Insurance Institute for Highway Safety

News Release

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Ten out of 13 midsize cars earn good ratings in new passenger-side crash test

ARLINGTON, Va. — A new crash test program from the Insurance Institute for Highway Safety aims to ensure that manufacturers pay attention to the safety of front passengers as well as drivers.

The test was developed after it became clear that some manufacturers were giving short shrift to the right side of the vehicle when it comes to small overlap front crash protection. A good or acceptable passenger-side rating will be required to qualify for the Institute's 2018 *TOP SAFETY PICK+* award.

The 2018 Subaru Outback earns a good rating in the passenger-side small overlap front crash test.

The first test group in the passenger-side small overlap front test program did better overall than vehicles IIHS previously evaluated for research. Ten out of 13 midsize cars tested earn a good rating, while one is acceptable and two earn a marginal rating.

In contrast with a group of 2014-16 model small SUVs tested for research, none of the 2017-18 midsize cars had a poor or marginal structural rating. Instead, the biggest problem in the new group was inconsistent airbag protection in five cars, which would put passengers' heads at risk.

"The midsize cars we tested didn't have any glaring structural deficiencies on the right side," says IIHS Senior Research Engineer Becky Mueller. "Optimizing airbags and safety belts to provide better head protection for front-seat passengers appears to be the most urgent task now."

In recent years, automakers have made important changes to vehicle structures and restraints to earn good ratings in the driver-side small overlap front test.

That test sends a vehicle into a barrier at 40 mph with just 25 percent of the vehicle's front end overlapping the barrier on the driver side. It mimics what happens when the front driver-side corner of a vehicle collides with another vehicle or with an obstacle such as a tree or utility pole. The Institute introduced the small overlap test in 2012, and it has been part of the IIHS awards criteria since 2013.

At first, a majority of models earned poor or marginal ratings in the test, which bypasses most of a vehicle's primary structure and is therefore more challenging than the head-on crash test conducted by the federal government or the moderate (40 percent) overlap test that the Institute has conducted since 1995. To improve performance, manufacturers strengthened the occupant compartment and in some cases extended the bumper and added engagement structures. Many also had to lengthen the side curtain airbags to provide better forward coverage. The changes have paid off: Among 2017 models, two-thirds earn a good rating.

IIHS engineers initially focused on driver-side protection for a simple reason: Every vehicle on the road has a driver, future advances in self-driving cars notwithstanding, but not every vehicle has a passenger. It also was clear that what works for small overlap protection on the left side might not work on the right, since vehicles are to a certain extent asymmetrical.

Once manufacturers solved the small overlap problem on the driver side, the Institute wanted to see them use that know-how on the passenger side as well.

Mueller oversaw the development of a passenger-side test that is virtually identical to the driver-side one, except the vehicle overlaps the barrier on the right side. In addition, instead of just a driver dummy, a passenger dummy also is seated in front.

In June 2016, IIHS published provisional results of passenger-side small overlap tests of small SUVs with good driver-side ratings. In that group, only the 2016 Hyundai Tucson would have earned a good passenger-side rating. Taking into account vehicle "twins," there were nine SUVs in total: two good (the Tucson and its twin, the Kia Sportage), four acceptable, two marginal and one poor.

"When we published that research, we said we were considering adding a passenger-side test to our awards criteria," Mueller says. "Clearly, some manufacturers were paying attention. Many of the cars in this group are equipped with improved passenger airbags that appear to be designed to do well in our test and in an oblique test that the government is considering adding to its safety ratings."

Among the midsize cars, all of which have good driver-side ratings, the Subaru Outback was one of the top performers in the new test. Its good passenger-side rating also applies to its twin, the Subaru Legacy. Their good ratings are notable, given that the 2014 Subaru Forester earned a marginal rating in the earlier tests. The Forester's rating carries forward through the 2018 model year.

In the test of the Outback, the passenger's space was maintained well, with maximum intrusion of 4 inches at the right edge of the toepan. The safety belt and front and side curtain airbags worked together to keep the dummy in place, and measures taken from the dummy showed there would be a low risk of injury in a similar real-world crash.

The Chevrolet Malibu and the Volkswagen Passat earn a marginal passenger-side rating. In both cars, the passenger dummy's head slid off the front airbag and contacted the dashboard. Measures taken from the dummy showed head injuries would be possible in a real-world crash of the same severity.

The Passat is one of five cars with an acceptable, instead of good, structural rating. It had maximum intrusion of 7 inches at the lower door-hinge pillar. In contrast, maximum intrusion in the Passat's driver-side small overlap test was 4 inches in a comparable location.

The vehicle with the most structural damage was the Mazda 6. Intrusion reached 9 inches at the lower door-hinge pillar, compared with 5 inches in the driver-side test. The Mazda 6's airbags and belts worked well together, and the dummies showed no indication of likely injuries, so the car earns a good rating overall.

For other vehicles that manufacturers think can achieve an acceptable or higher passenger-side small overlap rating, IIHS will accept automaker test data in lieu of conducting its own tests. If a model has a good driver-side small overlap

rating, automakers may submit video footage and data from a passenger-side test conducted using the IIHS protocol, and Institute staff will evaluate the information and assign a rating. IIHS will conduct occasional audit tests.

The Institute has used that process, known as test verification, to assign other types of ratings under certain circumstances. In the case of the passenger-side small overlap ratings, verification will allow more vehicles to vie for a 2018 *TOP SAFETY PICK+* award than the Institute would have time to test on its own.

Passenger-side small overlap front crash ratings for midsize cars

2017 models tested, except where noted

	Overall	Structure	Passenger restraints & kinematics	Passenger injury measures			
				Head & neck	Chest	Hip & thigh	Lower leg & foot
Ford Fusion	G	G	G	G	G	G	G
Honda Accord	G	G	G	G	G	G	G
Lincoln MKZ	G	G	G	G	G	G	G
2018 Subaru Legacy	G	G	G	G	G	G	G
2018 Subaru Outback	G	G	G	G	G	G	G
Hyundai Sonata	G	G	A	G	G	G	G
Mazda 6	G	A	G	G	G	G	G
Nissan Altima	G	G	G	G	G	G	M
Nissan Maxima	G	A	G	G	G	G	G
2018 Toyota Camry	G	G	A	G	G	G	G
Volkswagen Jetta	A	A	M	G	G	G	G
Volkswagen Passat	M	A	M	A	G	G	G
Chevrolet Malibu	M	A	M	A	G	G	A

Good G Acceptable A Marginal M Poor P

Driver restraints and kinematics and driver dummy injury measures are factored into the overall rating.
All were good in this group.

For more information, go to iihs.org

The Insurance Institute for Highway Safety is an independent, nonprofit scientific and educational organization dedicated to reducing the losses — deaths, injuries and property damage — from motor vehicle crashes. The Institute is wholly supported by auto insurers.