I-95 Corridor Crash Data Reporting Methods

Technical Memorandum:
Current State Crash Data Collection & Reporting
Systems and Procedures

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1.0 Introduction

Crash data is essential to improving safety and efficiency on the Corridor's transportation network. Crash data can be analyzed to identify safety hot spots along the corridor and factors contributing to crashes. The results can be used to identify areas which have need of specific safety applications, technologies, programs, practices, enforcement, and other activities. The timely transmission of incident crash data is critical for identifying areas and situations prone to incidents and their causes, particularly with respect to commercial vehicles. Frequently, however, this data is not accessible in a timely manner to law enforcement, Departments of Transportation (DOTs), and other entities which utilize the crash data. Often there is a significant lag time in the available data, and the crash reports are frequently inaccurate or incomplete.

■ 1.1 Data Quality Measures

While the data collection systems and practices vary amongst the Coalition states, there are common measures which can be used to evaluate data quality. National Highway Traffic Safety Administration (NHTSA) established the following six data quality measures commonly referenced as the "six pack":

- **Timeliness** is a measure of how quickly an event is available within a data system;

- **Accuracy** is a measure of how reliable the data are, and if the data correctly represent an occurrence;

- **Completeness** is a measure of missing information, including missing variables on the individual crash forms, as well as underreporting of crashes;

- **Uniformity** is a measure of how consistent information is coded in the data system, and/or how well it meets accepted data standards;

- **Data integration** is a measure of how well various data systems (e.g., roadway inventory, driver licensing, EMS, etc.) are connected or linked; and

- **Accessibility** is a measure of how easy it is to retrieve and manipulate data in a system, in particular by those entities that are not the data system owner.

The overall objective of this project is to identify the current state of practice and best practices in I-95 Corridor Coalition States' crash data collection and reporting systems to improve the timeliness, accuracy, and accessibility of crash data among the Corridor states. The first task in this process is to obtain comprehensive and detailed information about the present status of each state's crash data collection and reporting systems.

■ 1.2 Report Overview

This technical memorandum serves as the final deliverable for Task 1 of Project 2-2-16-7C, *Study Crash Data Reporting Methods*, and summarizes the research conducted on the I-95 Corridor States' crash data reporting systems and procedures. This memorandum provides a compilation of the following:

- Key contact information – lead agency responsible for maintaining the state's crash database, and crash data system, crash report form, and TRCC contacts;

- Legislation, regulations, policies and procedures - impacting crash report collection, submission, accessibility; includes state crash data repository policies and procedures; and multi-agency/multi-disciplinary reporting requirements, procedures and memorandums of understanding (MOUs);

- Crash report forms(s) – basic form and supplementary forms, number and description of fields, number of fields compliant with the Model Minimum Uniform Crash Criteria (MMUCC), documented instructions for completing the form(s);

- State planning documents – Traffic Records Strategic Plan, Strategic Highway Safety Plan, and Highway Safety Performance Plan, most recent Section 408 grant application, and most current Traffic Records Assessment report;

- Crash data related performance measures –used by the state agency responsible for maintaining the crash database (e.g., days from crash to report submission, number of reports missing key data fields), and law enforcement agencies (e.g., time to complete PAR, roadway clearance times, PAR quality control review time, number of reports returned for incomplete/illegible information); and related benchmarks, statistics and trends;

- Process descriptions - for crash report collection, reporting, and distribution to end users (e.g., type, distribution frequency, and audience for existing data compilation reports);

- Technology used – type of technology and software, agency/personnel using the technology, per unit and system costs, state or private vendor provided software, and project details and evaluations of pilot projects conducted to deploy crash data technology;

- Training – type of training offered, topics covered, targeted audience(s), entities providing training, requirements, number of individuals trained; instructor requirements and compensation; and cost per participant, per course, and cost of overall training program; and

- Evaluations – results of crash data system evaluations and information on evaluations currently in process.

The state planning documents were obtained through the state highway safety offices, Traffic Records Coordinating Committees, and on-line resources. In addition, the project team conducted phone interviews with state representatives from the agencies responsible for the crash data collection and reporting system. The remainder of this document summarizes the results of this effort.

2.0 Crash Data Collection & Reporting Systems and Procedures

This chapter provides a summary of the data collection effort conducted for Task 1. The project team is still waiting on information from a few of the Coalition states and will continue to compile any additional information obtained for the Task 5 final project report. The crash report forms and procedures have been compiled in Appendix A.

◼ 2.1 Key Contact Information

Management of crash data systems requires coordination and cooperation among various stakeholders. Crash data systems are typically maintained by one organization, but often rely on data and input from a variety of agencies statewide. As such, it is important to recognize a number of key stakeholders when inventorying current crash data collection and reporting systems and procedures among Corridor states. Key contacts identified include lead agencies responsible for maintaining state crash databases, and crash data system, crash report form, and Traffic Records Coordinating Committee (TRCC) contacts. TRCCs are statewide stakeholder committees created to facilitate the planning, coordination and implementation of projects to improve a state's traffic records system. The TRCC is a partnership of state and local interests from the transportation, law enforcement, criminal justice, and health professions. This traffic records coalition fosters understanding among stakeholders and provides an appropriate venue to formulate mutually beneficial projects for improving the accessibility, timeliness, accuracy, and completeness of statewide traffic-related information. Table 2.1 provides contact information for these key crash data system stakeholders.

Table 2.1   Stakeholder Contact Information

State	Lead Agency for Crash Data Collection	Lead Agency for Crash Data Reporting	Crash Data System Contact	Crash Form Contact	TRCC Key Contact
Connecticut	Connecticut Department of Transportation (ConnDOT)	All agencies accountable to send to ConnDOT	Vacant	Sebastian Puglisi ConnDOT, Accident Records Section	Joseph Cristalli, ConnDOT, Transportation Safety Section
Delaware	Delaware State Police (DSP)	Delaware Department of Transportation	Tammy Hyland, Department of Safety and Homeland Security, DSP	Barbara Conley Department of Safety and Homeland Security, DSP	Vacant
District of Columbia	U/A	U/A	Carole Lewis, District Division of Transportation, Safety Division	U/A	U/A
Florida	Department of Highway Safety and Motor Vehicles (DHSMV)	DHSMV	Joe Santos, Florida Department of Transportation	Susan Nash, DHSMV, Division of Administrative Services	Roger Doherty, Florida Department of Transportation
Georgia	Georgia Department of Transportation, Office of Traffic Operations	Georgia Department of Transportation, Office of Traffic Operations	Norm Cressman, Georgia Department of Transportation	Norm Cressman, Georgia Department of Transportation	Michael Smith, Governor's Office of Highway Safety
Maine	U/A	U/A	Duane Brunell, Maine Department of Transportation, Systems Management Division	Christopher Grotton, Maine State Police, Traffic Safety Unit	Lauren Stewart, Bureau of Highway Safety
Maryland	Maryland State Police (MSP), specifically the Central Records Division (CRD)	MSP and the Maryland State Highway Administration	Ida Williams, Department of Maryland State Police, Central Records Division	Doug Mowbray, Maryland State Highway Administration, Office of Traffic Safety	Doug Mowbray/ Neil Pedersen, Maryland State Highway Administration, Office of Administrator
Massachusetts	Massachusetts Registry of Motor Vehicles (RMV)	All law enforcement agencies accountable to send to RMV	Karen Perduyn, Massachusetts RMV	Karen Perduyn, Massachusetts RMV	Sheila Burgess, Executive Office of Public Safety and Security, Highway Safety Division
New Hampshire	U/A	U/A	Roberta Bourque, New Hampshire Department of Safety/DMV	Roberta Bourque, New Hampshire Department of Safety/DMV	Debra Garvin, New Hampshire Highway Safety Agency

State	Lead Agency for Crash Data Collection	Lead Agency for Crash Data Reporting	Crash Data System Contact	Crash Form Contact	TRCC Key Contact
New Jersey	Police Departments statewide	NJDOT	William Beans, NJDOT, Bureau of Safety Programs	William Beans, NJDOT, Bureau of Safety Programs	William Beans, NJDOT, Bureau of Safety Programs
New York	New York State Department of Motor Vehicles (NYSDMV)	NYSDMV	Michael McMullen/Robin Long, NY State Dept. of Motor Vehicles	Lynda Nowik, NYSDMV, Accident Records Bureau	Anne Dowling, NY Institute for Traffic Safety Management and Research
North Carolina	NCDOT Division of Motor Vehicles/Traffic Records Branch	NCDOT Division of Motor Vehicles/Traffic Records Branch	Ethel Keen, NCDOT Division of Motor Vehicles/Traffic Records Branch	Ethel Keen, NCDOT Division of Motor Vehicles/Traffic Records Branch	John Stokes, North Carolina Department of Transportation
Pennsylvania	Police agencies in the state	Pennsylvania Department of Transportation (PennDOT)	William Hunter, PennDOT, Bureau of Highway Safety and Traffic Engineering	William Hunter, PennDOT, Bureau of Highway Safety and Traffic Engineering	William Hunter, PennDOT, Bureau of Highway Safety and Traffic Engineering
Rhode Island	U/A	U/A	U/A	U/A	Daniel DiBiasio, Rhode Island Department of Transportation, Office on Highway Safety
South Carolina	South Carolina Department of Public Safety (SCDPS), specifically the Office of Highway Safety, located within SCDPS.	SCDPS, Office of Highway Safety	Tami McDonell/ Thomas Emily, SCDPS, Office of Highway Safety	Tami McDonell, SCDPS, Office of Highway Safety	Tami McDonell, SCDPS, Office of Highway Safety
Vermont	Vermont State Police, County Sheriff departments, local law enforcement	Vermont Agency of Transportation (VAOT)	Mary Spicer, VAOT, and Stephen J. Reckers, Vermont Department of Public Safety	Stephen J. Reckers, Vermont Department of Public Safety	Stephen J. Reckers, Vermont Department of Public Safety
Virginia	U/A	U/A	Lam Phan, Department of Motor Vehicles, Transportation Safety Services	Lam Phan, Department of Motor Vehicles, Transportation Safety Services	Angelisa Jennings, Department of Motor Vehicles, Highway Safety Office

Note: U/A – Information unavailable at this time. The state has not provided requested information.

■ 2.2 Legislation, Regulations, Policies and Procedures

State legislation and organization policies shape the way traffic records systems are implemented and administered and can greatly impact the effectiveness and efficiency of these systems. Numerous agencies across the states collaborate and coordinate to collect and submit data for the crash records system. State reporting requirements and procedures, along with penalties for non-reporting, often dictate the timeliness and completeness of crash data submitted. Crash data collection and reporting requirements and data sharing agreements for I-95 Corridor states have been compiled and assessed. Law enforcement agencies in Corridor states are typically required to report if a fatality, injury, or property damage exceeding a determined dollar amount occurs. Minimum reporting thresholds are provided in Table 2.2 below.

Table 2.2   State Minimum Reporting Thresholds

State	Minimum Reporting Thresholds
Connecticut	Fatality, injury, or $1,000+ property damage
Delaware	Fatality, injury, or $1,500+ property damage
District of Columbia	Fatality, injury, or $250+ property damage
Florida	Fatality, injury, alcohol involvement, or leaving the scene
Georgia	Fatality, injury, or $500+ property damage
Maine	Fatality, injury, or $1,000+ property damage
Maryland	Fatality, injury, immobilizing property damage, or citizen demand
Massachusetts	Fatality, injury, or $1,000+ property damage
New Hampshire	Fatality, injury, or $1,000+ property damage
New Jersey	Fatality, injury, or $500+ property damage
New York	Fatality, injury, or $1,000+ property damage
North Carolina	Fatality, injury, or $1,000+ property damage
Pennsylvania	Fatality, injury, or immobilizing damage
Rhode Island	Fatality, injury, or $500+ property damage
South Carolina	Fatality, injury, or $1,000+ property damage
Vermont	Fatality, injury, or $1,000+ property damage
Virginia	Fatality, injury, or $1,000+ property damage

The following Corridor states provided input on data sharing agreements (e.g., memorandums of understanding (MOUs)) or multi-agency/multi-disciplinary crash reporting requirements.

Data Sharing Agreements

- <u>Connecticut</u> – The Connecticut State Police has a data sharing agreement with 10 local agencies for crash data.

- <u>Georgia</u> - There have been efforts over the years to create a data warehouse for the State of Georgia, but without a mandate from higher up (i.e. the Legislature or Governor), these efforts have fallen apart due to disputes over ownership. Citation and driver's license information are owned by the Georgia Department of Driver Services and law prevents them from readily sharing this information with other state agencies. While GDOT does have an incident response database for its Highway Emergency Response units, this data is limited to the metro Atlanta area at this time.

- <u>Maine</u> - The Maine State Crash Reporting System database has interfaces to the Bureau of Motor Vehicles system that exports crash data including driver and insurance information. The database has interfaces to the Maine Department of Transportation Crash Analysis System which is linked to the roadway system.

- <u>Maryland</u> - Citation number, EMS run report, driver license number, etc. is collected, but there is no central repository or data warehouse.

- <u>Massachusetts</u> - The crash database is linked to driver's licenses information. The database is able to validate license information for instate drivers. Data must be shared with the Massachusetts Highway Department.

- <u>New York</u> - New York State Department of Motor Vehicles (NYSDMV) has data sharing MOUs with various traffic safety organizations, the New York State Department of Health, and the New York State Department of Transportation. NYSDMV also does geo-locating of accidents through a multi-agency agreement for NYSDOT.

- <u>South Carolina</u> – South Carolina Department of Motor Vehicle (SCDMV) is the agency responsible for updating driver records based on citations. Currently the SCDMV Office of Highway Safety (OHS) is not linked to the state's judicial or emergency response (South Carolina Department of Health and Environmental Control (DHEC)) departments. However, the link between SCDMV, OHS, DHEC and the Court's system is part of the South Carolina Collision and Ticket Tracking System (SCCATTS) project.

Crash Reporting Requirements

The following summary provides information from state statutes which address the time frame for reporting motor vehicle crashes to the appropriate agency, the crash report form presently used by the state, when the report was last revised, and the agency which receives the report. It should be noted that not all of the aforementioned points are addressed in statute.

- Connecticut – Section 14-108a of the Connecticut Motor Vehicle Laws, requires any police officer, agency or individual that investigates a reportable motor vehicle accident to forward one copy of the police accident report to ConnDOT upon completion of the investigation. The state has a single report form, Connecticut Uniform Police Accident Report, Form PR-1 (revised 12/1994).

- Delaware – Section 4203 (d) of the Delaware Laws, Title 21, requires that the driver of any vehicle which is involved in a vehicular collision must immediately report the collision to the police agency in the jurisdiction where the crash occurred if the collision included any of the following: injury or death to any person, the collision occurred on public property and resulted in property damage in excess of $500 or more, or the collision appeared to involve a driver whose physical ability was impaired by alcohol and/or drugs. Police agencies are to investigate the collision and complete the State of Delaware Uniform Traffic Collision Report (UTCR, revised 1987) form supplied by the Delaware Department of Safety and Homeland Security. Delaware police agencies report crashes electronically to the Delaware Department of Safety and Homeland Security. All agencies use the same crash reporting requirements. This statute does not stipulate a time requirement for report submission.

- Florida – Section 316.068(2) of the Florida Statues, stipulates that every crash report required to be made in writing must be made on the appropriate form approved by the Department of Highway Safety and Motor Vehicles. The state has two forms, the Florida Traffic Crash Report – Long Form HSMV-9003 (revised 01/2002) and Law Enforcement Short Form Report HSMV-90006 (revised 03/2002).

- Georgia – Section 40-6-278 of the Official Code of Georgia, establishes the Department of Transportation as the agency officially responsible for collecting and maintaining crash data. The GDOT Commissioner has the authority to prescribe the rules and procedures for crash data collection which are used by all state, county, or municipal police officers. The form used by police is the Georgia Uniform Motor Vehicle Accident Report (12/2003).

- Maine - Section 2251(a) of the Maine Revised Statutes, requires the Chief of the State Police to prepare and supply forms and approve the format for electronic submission for crash reports. Police Traffic Accident Report Form 13:20A (revised 04/1997) is the crash report form used in Maine. The state's reporting requirements are currently being redefined and slated

for a second quarter release of the new Maine Crash Reporting Form. This form revision is a result of a TRCC initiated multi-agency working group where input was received from state and local law enforcement, Maine Bureau of Highway Safety, Maine DOT, Maine EMS, and Maine Bureau of Motor Vehicles**.**

- Maryland – State of Maryland Motor Vehicle Accident Report (MSP Form#1, 01/1993) is currently being used although a new draft form dated 05/2009 has been submitted to NHTSA for review. Section 20-113(b) of the Maryland Code requires reports to be made on appropriate forms and states that each written accident report must be made on the form required by the Motor Vehicle Administration.

- Massachusetts – Massachusetts General Law Chapter 90, Section 26 requires every person operating a motor vehicle which is involved in a crash in which any person is killed or injured or in which there is damage in excess of $1,000 to any one vehicle or other property to submit a written report to the Registrar of Motor Vehicles (RMV), within five days after the crash. A copy of the report must be sent to the law enforcement agency in the jurisdiction where the crash occurred. Law enforcement agencies are required to notify the RMV of the crash in their jurisdiction within fifteen days, in a form prescribed by the RMV. However, there is no penalty for non-reporting by law enforcement agencies. The Motor Vehicle Crash Operator Report (CRA-23, revised 2005) is the RMV form used to report crashes in the state. The data collected must be shared with Mass Highway.

- New Hampshire - Section 264:26 of the New Hampshire Statutes stipulates that the commissioner shall prescribe a "uniform police investigation report of accident" in the form prescribed by the New Hampshire Department of Safety. The form used is Motor Vehicle Accident Report DSMV 400 (revised 12/1996). This statute does not stipulate a time requirement for report submission to the state.

- New Jersey – New Jersey Statutes Annotated 39:4-131 states an officer investigating a crash must submit a completed report within five days after investigation of the crash to the Motor Vehicle Commission. The New Jersey Police Crash Investigation Report (NJTR-1, revised 01/2006) is furnished by the Motor Vehicle Services.

- New York - Statutory requirements for crash reporting are identified in Section 605 of New York's Vehicle and Traffic Law. All drivers involved in the crash are required to file a Report of Motor Vehicle Accident (form MV-104) with the DMV no more than 10 days after the crash if the property damage of any person is $1,001 or more. If a person is injured or killed, drivers are required to immediately notify the police and all drivers involved in the crash and the police must file form MV-104 which is available for print and online. Failure to report a crash is a misdemeanor for the drivers; but there is no penalty for law enforcement.

- <u>North Carolina</u> – North Carolina General Statute 20-166.1 requires the Division of Motor Vehicles to provide forms or procedures for submitting crash data and approves the format for the crash report. Crash Form DMV-349 (revised 2000) is used by all law enforcement agencies to report motor vehicle crashes. The statute also requires that the investigating agency submit the report to the Division within 10 days after the investigation of the crash is completed. A violation of any provision of Section 20-166.1 is a misdemeanor.

- <u>Pennsylvania</u> - Section 3751 of Title 75, Pennsylvania's Consolidated Statutes (Vehicle Code) requires police agencies to investigate all crashes involving death, injury, and/or damage to any one vehicle. The investigating agency must report the crash within 15 days to the Department of Transportation on the Commonwealth of Pennsylvania Police Crash Report Form (AA-500, revised 2004) which is designed and supplied by the Department and available in paper or two electronic formats.

- <u>Rhode Island</u> – Effective January 1, 2003, Section 31-26-9 of the State of Rhode Island General Laws, Title 31, requires law enforcement officers to submit crash reports electronically to the Rhode Island Accident Data Export Manager over the Rhode Island Law Enforcement Telecommunication System (RILETS). The State of Rhode Island Uniform Crash Report must be submitted to the department of transportation within fourteen days of the investigation or preparing the report. Any person convicted of failing to make a report as required in this chapter shall be convicted of a civil violation of the chapters shall be punished by a fine of not more than five hundred dollars ($500) as provided in Section 31-27-13.

- <u>South Carolina</u> – Section 56-5-1270 of the South Carolina Code of Laws, requires law enforcement officers who investigate motor vehicle crashes to forward the written report to the Department of Motor Vehicle within 24 hours after completing the investigation. Section 56-5-1300 requires the Department of Public Safety to prepare and supply the crash report forms to law enforcement agencies. Traffic Collision Report Form (TR-310, revised 1/2001) is the form used by Law Enforcement in South Carolina.

- <u>Vermont</u> – Under Section 1016 of the Vermont Statues Annotated, Title 23, copies of completed crash investigations must be forwarded to the Vermont Department of Motor Vehicles within 30 days after the crash is investigated. State of Vermont Uniform Crash Report (revised 06/2005) is used by law enforcement to report crashes; both written and electronic reports are accepted.

- <u>Virginia</u> – Section 46.2-373 of the Code of Virginia requires law enforcement to forward a written crash report within 24 hours after completing the investigation to the Department of Motor Vehicles. The Department prepares and, on request, supplies the Police Crash Report (FR300P, revised 09/2003) to police departments.

■ 2.3 Crash Report Forms

Crash report forms are the primary means through which crash data is collected and subsequently entered into state crash data systems. Unfortunately, there is a lack of uniformity amongst state crash forms, and additionally, in some states not all agencies use the same crash form. The crash report forms may contain different data elements or definitions. This lack of uniformity makes it difficult to accurately compare and analyze crash data from differing states which may lead to misleading results. The state crash forms and procedures have been compiled in Appendix A.

The Model Minimum Uniform Crash Criteria Guideline (MMUCC) represents a voluntary and collaborative effort to generate uniform crash data that are accurate, reliable, and credible for data-driven highway safety decisions within a state, between states, and at the national level. Implementation of MMUCC will enable accurate data sharing and analysis at all levels.

MMUCC recommends voluntary implementation of a minimum set of standardized data elements to promote comparability of data within the highway safety community and help states collect consistent crash data for a wide range of traffic safety planning applications. The MMUCC Guideline was developed in 1998 and has been updated every five years, with the third version (MMUCC 3.0) released in 2008.

The four main categories of MMUCC data describe the characteristics of the crash, vehicle(s), person(s), and roadway involved. Crash data elements identify the date, time, location, first and most harmful events weather condition, light condition, and type of intersection related to the crash. Vehicle data include elements such as the vehicle identification number, make, model, model year, type, function, actions, impact, sequence of events, and damaged areas. Person data elements capture age, sex, injury status and type for all involved persons, in addition to driver status and non-motorist status information, alcohol and drug involvement for all drivers and non-motorists. Person data describing the vehicle number, seating position, use of safety equipment is also collected for all vehicle occupants. Roadway data elements include roadway curvature, grade, widths of lane(s) and shoulder(s), roadway lighting, and traffic control type at intersection, among others.

To reduce the burden on law enforcement not all MMUCC data elements are collected at the scene of the crash. Some data elements can be derived by converting data collected into new information. As an example, a database can convert a driver's birth date collected at the scene to the driver's age at the time of the crash. In MMUCC 3.0, ten MMUCC data elements are derived from the 75 data elements collected on the crash report at the crash scene. An additional 22 elements such as driver license status, injury description, and roadway functional class can be obtained after linkage to driver history, injury, and roadway inventory databases (in comparison, MMUCC 2.0 recommended 111 elements in the crash database, with ten derived elements and 24 linked elements; the data elements were updated to reflect new data elements relevant to emerging highway safety issues).

MMUCC Data Elements: Collected at the Scene

Crash Data Elements

- Case Identifier
- Crash Data and Time
- Crash County
- Crash City/Place
- Crash Location
- First Harmful Event
- Location of First Harmful Event Relative to the Trafficway
- Manner of Crash/Collision Impact
- Source of Information
- Weather Conditions
- Light Condition
- Roadway Surface Condition
- Contributing Circumstances

Vehicle Data Elements

- Motor Vehicle Identification Number
- Motor Vehicle Type and Unit Number
- Motor Vehicle Registration State and Year
- Motor Vehicle License Plate Number
- Motor Vehicle Make
- Motor Vehicle Model Year
- Motor Vehicle Model
- Motor Vehicle Body Type Category
- Total Occupants in Motor Vehicle
- Special Function of Motor Vehicle in Transport
- Emergency Motor Vehicle Use
- Motor Vehicle Posted/Statutory Speed Limit

- Direction of Travel Before Crash
- Trafficway Description
- Total Lanes in Roadway
- Roadway Alignment and Grade
- Traffic Control Device Type
- Motor Vehicle Maneuver/Action
- Areas of Impact
- Sequence of Events
- Most Harmful Event for this Motor Vehicle
- Bus Use
- Hit and Run
- Extent of Damage/Removal
- Contributing Circumstances, Motor Vehicle
- Motor Carrier Identification
- Gross Vehicle Weight Rating/Gross Combination Weight Rating
- Vehicle Configuration
- Cargo Body Type
- Hazardous Materials (Cargo Only)

Person Data Elements

Level 1: All Persons Involved

- Date of Birth
- Sex
- Person Type
- Injury Status

Level 2: All Occupants

- Occupant's Motor Vehicle Unit Number
- Seating Position
- Restraint Systems/Helmet Use

- Air Bag Deployed
- Ejection

Level 3: All Drivers

- Driver License Jurisdiction
- Driver License Number, Class, CDL and Endorsements
- Driver Name
- Driver Actions at Time of Crash
- Violation Codes
- Driver Distracted By
- Condition at Time of Crash

Level 4: All Drivers and Non-Motorists

- Law Enforcement Suspects Alcohol Use
- Alcohol Test
- Law Enforcement Suspects Drug Use
- Drug Test

Level 5: Non-Motorists

- Non-Motorist Number
- Non-Motorist Action/Circumstance Prior to Crash
- Non-Motorist Actions/Circumstances at Time of Crash
- Non-Motorist Location at Time of Crash
- Non-Motorist Safety Equipment
- Unit Number of Motor Vehicle Striking Non-Motorist
- Transported to Medical Facility By Derived from Collected Data
- Age

MMUCC Data Elements: Derived from Collected Data/Obtained After Linkage to Other Data

Crash Data Elements

- Crash Severity
- Number of Motor Vehicles Involved
- Number of Motorists
- Number of Non-Motorists
- Number of Non-Fatally Injured Persons
- Number of Fatalities
- Alcohol Involvement
- Drug Involvement
- Day of Week

Person Data Elements

Level 3: All Drivers

- Driver License Restrictions
- Driver License Status
- Drug Test Result

Level 6: All Injured Persons

- Injury Area
- Injury Description

Roadway Data Elements

- Bridge/Structure Identification Number
- Roadway Curvature
- Grade
- Part of National Highway System
- Roadway Functional Class
- Annual Average Daily Traffic
- Widths of the Lane(s) and Shoulder(s)
- Width of Median
- Access Control
- Railway Crossing ID
- Roadway Lighting
- Pavement Markings, Longitudinal
- Presence/Type of Bicycle Facility
- Traffic Control Type at Intersection
- Mainline Number of Lanes at Intersection
- Side-Road Number of Lanes at Intersection
- Total Volume of Entering Vehicles

MMUCC elements are a suggested minimum set of data elements to be collected for each crash; however, additional information should be collected for crashes involving an injury or fatality to meet the tracking and analysis requirements for different crash data systems (e.g., the Fatality Analysis Reporting System (FARS)). Table 2.3 summarizes the number of MMUCC elements found to be fully compliant (full), partially compliant (partial), or not found on the crash report forms for Corridor states, including the data year and MMUCC version.

Table 2.3   MMUCC Crash Form Elements

			Number of Data Elements			
State	Data Year	MMUCC Version	Full	Partial	Not Found	Total Elements
Connecticut	2005	3	11	34	30	75
Delaware	2006	3	34	36	5	75
District of Columbia	2007	2	17	41	17	77
Florida	2005	3	11	53	11	75
Georgia	2005	3	15	49	11	75
Maine	2005	3	13	44	18	75
Maryland	2008	3	31	39	5	75
Massachusetts	2005	3	15	44	16	75
New Hampshire	2007	2	35	31	11	77
New Jersey	2005	3	20	41	14	75
New York	2005	2	12	48	17	77
North Carolina	2005	2	18	53	6	77
Pennsylvania	2005	2	24	48	5	77
Rhode Island	2007	2	36	23	18	77
South Carolina	2005	3	20	46	9	75
Vermont	2005	3	14	37	24	75
Virginia	2007	2	19	47	11	77

While it is critical to capture all of the data elements on the crash form, it is of no consequence unless they are included in the crash database. Table 2.4 provides a summary of the number of MMUCC data elements found to be fully compliant (full), partially compliant (partial), or not found in the Corridor states' crash databases.

Table 2.4   MMUCC Database Elements

State	Data Year	MMUCC Version	Number of Data Elements			Total Elements
			Full	Partial	Not Found	
Connecticut	2005	3	12	37	58	107
Delaware	2006	3	37	41	29	107
Florida	2006	3	23	55	29	107
Maryland	2009	3	37	44	26	107
Massachusetts	2005	3	37	41	29	107
New Hampshire	2007	3	34	31	42	107
New Jersey	2005	3	17	48	42	107
North Carolina	2005	3	28	53	26	107
Pennsylvania	2006	3	27	51	29	107
Rhode Island	2006	3	34	25	48	107
Virginia	2007	2	45	46	20	111

Note: District of Columbia, Georgia, Maine, New York, South Carolina, and Vermont do not have a data dictionary on file with the NHTSA contractor.

■ 2.4 State Planning Documents

Various state planning documents provide strategies and performance measures for improving traffic records systems. These documents are developed with input from numerous safety stakeholders and provide insight into the components of the state's data records systems that will be upgraded in the coming year. As part of Task 1, state planning documents for Corridor states were obtained and reviewed to identify the status of the states' traffic records system and activities planned to improve the states' crash data systems. The state planning documents included Strategic Highway Safety Plans (SHSPs), Highway Safety Performance Plans (HSPPs), Traffic Records Strategic Plans, the most recent Section 408 grant application, and most current Traffic Records Assessment report. A description of each document and its significance to traffic records follows.

Strategic Highway Safety Plans (SHSPs) – Under SAFETEA-LU (23 U.S.C. 148), all 50 States are required to develop and implement a SHSP. The state SHSP is required to be:

- Data-driven, by using crash and other data analyses on all public roads to identify safety issues;

- Developed in collaboration with a broad range of stakeholders, including Governors Representatives for Highway Safety (GR), metropolitan planning organizations (MPOs), major transportation modes, state and local law enforcement, Operation Lifesaver, Motor Carrier Safety Assistance Program (MCSAP) personnel, Departments of Motor Vehicles (DMV), emergency response personnel, and others;

- Multidisciplinary addressing the 4Es of Safety – engineering, enforcement, education, and emergency medical services (EMS);

- Performance-based with the adoption of strategic and performance goals which focus resources on the areas of greatest need; and

- Coordinated with other state highway safety programs.

The SHSP acts as the umbrella planning document for all other transportation planning documents at the state and regional level. Action plans developed in the SHSP process detail the strategies the state will implement to address its motor vehicle-related fatalities and injuries, and they routinely address traffic records data reporting and collection.

Highway Safety Performance Plans (HSPPs) - State Highway Safety Offices (SHSOs) must submit an annual HSPP to the National Highway Traffic Safety Administration (NHTSA) to receive Federal highway safety grant funds. The HSPP supports a full range of highway safety behavioral programs, including alcohol countermeasures; occupant protection; police traffic

services (e.g., enforcement); emergency medical services; traffic records; motorcycle safety; pedestrian and bicycle safety; non-construction aspects of road safety; and speed. A minimum of 40 percent of a state's Section 402 funds must be expended by local governments, or be used for the benefit of local governments. Traffic records projects in the HSPP which address the areas of greatest need will also be included in the state's SHSP and the state's Traffic Records Strategic Plan, although not all HSPP traffic records projects are required to appear in these two documents.

Section 408 grant application – Established under SAFETEA-LU (23 U.S.C. 408), State Traffic Safety Information System Improvement Grants are administered by NHTSA and the SHSOs. This grant program encourages states to adopt and implement effective programs to improve the timeliness, accuracy, completeness, uniformity, integration, and accessibility of state data needed to identify priorities for national, state, and local highway and traffic safety programs; to evaluate the effectiveness of efforts to make such improvements; to link the state's data systems, including traffic records, with other data systems within the state; and to improve the compatibility of the state's data system with national data systems and data systems of other states. To receive 408 grant funds, states must establish a Traffic Records Coordinating Committee (TRCC), participate in a traffic records assessment at least once every five years, develop a strategic data improvement plan, and certify it has adopted and uses the model data elements contained in the Model Minimum Uniform Crash Criteria (MMUCC) and the National Emergency Medical Services Information Systems (NEMSIS) or will use 408 grant funds to adopt and use the maximum number of model data elements.

Strategic Data Improvement Plan (commonly called Traffic Records Strategic Plan) – Each state's TRCC is responsible for developing a strategic data improvement plan.   The TRCC is a source for identifying actions to improve the state's data system, and plays a key role in identifying the appropriate data improvement methods based on an agency's available resources. NHTSA encourages states to establish a two-tiered TRCC: an executive TRCC with policy and funding authority and a working-level TRCC to implement the tasks associated with the strategic data improvement plan. Many states which have identified traffic records as an emphasis area in their SHSP will use the TRCC as the emphasis area subcommittee for traffic records, thereby ensuring consistency and maximizing the state's resources.

Traffic Records Assessment report - NHTSA's Traffic Records Program Assessment utilizes a team of national highway safety data experts to review all components of a state traffic safety data program and compares it to NHTSA guidelines. The team reviews relevant traffic records information from the state, and gathers additional information from in-state presentations and interviews to provide the state with a report detailing the status of the state's traffic records program. The report identifies deficiencies in the system, and offers recommendations for program improvements. States use the report to develop a plan of action and identify traffic records improvement projects which correspond to their needs. These projects are routinely reflected in the SHSP, HSPP and in the TRCC's strategic data improvement plan.

The Corridor state's SHSPs and Traffic Records Strategic Plans are the two state planning documents which document each state's most critical traffic records data issues and identify projects and initiatives the state is implementing to improve their traffic records systems. The CS team reviewed these documents and identified the data-related strategies with potential impacts to state crash data collection and reporting. This information is summarized in Table 2.5 and Table 2.6.

Table 2.5 Traffic Records Strategic Plan: Crash System Objectives

State	Traffic Records Strategic Plan

Connecticut	• Convert the existing crash records system to a comprehensive, statewide system to serve the broader highway safety community by doing the following:
	  – Maintain plans to begin entering all reportable crashes in the Connecticut Department of Transportation (ConnDOT) AHF system starting with 2007 data.
	  – Begin entering the two thirds of the data elements now omitted.
	  – Complete plans to revise the crash form to include additional elements (such as cell phone usage) and to increase the level of compliance with MMUCC.
	• Implement the plan to electronically transfer reportable crashes from Connecticut State Police (CSP) to ConnDOT and to upgrade the data entry system for paper reports.
	• Develop an XML schema as the statewide standard for uploading crash data to ConnDOT and use the CSP data transfer project as a pilot.

Delaware	• Enter all crash reports (partial or complete) into the TraCS database by end of officer's shift • Enter all non-fatal crash reports into TraCS in entirety within 3 days of incident. • Enter partial data for fatal crashes into TraCS within 3 days of a crash. • Transfer "approved" TraCS data from Delaware State Police (DSP) to Delaware Department of Transportation (DelDOT) every 7 days. • Complete edit checks and revisions to crash locations within 2 weeks following receipt of data from DSP. • Expand TraCS to increase MMUCC compliance. • Expand TraCS to include median crossover and run off the road crashes. • Expand TraCS to increase compliance with FMCSA reporting requirements. • Require TraCS users to complete all fields to improve completeness of crash data *(long term goal).* • Provide training on the locator tool to increase accuracy of crash locations in TraCS. • Allow various authorized users to access crash data for statistical analysis.

State	Traffic Records Strategic Plan
Florida	• Facilitate the electronic transfer of crash data for the Florida Highway Patrol (FHP).
	• Work with software vendors to facilitate the electronic submission of crash reports by local law enforcement agencies.
	• Facilitate the development of a web-based system for local law enforcement agencies to submit crash reports to Florida Department of Highway Safety and Motor Vehicles (DHSMV).
	• Develop standard interpretations of crash report data elements.
	• Improve the instruction manual for the 2003 crash form.
	• Revise the instruction manual for the new 2010 crash form.
	• Evaluate data elements in terms of the investigating officer's ability to make the necessary evaluation.
	• Offer crash report form training to law enforcement agencies related to improve accuracy and completeness, including information on commercial motor vehicle crashes.
	• Update the crash report forms to include more MMUCC elements and attributes, including some required commercial motor vehicle elements not currently reported.
	• Implement the revised crash report form.
	• Facilitate the use of crash data in performance-based budgeting and program planning.
	• Provide the expertise to develop methodology for locating crashes that take place off the state road system.
	• Locate crashes off the state road system.
	• Migrate the crash location system from TeleAtlas to the unified roadway base map.
Georgia	• Complete beta testing the electronic submission of crash records, and publish the transmission specifications and all appropriate documentation to all law enforcement agencies (LEAs) and their vendors. Make this documentation available on the Georgia Department of Transportation (GDOT) website.
	• Begin accepting crash records electronically to the Oracle database as soon as possible.
	• Develop an outreach program to get as many LEAs as possible to report crash data electronically to the statewide crash file. Allowing electronic submission now can help reduce the timeframe for entry in the crash file dramatically and help make the crash data and the annual crash file available for analysis sooner.
	• Reduce the timeframe for submission of crash reports to meet the statutory guidelines.
Maine	• Create a single, comprehensive statewide crash file that serves as the basis for a traffic records data warehouse. This would eliminate the discrepancies between the two existing files and also eliminate the dissemination issues as it would be viewed as the official crash file.
	• Expand the capabilities of the back-end report function to allow more web-based ad hoc query capability by user agencies.
	• Pursue ongoing training efforts beyond academy-based training to address the problem areas of the crash report so as to minimize errors and maintain the quality of the crash file.

State	Traffic Records Strategic Plan
	• Reevaluate the decision to exclude non-reportable crashes and continue to keep the special logging road crash reports in the crash file so the entire accident experience of the state can be evaluated. • Task the TRCC to be involved in the migration of the crash file software platform to the .NET framework.
Maryland	• Improve the timeliness of the crash system as measured in terms of an increase of: – Percent of electronic reports submitted to Maryland State Police (MSP) Central records within 24 hours. – Percentage of crash records reported to FMCSA within 90 days over a 12-month period. • Improve the timeliness of the crash system as measured in terms of a decrease of: – Number of days for close of annual crash data reporting file. • Improve the completeness of the crash system as measured in terms of an increase of: – Total number of electronically collected crash reports using web-based GPS system for location. – Obtain update of most recent calendar year's datasets (police crash report, hospital/ emergency room record, EMS, citation, licensing, registration, toxicology data). – Percent of records with complete vehicle information. – Percent of records with complete vehicle information (Vehicle Identification fields in State Motor Carrier Division crash database). – Percentage of crash reports submitted to Central Records and entered into eMAARS that are 100% MMUCC-compliant. • Improve the completeness of the crash system as measured in terms of a decrease of: – Percentage of eligible drivers with blanks/unknown in the BAC field. • Improve the accessibility of the crash system as measured in terms of an increase of: – Percentage of satisfaction with CODES Data Request Form based on survey.
Massachusetts	• Expand the mission and participation for guiding improvements to Massachusetts' traffic records system. – Evolve the Traffic Records Coordinating Committee (TRCC) into a two-level organization for strategic planning and standards setting with broad representation from all stakeholders. – Build an organizational structure to include representation from all stakeholders to serve as the TRCC. – Conduct a Massachusetts traffic records and safety forum. • Improve the quality, accessibility, and usefulness of traffic records data. – Establish a comprehensive data quality management process. – Develop Standard data sets and data definitions. – Expand the data warehouse. • Promote improved acquisition, migration, and access to existing information for all users.

State	Traffic Records Strategic Plan
	– Develop a comprehensive functional definition or model for the desired system.
	– Expand capabilities of users and analytic support tools.
	– Implement centralized storage/access to roadway, EMS, and trauma data with links to crash information.
	– Promote technology to allow data entry close to the point of origin and electronic transfer to central files.
New Jersey	• Improve process for submitting crash reports.
	• Reduce time from when crashes occur to receipt of crash data.
	• Expand electronic collection of data at the scene.
	• Implement Electronic Data Transfer from police departments to state police to the New Jersey Department of Transportation (NJDOT).
	• Integrate driver, vehicle and roadway data.
	• Revise the New Jersey crash report (NJTR-1).
	• Integrate GIS/GPS into all traffic records applications.
	• Modify NJDOT Crash Records website to be more user friendly.
	• Create a directory of information sources.
South Carolina	• Improve collection and management of core traffic records data systems.
	– Implement state-of-the-art electronic field data collection for law enforcement statewide to improve timeliness, accuracy, completeness, accessibility, consistency, and data integration.
	• Improve traffic records data integration, access, and analysis.
	– Support electronic data sharing.
	– Improve access to data and analytic resources.
	• Improve management and coordination of traffic records system improvements.
	– Implement user-support tools and resources for the TRCC and others in the traffic safety community.
Vermont	• Establish Electronic Reporting System.
	• Establish web-based interface module for the electronic crash repository.
	• Upgrade Public Safety Spillman System to better interface with the electronic crash repository and other systems (DMV and Judicial Bureau).
	• Develop crash data interface for all Vermont police departments' records management systems.
	• Establish an interface between Burlington's CAD/RMS system (New World) and the Crash Repository.
	• Develop crash data interface for remaining local Vermont police departments' records management systems.

State	Traffic Records Strategic Plan
	• Develop a crash system interface with the Department of Motor Vehicles and SafetyNet systems.
	• Implement Geographic Positioning System location protocol.
	• Develop analytical reporting capability for law enforcement agencies.
	• Establish statewide Mobile Data Collection.
	• Identify and implement modernization upgrades to Department of Motor Vehicles.
	• Revise Operator Report Form required by the Department of Motor Vehicles.
	• Implement an Emergency Medical Service uniform electronic data system.
	• Maintain the Crash Reporting System database currently used by the Agency of Transportation as the centerpiece of the electronic crash reporting system.
	• Establish a formal data quality control process for crash reports to include measurements of timeliness, completeness, and accuracy.
	• Develop links from the Crash Repository to all law enforcement systems (e.g. Department of Public Safety, Safetynet, VIBRS, CAD systems), to include a link and notification to the Fatal Analysis and Reporting System analyst.
	• Develop a link between the Crash Reporting System and the Driver Improvement and Commercial Vehicle Enforcement records at the Department of Motor Vehicles.
	• Develop a link between the Crash Reporting System and Agency of Transportation roadway inventory.
	• Create an electronic link between the Crash Reporting System and the Emergency Medical Services reporting system.
	• Participate in National Highway Safety Administration (NHTSA) Crash Outcome Data Evaluation System (CODES).
	• Develop a crash data internet site with queriable analysis capability and different levels of access (e.g. police, analysts, legislators, policy developers, public.)

Note: District of Columbia, New Hampshire, New York, North Carolina, Pennsylvania, Rhode Island, and Virginia have not provided the state's Traffic Records Strategic Plan.

Table 2.6   SHSP: Data-Related Strategies

State	Strategic Highway Safety Plan
Connecticut	• Promote standardized reporting of motor vehicle crash data in the state. Complete data element capture from the PR-1 crash report for all roadways, including non-injury property damage only crashes on local roads. • Coordinate and promote GIS/GPS technologies, base map development and sharing of geospatial information for location referencing of motor vehicle crash, citation, EMS response, and other highway traffic safety related events. • Implement an electronic PR-1/XML crash reporting standard for agencies to use in submitting their crash data in a standard electronic format. • Establish a traffic records/crash data warehouse to provide a complete system for data storage, access, and analysis of motor vehicle traffic crash and related traffic records data for all involved stakeholders. • Join and participate in the Driver License Agreement (DLA). • Promote a train-the-trainer crash report training workshop involving accident records, highway safety, research and law enforcement to reinforce the importance of capturing timely and accurate safety event data. • Implement an electronic EMS run reporting system to collect data on every 911 call, focusing on national EMS Information System (NEMSIS) data element requirements.
Delaware	• Develop an integrated traffic crash data collection system to increase accuracy, uniformity, completeness, integration, accessibility and timeliness. • Create query tools. • Continue linkage of crash, hospital discharge, and EMS data through CODES. • Promote public use and accessibility of traffic crash data. • Integrate data systems.
District of Columbia	• Improve quality of safety data by establishing programs for quality assurance, incentives, and accountability. • Provide managers and users of highway safety information with resources for effective use of data. • Establish means to coordinate collection, management, and use of highway safety information among all. • Establish group of highway safety professionals trained in analytical methods for evaluating safety information. • Establish/Promote technical standards for HSIS that are critical to operating effective SMS programs. • Establish ongoing performance measurement system to evaluate cost-effectiveness of safety investments.
Florida	• Improve coordination among data collection agencies to promote an integrated statewide traffic records data system. • Increase the number of law enforcement agencies using TraCS, an electronic data collection system for use in reporting traffic crash information.

State	Strategic Highway Safety Plan
	• Increase use of geographic information systems (GIS) capabilities for plotting crash location data.
	• Promote availability and utilization of electronic crash data from the DHSMV, printable crash reports, geographic information system (GIS) mapping and analysis tools, and crash-typing software.
	• Provide training on data analysis, e.g. turning data into useful information.
	• Provide web access to appropriate data and analyses for the media and the public.
	• Improve timeliness and accuracy of data collection, analysis processes, and systems including the linkage of crash, roadway, driver, medical, CODES, enforcement, conviction, homeland security data, etc.
	• Implement TraCS and other compatible electronic systems for the collection of data.
	• Expand the local agencies' roles and resources to improve safety data.
	• Improve and expand the warehousing and accessibility of safety data.
	• Continually update data definitions in accordance with Model Minimum Uniform Crash Criteria (MMUCC).
Georgia	• Implement the "Strategic Plan for Traffic Records Improvement" included within the "State Traffic Safety Information System Improvement Grant".
	• Complete the electronic crash reporting network connection.
	• Georgia Traffic Records Coordinating Committee facilitates the automation of specific traffic records system components and processes, with priority being given to crash and citation record systems.
	• A full time Georgia Traffic Records Coordinator provides guidance and leadership in the Strategic Plan implementation.
	• Promote and support appropriate technology and research initiatives related to highway safety and traffic records in Georgia.
	• Support CODES, which links traffic records to allow in-depth analysis.
Maine	• Review data tracking systems to ensure that relevant data is collected and interpreted.
Maryland	• Develop infrastructure and policies that increase appropriate access to timely, accurate, and complete highway safety-related data.
	• Develop an impaired tracking system through citation, disposition, and treatment.
	• Revise the policy and crash analysis system to identify hazardous locations and identify appropriate safety improvements on all public roads.
	• Develop a uniform, standardized accident reporting threshold requirement that more adequately addresses safety needs and improvements.
	• Develop systems to identify, assess, and evaluate roadway elements, intersections, spots, sections, corridors, and routes on all road systems (including rural roads) that exhibit abnormal numbers and/or rates of crashes.
Massachusetts	• Outreach to Local and State Police (regarding completeness of crash report form).
	• Police Training on Crash and Citation Reporting.
	• Massachusetts Ambulance Trip Record Information System (MATRIS) and Statewide Trauma Registry.

State	Strategic Highway Safety Plan
	• Increase electronic submission to the Crash Data System.
	• Commonwealth-wide process for sharing data.
	• Standard Massachusetts Highway Safety Data Reports.
	• Support activities to improve data collection procedures and data quality, including the use of electronic license swiping equipment for police officers.
New Hampshire	• Conduct a NHTSA high-level deficiency evaluation of NH traffic record systems.
	• Enhance traffic crash data collection items: DMV Traffic Accident Report, Form DSMV-159, DSMV-160, and DSMV-161.
	• Conduct traffic records assessment.
	• Continue support for the development and implementation of the Crash Record Management System (CRMS) project and planned phases.
	• Link crash and medical outcome data sets to develop an integrated data system to facilitate population-based outcome measurements, geographic comparisons, trend analysis, and research.
	• Begin analysis of partial data sets for incorporation into commonly prepared plans, studies, and outreach materials.
	• Develop and conduct crash data collection training.
	• Develop centralized traffic record data repository (traffic record data warehouse).
New Jersey	• Expansion of Pilot Emergency Medical Services Electronic Patient Care Reporting System.
	• EMS Electronic Patient Care Reporting System for EMS Volunteers Co-location of Fatal Data Units.
	• Integration of EMS and Crash Records Data.
	• GPS Unit acquisition for Police Departments.
	• Vehicle Identification Number (VIN) Validation Program.
	• Blood Alcohol Count (BAC) Export Program.
New York	• Continue the expansion of TraCS to police agencies and courts throughout New York State to improve the timeliness and accuracy of crash, ticket, and disposition data in the state's traffic records systems.
	• Implement enhancements to the Accident Information System to improve the availability of timely, accurate and complete crash data.
	• Code non-reportable property damage crashes not currently captured by the AIS to improve the completeness and timeliness of the crash data available for use in identifying and analyzing high crash locations.
	• Enhance the Traffic Safety Law Enforcement and Disposition (TSLED) system by automating additional types of transactions.
	• Expand access to the Driver's License file and implement improvements to increase the accuracy, completeness, and timeliness of the driver information available in the file.
North Carolina	• No SHSP Strategies related to data.

State	Strategic Highway Safety Plan
Pennsylvania	• Increase the electronic submission of crash records input by partners.
	• Implement a program for improving the quality of police prepared data.
	• Increase the capabilities and capacity in data analysis and statistical evaluation for improving quality and timeliness of crash reports.
	• Improve reliability and accessibility of local road crash information.
	• Implement top 3 recommendations of NHTSA records assessment: 1) Establish active TRCC, 2) Develop strategic plan for crash data improvement, 3) Implement crash data quality control program.
	• Improve data accessibility by partners and data users (CDART) Prophecy, CODES, etc.
Rhode Island	• Improve the collection and analysis of data related to safety belt use.
	• Improve the collection of speed and aggressive driving-related data.
	• Develop a method to collect speed and aggressive driving-related data from crash reconstruction reports for fatal and serious injury crashes and forward data to RIDOT.
South Carolina	• Improve location coding for all rural roads and residential streets.
	• Improve query abilities on existing systems.
	• Pursue and complete the integration of crash data into ITMS so it can be graphically represented for statewide, regional, and metropolitan planning purposes.
	• Implement a continuously operating help desk to accommodate law enforcement personnel in crash reporting.
	• Implement electronic data capture.
	• Refine and expand automated GPS Collision location captures.
	• Implement a project to append road inventory data to each crash record.
	• Improve the quality and timeliness of crash data.
	• Continue rollout phase of South Carolina Collision and Ticket Tracking System (SCCATTS).
	• Develop system capabilities to share violation and suspension information among jurisdictions according to DLA Standards.
	• Implement all system requirements for MCSIA.
	• Implement electronic interface with SC court for transmission of CDL and CMV violations.
Vermont	• Implement local program for identifying and prioritizing high crash locations.
Virginia	• Realign the TRCC to have a more multidisciplinary membership.
	• Adopt a state traffic safety information systems strategic plan through TRCC with implementation of the Traffic Records Electronic Data System (TREDS) project as a cornerstone.

State	Strategic Highway Safety Plan
	• Adopt the National Agenda for improvement of highway safety information systems.
	• Capture data elements related to large truck deaths.
	• Capture crash injury outcomes using CODES to link statewide traffic records with injury outcome data and support highway safety decision making at all levels.
	• Automate the FARS data available online and from DMV.

■ 2.5 Crash Data Related Performance Measures

Crash data related performance measures on timeliness and completeness were collected through surveys conducted with the crash data managers of the Coalition states.

The timeliness of the crash data is critical for safety data analysis; if there are significant time lags in the data entry into the system, the analysis may not be representative of current conditions. Electronic data collection systems offer significant improvements in the timeliness of crash data by removing the data entry element associated with a paper-based crash data collection system.

The crash data managers were asked to report on the average time frame from time of crash till the report is submitted, the average time frame from report submittal till entered into crash database, time frame for closing out the crash database, and the time frame till the data is available to partners/public. Their responses are summarized in Table 2.7. States with electronic databases provided responses for both paper-based and electronic systems to establish a benchmark for improvements in the timeliness of the data associated with electronic data collection systems.

The crash data managers were also asked to report on the number of crash reports missing key data elements, which is also summarized in Table 2.7. The number of reports missing key data elements provides a measure of the completeness of the reports submitted. The majority of the states with electronic data collection systems reported that the systems had internal audits which would not allow incomplete reports to be submitted. In addition, they reported improved accuracy with electronic data collection systems due to the elimination of ineligible reports.

Table 2.7   Crash Data Collection and Reporting Performance Measures

State	Average Time from Crash to Report Submittal		Average Time from Report Submittal to Entry in Crash Database		Time Frame for Closing Out Calendar Year of Crash Data	Time Till Data is Available to Partners/ Public	Number of Reports Missing Key Data Fields	
	Paper	Electronic	Paper	Electronic			Paper	Electronic
Connecticut	1 Month	N/A	11 months	N/A	> 1 year	> 1 year	NR	N/A
Delaware	10 days	10 days	2-4 weeks	At submittal	4-5 months	NR	NR	0
Florida	NR	30 days	90 days	At submittal	6 months	NR	NR	Less than 2%
Georgia	U/K	U/K	U/K	U/K	NR	NR	U/K	U/K
Maine	180 days	15 days	NR	NR	NR	NR	300 per year	0
Maryland	U/K	N/A	U/K	N/A	5-6 months	5-6 months	NR	N/A
Massachusetts	53 days	16 days	407 days	64 days	NR	NR	NR	NR
New Jersey	NR	N/A	4 weeks	N/A	4 months	5 months	NR	N/A
Vermont	U/K	U/K	3 months	33 days	3 months	5 months	NR	0

Note: District of Columbia, New Hampshire, New York, North Carolina, Pennsylvania, Rhode Island, South Carolina, and Virginia have not provided the requested information.

N/A – Information not applicable; state has recently initiated or does not have electronic collections system.

NR – Not reported by the state.

U/K – Information unknown to state data manager.

■ **2.6 Process**

Process descriptions for crash report collection, reporting, and distribution to end users (e.g., type, distribution frequency, and audience for existing data compilation reports) for Corridor states, where available, are provided below. This information was obtained from state survey responses and state planning documents.

Crash Data System Process

- Connecticut – A copy of the Connecticut Uniform Vehicle Accident Report (PR-1) is required to be forwarded to the ConnDOT within five days after the investigation is completed for all reportable crashes. Approximately 115,000 crashes are reported each year by state and local law enforcement. ConnDOT maintains an Accident History File (AHF), which is a system for storing coded crash information for later retrieval and analysis. Although some agencies in the state have electronic crash reporting systems, all crash reports are received by ConnDOT as paper copies of the PR-1. Crashes involving fatalities are intercepted and processed separately by the FARS staff. Generally speaking, the AHF has a relatively limited mission: to meet the internal needs of ConnDOT. Consequently there is no statewide crash repository that is designed to meet the needs of all who require crash information. ConnDOT does respond to external requests for crash information, but the data are too limited to serve the various and numerous traffic safety stakeholders. Many crash data users obtain crash information from sources other than ConnDOT, including the Department of Public Health as well as the various local police agencies that maintain their own data. ConnDOT produces an extensive suite of standard reports on a regular basis, including the Connecticut Accident Summary Tables (CAST), Traffic Accident Surveillance Report (TASR) and Suggested List of Surveillance Study Sites (SLOSSS). They also provide raw crash data in various forms. However, there is no standard crash data query and analysis tool that is available to data users from the various constituencies.

- Delaware – All drivers involved in a crash are required to report the crash to the jurisdictionally responsible agency. The enforcement agency responding must complete a crash report for all reportable crashes exceeding the minimum reporting threshold and submit to the Delaware State Police (DSP) Traffic Unit within ten days for entry in the crash system. Many agencies in the state complete crash reports even though they do not meet the reporting threshold. Delaware upgraded their crash records from a paper-based system to an electronic data capture system through the use of the Traffic and Criminal Software product (TraCS). As of January 1, 2007, all DSP and local enforcement officers are submitting reports via TraCS. Data required for historical statistical analysis requires retrieval of data from both the existing paper-based file and the TraCS based file. A locator tool based on the DelDOT's centerline file was developed to enable the reporting officer to open a map of the state in TraCS and drill down to crash location. Presently there is no active linkage between the paper-

based crash files and the electronic TraCS crash files. There is a linkage between TraCS and roadway files, but not with other records systems such as motor vehicle data, driver history, or emergency medical services. Additionally, TraCS does not have a mapping component in the locator tool to allow a visual display that could be used to determine where selective enforcement and safety programs could be applied; however, a future project will address this deficiency.

- Florida – The State of Florida processes more than 250,000 crash reports annually. These reports are submitted by more than 350 law enforcement agencies to the Florida Department of Highway Safety and Motor Vehicles (DHSMV) where information from the reports is entered into the state's official crash file. This system is presently completely paper-based and reports are submitted on the paper crash report. Presently each law enforcement agency using TraCS and SmartRMS submits the electronic reports to its local server but has to print paper reports to send to DHSMV where they are placed in the processing queue with the other reports for data entry. Also, the development of an XML format for data transfer between the servers and the main crash database still needs to be put in place. Unfortunately, a number of agencies are using third party vendor products that are now unable to transmit electronically. Presently these agencies must print paper reports to submit to the state. There is typically a several-month backlog of crash reports, e.g., state crash files are not closed out and available for analysis until up to a year after the calendar year.

- Georgia – Georgia's crash report database is statutorily assigned to the Georgia Department of Transportation (GDOT). The system consists of: paper creation in the field by law enforcement, submission to the GDOT, microfilm storage and labeled identification, and manual data entry. There is a field based crash location tool that ensures a more accurate location of each crash as referenced by the officer. Much of the geo-locating of each individual crash is done programmatically in batch following data entry and the results go through a quality assurance process.

- Maine – The State's principal crash records repository is maintained by the Maine State Police (MSP). The Maine crash database relies 100 percent on electronically collected and transmitted crash reports. Most law enforcement agencies use the Maine Crash Reporting System (MCRS) field data collection software developed by MSP, accounting for about 66 percent of all crash reports. A few agencies use a third party vendor data collection product, but those reports are submitted to the MSP similarly to the MCRS transmittals. Accordingly, the MSP crash file is generally ready for production of statewide annual statistics within a few weeks from the end of the calendar year. The MSP provides a daily copy of the database to the Maine Department of Transportation (MDOT). The MDOT staff enhances the location information on the reports with additional roadway variables, at the same time correcting inaccurate location references. At the same time the MDOT drops and truncates certain elements, such as reports below the reporting threshold. Of concern is the inaccessibility to users outside the two major crash data custodial agencies (MSP and MDOT). Most non-MSP and non-MDOT users must submit requests for data to MSP or MDOT and rely largely on custom ad hoc reports. The State expects to expand web capabilities to include web-based access to crash data by law enforcement.

- Maryland – About 100,000 crash reports annually are submitted by all law enforcement agencies to the Central Records Division (CRD) of the MSP where they are entered into the Maryland Automated Accident Reporting System (MAARS). The State does not receive any crash reports electronically (as of June 2006). The file created at CRD is eventually transferred to a DB2 database resident on a Department of Public Safety mainframe. Reports are generally received within 10 days after law enforcement officers complete the crash investigation and the process for entering data from hard copy reports is labor intensive.

- Massachusetts – The statewide Crash Data System (CDS) is maintained by the Registry of Motor Vehicles (RMV) and is populated by crash reports sent to the RMV both electronically and on hard copy forms. While users have good access to RMV data and rely on it for their programming and planning needs, the State nevertheless is facing serious challenges in its attempts to provide crash data to users throughout the highway safety community. The current condition of the crash file renders it very unreliable as a source of data to drive decisions in program planning and policy-setting by the State's highway safety managers.

- New Hampshire – The New Hampshire Department of Safety (NHDOS) stores the Crash files on a relational database. The vast majority of the crashes on the NHDOS crash files are reported on the State of New Hampshire Uniform Police Traffic Accident Report (form DSMV-159). Report submittals vary from weekly to monthly, quarterly, or longer. The DMV reports accident report submittals take an average of 69 calendar days to reach them. Approximately 240 police agencies submit crash reports. The New Hampshire State Police submit approximately 30 percent of the reports and the remaining 70 percent by local agencies. NHDOS submits crash record files on data tapes to the New Hampshire Department of Transportation (NHDOT) for GIS analysis, which provides roadway location, roadway characteristics, and roadway classification of the crash site. The current crash data collection process is predominately a manual process and crash data validations do not include electronic checks for correctness or completeness.

- New York – New York State has over 11 million licensed drivers and registered vehicles, and approximately 800,000 motor vehicle crashes are reported annually to the Department of Motor Vehicles. To meet the increasing need for data and data analysis to support traffic safety initiatives, New York is continuing to expand and upgrade its automated traffic records systems. For the past five years, New York has been in the process of implementing the electronic ticket and accident reporting system known as TraCS (Traffic and Criminal Software). As of May 2006, the New York State Department of Motor Vehicles receives approximately 45 percent of the tickets and 15 percent of the crash reports electronically.

- North Carolina – Crash data are entered into the Crash Reporting System (CRS) managed by the Division of Motor Vehicles (DMV) within the North Carolina Department of Transportation (NCDOT). Crash reports are received by DMV's Traffic Records Branch in both paper and electronic format, although at present the electronic submission of crash reports is done

on a limited basis and does not account for a large proportion of the data. Analysis of crash component data is supported in a number of ways. The DMV Traffic Records Branch has the capability to run standard and ad hoc queries and answers thousands of such requests each year. Multiple years of crash data are accessible through the Traffic Engineering Accident Analysis System (TEAAS) providing a series of standard queries to produce aggregate data analysis reports. Reports may be run on one or more years of data and separately for various political jurisdictions (cities, counties or statewide). Local and state engineers as well as other authorized users can run queries online using the TEAAS tool. The University of North Carolina (UNC), Highway Safety Research Center (HSRC) maintains multiple years of crash data in a SAS data format and performs analyses on behalf of the Governor's Highway Safety Program (GHSP) and others. The HSRC maintains a web-based analysis tool for public use – the North Carolina Crash Data Query Website at http://www.hsrc.unc.edu/crash/. In addition to these various analytic resources, DMV makes copies of the data available to authorized users who can then perform their own analyses using the raw data. In most cases, the data are supplied without personal identifiers (names, addresses, etc.). Finally, the DMV Traffic Records Branch and Division of Highways, Traffic Engineering Branch, Traffic Safety Unit cooperate to produce the annual *Crash Facts* report.

- Rhode Island – Crash forms are received through electronic collection from state and local police departments. E-Citation module modifications are now complete, allowing police departments to make corrections to tickets before transmitting. Deployment of mobile hardware to police departments will be completed in March 2010.

- South Carolina – About 110,000 crash reports are submitted annually to the South Carolina Department of Public Safety (SCDPS), which maintains the South Carolina Collision and Ticket Tracking System (SCCATTS). This system houses the South Carolina Traffic Collision Master File obtained from data contained on the TR-310 Traffic Collision Repot Form. SCCATTS serves as the statewide repository for collision and citation data and also employs a GIS component. The other major user, the South Carolina Department of Transportation (SCDOT), gets a copy of the file from SCDPS and converts it to an Access database for their engineering analysis needs. The system is totally paper dependent, requiring manual data entry. A few local law enforcement agencies are using field data collection software but the state is unable, as of yet, to receive the data electronically. Despite the absence of electronic data transfer, the data are very up to date, with collision reports being entered on daily basis.

- Virginia – When a traffic crash occurs, law enforcement (state or local) complete an FR300 Crash Report for any crash involving injury, death, or property damage of $1,000 or more. The report is reviewed by a supervisor for completeness and forwarded to DMV in a hard-copy format. The report is processed by multiple agencies (DMV, VDOT, and enforcement agencies), which can result in data quality and timely access issues.

■ 2.7 Technology

In the survey sent to the states, they were asked what type of technology and software is used to collect, maintain, and distribute crash data; if the software is provided by the State or a private vendor; and who uses the technology/software. Table 2.8 summarizes the responses.

Table 2.8   Technology Used to Collect, Maintain, and Distribute Crash Data

State	Technology or Software Used	Software Provider	Technology/Software Users
Connecticut	NR	Private Vendor - Nexgen	NR
Delaware	Currently TraCS. In 10/2010 new E-Crash system will be initiated.	E-Crash, State	Everyone involved in crash data collection and reporting
Florida	For collection of crash data, the technology and software utilized is determined by each law enforcement agency. For maintenance and distribution of crash data, the technology and software utilized is Oracle and open source with custom code.	State & private vendor	Law Enforcement, Government, Private Industry, and Citizens.
Georgia	All crash report images are available electronically in pdf format. These images can be accessed via the mygdot portal, but are also in the process of being migrated to a GDOT contracted vendor – Open Portal Solutions (OPS). OPS (www.openportalsolutions.com) will provide a new portal which will allow designated users access to crash data collected as well as web-based adhoc querying tools for use with the data. Basic mapping tools will be provided as well. GDOT will also continue to make the crash data available to users via its Crash Analysis Reporting Environment (CARE) software in conjunction with the University of Alabama (care.cs.ua.edu).	In 10/09 GDOT outsourced this function to Open Portal Solutions (OPS). OPS has its own field based electronic crash report called NE Crash, but the State does not mandate the use of any one production for collection. Previously, GDOT along with the Georgia TRCC had been working to configure and deploy a version of Georgia TraCS (Traffic & Criminal Software) for this purpose. Currently, Cobb County PD is the only agency utilizing TraCS in Georgia.	Individual Law Enforcement Agencies throughout the state. GDOT also uses the software internally to make changes or pass updates to individual crash reports received. This function is primarily used for commercial vehicle crashes.
Maine	The Maine Crash Reporting System is comprised of a state Oracle database with an	Maine has contracted with a vendor to develop the software for the Maine Crash Reporting	State and local law enforcement use the MCRS Windows client application that can be

State	Technology or Software Used	Software Provider	Technology/Software Users
	import service that collects data from local agencies. The state database has web and client based report tools. Maine is currently developing a major upgrade to the Maine Crash Reporting System that will use Microsoft .NET technologies and incorporate the newly revised 2010 Maine Crash Report form.	System. Deep River LLC is currently upgrading the Maine Crash Reporting System to comply with the new form's data elements and requirements and to upgrade the underlying technology of the system.	configured at the agency for standalone or agency-wide network use. This local agency software contains basic reporting capabilities. Approximately 70% of the crashes reported in Maine are collected with the Maine Crash Reporting System. The remaining 30% are collected using local law enforcement records management system that exports data and is imported into the Maine Crash Reporting System.
Maryland	DotNet web-based system hitting an Oracle 1g database. Visual Studio 2008. GIS supported by ArcGIS 9.3.1	NR	SHA DBAs, Towson University (grantee), front end use by CRD staff
Massachusetts	ORACLE database written with Visual Basic on a stand alone platform. The software was developed in house.	State	The Registry of Motor Vehicles, Mass Highway, and Commercial Motor Vehicle Unit of the State Police.
New Jersey	NR	NR	NR
New York	The NYS repository is the Accident Information System (AIS). AIS utilizes Kofax scanning software to create images , and releases them to AIS which is comprised of an Oracle data & ODOC workflow product. (PDF or TIF images of the reports are presented to the users on data entry screens and data from these are entered manually by staff, converted to XML format and stored in AIS) We are currently replacing the ODOC workflow with an EMC Documentum based workflow product.	Private vendor(s)	Accident Records and the Certified Document Center (document sales)
North Carolina	Crash Reporting System (CRS) and TraCS	State	North Carolina Division of Motor Vehicles
Pennsylvania	Captivia software used to scan reports. In house data portal used to maintain collected data for DOT.	State	Police departments and DOT
South Carolina	The data is housed at the state's Central Information Office. The OHS also maintains a MasterFile that is used to conduct various statistical programs.	N/R	The OHS Statistician, Research Manager, and FARS analyst.

State	Technology or Software Used	Software Provider	Technology/Software Users
Vermont	Vermont Agency of Transportation (VAOT) has created a web based reporting tool called Web Crash. Paper reporting is manually entered into SQL server database, and electronic reports are exported to same database. Queries on the database are done via programs built into the SQL server program. OHS uses SAS.record search, and query tools	State	VAOT uses the software to conduct queries and provide reports to anyone requesting it including consultants (both private and State), Health Dept. staff, law enforcement, researchers, pubic. Engineering, law enforcement, education, health, EMS can use crash data for safety initiatives. Data entry application is used by statewide law enforcement. Secure password access necessary.

Note: NR – None reported by the state.

District of Columbia, New Hampshire, Rhode Island, and Virginia have not provided the requested information.

■ 2.8 Training

Proper training of all individuals responsible for crash data reporting and collection including law enforcement and crash report system administrators can improve data accuracy and integrity. Law enforcement should not only be trained on the proper techniques of crash data collection but also on the importance of the crash data. Crash data administrators should be trained on procedures for handling incomplete or inaccurate reports.

All of the responding states reported having some sort of training on crash data collection and reporting. The majority of the states cited law enforcement as the target audience for training with the majority of the training being provided at the police academy. Table 2.9 summarizes the type of training provided and the target audience. It also identifies the training agency and any instructor requirements.

Table 2.9   Crash Data Collection and Reporting Training

State	Type of Training Offered	Target Audience	Training Agency	Instructor Requirements
Connecticut	Crash report form and crash investigation	New law enforcement recruits	Police academy - state police	Sworn member of law enforcement
Delaware	Introductory course on TraCS	Law enforcement	Police academy - state police	Officers with intense crash investigation experience who have served on crash reconstruction units - fatal crashes
Florida	Crash form completion – fields and rules	Law enforcement	Individual law enforcement agencies and Institute of Police Technology & Management	NR
Georgia	Introduction to crash form completion, electronic field based reporting tool	Law enforcement	Georgia Public Safety Training Center	NR
Maine	40 hours of basic crash investigation offered biannually at law enforcement academy	Law enforcement	Maine State Police Traffic Safety Unit	Certified crash reconstruction specialists
Maryland	Crash report form and crash investigation	Entry level law enforcement	Police academy	Certified by Maryland Police and Correctional Training Commission (MPCTC)
Massachusetts	Crash report form and crash investigation	Law enforcement	Local jurisdictions	Law enforcement officer
New Jersey	NJTR-1 crash form, crash investigation, and Federal Motor Carrier Training	Law enforcement	State university (includes e-learning) and police academies	NR

State	Type of Training Offered	Target Audience	Training Agency	Instructor Requirements
New York	Mail sorting and scanning, indexing of information needed to identify and locate report in AIS, matching of reports on same crash (police and motorist), conversion of key data elements for entry in AIS, and location coding	DMV employees	DMV	Supervisors with appropriate program and system knowledge
	Training and support of TraCS	State and local police	State police	NR
North Carolina	DMV 349 crash report form and electronic crash reporting	Law enforcement agencies and state highway patrol	DMV, state highway patrol, community colleges, and	NR
Pennsylvania	NR	NR	NR	NR
South Carolina	Crash report completion	Law enforcement officers	South Carolina Criminal Justice Academy	NR
Vermont	Crash report form and use of the electronic web crash application, including data entry, record search, and query tools	All law enforcement statewide	Vermont Agency of Transportation	Knowledge of crash application use and familiarity with the crash form and requirements

Note: NR – None reported by the state.

District of Columbia, New Hampshire, Rhode Island, and Virginia have not provided the requested information.

■ **2.9 Evaluations**

Evaluations of crash data systems are critical for identifying any potential issues or deficiencies in the current system, such as extreme time lags or incomplete reports. Evaluations also provide feedback on improvements made to the system, such as improvements in timeliness from converting a paper-based system to an electronic system.

Several of the coalition states are currently in the process of pilot testing or implementing electronic data collection systems. The following evaluations are in progress:

- Connecticut is currently in the middle of an electronic crash data collection system pilot project. The crash data collection is currently a combination of paper-based and electronic, but the agency anticipates transitioning to totally electronic.

- Delaware is currently using TraCS for data collection, but beginning in January, a new crash data collection system (ECrash) will be implemented. This system was developed specifically for the state and offers more flexibility compared to TraCS. The system is designed to be efficient and user friendly and should reduce the amount of time for officers to complete a crash report. Officers are receiving training on the new system. The training provides the officers an opportunity to test the system and recommend changes that can be incorporated into the system before it goes on-line in January.

- Georgia will be pilot testing a new electronic crash report called NE Crash in three law enforcement agencies during February 2010.

- Maryland does not currently have a statewide electronic crash data system in place. A few counties are using electronic data collection systems, but they are currently required to submit paper forms for inclusion in the state crash database. However, Maryland has recently awarded a grant to CapWIN to develop an electronic crash report.

- New Jersey has recently begun pilot testing an electronic crash data collection technology with five departments.

While there are several evaluations currently in progress, none of the Coalition states reported results of any recently completed evaluations of their electronic data collection systems. However, the states with electronic crash data collection systems reported several benefits associated with an electronic system, including:

- More accurate data, no illegible reports;

- Fewer incomplete reports, most systems have internal audits to flag missing elements;

- Reduced processing time and reduced cost associated with data entry;

- More timely data availability; and

- Consistency in reporting.

While the states would agree that an electronic data collection systems are more efficient and accurate, states reported on some shortcomings of their current systems including:

- Need for statewide adoption of electronic reporting practices;

- Communication difficulties between varying technologies;

- Inflexible data collection systems;

- Potential frustration for inexperienced users; and

- Funding for equipment upgrades.

■ 2.10 Next Steps

The purpose of this document was to compile key crash contacts; current state laws, regulations, and policies related to crash data collection and reporting; crash data collection procedures and forms; data improvement strategies identified in the states' planning documents; crash data related performance measures; processes for crash data collection, reporting, and distribution; crash data system technologies; related training; and system evaluations. This data will be used in Task 2 to identify the impact of technology on data collection and reporting practices and in Task 3 to compare the states' crash data systems and practices to identify best practices.