

INDUSTRY INSIGHTS

AUGUST 2023

Trimble - The Path Forward for Autonomous Vehicles



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Section 1

Introduction

Overview

Methodology, data collection and analysis by Wards Auto on behalf of Trimble Navigation. Data collected July 14 through 26, 2023. Methodology conforms to accepted marketing research methods, practices and procedures.

Methodology

Beginning on July 14, 2023, Wards Auto sent emailed invitations to participate in an online survey to active subscribers in the automotive industry. By July 26, 2023, Wards Auto had received 246 completed responses.

Response Motivation

To encourage prompt response and increase the response rate overall, email invitations and survey materials were branded with the Wards Auto name and logo in an effort to capitalize on user affinity for this valued brand.

Each respondent was afforded the opportunity to enter a drawing for one of five \$50 Amazon gift vouchers.





Section 2

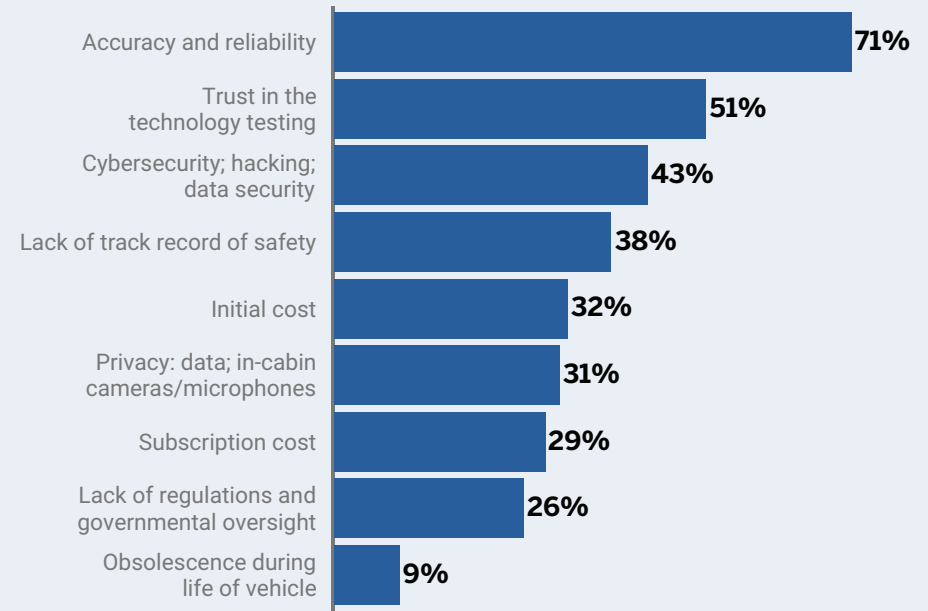
Key Findings

Consumer Concerns About ADAS Technology

Accuracy and reliability are indicated by 71% of Industry professionals to be the clear top concern that consumers have about ADAS technology. The majority of respondents (51%) indicated that trust in the technology testing to be another major concern.

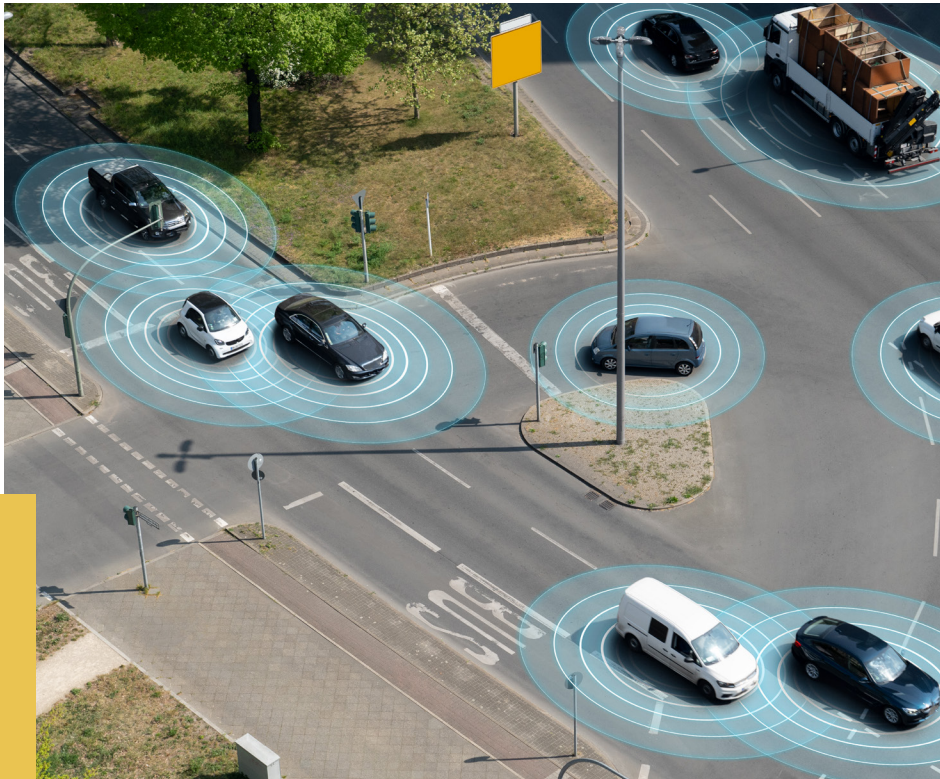


What do you believe are the major consumer concerns about ADAS (advanced driver-assisted system) technology the automotive industry must overcome?(Select up to four choices.)

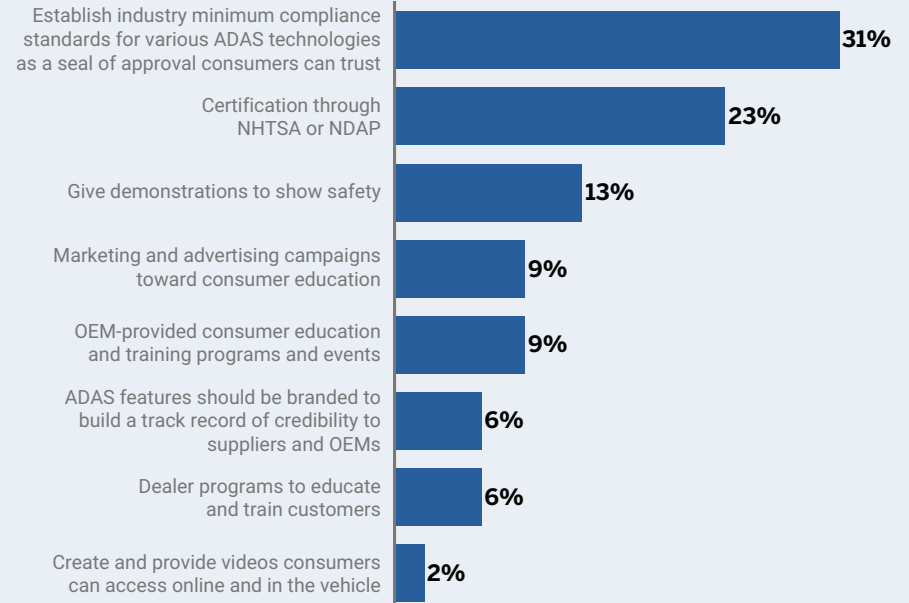


Best Way to Address Consumer ADAS Understanding & Fears

No single method of addressing consumer understanding & fears with ADAS is favored by most respondents. The leading methods are establishing industry minimum compliance standards as a seal of approval (31%) and having certification through NHTSA or NDAP (23%).



What is the best way for the automotive industry to address consumer understanding and fears related to ADAS technology?

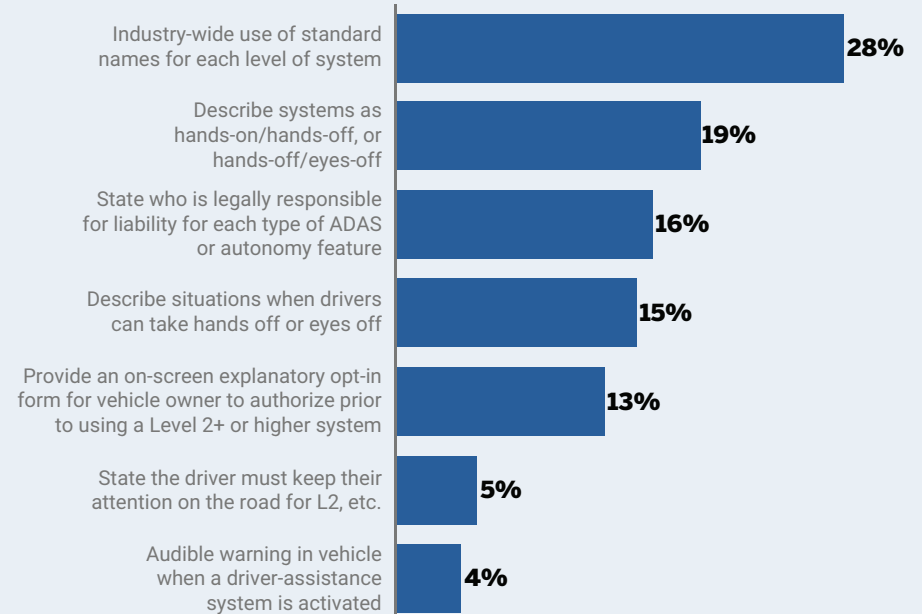


Explaining the Difference Between Level 2, Level 2+ & Level 3

The leading method for the automotive industry to market and explain the difference between the levels of ADAS features is the naming standardization for each level of system (28%).

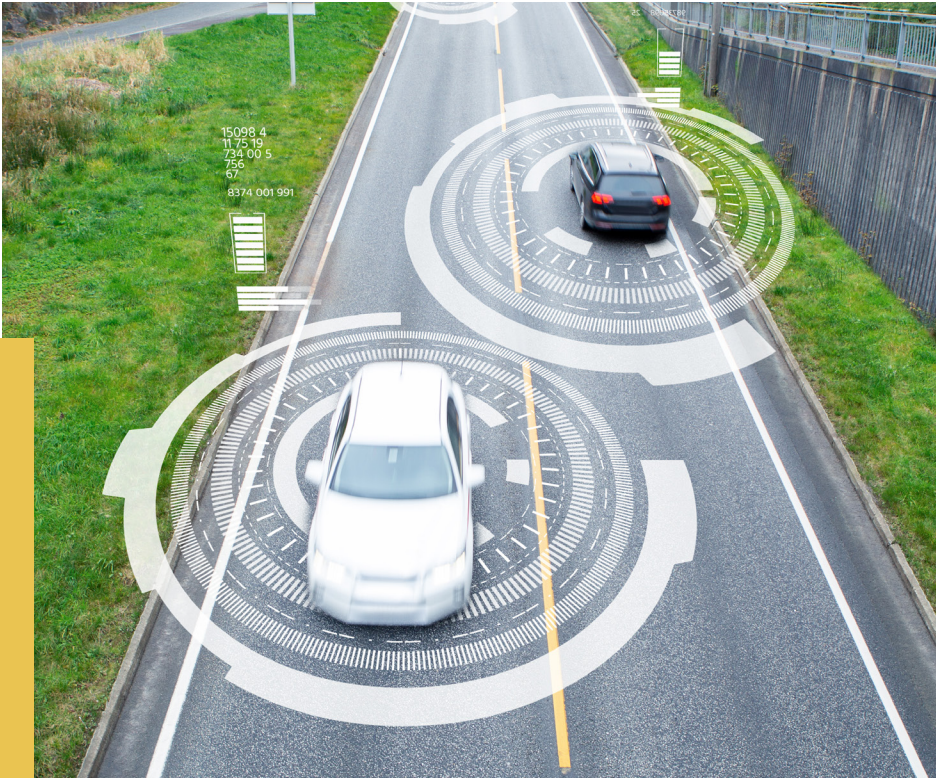


What is the best way for the automotive industry to market and explain the difference between Level 2, Level 2+ and Level 3 ADAS features?

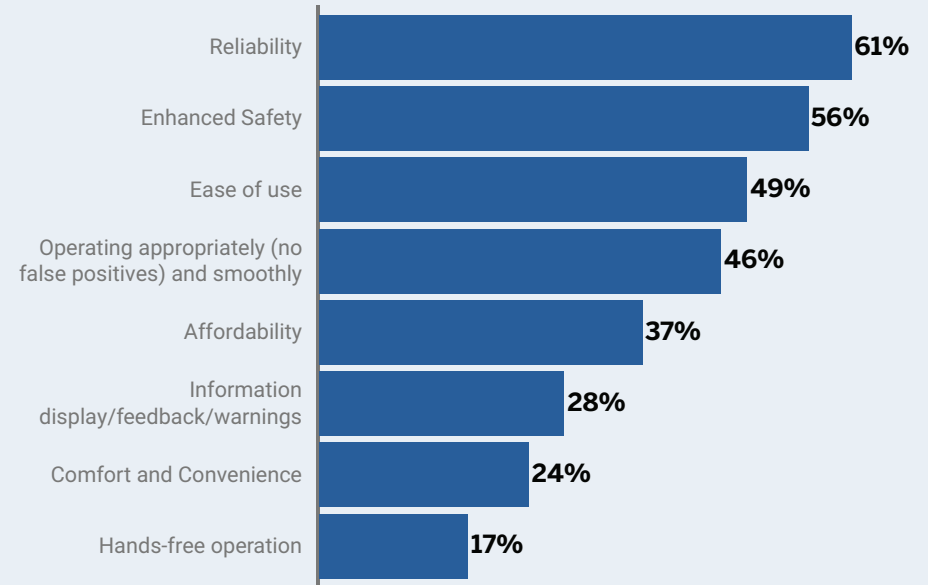


Most Important ADAS Attributes for Consumers

According to automotive industry professionals, reliability is the leading attribute (61%) consumers find important. The second-tier attribute is enhanced safety (56%). A third tier of attributes are ease of use (49%) and operating appropriately and smoothly (46%).



When it comes to purchasing ADAS-related optional equipment, which attributes do you believe are most important to consumers? (Select up to four choices.)

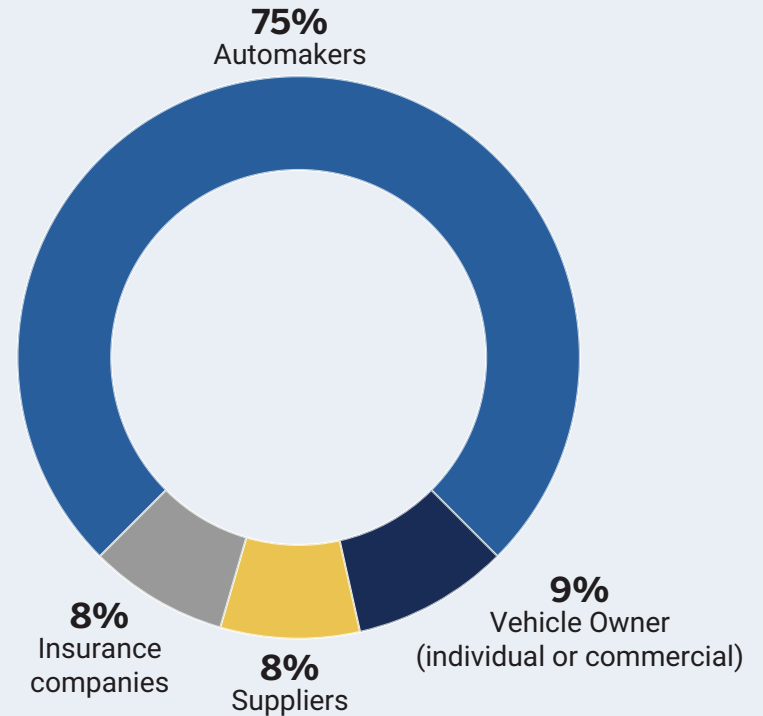


Responsibility & Liability Assumption for ADAS Failures

The ability of synchronizing a personal device to the user's vehicle is the best opportunity to have a personalized experience in their vehicle. Secondary opportunities are using AI, software upgrades and vehicle driving setup/saved driver preferences.

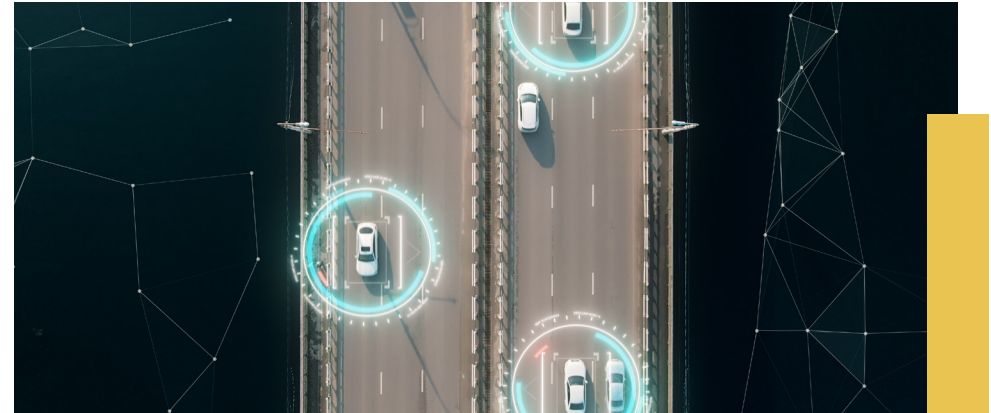


Who should take responsibility and assume liability for ADAS technology failures?

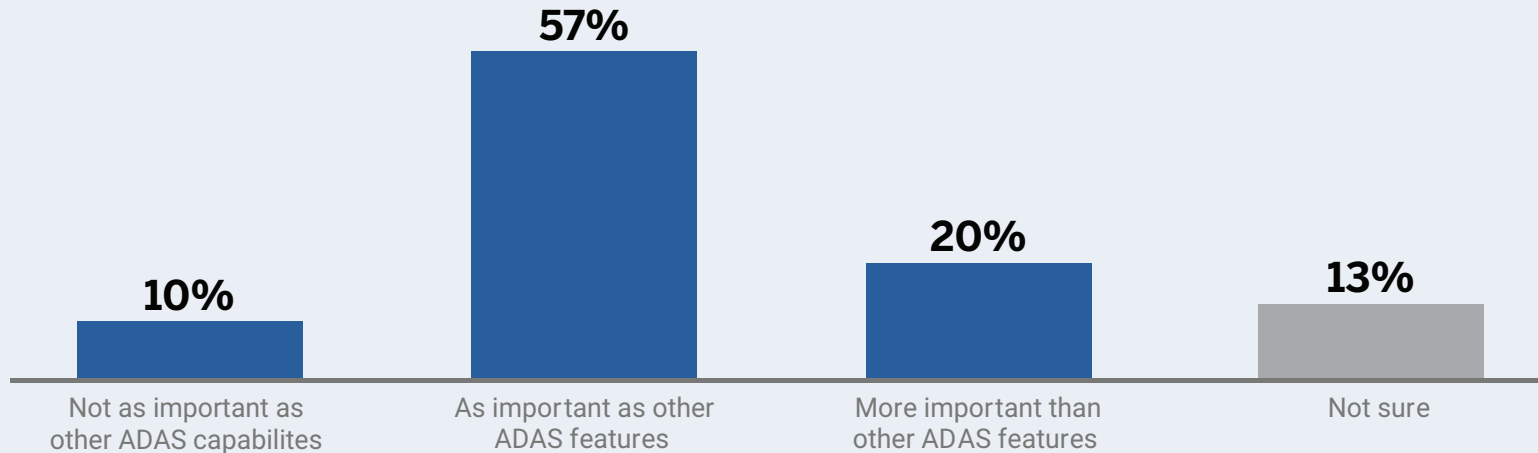


Importance of Accurate Precise Positioning

Three-fourths (77%) of respondents indicate that accurate precise positioning is either as important or more important than other ADAS features in building consumer confidence and boosting sales.



How important is accurate precise positioning to building consumer confidence in ADAS technology and boosting sales?

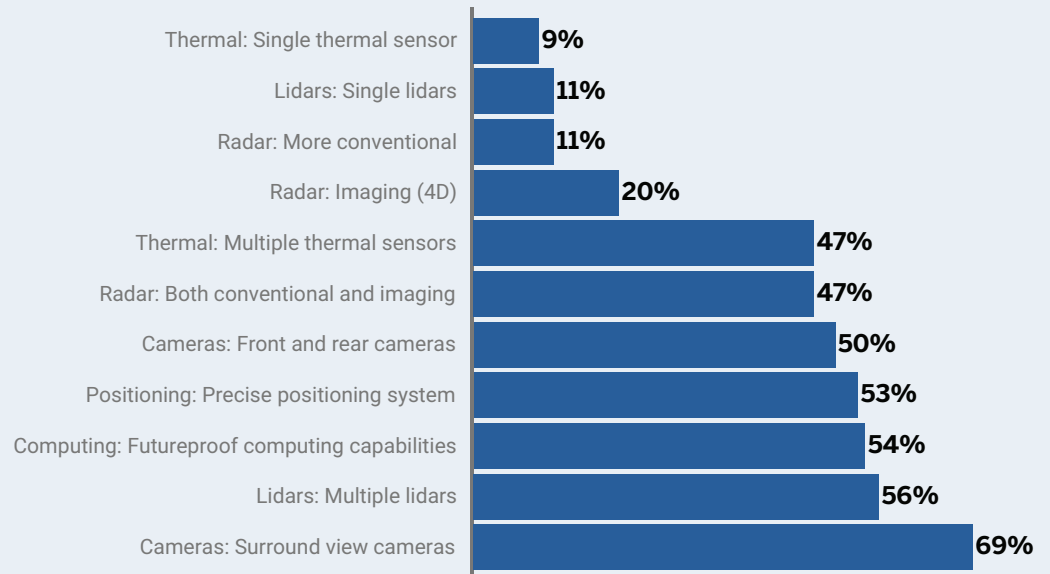


Components to Ensure ADAS System Safety & Reliability

The leading component to ensure ADAS system safety and reliability is surround view cameras (69%). A second tier of components are multiple lidars (56%), futureproof computing capabilities (54%), precise positioning system (53%), front and rear cameras (50%), both conventional and imaging radar (47%) and multiple thermal sensors (47%).



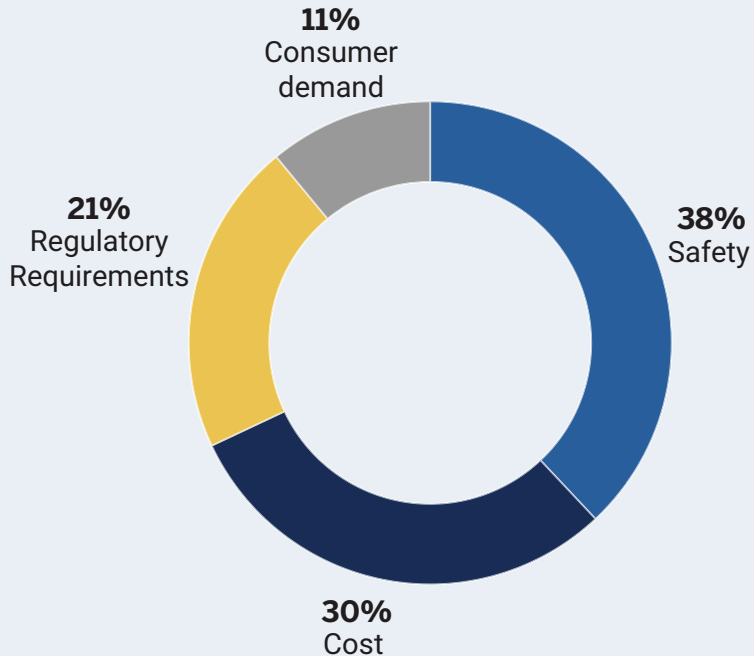
Which of the following is needed to ensure ADAS system safety and reliability?



Key Driver for Type of Sensors in ADAS Systems

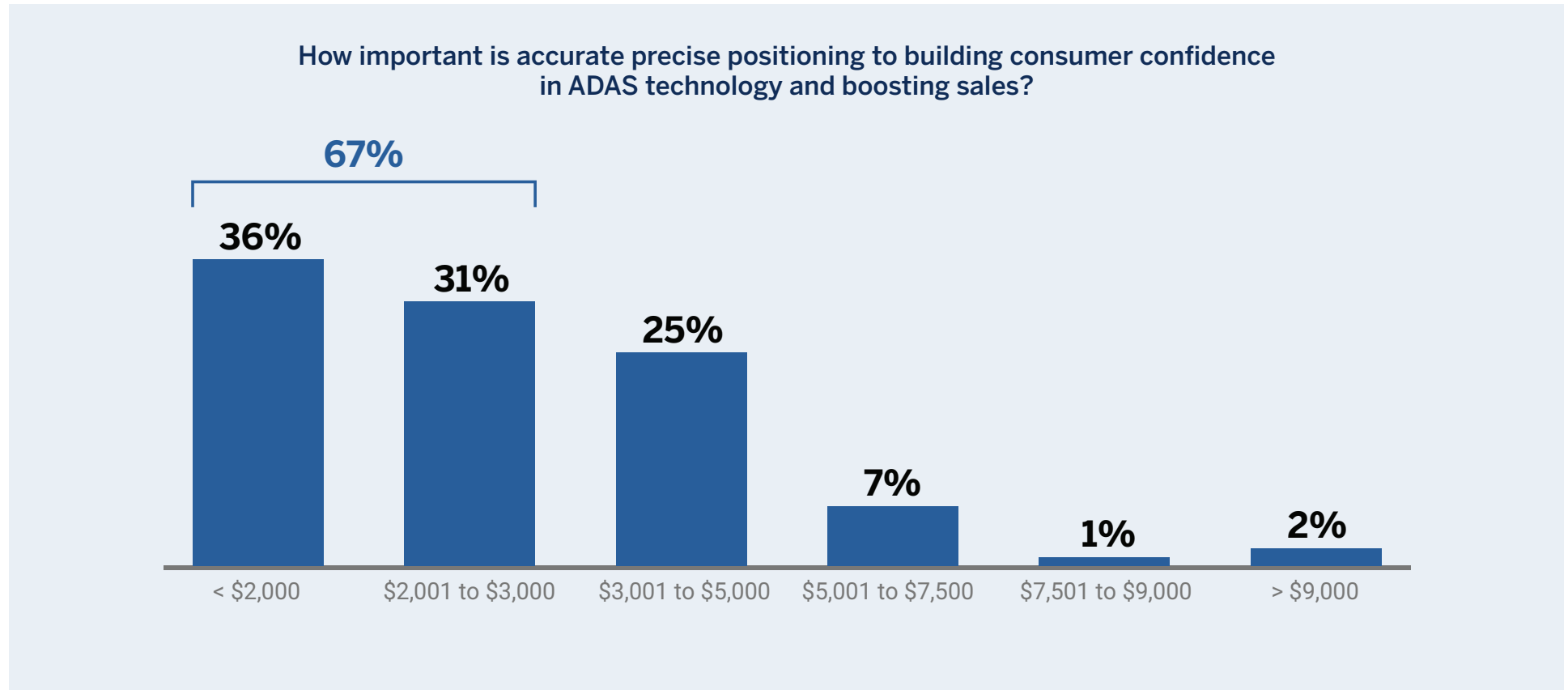
The key drivers for the type of sensors used in ADAS systems are safety (38%) and cost (30%).

Which will be the key driver for automakers in determining how many and what type of sensors are used in ADAS systems?



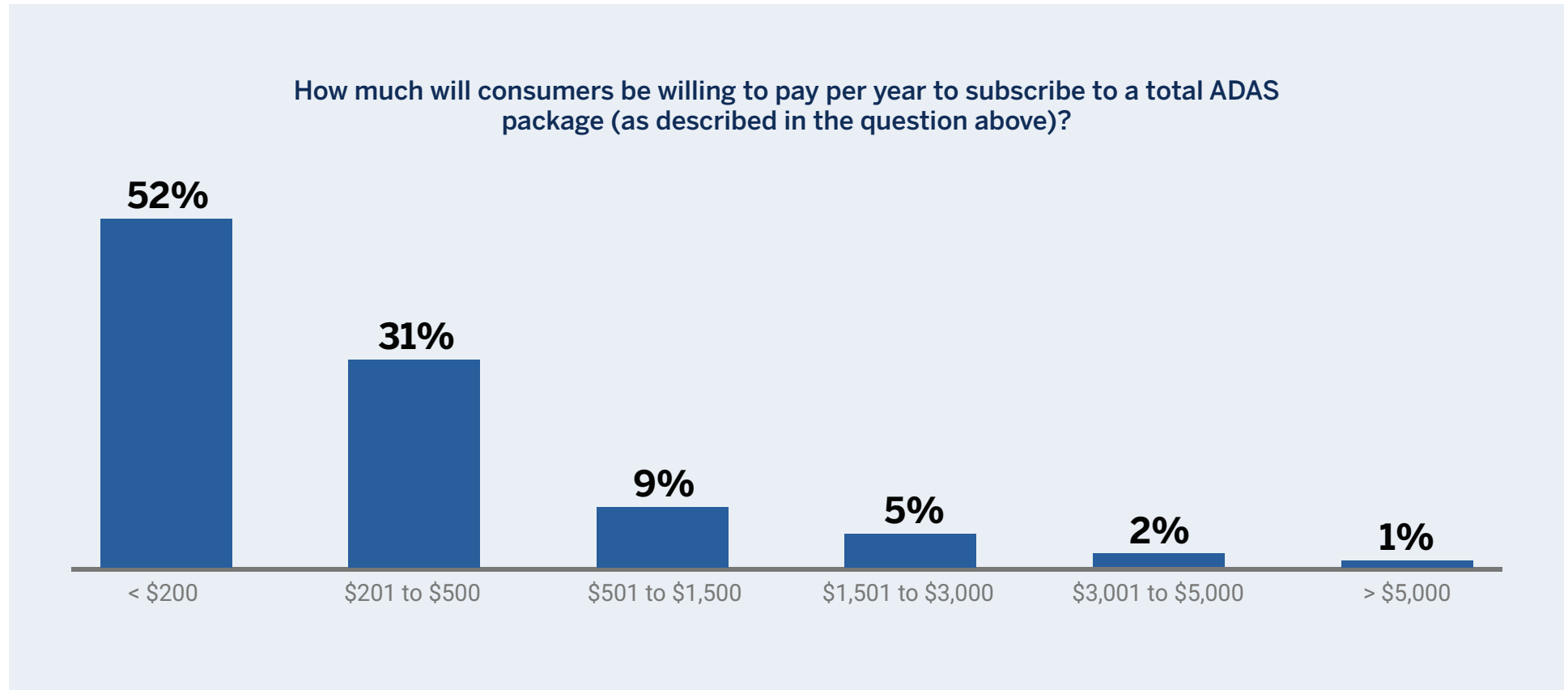
Consumer Price Point for Optional Level 2+ ADAS Package

Two-thirds (67%) of respondents indicate that consumers will pay at most \$3,000 one-time for an optional Level 2+ ADAS package.



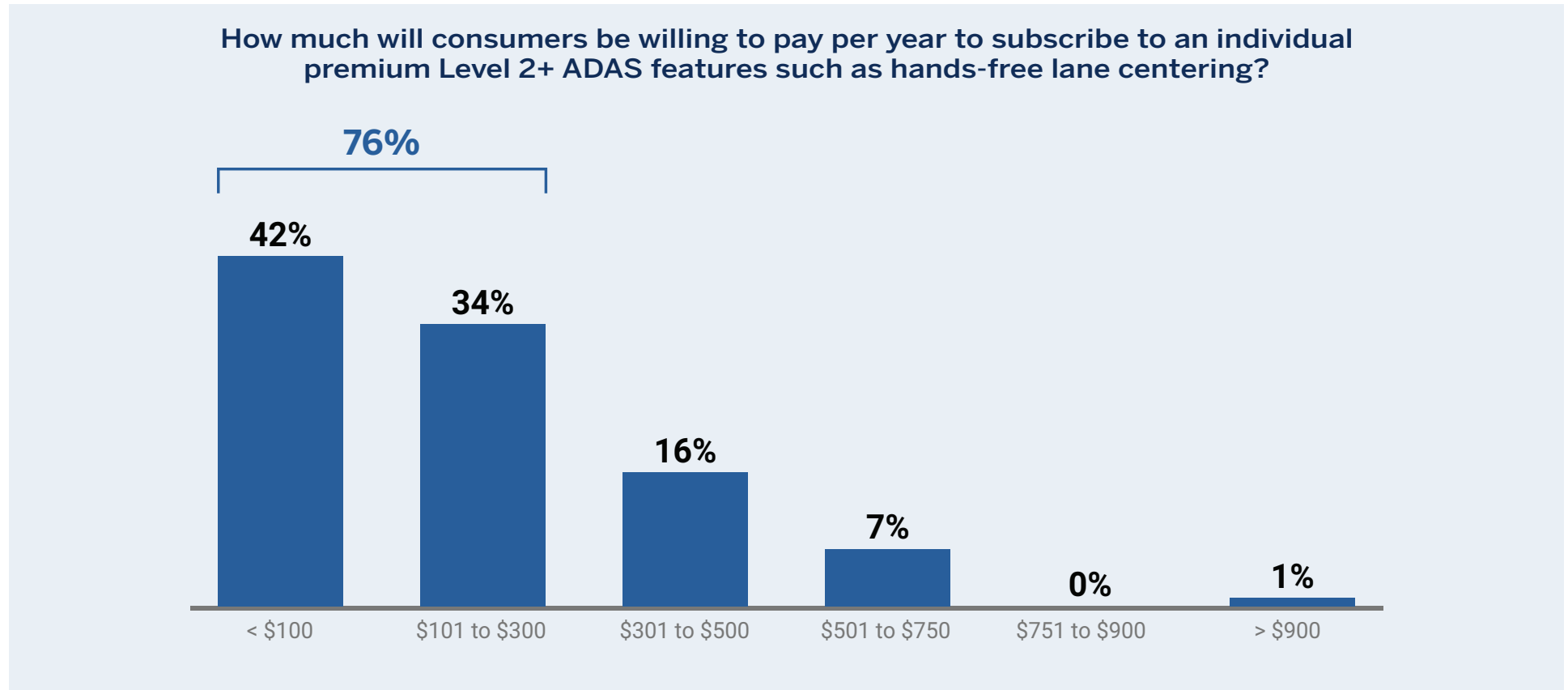
Consumer Price Point to Subscribe to a Total ADAS Package

Over half of respondents indicate that consumers will be willing to pay less than \$200 per year to subscribe to a total ADAS package.



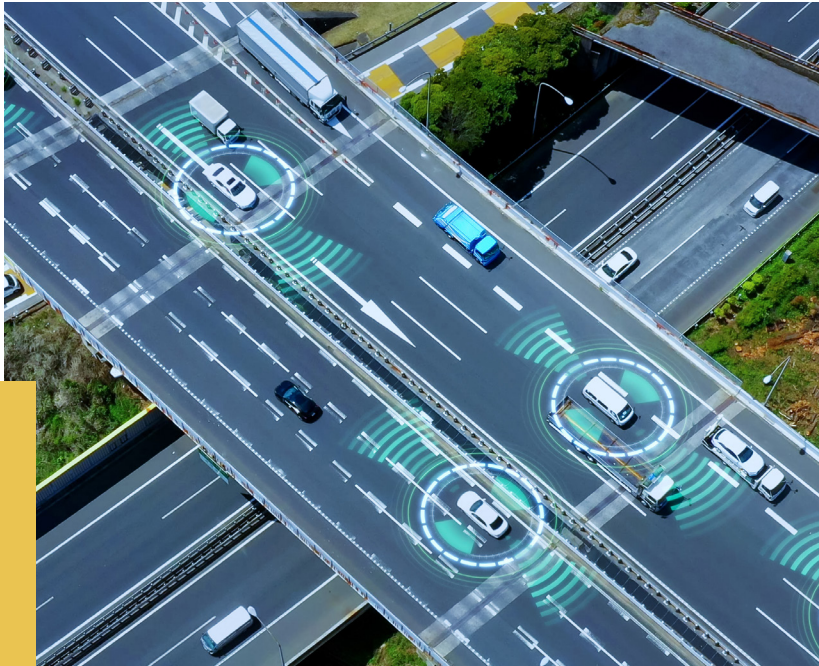
Consumer Price Point for Individual Level 2+ ADAS Features

Three-fourths (76%) of respondents indicate that consumers will pay \$300 or less annually for individual premium Level 2+ ADAS features.

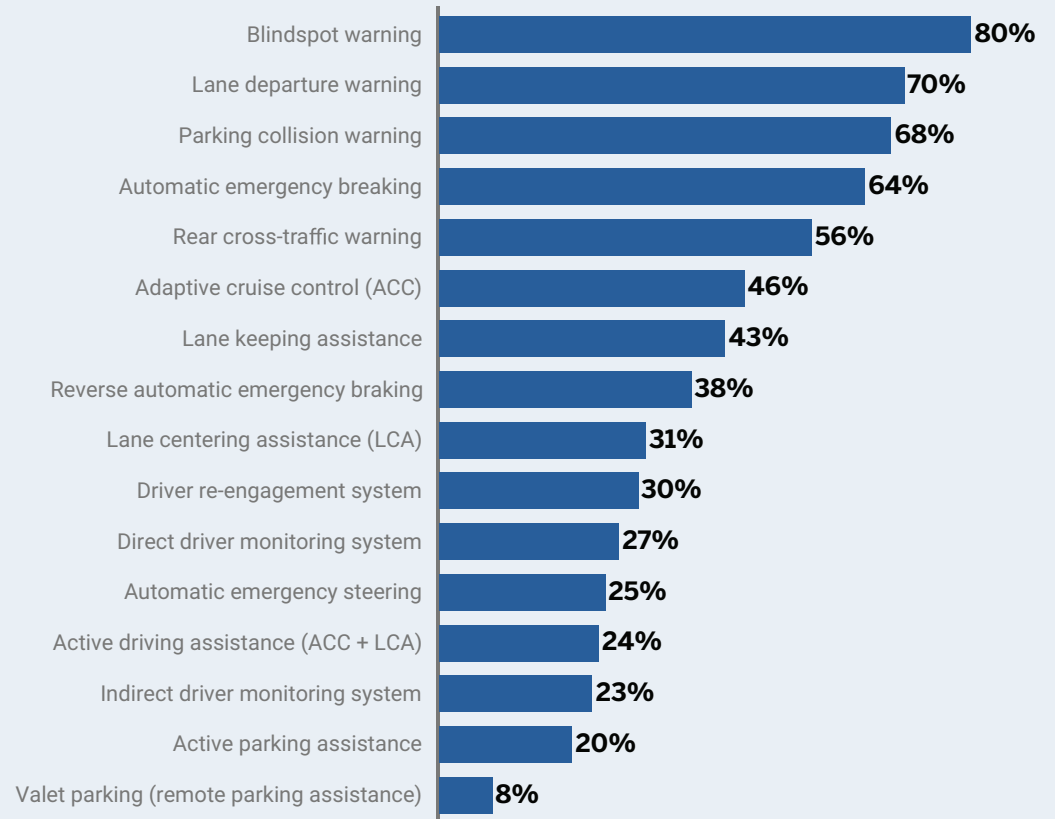


Features Expected to be Standard Equipment in 2025

The leading feature expected to be standard equipment in 2025 is blindspot warning (80%). The second-tier features expected to be standard equipment are lane departure warning (70%), parking collision warning (68%) and automatic emergency braking (64%). A third-tier feature is rear cross-traffic warning (56%).



Which of the following features do you expect to be standard equipment, optional equipment, offered as a subscription service or required by regulatory agencies in 2025?



Features Expected to be Optional Equipment in 2025

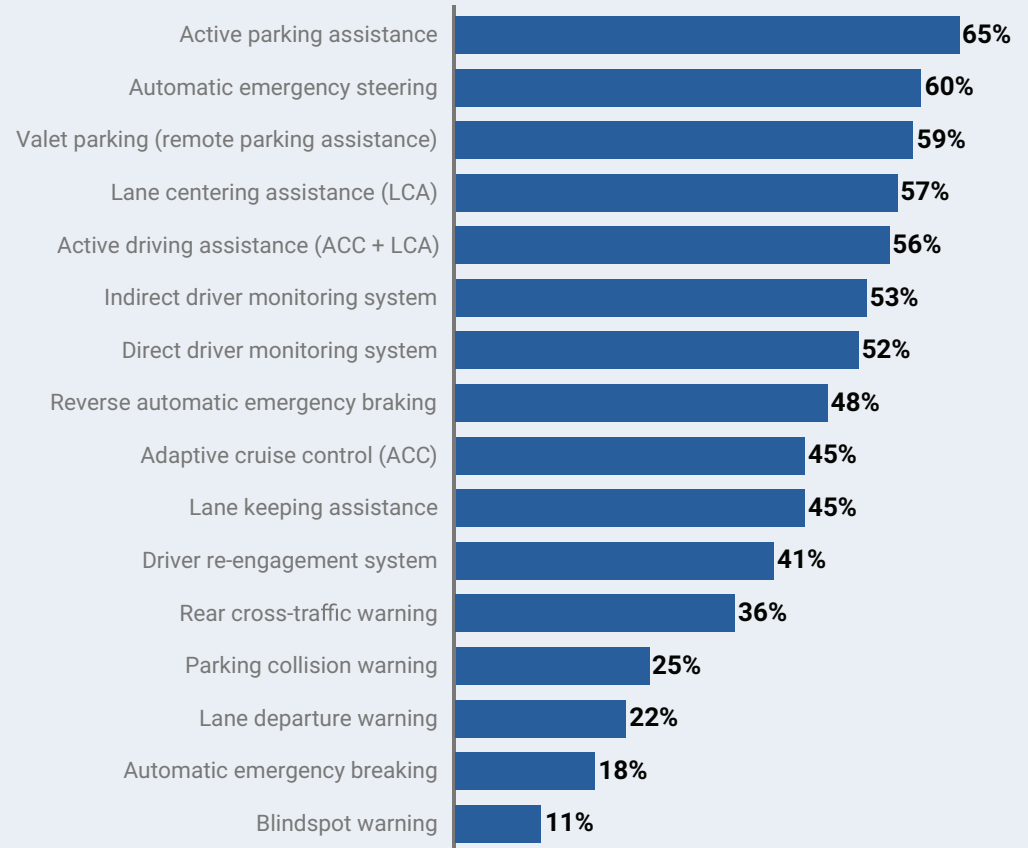
Features that are expected to be optional equipment in 2025 are not as clearly delineated as the features to be expected to be standard equipment.

The top five features are:

- Active parking assistance (65%)
- Automatic emergency steering (60%)
- Valet parking (59%)
- Lane centering assistance (57%)
- Active driving assistance (56%)



Which of the following features do you expect to be standard equipment, optional equipment, offered as a subscription service or required by regulatory agencies in 2025?

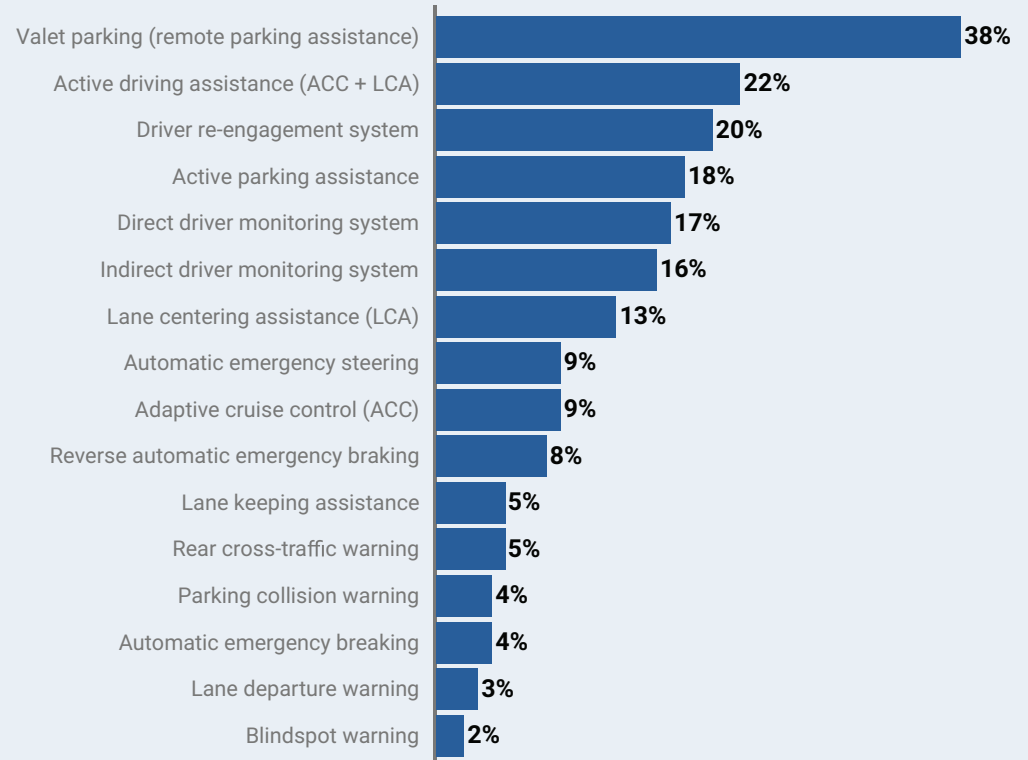


Features Expected to Offered as a Subscription Service in 2025

None of the features are expected by the majority of respondents to be offered as a subscription service. The most likely feature to be a subscription service is valet parking (38%).

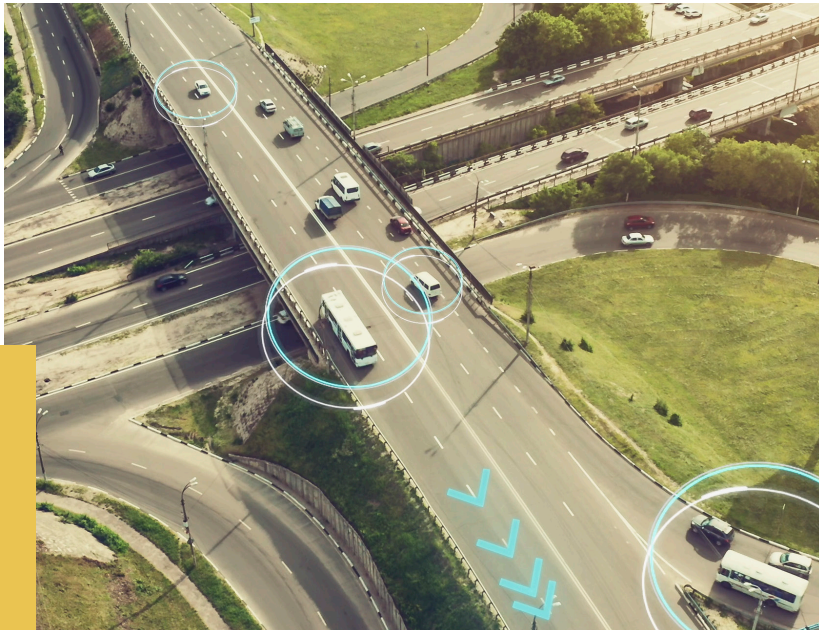


Which of the following features do you expect to be standard equipment, optional equipment, offered as a subscription service or required by regulatory agencies in 2025?

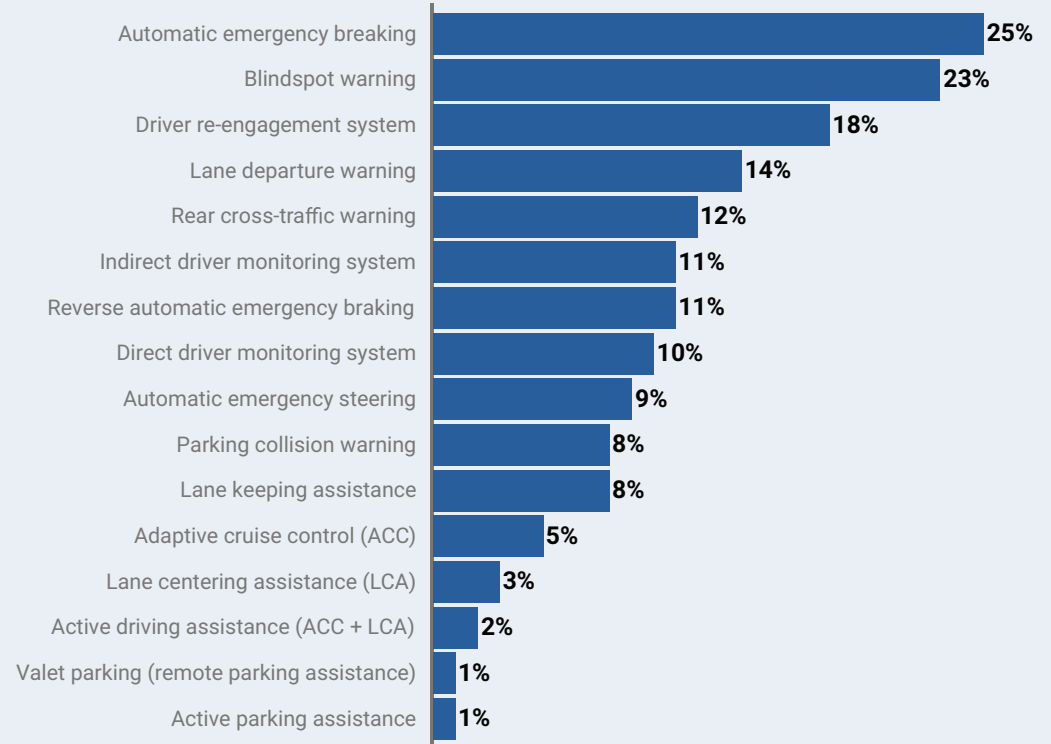


Features Expected to be Required by Regulators in 2025

None of the features are expected by the majority of respondents to be required by regulatory agencies in 2025. The most likely features to be required by regulatory agencies are automatic emergency braking (25%) and blindspot warning (23%).



Which of the following features do you expect to be standard equipment, optional equipment, offered as a subscription service or required by regulatory agencies in 2025?

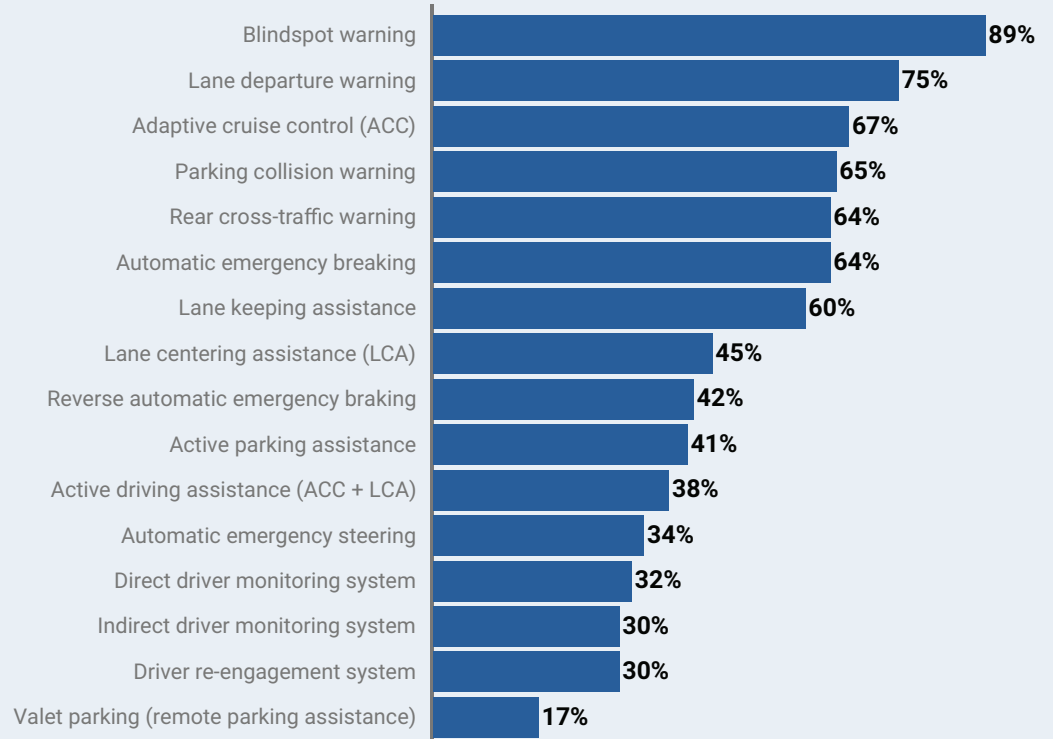


Most Popular ADAS Features with Consumers

The feature that is expected to be most popular with consumers is blindspot warning (89%). The second-tier features expected to be most popular with consumers is lane departure warning (75%). A third tier consists of adaptive cruise control (67%), parking collision warning (65%), automatic emergency braking (64%), rear cross-traffic warning (64%) and lane keeping assistance (60%).



For each ADAS feature in this table, select the items you expect to be most popular with consumers and those you believe will help drive new revenue for automakers:

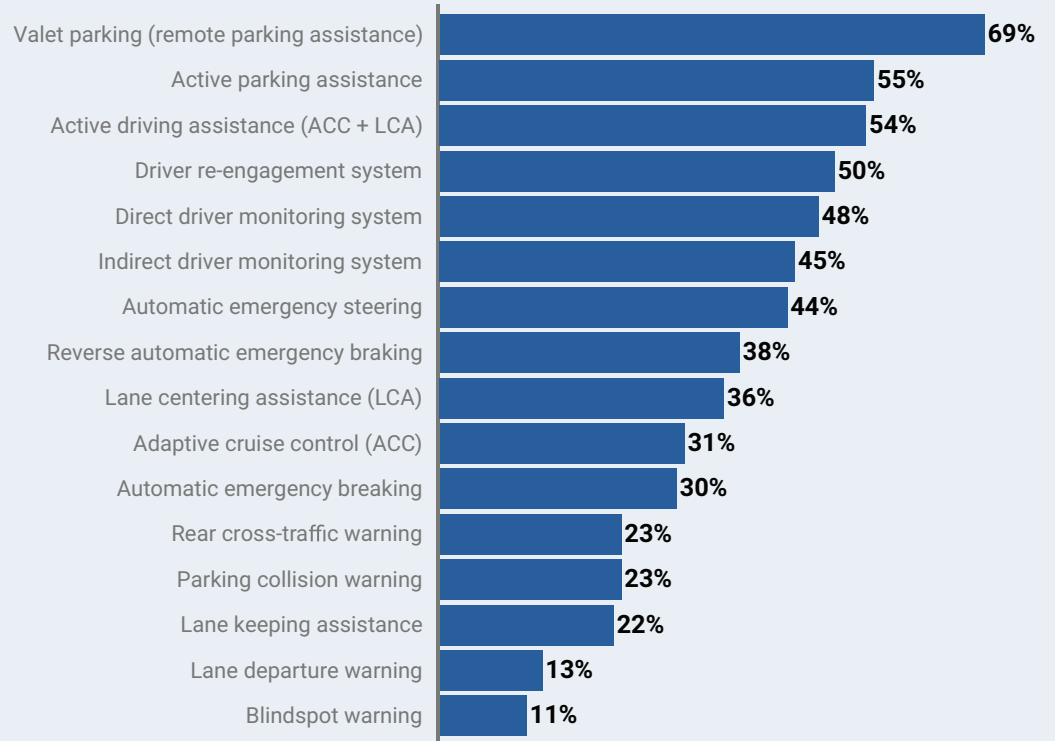


ADAS Features That Will Drive Automaker New Revenue

The most likely feature that is expected to drive new revenue for automakers is valet parking (69%). A second tier of features include active parking assistance (55%), active driving assistance (54%), driver re-engagement system (50%) and direct driver monitoring system (48%).



For each ADAS feature in this table, select the items you expect to be most popular with consumers and those you believe will help drive new revenue for automakers:

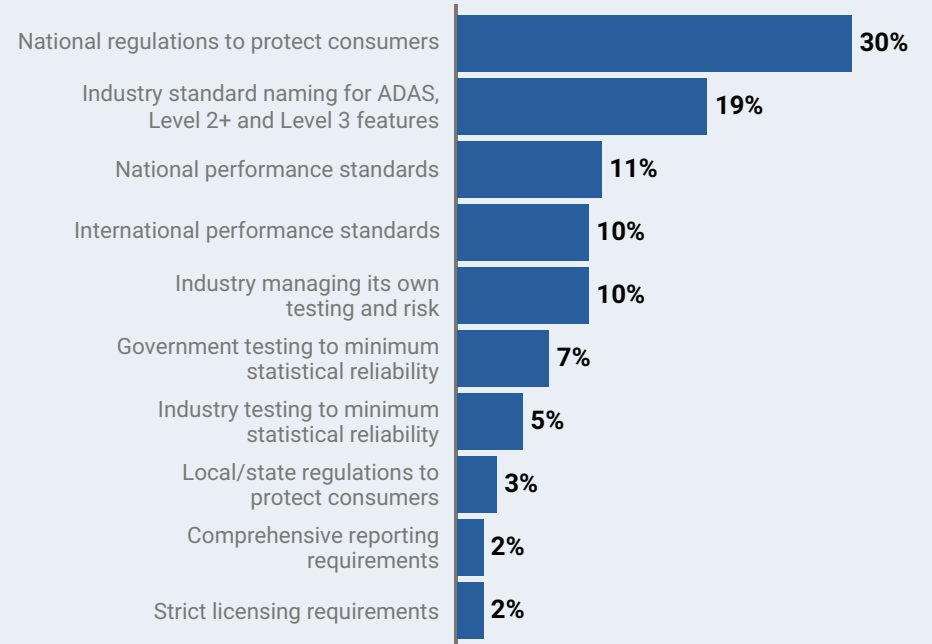


Most Important Factor for Success

The respondents are divided across a number of factors that would be the most important for the success of ADAS technology and autonomous vehicles. The leading factor is having national regulations to protect consumers (30%).



Which of these is most important to the success of ADAS technology and autonomous vehicles:

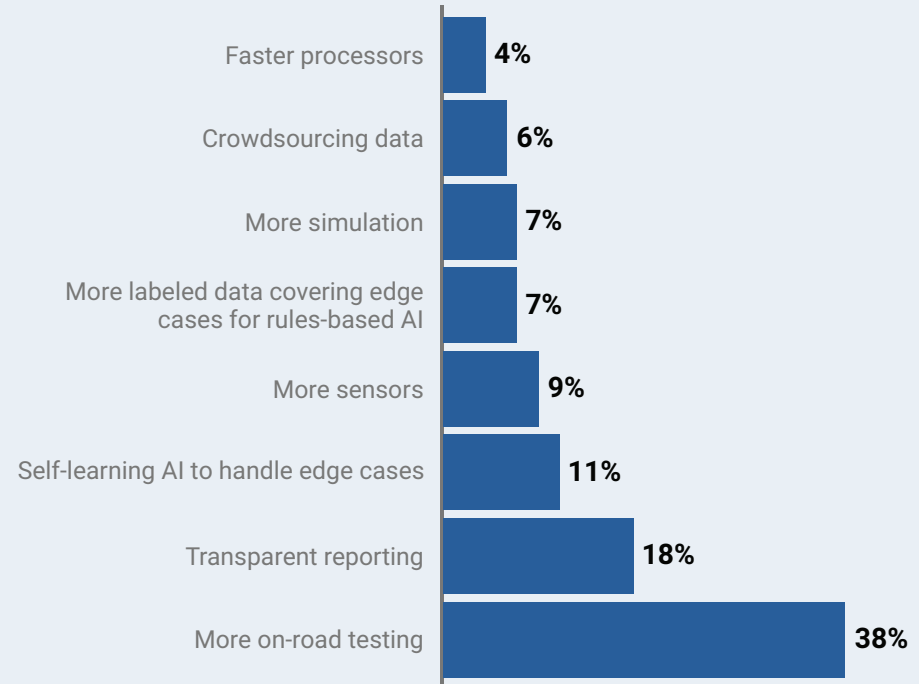


Method to Achieve Reliability and a Safety Track Record

The clear leading factor on how OEMs will achieve a sufficient level of reliability and a track record of safety is more on-road testing (38%).



How will OEMs achieve a sufficient level of reliability and a track record of safety for ADAS, Level 3 and Level 4 technology?



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