



NAMIC®
Seattle
Where The Industry Comes Together

Industry Partner Update

Tuesday, September 24, 2013, 1:00 p.m.

David Zuby

**Chief Research Officer, Senior Vice President, Vehicle Research
Insurance Institute for Highway Safety
Arlington, Va.**

David Zuby is chief research officer for the Insurance Institute for Highway Safety. Working out of the Vehicle Research Center, he oversees and coordinates research by the VRC, the institute's research department in Arlington, Va., and the Highway Loss Data Institute.

David is the author of numerous research papers published by the IIHS on topics such as the biomechanics of injury, pedestrian protection, crashworthiness, and crash investigation.

Prior to joining the IIHS as a research engineer in 1993, David worked on research projects for the National Highway Traffic Safety Administration at the Transportation Research Center in Ohio. He holds a bachelor's degree from Northwestern University.



IIHS – HLDI Research

NAMIC Annual Convention
Seattle, WA • September 24, 2013

David Zuby, Chief Research Officer

www.iihs.org

The Insurance Institute for Highway Safety,

founded in 1959, 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 Highway Loss Data Institute,

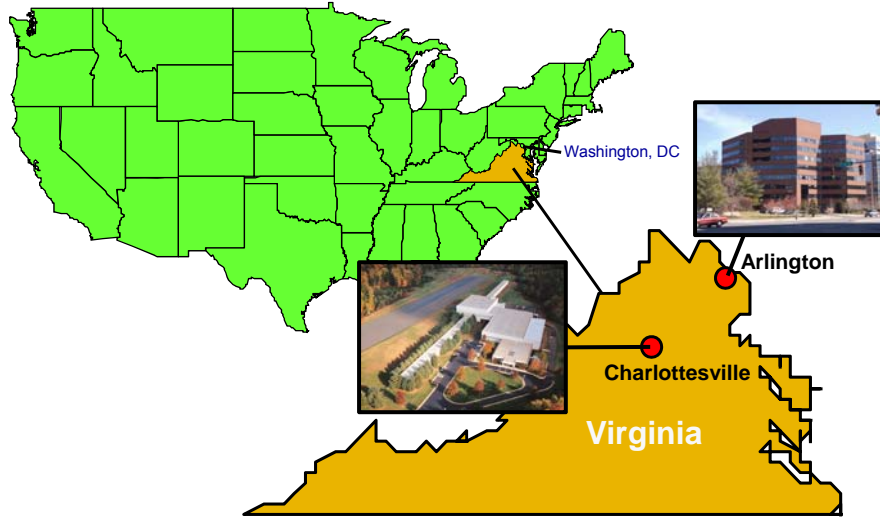
founded in 1972, shares and supports this mission through scientific studies of insurance data representing the human and economic losses resulting from the ownership and operation of different types of vehicles and by publishing insurance loss results by vehicle make and model.

Both organizations are wholly supported by auto insurers.

www.iihs.org

Where are we?

Location of IIHS/HLDI and Vehicle Research Center



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IIHS members write 85% of private passenger market

- ACE Private Risk Services
- Affirmative Insurance
- Agency Insurance Company of Maryland
- Alfa Alliance Insurance Corporation
- Alfa Insurance
- Allstate Insurance Group
- American Family Mutual Insurance
- American National Property and Casualty Company
- Ameriprise Auto & Home
- Amica Mutual Insurance Company
- ARI Insurance Companies
- Auto Club Enterprises
- Auto Club Group
- Bankers Insurance Group
- Bituminous Insurance Companies
- California Casualty Group
- California State Auto Group
- Capital Insurance Group
- Chubb & Son
- Colorado Farm Bureau Mutual Insurance Company
- Concord Group Insurance Companies
- Cotton States Insurance
- COUNTRY Financial
- Direct General Corporation
- Discovery Insurance Company
- Driver's Insurance Group
- Erie Insurance Group
- Esurance
- Farm Bureau Financial Services
- Farm Bureau Insurance of Michigan
- Farm Bureau Mutual Insurance Company of Idaho
- Farmers Insurance Group of Companies
- Farmers Mutual Hail Insurance Company of Iowa
- Farmers Mutual of Nebraska
- Fireman's Fund Insurance Company
- First Acceptance Corporation
- Florida Farm Bureau Insurance Companies
- Frankenmuth Insurance
- Gainsco Insurance
- GEICO Group
- Georgia Farm Bureau Mutual Insurance Company
- GMAC Personal Lines Insurance
- Grange Insurance
- Hallmark Insurance Company
- Hanover Insurance Group
- The Hartford
- Haulers Insurance Company Inc.
- Homeowners of America Insurance Company
- Horace Mann Insurance Companies
- ICW Group
- Imperial Fire & Casualty Insurance Company
- Infinity Property & Casualty
- Kemper Preferred
- Kentucky Farm Bureau Insurance
- Liberty Mutual Insurance Company
- Louisiana Farm Bureau Mutual Insurance Company
- Maryland Automobile Insurance Fund
- Mercury Insurance Group
- MetLife Auto & Home
- MiddleOak
- Mississippi Farm Bureau Casualty Insurance Company
- MMG Insurance
- Mutual of Enumclaw Insurance Company
- Nationwide
- New Jersey Manufacturers Insurance Company
- NLC Insurance Companies Inc.
- Nodak Mutual Insurance Company
- Norfolk & Dedham Group
- North Carolina Farm Bureau Mutual Insurance Company
- Northern Neck Insurance Company
- Old American County Mutual Fire Insurance
- Oregon Mutual Insurance
- Pekin Insurance
- PEMCO Insurance
- Plymouth Rock Assurance
- Progressive Corporation
- The Responsive Auto Insurance Company
- Rockingham Group
- Safe Auto
- Safeco Insurance
- Samsung Fire & Marine Insurance Company
- SECURA Insurance
- Sentry Insurance
- Shelter Insurance
- Sompco Japan Insurance Company of America
- South Carolina Farm Bureau Mutual Insurance Company
- Southern Farm Bureau Casualty Insurance Company
- State Auto Insurance Companies
- State Farm
- Tennessee Farmers Mutual Insurance Company
- Texas Farm Bureau Insurance Companies
- Tower Group Companies
- The Travelers Companies
- United Educators
- USAA
- Viceroy Insurance Company
- Virginia Farm Bureau Mutual Insurance
- West Bend Mutual Insurance Company
- Young America Insurance Company
- Zurich North America

Insurance Institute for Highway Safety

Organization as of May 2013

Total employees (103)

- Arlington, Virginia – headquarters (66 employees)
 - Research & Communications (48)
 - Highway Loss Data Institute (18)
- Ruckersville, Virginia – Vehicle Research Center (37 employees)

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2013 IIHS and HLDI budget

In millions

IIHS	\$17.3
HLDI	\$ 3.4
total	\$20.7

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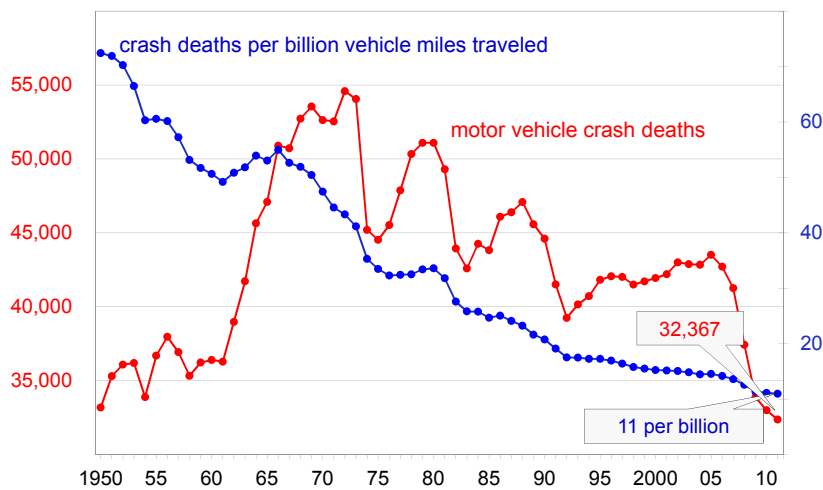
Haddon matrix

Recognizing opportunities to make a difference

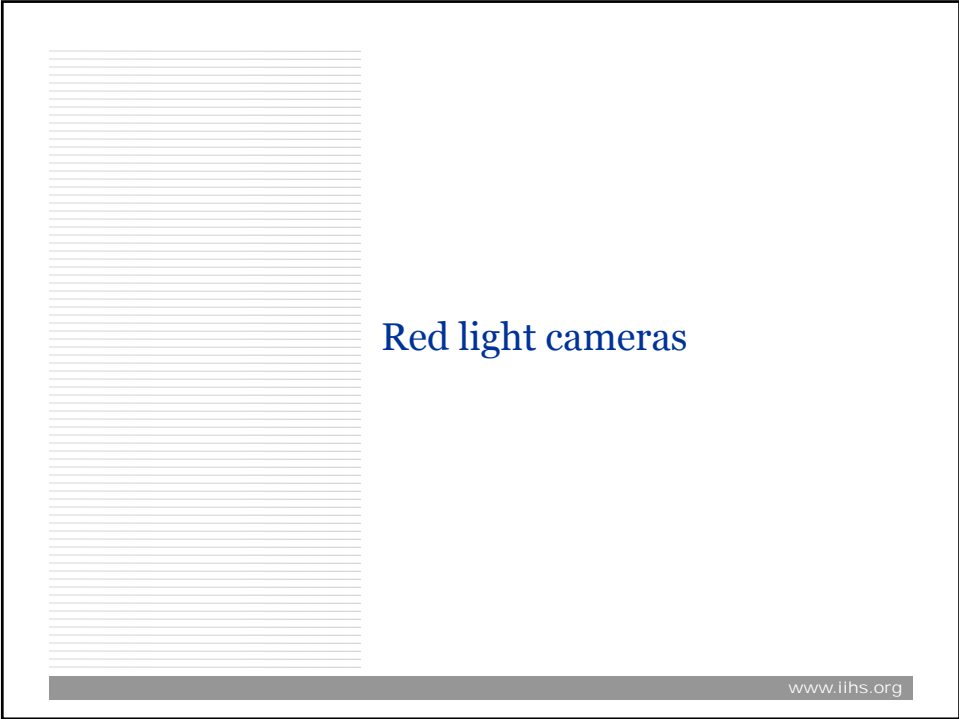
changes in...	crash phase			
	before	during	after	losses
people	<ul style="list-style-type: none"> •licensing (GDL, elderly) •impaired driving laws •camera enforcement 	<ul style="list-style-type: none"> •restraints (use) •helmets •speed cameras 	<ul style="list-style-type: none"> •alcohol 	<ul style="list-style-type: none"> •injuries •deaths •economic
vehicles	<ul style="list-style-type: none"> •driver assistance •daytime running lights •electronic control 	<ul style="list-style-type: none"> •restraints (effect) •vehicle structure •Bumpers 	<ul style="list-style-type: none"> •crash notification •fuel systems 	<ul style="list-style-type: none"> •damage •repairability
environment	<ul style="list-style-type: none"> •intersection design •trouble-spot treatment •rumble strips 	<ul style="list-style-type: none"> •roundabouts •breakaway poles •crash cushions 	<ul style="list-style-type: none"> •emergency medicine 	<ul style="list-style-type: none"> •economic •fuel economy

www.ihs.org

IIHS and HLDI research has contributed significantly to the decline of motor vehicle crash injuries during the past 50+ years

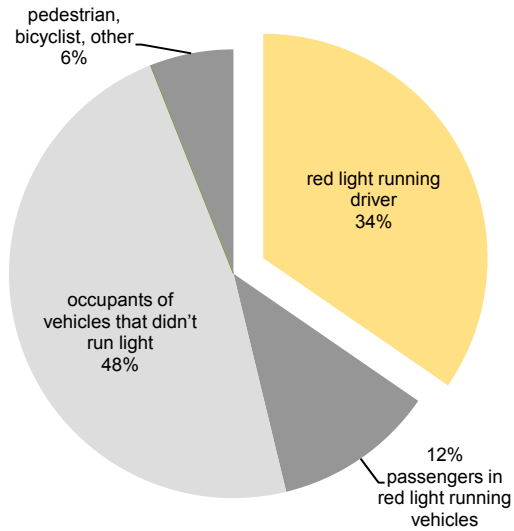


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714 deaths in red light running crashes in 2011

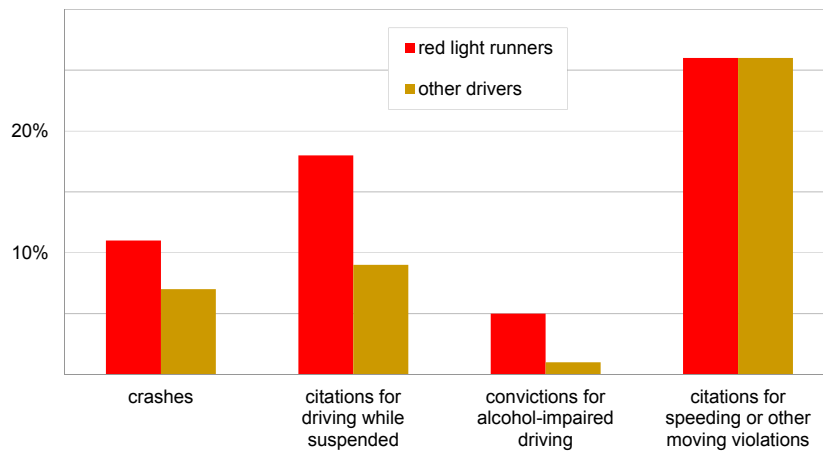
Distribution by type of road user



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Prior 3-year record of crashes or traffic citations

Drivers in fatal red light running crashes, 2011



www.ihs.org

Speeding or driving without valid license

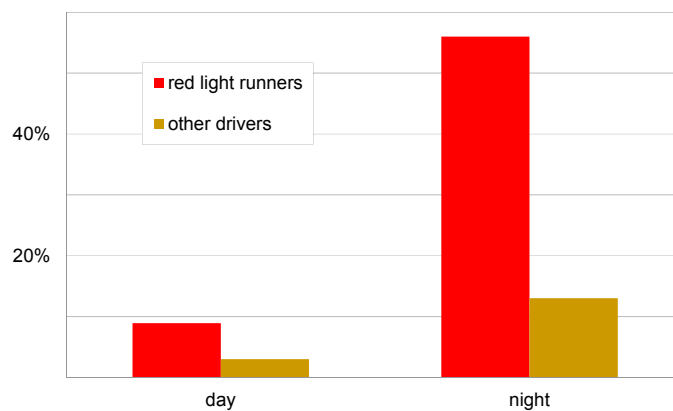
Drivers in fatal red light running crashes, 2011



www.ihs.org

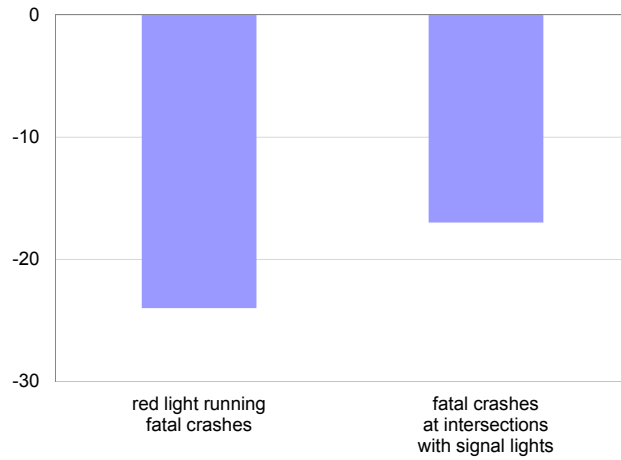
BACs ≥ 0.08 percent by time of day

Drivers in fatal red light running crashes, 2011



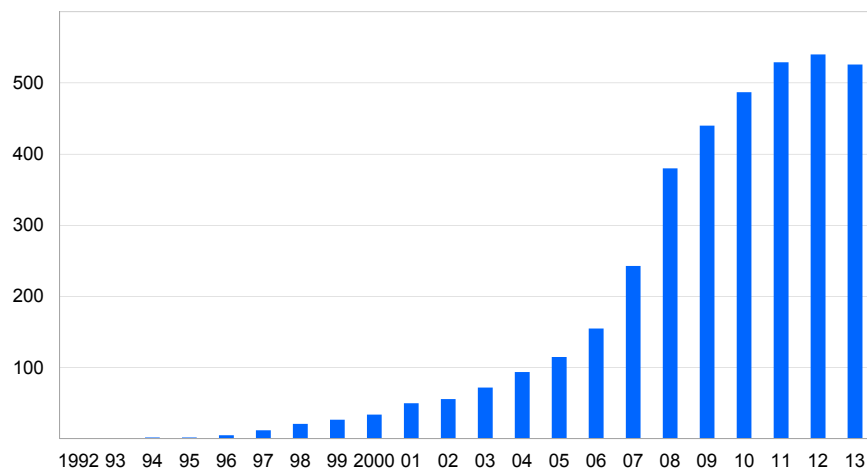
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Percent difference in actual fatal crash rates during 2004-08 in 14 large cities with red light cameras vs. expected rates without cameras



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US communities with red light cameras 1992-2013



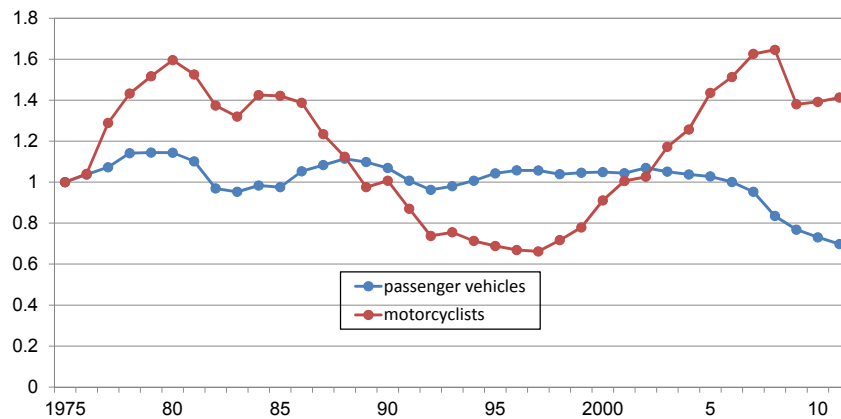
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Michigan motorcycle helmet law change

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Passenger vehicle occupant deaths and motorcyclist deaths

1975-2011, indexed to 1975



www.hidi.org

The Grand Rapids Press, March 28, 2013

21 percent reduction in motorcycle deaths projected if Michigan helmet mandate was in place, researcher says

By Fritz Klug | fklug@mive.com

EAST LANSING, MI — If Michigan did not repeal its mandatory helmet law in 2012, there could have been 26 fewer motorcycle deaths, according to statistical estimates from a University of Michigan researcher.

Those 26 fewer deaths would represent an overall 21 percent reduction of fatalities from 2011, Carol Flannagan, a researcher at U of M's Transportation Research Institute, said during the first public analysis of 2012 Michigan motorcycle crash data on Thursday during the Michigan Traffic Safety Summit at Kellogg Center in East Lansing.

The Detroit News, April 10, 2013

Michigan lawmakers urged to reinstate motorcycle helmet law

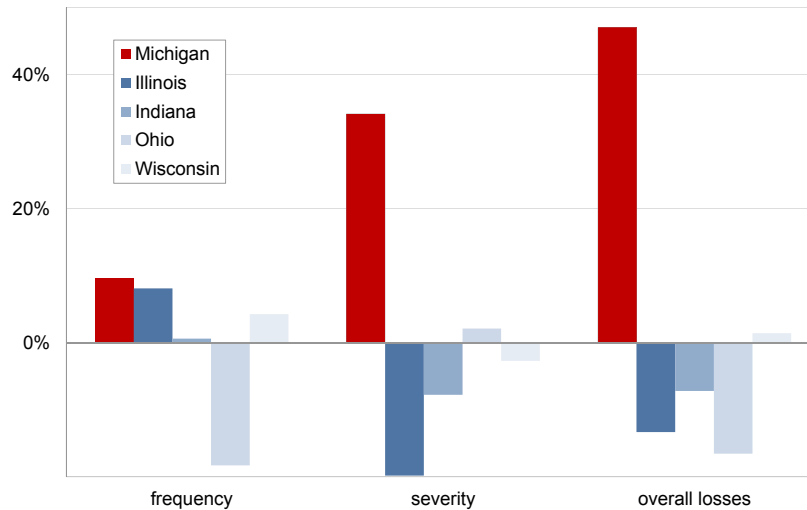
By Gary Heinlein and Chad Livengood

April 10, 2013

Lansing — Insurers and medical groups urged Gov. Rick Snyder and the Legislature to reinstate Michigan's motorcycle helmet requirement Wednesday, citing a University of Michigan study showing it would have prevented 26 deaths and 49 injuries last year.

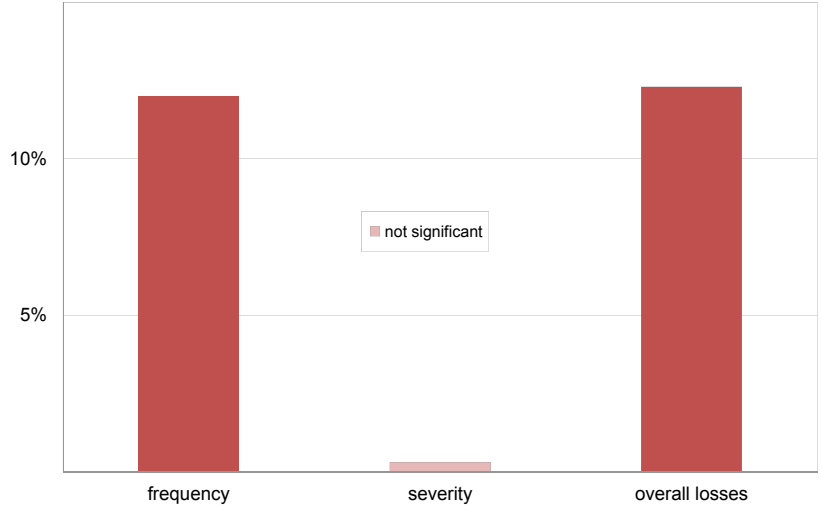
The study by researcher Carol Flannigan of U-M's Transportation Research Institute analyzed crash data from 2012, the first year Michigan cyclists were allowed to ride without protective helmets under legislation signed by Snyder on April 13. Michigan joined 30 other states that make helmets optional for motorcycle riders.

Actual change in MedPay losses after Michigan helmet law change by state



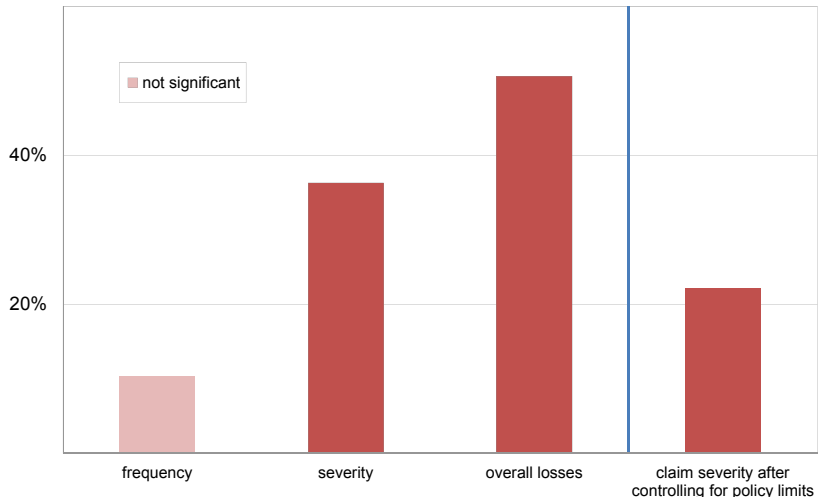
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Effects of helmet law change on Michigan collision losses, estimates of control states pooled

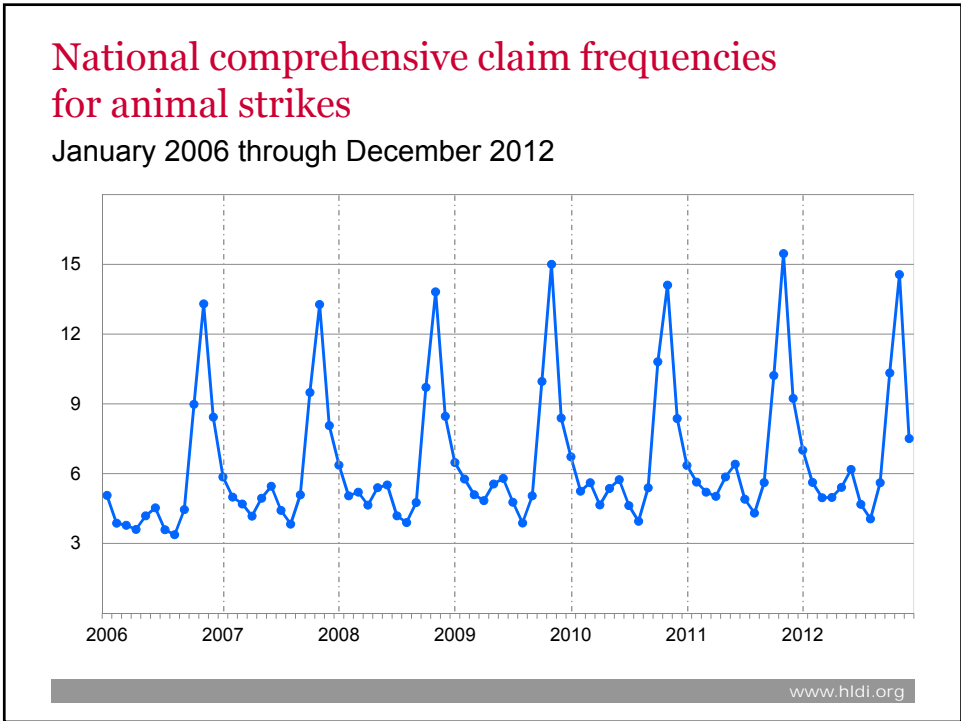
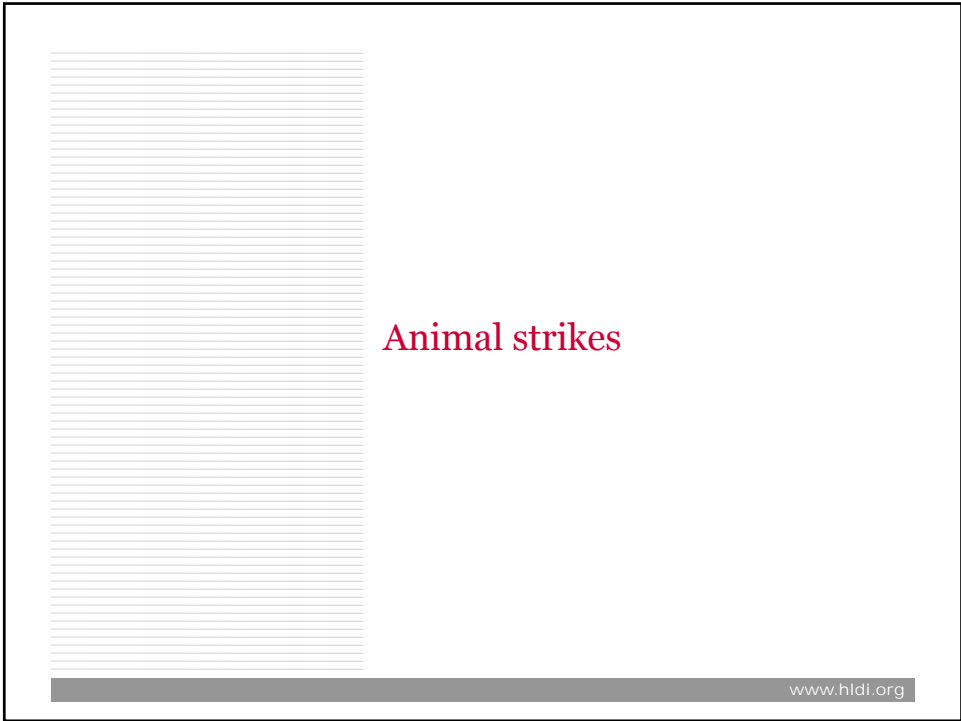


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Effects of helmet law change on Michigan MedPay losses, estimates of control states pooled

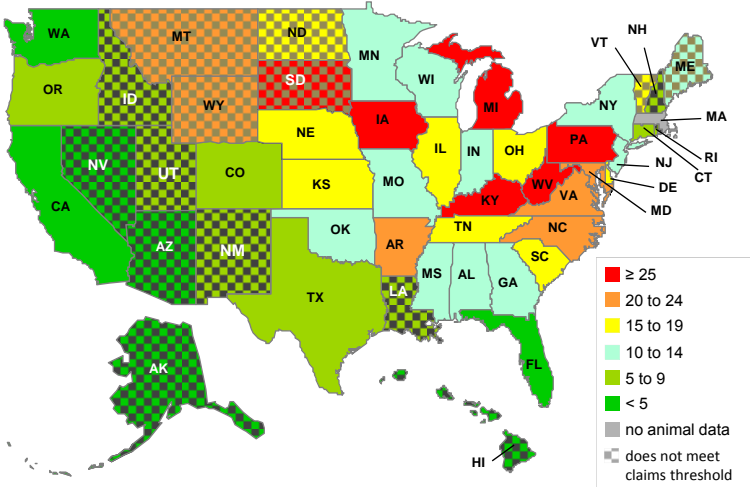


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November animal strike claim frequencies by state

During study period



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Saving lives through vehicle improvements

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IIHS crashworthiness tests



- Front moderate overlap, beginning 1995
- Side impact, beginning 2003
- Rear crash (whiplash mitigation), beginning 2004
- Roof strength, beginning 2009

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Video of Poor vs. Good crash test performance



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Death and injury reductions

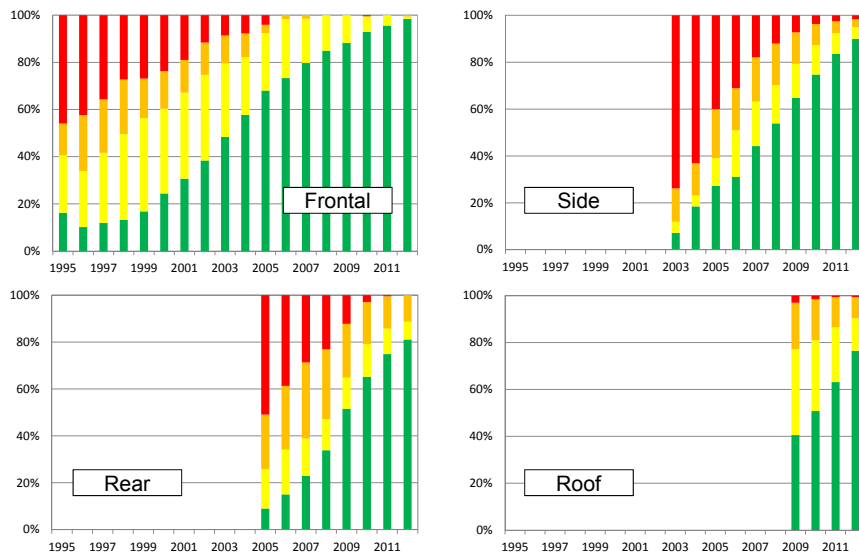
Good compared with Poor rating in IIHS tests

- Front offset with moderate overlap test at 40 mph
 - Fatality risk in head-on crashes is 46 percent lower
- Side impact crash test at 30 mph
 - Fatality risk in side impact crashes 70 percent lower
- Rear impact test simulates being struck from behind at 20 mph
 - Neck injury risk is 15 percent lower
 - Risk of neck injury requiring 3+ months treatment is 35 percent lower

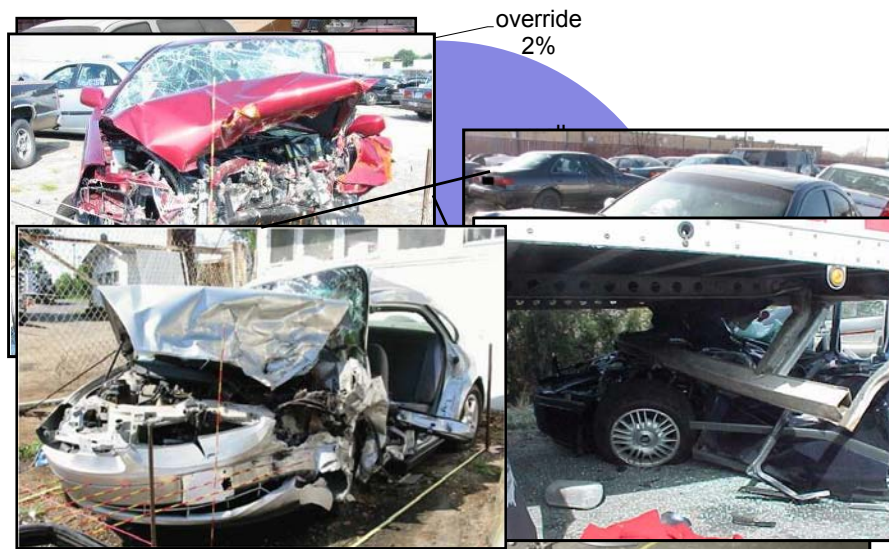
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Crash protection ratings by model year

Improvements: Beginning in 1995

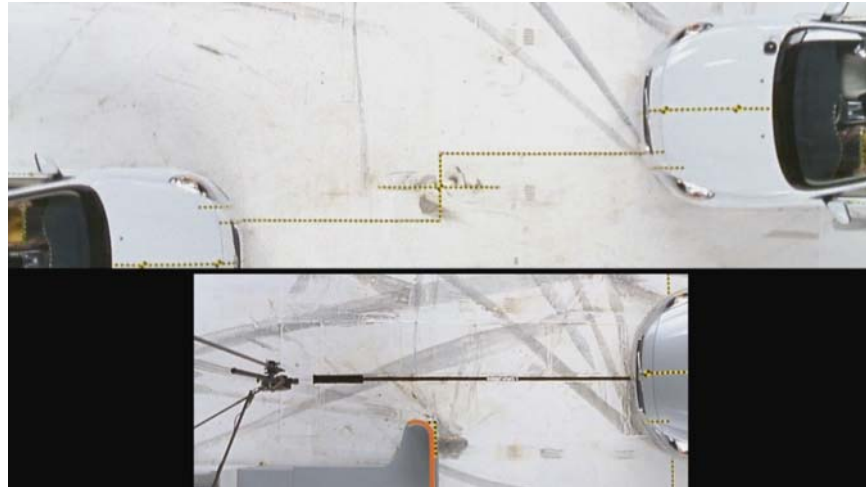


Serious injuries in frontal crashes, by configuration



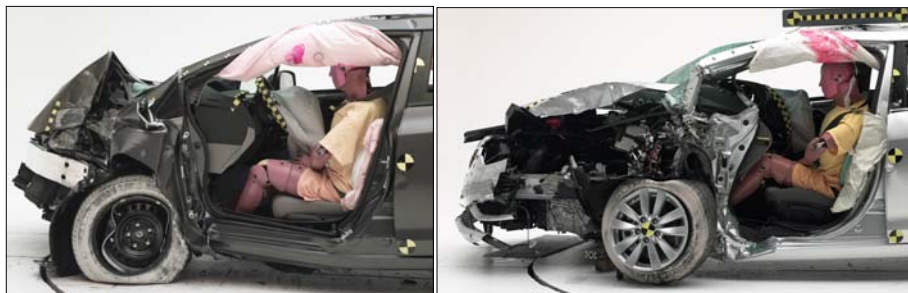
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Overhead video small overlap test (car-to-car and car-to-barrier)



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Structure



2013 Honda Civic - Good

2014 Kia Forte - Poor

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Restraints and kinematics

2014 Kia Forte - Poor



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Restraints and kinematics

2013 Honda Civic - Good



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Small car small overlap ratings

	Overall	Structure	Restraints & kinematics	Injury measures			
				Head & neck	Chest	Hip & thigh	Lower leg & foot
2013 Honda Civic 4-door	G	G	G	G	G	G	A
2013 Honda Civic 2-door	G	G	G	G	G	G	M
2013 Dodge Dart	A	A	M	G	G	G	G
2013 Ford Focus	A	M	A	G	G	G	G
2013 Hyundai Elantra	A	M	A	G	G	G	G
2014 Scion TC	A	M	A	G	G	G	A
2013 Chevrolet Sonic	M	A	M	G	G	G	M
2013 Volkswagen Beetle	M	A	P	G	G	G	G
2013 Chevrolet Cruze	M	P	M	G	G	G	G
2013 Nissan Sentra	P	P	M	G	G	A	M
2013 Kia Soul	P	P	P	G	G	G	M
2014 Kia Forte	P	P	P	A	G	P	M

changed for small overlap test
 G: Good
A: Acceptable
M: Marginal
P: Poor

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BACK-TO-SCHOOL
"BLACK FRIDAY"
 • 2012's busiest shopping day was August 10
 • This year's shopping season is expected to be Saturday the 7/11
 • Foursquare ranked the most shopping check-ins last year

Television coverage:
Small overlap crash tests
small cars

LIVE
 IAN MORNING EXPRESS
 8-10:28AM CT

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Effect of crash ratings on consumer behavior

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IIHS top 5 video news release audiences

	date	viewers	broadcasts
Side impact crash tests – midsize cars	April 18, 2004	239 million	2,412
First side impact crash tests – small SUVs	June 17, 2003	234 million	2,316
Frontal crash tests – large pickups	June 4, 2001	213 million	1,855
First small overlap crash tests – midsize luxury cars	August 14, 2012	204 million	2,550
Children's booster seat ratings	December 22, 2009	183 million	3,669

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Survey of dealerships



- Volvo S60, rated good
- Results announced August 14, 2012
- Surveyed 206 U.S. Volvo dealerships August-September 2012



- Subaru Forester, rated good
- Jeep Patriot, rated poor
- Results announced May 16, 2013



- Surveyed 275 U.S. Subaru and Jeep dealerships June-July 2013

Sales before and after small overlap release

	week before announcement	week after announcement	percent change
S60	267	376	41
all Volvo models	809	956	18
Forester	1,243	1,422	14
all Subaru models	3,970	4,397	11
Patriot	426	419	-2
all Jeep models	2,314	2,325	<1

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IIHS vehicle safety awards

Requirements for 2013



- G** rating in moderate overlap front crashworthiness test
- G** rating in side crashworthiness test
- G** rating in roof strength test
- G** rating in rear crashworthiness test



Vehicles must be eligible for TSP 2013 (above)

- +
- G** or **A** rating in small overlap front crashworthiness test

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2013 *TOP SAFETY PICK+* winners, as of September 2013

- Acura TL
- Chrysler 200
- Dodge Avenger
- Dodge Dart
- Ford Fusion
- Ford Focus
- Honda Accord 2-door
- Honda Accord 4-door
- Honda Civic 2-door
- Honda Civic 4-door
- Honda Odyssey
- Hyundai Elantra
- Kia Optima
- Lincoln MKZ
- Mazda 6
- Mitsubishi Outlander (2014)
- Mitsubishi Outlander Sport
- Nissan Altima
- Scion tC (2014)
- Subaru Forester (2014)
- Subaru Legacy
- Subaru Outback
- Suzuki Kizashi
- Volkswagen Passat
- Volvo S60
- Volvo XC60



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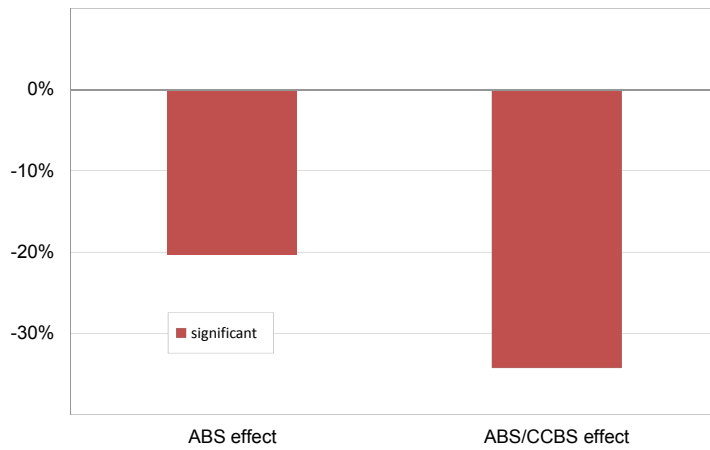
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**Insurance loss results
for motorcycle antilock
and combined control
braking systems**

www.hidi.org

Percent reductions in collision overall losses for motorcycles with antilock brakes

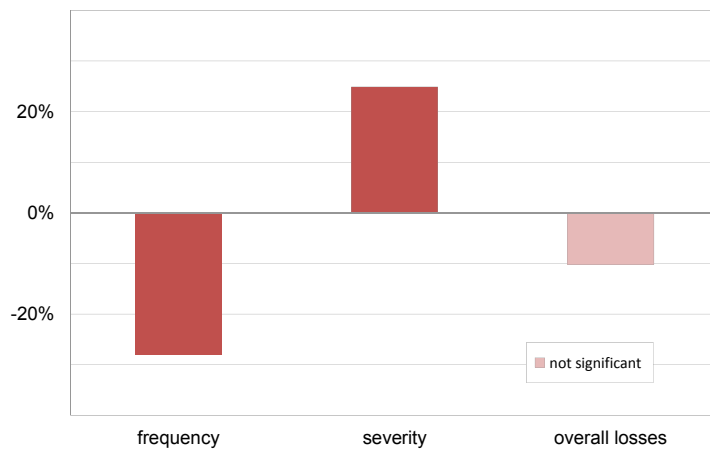
2003-13 models



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Percent changes in medical payment losses for motorcycles with antilock brakes

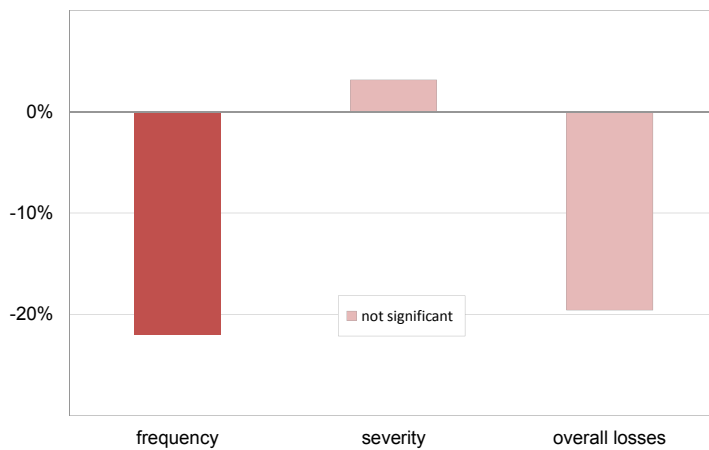
2003-13 models



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Percent changes in bodily injury liability losses for motorcycles with antilock brakes

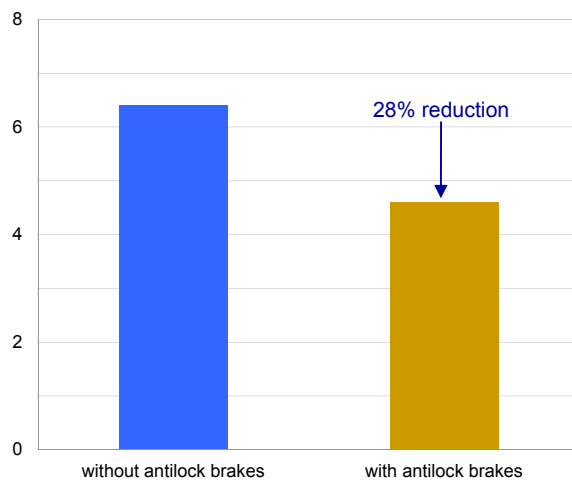
2003-13 models



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Fatal crashes per 10,000 registrations

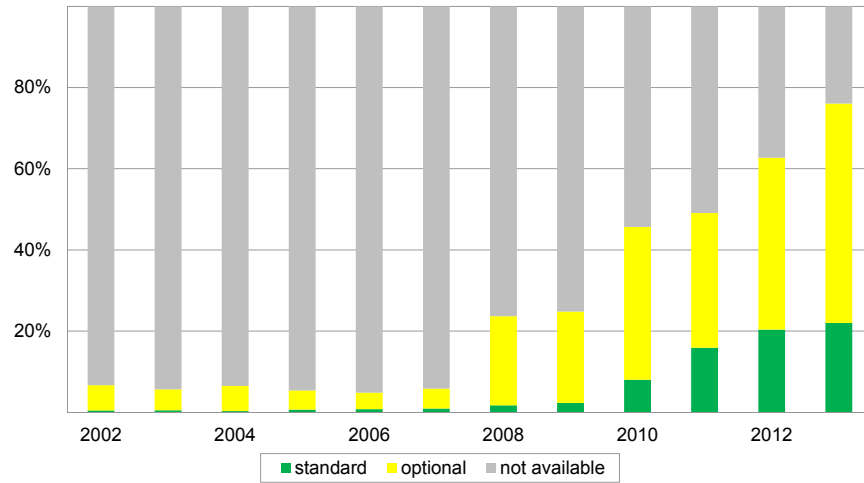
2003-07



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Motorcycle ABS availability by model year

2002-13 models



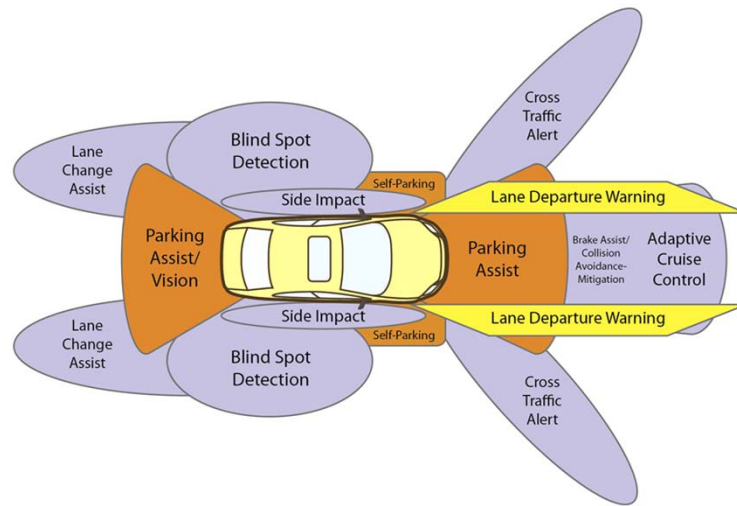
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Evaluating crash avoidance technologies

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Driver assistance features

Radar, LIDAR, ultrasonic, infrared, cameras, GPS



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Mercedes
advertisement

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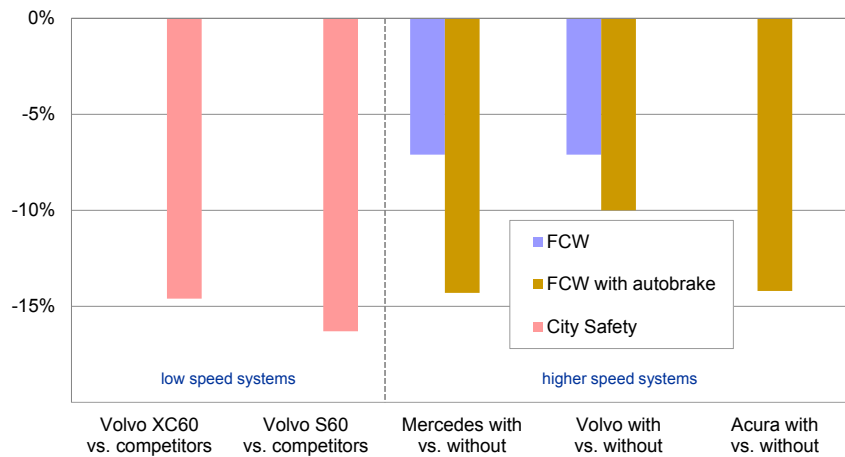


- Forward collision prevention systems are working
- Adaptive headlights are working
- The benefits of these systems are less clear –
 - Lane departure warning
 - Blind spot warning
 - Rearview cameras
 - Parking proximity sensors

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Front crash prevention systems are helping drivers avoid crashes

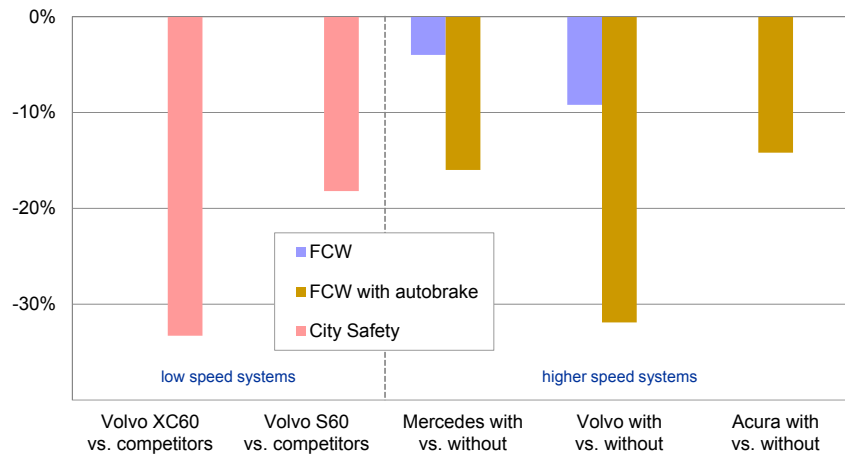
Reductions in property damage liability claim frequency



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Front crash prevention systems are preventing injuries

Reductions in bodily injury liability claim frequency



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Front crash prevention evaluations

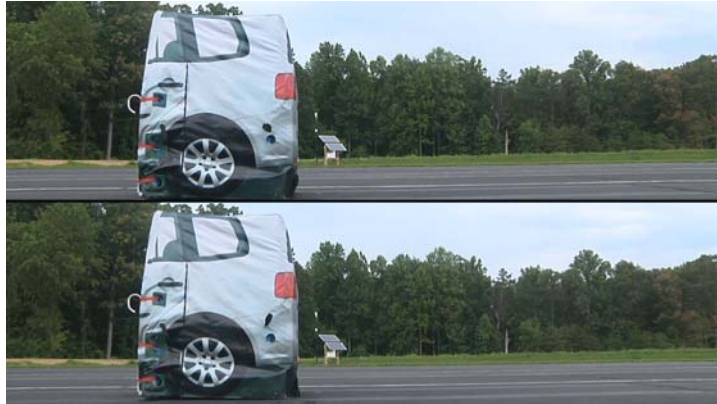
Consumer messages

- Forward collision warning (FCW) is beneficial
- Autobrake is more beneficial than FCW alone
 - Collision mitigation braking in combination with FCW
e.g. Acura Collision Mitigation Brake System, Mercedes-Benz Distronic Plus
 - Low-speed collision prevention/mitigation alone
e.g. Volvo City Safety
- Autobrake systems with greater capability than those HLDI studied are available
 - Examples
 - Subaru EyeSight
 - Volvo Collision Warning with Full Auto Brake and Pedestrian Detection

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Autobrake performance tests

25 mph



Subaru Outback with EyeSight

Mercedes-Benz E350 with Distronic Plus

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NHTSA identifies models with FCW (1 point)

Established criteria since 2010

Search Results by Model Filter results by year

Explanation of 1990–2010 compared to 2011–Newer
 Starting with 2011 models, NHTSA has introduced tougher tests and rigorous new 5-Star Safety Ratings that provide information about safety feature performance and crash avoidance technologies. Because of the more stringent tests, -newer model ratings are not comparable to 1990–2010 vehicles.

Year/Make/Model	Overall	Frontal Crash	Side Crash	Rollover	Recommended Technologies
2014 Cadillac ATS 4 DR RWD	★★★★★	★★★★★	★★★★★	★★★★★	
2014 Cadillac ATS 4 DR AWD	★★★★★	★★★★★	★★★★★	★★★★★	
2013 Cadillac ATS 4 DR AWD	★★★★★	★★★★★	★★★★★	★★★★★	
2013 Cadillac ATS 4 DR RWD	★★★★★	★★★★★	★★★★★	★★★★★	

« 1 » 10

Displaying 1–4 of 4 Results

Key Electronic Stability Control Forward Collision Warning Lane Departure Warning

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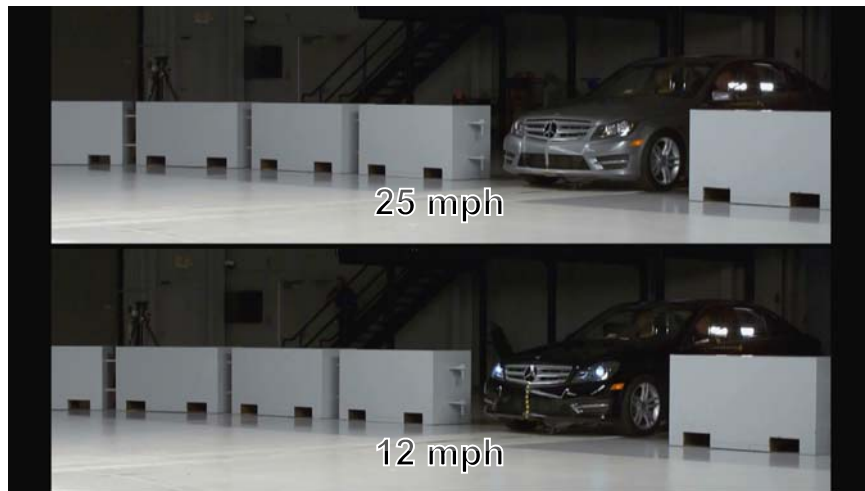
Autobrake performance tests

Points awarded based on speed reduction targets

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

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Benefits of Autobrake: Mercedes-Benz C-Class into Chevrolet Malibu at 25 and 12 mph



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Front crash prevention ratings



NOT AVAILABLE

vehicles without forward collision warning or autobrake; or vehicles equipped with a system that doesn't meet NHTSA or IIHS criteria



BASIC

vehicles earning 1 point for forward collision warning or 1 point in either 12 or 25 mph test



ADVANCED

vehicles with autobrake that achieve 2-4 points for forward collision warning and/or performance in autobraking tests



SUPERIOR

vehicles with autobrake that achieve 5-6 points for forward collision warning and/or performance in autobraking tests

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Autobrake performance tests

Models in HLDI effectiveness studies earn Advanced rating

	test points		total points
	12 mph	25 mph	
Acura MDX with Collision Mitigation Brake System	1	1	2
Mercedes-Benz E350 with Distronic Plus	0	2	2
Volvo S60 with City Safety	2	0	2
Volvo XC60 with City Safety and Collision Warning with Auto Brake	2	1	3

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Inaugural front crash prevention ratings

74 midsize cars and SUVs

- 7 rated Superior
- 6 rated Advance
- 25 rated Basic
- 36 not available with forward crash prevention

www.iihs.org



First public release of
IIHS crash avoidance ratings

September 27, 2013

www.iihs.org

Vehicle Research Center expansion



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Vehicle Research Center expansion

Five project components

1. Robotic test vehicles and control equipment
2. New covered test track
3. Expansion of existing outdoor test track
4. Addition of lab space and track viewing areas
5. Expansion of office

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Robotics



www.ihs.org

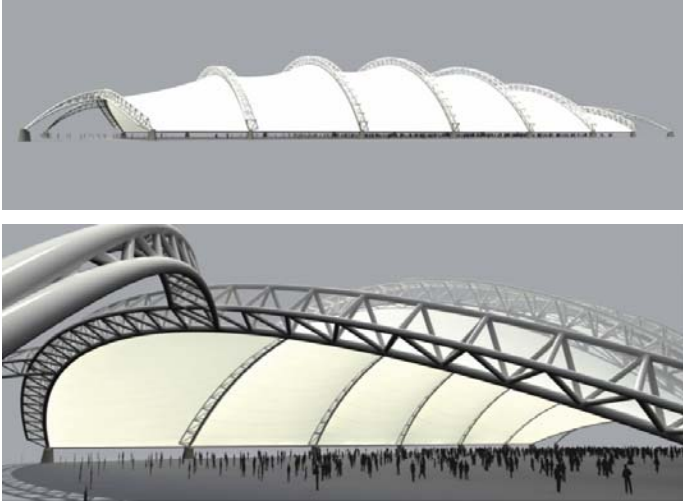
Robot control system

Local positioning beacon



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Covered test track



www.lihs.org

Site conceptual rendering



www.lihs.org

Time-lapse footage of construction



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www.hldi.org

Source of insurance loss statistics on most car, SUV, pickup, and motorcycle models on the road