

# STATUS INSURANCE INSTITUTE FOR HIGHWAY SAFETY REPORT

Vol. 41, No. 9, Nov. 21, 2006



**ACURA RDX**

**AUDI A4**

**AUDI A6**

**HONDA CR-V**

**HONDA PILOT**

**HYUNDAI ENTOURAGE**

**KIA SEDONA**

**MERCEDES M CLASS**

**SAAB 93**

**SUBARU B9 TRIBECA**

**SUBARU FORESTER**

**SUBARU LEGACY**

**VOLVO XC90**

# TOP SAFETY PICK

## 2007 WINNERS

Thirteen vehicles earn the Institute's *TOP SAFETY PICK* award for 2007. The winners include four cars, seven SUVs, and two minivans. This award recognizes vehicles that do the best job of protecting people in front, side, and rear crashes based on ratings in Institute tests. Winners also have to be equipped with electronic stability control (ESC).

Vehicles eligible to win are current small, midsize, and large car models plus minivans and small and midsize SUVs. Pickup trucks aren't included in this round of awards because the Institute hasn't begun to evaluate their side crashworthiness. This is the second year of the awards (see *Status Report*, Dec. 17, 2005; on the web at [iihs.org](http://iihs.org)).

"Our crash tests cover the most common kinds of real-world collisions," says Institute president Adrian Lund. "Designating *TOP SAFETY PICK* winners based on the tests makes it easier for consumers to identify vehicles that afford the best

overall protection without sifting through multiple sets of comparative test results."

**Tougher criteria to win:** The Institute rates vehicles good, acceptable, marginal, or poor based on performance in high-speed front and side crash tests plus evaluations of seat/head restraints for protection against neck injuries in rear impacts. The first requirement for a vehicle to become a *TOP SAFETY PICK* is to earn good ratings in all three Institute tests (see pp. 4-5).

A new requirement for 2007 is that the winning vehicles must offer ESC. This addition is based on Institute research indicating that ESC significantly reduces crash risk, especially the risk of fatal single-vehicle crashes, by helping drivers maintain control of their vehicles during emergency maneuvers (see p.5).

"The idea of tightening the criteria for the award is to encourage more vehicle safety improvements," Lund says. "Last year a car could win with an acceptable rating in the rear test instead of the highest rating of good, and electronic stability control wasn't considered. Now it's tougher to win, and some of the 2006 winners don't meet the criteria for this year's award because the manufacturers haven't improved the head restraints from acceptable to good or don't offer ESC."

In particular, the Ford Five Hundred and Mercury Montego, both large family cars, are good crash test performers but they don't have ESC, even optional. The midsize Chevrolet Malibu doesn't have ESC either, and its seat/head restraints aren't rated good. These cars won in 2006 but not 2007.

No small cars won this year's award. The four-door Honda Civic won last year, but most 2007 Civics don't have ESC. Those that do don't have seat/head restraints rated good for rear crash protection.

Three of the 13 winning vehicles for 2007 are from Honda, including an Acura SUV. Three winners are Subaru.

Each year the Institute offers to test early the vehicles that manufacturers think will be candidates to win *TOP SAFETY PICK*. All current car and minivan models plus small and midsize SUVs are eligible.

**Vehicle size and type are factored in:** *TOP SAFETY PICK* is awarded by vehicle size because size and weight are closely related, and both influence how well occupants will be protected in serious crashes. Vehicles that are larger and heavier generally afford better protection than smaller, lighter ones.

"The awards recognize the cream of the crop for safety in the vehicle size classes, but they don't mean a smaller vehicle that's an award winner affords better protection than a larger vehicle that didn't win *TOP SAFETY PICK*," Lund points out.

**Vehicle changes are made to win:** Crash tests have driven major improvements in the designs of all kinds and sizes of passenger vehicles. The Institute began frontal crash tests for consumer information in 1995. Side tests were added in 2003, and the following year a dynamic test to evaluate rear crash protection was introduced. Most vehicles now earn good ratings in the Institute's

### LARGE CAR WINNER

Audi A6 manufactured 12/2006 and later

### MIDSIZE CAR WINNERS

Audi A4, Saab 9-3, and Subaru Legacy with optional ESC

### MINIVAN WINNERS

Hyundai Entourage  
Kia Sedona



frontal test, but significant differences still are apparent in the performances of vehicles in side and rear crashes.

Some manufacturers improved their vehicles specifically to earn *TOP SAFETY PICK* awards. Audi redesigned the seat/head restraints in the A4 and A6 to improve performance in the Institute's rear test. Subaru accelerated plans to offer ESC in some versions of the Forester and Legacy.

"But ESC isn't on every version of these two Subarus. Initially it's only on the sporty or pricier models. It's disappointing that Subaru didn't add ESC across the board," Lund says. The company plans to expand ESC availability later.

Other vehicles are in the process of being changed to earn *TOP SAFETY PICK* status. For example, Ford will add ESC to 2008 Freestyles, so when this SUV is introduced next year it will qualify. Automakers also have been adding standard side airbags with head protection, even though government regulations don't require them. All 2007 award winners have standard side airbags.

Seventeen other vehicles would have won 2007 *TOP SAFETY PICK* awards if they had good seat/head restraint designs. Toyota could have claimed nine awards, including three Lexus winners. Honda could have picked up four additional awards, including one for an Acura.

"Protection in rear crashes is an area where many vehicles lag behind in safety," Lund notes. "As manufacturers continue to improve seat/head restraints, we expect to see more winners."

# 17 VEHICLES CAME UP SHORT

## PROTECTION IN REAR CRASHES ISN'T GOOD

Besides the 13 *TOP SAFETY PICK* winners, another 17 meet 3 of the 4 criteria to win. They earned good ratings in front and side crash tests, and they have electronic stability control, standard or optional. They would have won for 2007 if their seat/head restraints also had earned good ratings. But rear crash protection is rated acceptable, marginal, or poor. Among these also-rans, 9 are made by Toyota and 5 are manufactured by Honda. In addition to these vehicles, Honda reports that the seat/head restraints in the only Civic models equipped with electronic stability control wouldn't be rated good.

**ACCEPTABLE** rear crash protection: Audi A3, BMW 3-series 4dr, and Lexus IS 250/350

**MARGINAL** rear crash protection: Acura TL, Honda Odyssey, Lexus ES 350 and GS 350, and Toyota Camry, FJ Cruiser, Prius, and RAV4

**POOR** rear crash protection: Honda Accord 4dr, Infiniti M35, Nissan Quest, and Toyota Avalon and Sienna

### LUXURY SUV WINNERS

Mercedes M class and Volvo XC90

### MIDSIZE SUV WINNERS

Acura RDX, Honda Pilot, and Subaru B9 Tribeca

### SMALL SUV WINNERS

Honda CR-V and Subaru Forester with optional ESC



***“THE AWARDS RECOGNIZE THE CREAM OF THE CROP FOR SAFETY IN THE VEHICLE SIZE CLASSES, BUT THEY DON’T MEAN A SMALLER VEHICLE THAT’S AN AWARD WINNER AFFORDS BETTER PROTECTION THAN A LARGER VEHICLE THAT DIDN’T WIN TOP SAFETY PICK.”***

ADRIAN LUND, PRESIDENT  
INSURANCE INSTITUTE FOR HIGHWAY SAFETY

**SUVs qualify for 2007:** SUVs weren’t eligible to win *TOP SAFETY PICK* awards in 2006 because the Institute hadn’t evaluated the side crashworthiness of many of them. Now more SUVs have been rated, and 2007 winners reflect the safety improvements manufacturers have been making to these vehicles.

“In the past SUVs, especially the smaller ones, weren’t good safety choices compared with cars,” Lund explains. “Many SUVs didn’t earn good ratings in our crash tests, and on the road they were more likely than cars to get in serious single-vehicle crashes, including rollovers, because of their higher centers of gravity. Newer SUVs perform better in crash tests and, when equipped with ESC, are much less likely to roll over. All but one of the seven SUVs that win our 2007 *TOP SAFETY PICK* have ESC as standard equipment.”

Recent Institute research found that ESC reduces the risk of serious crashes involving both SUVs and cars (see facing page). The largest effect is in single-vehicle crashes, which were reduced 40 percent with the addition of ESC. Fatal single-vehicle crashes went down 56 percent, and fatal rollovers of cars and SUVs were reduced by about 80 percent.

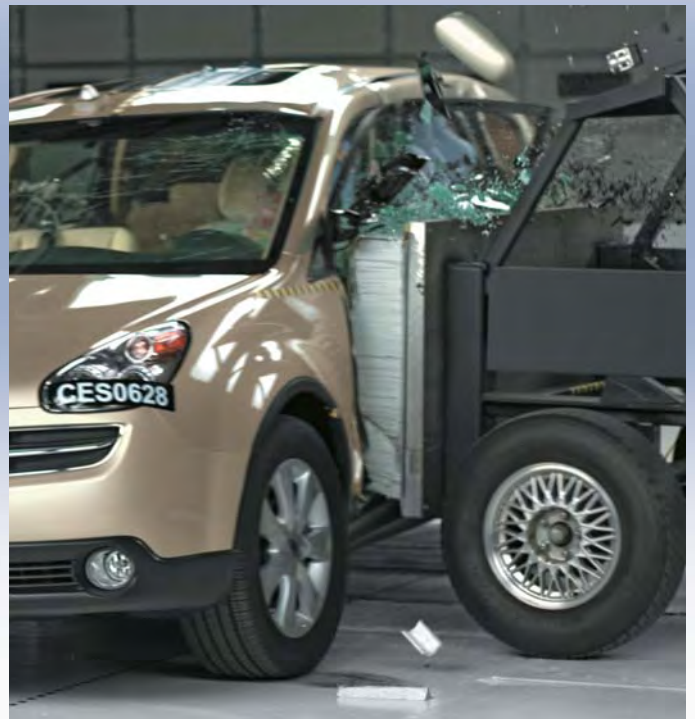
VEHICLES HAVE TO STAND OUT IN FOUR RESPECTS TO

# WIN THE 2007 AWARD

**1** **GOOD FRONTAL CRASHWORTHINESS EVALUATION,** based on performance in a 40 mph frontal offset crash test into a deformable barrier



**2** **GOOD SIDE CRASHWORTHINESS EVALUATION,** based on performance in a crash test in which the vehicle’s side is struck by a barrier going 31 mph



**How vehicles are evaluated in front, side, and rear tests:** The Institute's frontal crashworthiness evaluations are based on results of frontal offset crash tests at 40 mph. Each vehicle's overall evaluation is based on measurements of intrusion into the occupant compartment, injury measures recorded on a Hybrid III dummy positioned in the driver seat, and analysis of slow-motion film to assess how well the restraint system controlled dummy movement during the test.

Each vehicle's overall side evaluation is based on performance in a crash test in which the side of the vehicle is struck by a barrier that represents the front end of a pickup truck or SUV. The barrier strikes the test vehicle at 31 mph. Ratings reflect injury measures recorded on two instrumented SID-IIs dummies, assessment of head protection countermeasures, and the vehicle's structural performance during the side impact. Injury measures recorded on the two dummies, one in the driver seat and the other in the back seat behind the driver, are used to determine the likelihood that a driver and/or passenger in a real-world collision would have sustained serious injury. Researchers also evaluate the movements and contacts of the dummies' heads during the crash test. The structural performance rating is based on measurements indicating the amount of B-pillar intrusion into the occupant compartment.

Rear crash protection is rated according to a two-step procedure. Starting points for the ratings are measurements of head restraint geometry — the height of a restraint and its horizontal distance behind the back of the head of an average-size man. Seats with good or acceptable restraint geometry are tested dynamically using a dummy that measures forces on the neck. This test simulates a collision in which a stationary vehicle is struck in the rear at 20 mph. Seats without good or acceptable geometry are rated poor overall because they can't be positioned to protect many people.

**3 GOOD REAR CRASHWORTHINESS EVALUATION**, based on head restraint geometry and the performance of seat/head restraints in a test that simulates a rear impact

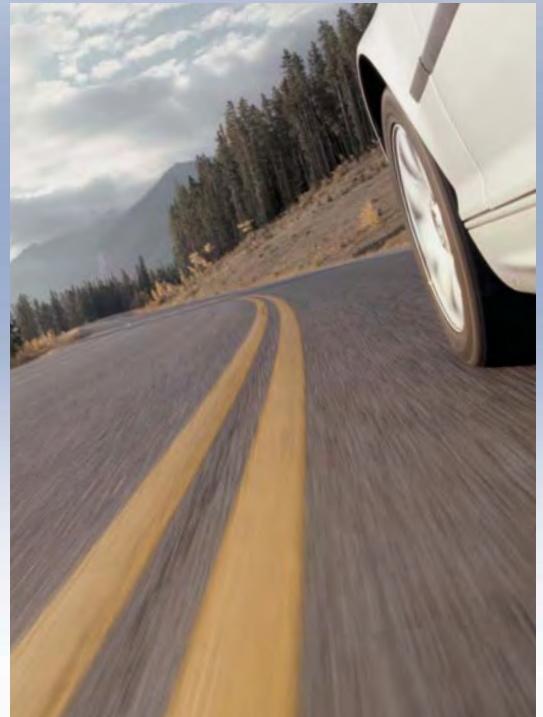


## NEW REQUIREMENT: VEHICLES MUST HAVE **ESC**

Electronic stability control (ESC) could prevent nearly one-third of all fatal crashes and reduce the risk of rolling over by as much as 80 percent (see *Status Report*, June 13, 2006; on the web at [iihs.org](http://iihs.org)). This is why the Institute requires ESC, standard or optional, to win a 2007 *TOP SAFETY PICK* award.

ESC wasn't required last year, and some cars that won the 2006 award don't qualify anymore because they aren't equipped with ESC. The Ford Five Hundred, for example, was a good performer in front, side, and rear tests. It won in 2006 but not in 2007 because ESC isn't offered.

**4 ESC CAN HELP** drivers maintain control during emergency maneuvers when their vehicles otherwise might spin out



# CRASH DEATHS GO UP

***MOTORCYCLISTS FUEL INCREASE IN FATALITIES WHILE DEATHS OF TEENS CONTINUE TO DECLINE***

More people died in motor vehicle crashes on US roads last year than in any year since 1990 — 43,443 people in 39,189 crashes during 2005. Much of the increase can be pinned on motorcycles. Deaths of cyclists have skyrocketed during the past decade while deaths have decreased among passenger vehicle occupants and pedestrians.

People in passenger vehicles represented 72 percent of motor vehicle deaths in 2005, down from 77 percent in 1997 but up from 69 percent in 1975, when the federal government started what's now the Fatality Analysis Reporting System, an annual census of motor vehicle deaths plus information on fatal crash types, vehicle and road types, driver characteristics, and other factors.

Motorcyclist deaths have more than doubled since 1997 and in 2005 accounted for 10 percent of all motor vehicle crash deaths, up from 5 percent in 1997, based on analysis of the federal data. In 2005 a total of 4,439 motorcyclists died in crashes, up 14 percent from the 3,904 toll in 2004.

Deaths among older motorcyclists have been rising for more than a decade (see *Status Report*, Jan. 12, 2002; on the web at [ihs.org](http://ihs.org)). Last year 47 percent of cyclists killed were 40 and older, up from 46 percent in 2004 and 15 percent in 1991. Now deaths in this group are almost 5 times higher than in 1990. The increase was offset during 1990-97 by a decline of about 50 percent in deaths among younger motorcycle riders. Then fatalities among riders younger than 40 started to climb, al-



though not to the same extent as deaths among older motorcyclists.

The median age of bikers killed in crashes is 38 years old, up from 27 in 1990. The shift reflects the changing demographics of motorcyclists as older, more affluent buyers take up riding. The typical rider is 41 years old, according to the latest survey of owners conducted by the Motorcycle Industry Council, a nonprofit trade group based in Irvine, California. This is up from 2002, when the typical rider was 38, and a leap from the typical 24-year-old rider in the 1980s. Nearly 10 percent of riders now are women, the council says.

US motorcycle sales topped 1.1 million last year, according to the council. The record was 1973, when Americans bought more than 1.5 million cycles. Sales cooled in the 1980s before starting to climb again in 1993. Why the surge? The council says it's partly because bikes have become more specialized and stylish. More than 300 models appeal to a broader range of potential riders.

Sales are strong among baby boomers, who are taking up cycling as a hobby or returning to riding after breaks to raise families, industry representatives say. Higher fuel prices are another reason.

Motorcyclist deaths are increasing in part because cycle sales are up. Another reason is that helmet use is down, even in states with laws covering all riders. Last year 79 percent of cyclists observed in states with universal laws were wearing helmets. This compares with 90 percent in 2002, according to a federal study. In states without helmet laws or with laws that apply only to younger riders, helmet use fell to 46 percent in 2005 from 53 percent in 2002.

Twenty states and the District of Columbia have laws requiring cyclists of all ages to wear helmets. Twenty-six states have laws requiring some cyclists to wear helmets. Since 1997, five states have narrowed their helmet laws to cover only young riders. The result is a surge in deaths. For example, helmet use in Florida plummeted to 53 percent from virtually 100 percent after the helmet law was weakened in 2000. The motorcyclist death rate increased about 25 percent (see *Status Report*, Sept. 28, 2005; on the web at [iihs.org](http://iihs.org)).

Riders who aren't wearing helmets are three times as likely as people with helmets to suffer brain injuries. These often are deadly or so debilitating that there's little chance a rider can resume the same lifestyle as before the crash.

"This is why state helmet laws should cover all motorcycle riders, not just the youngest ones," says Anne McCartt, Institute vice president for research. "There's no question that helmets save lives, whether they're worn by 20-year-old riders or 50 year-olds. Laws that cover only the youngest motorcyclists are largely ignored and difficult to enforce. Riders of all ages think they're less likely to get tickets, so they're less likely to wear helmets. Better enforcement of existing laws would help reverse the general decline in helmet use."

**No progress is being made against DWI:** Driving while impaired by alcohol remains a problem, despite progress achieved during the 1980s and most of the 1990s. Since 1997 about a third of all fatally injured passenger vehicle drivers have had blood alcohol concentrations of 0.08 percent or higher (see *Status Report*, Sept. 7, 2006; on the web at [iihs.org](http://iihs.org)). It's illegal in all states and the District of Columbia to drive with blood alcohol concentrations of 0.08 percent or more.

"Especially worrisome is that progress has stalled among the youngest drivers," says Susan Ferguson, Institute senior vice president for research. From about 1982 to 1995, the percentage of fatally injured drivers 16-20 years old who were impaired by alcohol declined by more than half. But since then the proportion has hovered around 25 percent. People 21-30 years old remain problems. In 2005 half of all fatally injured drivers in this age group had blood alcohol concentrations at or above 0.08 percent.

"We haven't been able to make a real dent in the problem since the mid-1990s," Ferguson adds. "We need to break the logjam, and one way to do this is to conduct frequent and well-publicized sobriety checkpoints to enforce DUI and DWI laws. In the longer term, innovative technologies might help to prevent impaired drivers from starting their vehicles" (see *Status Report*, April 2, 2005; on the web at [iihs.org](http://iihs.org)).

**Teen deaths decline:** A bright spot in the 2005 statistics is teenagers. Here there's headway in reducing crash deaths, thanks in large measure to the success of graduated licensing, which phases in full driving privileges among beginners. Deaths of 16 and 17 year-olds in passenger vehicles fell 8 percent in 2005, to 1,631 from 1,773 the year before. Among 13-19 year-olds, deaths fell 6 percent and have declined about 40 percent since 1975.



**THE PER-CAPITA DEATH RATE FOR TEENS IS THE LOWEST ON RECORD, BUT TEENS STILL ARE OVERREPRESENTED IN FATAL CRASHES.**

The death rate per population of teens is the lowest on record. Still, in 2005 teens accounted for 12 percent of motor vehicle deaths and only 10 percent of the US population.

Fatal crashes involving young drivers typically involve a single vehicle plus driver error and/or speeding. The crashes often occur when other young people are in vehicles driven by teens, so teenagers are disproportionately involved as passengers as well as drivers. Of the 4,440 teenagers killed in passenger vehicle crashes last year, 45 percent were passengers. Sixty-one percent of these deaths occurred in crashes in which another teenager was driving.

"The best graduated licensing systems limit teen passengers to zero or one. Some states need to toughen their laws to restrict passengers," Ferguson points out.

For current editions of the Institute's fatality fact sheets covering 13 topics, go to [iihs.org/research](http://iihs.org/research).

# STATUS REPORT

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