
EMBARGOED UNTIL 12:01 A.M. ET, TUESDAY, MARCH 14, 2023

March 14, 2023

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VNR: Tues. 3/14/2023, 10:30-11 a.m. ET; repeat 1:30-2 p.m. ET (KU) GALAXY 17
SD transponder 14/slot 4 (dl11983V) bandwidth 6 MHz; symbol rate 3.9787 FEC ¾
HD transponder 14-lower (dl11971V) bandwidth 18 MHz; symbol rate 13.235 FEC ¾

Rear passenger protection falls short in most midsize SUVs

ARLINGTON, Va. — Most midsize SUVs offer inadequate front crash protection for passengers seated in the rear, the latest crash test ratings from the Insurance Institute for Highway Safety show.

“All these vehicles provide excellent protection for the driver,” said IIHS President David Harkey, “but only a handful extend that level of safety to the back seat.”

IIHS recently updated its longstanding moderate overlap front crash test to add a rear passenger dummy positioned behind the driver. Although the test still includes a driver dummy, rear passenger protection is the main thing currently differentiating vehicles in this test.

Of 13 midsize SUVs tested, only four — the Ford Explorer, Ford Mustang Mach-E, Subaru Ascent and Tesla Model Y — earn good ratings.

Three others, the Chevrolet Traverse, Toyota Highlander and Volkswagen Atlas, earn marginal ratings. Six more, the Honda Pilot, Hyundai Palisade, Jeep Grand Cherokee, Jeep Wrangler 4-door, Mazda CX-9 and Nissan Murano, are rated poor.

IIHS [launched](#) the updated moderate overlap front test last year in response to research showing that the front-seat safety gains that were driven by the original evaluation have not been matched in the rear. In vehicles from model year 2007 onward, the risk of a fatal injury is 46 percent higher for belted occupants in the rear seat than in the front. This isn't because the rear seat has become less safe, but because restraint technologies have only improved in the front seat.

The new test incorporates a Hybrid III dummy representing a small woman or 12-year-old child positioned in the second row behind the driver and uses specific metrics that focus on the injuries most frequently seen in rear-seat occupants.

To earn a good rating, measurements recorded by sensors in the second-row dummy must not exceed limits indicating an excessive risk of injury to the head, neck, chest, abdomen or thigh. Video footage and greasepaint applied to the dummy's head must confirm that the restraints prevented the head from hitting the vehicle interior or coming too close to the front seatback and also prevented the dummy's body from “submarining,” or sliding forward beneath the lap belt, which causes abdominal injuries. A pressure sensor that monitors the position of the shoulder belt on the torso of the dummy is also used to help gauge the risk of chest injuries.

As in the original test, the structure of the occupant compartment must also maintain adequate survival space for the driver, and measurements taken from the driver dummy must not show excessive risk of injuries.

“Zeroing in on weaknesses in rear seat safety is an opportunity to make big gains in a short time, since solutions that are already proven to work in the front can successfully be adapted for the rear,” said IIHS Senior Research Engineer Marcy Edwards, who led the development of the updated test. “The four good ratings in this round of testing show that some automakers are already doing it.”

By most metrics, the four good-rated vehicles provide solid protection for rear passengers. The seat belt remained properly positioned on the pelvis, the side curtain airbag performed correctly, and there was no excessive force on the dummy’s chest. Measurements taken from the rear dummy indicated a slight risk of head or neck injuries for the Ascent and Explorer, however. In those two vehicles and in the Model Y, the rear dummy’s head approached the front seatback, which increases the risk of head injuries.

Measurements indicated a similar slight risk of head or neck injuries for the rear passenger in the marginal-rated Atlas and Highlander and more significant risk of such injuries in the Traverse. The seat belt tension was high in the Atlas and Traverse, increasing the risk of chest injuries. In the Atlas, the rear dummy’s head came close to contacting the front seatback. In the Highlander, the rear dummy’s seat belt moved from the ideal position on the pelvis onto the abdomen, raising the risk of abdominal injuries.

In the poor-rated vehicles, measurements taken from the rear dummy indicated a high risk of head or neck injuries to the rear passenger in the CX-9, Grand Cherokee, Murano, Palisade and Pilot and a significant risk of head or neck injuries in the Wrangler.

The Wrangler lacks a side curtain airbag in the rear. The lap belt also moved from the ideal position on the pelvis onto the abdomen during the test.

The rear seat belt tension was high in the CX-9, Grand Cherokee, Palisade and Pilot. That contributed to high chest injury values for the rear dummy in the Grand Cherokee.

The head of the rear passenger dummy came close to hitting the front seatback in the Murano. In the Grand Cherokee, the rear dummy’s head ended up between the window and the airbag as it rebounded from the initial impact, increasing the risk of injury from the hard surfaces of the vehicle interior or objects outside the vehicle.

All 13 SUVs performed well according to the original front seat criteria, but not all of them were flawless. In the Atlas, measurements taken from the driver dummy were high enough to indicate a significant risk of injuries to the right leg of the driver. In the Traverse, the driver dummy’s head hit the steering wheel hard through the airbag. Finally, in the Wrangler, the driver’s side airbag did not deploy.

Release continues on the next page.

Ratings in updated moderate overlap front test: midsize SUVs

	OVERALL RATING	Driver injury measures						Rear passenger injury measures			
		Structure & safety cage	Head & neck	Chest	Knee & thigh	Leg & foot	Driver restraints & kinematics	Head & neck	Chest	Thigh	Rear passenger restraints & kinematics
2022-23 Ford Explorer	G	G	G	G	G	G	G	A	G	G	A
2021-23 Ford Mustang Mach-E	G	G	G	G	G	G	G	G	G	G	G
2022-23 Subaru Ascent	G	G	G	G	G	G	G	A	G	G	A
2022-23 Tesla Model Y	G	G	G	G	G	G	G	G	G	G	A
2022-23 Chevrolet Traverse	M	G	A	G	G	G	G	M	M	G	G
2022-23 Toyota Highlander	M	G	G	G	G	G	G	A	G	G	P
2022-23 Volkswagen Atlas	M	G	G	G	G	M	G	A	M	G	M
2022 Honda Pilot	P	G	G	G	G	G	G	P	M	G	P
2022-23 Hyundai Palisade	P	G	G	G	G	G	G	P	M	G	G
2022-23 Jeep Grand Cherokee	P	G	G	G	G	G	G	P	P	G	A
2021-23 Jeep Wrangler 4-door	P	G	G	G	G	G	G	M	M	G	P
2021-23 Mazda CX-9	P	G	G	G	G	G	G	P	M	G	G
2021-23 Nissan Murano	P	G	G	G	G	G	G	P	G	G	M

G Good A Acceptable M Marginal P Poor

For more information, go to [iihs.org](https://www.iihs.org)

The Insurance Institute for Highway Safety (IIHS) is an independent, nonprofit scientific and educational organization dedicated to reducing deaths, injuries and property damage from motor vehicle crashes through research and evaluation and through education of consumers, policymakers and safety professionals. IIHS is wholly supported by auto insurers.