STATE
OF
KANSAS

TRAFFIC RECORDS ASSESSMENT

February 22-26, 2010

National Highway Traffic
Safety Administration
Technical Assessment Team

Larry Cook, Ph.D
Larry Holestine
Michael J. McDonald
Langston Spell
John J. Zogby

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EXECUTIVE SUMMARY

The National Highway Traffic Safety Administration (NHTSA), responding to a request by the Kansas Department of Transportation (KDOT), Bureau of Transportation Safety and Technology (BTST), Traffic Safety Section (TSS), assembled a team to conduct a traffic records assessment. Concurrently the TSS carried out the necessary logistical and administrative steps in preparation for the onsite assessment. A team of professionals with backgrounds and expertise in the several component areas of traffic records data systems (crash, driver, vehicle, roadway, citation and adjudication, and injury surveillance) conducted the assessment February 22 to 26, 2010.

The scope of this assessment covered all of the components of a traffic records system. The purpose was to determine whether the traffic records system in Kansas 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.

Background

A similar assessment was conducted in 2005 that offered a number of recommendations to improve the State's traffic records system. The State has made considerable progress since that time, some of which is briefly acknowledged below.

Crash reporting has improved dramatically since 2005. The Kansas Highway Patrol (KHP) has developed new field data capture software developed as part of the Kansas Law Enforcement Reporting (KLER) system that has been installed in 52 law enforcement agencies. Thirty-nine percent of all crash reports are now being electronically submitted to the Kansas Crash and Analysis Reporting System (KCARS) managed by KDOT. The Kansas Department of Revenue (KDOR) has begun a modernization project to establish a customer centric driver licensing and vehicle registration and titling system. This will not only provide more efficient business processing, but has the promise for better information exchange with other components of the traffic records system. The State has not implemented a statewide citation data repository as recommended in 2005; however, a Traffic Records Coordinating Committee (TRCC) initiative, co-managed by the KHP, the Kansas Bureau of Investigation (KBI), and the Office of Judicial Administration (OJA), is developing e-citation software for law enforcement that has the possibility for eventually providing the basis for a statewide citation database. Since the last assessment, the State has formed a Traffic Records Coordinating Committee (TRCC) which is a well functioning and effective group and manages many of the traffic records initiatives that are critical to an eventual total traffic records system. The funding and development of the electronic Kansas Emergency Medicine Information System (KEMIS) is a major step forward from the old paper based collection system in place at the time of the 2005 Assessment. There appears to be a strong upper level management interest and involvement in the development of the State's traffic records system which has influenced the progress we have seen and documented in this report.

As noteworthy as these accomplishments are, some issues still remain regarding the ability of the present traffic records system to support Kansas' management of its highway safety programs. These are included in the summary below and the full report that follows.

Crash Records System

The official state crash records system, the Kansas Crash and Analysis Reporting System (KCARS), is maintained by KDOT. The KCARS together with its supporting technology is designed to receive crash reports both in paper and electronic form.

The Crash component of KLER has allowed the KDOT to phase out the two field data collection applications that were operating in parallel in 2005. Approximately 13 additional agencies are in the approval process for electronic submission using KLER.

KDOT in coordination with the Traffic Records Coordinating Committee (TRCC) has finalized and published the specifications to allow those agencies with non-KLER software to electronically transfer their records to the KCARS.

However, KDOT has not conducted an inventory to determine the number of agencies using the non-KLER software. This should be done to develop a strategy for expanding the use of electronic submission facilities. While the 39 percent electronic submission rate is commendable, further increase will depend not only on KLER but the willingness to adapt local agency Records Management Systems (RMSs) supported by third party software for submitting via the KDOT transmission protocols.

This strategy should include a more robust effort to further electronic capabilities. KDOT needs to become more proactive by establishing an outreach program to get as many local agencies as possible to report crash data electronically to KCARS. Further improvement will require promoting electronic crash report submission regardless of vendor and providing support to those agencies willing to meet the file transfer specifications.

Citation and Adjudication Records

Traffic violations are filed in state courts (31 district courts) or municipal courts (about 335). Presently there is no central collection of data from the citations issued and filed or their dispositions. Consequently there is no citation tracking system as recommended in the 2005 report.

The Office of Judicial Administration (OJA) provides administrative and technical services to the District Courts, including support of the FullCourt case management system (CMS) in use by 29 of the 31 District Courts. The OJA facilitates the transfer of conviction records to the driver history records at the Division of Motor Vehicles (DMV), but does not maintain a central database, although statistical data are maintained.

The State is developing an e-citation module in the KLER software. The project is under the oversight of the TRCC and the Kansas Bureau of Investigation (KBI) and is carried out by representatives from the OJA, KHP, and the KDOR. Its purpose is “to provide issuance-to-resolution tracking of citations issued throughout the state of Kansas.” The e-citation module will be installed initially in the KHP and the Sheriff Departments since they both are currently using the same data capture tool. Some tweaking of the location field on the Sheriffs’ citations will be required before implementation. The goal is to establish a repository to store data from

the citations, but no decision has been made regarding its location. The data will be stored and available for analysis, and will include data from issuance of the citation through its final disposition.

Although this initiative will provide the foundation for a statewide database of citations, it will not be complete until it includes the citations filed in the municipal courts. It is recognized that the Supreme Court and the OJA have no statutory authority over the municipal courts. However, the State needs to make an attempt to bring their data into the e-citation system. One way may be to update local agencies first with the e-citation module that are currently using KLER. Further, the TRCC should invite some representatives from the municipal courts to assist on this project.

Without complete data about the processing of citations, the State is unable to evaluate the effectiveness of its traffic laws; it cannot determine if any cases are pending on offenders in other courts; and it cannot adequately determine if an individual's driving record is reflective of behavior requiring license removal.

Driver and Vehicle Records

The DMV has begun a modernization project to establish a customer centric driver licensing and vehicle registration and titling system. This will not only provide more efficient business processing, but has the promise for better information exchange with other components of the traffic records system.

The improvements already achieved and the emerging new DMV System are impressive and gratifying to acknowledge. Needed improvements to the character, quality, and completeness of citation/conviction data provided to the DMV could make the new KDOR system and its contents a benchmark for excellence in driver and vehicle records system.

Statewide Injury Surveillance System (SWISS) Components

Statewide Kansas has developed or is developing many components of a SWISS. These components include the Kansas Emergency Medicine Information System (KEMIS) housed at the Kansas Board of EMS (KBEMS); the Kansas Trauma Registry in the Kansas Department of Health and Environment (KDHE) Bureau of Local and Rural Health; the Kansas Vital Statistics database maintained by the KDHE Bureau of Public Health Informatics; and the Kansas hospital discharge database collected by the Kansas Hospital Association (KHA) and supplied to KDHE Bureau of Health Promotion.

The components of the SWISS are being used for motor vehicle crash and injury prevention activities. Linkages have been undertaken between various components of the SWISS but mainly for quality assurance purposes. SWISS and KLER data have not been linked, thus leaving decisions regarding highway safety to be made solely from the crash database without access to the rich information available within the SWISS.

Roadway Information

A system for locating crashes on highways owned and maintained by the Kansas Department of Transportation (KDOT) is currently in place. Crashes are assigned a location reference that corresponds to a unique point on the State highway system. Crash patterns can be detected and road sections can be compared to identify potential safety problems. A similar system is not yet in place for the approximately 130,000 miles of streets and roads not maintained by KDOT. A network database of these roadways is being developed, but administration of that roadway information will be a continual challenge as cities continue to develop and add streets.

The issue with both counties and cities is the availability and reliability of data to use in their problem identification processes. KDOT is in the process of enhancing their crash data system with a view to make these data available to county and city engineers for use in their safety program development. The Traffic Engineering Assistance Program can help local jurisdictions identify and design countermeasures.

Strategic Planning

The Traffic Records Coordinating Committee (TRCC) initially developed a Traffic Records Strategic Plan in early 2006. The Plan was scheduled to be updated every 12-18 months. The most current version of the Plan was last updated in September 2008.

The TRCC meets frequently throughout the year to discuss the Plan's progress and implementation and to approve all decisions associated with the Plan. All changes in the Plan have been reviewed, discussed and approved during TRCC meetings throughout the year. A new Strategic Plan will be undertaken using the findings of this Assessment as the basis for identifying deficiencies in the existing traffic records system.

Traffic Records Coordinating Committee

Since the last assessment in 2005, a statewide Traffic Records Coordinating Committee (TRCC) has been established which meets monthly to discuss and plan traffic safety projects including the allocation of traffic safety funding. An executive steering committee consisting of agency executives was also established at that time which typically meets annually to review and discuss any policy level decisions that need to be made.

The TRCC has been formed with a good governance structure (executive level, technical level, and working groups), has developed a mission statement, has executed Memoranda of Understanding, and functions according to a set of strategic principles. The TRCC and its members have remained actively engaged in ensuring the successful implementation of the Traffic Records Strategic Plan and its associated projects. The TRCC meets frequently throughout the year to discuss strategic plan progress and implementation and is fully aware and approves of all decisions associated with the Plan.

It has included representation from most stakeholder agencies including many local safety groups to include one of the large Metropolitan Planning Organizations, which is not usually found on many state TRCCs. The only major missing group is the municipal courts. This will be a significant contributor as the state moves forward with the eCitation initiative.

Overall, this is one of the better functioning committees we have encountered. It is apparent that there is a common commitment to the goals laid out in the Committee's Strategic Plan. It is the starting point for many of the State's traffic records initiatives – we often heard the statement, "We have discussed that in TRCC." Many TRCCs often are not involved or even aware of some of the ongoing initiatives within their respective states. The State of Kansas deserves high praise indeed!

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

MAJOR RECOMMENDATIONS

Crash Records

- ☐ Develop a marketing strategy/plan to get KLER crash reporting capability into as many local agencies as quickly as possible. **(Section 2-A)**

- ☐ Consider the development of a minor crash report short form for use by local law enforcement. **(Section 2-A)**

- ☐ Consider developing a secure, web-based, single submission KLER crash report capability for agencies without technical staff or sufficient technology resources so that they may move to the KLER electronic format. **(Section 2-A)**

- ☐ Conduct an inventory of third party vendor companies and identify the number of local LEAs supported by these vendor products. **(Section 2-A)**

- ☐ Meet with the identified third party vendors to outline a strategy and timeframe to conform to the NIEM standard for submitting electronically to KCARS. **(Section 2-A)**

Citation and Adjudication Records

- ❑ Continue implementation of the Kansas eCitation Program. **(Section 2-E)**

- ❑ Include Kansas Department of Transportation (KDOT) representation on the eCitation Work Group. Consider housing eCitation data at the future Traffic Record System Warehouse within the KDOT. **(Section 2-E)**

Roadway Information

- ❑ Work with county and city engineers to provide data and safety analysis capabilities. **(Section 2-B)**

Driver and Vehicle Records

- ❑ Consider evaluating the completeness, accuracy, and usefulness of the contents of the driver history records and determines the reasons for and realistic remedies for any deficiencies found. Publicize the findings to all of the highway and traffic stakeholders. **(Section 2-C)**

Injury Surveillance System Components

- ❑ Promote and expand KEMIS. **(Section 2-F)**
- ❑ Incorporate the trauma registry into KIC. **(Section 2-F)**
- ❑ Pursue efforts for KDHE to obtain the emergency department database from KHA. **(Section 2-F)**
- ❑ Undertake a data linkage project between SWISS components and KCARS. **(Section 2-F)**

Traffic Records Coordinating Committee

- ❑ Include representation from municipal courts on the Traffic Records Coordinating Committee. **(Section 1-A)**

Strategic Planning

- ❑ Create a fresh Strategic Plan for Traffic Records with the full membership of the TRCC **(Section 1-B)**
- ❑ Establish a forum for discussion of all issues and initiatives to be addressed in the new Plan (including the findings of this Assessment). **(Section 1-B)**
- ❑ Use the NHTSA suggested four box method to set priorities to the initiatives (existing and new) generated by participants involved in the forum. **(Section 1-B)**

ACKNOWLEDGMENTS

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The team would like to thank Clayton Hatch, team facilitator, for giving a national perspective to the assessment process and its goals. The team would also like to thank Randy Bolin, Regional Program Manager, NHTSA and David LaRoche, Safety Traffic Engineer, FHWA for their contribution. We would also like to thank our Administrative Assistant, Kathy Zogby.

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

Mike Floberg
Bureau Chief
KDOT

Chris Herrick
Director, Planning Development
KDOT

Pete Bodyk
Traffic Safety Section Manager
KDOT

Chris Bortz
Assistant Traffic Safety Manager
KDOT

Ruby Bradley
GAD Unit Manager
KDOT

Captain Art Wilburn
Public & Government Affairs
KHP

Zandra Myrick
TRS Administration
KDOT

Rex McCommon
Crash Database Manager
KDOT

Karen Wittman
TSRP
KDOT-AL

Leroy Mathis
Senior Supervisor
KCI (Lansing)

Carmen Alldritt
Director of Vehicles
KDOR

Marcy Ralston
Driver Control DMV
KDOR

Terry Mitchell
KDOR/Manager
KDOR

Mary Parmentier
KHP Records Manager
KHP

Herman Jones
KHP Records Custodian
KHP

Joe Moreland
Program Manager
BEMS

Dan Meyer
Captain
KHP

Barbara Turner
Investigator
KHP

Ken McGovern
Sheriff
DGCO

Ed Klumpp
Kansas Association
Of Police Chiefs

Amber Harrington
Lieutenant
KHP

Ed Boring
State Program Manager
FMCSA

Dennis Slimmer
Chief, Transportation Planning
KSDOT

Steven Buckley
State Highway Safety Engineer
KSDOT

Shaun Parkman
State Highway Safety Analyst
KSDOT

Lori Haskett
Director, KDHE Injury Prevention
KDHE

Joe Moreland
Project Manager
BEMS

Rosanne Rutkowski, RN
Director, Trauma
KDHE

Elizabeth Saadi
Director
KDHE

Dave Northup
City Traffic Engineer
UG

Joel Byford
Consultant
KDOT

Linda Voss
City
Topeka

Penny Evans
Miami County Engineer
Miami County

Mark Thurman
CIO
KHP

Steve Montgomery
CIO
KBI

Melanie Waters
Programs
OJA

Lisa Wilson
District Court Clerk Specialist
DJA

Lloyd Swartz
Municipal Court Judge
Topeka

Gail Lewis
Municipal Court Administrator
City of Topeka

Roger T. Moore
IT Project Manager
KDOT

Daniel Schultz
Research Director
DCCCA/OPOS

List of Observers

Randy Bolin
Regional Program Manager
NHTSA Region 7

David LaRoche
Safety Traffic Engineer
FHWA

INTRODUCTION

A complete traffic records system 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 system. 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 Association of Transportation Safety Information Professionals (formerly the 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 has published a *Traffic Records Program Assessment Advisory* 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 a State's traffic records strengths and accomplishments, and offers suggestions where improvements can be made.

Report Contents

In this report, the text following the "*Advisory*" excerpt heading was drawn from the *Traffic Records Program Assessment Advisory*. 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.

SECTION 1: TRAFFIC RECORDS SYSTEM MANAGEMENT

Advisory Excerpt: *Management of a State TRS requires coordination and cooperation. The data that make up a TRS reside in a variety of operational systems that are created and maintained to meet primary needs in areas other than highway safety. Ownership of these databases usually resides with multiple agencies, and the collectors and users of the data span the entire State and beyond.*

The development and management of traffic safety programs should be a systematic process with the goal of reducing the number and severity of traffic crashes. This data-driven process should ensure that all opportunities to improve highway safety are identified and considered for implementation. Furthermore, the effectiveness of highway safety programs should be evaluated. These evaluation results should be used to facilitate the implementation of the most effective highway safety strategies and programs. This process should be achieved through the following initiatives.

1-A: Traffic Records Coordinating Committee

Advisory Excerpt: *The National Highway Traffic Safety Administration's (NHTSA) 2004 Initiatives to Address Improving Traffic Safety Data Integrated Project Team report (hereafter referred to as the Data IPT Report) includes guidance on establishing a successful Traffic Records Coordinating Committee (TRCC). The following include recommendations from the Data IPT Report and additional items of an advisory nature:*

- *Establish a two-tiered TRCC.*
  There should be an executive and a working-level TRCC. The executive-level TRCC should be composed of agency directors who set the vision and mission for the working-level TRCC. The Executive TRCC should review and approve actions proposed by the Working TRCC. The Working TRCC should be composed of representatives for all stakeholders and have responsibilities, defined by the Executive TRCC, for oversight and coordination of the TRS. Together, the two tiers of the TRCC should be responsible for developing, maintaining, and tracking accomplishments related to the State's Strategic Plan for Traffic Records Improvement.

- *Ensure Membership is Representative.*
  TRCCs should be representative of all stakeholders, and each stakeholder representative must have support from their top management. When departments are considering changes to their systems, all TRCC members should be notified and departments should consider how to accommodate the needs of all the TRCC agencies.

- *Authorize Members.*
  The Working TRCC should have formal standing, recognition, and support of the administrators of participating agencies. This support will help the TRCC succeed in overcoming the institutional barriers, lack of focus, and lack of resources that prevent collaboration and progress in integrating highway safety data. The exact role and powers of the TRCC should be made explicit in its charter. Legislators, the governor, and top management of participating agencies should give authority to the TRCC members to make policy decisions and commit their agencies' resources to solve problems and approve the State's strategic plan for traffic records. The most important responsibility of the TRCC should be to provide the leadership necessary to ensure that available funds are sufficient to match stated needs. Despite challenges stemming from collective decision making by members from different agencies with competing priorities, TRCC members should speak with "one voice." The TRCC should have guidelines to determine who speaks for the TRCC and how its recommendations should be communicated.

- *Appoint an Administrator/Manager.*
  A single point of contact for managing a data improvement project is necessary to ensure leadership. The TRCC should designate a traffic records administrator or manager and provide sufficient time and resources to do the job. This person should be responsible for coordinating and scheduling the TRCC, in addition to tracking the progress of implementing the State's traffic records strategic plan. Uniform criteria should be established for monitoring progress. NHTSA can facilitate training for the TRCC administrator/manager regarding traffic record systems, program management, and data analysis.

- *Schedule Regular Meetings.*
  The TRCC should establish a schedule of regular meetings, not only to discuss data coordination issues and make progress on the strategic plan, but also to share success stories to aid in overcoming fears of implementation. The meetings should take place as required to deal with the State's traffic records issues and to provide meaningful coordination among the stakeholders. The TRCC should gain broader support by marketing the benefits of improved highway safety data. An example to provide data and analytical expertise to local government officials, legislators, decision makers, community groups, and all other stakeholders. TRCC meetings should include strategy sessions for such marketing plans.

- *Oversee Quality Control/Improvement.*
  The TRCC should have oversight responsibility for quality control and quality improvement programs affecting all traffic records data. Regularly scheduled presentations of quality control metrics should be part of the TRCC meeting agenda and the TRCC should promote projects to address the data quality problems that are presented.

- *Oversee Training for TRS Data Improvement.*
  The TRCC should have oversight responsibility for encouraging and monitoring the success of training programs implemented specifically to improve TRS data quality. Regularly scheduled presentations of training needs and training participation should be part of the TRCC meeting agenda, and the TRCC should promote projects to conduct training needs assessments and address the identified training needs.

1-A: Traffic Records Coordinating Committee Status

Establish a two-tiered TRCC

Since the last assessment in 2005, a statewide Traffic Record Coordinating Committee (TRCC) has been established which meets monthly to discuss/plan traffic safety projects and allocate traffic safety funding. An executive steering committee consisting of agency executives was also established at that time which typically meets annually to review and discuss any policy level decisions that need to be made.

While there is no statutory mandate for the TRCC within the State, there is a set of strategic principles the TRCC abides by. These include the following:

Support Ongoing Agency Efforts:

- The State will support local agencies in their effective use of resources.
- The State will maintain agency and systems autonomy while building on an integrated information-capture and -sharing approach.

Make Attainable and High Value Improvements:

- The State will seek out short-term benefits or improvements to the existing systems while building a long-term integrated system.
- Incremental build and improve traffic safety systems as funding permits.
- The State will strive to keep technical complexity to a minimum.

Provide Operational Value to Data Providers:

- Information available to community in near real-time.

The State will focus equally on high-volume and low-volume agencies in order to meet objectives.

The mission of the TRCC is to improve the quality of life for the traveling public and increase the level of safety on the roads of the State of Kansas by:

- Supporting law enforcement deployment and enforcement emphasis planning;
- Identifying and managing high-risk drivers;
- Planning traffic safety initiatives and geometric roadway improvements; and
- Improving medical response delivery through the improved collection and management of traffic records information.

Ensure Membership is Representative
The TRCC represents the interests of State traffic safety entities to outside organizations. Traditionally, the Kansas Department of Transportation (KDOT) Traffic Safety Section heads the TRCC. The leadership is appointed by the director of KDOT.

Members are appointed by their agency directors and typically consist of the Chief Information Officers for each agency with a traffic safety mission. Each agency only gets one vote on TRCC decision items.

Representation for both the TRCC and Executive TRCC consists of the following:

- Federal and State Representatives
- Federal Highway Administration (FHWA)
- National Highway Traffic Safety Administration (NHTSA)
- Federal Motor Carrier Safety Administration (FMCSA)
- Kansas Department of Transportation (KDOT)
- Kansas Highway Patrol (KHP)
- Office of Court Administration (OCA)
- Kansas Criminal Justice Information System (KCJIS)
- Department of Administration (DofA) & Office of the State CIO
- Kansas Department of Revenue (KDOR)
- Kansas Board of Emergency Medical Services (BEMS)
- Kansas Bureau of Investigation (KBI)
- Kansas Department of Health and Environment (KDHE)
- Kansas Insurance Department (KID)

- Local Representatives
- Kansas Peace Officers Association (KPOA)
- Kansas Association of Chiefs of Police (KACP)
- Kansas Sheriff's Association (KSA)
- Mid-America Regional Council (MARC)
- Johnson County
- Kansas Corporation Commission (KCC)

Unfortunately, attendance by department heads at the Executive TRCC is usually delegated down to department members. However, it was reported that the Executive TRCC is working effectively.

Authorize Members
The TRCC has the authority and responsibility to review changes to traffic safety systems before they are implemented. Each participating agency is responsible to identify and note projects they are undertaking which in any way impact partner agencies or traffic safety as a whole.

There are no formal Memoranda of Understanding (MOUs) for participation in the committee; however certain agencies have opted to enter into MOUs for data sharing.

The TRCC is empowered through its charter to meet the requirements for section 408 funding.

Appoint an Administrator/Manager
The TRCC is a self-regulating committee that works independently of any given agency; however, the KDOT Traffic Safety Section continues to maintain fiscal and governing responsibility.

There is no officially designated traffic records coordinator. The committee acts as a community-based traffic records coordinating entity.

Administration of the TRCC is outsourced to a consulting firm that has worked closely with the group in updating their strategic plan and performance measures.

Schedule Regular Meetings
The TRCC meets monthly, and the executive committee meets annually.

Oversee Quality Control/Improvement
The TRCC receives information about traffic record quality controls. As a part of the annual performance measurement reporting process, record quality is reviewed by KDOT staff and then reported to the TRCC. Annually the TRCC sets aside time to review data quality and other predefined traffic safety performance metrics.

The Kansas Traffic Records System (TRS) Performance Measurement System provides for the structured and systematic assessment of the TRCC progress in meeting its objectives and goals. The system describes identified measures and the processes of how performance metrics are defined, implemented, and used to manage initiatives and projects listed in the Traffic Records Strategic Plan.

The TRCC has hired vendors to develop the technology required to support real-time and batch validation of crash information. This technology will first allow KDOT to define the business rules associated with the data captured on the new crash form and then allow KHP to interact with the rules as part of the new Kansas Law Enforcement Reporting (KLER) system application. Once a record has passed validation, the system will package and exchange the information using an XML transmission protocol.

Oversee Training for Traffic Record Safety Data Improvement
Data entry and data integration training were identified as needs in the strategic plan and are contained in the plan as projects within their respective strategic initiatives.

Recommendation:

Note: Even though the State Traffic Records Coordinating Committee does not meet all of the recommendations in the Advisory, it is operating effectively and only one recommendation is

suggested.

- ❑ Include representation from municipal courts on the Traffic Records Coordinating Committee.

1-B: Strategic Planning

Advisory Excerpt: *The TRS should operate in a fashion that supports the traffic safety planning process. The planning process should be driven by a strategic plan that helps State and local data owners identify and support their overall traffic safety program needs and addresses the changing needs for information over time. Detailed guidance for strategic planning is included in the NHTSA Strategic Planning Guide and the FHWA Strategic Highway Safety Plan documents. The strategic plan should address activities such as:*

- ❑ *Assign Responsibility for the Strategic Plan.*
  The strategic plan should be created and approved under the direction of the TRCC. The TRCC should continuously monitor and update the plan, to address any deficiencies in its highway traffic records system.

- ❑ *Ensure Continuous Planning.*
  The application of new technology in all data operational phases (i.e., data collection, linkage, processing, retrieval, and analysis) should be continuously reviewed and assessed. The strategic plan should address the adoption and integration of new technology as this facilitates improving TRS components.

- ❑ *Move to Sustainable Systems.*
  The strategic plan should include consideration of the budget for lifecycle maintenance and self-sufficiency to ensure that the TRS continues to function even in the absence of grant funds.

- ❑ *Meet Local Needs.*
  The strategic plan should encourage the development of local and statewide data systems that are responsive to the needs of all stakeholders.

- ❑ *Promote Data Sharing.*
  The strategic plan should promote identification of data sharing opportunities and the integration among federal, State, and local data systems. This will help to eliminate duplication of data and data entry, assuring timely, accurate, and complete traffic safety information.

- ❑ *Promote Data Linkage.*
  Data should be integrated to provide linkage between components of the TRS. Examples of valuable linkages for highway and traffic safety decision making include crash data with roadway characteristics, location, and traffic counts; crash data with driver and vehicle data; and crash data with adjudication data, healthcare treatment and outcome data (e.g., Crash Outcome Data Evaluation System [CODES]).

- ❑ *Coordinate with Federal Partners.*
  The strategic plan's budget-related items should include coordination between the State and the various federal programs available to fund system improvements. The data collection, management, and analysis items in the strategic plan should include coordination of the State's systems with various federal systems (e.g., the Fatality Analysis Reporting System [FARS], the Problem Driver Pointer System [PDPS] of the National Driver Registry [NDR], the Motor Carrier Management Information System [MCMIS], and the Commercial Driver License Information System [CDLIS]).

- ❑ *Incorporate Uniform Data Standards.*
  The strategic plan should include elements that recognize and schedule incorporation of uniform data elements, definitions, and design standards in accordance with national standards and guidelines. Current examples of these standards and guidelines include:

  - *Model Minimum Uniform Crash Criteria (MMUCC)*
  - *American National Standards Institute (ANSI) -D20.1 and ANSI-D16.1*
  - *National Governors Association (NGA)*
  - *Global Justice XML Data Model (GJXDM)*

- *National Center for State Courts, Technology Services, Traffic Court Case Management Systems Functional Requirement Standards*

- *Guidelines for Impaired Driving Records Information Systems*

- *National Emergency Medical Service Information System (NEMSIS) Data Dictionary.*

- ❑ *Plan to Meet Changing Requirements.*
  To help the State meet future highway safety challenges, the strategic plan should include a periodic review of data needs at the local, State, and federal levels. It should be updated to include tasks to meet those needs as they are identified.

- ❑ *Support Strategic Highway Safety Planning and Program Management.*
  The strategic plan should include elements designed to ensure that the State captures program baseline, performance, and evaluation data in response to changing traffic safety program initiatives. Additional elements should be present for establishing and updating countermeasure activities (e.g., crash reduction factors used in project selection and evaluation).

- ❑ *Strategic Planning of Training and Quality Control.*
  The strategic plan should incorporate activities for identifying and addressing data quality problems, especially as these relate to training needs assessments and training implementation.

1-B: Strategic Planning Status

The Traffic Records Coordinating Committee (TRCC) initially developed a Traffic Records Strategic Plan in early 2006. The Plan was scheduled to be updated every 12-18 months. The most current version of the Plan was last updated in September 2008. A new Strategic Plan will be undertaken using the findings of this Assessment as the basis for identifying deficiencies in the existing traffic records system.

Over the past year, the TRCC and its members have remained actively engaged in ensuring the successful implementation of the Strategic Plan and its associated projects. The membership was expanded to include the Kansas Corporation Commission. The TRCC meets frequently throughout the year to discuss Strategic Plan progress and implementation and to approve all decisions associated with the plan. All changes in the Plan have been reviewed, discussed and approved during TRCC meetings throughout the year.

The TRCC has defined a stratagem to provide assurance that all traffic safety stakeholders have a common vision. The following are the key strategies that define the stratagem:

- *Define a Conceptual Architecture*—establishes key technical and architectural concepts for the anticipated Traffic Records System (TRS) to bring together the disparate traffic records data sources throughout the State.

- *Outline Initiatives and Projects*—the initial definition and ongoing management and oversight of the strategic initiatives and projects the State will undertake.

- *Define Critical Success Factors*—provides a means for objectively monitoring and measuring improvements to traffic records.

- *Implement a Cross-Agency Governance Model*—provides an organizational model for the management and governance of the TRS and a Web-based user interface that will be utilized by authorized personnel to access and search the TRS.

Assign Responsibility for the Strategic Plan

The TRCC provides the direction, sets priorities and establishes the vision for the Strategic Plan. The TRCC members are the primary contributors to the review and update of initiatives contained in the Strategic Plan.

The Plan attempts to address all areas of traffic safety data and automation through organizing traffic safety initiatives into three categories which include the following initiatives: Data Capture Improvement; Integration Improvements; and Management Improvement. All participant agencies are made aware of the Plan's initiatives. Each time it is updated, member agencies have the opportunity to provide comments, edits and changes.

Although the Strategic Plan was initially developed to address findings in the 2005 Traffic Records Assessment, in recent years the Plan has been updated in response to ongoing TRCC self-assessed performance needs.

Ensure Continuous Planning
A separate Traffic Records System (TRS) conceptual architecture document was developed to address fresh initiatives and migration towards emerging technologies.

A tactical planning section is included in the TRCC Strategic Plan.

Move to Sustainable Systems
Justification for the TRS initiatives included in the Strategic Plan is guided by the long-term needs of the State. While the TRCC attempts to estimate for and plan for ongoing TRS maintenance, the Plan does not address funding for long-term maintenance.

Much of the funding surrounding TRS projects in the Plan currently comes from statewide fees assessed on traffic citations, however, without the federal funding, some of the traffic safety efforts would need to be reduced or eliminated entirely.

Meet Local Needs
The TRCC includes the traffic safety needs at both the State and local level. Local safety representatives are included on the Committee and are actively involved in the Plan development. In fact the TRCC relies heavily on local data input, capture, and integration. Without local participation in data sharing, the TRS efforts would be severely hindered.

Promote Data Sharing
Data sharing is included and planned for within the Strategic Plan.

Promote Data Linkage
While there is no ongoing method for identifying linkage problems between information systems, a situational analysis is included in the Plan which identifies the known disparities in data indexes. The situational analysis reviewed potential data redundancy and found very few existed. As such, the primary focus of the Plan targets adding data, improving timeliness, and improving data integration between current data sources.

Coordinate with Federal Partners
The Plan does not assure consideration of new federal information data sources, however known federal system changes are reviewed by the TRCC to ensure future strategic plans consider federal needs.

Incorporate Uniform Data Standards
The situational analysis in the Strategic Plan addresses national data standards compliance for each of the following:

- Model Minimum Uniform Crash Criteria (MMUCC)
- National Emergency Medical Service Information System (NEMSIS)
- Highway Performance Monitoring System (HPMS)

- American National Standards Institute (ANSI-D16.1 and ANSI-D20.1)
- Model Inventory of Roadway Elements (MIRE)

This review in turn triggered strategic initiatives and projects to improve conformance with each of the above standards in addition to the National Information Exchange Model (NIEM).

Plan to Meet Changing Requirements
The strategic planning processes are designed to be the means by which to review the traffic records environment and adapt to current needs. While the needs of the private sector are considered in the Plan, the needs of the public sector are the primary target.

Support Strategic Highway Safety Planning and Program Management
Each of the projects outlined by the Strategic Plan is built according to Project Management Institute (PMI) standards.

Strategic Planning of Training and Quality Control
Data entry and data integration training were identified as needs in the Strategic Plan and therefore outlined as projects within their respective strategic initiatives.

The Plan does not include data quality benchmarks; instead the data quality benchmarks have been embodied in the organization's performance measures in a different document entirely. As with the data quality benchmarks, the quality metrics are not included directly in the Plan, and instead are included in the performance measurement document.

Recommendations:

- ❑ Create a fresh Strategic Plan for Traffic Records with the full membership of the TRCC
- ❑ Establish a forum for discussion of all issues and initiatives to be addressed in the new Plan (including the findings of this Assessment).
- ❑ Use the NHTSA suggested four box method to set priorities to the initiatives (existing and new) generated by participants involved in the forum.

1-C: Data Integration

Advisory Excerpt: *The Data IPT Report recommends that States integrate data and expand their linkage opportunities to track traffic safety events among data files. Integrated data should enable driver license and vehicle registration files to be updated with current violations, prevent the wrong driver from being licensed, or keep an unsafe vehicle from being registered. Integration should ensure that all administrative actions are available at the time of the driver's sentencing. Data linkage is an efficient strategy for expanding the data available, while avoiding the expense and delay of new data collection.*

State TRCCs should develop working relationships with the health care community to ensure that the causation, crash, emergency medical services, hospital, and other injury-related data linked during the event can be merged statewide. They should also link to other data such as vehicle insurance, death certificates, medical examiner reports, etc., to support analysis of State-specific public health needs.

Linkage with location-based information such as roadway inventory databases and traffic volume databases at the State level can help identify the kinds of roadway features that experience problems, allowing States to better address these needs through their various maintenance and capital improvement programs. Data integration should be addressed through the following:

- *Create and Maintain a Traffic Records System Inventory.*
  The TRS documentation should show the data elements and their definitions and locations within the various component systems. Ancillary documentation should be available that gives details of the data collection methods, edit/error checking related to each data element, and any known problems or limitations with use of a particular data element. The system inventory should be maintained centrally, ideally in a data clearinghouse, and kept up-to-date through periodic reviews with the custodial agencies. Funding for system development and improvement should include a review of existing systems' contents and capabilities.

- *Support Centralized Access to Linked Data.*
  The traffic records user community should be able to access the major component data files of the TRS through a single portal. To support this access, the State should promote an enterprise architecture and database, and develop a traffic records clearinghouse to serve as the gateway for users. The databases in the clearinghouse should be linked in ways that support highway safety analysis. At a minimum, this would include linkage by location, involved persons, and events.

- *Meet Federal Reporting Requirements.*
  The TRS, where possible, should link to or provide electronic upload files to federal data systems such as FARS, MCMIS/SafetyNet, Highway Performance Monitoring System (HPMS), and others.

- *Support Electronic Data Sharing.*
  The TRS should support standard methods for transporting data between systems. At a minimum, these should include a documented file structure and data definitions for information to be transferred to statewide databases. Standard information transfer formats and protocols, such as XML format and FTP, should be supported.

- *Adhere to State and Federal Privacy and Security Standards.*
  The TRS should make linked data as accessible as possible while safeguarding private information in accordance with State and federal laws. This includes security of information transferred via the Internet or other means.

1-C: Data Integration Status

The ultimate goal for any traffic records system is the integration of the various components or files comprising the system, i.e., crash, roadway, citation, medical/injury, driver and vehicle files as well as other available data related to public health needs. Ideally, these various files would be stored together in, for example, a data warehouse. Co-location is not necessary if access to the files is granted or file transfer is permitted where linking data elements among the files will provide data analysis capability using a single database of merged data.

The Kansas Crash and Analysis Records System (KCARS) is the State crash repository for all statewide reportable crashes submitted by all police jurisdictions. This repository holds only crash reports. There is also a data warehouse that currently contains both the crash file and the roadway file. This warehouse is apparently intended to be the future repository for all traffic record system component files on the condition that the issues surrounding the security of the data are resolved. Although not truly linked by definition, the crash report does contain the milepoint from the roadway file and GIS data associated with the crash location. This linear location based reference common to the two files can be the first real step by Kansas towards integrating the traffic records system components, but there is still work to be done on the intersection inventory component before its value can be realized. Currently no other files are integrated with the crash report file or linked by key fields to any other system component. There are ongoing plans to do so, and the stakeholders are working toward this outcome. File linkage was a major recommendation from the previous assessment, but a new revision of the crash report and database upgrade plans for other components like the driver and vehicle files have delayed any additional file linkage efforts.

Kansas is aware of the various files comprising the traffic records system individually, but there is no common centralized inventory of the various systems that documents the data elements of each, their definitions, and their organizational locations.

There is a portal enabling access to the library of crash report PDF images in Filenet for contributing agencies to obtain a copy of a completed report. Future capabilities through the same portal will enable access to the crash data file and other merged file sets of the traffic records system, allow for file query, report generation, Kansas Law Enforcement Reporting (KLER) system supplemental report submissions, file transfer, and other data management activities that will ultimately be identified.

Federal reporting requirements are being met in the areas of FARS and MCMIS/SafetyNet, but this is not accomplished by any linkage among the various files but instead by a concentrated and dedicated effort to meet these requirements by KDOT and the Kansas Highway Patrol (KHP).

Before the various components of the traffic records system can reside in one repository, issues addressing the safeguarding of private information are challenges that KDOT and the various future contributing agencies need to address. Today, as separate files, this responsibility lies with the individual traffic records file custodian and is supported by State statute in most cases. As for the crash file, KDOT appears to be leery of providing public access to the data as they are

concerned about the potential for identity theft and mass marketing efforts resulting from any public access capability.

Recommendation:

- ❑ Continue efforts toward integrating the component files of the traffic records system regardless of where they are physically located.

1-D: Data Uses and Program Management

Advisory Excerpt: *Data availability and quality directly affect the effectiveness of informed decision making about sound research, programs, and policies. Accurate, comprehensive, and standardized data should be provided in a timely manner to allow the agency or decision-making entities at the State or local levels to:*

- *Conduct Problem Identification.*
  Problem identification is the process of determining the locations and causes of crashes and their outcomes and of selecting those sites and issues that represent the best opportunity for highway safety improvements. States should be able to conduct problem identification activities with their traffic records system.

- *Develop Countermeasure Programs and Program Management Procedures.*
  States select and evaluate strategies for preventing crashes and improving crash outcomes. This requires that decision makers can select cost-effective countermeasures and that safety improvement programs and funds should be managed based on data-driven decision making.

- *Perform Program Evaluation.*
  States should be capable of measuring progress in reducing crash frequency and severity. Ideally, the effectiveness of individual programs and countermeasures should be evaluated and the results used to refine development and management processes.

- *Support Safety-Related Policies and Planning.*
  The States are responsible for developing SHSPs. These data should be available to support this and other policy and planning efforts such as development of agency-specific traffic safety policies, traffic records strategic planning, safety conscious planning, and others.

- *Access Analytic Resources.*
  Data users, and decision makers in particular, should have access to resources including skilled analytic personnel and easy to use software tools to support their needs. These tools should be specifically designed to meet needs such as addressing legislative issues (barriers as well as new initiatives), program and countermeasure development, management, and evaluation, as well as meeting all reporting requirements.

- *Provide Public Access to Data.*
  The TRS should be designed to give the public or general non-government user reasonable access to data files, analytic results, and resources, but still meet State and federal privacy and security standards.

- *Promote Data Use and Improvement.*
  The TRS should be viewed as more than just a collection of data repositories, and rather as a set of processes, methods, and component systems. Knowledge of how these data should be collected and managed, along with where the bottlenecks and quality problems arise, is critical to users understanding proper ways to apply the data. This knowledge should also aid in identifying areas where improvement is possible.

1-D: Data Uses and Program Management Status

Conduct Problem Identification

The Traffic Safety Section (TSS) in the Bureau of Transportation Safety and Technology (BTST) has the direct responsibility for conducting problem identification. The Section Chief has the support of a staff of Program Managers and Program Consultants and a Traffic Records System Administrator at the Kansas Department of Transportation (KDOT) headquarters. At present, a Data Analyst position in TSS is vacant because the analyst is in military service. There are three Law Enforcement Liaison (LEL) personnel who operate from the field. The LELs are retired enforcement officers who maintain relationships with local enforcement agencies and personnel.

Any of the TSS program management staff may initiate or assist in a quest for data or information concerning a problem or potential problem or information to use as a baseline for a new project. Further, however, the Bureau Chief is an active participant on problem identification issues and has enabled the Highway Safety Analyst from the Highway Safety Unit to engage in any and all aspects of analysis and problem searching in the behavioral issues rather than being constrained to considering engineering issues that are customary in many departments of transportation.

Reflecting the open access and task-sharing atmosphere of the Bureau, the Director of the Division of Planning and Development (DPD) maintains involvement with the issues TSS addresses and has enabled the Accident Manager Analyst to generate data and reports for TSS and others and, more importantly, to explore problem identification when any data search may cause a highway safety question to surface. This manager/analyst, in a different Bureau, is responsible for the accident file and has the most knowledge of that data set that is possible.

The extent of inter-bureau support and involvement enables TSS to compensate for or even overcome the temporary loss of its data analyst and avoid dependency on contracted services or the use of universities. Having in-Department resources keeps TSS on top of its responsibilities.

The most recent year's official crash data are for 2008. All of the 2009 data are also available for analysis with the caveat that the 2009 file has not been closed and declared official. In fact, all submissions to date are also available with a stronger caveat.

TSS also supports, under contract, a Kansas Traffic Safety Resource Office (KTSRO) that operates in conjunction with the DCCCA (Douglas County Citizens Committee on Alcoholism), providing rehabilitative services and project services, mainly Occupant Protection Surveys in rural areas. DCCCA contracts with Preusser Research Group for data processing and project evaluation. KTRSO contract also supports a Traffic Resource Prosecutor. These partners can also initiate and or provide assistance in problem identification.

Develop Countermeasure Programs and Program Management Procedures

The TSS staff personnel in Topeka manage the countermeasure programs and are supported by the three LELs who operate from the field. With the close involvement of the engineering-oriented personnel, the problem issues cross-pollinate the countermeasure programs.

Current primary focus for TSS is on Drunk Driving and Occupant Protection. Problem Intersections and Lane Departures are focus areas for BTST that are primary KDOT issues being addressed.

TSS programs also address the traditional behavioral problem areas: older drivers, under-age drinking; occupant protection for child passengers; motorcycle safety; and pedestrian safety.

Countermeasures for these problem areas are addressed by projects that are managed by the TSS staff with the Program Managers and Program Consultants becoming specialists in the issues. Because of the skills mix in the DPD and the parallel concerns and programs for highway- and traffic-related countermeasures, the approach to the programs and their management is coordinated and flexible.

DCCCA conducts occupant protection surveys under contract to TSS. The LELs obtain citation information from the enforcement agencies, and PRG performs data entry and evaluation.

Perform Program Evaluation

TSS Program Managers and Program Consultants evaluate the projects. The management and evaluation functions flow together and are subject to the same inter-Bureau treatment. When information on the results from a program area arises, any of those who extract and analyze data may become the evaluator *per se* or the resource for a TSS evaluator.

The evaluations are conducted mostly in-house and in a very timely manner. If correlations with data sets other than the crash file are required, that information is obtained if it is available. The Traffic Safety home page on the Internet provides a current and historic count of fatalities, summaries of those fatal crashes, Facts Sheets, Reports and Studies, and the 2008 Traffic Accident Fact Book.

The various countermeasure program areas publish brochures and reports, and most of the resources are PDF files that can be downloaded.

Support Safety-Related Policies and Planning

One of the goals of the traffic records data warehouse is to be the primary source for the information required to guide the setting of policy by decision makers.

Access Analytical Resources

The Geometric and Accident Data (GAD) unit within the Bureau of Transportation Planning manages the crash records system (the Kansas Crash & Analysis Reporting System, KCARS). The KDOT employs a data analyst who works under the supervision of a Highway Safety Engineer. He uses Microsoft Access©, an Open Database Connectivity (ODBC) compliant tool to communicate with the KCARS Oracle ODBC and TRS SQL ODBC compliant databases. For the most part, this data analyst provides the various reports requested from any of the data contributing agencies as well as any public requests after an Open Records Request (ORR) is submitted. In addition, the analyst provides reports and ad-hoc results to other state agencies upon request. This analyst was given rave reviews by his managers for his overall knowledge of

the crash data set and his creativity and technical capabilities at addressing every request that he receives. Unfortunately, KDOT is losing this resource for personal reasons and they hope to hire a replacement when that vacancy occurs in the coming year. One other data analyst position exists within KDOT, but the individual who holds that position is deployed in the military, thus the agency is holding that position for him pending his return without any temporary replacement for him.

The FARS analyst receives analytical support from the KDOT data analyst upon request. In addition, other governmental agencies including the Kansas Highway Patrol (KHP), local law enforcement agencies and the general public are all served with this single resource.

Provide Public Access to Data

The GAD Section is the main source for responding to data requests. Data are provided in the form of tables, crosstabs, graphs, and data extracts. GAD responds to over 500 data requests per year. An atmosphere which generates such a high demand for crash data is to be commended but it has also created a major strain on this Section's resources.

Promote Data Use and Improvement

The crash file manager and data entry personnel identify data quality problems with crash reports. They then pass this information back to law enforcement in a method that allows them to understand the problems and the correct way to report the data.

The TSS plans to do statewide training within the next year to educate law enforcement about the importance of data collection.

The Strategic Highway Safety Plan (SHSP) also promotes data and stresses the importance of accurate, complete and timely data. The SHSP states:

> Section 408 establishes a new program of incentive grants to encourage States to adopt and implement effective programs to improve the timeliness, accuracy, completeness, uniformity, integration, and accessibility of safety data, to evaluate the effectiveness of efforts to make such improvements; to link these data systems with other data systems in the State; and to improve the compatibility of the State data system with national data systems to enhance the ability to observe and analyze nationals trends in crash occurrences, rates, outcomes, and circumstances. Kansas developed a Traffic Records Strategic Plan (TRSP) in order to take advantage of the Section 408 grants, and it can be found at: http://www.ksdot.org/burTrafficSaf/TRCC.asp

To further express the importance of data the TRSP Initiative One states:

> The first initiative is meant to develop standard forms and electronic specification for all of the submittal information exchanges. The purpose of these projects is to bring all of the contributing systems to a baseline starting point, where data content has a high degree of conformity to national standards and from which data integration can begin to take place.

Recommendations:

- ❑ Research the availability of other analytical resources that may be able to quickly fill the void of the anticipated departure of the KDOT data analyst.

- ❑ Create a public use website with access to the KCARS data for simple queries.

- ❑ Review the current training for law enforcement on the importance and proper application of traffic safety data to look for ways to strengthen the message and for more effective training methods, e.g., video, CD-based, etc.

SECTION 2: TRAFFIC RECORDS SYSTEM COMPONENTS

Advisory Excerpt: *At the time of passage of the Highway Safety Act of 1966, State centralized TRS generally contained basic files on crashes, drivers, vehicles, and roadways. Some States added data on traffic safety-related education, either as a separate file or as a subset of the Driver File. As traffic safety programs matured, many States incorporated EMS and Citation/Conviction Files for use in safety programs. Additionally, some States and localities maintain a Safety Management File that consists of summary data from the central files that can be used 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 TRS needs to incorporate a view of information and information flow, as opposed to focusing only on the files in which that information resides.

Under this more distributed model, it does not matter whether data for a given system component are housed in a single database on a single computer or spread throughout the State on multiple local systems. What matters is whether the information is available to users, in a form they can use, and that these data are 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 major components of a TRS:

- ❑ *Crash Information*
- ❑ *Roadway Information*
- ❑ *Driver Information*
- ❑ *Vehicle Information*
- ❑ *Citation/Adjudication Information*
- ❑ *Statewide Injury Surveillance Information*

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

A frequently used overview of the contents of a TRS is the Haddon Matrix, named after its developer, William Haddon, the first NHTSA Administrator. It provides a valuable framework for viewing the primary effects of Human, Vehicle, and Environmental factors and their influence before, during, and after a crash event. Table 1 is based on the Haddon Matrix.

Table 1: Expanded Haddon Matrix With Example Highway Safety Categories

	Human	***Vehicle***	***Environment***
Pre-Crash	· *Age* · *Gender* · *Experience* · *Alcohol/Drugs* · *Physiological Condition* · *Psychological Condition* · *Familiarity with Road & Vehicle* · *Distraction* · *Conviction & Crash History* · *License Status* · *Speed*	· *Crash Avoidance* · *Vehicle Type* · *Size & Weight* · *Safety Condition, Defects* · *Brakes* · *Tires* · *Vehicle Age* · *Safety Features Installed* · *Registration*	· *Visibility* · *Weather/Season* · *Lighting* · *Divided Highways* · *Signalization* · *Geographic Location* · *Roadway Class, Surface, Cross-Section, Alignment, etc.* · *Structures* · *Traffic Control Devices, Signs, Delineations, and Markings* · *Roadside Appurtenances, Buildups, Driveways, etc.* · *Volume of Traffic* · *Work Zone* · *Animal Range Land & Seasonal Movements*
Crash	· *Belt Use* · *Human Tolerance*	· *Crash-Worthiness* · *Passenger Restraints*	· *Guardrails* · *Median Barriers*

	· *Size* · *Seating Position* · *Helmet Use*	· *Airbags and Airbag Shutoff*	· *Breakaway Posts* · *Rumble Strips and Other Safety Devices* · *Maintenance Status of Roadway and Devices*
Post-Crash	· *Age* · *Physical Condition* · *Insurance Status* · *Access to Health Care* · *Driver Control Actions* · *Court Actions* · *Probation*	· *Post Crash Fires* · *Fuel Leakage* · *Power Cell Securement* · *Hazardous Materials* · *Title*	· *Traffic Management* · *Bystander Care* · *EMS System* · *First Responders* · *Hospital Treatment* · *Long-Term Rehabilitation*

The Haddon Matrix has proven to be a meaningful way to examine primary effects of contributing factors on crash frequency and severity. It helps decision makers to consider countermeasures designed to address specific contributing factors. In recent years, with availability of more detailed data analyses, awareness has grown about the interactions among contributing factors. A good example of such interactions would be weather and drivers' skill or experience levels. To make the contribution of interaction effects more obvious, the matrix in Table 2 can be used to supplement the Haddon Matrix.

Table 1: Examples of the Interactions among Crash Characteristics

	Human	***Vehicle***	***Environment***
Human	· *Road Rage* · *Ped/Bike Behavior & Driver Behavior* · *Driver Age & Passenger Age & Number*	· *Familiarity with Vehicle & Training* · *License Class & Vehicle Type* · *Rollover Propensity & Driver Actions* · *Vehicle Ergonomics & Person Size*	· *Crash Avoidance* · *Vehicle Type* · *Familiarity with Roadway* · *Experience with Weather Conditions*
Vehicle		· *Vehicle Size Weight Mismatch* · *Under-Ride/Over-Ride* · *Shared Roads, No-Zone* · *Tire Inflation & Rollover Propensity*	· *Rollover Propensity & Road Configuration* · *Roadway Debris & Vehicle Size Weight* · *Vehicle Type & Weather Conditions* · *Vehicle Condition & Weather Conditions*
Environment			· *Congestion Interaction with Road Type* · *Congestion & Vehicle Mix & Lane Width* · *Animal Management Policies & Roadway Access & Seasons*

Taken together, these views of traffic safety factors offer a way of thinking about highway safety issues that is both conceptually robust and practical. For the purposes of this Advisory, the most important aspect of the TRS is that it supports high-quality decision making to improve highway safety. The remainder of this section of the Advisory presents details about the various components of the TRS.

2-A: Crash Data Component

Advisory Excerpt:

- *Description and Contents*

  The Crash Data Component should document the time, location, environment, and characteristics (e.g., sequence of events, rollover, etc.) of a crash. Through links to other TRS components, the Crash Data Component should identify the roadways, vehicles, and people (e.g., drivers, occupants, pedestrians) involved in the crash. These data should help to document the consequences of the crash (e.g., fatalities, injuries, property damage, and violations charged), support the analysis of crashes in general, and the analysis of 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)*
  - *the interaction of various components (e.g., time of day, day of week, weather, driver actions, pedestrian actions, etc.)*

  The Crash Data Component of the TRS contains basic information about every reportable (as defined by State statute) motor vehicle crash on any public roadway in the State.

- *Applicable Guidelines*

  Details of various data elements to be collected are described in a number of publications. The MMUCC provides a guideline for a suggested minimum set of data elements to be collected for each crash. Additional information should be collected for crashes involving an injury or fatality to meet the tracking and analysis requirements for the State and other systems (e.g., the FARS, SafetyNet).

- *Data Dictionary*

  Crash data should be collected using a uniform crash report form that, where applicable, has been designed and implemented to support electronic field data collection. Law enforcement personnel should receive adequate training at the academy and during periodic refreshers, to ensure that they know the purpose and uses for the data as well as how to complete each field on the form accurately.

  Information from the quality control program should be used to develop and improve the content of training. The training manual on crash reporting should be available to all law enforcement personnel. The instructions in the manual should match the edit checks that are performed on the crash data prior to its being added to the statewide crash database. The edit checks should be documented and sufficient to flag common and serious errors in the data. For example, these errors include missing or out of range values in single fields and logical inconsistencies between the data recorded in multiple fields (e.g., time of day is midnight and the lighting condition is coded as daylight). All data element definitions and all system edits should be shared with collectors, managers, and users in the form of a data dictionary that is consistent with the training manual and the crash report form.

- *Process Flow*

  The steps from initial crash event to final entry into the statewide crash data system should be documented in process flow diagrams. The diagram should be annotated to show the time required to complete each step and to show alternate flows and timelines depending on whether the reports are submitted in hardcopy or electronically to the statewide system. The process flow diagram should include procedures for error correction and error handling (i.e., returning reports to the originating officer/department, correction, resubmission, etc.). Process flow diagrams should show all major steps whether accomplished by staff or automated systems and should clearly distinguish between the two.

- *Interface with Other Components*

  The Crash Data Component has interfaces, using common linking variables shown in Table 3, to other TRS components to support the following functions:

- *Driver and vehicle data should be used to verify and validate the person and vehicle information during data entry and to flag records for possible updating in the driver or vehicle files when a discrepancy is identified. Key variables such as driver license number, vehicle identification number (VIN), license plate number, name, address, and date of birth should be available to support matching of records among the files. The Driver Data Component should also enable access to drivers' histories of crashes and convictions for traffic violations.*

- *Crash data should be linked to roadway inventory and other roadway characteristics based upon location information and other automated and manual coding methods. This linkage supports location-based analysis of crash frequency and severity as well as crash rate calculations based on location-specific traffic counts.*

- *Law enforcement personnel should be able to link crash, contact, incident, citation, and alcohol/drug test results through their own department's records and/or a secure law enforcement information network. For agencies with computer-aided dispatch and/or a records management system, the crash data should be linked to other data through incident, dispatch, and/or crash numbers and by names and locations to support analysis at the local level.*

- *Linkage to injury surveillance data should be possible either directly or through probabilistic linkage in order to support analysis of crash outcomes and overall costs of treatment. Key variables for direct linkage include names of injured persons or EMS run report number. Key variables for probabilistic linkage include the crash date and time, crash location, person characteristics such as date of birth and gender, EMS run report number, and other particulars of the crash.*

Table 3: Common Linking Variables between Crash And Other Data Components of a Traffic Records System

Crash Linkages to Other Law Enforcement and Court Files	- *Incident Number* - *Location (street address, description, coordinates, etc.)* - *Personal ID (name, address, DL number, etc.)*
Crash Linkages to Roadway Information	- *Location Coding (linear referencing system, reference post, coordinates, local street codes)*
Crash Linkages to Driver and Vehicle Information	- *Driver License Number* - *Vehicle Identification Number* - *Personal Identifiers (name, address, date of birth, etc.)*
Crash Linkages to Statewide Injury Surveillance System Information	- *Personal Identifiers (where allowed by law)* - *Crash Date, Time, Location* - *EMS Run Report Number* - *Unique Patient ID Number*

Furthermore, there should be data transfer and sharing linkages between State and local crash databases. The State crash data system should support the electronic transfer of crash data from a variety of law enforcement agencies' (LEAs) records management systems. The State's crash data system management should publish the specifications and editing requirements for generating the outputs from the various agency systems that can be processed into the official State crash data system.

- *Quality Control Program*

  The crash data should be timely, accurate, complete, and consistent and these attributes should be tracked based on a set of established quality control metrics. The overall quality of the information in the Crash Data Component should be assured based on a formal program of error/edit checking as the data are entered into the statewide system. In addition, the custodial agency and the TRCC frequently work together to establish and review the sufficiency of the quality control program and to review the results of the quality control measurements. The crash data managers should receive periodic data quality reports. There should be procedures for sharing the information with data collectors through individual and agency-level feedback, as well as training and changes to the crash report instruction manual, edit checks, and data dictionary. Example measurements are presented in Table 4

Table 2: Examples of Quality Control Measurements for Crash Data

Timeliness	- *# days from crash event to receipt for data entry on statewide database* - *# days for manual data entry* - *# days for upload of electronic data* - *Average # of days to enter crashes into the system* - *Average # of days of backlogged crash reports to be entered*
Accuracy	- *% of crashes "locatable" using roadway location coding method* - *% VINs that are valid (e.g., match to vehicle records that are validated with VIN checking software)* - *% of interstate motor carriers "matched" in MCMIS* - *% crash reports with uncorrected errors* - *% crash reports returned to local agency for correction*
Completeness	- *% LEAs with an unexplained drop in reporting one year to the next* - *% LEAs with expected number of crashes each month* - *% FARS/MCMIS match* - *% FARS/State Crash fatality match*
Consistency	- *% time that an unknown code is used in fields with that possible value* - *% logical error checks that fail* - *% compliance with MMUCC guidelines*

The measures in Table 4 are examples of high-level management indicators of quality. The crash file managers should have access to a greater number of measures and be prepared to present a standard set of summary measures to the TRCC on a periodic schedule, such as monthly or quarterly.

2-A: Crash Data Component Status

Description and Contents

The official custodian for the crash file in Kansas is the Division of Planning and Development (DPP) of the Kansas Department of Transportation (KDOT). The Geometric and Accident Data (GAD) section is the specific unit within the DPD that manages the crash file. Kansas State statute Chapter 8, Article 16 requires all crashes that involve a fatality, an injury or property damage exceeding $1,000 are required to be reported to KDOT on Motor Vehicle Accident Report, DOT Form No. 850A, Revision 1-2009. There are four additional forms that make up the entire forms available for any given crash. Investigating agencies are required by the same statute to submit crash reports to KDOT within 10 days of completing a crash investigation. The records, about 65,000 annually, are maintained in the Kansas Crash Analysis and Reporting System (KCARS) ORACLE database. KCARS contains information about every reportable motor vehicle crash occurring on any Kansas municipal or State maintained roadway in the State.

Paper forms are still in use and are supplied to local law enforcement by KDOT. An electronic version, developed for KDOT by the Kansas Highway Patrol (KHP), is commonly referred to as the Kansas Law Enforcement Reporting (KLER) system. The KDOT Form 850A and all accompanying forms are parts of the KLER suite of forms available in electronic format. Documents available in KLER were all created by KHP using a form development product. Any required form used by law enforcement can be created with this form development software. The KLER crash report was officially released in October 2009 and replaced the previous KDOT Electronic Accident Data Collection and Reporting (EADCR) application. Since its release in October 2009, 52 law enforcement agencies out of 402 utilize the electronic version of the KLER crash report accounting for approximately 39 percent of the total crashes reported to KDOT annually. Approximately 13 more agencies are awaiting approval to use the electronic form pending a technical review of the agencies' capabilities to submit forms electronically. KHP made presentations to approximately 200 local law enforcement agencies announcing the release and availability of the KLER crash reporting software. The remaining law enforcement agencies in Kansas not using KLER submit paper reports. Some agencies use software provided by third party vendors to electronically create their version of the Form 850A crash report but none of these agencies is capable of submitting the reports generated from these systems to KDOT electronically. Therefore, agencies that can create an electronic record outside of KLER still must print the report and submit the paper copy to KDOT. KDOT is unaware of how many agencies have third party software but know that there are twelve such third party products in the State.

Because electronic reports generated outside of KLER must be submitted in paper format, KDOT is tasked with having to key the report into KLER. This is a waste of the reporting agency's front end effort creating the report electronically. KDOT has provided the Information Exchange Package Documentation (IEPD) to the 12 third party software vendors but none has yet provided this capability for electronically reporting crashes generated from their software to KDOT. Because this issue has been lingering for some time and there appears to be no incentive for the third party vendors to address this yet, one strategy for KDOT may be to seek support from the agencies served by these vendors to begin using the KLER KHP product in lieu of the

crash reporting module provided by their vendor. Usually these products are sold in modules that are optional additions to Records Management Systems (RMS). While this approach sometimes pits a State agency in a perceived competition with private industry, it does allow the agency contracting with the third party to save the money spent on that module yet still get their crash data back to their RMS. The assessment team was told that two separate files can be generated by the KLER transmission to KDOT. One can be sent to the submitting agency RMS and the other to the TRS Index. While this is not one of the current strategies of KDOT to address the third party vendor issue, it may be worth considering whether there would be any support from these agencies for such a strategy. The carrot may be that they can also save money that can be deployed elsewhere, especially in these difficult budgetary times and KDOT can, with no additional investment, obtain a significant number of additional crash reports electronically in the format it requires.

The KLER crash report is electronically transferred from the user's (client) machine to the Traffic Record System (TRS) Index. KDOT is working with KHP technical staff to utilize the IEPD developed using the National Information Exchange Model (NIEM) XML as the data transport protocol. KHP has not yet conformed to transmitting using this KDOT preference but is amenable to working toward doing so. Instead, KHP designed the KLER crash report data to be stored in a flat file and transmitted to KDOT using a NIEM wrapper. This methodology does not meet the intent of the IEPD as it only receives the file in a NIEM compliant package instead of the individual data elements in the NIEM XML format. This causes KDOT technical staff to extract the payload elements from the wrapper and submit them to the TRS Index for processing and validation. In other words, this process is not the fluid exchange that it could be if KHP were to follow the IEPD at the data element level. In defense of the KHP position, KHP technical staff cite form navigational constraints for not making the KLER software data element fields NIEM compliant which is understandable; however, KHP has agreed to work towards engineering the transfer of the data to KHP to be in compliance with the KDOT published NIEM IEPD.

Linking to other traffic records components is not yet possible. This status remained unchanged since the last assessment however ongoing plans remain to link the files for integrated analysis.

Local law enforcement expressed concern about the number of fields on the crash report and also the fact that even minor crashes can result in an eight-to-ten-page printed report. They expressed a desire to make the process simpler and reduce the number of pages when information is printed but doesn't apply to the report they created. They also reported that most local law enforcement agencies (LEAs) created their own short form report outside of KLER or the paper 850A format to handle minor, non-reportable crashes.

There is an unknown number of LEAs in Kansas that do not have the technical staff nor the technology to be able to support the use of the KLER crash report. In some cases, they may be content to continue indefinitely using the paper crash forms. KDOT would be wise to consider developing a web-based single submission 850A KLER crash report that these smaller agencies could use to create and submit electronically. Since the form is already created, it may pay dividends to KDOT to offer this capability through a web page submission via a secure web site. This will enable any agency to take advantage of this capability without being required to have a

technical staff maintain the KLER application. If these agencies do not yet have at least a desktop computer at their station, then perhaps some strategies for funding at least one machine per agency could be considered if KDOT perceives any value to this approach.

Applicable Guidelines

The national guidelines and standards of MMUCC and ANSI D16.1 are used by the Kansas crash form 850A and all component reports to capture and classify crash data. KDOT adopts a philosophy to evaluate the guidelines and standards and adopt those that are deemed useful and reasonable. Compliance to the MMUCC guidelines at the data element level was estimated to be 75 to 80 percent. No compliance at the attribute level was provided. The KDOT crash report collects and reports the information required for meeting the tracking, analysis, and reporting requirements of the FARS as well as providing a commercial motor vehicle (CMV) supplement for all CMV crashes to meet the same requirements for SafetyNet.

The FARS analyst is organizationally placed under KDOT. Fatal crashes are received in paper and electronic format by the analyst for inclusion in FARS. KDOT places a priority on ensuring the analyst receives any fatal crash reports as early as possible after receipt by KDOT. The KHP routinely notifies the FARS analyst via written communication of the occurrence of a fatal crash when such a crash occurs in any KHP jurisdiction. This early notification provides the FARS analyst with the required preliminary information for the initial entry of the crash into FAST FARS. Notification to the FARS analyst when a fatal crash occurs in a local agency jurisdiction does not always occur. Because of this deficiency in communication, the analyst uses other resources such as the news media, vital statistics (death certificates), and autopsy reports to sometimes learn of the occurrence of a fatal crash. For most fatal crashes, the alcohol/drug toxicology results are generally not initially available and must be reported at a later date. This data element is aggressively sought by the FARS analyst by automatically generated letters to the agency of jurisdiction when this data element is missing. In addition, the analyst enlists the help of the Law Enforcement Liaison (LEL) personnel employed by KDOT to pursue any pending toxicology results or other important missing data element in order to meet the reporting threshold requirements of the FARS program. Kansas has consistently met these reporting timelines mandated by the FARS program.

Likewise, the CMV reporting requirements to SafetyNet are being met consistently by Kansas. Responsibility for SafetyNet reporting falls with the KHP. CMV crashes occurring within the KHP jurisdiction are handled by the KHP CMV Unit. CMV crashes occurring in other jurisdictions are usually handled by that particular agency but the KHP will respond and investigate these non-KHP CMV crashes upon request. Regardless of what agency investigates, in addition to the regular crash report form 850A, a CMV Truck/Bus Supplement Form #852 is also prepared and submitted with the regular crash report. Once again, KDOT places a priority emphasis on ensuring that any CMV crash is provided to the KHP CMV unit as quickly as possible after receipt. KLER CMV report submissions are received electronically in the TRS Index and electronically forwarded to KHP for SafetyNet processing. FMCSA's last report of January 22, 2010 rated Kansas Good or "green" overall with one Fair or "yellow" rating in the area of Non-Fatal Crash Completeness. For the last five FMCSA reports Kansas has consistently been rated Good overall. A further description of the Kansas CMV crash report processing is explained in the Quality Control area of this section.

Data Dictionary
The KDOT crash report is supported by a data dictionary that supports both manual and electronic field data collection. At least four levels of crash investigation and reporting training are offered by KHP; basic, advanced, reconstruction, and CMV crash training. KDOT also supplies in paper and electronic PDF format the Kansas Motor Vehicle Accident Report Coding Manual to all reporting agencies. In addition to a coding manual, this document is also a comprehensive training manual. The manual is well documented and thoroughly explains and provides clear examples for all fields on the available forms.

Process Flow
The work flow for the submission, validation, and retention of crash reports is depicted exceptionally well in two separate flow chart diagrams supplied to the assessment team by KDOT. One flow chart describes the paper submission process and the other describes the electronic submission process. In the paper submission process, paper reports are submitted to KDOT by mail. Sources of the paper submission are agencies that do not have electronic capture capability, i.e., laptop computers in their police vehicles or whose business process does not allow for officers to complete the reports from an office desktop computer at their station. In addition, agencies that create an electronic report from a third party vendor software solution must currently print the report and mail a paper copy to KDOT. The electronically generated non-KLER report cannot yet be electronically transmitted to KDOT because the third party vendors have not yet engineered their client systems to utilize the Extensible Markup Language (XML) interface exchange specification published by KDOT based on the National Information Exchange Model (NIEM). Once paper reports are received by KDOT the reports are reviewed by the GAD unit of KDOT to make sure the crashes are reportable. Crashes received that do not involve a death, injury or property damage of $1,000 or more get discarded by KDOT. Reports containing insufficient data are returned to the reporting agency for completion. Fatality paper reports are given priority and copies are made and distributed immediately to the FARS analyst at KDOT and to the KHP if the fatality involved a CMV. The remaining reports are sent to the Kansas Correctional Institute (KCI) by mail or courier. In a rare and surprisingly successful partnership, selected medium security KCI inmates operate under the supervision of a correctional employee supervisor to review the paper reports for missing information, scan the document creating an electronic image, and assign an accident key or control number to each report. The entire paper crash report is then keyed into KLER by the inmates. Inmates locate and obtain GIS data on a map using MapPoint 2010 from the literal description provided by the officer. Each crash is also located using the State's milepost linear referencing system (LRS). Both GIS and milepost data are recorded on a KLER **State Use Only** (SUO) form.

Once the data entry process is completed, the report is subjected to the automated validation process of the KLER system. Errors are identified and corrected as appropriate by the inmates. Once successfully validated, the reports are electronically submitted to the Traffic Records System (TRS) Index where the completed crash reports are indexed and stored in an SQL database. A Portable Document Format (PDF) image of the completed crash report is prepared in the TRS Index as well. This Index acts as a pointer system for future crash report searches of the KCARS repository as well as the path for the retrieval of a PDF copy of a crash report from the KDOT Filenet library. From the TRS Index, the reports are transmitted electronically to the

KDOT KCARS crash repository Oracle database. CMV crashes are also electronically transferred to the KHP Commercial Motor Vehicle Unit and the PDF generated for each report by the Index is electronically transferred to the KDOT Filenet library for permanent storage. The Filenet library contains only the PDF generated images for all crash reports submitted to KCARS.

The electronic data process flow follows the same procedure as outlined above with two exceptions all manual processes are now automated, and each crash is still manually located. Electronic submissions from the reporting agencies are received by the TRS Index and submitted to the validation process. Reports are electronically sent to KCI from the Index for location based information only, and once obtained the reports are returned from KCI electronically to the TRS Index and distributed electronically to the KCARS Oracle database and the Filenet image library. CMV crashes are electronically sent to the KHP CMV Unit for SafetyNet processing.

Interface with Other Components

The roadway file and the crash file can be linked to provide an interface between the two. When an extract or a copy of the crash file is requested, then the extract can be provided in any format but are commonly provided in .csv, .xls, and .txt file formats.

Quality Control Program

The combined KDOT-KCI quality control program is one of the most commendable efforts the assessment team has encountered. The validation process is self-contained within the KLER system and a manual exists documenting and explaining the validation edits provided by the software. The instructions in the manual match the edit checks that are performed on the crash report data prior to the data being added to the KCARS.

Manual reports undergo the normal agency level review process. Both report formats are received daily by the KDOT. Manual reports are sent in by each agency and received on average eight days from the date of the crash. Electronic reports created by KLER are submitted immediately upon completion one report at a time. There is no batch processing of electronic reports. Manual reports reach the KCARS database normally the same day they are received and on average are entered within ten days from the date of the crash. By all accounts, crash reports are received timely from the contributors.

Because of the thoroughness of the electronic submission validation process, crash reports submitted through KLER have a high degree of accuracy and completeness. KDOT offered no metrics on these two attributes but they were very confident that the strength of the validation process yielded a very low percentage of errors when submitted through KLER. Even when paper reports that actually may contain errors or be missing information are received by KDOT the errors are captured routinely by the validation process and missing information is identified, obtained, and included during the data entry/validation procedure of KLER. Any manual reports that are received with insufficient information are returned to the submitting agency to be completed properly. Because of this process, a very high percentage of crashes are complete and accurate when uploaded to KCARS. KDOT would be wise however to keep metrics on the accuracy and completeness of paper crash reports upon receipt prior to being subjected to the validation process. There was no evidence of KDOT providing any feedback to submitting

agencies evaluating their reports for data quality or completeness. Without this in place it is difficult to correct user deficiencies and when not done, KDOT reinforces the belief that careless data entry will be caught 100 percent of the time by the validation of the KLER system. Furthermore, paper reports are only returned to the contributing agency when sufficient information is not present in the report. In all other cases, missing information is entered and erroneous data entry corrected by KCI inmates using the KLER data entry and validation process.

One problem area mentioned concerned obtaining pending or missing information from the original report for Blood Alcohol Concentration (BAC) or other toxicology results. When the results of BAC tests are finally reported to the investigating officer by the Kansas Bureau of Investigation (KBI) there is no mechanism to monitor that this information is even needed. If the crash resulted in a fatality then the FARS analyst is persistent in acquiring this information. If the crash was not a fatality, then there needs to be a similar proactive effort to ensure this information is obtained and reported thus making the crash report complete.

Another area of concern identified was that there is no procedure in place to ensure reports returned to the submitting agency are actually returned to KDOT for eventual input into the KCARS database. Reports received with insufficient information are returned to the submitting agency by KDOT. A log of what was returned needs to be kept and follow up made within a reasonable time to ensure that those returned reports are actually received by KDOT.

The SafetyNet quality control process is very comprehensive. CMV crashes are validated by the KLER system first and then again for uploading to SafetyNet. Completed CMV crashes are received by the KHP CMV Unit electronically from the TRS Index where SafetyNet analysts do an “eyes on” check for completeness. A small percentage of CMV crashes with missing information arrive at the KHP CMV Unit and these missing fields are completed by the SafetyNet analysts. The CMV crash report and form 852 Truck/Bus Supplement are submitted electronically to SafetyNet and validated during the submission process. Kansas continues to do well with their SafetyNet rating from the Motor Carrier Management Information System (MCMIS).

Kansas DOT provided the following metrics for their crash report quality control program:

Timeliness	- # days from crash event to receipt for data entry on statewide database= 8 days - # days for manual data entry= 1-10 days - # days for upload of electronic data= immediate - % reports entered into the system within 30 days of the crash= 75% or less - % of reports aged more than 60 days= 10% or less
Accuracy	- % of crashes “locatable” using roadway location coding method= 100% of State Highway System Crashes, >99% of other roadways with Latitude/Longitude coordinates - % VINs that are valid (e.g., match to vehicle record and decode) = no response - % of interstate motor carriers “matched” in MCMIS= no response - % crash reports with 1 or more uncorrected “fatal” errors= no response

	- % crash reports with 2 or more uncorrected “serious, non-fatal” errors= no response - % crash reports with 5 or more uncorrected “minor” errors= no response
Completeness	- % LEAs with >10% unexplained drop in reporting one year to the next= no response - % LEAs within 5% of “expected” number of crashes each month= no response - % FARS/MCMIS match= no response
Consistency	- % time that an unknown code is used in fields with that possible value= no response - % logical error checks that fail= no response - % compliance with MMUCC guidelines= no response

Recommendations:

- ☐ Develop a marketing strategy/plan to get KLER crash reporting capability into as many local agencies as quickly as possible.
- ☐ Create a tracking mechanism in KLER for returned reports to ensure they get returned and included in the KCARS database.
- ☐ Consider the development of a minor crash report short form for use by local law enforcement.
- ☐ Investigate how the forms builder package may be able to print single pages on demand.
- ☐ Consider developing a secure, web-based, single submission KLER crash report capability for agencies without technical staff or sufficient technology resources so that they may move to the KLER electronic format.
- ☐ Conduct an inventory of third party vendor companies and identify the number of local LEAs supported by these vendor products.
- ☐ Meet with the identified third party vendors to outline a strategy and timeframe to conform to the NIEM standard for submitting electronically to KCARS.
- ☐ Create a tracking mechanism for identifying missing critical BAC information so it can be reported to KCARS as soon as possible.
- ☐ Continue to pursue strategies to develop linked data sets among the traffic records system component files.
- ☐ Develop a periodic report to local law enforcement summarizing the error rate and level of completeness for initial crash report submissions to KCARS in an effort to improve reporting.

2-B: Roadway Data Component

Advisory Excerpt:

- *Description and Contents.*
  Roadway information includes roadway location, identification, and classification, as well as a description of a road's total physical characteristics and usage. These attributes should be tied to a location reference system. Linked safety and roadway information are valuable components that support a State's construction and maintenance program development. This roadway information should be available for all public roadways, including local roads.

  The State Department of Transportation (DOT) typically has custodial responsibility for the Roadway Data Component. This component should include various enterprise-related files such as:

  - *Roadway Inventories*
    - *Pavement*
    - *Bridges*
    - *Intersections*

  - *Roadside Appurtenances*
    - *Traffic Control Devices (TCD)*
    - *Guard Rails*
    - *Barriers*

  - *Traffic*
    - *Vehicle Miles Traveled (VMT)*
    - *Travel by Vehicle Type*

  - *Other*
    - *Geographic Information Systems (GIS)*
    - *Location Reference System (LRS)*
    - *Project Inventories*

- *Applicable Guidelines*
  The major guideline that pertains to the Roadway Data Component is the HPMS. This provides guidance to the States on standards for sample data collection and reporting for traffic volume counts, inventory, capacity, delay, and pavement management data elements. Guidelines and tools that address roadway data, as well as identifying which of these are expected to have the greatest correlation with crash incidences, should be considered part of this advisory. Examples of these resources are the Highway Safety Manual, Safety Analyst, and the Interactive Highway Safety Design Model. In addition, the American Association of State Highway and Transportation Officials (AASHTO) is developing a series of guides for its Strategic Highway Safety Plan. This multi-year cooperative effort includes guidelines relevant to several TRS components.

- *Data Dictionary*
  Roadway information should be available for all public roads in the State whether under State or local jurisdiction. The contents of the Roadway Data Component should be well documented, including data definitions for each field, edit checks, and data collection guidelines that match the data definitions. Procedures for collection of traffic data and calculation of vehicle miles traveled (VMT) should be documented as well.

- *Process Flow*
  The steps from initial event to final entry onto the statewide roadway data system should be documented in process flow diagrams for each file that are part of the Roadway Data Component. The diagrams should be annotated to show the time required to complete each step and to show alternate flows and timelines depending on whether data are submitted in hardcopy or electronically to the statewide system. The process flow diagram should include processes for error correction and error handling (i.e., returning reports to the original source for correction, resubmission, etc.). Process flow diagrams should show all major steps whether accomplished by staff or with automated systems and clearly distinguish between the two.

- *Interface with Other Traffic Records System Components*
  A location reference system should be used to link the various components of roadway information as well as other TRS information sources, especially crash information, for analytical purposes. Compatible location coding methodologies should apply to all roadways, whether State or locally maintained. When using a GIS, translations should be automatic between legacy location codes and geographic coordinates. This process should be well established and documented. Compatible levels of resolution for location coding for crashes and various roadway characteristics should support meaningful analysis of these data.

- *Quality Control Program*
  The roadway data should be timely, accurate, complete, and consistent and these attributes should be tracked based on a set of established quality control metrics. The overall quality of the roadway data should be assured based on a formal program of error and edit checking as the data are entered into the statewide system and procedures should be in place for addressing the detected errors. In addition, the custodial agency and the TRCC should frequently work together to establish and review the sufficiency of the quality control program and to review the results of the quality control measurements. The roadway data managers should receive periodic data quality reports. There should be procedures in place for sharing the information with data collectors through individual and agency-level feedback, as well as training and changes to the applicable instruction manuals, edit checks, and roadway data dictionary. Audits and validation checks should be conducted as part of the quality control program to assure the accuracy of specific critical data elements. Example measurements are shown in Table 5.

Table 3: Examples of Quality Control Measurements for Roadway Data

Timeliness	- *% of traffic counts conducted each year* - *# days from crash event to location coding of crashes* - *# days from construction completion to roadway file update*
Accuracy	- *% of crashes locatable using roadway location coding method* - *% errors found during data audits of critical data elements*
Completeness	- *% traffic data based on actual counts no more than 3 years old* - *% public roadways listed in the inventory*

The measures in Table 5 are examples of high-level management indicators of quality. The managers of individual roadway files should have access to a greater number of measures. The custodial agency should be prepared to present a standard set of summary measures to the TRCC monthly or quarterly.

2-B: Roadway Data Component Status

Description and Contents

CANSYS is the Kansas Department of Transportation's (KDOT) central repository of geometric road and bridge data for the State road system. The main purpose of CANSYS is to serve as a central repository of geometric road, bridge, and railroad inventory information and to produce required federal reports. CANSYS provides answers to questions posed by the Legislature, KDOT management, FHWA, other users within KDOT, other State agencies, and requests from outside agencies. CANSYS also serves as the primary database for the KDOT Bureau of Traffic Engineering's access permit data and provides supporting data for several other KDOT applications. CANSYS is an Oracle spatially enabled database that contains network and road inventory data consisting of 120 unique elements.

The local public road data inventory is maintained in two separate databases.: Non-State Urban and Non-State Rural. Both are maintained in CANSYS. However, the number of data elements and level of detail are not as complete as that maintained for State-system roads. Some metropolitan areas maintain road and street data. The capital improvement projects they develop are submitted to the KDOT for inclusion in the Statewide Transportation Improvement Program (STIP) and the data from these projects are entered into the Non-State Urban file of CANSYS.

The total public road mileage by system is: State Highway System - 10,606;
Non-State Corporate Roads - 15,735, and Non-State non-Corporate Roads - 114,268 for a total public road mileage of 140,609.

CANSYS maintains four Location Reference Systems (LRS) methods; the two most commonly used are State Route Milepoint and County Route Milepoint.

Hourly traffic counts are obtained through 103 permanent counters throughout the State. Traffic counts are collected for the 13 vehicle types requested by FHWA at 12 permanent counter locations and 24-hour portable counters at 250 sites annually. The State highway system (Interstate, US and Kansas numbered routes) are counted on a two-year cycle. Counts are collected on rural major collectors and urban collectors on a three-year cycle. Rural minor collectors are counted on a six-year cycle and local roads are sampled every nine years.

Total and fatal crash rates are two of the factors used in the priority formula in project selection for the STIP. The Bureau of Transportation Safety and Technology leverages two federal aid categories to fund safety improvement projects, the Highway Safety Improvement Program (HSIP) and the Safety Set Aside for safety projects.

A system for locating crashes on highways owned and maintained by KDOT is currently in place. Crashes are assigned a location reference that corresponds to a unique point on the State highway system. Crash patterns can be detected and road sections can be compared to identify potential safety problems. But a similar system is not yet in place for the approximately 130,000 miles of streets and roads not maintained by KDOT. A network database of these roadways is being developed, but administration of that roadway information will be a continual challenge as cities continue to develop and add streets.

Another challenge will be tying the crashes to points on the network. New crashes can be given a reference point, but to go back into history and locate crashes will require the locator to know every past name for the local street or road, and also any changes to its alignment. The process of getting the needed training and equipment to all local agencies will take considerable time, and will also require maintenance. These challenges must be overcome, however, for the State to have a comprehensive picture of crash history, and to be able to evaluate countermeasures installed "off-system".

Only 23 of the 105 counties have county engineers. The sophistication of the crash record systems maintained at the county level varies, but usually is not more than a pin map. Counties would like to access KDOT data and not maintain their own system.

Cities have the same varying levels of sophistication and expertise. The major metropolitan areas have professional engineering staff and the analytic ability to use roadway and crash data to determine problem locations and develop countermeasures. For example Miami County is currently managing a High Risk Rural Roads project in cooperation with KDOT.

The issue with both counties and cities is the availability and reliability of data to use in their problem identification processes. KDOT is in the process of enhancing their crash data system with a view to make these data available to county and city engineers for use in their safety program development. The Traffic Engineering Assistance Program can help local jurisdictions identify and design countermeasures.

Applicable Guidelines

A major guideline for roadway data is the Highway Performance Monitoring System (HPMS). The HPMS data are used extensively in the analysis of highway system condition, performance, and investment needs that make up the biennial Condition and Performance Reports to Congress. For the most part, KDOT conforms to the provisions of this guideline.

Another guideline is the Model Inventory of Roadway Elements (MIRE). The goal of MIRE is to define *critical safety data inventory elements*—those elements needed by State and local agencies to conduct their internal analyses, and those elements required by existing safety analysis tools and resources. KDOT staff is aware of MIRE and intends to implement changes where feasible when the MIRE guideline is published.

MIRE complements the Model Minimum Uniform Crash Criteria (MMUCC) which is the major guideline for crash data elements. MMUCC provides a data set for describing crashes of motor vehicles in transport that will generate the information necessary to improve highway safety within each State and nationally. A subset of roadway data elements is part of MMUCC. Kansas' crash file is about 75 percent compliant with the MMUCC guideline.

Data Dictionary
An extensive data dictionary exists for both roadway and crash data systems. The documents include data definitions, edit checks, and data collection guidelines.

Process Flow
Process flow diagrams are available for the various roadway files displaying automated and manual processes.

Interface with Other Traffic Records System Components
The various roadway files reside in CANSYS and are able to be linked through the LRS. Road features are also linked to crash data through the LRS. KDOT has developed an Enhanced Priority Formula System (EPFS) which merges road and crash data to calculate rates that are used to select road segments for study of potential countermeasures.

Quality Control Program
Annually network maintenance is performed based on construction plans and resolutions. Inventory data are collected from multiple sources and entered into the system. These sources include construction plans, annual traffic data from Traffic and Field Operations, pavement condition data from Materials and Research, and speed limit and boundary data from resolutions. Additional information is derived from videolog footage.

Following are quality metrics provided by KDOT for the roadway data inventory file.

Quality Control Measurements for Roadway Data

Timeliness	50% of traffic counts conducted each year 30 days from crash event to location coding of crashes 365 days from construction completion to roadway file update
Consistency	130 (CANSYS) data elements consistent with historic data definitions
Completeness	50% (State System) traffic data based on actual counts no more than 3 years old 6.6% (State System) public roadways listed in the inventory
Accuracy	100% of crashes locatable using roadway location coding method <1% errors found during data audits of critical data elements
Accessibility	130 road files accessible to safety stakeholders
Data Integration	#of other traffic records component files l inked to road files

Recommendation:

- ❑ Work with county and city engineers to provide data and safety analysis capabilities.

2-C: Driver Data Component

Advisory Excerpt:

- *Description and Contents*
  Driver information should include data about the State's population of licensed drivers, as well as data about convicted traffic violators who are not licensed in that State. Information about persons licensed by the State should include: personal identification, driver license number, type of license, license status, driver restrictions, convictions for traffic violations in this State and the history of convictions for critical violations in prior States, crash history whether or not cited for a violation, driver improvement or control actions, and driver education data.

  Custodial responsibility for the Driver Data Component usually resides in a State Department or Division of Motor Vehicles. Some commercial vehicle operator-related functions may be handled separately from the primary custodial responsibility for driver data. The structure of driver databases should be typically oriented to individual customers.

- *Applicable Guidelines*
  The ANSI D-20 standard should be used to develop data definitions for traffic records-related information in the driver and vehicle files. Driver information should be maintained to accommodate information obtained through interaction with the NDR via the PDPS and the CDLIS. This enables the State to maintain complete driving histories and prevent drivers from circumventing driver control actions and obtaining multiple licenses. Data exchange for PDPS and CDLIS should be accomplished using the American Association of Motor Vehicle Administrators (AAMVA) Code Dictionary. Security and personal information verification should be in accordance with the provisions of the Real ID act.

- *Data Dictionary*
  At a minimum, driver information should be available for all licensed drivers in the State and for all drivers convicted of a serious traffic violation (regardless of where or whether the person is licensed). The contents of the driver data files should be well documented with data definitions for each field, and where applicable, edit checks and data collection guidelines that match the data definitions. Procedures for collecting, reporting and posting of license, conviction, and license sanction information should be documented.

- *Process Flow*
  The steps, from initial event (licensure, traffic violation, etc.) to final entry onto the statewide driver and vehicle data files, should be documented in process flow diagrams for each file that is part of the Driver Data Component. The diagram should be annotated to show the time required to complete each step and to show alternate flows and timelines depending on whether the data are submitted in hardcopy or electronically to the statewide system. The process flow diagram should include processes for error correction and error handling (i.e., returning reports to the original source for correction, resubmission, etc.). The process flow should also document the timing, conditions, and procedures for purging records from the driver files. Process flow diagrams should show all major steps whether accomplished by staff or automated systems and clearly distinguish between the two. The steps also should be documented in those States that have administrative authority to suspend licenses based on a DUI arrest independent of the judicial processing of those cases.

- *Interface with Other Traffic Records System Components*
  The Driver Data Component should have interfaces (using common linking variables shown in Table 6) to other TRS components such that the following functions can be supported:

  - *Driver component data should be used to verify/validate the person information during data entry in the crash data system and to flag records for possible updating in the driver or vehicle files when a discrepancy is identified. Key variables such as driver license number, name, address, and date of birth should be available to support matching of records among the files. Social Security Numbers should be validated for interstate records exchange.*

  - *Driver and vehicle owner addresses are useful for geographic analyses in conjunction with crash and roadway data components. Linkage in these cases should be based on conversions of addresses to location codes and/or geographic coordinates in order to match the location coding method used in the roadway data component and in the GIS.*

  - *Links between driver convictions and citation/adjudication histories are useful in citation tracking, as well as in systems for tracking specific types of violators (DUI [Driving Under the Influence] tracking systems, for example). Even if a citation tracking system is lacking, there is value in being able to link to data from enforcement or court*

records on the initial charges in traffic cases. These linkages should be based usually on driver name and driver license number but other identifiers may be used as well. The National Center for State Courts (NCSC) is looking for these identifiers in addition to methods to improve data sharing. "NCSC offers solutions that enhance court operations with the latest technology; collects and interprets the latest data on court operations nationwide; and provides information on proven best practices for improving court operations." (http://www.ncsconline.org/)

- *Linkage to injury surveillance data should be possible either directly or through probabilistic linkage in order to support analysis of crash outcomes and crash risk associated with specific driver characteristics (e.g., the driver's history of violations or crash involvement). Key variables should include names, date of birth, dates, times, and locations of crashes and citations.*

Table 6: Common Linking Variables between Driver And Other Data Components of a Traffic Records System

Driver Linkages to Other Law Enforcement & Court Files	- *Citation Number & Case Number* - *Location (street address, description, coordinates, etc.)* - *Personal ID (name, address, DL number, date of birth, etc.)*
Driver Linkages to Roadway Information	- *Driver Addresses (location code, coordinates)*
Driver Linkages to Crash Information	- *Driver License Number* - *Personal Identifiers (name, address, date of birth, etc.)*
Driver Linkages to Statewide Injury Surveillance System Information	- *Personal Identifiers (where allowed by law)* - *Crash Date, Time, Location*

- *Quality Control Program*

The driver data should be timely, accurate, complete, and consistent and these attributes should be tracked based on a set of established quality control metrics. The overall quality of the information in the Driver Data Component should be assured based on a formal program of error/edit checking as data are entered into the statewide system and procedures should be in place for addressing the detected errors. In addition, the custodial agency (or agencies) and the TRCC should work together frequently to establish and review the sufficiency of the quality control program and to review the results of the quality control measurements. The driver data managers should receive periodic data quality reports. There should be procedures in place for sharing the information with data collectors through individual and agency-level feedback, as well as through training and changes to the applicable instruction manuals, edit checks, and the driver and vehicle data dictionaries. Audits and validation checks to assure the accuracy of specific critical data elements should be conducted as part of the formal quality control program. Example measurements are presented in Table 7.

Table 3: Examples of Quality Control Measurements for Driver Data

Timeliness	- *Average time to post driver licenses* - *Average time to post convictions after receipt at DMV* - *Average time to forward dispositions from court to DMV*
Accuracy	- *% of duplicate records for individuals* - *% "errors" found during data audits of critical data elements*
Completeness	- *% drivers records checked for drivers moving into the State* - *% of driver records transferred from prior State*
Consistency	- *% of SSN verified online* - *% of immigration documents verified online* - *% violations reported from other States added to driver history*

The measures in Table 7 are examples of high-level management indicators of quality. The managers of individual driver files should have access to a greater number of measures. The custodial agency should be prepared to present a standard set of summary measures to the TRCC monthly or quarterly.

2-C: Driver Data Component Status

DESCRIPTION AND CONTENTS

The Kansas Department of Revenue (KDOR), Division of Motor Vehicles (DMV), maintains the driver file. At the time of the Traffic Records Assessment of 2005, the file software and system was antiquated, and now KDOR is in the initial stages of a complete overhaul of the system for drivers and vehicles. The DMV Modernization Project began its design sessions on January 26, 2010 working on the Titles and Registration with a target implementation date of July 5, 2011. The project will be based upon the *MVS 3M Solution*, an off-the-shelf product of 3M. "The Project Management Office oversees the 3 separate "teams" that make up the project within the Kansas Department of Revenue: The Organizational Development Team, Business Analyst Team, and Technology Team. The project also includes the outside vendors 3M and Accenture."

The Driver system target time for implementation is December, 2011—a shorter timeframe in a sense because the driver portion of the system will have been established in this customer-based, integrated approach.

The basic processes will use the current organizations: 34 DMV offices in the more populous counties, and 76 county treasurer offices providing DMV services. Both headquarters DMV personnel and both types of field personnel are involved in the development of the new system. It has recently been named simply the DMV System.

For the system development, and to an extent an aspect of training, operating personnel will help define the processes and will prototype the operations of the system. Following is an excerpt from the DMV Modernization Project web site:

"DMVM Project Team Training (presented by 3M) is a demonstration of the "off the shelf" 3M system software. The purpose of the Project Team Training is to give participants a clear view of the capabilities of the current off the shelf system and prepare them for Conference Room Pilots, which are line item reviews of the system requirements. The next step in the process is to determine what additional functionality is needed to fulfill KDOR system requirements. These trainings began in Oct. and will conclude in early 2010 with the Driver's Training and CRP.

"DMVM Project End User Training (presented by DMVM Project Training team and county staff) will be actual "hands on" training on the newly developed KDOR DMVM system. It will consist of instructor led classroom training (sitting at a computer, led by a DMVM trainer, and working through KDOR business process scenarios), computer based training and "hands on" practice time within a sand box training environment. This training will occur between Jan. 2011 and Dec. 2011."

"The DMV Modernization Project Training Team … will make sure all users of the new **DMV System** are properly trained *before* the system is implemented. Even though design of the new DMV System isn't complete, the training team has already begun laying the groundwork for system training sessions. The training schedule is so aggressive that the training team must make sure every end user has a certain baseline level of computer knowledge *before* the actual system training begins in January of 2011."

KDOR began making preparations for the modernization project and undertook a file clean-up process. The file contained 2.1 million records in 2005. Now a recent count is slightly over 1.9 million regular license records and slightly more than 135,000 CDL records. KDOR has had

facial recognition software since 2004, but in preparation for the modernization and facing the climate of Real ID, a major fraud prevention/reduction effort was undertaken during which many fraudulent records (multiples of the same person using variant identifications) were detected and eliminated. Establishing a requirement for proof of lawful presence has created a new climate of Secure Identification Management.

Other significant changes are the implementation of a Graduated Driver License (1/1/2010) and a new requirement for court convictions to be submitted electronically to the DMV. About 80 percent of convictions are now being received electronically. Also, the SAVE file is now being checked in additional to the SSOLV. As reported before, driver histories from previous states are maintained.

The character of conviction reports coming into the DMV is unchanged from the descriptions presented in the 2005 Traffic Records Assessment. Only moving violations are entered as convictions on the driver record. However, an original offense for a moving violation may be amended to a non-moving violation that would not become an entry in the driver file. The DMV cannot record what it does not receive and cannot compensate for the inability to determine what happens to any citation or any "conviction" that become shielded from the driver histories.

Courts requesting certified driver records wait now two to three weeks to obtain them on paper. It was reported that an electronic certified driver record would be strongly preferred, and there appeared to be no resistance to the upgrade.

The file is not basically used for statistical reports, but annual summaries and annual ACCESS files are provided to the Kansas Department of Transportation for use in normalizing crash data.

APPLICABLE GUIDELINES

The DMV uses the ACD Code Dictionary and the BRB Publications MVR Book/Decoder Digest if necessary.

DATA DICTIONARY

There is no current data dictionary. The new DMV System will establish a data dictionary and define the edit checks in the system.

PROCESS FLOW

The process flow diagrams exist now for Electronic Submission of Convictions only.

INTERFACE WITH OTHER TRAFFIC RECORDS SYSTEM COMPONENTS

The current system does not interface with other components of the traffic records system.

QUALITY CONTROL PROGRAM

There are now some minor edit checks on the data entry programs for manual processing: informal and manual monthly quality checks. They are used for training and instruction manuals.

Quality Control Measurements for Driver Data

Submitted prior to the 2010 Assessment

Timeliness	– Average time from accepted application to create driver record = _____ – Average time to mail license to driver from time of application = _____ – Average time to post convictions after receipt at DMV = __10 days_or less__ – Average time from court disposition to receipt at the DMV = _10 days or less____
Accuracy	– % of duplicate records for individuals requiring correction = _____ – Frequency of audits to assure data validity = _____ – % of errors found during audits of critical data elements = _____
Completeness	– % of records checked for drivers moving into the State = _____ – % of driver records requested from prior State = _____ – % of driver records received from prior State = _____
Consistency	– % of SSN verified online = _____ – % of immigration documents verified online = _____ – % non-CDL violations reported from other states added to driver history = Not tracked____

Recommendations:

Note: The improvements already achieved and the emerging new DMV System is impressive and gratifying to acknowledge. Needed improvements to character, quality, and completeness of citation/conviction data provided to the DMV could make the new KDOR system and its contents a benchmark for excellence in driver and vehicle records system.

- ❑ Include a provision to generate electronic certified driver records in the new DMV System.

- ❑ Consider evaluating the completeness, accuracy, and usefulness of the contents of the driver history records and determines the reasons for and realistic remedies for any deficiencies found. Publicize the findings to all of the highway and traffic stakeholders.

2-D: Vehicle Data Component

Advisory Excerpt:

- *Description and Contents*
  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 vehicle history (including odometer readings) in order to produce the information needed to support analysis of vehicle-related factors that may contribute to a State's crash experience. Such analyses would be necessarily restricted to crashes involving in-State registered vehicles only.

  Custodial responsibility for the vehicle data usually resides in a State Department or Division of Motor Vehicles. Some commercial vehicle -related functions may be handled separately from the primary custodial responsibility for all other vehicle data. The structure of vehicle databases is typically oriented to individual "customers."

- *Applicable Guidelines*
  Title and registration information, including stolen and salvage indicators, should be available and shared with other States. The National Motor Vehicle Title Information System (NMVTIS) facilitates such exchanges. In addition, some States empower auto dealers to transact vehicle registrations and title applications following the Business Partner Electronic Vehicle Registration (BPEVR) guidelines from AAMVA. The International Registration Plan (IRP), a reciprocity agreement among U.S States and Canadian provinces, administers the registration processes for interstate commercial vehicles.

- *Data Dictionary*
  Vehicle information should be available for all vehicles registered in the State. The contents of the Vehicle Data Component's files should be well documented, including data definitions for each field, and where applicable, edit checks and data collection guidelines that match the data definitions. Procedures for collection, reporting and posting of registration, title, and title brand information should be documented.

- *Process Flow*
  The steps from initial event (registration, title, etc.) to final entry onto the statewide vehicle data files should be documented in process flow diagrams for each file that is part of this component. The diagram should be annotated to show the time required to complete each step and to show alternate flows and timelines depending on whether the data are submitted in hardcopy or electronically to the statewide system. The process flow diagram should include processes for error correction and error handling (i.e., returning reports to the original source for correction, resubmission, etc.). The process flow should also document the timing, conditions, and procedures for purging records from the vehicle files. Process flow diagrams should show all major steps whether accomplished by staff or automated systems and should clearly distinguish between the two.

- *Interface with Other Traffic Records System Components*
  The Vehicle Data Component has interfaces (using common linking variables shown in Table 8) to other TRS components such that the following functions should be supported:

  - *Vehicle data should be used to verify/validate the vehicle information during data entry in the crash data system, and to flag records for possible updating in the vehicle files when a discrepancy is identified. Key variables such as VIN, license plate number, names, and addresses should be available to support matching of records among the files.*

  - *Vehicle owner addresses are useful in geographic analyses in conjunction with crash and roadway data. Linkage in these cases should be based on conversions of addresses to location codes and/or geographic coordinates in order to match the location coding method used in the Roadway Data Component and in the GIS.*

  - *As with crash data, linkage to injury surveillance data should be possible either directly or through probabilistic linkage in order to support analysis of crash outcomes and crash risk associated with specific driver characteristics (e.g., the driver's history of violations or crash involvement). Key variables should include names and dates, date of birth, times, and locations of crashes.*

Table 8: Common Linking Variables between Vehicle And Other Data Components of a Traffic Records System

Vehicle Linkages to Other Law Enforcement & Court Files	- *Location (street address, description, coordinates, etc.)* - *Personal ID (name, address, DL number, etc.)*
Vehicle Linkages to Roadway Information	- *Owner Addresses (location code, coordinates)*
Vehicle Linkages to Crash Information	- *Vehicle Identification Number* - *Personal Identifiers (name, address, date of birth, etc.)*
Vehicle Linkages to Statewide Injury Surveillance System Information	- *Personal Identifiers (where allowed by law)* - *Crash Date, Time, Location*

- *Quality Control Program*
  The vehicle data should be timely, accurate, complete, and consistent and these attributes should be tracked based on a set of established quality control metrics. The overall quality of the vehicle data should be assured based on a formal program of error/edit checking as the data are entered into the statewide system and procedures should be in place for addressing the detected errors. In addition, the custodial agency (or agencies) and the TRCC should work together frequently to establish and review the sufficiency of the quality control program and to review the results of the quality control measurements. The vehicle data managers should receive periodic data quality reports. There should be procedures in place for sharing the information with data collectors through individual and agency-level feedback, as well as training and changes to the applicable instruction manuals, edit checks, and the driver and vehicle data dictionaries. Audits and validation checks should be conducted to assure the accuracy of specific critical data elements as part of the formal Quality Control Program. Example measurements are presented in Table 9.

Table 9: Examples of Quality Control Measurements for Vehicle Data

Timeliness	- *Average time for DMV to post title transactions* - *% title transactions posted within a day of receipt*
Accuracy	- *% of duplicate records for individuals* - *% errors found during data audits of critical data elements* - *% VINs successfully validated with VIN checking software*
Completeness	- *% of records with complete owner name and address*

The measures in Table 9 are examples of high-level management indicators of quality. The managers of individual vehicle files should have access to a greater number of measures. The custodial agency should be prepared to present a standard set of summary measures to the TRCC monthly or quarterly.

2-D: Vehicle Data Component Status

The vehicle file is undergoing a complete revision and will be integrated with the driver file. The following paragraphs down to the next heading are italicized and taken from the driver section, 2-C, because the same information applies to both files.

The Kansas Department of Revenue (KDOR), Division of Motor Vehicles (DMV), maintains the driver file. At the time of the Traffic Records Assessment of 2005, the file software and system was antiquated, and now KDOR is in the initial stages of complete overhaul of the system for drivers and vehicles. The DMV Modernization Project began its design sessions on January 26, 2010 working on the Titles and Registration with a target implementation date of July 5, 2011. The project will be based upon the MVS 3M Solution, an off-the-shelf product of 3M. "The Project Management Office oversees the 3 separate "teams" that make up the project within the Kansas Department of Revenue: The Organizational Development Team, Business Analyst Team, and Technology Team. The project also includes the outside vendors 3M and Accenture."

The Driver system target time for implementation is December, 2011—a shorter timeframe in a sense because the driver portion of the system will have been established in this customer-based, integrated approach.

The basic processes will use the current organizations: 34 DMV offices in the more populous counties, and 76 county treasurer offices providing DMV services. Both headquarters DMV personnel and both types of field personnel are involved in the development of the new system. It has recently been named simply the DMV System.

For the system development, and to an extent an aspect of training, operating personnel will help define the processes and will prototype the operations of the system. Following is an excerpt from the DMV Modernization Project web site:

***"DMVM Project Team Training** (presented by 3M) is a demonstration of the "off the shelf" 3M system software. The purpose of the Project Team Training is to give participants a clear view of the capabilities of the current off the shelf system and prepare them for Conference Room Pilots, which are line item reviews of the system requirements. The next step in the process is to determine what additional functionality is needed to fulfill KDOR system requirements. These trainings began in Oct. and will conclude in early 2010 with the Driver's Training and CRP.*

***"DMVM Project End User Training** (presented by DMVM Project Training team and county staff) will be actual "hands on" training on the newly developed KDOR DMVM system. It will consist of instructor led classroom training (sitting at a computer, led by a DMVM trainer, and working through KDOR business process scenarios), computer based training and "hands on" practice time within a sand box training environment. This training will occur between Jan. 2011 and Dec. 2011."*

Description and Contents

Titles and registrations are processed through the same facilities as the driver license functions and remain essentially as they were in 2005. However, names used for vehicle transactions follow the requirements of the driver file and benefit from the fraud prevention and reduction procedures used now. Driver license numbers are also being captured for vehicle transactions and become essential features to enable the unification of the customer-based information.

Another significant upgrade is the use of a bar code and patch code on title applications and placement of a 2D bar code on certificates of title. The registration application and the registration documents now have a bar code. These enhancements benefit the KDOR and the enforcement community. VINA is used for VIN accuracy. The DMV also licenses and monitors vehicle dealers and issues temporary permits, including oversize/overweight permits.

Odometer readings are captured at the time of application for an original title, a duplicate, or a secured title. Stolen vehicle notices from vehicle owners initiate placement of a flag on a vehicle record. Unless a notice of recovery is received from the owner (as appropriate), the flag remains until some transfer transaction is attempted. The result is extra work for the owner and the DMV in such a situation; it may be avoidable by changing the practice.

Kansas will participate in the National Motor Vehicle Title Information System (NMVTIS) with the implementation of the new DMV System.

The following description was provided for vehicle brands and salvage vehicles: "Vehicles are branded as salvage, rebuilt salvage, non-highway, formerly non-highway and non-repairable. All brands can be declared by the vehicle owner. Vehicles designated as salvage by an insurance company as a result of a claim must be disclosed to the division within 30 days of designation. Once a vehicle is branded it will remain that way until it reaches antique status. Only if the declaration is claimed to be in error may it be removed. Each situation is handled on a one by one case."

Requests for records are processed within the constraints of the Driver Privacy Protection Act (DPPA). The file is primarily used for maintaining the information necessary for the vehicle registration and title functions. Summaries are provided to the Kansas Department of Transportation periodically and upon request.

Data Dictionary

There are table descriptions for many of the functions but no actual data dictionary. A data dictionary defining each field and its edits will be developed for the new DMV System.

Reference materials now available are the NADA books, online resources, State Statutes and Regulations, and a Training manual. Individual supervisors and team leaders provide training, and extensive training will be included in the implementation of the new DMV System.

Process Flow

Process flow diagrams will be developed for the new system.

Interface with Other Traffic Records System Components

There is no current interface with other components of the traffic records system as there will be in the future.

Quality Control Program

Vehicle registration data are updated nightly and edits are performed nightly.

Quality Control Measurements for Vehicle Data
(Submitted prior to the 2010 Assessment)

Timeliness	– Average time to post registrations = __**Same day**___ – Average time to process title documents = __**W/out lien-2 days after received by T&R; with liens, currently 10 weeks**___ – Average time to produce completed titles = _**35 days from date of purchase, depending on date of application**____ – % title brands posted with 24 hours of receipt = _____ – % registrations and title brands posted within 24 hours = _____
Accuracy	– % of duplicate records for individuals = __**NA**___ – % "errors" found during data audits of critical data elements = __**10%**___ – % VINs successfully validated with VIN checking software = __**100% for VINs covered by system**___
Completeness	– % of records with complete owner name and address = _____

Recommendation:

- ❑ Explore with the Kansas Highway Patrol and the Kansas Bureau of Investigation the most useful way to treat stolen vehicle flags being placed on vehicle records as reported by vehicle owners (including deferring that information to enforcement only).

2-E: Citation/Adjudication Data Component

Advisory Excerpt:

- *Description and Contents*
  Information, which identifies arrest and adjudication activity of the State, should be available, including information that tracks a citation from the time of its distribution to a law enforcement officer, through its issuance to an offender, its disposition, and the posting of conviction in the driver history database. Case management systems, law enforcement records systems, and DMV driver history systems should share information to support:
  - *citation tracking*
  - *case tracking*
  - *disposition reporting*
  - *specialized tracking systems for specific types of violators (e.g., DUI tracking systems)*

  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 and should be available at the local level.

  The information should be used in determining the level of enforcement activity in the State, for accounting and controlling of citation forms, and for detailed monitoring of court activity regarding the disposition of traffic cases.

  Custodial responsibility for the multiple systems that make up the Citation/ Adjudication Data Component should be shared among local and State agencies, with law enforcement, courts, and the Department of Motor Vehicles (DMV) sharing responsibility for some files (e.g., portions of the citation tracking system). State-level agencies should have responsibility for managing the law enforcement information network (e.g., a criminal justice information agency), for coordinating and promoting court case management technology (e.g., an administrative arm of the State Supreme Court), and for assuring that convictions are forwarded to the DMV and actually posted to the drivers' histories (e.g., the court records custodian and the DMV).

- *Applicable Guidelines*
  Data definitions should meet the standards for national law enforcement and court systems. Applicable guidelines are defined for law enforcement data in:
  - *National Crime Information Center (NCIC)*
  - *Uniform Crime Reporting (UCR)*
  - *National Incident-Based Reporting System (NIBRS)*
  - *National Law Enforcement Telecommunication System (NLETS)*
  - *Law Enforcement Information Network (LEIN)*
  - *Traffic Court Case Management Systems Functional Requirement Standards*

  Applicable guidelines should be defined for court records in the National Center for State Courts (NCSC), and jointly for courts and law enforcement in the GJXDM (with specific Traffic Processing Standards created through a national committee). Tracking systems for citations (i.e., a citation tracking system) and for specific classes of violators (e.g., a DUI tracking system) should meet the specifications for such systems published by NHTSA.

- *Data Dictionary*
  The citation/adjudication data files should be well documented, including data definitions for each field and where applicable, edit checks and data collection guidelines that match the data definitions. Procedures for collection, reporting and posting of license, registration, conviction, and title brand information should be documented.

Law enforcement personnel should receive adequate training at the academy and during periodic refreshers to ensure they know the purpose and uses for the data. Training also should ensure that officers know how to access information on violators and process citations and arrests properly. The training manual should be available to all law enforcement personnel and the instructions should match, as appropriate, the edit checks that are performed on the data prior to its being added to the local records management system and statewide databases. The edit checks should be documented and both common and serious errors in the data should be flagged, including missing or out-of-range values and logical inconsistencies. The data element definitions and system edits should be shared with all collectors, managers, and users in the form of a data dictionary that is consistent with the training manual and the crash report form. Court case management systems and tracking systems (citation tracking and DUI tracking) should be well documented to include definitions of all data elements and corresponding edit checks to ensure accuracy.

- *Process Flow*
  The processing of traffic violations, citations, arrests, and court cases should be documented in a series of flow diagrams showing the typical procedures and their average time to completion for each step. The administrative handling of payment in lieu of court appearance should be shown separately from those violations that are not handled administratively. The processes for detecting drugs or collecting blood alcohol concentration (BAC) values through various methods (breath test, blood or urine tests) should also be documented. The processes for tracking DUI cases in a DUI tracking system should also be included in the set of process flow diagrams. Processes for paper and electronic filing and reporting should be shown separately. Process flow diagrams should show all major steps whether accomplished by staff or automated systems and clearly distinguish between the two.

- *Interface with other traffic records system components*
  NCIC, GJXDM, NIBRS, LEIN, and NLETS guidelines all define methods and data standards for information transfer and sharing at the State and national level. Typically, there are State-level equivalents of the various networks and standards governing the sharing of law enforcement and court-related data. For the purposes of safety analysis at a State and local level, linkage between the Citation/Adjudication Data Component and other components of the TRS is important because it is useful for analyzing the geographic distribution of traffic violations and incidents, as well as monitoring the effectiveness of countermeasures that involve enforcement or court processes. It also enables the creation and updating of adverse driver histories for the purpose of driver control. Key linkages within the TRS for citation/adjudication information are listed in Table 10.

Table 10: Common Linking Variables between Citation/Adjudication and Other Data Components of a Traffic Records System

Citation/Adjudication Linkages to Other Law Enforcement Files and Tracking Systems	- *Computer Aided Dispatch (CAD) Record Number* - *Citation/Arrest/Incident Number, Court Case Number* - *Location (street address, description, coordinates, etc.)* - *Personal ID (name, address, DL number, etc.)*
Citation/Adjudication Linkages to Driver/Vehicle Files	- *Driver and Owner Names, Driver License Number* - *Driver & Owner Addresses (location code, coordinates)* - *Vehicle Plate Number, VIN*
Citation/Adjudication Linkages to Statewide Injury Surveillance System Information	- *Personal Identifiers (where allowed by law)* - *Crash-Related Citation/Arrest Date, Time, Location*

- *Quality Control Program*
  The citation/adjudication data should be timely, accurate, complete, and consistent and these attributes should be tracked based on a set of established quality control metrics. The overall quality of the citation/adjudication data should be assured based on a formal program of error/edit checking as the data are entered into the statewide system, and procedures should be in place for addressing the detected errors. In addition, the custodial agency (agencies) and the TRCC should frequently work together to establish and review the sufficiency of the quality control program and to review the results of the quality control measurements. The data managers receive regular, periodic data quality reports. There should be procedures in place for sharing the information with data collectors through individual and agency-level feedback as well as training and changes to the applicable instruction manuals, edit checks, and the driver and vehicle data dictionaries. Audits and validation checks should be conducted to assure the accuracy of specific critical data elements as part of the formal Quality Control Program. Example measurements are presented in Table 11.

Table 11: Examples of Quality Control Measurements for Citation/Adjudication Data

Timeliness	- *Average time for citations to be sent from LEAs to courts* - *Average time for convictions to be sent to DMV*
Accuracy	- *% errors found during data audits of critical data elements* - *% violations narratives that match the proper State statute*
Completeness	- *% of cases with both original charges and dispositions in citation tracking system*
Consistency	- *% traffic citations statewide written on a single uniform citation*

The measures in Table 11 are examples of high-level management indicators of quality. The managers of individual citation/adjudication files should have access to a greater number of measures. The custodial agency should be prepared to present a standard set of summary measures to the TRCC monthly or quarterly.

2-E: Citation/Adjudication Data Component Status

Description and Contents

Kansas does not require law enforcement officers to use a standardized citation form to document violations. Each law enforcement agency is using its own form to collect information that is necessary to address local needs.

Oversight for the content of the citation form is the responsibility of the Division of Motor Vehicles (DMV). State statute requires law enforcement agencies to submit their citation form to the DMV for approval. The information collected on the various citation forms includes; type of violation, location, date and time, and the enforcement agency.

There is no statewide citation tracking system containing information about enforcement and adjudication of all citations issued by all enforcement agencies. This lack of information prevents the State from evaluating and determining the effectiveness of enforcement countermeasures.

Some law enforcement agencies have various procedures in place to account for citations in their agencies, but there is no citation tracking from the point of issuance to disposition and posting on the driver history file.

There are statistics from the courts that identify traffic caseload filings by county and district courts for the State. Total District Court traffic case filings for the year ending June 30, 2009 was 201,510. The total traffic case filings for municipal courts for the same period were 413,439.

The Office of Judicial Administration (OJA) provides administrative oversight for all District Courts within Kansas. Violations of Kansas's Traffic Code are adjudicated by the District Courts. Municipal traffic ordinance violations are adjudicated in municipal courts. Most municipal traffic ordinance violations can be converted to State Statute cites, but there are concerns about converting some municipal code violations such as "Inattentive Driving" and "Yellow Light Running." There are 105 District Courts and approximately 330 Municipal Courts.

Twenty-nine of the thirty-one judicial districts and many of the municipal courts utilize the FullCourt Case Management System (CMS) software. There is a pass-through portal for citation and disposition data at the OJA. District Courts send data electronically to the portal for routing daily to the KDOR for download onto the driver file. Driver Control does not accept all convictions; only reportable offenses set by Driver Control are accepted through the electronic submission. District Court data are also directly routed to the DMV in matters that impact the suspension of drivers' licenses. The two judicial districts that do not use FullCourt are responsible for writing programs that permit the data transfer in a manner that allows integration of the information with that of the other 29 judicial districts. A portion of case filing fees are deposited into a technology fund that pays the maintenance costs for the FullCourt software.

Each of the 16 court case management systems used by municipal courts, other than FullCourt, contains complete information about enforcement actions and dispositions that is useful in evaluating and determining the effectiveness of local countermeasures. Electronic copies of all municipal court convictions are forwarded by the courts to the KDOR and are electronically entered onto the driver file.

The Kansas appellate courts utilize a CMS developed by OJA. Costs of this system are also funded by the technology fund.

In May 2009, Chief Justice Robert Davis appointed a committee to make recommendations to the Kansas Supreme Court regarding the development of an Electronic Filing System (EFS) for Kansas Courts. This project concerns criminal case filing. These cases are much larger and more intricate than normal traffic violations. The Supreme Court does not expect implementation of a statewide program in the immediate future but felt it was important that they begin looking at implementation of electronic filing of criminal cases in the Kansas Courts.

The committee is to make recommendations to the Supreme Court regarding policy decisions that would be necessitated should a statewide electronic filing system be implemented in Kansas. The committee has been divided into three subcommittees to address policy and procedure, finance, and technology. Unfortunately, the Traffic Safety Section has been unaware of these committees.

The KHP has developed a new offline data capture system, the Kansas Law Enforcement Reporting (KLER) system, which provides KHP and local law enforcement with the ability to electronically capture critical records data using existing mobile laptop computers in patrol cars. KLER is in use by 52 law enforcement agencies including the KHP. KLER has the capability to prepare various enforcement reports at crash scenes and during traffic stops, including crash forms from KDOT, incident forms from KBI, insurance forms from KDOR, and eventually a new statewide minimum-uniform-content traffic eCitation. All the forms are planned to be in a single software suite (KLER).

Over the past two years both the Kansas Criminal Justice Information System (KCJIS) Committee and the Traffic Records Coordinating Committee (TRCC) have identified and included a tactical project for planning and implementing a new eCitation system. This project was approved by the KCJIS Committee and the TRCC in November 2008 and is being funded via the State Traffic Records Enhancement Fund.

<u>Strategic Plan Goals and Objectives</u>: The goal of the eCitation program is to *develop and implement an interconnected set of systems through which traffic citation data can be collected and distributed quickly, effectively, and at cost savings over the current manual system. By use of a uniform and consistent system throughout the state by both state and local agencies, the accessibility, timeliness, completeness, and accuracy of the vital information disseminated will be significantly enhanced*. The Plan's objectives are:

> Educating Kansas on other State eCitation programs and their architecture, software and technologies.

Documenting the requirements of the State eCitation system based on interviews with State and local personnel.

Developing a vision and design for the implementation of a system for the State of Kansas that incorporates the technologies and work already in process by affected agencies.

Developing and approving a plan for implementing the strategies and achieving the desired vision over the next few years.

Ensuring compatibility with current KCJIS and TRCC technologies and plans.

Promoting a common understanding of the direction and vision for eCitation among management and executive personnel.

eCitation Project Organization: The eCitation Project organization structure has been set up to leverage the individuals and leadership already included in both KCJIS and the TRCC. The structure includes both a Work Group and a Steering Committee. The project is lead by a Work Group with representatives from KCJIS, TRCC, KHP, KBI, OJA and local law enforcement. This group meets every other week and provides review and guidance on the deliverables for the project and assists in identifying and coordinating input by local agencies.

The project intends to utilize the TRCC with additional ad hoc members as a Steering Committee to receive broad input into the vision and the plan for a statewide eCitation system. Meetings of the Steering Committee are tentatively planned to coincide with the monthly TRCC meetings on the 3rd Thursday of the month.

eCitation XML Schema Definition: The TRCC has developed two draft XML Information Exchange Process Descriptions (IEPDs) for exchanging data between law enforcement systems and State repositories following the standards and conventions defined in the National Information Exchange Model (NIEM). The two draft IEPDs created by the TRCC are the Crash Report and the Citation Report and are available online at www.kansastrs.org. The use of national standards increases data compatibility and conformity with other states and the federal government. More information can be found at www.niem.gov.

State impact: Many of the projects identified in the Traffic Records Strategic Plan lead to the development or improvement of statewide systems and repositories, which will be available for use by most Kansas law enforcement agencies and organizations. No agency has yet expressed an interest in housing the eCitation warehouse. More information on the eCitation Project can be found at the project library at: www.kansastrs.org/citation.aspx

Currently, there is no statewide citation information system 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 critical for highway safety purposes and should be available.

This information could be used in determining the level of enforcement activity in the State, for accounting and controlling of citations, and for detailed monitoring of court activity regarding the disposition of traffic cases and should be considered an integral part of any planning for the development of the eCitation system.

The Traffic Record Enhancement Fund (TREF) will supply some funding for this and other projects. The fines for traffic infractions are set uniformly by the Kansas Legislature. All traffic fines collected by district (county) courts are remitted to the State treasury and a percentage are remitted to certain enhancement funds such as traffic records. No enhancement funds come from the municipal courts.

The DMV Modernization Project, which is a complete overhaul of the current DMV system, will process the information on a "near-live" server, to give law enforcement the most current information available on drivers and vehicles during traffic stops.

Applicable Guidelines
The KDOR requires that data captured on the different citations be consistent with national guidelines, and dispositions recorded on the drivers' history files use appropriate AAMVA ACD codes for sharing of violation information among jurisdictions.

Data Dictionary
There is a data dictionary for all of the required fields on all citations in the State.

Process Flow
Many citation process flow charts were provided to the assessment team by law enforcement agencies, but they applied only to their departments and local courts.

Interface with other traffic record system components
There is no interface between any of the case management files at the courts and other components of the traffic records system except the driver history files at DMV.

Future electronic citation development could collect data from the driver license and vehicle registration through use of bar-code readers. Bar codes are being placed on the State's driver licenses and vehicle registrations. There is a statewide Geographical Information System (GIS) in Lawrence at Kansas University; use of this location data could improve data linkage between citations and crashes and other traffic records data containing location information.

Quality Control Program
The following quality control chart was provided by the Topeka Municipal Court. Unfortunately, these measurements are only estimates instead of systematically generated quality control measurements. There were no quality control measures supplied by the State. The overall quality of the citation/adjudication data should be assured based on a formal program of error/edit checking as the data are entered into a statewide system, and procedures should be in place for addressing the detected errors.

Quality Control Measurements for Citation/Adjudication Data

Timeliness	– Average time citations sent from LEA to courts = _5 to 7 days____ – Average time convictions sent to DMV from courts = currently done weekly
Accuracy	– % "errors" found during data audits of critical data elements = __5%___ – % violations narratives that match the proper State statute = __N/A___
Completeness	– % of cases with both original charges and dispositions in citation tracking system = _100%
Consistency	– % traffic citations statewide written on a uniform citation = _unknown____ NOTE: within our court some come through on private complaint form.

Recommendations:

- ❑ Continue implementation of the Kansas eCitation Program.
- ❑ Include Kansas Department of Transportation (KDOT) representation on the eCitation Work Group. Consider housing eCitation data at the future Traffic Record System Warehouse within the KDOT.
- ❑ Design data retrieval and statistical reporting capabilities in the Citation project.
- ❑ Expand the citation project scope to include a statewide citation data repository.
- ❑ Seek legislation requiring municipal traffic codes to match State Statute and the State fine schedule. Consider legislation that would collect monies from all traffic convictions to be placed in a State maintained municipal traffic record enhancement fund.
- ❑ Develop a quality control program that systematically generates data quality measurements for the recommended statewide citation data repository.

2-F: Statewide Injury Surveillance System (SWISS) Data Component

Advisory Excerpt:

- *Description and Contents*

  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 that drive the development of a SWISS. These systems typically incorporate pre-hospital (EMS), trauma, emergency department (ED), hospital in-patient/discharge, rehabilitation and morbidity databases to track injury causes, magnitude, costs, and outcomes. Often, these systems rely upon other components of the TRS to provide information on injury mechanisms or events (e.g., traffic crash reports). The custodial responsibility for various files within the SWISS typically is distributed among several agencies and/or offices within a State Department of Health.

  This system should allow the documentation of information that 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 SWISS should support integration of the injury data with police reported traffic crashes and make this information available for analysis to support research, public policy, and decision making.

  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 SWISS should be integrated into the injury control programs within traffic safety, and other safety-related programs at the State and local levels.

- *Applicable Guidelines*

  NHTSA has produced the National Emergency Medical Service Information System (NEMSIS) to serve as a guideline for a uniform pre-hospital dataset. It applies to all EMS runs, not just those related to traffic crashes. The American College of Surgeons (ACS) certifies trauma centers and provides guidelines for trauma registry databases and for a National Trauma Databank. Emergency Department and in-patient data guidelines (UB-92) are available from the US Department of Health and Human Services. The National Center for Health Statistics, within the Centers for Disease Control (CDC), sets ICD-9 codes and E-codes for injury morbidity/mortality. These codes are updated as needed and the ICD-10 codes are expected by the fall of 2007. The CDC also sets standards for reporting to their injury database and for use of the Public Health Information Network for data sharing.

- *Data Dictionary*

  The contents of the SWISS Data Component's files should be well documented to include data definitions for each field, and where applicable, edit checks and data collection guidelines that match the data definitions. Procedures should be documented in instruction manuals for collection, reporting, and posting of EMS run data on a uniform run report, uniform data in various hospital and trauma databases, and for tracking morbidity and mortality for each system.

  Training should include (where applicable) data collection, data entry, use of various injury coding systems (ICD and E-codes) as well as injury and trauma severity scoring systems such as the Injury Severity Score (ISS), Revised Trauma Score (RTS), and Abbreviated Injury Score (AIS) scales.

- *Process Flow*

  The information and processes involved in transport and treatment of victims of crash-related injuries should be documented in a series of flow diagrams showing the typical data collection and management processes and their average time to completion for each step in the data flow process. Processes for paper and electronic filing and reporting should be shown separately. Process flow diagrams should show all major steps whether accomplished by staff or automated systems and clearly distinguish between the two.

- *Interface with other Traffic Records System Components*

  Data transfer and sharing between local systems and the SWISS should be governed by data definitions, quality control requirements, and data transfer protocols defined by the custodial agencies. Transfer and sharing between SWISS files and the relevant national databases are governed by the data definitions, quality control requirements, and data transfer protocols for those systems (e.g., National Trauma Database).

The CODES project is the primary example of data sharing and integration between SWISS and the other components of a TRS. It can take the form of direct linkage using personal identifiers or probabilistic linkage using other data elements such as incident time, date, date of birth, and locations, responding officer/agency, and others. Key linkages within the TRS for SWISS information are listed in Table 12.

Table 12: Common Linking Variables between SWISS And Other Data Components of a Traffic Records System

Linkages Internal to the SWISS data on injury and healthcare treatments/outcomes	- *Patient name* - *Patient ID number* - *EMS run report number* - *Social Security Number*
Linkages between SWISS data and Crash Data	- *Personal Identifiers: Name, address, date of birth (direct linkage)* - *CODES linking variables (probabilistic linkage)* - *EMS run report number* - *Crash Report Number*
Linkages between SWISS data and other (non-Crash) components of the traffic records system	- *Name & SSN linked to driver file (direct linkage)* - *Location/address* - *Event & treatment date and time*

- *Quality Control Program*

  The SWISS data should be timely, accurate, complete, and consistent and these attributes should be tracked based on a set of established quality control metrics. The overall quality of the information in the SWISS Data Component should be assured based on a formal program of error/edit checking as the data are entered into the statewide system and procedures should be in place for addressing the detected errors. In addition, the custodial agency (or agencies) and the TRCC should work together frequently to establish and review the sufficiency of the quality control program and to review the results of the quality control measurements. The data managers should receive periodic data quality reports. There should be procedures in place for sharing the information with data collectors through individual and agency-level feedback, as well as to provide modifications to applicable training and instruction manuals, edit checks, and the SWISS data dictionaries. Audits and validation checks to assure the accuracy of specific critical data elements should be conducted as part of the formal Quality Control Program. Example measurements are presented in Table 13.

Table 13: Examples of Quality Control Measurements for the Statewide Injury Surveillance System

Timeliness	- *Average time for EMS run reports to be sent to governing agency* - *% EMS run repots sent to governing agency in the prescribed time* - *Average time from treatment & discharge from ED to record availability in the ED discharge database* - *Average time from patient discharge to record availability in the hospital discharge database* - *Average time from date of incident to record appearing in the trauma registry* - *# days from death to appearance of record on mortality database*
Accuracy	- *% EMS run locations that match statewide location coding* - *% correct ICD-9 and E-codes* - *% "errors" found during data audits of critical data elements in EMS, ED, trauma registry, hospital discharge, & mortality databases*
Completeness	- *% of traffic crash-related EMS runs in the EMS database* - *% of ED visits for crash-related injuries recorded in ED discharge database.* - *% of trauma cases represented in the trauma registry* - *% of SCI/TBI cases represented in the SCI/TBI registries*
Consistency	- *% correct ICD-9 and E-codes (see also accuracy)* - *CODES match rate (where applicable)* - *% crash-related deaths with motor vehicle crash in cause of death field on death certificate*

The measures in Table 13 are examples of high-level management indicators of quality. The managers of individual medical data files should have access to a greater number of measures. The custodial agencies should be prepared to present standard sets of summary measures to the TRCC monthly or quarterly.

2-F: Statewide Injury Surveillance System (SWISS) Data Component

There are several key components of a statewide injury surveillance system (SWISS) including emergency medical services (EMS), 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.

Integrating the SWISS with State traffic records system components has the ability to benefit both entities. Motor vehicle crash data can supply many of the pre-event and event information for the Haddon Matrix for use in planning injury prevention programs initiated by the public health professionals. Alternatively, providing traffic safety specialists with medical outcomes for motor vehicle crashes enables them to augment their understanding of crash severity beyond the typical five-point scale captured on most crash reports.

Description and Contents

Kansas has developed or is developing many components of a SWISS. These components include the Kansas Emergency Medicine Information System (KEMIS) housed at the Kansas Board of EMS (KEBMS); the Kansas Trauma Registry in the Kansas Department of Health and Environment (KDHE) Bureau of Local and Rural Health; the Kansas Vital Statistics database maintained by the KDHE Bureau of Public Health Informatics; and the Kansas hospital discharge database collected by the Kansas Hospital Association (KHA) and supplied to KDHE Bureau of Health Promotion.

Kansas Emergency Medicine Services Information System (KEMIS)

Applicable Guideline

KBEMS licenses 174 agencies and around 10,500 providers at the first responder, EMT, EMT-I, EMT-D, and MICT levels. KSA 65-6153(b) states that ambulance service operators, "shall collect and report," data to KBEMS.

KBEMS has contracted with ImageTrend to develop and maintain KEMIS. Currently 43 agencies submit data to KEMIS with plans to add an additional 45 agencies by the end of the year. While representing roughly half of the agencies it is thought that KEMIS will capture over 85 percent of all EMS runs in Kansas.

Data Dictionary

There is neither a uniform statewide EMS run report nor data dictionary. However, the KEMIS database is NEMSIS compliant and collects 192 of the NEMSIS data elements. Agencies approved to submit data to KEMIS do so by using a NEMSIS compliant ImageTrend product or directly entering data into the KEMIS website. Plans are in place to allow agencies with NEMSIS compliant data collection products to export data into KEMIS. By limiting submissions to only agencies with NEMSIS compliant products data uniformity between agencies is ensured.

Quality Control
A total of 72 business rules are incorporated into KEMIS and the user is supplied with a validity score while entering data. KBEMS has the ability to reject data based on low validity scores. Currently data are not rejected due to missing information but training is ongoing to reduce the large number of missing, unknown, and not applicable answers. KBEMS is working with ImageTrend to develop a duplicate record identification tool. Data quality reports are made available to submitting agencies via KEMIS. ImageTrend handles training of new agencies reporting to KEMIS. The following measures were also submitted in response to the assessment.

Timeliness	% EMS reports sent to governing agency within 10 days of incident	Approx 3%
	% EMS run reports sent to governing agency within 30 days	Approx 3%
	Mean # days from incident to data availability on statewide system	Unknown
Accuracy	% EMS run locations that match statewide location coding	Unknown
	% ”missing” found during data audits of critical data elements	Unknown
Completeness	% of EMS agencies contributing to the statewide database	25%
Consistency	% of records on EMS database that are NEMSIS compliant	>90% silver if unknown, other and NA are included

Process Flow
Data are collected by individual EMTs and are submitted to KEMIS in one of the three manners listed above (direct entry into KEMIS website, ImageTrend program, or eventually by extract from another NEMSIS compliant vendor). If the data have passed the validity checks during data entry they are immediately available to the KEMIS manager. Reporting tools exist within KEMIS allowing agencies to run standardized and *ad hoc* reports. At the current time statewide injury reports do not include KEMIS data. Data are currently not available to the public, but plans are in place to include KEMIS in the planned traffic records system warehouse being developed by the TRCC. KBEMS is finalizing a data sharing agreement with the NEMSIS Technical Assistance Center (TAC) to submit data to NEMSIS. Sample extracts have been tested and approved by NEMSIS TAC and submission is expected to go smoothly once the agreement is finalized.

Interface with other Traffic Records System Components
Plans and funding are in place to incorporate KEMIS with both trauma registry and hospital data. A hospital bridge has been developed by ImageTrend which allows staff at the receiving facility to view the ePCR (electronic patient care record). With the assistance of TRCC funding, the vendors for KEMIS (ImageTrend) and the Kansas Trauma Registry (Digital Innovation) are developing a means for trauma registrars at each hospital to identify and link information from the ePCR to the EMS data elements in the trauma registry. Emergency department and hospital discharge disposition will be added to KEMIS as part of this data exchange.

Emergency Department Database

KDHE is discussing the potential for receiving emergency department data from KHA. Staff is hopeful that counts of injuries by mechanism and intent will be made available, but currently record level data are unavailable to the traffic safety and injury prevention communities.

Hospital Discharge Database

Applicable Guidelines

KSA 75-7405 provides statutory responsibility for the Kansas Health Policy Authority (KHPA) to gather, analyze and distribute a wide range of health-related data about Kansas. Through a contract with KHPA and KHA, the KDHE receives the hospital discharge data set. Data contain information on approximately 360,000 discharges each year. Federal, Veteran's Administration, and State hospitals are excluded from the database.

Data Dictionary

Elements contained in the hospital database are typical of hospital billing records except that patient names and hospital-billed charges are not available.

Quality Control

Data are gathered by KHA from each of the Kansas community hospitals and sent to a contractor (HEIDI) for processing and cleaning. In addition to validation and quality checks employed by HEIDI, KDHE performs further edit and consistency analyses. The following measures were also submitted in response to the assessment.

Timeliness	Number of days from hospital/ED discharge until data is entered into database	unknown
	Number of days from end of quarter/year until data is available for analysis on a State level.	unknown
Accuracy	% "missing" found during data audits of critical data elements	Unknown
	% of hospitals participating in statewide database	100%
Completeness	% of injury related discharges containing a valid E-Code	92%

Process Flow

Data are coded at each of the community hospitals and submitted to KHA. Data are then processed by HEIDI and returned to KHA. KDHE receives quarterly batch files from KHA. There is typically an 18 month delay between when the discharge occurs and the data are available to KDHE staff. This results in a roughly two-year delay for the annual file to be generated and ready for use.

Injury records are incorporated into the Integrated Core Injury Prevention and Control (ICIPC) Program which supports the planning, implementation and integration of comprehensive injury prevention and control activities with basic injury surveillance. Data are used to generate annual billed injury indicators submitted to the Centers for Disease Control and Prevention (CDC).

Injury related discharges are also incorporated into Kansas Information for Communities (KIC) website where users may generate crosstabs of counts of discharge diagnoses but not mechanism of injury. Data are also included in a number of statewide injury related reports including the *Kansas Health Statistics Reports*. Additionally, staff at KDHE will run queries and produce data tables if requested by the public or outside agencies, such as KDOT. Research databases can be obtained upon the completion of a data use agreement.

Interface with other Traffic Records System Components

The hospital discharge database is not directly integrated with other traffic records components. However, KDHE and KDOT staff reported working closely to compare results between the two databases ensuring consistent numbers are presented to the public. Direct or probabilistic linkage of the hospital discharge database to other databases has not been attempted due to the lack of name information. Additionally, the lack of hospital-billed charges information has limited its attractiveness to the traffic safety community.

Kansas Trauma Registry

Applicable Guidelines

In 1999 the Kansas legislature passed legislation (KSA 75-5663 to 75-670) establishing an Advisory Committee on Trauma (ACT) and designated KDHE as the administering agency for a State trauma program. The goal of the trauma system is to ensure each patient is properly triaged and matched to the hospital with the most appropriate resources as quickly as possible.

The Kansas Trauma Program designates trauma centers at Levels I, II, and III. The feasibility of designating Level IV trauma centers is being explored. Kansas has three Level I, two Level II, and two Level III trauma centers. All hospitals which treat patients meeting registry case criteria submit patient level data to the trauma registry. Agreements are in place with hospitals in Missouri to identify injured patients transported out of State.

Data Dictionary

The Kansas Trauma Registry data dictionary is based on the National Trauma Data Standard (NTDS) and is available online. A few modifications have been incorporated to support State specific needs. Of the more than 300 data elements, about 100 are required to be submitted quarterly. Hospital-billed charges information is available from some but not all hospitals.

The Kansas Trauma Registry no longer submits data to the National Trauma Data Bank (NTDB) as the NTDB encourages individual hospitals to submit data, and the Kansas trauma centers are doing so. Through regional and statewide trauma meetings, the Kansas Trauma Program conducts trainings and promotes the use of the trauma registry data.

Quality Control
All but one trauma center uses Digital Innovation's Collector® for data collection. Smaller hospitals submit data through a website. Quality control checks and edits are built into both Collector and the website. Additional data verification procedures are performed once the data are compiled at KDHE. The amount of EMS related elements that are submitted has been steadily improving through education and presentations given at regional trauma meetings. Some efforts to identify transferred patients have been undertaken but staff would like a more rigorous process. Comparisons between the trauma registry and the hospital discharge database have not been made. The following measures were also submitted in response to the assessment.

Timeliness	Number of days from trauma center discharge until data is entered into database	Facilities are required to report quarterly
	Number of days from end of quarter/year until data is available for analysis on a State level.	90
Accuracy	% "missing" found during data audits of critical data elements	<10%
Completeness	% of discharges containing a valid E-Code	99.7%

Process Flow
All hospitals treating patients meeting registry criteria are required to submit data quarterly. The standalone product and website allow hospitals to submit data more regularly and many do so. Once data have been entered into the trauma registry they are available for analysis. Frequent reports are created on both a regional and statewide basis. Topics have included falls, ATVs, and teen drivers. The trauma program also produces a quarterly newsletter and annual report. A fulltime epidemiologist and a database manager are on staff at the trauma program that can run queries and fulfill data requests. Since the trauma registry is still in its infancy a research database has not been made available.

Interface with other Traffic Records System Components
The Kansas Trauma Registry is not directly integrated with other traffic components. Preliminary studies have been conducted with the death certificate database to determine the completeness of the trauma registry. With the aid of the TRCC, a project is underway for trauma registrars and records management personnel at each hospital to access the ePCR for patients transported to the hospital by EMS, allowing for automatic completion of the EMS data elements within the trauma registry.

Death Certificate Database

Applicable Guidelines
The Kansas Office of Vital Statistics receives and preserves vital records for events (births, deaths, marriages, and divorces) which occur in Kansas. The Office maintains more than 10 million records, adding approximately 100,000 new records annually; approximately 28,000 of these records are for deaths. Each year about 1,600 Kansans die from injury.

Data Dictionary
Death certificate data are coded according to national guidelines set by the National Centers for Health Statistics (NCHS). Cause-of-death information is classified in accordance with the ICD-10 standard.

Process Flow
Kansas has an electronic system for handling death certificates. Hospitals and funeral homes submit death information through an electronic registration system to KDHE. Data are used in numerous public health and injury control activities. Data are available in the KIC and can be queried by mechanism of injury. Injury mortality information is also included in statewide injury reports such as the *Kansas Injury PREVENTION PROGRAM Data Book.* Data can be requested from KDHE in the form of tables, graphs, or data set pending data use agreement approval. Regular comparisons are made between FARS and vital statistics to ensure the completeness of both databases.

Quality Control
Several quality control measures are in place at KDHE to ensure the accuracy of mortality data. A number of these take place via the software during the data entry process. Further checks are employed at KDHE once the data arrive. Additionally, KDHE employees a nosologist and junior nosologist to review cause of death information. The following measures were also submitted in response to the assessment.

Timeliness	Number of days from death discharge until data is entered into database (see footnote 1)	<5 days
	Number of days from end of quarter/year until data is available for analysis on a state level. (see footnote 2)	<10 days
Accuracy	% ”missing” found during data audits of critical data elements	0%
Completeness	% of injury related fatalities containing a valid E-Code	100%

Footnote 1 Fact of death is reported electronically within less than 5 days. Cause of death information may be a little longer to arrive until all physicians are online.
Footnote 2 The vital events reporting period by law runs for a period of six months after the end of the event calendar year. With QI/QA activities performed on an ongoing basis, the Bureau of Public Health Informatics is able to prepare a statistical file in less than one week after the closing of the reporting year. A research history file (deidentified) is available shortly thereafter.

Interface with other Traffic Records System Components
KDHE has performed internal studies comparing the death certificate database and the trauma registry; however, the death information is not directly integrated with other traffic records components.

Integration of the SWISS with Motor Vehicle Crash Information

The components of the SWISS in Kansas have been active in the motor vehicle crash prevention arena. Information from the hospital discharge database, the trauma registry, and the death certificates database were all used in support of the recent graduated drivers license (GDL) legislation. Information from these components has also been used to study a number of other injury related topics. It appears that these databases are analyzed and queried independently and are not integrated. The trauma registry has made comparisons with the death certificate database to verify completeness and is developing the technology to link with KEMIS to populate EMS related information; these appear to be more of a quality assurance process and not necessarily a traffic safety or injury prevention activity. Integration of the databases for analysis purposes has the ability to provide a full picture of all patient activity from the scene of the injury to ultimate discharge from the hospital or the patient's death.

While databases in the SWISS have been used to study motor vehicle crashes and to provide information to FARS they are not integrated in a meaningful fashion with the motor vehicle crash database. However, as the following table demonstrates, the probabilistic linkage of these databases may be feasible.

Crash	**KEMIS**	**Hospital Discharge**	**Trauma Registry**	**Death Certificates**
First Name	First Name			First Name
Last Name	Last Name			Last Name
Date of Birth	Date of Birth	Date of Birth	Date of Birth	Date of Birth
Date of Crash	Date of Call	Date of Admission	Date of Admission	Date of Injury/Death
Time of Crash	Time of Call		Time of Admission	Time of Injury/Death
Hospital Transported To	Hospital Transported To	Hospital Identifier	Hospital Identifier	Location of Death

A linked database will provide all the information to complete the injury pyramid and supply traffic safety engineers and researchers with a more complete description of injuries sustained from motor vehicle crashes. This information can be used to inform decisions regarding targeted enforcement campaigns and roadway design issues. Similarly, SWISS data linked to motor vehicle crash information can provide public health researchers access to valuable event information missing in many hospital based registries. Roadway and traffic volume information also provide the opportunity to create rates that are potentially more meaningful than those based on population numbers alone.

Recommendations:

- ❑ Promote and expand KEMIS.
- ❑ Enact business rules to reduce the number of missing, unknown, and not applicable answers in KEMIS.

- ❑ Continue with plans to integrate KEMIS and the trauma registry.
- ❑ Develop plans and processes for a public release KEMIS database once the system is more mature.
- ❑ Undertake an analysis of the hospital discharge database to estimate the completeness of the trauma registry.
- ❑ Incorporate the trauma registry into KIC.
- ❑ Create an analysis database for the trauma registry.
- ❑ Pursue efforts for KDHE to obtain the emergency department database from KHA.
- ❑ Create the ability within WIC to tabulate hospital discharges by intent and mechanism of injury.
- ❑ Obtain billed hospital charges for the hospital discharge database.
- ❑ Seek membership from the Core Injury Prevention and Control Program on the TRCC.
- ❑ Undertake a data linkage project between SWISS components and KCARS.

APPENDFIX A

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APPENDIX B

Abbreviations and Acronyms

AAAM	Association for the Advancement of Automotive Medicine
AAMVA	American Association of Motor Vehicle Administrators
AASHTO	American Association of State Highway and Transportation Officials
ACS	American College of Surgeons
AIS	Abbreviated Injury Score
ANSI	American National Standards Institute
ATSIP	Association of Transportation Safety Information Professionals
BAC	Blood Alcohol Concentration
BPEVR	Business Partner Electronic Vehicle Registration
CDC	Center for Disease Control
CDLIS	Commercial Driver License Information System
CODES	Crash Outcome Data Evaluation System
DMV	Department of Motor Vehicles
DOT	Department of Transportation
DUI	Driving Under the Influence
ED	Emergency Department
EMS	Emergency Medical Service
FARS	Fatality Analysis Reporting System
FHWA	Federal Highway Administration
GES	General Estimates System
GIS	Geographic Information System
GJXDM	Global Justice XML Data Model
GPS	Global Positioning System
HPMS	Highway Performance Monitoring System
ICD	Injury Coding System
IRP	International Registration Plan
ISS	Injury Surveillance Score
LEIN	Law Enforcement Information Network

MCMIS	Motor Carrier Management Information System
MMUCC	Model Minimum Uniform Crash Criteria
NCIC	National Crime Information Center
NCSC	National Center for State Courts
NDR	National Driver Registry
NEMSIS	National Emergency Medical Service Information System
NGA	National Governor's Association
NHTSA	National Highway Traffic Safety Administration
NIBRS	National Incident-Based Reporting System
NLETS	National Law Enforcement Telecommunication System
NMVTIS	National Motor Vehicle Title Information System
PDPS	Problem Driver Pointer System
RTS	Revised Trauma Score
SHSP	Strategic Highway Safety Plan
SWISS	Statewide Injury Surveillance System
TCD	Traffic Control Devices
TRCC	Traffic Records Coordinating Committee
TRS	Traffic Records System
UCR	Uniform Crime Reporting
VIN	Vehicle Identification Number
VMT	Vehicle Miles Traveled

TEAM CREDENTIALS

LAWRENCE J. COOK, Ph.D.

189 W 1050 N
Layton, Utah 84041
Work: (801) 585 – 9760
Fax: (801) 581 – 8686
E-mail: larry.cook@hsc.utah.edu

EDUCATION

06/93 Bachelor of Science, University of Utah, Mathematics

06/96 Masters of Statistics, Department of Mathematics; University of Utah

06/98 Johns Hopkins University, Summer Institute, Principles and Practice of Injury Prevention

05/08 PhD Department of Mathematics and Statistics, Utah State University

PROFESSIONAL EXPERIENCE

03/02 – Present Director of Motor Vehicle Research Intermountain Injury Control Research Center

01/96 – Present Statistician, Intermountain Injury Control Research Center; University of Utah, Department of Pediatrics

09/03 – Present Graduate Teaching Assistant, Utah State University, Department of Mathematics and Statistics

08/94 – 12/00 Associate Instructor, University of Utah, Department of Mathematics Instructor for Introductory Probability and Statistics Course

08/93 – 07/95 SAS Lab Instructor, University of Utah, Department of Mathematics

PROFESSIONAL MEMBERSHIPS AND ACTIVITIES

2004 – 2005 Program Chair, American Public Health Association Injury Control and Emergency Health Services Section.

2005 – Present Section Councilor, American Public Health Association Injury Control and Emergency Health Services Section

2007 – Present Board Member, Association of Traffic Safety Information Professional

2005 – Present Data Committee Member, American Public Health Association Injury Control and Emergency Health Services Section

1999 – Present Member American Public Health Association

2005 – Present Member American Statistical Association

2001 – Present Data Advisory Board, Utah's Health: An Annual Review

1996 – Present Coalition for Utah Traffic Safety

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LARRY C. HOLESTINE, MAJOR (Retired)

28660 Sunup Circle
Elizabeth, CO 80107
(303) 646-4877
E-mail: lholestine@aol.com

PROFESSIONAL EXPERIENCE

- Law Enforcement Liaison, NHTSA Region VIII
- Commander, District III Colorado State Patrol, Retired
- Director of Public Safety Services, Data Nexus, Inc.
- Coordinator/Instructor, Colorado Law Enforcement Training Academy and Colorado State Patrol Academy
- Instructor, Colorado Institute of Law Enforcement Training, Colorado State University
- Law Enforcement Experience - 30 years

ORGANIZATIONS/AFFILIATIONS

- Member, Transportation Research Board, National Academy of Sciences, Law Enforcement Committee
- Chair, Association of Transportation Safety Information Professionals, National Safety Council
- Member, ANSI D-16 Committee on Motor Vehicle Accident Classification
- Member, MMUCC Committee on Motor Vehicle Accident Crash Criteria
- Steering Committee and Chair of Law Enforcement Section, Colorado Safety Management System
- Member, Colorado State Traffic Records Advisory Committee
- Member, National Agenda Committee for Highway Information Systems
- USDOT, NHTSA, Traffic Records Assessment Team Member: Arizona (3 times), Connecticut, Delaware, Illinois, Idaho, Iowa, Kansas (4 times), Kentucky, Louisiana (2 times), Massachusetts (2 times), Mississippi, Missouri (2 times), Montana, Nebraska, New Jersey, New Mexico, North Dakota (3 times), Ohio (2 times), Oregon (2 times), South Carolina, South Dakota (2 times), Tennessee (2 times), Wisconsin, Wyoming (3 times), the Menominee Indian Nation and San Carlos Indian Nation.
- USDOT, NHTSA, Impaired Driving Assessment Team Member: Alaska, California, Florida, Indiana, Louisiana, Massachusetts, Nevada, Oregon, and Vermont.

MICHAEL J. MCDONALD

165 Brick Store Landing Road
Smyrna, DE 19977
(302) 659-2301
E-mail: michael.mcdonald@state.de.us

After earning an Associates Degree from the University of Delaware, Mike joined the Delaware State Police on September 8, 1978. During his career, Mike was assigned to a number of operational divisions within the state police. His most notable assignment was as a charter member of the Fatal Accident Investigation and Reconstruction Team known as F.A.I.R. His responsibilities included investigating all fatal motor vehicle accidents and personal injury accidents having the likelihood of becoming a fatality. During the six years he spent with the F.A.I.R. team, Mike was recognized as an expert witness in accident reconstruction. Mike has testified in all levels of the courts in Delaware including federal court. In 1984, Mike earned his Bachelor of Science Degree from the University of Delaware in Business Administration with a concentration in Operations Management. Mike was promoted to sergeant out of the F.A.I.R. team in 1988 and assigned to the patrol division.

In 1990 Mike was selected to attend the Federal Bureau of Investigation's National Academy in Quantico, VA and graduated from the 164th National Academy class. This school provides leadership training and is one of the most renowned and respected advance command schools in the nation. Mike held administrative positions from 1990 until 1992 when he was promoted to Captain and assigned as a Troop Commander. Mike was assigned to the Executive Staff in February 1993. Later that same year, he was promoted to the rank of Major and permanently assigned to Headquarters to manage the Division's budget and the Information Technology Section. In 1998, he was selected as a recipient of the Exceptional Performance award, and is credited even today with developing the Division's original and continuing vision for information technology and its business process reengineering model. Mike held this position until his retirement from active service in July 1999 when he accepted a civilian position with the agency as the Director Information Technology.

In addition to his duties with the Division, Mike also represents the State Police on a variety of boards and committees at the local and national level most notably as the CJIS Systems Officer for Delaware for the FBI's National Crime Information Center (NCIC) and the International Justice and Public Safety Information Sharing Network (*Nlets*). He is the northeast regional working group representative for Delaware to the FBI's shared management model of NCIC and a member of the FBI's Advisory Policy Board; the group that advises the Director of the FBI regarding changes in the NCIC system. He is also the past Chairman of the Finance and Management Committee for *Nlets*. Mike is Chairman of the Delaware Justice Information System (DELJIS); the Board of Managers who oversee criminal justice information within the state.

LANGSTON A. (LANG) SPELL

1883 Tower Lakes Blvd.
Lake Wales, FL 33859-4807
E-mail: Lang_Spell@yahoo.com

Independent Consultant

Professional Experience

Mr. Spell entered his professional career in traffic records systems and data exchange over 50 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 Code 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 National 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

JOHN J. ZOGBY, PRESIDENT

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

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. 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 (ITE).

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

Member of the Association of Transportation Safety Information Professionals.

Past President of the Mid-Atlantic Section of ITE.

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

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

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

President, Duncannon Area Revitalization, Inc.

Pastoral Associate, St. Bernadette Church, Duncannon, PA

Education

B.S., Economics, Villanova University

MPA, Penn State University