

Electronic Stability Control Could Prevent Nearly One-Third of All Fatal Crashes

June 13 2006

An extension of antilock brake technology, electronic stability control (ESC) is designed to help drivers retain control of their vehicles during high-speed maneuvers or on slippery roads. Previous research found significant effects of ESC in reducing the risk of fatal single-vehicle crashes. Using data from an additional year of crashes and a larger set of vehicle models, researchers at the Insurance Institute for Highway Safety have updated the 2004 results and found that ESC reduces the risk of fatal multiple-vehicle crashes by 32 percent.

The new research confirms that ESC reduces the risk of all single-vehicle crashes by more than 40 percent -- fatal ones by 56 percent. The researchers estimate that if all vehicles were equipped with ESC, as many as 10,000 fatal crashes could be avoided each year.

“The findings indicate that ESC should be standard on all vehicles,” says Susan

Ferguson, Institute senior vice president for research. “Very few safety technologies show this kind of large effect in reducing crash deaths.”

Availability varies: ESC is standard on 40 percent of 2006 passenger vehicle models and optional on another 15 percent. It's standard on every 2006 Audi, BMW, Infiniti, Mercedes, and Porsche. Another 8 vehicle makes (Cadillac, Jaguar, Land Rover, Lexus, Mini, Toyota, Volkswagen, and Volvo) offer at least optional ESC on all of their models. But ESC, standard or optional, is limited to 25 percent or fewer models from Chevrolet, Dodge, Ford, Hummer, Mazda, Mitsubishi, Saturn, Subaru,

and Suzuki.

After studies in 2004 by the Institute and National Highway Traffic Safety Administration, some manufacturers announced plans to make ESC standard on all SUVs. The percentage of SUV models with standard ESC has been growing faster than for cars.

As a stand-alone option, ESC costs from about \$300 to \$800, but it can cost more than \$2,000 on some models when packaged with other equipment. A potential problem for increasing consumer awareness is that automakers market ESC by various names including Electronic Stability Program, StabiliTrack, or Active Handling.

“When ESC is optional, this hodgepodge of terms is bound to be confusing,” Ferguson points out. “It’s good that some of the major manufacturers have pledged to make ESC standard on their SUVs in the next few model years, and it should be standard on cars and pickup trucks too.”

How ESC works: Antilock brakes have speed sensors and independent braking capability. ESC adds sensors that continuously monitor how well a vehicle is responding to a driver’s steering wheel input. These sensors can detect when a driver is about to lose control because the vehicle is straying from the intended line of travel — a problem that usually occurs in high-speed maneuvers or on slippery roads. In these circumstances, ESC brakes individual wheels automatically to keep the vehicle under control (see attached diagrams and explanation). When a driver makes a sudden emergency maneuver or, for example, enters a curve too fast, the vehicle may spin out of control. Then ESC’s automatic braking is applied and in some cases throttle reduced to help

keep the vehicle under control.

ESC is relatively new. Only in the last few years have researchers had sufficient data to analyze its effects on real-world crashes. The new Institute study is based on data from the federal Fatality Analysis Reporting System and police reports of crashes in 10 states during 2001-04. Researchers compared crash rates for cars and SUVs without ESC and the same models in subsequent years when ESC was standard (note: some vehicles with optional ESC were included in the no-ESC group because so few buyers choose this option).

More effects of ESC on SUVs: The data in the Institute's 2004 study weren't extensive enough to allow researchers to compute separate risk reduction estimates for cars and SUVs. However, this was possible in the broader analysis that's just completed. While both cars and SUVs benefit from ESC, the reduction in the risk of single-vehicle crashes was significantly greater for SUVs — 49 percent versus 33 percent for cars. The reduction in fatal single-vehicle crashes wasn't significantly different for SUVs (59 percent) than for cars (53 percent).

Many single-vehicle crashes involve rolling over, and ESC effectiveness in preventing rollovers is even more dramatic. It reduces the risk of fatal single-vehicle rollovers of SUVs by 80 percent, 77 percent for cars.

ESC was found to reduce the risk of all kinds of fatal crashes by 43 percent.

This is more than the 34 percent reduction reported in 2004. If all vehicles had ESC, it could prevent as many as 10,000 of the 34,000 fatal passenger vehicle

crashes that occur each year.

Insurance claims show effects on collision losses: The results of the Institute's studies showing significant reductions in serious crash risk are reflected in some insurance losses. According to a new analysis by the Highway Loss Data Institute, an affiliate of the Insurance Institute for Highway Safety, losses under collision coverage are about 15 percent lower for vehicles with ESC than for predecessor models without it. However, ESC doesn't have much effect on property damage liability claims or the frequency of injury claims. These findings track police-reported crashes, which show little effect of ESC on the risk of low-severity multiple-vehicle crashes.

Source: Insurance Institute for Highway Safety

Citation: Electronic Stability Control Could Prevent Nearly One-Third of All Fatal Crashes (2006, June 13) retrieved 9 April 2024 from <https://phys.org/news/2006-06-electronic-stability-one-third-fatal.html>

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