



# THE ASSOCIATION

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## NEW CRASH TESTS SHOW MODEST SPEED INCREASES CAN HAVE DEADLY CONSEQUENCES

Insurance Institute for Highway Safety

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**D**rivers want to save time, and local transportation agencies want to improve traffic flow, but at what cost? With posted speed limits increasing on roadways around the country, a vehicle's ability to protect drivers in crashes is in doubt. Small speed increases can have huge effects on crash outcomes, as shown in new crash tests by the AAA Foundation for Traffic Safety, the Insurance Institute for Highway Safety (IIHS) and Humanetics. The safety organizations conducted crashes at three different impact speeds (40, 50 and 56 mph). They found the slightly higher speeds were enough to increase the driver's risk of severe injury or death.

Drivers often travel faster than posted speed limits, but when officials raise limits to match travel speeds, people still go faster. Today, 41 states allow 70 mph or higher speeds on some roadways, including eight states that have maximum speeds of 80 mph or more. A [2019 IIHS study](#) found that rising speed limits have cost nearly 37,000 lives over 25 years. AAA and IIHS urge policymakers to factor in this danger from higher speeds when considering speed limit changes.

We conducted these crash tests to assess the effect of

speeds on drivers and learned that a small increase could make a big difference on the harm to a human body, said Dr. David Yang, executive director of the AAA Foundation for Traffic Safety. A speeding driver may arrive at their destination a few minutes faster, but is the trade-off of getting severely injured or even losing one's life worth it if a crash occurs?

The AAA Foundation collaborated with IIHS and Humanetics, the leading manufacturer of biofidelic crash test dummies, to examine how speed affects the likelihood and severity of occupant injury in a crash. Three 2010 Honda CR-V EX crossovers were used because they represented the average age (11.8 years) of a typical vehicle on U.S. roadways and earned the top rating in the IIHS moderate overlap front test. Calspan Corporation conducted all the tests in its crash laboratory in Buffalo, New York. As the crash speed increased in the tests, researchers found more structural damage and greater forces on the dummy's entire body.

Higher speed limits cancel out the benefits of vehicle safety improvements like airbags and improved structural designs, said Dr. David Harkey, IIHS president. The faster a driver is going before a crash, the less likely it is that they'll be able to get down to a survivable speed even if they have a chance to brake before impact. At the 40 mph impact speed,

there was minimal intrusion into the driver's space. But at the 50 mph impact speed, there was noticeable deformation of the driver side door opening, dashboard and foot area. At 56 mph, the vehicle interior was significantly compromised, with the dummy's sensors registering severe neck injuries and a likelihood of fractures to the long bones in the lower leg.

Our crash test dummies are instrumented with hundreds of sensors to measure the injury risk so that we understand the scientific limits of safety and injury prevention. Understanding that the risk of serious and permanent injury becomes significantly higher in crashes beyond statutory speed limits clearly demonstrates why there are limits in the first place, commented Jack Jensen, vice president of engineering at Humanetics. At both 50 and 56 mph, the steering wheel's upward movement caused the dummy's head to go through the deployed airbag. This caused the face to smash into the steering wheel. Measurements taken from the dummy showed a high risk of facial fractures and severe brain injury.

When correctly set and enforced, speed limits improve traffic flow and maximize all public road users' safety.

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# WOMEN AT HIGHER RISK IN MOTOR VEHICLE CRASHES

INSURANCE INSTITUTE FOR HIGHWAY SAFETY



According to a February 11, 2021 report from the Insurance Institute for Highway Safety, Women are much more likely than men to suffer a serious injury when they are involved in a crash, but much of the heightened risk is related to the types of vehicles women drive and the circumstances of their crashes, rather than physical differences, new research from the Insurance Institute for Highway Safety shows.

Women are much more likely than men to suffer a serious injury when they are involved in a crash, but much of the heightened risk is related to the types of vehicles women drive and the circumstances of their crashes, rather than physical differences, new research from the Insurance Institute for Highway Safety shows. Though men are involved in more fatal crashes than women, on a per-crash basis women are 20-28 percent more likely than men to be killed and 37-73 percent more likely to be seriously injured after adjusting for speed and other factors. However, when IIHS researchers limited the comparison to similar crashes, they found those discrepancies mostly disappeared and that crashworthiness improvements have benefited men and women more or less equally.

“The numbers indicate that women more often drive smaller, lighter cars and that they’re more likely than men to be driving the struck vehicle in side-impact and front-into-rear

crashes,” says Jessica Jermakian, IIHS vice president of vehicle research and one of the study’s authors. “Once you account for that, the difference in the odds of most injuries narrows dramatically.” Recently, the discrepancy in injury risk for men and women has prompted calls for new crash test dummies that better reflect how women’s bodies react to the forces of collisions and other changes to crash-testing programs. With this new study, IIHS sought to shed more light on the issue and to see what kind of changes to its vehicle testing program might be warranted.

The researchers analyzed the injuries of men and women in police-reported tow-away front and side crashes from 1998-2015.

In front crashes, they found women were 3 times as likely to experience a moderate injury such as a broken bone or concussion and twice as likely to suffer a serious one like a collapsed lung or traumatic brain injury. In side crashes, the odds of a moderate injury were about equal for men and women, while women were about 50 percent more likely to be seriously injured, but neither of those results was statistically significant.

To determine how much of the discrepancy was due to physical differences between men and women, the researchers then repeated the analysis with a limited set of “compatible” front crashes. This subset was

restricted to single-vehicle crashes and two-vehicle crashes in which the vehicles were a similar size or weight or the crash configuration was such that a size or weight difference would not have played a big role. To further reduce differences among crashes, only those with a front airbag deployment were included.

The sample included too few cases to do the same thing with side crashes.

Limiting the analysis to compatible front impacts flattened the disparity considerably, though women were still twice as likely to be moderately injured and a bit more likely to be seriously hurt. A further analysis of those crashes, as well as the unrestricted set of side crashes, showed that good ratings in the Institute’s moderate overlap front and side tests lowered the odds of most injuries more or less equally for both sexes. In the compatible front crashes, the benefits of a good rating in the moderate overlap front test were greater for women except in the case of leg injuries, where the benefit was similar. In the side-impact crashes, a good rating in the side test benefited men and women about equally where moderate injuries were concerned, but the benefits of a more crashworthy vehicle were greater for women for most types of serious injuries. These results are in line with previous research that shows serious

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## 2021 Membership:

The 2021 IACAI membership renewals have been sent out. If you haven’t received your renewal notice or may know of someone who may benefit from being a member of this association or who is looking to improve their knowledge of crash investigation in general, have them go to our website and download the new member application.

You can email your renewal to:

IndianaIACAI@gmail.com

## IACAI SKILL REVIEW



### More about: Women At Higher Risk In Motor Vehicle Crashes

(Continued from page #1)

“Cars are safer than they’ve ever been, but nobody’s figured out how to make them defy the laws of physics,” said Harkey of IIHS. Rather than raising speed limits, states should vigorously enforce the limits they have. This includes using proven countermeasures like high-visibility enforcement and carefully implemented speed-camera programs to consistently and equitably enforce speed limits 24/7.

Speed limits should not be raised or lowered only to manipulate traffic volume on a particular roadway. States are urged to use engineering and traffic surveys when setting maximum speed limits.

Policymakers need to also think beyond enforcement to control speeds and should consider infrastructure changes based on road type to calm traffic flow appropriately so that posted speed limits are followed, said Jake Nelson, AAA director of traffic safety advocacy and research.

This study is the second part of the AAA Foundation for Traffic Safety research examining the effect of posted speed limit changes on safety. In the Foundation’s [first study](#), traffic engineers were asked how posted speed limits are set and what factors they consider in changing them.

The research tests were con-

ducted following the same protocol that is used for the IIHS moderate overlap evaluation; only the speed was varied. With a test dummy representing an average-sized male in the driver’s seat, the cars were crashed with 40 percent of the vehicle’s front on the driver side overlapping the barrier.

IIHS has been conducting this type of test, which simulates a head-on, partial-overlap impact between two vehicles of the same weight and size traveling at the same speed, since 1995. Since 2013, 100 percent of new vehicles have earned a good rating when tested at the 40 mph impact speed.



The World Reconstruction Exposition 2023 is coming!! It will be held at the Rosen Shingle Creek Resort, Orlando, FL, April 17-21, 2023. If you were at WREX 2016, you know how great it was! WREX 2023 promises to be bigger and better!! Visit [WREX.org](http://WREX.org) to learn more about WREX 2023 and make your pre-reservations now!!

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## More Takata Recalls Increases The Total to 67,000,000 Airbags

Tens of millions of vehicles with Takata air bags are under recall. Long-term exposure to high heat and humidity can cause these air bags to explode when deployed. Such explosions have caused injuries and deaths.

The National Highway Traffic Safety Administration urges vehicle owners to take a few simple steps to protect themselves and others from this very serious threat to safety.

A separate group of defective Takata air bags was recalled in late 2019. Unlike the air bag inflators in the larger Takata recalls, this recall involves non-azide driver inflators. The defect in the NADI

inflators can result in the air bag either exploding or underinflating during deployment.

More Takata air bags are being recalled. This new recall involves Takata air bags built with non-azide driver inflators (NADI), and is separate from the much larger and [ongoing Takata air bag inflator recalls](#).

The air bags that are part of this new recall have defective inflators that could explode or cause the air bag to not inflate properly when it deploys. A faulty seal on the inflator is believed to cause the problem. If the inflator is not sealed properly, moisture can get into the propellant used to inflate the air bag and cause the inflator to malfunction.

This could lead to the air bag deploying slowly during a crash, which means it won't protect you as it's designed. Or, it could also lead to the inflator deploying aggressively and even exploding. The metal parts from the exploding inflator could injure or kill someone.

### Recalled vehicles

Vehicles containing NADI inflators were made by Toyota, BMW, Audi, Honda and Mitsubishi. Also included, the Isuzu Oasis.

Go to [NHTSA.gov/Recalls](https://www.nhtsa.gov/Recalls) to learn more.

## More about: Women At Higher Risk In Motor Vehicle Crashes

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and fatal injury risk has declined more for women than men as vehicles have gotten safer.

One explanation of the higher injury rates for women could be vehicle choice. Men and women crashed in minivans and SUVs in about equal proportions. However, around 70 percent of women crashed in cars, compared with about 60 percent of men. More than 20 percent of men crashed in pickups, compared with less than 5 percent of women. Within vehicle classes, men also tended to crash in

heavier vehicles, which offer more protection in collisions.

In a separate analysis of data from the federal Fatality Analysis Reporting System, the researchers also found that in two-vehicle front-to-rear and front-to-side crashes, men are more likely to be driving the striking vehicle. Because the driver of the striking vehicle is at lower risk of injury than the struck vehicle in such crashes, this could also account for some of the differences in crash outcomes for men and women.

The researchers' analysis of compatible front crashes did show some sex-

related differences, however. Women were still more than 2½ times as likely to suffer moderate leg injuries. They were also about 70 percent more likely than men to suffer serious leg injuries, though that figure wasn't statistically significant.

"The good news is that changes like strengthening the occupant compartment and improving seat belts and airbags have helped protect both men and women," says Jermakian. "Homing in on the risk disparities that still exist in compatible crashes gives us a great opportunity to make further gains."

## Approaching Training Events

### Northwestern University Center for Public Safety

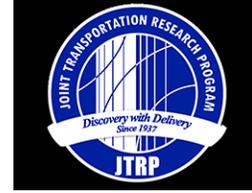
<a href="#">Advanced Collision Reconstruction with CDR Application</a>	5/3-7/2021	\$950	Lake Zurich, IL
<a href="#">Biomechanical Course (24 ACTAR CEUs)</a>	3/29-31/2021	\$450	Buffalo Grove, IL
<a href="#">Crash Data Retrieval Analysis and Applications Course</a>	5/10-14/2021	\$950	Lake Zurich, IL
<a href="#">Crash Data Retrieval System Operators Course</a>	5/17-19/2021	\$300	Lake Zurich, IL
<a href="#">Crash Investigation 1 Online - Instructor-Led</a>	6/7 to 8/1/2021	\$1200	NUCPS
<a href="#">Crash Investigation 2 Online - Instructor-Led</a>	8/16 to 10/10/2021	\$1200	NUCPS
<a href="#">Vehicle Dynamics- Remote Learning</a>	6/7-18/2021	\$900	NUCPS

Visit <https://sps.northwestern.edu/center-for-public-safety/> for more information

### Institute of Police Technology & Management

<a href="#">At-Scene Traffic Crash/Traffic Homicide Investigation (Online-Accelerated)</a>	3/8-21/2021	\$1195	IPTM
<a href="#">Advanced Traffic Crash Investigation (Online-Accelerated)</a>	3/8-21/2021	\$1195	IPTM
<a href="#">Event Data Recorder Use in Traffic Crash Reconstruction - Level I</a>	3/15-19/2021	\$795	IPTM
<a href="#">At-Scene Traffic Crash/Traffic Homicide Investigation</a>	3/15-26/2021	\$1095	Lawrence, IN
<a href="#">Advanced Traffic Crash Investigation</a>	4/12-23/2021	\$1095	Lawrence, IN
<a href="#">Event Data Recorder Use in Traffic Crash Reconstruction - Level II</a>	4/26-30/2021	\$895	IPTM
<a href="#">Pedestrian/Bicycle Crash Investigation - Level I (Online)</a>	4/19-5/23/2021	\$995	IPTM
<a href="#">Traffic Crash Reconstruction</a>	5/10-21/2021	\$1095	Lawrence, IN

Visit <https://iptm.unf.edu/default.aspx> for more information.



## FREE Virtual Training Seminar

### FORENSIC FRICTION TESTING

**Thursday, March 11, 2021 - 1:00 p.m.**

This session is being offered in partnership between the **Indiana Association of Certified Accident Investigators, Purdue Road School, and Purdue University's Joint Transportation Research Program.** Public safety officials investigating serious bodily injury and fatal crashes often conduct friction tests as part of their investigation. This virtual session will cover the common techniques used by local police agencies for conducting friction testing. Drone footage will be used to demonstrate recent tests.

#### Session Presenters:

Robert Hainje, Tippecanoe County Sheriff's Office  
Robert Wilcox, Fort Wayne Police Department  
Robert Oleksy, Madison County Sheriff's Department  
Ayman Habib, Purdue University  
Darcy Bullock, Purdue University  
Jijo Mathew, Purdue University  
Jairaj Desai, Purdue University

**You must register at the link below to receive**

**ILEA training credit for this FREE training**

(Certificates and LETB roster will be emailed to the email provided)

**Link to Register:**

[http://bit.ly/reg\\_friction\\_testing](http://bit.ly/reg_friction_testing)

**Link to join Zoom Webinar on March 11 at 1:00 PM:**

<https://purdue.pub/rs2021-s11>

[www.iacai.com](http://www.iacai.com)

[www.facebook.com/IndianaIACAI](https://www.facebook.com/IndianaIACAI)

**PLEASE POST AND SHARE WITH OTHER CRASH INVESTIGATORS**