

To facilitate this, the Department may want to consider developing a trusted partner program by which an automotive manufacturer could demonstrate such commitment and compliance. Once an automotive manufacturer has been admitted into the trusted partner program, it can self-certify continued compliance with the program requirements. Additionally, ITS America recommends that the Department consider moving towards setting cybersecurity standards for ICTS hardware and software, promote further development of requirements on organizational, processes, technical and methods to ensure cyber security for vehicles and the National Institute of Standards and Technology's (NIST) Cybersecurity Framework, and support OEM participation in cross-industry collaboration (Auto-ISAC) to address risks and vulnerabilities in cooperation with national authorities.

*Question 5.* To your knowledge, have any American connected vehicles, as defined by the ANPRM, been compromised by a foreign adversary in a manner that would affect the safety or security of the United States? If yes, please describe any incidents.

Answer. To our knowledge, no American connected vehicle, as defined by the ANPRM, has been compromised by a foreign adversary in a manner that would affect the safety or security of the United States.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. BRIAN SCHATZ TO  
JAKE NELSON

*Question 1.* The National Highway Traffic Safety Administration (NHTSA) is currently working on a number of rulemakings, including some that were mandated as part of the *Infrastructure Investment and Jobs Act*. Which rules will have the greatest impact on safety and should be prioritized by NHTSA?

Answer. The HALT Act, included in the *Infrastructure Investment and Jobs Act*, set a deadline for NHTSA to issue a final rule *Advanced Impaired Driving Prevention Technology* by November 15, 2024. The agency will miss this deadline, delaying the implementation of what could be the most effective vehicle safety measure since the seatbelt. The Insurance Institute for Highway Safety estimates that alcohol-detection systems preventing drivers with BAC levels of 0.08 or higher could save about 10,000 lives annually once fully implemented in U.S. passenger vehicles. This rulemaking stands to have the greatest impact on safety and should be prioritized by NHTSA.

*Question 2.* The *Infrastructure Investment and Jobs Act* includes a provision that I authored to require that states publish vulnerable road user safety assessments, which reports on incidents involving vulnerable road users and on countermeasures. How should public and private sector actors use this information to improve road safety?

Answer. AAA supports state safety data systems that allow for the identification of transportation safety investments not only on the basis of crash experience or crash rate, but also on the basis of crash potential. Using an inventory of roadway attributes or other data-supported means can help predict where states can target projects to maximize opportunities to advance safety before traffic injuries and deaths occur in those locations, especially to help protect vulnerable users of the transportation system. Proactive systemwide deployment of safety countermeasures in this fashion is a key tenet of the Safe System Approach, which has significantly reduced traffic deaths in developed nations like Australia (47 percent) and Spain (80 percent).

*Question 3.* How can Federal transportation funding programs better incentivize safer infrastructure design?

Answer. AAA strongly supports requiring rather than incentivizing states using Highway Safety Improvement Program funds to prioritize projects that have the greatest potential to reduce the State's roadway fatalities and serious injuries. Safety data should drive the targeting of Federal funding to advance safety where needed most. Whether a state is upgrading or expanding existing infrastructure, or building out new infrastructure, finding opportunities to maximize safety of system users should be required.

*Question 4.* What role does infrastructure design have in making autonomous vehicles safer? How should responsibility for this role be divided between levels of government?

Answer. The American Society of Civil Engineers' most recent infrastructure report card gives America's roads a "D" and bridges a "C" and finds that 46,154 bridges in the country are structurally deficient. The U.S. has underfunded its transportation infrastructure for several years, resulting in a backlog of road and bridge repairs. Traditional vehicles and automated driving systems will both benefit from infrastructure investments that bring roads and bridges into a good state of repair.

Additionally, the Federal Highway Administration (FHWA) released a Tech Brief entitled *Impacts of Automated Vehicles on Highway Infrastructure*, in which they conducted a comprehensive literature review, engaged with highway infrastructure owners and operators (IOOs), and interviewed industry experts and key stakeholders to document the potential impact of AVs on highway infrastructure. According to their findings "pavement markings are the foremost physical infrastructure priority for IOOs in supporting AV deployment."<sup>1</sup> Specifically, FHWA notes "Pavement markings should be designed to be visible and detectable in dry and wet conditions during both daytime and nighttime."

AAA recognizes the Federal government plays a critical role in guiding a comprehensive strategy for national automated vehicle deployment. With regards to infrastructure investment that will benefit the safe deployment of the ADS this will

<sup>1</sup> Federal Highway Administration Report *Impacts of Automated Vehicles on Highway Infrastructure* (FHWA-HRT-21-015) (Gopalakrishna *et al.*, 2020). Retrieved from: <https://www.fhwa.dot.gov/publications/research/infrastructure/pavements/21051/index.cfm>

require collaboration between U.S. DOT agencies, state departments of transportation, and local and municipal governments.

*Question 5.* Some vehicles are marketed as fully autonomous but do not yet have that capability. Do drivers of such vehicles adequately understand the limitations and capabilities of their vehicle's autopilot systems? If not, what should be done to increase consumer awareness of their responsibilities when behind the wheel of such vehicles?

Answer. According to AAA survey research, most U.S. drivers feel either fearful (66 percent) or uncertain (25 percent) about the prospect of fully self-driving vehicles, a fear that has not decreased since spiking last year in 2023.<sup>2</sup> This perception could stem from misleading or confusing names of vehicle systems that are on the market. AAA found that 22 percent of Americans expect driver support systems, with names like Autopilot, ProPILOT, or Pilot Assist, to have the ability to drive the car by itself without any supervision, indicating a gap in consumer understanding.

However, interest in semi-autonomous technologies like Automatic Emergency Braking (AEB) and Lane Keeping Assistance remains high. The auto industry should continue advancing vehicle technologies consistently and reasonably to alleviate concerns. For example, industry stakeholders should be consistent in how these technologies are named and described so as to alleviate confusion among consumers.<sup>3</sup>

It's also important that consumers understand the capabilities and limitations of these systems. AAA Foundation research shows that false expectations for ADAS can lead to misuse and driver distraction.<sup>4</sup> Survey findings include:

- Blind Spot Monitoring—80 percent of drivers are unaware of its limitations or wrongly believe it monitors behind the vehicle or reliably detects bicycles, pedestrians, and fast-moving vehicles.
- Blind Spot Monitoring/Rear Cross-Traffic Alert—25 percent of users rely solely on these systems, neglecting visual checks or shoulder checks.
- Forward Collision Warning/Automatic Emergency Braking—Nearly 40 percent of drivers are unaware of their limitations or confuse the technologies, with some believing forward collision warning can apply brakes. About one in six vehicle owners don't know if their vehicle has automatic emergency braking.
- Forward Collision Warning/Lane Departure Warning—25 percent of users feel comfortable engaging in other tasks while driving.

Auto manufacturers should stop overselling and underdelivering on these technologies. Instead, they should take care to use more accurate wording to name and describe what these technologies do and under which conditions they may not function as designed.

*Question 6.* Autonomous vehicles (AVs) have the ability to collect and report detailed safety data. What additional data should NHTSA collect to assess AV safety? How can NHTSA better compare the safety of AVs and other vehicles?

Answer. Safety should never be compromised to hasten automated vehicle deployment. Currently, the National Highway Traffic Safety Administration (NHTSA) requests Voluntary Safety Self-Assessments (VSSA) from industry that outline how they address automated vehicle safety. While these voluntary documents have provided critical information to the public on how safety is being addressed during the development of ADS, they lack sufficient details on testing results and vehicle design considerations being contemplated. In order to more fully inform the public of safety parameters put into place for ADS, future efforts or Federal legislation should mandate that safety self-assessments capture any incident that includes contact with another vehicle, vulnerable road user or stationary object, including video of the scenario and supporting sensor data. Mandatory safety self-assessments should be issued before an ADS developer tests on public roads.

ADS manufacturers should also notify NHTSA about changes to the vehicle's capabilities before it is deployed on public roads. This recommendation coincides with recommendations from the National Transportation Safety Board, which also rec-

<sup>2</sup>Fear of Self-Driving Cars on the Rise. (2023). Retrieved from: <https://newsroom.aaa.com/2023/03/aaa-fear-of-self-driving-cars-on-the-rise/>

<sup>3</sup>CLEARING THE CONFUSION: Common Naming for Advanced Driver Assistance Systems. (2022). Retrieved from: <https://newsroom.aaa.com/wp-content/uploads/2022/07/Clearing-the-Confusion-One-Pager-New-Version-7-25-22.pdf>

<sup>4</sup>McDonald, A., Carney, C. & McGehee, D.V. (2018). *Vehicle Owners' Experiences with and Reactions to Advanced Driver Assistance Systems* (Technical Report). Washington, D.C.: AAA Foundation for Traffic Safety.

ommended that NHTSA require AV developers submit a safety self-assessment report to the agency after its investigation of the 2018 Uber AV test vehicle crash. The report to NHTSA should also include explanations of updates to the software that enables the ADS. Further, the vehicle manufacturer should perform additional testing to ensure that the vehicle's safety case is maintained or enhanced as new functionality is added or existing functionality is repaired. Among these considerations, NHTSA may also want to seek information from a developer that shows the vehicle's overall safety case is maintained should vehicle capabilities evolve.

Moreover, NHTSA should mandate that testing results be made available to the public for review to create a feedback process that allows the public and industry stakeholders the opportunity to address key concerns that arise from the data.

AAA believes, NHTSA should also develop a revised safety framework, in conjunction with private industry, academia and standards bodies to sponsor research to develop authoritative methods for safety assurance of automated driving systems (ADS), including a layered set of complementary test settings in simulation, test track and on-road testing, wherein each setting progressively validates the functionality and safety with greater fidelity, as suggested in Koopman and Wagner.<sup>5</sup>

Safety assurance programs should be stakeholder and technology neutral and be applied to all stakeholders who seek to test or deploy ADS and ADS-equipped vehicles. Data from ADS safety assurance programs should be made available in a consistent format for validation by independent third parties. We note that a "testing regime" by manufacturers and/or third parties incorporating simulation testing, closed-track testing, and on-road testing is complementary and that no one form of test setting alone is enough to make a credible safety argument.

Thus, ADS developers should be required to develop and submit explicit explanations and data to NHTSA and the public, detailing:

- The methodical exposure of the ADS to all expected driving maneuvers under all expected driving conditions in the vehicle's operating environment, demonstrating the behavioral competencies of the ADS.
- The object and event detection and response (OEDR) capabilities of the highly automated vehicle, noting the ADS performance and identifying situations requiring supervisor intervention ("disengagement").
- Iterative testing of scenarios, identifying edge cases that challenge ADS, recreating such edge cases in closed-course, and re-testing in the real-world.

NHTSA should place the burden on an ADS developer to explain (a) why the ADS behaves in a certain manner when subject to external objects and or events, (b) how a consumer will interact with the new technology, and (c) the safety benefit of removing traditional vehicle features, if requested by an ADS developer. Requiring vehicle developers to provide this data will aid NHTSA and the public in considering when and how to use the vehicles and could ultimately help inform the development of future Federal safety standards and promote industry learnings that ensure the safe deployment of ADS vehicles on our Nation's roads.

NHTSA should also encourage developers to consider scenario testing informed by various standards organizations and regulatory bodies, including EuroNCAP, ISO, SAE, the U.S. Department of Defense, and NHTSA's own Framework for Automated Driving System Testable Cases and Scenarios.

Consumer education must be a core element of any new automated vehicle regulation or legislation. However, Congress should prioritize consumer education and training on vehicle technology available in cars today. It is important for consumers to understand these technologies' capabilities and limitations and differentiate them from fully automated vehicles not yet available to the public.

In addition to the data NHTSA should require of ADS developers it is also important to ensure the data created by the vehicle is protected. Automated vehicles have the potential to generate a lot of personal data and present new privacy and cybersecurity issues. Legislation or regulations should ensure transparency about the collection, protection, and use of this data and that appropriate security protection protocols are in place to minimize potential breaches. Consumers should clearly understand what data is collected from an automated vehicle and how it is used.

Congress plays a crucial role in balancing the pace of new vehicle technology implementation, ensuring it does not get ahead of consumer safety. AAA urges the Federal government to carefully consider how to develop, test and safely deploy

<sup>5</sup> Koopman and Wagner, Toward a Framework for Highly Automated Vehicle Safety Validation, 2018 SAE World Congress, SAE 2018-01-1071.

automated vehicles while also considering how to build public confidence and trust in the technology.

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RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. GARY PETERS TO  
JAKE NELSON

*Question 1.* As the representative of over 50 separately owned and operated motor vehicle clubs, you have a unique perspective of what it means to work on roadway safety issues across jurisdictions. Roadway planning is inherently inter-jurisdictional, which creates challenges for local or state departments of transportation attempting to enact a holistic vision of roadway safety. Can you discuss what some of these challenges are, and can you give the committee some good examples of state, local, or tribal coordination on roadway safety planning?

Answer. One of the best examples of how the lack of state and local coordination can hinder traffic safety occurs when changing maximum posted speed limits on state-owned roadways. AAA recommends stronger state requirements to coordinate with local governments when determining changes to maximum posted speed limits on higher-speed state highways. The AAA Foundation recently published new research documenting the “spillover effect” whereby traffic crash experiences on surrounding roadways can be exacerbated unintentionally when speed limits are raised on nearby highways or highway segments.<sup>6</sup> To minimize unintended safety consequences, it is important for transportation departments, at all levels, to coordinate and work closely together when considering posted speed limit adjustments.

Related to setting speed limits, AAA recommends that states be strongly discouraged from using the 85th percentile operating speed when setting maximum posted speed limits and incentivized to utilize a safety-prioritizing method such as the expert system (*e.g.*, USLIMITS, USLIMITS2 or the anticipated USLIMITS3). Further, AAA recommends that state reporting requirements include proper documentation of methods utilized within the reporting period to adjust maximum posted speed limits on state roadways and include the proportion of those instances where the 85th percentile operating speed was considered.

In 2018, the AAA Foundation conducted a national survey<sup>7</sup> of 175 traffic engineers across the 48 continental United States representing local (44 percent) and state (54 percent) agencies, as well as private consulting firms (2 percent). Results indicated that 98 percent of respondents consider the 85th percentile operating speed when raising or lowering posted speed limits and that 3 out of 10 respondents either had never heard about an expert system (*i.e.*, USLIMITS or USLIMITS2) or had any understanding of the system. Further, respondents indicated that their agencies do not recommend (19 percent) nor provide training (10 percent) for such a safety-prioritizing system.

One of the best examples of state and local government coordination AAA has recently encountered is the coordination between the Florida Department of Transportation, Miami-Dade County and the City of Miami. Here’s an overview of their collaborative efforts:

*Joint Initiatives and Programs*

1. Vision Zero Initiative. Miami-Dade County and the City of Miami have adopted Vision Zero policies, aiming to eliminate all traffic fatalities and serious injuries. FDOT supports these efforts by providing funding, technical assistance, and aligning state-level safety strategies with local goals.
2. Strategic Highway Safety Plan (SHSP). FDOT’s SHSP outlines statewide goals for reducing traffic-related fatalities and injuries. The department collaborates with Miami-Dade County and the City of Miami to implement SHSP strategies locally, ensuring that safety measures are tailored to address specific regional issues.

*Infrastructure Projects*

1. Complete Streets. The Complete Streets program promotes the design and operation of roadways for safe use by all, including pedestrians, cyclists, motorists, and transit riders. FDOT works with local governments to implement Complete Streets principles in urban planning and roadway design projects.

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<sup>6</sup>Romo, A., McDonough, J., Wei, A. & Yang, C.Y.D. (2024). *Uncovering the Spillover Effect from Posted Speed Limit Changes: A Tool to Examine Potential Safety Concerns* (Technical Report). Washington, D.C.: AAA Foundation for Traffic Safety.

<sup>7</sup>Kim, W., Kelley-Baker, T. & Chen, K.T. (2019). *Review of Current Practices for Setting Posted Speed Limits* (Research Brief). Washington, D.C.: AAA Foundation for Traffic Safety.

2. Roadway Improvements and Upgrades. FDOT, Miami-Dade County, and the City of Miami collaborate on various roadway improvement projects. These projects include intersection redesigns, the addition of bike lanes, pedestrian crossings, and the installation of traffic calming measures to enhance safety.
3. Community Involvement. FDOT, Miami-Dade County, and the City of Miami engage with local communities through public meetings, workshops, and forums. These interactions ensure that community feedback is considered in safety planning and that residents are informed about upcoming projects and initiatives.

Overall, the collaboration between FDOT, Miami-Dade County, and the City of Miami is integral to enhancing roadway safety. By combining resources, expertise, and efforts, these entities work together to create a safer transportation environment for all users.

To discuss the coordination AAA has observed in more detail, please contact Stacy Miller, District Six Secretary of Transportation, located at 1000 N.W. 111 Avenue, Miami, Florida 33172, or by phone at (305) 470-5197.

*Question 2.* In your testimony, you state that “Roadway engineers, but especially behavioral highway safety practitioners and policymakers would benefit from more guidance and technical assistance relative to the proper adoption of SSA principles to maximize measurable safety gains.” Can you expand on how you think the Department of Transportation can help achieve this goal?

Answer. The AAA Foundation has published a report<sup>8</sup> designed to assist local decision-makers, transportation professionals, and community advocates in effectively communicating about why the Safe System policies and engineering approaches are necessary, how they work, and how they benefit everyone who uses the roads. The guide also assists in communicating to road users about the kinds of infrastructure projects recommended by the Safe System Approach, which can more effectively help build community-level support for these projects.

A companion guide in development now is designed for these same audiences specifically to help facilitate the adoption of Safe System Approach principles when developing Highway Safety Improvement Plans and State Highway Safety Plans.

The USDOT and its agencies should aid in promoting these guidance documents to state and local stakeholders to leverage when developing strategic plans relative to the use of Federal transportation funding.

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RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. BRIAN SCHATZ TO  
LAURA SANDT

*Question 1.* The National Highway Traffic Safety Administration (NHTSA) is currently working on a number of rulemakings, including some that were mandated as part of the *Infrastructure Investment and Jobs Act*. Which rules will have the greatest impact on safety and should be prioritized by NHTSA?

Answer. I haven’t been part of research to estimate the safety effects or relative benefits of the different rules that are currently in the rulemaking process. However, generally speaking, any rulemaking efforts aimed at reducing kinetic energy in the transportation system are likely to be highly impactful and should be prioritized. Excess kinetic energy is the primary mechanism underlying crashes of all types, affecting people of all ages and abilities. There are a number of speed managing technologies with proven safety benefits, such as Intelligent Speed Adaptation (ISA), which can be applied to large trucks/commercial vehicles, fleet vehicles, as well as privately owned vehicles. Similarly, there are many ways that vehicle designs can be improved to reduce vehicle size/height, weight, and the likelihood of causing severe and fatal injuries to people struck by them. A focus on implementing and evaluating the effects of vehicle-based safety measures to reduce kinetic energy is an important priority. Evaluation of these technologies requires data, and NHTSA’s traffic records team is responsible for development of the Model Minimum Uniform Crash Criteria (MMUCC). Ensuring that MMUCC and other traffic records systems incorporates key data needed to measure speed and system kinetic energy, and that states are collecting and reporting these data elements in a timely way, is an important need to help inform future rulemaking as well.

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<sup>8</sup>Michael, J.P., Chirles, T.J., Frattaroli, S., LaJeunesse, S., Austin, L.L., Romo, A., McDonough, J. & Yang, C.Y.D. (2023). *A Safe System Guide for Transportation: Sharing this Approach to Lead Your Community to Action* (Technical Report). Washington, D.C.: AAA Foundation for Traffic Safety.

*Question 2.* The *Infrastructure Investment and Jobs Act* includes a provision that I authored to require that states publish vulnerable road user safety assessments, which reports on incidents involving vulnerable road users and on countermeasures. How should public and private sector actors use this information to improve road safety?

Answer. The Vulnerable Road User (VRU) Safety Assessments are a much-needed step to help a variety of safety partners to understand the issues, trends, and opportunities to improve safety for people of all ages, travel modes, and abilities. The assessments can be used to engage the public on important safety risks and challenges for vulnerable road users, and to seek additional feedback. Given the current challenges with VRU data quality, completeness, timeliness, and consistency, the VRU assessments can also be used to highlight the gaps in the data available and identify needed improvements to data that would make the assessments more robust and reliable in the future. As data quality improves and more states adopt consistent analysis methods and performance measures, the VRU assessments will likely play an important role in helping to assess progress and identify ongoing and emerging concerns to prioritize in strategic safety plans.

*Question 3.* How can Federal transportation funding programs better incentivize safer infrastructure design?

Answer. There needs to be a focus on institutionalizing safety throughout the entire project development and maintenance/operations lifecycle, such that new roads are designed in alignment with the principles of Safe Systems and that safety risks on existing roads can be proactively identified and addressed. One powerful practice observed in Safe System adopting countries such as New Zealand and Australia is to require Road Safety Audits (or Safe System Audits) as a standard (*i.e.*, mandated) and funded practice (*Chiarenza et al.*, 2023). Road Safety Audits are conducted by multidisciplinary teams of trained and certified auditors, who independently review projects at key milestones in the project development lifecycle to ensure safety is imbedded in the design. In the US, we have guidance for conducting Road Safety Audits and some agencies are performing them, but the practice is not required, sufficiently funded, or staffed to the degree needed to ensure consistency and comprehensiveness across the transportation network.

*Question 4.* What role does infrastructure design have in making autonomous vehicles safer? How should responsibility for this role be divided between levels of government?

Answer. This question relates to issues extending beyond my area of research expertise, but I can point to a study conducted by colleagues at UNC and Appalachian State University (*Combs and Shay*, 2023) that examined the role of infrastructure in improving safety for all road users as Connected and Autonomous Vehicles (CAVs) make up an increasingly significant portion of the vehicle fleet. The study also offers recommendations for state and local agency actions; their key recommendations included:

“facilitating CAV-readiness discussions among diverse stakeholders, designing intersections to serve CAVs but prioritize pedestrian safety and comfort, developing methods to understand impacts on non-vehicular travelers, and supporting research on post-pandemic public engagement” (*Combs and Shay*, 2023).

*Question 5.* Some vehicles are marketed as fully autonomous but do not yet have that capability. Do drivers of such vehicles adequately understand the limitations and capabilities of their vehicle’s autopilot systems? If not, what should be done to increase consumer awareness of their responsibilities when behind the wheel of such vehicles?

Answer. There are several studies that have provided evidence that drivers often do not adequately understand the limitations and capabilities of their vehicle’s technology features and systems. This may lead to instances of over-trust or under trust of such features, both of which can result in less than optimal safety outcomes. One study by *Teoh (2020)* found that system name can affect understanding and use of vehicle technologies and concluded that systems need to be named such that they do not mislead drivers. The AAA Foundation has supported a number of studies about this issue that make recommendations on ways to enhance consumer awareness, including the report, *The Impact of Information on Consumer Understanding of A Partially Automated Driving System*, *Singer & Jenness*, 2020.

Importantly, as vehicle technologies continue to evolve, there is a need to inform consumers not just at the point of sale (or resale or rental) of a vehicle but to build in awareness and experience/skill-building throughout the entire driver education, training, testing, and licensing lifecycle. Vehicles and in-vehicle systems could also

be important tools for raising consumer awareness, for example by incorporating owner's manuals or interactive training into existing displays.

*Question 6.* Autonomous vehicles (AVs) have the ability to collect and report detailed safety data. What additional data should NHTSA collect to assess AV safety? How can NHTSA better compare the safety of AVs and other vehicles?

Answer. Several research groups and safety organizations, including *Advocates for Highway and Auto Safety*, have called for enhanced data definitions, standards, and data collection to help assess AV safety. To holistically assess safety issues, the following data are needed, at a minimum:

- Vehicle “exposure” measures (time driving, miles driven) in different environments/road types within the operational design domain
- Vehicle speed data (pre-crash and at time of impact)
- System failures and malfunctions (type, number of events, and frequency)
- Disengagements and driver takeover events (type, number of events, and frequency)
- Operator errors; issues with human machine interface (type, number of events, and frequency)
- Near collisions (*i.e.*, near misses), including those involving pedestrians, bicyclists, wheelchair users, cane users, etc. (type, number of events, and frequency)
- Pre-crash maneuvers (type, number of events, and frequency)
- Number/frequency of crashes, as well as crash type, location, involved parties, injury severity, and environmental conditions
- Number/frequency of cyber security issues
- Public perception of safety

Offering recommendations on specific AV safety testing/comparison methods and standards are beyond my area of expertise, but I would refer to work of Dr. Phil Koopman (Carnegie Melon), including his July 26, 2023 *testimony* to the Energy and Commerce Committee, as well as Dr. Missy Cummings (George Mason University) and the research team involved with our CSCRS study, *Safety testing for connected and automated vehicles through physical and digital iterative deployment*.

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RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. GARY PETERS TO  
LAURA SANDT

*Question 1.* One aspect of the Safe Systems Approach to roadway safety is understanding the relationship between human behavior and the vehicles on the road as well as the design of the roads themselves. Right now, NHTSA is responsible for the majority of behavioral research related to roadway technology, while FHWA—a different sub-agency within the Department of Transportation—is responsible for setting standards related to roadway design. I know you have worked with both agencies on safety-related projects. Do you believe it would be beneficial to see more coordination between these two entities in carrying out these responsibilities? What do you think that could look like?

Answer. Yes, I believe it would be beneficial to see more coordination between NHTSA and FHWA, along with other agencies that have a key role in delivering transportation services and defining or measuring health and safety outcomes (such as FMCSA, FTA, BTS, and CDC). With more opportunities for and structures to enhance collaboration, these entities could share and integrate data that could help us better understand transportation related choices, behaviors, exposure to risk, injuries, and health outcomes. Coordination across agencies could also lead to more integrated and pooled funding to support holistic programs delivered by local agencies; opportunities to implement holistic safety interventions with a single grant source might help reduce the administrative burden for local agencies that currently seek funding across multiple entities. It might also help to streamline the identification of shared research needs and provide sustained funding for research that could be more holistic and cross-cutting as well.

*Question 2.* In my opening statement I discussed how many transportation safety experts such as yourself have coalesced around the safe systems approach to roadway safety. Can you discuss how your research on the safe systems approach has enabled you to provide concrete guidance to local and state transportation stakeholders doing roadway planning? Do you have ideas for how we can encourage more collaboration between transportation planners and experts such as yourself?

Answer. Communities are leading the way in terms of innovating and implementing Safe System approaches and it is the job of transportation safety researchers such as myself to be engaged with state and local agencies and support the development and evaluation of programs. University-based researcher groups are uniquely equipped to help convene different partners, support communities of practice, offer training and workforce development, and provide technical assistance with data collection, data integration, and analysis. Providing sustained opportunities for collaboration beyond a one-time grant or research project is one way to help support and maintain partnerships between agency practitioners and university-based researchers and safety experts.

*Question 3.* In your testimony you cite several studies looking specifically at motorcycle safety on our roads. As an avid motorcyclist, I am concerned with how over-represented we are in roadway fatality statistics. Based on your and your colleagues' research, can you discuss how different speed management solutions would impact motorcycle drivers specifically? Additionally, from a public health education perspective, do you think it would be helpful for more states to include motorcycle safety, including information about sharing the road, in drivers' ed curriculums?

Answer. There are speed management approaches that are uniquely suited to support motorcyclist safety and target the locations in which motorcyclists are most at risk of a crash, such as curve delineation measures, traffic calming treatments, and pavement markings (such as optical speed bars) used on steep grades or on the approaches to sharp curves. More generally, speed management efforts can benefit motorcyclists by affording other drivers on the road more time to detect motorcyclists and distance to avoid a crash. Given the large weight differential between motorcyclists and other vehicles on the road, speed management of larger vehicles is critical to reduce the amount of kinetic energy directed toward more vulnerable motorcyclists in the event of a collision. There have been many changes in the two-wheeler vehicle market, and driver education training, testing, and licensure should be routinely updated to reflect changes in technology, safety trends, and priority issues/risks.

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RESPONSE TO WRITTEN QUESTION SUBMITTED BY HON. TED BUDD TO  
LAURA SANDT

*Question.* Sen. Thom Tillis has sponsored a bill (S. 3092, the Collision Avoidance Systems Act of 2023) to make certain motorists have the ability to use pulsating center-mount brake lights. These devices pulse the center brake light (within the photometric range called for within Federal Motor Vehicle Safety Standards No. 108) 4 times in 1.2 seconds when a brake is first applied. Can you speak to how these pulsating brake lights, and other technologies, contribute to a holistic approach to roadway safety?

Answer. Thank you for this question. I am not familiar with the specific technology referenced (pulsating brake lights) or any research related to their safety performance, or safety outcomes in relation to other devices or technologies available. However, speaking broadly, technologies with proven safety benefits—made available to drivers of all ages, income levels, and in all places—are an important part of a holistic, Safe System approach. Safety-oriented improvements to vehicle technologies hold the potential to improve compliance with laws, reduce error-making among drivers, help identify and avoid risks and potential crashes, and generally reduce the likelihood and severity of injury outcomes.

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RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. BRIAN SCHATZ TO  
JEFF FARRAH

*Question 1.* The National Highway Traffic Safety Administration (NHTSA) is currently working on a number of rulemakings, including some that were mandated as part of the *Infrastructure Investment and Jobs Act*. Which rules will have the greatest impact on safety and should be prioritized by NHTSA?

Answer. There are two important outstanding rulemakings, one at NHTSA, the other at the Federal Motor Carrier Safety Administration ("FMCSA") that should be prioritized to help bring the safety benefits of autonomous vehicle ("AV") technologies to communities across the country. The first rulemaking, from NHTSA, would create the *ADS-Equipped Vehicle Safety Transparency and Evaluation Pro-*

gram (“AV STEP”).<sup>1</sup> First announced in July of 2023,<sup>2</sup> AV STEP would create an exemption and oversight framework for deploying non-FMVSS compliant ADS-equipped vehicles with permission from NHTSA. If put into place, this program would benefit AV developers by providing them a clear regulatory path forward for vehicles whose designs require exemptions from current FMVSS and would also provide NHTSA with valuable data on AV safety, which can inform further AV-related rulemaking. NHTSA had originally indicated that a notice of proposed rulemaking (“NPRM”) would be issued on AV STEP in the fall of 2023, but that NPRM has yet to be made public.

The second outstanding rulemaking that would help with the wider deployment of AV technologies and their safety benefits is FMCSA’s proposed rule on *Motor Carrier Operation of Automated Driving System (ADS)-Equipped Commercial Motor Vehicles*.<sup>3</sup> This rulemaking would make needed updates to the Federal Motor Carrier Safety Regulations (“FMCSRs”) to incorporate considerations for ADS-equipped commercial motor vehicles (“CMVs”) and codify FMCSA’s existing interpretation that the FMCSRs do not require a human driver to operate or be present in a CMV operated by a SAE Level 4 or Level 5 ADS.<sup>4</sup> Currently this rulemaking is under review by the Office of Management and Budget, and it is unclear when it will be finalized.

One additional piece of regulatory action at FMCSA that would aid in the deployment of AVs and promote roadway safety is the granting of the existing AV-industry-backed exemption petition that would allow ADS-equipped vehicles to use alternative warning devices to signal when an ADS-equipped CMV is stopped on the roadside.<sup>5</sup> This data-backed exemption petition was filed in January 2023 and has been pending for 17 months. This is far beyond the typical review period for equipment and lighting-related petitions, which over the last several years have, on average, been completed within 8 months.<sup>6</sup> FMCSA should act expeditiously to ensure AV developers can more easily deploy their CMVs and contribute to improving roadway safety.

**Question 2.** The *Infrastructure Investment and Jobs Act* includes a provision that I authored to require that states publish vulnerable road user safety assessments, which reports on incidents involving vulnerable road users and on countermeasures. How should public and private sector actors use this information to improve road safety?

**Answer.** Improving the safety of vulnerable road users (“VRUs”) is a vital task for improving overall roadway safety. In the first half of 2023, an estimated 3,373 pedestrians were killed on U.S. roads, a 14 percent increase over 2019.<sup>7</sup> In 2021, NHTSA recorded 966 cyclist deaths (a 1.9 percent increase over 2020) and 41,615 cyclist injuries (a 7 percent increase over 2020).<sup>8</sup> These numbers are only a portion of the over 40,000 roadway deaths,<sup>9</sup> and over 2 million roadway injuries that the U.S. has faced in recent years.<sup>10</sup> Consistent with the U.S. Department of Transpor-

<sup>1</sup>Exemption and Demonstration Framework for Automated Driving Systems 2127-AM60, REGINFO.GOV, <https://www.reginfo.gov/public/do/eAgendaViewRule?pubId=202304&RIN=2127-AM60>.

<sup>2</sup>Ann Carlson, Acting Adm’r, Nat’l Highway Traffic Safety Admin., Keynote Address at the Automated Road Transportation Symposium (ARTS2023) (July 12, 2023), <https://www.nhtsa.gov/speeches-presentations/automated-road-transportation-symposium-arts23-keynote-address>.

<sup>3</sup>Motor Carrier Operation of Automated Driving System (ADS)-Equipped Commercial Motor Vehicles 2126-AC17, REGINFO.GOV, <https://www.reginfo.gov/public/do/eAgendaViewRule?pubId=202310&RIN=2126-AC17>.

<sup>4</sup>U.S. DEP’T OF TRANSP., PREPARING FOR THE FUTURE OF TRANSPORTATION: AUTOMATED VEHICLES 3.0 (AV 3.0) 9 (Oct. 2018), <https://www.transportation.gov/sites/dot.gov/files/docs/policy-initiatives/automated-vehicles/320711/preparing-future-transportation-automated-vehicle-30.pdf>; Safe Integration of Automated Driving Systems-Equipped Commercial Motor Vehicles, 84 Fed. Reg. 24449, 24453 (May 28, 2019).

<sup>5</sup>See AURORA & WAYMO, FMCSA-2023-0071-0011, JOINT WAYMO-AURORA APPLICATION FOR EXEMPTION (Jan. 10, 2023), <https://www.regulations.gov/document/FMCSA-2023-0071-0011>.

<sup>6</sup>FMCSA’s own regulations state that the agency will attempt to issue a final decision on any exemption application within 180 days of receipt. 49 C.F.R. § 381.320.

<sup>7</sup>GOVERNORS HIGHWAY SAFETY ASS’N, PEDESTRIAN TRAFFIC FATALITIES BY STATE JANUARY-JUNE 2023 PRELIMINARY DATA, 3 (2023), <https://www.ghsa.org/resources/Pedestrians24>.

<sup>8</sup>NAT’L HIGHWAY TRAFFIC SAFETY ADMIN., U.S. DEP’T OF TRANSP., DOT HS 813 484, 2021 DATA—BICYCLISTS AND OTHER CYCLISTS (JUNE 2023), <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813484.pdf>.

<sup>9</sup>NAT’L HIGHWAY TRAFFIC SAFETY ADMIN., U.S. DEP’T OF TRANSP., DOT HS 813 561, EARLY ESTIMATE OF MOTOR VEHICLE TRAFFIC FATALITIES IN 2023 (April 2024), <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813561>.

<sup>10</sup>NAT’L HIGHWAY TRAFFIC SAFETY ADMIN., U.S. DEP’T OF TRANSP., DOT HS 813 560 OVERVIEW OF MOTOR VEHICLE TRAFFIC CRASHES IN 2022 (April 2024), <https://crashstats.nhtsa>

tation's safe systems approach, new vehicle technologies, including AVs, can be an important tool for improving the safety of VRUs and the overall safety of our roads.

An ADS, which serves as the heart and brain of an AV, is equipped with suites of sensor systems (including lidar, radar, and cameras) with sensitivities, capabilities, and reaction times well beyond those of a human driver. These sensors grant an ADS a 360-degree field of vision which can detect, track, and react to objects and people even when hidden from human perception due to vehicles, buildings, and other obstructions. ADS are specifically developed to detect VRUs and predict and safely respond to their unique behavior.

Much of the danger on our roads currently stems from human error, including speeding, impaired driving, unfamiliarity with the roadway, and fatigue. AVs are designed to remove that error from the equation. AVs have built a significant safety record through more than a decade of development, testing, and deployment, and ADS-equipped vehicles have now driven millions of miles autonomously, with vehicles operated by AVIA members having driven nearly 70 million autonomous miles on public roads in the U.S. alone.<sup>11</sup> Reinsurer Swiss Re recently published an analysis of 3.8 million autonomous miles driven by passenger AVs operated by AVIA member Waymo, and found that when compared to baseline human drivers, Waymo AVs reduced bodily

injury claims by 100 percent, and reduced property damage claims by 76 percent.<sup>12</sup> These results led Swiss Re to conclude that Waymo's AVs are "significantly safer towards other road users than human drivers are."<sup>13</sup> Waymo's own review of over 7 million rider-only autonomous miles found that the company's AVs demonstrated a 85 percent reduction in crashes involving any injury, and a 57 percent reduction in police-reported crashes when compared to human drivers.<sup>14</sup> As the deployment of AVs grows, so will the safety benefits, for VRUs, passengers, and motor vehicle drivers alike.

*Question 3.* How can Federal transportation funding programs better incentivize safer infrastructure design?

Answer. AVs can benefit from infrastructure improvements and advancements just as any other road user would. Improvements to things like intersection signaling, lane marking, and roadway surfaces serve AVs just as much as they do human drivers, as they improve overall driving conditions. While AVs are designed to operate on the road as it is today, and do not require any new or updated infrastructure to function, they can leverage smart infrastructure and connected vehicle ("CV") technologies to supplement their own sensing systems. For example, AVIA member Cavnue is developing a number of AV-focused infrastructure technologies and is currently working with state governments in Michigan<sup>15</sup> and Texas<sup>16</sup> to build out first-of-their-kind connected infrastructure corridors.

*Question 4.* What role does infrastructure design have in making autonomous vehicles safer? How should responsibility for this role be divided between levels of government?

Answer. As noted above, AVs are designed to operate without added infrastructure, and benefit from infrastructure improvements much like any other driver would. While not necessary for AV operations, AVs may also benefit from smart infrastructure and CV technologies.

*Question 5.* Some vehicles are marketed as fully autonomous but do not yet have that capability. Do drivers of such vehicles adequately understand the limitations and capabilities of their vehicle's autopilot systems? If not, what should be done to increase consumer awareness of their responsibilities when behind the wheel of such vehicles?

[.dot.gov/Api/Public/ViewPublication/813560#:~:text=The%20estimated%20number%20of%20people,2021%20to%2075%20in%202022](https://www.transportation.gov/Api/Public/ViewPublication/813560#:~:text=The%20estimated%20number%20of%20people,2021%20to%2075%20in%202022).

<sup>11</sup> *Autonomous Vehicle Industry Association Releases First-Ever "State of AV" Report*, AUTONOMOUS VEHICLE INDUS. ASS'N (Apr. 10, 2024), <https://theavindustry.org/newsroom/press-releases/first-ever-state-of-av-report>.

<sup>12</sup> LUIGI DI LILLO ET AL., *COMPARATIVE SAFETY PERFORMANCE OF AUTONOMOUS- AND HUMAN DRIVERS: A REAL-WORLD CASE STUDY OF THE WAYMO ONE SERVICE* (2023), <https://arxiv.org/ftp/arxiv/papers/2309/2309.01206.pdf>.

<sup>13</sup> *Id.*

<sup>14</sup> *Waymo Significantly Outperforms Comparable Human Benchmarks Over 7 Million Miles of Rider-Only Driving*, WAYMO (Dec. 20, 2023), <https://waymo.com/blog/2023/12/waymo-significantly-outperforms-comparable-human-benchmarks-over-7-million/>.

<sup>15</sup> *Michigan Project*, CAVNUE, <https://www.cavnue.com/michigan-project> (last visited June 20, 2024).

<sup>16</sup> *The SH 130 Smart Freight Corridor*, CAVNUE, <https://www.cavnue.com/homepage/texas-project/> (last visited June 20, 2024).

Answer. In any discussion of vehicle automation and roadway safety, it is critical to distinguish autonomous vehicles from other types of technology. “Driver-assistance technology”—which can be found in tens of millions of cars and trucks on our roads today—can be important and helpful, but it is not *autonomous* driving. SAE International’s J3016 standard, which has been adopted industry wide, establishes 6 levels of driving automation, rising from “No Driving Automation” (Level 0) to “Full Driving Automation” (Level 5). Level 2 systems (often called advanced driver assistance systems or “ADAS”) are available on a number of vehicles today and are capable of “partial driving automation,” but require human supervision at all times.<sup>17</sup> It is important that consumers understand the capabilities and limitations of those technologies. The misuse of driver assistance technologies cuts against the AV industry’s goals for improving roadway safety, and risks conflating driver assistance technologies with more advanced and capable AV technologies. As the primary regulator and public educator on motor vehicles NHTSA has a key role to play in helping consumers understand the capabilities and limits of driver assistance technologies.

AVIA members are focused on the development of SAE Level 4 and 5 vehicles, truly autonomous vehicles whose automated driving systems are responsible for the entire dynamic driving task and are capable of reaching a minimal risk condition should an incident or failure occur while on the road. AVIA members are dedicated to properly educating policymakers and regulators on the capabilities and safety benefits of these vehicles, and we have recently released a set of TRUST Principles to guide our work with government, communities, and the public at large.<sup>18</sup> Among these principles is support for transparency in AV industry interactions with government and the public to help build trust and understanding between all parties. The AV industry believes that public trust in AVs goes hand-in-hand with their deployment and that we must earn and maintain that trust.

*Question 6.* Autonomous vehicles (AVs) have the ability to collect and report detailed safety data. What additional data should NHTSA collect to assess AV safety? How can NHTSA better compare the safety of AVs and other vehicles?

Answer. AV developers are already providing NHTSA with important safety data via the agency’s Standing General Order 2021–01 (“SGO”).<sup>19</sup> Under the SGO, AV developers provide the agency with detailed reports of any incidents or crashes involving their ADS-equipped vehicles within days of an event and provide monthly updates to NHTSA on previously reported incidents. The reporting requirements of the SGO encompass even minor collisions and incidents where a human driver, and not the ADS, are at fault. Regulators in states like California are also collecting data on AVs operating under their jurisdiction, with the California Department of Motor Vehicles publishing public disengagement (describing incidents where a vehicle’s ADS disengages)<sup>20</sup> and collision reports that include data from hundreds of vehicles on a yearly basis.<sup>21</sup> California’s Public Utilities Commission also collects data on AVs engaged in autonomous ride hail deployments within the state.

Should NHTSA seek further data on the safety of AVs, the agency should complete the rulemaking first proposed almost a year ago and launch the *ADS-Equipped Vehicle Safety Transparency and Evaluation Program* (“AV STEP”).<sup>22</sup> The agency has said publicly that AV STEP would provide a “wealth of data” on AV safety and performance, while also providing added transparency on AV deployments.<sup>23</sup> The best way to ensure NHTSA has access to the data it needs on AVs is to complete the AV STEP rulemaking and open the program to AV developers across the country.

<sup>17</sup> See SAE INT’L, TAXONOMY AND DEFINITIONS FOR TERMS RELATED TO DRIVING AUTOMATION SYSTEMS FOR ON-ROAD MOTOR VEHICLES, J2016 202104 (2021).

<sup>18</sup> See *Trust Principles*, AUTONOMOUS VEHICLE INDUS. ASS’N, <https://theavindustry.org/trust-principles> (last visited June 10, 2024).

<sup>19</sup> See NAT’L HIGHWAY TRAFFIC SAFETY ADMIN., SECOND AMENDED STANDING GENERAL ORDER 2021–01 (2023). [https://www.nhtsa.gov/sites/nhtsa.gov/files/2023-04/Second-Amended-SGO-2021-01\\_2023-04-05\\_2.pdf](https://www.nhtsa.gov/sites/nhtsa.gov/files/2023-04/Second-Amended-SGO-2021-01_2023-04-05_2.pdf).

<sup>20</sup> *Disengagement Reports*, CA DEP’T OF MOTOR VEHICLES, <https://www.dmv.ca.gov/portal/vehicle-industry-services/autonomous-vehicles/disengagement-reports/> (last visited June 20, 2024).

<sup>21</sup> *Autonomous Vehicle Collision Reports*, CA DEP’T OF MOTOR VEHICLES, <https://www.dmv.ca.gov/portal/vehicle-industry-services/autonomous-vehicles/autonomous-vehicle-collision-reports/> (last visited June 20, 2024).

<sup>22</sup> Ann Carlson, Acting Adm’r, Nat’l Highway Traffic Safety Admin., Keynote Address at the Automated Road Transportation Symposium (ARTS2023) (July 12, 2023), <https://www.nhtsa.gov/speeches-presentations/automated-road-transportation-symposium-arts23-keynote-address>.

<sup>23</sup> *Id.*

RESPONSE TO WRITTEN QUESTION SUBMITTED BY HON. GARY PETERS TO  
JEFF FARRAH

*Question.* Comprehensive and transparent data collection is essential to proving out the safety case on AVs and gaining public trust, as well as ensuring NHTSA has the data it needs for substantive regulatory analysis to ensure the safety of autonomous technologies. Under current policy, can you outline what categories of data NHTSA collects from your member companies on level 4 operations, what authorities that data is collected under, and whether each collection is voluntary or mandatory? In your view, what additional data does NHTSA need, if any, to undertake regulatory action, including new FMVSS specific to level 4 autonomous vehicles?

*Answer.* Currently, NHTSA collects important safety data from AV developers via the agency's Standing General Order 2021-01 ("SGO").<sup>24</sup> Under the SGO, AV developers are required to provide detailed reports to the agency of any incidents or crashes involving their automated driving system ("ADS") equipped vehicles within days of an event and provide monthly updates to NHTSA on previously reported incidents. The reporting requirements of the SGO encompass even minor collisions and incidents where a human driver, and not the ADS, are at fault. SGO reporting is mandatory for those AV operating entities named in the order, including a number of AVIA members. Regulators in states like California also use state regulatory power to collect data on AVs operating under their jurisdiction, with the California Department of Motor Vehicles publishing for the public disengagement reports (describing incidents where a vehicle's ADS disengages)<sup>25</sup> and collision reports that include data from hundreds of vehicles on a yearly basis.<sup>26</sup> California's Public Utilities Commission also collects data on AVs engaged in autonomous ride hail deployments within the state. These data collections are mandated as part of the permitting process for testing and deploying AVs in California.

Should NHTSA seek further data on the safety of AVs to inform future rulemaking, the agency would be best served by completing the process first announced in July of 2023 and launching the *ADS-Equipped Vehicle Safety Transparency and Evaluation Program* ("AV STEP").<sup>27</sup> NHTSA has publicly stated that AV STEP would provide a "wealth of data" on AV safety and performance, while also providing added transparency on AV deployments.<sup>28</sup> By committing to AV STEP, NHTSA can serve its own data needs while also providing assistance to AV developers looking to deploy their vehicles across the country.

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RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. TED CRUZ TO  
JEFF FARRAH

**Corrupted Vehicles ANPRM**

On March 1, 2024, the Commerce Department's Bureau of Industry and Security released an advance notice of proposed rulemaking (ANPRM) requesting comments on issues related to connected vehicles (CVs) equipped with information and communications technology and services (ICTS) systems. The ANPRM proposes defining "connected vehicle" as "an automotive vehicle that integrates onboard networked hardware with automotive software systems to communicate via dedicated short-range communication, cellular telecommunications connectivity, satellite communication, or other wireless spectrum connectivity with any other network or device." Further, such vehicles "integrate hardware that enables connectivity within the vehicle and/or external connectivity."

*Question 1.* Please describe whether, in your view, it would be possible to manufacture such a vehicle exclusively of U.S. components.

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<sup>24</sup> See NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., SECOND AMENDED STANDING GENERAL ORDER 2021-01 (2023). [https://www.nhtsa.gov/sites/nhtsa.gov/files/2023-04/Second-Amended-SGO-2021-01\\_2023-04-05\\_2.pdf](https://www.nhtsa.gov/sites/nhtsa.gov/files/2023-04/Second-Amended-SGO-2021-01_2023-04-05_2.pdf).

<sup>25</sup> *Disengagement Reports*, CA DEP'T OF MOTOR VEHICLES, <https://www.dmv.ca.gov/portal/vehicle-industry-services/autonomous-vehicles/disengagement-reports/> (last visited June 20, 2024).

<sup>26</sup> *Autonomous Vehicle Collision Reports*, CA DEP'T OF MOTOR VEHICLES, <https://www.dmv.ca.gov/portal/vehicle-industry-services/autonomous-vehicles/autonomous-vehicle-collision-reports/> (last visited June 20, 2024).

<sup>27</sup> Ann Carlson, Acting Adm'r, Nat'l Highway Traffic Safety Admin., Keynote Address at the Automated Road Transportation Symposium (ARTS2023) (July 12, 2023), <https://www.nhtsa.gov/speeches-presentations/automated-road-transportation-symposium-arts23-keynote-address>.

<sup>28</sup> *Id.*

Answer. Entities across the automotive and transportation industries need the highest quality products available on the market—including some manufactured by foreign entities when there is no reasonable alternative—to meet key performance and safety requirements. At present this is especially true for autonomous vehicles (“AVs”), as AV technologies are relatively new and not all key components are as available from the domestic market as would be preferable. The AV industry’s supply chain is diverse, and AVs themselves contain a mix of domestic equipment and software designed and purpose-built by AV developers, motor vehicles designed and built both domestically and abroad, and component technologies and software sourced globally. When sourcing equipment, AVIA members prioritize safety and must balance technical demands, performance requirements, and production and deployment timelines. Suppliers may produce components of differing designs from company to company, which can lock AV developers into sole source relationships as they design vehicle systems around what is available.

*Question 2.* Please describe whether, in your view, there are any vehicle types—such as electric vehicles—that would *not* meet the ANPRM’s proposed definition.

Answer. In AVIA’s public comments on the Bureau of Industry and Security’s (“BIA”) ANPRM,<sup>1</sup> we did not raise issue with the definitions used by the agency, but did encourage BIS to, whenever possible, use definitions from existing industry standards, such as SAE International’s J3016 standard,<sup>2</sup> when discussing AV-related issues to ensure consistency of terminology across government agencies and industry.

*Question 3.* The ANPRM specifically focuses on ICTS products and services from persons “owned by, controlled by, or subject to the jurisdiction or direction of” certain foreign adversaries, including China, Cuba, Iran, North Korea, Russia, and Venezuela.

a. To what degree do your member companies utilize ICTS components from the countries listed above?

Answer. AVIA members rely on both off-the-shelf and specially made lidar sensors, and foreign lidar manufacturers, including some based in China. As indicated above, it is imperative that key performance and safety requirements are met to ensure safe AV operations.

b. Please describe any measures taken by your member companies to ensure the security and safety of vehicles containing ICTS components from the countries listed above.

Answer. AVIA members undertake a number of security and safety practices to ensure the security of their vehicles, regardless of the country of origin of any component, as we discussed in greater detail in our comments on BIS’s ANPRM.<sup>3</sup>

To navigate the world, an AV must constantly process diverse types of data, using a suite of on-board sensors, including lidars, radars, and cameras. This data is fed into the vehicle’s automated driving system (“ADS”), which uses the data to safely plan a vehicle’s route, react to the environment around the vehicle—including other cars, pedestrians, cyclists, traffic infrastructure, and more—and control the vehicle’s movements. The ADS’s sensors operate in a complementary fashion, with the strengths of one sensor making up for any weaknesses of another. While lidar, for example, performs best in clear weather conditions, radar is not disrupted by fog or rain, but lidar’s lasers can provide a much more detailed set of data on the objects around it. At the same time, lidar and radar sensors cannot capture color or read text, so cameras and machine vision systems help detect and interpret road signs and identify the difference between types of objects.

At the core, AVs rely on data collection and communications systems to navigate the world. Each AVIA member has developed their own ADS, meaning even when using off-the-shelf lidars, radars, cameras, or other components, these systems utilize confidential business information unique to each company and each developer’s ADS, and they generally contain proprietary software and protected data. Due to this structure, AVIA members have embraced robust cybersecurity programs and developed the architecture of their ADS and systems to keep data secure. In the

<sup>1</sup>Autonomous Vehicle Indus. Ass’n, Comment Letter on Advanced Notice of Proposed Rulemaking on Securing the Information and Communications Technology and Services Supply Chain: Connected Vehicles (Apr. 30, 2024), <https://www.regulations.gov/comment/BIS-2024-0005-0039>.

<sup>2</sup>See SAE INTERNATIONAL, TAXONOMY AND DEFINITIONS FOR TERMS RELATED TO DRIVING AUTOMATION SYSTEMS FOR ON-ROAD MOTOR VEHICLES, J2016 202104 (2021).

<sup>3</sup>Autonomous Vehicle Indus. Ass’n, Comment Letter on Advanced Notice of Proposed Rulemaking on Securing the Information and Communications Technology and Services Supply Chain: Connected Vehicles (Apr. 30, 2024), <https://www.regulations.gov/comment/BIS-2024-0005-0039>.

case of AVIA members, data flows and cybersecurity systems are designed to ensure that all data flowing through the ADS and its related components is controlled by the AVIA member and remains firmly under the control and monitoring of the respective domestic AV developer. These security practices extend to connectivity as well, with communication by ADS components routed through the ADS or other systems under the AVIA member's control. These measures not only assure that intellectual property and confidential data are secured, but also that the overall safety of the ADS is not compromised.

The networks within an ADS are often designed to be closed, routing all communication through a single point and cutting off any ability for sensors or other components to communicate separately from the ADS. Network security techniques like network segmentation allow AV developers to compartmentalize systems within the vehicle's overall network and place security controls around communication between those networks, further limiting what information passes between different systems.<sup>4</sup> Data-rich systems like lidar will often require a hard-wired ethernet or other high bandwidth connection to ensure point cloud data is effectively communicated to the ADS. Firmware or software updates for individual ADS sensors and components will need to be uploaded manually or transmitted first to the ADS before being transmitted to individual systems, a process which allows for additional cybersecurity measures. AV developers can require vendors to provide a component's source code to verify that there are no backdoors or hostile functionality present. The AV developer can then validate the update using internal engineering teams. The process involves scrubbing a patch prior to integrating it into a component. Prior to releasing a patch to the ADS, developers can undertake extensive validation testing, including lab and bench testing to ensure only expected sensor data is being transmitted over existing/permitted data links. Once accepted by internal engineering and integration platforms, a firmware update is accepted and can be loaded onto an ADS through a system maintained and controlled by the AV developer. At no point during the process is there direct communication from the supplier to the component. When using this type of system architecture, developers can be aware of every update loaded onto an ADS under their control, providing an added layer of security, and helping to reduce the likelihood of unauthorized access or updates that could alter a vehicle's performance without their knowledge.

For wireless communication outside of the vehicle, an ADS will rely primarily on commercial cellular data networks, with both standard and proprietary security protocols used to receive vehicle telemetry and provide remote assistance when needed. However, the connection speeds offered are not sufficient to constantly stream all the data collected by an ADS while in operation, and developers will typically reserve cellular bandwidth for mission critical data and operations. While the actual amount of data an AV produces can vary, depending on the technologies in use, an AV is capable of producing up to twenty terabytes of data per hour,<sup>5</sup> far more than can be reliably uploaded via cellular networks outside of perfect conditions not normally found in the real world.<sup>6</sup> The scale of the data produced by an AV can also make intrusions into a vehicle's systems by a third-party easier to detect, as unauthorized attempts to move vehicle data would be immediately noticeable due to the significant bandwidth demands.

Common cybersecurity practices in the AV industry include adherence to organization-wide security strategies like the National Highway Transportation Safety Administration's ("NHTSA") *Cybersecurity Best Practices for the Safety of Modern Vehicles* ("Cyber Best Practices") which provides cybersecurity policy and procedure recommendations not only for the AV industry, but also for entities across the motor vehicle supply chain.<sup>7</sup> In the *Cyber Best Practices*, NHTSA also recommends that the automotive industry follow the National Institute of Standards and Technology's ("NIST") *Cybersecurity Framework*, which provides guidance to organizations of all

<sup>4</sup>What is network segmentation?, VMWARE, <https://www.vmware.com/topics/glossary/content/network-segmentation.html#:~:text=Network%20segmentation%20is%20a%20network,service%20to%20each%20sub%2Dnetwork> (last visited Apr. 22, 2024).

<sup>5</sup>Florian Götz, *The Data Deluge: What do we do with the data generated by AVs?*, SIEMENS (Jan. 22, 2021), <https://blogs.sw.siemens.com/polarion/the-data-deluge-what-do-we-do-with-the-data-generated-by-avs/>.

<sup>6</sup>Tim Fisher, *5G Speed: How to Understand the Numbers*, LIFEWIRE (Sept. 21, 2023), <https://www.lifewire.com/5g-speed-4180992>.

<sup>7</sup>NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., CYBERSECURITY BEST PRACTICES FOR THE SAFETY OF MODERN VEHICLES (Sept. 2022), <https://www.nhtsa.gov/sites/nhtsa.gov/files/2022-09/cybersecurity-best-practices-safety-modern-vehicles-2022-tag.pdf>

kinds on how to structure cybersecurity programs.<sup>8</sup> By internalizing and building on the prescriptions of NHTSA's *Cyber Best Practices*, AVIA members have established strong cybersecurity programs that ensure cybersecurity risks are identified, investigated, and mitigated across their operations.

Because AV technology is innovative, proprietary, and highly valuable, companies are incentivized to be even more careful in how they approach cybersecurity. AVIA members employ large teams of security experts focused specifically on protecting their technology from external access or misuse. This starts by establishing, with the help of industry standards and best practice guidelines, clear internal processes for identifying and mitigating cybersecurity risks before they happen—processes that may block unauthorized entities, including 15 CFR 7.4 entities, from changing the component configuration or firmware, leading to a robust set of cybersecurity tools to keep vehicles and systems secure. By building on the guidance in NHTSA's *Cyber Best Practices* and other industry standards and guides, AVIA members can create layers of procedures and technical solutions, reducing cybersecurity risks and strengthening their ability to detect and mitigate vulnerabilities quickly. These procedures and solutions can also be used to evaluate and secure software and materials up and down the AV industry's supply chain.

To help ensure the security of their vehicles and systems, AVIA members can also impose requirements on vendors and use industry standards and tools to evaluate if those requirements are met. In addition to NHTSA's *Cyber Best Practices* and NIST's *Cybersecurity Framework*, this includes NIST's *Cybersecurity Supply Chain Risk Management Practices for Systems and Organizations*, which provides comprehensive guidance on identifying, assessing, and mitigating cybersecurity risks across supply chains through structured risk management systems informed by risk assessments.<sup>9</sup> Much like NIST's *Cybersecurity Framework*, the intent of this document is for entities to build cybersecurity considerations across operations, including when engaging with suppliers.

*Question 4.* In general, how would restricted access to foreign-made components or systems impact the American automobile industry, including vehicle costs, employment, and overall competitiveness?

Answer. As noted above, entities across the automotive and transportation industries, including within the AV industry, need the highest quality products available on the market—including some manufactured by foreign entities when there is no reasonable alternative—to meet key performance and safety requirements. Restricting access to these components could harm the safety of American AVs, as they will not be able to access the best equipment available and hamper the growth and competitiveness of the U.S. AV industry by limiting access to key technologies that foreign competitors would remain able to use without issue.

a. How would such restrictions potentially impact the tripartite auto manufacturing supply chain throughout the U.S., Mexico, and Canada?

Answer. As these restrictions would presumably be targeted at any vehicle intended for the U.S. market, restrictions on the sourcing of components would impact the manufacturing supply chain across the U.S., Mexico, and Canada. In the short term these restrictions could disrupt ongoing manufacturing as companies seek to source parts from suppliers not subject to restrictions. In the long term it could encourage the development of new suppliers in all three countries to source advanced components locally.

*Question 5.* To your knowledge, have any American connected vehicles, as defined by the ANPRM, been compromised by a foreign adversary in a manner that would affect the safety or security of the United States? If yes, please describe any incidents.

Answer. AVIA only has knowledge of the AV industry and cannot speak to all connected vehicles across the country. That said, to our knowledge this has not occurred to any AV operating within the U.S.

<sup>8</sup>See NAT'L INST. OF STANDARDS AND TECH., NIST CSWP 29, THE NIST CYBERSECURITY FRAMEWORK (CSF) 2.0 (Feb. 26, 2024), <https://nvlpubs.nist.gov/nistpubs/CSWP/NIST.CSWP.29.pdf>.

<sup>9</sup>See JON BOYENS ET AL., NAT'L INST. OF STANDARDS AND TECH., NIST SP 800-161r1, CYBERSECURITY SUPPLY CHAIN RISK MANAGEMENT PRACTICES FOR SYSTEMS AND ORGANIZATIONS (May 2022), <https://nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.800-161r1.pdf>.

RESPONSE TO WRITTEN QUESTION SUBMITTED BY HON. TED BUDD TO  
JEFF FARRAH

*Question.* Your testimony highlights the fact that the autonomous vehicle industry's primary goal is to improve roadway safety. The sophisticated systems found on autonomous vehicles give them a full 360-degree awareness of the environment around the vehicle, and the response time of any AV far outperforms anything a human driver could be capable of. As many of the statements here today have attested, the number one cause of traffic incidents is simple human error so, I would like to know, what steps can Congress take to encourage the development of autonomous vehicles and are there any harmful regulations standing in the way of the AV industry?

*Answer.* Research continues to show the many ways that human behavior overwhelmingly represents the most common factor in fatal accidents on our roads. A recent study by the National Highway Traffic Safety Administration ("NHTSA") found that over 55 percent of all people injured or killed in a roadway incident tested positive for one or more drugs (including alcohol).<sup>10</sup> Drivers are also frequently distracted by electronics; at any given time, almost 3 percent of all drivers are looking at or using their handheld device.<sup>11</sup> Studies have also found that drivers manipulating cell phones are two to six times more at risk for a crash.<sup>12</sup> Several categories of behavior-related fatalities have increased in the past few years, including police-reported alcohol-involved crashes and deaths of unrestrained passengers.<sup>13</sup>

For years, the U.S. Department of Transportation has promoted a safe systems approach to addressing traffic fatalities: safe people, safe speeds, safe vehicles, safe roads, and post-crash care. AVs are poised to help combat roadway deaths by removing human error from the driving equation and have built a significant safety record through more than a decade of development, testing, and deployment. Automated Driving System-("ADS") equipped vehicles have now driven millions of miles autonomously, with vehicles operated by AVIA members having driven nearly 70 million autonomous miles on public roads in the U.S. alone.<sup>14</sup> Reinsurer Swiss Re recently published an analysis of 3.8 million autonomous miles driven by passenger AVs operated by AVIA member Waymo, and found that when compared to baseline human drivers, Waymo AVs reduced bodily injury claims by 100 percent, and reduced property damage claims by 76 percent.<sup>15</sup> These results led Swiss Re to conclude that Waymo's AVs are "significantly safer towards other road users than human drivers are."<sup>16</sup> Waymo's own review of over 7 million rider-only autonomous miles found that the company's AVs demonstrated a 85 percent reduction in crashes involving any injury, and a 57 percent reduction in police-reported crashes when compared to human drivers.<sup>17</sup>

Perhaps the most important thing Congress can do to help further the deployment of AVs and ensure Americans across the country can enjoy the safety benefits of the technology is to pass Federal AV legislation like the AV START Act previously introduced by Sens. Peters and Thune.<sup>18</sup> Such a bill should encompass all vehicle types and include statutory and regulatory changes to support the wider deployment of AVs across the U.S. AVIA's own Federal policy framework, published last year,

<sup>10</sup> NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., U.S. DEP'T OF TRANSP., DOT HS 813 399, ALCOHOL AND DRUG PREVALENCE AMONG SERIOUSLY OR FATALY INJURED ROAD USERS, 2 (2022), [https://rosap.nhtl.bts.gov/view/dot/65623/dot\\_65623\\_DS1.pdf](https://rosap.nhtl.bts.gov/view/dot/65623/dot_65623_DS1.pdf).

<sup>11</sup> NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., U.S. DEP'T OF TRANSP., DOT HS 813 184C, DRIVER ELECTRONIC DEVICE USE IN 2020, 1 (2021), <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813184.pdf>.

<sup>12</sup> *Distracted driving*, INS. INST. FOR HIGHWAY SAFETY, <https://www.iihs.org/topics/distracted-driving> (last visited June 20, 2024).

<sup>13</sup> NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., U.S. DEP'T OF TRANSP., DOT HS 813 298, EARLY ESTIMATES OF MOTOR VEHICLE TRAFFIC FATALITIES AND FATALITY RATE BY SUB-CATEGORIES IN 2021, 1 (2022), <https://www.nhtsa.gov/press-releases/early-estimate-2021-traffic-fatalities>.

<sup>14</sup> *Autonomous Vehicle Industry Association Releases First-Ever "State of AV" Report*, AUTONOMOUS VEHICLE INDUS. ASS'N (Apr. 10, 2024), <https://theavindustry.org/newsroom/press-releases/first-ever-state-of-av-report>.

<sup>15</sup> Luigi Di Lillo *et al.*, COMPARATIVE SAFETY PERFORMANCE OF AUTONOMOUS-AND HUMAN DRIVERS: A REAL-WORLD CASE STUDY OF THE WAYMO ONE SERVICE (2023), <https://arxiv.org/ftp/arxiv/papers/2309/2309.01206.pdf>.

<sup>16</sup> *Id.*

<sup>17</sup> *Waymo Significantly Outperforms Comparable Human Benchmarks Over 7 Million Miles of Rider-Only Driving*, WAYMO (Dec. 20, 2023), <https://waymo.com/blog/2023/12/waymo-significantly-outperforms-comparable-human-benchmarks-over-7-million/>.

<sup>18</sup> See American Vision for Safer Transportation through Advancement of Revolutionary Technologies Act, S. 1885, 115th Cong. (2017), <https://www.congress.gov/bill/115th-congress/senate-bill/1885>.

details a number of components such a law should include.<sup>19</sup> AVIA was pleased to see the Bipartisan Senate AI Working Group—led by Senators Schumer, Rounds, Heinrich, and Young—encourage continued “work on developing a Federal framework for testing and deployment of autonomous vehicles across all modes of transportation to remain at the forefront of this critical space. This effort is particularly critical as our strategic competitors, like the Chinese Communist Party, continue to race ahead and attempt to shape the vision of this technology.”<sup>20</sup>

Congress should also encourage NHTSA and the Federal Motor Carrier Safety Administration (“FMCSA”) to complete important outstanding rulemakings that, once completed, would help bring the safety benefits of AV technologies to communities across the country. The first rulemaking, from NHTSA, would create the *ADS-Equipped Vehicle Safety Transparency and Evaluation Program* (“AV STEP”).<sup>21</sup> First announced in July of 2023,<sup>22</sup> AV STEP would create an exemption and oversight framework for deploying non-FMVSS compliant ADS-equipped vehicles with permission from NHTSA. If put into place, this program would benefit AV developers by providing them a clear regulatory path forward for vehicles whose designs require exemptions from the current FMVSS but would also provide NHTSA with valuable data on AV safety, which can inform further AV-related rulemaking. NHTSA had originally indicated that a notice of proposed rulemaking (“NPRM”) would be issued on AV STEP in the fall of 2023, but that NPRM has yet to be made public.

The second outstanding rulemaking that would help with the wider deployment of AV technologies and their safety benefits is FMCSA’s proposed rule on Motor Carrier Operation of Automated Driving System (ADS)-Equipped Commercial Motor Vehicles.<sup>23</sup> This rulemaking would make needed updates to the Federal Motor Carrier Safety Regulations (“FMCSRs”) to incorporate considerations for ADS-equipped commercial motor vehicles (“CMVs”) and codify FMCSA’s existing interpretation that the FMCSRs do not require a human driver to operate or be present in a CMV operated by a SAE Level 4 or Level 5 ADS.<sup>24</sup> Currently this rulemaking is under review by the Office of Management and Budget, and it is unclear when it will be finalized.

One additional piece of regulatory action at FMCSA that would aid in the deployment of AVs and promote roadway safety is the granting of an existing AV-industry-backed exemption petition that would allow ADS-equipped vehicles to use alternative warning devices to signal when an ADS-equipped CMV is stopped on the roadside.<sup>25</sup> This data-backed exemption petition was filed in January 2023 and has been pending for 17 months. This is far beyond the typical review period for equipment and lighting-related petitions, which over the last several years have, on average, been completed within 8 months.<sup>26</sup> FMCSA should act expeditiously to ensure AV developers can more easily deploy their commercial motor vehicles and contribute to improving roadway safety.



<sup>19</sup> AUTONOMOUS VEHICLE INDUS. ASS’N, FEDERAL POLICY FRAMEWORK FOR OUR AV FUTURE (March 2023), <https://theavindustry.org/resources/AVIA-Federal-Policy-Framework-for-Our-AV-Future.pdf>.

<sup>20</sup> BIPARTISAN SENATE AI WORKING GROUP, DRIVING U.S. INNOVATION IN ARTIFICIAL INTELLIGENCE 12–13 (May 2024), <https://www.politico.com/f/?id=0000018f-79a9-d62d-ab9f-9a9f975d0000>.

<sup>21</sup> *Exemption and Demonstration Framework for Automated Driving Systems 2127-AM60*, REGINFO.GOV, <https://www.reginfo.gov/public/do/eAgendaViewRule?pubId=202304&RIN=2127-AM60>.

<sup>22</sup> Ann Carlson, Acting Adm’r, Nat’l Highway Traffic Safety Admin., Keynote Address at the Automated Road Transportation Symposium (ARTS2023) (July 12, 2023), <https://www.nhtsa.gov/speeches-presentations/automated-road-transportation-symposium-arts23-keynote-address>.

<sup>23</sup> *Motor Carrier Operation of Automated Driving System (ADS)-Equipped Commercial Motor Vehicles 2126-AC17*, REGINFO.GOV, <https://www.reginfo.gov/public/do/eAgendaViewRule?pubId=202310&RIN=2126-AC17>.

<sup>24</sup> U.S. DEPT OF TRANSP., PREPARING FOR THE FUTURE OF TRANSPORTATION: AUTOMATED VEHICLES 3.0 (AV 3.0) 9 (Oct. 2018), <https://www.transportation.gov/sites/dot.gov/files/docs/policy-initiatives/automated-vehicles/320711/preparing-future-transportation-automated-vehicle-30.pdf>; Safe Integration of Automated Driving Systems-Equipped Commercial Motor Vehicles, 84 Fed. Reg. 24449, 24453 (May 28, 2019).

<sup>25</sup> See AURORA & WAYMO, FMCSA-2023-0071-0011, JOINT WAYMO-AURORA APPLICATION FOR EXEMPTION (Jan. 10, 2023), <https://www.regulations.gov/document/FMCSA-2023-0071-0011>.

<sup>26</sup> FMCSA’s own regulations state that the agency will attempt to issue a final decision on any exemption application within 180 days of receipt. 49 C.F.R. § 381.320.