THE EVOLUTION AND BENEFITS OF COLLISION AVOIDANCE TECHNOLOGY

Collision avoidance systems use cameras and sensors to detect obstacles and help drivers safely navigate roads and highways. Learn how far the technology has come, what's available to fleet managers, and how collision avoidance systems reduce the number, severity, and cost of crashes.

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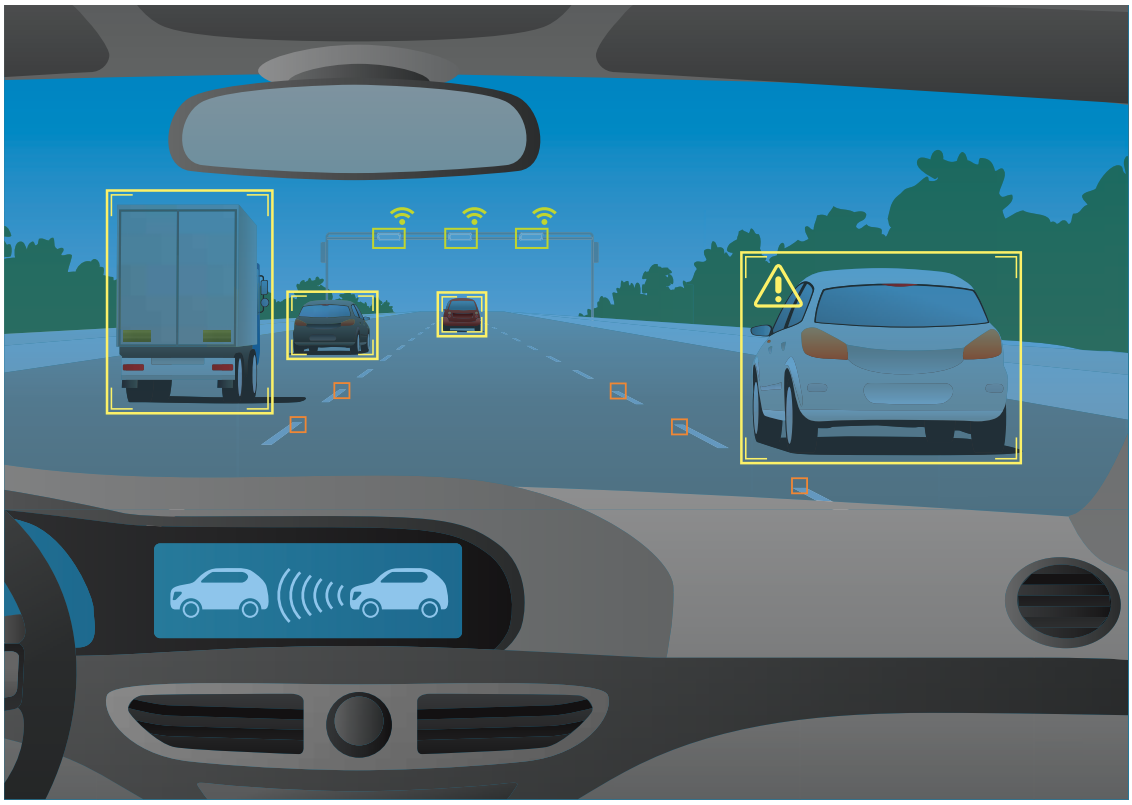

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"… according to a 2016 study from the Insurance Institute for Highway Safety, forward collision warnings can cut rear-end crash frequency by 23%."

Collision avoidance technology makes drivers and vehicles safer by scanning the roadway for imminent danger. Mobileye, a leading provider of factory-installed and aftermarket collision avoidance systems, uses a single, camera-based sensor to scan the road ahead. When an imminent collision, unsafe following distance, lane departure, or speed limit violation is detected, the system issues visual and audible alerts, giving the driver a critical opportunity to react and correct. For example, according to a 2016 study from the Insurance Institute for Highway Safety, forward collision warnings can cut rear-end crash frequency by 23%.

These systems have become increasingly popular among vehicle manufacturers, particularly in the luxury segment. But collision avoidance technology is also available in the form of aftermarket add-on products, giving fleet managers the opportunity to raise their safety score with the vehicles they already have in service. In fact, collision avoidance technology is the first step in ultimately leading to autonomous vehicles. In order to determine what may be the best solution for your fleet, it's important to make a distinction between the various levels of collision avoidance systems — sometimes also referred to as driver assistance features —and how it can make an impact on your fleet's safety.

To find out, let's explore:

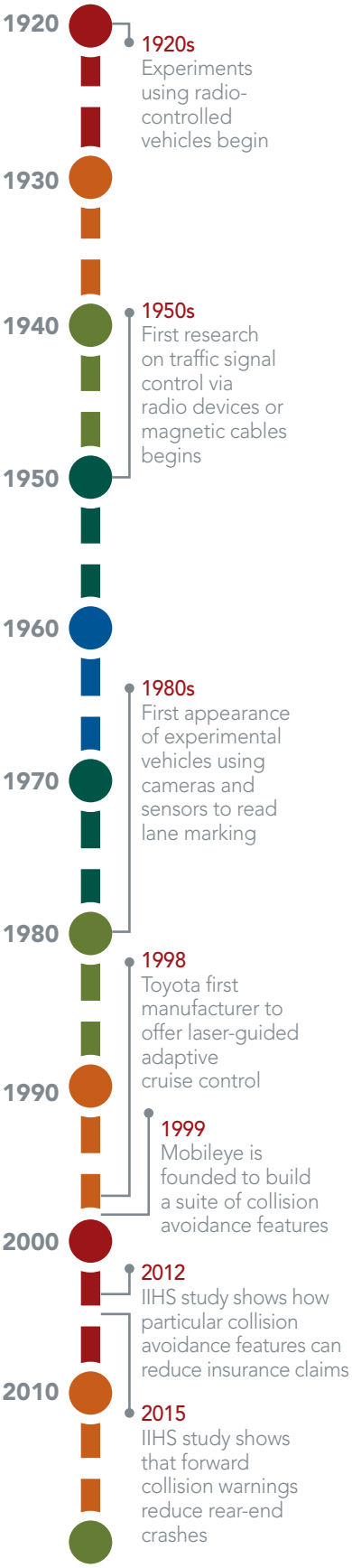
1. How NHTSA categorizes and defines the various levels of collision avoidance and automated vehicles
2. How much progress has been made, including the role of collision avoidance technology
3. How collision avoidance systems promote safe driving and reduce fleet costs

AUTONOMOUS DRIVING DEFINED

In 2013, the National Highway Traffic Safety Administration (NHTSA) released its Policy on Automated Vehicle Development. The policy serves as guidance for state regulators as they adapt to the increasing presence of experimental vehicles on public roads. It also includes a handy reference outlining the various levels of automation with which a vehicle could be equipped.

AUTOMATED VEHICLE TECHNOLOGY "LEVELS"	
LEVEL 0 = NO AUTOMATION	The driver remains in complete control of the vehicle at all times, manually operating the accelerator, brakes, and steering wheel.
LEVEL 1 = FUNCTION-SPECIFIC AUTOMATION	The driver remains the primary operator but may be assisted by some automated controls. NHTSA's policy includes the examples of electronic stability control (ESC) and automatic (or "pre-charged") braking; the agency has mandated that all new vehicles sold in the U.S. (with very few exceptions) be equipped with ESC as of the 2012 model-year.
LEVEL 2 = COMBINED FUNCTION AUTOMATION	At least two primary automated controls work in unison without driver input, for example, adaptive cruise control and lane-keeping assist.
LEVEL 3 = LIMITED SELF-DRIVING AUTOMATION	Once underway, the driver can cede control of the accelerator, brakes, and steering to the vehicle itself, but is expected to remain in the driver's seat and be available to retake control at any moment. A good example is the "Autopilot" feature in the Tesla Model S.
LEVEL 4 = FULL SELF-DRIVING AUTOMATION	Whether occupied or unoccupied, the vehicle is expected to go from Point A to Point B without human input.

Aftermarket collision avoidance systems are best described as "Level 0" technology because they are designed to alert the driver to potential trouble, not to take control of the vehicle. Level 0 serves as the basis for these other technologies, and is also responsible for a significant reduction in collisions, such as the 23% reduction in rear-end crashes mentioned at the beginning of this paper.



PROGRESS AND AVAILABILITY

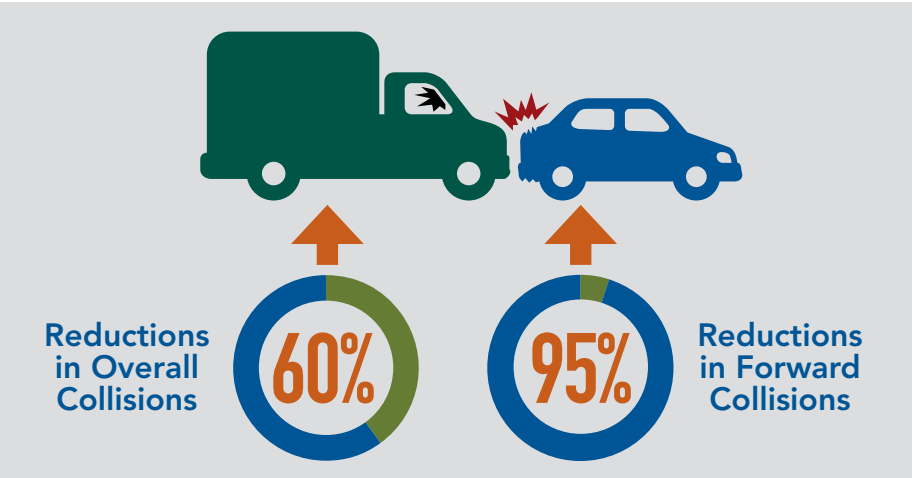
The first attempts to build driverless cars began not long after the invention of the automobile. Experiments with radio-controlled vehicles in the 1920s and '30s gave way to fantastical plans to control traffic via signals from radio devices or magnetic cables embedded in "electronic highways" in the 1950s and '60s. The first experimental vehicles to use cameras and sensors to read lane markings appeared in the 1980s and '90s. In 1998, Toyota became the first manufacturer to offer a production vehicle with laser-guided adaptive cruise control.

Founded in 1999, Mobileye quickly established itself as the industry leader in collision avoidance technology. The company has partnered with BMW, General Motors, Hyundai, Volvo, Renault-Nissan, and other manufacturers to add collision avoidance systems as standard or optional equipment in passenger cars and commercial vehicles. Mobileye is also available as an aftermarket technology as well. This means that fleets, and even consumers, can take advantage of this safety technology without buying new vehicles.

Through a single camera lens, Mobileye's technology now offers a multitude of advanced collision avoidance features, including:

- Forward collision warnings
- Lane departure warnings
- Tailgate monitoring
- Pedestrian collision warning
- Intelligent high beam control
- Speed limit alerts

The Mobileye system connects a front-mounted camera sensor with a dashboard-mounted display. When a collision is imminent or a driver follows too closely, drifts out of their lane without signaling, or exceeds the speed limit, the system emits visual and auditory warnings. The primary effect is to give the driver an opportunity to react. The long-term effect is to train drivers to avoid the behaviors that set off the alarms.



THE GREAT RACE TO AUTONOMOUS DRIVING

In an interview with Forbes magazine's Joann Muller, Mobileye's Cofounder, CTO, and Chairman, Prof. Amnon Shashua, explained how the same technology that powers his company's collision avoidance systems can be paired with high-definition mapping software to self-navigate vehicles through busy streets. Shashua's personal vehicle, a factory-built Audi A7, is one of several test vehicles in Mobileye's fleet.

"I let go of the wheel and let the car drive," Shashua told Forbes.

Mobileye's technology is designed to map routes and react to traffic conditions in real time. The company is currently working with General Motors, Volkswagen, and Renault-Nissan — which together account for about 30% of all the cars and trucks produced and sold worldwide — to introduce the technology to the new-vehicle market. With Mobileye's help, BMW has committed to producing fully autonomous passenger cars by 2021.

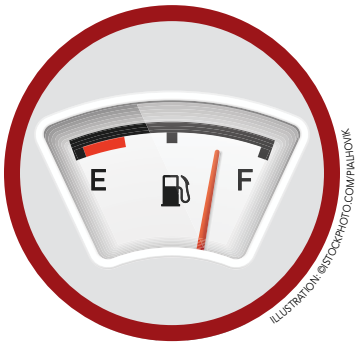
"The beauty is there are other incentives for having communications and cameras in the car," Shashua said, noting that front-mounted cameras will soon be ubiquitous, and manufacturers are pushing for cloud-connected vehicles to which they can send software updates remotely.

MAKING FLEETS SAFER

Business owners and fleet managers nationwide are investing in collision avoidance technology to make their fleets safer by curbing bad driving behavior, acting as a "third eye" to increase drivers' awareness of their surroundings, and reducing or mitigating collisions. They are also enjoying a tremendous return on investment: Fewer collisions means fewer repairs, fewer insurance claims, reduced wear-and-tear, and longer service lives.

Better Overall Driving

Reduction in Vehicle Wear & Tear



Reduction in Fuel Consumption

The IIHS estimates that if every vehicle on the road were equipped with the four main types of collision avoidance features — forward collision warning, lane departure warning, blind spot detection and adaptive headlights — that one in three fatal roadway crashes could potentially be prevented or at least mitigated.

As far as frequency of insurance claims, studies continuously show a reduction as well. Across three OEMs with a collision warning system, for example, there was a 7% reduction in property damage claim frequency.

The systems are effective as standalone driver aids, but they can also be used as part of a driver safety training program. Paired with a telematics system, collision avoidance technology gives fleet managers an effective reporting and training tool. Near-collisions, lane departures, and speed limit violations, for example, can be recorded, archived, and reviewed. Fleet managers can use the reports to identify frequent offenders who may require additional coaching, as well as good drivers deserving of positive reinforcement.

Studies have even cited driver preferences for these types of safety systems. In a DOT study with Volvo Trucks and various heavy-duty fleets, more than 80% of drivers surveyed after the study completed said they preferred the trucks with a collision warning system, citing that it helped them maintain and be more vigilant about safe following distances.[6]

It could be several more years before you have the opportunity to add fully autonomous vehicles to your fleet, but collision avoidance technology is available today. The systems offer a proven way to protect your drivers, upgrade your safety training program, and reduce costs.

For more information, visit Mobileye.com today!

RESOURCES

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