Autonomous Vehicle Acceptance
Focus Groups

September, 2017
### Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Background &amp; Objectives</td>
<td>3</td>
</tr>
<tr>
<td>Methodology</td>
<td>4</td>
</tr>
<tr>
<td>Executive Summary</td>
<td>5-14</td>
</tr>
<tr>
<td>Detailed Findings</td>
<td>15-71</td>
</tr>
<tr>
<td>Autonomous Vehicle Safety Technology</td>
<td>16-19</td>
</tr>
<tr>
<td>PRE: Humans vs. Technology</td>
<td>20-23</td>
</tr>
<tr>
<td>Levels of Autonomy</td>
<td>24-34</td>
</tr>
<tr>
<td>Graphic Communications</td>
<td>35-44</td>
</tr>
<tr>
<td>Autonomous Nomenclature</td>
<td>45-53</td>
</tr>
<tr>
<td>Message Performance</td>
<td>54-65</td>
</tr>
<tr>
<td>POST: Humans vs. Technology</td>
<td>66-71</td>
</tr>
<tr>
<td>Strategic Implications</td>
<td>72-73</td>
</tr>
<tr>
<td>Demographics</td>
<td>74-75</td>
</tr>
</tbody>
</table>
Background & Objectives

The Secretary of the National Highway Safety Traffic Administration (NHTSA) is planning to rollout a new Autonomous Vehicle Policy in mid-September around the safety of automated driving systems. This research has been undertaken to better understand the best ways for NHTSA to communicate and educate consumers about the advantages and positive impact automation technology can have in saving lives. The specific objectives of this research are:

- Gain a deeper knowledge of consumer willingness to accept automation technology
- Measure driver comfort with automation technology along each level of autonomy based on Kelley Blue Book Research Findings
- Understand the best ways to discuss automation nomenclature
- Test infographic collateral for receptivity and clarity
- Measure message performance and resonance among the driving public
Methodology

MODE  Focus Groups

LENGTH  90 minutes each

DATES  Paramus, NJ  Kansas City, MO  Sacramento, CA
- Older Group: 8/23 at 6PM  Older Group: 8/23 at 6PM  Older Group: 8/23 at 6PM
- Younger Group: 8/23 at 8PM  Younger Group: 8/23 at 8PM  Older Group: 8/23 at 8PM

AUDIENCE  All n=50 participants were screened to ensure participants were drivers (hold a valid drivers license) and had no to moderate experience with advanced vehicle safety technologies.

Groups were split by age:

- Paramus, NJ
  Older: Age 40+ (n=8)
  Younger: Age 18-35 (n=8)

- Kansas City, MO
  Older: Age 40+ (n=8)
  Younger: Age 18-35 (n=8)

- Sacramento, CA
  Older: Age 40+ (n=9)
  Younger: Age 18-35 (n=9)

Note on Qualitative Research: Qualitative research allows for depth and breadth of understanding, but unlike quantitative survey research methods, it is not meant to provide results that are statistically projectable to the general population. Although some of the results in this report are reported in percentages and ratios, it is understood that these are based on a very small number of respondents.
EXECUTIVE SUMMARY
Executive Summary

Advanced Vehicle Safety Technology

- Human error (especially texting while driving) comes up immediately with top-of-mind safety concerns on the roadways today, along with traffic conditions (congestion and merging).
  - Tying messaging around reducing 94% of human error caused accidents, to texting while driving can merge an emotionally compelling narrative alongside strong informative data - helping to put context around the potential life saving power of autonomous technology.

- Current advanced vehicle safety technologies are quickly offered as solutions to many of the main safety concerns drivers often experience.

- Current advanced vehicle safety technologies are already well received by the driving public and can serve as a credible gateway toward discussion of autonomous vehicles.

- Advanced vehicle safety technologies are seen as helpful, protective safety features; but also as premium features that are not standard on vehicles.
  - Full autonomy in a vehicle is the most premium of these features and is expected to come to market at a high price financially that everyday drivers are likely not going to be able to afford anytime soon.
Executive Summary

PRE: Humans vs. Technology

- Drivers are split when it comes to whether to trust humans or technology more on the road.

  - People tend to trust what they know - and although aware of the drawbacks human drivers present, the lack of familiarity with autonomous technology creates a barrier of acceptance.

- Those who are more in favor of autonomous technology describe having experienced or having a family member or close friend who has experienced advanced vehicle safety technologies in action.

  - Younger males tend to be less trusting of this technology.
Executive Summary

Levels of Autonomy

- Younger groups and females tend to be more trusting of lower level vehicle safety technologies; however, they are notably less comfortable than other demographic groups when full autonomy becomes an option.
  - Older drivers are more likely to see the value of full autonomy, particularly as a way for those who can’t drive to remain active (elderly, disabled, etc.).

- Comfort with full autonomy is a progression; garnering buy-in around currently available technology gets the foot in the door to open the way to acceptance of full automation.
  - Lack of understanding around full autonomy and concerns around safety of the technology are the biggest barriers to acceptance. The public is seeking a proven track record of success.

- Speculating about advanced vehicle safety technologies and full autonomy creates anxiety among drivers. Most feel they’d have to see it/feel it, or at least hear from someone who has, to believe it.
Executive Summary

Graphic Communications

The National Highway Traffic Safety Administration can answer the call for credibility.

- Seeing information sponsored by NHTSA increased confidence and bridged the gap of credibility for drivers. NHSTA can play an important and central role in disseminating accurate factual knowledge to better inform drivers and consumers.

The “Today to Tomorrow” infographic is by far the most informative and well laid out for drivers, pulling significant appreciation from drivers who are largely unfamiliar with the nuances of advanced vehicle safety technologies.

- This is by far the strongest piece of collateral tested in the groups and will be an important tool in informing and building trust in advanced vehicle safety technologies, leading to full automation.
Executive Summary

Graphic Communications

The “Safety Technologies” handout contains great information, however, the way it is laid out it is reminiscent of a vehicle customization page rather than a factual, credible document.

Drivers are unsure what they are supposed to takeaway from the list of different technology options available on vehicles other than choosing ones they would or would not like.

Driver Alcohol Detection (DADSS), Automatic Crash Notification (ACN), Rearview Video System (Backup Camera), Forward Collision Warning (FCW) did come out as the most appealing technologies listed.

“Icon Scale - Automation Levels” is the least liked among all other graphic representations tested because it was unable to consistently convey meaning.

Drivers struggled understanding the images (lines around cars, car changes, one-hand on wheel, no change in driver, no wheel vs. outlined wheel, etc.) as well as the language used to describe them (“high” automation, “conditional” automation, etc.).
Executive Summary

Autonomous Nomenclature

Drivers clearly make a distinction between technologies available today, and those they see as coming in the future with respect to naming conventions.

Of technologies available now, drivers gravitate toward stem words like “assist” and “safety” as essential to the naming conventions. Top names selected were Driver assistance vehicles and Safe-drive technologies.

For current technologies, it was clear drivers are not comfortable using descriptors like “driverless,” “self-driving” or “autonomous” since they were more intimidating words that generate anxiety and fear.

The future is more up-in-the-air, though most selected Automated vehicle technologies to describe what they see the technology becoming.

The automation technology to come is the point where drivers see “self-driving” and “autonomous” start to become part of the nomenclature. Safety will still be important when discussing the future.
Executive Summary

Message Performance

Statement B - “Driver Assistance Technologies” was the clear winner, outperforming all other messages across key metrics:

An estimated 94% of vehicle crashes involve human error. Driver assistance technologies – like adaptive cruise control, which helps you maintain space between your car and others, and lane keeping support, which helps you stay in your lane – are already available in many vehicles. These technologies reduce human error by alerting the driver or reacting more quickly than the driver could to avoid crashes and help save thousands of lives.

NHTSA sponsorship of the message will give it a credibility bump in the eyes of the driving public and make for a compelling message.
Executive Summary

Message Performance

With low awareness of advanced vehicle safety technologies overall, drivers are looking for concise straightforward information that meets 5 critical elements:

- Delivered from a credible source
- Based on a foundation of statistical information
- Gives brief, clear and concise explanations of the technology
- Highlights how the technology is safer than past methods
- Describes the benefits are to both the driver and society: “helping save thousands of lives”

What is most important to drivers is knowing that the technology is safer, for themselves and for their family/loved-one.

Relating everyday drivers’ experiences and testimonials resonates strongly.
Executive Summary

POST: Humans vs. Technology

Four elements that came up throughout the discussion really stand out to drivers at the end of the session.

- NHTSA as a point of credibility and trust in reporting unbiased facts
- Statistical evidence and proof - 94% of accidents are caused by human error
- Reassurance that others have tried the technology, a touch-point that others like themselves have experienced the technology and enjoyed it.
- That it is not just one individuals’ safety, but all drivers’ safety that is benefited from a car with these technologies.

Exposure to those who have used advanced vehicle safety technology increases comfort and agreement that technology is safer than humans as a driver.
DETAILED FINDINGS
Benefits vs. Concerns

ADVANCED VEHICLE SAFETY TECHNOLOGY
Top-of-mind concerns revolve around human distractions, errors, and roadway conditions.

Current Safety Technology

I’d say my biggest fear is probably teenagers who are texting and driving. I know that some people have mastered the art of texting and driving, but 17 and 18 year-olds, I believe they think they’re invincible still. – Paramus, 8pm

My biggest concern is actually texting on the phone because I deal with it on a daily basis. I’ve actually almost lost friends because of it. I’ve witnessed several accidents because of it. – Sacramento, 8pm

Other drivers...just their being reckless and they’re not obeying the laws of the road or just not paying attention to other drivers. – Sacramento, 6pm

When I started driving, I was the worst in pulling into highways from the intersection. That’s one of my biggest fears is getting hit when I’m trying to turn in. – Paramus, 8pm

BASE: ALL RESPONDENTS
What are your biggest safety concerns while driving? How might technology be able to address these concerns?
Drivers describe advanced vehicle safety technology as ways to mitigate major safety concerns, but have difficulty naming them.

Unaided: How to Address Safety Concerns

Advanced Vehicle Safety Technology

BASE: ALL RESPONDENTS
How might technology be able to address these [safety] concerns?
When you hear the phrase automated vehicle technology, what comes to mind? What do you think about? Is that positive or negative, why?
Drivers see accident prevention as the top benefit of current driver assist technologies, over dependence is seen as a real concern.

Benefits/Concerns of Current Driver Assist Technologies

<table>
<thead>
<tr>
<th>BENEFITS</th>
<th>CONCERNS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prevents Accidents</strong></td>
<td>Become too dependent on it, because I have blind spot mirror so when I drive other people’s cars I will forget to look over my shoulder and I will just look at the mirror because that’s what my car has. I feel like you get way too dependent on it.” - Sacramento, 6pm</td>
</tr>
<tr>
<td><strong>Supports driver</strong></td>
<td><strong>Malfunctions</strong></td>
</tr>
<tr>
<td><strong>Protect pedestrians/bicyclers</strong></td>
<td>Performance (Bad Weather/Construction)</td>
</tr>
<tr>
<td><strong>Make people pay attention more</strong></td>
<td>Scary</td>
</tr>
<tr>
<td><strong>Make better decisions</strong></td>
<td>Lack of trust</td>
</tr>
<tr>
<td><strong>Personal safety</strong></td>
<td>Lose ability to drive</td>
</tr>
<tr>
<td><strong>Survival</strong></td>
<td>Distracting</td>
</tr>
<tr>
<td><strong>Premium/Luxury feel</strong></td>
<td></td>
</tr>
</tbody>
</table>

“I think I associate that with a more advanced car, maybe a more expensive car or something that has more ability and features that are going to help you drive and help you stay safe.” - Kansas City, 8pm

“Technology could be integrated in the driver systems because I’ve seen the commercial where the cars brake and prevent an accident and I just think that is phenomenal.” - Kansas City, 6pm

“Survival...particularly with the automatic stopping...for that one instance that you’re not paying attention, you could wind up through your window and that could mean death...I would get it as a form of survival for me and my family.” - Paramus, 6pm

“One thing that I’ve seen is with regard to the lane change one, it goes based on GPS. If there’s a construction zone, it doesn’t know about it...it tries to force you along the original lines and you try to cut back.” - Paramus, 6pm

“You can become way too dependent on it, because I have blind spot mirror so when I drive other people’s cars I will forget to look over my shoulder and I will just look at the mirror because that’s what my car has. I feel like you get way too dependent on it.” - Sacramento, 6pm

“It makes you lazy. You know how you’re driving normally like in a basic automatic car and then you’re used to it, your instincts on certain types of things, automated vehicle technology takes that away from you...you need to be responsible for yourself, not machines.” - Kansas City, 8pm

*Size of text correlates to number of mentions

BASE: ALL RESPONDENTS

When you hear the phrase automated vehicle technology, what comes to mind? What do you think about? Is that positive or negative, why?
Reaction & Pre-Assessment

PRE: HUMANS VS. TECHNOLOGY
Initially, participants are divided on which would be the safer driver, humans or technology; with a slight lean toward humans.

Agreement with technology being the safer driver softens when full autonomy is brought into the discussion.

**HUMANS**
Some people say that it’s safer when they (the driver) are in complete control of all the vehicle functions. They trust themselves more than technology, and say that technology software could be hacked, or that they can’t fully relax in a vehicle where driving is controlled by a computer.

**TECHNOLOGY**
Others say that vehicles in which driving is controlled by a computer are safer, because the technology is proven, there is new and better technology on the horizon and technology can react more quickly and reliably than people can.

*Numeric data presented as counts
BASE: ALL RESPONDENTS (n=50)
WB1. When it comes to overall vehicle safety and technology, people can have different perspectives. I’m going to read you two perspectives and after I do I’d like you to tell me, which one comes closest to your own.*

Total 27
Humans are Safer
Technology is Safer 23
Having experience or word of mouth exposure to automation increases trust in technology. Those who trust humans more are unfamiliar and look for assurance in testing for proven features and systems to trust technology.

PRE - Humans vs. Technology

HUMANS
Some people say that it’s safer when they (the driver) are in complete control of all the vehicle functions. They trust themselves more than technology, and say that technology software could be hacked, or that they can’t fully relax in a vehicle where driving is controlled by a computer.

“I think what will help me adapt is assurance, some type of assurance. ‘This is tested, we’ve done this so many times, look at this.’” - Paramus, 6pm

“More for the other driver. I consider myself a fairly good driver, but you have so many other people out there who are not paying attention, old people driving” - Paramus, 6pm

“In the event that it just happens not to work once … It can malfunction at anytime.” - Paramus, 8pm

“People have more time to develop the amount of accidents [data] that we have now, computers haven’t had the chance to do this. So who knows that they have the same amount, same rate in the future as we do?” - Paramus, 8pm

TECHNOLOGY
Others say that vehicles in which driving is controlled by a computer are safer, because the technology is proven, there is new and better technology on the horizon and technology can react more quickly and reliably than people can.

“I put a lot of trust into it, I guess, but I know my friend has a car and sometimes we go and I’ll drive and being on the beach all day, you’re down and you do it so often, it actually vibrates and has an alert when you have to stop and take a break. I think it’s amazing what they’re coming out with, so I trust it, and you can override. Like lane change, if you turn back, it overrides it.” - Paramus, 6pm

“I was just going to add to that, [like] I said before my wife doesn’t want to necessarily test it on her own car. ‘Is there someone else that we can use it on first and prove it to me’ kind of thing as you’re going. ‘Show me and then prove it to me, and I’ll believe it.’” - Paramus, 6pm

“Yes. I drive out in the world all the time and I just see so much human error. So that’s just where I’m coming from.” - Kansas City, 6pm
Ages 18-35 and males are much less trusting of technology, whereas older females tend to be slightly more trusting.

**HUMANS**

Some people say that it’s safer when they (the driver) are in complete control of all the vehicle functions. They trust themselves more than technology, and say that technology software could be hacked, or that they can’t fully relax in a vehicle where driving is controlled by a computer.

**TECHNOLOGY**

Others say that vehicles in which driving is controlled by a computer are safer, because the technology is proven, there is new and better technology on the horizon and technology can react more quickly and reliably than people can.

### PRE - Humans vs. Technology by Age

<table>
<thead>
<tr>
<th></th>
<th>Humans are Safer</th>
<th>Technology is Safer</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td>27</td>
<td>23</td>
</tr>
<tr>
<td><strong>Age 18-35</strong></td>
<td>16</td>
<td>9</td>
</tr>
<tr>
<td><strong>Age 40+</strong></td>
<td>11</td>
<td>14</td>
</tr>
<tr>
<td><strong>Male</strong></td>
<td>13</td>
<td>10</td>
</tr>
<tr>
<td><strong>Female</strong></td>
<td>14</td>
<td>13</td>
</tr>
</tbody>
</table>
LEVELS OF AUTONOMY
Levels of Autonomy: Kelley Blue Book Descriptions

Participants first reviewed the six levels of autonomy as outlined in the Kelley Blue Book Future Autonomous Vehicle Driver Study identified in the Literature review.

<table>
<thead>
<tr>
<th>Level 0</th>
<th>The driver (human) controls everything: steering, brakes, throttle, power.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>Most functions are still controlled by the driver, but some (like braking) can be done automatically by the car.</td>
</tr>
<tr>
<td>Level 2</td>
<td>At least 2 functions are automated (like adaptive cruise control and lane-centering), but the driver must be ready to take control of the vehicle.</td>
</tr>
<tr>
<td>Level 3</td>
<td>Drivers are still necessary but are not required to monitor the situation as with previous levels.</td>
</tr>
<tr>
<td>Level 4</td>
<td>Vehicles perform all safety-critical driving functions and monitor roadway conditions for an entire trip, with option for human driving.</td>
</tr>
<tr>
<td>Level 5</td>
<td>No option for human driving – no steering wheel or controls.</td>
</tr>
</tbody>
</table>


Descriptions were read out loud to the group and clarity was given when and where possible.

*Confusion around descriptions stems from irregular syntax structures making it difficult to understand distinctions between levels - describing each level in terms of a driver would increase consistency and clarity. For example: “Driver controls … everything / some things / nothing” etc.*
Key Takeaways & Recommendations

Summary (1): Levels of Autonomy

- Females and those age 18-35 are more likely to be comfortable with early levels of assistance technologies, but tend to have lower comfort with higher levels still seeing driving as an “enjoyable” privilege - rather than a task.
  - Older participants (age 40+) tend to have more comfort with higher automation in it’s ability to benefit the elderly or disabled - more likely to be caregivers and think of others needs.

- Drivers want to know their vehicle is safe, but they don’t necessarily want to learn the ins-and-outs of the vehicle. Keeping descriptions simple and straightforward can dispel confusion and subsequent hesitation.
  - Vague and nonparallel description structures causes people to interpret virtually the same description in significantly different ways
Key Takeaways & Recommendations

- Describing specific technologies in Level-descriptions leads to more confusion than clarity.

- Relinquishing control of braking unearths real anxiety toward assistance and autonomous technologies; braking is a feature people acknowledge needing to try first to become comfortable with.

- Participants note that if they were to get used to lower levels of autonomy first, they would feel more comfortable moving to higher levels when the time came.

  *Getting heads nodding around early levels of autonomy (1-2), increases likelihood to try and comfort with higher levels of autonomy (3-5).*
Key Takeaways & Recommendations

- Liability is a very real concern, but not necessarily a barrier.
  - With limited knowledge or precedence, drivers are interested in understanding how liability in an accident will work, and who will be held responsible. Providing answers to these questions can increase public support and understanding.

- There is little context and education around full autonomy creating more questions than answers. This makes it difficult for drivers to come to decisive conclusions or opinions.
  - Although there is an overlying need to understand more about full autonomy and how it works before drivers will feel comfortable, full autonomy is seen as a given that will happen at some point in the future (3 or more years away).
COMFORT LADDER: Level to Level

Participants were asked to score their comfort moving up one-level at a time on a scale from ‘1’ Not at all comfortable to ‘10’ Extremely comfortable.

**Level 0**
The driver (human) controls everything: steering, brakes, throttle, power.

**Level 1**
Most functions are still controlled by the driver, but some (like braking) can be done automatically by the car.

- **Key Audiences**
  - (9.3) Female
  - (9.2) Age 18-34
  - (9.0) Age 40+
  - (8.9) Male

**Level 2**
At least 2 functions are automated (like adaptive cruise control and lane-centering), but the drive must be ready to take control of the vehicle.

- **Key Audiences**
  - (8.6) Female
  - (8.3) Age 18-34
  - (8.3) Age 40+
  - (8.0) Male

**Level 3**
Drivers are still necessary but are not required to monitor the situation as with previous levels.

- **Key Audiences**
  - (8.4) Age 40+
  - (8.3) Male
  - (8.3) Female
  - (8.0) Age 18-34

**Level 4**
Vehicles perform all safety-critical driving functions and monitor roadway conditions for an entire trip, with option for human driving.

- **Key Audiences**
  - (6.4) Age 40+
  - (6.4) Female
  - (6.3) Age 18-34
  - (6.3) Male

**Level 5**
No option for human driving – no steering wheel or controls.

- **Key Audiences**
  - (2.6) Age 18-34
  - (2.6) Age 40+
  - (2.6) Male
  - (2.6) Female

---

*Notable differences
*Relative height corresponds with level of comfort

BASE: ALL RESPONDENTS (n=50); Ages 18-35 (n=25); Ages 40+ (n=25); Male (n=23); Female (n=27)

WB3/4/5/6/7. How comfortable would you be moving from driving a Level … vehicle to Level … vehicle?
Driving a **Level 1 Vehicle**

<table>
<thead>
<tr>
<th>Level 1 (Comfort Level - 9.1)</th>
</tr>
</thead>
</table>

- **Likes/Positives**
  - Phrase “Most functions are still controlled by the driver,” reassures participants that they are still in control, but can try out the technology - ‘test the waters’
  - See this technology as an additional safety when driving - acts as a ‘safety net’
  - Automatic assistance is seen as a second pair of eyes, someone watching out for you over your shoulder

- **Dislikes/Negatives**
  - Phrase “…(like braking) can be done automatically” creates concern of control issues around braking - causes ‘high anxiety’ among many participants
    - Most commented on dislike or hesitation with Level 1 description
  - Giving up control - prefer complete control of the vehicle

“**You’re still driving.** You’re still hitting the gas. You’re still hitting the brakes. You’re watching.” - Paramus, 8pm

“I think it’s something **I could get extremely comfortable with.** It’s just at first there’s probably little bit of an adjustment of like, oh, my gosh, I won’t be able to brake on my own.” - Kansas City, 8pm

“I said a 10 as well. I’ve actually driven a car that breaks by itself … it’s **scary at first but you get used to it.**” - Kansas City, 8pm

“The **braking is one thing I wouldn’t particularly like** - automatic braking. As far as lane changing indicator or something like that I’m much more comfortable with that.” - Kansas City, 6pm

“It’s like a little bit of a shock. If you’re driving, and all of a sudden, your car just starts slowing down… I’d rather have it all the time or not at all in my opinion.” - Paramus, 8pm

“I **like to have complete control** of it and the thought of my car braking on its own, **not because I want it to but because it thought that was the best thing to do,** I don’t like that idea.” - Sacramento, 6pm

**DESCRIPTION:**

**LEVEL 1** - Most functions are still controlled by the driver, but some (like braking) can be done automatically by the car.
LEVEL 2 - At least 2 functions are automated (like adaptive cruise control and lane-centering), but the driver must be ready to take control of the vehicle.

Likes/Positives
- Driver is still in control / has to be in control
- Helpful, like having a passenger or extra set of eyes
- Not much different from Level 1 - if you are already using one function, two won’t be difficult to adapt to

Dislikes/Negatives
- Phrase “Driver must be ready to take control” seems like the driver has to do more work, and implies there’s a chance that the technology is not going to work
- “Lane centering” unsure if you are able to override manually if it’s dangerous to stay in the lane
  - Experience where lane centering doesn’t work a lot of the time
- Bad weather conditions - can the computer recognize and adjust for these changes?
- Lower driver attention - the more automated technology in the vehicle, the less aware people will be on the road
- Examples can impact people’s comfort level (i.e. steering/brake control)

“I feel like a nine. Because I think too if I was already used to the one function, then I think two functions wouldn’t be that crazy to adapt to.” - Paramus, 8pm

“It’s still helping you out. It’s not taking over completely.” - Paramus, 8pm

“There’s been a fair amount of snow and that’s my concern. I know how to drive at a certain speed and handle the car in a certain way … So my concern is the computer that good? Is the program that good?” - Kansas City, 8pm

“Adaptive cruise control and lane centering seems to me a little bit more of an annoyance, whereas if I’m driving and I still have to pay attention and I have to be ready to take control of the vehicle, then I don’t know, it seems to me as if I’m still working … so now I’m paying more attention to what’s going on… I’m not 100% opposed … I feel maybe if the wording was a little different.” - Paramus, 6pm

“It also says you got to be ready to take control of the vehicle, so there’s also the chance that it’s not going to work in a certain time, so you have to be aware.” - Paramus, 8pm
Driving a Level 3 Vehicle

### Likes/Positives

- Like that it will monitor certain aspects of driving for you rather than just alerting you
- Once you’ve given up lower levels of control it becomes easier to be comfortable with progressively higher levels

### Dislikes/Negatives

- Unclear & vague phrase “drivers are necessary but not required to monitor” - many asked for clarification here
- Need to know multiple years of testing has been done - conducted by independent companies, consumers or the government
- Getting close to giving up full control of the vehicle - less comfortable considering family safety
  - “Not required to monitor” = ‘Not in control’/’No human control’
- Unclear if you still have the option to drive (control the vehicle) or not
- Perpetuating the ‘lazy’ culture - people just don’t want to be responsible
  - Cars are powerful and dangerous - people still need to be monitoring and mindful

“Ten. Similar [to other participant], I feel like once you’ve given up that much control at that point, two to three is not that much different.” - Kansas City, 8pm

“I feel like Level 3 is what Level 2 should be. Because I don’t think it’s smart to have something that will notify you, but you still have to be aware and keep your eye on it versus Level 3 which is it’ll keep its eye on it for you and it’ll handle it if you’re not… If I have a backup camera, I would never turn my head around… I think level three is what it should be because it takes out the people like me who would be lazy and not drive as well.” - Paramus, 8pm

“I’m still a little confused with this question a little bit … They’re still required, but it’s not really explaining what the ‘required’ actually [means].” - Sacramento, 6pm

“Multiple years of testing. By individual car companies, independent companies. So you can’t have car companies saying ‘Yes, our cars are safe’… Look what happened with Toyota with the runaway cars.” - Sacramento, 8pm

“I did a three just because of the fact that I wouldn’t have the option to take control myself.” - Sacramento, 6pm
WB6. How comfortable would you be moving from driving a Level 3 vehicle to Level 4 vehicle?

<table>
<thead>
<tr>
<th>Level 4 (Comfort Level - 5.4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Because my issue with level three was that I don’t know what was needed for the driver … it’s like becoming the passenger in the car for level four. Let’s say, you’re from somewhere, and you had a drink or one too many drinks, you can still get home because the car would take over if that’s even legal… but I feel like it’s a little better because it takes complete control of the car if needed, but you’re allowed to also have control if you like to drive personally.” - Paramus, 8pm</td>
</tr>
<tr>
<td>&quot;As long as I know it would do it’s job I would be very okay with it. [With] testing … of course the manufacturer, but also whatever government agency would do that” - Paramus, 6pm</td>
</tr>
<tr>
<td>“I would say to a lot of this conversation is the unknown. We’re always afraid of the unknown.” - Kansas City, 6pm</td>
</tr>
<tr>
<td>“I like to have complete control of it and the thought of my car braking on its own, not because I want it to but because it thought that was the best thing to do, I don’t like that idea.” - Sacramento, 6pm</td>
</tr>
<tr>
<td>&quot;Stating that the “vehicle performs all safety-critical driving functions” reassures that it will can and will do it’s job</td>
</tr>
<tr>
<td>&quot;Allow those who can’t or shouldn’t drive the opportunity to still drive (elderly, disabled, inebriated, etc.)</td>
</tr>
<tr>
<td>&quot;There is technological (mechanical) error that causes anxiety - can the technology really be trusted?</td>
</tr>
<tr>
<td>&quot;Not sure what happens if it breaks - everything breaks eventually</td>
</tr>
<tr>
<td>&quot;Depends on the type of driving (local vs. highway; big city vs. rural) - will it respond as well in areas with lower infrastructure?</td>
</tr>
<tr>
<td>&quot;A lot is unknown around Level 4 - leads to a real fear and barrier for drivers</td>
</tr>
<tr>
<td>&quot;Not sure the programming will be bug free early-on, prefer to wait until it’s been tested</td>
</tr>
</tbody>
</table>

BASE: ALL RESPONDENTS (n=50)

Level 4 Vehicles perform all safety-critical driving functions and monitor roadway conditions for an entire trip, with option for human driving.
Driving a Level 5 Vehicle

**Likes/Positives**
- Comfortable with other automated transport (i.e. airport terminal, etc.) without the option for control so would try it
  - Would need to experience in a low risk setting first (25mph)

**Dislikes/Negatives**
- No option for control, if something is wrong with the car the owner can’t drive it to a mechanic to get it fixed
  - What point does the car shutdown (i.e. light, sensor, etc.)?
- Liability is an unanswered issue and major fear - participants are unclear who is responsible in an accident
- Unfamiliarity with how the technology works - concern of technical issues in software and programming
- Lose the thrill or privilege of driving
- Don’t believe it can handle trailering and similar tasks, since the trailer (boat, storage, etc.) doesn’t have additional sensors on it

"I’m perfectly comfortable riding the trams from one terminal an airport to another. It’s on a rail. I’ve got no control over it… There’s a whole lot more chance for something to go wrong when you’ve got 200,000 cars in rush hour. “ - Kansas City, 6pm

“Well, my thought is let’s say something’s wrong with the car, right? I can’t drive it anywhere now. I figured if the sensor went out, it wouldn’t let you drive it and then how am I going to get to work?” - Kansas City, 8pm

“Liability… So if I’m in a self-driving car and let’s say it does malfunction for whatever reason and I hit somebody, all right, I put my trust in that car and I’ve been in an accident because I thought that self-driving car corrected itself. I think that’s probably the big fear because I want to be in control because I don’t want to be liable. I don’t want that car to hold my liability versus if I do it.” - Kansas City, 8pm

“I don’t know but I will say that I’m in general like a late adopter to most things … I don’t have a mistrust of the technology but if it’s new and we don’t know how it works, if there are still bugs, if there’s liability issues still with that so I wouldn’t really want to – I would not want to mess with that. “ - Kansas City, 8pm
Informative Illustrated Storytelling

GRAPHIC COMMUNICATIONS
Participants reviewed 2 out of 3 handouts of possible informative collateral that NHTSA may consider to use in the upcoming campaign.

**SAFETY TECHNOLOGIES**

- **AUTOMATIC EMERGENCY BRAKING (AEB)**: This technology assists the driver in avoiding or mitigating a collision with another vehicle or object in front of them by automatically applying the brakes. Works with FCW.
- **LANE KEEPING SUPPORT**: This technology brings the vehicle back to the middle of its lane when the driver fails to respond to a warning.
- **FORWARD COLLISION WARNING (FCW)**: Using forward-looking sensors, this technology warns the driver of an impending collision so the driver can break or steer to avoid or mitigate the collision.
- **PEDESTRIAN CRASH AVOIDANCE & MITIGATION**: This technology alerts the driver of an impending impact with a pedestrian, and can automatically apply the brakes to help avoid impact.
- **LANE DEPARTURE WARNING (LDW)**: Using a camera system to track a vehicle’s position in relation to lane markings on the road, this technology warns the driver of unintentional lane shifts.
- **AUTOMATIC CRASH NOTIFICATION (ACN)**: Immediately following a crash, this technology notifies emergency responders that a crash has occurred and provides them with the location of the crash.
- **ELECTRONIC STABILITY CONTROL (ESC)**: This system uses automatic computer-controlled braking of individual wheels to assist the driver in maintaining control in critical driving situations.
- **REARVIEW VIDEO SYSTEM (BACKUP CAMERA)**: This technology assists the driver in seeing whether there are any obstructions, particularly people, in the area immediately behind the vehicle.
- **SAFE-CRASH-CAPABLE AIRBAGS**: These airbags deploy in the event of a crash, providing additional protection to the driver and passengers.
- **VEHICLE-TO-VEHICLE COMMUNICATION (V2V)**: This technology allows the wireless exchange of data among vehicles traveling in the same vicinity. By communicating important safety information to one another, this technology enhances the performance of other safety applications, and allows for all-new technologies such as intersection collision avoidance.
- **DRIVER ALCOHOL DETECTION SYSTEM FOR SAFETY (DADSS)**: This technology automatically detects when the driver is intoxicated with a blood alcohol concentration (BAC) at or above 0.08 – the legal limit in all 50 States – and prevents the car from moving.

---

**‘Today to Tomorrow’**

**‘Automation Levels’**

<table>
<thead>
<tr>
<th>Automation Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No Automation</td>
</tr>
<tr>
<td>1</td>
<td>Driver Assistance</td>
</tr>
<tr>
<td>2</td>
<td>Partial Automation</td>
</tr>
<tr>
<td>3</td>
<td>Conditional Automation</td>
</tr>
<tr>
<td>4</td>
<td>High Automation</td>
</tr>
<tr>
<td>5</td>
<td>Full Automation</td>
</tr>
</tbody>
</table>

---

For more information, visit the NHTSA website.
Key Takeaways & Recommendations

Summary: ‘Today to Tomorrow’ (1)

The ‘Today to Tomorrow’ presentation was by far the most liked because it was clear concise and informative.

The top positive elements that stand out to drivers is the statistic “94% of all vehicle crashes involve human error” and the National Highway Traffic Safety Administration.

[MODERATOR: What are some of the things people particularly like?] The obvious one to me is right up top, the National Highway Traffic Safety Administration. I mean basically it’s a regulatory body that’s looking at all of these things and validates that they work or not work … in a scenario. You don’t want to necessarily trust … like Volvo, you don’t ever want to just trust the manufacturer for what it is that they’re trying to convey.

- Paramus, 6pm

Be careful pairing phrases like ”possibly making crashes a thing of the past” with the statistic. It is noted that even if the 94% is dropped to 0% because of the technology, that still leaves 6% of crashes unaccounted for.

This undermines an otherwise strong compelling argument for full autonomy that makes even those opposed to automation stop-to-think.
Key Takeaways & Recommendations

Summary: ‘Today to Tomorrow’ (2)

- The incremental progression laid out in the infographic resonates among the driving audience, giving a sense of time and setting expectations for realistic implementation of the future vision.

- There is some confusion around the Forward Collision Warning icon, where the jagged lines reads more as a car receiving a jump than what the information is describing.

- Words like “possibly” and “promise” are seen as weak word choices being too passive, making the points made ring hollow for drivers when reviewing the material.

- The bottom section of the graphic is highly positive and comforting in summarizing the future of autonomy.
  - Drivers particularly like knowing that others like themselves have tried these technologies and like them.
  - Redirecting drivers to the “safercar.gov” website for more information was highly appreciated.
Drivers largely consider the technologies of ‘Today’ positive, liking the assistance and additional sense of security provided.

**Today’s Safety Technologies: Moving Towards Driverless Vehicles**

An estimated 94% of all vehicle crashes involve human error. Safety technologies – features designed to help you avoid a crash by warning you or automatically taking preventative action – help make safety improvements. By reducing human made mistakes, making the way for driverless vehicles and possibly making crashes a thing of the past.

**FORWARD COLLISION WARNING**
Detected if a crash is imminent and alerts the driver.

**LANE DEPARTURE WARNING**
Alerts the driver if they are about to drift out of their lane.

**REARVIEW VIDEO SYSTEM**
Expand the field of vision so drivers can see obstacles and prevent backover incidents (standard in all vehicles by May 2018).

**BLIND SPOT DETECTION**
Warns the driver if there are vehicles in adjacent lanes that the driver may not see.

**AUTOMATIC EMERGENCY BRAKING**
Helps prevent crashes or reduce their severity by applying the brakes (standard in most vehicles by 2022).

**Likes/Positives**
- “NHTSA” | Government sponsored information, credible source
- “94%” | Statistical evidence
- “avoid a crash” | Describes how technology can empower drivers
- “how do they protect you?” | Informative & educational; it’s not solicitation

**Dislikes/Negatives**
- “Moving Toward Driverless Vehicles” | Causes anxiety and hesitation
- “promise” | Rings hollow, disbelief that it can be fulfilled
- “making crashes a thing of the past” | Unbelievable, always other variables
- “possibly” | Weak descriptor, sparks doubt in ability to deliver

BASE: SPLIT SAMPLE (n=25)

A3_1. Take a moment to look through all the information on this image. As you do, please carefully CIRCLE any words, phrases or images that you find particularly compelling and positive in helping you to feel better informed about these technologies. At the same time, please STRIKE THROUGH any words, phrases or images that you find hard to understand or are not appealing to you.
Drivers are hesitant about technologies of tomorrow. NHTSA can be a powerful source of credibility to build trust toward these technologies.

**Graphic: ‘Today to Tomorrow’ (2)**

**ADAPTIVE CRUISE CONTROL**
Reduces the speed of a vehicle if traffic ahead is slowing.

**Likes/Positives**
- “years away” + “ADAPTIVE” + “Reduces speed”
- “rapid pace of innovation” + “Experience, positive, forward-looking message”
- “semi-autonomous” + “Still gives drivers the option for control”
- “overwhelmingly trust them” + “Knowing that others have tried eases anxiety”
- “keep them safe” + “Statistical evidence”
- “safercar.gov” + “Provides the option to dig deeper if interested”

**LANE CENTERING**
Steers the vehicle to keep it in the center of the lane.

**PEDESTRIAN AVOIDANCE**
Provides a warning to drivers and automatically applies the brakes to avoid hitting a pedestrian.

**AUTONOMOUS VEHICLE**
Offers the potential for the vehicle to drive itself without active driver control.

**So what does this mean for you?**
We’re still years away from widespread adoption of semi-autonomous and fully autonomous vehicles, but the rapid pace of innovation means it will be here before we know it. Many drivers now look for these safety technologies when purchasing a vehicle, and those who already have these technologies overwhelmingly trust them to keep them safe.

NHTSA, your official government vehicle safety authority, is spurring innovation with research, rigorous testing and new safety guidelines to ensure that these vehicles achieve their lifesaving potential and save more lives in the future.

Go to NHTSA’s website safercar.gov for more information.

BASE: SPLIT SAMPLE (n=25)
A3_1. Take a moment to look through all the information on this image. As you do, please carefully CIRCLE any words, phrases or images that you find particularly compelling and positive in helping you to feel better informed about these technologies. At the same time, please STRIKE THROUGH any words, phrases or images that you find hard to understand or are not appealing to you.
Key Takeaways & Recommendations

Summary: ‘Safety Technologies’

- With no reference to a vision of the future or source sponsor, drivers typically interpret the graphic as a manufacturer's vehicle features sales sheet for potential feature upgrades.

- Overly technical descriptions tend to confuse drivers when trying to understand what the technology can do for them. Many drivers are unaware some of these technologies come standard on new vehicles.

  - Drivers are unaware of the benefits of some technologies like Lane Keeping Support & Electronic Stability Control (ESC) from the descriptions. The explanation of Vehicle-to-Vehicle communications is vague, referencing technology not described on the page (intersection collision avoidance) and doesn’t adequately explain if it is a universal or optional feature.

  - Labeling technologies as standard, standard by a point in the future, or optional can help clear up confusion and lend context to the graphic.

- The most appealing technologies to drivers are: Driver Alcohol Detection (DADSS), Automatic Crash Notification (ACN), Rearview Video System (Backup Camera), and Forward Collision Warning (FCW).
Lack of understanding leads drivers to interpret the ‘Safety Technologies’ graphic as an vehicle customization screen.

The ‘Safety Technology graphic was informative about the technologies, but lacks any reference to time or context to frame what this means for drivers.

Without context around time or reference to the broad vision, drivers generally see the graphic as an OEM sales promotion describing features to choose from when buying a new car.

**Most Appealing Technologies:**
Driver Alcohol Detection (DADSS) | Automatic Crash Notification (CAN) | Rearview Video System (Backup Camera) | Forward Collision Warning (FCW)

**Least Appealing Technologies:**
Lane Keeping Support | Electronic Stability Control (ESC)

**Key Positive Phrases**
+ “assists” + “immediately notifies” + “automatically detects” + “prevents” + “sensors” + “warns the driver” + “support”

**Key Negative Phrases**
- “automatically” - “mitigating” - “computer controlled”

---

**SAFETY TECHNOLOGIES**

**Driver Alcohol Detection System for Safety (DADSS)**
This technology automatically detects when a driver is intoxicated with a blood alcohol concentration (BAC) of or above .08, automatically informing the driver to reduce their speed and ends the car's movement.

**Automatic Crash Notification (CAN)**
This technology sends an emergency message to the police, informing them about the accident, giving them immediate access to the location of the crash.

**Rearview Video System (Backup Camera)**
The backup camera improves visibility behind the vehicle, assisting the driver to avoid collisions.

**Forward Collision Warning (FCW)**
This technology monitors the vehicle’s front sensors, warns the driver of an impending collision, and automatically applies the brakes to avoid impact.

**Lane Departure Warning (LDW)**
This technology warns the driver when the vehicle moves out of its lane, automatically applying the brakes if necessary.

---

**BASE: SPLIT SAMPLE (n=25)**
A3_2. Take a moment to look through all the information on this image. As you do, please carefully CIRCLE any words, phrases or images that you find particularly compelling and positive in helping you to feel better informed about these technologies. At the same time, please STRIKE THROUGH any words, phrases or images that you find hard to understand or are not appealing to you.
Key Takeaways & Recommendations

Summary: ‘Automation Levels’

- With low awareness and understanding around levels of automation, the graphic is difficult to follow for drivers and does not intuitively show a clear progression between levels.
- ‘Automation Levels’ was the least liked among infographic collateral tested, and creates more questions than it is able to answer.
- Several illustrations were confusing:
  - Sensor waves - difficult to determine specific meaning of increasing size
  - One-handed wheel operation - unsafe or lazy, and contradictory to how drivers are taught
  - Dotted-line steering wheel - unsure if this meant it was missing / not available / optional
  - Large window full automation - seems dangerous and accident prone
‘Automation Levels’ proved the most confusing and difficult to understand graphic for drivers unfamiliar with the technology.

Lacks imagery progression - confusing, not intuitive if levels are the same or different

Unsafe, one-hand driving - not how you’re taught to drive

“I didn’t like the hand on 3 because it’s like now you’re just getting lazy and having the car take over” - Paramus, 8pm

“I was always taught to put two hands on the steering wheel.” - Kansas City, 6pm

Large window, looks like man is standing in the car

“Large window seems unsafe...something could easily fly through it if you didn’t have your seatbelt on.” - Kansas City, 6pm

Sensor waves are confusing and illicit multiple interpretations:

Distance / Wifi connection / Alarm / Sensor (range) / Shaking

“I have question marks on all these little side markers on all the … how do I know what they’re doing? Like what’s the benefit of each mark having more marks versus less marks?” - Sacramento, 6pm

Different fascia do a good job of showing progression from one level to the next

It’s not clear how “High” differentiates this level from others - relative to what?

Makes it look like the steering wheel is missing, confusion around dotted lines

“Does that mean you don’t need to use the steering wheel?” - Paramus, 8pm

BASE: SPLIT SAMPLE (n=25)

A3_3. Take a moment to look through all the information on this image. As you do, please carefully CIRCLE any words, phrases or images that you find particularly compelling and positive in helping you to feel better informed about these technologies. At the same time, please STRIKE THROUGH any words, phrases or images that you find hard to understand or are not appealing to you.
Developing a Lexicon

AUTONOMOUS NOMENCLATURE
Key Takeaways & Recommendations

Summary: Autonomous Nomenclature (1)

- **Best naming Conventions Nomenclature**
  - Level 0: *(Tie)* No Automation vs. Human Only
  - Level 1: Driver Assistance
  - Level 2: Partial Automation
  - Level 3: Conditional Automation
  - Level 4: High Automation
  - Level 5: Full Automation

- There is a clear distinction in drivers’ minds of what the technology and vehicles should be called ‘now’ vs. ‘in the future’ and should be discussed separately to avoid confusion.
Key Takeaways & Recommendations

CURRENT:

- The most compelling way to describe current technologies is using some form of “assist” or “safety” in the naming convention and description.
- Top names are Driver assistance vehicles and Safe-drive technologies.
- Words or phrases like “driverless,” “self-driving” or “autonomous” are intimidating and lead into anxiety around losing control.

“...I think Driverless Vehicles better explains it but that just kind of sounds scary, like Driverless Vehicle, I think … It’s a little intimidating. I don’t know; because there’s no driver, really. That’s what that means to me. It means that the car can go on its own, it doesn’t need a human in it.” - Paramus, 6pm

FUTURE:

- Uncertainty of what full automation will look like in the future led to a greater variety and dispersion in naming conventions.
- The top name for future technology is Automated vehicle technology.
There is consensus around Level 1 and 2 (Driver Assistance and Partial Autonomy), whereas Level 0 is more disperse.

<table>
<thead>
<tr>
<th>Level</th>
<th>Human Only</th>
<th>No Automation</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 0</td>
<td>14</td>
<td>16</td>
<td>20</td>
</tr>
<tr>
<td>18-35</td>
<td>10</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>40+</td>
<td>4</td>
<td>8</td>
<td>13</td>
</tr>
<tr>
<td>Male</td>
<td>7</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Female</td>
<td>7</td>
<td>10</td>
<td>13</td>
</tr>
</tbody>
</table>

Numeric data presented as counts

*control* and *driving* are major themes among ‘Other’ mentions

<table>
<thead>
<tr>
<th>Level</th>
<th>Modern Vehicle</th>
<th>Driver Assistance</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>6</td>
<td>39</td>
<td>5</td>
</tr>
<tr>
<td>18-35</td>
<td>3</td>
<td>19</td>
<td>3</td>
</tr>
<tr>
<td>40+</td>
<td>3</td>
<td>20</td>
<td>2</td>
</tr>
<tr>
<td>Male</td>
<td>2</td>
<td>19</td>
<td>3</td>
</tr>
<tr>
<td>Female</td>
<td>4</td>
<td>20</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Level</th>
<th>Modern Plus</th>
<th>Partial Autonomy</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 2</td>
<td>12</td>
<td>28</td>
<td>10</td>
</tr>
<tr>
<td>18-35</td>
<td>6</td>
<td>17</td>
<td>2</td>
</tr>
<tr>
<td>40+</td>
<td>6</td>
<td>11</td>
<td>8</td>
</tr>
<tr>
<td>Male</td>
<td>5</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>Female</td>
<td>7</td>
<td>16</td>
<td>8</td>
</tr>
</tbody>
</table>

Highest selected - ☐

* Numeric data presented as counts

BASE: ALL RESPONDENTS (n=50)

WB8/9/10/11/12/13. Which name is the best fit for this level of vehicle automation?
Conditional Automation, High Automation, and Full Automation rise to the top.

**Level Nomenclature (2)**

<table>
<thead>
<tr>
<th>Level 3</th>
<th>Partial Autonomy</th>
<th>18-35</th>
<th>40+</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Conditional Automation</td>
<td>24</td>
<td>13</td>
<td>10</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>14</td>
<td>5</td>
<td>9</td>
<td>9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Level 4</th>
<th>Full Autonomy (+Human)</th>
<th>18-35</th>
<th>40+</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High Automation</td>
<td>23</td>
<td>12</td>
<td>7</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>16</td>
<td>7</td>
<td>9</td>
<td>9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Level 5</th>
<th>Full Autonomy</th>
<th>18-35</th>
<th>40+</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Full Automation</td>
<td>28</td>
<td>11</td>
<td>17</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>14</td>
<td>6</td>
<td>8</td>
<td>8</td>
</tr>
</tbody>
</table>

"partial" assistance or automation is a major theme among ‘Other’ mentions

"optional" and “driving/driver” are common themes among ‘Other’ mentions

"self-driving" is the main theme among ‘Other’ mentions

*Numeric data presented as counts

BASE: ALL RESPONDENTS (n=50)
WB8/9/10/11/12/13. Which name is the best fit for this level of vehicle automation?
Drivers prefer to describe current technologies widely available today as ‘assistance’ & ‘safety’ technologies.

**Current Nomenclature (1)**

<table>
<thead>
<tr>
<th>BASE: ALL RESPONDENTS (n=50)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current technologies</strong></td>
</tr>
<tr>
<td>Driver assistance vehicles</td>
</tr>
<tr>
<td>Safe-drive technologies</td>
</tr>
<tr>
<td>Automated vehicle technology</td>
</tr>
<tr>
<td>Self-driving vehicles</td>
</tr>
<tr>
<td>Driverless vehicles</td>
</tr>
<tr>
<td>Autonomous vehicles</td>
</tr>
<tr>
<td>Other</td>
</tr>
</tbody>
</table>

6 out of 10 include “Assist” and 5 out of 10 include “Safety”

**[Driver assistance vehicles]** There is automated vehicle technology out there but it’s not what I would describe as the current modern car, because … those are the really expensive cars or really futuristic cars, I would say. In general, an overall description of what’s on the market right now is Driver assistance. – Paramus, 8pm

**[Safe-drive technologies]** That’s what they’re there for, to help me drive safer … from like a marketing type perspective, I think self-driving vehicles sounds well, oh, my God that’s so scary … but if we’re just talking about what’s currently available and some of the technologies that we’ve discussed today for what’s out there, I think that’s really what they are, just things that help to make driving safer. They’re assistive or safer technologies. – Kansas City, 8pm

**[Driving safety assistance]** I combined Driver Assistance and the Safe-drive and I just put Driving safety assistance … Yes, they’re assisting but I couldn’t just put “assisting” because I also want to feel safe in the car too, so that’s why I combined them. – Paramus, 6pm

*Numeric data presented as counts*

*BASE: ALL RESPONDENTS (n=50)*

WB14. Below are some names that others have suggested for these types of technologies that are widely available now. Which of the following is the best name to refer to this type of vehicle technology that is currently available?
Naming is more of a generational difference, with ‘Assistance’ resonating strongest for younger, and ‘Safe’ for older drivers.

The Younger audience is very confident in their driving abilities, seeing themselves as highly skilled drivers, and favor describing current technology in terms of “assisting” them in being great drivers.

The Older audience who have their family and loved-ones top of mind, are more likely to favor describing the current technology as “Safe” giving them a greater sense of peace of mind.

### Current Nomenclature (2)

<table>
<thead>
<tr>
<th>Type of Technology</th>
<th>18-35</th>
<th>40+</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driver assistance vehicles</td>
<td>16</td>
<td></td>
<td>11</td>
<td>5</td>
</tr>
<tr>
<td>Safe-drive technologies</td>
<td>15</td>
<td></td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Automated vehicle technology</td>
<td>9</td>
<td></td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Self-driving vehicles</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Driverless vehicles</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Autonomous vehicles</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Other</td>
<td>10</td>
<td></td>
<td>3</td>
<td>7</td>
</tr>
</tbody>
</table>

*Numeric data presented as counts

BASE: ALL RESPONDENTS (n=50)

WB14. Below are some names that others have suggested for these types of technologies that are widely available now. Which of the following is the best name to refer to this type of vehicle technology that is currently available?
When discussing future technologies ‘Automated vehicle technology’ rises to the top, though there is less consensus.

Future Nomenclature (1)

<table>
<thead>
<tr>
<th>Name of Technology</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automated vehicle technology</td>
<td>14</td>
</tr>
<tr>
<td>Self-driving vehicles</td>
<td>10</td>
</tr>
<tr>
<td>Autonomous vehicles</td>
<td>6</td>
</tr>
<tr>
<td>Driverless vehicles</td>
<td>4</td>
</tr>
<tr>
<td>Safe-drive technologies</td>
<td>4</td>
</tr>
<tr>
<td>Driver assistance vehicles</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>9</td>
</tr>
</tbody>
</table>

6 out of 9 names include “Driver” or “Driving” - possibly a need to qualify that something is still driving “Human” car I Autonomous driving technology I Autodrive I Automated self-driving vehicle technology I Fully automatic driverless vehicles I Adaptive driving technologies I Automated safety vehicle technology I Driver convenience technology I Drive like the Jetsons

[Automated vehicle technology] I also said Automated vehicle technology just because that’s how I see it in my mind, just automatic. The car does its own thing. It’s just the phrase that goes with it. – Kansas City, 8pm

[Self-driving vehicles] Driverless vehicles make me feel like no one would even be in the vehicle … and the other ones seem to not really capture other things that these vehicles are going to be able to do in the future. So I think Self-driving is more accurate because there’s still going to be someone in the car but it’s going to drive itself. – Kansas City, 8pm

[Adaptive driving technologies] Well, it sounds like the technology that we were referring to earlier is that there is going to be communication through other cars which is adapting to the environment around them. It’s that things are going to be automated but that’s based on the surroundings. – Sacramento, 6pm

BASE: ALL RESPONDENTS (n=48) *Numeric data presented as counts
WB15. Below are some names that others have suggested for these types of technologies that are going to be available in the future. Which of the following is the best name to refer to this type of vehicle technology that is coming?
There is very little differences of note between demographic breaks. Younger Females are more comfortable with ‘driverless.’

Future Nomenclature (2)

<table>
<thead>
<tr>
<th>Technology</th>
<th>18-35</th>
<th>40+</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automated vehicle technology</td>
<td>14</td>
<td></td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Self-driving vehicles</td>
<td>10</td>
<td></td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Autonomous vehicles</td>
<td>6</td>
<td></td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Driverless vehicles</td>
<td>4</td>
<td></td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>Safe-drive technologies</td>
<td>4</td>
<td></td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>Driver assistance vehicles</td>
<td>1</td>
<td></td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>9</td>
<td></td>
<td>6</td>
<td>3</td>
</tr>
</tbody>
</table>

*Numeric data presented as counts

BASE: ALL RESPONDENTS (n=48)

WB15. Below are some names that others have suggested for these types of technologies that are going to be available in the future. Which of the following is the best name to refer to this type of vehicle technology that is coming?

The Younger audience is more comfortable describing the future technology as “driverless.”

The Older audience views “driverless” as a negatively charged word that can cause some drivers to turn away from the technology.
## MESSAGING: Six Statements Tested

Participants reviewed 3 out of 6 statements assessing them on 6 key metrics and recording any elements that were confusing or difficult to understand. In addition, the last 4 groups did an exercise to circling positive words and underline negative words.

<table>
<thead>
<tr>
<th>A - “Faster”</th>
<th>B - “Driver Assistance Technologies”</th>
</tr>
</thead>
<tbody>
<tr>
<td>The faster the shift to self-driving cars happens safely on our roads, the faster thousands of lives can be saved.</td>
<td>An estimated 94% of vehicle crashes involve human error. Driver assistance technologies – like adaptive cruise control, which helps you maintain space between your car and others, and lane keeping support, which helps you stay in your lane – are already available in many vehicles. These technologies reduce human error by alerting the driver or reacting more quickly than the driver could to avoid crashes and help save thousands of lives.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C - “Tesla’s Autopilot”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whether it’s Tesla’s autopilot, Uber’s driverless ridesharing, or Google’s self-driving cars, automated vehicles are here and improving every day. These technologies will significantly reduce the estimated 94% of crashes caused by driver error, helping to save thousands of lives.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>D - “Human Error”</th>
</tr>
</thead>
<tbody>
<tr>
<td>An estimated 94% of vehicle crashes involve human error. Fully autonomous vehicle systems, which control the vehicle for the driver, hold the promise of eliminating human error related crashes entirely, helping to save tens of thousands of lives.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>E - “Good Driver”</th>
</tr>
</thead>
<tbody>
<tr>
<td>You’re a good driver. But with so many people driving recklessly, drunk, or while on their phone, having safe-driving technology in your vehicle will keep you safe from them.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>F - “Try It”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drivers who have used driver assistance technologies and driverless cars see their potential to save lives. Try it. You’ll see it too.</td>
</tr>
</tbody>
</table>
Statement B was undisputedly the best performing statement across all demographic groups. It contained a strong mix of key elements that drivers were seeking from communications - statistical basis, explanation of the technology, how it is safer than human drivers, and describes what the driver and societal benefit is.

Statement B’s performance (and all others) could be improved by including a credible source. With NHTSA sponsoring the message, it will be an effective communication tool among the driving public.

"It's not credible because they didn’t really say who released that or who is making these vehicles. They just made a general statement. [MODERATOR: What would make it more credible?] If they said, how you have it here ... NHTSA, something like that. If they were to release that statement [it would be credible], because it doesn’t really say who released it."

- Paramus, 8pm

More, concise information is better - drivers want to know more in order to empower them to make smart decisions, but do not want to be bogged down by technical explanations.
Key Takeaways & Recommendations

Summary: Messaging (2)

When possible, incorporate testimonials - many find comfort in others trying and liking the technology - sharing those experiences can be a powerful way to engage the public.

Bottom line is drivers want assurance that the technology is safe, not just that it could reduce accidents.

"I just want something that says that they are safer, something that says that they have been tried and - yes, statistics and facts."

- Kansas City, 8pm
Statement B outperforms all messages and generates the highest 'complete' agreement across key metrics.

### Agreement with Key Metrics

<table>
<thead>
<tr>
<th>Statement</th>
<th>Somewhat agree</th>
<th>Completely agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. This statement shows how my quality of life can be improved through these vehicle technologies.</td>
<td>13 5 18</td>
<td></td>
</tr>
<tr>
<td>B. This statement makes me more supportive of having more vehicles with these types of driver assistance technology on the road.</td>
<td>12 5 17</td>
<td></td>
</tr>
<tr>
<td>C. This statement demonstrates to me that these vehicle technologies can help to save lives on America's roads.</td>
<td>10 6 16</td>
<td></td>
</tr>
<tr>
<td>D. This statement tells me something I didn’t know before.</td>
<td>12 3 15</td>
<td></td>
</tr>
<tr>
<td>E. This statement is credible.</td>
<td>11 3 14</td>
<td></td>
</tr>
<tr>
<td>F. This statement helps me understand the benefits of these vehicle technologies.</td>
<td>7 6 13</td>
<td></td>
</tr>
</tbody>
</table>

*Numeric data presented as counts

**BASE: SPLIT SAMPLE (n=25)**

To what degree do you agree to each of the following?

**Best performing -**

**Second best performing -**
Statement B outperformed all other statements. Females age 40+ are more likely to be comfortable with “Faster” message.

For easy comparability of messages we built an index score: index was calculated by assigning (3) points to a score of Completely agree, (1) point to a score of Somewhat agree, and then dividing by the total possible points across all 6 metrics [25 x 3 x 6 = 450].

<table>
<thead>
<tr>
<th>INDEX TABLE:</th>
<th>Total</th>
<th>Age 18-35</th>
<th>Age 40+</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statement B - “Driver Assistance Technologies”</td>
<td>61</td>
<td>62</td>
<td>60</td>
<td>60</td>
<td>64</td>
</tr>
<tr>
<td>Statement D - “Human Error”</td>
<td>48</td>
<td>53</td>
<td>43</td>
<td>32</td>
<td>55</td>
</tr>
<tr>
<td>Statement C - “Tesla’s Autopilot”</td>
<td>46</td>
<td>48</td>
<td>45</td>
<td>32</td>
<td>53</td>
</tr>
<tr>
<td>Statement E - “Good Driver”</td>
<td>36</td>
<td>36</td>
<td>37</td>
<td>38</td>
<td>36</td>
</tr>
<tr>
<td>Statement F - “Try It”</td>
<td>34</td>
<td>33</td>
<td>35</td>
<td>34</td>
<td>33</td>
</tr>
<tr>
<td>Statement A - “Faster”</td>
<td>33</td>
<td>31</td>
<td>35</td>
<td>28</td>
<td>44</td>
</tr>
</tbody>
</table>

Key: Index Score
Scale (0-100)
Completely agree = 3
Somewhat agree = 1
Do not agree at all = 0

BASE: SPLIT SAMPLE (n=25)
WB16/18/20/22/24/26. To what degree do you agree to each of the following?
An estimated 94% of vehicle crashes involve human error. Driver assistance technologies – like adaptive cruise control, which helps you maintain space between your car and others, and lane keeping support, which helps you stay in your lane – are already available in many vehicles. These technologies reduce human error by alerting the driver or reacting more quickly than the driver could to avoid crashes and help save thousands of lives.

### Appealing

- Statistics are compelling when cited, people want to know the facts when it comes to their safety
- The technology example and stated safety benefits were appreciated - most drivers are unaware/unexposed to these technologies

### Unappealing

- Implying technology can react more quickly than the driver weakened credibility - until the technology is proven, drivers will be skeptical

### Suggestions

- Statistics need to have a reference in order to be credible
- Technology descriptions/explanations with explicit safety benefits are important - early communication efforts should focus on education with relatable scenarios for drivers
An estimated 94% of vehicle crashes involve human error. Fully autonomous vehicle systems, which control the vehicle for the driver, hold the promise of eliminating human error related crashes entirely, helping to save tens of thousands of lives.

The part that concerns me is when it says “promise” because that’s such a huge word. Sometimes, when things seem to good to be true, I don’t believe it. If you’re promising something, I’m already suspicious about it. – Sacramento, 8pm

I liked eliminating human error...because if you’re not in control of the car, you’re the human and cause human error...then if the computer is more reliable by far then you’re going to be safer and others will be safer by far.– Kansas City, 6pm

APPEALING
• Statistics are compelling when cited, people want to know the facts when it comes to their safety

UNAPPEALING
• “Eliminating” strong wording seems improbable and undermines the statement
• “Promise” is also a strong word
• “Hold the promise” wasn’t very believable or credible, drivers don’t believe safety should rely on hope

SUGGESTIONS
• Statistics need to have a reference in order to be credible
• Avoid definitive wording unless it is assured/proven
• “Promise” is a strong word and should be avoided
Whether it’s Tesla’s autopilot, Uber’s driverless ridesharing, or Google’s self-driving cars, automated vehicles are here and improving every day. These technologies will significantly reduce the estimated 94% of crashes caused by driver error, helping to save thousands of lives.

These companies are working on it, that they used them on a daily basis. You figure with that information, there are studies on it now, that they’re keeping … I feel safer knowing that. – Sacramento, 8pm

I thought it was vague … Give me a few examples of how it’s going to keep me safe so that it catches my attention a little bit more versus a blanket statement. – Sacramento, 8pm

APPEALING
- Reinforcing that companies are improving the technology is reassuring
- Lots of new information
- Shows how one’s quality of life can be improved and then demonstrated how the vehicles can help to save lives

UNAPPEALING
- Lacked “how” - Left drivers with questions
- News reports of issues with Tesla and Google issues hurt credibility/contradicted drivers existing information on this topic - all are new to the automotive industry, so people are hesitant to blindly trust them

SUGGESTIONS
- Statistics need to have a reference in order to be credible -Government or Insurance company
- Drivers were craving “proof” and more detail, examples
- References to specific and recognizable companies helped people identify with the statement
You’re a good driver. But with so many people driving recklessly drunk, or while on their phone, having safe-driving technology in your vehicle will keep you safe from them.

“The vehicle will keep me safe from them” - This is just a piece of opinion. There’s nothing in any of the technologies that have been mentioned that I could see that will protect me, say for example, from a vehicle that doesn’t have it and even though lets say this is supposed to happen by 2022, it’s going to be a long time before all the cars have it. – Kansas City, 6pm

**SUGGESTIONS**

- Messaging should promote keeping everyone safe
- A more neutral term like competent, decisive instead of “good” - or remove altogether
- Could use a more specific example of the technology and how it keeps drivers safe

**Key: Heatmap**

- **Positive**
- **Polarizing**
- **Negative**

Bolding correlates to intensity of mentions

**APPEALING**

- Identifying hazards of the road and less attentive drivers is effective in communicating how the technology can enhance driver’s ability to react

**UNAPPEALING**

- “Keep you safe from them” - creates a us vs. them mentality and an unnecessary arbitrary confrontational tone
- “You’re a good driver” - came across as pandering and opened the statement up to challenges (how do you know?) - this was considered untrue of most drivers making it less credible

**BASE: SPLIT SAMPLE (n=25)**

WB25. Is there anything about this statement that is confusing or difficult to understand? If, so, what, and how could that be improved?
Drivers who have used **driver assistance technologies** and **driverless** cars see their potential to **save lives**. **Try it.** You’ll see it too.

“Drivers who have used” - I like that … because up until this point, I didn’t really know a lot about who’s used it … if people like me have tried these driverless cars and they actually know what it feels like and they thought it was cool … maybe it’s not that scary … maybe it’s a great thing. – Kansas City, 8pm

**Try it**…because it **reminds me of trial and error**. I don’t want to be the one who tries the car. I want to know the car when it’s **safe**. – Kansas City, 8pm

**Key: Heatmap**

**Positive**

**Polarizing**

**Negative**

---

**APPEALING**

- “Potential to save lives” had significant positive impact
- Including reference to “drivers” was reassuring to some, knowing others have had positive experiences lessened fear of the unknown

**UNAPPEALING**

- The term “driverless” creates a contradiction/confusion - how can there be drivers in driverless cars?
- “Try it. You’ll see it too” - received pushback and was not well received by those who have yet to experience the technologies (came across as soliciting “guinea pigs” for unproven technology)
- “Potential” could be seen as open-ended, open to questions on specifics

**SUGGESTIONS**

- Avoid language that tells people how they will feel or react to an experience
- Avoid “Trial” scenarios - implies the technology is still in the testing stage, drivers want cars that are already proven safe
- Statistics and Facts from credible sources would help give the statement substance
The faster the shift to self-driving cars happens safely on our roads the faster thousands of lives can be saved.

That was my biggest issue. I felt like with the statement, it felt really rushed like, “Go out and do it.” I feel like anything that’s rushed, it’s low quality. – Sacramento, 6pm

I’m hearing a lot of like, “Oh, this needs to be – we need to make sure it tests longer” but I admittedly don’t know a lot about this at all but my sense is just from the headlines I’ve seen here and there is that like behind the scenes that maybe the average person doesn’t know that this has been being worked on and tested for like years and years and years. So just because we don’t know about it, it’s not like it’s a new thing that they just came up with like last year or something. – Kansas City, 8pm

APPEALING
- “faster the shift to self-driving cars” was appealing to those who trust technology

UNAPPEALING
- Avoid the word faster - it is immediately associated with lower quality
- Lacked information

SUGGESTIONS
- Technology is seen as needing frequent bug fixes and updates, “fast” implies the technology will not be safe from the start
Movement & Post-Assessment

POST: HUMANS VS. TECHNOLOGY
Key Takeaways & Recommendations

Summary (1): POST-Humans vs. Technology

The most compelling, supporting elements for technology that stuck with drivers in post-discussion were:

- National Highway Traffic Safety Administration (NHTSA) as a source and guide in the infographic representation
- Statistical evidence that 94% of accidents are caused by human error
- Message F elements that state “people have tested it” and “they like it”
- Framing the technology as a safety for all drivers not just the one “behind the wheel”

Drivers need a credible pillar to place their trust in, NHTSA can be that pillar.

"I think what really helped me was this ['Today to Tomorrow'] … because it was much better to know that the National Highway T[raffic] Safety A[dmistration] did this so this moved me more toward the autonomous vehicle. It was a trust factor when you brought this out, because I felt like I was kind of blind when we first started.

- Kansas City, 6pm
Key Takeaways & Recommendations

Summary (2): POST-Humans vs. Technology

Drivers willingly agree that even though technology may make mistakes, it makes fewer mistakes than humans - however, lack of exposure, experience, and education creates anxiety around the unknown.

“**We have trust issues … it’s only because not everyone has it. Not everyone’s used to it. Not everyone knows what to do with it.**”

- Paramus, 8pm

There is a small faction who want to rebel against a systemic feeling that technology is replacing humans and the significance, or impact, an individual can make in society.

“I just feel like everything - not even necessarily with cars - are just trying to take over the importance of people in general so I just don’t want certain technologies to overshadow the need of people.”

- Kansas City, 8pm
About 1 in 4 of those originally for Humans changed their views to be for technology at the end of the session.

Although there is a positive shift toward technology as the safer driver, more feel ‘definite’ that humans are safer than feel ‘definite’ that technology is safer.

**HUMANS**
Some people say that it’s safer when they (the driver) are in complete control of all the vehicle functions. They trust themselves more than technology, and say that technology software could be hacked, or that they can’t fully relax in a vehicle where driving is controlled by a computer.

**TECHNOLOGY**
Others say that vehicles in which driving is controlled by a computer are safer, because the technology is proven, there is new and better technology on the horizon and technology can react more quickly and reliably than people can.

<table>
<thead>
<tr>
<th></th>
<th>PRE-Total</th>
<th>POST-Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definitely feel humans are safer</td>
<td>27</td>
<td>19</td>
</tr>
<tr>
<td>Somewhat feel humans are safer</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Somewhat feel technology is safer</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Definitely feel technology is safer</td>
<td>23</td>
<td>30</td>
</tr>
</tbody>
</table>

*Numeric data presented as counts
BASE: ALL RESPONDENTS (n=49)
WB28. Thinking back about everything we discussed this evening, please turn to the last page in your workbook and indicate which of these two perspectives is closest to your own.
Human error and exposure to experience/confidence in proven technologies are major reasons for the positive shift in opinions.

**HUMANS**

Some people say that it’s safer when they (the driver) are in complete control of all the vehicle functions. They trust themselves more than technology, and say that technology software could be hacked, or that they can’t fully relax in a vehicle where driving is controlled by a computer.

“I just think with technology growing every day, this is a scary thought to me - but I would still rather have control with, I guess, not knowing what technology is actually capable of.” – Kansas City, 8pm

“I think when you put all this technology together and then you see numbers like 94% are caused by human error, it kind of opens your eyes a little bit. So I think that’s why I kind of changed a little bit, but … I still feel that human interaction is important.” – Paramus, 6pm

“I believe that the brakes that stops it automatically from hitting pedestrians, and the emergency brake if a car’s in front of you, I do believe that that can benefit human drivers in a way, but I don’t think that technology completely is safer.” – Paramus, 8pm

**TECHNOLOGY**

Others say that vehicles in which driving is controlled by a computer are safer, because the technology is proven, there is new and better technology on the horizon and technology can react more quickly and reliably than people can.

“It’s the human factor. Technology is going to hopefully be consistent. With humans, there’s a variable. Anything can happen. Someone could fall asleep.” – Paramus, 6pm

“After hearing everyone’s opinions about technology and people who do drive more technological cars than I do … I do like it being there as a backup. That’s why I liked “somewhat” [technology is safer]. “Somewhat” is my go-to word in this but not fully there.” – Paramus, 8pm

“The biggest thing for me was like seeing a bigger picture rather than [the individual driver].” – Sacramento, 6pm

“The technologies that are in the cars now is proven. Because the ones that aren’t proven aren’t in the cars like the self-driving cars – completely self-driving aren’t in most cars yet … I would say ‘definitely feel technology is safer’ when the whole car is taking over.” – Paramus, 8pm

BASE: ALL RESPONDENTS (n=50)

WB28. When it comes to overall vehicle safety and technology, people can have different perspectives. I’m going to read you two perspectives and after I do I’d like you to tell me, which one comes closest to your own.
There is similar, positive movement across demographic breaks.

PRE-POST: Humans vs. Technology (3)

**HUMANS**
Some people say that it’s safer when they (the driver) are in complete control of all the vehicle functions. They trust themselves more than technology, and say that technology software could be hacked, or that they can’t fully relax in a vehicle where driving is controlled by a computer.

**TECHNOLOGY**
Others say that vehicles in which driving is controlled by a computer are safer, because the technology is proven, there is new and better technology on the horizon and technology can react more quickly and reliably than people can.

---

*Numeric data presented as counts
BASE: ALL RESPONDENTS (n=49) | Ages 18-35 (n=25); Ages 40+ (n=24) | Male (n=22); Female (n=27)
WB28. Thinking back about everything we discussed this evening, please turn to the last page in your workbook and indicate which of these two perspectives is closest to your own.*
STRATEGIC IMPERATIVES
Strategic Imperatives (1)

- Use current proven technology as the cornerstone to bridge the gap and start drivers down the path to acceptance of full autonomy.
  - “Assistance” technologies are generally seen as empowering - building that sentiment will open the door to full autonomy empowering drivers in new ways, like higher productivity. However, this is not easily seen at this moment in time.

- Be specific in messaging using examples and citable data, but short and concise when describing and communicating levels of Autonomy.

- Bottom-line, drivers want to know the technology is safe or at least safer than older, less-advanced options.
  - As much as possible, be informative. Broad statements convey an inability to prove or back up the technology.
Strategic Imperatives (2)

Generating greater support for automated vehicles is rooted in an educational progression that:

- **First** – Reinforces the **confidence** that drivers already have in existing driver assistance technologies like Lane Departure Warning, Rearview Video Systems and Blind Spot Detection. This serves as the gateway to open the conversation surrounding automated/autonomous vehicles.

- **Second** – Builds **credibility** in emerging automated technologies by emphasizing the rigorous testing taking place to safely bring this technology to market.

- **Third** – Drives **comfort** with greater autonomy through increased understanding of how the technology operates, the role of the driver and the resulting life-saving impact it will have for America’s roadways.
DEMOGRAPHICS
## Demographic Data

<table>
<thead>
<tr>
<th>Gender</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>23</td>
<td>27</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age</th>
<th>18-35</th>
<th>40+</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>25</td>
<td>25</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Hispanic</td>
<td>5</td>
</tr>
<tr>
<td>American Indian or Alaska Native</td>
<td>-</td>
</tr>
<tr>
<td>Asian American</td>
<td>2</td>
</tr>
<tr>
<td>Black or African American</td>
<td>14</td>
</tr>
<tr>
<td>Native Hawaiian or Other Pacific</td>
<td>2</td>
</tr>
<tr>
<td>Islander</td>
<td>2</td>
</tr>
<tr>
<td>Caucasian</td>
<td>26</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Education</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than high school</td>
<td>-</td>
</tr>
<tr>
<td>High school graduate</td>
<td>8</td>
</tr>
<tr>
<td>Vocational/technical</td>
<td>1</td>
</tr>
<tr>
<td>Some college</td>
<td>18</td>
</tr>
<tr>
<td>College graduate</td>
<td>16</td>
</tr>
<tr>
<td>Post graduate</td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Region</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Paramus, NJ</td>
<td>16</td>
</tr>
<tr>
<td>Kansas City, MO</td>
<td>16</td>
</tr>
<tr>
<td>Sacramento, CA</td>
<td>18</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Income</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than $25K</td>
<td>3</td>
</tr>
<tr>
<td>$25,000-$49,999</td>
<td>10</td>
</tr>
<tr>
<td>$50,000-$74,999</td>
<td>17</td>
</tr>
<tr>
<td>$75,000-$99,999</td>
<td>21</td>
</tr>
<tr>
<td>$100,000-$149,999</td>
<td>5</td>
</tr>
<tr>
<td>$150,000+</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Employment</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Employed full-time</td>
<td>28</td>
</tr>
<tr>
<td>Employed part-time</td>
<td>11</td>
</tr>
<tr>
<td>Retired</td>
<td>4</td>
</tr>
<tr>
<td>Unemployed</td>
<td>2</td>
</tr>
<tr>
<td>Student</td>
<td>2</td>
</tr>
<tr>
<td>Homemaker</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>

---

*Pg. 76*