Insurance Institute for Highway Safety
Highway Loss Data Institute

Driving automation at IIHS

Consensus Safety Measurement Methodologies for ADS-Equipped Vehicles Workshop

June 25, 2019

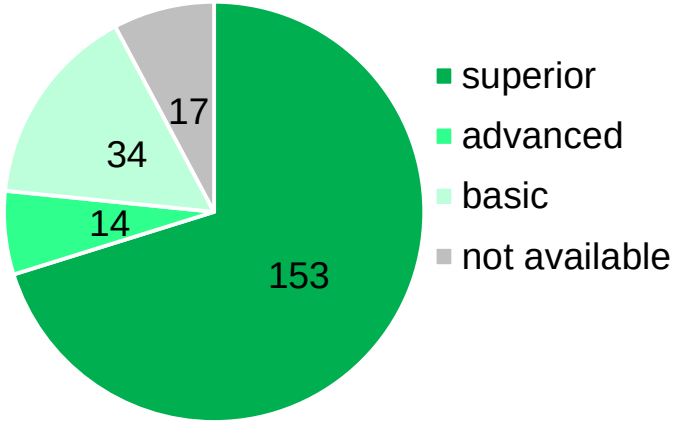
Jessica Cicchino

IIHS 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.

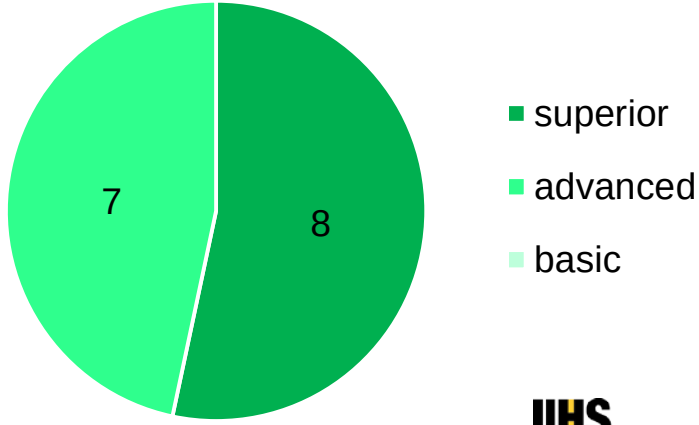
HLDI shares this mission by analyzing insurance data representing human and economic losses from crashes and other events related to vehicle ownership.

Both organizations are wholly supported by auto insurers.

Ratings to promote ADAS that's proven to work

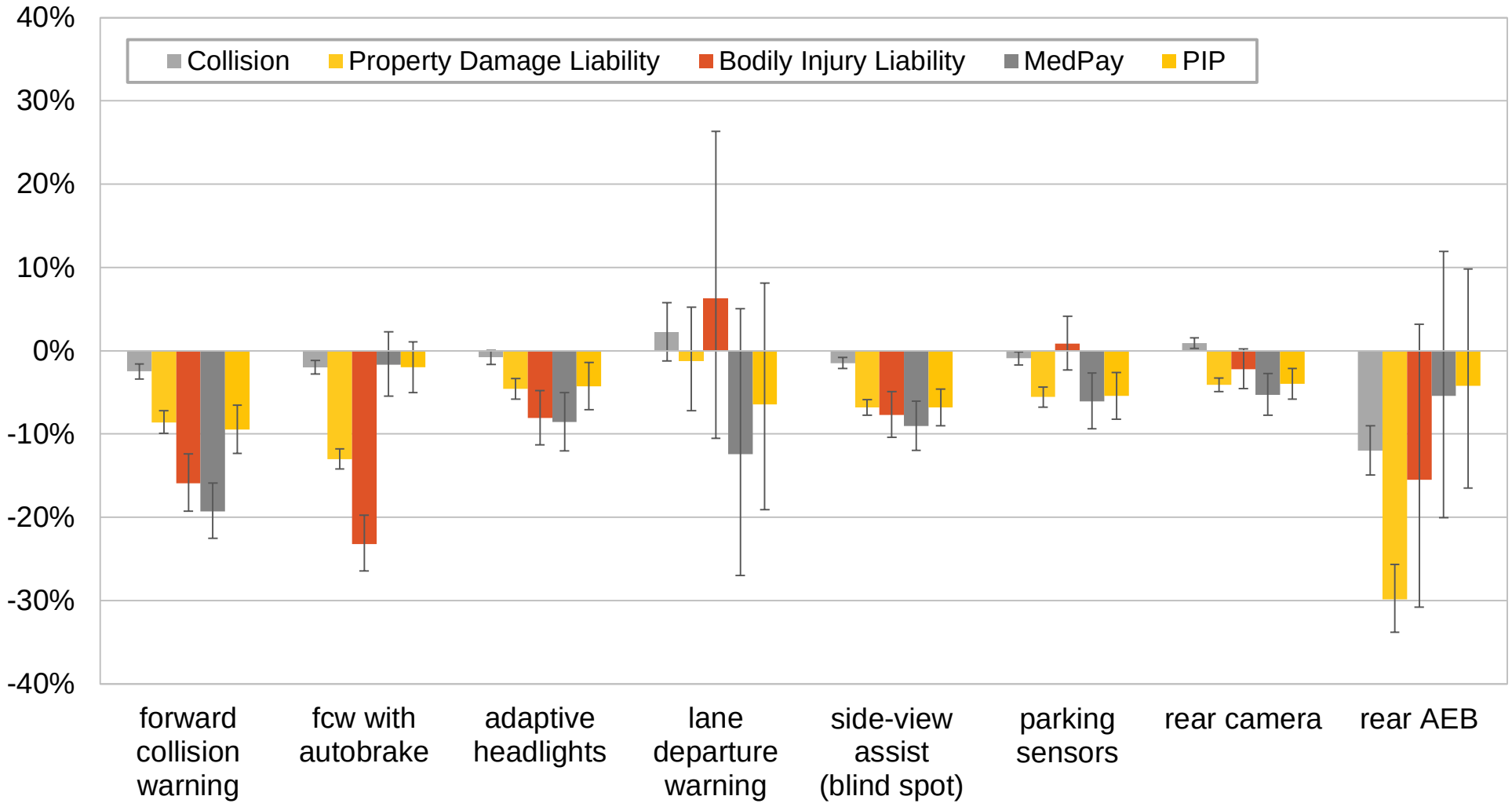


SUPERIOR	2018-19 Honda CR-V
	2019 Subaru Forester
	2019 Toyota RAV4
	2019 Volvo XC40
ADVANCED	2019 Chevrolet Equinox
	2018-19 Hyundai Kona
	2019 Kia Sportage
	2018-19 Mazda CX-5
	2019 Nissan Rogue
BASIC	2019 Mitsubishi Outlander
NO CREDIT	2018-19 BMW X1



Data are key for understanding real-world effects

Summary of HLDI findings of technology effects on insurance claim frequency



Data are key

Independent and objective research is needed to foster public confidence in automated driving

- Deployment for public use of automated driving systems
  - Publicly available VIN-searchable database for all vehicles with level 2 automation and above
    - Listing of all driver assistance and crash avoidance features; level of automation (2+), operational design domains, etc. for each applicable feature
    - All FMVSS exemptions granted by DOT
  - Automatically recorded data in the event of a crash (black box)
    - Retrievable with publicly available tool for use by researchers, insurers, law enforcement
    - Status of each automated system, last actions including take over request by system, speed, location, etc.
- Testing of automated driving on public roads
  - Data on crashes, disengagements and mileage

Focus on safety

Necessary conditions for automation to be safer than human drivers

The critical reason for the critical pre-crash event was attributed to drivers in 94 percent of crashes in NHTSA's NMVCCS database

- 41% were recognition errors (inadequate surveillance, distraction, inattention)

  Automated driving systems need to reliably "recognize" and avoid critical situations better than humans

- 33% percent were decision errors (speed, wrong assumptions about other road users, illegal maneuver, aggressive driving)

  ADS need to make better decisions, obey traffic laws and predict the future better than humans

- 11% performance errors (poor control, freezing); 7% percent non-performance

  ADS need to reliably control the vehicle better than humans

IIHS developing evaluation of L2 systems to promote safety-focused partial automation

Considerations

- Safe lane following and speed control within designated ODD
- Effectiveness of engagement of human co-driver
- Enforcement of use within designated ODD
- Adherence to/enforcement of traffic laws
- Interlocks requiring the use of crash avoidance functions including warnings
- Interlocks requiring the use of seatbelts
- Crash avoidance system ratings
  - Maybe set a minimum requirement for AEB etc.

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VP Research, IIHS
jcicchino@iihs.org