Safe on the Road

Empowering Senior Drivers Webinar Series #2: Adapting and Staying Safe

Sponsored by Uber

Jan. 14, 2025

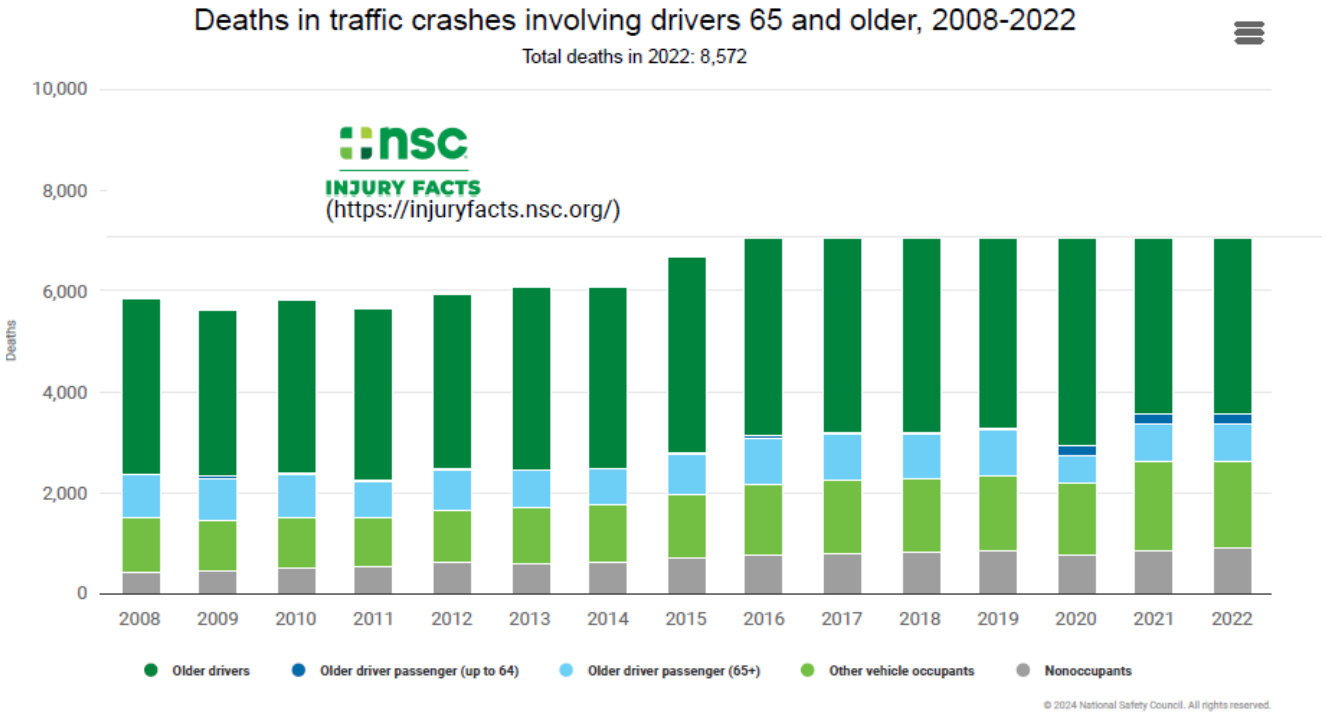
Road to Zero and the Safe System Approach

What's Known About Ageing & Driving

- There are natural declines in cognitive and physical abilities relevant to driving
- There is an increased likelihood of health conditions that can pose a risk to safety
- Some adaptations can reduce those risks and help people driver safer for longer
- How exactly can training and technology help?

National Safety Council

Background



National Safety Council

ROAD TO ZERO

Today's Panel

Josh Dunning
AARP

Renée St. Louis
University of Michigan
Transportation
Research Institute

Aimee Cox
Insurance Institute
for Highway Safety

nsc National Safety Council

ROAD TO ZERO

Driver Safety Programs

Josh Dunning, Vice President, AARP Driver Safety

AARP fights for and equips everyone to live their best life.

The nation’s largest nonprofit, nonpartisan organization dedicated to people age 50+ and their families

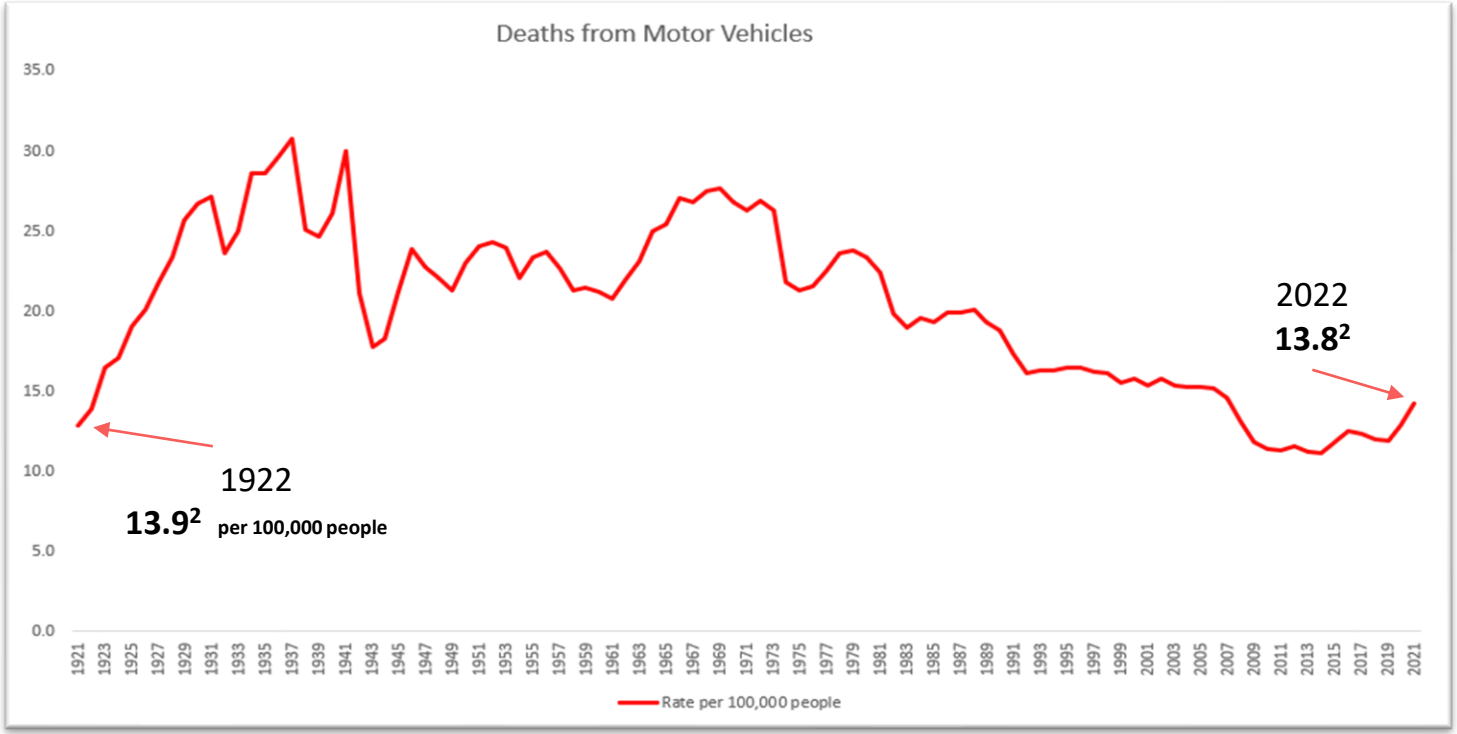
50+ years of Driver Safety Leadership

- From 1969: AARP Volunteers taught the National Safety Council's Driver Improvement Course

- In 1979, AARP created 55 Alive, a defensive driving course designed specifically for drivers aged 55+.

AARP Volunteer teaching in 1972

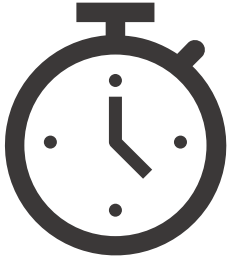
The Problem Too many people die on our nation's roadways – 42,795[1] in 2022



1 NHTSA 2022 death statistics
2 National Safety Council Injury Facts.

Consumer Problems We Address

Drive safe now



Know when its time to limit or stop driving

Get around without driving

Program Portfolio

Our Work: Develop and deploy transportation education designed to help drivers and riders remain safe, independent, connected, and confident as they age.

Smart Driver
Est. 1979

Classroom and online course designed to refresh driving skills, stay safe & save money.

CarFit
Est. 2004

Free educational program helping older drivers adjust their “fit” for maximum safety and comfort.

We Need to Talk
Est. 2005

Free seminar focusing on family conversations about limiting or stopping driving.

Smart DriverTEK
Est. 2016

Free workshops focused on new vehicle technology that is keeping people safer on the roads.

Getting Around w/o Driving
Est. 2018

Online learning and written guides that support Individuals to get around with out driving - Rideshare education and other modes of transportation.

On Demand Learning Library
Est. 2020

A library of video content explaining vehicle technology, autonomous vehicles, ridesharing services and much more.

AARP SafeTrip™
Est. 2022

Our newest offering launched in Dec. 2022 will provide real-time education when it matters most via a smart phone app.

OUR VOLUNTEER POWER

OFFICES IN ALL

50 states, the District of Columbia, Puerto Rico and U.S. Virgin Islands

3K+ Volunteers nationwide

10K+ annual in-person events conducted

6K+ host locations nationwide

360K+ Volunteer hours per year

85% are satisfied with their AARP Driver Safety role

The AARP Smart Driver™

- Nation's first and largest refresher course designed specifically for drivers aged 50 and older.
  - **Research-based**
  - **Easy-to-follow format**
  - **4, 6 or 8 hours depending on the state**
- Available in a classroom or online setting, in English and other languages.
- Price for the course varies by state and membership status but ranges between $20-$30.

In-person: **www.aarp.org/findacourse**

Online: **www.aarpdriversafety.org**

OUR RESULTS

9/10 have changed at least one driving behavior.

90% would recommend the course to a friend.

89% consider themselves confident drivers.

20 Million PARTICIPANTS

$85 Million ANNUAL INSURANCE SAVINGS

SMART DRIVER

AARP SafeTrip™

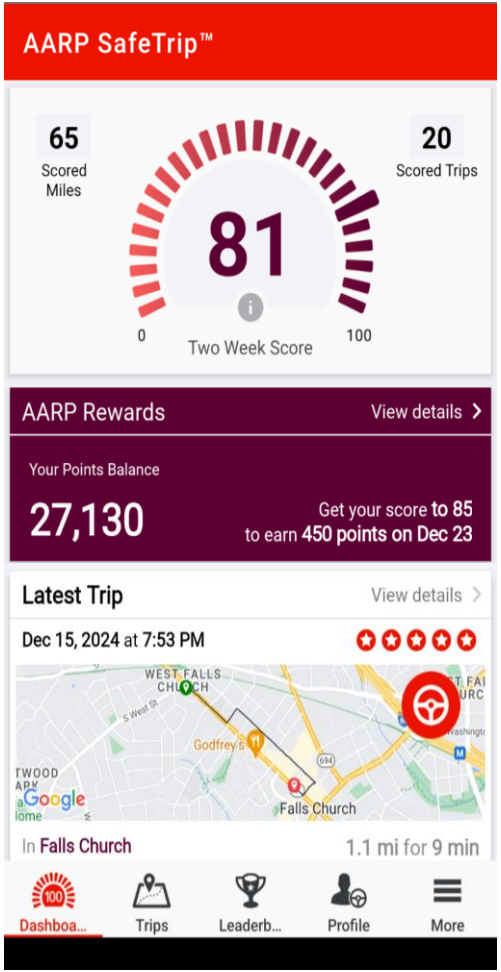
Safer driving could be as close as your smartphone.

Monitor your driving skills and get rewarded with the free AARP SafeTrip℠ app.

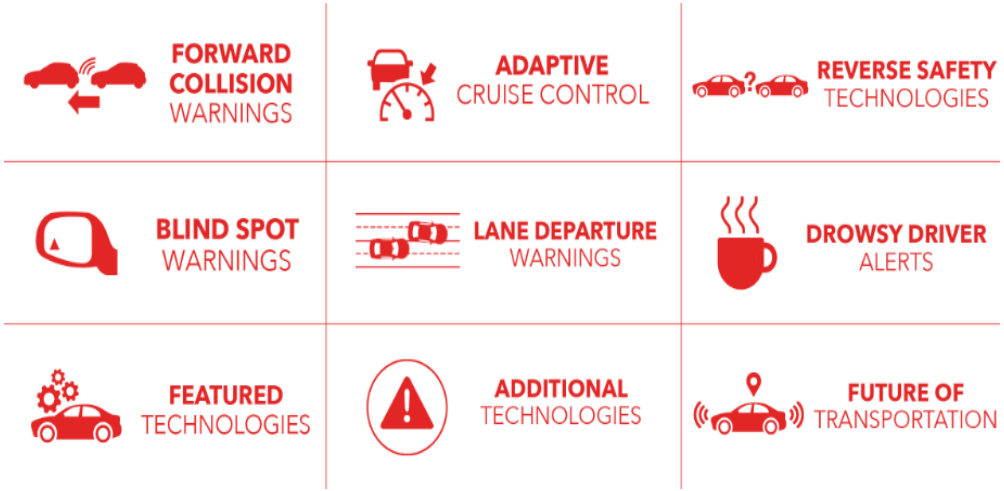
AARP SafeTrip™

- Monitors key driving behaviors:
  - **Speeding – Acceleration – Braking – Cornering - Phone use**
- Gain insight on good behaviors – and where you may need a little improvement.
- All data belongs to you and will not be sent to your insurance company.
- Share and compare driving scores with friends and family.
- Earn AARP Rewards points

www.aarp.org/SafeTrip



Smart DriverTEK℠



- Free 90-minute workshop on the latest safety features in your current car, or what technology to look for when shopping for a new car
- Overview of 9 crash-avoidance technologies
- Offered online, virtually via Zoom and in-person

www.aarp.org/SDTEK

CarFit: Find the Best Fit

- Free event to ensure safety and comfort
- Partnership between AARP and the American Occupational Therapy Association (AOTA)
- 12 Key areas are reviewed including:
  - Distance between driver and steering wheel
  - Seat height for best visibility
  - Side and rearview mirror settings

www.car-fit.org

We Need to Talk: Family Conversations

- Practical tips to help you determine how to assess a loved one's driving skills
- Warning signs that it may be time to have a conversation
- Tools to help you have this important conversation.

Based on information created jointly by The Hartford and MIT AgeLab.

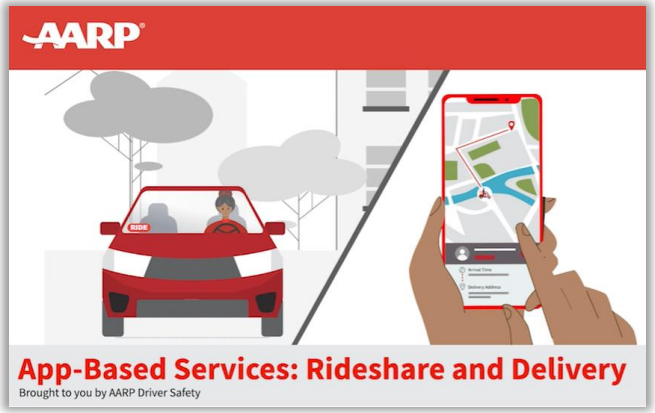
aarp.org/WNTT

Other Great Driver Safety Programs

Electric Vehicles

Free 60-minute workshop covering key considerations for purchasing and owning an EV.

aarp.org/EV



App-Based Services

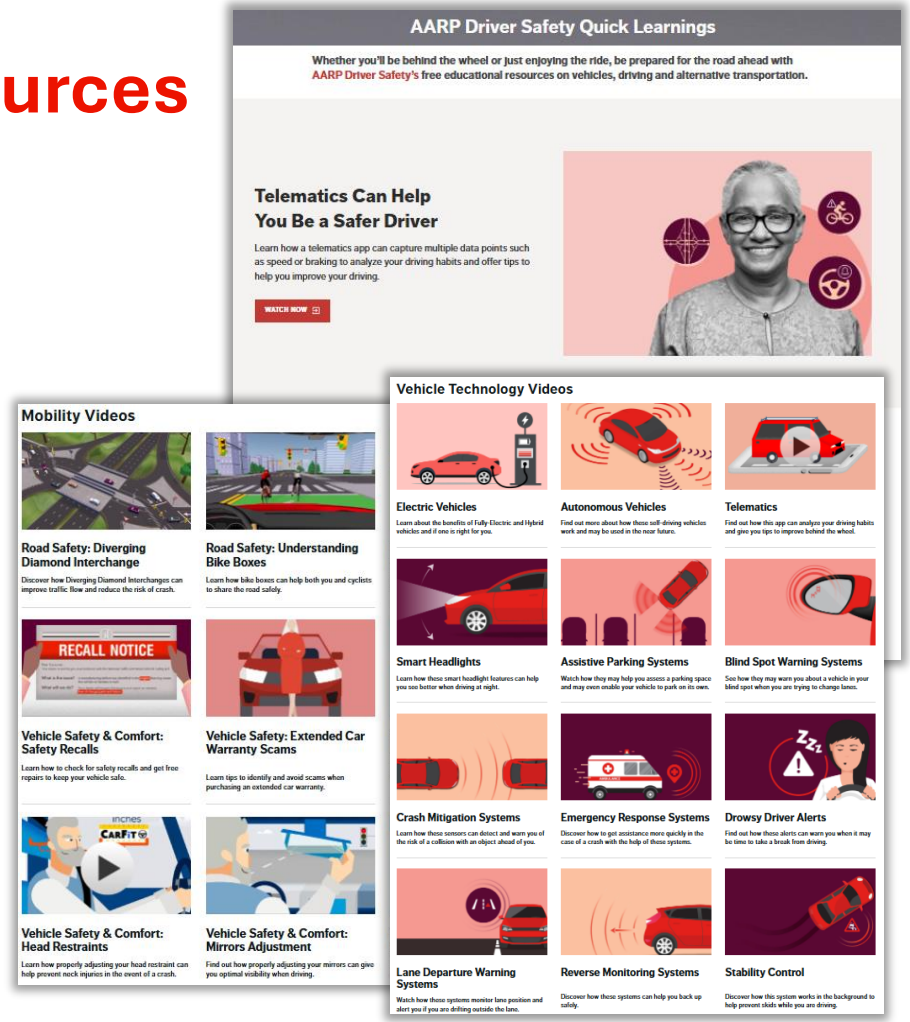
Free 60-minute workshop covering ride and food delivery app services.

aarp.org/rideshare

Quick Learning Video Resources

- Series of short videos and online programming explaining vehicle technology, autonomous vehicles, ridesharing services and much more.

aarp.org/QuickLearnings



Thank You!

Ways to partner with AARP Driver Safety

- Host events
- Sponsor new program development
- Joint research

Older Adults' Use of Advanced Vehicle Technologies: Training and Design Considerations

Renée M. St. Louis, PhD

January 14, 2025

Background

- Research has suggested the potential for advanced driver assistance systems (ADAS) to improve safety and driving comfort by helping aging drivers overcome functional declines commonly experienced in later life
- Attaining anticipated benefits is dependent upon drivers' awareness, understanding, and use of ADAS in their own vehicles
- Three studies

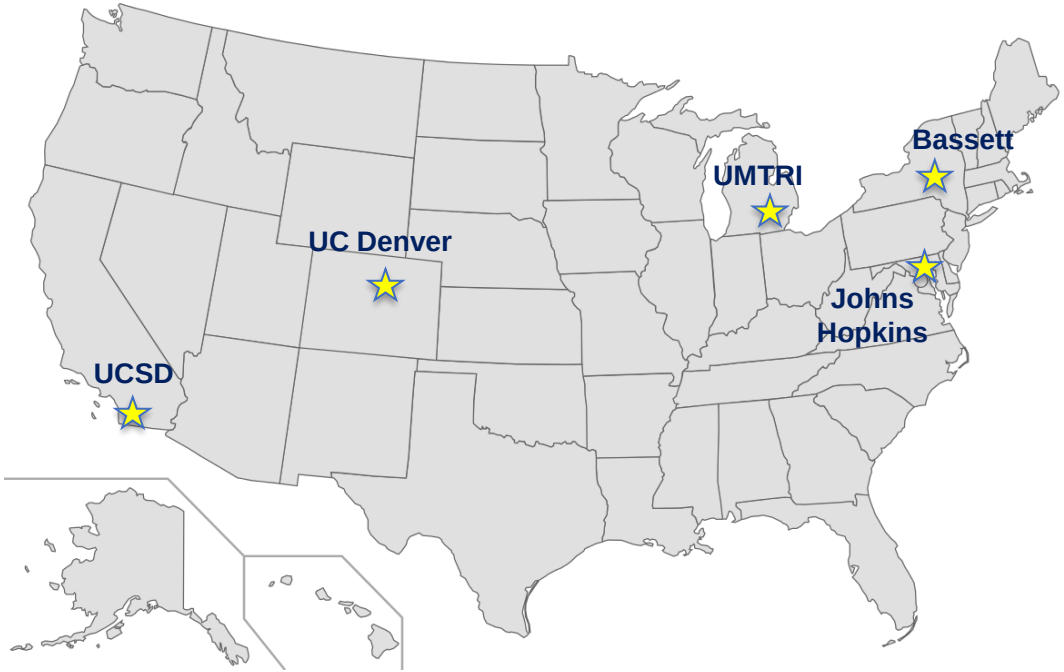
Q 1 How often do older adults use ADAS and how did they learn to use ADAS?

Q 2 What are the benefits and barriers to using ADAS and other automated vehicle technologies?

Q 3 What is the influence of a hands-on training program on knowledge and trust in ADAS?

Q 1 Longitudinal Research on Aging Drivers (LongROAD) Study

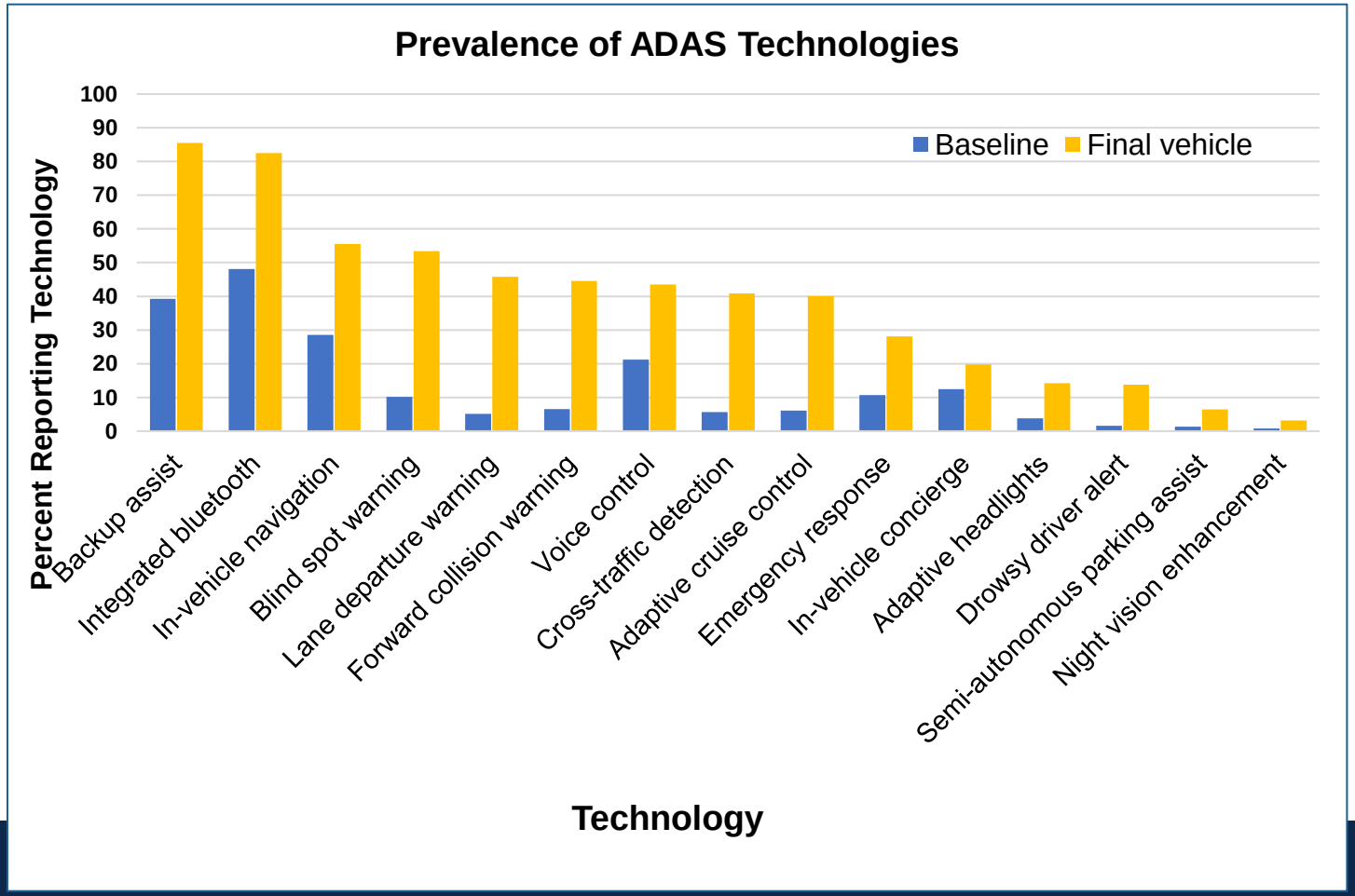
- Multi-site prospective cohort study of 2,990 drivers aged 65 to 79 years
- Recruitment began July 2015, study ended December 2022



https://aaafoundation.org/longroad/

FOUNDATION FOR TRAFFIC SAFETY

Prevalence



- 1,417 participants changed vehicles
- Statistically significant increases; p<.001

Frequency of use

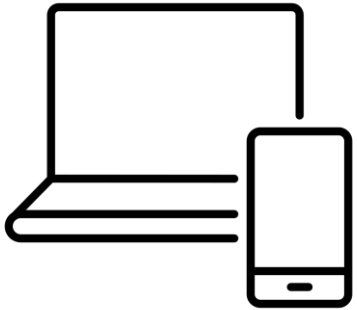
Functionality	Technology	Frequency of use 1 (never) - 5 (always)			
		Baseline		Final vehicle	
		n	Mean (SD)	n	Mean (SD)
Alert drivers to unsafe driving situations; drivers must take action to mitigate potential hazards	Blind spot warning	144	4.7 (1.0)	753	4.8 (0.7)
	Forward collision warning	93	4.6 (1.0)	625	4.6 (1.0)
	Lane departure warning	73	4.2 (1.4)	648	4.2 (1.4)
Intended to support drivers for safe vehicle operations	Drowsy driver alert	21	5.0 (0.0)	195	4.3 (1.4)
	Night vision enhancement	11	3.3 (1.7)	46	3.4 (1.6)
Intended to support drivers with services or information	Voice control	294	3.7 (1.3)	608	3.7 (1.3)
	Integrated Bluetooth	672	3.3 (1.6)	1154	3.1 (1.6)
	In-vehicle navigation	405	3.4 (1.5)	772	3.4 (1.5)
	In-vehicle concierge	176	1.8 (1.0)	278	1.6 (0.8)
Take action to assist drivers with vehicle operations	Adaptive cruise control	83	3.0 (1.4)	554	2.9 (1.4)
	Semi-autonomous parking assist	19	1.9 (1.4)	89	1.7 (1.1)

- **No statistically significant change in frequency of use for any technology**

St. Louis et al. (2023)

Learning methods

- “Figured it out by myself” reported as primary method for learning how to use all ADAS except semi-autonomous parking assist
- “Never learned” more frequently reported for ADAS that assist with vehicle operations and support services
  - Semi-autonomous Parking Assist
  - Adaptative Cruise Control
  - Voice Control
  - Bluetooth



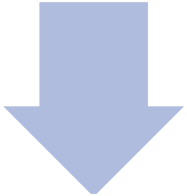
- Internet least prevalent source for learning to use ADAS
- Less frequent use of certain ADAS by older drivers could be due to lack of appropriate training

Two related projects

CENTER FOR CONNECTED AND AUTOMATED TRANSPORTATION

Q 2

Qualitative study using focus groups with older adults to learn more about potential benefits and barriers to using automated vehicle technologies



Q 3

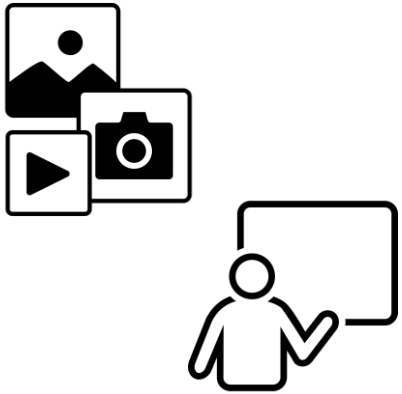
Develop and test a training program for older adults to learn more about ADAS and automated vehicle technologies

Results: Focus groups

- N = 20; Mean age: 70 years
- Recognize the potential value of ADAS and fully-automated vehicles for maintaining safe mobility as driving abilities decline
- Learning how to use advanced vehicle technologies was identified as the first-ranked barrier to use
- Strong preference for hands-on experiences to increase perceived safety and trust in new technologies
  - Too many types of technologies to provide meaningful and detailed training on each of them
- There is a need for training programs targeted specifically at older adults

Training program

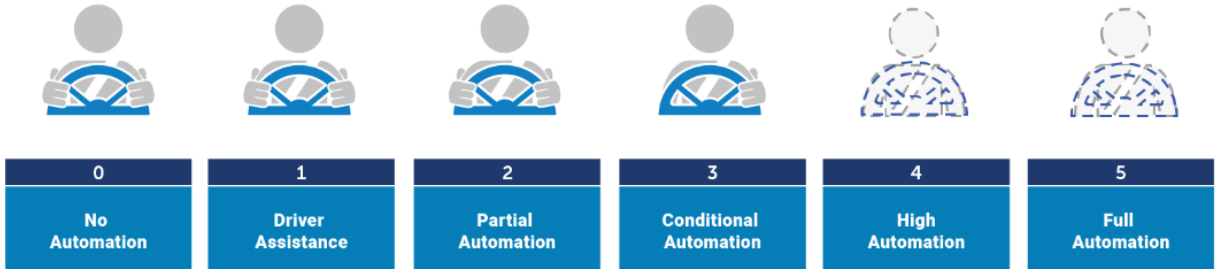
- The training program was designed to:
  - Use a multimedia approach
  - Provide background and resources for understanding and learning how to use specific ADAS technologies
  - Demonstrate technologies in a vehicle on the Mcity test track



- Pre/post surveys to assess changes in confidence, attitudes, intent to use advanced technologies; feedback on the training
- N=29: Mean age = 73 years (range: 66-87)

Training program - Classroom

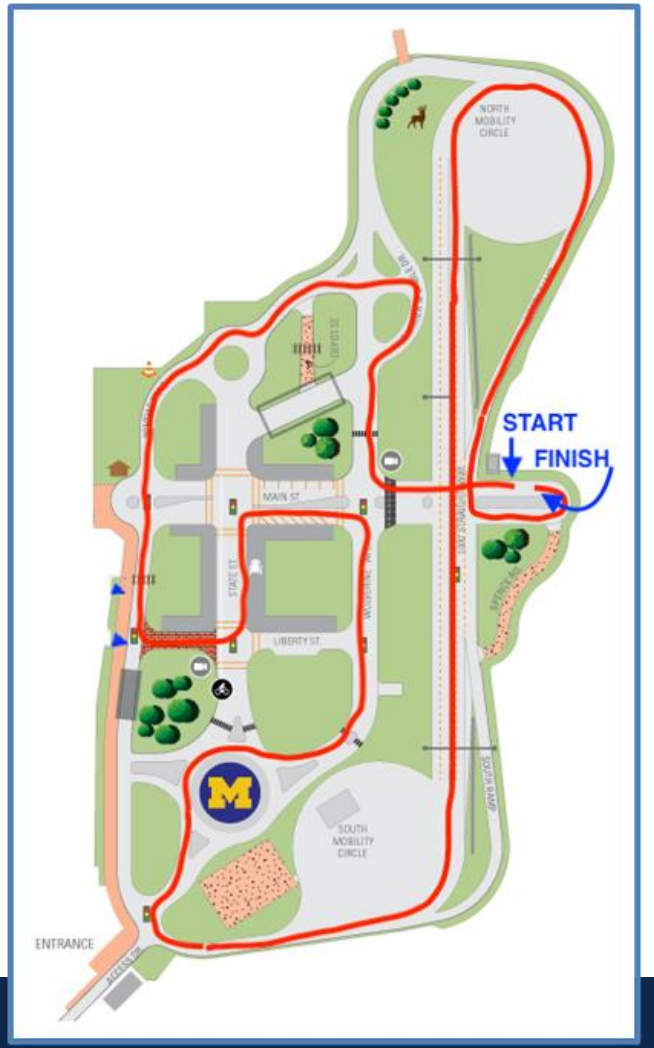
- The classroom training included (30 min):
  - Introduction to ADAS including a short video
  - Progression of automated vehicle technology



  - Two short videos on ADAS and AVs
  - Discussion of why learning about these technologies is important

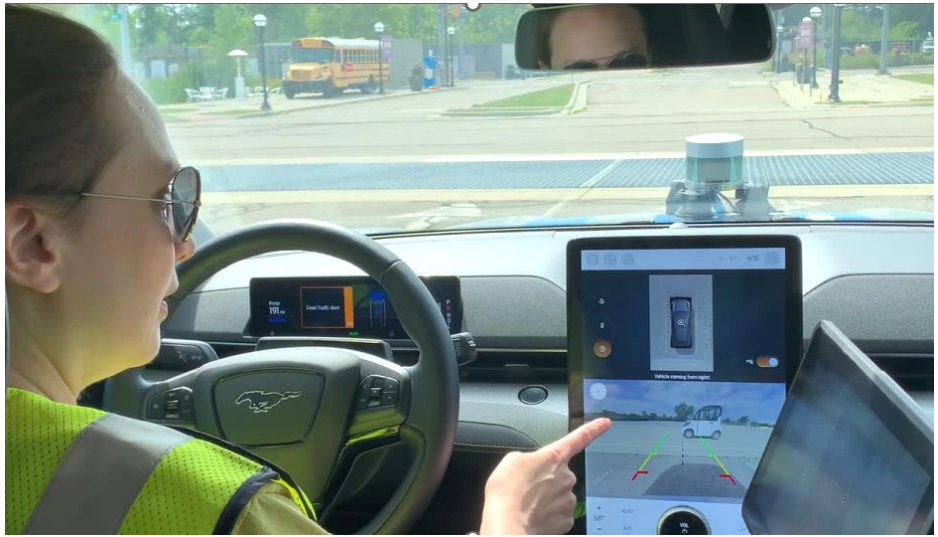
Training program - Demonstrations

- The Mcity demonstrations included (30 min):
  - Simulated AV ride through Mcity course
  - ADAS demo
- Ford Mustang Mach-E
- Safety driver and three research participants as passengers

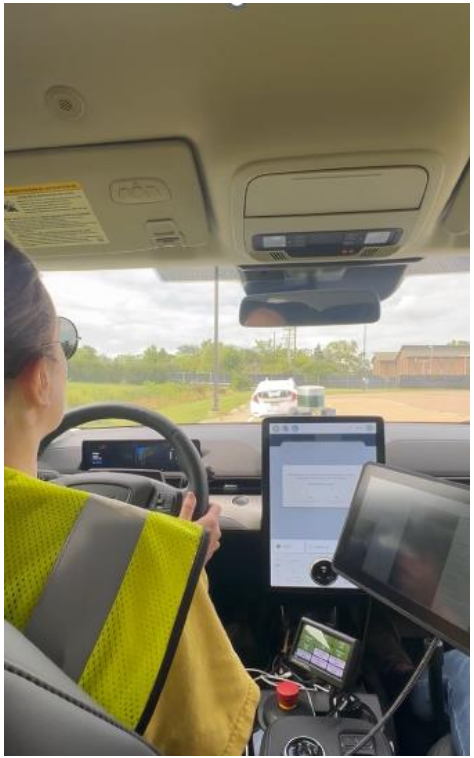


Training program - Demonstrations

Back-up cross-traffic alert



Automatic emergency braking



Results and Feedback on the Training

- Pre/post survey showed significant increases in trust and intention to use automated technologies, and significant decrease in perceived safety risk

97% agreed the hands-on demonstration helped them to better understand advanced technologies

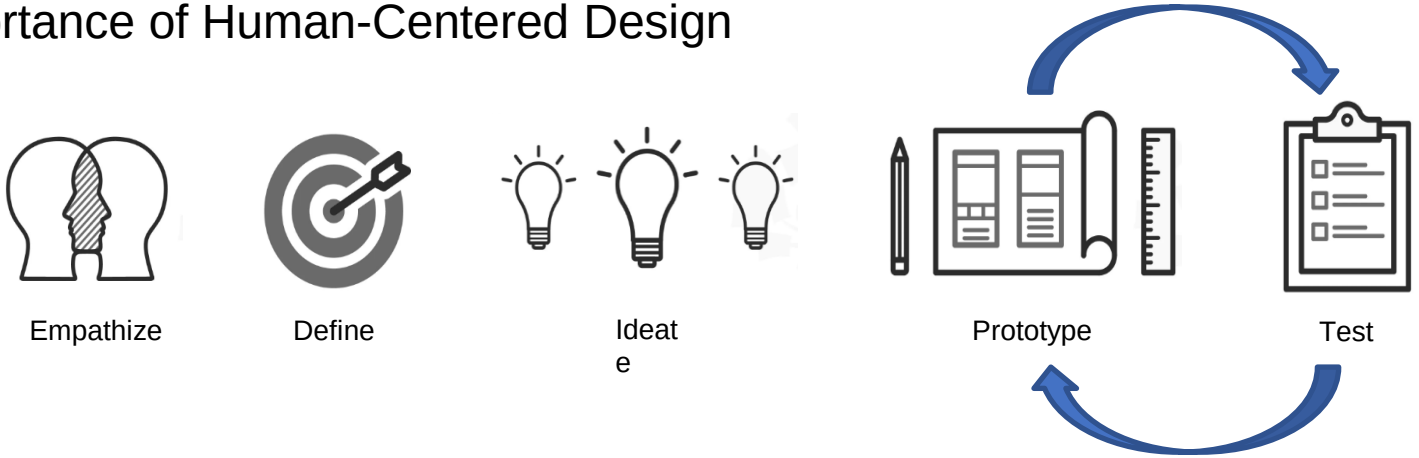
97% agreed that they would recommend the training program to friends and family

83% agreed that they were more excited about the future of automotive technologies

82% agreed that they will consider or have increased their use of ADAS technology in their own vehicle

Inclusion of older adults in design of technology and training

- Design of advanced technology is informed by Human Machine Interface guidelines and testing protocols
  - 50th percentile male; limited guidance about perceptual, cognitive, or psychomotor impairments
- Importance of Human-Centered Design



- Inclusion of older adults/caregivers throughout process
- Promote equity and accessibility

IDEO.org, 2015

Looking ahead

- Safety benefits are reduced if older drivers do not use their ADAS or do not understand operational limitations of these technologies
- Addressing the digital divide
  - Many older adults may not have access to or knowledge of the digital platforms that new training programs tend to utilize
  - Preference for hands-on or in-person training
- Human-centered design as a tool to develop solutions that are inclusive of varying needs, preferences, and capabilities
  - Establish how older adults' capabilities and limitations can be supported with the vehicle design process and training programs
  - Design can influence trust, acceptance, and accessibility

Thank you!

rstloui@umich.edu

Potential safety benefits and use of ADAS

Road to Zero and Uber Older Driver Safety Series

January 14, 2025

Aimee Cox
Research Scientist

Can safety features for the general population uniquely benefit older drivers?

- Older drivers have highest fatality rates
- Overrepresented in some crash scenarios
- Vehicle environment changing
  - Most vehicle safety features are designed for all drivers
  - Maximum benefits may vary by driver age because of the types of crashes they tend to have

Maximum potential safety benefits for older relative to middle-aged drivers

- Nationwide crash data: CRSS and FARS from 2016 to 2019
- Drivers ages 70+ and 35-54
- For each scenario:
  - Average annual number of crash involvements
  - Average annual number of drivers injured
  - Average annual number of drivers killed

Conventional crash avoidance features

- Front crash prevention
  - Rear-end crashes
  - Pedestrian crashes

Lane departure prevention

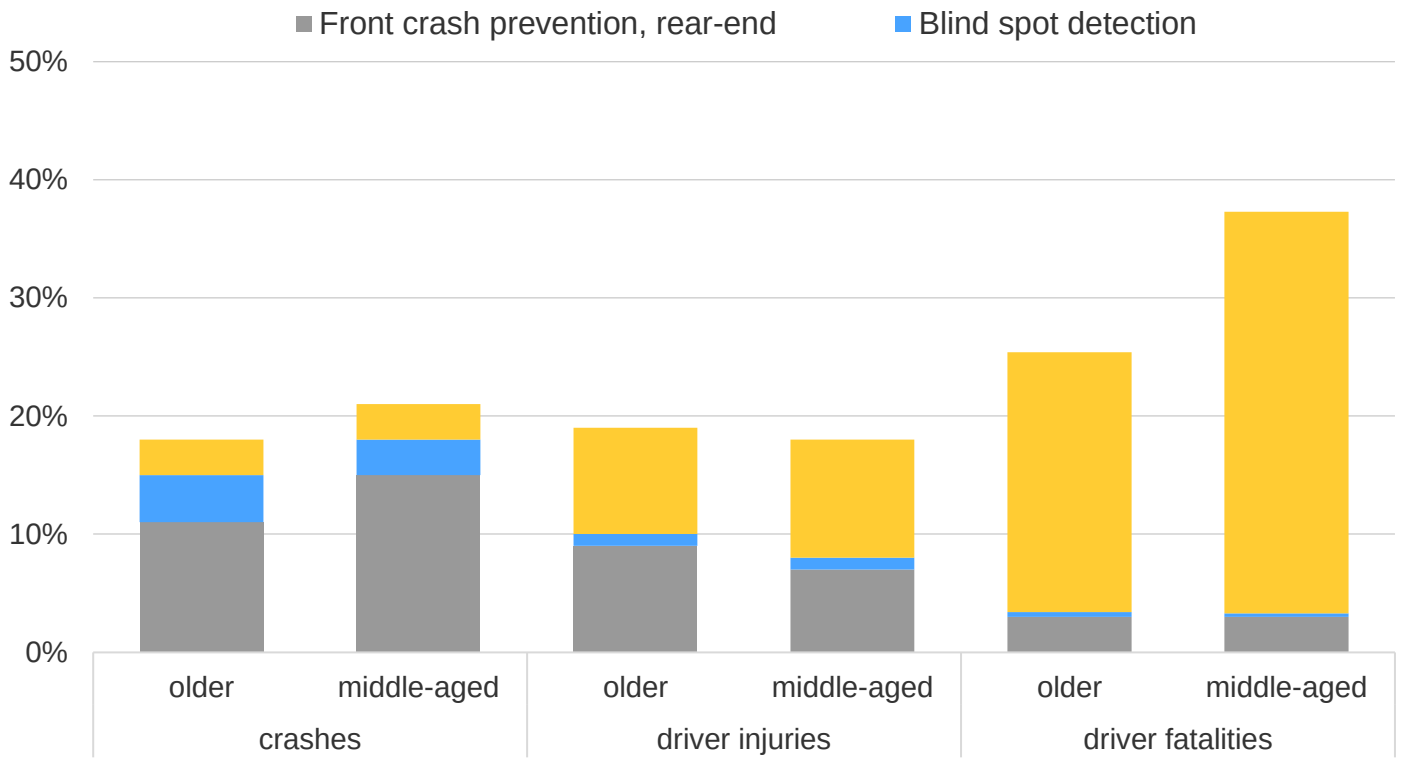
- Single-vehicle road departure crashes
- Sideswipe crashes without lane change
- Head-on crashes without lane change

Blind spot detection

- Intentional lane change crashes

Conventional crash avoidance features

Percent of crashes, driver injuries, and driver deaths relevant to systems

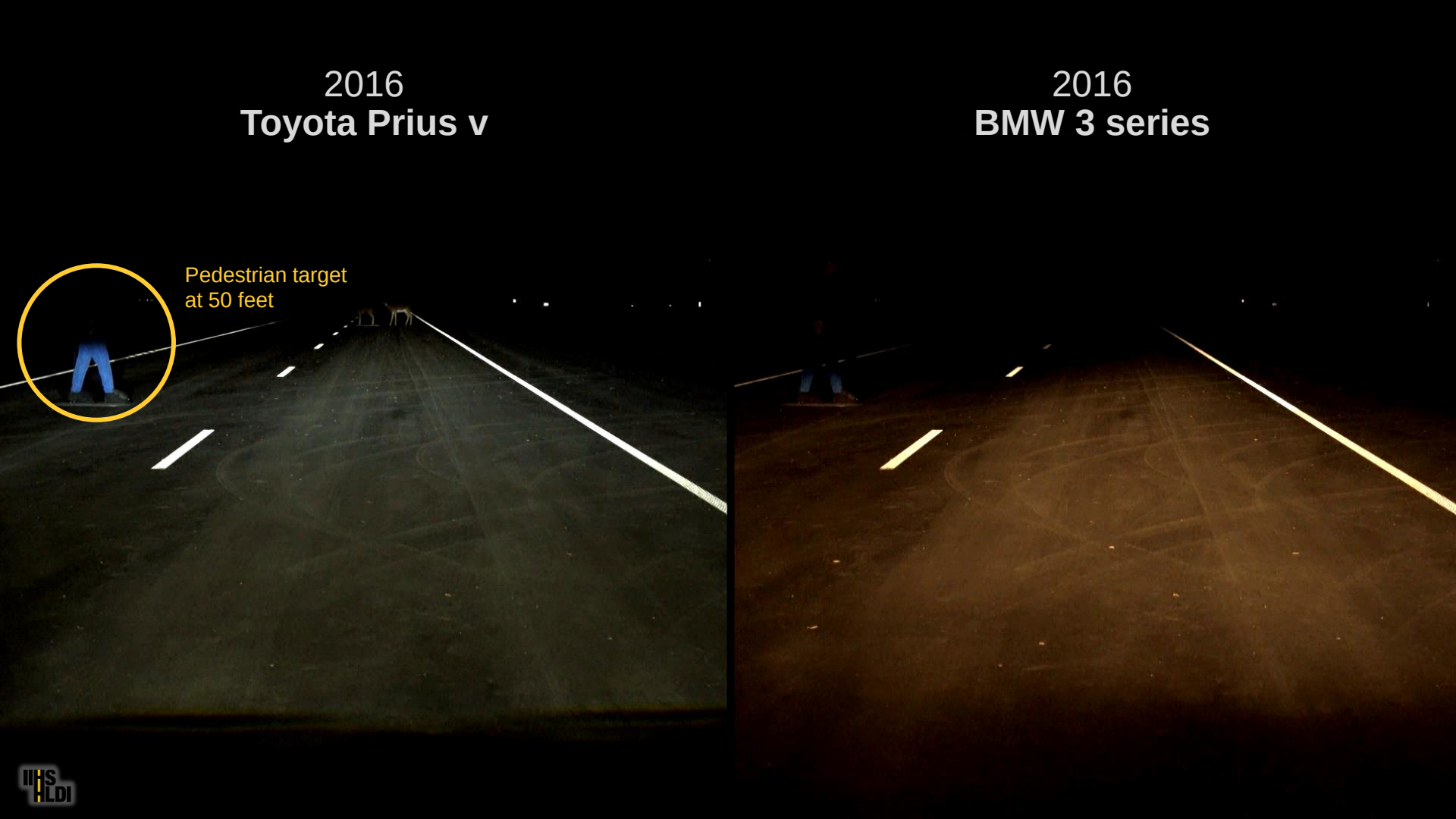


Improved headlights

- Crashes in dark ambient lighting conditions

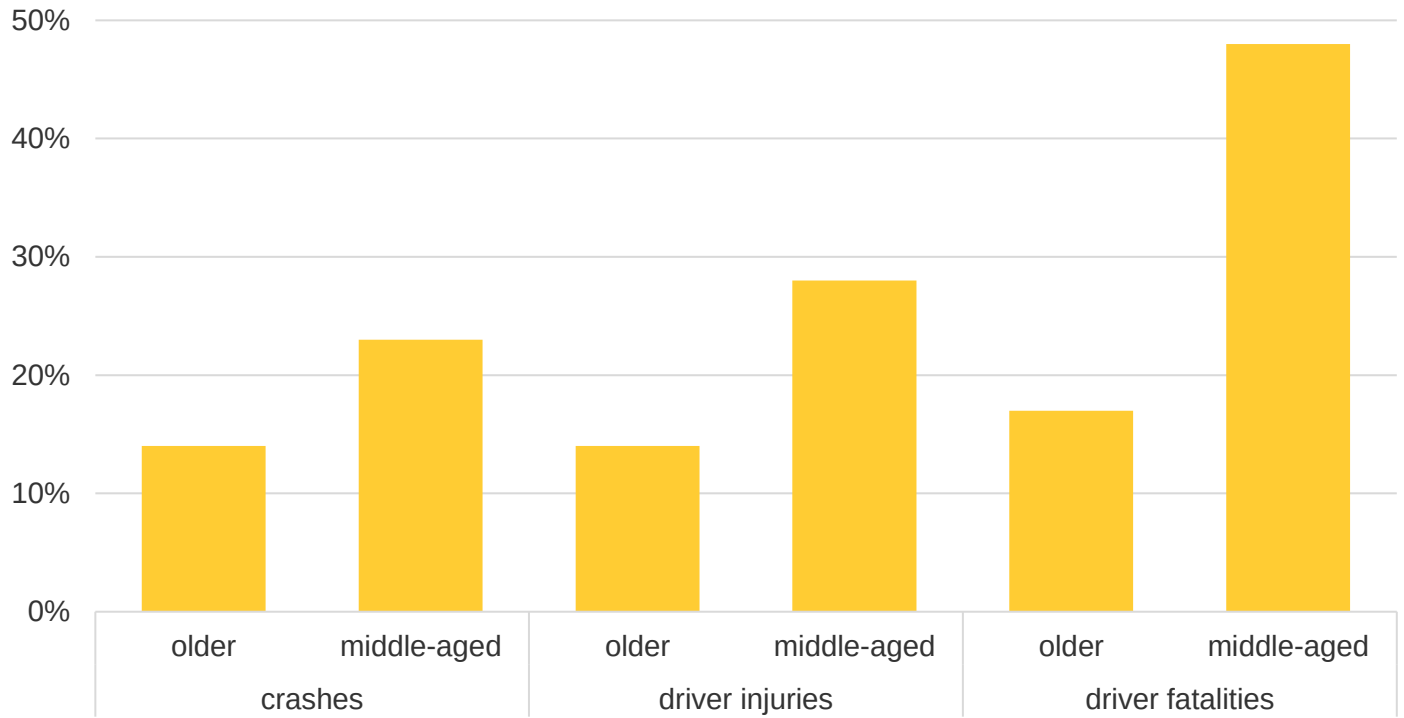
2016
Toyota Prius v

2016
BMW 3 series



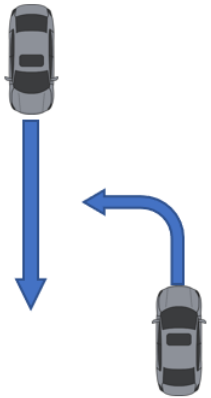
Improved headlights

Percent of crashes, driver injuries, and driver deaths relevant to systems



Intersection assistance features

Left turn assist (LTA)

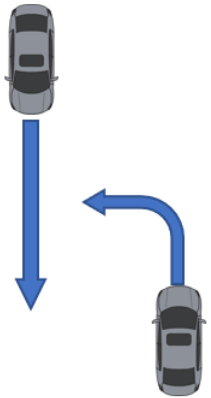


- Left turn across path crashes

  Alerts vehicle making left turn

Vehicle-to-vehicle (V2V) enhanced safety technologies

V2V-enhanced LTA



- Left turn across path crashes

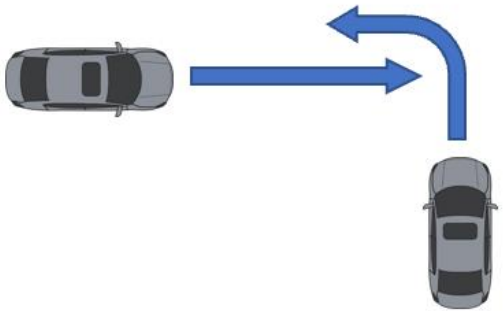
  Alerts both:

  Vehicle making left turn

  Vehicle traveling straight

Vehicle-to-vehicle (V2V) enhanced safety technologies

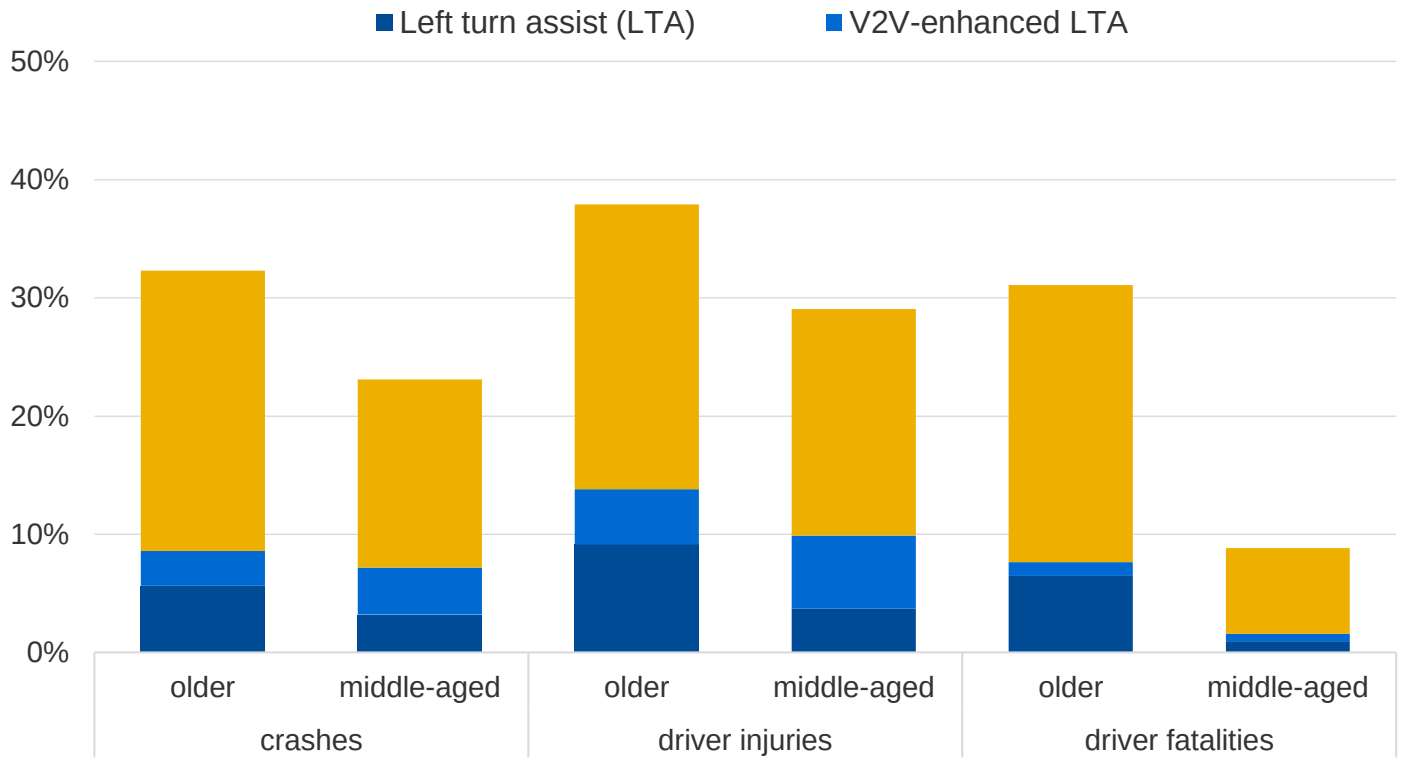
Intersection movement assist (IMA)



- Straight crossing path
- Turn into path same direction
- Turn into path opposite direction

Intersection assistance features

Percent of crashes, driver injuries, and driver deaths relevant to systems

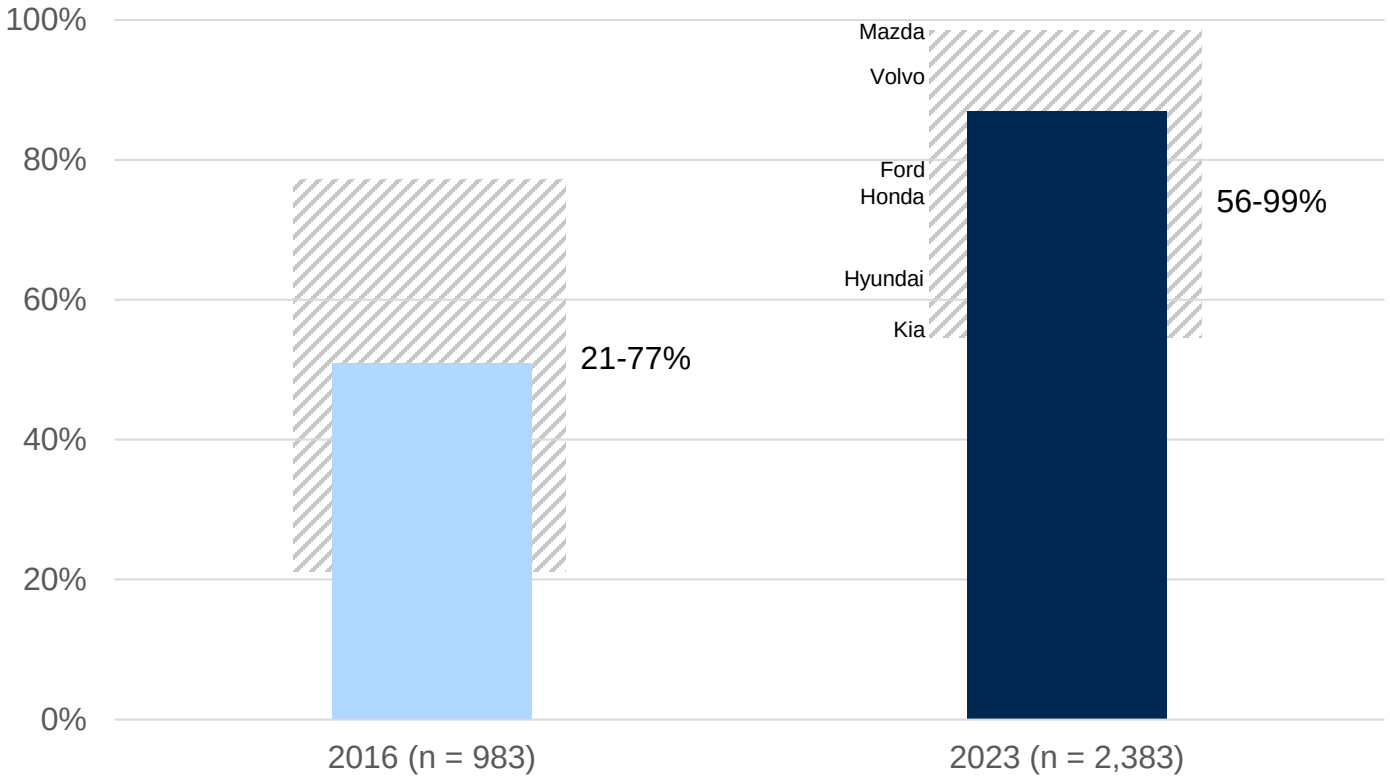


Dealership observation study


Range
136 mi
58%
MPH
0
GROUND SPEED
SPEED LIMIT 25
P
R
N
D
L
E
BRAKE READY
6850.4 mi

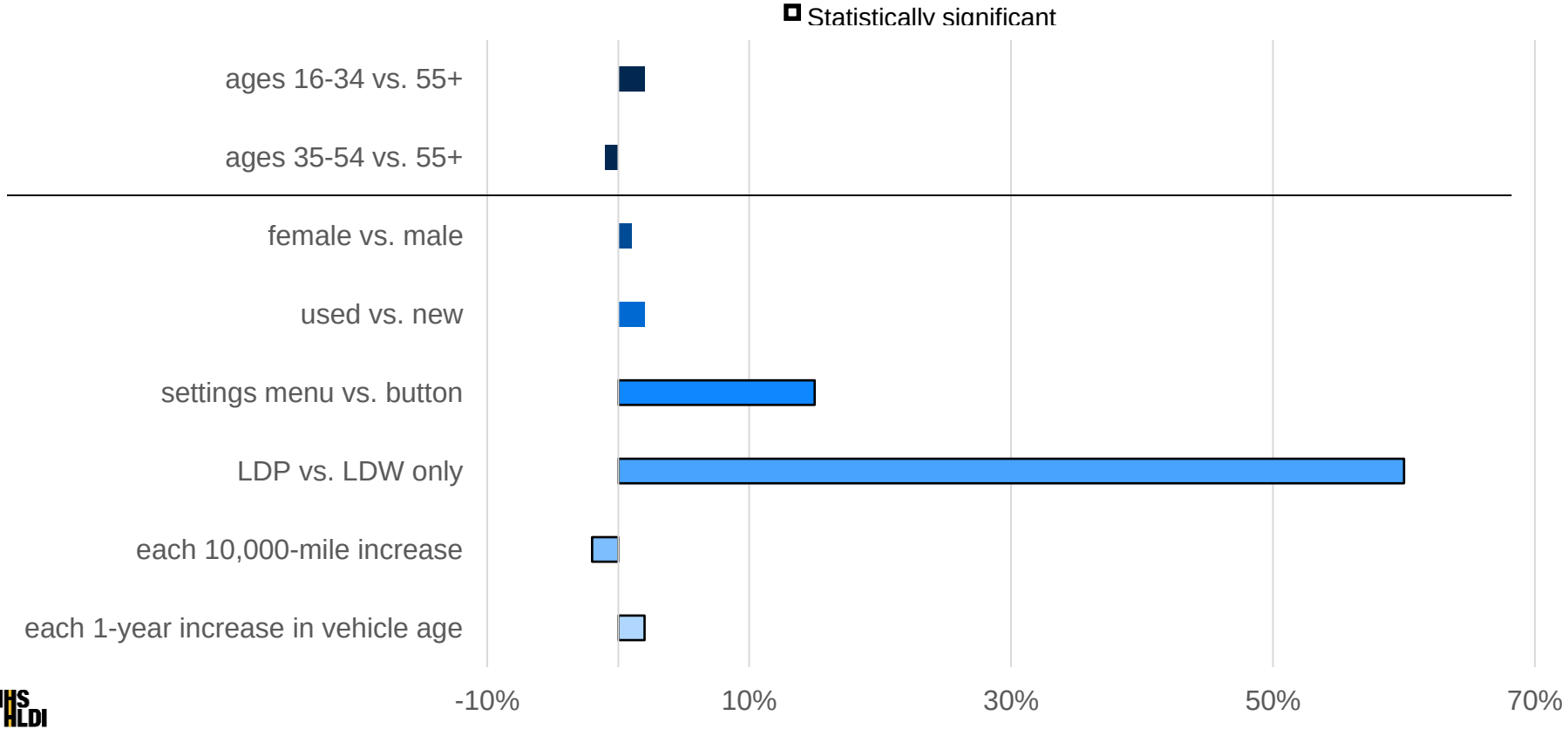
Activation rates of lane departure systems, 2016 vs. 2023

Sample average and manufacturer range



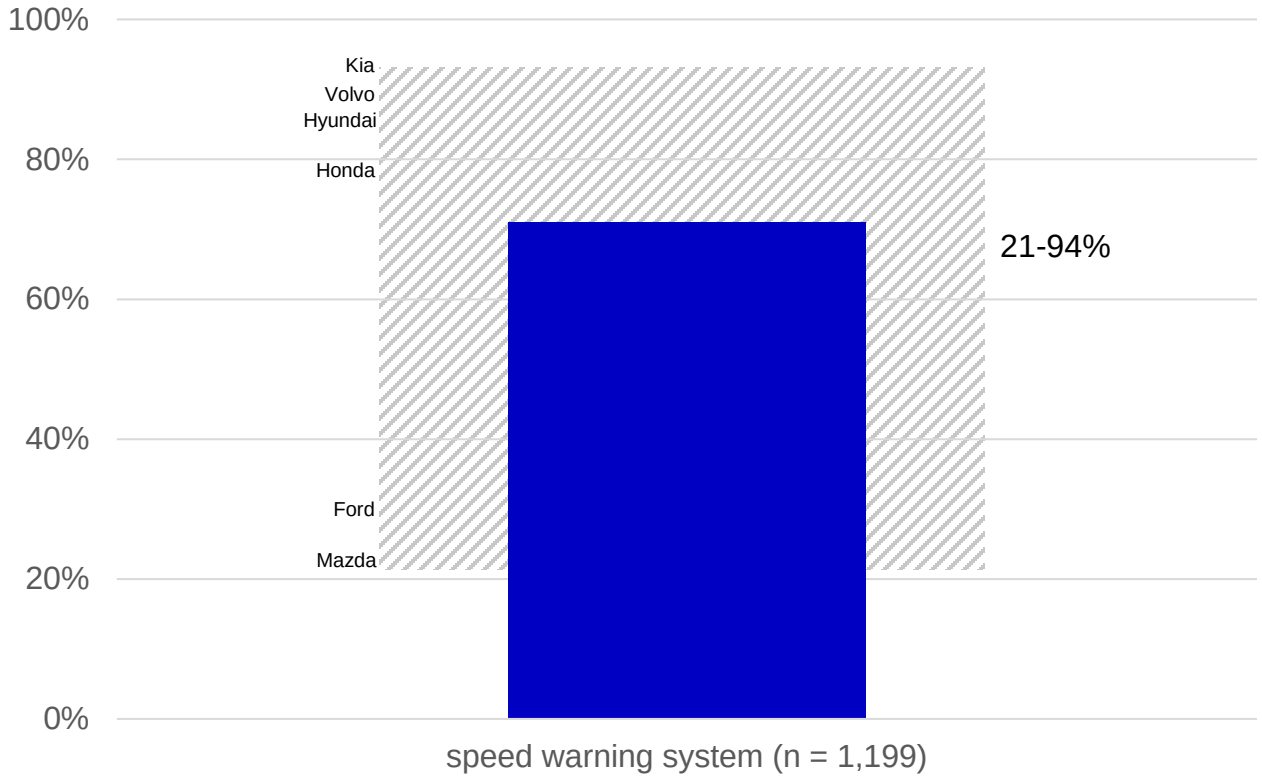
Relative likelihood of lane departure system activation

Vehicle and rated driver characteristics when controlling for OEM



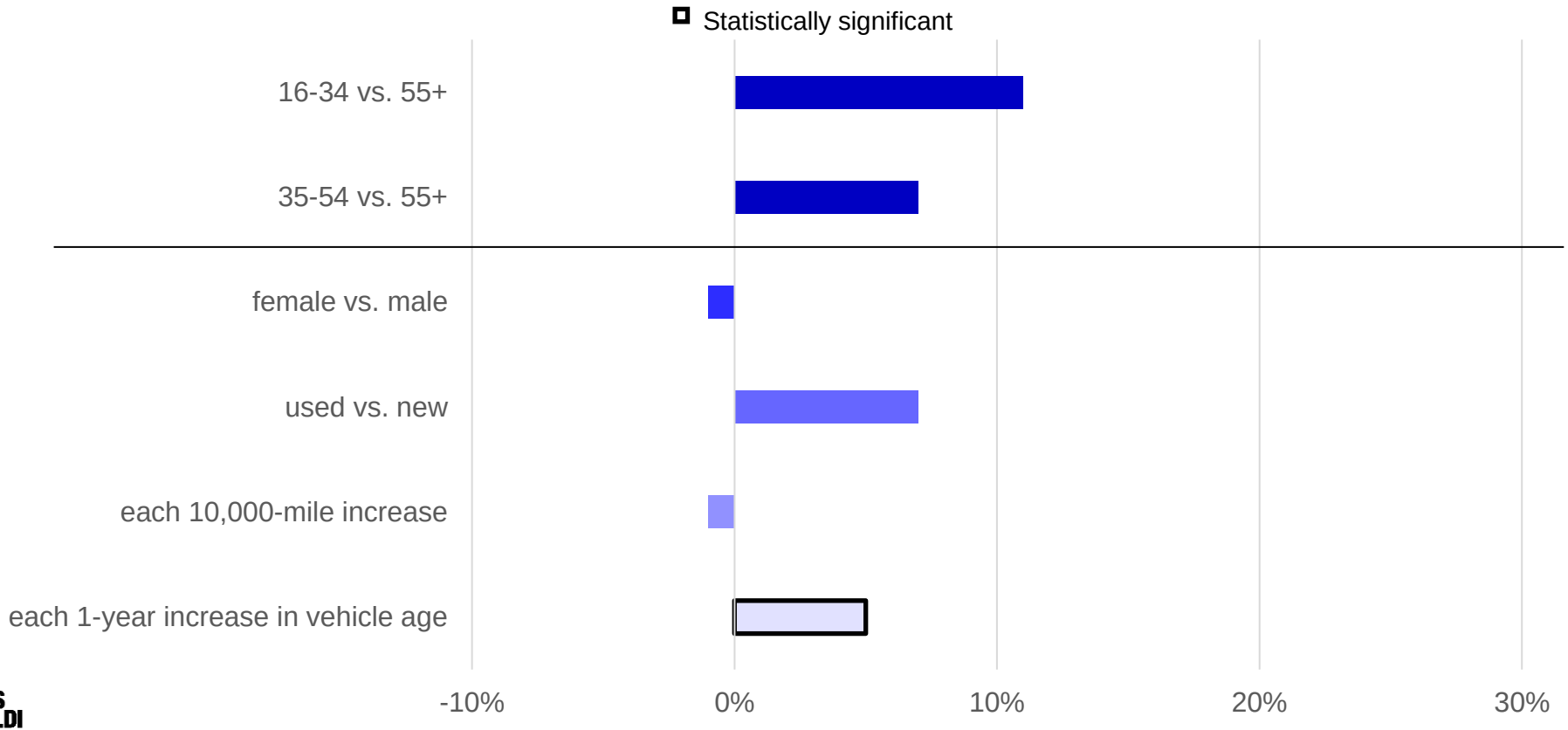
Activation rates of speed warning system alerts

2023 study



Relative likelihood of speed warning system activation

Vehicle and rated driver characteristics when controlling for OEM



Key takeaways

- ADAS has the potential to benefit older drivers based on their crash involvements
  - Currently available FCP, LDP, and BSM
  - Intersection safety greatest promise
- High use of lane departure prevention and speed warning systems
  - No significant differences in use by rated driver age

Insurance Institute for Highway Safety
Highway Loss Data Institute

iihs.org

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@iihs_autosafety

THANK YOU

Aimee Cox
Research Scientist
acox@iihs.org