

INSURANCE INSTITUTE FOR HIGHWAY SAFETY

NEWS RELEASE

March 21, 2004

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RESULTS OF NEW HIGH-SPEED CRASH TESTS: FIVE MIDSIZE CARS ARE RATED GOOD AND ONE IS ACCEPTABLE; STRUCTURAL DESIGNS IMPROVE COMPARED WITH OLD MODELS

Arlington, VA — In 40 mph frontal offset crash tests conducted recently by the Insurance Institute for Highway Safety, five of six new or redesigned midsize cars earned good ratings: Acura TL, Acura TSX, Nissan Maxima, Chevrolet Malibu, and Mitsubishi Galant. Both Acuras and the Maxima also earned "best pick" designations in the frontal test. The only car tested that didn't earn a good rating was the Suzuki Verona, which is rated acceptable.

The Institute has tested previous designs of the Galant, Maxima, and Malibu. In each case the performance of the new model improved.

Vehicle ratings reflect performance in 40 mph frontal offset crash tests into a deformable barrier. Based on the results, the Institute rates each vehicle from good to poor. If a vehicle earns a good rating, it means that in a real-world crash of similar severity a driver using a safety belt would be likely to walk away with little or no injury.

"These results show how automakers have improved the structural designs of vehicles to protect occupants better in serious frontal crashes," says Institute chief operating officer Adrian Lund. "Designing a vehicle for safety is much like shipping a fragile object. First the box needs to be strong enough to keep from being crushed in transit. Then damage to the object can be prevented by styrofoam or other energy-absorbing materials. In the same way, a car's safety cage first needs to be strong, and then the restraints can effectively protect the occupants."

— MORE —

Crash test reveals airbag problem in Suzuki Verona: The Verona was tested twice. The first test revealed a major problem with the driver airbag, which was only partially inflated during much of the crash. Then late in the crash the airbag fully inflated, throwing the dummy's head violently backward into the door pillar. Very high injury measures were recorded on the dummy's head during this impact. Suzuki engineers subsequently determined there was a manufacturing defect — the airbag inflation module was improperly wired.

"What happened in the first test of the Verona led Suzuki to identify a serious safety-related defect, which was fixed for cars in production. All models produced earlier were recalled. When we tested a second Verona with the defect fixed, the airbag deployed correctly," Lund says.

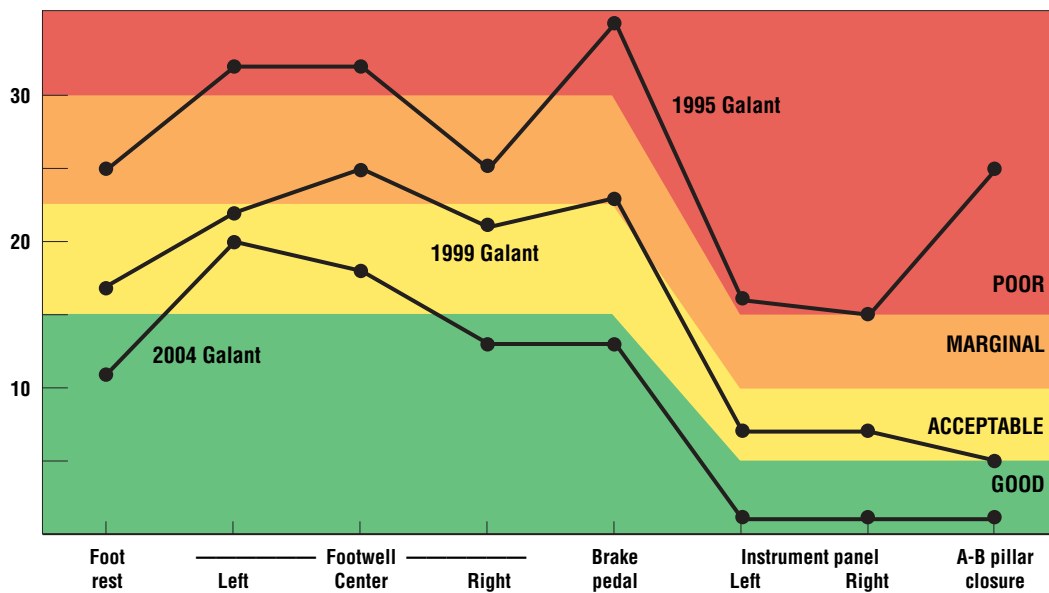
The Verona's structure held up well in the Institute's frontal offset test. However, "the driver seat pitched forward slightly and tipped toward the door," Lund points out. "Forces recorded on the dummy indicated the likelihood of leg injuries. This is why the Verona didn't earn the Institute's highest rating of good."

Mitsubishi Galant improves: Compared with its two predecessor models, the new Galant is a good example of improved structural design.

"The 1995 Galant was one of the worst performers in the frontal offset test," Lund says. "The occupant compartment virtually collapsed, the dummy moved to the left of the deploying airbag, and the windshield frame was driven back toward the dummy's head. Plus the dummy's left knee crashed through the dashboard and hit the steering column assembly."

When the Institute tested a redesigned 1999 Galant, its structure had been improved, and it earned an acceptable rating. Still there was moderate rearward movement of the instrument panel and intrusion into the driver footwell area that could lead to lower leg injury.

COMPARISON OF MITSUBISHI GALANT MODELS: 1995, 1999, 2004
Measured intrusion (centimeters) in 40 mph frontal offset crash tests



1995 MITSUBISHI GALANT
Poor performance: major intrusion into the occupant compartment



1999 MITSUBISHI GALANT
Improved performance: somewhat less intrusion



2004 MITSUBISHI GALANT
Good performance: much less intrusion

"The structure of the 2004 Galant was much better," Lund says. "The space around the driver dummy was well maintained, and there was minimal intrusion into the occupant compartment. The possibility of a lower right leg injury kept the Galant from earning the added designation of 'best pick' in the frontal test."

Once rated poor, Nissan Maxima now is a “best pick” in the frontal test: The 1995 Maxima was rated poor. It was one of the few cars the Institute tested that year with high injury measures on both legs. Even though the car’s structure was rated acceptable, there was moderate intrusion into the footwell area.

“The 1995 Maxima’s driver seat came loose on its tracks, slamming the dummy’s legs against the instrument panel. We had to use tools to open the driver door,” Lund points out. The redesigned Maxima for the 2000 model year was a better performer. The safety cage was reasonably well maintained, and measures recorded on the dummy’s head, neck, and chest indicated low risk of injury. Still there was too much intrusion into the footwell area, with high forces on both legs.

“The 2004 Maxima is a big improvement. It’s a good performer and a ‘best pick’ in the frontal test,” Lund says.

Chevrolet Malibu improves from acceptable to good: “The structure of the old Malibu held up reasonably well, but the dummy’s head hit the inside of the door below the window sill and then contacted the roof pillar beside the driver seat,” Lund says. “The steering wheel also moved upward, which can reduce the protection of the seat belt and airbag.”

The performance of the 2004 Malibu improved compared with the 1999 model. There was minimal movement of the instrument panel and steering wheel. The occupant compartment did a good job of preventing major intrusion during the test. However, the possibility of head and leg injuries kept the Malibu from earning the “best pick” designation in the frontal test.

“These new and redesigned midsize cars are performing much better in our offset test, compared with just a few years ago.” Lund concludes. “In fact, no current midsize car designs are rated marginal, and only one earns the Institute’s lowest rating of poor — the Pontiac Grand Am and its twin, the Oldsmobile Alero. This design dates back to 1999.”

Institute and government crash tests complement each other: The Institute's crashworthiness evaluations are based on results of frontal offset crash tests at 40 mph. Each vehicle's overall evaluation is based on three aspects of performance — measurements of occupant compartment intrusion, injury measures from 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.

The federal government has been testing new passenger vehicles in 35 mph full-front 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 tests, conducted since 1995, involve 40 percent of a vehicle's front end hitting a deformable barrier at 40 mph. This test complements the federal test involving the full width of the front end hitting a rigid barrier. Both tests are contributing to improvements in crashworthiness — in particular improved crumple zones and safety cages.

The same 40 mph offset crash test is used to evaluate new cars by the European Union in cooperation with motor clubs, by an Australian consortium of state governments and motor clubs, and by a government-affiliated organization in Japan.

**End 5-page release on results of offset crash tests; 4-page attachment summarizes crashworthiness ratings
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On the web at www.highwaysafety.org

Evaluations

Frontal Offset Crash Test Performance

	OVERALL EVALUATION	Structure/ Safety Cage	Injury Measures			Restraints/ Dummy Kinematics	
			Head/ Neck	Chest	Leg/Foot Left, Right		
Midsize inexpensive cars							
BEST PICK frontal	HONDA ACCORD 2003-04 models test vehicle wt. = 3,186 lbs.	G	G	G	G	G	G
BEST PICK frontal	TOYOTA CAMRY 2002-04 models test vehicle wt. = 3,276 lbs.	G	G	G	G	A	G
BEST PICK frontal	SUBARU LEGACY 2000-04 models test vehicle wt. = 3,298 lbs.	G	G	G	G	A	G
BEST PICK frontal	MAZDA 6 2003-04 models test vehicle wt. = 3,086 lbs.	G	G	A	G	G	G
NEWLY TESTED	MITSUBISHI GALANT 2004 models test vehicle wt. = 3,395 lbs.	G	G	G	G	M	G
	NISSAN ALTIMA 2002-04 models avg. test vehicle wt. = 3,150 lbs.	G	G	G	G	A	A
NEWLY TESTED	CHEVROLET MALIBU 2004 models test vehicle wt. = 3,183 lbs.	G	G	A	G	G	A
	DODGE STRATUS CHRYSLER SEBRING 2001-04 models test vehicle wt. = 3,252 lbs.	A	A	G	G	G	M
NEWLY TESTED	SUZUKI VERONA 2004 models avg. test vehicle wt. = 3,385 lbs.	A	G	G	G	M	P
	CHEVROLET CLASSIC 2004 models (formerly Malibu) test vehicle wt. = 3,058 lbs.	A	A	G	G	G	A

Turn page for more crashworthiness evaluations ▶

G GOOD **A** ACCEPTABLE **M** MARGINAL **P** POOR

Caution: The kinetic energy a vehicle must absorb in a crash test increases with vehicle weight, so barrier tests are more demanding of heavier vehicles. But people in heavier vehicles in real-world, 2-vehicle crashes typically fare better than people in lighter vehicles (in many single-vehicle crashes, weight offers no safety advantage). This is why **test results shouldn't be compared among vehicles with large weight differences.**

Go to www.highwaysafety.org: These pages summarize crashworthiness evaluations of midsize inexpensive cars. The principal component of each vehicle's evaluation is its performance in a 40 mph frontal offset crash test. Details about each vehicle's test performance, including photos taken during and after the crash test, are available online at www.highwaysafety.org.

Evaluations

Frontal Offset Crash Test Performance

Midsize inexpensive cars (continued)	OVERALL EVALUATION	Structure/ Safety Cage	Injury Measures				Restraints/ Dummy Kinematics
			Head/ Neck	Chest	Leg/Foot Left, Right		
SATURN L SERIES 2000-04 models test vehicle wt. = 3,192 lbs.	A	A	G	G	G	P	A
HYUNDAI SONATA 1999-2004 models test vehicle wt. = 3,131 lbs.	A	M	G	G	A	M	G
KIA OPTIMA 2001-04 models							
PONTIAC GRAND AM OLDSMOBILE ALERO 1999-2004 models test vehicle wt. = 3,080 lbs.	P	M	A	G	G	M	P

For crashworthiness evaluations of earlier designs of midsize inexpensive cars, go to www.highwaysafety.org.

Turn page for more crashworthiness evaluations ►

G GOOD

A ACCEPTABLE

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Evaluations

Frontal Offset Crash Test Performance

Midsize moderately priced cars

OVERALL
EVALUATION

Structure/
Safety
Cage

Injury Measures

Restraints/
Dummy
Kinematics

Head/
Neck Chest Leg/Foot
Left, Right

		OVERALL EVALUATION	Structure/ Safety Cage	Injury Measures			Restraints/ Dummy Kinematics
				Head/ Neck	Chest	Leg/Foot Left, Right	
BEST PICK frontal	AUDI A4 2002 (mfg. after 2/2002)-04 models test vehicle wt. = 3,569 lbs.	G	G	G	G	G G	G
	NISSAN MAXIMA 2004 models test vehicle wt. = 3,472 lbs.	G	G	G	G	G G	G
NEWLY TESTED	BEST PICK frontal						
	SAAB 9-3 2003-04 models test vehicle wt. = 3,322 lbs.	G	G	G	G	G G	G
BEST PICK frontal	TOYOTA AVALON 2000-04 models test vehicle wt. = 3,468 lbs.	G	G	G	G	G G	G
	ACURA TSX 2004 models test vehicle wt. = 3,278 lbs.	G	G	G	G	G A	G
NEWLY TESTED	BEST PICK frontal						
	VOLKSWAGEN PASSAT 1998-2004 models test vehicle wt. = 3,170 lbs.	G	G	G	G	G G	A
BEST PICK frontal	INFINITI G35 2003-04 models test vehicle wt. = 3,468 lbs.	G	G	A	G	G G	G
	INFINITI I30/I35 2000 (mfg. after 11/1999)-04 models test vehicle wt. = 3,220 lbs. <i>Note:</i> Vehicle tested was 2000 Nissan Maxima.	A	A	G	G	P P	G

For crashworthiness evaluations of earlier designs of midsize moderately priced cars, go to www.highwaysafety.org.

Turn page for more crashworthiness evaluations ▶

G GOOD **A** ACCEPTABLE **M** MARGINAL **P** POOR

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Evaluations

Frontal Offset Crash Test Performance

NEWLY TESTED

	OVERALL EVALUATION	Structure/ Safety Cage	Injury Measures			Restraints/ Dummy Kinematics
			Head/ Neck	Chest	Leg/Foot Left, Right	
ACURA TL 2004 models test vehicle wt. = 3,552 lbs.	G	G	G	G	G	G
MERCEDES C CLASS 2001-04 models test vehicle wt. = 3,395 lbs.	G	G	G	G	G	G
LEXUS IS 300 2002-04 models test vehicle wt. = 3,395 lbs.	G	G	G	G	G	G
LEXUS ES 300/ES 330 2002-04 models test vehicle wt. = 3,461 lbs.	G	G	G	G	G	G
BMW 3 SERIES 2000 (mfg. after 11/1999)-04 models test vehicle wt. = 3,347 lbs.	G	G	G	G	G	G
SAAB 9-5 2002 (mfg. after 11/2001)-04 models test vehicle wt. = 3,602 lbs.	G	G	G	G	A	G
JAGUAR X-TYPE 2002 (mfg. after 12/2001)-04 models test vehicle wt. = 3,598 lbs.	G	G	G	G	A	G
VOLVO S60 2001-04 models test vehicle wt. = 3,422 lbs.	G	G	G	G	A	A

BEST PICK frontal

BEST PICK frontal

BEST PICK frontal

BEST PICK frontal

BEST PICK frontal

BEST PICK frontal

BEST PICK frontal

For crashworthiness evaluations of earlier designs of midsize luxury cars, go to www.highwaysafety.org.

End of crashworthiness evaluations

G GOOD **A** ACCEPTABLE **M** MARGINAL **P** POOR

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Go to www.highwaysafety.org: These pages summarize crashworthiness evaluations of midsize luxury cars. The principal component of each vehicle's evaluation is its performance in a 40 mph frontal offset crash test. Details about each vehicle's test performance, including photos taken during and after the crash test, are available online at www.highwaysafety.org.