

# INSURANCE INSTITUTE FOR HIGHWAY SAFETY

## NEWS RELEASE

April 16, 2003

VNR: Wed. 4/16/03, 1:30-2 pm EDT fed in rotation (C) Telstar 5/Trans. 19

### **CRASH TEST RESULTS: 5 OF 6 VEHICLES EARN GOOD OVERALL RATINGS, DEMONSTRATE AUTOMAKERS' COMMITMENT TO IMPROVING DESIGNS**

ARLINGTON, VA — A recent series of six frontal offset crash tests by the Insurance Institute for Highway Safety included three 2003 model SUVs (midsize Volvo XC90 and two small models, the Honda Element and Mitsubishi Outlander) plus three large luxury cars (2002 Acura RL, 2003 Cadillac CTS, and 2003 Infiniti Q45). All three SUVs earned good overall ratings and "best pick" designations. Two of the large luxury cars, the CTS and Q45, also earned good ratings and are "best picks." Only the RL failed to earn the Institute's highest rating. It is rated acceptable.

These results "are good news. Five out of six vehicles we tested are good performers, and all five of them also earn our 'best pick' designation," says Institute president Brian O'Neill. "We haven't had a poor or a marginal performer in our frontal offset crash test program since 2001. These new results provide further evidence that auto manufacturers are designing safer vehicles."

Vehicle ratings (attached) 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 overall to poor.

**Volvo XC90 'held up very well' in the offset test:** "This was a very good performer across the board in our frontal offset crash test. The occupant compartment held up very well," O'Neill points out. All of the measures recorded on the instrumented dummy indicated that significant injuries would be unlikely to occur in real-world crashes of comparable severity.

— MORE —

**Two small SUVs earn highest ratings:** The Honda Element and Mitsubishi Outlander are new designs introduced for the 2003 model year, and both performed well in the offset test. Their occupant compartments held up well, and all measures recorded on the driver dummies were low, indicating that significant injuries would be unlikely.

"These ratings double the number of small SUVs that have earned good ratings in our test and 'best pick' designations. Before this round of tests, only the Honda CR-V and Subaru Forester did so. Now we have four top performers in this group," O'Neill says.

**Q45 improves compared with 1997 design:** The 2003 Infiniti Q45 is a successor to the 1997 Q45 design that was a marginal performer in the Institute's 40 mph crash test. "When we tested the predecessor 1997 model, the airbag deployed late and high injury measures were recorded on the driver dummy's head. In addition, measures on both of the dummy's legs indicated the possibility of injury. This is why the old Q45 design was rated marginal. But the frontal airbag system and overall frontal crashworthiness of the new Q45 is much improved. Everything about its performance was good," O'Neill says.

**CTS is tested twice:** The Institute tested this car twice. In the first test, the airbag deployed too late for optimal head protection, so this model was rated acceptable. This led Cadillac to modify the airbag crash sensors, and when the CTS was tested again it earned the highest rating.

**RL is rated acceptable:** This is the only vehicle the Institute tested this time around that didn't earn a good overall rating for crashworthiness. There was "more collapse of the occupant compartment than we like to see in the offset test," O'Neill points out, "and intrusion into the footwell area contributed to the high forces on the dummy's right leg. The dummy's head also hit the B-pillar hard."

**Structural design is key to good performance:** The Institute's frontal offset crash 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 man-

age the crash energy. This means intrusion into the occupant compartment is more likely to occur than in a full-width test.

“Good structural design is the key to good performance in the offset test,” O’Neill notes. “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 is likely to 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 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 3-page release on vehicle crashworthiness  
VNR 4/16/2003, 1:30-2 p.m. EDT fed in rotation  
(C) Telstar 5/Trans. 19; includes test footage**

**Internet: [www.highwaysafety.org](http://www.highwaysafety.org)**

**APPENDIX PAGE 1**  
**LARGE LUXURY CARS, CURRENT MODELS**  
**CRASH TEST RESULTS: 40 MPH FRONTAL OFFSET TEST**

		OVERALL RATING	Structure/ safety cage	Head/ neck	INJURY MEASURES		Restraints and dummy kinematics
					Chest	Legs left / right	
	<b>LEXUS LS 430</b> 2001-03 models (made after 12/2000) avg. test vehicle wt. = 4,065 lbs.	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD/GOOD</b>	<b>GOOD</b>
	<b>BEST PICK</b>						
	<b>INFINITI Q45</b> 2003 models test vehicle wt. = 3,999 lbs.	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD/GOOD</b>	<b>GOOD</b>
<b>NEWLY TESTED</b>	<b>BEST PICK</b>						
	<b>BMW 5 SERIES</b> 1997-2003 models test vehicle wt. = 3,827 lbs.	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD/GOOD</b>	<b>GOOD</b>
	<b>BEST PICK</b>						
	<b>LINCOLN LS</b> 2000-03 models (made after 2/2000) test vehicle wt. = 3,818 lbs.	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD/GOOD</b>	<b>GOOD</b>
	<b>BEST PICK</b>						
	<b>BUICK PARK AVE.</b> 1997-2003 models test vehicle wt. = 3,794 lbs.	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD/GOOD</b>	<b>GOOD</b>
	<b>BEST PICK</b>						
	<b>CADILLAC SEVILLE</b> 2000-03 models test vehicle wt. = 4,008 lbs.	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD/GOOD</b>	<b>GOOD</b>
	<b>BEST PICK</b>						
	<b>CADILLAC CTS</b> 2003 models (made 10/2002 or after) test vehicle wt. = 3,554 lbs.	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD/GOOD</b>	<b>ACCEPT.</b>
<b>NEWLY TESTED</b>	<b>BEST PICK</b>						
	<b>CADILLAC CTS</b> 2003 models (made before 10/2002) test vehicle wt. = 3,627 lbs.	<b>ACCEPT.</b>	<b>GOOD</b>	<b>ACCEPT.</b>	<b>GOOD</b>	<b>GOOD/MARGINAL</b>	<b>ACCEPT.</b>
<b>NEWLY TESTED</b>							
	<b>LEXUS GS</b> 1999-2003 models (made after 11/1998) test vehicle wt. = 3,805 lbs.	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD</b>	<b>ACCEPT./GOOD</b>	<b>ACCEPT.</b>
	<b>NEWLY TESTED</b>						
	<b>ACURA RL</b> 1996-2003 models test vehicle wt. = 3,840 lbs.	<b>ACCEPT.</b>	<b>ACCEPT.</b>	<b>ACCEPT.</b>	<b>GOOD</b>	<b>GOOD/ACCEPT.</b>	<b>GOOD</b>
<b>NEWLY TESTED</b>							

**CAUTION:** Crash test results shouldn't be compared among vehicles with large weight differences.

Vehicles are rated good, acceptable, marginal, or poor based on performance in a 40 mph frontal offset test. Go to [www.highwaysafety.org](http://www.highwaysafety.org) for more information about how vehicles are rated and to obtain ratings for hundreds of other vehicles, including earlier large luxury car designs.

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**APPENDIX PAGE 2**  
**SMALL SUVs, CURRENT MODELS**  
**CRASH TEST RESULTS: 40 MPH FRONTAL OFFSET TEST**

BEST PICK

NEWLY TESTED

BEST PICK

BEST PICK

NEWLY TESTED

BEST PICK

	OVERALL RATING	Structure/ safety cage	INJURY MEASURES			Restraints and dummy kinematics
			Head/ neck	Chest	Legs left / right	
<b>HONDA CR-V</b> 2002-03 models test vehicle wt. = 3,347 lbs.	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD/GOOD</b>	<b>GOOD</b>
<b>HONDA ELEMENT</b> 2003 models test vehicle wt. = 3,494 lbs.	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD/GOOD</b>	<b>GOOD</b>
<b>SUBARU FORESTER</b> 2003 models test vehicle wt. = 3,197 lbs.	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD/ACCEPT.</b>	<b>GOOD</b>
<b>MITSUBISHI OUTLANDER</b> 2003 models test vehicle wt. = 3,439 lbs.	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD/GOOD</b>	<b>ACCEPT.</b>
<b>SATURN VUE</b> 2002-03 models test vehicle wt. = 3,534 lbs.	<b>GOOD</b>	<b>GOOD</b>	<b>ACCEPT.</b>	<b>GOOD</b>	<b>GOOD/GOOD</b>	<b>ACCEPT.</b>
<b>HYUNDAI SANTA FE</b> 2001-03 models (made after 3/02/2001) test vehicle wt. = 3,836 lbs.	<b>GOOD</b>	<b>GOOD</b>	<b>ACCEPT.</b>	<b>GOOD</b>	<b>GOOD/ACCEPT.</b>	<b>GOOD</b>
<b>JEEP WRANGLER</b> 1997-2003 models test vehicle wt. = 3,247 lbs.	<b>ACCEPT.</b>	<b>ACCEPT.</b>	<b>GOOD</b>	<b>GOOD</b>	<b>ACCEPT./GOOD</b>	<b>ACCEPT.</b>
<b>TOYOTA RAV4</b> 2001-03 models (made after 10/2000) test vehicle wt. = 3,104 lbs.	<b>ACCEPT.</b>	<b>GOOD</b>	<b>ACCEPT.</b>	<b>GOOD</b>	<b>ACCEPT./ACCEPT.</b>	<b>ACCEPT.</b>
<b>SUZUKI GRAND VITARA</b> <b>SUZUKI VITARA</b> <b>CHEVROLET TRACKER</b> 1999-2003 models test vehicle wt. = 3,223 lbs.	<b>ACCEPT.</b>	<b>ACCEPT.</b>	<b>ACCEPT.</b>	<b>GOOD</b>	<b>GOOD/GOOD</b>	<b>ACCEPT.</b>
<b>LAND ROVER FREELANDER</b> 2002-03 models test vehicle wt. = 3,549 lbs.	<b>ACCEPT.</b>	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD</b>	<b>ACCEPT./GOOD</b>	<b>POOR</b>
<b>FORD ESCAPE</b> <b>MAZDA TRIBUTE</b> 2001-03 models test vehicle wt. = 3,408 lbs.	<b>MARGINAL</b>	<b>MARGINAL</b>	<b>ACCEPT.</b>	<b>GOOD</b>	<b>GOOD/POOR</b>	<b>ACCEPT.</b>

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**APPENDIX PAGE 3**  
**MIDSIZE SUVs, CURRENT MODELS**  
**CRASH TEST RESULTS: 40 MPH FRONTAL OFFSET TEST**

NEWLY TESTED

BEST PICK

BEST PICK

BEST PICK

BEST PICK

BEST PICK

BEST PICK

	OVERALL RATING	Structure/ safety cage	INJURY MEASURES			Restraints and dummy kinematics
			Head/ neck	Chest	Legs left / right	
<b>VOLVO XC90</b> 2003 models test vehicle wt. = 4,617 lbs.	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD/GOOD</b>	<b>GOOD</b>
<b>BMW X5</b> 2001-03 models (made after 6/2000) test vehicle wt. = 4,665 lbs.	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD/GOOD</b>	<b>GOOD</b>
<b>ACURA MDX</b> 2001-03 models test vehicle wt. = 4,339 lbs.	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD/GOOD</b>	<b>GOOD</b>
<b>FORD EXPLORER</b> <b>MERCURY MOUNTAINEER</b> 2002-03 models (made after 10/2001) test vehicle wt. = 4,511 lbs.	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD/ACCEPT.</b>	<b>GOOD</b>
<b>LINCOLN AVIATOR</b> 2003 models						
<b>MERCEDES M CLASS</b> 1999-2003 models (made after 3/1999) test vehicle wt. = 4,445 lbs.	<b>GOOD</b>	<b>GOOD</b>	<b>ACCEPT.</b>	<b>GOOD</b>	<b>GOOD/GOOD</b>	<b>GOOD</b>
<b>LEXUS RX 300</b> 1999-2003 models test vehicle wt. = 3,973 lbs.	<b>GOOD</b>	<b>ACCEPT.</b>	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD/GOOD</b>	<b>GOOD</b>
<b>TOYOTA HIGHLANDER</b> 2001-03 models test vehicle wt. = 3,880 lbs.	<b>GOOD</b>	<b>GOOD</b>	<b>ACCEPT.</b>	<b>GOOD</b>	<b>GOOD/ACCEPT.</b>	<b>ACCEPT.</b>
<b>SUZUKI GRAND VITARA XL-7</b> 2001-03 models test vehicle wt. = 3,682 lbs.	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD</b>	<b>ACCEPT./GOOD</b>	<b>MARGINAL</b>
<b>MITSUBISHI MONTERO SPORT</b> 2001-03 models test vehicle wt. = 4,151 lbs.	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD/MARGINAL</b>	<b>ACCEPT.</b>
<b>BUICK RENDEZVOUS</b> 2002-03 models test vehicle wt. = 4,191 lbs.	<b>ACCEPT.</b>	<b>ACCEPT.</b>	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD/GOOD</b>	<b>MARGINAL</b>
<b>MITSUBISHI MONTERO</b> 2001-03 models test vehicle wt. = 4,788 lbs.	<b>ACCEPT.</b>	<b>GOOD</b>	<b>ACCEPT.</b>	<b>GOOD</b>	<b>MARGINAL/GOOD</b>	<b>MARGINAL</b>

See next page for more midsize utility vehicle ratings.

**CAUTION:** Crash test results shouldn't be compared among vehicles with large weight differences. The weight range of the SUVs in this group is greater than in most other groups of vehicles the Institute has tested. However, since the weight benefit in two-vehicle crashes is only slight for vehicles weighing more than 4,000 pounds, and because a greater proportion of midsize SUV occupant deaths (compared with car occupant deaths) occur in single-vehicle crashes in which vehicle weight often offers no advantage, the test results for these vehicles can be compared.

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**APPENDIX PAGE 4**  
**MIDSIZE SUVs, CURRENT MODELS (CONTINUED)**  
**CRASH TEST RESULTS: 40 MPH FRONTAL OFFSET TEST**

	OVERALL RATING	Structure/ safety cage	INJURY MEASURES			Restraints and dummy kinematics
			Head/ neck	Chest	Legs left / right	
<b>ISUZU AXIOM</b> 2002-03 models test vehicle wt. = 4,109 lbs.	<b>ACCEPT.</b>	<b>GOOD</b>	<b>ACCEPT.</b>	<b>GOOD</b>	<b>ACCEPT./MARGINAL</b>	<b>ACCEPT.</b>
<b>NISSAN XTERRA</b> 2000-03 models (made after 9/1999) test vehicle wt. = 4,162 lbs.	<b>ACCEPT.</b>	<b>GOOD</b>	<b>ACCEPT.</b>	<b>GOOD</b>	<b>GOOD/MARGINAL</b>	<b>MARGINAL</b>
<b>LAND ROVER DISCOVERY SERIES II</b> 1999-2003 models (made after 10/1998) test vehicle wt. = 4,707 lbs.	<b>ACCEPT.</b>	<b>ACCEPT.</b>	<b>GOOD</b>	<b>GOOD</b>	<b>POOR/ACCEPT.</b>	<b>ACCEPT.</b>
<b>DODGE DURANGO</b> 1998-2003 models test vehicle wt. = 4,844 lbs.	<b>ACCEPT.</b>	<b>ACCEPT.</b>	<b>GOOD</b>	<b>GOOD</b>	<b>POOR/GOOD</b>	<b>MARGINAL</b>
<b>CHEVROLET TRAILBLAZER GMC ENVOY OLDSMOBILE BRAVADA</b> 2002-03 models test vehicle wt. = 4,544 lbs.	<b>MARGINAL</b>	<b>ACCEPT.</b>	<b>ACCEPT.</b>	<b>ACCEPT.</b>	<b>GOOD/POOR</b>	<b>ACCEPT.</b>
<b>JEEP GRAND CHEROKEE</b> 1999-2003 models test vehicle wt. = 3,968 lbs.	<b>MARGINAL</b>	<b>MARGINAL</b>	<b>GOOD</b>	<b>GOOD</b>	<b>MARGINAL/ACCEPT.</b>	<b>MARGINAL</b>
<b>JEEP LIBERTY</b> 2002-03 models test vehicle wt. = 4,100 lbs.	<b>MARGINAL</b>	<b>GOOD</b>	<b>MARGINAL</b>	<b>GOOD</b>	<b>ACCEPT./GOOD</b>	<b>ACCEPT.</b>
<b>PONTIAC AZTEK</b> 2001-03 models test vehicle wt. = 4,098 lbs.	<b>MARGINAL</b>	<b>ACCEPT.</b>	<b>MARGINAL</b>	<b>GOOD</b>	<b>GOOD/GOOD</b>	<b>MARGINAL</b>
<b>NISSAN PATHFINDER INFINITI QX4</b> 1997-2003 models (made after 10/1996) test vehicle wt. = 4,191 lbs.	<b>MARGINAL</b>	<b>POOR</b>	<b>ACCEPT.</b>	<b>GOOD</b>	<b>GOOD/GOOD</b>	<b>MARGINAL</b>
<b>ISUZU RODEO</b> 2002-03 models test vehicle wt. = 4,021 lbs.	<b>MARGINAL</b>	<b>GOOD</b>	<b>MARGINAL</b>	<b>GOOD</b>	<b>ACCEPT./MARGINAL</b>	<b>ACCEPT.</b>
<b>CHEVROLET BLAZER</b> 1995-2003 models test vehicle wt. = 4,103 lbs.	<b>POOR</b>	<b>POOR</b>	<b>POOR</b>	<b>GOOD</b>	<b>GOOD/ACCEPT.</b>	<b>POOR</b>

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