IHS AUTOMOTIVE

Automotive Technology

Consumer Survey - Connected Car US - 2016

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IHS AUTOMOTIVE
driven by POLK

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Contents

Introduction

- This report builds off of the analysis of *Apps in the Car: Auto Tech Consumer Survey - Apps in the Car - US, UK, Germany & China – 2015* and *Auto Tech Consumer Survey Brief - Apps in the Car - 2015*.
- **Scope:** This report primarily explores consumer attitudes and behavior as it pertains to emerging connected car features. These questions pertain to infotainment systems, telematics systems, remote vehicle services, over-the air updates, autonomous cars, Advanced Driver Assistance Systems (ADAS), navigation, audio, human-machine interface (HMI), apps and smartphone usage in the car.
- Due to the expanded scope the report has been renamed "*Connected Car*" to illustrate the wide variety of topics covered.
- This presentation divides the survey results into the following categories: infotainment, Apple CarPlay/Android Auto/MirrorLink, apps, smartphone usage, telematics, autonomous car and ADAS features, and related content and concludes with analysis on the behavioral and attitudinal questions.
- The data presented in this presentation is from the 1,003 respondents in the United States, fielded in March 2016. The criteria for the US survey participant selection were the following:
  - The respondent's household had to own a vehicle
  - Plan to buy a <u>new</u> vehicle within the next 3 years for <u>personal</u> use

Methodology

- **Consumer research**
  - IHS used a quota system when gathering the sample for the survey in order to develop a representative sample of the region being studied. In this survey, gender, age, household income, life stage, and region were monitored and quotas were applied where necessary. Quotas varied by country.
- **Tests of significance**
  - IHS includes tests of significance in the provided Excel workbooks. When comparing subgroups of the sample, some results will show statistically significant differences. The 95% confidence level was applied to the data, meaning that there is a 95% chance that the significant difference is real and cannot be explained by sampling error alone. Most of the data highlighted throughout the written report had statistical significance.
- **Report analysis**
  - Readers of this report are strongly advised to make use of the accompanying Excel workbook data to analyze as desired. Guidance can be given on how best to do this.
  - For greater manipulation of data, IHS has partnered with mTAB Survey Analysis.

Definitions

- This report primarily explores consumer attitudes and behavior as it pertains to emerging connected car features. These questions pertain to infotainment systems, telematics systems, remote vehicle services, over-the air updates, autonomous cars, ADAS, navigation, audio, HMI, apps and smartphone usage in the car.
- A mobile app is an application originally intended to run on a smartphone or on a tablet. Most integrated applications installed on in-vehicle infotainment systems also closely resemble mobile apps. Because of this and for the purposes of this report, the word “app” applies to any computer program installed within an in-vehicle infotainment system and/or installed on a smartphone or on a tablet.

Abbreviations

ADAS	Advanced Driver Assistance Systems
CE	Consumer electronics
DAB	Digital Audio Broadcasting
DE	Germany
HFP	Hands-Free Profile
HMI	Human-machine interface
HUD	Heads-up display
IVI	In-Vehicle Infotainment
LTE	Long-Term Evolution
L1	Function-specific automation
L2	Combined function automation
L3	Limited self-driving automation
L4	Full self-driving automation
L5	IHS term for steering-wheel-less cars
OEM	Original equipment manufacturers
OTA	Over-the-air
POI	Point of interest
RSE	Rear-seat entertainment
UK	United Kingdom
US	United States

Source: IHS

Terms

Generations are discussed within this report and they are defined as:

Swing Generation/World War II	70-99+ (US, UK)
World War II/Lost Generation	75-99+ (Germany)
The War and PRC Generation/ Traditionalists	69-99+ (China)
Baby Boomers	51-69 (UK, US, China)
68er-Bewegung/Baby Boomers	51-75 (Germany)
Generation Golf/Generation X	39-50 (Germany)
Generation X	39-50 (US, UK, China)
Millennials/Generation Y/Generation Z	18-38 (US, UK, Germany, China)

When speaking about generational cohorts globally, cohorts were combined by the corresponding colors shown above.

Source: IHS

Definitions

- Some terms had examples and definitions for the survey respondent. Below are those examples.

Q14. Which of the following products/features would you like to have, or desire to have, in your next car?	
Bluetooth	(e.g., hands-free voice calling)
Branded audio system	(i.e., premium audio system)
Audio/sound management technologies	(e.g., Active Noise Cancellation, Sound Staging Technology, Surround Sound, Signal Processing etc.)
Blind spot detection	(e.g. notifies the driver that there is a vehicle within the vehicle's blind zones)
Steering wheel mounted controls	(e.g., for radio, phone, etc.)
Voice recognition	(e.g., for hands free/radio)
Remote start	(e.g., can automatically start the engine from a distance)
Internet streaming radio in the car	(e.g., Pandora, Spotify, etc.)
Telematics	(e.g., OnStar, Blue Link)
Lane departure warning	(e.g. alerts driver when vehicle leaves lane without indicating; lane keeping can help keep vehicle within lane markers)
Automatic Emergency Braking	(e.g. automatically brakes the vehicle if a crash is imminent and driver takes no action)
Adaptive cruise control	(e.g. car is capable of maintaining a safe distance between the car in front of it on the highway by automatically adjusting its speed)

Source: IHS

Definitions

- Some terms had examples and definitions for the survey respondent. Below are those examples.

Q16. Thinking about telematics system, what are the top features that interest you? You can select up to 5 attributes.	
Automatic crash notification/response	(i.e., 911, emergency medical services)
Roadside assistance	(i.e., no fuel, flat tire, breakdown, etc.)
Hands-free calling	(e.g., ability to call without pairing cellphone or using its minutes)
Access to a human customer car assistant	(i.e., being able to contact a call center for help with finding location, unlocking car, medical emergency)
Wi-Fi hotspot	(i.e., ability to pair mobile devices to the internet)
Service maintenance notifications	(e.g., alerts when it is time to change oil, etc.)
Controlling vehicle systems from my smartphone	(i.e., lock/unlock doors, windows, horn, alarm, ignition, etc.)
Stolen vehicle assistance	(e.g., turns off ignition, slows down vehicle)
Theft alarm notification	(i.e., notifies you if alarm sounds)
Concierge services	(e.g., book hotels, restaurant reservations, concerts, etc.)
Family services	(e.g., alerts you when of teen/dependent of driving behavior)

Source: IHS

Definitions

- Some terms had examples and definitions for the survey respondent. Below are those examples.

Q24. Please select your top 5 favorite app categories for use on your smartphone while in the vehicle?	
Books	(e.g., can read eBooks, or listen to audio books)
Business/Productivity	(e.g., task/notes management, hours tracking, office suite, etc.)
Education	(e.g., can learn a new language, take a class, course material, etc.)
Video	(e.g., watch streaming video or video stored on smartphone, etc.)
Music	(e.g., listening to streaming audio music, comedy, spoken word, etc.)
Navigation	(e.g., turn-by-turn navigation, real-time traffic information, parking , etc.)
Communicating	(e.g., Google Hangouts, Skype, Kik, WhatsApp, LINE)
Remote services	(i.e., Vehicle services, remote garage door openers, remote vehicle controls, smart home/appliances/electronics controls, etc.)
Finance	(e.g., lets you manage your finances, look at stocks, etc.)
Food & Drink	(e.g., helps you search and book restaurants)
Point of interest (POI)/Local	(e.g., business locations and reviews, look up free Wi-Fi locations, etc.)
Driver's aid	(i.e., eco driving advice, cheapest gas station, traffic cameras, etc.)
Travel	(e.g., helps book travel, find a travel destination, etc.)
Health & Fitness	(e.g., pedometer information, nutrition information, etc.)
Sports	(e.g., scores, fantasy leagues, sport news, etc.)

Source: IHS

Definitions

- Some terms had examples and definitions for the survey respondent. Below are those examples.

Q26. Does your current vehicle have a built-in display audio, and or “infotainment” system, and or navigation system (has a screen in the center part of the vehicle to show various functions of the vehicle like audio, air, navigation, etc.)?

Q27. Does your vehicle’s built-in display audio (i.e., infotainment system) or navigation system have smartphone-like apps (e.g., Pandora, Google Local Search) installed directly to the system?

Executive summary

- Connected cars have gradually become an increasing share of cars sold in every region of the world. With connectivity, cars can leverage real-time traffic and weather conditions to help drivers plan optimal driving routes, increase safety and avoid crashes, monitor driver's driving habits, and stimulate eco driving behaviors. Additionally, connected cars bring a tremendous amount of multimedia content into the car such as internet radio, social media, messaging applications, and more.
- Automakers are still struggling to figure out the right balance between functionality, multimedia content, and interface when it comes to their infotainment and app offerings.
- While there is great demand from all new car intenders for respective infotainment systems and app integration, there is evidence that suggests that these consumers may be disappointed when they eventually get a vehicle with such a system.
- Those who already own a vehicle with an in-car display showed disproportionately higher awareness and interest in Apple CarPlay and Android Auto, which could effectively bypass the native HMI interface designed by OEMs and suppliers.
- There has been a noticeable increase in awareness of Apple CarPlay since last year's *App in the Car* survey results. More than a third of respondents say they have heard of Apple CarPlay, compared to only 1 in 4 who said they were aware of it last year. IHS believes this has more to do with a successful rollout of Apple CarPlay versus Android Auto. Apple CarPlay is currently available on more models and has been advertised more uniformly in the United States compared to Android Auto.

Executive summary

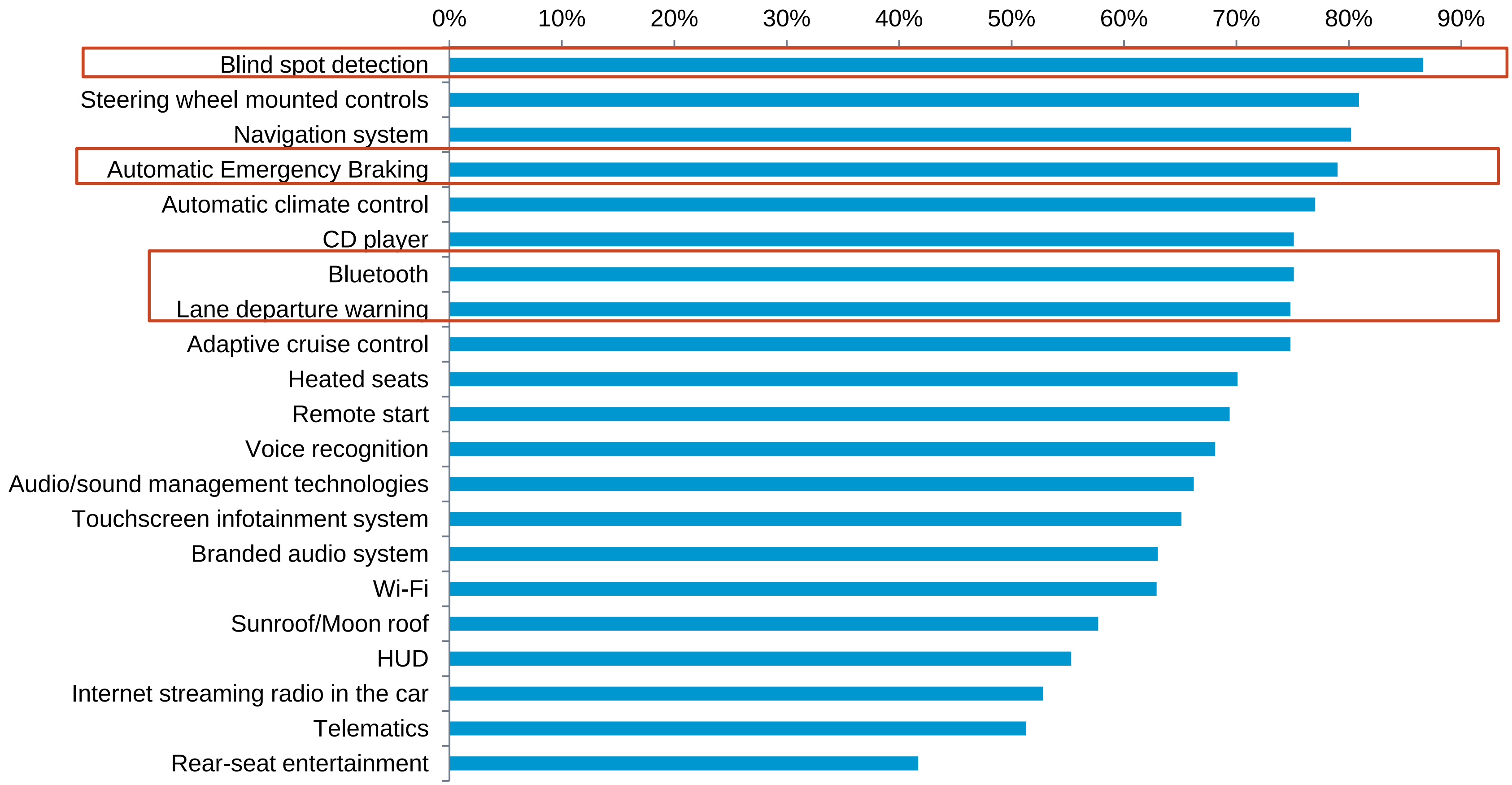
- This report shows a great desire for more robust infotainment systems, ones that are capable of updating themselves without involving a car dealer. An overwhelming majority of new car intenders, who currently own a vehicle with an infotainment system, want their next car to have OTA updates that can fix or enhance the performance of the vehicle or the HMI user experience.
- Many consumers already anticipate the latest upgrades to their smartphone operating system (OS) and PC. These updates typically bring a fresh user interface and new features as well as fix bugs. Clearly, that consumer expectation among consumer electronics is expected in automobiles today. Indeed, infotainment OS and app OTA updates are starting to show up on BMW, Lexus, Toyota, and Ford vehicles. Tesla vehicles have had it longer than most and are capable of electronic control units (ECUs) and safety critical updates. These are beneficial commercially for the OEM in terms of cost savings for safety related recalls, but clearly a large subset of consumers also see the benefit as well by having the most up-to-date user experience and bug fixes.
- Additionally, with politics and commercial interests seemingly aligned, we appear to be moving fast toward the autonomous age, but is the consumer ready? Autonomous cars are well publicized and there are L3 vehicles already on the road; Mercedes-Benz has offered highway self-steering since 2014, the Tesla Model S has a well-publicized Autopilot feature, and Volvo, Cadillac and BMW are working on similar features.
- Even though few consumers have experienced the technology, approximately a third of new car intenders said they would “ride in a self-driving vehicle and would purchase one.” That is a very promising figure for something still so new. An additional 1 in 5 new car intenders said they would ride in a self-driving car, but would not purchase one.

Desired features in the next vehicles

- **Which of the following products/features would you like to have, or desire to have, in your next car?**
- **Of the products/features you selected as somewhat- or very-desirable, which are you willing to pay extra to have them?**
- **Which should be standard features?**
- **How much money would you be willing to spend extra for the feature?**
- **Thinking about telematics systems, what are the top features that interest you?**

Desirable features in the next vehicles

Q14. Which of the following products/features would you like to have, or desire to have, in your next car?



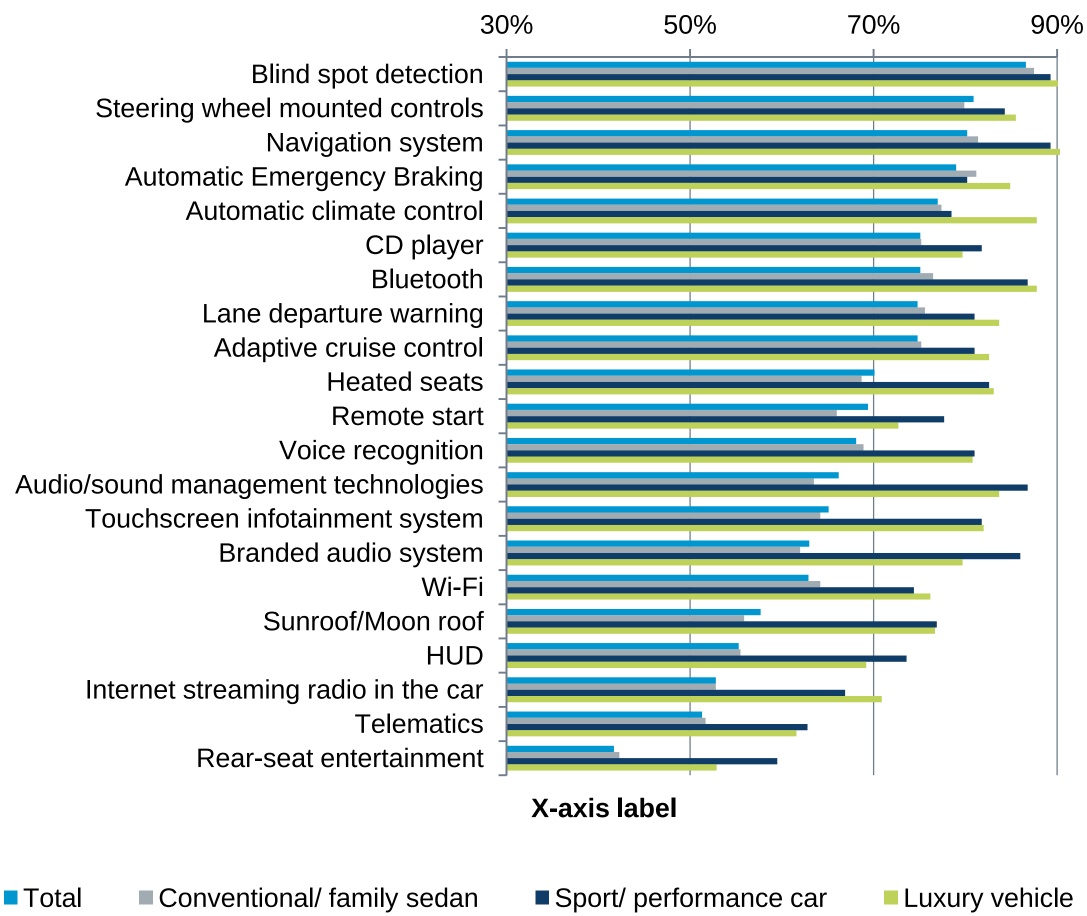
Base: 1,003 new car intenders
Source: IHS

Desirable features in the next vehicles

- Blind spot detection is not only the most desired crash avoidance technology or ADAS feature, but it was also the most desired feature overall across a broad subset of safety, technology, and comfort features surveyed in this report (87% any desirable). Blind spot monitoring systems have been proven to reduce rates of insurance claims and vehicle damage, according to The Highway Loss Data Institute (HLDI).
- Other ADAS features, such as automatic emergency braking (79% any desirable) and lane departure warning (75%) also ranked as highly desirable. Autobrake systems also greatly reduce rear-end crashes involving injury, according to HLDI, while the real-world effectiveness of lane departure warning has not borne itself valuable, in terms of actuarial data. Nonetheless, consumers clearly find ADAS features desirable!
- Interestingly, touchscreen infotainment (65%), internet streaming radio (53%), and telematics systems (51%) scored much lower than fairly popular and well known comfort and technology features, but also were far less desirable than newer ADAS systems.
- Rear-seat entertainment systems (42% any desire) have only specific-use cases, primarily for households with small children.

Desirable features in the next vehicles – by body style

Q14. Which of the following products/features would you like to have, or desire to have, in your next car?

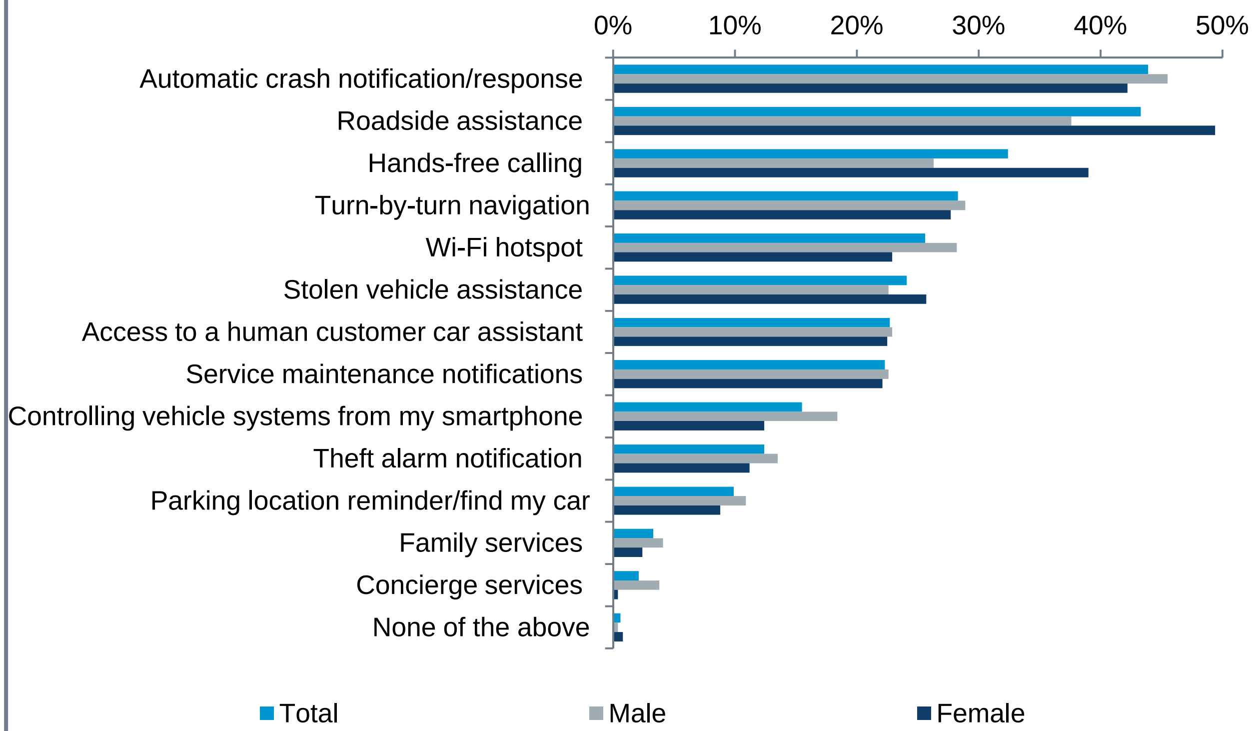


Base: 1,003 new car intenders
Source: IHS

- Luxury vehicle intenders and sports/performance car intenders showed stronger desirability of premium audio, comfort, and in-car electronic features.

Most interesting telematics features

Q15. Thinking about telematics system, what are the top features that interest you?

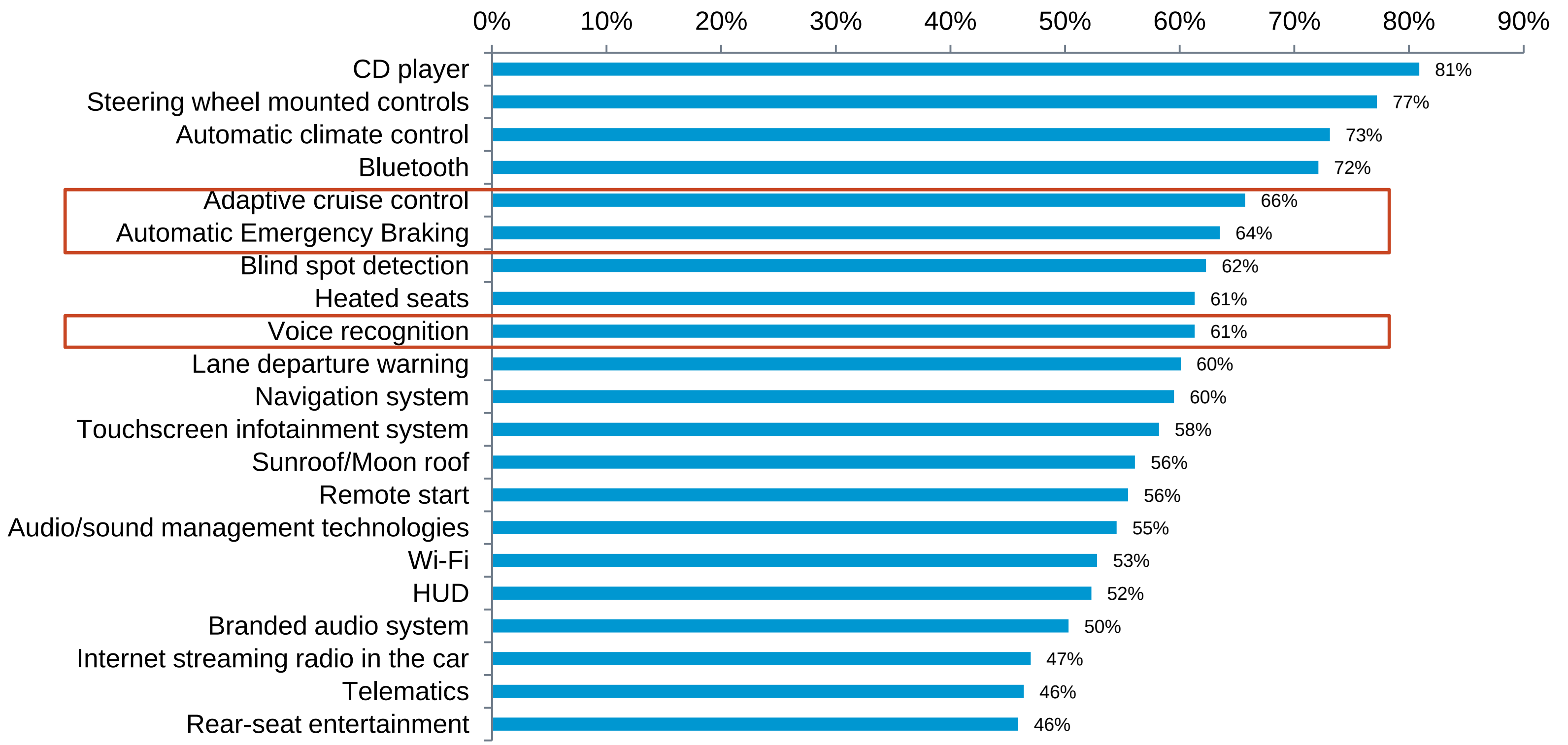


Base: 515 new car intenders who find the telematics system somewhat or very desirable
Source: IHS

- For those that desired telematics, a subsequent question was asked regarding the features.
- Women were more interested in roadside assistance (49%) and hands-free calling (39%) through their telematics systems when compared to males (38% and 26%, respectively).
- Women are less likely to replace parts through do-it-yourself (DIY) means compared to men, which could correlate to this higher interest in roadside assistance. Women were more likely to strongly agree that using a smartphone while driving is distracting (49%), which could help explain the stronger desire for hands-free via telematics.

Think the feature should be standard

Q15. Cost should be built into the base price of the vehicle



Base: 987 new car intenders and desire some of the followings
Source: IHS

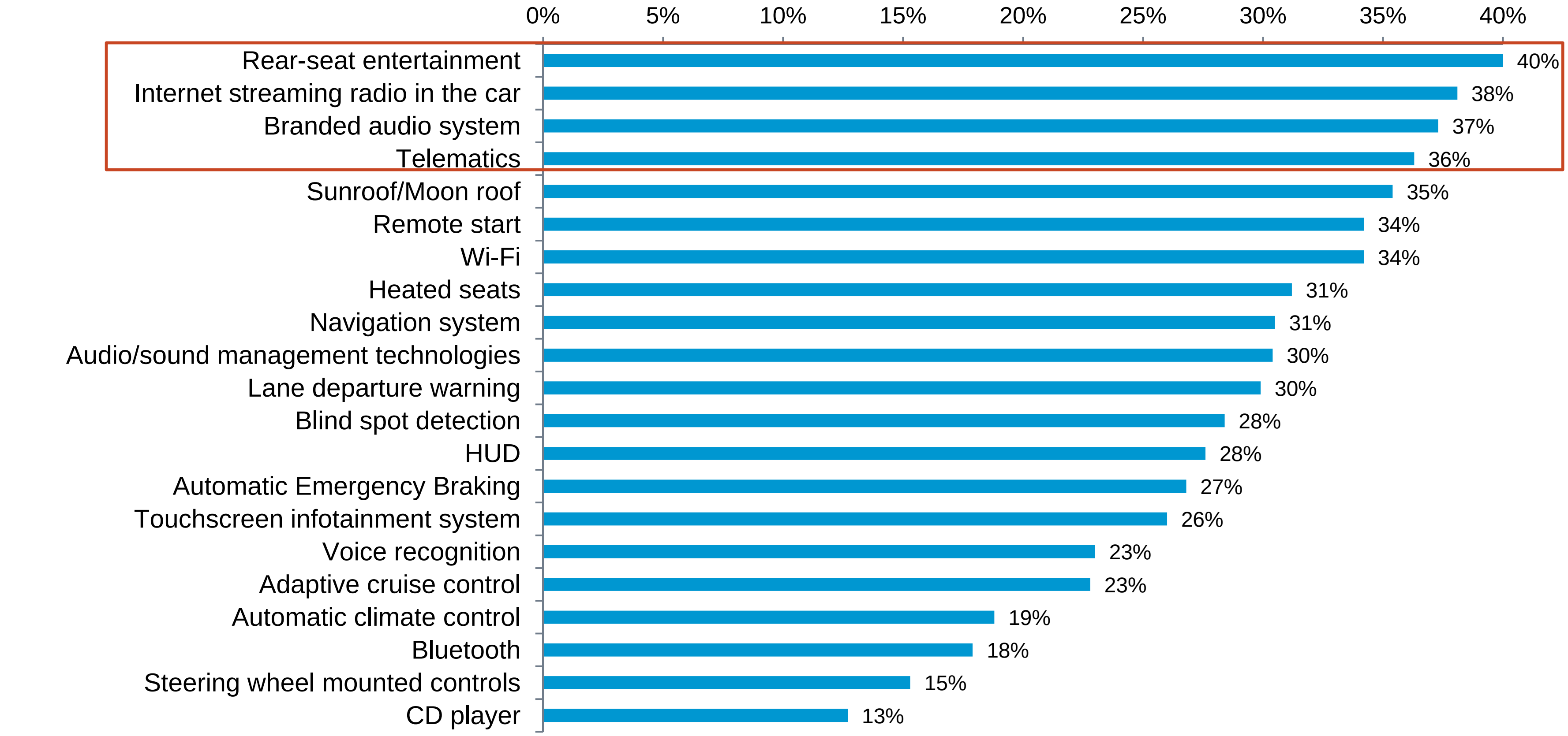
- When rating the desirable features by which respondents thought should be standard, common features like a CD player (81%), steering-wheel-mounted controls (77%) and Bluetooth (72%) ranked highly. More interestingly, consumers also think ADAS features should be standard.

Think the feature should be standard

- IHS asked respondents to rate their desirable features by which they thought should be standard and which they would be willing to pay extra for. Very common features like a CD player (81%), steering-wheel-mounted controls (77%), and Bluetooth (72%) ranked highly.
- More interestingly, consumers really think ADAS features should be standard. Adaptive cruise control (66%), Automatic Emergency Braking (64%), and blind spot detection (62%) ranked highly, too.
- Typically, ADAS features are packaged in such a way as to require luxurious features such as leather seating and a high-end infotainment system, but clearly consumers expect these features to be standard. This likely has to do with learned behavior that safety features, such as electronic stability control or pre-charged brakes, are mostly standard. Some automakers, like General Motors (GM), Toyota, and Subaru, are starting to offer more low-cost forward autobrake options, ranging from $300–2,000.
- In March 2016, a broad group of automakers (including BMW, Fiat Chrysler Automobiles (FCA), Subaru, Nissan, Jaguar Land Rover, Hyundai-Kia, Daimler AG, Tesla, Toyota, Volkswagen, Mitsubishi, Honda, Volvo, Ford, and GM) agreed to work with the National Highway Traffic Safety Administration (NHTSA) and the Insurance Institute for Highway Safety (IIHS) to equip all vehicles with emergency braking by 2022.

Willing to pay extra for feature

Q15. What feature are you willing to pay extra for?

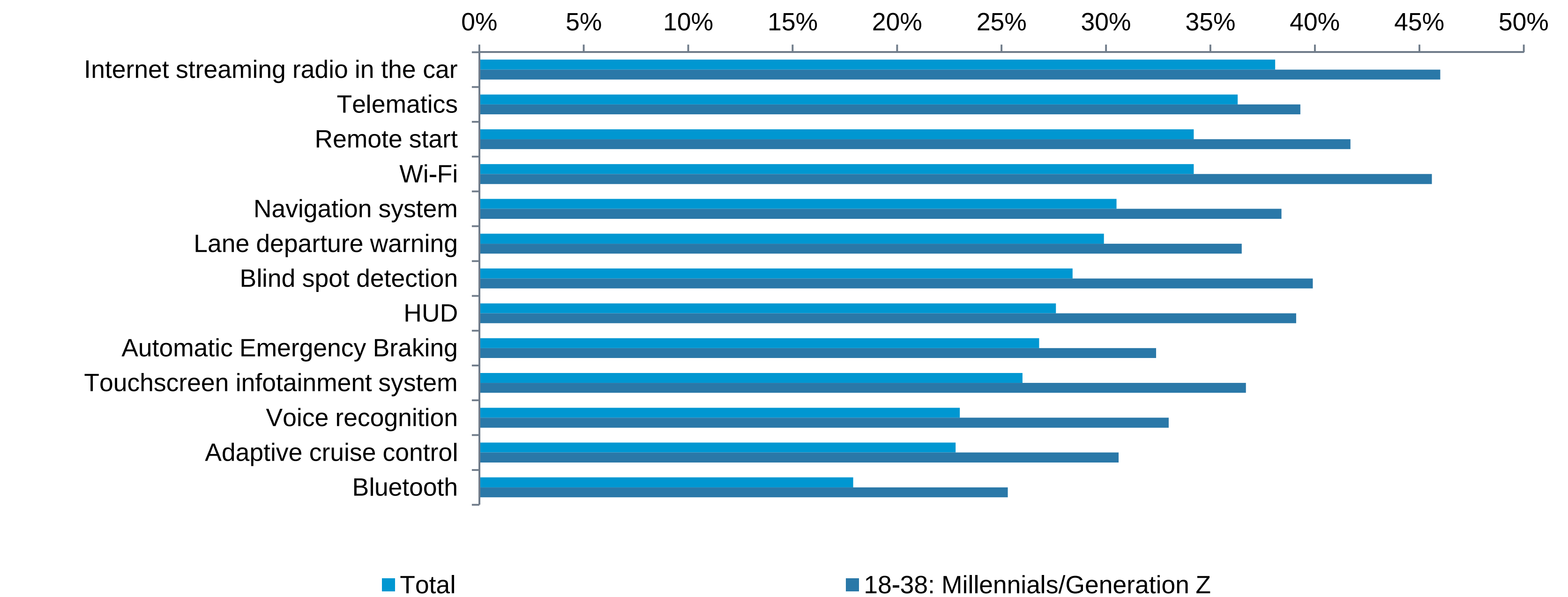


Base: 987 new car intenders and desire some of the followings
Source: IHS

- Rear-seat entertainment (40%), internet streaming radio (38%), branded audio (37%), and telematics (36%) were the most likely features that consumers said they would be willing to pay extra for.

Willing to pay extra for feature - Millennials

Q15. What feature are you willing to pay extra for?

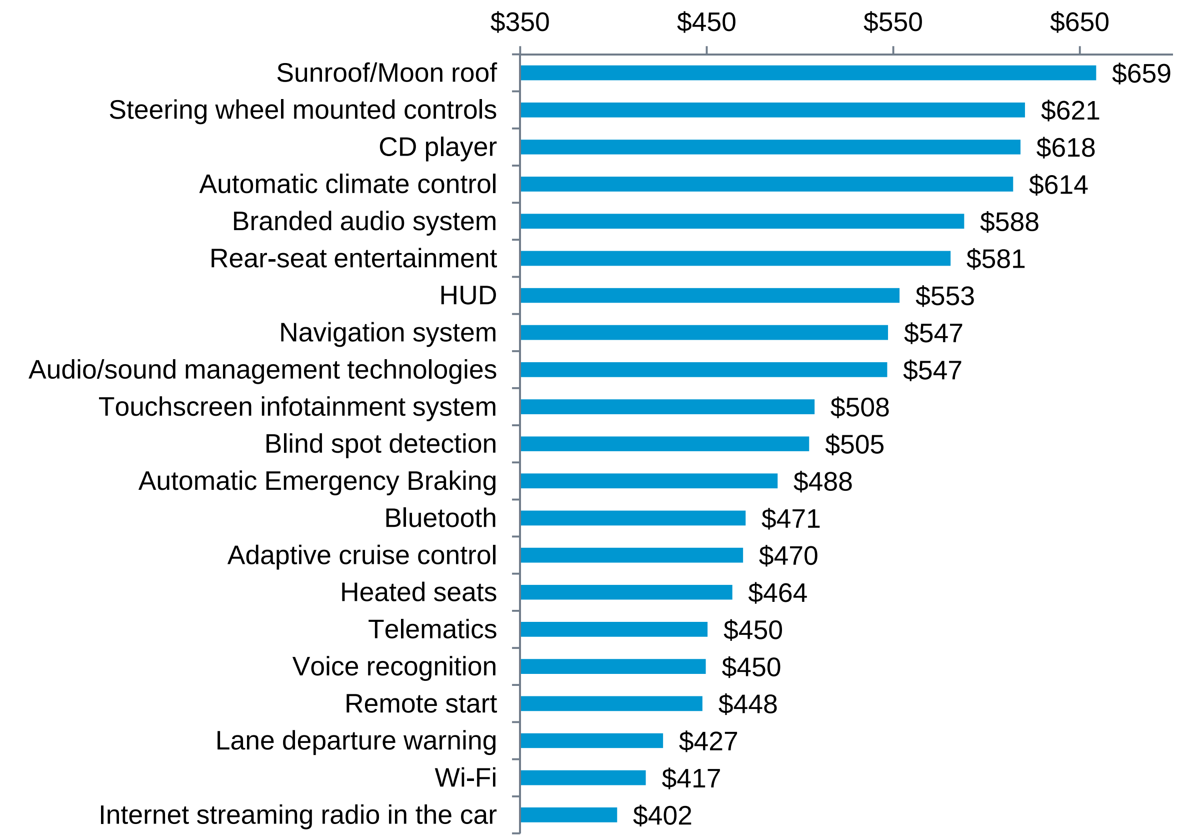


Base: New car intenders and desire some of the followings (987), Millennials (354)
Source: IHS

- Millennials were the most willing to say they would pay extra for features like internet streaming radio (46%), Wi-Fi (46%), remote vehicle start (42%), blind spot detection (40%), and HUD (39%), when compared to older generations. In fact, Millennials were more willing to pay extra for a wide variety of technology and ADAS features, suggesting that Millennials are more likely to see the value in these features.

How much extra willing to pay for feature – Ranked by mean

Q17. How much money would you be willing to spend extra for?



Base: 1,003 new car intenders – United States
Source: IHS

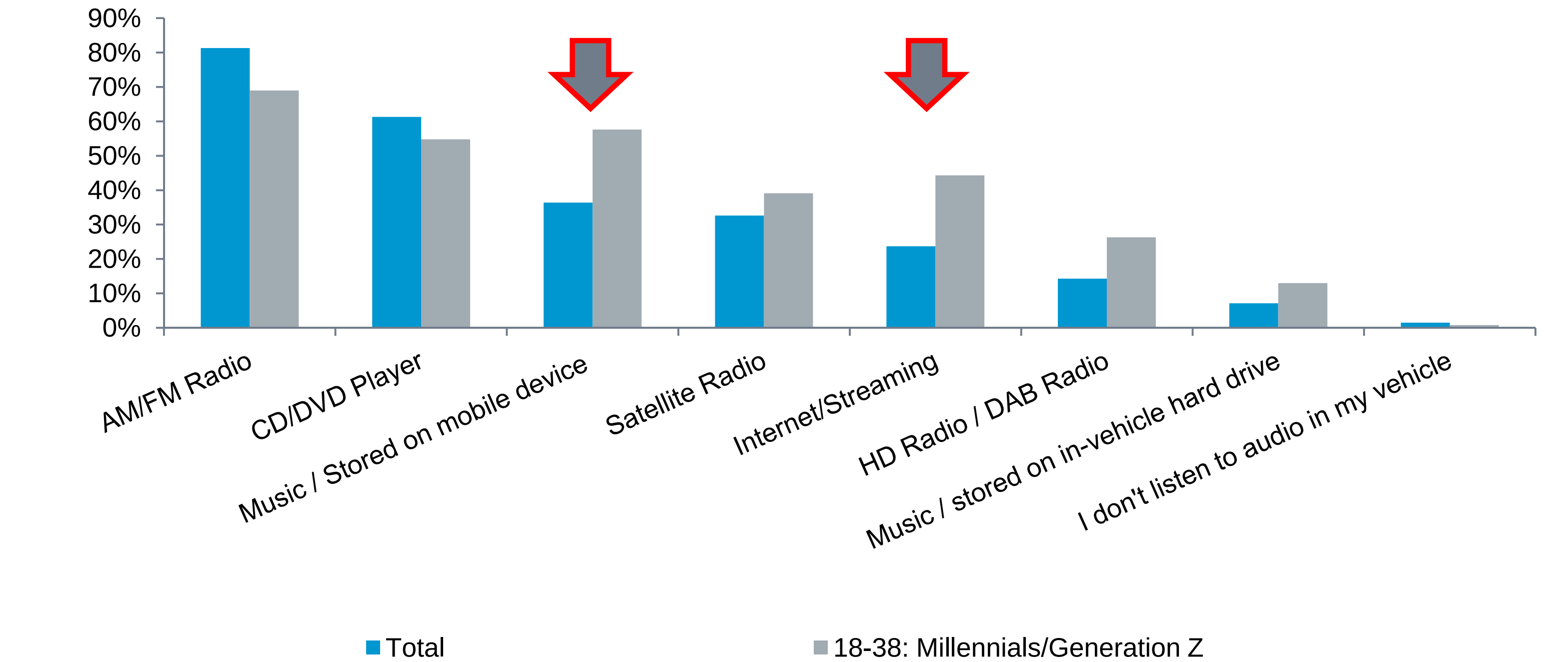
- Looking closely at what respondents are willing to pay extra for and by how much, new car intenders are most willing to spend significant sums on features like steering-wheel-mounted controls ($621) and a CD player ($618). These features are fairly inexpensive, but it does suggest something—that a certain subset of consumers find these features very valuable.
- The majority of respondents wanted a CD player to be standard, but in those cases where the head-unit features a “mechless” (no CD player) unit, some consumers are willing to pay dearly for the feature. Interestingly, the opposite is true for ADAS features. While consumers said these features were highly desirable, they are not willing to pay for them.

Audio in the car

- **What are the top 4 ways you listen to audio in your vehicle?**
- **Do you subscribe to a premium streaming radio or on-demand streaming service?**
- **Which internet radio/audio app do you use most often?**

Audio methods in the car

Q.33 What are the top 4 ways you listen to audio in your vehicle?



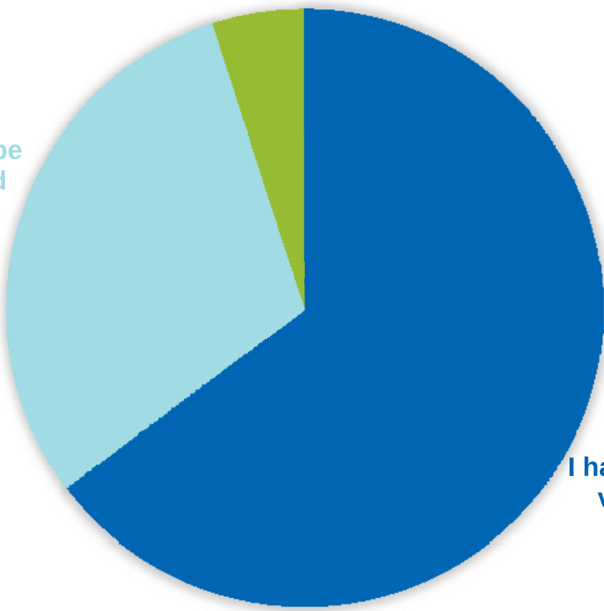
Base: 1,003 new car intenders
Source: IHS

- Traditional AM/FM radio is still the most often used way to listen to audio in the car, by a wide margin (81%).

- The picture changes considerably when looking at the same data by generation. For Millennials, 58% play music/audio from a digital storage device, such as a smartphone or MP3 player**.** Millennials are also nearly twice as likely (44%) to listen to internet streaming radio in the car compared to average.

Internet streaming radio in the car

Q36. Do you subscribe to a premium streaming radio or on-demand streaming service?

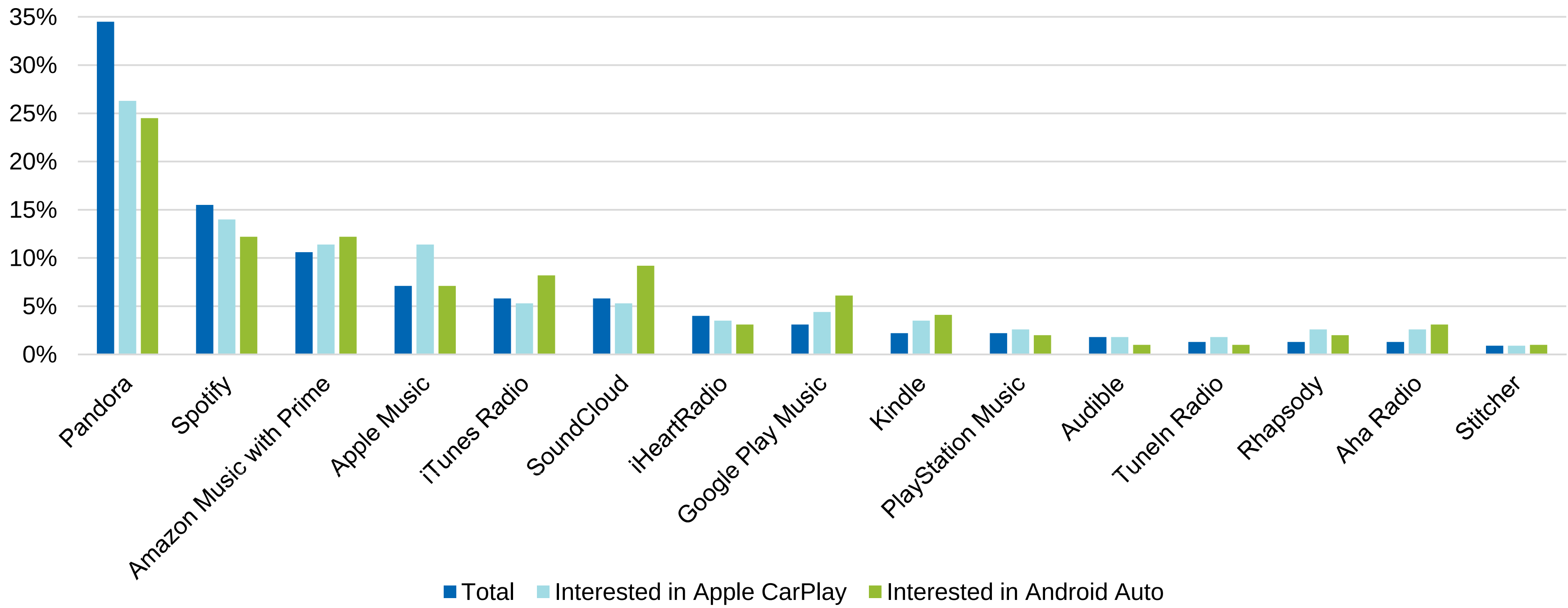


Base: In-car internet streaming radio users (238)
Source: IHS

- Approximately two-thirds of those who use internet streaming radio in the car use a free, ad-supported, music app.
- These figures have not changed from last year's survey (65% had free version versus 32% who had paid subscriptions).
- Most paid subscription services tend to offer an on-demand music selection, higher quality streaming, and tend to have no- or fewer ads.

Popular internet radio/audio apps

Q37. Which internet radio/audio app do you use most often?



Base: Respondents who subscribe to an online music service (226)
Source: IHS

Popular internet radio/audio apps

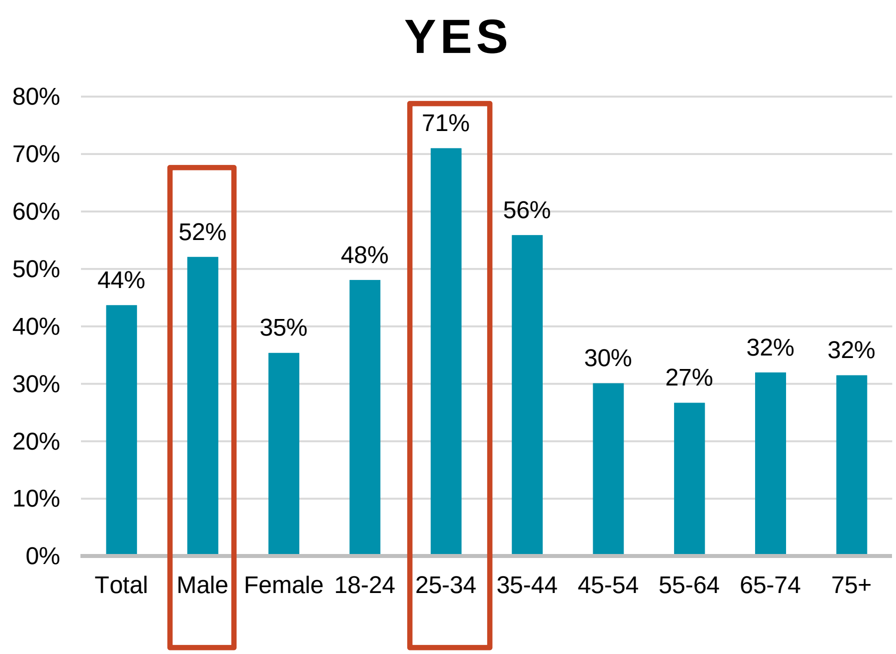
- Pandora remains the number one streaming radio music service used among new car intenders (35%), and Spotify has increased usage among survey respondents (16%). The new Apple Music streaming service is the fourth most used service.
- Among those interested in Apple CarPlay, there are more subscribers of Apple Music (11%). Overall, the order (Pandora, Spotify, Amazon Music) does not change, depending on the desire for Apple CarPlay or Android Auto.
- All three smartphone integration systems offer Spotify, while Pandora is available on Apple CarPlay and Android Auto. Amazon Music is available only on Android Auto.
- **2015 trended data:** Pandora (36%), Spotify (10%), and iHeartRadio (8%) were the most often used internet radio sources in the United States.

Current infotainment availability

- **Does your current vehicle have a built-in display audio, and or “infotainment” system, and or navigation system?**
- **Does your vehicle’s built-in display audio (i.e., infotainment system) or navigation system have smartphone-like apps (e.g., Pandora, Google Local Search) installed directly to the system?**
- **What types of apps are you interested in directly downloading to your infotainment/multimedia system?**

Current infotainment availability

Q26. Does your current vehicle have a built-in display audio, and or 'infotainment' system?

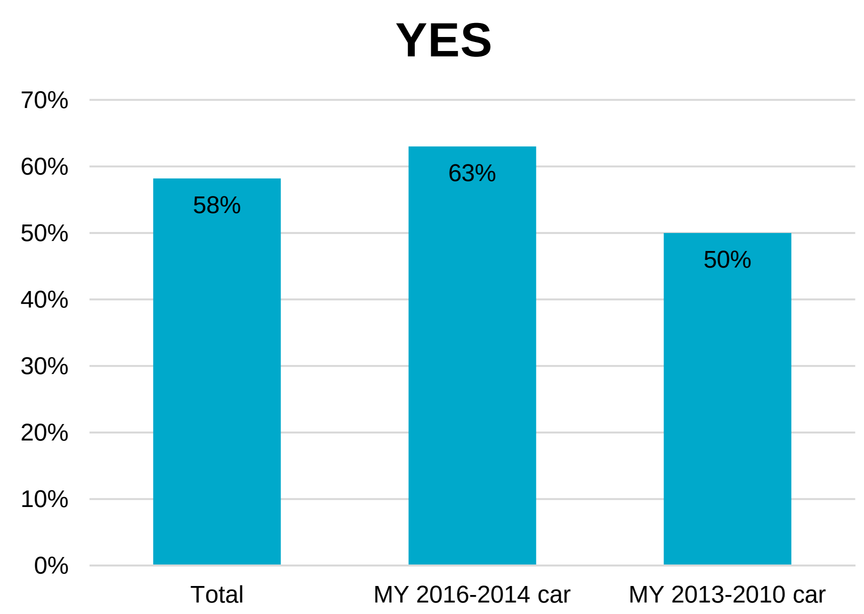


Base: 1,003 new car intenders
Source: IHS

- Among new car intenders, less than half currently have an infotainment system or navigation system in their vehicle (44%).
- This means for the majority of new car intenders, infotainment systems and touchscreen interfaces will be a new experience.
- These consumers will not bring with them the baggage of past experiences, which will be beneficial for some automakers who have had negative customer satisfaction for their current systems.
- Gender and age does play a role in the results, with Males and 25–34 year olds having statistical significance in outperforming their cohorts.

Current infotainment availability

Q27. Does your vehicle's built-in display audio (i.e., infotainment system) or navigation system have smartphone-like apps (e.g., Pandora, Google Local Search) installed directly to the system?

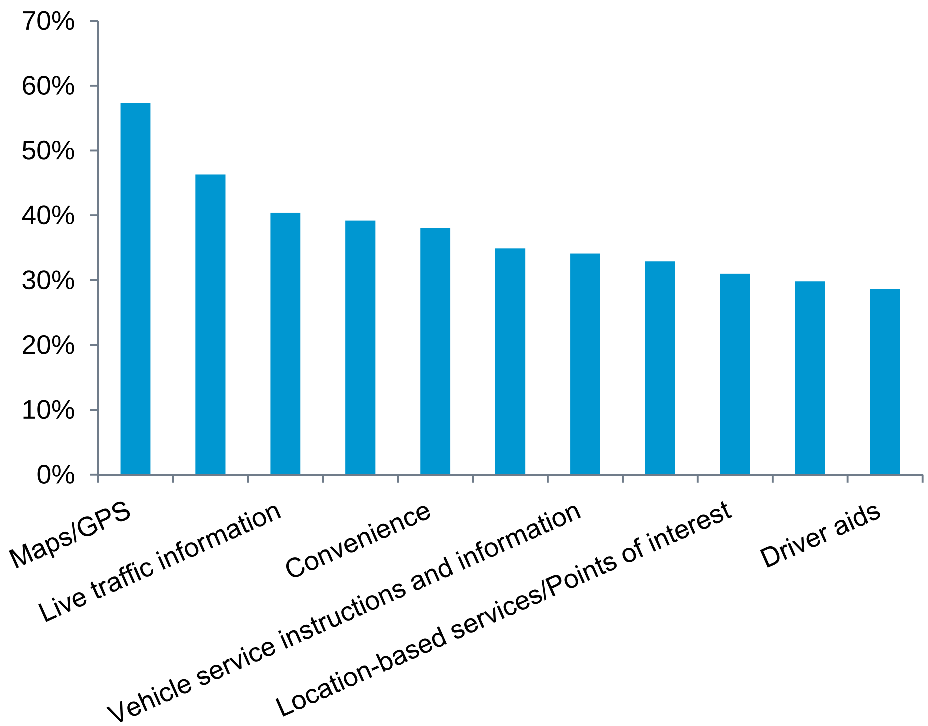


Base: Owns existing vehicle with infotainment or navigation (438)
Source: IHS

- From the survey, 58% of owners of vehicles with infotainment systems say those systems have smartphone-like apps on them today.
- Today, many vehicles have native app integration for CE-telematics, off-board navigation, and internet streaming radio. Newer still are screen projection systems like Ford AppLink, MirrorLink, Apple CarPlay, and Android Auto.
- When examining the most recently purchased automobile, those with the latest model years (MY) were even more likely (63% for 2016–14 MY versus 50% for 2013–10 MY) to say they had such features in their car, demonstrating how quickly apps in the car has proliferated over the past few years.

Desired in-vehicle apps

Q32. What types of apps are you interested in directly downloading to your infotainment/multimedia system?



Base: Owns existing vehicle with infotainment or navigation and with smartphone-like apps installed (255)
Source: IHS

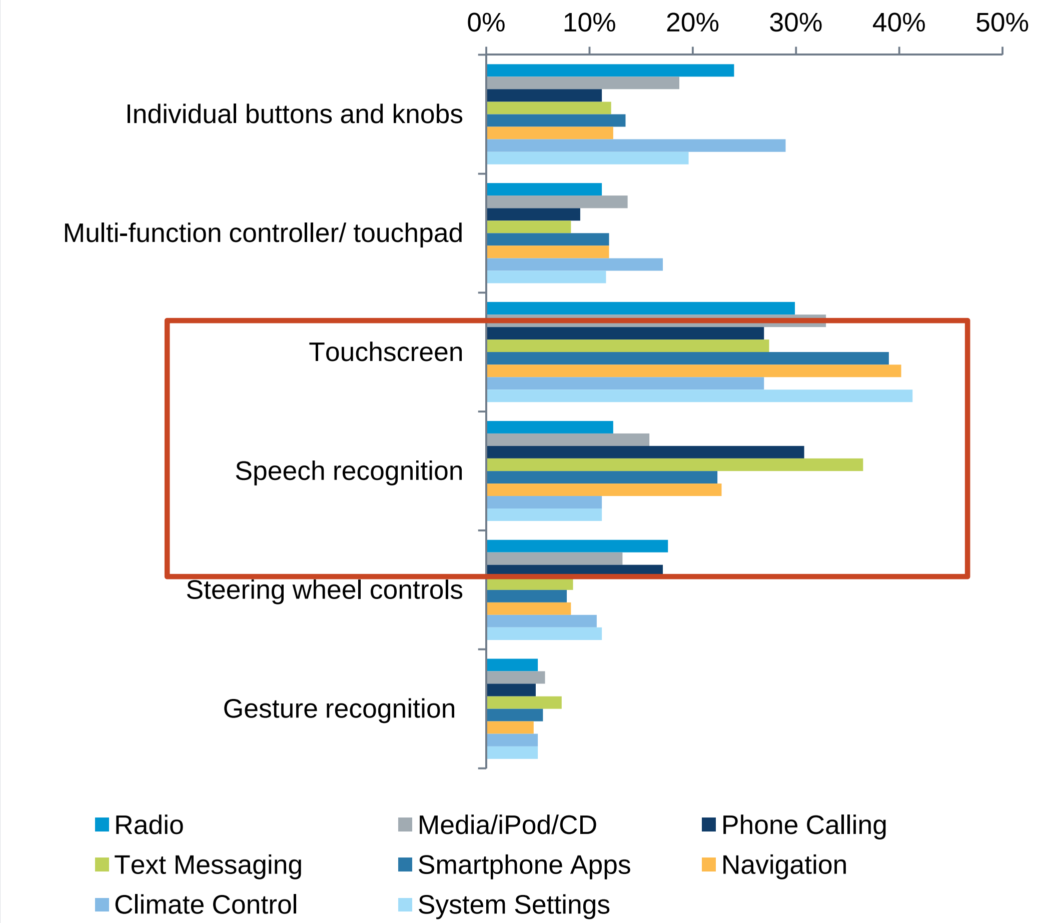
- New car buyers who own an infotainment system with apps are most likely to want navigation apps (57%), such as Google Maps, Waze, TomTom, etc.
- Several automakers, including Chevrolet and Honda, offer off-board navigation apps and are a lower cost option compared to an embedded navigation.
- Internet radio/audio (46%) is the second most wanted infotainment app, followed by live traffic information (40%).
- Other more "driver-centric" apps, such as driver aids and vehicle remote services, are less so desired.

Human-machine interface (HMI)

- **What is your most preferred interface for controlling various infotainment and comfort features?**
- **What is your most preferred interface for receiving information from your vehicle?**

HMI preferences – Input

Q30. What are your two most preferred interfaces for controlling various infotainment and comfort features listed below?



Base: Owns existing vehicle with infotainment or navigation (438)
Source: IHS

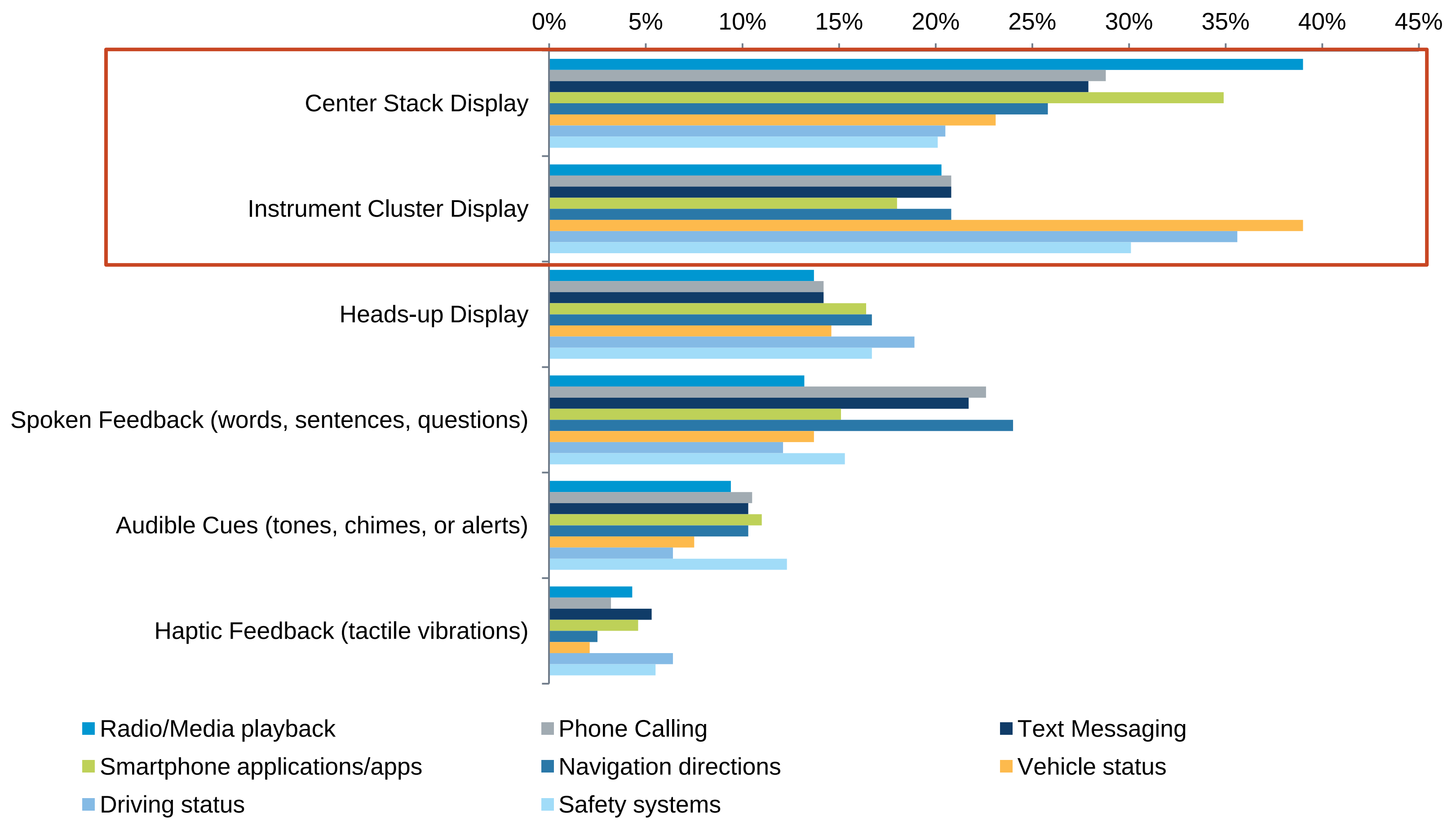
- A touch screen is the most preferred method for system settings (41%), navigation (40%), smartphone apps (39%), media (33%), radio (29%), and climate control (27%) settings. This is interesting because recently many OEMs have backpedaled on touchscreen controls for the radio and climate control, yet physical button and knobs did not rank all that higher than touchscreen controls.

- Touch screens have the advantage of greater context adaptability, being able to change size, shapes, and actions of buttons and controls depending on the application. However, since the controls may change location on a touch screen depending on function selected, it may require the driver to look down. Even so, the pervasiveness of smartphones and tablets may enhance the desirability of touch screens in the car.

- Speech recognition is most preferred for text messaging (37%), phone calling (31%), navigation (23%), and smartphone apps (22%).

HMI preferences - Receiving information

Q.31 What is your most preferred way for receiving information from your vehicle?



Base: Owns existing vehicle with infotainment or navigation (438)
Source: IHS

HMI preferences - Receiving information

- The instrument cluster and center stack display are the most preferred ways of receiving vehicle information over a wide array of informational inputs. Predictably, the center stack display is more preferred for media related information, such as radio/media playback (39% most preferred) and apps (35% most preferred); while the instrument cluster is more so preferred for safety critical driver information, such as vehicle tell-tale information (39% most preferred), speed (36% most preferred), and ADAS information (30% most preferred).

- Spoken feedback is strongly preferred for navigation directions (24% most preferred) and text messaging (22% most preferred).

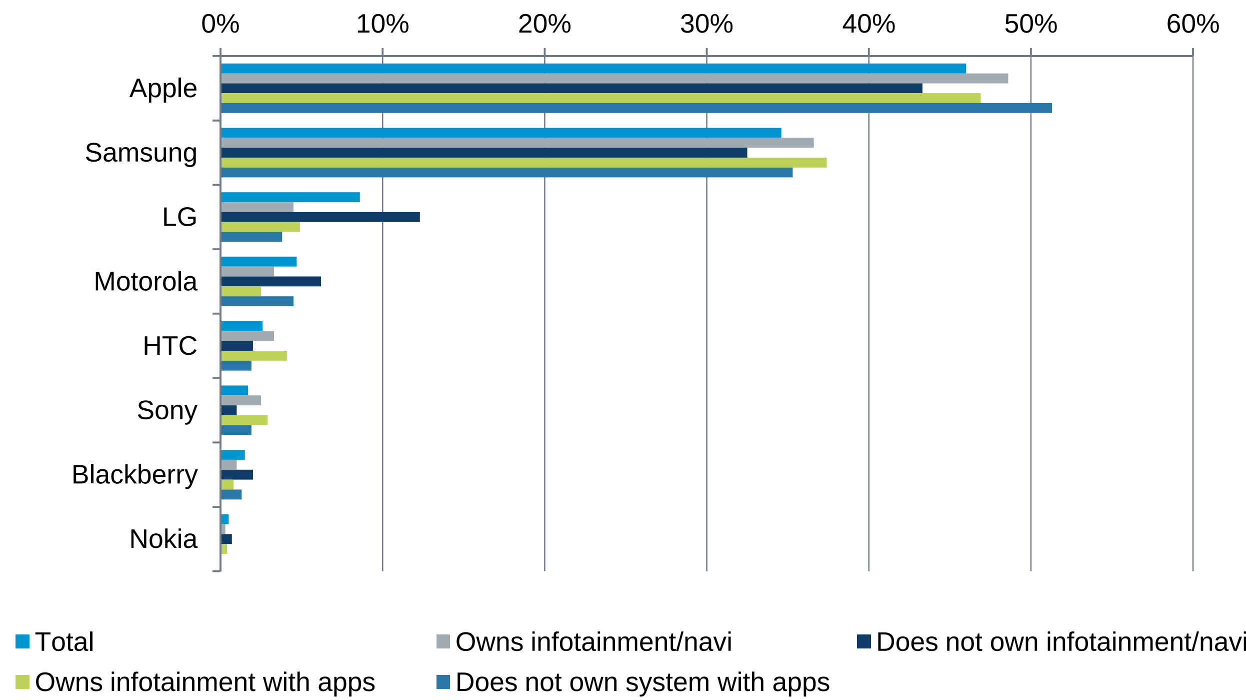
- For HUD, real-time vehicle information like speed ranked the highest as an input (19% most preferred).

Smartphone ownership, apps, and usage in the car

- **What is the most you have paid for an app on your smartphone?**
- **Please select your top 5 favorite app categories for use on your smartphone while in the vehicle.**
- **How often do you use a navigation app on your smartphone for driving?**
- **Which of the following statements, if any, about using your smartphone in your car do you agree with?**

Smartphone brand

Q19. What is the brand of the smartphone you own and use most often?

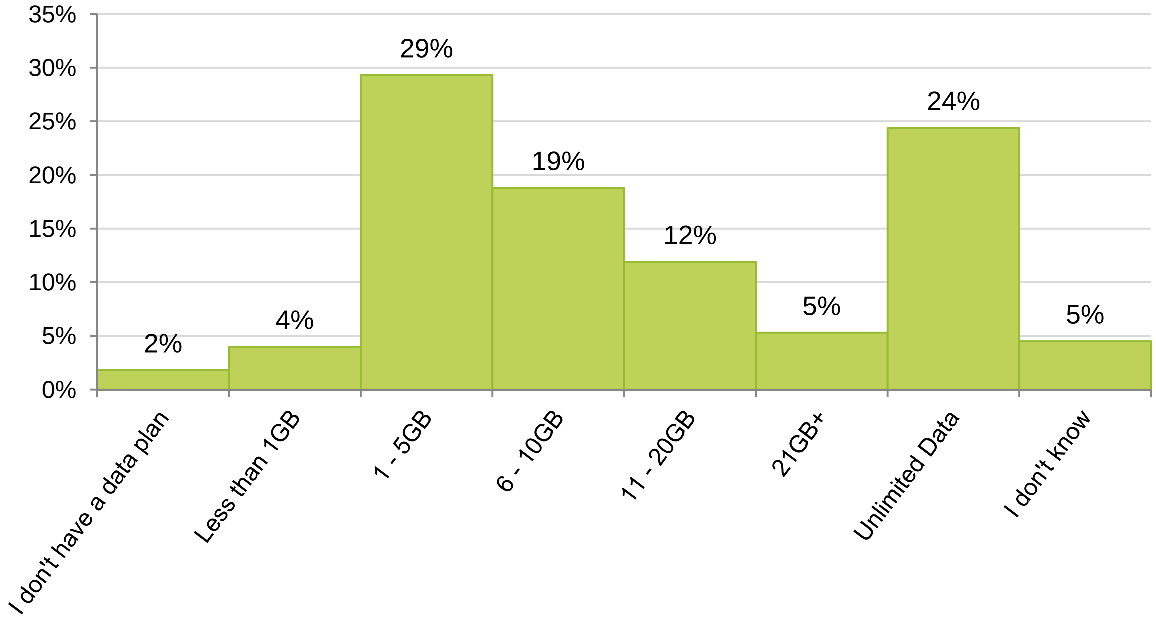


Base: 816 new car intenders that own a smartphone
Source: IHS

- The majority of new car intenders say their most often used smartphone is a iPhone (46%). This figure increases for those who own vehicles with infotainment systems (49%) and infotainment systems with apps (51%).
- This again suggests that the most important platform for software developers is iOS. For hardware developers and OEMs, implementing Apple CarPlay/ Siri Eye Free and companion apps would appear to be the priority.
- Samsung is the next most used smartphone by new car intenders (35%), making features like “Samsung S Voice” support pertinent as well.

Data plan

Q21. What kind of data plan do you have?

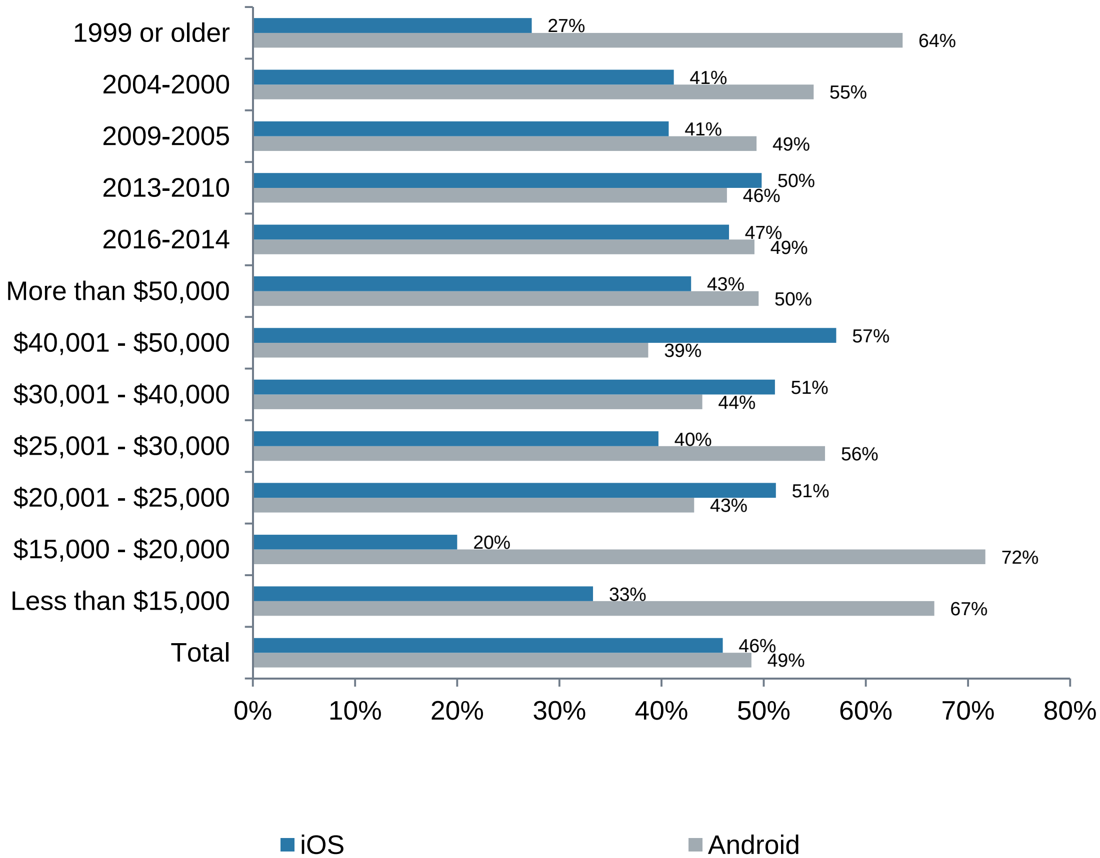


Base: 816 new car intenders that own a smartphone
Source: IHS

- The majority of new car intenders either have a very small 1–5 GB data plan or they have an unlimited plan. Cell phone carriers, particularly the larger two (Verizon and AT&T), started moving away from unlimited data plans in 2012. For a plurality of users needs, 1–5 GB tiered plans are adequate.

Smartphone OS

Q20. Which operating system (OS) is on this smartphone?

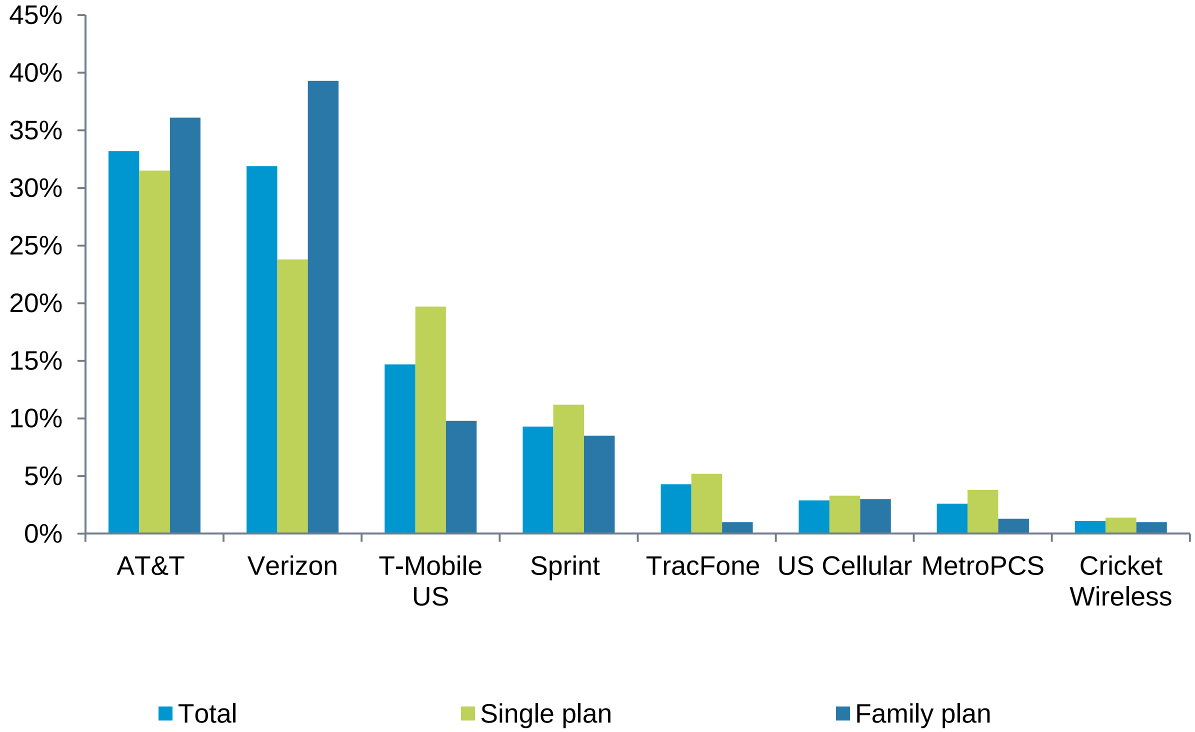


Base: 816 new car intenders that own a smartphone
Source: IHS

- Android smartphone users were more likely to currently own older vehicles and to say they would pay less for their next car purchase, compared to iOS users.

Mobile carrier

Q20. Which mobile carrier are you utilizing?

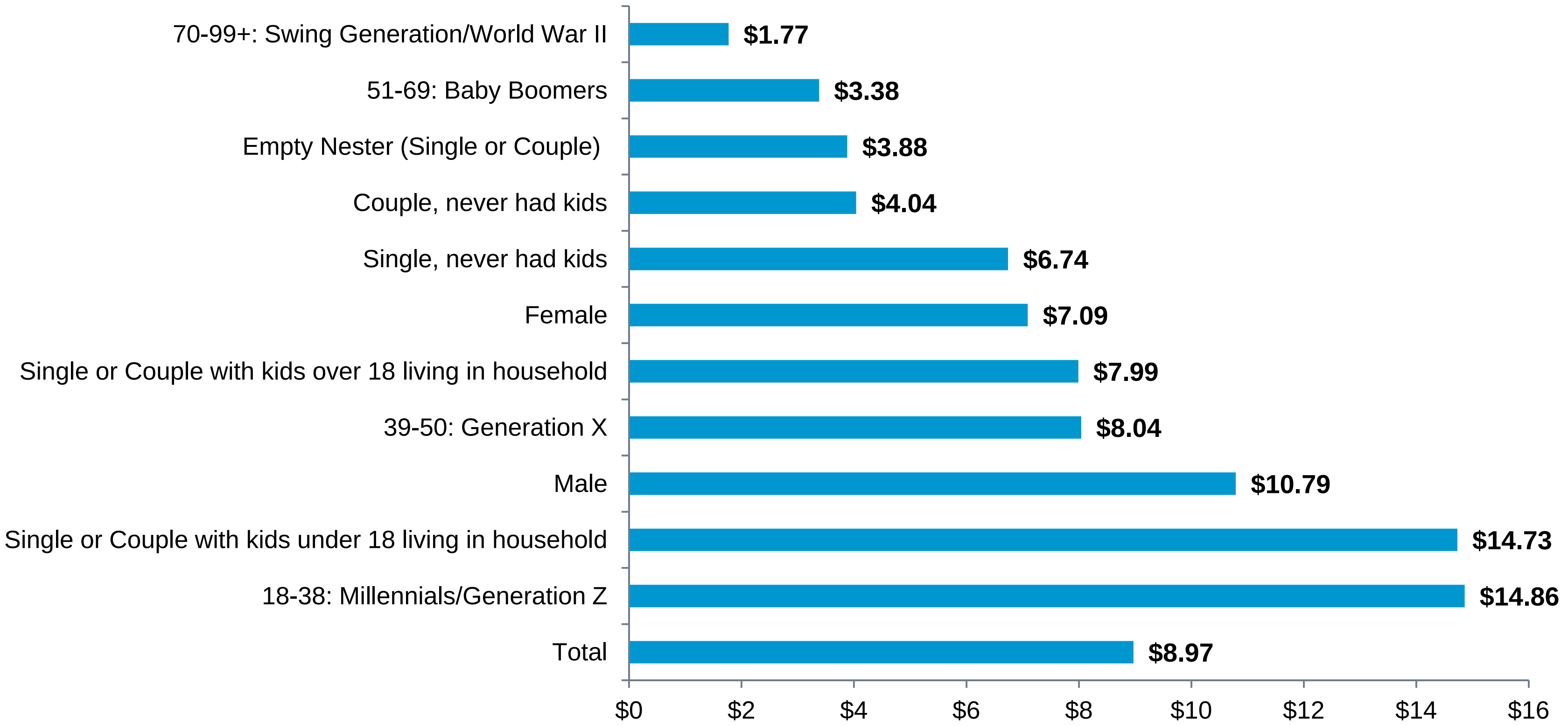


Base: 816 new car intenders that own smartphone
Source: IHS

- AT&T and Verizon users skew more so toward family plans, while T-Mobile and Sprint skew slightly toward single plans. T-Mobile and Sprint still emphasize unlimited data plans, which tend to be marketed toward single plan users.

Most paid on app - Means

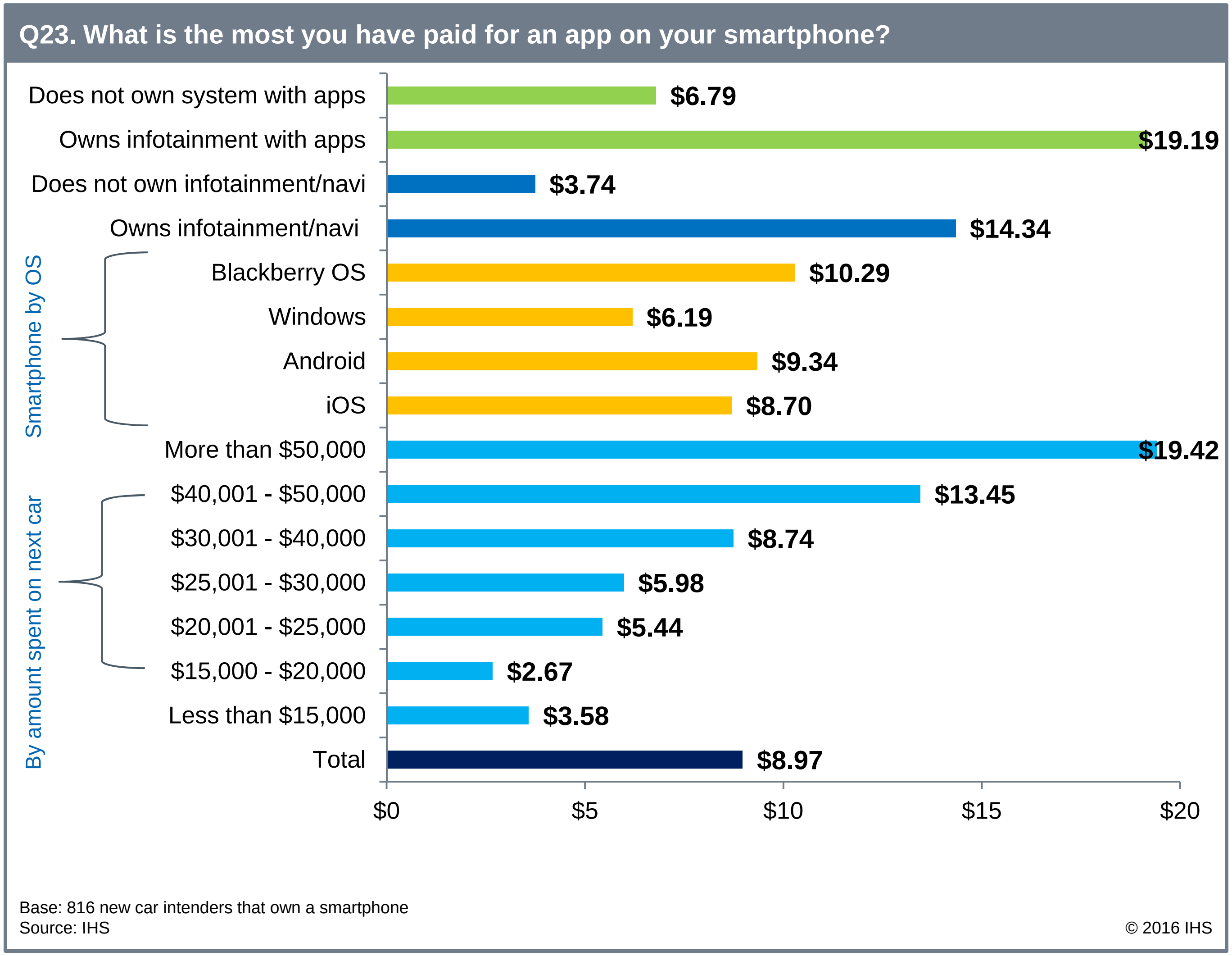
Q23. What is the most you have paid for an app on your smartphone?



Base: 816 new car intenders that own a smartphone
Source: IHS

- Millennials ($14.90) and households with children younger than 18 years old ($14.70) are more likely to have spent more on their most expensive apps compared to those without kids and older generations. Certain productivity apps and games can cost a premium, which could be driving up the cost for parents. Millennials in general appear to value apps more than older generations.

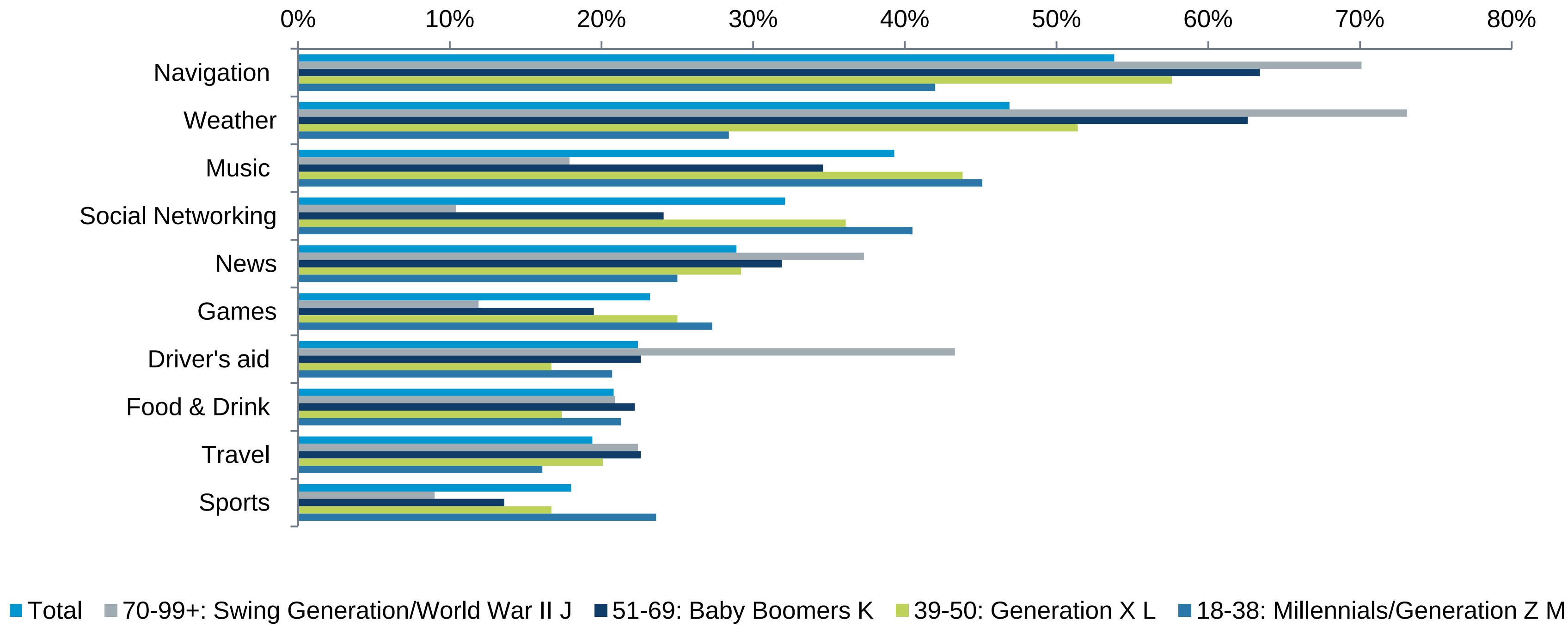
Most paid on app



- Those who own infotainment systems with native apps ($19.20) and those who intend to spend $50,000 or more on their next car ($19.40) have spent the most on an app for their smartphone.
- For app developers and app shop platform software developers, those looking for luxury vehicles, performance vehicles or large SUVs appear to be more in the category willing to pay for driver-centric apps like off-board navigation apps.

Favorite apps for the car

Q24. Please select your top 5 favorite app categories for use on your smartphone while in the vehicle.

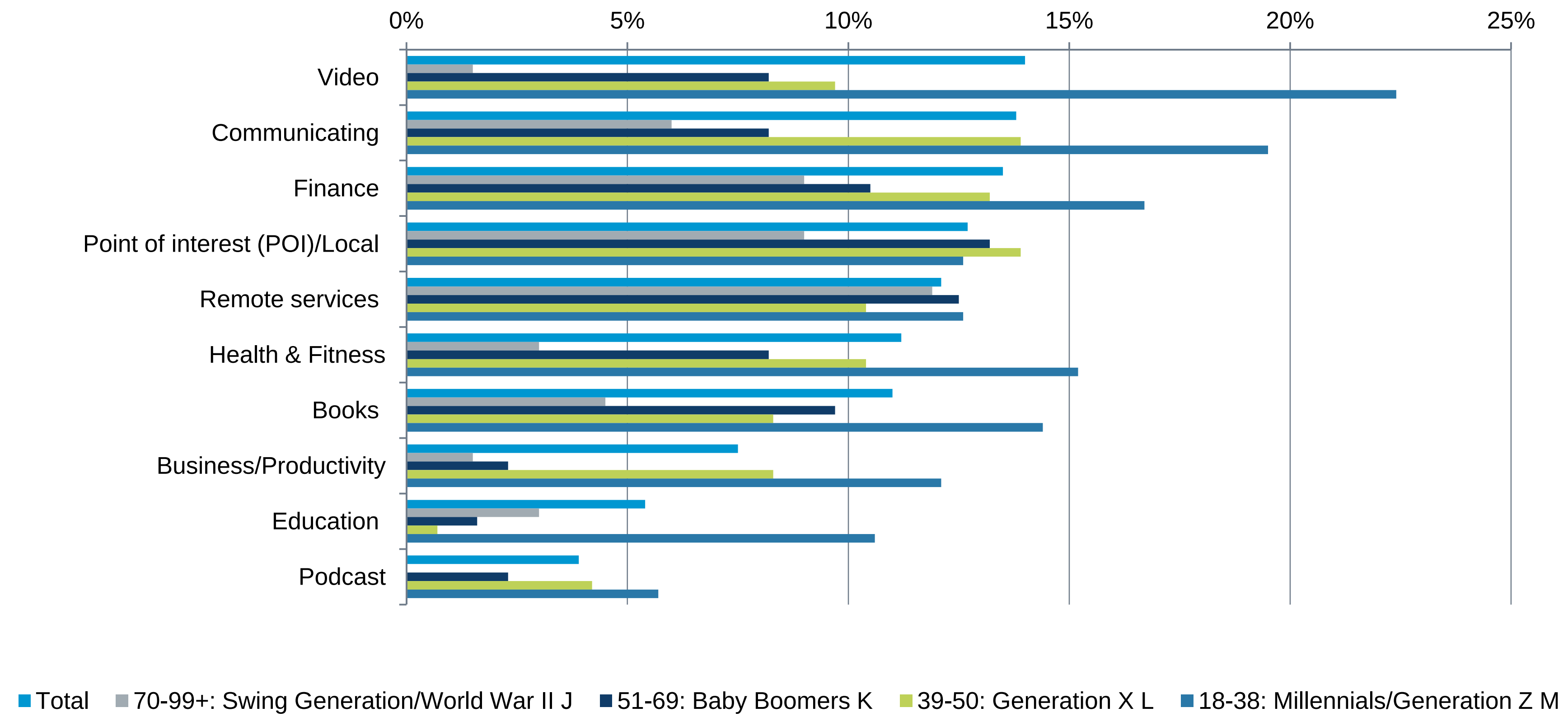


Base: 816 new car intenders that own a smartphone
Source: IHS

- Baby Boomers are more likely to favor navigation (63%) and weather apps (63%) when compared to Millennials. The Swing Generation/WWII generation was the most likely to see Driver's Aid as a favorite (43%). This suggests that older generations are more likely to use apps in the car as utility, a form of information, and see less value in the entertainment aspects, such as music, games, and sports when compared to Millennials.

Favorite apps for the car

Q24. Please select your top 5 favorite app categories for use on your smartphone while in the vehicle?

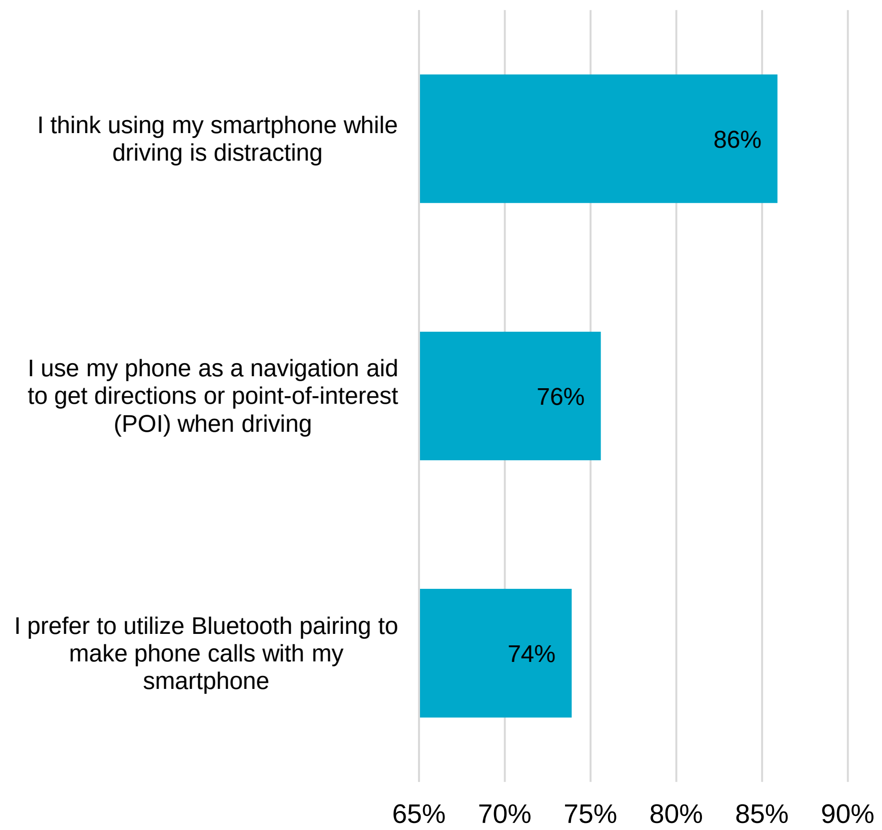


Base: 816 new car intenders that own smartphone
Source: IHS

- Millennials were far more likely to say video (22%) and messaging apps (20%) when compared to older generations. Millennials are probably more likely to use different communication apps beyond text messaging, like Facebook Messenger and WhatsApp and video apps like Snapchat.

Smartphone usage in the car

Q25. Which of the following statements, if any, about using your smartphone in your car do you agree with?

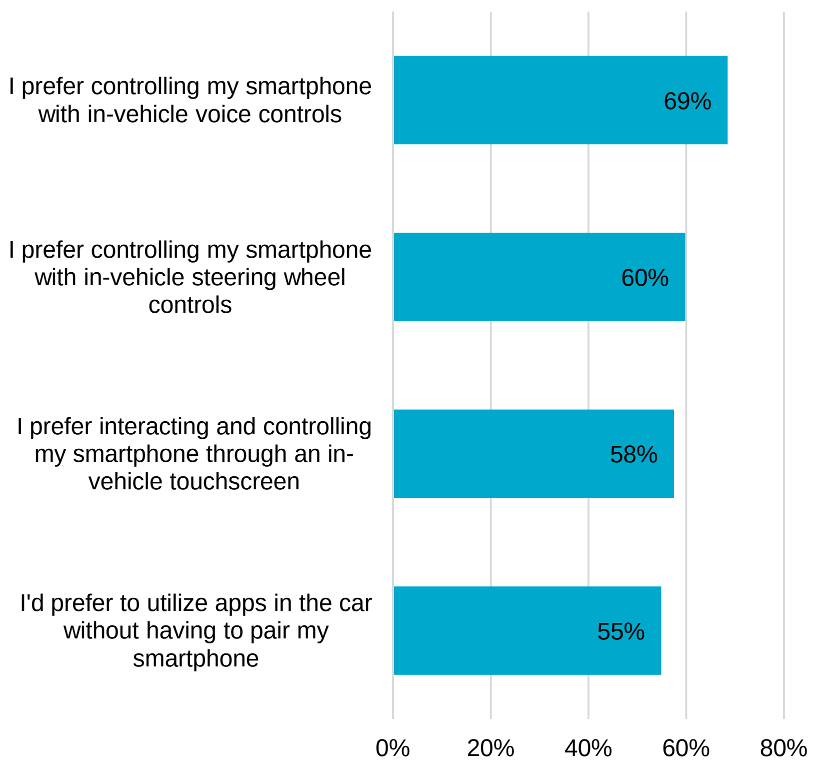


Base: New car intenders that own a smartphones (816)
Source: IHS

- There is near unanimous agreement that using a smartphone while driving is distracting (86%).
- However, three-quarters of respondents also say they use their smartphone for navigation in the car (76%) and a similar figure (74%) say they pair their phone via Bluetooth for calls.

Smartphone usage in the car

Q25. Which of the following statements, if any, about using your smartphone in your car do you agree with?

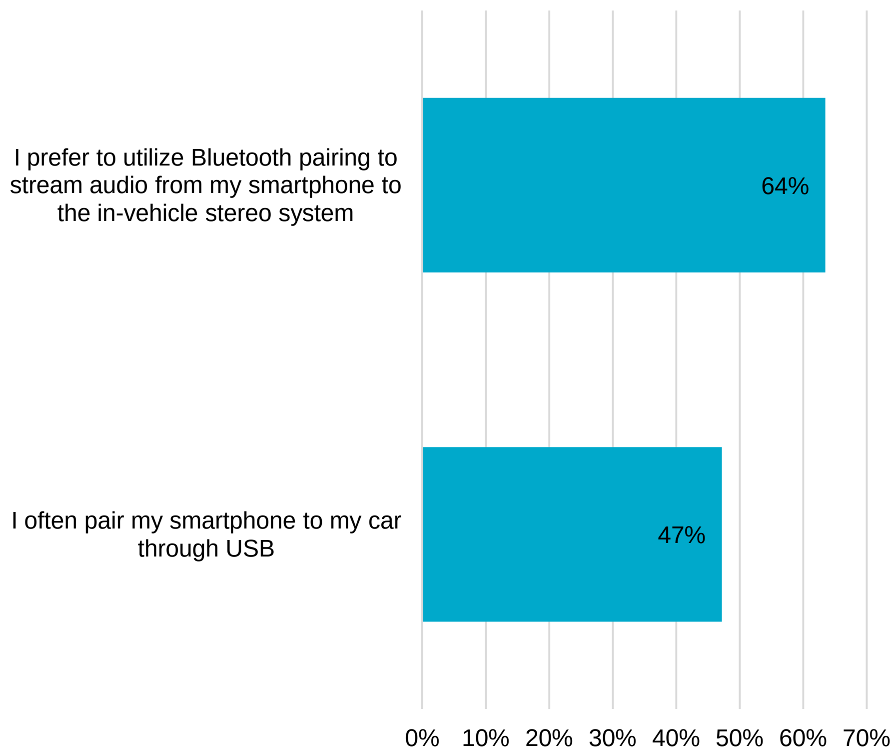


Base: New car intenders that own a smartphones (816)
Source: IHS

- So what are the preferred methods of using a smartphone in the car? Overall, respondents want the in-vehicle HMI to seamlessly integrate their phone into the vehicle controls.
  - Based on the survey, 69% of respondents want to control their smartphone via in-vehicle voice controls.
  - Whereas, 60% want to control their smartphone via steering-wheel-mounted controls.
  - Of new car intenders, 58% prefer interacting and controlling their smartphone through an in-vehicle touch screen. This is again promising for screen projection mode systems.
  - Lastly, 55% of users would like their infotainment system to have smartphone apps integrated within the head-unit without having to pair their phone. There are systems like this, from BMW and Chevrolet, but they are rare and do not seem to be gaining commercial traction.

Smartphone pairing

Q25. Which of the following statements, if any, about using your smartphone in your car do you agree with?

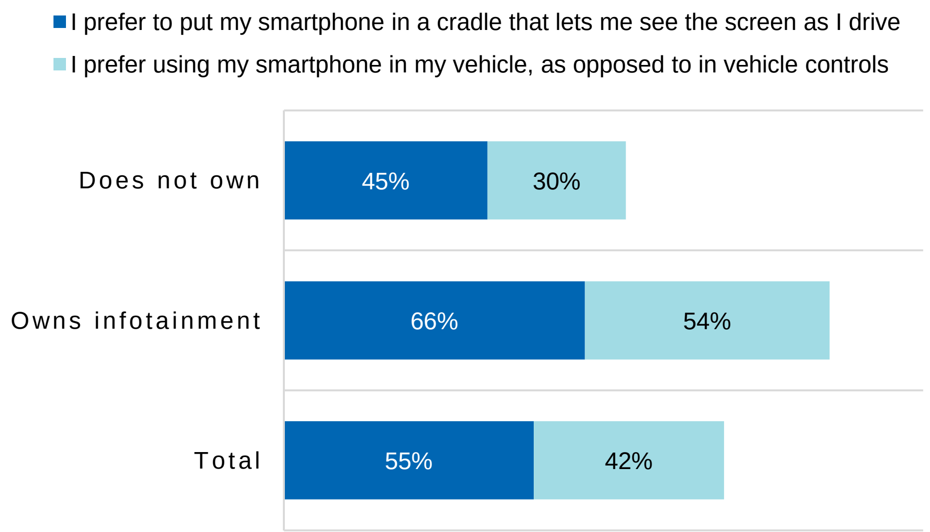


Base: New car intenders that own a smartphones (816)
Source: IHS

- There is a strong desire for wireless pairing for other features, including streaming audio, for instance (64%).
- This coincides with a rather low response rate for pairing a vehicle via USB (47%).
- This bodes fairly negatively for Apple CarPlay and Android Auto, both of which are mostly USB systems for now.

Smartphone usage in the car

Q25. Which of the following statements, if any, about using your smartphone in your car do you agree with?

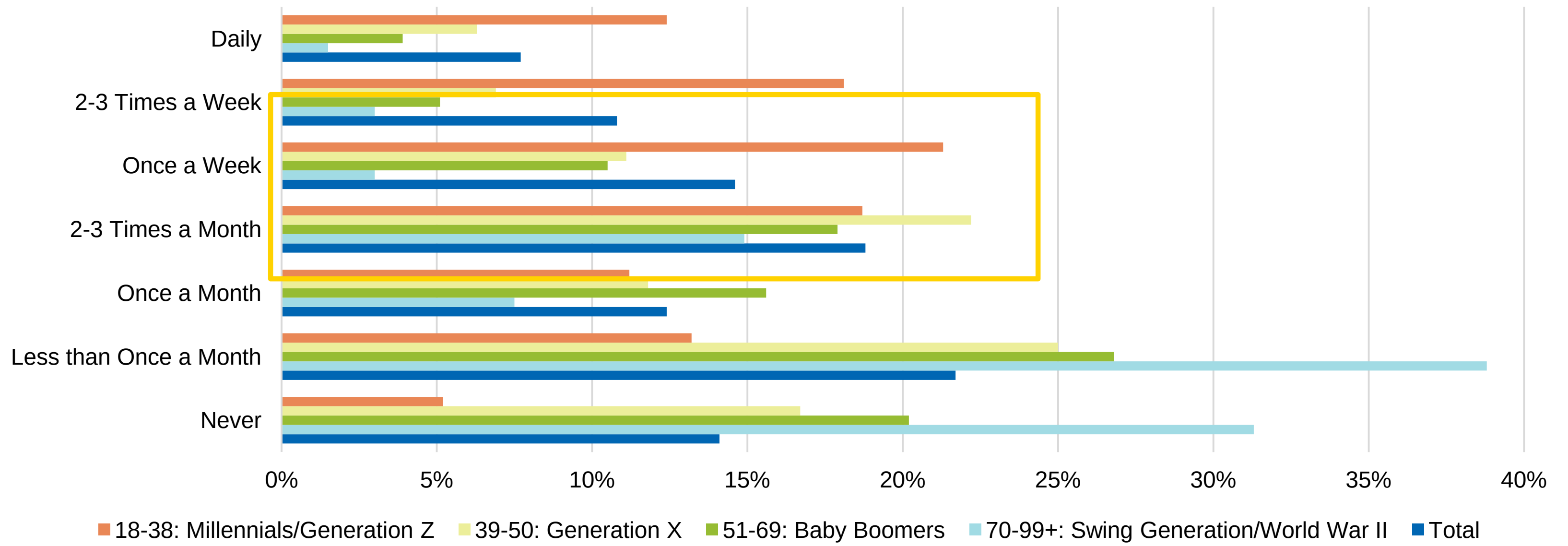


Base: New car intenders that own a smartphones (816)
Source: IHS

- Even so, 55% say they put their smartphone in their line of sight to control while they are driving.
- This figure is much larger for those who currently own a vehicle with an infotainment/ navigation system (66% versus 45%).
- Piling on to this, 54% of respondents who own a current vehicle with an infotainment system prefer to use their smartphone in their vehicle over vehicle controls.
- This is striking, suggesting that infotainment systems are not producing the value they were intended to.

Smartphone navigation while driving

Q38. How often do you use a navigation app on your smartphone for driving?

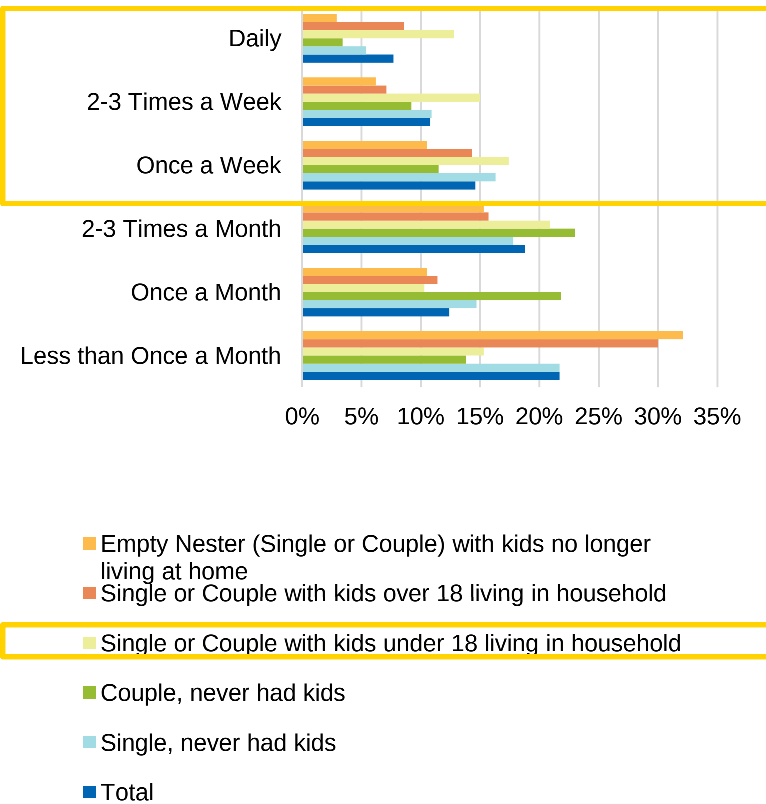


Base: New car intenders that own a smartphones (816)
Source: IHS

- Households with children under 18 years of age are far more likely to use their smartphone for navigation with more frequency than other household compositions. Among new car intenders who own smartphones, 64% use their phone's navigation at least once a month. Millennials are more likely to be daily or weekly users compared to older generations. This suggests there is a large pool of car buyers interested in GPS turn-by-turn navigation and a large pool of users who are used to the functionality of smartphone navigation while driving. These users may be good targets for screen projection features, such as Apple CarPlay, MirrorLink, Android Auto, and Ford Applink.

Smartphone navigation while driving

Q38. How often do you use a navigation app on your smartphone for driving?



Base: New car intenders that own a smartphones (816)
Source: IHS

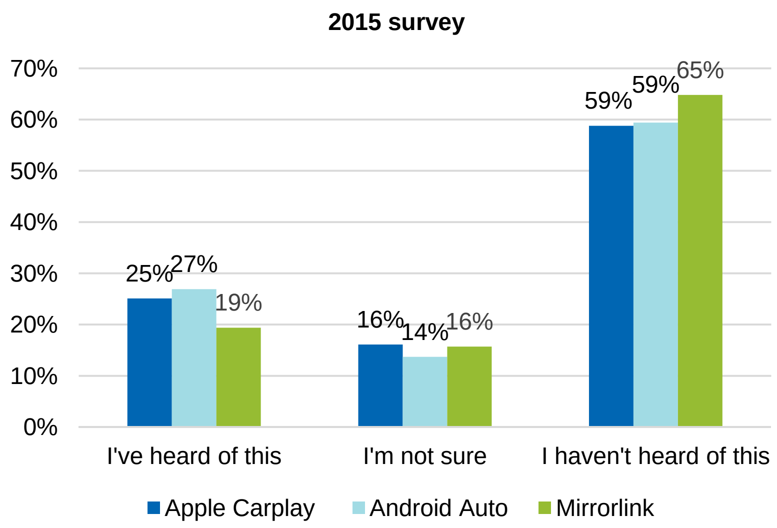
- Households with children under 18 years of age are far more likely to use their smartphone for navigation with more frequency than other household compositions.
- Households with children tend to drive significantly more than those without children. In fact, according to the U.S. Department of Transportation, they travel more than twice as many miles per year by motor vehicle than households without children. Households with children typically have many afterschool activities—field trips, tutoring, little league, and sports practice—that may be in unfamiliar, one-off, places for the parents driving, increasing the value of GPS navigation compared to childless households.

Apple CarPlay, Android Auto, MirrorLink

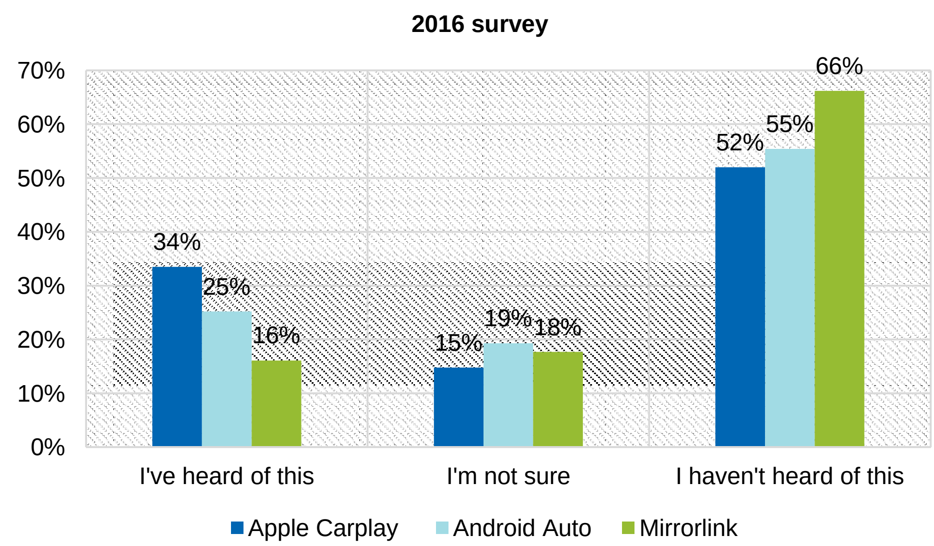
- **Which of the following systems, if any, have you heard of?**
- **If you have heard of this system, are you interested in having this feature in your next vehicle?**
- **Which internet radio/audio app do you use most often?**

Apple CarPlay, Android Auto, MirrorLink – Awareness

Q39. Which of the following systems, if any, have you heard of?



Base: 1,004 new car intenders



Base: 1,003 new car intenders

Source: IHS

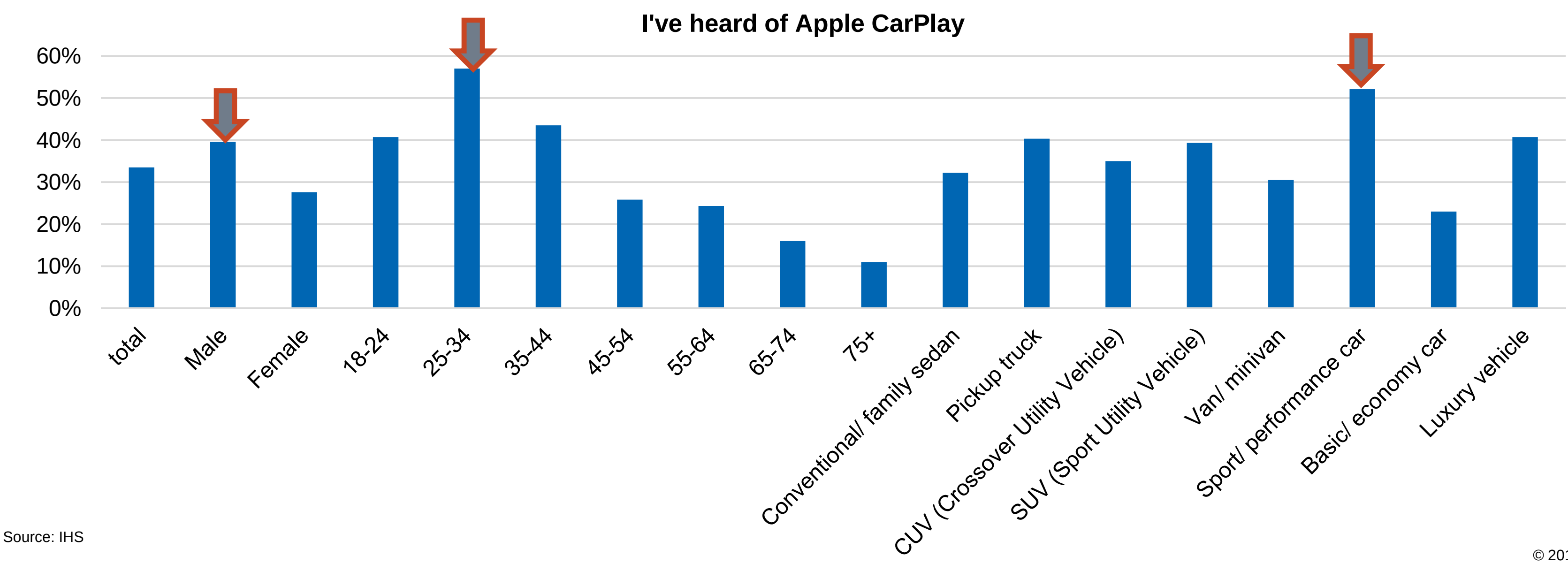
- There has been a noticeable increase in awareness of Apple CarPlay since last year's survey results. More than a third of respondents (34%) say they have heard of Apple CarPlay, compared to only 1 in 4 who said they were aware of it last year. There is no statistical significant difference between awareness of Android Auto or MirrorLink compared to last year's survey. This is likely due to Apple's stronger rollout, with over 100 models enabled with CarPlay (as of April, 2016) compared to about 70 models with Android Auto, worldwide.

Apple CarPlay– Awareness

- Apple has had a stronger launch in the United States compared to Google, for instance General Motors has released over 30 models with CarPlay, but many of those same models have yet to receive a dealer software update for Android Auto. Automotive brands like Volkswagen, Chevrolet, and Kia have heavily advertised Apple CarPlay with nary a mention of Android Auto in the United States.

- Among the demographics, males were significantly more aware of Apple CarPlay (40% versus 28% for females), as well as the 25–34 year olds (57%) among the age groups, and those interested in a sport/performance car (52%).

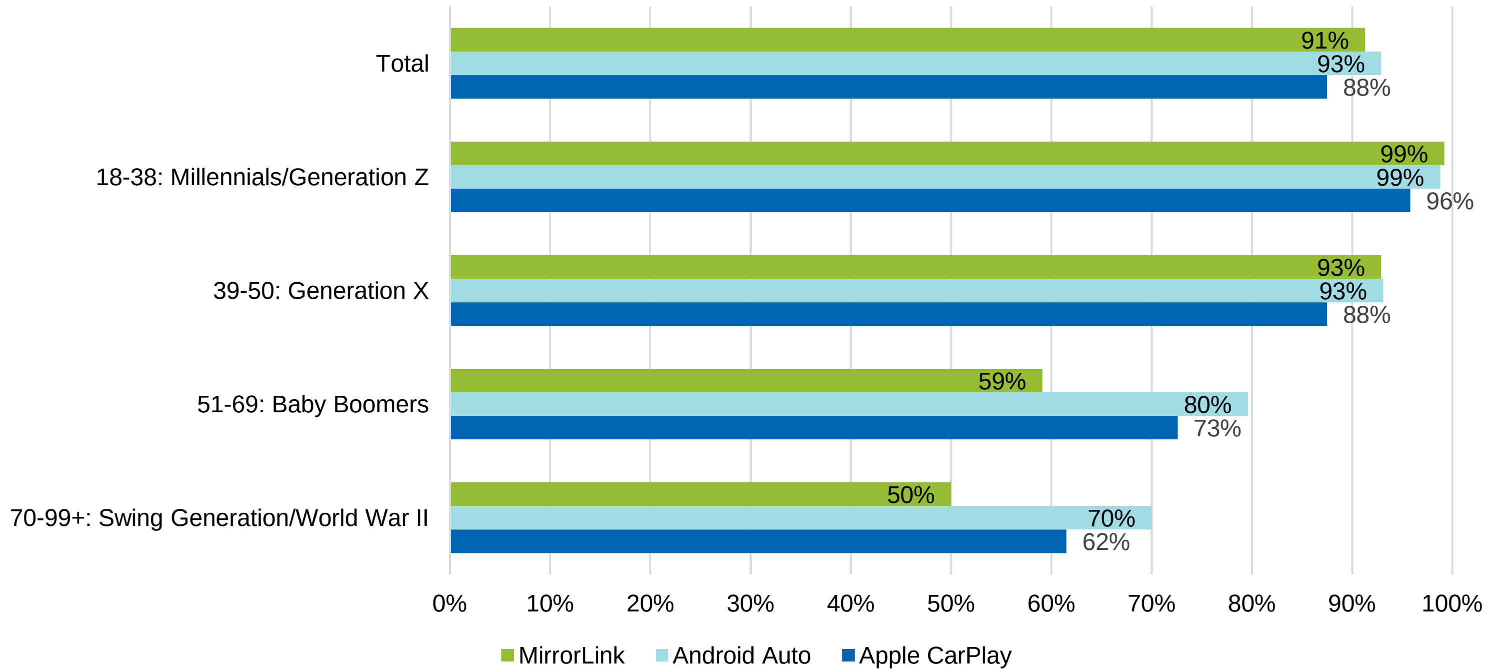
Q39. If you have heard of this system, are you interested in having this feature in your next vehicle?



Source: IHS

Apple CarPlay, Android Auto, MirrorLink – Interest

Q40. If you have heard of this system, are you interested in having this feature in your next vehicle?



Base: Respondents who have heard of Apple CarPlay (294), Android Auto (235), and/or MirrorLink (147) in 2016

Source: IHS

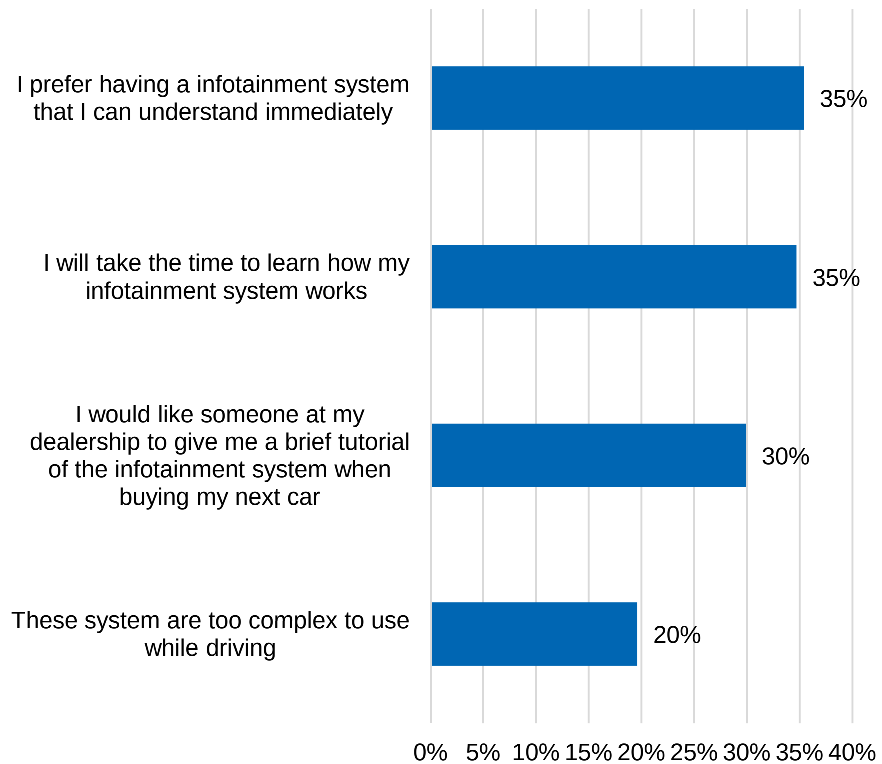
- Among those who have heard of Apple CarPlay, Android Auto, and MirrorLink, there is very high interest in having these features on the next vehicle. There is a dramatic decline in desire among older generations, especially for MirrorLink, but overall similar to what is seen among all advanced technology features in this survey.

Attitudes and behavior

- **Which of the following statements, if any, about built-in display systems (i.e., infotainment system) do you agree with?**
- **Which of the following statements, if any, about using in-vehicle based apps do you agree with?**
- **Would you be willing to pay to update software on your vehicle, either to add functionality, or to improve performance or the user experience?**
- **What is your general opinion regarding autonomous and or self-driving vehicles?**

Current infotainment – Attitudes and behaviors

Q29. Which of the following statements, if any, about built-in display systems (i.e., infotainment system) do you agree with?

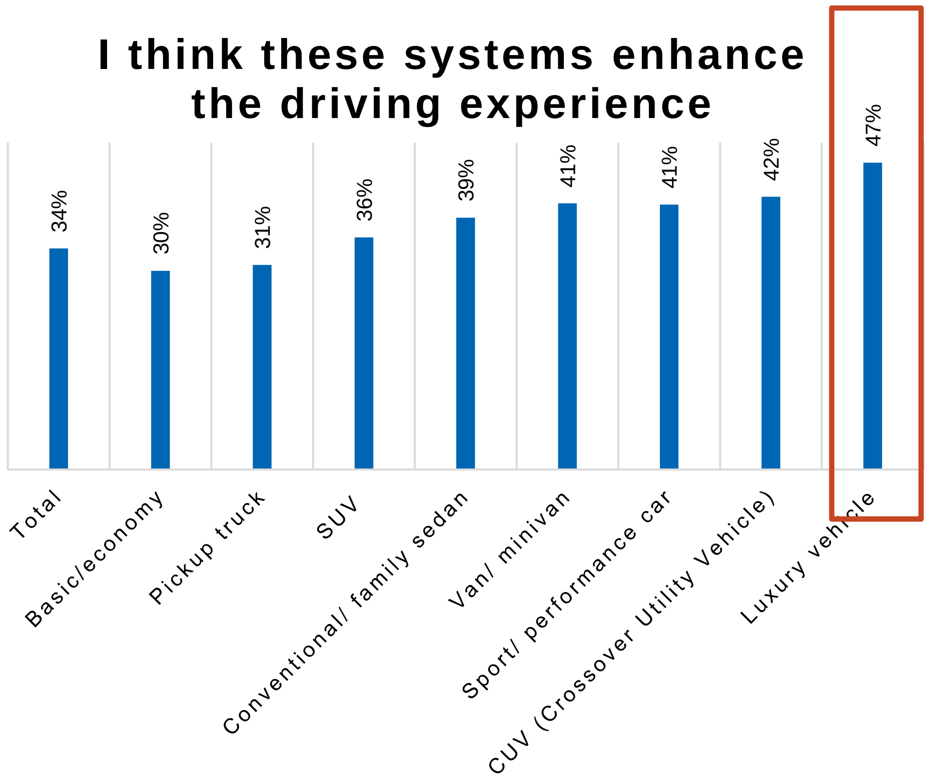


Base: Owns existing vehicle with infotainment or navigation (438)
Source: IHS

- Looking at attitudinal and behavioral statements among respondents, there is a strong desire for infotainment systems that can be understood immediately (35%).
- There is also a near equal response (35%) among infotainment system owners who say they will take the time to learn how their system works.
- Approximately a third of respondents want their dealer to conduct a tutorial on their infotainment system when they buy their next car.
- Additionally, 1 in 5 respondents think infotainment systems are too complex to use while driving (20%).
- This suggests that there is a strong desire for a HMI experience that is simplistic to use and learn.

Current infotainment – Attitudes and behaviors

Q29. Which of the following statements, if any, about built-in display systems (i.e., infotainment system) do you agree with?

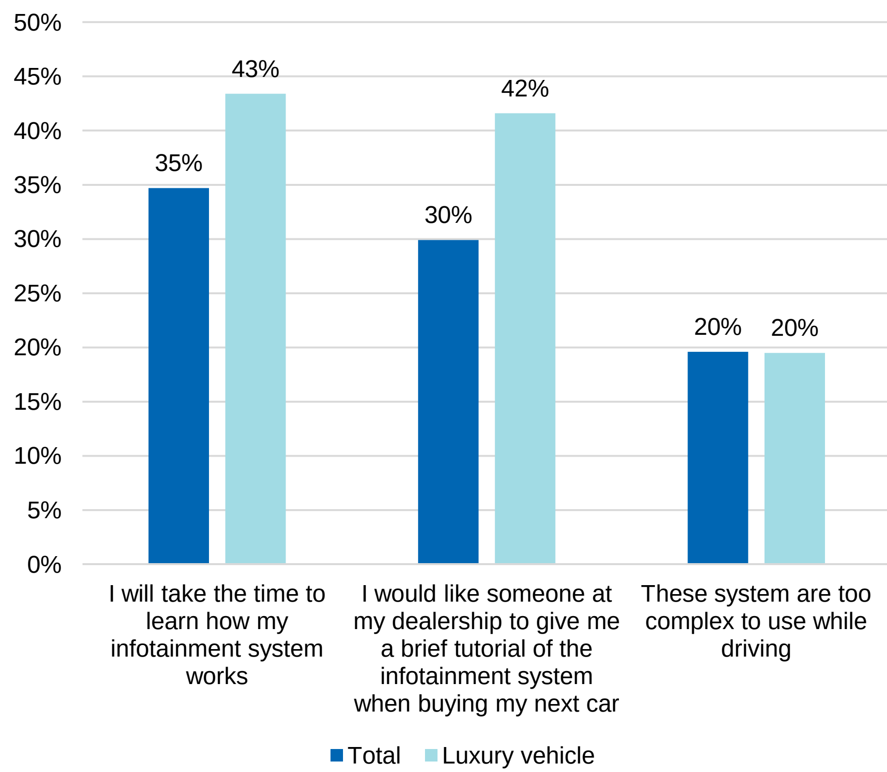


Base: Owns existing vehicle with infotainment or navigation (438)
Source: IHS

- Over a third of new car intenders who already have a vehicle with an infotainment system think these systems enhance the driver experience.
- When cross referencing body style intention, luxury car (47%) intenders were statistically more significant to think these systems enhanced the driving experience.
- Luxury intenders in general have been more gung ho for technology features and have viewed infotainment features more favorably throughout this survey.

Current infotainment – Attitudes and behaviors

Q29. Which of the following statements, if any, about built-in display systems (i.e., infotainment system) do you agree with?

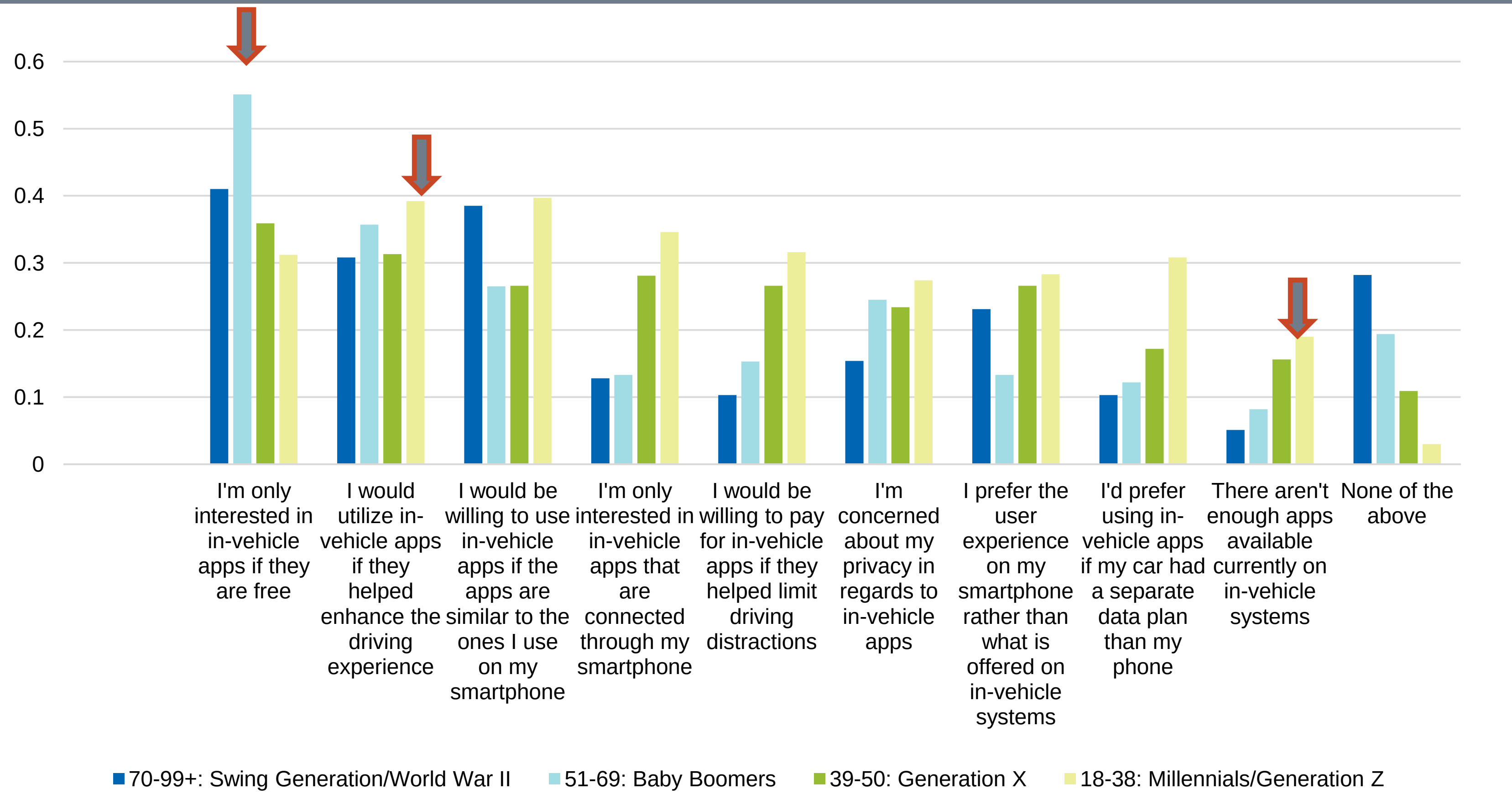


Base: Owns existing vehicle with infotainment or navigation (438)
Source: IHS

- Luxury car intenders also were more likely to say they would take the time to learn how to use their infotainment systems (43%).
- Luxury cars tend to have more complex HMI with more functionality than mainstream systems. Luxury car intenders may not know these systems and a dealer's help is warranted to highlight interesting features.
- In fact, luxury car intenders are statistically more likely to want a car dealer to train them on how to use their infotainment system on their next car (42%).
- Luxury car intenders are likely to want a pampered car buying experience as well and may expect more attention from the salesperson.
- Interestingly, despite having some of the most complex infotainment systems on the market, luxury car intenders did not think the systems were any more complex to use while driving compared to average respondent in this question.

Attitudes toward in-vehicle (head unit) based apps – Generational

Q41. Which of the following statements, if any, about using in-vehicle based apps do you agree with?



Source: IHS

Attitudes toward in-vehicle (head unit) based apps – Generational

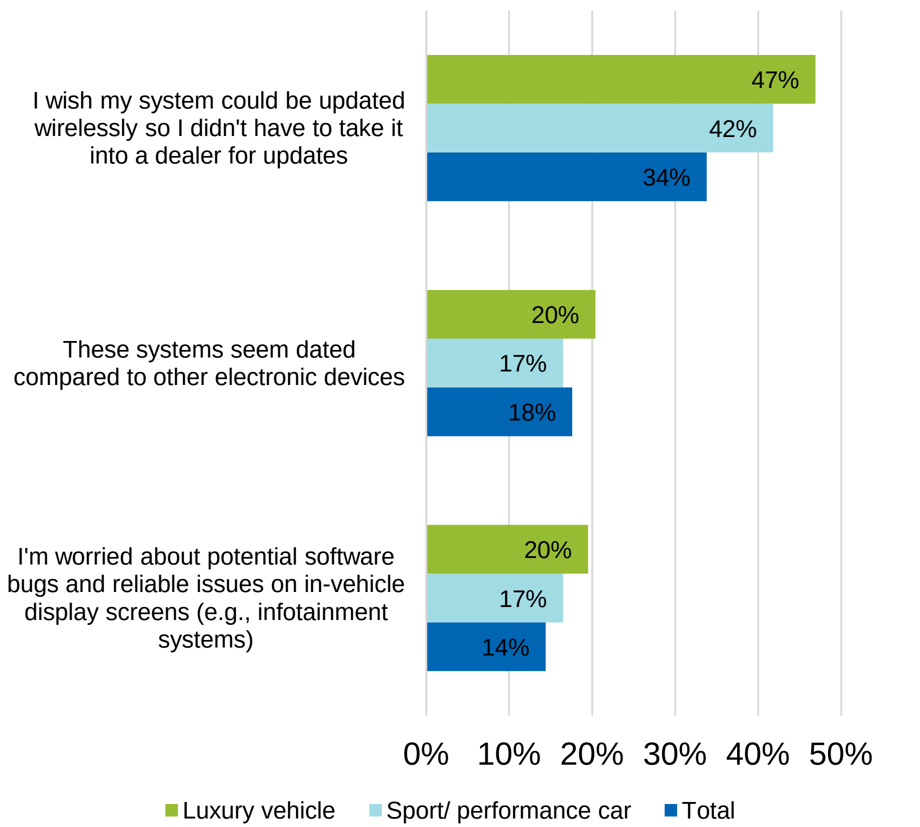
- Baby Boomers showed a statistically significant difference compared to younger generations in wanting in-car apps that are free. Consumers have been trained to expect apps to be free or—to cost $0.99 to $1.99 and no more—because of the mobile phone space where most popular apps are ad-supported and free to the consumer. Baby Boomers simply may not see the value to justify paying more. Many automotive apps can cost more than $5, some can cost up to $50, particularly for navigation.

- More promising is that Millennials and Generation X are less focused on the apps being free, and more so on the functionality of the app. Approximately 40% of Millennials want in-car apps that help enhance the driving experience and for apps that help limit driving distractions. In addtion, 1 in 5 Millennial car buyers say there are not enough apps available on in-vehicle app systems.

- Overall, there seems to be a strong opportunity here for an OEM to development more “driver-centric” apps that provide the driver with information that saves time, lowers operational costs, adds convenience, and brings entertainment contents into the car.

Software over-the-air updates

Q29. Which of the following statements, if any, about built-in display systems (i.e., infotainment system) do you agree with?

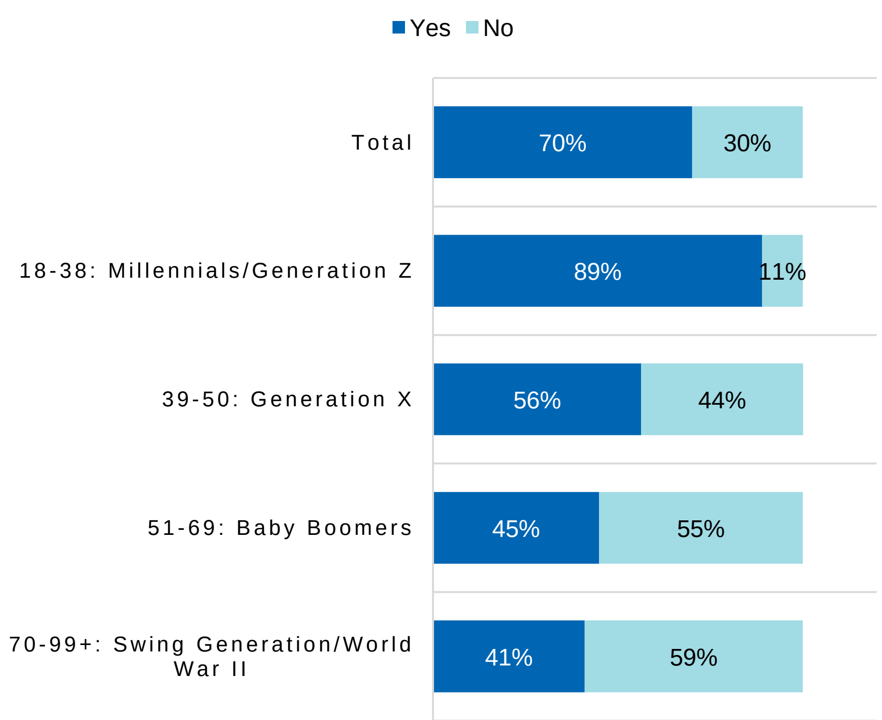


Base: Owns existing vehicle with infotainment or navigation (438), luxury vehicle intenders (113), and sports car intenders (79)
Source: IHS

- Approximately a third of respondents (34%) are interested in over-the-air updates, an emerging technology in the automotive space.
- Sports car intenders (42%) and luxury car intenders (47%) even more so want over-the-air updates and skip having to get updates at car dealers.
- This coincides with a higher percentage of luxury car intenders (20%) who say that infotainment systems feel dated when compared to other electronic device and a higher than average percentage who are worried about software bugs and reliability (20%).
- Indeed, infotainment OS and app OTA updates are starting to show up on BMW, Lexus, Toyota, and Ford vehicles. Tesla vehicles have had it longer than most and are capable of ECUs and safety critical updates. These are beneficial commercially for the OEM, but clearly a large subset of consumers also see the benefit as well.

Software over-the-air updates – Willingness to pay

Q28. Would you be willing to pay to update software on your vehicle, either to add functionality, or to improve performance or the user experience?

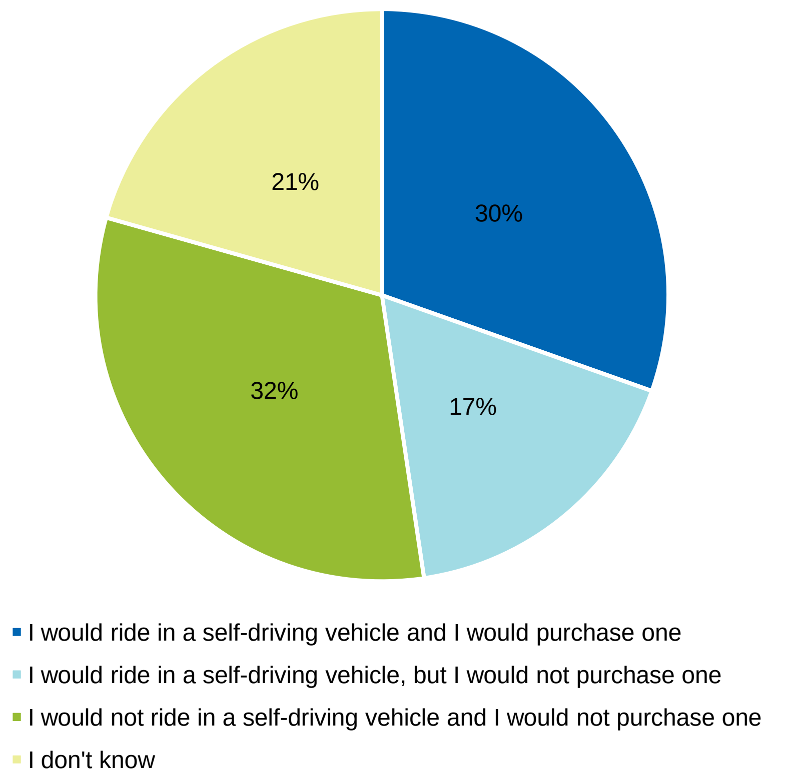


Base: Owns existing vehicle with infotainment or navigation (438)
Source: IHS

- An overwhelming majority of new car intenders who currently own a vehicle with an infotainment system (70%) want their next car to have over-the-air updates that can fix or enhance the performance of the vehicle or the HMI user experience.
- Millennials are the overwhelming driving force here, with 89% of these younger car-buying cohorts wanting over the air update capabilities.
- Many consumers already anticipate the latest upgrades to their smartphone operating system and PC. These updates typically bring a fresh user interface and new features as well as fix bugs. Clearly that consumer expectation among consumer electronics is expected in automobiles today.

Autonomous and/or self-driving vehicles

Q42. What is your general opinion regarding autonomous and/or self-driving vehicles?



Base: New car intenders
Source: IHS

- Autonomous cars are fast approaching production. At least eight automakers say they will have limited self-driving automation (known as L3) by 2020. There are L3 vehicles already on the road; Mercedes-Benz has offered highway self-steering since 2014, the Tesla Model S has a well-publicized Autopilot feature, and Volvo, Cadillac, and BMW are working on similar features. NHTSA, the US regulatory agency for motor vehicles, has stated that artificial intelligence (AI) systems will be considered as the driver under federal law as of February 2016.

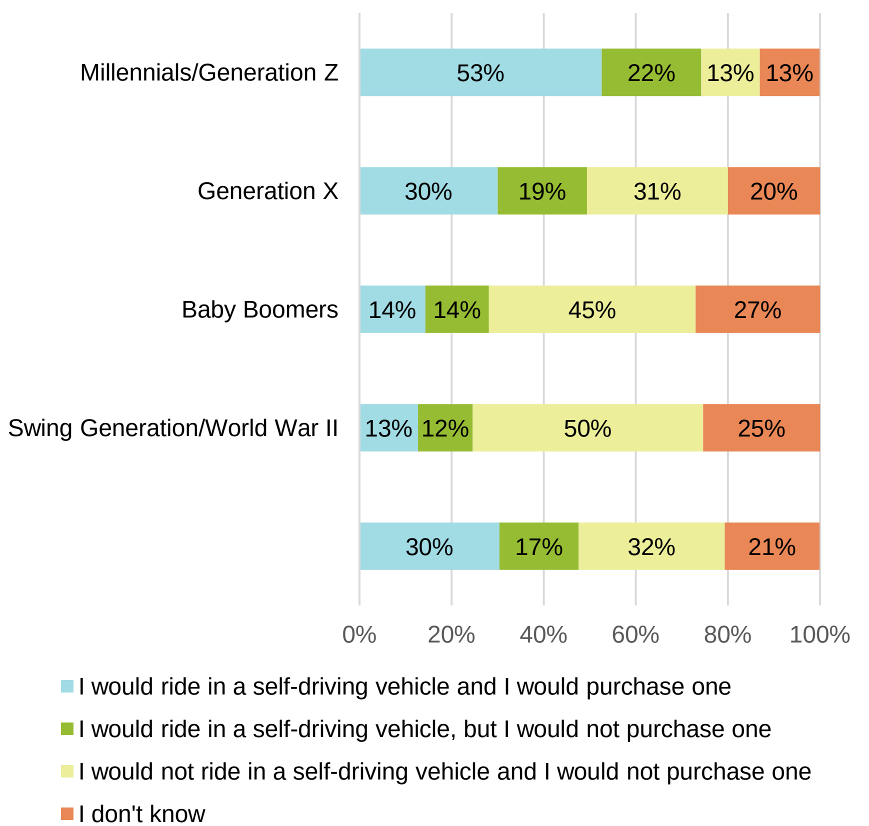
- With politics and commercial interests seemingly aligned, we appear to be moving fast toward the autonomous age, but is the consumer ready?

- Approximately a third of new car intenders said they would "ride in a self-driving vehicle and would purchase one." An additional 1 in 5 said they would ride in a self-driving car, but would not purchase one. That means nearly half of new car intenders are comfortable with a machine taking control of a vehicle they are in.

- Even so, more than half of intenders are not interested in being driven, purchasing a self-driving car, or simply do not know.

Autonomous and/or self-driving vehicles

Q42. What is your general opinion regarding autonomous and/or self-driving vehicles?

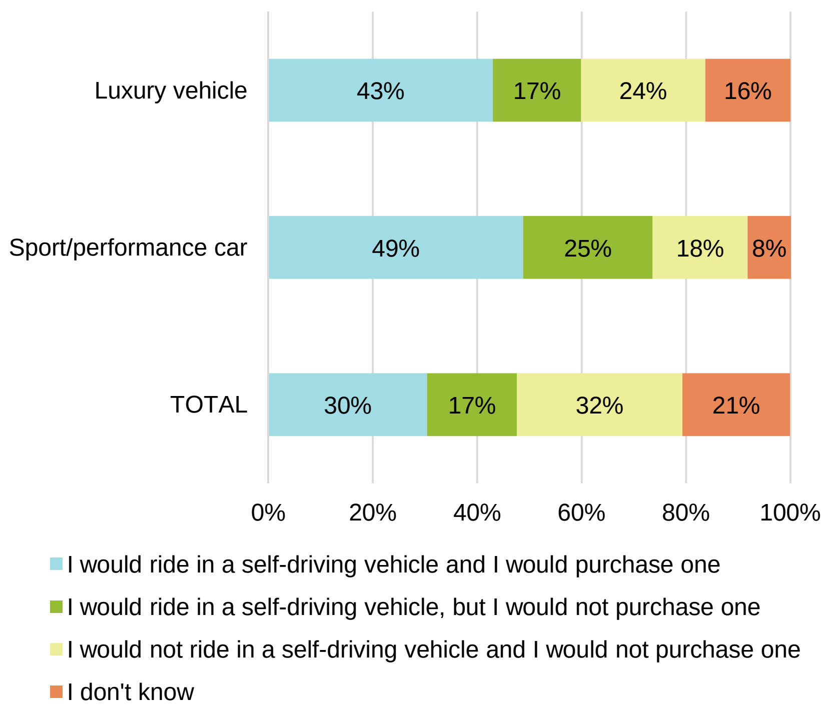


Base: New car intenders
Source: IHS

- Predictably, the enthusiasm for autonomous cars skews younger. More than half of Millennials are ready to be driven in autonomous cars and are willing to purchase one. Nearly 3 in 4 Millennials is comfortable with an AI driving the car.
- More alarming is the anxiety seen by Baby Boomers —still the primary driving force for new car sales. Nearly three-fourths of Baby Boomers either did not know, would not drive, or purchase a self-driving car. This is concerning because autonomous technology has been theorized to elongate independent living and mobility among the elderly and older generations would derive the most benefit from the technology.
- There are currently more than 45 million people in the United States age 65 or older, a figure that will grow to 72 million by 2030, according to AARP.

Autonomous and/or self-driving vehicles

Q42. What is your general opinion regarding autonomous and/or self-driving vehicles?



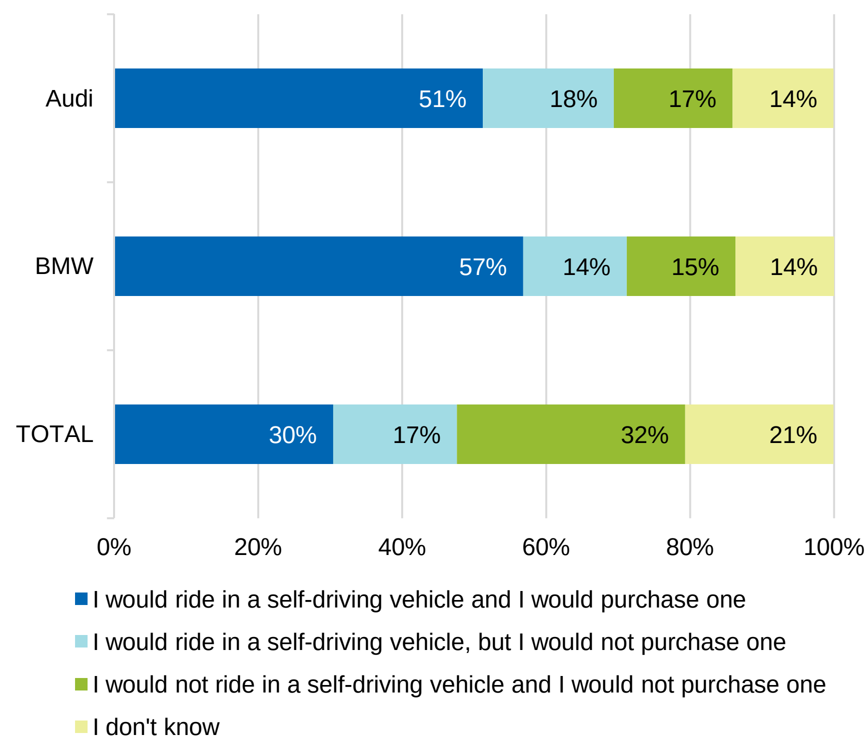
Base: New car intenders
Source: IHS

- Those looking to buy a luxury car (43%) or performance car (49%) are the most likely to say they would be driven and buy a self-driving car. The technology is so new that it is often only available on these types of cars.

- In general, luxury car intenders are highly aspirational and are more cognizant of the latest technology. Cutting-edge technology also helps distinguish luxury cars from more mainstream cars and creates a stronger sense of exclusivity. Many performance cars, particularly sedans, are in among themselves luxury vehicles, so these two groups appear to correlate in terms of autonomous driving desires.

Autonomous and/or self-driving vehicles

Q42. What is your general opinion regarding autonomous and/or self-driving vehicles?

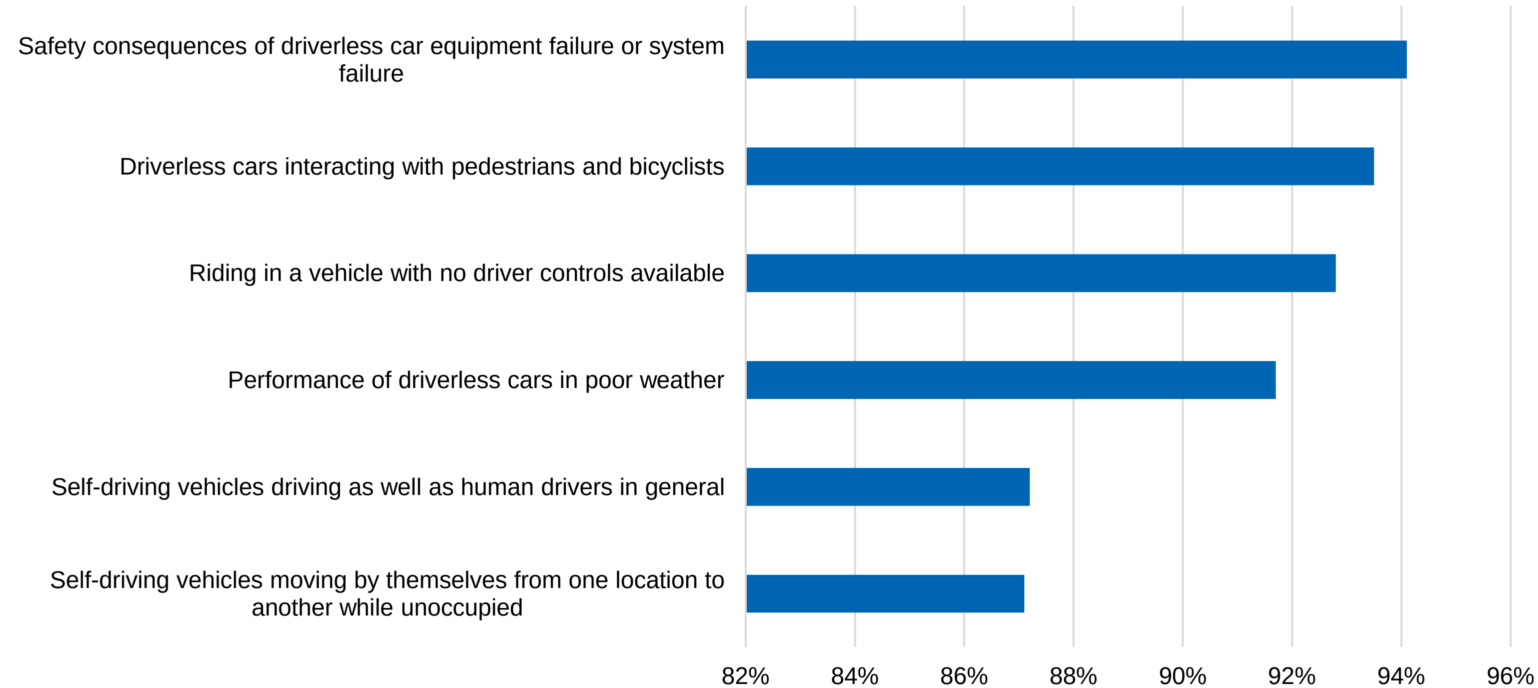


Base: New car intenders
Source: IHS

- Among the most sought after new car brands, Audi and BMW ranked the highest among those who would be willing to purchase a car with autonomous technology.
- This again shows a strong desire among luxury car intenders for the latest technology advancement and coincides well with the brands who are on the fast-track of developing the technology.
- Both BMW and Audi have announced that they will have partially autonomous vehicles (at least L3 autonomy) by 2020.

Autonomous and/or self-driving vehicle concerns

Q43. How do you feel about autonomous and/or self-driving vehicles? Summary of results for ANY CONCERN.



Base: Respondents that have opinions about self-driving vehicles (796)
Source: IHS

Autonomous and/or self-driving vehicle concerns

- Despite approximately half of new car intenders being interested in riding in a self-driving car and approximately a third being interested in purchasing one, there remains a high level of anxiety about the capabilities of self-driving cars regardless of the question asked.
- This is understandable as the public has not driven these vehicles and the technology is not production-ready. There is also a lot of negative press about the capabilities of autonomous cars. The layman will naturally be skeptical of the capabilities of self-driving cars until they are able to ride in them without harm.
- While there is a strong animosity of losing control over manning an automobile, we are often passengers in vehicles driven by people we do not know such as pilots, engineers, and drivers of planes, trains, and for-hire vehicles.

Appendix – Survey questionnaire and routing notes

QINTRO1:
Thank you for taking part in the survey. We would like to ask you a few questions about technologies located within new cars as well as premium audio in cars. Please rest assured that all answers will be treated in the strictest of confidence and will only be used for statistical purposes. All replies will remain completely anonymous.

****SCREENER****
ASK ALL – SINGLE CHOICE
SINGLE SELECT
Q1 How many vehicle(s) does your household own
1. None - TERMINATE
2. 1
3. 2
4. 3
5. 4 or more

The next three questions are about your NEXT vehicle.

****SCREENER****
ASK ONLY THOSE WHO OWN A VEHICLE CURRENTLY (Q1 [2-5])
SINGLE SELECT
Q2 Does your household plan to <u>buy a vehicle</u> sometime <u>within the next 3 years</u> that will be for personal use only? Please do not answer "yes" if the vehicle to be purchased will primarily be used for business.
1. Yes
2. Maybe
3. No - TERMINATE

****SCREENER****
ASK ONLY THOSE WHO MIGHT/WILL BUY VEHICLE (Q2 [1-2])
SINGLE SELECT
Q3 How likely are you to be <u>involved in the purchasing decision</u> of the next household vehicle?
1. Likely
2. Undecided
3. Unlikely - TERMINATE

****SCREENER****
ASK ONLY THOSE WHO MAY BE INVOLVED IN PURCHASING DECISION (Q3 [1-2])
SINGLE SELECT
Q4 When thinking about your next vehicle purchase, will that vehicle be new or used?
1. New
2. Used - TERMINATE
3. I don't know- TERMINATE

1

ASK ONLY NEW CAR INTENDERS (Q4 [1])
SINGLE SELECT

Q5 What is your gender?

1. Female
2. Male

ASK ONLY NEW CAR INTENDERS (Q4 [1])
ONLY US
ORDER ALPHABETICALLY ANCHORING "I DO NOT RESIDE IN THE UNITED STATES"

Q6 In what US state do you currently reside?

2

1. Alabama
2. Alaska
3. Arizona
4. Arkansas
5. California
6. Colorado
7. Connecticut
8. Delaware
9. District of Columbia
10. Florida
11. Georgia
12. Hawaii
13. Idaho
14. Illinois
15. Indiana
16. Iowa
17. Kansas
18. Kentucky
19. Louisiana
20. Maine
21. Maryland
22. Massachusetts
23. Michigan
24. Minnesota
25. Mississippi
26. Missouri
27. Montana
28. Nebraska
29. Nevada
30. New Hampshire
31. New Jersey
32. New Mexico
33. New York
34. North Carolina
35. North Dakota
36. Ohio
37. Oklahoma
38. Oregon
39. Pennsylvania
40. Rhode Island
41. South Carolina
42. South Dakota
43. Tennessee
44. Texas

3

45. Utah
46. Vermont
47. Virginia
48. Washington
49. West Virginia
50. Wisconsin
51. Wyoming
52. I do not reside in the United States - ANCHOR AT THE END AND TERMINATE IF SELECTED.

Recode the above states into the regions provided for the quotas.

ASK ONLY NEW CAR INTENDERS (Q4 [1])
SINGLE SELECT
****age should also be grouped into generational groups as provided in Excel quota sheet)****

Q7 What is your current age? [if under age 18, terminate]
[DROP DOWN] with values 18-99+

Recode Age
1. 18-24
2. 25-34
3. 35-44
4. 45-54
5. 55-64
6. 65-74
7. 75+

ASK ONLY NEW CAR INTENDERS (Q4 [1])
SINGLE SELECT
WILL CHANGE PER EACH COUNTRY

Q8 Please indicate your current annual household income in US dollars
1. Under $25,000
2. $25,000 to $49,999
3. $50,000 to $74,999
4. $75,000 to $99,999
5. $100,000-$149,999
6. $150,000-$225,000
7. More than $225,000
8. I prefer not to answer or I don't know

ASK ONLY NEW CAR INTENDERS (Q4 [1])
SINGLE SELECT

Q9 What is your life stage?

4

1. Single, never had kids
2. Couple, never had kids
3. Single or Couple with kids under 18 living in household
4. Single or Couple with kids over 18 living in household
5. Empty Nester (Single or Couple) with kids no longer living at home

ASK ONLY NEW CAR INTENDERS (Q4 [1])
WRITE IN
Q10 What is the make and year of the most recently purchased vehicle in your household?

1. Year [DROP DOWN] with values 1999-2016
2. Make [DROP DOWN] – (makes in the attached excel, per region)
3. I don't know/not provided [EXCLUSIVE]

The next sets of questions are about your NEXT new vehicle.

ASK ONLY NEW CAR INTENDERS (Q4 [1])
WILL CHANGE PER EACH MARKET
Q11 How much are you willing to spend on your next new vehicle?

1. Less than $15,000
2. $15,000 - $20,000
3. $20,001 - $25,000
4. $25,001 - $30,000
5. $30,001 - $40,000
6. $40,001 - $50,000
7. More than $50,000

ASK ONLY NEW CAR INTENDERS (Q1)
CHOOSE UP TO 3
Q12 What vehicle category do you plan to buy when selecting your next vehicle? You may choose up to 3 from the list.

1. Conventional/ family sedan
2. Pickup truck
3. CUV (Crossover Utility Vehicle)
4. SUV (Sport Utility Vehicle)
5. Van/ minivan
6. Sport/ performance car
7. Basic/ economy car
8. Luxury vehicle

ASK ONLY NEW CAR INTENDERS (Q4 [1])
RANK TOP 3

5

****Program as drag and drop****
MAY CHANGE PER EACH MARKET
Q13 What are the top 3 makes you are considering when purchasing your next vehicle?

1. Acura
2. Alfa Romeo
3. Aston Martin
4. Audi
5. Bentley
6. BMW
7. Buick
8. Cadillac
9. Chevrolet
10. Chrysler
11. Dodge
12. Ferrari
13. Fiat
14. Ford
15. Genesis (Hyundai)
16. GMC
17. Honda
18. Hyundai
19. Infiniti
20. Jaguar
21. Jeep
22. Kia
23. Lamborghini
24. Land Rover
25. Lexus
26. Lincoln
37. Lotus
28. Maserati
29. Mazda
30. McLaren
31. Mercedes-Benz
32. MINI
33. Mitsubishi
34. Nissan
35. Porsche
36. RAM Trucks
37. Rolls-Royce
38. Scion
39. Smart

6

40. Subaru
41. Tesla
42. Toyota
43. Volkswagen
44. Volvo
45. Other
46. Don't know

ASK ONLY NEW CAR INTENDERS (Q4 [1])
SELECT ONE ATTRIBUTE PER STATEMENT
ROTATE/RANDOMIZE 1-21

Q14 Which of the following products/features would you like to have, or desire to have, in your next car?
[ROTATE/RANDOMIZE 1-21]

	Very desirable [5]	Somewhat desirable [4]	Neither desirable or undesirable [3]	Somewhat undesirable [2]	Very undesirable [1]
1. **Bluetooth** (e.g., hands-free voice calling)					
2. **CD player**					
3. **Navigation system**					
4. **Heated seats**					
5. **Branded audio system** (i.e., premium audio system)					
6. **Audio/sound management technologies** (e.g., Active Noise Cancellation,					

Sound Staging Technology, Surround Sound, Signal Processing etc.)					
7. **Rear seat entertainment**					
8. **Blind spot detection** (e.g. notifies the driver that there is a vehicle within the vehicle's blind zones)					
9. **Steering wheel mounted controls** (e.g., for radio, phone, etc.)					
10. **Sunroof/Moon roof**					
11. **Voice recognition** (e.g., for hands free/radio)					
12. **Automatic climate control**					
13. **Remote start** (e.g., can automatically start the engine from a distance)					
14. **Internet streaming radio in the car** (e.g., Pandora,					

Spotify, etc)					
15. **Touchscreen infotainment system**					
16. **Telematics** (e.g., OnStar, Blue Link)					
17. **HUD (heads-up display)**					
18. **Wi-Fi**					
19. **Lane departure warning** (e.g. alerts driver when vehicle leaves lane without indicating; lane keeping can help keep vehicle within lane markers)					
20. **Automatic Emergency Braking** (e.g. automatically brakes the vehicle if a crash is imminent and driver takes no action)					
21. **Adaptive cruise control** (e.g. car is capable of maintaining a safe distance between the car in front of it on					

9

the highway by automatically adjusting its speed)					

ASK ONLY NEW CAR INTENDERS WHO ANSWERED Q14 WITH ANSWERS OF SOMEWHAT DESIRABLE AND VERY DESIRABLE)

SELECT ONE ATTRIBUTE PER STATEMENT
ROTATE/RANDOMIZE 1-21

Q15 Of the products/features you selected as somewhat- or very-desirable, which are you willing to pay more to have them?

	Cost should be built into the base price of the vehicle (A)	Don't know (B)	Willing to pay extra (C)	

Same question attributes as Q14 selected somewhat or very desirable

ASK ONLY THOSE WHO ANSWERED Q15 [C]
ANSWER FOR EACH ATTRIBUTE Q15-C
WILL CHANGE PER EACH MARKET
Q17 How much money would you be willing to spend extra for **insert attribute from Q15 (C)?**

1. $1-$100
2. $101-$200
3. $201-$300
4. $301-$400
5. $401-$500
6. $501-600
7. $601-$700
8. $701-$800
9. $801-$900
10. $901-$1000
11. $1001-$1500
12. $1501-$2000
13. $2001-$2500
14. $2501+

10

ASK ONLY THOSE WHO FIND TELEMATCS SOMEWHAT DESIRABLE OR VERY DESIRABLE (Q14, ATTRIBUTE 16 (SOMEWHAT DESIRABLE; VERY DESIRABLE)
SELECT UP TO 3 ATTRIBUTES
ROTATE/RANDOMIZE

Q16 Thinking about telematics system, what are the top features that interest you? You can select up to 3 attributes.

1. **Automatic crash notification/response** (i.e., 911, emergency medical services)
2. **Roadside assistance** (i.e., no fuel, flat tire, breakdown, etc.)
3. **Hands-free calling** (e.g., ability to call without pairing cellphone or using its minutes)
4. **Access to a human customer car assistant** (i.e., being able to contact a call center for help with finding location, unlocking car, medical emergency)
5. **Wi-Fi hotspot** (i.e., ability to pair mobile devices to the internet)
6. **Service maintenance notifications** (e.g., alerts when it is time to change oil, etc.)
7. **Controlling vehicle systems from my smartphone** (i.e., lock/unlock doors, windows, horn, alarm, ignition, etc.)
8. **Turn-by-turn navigation**
9. **Stolen vehicle assistance** (e.g., turns off ignition, slows down vehicle)
10. **Theft alarm notification** (i.e., notifies you if alarm sounds)
11. **Concierge services** (e.g., book hotels, restaurant reservations, concerts, etc.)
12. **Parking location reminder/find my car**
13. **Family services** (e.g., alerts you of teen/dependent driving behavior)
14. **None of the above** [EXCLUSIVE] [ANCHOR]

ASK ONLY NEW CAR INTENDERS (Q4 [1])
SINGLE SELECT

Q18 Do you currently own a smartphone?

1. Yes
2. No

ASK ONLY SMARTPHONE OWNERS (Q18 [1])
SINGLE SELECT
ROTATE/RANDOMIZE 1-8
LIST CHANGES PER EACH MARKET

11

Q19 What is the brand of the smartphone you own and use most often?

1. Apple
2. Blackberry
3. HTC
4. LG
5. Motorola
6. Nokia
7. Samsung
8. Sony

ASK ONLY SMARTPHONE OWNERS (Q18 [1])
IF Q19 [1] AUTOMATICALLY SELECT Q20 [1] AND MOVE RESPONDENT TO Q21
IF Q19 [2] AUTOMATICALLY SELECT Q20 [4] AND MOVE RESPONDENT TO Q21
IF Q19 [3-9] DISPLAY Q21 ATTRIBUTES [2,3,5 AND 6 ONLY]

Q20 Which operating system (OS) is on this smartphone?

1. iOS
2. Android
3. Windows
4. Blackberry OS
5. I don't know

ASK ONLY SMARTPHONE OWNERS (Q18 [1])
SINGLE SELECT
ROTATE/RANDOMIZE 1-8
LIST CHANGES PER EACH MARKET

Q20_1 Which mobile carrier are you utilizing?

1. Verizon
2. AT&T (incl. GoPhone)
3. Sprint (incl. Boost Mobile, Virgin Mobile, payLo)
4. T-Mobile US (incl. GoSmart)
5. TracFone (incl. Net10 Wireless, SafeLink Wireless, Straight Talk, Telcel América)
6. MetroPCS
7. US Cellular
8. Cricket Wireless

12

ASK ONLY SMARTPHONE OWNERS (Q18 [1])
SINGLE SELECT

Q21 What kind of data plan do you have?

1. I don't have a data plan
2. Less than 1GB
3. 1-5 GB
4. 6-10 GBs
5. 11 -20 GBs
6. 21+ GBs
7. Unlimited Data
8. I don't know

ASK ONLY THOSE ANSWERED (Q21 [2-7)
SINGLE SELECT

Q22 Is this data plan shared with anyone else?

1. No, this data plan is only for me
2. Yes, this data plan is shared (e.g., family plan)

ASK ONLY SMARTPHONE OWNERS (Q18 [1])
IN THE CURRENCY OF EACH MARKET

Q23 What is the most you have paid for an app on your smartphone?

1. Less than $1
2. $1-$2
3. $3-$5
4. $6-$10
5. $11-$20
6. $21-$50
7. More than $50

ASK ONLY SMARTPHONE OWNERS (Q18 [1])
SELECT UP TO 5
ROTATE/RANDOMIZE 1-20

13

Q24 Please select your top 5 favorite app categories for use on your smartphone while in the vehicle.

1. **Books** (e.g., can read eBooks, or listen to audio books.)
2. **Business/Productivity** (e.g., task/notes management, hours tracking, office suite, etc)
3. **Education** (e.g., can learn a new language, take a class, course material, etc)
4. **Video** (e.g., watch streaming video or video stored on smartphone, etc)
5. **Music** (e.g., listening to streaming audio music, comedy, spoken word, etc)
6. **Podcast**
7. **Social Networking**
8. **Navigation** (e.g., turn-by-turn navigation, real-time traffic information, parking , etc)
9. **Communicating** (e.g., Google Hangouts, Skype, Kik, WhatsApp, LINE)
10. **Remote services** (i.e., Vehicle services, remote garage door openers, remote vehicle controls, smart home/appliances/electronics controls, etc.)
11. **Finance** (e.g., lets you manage your finances, look at stocks, etc.)
12. **Food & Drink** (e.g., helps you search and book restaurants)
13. **Point of interest (POI)/Local** (e.g., business locations and reviews, look up free Wi-Fi locations, etc)
14. **Travel** (e.g., helps book travel, find a travel destination, etc)
15. **Driver's aid** (i.e., eco driving advice, cheapest gas station, traffic cameras, etc)
16. **Games**
17. **Health & Fitness** (e.g., pedometer information, nutrition information, etc)
18. **News**
19. **Sports** (e.g., scores, fantasy leagues, sport news, etc)
20. **Weather**

ASK ONLY SMARTPHONE OWNERS (Q18 [1])
MULTIPLE SELECT
ROTATE/RANDOMIZE 1-11

14

Q25 Which of the following statements, if any, about using your smartphone in your car do you agree with?

	Strongly Agree (5)	Agree (4)	Disagree (3)	Strongly Disagree (2)	I have no opinion (1)
1. I think using my smartphone while driving is distracting					
2. I prefer controlling my smartphone with in-vehicle steering wheel controls					
3. I prefer controlling my smartphone with in-vehicle voice controls					
4. I prefer to put my smartphone in a cradle that lets me see the screen as I drive					
5. I prefer interacting and controlling my smartphone through an in-vehicle touchscreen					
6. I prefer to utilize Bluetooth pairing to make phone calls with my smartphone					
7. I prefer to utilize Bluetooth pairing to stream audio from my smartphone to the in-vehicle stereo system					
8. I'd prefer to utilize apps in the car without having to pair my smartphone					
9. I use my phone as a navigation aid to get directions or point-of-interest (POI) when driving					
10. I often pair my smartphone to my car through USB					
11. I prefer using my smartphone in my vehicle, as opposed to in vehicle controls					

15

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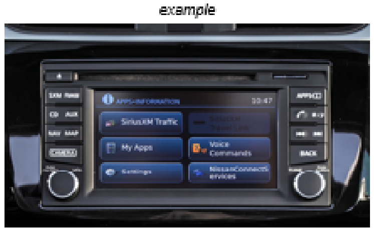
ASK ONLY NEW CAR INTENDERS (Q4 [1])
SINGLE SELECT
Q26 Does your current vehicle have a built-in display audio, and or "infotainment" system, and or navigation system (a screen in the center part of the vehicle to show various functions of the vehicle like audio, air, navigation, etc.)?

example



1. Yes
2. No
3. Not sure

ASK ONLY DISPLAY AUDIO/INFOTAINMENT/NAVIGATION (Q26 [1])
SINGLE SELECT
Q27 Does your vehicle's built-in display audio (i.e., infotainment system) or navigation system have smartphone-like apps (e.g., Pandora, Google Local Search) installed directly to the system?

1. Yes
2. No

ASK ONLY DISPLAY AUDIO/INFOTAINMENT/NAVIGATION (Q26 [1])
SINGLE SELECT
Q28 Would you be willing to pay to update software on your vehicle, either to add functionality, or to improve performance or the user experience?
1. Yes
2. No

ASK ONLY DISPLAY AUDIO/INFOTAINMENT/NAVIGATION (Q26 [1])
MUTLI SELECT
ROTATE 1-14
Q29 Which of the following statements, if any, about built-in display systems (i.e., infotainment system) do you agree with?

1. These system are too complex to use while driving [CAN'T BE SELECTED WITH 2]
2. I think these systems enhance the driving experience [CAN'T BE SELECTED WITH 1]
3. These systems seem dated compared to other electronic devices
4. I want the ability to use gestures and controls in my car similarly to how I do on a smartphone (i.e., swipe, pinch-to-zoom, etc.)
5. I'm worried about potential software bugs and reliable issues on in-vehicle display screens (e.g., infotainment systems)
6. I'm worried that in-vehicle display screens (e.g., infotainment systems) won't get updated as the vehicle ages
7. I'm concerned about security issues and/or my privacy when using infotainment systems
8. I wish my system could be updated wirelessly so I didn't have to take it into a dealer for updates
9. I wouldn't pay for a subscription to satellite radio
10. I will take the time to learn how my infotainment system works
11. I prefer having a infotainment system that I can understand immediately
12. Automakers are doing a good job designing infotainment systems
13. The type of infotainment system in my next car will be an important purchasing decision
14. I would like someone at my dealership to give me a brief tutorial of the infotainment system when buying my next car
15. None of the above [ANCHOR] [EXCLUSIVE]

ASK ONLY DISPLAY AUDIO/INFOTAINMENT/NAVIGATION (Q26 [1])
SIDE BY SIDE (RANK ORDER PER ATTRIBUTE 1 (MOST) 2(SECOND MOST)
FORCE RESPONSE
ROTATE 1-8

Q30 What are your two most preferred <u>interfaces for controlling</u> various infotainment and comfort features listed below. (For each feature, put your MOST preferred interface as "1" and your SECOND most preferred interface as "2".)

	Individual buttons and knobs [6]	Multi-function controller/ touchpad [5]	Touch screen [4]	Speech recognition [3]	Steering wheel controls [2]	Gesture recognition (i.e., control through hand gestures, without touch) [1]
Radio						
Media/iPod/CD						
Phone Calling						
Text Messaging						
Smartphone Apps						
Navigation						
Climate Control						
System Settings						

ASK ONLY DISPLAY AUDIO/INFOTAINMENT/NAVIGATION (Q26 [1])
SIDE BY SIDE (RANK ORDER PER ATTRIBUTE 1 (MOST) 2(SECOND MOST)
FORCE RESPONSE
ROTATE 1-8

19

Q31 What are your two most preferred ways <u>for receiving information</u> from your vehicle. (For each feature, put your MOST preferred interface as "1" and your SECOND most preferred interface as "2".

	Center Stack Display [6]	Instrument Cluster Display [5]	Head-up Display [4]	Spoken Feedback (words, sentences, questions) [3]	Audible Cues (tones, chimes, or alerts) [2]	Haptic Feedback (tactile vibrations) [1]
1. Radio/Media playback						
2. Phone Calling						
3. Text Messaging						
4. Smartphone applications/apps (Facebook, Spotify, Skype, etc)						
5. Navigation directions						
6. Vehicle status (fuel, oil life, battery, warnings)						
7. Driving status (speed, RPM, mpg)						
8. Safety systems (adaptive cruise control, lane departure warning, blind spot detection, collision alerts)						

ASK ONLY DISPLAY AUDIO/INFOTAINMENT/NAVIGATION (Q27[1])
MULTIPLE SELECT
ROTATE/RANDOMIZE 1-11

20

Q32 What types of apps are you interested in directly downloading to your infotainment/multimedia system?

1. **Convenience** (e.g., Email reader, Text reader, Voice recognition, Personal assistant)
2. **Driver aids** (e.g., eco driving advice)
3. **Information** (e.g., News, Stocks, Sports, Flights status)
4. **Internet radio/audio** (e.g., Pandora, iHeartRadio, Stitcher, Audible, TuneIn, etc)
5. **Live traffic information** (e.g., Waze, INRIX)
6. **Maps/GPS** (e.g., Apple Maps, Google Maps, Waze, TomTom, Garmin, etc)
7. **Location-based services/Points of** interest (e.g., Yelp, Foursquare, Zagat, Road Ninja, Free Wi-Fi locator)
8. **Remote vehicle services** (i.e., vehicle preferences that can be controlled ahead of driving, e.g. vehicle pre-warming/cooling, remote locking, seat adjustments, vehicle diagnostics etc)
9. **Other remote services** (e.g., smart home controls, garage door opener, smart appliances)
10. **Social Media** (e.g., Facebook, Twitter, Snapchat, etc)
11. **Vehicle service instructions and information** (e.g., user manual, how-to videos, contact a dealer, schedule maintenance, etc)
12. Other ____________________ [ANCHOR]
13. None of the above [ANCHOR] [EXCLUSIVE]

ASK ONLY NEW CAR INTENDERS (Q4 [1])
SELECT UP TO FOUR ATTRIBUTES
LIST WILL CHANGE PER MARKET
Q33 What are the top 4 ways you listen to audio in your vehicle?

1. AM/FM Radio
2. HD Radio
3. Satellite Radio
4. Stored on mobile device (phone, iPod, USB, etc.)
5. Internet/Streaming (such as Pandora)
6. CD/DVD Player
7. Stored on in-vehicle hard drive
8. I don't listen to audio in my vehicle [ANCHOR, EXCLUSIVE]

ASK THOSE WHO ANSWERED Q33 [1-7]
ANSWER FOR EACH SELECTED ATTRIBUTE IN Q33
DRAG AND DROP QUESTION
Q34 How often do you listen to <INSERT choices from Q33 here> in your vehicle?

1. Always (i.e., whenever I drive) [CAN ONLY ANSWER ONCE FOR ON ATTRIBUTE]
2. Frequently (e.g., 3-5 times a week) [CAN PLACE MULTIPLE ATTRIBUTE]
3. Occasionally (e.g., a few times a month) [CAN PLACE MULTIPLE ATTRIBUTES]

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ASK ONLY NEW CAR INTENDERS (Q4 [1])
ROTATE/RANDOMIZE 1-4
MULTIPLE SELECT
Q35 What type of audio connection device do you use in the car? Select all that apply.

1. Bluetooth
2. 3.5mm jack
3. USB cable
4. iPod cable
5. Other (please specify) [ANCHOR] [WRITE IN]
6. None [ANCHOR] [EXCLUSIVE]

ASK ONLY THOSE WHO SELECT INTERNET RADIO AS ONE OF THEIR OPTIONS (Q33 [5])
SINGLE SELECT
Q36 Do you subscribe to a premium streaming radio or on-demand streaming service (e.g., Pandora One, Spotify, Xbox Music, Beats Music, Google Play Music, etc) for which you have a paid subscription, or do you have a free version?

1. I have a free version
2. I subscribe to a paid version
3. Not sure

ASK ONLY MUSIC SUBSCRIBERS (Q36 [1-2])
SINGLE SELECT
ROTATE/RANDOMIZE 1-21
LIST WILL CHANGE PER EACH MARKET
Q37 Which internet radio/audio app do you use most often?

1. TIDAL
2. Spotify
3. Amazon Music with Prime
4. iTunes Radio
5. Apple Music
6. Google Play Music
7. Beats Music
8. Pandora
9. Rhapsody
10. iHeartRadio
11. TuneIn Radio
12. SoundCloud
13. Groove Music, previously Xbox Music and Zune Music
14. Slacker Radio
15. Songza
16. Aha Radio

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17. AUPEO!
18. Stitcher
19. Kindle
20. Audible
21. PlayStation Music
22. Other ________________ [ANCHOR]

ASK ONLY SMARTPHONE OWNERS (Q18 [1])
SINGLE SELECT
Q38 How often do you use a navigation app on your smartphone for driving?
1. Never
2. Less than Once a Month
3. Once a Month
4. 2-3 Times a Month
5. Once a Week
6. 2-3 Times a Week
7. Daily

ASK ONLY NEW CAR INTENDERS (Q4 [1])
SINGLE SELECT PER ATTRIBUTE

Q39 some new vehicles will have the ability to replicate your smartphone system onto an in-vehicle display. Which of the following systems, if any, have you heard of?

	Aware of		
	I've heard of this (A)	I'm not sure (B)	I haven't heard of this (C)
1. Apple CarPlay			
2. Android Auto			
3. MirrorLink			

ASK ONLY HAVE HEARD OF THIS (Q39 [A])
SINGLE SELECT PER ATTRIBUTE

Q40 If you have heard of this system, are you interested in having this feature in your next vehicle?

	Interest in			
	Interested (A)	Somewhat interested (B)	Not really interested (C)	No interest (D)
1. Apple CarPlay				
2. Android Auto				
3. MirrorLink				

ASK ONLY DISPLAY AUDIO/INFOTAINMENT/NAVIGATION (Q26 [1])
MULTIPLE SELECT
ROTATE/RANDOMIZE 1-9
Q41 Which of the following statements, if any, about using in-vehicle based apps do you agree with?
1. I would be willing to pay for in-vehicle apps if they helped limit driving distractions
2. I'd prefer using in-vehicle apps if my car had a separate data plan than my phone
3. I would be willing to use in-vehicle apps if the apps are similar to the ones I use on my smartphone
4. I'm only interested in in-vehicle apps that are connected through my smartphone
5. I'm only interested in in-vehicle apps if they are free
6. I'm concerned about my privacy in regards to in-vehicle apps
7. There aren't enough apps available currently on in-vehicle systems
8. I would utilize in-vehicle apps if they helped enhance the driving experience
9. I prefer the user experience on my smartphone rather than what is offered on in-vehicle systems
10. None of the above [ANCHOR] [EXCLUSIVE]

ASK ONLY NEW CAR INTENDERS (Q4 [1])
SINGLE SELECT PER ATTRIBUTE
ROTATE/RANDOMIZE 1-8

CURRENTLY OR USED TO OWN BRANDED AUDIO SYSTEM (Q55 [1-39])
SINGLE SELECT PER ATTRIBUTE

Q58 Would you buy (insert brand from Q55) again?

1. Yes
2. No

WOULD NOT BUY THE SAME BRANDED AUDIO SYSTEM (Q58 [2])
MULTIPLE SELECT
ROTATE/RANDOMIZE (1-7)

Q59 Why would you not buy the same brand again?

1. The car I intend to buy does not feature the audio brand
2. No longer interested in branded car audio
3. Intend to use an aftermarket system
4. Too expensive
5. Not good quality
6. Not value for money
7. It should come with the car
8. Other ________________

ASK ONLY NEW CAR INTENDERS (Q4 [1])
SINGLE SELECT

Q42 What is your general opinion regarding autonomous and or self-driving vehicles?

1. I would ride in a self-driving vehicle and I would purchase one
2. I would ride in a self-driving vehicle, but I would not purchase one
3. I would not ride in a self-driving vehicle and I would not purchase one
4. I don't know

ASK ONLY THOSE WHO ANSWERED Q42 1-3
SELECT ONE ATTRIBUTE PER STATEMENT
ROTATE/RANDOMIZE 1-6

Q43 For the following questions please tell us how you feel about autonomous cars and self-driving vehicles

	Very concerned[5]	Moderately concerned [4]	Slightly concerned [3]	Not at all concerned [2]	I don't know [1]
1. Riding in a vehicle with no driver controls available					
2. Self-driving vehicles moving by themselves from one location to another while unoccupied					
3. Performance of driverless cars in poor weather					
4. Self-driving vehicles driving as well as human drivers in general					
5. Driverless cars interacting with pedestrians and bicyclists					
6. Safety consequences of driverless car equipment failure or system failure					

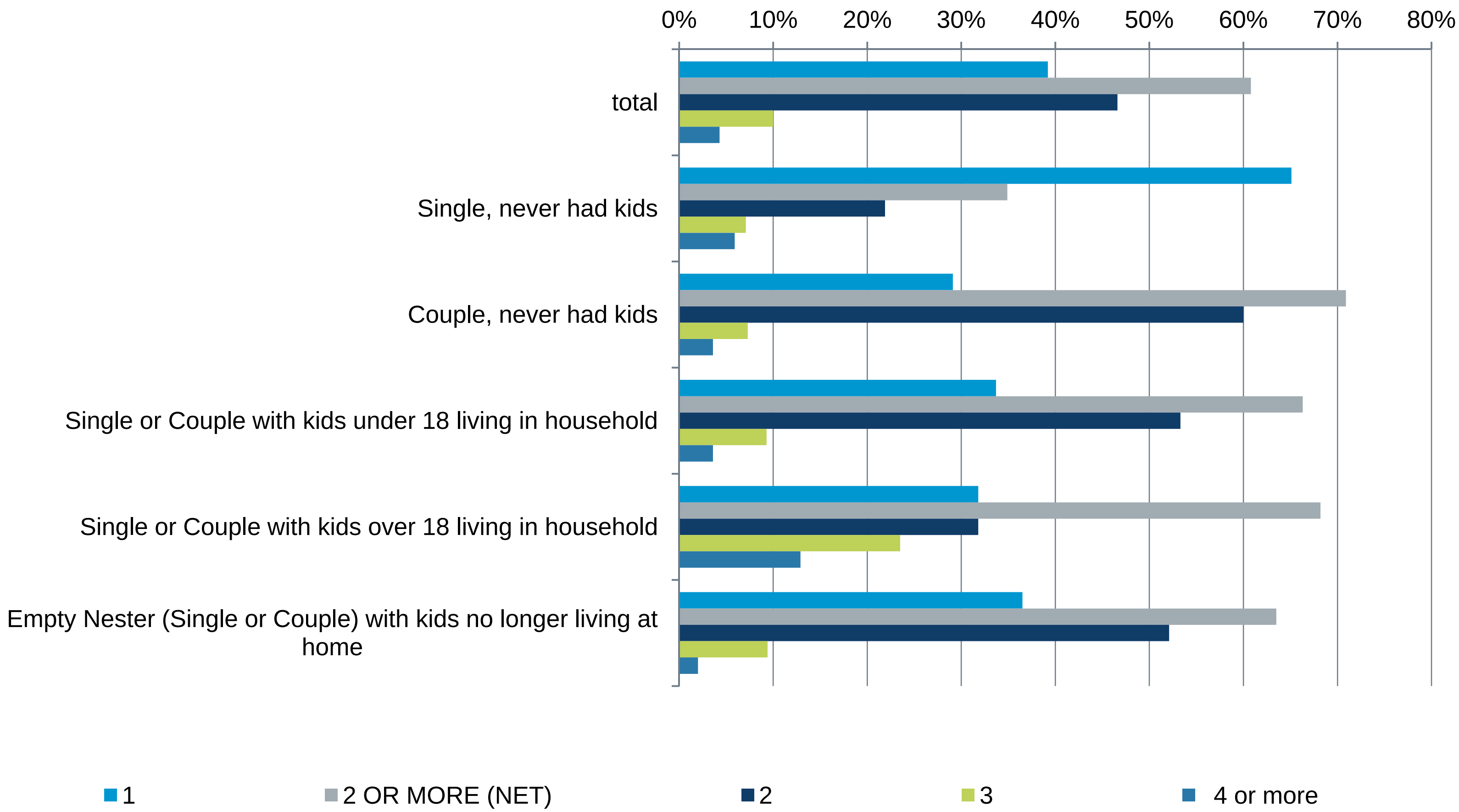
33

34

Appendix – Demographics

How many vehicles, pre-household

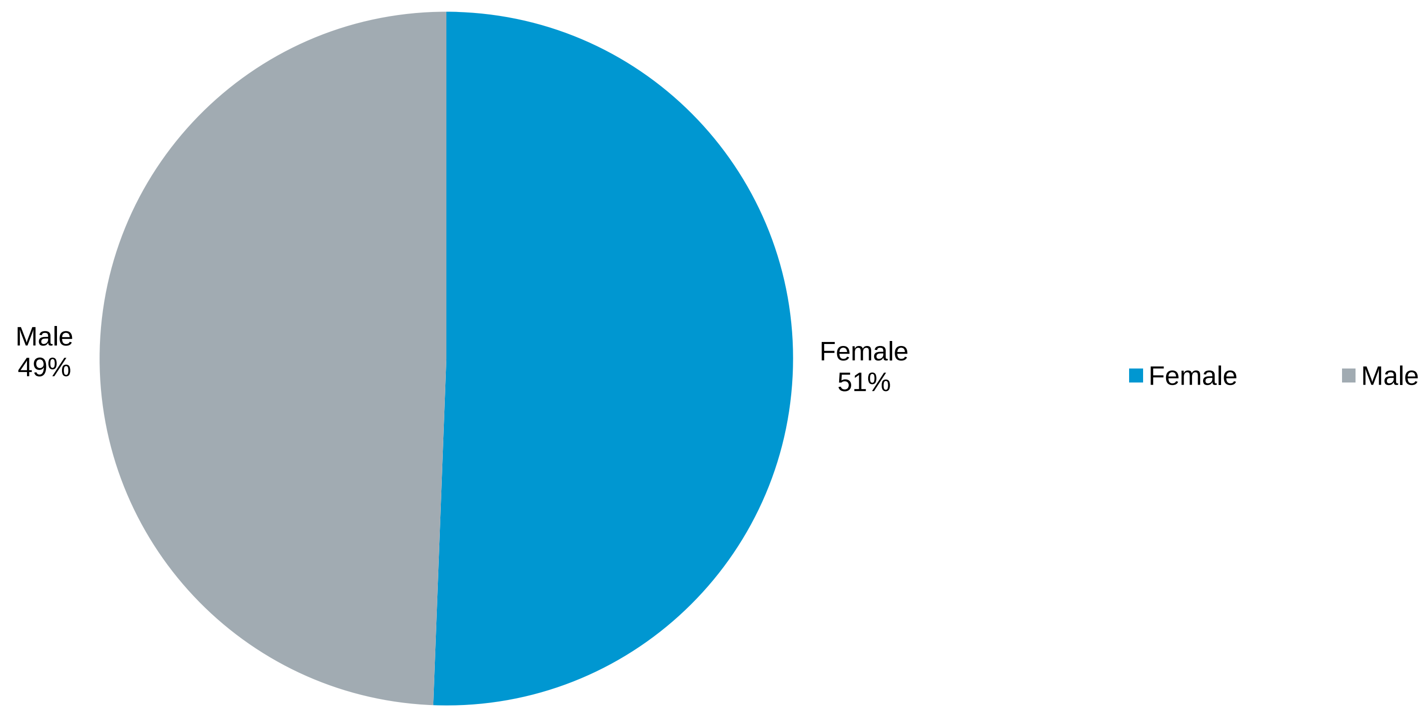
Q1. How many vehicle(s) does your household own?



Base: 1,003 new car intenders
Source: IHS

Gender

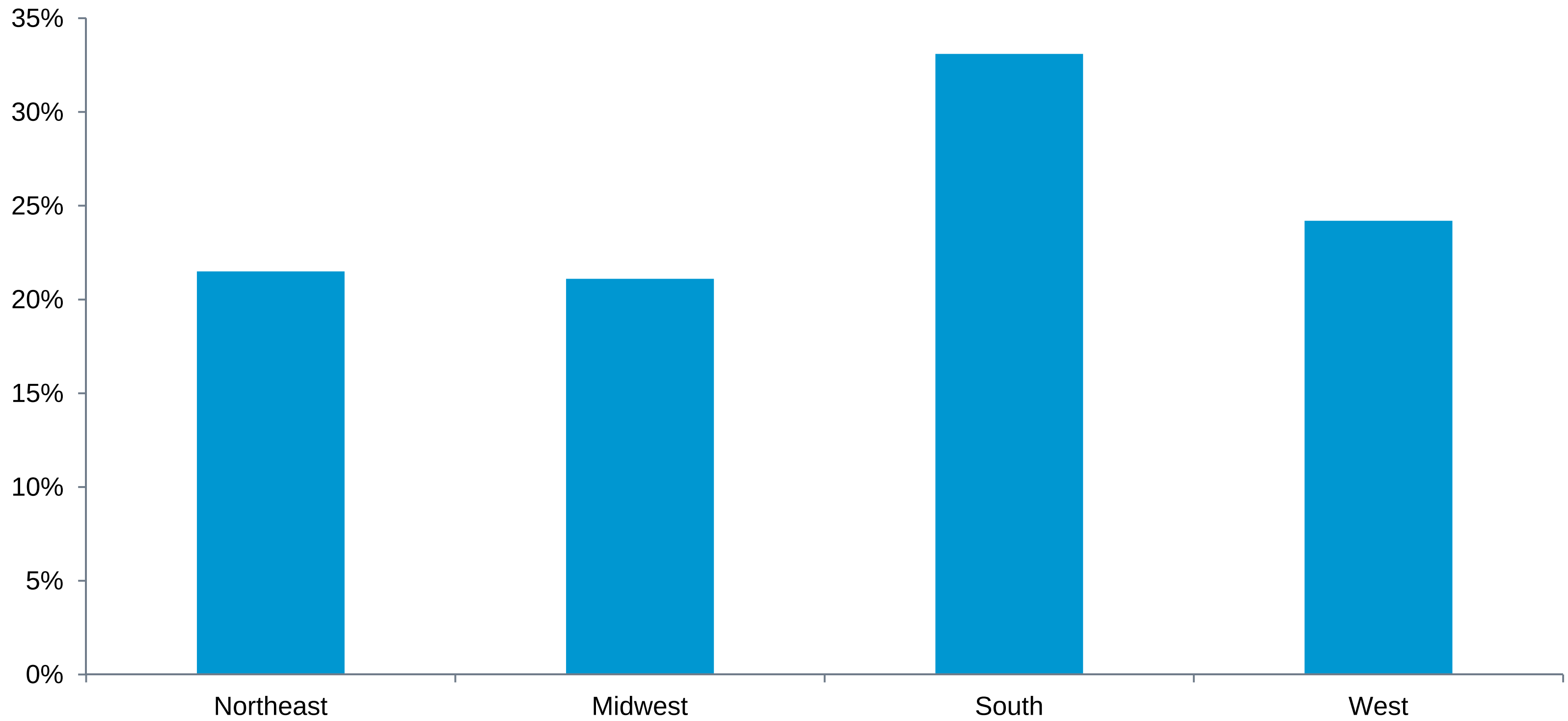
Q5. What is your gender?



Base: 1,003 new car intenders
Source: IHS

US region

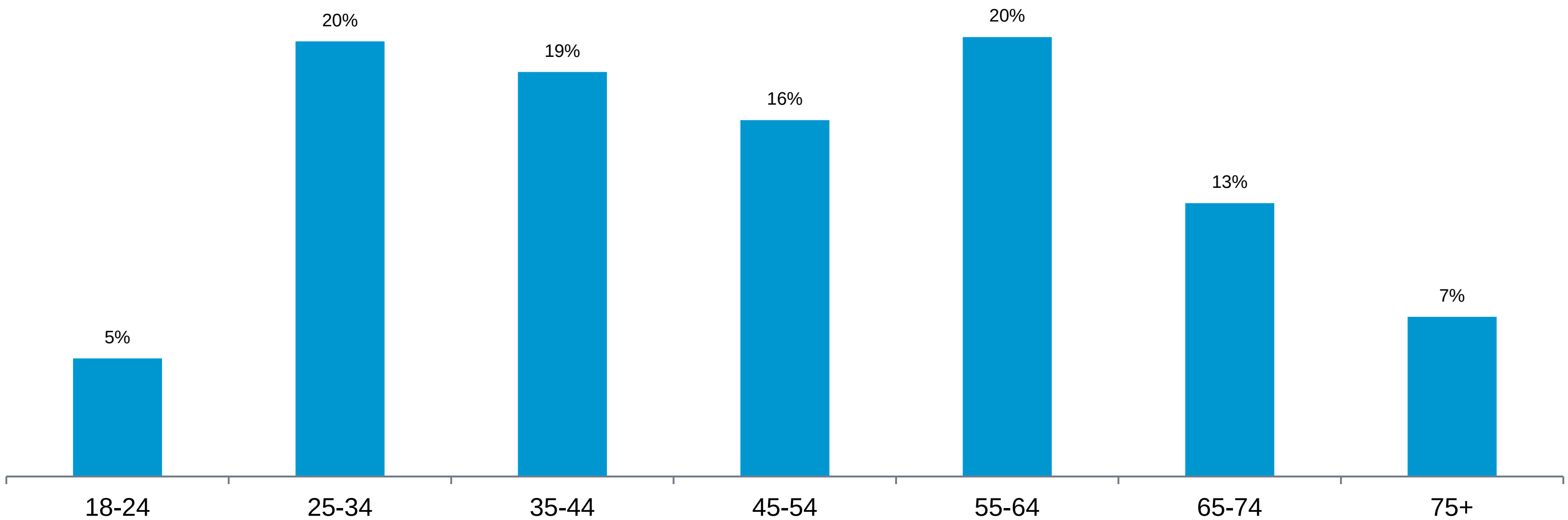
Q6. In what US state do you currently reside?



Base: 1,003 new car intenders
Source: IHS

Current age

Q7. What is your current age?

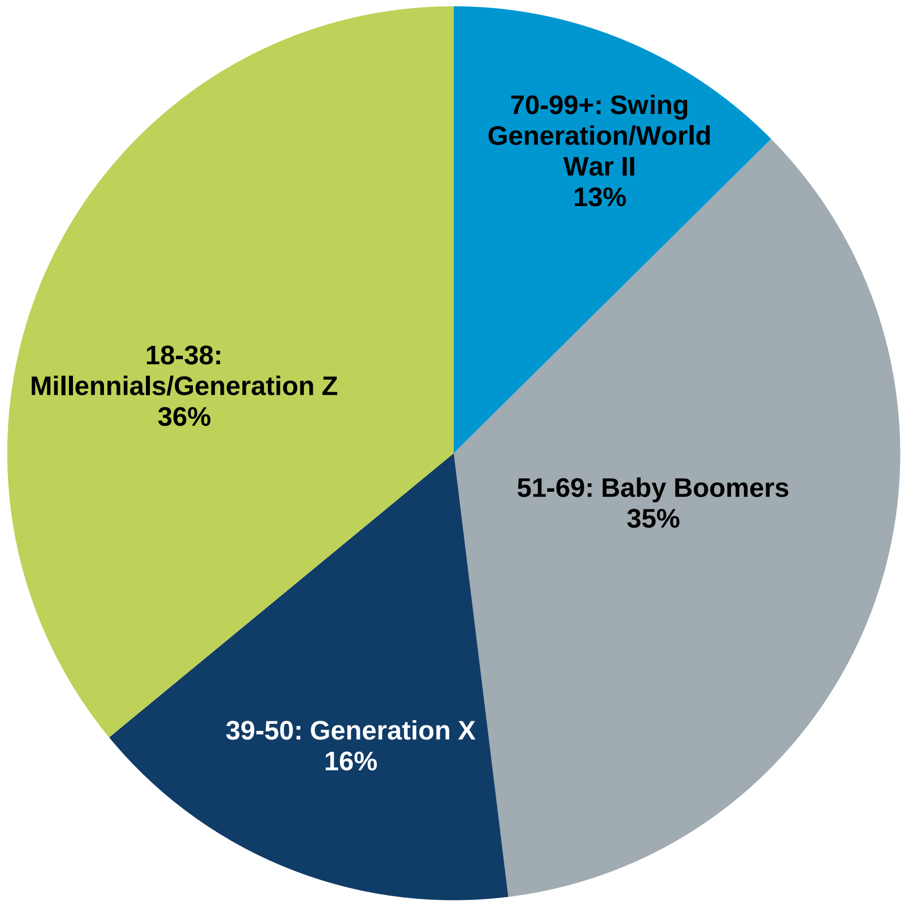


Base: 1,003 new car intenders
Source: IHS

Mean: 48.8 years **Median: 49 years**

Generations

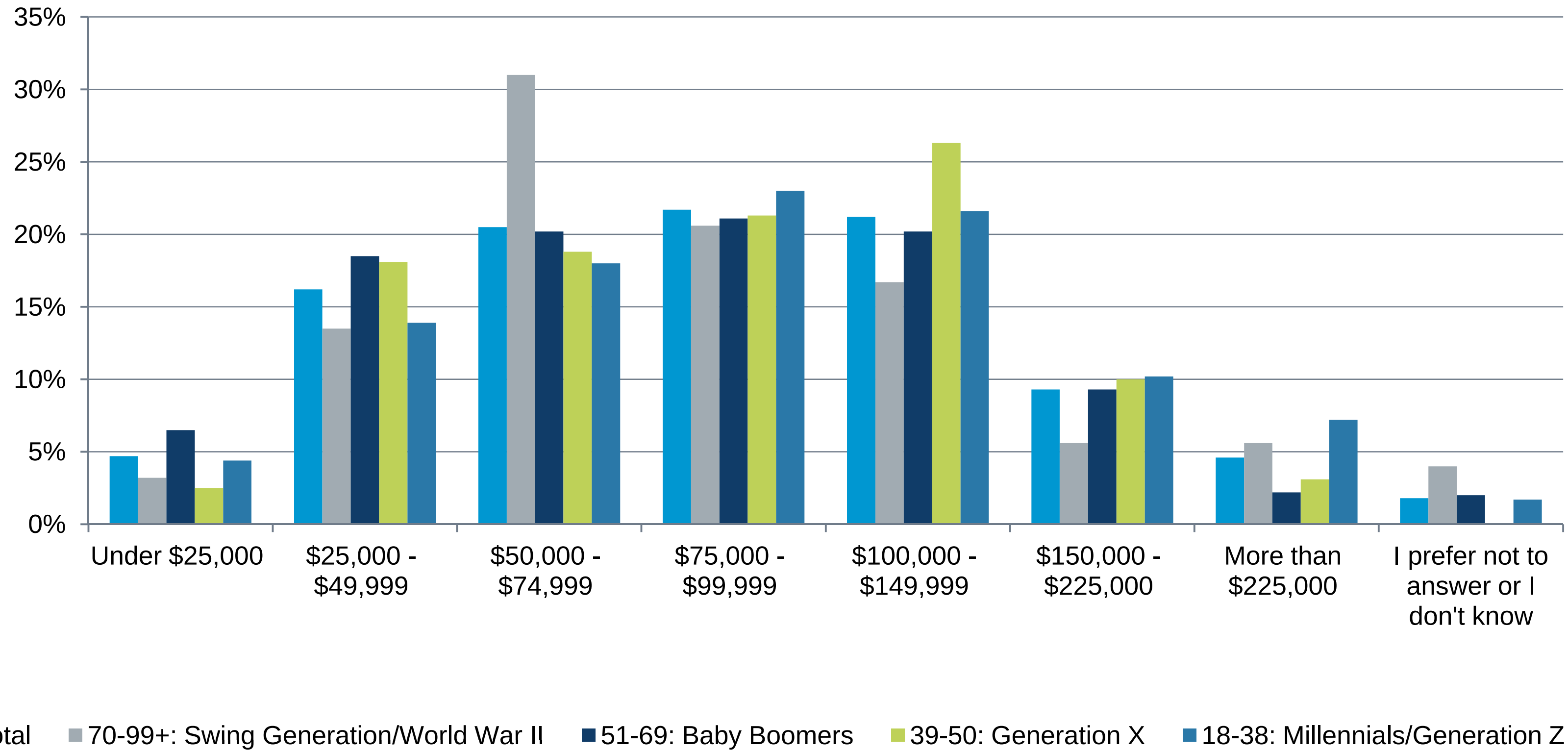
Q7. Age cohorts, by generations



Base: 1,003 new car intenders
Source: IHS

Household income

Q8. Please indicate your current annual household income in US dollars



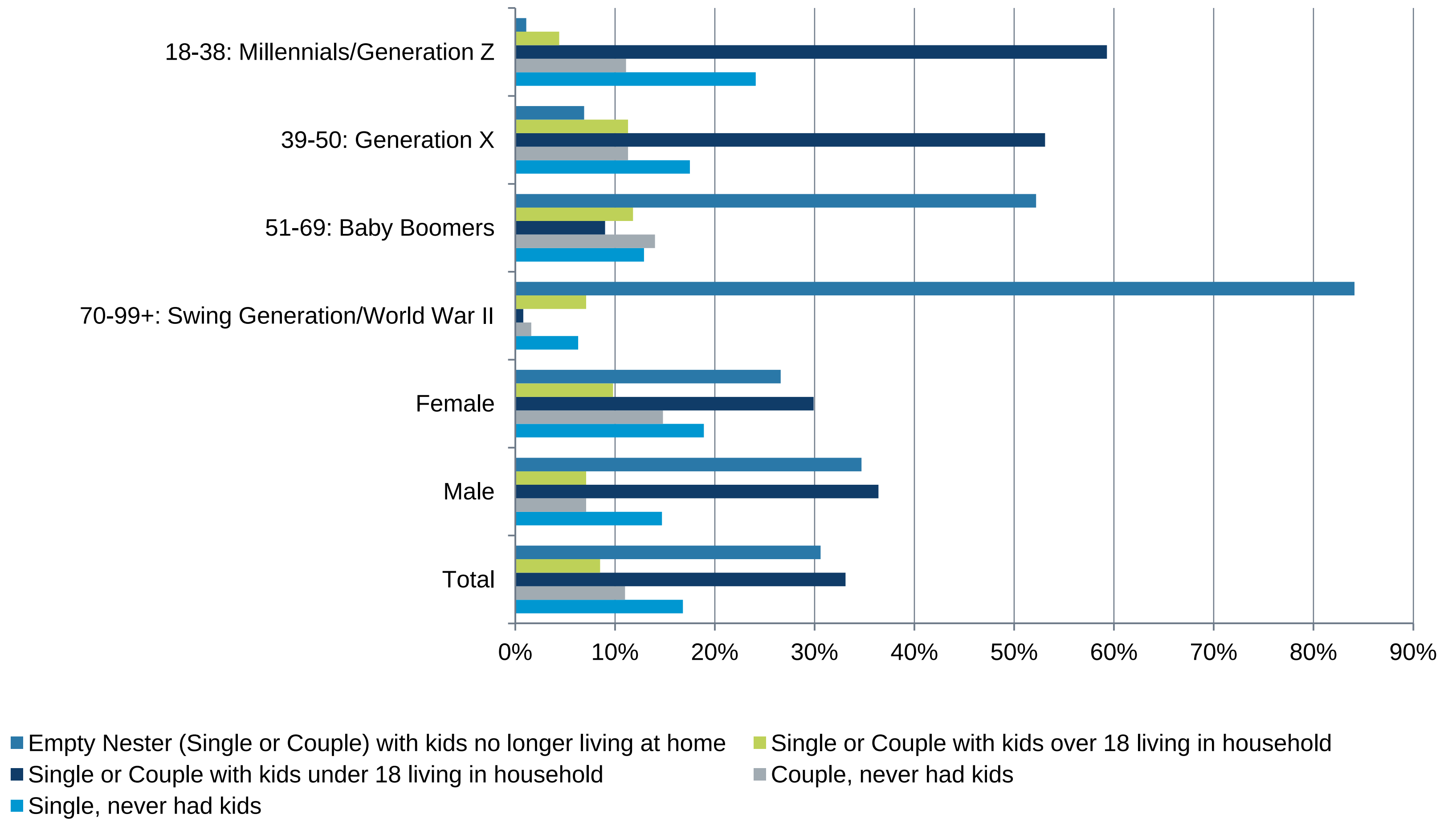
Base: 1,003 new car intenders
Source: IHS

Mean: $95,610

Median: $83,880

Life stage

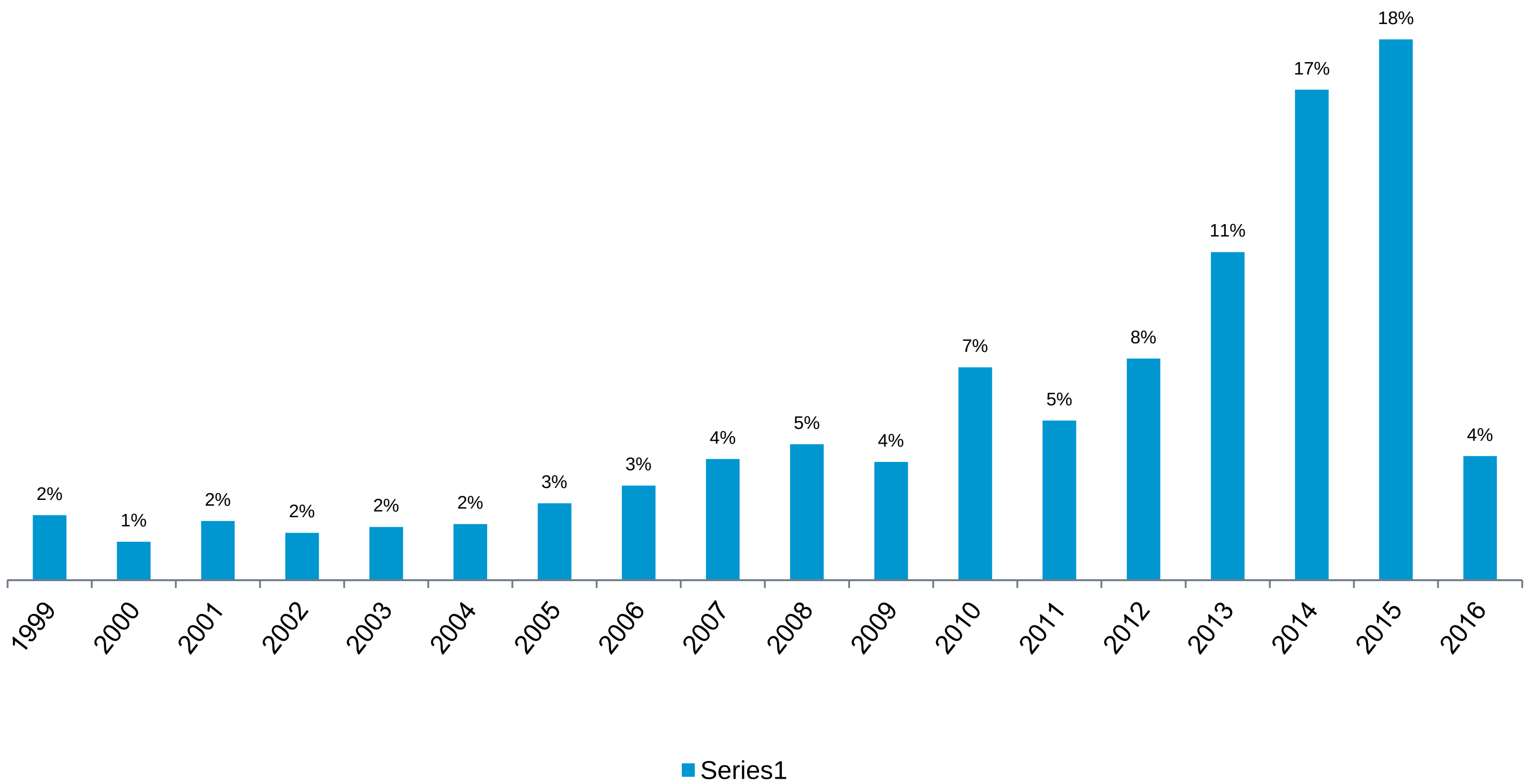
Q9. Life stage



Base: 1,003 new car intenders
Source: IHS

Model year of most recently purchased vehicle

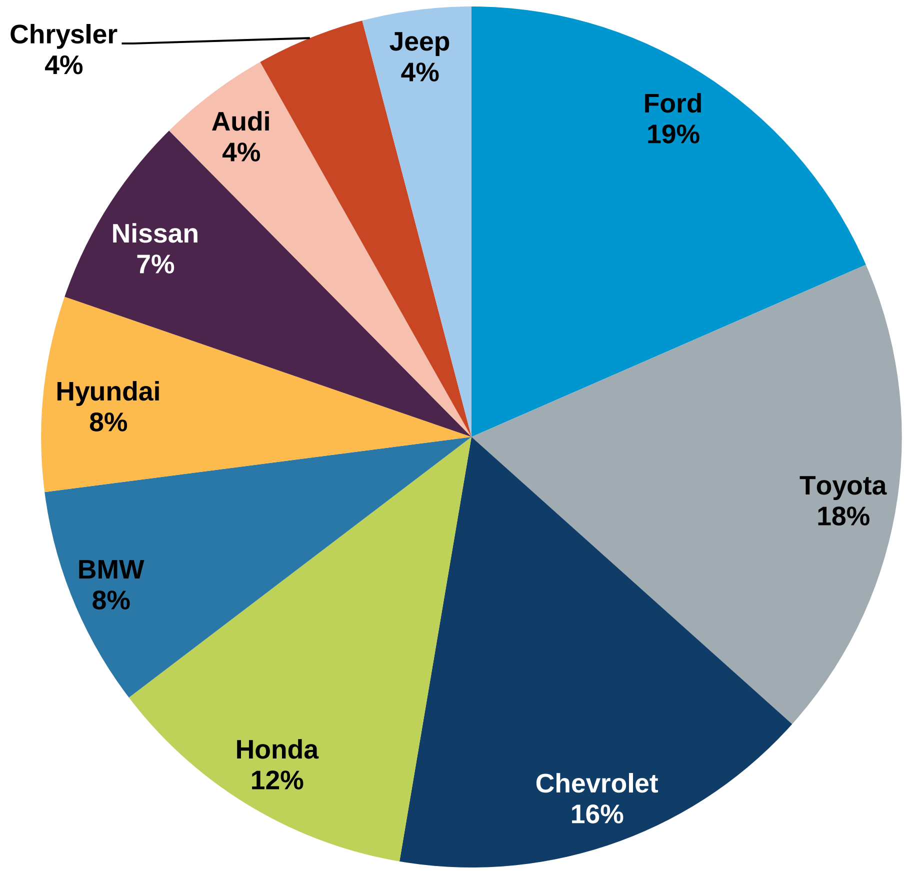
Q10. Model year of most recently purchased vehicle



Base: 1,003 new car intenders
Source: IHS

Make of most recently purchased vehicle

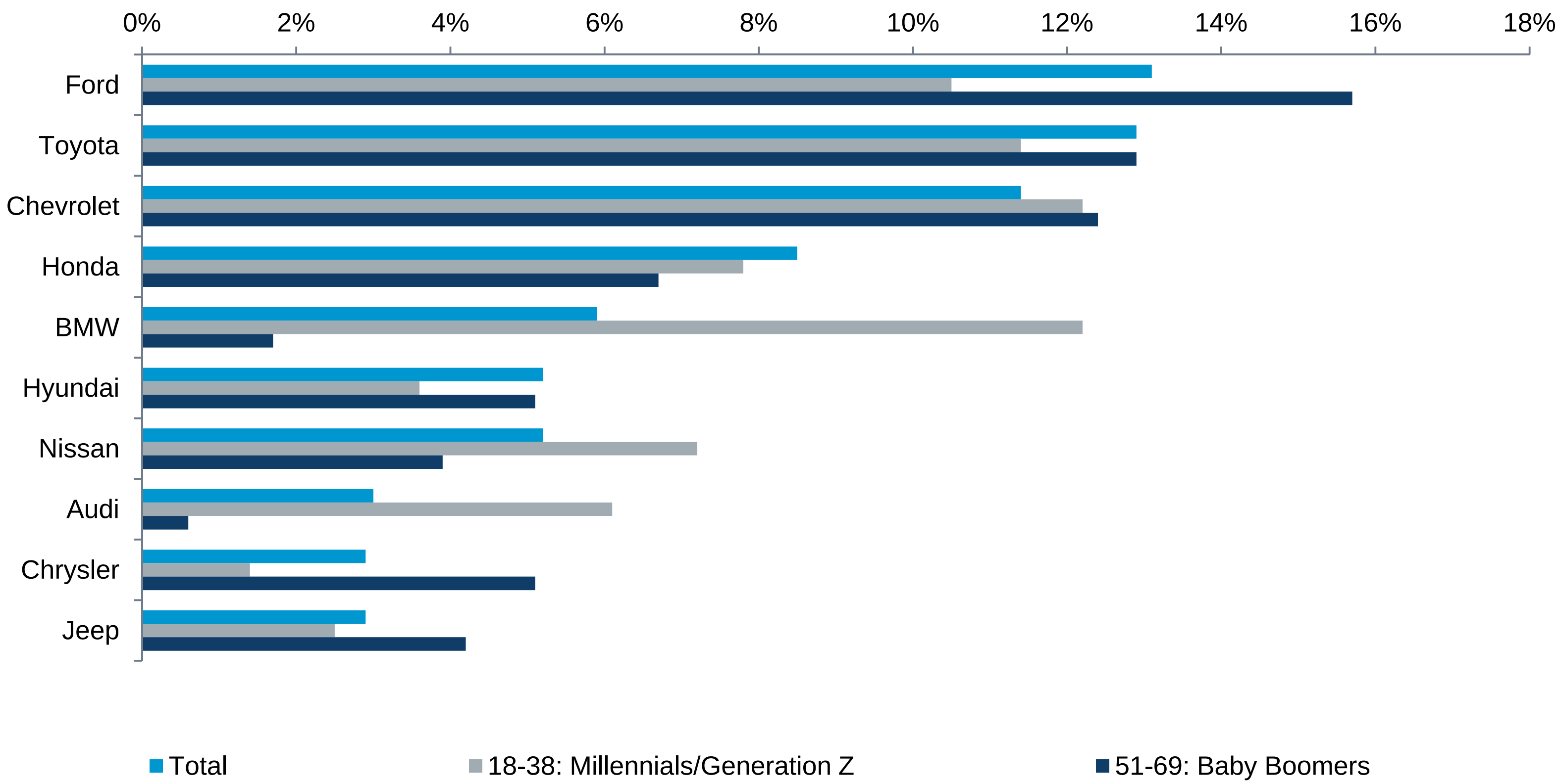
Q10. What is the make and year of the most recently purchased vehicle in your household?



Base: 1,003 new car intenders
Source: IHS

Make of most recently purchased vehicle

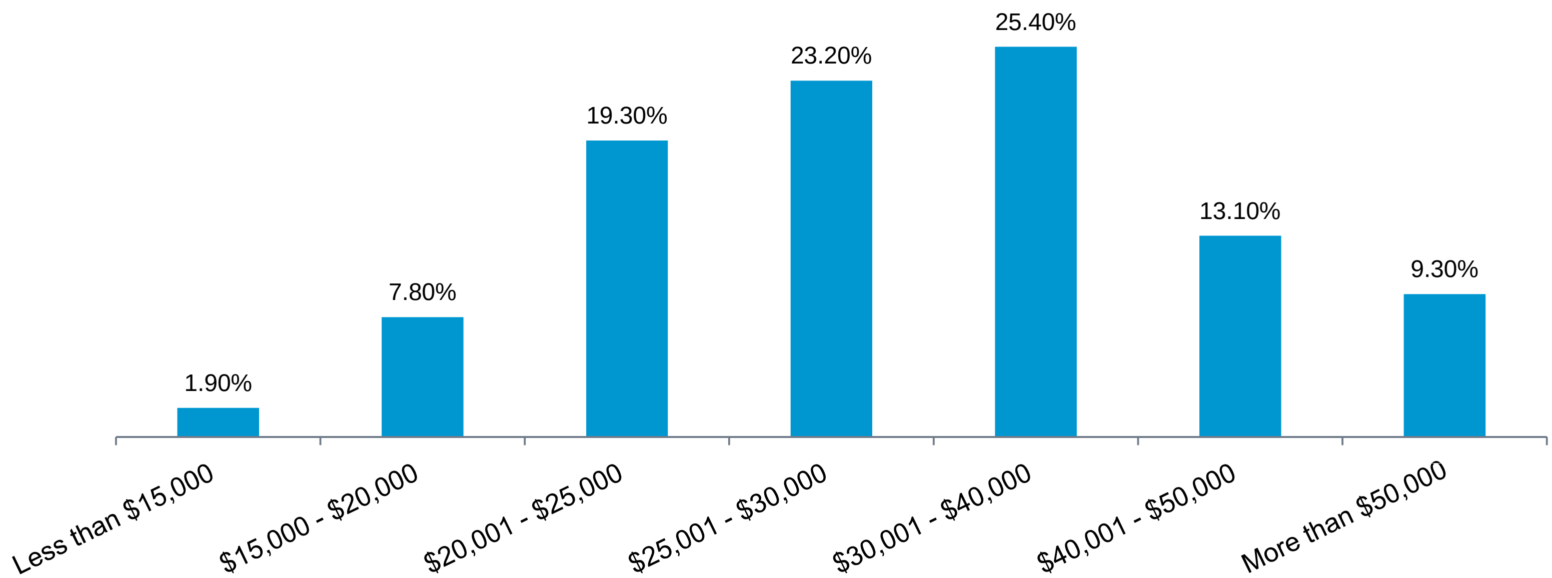
Q10. What is the make and year of the most recently purchased vehicle in your household?



Base: 1,003 new car intenders
Source: IHS

Willingness to pay on next car

Q11. How much are you willing to spend on your next new vehicle ?

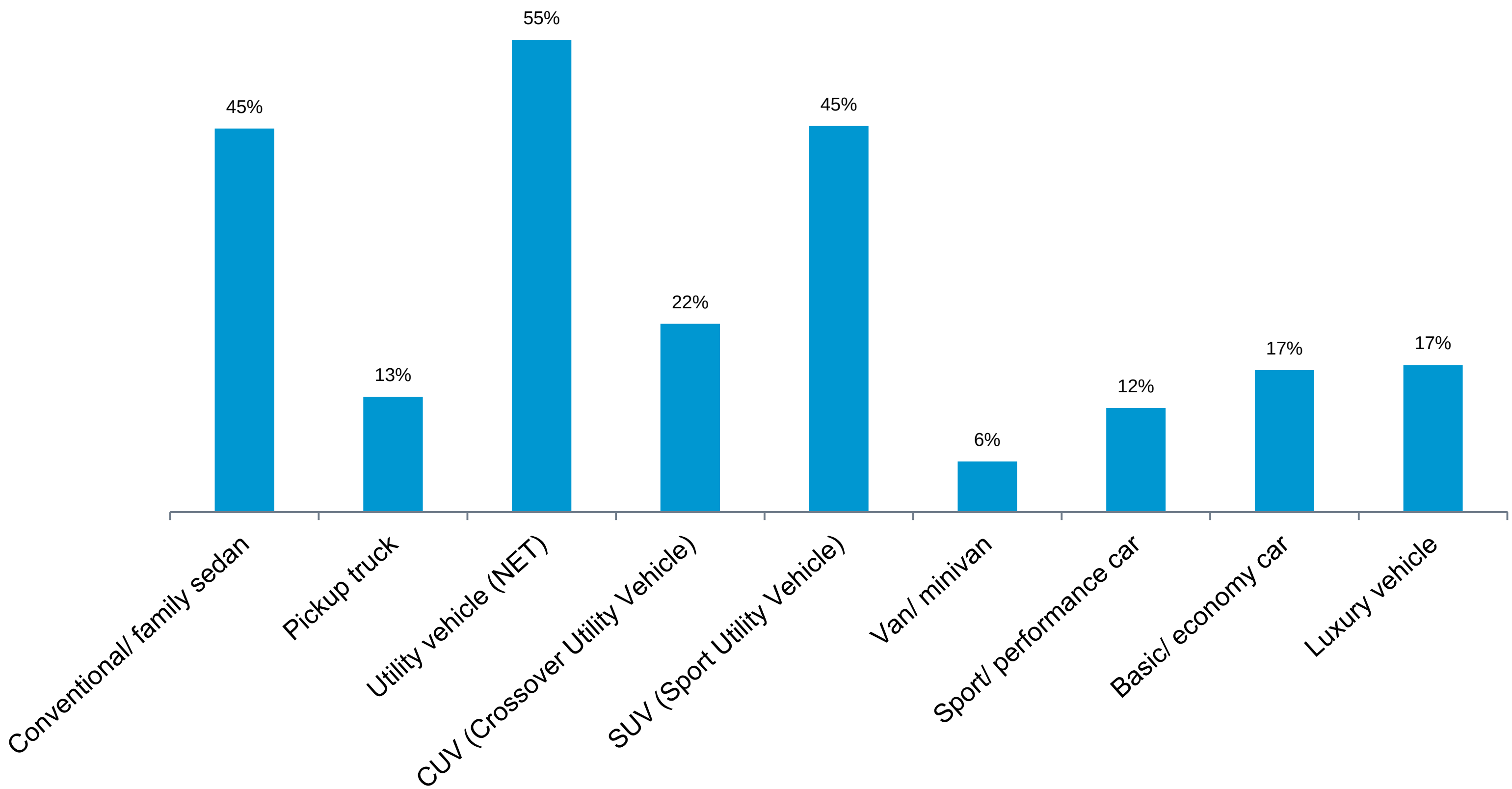


Base: 1,003 new car intenders
Source: IHS

Mean: $32,580 **Median: $29,510**

Desired body style for next vehicle purchase

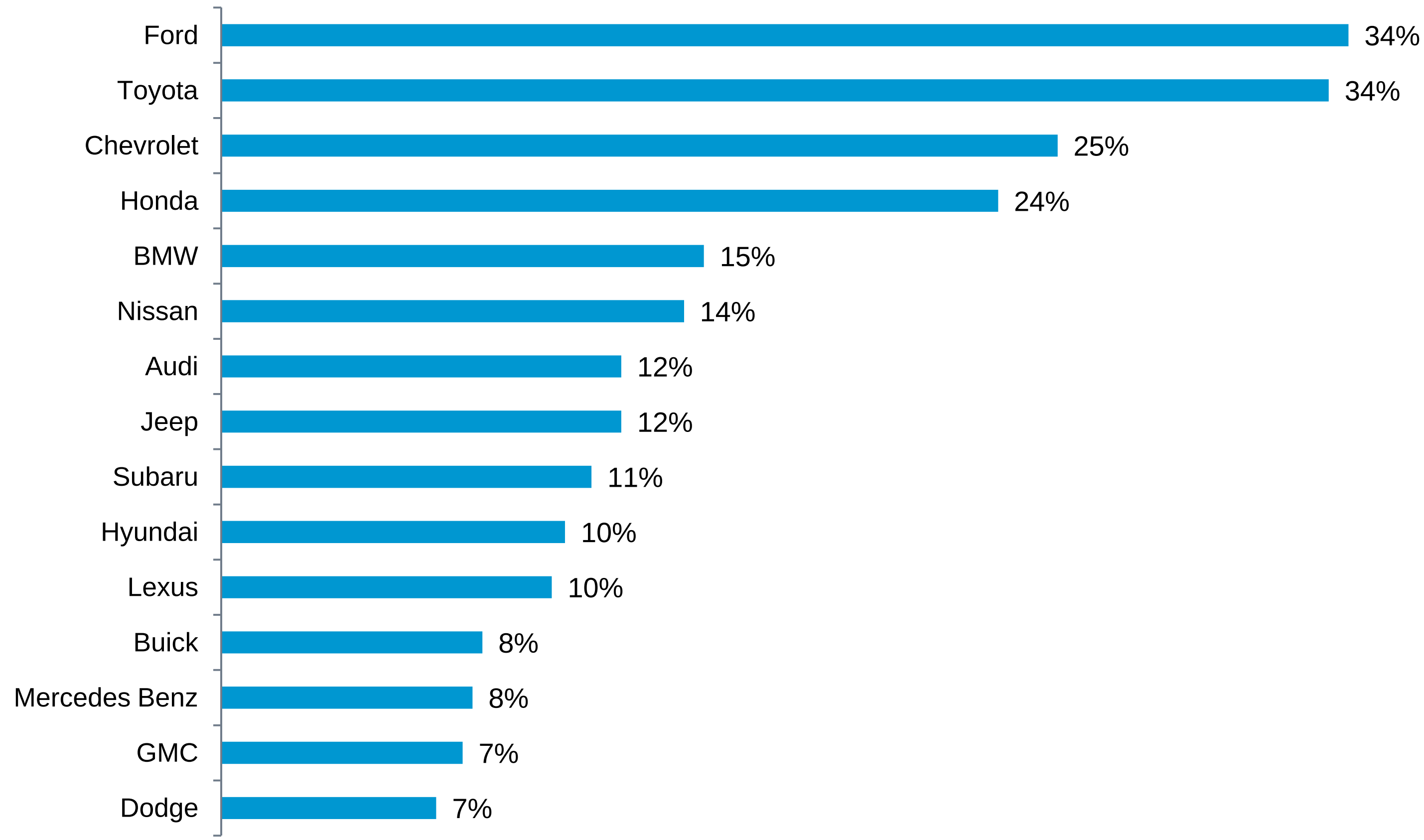
Q12. What vehicle category do you plan to buy when selecting your next vehicle?



Base: 1,003 new car intenders
Source: IHS

Top three vehicle brands desired for purchase

Q13. What are the top 3 makes you are considering when purchasing your next vehicle?

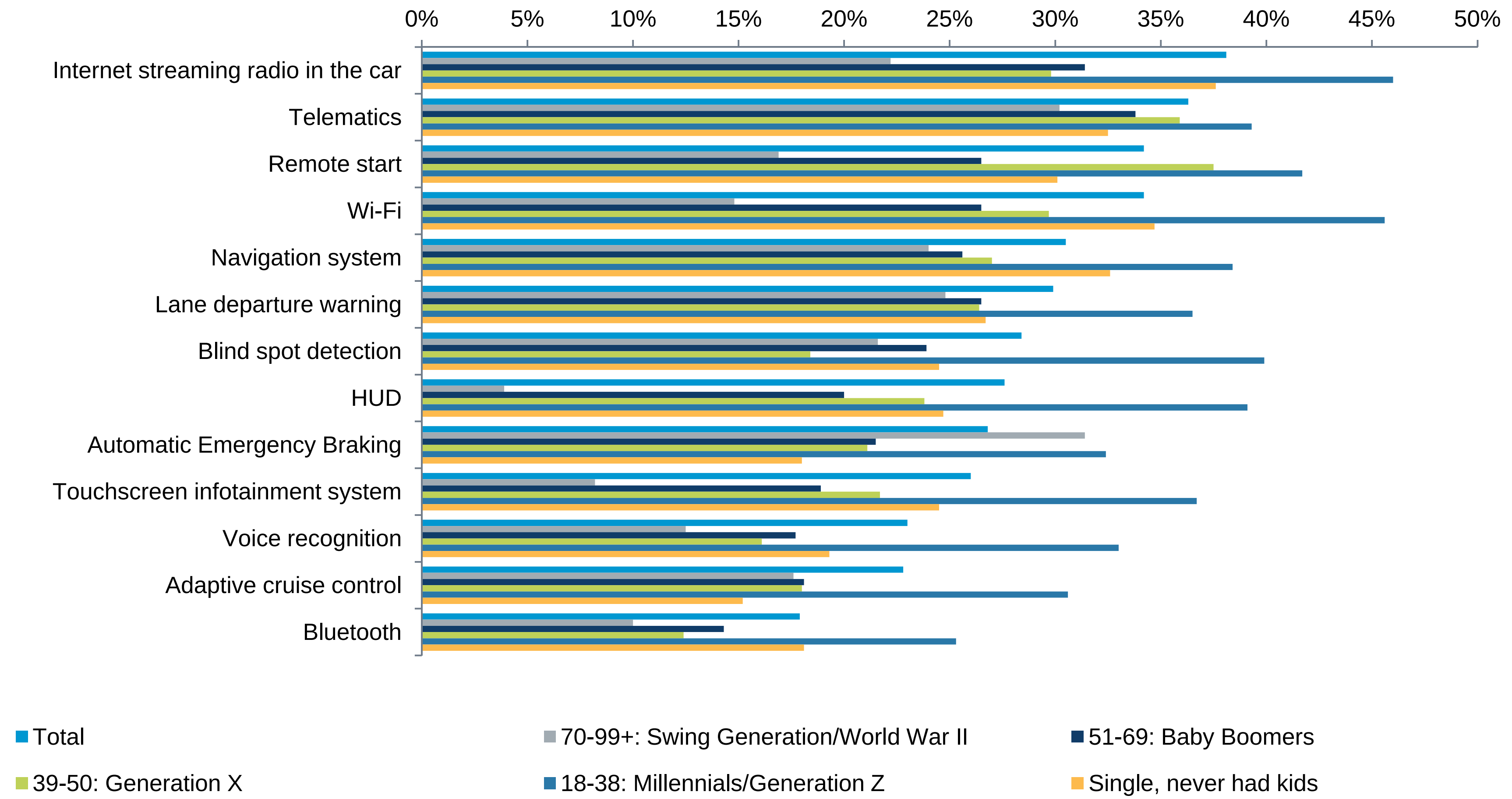


Base: 1,003 new car intenders
Source: IHS

Appendix – Desired features in next vehicle purchase

Willing to pay extra for feature

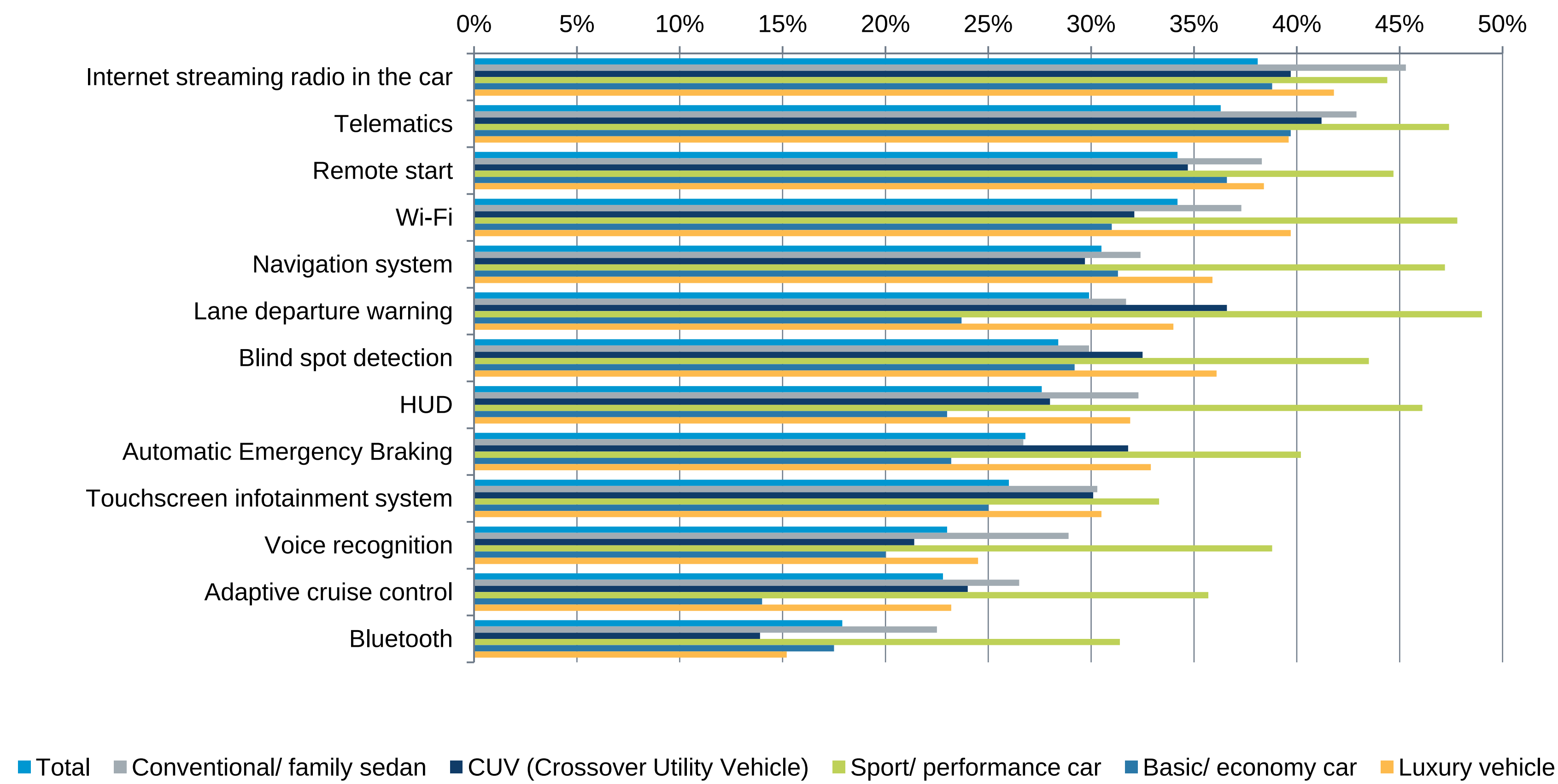
Q15. Willing to pay extra for feature?



Base: 987 new car intenders and desire some of the followings
Source: IHS

Will to pay extra for feature

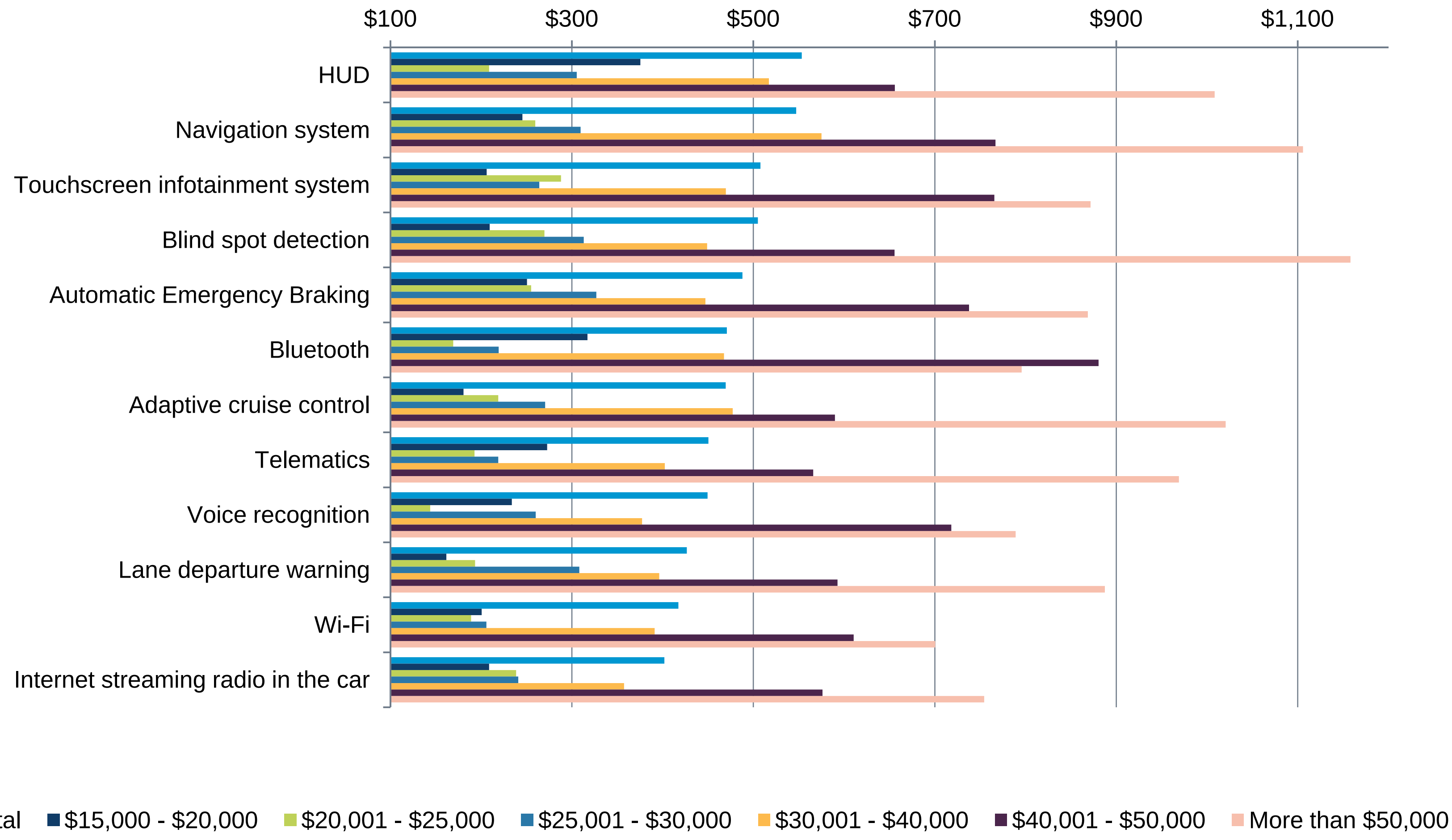
Q15. Willing to pay extra for feature?



Base: 987 new car intenders and desire some of the followings
Source: IHS

Willing to pay extra for feature

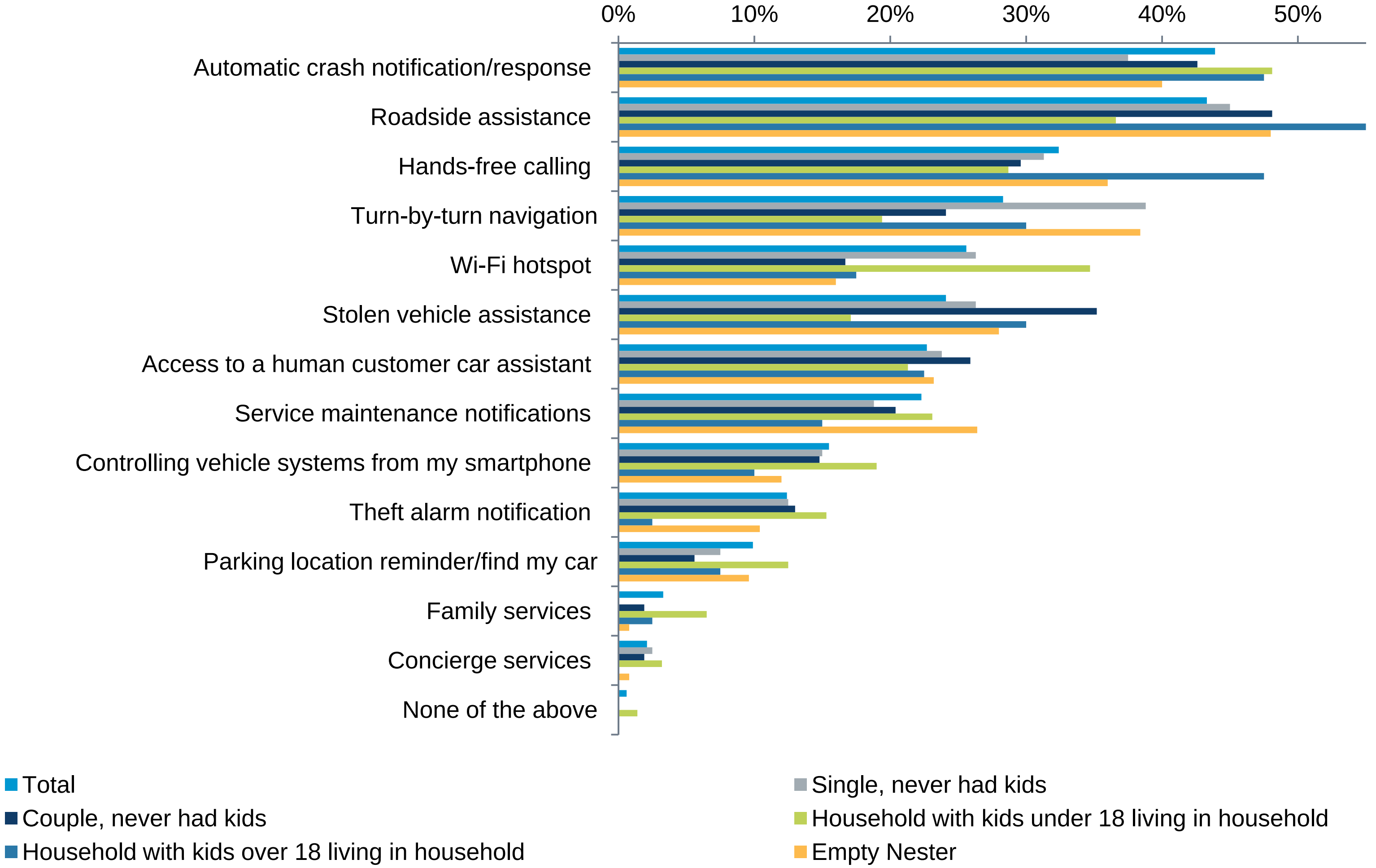
Q17. How much money would you be willing to spend extra for?



Base: 1,003 new car intenders – United States
Source: IHS

Most interesting telematics features

Q16. Thinking about telematics system, what are the top features that interest you?

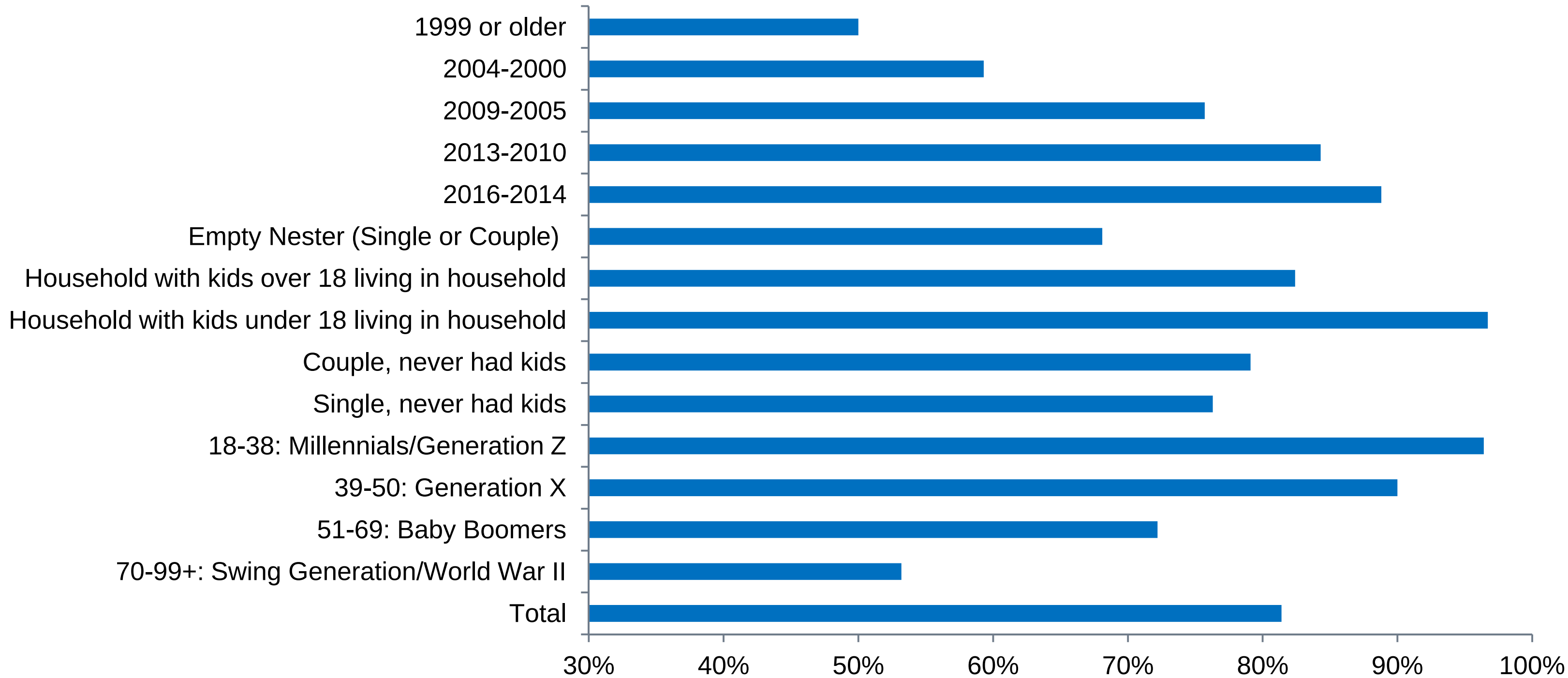


Base: 515 new car intenders who find the telematics system somewhat or very desirable
Source: IHS

Appendix – Smartphone ownership, apps, and usage in the car

Do you currently own a smartphone?

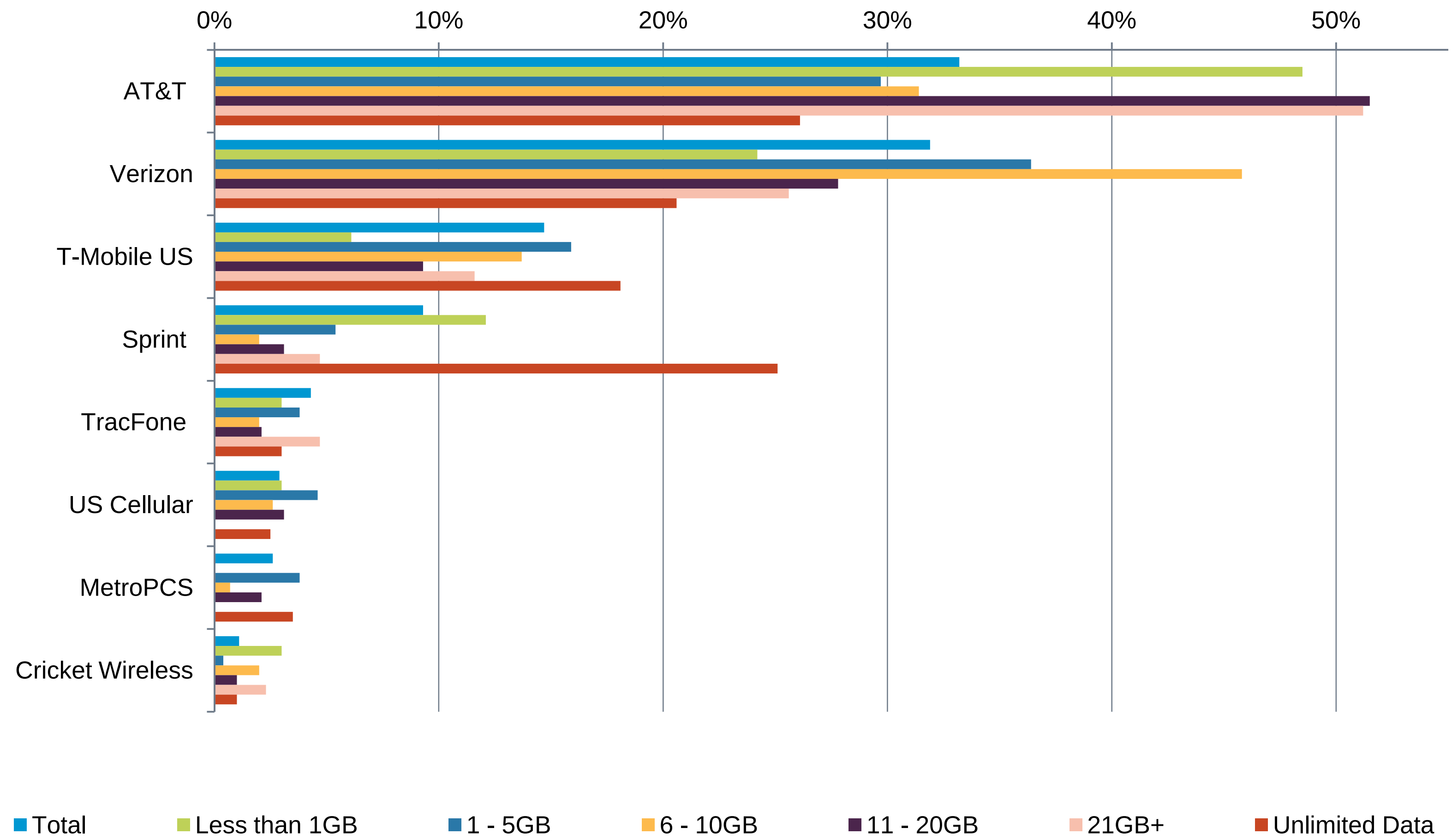
Q18. Do you currently own a smartphone?



Base: 1,003 new car intenders
Source: IHS

Mobile carrier

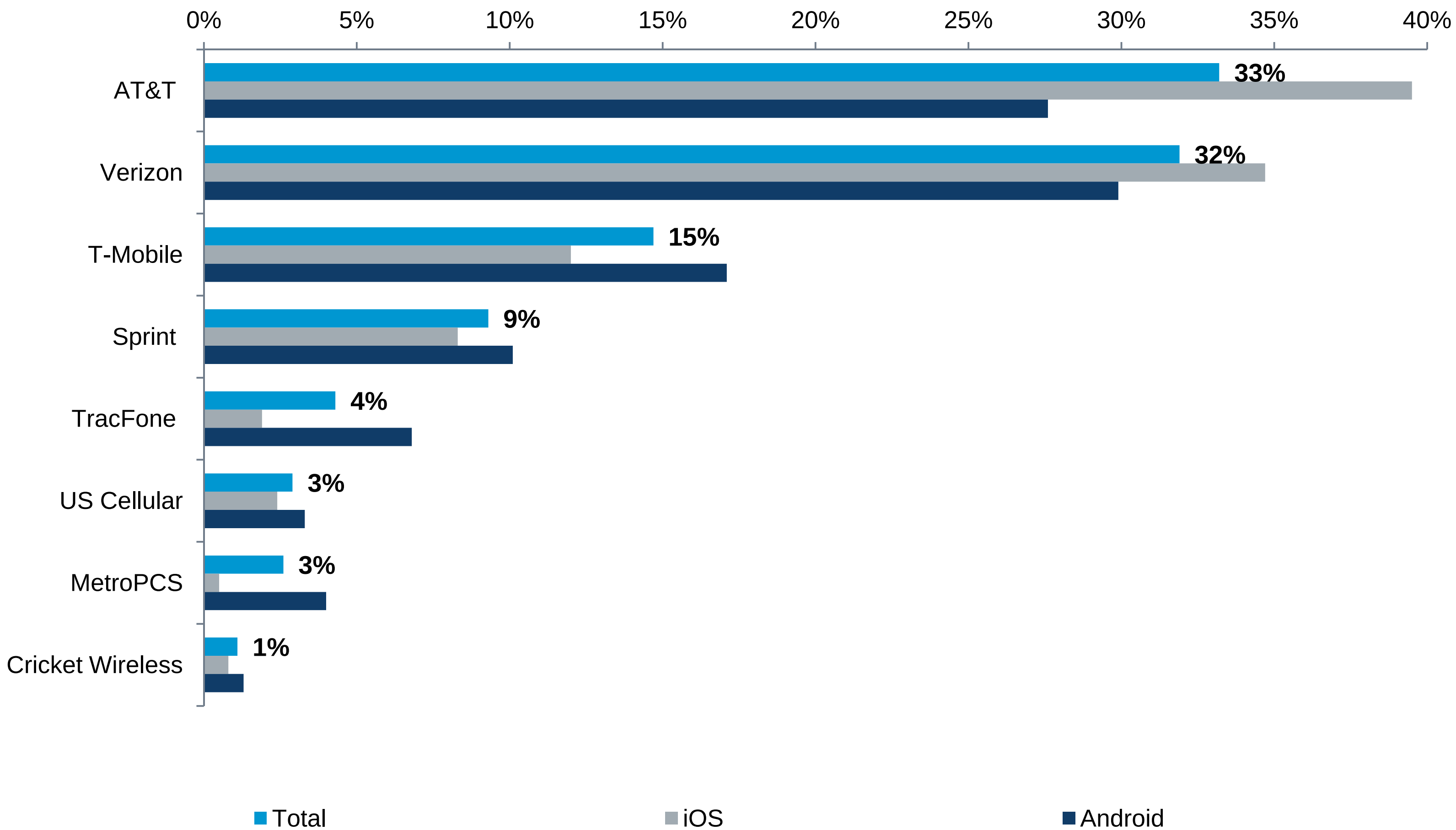
Q20. Which mobile carrier are you utilizing?



Base: 816 new car intenders that own smartphone
Source: IHS

Mobile carrier

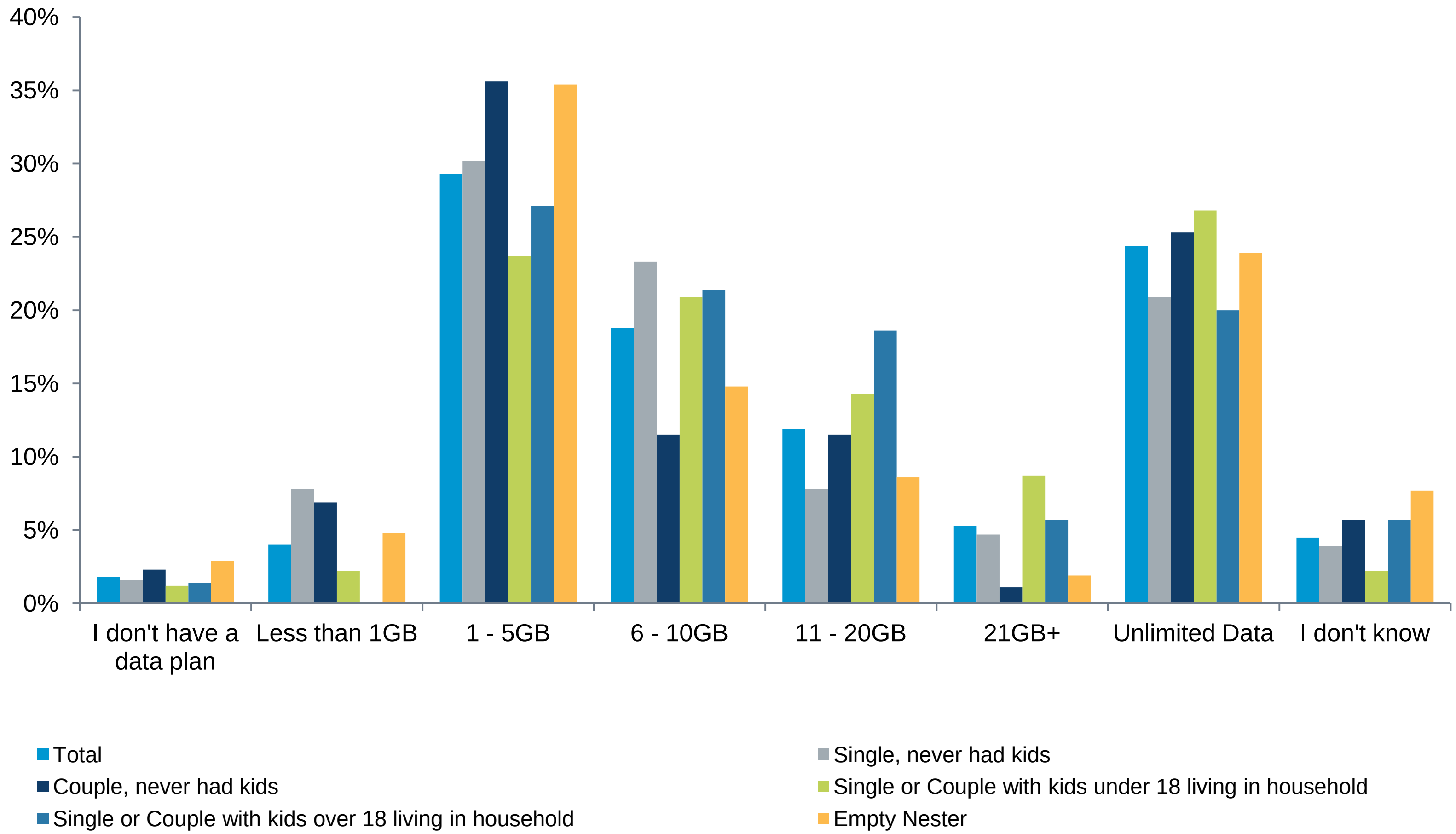
Q20. Which mobile carrier are you utilizing?



Base: 816 new car intenders that own smartphone
Source: IHS

Data plan

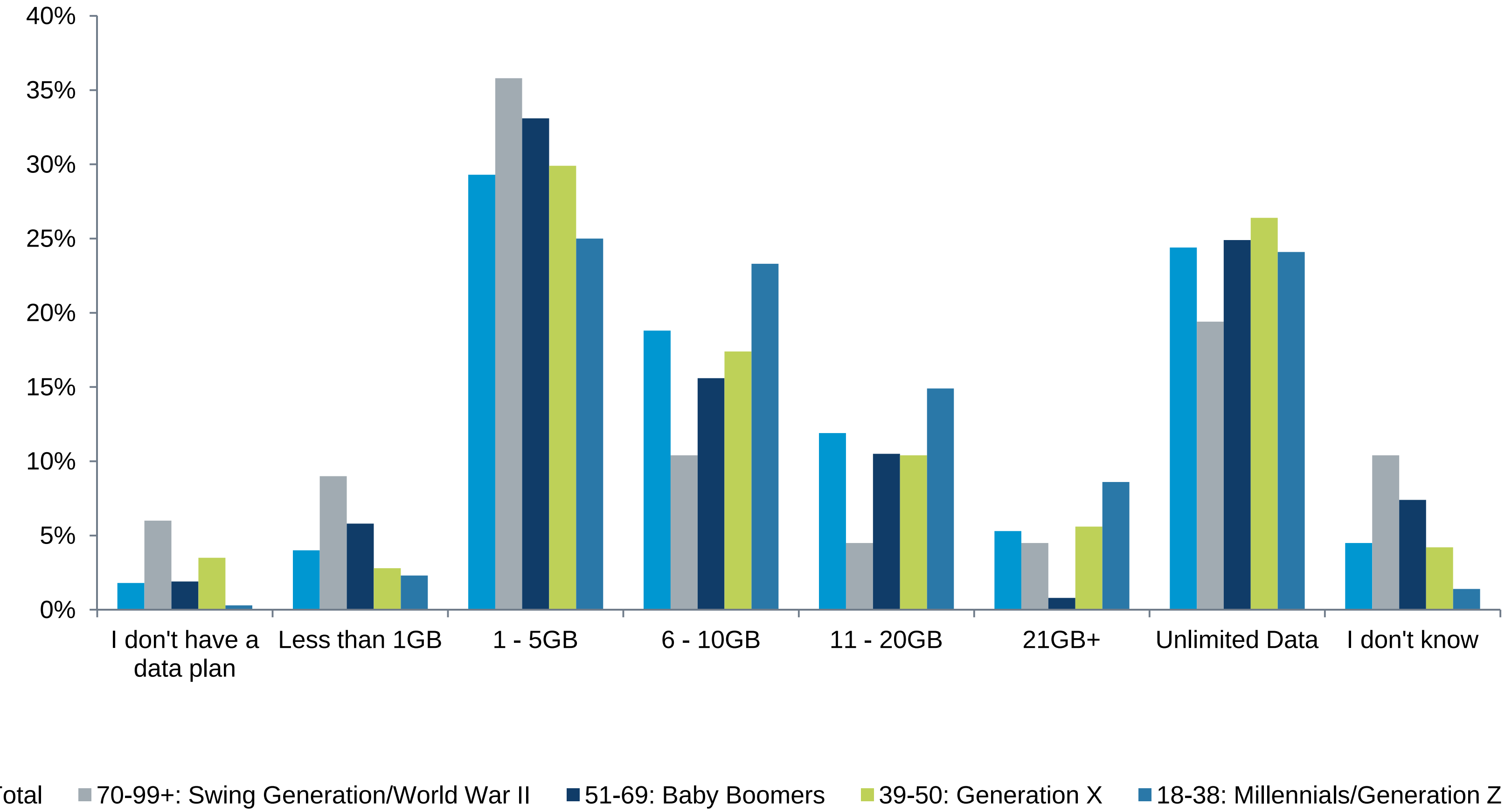
Q21. What kind of data plan do you have?



Base: 816 new car intenders that own a smartphone
Source: IHS

Data plan

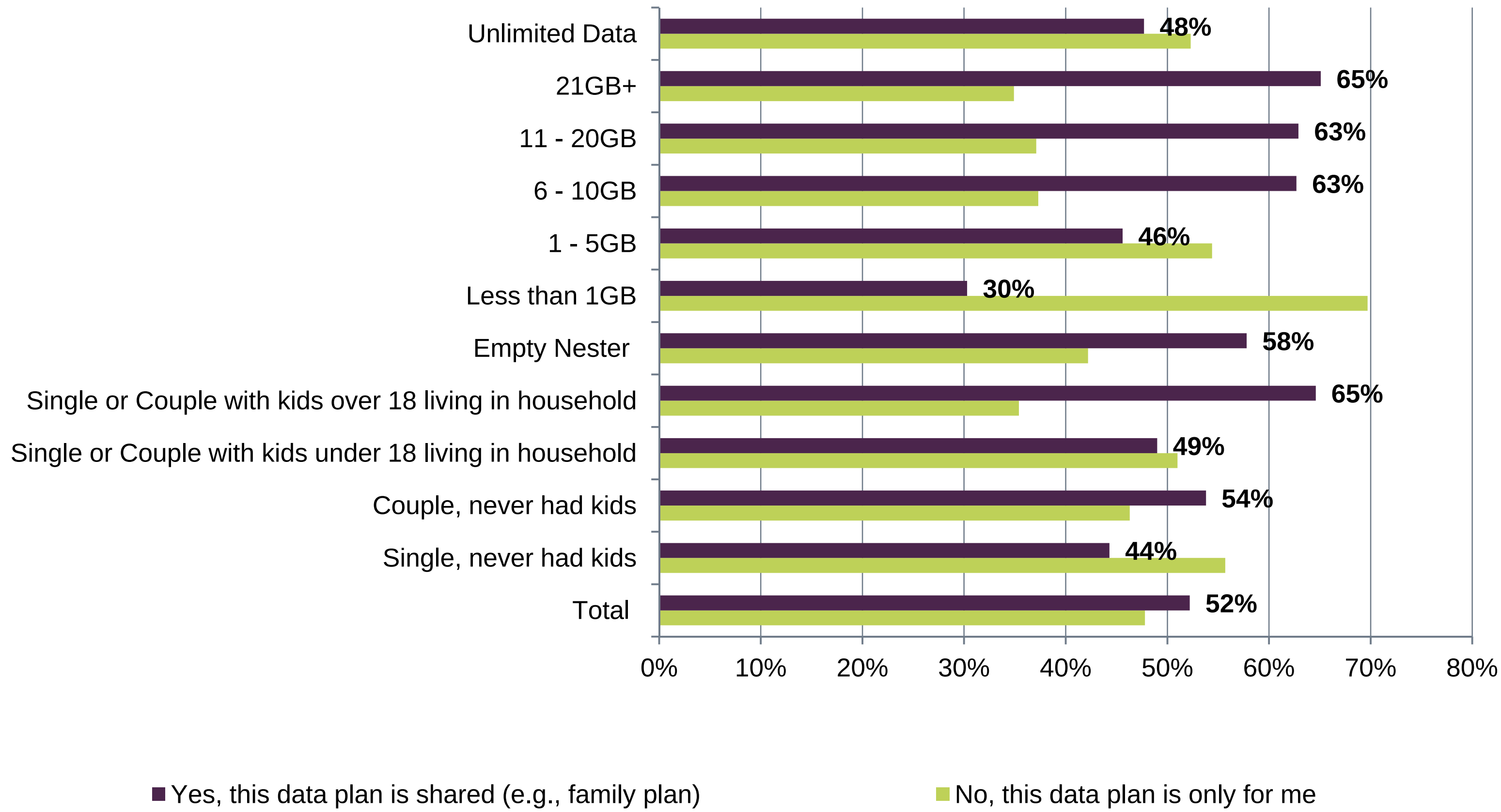
Q21. What kind of data plan do you have?



Base: 816 new car intenders that own a smartphone
Source: IHS

Family plan or single user

Q22. Is this data plan shared with anyone else?



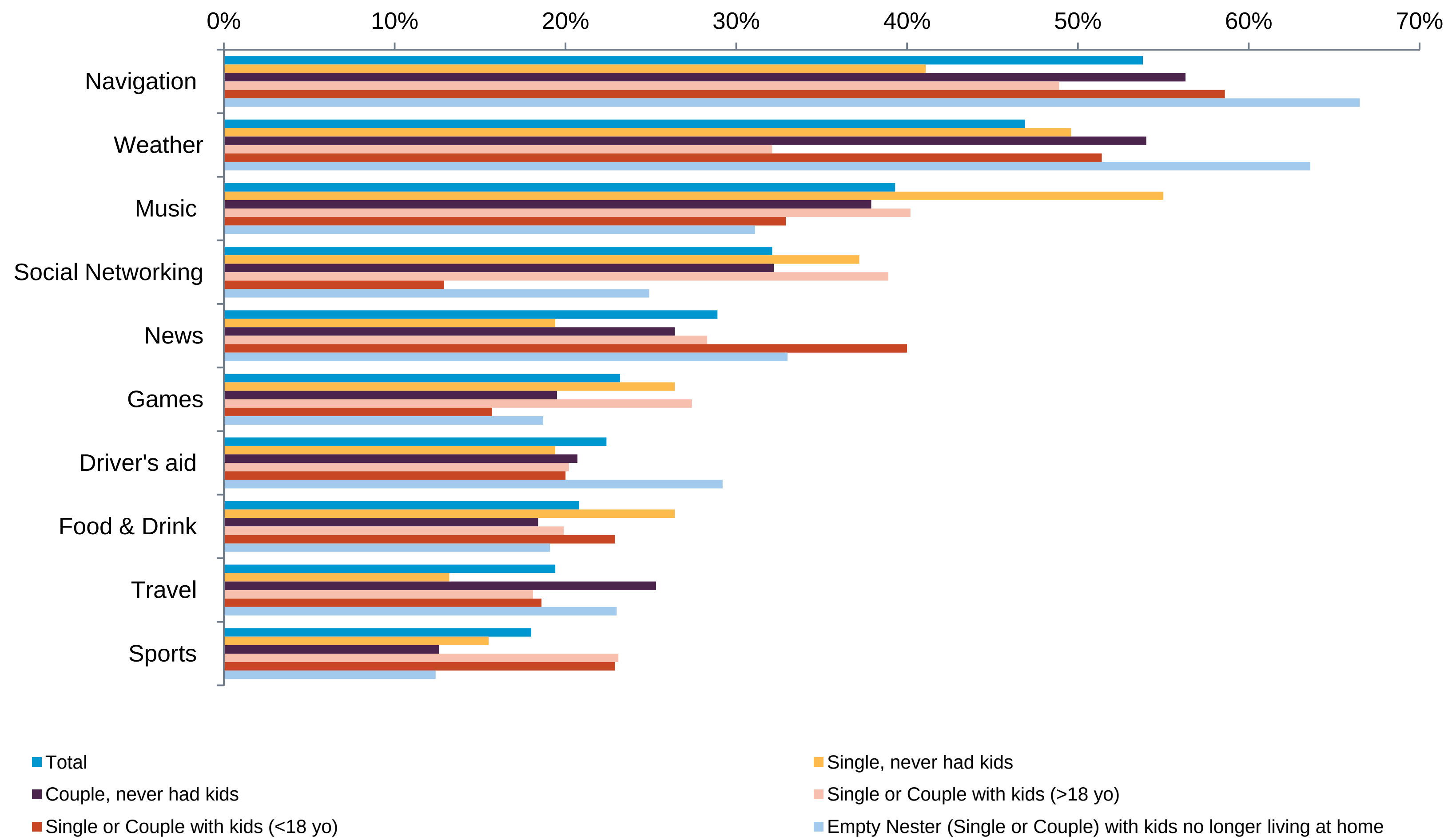
Base: 764 new car intenders that own a smartphones and have a data plan
Source: IHS

Appendix – Smartphone ownership, apps, and usage in the car

- **What is the most you have paid for an app on your smartphone?**
- **Please select your top 5 favorite app categories for use on your smartphone while in the vehicle.**
- **How often do you use a navigation app on your smartphone for driving?**
- **Which of the following statements, if any, about using your smartphone in your car do you agree with?**

Favorite apps for the car

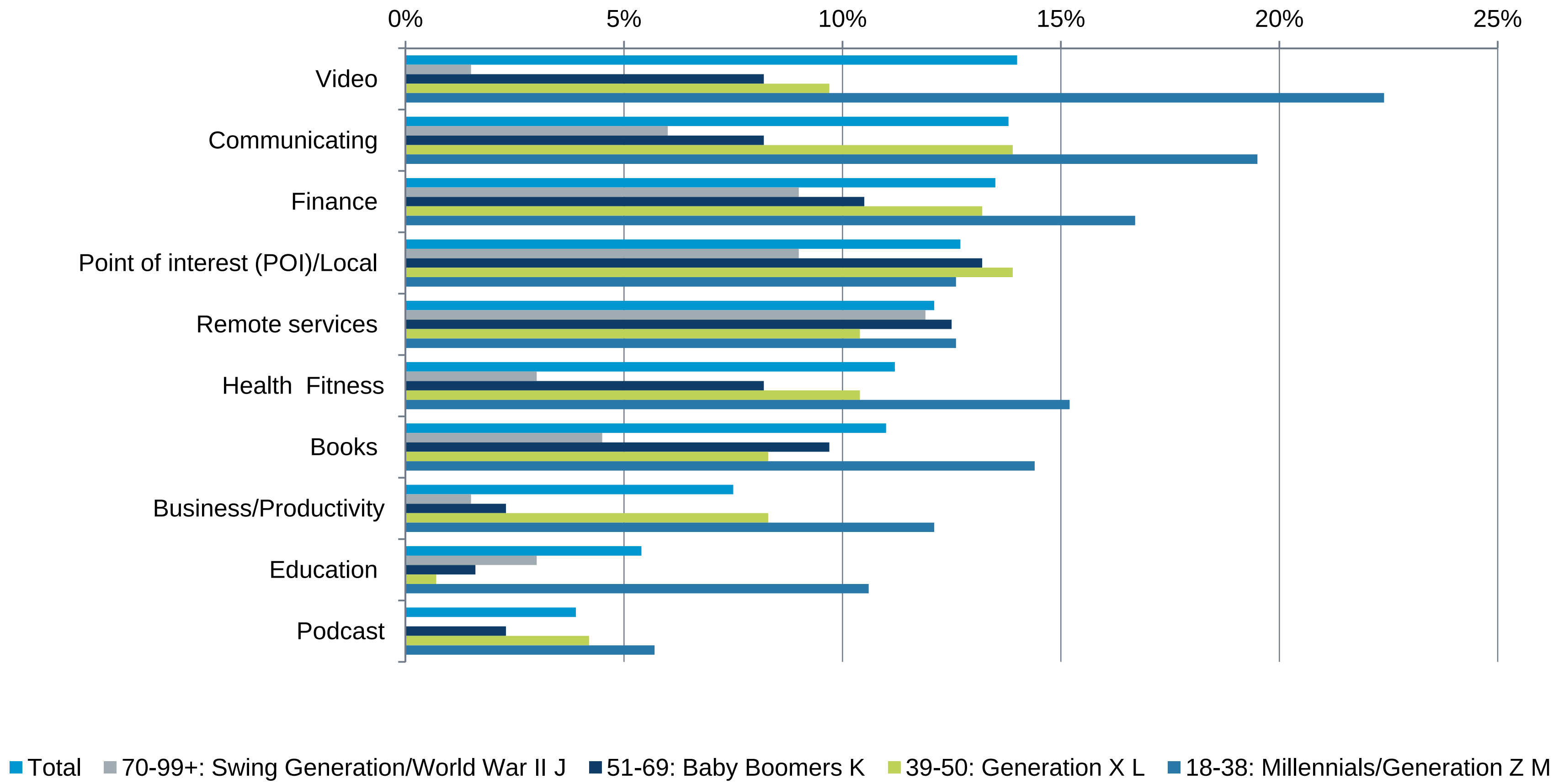
Q24. Please select your top 5 favorite app categories for use on your smartphone while in the vehicle?



Base: 816 new car intenders that own smartphone
Source: IHS

Favorite apps for the car

Q24. Please select your top 5 favorite app categories for use on your smartphone while in the vehicle



Base: 816 new car intenders that own a smartphone
Source: IHS

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