



**STATE
OF
CONNECTICUT**

**TRAFFIC RECORDS
ASSESSMENT**

MARCH 5 – 9, 2007

National Highway Traffic
Safety Administration
Technical Assessment Team

Leslie Nelson-Taullie
Allen Parrish, Ph.D.
Langston A. Spell
Carol Wright
Jack Zogby

NOTES AND DISCLAIMERS

NOTE: The terms "Highway Safety Information System" and "Traffic Records System" are interchangeable. This Advisory uses the term, "Traffic Records System" to be consistent not only with its traditional use, but also with references in many of the publications and documents listed at the back of this Advisory, as well as its use in various pieces of legislation.

NOTE: The term "crash" is used in lieu of the term "accident" in this document. Many of the references cited in this document use the term "accident" as do many of the laws defining crashes or accidents at the state level. This advisory recommends that states begin to use the term "crash" and to reflect that change in legislation.

TABLE OF CONTENTS

| | |
|--|----|
| EXECUTIVE SUMMARY | 1 |
| ACKNOWLEDGEMENTS | 7 |
| INTRODUCTION | 11 |
| Assessment Background | 11 |
| Methodology | 11 |
| Recommendations | 12 |
| Report Contents | 12 |
| SECTION 1: TRAFFIC RECORDS SYSTEM INFORMATION COMPONENTS | 13 |
| 1-A: Crash Information | 16 |
| 1-B: Roadway Information | 20 |
| 1-C: Vehicle Information | 23 |
| 1-D: Driver Information | 26 |
| 1-E: Enforcement/Adjudication Information | 29 |
| 1-F: Injury Surveillance System Information | 31 |
| SECTION 2: INFORMATION QUALITY | 35 |
| 2-A: Crash Information Quality | 36 |
| 2-B: Roadway Information Quality | 38 |
| 2-C: Vehicle Information Quality | 40 |
| 2-D: Driver Information Quality | 42 |
| 2-E: Enforcement/Adjudication Information Quality | 44 |
| 2-F: Injury Surveillance Systems Information Quality | 46 |
| SECTION 3: USES OF A TRAFFIC RECORDS SYSTEM | 51 |
| 3-A: Program Management and Evaluation | 52 |
| 3-B: Research and Program Development | 54 |
| 3-C: Policy Development | 55 |
| 3-D: Private Sector and Public Requests | 56 |
| SECTION 4: MANAGEMENT INITIATIVES | 58 |
| 4-A: Coordination | 59 |
| 4-B: Strategic Planning | 61 |
| 4-C: Training and Staff Capabilities | 65 |
| SELECTED REFERENCES | 66 |
| GLOSSARY OF TERMS AND ACRONYMS | 68 |

EXECUTIVE SUMMARY

Upon request by the Transportation Safety Section (TSS) in the Connecticut Department of Transportation (ConnDOT), the National Highway Traffic Safety Administration (NHTSA) assembled a team to facilitate a traffic records assessment. Concurrently the TSS carried out the necessary logistical and administrative steps in preparation for the onsite assessment. A team of professionals with backgrounds and expertise in the several component areas of traffic records data systems (crash, driver/vehicle, traffic engineering, enforcement and adjudication, and injury data systems) conducted the assessment March 5 to 9, 2007.

The scope of this assessment covered all of the components of a traffic records system. The purpose was to determine whether Connecticut's traffic records system is capable of supporting management's needs to identify the state's safety problems, to manage the countermeasures applied to reduce or eliminate those problems, and to evaluate those programs for their effectiveness. The following discusses some of the key findings regarding the ability of the present traffic records system to support the state's management of its highway safety programs.

Crash Records System

The Accident Records Section (ARS) within ConnDOT is responsible for the processing and maintenance of crash data. Although some police agencies have electronic crash records, the ARS presently can accept only the paper reports, having to data enter about 80,000 reports annually. (Certain crash reports are not entered as noted below.)

There are a number of factors that need to be addressed before Connecticut can rely on its crash file as representing the state's entire crash experience and as a source of data to support the needs of the highway safety community throughout the state.

The data are not timely due primarily to the shortage of data entry staff and the frequent delays in submission of the reports from the investigating agencies. The ARS is not capable yet of receiving electronically submitted reports even though several agencies have electronic records. To its credit, the state has assigned a high priority to initiating a project to establish electronic transfer capability, beginning with the development of an interface with the Connecticut State Police (CSP) for the transfer of their data directly to ConnDOT. Other agencies with electronic records are targeted for similar system interfaces in the near future depending on the CSP project success.

Further diminishing the usefulness of the data is the lack of complete information in the crash system for two reasons: one, only about one third of the information on the crash report is actually coded to the file, and two, no information from property damage only (PDO) crashes on local roads is added to the file (accounting for the loss of approximately 30,000 reportable crashes per year).

Perhaps the most critical deficiency is the lack of an official designation of the file as the state's "official" crash file and a formal assignment of responsibility to perform the functions that are usually vested in that designation, i.e., to serve the needs of all highway safety partners and

stakeholders in the state. It was clear from the interviews that the ARS does not have that mission, and that the file operates primarily to support ConnDOT's mission. The planned development of electronic reporting capabilities promises to resolve some of the processing and systemic problems, but there needs to be either a major re-definition of mission or relocation of the crash records system. However, any transfer of the crash repository must insure that ConnDOT's ability to perform its mission is not compromised and its data resources are preserved.

Driver and Vehicle Information

The Department of Motor Vehicles now operates with severely fragmented file structures for both vehicles and drivers in the legacy systems that were outdated decades ago. Nonetheless, the DMV services have been remarkable. Plans for upgrading have been pending for years but are now being initiated, and the DMV has applied diligent hard work to enable the services it provides to law enforcement, the courts, and the public. Its thoughtful preparations for migrating the antiquated record structures and content into a customer-oriented database are noteworthy, and seemingly every possible step has been taken to anticipate and deal with the problems of merging the separate files. These factors make successful results a realistic expectation.

Injury Surveillance System

A comprehensive functional statewide injury surveillance system provides crucial healthcare and injury prevention information to local, state, and regional healthcare providers and policy-making partners.

Connecticut has several of the key components of a comprehensive functional Statewide Injury Surveillance System (ISS), although not all of these components are completely functional or have the same degree of maturity:

- Connecticut EMS Transport Data – Department of Information Technology (DoIT) and the Connecticut Department of Public Health (CDOPH), Operations Branch Information Technology Section (OBITS), and Office of Emergency Medical Services (OEMS)
- Connecticut Trauma Registry Data - DoIT and CDOPH, OBITS, and OEMS
- Connecticut Emergency Department Data and Hospital Discharge (In-Patient) Data System - Connecticut Hospital Association (CHA)
- Mortality data –CDOPH, Vital Records Office

Citation Records System

The ability to track the complete “life cycle” of a traffic citation from distribution to an officer, to its issuance to an offender, to its disposition, and to its placement on the driver history file requires accessing multiple databases. Accordingly stakeholders throughout the traffic safety community do not have the information necessary to evaluate the effectiveness of enforcement activities.

There is an initiative underway to establish business rules and procedures for processing traffic citations electronically. It is envisioned that the state will deploy a tracking system for citations. This application will allow the state to account for traffic citations from the point of distribution

of the form to an officer to the placement of the information on the driver history file. This is a planned module in the Connecticut Impaired Driver Records Information System (CIDRIS)

It must be noted that as law enforcement agencies expand the use of software applications on their Mobile Data Computers (MDC), a long term financial plan will be needed.

Executive and Judicial Branches have not yet identified a standard protocol and schemas to facilitate the exchange of information between various data systems within these branches. This is a significant decision in that it will impact the establishment of edits and validation routines between the existing custodial databases and to facilitate future interfaces with other statewide or local systems.

Roadway Information System

The ConnDOT envisions the use of GIS as the information enterprise system for all Department data files. The use of the legacy LRS and latitude/longitude coordinates obtained by survey instruments or electronic data collection will allow the linking of data for the state and local road system. ConnDOT has a safety improvement program that is tied to its statewide accident reporting system. Crashes on the State highway system are location-coded by route and cumulative mileage allowing them to be used in conjunction with roadway files.

Most local road safety initiatives are proposed by the Regional Planning Agencies (RPA) utilizing road and crash data provided by ConnDOT and implemented with federal and state funds. The traffic improvement projects must justify that the proposed project will help improve traffic flow, traffic safety, or roadway geometrics.

Crash and roadway data on the local road system is limited. Crash and road features data are essential for problem identification and project design and have a significant effect on project selection.

Traffic Records Coordinating Committee

Connecticut's Traffic Records Coordinating Committee has been in existence since 1993. It had met intermittently until 2006 when it was re-energized to prepare the *State of Connecticut Traffic Records Strategic Plan* as part of its application for a 408 grant to the National Highway Traffic Safety Administration (NHTSA). The purpose for this action was to meet the requirements of a NHTSA grant program to improve state traffic safety information systems under Section 2006 of the Safe, Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy for Users (SAFETEA-LU).

The TRCC is about to undertake numerous initiatives several of which are critical to upgrading the crash data system to become a more comprehensive and more useful crash data resource. While the TRCC performed adequately in the recent preparation of the *Strategic Plan*, the Committee needs to be strengthened through the establishment of a formally constituted Executive Level of the TRCC. Although executive approval was obtained for the recent 408 application, only the constant presence and oversight of the Executive Level group can provide the level of empowerment, authority, and oversight essential to the development of a crash data system that serves the needs of all highway safety partners and stakeholders throughout the state.

The state could model this new executive group after the former Connecticut Safety Commission.

Strategic Planning

The Strategic Plan for Traffic Records submitted by ConnDOT as an application for section 408 federal grant funds represents a valuable effort considering the time and resource restraints under which it was conducted. However, it will be difficult to show measurable progress for the projects submitted with the currently described tasks for each project. The tasks need more detail and should be presented in an appropriate project management format. Project management software, GANNT charts, or other project management tools should be examined for use by the TRCC.

The project descriptions and format used may be adequate for the grant submission, but much more detail and adherence to project management processes will be necessary for the project manager and the TRCC to monitor progress and to adjust and modify projects. Accountability is an important attribute in strategic planning to assure some level of achieving success for each project. Rather than describing persons who completed the form describing the project and the person to contact regarding the project it should be clearly identified who is responsible and accountable for the project completion.

Following are the major recommendations for improvements to the State's traffic records system. The references indicate the sections of the report from which the recommendations are drawn.

MAJOR RECOMMENDATIONS

Crash Records Information System

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 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. **(Section 1-A)**

Implement the plan to electronically transfer reportable crashes from CSP to ConnDOT and to upgrade the data entry system for paper reports. **(Section 1-A)**

Develop an XML schema as the statewide standard for uploading crash data to ConnDOT and use the CSP data transfer project as a pilot. **(Section 1-A)**

Driver & Vehicle Records System

Incorporate, as already planned, the following features into the real-time system being developed:

- NMVTIS for its efficiencies and functionality,
- An electronic lien system, and
- Integration with the driver data system. **(Section 1-C)**

Plan to incorporate the serious adverse records of drivers coming from previous states of record into the driver history as is done with the Commercial Driver License Information System. **(Section 1-D)**

Plan to include information on drivers' crashes for driver control and improvement assessment and possible remedial action. **(Section 1-D)**

Injury Surveillance System

Involve EMS providers, nurses, physicians, and stakeholders in pre-hospital and trauma data collection planning, development, implementation, and deployment activities. **(Section 2-F)**

Establish a CODES Board of Directors that includes all data owners (OEMS, CHA, the Department of Information Technology, and the Department of Transportation). This will assist in establishing data access and availability for the data linking process. In addition this also assists in the promotion and accessibility of the CODES data for traffic safety and injury prevention activities. **(Section 2-F)**

Collaborate with all data-sharing partners in developing protocols, memoranda of agreements, and data sharing methodologies that will enable the injury prevention and traffic safety community to conduct analytical and research activities as authorized users. This should be done under the guidance of the TRCC. **(Section 2-F)**

Citation Records System

Establish a long term financial plan to support future maintenance, upgrades, and new applications. **(Section 1-E)**

Roadway Information Systems

Establish the GIS as the Department's enterprise information platform. Promote the efforts of the Geospatial Council to develop a new State base map, and a statewide GIS. **(Section 1-B)**

Encourage local agencies to provide roadway inventory data by making these files easily available to the ConnDOT in a user-friendly manner, and the ConnDOT should provide data and access to the local agencies in return. **(Section 1-B)**

Assume the lead within ConnDOT for the proposed study for a Location Identification/Location Reference System for use by all highway safety stakeholders. This effort could function as a subcommittee to the TRCC with strong liaison to the Geospatial Council. **(Section 1-B)**

TRCC

Restructure the TRCC to include an Executive Level to provide the necessary policy and strategic direction for the development of a comprehensive traffic records system. **(Section 4-A)**

Involve the Executive Level members directly in the oversight of the TRCC's activities. **(Section 4-A)**

Develop project governance for these initiatives that place the TRCC executive level group in the accountability and decision-making role. **(Section 4-A)**

Strategic Planning

Establish project management procedures for each project. **(Section 4-B)**

Provide periodic reports and briefings to the Executive Level of the TRCC. **(Section 4-B)**

ACKNOWLEDGMENTS

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The team would also like to thank the principal participants in the assessment for the time invested, the information they presented, and their candor in answering the many questions put forth by the team.

List of Presenters

Gerald Jennings
Transportation Assistant Planning Director
Connecticut Department of Transportation
(ConnDOT)

Juliet Little
Transportation Highway Safety
Management Specialist
ConnDOT

David Bozak
Consultant
InfoGroup

Joe Cristalli
Transportation Principle Safety Program
Coordinator
ConnDOT

Harley Polverelli
Transportation Planner I
ConnDOT

Roseann McCorkle
Transportation Planner I
ConnDOT

Gene Interlandi
Transportation Planner II
ConnDOT

Sebastian P. Puglisi
Transportation Supervisor Planner
ConnDOT

Dennis Mitchell
Manager, Bureau of Research and
Information Services
Connecticut State Police (CSP)

Frank Sawicki
Sergeant/Executive Officer
Traffic Services Unit, CSP

William B. Krauss
Sergeant
Traffic Services Unit, CSP

Jae Fontanella
Sergeant
Traffic Services Unit, CSP

James Spencer
Supervisor Transportation Planner
Planning GIS Section, ConnDOT

John F. Carey
Manager of Traffic Engineering
ConnDOT

Al Iallonardo
Transportation Supervisor Planner
ConnDOT

Andy Asaro
Transportation Assistant Planning Director
ConnDOT

Eric Bergeron
Transportation EngineerC\
ConnDOT

Mukhtar Mohamed
Epidemiologist
Department of Public Health (DPH)

Marion Storch
Health Program Associate
DPH

Bill Teel, PhD
Epidemiologist
DPH

Jan Sniffin
Systems Development
DCJ

Susan Naide
Sr. Assistant State's Attorney
DVI Pros./Coordinator
DCJ

Karen Brock
Director
Safe Kids Connecticut

Karen Sandler
Caseflow Coordinator
Judicial Court Operations

David Smith
Deputy Chief Clerk
Judicial Branch – Court Operations

Pamela Frank-Hall
Deputy Director
Judicial Court Operations

JoAnn Miller
Program Manager, Criminal Matters
Court Operations

John DeCarlo
Deputy Police Chief
Branford Police Department

John Murphy
Commander
East Hartford Police Department

Joseph Wynosky
Sergeant
West Haven Police Department

Joseph Vecellio
Detective
West Haven Police Department

Jennifer Carrier
Principal Transportation Engineer
Capitol Region Council of Government
(COG)

Peter Dorpalen
Executive Director
Central Naugatuck Valley (COG)

Tom Maziarz
Transportation Director
Central Region COG

Donald Bridge, Jr.
Sergeant
Department of Motor Vehicles (DMV)

George White
Division Chief
DMV

David M. Ostafin
Division Chief
DMV

Bob Sardo
Division Manager
DMV

Jim Fazzalano
Principal Research Analyst
Office of Legislative Research

John Ivan
Associate Professor
University of Connecticut

Bob Whitney
Research Consultant
PRG, Inc.

Bill Saypalia
CIDRIS Project Manager
Office of Policy and Management (OPM)

Terry Schnure
Assistant Division Director
OPM – Criminal Justice Policy and
Planning

Kate Trudeau
Business Systems Manager
ConnDOT

Charles Dew
Information Technology Director
ConnDOT

List of Observers

Robert Ramirez
ITS Traffic & Safety Engineer
Federal Highway Administration

INTRODUCTION

A complete traffic records program is necessary for planning (problem identification), operational management or control, and evaluation of a state's highway safety activities. Each state, in cooperation with its political subdivisions, should establish and implement a complete traffic records program. The statewide program should include, or provide for, information for the entire state. This type of program is basic to the implementation of all highway safety countermeasures and is the key ingredient to their effective and efficient management.

As stated in the *National Agenda for the Improvement of Highway Safety Information Systems*, a product of the National Safety Council's Traffic Records Committee:

“Highway safety information systems provide the information which is critical to the development of policies and programs that maintain the safety and the operation of the nation's roadway transportation network.”

A traffic records system is generally defined as a virtual system of independent real systems which collectively form the information base for the management of the highway and traffic safety activities of a state and its local subdivisions.

Assessment Background

The Traffic Records Assessment is a technical assistance tool that the National Highway Traffic Safety Administration (NHTSA), the Federal Motor Carrier Safety Administration (FMCSA) and the Federal Highway Administration (FHWA) offer to state offices of highway safety to allow management to review the state's traffic records program. NHTSA, FMCSA and FHWA have co-published a Highway Safety Program Advisory for Traffic Records which establishes criteria to guide state development and use of its highway safety information resources. The Traffic Records Assessment is a process for giving the state a snapshot of its status relative to that Advisory.

This assessment report documents the state's traffic records activities as compared to the provisions in the Advisory, notes the state's traffic records strengths and accomplishments, and offers suggestions where improvements can be made.

Methodology

The assessment process follows a “peer” review team approach. Working with the NHTSA Regional Office, the FHWA Division Office, FMCSA, and the State's Highway Safety Office, the NHTSA selected a team of individuals with demonstrated expertise in major highway safety program areas including: law enforcement, engineering, driver and vehicle services, injury surveillance systems, and general traffic records development, management, and use. Credentials of the assessment team are listed in the Team Credentials section of this report. The state officials who were interviewed during this assessment are listed in the List of Presenters section. Throughout the assessment, NHTSA, FMCSA, and FHWA representatives served as observers and are also listed in the Acknowledgments section.

Recommendations

The recommendations in the sections following may include suggestions on how they might best be achieved, based on the experience of team members and information provided.

Report Contents

In this report, the text following the “*Advisory*” excerpt heading was drawn from the Highway Safety Program Advisory for Traffic Records. The “*Advisory*” excerpt portion is in italics to distinguish it from the “Status and Recommendations” related to that section which immediately follows. The status and recommendations represent the assessment team’s understanding of the state’s traffic records system and their suggestions for improvement. The findings are based entirely on the documents provided prior to and during the assessment, together with the information gathered through the face-to-face discussions with the listed state officials. Recommendations for improvements in the state’s records program are based on the assessment team’s judgment.

It is recognized that, based on resources and other program priorities, the recommended improvements would be considered for implementation through a strategic plan established by the State Office of Highway Safety in coordination with all affected state and local agencies.

The report will follow the outline in the Advisory and present the “*Advisory*” excerpt followed by the “Status” and “Recommendation” for each section and subsection of the Advisory. Section 1-A would present the text from the Advisory related to Crash Information followed by a statement of the findings and the recommendations for improvements to crash information. Section 1-B would repeat for Roadway Information, etc.

SECTION 1: TRAFFIC RECORDS SYSTEM INFORMATION COMPONENTS

At the time of passage of the Highway Safety Act of 1966, state central traffic records systems generally contained basic files on crashes, drivers, vehicles, and roadways. Some states added data on highway safety-related education, either as a separate file or as a subset of the Driver File. As highway safety programs matured, many states added Emergency Medical Services (EMS) and Citation/Conviction Files. Additionally, some states and localities also maintain a Safety Management File, which consists of summary information from the central files useful for problem identification and safety planning.

As the capabilities of computer hardware and software systems increased and the availability of powerful systems has expanded to the local level, many states have adopted a more distributed model of data processing. For this reason, the model of a traffic records system needs to incorporate a view of information and information flow, as opposed to focusing on the files in which that information resides. Figure 1 displays this view of distributed data processing in a traffic records system.

Under this more distributed model, it doesn't matter whether data for a given system component are housed in a single file on a single computer or spread throughout the state on multiple local systems. What matters is whether or not the information is available to users, in a form they can use, and that this information is of sufficient quality to support its intended uses. Thus it is important to look at information sources. These information sources have been grouped to form the following major components of a traffic records system (see also Table 1):

- Crash Information
- Roadway Information
- Vehicle Information
- Driver Information
- Enforcement/Adjudication Information
- Injury Surveillance Information

Together, these components should provide information about places, property, and people involved in crashes and about the factors that may have contributed to the events described in the traffic records system. The system should also contain information that may be used in judging the relative magnitude of problems identified through analysis of data in the traffic records system. This should include demographic data (social statistics about the general population such as geographic area of residence, age, gender, ethnicity, etc.) to control for differences in exposure (normalization) and cost data for benefit/cost and cost effectiveness determinations. Performance level data should be included to support countermeasure management.

Further descriptions of these types of information are provided in the following sections.

Figure 1: Model of Distributed Data Processing in a Traffic Records System

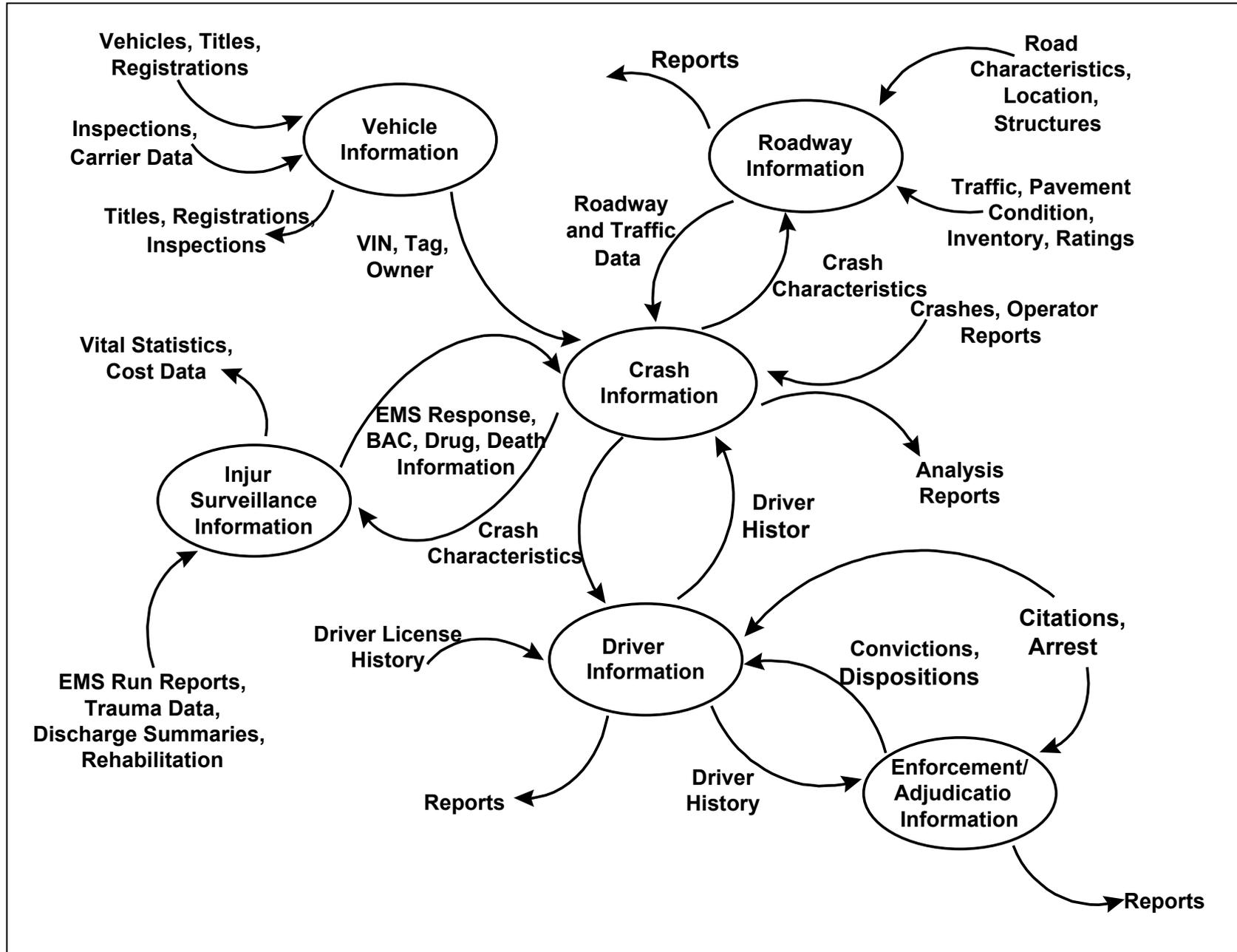


Table 1. Components of a Traffic Records System

| COMPONENTS | | EXAMPLES |
|----------------------------|------------|---|
| Crash | | <ul style="list-style-type: none"> • Weather conditions and pavement • Illumination • Time of Day, Day of Week • Avoidance maneuvers • Violation of traffic law (speed, turns, failure to obey, reckless driving) • Number and severity of injuries or level of property damage • Number of vehicles involved • Manner of collision and speed • Object struck • Person type (driver, occupant, pedestrians) • Substance abuse • Safety device use |
| Injury Surveillance System | | <ul style="list-style-type: none"> • EMS response time for driver/pedestrian/pedacyclist • Hospital assessment of injury severity • Hospital length of stay and cost • Rehabilitation time and cost |
| Roadway | | <ul style="list-style-type: none"> • Location referencing system • Roadway character (jurisdiction, classification, surface, geometries) • Structures (bridges, tunnels) • Traffic control devices, signs, delineations, and markings • Roadside features (hardware, conditions, bike lanes, sidewalks, land use) • Rail grade crossings • Traffic volume and characteristics |
| Vehicle | All | <ul style="list-style-type: none"> • Type and configuration • VIN • Age/model year • Weight • Registration information/Plates • Defects • Owner information • Safety devices (type and condition) |
| | Commercial | <ul style="list-style-type: none"> • Carrier information • Hazardous materials/Placards • Inspection/Out of Service Records |
| Driver | | <ul style="list-style-type: none"> • Age/DOB • Gender and Ethnicity • Experience, driver education • License status • Conviction history |
| Enforcement/Adjudication | | <ul style="list-style-type: none"> • Citation tracking • Traffic case volume • Conviction • Sentencing • Case tracking |

Section 1-A: Crash Information

Advisory Excerpt: *The Crash Component documents the time, location, environment, and characteristics (sequence of events, rollover, etc.) of a crash. Through links to the crash-involved segments of Roadway, Vehicle, and Driver Information, the Crash Component identifies the roadways, vehicles, and people (drivers, occupants, pedestrians) involved in the crash and documents the consequences of the crash (fatalities, injuries, property damage, and violations charged). In addition to providing information on a particular crash, the Crash Component supports analysis of crashes in general and crashes within specific categories defined by: person characteristics (e.g., age or gender), location characteristics (e.g., roadway type or specific intersections), vehicle characteristics (e.g., condition and legal status), and the interaction of various components (e.g., time of day, day of week, weather, driver actions, pedestrian actions, etc.).*

The Crash Component of the Traffic Records System should contain some basic information about every reportable motor vehicle crash on any public roadway in the state. Details of various data elements to be collected are described in a number of publications. The Model Minimum Uniform Crash Criteria (MMUCC) provides a guideline for a suggested minimum set of data elements to be collected for each crash. Additional information should be collected (as necessary) for crashes involving an injury or fatality to meet the requirements for tracking and analysis for the state, and other systems (e.g., the Fatality Analysis Reporting System [FARS], General Estimates System [GES]).

Status

Section 14-108a of the Connecticut General Statutes defines the statutory requirements for crash reporting. Law enforcement officers use the Connecticut Uniform Vehicle Accident Report (PR-1) as the official crash report form. The statutory requirement is that a copy of the PR-1 be forwarded to the Connecticut Department of Transportation (ConnDOT) within five days after the investigation is completed, for all reportable crashes. A reportable crash is defined to be any crash that involves at least one fatality or injury, or property damage exceeding a threshold of \$1000.

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. Reports are batched by month received and then processed. Processing includes coding of standardized location information and data entry of other form elements. An extensive set of edit checks are employed to validate forms at data entry time, and forms not meeting correctness requirements are rejected and returned to the submitting agency. PR-1 forms are destroyed 90 days after the data entry process is complete.

Connecticut participates in the federal Fatality Analysis Reporting System (FARS). Crashes involving fatalities are intercepted and processed separately by the FARS staff. There is a crash

form supplement (the PR-2) that includes information relative to fatalities that does not appear on the PR-1. Fatal crash processing includes the normal entry into the AHF and compilation of additional information from various sources for entry into the FARS database. Due to the accuracy requirements for FARS, there may be significant delays before fatality records are finalized. PR-1 and PR-2 forms associated with fatalities are not subject to the 90-day destruction policy.

Connecticut also participates in the Safetynet program for commercial vehicle crashes. An electronic crash reporting system (called NexGen) is used by the Connecticut State Police (CSP) for the purpose of electronically reporting commercial vehicle crashes to the Connecticut Department of Motor Vehicles (DMV), who has the responsibility for processing commercial vehicle crashes and entering those crashes into Safetynet for uploading to MCMIS. The DMV receives approximately 80 percent of the commercial vehicle crashes electronically from the state police; the remaining 20 percent are reported by local agencies and are submitted by paper copy from ConnDOT.

The CSP NexGen system has been distributed to approximately 800 CSP state troopers (virtually all of the patrol troopers). This system is being used to develop PR-1 reports for all crashes investigated by the CSP. While reports are being submitted electronically to the DMV for commercial vehicle crashes, ConnDOT cannot currently receive electronic records and thus receives paper copies for all crashes for entry into the AHF. A system for the receipt of electronic XML-based records is currently under discussion at ConnDOT, and the intention is to begin receiving electronic crash records from CSP some time during this calendar year.

Local police agencies either complete the PR-1 strictly using paper forms or utilize their own electronic crash reporting systems to produce paper copies for submission to ConnDOT. There are two dominant products that local agencies currently use for electronic crash reporting: the NexGen system also used by the state police and the CAPTAIN system. Officers in agencies doing electronic reporting complete the crash form on laptops in cars in most cases and upload these forms using cellular data connections to local servers. Edit checks are used for error detection; these edit checks generally match the ConnDOT edit checks and have resulted in a very small percentage of the forms being rejected by ConnDOT. All submitted reports are evaluated and approved by supervisors and then submitted to ConnDOT as paper copies.

Of the approximately 115,000 crashes reported each year to ConnDOT, all fatal and injury crashes are entered into the AHF. Of the PDO crashes, only those crashes on state roads are entered. PDO crashes on local roads are not currently entered into the AHF. Thus, of 115,000 reportable crashes, only approximately 80,000 of those crashes are entered into the AHF. ConnDOT intends to begin entering all reportable crashes into the AHF for 2007, but the backlog is such that data entry for 2007 forms is just being initiated.

With respect to an individual crash report, only one-third (or 34) of the 107 elements on the form, are entered into the AHF. Many elements are omitted because they contain personal information, and the provision of personal information from crashes is not part of the charter of ConnDOT. In addition, omitting these relatively lengthy personal information elements speeds the processing and reduces keystrokes.

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 consumers 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 CAST (Connecticut Accident Summary Tables), TASR (Traffic Accident Surveillance Report) and SLOSS (Suggested List of Surveillance Study Sites). 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.

The PR-1 form last underwent significant revision in 1995, with subsequent minor revisions leading to the current version of the form (the 1/01 revision). A committee made up of stakeholders from a variety of disciplines is currently evaluating the form for possible expansion to additional data elements. A major focus of this committee is on MMUCC data elements that are currently not part of the form. Currently 48 of the 77 MMUCC data elements intended for roadside collection are included on the form, but only 23 of these data elements are entered into the AHF.

Recommendations

- 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 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 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.
- Fund the efforts by local agencies to generate XML-based records from their RMSs for uploading to the state crash records system.
- Promote further expansion of electronic crash data collection and reporting.
- Develop a query and analysis tool suite for the crash records system, providing stakeholders with the capability to access and analyze crash data.

- ❑ Study the pros and cons of assigning the responsibility for maintaining a comprehensive statewide crash records system to another state agency and clearly define the mission of the custodian agency to include serving the crash data needs of all traffic safety partners and stakeholders.

Section 1-B: Roadway Information

Advisory Excerpt: *Roadway information includes roadway location, identification, and classification, as well as a description of a road's total physical characteristics and usage, which are tied to a location reference system. Linked safety and roadway information are valuable components in support of a state's construction and maintenance program development.*

Roadway information should be available for all public roads in the state whether under state or local jurisdiction. A location reference system should be used to link the various components of roadway information as well as other information sources (e.g., Crash/Environment information, EMS records) for analytical purposes.

Status

The Connecticut Department of Transportation (ConnDOT) collects, processes, stores, and distributes roadway traffic volumes, accident information, and highway system inventory data associated with state and local public roadways. These data are utilized for program and project development of the 21,000 mile public road system. The ConnDOT also provides data for input to various federal, state, municipal, and other public and private sector reports and forms the basis for developing traffic projections. ConnDOT prepares forecasts of travel demand based upon socio-economic, demographic, and transportation system characteristics; analyzes the current and future levels of service and congestion; determines and maintains the functional classification of the state road system; analyzes major traffic generators for their potential impact upon the transportation system; and provides geographic information systems (GIS) services to the Department bureaus and other selected users.

ConnDOT's primary linear reference system (LRS) is route and cumulative mileage. A GIS-based reference system is currently in use; however, latitude and longitude is usually present only at the beginning of a route, end of a route, bridge location, and signal location. Roadway mileage in the state that is reflected in the state roadway database includes a total of 21,089 roadway miles, consisting of 4,065 miles of state roads and 17,024 miles of city streets.

The State Highway Log contains various roadway features that include intersecting bridges, ramps, all state routes and local roads where an ADT change occurs, brooks and rivers, and town lines. The log also gives pertinent roadway administrative information, such as functional classification, state maintenance responsibility, rural or urban designation, etc.

Roadway inventory files linked by route and milepost include traffic signs, traffic signals, illumination, ramps, town road inventory, and state road inventory. The state road inventory includes road type, functional class, access control, average daily traffic, pavement information, improvement information, maintenance, bridge information, railroad crossing numbers, and many other details of information.

Crashes on the state highway system are location-coded by route and cumulative mileage allowing them to be used in conjunction with roadway files. Route and cumulative mileage

information for the crash file is used with the location and average daily traffic (ADT) files to generate reports such as:

- Traffic Accident Surveillance Report – This report provides an analysis of crashes at particular intersections or on particular road segments on the state highway system
- Suggested List of Surveillance Study Sites – This contains a listing of intersections and other locations that have experienced abnormally high crash rates.

These files have a limited distribution, primarily within ConnDOT, with a caveat that it is privileged information and can not be used other than for the designated approved purpose stated in the request.

Roadway features files and crash data can be linked through the use of the Department's ESRI-based GIS system and through a battery of mainframe programs. The ConnDOT envisions the use of GIS as the information enterprise system for all Department data files. The use of the legacy LRS and latitude/longitude coordinates obtained by survey instruments or electronic data collection will allow the linking of data for the local road system.

Most local road safety initiatives are proposed by the Regional Planning Agencies (RPA) utilizing road and crash data provided by ConnDOT and implemented with federal and state funds. As an example, the Capital Region Council of Governments (CRCOG) primarily seeks to fund traditional roadway improvement projects that will substantially improve the physical condition of roads and bridges (including major culverts) or corrects existing traffic problems related to congestion, safety (accidents), and geometry. The CRCOG will fund projects that cost between \$100,000 and \$2,500,000.

The traffic improvement criterion provides an indication of whether or not the proposed project will help improve traffic flow, traffic safety, or roadway geometrics. The applicant must provide documentation of the nature and severity of the existing problems and how the problems will be corrected by the proposed project. CRCOG staff will review the documentation and determine whether the improvement qualifies as major, moderate, minor, or not included in the program.

Crash and road features data are essential for problem identification and project design and have a significant effect on project selection.

Recommendations

- Establish the GIS as the Department's enterprise information platform. Promote the efforts of the Geospatial Council to develop a new State base map, and a statewide GIS.
- Encourage local agencies to provide roadway inventory data by making these files easily available to the ConnDOT in a user-friendly manner, and the ConnDOT should provide data and access to the local agencies in return.
- Assume the lead within ConnDOT for the proposed study for a Location Identification/Location Reference System for use by all highway safety stakeholders.

This effort could function as a subcommittee to the TRCC with strong liaison to the Geospatial Council.

Section 1-C: Vehicle Information

Advisory Excerpt: *Vehicle information includes information on the identification and ownership of vehicles registered in the state. Data should be available regarding vehicle make, model, year of manufacture, body type, and miles traveled in order to produce the information needed to support analysis of vehicle-related factors which may contribute to a state's crash experience. Such analyses would be necessarily restricted to crashes involving in-state registered vehicles only.*

This information should also be available for commercial vehicles and carriers which may be registered in other states, but which are licensed to use the public roadways in the state.

Status

The Connecticut Department of Motor Vehicles (DMV) administers vehicle registration and titling. The registration file contains motor vehicle registration and title records, and watercraft and other licensing information is also the responsibility of the DMV. Commercial vehicles are included in the database. Those under the International Registration Plan (IRP) are managed separately with the basic vehicle information about the IRP vehicles mirrored in the regular registration file. Information is maintained on temporary registrations and stolen vehicles.

Vehicle registrations and title applications may be processed through ten full service offices and four satellite offices. Renewals are processed by mail-in procedures. These facilities send paper transactions to the DMV headquarters office in Wethersfield, CT. Qualified automobile dealers also process registrations on-line, issue registration plates, and process title applications.

The scope of descriptive information on vehicles meets the recommendations of the *Advisory*, and the data scope is adequate for participation in applications of the American Association of Motor Vehicle Administrators (AAMVA). These data fields are used (as appropriate for the vehicle type): VIN, MAKE, MODEL, BODY, YEAR, primary color, secondary color, number of cylinders, number of axles, fuel code, light weight, registered gross weight, seating capacity, and standing capacity. *The elements in capitals are populated in a record by entering the VIN and extracting those key descriptions from the VINA program.* Using VINA assures a constant discipline for the extracted data elements, and VINA validates the VINs.

Registrations are classified for publication on the DMV web site with basic categories: Passenger Car, Commercial Vehicle, Combinations (vehicles used for commercial and non-commercial purposes), and Other (motorcycle, camper, camp trailer, etc.), but for DMV administration purposes there are 44 different class codes. There is no "use code," but usage is a factor in some of the registration classes: taxi, livery, service bus, etc. The classifications are not the same classifications as those on the crash report form.

Odometer readings are required when vehicles are titled or there is a new title (change of ownership). Updates are not captured with registration renewals, but when emissions inspections are required odometer readings are taken.

The vehicle records are maintained in an antiquated computer system and are highly fragmented.

Each registration or title record is separate for each registration or title; multiple vehicles are separate even when owned by the same person, and the records are not linked. They can be cross-referenced by VIN, Name, or Plate Number.

The vehicle records are not linked with other files, but the DMV fully recognizes the need to integrate the vehicle and driver records and has applied foresight in the actions taken to accomplish the customer-oriented database that will result from upgrades that have been initiated and are soon to be implemented. It has taken literally years to acquire the funding and approvals for the upgrade that is to begin very soon. At the time of this assessment a vendor has been selected to develop the new real-time vehicle system.

Examples of steps being taken toward the creation of the new system include the following:

- Complete identification: the type that is required for the driver file is required of registrants who must present acceptable documentation to establish identity, preferably a Connecticut driver license.
- The Social Security On Line Verification is checked to help assure that the applicant is correctly identified.
- Titles and registrations are issued only to the same person for both transactions (with controlled exceptions for some acceptable circumstances).

Although the upgrade of the driver records will be undertaken separately (resulting from different funding and approval processes), the DMV administration clearly has the vision and commitment to direct the development of the now separate systems into a customer-based system addressing all of the functions for which DMV is responsible.

The DMV is also moving toward participation in the National Motor Vehicle Title Information System (NMVTIS). The DMV also has plans to develop or participate in an electronic lien system, either an AAMVA application or a system with comparable functionality.

Title brands from other states are retained in the vehicle file. Some mismatches in the definitions require the DMV to apply the closest description using the Connecticut code set. The DMV has developed a set of brand descriptions that is updated as additional circumstances for identifying damaged vehicles is encountered.

Vehicle salvage information is obtained from insurance companies, and the title is branded as "salvage." The vehicle cannot be re-registered or re-titled without proof of passing a salvage inspection. Those passing are branded as "rebuilt."

Release of information is restricted for inquiries according to the stipulations of Section 14-10 of the Connecticut General Statutes. The circumstances for release of information are listed on the COPY RECORD REQUEST form. Enforcement has direct access electronically through the enforcement query system.

R. L. Polk purchases the file for the statistics they produce.

Year-end and other vehicle registration summaries are produced routinely for management purposes and publication. The DMV web site provides summaries of basic registration classes and driver licenses by year, by county, and by the cities and towns within the county. There is information that could be useful in studies of crash experience, but the automated crash file does not contain information identifying or categorizing vehicles or persons including drivers.

The registration document now has a one-dimension bar code containing the registration plate number and the VIN. The DMV knows of no use of this feature. The IRP cab card has a PDF-417 two-dimension bar code, and commercial vehicle enforcement personnel use that information for their inspection reports using ASPEN software in the field.

Note: Aspects of the driver system and plans for its upgrading are interrelated with those of the vehicle system. It is important to be aware of the status of and plans for the driver system when considering the vehicle system and its future.

Recommendation

- ❑ Incorporate, as already planned, the following features into the real-time system being developed:
 - NMVTIS for its efficiencies and functionality,
 - An electronic lien system, and
 - Integration with the driver data system.

Section 1-D: Driver Information

Advisory Excerpt: *Driver information includes information about the state's population of licensed drivers. It should include: personal identification, driver license number, type of license, license status, driver restrictions, convictions for traffic violations, crash history, driver improvement or control actions, and driver education data.*

Driver information should also be maintained to accommodate information obtained through interaction with the National Driver Register (NDR) and the Commercial Driver License Information System (CDLIS) to enable the state to maintain complete driving histories and to prevent drivers from circumventing driver control actions and obtaining multiple licenses.

Status

The Connecticut Department of Motor Vehicles (DMV) issues driver licenses and administers programs for driver control and improvement. Driver licensing processes may be conducted through ten full service offices, five photo license centers, and four satellite offices. There is also a Commercial Driver License skills test site and a photo license bus. These facilities are identified on the DMV web site with information about the hours of operation at the different facilities.

The DMV web site has a wealth of information on DMV requirements and information for the public including podcasts that can be played from the web site or downloaded to a player. There is also an option to subscribe to podcasts that will be added or updated. Subscription to podcast updates provides the means of notifying the public of changes that might be applied to services or times of operation (for example).

The information about drivers and driver histories appears to satisfy the recommendations of the *Advisory*. Connecticut has a graduated license program and administrative license revocation authority. Information on learner permits and provisional licenses is maintained. Driver education information is maintained in the driver licensing files.

The driver file is actually a set of separate files divided into two types: the licensing file and the driver history file. The driver *licensing* records contain identification and descriptive information about the driver and details of licenses issued (dates of issuance and expiration, license restrictions, and license class). The licensing files are subdivided: learner permits (further separated into automobile and motorcycle learners), commercial driver licenses, non-commercial licenses, and identification-only records.

Driver *history* files store information on convictions, suspensions, revocations, and DMV actions and are contained in separate records. Those files are subdivided into four types: the internal file (comprehensive history information the DMV needs), two external files—one for commercial inquirers (MVRs) and one for responding to persons requesting their own records—and a file (updated by the courts) containing information on citations issued and reflecting cases pending in court. This unusual structure results from the initial file designs with modifications applied to

enable the DMV to respond to the needs of driver control internally, law enforcement, and the courts.

All citations are posted to the driver history when processed in the Central Infractions Bureau or the Superior Court. Conviction information is updated from the court systems. Thus the DMV record can show pending cases to court inquiries and convictions as applicable for driver histories.

The driver file records no crash involvements and no BAC results. Driver histories from previous states of licensing are included in the driver file only for commercial vehicle operators. The licensing process queries the NDR/PDPS and the CDLIS, the Social Security On Line Verification, and the files on resident aliens. The DMV expects to query the SAVE file when the system is upgraded and incorporates as much as possible of the REAL ID specifications. Anticipating the upgrade, the DMV has acquired and is using facial recognition software to detect fraudulent applications and problems in the existing records.

The courts report convictions electronically as noted above. The electronic conviction record shows the original charge if the adjudicated charge is lesser. The DMV matches license information to court information using Name, DOB, and license number. However, many cases from the courts do not have correct or complete identifying driver data. Therefore the DMV's Driver Services Division has seven staff members that manually review and post any court conviction information that does not match on Name, DOB, and license number.

The DMV in coordination with the courts and prosecutors is working to implement a Connecticut Impaired Driver Records Information System (CIDRIS) that will track impaired drivers and assure the completeness and consistency of records pertaining to those offenders. The system is not operative yet, and it does not extend the tracking of offenders for other serious violations as a full Citation Tracking System would.

There is a point system leading to a withdrawal of licenses. If an infraction is resolved by paying the fee or fine, there are no points assigned to the driver history. The record is posted to the driver history nonetheless.

Within the constraints of the DPPA, the driver file is accessible to authorized users.

The driver file does not link with other files. It is possible to match records in the registration file by name and date of birth matching in both files.

Summary data from the driver file provides management and statistical information. Public information is provided on the web site as described in Section 1-C.

The driver license document contains a 2D bar code. Enforcement officers are able to query the driver and registration files with the ability to determine the status of the driver or vehicle.

The new licensing system planned is described in the following press release:

Governor M. Jodi Rell announced today that \$10 million in funding for customer-service technology improvements at the Department of Motor Vehicles is expected to be approved when the State Bond Commission meets January 26. Editorial note: It was approved.

When these upgrades are completed, customers can expect that their transactions will be done faster and that more transactions will be moved online, said Governor Rell. "I want a 21st century DMV that is modern, service-oriented and technologically efficient and this bond money will help get us there."

The DMV's aging computer network has numerous problems, including that it often cannot share information among files. This frequently requires a customer to provide the same information more than once. The network also fails to allow for easy access to customer-service features that can be provided through the growing presence of Internet connections.

"These funds will help the department take significant steps toward upgrading its old and outdated computer systems with streamlined, state-of-the-art technology," Governor Rell said. "My goal for the future of DMV is an agency that maximizes technology to make customer service easy for residents whether in their homes or at a DMV office."

The bond money would be added to funding already in place in DMV for the project, which state officials are designing now. The entire multi-million dollar upgrade is expected to be completed in stages during the next two to three years.

At present, a significant portion of the vehicle registration work is processed manually, requiring the examination of paper documents, completion of handwritten forms and the storage and tracking for review of extremely large volumes of paper documents.

In addition, the inability of the systems to easily connect and share information is unacceptable in this age of increased security regarding registration and licensing processes. Federal and state agencies in the future will expect quicker access to important documents needed for any reviews.

The aging technology also requires DMV workers to frequently perform an excess amount of processing with needless complexity, which can lead to delays and customer inconvenience at the counter when they go to a DMV office for a transaction.

Other funding from the State is expected for this multi-million dollar project.

Recommendations

- Plan to incorporate the serious adverse records of drivers coming from previous states of record into the driver history as is done with the Commercial Driver License Information System.
- Plan to include information on drivers' crashes for driver control and improvement assessment and possible remedial action.

Section 1-E: Enforcement/Adjudication Information

Advisory Excerpt: *Information should be available which identifies arrest and conviction activity of the state, including information which tracks a citation from the time of its distribution to an enforcement jurisdiction, through its issuance to an offender, and its disposition by a court. Information should be available to identify the type of violation, location, date and time, the enforcement agency, court of jurisdiction, and final disposition. Similar information for warnings and other motor vehicle incidents that would reflect enforcement activity are also useful for highway safety purposes.*

This information is useful in determining level of enforcement activity in the state, accounting and control of citation forms, and monitoring of court activity regarding the disposition of traffic cases.

Status

Connecticut maintains several databases containing records on citations, pending actions, or dispositions which are useful to highway safety practitioners in evaluating and determining the effectiveness of statewide and local countermeasures. Collectively these components have the functionality of a citation tracking system that meets the criteria as called for in the *Advisory*.

In Connecticut traffic offenses are defined as an infraction or a crime. There are two citation forms used by law enforcement officers to document these violations of state statutes and municipal ordinances. These forms are:

- *Traffic Complaint Form* is used by law enforcement to cite those violations that are classified as an infraction.
- *Motor Vehicle Misdemeanor Summons* is used by law enforcement officers to document traffic violations categorized as traffic crimes.

Traffic Complaints issued by law enforcement officers are submitted to the Centralized Infractions Bureau (CIB). Data from these forms are entered into the CIB's application which can be used to account for the forms issued to the law enforcement agencies. The CIB's application resides in a VAX computer.

Traffic Complaints do not require a court appearance. Therefore, administrative procedures are used to process these violations. Motorists are given the opportunity to pay the fine by mail. This action is considered to be a plea of *Nolo Contendere* (no contest) and the charge is submitted to the Department of Motor Vehicles (DMV) for posting on the driver's record.

Traffic Complaint "Not Guilty" pleas, those unpaid infractions, are submitted to the Superior Court for adjudication. This requires that the information from the Traffic Complaint form be entered into the Criminal Record and Motor Vehicle System (CRMVS).

All Motor Vehicle Misdemeanor Summons are entered into the CRMVS. The CRMVS is intended to provide judicial staff with the current status of the citation (open, closed,

disposition). The CRMVS is used to submit dispositions (convictions and dismissals) to the DMV.

Connecticut's judicial branch is a unified state court system that functions under one administrative head, the Chief Court Administrator. The Office of the Chief Court Administrator (OCCA) provides administrative oversight for all courts within Connecticut. Oversight for the citations' design and content is the responsibility of the Superior Court according to state statute.

There is an initiative underway to establish business rules and procedures for processing traffic citations electronically. It is envisioned that the state will deploy a tracking system for citations. This application will allow the state to account for traffic citations from the point of distribution of the form to an officer to the placement of the information on the driver history file. This is a planned module in the Connecticut Impaired Driver Records Information System (CIDRIS)

It must be noted that as law enforcement agencies expand the use of software applications on their Mobile Data Computers (MDC), a long term financial plan will be needed.

The ability to track the complete "life cycle" of a traffic citation from distribution to an officer, to its issuance to an offender, to its disposition, and to its placement on the driver history file now requires accessing multiple databases. Accordingly stakeholders throughout the traffic safety community do not have the information necessary to evaluate the effectiveness of enforcement activities and to be assured that there are procedures in place to account for citations.

Recommendations

- Define the formats, protocols, and schemas to facilitate the exchange of information between various data systems as this will accommodate the various electronic citation modules that may be used by all law enforcement agencies. The preferred national standard is GJXDM.
- Establish a long term financial plan to support future maintenance, upgrades, and new applications.

Section 1-F: Injury Surveillance System Information

Advisory Excerpt: *With the growing interest in injury control programs within the traffic safety, public health, and enforcement communities, there are a number of local, state, and federal initiatives which drive the development of Injury Surveillance Systems (ISS). These systems typically incorporate pre-hospital (EMS), emergency department (ED), hospital admission/discharge, trauma registry, and long term rehabilitation databases to track injury causes, magnitude, costs, and outcomes. Often, these systems rely upon other components of the traffic records system to provide information on injury mechanisms or events (e.g., traffic crash reports).*

This system should allow the documentation of information which tracks magnitude, severity, and types of injuries sustained by persons in motor-vehicle related crashes. Although traffic crashes cause only a portion of the injuries within any population, they often represent one of the more significant causes of injuries in terms of frequency and cost to the community. The ISS should support integration of the ISS data with police reported traffic crashes. The EMS run reports and roadway attributes are the first critical steps in the identification of a community's injury problem, and in turn, the identification of cost-effective countermeasures which can positively impact both the traffic safety and health communities.

The use of these data should be supported through the provision of technical resources to analyze and interpret these data in terms of both the traditional traffic safety data relationships and the specific data relationships unique to the health care community. In turn, the use of the ISS should be integrated into the injury control programs within traffic safety, and other safety-related programs at the state and local levels.

Status

There are several key components of a comprehensive functional statewide Injury Surveillance System. These components are: emergency medical services, acute care, trauma and rehabilitation facilities, and vital records. Oversight for these entities' activities may be governed by local, state, and regional authorities. Collection of data from these entities provides a wealth of patient care routing, intervention, and prevention information that can be used to evaluate current treatment modalities and injury prevention activities. A comprehensive functional statewide injury surveillance system provides crucial healthcare and injury prevention information to local, state, and regional healthcare providers and policy-making partners.

Connecticut has several of the key components of a comprehensive functional Statewide Injury Surveillance System (ISS):

- Connecticut EMS Transport Data – Department of Information Technology (DoIT) and the Connecticut Department of Public Health (CDOPH), Operations Branch Information Technology Section (OBITS), and Office of Emergency Medical Services (OEMS)
- Connecticut Trauma Registry Data - DoIT and CDOPH, OBITS, and OEMS
- Connecticut Emergency Department Data and Hospital Discharge (In-Patient) Data System - Connecticut Hospital Association (CHA)

- Mortality data –CDOPH, Vital Records Office

Not all of these components are functional or have the same degree of maturity.

EMS

Chapter 368d of the Connecticut General Statutes establishes the OEMS regulatory authority over the 276 EMS pre-hospital providers. Section 19a-177-7 of the Public Health Code establishes the OEMS authority to collect nonscheduled EMS transports data and provide the data to a sponsor hospital. These data will become part of the patient's hospital record. There are no EMS pre-hospital patient care data collection rules that define the data submission format, data elements, and data definitions, and that establish a statewide pre-hospital data repository. The DoIT is the custodian of the EMS transport data and OBITS is the data administrator. OEMS is provided an electronic data file from OBITS upon request. All EMS providers are required to submit a quarterly report on transport volume and transport type to the OBITS. This paper report is entered into an electronic database but does not contain any detailed patient care data. Approximately 450,000 pre-hospital transports were reported for 2005; this includes 84,000 trauma patient transports.

OEMS requires EMS providers to complete a nonscheduled EMS transport data form and leave a copy of the form at the receiving hospital. These data are not submitted to OBITS; it remains at the hospital as part of the patient's medical record to be used by the sponsor hospital for quality improvement activities. The original is kept at the EMS provider's office.

Currently, the state EMS providers are using third-party EMS patient care and billing software in addition to the software application that has been adopted by the state, Digital Innovations EMS Collector. These data are not submitted to the state but are maintained at the EMS providers' RMSs.

The OEMS and OBITS are in the initial phase of implementing a new electronic EMS data collection system. The new system will be able to accept data from third-party software applications that meet the XML data transfer standard. Two hundred rugged laptops have been purchased and distributed to the EMS providers who are involved in phase one of the deployment process so they may become accustomed to using the new rugged laptops and the new software application for data collection. EMS data will not be accepted at the State data repository until October 2007.

OEMS and OBITS staff have conducted meetings with EMS providers to discuss the development of a new electronic system and the adoption of the National EMS Information System (NEMSIS) Version 2.2.1 Data Set Gold Standard, what data elements are appropriate for Connecticut, and how the new electronic data collection system will accept or reject records (data quality controls). OEMS and OBITS have not completed a statewide EMS data inventory that identifies the hardware, software, or data submission capabilities of each EMS provider. However, OEMS and OBITS have met with EMS providers and have knowledge of the current EMS statewide data collection and submission capabilities. This information is crucial in assisting OEMS and OBITS with the development of a statewide data collection system that is

compatible with any existing EMS software applications being used by EMS providers at this time, the type of computer equipment, and available Internet services.

The OEMS has selected the Digital Innovation EMS Collector data collection software as the platform for statewide data collection and submission to the state data repository at DoIT. The software application and data storage server have been purchased and await installation at DoIT. Installation and implementation of the new electronic data system and data storage system is planned to occur in 2008. Rugged laptops for the EMS providers are scheduled to be purchased as a result of a joint venture with OEMS and the Connecticut Department of Transportation, Transportation Safety Section.

Trauma Registry

Currently Connecticut does not have a statewide Trauma Registry. Section 19a-177-1 of the Connecticut Public Health Code establishes the authority for a state Trauma Registry, and OEMS provides regulatory oversight for the 12 designated Trauma Facilities. The OBITS is the administrator of the planned statewide Trauma Registry. Each designated Trauma Facility electronically collects trauma patient care data in compliance with the trauma designation essential criteria. At this time the state does not have the capability to accept electronic data from these designated trauma facilities. However, the state is in the initial phase of implementing and deploying a new electronic statewide Trauma Registry. Digital Innovations Collector software application has been adopted as the State Trauma Registry data collection and data repository platform; however, trauma facilities may use a third-party software of their choice as long as it meets the state XML data transfer protocols. Phase one of the implementation and deployment process will begin July 2007. Phase two will include all of the hospitals within the state, and these facilities will begin submitting trauma patient care data by January 2008, thereby creating an electronic statewide Trauma Registry.

Emergency Department/Hospital Discharge Data

The Connecticut Hospital Association (CHA) is the custodian of the Emergency Department and Hospital Discharge Data Collection System. The Emergency Department and Hospital Discharge data are submitted electronically from the 29 not-for-profit hospitals using a web-based application or by sending an electronic batch file. Data are submitted monthly. The data format is based on the national standardized Uniform Billing (UB-92) data format used by hospitals to bill for patient gross charges. Data elements include International Classification of Diseases, Ninth Revision, Clinical Manual (known as ICD-9) Diagnosis and Procedures Codes, gender, date of birth, admission date, discharge date, admission priority, length of stay, discharge status, total charges (based on specific items such as prescriptions), admission source, payer source, and county of origin. These data include those patients seen in the Emergency Department and those patients who spent at least 24 hours as an in-patient. There were two million patients seen in the Emergency Department or admitted to the hospital in 2005.

The CHA provides a flat file to the CDOPH annually for use in statistical analysis and surveillance activities.

Mortality Data

Connecticut law mandates that all death data be filed with the CDOPH Vital Records Program. All Medical Examiners, funeral home directors, justices of the peace, and healthcare facilities are reporting data to the state data repository.

The death certificate data provide information on the frequency of deaths of Connecticut residents, demographic characteristics of the decedents, and the conditions leading to mortality, including deaths that may have occurred outside of the State of Connecticut.

Mortality data include the demographic data of the individual, occupation, gender, age, date of birth, age at death, place of death, manner of death, state of residence, and cause of death (identified by ICD-10, International Classification of Disease codes). The ICD-10 system is used to code and classify mortality (the number of deaths) data from death certificates.

Recommendations

- Seek legislative budget support to maintain the EMS and Trauma Registries. This will assist in the continued monetary support for the purchase of new computers and software products used to maintain these two systems.
- Consider introducing the new NEMESIS data set incrementally and in phases. This may allow the EMS providers the opportunity to gain confidence in the system therefore not overwhelming them with the large data set.
- Provide data back to the EMS providers and hospitals that will assist them in evaluation of their agencies' performance and quality improvement activities. This will assist in increasing participation.
- Promote the value of the data in the ISS components to traffic safety partners and stakeholders.
- Assure that all managers of the Connecticut ISS components participate fully in the TRCC.

SECTION 2: INFORMATION QUALITY

A state's traffic records information should be of an acceptable level of quality to be useful and should be maintained in a form that is readily accessible to users throughout the state. The quality of information in a state's traffic records system is determined by the following characteristics:

- Timeliness
- Consistency
- Completeness
- Accuracy
- Accessibility
- Data integration with other information

The definition of each of these attributes and their relative significance may vary for each information area (crash, roadway, etc.). For example, while a high degree of timeliness may be crucial for entry of actions in a driver history database, it may not be as significant for certain roadway related data. Also, while the various information sources may exist separately, these sources should be easily tied together. This integration can eliminate the need to duplicate data, thus reducing data collection, entry, and storage costs.

2-A: Crash Information Quality

Advisory Excerpt:

- ❑ *Timeliness – The information should be available within a time frame to be currently meaningful for effective analysis of the state’s crash experience, preferably within 90 days of a crash.*

- ❑ *Consistency – The information should be consistent with nationally accepted and published guidelines and standards, for example:*
 - *Model Minimum Uniform Crash Criteria (MMUCC).*
 - *Manual on Classification of Motor Vehicle Traffic Accidents, 6th Edition, ANSI D16.1-1996.*
 - *Data Element Dictionary for Traffic Records Systems, ANSI D20.1, 1993.*
 - *EMS Data Dictionary (Uniform Pre-Hospital Emergency Medical Services Data Conference).*

The information should be consistent among reporting jurisdictions; i.e., the same reporting threshold should be used by all jurisdictions and the same set of core data elements should be reported by all jurisdictions.

- ❑ *Completeness – The information should be complete in terms of:*
 - *All reportable crashes throughout the state are available for analysis.*
 - *All variables on the individual crash records are completed as appropriate.*

- ❑ *Accuracy – The state should employ quality control methods to ensure accurate and reliable information to describe individual crashes (e.g., feedback to jurisdictions submitting inaccurate reports) and the crash experience in the aggregate (e.g., edit checks in the data entry process).*

- ❑ *Accessibility – The information should be readily and easily accessible to the principal users of these databases containing the crash information for both direct (automated) access and periodic outputs (standard reports) from the system.*

- ❑ *Data Integration – Crash information should be capable of linkage with other information sources and use common identifiers where possible and permitted by law.*

Status

Timeliness

Agencies are required to submit the PR-1 form to the Connecticut Department of Transportation (ConnDOT) within five days of the completion of the investigation. This requirement is met by the majority of agencies, though there are periodic issues that delay the submission of reports. Currently, the typical backlog for data entry is approximately three months. However, because there are a number of residual submissions, particularly in the area of fatalities, it is currently

approximately nine months after year end before a particular year's crash file is finalized. ConnDOT will supply early, provisional copies of partial year data if requested.

Consistency

A common reporting threshold is used for crashes by all jurisdictions. However, because there is not a designated crash data repository that is suitable for all stakeholders, they may go to different sources to obtain information. This has resulted in periodic consistency problems among published numbers released for various statistics.

The PR-1 is only 62 percent MMUCC compliant (48 of 77 MMUCC elements to be collected at the roadside), and only 23 of these elements are entered into the crash records system. A group is currently working on expanding the level of MMUCC compliance of the form, and electronic records capture will increase the capacity to capture a large number of these data elements in the crash records repository.

Completeness

It is assumed that most reportable crashes are received by ConnDOT. However, no PDO crashes on local roads are currently entered into the crash file. In addition, as noted above, only 1/3 of the data elements on the form are entered into the crash file.

Accuracy

An extensive set of edit checks is in place in both the ConnDOT Accident History File (AHF), and in electronic crash reporting software that is currently deployed at the Connecticut State Police and within local agencies. Only a small percentage of forms appear to be rejected by ConnDOT. This percentage appears to be nearly zero for those agencies with electronic reporting systems with their own edit checks.

Accessibility

ConnDOT has been forthcoming with the sharing of crash data from the AHF, even in the context of limited resources. ConnDOT produces a large number of standard reports on an annual basis, including the CAST (Connecticut Accident Summary Tables), TASR (Traffic Accident Surveillance Report), and SLOSSS (Suggested List of Surveillance Study Sites). ConnDOT also releases raw data upon request.

However, there are no analytical tools that are available to allow external stakeholders to access and analyze historical data in a useful and user-friendly way. This limits the ability of researchers to independently engage in complex and ad hoc queries that are typically important in conducting traffic safety and legislative research, thus limiting the utility of such research for planning purposes and legislative initiatives.

Recommendations

- See Section 1-A.

2-B: Roadway Information Quality

Advisory Excerpt:

- ❑ *Timeliness – The information should be updated as required to produce valid analysis. This implies that changes on the roadway (e.g., construction, sign improvements) should be available for analysis as soon as the project is completed.*
- ❑ *Consistency – The same data elements should be collected over time and for various classes of roadways.*
- ❑ *Completeness – The information should be complete in terms of the miles of roadway, the trafficway characteristics, the highway structures, traffic volumes, traffic control devices, speeds, signs, etc.*
- ❑ *Accuracy – The state should employ methods for collecting and maintaining roadway data that produces accurate data and should make use of current technologies designed for these purposes.*
- ❑ *Accessibility – The information should be readily and easily accessible to the principal users of these databases containing the roadway information for both direct (automated) access and periodic outputs (standard reports) from the files.*
- ❑ *Data Integration – In order to develop viable traffic safety policies and programs, the roadway information must be linked to other information files through common identifiers such as location reference point. Integration should also be supported between state and local systems.*

Status

Timeliness

Field inventory crews collect the data using Distance Measuring Instrument electronics, GPS units, and computer tablets by driving the roads and making appropriate changes to the existing road inventory for all state roads, highways, town roads, ramps, and state and forest roads.

Most roadway data files are updated yearly, and the number of days from construction completion to roadway file update is approximately three months. Traffic counts are taken on a three-year cycle so that the entire state system of roads is surveyed in three years. Local road inventory and road features are collected and maintained but not to the accuracy or timeliness of the state road system. Nonetheless no significant deficiencies are noted.

Consistency

Data among the various classes of state highways are similar and are comparable from year to year. There are fewer data items collected on town roads, but the town road files are comparable from year to year. The same is true for ramps and park and forest roads. Consistency with data in the HPMS file is about 95 percent.

Completeness

The ConnDOT maintains inventory files on both state-maintained and town-maintained roads. However, fewer data items are collected and maintained on the town-maintained roads. All public roads are in the road inventory, and 100 percent of traffic data based on actual counts are no more than 3 years old.

Accuracy

The road files are accurate for ConnDOT business uses. Less than five percent of errors were found during data audits of critical elements.

Accessibility

No significant deficiencies were noted concerning access to road data from users within ConnDOT. Access to users outside of ConnDOT is limited due to tort liability issues. However, users outside of ConnDOT are provided with subsets of previous year(s) data and statistical reports.

Data Integration

The roadway files can be linked through the use of the Department's ESRI-based GIS system and through a battery of mainframe programs.

Recommendations

- See Section 1-B.

2-C: Vehicle Information Quality

Advisory Excerpt:

- ❑ *Timeliness – The information should be updated at least annually.*
- ❑ *Consistency – The same data elements should be collected over time and they should be consistent with the data elements contained in the other components of the traffic records system.*
- ❑ *Completeness – The information should be complete in terms of the vehicle ownership, registration, type, VIN, etc. Information on vehicle miles traveled (VMT) by type or class of vehicle should be available. For commercial vehicles, completeness also involves collection and availability of standard data elements (such as the NGA elements, a set of data developed and recommended by the National Governors' Association for collection of data from crashes involving commercial vehicles).*
- ❑ *Accuracy – The state should employ methods for collecting and maintaining vehicle data that produces accurate data and should make use of current technologies designed for these purposes.*
- ❑ *Accessibility – The information should be readily and easily accessible to the principal users of these databases containing the vehicle information for both direct (automated) access and periodic outputs (standard reports) from the system, within the parameters of confidentiality.*
- ❑ *Data Integration – Vehicle information should be capable of linkage with other information sources and use common identifiers (e.g., VIN, Crash Reports Number, etc.) where possible and permitted by law.*

Status

Timeliness

Current processes are not timely requiring some 30 to 60 days for processing both registrations and titles. Input, paperbound from the DMV offices, is processed weekly. Transactions from on-line dealers are timely, but the volume of those transactions is a very small portion of the total volume.

Consistency

The file contains the data recommended by the *Advisory* and required for AAMVAnet support.

Completeness

The records appear to contain complete data.

Accuracy

Accuracy of vehicle title information is high. The DMV uses VINA to enhance accuracy, and close scrutiny of vehicle transactions is applied throughout the DMV processing.

Accessibility

The file information is accessible to authorized users detailed in Section 1-C, and it is available to other users consistent with the requirements of the Connecticut General Statutes.

Data Integration

The file is not linked with the driver file, the crash data file, or other traffic records system files.

Recommendations

- ❑ None apply with regard to quality. Deficiencies in the antiquated system are being corrected through the actions taken with existing records, the creation of new records, and the development of the new customer-oriented database that will encompass vehicles, drivers, and the other DMV transaction types.

2-D: Driver Information Quality

Advisory Excerpt:

- ❑ *Timeliness – Routine license issuance information should be updated at least weekly. Adverse actions (license suspension, traffic conviction) should be posted daily.*
- ❑ *Consistency – Information maintained on the state's Driver File should be compatible for exchange with other driver-related systems such as the National Driver Register (NDR), the Commercial Driver License Information System (CDLIS), and other applications for interstate exchange of driver records, especially those facilitated via the American Association of Motor Vehicle Administrators Telecommunications Network (AAMVANet).*
- ❑ *Completeness – The information should be complete in terms of data elements (e.g., unique personal identifiers and descriptive data such as name, date of birth, gender) and complete in terms of all prior driving history, especially adverse actions received from other states either while licensed elsewhere or while driving in other states.*
- ❑ *Accuracy – The state should employ methods for collecting and maintaining driver information which makes use of current technologies (e.g., bar codes, magnetic stripes).*
- ❑ *Accessibility – The information should be readily and easily accessible to the principal users of these databases, including driver licensing personnel, law enforcement officers, the courts, and for general use in highway safety analysis. The information should be available electronically for individual record access, and technology should be available to support automated downloading of summary data sets for analytical purposes, providing safeguards are in place to protect confidentiality within the guidelines established by the state.*
- ❑ *Data Integration – Driver information should be capable of linkage with other information sources and use common identifiers (e.g., driver license number, citation number, crash report number) where possible and permitted by law. Updates of driver information from courts should be accomplished through linkages, preferably electronic, to the driver history data.*

Status

Timeliness

The Judicial Information Systems (JIS) transmits conviction data on a nightly basis, and the DMV batches that information for weekly output. DMV is currently in the process of upgrading its operator control system to receive and post JIS transmissions on a daily basis. Timeliness is hampered as a result of input from the courts with missing or inaccurate identifiers that require extensive and labor-intensive efforts to match the records to current driver records.

Consistency

Data content meets the requirements of the NDR, CDLIS, and other applications of AAMVAnet and the recommendations of the *Advisory*.

Completeness

The data contain all of the descriptive elements for all drivers and all conviction information, convictions for unlicensed drivers, and convictions of Connecticut drivers received from other states.

Accuracy

The Social Security On-Line Verification process is used to promote accuracy. The SAVE system will be used in the upgraded system; other US Citizen and Immigration Services records are checked in the meantime.

Accessibility

Authorized users obtain records in accordance with procedures defined for commercial and citizen access in compliance with the Driver Privacy Protection Act. There is some use of barcode readers.

Data Integration

The driver file does not link with other files.

Recommendations

- Provide information for enforcement training to address the problem of incomplete and illegible citations.
- No recommendations are offered to DMV pertaining to data quality. The DMV is fully aware of the current problems in managing driver data and is taking the necessary steps to establish a superior data system that meets the needs for driver identification, control, and improvement.

Section 2-E: Enforcement/Adjudication Information Quality

Advisory Excerpt:

- ❑ *Timeliness - Information from an issued citation should be recorded on a statewide citation file as soon as the citation is filed in the court of jurisdiction. Information regarding the disposition of a citation should be entered on the citation file, as well as on the driver history record, immediately after adjudication by the courts.*
- ❑ *Consistency - All jurisdictions should use a uniform traffic citation form, and the information should be uniformly reported throughout all enforcement jurisdictions.*
- ❑ *Completeness - All citations issued should be recorded in a statewide citation file with all variables on the form completed including the violation type; the issuing enforcement agency; violation location; a cross reference to a crash report, if applicable; and BAC, where applicable, etc. All dispositions from all courts should be forwarded for entry on the driver history record.*
- ❑ *Accuracy - The state should employ quality control methods to ensure accurate and reliable information is reported on the citation form and updated on the citation and driver history files.*
- ❑ *Accessibility - The information should be readily and easily accessible to the principal users, particularly:*
 - *driver control personnel -- to take timely license sanction actions when appropriate.*
 - *law enforcement personnel -- for operational analysis and allocation of resources.*
 - *agencies with administrative oversight responsibilities related to the courts under its jurisdiction.*
 - *court officials -- to assess traffic case adjudication workload and activity.*
- ❑ *Data Integration - Citation information should be capable of linkage with other information sources, such as the crash and driver history data, and use common identifiers (e.g., crash report number, driver license number) where possible and permitted by law.*

Status

Timeliness

The Centralized Infractions Bureau (CIB) and the Superior Courts are using applications for following cases from the point of filing through prosecution to disposition. This has resulted in traffic cases being adjudicated more efficiently to include the reporting of convictions/dispositions to the Department of Motor Vehicles (DMV). Currently, the CIB and courts are submitting all disposition information (convictions and dismissals) electronically to the DMV daily.

The CIB indicated that there is up to a two-week delay in receiving Traffic Complaint forms from the law enforcement agencies.

Consistency

There are standardized citation forms used by law enforcement in Connecticut. Both forms contain data elements to identify the type of violation, location, date and time, the enforcement agency, court of jurisdiction, and final disposition.

Completeness

Connecticut has to rely on numerous databases to account for the complete “life cycle” of a traffic citation (distribution to an officer, to its issuance to an offender, to its disposition by the court, and its placement on the driver history file). This information is spread throughout various databases in the law enforcement agencies, in the CIB application, and in the Criminal Record and Motor Vehicle System (CRMVS).

Accuracy

The applications that are being used by the CIB and the Superior courts do contain quality control procedures and edits to identify errors made by law enforcement officers and data entry personnel.

However, it is not uncommon for DMV personnel to spend time researching the reliability of conviction information submitted by the courts and CIB for posting to the driver file. Often there is a discrepancy in the name, date of birth, or the driver license number resulting in a delay in posting the disposition information on the record.

Accessibility

Information about statewide violations and convictions is accessible to all authorized users. It is possible for law enforcement, prosecutors, and court personnel to have complete information about a defendant’s history regarding any other prior actions or cases that may be pending in another court’s jurisdiction.

Data Integration

The Executive and Judicial Branches have not yet identified a standard protocol and schemas to facilitate the exchange of information between various data systems within these branches. This is a significant decision in that it will impact the establishment of edits and validation routines between the existing custodial databases and to facilitate future interfaces with other statewide or local systems.

Recommendations

- See Section 1-E.

2-F: Injury Surveillance Systems Information Quality

Advisory Excerpt:

- ❑ *Timeliness - Ideally, the medical data on an injury should be available within an Injury Surveillance System (ISS) in the same time frame as data about the crash is available elsewhere within the traffic records system. However, the medical record on the individual may be incomplete initially because local protocols dictate that the medical record is only placed in the ISS when the patient leaves the health care system (e.g., discharged). Every effort should be made to integrate the ISS record with the crash data as soon as the medical records become available.*
- ❑ *Consistency - The reporting of EMS run data, hospital ED and admission data, trauma registry data, and long term health care data should be consistent with statewide formats which should follow national standards such as ICD-9-CM, as published by the Centers for Disease Control (CDC), the use of Injury Severity Scale standards, etc.*
- ❑ *Completeness - Although a trauma registry based ISS can provide a valuable source of ISS information, it cannot provide a complete picture of the injuries within a community or state. Where possible, the ISS should represent a consensus of all injuries that occur within the community. The ISS should, where feasible, be maintained at a state level but, at a minimum, should be maintained at the local level.*
- ❑ *Accuracy - The state should provide local health care providers with training and support in the accurate coding of injuries and should foster the proper use of the resulting ISS data through education of data users in proper interpretation of these data.*
- ❑ *Accessibility - Recognizing the issues of patient and institutional confidentiality, there should be mechanisms in place to balance the demands for data accessibility from end users and the requirements of state and local privacy rules. At a minimum, the traffic safety and injury control communities should be able to access these data in summarized reports designed to address specific needs, including injury type and severity cost data. Ideally, the system should support the creation of “sanitized” extracts of the ISS data for use in research, problem identification, and program evaluation efforts.*
- ❑ *Data Integration - The true power of the ISS is recognized when the ISS data are integrated with other traffic records system data such as traffic crash, roadway, and crime data, as well as internally between EMS runs, hospital/ED admission data and discharge data. The ISS should be implemented in a fashion that supports this integration in as efficient a manner as possible. Often GIS systems provide the ideal platform for linkage and interpretation of the ISS and traditional traffic records system data. The use of common identifiers whenever possible within the traditional traffic records system and ISS data systems will facilitate this integration effort.*

Status

EMS

Timeliness

Currently, 100 percent of the 276 EMS providers submit a quarterly paper report that includes transport volume rates and type of transport (medical or trauma) to the Department of Public Health (CDOPH), Operations Branch Information Technology Section (OBITS). This report does not contain pre-hospital patient care data.

The State will be migrating to a new electronic EMS patient care report starting in October 2007. The Office of Emergency Medical Services (OEMS) and OBITS are planning for the data to be submitted on a weekly basis.

Consistency

The quarterly paper report is entered into an electronic data base by OBITS staff. This paper report does not have a specified data format or data quality standard.

The State has adopted the NHTSA National Emergency Medical Services Information System Data Set (NEMSIS) Version 2.2.1 Gold Standard. All EMS providers must submit data using the NEMSIS XML data transfer standards by January 2008. A published NEMSIS Version 2.2.1 data dictionary and XML data schema is available to EMS providers.

Completeness and Accuracy

The new electronic pre-hospital patient care data collection system and repository will have data quality processes and edit checks performed on the data prior to being appended to the State EMS production database. Incomplete records will be rejected and essential data fields will be required to be completed prior to submission to the state. This will assist in the data quality and completeness of the statewide pre-hospital data.

Accessibility

Pre-hospital transport volume data is available to the public on the OEMS website. This data report does not contain any patient care data.

Trauma Data

There is not a centralized statewide Trauma Registry. There are 12 designated Trauma Facilities that collect trauma patient care data and maintain an in-house trauma registry. Data are not submitted to the state. However, a new electronic trauma patient care data collection system and repository is planned to be implemented, and deployment will start July 2007, with full deployment to be completed by February 2008.

Emergency Department/Hospital Discharge Data

Timeliness

These two data sets are submitted electronically by 29 not-for-profit hospitals. Data are submitted monthly to the state data repository. Data are not available in the Connecticut Hospital Association (CHA) Database until three months after the end of the calendar year. The most current year of Emergency Department data and Hospital Discharge data is 2006.

Consistency

The Emergency Department and Hospital Discharge data have the same standardized national standard UB-92 data elements and data format. These data are submitted electronically to the CHA. The data elements and data dictionary are available on the CHA website.

Completeness

All 29 not-for-profit hospitals are submitting data to the state data repository. The extent of traffic crash-related cases was not available from the Emergency Department and Hospital Discharge databases at the time of this assessment.

Accuracy

The Emergency Department and Hospital Discharge data are collected electronically and have edit checks and logic checks performed on the data prior to submission and appending to the state data repository. A data error report flags the errors and causes the user to correct the error prior to submission.

Accessibility

The Emergency Department and Hospital Discharge data are available upon request for a fee. The purchased data file has all of the patient identifiable data removed prior to release. This is a sanitized data file that includes both the Emergency Department and Hospital Discharge data and may be used for data analysis, research, or data linkage projects.

Mortality Data

Timeliness

Information was not available during the assessment related to the timeliness of the data.

Consistency

Mortality data are collected on a standardized form that is submitted to the Vital Records Program.

Completeness

All Medical Examiners, funeral home directors, justices of the peace, and healthcare facilities are reporting data to the state data repository.

Accuracy

Information was not available during the assessment related to the accuracy of the data.

Accessibility

Mortality data are available (electronic data file or hard copy) upon request for statistical analysis or research activities. The most current year of data is 2005.

Linkage/Integration

The EMS, Trauma, Emergency Department, Hospital Discharge, mortality, and crash data files (linked or used separately) can provide a platform to launch legislative initiatives and traffic safety and injury prevention activities that can have a positive impact on the health and welfare of the citizens and the State of Connecticut.

There are data linking activities and projects being undertaken within the state. Connecticut has entered into a cooperative agreement with the NHTSA to implement a Crash Outcome Data Evaluation System (CODES) probabilistic data linking project. Connecticut attempted this data linking project several years ago, but the project was not successful. The current CODES project is directed by the CDOPH Injury Surveillance Program. This is the second year of the four year project. The CODES project has two data analysts to perform the data linking activities. The data files that are to be used for this project are the crash, Emergency Department, Hospital Discharge, vital records, and EMS and Trauma data as they become available. Preliminary analysis is being conducted at this time on the crash, Hospital Discharge, and Emergency Department data files. Linking of these data files has not been completed at this time. There is a CODES advisory committee whose membership include the data owners and the data users.

The lack of statewide pre-hospital and trauma data collection systems and data repositories are critical injury surveillance system deficiencies. These deficiencies contribute to the inability to link the ISS components with each other or other traffic records system components.

The following issues are contributing factors in the lack of a comprehensive data-linking project and comprehensive functional statewide injury surveillance system:

1. Lack of an electronic EMS data submission and data repository system;
2. Lack of a statewide centralized Trauma Registry;
3. Lack of common data variables that can follow a patient/victim from the scene of an accident through the healthcare system, discharge, or death;
4. Lack of access to comprehensive medical and healthcare data files by authorized data partners (through signed agreements and data sharing practices) for research and injury prevention activities;
5. Lack of a comprehensive, statewide crash records system; and
6. Lack of stable fiscal foundations for the EMS and trauma data collection systems for maintenance, hardware, software, and sustainability.

Once these barriers are overcome, Connecticut will be in the position to apply for many funding opportunities that can assist in combating problems in traffic safety, injury prevention, and healthcare. In addition, Connecticut will have the final components of a statewide traffic records

system that will be proactive and innovative in addressing highway safety and injury prevention issues.

Recommendations

- ❑ Seek legislation to support the ongoing operation and life-cycle of the new EMS and Trauma data collection systems.
- ❑ Implement the NEMESIS 2.2.1 Data Set Gold Standard in several phases so the EMS providers will not be overwhelmed and will submit data to the state repository.
- ❑ Ensure that the EMS and Trauma data collection systems have inherent edit checks and logic checks to assist with the collection of quality data.
- ❑ Involve EMS providers, nurses, physicians, and stakeholders in pre-hospital and trauma data collection planning, development, implementation, and deployment activities.
- ❑ Establish a CODES Board of Directors that includes all data owners (OEMS, CHA, the Department of Information Technology, and the Department of Transportation). This will assist in establishing data access and availability for the data linking process. In addition this also assists in the promotion and accessibility of the CODES data for traffic safety and injury prevention activities.
- ❑ Collaborate with all data-sharing partners in developing protocols, memoranda of agreements, and data sharing methodologies that will enable the injury prevention and traffic safety community to conduct analytical and research activities as authorized users. This should be done under the guidance of the TRCC.
- ❑ Assure that all managers of the Connecticut Statewide Injury Surveillance System components participate fully in the TRCC.

SECTION 3: USES OF A TRAFFIC RECORD SYSTEM

The end purpose of a state's traffic records system is to establish a base of information and data that is available and useful to its customers, including operational personnel, program managers, analysts and researchers, policy makers, and the public. To be of optimal value to its customers, the system should provide for efficient flow of data to its users and be used in support of a wide range of activities. The traffic records system should support the needs of users at all levels of government (state & local), as well as the private sector and the public. The information demands from this wide range of professions and interests is driven by the need for operational data, as well as planning and evaluation information. Examples of uses are provided in the following sections.

3-A: Program Management and Evaluation

Advisory Excerpt: *Fiscal limitations make it imperative that existing resources (time, staff, funding) be used efficiently. The safety programs at all levels should be accountable for demonstrating the impact of their countermeasures. This places demands on the traffic records system for information to monitor progress and evaluate the impact of countermeasure programs (e.g., monitoring of construction zone crashes during a project, and changes in alcohol-related injuries as a result of an enforcement project).*

Status

The mission of the Governor's Representative for Highway Safety is to reduce the number and severity of traffic crashes on the State's roadways that result in deaths, injuries, and economic losses from property damage. Each year the office is required to review and update its goals and objectives to accomplish the mission. Strategies are developed and implemented as countermeasures to address identified traffic safety problems. These strategies become projects with performance measures that must be evaluated using traffic records data to study pre- and post-project conditions. Projects should be evaluated either administratively or for impact using traffic records data and other pertinent information.

The Transportation Safety Section (TSS) has basic resources available to manage the grants for highway safety projects. In addition to its staff, the TSS has the services of the Preusser Research Group, Inc. (PRG) to perform the services needed for the highway safety projects. PRG is aware of the limits of the crash file and pursues additional data and resources to make the most of the efforts to present a correct portrayal of the crash experience and other factors addressing highway safety problems.

The TSS obtains crash data arrays with the limited crash data available from the Department of Transportation (documented in Section 1-A of this report). Primarily, however, the program managers must rely on administrative evaluation self-reporting from the grantees. They are tasked with providing information supporting the activities of their projects.

Program managers perform the evaluations based upon the submitted reports.

Recommendations

- Apply every effort to correct the deficiencies of the crash file. Arrangements for promoting data usage, availability, and user resources are premature until the crash file is radically upgraded to become useful beyond its current utility limited to traffic engineering needs.
- Include appropriate disclaimers to users regarding known deficiencies of information derived from the current crash system. However, explain corrective actions being taken to improve the scope and quality of crash data.
- Develop a stakeholder-driven plan for a statewide highway safety data clearinghouse that includes crash data and the other traffic records data, with a broadly defined safety mission that meets the needs of both producers and consumers of highway safety data.

- ❑ Develop a query and analysis tool suite that is provided with the highway safety data clearinghouse, providing stakeholders with the capability to access and analyze all categories of highway safety data without having to request special reports and raw data dumps from various agencies.

3-B: Research and Program Development

Advisory Excerpt: *Data-driven planning decisions within the highway and traffic safety communities necessitates identification of trends and baseline measures. In order to identify safety problems and trends, the traffic records system should provide comparable data, over time, that can be easily linked and analyzed, and that data should be made available to a wide range of users (e.g., State Traffic Safety Offices for development of the safety plan, local police agencies for identification of enforcement zones, etc.).*

Status

The Transportation Safety Section (TSS) should be considered the focal point for highway safety issues within the State. The TSS should provide leadership by developing, promoting, and coordinating programs; influencing public and private policy; and increasing public awareness about highway safety issues.

The office utilizes the services of the researchers at the Preusser Research Group, Inc. (PRG) to conduct statistical analysis and prepare reports addressing Connecticut's traffic safety issues. These researchers make use of the information from various traffic record files for highway safety planning and program development. The analysts do obtain and use information from the crash file, driver license file, court disposition files, and seatbelt compliance surveys to develop strategic initiatives for all of the program areas in highway safety. It should be emphasized that there are limitations in the completeness of these files, in particular the crash file.

Recommendation

- See recommendation in Section 3-A regarding creation of a highway safety data clearinghouse.

3-C: Policy Development

Advisory Excerpt: *Informed decision making to support highway and traffic safety policy decisions is only possible with timely, accurate, and accessible information. Traffic records systems data should also be available to promptly respond to legislative and executive requests.*

Status

There does not appear to be a central focal point for highway safety information in Connecticut. Currently requests for data to support safety policy decisions are directed to a number of agencies in the State. While the Connecticut Department of Transportation (ConnDOT) is recognized as the custodian of the crash file, safety information from other than crash data is either not available or known by all safety stakeholders.

Many decisions at the policy level require safety information from traffic record sources other than crash data. The traffic records coordination function now in the Transportation Safety Section office would seem to be the logical setting to coordinate the development of data systems and to support highway safety policy decisions. However, this office is five levels below the Chief Executive Officer (Commissioner of Transportation). This does not imply that this office is not the appropriate location for the traffic records coordinating function but rather its setting in the ConnDOT organization implies a relative low priority for the function.

For the Traffic Records Coordinating Committee (TRCC) to effectively coordinate and support the sharing and dissemination of highway safety data to assure all legitimate safety stakeholders' data needs are met. This will require an acknowledgement by an executive level coalition of safety stakeholders of its importance and the concomitant resources to accomplish this function.

Recommendation

- ❑ Insure that the TRCC is appropriately structured to exercise the authority to effectively coordinate and support the sharing and dissemination of highway safety data to assure all legitimate safety stakeholders' data needs are met.

3-D: Private Sector and Public Requests

Advisory Excerpt: *The traffic records system, through a combination of information sources, technical staff, and public records access policies, should be capable of producing scheduled and ad hoc reports. The media, advocacy groups, safety organizations, the general public, and internal (state and local) users have demands for regular reporting as well as for unforeseen ad hoc reports and access to data extracts. There should be a mechanism in place for establishing what data should be available to public and private sector users, within the laws protecting individual privacy and proprietary information.*

Status

The Connecticut Department of Transportation (ConnDOT), Bureau of Policy and Planning, Transportation Safety Section (TSS) responds to data requests for crash information and ad hoc reports. TSS has contracted the services of the Preusser Research Group, Inc. for analytical and statistical services.

The most recent year of crash data is 2005. There is a statistical *Connecticut Traffic Accident Facts 2004* publication available to the public on the ConnDOT website at <http://www.ct.gov/dot/cwp/view.asp>. The following reports and traffic safety information are available on the ConnDOT website:

- Air Bags
- Bicycle Safety
- Child Safety Seats
- Driving Safety Tips
- Impaired Driving
- Motorcycle Safety
- School Bus Safety
- Seat Belts

The ConnDOT and TSS plan to develop a public website that will provide traffic safety data and statistical reports to the public in the near future.

The Preusser Research Group, Inc. has traffic safety reports and studies available to the public at <http://www.ct.gov/dot/cwp/view.asp>. A few of the traffic safety topics available are:

- Occupant Restraints
- Graduated Driver Licensing
- Youth Alcohol
- Motorcycles
- Trucks
- Alcohol Impaired Drivers
- Drug Impaired Drivers
- Crash Analysis
- Aggressive Driving

The Connecticut Department of Public Safety has traffic safety information and statistical reports available to the public at <http://www.ct.gov/dps/cwp/view.asp>. The following information is available:

- Aggressive Driving
- CSP and Kids
- Distracted Driving
- Drunk Driving
- Seatbelt Safety
- Bicycle Safety

Connecticut Injury Surveillance Section within the Connecticut Department of Public Health is the State's public health injury surveillance and prevention authority. Electronic data files from several sources (crash, vital records, Emergency Department and Hospital Discharge) are placed in an Injury Surveillance database and are used for statistical and research activities.

Recommendation

- See recommendation in Section 3-A regarding the creation of a highway safety data clearinghouse.

SECTION 4: MANAGEMENT INITIATIVES

The development and management of safety programs should be a systematic process with the goal of reducing the number and severity of traffic crashes. This process should ensure that all opportunities to improve highway safety are identified, considered, and implemented. All implemented highway safety activities should be evaluated. The evaluation results should be used to improve and facilitate the selection and implementation of the most efficient and effective highway safety strategies and programs. This process can be achieved through the following initiatives.

4-A: Coordination

Advisory Excerpt: *There should be a statewide traffic records coordinating committee (STRCC) with representation of the interests from all levels of public and private sector traffic safety stakeholders, as well as the wide range of disciplines that have need for traffic safety information. This committee should be formed within state policy and legal guidelines and institutionalized and empowered with the responsibility (through formal agreements) to recommend policy on traffic records. The state should provide a mechanism to ensure support for the administration and continuance of the coordinating committee, as well as technical guidelines. The STRCC should be responsible for adopting requirements for file structure and data integration, assessing capabilities and resources, establishing goals for improving the traffic records system, evaluating the system, developing cooperation and support from stakeholders, and ensuring that high quality and timely data will be available for all users.*

Status

The leveraging of resources is one of the inherent benefits of having continuous communications between and among members of the traffic safety community. An active Traffic Records Coordinating Committee (TRCC) facilitates this effort.

Any improvements to the state's traffic records system are dependent on multi-agency coordination. Connecticut's TRCC has been in existence since 1993 and now meets monthly.

The State has a designated traffic records coordinator. The administrative support for the Committee is provided by a contractor hired by the Transportation Safety Section (TSS) who provides guidance to the members of the TRCC.

The Committee functions as a working group, and its primary purpose is to serve as a forum for the various stakeholder agencies to discuss and provide status reports regarding traffic records initiatives that are occurring within their agencies.

The Committee's primary focus for the last year has been the preparation of the *State of Connecticut Strategic Plan for Traffic Records* as part of their application for a 408 grant to the National Highway Traffic Safety Administration (NHTSA). The purpose for this action was to meet the requirements of a NHTSA grant program to improve state traffic safety information systems under Section 2006 of the Safe, Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy for Users (SAFETEA-LU).

The TRCC is about to undertake numerous initiatives. One involves the electronic submission of crash records to ConnDOT using the Connecticut State Police's NexGen accident data collection application. All of the projects shown in the *Strategic Plan* are going to need support and direction if they are to benefit the entire traffic safety community. The present configuration of the Committee does not have the authority or power to properly direct the development and integration of these projects.

Representation is currently lacking from the policy level of the Department of Transportation, Department of Public Safety, Department of Public Health, Department of Motor Vehicles, Department of Information Technology, the Office of Management and Policy, and the Superior

Court. At one time an inter-agency partnership at the policy level existed known as the Connecticut Safety Commission. This could be the model for establishing an executive level of the TRCC.

An executive level is necessary to create vision, mission, and policy to guide the TRCC. Additionally, these members should set strategic goals for project development, approve projects, authorize funding, and champion the cause for traffic records. This is critical if the state is to develop a comprehensive integrated traffic records system with the necessary data linkages between and among existing and proposed traffic record files.

The technical level committee membership includes representation from most stakeholder agencies. These members are charged with providing technical support, project implementation, and collaboration. These members are the collectors, managers, and users of traffic records data from the public sector (state and local) organizations.

In order for the members of TRCC to determine if significant progress is being made towards achieving the performance measures stated in the *Strategic Plan*, it will be necessary for them to periodically assess the current environment and review the progress of current initiatives. This will assist the state in moving towards a traffic records system that meets the needs of the traffic safety community.

A properly constituted TRCC provides for its members the opportunity to coordinate all traffic records projects and become informed about the component parts of, and data sets within, a traffic records system. The strategic implementation of the various tenets of the traffic records system will result in economies of scale through joint purchase power, eventual integration of new systems, and the cooperative development of data elements and data dictionaries.

Recommendations

- Restructure the TRCC to include an Executive Level to provide the necessary policy and strategic direction for the development of a comprehensive traffic records system.
- Involve the Executive Level members directly in the oversight of the TRCC's activities.
- Develop project governance for these initiatives that place the TRCC executive level group in the accountability and decision-making role.
- Encourage someone from among the membership of the Executive Level to champion traffic records.
- Hire a project manager on the TSS staff to provide full time administrative support for the TRCC.

4-B: Strategic Planning

Advisory Excerpt: *The traffic records system should be operated in a fashion that supports the traffic safety planning process. The planning process should be driven by a traffic records system strategic plan which helps state and local data owners support the overall safety program needs within the state. This plan should address such activities as:*

- A continuous review and assessment of the application of new technology in all phases of its data operations: collection, processing, retrieval, and analyses. The strategic plan should address the adoption and integration of new technology, as such change is feasible and desirable in improving the traffic records system.*
- Promotion of local data systems that are responsive to the needs of local stakeholders.*
- Identification and promotion of integration among state and local data systems to eliminate duplication of data and to help assure current, reliable information.*
- Data integration to provide linked data between components of the traffic records system (e.g., Crash Outcome Data Evaluation System [CODES]).*
- Coordination of the federal systems (e.g., FARS, NDR, CDLIS) with the state records systems.*
- Recognition and incorporation, where feasible, of uniform data elements and definitions and design standards in accordance with national standards and guidelines (e.g., MMUCC, ANSI-D20.1, ANSI-D16.1, NGA, EMS Data Dictionary, etc.).*
- Changing state and federal requirements.*
- Capture of program baseline, performance, and evaluation data in response to changing safety program initiatives.*
- Establishment and updating of countermeasure impacts (e.g., crash reduction factors used in project selection and evaluation).*

The strategic plan should be endorsed by, and continually updated through the activities of, the statewide traffic records coordinating committee.

Status

The Deputy Commissioner of the Connecticut Department of Transportation (ConnDOT), the designated Governor's Highway Safety Representative, submitted a strategic plan (*State of Connecticut Strategic Plan for Traffic Records*) which was the application for a 408 grant to the NHTSA. The impetus for this action was to meet the requirements of a NHTSA grant program to improve state traffic safety information systems under Section 2006 of the Safe, Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy for Users (SAFETEA-LU).

The application and accompanying *Plan* has been reviewed by NHTSA to determine whether the SAFETEA-LU requirements are met. The following comments are intended as an aid to the Traffic Records Coordinating Committee (TRCC) in future strategic planning activities to achieve successful implementation of selected projects. It is not to be viewed as an endorsement of the submitted *Plan* nor should this be viewed as part of the NHTSA grant approval process for the submitted *Plan*.

The following is an Assessment team review of the *Plan* with consideration to the provisions set forth in SAFETEA-LU and the development process used by the TRCC. SAFETEA-LU provides that a Strategic Plan for Traffic Records improvement shall be:

a) approved by the State’s TRCC;

The TRCC satisfies the requirement in SAFETEA-LU that a state TRCC must have a multidisciplinary membership that includes, among others, managers, collectors, and users of traffic records and public health and injury control data systems, and the authority to approve the state’s Strategic Plan.

Although the certification documents were not present in the *Plan* reviewed, appendices indicate that the TRCC was in charge of the development and approval of the submitted *Plan* and that the authority was vested in the TRCC by letters of appointment from the respective cabinet level executives.

(b) address existing deficiencies in a State’s highway safety data and traffic records system;

An in-house traffic records assessment was performed in 2004 that was the basis of the identification of deficiencies in the current traffic records system. The assessment followed a “peer” review team approach, involving a team of individuals with expertise in major highway safety program areas.

(c) specify how deficiencies in the system were identified;

The deficiencies identified through the review process mentioned above focused on the quality characteristics suggested in the *Federal Register- State Traffic Safety Information System Improvement Grants*. The projects included in the *Plan* were reviewed for their impact on timeliness, consistency, completeness, accuracy, accessibility, and integration. However, the system components were not reviewed through an assessment by an independent agent as recommended under SAFETEA-LU legislation which states:

“SAFETEA-LU provides that a State may qualify for a successive year grant by certifying that an assessment or audit of its highway safety and data and traffic records system has been conducted or updated within the preceding 5 years (an “assessment” or “audit”)” it further states that *“... an assessment or audit used by a State to meet the section 408 Program’s assessment or audit requirement should be (a) an in-depth, formal review of a State’s highway safety data and traffic records system that addresses the criteria in NTSC’s Traffic Records Highway Safety Program Advisory, (b) that generates an impartial report on the status of the highway safety data and traffic records system in the State, and (c) that is conducted by an organization or group that is knowledgeable about highway safety data and traffic records systems, but independent from the organizations involved in the administration, collection and use of the highway safety data and traffic records systems in the State.”*

The “peer” review conducted by the TRCC was a commendable effort and addresses the issues as presented in the *NHTSA Traffic Records - A Highway Safety Program Advisory* but did not meet the criteria of an impartial report conducted by an independent agent.

(d) prioritize the needs and set goals for improving the system;

The *Plan* did not describe the method used to set priority for the projects presented. It was acknowledged that the TRCC set priority through two-thirds of the members present by consensus. While the method described above was acceptable, bias is introduced through the separate ranking by each agency without the benefit of discussion in open forum with the full TRCC membership. After discussion, ranking can then be done in a modified Delphi method.

A more thorough prioritization method should be developed and adopted by the TRCC for future updates and 408 grant submissions. The NHTSA-suggested four-box priority method to categorize projects by costs and expected benefits is one to consider. Projects submitted would be classified as Low Cost–High Payoff, Low Cost–Low Payoff, High Cost–Low Payoff, High Cost–High Payoff.

(e) identify performance-based measures by which progress towards those goals will be determined;

This is an area in the submitted *Plan* that is ambiguous. To measure progress on how the projects will achieve the stated goals or objectives, measures must be quantifiable. Also, a benchmark for each must be established that reflects current status. A listing of expected benefits/impacts shown on the individual projects can be the basis for developing the performance measures. In different locations in the *Plan* benchmarks are shown that should be included in each project submission.

Milestones are shown for the projects; however, it would be more acceptable to show project timelines for various action items. These can be expanded to show resources required by activity, and costs relating to each action item can be estimated. This information can then be used to show budget impact and the source of all funds identified.

(f) specify how the State will use section 408 and other funds of the State to address the needs and goals identified in its Strategic Plan.

This is another ambiguous area in the *Plan* that needs to be addressed. Total project costs from all sources need to be identified. This includes in-house matching funds and resources required for each action item. The project descriptions and format used may be adequate for the grant submission, but much more detail and adherence to project management processes will be necessary for the project manager and the TRCC to monitor progress and to adjust and modify projects.

Accountability is an important attribute in strategic planning to assure some level of achieving success for each project. Rather than describing persons who completed the form describing the project and the person to contact regarding the project, it should be clearly indicated who is responsible and accountable for the project completion.

Overall the submitted *Plan* represents a considerable effort given the time and resource restraints under which it was conducted. However, it will be difficult to show measurable progress for the projects submitted with the currently described tasks for each project. The tasks need more

detail and should be presented in an appropriate project management format. Project management software, GANNT charts, or other project management tools should be examined for use by the TRCC.

Recommendations

- Task the TRCC with the responsibility to follow-up on the NHTSA review of the 2006 grant submission, and address the concerns cited above.
- Use the recommendations in this Assessment, and begin the process for the second year update and the 408 grant submission for 2007.
- Establish project management procedures for each project.
- Establish a progress reporting and monitoring system to track all projects listed in the *Plan* regardless of funding sources.
- Develop benchmark and performance measures in future *Plan* updates collaboratively with the project manager, other traffic records partners that may be affected by the project results, and the Traffic Records Coordinator to assure consensus is reached on the appropriate measures to be monitored for progress.
- Provide periodic reports and briefings to the Executive Level of the TRCC.

4-C: Training and Staff Capabilities

Advisory Excerpt: *Throughout the data gathering, interpretation, and dissemination process, there is a need for training and technical support. A training needs analysis should be conducted for those highway safety professionals involved in program development, management, and evaluation. Training should be provided to fulfill the needs identified in this analysis. There should also be an ongoing outreach program for users of traffic safety program information to assure that all users are aware of what is available and how to use the information to fulfill their needs.*

Status

Basic training is provided at the Connecticut Police Academy on the completion of the PR-1 form and on crash investigation. Training is then available within the various agencies regarding the use of crash reporting software used by that agency.

Data users appear to be well aware of opportunities and methods for utilizing existing crash data. Currently, however, there is no organization with a vested interest in making data available to the various at-large stakeholders. Thus, there is no standard source for data, no standard interface to the data, and no training program in place for data users. As such, there is the potential for data misuse resulting in inaccurate conclusions.

Recommendations

- Continue to conduct training sessions for the State Police and local law enforcement agencies on the completion of the crash report form and the use of electronic crash reporting software.
- Develop a standard data orientation and training manual for data users.

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GLOSSARY OF TERMS AND ACRONYMS

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|-------------------|--|
| AADT | Average Annual Daily Traffic |
| AAMVNet | American Association of Motor Vehicle Administrators Telecommunications Network |
| ADT | Average Daily Traffic |
| ANSI | American National Standards Institute |
| ANSI D16.1 | Manual on Classification of Motor Vehicle Traffic Accidents |
| ANSI D20.1 | Data Element Dictionary for Traffic Record Systems |
| BAC | Blood Alcohol Concentration |
| CCSRs | Comprehensive Computerized Safety Record-keeping System |
| CDC | Centers for Disease Control |
| CDLIS | Commercial Driver License Information System |
| CODES | Crash Outcome Data Evaluation System |
| ED | Emergency Department |
| EMS | Emergency Medical Services |
| FARS | Fatality Analysis Reporting System |
| FHWA | Federal Highway Administration |
| FMCSA | Federal Motor Carrier Safety Administration |
| GIS | Geographic Information Systems |
| GPS | Global Positioning System |
| ICD-9-CM | International Classification of Diseases, Volume 9, Clinical Modification |
| ISS | Injury Surveillance Systems |
| MMUCC | Model Minimum Uniform Crash Criteria |
| NDR | National Driver Register |
| NGA | National Governors' Association |
| NHTSA | National Highway Traffic Safety Administration |
| NSC | National Safety Council |
| STRCC | Statewide Traffic Records Coordinating Committee |
| TEA-21 | Transportation Equity Act for the 21 st Century |
| TRB | Transportation Research Board |
| VIN | Vehicle Identification Number |
| VMT | Vehicle Miles Traveled |