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October 14, 2021

The Honorable Steven Cliff
Acting Administrator
National Highway Traffic Safety Administration
1200 New Jersey Avenue, SE
Washington, DC 20590

Agency Information Collection Activities; Notice and Request for Comments; Event Data Recorders, Docket Number NHTSA–2021–0058

Dear Acting Administrator Cliff:

The Insurance Institute for Highway Safety and Highway Loss Data Institute (IIHS-HLDI) welcome the opportunity to respond to this request for comments related to motor-vehicle event data recorders (EDRs). We urge the National Highway Traffic Safety Administration (NHTSA) to expand the data collected by EDRs as well as require EDRs for certain vehicles.

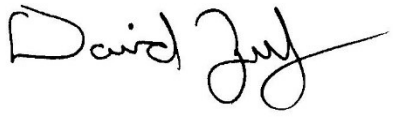
IIHS-HLDI support the collection of crash event data as specified in 49 Code of Federal Regulations (CFR) part 563. NHTSA accurately describes in this notice the importance to the agency's work of information captured by EDRs. Similarly, this information supports the broader field of highway safety research, as it provides crash investigators with more accurate information about the circumstances of crashes when the vehicles involved are equipped with EDRs. For example, EDR-enhanced information about front-crash injury risks is informing our efforts to devise new crash tests for our consumer information programs (Brumbelow, 2019), which have been shown to drive vehicle crashworthiness improvements (Zuby, 2015).

As we have commented on earlier occasions (IIHS, 2013, 2018), we urge NHTSA to expand the number and types of elements recorded by EDRs and require that at least certain vehicles be equipped with them, even though the agency estimates that "99.5 percent of model year 2021 light vehicles have a compliant EDR."

New vehicles are increasingly being equipped with crash avoidance and driver assistance features that automate the control of basic vehicle functions—acceleration, braking, and steering. Understanding how these features influence crash risk and outcomes is critical to guiding their development and optimizing their potential. Requiring vehicles with these features to be equipped with EDRs recording an expanded data set would not only serve NHTSA's research and regulatory functions; doing so would also serve foreseeable law enforcement and insurance needs (Karol, 2019). Our prior communications with NHTSA included a proposed list of data elements (also included here, see the Appendix), many of which are further defined in SAE International's Recommended Practice J1698 (2018), which could serve as the basis for amending part 563.

In summary, NHTSA could improve the information collection activities encompassed by 49 CFR part 563 if it amended the regulation to require EDRs to capture data elements related to the use and function of advanced driver assistance features. Capturing this data will help serve the information needs of NHTSA and the highway safety research, law enforcement, and insurance fields.

Sincerely,



David Zuby
Executive Vice President &
Chief Research Officer

References

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Insurance Institute for Highway Safety. (2018, April 4). Comment submitted to Docket No. NHTSA-2018-009: Revising the Federal Motor Vehicle Safety Standards to address issues related to automated driving technology.

Karol, T. (2019, December). *Responsibility assessment standard for conditional automation/dual control vehicles*. National Association of Mutual Insurers. https://www.namic.org/pdf/publicpolicy/200108_cadc_final.pdf

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Appendix

Suggested variables to include in event-based electronic data recording for vehicles equipped with one or more driving automation systems

IIHS-HLDI recommend that the following variables be recorded by an event data recorder or autonomous vehicle data recorder when an autonomous vehicle is involved in a crash. At a minimum, each variable below should be recorded every second during the period beginning 30 seconds before a crash and ending 5 seconds after, or until the vehicle comes to a stop. Some variables are currently recorded by event data recorders in conventional vehicles. It may be appropriate to record some variables more frequently.

Definitions

State: a categorical variable indicating if a vehicle system is off or on, its current setting (e.g., standby mode, low beam, high beam), or if the system is not functioning (e.g., failure mode).

Action: a categorical variable indicating when a restraint system, advanced driver assistance system, driver monitoring system, or driving automation system is warning, intervening, deploying, or responding to a safety-critical event.

Category	Variable
Time and history	Timestamp
	Ignition cycle count since being manufactured
Location and path	Latitude
	Longitude
	Elevation
	Heading
Vehicle state and kinematics	Speed
	Steering input (torque or wheel angle) (overall, amount applied by driver, amount applied by automation)
	Brake position/input (overall, amount applied by driver, amount applied by automation)
	Throttle position/input (overall, amount applied by driver, amount applied by automation)
	Lateral acceleration
	Longitudinal acceleration
	Roll angle
	Transmission state (P [park]; R [reverse]; N [neutral]; D-L [forward/drive]
	Windshield wiper state
	Exterior lights state
	Engine revolutions per minute (RPM)
Crash prevention, driver assistance, and restraint systems	Antilock brake system state and action
	Electronic stability control state and action
	Front crash prevention system (e.g., forward collision warning, automatic emergency braking) state and action
	Rear crash prevention system (e.g., parking sensor, rear automatic emergency braking) state and action
	Lane change crash prevention (e.g., blind spot warning, blind spot intervention) state and action

Category	Variable
	Lane maintenance system (e.g., lane departure warning, lane departure prevention, active lane keeping) state and action
	Frontal airbag state and action
	Side airbag state and action
	Safety belt pretensioner state and action for each occupied seating position
	Driver fatigue monitoring system state and action
	Hands-on wheel detection state and action
	Driver monitoring system (e.g., eyes on or off road) state and action
Vehicle occupant state	Occupant presence for each seating position
	Safety belt state for each occupied seating position
	Occupant size classification for each occupied seating position
Automated driving systems (e.g., self-parking, highway autopilot, traffic jam assistant) * These variables are collected for each equipped Level 2-5 driving automation system, even if the system is not in use for any reason (e.g., outside the operational design domain, driver choice).	OEM defined SAE level of automation for each equipped system
	Vehicle within or outside intended or specified operational design domain for each equipped system
	State of each equipped system
	Transition of control/take-over message action for each equipped system
V2V basic safety message data for each message broadcasted and received	Time
	Message count
	Temporary ID
	Position data (latitude, longitude, elevation)
	Positional accuracy (semi-major axis accuracy, semi-minor axis accuracy, semi-major axis orientation)
	Transmission state
	Speed
	Heading
	Steering wheel angle
	Acceleration (longitudinal, lateral, vertical, yaw rate)
	Brake system state
	Vehicle size (width, length)
V2I safety message data for each message broadcasted and received	Signal phase and timing message data
	Signal request message data
	Signal state message data
	Map message data
	Emergency vehicle alert message data
	Intersection collision avoidance message data
	Personal safety message data (vulnerable road user data)
	Road side alert message data
	Traveler information message data