

COX
AUTOMOTIVE™

Research & Market Intelligence

2017 Autotrader Car Tech Impact Study

January 2017

➤ Methodology



National online survey of US residents **aged 18+**

n= **1,020**

Conducted from **September 22nd – 27th, 2016**

The sample was weighted to Census figures by age, gender, and ethnicity

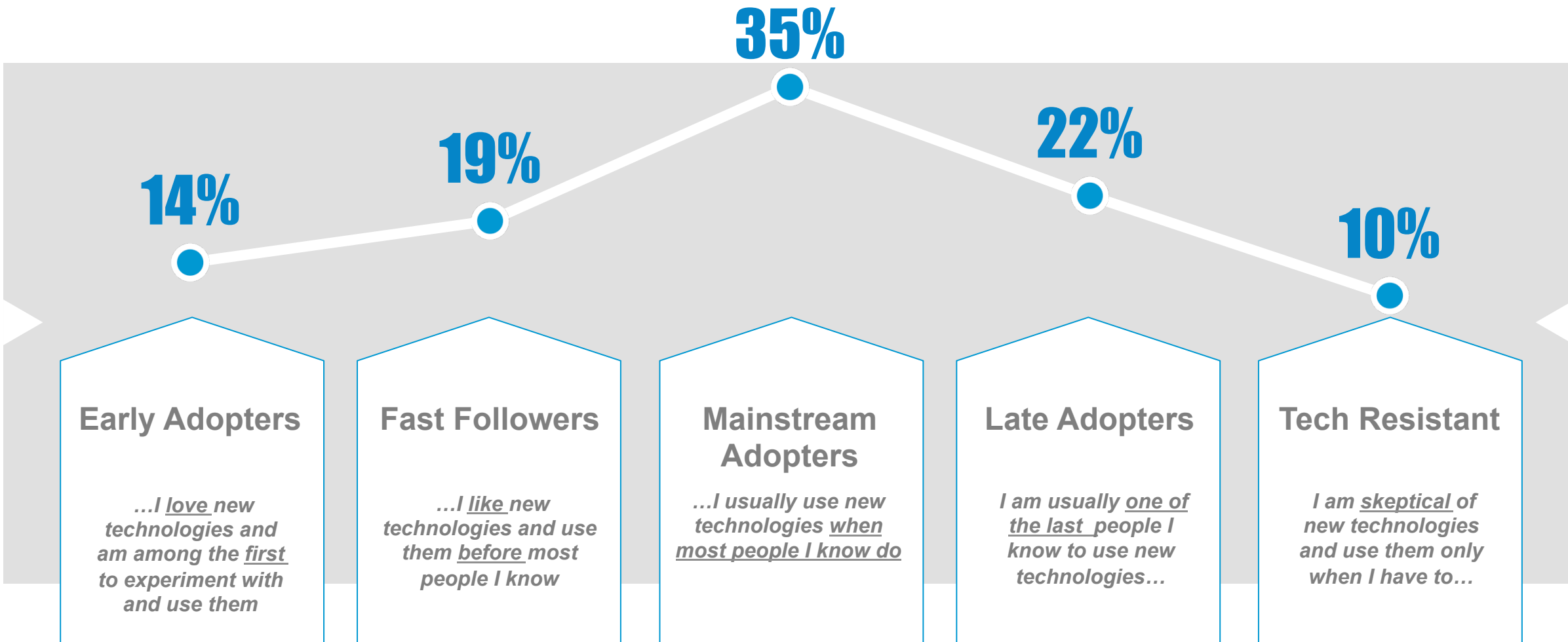


In order to examine how younger drivers feel about in car technology, we sampled n=314 drivers aged 16-17

To make data comparable year over year, we've excluded these younger drivers from the "Total Drivers" composition mentioned throughout this report.

Wherever possible, we've included data for the 2015 and 2016 waves of this research to better understand how consumer attitudes and behaviors towards in-car technology have changed over time

Technology Adaption Groups

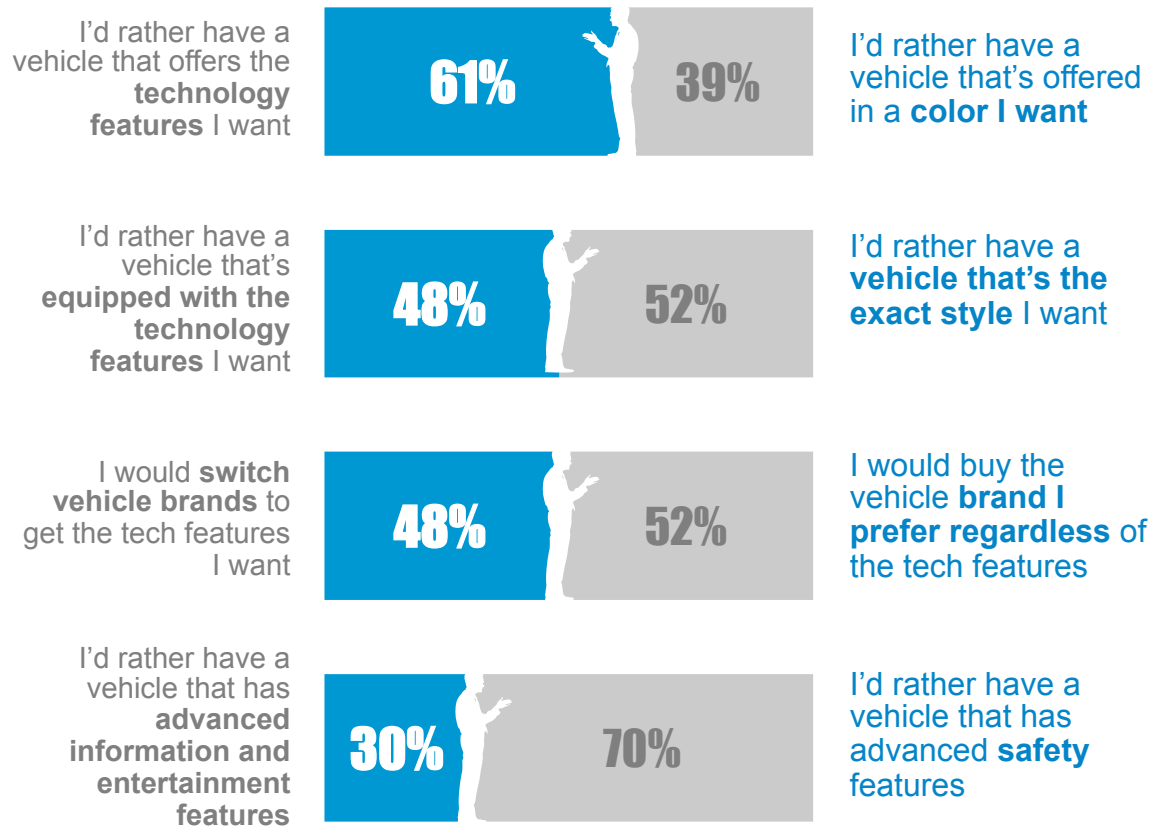




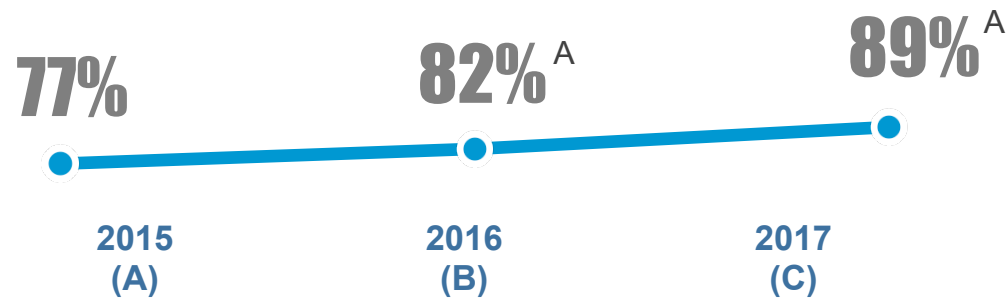
The Role of Tech in Car Buying

Half, or more, of drivers are willing to sacrifice on vehicle color, style, and brand in order to get the latest technology – a third would even sacrifice safety

Vehicle Tech Preferences: Strongly Agree/Agree a Little More



Willing to Wait for Must-Have Features: % Would Wait



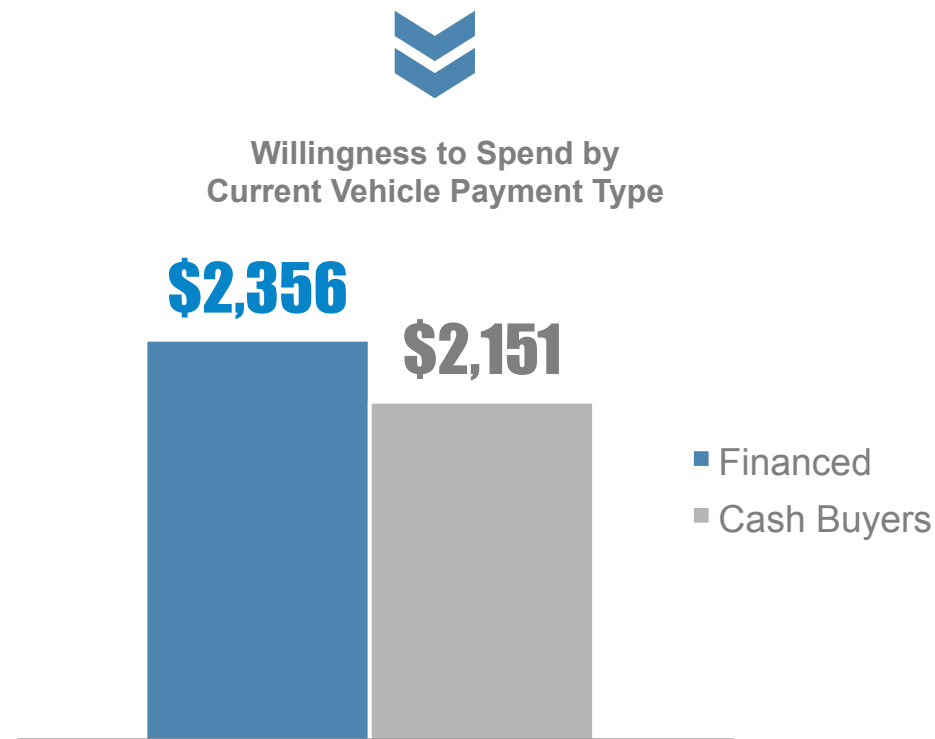
*Agree Strongly/Somewhat Summary
 **Strongly Agree/Agree a Little More Summary
 ***Note: In 2014 and 2015, this question was asked as a "yes/no" question and changed to a binary in 2016.
 Base: Total (1020)
 Capital letters indicate statistical differences at the 95% confidence level (A-C)
 Q916. How long would you be willing to wait to buy a new vehicle if it meant you could get all the "must-haves" you want?
 Q938. For each of the statements listed below, please select the point on the scale that best describes you.

➤ Most consumers expect to pay more in the future for in-vehicle technology they want

Current Vehicle Technology vs. Anticipated Technology for Next Vehicle

	Current Vehicle	Next Vehicle
	I paid extra for...	I will pay extra for...
All or some features and technology (Net)	41%	64%
...all the latest features and technology available	13%	14%
...some features and technology, but not everything available	28%	50%
	It had...	I will buy a vehicle with...
...only the standard features and technology available, nothing extra	59%	36%

Consumers will purchase an average of **\$2,276** to get the tech features they want.



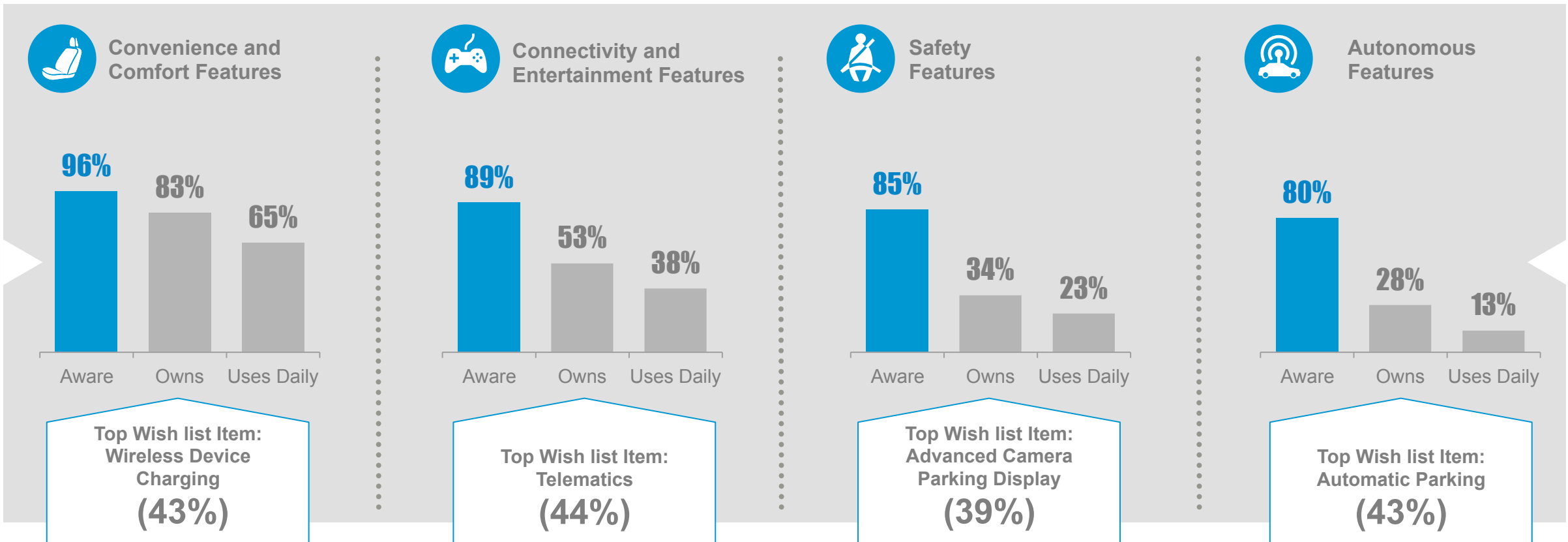
Base: Total (1020); Current Financed Purchasers (448); Current Cash Purchasers (300); Q745. Which of the following best describes your primary vehicle at the time you ... it? Q745b. And which of the following best describes what you think you will do for your next vehicle purchase or Q920. How much more would you be willing to pay beyond the base price of the model to ensure that your new vehicle had all of your must have features?



**Not All Features
are Made Equal**

There is a clear hierarchy of tech features, with convenience and comfort being the most known and widespread features

Car Technology Awareness and Usage



Base: Owns or Leases Vehicle (n=912)
 Q825. Which of the following features does your primary vehicle have?
 Q825b. Before today, which features had you heard of?
 Q830. Which features do you use in your vehicle during a typical day?

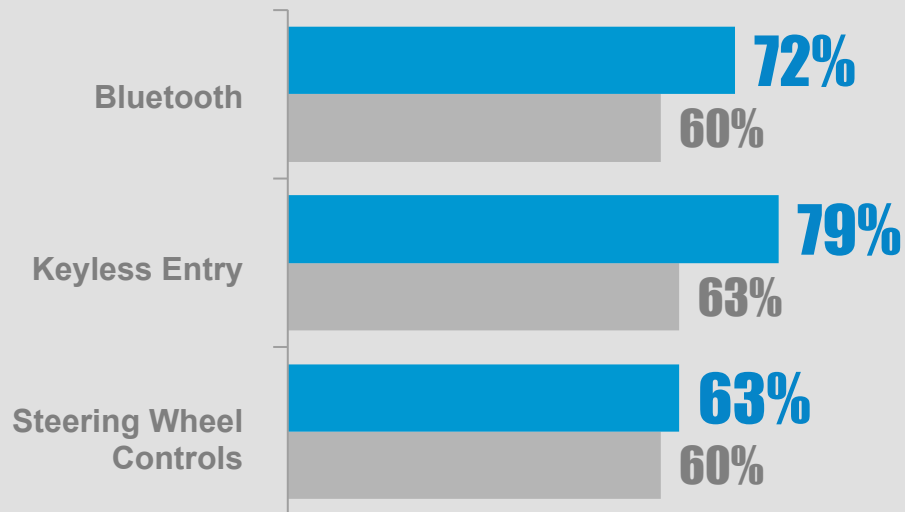
Features revolving around convenience, comfort and safety - such as Bluetooth and blind spot detection - have become “table stakes” for most

Feature Awareness and Interest

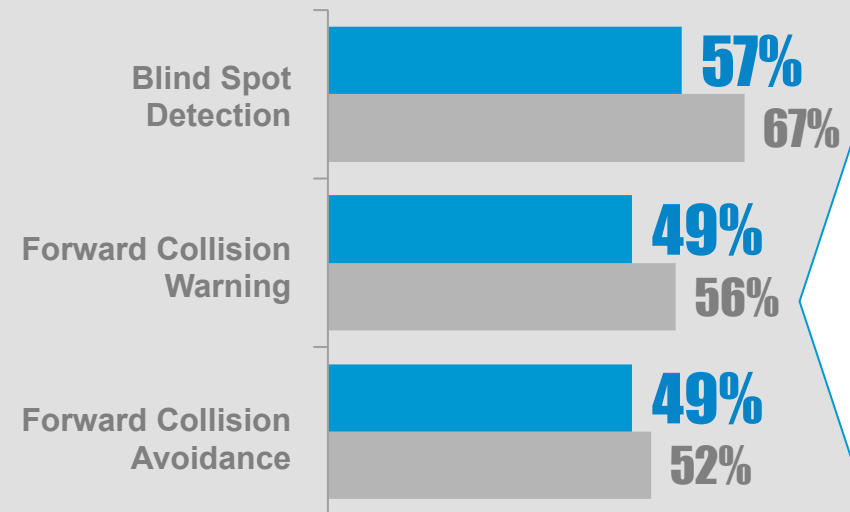
● Aware of Feature ● Believes the Feature Should Be Standard



Convenience and Comfort Features



Safety Features



Despite low penetration for Forward Collision Warning (11%) and Forward Collision Avoidance (8%), drivers still say these features should come standard

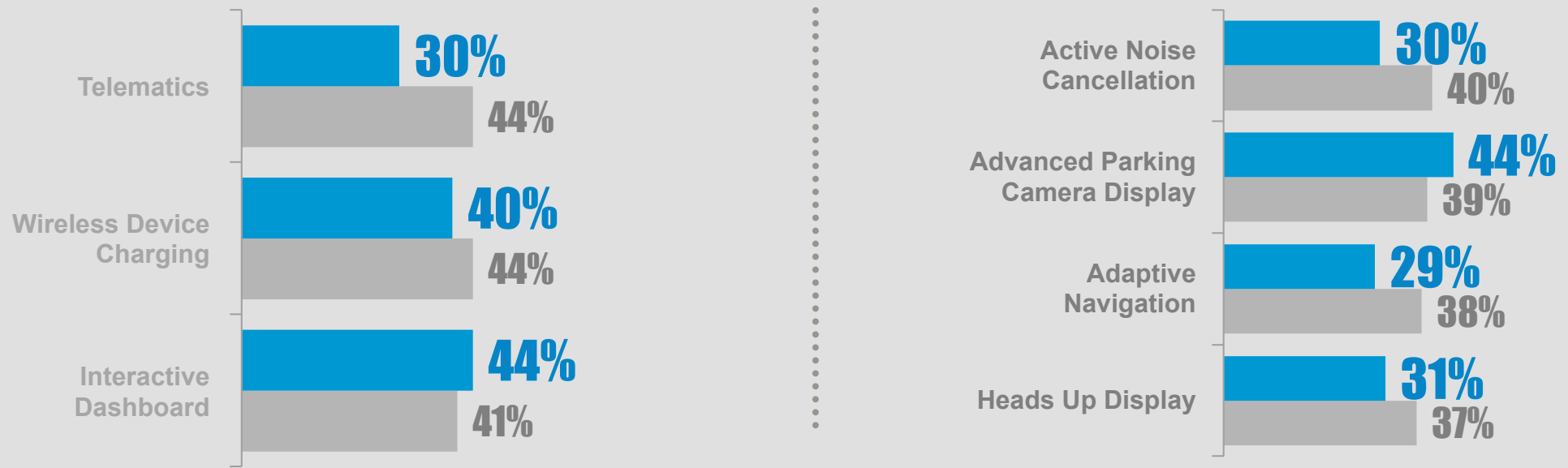
Base: Owns/Leases Vehicle (n=912)
 Q825b. Before today, which features had you heard of?
 Q917. You mentioned that the features listed below are either “must have” or “nice to have” features. Of these, please tell us whether each feature...

Connectivity and Entertainment features are less known, but highly-desired wish list items that may help differentiate one vehicle from the next

Feature Awareness and Interest

● Aware of Feature ● Feature Is a Wish List

Connectivity and Entertainment Features



Base: Owns/Leases Vehicle (n=912)
 Q825. Which of the following features does your primary vehicle have?
 Q825b. Before today, which features had you heard of?
 Q917. You mentioned that the features listed below are either "must have" or "nice to have" features. Of these, please tell us whether each feature...

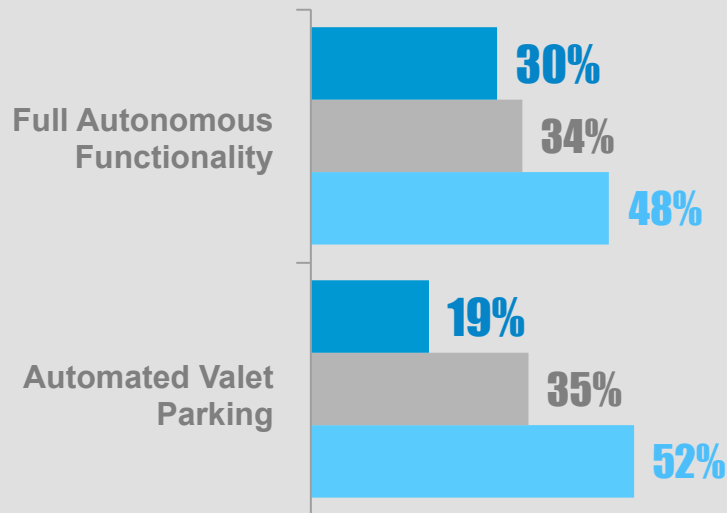
Niche autonomous and 'connected car' features have low awareness and appear to be somewhat polarizing

Feature Awareness and Interest

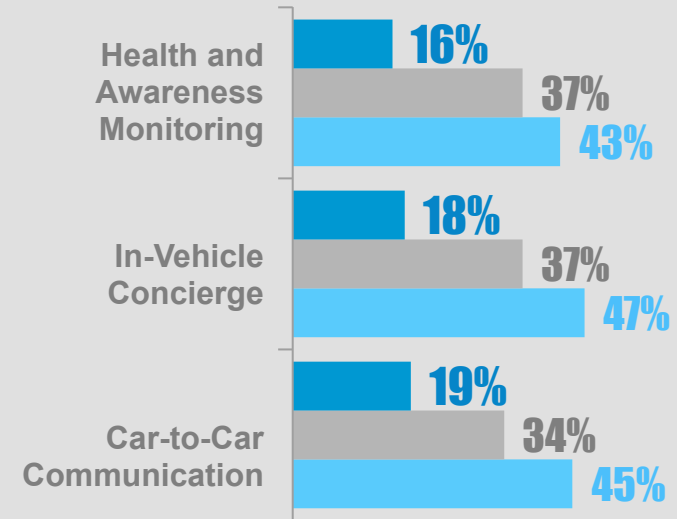
● Aware of Feature
 ● Feature Is a Wish List
 ● Uninterested in Feature



Autonomous Features



"Connected Car" Features



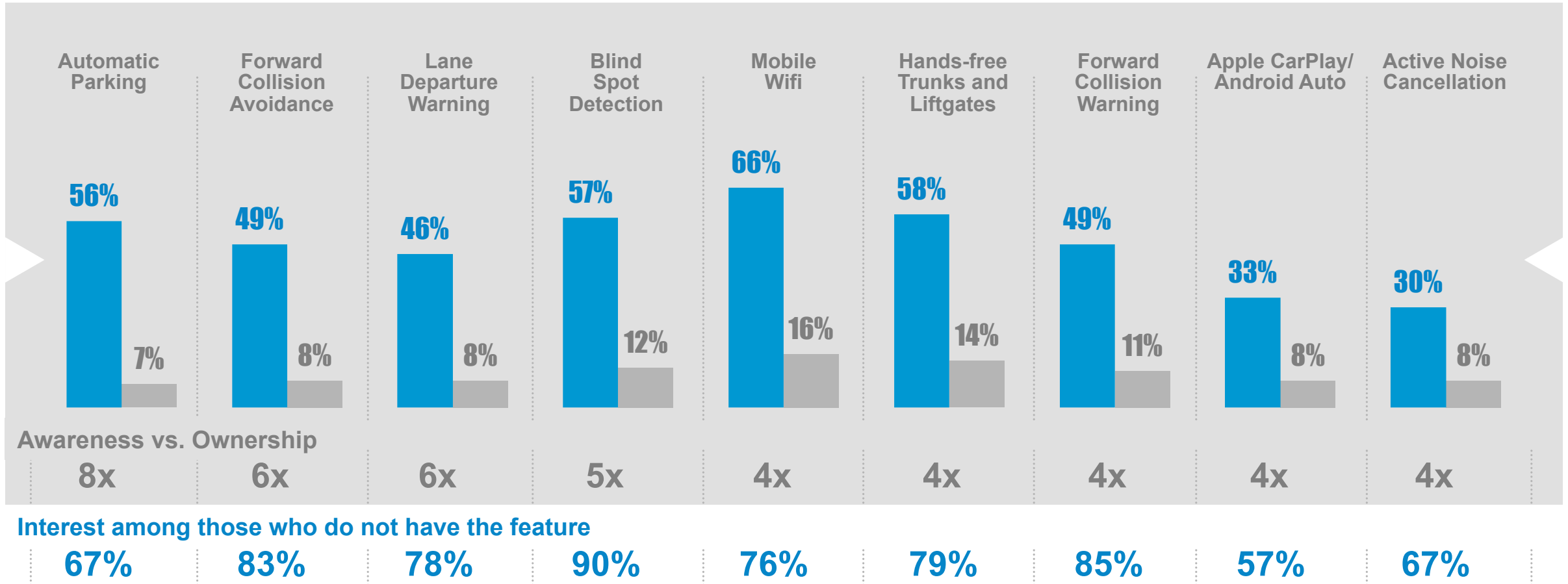
Base: Owns/Leases Vehicle (n=912)
 Q825. Which of the following features does your primary vehicle have?
 Q825b. Before today, which features had you heard of?
 Q917. You mentioned that the features listed below are either "must have" or "nice to have" features. Of these, please tell us whether each feature...
 Q910. When buying your next vehicle, using the scale below, how interested would you be in each of the following features?

Ads make it stick! Features that benefit from high awareness, despite low ownership, have all been prominently featured in TV commercials

Feature Awareness vs. Ownership

Among Vehicle Owners/Leasers

■ Aware ■ Own



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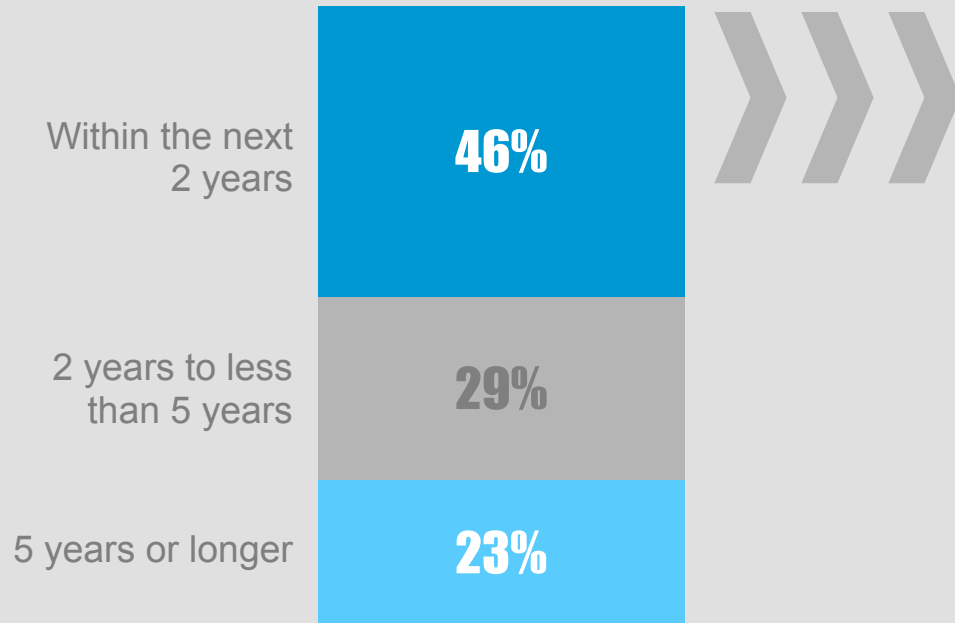


How to Get Consumers in the Driver's Seat

Nearly half of drivers say they'll be in the market for a new vehicle within the next two years

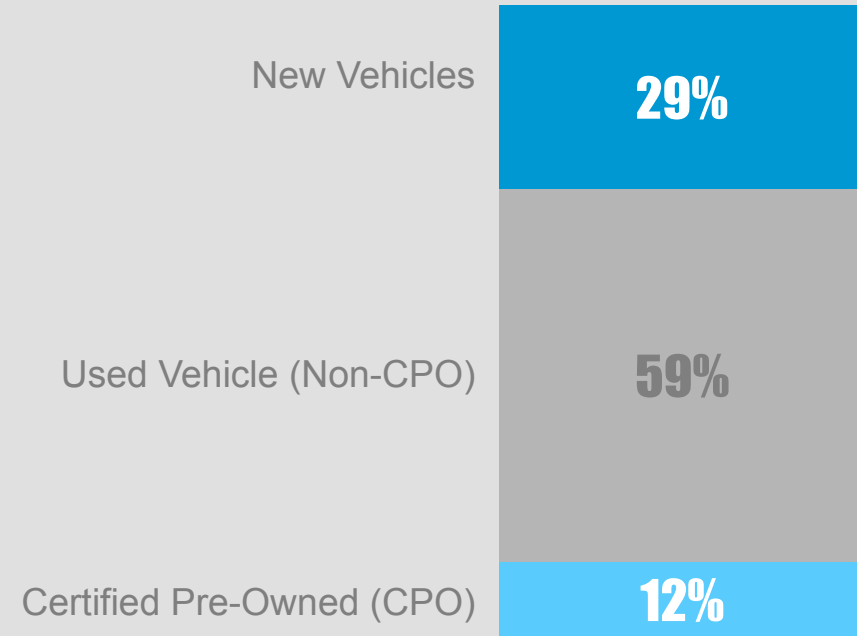
Car Purchasing Timeline

Among Total Drivers



Anticipated Next Vehicle Purchase

Among Drivers Who Anticipate Buying a Vehicle in the Next Two Years



Base: Total Drivers (n=1020), Drivers in the Market in the Next 2 Years (n=483)

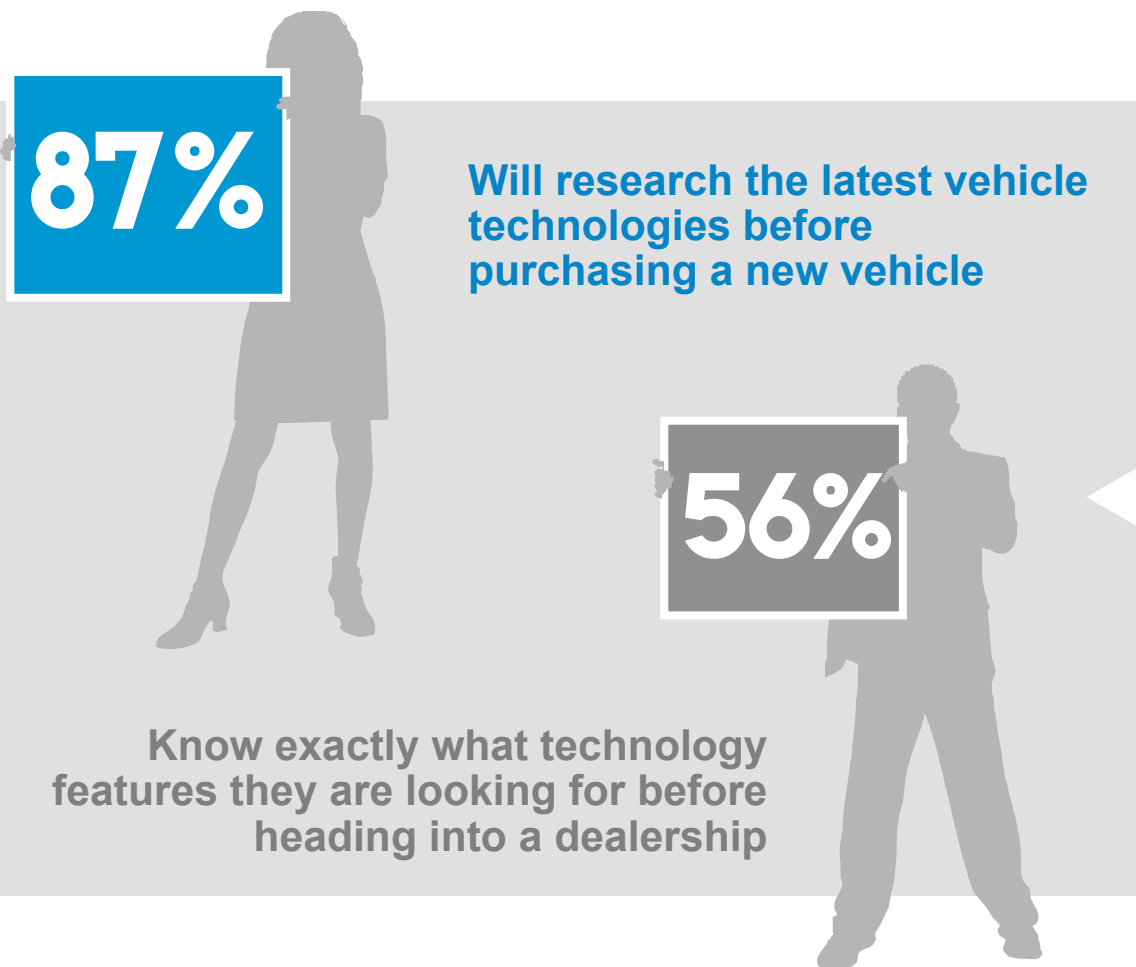
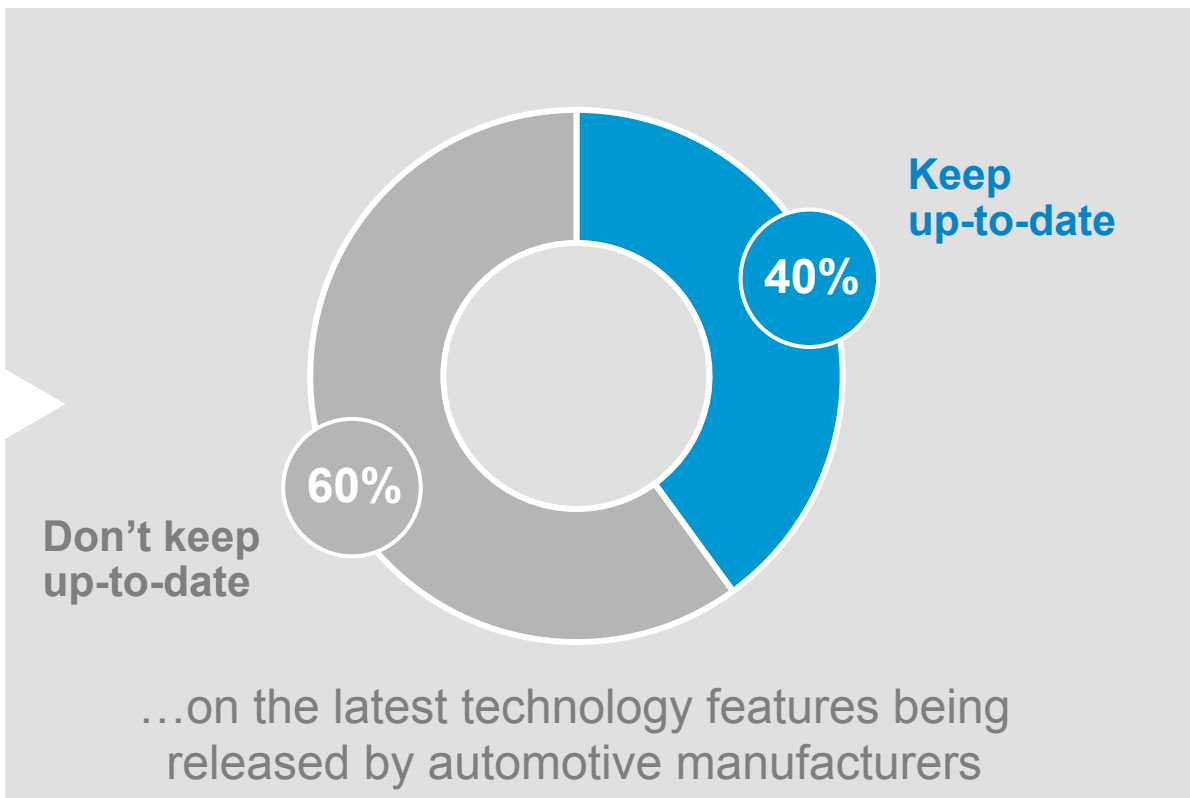
Q900. When are you likely to purchase or lease your next vehicle?

Q734. Which of the following do you think will best describe your mindset when shopping for your next vehicle?

Q734b. You mentioned when shopping for your next vehicle you might look for a used vehicle. Which of the following best describes the type of used vehicle you plan to shop for?

6 in 10 consumers do not keep up-to-date with the latest technology features, but most plan to research technology when in the market for a new vehicle

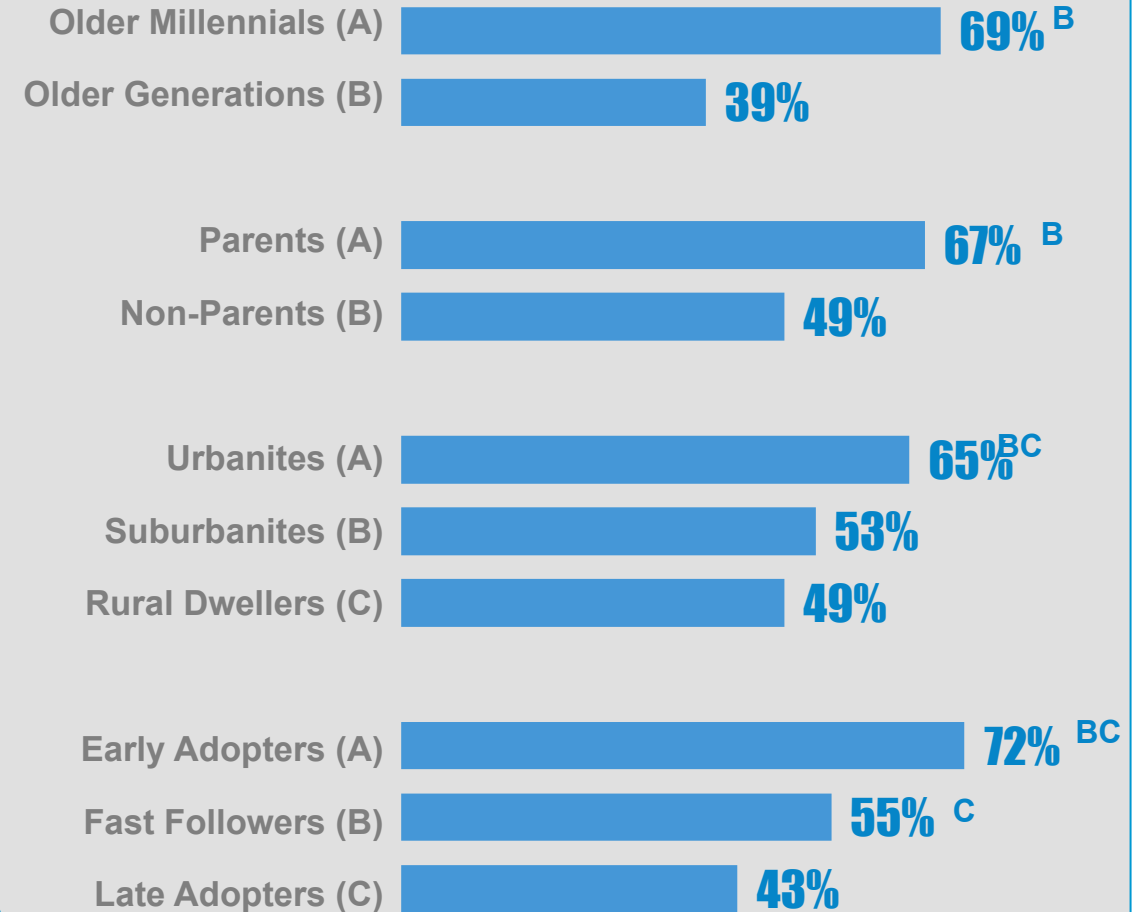
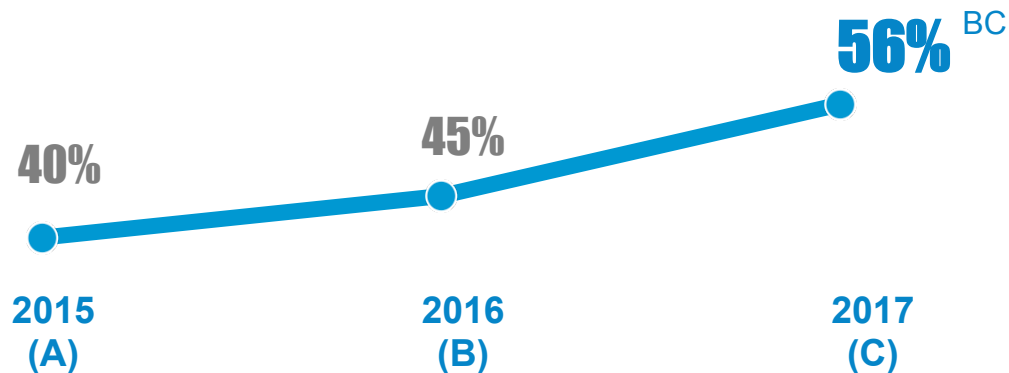
Keeping Up-to-Date with Technology



Total (1020)
Q907. Do you keep up-to-date on the latest technology features being released by automotive manufacturers?
Q938. For each of the statements listed below, please select the point on the scale that best describes you. (Agree strongly/agree more)
Base: Planning to buy a vehicle in the next year (319)
Q909. You mentioned that you'll likely be purchasing another vehicle within the next 12 months. Do you plan to research the latest vehicle technologies?

➤ While the comfort level is increasing, for 4 in 10, the test drive still isn't enough time to master the latest tech and safety features a vehicle has to offer

Is the Time Spent during the Test Drive Enough to Test Technology and Safety Features?
% Yes



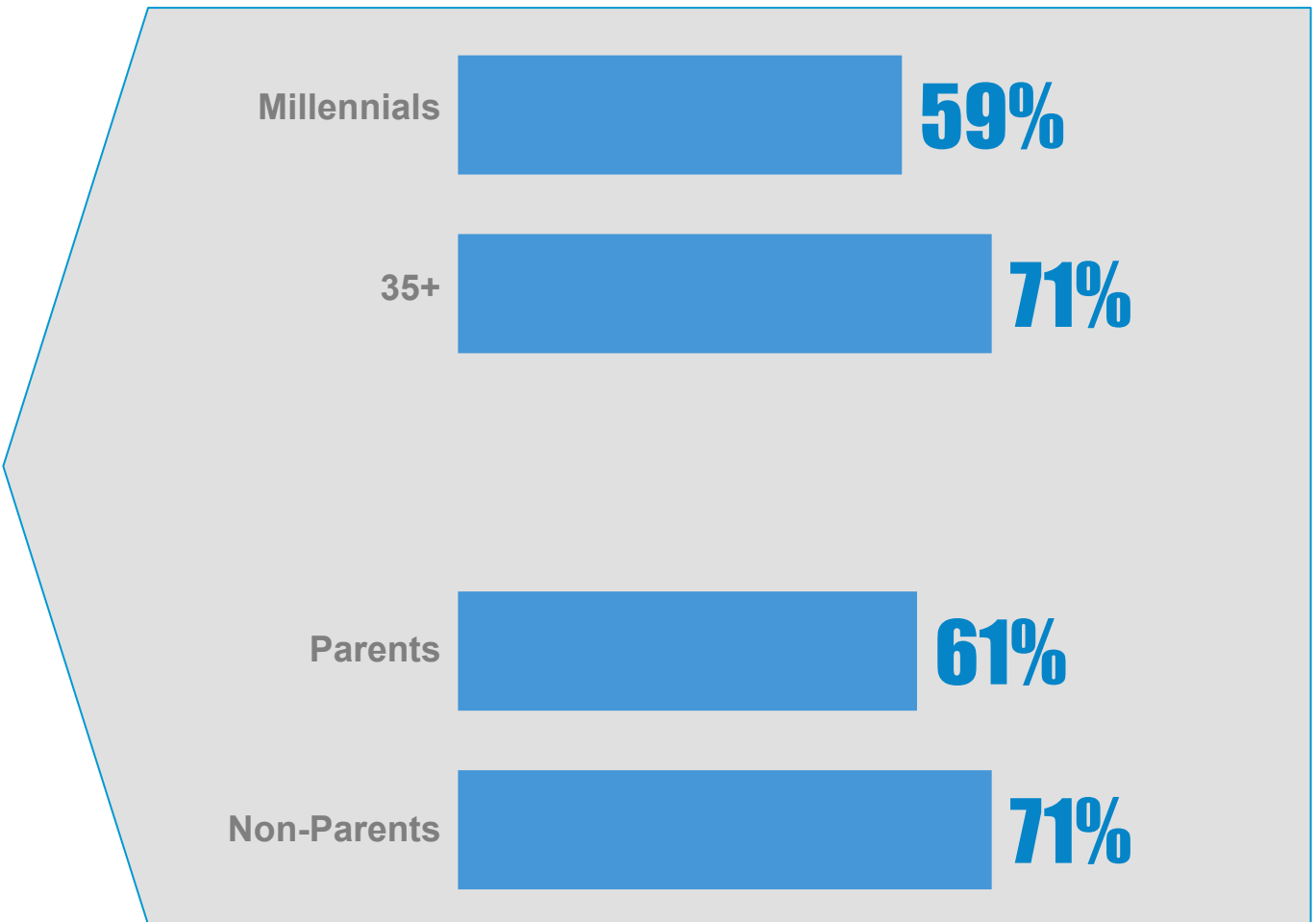
Total (1020), Older Millennials (228), Older Generations (197), Parents (440), Non-Parents (580), Urban (337), Suburbs (435), Rural (248) Q925. If you were to test drive a potential new vehicle, do you think the time spent during the test drive would be enough to also test the vehicle's technology and safety features?

Note: Capital letters represent statistically significant differences at the 95% confidence level.

➤ Most drivers say they'll need at least half an hour to figure out tech features

67%

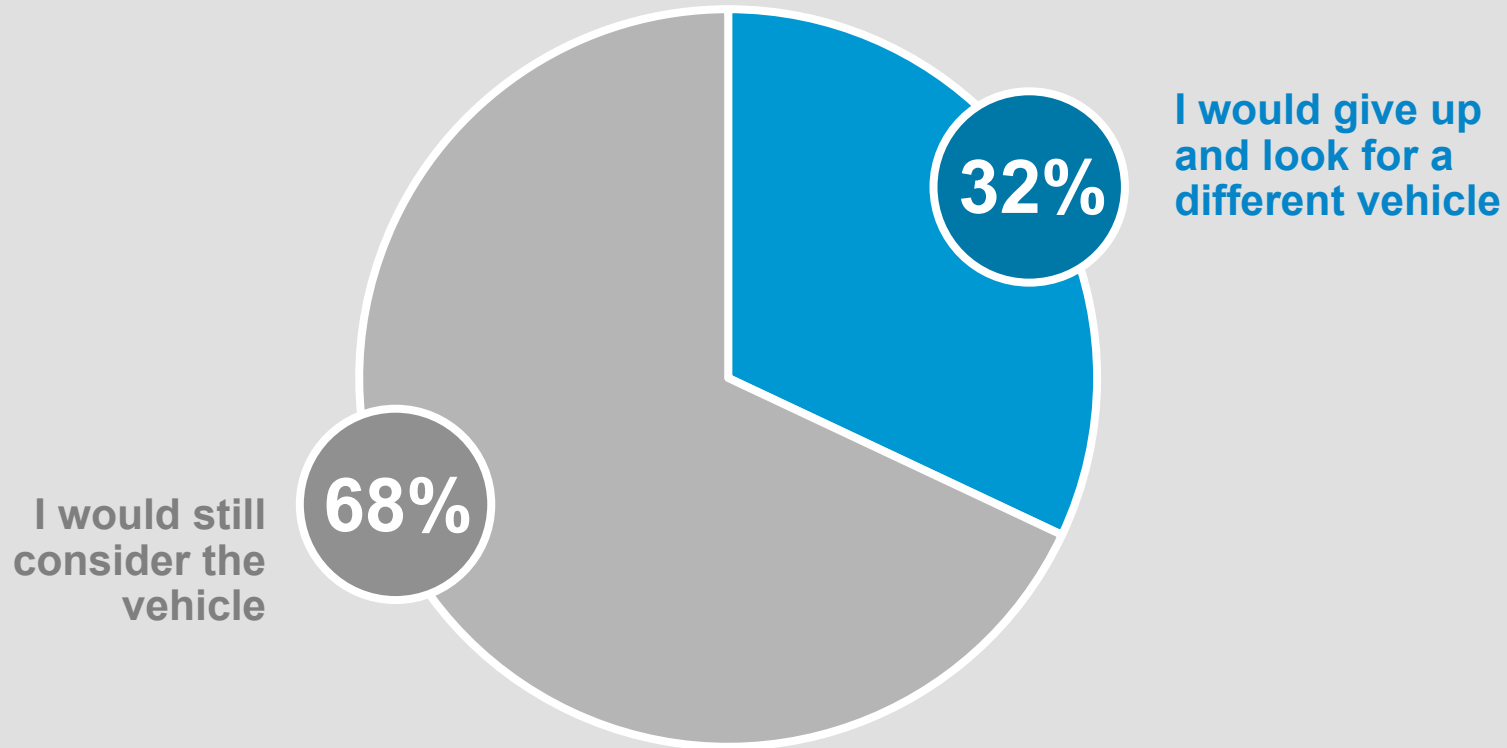
Need at least 30 minutes to figure out how to use all of the tech features in their next vehicle



Total (1020), Older Millennials (228), Older Generations (197), Parents (440), Non-Parents (580)
Q932. How much time do you think it should take to figure out how to use all of the tech features in your next vehicle?
Question changed from 2016 - 2017

➤ Making sure drivers are comfortable with their in-car technology is crucial to retain potential customers

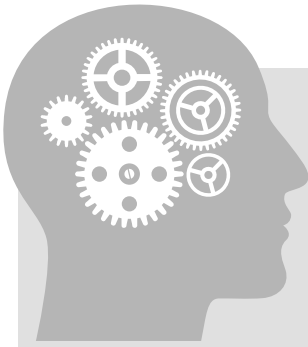
Effect of Difficult Tech Features
Among Total Drivers



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While drivers desire independent learning most often, dealerships play an integral role in making drivers feel comfortable with in-car technology with 35% preference for either a class or Salesperson guidance



Learning Preferences



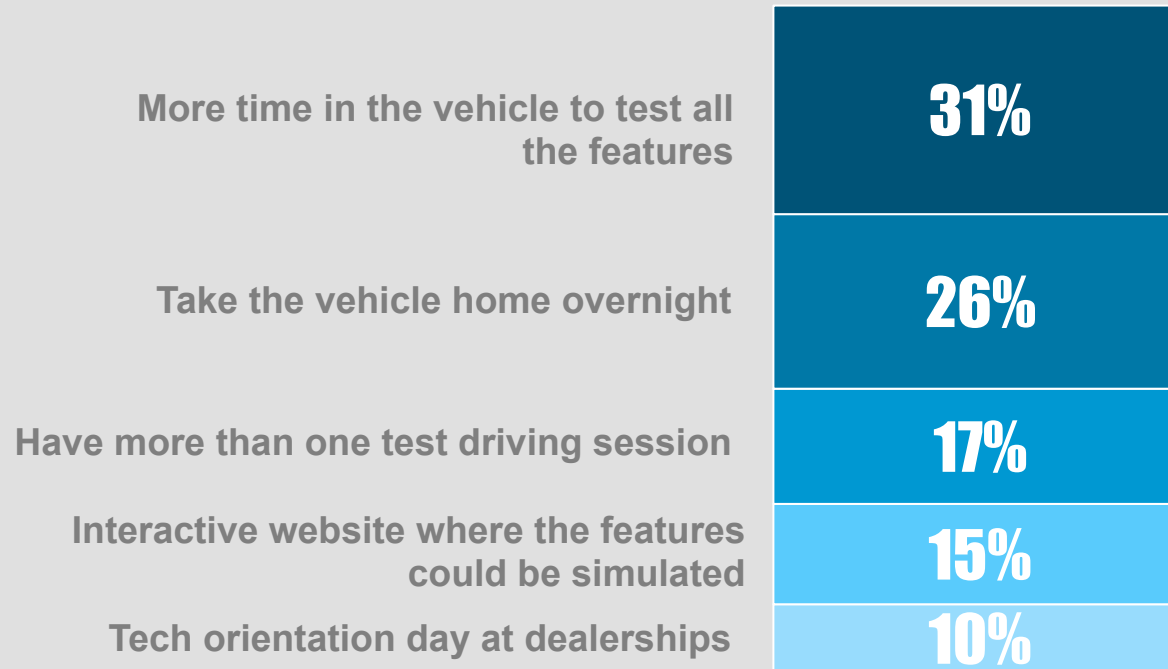
30% On My Own
16% Online Tutorial
11% Owner's Manual


18% Training Class at Dealer
17% Salesperson

7% Friend/Family Member

➤ When specifically asked how they'd prefer to *experience* tech and safety features via a test drive, drivers say they want a chance to experience them on their own terms

Most Preferred Test Drive Experience *Among Total Drivers*

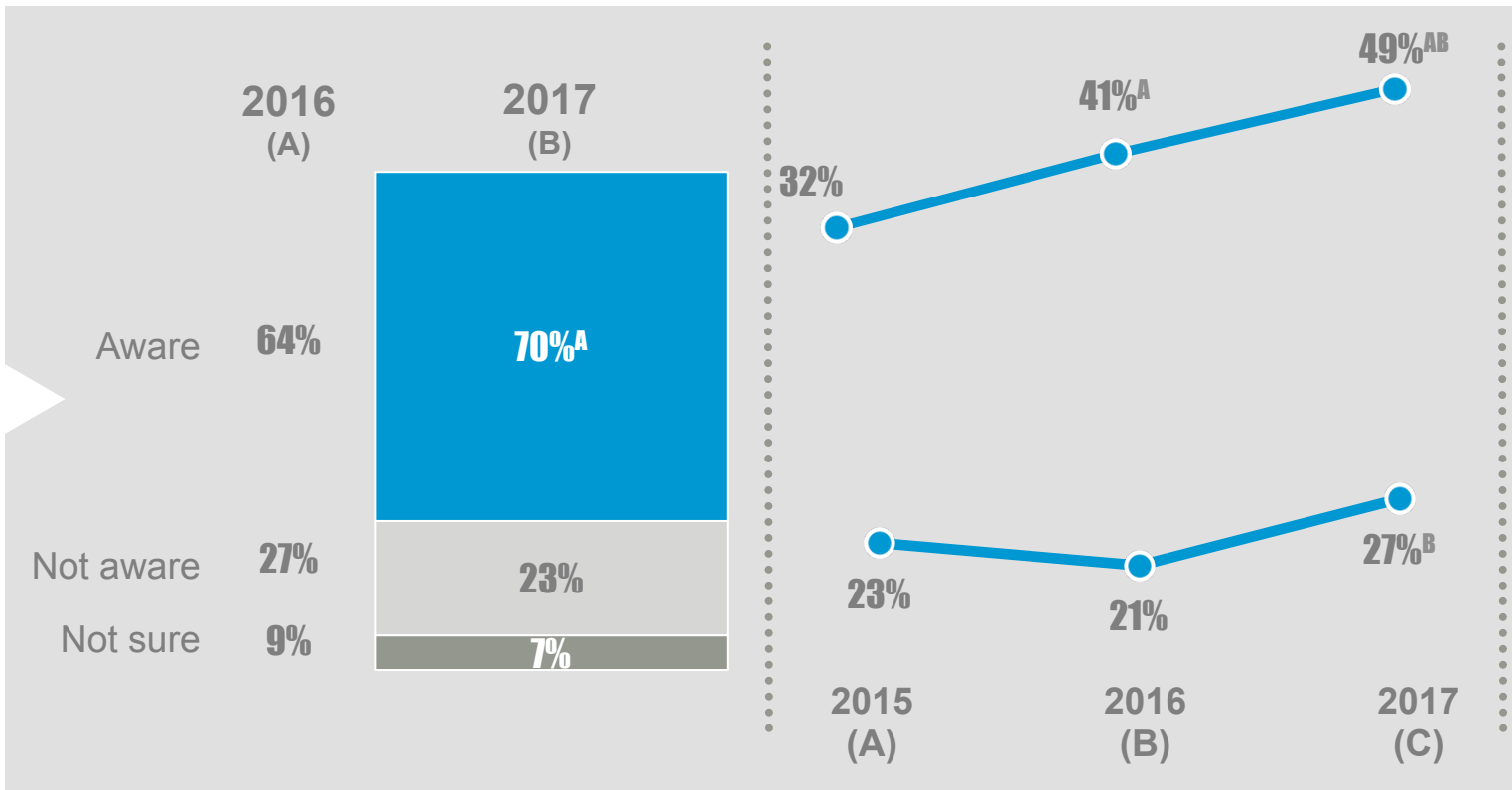




Drivers are Warming Up to the Idea of Autonomous Vehicles

Knowledge, confidence, and openness towards autonomous vehicles are growing, particularly among Millennials

Awareness of Autonomous Vehicles
Among Total Drivers



Autonomous Features Will Make People Better Drivers
Among Total Drivers

	2015 (A)	2016 (B)	2017 (C)
Millennials	33%	46% ^A	58% ^{AB}
Boomers	25%	38% ^A	38% ^A

If I won the lottery I would gladly give up driving and hire a chauffeur*
Among Total Drivers

	2015 (A)	2016 (B)	2017 (C)
Millennials	32%	27%	32%
Boomers	14%	16%	13%

*Agree Strongly/Somewhat

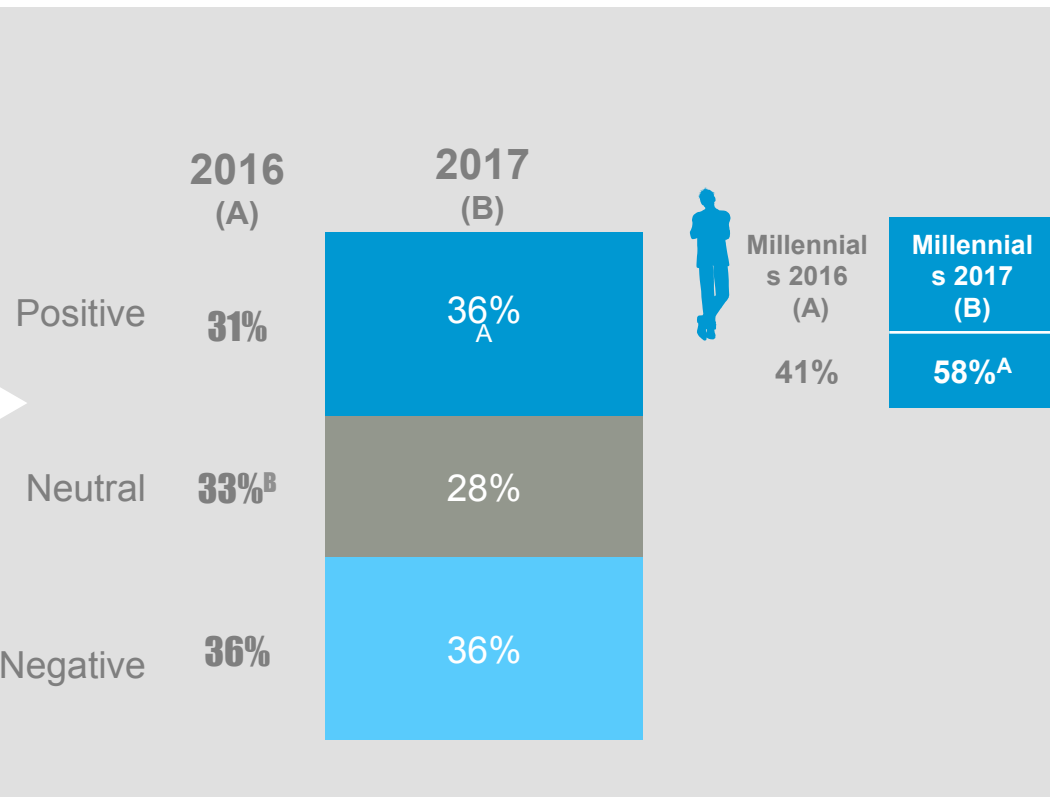
Base: Total 2016 (1020), Total 2015 (1012), Total 2014 (1033)

Capital letters indicate statistical differences at the 95% confidence level (A-C)

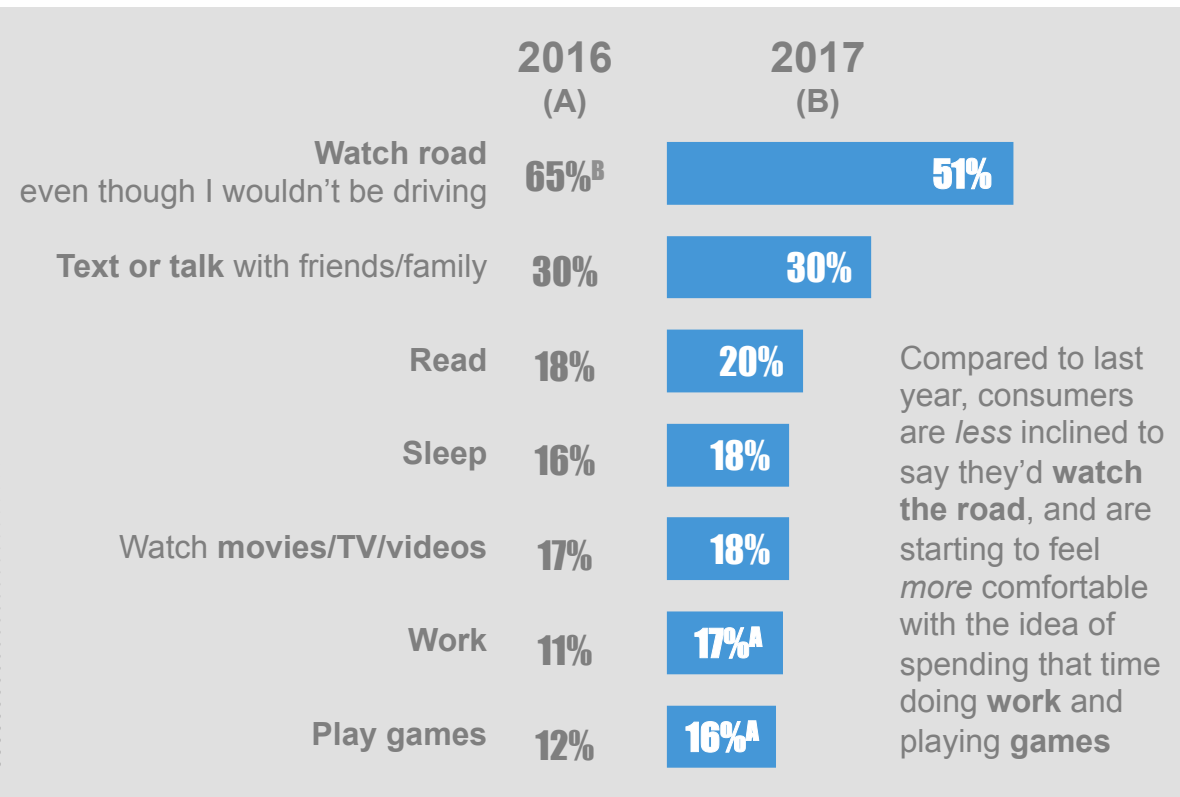
Q975. Had you ever heard of completely autonomous or self-driving vehicles before participating in this survey? Q735. How much do you agree or disagree with each of the following statements? (T2B) Q970. How do you think vehicles with autonomous features will impact how people drive?

While Autonomous Vehicles are still somewhat polarizing, there is positive momentum in public perceptions and comfort-levels

Overall Opinion Towards Autonomous Vehicles
Among Total Drivers

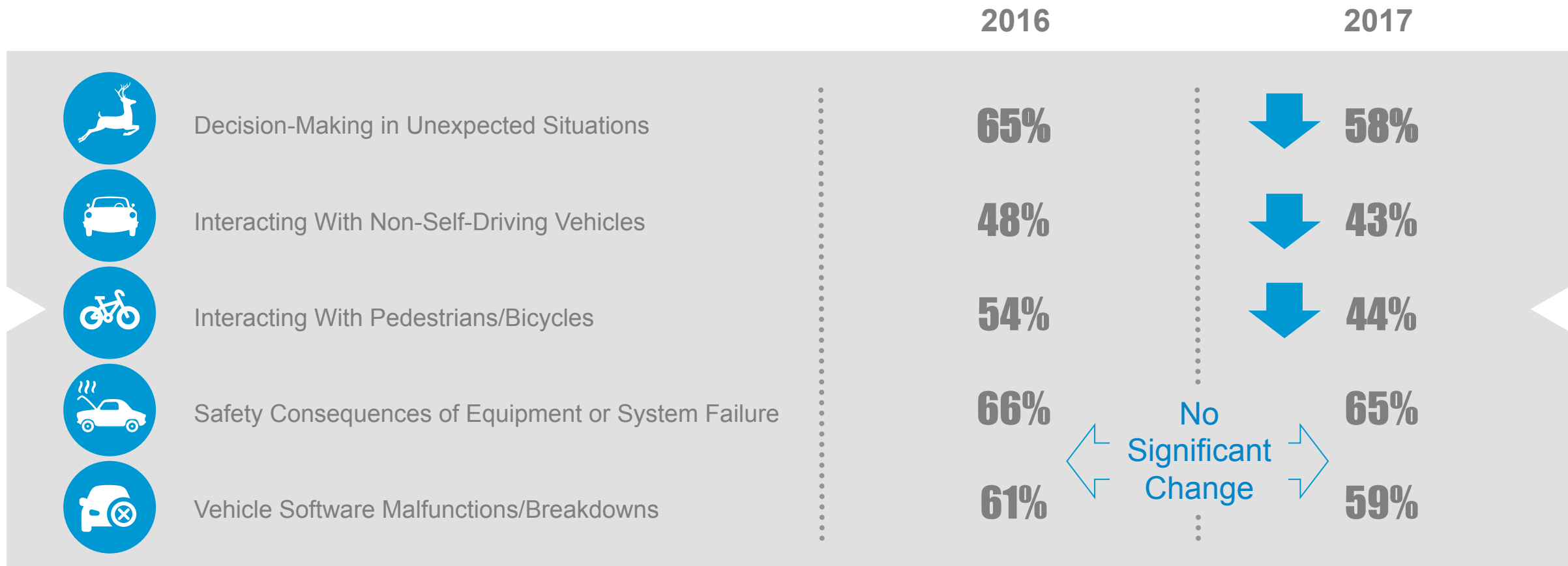


Anticipated Use of Time in an Autonomous Vehicle
Among Total Drivers



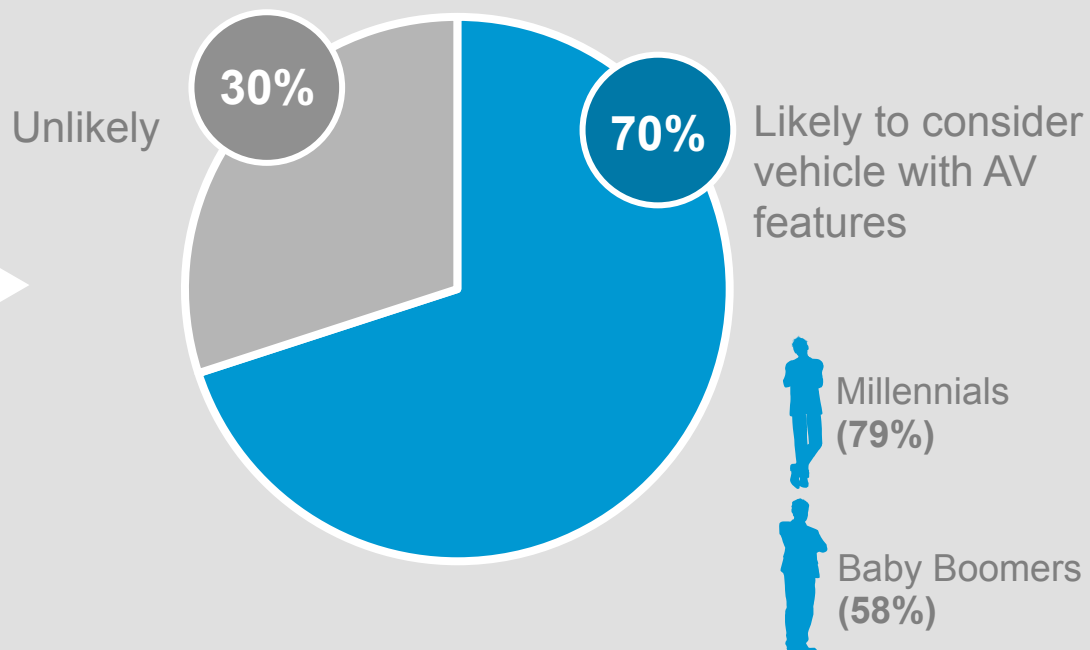
Base: Total 2016 (1020), Total 2015 (1012)
Capital letters indicate statistical differences at the 95% confidence level (A-B)
Q980. What is your overall opinion about autonomous and self-driving vehicles? Q985. How comfortable would you be driving or riding in a vehicle with self-driving technology?

Instilling confidence in autonomous reliability is a key to bridging the consideration gap

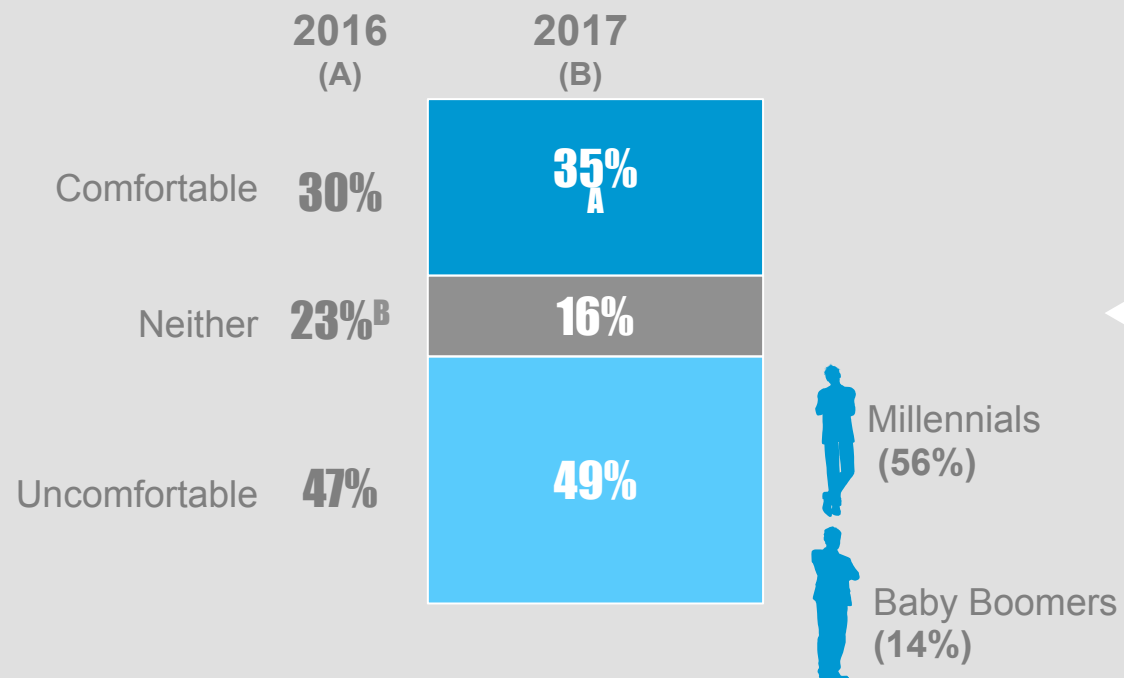


Instilling confidence in autonomous features is a key to bridging the consideration gap to higher levels of vehicle autonomy

Likelihood to Consider Vehicle with Autonomous Features for Next Purchase
Among Total Drivers



Comfort with Driving/Riding in Autonomous Vehicles
Among Total Drivers



Base: Total 2016 (1020)
 Q960. When buying your next vehicle, how likely are you to consider a model that offers autonomous features, such as parking assist, collision avoidance with automatic braking, etc.?
 Q985. How comfortable would you be driving or riding in a vehicle with self-driving technology?
 Note: Capital letters represent statistically significant differences at the 95% confidence level.

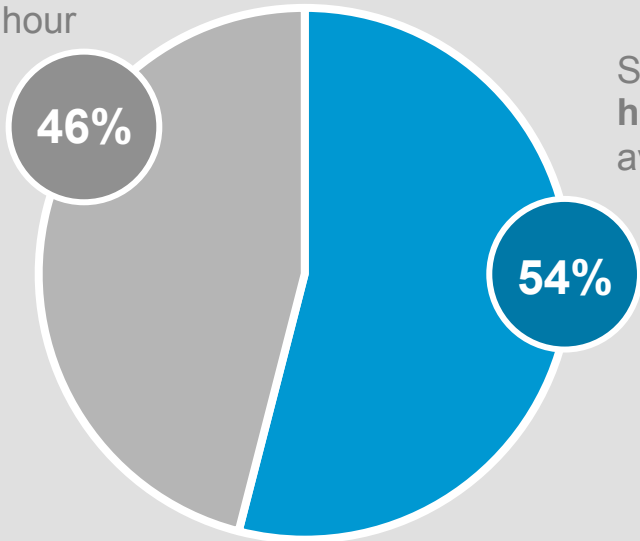


Millennials Are the Most Open to and Interested in Car Technology

➤ Older Millennials represent the greatest opportunity for car tech adoption; they spend a considerable amount of time driving and half say they're purchasing in the next 12 months

Time Spent in Primary Vehicle on Average Day *Among Older Millennials*

Spend less than an hour



Spend **over an hour** on an average day

50%

Are looking to purchase/ lease their next vehicle within the next 12 months

Base: Older Millennial (n=228), 35+ (n=660).

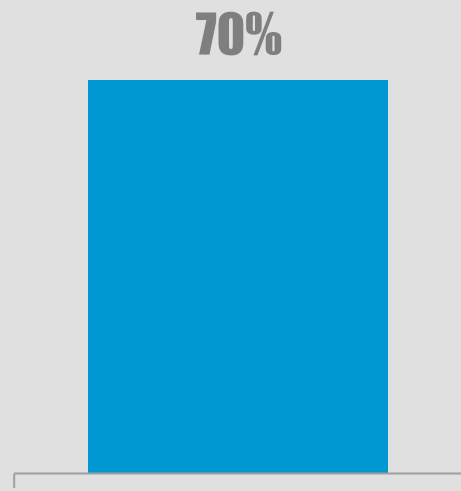
*Agree Strongly/Somewhat

Q805. How much time do you spend in your primary vehicle on an average day?

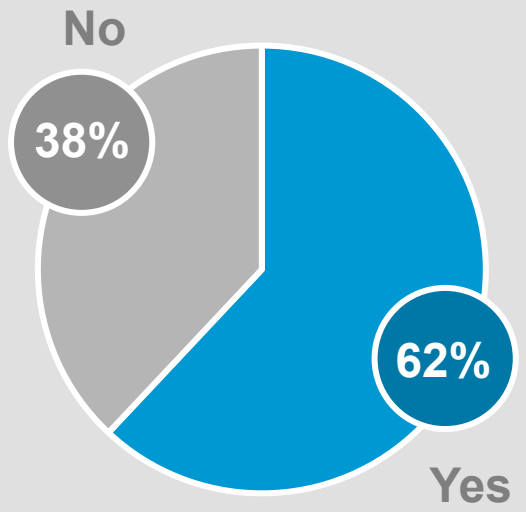
Q900. When are you likely to purchase or lease your next vehicle?

Older Millennials are excited to do the research and learn about vehicle technology

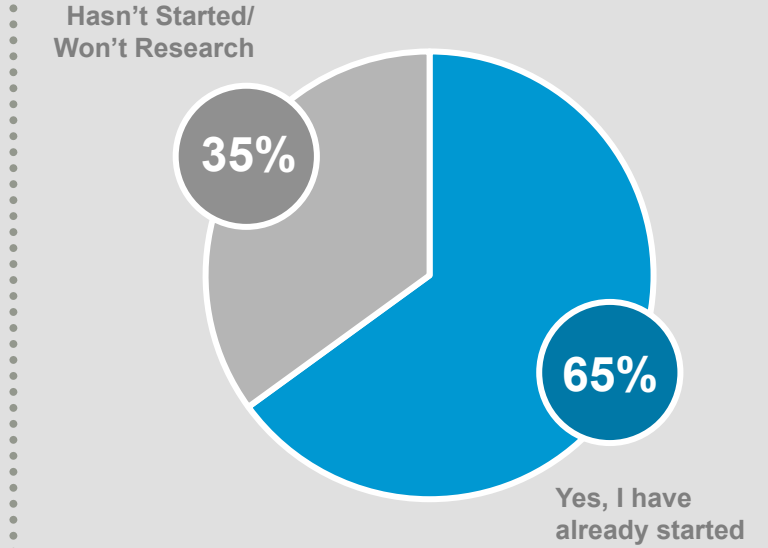
I Put a Lot of Thought Into the Technology Features I Want in a Vehicle
Among Older Millennials



Keep Up With Latest Technology
Among Older Millennials



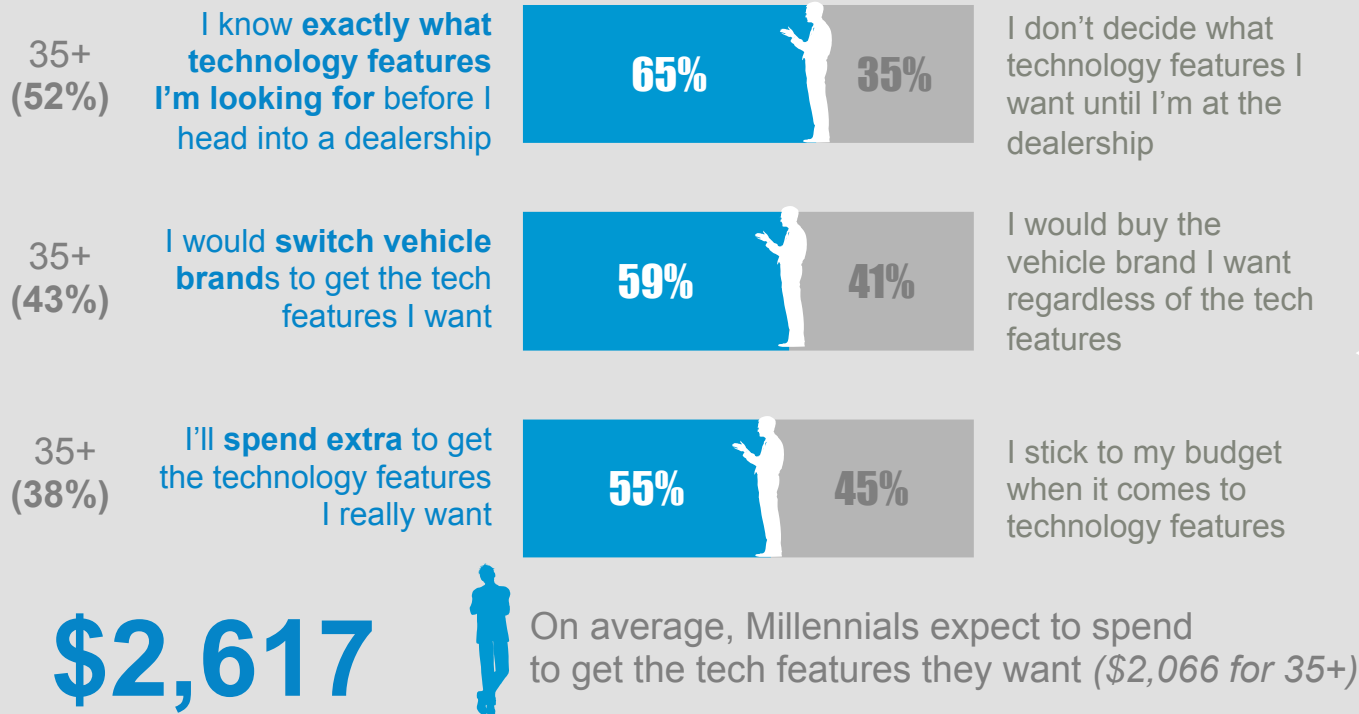
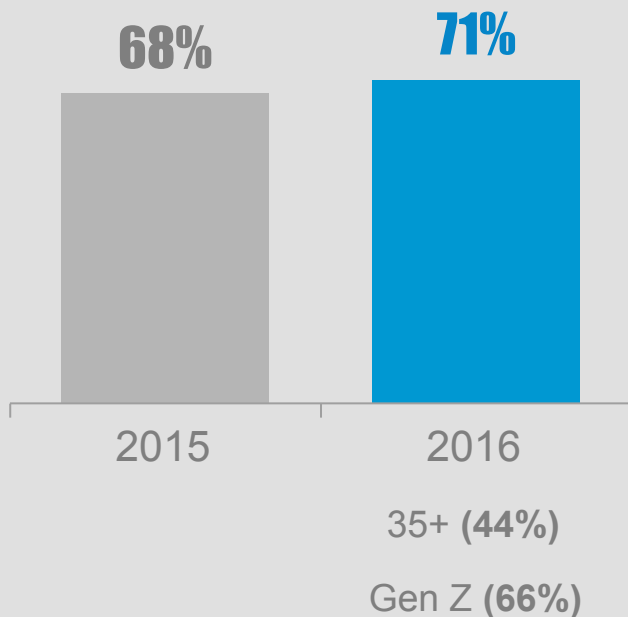
Future Research Intent
Among Older Millennials Who Are Planning on Buying a Vehicle in the Next 12 Months



Base: Older Millennial (n=228), Base: Older Millennials Who are Planning on Buying a Vehicle in the N12M (n=111)
*Very/Somewhat important summary.
845. How much do you agree or disagree with each of the following statements?
Q907. Do you keep up-to-date on the latest technology features being released by automotive manufacturers? Q909. You mentioned that you'll likely be purchasing another vehicle within the next 12 months. Do you plan to research the latest vehicle technologies?

Millennials are thirsty for in-vehicle technology and say they will go to extra lengths to get it

It's Important That My Car Syncs with All Other Technology In My Life
Among Millennials



Base: 2016 Millennials (n=360), 2015 Millennials (n=342), 35+ (n=660), Gen Z (n=314)

*Very/Somewhat important summary.

Q735. How much do you agree or disagree with each of the following statements?

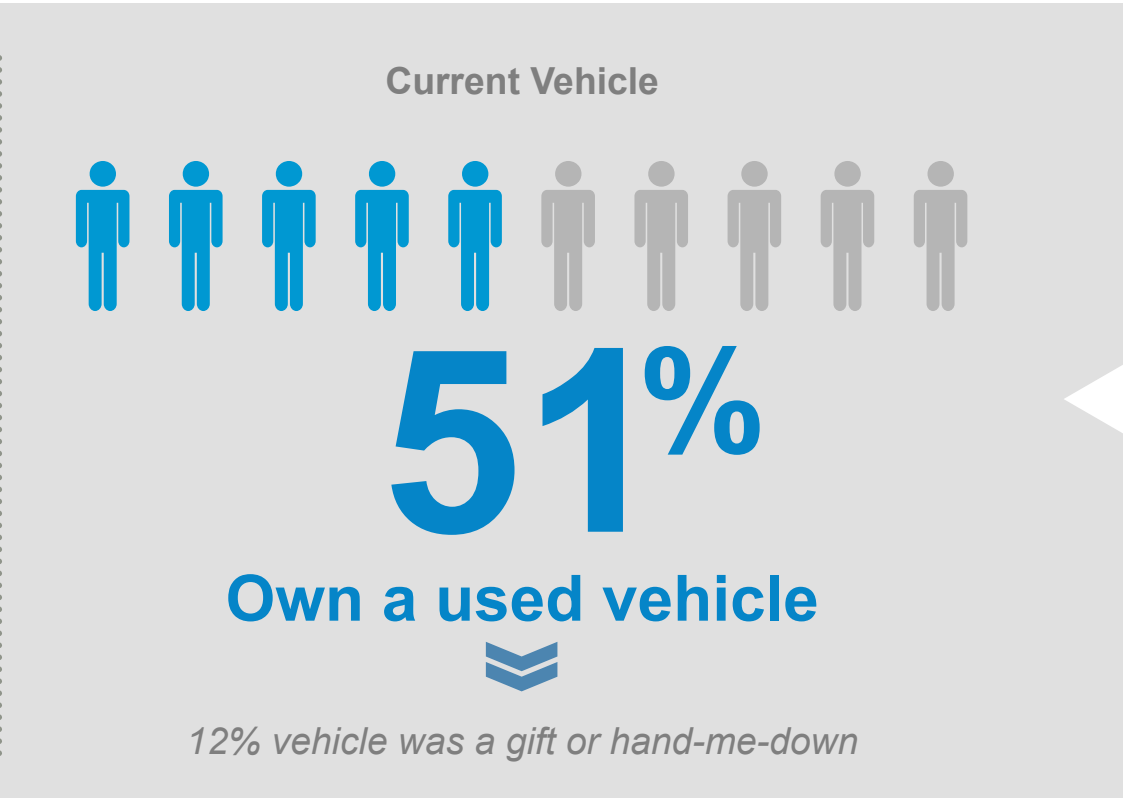
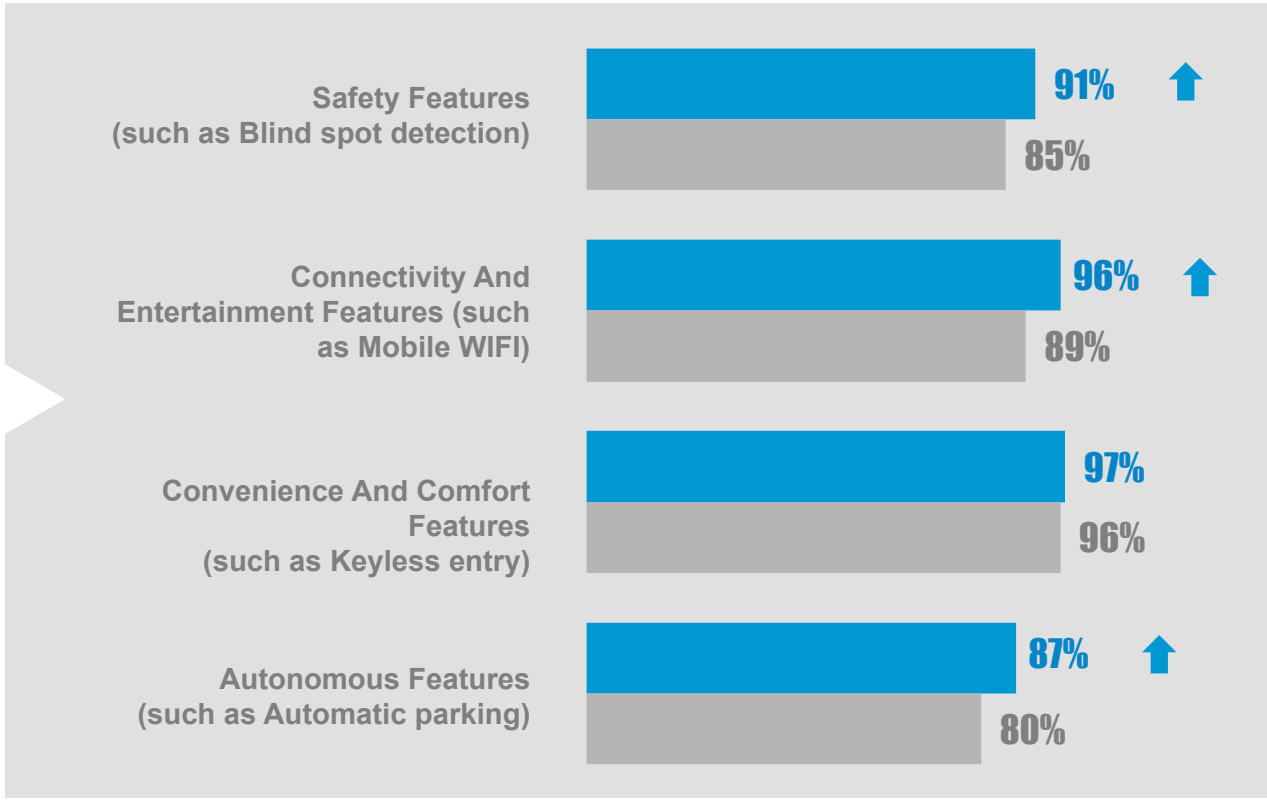
Q938. For each of the statements listed below, please select the point on the scale that best describes you.



For Gen Z, it's all about Connectivity

➤ Gen Z are more familiar with tech features, but tend to have older vehicles

Awareness of Features ■ Gen Z ■ Non-Gen Z

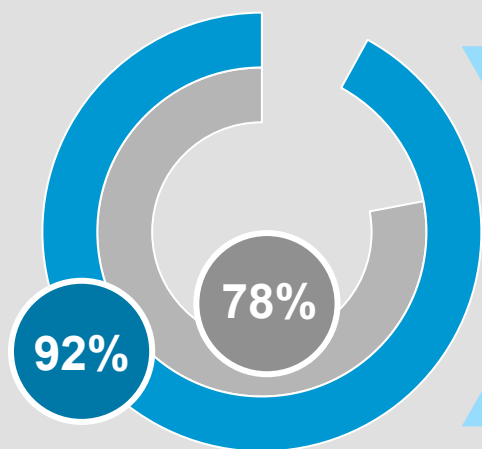


Gen Z (169) Non-Gen Z(834) excluding not sure. Q727. When you purchased your vehicle, was it new, used or CPO? Base: Purchased or leased vehicle Gen Z (193) Non-Gen Z (912). Q745. Which of the following best describes your primary vehicle at the time you purchased/leased it? Base: Gen Z (314) Non-Gen Z(1,020) Q825b. Before today, which features had you heard of?

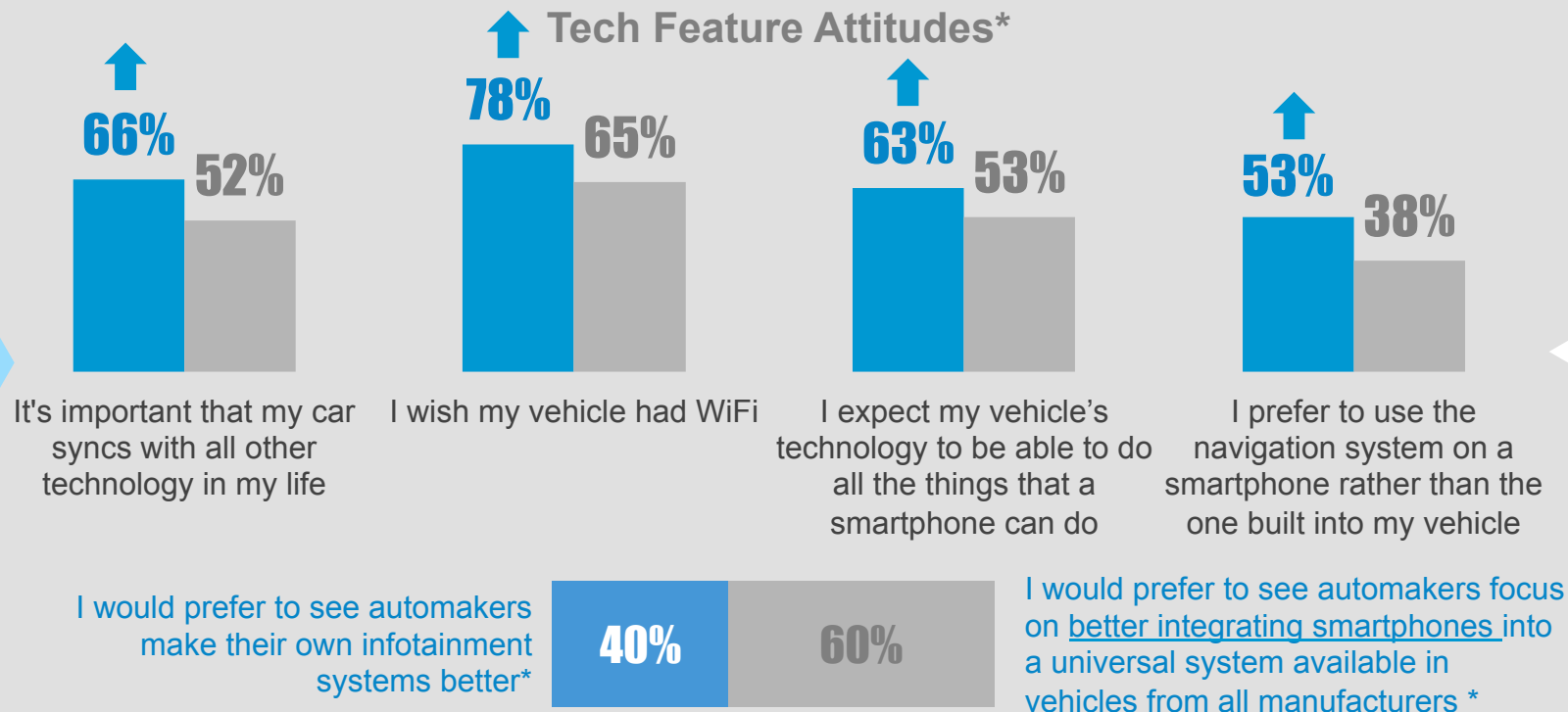
Gen Z are ultra-connected and 6 in 10 prefer smartphone integration in their vehicles versus built-in systems

Access to Smartphones

■ Gen Z
■ Non-Gen Z



Vehicle Attitudes*



*Agree Strongly/Somewhat Summary ** Strongly agree/agree a little more
 ↑↓ indicate statistical differences at the 95% confidence level

Gen Z (314) Non-Gen Z(1020) Q742. Which of the following devices do you have access to regularly? Q735. How much do you agree or disagree with each of the following statements? Base: Own/lease vehicle Gen Z (193) Non-Gen Z(912) Q845. How much do you agree or disagree with each of the following statements? Q938. For each of the statements listed below, please select the point on the scale that best describes you.

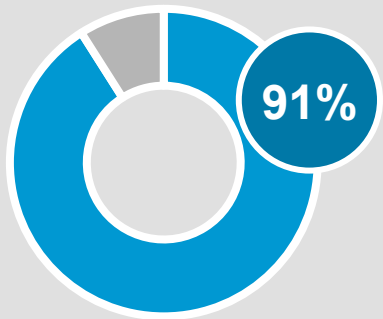
➤ Gen Z rely heavily on technology for entertainment and to help them multitask safely. Music streaming has become the new radio

Tech Feature Attitudes*

82%

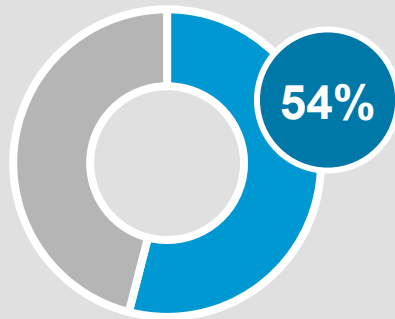
Never take a long car ride without some kind of entertainment

(vs 71% for Non-Gen Z)



Being able to stream music in my vehicle makes driving more enjoyable

(vs 68% for Non-Gen Z)

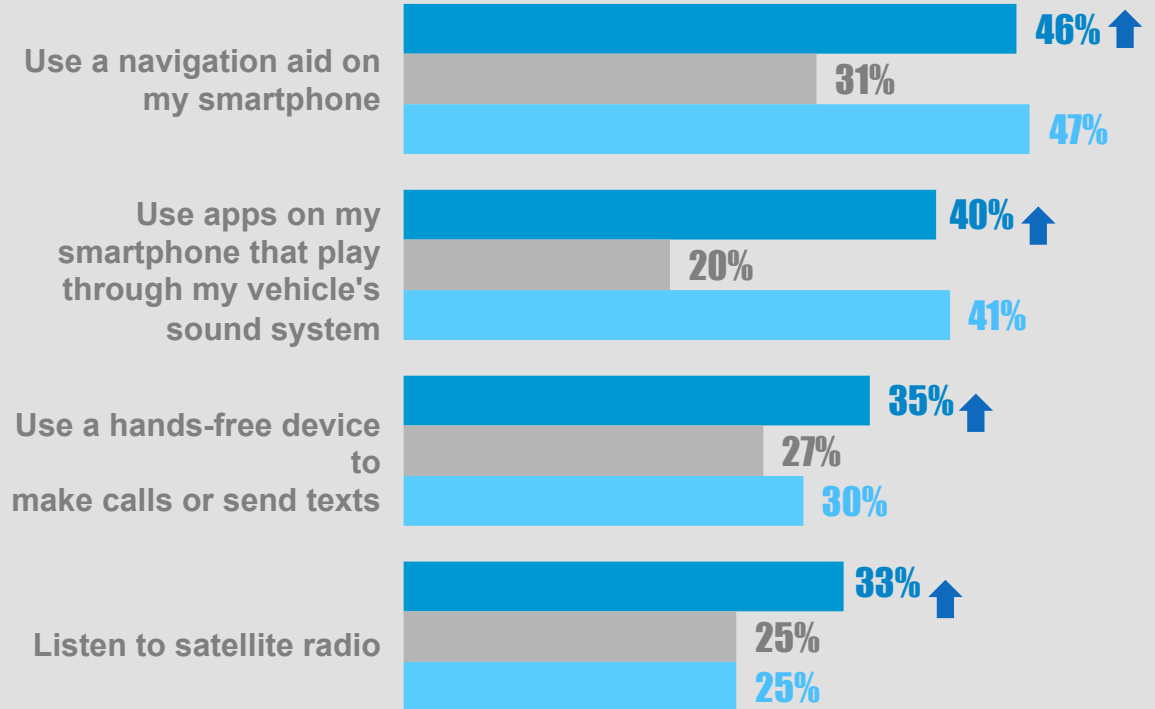


A basic CD/AM/FM radio in my vehicle meets all of my entertainment needs

(vs 70% for Non-Gen Z)

Activities in Vehicle

■ Gen Z ■ Non-Gen Z ■ 18-24



*Agree Strongly/Somewhat Summary

↑↓ indicate statistical differences at the 95% confidence level

Base: Own/lease vehicle Gen Z (193) Non-Gen Z(912) Q815. Whether or not you are alone or have passengers in your vehicle, aside from driving, what else do you do? Base: Gen Z (314) Non-Gen Z(1,020) Q735. How much do you agree or disagree with each of the following statements Q845. How much do you agree or disagree with each of the following statements?

➤ Gen Z have different expectations of what should be standard; must have features revolve around connectivity & convenience

49%

of Gen Z drivers list **Bluetooth** as their top must-have Feature

vs. 45% of Young Millennial Drivers

(vs Standard Cruise control for Non-Gen Z)

Gen Z are more likely to pick these as must-have features	Young Millennials are more likely to pick these as must-have features	Older generations are more likely to pick these as must-have features
Device integration via USB	Bluetooth	Forward collision warning
Bluetooth	Keyless Entry	Forward collision avoidance
Traditional Electric Plugs	Device integration via USB	Night Vision
Steering wheel controls	Mobile WiFi	Telematics
	Standard Cruise Control	Augmented Reality Owner's Manual
	Blind Spot Detection	Adaptive Navigation
		Gesture Controls

Gen Z (314) Non-Gen Z(1,020)

↑↓ indicate statistical differences at the 95% confidence level

Q910. Must Have This Feature Summary - When buying your next vehicle, using the scale below, how interested would you be in each of the following features? Q917. You mentioned that the features listed below are either "must have" or "nice to have" features. Of these features, please tell us whether each feature...



Appendix



Feature Descriptions

CONVENIENCE

Keyless entry

a way of accessing a car without using a traditional key allowing the vehicle's doors to unlock as long as the fob is within a limited range.

Hands-free trunks and liftgates

a system that will release and open your trunk or SUV liftgate when you hands are full of cargo - often activated with a foot gesture or through a proximity detector.

Steering wheel controls

buttons on the steering wheel that allow a driver to make changes to the infotainment features in their vehicle without removing their hands from the wheel.

Voice Command features

allows the driver or passenger to manage the climate control, radio, cruise control, and other vehicle features via voice control.

Gesture Controls

allows the driver to manage key features such as climate control, radio, and other features via hand movements or gestures, reduces the need for dials, buttons, or voice interaction.

Heads-up display

a transparent or miniaturized display technology that does not require drivers to shift their gaze from where they are naturally looking, straight-ahead.

Adaptive Steering / Steer-by-wire

advanced steering systems that help the vehicle feel more maneuverable and easy to drive and is able to change steering performance – ie, more sporty, more comfort.

Active Noise Cancellation

technology similar to noise-cancelling headphones that helps quiet the vehicle cabin even further

In-Vehicle Concierge

a feature in your vehicle that gives you access to a resource that can assist in making appointments, advanced directions, looking up contact information, etc.

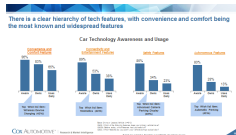
Wireless device charging

the ability to charge your devices without the use of a physical charging cord.

Traditional Electric Plugs

2- or 3-prong outlets for electronics not powered by USB

Back to:



CONNECTIVITY

Device integration via USB

the ability to connect one's devices to the vehicle via a USB port.

Bluetooth

ability to wirelessly connect devices to your vehicle

Mobile WIFI

ability to connect to the Internet while on-the-go in your vehicle

Apple CarPlay / Android Auto

ability to have your cell phone's functionality mirrored into the car.

Interactive dashboard

a built-in infotainment system in your vehicle's dashboard that allows access to apps, maps, and other software or content.

Telematics

a suite of connected technology features that offer emergency assistance, automatic crash notification, navigation, remote vehicle access, vehicle help diagnostics, and other information via satellite or cellular connection (eg GM OnStar, Ford Sync, Toyota Entune)

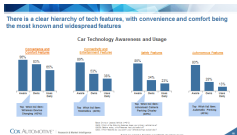
Augmented Reality Owner's Manual

ability to point your smartphone or tablet at a part of the vehicle you have questions about for it to pull up detailed information in the form of videos, guides, or other helpful tips

Adaptive Navigation

artificial intelligence that learns the driver's patterns and history and predicts where the driver might be going, so it can then warn of congestion or suggest optimized routes even if the driver doesn't enter a destination

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SAFETY

Forward collision warning

is a feature that issues a warning to the driver of the vehicle in case of an impending rear-end collision with a vehicle ahead in traffic in the same lane and direction of travel.

Forward collision avoidance

is a feature that uses radar, laser or camera systems in a vehicle to detect an imminent collision and apply the breaks to avoid collision.

Lane departure warning

is a feature that alerts a driver of when the vehicle is not maintaining its lane.

Blind spot detection

is a feature that alerts a driver when a nearby vehicle is in its blind spot.

Rear Seat Alert

a feature that alerts and warns the driver to check the backseat of the vehicle before exiting to prevent children or pets from being left inside the vehicle

Health and Awareness Monitoring

driver's seat and steering wheel that can monitor vital health statistics (heart rate, blood pressure, etc.) and driver alertness and will alert the driver and passengers or the authorities of potential issues.

Car-to-Car Communications

a system that allows cars in close proximity to communicate with each other and potentially reduce the likelihood of an accident or collision

Pedestrian Protection

exterior air bags or "quick-release" hoods that help reduce pedestrian injuries in car-pedestrian impacts

Teen Driving Limiters

systems that can establish a speed limiter, radio volume limiter, seat belt usage monitor, etc., to help monitor and protect teen drivers.

Advanced parking camera display

a system of video cameras that allows you to see a full, 360-degree view of what is around your vehicle. A "bird's eye" view. Image is displayed on a screen on the instrument panel.

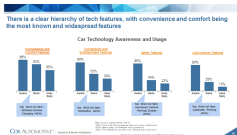
Parking sensors

proximity sensors at the front and/or rear of your vehicle that audibly alerts the driver and passengers to obstacles nearby the vehicle.

Night Vision

artificially illuminates and enhances the road ahead through the vehicle's navigation screen or through heads-up display on the windshield to allow better vision at night or during inclement weather.

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AUTONOMOUS

Standard Cruise control

a feature that allows the vehicle to maintain a selected constant speed without the use of the accelerator.

Adaptive cruise control

a feature that allows a vehicle's cruise control system to adapt the vehicle's speed to the traffic environment; requires the cruise control to be active

Lane keeping support

is a feature that steps in and corrects the steering wheel when the vehicle is not maintaining its lane.

Hands-free driving

a feature that allows your vehicle to maintain it's lane without the use of the driver's hands on the steering wheel.

Traffic Jam Assist

technology that will take over driving duty in basic stop and go traffic, allowing the driver to completely disengage as the vehicle travels at low speeds in traffic.

Automatic parking

a feature that moves a vehicle from a traffic lane into a parking spot to perform parallel, perpendicular or angle parking.

Automated Valet Parking

ability to have your vehicle drop you at a location and park itself. Likewise, pick you up in the same location.

Pedestrian Detection

sensors detect pedestrians and allow the vehicle to stop without the driver's assistance

Full autonomous functionality

ability for the vehicle to take over the driving in all situations – on demand - when a human driver is not needed or interested in driving.

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