

Unlocking Forensics Data for Vehicles Involved in Motor Vehicle Crashes

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Center Name: New England University Transportation Center (NEUTC)

Research Priority: Promoting Safety

Principal Investigator(s): Sgt. Charles Grasso, III (ret)

Project Partners: University of Connecticut

Research Project Funding: \$36,826 (Federal), \$71,347 (Non-Federal)

Project Start and End Date: 1/1/2024 - 6/1/2025

Project Description: This project evaluated how incorporating vehicle electronic crash data—particularly Event Data Recorder (EDR) outputs accessed via the Bosch Crash Data Retrieval (CDR) system—enhanced the accuracy, completeness, and interpretive value of crash reconstructions compared with using physical evidence alone. The team conducted five paired fatal-crash reconstructions: each case was first analyzed with traditional scene and vehicle evidence, then re-analyzed with added EDR data (e.g., speed, braking, throttle position, steering input, seat belt status, and time-stamped pre-crash traces). The comparative analysis showed that EDR data confirmed or clarified key sequence-of-events details, reduced reliance on assumptions, and strengthened investigative conclusions. Findings support adopting EDR data, when available, as standard practice in serious crash investigations and highlight its potential to inform vehicle safety improvements, roadway countermeasures, driver training, and policy.

US DOT Priorities: This project supported U.S. DOT priorities by improving the accuracy and completeness of crash reporting. The research demonstrated how Event Data Recorders (EDRs) and related onboard vehicle systems provide time-stamped, objective data elements such as speed, braking, throttle, steering, and seat belt usage. By comparing reconstructions based on physical evidence alone with those supplemented by electronic crash data, the project advanced methods for more reliable crash analysis. This work directly supported the Department's emphasis on innovation, advanced technology integration, and improved roadway safety.

Outputs: The project delivered several key outputs:

- A series of five paired crash reconstructions, each completed using (1) physical evidence only and (2) physical evidence plus electronic vehicle data.
- Access to EDR data through the Bosch Crash Data Retrieval system, producing detailed reports of pre-crash and crash-time conditions.
- Side-by-side comparisons that documented differences in speed estimates, braking, throttle, seat belt usage, and collision sequence reconstruction.
- Case study documentation demonstrating how electronic crash data enhances traditional reconstruction methods.

These outputs provided investigators, researchers, and policymakers with practical demonstrations of how EDR data can be systematically incorporated into crash investigations.

Outcomes/Impacts: The project showed that incorporating EDR data:

- **Enhanced Accuracy:** Electronic data confirmed or clarified critical crash sequence details that were uncertain using physical evidence alone.
- **Improved Reliability:** Objective, time-stamped data reduced reliance on assumptions, witness statements, or incomplete physical evidence.
- **Supported Accountability:** Clearer reconstructions strengthened investigative findings and supported more accurate determinations of contributing factors.

- **Informed Safety Improvements:** Aggregated EDR data has potential to guide vehicle safety standards, roadway design changes, and driver training by identifying patterns such as delayed braking or seat belt non-use.
- **Policy Relevance:** The research demonstrated that integrating EDR data into crash investigations could support future legislation, regulatory standards, and law enforcement practices.

In sum, the project provided compelling evidence that vehicle electronic crash data, when available, should be standard practice in serious crash investigations to improve accuracy, accountability, and safety outcomes.

Final Research Report: Final report is posted here: <https://www.umass.edu/neutc/projects/unlocking-forensics-data-vehicles-involved-motor-vehicle-crashes>