

UNITED STATES OF AMERICA

NATIONAL TRANSPORTATION SAFETY BOARD

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In the matter of: *

REACHING ZERO CRASHES: A DIALOGUE *
ON THE ROLE OF ADVANCED DRIVER *
ASSISTANCE SYSTEMS *

* * * * *

Board Room and Conference Center
National Transportation Safety Board
420 10th Street, S.W.
Washington, D.C.

Thursday,
October 27, 2016

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DEBORAH HERSMAN, President and CEO
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SESSION 1: Defining ADAS - Features, Benefits
and Availability

DAVID ZUBY, Executive VP & Chief Research Officer
Insurance Institute for Highway Safety
GREG BRANNON, Director, Automotive Engineering and
Industry Relations, AAA National
MATT MOORE, VP, Highway Loss Data Institute

SESSION 2: Human Factors and Driver
Interaction with ADAS

DAN McGEHEE, Ph.D., Director, Transportation and
Vehicle Safety Policy Research Program,
University of Iowa
JOHN SULLIVAN, Ph.D., Associate Research Scientist
and Head of Human Factors Group, University of
Michigan, Transportation Research Institute
ANDERS EUGENSSON, Director of Government Affairs,
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SESSION 3: Education and Promotion of ADAS

CHRIS MULLEN, Director, Technology Research Division,
State Farm
MIKE CAMMISA, Senior director, Safety & Connected
Vehicles Global Automakers
HENRY JASNY, Senior VP & General counsel,
Advocates for Highway and Auto Safety
ROBERT GORDON, Senior VP, Policy Development & Research,
Property Casualty Insurers Association of America

APPEARANCES (Cont.):

SESSION 4: Consumer Tools and Research

JENNIFER DANG, New Car Assessment Program Division Chief
Chief, National Highway Traffic Safety Administration

SUSAN McMEEN, Consumer Information Director,
National Highway Traffic Safety Administration

SHAWN SINCLAIR, Automotive Engineer, Consumer Reports

REBECCA LINDLAND, Senior director of Commercial
Insights, Kelley Blue Book

JAMIE PAGE DEATON, Managing Editor, Best Cars,
US News & World Report

SESSION 5: Driver Training

JARED ALLEN, Senior Director of Media Relations,
National Automobile Dealers Association

KYLE RAKOW, VP and National Director of Driver
Safety, AARP

JODI OLSHEVSKI, Executive Director and Gerontologist,
The Hartford Center for Mature Market Excellence

ALLEN ROBINSON, Ph.D., Chief Executive Officer,
American Driver and Traffic Safety Education
Association

I N D E X

<u>ITEM</u>	<u>PAGE</u>
Opening Remarks and Introductions:	
Paul Sledzik, NTSB	7
Earl Weener, Ph.D., NTSB	9
Deborah Hersman, National Safety Council	12
Christopher A. Hart, Chairman, NTSB	16
 <u>SESSION 1: Defining ADAS - Features, Benefits and Availability</u>	
<i>Features, benefits, and capabilities of AEB, FCW, LDW, blind spot detection, adaptive headlights - David Zuby</i>	19
<i>Capabilities of current ADAS & current AAA testing - Greg Brannon</i>	26
<i>Integration of ADAS into the passenger fleet - Matt Moore</i>	34
Question and Answer Session	41
 <u>SESSION 2: Human Factors and Driver Interaction with ADAS</u>	
<i>Driver perceptions of ADAS (MyCarDoesWhat survey) - Dan McGehee, Ph.D.</i>	52
<i>Overview of behavioral adaption research related to new safety technologies - John Sullivan, Ph.D.</i>	60
<i>Considerations for driver attention and vehicle technologies - Anders Eugensson</i>	68
Question and Answer Session	75
 <u>SESSION 3: Education and Promotion of ADAS</u>	
<i>Driver's role in safety and importance of consumer education - Chris Mullen</i>	88
<i>Role of auto industry in advancing ADAS - Mike Cammisa</i>	97

I N D E X

<u>ITEM</u>	<u>PAGE</u>
SESSION 3 (Cont.):	
Role of advocates in promoting technology and educating policymakers and consumers - Henry Jasny	104
<i>Role of insurance companies in promotion and consumer education; incentives considerations -</i> Robert Gordon	111
Question and Answer Session	121
<u>SESSION 4: Consumer Tools and Research</u>	
<i>Role of New Car Assessment Program (5-Start Safety Ratings) in educating consumers about vehicle safety - Jennifer Dang and Susan McMeen</i>	133 140
<i>How Consumer Reports advances automotive safety -</i> Shawn Sinclair	142
<i>How Kelly Blue Book educates auto buyers -</i> Rebecca Lindland	150
<i>How US News & World Report, mass media, educates consumers on auto technologies - Jamie Page Deaton</i>	155
Question and Answer Session	164
<u>SESSION 5: Driver Training</u>	
<i>Role of dealers and dealer strategy in training their sales staff and car buyers - Jared Allen</i>	167
<i>Training seniors on ADAS features/benefits -</i> Kyle Rakow	176
<i>Research from Center for Mature Market Excellence -</i> Jodi Olshevski	179
Training traffic safety educators and drivers on vehicle safety technologies - Allen Robinson, Ph.D.	186
Question and Answer Session	191

I N D E X

<u>ITEM</u>	<u>PAGE</u>
<u>SESSION 6: Roundtable Discussion & Industry Commitments</u>	194
Closing Remarks:	
Deborah Hersman	245
Member Weener	249

P R O C E E D I N G S

(8:30 a.m.)

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2
3 MR. SLEDZIK: Good morning. My name is Paul Sledzik, and I'm
4 Deputy Director of the Office of Safety Recommendations and
5 Communications here at the Safety Board.

6 Welcome to Washington, D.C. in our Conference Center. Glad
7 you found it. Every time I come down here, there seems to be a
8 different maze to get down here to our Conference Center, and we
9 can thank the International Spy Museum for that effort this
10 morning.

11 It's great to co-host this event with the National Safety
12 Council, and I want to thank NSC President and CEO, Debbie
13 Hersman, for her leadership, and thank you for her team working so
14 effectively with our team here at the Safety Board in really
15 setting the stage today to discuss a really important topic on the
16 importance and benefits of advanced driver assistance safety
17 technologies.

18 I want to thank Amy Terrone, who is over here on my right,
19 and the advocacy staff and her team for their outstanding efforts
20 in coordinating with the National Safety Council staff in putting
21 together today's event. I know it takes a lot of time to do an
22 event like this, a lot of attention to detail, and I know we'll
23 see the fruits of those labor today.

24 A few logistics before I introduce Member Weener who will
25 kick off the event. Please note the nearest emergency exits.

1 There's two ways to get out of this facility. One is through the
2 doors you came in, in the back, and just head straight out. Don't
3 go back through the maze. Just head straight out the glass doors
4 and you'll be under the underpass under the promenade. The other
5 ways are out these two exits here that you see behind me. Go down
6 the stairs, there will be some hallways that will lead you out
7 that way.

8 There's -- let's see. Bathrooms are on the left as you walk
9 out of the Board Room, and please take a moment to silence your
10 personal electronic device.

11 For lunch, there's plenty of options in the food court
12 upstairs, and if you're a speaker actually having a special lunch
13 that will be served in the room as you leave the Board Room, just
14 on the left, in fact standing up, right behind Don Carroll, who is
15 standing in the back left there.

16 You certainly notice that we do have a lot of construction
17 going on. So please be careful in coming up and down the spiral
18 staircases.

19 Today you will be presented with five panels of distinguished
20 speakers, and we're honored to have them here today to share their
21 insights. Between panels, we will be taking a limited number of
22 questions and throughout the presentations we'll have a few staff
23 that will have some index cards that will be passed out, if you
24 haven't picked those up, raise your hand and they'll bring them by
25 and write your question down on that, hold the card up and we'll

1 pick those up as staff's going up and down the aisle.

2 We'll also be webcasting this event, as you know, and so
3 listeners online can send their questions to
4 drivertechevent@ntsb.gov -- drivertechevent@ntsb.gov.

5 Thank you. I hope you walk away today with something that
6 helps to inform you about this new technology, and I will now
7 yield the floor to Member Weener.

8 MEMBER WEENER: Well, thank you, Paul. Good morning and
9 welcome to the Board Room of the NTSB.

10 As Paul said, I'm Earl Weener, a Member of the National
11 Transportation Safety Board, and it's my pleasure to welcome you
12 to our first expert-panel discussion on driver assistance safety
13 technologies.

14 Today's event has been organized by the NTSB advocacy staff
15 in partnership with the National Safety Council. We've asked you
16 to join us to engage in a dialogue regarding the benefits of
17 current safety technologies, the availability and deployment of
18 vehicle safety features, and the importance of educating consumers
19 about what these new features can and cannot do.

20 With us today is President and CEO of the National Safety
21 Council, former Chairman of the NTSB, and my good friend, Debbie
22 Hersman. Debbie is here today with us to reinforce the message of
23 how important existing and emerging technologies can be in
24 preventing crashes, reducing injuries, and saving lives.

25 Motor vehicle crashes continue to be a leading cause of

1 preventable deaths in the United States. According to our
2 colleagues at the National Safety Council, 2016 is on pace to be
3 the deadliest year on our nation's highways in nearly a decade.
4 More than 19,000 people have died during just the first half of
5 this year. This increase comes after traffic fatalities
6 unexpectedly rose in 2015 after several years of declines.

7 While we can't say that one year makes a trend, the numbers
8 are very disturbing and certainly a move in the wrong direction.
9 We believe that existing crash avoidance technologies could have
10 prevented many of these deaths, and that advanced driver
11 assistance systems such as forward collision warning and
12 autonomous emergency braking can play a significant role in saving
13 lives.

14 The NTSB has advocated for driver assistance safety
15 technologies for more than 2 decades. We have produced multiple
16 safety technology reports and have issued 14 safety
17 recommendations urging the use of collision avoidance technologies
18 to prevent crashes. We have included the need for collision
19 avoidance technology on the NTSB's Most Wanted List of
20 transportation safety improvements twice in that time frame as
21 well.

22 Because of my belief in the importance of these technologies,
23 in 2016, I elected to assume the role of leading the NTSB's
24 advocacy campaign for promoting collision avoidance technologies
25 in all highway vehicles.

1 Advances in highway safety have come a long way over the past
2 few decades. Seatbelt use is at an all-time high and airbags have
3 become standard equipment. But, with thousands still dying on our
4 roads each year, there is a tremendous opportunity for additional
5 safety technology solutions.

6 Earlier this year, I met with automakers and vehicle safety
7 researchers from my home state of Michigan. I had the opportunity
8 to experience several different safety technologies, such as the
9 autonomous emergency braking system that stopped our car to avoid
10 a vehicle stopped directly ahead. Another car provided an audible
11 alert when I drifted out of the marked lane and provided steering
12 assist to get me back between the lines. The ability to see these
13 technologies firsthand helped me fully understand and appreciate
14 their lifesaving potential.

15 That said, the best safety measure for any vehicle is a
16 sober, well-rested, fully focused operator, and drivers should not
17 be lulled into a false sense of security and become overreliant on
18 advanced driver assistance technologies. It is important to
19 understand that the technologies are assistive, not autonomous in
20 nature. To be clear, these systems are designed to assist the
21 driver, not replace the driver.

22 As these technologies become integrated into our
23 transportation system, it is vitally important for manufacturers
24 and dealers to educate consumers about their benefits and proper
25 use. We are here today to discuss the best ways for all of us to

1 help with that consumer education process to make sure that
2 drivers seek out these technologies, understand them and use them
3 consistently and appropriately. I look forward to hearing and
4 learning from the distinguished speakers who have agreed to come
5 and share with us their research and expertise.

6 Today, we will have five sessions of presentations that will
7 cover the availability and benefits of advanced driver assistance
8 safety technologies, human factors research, and methods to
9 improve public education and promotion efforts. The day will
10 conclude with an open roundtable discussion among all of our
11 presenters as they discuss what we've learned over the course of
12 today and respond to questions from our audience.

13 Before we kick off our first session of the day, I would like
14 to ask Debbie Hersman, President and CEO of the National Safety
15 Council, to share some opening remarks.

16 MS. HERSMAN: Thank you, Member Weener. The Board has been a
17 leader in advocating for advanced vehicle safety technology for a
18 long time, and I'm glad to see that you are leading that specific
19 initiative for the Board. We're very grateful for your work and
20 for the team here at the NTSB for really focusing on this issue in
21 their investigative work, and we're so glad to partner with you
22 all today.

23 Welcome to our distinguished guests, and we really look
24 forward to the discussion today. We know we'll learn a lot.

25 Nearly a century ago, motor vehicle pioneer, Henry Ford,

1 said, "The remains of the old must be decently laid away. The
2 path of the new prepared. That's the difference between
3 revolution and progress."

4 It was a bold statement considering that the year was 1922
5 and the old was not really that old at all. Just 2 years earlier,
6 Ford had sold his millionth car. Black boxy Model T's were all
7 over our nation's roadways. But Ford was a visionary. Even on
8 the heels of such a milestone, he was talking about how we could
9 make what was once considered impossible even more extraordinary.

10 Ninety-four years later, at least 30 manufacturers sell more
11 than 17 million vehicles annually in the United States in a race
12 to be as cutting edge as possible. Automakers have indeed lived
13 Ford's vision out. They have done that through constant progress,
14 by innovating, by responding to consumers and by designing better
15 vehicles.

16 But what will actually constitute that revolution that Ford
17 called for? The answer for us in traffic safety is zero
18 fatalities. From the moment that we put cars on the road, we have
19 been trying to find better ways to protect the people that
20 interact with them.

21 As Member Weener noted, safety has come a long way. So let's
22 take a look at how some NSC, National Safety Council, campaigns
23 have evolved over the years.

24 Could you please play the video?

25 (Video playing.)

1 MS. HERSMAN: Go Cubs!

2 (Video playing.)

3 MS. HERSMAN: Good morning, Mr. Chairman. Thank you for
4 joining us. It's nice to see you.

5 So we know certainly those videos can kind of walk us through
6 time a little bit and show us how much things have changed, but we
7 know that every advancement brings us one step closer to zero.

8 But sadly, as Member Weener shared, the data are showing us
9 that we are killing people faster than we are innovating. We can
10 continue to ask who bears the blame for predictable human failures
11 or we can start asking ourselves, what more we can do? If you're
12 in this room today, you're probably hardwired to ask the latter.
13 Hopefully it also means that you agree that zero roadway deaths is
14 more than just a lofty goal but it can be a reality.

15 So let's look at a few recognizable scenarios. Approximately
16 2,400 people were killed in rear end collisions. Systems like
17 automatic emergency braking could help us get to zero. More than
18 5,000 pedestrians were killed in 2015. Pedestrian detection
19 systems -- (audio noise) -- third of all fatal crashes involve
20 speed, not just going over the limit, but driving too fast for
21 conditions. Speed monitoring systems like adaptive cruise control
22 could help us get to zero. We can't accept the status question
23 because what that means is that 100 people will die every single
24 day.

25 The National Safety Council announced a partnership earlier

1 this month with the Department of Transportation called the Road
2 to Zero Coalition. Together with the Department of Transportation
3 and dozens of other organizations, many of whom are represented
4 here in the room today, we are focused on eliminating traffic
5 fatalities in the next 30 years.

6 A goal like this has been called a moonshot, and whether it
7 involves going to the moon, curing cancer, or eliminating highway
8 fatalities once and for all, we know it is a huge lift, but it
9 isn't impossible. It just hasn't been done yet.

10 Most of the technologies that we will talk about here today
11 were probably moonshots, but concepts that went from moonshots to
12 realities, and they outpace laws, regulations and even consumer
13 understanding. Many drivers are now sitting in front of
14 dashboards that are more like the Millennium Falcon than the Model
15 T.

16 As safety professionals, we know that a fully autonomous
17 fleet is decades away, but if drivers cannot properly interface
18 with the technology that is in their vehicles today, our moonshot
19 is in serious jeopardy.

20 The National Safety Council and the University of Iowa are
21 trying to help build the education gap with our MyCarDoesWhat
22 initiative which explains driver assistance technologies and how
23 to properly interface with them. Improving the human-machine
24 interface is how we get to zero. This is a discussion about a
25 driver assistance technologies, how technologies can work for us

1 but never without us. As Member Weener noted, we are still our
2 car's best safety feature.

3 So we have made incredible advancements in the last 94 years
4 and are on the cusp of truly unbelievable things. As Ford
5 envisioned, the path is now being prepared and we can see the
6 difference between progress and revolution. Thanks to the
7 innovation effort and commitment of everyone here today, smart
8 deployment of technology can make zero a reality. Thank you all
9 so much, and we look forward from learning from you today.

10 MEMBER WEENER: Thank you, Debbie. Thank you for those
11 opening remarks.

12 Before we go any further, I'd like to ask if our Chairman
13 would like to make some comments.

14 CHAIRMAN HART: Good morning. Asking a lawyer if he wants to
15 make remarks is like asking a baby if he wants to cry. So I will
16 try to be brief but again, I'm an attorney.

17 So anyway, I want to welcome all of you to the National
18 Transportation Safety Board, to our meeting room. Thank you all
19 for coming, and also I wanted to thank the organizations that got
20 together to do this, especially the National Safety Council. It's
21 great to be with our former Chairman again and Earl Weener for
22 gathering this group.

23 This is so exciting that for decades we have been taking
24 advantage of new technologies to mitigate the effects of
25 collisions. So we are talking about seatbelts and airbags and

1 more robust passenger compartments and all those things that help
2 reduce injuries if there's a crash, and that's been exciting
3 because I'm sure that has saved thousands of lives a year.

4 Now as we move towards looking at new technologies to
5 eliminate crashes altogether, how exciting that is because that
6 could save tens of thousands of lives a year. That's amazing.

7 Now having said that, that is going to be a challenge. We at
8 the NTSB have only -- we're now investigating our first crash of
9 let's call it a relatively automated vehicle. That's the Tesla
10 crash that occurred on May 7th. So we certainly are not experts
11 in investigating crashes of autonomous vehicles, but we are
12 experts in the challenges associated with bringing automation into
13 complex human-centric systems because we've investigated those for
14 years in all modes of transportation. Aviation is certainly the
15 most advanced. They've been doing this for decades and they still
16 haven't completely figured out, as former Chairman said, the
17 human-machine interface, the human-automation interface. That's
18 very challenging. We stand ready to inform that process of moving
19 in that direction with our tremendous experience with bringing
20 automation into complex human-centric systems.

21 So this is a very valuable effort in the crawl, walk, run
22 towards autonomous vehicles. It's going to take some time. I
23 think a lot of people are vastly underestimating the challenges
24 associated with that, but kudos to all of you for taking all these
25 steps to start the crawl process of crawl, walk, run events to get

1 there to save tens of thousands of lives a year.

2 So thanks again for coming. I hope you have a productive
3 conference. I'm sorry I'm not going to be able to stay, but
4 thanks for taking time out of your very busy schedules to be here,
5 and thanks for offering me the opportunity to speak. I appreciate
6 it, everyone.

7 MEMBER WEENER: And you didn't have any slides.

8 CHAIRMAN HART: Well, I had 75 ready but you winced when I
9 said that.

10 MEMBER WEENER: All right. I think at this point, I'd like
11 to turn this back over to Mr. Sledzik. Oh, okay.

12 MS. TROMBLEY: Okay. So I'm pleased to introduce our first
13 session for the morning, and before we get started, if you have
14 questions for any of our speakers today, if you can let us know
15 and note on the note if it's for a specific speaker or if it's for
16 any speaker who can answer the question, I'll know which speaker
17 to address with your question.

18 So our first session today, we're going to talk about setting
19 the foundation for the rest of the day. We'll address the
20 contributions these technologies make toward preventing crashes
21 and injury and decreasing the severity of crashes when they do
22 occur.

23 We're going to talk about how accessible these safety
24 benefits are to the public, and we'll hear about the availability
25 of technology in registered vehicles on the roads today as well as

1 predicted availability in future years.

2 So I'm please to introduce our first speaker, David Zuby. He
3 is Executive VP and Chief Research Officer of the Insurance
4 Institute for Highway Safety.

5 MR. ZUBY: Good morning, and thanks to the National Safety
6 Council and National Transportation Safety Board for inviting me
7 to share what we know about the effectiveness of the systems that
8 are already in the marketplace and out on the road today.

9 For those of you who don't know, the Insurance Institute for
10 Highway Safety, we are a non-profit research organization
11 dedicated to doing the research that helps understand what are the
12 potential solutions to the problem that is represented by car
13 crashes, and we are wholly supported by companies that sell
14 automobile insurance.

15 So a few years ago, we did a study where we undertook to try
16 to understand these new technologies coming out into the
17 marketplace, how many crashes could they prevent if every car had
18 them and they were 100 percent effective at preventing their
19 target crashes.

20 Front crash prevention is a term that we use to describe
21 systems that have a front crash -- or front collision warning, may
22 be combined with auto brake or an auto emergency braking system by
23 itself, and we see that, you know, that could prevent nearly 1.2
24 million police reported crashes, 66,000 injuries and in the
25 neighborhood of 900 fatalities.

1 Lane departure prevention systems may be a warning system or
2 a system that provides some active intervention to push you back
3 into the lane, might be able to prevent 180,000 police reported
4 crashes, 37,000 injuries and 7,500 fatalities.

5 Side view assist or blind spot systems could prevent as many
6 as 400,000 police reported crashes, 20,000 injuries and in the
7 neighborhood of 400 fatalities.

8 Adaptive headlights, which steer the beam of your headlights
9 in the direction that you are steering your car, could potentially
10 prevent as many as 142,000 police reported crashes, 29,000
11 injuries and nearly 2500 fatalities.

12 If we add all those up and get rid of the double counts
13 because some of the crashes fall into more than one category, we
14 get something like 2 million crashes, 150,000 injuries and maybe
15 10,000 fatalities that could be prevented if all of these things
16 were absolutely effective.

17 Of course, when technology first comes to the fleet, it's not
18 necessarily 100 percent effective, and so mostly what I'm talking
19 about this morning is what we've been able to do in order to
20 measure the effectiveness of these systems.

21 Front crash prevention systems, as I mentioned, we use that
22 term to refer to cars that have forward collision warning,
23 automatic emergency braking, maybe a combination of the two. And
24 in our view, the vehicles in the analysis that I'm going to show
25 you have what I call three flavors of automatic emergency braking.

1 For instance, there are some systems that only work at a low speed
2 range -- Volvo City Safety is probably the primary example of that
3 -- but it is capable of avoiding crashing into vehicles in front
4 of it. Then there are some systems in the marketplace that really
5 are sort of collision mitigation systems. The systems don't
6 intervene early enough or with enough braking power to avoid
7 crashing, but they can mitigate the risk of injuries in those
8 crashes because they do take away some of the speed. And then the
9 more recent systems in the market are capable of working across a
10 wide range of speeds and in many cases avoiding crashes.

11 So this video shows what this looks like. These are 12-mile-
12 an-hour tests in the top row, and you can see that the automatic
13 braking system is in two cases preventing crash and in the one
14 case is at least reducing the speed. City Safety is not working
15 at 24 miles an hour. You only get a little bit of speed reduction
16 from the Dodge, and the Subaru Outback is able to avoid that crash
17 at both speeds.

18 So the way we're looking at these technologies, to understand
19 the effectiveness in the real world, is to compare the crash rates
20 for vehicles that have the technology with their counterparts that
21 don't.

22 Now City Safety, when Volvo brought it out, they fit it as a
23 standard system. So there are Volvos with and without City
24 Safety, but what we can do is we can look at Volvos with City
25 Safety and then their counterparts in the marketplace, and that's

1 what this slide shows here, is the rate of rear end crashes for
2 cars equipped with City Safety. In this case, we've got S60 and
3 XC60 and then their counterparts. And in most cases, the City
4 Safety equipped car has a lower crash rate than the other cars,
5 and the dark blue bar represents the pulled results for all of its
6 competitors and you can see that that is a significant reduction.

7 Rolling this all up, we see about a 40 percent, not quite 40
8 percent reduction for City Safety versus its counterparts without
9 this kind of a system. And when we're looking at crashes that
10 involve injuries in the other vehicle that would have been struck
11 if there was a crash or maybe has been struck at a lower speed, we
12 see a reduction of greater than 40 percent in those type of
13 crashes.

14 So this now is looking at optional systems. So we're
15 comparing the same year, make, model cars with the system versus
16 those without the system and this is what we're finding. In
17 general, when we're looking at systems that only have a warning
18 system, do not provide any automated braking function, we see a
19 lower reduction in crashes, in the neighborhood of 25 percent,
20 than we do when we add in the auto braking where we're seeing more
21 than over a 40 percent reduction in rear-end type crashes.

22 When we look at injury crashes, we sometimes see an even
23 bigger benefit because even when the crash isn't prevented, we are
24 reducing the risk of injury. So in the case of a warning with
25 auto brake, we see more than a 50 percent reduction in rear

1 crashes with injuries in the car that would have been struck or is
2 struck at a lower speed.

3 Now that's not 100 percent of all rear crashes, and there are
4 a number of reasons why these systems aren't preventing all the
5 crashes. Some of them were illustrated in the first slide.
6 They're not designed to prevent all crashes, and then there are
7 some crashes that aren't prevented as illustrated in this slide.

8 All three of the systems in this video are capable of
9 avoiding crashing into the balloon car on a dry test track, but we
10 took the opportunity of a snowstorm a few years ago to see what
11 happens with AEB systems on the snow. And it turns out that the
12 systems make no adjustment for the fact that the road is slippery.
13 They're applying the brakes at the same time with the same level
14 of force on the snowy track as they are on the dry track, and as a
15 consequence, you don't get crash avoidance, but you do get some
16 speed reduction.

17 Lane departure prevention. So before we get into the
18 effectiveness, I want to share this slide which is an
19 observational study of our drivers using a lane departure
20 prevention system. We stationed researchers at Honda dealerships,
21 and as customers brought their cars in for service, we sent the
22 researchers out to take a look to see whether or not the lane
23 departure warning system was switched on or off. And what we find
24 is that only about 30 percent of drivers are keeping the system
25 on.

1 So the next few slides need to be taken with a grain of salt,
2 but when we look at run-off-road crashes and head-on crashes,
3 which are two type of crashes that lane departure warning might
4 help prevent, we do see a reduction in those types of crashes.
5 When we look at sideswipe crashes, however, which is another type
6 of crash that might be prevented, we see an increase in crashes.

7 Another thing to keep in mind about lane departure warning
8 systems is we took a look at what are the driver factors
9 associated with crashes that involve drivers running out of their
10 lane inadvertently and we find that about 40 percent of those
11 crashes involve a driver that is in some way incapacitated, either
12 because of drugs, alcohol, fatigue or some medical consequence.
13 So it's not clear that people in that state are going to be able
14 to respond to a warning anyway.

15 Advanced headlights, we see reductions in two types of
16 insurance claim frequencies, collision and PDL, paid for damages
17 to the vehicle associated with the adaptive cruise control, and we
18 know that's coming at night. We were able to combine our
19 insurance data with time of day information to find that, in fact,
20 adaptive crashes [sic] are preventing crashes at nighttime but not
21 necessarily during the day. And we see some evidence that those
22 are associated with reductions in injury claims as well.

23 The two bars that go the wrong way have very wide confidence
24 intervals, meaning we don't have enough data to be confident that
25 in fact it is an increase in crashes rather than a reduction in

1 injury claims.

2 So a lot of the information that we had early on was based on
3 our analysis of insurance claims, and this shows that what we're
4 finding for collision coverage, property damage liability coverage
5 and bodily injury liability coverage for these five different
6 technologies, and all of them are associated with reductions in
7 crashes, reductions in injuries, with the exception of lane
8 departure prevention. Again, that may be because some of the
9 reductions we see for head on and run-off-road crashes are being
10 offset by the increases in sideswipe crashes, or possibly because
11 no one's using -- only one-third of people are using it in
12 crashes, we don't see much effect on lane departure warning
13 crashes in the insurance data.

14 Now one thing that people always want to know is, well, if
15 it's preventing crashes, is it going to lower my insurance bill?
16 This slide shows the average -- the change in the average cost to
17 repair vehicles after they've been damaged, and what it shows is
18 that in some cases, the technology is associated with a higher
19 cost to repair those crashes that do occur. That's particularly
20 true of forward collision warning systems that use a radar sensor
21 mounted out at the front of the vehicle. That can add
22 considerably to the cost of repairing damage at the front of the
23 vehicle.

24 The bars that go down for low speed system and the low speed
25 warning system, are systems that use sensors mounted behind the

1 windshield, which is a more protective place. So something to
2 keep in mind for automakers in terms of how we can be more
3 effective.

4 When you roll together frequency and overall -- and average
5 costs, you get the overall cost to insure the vehicle, and we see
6 these kind of follow the same pattern as the average cost to
7 insure. In some cases they go up, but in most of the cases they
8 go down, and when we look at adaptive headlights, they go up a
9 little bit because the adaptive headlight replacements are much
10 more expensive than their non-adaptive counterparts. So that's
11 what I've got to say.

12 MS. TROMBLEY: We can take questions at the end, and if you
13 do have questions for David please write them on a paper and hold
14 them up and Rob or Alex will stop by to pick them up. If you're
15 watching us online, please email your question to
16 drivertechevent@ntsb.gov.

17 And next we'll hear from Greg Brannon who is Director of
18 Automotive Engineering and Industry Relations from AAA National.

19 MR. BRANNON: Thank you very much. I certainly appreciate
20 the opportunity that NTSB has provided us today to talk with you
21 about some of the evaluations that AAA has done recently on
22 advanced driver assistance systems. So we're happy to be here.

23 As many of you know, I'm sure, AAA is a 114-year-old
24 membership organization with just under 57 million members in
25 North America, and whether we're inspecting hotels, looking at the

1 safest ways to tow or service vehicles along the roadside or
2 evaluating new vehicle technology, we really want to do that and
3 consistently do that based on our firsthand knowledge of the
4 systems and also in a very unbiased manner. And as a result, any
5 funding that we use to perform this testing is all internal.
6 There's no outside funding involved.

7 Understanding today's technology requires very technical
8 skill sets, and we have a team of engineers fortunately dedicated
9 to this task at AAA, and our mission is not to identify the best
10 systems in market or even to rank or look at individual
11 manufacturers and pros and cons of their individual systems, but
12 we view our role as one of education to the consumers about the
13 technology, helping them understand what the technologies are and
14 what they can do for them and also importantly what they cannot
15 do.

16 And as we'll discuss today, there's significant variability
17 in the design, operation and user experience of all these systems.
18 I think David hit on that point as well.

19 Our engineers do the best job we can of designing real-world
20 test scenarios and, where available, we model existing testing
21 that's in market today, but we also consider what the average
22 consumer experiences on their daily commute when we design our
23 testing.

24 We've tested a wide range of advanced driver assistance
25 systems to date, including rear cross-traffic alert system,

1 adaptive cruise control, and parking assist, but today I want to
2 discuss with you more specifically three systems that we tested:
3 blind spot monitoring, lane departure, and automatic emergency
4 braking. I'll also share some of the consumer research that will
5 help kind of reinforce the driver and their role as an important
6 integral component to having these systems work effectively.

7 Before I drive into the research, I want to be really clear
8 on one point. AAA is very supportive of advanced driver
9 assistance systems technology and the safety benefit that it can
10 bring to motorists, and so while I point out some of the
11 shortcomings that we've seen in our testing, we need to just keep
12 in mind that these systems hold a great opportunity to save lives.
13 And what we need to ensure is that the drivers understand how the
14 systems work and the limitations and the variations among the
15 systems.

16 So the first test that I want to talk a bit about is our
17 blind spot monitoring systems, and these -- what our test was
18 designed to do was to measure the system response time and the
19 vehicle detection distance in a variety of scenarios. Our test
20 plan included approaching vehicles from both the left and right
21 and high speed and low speed differentials with a range of
22 vehicles in the blind spot, including a motorcycle that you see in
23 the picture here.

24 So I have a video that I'll show here, but if you watch the
25 side view mirror, you can see the blind spot detection icon

1 illuminate and alert the driver of the approaching vehicle. So
2 let me play the video here. Here we have two approaching
3 vehicles. You can see the blind spot system working. Here we
4 have the motorcycle approaching but a very late detection, and in
5 this one we'll see a missed detection altogether.

6 On average, we found that the systems had a difficulty
7 detecting fast moving vehicles, and this was a scenario that we
8 designed to simulate the merging onto an on-ramp on a freeway,
9 where there would be a high speed differential between the two
10 vehicles. And the detections were often too late for any kind of
11 evasive action for the driver to take. And motorcycles were
12 detected some 26 percent later than passenger vehicles.

13 And the most advanced system provided an alert of about 3
14 seconds or 188 feet at the speeds that we were testing at versus
15 the shortest notification we saw, some 2/10th of a second or 4
16 feet, which I think we can all believe to be too late for an
17 evasive action to take place.

18 So moving on to lane departure systems and lane keeping, 41
19 percent of drivers report wanting lane departure or lane keep
20 assists on their next vehicle, and our tests were designed to find
21 the activation criteria and the limitations for these systems, and
22 we also tested the system response of various road marking types.

23 However, we noted that the systems worked very well for our
24 engineers in a variety of scenarios but we did find that road
25 conditions were often a problem for these systems. Things like

1 worn pavement striping, construction zones and intersections can
2 cause lane departure systems to deactivate, and one of the things
3 that is interesting is that, that deactivation is often not noted
4 by the consumer or the driver unless they are paying very close
5 attention to the dashboard, which they probably shouldn't be as
6 they're going through an intersection or a construction zone.

7 We also compared the user experience, and while I don't want
8 to focus on the human factors too much, our engineers noted that
9 haptic feedback was much preferred over audible warnings, which
10 may explain some of the deactivation of these systems, because
11 over time, the audio warnings prove to be somewhat annoying and
12 could lead to them being deactivated.

13 As you can see in the picture, though -- I want to make a
14 point here. We can't put all of the burden on the auto
15 manufacturers. These systems simply may not work if the
16 infrastructure is not there. And when we talk about
17 infrastructure and we think about V to V or V to I, there's some
18 very important things that even -- that are more simple, such as
19 maintaining roadways and road markings for these systems to work
20 today. And while GPS may be the future of keeping the vehicles in
21 the lanes, today the systems rely on lane markings, and as you see
22 on the screen, you know, there's a lot of opportunity for
23 infrastructure funding to make sure that these systems have the
24 best road markings available.

25 The next system I want to talk about is our recent testing of

1 automatic emergency braking. And while automakers are really
2 advancing the systems rapidly -- we first assessed the systems
3 back in 2013 and we wanted to reevaluate in 2016 using current
4 model year vehicles. And, as David noted, all these systems are
5 not created equally. Automakers are implementing the systems in
6 various ways, balancing a mix of system performance and minimizing
7 false positives, which is notably a difficult task.

8 And we tested systems that were both designed to prevent
9 crashes as well as those that lessened crash severity, and let me
10 show you a couple of quick slides here. We used three scenarios
11 with different speed variations in a robotic soft car. One, as
12 you just saw, was a scenario where there was a vehicle stopped in
13 the roadway, and we also tested a dynamic cut-in, which is what
14 you're going to see on the screen here, followed by a hard braking
15 event, and we tested the third -- you're going to see where a
16 faster moving vehicle was approaching a slower moving vehicle.

17 And not surprisingly, the systems that stated they were
18 capable of preventing crashes reduced the vehicle speeds by twice
19 that of those that were designed just to mitigate or lessen the
20 severity of the crash. What was surprising to us and our engineers
21 is that the system -- the variation in system performance was so
22 great, and as was the description of the system, its description
23 in the owner's manual and the user experience.

24 And while any reduction in speed prior to collision is a
25 great benefit for a driver that may not be fully engaged, clearly

1 all of these systems are not created equally. Our research found
2 that over two-thirds of the drivers that are familiar with AEB
3 technology believe that the systems are designed to bring a
4 vehicle to a stop.

5 AAA is confident that advanced driver assistance systems hold
6 great potential to keep the drivers safe as long as the consumers
7 understand the limitations of the system. And no system that
8 we've evaluated to date has performed flawlessly in every
9 environment or every scenario that we've put it through. An
10 engaged driver is still a very necessary component of the system.

11 And there's also a high degree of variability among
12 automakers, including the naming, design and ultimately the
13 performance of a system. Consumers can easily be confused by ADAS
14 systems, the marketing of the systems. The limitations are
15 difficult to understand, as I pointed out, and how the systems
16 perform in real-world scenario, as David noted, in snow, ice,
17 rain, all different, as well as kind of a lack of training that is
18 taking place prior to the driver climbing behind the wheel.

19 We already know that some consumers believe the systems are
20 fully autonomous and no longer requiring driver engagement, but
21 this is absolutely not the case and a very dangerous assumption.

22 The good news is that consumers are highly receptive to the
23 systems, and over 61 percent of drivers want at least one semi-
24 autonomous feature in their next vehicle citing safety,
25 convenience, reduction in stress as the reason.

1 However, a large population of motorists feel that their
2 driving skills are still superior to the systems that are
3 available today.

4 And while consumers may be afraid of riding in a fully
5 autonomous vehicle, what the data tells us is that once they
6 experience some of these building blocks towards autonomy, they
7 become much more comfortable with the technology.

8 AAA believes automakers are doing a great job of advancing
9 the technology and consumer education appears to be the biggest
10 gap and most significant missing link and it's important to
11 drivers to understand that they're not driving autonomous vehicles
12 today. But consumer acceptance and understanding is a process and
13 will take some time.

14 The key to successfully reaching zero crashes is to ensure
15 that motorists understand and embrace these systems and use them
16 as designed. And if the systems are disengaged, if the road
17 markings are not there to have the systems work properly, or if a
18 driver becomes distracted or complacent in the assumption that the
19 system will take care of itself and drive the car itself, the
20 benefits will be severely diminished.

21 To conclude, I want to reiterate that AAA is very supportive
22 of advanced driver assistance technology and our commitment to
23 this organization and our membership is that we'll continue to
24 test advanced driver assistance systems into the future to ensure
25 that consumers are aware of the benefits as well as the

1 limitations of the systems.

2 You can find our latest study on our newsroom and follow us
3 on Twitter and Facebook for any updates on this testing. So thank
4 you for your time.

5 MS. TROMBLEY: Thank you, both Greg and David, for the first
6 two presentations this morning. And just a quick reminder, if you
7 do have questions, please send them before the end of the final
8 presentation for the session so we have time to gather them and
9 get them to me to ask.

10 So I'd like to introduce our third speaker of this session,
11 Matt Moore, who is Vice President at the Highway Loss Data
12 Institute. Matt.

13 MR. MOORE: Good morning. I'm grateful to be here today to
14 talk about the research of the Highway Loss Data Institute. HLDI,
15 as we call ourselves, is a sister organization to the Insurance
16 Institute for Highway Safety, and we share the mission of the IIHS
17 but we do that almost exclusively through studies of insurance
18 data.

19 Now the study I'm going to be talking with you about today is
20 a study not based on insurance data. It's a study looking at the
21 registered vehicle fleet. It's something that we pay a lot of
22 attention to.

23 As David's presentation demonstrated, some of these
24 technologies are demonstrating real-world benefits, significant
25 reductions in terms of insurance claims, significant reductions in

1 terms of lives lost, but in terms of the societal benefit of these
2 systems, we can't achieve the maximum potential that they have to
3 offer unless they're on all vehicles.

4 So the point and purpose of my study is -- and my
5 presentation today is to illustrate how long it takes for vehicle
6 technologies to find their way deep into the vehicle fleet. Now
7 if you take nothing else away from my presentation, if you don't
8 remember anything I had to say, the key thing to keep in mind is
9 that we have somewhere in the neighborhood of 260 million vehicles
10 on the road today, and despite the fact that we're selling 17
11 million vehicles, those vehicles are lasting longer. The average
12 vehicle age today is in excess of 11 years. So despite the rapid
13 introduction of these technologies, in terms of the realization of
14 their benefit, it's going to take a long time because we have so
15 many vehicles.

16 All righty. So I'm going to be talking in detail about four
17 technologies, and as I step through these technologies, there will
18 be three slides per technology. And we're going to start with
19 electronic stability control, not the newest vehicle feature but
20 one that demonstrated real potential.

21 And on this first slide, we're looking at the deployment of
22 ESC on new vehicles. So this data is by model year and here each
23 vehicle counts as a unit of one. So -- and no consideration given
24 to the level of vehicle sales. So the Honda Accord is one of the
25 best selling sedans in the U.S. counts as one, and Bugatti Veyron,

1 they sell about one a year, it counts as one on this slide. Green
2 color indicates standard fit, yellow indicates optional, red
3 indicates that the feature wasn't available.

4 And as some of you might know, there was a requirement for
5 electronic stability control to be fitted on all vehicles in the
6 U.S. Manufacturers had to hit a level of 50 percent by model year
7 2009, and 100 percent of vehicles with a gross vehicle rating
8 below 10,000 pounds by model year 2012. So what you see
9 illustrated here is a very steep run-up and, by 2012, model year
10 2012, almost all vehicles were fitted with this technology.

11 Now on this next slide, we're looking at data on a bi-
12 calendar year basis and here we're looking at all model years, and
13 on this slide, vehicles do count in proportion to the level of
14 registration. So on this slide, the Honda Accord counts as many
15 and the Bugatti Veyron still counts at about one per year. And
16 what we can see is that looking at model year 2012, despite the
17 fact that all new vehicles had to have the technology in 2012, we
18 still had 60 percent of vehicles that did not have the technology.
19 And also important to point out that among the optional vehicles,
20 we don't know what the take rate is. So it was some percentage
21 less than 100 percent.

22 So sort of, this isn't necessarily best case scenario, but it
23 enjoyed -- electronic stability control enjoyed the benefits of
24 early requirements to fit it to all vehicles. And so if you take
25 the curve on this slide, the adoption curve on this slide and make

1 some assumptions about new vehicle sales and how many vehicles are
2 going to fall out of the fleet, and you project it forward, what
3 you can see illustrated here is that it'll take us until about
4 2036 until we hit 95 percent of new vehicles with the technology.

5 You're going to hear me talking, despite the fact that this
6 graph and this curve goes to 100 percent, we can never really
7 truly get to 100 percent of vehicles in the U.S. because people
8 love to hold onto their old Corvettes and Camaros and Mustangs and
9 pickup trucks. If you look at the oldest vehicles in any model
10 year, there's a lot of collectors cars and there's a lot of old
11 pickups, so we cannot truly get to 100 percent.

12 Now then, moving on to some of the newer technologies, more
13 interesting technologies, here we see illustrated front crash
14 prevention systems. And it's sort of sad to point out, you know,
15 in the case of electronic stability control we got to
16 approximately half of new vehicle series with ESC available in
17 just 10 short model years. By contrast, these front crash
18 prevention systems, after 10 model years, we were still below 10
19 percent of vehicles with this technology available to consumers.
20 And considering the benefits that David talked about, there's a
21 lot of opportunities lost there.

22 And then when we look at the availability of the system in
23 the registered vehicle fleet, it barely even registers. We can't
24 even see it illustrated on the graph, the number of vehicles that
25 have the technology as standard fit.

1 So projecting out into the future, what we can see is that
2 it's going to take a long time to get to a point where most
3 vehicles have this technology. One of the things that I'm pleased
4 to say, and you can't necessarily see it on the graph, but there
5 is a slight perceptible kink in the line at 2022, and the reason
6 for that is there's a voluntary commitment in place for
7 manufacturers to fit these systems on all new vehicles as of 2022.
8 So it helps to accelerate the adoption or presence of the feature
9 in the fleet.

10 Now looking at adaptive headlights, the adoption of this
11 system is somewhat different than the other vehicles, and whereas
12 -- or the other features, and whereas with ESC and front crash
13 prevention, it increased at an increasing rate. Here we see that
14 the growth of the technology has sort of languished, and we're at
15 a point where we have just somewhere in the neighborhood of 38
16 percent of vehicles with the technology available, and when we
17 look at its presence in the registered vehicle fleet, we're at
18 under 10 percent.

19 Projecting out into the future, it's going to take until
20 about 2050 or so, given its natural projection, for us to be at a
21 place where 95 percent of vehicles have this technology.

22 Blind spot warning systems. Now blind spot, the adoption was
23 much quicker. The unfortunate thing or the disappointing thing
24 here is that the bulk of the adoption and the offerings on new
25 vehicles, it's being offered as optional technology and the take

1 rates tend to be low any time technology is optional. And, again,
2 looking at it in the registered vehicle fleet, we're at 10 percent
3 optional and we can't even register the number of vehicles with a
4 standard fit. Projecting out into the future, we will hit the 95
5 percent mark at about 2042.

6 Now finally, this is a look at or a summary of all the
7 technologies that I've discussed, and we also have illustrated
8 here lane departure warning systems, parking cameras and parking
9 sensors. And the point and purpose of this slide is to illustrate
10 that mandates and federal requirements can make a difference, and
11 the red bars illustrate the natural projections of these vehicle
12 features in the vehicle fleet and, with the exception that we've
13 made allowances for the voluntary commitment for forward collision
14 warning with ADB and also the current requirement for parking
15 cameras, which you can see illustrated here, is that in most cases
16 we can gain several years, several calendar years in terms of
17 hitting that 95 percent mark. But each of those years represent
18 hundreds of thousands, if not millions, of vehicles fitted with
19 these systems, and given the tremendous potential for these
20 systems to reduce crashes and save lives, it's something we should
21 consider.

22 Feature X, this is a look at the hypothetical best case
23 scenario for the introduction of a vehicle feature, feature X.
24 And the assumption here is that if all new vehicles in 2015 had
25 some piece of vehicle technology, this is what the trajectory

1 would look like, and it's sort of -- it's good news and it's bad
2 news, and it's given that we have 260 million vehicles, even if
3 all new vehicles are fitted with the technology, this takes a long
4 time.

5 Also to sort of temper our enthusiasm, the slides David
6 showed earlier looking at forward collision warning systems, on
7 average, the benefit's about a 10 percent reduction in terms of
8 property damage liability claims, claims for damage you do to
9 other vehicles when you're responsible. And we see illustrated on
10 the red axis the percentage of vehicles with the system, and on
11 the blue axis we see the change or reduction in claim frequencies.

12 So given this aggregated or average benefit of 10 percent and
13 the fact that we're at about less than 1 percent or so of vehicles
14 fitted with the system, across all vehicles we're only realizing a
15 very, very tiny piece of that maximum -- or that possible
16 demonstrated benefit of that system.

17 So we've got a long way to go, but by accelerating the
18 fitment of these systems, and hopefully that's part of what we're
19 going to -- will be one of the outcomes today is strategies to get
20 people to purchase these technologies, strategies to get more
21 vehicles fitted with these technologies, we can achieve and
22 realize some of these benefits sooner. So that's a potential for
23 improvement there.

24 More bad news though. Electronic stability control, we
25 reprised the study that we did about 10 or 15 years ago, and what

1 we did was we took the study population that we used to assess the
2 benefits of electronic stability control and we said, okay, forget
3 about demonstrated benefits in terms of reducing fatal crashes or
4 highway safety outcomes or insurance outcomes, and let's just look
5 and see if vehicles fitted with electronic stability control
6 persist longer in the vehicle fleet than comparable vehicles that
7 don't have the system. And, in aggregate, what we see is that
8 vehicles without standard electronic stability control fall out of
9 the fleet at a rate of approximately 2 percent per year. By
10 contrast, vehicles with electronic stability control as standard
11 fit fall out at a lower rate.

12 So the consequence is, as we achieve success in terms of
13 getting more and more of these features aimed at stopping serious
14 crashes into the fleet, we are going to decelerate the turnover of
15 the fleet. So that 5 years from now, when I come back and do this
16 same presentation, we won't just have 260 million vehicles, we
17 will have a lot more vehicles, because we're going to sell more
18 new vehicles and fewer vehicles are going to fall out of the fleet
19 because we're going to have less serious crashes because of
20 systems like electronic stability control and front crash
21 prevention. That's my presentation for today.

22 MS. TROMBLEY: Thank you. May I -- do we have questions from
23 the floor? Okay. We have several questions.

24 MR. ALLEN: Deborah -- sorry.

25 MS. TROMBLEY: Yes.

1 MR. ALLEN: Are we the floor or is that the floor out there?

2 MS. TROMBLEY: Well, I will ask a few questions we received
3 and then I will open it up to speakers.

4 MR. ALLEN: Thank you.

5 MS. TROMBLEY: Yes. So this is a question for Mr. Zuby. Do
6 IIHS and NCAP collaborate together? And how does the Insurance
7 Institute for Highway Safety affect the current industries? Do
8 they take the IIHS studies and conclusions into consideration?

9 MR. ZUBY: So with respect to collaboration with NCAP, or the
10 New Car Assessment Program, we don't necessarily coordinate what
11 testing we're doing versus what testing they're doing, but we do
12 communicate with the folks at NCAP quite frequently so that each
13 of us is aware of what we're doing. Where possible, when it comes
14 to test equipment that might be used for types of ADAS testing, we
15 try to, to the extent possible, harmonize on the technologies that
16 make sense.

17 Regarding automakers and their paying attention to our
18 studies, we believe that they are, especially when we begin rating
19 the systems that they fit to their cars, trying to promote it. We
20 do see an increase of automakers offering systems that have the
21 qualities that we're looking for in our tests.

22 MS. TROMBLEY: Okay. Thank you. So the next question is for
23 Mr. Brannon. You cited deteriorated road markings as a factor in
24 degrading lane monitoring systems. What is AAA doing to get
25 Congress to increase gas taxes or other funding mechanisms to

1 support improvement in roads to support automated vehicle
2 technology?

3 MR. BRANNON: That's an excellent question and one really
4 that I would have to more pose to our folks in government
5 relations, as I am more focused on the engineering side and
6 testing. I know we certainly are supportive of additional funding
7 for roads and infrastructure and continue that as we look towards
8 the new administration.

9 MS. TROMBLEY: Okay. We received a question for Mr. Moore.
10 Please characterize the effectiveness of insurance discounts for
11 new safety -- as motivators for new safety technologies.

12 MR. MOORE: I think, given the way that vehicles are sold and
13 features are packaged in the U.S., it's the tendency of consumers
14 to buy a vehicle and then later figure out what their car does and
15 what it has. And so I don't know that necessarily insurance
16 discounts are a strong mechanism for encouraging consumers to
17 select technologies because oftentimes they really don't have the
18 opportunity to select technologies at the dealership.

19 MS. TROMBLEY: Okay. Thank you. A question for Mr. Zuby.
20 What are the characteristics of adaptive headlight systems? How
21 varied are they by functionality? How does IIHS evaluation of
22 general headlight performance variability affect advanced
23 headlight system performance?

24 MR. ZUBY: So the basic definition of adaptive headlights
25 that I was talking about in the effectiveness studies are

1 headlights that direct the headlight beam in the direction that
2 the vehicle is being turned. They typically have a motor that
3 actually turns the light source in the direction that the vehicle
4 is being steered.

5 One of the things to keep in mind about the effectiveness
6 results that I showed is that in many of those comparisons, there
7 was also a switch of light sources. Halogen was typical, you
8 know, of 20 years ago. Now we're starting to see high intensity
9 discharge or xenon lights. There are also LED type lights, and
10 those also have an influence on a driver's ability to see.

11 When we decided we wanted to do evaluations to promote
12 adaptive headlights, those that help drivers see better on curved
13 roads at night, what we found out was that there are a lot of
14 other things going on that contributed to how well a lighting
15 system lit up the road, and consequently in our evaluations, we
16 went with a more general evaluation of how well lights light up
17 roads in different situations. But to make sure that we are
18 trying to promote good lighting on good curves, given that we saw
19 a big benefit of that, our evaluation does include driving the
20 cars on a curved course as we measure the light coming out of the
21 headlights.

22 So manufacturers may find ways to provide better lighting on
23 curves that don't necessarily rely on the adaptive systems that we
24 were testing or that we're evaluating with the insurance data, but
25 we are trying to encourage them to provide better lighting on

1 curved road.

2 MS. TROMBLEY: Okay. Thank you. I have one more question
3 from the floor, and then we'll open up to questions from other
4 speakers on the expert panel. And again, another question for
5 Mr. Zuby. Is there a mechanism for insurance agencies to know
6 which vehicles are equipped with various ADAS technologies? Does
7 the manufacturer make that information known by some indicator
8 associated with the vehicle? And if so, how is that conveyed?

9 MR. ZUBY: So this is a big puzzle for everybody. Obviously
10 when you buy the vehicle, you do get information about the
11 features that are fit to your vehicle. Unfortunately, that
12 information is not encoded into the vehicle identification number.
13 So unless you can provided documentation of the information about
14 the vehicle setup as it was purchased to an insurer or researcher
15 or anybody who might want to know, there is no way for somebody to
16 figure that out.

17 The way we've been able to do our studies is that we have
18 worked with automakers because they do have records of how the
19 vehicles are equipped associated with the VIN, but it's not
20 encoded in the VIN. So this is a quite complicated analyses to
21 get the automakers to provide, okay, for VIN XXXXX, it had these
22 features. And one of the things we found in our experience is
23 that, in some cases, the automakers are not very used to putting
24 the information back together after the fact, after they've built
25 the vehicle. They know what it is when the vehicle comes off the

1 line but then it becomes difficult over time to reconstruct that
2 information. So unfortunately no, there isn't an easy way for a
3 consumer to know, especially on a used car, what are the fitment
4 of the pieces.

5 MS. TROMBLEY: Thank you. So I'd like to invite any speakers
6 on the expert panel, if you have any questions for any of our
7 Session 1 speakers?

8 MR. ALLEN: I have a question for Matt, Mr. Moore. This is
9 Jared Allen with the National Automobile Dealers Association. We
10 were looking at the lag between now and when it's going to take
11 the fleets of registered vehicles on the road to have, you know,
12 95 percent of the fleet to have these systems. Were you able to
13 look back and see what kind of lag we experienced with, say,
14 seatbelts? I'm assuming it might not have been as long given that
15 the average age of vehicles on the road was a lot less than it is
16 today going forward. But I'm wondering if you have any data
17 looking backward and any lessons that we can import from past
18 experiences?

19 MR. MOORE: I'm pleased to say that we did do earlier studies
20 that included estimates or counts and tallies of earlier
21 technologies like frontal airbags, antilock brake systems, and I'm
22 embarrassed to say I don't have those data in the front of my
23 mind and ready to share with you, but it is something I could get.
24 If you want to give me your card, I can send the study to you
25 after the fact.

1 MR. ALLEN: Thank you.

2 MS. TROMBLEY: Any other speakers have a question? Yes?

3 DR. McGEHEE: I have a question for David. I'm Dan McGehee
4 from the University of Iowa. Can you talk a little bit about lane
5 keeping systems versus lane warning? I noticed your data didn't
6 have lane keeping.

7 MR. ZUBY: That's right. So far, and like I said, in order
8 to do these studies we need to have cooperation of manufacturers
9 who provided information that linked up the vehicle identification
10 number to the features that were fit. Those manufacturers who
11 have been cooperating with us up to this point have not been
12 offering lane departure or lane keeping systems so we haven't had
13 an opportunity to look at that. Some manufacturers are continuing
14 to provide us with data and those systems are becoming more common
15 in the market. So we may be able to do a study at some time in
16 the future.

17 MS. TROMBLEY: Are there any other speakers from or -- yes?

18 MR. CAMMISA: Mike Cammisa, Global Automakers. David, I had
19 a question on your first slide when you had the different crashes
20 and fatalities, those numbers. Were those the total potential
21 numbers that those technologies would prevent or was there an
22 effectiveness adjustment or, you know, what did those numbers
23 represent exactly?

24 MR. ZUBY: Yeah, those numbers were the total number of
25 crashes that we think are trying to be addressed by those systems.

1 And so you only get a reduction of that size if every car has the
2 system and every system eliminates all of the crashes that we
3 think it was designed to eliminate.

4 So, for instance, in front crash prevention, we were only
5 counting front to rear crashes because that's how the systems were
6 designed to operate at this point and why you get a relatively low
7 number of fatalities. I mean, it's 900 versus 1,000 for run-off-
8 road crashes because, relative to other types of crashes, not that
9 many people die in rear crashes.

10 MS. TROMBLEY: Any other questions from the panel? Yes?

11 MS. LINDLAND: Rebecca Lindland from Kelley Blue Book. I'm
12 somebody who looks at transaction data a lot. I wondered what the
13 best suggestions were to pay for some of these technologies that
14 are necessary but often mandated? Because consumers are
15 incredibly resistant right now. They're really at the top of
16 their budgets in terms of, you know, how much they pay for a
17 vehicle. They're very monthly payment oriented, and that's why we
18 see loans extended out to 60 and 72 months. And so as we add this
19 necessary technology, I think we have to look at how we pay for
20 it. And so I just wondered if any of the three of you could
21 comment on that topic? Thank you.

22 MR. BRANNON: Well, as I mentioned, our survey data showed
23 that consumers were very interested in ADAS technology,
24 specifically 61 percent of the consumers said that they were
25 looking for at least one of those features on their next vehicle.

1 So I'm not confident that the consumers survey understood the
2 exact cost of the technology, but there's a high degree of
3 interest in the technology. And also what we've seen over time is
4 a dramatic reduction in the cost of the sensors that stand behind
5 the technology and I suspect, then, that that will be passed on to
6 the consumer in reduction in the cost of the overall package by
7 the auto manufacturers.

8 MS. TROMBLEY: Any other questions from the panel? Okay. I
9 have a few more questions from the audience. We're a little bit
10 ahead on time so I'll share a few more that came in.

11 For anybody on the panel that can answer, what are your
12 thoughts on a "cash for clunkers" type program to help increase
13 the turnover of the fleet to these more advanced safer vehicles?

14 MR. ZUBY: Well, something like that could help, but again
15 the question becomes who's going to pay for it? You know, I think
16 NHTSA did a report and they were able to show some changes
17 associated with the "cash for clunkers" program that they did
18 during the recession but, you know, those are very, very expensive
19 programs to do. So I'm not sure if it's a practical suggestion.

20 MS. TROMBLEY: Okay. Thank you. And our final question from
21 the audience: In recent news, a 120-mile trip in an autonomous
22 truck was announced along with the video showing the truck driver
23 out of his seat, reading his newspaper in the back of a cab as the
24 truck traveled among the motoring public. Do panelists here see
25 that announcement as a revolution or as a risk?

1 MR. BRANNON: I think from AAA's standpoint, as I stated
2 during my presentation, these systems as they're designed today
3 are not autonomous systems. They are advanced driver assistance
4 systems that assumes that there's an engaged driver still behind
5 the wheel and the systems are meant to augment in the event that
6 that driver does not take immediate action. So that that type of
7 behavior with current technology is very risky and we certainly
8 are not -- unhappy to see that kind of publicity.

9 MR. ZUBY: Yeah, I think that video showed not a readily
10 available system but sort of a forward looking system and, you
11 know, the video I think represents both a risk and potential for
12 benefit in the future. I think there's a serious question about
13 whether or not the technology that's even fitted on that truck,
14 which is well advanced beyond the kinds of technologies that we're
15 talking about today, is really safe enough to be left unmonitored
16 by a human driver. But at the same time, it does show that the
17 technology is evolving very quickly.

18 MS. TROMBLEY: Okay. So what we'll do is break a little bit
19 early and if we can come back a little early so we can buy some
20 time for Session 2. Actually this is a great segue. Session 2 is
21 going to discuss more about these driver adaptation issues and
22 some of the unexpected things we might see drivers do.

23 So we will reconvene and begin the next session at 10:05.

24 (Off the record at 9:46 a.m.)

25 (On the record at 10:05 a.m.)

1 MS. TROMBLEY: Okay. We will get started with Session 2, and
2 we're running a few minutes ahead so we will buy some extra time
3 for these speakers, and I'm sure the question and answer
4 discussion that will get going afterwards.

5 I have a few quick housekeeping issues first. Some have
6 asked about biographies of the speakers and presentations. We
7 will have those available on the website by the end of the day,
8 and you can go to ntsb.gov/drivertech, and tech is spelled t-e-c-
9 h. You'll be able to get the complete bios and the PowerPoints on
10 the website.

11 We also have resources upstairs. So during breaks and during
12 lunch, there's a room upstairs that has a sign that says Expo.
13 There's handouts from participating organizations. So you can
14 stop in that room and pick up some of the materials. And for
15 those of you online, for the materials that we can put online, we
16 will do that also so you can revisit the website and get links to
17 those materials.

18 And I want to share the correct address. I may have shared
19 an incorrect address for those of you online to send questions
20 earlier. The address to send questions to is
21 drivertechevent@ntsb.gov. So as speakers are presenting in the
22 next session, feel free to send your questions through email.

23 So we'll start the next session: Human factors and driver
24 interaction with advanced driver assistance systems. During the
25 first session we heard about the potential safety benefits of

1 these systems. During this next session, we'll discuss how
2 drivers can potentially undermine our best efforts to protect
3 them, and we'll share learnings that point to what we may be able
4 to do about this driver interaction.

5 So for our first speaker, I'd like to introduce Dr. Dan
6 McGehee. He's Director of the National Advanced Driving Simulator
7 and Professor of Mechanical and Industrial Engineering, Emergency
8 Medicine and Public Health, at the University of Iowa.

9 DR. McGEHEE: Thank you very much.

10 MS. TROMBLEY: You're welcome.

11 DR. McGEHEE: Adjust my microphone here, and we'll be on. We
12 have some slides coming up, I think.

13 So as Deb mentioned, what we're going to be talking about now
14 is sort of how drivers understand a lot of these technologies or
15 how they don't understand them. And we've had the great privilege
16 to work with the National Safety Council on driver assistance
17 systems and getting the word out nationally, and we're going to
18 talk a little bit about that today, about the MyCarDoesWhat
19 program and some of the data that we put together as part of that
20 overall project.

21 I think one of the important elements that drivers don't
22 really fully understand is sort of the generational shift away
23 from sort of occupant protection over the last generation of
24 vehicles, and that is sort of protecting the driver and the
25 occupants in crashes and then moving towards vehicles now that can

1 prevent these crashes altogether with these technologies. And
2 part of the educational process that's really important to
3 consider is that drivers are used to seeing all sorts of TV
4 commercials with the big pillowy airbags that are coming out to
5 help protect them, and now we're starting to see a lot of these
6 advanced driver assistance systems emerge into the marketing
7 sphere as well.

8 But as was mentioned earlier by our other colleagues, these
9 systems really vary. They vary greatly. The naming of the
10 systems becomes also very important because the kinds of systems
11 that are on these vehicles, even systems like adaptive cruise
12 control, something that we thought was going to be sort of a
13 standard name, is now varying greatly as it's being introduced
14 across the broader fleet. So the nuances of these systems are
15 important.

16 But sort of dialing back, and we've talked a little bit about
17 this, and really is these systems are there to mitigate driver
18 errors. And we know that, you know, 94 percent thereabouts of
19 crashes have some sort of driver error component in them, and some
20 of our own research that we've just completed for the AAA
21 Foundation that looked at over 2,000 drive cam crashes, upwards of
22 99 percent of those moderate to severe airbag level crashes had
23 driver error involved. So it's a really critical feature now that
24 we can have these technologies intervene and reduce the severity
25 and sometimes even prevent those crashes altogether.

1 So what about the driver? This is really where we've spent
2 the last several years looking at MyCarDoesWhat project, and as
3 part of that, we've done several large national surveys of what
4 consumers understand about these technologies and what they don't
5 understand. So we've been doing -- we're working on our third
6 national survey of over 2,000 -- nationally representative dataset
7 of 2,000 drivers about these specific technologies and what they
8 know about them. And I think the market penetration area that was
9 talked about by HLDI and IIHS is really a critical feature, and
10 even just hearing about these things.

11 So one of the really big confusing issues is the naming
12 elements because people might even have adaptive cruise control on
13 their vehicle but they don't know it because it may be called
14 laser guided. There are at least a half a dozen different names
15 out there.

16 AEB, automatic emergency braking seems to be one technology
17 that only has a couple of different names out there. So at least
18 that one seems to be sticking out there.

19 But based on these surveys, what have we learned? And so
20 this is one of the first fully dedicated surveys to really
21 understanding specific technologies and what people have heard
22 about them and then what the experience of drivers have with these
23 technologies and just their cars in general.

24 As we know, cars are getting much more complicated not only
25 from the ADAS systems but also from the infotainment systems out

1 there. So it's really trying to disentangle the driver's
2 perception of the modern vehicle with voice recognition systems
3 and all sorts of touch screens that are surrounding and so forth.

4 And a lot of the data, then, that came out of the ADAS side
5 really fueled the national education campaign of MyCarDoesWhat.

6 What we found in these first surveys is that even
7 conventional cruise control, there's a few percentage of these
8 2,000 drivers that are not even really familiar with conventional
9 cruise control. As we go across this graph, we can see that ABS
10 is something that's now been around for 2 decades. Drivers have
11 heard about traction control, back-up cameras are pretty salient
12 these days; they've usually had some experience driving with a
13 friend, their own car. That's a technology that's really clear
14 even though it has some different limitations and works
15 differently between cars, it's something that's pretty salient.

16 Back-up sensors, if you don't have a camera associated with
17 them, are a little less so. But adaptive cruise control is one of
18 the lowest in terms of what people know about them. Forward
19 collision warning, lane departure, a little less than 60 percent
20 of people have heard of those technologies and have been exposed
21 to them.

22 One of the sort of headlines of what we're hearing from the
23 vehicle experiences, some 40 percent of drivers report that their
24 vehicle had acted in a way that startled them in a manner that
25 they really didn't expect. So this is an important feature to see

1 that such a high percentage of drivers are experiencing elements
2 of driving where they just don't really understand what the
3 systems are doing. And about a third of those went to go seek
4 information of, what the heck just happened in my car?

5 And this is -- especially as we get into full range adaptive
6 cruise control, as that begins to penetrate the market more, we're
7 seeing even the way the user interface design of those kinds of
8 systems, where you still have an option, physical option that's
9 salient to pick conventional cruise control or full range adaptive
10 cruise control. We see some issues in terms of that transfer of
11 training or your expectation where a spouse may have the use to
12 having full range ACC, the other one, the other driver, turns it
13 off, and so then you have sort of a mismatch of expectation and
14 could actually have crashes occur because of that expectation of a
15 braking system being there.

16 But the bottom line in this national survey was drivers are
17 pretty uncertain. Even though they were exposed to many of these
18 technologies, they really don't know a lot about these things. So
19 in the MyCarDoesWhat campaign, we take a look at educating drivers
20 about 40 different kinds of technologies on our website. I don't
21 know if you've had a chance to go visit that, go to
22 MyCarDoesWhat.org, and you can learn about tire pressure
23 monitoring systems, ABS, adaptive cruise control and a number of
24 technologies. And these are designed really -- we have Rick and
25 Scout -- you've always got to get a guy and his dog to explain

1 these high tech systems, and those have been really well received
2 throughout.

3 The other element that we think is important to try to
4 understand is how do we get consumers to sort of shift into
5 appreciating these technologies. It's really difficult with any
6 technology -- I've been around long enough to -- I've been
7 involved in some of the early GPS navigation on road studies. So
8 25 years ago we did a study on one of the first systems called
9 Travtech, and when you polled drivers and say, hey, you have this
10 opportunity to put a little screen in your car and give you turn-
11 by-turn directions, they'd say, well, I would never use that. And
12 now today, you know, you put a paper map in front of somebody and
13 it's going to be a really difficult job and quite dangerous to do
14 that while they're driving.

15 And that's the same sort of disconnect between really finding
16 a way to get a mental model to a driver so they understand the
17 technology so that they want to buy it or they see a value, is one
18 of the big challenges.

19 So we just recently completed a study of about five different
20 ADAS technologies from ACC to park assist, parallel park assist,
21 rear cross-traffic alerts, blind spot protection and a lane
22 keeping system.

23 So we take people out on the road and we have them experience
24 those technologies but we sort of give them this pretest and say,
25 okay, what do you think about a car that would brake by itself to

1 a stop? I would never want to have it, never trust it. What do
2 you think about a car that can parallel park, perpendicular park
3 itself? Well, that sounds sketchy to me.

4 So they kind of come up with a number of these kinds of
5 uncertain responses, "I'm not sure about it," but then we take
6 them out on a drive and they get to experience those. And we did
7 that with over 120 participants on road in real traffic so that
8 they could really get a sense of the state of the art in
9 technology. And what we found was that the driver knowledge of
10 these systems, whether we provided enhanced user manuals,
11 demonstrations and so forth, we were able to increase their
12 overall knowledge of these systems pretty much but also increase
13 their trust in these ADAS systems, once they were able to
14 experience them firsthand.

15 Also they're much more willing to use in this scenario, too.
16 So we looked at parallel park assist, speed, ACC full range speed
17 and so forth. So they're really much more willing to use these
18 once they experience them.

19 And then we also found that their apprehension about these
20 cars was reduced significantly as well because people were really
21 not quite trusting. They're apprehensive about having a car that
22 might brake by itself, you know, can it really get into that
23 parking spot and so forth.

24 And then overall, we tested their knowledge of these systems
25 and indeed we think that their mental model is much more enhanced

1 about the operation of these system. So really one of the
2 challenges is how do we translate this into the broader education
3 experience.

4 And then even among the car dealers, because one of the
5 things we've also surveyed along the way is car salespeople,
6 service personnel and dealers and we find that they also don't
7 have a lot of knowledge about these systems. The way cars are
8 sold today, we have a fairly high turnover in these sales
9 positions. Big conglomerate sales lots will have multi OEMs being
10 sold and so forth. So it's a big challenge to be able to keep
11 everybody up to speed on how these systems work. And I frequently
12 haunt driver places and take cars for test drives and I'm always
13 really curious to see what sales folks know and don't know in this
14 area.

15 So I think really what's important is that there are going to
16 be many more of these technologies integrated into the vehicle and
17 sort of understanding these gaps are going to be really an
18 important area to keep on. And as part of any of these systems,
19 the consumer education element is really going to be vital to the
20 success of these technologies, especially when we see a lot of
21 these technologies sometimes over marketed on television and other
22 areas, this becomes sort of even more confusing to the driver.

23 So with that, I will step down and we'll go to the next.

24 MS. TROMBLEY: Thank you, Dr. McGehee. So I'd like to
25 introduce our next speaker during Session 2, Dr. John Sullivan.

1 He is an Associate Research Scientist and Head of the Human
2 Factors Group at the University of Michigan Transportation
3 Research Institute.

4 DR. SULLIVAN: Thank you, everybody. I'm very grateful to be
5 here, especially to talk about this very important and, you know,
6 breaking topic. What I'd like to talk about specifically today is
7 the issue of behavioral adaptation and how thinking about that has
8 evolved especially with the introduction of ADAS technologies.

9 A brief overview of my presentation: We'll get into what we
10 mean by behavioral adaptation and I'll discuss a little bit about
11 some of the early ideas that were put forward about behavioral
12 adaptation and provide some early examples.

13 I'm probably going to gloss over this, but there have been
14 three principle theories of behavioral adaptation early on,
15 primarily having to do with issues of risk. And then I'm
16 basically going to talk a little bit more about how ADAS
17 technologies differ from early technologies that were introduced
18 to improve driver safety, and how that has led to different
19 thinking about the kinds of behavioral adaptation models that help
20 explain what drivers might be doing.

21 Perhaps the earliest work, which actually just raised the
22 specter of behavioral adaptation, was a paper written in 1938, and
23 this was a footnote in the paper which suggested that giving a
24 driver more efficient brakes would not necessarily make driving
25 any safer because the concern was the driver will then learn the

1 new minimum stopping distance and adjust his behavior to
2 compensate for that. Of course, this is very disappointing,
3 especially for safety researchers, and it suggested that
4 behavioral adaptation should be a concern whenever you're -- for
5 both active and passive safety.

6 Two things that are particularly important to note is that
7 behavioral adaptation is difficult to predict and it threatens to
8 undermine the expected safety benefits of these technologies.

9 This concern was so -- you know, came to a head, I suppose,
10 in 1990 when the Organization for Economic Co-operation and
11 Development commissioned a report to sort of look carefully at
12 behavioral adaptation issues. They examined behavioral adaptation
13 as it applied to both road safety, demarcating roads more
14 effectively and what they would do to driving, as well as
15 improvements in vehicle safety technologies in the vehicle.

16 And this study basically looked -- you know, with respect to
17 specific vehicle improvements, it looked at ABS, what they would
18 call sporty vehicles, which I suppose means better suspensions and
19 more acceleration, those factors, as well as the use of center
20 high mounted stop lamps, daytime running lights, things like that.

21 Their report actually looked at both negative and positive
22 behavioral adaptations. The negatives were the most concerning,
23 and in sum, they basically concluded that ABS in sporty vehicles
24 tended to increase -- drivers would drive those with increased
25 level of risk.

1 Now the ABS work is kind of -- it was based on a handful of
2 studies, and I don't think that they felt that the evidence was
3 particularly strong back then.

4 But most of the initial improvements that they looked at, the
5 vehicle improvements, all related to things like vehicle
6 performance, the braking characteristics as well as occupant
7 protection. It was argued that the behavioral adaptation that
8 occurred was in response to drivers feeling more safe in these
9 vehicles, and that drivers might offset this perception of reduced
10 risk by taking more risks in their driving.

11 Now in particular, they were thinking of just general, you
12 know, driving carelessly, increased aggressive maneuvers like
13 speeding, lane changing, hard braking, close following stance,
14 small gap acceptance. These are all sort of broad, you know,
15 risky behaviors in vehicles.

16 So the initial theories that were posed for behavioral
17 adaptation focused entirely on this balance of perceived risk and
18 acceptable risk among drivers. The most significant theory was
19 the risk homeostasis idea that drivers drive around with this
20 ideal of what risks they will tolerate and then drive to sort of
21 -- you know, if they feel too safe, they'll basically drive more
22 risky to offset that risk level.

23 The theory suggested that any measure to improve driver
24 safety would be offset by some behavioral change and result in no
25 net improvement in safety. Of course, this was very distressing

1 for everybody in the safety world to contemplate. And I'll just
2 skip over this, this risk allostasis theory.

3 Most of these theories though suggest this constructive risk
4 and some comparison operation going on inside the driver's head at
5 all times. They are not very specific about what the driver will
6 actually do that is risky. They're mostly concerned with that the
7 driver will do something that makes driving -- that offsets the
8 reduced risk from the safety system.

9 ADAS has really changed this view a bit, and primarily
10 because ADAS technologies do a lot more than simply enhance
11 vehicle performance. They now support and share specific parts of
12 the driving task. In particular, control functions, they will
13 basically take over lateral control or longitudinal control from
14 the driver. They'll do lookout support. Effectively all the
15 warning systems you hear about are lookout support. They
16 basically advise the driver they're approaching somebody too
17 quickly, they're veering out of their lane, there's some rear
18 cross-traffic behind them or somebody is in the lane that they
19 want to turn into.

20 Other ADAS technologies do something quite different. They
21 extend the driver's sensory capability. They see things the
22 driver does not see. A simple example are night vision systems
23 that respond to animals or pedestrians in the roadway. But there
24 are, with connected vehicle applications, vehicles are now capable
25 of seeing, you know, around geometric obstructions. They can see

1 three cars ahead that the driver wouldn't be able to normally see
2 out of his window. This is kind of an interesting issue because
3 the driver then has to be confident that his system is really
4 better than he is, he or she. I should watch myself there.

5 And finally, there's automatic intervention where, and I --
6 excuse this -- I use crash imminent braking, but automatic
7 emergency braking is exactly the same thing. It just depends on
8 what part of the world you're working in. But such automatic
9 interventions include automatic emergency braking, electronic
10 stability control and ABS.

11 So what we see is a lot of specifics about the driving task
12 is being assisted by these ADAS technologies. This sort of
13 prompted a reconsideration of exactly what's going on both inside
14 the driver's head and how it affects driving behavior.

15 An early model, and this is like 2002, suggested by Missy
16 Rudin-Brown and Ian Noy, conceived of a model in which the driver,
17 and that means stuff that's going on inside the driver's head, the
18 kinds of behaviors the driver is going to produce, and they
19 basically adopted this hierarchical model of driving behavior,
20 which included the kind of basically moment-to-moment control
21 behavior; the tactical decisions drivers make minute-to-minute,
22 like changing lanes, overtaking somebody; and the strategic, you
23 know, what roads they're going to take for their trip, that sort
24 of thing. So they sort of conceive that as kind of the behavioral
25 hierarchy of the driver.

1 In terms of the driver's component, the mental model is key.
2 It has to do with what the driver understands this technology to
3 be doing, and they will act on this information.

4 Other factors that were raised include personality factors,
5 like how much the driver is willing to believe that the system is
6 competent and not require some level of monitoring, as well as
7 their eventual trust and belief that the system is doing things
8 properly. And the effects of behavioral adaptation play out over
9 different performance levels in the driving task. Let's see.

10 So what does it look like? Well, the changes in driver
11 control behavior might be seen as increased response time to
12 hazards or system failures. That is, the driver's going along and
13 he basically stops doing what he normally would do during a
14 control task and does something else. He's not actually looking
15 at the roadway in the same way he would normally. Other reported
16 factors included shorter following distances, decreased monitoring
17 of the forward scene.

18 Change in tactical behavior can manifest in things like
19 decreased overtaking maneuvers. ACC allows you to basically
20 cruise behind somebody without worrying about reaching them so the
21 motivation to overtake is somewhat reduced. There are others on
22 this. I'd just like to hurry through this.

23 And there's also changes in driver strategic behavior; that
24 is, when the driver decides to participate in some other non-
25 driving secondary task because his ADAS system is basically

1 covering things for him. Drivers might also, for example, have
2 preferences for ADAS friendly roadways, roadways that have better
3 lane demarcations, stuff like that. So these are the things that
4 we're kind of worried about what's going on with drivers.

5 Now to summarize some of the state of the research over the
6 last 20 years, most of it has been simulator based, and that's for
7 good reason because a lot of these systems were not available in
8 vehicles when the research was being done so a lot of this stuff
9 had to be simulated. Most of the studies focus on lateral and
10 longitudinal control as well as highly automated, which really
11 means both.

12 The main limitation of some of this work has had to do with
13 the limited exposure durations. Many of these studies allow
14 drivers. So drivers basically got these systems for about 45
15 minutes and then something would happen and drivers would be
16 unprepared and then there was a concern about over-trust of these
17 systems, when in fact a lot of the results might be attributable
18 to drivers' just limited understanding of the system.

19 The recent trend, however, have returned focus on issues of
20 driver trust and what their mental model of these ADAS systems
21 looks like. There's a call for more longitudinal studies of how
22 trust and understanding develop and there's a call for more on-
23 road studies over much longer periods of time than were originally
24 done in simulators and short-term studies.

25 So some basic conclusions about the behavioral adaptation and

1 ADAS, and these are going to be kind of dissatisfying-ly general.
2 Behavioral adaptation to ADAS technologies are highly variable
3 and depend on things like, how obvious is the ADAS intervention?
4 How much exposure does the driver receive to the ADAS operation?
5 What does the driver understand about ADAS capabilities, and in
6 particular, their mental model? This is key, and I think Dan
7 would agree, that what the driver thinks the system is doing is
8 important because they act on it.

9 And finally, if ADAS limits are rarely encountered, it's
10 concerning that drivers will be likely to forget them or be
11 unprepared to intervene when such circumstances arise. Finally,
12 adaptation effects will likely be specific to different ADAS
13 systems, so no one solution will fit.

14 And with that, I'd like to thank you and plug the AAA
15 Foundation for Traffic Safety who funded this review and
16 acknowledge my collaborators, Dr. Shan Bao, Dr. Anuj Pradhan and
17 Dr. Michael Flannagan. Thank you very much.

18 MS. TROMBLEY: Thank you, Dr. Sullivan. And just a reminder
19 for those in the audience here, and if you're watching online, if
20 you have questions, please write them on the paper if you're here
21 in person and raise your hand and Alex and Rob will pick up your
22 questions. We'll address them at the end. And if you're online,
23 you can email them to drivertechevent@ntsb.gov. And try to send
24 your questions in before the end of the next speaker so we can
25 organize them and get them to me to ask the questions.

1 I'd like to introduce our final speaker in this session,
2 Anders Eugensson, Director of Governmental Affairs from Volvo.

3 MR. EUGENSSON: Good morning, everyone. For someone who's
4 not living here in the States, I'm fascinated by the level of
5 engagement and the excitement I see here in Washington at the
6 moment. We're thrilled by that. Over in Europe, we don't see
7 that. So it's really exciting to be here.

8 Okay. We have a vision at Volvo that no one is to be killed
9 or seriously injured in a new Volvo by 2020. Key to this is that
10 we have systems that assist the driver in trying to make the
11 attention levels of drivers higher and, if the driver's attention
12 is not high enough, the car will support the driver in trying to
13 avoid the crash.

14 So linked to that vision, we have an attentive driving
15 vision, and we say in that vision, we're saying no crashes should
16 be caused by inattention of the driver. We should work on eyes
17 and mind on threat. We should have the safe deliverance of
18 infotainment system, and we would like drivers to pocket the
19 smartphone. Always link up the smartphone with the car to get an
20 optimal way of not having inattention, causing inattention of the
21 driver. And we're going to make sure we have sleep-free driving.
22 Those are the four keys to our attentive driving vision.

23 Okay. This slide, I hope you can see anyway. So we always
24 design for the error prone driver. Let's work on the driver that
25 is causing the problem. And we've realized this, the ideal driver

1 doesn't exist. We have to work on a driver that's not ideal, that
2 doesn't have the attention at all times. And linked to this, of
3 course, is the data showing 94 percent of the crashes are linked
4 to some kind of driver-related issues.

5 And the bottom of the slide, you'll see some of the
6 statements made by the Swedish government stating its Vision Zero
7 strategy, which says we have to work on a safety philosophy that
8 incorporates a failing human. Humans cannot be trusted. Humans
9 are great as drivers when we keep the attention level high up, but
10 we have problems keeping that attention level high. So we have to
11 basically work on the assumption that the driver isn't paying
12 attention all the time and trying to get the driver's attention
13 back.

14 And we have the possibility to work on different parts of the
15 chain of events that starts with normal driving and can end up in
16 a crash. So if you look at all the stages from the normal driving
17 until you have a crash and trying to cut that chain of events as
18 soon as possible, different systems and different ways of getting
19 the attention level back of the driver, you have a way of not
20 having a crash or a serious crash.

21 So very much was said earlier in this session is that we have
22 to work on something that links the driver and the car. All the
23 systems have been linked to the human in a way that the human
24 understands the systems, they don't encourage overdependency, and
25 once they get into action, hopefully the driver understands what

1 he or she should do. Most of them need to be intuitive in a way
2 that you don't have to learn about the systems. You can just
3 address them by acting in a way you normally do to prevent the
4 crash.

5 So in doing this, we have two tactics. First of all, I have
6 a risk reduction with active safety and attention sensors, and
7 autonomous driving is also going to be linked to this. The second
8 one is to reduce the eyes-off-road time by design.

9 So for the first one, you have a critical situation. We're
10 trying to have -- and it can be caused by mismatch in timing and
11 it can lead to crash risk. So we have to have systems acting for
12 that critical situation.

13 The other one is the driver performing non-driving-related
14 tasks. And if that happens, it could be a mismatch with those
15 tasks and taking eyes off the road, then we have to act in a way
16 that we can reduce. It is stopping the car or hopefully
17 preventing -- risk reduction by design that the driver isn't
18 taking the eyes off the road for too long a time. So these two
19 tactics are basic for building our safety systems in the vehicle.

20 So this figure in the slide shows all the stages from normal
21 driving until the crash and after crash. And we tried to work on
22 to perceive the threat before the crash and when a perceivable
23 threat is present, we have to act. So if we can have systems
24 working on all the stages before the crash and take the driving
25 back to normal driving so the arrows are pointing back to normal

1 driving, saying we assist the driver and telling the driver that
2 he or she that is not paying attention or they have a way of being
3 distracted doing secondary tasks, avoiding those tasks and put
4 everything back into normal driving. And gradually when we move
5 into a risk scenario, hopefully we can give this warning to
6 drivers and push it back to normal driving.

7 When that is too late, when the driver is no longer able to
8 avoid a crash, then we have to have the systems acting. But in
9 the first stage you would try not to build on over-trust and
10 overdependency. We try to make everything so that the driver is
11 still paying attention, still being part of the driving and
12 keeping the attention level high.

13 So when we look at this, we see that crashes are associated
14 with -- when it comes to inattention, crashes are associated with
15 short glances with high closure rates. Something happened very
16 quickly. Or long glances and slow closure rates. Those are two
17 mechanisms we see when we look at inattention.

18 And the countermeasures we're working on are reducing the
19 eyes-off-road time, and active safety systems replace the eyes
20 when the drivers look away and protect the driver if the situation
21 changes and changes rapidly during off-road glance.

22 And here we have all the active safety systems: emergency
23 braking, forward collision warnings; we have rear collision
24 warnings; we have adaptive cruise controls, and we're also going
25 to have connected safety, and all the assistance systems we talked

1 about.

2 A third element of this is safety coaching. We're trying to
3 link this back to drivers saying, in this way you can perform --
4 you can increase your attention level.

5 So by having all these working together, we can improve the
6 way the driver is interacting with the vehicle and the way the
7 driver is acting to avoid any critical situation. And if so, if
8 there's still going to be a critical situation, the car has to
9 act.

10 The previous speakers talked a bit about overdependency and
11 how the systems could change the behavior of the driver. We have
12 done a lot of studies on that, and to us, it's not obvious that
13 this is happening. We tried to work on not creating this
14 overdependency. We tried to have the systems dormant as much as
15 possible, not to create overdependency.

16 And there's also research looking at this. This is a
17 research paper that says that adaptive cruise control and forward
18 collision warning has decreased the number of incidents, but the
19 time headway to collision is below .5 seconds. We don't see this
20 as increasing the crashes. So the research we see doesn't look
21 like it's going to create overdependency.

22 Another thing we also find from the research is that sensory
23 cues can be important. We talk about the adaptive cruise control.
24 The adaptive cruise control, when you close in on the vehicle in
25 front of you, you feel the car -- it's getting kind of easy, a

1 slight braking. That slight braking is often enough for the
2 driver to sense there is -- you're approaching another vehicle,
3 and that sensory cue could be enough for the driver to get back
4 and increase the attention level.

5 And the research we've done, it's not easy to see from this
6 slide, but the research we've done is clearly showing that those
7 sensory cues are important. So closing in on a car in front of
8 you, at different stages you can avoid crashing. First of all,
9 have the adaptive cruise control give that first warning to the
10 driver, you're closing in on another car. If you're closing in
11 even more and you get to this stage where the car is saying this
12 is getting too close, you need to brake; there's a warning coming
13 up. And if still you're getting closer, the car will brake
14 harshly in order to avoid a crash. And even if you're not able to
15 avoid a crash, it's still taking the crash violence down. It
16 makes the restraint systems in the vehicle be able to protect the
17 occupants.

18 One of the systems we have in our vehicle is a drowsiness
19 system and it's both a distraction and drowsiness system. We call
20 it driver alert control. And this system has been around for 8 or
21 9 years in a Volvo. We have two levels of that now, where we say
22 -- we give a warning first and hopefully that makes the driver to
23 pay attention and take a break hopefully. If the driver doesn't
24 do that, we remind him or her to take a break.

25 In the latest models, we also have an acceptance button where

1 you have to press and, if you accept, the car will tell you tell
2 you the best place to go off the road and stop and have a rest.
3 We still think it's way of encouraging the driver to react and say
4 I realize I'm not paying attention as much as I should and I have
5 to take some action to do that.

6 So in order to do this, we have predictive systems and in-
7 conflict attention reminders. So predictive systems like the
8 driver alert control, here we're trying to increase the level of
9 attention of the driver by constantly reminding the driver. And
10 inattention systems, that's when you're close to a pre-crash
11 situation. You're leaving the lane, your eyes are closed, there's
12 an emergency brake or steer and take you back and you wake up, and
13 eyes is back on the threat. So those are two levels of attention
14 reminders that we work on.

15 Soon we're going to get into autonomous driving, where you're
16 going to have unsupervised driving. So you're going to still have
17 supervised driving even when we get into the technologies, when we
18 put the technology into the cars for unsupervised driving. When
19 you're still in supervised mode, all those systems you build up in
20 a car to help you to be unsupervised or have unsupervised driving.
21 It's going to significantly increase the level of all these
22 assistance systems while you're still driving in normal mode. So
23 we see that as an even higher level of assisting drivers in
24 keeping their attention level up and preventing crashes.

25 I'd just like to say a couple of words about the NHTSA

1 guidelines. Yes, we aim to be compliant with the guidelines. We
2 still have many issues with the guidelines. We think the method
3 for assessing compliance is not the best one, and we see real-life
4 compliance of NHTSA guidelines when it comes to attention levels
5 of drivers, it may not be in full compliance all the time.

6 And I'm not asking you to look at this slide carefully but
7 basically what we find in meeting the guidelines is all dependent
8 by the individuals. We can meet the guidelines with one
9 individual or set of individuals or we fail to meet the guidelines
10 with the same systems with other individuals. So we are meeting
11 the guidelines but we're not so in line with those guidelines.

12 So in conclusion, we have proactive crash avoidance systems
13 to reduce exposure, for reducing eyes-off-road time, and to do
14 safety coaching. And we have crash avoidance to prevent crashes.
15 Those systems replace the eyes of the driver when the driver is
16 not paying attention. And this gives more time, headway time that
17 we can act, do a lot of active braking systems, we can have lane
18 keeping aid systems, things that helps to put everything back into
19 normal driving mode in order to make the collision -- avoid the
20 crashes. And if we can't avoid crashes, we can still help by
21 reducing the crash violence and make sure that the occupants are
22 safe.

23 Okay. Thank you for your attention.

24 MS. TROMBLEY: Thank you so much. And we'll go into
25 questions and answers now and this should be good discussion

1 because we have some really good questions here.

2 The first one is for Dr. McGehee and any other panelist who
3 can answer. What more can be done -- and this is from an online
4 viewer, so thank you. What more can be done to capture data about
5 the frequency of human misunderstanding of these features as well
6 as train sales people and inform consumers about how all these
7 confusing new features work in cars in the years before they all
8 become standard? And the writer also included a note. Their
9 daughter was struck by a driver who was test driving a car who was
10 told by his vehicle salesman that the cruise control system would
11 stop his car automatically.

12 DR. McGEHEE: Thank you for that question. I think this is
13 sort of a multidimensional answer in terms of not only consumer
14 education, as we're doing in MyCarDoesWhat, but I think the
15 carmakers, the suppliers, the Tier 1's, also need to be part of
16 the broader conversation in articulating how their systems work as
17 well.

18 And you mentioned sort of the car dealer scenario. I've
19 experienced several times, especially with full range adaptive
20 cruise control, where the sales person claimed that it was on a
21 car when it wasn't, or it was engaged when conventional cruise
22 control was engaged. So I think the dealer network also should be
23 looking at training of the sales folks in more detail to get that
24 side of the thing.

25 So like I said, the answer is really that we need to look at

1 many different modalities of training. So the broader media
2 aspects, getting earned media on board to do stories and write
3 about these technologies, because they really are going to reduce
4 and prevent crashes in the future. So that's really tying in the
5 overall driver error component to normal drivers, is a really
6 critical element.

7 MS. TROMBLEY: Thank you. Do any other speakers want to make
8 a comment on this issue of collecting the data?

9 MR. ALLEN: Just real quick. I would encourage the viewer to
10 stay tuned in at 2:25. We'll speak to this. Thank you.

11 MS. TROMBLEY: Okay. And our next question from the
12 audience, being aware of the safety technologies in the vehicles
13 is -- and this is for Dr. Dan McGehee again -- being aware of the
14 safety technologies in the vehicles is essential to benefit from
15 their presence, but becoming overconfident will expose the drivers
16 to risk. Have you done any surveys concerning the overconfidence
17 behavior while driving and its consequences?

18 DR. McGEHEE: That's a great question. We'd really like to
19 do that. It's a matter of exposure to the technologies. There's
20 still a lot of these systems the market penetration is not great
21 enough for us to be able to get at that particular question.

22 Having said that, we've been able to attract people -- you
23 know, adaptive cruise control and its early release has been
24 around for about 10 years on higher-end vehicles, and we have been
25 able to bring in owners of those vehicles. It's still really

1 tough because, you know, people that own high-end cars don't
2 really want to come in and spend a couple hours with you to get
3 debriefed on how the systems are working for them.

4 But I think the good news is that as these systems are
5 increasing, especially in the lower-end vehicles, we're seeing,
6 you know, cars now in the very low \$20,000, \$21,000 range getting
7 adaptive cruise control, AEB, lane keeping. In the next few
8 years, we're really going to be able to get a much higher exposure
9 and bring people into those studies.

10 MS. TROMBLEY: Okay. Thank you.

11 I have a question for anybody on the panel who would like to
12 answer. In the U.S., approximately 10,000 people are killed in
13 alcohol-impaired crashes every year. What will it take to reduce
14 or eliminate these fatalities?

15 DR. McGEHEE: Yeah, I think we didn't address the alcohol-
16 related, specific alcohol-related issues but certainly ADAS will
17 help reduce the severity of some of those crashes if we take a
18 look at lane keeping systems, for instance, keeping an impaired
19 driver in their lane, automatic braking. So there's some good
20 news there. But having said that, we don't want people to over
21 rely and think that the car's now going to save them while they're
22 impaired.

23 MS. TROMBLEY: Any other speakers want to comment? I know
24 it's a challenging question. It's a challenging issue we have to
25 address.

1 MS. LINDLAND: I think it's a combination of things. I think
2 ride sharing or car systems like Uber and Lyft actually have
3 helped in that regard. Consumers are aware. I think we just need
4 to continue with, you know, societal stigma. It's just not
5 acceptable to behave like that. And you see in Europe -- I lived
6 overseas and, you know, the fines are just -- they're prohibitive.
7 Nobody drives when they are -- you know, when they know.

8 I remember sitting down with my aunt in -- actually in
9 Kristiansand in Norway and we were going to be there for 3 hours
10 and she would not drink, even a glass of wine, because she was
11 going to drive at the end of the evening, and that's the kind of
12 mentality that I think we need to have here. It's really hard,
13 but -- I don't know if it's a moonshot or not, but I think that
14 it's certainly something that we need to continue to address and
15 have it just -- it is just simply unacceptable behavior.

16 MS. TROMBLEY: Okay. So for our next question, are there --
17 and this is for any speaker. Are there indications that people's
18 misunderstandings about advanced driver assistance systems are or
19 may increase crashes? Are people misunderstanding current
20 capabilities and wrongly or overly relying on the technology?

21 DR. SULLIVAN: I think the human tendency when you get into a
22 car that appears to be smart -- for example, it's easy to
23 understand conventional cruise control. All it's doing is it's
24 maintaining your speed. When you introduce a driver to a system
25 that can actually see forward vehicles and adjust speed to keep

1 your distance from those forward vehicles, I believe the tendency
2 of drivers is maybe to jump to conclusions and see that as an
3 intelligent behavior and make all kinds of projections on how it's
4 operating. I think the tendency is to see it as another human
5 being, what they might do; it sees what I see. And their initial
6 mental model before they become very familiar with the vehicle may
7 be to sort of project their capabilities onto these systems, and
8 that's where they're likely to fall into -- make mistakes about
9 being overconfident about the operation of these systems.

10 DR. McGEHEE: I still point back to just the high rate of
11 driver error in general. We talk about the 94 percent of crashes
12 having some elements of error involved. These systems will do a
13 lot of good, and I think what we talked about earlier in terms of
14 behavioral models, are really critical to understand as we move
15 forward and manage how drivers can use these systems.

16 MR. EUGENSSON: We at Volvo have done studies on some of the
17 systems like adaptive cruise controls, and we clearly see that
18 it's not an overdependency. We did a field operation of tests a
19 couple years back, equipping 100 vehicles with cameras and
20 recording systems, and that study clearly shows that the adaptive
21 cruise control did not create an overdependency. The other way
22 around actually. The sensory cue, when you approached another
23 vehicle with adaptive cruise control kind of alerted the driver,
24 instead of the other situation with normal cruise control where
25 you didn't get an alert until you were too close to the car in

1 front of you. Whereas adaptive cruise control told you you're
2 getting close to this other vehicle, please pay attention.

3 We've also done other studies on overdependency, and so far
4 as we can see, it does not indicate, for the normal assistance
5 systems that you have, you create an overdependency.

6 MS. TROMBLEY: Okay. Thank you.

7 So our next question is: It's cost effective for OEMs to
8 distribute owner's manuals electronically. Some vehicles link the
9 information including updates in dash monitors. For segments of
10 the population, such as older drivers, overconfident drivers, this
11 is not an ideal education method. How can OEMs improve drivers'
12 education?

13 DR. McGEHEE: As you know, owner's manuals are getting much
14 more complicated these days. Some of the vehicles that we're
15 testing has owner's manuals that exceed over 500 pages, one over
16 600 pages. What we're looking at, at MyCarDoesWhat, is actually
17 mining how people ask questions about their cars on the internet.

18 And so context in a car is something that the future owner's
19 manual -- most cars now have multifunction displays in them. So
20 when a telltale shows up, when an issue shows up with the car that
21 may be different, in the future we'll be able to have drivers say
22 "What just happened?" Or "What is that icon that just showed up
23 on my display?" Where they can sort of talk back to their cars
24 and get a full, a more full report from it. So we think context-
25 related owner's manuals are going to be much more relevant in the

1 future especially as these systems get more complicated,
2 especially infotainment systems.

3 MR. EUGENSSON: Yeah, we think what Dr. McGehee's doing in
4 Iowa is very good. But in addition to that, we'd like to make all
5 the systems intuitive so we think there should be no previous
6 education of how the system works. Once you activate the systems,
7 they should give you signals in a way that you understanding it
8 without having previous knowledge about them.

9 For instance, the warning for braking, for the automatic
10 braking system, we have a red light coming up in the wind screen,
11 we had a display and a signal. That red light is imitating the
12 brake lights of the car in front of you. So without knowing
13 before what this light is before, we see that the driver is going
14 for the brake because that's the normal reaction. That's what you
15 do when you see a critical light, red light in front of you. So
16 we think that that's the best strategy, to work on something
17 people understand without having previous knowledge about the
18 system.

19 MS. TROMBLEY: Any other speakers have any comments about
20 that question? Okay. Our next question is a little bit of a
21 shift. You know, we've seen in some presentations that certainly
22 the roadway quality can affect the effectiveness of these
23 technologies. So this question addresses that.

24 Our deteriorating road and bridge system has many
25 deficiencies that are likely to defeat certain aspects of ADAS.

1 This includes faded or nonexistent lane markings, potholes and
2 deteriorated shoulders. In addition, work zones present a
3 challenge to automated vehicles. What needs to be done to make
4 our roads reasonably friendly to these vehicles? How much will it
5 cost? And how can funding be raised? Anybody want to tackle a
6 comment on that or anything related to that, even what drivers
7 need to know in that situation?

8 DR. McGEHEE: Well, clearly paint is going to be -- is a
9 really important element, whether you're a municipality or a
10 county or a state, that's going to be a really important area that
11 you're going to have to keep up on. And most places do pretty
12 well. I know of one state who decided to forego painting for a
13 year to save \$3 million. That's probably not a good idea for
14 future systems, especially if you're in a state that is exposed to
15 snow and ice and snow removal. But it's certainly an issue that I
16 think is going to be really critical for infrastructure to be
17 maintained so that these systems can see.

18 But as we get more high definition mapping systems integrated
19 with these ADAS systems, that's also going to increase the
20 confidence of the position. But none of these systems can work by
21 themselves very well, so integration of sensing is going to be the
22 future.

23 MS. TROMBLEY: Would any other panelist like to comment?
24 I'm hiding behind the monitor over here for some of you over
25 there.

1 So we have another question from our audience here. One
2 human factor that has not been addressed is people of limited
3 financial means, such as young drivers, lower income drivers,
4 older drivers, who will drive older cars well into the future.
5 These people cannot afford automated vehicles and cannot afford
6 the maintenance of automated features. How do you think we will
7 deal with this problem? Would anybody like to comment on that?
8 It's a tough one.

9 DR. MCGEHEE: Yeah, I mean it's -- I think they've sort of
10 addressed this earlier. I mean, it takes a long time for market
11 penetration to occur. As I mentioned earlier, the really great
12 news is that these features are coming down into really
13 inexpensive cars and so as young people can afford to buy their
14 first cars, likely those new cars in the next few years will have
15 them.

16 MS. TROMBLEY: This reminds me, too, of a conversation I had
17 with somebody at another conference recently and he said, you
18 know, we give breaks, economic breaks to the consumers for Energy
19 Star appliances. Why not breaks for safe vehicles with safety
20 features, and so that's something to consider.

21 So another question from an online viewer, and we have three
22 more questions. These presentations stimulated a lot of thought
23 from people.

24 Errors in misbehavior at the design and production level have
25 led to a number of spectacular failures in consumer products in

1 recent years. Why would one expect that these kinds of failures
2 will not continue to affect future automated vehicles? If anyone
3 would like to comment on that and what might be done?

4 DR. McGEHEE: Well, automated vehicles I think is beyond the
5 scope of what we're talking about here today.

6 MS. TROMBLEY: So another question from online. How
7 effective is safety coaching? Do audio, visual or haptic warnings
8 impact the driver's perceived risk level and influence their
9 driving behavior? What have you found in research regarding that?

10 MR. EUGENSSON: I think the extent of that question is, all
11 those ways of telling the drivers that there's something wrong --
12 I mean, we have looked at studies on both haptic warnings, the
13 warnings for braking, the warnings when you're tired or drowsy,
14 and some of them are fairly efficient. Some of them work well.
15 Some of them need improvement and some of them also have been too
16 annoying, which made some drivers turn them off and deactivate
17 them. So it's a learning process how we can make them in the best
18 way not to annoy drivers, and it's also the balance of how early
19 you put them on, how much assistance does the driver needs in
20 order to bring it back into normal mode or is this an attempt to
21 drive -- it's a good driver or is it the low performing driver?

22 We're trying to work on systems that can adapt to the driver
23 much better, both the attentiveness level of the driver and also
24 the capability of the driver. But there are lessons to be learned
25 about the first level of systems we had, and we've, I think --

1 although most of them have been very efficient in reducing
2 crashes, we think we're going to learn about HMIs and how we
3 attract the attention of drivers, and I think it's going to be
4 much better in the future. But they are pretty good still.

5 MS. TROMBLEY: Okay. We have one more question from the
6 audience. Has behavioral research been done that looks at
7 frequency of users turning off ADAS technologies so they can
8 revert to risky behaviors? Has research looked at how often do
9 drivers turn off these technologies?

10 DR. McGEHEE: Not that I'm aware of. Again, that's really an
11 exposure issue and getting a number of systems out there to find
12 those drivers.

13 MS. LINDLAND: Sorry, Deborah. And our signs are squinched.
14 This is Rebecca Lindland from Kelley Blue Book.

15 I think that it's not so much that people want to revert to
16 risky behavior in their car, it's just that the system is annoying
17 for them, and they don't know what it's doing, the sounds are
18 annoying, you're getting all this feedback from your car. It's
19 startling to people. So I think that the reasons for why they're
20 turning the systems off is not so much that they want to, you
21 know, throw caution to the wind and drive like a crazy person. I
22 think it's more just that they don't know, they don't understand
23 what these systems are telling them. They don't like them. You
24 know, when you drive these cars, sometimes the seat is squeezing
25 you, sometimes your steering wheel is vibrating, the car is

1 jerking you back into the lane. There's crazy things going on
2 sometimes.

3 And I was just driving the new Alfa Romeo on Tuesday at
4 Sonoma Raceway and it was doing a lot of stuff. I mean, the back
5 end -- it was wet so the back end is sliding out on me. I knew
6 what was happening but I have a lot of training, and for drivers
7 that don't have a lot of training, it can be really scary, and it
8 can be really distracting in that vehicle.

9 And so -- I mean that's why, you know, there's so -- it's
10 such an emphasis on understanding and cooperating with everybody
11 so that people, you know, that are buying these cars are going
12 into these dealerships and the manufacturers are developing these
13 vehicles that we understand and we educate people.

14 And the other difficult challenge we have is car sharing. As
15 we move into a car sharing society where you may not be driving
16 the same car all the time, that's a whole other issue that we have
17 to address as well. Thank you.

18 MS. TROMBLEY: Okay. Thank you. And we'll take a break now,
19 and switch speakers to our next session, and we will reconvene at
20 11:20 a.m. Thank you.

21 (Off the record at 11:12 a.m.)

22 (On the record 11:21 a.m.)

23 MS. TROMBLEY: We're ready for our next session and the last
24 session of the morning before lunch. This session will cover
25 education and promotion of advanced driver assistance systems. In

1 Session 2, we heard about needs for consumer and driver education.
2 We know it takes a whole system and all its diverse partners to
3 reach zero crashes. So in this next session, we'll hear from a
4 variety of organizations that can promote advanced driver
5 assistance systems and educate and influence drivers, industry and
6 policy.

7 And as our first speaker in this session, I'd like to
8 introduce Chris Mullen, Director of the Technology Research
9 Division at State Farm.

10 MS. MULLEN: Good morning. I want to thank everyone for
11 attending and, on behalf of the team back at State Farm, to thank
12 the NTSB and NSC for allow us to speak with you and to focus on
13 this topic.

14 In Debbie Hersman's opening comments, she quoted a visionary
15 and the understanding of what disruptive innovative change can do
16 to an industry, I believe, and so I'll also quote someone from the
17 1940s, and that was our founder. And he noted that, "We are
18 either in the tide aiding and assisting in the improvements that
19 are certain to come, or we are obstructionists to the things that
20 are bound to come. Nothing in this world is permanent but change;
21 change is constant, eternal, and everlasting and those of us who
22 are not ready and willing to adapt ourselves to changing
23 conditions must be left behind."

24 So when we think about the situation we're in now, with a
25 very revolutionary evolutionary change in technology in mobility,

1 we are focusing here on the driver, and the driver is going to be
2 part of the picture for the foreseeable future. They are now 94
3 percent of the reason that vehicles are crashing. So we have to
4 understand as vehicles become more automated, how does the
5 driver's role change.

6 So when we're focusing on the theoretical relationship
7 between the role of the driver and the role of automation, we find
8 ourselves right now kind of at the beginning, more toward the
9 middle, where they're sharing. They're sharing the
10 responsibilities of driving. And that's where you have these
11 advanced driver assist features where the driver is still
12 ultimately responsible for the trip but there are pieces of that
13 trip that they can receive assistance from the systems. In this
14 way, those systems have to be designed keeping in mind what the
15 driver is likely to do. I think others mentioned that intuitive
16 nature of what they expect the system to do and how their behavior
17 will adapt.

18 As Dr. Sullivan was presenting, I was hoping that it would
19 come to a point where it was encouraging, and it did in terms of
20 the ability of drivers to adapt to those assist features, but
21 keeping in mind what the driver expects is critical.

22 Also the traditional way of looking at the crash picture
23 always involves these three facets, and we've heard that all day
24 -- all morning today, where we think about not only the vehicle
25 and the technologies that have been designed, but it's impacts on

1 the other two major facets of that picture. The environment, we
2 heard about systems that were designed to expect a certain thing
3 out of the roadway systems and if that thing, in this case, paint,
4 isn't there, what that could do to the crash picture. And then,
5 of course, the driver and how all three of those things
6 interrelate.

7 So what is our approach to this? What should we focus upon?
8 And in this case, we're focusing on the driver, but the ultimate
9 goal here is that crashes are prevented and lives are saved. You
10 know, as we go towards zero, the approach and research to action
11 that we're taking looks at what those critical issues are, what's
12 the root cause of those issues, and then how do we design science-
13 based effective interventions so that once those get out into the
14 hands of our consumers and our drivers, what we expect to happen
15 actually does. And if that is not the case, how do we go about
16 chipping away at the remaining pieces of that picture?

17 What we're doing in terms of understanding this, and this is
18 particularly critical when we're thinking about these ADAS systems
19 is what the driver understands and knows. We do this through a
20 variety of ways. We monitor trends, of course, but we're asking
21 our customers constantly what they think, what they know through
22 surveys, through focus groups, interviewing them as well as
23 understanding from our expertise and user experience what the
24 development and implementation of an intervention might look like
25 and then post-implementation of that solution. What actually

1 happened, and did we design ourselves a perfect solution? Ideally
2 yes. More likely no. So then what will we do beyond that?

3 We've done that in the past and we are constantly taking
4 action in that vein. There are multiple ways to reach consumers
5 as you all know in terms of education and awareness, through
6 direct communications, of course, and grassroots outreach, but
7 through those educational tools and programs as well. And I show
8 a couple of those that we've done in the past on these slides that
9 target some of those root cause for why drivers behave the way
10 they do and how we can help them learn and understand better.

11 There was a question at the end of the last session on
12 coaching, and there is evidence to suggest that some of these
13 programs will, in fact, increase a driver's skill to the point
14 that they can learn it in a safe space and then apply what they've
15 learned once they hit the road.

16 And then, of course, industry collaborations have been a
17 cornerstone of how we've been able to achieve safety impacts in
18 the past and so we look forward to continuing those.

19 And then legislative advocacy. All of those are ways that we
20 can get consumers better educated and aware.

21 So going into a little bit of data that we recently released
22 on what drivers know and what they want in terms of assistance
23 from their vehicle, we asked them just recently their awareness of
24 particular technologies that have automated function. And when we
25 look at these, it largely tracks with the availability of these.

1 These that have been around for a little while, consumers are much
2 more aware.

3 So backup assistance, they're either very knowledgeable or
4 somewhat knowledgeable, the majority of our respondents. Parking
5 assistance, adaptive cruise control, we've heard these mentioned
6 all morning, and most drivers are aware of those. But when we get
7 into the ones that have only more recently started to hit the
8 market, you're looking at lane departure assistance, automated
9 braking, there's less awareness and less knowledge of those
10 systems in the consumer population.

11 And when we ask them what they want from their vehicles, so
12 their desired functionality -- if your vehicle were to have some
13 automated or self-driving technology, what driving task would you
14 want assistance with versus the ones that maybe you're not ready
15 to hand over to the car, and it also tracks with the available
16 technology, which is a good thing. Backing up, the alerting
17 drowsy drivers, Anders presented on Volvo systems, in that vein;
18 parking, adaptive cruise control, the majority of our respondents
19 did say that they would like that assistance.

20 But as you get into more automation where the car has more
21 responsibility for the functions, the responses start to decline a
22 bit, although still rather high. And then on the end there, we
23 did ask, do you want the whole drive? And encouragingly a quarter
24 of them do. So that shows you a little bit of the intentionality
25 of the consumers to at least consider getting some of this

1 technology in their vehicles.

2 Why is this important? Why do we need to know what they want
3 and understand? We know from our previous study that they are
4 predisposed to want to do other things than drive, and so we asked
5 them again, and we've done this survey I think 6 or 7 years, and
6 this most recent year, we asked them what they want, and the
7 majority want to eat, but they want to do other things.

8 So you can see that if they were able to hand over control of
9 that drive to someone else, in this case, the car, there are other
10 things they want to do. They want to eat. They want to read text
11 messages. They want to send text messages. And most of us in the
12 safety field are not surprised by seeing this. This tracks
13 largely with the naturalistic. We've already seen, we already
14 know they're doing these things and so they're telling us some
15 things we already know, but it's interesting to see the majority
16 of them that are wanting to do other things than drive.

17 And now I'm going to go off memory. Are we going to get the
18 slides back? Now you're just going to have to trust me.

19 When they're telling us those things they want to do other
20 than drive, there actually is an age impact as well. So there are
21 age effects in this for those that want to do things other than
22 drive. In the population, of course, we started with 18 and went
23 on up. And when we split that up, in 18 to 24-year-olds versus
24 everyone else, all of those behaviors you just saw, the larger
25 proportion of 18 to 24-year-olds wanted to do that versus their

1 older counterparts in the survey.

2 And, you know, I had dinner with a friend of mine just this
3 last week and she has a teen driver. Well, let me change that.
4 She has a teenager who is 16, perfectly legal to get her license
5 and hasn't done it yet, and she keeps pushing her, why aren't you
6 getting this? You're supposed to be excited about this. And
7 finally she was, mom, driving is so boring, and she said, you
8 know, when I'm stopped, I know I'm not supposed to, but I want to
9 check my phone. And just that mentality that there's other things
10 I'd rather be doing than driving this car, right there is telling
11 us that the drivers would like that assistance if for no other
12 than to get some bandwidth back.

13 Another reason that we get concerned about is because they
14 just can't resist that behavior. We already see how badly they
15 want to do it and, in fact, we've seen them do it on the road.
16 Not a day goes by, I'm sure for a lot of us, you drive in traffic,
17 you see someone behaving a little bit oddly. As soon as you get
18 up with them, you're just waiting to see something that they're
19 doing, that's distracting, and they're telling us that is true.
20 And they understand it. They do know that it's distracting.

21 In this case, the survey results we released, that 94 percent
22 -- so almost all of the respondents knew that texting was
23 distracting, but over a third are doing it any way. Similarly
24 over 90 percent knew that programming in navigation was
25 distracting, but over half of them were still doing it. So they

1 know this to be the case. They know it's unsafe, but somehow
2 can't resist.

3 So when we try to look at what people are doing, one of the
4 more interesting studies from our colleagues at UMTRI, Dr. Bao's
5 study, looked at what does that do to your performance. And
6 especially parents of teens are fascinated to understand that once
7 they are distracted, they're no better than their teen. They're
8 essentially driving about the performance level of a novice
9 driver. That's usually rather frightening and sobering to them,
10 that that's what results from just texting, if you will.

11 So where should we focus the education efforts? So the focus
12 of this panel in particular is what do we need to do in terms of
13 education, and so we asked them, where to focus, and
14 interestingly, this was alluded to earlier, that they need
15 training and they know that. So they're asking for training.
16 They consider it very important. In fact, 51 percent considered
17 it very important, and 24 percent considered it somewhat
18 important. So you've got three-quarters of the respondents that
19 really do want that training.

20 And when we asked them where they would get it, the
21 overwhelming majority expect to get it at the dealership, and that
22 came up this morning as well. So they're looking for this
23 training. They know these systems are complex and they know that
24 they won't intuitively understand them necessarily just driving
25 off the lot, but there's a bandwidth there, too. You know, as

1 those folks sit on the lot, and you know how long it takes to get
2 through that process of driving and really deciding, are you at a
3 point there to consume that education for 2 more hours, for
4 example. So that design of the intervention there, in this case,
5 the training, is critical.

6 Oh, good. The slides are back. So now you just have to
7 trust me and look at the slides.

8 So what's next? Now that we have slides but no control. Who
9 asked about failure of technology by the way?

10 Okay. So what do we do next in this case? And what we've
11 chosen to focus on is the fact that these are incredibly complex
12 so we need to understand them. We can't simply wait for this to
13 come along. These things are being developed at an incredible
14 rate, and so for that, we have been funding multiple research
15 efforts both internally and externally to understand what these
16 systems are likely to do.

17 When we talked earlier about potential limitations in
18 technology, there's only so much an individual system can do
19 before you'll need to have that interrelation of other systems.

20 So we're funding the Michigan Mobility Transformation Center
21 in Ann Arbor at the University of Michigan, looking at that
22 overall ecosystem. And this goes a little further in that time
23 horizon when we'll have more automated features and autonomous, if
24 you will, but also looks at the connected ecosystem.

25 Similarly, we of course continue our support of the Insurance

1 Institute for Highway Safety and the Highway Loss Data Institute,
2 looking at the performance of these technologies. And any of you
3 who have had the opportunity to visit their facility just south of
4 Washington, an incredibly impressive facility that opened last
5 September, and that gives us the ability to understand more and
6 more about what the systems are doing so that we can understand
7 the differences in performance. Because we understood this
8 morning, they don't all perform the same, and if folks are
9 expecting a certain performance out of that system in a different
10 car, what is that likely to do to the way they react?

11 But the promise of those technologies is what keeps this
12 motivation going, and I think David Zuby presented slides this
13 morning that showed this initial effectiveness that you're seeing,
14 and that is incredibly promising. So that safety perspective and
15 safety potential is what motivates us in this case.

16 If I had the slides, which I don't -- they'll be available --
17 the last slide does give you links to the data that I reference
18 here in addition to a lot of other data in that survey. Oh, good.
19 It gives you the links online to show you where you can find those
20 full surveys and the full balance of the data, and I thank you for
21 the opportunity.

22 MS. TROMBLEY: Thank you, Chris. And I'd like to introduce
23 our next speaker, Mike Cammisa, Senior Director of Safety and
24 Connected Vehicles at Global Automakers.

25 MR. CAMMISA: So I'd like to start with this sort of picture

1 of what the future was supposed to look like when somebody
2 conceived it in the 1950s of what we would be doing in our
3 advanced technology cars. It's a little different, I think, than
4 what we're envisioning today and talking about today, what we have
5 available now for us and what we think the future will be.

6 Just a quick note, I'm with the Association of Global
7 Automakers who represent international motor vehicle manufacturers
8 and original equipment suppliers, and invest in the United States
9 and new technology for improving safety and environment.

10 So let me start with some numbers about where we are today.
11 These numbers represent the fatal crashes, injury crashes and
12 total crashes. So that's not the fatality number that a lot of
13 you and NHTSA recognize from the total number of fatalities in
14 2015, but rather the number of crashes that result in fatalities,
15 injuries and crashes. And the total crashes is more than the
16 other two because it includes property damage crashes. So those
17 are with or without injuries.

18 So with advanced driver assistance technologies, we have an
19 opportunity to reduce all of these numbers, and by reducing even
20 those minor non-injury crashes by even -- I'm sorry -- I just got
21 a note here. We fixed this slide a minute ago, but we're reusing
22 the old slides here. So with advanced driver assistance
23 technologies, we have an opportunity to reduce all of these
24 numbers and by reducing even minor non-injury crashes, we can
25 reduce congestion and the associated emissions as well as reduce

1 the number of secondary crashes that can occur when traffic is
2 expectedly stopped.

3 So again, just to mention, because of technical difficulties,
4 the slides are not coming up entirely as originally done.

5 This slide talks about the future, is the topic, top line
6 that would be on the slide. And I just want to talk about looking
7 from those present numbers way out into the future or not so far
8 out. With connected and automated vehicles on our roads, we'll
9 see a reduced number of crashes, smoother traffic flow, reduced
10 fuel consumption, saving lives, time and fuel. And that's why
11 we're all excited about this technology in here to try to promote
12 it and move it along through its phases with what's available now
13 and develop the new technologies and implement them for what we
14 can do in the future.

15 So lives saved by vehicle technology. This is -- you know,
16 we don't need to wait for the future for all this to unfold. It's
17 been unfolding over time. We've been on this pathway of using
18 technology to improve vehicle safety. In fact, since 1960, NHTSA
19 estimates that vehicle safety technologies have saved 613,501
20 lives, which compares to 115 lives saved annually by the
21 technology that was on vehicles back in 1960. So we've come a
22 long way already, and I think we have some exciting things coming
23 ahead.

24 Now most of the technology studied in this report is now
25 considered basic. So some of the technology included, like dual

1 master cylinders and front disc brakes, side door beams and side
2 curtain airbags, safety belt tensioners, and then some of the
3 later things like electronic stability control and rollover
4 curtains.

5 So we've been moving from crash survival to crash avoidance.
6 With the exception of a few things like the improved braking and
7 ESC that I mentioned in the previous slide that was studied by
8 NHTSA, we were looking at crash survival. Today with advanced
9 driver assistance technologies, we can make even greater gains by
10 avoiding crashes in the first place.

11 So one of the topics I'm supposed to talk about, you know, is
12 the role of the auto industry in advancing ADAS, advanced driver
13 assistance systems, and part of that role is just developing this
14 technology and coming up with new ways to use some of the
15 technology that's been developed.

16 So this slide shows a lot of the different sensors that are
17 on vehicles now and some of the technologies that are used. And
18 as they get put on each vehicle, we find new ways of using the
19 data from the sensors and the control capabilities that the
20 vehicle has to improve safety in terms of active safety.

21 So sensors on the vehicle can monitor 360 degrees around the
22 car and provide the driver with information that they may not be
23 able to detect themselves. And in the near future, connecting
24 cars with the safety spectrum also known as dedicated short range
25 communication, or DSRC, for vehicle-to-vehicle communications,

1 vehicles will have even more information about the cars around
2 them, even the cars that the driver and current sensors can't see.

3 So we talked a little about this, too. Consumer trust is
4 essential and one of the things that comes up with a lot of this
5 advanced technology is we get questions about cyber security and
6 privacy. So the auto industry has taken some proactive steps to
7 try to address that upfront by establishing the Automotive
8 Information Sharing and Analysis Center, the AUTO-ISAC, and by
9 developing privacy principles, piracy protection principles so
10 consumers know when they drive the vehicle what the expectations
11 are, what their expectations should be in terms of how their
12 personal identifiable information is protected by the vehicle and
13 manufacturer.

14 So again the top title of this slide, if you could see it,
15 would be Stronger Focus on Driver Behavior. And so we've had a
16 couple a panelists mention the 94 percent number, that 94 percent
17 of crashes can be attributed to driver factors. And what I wanted
18 to point out here with this slide is that it just doesn't refer to
19 things like impaired driving or nonuse of seatbelts and
20 distraction, but it also includes recognition errors, decision
21 errors and performance errors.

22 At this point I'd just like to mention that we're encouraged
23 by the announcement earlier this month of the Road to Zero
24 initiative that the DOT and the National Safety Council are
25 undertaking which has a strong focus in driver behavior, and we

1 think it's important to use multiple tools in our collective
2 toolbox -- technology, education and enforcement -- to reduce
3 crashes.

4 So from the technology standpoint, with advanced driver
5 assistance systems, we can begin to put a stronger focus on driver
6 behavior issues, using technology as well as the education, and by
7 providing warnings to the driver and in some cases, taking action,
8 as is the case with automatic emergency braking, advanced driver
9 assistance systems will help reduce these errors and the crashes
10 that come with them.

11 So advancing ADAS technologies. Automakers continue to make
12 investments in developing new technologies to help drivers.
13 Advanced driver assistance systems are available on many models,
14 and not just luxury vehicles. So there's things like automatic
15 emergency braking, forward collision warning systems, lane
16 departure warning systems. I could go on down this list. I'll
17 let you look it, but I don't have to go through the whole list
18 because a lot of this information is already available on places
19 like MyCarDoesWhat, or the NHTSA website or IIHS, as well as the
20 manufacturers' own websites.

21 To the MyCarDoesWhat website provides information to help
22 educate drivers on new vehicle safety technologies designed to
23 help prevent crashes. Information is also provided on the vehicle
24 manufacturers' websites often with videos demonstrating how the
25 technology works and what the driver can expect. Additionally,

1 point of sale information is provided at dealerships and the
2 websites for safecar.gov and the Insurance Institute for Highway
3 Safety provide even more sources for consumer education and
4 research.

5 Automakers are also promoting these technologies in
6 advertising which often shows a real-world situation of how the
7 technology can assist the driver. A picture is worth a thousand
8 words, and the automotive press plays a role, too, in describing
9 the technology and identifying when it is available in their
10 produce reviews. I look forward to hearing more about that in the
11 next panel on consumer tools.

12 So I would like to thank the National Transportation Safety
13 Board and the National Safety Council for hosting this important
14 conference. It has provided a good opportunity for these
15 different groups to exchange information on advanced driver
16 assistance systems and how we can work together to see them
17 embraced by drivers.

18 While today's vision of automated vehicles may look quite
19 different from this vintage one, it is important that we continue
20 to foster innovation to improve vehicle safety even in ways we
21 didn't envision a few years ago.

22 So in addition to the work we do here as automakers, as
23 consumer advocates, the press, we also want to be sure that as the
24 policymakers develop guidance for automated vehicles, investigate
25 the sharing of the safety spectrum with WiFi devices and develop

1 rules for vehicle-to-vehicle communications, we need to remember
2 the numbers that I showed on the first slide and ensure that
3 policies adopted don't inhibit innovation that will reduce crashes
4 and improve safety on our roadways. Thank you.

5 MS. TROMBLEY: Thank you. Now I'd like to introduce our next
6 speaker. In this session, we're going to have four speakers. So
7 you can submit questions at this time if you'd like, if you have
8 questions for the first two speakers.

9 The next speaker I Henry Jasny, Senior Vice President and
10 General Counsel of the Advocates for Highway and Auto Safety.

11 MR. JASNY: Good morning. Thank you. Just so you know, our
12 name implies that we're an advocacy organization, and that's what
13 we do. So we have a little different perspective or a little
14 different piece of the puzzle.

15 I'd like to thank both Board Member Weener and Deborah
16 Hersman of the National Safety Council for inviting us to
17 participate in today's event.

18 Okay. A little bit about Advocates. We've been around for
19 just over 25 years. We've been very active. Our advocacy takes
20 us to three areas basically: We have a state program, federal
21 legislative program and a federal regulatory program.

22 On the state level, it should be noted that although we
23 generate a lot of publicity from various things that we do, we
24 don't directly communicate with the public-at-large. We do that
25 sometimes through articles in Consumer Reports or in other ways,

1 but we generally are focused on policymakers and policy deciders,
2 the people who are in legislatures in states and in Congress, them
3 and their staffs, who are going to make decisions about what goes
4 into bills and what kind of safety is going to come out in
5 vehicles.

6 As an example of our outreach in state program, each year we
7 publish a report called a Roadmap Report. This is a copy of the
8 front page of last edition that came out earlier this year in
9 January, in which we rate states based on 15 highway laws and how
10 well the states are doing.

11 We rate them as either being green for doing very well,
12 yellow for being in the middle or red for lagging behind. We
13 still have over 300 of these 15 laws that we need to pass in
14 various states, and we work in probably about, each year, probably
15 about 20 states with people on the ground locally to try and get
16 laws passed. And we basically get our message out to the public
17 through earned media but otherwise we're focused on decision
18 makers within the legislative branches.

19 So turning to our federal program and to technology, we are
20 very big endorsers and backers of technology. Essentially we want
21 to democratize safety for the motor vehicle fleet; that is, we
22 want to take great ideas, great safety innovations that have been
23 developed by suppliers and the OEMs and get that into all models
24 of vehicles as soon as possible.

25 These are some of the technologies that we've promoted in

1 advance and been involved in getting into legislation, and I'll
2 talk a little bit more about after, at the end, about how that
3 fits into the approach we take, but each of these provisions was a
4 long and torturous process. We picked them based on what we think
5 are need and ability to get something done and what the
6 manufacturers and the National Highway Traffic Safety
7 Administration aren't doing on their own.

8 I do appreciate Mike's slide about the savings that the
9 technology has rendered, NHTSA's estimate of over 600,000 lives
10 saved. When you compare that to the fact that we're somewhere
11 above 3.5 million lives lost, fatalities in motor vehicle crashes
12 since the inception of this new technology back in 1899, it's a
13 significant amount of lives saved.

14 We can do more and better with more technology, leading
15 ultimately to the driverless vehicle, which everybody's doubting
16 but, again, probably we don't think we'll see in regular use for a
17 couple of decades. It will come in slowly and that's probably as
18 it should be so people can get used to it. But we still need to
19 have vehicle safety, both passive and active, in motor vehicles
20 where the operator, the driver is still a significant part of the
21 ultimate function.

22 Although you've heard that 94 percent of vehicle crashes
23 involve a factor in driver error as one of the factors in the
24 crash, the possibility is that we can compensate for those errors
25 and make them non-lethal or non-serious by having innovations in

1 technology, and that's what we've been doing over these 25 years.
2 The first effort we had was to get frontal airbags required and we
3 did that in the 1991 ISTEA bill.

4 As a case in point, I want to talk about our efforts for
5 rearview or backup camera systems. Many of you probably have
6 familiarity with them if you have a recent model car. Most of
7 these have been spurred by the fact that there is now legislation
8 that will require them -- excuse me, regulation that will require
9 those to be installed as standard equipment in all vehicles by
10 2018.

11 Originally rear video cameras were a development by
12 suppliers, I suppose people who had camera systems to sell, but
13 they were mostly for parking assist. They were being put in by
14 the OEMs in a limited means on high -- in a limited number on
15 high-end lines to assist in parking, and they were strictly
16 labeled as just parking assists. But it was clear that they had a
17 very good off-label use in terms of being able to see what is
18 behind the vehicle when you're backing up.

19 Quickly we became familiar and became in touch with hundreds
20 of families across the nation where parents or grandparents or
21 other custodians of children had backed over children in their own
22 driveways because they couldn't see the child. The child was too
23 short or too small to be seen. So we saw the potential for this
24 kind of technology to be useful in those kinds of situations where
25 there are somewhere between 2- and 300 fatalities a year.

1 Our legislative action involvement began in 2005, where we
2 started to lobby on the Hill, and again our job there was to
3 inform staff of members' offices and staff of committees as to
4 what the technology is and what the technology can do. We
5 actually do have an advantage on the Hill because most of the
6 staffers who we deal with are so young, they understand
7 technology. It's not hard to get that point across to them and
8 they're eager to participate and to promote it. The problem is,
9 they lack experience in terms of how it fits into the
10 transportation picture overall.

11 So it took us 3 years to get a bill out of Congress and that
12 was the Cameron Gulbransen Safety Bill named after the child,
13 Cameron Gulbransen, who was killed by his own father, who is a
14 pediatrician, inadvertently in his driveway on Long Island. That
15 Bill, enacted in 2008, required the agency, NHTSA, to issue a
16 notice of proposed rulemaking in 1 year, a final rule 3 years
17 after the bill was enacted, so like March of 2011, and allowed for
18 a 4-year phase in. The agency issued an ANPRM in 2009, and a
19 notice of proposed rulemaking in 2010, and that's where things got
20 bogged down.

21 The rule was delayed both for technical reasons, research
22 reasons. There were a lot of things that came up, but they just
23 couldn't produce a final rule that they thought would be
24 acceptable for OMB. So they issued a statement to Congress saying
25 that they would need another 10 months to do work on it.

1 Within that 10 months, they did propose a final rule which
2 was sent to OMB. Of course, that's not public. It's just between
3 the agency and OMB at that point, and OMB has 90 days to decide
4 whether the rule should go forward or what changes should be made.

5 OMB kept that rule for 19 months rather than 90 days. It was
6 finally withdrawn by the agency after some more delays, in June of
7 2013. At that time the agency said it would need another 19
8 months to complete the rule.

9 At that point my organization, along with Consumers Union,
10 Kids in Cars, Dr. Gulbransen and another parent who had injured
11 her child backing up, decided to sue to get that final rule
12 issued. We went to court. We briefed the case. Oral argument
13 was set for April 1st of 2014. The day before, March 31st, the
14 agency announced the issuance of the final rule. So having issued
15 the rule in 2014, it took us about 9 years from the point where we
16 started engagement on this until the time we got the rule issued.
17 And then, of course, the agency put the phase-in in to take
18 another 4 years.

19 But the whole idea is that we need to expedite the
20 installation of technology as standard equipment. You saw from
21 Matt Moore's presentation earlier this morning that it takes a
22 long time to get anything installed as basic equipment in the
23 entire fleet. It takes decades. We can't control the turnover of
24 the fleet when it's out on the road, but we can control the time
25 it takes for manufacturers to install this equipment as standard

1 equipment. And so we wanted to telescope the time from the
2 development of the technology until the installation as standard
3 equipment.

4 Now, we worked on a number of other issues where we supported
5 ADAS and NCAP. We petitioned for autonomous braking in heavy
6 vehicles. There's already an agreement for autonomous braking on
7 passenger vehicles. We've supported future rule making on fatigue
8 monitoring systems and, in the states, interlock is part of our
9 Roadmap Report.

10 So we see there's a sequence of how things get developed. It
11 starts with research and development usually by suppliers but also
12 by OEMs. Then the field testing and installation of what they
13 think are proven technologies in selective models by OEMs. Some
14 of the technology gets put into NCAP, which we appreciate, that
15 NHTSA does. We would like to see that any NHTSA-identified safety
16 technology, that the OEMs would sell those as standalone
17 technologies and not part of an expensive trim package, and that
18 may help the democratization where people can afford the safety
19 benefits without having to buy cup holders and seat warmers.

20 And finally to get to standard equipment, this can be done by
21 the OEMs on their own voluntarily, by NHTSA when it on its own
22 initiates regulation, or as the last backstop, when we go to
23 Congress and try and get Congress to mandate it, which we had to
24 do with airbags and many others.

25 So I appreciate your listening. Thank you very much.

1 MS. TROMBLEY: Thank you. And I'll introduce our final
2 speaker for this session, Robert Gordon, who is Senior Vice
3 President of Policy Development and Research with the Property
4 Casualty Insurers Association of America.

5 MR. GORDON: Thank you for the opportunity to be here today.
6 I know it's always a little dangerous to be the last speaker
7 before lunch.

8 PCI represents roughly 1,000 insurers including 42 percent of
9 the auto insurance market, and our auto insurance companies
10 strongly support improved auto safety. PCI is a long-standing
11 member and contributor to the Insurance Institute for Highway
12 Safety and we're a formal or informal partner with numerous other
13 safety groups including several people who have spoken today.

14 We're a very powerful advocate for ADAS. We use our
15 political clout to work to promote auto safety in Congress, in the
16 states, with transportation agencies. We were strong supporters
17 of the FAST Act, the highway safety bill recently enacted by
18 Congress, and we actually followed up generating very, very
19 significant bipartisan support letters from members of Congress to
20 ensure expedited funding and completion of a lot of the auto
21 safety projects authorized by that legislation.

22 Our insurance companies provide significant incentives for
23 safer cars. Beneficial insurance pricing sends important market
24 signals. I know there was a question earlier today about the
25 impact of discounts and I know that it can be an important factor

1 not only in the estimated car ownership cost but it also can
2 increase consumer awareness when those discounts are offered. It
3 can impact used car purchases, which ones consumers buy. And it
4 can also impact rental car and fleet purchasers who tend to be
5 more sophisticated in those decision makings.

6 Insurers have long offered discounts for safety features such
7 as airbags and antilock brakes, and our members are now starting
8 to offer in some instances discounts for advanced driver
9 assistance systems. But I do want to note some concerns that our
10 members have about our role in promoting these.

11 As we shift towards highly automated vehicles, there are
12 increasing questions about liability and how to allocate
13 responsibility among the drivers, the manufacturer, and the
14 software companies. Insurers also believe that as drivers switch
15 back and forth from highly automated vehicles, we call them HAVs
16 -- I know there's a lot of acronyms -- but the highly automated
17 vehicles, HAVs, we're concerned there's going to be a very messy
18 transition as consumers go from a car that has it to one that
19 doesn't. So we say that's a problem between the HAVs and the HAV-
20 nots, with the consumers essentially over-relying on safety
21 devices or not recognizing that a vehicle may have a safety
22 feature that they are used to.

23 As one of the earlier speakers pointed out, the more
24 autonomous the car, the less attention drivers pay to the road,
25 and that offsets a lot of the gains until we get to fully self-

1 driven cars. Both the IIHS and the AAA talked earlier today about
2 their helpful studies on the effectiveness of the technology, and
3 I think what they noted is some devices don't always work as well
4 as hoped, especially when consumers disable or ignore them.

5 And an early example of that for our companies was antilock
6 brakes, a great technology, and our companies embraced it at the
7 time and offered incentives and discounts immediately, but those
8 promises didn't materialize initially in large part due to the
9 consumers' lack of understanding of how to use them, and that also
10 goes to the training issue. So we found that a lot of consumers,
11 once the brake pedal started the characteristic pulsing to keep
12 the brakes from locking, they'd they take their foot off the brake
13 and say, uh-oh, something's happening; it's locking. It's
14 activated and they take their foot off and that actually led to
15 higher losses.

16 So it shows sometimes it can take some education as well as
17 just some time for these safety technologies to really prove out.
18 And insurers are unlikely to provide significant discounts until
19 there's adequate telematic data on the balance between more full-
20 proof technology and the increasingly reckless fools who sometimes
21 drive those cars.

22 Insurers do have a very mixed history with safety discounts
23 particularly when mandated. It's very unfortunate that we spend a
24 lot of time and money going to legislators to convince them that
25 this new technology is going to save consumers and the industry a

1 lot of money, and then they finally decide not to do it after all
2 the pressure, and then they say, oh, but we're going to mandate
3 that you create a discount for this now. And again, sometimes the
4 technologies don't yield reductions in loss costs or sometimes,
5 you know, very sophisticated technology increases the cost when
6 you have crashes.

7 A lot of times the discounts are still on the books long
8 after the technology has been standardized and in all the cars,
9 and so that's a problem that once you get it, you can't change it.
10 And then we have a lot of problems that insurance premium rates
11 tend to be regulated in the states, and if rates are already near
12 breakeven, discounts can sometimes force insurers to offer our
13 product at a further loss.

14 So insurers ultimately -- again, very strong supporters of
15 ADAS, but we do base auto insurance rates on historical cost and
16 cost-based pricing, and so we need lots of data with safety
17 discounts being the result to prove accident reduction.

18 And I want to talk a little bit about the public perceptions
19 out there that are creating a lot of problems for us right now,
20 the hope and the hype. So the problem we're facing is that all
21 this talk about car safety features is creating a public
22 perception that auto accidents should be significantly declining
23 and, in fact, a recent PCI pole found that 70 percent of people we
24 surveyed believe that motor vehicle accidents are decreasing
25 because of that. We also have groups like Forbes and KPMG that

1 say, oh, well, 60 percent of the auto insurance industry is going
2 to be disappearing soon because of all this great technology and
3 reduced accidents.

4 Well, as Mark Twain said, the reports of our death have been
5 greatly exaggerated. All the talk about safer and even self-
6 driving cars is creating this fundamental mismatch between the
7 public perception and the stark reality, which is that our roads
8 are becoming increasingly dangerous. And I know we talked earlier
9 about how traffic deaths are now increasing at the fastest rate in
10 50 years, and you compare that to a 22 percent decrease from the
11 year 2000 to the year 2014.

12 So it's an enormous reversal of the long-term trends, and
13 it's not just deaths; it's also injuries. You can see from this,
14 non-fatal injuries to consumers are now rising at an alarming
15 rate. Not surprisingly, that affects auto insurance losses, and
16 auto insurance losses are increasing at double-digit levels and
17 nearly twice the rapidly growing increase in rates. With the
18 recent combined loss ratios for auto insurance right now at below
19 breakeven, unfortunately that's contributing to somewhat of the
20 being circumspect about discounts as we face this normal loss, and
21 we're all trying to figure out to what extent this is the new
22 normal.

23 The new long-term nationwide trend had been flat or slightly
24 declining accident frequency for a long, long time, and that's
25 somewhat offset slowly stable, rising severity. But starting in

1 2013, as you can see in this graph, the accident frequency trend
2 is reversed and in 2014 spikes sharply upwards, a major reversal.

3 Accident frequency is kind of puzzling when you think about
4 all the safer driving cars. Severity, huge increase, and that's
5 the cost of repairing cars and people, and it's not just on the
6 personal side. If you look at commercial auto, it took a little
7 longer to hit that sector, but you can see now that the losses are
8 greatly outstripping premium growth.

9 Now there have been a number of studies that have analyzed
10 national correlations to explain the increasing auto accidents and
11 they blame it on things, particularly miles driven. We believe
12 that's an important explanation but at best a partial one because
13 the changes in accident frequency are dramatically different among
14 the states.

15 I know my colleague here talked about sort of identifying
16 good states and bad states. We have identified the 10 states that
17 have had the worse accident frequency increase versus those that
18 had declining frequency. So, for example, in Alaska, accident
19 frequency dropped 12.3 percent while auto accidents in DC
20 increased by nearly the same amount. So if it was just more miles
21 driven or higher employment, it should be a nationwide trend of
22 increasing accidents. Instead, enormous variation in the states
23 and local factors impacting it.

24 So PCI analyzed some of the trend factors, contrasting the
25 best and the worst states. We found a strong correlation with

1 traffic congestion and frequency, which we think is very related
2 to distracted driving. We found correlations with increasing
3 populations of older or very young drivers, with weather. We
4 found some correlation with higher frequency accident states with
5 liberalizing marijuana laws.

6 Severity is a little easier to explain. Again, cars and
7 hospitals have more sophisticated technology. Severity trends
8 largely national, except for significant differences in tort law.

9 And I'll just quickly go through some of these individual
10 items. Higher average urban traffic congestion correlates
11 strongly with the worst states. Also related to the correlation
12 for increased miles driven in urban areas, and that correlation
13 presents a bit of a problem for autonomous vehicles because if you
14 have a lot more people driving because it's easier, that increases
15 traffic volume in the urban areas which then increases the
16 accidents and offsets the safety gains.

17 There appears to be a strong regional -- national correlation
18 between gas prices and miles driven, but as I mentioned, that
19 breaks down a lot at the state-by-state level, and if you look
20 historically, there's been lots of times in the past where you've
21 had cheaper gas prices and yet not increasing accidents. And even
22 -- and I think this is important -- even on a per miles driving
23 basis, the auto accident death rate has still increased by 6
24 percent. So even on a per mile driving basis, death rate is
25 increasing. We're looking at PCI, at the accident rate, and that

1 seems to be increasing significantly on a per miles driven basis
2 as well.

3 Again, more miles driven is more problematic in high
4 congestion urban areas. Also evening driving seems to be a
5 greater risk. Not all miles are created equal. We see that in
6 cycling accidents as well where there tends to be more evening
7 accidents for cyclists.

8 Weather is another causal factor. It's not necessarily bad
9 weather, but unusually bad weather. So you think about an ice
10 storm in North Dakota isn't going to move the needle a lot, but
11 when we had an ice storm in DC a couple of winters ago, man, did
12 that create a lot of extra accidents. But while the unusual
13 weather events create some short-term frequency spikes, they're
14 not really bending the graph that much overall.

15 This is a great AAA Foundation for Traffic Safety graph where
16 they found significant increases in fatal crashes involving
17 marijuana in Washington after legalization. In California,
18 drivers killed in car crashes testing positive for marijuana
19 increased by more than 40 percent. Over the last few years, we've
20 seen a lot of problems in Colorado. Some experts believe that the
21 problem is marijuana taken in combination with things like
22 antidepressants or sleeping aids or alcohol or other drugs, and
23 the stacking of the drugs is far worse than the individual parts.

24 I think part of the problem is if you compared marijuana to
25 alcohol, there's been so much public education on alcohol over the

1 years, society hasn't really yet begun the same public education
2 on responsible marijuana use. We haven't developed appropriate
3 impairment standards or testing standards or roadside testing.

4 Speed limits, mixed impact on frequency, but the two recent
5 states that increased their speed limits subsequently suffered a
6 very significant jump in traffic deaths, and severity is a problem
7 there as well.

8 Insurers have experienced increases in uninsured motorist
9 losses, both frequency and severity. Auto medical costs are
10 increasing rapidly. There was sort of a somewhat benign period in
11 medical inflation, but that's gotten worse and it's even worse for
12 auto medical.

13 This is kind of interesting, distracted walking accidents.
14 You can see an enormous spike, like my kids, they're all playing
15 Pokemon Go and between a third of auto accidents according to
16 various studies involve what I call a not so smartphone or other
17 handheld distraction.

18 PCI is partnering with a company called True Motion. They
19 analyzed half a million trips to study distracted driving. They
20 can detect if the iPhone is being used in the passenger seat or
21 not. And we compared True Motion's analysis of what drivers
22 actually do versus what they self-report. We already know that
23 drivers have about three times as many crashes as they actually
24 report. Results of a recent survey by the AAA Foundation found
25 that nearly half of respondents admitted that they used text

1 messages or emails while driving, but True Motion found that the
2 actual use is almost double that.

3 True Motion also gave PCI a list of the top 10 most used
4 distracted driving apps. So I was reading that on my iPad on my
5 drive over. It's very shocking. Number one, not surprising,
6 Google Maps, but number two, Pokemon Go. And drivers are also
7 watching YouTube and Netflix and surfing Chrome while they're
8 driving. And it's sometimes hard to analyze this, which is why
9 we're partnering with this InsureTech company, but this is really
10 what our members, our auto insurance companies feel is the biggest
11 cost to increasing accident frequency, is this kind of distracted
12 driving.

13 And so, you know, all the work on safety technology that's
14 being done is fantastic but the bar for fool-proof driving is
15 going up really high.

16 I don't know if we can do this video. It would be great.
17 This was a self-parking car and you can see it wasn't so much the
18 car technology, but rather it wasn't properly activated. But you
19 can see self-driving cars are still going to need insurance.
20 We're not going to go anywhere.

21 Another overlooked factor in the transition to advanced
22 driving systems and ride sharing is there's going to be a shift
23 from personal liability to commercial liability. The car
24 manufacturers and the software companies and the ride share
25 companies, they're going to be responsible. The auto insurance

1 required for those commercial companies is typically anywhere from
2 \$750,000 to \$5 million. So it's 15 to 100 times as much as the
3 very low personal responsibility requirements of \$25,000 per
4 driver/\$50,000 per accident, insurance required for most states.
5 So even if we have a lot fewer accidents, you're going to have a
6 much, much higher exposure.

7 So PCI is working very hard to educate policymakers, educate
8 consumers, partnering with a lot of the other safety groups. This
9 is a very serious public safety concern for the nation. We
10 appreciate all those groups who have joined us in sounding the
11 alarm and very much look forward to being part of the solution.

12 MS. TROMBLEY: All right. Thank you.

13 We have a little bit of extra time for some questions. If
14 you do have questions, either in the audience here or online,
15 please submit them to us now. And I want to say if we do run into
16 time limitations, we can't ask all questions, we do have a
17 roundtable discussion at the end of the day starting at 3:30, and
18 we can hold some questions until that time to also discuss among
19 all the speakers then.

20 So for the first question, this question is for Chris Mullen.
21 Has State Farm looked at how auto insurance would change with more
22 automation in vehicles? Has it entered into a dialogue with
23 manufacturers concerning their liability when these vehicles with
24 these technologies crash?

25 MS. MULLEN: Yes. So, yes, we have continued to look at

1 this, and I alluded to some of this in my presentation for a need
2 to understand how this landscape is going to evolve and it's
3 liability, legal, regulatory is one piece of it. But this is a
4 complicated ecosystem that's emerging and so it's going to involve
5 other things as well, cyber security, consumer acceptance, vehicle
6 effectiveness technology.

7 And so one of the things I mention in the presentation, we're
8 funding the Mobility Transformation Center, and it's not only the
9 funding that's inherent in the university in the facility there,
10 but also the collaborative relationship that we have with the
11 other companies that are funding that effort, and so it allows
12 some of the key stakeholders in this issue to have those dialogues
13 and to pursue answers to some of these big questions together.
14 This is an ocean to boil in terms of what needs to be answered for
15 this, and I'll say so the opportunities that are inherent in some
16 of those collaborations are key.

17 One of the things we also looked to understand, and Robert
18 did a good job about outlining a lot of things that affect this,
19 is not just whether these vehicles really will not crash, but when
20 they do crash, what will be involved in that. And so the intent
21 and the promise of the technology is that these crashes will be
22 less severe, but if they still occur, you will still have a
23 vehicle to then repair.

24 And so some of the dialogues that we've had with industry
25 over time have been what impacts those repairs and things that can

1 be done through some of the research we've done, and I think David
2 Zuby alluded to some of this earlier, placement of some of the
3 hardware, for example, that can impact those. So sharing that
4 information with the industry, that allows that constant learning
5 environment. It's been key.

6 MS. TROMBLEY: Thank you. I have a related liability
7 question while we're on the issue of this. Given the possibility
8 for a messy transition as vehicles become more automated,
9 especially level 2 and 3 technology, where does liability lie in
10 the event of a crash or injury or a fatality? And that's open to
11 any speakers who can answer. I know it's a big question that we
12 can hold until later in the day.

13 MR. GORDON: Where does liability lie?

14 MS. TROMBLEY: Where does liability lie, yes.

15 MR. GORDON: You know, that's come up at several conferences
16 I've spoken at lately, and I know one of the legal experts told
17 the Federal Advisory Committee to the Federal Insurance Office,
18 well, that's something the courts will very quickly work out.
19 That's not very good constellation for insurance companies because
20 it means -- the short answer is we have no idea and it's going to
21 get litigated, and, yes, it might work out, but you're going to
22 have a whole lot of liability uncertainty.

23 And that gets really important, as I say, when you shift from
24 personal auto insurance where you're talking about policies that
25 are often 25-, \$50,000 to commercial auto insurance policies

1 where, you know, it can range from \$750,000 to \$5 million or
2 potentially unlimited plus joint and several liability. So it
3 makes a big difference on the liability coverage. People are
4 going to search for the deep pockets.

5 We had a fight like that with Uber where Uber was initially
6 saying, well, you have all these commercial drivers going around
7 picking up passengers, but if they get into an accident, then
8 their personal liability insurance is going to pay for it. Then
9 you had some crashes and personal auto insurers said, no, there's
10 something in every policy that says we don't cover commercial
11 unless you get a special endorsement. There were gaps. There
12 were lots of lawsuits, and now the states are all having to pass
13 new laws and regulations to make sure there are no gaps for
14 consumers.

15 So that's a very important question. Just sort of waiting
16 for the court to work it out is not a good answer, and we're
17 actually now working very hard with our members to start talking
18 to states and policymakers about getting that question addressed
19 before we end up with all sorts of consumers with injuries and no
20 protection.

21 MS. TROMBLEY: Okay. Robert, I just received a few more
22 questions for you, and this is one question that's probably on a
23 lot of our minds right now -- was the guy in the video okay?

24 MR. GORDON: Yes, I'm told it was minimal, minimal injuries
25 and it wasn't the fault of the safety technology. It was they

1 thought they turned it on and they hadn't. But that again shows
2 you the very messy transition we expect. Somebody's riding in one
3 of their cars that they think might have some sort of automated
4 braking system and then they switch over to another car that
5 doesn't, and their expectation hasn't changed or, you know, you
6 have two different cars coming and one of the cars is expecting
7 that the other one might have a similar stopping distance, which
8 it won't. So, you know, autonomous vehicles are going to be a
9 great boom for society but it will be a very messy transition.

10 MS. TROMBLEY: Yes, and I should mention, we did have to
11 switch to some previous slides due to the technical issues. I
12 hope that didn't surprise you. I think we did possibly talk about
13 taking that video out because of the sensitivities and we wound up
14 reloading previous slides.

15 Another question regarding the interesting True Motion data,
16 does it show if the distractions were accessed on a handheld
17 device or the built-in vehicle entertainment consoles?

18 MR. GORDON: They measured smartphone use. It was actually
19 an app that's on people's smartphones, and they found some
20 ingenious ways to figure out if the smartphone is in the driver's
21 seat, and then what apps are being used while the smartphone is in
22 the driver's seat, and as you saw, it's pretty shocking
23 conclusions.

24 MS. TROMBLEY: This is a question for the entire panel.
25 Lately NHTSA has been using other methods such as the agreements

1 from OEMs to make AEB standard and guidance documents as a way to
2 move technologies forward that can improve vehicle safety. The
3 typical regulatory process does take significant time from NPRM to
4 the final rule. An earlier speaker indicated that mandates
5 improve the pace of fleet penetration. The question is, both
6 methods have their own set of challenges and opportunities. How
7 do the panelists feel about the increased use of voluntary
8 guidance approaches versus mandatory regulations and standards?

9 MR. CAMMISA: So from the manufacturer's point of view, this
10 technology is evolving very quickly, and with the typical
11 regulation you need to have, you know, solid data backing it up,
12 test procedures that are developed that are understood throughout
13 industry, and objective test criteria, and so it takes longer to
14 get those pieces put together before you can move to regulation.
15 And so what some of these other methods are doing, they're trying
16 to jump in earlier in the stage and try to encourage the
17 development and implementation of the technology while it's in its
18 earlier stages.

19 So there's, you know, there's mixed benefits from using these
20 different types of tools, but they are tools that are available.

21 MR. JASNY: As Mike said, there's a lot that needs to go into
22 the preparation of putting out a proposed rule. Having a mandate
23 from Congress often focuses the agencies on getting that done. It
24 does mean that they may not be doing everything else that they
25 want to do. For certain issues, it's fine for the manufacturers

1 to do it on their own through a voluntary standard. The problem
2 is that often those voluntary standards are not being met
3 completely by all the manufacturers. It's voluntary, so they can
4 decide to opt out, maybe not all the things that they plan to do
5 get done, and then you find out at the end of 10 years, that it
6 wasn't really as effective as you thought it would be.

7 So the idea of what NHTSA is doing with the AEB I think can
8 work if NHTSA is actually ready to propose a rule if the voluntary
9 agreement does not pan out and they don't see that they're getting
10 full compliance and agreement down the road. And we're monitoring
11 that process as well to see whether or not it's working. And if
12 it stays on the rails, that's fine, then we'll get those installed
13 universally, voluntarily. But even then you need a standard. As
14 was discussed earlier, that not all systems are equal. Some
15 systems work better than others. So you need a standard to set a
16 minimum performance level and minimum requirements that all
17 manufacturers are meeting, at least the minimum requirements that
18 they think should be in those technologies.

19 MS. TROMBLEY: Okay. Thank you. This is another question
20 for Robert Gordon from the audience. With 94 percent of crashes
21 attributable to driver error, what is PCI's position on insurers
22 providing discounts for driver education courses like defensive
23 driving or avoiding distracted driving?

24 MR. GORDON: You know, first of all, those are all individual
25 choices by individual companies. So they all decide what's in the

1 best interest. If it's something that's good for society, you
2 would think society would fund it rather than trying to pick one
3 particular company and encourage them to do something. But I know
4 that some insurers do offer discounts for individuals who take
5 certain safety courses, and so we think if those are beneficial,
6 companies will encourage it and we hope more people do it.

7 MS. MULLEN: I'll echo that, and in our case, that we do have
8 the scientific support for the effectiveness of those programs
9 that will help to roll those out. In the case of novice drivers,
10 we offer a program that's called Steer Clear, and that does then
11 target their ability to learn and being able to provide variety
12 and diversity of that practice. So in those cases, when we have a
13 target population that would be helped by an incentive like that,
14 that's when it's appropriate.

15 MS. TROMBLEY: Okay. Another question, safety is a
16 responsibility and should not be a luxury. We often see safety
17 technology bundled with luxury packages such as moon roofs and
18 leather seats. And the question is how is the auto industry and
19 other influencers working to make these technologies more
20 affordable and available for all in more vehicles, not just the
21 high-end expensive vehicles?

22 MR. CAMMISA: So with the technology, of course, the new
23 sensors and cameras and things, there is a cost associated with
24 those, and as companies ramp up and the deployment gets greater,
25 you get the economies of scale and prices, the cost of those come

1 down, and that helps to get it out into the lower priced cars.
2 There's also just production capability that you have to build up
3 when you have some new technology.

4 So you can't necessarily -- I think Matt mentioned, there was
5 17 million new cars out each year, and so you can't just turn a
6 switch and produce 17 million new sensors of some sort. So it
7 does take a while to develop that, the technology, to implement
8 it, to integrate it into a particular vehicle platform, and then
9 also the time for the production capabilities of the suppliers to
10 provide all the units that are needed.

11 So that's why you see it often come out in different ways.
12 So it's not often available throughout a fleet, you know, in an
13 instant, but companies are trying to get these technologies on
14 their more affordable vehicles and we are seeing that with some of
15 the new technologies, like AEB and some of the other ones that
16 have been mentioned today, are available as options or in packages
17 of safety equipment, not just packages of leather seats and things
18 like that.

19 MR. JASNY: Yeah, as I mentioned, we would like to see safety
20 technology be sold as standalone, not packaged with other items,
21 so that the consumers can pick and choose what safety items they
22 want on their vehicle, paying the cost for it. But we also know
23 that as mass production kicks in, when you have required
24 installation in all vehicles, the cost of all those items go down
25 per unit costs. We've seen that with the backup cameras, with

1 airbags, the initial costs are very high when it's being done
2 selectively, but when you have a requirement that it's installed
3 as standard equipment, it becomes very cheap very quickly.

4 MS. TROMBLEY: Okay. Thank you. I have another question for
5 Mr. Jasny from the audience. Your organization pressed for
6 rulemakings to be mandated by Congress when you believe safety
7 regulatory agencies do not adopt your views about the urgency of
8 certain safety issues. Could this approach serve to force
9 rulemaking priorities on agencies that may not match what may be
10 more important evidence-based life saving rules?

11 MR. JASNY: It could, but it probably doesn't. NHTSA is very
12 nimble and has a lot of resources. It needs more resources and
13 we're trying to work for that as well. But when you're talking
14 about a specific technology like airbags or backup cameras, those
15 kinds of rules, although they take time and they take resources,
16 usually don't take away from other critical functions.

17 Now there may be other non-critical functions that the agency
18 doesn't need to pursue, but we've always been told by the agency
19 that they can do whatever they need to do with their budget.

20 MS. TROMBLEY: Okay. Thank you. And so the final question
21 -- there are some more questions, but I know we have a limited
22 time for lunch. We'll do one more question and then we can hold
23 more questions to the roundtable discussion later today. I'm
24 going to try to summarize this questions.

25 It has to do with data collection. When autonomous features

1 do not function or ADAS features do not function as the drivers
2 expect, collecting and sharing the data throughout the industry is
3 a factor. Currently there doesn't seem to be a way that this data
4 is collected. It's hard to record something like a driver saying,
5 you know, I didn't realize the automatic emergency brake defaulted
6 to the off position and I must not have turned it on. What can
7 insurance agencies do to make sure they're helping capture and
8 share this otherwise elusive data?

9 MS. MULLEN: I mean, I think that the first thing we can do
10 is make the concern known and understanding what you would need to
11 know from those systems and understanding how those systems
12 function are critical. In the case of collection and sharing, I
13 think some of that, we would have to know a little bit more about
14 what the risk profile is going to look at. I think that's why
15 it's so important to continue to understand what this entire
16 emerging ecosystem is going to look like because new risks will
17 emerge and for us to be able to be there for our customers and
18 understand what they will need, we will have to understand what
19 that will look like.

20 Some of the studies that were referenced earlier today
21 referenced learning these things in a safe space. I think
22 Dr. McGehee referenced the ability to understand what folks will
23 do with those systems and some of that learning occurring in a
24 simulation environment. Those are places where you might be able
25 to understand a little bit more about what the human intuition

1 will cause a person to do, but then ultimately understanding those
2 in a real environment is the last piece.

3 MR. JASNY: One thing that can be done by manufacturers is to
4 make sure that the event data recorded in their vehicles record
5 all the technology that's involved, the status of the technology
6 and what the inputs were leading up to the crash.

7 MS. TROMBLEY: Okay. So we'll take a break for lunch. We're
8 going to have a break for lunch until 1:15. For viewers who are
9 online, the screen will go blank until 1:15, but please join us
10 then. We have several more sessions in the afternoon, and we're
11 going to have the open roundtable of discussion with facilitated
12 questions and answers.

13 There is a food court just right upstairs from the stairs.
14 There's some restaurants right near the stairs and some farther
15 down in the mall for you, and I think there was a mention earlier
16 today that we would have food in here but we don't. So we'll all
17 head upstairs to the food court.

18 And if speakers can be back here at 1:10, a little bit before
19 we get started, and again we'll set started at 1:15. Thank you.

20 (Whereupon, at 12:30 p.m., a lunch recess was taken.)
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26

A F T E R N O O N S E S S I O N

(1:20 p.m.)

1
2
3 MS. TROMBLEY: Okay. We will get started with our next
4 session to start the afternoon. So in this session, we'll talk
5 about consumer tools and resources. This morning we heard about
6 the crash reduction benefits of advanced driver assistance
7 systems. We also heard that driver behavior, trust and perception
8 of the systems may affect the crash reduction potential.

9 To achieve our goal of reaching zero crashes, we need to
10 educate and train drivers. So our first session this afternoon
11 will share tools and media resources to do so. And if you're
12 joining us for the first time today after lunch, online or either
13 in the audience, we are happy to take your questions. You can
14 submit questions on paper if you're here in the audience. You can
15 flag and ask for an index card. If you're online, you can email
16 questions to drivertechevent@ntsb.gov and we'll cover the
17 questions at the end of the session.

18 So for our first speakers in this session, I would like to
19 introduce to you Jennifer Dang, the New Car Assessment Program
20 Division Chief with the National Highway Traffic Safety
21 Administration and Susan McMeen, the Consumer Information Director
22 at the National Highway Traffic Safety Administration.

23 MS. DANG: Thank you, Debbie. First I would like to thank
24 the NTSB and the National Safety Council for inviting NHTSA to
25 participate in this session that focuses on consumer tools and

1 resources. My colleague, Susan, and I are very pleased to
2 represent NHTSA to talk about this very important topic because we
3 believe that vehicle safety technological advancement and consumer
4 education, understanding and acceptance are very key in driving
5 vehicle safety improvements.

6 First I will talk about how our program has pretty much
7 encouraged vehicle safety improvements over the last 40 years
8 through market forces and then Susan will discuss how our program
9 has educated consumers over the years about vehicle safety and our
10 plans moving forward.

11 Just a brief background on our program. NCAP was established
12 in 1978 by NHTSA, and NHTSA's mission is to prevent fatalities and
13 injuries that are related to motor vehicle crashes, and we believe
14 that NCAP is one of the most effective tools that we have in
15 driving to carry out the mission at NHTSA. And also over the
16 years, NCAP has encouraged vehicle safety improvements by
17 encouraging manufacturers to continue to make safety improvements
18 through our 5-star rating system, and every year, our program
19 provides safety rating information on approximately 85 percent of
20 the new model year vehicle fleet.

21 So by rating new cars on a 5-star scale, with 1 star being
22 the least safe and 5 stars being the safest, our program provides
23 differentiation in safety performance among the new model year
24 vehicle fleet. Safety ratings information is provided to
25 consumers on new stickers, on window stickers of new cars and also

1 on our website and mobile app, safercar.gov. Consumers are also
2 very familiar with our safety ratings information because they
3 often see them in commercials as well.

4 Our current 5-star ratings system is based on assessment of a
5 35 miles per hour full frontal impact into a rigid barrier test;
6 at 38.5 miles per hour, side impact with a moving deformable
7 barrier test; and a 20 miles per hour side impact into a rigid
8 pole test. A rating system is also based on an evaluation of
9 vehicle static stability factor and also risk of rollover in a
10 single vehicle crash.

11 Although ADAS technologies are part of our program, they are
12 not part of our current 5-star rating system. For technologies
13 that we currently recommend in our program, such as forward
14 collision warning, FCW; lane departure warning, LDW; rear view
15 video systems, RVS; and recently added technologies, crash
16 imminent braking, CIB; dynamic brake supports, DBS, also known as
17 automatic emergency braking system, AEB.

18 For vehicles that offer one or more of these technologies and
19 pass our performance test criteria, are given a checkmark next to
20 the technology on safercar.gov, but as I mentioned before, they
21 are not part of our current 5-star rating system.

22 This slide shows how the market responded to our program for
23 the last 40 years, since we established NCAP. In 1978, beginning
24 with model year 1979, and as you can see here, at the beginning of
25 the program, we only had a full frontal impact test, and at the

1 time, as you can see, very low percentage of vehicles that we
2 rated received top ratings. In fact, only 30 percent for the
3 driver seating position and 43 percent for the front passenger
4 seating position.

5 And then in model year 2010, and that's one year prior to the
6 last major upgrade that we did in model year 2011, most vehicles
7 that we rated received top ratings of 4 and 5 stars.

8 And then when we added the side impact barrier test to our
9 program in model year 1997, you can see the percentage of vehicles
10 that we rated, earned top ratings, were even lower, 34 [sic] for
11 the driver seating position and only 20 percent for the rear
12 passenger seating positions. And in model year 2010, nearly all
13 vehicles that we rated received top ratings.

14 Now let's look at the last major upgrade to our program in
15 model year 2011, and as you can see, the percentages of vehicles
16 that we rated received top ratings were much higher than when we
17 added the side impact barrier test or the full frontal impact test
18 to our program. And within 4 years, most vehicles that we rated
19 received top ratings, and those numbers continue to increase
20 across the board in model year 2016.

21 Now let's look at the penetration rate of ADAS technologies
22 into the U.S. marketplace in terms of the percentages of trim
23 lines that offer these technologies and passed our performance
24 test criteria. And I'm only going to focus on the technologies
25 that we currently recommend in our program.

1 So let's look at LDW. At the beginning, when we introduce
2 LDW to our program back in model year 2011, only 7 percent of the
3 total vehicle trim lines offered this technology and passed our
4 performance test criteria, and that number went up to 46 percent
5 in model year 2017. But keep in mind, most trim lines offer this
6 technology only as optional equipment.

7 FCW is another technology that is in our program and 49
8 percent of the total trim lines in model year 2017 offer this
9 technology and passed our performance test criteria compared to
10 only 7 percent. And again, similar to LDW, this technology is
11 offered on most trim lines but only as optional equipment.

12 RVS is one of the more recent technologies that were added to
13 our program, and as you can see here, there's a steady increase in
14 the percent of trim lines that offer this technology, but similar
15 to the other two technologies, it's being offered mostly as
16 optional equipment.

17 The two most recent technologies that were added to our
18 program were CIB and DBS, also known as AEB, and we believe that
19 these two technologies demonstrated significant safety improvement
20 potential, and that's the reason why in November 2015, we
21 finalized our decision to include these two technologies in NCAP.
22 In 2012, there were 1.66 million rear end crashes that resulted in
23 nearly 1800 fatalities and 700,000 injuries, which represent 3
24 percent of all fatalities and 30 percent of all injuries in motor
25 vehicle crashes in 2012. And we concluded from our analysis that

1 these two technologies with FCW combined, for all light vehicles,
2 could potentially prevent 200,000 minor injuries, 4,000 serious
3 injuries, and save 100 lives annually. That's pretty significant.

4 So what you see here on the slide, the top graph, represent
5 again the percentage of trim lines offer any variation of AEB
6 technologies and passed -- not passed our performance criteria
7 because we haven't collected that information yet, but as optional
8 and standard equipment, and the bottom graph it's only being
9 offered as standard equipment.

10 So what you see from the previous slides is that
11 manufacturers do respond to our program by designing their
12 vehicles to earn top ratings of 4 or 5 stars at a much faster pace
13 than ever before.

14 If you recall on slide 4, when we introduced the full frontal
15 impact test at the beginning of the program, it took manufacturers
16 decades to design their vehicles to earn top ratings. And when we
17 added the side impact barrier test, it took manufacturers within
18 like 10 years to design their vehicles to earn top ratings, and
19 then with the last upgrade in model year 2011, it took less than 4
20 years for vehicles to earn top ratings.

21 For ADAS technologies, they're relatively new to our program,
22 and we do see steady increase in the penetration rate, but we hope
23 that the penetration rates will continue to increase over the
24 years and we hope that our program will continue to drive vehicle
25 safety improvements through our 5-star ratings system, not only

1 through crashworthiness programs, but also advanced technologies
2 program as well as the future pedestrian protection program.

3 So in December of 2015, we issued a request for comments
4 notice announcing the agency's plan to once again overhaul the
5 NCAP program. We plan to include 11 advanced technologies. Nine
6 of them will be part of the future 5-star ratings system as part
7 of the crash avoidance category, as you see on the slide there.
8 For the nine technologies, some of them are the existing
9 technologies, and the new technologies will be from advanced
10 lighting systems and also blind spot detection technology.

11 And for the first time in the history of our program, we plan
12 to include pedestrian protection assessment as part of our future
13 5-star ratings system, and that program will have two components,
14 the crashworthiness component and the crash avoidance component.
15 For the crash avoidance component, we will include pedestrian
16 automatic emergency braking and rear automatic braking
17 technologies to that portion of the pedestrian protection program.

18 For the crashworthiness program, our work does not stop
19 there. We plan to include advanced dummies to our frontal and
20 side impact tests and also we plan to introduce a brand new
21 frontal oblique crash test. So before we issue a final decision
22 notice on this planned NCAP upgrade, we wanted to issue a second
23 request for comments notice to include additional materials and
24 test results that we obtained since December of 2015, and also we
25 plan to discuss in detail the 5-star rating system, the new 5-star

1 rating system.

2 So now I would like to hand over the consumer piece of our
3 program to Susan.

4 MS. McMEEN: Thank you, Jenny. So what we are currently
5 doing with our 5-star rating program is that we know that the way
6 in which consumers are seeking information about the 5-star
7 ratings, is doing it mostly through online. So we have developed
8 our strategy to really put those messages out there in that
9 channel for our consumers, and we have done that through a variety
10 of ways.

11 We do it through an online campaign that we do on a regular
12 monthly basis. Also we do it through social media, and also we
13 work with online automotive sites, that I'm sure you're very
14 familiar with, like Kelley Blue Book, Edmunds, cars.com,
15 Autotrader, and we know that that's where the majority of the
16 consumers are going besides the manufacturers' sites to get
17 information. So we're working with them to help educate consumers
18 about the 5-star rating and also some of the advanced
19 technologies.

20 We also have been developing new materials in which we know
21 consumers want to engage. They're no longer wanting to read very
22 much, so we're in the process, and we have done just recently,
23 been developing videos in which people can learn about the
24 technologies and see them, and I'm going to show you one of them
25 right now for AEB, at least I hope.

1 (Playing video.)

2 MS. McMEEN: So what are we doing? As Jenny had mentioned,
3 they're working on some new 5-star rating program. Well, we're
4 going to do very similar to what we are currently doing, and that
5 is we know that the way to reach people is through online and
6 social, and we're going to continue to develop materials in which
7 people can digest it and engage in a way that they are doing it
8 currently with a lot of different programs.

9 We're also going to be working with dealers, knowing that
10 they are the sales people right there when people are making
11 decisions and trying to decide what they want in their cars. We
12 want to educate them and arm them with information about what the
13 5-star rating program will be and also what those different
14 technologies that will be included in it.

15 And also, we're going to be working on doing webinars,
16 communicating with various different organizations and
17 associations and other groups that can help us to get to the
18 consumer and talk about the program.

19 And lastly, we'll always want to do some type of launch to
20 announce the big new changes. With that, I will pass it on.
21 Thank you.

22 MS. TROMBLEY: All right. Thank you so much, Jennifer and
23 Susan.

24 And I'd like to introduce the next speaker of this session,
25 Shawn Sinclair, Automotive Engineer with Consumer Reports.

1 MS. SINCLAIR: Thank you. I'd like to thank the National
2 Transportation Safety Board and National Safety Council for
3 allowing me the opportunity to speak today.

4 I'm going to speak to you on two topics today: what
5 consumers are thinking about on these active safety system through
6 our survey data and how Consumer Reports is teaching consumers.

7 Just to give you some background, I work at the Auto Test
8 Center. It's in Colchester, Connecticut. It's 327 acres at that
9 facility. We test vehicles, cars and child seats.

10 A milestone for Consumer Reports, this year we turned 80. So
11 we've been advocating for a healthier and safer marketplace for a
12 very long time.

13 Just to give you some information, so a year ago we did a
14 national survey and we asked the consumers what would you look for
15 in a car if you're going to purchase a car in the next 2 years?
16 It came back, the top three: safety, cost and reliability. We
17 thought that was nice.

18 So we dug a little deeper and we asked the consumer that was
19 interested in the safety what kind of safety. They said crash
20 test scores, brand reliability, auto safety features.

21 Then we said, well, which ones would you pay more for on the
22 safety end? And they said backup cameras, blind spot warning and
23 forward collision warning, auto braking. And what's not presented
24 in this slide, we asked one more time, we said, well, what are
25 your favorite ones? And they said rear cross-traffic and blind

1 spot monitoring, which kind of surprised us, but we said okay.

2 Today we're going to talk a little bit more about forward
3 collision warnings, auto braking and some of the consumers'
4 comments on lane departure warning and lane keeping assist.

5 We looked on the web and we said, what is the consumer
6 finding for forward collision warning? And this is what we came
7 up with when we Googled, and we were like, wow. That's a lot of
8 systems out there. Manufacturers, every vehicle manufacturer out
9 there is giving it a different name. I said that's pretty
10 concerning to the consumer, confusing to the consumer. We were
11 happy to see that at least a few of them had forward collision
12 warning in there. And it goes the same for AEB, automatic
13 emergency braking.

14 Then we went a little further and we saw one of these at one
15 of the auto shows, one of the dealerships that we went into, and
16 we were like, wow, that's a lot for the consumer to take in,
17 especially if a consumer has not been to a dealership in the past
18 10 years, and that's how long the cars are lasting. So, you know,
19 it's typical to say maybe a consumer has not been there and at the
20 same time, the consumers in there buying that car, they're not
21 really wanting to look at this. They're really wanting to buy the
22 car and get out of there.

23 But we know that dealers have a really important role to play
24 to helping the consumer understand these systems. This is a slide
25 that we found, and it's been out on the web, it's everywhere, and

1 it just happens to be that Volvo was caught on YouTube, and I
2 think a lot of people have seen this, but we think it's very
3 interesting. The dealer thought they had the system that had
4 pedestrian detection on the vehicle. He did not. All he had was
5 City Safety. So I'll play this for you.

6 (Playing video.)

7 MS. SINCLAIR: So the pedestrian was fine, before we get
8 anything on the web. Kind of shocking, but that's what consumers
9 are up against. They don't really know what they have on their
10 vehicles.

11 Going forward on some of the survey information that we have,
12 on lane departure warning, we had a lot of write-ins, and the guy
13 says, you know, this is very annoying to me; you have to be a
14 perfect driver if you're going to use this system, it's always
15 beeping at me. And this is 1 of probably 100 that we got on this
16 system, and we found that even our own staffers were turning the
17 systems off, especially the ones that were working below 35 miles
18 per hour.

19 We found that the systems that have haptic in them, we didn't
20 mind them so much, and personally I liked it, especially when I
21 was coming home from a business trip, kids in the car, mother-in-
22 law in the car, went over the line, at least the steering wheel
23 vibrated to me. It didn't beep and wake up every single person in
24 the car, and that was a nice thing.

25 We think that manufacturers can, you know, give the drivers

1 the choice of are you going haptic to the beeping, and maybe even
2 a sensitivity level in there, and we are starting to see some of
3 those on the cars coming out.

4 Lane keeping assist, there's some issues with this. This
5 actually happened to one of my colleagues. He was going home from
6 work and there was a bicyclist next to him, and he said I'm going
7 to give him a little bit more room. Not knowing that the system
8 was activated, the car decided that it was going to go back over
9 towards the bicyclist. The bicyclist told him he was number 1 in
10 a nice hand gesture.

11 But on my own experience, I'm driving home one day, the
12 system's on. There's nothing really on the dash to tell me the
13 system's working and it picks up -- there had been ice on the road
14 that day, and it picked up an ice line. The system put me into
15 another car, going towards another car. I had to slow down, get
16 over to the side of the road, park the car and actually had to go
17 through the instrument panel to find the system and be able to
18 turn it off.

19 We think lane departure warning and lane keeping assist,
20 having a button near the dash or near the steering wheel that the
21 person can turn this off and use it how they want to use it, would
22 be very handy because these systems are great on highways but
23 secondary roads can get the driver in trouble really quickly.

24 So how is Consumer Reports educating the consumer? Maybe.
25 We are, we are actually educating them -- but it seems to like to

1 stick on this slide.

2 (Audiovisual problems)

3 Well, I can just -- any choices here? Okay. How are we
4 doing? All right. Well, first of all, we have the CR Overall
5 Score which comes out and it has a couple of components to it.
6 There's four components, and one of them is, first, road test
7 scores, and in the road test scores, there's 50 individual tests
8 that we have and that helps gives the consumer some information
9 about how the car is going to handle, braking, acceleration,
10 and -- I'm done, huh?

11 (Audiovisual problems)

12 This is the old one. We're good with this.

13 So we also have reliability and survey safety information
14 that goes into that scoring. And then we have the front crash
15 prevention systems test results, and independent crash test
16 ratings that we also get from IHS and NHTSA.

17 So to go a little bit further into the front crash prevention
18 systems, we decided a year ago that we would give points to any
19 manufacturer that could put standard FCW and AEB on their systems
20 for the models across their trim line. We break down AEB into two
21 systems, low speed systems that will work at or equal to 55 miles
22 per hour, and then high speed is over 55 miles per hour. So they
23 get a point for forward collision warning, a point for low speed
24 AEB and a point for high speed AEB only if it's standard on all
25 model trim line.

1 So let me see. Consumer Reports also has a huge website, and
2 what you would see on here, if you just wrote in "cars" on our
3 website, it would come up a choice for car safety section and --
4 there we go. Yes, that's it. Well, it was there. It's going in
5 and out. And in there is -- do we need a new battery?

6 MS. TROMBLEY: I think it's the computer is the problem.

7 MS. SINCLAIR: Okay. So to give you, just to back up, this
8 is the road test score, this is the CR overall scores.

9 The other thing that happened this year, since we turned 80
10 we decided that we needed a new facelift. So we got a new
11 branding. So we're no longer -- the scorings no longer goes from
12 black to red. It goes from red to green. So it's like a signal
13 light. If it's red, think twice before you buy that vehicle. If
14 it's green, go ahead, if it meets your family's needs.

15 And here's the standard safety point system. I won't let you
16 stretch your eyes too much today, but like I said, you get a point
17 for each one of those systems if it comes standard across the
18 models trim line. If it's optional on it, it at least shows up
19 there, but you get no points for the system.

20 Going forward, this is Consumer Reports online. There's a
21 whole safety section there. Up here we have our safety features.
22 In there, there's also a spreadsheet that lists from Acura all the
23 way down to Volkswagen, if the car has a system as optional or
24 standard and the consumer can look that up. Also we have safety
25 driving features in here, many, many articles to help the consumer

1 with their purchase needs.

2 This is probably what everyone knows us for. This is our
3 magazine. This is our April issue. This is all about cars.
4 There's no toasters. There's no TVs. There's no snow blowers in
5 there. It's all about cars. And this comes out every April. And
6 there's always a safety article in here discussing features of
7 what is new out in the vehicle.

8 This is another one. This is our special HUB's, and it's
9 mainly on newsstands. The consumer can always find there's always
10 a safety article in there also. And lately, most of them have
11 been talking about forward collision warning, blind spot, rear
12 cross traffic, how the systems work. This is one of the articles
13 that you would see in one of these magazines.

14 Just to kind of wrap up a little bit, this is some of the
15 quotes that we got from the forward collision warning systems and
16 automatic braking, and it says, you know, the collision warning
17 system just goes off randomly; I don't know what's going on. Hey,
18 there's a little bit of dirt on it and it keeps going off. A lot
19 of people, the false warnings are aggravating them. The one with
20 the E-Z Pass is interesting to me. The gentleman went back to the
21 dealer and said it's your E-Z Pass that's making the system go
22 off. And my favorite one is down at the bottom. Is this my
23 automatic braking system, that symbol. People don't know what to
24 look for when these systems are on in the car for forward
25 collision warning and AEB.

1 So what can we do? We really need some standard names for
2 these systems. We haven't got it for ESC yet. I'm hoping it
3 comes through for forward collision warning, but after talking
4 with some manufacturers, that's going to be a hard thing to
5 happen. We can tune these systems, especially for forward
6 collision warning and AEB, to eliminate false alerts. Allow
7 drivers to adjust some of the sensitivity. We have it for forward
8 collision warning on some of the cars. Your distance, you can
9 adjust that. I've seen it on some of the cars for lane departure
10 warning.

11 The next thing is make effective safety systems standard. I
12 know they have the verbal agreement between NHTSA and automakers
13 trying for 2022 to get these systems standard out there.
14 Hopefully we will be tracking that. We'll be having an article
15 that comes out pretty soon that shows where manufacturers stand in
16 2017 with these systems on the cars.

17 And the last thing, we need to put some limitations on
18 misleading marketing. There's some advertisements out there that
19 pretty much just allow you not to be looking at the road and you
20 can, you know, drive this car and it's going to stop you from
21 hitting a pedestrian. So we really need to watch that, and
22 especially with the new semi-autonomous vehicles coming out. We
23 as, you know, our company and as everyone out there, needs to call
24 out the manufacturers when they're misleading the marketplace.

25 And that's all I have. Thank you.

1 MS. TROMBLEY: Thank you so much, Shawn, and thank you for
2 pinch hitting there for a moment with paper.

3 Okay. Next up we have Rebecca Lindland who is Senior
4 Director of Commercial Insights with Kelley Blue Book.

5 MS. LINDLAND: Thank you very much. Thank you so much for
6 having me here today. I used to do a lot of work in Washington.
7 So this is exciting to come back here after 3 years overseas. So
8 thanks for having me.

9 One of the things that -- and as usual, I found this when I
10 was 12, 13 and 14, and it's no better now. I can barely see over
11 the podium. So will my slides come up then? Okay. Great.

12 So Kelley Blue Book is actually owned by Cox Automotive which
13 also owns Cox Communications, and so there's over 60,000 people
14 that work for the company and over 30,000 that work for Cox
15 Automotive in general. So we're really very much a powerhouse
16 here, and it's something that we are focused on by making sure
17 that we leverage our audience to understand consumer attitudes and
18 behaviors.

19 And some of the ways that we do that is by gathering all
20 different insights and this is one of the main things that I do on
21 a daily basis when I'm not testing other vehicles. And so we have
22 all different means of communicating with people that are in
23 market. These are people that are shopping today, right now, for
24 a car. And that's one of the unique aspects of our website is
25 that this isn't general, you know, how are you doing or what do

1 you think about these things? These are people that we generally
2 will interrupt their car shopping experience and ask them to take
3 a survey, and so it's self-selected. It's not academically
4 rigorous as some of the other work I've done in the past, but it
5 is very much in market.

6 Some of the things that we gather, shopper behaviors, owner
7 behaviors, attitudinal tracking. We have something called brand
8 watch where we ask consumers about their priorities, how they feel
9 about different brands, what their perceptions are. We do CPO
10 research, so certified preowned, which is also really interesting
11 when we think about turning over this vehicle fleet and getting
12 new cars on the road. As we've said, the longer that they last,
13 the longer that we have CPO where they've certified a vehicle to
14 say this is good to go, that actually could potentially extend the
15 adoption rate here and make it even harder to get new technologies
16 on the road, but it's something that we're tracking very closely.

17 Industry studies, of course, and other things that we do.

18 Kelley Blue Book and Autotrader, our sister company, provide
19 consumers with continuously updated information regarding these
20 technologies. Some of the ways that we do that is we dedicate a
21 lot of resources to educating consumers and the media also. We
22 have a lot of very close relationships. It's one of the things,
23 again another part of my job is to translate all this information,
24 to go on the different social media sites, to go onto different
25 networks and explain to consumers what some of these things are,

1 doing some of the studies that we find, and just educate them.
2 We're working closely with NHTSA, as Susan mentioned, to get a
3 website up so that we can work even harder at educating consumers
4 and getting them to understand what these technologies are.

5 So this is a Topline Report that we did on in-vehicle
6 technology a few months ago. As some people have mentioned, you
7 know, just getting those vehicles on the road is really difficult.
8 The majority of vehicles on the road today are basically modern
9 vehicles. So they have some equipment here. Most of them have
10 cruise control, although not everybody understands cruise control
11 yet, which is interesting, but only about 12 percent of vehicles
12 have anything beyond what we would consider a modern vehicle.

13 And the other thing that's interesting here is that consumers
14 are actually split between understanding what these technologies
15 are, is it safety or is it infotainment, and really defining what
16 that actually really means to them.

17 Of course, it varies by age as expected. Younger shoppers
18 associate in-vehicle technology much more with infotainment
19 systems and that's what's important to them, whereas older
20 consumers are more interested in the safety part of it.

21 Safety features are most important when considering a new
22 vehicle. So one of the things that consumers look at right away
23 is, how safe is this vehicle? I'm sure they go to Consumer
24 Reports, they go to NHTSA, safecar.gov to understand what, you
25 know, what features these vehicles come with.

1 But only -- 64 percent of people have never experienced so
2 many of these safety features, and the only one they are really
3 familiar with, and only 26 percent of those are, is the blind spot
4 monitoring. The others, they're just not familiar with. They
5 just haven't had that kind of experience yet.

6 People who think technology means safety are more likely to
7 have experienced it. So they understand it more, and again, we
8 get back to that idea that people have to have hands on here.
9 They don't know it until they really see it and understand it.

10 For one in three people, technology really make or break,
11 which is something that's interesting for the manufacturers to
12 understand, that this can be a real decision-making situation when
13 they go into the dealership or even when they're shopping KBB and
14 Autotrader. Are they finding the kinds of technologies that they
15 want, and that's where they're going to funnel down and get down
16 into that purchase decision.

17 Unfortunately, it's incredibly difficult sometimes to
18 retrofit existing vehicles for this technology, which is why some
19 of these timelines have to be extended because you can't just
20 necessarily throw on a bunch of sensors on an existing vehicle, on
21 an existing platform, but it is something that consumers are
22 looking at very closely.

23 Common tech items are most important when shopping for a new
24 vehicle, backup cameras as you've heard, the USB/auxiliary port,
25 infotainment, safety, Bluetooth, remote keyless entry. They're

1 more neutral on things that they're not as familiar with or don't
2 necessarily have that make or break decision, remote engine start,
3 things like that. It's kind of like, yeah, they're interesting
4 but not necessarily a make or break situation.

5 Safety technology is more important as drivers age. We see
6 this where consumers, in the baby boomer factor in particular, say
7 this is very important to me. These are things that I have to
8 have on these vehicles.

9 Younger drivers value connectivity features more, which is
10 good in some ways because then that means they're recognizing
11 they're going to use their phones. But one of the things that was
12 a little distressing to me when I was looking at this, was that
13 voice commands were not actually as important to them as we would
14 like to see, and that's sort of what we always consider the, hey,
15 well, as long as it's voice command, they'll be safer. And the
16 fact that they don't consider that or not as many consider it as
17 really important to them means that that may not be the solution
18 that we're hoping it actually is.

19 So some key takeaways. Advanced driver assist programs, as
20 they penetrate the market, KBB and Autotrader are going to
21 continue to educate consumers on these technologies. As
22 familiarity and experience grows, consumers will become more
23 comfortable with ADAS, such as blind spot monitoring, lane
24 departure warning, adaptive cruise control. I used adaptive
25 cruise control on a trip recently, and it was -- I was terrible at

1 it because it was set very sensitively and I wanted to really test
2 it out, and it was so hard not to brake myself and just let the
3 car do the job, and that's one of the most difficult things.
4 Years ago I test drove a 5 series, and I was actually the failure
5 because I wouldn't let it park itself. It's like I just have to
6 touch it. I didn't trust it yet. So we have to get consumers to
7 understand these technologies and to believe in them.

8 Efforts towards educating drivers we've heard all day today
9 are really, really important.

10 And ADAS can help mitigate dangers and, you know, consumers
11 need to value this technology, and they have to be willing to pay
12 for it, and they have to be willing to learn how to use it. And I
13 think that's really some of our biggest obstacles that we face
14 today is how do you pay for it, how do you finance things and how
15 do you get the consumer to be educated and understand it. Thank
16 you.

17 MS. TROMBLEY: Okay. Thank you, Rebecca. And just as a
18 reminder, we have one more speaker before the end of the session.
19 If you do have questions, either people watching online or here in
20 the audience, please submit them before the end of the next
21 session [sic] so we have time to get them up here to the front.

22 And I'd like to introduce Jamie Page Deaton. She's Managing
23 Editor, Best Cars, U.S. News & World Report.

24 MS. DEATON: Thank you. You know, there's a big dose of
25 irony that I'm speaking at an automotive safety conference, given

1 that as a teen driver I was single handedly committed to raising
2 the automotive crash rate. I once ran over my own foot while
3 driving, and I once decided that the safest way to get my
4 gymnastics team home from a meet in a snowstorm was to have
5 everyone ride without seatbelts in the cargo area of my Volvo 240
6 station wagon because it was a rear wheel drive car, and I
7 figured, hey, the extra weight, that's more traction. Of course,
8 teenage gymnasts known for not weighing a whole lot.

9 My point is though, people are always going to be behave less
10 than intelligently around cars, and as we've seen today, even with
11 the introduction of these ADAS systems, we're adding an extra
12 layer of complexity which requires an extra layer of education for
13 consumers to behave smartly and make good choices, both while
14 they're purchasing a car and also while they're driving it.

15 So I'm going to talk to you a little bit today about how the
16 U.S. News & World Report best car rankings actually do that to
17 help with consumers.

18 So most people are familiar with U.S. World & News Report for
19 our college rankings and our high school rankings, and now we've
20 gone into diet rankings and hospital rankings and lawyer rankings.
21 You name it, we'll rank it. But we've been ranking cars since
22 2007, and our mission with our car rankings is to help people
23 choose and purchase the right car for their needs.

24 Now our challenge, as driver assistance systems become more
25 and more advanced, is to educate consumers on the technology

1 that's worth buying and how that technology works and how it can
2 improve their lives. Now this is particularly important and
3 challenging given the hype that accompanies many of these systems
4 and the distrust that a lot of consumers have for them.

5 And finally, we really need to educate consumers on the
6 limits of the systems and note that despite the added layer of
7 protection these systems provide, ultimate responsibility for
8 safety still rests with the driver.

9 So now everybody who has been to an automotive marketing
10 conference or dealer conference has seen this. This is the
11 automotive purchasing path. When we're talking at U.S. News about
12 educating consumers about ADAS systems, we really focus on two
13 parts of the path, the just dreaming section and the time to buy
14 section.

15 Now when consumers are just beginning to think about buying a
16 car or simply trying to stay on top of the latest automotive
17 trends, our features and advice content provides news advice and
18 explanation for how the technology works, and when a consumer is
19 actively shopping for a car, our reviews and rankings delve into
20 what safety features are available on different models and trims,
21 as well as how much those features cost.

22 We also make recommendations based on data on what technology
23 is worth springing for and note which features professional car
24 reviewers actually like and which ones they dislike and recommend
25 be turned off.

1 Now based on just that explanation, the U.S. News car
2 rankings are really not that much different from any other third-
3 party automotive site. Dig a little deeper though and you'll find
4 that we have a unique approach with the industry. Now my team is
5 sick of hearing me say it, but I haven't said it to you all yet,
6 so I'm going to again. It says U.S. News on our paychecks, but
7 ultimately we work for consumers.

8 We're approaching this as consumer advocates, and we take
9 this role very seriously and, as the MIT study I showed earlier
10 found, that while 16 percent of respondents learned about the
11 technology in their car from online sources, 58 percent of
12 consumers would actually prefer to do so. And as a trusted brand
13 with a strong tradition of independence, consumer advocacy and
14 journalism, U.S. News is uniquely placed to meet this demand and
15 help consumers make smart choices away from marketing and other
16 influences.

17 Now what makes us truly different though is our approach to
18 ranking cars, trucks and SUVs. Now our rankings are not based on
19 our evaluations or test drives. Rather, what we do is we collect
20 and we analyze every published credible review of a given model,
21 and we take those reviews and we have a team that goes through,
22 sees what the reviewer has said, and translates those reviews into
23 numerical scores about the car's performance, it's interior, it's
24 technology, and just overall how strongly the reviewer recommends
25 that consumers purchase that car.

1 We take that qualitative data and combine it with qualitative
2 data and combine it with quantitative data on reliability as well
3 as crash test results and safety.

4 Now when it comes to driver assistance systems, we're able to
5 pull reviews from over 50 different professional automotive
6 publications to let consumers know how these systems impact the
7 driving experience and if they're worth paying extra for. We're
8 also, while we're doing this, bringing in data often from the
9 insurance industry on which ones actually have been shown to
10 prevent accidents. Thus again, helping the consumer save money
11 and make smart choices.

12 Now while the rankings give consumers a snapshot of how a car
13 stacks up against other cars in its class, we also provide tools
14 so car buyers can hone in on the things that matters most to them.
15 So consumers can go through and use our rankings and sort by
16 individual scores to find a car with the best safety rating or the
17 car with the best performance or the car with the nicest interior.

18 It's with our reviews though that we truly communicate about
19 this new technology with consumers. Now our reviews aren't car
20 reviews in the traditional sense because, again, these are based
21 on scoring and data from other professional automotive reviews.
22 And so they focus on explaining why a car ranks the way that it
23 does, and our writers act as translators for car buyers. So many
24 car reviews are written for enthusiasts and full of jargon and so
25 they're very confusing for everyday car buyers, and we seek to

1 clear up that confusion for people who are in market for a car.

2 Now with driver assistance systems, this means being explicit
3 about how the systems work in everyday life and putting real-life
4 examples in front of users so they understand how ADAS work and
5 why they're an important consideration point for the purchase of a
6 new car. I should also note, though we're focusing, because a lot
7 of this technology is fairly new, on our new car rankings here, we
8 also have used car rankings interviews that we go back and update
9 yearly with new data and new information so that used car shoppers
10 have that same kind of access to our analysis when they're
11 considering what safety features to purchase there or what models
12 to search for.

13 Now to further help car shoppers, each year we highlight cars
14 and brands that excel in a given area. When you're talking about
15 advanced driver assistance systems, our Best Cars for Families
16 Award is really the one that highlights models that are doing a
17 good job in this area.

18 Now while most publications when they do Best Cars for
19 Families Awards, they focus on connectivity features or
20 entertainment features, and while we do take that into account, we
21 also give extra points to cars competing for this award to ones
22 that offer advanced driver assistance features simply because --
23 and as a mom of two young kids, every once in a while the
24 screaming will get to be too much and you need to turn around and
25 grab a sippy cup that's been dropped, and having that extra layer

1 of security with an automatic braking system certainly helps. We
2 want to make sure we recognize models that offer that because it
3 does help make family life a little bit easier.

4 Now our advice content follows the same ethos as our reviews
5 and our rankings, educating consumers to make smart choices, but
6 it does it from a more general perspective. We highlight new
7 technology that should be on the radar for new car shoppers and
8 provide explanations for how it works that are more in depth than
9 what we can do in a review.

10 We also highlight all models that offer different types of
11 safety tech and assistant features, again, so consumers can find
12 the right car for them. This content is widely syndicated, and in
13 many cases, it's the first introduction consumers have to our best
14 car rankings and website. And so it, too, is written from the
15 perspective of consumer advocacy.

16 Now because our entire approach is based on data-drive
17 analysis and the collective opinion of the automotive press, at
18 U.S. News, we're uniquely placed to give a birds-eye view of
19 what's happening within the industry. For a given new car, we're
20 analyzing anywhere from 15 to 30 reviews for every car on this
21 site.

22 Now with this perspective, we can see that there are some
23 things specifically that the automotive press is doing a very good
24 job on when it comes to educating consumers about these advance
25 systems. However, there are some areas that need improvement.

1 Automotive media needs to think more about everyday car
2 buyers and how safety technology impacts their lives, not just
3 enthusiasts who are interested in the gee whiz aspect of the
4 latest technological breakthroughs for futurists who are
5 interested in what could happen 10 to 20 years down the line.
6 Automotive journalists need to be focusing on creating content
7 that users can use today to buy a car.

8 Consumers also need to understand the larger landscape that
9 their cars and their car buying choices inhabit. So the
10 automotive press should be focusing on explaining the regulatory
11 requirements and the impact of new car technology on the overall
12 cost of a car. We hear a lot from consumers about how expensive
13 cars are getting. Every month it seems there's a new high reached
14 for transaction prices and consumers just don't understand why new
15 cars are costing so much.

16 Now so many car reviews are written at press events, but your
17 average car buyer is not spending their days driving on an
18 automaker-approved course through the Napa Valley. So what
19 automotive journalists need to do is spend more time doing real-
20 world testing including real-world testing of ADAS, and that is
21 key for getting the full picture to consumers.

22 Now speaking of real-world testing, much of the automotive
23 press relies on automakers for access to cars for reviews and for
24 content, but that doesn't mean they can't do a better job of
25 holding automakers accountable for the shortcomings of their

1 products, particularly when that comes to safety.

2 Finally, most of the automotive press are gearheads and
3 that's great. We get that. That's why they're in that area of
4 journalism, but they need to be wary of getting wrapped up in what
5 ADAS could do in the future and focus on what it does and does not
6 do today.

7 For automakers, many of the same lessons apply. Safety tech
8 should do what the automaker promises, which means those promises
9 need to be attainable in everyday real-world driving and not a
10 marketing driven fantasy.

11 Automakers also need to be transparent about the capabilities
12 and limitations of their technology. By being clear about what
13 their systems can and cannot do, automakers can limit human error
14 based on an over reliance on the technology. When automakers
15 discuss the limits of their safety tech, it should not just be in
16 the fine print of an owner's manual or a disclaimer on the
17 infotainment screen. Knowing limits is key to safe driving and
18 those limits need to be central to the conversation a carmaker has
19 with its customers.

20 And finally, automakers need to educate consumers
21 particularly at the dealership. The dealer's staff needs to be
22 better trained and be prepared to show in a safe way this
23 technology during test drives. If dealerships can have off-road
24 courses to show off how well their vehicles do off road, they can
25 certainly think about putting in safety areas, and if the dealers

1 are not able to put in these safety demonstrations on their
2 properties, automakers should see other events to do it. For
3 example, if you go to the DC Auto Show, Jeep almost always has a
4 off-road course inside the convention center. Why not have an
5 ADAS demonstration area inside the convention center as well.

6 And as for consumers, they must take responsibility for
7 educating themselves about the new safety systems in their cars.
8 A few minutes with their owner's manual or a few minutes even
9 watching videos online, I've found that there are a number of
10 owner communities that do a much better job about educating people
11 about the technology in their cars than automakers themselves are
12 actually doing. But that helps consumers better understand what
13 their car is and is not capable of.

14 And finally, consumers need to be demanding more education
15 from dealers, automakers, the government and the automotive press,
16 so they can make smart choices, and thus understand the limits of
17 ADAS and drive accordingly. Thanks.

18 MS. TROMBLEY: Thank you so much. Okay. We are -- we're
19 running a little bit short on time. So we're going to ask three
20 questions and for questions that we're not able to get to, we'll
21 either try to answer them later and get back to you after the
22 event or ask them during the roundtable at 3:30.

23 So the first question is for our speakers from NHTSA. Since
24 the NCAP 5-star rating system seems to incentivize automakers to
25 design vehicles to produce safer cars, have you considered

1 weighting the crash avoidance category to be more valuable than
2 the other two categories in order to create an added incentive to
3 equip cars with ADAS features so to earn a maximum 5-star safety
4 rating?

5 MS. DANG: So for the past 2 years, as you know, we've been
6 working very hard to plan for the upgrades and also develop the
7 new 5-star rating system, and as I mentioned before, when we
8 published the second request for comments notice, we will discuss
9 in details the new future 5-star safety ratings, and you will see
10 that we talked about the weighting proportions of the three
11 categories that we plan to include in the new rating system. So
12 at this time because we haven't published the notice, we won't be
13 able to talk about it in detail, you know, whether the crash
14 avoidance portion will be much greater than the other two
15 categories.

16 MS. TROMBLEY: Okay. Thank you. I have a question for Shawn
17 Sinclair. IIHS, the Insurance Institute for Highway Safety, has
18 recently introduced a new rating for headlights. Will Consumer
19 Reports incorporate those tests and performance metrics into CR
20 scores?

21 MS. SINCLAIR: It's not my area, on headlight testing, but
22 just some thoughts on it. At this time I don't believe we will be
23 incorporating those scores. We have our own headlight testing
24 even though it's not included in the ratings that we do.

25 MS. TROMBLEY: Okay. And our third question is for Jennifer.

1 When will the new NCAP upgrades take effect? Will vehicles with
2 ADAS features as optional receive different ratings with and
3 without these options?

4 MS. DANG: Well, for the planned NCAP upgrades, I know that
5 in the first notice that was published in December of 2015, we
6 mentioned that we planned to finalize and have a final decision
7 notice in December of 2016, but since then because we include, as
8 you can see, so many programs into this next planned NCAP upgrade,
9 that we thought that it would be best for the public and for us to
10 have another round of request for comments. And because we have,
11 as I mentioned before, a lot of additional materials that we
12 didn't include in the first notice, we wanted to publish a second
13 notice with all that information and materials.

14 So in terms of the planned upgrades, it really depends on
15 when we're going to publish the second notice and then the final
16 decision notice, and I'm pretty sure that in the final decision
17 notice, we will, I guess, convey when we plan to implement the
18 NCAP upgrades.

19 And in terms of the second part of the question, as I
20 mentioned before, for the future 5-star rating system, we will
21 discuss in detail about the weighting proportions of the three
22 categories and overall vehicle score as well as the details of the
23 ADAS technologies program. So it will be in there.

24 MS. TROMBLEY: Okay. We do have about 1 minute left. I
25 don't know if any other speaks on the panel want to speak to the

1 issue of headlights and adding those into ratings or any reviews
2 and assessments.

3 Okay. So we will take a 5-minute break while we switch
4 speakers to the next session, and we will be back at 2:20.

5 (Off the record at 2:16 p.m.)

6 (On the record at 2:27 p.m.)

7 MS. TROMBLEY: Our next session of the afternoon, and this
8 session will cover driver training. Training is one way to
9 intensively deliver the education, resources and tools that we've
10 been talking about today. So we've invited speakers who reach
11 drivers at many different points, at the point of sale and ongoing
12 vehicle customer service, when learning to drive, and during the
13 retraining we need periodically throughout our adult driving
14 years.

15 So first to speak, I'd like to introduce Jared Allen, Senior
16 Director of Media Relations with the National Automobile Dealers
17 Association.

18 MR. ALLEN: Thank you very much. Good afternoon. I know
19 it's been a long day, but I want to thank everybody for their
20 continued attention. It's a very, very substantive discussion,
21 and when you think of the range of stakeholders that we have here
22 discussing this issue, it's a very big tent, but that's a good
23 thing. In fact, in order to have this discussion go forward in
24 the most positive way, that's essential. So NTSB and the National
25 Safety Council should be commended for that. So thank you to

1 them.

2 So I'm going to talk, as we said, a little bit about the role
3 that the nation's franchise new car and truck dealers play in the
4 training and a little bit in education and promotion of these
5 advanced driver assistance systems.

6 One of the topics that we've highlighted today is how these
7 technologies changed the relationship between drivers and their
8 vehicles. It's been touched upon before, but I do want to take a
9 step back, and I think we should all reflect on it wasn't very
10 long ago -- some of us shared our own learning-to-drive
11 experiences -- when the gold standard for safety was a car that
12 could keep you safe when you crashed, and we're moving into a
13 phase -- I think Volvo very eloquently laid out their vision for
14 the gold standard being cars that prevent crashes from occurring
15 altogether. That is pretty incredible when you think about it.

16 But as we know, and as we've discussed, that has and will
17 continue to lead to a change in the relationship, the dynamic and
18 the expectation between the driver and their car.

19 The eye opener for us, the nation's dealers, came in the form
20 of two figures. The first is 40 percent -- we talked about this.
21 This is the percentage of drivers who said they've experienced the
22 situation in which their vehicle acted or behaved in some way they
23 were not expecting. That's a lot.

24 The second figure is 30 days. This is what J.D. Power called
25 the "make-it-or-break-it stage" for consumer acceptance and,

1 therefore, use of vehicle technology that they aren't already
2 familiar with, including many of the safety features we're talking
3 about today. So that told us two things: one, there is indeed a
4 consumer education gap; and, two, that gap has to be closed on the
5 front end or even before a vehicle purchase. So we got to work as
6 dealers to help address this.

7 Before I talk about that, let me talk a little bit about the
8 role that dealers have to play. In case it's not incredibly
9 obvious -- I think it is -- there's a very natural role for the
10 dealers to play here. We are the front line during the point of
11 sale. We are where consumers go when these things go from
12 theoretical to tangible, and that includes everything from
13 purchase to test drives or even just, you know, tire kickers, as
14 they're referred to in the industry.

15 So someday these features may be as intuitive as steering and
16 using a turn signal, but the point is that right now they aren't.
17 So many consumers need to learn how these features work when
18 they're introduced to a vehicle and when they make a purchasing
19 decision and in the continued use of that vehicle.

20 Dealers are often the first call a customer makes when they
21 start seeing and feeling these features in action and have
22 questions. That 40 percent means they already have a vehicle and
23 it's now doing something that they didn't expect.

24 Dealers are the home base for service of these vehicles
25 including for updates and maintenance on the safety features that

1 we're talking about today. And dealers are the best advocates for
2 their consumers throughout ownership, and that includes when it
3 comes to how vehicles behave.

4 There are -- you know, I heard a story recently of a person
5 who has trouble backing into or pulling into their garage because
6 of a very tight turn, and the car keeps emergency braking it. So
7 that is a problem that a dealer is going to help a consumer find a
8 solution to, whether it means, you know, thinking about what kind
9 of safety features they're looking for going forward.

10 So let me talk about what dealers are doing to address this
11 in terms of training and the promotion of these advanced driver
12 assistance systems essentially to help close this education gap.

13 In April, NADA announced a partnership with the MyCarDoesWhat
14 campaign which, as you know, is a research-driven campaign created
15 by the National Safety Council and the University of Iowa to help
16 raise awareness of driver systems. The goal of our partnership
17 with the National Safety Council is very simply to drive more
18 eyeballs to the very excellent videos and infographics you saw
19 Scott and -- Rick and Scott, sorry, that MyCarDoesWhat has
20 created. This is in an effort to encourage more consumers to take
21 the time to learn about the newer safety features that are
22 available to them to ask questions and ultimately feel comfortable
23 and confident with the vehicles that they are driving.

24 The online aspect of this educational effort and this
25 outreach is maybe more critical than we might think intuitively.

1 Every day, quite literally, customers are doing more of their
2 research, more of their shopping, more of their shopping for
3 financing online, and by the time they get to the dealership, many
4 of them have already pretty much made their purchasing decision.

5 Fifteen years ago, a consumer made an average of six
6 dealership visits prior to purchasing a vehicle. Today it's about
7 1.7. So, yes, there is a very important role for the dealers to
8 play here, but as I said before, I just want to make sure we
9 remain mindful of this, this sort of pre-education effort is every
10 bit as critical as the educational outreach that we do at the
11 dealership. This is why we think that the MyCarDoesWhat campaign
12 is right on the money because it becomes -- if it's not
13 necessarily a tool to teach a consumer exactly how an individual
14 system will work, it will most definitely prompt that consumer to
15 ask that question about their vehicle and again get that
16 information either at the dealership or online before they come,
17 during the process of researching which car is right for them.

18 So here's what we are talking to our members, our dealer
19 members, as well as the other state and metro new car dealer
20 associations about. First is, what's on your website? You're
21 also active on social media, so we've asked them, are you being
22 active to help use Facebook and Twitter to promote these outreach
23 efforts, including MyCarDoesWhat? We want more of our dealers and
24 the state associations to join in this effort.

25 The next is -- and this is something we are working on. It's

1 not something that we can wave a wand and have accomplished
2 tomorrow, but we are working on asking the question to our dealer
3 members, including whatever franchise brands they carry, what is
4 showing in your showroom? And what's showing in your service
5 room?

6 There's a wealth of collateral material that is available to
7 help educate and to supplement the information that's coming from
8 the manufacturers about their safety technology. So we are
9 looking to see if and how we can bring the educational material
10 that's part of MyCarDoesWhat directly into the dealership so
11 consumers can see it hand-in-hand with vehicles that they're
12 looking at and, just as importantly, in many instances, alongside
13 the vehicles that they already have, and this is where it comes
14 into play in the service department.

15 And finally, how can, in terms of training the trainers, how
16 can MyCarDoesWhat help sales people and dealership employees
17 having these real conversations with consumers every day about
18 what exactly a particular vehicle does or doesn't do?

19 I'm going to pause here for a second, and bring this back
20 into the conversation. In terms of training the trainers, talking
21 about educating dealership staff, the manufacturers are doing a
22 very, very, very good job particularly most recently in providing
23 dealership staff with the training and the resources that they
24 need to be able to talk about these individual systems and become
25 experts in safety and the connected technology that's available in

1 the vehicles that they offer throughout their lineup.

2 And in some instances, we know that the training and tools
3 for the dealerships are something that some manufacturers are
4 starting to require. So through their franchise agreements with
5 their dealerships, they are requiring expertise in systems to a
6 degree that -- the degree is increasing. So that's a very good
7 thing.

8 And this is all critical. We talked about that 40 percent
9 number before. In order to close the education gap that we have,
10 which we do, and get that 40 percent down to zero, ultimately
11 drivers need to know exactly how a system is unique to their
12 individual vehicles work. And Rebecca brought this into the
13 conversation earlier, and it's another critical point, not every
14 consumer will drive only one vehicle, right. So they are going to
15 be driving multiple vehicles, and that's something we need to be
16 mindful of, too, in terms of talking about, yes, this is great, in
17 terms of talking about a car that a consumer has, but what if it's
18 another car in their family fleet, so to speak? How do we get
19 that conversation going about what's already in your driveway?

20 So that brings us to some of the challenges that we see. We
21 see really three main ones. These are the challenges to training,
22 that we think that we can overcome them, but I think it's
23 important to lay them out.

24 The first is, I was talking about this earlier, translating
25 the varying terminology and performance characteristics for

1 consumers at the individual level. After all, the consumer has to
2 have command of the features in his or her car in order to
3 maximize the safety technologies that are in that car.

4 This is some information from MyCarDoesWhat, which lays out
5 what all these systems do. So what you are looking at is the most
6 consolidated version available of what some of these safety
7 technologies are. Right. The Consumer Report slide was an even
8 better illustration of this, you know, one Google search of one
9 term was barely enough to -- was too much to get on one slide.

10 The second challenge is keeping up with the technology
11 itself. When it comes to bringing newer and more safety
12 technology to market, I think societally or natural instinct is to
13 say bring it on, the more the better, as much as possible, but in
14 the process, does the education gap widen? Does that 40 percent
15 become 50 percent or 60 percent? And this is sort of critical to
16 this question, do these technologies become more mainstream or do
17 they become more proprietary? We don't have an answer to that yet
18 but it will inform how we go about trying to educate and train
19 going forward. It has to.

20 The third challenge that we see and this is maybe the
21 trickiest one is that time cuts both ways. Explanation takes
22 time. Education takes time. Integration into your way of
23 thinking and operating takes time. But the truth is that time is
24 often the single most valuable commodity at a dealership to a
25 consumer, and that goes above money. Customers want the sales

1 process and the service process to move as fast as humanly
2 possible. Dealers have to be sensitive to that. It's just
3 reality.

4 You know, there are countless examples that I've heard of
5 dealers who have taken a very proactive approach to try and engage
6 customers and prospective customers, particularly new sales
7 customers, about these features only to have the customer say very
8 adamantly, "Look, I'll figure this out on my own later. I've got
9 to go. It's time to wrap this up." So we have to be sensitive to
10 that. And when I say we, I do mean all of us. It's just a
11 reality we can't ignore.

12 So the question becomes how do we balance the need to educate
13 and to inform with the need that every individual has to maximize
14 their time factor? Again, I don't have an answer to that question
15 but as long as we're all cognizant of it, I think we'll probably
16 go down the right path.

17 There are two additional thoughts I just want to bring in
18 here that were mentioned recently and not necessarily in my
19 presentation, but prompted me to think about it.

20 We've been talking about new cars primarily, and it was
21 Consumer Reports -- I'm sorry. U.S. News, thank you for bringing
22 up the used car conversation. That's really critical. We're at
23 auto conferences constantly and basically the consensus is that
24 yes, we're on track to sell 17.7 million new vehicles in 2016, but
25 we won't be selling 18 million in 2017 and we won't be selling 22

1 million in 2018. We are likely sort of at an industry plateau in
2 terms of new car sales. That means that used cars are going to
3 increase, and particularly when you're looking at the number of
4 leased sales, vehicles are going to be coming off lease and into
5 the market that are relatively new, talking about 3, 4, 5 year old
6 vehicles. Sales of those vehicles are going to increase.

7 So if we say the solution is let's just focus on the new car
8 technology and talking about this in the context of new cars that
9 are available, we're only solving part of the problem. We really
10 do have to think about how we broaden these education efforts to
11 include vehicles that are preowned, used, and again, that
12 consumers already have.

13 I have one more slide. I have great video of a dealer
14 accidentally backing a Volvo into a basketful of kittens. That
15 was a joke. Actually that's it.

16 Thank you very much for your time. I appreciate it. Now
17 that I've got everyone's attention, I'm going to step off the
18 stage. Thank you.

19 MS. TROMBLEY: Thank you, Jared. And next I'd like to
20 introduce Kyle Rakow, Vice President and National Director of
21 Driver Safety with AARP, and he'll also be speaking with Jodi
22 Olshevski, Gerontologist and Executive Director of The Hartford
23 Center for Mature Market Excellence.

24 MR. RAKOW: Hello, and good afternoon again. It's a pleasure
25 to be here, and a big thanks to NTSB and NSC and, Jared, thank you

1 so much for the comments. I'm actually looking forward to the
2 next session and am looking forward to some industry commitments
3 here. I think there's some great opportunities for collaboration
4 after hearing all the speakers this afternoon.

5 So again, my name is Kyle Rakow. I'm the Vice President and
6 National Director of AARP Driver Safety, which is the first and
7 largest driver safety program focused on the 50-plus, and since
8 inception, we've reached more than 16 million participants through
9 our educational programs and on an annual basis we're helping more
10 than 500,000 drivers stay safer on our roads today.

11 In order to increase mobility, independence and safety on the
12 roads, this slide quickly portrays the four core components of
13 AARP driver safety today, and I'll also speak about them really
14 quickly. So the first one, our AARP smart driver course. We do
15 probably about 75 percent of our production through this
16 educational component. It is instructed both in the classroom and
17 online, as well as in Spanish and in English, and I'll talk a
18 little bit about that more in the next slide.

19 But first, just a quick highlight on the other three
20 programmatic components. We have a program called CarFit, where
21 we actually partner with AAA and AOTA, and this program is pretty
22 neat. It's a free event-based program and it's where we actually
23 partner hand-in-hand with occupational therapists and CarFit
24 technicians to help make sure individuals fit well in their
25 vehicle. It gives us a great opportunity to assess and make those

1 sometimes minor adjustments with headrests, steering wheel
2 position and tilt and mirrors, for example.

3 Next, We Need to Talk. We actually partner with The Hartford
4 on this program, and this is both online as well as in person, but
5 it's focused more around the caregiver and potentially having
6 those difficult conversations around limiting ones driving.

7 And then really quickly, the Driving Resource Center. It's
8 essentially that. It's an online driving resource center and
9 platform where we help keep our participants engaged, from the
10 first time they interact with one of our programs to the time they
11 come back again to interact with another one of our programs.

12 And then really quickly, just a little bit more on our smart
13 driver course. One think I definitely want to mention because I
14 think it's a unique sort of differentiator with what we do, this
15 course is actually instructed by about 5,000 volunteers across the
16 country nationwide, and they're instructing nearly 30,000
17 classroom courses a year for us. And some of the focus within
18 this curriculum, of course, we talk about driving strategies, but
19 one of the things that I like most about the curriculum is it
20 really focuses on the changes, changes in the road, changes with
21 ourselves as we age. So, for example, we speak to vision. We
22 speak to hearing. We also speak to medication and how some of
23 those impact potentially the driving experience. And then lastly,
24 of course, the changes in the vehicles, which brings me to what
25 we've been hearing a lot about today.

1 The driving landscape is just drastically changing, not only
2 due to the increased number of drivers on the road, but my
3 goodness, vehicle technology and actually it really excites me to
4 have been partnering with The Hartford for the last 4 years and
5 really to help us shape our curriculum, and even more specifically
6 around technology, for example.

7 This slide highlights the Driving Resource Center that I
8 mentioned earlier. This is an example of a tool and simulation
9 based on our partnership with The Hartford and MIT AgeLab which
10 simulates the top 10 technologies for mature drivers based upon
11 their research. And I'm not sure, if I could, I can try to play a
12 video, and I'm hitting the play button.

13 (Playing video.)

14 MR. RAKOW: And I think we've seen enough videos today. So
15 I'll save the last one, but please feel free to check out our
16 Driving Resource Center. It's an unbelievable tool.

17 And next, I would like to introduce Ms. Jodi Olshevski from
18 The Hartford to hear a little bit more about their Center for
19 Mature Market Excellence and some of their research.

20 MS. OLSHEVSKI: Thanks, Kyle. So we've had a long
21 partnership at the Center with AARP. We've been around since 1984
22 as a center, and that's when we started our relationship with
23 them. The Center is staffed with gerontologists and one of our
24 main focus areas is conducting research. We've had a long
25 standing partnership with the MIT AgeLab for many, many years, 17

1 years.

2 We have a primary focus on driving and aging. So we've
3 produced about 10 different studies throughout the years but our
4 focus is, we're all about academic rigor, and so we publish a lot
5 of our studies, but our main focus is translating those results
6 into helpful consumer information. And so we've done that. We
7 get that out in a lot of different forms. We have guidebooks. We
8 have online content. Like all of you, too, we have videos and
9 social media.

10 And I guess it was about 4 years ago, within our discussion
11 with MIT AgeLab, we decided that even though we had started with
12 the difficult issues of dementia and driving and aging, that it
13 was time to sort of look at the issue of vehicle technologies and
14 the intersection between those and older drivers, given everything
15 that we've known.

16 I know you've seen a lot of statistics today. So I hate to
17 even add any more to your experience, but I want to run through
18 just the highlights of some of these studies. We have detailed
19 information in the folders in the back and certainly you can find
20 out more information on our website.

21 We decided to really start with identifying what are the key
22 technologies that we think can actually enhance driving for older
23 adults, and so we convened an expert panel. We identified that
24 top 10 list, and again this was back in 2012. So even at the
25 time, many reporters weren't aware that all of these technologies

1 already existed. But you can see that based on this list, for
2 example, smart headlights or adaptive headlights were at the top
3 and part of that is because we know that vision changes as you
4 age. It starts for most of us in our forties, and particularly
5 that influences the person's driving as they get older. And, each
6 of these technologies had a component to them that we thought
7 could be beneficial for people as they age.

8 In 2013, we went on to field a survey with consumers. We
9 wanted to get their perspective, and blind spot warning systems
10 came up at the top of the list, which made some sense to us just
11 because of the flexibility changes that we experience and range of
12 motion. That was a technology that was really appealing to older
13 drivers.

14 And then we asked the issue around cost. I think that came
15 up earlier in the discussion. About 30 percent told us that they
16 would be willing to pay more for these technologies; 33 percent
17 said they, you know, thought about these safety features as really
18 important, and about 51 percent said that they would feel safer if
19 they had these technologies.

20 How do they learn about it? Not a surprise. Forty-seven
21 percent told us that they learned about it from their owner's
22 manual and, Jared, you can see that about 20 percent said they
23 learned from their car dealer. So this gave us a sense of how
24 people were learning about using these technologies.

25 Then in 2015, we really wanted to dive into the issue of

1 adoption. As you can imagine, I think there's a lot of
2 assumptions made about older drivers, older people in general in
3 technology, and so we wanted to hit that head on. So we did an
4 in-depth study with boomers where we actually put in front of them
5 videos, many of which you've seen today, examples of the actual
6 technologies. That was about as close as we could get to
7 simulating it. And then we talked with them about a number of
8 different issues. Ninety-six percent told us that they would be
9 willing to have at least one, and 10 percent said they would love
10 all seven. Those were the seven we put in front of them to
11 experience.

12 And then from a safety perspective, we asked them what was
13 the most important effect out of these technologies, and certainly
14 safety was associated with backup cameras and blind spot warnings.
15 What we thought was particularly fascinating is, as we asked them
16 about parking assistance and adaptive cruise control, which of
17 course takes a little more control away from the driver, a lot of
18 the drivers weren't so sure about that, and I think we heard some
19 of that also earlier in the day. We heard lots of stories about
20 people really valuing their parallel parking skills. They really
21 weren't too crazy about kind of giving that up.

22 And then we put in front of them also a video, a
23 manufacturer's video where the driver, you know, was driving and
24 then the car was driving for them just to get a little bit of a
25 pulse on where people were at. Seventy percent said that they

1 certainly would be willing to jump in that car and try it out.
2 When we said if it was the same price as a regular car, would you
3 be willing to get one? And again you can see the split. About 31
4 percent said that they would, 31 said they really didn't know and
5 39 percent were still, no, no, they just wanted to stick with
6 their original car.

7 Now this year what we did was a more extensive survey. We
8 really wanted to tap into older drivers. So we oversampled, which
9 you sort of have to do to make sure that you're accurately
10 reflecting this age group of people in their seventies and
11 eighties, and we wanted to find out from them, are they
12 associating these vehicles with driving longevity. So we think
13 there's potential for that but we really didn't know what drivers
14 themselves thought. And I was pretty surprised that three-fourths
15 of them told us that, yes, they were associating these
16 technologies with their ability to stay on the road for as long as
17 possible in their older years. They associated it with
18 confidence, with comfort, and some of them you can see, 28
19 percent, said that they thought that the technologies could
20 compensate for some of the difficulties they might be having as
21 they were aging.

22 The top five reasons for driverless cars, about half of the
23 people said, well, if the car was as safe as I was behind the
24 wheel, I'd be willing to consider it. And then what we really
25 wanted to get at is that issue of health because, as you know,

1 there's a whole lot of dialogue about how self-driving cars can
2 help to solve that issue, and about 48 percent said that they
3 would be considering it in that situation.

4 But the most interesting result that I think is worth noting
5 is we asked people, are you planning on buying a vehicle, a new
6 vehicle, or leasing one in the next 2 years? And if so, are you
7 actively planning to look for these technologies? And 76 percent
8 told us that, yes, they were. And that was in contrast to those
9 people who had just bought a vehicle in which only a third were
10 actively seeking it. In other words, they might have landed in a
11 vehicle, but they weren't, like, going to the dealer and saying,
12 hey, I want a backup camera.

13 So that was a real pause for us because we thought, wow,
14 within this segment, our population, this many people are going
15 out there. The importance of education is even that much more
16 critical, and so I'll turn it back to Kyle, because he'll talk a
17 little bit about what we're co-developing together to try to
18 address that.

19 MR. RAKOW: All right. Thank you so much, Jodi.

20 As you can see, vehicle technology is just extremely
21 important to the continued mobility and well-being for all of us
22 as we age. And it's one of the reasons why I'm really excited to
23 announce today, from a 3-year grant from The Hartford, we are
24 currently designing and developing and actually next week
25 delivering a vehicle technology program that we're calling Smart

1 DriverTEK that will be 100 percent focused on the advancements of
2 vehicle technology, not only understanding what these technologies
3 are but, in my opinion, more around how to use them and the
4 benefits of adapting to these technologies for these older
5 individuals.

6 This is just a quick slide, and I'll make mention, in the
7 design and delivery of this program, of course, we did numerous
8 focus groups, we've interviewed many subject matter experts and we
9 continue, and we've heard today, there's just an enormous need and
10 relevance gap in terms of education that's needed here. So we're
11 very confident that we're going to be delivering extremely
12 relevant content and impressive interactive curriculum.

13 But we also made note of understanding how best to deliver
14 this program. And so we're also going to play off of some of the
15 history that AARP driver safety has in the platform that we have
16 and really are taking notice of the delivery.

17 And really quickly, this is how we're going to do it. Smart
18 DriverTEK, essentially the core of this program is going to be a
19 60 to 90 minute in-person workshop. We are going to be deploying
20 -- we're going to call them pop-up events to generate awareness in
21 very short, small snippet information interaction at local events.
22 Think of your community fairs. We're going to be generating
23 awareness. We're also going to be deploying these 60 to 90-minute
24 workshops and participants will receive a checklist and also an
25 exclusive online resource page, and here you can see, we are

1 piloting starting next week and through December in Florida,
2 California, Texas and Georgia.

3 And, obviously as we all know, technology is just continuing
4 to evolve and I absolutely see this program doing exactly that.
5 So for 2017 and beyond, we're going to be deploying to additional
6 markets. We're going to be developing an online workshop and
7 digital checklist. We're also going to be refining the workshop
8 based on new research, new technologies and in my opinion, the
9 thing that I'm most excited about, because I think it would most
10 likely encourage adoption is a one-on-one sort of education and
11 environment where we're really helping make sure an individual
12 understands that technology in their vehicle.

13 So with that, thank you very much.

14 MS. TROMBLEY: Thank you so much, Kyle and Jodi. And Jodi
15 mentioned a resource packet. On your way out or during a break,
16 you can stop in the room upstairs that says expo just outside the
17 door, and there's materials from NSC, from NTSB and from the
18 speakers around the table there for you and you can also find the
19 packet that Jodi mentioned.

20 So next I'd like to introduce Dr. Allen Robinson. He's Chief
21 Executive Officer of the American Driver and Traffic Safety
22 Education Association.

23 DR. ROBINSON: Well, good afternoon. I'll bet you're glad to
24 see me. It's only because I'm last. I realize that, but still.

25 I'd like to ask the staff of NTSB and NSC, to thank our hosts

1 for bring us here today. They needed to step out for a few
2 minutes, and I know they've worked hard to put this on.

3 Now, I'm going to talk briefly about what ADTSEA does and
4 what our positions are on training of new technology. I want to
5 start though by an omission that I just can't believe, and most of
6 you engineers and others won't think it's an omission, but no one
7 has talked about all-wheel drive vehicles, and actually I think
8 that was one of the first things that ever came along in terms of
9 new technology for driving. And when you live in Pennsylvania, an
10 all-wheel drive vehicle is important 12 months a year. And I know
11 others say, well, it's not needed in the summer and yes, it is.
12 It's needed on sand and gravel and wet leaves and things of that
13 nature. But that to me was the smart new technology.

14 I guess I hit the arrow to the right. I got it right.

15 Well, most people don't know who ADTSEA is. So the American
16 Driver and Traffic Safety Education Association is a group that
17 represents traffic safety educators. You think of them as just
18 driver education teachers. Well, it's more than that. There are
19 a lot of driver education teachers. There's private driver
20 training schools. There's people who work at the university
21 level. There's people who do work with the older driver, and
22 there are people who work with drivers of handicap.

23 Nationally, we're an advocate for quality driver education,
24 and I know in this group, if we ask your definition of driver
25 education, I wouldn't have enough room for all the different

1 definitions because everybody unfortunately in some cases believes
2 driver education is what they had, and they got a real bad feeling
3 about what driver ed is.

4 We create and publish standards and curriculums. You have to
5 have a standard if you want to have a new technology in your car.
6 That's one of the things you all have been talking about. There's
7 no common names for some of these new technologies. You need a
8 standard that says such and such is what we define as brake assist
9 and this is how it works. Well, our role in education is to
10 develop the standard that tells people here's what you're supposed
11 to teach and here's how you get it done.

12 And then we conduct national conferences for driver education
13 teachers. We work with our state affiliates and assist them in
14 state conferences, and we provide a variety of communications on a
15 monthly basis through emails and through webpages giving them the
16 kinds of information that you all are giving us here today.

17 One of our big ways to influence what our teachers do is just
18 like what was talked about with the dealers. We train our
19 teachers. If a teacher hasn't been properly trained to deliver
20 the content, doesn't know what the content is, doesn't know how to
21 work with somebody that has learning difficulties, they're going
22 to do a very poor job of teaching driver education.

23 And we work with a group called the National Association of
24 Traffic Safety Educators because they're another group like us but
25 have a different audience that are trying to improve driver

1 education nationwide. We provide a list of new technologies to
2 all of these groups, to all of our teachers, to everybody that we
3 reach out to, we try to tell them what these technologies are.

4 We recommend that teacher trainers stay up to date and aware
5 of these new technologies. I wish they all had enough money in
6 their paycheck to go out and buy one of these new cars so they
7 could have the ongoing experience. I've been using that on my
8 wife now for three months, and it hasn't worked.

9 We send out newsletters to our teachers and beginning in
10 November, we're going to begin sending newsletters on advanced
11 technologies and autonomous vehicles.

12 The key thing that we have coming up that will be influenced
13 by this group, ADTSEA currently has a 3.0 curriculum which
14 includes fact sheets on new advances in vehicle safety for
15 tomorrow and advanced automotive technology for traction control.
16 I don't expect you to read what's on that right side of the slide,
17 but that's just an example of a fact sheet that goes into the
18 instructional packages that the teacher can copy, give to the
19 student, the student can take it home and see if mom and dad knows
20 what those things are. Usually they don't.

21 But anyway, we list the new technologies, for example, lane
22 departure warning, and that's the one I want, and whoever talked
23 about that earlier wasn't real thrilled with that one. But, boy,
24 do I need that one. Electronic stability control, I have that.
25 Park assist, adaptive cruise control -- I don't really understand

1 that one -- and forward collision warning systems. We, too, need
2 your help in defining these technologies so that when our teachers
3 talk to our trainers and our students, they all know what they're
4 talking about in terms of the specific technology.

5 We also work very closely with NHTSA. We're trying to
6 disseminate NHTSA's automated vehicles policy statement. We're
7 trying to provide more information to our teachers, more
8 definitions, but boy that's hard to do with that new policy
9 statement because it's pretty comprehensive and long.

10 And in the 4.0 curriculum -- I get behind myself sometimes.
11 In our 4.0 curriculum that we're working on now, that we're
12 expecting to have out next summer, we will begin to integrate a
13 great deal of information on this new technology. With the
14 outcome of new information, ADTSEA can work on integrating a unit
15 on advanced technologies for the 4.0 curriculum, and it will
16 include videos, learning activities, worksheets, how to use the
17 technology and in-car guidelines for the technology because you
18 need to teacher to get in the car and have them experience the
19 weirdness of how that new technology works.

20 And I know you've seen a whole bunch of videos today, but
21 just to prove to you that we do -- where did it go? How do I get
22 a video up? Should I just be able to push the arrow?

23 MS. TROMBLEY: You should. If it's in there, you should.

24 DR. ROBINSON: Well, I had a video on the lane departure
25 system that came from the Insurance Institution for Highway

1 Safety, and what I just wanted to demonstrate was we don't have
2 the money to make any of these videos, but we do have the money
3 and we do work with the various organizations that have been
4 identified here where we can take those learning aids and put them
5 in our lesson plans and share them with our teachers, and our
6 teachers really, really appreciate that effort that we go through
7 to get that material for them.

8 We are very hopeful that we're going to see a lot of changes
9 in driver education in the next few years, and believe it or not,
10 we've seen a lot of positive changes and a lot of improvements in
11 driver education. And I'll end with this, because I haven't used
12 this statistic. Everybody wants to say that there are 5,000
13 teenagers killed every year so driver education must not be
14 working. That's not true. In driver education, we work with 15
15 and 16-year-olds, and annually there are 998 16-year-olds who die
16 in traffic crashes. There's about 250 or 300 15-year-olds. But
17 that's not that 5- or 6,000 that usually ends up in the
18 statistical analysis.

19 That's too many, and we're going to reach zero before all of
20 you reach zero with the whole population, I guarantee you. Thank
21 you.

22 MS. TROMBLEY: Thank you, Dr. Robinson. And so the first
23 question I received, you already touched on this during your talk,
24 the question is, shouldn't commercial and high school driver
25 educators be provided with adequate technologies to give new

1 drivers the hands-on experience so they understand these
2 technologies? And I think you mentioned that when you said we
3 should be able to buy these vehicles with the technologies and, I
4 don't know if you want to add to that at all.

5 DR. ROBINSON: Let me clarify that. You mean actually give
6 them the vehicles to teach with?

7 MS. TROMBLEY: Well, have them available to use during
8 training.

9 DR. ROBINSON: Well, I guess 20, 25 years ago that was true.
10 The American car manufacturers provided training vehicles for
11 driver education, and that gradually went away. It's a cost
12 factor. My goodness, that's an expensive contribution of the
13 manufacturers to do that and, in most cases, programs work much
14 better when you buy your own cars because you have control of the
15 vehicles, you can use them, maintain them, and instead of turning
16 them in every year and a half, every 9 months, you can drive that
17 car just like you do with your home car, 8 or 9 years, and boy
18 your costs are a lot cheaper than when you have to pay the
19 turnover cost to get a new car from a dealer. So it's been
20 working quite well. And dealers help us. They don't charge us a
21 skyrocket price for a car when they know where it's going, but
22 they just can't afford to give it to us.

23 MS. TROMBLEY: Do any other speakers want to talk to ways to
24 give drivers the hands-on experience either through the vehicles
25 or other methods during training and education?

1 Okay. So -- yes?

2 MS. MULLIN: Not specific to ADAS necessarily, but since it
3 bears on this session on training and someone asked me during the
4 break to provide the website that I mentioned earlier with the
5 web-based training products that we offer novice drivers. So the
6 website is teendriving.statefarm.com, and if you go to the right-
7 hand side, scroll all the way down, all of the products are listed
8 by icon there, including Road Trips, which is a planning and
9 scoring evaluation for parents and teens, and then Road Aware,
10 which is a hazard awareness training to anticipate hazards.
11 There's also a link there to the Steer Clear discount program for
12 more information.

13 MS. TROMBLEY: Great. Thank you. So the other question we
14 received from an online viewer, what are your thoughts about
15 updating driver licensing laws to help educate consumers on ADAS
16 and other modern vehicle technologies?

17 DR. ROBINSON: Do you want me to answer that?

18 MS. TROMBLEY: Sure, anybody who wants to.

19 DR. ROBINSON: That's pretty hard to upgrade driver licensing
20 laws because you've got 50 different states that you're working
21 with, and they don't change very easily. There have been changes
22 in licensing but it's been very limited, and the driver license,
23 believe it or not, is not a true indicator of how safe the driver
24 is going to be. So AAMVA and others, people at NHTSA that have
25 that concern, they don't spend a lot of money on it.

1 MS. TROMBLEY: Okay. And so the final question I received.
2 Dr. Robinson just mentioned, shouldn't the driver license agencies
3 be part of this discussion? They are the ones that reach all
4 drivers.

5 And actually, yes, AAMVA was originally intending to attend
6 and speak today, and they were enthusiastic about it but they
7 unfortunately had another event scheduled today that took anybody
8 who would have spoken here is at that. So they weren't able to be
9 here. But NTSB and NSC will be following up with them to see how
10 we can engage with them on this issue. So they are an important
11 partner around the table.

12 So we will take a break for 10 minutes, and we will gather
13 again at 3:30, and we're going to shake things up a little bit.
14 We're going to have a different format for our last session for
15 the day. It's going to be a roundtable discussion, and I'm going
16 to turn moderating over to Dr. Rob Malloy. He's the Director of
17 the Office of Highway Safety at NTSB, and Alex Epstein who is our
18 Senior Director who leads the MyCarDoesWhat campaign. So they'll
19 run an engaging back and forth discussion with the speakers
20 starting at 3:30.

21 (Off the record 3:19 p.m.)

22 (On the record 3:32 p.m.)

23 DR. MOLLOY: Well, first off, I want to say thank you to all
24 the participants today. This has been a wonderful session where
25 I've learned a lot. I've been with the Safety Board now for over

1 20 years. I've been here when we've made recommendations to NHTSA
2 for requiring these systems. I most recently made recommendations
3 to manufacturers for putting them on their systems, and I think
4 the third part of it is really getting consumers to demand them on
5 their cars.

6 And it was so great, we had a meeting in Washington today
7 where I think almost everyone -- no, I'm going to stop. I'm going
8 to say everyone agreed that these technologies have great benefits
9 and that we need them and consumers need them. That's one thing
10 that was great to hear, you know, we're coming from so many
11 different groups, so many different stakeholders in reducing the
12 35,000 fatalities, and we see a path forward and as we said
13 earlier today, I think speakers talked about we need something big
14 to really change the tide.

15 So those are some of my observations. I'll throw it over to
16 Alex for a quick, if he's got anything he wanted to say real
17 quick.

18 MR. EPSTEIN: Thanks, Rob. I want to second your opinion and
19 statement that it's just wonderful to be in your company, the
20 company of all of you who come from different perspectives, but
21 have the same common goal, and that is to reduce injury and death
22 on the nation's highways.

23 And before we get into this portion, I just wanted to remind
24 everybody, because we're involved in these technologies all the
25 time, for the average person, this is like magic, okay. This is

1 magic. You get into a car and you tell it to go straight and it
2 will sure enough pretty much go straight or follow the lines or
3 stop even if you're not paying attention most of the time.

4 The point is that the education gap which was referred to is
5 real but I don't think it's an insurmountable problem, and what
6 we're doing today, hopefully is encouraging cooperation and
7 discussion and that's what this portion is all about. Rob.

8 MS. TROMBLEY: The first thing we wanted to do is, Alex and I
9 are standing up here, and we've got a list of questions and we've
10 got some of the extra questions that weren't asked earlier, but we
11 actually wanted to throw it out to the table, that if there are
12 any questions you had for each other.

13 We've seen five sessions where we talked about basically
14 getting people to understand the technology, making sure the
15 technology fits the driver, making sure that people know the
16 limits of the technology and, you know, I'll tell you, in 2001,
17 the NTSB solved the education problem because we made a
18 recommendation to basically the news media to inform people about
19 this technology, and we closed it acceptable. It might not have
20 worked completely, and then the reason being it wasn't quite the
21 right time.

22 And, you know, I think we're at the point now where it is
23 really closer to the right time, but I'm curious, too, if you have
24 questions for others on how we can make sure this message gets out
25 and it sticks, that one time sending the message out like a

1 meeting today isn't really as effective as continually bringing
2 that message to people. So if anyone had any thoughts on that or
3 wanted to ask others on how we could do that, that would be great.

4 MR. CAMMISA: I think one of the things we're seeing more
5 advertising of these features on the television ads and other
6 sources. So I think that is helping bring this technology to the
7 public's awareness more so than back when you had that previous
8 recommendation, and we're also see it available on more vehicles.

9 So I think there's a greater awareness of some of this
10 technology. So I think now is a good time as you said to start
11 this initiative and to try to raise more awareness, continue to
12 raise that awareness, and things like MyCarDoesWhat then is a
13 place where people can go to find that additional background on
14 these technologies. So I think that's an observation I have on it
15 compared to where you were a few years ago.

16 MS. MULLEN: I have a question for the panel just in terms of
17 the intervention of education and when to message to folks,
18 because the most effective education and messaging comes at a time
19 when they're most receptive to it. And we heard a lot today about
20 -- at the dealership, you know, I had data that showed that people
21 were expecting to hear it at the dealership and, you know, Jared,
22 you presented some data as well. But what other places or times
23 might be the most receptive time for folks information like this?

24 MS. LINDLAND: I mean, at Kelley Blue Book, that's one of the
25 things that we're working on is that, to make sure that we are

1 setting up our websites and setting up our information so that we
2 can best convey that information to consumers, so that they can go
3 and select, you know, I need a car that has to have a backup
4 camera, you know, it has to have these kinds of things. And our
5 website is not up yet for that, and so that's something that we're
6 working on to make sure that we are not only contributing to that
7 conversation but actually encouraging adoption.

8 And also to educate the manufacturers to say this is the
9 interest that we see from consumers on the site. You know, they
10 are coming to, you know, one of the most popular websites. We
11 have 35 million unique visits a month between Autotrader and KBB
12 and they're coming in to say I want this. And so we're working
13 with the manufacturers also to say this is what we're finding on
14 the site. This is how people are behaving. This is what they
15 want from these kind of technologies, and so that's something that
16 we're very conscious of as well.

17 DR. MOLLOY: And real quickly, that was just Rebecca with
18 Kelley Blue Book. Our transcription person is behind you. So if
19 you can just say your name as you give an answer, that's great.
20 All right. Susan.

21 MS. McMEEN: Hi, I'm Susan with National Highway Traffic
22 Safety Administration known as NHTSA. And you really have to look
23 at it from all the various different touch points the consumer
24 goes through in either purchasing a new or used vehicle and that
25 is from when they will go online, do their searches, where are

1 those points they need to find that information, the type of
2 keywords they use. You have to think about that when you're
3 putting your sites together and then how people will get drawn to
4 them.

5 You have to also look at then what type of information they
6 need. You need to almost dumb it down, make it easy for them.
7 You need to have it very engaging because unfortunately today
8 people don't want to read. We find this from even our other
9 campaigns that, especially the younger generations, they are only
10 engaging really in video and wanting everything to be explained
11 that way, the how-tos of everything, the top 10s list and so
12 forth. You have to make it very easy and simple.

13 And then it gets down to when they actually go to the dealer
14 themselves and unfortunately even my own personal experience, when
15 I was shopping for a car not that long ago, I would ask, so tell
16 me about your technologies and they got so excited about all the
17 audio and, oh, this you can, you know, voice activate. I'm like
18 no, actually the safety of the car and they just gave me these
19 blank faces, and I actually felt like I was educating the
20 salespeople. So I think there's a huge gap there because what
21 they learn online and then they go to the actual dealer, there's a
22 huge gap of knowledge, and I think it's really important how we
23 all will work with the people who are actually going to interface
24 mostly with the consumer when they purchase that vehicle.

25 MS. DEATON: And just to add to that. This is Jaime from

1 U.S. News. We actually try and approach educating consumers well
2 before they're actually purchasing a vehicle because I think if
3 you wait until somebody says, all right, I'm going to go and start
4 researching which vehicle to buy, if they're unaware of these
5 systems and what they can do for the consumers and the type of
6 protections they can potentially give drivers, if you wait until
7 they're going to buy a car, they're not even going to know what
8 they should be looking for.

9 So -- and, you know, we're building on our site, sort of our
10 browse features and things like that, we obviously include these
11 safety systems, but if someone's unaware of them, they're not
12 going to know to click the box and say, okay, I need forward
13 collision warning because they're not going to know what that is.
14 So a lot of our features and advice content is focused
15 specifically on being those type of lists that are attention
16 grabbing and, you know, we will syndicate these out to MSN or
17 Yahoo and say, all right, these are the 10 must-have safety
18 features for new drivers or the 10 must-have safety features for
19 older drivers, so that we get that information out there before
20 somebody's ready to make a purchase. Because while I agree that I
21 think at the dealership, that's where people should get, should
22 get the meat of their education with it, at the same time, they're
23 not always going to be receptive to it then because they've
24 already gone through, you know, 2 hours of sitting in the finance
25 office, and so at that point everybody just wants to get home.

1 So I think doing it before that they're even beginning the
2 purchasing is a way to really get the consumers while they're open
3 and receptive to it because they're coming to it on their own, and
4 it's not part of kind of checking off a box.

5 MR. EPSTEIN: We've also found that when we were doing the
6 research for MyCarDoesWhat, that folks tended to look for specific
7 systems, and they didn't look at a site as a compendium
8 necessarily. They were glad that all that information was there,
9 but they would specifically want to know about a backup camera,
10 and they would search for backup cameras. And so it wasn't as
11 though they were delving deeply into a site to find out the whole
12 suite of safety systems necessarily. It was that they were
13 looking for a specific system and trying to understand how that
14 worked. And lots of requests were for aftermarket systems as well
15 by the way.

16 MR. ALLEN: Alex, can I -- this is Jared Allen with NADA. I
17 just want to address -- this came up a few times and I just wanted
18 to address it again.

19 We are acutely aware that there not only is a consumer
20 education gap, but there's a gap in the dealership level expertise
21 on these systems. Just a couple of things to keep in mind for all
22 of us, one, where everybody is committed to closing it. Two, I
23 think we've -- sometimes we overlook just how fast and furious
24 this technology is coming, and that is real challenge. It is a
25 challenge for consumers, as I think we know it is a challenge for

1 dealers to be able to, you know, really have the, you know, you've
2 got engineers at the manufacturers that have been staring at these
3 systems for 10 years, right, to have a dealership employee have
4 the same master and command authority as the engineer does is a
5 lot to ask.

6 That said, that's what we're asking, right, and we know that
7 the manufacturers are asking for the same thing as well.

8 I alluded to this earlier. They are increasingly putting
9 requirements which fortunately come with the training and the
10 resources that the dealerships need from the manufacturers in
11 order to really become these product expert and feature experts.
12 We're working at it.

13 And the other thing I do want to put some perspective on
14 this, there are, you know, 2016, there will be 17.7 million new
15 cars sold likely in the calendar year. That's an average of
16 48,000 per day. I think the vast majority of consumer
17 interactions with dealers are very positive including on this
18 front. We saw earlier the data from IIHS that 30 percent of
19 Hondas that are coming in, and these are including older cars, to
20 service bays do not have their blind spot monitoring systems
21 turned on. That means that 70 percent do, right, and that is
22 generally -- what you're seeing there is a reflection that these
23 interactions between dealers and customers are positive and that
24 dealers are conveying information that they need to.

25 But again, all that said, we understand that it's not

1 perfect, and we're working towards getting as close as we can.

2 Thank you.

3 DR. MOLLOY: One question I have as a follow-up on that is I
4 know NHTSA's done some good work on getting these cars out,
5 advanced cars out to people and seeing what they think about them.
6 With regard to the manufacturers and the dealers, you know, are
7 these cars available on lots for people to try because I have been
8 out there and I've asked about certain technology to try it, and
9 they say, well, we don't have that available, you know, and that
10 could be part of the problem with being optional. You know, what
11 can we do more to try and get this technology onto lots?

12 MR. ALLEN: Realistically other than slowing it down,
13 probably -- slowing the technology development down, probably not
14 a lot but that's not what we want to do. You've identified a very
15 important issue in that when, you know, dealers get cars and are
16 generally trying to turn them around as far as they can and if
17 there's new technology available with each model year, that means
18 that there is less hands-on time. That's why I think some of what
19 the manufacturers are doing in terms of providing training to
20 dealership staff in a way that doesn't necessarily require hands
21 on with the vehicles is really important. We certainly hope they
22 do more of that.

23 DR. MOLLOY: Mike, can I put you on the spot on that?

24 MR. CAMMISA: Yeah. In terms of the dealership, I mean they
25 order the vehicles that they need for their sales. So that's part

1 of the way the system works, and with these technologies as
2 they're new and rolling out, they aren't available as I explained
3 before how hard it is to get to -- you can't turn the switch on
4 and have every car with the same feature. So sometimes they may
5 be rolling off the lots faster and so when you come in, the one
6 that had the technology you wanted had already been sold, and so
7 there isn't another one on the lot at that moment.

8 So I think the idea of demonstrating it with displays,
9 videos, that the types of materials that they provide to the
10 dealership as well as on their websites, at auto shows and things,
11 there's also displays of some of the new technology and how it
12 works, that's one way to reach people where they are not able to
13 get access to the vehicle on the road and actually feel it right
14 away. So there are, you know, initiatives to do that.

15 DR. MOLLOY: David, did you have a comment?

16 MR. ZUBY: So I think there is some reason to be hopeful,
17 that if we can get the information about the benefits of the
18 technologies in front of consumers, that they will seek it out.

19 We've done three series of interviews with automobile
20 dealerships following our public release of ratings, and this
21 first came up when we launched our small overlap crash test. At
22 the time, I was in the process of shopping for a Volvo, and my
23 local Volvo dealership called me up at work and said, hey,
24 everybody's talking about the new small overlap crash test, and we
25 did really, really good and we've got customers coming in wanting

1 to buy new Volvo S60s, and we thought, oh, that's interesting. I
2 wonder if other Volvo dealers around the country are experiencing
3 this.

4 So we called up all of the Volvo dealerships in the United
5 States and, in fact, compared to the weeks before we made our
6 announcement on the small overlap, we were finding that dealers
7 were reporting more customers asking about the S60 and more
8 customers purchasing S60 and mentioning the safety ratings in
9 their discussions with the salesmen.

10 So when we launched our front crash prevention ratings in
11 2013, we repeated a similar survey of automotive dealerships.
12 Unfortunately, whatever happened the week after we made that
13 announcement, resulted in lower sales across the board for
14 everybody, but being scientists, we were clever enough to include
15 interviews of dealerships of a manufacturer that didn't sell any
16 crash prevention at the time, and if we adjusted the results for
17 those dealerships that had front crash prevention available
18 against, you know, what we were seeing for the manufacturer that
19 didn't even offer it, we did see that, you know, those automakers
20 that were offering front crash prevention had less depressed sales
21 than those dealerships that didn't have brands that were offering
22 the technology.

23 So I think if you get the information in front of the
24 consumers at the time that they're considering buying a new car,
25 there is reason to be hopeful that they will try to seek it out.

1 DR. MOLLOY: And nothing beats experience because as you
2 pointed out, you're driving your car with AEB and you're afraid to
3 get it to trigger, right, because there's very little that a
4 dealer would have done except maybe gotten it to trigger somehow
5 for you.

6 MR. GORDON: I just wanted to -- this is Robert Gordon with
7 PCI. I just wanted to throw out a caution to be careful about
8 consumer education. It's badly needed but it also needs to be
9 based on fact, not feel good and, you know, HLDI and the Insurance
10 Institute for Highway Safety have done some great work on the
11 impact of safety technology and we know that sometimes feel good
12 ideas don't always work in practice or sometimes they don't work
13 initially until the kinks get worked out.

14 I know, for example, there was some discussion earlier today
15 about discounts for senior driving classes, but studies show that
16 drivers who complete those driving classes get fewer tickets but
17 don't actually lower their accident frequency. So I think we want
18 to be careful to focus on touting efforts that can achieve the
19 desired results and make sure we direct consumers to the things
20 that are actually going to help them versus the things that
21 haven't quite played out that way yet.

22 MR. CAMMISA: I also want to mention one thing, too. In
23 terms of having people have experience with the technology, some
24 of it is crash imminent. You can't just take them out on the
25 roads and show them how it works. And so not every dealership is

1 set up in a place where they would have room. Someone mentioned,
2 I think at the auto show, Jeep has some special course, but you
3 can't do that everywhere at every dealership to show how some of
4 the technology works.

5 So in that case, the simulations and the videos are probably
6 the best way to demonstrate it so they are aware of what's going
7 to happen if they run into that condition when they're driving it.

8 DR. SULLIVAN: We had a recent experience, we were going to
9 do a study involving lateral control as well as longitudinal
10 control, and we wanted to get two samples of vehicles with that
11 capability. We found marked differences between each
12 manufacturer's implementation such that we wouldn't have known
13 from simply looking at owner's manuals that what some of these
14 vehicles were going to do. In particular, the lane departure
15 management system in one was a lane centering system which was
16 constantly kind of resisting you moving the vehicle to either the
17 left or the right. The other system was essentially a very timid
18 and waited until you were almost at the lane edge before you felt
19 any kind of intervention.

20 And I don't know if consumers -- these systems all vary in
21 really subtle ways. Sometimes, for example, they don't -- you
22 lose the capability if you go below 35 miles an hour. Others are
23 clearly intended to only be used at speeds above 45. These
24 variations are very daunting to a consumer who isn't making these
25 distinctions when they first go shopping. They don't know about

1 this stuff, and I think it's easy to say, yes, we can educate the
2 consumers, but it seems like you need to be educating them about
3 this specific instance of this technology.

4 The other thing that's a problem is the technologies
5 themselves are changing. Every year, they're getting better and
6 they're getting different. So that's another thing that's a real
7 barrier to really -- to education, people understanding these
8 things as well as they may need to when they're driving them.

9 MR. ALLEN: That's actually a fairly important point. We've
10 been talking about 40 percent of people who report that their car
11 is behaving in a strange way as being a problem, as being
12 something we need to get down to zero, and maybe we're not
13 thinking about it. Maybe the right way to think about it is to
14 say, okay, well, that's okay. That 40 percent is okay. It's what
15 we do after we get that reaction. What do we do in response to
16 somebody saying that did something I didn't expect it to do?

17 Just a thought for the group as we go forward, if we never --
18 and I'm not saying we shouldn't, but if we don't get to a point
19 where we have standardization, then maybe a supplemental idea is
20 to think about, you know, can we somehow embrace this idea that
21 the vehicle did something I wasn't expecting it to do and say,
22 okay, that's fine. That's a good experience to have. Turn that
23 into a positive.

24 MR. CAMMISA: And, Jared, I wondered about that statistic
25 too. Is that necessarily a negative reaction or it did something

1 I didn't expect it to do, and I'm glad it did it. So it's hard to
2 read into that for sure.

3 And the other point I want to make up -- pull out a little
4 bit, was the issue of the technology changing and, you know, as
5 you said, it's advancing, it's evolving. There are different
6 implementations depending on the type of sensors that a particular
7 manufacturer might have. And as it rolls out, I mean we're
8 seeing groups like the Insurance Institute look at some of the
9 different characteristics of the systems to try to identify which
10 ones are actually performing better in the field. So it's, you
11 know, it's part of the development process, part of bringing these
12 technologies out. They're all beneficial. They're all helping
13 and I think, you know, at some point you do start to coalesce
14 around the implementations that seem to work the best.

15 DR. MOLLOY: One thing I wanted to follow up on is because we
16 hear about all this wonderful technology and how quickly it's
17 coming into vehicles and how people can be surprised. Are we doing
18 enough to integrate the systems so that they're not competing
19 against each other for attention? You know, your blind spot is
20 trying to tell you something while you're forward collision is
21 trying to tell you something else, you know, and I'm curious from
22 anyone's perspective, is that integration happening the way it
23 should be or are we just tacking system on top of system on top of
24 system?

25 MR. CAMMISA: I know there was some research work being done

1 with NHTSA and the auto manufacturers on that, that very aspect
2 because it is something that, you know, how do you prioritize the
3 different warnings. So I know that work has been going on, and
4 I'm sure some of the results have been informing what companies do
5 now and is probably continuing to go on.

6 DR. SULLIVAN: Actually UMTRI conducted a study. It was
7 called the Integrated Vehicle Based Safety System, and it
8 basically had forward collision, side collision warning systems
9 that could potentially compete with each other. The worry about
10 what the driver was going to do should these systems all come on
11 at once did not appear to be as big an issue as we originally
12 thought it might be going in because you're talking about what are
13 normally fairly rare events and they're even rarer if you're
14 expecting them to co-occur. So having a side impact warning at
15 the same time as a forward collision warning, is indeed a very
16 rare event.

17 And the other thing is you need to give the driver some
18 credit for being aware of what's going on and not being completely
19 slaved to the warning sounds. That's the first instinct of a
20 driver when something -- when he hears something is to look around
21 and figure out what the problem is.

22 DR. SULLIVAN: My name is John Sullivan. With regard to the
23 testing and I know a number of the groups here do testing, one of
24 the things that I love about NHTSA's nesting, Consumer Reports and
25 IIHS, is it doesn't take long for companies to respond. What has

1 been your experience with regard to -- from the time you
2 introduce a test to the time you see manufacturers actually
3 respond even though there's no requirement to do so?

4 MR. ZUBY: Well, Jenny's presentation had some information on
5 that showing how quickly automakers have achieved 5 stars after
6 making a change in the program, and we've got very similar showing
7 for each of the crash tests that we've introduced, it's taking a
8 shorter and shorter amount of time for manufacturers to reach the
9 good level of performance in that new crash test.

10 And we're finding a similar thing with the technology
11 especially when we roll the technology into it being a requirement
12 for our top safety pick, and that is turning out to be a big
13 motivator for automakers to start offering those technologies at
14 an increasing rate of availability.

15 MS. DANG: Jenny Dang with NHTSA. I wanted to follow up on
16 David's comment. Yes, as you can see, the crashworthiness NCAP
17 program has been very successful for the last 40 years, and that's
18 the reason why, you know, last year we decided to include a whole
19 bunch of advanced technologies into a new 5-star safety ratings
20 system, and we hope that we will eventually see -- will experience
21 the same kind of success that we have with crashworthiness NCAP.

22 And I would hope that, you know, because our safety ratings
23 information is also on the Monroney label, on the window stickers,
24 and you mentioned earlier that if we go to a dealership and
25 consumers don't see the vehicles there, but out information is on

1 safercar.gov, we're hoping that when they do research, they will
2 see that different trim lines have different star ratings, that
3 they would question, and when they go to the dealership, they
4 would question why, you know, certain trim lines don't do as well
5 as the others, and consumer demands is I think what will drive or
6 encourage vehicle manufacturers to start putting more technologies
7 on vehicles and hopefully as standard equipment and not just
8 optional equipment.

9 MS. SINCLAIR: For us, to have manufacturer change something,
10 it's a little bit longer in the process. We're looking at, you
11 know, suspension changes or front seat changes. For active safety
12 systems, I know in the last six months, I've been talking to
13 manufacturers and telling them, you know, you're going to get
14 points in the overall score here if you make these systems
15 standard and their response was they're kind of wide eyed and
16 they're going, oh, okay. And we have seen a few of them put these
17 systems on as standard.

18 DR. MOLLOY: And that's great because again it's not just one
19 group having to do it. We're working together, and I like that
20 there's even some competition among rating companies in some way.
21 Or maybe not. Maybe you collaborate completely. I apologize.
22 Alex, do you have anything?

23 MR. EPSTEIN: Well, I was just, you know, we were talking
24 about barriers in education, and one of the first things I learned
25 when we were trying to do this national education program was

1 that, and it's been pointed out very clearly, and you all know
2 this, every safety system is called something different.

3 And I'm not speaking of brand names or trademarks or that
4 kind of thing. I'm speaking about the underlying generic system,
5 the variety of that is astounding. We saw a slide to that earlier
6 today, and I'm wondering, does the panel think that there might be
7 some standardization, voluntary standardization, if you will, of
8 what the underlying technology could be called?

9 MR. BRANNON: This is Greg Brannon with AAA. I think just
10 beginning that conversation would be a very positive step because
11 I think it's very confusing for -- well, even for us as engineers
12 but testing the systems, to understand exactly what they are, what
13 they're capable of, but much less the consumer who's faced with
14 the buying decision of that vehicle.

15 And then I'd add to that, that once that standardization is
16 there in a way that could be placed into a database that would
17 allow the tracking of that vehicle through its lifecycles, we can
18 understand the availability of that technology and whether or not
19 the crash statistics follow that technology through the lifecycle
20 of that vehicle as it was mentioned earlier today. Decoding that
21 from the VIN is not totally impossible, but nearly, and so moving
22 towards that would be a big step for consumers.

23 MR. CAMMISA: Yeah, Alex, I'm glad you brought that up
24 because I was thinking about that. It's a multifaceted issue
25 really. I think there's maybe a little less confusion when --

1 with some of the sort of trademark names, the marketing names, and
2 those, we might actually look at those as good things because
3 those are the kinds of things that help sell the device, but when
4 you go in and read the description, I think consumers get confused
5 now when you get to the technical terms we've been using. So
6 there is a difference between lane departure warning and lane
7 keeping assist, but I don't think there's a difference between
8 collision, imminent braking and automatic emergency braking, but
9 to the person who, you know, reads one description that uses CIB
10 and another uses AEB, they're probably wondering if that -- does
11 that mean something? And so I think we as a community need to
12 make clear which of these terms are the same and, you know, pick
13 one so that when we do describe a system with these features, then
14 they know what those are. Thank you.

15 The other thing I wanted to mention, too, was we talked about
16 bundling and packaging and, you know, the example was given of,
17 you know, leather seats and safety equipment. A lot of times, the
18 safety equipment is packaged together in a safety package, and the
19 reason for that often is that once you put the sensors on, it does
20 all of those things. So you sell it as that whole package, and
21 that's also another place where some of the names become a little
22 bit -- their overarching name for several different types of
23 things. So some trademark name might include both lane departure
24 warning and automatic emergency braking and blind spot warning.

25 DR. MOLLOY: Jodi.

1 MS. OLSHEVSKI: I was just going to add and say, yes, I mean
2 I think this is one of the biggest frustrations that we've had is
3 that we think about trying to educate older drivers, but it's true
4 for any driver that if we're really interested in consumers
5 adopting these, that we have to be consistent. I get it mixed up
6 myself. So I think it's critical.

7 But I wanted to go back, and I'm not quite sure where this
8 fits in, but I wonder around this issue of the variation and how
9 the technologies are used, is there any -- I mean should we be
10 reviewing for usability in terms of these different technologies.
11 We're reviewing for whether manufacturers have them and how safe
12 they are, but I just want to throw that out there in terms of
13 easier use for the consumer. I know that design and usability is
14 a huge issue when we talk about the aging population, and so I
15 just wanted to throw that out there to see if anyone had any
16 thoughts on that.

17 MS. DEATON: I do. So one of the things we do at U.S. News
18 when we're doing our rankings is, of course, we're collecting
19 published reviews from credible automotive reviewers and
20 journalists. And we've started paying particular attention to the
21 notes they make about usability of these systems. And so what
22 we're seeing in a lot of cases are people saying, hey, you know,
23 on side streets, the lane keeping assist was terrible, so I shut
24 it off or the beeping was loud and annoying and I shut it off.
25 That's the main thing that we see is, and so I shut it off.

1 One thing that I would like to see the automotive press do a
2 better job of though is many automotive journalists are highly
3 trained drivers who have some racing experience, and so the first
4 thing that they do when they get into a new car is shut these
5 systems off. And we'll see it noted in the reviews, which is
6 terrible because, you know, most consumers aren't driving like
7 automotive journalists.

8 I just got back from testing for North American Car and Truck
9 of the Year Awards and there was one journalist who was
10 complaining about a minivan that was up for the award, you know,
11 the rear end was loose and all these systems were on it. I was
12 like, well, I saw you driving it. How fast were you going? Well,
13 I was going 120. It's like come on, guys, it's like we actually
14 need to put the consumer first, and granted some of these guys,
15 you know, they're riding for enthusiast publications and so they
16 do instrumented tests, but they need to make it very clear to
17 consumers when they're doing an instrumented test and when they're
18 not.

19 But to your point, usability is something that we do see in
20 the automotive press. People checking for and making note of and
21 saying, you know, this was really hard to deal with. This was
22 really annoying.

23 One thing, too, that we note as well, you know, we still will
24 get cars not for assessment but so we can be better translators
25 between reviewers and consumers, and we do make note, you know, in

1 our reviews when something happens. For example, I was testing a
2 car that had a system that does not work in direct sunlight. So
3 when you're driving west at sunset, and the system did a very,
4 very good job at letting me know, hey, I'm not working any more.
5 So you need to make sure you're paying extra attention, and it's
6 something that we put in our write up of the car as well, just
7 making sure that people understand, you know, not only, hey,
8 here's how this system could potentially improve your safety, but
9 also here's what it's like to live with this system. So you can
10 make an informed choice about whether or not it's worth it to you
11 when you go to buy it.

12 DR. MOLLOY: One thing I'm curious, as we're looking at
13 specific populations, and I think several years ago we had an
14 older driver forum and we heard about CarFit, and I was curious if
15 those types -- these systems are getting included in those types
16 of programs.

17 MR. RAKOW: That's a great question, and the answer is yes.
18 So we run that program with AAA and AOTA, and it's one of the
19 things that we're going to be assessing as we pilot Smart
20 DriverTEK in November and December, but we think there's
21 absolutely an opportunity through CarFit and the stations that we
22 have available and that sort of event-based assessment program, to
23 start adding in a technology station within that station.

24 DR. MOLLOY: Is this something that we could do with novice
25 drivers and try and get them available to -- I see high schools

1 all the time with the destructed car from impaired driving, you
2 know, where we can get good cars and smart cars being shown to
3 them also?

4 MS. MULLEN: I think you could. One of the things that, and
5 I don't want to speak for AAMVA, but you were mentioning earlier
6 about the issue of training, and one of the things that came up in
7 a panel I sat AAMVA earlier this year, was the concern frankly
8 that the younger drivers and the novice drivers are learning on
9 vehicles that are more capable of doing more of the driving tasks
10 than when we all learned, of course, but they're skipping a step
11 in not learning some of the defensive driving skills, of course,
12 the hazard anticipation that we talked about earlier which is 43
13 percent of the reason that they crash.

14 So from those perspectives, you'd want them to learn the
15 skills first before they go about experiencing a vehicle that is
16 going to take over pieces of that for them. So it's almost a
17 catch-22. You want them to know about those features and be able
18 to anticipate what they'll do. At the same time, they need to
19 make sure that they know how to operate the piece of equipment
20 before the vehicle starts to take over. So the answer I would
21 give is yes and no.

22 MR. CAMMISA: And I don't know if the gentleman from driver
23 training, if he's still here, because that was a question that had
24 come up before, too, is do you -- when you test the novice
25 drivers, do you test them with the systems on to see if they know

1 how to use them or do you test them with the systems off to see if
2 they know how to drive without them? I don't know if anybody --

3 MR. EPSTEIN: I think our feeling is they're off, you know.
4 James Solomon and his team and Jeff Craft (ph.), they train a
5 million people a year in defensive driving techniques from the
6 National Safety Council and, you know, we're trying to come to
7 grips with how do we train these folks. I mean these are real
8 questions that we face, and we've talked it over a bit, and we're
9 developing new curriculum but to your point, they have to learn
10 how to deal with these situations in case the car says I can't
11 deal with the situation. Here, you take it.

12 DR. MOLLOY: This is not -- it's going to sound like it's
13 outside the scope of this forum, this group, but I don't think it
14 is. Do you think we're having a harder time communicating the
15 message on some of the technologies that are available today
16 because of all the press that's happening regarding the autonomous
17 vehicle and all the, you know, again as we heard, several days
18 ago, a beer truck that was escorted in a very controlled
19 situation, made a trip, and that's in the press, and that type of
20 story overrides what's available today.

21 MR. CAMMISA: Yeah, I think the automated vehicle is getting
22 a lot of attention. It's a, you know, fascinating story, and
23 it's, you know, as I showed in my first slide, there was that
24 vision of automated vehicles back in the '50s, that we're always
25 looking for that, you know, it was a flying car and now automated

1 vehicles. So it does -- it is, you know, newsworthy. It is
2 something I guess the media folks can talk a little bit more about
3 that, how that plays into their coverage of things versus some of
4 the more present day technology that's already out there.

5 MS. McMEEN: I guess we look at it as really it kind of gives
6 people a flavor of where it's going to be going to, but there are
7 steps in the future that we have to take to get to that point, and
8 we actually point that out on our website at safercar.gov, talking
9 about where we are today, how these technologies kind of add next
10 steps to get us finally to the autonomous vehicle.

11 DR. MOLLOY: That's great.

12 MR. BRANNON: I was just going to add onto that point, that
13 every time that we have come out with a release related to
14 advanced driver assistance systems, we've tried to iterate to the
15 press that these are the building blocks towards autonomous
16 because if you talk to press in general, they want to talk about
17 the autonomous vehicle. They're very excited about that, as we
18 all are, but we have to walk before we can run.

19 MR. GORDON: I just want to underscore again that PCI's
20 polling shows that 70 percent of people think that accidents are
21 decreasing because they're hearing all this talk about safety
22 technology and so they say, oh, it's all getting better and then I
23 think going to John Sullivan's point, people tend to get more
24 reckless then. They say, oh, well, our cars are so much safer and
25 so they're just a little less concerned about the distracted

1 driving, the tailgating, what have you, and it's dangerous. We're
2 creating a negative cycle rather than a positive one.

3 MR. EPSTEIN: To your point, I think there's almost a false
4 expectation set up in the consumer's mind about what the
5 capabilities of these systems are when you talk about them as
6 autonomous or self-driving, and we're clearly not there yet.

7 DR. SULLIVAN: Yeah, I'd agree with that because you can --
8 all you need to do is look at YouTube and see people that are
9 basically driving vehicles equipped with ADAS technology and
10 pretending that they're autonomous. They're taking their hands
11 off the steering wheel, look at what my car does. It's clear that
12 the magic of an autonomous vehicle has captured a lot of people's
13 attention and there are those out there that will try to push the
14 envelope as far as they can with the existing technology.

15 DR. MOLLOY: One thing I do want to say, and I'm sorry, I'll
16 get to you right there, because I think UMTRI and NHTSA and others
17 have done, AAA I think, too, have done some good research though
18 showing the risk compensation, that when you put these safety
19 systems in vehicles, people don't actually drive more risky. They
20 drive more smart if that's the right way to say that because
21 following distances get better, you know. With lane departure
22 systems, blinker use gets better, you know, so I think that there
23 are those that may take the technology too far, but I think what
24 we've seen in the research is it makes better drivers. MS.

25 MULLEN: I think in that case too -- sorry. Go ahead, Rebecca.

1 MS. LINDLAND: We've done an admirable job of not singling
2 out a manufacturer, but I am curious, I'm going to say it, where's
3 Tesla in this equation because they're the ones that have been the
4 most aggressive about coming out with an autonomous vehicle,
5 coming out with, you know, they just announced last week that, you
6 know, their vehicles will be capable of Elon called it level 5,
7 SAE would actually be level 4 because it has human interaction, an
8 option as well, but -- and I don't want to derail this
9 conversation because I think we have another, but I was curious in
10 terms of what people can comment on, Tesla's involvement in these
11 kinds of conversations.

12 MS. MULLEN: So it doesn't derail it. In fact, I can still
13 make the comment I was going to make, and somewhat answer this,
14 but building on your point about the media and what they're
15 covering. I think some of that actually falls on us as well
16 because the media is another mechanism to get messaging out. So
17 if we're going to provide media releases or take interviews,
18 making sure that we're providing a balanced picture in answer to
19 the question of where's this thing going because there is
20 inevitably going to be the need and desire to talk about what's
21 the most exciting which is where this thing is going to go.

22 And, I think many have said today, decades, but in between
23 that, is the challenging piece of this for the safety community,
24 and that's in the loop, out of the loop, they hand off, what is
25 the human supposed to be doing or expected to be doing. So I

1 think as long as we're providing that balanced picture when we're
2 talking about how exciting this case can be, because the safety
3 promise of that is insane. It's huge. So, of course, we're
4 supportive. Of course, we want it to go there, but in the
5 meantime, there's plenty that needs to be done leading up to that,
6 and that has to be part of the dialogue in the story, too, and
7 that includes your question, too, Rebecca, about what's been
8 covered.

9 MR. GORDON: One point I'd like to add to that is some of the
10 early looks at self-driving show that drivers can't focus on the
11 road for a long time if it's a self-driving car. As human beings,
12 if you're not engaged in the process of driving, you become very
13 quickly bored and start doing something else, and so the
14 expectation that a driver is going to sit there staring at the
15 road and not engage in the driving process and be prepared on a,
16 you know, a second's notice to respond and react is completely
17 unrealistic and that transition again is going to be very, very
18 messy.

19 MR. EPSTEIN: I was just going to say, I think manufacturers
20 recognize that, and there are different routes to what they
21 consider to be the future and some have steering wheels and some
22 don't.

23 DR. MOLLOY: And I'll say, too, with regard to Tesla, one of
24 the nice things I saw, too, is that one of the research
25 institutions have just gotten a number of cars and are equipping

1 them for naturalistic driving. And so again, trying to be data
2 driven on what's happening and again that's where bringing the
3 whole community together, so having regulators and the
4 academicians and the insurance groups and the press working
5 together on this is really something that can help us have a clear
6 picture of what new technology is bringing and what are some of
7 the, you know, I remember reading back in 1980, when I was young,
8 the promises and the problems of automation as it was coming into
9 aviation, and those are the same things we're facing today and,
10 you know, I think we just need to, as a group, be aware of that
11 and communicate that message to people from each of our own
12 perspectives.

13 MR. EPSTEIN: I wonder if anybody -- oh, go ahead.

14 MR. MOORE: To Rebecca's point on the Tesla, point of
15 clarification there, if I'm not mistaken, Tesla's own press
16 release said that the vehicles would be fitted with the hardware
17 to develop an autonomous vehicle, but not the software.

18 Furthermore, their own press release said they were going to
19 back off on some of the existing offered ADAS functionalities
20 until they gained more on-road experience with the new hardware.
21 So the whole autonomous driving claim didn't come from Tesla. It
22 came from the media misconstruing what was in Tesla's press
23 release.

24 MS. LINDLAND: Well, no, see -- I mean I was on the call with
25 Elon and he said this would be capable -- it would be, not today,

1 but he said it would be capable of level 5 which again wasn't
2 entirely accurate. I wasn't going to take it up with him, but I
3 mean he certainly in the call he said -- were you on that as well?

4 Yeah, in the call he said it was -- this is capable of level 5,
5 and so it wasn't so much the media misconstruing, it was what he
6 said that we were talking about but --

7 MR. MOORE: The press release said it would have the hardware
8 but not the software. That's --

9 MS. LINDLAND: Sometimes Elon doesn't read his press
10 releases.

11 DR. MOLLOY: Well, just to recapture this again, you know, I
12 do think, and I'm grateful for NHTSA for getting the guidelines
13 out. I know some people are working their way through because it
14 is a larger document than a normal person can read which is about
15 three pages, but that is needed, you know. We are somewhat -- it
16 feels like a race, and safety is not a race. You know, safety is
17 something we take and we take careful steps to make sure we don't
18 introduce unintended consequences, and for someone who has had
19 experience in a world where automation is a reality, Member Weener
20 wanted to step in with a comment.

21 MEMBER WEENER: I was just going to comment that talking
22 about unintended consequences, automation in aviation certainly
23 has improved safety, but it's come with its own set of problems,
24 but there are good examples like the ground proximity warning
25 system which when it first came out, and it was basically a

1 legislated system, the system had a lot of false positives, and
2 there's a whole group of pilots who learned which circuit breaker
3 to pull to get rid of that damn system.

4 Now are we perhaps in a situation where we might create the
5 same sort of system or the same sort of situation, I should say.
6 We talk about putting these safety systems in a package and making
7 it available right from the bottom of the line on up, but if we do
8 that without creating the draw, so that people are, in fact,
9 interested in that package, interested in the capabilities in that
10 package, it might be a lot like what happens when I get a new
11 iPhone and I get a bunch of programs that I know nothing about and
12 really have no interest in, and they're just stagnant there.

13 So how do we create that draw that makes people really want
14 to take advantage of the capabilities of these systems?

15 DR. MOLLOY: I'll open that up to the floor here, too,
16 because I think a lot of us are in that process right now.

17 MS. LINDLAND: Well, one of the things -- a friend of mine
18 did a lot of work in the tobacco industry and one of the things
19 when they were looking at semantic text analysis, they found that
20 when they tied the impacted second-hand smoke to children in the
21 household, that's when people changed their behavior. It wasn't
22 for themselves that they were willing to change. It was when
23 their kids were involved, they said this is bad for your children,
24 and I -- and the work that they did showed that that's when people
25 said, oh, okay, I need to pay attention to this because this isn't

1 just about me.

2 And so I think one of the ways that we can do this is to
3 really emphasize that this is good for your family. These systems
4 keep your family safer. It's not the other driver because people
5 aren't worried about the other driver despite the baby on board
6 warnings though you see everywhere. People are concerned about
7 the people in their own vehicle. And so if you say this is
8 keeping your family safer, whether it's your mother-in-law, you
9 know, or your own children or my mom who drives with me all the
10 time, that's where I think we can really change that conversation
11 and really enhance that conversation.

12 MS. McMEEN: I think it's also very much about education and
13 explaining to people what the real benefit is to the technologies
14 that we're putting in the cars and why they would want them in the
15 cars because right now they sound very kind of sexy and kind of
16 cool, things to have, but what is ultimately the benefit to the
17 consumer and why should they have it in their car? And I don't
18 think that connection really has been made yet. We've been really
19 busy talking to them about all these neat things and features, but
20 what is it, and it's just like getting back to your phone, all
21 these really cool things come in but why is it a benefit to you?
22 Why would you want to use it, and I think until we make that
23 connection, it's going to be hard.

24 MS. LINDLAND: I think there are some manufacturers that are
25 doing some work in that. I mean, there's some that have specific

1 ad campaigns that show a vehicle stopping that have, until the
2 seatbelt is buckled, the radio doesn't turn on. So I think there
3 are some things they are doing already to try and convey what this
4 technology does and how it behaves and such. So they're aware of
5 it. It's just getting the message out there more and more.

6 MS. DEATON: I also think, you know, to go back to autonomous
7 a little bit, those types of stories, and I would, you know, think
8 agree with a lot of people here that in general the media has gone
9 too far with the promise of autonomous driving, in part because
10 some systems are called autopilot which to most ears says sit
11 back, relax, enjoy the ride, but also because in a lot of cases,
12 you have, you know, the automotive press and a lot of the press is
13 just made up of early adopters any way. So they get really
14 fascinated by this technology, and then also, too, consumers are
15 very fascinated by this technology.

16 But one of the things I think we can do to get people more
17 interested in the ADAS technology is by using what's in the news
18 with the autonomous vehicle and saying, here are the baby steps
19 where we are today, while being very clear about the limits. But
20 saying, hey, your car can't drive itself, but here's how it's
21 going to help keep your family safe. Here's how it's going to,
22 you know, help reduce your risk of an accident which can help
23 bring down your insurance rates. Here's how it can help you save
24 on gas. Those types of things while, you know, pegging it to
25 something that's already in the news, that already has a high

1 level of consumer interest and then walking it back to the level
2 that consumers can understand and actually purchase and live with
3 today, that I think is the path that people need to be taking.

4 MR. CAMMISA: Yeah, there's a lot of things to this. Rebecca
5 mentioned about how you can protect your family, and you hear
6 people buying things for their teen driver that they wouldn't have
7 bought for themselves. I'm not sure if IIHS has the data or I've
8 seen it, somebody presented, you know, how many people think
9 they're a better than average driver. And so some of these
10 technologies maybe people are not buying because they don't think
11 they need it, but I, you know, anecdotally when you talk to some
12 people who have the systems and they really like them, that
13 probably helps as well sell the system to the next person. Oh, my
14 neighbor has this and he thinks it's the greatest thing and, you
15 know, maybe I'll get that.

16 The advertising, I don't know if any of the insurance
17 companies show any of this on their advertising as well, but the
18 auto companies have some of that. You know, MyCarDoesWhat. AAA
19 promotes it in their activities. So there's a lot of different
20 ways to get the technology out there and show the benefit of it.
21 And I think we are seeing more. I think initially some of the
22 technology we referred to it in the dry terms of collision and
23 imminent braking or AEB and just talked about it, and now when you
24 start seeing those kind of demonstrations with people in the car,
25 with a bouncing ball coming out in front, and people start to see

1 a real situation that they've encountered, and said, oh, wow, that
2 would really help me, then I think you'll start to see that
3 uptake.

4 MS. MULLEN: I'd just say, too, and this may have been the
5 slide that no one saw, but when we asked them what they would want
6 and whether they would want a lot of these features, that slide to
7 me, the data we got back, doesn't reflect a reluctant population.
8 They did want them. It was an overwhelming -- I wouldn't say
9 overwhelming, but it was a majority that did want them. So it
10 makes me want to dig a little deeper as to if they did want it,
11 did they go ahead and buy it? And if they didn't, why not? Just
12 to figure out what problem we're trying to solve. It's not desire
13 in that case. There might be some other reason that they don't
14 have it in the car they're currently driving.

15 DR. MOLLOY: All right. Debbie, you wanted to say something.

16 MS. HERSMAN: I just wanted to throw it out because we've
17 talked a lot about things on the front end, about consumer
18 interest, about some of the anecdotal successes or what things are
19 called. I would just put out there certainly we're here at the
20 NTSB and I think one of the things to think about is how do things
21 actually play out in the real world, and I would use just kind of
22 the example of the VIN numbers not being connected to what
23 technologies potentially are on board. So we have a lot of
24 estimates about lives saved. We have a lot of anecdotal
25 information but I would use absolutely the issue of distraction as

1 a surrogate to talk about how we have a lot of trouble, talking
2 about what we know is a problem, and there was some great data
3 presented today about -- Robert talked about -- I can't remember
4 the company that did the survey for you --

5 MR. GORDON: True Motion.

6 MS. HERSMAN: -- True Motion, 90 plus percent of people that
7 were using these devices. We don't see that in crash reports.
8 It's not -- the data is not showing up, and certainly my
9 experience at the NTSB illuminates exactly why that's the case,
10 because a police officer filling out a crash report at the
11 roadside is not going to know whether cell phone use was involved.
12 If there's a fatality, you have to subpoena records. That takes
13 weeks. Law enforcement jurisdiction doesn't have the time to do
14 that. You have to match up times. There's a lot of reasons why
15 it doesn't happen.

16 But I would say on the flipside with all of this discussion
17 about transportation, the end result is to save lives, and I think
18 we need to understand what's happening in the real world because
19 the fatality numbers are going up on our roadways. They've gone
20 up for, you know, the last 2 years. We're seeing increases that
21 are huge, the biggest increases we've seen in 50 years and, yes,
22 we don't have big penetration of the technology into the fleet,
23 but we do have some.

24 And so what's the end result and are we doing a good job
25 tracking that? And if we're not, what do we need to be doing

1 because you don't have a NTSB investigation into every crash that
2 occurs on the roadside.

3 MS. LINDLAND: But we have 100 percent penetration of these,
4 you know, and --

5 MS. HERSMAN: We do, but data doesn't show --

6 MS. LINDLAND: No, I understand. Right.

7 MS. HERSMAN: -- what we know. What we see in surveys and
8 what we have put out is estimates. We're not seeing that back in
9 the fatality data.

10 MS. LINDLAND: Right. I know, and I think to myself, like
11 how many of us plug in our phones when we're in the car, you know,
12 to keep them constantly charged, and is there a way to know
13 whether the USB was activated at that time, you know, at that
14 point, of crash. And I think this is where we have such
15 challenges to retrofit the regulations or retrofit, you know, how
16 do we find out what really happened in that crash? How do we find
17 out what was really going on at that and exploring those
18 opportunities? What from a manufacturer's standpoint? What can
19 the manufacturers do so you can track that without it being a
20 privacy issue because then that also comes into play as well. But
21 it is. It's really hard to measure.

22 MS. HERSMAN: And, Rebecca, I'm sorry, I took us off on a
23 sidetrack. I actually didn't mean to focus us on the distraction
24 issue. I meant to focus us on the technology issue, just using
25 distraction as an example. Dave opened this morning with showing

1 how many lives could be saved by lane departure warning systems,
2 but what you actually found out from some of the crash data was
3 actually those crashes actually were -- you had more sideswipes,
4 right?

5 MR. ZUBY: That's right.

6 MR. HERSMAN: So I'd say kind of following that string is
7 understanding what we're looking for on the front end with the
8 technology but what we actually get is an outcome and how well
9 we're able to track that in the real world.

10 MR. ZUBY: Right. I mean and I think somebody suggested
11 earlier today that it would be helpful if the event data recorders
12 that are in cars recording whether or not airbags deploy also
13 recorded the states of these driver assistance systems, so that
14 after the crash, you know, if it is investigated in depth, we
15 could learn whether or not the system was engaged or not engaged,
16 and if not engaged, start looking into the characteristics of that
17 system and find out why more people aren't using it.

18 DR. MOLLOY: Great. Just to wrap things up, I was going to
19 go around the room actually and check to see if anyone had some
20 takeaways that they got today from today's meeting.

21 And I'll start it off myself to tell you the truth, the lead
22 time for these vehicles equipped with technology into an existing
23 fleet of vehicles, that was a very illuminating slide. So I thank
24 you for putting that up because we are in an uphill battle to
25 introduce new technology and have the effects affect a number

1 today when in reality penetration won't be for another decade or
2 so.

3 You know, that is difficult. You know, so that's one thing
4 I've taken away. It makes me think about again one of the things
5 I've never done, rarely done. I think we've done it once or
6 twice, is called for retrofit technology. You know, some of this
7 is very hard to do. Some of the V-to-V technology might be easy
8 to do, to get basic systems into cars, you know. So thinking
9 about that as a faster way of penetrating things.

10 And one of the things is, you know, people need to know the
11 information about these systems and we've had forward collision
12 avoidance systems on our most wanted list, and we do a good job of
13 just saying why it's important, but I think today, you know, after
14 hearing everyone and I've talked to some of my people who handle
15 our website, that we're going to try and develop a webpage that
16 does do a better job of linking our reports that have recommended
17 this technology, of talking about the technology and what it does
18 and also the limitations of the technology.

19 Again, a lot of people have that information there but it's
20 good to have it as many places as you can and we bring a unique
21 experience. You know, we're not doing tested vehicles in
22 controlled environments. We're actually looking at what happened
23 on the road. You know, one of the things we learned is data
24 collection isn't necessarily great for these technologies. So
25 understanding why it worked or didn't work, is often difficult.

1 So trying to get that message out, too. So that's a couple of
2 things I learned.

3 If I could just kind of start working around the room this
4 way, if there's anything.

5 MS. SINCLAIR: To me it would be how everyone in this room is
6 putting an effort forward to educate the consumer on these
7 products. I was very much interested in the little bits and
8 pieces that everyone had to contribute to that.

9 DR. MOLLOY: Great. Thanks.

10 MR. ALLEN: I was pretty -- I thought it was pretty
11 remarkable, the statistic that showed just how long it will take
12 for the entire fleet, when you talk about fleet turnover, to have
13 these systems in place. We're talking about 20, 40 for the most,
14 not advanced in terms of technology, but how far down the road we
15 are to integrating these things into vehicles. And I would just
16 encourage everyone, the industry, consumer advocates, regulators,
17 to just be mindful of how, if fleet turnover is our goal, be
18 holistic in your thought about what maximizes fleet turnover and
19 what minimizes fleet turnover. We don't talk enough about how,
20 you know, the universe of regulatory approach to all this stuff
21 can really help fleet turnover or how it could potentially hinder
22 fleet turnover if we're not careful.

23 So just thinking about how important it is for, you know, we
24 need to realize these systems in as many vehicles as possible.
25 Again, just again in thinking how fleet turnover is a goal to

1 strive for, just be cognizant of what inhibits that and what
2 potentially that we haven't thought about or haven't discussed, it
3 came up a little bit, could actually spur that.

4 MS. LINDLAND: Yeah. I think it was really interesting to
5 see all the different surveys because there was such a sense of
6 consistency across them, and I thought it was really interesting
7 that there's not a lot of -- I think somebody mentioned this --
8 there's not a lot of dissention like we know that this is a good
9 thing, you know, this is something that we need, that everyone is
10 in favor of. And so how do we all work together.

11 And two things that I would like to continue the conversation
12 with is globalization. What does this look like on a global scale
13 when we talked about economy to scale? For the manufacturers, if
14 all of the vehicles on a global basis requires this kind of
15 technology, and it's consistent across the board so they don't
16 have to homogenize each vehicle for each region, that actually
17 could spur adoption as well and lower the cost which could spur
18 adoption.

19 And then infrastructure, you know, you drive through a
20 construction zone with faded lines, the car will not know which
21 line to look at to keep it in. And, you know, a bad pothole
22 cannot only break your car, it can break the systems as well, and
23 so I think we have to look, not making any suggestions on how we
24 pay for that or what that looks like, but if we don't clean up our
25 infrastructure, these systems are never going to work right.

1 DR. MOLLOY: Thanks.

2 MS. DEATON: I think the better infrastructure, for anybody
3 who's ever been directed to drive across, you know, a double
4 yellow line in a construction zone or that sort of thing and had
5 to wrestle with the minivan to actually do it --

6 MS. LINDLAND: At 120 miles an hour.

7 MS. DEATON: -- at 120 miles an hour, totally somebody else,
8 but I think the main takeaway for me, which I'm kind of surprised
9 that I hadn't noticed this before, was just the critical need we
10 have for standardization of at least the names of these systems.
11 I understand that automakers want to have a brand and system, and
12 that is fine, but we at least, if we're going to educate
13 consumers, and get consumers to buy into these technologies, but
14 everyone is different for every single automaker, that's going to
15 be a very tough hill to climb.

16 So getting some sort of standardization, not only of the name
17 but also of this is what this type of system should do, I think
18 would go a long way in educating people and make these more
19 widespread and more trusted.

20 DR. MOLLOY: Great. Thanks.

21 MS. McMEEN: I'll echo that, too, in the sense that there is
22 so much complexity not only with the names but also within the
23 technologies themselves from manufacturer to manufacturer and how
24 we are looking to the consumer to figure that out. And again I
25 really feel that education and how we do it at very many different

1 touch points for the consumer is going to be really important to
2 make this being successful, and ultimately what we want to do is
3 we want to save lives, and that's what we're looking to do. So we
4 have to think about that.

5 MS. DANG: For me, it's very encouraging to see that the
6 entire community is embracing ADAS technologies because of the
7 significant safety improvement potential, but I agree with you
8 guys that, you know, standardization of the terminology for these
9 technologies is key for consumer understanding and acceptance as
10 well, and I think Susan and I for the past few years, we've been
11 struggling to find a way to communicate that to consumers and with
12 so many different terminologies, take ESC for example, you know,
13 it's standard equipment on all vehicles and most consumers when we
14 conducted surveys, they are not familiar with ESC. They thought
15 that ABS was the latest technologies on their vehicles. So I
16 think that we need to, as a community, work together to find -- I
17 know having standardized terminology is probably not realistic,
18 but we need to find a way to somehow get the message out there and
19 try to, you know, educate consumers about these technologies and
20 their understanding.

21 DR. MOLLOY: Great.

22 DR. SULLIVAN: I was particularly encouraged to hear so many
23 of us have focused on ensuring that the drivers better understand
24 how these systems work. I think that is going to help the
25 potential problem with misusing these systems in a lot of

1 situations. It's also going to encourage drivers to buy these
2 systems and maybe use them in appropriate situations.

3 I'm also actually happy to hear that NHTSA is initiating
4 efforts to establish NCAP ratings on many of these systems. I
5 think that will be a very good development and help manufacturers
6 of these systems converge on what a good solution should look
7 like.

8 MR. EPSTEIN: Jodi.

9 MS. OLSHEVSKI: Sure. I think what I've learned is similar
10 to what you all have said, in that I've been struck by the
11 complexity. We've been trying to educate, you know, for a number
12 of years on these technologies, and it's nice to know that the
13 challenges we faced are very similar around language and all the
14 rest of it.

15 And I think it's also been really informative as we are
16 working with AARP like right now, we're working on the curriculum
17 that's going to be piloted in the next few weeks. This dialogue
18 has been extremely helpful because we have an immediate need to
19 figure out how do we take some of this. So I've gleaned a ton
20 that I think we'll be able to try out and see in action and kind
21 of see where it goes.

22 MR. RAKOW: Yes, just two points I want to make, sort of
23 building off of Jodi. In regards to education, I'm sort of seeing
24 two tracks come about. Susan, some of your remarks actually
25 resonated with me because I feel like there's a need for just the

1 initial sort of upfront awareness in education and, Robert, some
2 of your comments actually resonated with me earlier, too. It has
3 to be also more about just feeling good, right.

4 So I think a commitment that I have in sort of approaching
5 education on these maybe two different tracks is once we get
6 beyond sort of the education and awareness which I think is a huge
7 hurdle, but I'm also committed to understanding how we can provide
8 the most relevant education at the right time to make sure that
9 individuals are adapting and we actually are saving lives.

10 And one thing that we didn't mention today, but who knows,
11 may play a role in this, is some of the connected car and
12 telematics devices that will help better track these things and
13 maybe if the scoring does become standardized, maybe that will
14 provide a way for us to provide that actual education that we can
15 really track to make sure that individuals are becoming safer
16 drivers.

17 And maybe one other comment that I have, I had the pleasure
18 of connecting with Alex at one of the breaks, and a lot of our
19 work is just so similar and I think one of the things I'm seeing
20 across the industry is that's very consistent and it just makes
21 perfect sense for me to connect with you and really figure out how
22 we can sort of combine our intellect and resources to, you know,
23 help serve a greater good.

24 MR. GORDON: Thank you. They shut me off from earlier
25 comments maybe with the car running over the kittens video.

1 It's very, very encouraging to hear the strong commitment
2 today to swift adoption of some of these safety technologies and
3 insurance companies that we represent strongly support those
4 efforts.

5 I do though want to circle back to I think a very important
6 comment that Deborah was I think getting at, that we've made huge
7 advances already over the last decade and yet accident rates and
8 death rates are still going up. And so until we have truly
9 automated vehicles, as long as people are still driving distracted
10 and playing Pokemon Go and watching Netflix, as long as people are
11 still driving drunk which has been a long-term problem, as long as
12 people are increasingly driving drugged, which is a growing
13 problem, where we desperately need standards and solutions, again
14 technology may be a long-term solution, but at this point, it's
15 not the only answer. We need better laws. We need better
16 regulations. We need better education as Kyle mentioned.

17 You know, we're going through all of the state laws, an
18 amazing number that has big gaps on distracted driving because
19 they're originally done for cell phone use. Some of them like in
20 Florida, you can't pull somebody over for using an iPhone while
21 driving as being a primary offense, only if you pull them over for
22 something else. So there are some major gaps.

23 So we need to make sure we focus on the regulations and
24 education as well as the technology. That's the long-term
25 solution.

1 MR. EPSTEIN: Mike.

2 MR. CAMMISA: I thought Deborah made a good comment at the
3 end, too, about the data and trying to determine how effective
4 these systems are being. I mean this is what innovation looks
5 like. We have different systems out there, new technologies, it's
6 being refined. There's different implementations. There's
7 different sensors that are on vehicles and different concepts of
8 how to warn the driver and it's good that we have this variety out
9 there as we innovate and see what works best.

10 But before we coalesce around something as a standard, we
11 need to understand what the best option is, and I think right now,
12 you know, we're still gathering that data. We see surveys like
13 IIHS has done. NHTSA is doing some work on that as well. So
14 we're learning more about how these systems work in the real
15 world.

16 I was encouraged a lot by the fact that it was mentioned
17 that, you know, education is a gap and yet that's also
18 complimented by the fact that University of Iowa mentioned that
19 they found their technology demonstrations study raised the
20 knowledge of how the system worked, the willingness to use and
21 trust in the system. So we see what the problem is and we do have
22 an answer for it. So I think that's good, too.

23 It is a little bit complicated now because the systems are
24 different, and we just have to make sure we do the best job we can
25 to educate the consumer how the system that they have operates.

1 MR. EPSTEIN: Thank you, Mike. Chris.

2 MS. MULLEN: I'll just echo a couple of comments that were
3 made earlier about leaving on an encouraging tone that there was -
4 - consistency in the data that was presented and the safety
5 promise of the technology. And so as a safety community, we know
6 it, we know that there is promise for the safety and we want this
7 for consumers, and to the large degree, they know it and want it.
8 So then we can focus on how do we encourage it? How do we enable
9 it? What are those gaps to getting these things to market and
10 getting them in the hands of consumers quicker than what we're
11 projecting now. So it's encouraging that that focus can happen
12 after leave.

13 MR. EPSTEIN: Thank you.

14 MR. MOORE: It's getting hard to come up with something that
15 hasn't been said. So I'm very pleased that there were general
16 consistency in terms of our opinion about us needing to accelerate
17 fitment of these technologies but I think it also makes me very
18 nervous because I think it underscores the need that we continue
19 to study and ask the hard questions about how these systems are
20 functioning in the real world. And, as Robert pointed out
21 earlier, you know, we were all very enthused about ABS but those
22 benefits never materialized.

23 And as Mike said, we need to study and understand these
24 systems and how they're functioning in the real world. What are
25 the better -- what is the best mechanism for warning about certain

1 perils and to that end, we need better data, better information
2 from the manufacturers about what systems are fitted to what
3 vehicles at the VIN level.

4 MR. BRANNON: I'll echo your comment that it's becoming
5 increasingly difficult to come up with a new point. I wanted to
6 reiterate that the last point that you made, we're all doing
7 testing of these systems, and I think we've all found great
8 variability by manufacturer leading us towards ultimately what
9 will be highly efficient and effective systems, but if we don't
10 know the specific vehicle that's outfitted with that, we can lead
11 it all the way to the crash data to show whether or not it's
12 actually impacting the market. So there's an opportunity there.

13 MR. ZUBY: So I think that a lot of the presentations today,
14 you know, actually show good promise, that we shouldn't be too
15 depressed. The technology is out there. It is effective. It is
16 preventing crashes, and it seems that consumers want it.

17 And its presence is growing in the fleet. It's not, you
18 know, none the graphs that Matt showed, had the technology
19 decreasing in available among new cars. So I think the benefits
20 will accrue over time and one of the things to keep in mind is
21 that the systems that automakers fit in the future may have bigger
22 benefits than the systems that we're seeing today. So there may
23 be an acceleration of the benefit even if it takes a long time for
24 the technology to penetrate the fleet.

25 I'm going to end on a comment that takes us back to old

1 school vehicle safety. The graphs that Matt showed have
2 implication for the changes in the vehicle fleet that have
3 improved survivability of crashes. Cars on the market today are
4 much, much better at being able to protect people from injuries
5 and deaths in crashes, but a lot of the improvements still are not
6 widely available through the fleet. They're commonplace among the
7 new cars, but a lot of the benefits that are coming associated
8 with new crash tests that NHTSA has done, new crash tests that
9 we've pushed into the market, are still to come in the future and
10 so if we don't screw up, we should see the trends start going back
11 down as people are better able to survive crashes in the future.

12 MR. EPSTEIN: Thank you all. Any remarks, Deb?

13 MS. TROMBLEY: They're actually going to be short because I
14 know we have some remarks from, I'd like to invite Debbie Hersman,
15 President and CEO of the National Safety Council, has a few
16 closing remarks, and then the Honorable Dr. Earl Weener, a Member
17 of the National Transportation Safety Board will follow with some
18 closing remarks.

19 MS. HERSMAN: So this is all professional for us because we
20 all have some responsibility in transportation safety and
21 particularly for many of you all in motor vehicle safety
22 operations but it's also personal for us. We're all drivers. We
23 all have family on the road, and I just shared with Member Weener
24 that my oldest son, Taylor, got his learner's permit this week,
25 and so it gets closer to home when we start to talk about the

1 potential of lifesaving technology when we know that motor vehicle
2 crashes are the leading cause of death for certain groups, in
3 particular, our young people.

4 And so these are very real life and death issues that we're
5 talking about, and I know we all share in that goal of getting to
6 zero particularly when it comes to our family, but that means
7 being able to get to zero for everyone across the nation.

8 I'd like to first thank Member Weener and the NTSB, thank you
9 for your leadership. Thank you for hosting this and thank you for
10 your team. I know Amy Terrone and Nicholas Worrell did a lot of
11 heavy lifting for this, and so along with everyone on the NTSB
12 team, thank you all, and everyone on the NSC team, thank you all.
13 This has been a great partnership and collaboration to be able to
14 have our teams work together.

15 Deb, thank you for moderating and, Tom Bukowski, who's taking
16 a picture right now, I know for the people who are sitting here in
17 this room, it actually may feel like you're looking out and there
18 is not a full crowd of cheering observers listening to what you
19 have to say, but when we talk about technology, social media is
20 one of those technologies that we pay attention to and we monitor
21 and we are trending on Twitter. We are one of the top 10 things,
22 if you look over on the left side, and we have had over 3 million
23 impressions reaching over 200,000 people when Tom checked about
24 two-thirds of the way through today. So being able to stream this
25 and being able to share some of the work that you all are doing

1 actually results in a lot more people being able to hear about it
2 than the folks who are in this room. So that's something pretty
3 cool.

4 We've learned a lot from all of you today, certainly a lot
5 that we want to take back home with us and think about, how we put
6 that into next steps and next actions but this morning, I started
7 with a quote from Henry Ford, from 94 years ago, but this
8 afternoon I'd like to close with a quote from Alan Mulally,
9 someone that Dr. Weener had the opportunity to work with through
10 his career at Boeing, but then Alan went to Ford and ran Ford. He
11 often said the data will set you free, and we learned a lot about
12 the data today. Much of it is trending in the wrong direction and
13 so when we look at overall fatalities, that's something that we
14 certainly want to pay attention to. Higher fatalities of
15 vulnerable populations, like pedestrians and cyclists and we know
16 that when it comes to the data that the technologies are changing,
17 they're rapidly evolving, there are more of them but in injury
18 prevention, we go where the data tell us to go.

19 But what happens as we heard today, some of that data can be
20 a moving target, and we heard lots of things where we were in flow
21 but also some contradictory things as well. But the conflicting
22 data really gives us a lot of room for creativity and solutions,
23 and how we turn information into innovation. We love that
24 technology.

25 And it starts with you all, the people who are right here in

1 this room. That is really how we take those promising
2 technologies that you all have identified have no uniform
3 nomenclature. We have performance expectations that are based on
4 manufacturer preferences rather than standard systems
5 expectations. We have different deadlines for rolling out some of
6 the same technologies.

7 Many consumers have said they're ready for what comes next,
8 but we all define next differently, and so we have some very
9 polarizing approaches to driving in the digital age. Some drivers
10 over rely on the technology in their vehicles while others are so
11 confused that they simply turn it off, and don't understand the
12 potentially lifesaving benefits.

13 Today was about articulating those issues, about recognizing
14 that even in our differences, there are strengths, and that the
15 people in this room will be able to solve the challenges and
16 embrace the opportunities that are coming next.

17 This morning I talked about a revolution, but it really is an
18 evolution. Our goal is zero but we won't get to zero unless we go
19 one life at a time, one new car sale at a time, one consumer at a
20 time.

21 So we're assembling the Road to Zero Coalition of individuals
22 and organizations committed to eliminating deaths in the next 30
23 years, in our lifetime, and we'd like to invite everyone here to
24 join us. It's an open coalition. So everyone's invited to join
25 and media, you all are welcome to be adjunct if you don't want to

1 participate, but if you're interested in more information about
2 that, please send an email to roadtozero@nsc.org.

3 Zero isn't impossible. It just hasn't been done yet. The
4 trick is creating appropriate synergy between the human being, the
5 machine and the environment. So to do that, technology needs to
6 have rigorous design and testing, drivers need better education on
7 the technologies and we need to continuously monitor the outcomes
8 to ensure that our excitement about the technology becomes a
9 reality. Thank you so much, and I will turn it over to my
10 colleague, Dr. Weener.

11 MEMBER WEENER: Well, thank you for the participation of the
12 National Safety Council. I think this has been a great session.
13 You said it was personal, and it became really personal starting
14 on Sunday when I found myself in Desert Hot Springs, California,
15 at the bus/truck collision, a rear ending of a bus into the back
16 of a semi, a situation that an autonomous emergency braking would
17 have made a considerable difference. Thirteen fatalities. So it
18 became really a visceral and emotional sort of looking forward to
19 today.

20 So we've taken part in an important conversation between
21 different safety stakeholders. We've shared perspectives on
22 various ways industry, academia, government and media are
23 promotion and educating drivers about driver-assist technologies.

24 We've also learned about ways to do even more to educate and
25 encourage the public to use these technologies through incentives

1 to consumers, consistent safety messaging and the creative
2 promotion of crash avoidance technology use.

3 On behalf of the National Transportation Safety Board, I
4 thank every one of our presenters for taking the time to share
5 their research and discuss what their organizations are doing in
6 this area. And I think our hard-working NTSB team and our
7 colleagues at the National Safety Council for putting this
8 educational event together.

9 As you know, the NTSB is committed to promoting
10 transportation safety. That's because we've seen firsthand the
11 devastation caused by traffic crashes, many of which could have
12 been prevented through the proper use of existing crash avoidance
13 technology. Traffic deaths represent a complex challenge and we
14 must use every tool available, including education, legislation,
15 enforcement, advocacy and technology in our ongoing effort to move
16 towards our goal of zero traffic related fatalities.

17 We hope you take what you have learned here today with and
18 share it. Thank you for all your commitment to traffic safety,
19 and that concludes our event. Thank you very much.

20 (Whereupon, at 5:03 p.m., the forum was adjourned.)
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CERTIFICATE

This is to certify that the attached proceeding before the

NATIONAL TRANSPORTATION SAFETY BOARD

IN THE MATTER OF: REACHING ZERO CRASHES: A DIALOGUE
ON THE ROLE OF ADVANCED DRIVER
ASSISTANCE SYSTEM

PLACE: Washington, D.C.

DATE: October 27, 2016

was held according to the record, and that this is the original,
complete, true and accurate transcript which has been compared to
the recording accomplished at the hearing.

Timothy J. Atkinson, Jr.
Official Reporter