

INSURANCE INSTITUTE FOR HIGHWAY SAFETY

NEWS RELEASE

September 21, 2003

VNR: Monday 9/22/2003 at 10-10:30 a.m. EDT (C) Telstar 6/Trans. 22;
& again at 1-1:30 p.m. EDT (C) Telstar 5/Trans. 19; fed in rotation

7 OF 7 NEW VEHICLES EARN RATINGS OF GOOD IN HIGH-SPEED FRONTAL OFFSET CRASH TESTS

ARLINGTON, VA — In a recent series of frontal offset crash tests by the Insurance Institute for Highway Safety, all seven new or redesigned vehicles earned the top rating of good. The Institute tested three 2003 model midsize cars (Mazda 6, Infiniti G35, and Saab 9-3), two 2004 model minivans (Toyota Sienna and Nissan Quest), and two 2003 model large luxury cars (Lincoln Town Car and Mercedes E class). In addition to good overall ratings, five of the best performing vehicles earned the Institute's "best pick" designation.

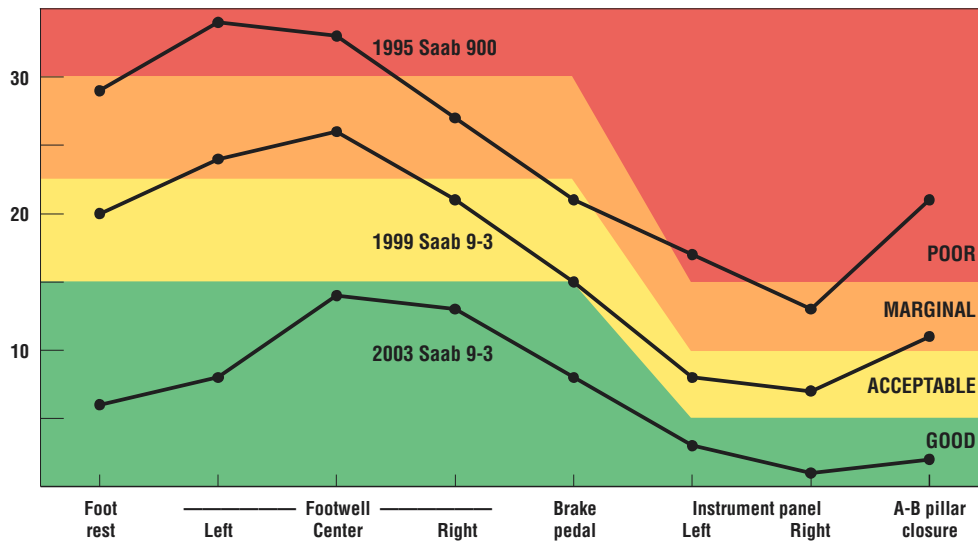
Vehicle ratings reflect performance in 40 mph frontal offset crash tests into a deformable barrier. Based on the results, the Institute evaluates the crashworthiness of passenger vehicles, assigning each vehicle a rating from good to poor overall. If a vehicle earns a good rating, it means that in a real-world crash of similar severity a belted driver would be likely to walk away without serious injuries.

"These results show the progress the auto manufacturers have made in designing safer vehicles," says Institute president Brian O'Neill. "Good performance in the Institute's frontal offset crash test program now is the norm. None of the vehicles we've tested in 2002 or in 2003 has received a marginal or poor frontal crash test rating. But it wasn't always that way."

Saab 9-3 is much improved compared with previous models: When the Institute tested the 1995 model Saab 900, predecessor model to the 9-3, "its structural performance was poor and there was major deformation of the passenger compartment," O'Neill says. "The 1999 model 9-3

— MORE —

COMPARISON OF THREE SAAB MODELS: 1995, 1999, and 2003
Measured intrusion (centimeters) in 40 mph frontal offset tests



1995 SAAB 900
Poor structural performance: major intrusion into the occupant compartment



1999 SAAB 9-3
Improved structural performance: somewhat less intrusion



2003 SAAB 9-3
Good structural performance: much less intrusion

was somewhat improved, but there were still structural problems. In contrast, the new 2003 9-3 is a good performer and a best pick. The structural design of this car is much improved compared with its predecessor models."

Two other midsize cars also earn top rating: The Mazda 6 and Infiniti G35 have good structural designs. The safety cages of both vehicles held up well in the offset test, and most injury measures were low.

"There are now 11 inexpensive and moderately priced midsize car designs with good offset crash test ratings," O'Neill says. "There's no reason to buy a midsize car that doesn't do well in the Institute's test."

Two minivans earn good ratings: The Nissan Quest and Toyota Sienna are new designs for 2004. The Institute tested the Sienna twice, because in the first test there was a major fuel leak immediately following the crash. Toyota identified a defect in the manufacturing process of the plastic fuel tank and recalled the affected models. In a second test with one of the newly manufactured fuel tanks, there was no leak and the results for the instrumented dummy were similar.

"The driver space was maintained well in both tests of the Sienna, injury measures were low, and there was minimal intrusion into the occupant compartment," O'Neill says. The Sienna earned a good rating, and it's a best pick.

The Nissan Quest performed much better than its predecessor model, which the Institute rated poor in 1999. "There's still some room for improvement," O'Neill says. "The steering column moved up too much, and the dummy's head contacted the steering wheel through the frontal airbag. The new Quest is still a good performer but not a best pick."

Lincoln Town Car improves in second test: In the first test of this car, the structural performance was good, but during the crash the dummy's head rebounded against the door frame.

"The hit was hard and resulted in high forces on the head," O'Neill says. "We gave the Town Car an acceptable rating, but Ford officials thought they could fix the problem. They modified the way the airbag deploys, and in the second test the head injury measures were low. The Town Car with the modification earned a good overall rating."

Mercedes E class performs well: The structural performance was good, and there was minimal intrusion into the driver footwell area. During the crash, the dummy's head moved partway out the open window and contacted the door frame, so the dummy kinematics rating was only acceptable. But on all other measures the E class performed well, so it was rated good and a best pick.

Structural design is key: The Institute's frontal offset test into a deformable barrier is especially demanding of vehicle structure. The driver side hits the barrier, so a relatively small area of the vehicle's front-end structure must manage the crash energy. This means intrusion into the occupant compartment is more likely than in a full-width test.

"Good structural design is the key to good performance in the offset tests," O'Neill says. "If a car's front-end structure absorbs and manages the crash energy so the occupant compartment remains largely intact, with little or no intrusion into the driver's space, then the dummy's movement can be controlled, and injury measures are likely to be low. In contrast, poor structural design means greater likelihood of poor control of the dummy and high injury measures."

Institute and government 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 4-page release on results of offset crash tests; 6-page attachment of crashworthiness ratings
VNR 9/22, 10-10:30 a.m. EDT (C) Telstar 6/Trans. 22; 1-1:30 p.m. (C) Telstar 5/Trans. 19; fed in rotation**

Internet: www.highwaysafety.org

Evaluations

Frontal Offset Crash Test Performance

Large luxury cars 4-door models		OVERALL EVALUATION	Structure/ Safety Cage		Injury Measures			Restraints/ Dummy Kinematics	
					Head/ Neck	Chest	Leg/Foot Left, Right		
<div style="display: flex; flex-direction: column; align-items: center; gap: 10px;"> <div style="border: 1px solid black; padding: 2px;">NEWLY TESTED</div> <div style="background-color: green; color: white; border-radius: 50%; padding: 5px; text-align: center;">best pick</div> <div style="background-color: green; color: white; border-radius: 50%; padding: 5px; text-align: center;">best pick</div> <div style="background-color: green; color: white; border-radius: 50%; padding: 5px; text-align: center;">best pick</div> <div style="background-color: green; color: white; border-radius: 50%; padding: 5px; text-align: center;">best pick</div> <div style="background-color: green; color: white; border-radius: 50%; padding: 5px; text-align: center;">best pick</div> <div style="background-color: green; color: white; border-radius: 50%; padding: 5px; text-align: center;">best pick</div> <div style="background-color: green; color: white; border-radius: 50%; padding: 5px; text-align: center;">best pick</div> <div style="background-color: green; color: white; border-radius: 50%; padding: 5px; text-align: center;">best pick</div> <div style="background-color: green; color: white; border-radius: 50%; padding: 5px; text-align: center;">best pick</div> <div style="background-color: green; color: white; border-radius: 50%; padding: 5px; text-align: center;">best pick</div> <div style="background-color: green; color: white; border-radius: 50%; padding: 5px; text-align: center;">best pick</div> </div>	LEXUS LS 430 2001-03 models avg. test vehicle wt. = 4,065 lbs.	G	G	G	G	G	G	G	
	INFINITI Q45 2003 models test vehicle wt. = 3,999 lbs.	G	G	G	G	G	G	G	G
	VOLVO S80 2001-03 models test vehicle wt. = 3,576 lbs.	G	G	G	G	G	G	G	G
	BMW 5 SERIES 1997-2003 models test vehicle wt. = 3,827 lbs.	G	G	G	G	G	G	G	G
	LINCOLN LS 2000-03 models (mfg. after 2/2000) test vehicle wt. = 3,818 lbs.	G	G	G	G	G	G	G	G
	CADILLAC CTS 2003 models (mfg. 10/2002 or after) test vehicle wt. = 3,554 lbs.	G	G	G	G	G	G	G	G
	CADILLAC CTS 2003 models (mfg. before 10/2002) test vehicle wt. = 3,627 lbs.	A	G	A	G	G	M	G	G
	BUICK PARK AVENUE 1997-2003 models test vehicle wt. = 3,794 lbs.	G	G	G	G	G	G	G	G
	CADILLAC SEVILLE 2000-03 models test vehicle wt. = 4,008 lbs.	G	G	G	G	G	G	G	G
	MERCEDES E CLASS 2003 models (mfg. after 12/2002) test vehicle wt. = 3,942 lbs.	G	G	G	G	G	G	G	A
	LEXUS GS 1999-2003 models (mfg. after 11/1998) test vehicle wt. = 3,805 lbs.	G	G	G	G	A	G	G	G

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 large 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.

Large luxury cars 4-door models (continued)		Frontal Offset Crash Test Performance						
		OVERALL EVALUATION	Structure/ Safety Cage	Injury Measures			Restraints/ Dummy Kinematics	
				Head/ Neck	Chest	Leg/Foot Left, Right		
NEWLY TESTED	LINCOLN TOWN CAR 2003 models (mfg. 06/2003 or after) test vehicle wt. = 4,392 lbs.	G	G	G	G	A	G	A
NEWLY TESTED	LINCOLN TOWN CAR 2003 models (mfg. before 06/2003) test vehicle wt. = 4,339 lbs.	A	G	A	G	A	G	M
<p><u>Note:</u> Ratings for Lincoln Town Car also apply to 2003 Ford Crown Victoria and 2003 Mercury Grand Marquis, both large family cars.</p>								
	ACURA RL 1996-2003 models test vehicle wt. = 3,840 lbs.	A	A	A	G	G	A	G
	AUDI A6 1998-2003 models test vehicle wt. = 3,766 lbs.	A	A	G	G	M	M	A

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

Turn page for more crashworthiness evaluations ▶

G GOOD
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Evaluations

Frontal Offset Crash Test Performance

Midsize moderately priced cars 4-door models

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	AUDI A4 2002-03 models (mfg. after 02/2002) test vehicle wt. = 3,569 lbs.	G	G	G	G	G G	G
	SAAB 9-3 2003 models test vehicle wt. = 3,322 lbs.	G	G	G	G	G G	G
NEWLY TESTED	TOYOTA AVALON 2000-03 models test vehicle wt. = 3,468 lbs.	G	G	G	G	G G	G
	VOLKSWAGEN PASSAT 1998-2003 models test vehicle wt. = 3,170 lbs.	G	G	G	G	G G	A
best pick	ACURA TL 1999-2003 models test vehicle wt. = 3,475 lbs.	G	G	G	G	G A	G
best pick	INFINITI G35 2003 models test vehicle wt. = 3,468 lbs.	G	G	A	G	G G	G
	NISSAN MAXIMA INFINITI I30/I35 2000-03 models (mfg. after 11/1999) test vehicle wt. = 3,220 lbs.	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 ►

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Go to www.highwaysafety.org: These pages summarize crashworthiness evaluations of midsize moderately priced 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 4-door models

	OVERALL EVALUATION	Structure/ Safety Cage	Injury Measures			Restraints/ Dummy Kinematics
			Head/ Neck	Chest	Leg/Foot Left, Right	
HONDA ACCORD 2003 models test vehicle wt. = 3,186 lbs.	G	G	G	G	G	G
TOYOTA CAMRY 2002-03 models test vehicle wt. = 3,276 lbs.	G	G	G	G	G	A
SUBARU LEGACY 2000-03 models test vehicle wt. = 3,298 lbs.	G	G	G	G	G	A
MAZDA 6 2003 models test vehicle wt. = 3,086 lbs.	G	G	A	G	G	G
NISSAN ALTIMA 2002-03 models avg. test vehicle wt. = 3,150 lbs.	G	G	G	G	A	G
DODGE STRATUS CHRYSLER SEBRING 2001-03 models test vehicle wt. = 3,252 lbs.	A	A	G	G	G	M
MITSUBISHI GALANT 1999-2003 models test vehicle wt. = 3,069 lbs.	A	A	G	G	G	A
CHEVROLET MALIBU 1997-2003 models test vehicle wt. = 3,058 lbs.	A	A	G	G	G	A
OLDSMOBILE CUTLASS 1997-99 models						P
SATURN L SERIES 2000-03 models test vehicle wt. = 3,192 lbs.	A	A	G	G	G	P

best pick

best pick

best pick

best pick

NEWLY TESTED

Turn page for more crashworthiness evaluations ►

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**Midsize inexpensive cars
 4-door models
 (continued)**

Frontal Offset Crash Test Performance

	OVERALL EVALUATION	Structure/ Safety Cage	Injury Measures			Restraints/ Dummy Kinematics
			Head/ Neck	Chest	Leg/Foot Left, Right	
HYUNDAI SONATA 1999-2003 models test vehicle wt. = 3,131 lbs. KIA OPTIMA 2001-03 models	A	M	G	G	A M	G
PONTIAC GRAND AM OLDSMOBILE ALERO 1999-2003 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 **M** MARGINAL **P** POOR

Evaluations

Frontal Offset Crash Test Performance

	OVERALL EVALUATION	Structure/ Safety Cage	Injury Measures			Restraints/ Dummy Kinematics				
			Head/ Neck	Chest	Leg/Foot Left, Right					
Passenger vans										
NEWLY TESTED	best pick	TOYOTA SIENNA 2004 models avg. test vehicle wt. = 4,170 lbs.	G	G	G	G	G	G	G	G
		HONDA ODYSSEY 1999-2003 models test vehicle wt. = 4,251 lbs.	G	A	G	G	G	G	A	A
NEWLY TESTED		NISSAN QUEST 2004 models test vehicle wt. = 4,233 lbs.	G	G	A	G	G	G	A	A
		FORD WINDSTAR 1999-2003 models test vehicle wt. = 4,131 lbs.	A	A	G	G	A	G	A	A
		KIA SEDONA 2002-03 models test vehicle wt. = 4,665 lbs.	A	A	A	G	G	G	P	P
		MAZDA MPV 2000-03 models test vehicle wt. = 3,657 lbs.	A	A	A	G	G	P	G	G
		DODGE GRAND CARAVAN CHRYSLER TOWN & COUNTRY 2002-03 models avg. test vehicle wt. = 4,224 lbs.	A	A	A	G	A	P	G	G
		CHEVROLET ASTRO GMC SAFARI 1996-2003 models test vehicle wt. = 4,350 lbs.	P	P	G	G	P	G	M	M
		PONTIAC TRANS SPORT/MONTANA OLDSMOBILE SILHOUETTE CHEVROLET VENTURE 1997-2003 models test vehicle wt. = 3,783 lbs.	P	P	P	G	P	P	M	M

For crashworthiness evaluations of earlier designs of passenger vans, go to www.highwaysafety.org.

End of crashworthiness evaluations

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

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