STATE OF ILLINOIS

TRAFFIC RECORDS ASSESSMENT

MAY 1 – 5, 2006

National Highway Traffic
Safety Administration
Technical Assessment Team

Allen Parrish, Ph.D.
Robert Scopatz, Ph.D.
Langston A. Spell
Carol Wright, R.N.
John J. 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.

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EXECUTIVE SUMMARY

Upon request by the Illinois Division of Traffic Safety (DTS) of the Illinois Department of Transportation (IDOT), the National Highway Traffic Safety Administration (NHTSA) assembled a team to facilitate a traffic records assessment. Concurrently the DTS 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 medical data systems) conducted the assessment May 1 to 5, 2006.

The scope of this assessment covered all of the components of a traffic records system. The purpose was to determine whether the Illinois 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 management of the state's highway safety programs.

Crash Records System

Crash reports, about 500,000 annually, are submitted by state and local law enforcement agencies to the IDOT where they are entered into the Crash Information System (CIS) which is the state's official crash file. Reports are submitted either on the paper crash report, Illinois Traffic Crash Report (SR1050A 50M; reprint 10/05) or electronically via the Mobile Capture and Reporting (MCR) system.

Reports submitted on the paper form undergo a time consuming, multi-step process to enter the data into the CIS. Due to a change in systems, a loss of contractor staff, and processing delays, crash data analysis and data availability are delayed approximately 18 months past the end of a calendar year. 2004 data are not yet available for statewide analysis. Through both temporary and long term fixes, the IDOT is hopeful that the backlog will be reduced to a more manageable level.

While a major objective of the MCR electronic data collection tool was to improve the timeliness of crash reporting, at present the MCR data are not transferred electronically to the CIS. The reports are received at a client server in IDOT but must be printed and placed in the processing queue with the paper reports. However, the state has developed the necessary interface but is awaiting other changes to the data entry process before it can transfer the data from the MCR to the CIS. The Illinois State Police (ISP) and several local agencies are using the MCR, accounting for approximately 15 percent of all crash reports, and the state is promoting wider adoption.

Several local law enforcement agencies either are considering third party data collection products or already maintain an electronic Records Management System (RMS) supported by a third party vendor. IDOT has developed, but not fully implemented, standards for accepting electronically transferred data from such non-MCR systems. Until such transmission processes are established, these agencies will be required to print hard copy reports from their local systems to send to IDOT, even after the CIS begins to accept electronic reports from the MCR.

IDOT needs to develop standards for accepting electronic data from non-MCR sources such as agencies using third party data collection systems or from agencies maintaining an RMS. An import format was provided to the Chicago Police Department to address the critical need for their data, accounting for about one-fourth of the crashes in the state. It is possible that this same format could be used by other agencies.

Citation Records System

No single source of data exists in Illinois containing information about the life cycle of citations including information about the original arrest and all subsequent actions including the final disposition, i.e., a statewide citation tracking system. Data related to the processing of citations and their subsequent dispositions reside in the various and separate case management systems in the individual courts, as well as in the various enforcement agencies, but the data are not collected on a statewide basis. A citation tracking system is necessary to analyze the effectiveness of enforcement of the State's traffic laws, to track the processing of citations and their adjudication, and to insure the accurate and complete posting of convictions on the driver history records. Illinois, as do most states, conducts various enforcement related campaigns, such as sobriety checkpoints. Without a comprehensive citation tracking system, the state can evaluate the effectiveness of these campaigns only in terms of the number of arrests. The real effectiveness in terms of final judicial sanctions and penalties, or lack thereof, cannot easily be evaluated without a fully functional citation tracking system.

Driver Records System

A major court user of driver records reports a significant problem with finding multiple records on the same individual. The issue arises from inquiries made to determine whether a driver record exists for defendants claiming they have no driver license or record. After finding multiple records with minor variances in the descriptive information on the same person, verification was established through fingerprint records in the court's system. Despite the controlled identification requirements described on the DSD web site and the use of the Social Security On Line Verification process, there appears to be a breakdown in the actual practice of assuring correct and unique personal identification. This further provides the opportunity for issuing multiple licenses to a single individual as anecdotally established during the course of this assessment.

A joint effort between the Secretary of State (SOS) and the Administrative Office of Illinois Courts (AOIC) provides for electronic transfer of conviction records from the courts to the SOS, accounting for roughly 90 percent of all convictions.

Roadway Information System

A fundamental concern in the use of the information systems used by state and local road safety analysts is the accurate location of data on their respective road systems. IDOT uses several location reference methods: key route number, route name and milepost, street name and/or address, link-node, and latitude/longitude coordinates.

The use of multiple location referencing methods causes confusion resulting in the need for IDOT to create separate road files for each user. Further, the conversion of location data from

one method to another for use in the various data systems introduces the potential of increased incompatibility and inaccuracies in location data.

Healthcare Data Systems

Illinois does not have a functional comprehensive statewide Injury Surveillance System although there are several key components with varying degrees of maturity and functionality within the state. These key components are: the Illinois Department of Public Health (IDPH), Emergency Medical Services, and Highway Safety Division which provides regulatory oversight for the EMS and Trauma System; the IDPH Division of Vital Records which maintains mortality data; and the Division of Health Statistics which is the hospital discharge data repository. Emergency Department data are to be collected starting in 2007.

The CODES Project is in the implementation phase of the project and has completed the first attempt to link the crash data file with the hospital discharge data file. The EMS pre-hospital, trauma and discharge patient care data, mortality data, and crash data files will be used in this probabilistic data linking project. The CODES Project's focus is to follow the crash victim from the scene of the crash through the healthcare system and disposition to home, rehabilitation or death.

Traffic Records Coordinating Committee (TRCC)

The state has created a TRCC and has executed memoranda of agreement among the heads of the principal agencies. However, the existing makeup is a mixture of executive and technical members. It does not have the two-tier structure generally found to be the most effective means to pursue the development of a traffic records system that supports data driven programs and policies.

It needs to be restructured to consist of two levels: an executive level and a working/technical level. The executive level should set the mission of the TRCC and provide oversight, approval authority, and resource support for actions proposed by the technical level members. The executive level group may not need to meet as frequently as the technical level members, only when necessary to approve major projects or receive progress reports on ongoing and previously approved activities. The newly organized TRCC will also need to examine its membership roster to insure that all stakeholders have been included.

This combined executive and technical level TRCC will be critical for the state to properly develop, maintain, and track the progress of a Strategic Plan for Traffic Records as recommended in this report and as required by the SAFETEA-LU legislation.

Strategic Planning

The IDOT is taking the lead in preparing a multi-year highway safety data and traffic records system strategic plan. The impetus for this action is to meet the requirements of a National Highway Traffic Safety Administration (NHTSA) grant program to improve State traffic safety information systems under SAFETEA–LU.

The Secretary of IDOT assigned a high level member of his staff (a special assistant) to facilitate this effort and is in the process of soliciting support from the other major safety stakeholders

through informal or formal mechanisms such as a memorandum of understanding (MOU). This is a laudable and essential action that will focus attention and resources toward achieving a successful strategic plan.

Following are the major recommendations to address the deficiencies noted here and to improve the state's traffic records system. The references indicate the sections of the report from which the recommendations are drawn.

MAJOR RECOMMENDATIONS

Roadway Data

Accelerate the development and use of the GIS as the IDOT enterprise system for all road and road related information systems. **(Section 1-B)**

Accelerate the deployment and use of Global Positioning System (GPS) devices for the capture of location data by latitude/longitude coordinates for road and crash data. **(Section 1-B)**

Allow all legitimate users of IDOT data direct access to the GIS or provide them with the information in a medium and format for their manipulation and analysis. **(Section 2-B)**

Crash Data

Implement the CIS revision to support electronic transfer and image creation from reports created using MCR. **(Section 1-A)**

Plan long-term for CIS to accept crash report data from other (non-MCR) field data collection and Records Management Systems software used by law enforcement agencies. **(Section 1-A)**

Invest in automation for Chicago Police Department to reduce the number of paper crash reports processed manually at IDOT. **(Section 1-A)**

Develop a set of standard quality control metrics for reporting crash data quality on a routine, repeatable basis periodically throughout the year. **(Section 2-A)**

Driver & Vehicle Data

Begin recording owner names and addresses for persons with the identical requirements for those elements in the driver files so that the requirements are consistent throughout the offices of the Secretary of State. **(Section 1-C)**

Record the driver histories from previous states of record on non-commercial drivers (as required for commercial driver records). **(Sections 1-D & 2-D)**

Coordinate the overlapping requirements of the crash file processing with those of the DSD: discover the means to assist with clearing the backlog of crash reports (which are needed for

safety analysis and for entry into the driver records in a timely manner) and the timely and correct identification of drivers in crashes not meeting the financial responsibility requirements. Without mutual support, both operations are hampered. **(Sections 1-D & 2-D)**

Determine what is causing the creation of multiple driver records on the same individual, and correct the problem with strict adherence to the identification processes, and provide training throughout the field offices to assure that the DSD can identify problem drivers for the licensing and control operations of the DSD, the courts, and other states. **(Sections 1-D & 2-D)**

Healthcare Data

Use one data format for the EMS run form. Discontinue accepting both data formats or develop a data conversion process to map the data. **(Section 2-F)**

Move forward with a total electronic data submission process for EMS run reports. **(Section 2-F)**

Refine the CODES Board of Directors to include only the data owners. This will encourage open honest discussion of data quality issues and data linking processes. **(Section 2-F)**

Establish a CODES Advisory Group (data users) that can provide direction and vision for the use of the linked CODES data. **(Section 2-F)**

Promote the availability and accessibility of the healthcare data, e.g., a State of Healthcare in Illinois Legislative Report. **(Section 3-D)**

Training

Provide training opportunities to those local law enforcement agencies that are submitting paper crash reports. **(Section 4-C)**

Citation Data

Promote and assist local courts without computerized case management systems and/or electronic conviction filing, in obtaining computerized management systems and in electronically filing convictions with the SOS office. **(Section 1-E)**

Establish a statewide citation tracking system. **(Section 1-E)**

TRCC

Identify an "executive group" from the leadership of participating agencies within the TRCC. **(Section 4-A)**

Strategic Planning

Task the TRCC with conducting a traffic records system strategic plan that helps state and local data owners support the overall safety program needs. This Strategic Plan should:

- Specify the requirements for and from each component of the traffic records system.
- Identify the goals for improvements for each of the traffic records system components.
- Set priorities for each goal with a timeline for implementation.
- Secure commitment to the goal implementation and the timeline.
- Establish performance-based measures for each of the goals and the strategies developed to achieve the goal.
- Develop a monitoring process to track progress for each goal and a mechanism to modify or replace goals as required. **(Section 4-B)**

ACKNOWLEDGMENTS

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Kay Banks support during the preparation phase of this report was especially appreciated. The team wishes to recognize her patience, skills, cooperative spirit, and sense of humor.

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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

Sandra Klein
Deputy Director
Illinois Department of Transportation
(IDOT)

Eugene D. Brenning
Special Assistant to the Director
IDOT

Mike Stout
Director
IDOT

Mehdi Nassirpour
Chief, Research and Development
IDOT

Mark Kinkade
Bureau Chief
IDOT

Michael Handley
MCR
IDOT

Anne Mohay Hillen
Technical Manager
IDOT

DinahWillard
Technical Manager
IDOT

Katie Nation
Technical Supervisor
IDOT

David Beasley
Master Sergeant
Illinois State Police

Steve Mattioli
Division Administrator
Federal Motor Carrier Safety Administration

Tom Wise
HM Compliance
IDOT

Rob Robinson
Data Management Chief
Office of Planning and Programs, IDOT

Jim Garceau
PM
Bureau of Information Processing

Priscilla Tobias
State Safety Engineer
IDOT

Joe Hill
Engineer of Operations
IDOT

Rich Forshee
Chief, Discharge Data Section
Illinois Department of Public Health (IDPH)

Rod Smith
Data Process Administrator
Office of the Secretary of State (ISOS)

Mike Steiner
Manager, Grants/Programs
Driver Services Department (DSD)/ISOS

Connie Satlar
Manager, ISS
DSD/ISOS

Bruce Tanner
Court Liaison Manager
DSD/ISOS

Honorable John Doody
Cook County Circuit Court

Catherine Sanders
Supervisor ASA
CCSAO

Dan Mueller
Court Analyst
Administrative Office of Courts

John Webber
Assistant to Secretary
IDOT

Scott Slavin
Sergeant
Chicago Police Department

Mike Lone
Sheriff
Sangamon County

Martha Hammer
Records Administrator
Peoria Police Department

Matt Newell
City Engineer
City of Decatur

Rita Black
Transportation Engineer
CCRPC

Tom Cissell
Project Manager
Oates Associates

Parry Frank
Transportation Analyst
CATS

Honorable Jeffrey Ford
Circuit Court

Karen Magee
Technical Manager
IDOT Traffic Safety

Lori Midden
Technical Manager
IDOT Traffic Safety

Deleted: Midder

Mary Ann Paulis
Technical Manager
IDOT Traffic Safety

Joyce Schroeder
Technical Manager
IDOT Traffic Safety

Michael Johnson
FARS
IDOT

Sherri Akers
ABC
Illinois State Police (ISP)

Cheri Strode
Executive I
ISP

Fran Schnerf
Executive I
ISP

Hope Evans
Executive I
ISP

John Cullerton
Senator
Illinois General Assembly

Norman Stoner
Division Administrator
FHWA

Evelyn Lyons
EMSC Manager
IDPH

Susan Fitzpatrick
CODES Analyst
IDOT

Vickie Williams
Vital Records
IDPH

Suzanne Gray
EMS/HS
IDPH

David Zavattero
Information Technology Services
IDOT

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

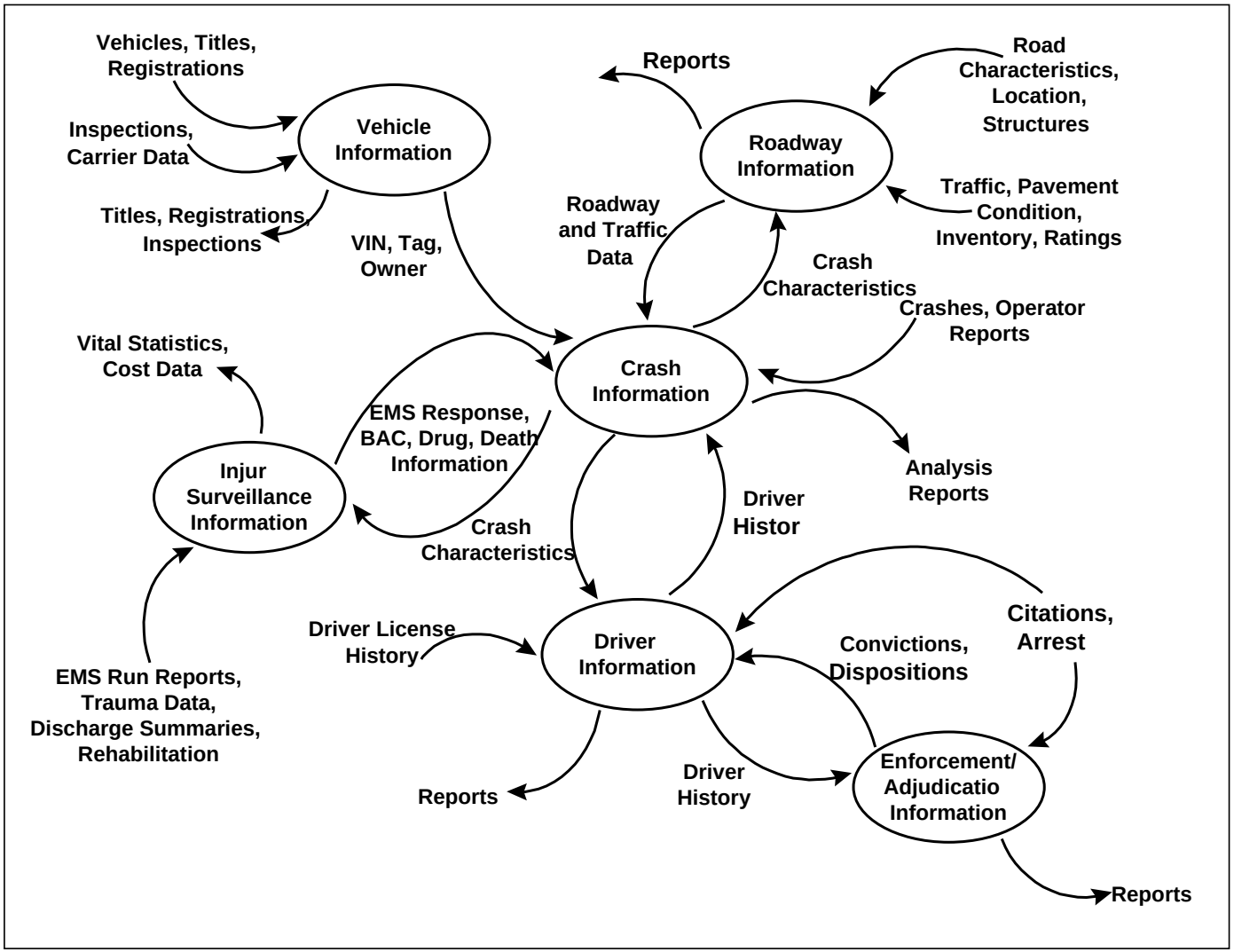

Table 1. Components of a Traffic Records System		
COMPONENTS		EXAMPLES
Crash		• Weather conditions and pavement • Illumination • Time of Day, Day of Week • Avoidance maneuvers • Violation of traffic law (speed, turns, failure to obey, reckless driving) • Number and severity of injuries or level of property 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		• EMS response time for driver/pedestrian/pedacyclist • Hospital assessment of injury severity • Hospital length of stay and cost • Rehabilitation time and cost
Roadway		• 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	• Type and configuration • VIN • Age/model year • Weight • Registration information/Plates • Defects • Owner information • Safety devices (type and condition)
	Commercial	• Carrier information • Hazardous materials/Placards • Inspection/Out of Service Records
Driver		• Age/DOB • Gender and Ethnicity • Experience, driver education • License status • Conviction history
Enforcement/Adjudication		• 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 625 of the Illinois Compiled Statutes 5/11-406 through 408 defines the statutory requirements for crash reporting. Law enforcement officers use the Illinois Traffic Crash Report (SR1050A 50M; reprint 10/05) as the official crash report form. Some 500,000 crashes are reported each year.

The Illinois statewide Crash Information System (CIS) is a recently upgraded relational database managed by the Illinois Department of Transportation (IDOT), Division of Traffic Safety (DTS). It is used to document the time, location, environment, and characteristics of crashes. A multi-step data management/data entry process is used to image and data enter crashes received from law enforcement agencies using the paper form. An electronic version of the form is available for data entry into a field data collection system – the Mobile Capture & Reporting (MCR) system – which is used by participating law enforcement agencies to report crashes to IDOT electronically.

For reports received on paper, the DTS staff pull out the fatal and truck/bus-involved reports and send them to the appropriate staff, then sort and pre-process the remaining reports into batches, and image them in a process that creates an index file. Pre-data entry clerks work from the crash report images to enter a small number of key fields necessary to establish the CIS record and begin a case file for each crash. Clerks performing main data entry and location coding work from the crash report images to complete the CIS record of each crash. Location coding brings

forward into the crash file selected roadway attributes from the Illinois Road Inventory System (IRIS) as well as latitude/longitude (x,y) coordinates pinpointing the location. After data entry, clerks are required to identify multi-page crash reports and associate all the data to the proper crash record.

For crash reports created using the MCR software, participating law enforcement agencies send the data electronically to a server at IDOT. At present, IDOT DTS staff print each report and submit the paper version for handling just like any other crash report. CIS does not currently accept data electronically, although it was reported that the programming changes to allow this to happen are already in place. The barrier to implementation was the need to support creation of a crash report image from the MCR data since so many key users of CIS require access to the report images, not only the data. There are other sources of electronic crash data including law enforcement agencies using software other than MCR for field data collection and agencies that enter their crash data into a Records Management System (RMS). CIS is not yet able to accept data (and create crash report images) from these non-MCR sources, although a data import format (using XML) has been shared with the Chicago Police Department (CPD) which is responsible for approximately ¼ of all crash reports received by IDOT. CPD is not able to send current crash data to IDOT electronically because they are experiencing a two-year data entry lag. It is assumed that the same import format given to CPD could be used by other agencies possessing an RMS or field data collection software, although it is also true that some method of image creation may be required for these non-MCR sources as well. It is not known how many of the local law enforcement agencies have field data collection or RMS software. Two of the local law enforcement agencies interviewed for this assessment appeared to have developed their systems without planning for crash data collection or coordination with IDOT or using the Illinois Traffic Records Coordinating Committee (TRCC) as a source of advice or information.

Users of the IDOT GIS (currently limited to a subset of IDOT staff) have the ability to view a map of crash locations and identify the case number for each crash. Collision diagrams can be run by the GIS users using the Crash Analysis Project reports or they can request Traffic safety staff to run the collision diagrams fro them. Through the DTS staff and data extracts, the crash component supports analysis of crashes in general and crashes within specific categories including: person, location, and vehicle characteristics and the interaction of the categories. The CIS database contains basic information about every reportable motor vehicle crash on public roadways in the state.

The MMUCC guideline and ANSI D-16.1 standard are used to establish and update the crash report form contents and data element definitions. An IDOT review showed that 102 of 111 MMUCC data elements are on the crash report form.

The state participates in the Fatality Analysis Reporting System (FARS) and the SafetyNet/MCMIS programs providing data to the National Highway Traffic Safety Administration and Federal Motor Carrier Safety Administration. Separate processes for handling reports of crashes involving a fatality or a reportable truck/bus/hazardous material crash have been implemented by DTS to ensure that data submissions meet federal requirements.

Crash data analysis and data availability are delayed approximately 18 months past the end of a calendar year. 2004 data are not yet available for statewide analysis. This is a marked change from the recent past, when data were about 90 days old when entered into the system. The primary causes of the delay are a change in systems, and, more recently, a loss of contract data entry staff. A temporary agreement is in place to allow IDOT to hire more contract workers to help catch up on data entry. A longer-term solution to staff shortages has been worked out with the Personnel Department, and DTS is hopeful that the data entry delay will be reduced to a more typical level as a result.

System upgrades in CIS and continued expansion of MCR usage among larger agencies should also help to relieve the data entry burden on DTS staff. Chief among the upgrades are implementation of program changes to allow CIS to accept data electronically from MCR, and perhaps other automated crash reporting systems, and to create crash report images from the electronically received data.

Recommendations

- ❑ Implement the CIS revision to support electronic transfer and image creation from reports created using MCR.
- ❑ Plan long-term for CIS to accept crash report data from other (non-MCR) field data collection and Records Management Systems software used by law enforcement agencies.
- ❑ Create an inventory of information technology resources and capabilities among law enforcement agencies.
- ❑ Task the TRCC with providing advice to law enforcement agencies regarding implementation of RMS and field data collection systems.
- ❑ Implement user-friendly reporting tools to expand access to the crash data.
- ❑ Give more users access to crash report images, masked appropriately to ensure confidentiality.
- ❑ Invest in automation for Chicago Police Department to reduce the number of paper crash reports processed manually at IDOT.

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 highway transportation network in Illinois consists of 140,000 miles of public roads that carry 300 million vehicle miles of travel in a typical day. State, county, township, and municipal governments own and operate this system.

The state system contains 17,000 miles which represent 12 percent of the statewide mileage and carries 65 percent of the vehicle miles traveled. The local systems represent 88 percent of the total mileage and carries 35 percent of the vehicle miles traveled. Included in these numbers are 282 miles of toll roads and 2,161 miles of Interstate highways. The crash experience on the state maintained system is approximately 57 percent with the remaining 43 percent of crashes occurring on county and township roads and city streets.

In 2003 there were 1,454 people killed and 131,279 people injured in traffic crashes according to the *2003 Illinois Crash Facts and Statistics* publication. In all there was a total 437,289 reported traffic crashes. The economic loss due to these crashes is estimated at $10.5 billion dollars.

The Illinois Department of Transportation (IDOT) uses the Illinois Road Inventory System (IRIS) as an information source to help in the management of the state maintained road system. IRIS contains over 150 roadway attributes for the state maintained system. These data are categorically classified as physical characteristics, traffic data, jurisdictional and geographic boundaries (county, township, political), road conditions, shoulders, surface, lanes, etc. IDOT also collects information on most of the 123,000 miles of local roads to help local governments in administering projects and programs on their road systems.

In addition to the IRIS the IDOT also maintains a Structure Inventory System (30,000 structures), a Railroad Inventory System (13,000 at grade crossings), and the Highway Performance Management System (HPMS). All four of these systems serve as the base for the Geographic Information System (GIS).

IDOT maintains a statewide crash file of all reportable traffic crashes. This file, the Crash Information System (CIS), has recently been enhanced to a relational database for ease of access and data extraction. IDOT has also taken a leadership role in pursuing the electronic capture of

crash data through the Mobile Capture and Reporting (MCR) system being implemented by the state's law enforcement agencies.

All these systems are accessed to develop safety programs and detect safety problems on the state's road systems. The major road programs developed through the use of these traffic records systems are projects for hazard elimination, rail grade crossing, and skid reduction.

The High Accident Location Identification System (HALIS) identifies crash locations by equivalent road types using three years of crash and traffic data with criteria that consider frequency of crashes, their severity, and crash rates based on vehicle miles traveled. This method can be used for various crash features such as, wet road crashes, alcohol involved crashes, run-off-the-road crashes, etc. However, HALIS is written in FORTRAN and is not set up to accept CIS (2004 and 2005+) crash data.

IDOT developed a Local Accident Reporting System (LARS) in the mid-1970s that located crashes on the local road system. The LARS required the local agencies, either law enforcement or engineering, to provide location data on the crash report for inclusion in the system. For those communities that participate in the program IDOT provides extracts from LARS of crash data for their community by location. Now the LARS system can produce reports using Crystal Reports that can be sent to the user electronically, as a PDF document or an Excel spreadsheet. An access application has also been written allowing the electronic transmittal of the updated listing of LARS agency streets. LARS agencies can also request whatever ad hoc reports they need.

A fundamental concern in the use of the information systems used by state and local road safety analysts is the accurate location of data on their respective road systems. IDOT uses several location reference methods: key route number, route name and milepost, street name and/or address, link-node, and latitude/longitude coordinates.

The use of multiple location referencing methods causes confusion resulting in the need for IDOT to create separate road files for each user. Further, the conversion of location data from one method to another for use in the various data systems introduces the potential of increased incompatibility and inaccuracies in location data. The confusion is not only evident by local safety officials interviewed during this assessment but also among IDOT personnel who use the information frequently in the execution of their assigned tasks.

Recommendations

- ❑ Accelerate the development and use of the GIS as the IDOT enterprise system for all road and road related information systems.

- ❑ Accelerate the deployment and use of Global Positioning System (GPS) devices for the capture of location data by latitude/longitude coordinates for road and crash data.

- ❑ Resolve the issue of the incompatibility between HALIS and other roadway files with CIS.

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 Vehicle Services Department (VSD) of the Illinois Office of the Secretary of State maintains the vehicle registration and title file. The file contains records on approximately 10.7 million registered motor vehicles. The full file of some 23 million title records includes mobile homes, trailers, and property in addition to registered motor vehicles.

Intrastate commercial vehicles are included in the registration database; interstate commercial vehicles are registered through the International Registration Plan (IRP), a separate, stand-alone database. The scope of information on all vehicles, private and commercial, meets the recommendations of the *Advisory* and is adequate for participation in the American Association of Motor Vehicle Administrators (AAMVA) applications.

Vehicle identification and descriptive information includes the data elements recommended in the *Advisory*, in particular the Vehicle Identification Number (VIN) and vehicle body type. Registrations are classified by body type and use type (e.g., automobile, commercial vehicle, motorcycle, trailer, etc.). The VSD classifications are more extensive than those used on the crash report form. Registrations do not require the same owner attributes that are used in the driver file for persons. For example, name styles are inconsistent and post office addresses are acceptable for registrations. A driver license number may be recorded with the owner identification, but it is not a requirement. The VSD reported difficulty with the lack of a specific convention for owner addresses resulting in many renewal documents being returned as undeliverable.

Odometer readings are captured when vehicles are first titled (which includes title transfers) but not on vehicles 10 years or more old and not on vehicles in excess of 16,000 pounds. VINs are validated first by running a VIN validation program including VIN conversions in the field for temporary registration permits.

Registrations are processed through VSD offices, and the registration file is updated in real time. County officials, such as registrars or clerks, are not involved with registration processes. A pilot project has been successful with processing registrations and title applications through automobile dealers, using the services of a major vendor to establish the dealership services.

The VSD reports better VIN accuracy using the input from this Electronic Registration and Titling system than that achieved in their own offices.

Title brands from other states are retained but are not converted to the descriptions applied in Illinois. At present Illinois does not participate in the National Motor Vehicle Title Information System (NMVTIS), but the VSD is interested in participating.

Vehicle salvage information is obtained from insurance companies and salvage yards when a request is made for a salvage title. Records on stolen vehicles are flagged when reported by law enforcement.

Personal information is restricted for public inquiries according to the stipulations of the Driver Privacy Protection Act (DPPA).

Beyond maintaining the information necessary for the vehicle registration and title functions, the information from the file supports inquiries on individual records from law enforcement, and inquiries required for the Fatality Analysis Reporting System (FARS).

Management summary reports are produced annually, and ad hoc statistical queries can be processed upon request.

The vehicle file cannot currently link with the driver file or other traffic records files, but the driver file is accessible to the VSD.

The crash file managers have asked for access to the registration files for auto-populating crash records in the data entry process. Details are being worked out to enable that access.

Recommendations

- ❑ Begin recording owner names and addresses for persons with the identical requirements for those elements in the driver files so that the requirements are consistent throughout the offices of the Secretary of State.

- ❑ Establish linkages with the driver, crash, and other appropriate files in the traffic records system, and provide information extracts to the data clearinghouse which is recommended elsewhere in this report.

- ❑ Establish in the Strategic Plan—to be developed by the Traffic Records Coordinating Committee—plans for becoming a full participant in the NMVTIS for the benefits of automatic and instantaneous data transfers and authentication of titles coming into Illinois from other NMVTIS states.

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 Driver Services Department (DSD) of the Illinois Office of the Secretary of State maintains the driver file which contains approximately 12.5 million driver records, of which 8.5 are active (meaning the licenses are eligible for renewal). The driver records include those on commercial drivers.

The descriptive information satisfies the recommendations of the *Advisory*. Learner permits and provisional licenses are contained in the file. Driver education information is also included.

Illinois has a graduated license law and provides comprehensive information about the program and its requirements on the Driver Services web site. The information in the driver file supports the functions of license issuance and driver control. In addition, this file is used in support of the Problem Driver Pointer System (PDPS) and the Commercial Driver License Information System (CDLIS). A concern about the ability to identify problem drivers is discussed below in connection with information provided by a major court user of driver records.

Driver histories from previous states are included in the driver file for commercial vehicle operators only.

Crash involvement is posted to the driver file whether or not a citation was issued. The DSD is responsible for administering the financial responsibility requirements, but it appears that the crash file processing personnel at the Illinois Department of Transportation (IDOT) are charged with identifying crash involved motorists owing financial restitution. There appears to be no systematic way of assuring that this process is done correctly or in a timely manner.

BAC data are recorded in the driver file from DUI arrests. BAC information is not recorded from the crash reports.

Convictions from all types of courts are entered into the driver history. The larger courts send their convictions electronically. About 20 percent of the smaller courts do not have electronic capabilities, but their volume of convictions is significantly less than 20 percent.

The convictions are reported to be transmitted properly, but there is no tracking system in place to affirm that belief. Each court operates independently, and the Cook County courts use a citation form different from the otherwise "uniform" traffic citation.

The original charge is not entered in the driver history for all convictions, but they are on DUI cases. Court diversions (known as Court Supervisions) are reported to the DSD and entered into the driver history. The courts rely on the driver histories, and the DSD produces electronic certified driver records which is a major benefit for the courts.

The DSD has obtained facial recognition software and reports good results in using it.

A major court user of driver records reports a significant problem with finding multiple records on the same individual. The issue arises from inquiries made to determine whether a driver record exists for defendants claiming they have no driver license or record. After finding multiple records with minor variances in the descriptive information on the same person, verification was established through fingerprint records in the court's system. Despite the controlled identification requirements described on the DSD web site and the use of the Social Security On Line Verification process, there appears to be a breakdown in the actual practice of assuring correct and unique personal identification. This further provides the opportunity for issuing multiple licenses to a single individual as anecdotally established during the course of this assessment.

Prosecutors and State's Attorneys can obtain driver records, and law enforcement agencies obtain driver histories through the LEADS inquiries. Officers with the capabilities to auto-populate their electronic reports do so in the field.

Direct file linkage does not occur with other traffic records files aside from the input of conviction records from the courts.

Within the constraints of the state's DPPA the driver file serves a variety of users.

Summaries of the driver file provide management and statistical information.

The crash file managers have asked for copies of the driver files for auto-populating crash records in the data entry process. At present, the DSD has refused the request. Other options for obtaining only the needed data extracts do not appear to have been explored.

Recommendations

- ❑ Record the driver histories from previous states of record on non-commercial drivers (as required for commercial driver records).

- ❑ Coordinate the overlapping requirements of the crash file processing with those of the DSD: discover the means to assist with clearing the backlog of crash reports (which are needed for safety analysis and for entry into the driver records in a timely manner) and

the timely and correct identification of drivers in crashes not meeting the financial responsibility requirements. Without mutual support, both operations are hampered.

- ❑ Determine what is causing the creation of multiple driver records on the same individual, and correct the problem with strict adherence to the identification processes, and provide training throughout the field offices to assure that the DSD can identify problem drivers for the licensing and control operations of the DSD, the courts, and other states.

- ❑ Support the efforts to establish a comprehensive citation tracking system (See Section 1-E).

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

Illinois has an approved uniform citation and complaint form used by all law enforcement agencies within the state, except for Chicago and the surrounding Cook County suburbs. Law enforcement agencies within the Chicago area use a different form. The uniform citation form is a relatively typical state citation form, containing violator information, charge, court of jurisdiction, court date, and final disposition. The Chicago form contains this information as well.

Citations are independently produced by each law enforcement agency. Each agency has the responsibility for tracking and ensuring accountability with respect to its own citations. Many agencies have their own citation tracking systems that fulfill this function. These tracking systems record each citation and some agencies reported policies that require that missing citations be accounted for by the officer to whom the citations were assigned. Note that there is no statewide citation file, and therefore no mechanism for tracking citations at the state level.

Court dispositions are filed with the Secretary of State's (SOS) office to be included as part of the driver history record. Dispositions that are filed include convictions and court supervisions for major offenses (e.g., DUI). Acquittals, *nolle prosse* cases, and dismissed cases are not filed with the SOS office. These non-conviction cases are not forwarded to the state level at all, but are simply retained within the local court information system. Correspondingly, the arresting agency does not routinely receive feedback on non-conviction cases.

Regarding convictions, approximately 80 counties file these dispositions electronically via the Administrative Office of Illinois Courts (AOIC), which acts as an electronic clearinghouse. The AOIC forwards the electronic conviction records to the Secretary of State's office, as well as to the issuing police agency. A few counties with populations greater than 300,000 electronically file their dispositions directly with the Secretary of State's office.

Approximately 20 counties do not file convictions electronically at all and forward a copy of the paper citation that is marked with the disposition information to the SOS. Thus, there are

mailing delays at the court level, and data entry delays at the SOS, thus delaying posting to the driver record.

Finally, several jurisdictions, including Peoria, Rolling Meadows, and Pallatine, report some limited experimentation with electronic citations. However, these systems have not yet had a major impact at the state level.

Recommendations

- ❑ Promote and assist local courts without computerized case management systems and/or electronic conviction filing, in obtaining computerized management systems and in electronically filing convictions with the SOS office.

- ❑ Establish a statewide citation tracking system.

- ❑ Promote and assist all local police agencies in electronically generating citations and reporting them to the courts and to any future statewide citation tracking system.

- ❑ Promote and assist all local courts in electronically reporting **all** dispositions to any future statewide citation tracking system – convictions as well as acquittals, dismissals, *nolle prosse* cases, etc.

- ❑ Develop XML data standards to support data exchange with electronic citation systems, court case management systems, the SOS driver history file and police records management systems, as well as any future statewide citation tracking system.

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.

Illinois does not have a functional comprehensive statewide Injury Surveillance System although there are several key components with varying degrees of maturity and functionality within the state. These key components are: the Illinois Department of Public Health (IDPH), Emergency Medical Services, and Highway Safety Division which provides regulatory oversight for the EMS and Trauma System; the IDPH Division of Vital Records which maintains mortality data; and the Division of Health Statistics which is the hospital discharge data repository. Emergency Department data are to be collected starting in 2007.

<u>EMS</u>

In 1994, the Illinois Department of Public Health's Division of Emergency Medical Services and Highway Safety began to collect pre-hospital reports through voluntary submission. In July 1997, mandatory reporting of pre-hospital information to the state was initiated (as legislated in the 1995 Emergency Medical Systems Act). Pre-hospital providers submit data to the Division of EMS and Highway Safety by utilizing a pre-hospital report form developed by the Illinois Department of Public Health or they may use other compatible data collection tools.

Currently there are 770 EMS providers and 34,379 EMS personnel that respond to over one million calls. All Emergency Medical Technicians (EMT) are required to complete the State's certification process. All EMT Intermediate and Paramedic personnel are required to complete the National Registry process for certification.

EMS providers are required to submit all (medical and trauma) pre-hospital patient care reports to the state data repository. There are two versions of the EMS run report that are submitted to the state registry by EMS providers. Approximately 40 percent of the data submitted to the state are in a paper format (bubble form) that is scanned into an electronic data system. Additionally EMS providers may purchase the EMS data collection software that was developed by a firm in Scottsdale, Arizona. The state contracted with this firm for the development of the current EMS data collection system. The State EMS Division has not adopted the new version of the NHTSA National Emergency Medical Services Information System data dictionary.

Trauma

The Illinois Trauma System has 67 hospitals within Illinois designated as either a Level I (20) or Level II (47) trauma center. Two of the Level I Trauma Centers are designated as both Adult and Pediatric Trauma Centers, and two others are designated as only a Pediatric Trauma Center. These Trauma Centers have completed an in-state trauma designation process. The Trauma Centers may opt to complete the American College of Surgeons Trauma Verification process (two have completed the verification process). Only designated Trauma Centers are required to submit data electronically to the state trauma registry. Approximately 35,000 trauma cases are reported annually to the IDPH.

Hospital Discharge

The Illinois Hospital Discharge Data database is maintained by the IDPH. There are approximately 1.6 million patients discharged from Illinois hospitals each year. The Illinois Health Care Cost Containment Council collected hospital discharge data until 2002 when the Council transferred these data collection activities to the IDPH Division of Health Statistics. These data are submitted using the standard Uniform Billing (UB-92) form, which is used by hospitals to bill for their charges. These data include information on patients who spent at least 24 hours as in-patients but do not include patients who were treated in the emergency room and released. The data include information about patients discharged from all acute care and rehabilitation facilities.

Mortality Data

Illinois state law mandates that all death certificates be filed with the IDPH Division of Vital Records. These records are typically filed by the over 850 Funeral Home Directors and 102 Coroners, one of whom is a Medical Examiner, in paper format to the state repository. Death certificates are sent to a firm outside the IDPH for manual entry into an electronic data base. These data files are provided to the Division of Vital Records for data processing and analysis.

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

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.

Statewide Head and Spinal Cord Injury Registry Data

The IDPH Division of EMS and Highway Safety maintains the state Head and Spinal Cord Injury database. This registry was implemented in 1991. All hospitals with an Emergency Department (211) are to report any patient diagnosed with a head or spinal cord injury to the state registry.

Recommendations

- ❑ Obtain legislative support for increased funding for the Illinois EMS and Trauma System.
- ❑ Use one data format for the EMS run form.
- ❑ Move forward with a total electronic data submission process.
- ❑ Provide incentives to the EMS providers for submission of the required data set.
- ❑ Continue the development of the statewide emergency department data collection and analysis system.
- ❑ Assure that all managers of the Injury Surveillance System components participate fully in the Traffic Records Coordinating Committee.

Section 1-G: Other Information

Advisory Excerpt: *The Traffic Records System should acknowledge the importance of, and incorporate where feasible, other types of information from the state and local level which will be useful in the identification of traffic safety problems and the evaluation of countermeasures. These supporting components may include:*

- ❑ *Geographic Information Systems (GIS) and Global Positioning System (GPS) data.*
- ❑ *Insurance data (carrier, policy number, expiration date, claims cost).*
- ❑ *Safety Program Evaluation data.*
- ❑ *Data specifically required by state or Federal programs (e.g., the Transportation Equity Act for the 21st Century [TEA-21]).*
- ❑ *Demographic data (data on the state's population including gender, age, rural/urban residence, ethnicity) sufficient to be used in normalizing crash data to the state's general population.*
- ❑ *Behavioral data (e.g., occupant protection usage).*
- ❑ *Attitude/perception/knowledge data (e.g., telephone surveys, focus groups).*
- ❑ *Economic loss data (e.g., medical, insurance cost, workers' compensation, lost productivity).*
- ❑ *Inventory - Each state should have in place procedures that result in the compilation of an inventory of state and local information sources. This inventory should include information on the source, ownership (contact agency/person), quality, and availability of these data from each information source.*
- ❑ *Performance data - Performance level data, as part of a traffic records system, are those measures relating to an ongoing or proposed countermeasure that addresses a crash problem. They can include number and types of citations and convictions, number or percent of drivers and occupants using occupant protection, average Blood Alcohol Concentration (BAC) levels, average speeds, percent of injured receiving EMS response, recidivism rates for past offenders/crash-involved drivers, highway countermeasures (e.g., breakaway signs), etc.*
- ❑ *Cost data - Cost data consist of dollar amounts spent on countermeasure programs, together with the costs of fatalities, injuries, and property damage crashes. The National Highway Traffic Safety Administration (NHTSA), the National Safety Council (NSC), and other national and state agencies have published cost data for use by the states. NHTSA has also made easy-to-use cost modeling software available. In addition, specific local*

costs can be accumulated through injury surveillance systems or other means of collecting treatment costs and outcomes.

- *ITS data – Intelligent Transportation Systems (ITS) is becoming a major force in the area of traffic mobility and traffic safety. ITS also has an enormous potential for capturing traffic safety data. The first area where ITS can facilitate the capture of traffic safety data concerns documenting crash instances. This can be accomplished through video monitoring systems where data are archived. The archived data can be reviewed to ascertain where a crash report was completed on the date and time of the crash observed. The archived data can also be used to corroborate data contained in the crash report such as date, time, crash location, vehicle type(s), and time of arrival of emergency vehicle(s).*

  ITS can also be used to record normalizing data such as vehicle counts (ADT) by vehicle type, by location, time of day, and day of week. Normalizing data essential for data analysis where comparisons are made across time and across geographical locations.

Status

Geographic Information Systems (GIS) and Global Positioning Satellite (GPS) data.
The Illinois Department of Transportation (IDOT) and several local agencies have GIS capabilities. Currently, the IDOT GIS and many of the local systems are not compatible. IDOT is moving to a NAVTEQ system that will support greater sharing among various GIS data sources. IDOT plans to have their GIS form the basis of a data warehouse and reporting tool for users of roadway and crash data.

Safety Program Evaluation data.
IDOT makes extensive use of safety program evaluation data. The age of crash data makes it difficult to perform analysis of specific programs' effects on safety, but productivity and output of grant funded programs is well monitored.

Demographic data (data on the state's population including gender, age, rural/urban residence, ethnicity) sufficient to be used in normalizing crash data to the state's general population.
IDOT provided several examples of reports produced as part of problem identification and program evaluation efforts that included demographic and other normalizing variables.

Behavioral data (e.g., occupant protection usage).
An annual seat belt survey is conducted. Additional occupant protection surveys are conducted for specific programs areas and sub-populations.

Attitude/perception/knowledge data (e.g., telephone surveys, focus groups).
Survey data are collected and reported twice each year as part of *Click It or Ticket* campaigns.

Economic loss data (e.g., medical, insurance cost, workers' compensation, lost productivity).
IDOT received a NHTSA grant in 2005 to develop a Crash Outcome Data Evaluation System (CODES) project. This project is designed to use crash, EMS/pre-hospital, trauma registry, head and spinal cord injury registry, vital records, and hospital discharge data to develop merged data to support estimates of the economic loss due to crashes. The IDOT CODES staff are currently working on a second-pass record matching step.

Inventory data.
Data dictionaries are available for several key traffic records data sets including crash, roadway inventory/attributes, hospital discharge, EMS run report, head & spinal cord injury registry, trauma registry, and vital records. The primary missing information relates to the systems and capabilities of local law enforcement and engineering agencies.

IDOT's Bureau of Information Processing (BIP) is considering development of a departmental data warehouse to house transportation "enterprise" data in a single-point of access. The vision for this system includes providing users with access to analytic tools and support. Other traffic records data sources (e.g., driver, vehicle and health-related data) were discussed as part of a broader data clearinghouse concept. The Traffic Records Coordinating Committee (TRCC) has not yet been presented with the BIP data warehouse vision.

Performance data.
Because of the age of the crash data, effectiveness evaluation of countermeasures is limited. Projects that can be evaluated using up-to-date crash information from law enforcement agencies may make use of these local sources, but the statewide crash database is generally considered too out-of-date for use in project evaluation.

Cost data.
Crash costs based on the National Safety Council published data are used in Benefit/Cost calculations by IDOT.

ITS data
There are several ITS projects in Illinois. The most advanced of these covers the Chicago area and is part of the Gary/Chicago/Milwaukee Corridor project (http://www.gcmtravel.com/gcm/home.jsp) which was one of four United States Department of Transportation ITS priority projects at the outset in 1993. This project includes real time traffic data and archival storage and analysis features that currently can support statistical comparisons of current conditions to historical averages. Detail data are also available through the online query tool. An incident tracking feature is being added which will provide reports of traffic incidents and relate changes in traffic flow to individual incidents. Future expansions of the ITS program in Illinois will include adding the capabilities for traffic and incident reporting in other large urban areas.

The ITS project data are used for generating traffic counts and other data elements for IDOT roadway information systems and are used in federal reporting as well (including HPMS).

Recommendations

- ❑ Implement the IDOT BIP vision for a department-wide data warehouse.
- ❑ Expand this vision to include all traffic records components in a full data clearinghouse at IDOT.
- ❑ Develop user-accessible analytic tools in addition to GIS for the traffic records data clearinghouse.
- ❑ Develop crash event analyses using the ITS data for traffic flow impact and cost estimation using a combination of CODES and ITS sources.

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

Most law enforcement agencies are meeting the timeliness requirements for submission of crash reports to the Illinois Department of Transportation (IDOT). However, the crash data are currently running about 18 months behind from the end of a calendar year to completion of data entry. Additional months are required for close out of the database and generating official data summaries. Delays are due to a variety of factors including:

- changeover to a new crash system (since upgraded)

- loss of contract data entry staff (recently approved for rehire)
- a convoluted data entry process
- inability to accept data electronically (programmed but not implemented at this report date)
- key vacancies in management & supervisor positions in the data entry operation.

Supervisors in the crash data entry area have extensive data to help them keep track of timeliness problems and the size of various data entry queues. There are no standard measures reported outside of the data entry area, but key users are generally aware of the overall timeliness issues with the crash data.

Consistency
The crash data are considered consistent with MMUCC and ANSI D-16.1. A recent MMUCC comparison showed 97 percent compliance with individual data values. Illinois, in particular, complies with many of the roadway linkage recommendations in MMUCC.

Completeness
It is assumed that most of the reportable crashes are received by IDOT. There was some anecdotal evidence offered regarding missing crash reports from smaller law enforcement agencies, but quality control checks during crash report pre-processing help to ensure that any large-scale under-reporting is not taking place. IDOT Division of Traffic Safety (DTS) staff check the volume of crash report submissions from each law enforcement agency on an ongoing basis and contact any agency that appears to have submitted an abnormally low number of reports. The counts are based on Mobile Capture and Reporting (MCR) logs and manual counts from the staff who take in and sort the incoming paper reports and therefore is current up to the most recent report submissions from each agency.

Accuracy
The Crash Information System (CIS) and MCR both have extensive edit checks that provide warnings and trap critical errors during entry of crash information. In 2004, the CIS data entry edits were essentially turned off in an effort to reduce the backlog. Unfortunately, this resulted in approximately 50 percent of the crash records ending up in a supervisory queue for error correction at the end of the data entry cycle – delaying data availability severely. For entry of 2005 data, the edit checks were reinstated early in the process and even those reports that went in without extensive edits were double-checked by senior and supervisory personnel. It is believed that 2005 data are much “cleaner” than the 2004 data.

At the end of a data entry year, DTS analytic staff process some 100-plus tabulations of the data looking for results that do not fit with expectations based on comparison to prior years’ data summaries. This technique is used as part of an iterative process to identify data quality issues, isolate crash report records for correction, and reanalysis of the resulting database to ensure that it is comparable to prior years. The knowledge of what fields/values to check in the database has built up over the years and relies on the expertise of the analysts in DTS.

There are a small number of routinely reported quality control measures of accuracy of the crash data. For the most part, these relate to the fatal crash data rather than being reported for the

crash data overall. There is no formal quality control measurement process in place. In part, this is due to the old (now replaced) database structure of CIS. It was a major undertaking to "unstack" the CIS database in order to analyze it, and, at least for 2004, there were so many errors in the database that producing quality metrics was a lower priority than identifying and fixing errors.

Accessibility
With the recent conversion of CIS to a relational database, the IDOT DTS analysts have been using Crystal Reports as the primary reporting tool to support data quality analyses and to meet users requests for information. The learning curve on this software is such that it is not a good solution for most casual users of the dataset. IDOT also supplies data extracts to users on request and is generally considered responsive. There are no easy-to-use analytic tools that support non-expert users of the data.

Beginning in the 1970s, IDOT developed the Local Accident Reporting System (LARS) to meet the need for location-coded crash information on local roadways. A similar system (High Accident Location Information System – HALIS) covers state-maintained roadways. Together, these systems provide users with meaningful extracts of crash data along with key roadway information associated. For LARS users, the system is limited and somewhat cumbersome by modern standards. The planned upgrade to NAVTEQ GIS in IDOT is going to make LARS essentially obsolete. LARS will be utilized by IDOT until the same information can be made available to the local agencies using the XY coordinates. Historic LARS data will be maintained indefinitely. Instead of an arbitrary numeric system of location codes, the GIS will include local roadway data (including crashes) locatable on an electronic map. Because the map will be compatible with many of the locally-maintained GIS databases, it is also hoped that municipal and county engineers and planning organization staff will have automated access to the crash data.

Some agencies, notably the Illinois State Police (ISP), have solved their data access needs by creating a copy of the CIS or MCR databases for their own use. These systems generally have easier and more powerful reporting features than are currently available in the IDOT systems. Unfortunately, much of this access comes at the price of duplication of data storage and often even duplicate data entry. ISP, for example, prints copies of all fatal crash reports in MCR and enters them into a separate database unconnected with either the FARS or the "F-Desk" process at IDOT.

Data Integration
Electronic sharing of crash data is currently non-existent. Revisions of CIS and MCR have been required to allow for electronic data sharing between these two IDOT systems. Those changes have been programmed, but final implementation had not yet occurred at the time of this report. It was stated that implementation was imminent.

For users of MCR outside of IDOT, there is no ability to easily share data with other systems, such as departmental Records Management Systems (RMS) or analytic databases. IDOT has supported some users by supplying MCR data in an ACCESS database format, but this is not generally responsive to the needs of users who do not already have familiarity with that product.

One example came from the Peoria Police Department which has a department-wide RMS and uses MCR for crash data collection. Lacking a way to share data between MCR and their RMS, the agency has been printing out the crash reports and entering the data manually. This department is evaluating whether to continue using MCR or to implement the crash reporting module that is part of the field data collection software suite from their RMS vendor. If they decide to go with the non-MCR software, they would have better access to their own crash data but would face a problem sharing the data electronically with IDOT.

Recommendations

- ❑ Develop a set of standard quality control metrics for reporting crash data quality on a routine, repeatable basis periodically throughout the year.
- ❑ Use the data quality metrics to provide feedback to law enforcement agencies and to influence future form revision training.
- ❑ Immediately implement the CIS and MCR changes that will allow CIS to accept MCR data electronically and produce crash report images for those users needing them.
- ❑ Ensure that CIS can accept data from any source of crash data capable of supplying data electronically in compliance with a standard format and edit check process.
- ❑ Consider replacing the current CIS-limited multi-step data entry process with a more streamlined process, perhaps using MCR as the data entry "front end."
- ❑ Integrate MCR and CIS to be a seamless system instead of two separate development and maintenance activities.
- ❑ Document the end-of-year quality checking process, and produce a standard set of warnings regarding known caveats and limitations in the crash dataset.
- ❑ Create a flexible data export feature for MCR and CIS.
- ❑ Develop user-friendly analytic tools to support analysis of crash and other datasets.
- ❑ Provide broader access to CIS crash data and analytic tools in order to reduce the need for agencies to create duplicate datasets.

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
Updates to the Illinois Road Inventory System (IRIS) are made when construction or reconstruction projects are completed, when changes in jurisdictional boundaries or functional classifications occur, when periodic traffic count surveys are conducted, and when any re-inventory of road characteristics is undertaken. However, it was noted that this is done only when district staff are available.

Consistency
The data in the road files appear consistent from year-to-year for the types of data collected.

Completeness
The road files appear complete with the exception that the 28,000 miles of city streets is not in GIS. However, the Illinois Department of Transportation (IDOT) is commended for the inclusion of the 123,000-mile local road system in the IRIS.

Accuracy

The major issue regarding accuracy is the data used to identify locations on the public road system. The impact is felt more acutely in crash location data rather than road features data. This may be due to the diversity of the crash data user community especially those users outside the IDOT. Current action to migrate to a Geographic Information System (GIS) supported by NAVTEQ software using latitude/longitude coordinates will alleviate this problem not only for crash location but also for road feature location.

Accessibility
Road inventory data are accessible to internal users at IDOT through the IRIS. Road and traffic data are available on web-based applications in the IDOT web site, but direct access is not readily available and is a concern, especially regarding crash data. All requests must be routed through the Division of Traffic Safety.

Data Integration
Integration of road features is accomplished through the Department's GIS. The integration of crash data with road features data is being accomplished

Recommendations

- ❑ Expedite the completion of the enhanced GIS which will increase the quality of the crash and road features data, especially the accuracy of location data.

- ❑ Establish the enhanced GIS as the IDOT enterprise system for all IDOT automated data.

- ❑ Allow all legitimate users of IDOT data direct access to the GIS or provide them with the information in a medium and format for their manipulation and analysis.

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
The registration file is updated in real time from Vehicle Services Department facilities.

Consistency
The file appears to contain the data content recommended by the *Advisory* and required for AAMVAnet support.

Completeness
Odometer readings are captured when vehicles are titled, but they are not required for all vehicles as noted in Section 1-C.

Accuracy
A VIN verification program is used to enhance the accuracy of VINs.

Accessibility

The file information is accessible to users in accordance with the terms of the required contracts for access and is available to other users consistent with the requirements of the Driver Privacy Protection Act.

Data Integration
The file is not linked with the driver file or the crash data file.

Recommendations

- ❑ None

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 file is updated continuously with newly issued and renewed licenses. Convictions received electronically are entered within 24 hours (usually on the same day of receipt), and those received on paper are processed within 15 days.

Consistency
Data content appears to meet the requirements of the PDPS, CDLIS, and other applications of AAMVAnet and the recommendations of the *Advisory*.

Completeness

The data contain all of the elements for all drivers, but adverse histories from previous states of record are not recorded except for commercial drivers. The file cannot be regarded as sufficiently complete for identifying problem drivers.

Accuracy
Accuracy would appear to be generally high in view of the identification requirements published by the Driver Services Department (DSD) and the use of the Social Security On Line Verification (SSOLV) process. Nonetheless, a court with the ability to apply fingerprints to its records has unearthed multiple DSD driver records on the same individual. This makes the accuracy of the file questionable. Although the number of persons seeking to obtain driver licenses with fraudulent personal descriptors may be relatively small, those are the very persons needed to be identified and placed under driver and court control programs here in Illinois and in other states where they may present themselves to obtain a license when they are actually ineligible.

Accessibility
Courts now obtain electronic certified driver histories, and other authorized users obtain records efficiently. At present there is a problem in providing information requested by the Illinois Department of Transportation to support crash data processing.

Data Integration
The file is not dynamically linked with the vehicle file or any other file.

Recommendations

- ❑ Record the driver histories from previous states of record on non-commercial drivers (as required for commercial driver records).

- ❑ Coordinate the overlapping requirements of the crash file processing with those of the DSD: discover the means to assist with clearing the backlog of crash reports (which are needed for safety analysis and for entry into the driver records in a timely manner) and the timely and correct identification of drivers in crashes not meeting the financial responsibility requirements. Without mutual support, both operations are hampered.

- ❑ Determine what is causing the creation of multiple driver records on the same individual, and correct the problem with strict adherence to the identification processes, and provide training throughout the field offices to assure that the DSD can identify problem drivers for the licensing and control operations of the DSD, the courts, and other states.

- ❑ Support the efforts to establish a comprehensive citation tracking system (See Section 1-E).

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

Of the 102 counties in Illinois, approximately 80 have an automated system to transfer conviction data to the Secretary of State (SOS) office, typically via electronic reporting to the Administrative Office of Illinois Courts (AOIC), who then further distributes the conviction data to the SOS and the arresting agency. These counties have automated case management systems and have the capability to enter judgment information the same day judgment is entered by the court. Electronic transfers are typically made regularly from the individual court to the AOIC or the SOS office. For the remaining courts, paper citations reflecting convictions are forwarded

from the court to the SOS office. Due to both mailing delays and data entry delays at the SOS office, there can be substantial delays in posting these convictions to the driver history.

Consistency
All enforcement jurisdictions, with the exception of Chicago and the Cook County suburbs, use the Uniform Citation and Complaint form approved by the Illinois Supreme Court.

Completeness
There is no statewide tracking system for citations in general. Individual police agencies may track their own citations via their own records management systems. Convictions are reported back to the arresting agencies. However, for a citation that does not receive a conviction report, it is only possible to determine the disposition of that citation through the individual court system.

All traffic convictions as well as court supervisions for major offenses (e.g., DUI) are reported to the SOS office for inclusion in the driver history file.

Accuracy
Citations forwarded to the courts from law enforcement agencies that are illegible or missing data are returned to the issuing agencies for corrections. However, convictions, when reported to the SOS office, are not always correctly linked to the remainder of the driver record. In particular, multiple, unrelated driver records are sometimes created on the same individual. In the absence of a biometric-based system for matching new convictions with the previous records, some failures to link an individual's convictions are unavoidable. However, cases were reported where there were a relatively large number of unlinked records belonging to the same individual. This appears to be beyond the typical level of data quality tolerance for a conviction posting process.

Accessibility
The statewide conviction information is available from the SOS office to law enforcement and prosecutors. Judges do not typically utilize this information directly unless reported by the prosecution. Citation information was reported to be utilized by some police agencies, both for enforcement planning purposes and for obtaining background information by the arresting officer on a particular offender. However, since there is no statewide citation file, access to previous citations is restricted to an individual agency's previously administered citations.

Data Integration
Elements such as driver license numbers are in place to link crash data and conviction data, but because of differences in location methods, it is doubtful that the linkage would be of value in identifying the response countermeasures.

Recommendations

- ❑ Improve the methodology for identifying drivers to ensure that records corresponding to the same individual are properly posted.

- ❑ Develop an electronic citation system that utilizes the same location methodology as for crash data.

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 heath 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

Illinois does not have a functional comprehensive statewide Injury Surveillance System, although there are several key components with varying degrees of maturity and functionality. The Illinois Department of Public Health (IDPH), Emergency Medical Services and Highway Safety Division provides regulatory oversight for the EMS and Trauma System. The IDPH Division of Vital Records is the custodian for mortality data and the Division of Health Statistics is the custodian for hospital discharge data. Emergency Department data are to be collected starting in 2007.

Timeliness

EMS
EMS providers are required to submit all pre-hospital patient care reports to the state data repository. Data are to be submitted every 30 days. Information related to compliance with this requirement was not available at the time of this assessment.

Trauma
All designated Trauma Centers are required to submit trauma patient care data to the state data repository within 90 days of patient discharge. All designated Trauma Centers are compliant with reporting requirements.

Hospital Discharge
All acute care hospitals are required to submit UB92 patient data to the state every 90 days. All acute care hospitals are compliant with the reporting requirements.

Mortality
Mortality data are submitted to the IDPH Division of Vital Records on the 10th of every month for the prior's month's events. All Funeral Directors, Coroners and the Medical Examiner are compliant with reporting requirements.

Statewide Head and Spinal Cord Injury Registry Data
All acute care hospitals with an Emergency Department are required to submit data to the state. Information related to compliance with this requirement was not available at the time of this assessment.

Consistency

EMS
The State EMS and Highway Safety Division have two versions of the uniform run sheet. There is no data conversion method in place to map the data elements from one form to the other for data consistency. Data are submitted either electronically or using a paper scan form to the state data system. The State has adopted a third party software and data collection system. Software may be purchased by the EMS providers to enable them to report pre-hospital patient care data to the state repository. There is a published EMS data dictionary that is available upon request and a list of data elements available on the EMS website. The State has not adopted the

comprehensive National Emergency Medical Services Information System's (NEMSIS) Data Dictionary and data collection format.

Trauma

The Illinois Trauma Registry collects trauma patient care data electronically using the state's web based data submission process. The State has adopted a third party software application as the state data platform. Software is provided to the hospitals to enable them to report trauma patient care data to the state repository. There is a uniform trauma flow sheet, a published data dictionary, and a list of data elements available on the EMS website.

The data set includes ICDM 9 Codes 800.0 – 959.9, E – Codes (Mechanism of Injury Codes), Abbreviated Injury Severity (AIS) Codes and Injury Severity Score (ISS). These assist in maintaining uniformity and consistency in the reporting and evaluation of a trauma patient's injuries and probability for survival.

Hospital Discharge

The hospital in-patient (discharge) data are submitted electronically to the state data repository. The acute care hospitals and rehabilitation facilities are required to submit the standard Uniform Billing (UB-92) data format that is used to bill for their hospital charges. These data include patients who spent at least 24 hours as an inpatient but do not include patients who were released from the emergency room. These data identify billed charges, not the actual payments received by the hospital. Data include demographic information, diagnoses, (identified by ICD-9, International Classification of Disease codes), diagnostic and operative procedures, billed charges, length of hospital stay, and discharge destination. The ICD-9 system is used to code and classify morbidity (the rate at which an illness occurs) data from inpatient records.

Mortality

Mortality data submitted to the IDPH Division of Vital Records 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 data from death certificates from which statistics are produced on the number of deaths.

Statewide Head and Spinal Cord Injury Registry Data

There is a uniform data set and data collection method used by all acute care hospitals with an Emergency Department to report head and spinal cord injuries to the state data repository.

Completeness and Accuracy

EMS

There is no process that tracks compliance with data reporting requirements or deficits in reporting to the state data repository. There are no penalties or punitive actions levied against the EMS providers not compliant with data reporting requirements. The data that are submitted using the paper scan form process may include incomplete records that may be appended to the state data system. It was reported that this is impacting the quality of the EMS data. There are

edit checks and validation processes preformed on the data that are submitted electronically to the state repository. Data quality feedback is not provided to pre-hospital providers.

Trauma

There is a process that tracks compliance with data reporting requirements or deficits in reporting to the state data repository. The reporting of trauma patient care data is an essential criterion for trauma designation. In addition, trauma designation and trauma funds may be withheld from those Trauma Centers that are not compliant with the state reporting requirements. Data are submitted to the state Trauma Registry electronically. It was reported that 100 percent of the 64 designated Trauma Centers are compliant with the state reporting requirement. There are edit checks and validation processes performed on the data that are submitted electronically to the state repository. Data quality feedback is not provided to the Trauma Centers.

Hospital Discharge

All 221 acute care hospitals and rehabilitation facilities are reporting in-patient care data to the state data repository.

Mortality

Mortality data are being submitted to the state data repository. It was reported that all Funeral Directors, Coroners and the Medical Examiner are compliant with the state reporting requirement.

Statewide Head and Spinal Cord Injury Registry Data

All acute care hospitals with an Emergency Department are required to submit data to the state. Information related to compliance with this requirement was not available at the time of this assessment.

Accessibility

Protected patient care data are released in compliance with state and national patient privacy and protection regulations. Patient identifiable data are removed from data released in statistical reports.

EMS/Trauma/Hospital Discharge/Mortality and Head and Spinal Cord Injury Data

These data are available on the IDPH EMS and Highway Safety Division website. A pre-determined data set is available for the public to query and create a report at http://app.idph.state.il.us/emsrpt/form-hospitalization.asp. All patient identifiable information has been removed from this database. Data are available to the Crash Outcome Data Evaluation System Project for data linking and analysis.

A public data file is available upon request and contains a very limited number of variables that have the crucial patient information removed leaving it virtually unusable for statistical data analysis. Researchers may submit a request for a research data file that contains patient identifiable information to the Department's internal review board for approval on a case by case basis.

Linkage

Illinois has entered into a Crash Outcome Data Evaluation System (CODES) Cooperative Agreement with the National Highway Traffic Safety Administration. The grantee is the Illinois Department of Transportation (IDOT) Division of Traffic Safety (DTS).

The CODES Project is in the implementation phase of the project and has completed the first attempt to link the crash data file with the hospital discharge data file. The EMS pre-hospital, trauma and discharge patient care data, mortality data, and crash data files will be used in this probabilistic data linking project. The CODES Project's focus is to follow the crash victim from the scene of the crash through the healthcare system and disposition to home, rehabilitation or death.

Currently, the CODES data linkage process is hampered by the quality of EMS and crash data. The multiple versions of the uniform EMS run sheet, the lack of a data conversion process for mapping the EMS data from one form to another, the lack of quality control processes for EMS and Trauma data, and the backlog of crash data are hampering the CODES data linking process/progress.

Emergency Department patient care data is a crucial component of a statewide Injury Surveillance System that identifies motor vehicle crash victims and evaluates their appropriate treatment at an appropriate definitive care facility. Illinois will be collecting Emergency Department data in 2007. These data are rich in information and could be used as an adjunct to the limited data that are being used currently for CODES data linking. The IDOT crash data, EMS run data, trauma registry data, hospital discharge data, vital records and head and spinal cord injury data are to be combined for data linking. The data owners will be provided a linked data file for their own data needs and analysis. The linked data files will be used for traffic safety and injury prevention activities.

There are multi-agency Memoranda of Understanding (MOU) that exist between the data owners involved in the CODES Project. These MOUs establish a data sharing partnership for probabilistic data linking and analysis. The CODES Board of Directors includes the entire membership of the Traffic Records Coordinating Committee. This large committee includes the owners of the data being used in the CODES project. The inclusion of non-data owners may hamper open and honest discussions related to data quality and data linking processes such as imputation. Currently there is not an established CODES Advisory Committee that is inclusive of data users and traffic safety advocates. These individuals are the key to the promotion of the CODES project and can drive the grass roots traffic safety efforts for the state.

Recommendations

- ❑ Use one data format for the EMS run form. Discontinue accepting both data formats or develop a data conversion process to map the data.

- ❑ Develop and implement a data validation process that will check the data for completion, and validate the data variables prior to appending to the EMS production data base.

- ❑ Move forward with a total electronic data submission process for EMS run reports.

- ❑ Provide incentives to the EMS providers for submission of the required data set.
- ❑ Develop and implement a data quality report for the state EMS and Trauma office.
- ❑ Develop and implement a data quality report that can be sent to the EMS providers and Trauma Centers upon processing their data submission.
- ❑ Develop and implement an annual data cleansing process (removal of duplicates, incomplete data fields, invalid data variables, etc.).
- ❑ Refine the CODES Board of Directors to include only the data owners. This will encourage open honest discussion of data quality issues and data linking processes.
- ❑ Establish a CODES Advisory Group (data users) that can provide direction and vision for the use of the linked CODES data.
- ❑ Assure that all the managers of the Injury Surveillance System components participate fully in the Traffic Records Coordinating Committee.

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 Division of Traffic Safety (DTS) has data analysts capable of providing in house all aspects of problem identification, program management, monitoring, and evaluation. Statistical analysis is essentially limited to the use of historic data because the crash file is not timely. Concerted efforts are being applied to correct that resource deficiency.

While the DTS analysts possess all of the skills needed, there is no access to the available data which is user friendly. A capability for non-technical personnel and the public is a feature being planned.

Under the sponsorship of the DTS there is an impressive web-based query system in the Illinois Department of Public Health providing univariate extractions of data from EMS run reports, the trauma registry, hospital discharge data, and a subset of crash data in addition to extensive data in other health records including vital statistics.

Recommendations

- ❑ Strengthen the Traffic Records Coordinating Committee, and assure that all components of the statewide traffic records system are fully represented and aware of and become participants in plans for improving the overall system and the need for them to leverage resources for their mutual support.

- ❑ Insure that the Strategic Plan addresses all components of the traffic records system.

- ❑ Produce statistics in various forms and make them interesting as well as informative. Use the Internet and traditional publishing avenues.

- ❑ Provide basic data extraction and analysis tools for the entire user community.

- Create and publish a catalog of available highway safety reports and resources to enable all interests in highway safety to become aware of points of contact, plans for improvements, and information available.

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

Crash data are available to the highway and traffic safety communities for planning purposes. These data have historically not been current, but efforts are underway to improve the currency of the crash data. These data are used to support pending legislative actions, management of Section 402 safety programs, and planning and enforcement at the local level. Performance measures have been developed to determine progress meeting goals for the various safety programs.

The Illinois Department of Transportation (IDOT) Division of Traffic Safety (DTS) has an Evaluation Unit, with research technical expertise, as do the Illinois State Police (ISP) and the Illinois Department of Public Health. IDOT also has an Accident Studies Unit and a Traffic Statistics Unit that conduct problem identification and evaluations for the engineering-related side of DTS. In addition, colleges and universities have been involved in safety research and problem identification through formal research grants.

Information may be provided in the form of reports, or in some cases raw data are provided to support direct analysis by users. The DTS data analysis staff is very effective at producing crash statistics in response to user requests. However, the overall information sharing process could be improved by providing improved analytical tools for users to obtain information on their own, without having to request data and reports from the DTS analysts.

The IDOT Bureau of Information Processing proposed integrated data warehouse should help to significantly address this problem. The fact that a GIS is a major part of this data warehouse should enhance its usefulness and user-friendliness. Additional attention should also be paid to expanding the scope of the data warehouse beyond the areas covered by the data housed within IDOT. The Traffic Records Coordinating Committee (TRCC) should be an effective resource in developing an overall vision and direction for a complete traffic records data clearinghouse.

Recommendations

- ❑ Expand the data warehouse concept to move forward with an integrated data clearinghouse that could be used to share all traffic safety information in a user-friendly fashion.

- ❑ Task the TRCC to develop the 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

Safety data has supported decision-making at the policy level successfully. For example, a state Senator described his success in passing highway safety related legislation due directly to the availability of data to support his legislative initiatives.

The direction by the Secretary of Transportation as expressed in the Illinois Comprehensive Highway Safety Plan and in his recent appointment of a special assistant to facilitate the development of a Strategic Plan for Traffic Records Systems, is a strong endorsement of the need of reliable and credible safety data.

However, the evidence of uses of safety data for policy direction is for the most part anecdotal. This is probably due to the unavailability of reliable data in a timely fashion. The current backlog of crash data and the lack of useful data from other traffic records files, such as health care costs, may have discouraged users from requesting data. Also, the access to the data may not be timely enough for issues needing immediate action.

Recommendations

- ❑ Create a method to receive input from policy level safety stakeholders, including legislators, of their highway safety data needs as part of the needs assessment step in the Strategic Plan for Traffic Records System improvements.

- ❑ Create an inventory of safety related data sources for use by all safety stakeholders and in particular policy level officials.

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 Illinois Department of Transportation (IDOT) Division of Traffic Safety (DTS) responds to local, state, and national data requests. The DTS publishes an annual *Illinois Fatal Crash Facts* that is available for the years 1998 - 2004 on the IDOT website. The *Illinois Fatal Crash Data A Snapshot View* with current fatal crash information is also available on the IDOT website see http://www.dot.il.gov/trafficsafety/crashreports.html.

Also available on the IDOT website are the following traffic safety reports:

- Work Zone Safety
- Seat Belt Usage
- Impaired Driving
- Child Passenger Safety
- Motor Cycle Safety and Training
- Motor Carrier, Hazardous Material and School Bus
- Safety Publication and Reports

The Illinois Department of Public Health provides crash information, injury and death data on its website at http://app.idph.state.il.us/emsrpt/to_dth_forms.asp. The public may review data using a public query form that allows them to select predetermined data elements to create a report. Personal identifiers have been removed from the data and there are limitations in place to protect the cases from being identified by the public. The creation and development of this valuable website was funded by the Illinois Department of Transportation. The following data can be queried for information:

- Vital Records
- Hospital Discharge
- Head and Spinal Cord Injury
- Trauma Registry
- EMS Pre-hospital
- Traffic Crash

The Illinois State Police provides traffic safety information on their website for public access. These reports include:

- Traffic Safety Facts
- Balancing the Responsibility – Commercial vehicle, passenger vehicles and semi-truck information
- Child Safety Seats and Seat Belts
- About Drunk and Drugged Driving

It was reported during this assessment that data are available upon request to legislative representatives for use in preparing for upcoming legislative sessions. The crash data has been used to support legislative initiatives and traffic safety bills, e.g., Child Passenger Seat and Seat Belt Laws. Concern was voiced that healthcare data are not readily accessible and would be of great value to combat uncompensated trauma care cost and motor vehicle injuries.

Recommendations

- ❑ Provide healthcare data upon request to legislative representatives.

- ❑ Promote the availability and accessibility of the healthcare data, e.g., a State of Healthcare in Illinois Legislative Report.

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

A Traffic Records Coordinating Committee (TRCC) has been formed in the past several years. The current TRCC roster lists 51 members from a variety of agencies, including the Illinois Department of Transportation, Administrative Office of Illinois Courts, Illinois State Police, Illinois Department of Public Health, the Secretary of State and a variety of local agencies (engineers, police agencies, MPOs). Memoranda of agreement have been signed among the major stakeholder agencies.

The committee is relatively large, and its current structure is a single tier consisting of both executive and technical members. It needs to be restructured to consist of two levels: an executive level and a working/technical level. The executive level should set the mission of the TRCC and provide oversight, approval authority, and resource support for actions proposed by the technical level members. The executive level group may not need to meet as frequently as the technical level members, only when necessary to approve major projects or receive progress reports on ongoing and previously approved activities. The newly organized TRCC will also need to examine its membership roster to insure that all stakeholders have been included.

This combined executive and technical level TRCC will be critical for the state to properly develop, maintain, and track the progress of a Strategic Plan for Traffic Records as recommended in this report and as required by the SAFETEA-LU legislation.

Recommendations

- ❑ Identify an “executive group” from the leadership of participating agencies within the TRCC.
- ❑ Develop a charter to formalize the role and scope of the TRCC.
- ❑ Re-examine the membership and ensure that all stakeholders have been included.

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 Illinois Department of Transportation (IDOT) is taking the lead in preparing a multi-year highway safety data and traffic records system strategic plan. The impetus for this action is to meet the requirements of a National Highway Traffic Safety Administration (NHTSA) grant program to improve state traffic safety information systems under the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA–LU).

The Secretary of IDOT assigned a high level member of his staff (a special assistant) to facilitate this effort and is in the process of soliciting support from the other major safety stakeholders

through informal or formal mechanisms such as a memorandum of understanding (MOU). This is a laudable and essential action that will focus attention and resources toward achieving a successful strategic plan.

The state is in a good position to be successful in this effort not only because of this high level direction but also because they have in place a broad based Traffic Records Coordinating Committee (TRCC) with representation from the major traffic records system components. The SAFETEA-LU requires that in order to satisfy the TRCC requirement for a first year grant 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 a State's Strategic Plan."

SAFETEA-LU also provides that a Strategic Plan shall be: "(a) Approved by the State's TRCC; (b) address existing deficiencies in a State's highway safety data and traffic records system; (c) specify how deficiencies in the system were identified; (d) prioritize the needs and set goals for improving the system; (e) identify performance-based measures by which progress towards those goals will be determined; and (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." (Quoted remarks are from the 5729 Federal Register / Vol. 71, No. 22 / Thursday, February 2, 2006 / Notices.)

Recommendation

- ❑ Task the TRCC with conducting a traffic records system strategic plan that helps state and local data owners support the overall safety program needs. This Strategic Plan should:
    - Specify the requirements for and from each component of the traffic records system.
    - Identify the goals for improvements for each of the traffic records system components.
    - Set priorities for each goal with a timeline for implementation.
    - Secure commitment to the goal implementation and the timeline.
    - Establish performance-based measures for each of the goals and the strategies developed to achieve the goal.
    - Develop a monitoring process to track progress for each goal and a mechanism to modify or replace goals as required.

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

The State has not conducted a data inventory and training needs assessment for the law enforcement agencies. This would provide valuable information related to the data collection methods, software products that are used, and the computer hardware in use by the local law enforcement agencies. There are agencies that have developed their own electronic crash data collection systems and are using third party software to collect crash data. Due to the lack of compatibility of these systems with the state data system the majority of the local law enforcement agencies submit a paper crash report. The extent and variety of these systems is unknown.

Training has been provided to the Illinois State Police (ISP) and those local law enforcement agencies that are collecting data using the electronic Mobile Capture and Reporting system. The current focus is to train the ISP then implement training to the local law enforcement officers. It was reported that there have been over 100 training sessions.

Basic training is provided at the law enforcement academies on the completion of the crash report and on crash investigation. In addition, there are POST training opportunities for law enforcement personnel related to crash investigation.

Recommendations

- ❑ Continue to conduct training sessions for the State Police and local law enforcement agencies on the completion of the crash report form.
- ❑ Develop an electronic training medium to address the high frequency data errors and data quality problems found in the paper crash report processing.
- ❑ Provide training opportunities to those local law enforcement agencies that are submitting paper crash reports.

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GLOSSARY OF TERMS AND ACRONYMS

AADT	Average Annual Daily Traffic
AAMVANet	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 21st Century
TRB	Transportation Research Board
VIN	Vehicle Identification Number
VMT	Vehicle Miles Traveled

TEAM CREDENTIALS

ALLEN S. PARRISH, PH.D.

Department of Computer Science
The University of Alabama
Tuscaloosa, AL 35487
Phone: (205) 348-3749
Fax: (205) 348-5044
E-Mail: parrish@cs.ua.edu

INTERESTS

Transportation information systems; crash and citation records; electronic citations; traffic crash data analysis and visualization; data mining; applications of information technology to homeland security and law enforcement.

EDUCATION

Ph.D. Computer and Information Science, The Ohio State University, Columbus, Ohio, 1990.
M.S. Computer and Information Science, The Ohio State University, Columbus, Ohio, 1987.
B.S. Computer Science, The University of Tennessee, Martin, TN, 1983.

EMPLOYMENT

(August 2005 to Present) Professor, The University of Alabama, Tuscaloosa, AL
(August 1996 to August 2005) Associate Professor, The University of Alabama, Tuscaloosa, AL.
(August 1990 to August 1996) Assistant Professor, The University of Alabama, Tuscaloosa, AL.
(September 1986 to August 1990) Graduate Teaching Associate, Ohio State University, Columbus, Ohio.
(September 1985 to September 1986) Graduate Fellow, Ohio State University, Columbus, Ohio.
(August 1983 to September 1985) Senior Computer Program Specialist, The University of Tennessee, Martin, TN.

ADMINISTRATIVE EXPERIENCE

January 2000 to Present: Director, CARE Research and Development Laboratory (CRDL). Responsible for the management and supervision of a major College of Engineering research operation with $2M in annual research expenditures. Supervise 8 full-time professional staff, as well as around 10 students, in collaboration with 2 other Computer Science faculty members. Responsible for management of budgets, personnel and purchasing funded by a large number of concurrent contracts, as well as technical direction and coordination for the entire operation. The CRDL conducts research and advanced development projects involving data mining, mobile and wireless computing, and traffic safety/law enforcement information systems.

GRANTS AND CONTRACTS

Over 50 separate funded projects totally over $15M during 1990-2005. Recent sponsors have included:

- National Highway Traffic Safety Administration
- Federal Motor Carrier Safety Administration
- Department of Homeland Security
- Department of Justice – Office of Justice Programs
- Alabama Criminal Justice Information Center
- Alabama Administrative Office of Courts
- Alabama Department of Public Safety
- Alabama Department of Transportation
- Alabama Department of Public Safety
- Georgia Department of Transportation
- Delaware Highway Safety Office

RECENT PUBLICATIONS

Over 75 publications in a large number of areas of computer science. Some recent relevant publication titles include:

- Wang, H., R. Smith, S. Vrbsky and A. Parrish, Improved Variable and Value Ranking Techniques for Mining Categorical Traffic Accident Data, *Expert Systems With Applications*, to appear, 2006.
- Improved Variable and Value Ranking Techniques for Mining Categorical Traffic Accident DataWang, H., H. C. Chen and A. Parrish. Automated Selection of Auto Crash Causes," *Proceedings of 42nd ACM Southeast Regional Conference*, pp. 375-378, 2004.
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RECENT CONFERENCE PRESENTATIONS

- Parrish, A., "Electronic Citations in Alabama," Presentation at the 31st Annual International Forum on Traffic Records and Highway Information Systems, Buffalo, NY, July 2005.
- Parrish, A., "Data Integration to Improve Traffic Safety Enforcement," Presentation at the 30th Annual International Forum on Traffic Records and Highway Information Systems, Nashville, TN, July 2004.
- Parrish, A., "Wireless Data Communications: Alternatives, Challenges and Applications," Presentation at the 5th Annual Alabama Law Enforcement Technology Conference, Point Clear, AL, December 2003.

- Parrish, A., “Handheld Computing Devices for Mobile Traffic Records Management,” Presentation at the 29th International Forum on Traffic Records and Highway Information Systems, Denver, CO, July 2003.
- Parrish, A., “CARE After 20 Years: Impact on Highway Safety,” Presentation at the 28th International Forum on Traffic Records and Highway Information Systems, Orlando, FL, August 2002.

ROBERT A. SCOPATZ, PH.D.

Data Nexus, Inc.
P.O. Box 11770
College Station, TX 77842-1770

Director of Research & Consulting Services

Professional Experience

- Director of Research & Consulting Services, Data Nexus Inc., College Station, Texas
- Research Scientist, Star Mountain Inc., Alexandria, Virginia
- Director and Acting Assistant Commissioner, New York City DOT, Office of Transportation Analysis
- 17 years research and managerial experience in Transportation Data Analysis

Organizations/Affiliations

- Member, NCHRP Synthesis Panel; Statistical Methods in Transportation Research; National Academy of Sciences
- Executive Board Member & 2004/2005 President, Traffic Records Committee/Association of Transportation Safety Information Professionals (ATSIP), National Safety Council
- Member, Statistical Data Analysis and Safety Data & Research Methodologies Committees; Transportation Research Board, National Academy of Sciences

LANGSTON A. (LANG) SPELL

1883 Tower Lakes Blvd.
Lake Wales, FL 33859-4807
E-mail: lspell@verizon.net

Independent Consultant

Professional Experience

Mr. Spell entered his professional career in traffic records systems and data exchange over 45 years ago. He is nationally recognized for his work in development of traffic records systems, especially interchange (NDR and CDL) of information amongst various users and the development and promulgation of data standards in information processing.

He served as a member of D16.1 committee. He developed the AAMVA Violations Exchange Code or "ANSI" code (predecessor of the AAMVAnet Coding Dictionary or ACD which he also co-developed) while employed with AAMVA and later served as the Accident (Crash) Subcommittee Chairman for the ANSI D-20 Standard, A States Model Motorist Data Base, while employed with the National Highway Traffic Safety Administration.

While employed with NHTSA he created the original reporting forms and file structure for the Fatality Analysis File which was renamed in 1975 as the Fatal Accident Reporting System (FARS) and later renamed again, the Fatality Analysis Reporting System (FARS). He and his staff conducted the training for all of the original analysts.

As an independent consultant, he conducted the NHTSA Uniform Traffic Ticket Study to determine the extent and details of emerging Citation Tracking Systems. He conducted all aspects of the study including on-site State visits and assessments to determine the extent of control being exercised in citation issuance, processing of conviction information through the courts, and recording conviction dispositions in driver history files.

In the private sector, he developed numerous Crash Report forms, instruction manuals for crash reporting, data input procedures, all edits to assure data quality, and reporting and analysis procedures for problem identification. He also developed the EMS Run Report for Kentucky.

He designed the graphical user interface for the Highway Traffic Records Information System for the Virginia Department of Transportation (VDOT) and provided training in the use of the system to the district offices of VDOT.

He was involved in the design and developmental efforts for the Commercial Driver Licensing Information System (CDLIS) and its AAMVAnet environment and was a member of the AAMVAnet "Tiger Team" that made the assessments of selected states to become pilots and eventual founding states in the National Motor Vehicle Title Information System. His background, experience and interested cover the entire spectrum of traffic records systems.

History

1992 – "present"	Independent Consultant (now essentially retired)
1977 – 1992	Senior Traffic Records Analyst National ConServ, Inc. (but 1980 to 1983: Independent Consultant)
1974 – 1977	Vice President GENASYS (Systems Division) (now Keane, Inc.)
1968 – 1974	Chief, Information Systems, NHTSA, US Department of Transportation
1966 – 1968	Director of Data Systems for the AAMVA
1958 – 1966	Staff Specialist in MVRs (driver histories) for Retail Credit Co. (now Equifax) Atlanta, GA

Memberships in Professional Associations (former)

- Traffic Records Committee, Transportation Research Board
- American Nation Standards Institute, D-16, D-20, and X3L8 Committees
- Executive Board, Traffic Records Committee, National Safety Council
- Society of Automotive Engineers Committee on Standardization of Vehicle Identification Numbers

Education

Boston University ..... S.T.B., 1956
Duke University ..... A.B., 1953

CAROL WRIGHT, R.N.

149 Lazy Lane
Red Rock, TX 78662
Tel. 830-839-4103 or 512-581-2900
E-mail: carol-sunshine@yahoo.com

Professional Experience

Current: EMS & Trauma Systems Consultant,
In graduate school (Nurse Practitioner Program)
Clinical Nursing (ER & Trauma) at Acute Care Facility
Guest Lecturer

2000 – 2004 Texas Department of State Health Services Austin, Texas
Injury Epidemiology & Surveillance
Program Administrator II EMS/Trauma Registry

- Responsible for Grant resource and oversight
- Liaison to legislative staff advocacy groups
- Supervise registry staff
- Program Budget, schedules, travel coordination
- Development of new web-based EMS/Trauma Registry System (TRAC-IT)
  Review RFP, JAD/JRP collaboration
- Data schema analysis
- Development of EMS & Trauma Data Dictionaries
- Staff stakeholder and town hall meetings
- Facilitate EMS provider & trauma registry workgroup
- Staff support and liaison for Governor's EMS & Trauma Advisory Committee
- Resource for EMS/Trauma development and registry issues
- Clinical and technical resource for EMS/Trauma Systems Development

1997 – 2000 Texas Department of Health Austin, Texas
Bureau of Emergency Management
Trauma Designation Specialist

- Survey Trauma Facilities Level 1 – Level 4
- Reviewed designation applications & forward recommendations to Bureau Chief
- Developed revised designation applications
- Developed Quality Improvement Process
- Developed Pediatric Categorization applications and categorization process
- Trained surveyors
- Staff support for Governors Advisory Council
- Liaison with Center For Rural Initiatives and EMS/Trauma Registry
- Presenter at Texas EMS Conference 1998 & 1999
- Developed Grant RFP, grant quarterly & annual reports

1995 - 1997 Memorial Hospital of Gonzales Gonzales Texas

Trauma Coordinator/Nurse Educator/ ED Director

- Developed Trauma Program
- Developed Trauma Quality Improvement Program
- Developed Trauma Designation & ED policies and procedures
- Developed and taught orientation, advanced cardiac life support, trauma nurse core course prep, emergency nurse pediatric prep, oncology
- Developed and taught EKG course, dosage calculation course, arterial blood gas course
- Facilitated trauma administrative meetings
- Supervised staff
- Developed and presented statistical reports to hospital Medical Executive Committee and Hospital Board of Directors
- Resource and mentorship of Area "P" trauma coordinators

1994 – 1995 Smithville Regional Hospital Smithville. Texas

Director Quality improvement/ Infection Control/ E.D.

- Supervised Staff
- Budget/Staffing/Staff Training
- Developed and presented statistical reports to hospital Medical Executive Committee and Hospital Board of Directors
- Developed Quality Improvement Program for hospital and three rural clinics
- Developed Infection Control Program for hospital and three rural clinics

1988 – 1994 Medical Center Hospital Odessa Odessa, Texas

Assistant DON Skilled Nursing Facility/Patient Care Coordinator/ED nurse/ Charge nurse/ Critical Care nurse

- Started employment as an LVN and obtained RN
- Supervised staff
- Budget
- Trained nurses
- Developed and presented statistical reports
- Liaison to Administrator
- Facilitated executive meetings
- Critical and emergency patient care (ICU/CCU/ED)
- Oncology nursing

Education

Graduate School Nursing/Health Administration currently enrolled
Odessa College Nursing Degree –ADN Registered Nurse 1989
Certified Emergency Nurse

Current Education

Trauma Nurse Certification
Advance Life Support
Advance Trauma Life Support

Professional Affiliations

- Texas Trauma Coordinators Forum
- Emergency Nurses Association
- National Trauma Society
- Emergency Pediatric Nurse Association
- American Trauma Society
- Association of Transportation in Information Programs

Additional Information

Presenter and Lecturer:

- Annual Texas EMS Conference
- Bi National Traffic Records Conference
- SWT Suicide and Psychology Class
- Texas Trauma Coordinators Course
- Suicide Prevention Lecture "Let's Talk"
- CODES "A Collaborative Partnership"
- Trauma Designation Surveyor Course
- EMS & Trauma Data "Why Do I Send This Stuff"

JOHN J. ZOGBY, PRESIDENT

Transportation Safety Management Systems
1227 North High Street
Duncannon, PA 17020
Voice: (717) 834-5363
Email: jzogby@paonline.com

Summary of Experience

Mr. Zogby has over 40 years experience in highway safety engineering and management and motor vehicle and driver licensing administration.
Mr. Zogby's transportation career began in the Bureau of Traffic Engineering in the Pennsylvania Department of Highways, where he was responsible for statewide application of highway signs and markings. He was instrumental in developing the State's first automated accident record system in 1966. In the late 1960's, he helped initiate and was project director for the statewide safety improvement program and the State's in-depth accident investigation function.
Mr. Zogby worked in the private sector in traffic safety research for several years before returning to public service as the Director of the Bureau of Accident Analysis in the Pennsylvania Department of Transportation (PennDOT). He was appointed Deputy Secretary of Transportation for Safety Administration in February of 1979, a position he held for 13 years, until his retirement from public service in December 1991.
Since his retirement from State government, Mr. Zogby has been engaged as a consultant on management and policy issues for federal, State and local government agencies in the area of transportation safety and motor vehicle/driver licensing services.

Professional and Business Experience

Subcontract with GeoDecisions Consulting on a Safety Analysis Management System (SAMS) for the state of Mississippi.

Subcontract with iTRANS Consulting Inc. on NCHRP project 17-18 (05), Integrated Management Process to Reduce Highway Injuries and Fatalities Statewide for the Transportation Research Board.

Contract with the National Academy of Sciences (NAS) to provide AASHTO Strategic Highway Safety Plan - Case Studies (17-18(06)) for the Transportation Research Board.

Subcontractor with ISG, a systems integration consulting company, conducting a reengineering contract with the Pennsylvania Department of Transportation in the area of motor vehicle processes.

Subcontractor with the Pennsylvania State University to research the impact of an education provision in State law governing novice drivers.

Conducted a three-week course on safety management for the Ministry of Communications in the Kingdom of Saudi Arabia.

Subcontractor with a Moroccan Engineering firm to develop a national highway safety plan for the Country of Morocco.

Completed a study for the State of Mississippi, Department of Public Safety, to develop a Strategic Plan for Highway Safety Information.

Contracted by the Federal Highway Administration, Office of Motor Carrier Safety, to help in the final implementation phase of the Commercial Driver License (CDL) program.

Consulted with several States in assessing their Traffic Records capabilities to address highway safety program management needs. In addition, completed Traffic Records Assessments for three Indian Nations in Arizona.

Project director and principal instructor for a Federal Highway Administration (FHWA) contract to develop, implement, and instruct a training program for the Highway Safety Management System.

Professional Societies and National Committees

Member Institute of Transportation Engineers.

Member Emeritus of the Transportation Research Board (TRB) Committee on Transportation Safety Management.

Chair TRB task force on Safety Management status.

Member of the National Safety Council's Association of Transportation Safety Information Professionals.

Past Chair of the National Safety Council's Traffic Records Committee.

Past President of Region 1 of the American Association of Motor Vehicle Administrators.

Past President of MidAtlantic Section, Institute of Transportation Engineers.

Chaired the Governing Board of the International Registration Plan.

Chaired a subcommittee of the NGA Working Group on State Motor Carrier Taxation and Regulation.

Completed six-year tenure as Chair of the TRB committee on Planning and Administration for Transportation Safety.

Community

Chairman, Duncannon Borough Planning Commission

Executive Board, Perry County Economic Development Corporation

President, Duncannon Area Revitalization, Inc.

Board Member, Tri-County Regional Planning Commission

Task Force Member, Cumberland/Perry Counties Safety & Congestion Management Study

Pastoral Associate, St. Bernadette Church, Duncannon, PA

Education

B.S., Economics, Villanova University

MPA, Penn State University