

INSURANCE INSTITUTE FOR HIGHWAY SAFETY

NEWS RELEASE

November 11, 1997

ROOM FOR IMPROVEMENT BEFORE MANY SMALL 4-DOOR CARS PROVIDE GOOD PROTECTION TO THEIR OCCUPANTS IN CRASHES

ARLINGTON, VA – None of the 11 small four-door cars the Insurance Institute for Highway Safety has evaluated for crashworthiness earns an overall rating of good. The HONDA CIVIC and TOYOTA COROLLA are at the top of the list. Both are rated acceptable, and, with a little improvement, could have earned good evaluations. Five other cars are rated acceptable, one is rated marginal, and three cars are poor (see attached list). These evaluations are based on performance in a 40 mph frontal offset crash test. Head restraint design and bumper performance in low-speed crash tests don't affect crashworthiness evaluations but are considered in vehicles' overall evaluations.

"The laws of physics dictate that light cars cannot offer as much protection in crashes as larger, heavier vehicles, so it's important for the crashworthiness designs of smaller cars to be as good as possible," Institute President Brian O'Neill explains. "It's disappointing that the 11 small cars we evaluated didn't perform better in the crash test. This test is easier for small, light cars than it is for heavier ones because it's equivalent to an offset frontal crash involving an identical vehicle."

Automakers Are Taking Steps to Improve Offset Crash Performance

O'Neill adds that "the crashworthiness of many of the 11 cars we evaluated will be improved as they're redesigned in upcoming model years. Nearly every automaker has incorporated an offset test into the development process for new and re-designed models, and this already is leading to design improvements." The Corolla

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is an example. Toyota says it paid attention to offset performance when it re-designed this car for the 1998 model year, and it's one of the best performers.

Wide Range of Performance

Performance ranged widely among the 11 cars evaluated. The Civic, rated acceptable overall, missed a good crashworthiness evaluation because of too much intrusion of vehicle front-end structure into the driver footwell area during the offset crash test. The Corolla had the same problem – too much intrusion – plus too much steering column movement.

"If not for these shortcomings, both cars would have been good. The Corolla is noteworthy because of its additional safety features. It's the only one of the 11 models with available side impact airbags. These are mostly in more expensive cars, and Toyota deserves credit for pioneering them in more affordable models," O'Neill notes.

The three worst performers – Kia Sephia, Dodge/Plymouth Neon, and Mitsubishi Mirage failed to maintain the driver space during the offset crash test. Significant injury to one or both legs was likely in all three cars, according to measures taken from the crash dummy. Another major problem was too much steering column movement in the Sephia, Neon, and Mirage – a problem that compromises the performance of the restraints.

Cars' Structural Performances Don't Measure Up to Advertising

Advertising for all 11 cars evaluated emphasizes structural aspects that help protect people in frontal crashes – the crumple zones or crush zones designed to help absorb and dissipate crash energy before it reaches the occupant compartment. "But the structures, or safety cages, of these cars generally don't measure up to the advertising claims," O'Neill says. None of the 11 cars earns a good evaluation of structural performance alone.

For example, Kia touts the “Sephia’s crumple zones. They make sure you are provided with significant protection – even in a head-on collision.” Another Kia ad points to “a crashworthy steel passenger cage.” Kia also touts the performance of the car’s structure in frontal crashes by saying it will “help you do one thing if you’re ever in an accident: walk away.” Yet the Kia was the worst performer among the 11 cars in the frontal offset crash test. Its structure is rated poor. Its overall evaluation also is poor. “And it’s not likely anyone could have walked away from a crash like our test,” O’Neill points out, “because the measures taken from both of the dummy’s legs indicate the likelihood of significant injury.”

How Researchers Assess Vehicle Performance in the Frontal Offset Crash Test

Institute researchers use 40 mph offset crash tests to evaluate three important aspects of crashworthiness – how well the front-end crush zone manages crash energy and the safety cage limits occupant compartment intrusion, injury risk measured on a dummy representing an average-size male driver, and how well dummy movement is controlled during impact.

Essentially the same test is used to evaluate new cars by the European Union in cooperation with motor clubs and by an Australian consortium of state governments and motor clubs. In addition, the Institute’s crashworthiness evaluations reflect the adequacy of front-seat head restraint designs and bumper performance in a series of four low-speed (5 mph) impacts.

Vehicle structure, restraints, and injury measures in the 40 mph frontal offset test are evaluated separately – even though they’re related – because good performance for any one of the three by itself in a single test isn’t sufficient to reliably indicate good crashworthiness.

Institute and Government Crash Tests Complement Each Other

The federal government has been testing new passenger vehicles in 35 mph crash tests since 1978. This New Car Assessment Program has been a major contributor to crashworthiness improvements – in particular, improved restraint systems in new passenger vehicles. The Institute's offset test, which involves 40 percent of a vehicle's front end hitting a deformable barrier at 40 mph, complements the federal test involving the full width of the front end hitting a rigid barrier. The government test is especially demanding of vehicles' restraint systems but not so much so of vehicle structure. An offset test is more demanding of vehicle structure.