

Your Decision to Invest in a Modern Vehicle may Save Your Life

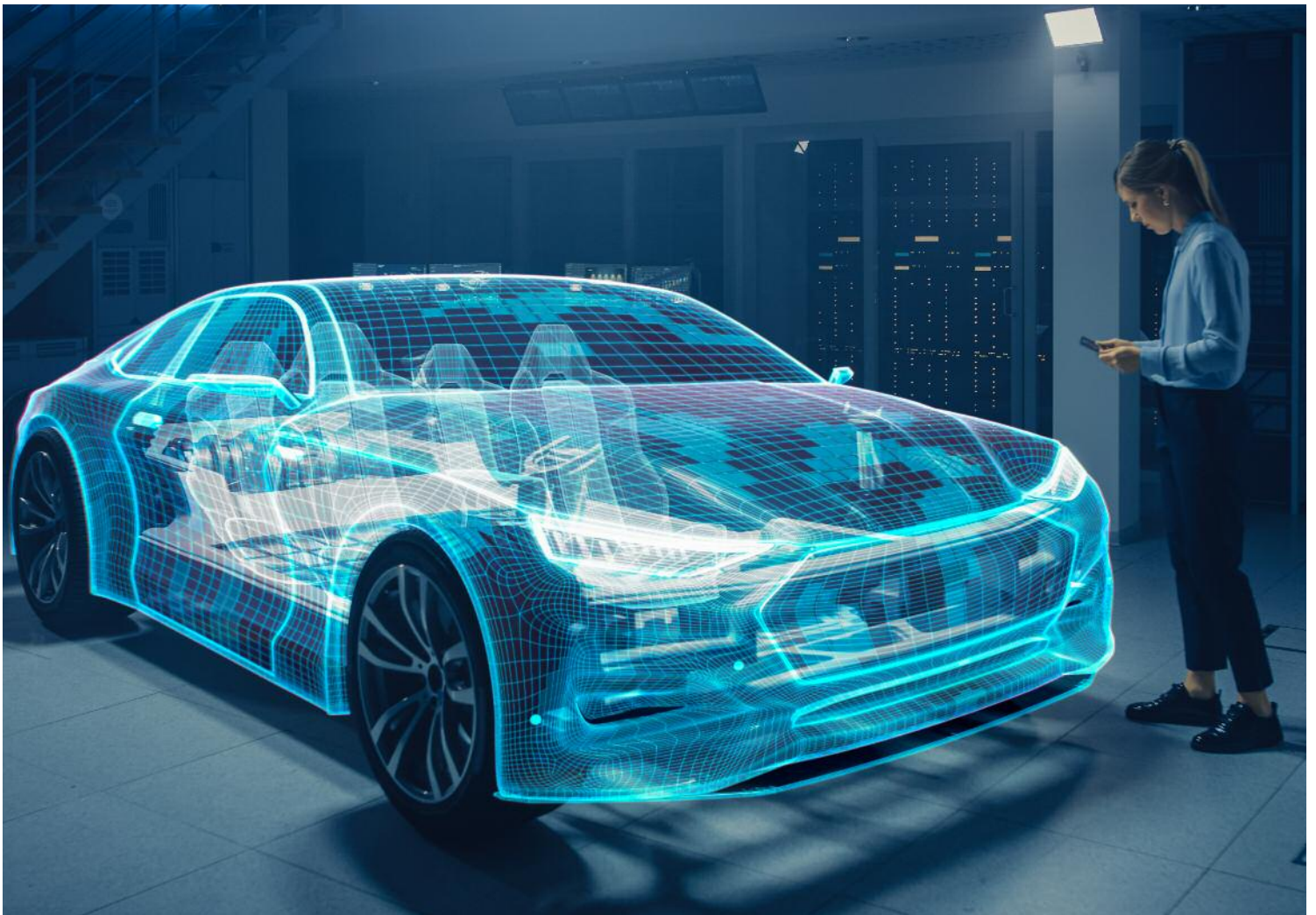
Many people think that because older vehicles are heavier than newer ones, they must also be safer. Statistics demonstrate that this widely held belief is a misconception. Statistically, modern vehicles are far safer than older vehicles. The probability for vehicle occupants to sustain injuries in the case of a traffic accident increases by approximately 1.1% for every year of the vehicle's age. This means that for a vehicle that is twenty years old, the probability for its occupants to be injured in the case of an accident is approximately 24.5% more than that if the occupants were in a recent-year vehicle.

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Why are modern vehicles safer than older vehicles?

Although the bodies of modern vehicles are made out of materials that are thinner and lighter than those used in older vehicles, those materials allow the vehicle's body to act as a cushion to absorb the impact in the case of a traffic accident. This decreases the chances of severe and life-threatening injuries for the vehicle's occupants.

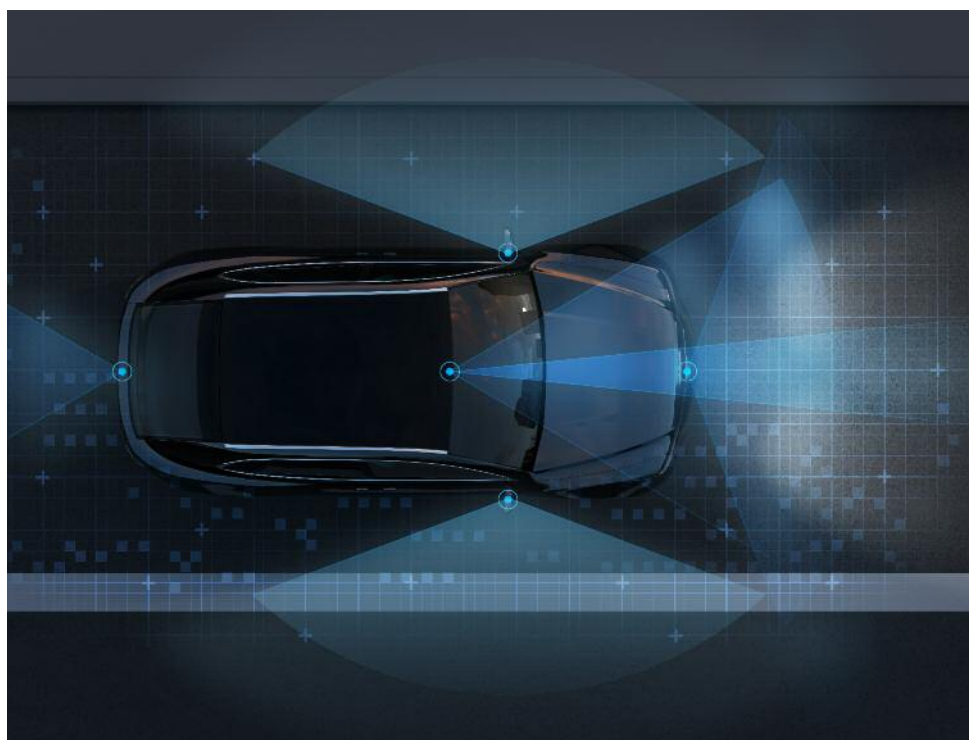
In addition to modern safety features that are now standard and law-mandated, such as seatbelts and airbags, there are several other features that make today's vehicles safer for their occupants when compared to older vehicles.



Modern steering wheels are now wrapped in thick rubber and designed to collapse in the case of an accident. This protects the driver's chest from being crushed, which was one of the most common injuries in traffic accidents involving older vehicles. Seats in modern vehicles are equipped with head restraints that are designed to reduce the probability of a whiplash injury, which was another common injury in traffic accidents involving older vehicles. These safety features found in modern vehicles reduce the severity of injuries in the case of a traffic accident and are referred to as 'passive' safety features since they are only necessitated when an accident does occur.

Active safety features

With the aid of modern technologies, most modern vehicles are now equipped with Advanced Driver-Assistance Systems (ADAS) that help drivers avoid traffic accidents altogether. Some of those active safety features are now standard in most countries, such as antilock braking systems (ABS), which avoid uncontrolled skidding of the vehicles by preventing the wheels from locking if brakes were activated at high speeds or if the road surface was slippery. Rear-view cameras are another standard safety feature required in all new vehicles sold in Canada since 2018. Other active safety features widely vary among

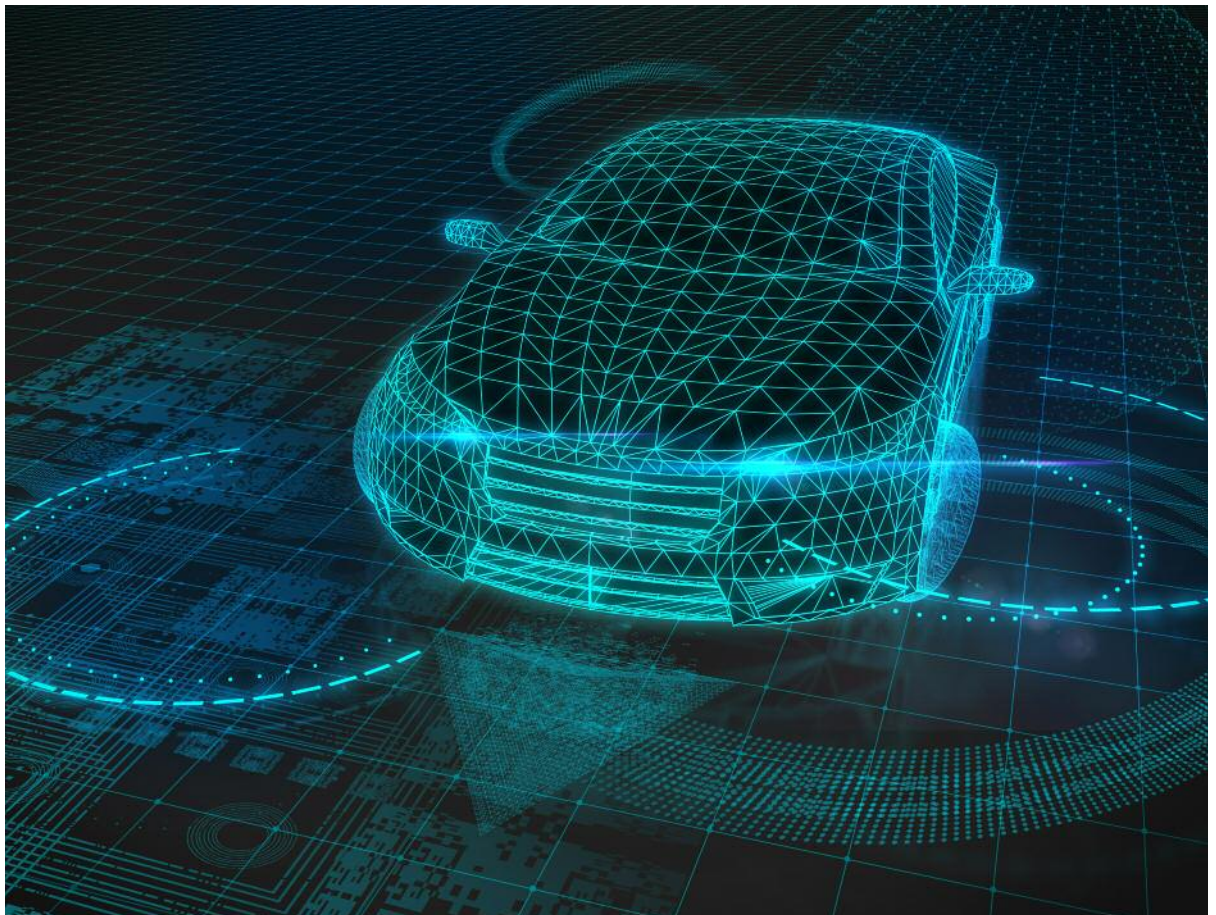


different automakers, but the most common features include electronic stability control systems that automatically detect skidding and apply brakes on individual wheels to regain vehicle's stability. Adaptive cruise control is another active safety feature, which automatically adjusts the speed of the vehicle to maintain a safe distance from the vehicle ahead. Lane departure warning systems provide another example of an active safety feature, where the vehicle continuously scans the lane markings ahead of the vehicle and warns the driver if the vehicle is unintentionally drifting into another lane due to the driver's inattention. Modern active safety features also include tire pressure monitoring systems that alert the driver in case of loss of pressure in any tire.

Are active safety features truly making vehicles safer?

According to research by MarketsandMarkets, the global market for ADAS is projected to rise from \$27 billion in 2020 to an astounding \$83 billion by 2030. ADAS can revolutionize the driving experience. A study conducted by LexisNexis Risk Solutions showed that vehicles equipped with ADAS resulted in a 27% reduction in bodily injury claims and a 19% reduction in property damage claims. A research study conducted by the Insurance Institute for Highway Safety (IIHS) found that vehicles equipped with blind-spot detection resulted in 14% fewer crashes as compared to vehicles without the feature. The same study suggested that if every vehicle sold in the United States in 2015 was equipped with blind-spot monitoring, 50,000 crashes and 16,000 crash injuries might have been prevented. Corey Harper, a researcher at Carnegie Mellon University, found that ADAS reduce the probability of traffic accidents by approximately 3.5%. He also noted that if ADAS were deployed throughout the light-duty vehicle fleet, we could see crash prevention cost savings of up to \$264 billion, assuming all relevant crashes are prevented.

Although ADAS are designed to avoid traffic accidents, they also provide last-second corrective measures that can reduce the severity of



injuries in the case of a traffic accident. In a research study that was led by one of the authors of this article (Dr. Essam Dabbour), it was found that modern vehicles not only reduce the severity of injuries for their own occupants, but they also reduce the severity of injuries for the occupants of other vehicles involved in a traffic accident with a modern vehicle equipped with ADAS. This is due to the reduction in speed provided by ADAS, which can reduce the impact in case of a traffic accident.

Since modern vehicles reduce the risk of accidents and the severity of injuries in the case of an accident, many would assume that this would reduce the cost of car insurance.

Do all modern vehicles have the same level of safety?

Although modern vehicles are generally safer than older ones, there are still variations among them in terms of safety. Vehicle safety is usually assessed under three different scenarios – front impact, side impact, and rollover. Based on the level of potential injury to the vehicle occupants in the three scenarios, that vehicle is given an overall safety rating. The largest two agencies in the world that test vehicles and assign those safety ratings are the United States National Highway Traffic Safety Administration (NHTSA) and the European New Car Assessment Programme (Euro NCAP). Fortunately, the safety ratings by both agencies are publicly available on the agencies' websites so that people can educate themselves about the safety performance of the vehicle they intend to purchase. It is worth noting that these safety ratings are all related to "passive" safety features since they are based on assessing the level of safety for occupants if a traffic accident has already occurred. It is also interesting to know that vehicle safety is now irrelevant to the price of the vehicle. Some lower-priced vehicles have excellent safety ratings that exceed those found in more expensive luxury vehicles.

Impact on car insurance

Since modern vehicles reduce the risk of accidents and the severity of injuries in the case of an accident, many would assume that this would reduce the cost of car insurance. On the contrary, modern safety features found in modern vehicles can in fact push the insurance premiums higher. This can be explained by the higher repair costs in the event the vehicle is involved in an accident. The technology components found in



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modern safety systems are costly. A normal side mirror is cheaper to replace as compared to a mirror that is equipped with a blind-spot monitoring sensor or a lane-departure camera. Similarly, a bumper with proximity sensors would be significantly more expensive when compared to a regular bumper. The list goes on with windshields, heads up displays, tire pressure sensors, and many other parts. "At least thus far, the improvements in safety and accident avoidance hasn't been significant enough to overtake the increase in cost to repair vehicles," says Michael Klein, the president of personal insurance at Travelers. However, this should not discourage buyers. If there is an opportunity to purchase a vehicle with advanced systems that reduce the risk of accidents, or the severity of injuries in the case of an accident, it should be taken.

On the bright side, there are insurance companies that offer incentives for vehicles equipped with ADAS. In 2016, for instance, Aviva started offering a 15% discount to drivers who had installed automatic emergency braking in their vehicles. While it is currently unlikely to receive a significant discount in insurance premiums for modern vehicles, this could change in the future. Vehicle technologies, like any other new technologies, will get cheaper over time, thereby reducing the repair costs. Additionally, with the widespread availability of ADAS, the overall number of traffic accidents could be significantly reduced to the point of warranting a significant reduction in insurance premiums.

Driver behavior is the most important factor

A final word – please remember that despite all the active and passive safety features in modern vehicles, driver behavior will always be the most important factor in traffic safety. Sadly, despite all those advancements, there are still more than 1.3 million people who lose their lives every year in traffic accidents worldwide. Driver behavior is still the most common factor attributed to traffic accidents.



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