



SURVEY

The Increasing Importance of In-Vehicle Safety and Personalization Systems

Executive Summary

This report presents the findings of an Online CARAVAN® survey conducted by ENGINE Insights among a sample of 1,004 adults 18 years of age and older, comprised of 502 men and 502 women. The online omnibus study is conducted three times a week among a demographically representative U.S. sample of 1,000 adults ages 18 and older. The survey was live on August 2-4, 2021. Most questions in the survey were asked among those who own or lease a vehicle, or who plan to purchase one in the next year (N=900).

Respondents were members of an online panel and had agreed to participate in online surveys and polls. Completed interviews are weighted by five variables - age, gender, geographic region, race and education - using data from the U.S. Census Bureau to help ensure reliable and accurate representation of the total U.S. population, 18 years of age and older.

Throughout this report, results are analyzed in total as well as by gender and generation where statistically significant differences exist at a 95% confidence level. Generations are defined as Gen Z, ages 18-24 (N=133); Millennials, ages 25-40 (N=323); Gen X, ages 41-56 (N=215); and Baby Boomers, ages 57-75 (N=289).

Survey Objectives

The personal vehicle grew in importance for consumers during the pandemic - today, 77% of adults own a vehicle, with another 6% leasing and 10% planning to purchase. Meanwhile, those vehicles are becoming more automated, with a new generation of autonomous vehicles on the horizon. How is this impacting consumer attitudes towards in-vehicle safety for both passengers and occupants, whether parked or in motion?

In 2018, distracted driving claimed 2,841 lives and, in the United States alone, there are an average of 39 reported hot car child fatalities and hundreds of pet casualties per year. A new generation of secure vehicle In-cabin sensing systems are coming into market, designed to save the lives of vehicle passengers and drivers and to improve the in-cabin experience, often using computer vision solutions that can detect distracted driving or children/pets left in vehicles.

This survey seeks to understand how vehicle safety impacts purchase choices and interest in systems that can enhance vehicle safety and the in-cabin experience among adults who own or lease a vehicle, or who plan to purchase one in the next year.

How important is *safety* in your vehicle purchase choice?

98%

Important



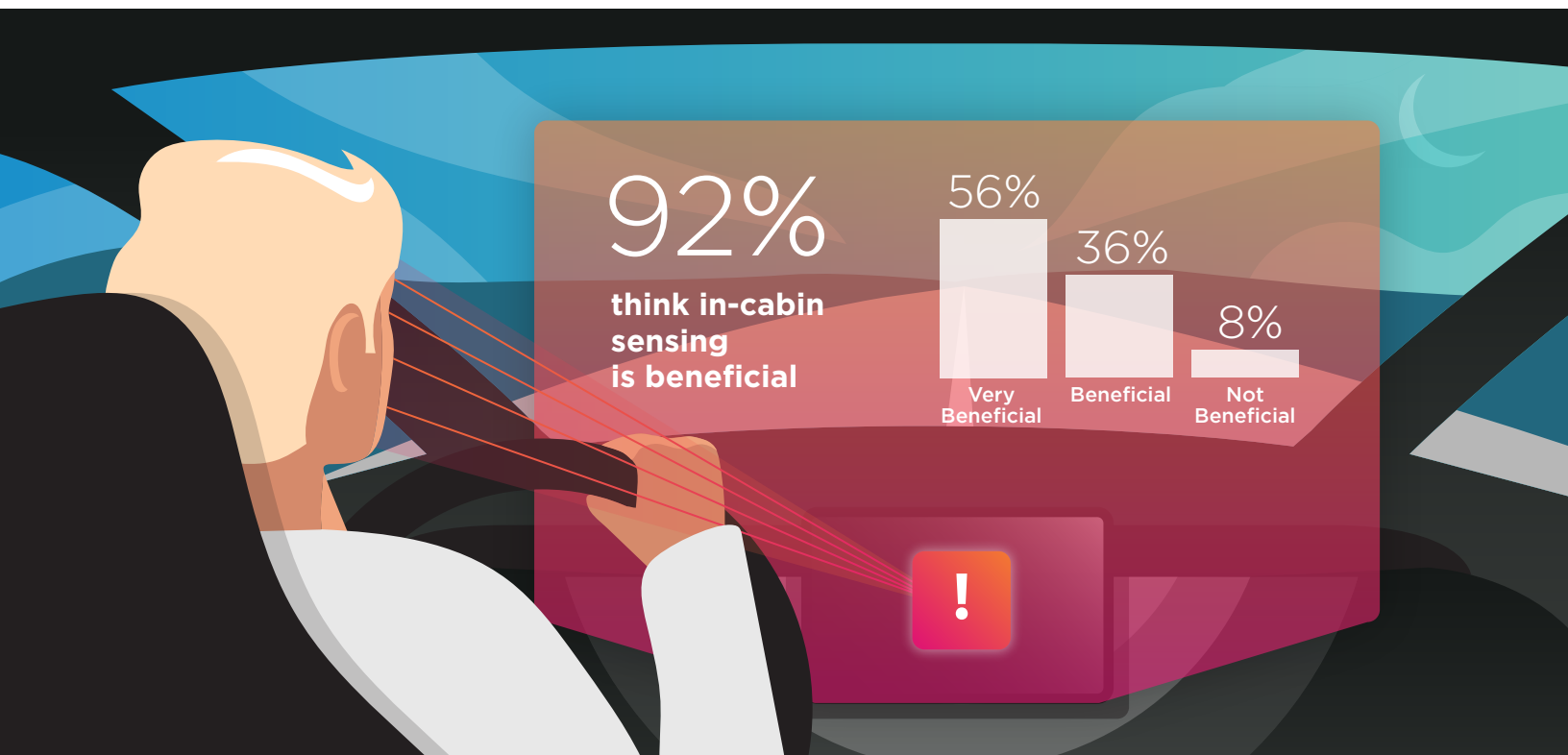
Safety Plays Key Role in Vehicle Purchase Choices

More than three-quarters (78%) of respondents say safety is “very important” to their vehicle purchase choice. Another one in five (20%) rate safety as “important” when determining which vehicle to buy.

While viewpoints are consistent across generations, women (81%) are more inclined than men (74%) to view safety as a “very important” consideration when purchasing a vehicle.

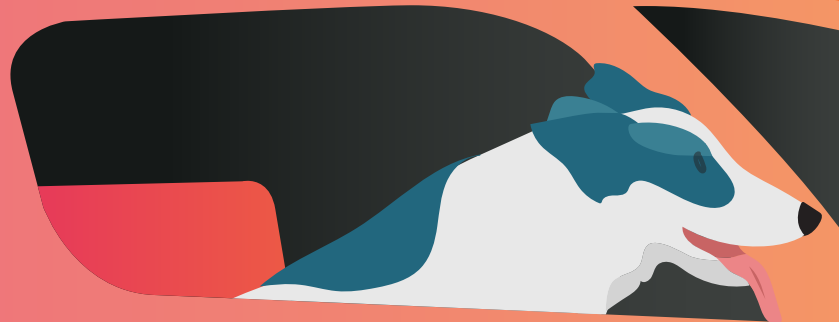
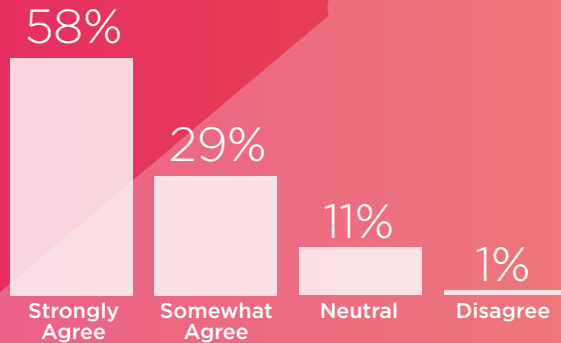
In-cabin Sensing Systems Considered Beneficial by Most

Automation that can detect - and notify - drivers when they’re drowsy, falling asleep or not paying attention to the road is regarded as beneficial by 92% of adults, with 56% saying it is “very beneficial”.



88%
Agree

“It is more important than ever to securely access the safety status of pets/children/passengers to trigger alerts to prevent dangerous situations.”



Majority Recognize Importance of Assessing Occupant Safety Status

The vast majority of respondents (88%) agree that the increase in automation in vehicles increases the importance of assessing the safety status of in-cabin occupants to prevent dangerous situations.

Although overall agreement levels are equally high among women (87%) and men (88%), women are significantly more likely than men to *strongly* agree with the statement (63% vs. 53%, respectively).

Across generations, strong agreement with the statement runs highest among Baby Boomers (63%) and lowest among Gen Z (52%).

High Likelihood to Purchase Model/Brand with In-vehicle Camera Computer Vision System

Having an innovative in-vehicle computer vision system increases the likelihood that consumers will purchase that vehicle, with 86% of respondents saying it would influence their decision.

This feature was described in the survey as employing cameras that are able to detect children/pets left in a hot vehicle, seatbelt status, sudden sickness, driver drowsiness and other distracted driving indicators and then trigger alerts to the driver. Respondents are nearly equally split between being very likely (44%) or somewhat likely (42%) to buy a vehicle model/brand that offers this feature.

How likely would you be to buy a model with an in-vehicle camera computer vision system?

86%

Likely

By Age

92%
Millennials

83%
GenX

84%
Baby Boomers

While results between men and women are nearly identical, opinions vary a bit more by generation, with Millennials (92%) significantly more likely than Gen X (83%) and Baby Boomers (84%) to purchase a vehicle model/brand with this type of computer vision system.

In-vehicle Computer Vision Systems to Ensure Child Safety Embraced by Majority

In-vehicle computer vision systems that detect if a child is present and properly secured in the vehicle – and can trigger alerts to the driver to ensure child safety – are considered beneficial by nine out of ten adults, with 56% considering them “very beneficial” and 36% finding them “beneficial”. A mere 8% think this feature is “not beneficial”.

Millennials (96%) are the most likely, and Baby Boomers (89%) the least likely, to see the benefits of this system. Three in five Millennials (61%) believe the feature is “very beneficial”, significantly higher than the 51% of Baby Boomers who feel the same.

Distracted Driving Alerts Are Beneficial, Say Nine in Ten ...

Positive feelings abound toward a vehicle feature that detects distracting activities and triggers alerts to avoid an accident, with 91% of respondents finding it beneficial. Half (51%) found this feature “very beneficial” while another 40% found it “beneficial.”

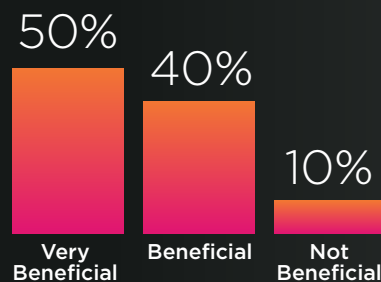


... As Are Driver and Occupant Health Monitors

Ninety percent of respondents say a vehicle feature that could monitor, in real-time, driver and occupant immediate health and act on it to prevent accidents is beneficial – with 50% viewing it as “very beneficial.”

Not surprisingly, digitally habituated Millennials (58%) are the most inclined of all generations to consider this feature “very beneficial”, while Baby Boomers are the least inclined (46%).

90% think in-cabin health sensing is beneficial



Child Safety Most Important Computer Vision-enabled Vehicle Feature

Respondents were presented with four vehicle features enabled by computer vision systems and asked to rank them in importance from highest to lowest. Seven in ten (71%) respondents chose the ability to detect a child left in a hot vehicle and trigger alerts to the owner as their top or second most important vehicle feature. Ranking second in importance is the ability to detect driver drowsiness and trigger alerts (62%). Pet safety, while not surprisingly carrying less weight than children, is still of major importance to over a third of respondents (36%). The ability to detect emotional changes in the driver potentially impacting safety and then trigger an alert was important to nearly one in three (31%).

While detecting a child left in a hot vehicle and triggering alerts to the owner consistently ranks highest in top two importance among the four vehicle features across genders and generations, men (65%) are much more likely than women (58%) to choose detecting driver drowsiness and triggering an alert as one of their top two most important features.

Most important feature?

71%

Detect child left in hot car

62%

Detect driver drowsiness

36%

Detect pet left in hot car

31%

Detect emotional changes



Personalization of Vehicle Interior Based on Driver/Occupant Preferences, Presence of Child Appeals to Many Drivers

The same sensing systems that can alert consumers to a child left in a hot vehicle or if a driver is distracted or drowsy can also improve the in-cabin experience by personalizing the vehicle's infotainment, wheel and chair positions and more.

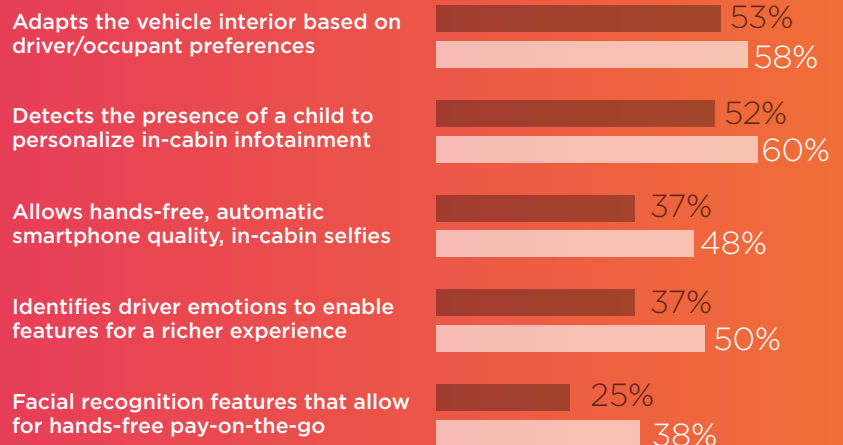
Over half (53%) of adults would like to have a feature that adapts their vehicle interior to driver/occupant preferences, such as wheel and chair position or loading preferred apps and/or music on the infotainment system.

Just as appealing is a feature that detects if a child is present in the car to personalize in-cabin infotainment to be appropriate, chosen by 52% of respondents.



Most appealing personalization features?

Overall Millennials



Over one in three (37%) would like a feature that allows hands-free, automatic smartphone quality, full in-cabin selfies. Attractive to an equal proportion of respondents (37%) is a system that identifies driver emotions to enable features such as smart playlists or actions such as lowering the volume, changing the studio light settings inside the cabin, or modifying the HVAC settings to provide a richer journey experience.

Rounding out the list of desirable features is one that enables the driver to securely, hands-free pay-on-the-go based on facial recognition, selected by 25% of respondents. Just 14% are not interested in any of the listed features.

While men and women express similar interest levels for most features, the hands-free selfie feature is appealing to significantly more men (41%) than women (34%).

Across generations, Gen Z (98%) and Millennials (96%) are much more likely than Gen X (85%) and Baby Boomers (78%) to find any of these additional features appealing. Millennials are the most inclined to say they would like a feature that adapts the vehicle interior based on driver/occupant preferences (58%) and/or one that detects the presence of a child to personalize in-cabin infotainment (60%). When it comes to hands-free selfies, Millennials (48%) are significantly more likely than all other generations to find this feature appealing [Gen Z (36%); Gen X (38%); Baby Boomers (31%)].

At least half of Gen Z (52%) and Millennials (50%) like the idea of a feature that identifies driver emotions to enable features that provide a richer journey experience - considerably more so than Gen X (36%) and Baby Boomers (23%). The same is true of facial recognition features that allow for hands-free pay-on-the-go, chosen by 31% of Gen Z and 38% of Millennials versus 24% of Gen X and just 15% of Baby Boomers.

