

Status Report



Insurance Institute for Highway Safety | Highway Loss Data Institute

Successes and failures

Midsize SUVs have mixed small overlap results

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Three more midsize SUVs achieved good or acceptable ratings in the Institute's latest round of small overlap front crash testing, but many models, including three newly rated SUVs from Fiat Chrysler Automobiles and one from Hyundai, continue to struggle with the test.

The Nissan Murano earns a good rating and, with a superior-rated optional front crash prevention system, qualifies for the

Institute's highest award, *TOP SAFETY PICK+*. The Ford Flex earns an acceptable rating and qualifies for *TOP SAFETY PICK*.

Consumers looking for a midsize SUV now have seven choices that qualify for IIHS awards — five that earn *TOP SAFETY PICK* and two that earn *TOP SAFETY PICK+*.

Among the seven 2015 models in this round of testing, the Jeep Wrangler 4-door model also picked up a good small overlap

rating. However, the Wrangler offers only marginal protection in side and rear crashes, so it's not a recommended choice. It also lacks a fixed roof, so it can't provide good protection in rollover crashes.

Aside from the Wrangler, three other Fiat Chrysler SUVs were tested for small overlap protection and didn't fare well. The Dodge Journey earns a poor rating, and the Dodge Durango and Jeep Cherokee earn marginal ratings. The Hyundai Santa Fe also earns a marginal rating.

The small overlap test replicates what happens when the front corner of a vehicle collides with another vehicle or an object such as a tree or utility pole. In the test, 25 percent of a vehicle's front end on the driver's side strikes a rigid barrier at 40 mph.

The test is more difficult than either the head-on crashes conducted by the government or the IIHS moderate overlap test. That's because, in a small overlap test, the main structures of the vehicle's front-end crush zone are bypassed, making it hard for the vehicle to manage crash energy. The occupant compartment can collapse as a result.

Since IIHS began small overlap testing in 2012, manufacturers have responded to the





Midsize SUV ratings in small overlap front test

		Overall	Structure	Restraints & kinematics	Dummy injury measures			
					Head & neck	Chest	Hip & thigh	Lower leg & foot
TSP+	Nissan Murano	G	G	G	G	G	G	G
TSP	Ford Flex	A	M	A	G	G	G	G
	Jeep Wrangler 4-door	G	G	A	G	G	G	A
	Hyundai Santa Fe	M	P	A	G	G	G	M
	Jeep Cherokee	M	M	P	G	G	G	A
	Dodge Durango	M	P	A	G	G	A	P
	Dodge Journey	P	P	M	G	G	M	M

Good **G** Acceptable **A** Marginal **M** Poor **P**

In addition to earning a good small overlap rating, the Murano improved its roof strength rating to good from the previous generation's marginal rating.

The optional front crash prevention system also is new for 2015. The Murano's autobrake nearly avoided a collision in the 12 mph IIHS track test and reduced the vehicle's speed by 11 mph in the 25 mph test. The Murano also earns a point for meeting federal criteria for forward collision warning systems.

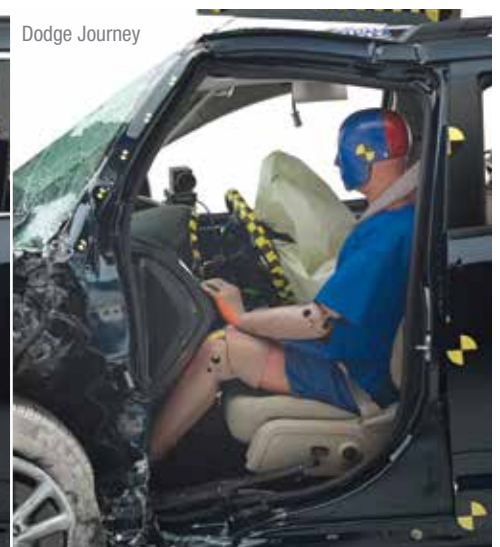
Despite being an older design, the 2007-15 Wrangler's structure incorporates some

features that automakers now are adding to provide better protection in small overlap front crashes. A stiff bracket that supports the suspension and is welded to the outside of the frame rail, plus a strong bumper, helped the Wrangler glance off the barrier.

"Some automakers are purposely adding structure to make vehicles move away from the barrier during the small overlap crash test," Zuby points out. "The Wrangler happened to have it already built in."

Thanks to this deflection, the Wrangler's occupant compartment remained intact, with

Best and worst performer: The redesigned Nissan Murano (below left) hit all the marks for good small overlap protection, starting with the good structural performance shown in this post-crash photo. In contrast, the occupant compartment of the Dodge Journey failed to hold up.



challenge in two ways. One is by taking the test into account when models are redesigned. The other is by making smaller modifications to beef up the front structure and improve airbags even before a model gets a full overhaul.

"This test presented a major challenge for manufacturers when it was introduced three years ago, and many have adapted quickly," says IIHS Chief Research Officer David Zuby. "Chrysler, Dodge and Jeep have had some successes with redesigned models, but they haven't done much in the way of interim improvements. As a result, they still have many models that rate poor or marginal."

The best performer in the current group of seven is the redesigned 2015 Murano. It hit all the marks for ideal small overlap protection. The driver space held up well, with maximum intrusion of 5 inches at the lower door hinge pillar. The dummy's movement was well-controlled, and its head hit the front airbag and stayed there until rebound. The side curtain airbag deployed with sufficient forward coverage to protect the head from contact with side structure and outside objects. Measures taken from the dummy indicate a low risk of any significant injuries in a crash of this severity.

maximum intrusion of 4 inches in the left footwell. Forces on both of the dummy's lower legs were just high enough to indicate a moderate risk of injury in a crash of this severity.

The dummy's movement was well-controlled, and the head hit the front airbag and remained there until rebound. However, a real driver under slightly different crash circumstances could be vulnerable to injuries from intruding structure or outside objects. That's because the Wrangler is one of a handful of vehicles still sold without standard side airbags to protect the head and chest.

The Flex managed an acceptable rating, despite the fact that its structure didn't hold up particularly well. Intrusion reached 8 inches toward the top and bottom of the door



The Jeep Wrangler deflected off the barrier, which limited the forces on the vehicle, resulting in a good rating.

hinge pillar and nearly 7 inches at the instrument panel. The steering column was pushed back 4 inches toward the driver.

The dummy's head barely contacted the front airbag before sliding off the left side. The side curtain airbag deployed, though it lacked sufficient forward coverage to fully protect the head.

Despite the Flex's shortcomings, measures taken from the dummy indicate a low risk of any significant injuries in a crash of this severity.

The Flex's rating applies to earlier model years, dating back to its 2009 introduction.

The Journey is the worst performer in the group and a classic example of poor small overlap protection. The occupant compartment failed to hold up, with intrusion measuring as much as 9 inches at the instrument panel and the parking brake pedal, which tore through the dummy's left lower leg. Injuries to the left hip, left knee and right lower leg also would be possible.

The dummy's head barely contacted the front airbag before sliding off, as the steering column moved to the right. The side curtain airbag failed to deploy, leaving the dummy's head vulnerable to contact with side structure and outside objects.

The Journey also was introduced in 2009, and its poor rating applies to the previous models. ■

DUI checkpoints, passive sensors are underutilized

Well-publicized sobriety checkpoints are a proven way to reduce alcohol-impaired driving and crashes, yet results of new IIHS research indicate that many agencies don't conduct them often enough.

Checkpoints, which have been upheld by the U.S. Supreme Court, don't always result in a lot of arrests, but they are a good deterrent if they are visible and publicized (see *Status Report*, Feb. 8, 2003, and April 2, 2005). In a checkpoint, officers stop all vehicles or systematically select vehicles to assess drivers for signs of alcohol or other drug impairment. Not all states use them. Ten states (Idaho, Iowa, Michigan, Minnesota, Oregon, Rhode Island, Texas, Washington, Wisconsin and Wyoming) prohibit them by state constitution or law.

Researchers conducted a telephone survey of state highway safety offices in the summer and fall of 2012. In a separate telephone survey, a nationally representative sample of county, municipal and state law enforcement agencies were interviewed about their DUI enforcement activities. The surveys are a follow-up to a similar sobriety checkpoint study done in 2000 (see *Status Report*, June 30, 2001).

The latest survey of highway safety offices found that law enforcement agencies in 38 states and the District of Columbia conducted sobriety checkpoints in 2011, one more than in the 2000 survey. Based on the survey of enforcement agencies, an estimated 58 percent of all agencies conducted sobriety checkpoints in 2011-12, but most conducted them infrequently. Half of state enforcement agencies reported conducting checkpoints once a month or more, compared with 12 to 14 percent of municipal or county agencies.

Most agencies reported using at least seven officers at checkpoints, and slightly more than a quarter reported using more than 15 officers. In line with the 2000 survey, the most frequent reasons cited for not conducting checkpoints were that they were illegal in the state and that they require too many officers.

IIHS research has shown that small-scale checkpoints with as few as 3-5 officers can be conducted successfully and safely and can be effective in reducing alcohol-impaired driving (see *Status Report*, April 2, 2005). The federal government encourages states to do frequent, low-manpower checkpoints.



Ohio State Highway Patrol Trooper Dexter Howard, left, conducts a field sobriety test on a motorist at a sobriety checkpoint in Wilmington, Ohio, on July 16, 2006.

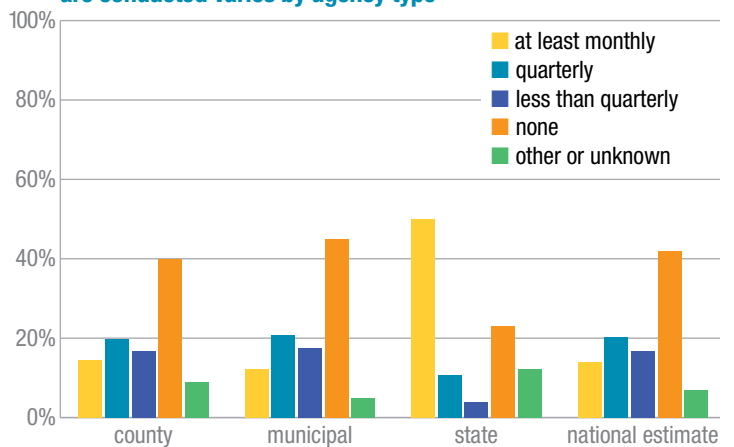
AP Photo/David Kohl

Among agencies that conducted sobriety checkpoints, 87 percent publicized them, and 56 percent frequently or always announced their locations to raise awareness of enforcement efforts.

“Publicity is important because the real goal of sobriety checkpoints is to deter, not catch, impaired drivers,” says Anne McCartt, the Institute’s senior vice president for research and a co-author of the study. “People are less likely to drink and drive if they believe they’ll encounter a checkpoint. Sustained and well-publicized enforcement is the best way to let potential violators know they won’t get away with it.”

Alcohol-impaired driving persists as a substantial problem in the U.S. (see *Status Report*, Dec. 30, 2013, at iihs.org). Just over 10,000 people died in crashes involving drivers with illegal

How often sobriety checkpoints are conducted varies by agency type



blood alcohol concentrations (BACs) in 2013. Since 1994, each year about a third of crash deaths have occurred in crashes involving drivers with BACs of 0.08 percent or higher.

Sensors help detect DUI offenders

Passive alcohol sensors are a proven way to help officers identify alcohol-impaired drivers once stopped (see *Status Report*, June 30, 2001). Passive sensors unobtrusively identify alcohol in the exhaled breath near a driver’s mouth and give officers an objective basis for further evaluation when alcohol is detected. Officers using passive alcohol sensors are able to detect more impaired drivers than when they rely on judgment alone.

Just 20 percent of agencies reported using passive alcohol sensors during 2011-12, and only about 4 percent of these agencies reported using them on a regular basis, the survey found.

“Using passive alcohol sensors in all kinds of DUI enforcement would help improve the apprehension of impaired drivers,” McCartt says.

DUI patrols widely used

The survey found a clear preference for dedicated DUI enforcement patrols over sobriety checkpoints. Research examining how DUI patrols stack up against checkpoints in reducing alcohol-related crashes is lacking, as few strong studies have been conducted on the effectiveness of DUI patrols.

Eighty-seven percent of the agencies surveyed reported that they conducted DUI enforcement patrols, such as saturation or roving patrols, to apprehend drivers with illegal BACs. Of the three agency types, state agencies were the most likely to conduct dedicated patrols and the most likely to conduct them at least monthly.

Dedicated DUI patrols were less likely to be publicized than checkpoints (61 percent vs. 87 percent).

“Getting impaired drivers off the roads is important, but so is discouraging drinking drivers from getting behind the wheel in the first place,” McCartt explains. “That’s where publicity comes in. Agencies could maximize the deterrent effects of dedicated patrols by letting people know about them ahead of time and conducting them more often.”

Passive alcohol sensors are a proven way to help officers detect more impaired drivers at sobriety checkpoints and during routine traffic stops.



One version of the passive sensor is built into a flashlight. If alcohol is detected, a color-coded meter on the side of the flashlight will light up. Another version is built into an aluminum clipboard.

For a copy of “Impaired driving enforcement practices among state and local law enforcement agencies” by A.H. Eichelberger and A.T. McCartt, email publications@iihs.org. ■

More drivers use marijuana, but link to crashes is murky

There are fewer alcohol-impaired drivers on U.S. roads than ever before, but the proportion of drivers testing positive for marijuana and other illegal drugs is on the rise, results of the latest National Roadside Survey of Alcohol and Drug Use by Drivers indicates. At the same time, an in-depth federal study found no link between marijuana use and driver crash risk after controlling for driver demographic factors and alcohol use.

The National Highway Traffic Safety Administration (NHTSA) in February released results of the 2013-14 roadside survey, a nationally representative survey of nighttime weekend drivers. The voluntary, anonymous survey includes data collected from more than 9,000 drivers at a representative sample of 300 roadside sites nationwide. This was the second time that the survey collected information about driver use of illegal and legal drugs in addition to alcohol. Both saliva and blood samples were used to detect drugs, including cannabinoids, stimulants, sedatives, antidepressants and narcotic analgesics. For marijuana, samples were screened for THC and its active metabolite, 11-OH-THC.

The survey found a large increase in the proportion of weekend nighttime drivers testing positive for marijuana or other illegal drugs compared with the 2007 survey, which was the first one to screen for drug use (see *Status Report*, Feb. 6, 2010, at iihs.org). About 1 in 5 weekend nighttime drivers tested positive for at least one legal or illegal drug, NHTSA reports. Marijuana showed the greatest increase in prevalence among illegal drugs. The percentage of weekend nighttime drivers testing positive for marijuana use increased from 8.6 percent in 2007 to 12.6 percent in 2013-14.

In contrast to the rise in drug use, the roadside survey found a third fewer drivers with alcohol in their system in 2013-14 compared with 2007. About 8.3 percent of weekend nighttime drivers tested positive for alcohol, and about 1.5 percent of drivers had a blood alcohol concentration (BAC) of 0.08 percent or higher. The proportion of

weekend nighttime drivers at or above 0.08 percent BAC declined 32 percent from 2007 and plunged 80 percent from 1973 when the first roadside survey was conducted.

NHTSA in its research summary notes, “Changes in state policy on marijuana use, including medical and recreational use, may have contributed to an increase in marijuana use by drivers. However, the survey does not permit a state-by-state comparison. The change in use may reflect the emergence of a new trend in the country that warrants monitoring.”

Voters in Colorado and Washington approved the legalization of the recreational use of marijuana for adults 21 and older in 2012, while Alaska, Oregon and the District of Columbia followed suit in 2014. Efforts are under way in a number of state legislatures to legalize marijuana or decriminalize possession. Medical marijuana use is legal in 23 states and D.C.

Evidence is mixed on the effects of marijuana use on crash risk. Laboratory studies indicate that marijuana use degrades driving skills, but crash-data research hasn’t been as definitive. Some studies have found that using the drug could more than double crash risk, while others have failed to find a link between marijuana use and crashes.

NHTSA drug study

Results of the first large-scale case-control study in the U.S. to examine the crash risk associated with driver drug use help to broaden researchers’ understanding of the issue.

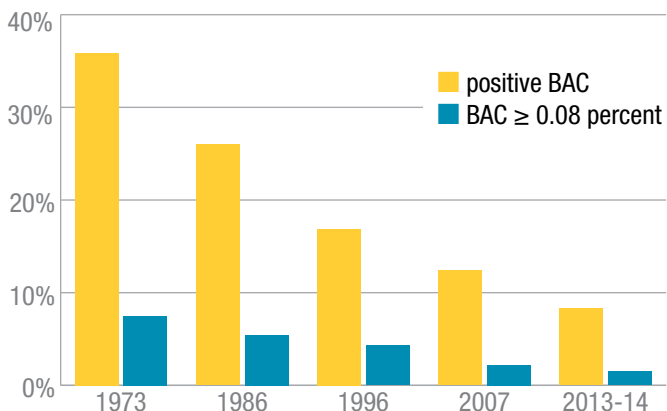
Conducted in Virginia Beach, Va., during a 20-month period ending in 2012, the NHTSA-sponsored study gathered data from more than 3,000 drivers who were involved in police-reported crashes, plus a comparison group of 6,000 drivers who didn’t crash. Research teams responded to crashes 24 hours a day, seven days a week and screened drivers for a large number of potentially impairing legal and illegal drugs using blood and saliva samples. NHTSA released a summary of the Virginia Beach study in early 2015, along with results of the national roadside survey.



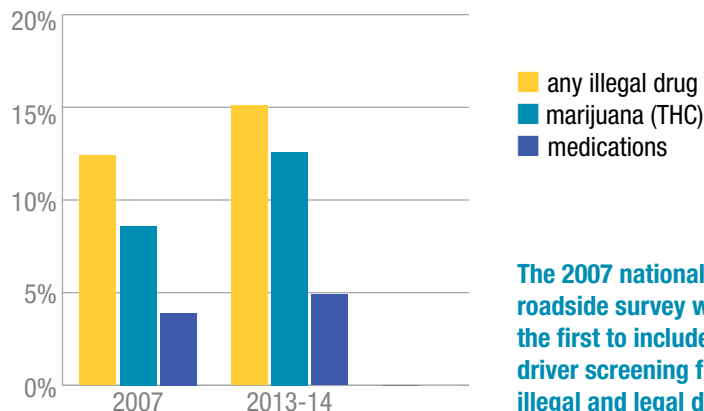
AP Photo/Brennan Linsley

A pot store employee talks with customers inside the Breckenridge Cannabis Club, which sells recreational marijuana products, in the ski town of Breckenridge, Colo., in this Dec. 11, 2014, photo. Recreational use of marijuana by adults is legal in Colorado.

Fewer weekend nighttime drivers have illegal BACs...



...but more drivers test positive for marijuana, other drugs



The 2007 national roadside survey was the first to include driver screening for illegal and legal drugs.

The drug most frequently used by drivers was marijuana. THC, the main psychoactive substance in marijuana, was detected in 7.6 percent of the crash-involved drivers and 6.1 percent of the control drivers. In comparison, based on breath tests, alcohol was detected in 5 percent of the crash-involved drivers and 2.7 percent of the control drivers. After marijuana, the most frequently detected drugs were opiates (e.g., heroin, oxycodone) and stimulants (e.g., amphetamines, cocaine). About 3 percent of the crash-involved drivers tested positive for more than one class of drug; 2.1 percent of the control drivers tested positive for more than one drug.

Although marijuana-positive drivers were overrepresented in the crash-involved

population, when researchers controlled for demographic factors (age, gender, ethnicity) and alcohol use, they didn't find an increase in crash risk associated with marijuana use. The analyses were unable to examine the crash risk associated with different amounts of the drug.

In contrast, driver alcohol use was associated with an elevated risk of a crash, both before and after controlling for demographic factors, and crash risk increased as BACs increased. Drivers with a BAC of 0.08 percent had about 4 times the risk of crashing as sober drivers. Drivers with a BAC of 0.15 percent had at least 12 times the risk of crashing.

In announcing results of the research, NHTSA Administrator Mark Rosekind said,

“The combined message of these two surveys is that our work to understand and combat drunk driving is paying off, but that we have much to learn about how illegal drugs and prescription medications affect highway safety — and that developing that knowledge is urgent, because more and more drivers have these drugs in their systems.”

NHTSA notes that studies using driving simulators and test tracks have found that marijuana at sufficient dosage levels impairs driving functions. The agency is conducting more studies on the impact of drugged driving, including a roadside survey in Washington, where marijuana use is legal, as well as a simulator study with the National Institute on Drug Abuse to assess the performance of drivers under the influence of drugs. ■

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HLDI shares and supports this mission through scientific studies of insurance data representing the human and economic losses resulting from the ownership and operation of different types of vehicles and by publishing insurance loss results by vehicle make and model.

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