

NHTSA's Final Ruling for Automotive EDRs Will Revolutionize Auto Insurance

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On August 21st, the National Highway Traffic Safety Administration (NHTSA) issued its final ruling for automotive event data recorders (EDRs) which will take effect 60 days after its publication in the Federal Register. The entire ruling can be downloaded using the following link:

http://www.nhtsa.dot.gov/staticfiles/DOT/NHTSA/Rulemaking/Rules/Associated%20Files/EDRFinalRule_Aug2006.pdf

This article summarizes the key provisions and commentary from NHTSA's 207 page promulgation and examines the operational and strategic implications to auto insurance claims, customer service, underwriting and pricing.

EDR DEFINITION

An EDR is defined by NHTSA as "a device or function in a vehicle that records the vehicle's dynamic, time-series data during the time period just prior to a crash event (e.g., vehicle speed vs. time) or during a crash event (e.g., delta-V vs. time), intended for retrieval after the crash event. For the purposes of this definition the event data do not include audio and video data."

APPLICABILITY AND COMPLIANCE DEADLINE

The final rule requires that by September 1, 2010, an EDR installed in light vehicles (e.g., those vehicles with an unloaded weight of 5,500 lbs. or less) must record a minimum set of data elements. There will be a one-year extension of this compliance deadline for a limited type of vehicles.

What this means:

- 1) The rule applies to the vast majority of sedans, SUVs, pickup trucks and vans.
- 2) The rule does not mandate the installation of EDRs but governs the standard for data collection if an EDR is voluntarily installed by a manufacturer. NHTSA stated that it elected not to mandate EDR installation because "the fact that approximately two-thirds of new vehicles are already equipped with EDRs is strong evidence of a significant incentive (for manufacturers) to install these devices." Additionally, NHTSA expects the installation rate to reach approximately 85 percent by the 2010 model year.

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- 3) The risk of manufacturers electing to not participate appears very low due to a number of factors. First and foremost, NHTSA was clear in the ruling that it would revisit voluntary vs. mandatory compliance if the current trends in the growth of voluntary EDR installation are reversed or slowed. NHTSA's expectation for the availability of EDR data to increase was clearly implied. Secondly, if a manufacturer elected not to participate, they would lose an opportunity to present critical evidence that could prove the proper performance of their vehicle in a product liability lawsuit. Similarly, the decision to remove an existing EDR system might create the perception that a manufacturer is attempting to cover up a product defect. The cost of a single adverse jury verdict could easily be many times higher than the modest implementation costs projected by NHTSA (estimated to be as little as 17 to 70 cents a vehicle). Ironically, the cost of removing an EDR may be higher than modifying an EDR system to be compliant.
- 4) The rule sets forth minimum, but not uniform data collection requirements. As a result, more advanced data sets will exist (and are encouraged by NHTSA). Consequently, variances will continue to exist within and across manufacturers in the types of EDR data available and the types of claim scenarios that can benefit from these varying data sets. To maximize the use and the effectiveness of this data, insurers will need to have access to databases which track the types of data available on each vehicle manufactured and what types of claims questions or scenarios can be addressed with each available data set. These databases are already commercially available from Injury Sciences and ISO.
- 5) By 2010, it will be a near certainty that one or more of the vehicles in a collision involving two private passenger autos or light vehicles will have an operational EDR. Given the data collection requirements set forth by NHTSA's ruling, much insight can be gleaned about a collision's dynamics and severity for a vehicle without an EDR by scientifically evaluating the data from the striking vehicle which has EDR information.

DATA STANDARDS

The minimum data set required by NHTSA's ruling encompasses 15 data elements. Some of the more significant data elements include longitudinal delta-V during the collision event; pre-collision vehicle speed, engine throttle percentage and braking activity at half second intervals for 5 seconds prior to the collision; driver seat belt usage; engine cycle count at the time of the collision and EDR data download; number of collision events (up to two); and, the time from event 1 to event 2. Delta-V and speed data are required to be recorded even if the engine is not running; however, the ignition must be turned to the "ON" position.

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NHTSA further requires that in an airbag deployment crash, the data recorded from any previous crash must be deleted, the data related to the deployment must be recorded and the memory must be locked in order to prevent any future overwriting of these data. In an airbag non-deployment crash that has a delta-V of 5 mph or greater within a .15 second period (which is roughly equivalent to an average bumper car collision in an amusement park), all previously recorded data in the EDR's memory must be deleted and the current data (for up to two events) must be recorded. Specified rules are set forth as to how and when two collision events should be recorded when they occur within 5 seconds of each other.

Also, there are 30 data elements that, if recorded by an EDR, must comply with NHTSA's standards. Some of these data elements include lateral delta-V during the collision event and the following information prior to the collision: engine rpm, vehicle roll angle, ABS activity, steering angle, right front passenger seat belt usage, seat track position for the driver and right front passenger, and occupant size and position classifications for the driver and right front passenger.

What this means:

- 1) Delta-V is the gold standard metric used by researchers and experts for defining crash severity and determining injury causation (or injury relatedness to a collision). Delta-V measures the rate (or magnitude) and direction in which a vehicle decelerates or accelerates. Further, delta-V helps define and characterize what an occupant feels or experiences in a collision and determine what injuries are and are not likely when examined with other data (e.g., restraint system usage, occupant location and position, etc.). Consequently, NHTSA's standards for longitudinal delta-V (i.e., in the fore-aft direction) and lateral delta-V (i.e., from side to side) will provide data that is critical to many claim investigations. Also in the final ruling, NHTSA acknowledged the importance of delta-V, as a measure of crash severity, in crash investigations and crash research. This represents yet another independent validation of the methodology employed by experts that uses delta-V to define impact severity and assess injury causation. This independent validation significantly undermines those who would question or attack its use in such evaluations.
- 2) A wide variety of claim questions can be reliably and accurately answered from the data elements required by NHTSA. Consequently, claims can be more accurately reserved and resolved. The types of claim scenarios that will benefit include, but are not limited to, the following:
 - a. Identifying questionable or fraudulent soft tissue injuries claimed as the result of collisions. EDR information will be an excellent complement to low impact programs, even when no data is

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- recorded during a collision (which confirms a very low severity collision for the vehicle with the EDR).
- b. Identifying if there was a failure to stop or yield at an intersection and if a driver had the last clear chance to avoid a collision in a variety of accident scenarios.
 - c. Determining driver negligence in a wide variety of accident scenarios.
 - d. Determining the collision sequence in collisions involving 3 or more vehicles.
 - e. Ascertaining if, in certain instances, a collision occurred within the policy coverage period.
 - f. Validating if or how a reported phantom vehicle collision occurred.
 - g. Determining eligibility for special benefits when a seat belt is worn and injury is sustained and using in seat belt defense cases.
 - h. Identifying fraudulent airbag replacements.
 - i. Identifying staged collisions.
 - j. Evaluating potential mechanical failures (e.g., brakes, airbags, seat belt pretensioners, cruise controls, etcetera).
 - k. Establishing subrogation and recovery probabilities.
- 3) The data collection rules provide for a straightforward process to link EDR data retrieved from a vehicle to the subject collision event. Consequently, with the appropriate retrieval procedures, EDR evidence can be properly established and preserved.
 - 4) When the optional data elements defined by NHTSA are recorded, even a greater number of complex questions can be addressed. Just a few examples include:
 - a. Using lateral delta-V in angular and side collisions to determine impact direction and injury potential.
 - b. Assessing injury claims with occupant positioning data.
 - c. Identifying who was driving at the time of the collision with occupant classification data.
 - d. Using driver steering data to evaluate potential accident avoidance.
 - 5) When an airbag deploys, there will most likely be a requirement to replace the EDR during the repair process so future collisions can be recorded. As with today, carriers will need to be careful in their repair and salvage disposal processes so as to not inadvertently discard the EDR hardware that contains potentially valuable evidence.
 - 6) Since EDR data complements a claim investigation as an unbiased witness, it will help identify conflicting information and fraudulent representations. For these reasons and the previously-described usefulness and increasing availability of this information, NHTSA's ruling will make EDR data as commonplace in and important to a claim file as a police report and witness statements.

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- 7) Auto insurers should recognize that much of the data described in NHTSA's data collection requirements is retrievable today from a very large percentage of vehicles currently in operation.

DATA RELIABILITY, ACCURACY AND SURVIVABILITY

NHTSA's ruling states that EDR data must be recorded in accordance with certain range, accuracy and resolution requirements (e.g., within +/- 5 percent). Additionally, the rule requires that the EDR system pass certain tests that ensure the survivability of EDR data in most crashes.

What this means:

- 1) The data range, accuracy and resolution requirements are complex and affect how EDR information should be interpreted and used. Also, the requirements establish the boundaries for data accuracy but, again, **not** uniformity. As a result, some EDR systems may be more accurate than others within the specified accuracy range. Consequently, responsible analysis of the data by those experienced with the technology will continue to be recommended as EDR information is used to investigate, evaluate and resolve claims.
- 2) Historically, courts have consistently found that EDR data is scientifically reliable and relevant evidence under both the Daubert and Frye criteria (which govern the admissibility of scientific data). NHTSA states in the final ruling that "We believe that the range, resolution, and accuracy standardization requirements are representative of current industry standards that are generally accepted in the industry". This is textbook language for admissibility of EDR data as evidence under the previously-noted criteria. Additionally, the mere existence of NHTSA's final ruling gives tremendous weight to the importance and credibility of the technology. As a result, the existence of the final ruling, its accuracy standards and its testing requirements should effectively remove any doubt of the scientific admissibility of EDR data in litigation.

DATA AVAILABILITY TO THIRD PARTIES

In order to ensure the retrievability of EDR data, each vehicle manufacturer that installs EDRs must ensure by licensing agreement or other means that the necessary tool(s) are commercially available for downloading the required EDR data. The tool must be commercially available not later than 90 days after the first sale of the vehicle for purposes other than resale.

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What this means:

- 1) The days of EDR data being only available to a vehicle manufacturer are numbered. Approximately one-third of the vehicles in operation today have EDRs with data that can be extracted with equipment made by third parties. For the most part, these vehicles are manufactured by GM, Saturn and Ford. It has been reported that Chrysler and Toyota will soon make their EDR data available to third parties. The impact of NHTSA's ruling related to the acceleration or delay of data availability from these and other manufacturers is unknown. Since it appears unlikely that all voluntary compliance will be delayed to 2010, it is reasonable to expect continued growth in the commercial availability of EDR data over the near-term.
- 2) **Third party availability is one of the most important elements of NHTSA's ruling.** By the fall of 2010, if a vehicle has an EDR, its data can be retrieved by individuals that possess the commercially available equipment and training to access and extract the data. Outside of requirements to obtain a vehicle owner's permission to access the data, NHTSA's rule creates open and equal access to insurers and the legal industry. Because the data is accurate, reliable and unbiased, one party in a disputed claim involving the previously-described scenarios will likely have an advantage by possessing the vehicle's EDR data. Unfortunately, the party with the resulting advantage will not be conclusively known until after the EDR data is retrieved.
- 3) Based on comments cited in the final ruling, the current and prevailing practice of manually extracting EDR data through the use of extraction tools appears to be the contemplated method of choice by NHTSA and the manufacturers for the foreseeable future. Additionally, the comments in the ruling appear to indicate that it is unlikely there will be a single data retrieval tool that is compatible with all EDRs over the long-term. As a result, acquisition of the various types of proper equipment, related training and physical access to the vehicle after an accident will most likely be prerequisites to successfully retrieving EDR data. For insurers that do not have the appetite to invest in the required equipment or alter work processes to retrieve EDR data, Injury Sciences offers trained and equipped service providers throughout the U.S. that will travel to the vehicle and retrieve the EDR data for analysis by Injury Sciences for a total cost (including analysis) of approximately \$200.
- 4) With open and equal access to EDR data and its importance to the evaluation of a claim, auto insurers will be well served to structure their processes and technologies to rapidly identify when relevant EDR data could exist in a claim. By doing so, auto insurers can avoid being the last

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to know vital claim information and avoid the inadvertent loss of the critical data during the vehicle repair or salvage disposal process.

PRIVACY

NHTSA's ruling requires that manufacturers of vehicles equipped with an EDR include a specified statement in the owner's manual to make the operator aware of the presence, function and capabilities of the EDR. NHTSA's requirements are preemptive to conflicting requirements from States.

During the public comment period prior to the final ruling, NHTSA noted that "Many issues raised by commenters concerning privacy arise from the misconception that EDRs record data for prolonged intervals and personal information to study driver behavior". Similarly, when NHTSA's ruling was released, numerous articles and news features reported the ruling as a requirement for a car to be a "spy" or "big brother". NHTSA has emphasized in its ruling that the required recording period was not for prolonged periods as with flight data recorders and locomotive event recorders but for "an extremely short duration (i.e., a few seconds immediately before and after a crash)". Not only is the data recorded for a very short period of time, it is only preserved when a collision occurs. Also, NHTSA made a point to exclude audio and video data from its definition of EDRs as well as exclude telematics systems such as OnStar® from the purview of its ruling.

NHTSA also indicated that it is their practice to only retrieve data with the vehicle owner's verbal permission and provided assurances that personally identifiable information will be held confidential.

What this means:

- 1) Consumers will be more consistently made aware of the existence of EDR technology in their vehicle which will reduce surprises when requests are made for its retrieval. Scientific studies have consistently shown that driver awareness of the existence of EDRs has reduced the frequency of accidents. Ultimately, this technology may actually reduce the accident frequency experienced by insurance carriers.
- 2) In States where EDR notification conflict with NHTSA's requirements, NHTSA's requirements should prevail. Currently, Arkansas, Colorado and North Dakota require more disclosure than the other seven States that have passed EDR legislation. This preemption will also apply should states pass laws that would affect EDR design and operation.
- 3) Consumers and the media are still very confused as to what an EDR is and often link it to technologies that can track where a vehicle has traveled. Without adequate public education which clearly distinguishes

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- technologies with GPS capabilities (e.g., OnStar®) from EDRs as defined by NHTSA, public perception could incorrectly assume that EDRs are an invasion of privacy and, thereby encourage unfavorable legislation regarding EDR use. The auto insurance industry has two significant benefits that will result from properly educating the public: a) reducing the risk of losing access to this technology due to restrictive legislation by States, and b) reducing accident frequencies as demonstrated by previously-noted research.
- 4) The 10 states that have passed EDR legislation have provided for retrieval of EDR data if consent is obtained from the vehicle owner or a court order is obtained. NHTSA does not extract EDR data without the vehicle owner's permission. There is safety in numbers. Insurers that support the practice of obtaining EDR data without a vehicle owner's knowledge run the risk of provoking adverse legislation which restricts the use of EDR data by insurers (e.g., such as in Arkansas, North Dakota and Virginia). It should be noted that in these States, the legal industry is not restricted in its use of the technology, thereby creating an un-level playing field. By adopting a practice of only retrieving EDR data with vehicle owner permission or a court order, the insurance industry can protect itself and the consumer from invasion of privacy concerns. It is important to note that this practice does not prohibit insurers from withholding payment of a claim if legitimate concern exists about the claimant's cooperation in providing data important to the claim investigation (except in the very few States that have passed unfavorable legislation).

OTHER CONSIDERATIONS

While claims will be in the best position to reap the benefits of NHTSA's ruling over the near-term, other profound business opportunities will surface for auto insurers over the longer-term. Over time, the auto insurance industry will be in the position to accumulate and evaluate millions of EDR data records in the context of other relevant claim information. As a result, there will be opportunities to:

- 1) Better understand how specific vehicles perform in the context of repair cost and occupant injury protection in a wide variety of the most likely accident scenarios (from point of impact and impact severity perspectives). This will enable auto insurers to more accurately rate vehicles and occupants during the underwriting process. This will create competitive advantages for those companies that best understand and evaluate these relationships.
- 2) Revolutionize the accuracy of the material damage repair estimating process. Near-term uses will be to help highlight the potential for damage that is often hidden or difficult to identify. This is because EDRs capture

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- metrics of impact energy and how this energy is applied to a vehicle during a collision (e.g., location, direction and duration) affects how a vehicle is damaged.
- 3) Improve fraud identification systems. Over time, insurers will develop a wealth of "cause and effect" information based on EDR data and the use of objective science. As a result, fraud models and processing priorities will be improved for faster and more accurate identification and prioritization of problematic claims.

Lastly, the duty that auto insurers have to provide a reasonable defense to its insureds is an important one. As EDR data becomes easily available to an insured's adversary (as it is today), it becomes a more reasonable expectation for auto insurers to seek this information in the normal course of investigating a claim and preparing for its defense. Legal experts that have used EDR information in court have already recognized that failure to obtain EDR data when it is available can impeach the credibility of their experts and their case. Given auto repair and salvage disposal processes, time will be of the essence as auto insurers determine if EDR data should be secured, otherwise it could be lost. With NHTSA's current ruling, lost or missed opportunities to preserve EDR data that could have been relevant to the defense of a claim will be increasingly viewed as something less than reasonable.

CONCLUSIONS

Today, varying degrees of the EDR data required by NHTSA's ruling is available and retrievable from nearly a third of the vehicles in operation today. By the time today's high school freshmen enter college, this technology will be almost ubiquitous and commonly used by the insurance and legal communities. For parents with children already in college, this timeframe seems more like the blink of an eye than 4 years.

Now and during this "blink" auto insurers will face the very real opportunities/benefits and risks (as described in this writing) of EDR technology on a very large and growing scale. As with any new technology-driven change, the winners will be those organizations that possess the knowledge, experience, structure and best practice automation to execute their operations in the new and changing environment. In this regard, auto insurers will be well served to begin developing experience now before the technology becomes overwhelming and the cost of change is highest.

Privacy concerns are expected to continue but should abate *if* the insurance industry makes a strategic investment in the education of the public regarding the benefits of using this technology and advocating a conservative approach in its use (i.e., pursuing the information only with owner consent). Research tells us

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this education should also reduce claim frequencies. Failure to educate the public could result in more legislation that puts auto insurers in a disadvantage relative to the legal industry (such as in Arkansas and Virginia).

Without question, NHTSA's ruling heralds a major, technology-driven change in the way policies are underwritten, companies price their offerings and how insurers compete for business. And, over a very short time frame, NHTSA's ruling will provide more objectivity, consistency and accuracy to the claims handling and management process.

About the Author

W. Scott Palmer is the President and CEO of Injury Sciences LLC. Injury Sciences provides forensic science technologies to the auto insurance industry and has been researching, retrieving and analyzing EDR data for over 8 years. Scott Palmer has published numerous articles regarding the use of EDR information in the evaluation of auto claims and has delivered scores of invited lectures on this subject. He has also served as an expert resource to legislators in their development of EDR legislation. He can be reached at scott.palmer@injsci.com.