

What Happens When the Driver is the Robot? Automated Vehicles, Human Behavior, and Safety

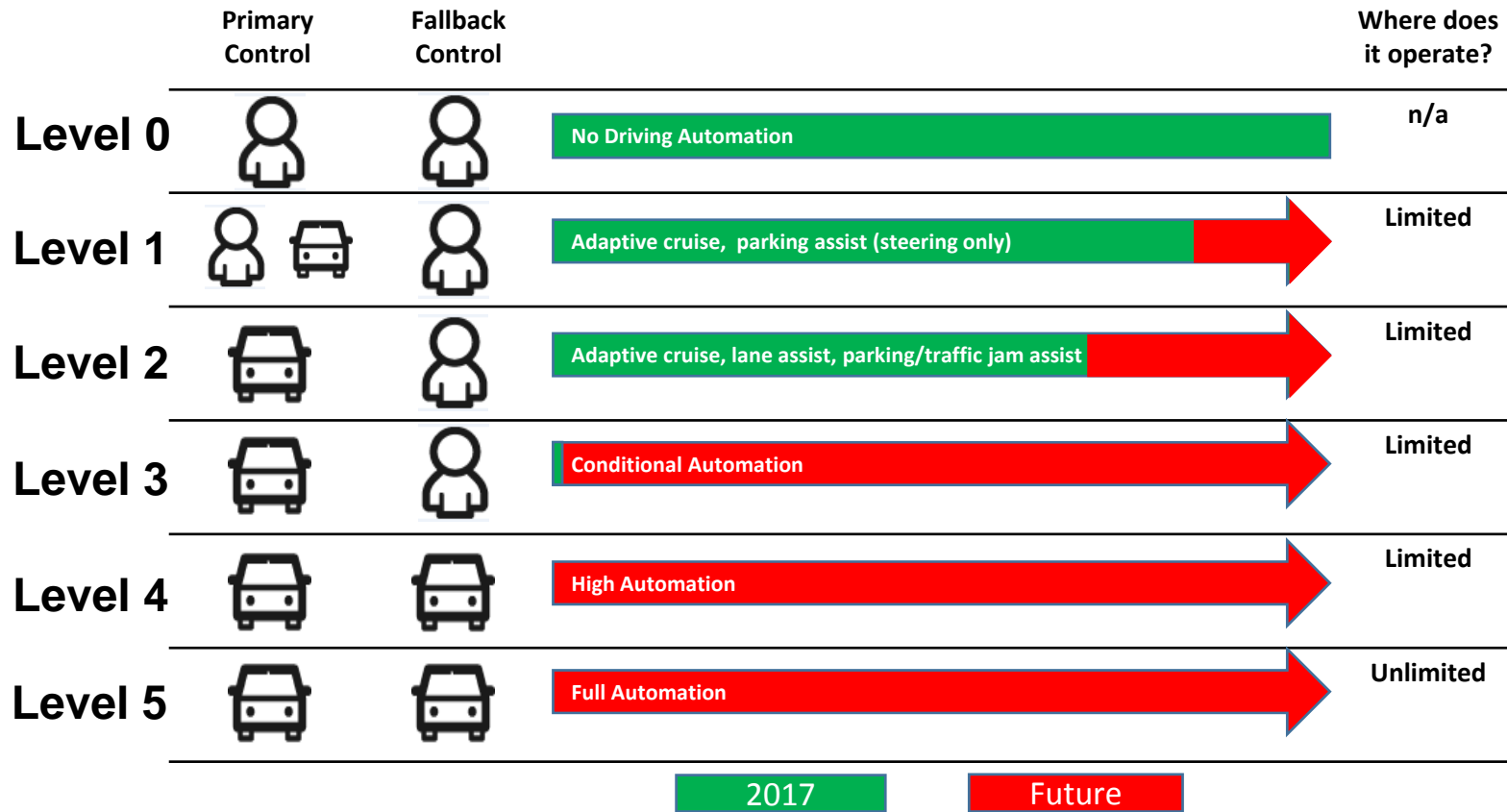
2017 Lifesavers National Conference

Chris Mullen
Director, Technology Research





SAE Levels of Automation

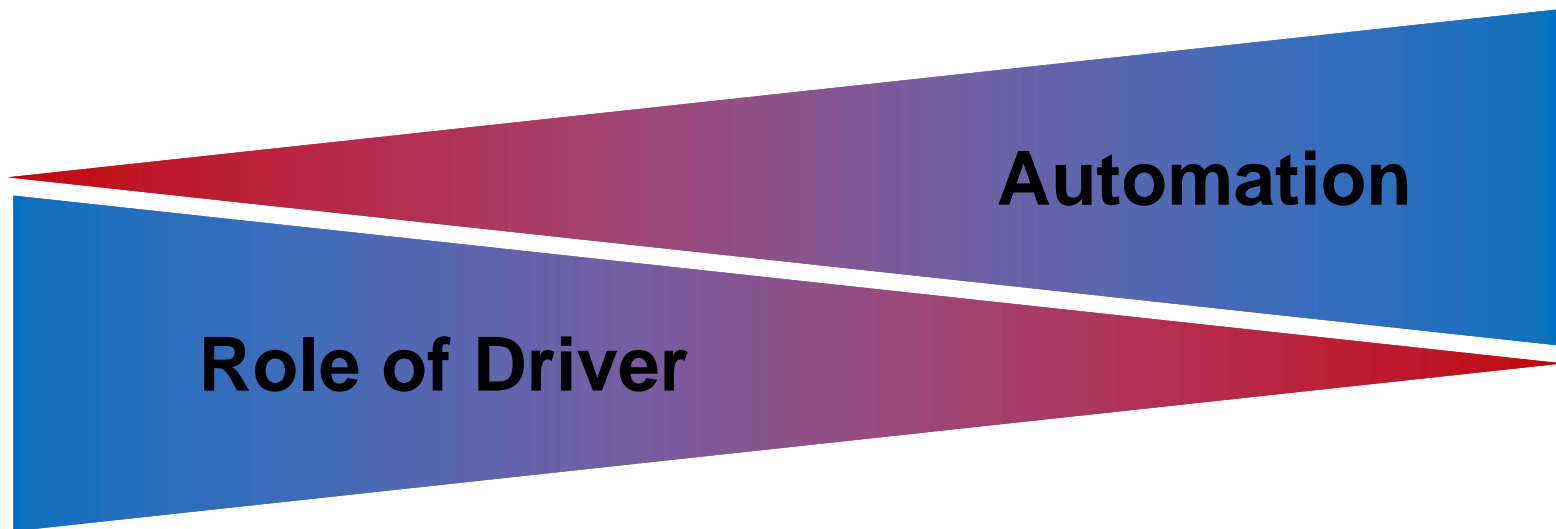


“We are either in the tide aiding and assisting in the improvements that are certain to come, or we are obstructionists to the things that are bound to come. Nothing in this world is permanent but change; change is constant, eternal, and everlasting, and those of us who are not ready and willing to adapt ourselves to changing conditions must be left behind.”

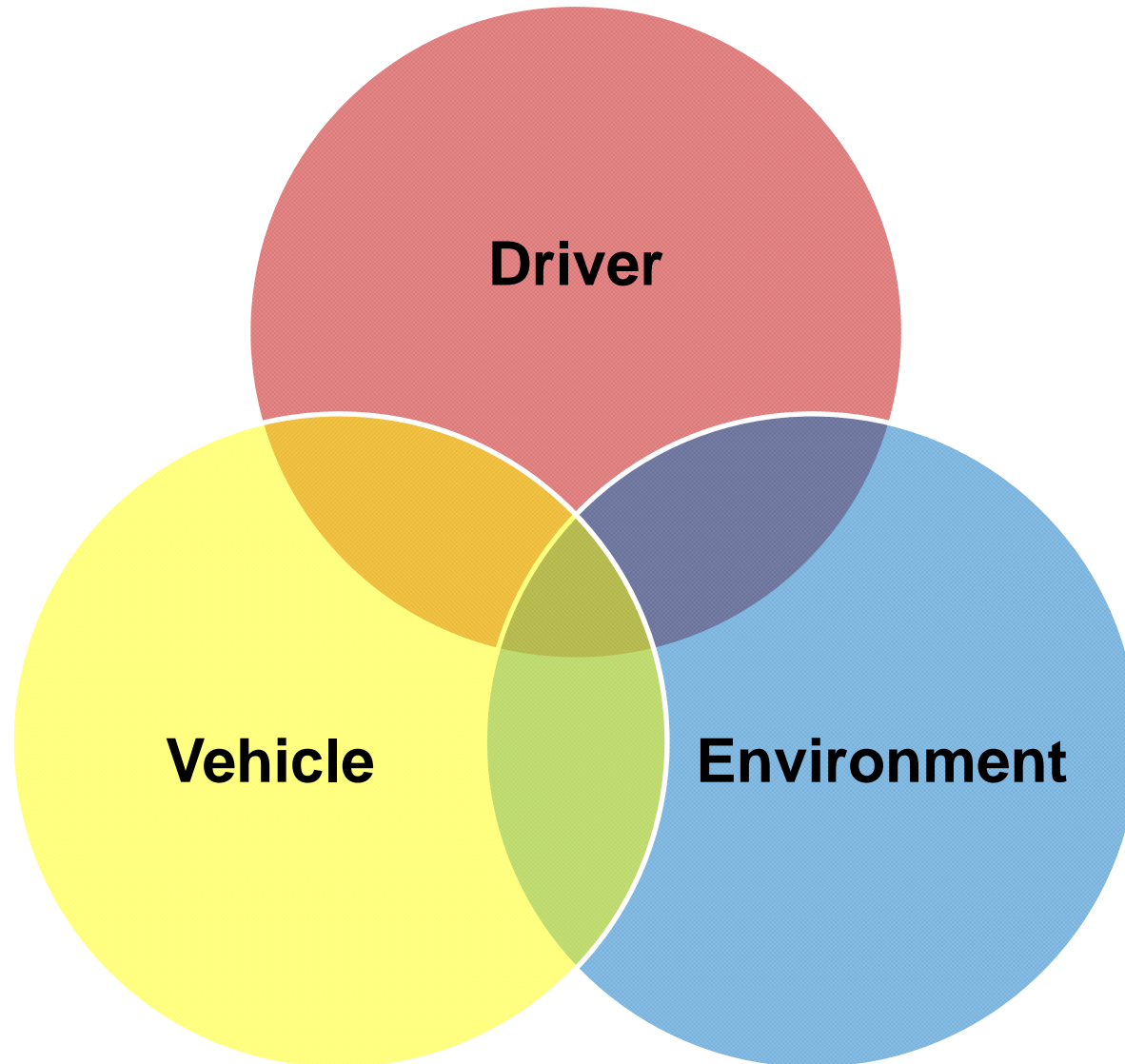
- G.J. Mecherle
founder of State Farm

As vehicles become more automated, how does the driver's role change?

The Theoretical Relationship



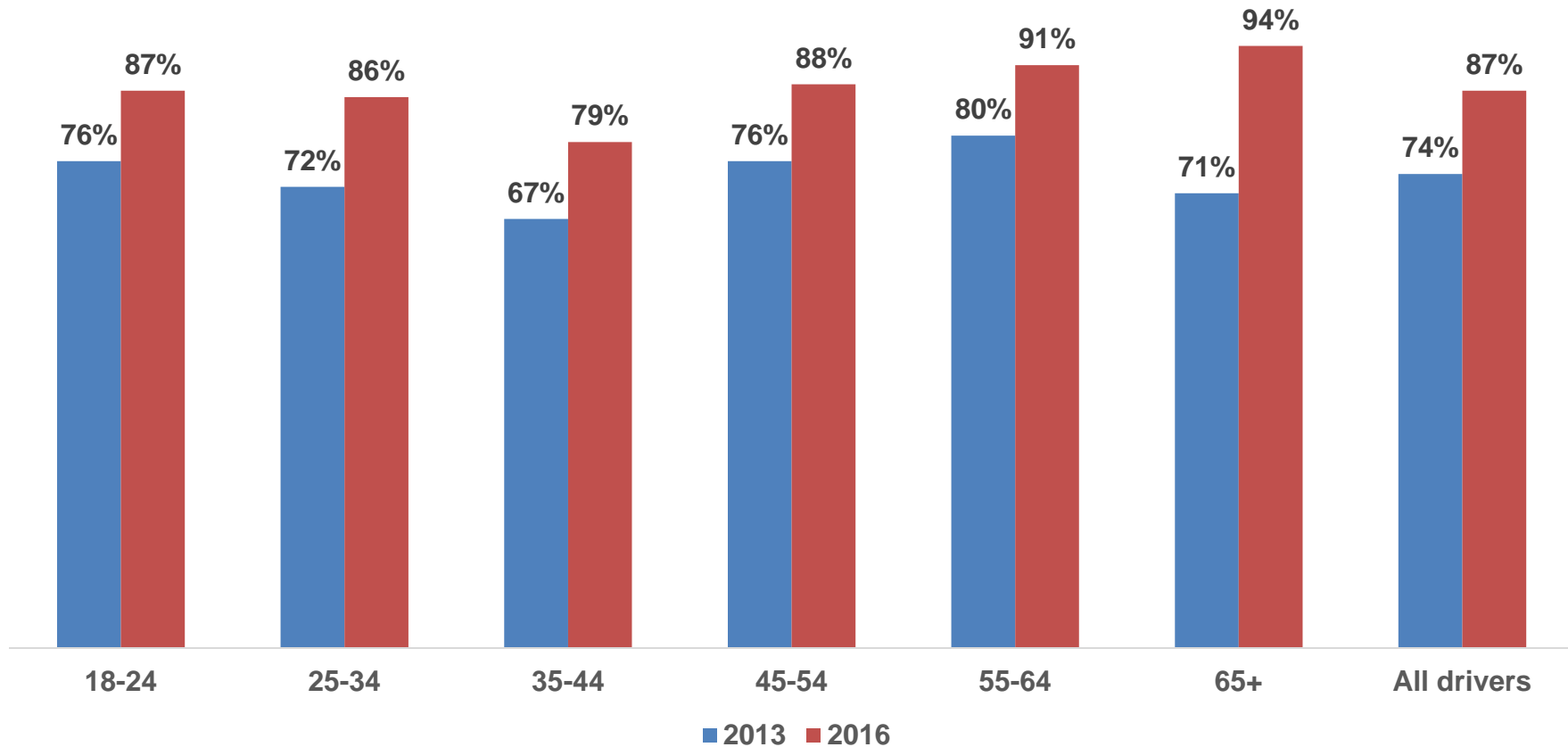
All Things Considered



What do drivers know?

Awareness of Autonomous Vehicles

“Prior to reading this description, had you heard of autonomous/self-driving vehicles?”



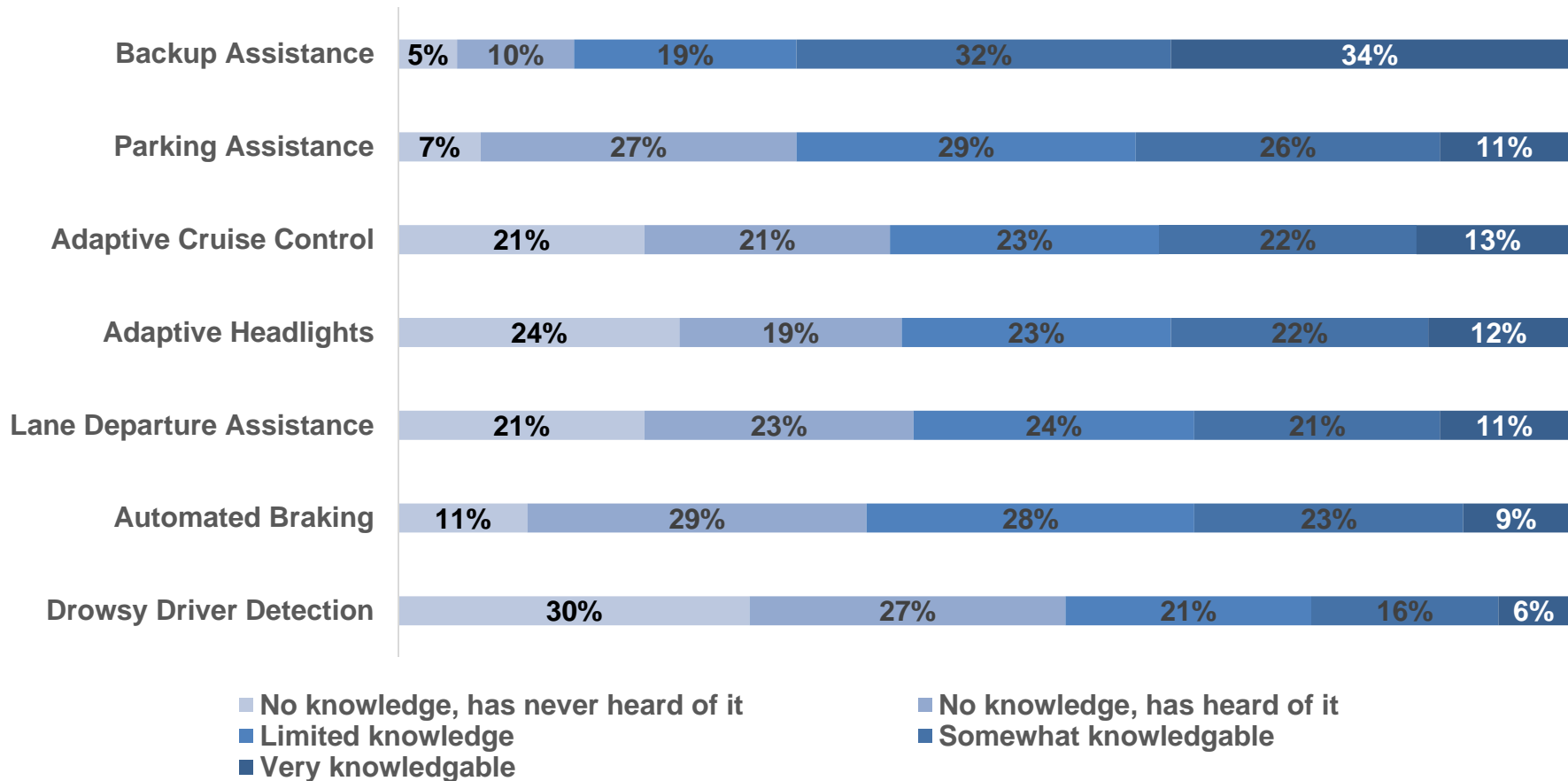
Source: 2013 & 2016 Autonomous Vehicles Surveys, State Farm

n=951; 948



Awareness of Specific Technologies

“Please indicate your knowledge with regards to each of the following automated vehicle technologies.”



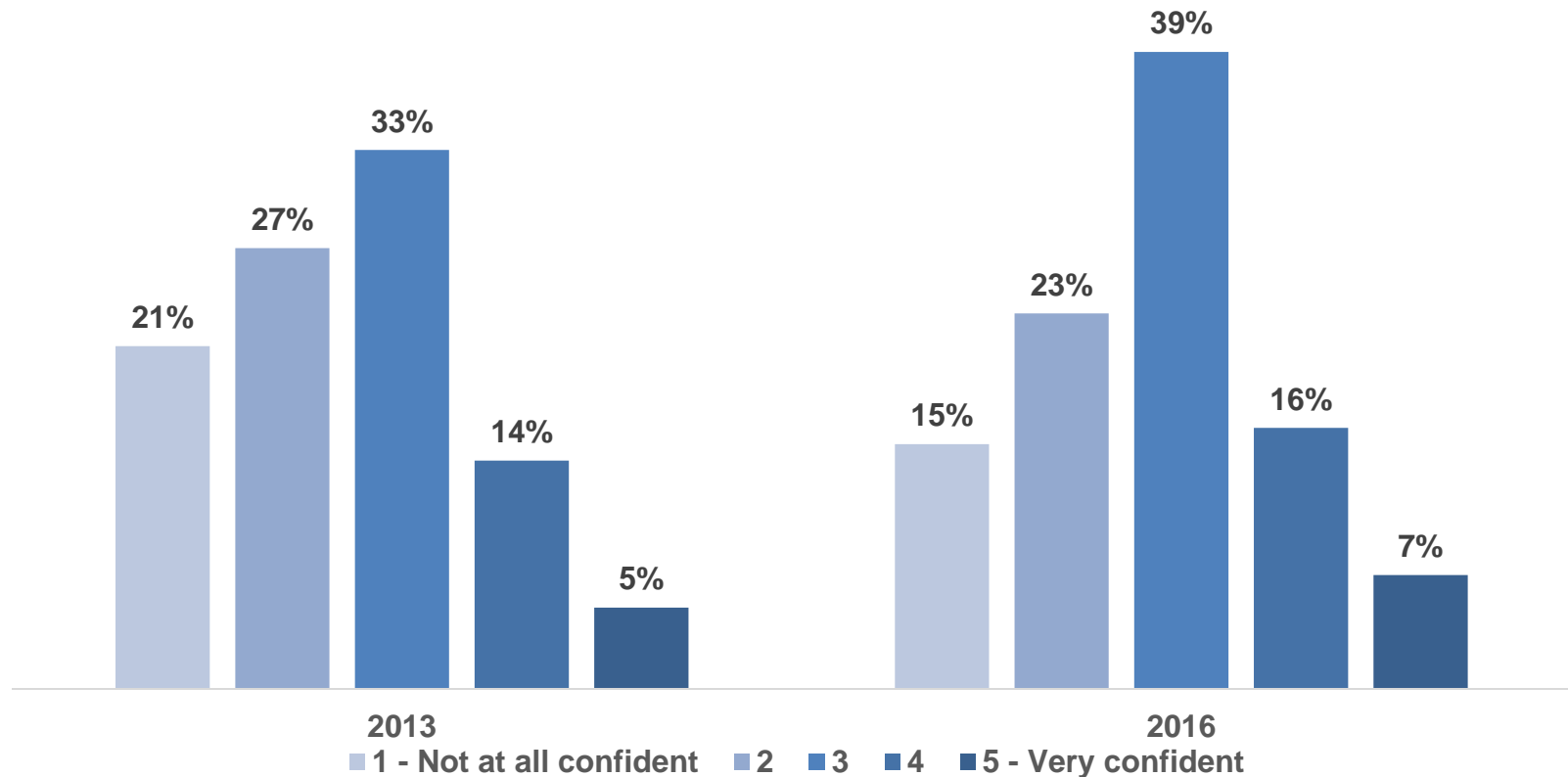
Source: 2016 Autonomous Vehicles Survey, State Farm

n=961



Confidence in Autonomous Vehicles

“How confident are you in the ability of a fully autonomous vehicle to safely navigate from one location to another without any human involvement?”

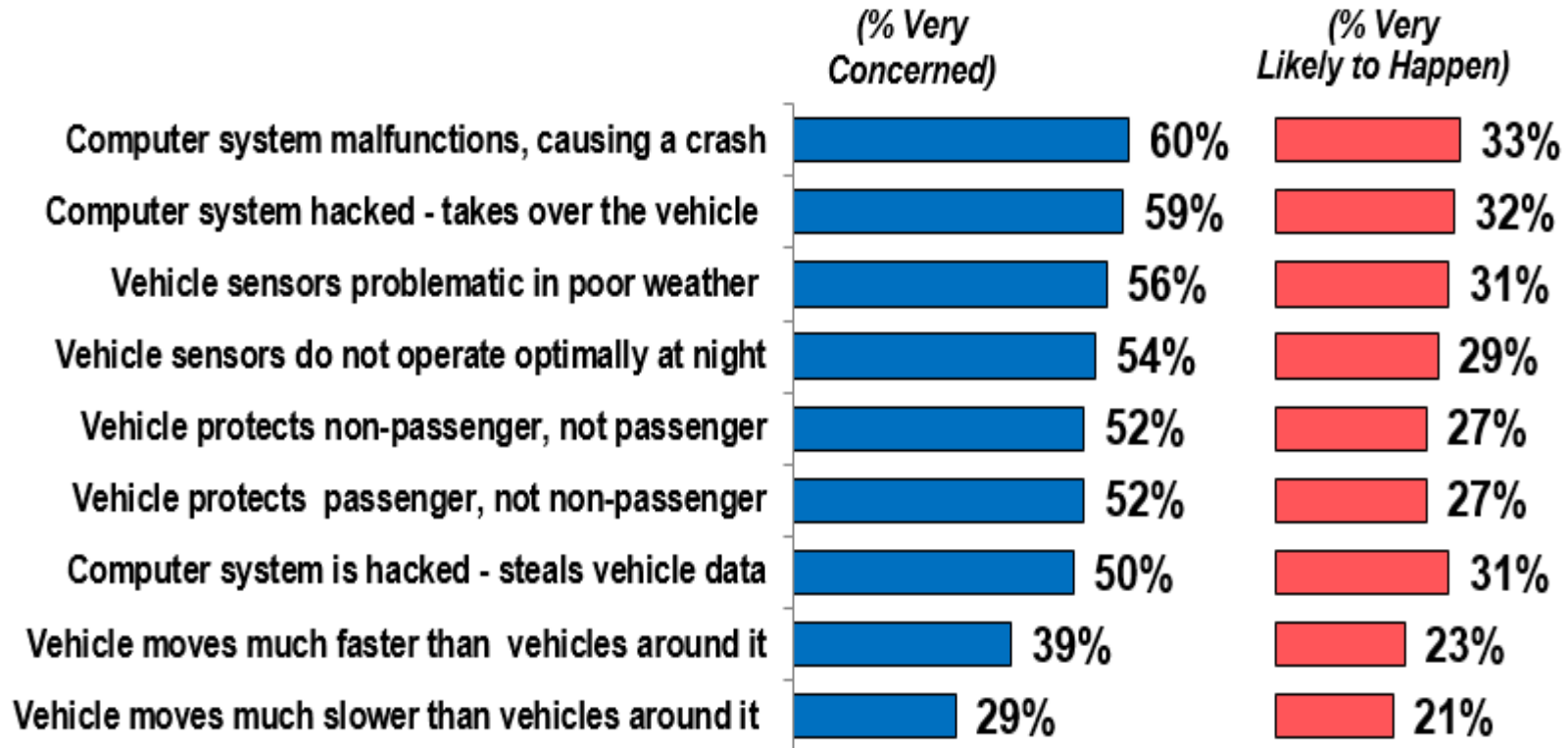


Source: 2013 & 2016 Autonomous Vehicles Surveys, State Farm

n=971; 961



Malfunction Concerns



Source: 2016 Public Perceptions of Driverless Cars Survey, Bloomberg & State Farm

n=1,005



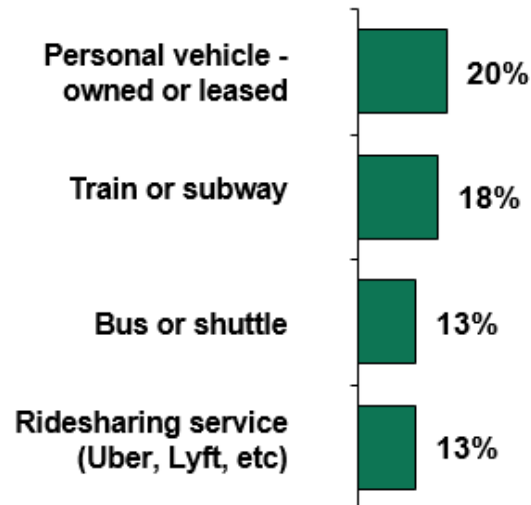
Autonomous Shared Mobility

There is greater comfort with autonomous vehicles that are personally owned (compared to other types of autonomous vehicles)

But only 20% are very comfortable with the idea

Comfort by Autonomous Vehicle

Type (% 5 on a 5 pt Comfort Scale, where 5=Very Comfortable)

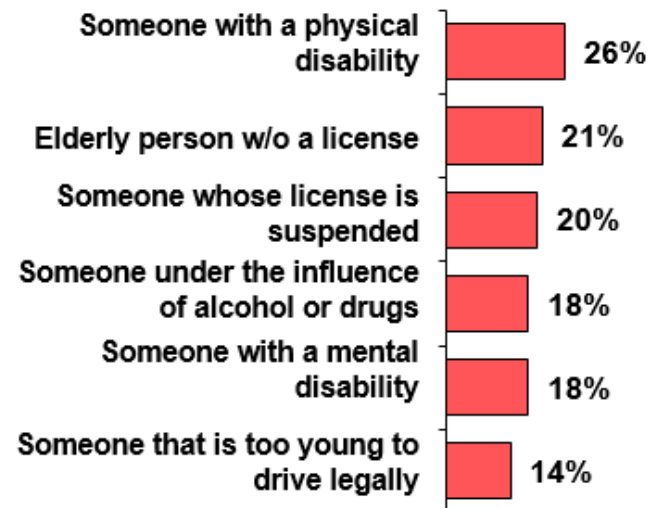


Few would be comfortable sending children in an autonomous/self driving vehicle

Respondents are a little more comfortable having those with physical disabilities or the elderly ride in an autonomous vehicle

Comfort in Having Non-Drivers Ride in Autonomous Vehicles

(% 5 on a 5 pt Comfort Scale, where 5=Very Comfortable)



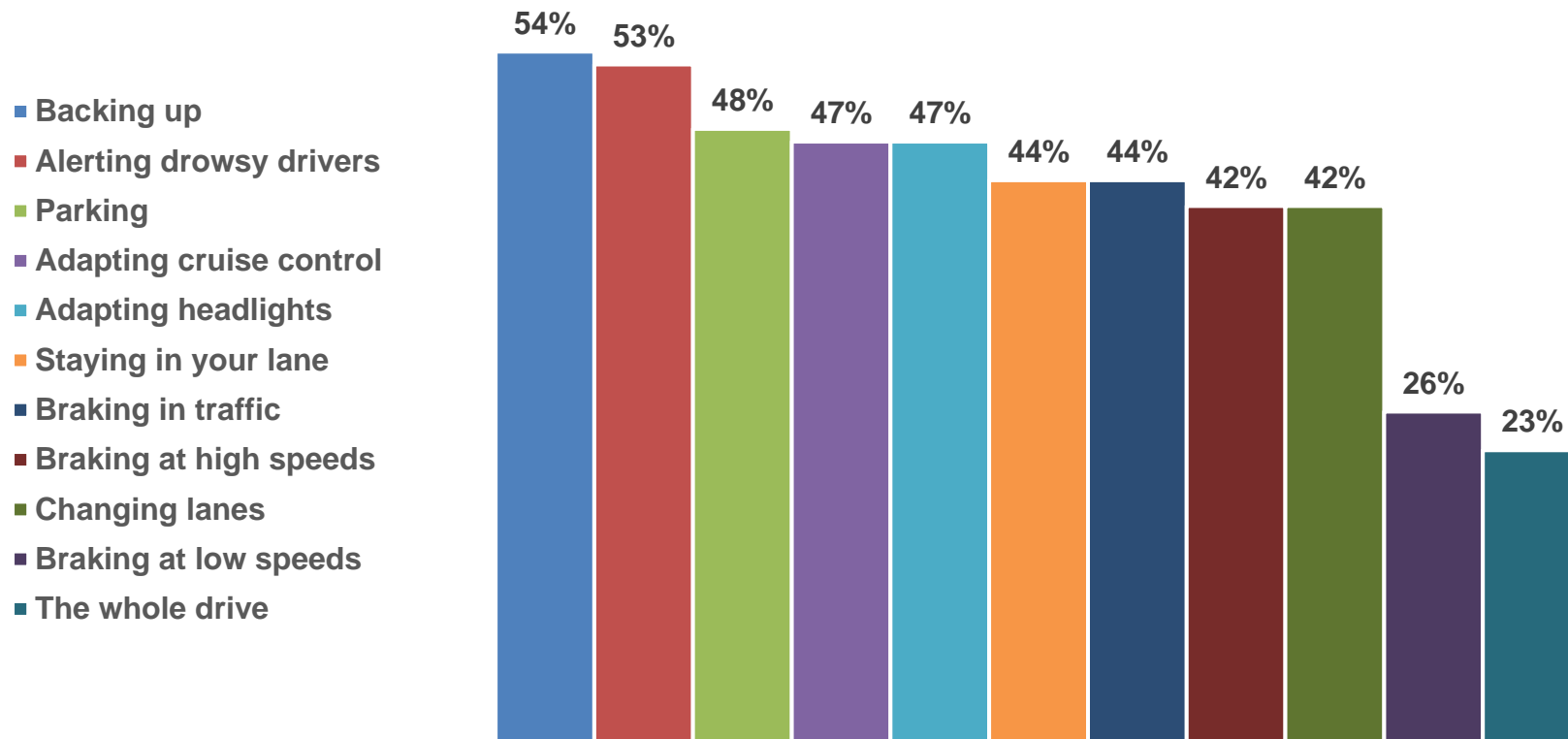
Source: 2016 Public Perceptions of Driverless Cars Survey, Bloomberg & State Farm

n=1,005

What do drivers want?

Desired Functionality

“If you were to drive a vehicle that had some automated, self-driving technology in it, which driving tasks/maneuvers would you like your vehicle to automatically assist with?”



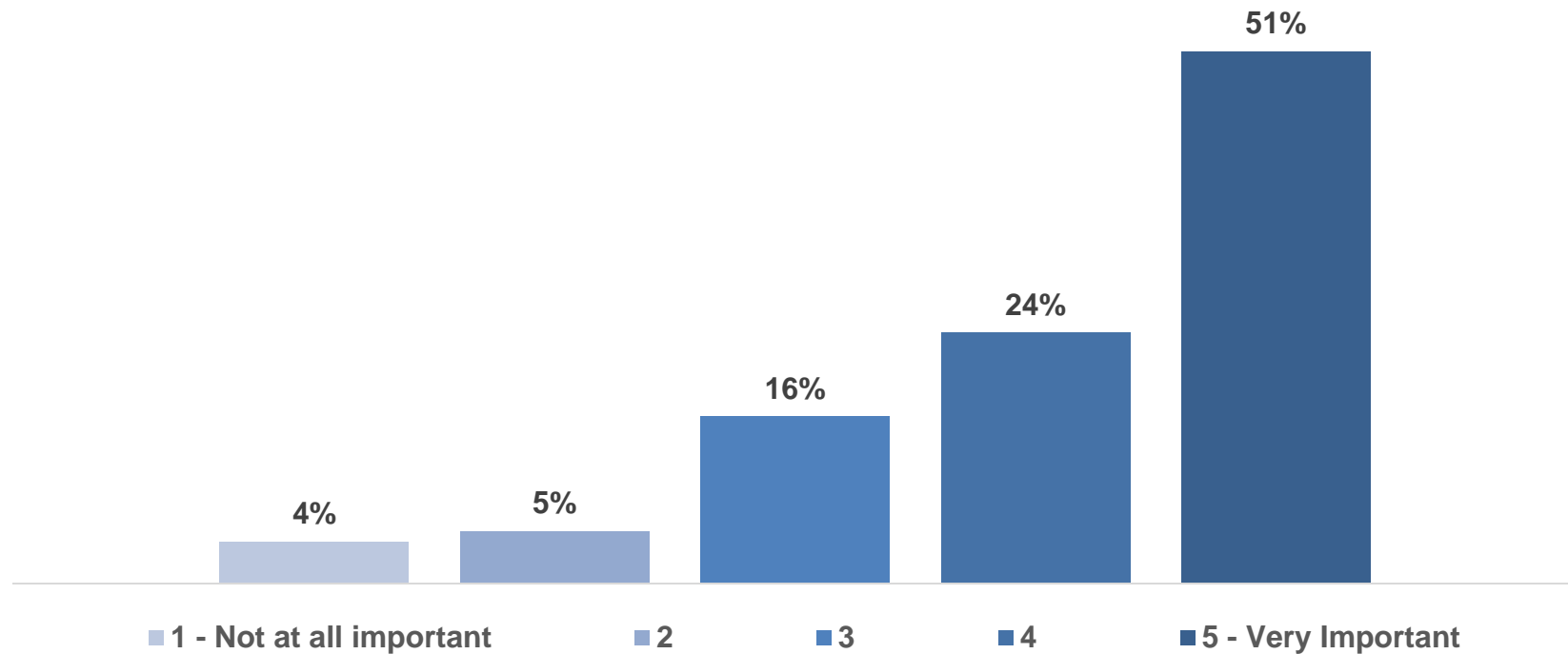
Source: 2016 Autonomous Vehicles Survey, State Farm

n=961



Training Needs

“If you were considering purchasing a vehicle with one or more automated technologies in it, how important would it be to receive training on how to use the technology?”



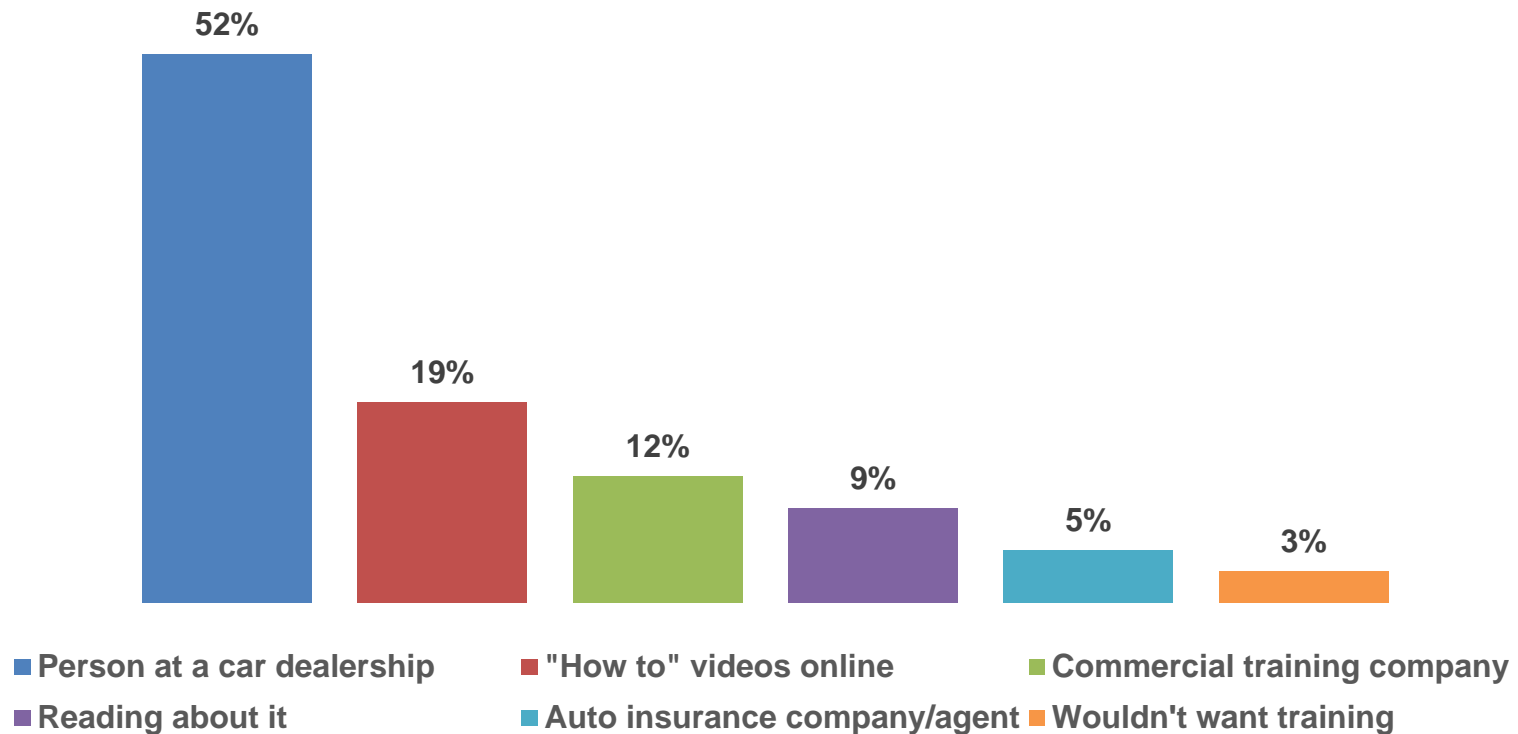
Source: 2016 Autonomous Vehicles Survey, State Farm

n=961



Training Needs

“If you wanted to learn how to operate a vehicle with automated vehicle technology, how would you most prefer to receive training?”



Source: 2016 Autonomous Vehicles Survey, State Farm

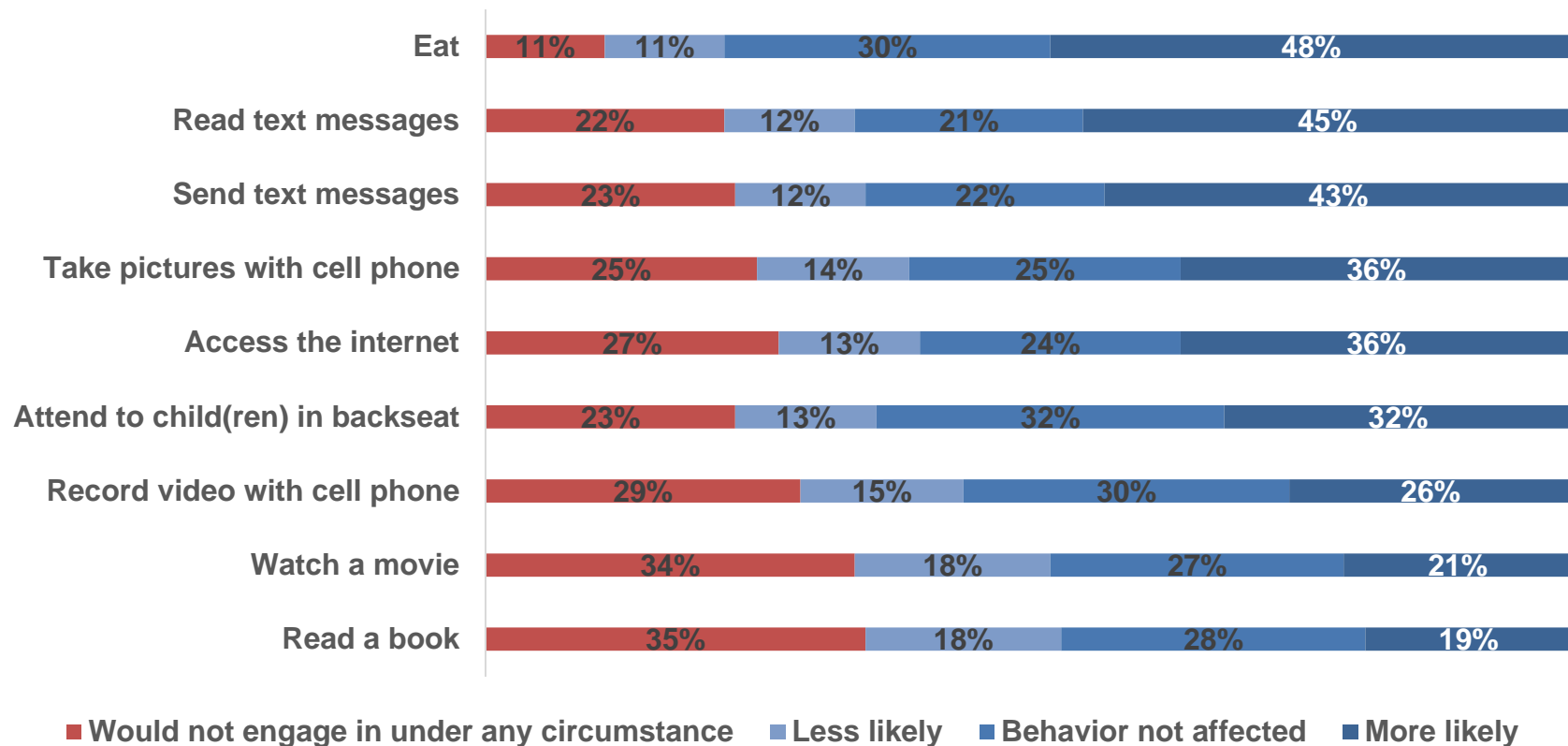
n=961



**What happens when a
self-driving vehicle turns
control back to the driver?**

Predisposition for Distractions

“How much more, or less, likely would you be to engage in the following activities when the vehicle is driving itself compared to when you are driving the vehicle yourself?”



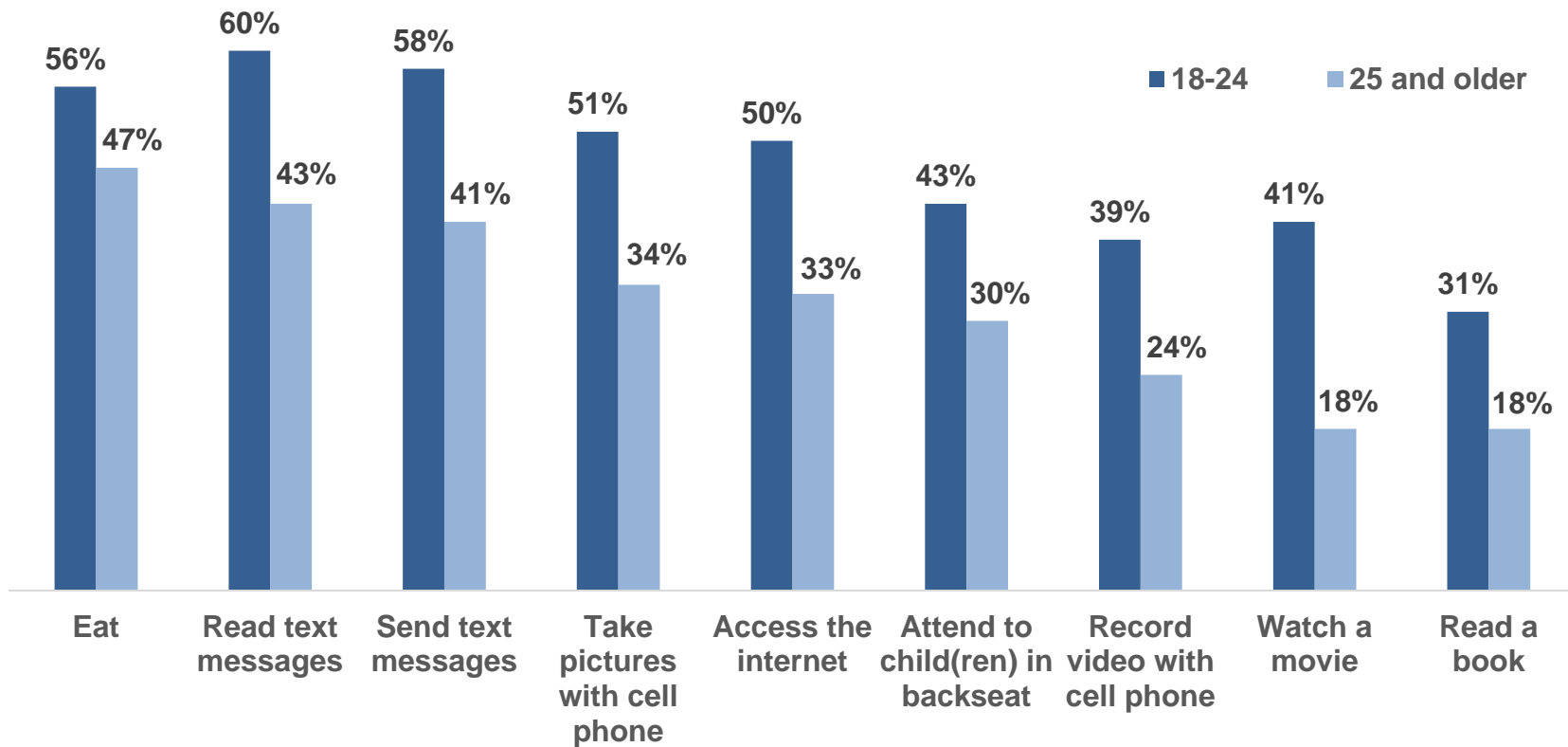
Source: 2016 Autonomous Vehicles Survey, State Farm

n=961



Predisposition for Distractions – By Age

“How much more, or less, likely would you be to engage in the following activities when the vehicle is driving itself compared to when you are driving the vehicle yourself?”



Source: 2016 Autonomous Vehicles Survey, State Farm

n=961



Just Can't Resist

Drivers perceive many behaviors as distracting, yet they still report participating in them:

Text messaging is distracting:	94%
Read/send texts anyways:	36%
Programming navigation is distracting:	90%
Program navigation anyways:	51%

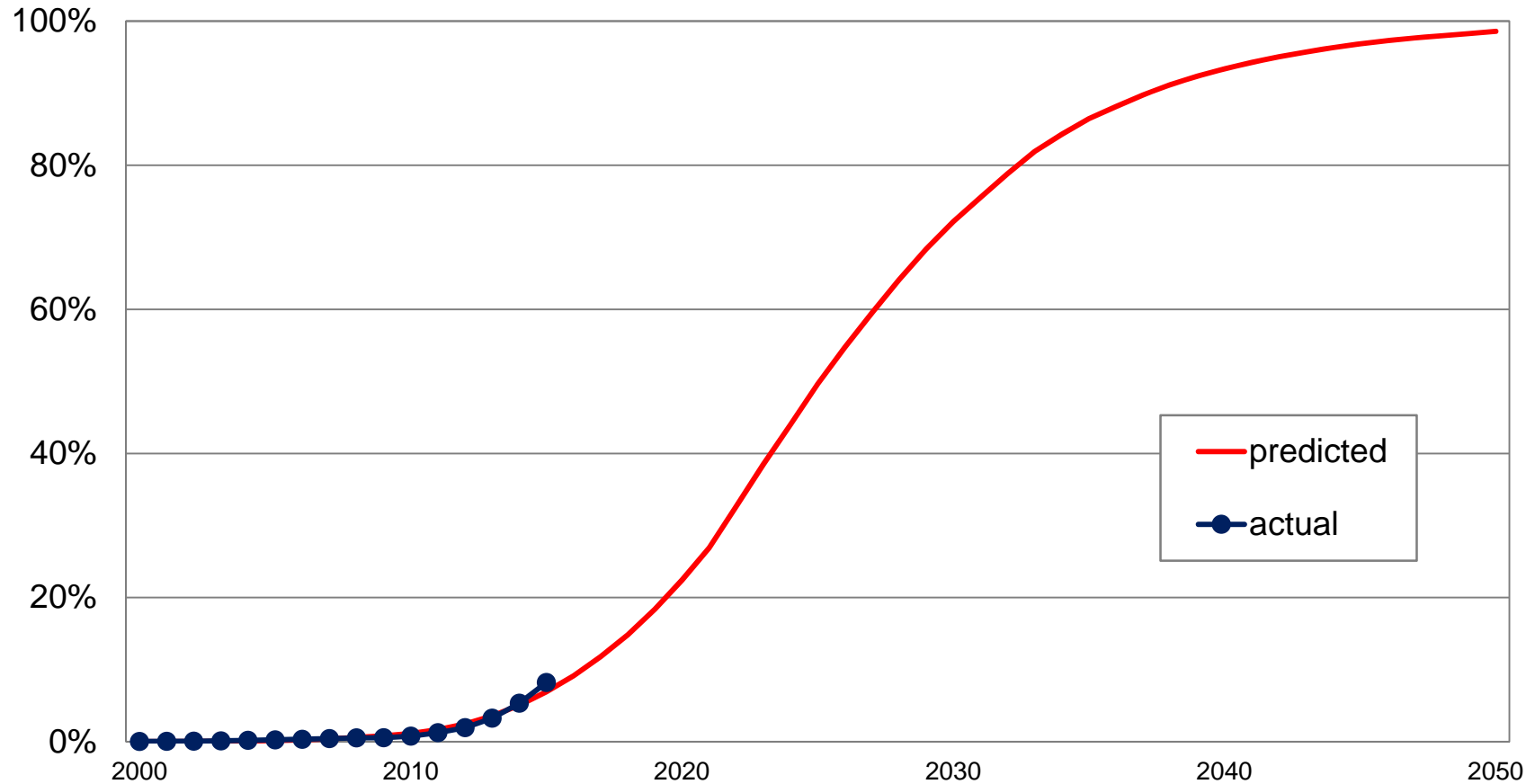
Source: 2015 Distracted Driving Survey, State Farm

n=856



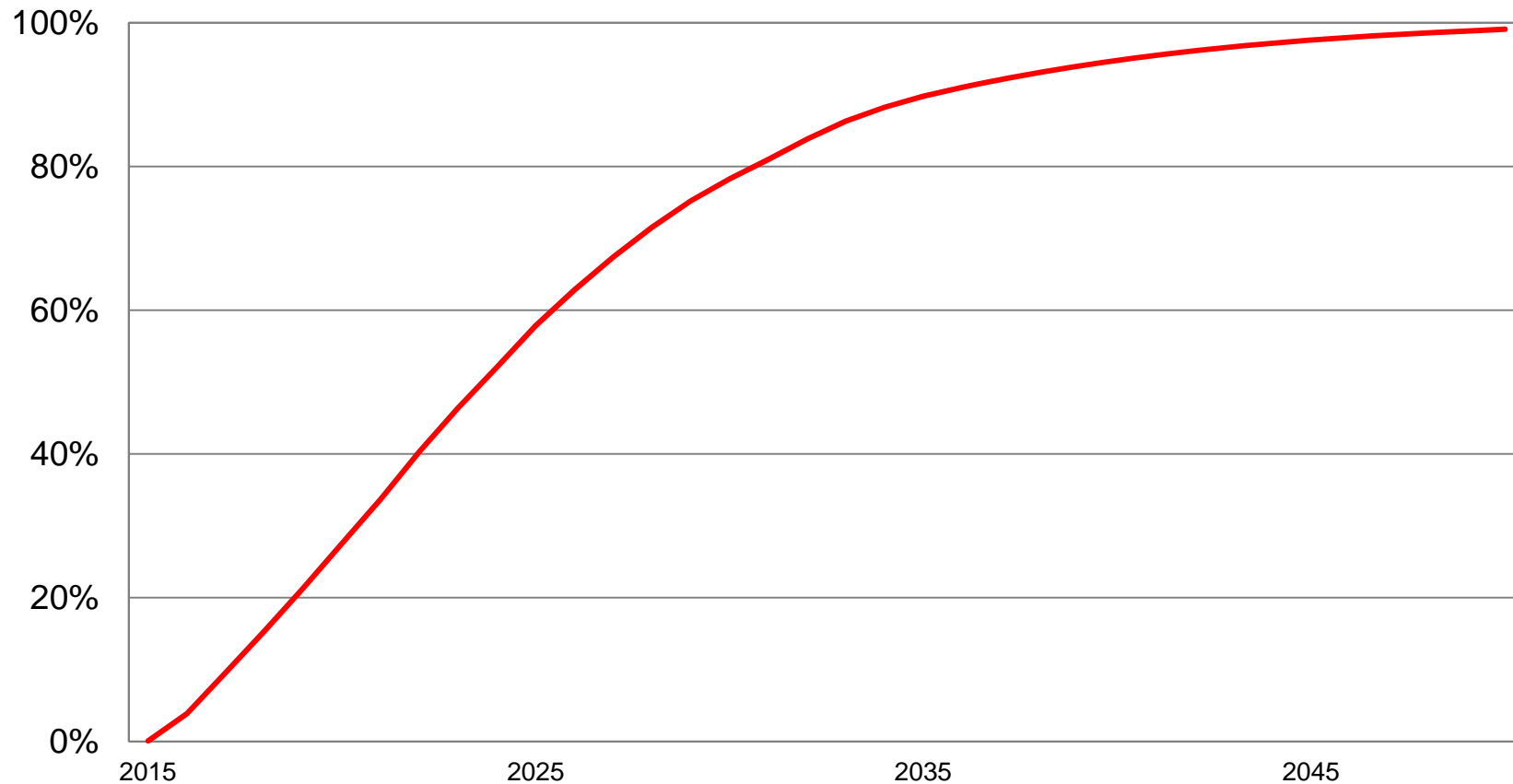
**Where should we target our
research efforts?**

Registered vehicles with available front crash prevention, actual and predicted



Source: Highway Data Loss Institute, 2016

Predicted percentage of registered vehicles with feature X



Source: Highway Data Loss Institute, 2016

Mobility Transformation Center

University of Michigan

- Academic, government & industry collaboration
- Advance connected and automated mobility
- MTC and MCity

<http://www.mtc.umich.edu/>



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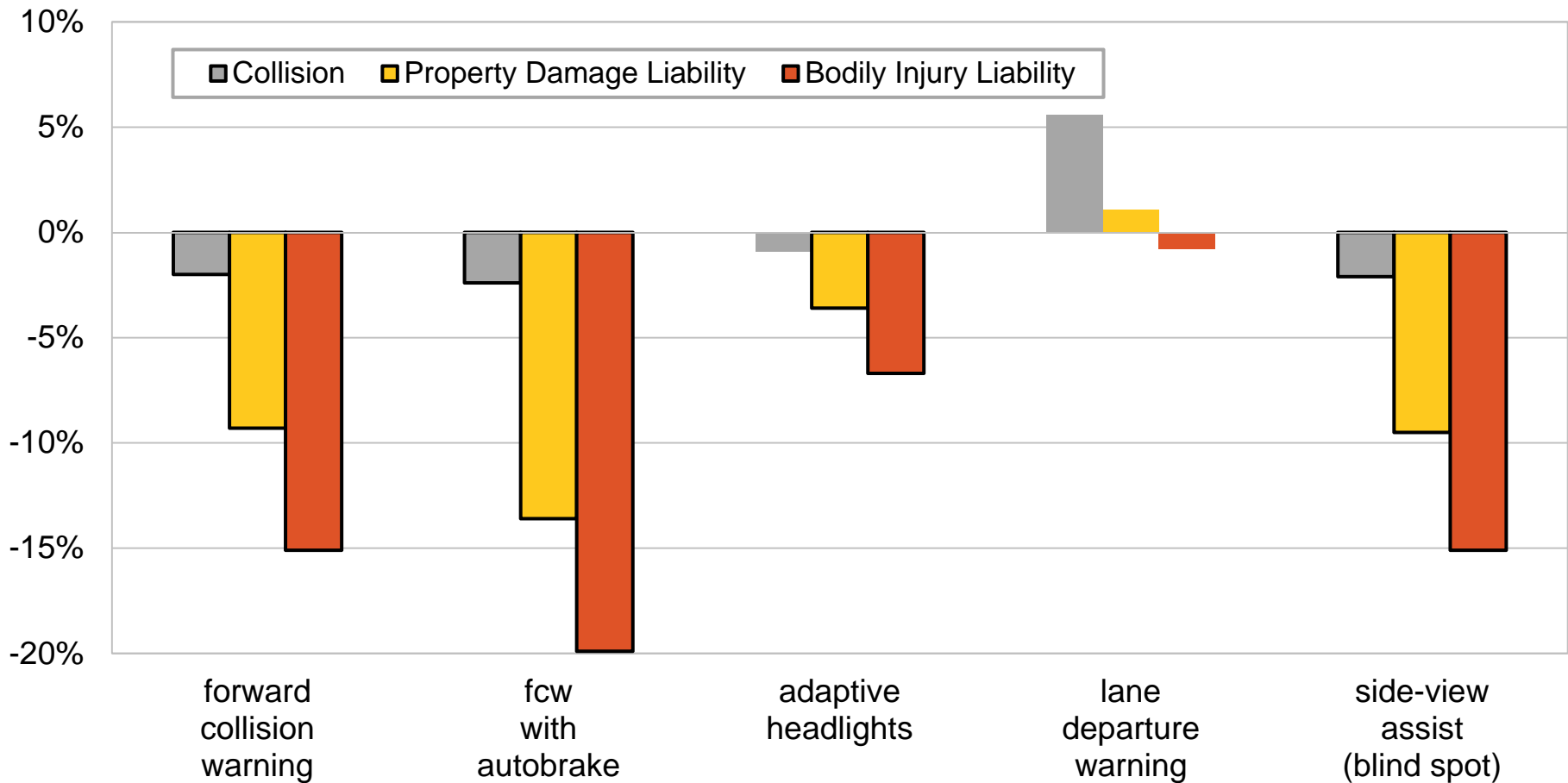
Insurance Institute for Highway Safety



Photo used with permission from the Insurance Institute for Highway Safety

Summary of technology effects on insurance claim frequency

Results pooled across automakers



Source: Highway Data Loss Institute, 2016

What's next?

Thank you!

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2016 Consumer Survey – Autonomous Vehicles

<http://st8.fm/avr16>

2015 Consumer Survey – Distracted Driving

<https://newsroom.statefarm.com/20151207distracted-driving-trends/>