



## NEWS RELEASE

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### **IIHS issues first crash avoidance ratings under new test program; Seven midsize vehicles earn top marks for front crash prevention**

ARLINGTON, Va. — A new test program by the Insurance Institute for Highway Safety (IIHS) rates the performance of front crash prevention systems to help consumers decide which features to consider and encourage automakers to speed adoption of the technology. The rating system is based on research by the Highway Loss Data Institute (HLDI) indicating that forward collision warning and automatic braking systems are helping drivers avoid front-to-rear crashes.

The Institute rates models with optional or standard front crash prevention systems as superior, advanced or basic depending on whether they offer autonomous braking, or autobrake, and, if so, how effective it is in tests at 12 and 25 mph. Vehicles rated superior have autobrake and can avoid a crash or substantially reduce speeds in both tests. For an advanced rating a vehicle must have autobrake and avoid a crash or reduce speeds by at least 5 mph in 1 of 2 tests.

To earn a basic rating, a vehicle must have a forward collision warning system that meets National Highway Traffic Safety Administration performance criteria. For a NHTSA endorsement, a system must issue a warning before a specified time in 5 of 7 test trials under three scenarios. The agency identifies vehicles with compliant systems at [safercar.gov/Safety+Ratings](http://safercar.gov/Safety+Ratings).

Moderately priced and luxury midsize cars and SUVs are the first to be evaluated in the new IIHS test program. These include 74 vehicles, all 2013-14 models. Seven earn the highest rating of superior when equipped with optional autobrake and forward collision warning systems. They are the Cadillac ATS sedan and SRX SUV, Mercedes-Benz C-Class sedan, Subaru Legacy sedan and Outback wagon, Volvo S60 sedan and XC60 SUV.

Six models earn an advanced rating when equipped with autobrake and forward collision warning. These include the 2014 Acura MDX SUV, Audi A4 sedan and Q5 SUV, 2014 Jeep Grand Cherokee SUV, Lexus ES sedan and the 2014 Mazda 6 sedan. In addition, the Volvo S60 and XC60 earn an advanced rating when they aren't equipped with an option called Collision Warning with Full Auto Brake and Pedestrian Detection. The S60 and XC60 are the only models in the new test program with standard autobrake. Called City Safety, the system brakes to avoid a front-to-rear crash in certain low-speed conditions without warning the driver before it takes action.

Twenty-five other vehicles earn a basic rating. Three models available with forward collision warning earn higher ratings when equipped with autobrake. They are the 2014 Acura MDX and the Cadillac ATS and SRX. Thirty-six models either don't offer a front crash prevention system, or they have a system that doesn't meet NHTSA or IIHS criteria.

"Front crash prevention systems can add a thousand dollars or more to the cost of a new car. Our new ratings let consumers know which systems offer the most promise for the extra expense," says David Zuby, IIHS chief research officer.

The front crash prevention ratings complement the Institute's long-standing crash test program telling consumers how well passenger vehicles protect people in a range of crash configurations. In its crashworthiness program, the Institute rates vehicles good, acceptable, marginal or poor based on performance in moderate overlap front, small overlap front, side, roof strength and head restraint evaluations.

For crash avoidance technologies, the Institute developed a three-tier rating system of superior, advanced and basic to reflect that even a basic forward collision warning system can provide significant benefits.

### **About the technology**

Front crash prevention is part of a larger group of crash avoidance features spreading through the U.S. vehicle fleet. Marketed under various trade names, system capabilities vary by manufacturer and model, and most are offered as optional add-ons. In general, current front crash prevention systems fall into two categories: forward collision warning and front crash mitigation or prevention with autobrake.

Forward collision warning alerts a driver when the system detects that the vehicle is about to crash into the vehicle in front, but the system doesn't slow down or stop the vehicle. Some forward collision warning systems are combined with an autobrake system to reduce vehicle speeds in a crash, but they aren't designed to avoid the collision. Acura's Collision Mitigation Brake System is an example.

Other autobrake systems can slow down or completely stop the car to avoid some front-to-rear crashes if its driver doesn't brake or steer out of the way in response to a warning. Like the Acura system, these will reduce the speed of those crashes they can't prevent. Cadillac's Automatic Collision Preparation and Volvo's Collision Warning with Full Auto Brake and Pedestrian Detection combined with City Safety are examples.

Another design difference involves whether the vehicle ahead is stopped or moving. All of the front crash prevention systems that earn a superior or advanced rating from IIHS are capable of braking for a stopped or slower-moving vehicle. Some other systems are designed to brake for a stopped car ahead only if sensors first detect the car moving before it stops. The 2013 BMW 3 series sedan is available with this type of system. It gets a basic rating for front crash prevention.

"The point of autobrake systems is to help inattentive drivers avoid rear-ending another car," Zuby explains. "It's clear that the ability to automatically brake for both stopped and moving vehicles prevents the most crashes."



**Running into an actual car puts the test driver at risk and is expensive, so IIHS uses a stationary target as a stand-in. Under the vinyl cover, inflatable tubes and foam sit on a metal frame, which is then affixed to metal guides on the track to keep the target from moving until it is struck by the test vehicle. A GPS system and other sensors monitor the test vehicle's lane position, speed, time to collision, braking and other data. An onboard camera captures each test run from the driver's perspective and monitors any warnings issued by the front crash prevention system.**

### **Test track evaluations**

To gauge how autobrake systems from different manufacturers perform, the Institute conducted a series of five test runs at speeds of 12 and 25 mph on the track at the Vehicle Research Center in Ruckersville, Va. In each test, an engineer drove the vehicle toward a stationary target designed to simulate the back of a car. Sensors in the test vehicle monitored its lane position, speed, time to collision, braking and other data. The IIHS protocol is similar to the procedure the European New Car Assessment Programme uses to evaluate autobrake systems, which the group plans to begin rating in 2014.

The Institute awards as many as five points in the autobrake tests, based on how much the systems slow the vehicle to avoid hitting the inflatable target or lessen the severity of the impact. In the case of an unavoidable collision, lowering the striking vehicle's speed reduces the crash energy that vehicle structures and restraint systems have to manage. That reduces the amount of damage to both the striking and struck car and minimizes injuries to people traveling in them.

The Institute awards as many as five points in the autobrake tests, based on how much the systems slow

"We decided on 25 mph because development testing indicated that results at this speed were indicative of results at higher speeds — and because higher-speed tests would risk damaging the test vehicles," Zuby says. "As such, we expect crash mitigation benefits at higher speeds as well."

In addition to points earned in the autobrake tests, vehicles earn one point if they have a forward collision warning system that meets NHTSA criteria. That means vehicles can earn a maximum of six points total for front crash prevention. Models with one point earn a basic rating. A total of 2 to 4 points qualifies vehicles for an advanced rating, and 5 to 6 points qualifies vehicles for a superior rating.

The highest-scoring cars and SUVs have autobrake and substantially reduce speeds in both the 12 and 25 mph tests. Most of these systems prevent the 12 mph collision.

Subaru's EyeSight performed best. It helped the Legacy and Outback avoid hitting the target at both test speeds. Next best was Cadillac's Automatic Collision Preparation. The system helped the ATS and SRX avoid hitting the target in the 12 mph test and reduced the ATS's speed by 15 mph and the SRX's speed by 19 mph in the 25 mph test.

"We want to help get the most effective systems in as many vehicles as soon as possible. That means a speed mitigation system like Subaru's EyeSight that can prevent crashes at low and moderate speeds," Zuby says. "At the same time, we want consumers to know that forward collision warning alone can help them avoid crashes, and it's a feature that's available on more models than autobrake."

Besides the 2013 BMW 3 series, another midsize model advertised with autobrake also earns a basic rating. In tests of the Infiniti JX SUV, there was only minimal braking at 12 and 25 mph. The Toyota Prius v wagon, which claims to have autobrake, had minimal braking in IIHS tests and currently fails to meet NHTSA criteria for forward collision warning. It doesn't qualify for an IIHS front crash prevention rating.

#### **New criteria for highest safety accolade**

The Institute introduced the *TOP SAFETY PICK+* award last year to recognize models with the best crash protection. To qualify for the 2014 award, vehicles must earn a basic, advanced or superior rating for front crash prevention. This is in addition to a good or acceptable rating for occupant protection in a small overlap front crash, plus good ratings in the moderate overlap front, side, roof strength and head restraint tests.

To qualify for a 2014 *TOP SAFETY PICK* award, models must earn a good or acceptable rating in the small overlap front test, plus good ratings in the moderate overlap front, side, roof strength and head restraint tests. Winners of the 2014 awards will be announced in December.

#### **For more information, go to [www.iihs.org](http://www.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 crashes on the nation's roads. The Institute is wholly supported by auto insurers.

# Front crash prevention ratings

## 2013-14 midsize cars and SUVs

12 mph test		25 mph test		autobrake total points	Forward collision warning
speed reduction	points	speed reduction	points		

### SUPERIOR



	Subaru Legacy (EyeSight)	12 mph	2	25 mph	3	5	1
	Subaru Outback (EyeSight)	12 mph	2	25 mph	3	5	1
	Cadillac ATS (Forward Collision Alert, Automatic Collision Preparation)	12 mph	2	15 mph	2	4	1
	Cadillac SRX (Forward Collision Alert, Automatic Collision Preparation)	12 mph	2	19 mph	2	4	1
	Mercedes-Benz C-Class (Distronic Plus and Pre-Safe Brake)	11 mph	2	13 mph	2	4	1
	Volvo S60 (City Safety/Collision Warning with Full Auto Brake and Pedestrian Detection)	12 mph	2	14 mph	2	4	1
	Volvo XC60 (City Safety/Collision Warning with Full Auto Brake and Pedestrian Detection)	12 mph	2	11 mph	2	4	1

### ADVANCED



	Acura MDX (2014; Forward Collision Warning/Collision Mitigation Brake System)	7 mph	1	6 mph	1	2	1
	Audi A4 (Audi pre sense front)	11 mph	2	0 mph	0	2	1
	Audi Q5 (Audi pre sense front)	11 mph	2	0 mph	0	2	1
	Jeep Grand Cherokee (2014; Forward Collision Warning with Crash Mitigation)	4 mph	0	7 mph	1	1	1
	Lexus ES (Pre-Collision System)	6 mph	1	4 mph	0	1	1
	Mazda 6 (2014; Smart City Brake Support)	12 mph	2	0 mph	0	2	0
	Volvo S60 (City Safety)	12 mph	2	2 mph	0	2	0
	Volvo XC60 (City Safety)	12 mph	2	1 mph	0	2	0

### BASIC



	Acura MDX (2014)** Acura ZDX BMW 3 series, X3 Cadillac ATS, SRX** Chevrolet Equinox, Malibu Dodge Durango (2014)*	Ford Edge, Explorer, Flex, Fusion GMC Terrain Honda Accord, Crosstour Infiniti EX, FX, JX* Infiniti Q50, QX50, QX60, QX70 (2014)*	Jeep Cherokee (2014)* Lexus IS and RX (2014)* Lincoln MKT, MKX, MKZ Mercedes-Benz GLK, M-Class*
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### Point system based on autobrake performance

speed reduction (mph)	points
<b>12 mph test</b>	
less than 5	0
5 to 9	1
10 or more	2
<b>25 mph test</b>	
less than 5	0
5 to 9	1
10 to 21	2
22 or more	3

### SUPERIOR

Models earning a total of 5 to 6 points, based on performance in autobrake tests and credit for forward collision warning.

### ADVANCED

Models earning a total of 2 to 4 points, based on performance in autobrake tests and credit for forward collision warning.

### BASIC

Models earning 1 point for forward collision warning or in 1 of 2 autobrake tests.

For details on individual vehicles, go to [iihs.org](http://iihs.org)

\*Note: These models have an autobrake system that IIHS hasn't tested, with the exception of the Infiniti JX. In the test of the JX, renamed the QX60 for 2014, the autobrake system didn't earn enough points to qualify for a higher rating.

\*\* Note: These models have an optional forward collision warning system without autobrake.