

# STATUS REPORT

INSURANCE INSTITUTE  
FOR HIGHWAY SAFETY



**If your car earns a GOOD rating in a controlled crash test, like the car on the left,**

it means that if you get in a serious frontal crash out on the highway you'll get much better protection than you would in a similar car that's rated POOR (right).  
A new Institute study confirms the value of crash



test ratings of vehicles for consumer information.

“Drivers of vehicles rated poor based on performance in our frontal offset crash tests are at significantly greater risk of dying in real-world frontal crashes, compared with drivers of vehicles with better crash test ratings,” Institute chief operating officer Adrian Lund points out.

Since 1995 the Institute has been evaluating passenger vehicle crashworthiness in frontal tests. The ratings of good, acceptable, marginal, or poor are based on 40 mph offset tests in which the driver side of each vehicle strikes a deformable barrier. For the new study relating test ratings to fatality risk in real-world crashes, researchers examined 12 years of records from the Fatality Analysis Reporting System, a federal database of all fatal crashes on U.S. roads, and identified vehicles that had been rated in the Institute’s offset test.

In the most relevant comparison, the researchers compared fatality risks in crashes in which two vehicles similar in type hit head on (car to car, pickup to pickup, etc.). After controlling for differences in vehicle weight, driver age and gender, and other factors, the researchers found that drivers of vehicles with good ratings were about 74 percent less likely to die than drivers of vehicles rated poor. The drivers of vehicles rated acceptable or marginal were about 45 percent less likely to die than drivers of the poor-rated vehicles they crashed into.

“Consumers who factor crash test ratings into their

purchasing decisions can get more crashworthy vehicles that will do a better job of protecting them if they get in a frontal crash,” Lund says.

Results of the new study are consistent with previous research correlating crash test performance and real-world injury and survival rates. A study of cars rated by the European New Car Assessment Program, which uses a frontal offset crash test similar to the Institute’s, found that drivers of cars with four-star

ratings were about 30 percent less likely to be severely injured in real crashes than drivers of cars with only one star (see *Status Report*, June 11, 2003; on the web at [www.highwaysafety.org](http://www.highwaysafety.org)).

For a copy of “Relationships of frontal offset crash test results to real-world driver fatality rates” by C.M. Farmer, write: Publications, Insurance Institute for Highway Safety, 1005 North Glebe Road, Arlington, VA 22201, or email [publications@iihs.org](mailto:publications@iihs.org).


### GOOD RATINGS in frontal offset crash tests



### POOR RATINGS in frontal offset crash tests



**In most groups of similar vehicles the Institute has evaluated in 40 mph frontal offset crash tests, the ratings vary from good to poor. For example, among midsize inexpensive cars the 2002 Toyota Camry (top left) is a good performer while the 1996 Hyundai Sonata (top right) is rated poor. Among minivans, the 1998 Toyota Sienna (above left) is good. In contrast, the 1997 Pontiac Trans Sport (above right) is rated poor. Drivers of vehicles rated poor based on performance in these crash tests are at significantly greater risk of dying if they get into frontal crashes out on the road, compared with drivers of vehicles with good ratings.**



## Rumble strips down centerlines of two-lane roads reduce head-on and sideswipe crashes

Rumble strips have been widely used along the sides of highways to help prevent drivers from drifting off the road. A new Institute study finds that installing the same strips along the centerlines of undivided, rural two-lane roads can reduce head-on and opposing-direction sideswipes by about 20 percent.

A disproportionate number of fatal crashes occur on rural roads, and most such crashes occur on two-lane roads. A major problem on these roads involves vehicles crossing the centerlines and striking opposing traffic. Crashes like these account for about 20 percent of all fatal crashes on rural two-lane roads. Approximately 4,500 deaths occur annually in such collisions.

For the new study, researchers examined crash data for more than 200 miles of two-lane roads in seven states where experimental rumble strips were installed along the centerlines. The strips, like those used for years along roadway shoulders, consist of either raised or grooved patterns installed perpendicular to the direction of travel. The strips produce audible and tactile warnings when drivers stray from travel lanes.

Crashes at sites treated with centerline rumble strips were reduced by an estimated 14 percent overall, the researchers



*There's another application for rumble strips besides the edges of roadways, where they've been used for years to help keep sleepy or distracted drivers from straying off the side.*

found. Injury crashes were reduced by about 15 percent. Head-on and opposing-direction sideswipe crashes, the main targets of this preventive measure, decreased by an estimated 21 percent, and injury crashes of the same type decreased by about 25 percent.

"Until now there have been only limited studies of the use of rumble strips on centerlines," says Richard Retting, Institute senior transportation engineer and an author of the new study. "State officials have attempted to evaluate their effects. A number of small before-and-after comparisons have shown reductions in crash rates, but this new study is the first large-scale scientific investigation of the effects of centerline rumble strips. The results should encourage highway departments to use this approach more widely on rural two-lane roads."

Researchers analyzed crash data for periods before and after the installation of centerline rumble strips in California, Colorado, Delaware, Maryland, Minnesota, Oregon, and Washington. In addition to collecting data along 210 miles of treated sites in these states, the researchers included several hundred miles of comparison sites that hadn't been treated to control for overall crash trends.

Rumble strips represent a relatively low-cost but highly effective way of reducing crashes caused by vehicles crossing centerlines, Retting concludes.

For a copy of "Crash reduction following installation of centerline rumble strips on rural two-lane roads" by B.N. Persaud et al., write: Publications, Insurance Institute for Highway Safety, 1005 North Glebe Road, Arlington, VA 22201, or email publications@iihs.org.

## Prior violations often omitted from public records; courts allow citations to be hidden

Drivers found guilty of DWI and other traffic violations such as speeding had the violations withheld from their public records up to 50 percent of the time, largely because of court-approved diversion programs such as traffic school or probation before judgment. This is the main finding of a new Institute study that followed thousands of drivers through the court systems in four jurisdictions in three states.

“Insurers, employers, and others rely on public driver records to determine the future crash risks of particular drivers, and the number of prior violations is one of the best predictors of future risks,” says Anne McCartt, senior research analyst at the Institute and lead author of the study. Previous research has indicated that crash rates for drivers with two or more violations are about twice as high as the rates for drivers without any moving violations.

“But for the records to be useful in predicting drivers’ future crash risks, those records have to accurately reflect all of a driver’s prior violations,” McCartt points out. “What our new research shows is that the public records often don’t do this.”

Institute researchers examined DWI and common traffic violations like speeding and running signals for a random sampling of tickets issued during 2000 across Maryland, two counties in Florida, and one Indiana county. Using a case-study approach, the researchers followed citations through the courts to posting on public driver records.

The percentage of citations resulting in convictions varied among the jurisdictions

from 27 to 90 percent for DWI and from 60 to 83 percent for the other traffic violations. These ranges largely reflect differences in the application of diversion programs. In Maryland the primary diversion method is probation before judgment — a defendant is found guilty but the judgment is withheld and can be expunged contingent on good behavior.

Of the cases tracked in Maryland, 27 percent of DWI citations resulted in conviction

In each jurisdiction, almost all guilty verdicts that didn’t result in diversions were recorded on driver records. But among the drivers who opted for, or were directed to, diversion programs by the courts, only a few ended up with citations on their records. Violators who attended traffic schools typically got reduced penalties and could keep

**AMONG DRIVERS CITED FOR SERIOUS TRAFFIC VIOLATIONS (VIOLATIONS OTHER THAN DWI)**

... and **CONVICTED** of the offense:

- 95% of citations appeared on public records in Maryland
- 99% of citations appeared on public records in Indiana
- 91% of citations appeared on public records in Florida

... and **admitted guilt, then went to TRAFFIC SCHOOL or other court-approved diversion:**

- 0% of citations appeared on public records in Maryland
- 0% of citations appeared on public records in Indiana
- 5% of citations appeared on public records in Florida

while 20 percent of drivers cited for this offense and 21 percent who were cited for other violations received probation before judgment. In contrast, in Tippecanoe County, Indiana, none of the DWI cases and only 7 percent of cases involving other violations were addressed with diversion programs.

In Florida, where the primary diversion is traffic school, 35 percent of drivers charged with violations other than DWI took advantage of this option. Traffic school isn’t an option in Florida DWI cases.



## Some approaches to reducing crashes and violations work better than others; education doesn't reduce crash risk

Programs that target drivers with poor records can reduce future traffic violations and crashes, according to a new study sponsored by the Institute. However, not all such programs work. Court-initiated education for violators failed to reduce future crash risk.

Based on these findings, the researchers questioned "the appropriateness of the growing use of court traffic violator schools and home study programs (such as internet courses) for which the triggering violation is dismissed upon completion" of the education. The result is a reduced chance that future violations will lead to measures that effectively reduce violations and crashes.

The researchers examined 106 approaches from traffic school to license suspension as well as simpler forms of intervention including warning letters aimed at violators. The study specifically excluded interventions that are triggered by alcohol-related violations.

As a group, these measures can produce small but significant reductions in future violations and crashes, the study found. One year after intervention, researchers found an average 6 percent reduction in crashes and 8 percent reduction in violations. These effects are greater than had been reported in a previous review sponsored by the Institute (see *Status Report*, July 29, 1989). But the researchers also found wide variations in the effectiveness of the approaches. Some work better than others, and some apparently don't work at all.

License suspension or revocation showed the largest reductions in subsequent crashes (17 percent reduction) and violations (21 percent). The distribution of educational or informational materials had no effect on either crashes or violations. Court-initiated education for violators reduced future offenses but didn't reduce future crash risks. These findings are consistent with Institute research findings that date back to 1984 (see *Status Report*, May 12, 1989).

Warning letters also reduced crashes (4 percent reduction) and violations (6 percent). Although this approach had the smallest measurable effect on crashes, the letters reached the largest number of drivers at the lowest cost per driver.

For a copy of "Problem driver remediation: a meta-analysis of driver improvement literature" by S.V. Masten and R.C. Peck, write: Publications, Insurance Institute for Highway Safety, 1005 North Glebe Road, Arlington, VA 22201, or email [publications@ihs.org](mailto:publications@ihs.org).

the violations off of their records despite evidence that attending such schools doesn't reduce future crash risk (see accompanying story on this page).

"Diversion programs like traffic school not only fail to reduce crash risk but also undermine the predictive value of driver records and can actually harm the overall safety picture by preventing the accumulation of violations on the records," McCartt says. When violations don't accumulate on the records, tougher sanctions such as license suspension aren't triggered.

For a copy of "Tracking traffic citations through court adjudications to posting to public driver records" by A.T. McCartt and M.G. Solomon, write: Publications, Insurance Institute for Highway Safety, 1005 North Glebe Road, Arlington, VA 22201, or email [publications@ihs.org](mailto:publications@ihs.org).

## Many truckers aren't buckling up, but new federal initiatives aren't likely to boost their belt use rates

*Initiatives cover research and education, but they're silent on enforcement of existing belt use laws*

One of every two commercial truck drivers isn't using a safety belt, according to a survey conducted by the Federal Motor Carrier Safety Administration (FMCSA). A consequence is that about one-third of the truckers killed in 2002 were ejected from their vehicles.

The researchers observed belt use by truck drivers in 2002 at locations that included truck stops and freeway exit ramps in the 12 states with the highest amounts of truck travel. Among the 3,909 truckers who were observed, safety belt use varied by type of truck. Dump truck drivers used their belts an average of 26 percent of the time, the lowest rate observed. The highest belt use rate (67 percent) was observed among drivers of trucks hauling hazardous materials. Drivers for local or independently owned motor carriers had lower use rates than truckers driving for national or major regional carriers.

These belt use rates compare with a national average of 75 percent in 2002 among drivers of passenger cars, pickup trucks, and SUVs (see *Status Report*, Jan. 11, 2003; on the web at [www.highwaysafety.org](http://www.highwaysafety.org)).

As a result of FMCSA's findings, U.S. Transportation Secretary Norman Y. Mineta announced an extensive research and



### ONCE HE CLIMBS IN HIS RIG, HOW LIKELY IS HE TO BUCKLE HIS SAFETY BELT?

Not as likely as drivers of cars, pickups, and SUVs. Belt use rates among commercial truck drivers averaged about 50 percent in 2002, according to a federal study. The rates varied from about 1 in 4 dump truck drivers to about 2 of every 3 drivers of vehicles with hazardous cargo. Belt use among passenger vehicle drivers in 2002 was 75 percent.

educational campaign to encourage truckers to buckle up. "If you are one of the more than five and a half million truck drivers who choose not to wear your safety belt, I have a message for you. Uncle Sam wants you to, no, needs you to buckle up," Mineta


said at a press event in Atlanta late last year. In addition, FMCSA signed a pledge along with commercial trucking associations, a truck driver association, and an organization that represents roadside inspectors to "work together to promote [commercial motor vehicle] driver safety belt education."

## In other highway safety news ...

**Older motorcyclists in Germany:** Deaths of riders ages 35-45 have increased 140 percent in Germany since 1995. Deaths of riders 45 to 55 years old have increased 170 percent. While overall motorcyclist deaths haven't changed much, the shifting demographics of riders in Germany is leading to far more deaths among older riders and fewer among younger ones. This mirrors a trend in the United States, where deaths of cyclists 40 and older have increased 150 percent since 1990 (see *Status Report*, Jan. 12, 2002; on the web at [www.highwaysafety.org](http://www.highwaysafety.org)). Much of the shift can be traced to rising numbers of older riders. The median age of bikers killed on U.S. roads is about 36, up from 27 in 1990.

**Constitutionality of photo enforcement:** A North Carolina court has ruled that photo enforcement of traffic laws doesn't violate constitutional rights. A driver cited for running a signal monitored by a red light camera in High Point, North Carolina, sued the city, claiming the automated enforcement procedures violated his constitutional right to due process and equal protection. The U.S. District Court for the Middle District of North Carolina ruled against the driver, finding the automated enforcement program didn't violate state or federal constitutions.

**Belt use and phone use:** Researchers observing the use of hand-held cell phones at 40 Michigan locations found that drivers using phones were buckled up about 76 percent of the time. This compares with about 83 percent of drivers who weren't phoning. The overall phone use rate was about 3 percent, which is consistent with national estimates (see *Status Report*, Aug. 26, 2003; on the web at [www.highwaysafety.org](http://www.highwaysafety.org)). While the effect of phone use on crash risk isn't fully understood, it's likely to increase the risk. Research has shown that people who don't buckle up are more likely to exhibit other risk-taking behaviors like speeding and heavy use of alcohol. Adding the distraction of phone use would be expected to increase such drivers' crash risk.



Conspicuously absent from both FMCSA's pledge and Mineta's announcement of new educational initiatives is any mention of stepped-up enforcement of existing federal requirements for belt use by commercial drivers who cross state lines. State officials are responsible for enforcing these requirements during roadside safety inspections. But FMCSA's estimates of citations issued at roadside inspections during 2002 indicate that the inspectors rarely cite truckers for not using belts.

"It's a serious omission for the Transportation Department to shortchange enforcement," Anne McCartt, senior research analyst at the Institute, points out. "An abundance of research going back years and years indicates the ineffectiveness of education by itself in getting people to buckle up. If roadside inspectors, together with motor carriers, enforced the federal belt regulation more consistently, the percentage of commercial drivers using belts would be expected to rise."

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