NATIONAL DISTRACTED DRIVING COALITION

The Role of Advanced Driver Assistance Systems in Preventing Distracted Driving

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What are advanced driver assistance systems and how do these systems work?

In the past, vehicle safety has often focused on how well a vehicle protects occupants in a crash. However, more recently, there has been an increased emphasis on driver support features and crash avoidance technologies to help prevent or reduce road crash severity.

Advanced driver assistance systems (ADAS) represent a broad class of in-vehicle systems that use sensors such as cameras and radar to detect objects (e.g., vehicles, pedestrians, cyclists) in the surrounding roadway environment. This information is used to provide warnings to drivers about critical safety issues, or in some cases actively intervene if drivers fail to take action.

Support features also use in-cabin sensors to help drivers mitigate or reduce the likelihood of potential crashes resulting from risky behaviors such as speeding, distraction, and impairment.

What is the purpose of ADAS technologies and who uses them?

ADAS are designed to support drivers by providing alerts and with certain features, automating specific driving tasks to assist drivers with crash avoidance. The benefits of this type of support include reducing the likelihood of crashes and making the driving experience more pleasant as well as increasing driving confidence. Several examples of current technologies include:

ADAS represents a shift from protecting people in crashes to helping prevent crashes before they happen.

- Crash avoidance systems are designed to help mitigate or reduce crashes by warning or acting for drivers.
  - **Lane departure warning (LDW)** systems primarily use cameras to identify lane markings and provide alerts if drivers unintentionally steer or drift out of their lane.
  - **Automatic Emergency Braking (AEB)** systems are designed to detect when a crash is imminent and apply the brakes if drivers fail to respond.
- Driver convenience technologies automate part of the driving task but aren't designed with safety as the primary objective.
  - **Adaptive Cruise Control (ACC)** uses radar, cameras, or other sensors to detect vehicles in the lane ahead and automatically adjust a vehicle's set cruise speed to maintain a safe distance between vehicles.
  - **Partial automation systems** combine lane centering with ACC to provide continuous steering and speed input but require drivers to monitor the driving task. This is the most advanced system that is currently widely available to consumers looking to buy a vehicle with automation.
- Driver support features are designed to encourage safer driving behaviors and are increasingly common in new vehicles.
  - **Intelligent Speed Assistance (ISA)** helps drivers maintain the speed limit by providing an alert or slowing the vehicle when it exceeds the posted speed limit.
  - **Driver attention support** uses in-cabin sensors to help detect driver inattention to keep drivers focused on the road. These support features are also evolving to help identify drowsy driving and signs of impairment.

What role does this technology play in driver safety and how frequently are ADAS used?

ADAS are designed to prevent crashes under certain conditions and have a positive impact on safety outcomes in these scenarios. The greatest safety benefits accrue from systems that provide active intervention such as AEB. In contrast, systems that simply warn drivers, such as Forward Collision Warning (FCW), may have more limited benefits. The Insurance Institute for Highway Safety (IIHS) has conducted many studies in the last 15 years which have consistently shown that certain vehicles equipped with crash avoidance systems have significantly lower crash rates than the same vehicles without these systems. However, systems designed to ease the driving task by maintaining speed and lane control have not to date been shown to consistently[1] influence crash rates. It is important that drivers do not misuse these systems to engage in unsafe behaviors like speeding or distraction.

What are some common questions and misconceptions about ADAS?

Question: If my vehicle has ADAS technology, can I text and drive or use it to get home safely if I am impaired or drowsy?

No. While it may be possible to hail a self-driving taxi in some US cities, you cannot yet buy a car that is capable of driving itself. All vehicles for sale to the public require drivers to be sober, engaged in the driving task, and prepared to resume control of the vehicle.

Question: Does reliance on crash avoidance technology reduce driver attentiveness or increase the risk of distraction?

There is no strong evidence to suggest drivers of vehicles equipped with crash-avoidance systems are less attentive when driving. The support provided by Lane Departure Warning systems and AEB/FCW systems can reduce rear-end and lane drift crashes which are highly correlated with visual distraction. However, these systems are designed to assist but not replace an attentive driver. While they can help mitigate certain risks, safe driving still depends on drivers remaining alert and engaged behind the wheel.

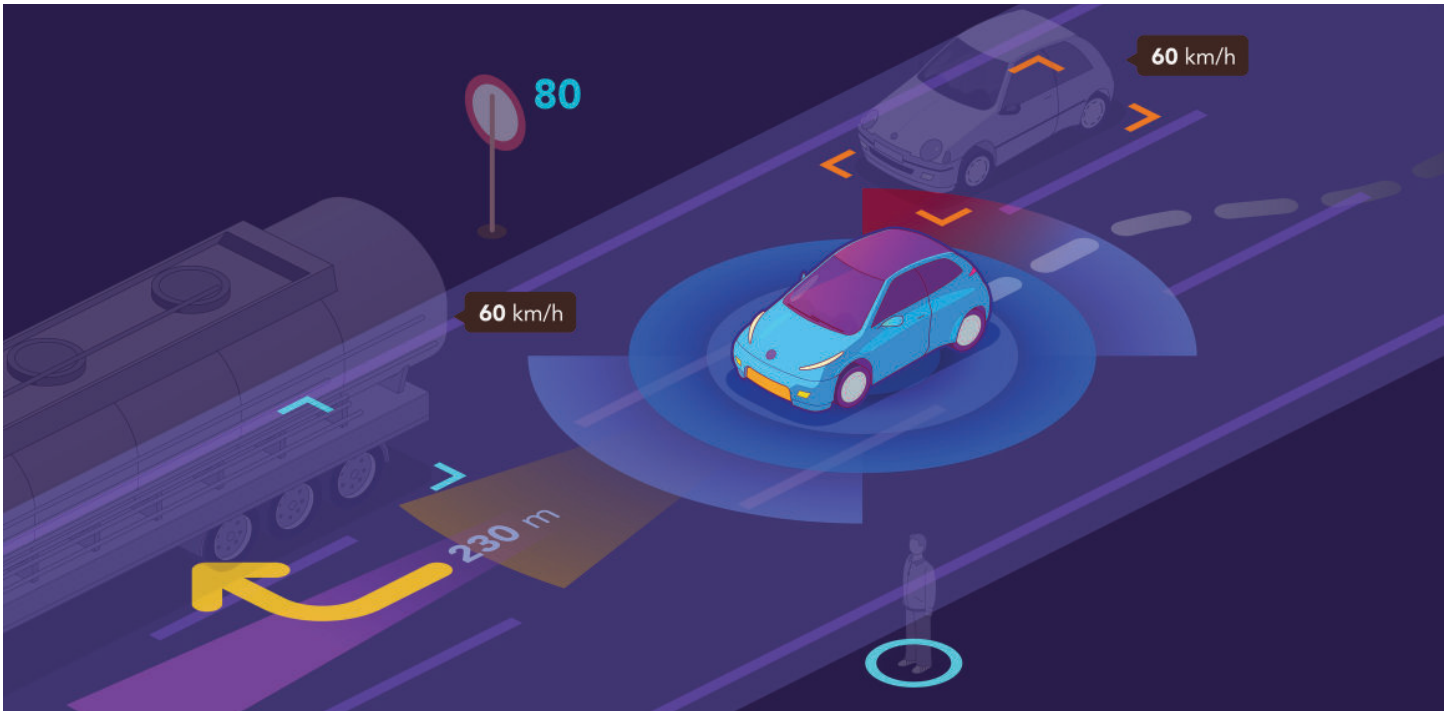
[1] Cicchino, J. B. (2025). Convenience or safety system? Crash rates of vehicles equipped with partial driving automation. Traffic Inj Prev, 26(6), 631-641. doi:10.1080/15389588.2024.2448511.

Question: Is investing in crash avoidance technology worth it?

Vehicles equipped with crash avoidance systems have the potential to reduce the risk of serious injury and may help lower the frequency and cost of insurance claims. However, the repair costs of vehicles with a crash avoidance system are usually higher than in cars without the system. Despite these higher repair expenses, the ability of these technologies to prevent certain collisions or lessen their severity can contribute to meaningful safety and financial benefits over time.

Call-to-action

- Safe and alert driving behavior is still essential when driving. Drivers should keep their eyes on the road, hands on the wheel, and minimize the use of portable devices to stay fully engaged.
- Crash avoidance technologies, including ADAS, can help prevent certain types of crashes. However, these systems have limitations and should never be used as a justification for unsafe, inattentive or impaired driving.
- If you invest in crash avoidance features, ensure they are activated, maintained and used as designed to maximize their effectiveness. For example, while lane departure warning systems may have lower levels of consumer acceptance, they can significantly reduce lane-drift crashes—but they only work when turned on.
- For vehicles equipped with partial automation, drivers should understand both the capabilities and limitations of these systems. It is critical to remain attentive, monitor road conditions, and be prepared to take control at any time.



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The **National Distracted Driving Coalition (NDDC)** was formed in March 2021 to address distracted driving, which is a contributing factor to road deaths and injuries. This road safety issue is a priority concern shared by many organizations across many sectors. A diverse cross-section of entities, representing academia, non-profits, government, advocacy, and industries, including insurance, transportation, automotive and technology, have come together to create a National Action Plan to tackle this important issue.

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The National Distracted Driving Coalition (NDDC), formed by the National Transportation Safety Board, is composed of diverse members and stakeholders representing a variety of organizations, including non-profits, industries, governments and communities. The diversity of views and opinions is a key feature of the NDDC designed to encourage the development of innovative approaches to preventing distracted driving. This strategy enables the NDDC to explore multiple tactics to reduce distracted driving crashes. In light of this diversity, it is unlikely consensus can be achieved across all organizations with respect to materials produced. NDDC participation does not suggest all organizations necessarily agree with, or support, NDDC proposals, recommendations, or educational materials, and it would be improper to impute any one organization's agreement with, or support for, NDDC proposals, recommendations or materials solely on the basis of NDDC participation. Similarly, organizations may advance views or positions that do not necessarily represent the NDDC. Those beliefs, opinions, or statements should be considered to be solely those of the individual organization and not of the NDDC.

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