

# **North Carolina Traffic Safety Information Systems**

## **Strategic Plan 2017**

**June 2017**

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## Commonly Used Abbreviations

AASHTO – American Association of State Highway and Transportation Officials

ACIS – Automated Criminal Infraction System

EMSPIC – Emergency Medical Services Performance Improvement Center

FARS – Fatality Analysis Reporting System

FHWA – Federal Highway Administration

HSRC – Highway Safety Research Center

ITRE – Institute for Transportation Research and Education

IVPB – Injury and Violence Prevention Branch

NC DHHS – North Carolina Department of Health and Human Services

NC DPS – North Carolina Department of Public Safety

NC ECHS – North Carolina Executive Committee for Highway Safety

NC GHSP – North Carolina Governor’s Highway Safety Program

NC TRCC – North Carolina Traffic Records Coordinating Committee

NCAOC – North Carolina Administrative Office of the Courts

NCAWARE – North Carolina Warrant Repository

NCDOT-DMV – North Carolina Department of Transportation Division of Motor Vehicles

NCDOT – North Carolina Department of Transportation

NCDPH – North Carolina Division of Public Health

NCOEMS – North Carolina Office of Emergency Medical Services

NCSHP – North Carolina State Highway Patrol

NHTSA – National Highway Traffic System Administration

PreMIS – Prehospital Medical Information System

SADLS – State Automated Driver License System

STARS – State Titling and Registration System

TEAAS – Traffic Engineering Accident Analysis System

TraCS – Traffic and Criminal Software

UNC – University of North Carolina

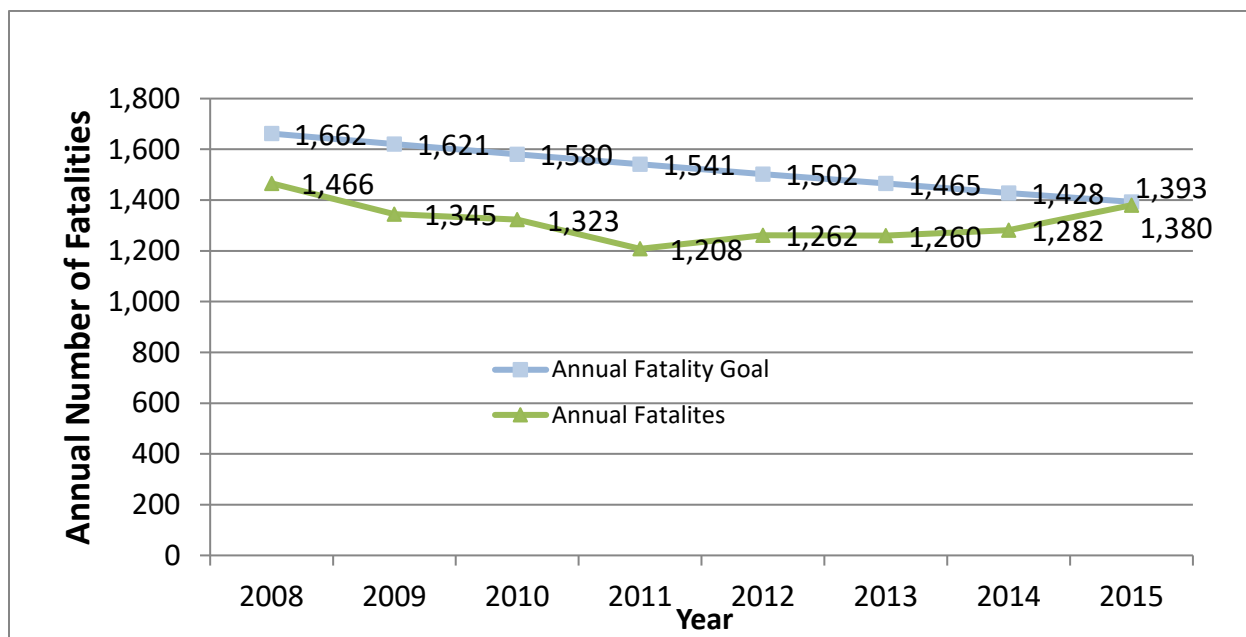
## Introduction

### Background

While North Carolina has made progress in reducing the toll that results from traffic crashes on our roadways, the number of people killed and injured remains unacceptably high. In 2015, there were 251,638 reported crashes on public roads that resulted in 1,380 people killed and 123,589 injured. The economic impact of these crashes is costly, resulting in an estimated annual loss of \$23.8 billion to the economy of North Carolina annually (based on a three year average as noted in the NC Traffic Crash Facts Report on page 38).

In 2015, the North Carolina Department of Transportation updated the state’s Strategic Highway Safety Plan and officially declared North Carolina a Vision Zero State—with the idea that even one fatality is too many on our roadways. The Plan’s vision, mission and goals guide the development and implementation of strategies and actions to achieve Vision Zero. It aims to cut the fatalities and serious injuries in North Carolina in half based on the 2013 figures, reducing the total annual fatalities by 630 fatalities and the total serious injuries by 1,055 serious injuries before 2030. Progress toward this goal will be tracked on the North Carolina Strategic Highway Safety Plan online dashboard, <http://ncshsp.org/progress>.

Previous efforts by the North Carolina Department of Transportation (NCDOT) to reduce fatalities by 2.5 percent per year from 2007 onward have been mostly successful. As shown in the chart below, the state is still slightly ahead of this pace at the end of 2015.



### *Annual number of fatalities on North Carolina's roads versus the annual fatality goal of the NCDOT*

For North Carolina to continue to make progress toward these goals and reach the vision of multi-disciplinary and multi-agency approaches to the challenges we face, improvements in the quality and utility of traffic safety information data and systems must continue to evolve.

Improvements are needed in each of our primary traffic safety information systems, which include 1) crash records, 2) vehicle and driver records, 3) roadway inventory and geographic information systems, 4) medical outcome systems, and 5) citation and adjudication systems. The even greater achievement will be to increase the effectiveness and efficiency of linking crash data to the other systems for improved reporting and analysis. These important linkages must be achieved while protecting the privacy rights of our citizens' data and abiding by the appropriate laws and regulations.

Coordination, communication and cooperation are the defining attributes for success of the North Carolina Traffic Records Coordinating Committee (NC TRCC). Each stakeholder will be able to develop awareness of the needs of the various data collectors, data users, data managers and traffic records systems owners. Beginning this year, the NC TRCC will be using the 2017 NC TR Assessment suggestions and recommendations cited on an overall level as well as on a question by question level in the new assessment format.

North Carolina's Traffic Safety Information Systems Strategic Plan documents progress toward the overall goal of providing high-quality data to users with timely and efficient processes. This document records the progress of the NC TRCC's efforts and will serve as the guide for planning and implementing change.

### ***Organization of the Report***

This report includes an overview of the organizational structure that is in place in the state to address traffic safety information needs, a strategic plan that was developed with input from the NC TRCC membership and a description of safety information projects that have been conducted with specific objectives of improving traffic safety information systems.

## Organizational Structure

The multidisciplinary approach to traffic system information systems requires multiple agencies to be included in the planning and implementation of programs and processes designed to improve the components of the various systems, linkages among the systems and ultimately affect the outcome of reducing the level of harm on the roads of North Carolina. There are two committees that have been established in North Carolina to ensure that all information stewards and stakeholders are included in the decision-making process for improving our traffic safety information: the North Carolina Executive Committee for Highway Safety (NC ECHS) and the NC TRCC. The purpose and role of these groups are described below.

### *Executive Committee for Highway Safety*

The NC ECHS was established in 2003; it is empowered to address the motor vehicle crash epidemic and coordinate the many safety initiatives both within and outside of the NCDOT, with an emphasis on efficiency of resources and the prioritization of programs. The NC ECHS is comprised of representatives from top management of selected disciplines involved in highway safety who control the current and potentially available resources for use in safety efforts. The committee endorsed and adopted the American Association of State Highway and Transportation Officials' (AASHTO) Strategic Highway Safety Plan (SHSP) as its working plan with the understanding that this is a dynamic document subject to modifications as necessary to address North Carolina's needs.

The committee has also adopted the goal of reducing fatalities on North Carolina's roads by 2.5 percent per year for the next 20 years. Implementation of the strategies and directives of the NC ECHS and the AASHTO SHSP are viewed as the key mechanism to reach this goal and thereby significantly reduce the annual number of fatalities and deaths on our highways.

The energy generated and knowledge of the multi-disciplined NC ECHS team members has provided many opportunities for innovative strategies. Representatives from different agencies are teamed up to find solutions to a common goal. A key "facilitator" works closely with all of the working groups through meetings and discussions with members. This central point of reference provides assistance in eliminating road blocks, suggests champions for strategy involvement and ensures elimination of redundant strategies.

The NC ECHS endorses and supports NC TRCC. NC TRCC, as necessary and appropriate, will provide strategies for the Executive Committee to support and endorse. These strategies could include legislative initiatives, inter-agency projects requiring significant resources and other important strategies.

### ***NC ECHS Membership***

The NC ECHS is chaired by Secretary of Transportation James H. Trogdon III. The membership is listed below and includes representatives for the NCDOT, municipal transportation departments, state and local law enforcement, universities, and other state and local agencies.

- James H. Trogdon III, Secretary of Transportation, NCDOT (Committee Chair)
- Isaac T. Avery, III, Attorney at Law, NC Conference of District Attorneys
- Irene Dwinnell, State Executive Director, Mothers Against Drunk Driving
- Adam Fischer, Transportation Director, City of Greensboro
- David Harkey, Director, UNC HSRC
- W. A. “Tony” Hayes, President and Chief Executive Officer, Transformative Ideas Calculated Success
- Michael L. Holder, Chief Engineer, NCDOT
- James K. Lacy, State Traffic Engineer, Transportation Mobility and Safety, NCDOT
- Brian K. Mayhew, State Safety Traffic Engineer, Traffic Safety Unit, NCDOT
- Jon R. McCormick, Division Administrator, Federal Motor Carrier Safety Administration
- Glenn M. McNeill, Colonel, NCSHP
- Don Nail, Director, NC GHSP
- Harriett Southerland, State Coordinator, Students Against Destructive Decisions
- John Sullivan, III, Division Administrator, FHWA

### ***Traffic Records Coordinating Committee***

The NC TRCC was established in 2006. The vision of the NC TRCC reads as follows:

*To improve safety by significantly reducing the number of fatalities and injuries to the citizens and visitors of our state.*

In support of this vision, the mission of the NC TRCC is to:

*Provide the leadership to establish and maintain a level of coordination, communication and cooperation between agencies and stakeholders to maximize utilization and improve functionality, data accuracy, timeliness and linkages, and to advance electronic data collection, protect privacy, minimize redundancies in traffic records systems and better accomplish individual agencies' goals.*

The specific roles and functions of this group were collectively established by the participating members and consist of the following:

- Provide for coordination, cooperation and collaboration of agency activities that could affect or improve the state traffic safety data or systems, while also ensuring the protection of confidential information.

- Prepare, update and maintain the NC TRCC Traffic Safety Information Systems Strategic Plan and provide a guide for the implementation of traffic safety systems and data improvements.
- Recommend and provide strategies to NC ECHS for endorsement and action.
- Develop inter-agency project teams to create implementation plans for carrying out the objectives of the guide as necessary.
- Provide a forum for review and endorsement of programs, regulations, projects and methodologies to implement the improvements identified in the implementation guide.
- Review programs, regulations, projects and methodologies for alignment with the NC TRCC's mission, goals and objectives.
- Provide coordination for programs, projects and regulations as they become operational.
- Receive periodic updates from the project teams.
- Endorse and/or implement projects to achieve quality traffic safety data from state traffic records systems.
- Encourage and provide for the sharing of data among all members, owners, users and collectors and collaborate on interagency projects.
- Provide for adequate communication and review between members of all changes or modifications to systems, regulations, collection procedures, or usage and analysis needs.
- Support electronic data collection for all types of data including crash, roadway (including volume and asset management), vehicle, driver, medical, and citation or adjudication data.
- Simplify all data collection wherever possible for any record.
- Increase automation and only collect data necessary from field efforts.
- Encourage and provide for the marketing of traffic safety information to increase public and political awareness of its necessity for decision making, resource allocation and improving quality of life.



### ***NC TRCC Membership***

The NC TRCC consists of a diverse membership that includes representation from the data stewards for each primary data or information system: crash records; vehicle and driver records; roadway inventory and geographic information systems; court, citation and adjudication systems; and medical outcome systems. Several key stakeholder agencies also serve in a membership role on the committee, including law enforcement, the NCDOT Traffic Safety Unit, the North Carolina Governor's Highway Safety Program (NC GHSP) and a university research center. The current list of members is provided below.

- Brian Mayhew (NC TRCC Co-chairperson), State Safety Traffic Engineer, Traffic Safety Unit, NCDOT
- Eric Rodgman (NC TRCC Co-chairperson), UNC HSRC
- Alan Dellapenna, NCDPH, Injury and Violence Prevention Branch
- Greg Ferrara, ITRE
- Cindy Blackwell, NC AOC
- Frank Hackney (State Traffic Records Coordinator), NC GHSP
- Brian Murphy, NC DOT Safety Planning Group
- Jeff Robertson, EMSPIC
- Eric Schaberg, NCSHP
- Vish Tharuvesanchi, DOT-IT
- Anna Waller, UNC Department of Emergency Medicine, Carolina Center for Health Informatics; IPRC

In addition to the official membership, there are a number of additional stakeholders, including representatives from the Federal Highway Administration (FHWA) and National Highway Traffic Safety Administration (NHTSA), who routinely participate in NC TRCC meetings. A complete list of active participants is included in Appendix B.

### ***NC State Traffic Safety Data Coordinator***

One of the members of the NC TRCC is the state traffic safety data coordinator. This individual serves as the primary point of contact for information about traffic safety systems for NHTSA, the state of North Carolina and the NC TRCC. This person is aware of all the primary traffic records systems in North Carolina and maintains communications with the NC TRCC. This person can report on, or obtain status information on, all projects within the state.

Frank Hackney, Traffic Records Coordinator  
NC GHSP, 215 East Lane Street, Raleigh, N.C. 27601  
Phone: (919) 814-3659  
Email: [fhackney@ncdot.gov](mailto:fhackney@ncdot.gov)

## Traffic Safety Information System Summaries

Provided in this section of the report are descriptive summaries of the traffic safety information systems that are available in North Carolina. Summaries are included for systems within the following agencies:

- North Carolina Administrative Office of the Courts (NCAOC)
- North Carolina Department of Health and Human Services (NC DHHS)
- North Carolina Department of Public Safety (NC DPS)
- North Carolina Department of Transportation (NCDOT)
- North Carolina Department of Transportation Division of Motor Vehicles (NCDOTDMV)
- North Carolina Office of Emergency Medical Services (NCOEMS)

### NC Administrative Office of the Courts

#### **Automated Criminal Infraction System (ACIS)**

The Automated Criminal/Infractions System (ACIS) was created by and is maintained by the North Carolina Administrative Office of the Courts (NCAOC) to provide the North Carolina superior and district courts with accurate and timely criminal and infraction case information. ACIS data is available to the public through the Court Information Public Record Search (CIPRS) tool at public access terminals located in each Clerk of Court's office, through private vendors via the Internet, and to other government agencies through system interfaces and nightly downloads.

ACIS is a mainframe computer system that has been enhanced and maintained for over 30 years. ACIS interfaces with several in-house systems, including the North Carolina Warrant Repository (NCAWARE), Financial Management System (FMS), Civil Case Processing System (VCAP), and CCIS (Criminal Court Information System – a browser-based system that will eventually replace ACIS). ACIS interfaces with several outside agencies as well, to including the NC Department of Transportation (NCDOT), the State Bureau of Investigation (SBI), and the Department of Public Safety (DPS).

All reportable traffic offenses are transmitted nightly to the North Carolina Department of Transportation Division of Motor Vehicles (NCDOT-DMV). Charges and convictions for all serious misdemeanor and felony offenses (including death by motor vehicle) are reported nightly to the State Bureau of Investigation which, in turn, updates ACIS, CCIS-Clerks Component, and NCAWARE with state fingerprint identification numbers. ACIS is also a major data feed to the Criminal Justice Law Enforcement Automated Data Service (CJLEADS). All North Carolina State Highway Patrol (NCSHP) citation data is transferred to CJLEADS nightly. In March 2012, the NCAOC added the Eastern Band of Cherokee Indians (EBCI) to ACIS, allowing the EBCI to process their court cases in the ACIS system. Additionally, in May 2016 the NCAOC provided an automated means for ECBI to report their traffic cases to the NCDOT-DMV.

**Criminal Court Information System – Clerks Component (CCIS-CC)**

CCIS-CC is a robust web based application developed to record court information for all criminal cases in an efficient and accurate manner. CCIS-CC will incrementally replace existing ACIS screens and functions accessed primarily by clerks of court. Replacement of Court Flow functionality for clerks was completed in 2014. The system is designed to enhance the current work flow by consolidating multiple functions on a single screen to allow for speedy data entry and recovery for users. As replacement components with enhanced capability are built in CCIS-CC, those components are disabled in ACIS.

CCIS-CC is designed to reduce manual processes and streamline the flow of information. The application provides user friendly features such as system-calculated and pre-filled fields, search capabilities, calendar lookup and drop-down lists, all of which save time and reduce data entry errors. The system provides multiple entry functions for court continuances and results, speeding dispositions and monies paid. Case disposition with extended DWI data capture is provided in CCIS-CC, along with courtroom generation and electronic storage of judgment forms, and a NCDOT-DMV interface for electronic notification and reporting.

CCIS-CC ensures that data consistency is maintained across the state by providing flexibility to accommodate user preferences while enforcing rules for business. Additionally, CCIS-CC is designed to be intuitive and flexible enough to handle large volumes of data accurately and efficiently while maintaining historical records. The system is scalable to include new features, enhancements and interfaces for future requirements, and is available statewide.

**Criminal Court Information System – District Attorneys Component (CCIS-DA)**

CCIS-DA is a web-based criminal case management system developed specifically for district attorneys to manage the caseload within their offices. CCIS-DA captures individualized case notes and tracks and schedules action-oriented events and decision points relevant to the prosecution of each case, including DWI case management.

CCIS-DA interfaces with ACIS to download case data in real-time. The system also interfaces with the Discovery Automation System, which allows uploads of law enforcement discovery documents. As of October 2011, CCIS-DA was implemented in all 100 counties.

**Electronic Compliance and Dismissal (ECAD)**

ECAD is a web-based system designed to save NC citizens a trip to court by providing them a quick, convenient means of requesting dismissal online for certain traffic offenses if they have complied with the North Carolina Department of Motor Vehicles (NCDMV). ECAD also provides an efficient, simple interface to CCIS-DA allowing the district attorney the ability to view and approve or deny requests, as well as a reporting interface to CCIS-CC to assist clerks with the management of case records. ECAD directly interfaces with NCDMV data to determine whether someone is in compliance before allowing them to submit a request. Once the district attorney approves a request, the case is electronically dismissed with no data entry required by the clerk. There is no cost for the public to request dismissal through ECAD.

The ECAD rollout began May 2016 with Wake County and has been live statewide since July 2016.

### **eCitation**

eCitation automates the issuing of cite-and-release citations in North Carolina. Six hundred law enforcement agencies issue more than one million traffic and infraction citations annually. Prior to the implementation of the eCitation system, North Carolina law enforcement officers wrote all citations by hand. Copies of the handwritten citation were given to the recipient, delivered to the local clerk of superior court (CSC) office, and kept on file by both the LEA and CSC involved. This process could be rather cumbersome and lengthy, as it involved entering the same information multiple times in different systems. Additionally, there was a high probability of mistakes being introduced due to illegible handwriting.

eCitation, the first such system in the nation, was conceived and developed as a solution to this manual process. eCitation fully automates the citation process, producing the North Carolina Uniform Citation in an electronic format and reducing data entry to a single iteration. Using existing wireless connections, eCitation allows officers to create citations and schedule court dates electronically from the patrol car. A portable printer produces the copy of the citation for the cited person. After issuance of the eCitation, the officer transmits the data directly to NCAOC where it can be accessed immediately statewide in both the Automated Criminal Infraction System (ACIS) and the Criminal Court Information System – Clerks Component (CCIS-CC).

eCitation was developed as a joint venture between the NCAOC and the NCSHP. Significant funding was also provided by NC GHSP and the Governor's Crime Commission. During October 1999 through September 2001, a pilot project was conducted in Cumberland County, and after a successful pilot, eCitation was implemented in all 100 counties at no cost to law enforcement agencies.

The eCitation Officer Component was upgraded from Visual Basic/COBOL to Java platform in 2016 and implemented statewide in 2017. This rewrite was a major upgrade of the technology allowing for future enhancements such as an NCAWARE interface to handle arrest offenses and the use of hand-held devices.

eCitation includes the following components:

- **Officers component:** This component is loaded on the computer in the patrol car for entering and printing eCitations. It is capable of operating with or without communication coverage.
- **Records management systems component:** This component provides law enforcement agencies with the capability to electronically download eCitation data for use by the local law enforcement agency without requiring dual data entry. It also provides a citation printing function.

- Clerks component: This is a browser-based component used by county clerk staff to monitor and print judgment copies of the transmitted citations. It also allows the clerk to set court schedules and court room limits which the officer can then use to assign a court date to the defendant.
- Interface to NCAOC ACIS: This interface receives and stores eCitation data in ACIS and CCIS-CC, making the information available statewide.
- Interface to NCDOT-DMV: This interface automatically prefills demographic and vehicle data using the driver's license or vehicle plate number.

### **North Carolina Warrant Repository (NCAWARE)**

NCAWARE is a custom-developed, web-based system that was designed, developed and implemented by the NCAOC. The system maintains detailed information about criminal processes such as warrants, magistrate orders, citations that lead to an arrest, criminal summons, orders for arrest, release orders and appearance bonds. It also tracks information and details for all people and businesses involved in such processes. With the implementation of NCAWARE and accompanying legislation that provided for a statewide electronic repository, law enforcement can view and serve any electronic unserved process in the state without having paper in hand. Officers are also able to pre-fill arrest and warrant information prior to appearing before the magistrate, thus decreasing processing time.

All NCAWARE judicial and law enforcement users also have access to the unserved warrants in both the NCAWARE system and the Automated Criminal Infraction System (ACIS) through the Statewide Warrant Search, which combines information from both systems. Prior to implementation in each county, the NCAOC worked with local criminal justice and public safety entities to certify the validity of all outstanding processes for the year 2000 and forward. Additionally, the NCAOC staff continues to work with counties to convert paper-based orders for arrest to NCAWARE so that older processes are also available electronically.

NCAWARE is the first point of entry for all arrests, including DWI cases, into the courts databases. Via a user prompt, demographic driver and vehicle data is pre-populated in NCAWARE through a host-to-host DB2 connection with NCDOT-DMV. Court case information in NCAWARE automatically populates ACIS through real-time XML and MQ interfaces. The NCAOC is planning a real-time interface between eCitation and NCAWARE to provide for the automatic creation of a process where a traffic citation leads to an arrest – such as DWI, driving while license revoked, and driving with no operator's license.

### **payNCticket**

payNCticket is a web-based system which allows persons who have received citations for offenses not requiring a court appearance (primarily traffic tickets) to query and pay their tickets online. Prior to payNCticket, citizens had to pay fines and related court costs by going to the courthouse to pay in cash or by mailing a money order or cashier's check. In addition to providing a more convenient payment method for the public, the system also allows for quicker disposition of cases because as payment is received, the citation is also disposed in ACIS and CCIS-CC. In conjunction with eCitation, which allows citations to be transmitted to ACIS and

CCIS-CC immediately, payNTicket can potentially allow for a ticket to be paid and disposed within minutes after it was issued.

Payments made through payNTicket are processed by an independent payment processing vendor.

payNTicket was piloted in March 2010 and released statewide in June 2010.

## **NC Department of Health and Human Services**

### **NC Disease Event Tracking and Epidemiologic Collection Tool (NC DETECT)**

NC DETECT is North Carolina's statewide syndromic surveillance system. NC DETECT was created by the North Carolina Division of Public Health in 2004 in collaboration with the Carolina Center for Health Informatics in the UNC Department of Emergency Medicine to address the need for early event detection and timely public health surveillance using a variety of secondary data sources. Authorized users are currently able to view data from emergency departments, the Carolinas Poison Center and PreMIS, as well as pilot data from select urgent care centers. NC DETECT is designed, developed and maintained by CCHI staff with funding by the NCDPH. New functionality is added regularly based on end user feedback.

### **NC Hospital Patient Discharge System**

Prior to 1995, the Medical Database Commission (MDC) collected hospital discharge data. On September 30, 1995, the North Carolina General Assembly eliminated the MDC and set up an alternate system for the reporting of discharge data. Since 1996, hospitals have reported data, currently through Truven Health Analytics, as set forth by the Medical Care Data Act of 1995 (Article 11a of Chapter 131E of the North Carolina General Statutes).

Since 1996, the Cecil G. Sheps Center for Health Services Research has worked under contract with the North Carolina Division of Health Service Regulation to store, maintain and analyze the North Carolina Discharge Databases. The data contained in the discharge databases are retrieved claim forms used by facilities to bill payers.

### **NC Medical Examiner System**

The North Carolina Medical Examiner System is a network of over 600 medical doctors throughout North Carolina who voluntarily devote their time, energy and medical expertise to see that deaths of a suspicious, unusual or unnatural nature are adequately investigated. This resource is maintained by the Office of the Chief Medical Examiner of the state of North Carolina (OCME), a division of the North Carolina Department of Health and Human Resources. OCME also functions as the Division of Forensic Pathology of the UNC School of Medicine Department of Pathology.

The Medical Examiner's office has detailed data on each death in North Carolina. For the cases that are associated with motor vehicle crashes, these death reports are used to determine the presence of alcohol for the North Carolina crash data driver fatalities and the Fatalities Analysis Reporting System North Carolina driver fatalities.

**NC State Center for Health Statistics (SCHS)**

The SCHS is the North Carolina agency responsible for data collection, health-related research, production of reports and maintenance of a comprehensive collection of health statistics. SCHS provides high quality health information for better informed decisions and effective health policies. The goal is to improve the health of all North Carolinians and their communities. These data include statewide records on all births, deaths, marriages and divorces. These records have data on age, race, sex, county, name and key dates, as required by the state. . Additionally, SCHS has copies of the NC hospital discharge and emergency department discharge datasets.

**NC Department of Public Safety****Commercial Vehicle Enforcement Resource Lab (COVERLAB)**

The COVERLAB is a university-based program for helping to reduce truck-involved crashes by improving commercial vehicle enforcement effectiveness. Located at North Carolina State University's Institute for Transportation Research and Education (ITRE), COVERLAB provides the Motor Carrier Enforcement (MCE) section of the North Carolina State Highway Patrol with online data-driven analytics, geospatial analysis, program development support, and research for improving commercial vehicle safety outcomes.

**COVERLAB Analytics**

COVERLAB Analytics is web-based data visualization decision support tool that helps the Motor Carrier Enforcement (MCE) section of the North Carolina State Highway Patrol (NCSHP) improve its tactical enforcement planning for reducing truck-involved fatal crashes and protecting road/bridge infrastructure from heavy truck damage. COVERLAB Analytics provides MCE supervisors with online scorecards to track crash reduction performance goals, dashboards for in-depth trend and comparison analysis and map analytics to prioritize times and locations for improving enforcement effectiveness.

**Vision Zero**

NC Vision Zero is a collaborative initiative to eliminate roadway deaths and injuries in North Carolina. The goal of the NC Vision Zero initiative is to unify all safety stakeholders to reduce traffic fatalities. The NC Vision Zero website provides centralized access to program content and crash data tools, for both the public and traffic safety partners.

**Vision Zero Analytics**

NC Vision Zero Analytics is an online data visualization system for safety stakeholders to track traffic safety goals and identify effective data-driven strategies for reducing traffic fatalities in North Carolina. The state's crash reduction goals are visually presented to (and co-tracked by) both patrol supervisors and NC Governor's Highway Safety Program staff. Users can see how well they are performing with "views" specific for their geographic location. This provides a common version of the truth and the capability to prioritize safety countermeasure activities by using a data-driven approach.



### **NC Vision Zero Safety Dashboard**

NC Vision Zero Safety Dashboard is a public-facing web-based data visualization and mapping tool for helping to reduce traffic fatalities in North Carolina. Users can:

- Visualize trends of fatalities and serious injury collisions over time
- View maps of crash trends by county, city, and law enforcement jurisdictions
- View top contributing circumstances for filtered crashes
- Visualize crash times with a time-of-day/day-of-week heat grid

### **NC Department of Transportation**

#### **North Carolina Geographic Information System**

The main objectives of the DOT GIS group are to provide quality mapping of the existing state maintained system of highways as well as to produce computer-generated images of proposed NCDOT projects. This information is used in the planning, funding, construction and maintenance of transportation facilities throughout the state, helping to provide an efficient and cost effective state transportation system. At this time, the DOT GIS group is being reorganized to take full advantage of new and improved GIS technologies and tools to better serve the state and to reorganize the GIS personnel to accommodate the changes. Because this group is in a period of transition and restructuring, the DOT recommended and the TRCC agreed to wait until next year when updating the NC TR Strategic Plan for 2017 to accurately describe and summarize the DOT GIS group.

#### **Traffic Engineering Accident Analysis System (TEAAS)**

The Traffic Engineering Accident Analysis System (TEAAS) consists of an oracle database and custom client software developed for the purposes of performing engineering and location based analysis of crash data. TEAAS went into production in 1999 and contains crash data for analysis purposes back to 1990. The TEAAS database is a replication of the crash database maintained by the Department of Motor Vehicles. Crash data is typically available in the analysis system within a few weeks of the date of the crash. This time is much shorter for crashes that are submitted electronically.

TEAAS software is available for download via the internet free of charge to state or local government personnel, law enforcement agencies, planning organizations, and research entities.

TEAAS also contains all traffic ordinance information for state maintained roadways. Roadway information is also available in the system for the purposes of locating crashes and ordinance data.



## NCDOT Division of Motor Vehicles

### Fatality Analysis Reporting System (FARS)

FARS contains data for fatal traffic crashes that occur within the 50 states, the District of Columbia and Puerto Rico. To be included in FARS, a crash must involve a motor vehicle traveling on a public roadway and result in the death of a person (including occupant of a vehicle or a non-motorist) within 30 days of the crash.

FARS was developed by the National Center for Statistics and Analysis of the National Highway Transportation Safety Administration in 1975. The main objectives of FARS include: providing an overall measure of highway safety, identifying traffic safety problems and solutions and providing an objective basis to evaluate the effectiveness of motor vehicle safety standards and highway safety initiatives.

NHTSA has a cooperative agreement with an agency in each state's government to provide information on all qualifying crashes in the state. In North Carolina, the NCDOT-DMV is the lead agency for FARS reporting. FARS data are obtained solely from the state's existing documents, which include the following: police crash reports, state vehicle registration files, state driver licensing files, state Highway Division data, vital statistics, death certificates, coroner/medical examiner reports, hospital medical reports, emergency medical service reports and other state records.

More than 100 FARS data elements are coded from the documents above. The specific data elements may be modified slightly each year to conform to changing use needs, vehicle characteristics and highway safety emphasis areas. The data included in FARS do not include any personal identifying information such as names, addresses or social security numbers. Thus, data kept in FARS files and made available to the public fully conform to the federal Driver Privacy Protection Act.

Fatal crash data for each state are entered into a local microcomputer data file and daily updates are sent to NHTSA's central computer database. Data are automatically checked when entered for acceptable range values and for consistency. This makes it possible for corrections to be made immediately.

Each year, FARS data are utilized by the NCSA to publish a Traffic Safety Facts report. The report compiles fatal crash data from FARS and non-fatal crash data from the General Estimates System. The purpose of the Traffic Safety Facts report is to present statistics about traffic crashes of all severities.

### NC Crash Data

The NCDOT-DMV maintains a database that contains information on all reported crashes in the state. The database was assembled to serve as a single electronic repository for all crash data.

One of the main objectives of the crash database is to make records and related data available to the law enforcement community. The current Crash Reporting System (CRS) was established in 1999, and the earliest record dates back to 1990. Crash data may either be submitted electronically using either the NCDOT-DMV TRCS application or NCDOT-DMV Electronic Crash Reporting System (ECRS) and manually through a written crash report form. The TRCS application enables law enforcement to electronically complete and submit crash reports directly to the CRS from the field. The ECRS application allows the law enforcement to electronically send crash reports in an XML format from the law enforcement repository. Written crash reports are received by NCDOT-DMV and scanned. Data entry staff key information from the scanned images stored in the database. Crash report data that are electronically submitted through TRCS are typically available within two days after NCDOT-DMV receives the report. Crash data that must be manually entered from the DMV-349 form are usually available within 30 days after the NCDOT-DMV receives the report. Updates to the CRS database are made on a daily basis. The data are never purged. A CRS data dictionary is available upon request. It is updated periodically, as needed or as request by the NCDOT-DMV Traffic Records Branch. Business rules are in place to ensure the completeness of the data. Only reportable crash data are typically entered into the CRS database; however, data are entered for all crashes that are reported, even those that may not fit the criteria of a reportable crash. A reportable crash must meet at least one of the following criteria:

- The crash resulted in a fatality, or
- The crash resulted in a non-fatal personal injury, or
- The crash resulted in total property damage amounting to \$1,000.00 or more, or
- The crash resulted in property damage of any amount to a vehicle seized, or
- The vehicle has been seized and is subject to forfeiture under G. S. 20-28.3.

All law enforcement agencies are required to report crashes that they respond to that meet one or more of the criteria.

### **Traffic and Criminal Software**

Traffic Safety Information System Summaries The North Carolina Traffic and Criminal Software (TraCS) is the NCDOT-DMV's implementation of the national model of the Traffic and Criminal Software TraCS package. TraCS enables law enforcement officers to record and retrieve incident information from the field wherever and whenever an incident occurs. The NCDOT-DMV Traffic Records Communications System is an enhancement of the current CRS that enables NCDOT-DMV to receive and process crash reports electronically.

NCTraCS and NCDOT-DMV TRCS are collectively referred to as TraCS and work together to allow officers to electronically collect and transmit crash information from the field to a central repository (i.e., CRS). TraCS allows an officer to collect and validate information in his or her vehicle using a notebook computer or at a local office using a workstation. TraCS can obtain driver and vehicle information corresponding to a driver license or a vehicle (plate or VIN) from the State Titling and Registration System (STARS) and State Automated Driver License System (SADLS) through the crash database.

The primary objective of TraCS is to maintain a paperless system where creation, validation, and transmission of crash data are performed electronically. In the process of accomplishing this objective, TraCS also helps to reduce the time needed to create a crash report in the field. This translates to faster submittal of crash reports to DMV, and in turn, expedited public availability of crash data.

### **NC Driver License Record System Data**

The NCDOT-DMV maintains the State Automated Driver's License System (SADLS), which contains North Carolina driving records data. SADLS went into live production on November 24, 1994. The earliest driver license record stored in the system is from October 14, 1966. Online data are processed in real time as received from various states/agencies via the American Association of Motor Vehicle Administrators Network (AAMVANet) interface. Some data files provided by outside agencies, such as the NCAOC, are not received through AAMVANet and are processed by batch each workday.

Updates made to a driver record as the result of the driver turning in his or her North Carolina license and applying for a license in another state are made in real time. In addition, another example of real time updates includes any updates resulting from receipt of customer information from the Social Security Administration.

Overnight data updating is primarily adjudicatory in nature, and involves updating the driving record based on convictions received from the NCAOC. The updated record is then applied against the standards to determine whether a suspension should result. It could also involve updating the driving record when a suspension ends or updating status information for the recently deceased.

### **NC Vehicle Registration Record Data**

The State Training Titling and Registration System (STARS) is a database maintained by the NCDOT-DMV that was created to provide automated vehicle titling and registration services. STARS represents a comprehensive automation of all vehicle titling and registration business functions and was implemented in 1996. It is one of North Carolina's largest systems and requires a high level of support and maintenance. STARS currently stores information on 12,700,000 vehicles; 12,100,000 active titles; 6,860,000 active registrations; and historical information on 2,900,000 cancelled titles and 25,800,000 previous years' registrations. Registration and titling services. The major system components of STARS include titling, registration, fiscal, correspondence, inquiry, police network, imaging, inventory, printing, interface processing, headquarters, batch, and other services.

### **SAFETYNET – Commercial Motor Vehicle Crash Reporting**

SAFETYNET is a computer system utilized by state law enforcement agencies and the Federal Motor Carrier Safety Administration (FMCSA) for the collection and management of commercial vehicle safety data. Data are collected from all safety inspections and compliance reviews performed in North Carolina and all qualifying crashes that occur on North Carolina highways.

The NCDOT-DMV maintains commercial motor vehicle (CMV) crash data in the crash database. The division is responsible for forwarding CMV crash data to the NCSHP, who enter the data into SAFETYNET. SAFETYNET data are routinely transferred to the Motor Carrier Management Information System for analysis by FMCSA and are used to help determine a motor carriers' safety fitness rating. The system also allows for the electronic collection of inspection data from roadside inspection software.

FMCSA's SAFETYNET Crash Module records qualifying vehicles involved in crashes that are motor vehicle traffic crashes as defined in the ANSI D-16 Manual on the Classification of Motor Vehicle Traffic Accidents. To satisfy the definition of a motor vehicle traffic crash, the crash must not be the result of a deliberate act (e.g., suicide, police intervention) or a cataclysm (e.g., hurricane, flood). A crash must also meet the following criteria to be sent to SAFETYNET: The crash must result in at least one of the following: fatality, injury or towed vehicle.

1. Commercial vehicles must have a gross vehicle weight rating (GVWR) > 10,000 pounds or carry hazardous materials.
2. Non-commercial vehicles must have one of the following vehicle styles: commercial bus, school bus, activity bus, other bus, light truck (carrying nine or more occupants), sport utility vehicle (carrying nine or more occupants) or van (carrying nine or more occupants).

### **North Carolina Office of Emergency Medical Services**

#### **EMS Performance Improvement Center (EMSPIC)**

The North Carolina EMS Performance Improvement Center (EMSPIC) is located within Department of Emergency Medicine at the University of North Carolina at Chapel Hill. Systems that are currently maintained and supported by the EMSPIC are the Credentialing Information System (CIS), EMS Toolkit Project, Prehospital Medical Information System (PreMIS) and the State Medical Asset Resource Tracking Tool.

The North Carolina Office of EMS established a central location where, by regulation, incident data could be collected and maintained from all 101 North Carolina EMS systems/counties. This is accomplished by a contractual agreement in place since 1999. The EMSPIC is strategically placed to provide a high level of information technology support and quality management expertise. The EMSPIC supports state, regional and local EMS service delivery from a patient care, resource allocation and regulatory perspective.

#### **NC Trauma Registry**

Since 1987, all North Carolina trauma centers and several non-trauma center hospitals have submitted data to the North Carolina Trauma Registry. Thirteen of these facilities are designated by the state of North Carolina as level I, II or III trauma centers. The North Carolina Office of Emergency Services maintains the North Carolina Trauma Registry through a contract with the University of North Carolina-Chapel Hill Department of Surgery. All state designated trauma centers are required to submit data for the purposes of performance improvement, outcomes measurement, resource utilization, injury prevention and clinical research.

A designated trauma center is a local hospital voluntarily meeting the state's guidelines for care of the injured patient. Each of the state's centers has the responsibility of providing care and of developing and supporting a regional trauma system.

**Prehospital Medical Information System (PreMIS)**

The Prehospital Medical Information System (PreMIS) provides a data entry and reporting capability for the evaluation of EMS patient care and system performance. PreMIS follows the NEMSIS standards. The benefits of PreMIS include a standard method of documenting patient care to facilitate tracking of hospital diagnoses and patient outcome information, system comparison across agencies, involvement in public health and injury prevention initiatives and EMS research, EMS strategic planning on a statewide basis, fiscal accountability, leadership in developing EMS outcome measurements, links to other state and national data sets for researchers, quality management of patient care, services, and resource tracking, required billing information, offsite data warehousing, feedback on technician procedures for evaluation and certification, and storage of medical device data.

## 2017 Strategic Plan

### Overview

In 2017, the NC TRCC began the process of updating the 2016 Strategic Plan. The UNC Highway Safety Research Center worked with NC GHSP and NCDOT to review relevant materials, gather input from key agencies, and develop a plan to guide improvements to be made in traffic safety information systems over the next five years. Agencies who participated in the development of this plan included:

- EMSPIC
- ITRE
- NC DHHS
- NC GHSP
- NCAOC
- NCDOT
- NCDOT-DMV
- NCSHP
- UNC-HSRC

Gathering input for the plan began with the initial task of reviewing the following documents:

- *North Carolina Traffic Safety Information Systems Strategic Plan, 2016*. This plan became the benchmark for progress with respect to improvements made over the past year.
- *State of North Carolina Traffic Records Assessment, 2017*. The assessment was completed by a NHTSA Technical Assessment Team in May 2017 and included several recommendations related to traffic safety information systems.
- *North Carolina Governor's Highway Safety Program FY 2017 Highway Safety Plan*. This plan was reviewed for specific recommendations related to traffic safety information systems and for data-related recommendations related to targeted safety strategies.

The primary source of input to the plan was a strategic planning session with representatives from the agencies listed above. This session was used to review goals and objectives and monitor progress toward performance measures, which were set last year.

The plan, first developed in 2017, was intended to address improvements in traffic safety information systems over five years. However, the plan was and will continue to be reviewed on an annual cycle and modified as necessary to ensure that progress is being made in each of the areas and that new objectives are added to address changes in the state and take advantage of improvements that may lead to better systems. In other words, this is a dynamic plan.

**Vision and Mission**

**Vision**

*To improve safety by significantly reducing the number of fatalities and injuries to the citizens and visitors of our state.*

**Mission**

*Provide the leadership to establish and maintain a level of coordination, communication and cooperation between agencies and stakeholders to maximize utilization and improve functionality, data accuracy, timeliness and linkages, and to advance electronic data collection, protect privacy, minimize redundancies in traffic records systems and better accomplish individual agencies’ goals.*

**Goals and Objectives**

Goals are established for the NC TRCC as an entity and for each of the six primary data systems that are required for addressing traffic safety in the state. For each of these seven goals, specific objectives and performance measures were developed that represent the priorities for each group/system.

**Traffic Records Coordinating Committee**

**Goal – Provide direction and facilitate coordination among the safety data stewards and stakeholders to improve the transportation safety information systems in North Carolina.**

*\* Note: The official annual performance period for measuring performance is April to March each year. However, some of the activities described in this section include items undertaken or completed in May or June, as the final plan is delivered at the end of June each year.*

<i>Objective</i>	<i>Performance Measure/Target</i>	<i>4/1/15-3/31/16*</i>	<i>4/1/16-3/31/17*</i>
Ensure that the membership of the TRCC consists of all key stakeholders, including the owners, stewards and users of the data in NC.	An annual review of stakeholders and expansion of the TRCC membership as necessary.	Reviewed membership, added 6 new members	Discuss DMV membership with current DMV representative to determine if additional expertise is needed on TRCC committee.
In collaboration with the NC GHSP, review and improve upon the protocol used in the identification and prioritization of projects.	Annual review and improvement upon the project identification and prioritization process. <i>(Note: Schedule for the approved protocol will need to</i>	Ongoing	Ongoing (related to measure below)

Objective	Performance Measure/Target	4/1/15-3/31/16*	4/1/16-3/31/17*
	<p><i>align with the GHSP proposal process.)</i></p> <p>A set of guidelines created for use in identifying and prioritizing projects.</p> <p>A prioritized list of recommended projects provided to NC GHSP and other funding sources and agencies that align with the specific objectives of the Strategic Plan.</p>	<p>Sub-committee formed to develop draft protocol; will be presented to full TRCC membership in fall 2016.</p> <p>Future effort (may be part of the protocol developed)</p>	<p>Ongoing. Plans for the October 2017 TRCC include reviewing this item.</p> <p>Ongoing (will be done following the guideline development noted above)</p>
<p>Monitor and measure progress on existing goals and objectives.</p>	<p>Annual update of TRCC Strategic Plan.</p> <p>Periodic review of ongoing projects, focusing on progress toward meeting performance measures outlined in the strategic plan.</p> <p>Feedback to NC ECHS to report on progress made and new strategies proposed by the TRCC.</p> <p>Review NHTSA recommendations for TRCC activities to align our goals with the assessment document focus questions.</p>	<p>Completed (June 2016)</p> <p>Completed</p> <p>As needed for specific purposes or when requested (plan to ask to be on agenda for fall 2016 meeting)</p> <p>Completed</p>	<p>Completed</p> <p>Completed</p> <p>As needed for specific purposes or when requested (will ask to be on agenda for fall 2017 meeting)</p> <p>2017 assessment (received mid-May, 2017) being reviewed by all stakeholders to find future opportunities for information systems improvements.</p>
<p>Identify gaps in the current traffic records systems and explore new solutions.</p>	<p>Establishment and revision of goals and objectives as part of development of the next strategic plan. <i>(Note: Explore</i></p>	<p>Completed (May 2016)</p>	<p>Completed (May 2017)</p>



Objective	Performance Measure/Target	4/1/15-3/31/16*	4/1/16-3/31/17*
	<i>external funding opportunities. Examples include: 405C, NC ECHS, FHWA, NHTSA, CDC).</i>		
Explore the value and feasibility of capturing detailed lat/long location information for citations, crashes and asset management (results have implications for multiple data systems).	Feasibility study report.	Future effort	Future effort, pending availability of resources.
Share NC achievements and best practices in traffic safety information systems with other states.	Participation in regional and national conferences and peer-to-peer exchanges.	(See list from Anna Waller/send request to group for presentations related to their systems/tied to goals of TRCC.) Any presentations/participation in Baltimore in 2016?	Held stakeholders meeting in April 2017. Project moving forward with the GoTeam effort. TRCC members plan to attend the Traffic Records Forum in New Orleans in August 2017, present on activities in NC.
Monitor and evaluate the achievements and best practices in traffic safety information systems in other states for potential implementation in NC.	Participation in peer-to-peer exchanges.  Review of promising strategies from other states, or items shared w/ other states, and sharing back with group.  Monitor USDOT/other state's TRCCs for ideas for consideration.	Delegation of 7 TRCC members and other NC representatives participated in the Traffic Records Forum in Costa Mesa, CA (October 2015)  State experiences with assessment process/spatial mapping of crashes/emerging technologies  Ongoing	Continued involvement and attendance at Traffic Records Forum in Baltimore, MD (August 2016). NC is a HSIS state and has an annual peer exchange on traffic record topics  Ongoing  Ongoing

<i>Objective</i>	<i>Performance Measure/Target</i>	<i>4/1/15-3/31/16*</i>	<i>4/1/16-3/31/17*</i>
Ensure that state highway safety plans include traffic safety information systems as a major component.	Review of NC Strategic Highway Safety Plan.  Review of NC State Highway Safety Plan.	The final plan was released in the summer of 2015. This review task is completed.  Completed (July 2015)	2016 plans were completed and submitted.  Completed (2016)

**Crash Information Systems**

***Goal – Maintain the crash data system and expand the capabilities of the system to allow the state to use this data to track crash injury/fatality experience for use in court cases, safety improvement studies and evaluating State driving statutes.***

<i>Objective</i>	<i>Performance Measure/Target</i>	<i>4/1/15-3/31/16</i>	<i>4/1/16-3/31/17*</i>
Continue to enhance and expand electronic crash reporting by all enforcement agencies in the State.	Number or percentage of law enforcement <u>agencies</u> submitting to the electronic crash reporting system.	21.26%	23.33%
	Number or percentage of reported <u>crashes</u> submitted via the electronic crash reporting system.	72.59%	76.67%
	Integration and use of additional features or options for crash reporting. (Example: <i>geo-locating</i> .)	Future effort (dependent on third party vendor capability and NCDMV requirements).	Conduct an assessment of agency reporting practices to determine who is taking advantages of additional crash reporting features.
			*Note: City of Raleigh has been collecting x and y coordinates since 2012.

Objective	Performance Measure/Target	4/1/15-3/31/16	4/1/16-3/31/17*
Continue to communicate data collection and data submission protocols and business rules with third-party software vendors of electronic crash submission products to keep them apprised of changes in the North Carolina crash data systems that need to be accommodated in their software applications.	<p>Periodic meetings with third-party vendors to share business rules and communicate changes.</p> <p>Periodic review and validation of third-party vendors' compliance capabilities.</p> <p>Initial review and validation for new third-party vendors.</p>	<p>Biweekly meeting conducted by NCDMV.</p> <p>Initial tests by NCDMV, but no period review yet.</p> <p>Currently 4 vendors in place (0 new vendors in the last year). New vendor coming online in FY17.</p>	<p>Biweekly meeting conducted by NCDMV.</p> <p>Initial tests by NCDMV, but no period review yet.</p> <p>Currently 5 vendors in place (0 new vendors in progress).</p>
Explore the feasibility of LEA-level metrics for improving crash reporting.	<p>Feasibility study on the potential range and use of LEA-specific metrics. <i>(Note: Report on types of errors made and time period for reporting, compared to peers)</i></p> <p><i>Next: Review and see if it can be enhanced or built upon in the future/broadened to include quality.</i></p>	<p>Published crash data submission performance and LEA-specific assessments in LEA newsletter as a means of providing peer agency performance results.</p>	<p>Published crash data submission performance and LEA-specific assessments in LEA newsletter as a means of providing peer agency performance results.</p>
Continue to enhance the integration of crash data systems.	<p>Continuing to correct CRS records on the basis of analysis of TEAAS data.</p> <p>Periodic review of the integration process between the traffic safety unit and DMV.</p>	<p>When error is identified.</p> <p>Protocol in place between NCDMV and NCDOT Traffic Safety Unit to find and resolve discovered issues.</p>	<p>When error is identified.</p> <p>Monthly meetings to resolve any issues. Ongoing</p>
Ensure that crash data continue to be submitted accurately and in a timely manner to the CRS.	<p>Average lapsed time between the time of the crash and the time of the submission.</p> <p>Percentage of crash reports submitted within 10 days. (GS 20-166.1 indicates that a law enforcement agency who</p>	<p>21.89 days (print submissions) 3.82 days (electronic submissions)</p> <p>70.76%</p>	<p>27.56 days (print submissions) 4.01 days (electronic submissions)</p> <p>68.60%</p>

<i>Objective</i>	<i>Performance Measure/Target</i>	<i>4/1/15-3/31/16</i>	<i>4/1/16-3/31/17*</i>
	receives an accident report must forward it to the NCDMV within 10 days after receiving the report.)	*These are the same numbers reported in the 2016 Strategic Plan	
Ensure that crash data continue to be accurately recorded and reported to the CRS.	<p>The percentage of rejected crash reports. (Note: no reports are accepted to the CRS until the errors in mandated data elements are corrected.)</p> <p>Periodic summary of crash report rejection reasons.</p> <p>Periodic review of business rules to target inaccurate fields.</p>	<p>4.74% (electronic submission only)</p> <p>1,324 reasons for rejection (electronic submission only). Summary report on file (may become part of the LEA newsletter to help inform training).</p> <p>Future effort</p>	<p>3.66% (electronic submission only)</p> <p>Future effort to be revisited in conjunction with the development of the new crash system.</p>
Ensure that crash data continues to be recorded as completely as possible.	<p>Percentage of reports that have no missing critical data elements. (Note: Must define critical elements; see notes under prior objective.)</p> <p>Periodic review of business rules to address completeness.</p> <p>Feedback to LEAs with respect to their data quality.</p>	<p>Future effort (non-mandated elements to be reviewed as potential critical data elements).</p> <p>Addressed business rule completeness as a result of vehicle style addition and moped definition change.</p> <p>Query is run every 6 months regarding alcohol level and injury</p>	<p>All critical data elements are required for electronically submitted reports by business rules.</p> <p>Ongoing</p> <p>Ongoing and covered in monthly meetings.</p>

Objective	Performance Measure/Target	4/1/15-3/31/16	4/1/16-3/31/17*
	Year-to-year comparison of the number of reports received to review for possible missing data.	status updated. LEAs are contacted as a result of the query.  Query run comparing crash report submission 2014 to 2015. LEAs contacted and submission discussed.	Ongoing
Ensure that crash data is recorded uniformly.	Percentage of data elements that are MMUCC compliant.  Year-to-year comparison of reportable vs. non-reportable crashes by LEAs.	67.5% Crash Mapping Score. 55.3% Vehicle Mapping Score. 73.8% Person Mapping Score.  75.22% reportable 24.78% non-reportable	*Note: Personal injury variable definitions have been changed to NHTSA standards.  75.34% reportable 24.66% non-reportable
Ensure that the crash data are accessible to key stakeholders.	Annual survey of crash data accessibility by stakeholder groups, including internal users within the NCDOT and external users such as other state agencies and universities.  Potential workshop with stakeholders including IT to discuss accessibility issues.	New Department of Information Technology rules and protocols requires review of this objective in the coming year, as IT within all state agencies is in a state of transition.  Future effort (same as above)	New Department of Information Technology rules and protocols requires review of this objective in the coming year, as IT within all state agencies is in a state of transition.  Future effort (same as above).  *Note: Sanitized crash data set that can be supplied to outside users.
Enhance law enforcement training that will result in more complete and accurate crash reporting.	Review of alternative training methods, including distance learning and blended training options, and methods used in other fields. (Note: EMS as an example.)	Computer Based Training developed and still being utilized. Bomgar Training sessions used as needed to promote on-	Ongoing

Objective	Performance Measure/Target	4/1/15-3/31/16	4/1/16-3/31/17*
	<p>Number of law enforcement officers who receive training, including a breakdown of standard and more extensive training.</p> <p>Review of the current Basic Law Enforcement Training.</p>	<p>hands training assistance for TraCS10 and ECRS LEAs.</p> <p>Trained 72 law enforcement train-the-trainer officers between April 1, 2015 and March 11, 2016 from 35 agencies using NISR training materials and materials developed by DMV TR training staff.</p> <p>Future effort</p>	<p>Trained 79 law enforcement train-the-trainer officers between April 1, 2016 and March 31, 2017.</p> <p>Currently being updated for North Carolina training and standards. Traffic Crash rollout approximately 2018.</p>
<p>Explore the feasibility of creating a statewide streamlined or “limited” data entry protocol for non-injury crashes within the electronic crash reporting system at the time the DMV349 is updated.</p>	<p>Review of the implications on the CRS database.</p> <p>Review of the implications on safety analysis and decision making.</p> <p><i>Note: The issues addressed should include data acquisition, compliance with NHTSA data guidance (e.g., MMUCC), legal considerations, and possible degradation in the information being captured in the crash report.</i></p>	<p>Future effort (when new forms are developed that include data element/attribute changes)</p> <p>Future effort (same as above)</p>	<p>Future effort (when new forms are developed that include data element/attribute changes)</p> <p>Future effort (same as above)</p>
<p>Develop standards for reporting location information.</p>	<p>Publication of spatial location reporting standards available to third-party vendors for ECRS.</p>	<p>Reporting standards provided to third-party vendors.</p>	<p>Ongoing</p>

<i>Objective</i>	<i>Performance Measure/Target</i>	<i>4/1/15-3/31/16</i>	<i>4/1/16-3/31/17*</i>
	Determine the best method of implementing electronic crash reporting by all LEAs statewide.		To be discussed further in fall 2017 TRCC meeting to determine how this will be addressed.

## Data Use & Integration

**Goal - Provide direction and facilitate coordination among the safety data stewards to improve the integration of transportation safety information systems in North Carolina.**

<i>Objective</i>	<i>Performance Measure/Target</i>	<i>4/1/15-3/31/16</i>	<i>4/1/16-3/31/17*</i>
Conduct a feasibility assessment of the value of and most effective means of sharing data across multiple systems within the data collection process, such as crash and citation, for consistency and accuracy of data.	Feasibility study report. <i>(Note: This is a project that will be addressed in the future, when all stewards are ready and funding is available to support the study.)</i>	Future effort	Future effort
Explore the value and the feasibility of developing a centralized database for warning tickets that would be available to law enforcement officers and other stakeholders, such as researchers, in the road safety community.	Feasibility study report. <i>(Note: This is a low priority issue based on recent discussions with NHTSA and will be discussed at a later time.)</i>	Future effort	Recommendation to eliminate this objective since it is not part of the 2017 assessment. The TRCC membership has previously noted that 1) this is a low priority item – no funds to implement such a system, and 2) uncertainty of the value of such a system. Using the new 2017 assessment, we can now remove this objective.
Conduct demonstration projects to illustrate the feasibility and value of data integration.	Data Linkage Project and Repeat Offenders Project.		

## Citation/Adjudication Systems

**Goal – Maintain and update North Carolina AOC databases and oversee the proper movement of court information and data, while centralizing information and creating citation/sharing procedures for the citation and adjudication records.**

<i>Objective</i>	<i>Performance Measure/Target</i>	<i>4/1/15-3/31/16</i>	<i>4/1/16-3/31/17*</i>
Continue to improve electronic citation audit procedures and implement the most promising improvements to ensure citations are tracked from time of issuance to disposition of citations.	Implementation of a tracking system for unused citations.	Software upgrade in progress.	Software upgrade completed, improving the stability and tracking of citation issuance to include passed/failed citation transmissions.
Continue to improve the electronic citation submission statewide.	Length of time for citations to be received at AOC.	84.63% received within 3 days  *Note: Previously reported data was incorrect.	87.63% received within 3 days
Increase data capture surrounding the case management of DWI charges and convictions to aide in the analysis and tracking of these cases.	Number of DWI data element fields added to the file.	In process. AOC communicating with legislature regarding reporting requirements.	Four reports were reviewed by AOC and judicial officials. Next steps have not been defined.
Provide an interface between eCitation and NCAWARE for the most frequent arrestable offenses to reduce duplicate data entry.	Percent reduction in number of cases for which there is duplicate data entry.	Future effort. Expect to begin in October 2016.	In progress
Capture and store large video as evidence in a secure location in data center.	Expand discovery automation system to handle remote blob storage.	In progress	Partially implemented (25% of the prosecutorial districts implemented; project on hold due to



<i>Objective</i>	<i>Performance Measure/Target</i>	<i>4/1/15-3/31/16</i>	<i>4/1/16-3/31/17*</i>
			prioritization and resource allocation).
Paperless process in court room with workflow between district attorney, judges and clerks.	Design and develop automated workflow process for citation in the courtroom.	In progress, awaiting development of e-courts strategic plan.	Future effort

### Injury Surveillance Systems

**Goal – Evaluate the need for and feasibility of a Statewide Surveillance Injury System.**

<i>Objective</i>	<i>Performance Measure/Target</i>	<i>4/1/15-3/31/16</i>	<i>4/1/16-3/31/17*</i>
Conduct a demonstration project that links injury surveillance data with crash data to identify issues associated with linkage.	Identification of a project with defined objectives that requires linking injury surveillance data and crash data.	Ongoing	Developed into a strategic planning project for statewide data linkage. Stakeholder planning meeting held 4-6-2017. Follow up meeting planned September 2017, smaller work group meetings planned in between.  Final report for the Wake County Demonstration project submitted in September 2016.
	Development of a work plan for the demonstration project.	Expansion project to initiate October 2016.	
	Demonstration project report.	Interim reports have been and are still being submitted.	
Meet with key stakeholders to <b>improve interfaces across the health care databases</b> (EMS, Emergency Department, Hospital Discharge, Trauma Registry, Vital Records) and examine transportation injury data.	Develop process flow diagrams, data dictionaries, policies and procedures, data quality guidelines, annual reporting from the medical data systems to TRCC, and explore the collection of rehabilitation data.		Initial stakeholders meeting conducted in 2017 as part of the Data Linkage project. Further efforts to be defined in the coming year.

## Roadway Information Systems

**Goal – Continue to maintain and expand an up-to-date statewide inventory of all North Carolina roadways that allows the State to track roadway changes and improvements and permits enhanced safety analysis.**

<i>Objective</i>	<i>Performance Measure/Target</i>	<i>4/1/15-3/31/16</i>	<i>4/1/16-3/31/17*</i>
Expand the linear referencing system (foundation for linkage to roadway characteristics) to cover all public roads, state- and locally-owned.	Percentage of NC roadway mileage that is included in the LRS.	Re-scheduled to be completed in summer 2016.	Completed late 2016.
Improve the interoperability and linkage between the linear referencing system, road characteristics data, and the crash data system (TEAAS).	Successful implementation of a distributed ownership model for capturing and maintaining roadway data elements.  Ability of external customers to add or edit data to the primary roadway characteristics file. Ability to integrate crashes from non-system roadways into the statewide LRS.	In progress. Will be implemented with the Road Operations and Management Effort (ROME) project (ESRI Roads and Highways project)  Future effort (long-term goal for municipalities to enter data)	ROME completed. Integration in progress.  Future effort
Conduct a feasibility assessment of the development of supplemental roadway files that may be used in safety analysis. ( <i>Examples include horizontal curves and grades.</i> )	Feasibility report that includes priorities for the development of supplemental files.	Currently collecting information for primary highways.	Currently collecting information for primary highways. Looking to expand to include additional state maintained roads.
Explore the feasibility of an intersection database (in support of FHWA	Feasibility report.	Future effort (starting FY17)	Pilot project underway. Estimated completion December 2017.

<i>Objective</i>	<i>Performance Measure/Target</i>	<i>4/1/15-3/31/16</i>	<i>4/1/16-3/31/17*</i>
Fundamental Data Elements (FDE)).			
Improve data quality control for roadway data elements.	Investigate what data quality control measures are in place currently.		Explore further with NCDOT during fall 2017 TRCC committee meeting.

**Driver Information Systems**

***Goal – Continue to maintain and update the North Carolina driver license record data to be used in road safety studies and statistical analysis and to track all North Carolina drivers and their driving records according to North Carolina law.***

<i>Objective</i>	<i>Performance Measure/Target</i>	<i>4/1/15-3/31/16</i>	<i>4/1/16-3/31/17*</i>
Provide online a basic summary of the number of licensed North Carolina drivers, which includes their age, race, sex and county of residence. <i>(Note: the publication should include motorcycle endorsements, commercial licenses and learner’s permits.)</i>	Annual online publication as part of NC Crash Facts.	Update expected at fall 2016 TRCC meeting.	Find out more information about access to this data during the mini-assessment meeting(s).
<b>Hold mini-assessment meeting(s) with key individuals in driver license sections to address the issues of the data dictionary and improve data quality control.</b>	Improve communication efforts and obtain a better understanding of what data documentation, data information flow charts, purging record procedures and data quality control routines are available. Develop summary reports on each of these topics.		Future effort

**Vehicle Information Systems**

**Goal – Continue to maintain and update all North Carolina vehicle registration record data for the state to be used in road safety studies and statistical analysis and to insure all vehicles are properly licensed according to the laws of NC.**

<i>Objective</i>	<i>Performance Measure/Target</i>	<i>4/1/15-3/31/16</i>	<i>4/1/16-3/31/17*</i>
Publish a summary of the number of NC registered vehicles – by type of vehicle and county.	Annual publication as part of NC Crash Facts.	Update expected at fall 2016 TRCC meeting.	Completed
<b>Hold a mini-assessment meeting(s) with key individuals in vehicle registration information systems to address the issue of data quality control.</b>	Improve communication efforts and obtain a better understanding of the information available in the Vehicle Data System, data quality control procedures, validation of VINs, vehicle data information flow diagrams, and vehicle record purging procedures. Develop summary reports on each topic.		Future effort

## Traffic Safety Information System Projects

Provided in this section of the report is a discussion of the process that is currently used by the NC TRCC to provide input to the NC GHSP on the selection of projects to be funded using Section 405(c) funds from NHTSA. At the end of this section is a table showing current traffic safety information system projects that are ongoing in the state, regardless of funding source.

### *Project Identification*

The following section of this report will be dynamic and will reflect the ongoing efforts of the NC TRCC to effectively identify and prioritize initiatives to reflect its goals. The priorities and projects will change as available resources are identified. This section will also evolve as Traffic Records Assessments are completed and as information, data and opportunities become clearer. In addition, the status of information technology directives or legislative actions can have significant effects on the items in this section.

Projects will primarily be identified by each agency effort to address a deficiency in a traffic records system, the data collection process (accuracy, completeness), achieving necessary compliance, customer service improvements (availability of data) or improving the timeliness of the data. Projects involving the linking of data for improved utilization and establishing partnerships will also be identified and receive full consideration by the NC TRCC. All projects must fully address all federal and state laws or policies concerning the privacy or protection of information. Formal and informal traffic records assessments will be a significant resource for projects and strategies.

### *Project Prioritization*

All strategies or projects included in this report are considered important to both the short term and long term success of the NC TRCC, each agency and North Carolina. Each initiative will have measurable benefits. In addition to addressing data systems, data collection, the technical ability to link data or systems or other technical components, some projects may focus on increasing the general knowledge, understanding or marketability of the data. Projects demonstrating the results of a successful NC TRCC partnership should also be considered.

The NC TRCC also recognizes that many projects or strategies will be easier to implement and may yield high payoff and have few obstacles to achieve relatively quick success. If resources become available to the NC TRCC, typically in the form of grants or possibly through the NC ECHS, a process should be in place to select these projects. Future effort is planned to develop a project prioritization protocol, which would involve the development of specific criteria for ranking projects.

### *Traffic Safety Information System Projects Listing*

The table on the following page includes a list of current traffic safety information system projects, with the projects funded entirely or partially by Section 405(c) funds listed first. Descriptions of these projects, as well as a list and description of past projects is available in Appendix C.

Current projects

Cross Ref. #	Project	Project Number	Coordinating Agency	Budget	Budget Source
	<b>405(c)-funded projects</b>				
1	eCitation Printers	M3DA-17-14-01	NCAOC	\$303,421	NC GHSP
2	eCitation to NCAWARE interface update	M3DA-17-14-02	NCAOC	\$711,660	NC GHSP
3	Linking Crash Reports to Medical Data in North Carolina	M3DA-17-14-04	UNC IPRC	\$215,526	NC GHSP
4	Vision Zero- North Carolinas Fatality Reduction Program	M3DA-17-14-03	ITRE	\$422,231	NC GHSP
	<b>Non 405(c)-funded projects</b>				
5	A Performance-Based Web Analytic Solution for NCSHP Operational Planning Decision Support - PHASE II		ITRE	\$142,909	NC GHSP
6	Alcohol Facts Website 2016	TR-16-07-03	HSRC	\$40,030	NC GHSP
7	EMS PIC Linkage Project		EMSPIC		GHSP, NCDOT, AOC, NCSHP, etc.
8	Ignition Interlock Management System		NCDOT	\$1,308,089	NTSA, NCDOT
9	Motor Vehicle Crash Injuries in Wake County, NC: Exploring available data sources and potential data linkages	TR-16-07-02	IPRC	\$136,474	NC GHSP

Cross Ref. #	Project	Project Number	Coordinating Agency	Budget	Budget Source
10	North Carolina Traffic Safety Information Systems Strategic Plan Update	TR-17-07-03	UNC HSRC	72,573	NC GHSP
11	Quick Response System	TR-17-07-02	HSRC	\$24,687	NC GHSP
12	Traffic Records	TR-17-07-01	NC GHSP	\$119,800	NC GHSP
13	Truck Crash Geocoding		ITRE/NCSU	\$69,000	NCSHP

## Appendix A – Conference Participation

### **Presentations by NC TRCC members**

None to report.



Provided below is a list of the active participants in the NC TRCC meetings.

<b>Name</b>	<b>Agency</b>	<b>Email Address</b>
Brian Mayhew (Co-chair)	NCDOT	<a href="mailto:bmayhew@ncdot.gov">bmayhew@ncdot.gov</a>
Eric Rodgman (Co-chair)	UNC-HSRC	<a href="mailto:rodgman@hsrc.unc.edu">rodgman@hsrc.unc.edu</a>
Jeff Robertson	EMSPIC	<a href="mailto:jrobertson@emspic.org">jrobertson@emspic.org</a>
Brad Hibbs	FHWA	<a href="mailto:bradley.hibbs@fhwa.dot.gov">bradley.hibbs@fhwa.dot.gov</a>
Alan Dellapenna	NC DHHS	<a href="mailto:alan.dellapenna@dhhs.nc.gov">alan.dellapenna@dhhs.nc.gov</a>
Eleanor Fleming	NC DHHS	<a href="mailto:eleanor.fleming@dhhs.nc.gov">eleanor.fleming@dhhs.nc.gov</a>
Joshua DeFisher	NC GHSP	<a href="mailto:jsdefisher@ncdot.gov">jsdefisher@ncdot.gov</a>
Frank Hackney	NC GHSP	<a href="mailto:fhackney@ncdot.gov">fhackney@ncdot.gov</a>
Don Nail	NC GHSP	<a href="mailto:dnail@ncdot.gov">dnail@ncdot.gov</a>
Mark Scaringelli	NC GHSP	<a href="mailto:mascaringelli@ncdot.gov">mascaringelli@ncdot.gov</a>
David Williams	NC GHSP	<a href="mailto:dswilliams4@ncdot.gov">dswilliams4@ncdot.gov</a>
Jennifer Barbour	NCAOC	<a href="mailto:jennifer.h.barbour@nccourts.org">jennifer.h.barbour@nccourts.org</a>
Cynthia Blackwell	NCAOC	<a href="mailto:cynthia.g.blackwell@nccourts.org">cynthia.g.blackwell@nccourts.org</a>
Ashley Clowes	NCDOT	<a href="mailto:aeclowes@ncdot.gov">aeclowes@ncdot.gov</a>
Brian Murphy	NCDOT	<a href="mailto:bgmurphy@ncdot.gov">bgmurphy@ncdot.gov</a>
Roger Smock	NCDOT	<a href="mailto:rdsmock@ncdot.gov">rdsmock@ncdot.gov</a>
Vishwatheja Tharuvesanchi	NCDOT	<a href="mailto:vtharuvesanchi@ncdot.gov">vtharuvesanchi@ncdot.gov</a>
Eric Bellamy	NCDOT-DMV	<a href="mailto:edbellamy@ncdot.gov">edbellamy@ncdot.gov</a>
Todd Messer	NCOEMS	<a href="mailto:todd.messer@dhhs.nc.gov">todd.messer@dhhs.nc.gov</a>
David Langley	NCSHP	<a href="mailto:david.langley@ncdps.gov">david.langley@ncdps.gov</a>
Eric Schaberg	NCSHP	<a href="mailto:eric.schaberg@ncshp.org">eric.schaberg@ncshp.org</a>
Cameron Taylor	NCSHP	<a href="mailto:cameron.taylor@ncshp.org">cameron.taylor@ncshp.org</a>
Greg Ferrara	NCSU-ITRE	<a href="mailto:gpferrar@ncsu.edu">gpferrar@ncsu.edu</a>
David Harkey	UNC-HSRC	<a href="mailto:harkey@hsrc.unc.edu">harkey@hsrc.unc.edu</a>
Colleen Oliver	UNC-HSRC	<a href="mailto:oliver@hsrc.unc.edu">oliver@hsrc.unc.edu</a>
Sharon Schiro	UNC School of Medicine	<a href="mailto:sharon_schiro@med.unc.edu">sharon_schiro@med.unc.edu</a>
Anna Waller	UNC School of Medicine	<a href="mailto:anna_waller@med.unc.edu">anna_waller@med.unc.edu</a>

Included in the table below are the historical (completed) traffic safety information system projects.

**Completed (historical) projects**

Project	Project Number	Coordinating Agency	Budget	Budget Source
<b>408/405(c)-funded Projects</b>				
Air Cards Technology to Reduce Speed Related Crashes and Increase Seat Belt Use	K9-13-11-02	NCSHP	\$608,160	GHSP
ASU In-car Computer Grant	K9-14-11-06	Appalachian State University	\$30,000	GHSP
Division of Motor Vehicles (DMV) Gap Analysis	K9-09-11-05	DMV	\$56,109	GHSP
eCitation Printers	K9-13-11-03	NCAOC	\$214,500	GHSP
eCitation Printers	M3DA-15-16-05	NCAOC	\$303,050	GHSP
eCitation/Electronic Crash Reporting	K9-13-11-05	Enfield PD	\$8,000	GHSP
eCitation/Electronic Crash Reporting	K9-12-11-15	NCSHP	\$46,000	GHSP
eCitation/NCAWARE Arrestables Interface	K9-13-11-06	NCAOC	\$133,572	GHSP
eCitation Upgrade	M3DA-16-14-01	NCAOC	\$288,104	NC GHSP
Electronic Submission of Crash Reports (DMV-349) from NCSHP	K9-08-11-04	NCSHP	\$331,240	GHSP
eCitation Upgrade	M3DA-15-16-03	NCAOC	\$282,804	NC GHSP
Geocode Pedestrian Crashes Statewide and Traffic Records Strategic Plan	K9-12-11-04	HSRC	\$51,421	GHSP
GIS location of Crashes	K9-11-11-03	ITRE	\$15,898	GHSP

<b>Project</b>	<b>Project Number</b>	<b>Coordinating Agency</b>	<b>Budget</b>	<b>Budget Source</b>
Linking EMS, Trauma, Healthcare and Crash Data Systems	K9-10-11-03	EMSPIC		
MDTs to Enable More Officers to Perform eCitation and Electronic Crash - GPD (Garner)	K9-10-11-11	Garner Police Department	\$10,000	GHSP
MDTs to Enable More Officers to Perform eCitation and Electronic Crash - GPD (Gastonia)	K9-10-11-08	Gastonia Police Department	\$3,340	GHSP
MDTs to Enable More Officers to Perform eCitation and Electronic Crash – LPD	K9-10-11-04	Lenoir Police Department	\$44,000	GHSP
MDTs to Enable More Officers to Perform eCitation and Electronic Crash – MCSO	K9-10-11-05	Macon County Sheriff’s Office	\$16,000	GHSP
MDTs to Enable More Officers to Perform eCitation and Electronic Crash - N.C. Highway Patrol	K9-10-11-07	N. C. State Highway Patrol	\$331,240	GHSP
MDTs to Enable More Officers to Perform eCitation and Electronic Crash – NPD	K9-10-11-12	Norwood Police Department	\$4,850	GHSP
MDTs to Enable More Officers to Perform eCitation and Electronic Crash – TPD	K9-10-11-06	Taylorsville Police Department	\$11,372	GHSP
NC Crash Data Website	M3DA-16-14-04	HSRC	\$61,222	NC GHSP
NC DOT Traffic Engineering TR Guidebook	K9-09-11-06	DOT	\$6,342	GHSP
NC DOT Traffic Engineering TRCC Support	K9-09-11-07	DOT	\$33,000	GHSP
NC Traffic Safety Information Systems Strategic Plan Update	M3DA-16-16-03	HSRC	\$90,843	NC GHSP

Project	Project Number	Coordinating Agency	Budget	Budget Source
NC Traffic Safety Information Systems Strategic Plan Update	M3DA-15-16-04	HSRC	\$39,263	NC GHSP
NCAOC-Batmobile for purchase of MDTs to Place Aboard Each BAT Units	K9-10-11-09	NCAOC	\$10,992	GHSP
NCSHPGIS Decision Support from Motor Carrier Enforcement to Traditional Enforcement	K9-12-11-02	NCSU ITRE	\$28,049	GHSP
Performance-based Web Analytic Solution for NCSHP	M3DA-15-16-06	NCSU / ITRE	\$135,648	NC GHSP
Purchase of MDTs for Electronic Crash Reporting – MDPS	K9-11-11-06	Morganton Department of Public Safety	\$8,000	GHSP
Purchase of MDTs for Electronic Crash Reporting – RMPD	K9-11-11-11	Rocky Mount Police Department	\$4,000	GHSP
Purchase of MDTs for Electronic Crash Reporting – SPD	K9-11-11-07	Sylva Police Department	\$4,132	GHSP
Purchase of MDTs for Electronic Crash Reporting – WPD	K9-11-11-12	Warrenton Police Department	\$5,425	GHSP
Purchase of Printers	K9-10-11-02	NCAOC	\$325,000	GHSP
Purchase/Distribution of Printers to Expand the eCitation Program	K9-11-11-02	NCAOC	\$325,000	GHSP
Salary and Benefits for a State Traffic Records Coordinator	K9-10-11-01	GHSP-Traffic Records	\$67,000	GHSP
State Highway Patrol (SHP) Mobile Data Computers	K9-09-11-03	SHP	\$445,639	GHSP
Systems Gap Analysis	K9-10-11-10	N. C. DOT - Division of Motor Vehicles	\$117,420	GHSP
Quick Response System	M3DA-16-14-02	HSRC	\$43,841	NC GHSP

Project	Project Number	Coordinating Agency	Budget	Budget Source
TRACS Upgrade	K9-14-11-03	NCDMV	\$43,300	GHSP
<b><i>Non 408/405(c)-funded Projects</i></b>				
2013 North Carolina Traffic Safety Information Systems Strategic Plan Update	TR-13-10-03	HSRC	\$22,807	GHSP
ACIS/Eastern Band of Cherokee Indians (ECBI)		NCAOC	\$67,990	EBCI/NCAOC
Administrative Office of the Courts (NCAOC) e-Citation Printers	K9-09-11-04	NCAOC	\$328,157	GHSP
Alcohol Facts Web Site 2014	TR-14-10-03	HSRC	40,066	GHSP
Automated Criminal Infraction System (ACIS)		NCAOC		NCAOC
Criminal Court Information System – Clerk Component (CCIS-CC)		NCAOC	\$ 6,301,022	NCAOC
Criminal Court Information System – District Attorney Component (CCIS-DA)		NCAOC	\$3,333,348	NCAOC
eCitation		NCAOC	2,001,616	NC GHSP/Governor's Crime Commission
E-citation/Electronic Crash Reporting	TR-12-10-06	Roxboro PD	\$40,000	GHSP
E-citation/Electronic Crash Reporting	TR-12-10-04	Enfield PD	\$16,000	Enfield PD/ GHSP
ECRS Program Manager Position Continuation	K9-11-11-13	NCDMV-TR	\$27,400	NCDMV-TR
Electronic Compliance and Dismissal (ECAD)		NCAOC	\$338,000	NCAOC
Local Law Enforcement MDT Projects		Local PD	\$19,682	GHSP
Linkage Project		EMSPIC		EMSPIC

Project	Project Number	Coordinating Agency	Budget	Budget Source
Motor Vehicle Crash Injuries in Wake County, NC: Exploring available data sources and potential data linkages	TR-15-14-02	Carolina Center for Health Informatics and the UNC Injury Prevention Research Center	\$135,430	NC GHSP
NC Crash Data Web-site	TR-12-10-02	HSRC	\$51,782	GHSP
NC Crash Data Web Site	K9-15-15-03	HSRC	\$59,656	NC GHSP
North Carolina Warrant Repository/NCAWARE		NCAOC	\$13,000,000	NCAOC
payNcticket		NCAOC	\$185,459	NCAOC
PreMIS migration to NEMIS v3 Standard		EMSPIC		OEMS
Quantifying and Describing EMS Patient Transports following Motor Vehicle Crashes in North Carolina		EMSPIC		EMSPIC
Quick Response System	K9-15-15-02	HSRC	\$44,640	NC GHSP
Quick Response System	TR-12-10-01	HSRC	\$45,537	GHSP
Quick Response System for GHSP Inquiries: A Continuation	TR-13-10-01	HSRC	\$44,146	GHSP
SADIP 2009	SD-09-37-G-00000	NCDMV-TR, NCSHP	\$562,651	NCDMV- TR, NCSHP
SADIP 2010	SD-10-37-01-000000	NCDMV-TR	\$90,218	NCDMV-TR
SADIP 2011	FM-SAD-003-11-01-00	NCDMV-TR	\$872,400	NCDMV- TR, NCSHP
SADIP 2012	FM-SAD-0022-12-01-00	NCDMV-TR	\$946,400	NCDMV-TR
Traffic Records Support Position	M3DA-14-20-02	NCDMV	\$176,800	GHSP

<b>Project</b>	<b>Project Number</b>	<b>Coordinating Agency</b>	<b>Budget</b>	<b>Budget Source</b>
Vision Zero- North Carolinas Fatality Reduction Program	M3DA-16-14-03	ITRE	\$299,863	NC GHSP
UNC HSRC Crash Web Site Update		HSRC	\$48,483	GHSP
Weldon Electronics Enhancement	TR-15-14-03	Weldon PD	\$18,000	NC GHSP
Web Site Using NC Crash Data	TR-13-10-02	HSRC	\$55,421	GHSP

### ***2017 Traffic Records Current Project Status Reports***

See below for project descriptions for current traffic safety information system projects.

#### **1.) eCitation Printers**

**Number(s):** M3DA-17-14-01

**Agency(ies):** NCAOC

**Project Leader(s):** Jennifer Barbour

**Performance Period:** 10/01/2016 – 09/30/2017

**Description:** The eCitation program is available to all law enforcement agencies (LEAs) statewide. The NCAOC provides the software and support, while SHP provides the law enforcement training, all free of charge. The LEAs are responsible for providing the computer equipment. Many LEAs would like to participate in eCitation, but are unable to purchase the printers necessary for generating the cited copy of the citation in the car. This grant would provide printers for those LEAs unable to purchase them and would therefore increase the number of law enforcement officers utilizing eCitation and would increase the percentage of citations versus paper citations issued.

**Performance Areas:** Accuracy, Integration, Uniformity, Completeness, Timeliness, Accessibility

**Performance Measures:** Increase percentage of eCitations versus paper citations.

**Status:** In progress and will continue.

**Sponsoring Agency:** NC GHSP (\$300,421)

**Total budget:** \$303,421

**For more information, contact:** Cynthia Blackwell, 919-890-2059,  
[cynthia.g.blackwell@nccourts.org](mailto:cynthia.g.blackwell@nccourts.org)

#### **2.) eCitation to NCAWARE interface**

**Number(s):** M3DA-17-14-02

**Agency(ies):** NCAOC

**Project Leader(s):** Matthew Fuller

**Performance Period:** 10/01/2016 – 09/30/2017

**Description:** This project will develop an electronic interface between eCitation and NCAWARE enabling law enforcement officers the ability to electronically generate, update and print arrest citations resulting from traffic stops. Currently, LEOs must hand write arrest citations under these circumstances. The same information must then be entered into NCAWARE upon the defendant being presented to the Magistrate. Once the magistrate has made their determination as to probable cause NCAWARE must be updated as does the original paper citation which must be done by hand. This project will provide an electronic process for arrest citations resulting from traffic stops thereby eliminating duplicative efforts and increasing efficiency. This will result in time savings for LEOs, Magistrates and Defendants. In 2015, there were 51,757 traffic-related citations created in which the stop resulted in an arrest.

**Performance Areas:** Accuracy, Integration, Uniformity, Completeness, Timeliness, Accessibility

**Performance Measures:** Reduce paper citations issued by participating Law Enforcement Agencies for arrest citations resulting from traffic stops.

**Status:** This project is ongoing at this time and scheduled for completion in the 2017 grant year.



**Sponsoring Agency:** NC GHSP (\$711,660)

**Total budget:** \$711,660

**For more information, contact:** Cynthia Blackwell, 919-890-2059,  
[cynthia.g.blackwell@nccourts.org](mailto:cynthia.g.blackwell@nccourts.org)

### **3.) Linking Crash Reports to Medical Data in North Carolina**

**Number(s):** M3DA-17-14-04

**Agency(ies):** UNC IPRC

**Project Leader(s):** Anna Waller

**Performance Period:** 10/01/2016 – 09/30/2017

**Description:** In 2012, almost 12,000 visits were made to Wake County emergency departments for injuries sustained in motor vehicle traffic crashes (MVTCS), according to data available through the North Carolina Disease Event Tracking and Epidemiologic Collection Tool (NC DETECT), the state's electronic public health surveillance system. Statewide, approximately one-third of MVTC injury related Emergency Department (ED) visits arrived at the ED via Emergency Medical Services (EMS) transport (air and ground ambulance combined). It is unknown what proportion of MVTC injury related ED visits have a NC DOT crash report for the incident.

NC DOT crash report data have been linked to EMS response data, through a collaboration between NC DOT and EMSPIC. NC DETECT ED visit data and EMS response data have been linked through collaborative efforts of EMSPIC and the Carolina Center for Health Informatics (CCHI). It is unknown if NC ED visit data can be linked directly with NC DOT crash report data; however, it is likely that NC DETECT ED visit data can be linked to the previously linked EMS-crash report data, using previously defined techniques. A pilot/demonstration project is needed to determine what each potential data source brings to the picture of MVTC injury in NC. By focusing on one county (Wake), we can also determine if local EMS data are useful in this linkage process. However, it is likely that NC DETECT ED visit data can be linked to the previously linked EMS-crash report data, using previously defined techniques. A pilot/demonstration project is needed to determine what each potential data source brings to the picture of MVTC injury in NC. By focusing on one county (Wake), we can also determine if local EMS data are useful in this linkage process.

**Performance Areas:** Accuracy, Integration, Uniformity, Completeness, Timeliness, Accessibility

**Performance Measures:** Provide both GSHP and NCSHP with a common performance measure online "scorecard" for monitoring and tracking shared crash reduction performance goals. GHSP would be able to continuously monitor HSP performance measures online as well as view the relative performance of NCSHP against those measures. Conversely, the NCSHP would be able to see their performance relative to GHSP HSP statewide goals. An interactive dashboard will provide at-a-glance visualization for exposing trends while providing additional drill-down analytic capabilities for crashes and enforcement. ITRE will request and integrate crash data from NCDOT and enforcement data from NCSHP into the scorecard. Updates will be requested monthly for continuous monitoring.

This scorecard will be part of an NCSHP Analytic Center. Just like the NCSHP MCE section uses COVERLAB Analytics for MCE operational planning, a non-MCE NCSHP analytics center would be developed for the traditional side. This analytic center is a single web portal that contains all analytic capabilities in one place: performance measure scorecard, dashboards, reports and maps.

**Status:** This project is ongoing at this time and will continue into the 2018 grant year as an expanded project to the state level.

**Sponsoring Agency:** GHSP (\$215,526)

**Total budget:** \$215,526

**For more information, contact:** Frank Hackney, 919-814-3659, [fhackney@ncdot.gov](mailto:fhackney@ncdot.gov)

#### **4.) Vision Zero- North Carolinas Fatality Reduction Program**

**Number(s):** M3DA-17-14-03

**Agency(ies):** NCSU ITRE

**Project Leader(s):** Greg Ferrara

**Performance Period:** 10/01/2016 – 09/30/2017

**Description:** Each year, North Carolina's Governor's Highway Safety Program (GSHP) establishes performance measures for meeting traffic safety goals. Most of these traffic safety goals are focused on crash reduction. The North Carolina State Highway Patrol (NCSHP) is the primary safety enforcement mechanism for reducing crashes on state-maintained highways. As such, the NCSHP's mission closely mirrors GHSP's crash reduction mission. However, GHSP and NCSHP crash reduction performance goals are not currently aligned or co-tracked by either agency.

Second, but equally important, the NCSHP does not have a patrol-wide web-based decision support analytic system for operational enforcement planning. Currently, only the Motor Carrier Enforcement (MCE) section of the Patrol has such a performance-based, spatially-enabled web analytic system. Transitioning these mission-critical technologies to the 'traditional', non-MCE side of the Patrol is essential to developing flexible and effective enforcement planning strategies, and in particular, aligning these strategies with HSP and SHSP coordinated safety improvement efforts across the state.

#### **Background**

In 2012, an initial effort began to map non-CMV crashes for the non-MCE section of the Patrol as part of a grant from the North Carolina Governor's Highway Safety Program. The intent was to provide a visual reference for increasing enforcement effectiveness to geographically target high crash locations, and as a first step towards such a spatially-enabled decision support system.

Figure 1 shows a screenshot example of the GIS crash map provided as part of this initial GHSP grant in 2012. NCSHP reported crashes were mapped for five crash reduction performance measures over a two year period, 2010-2011. These five measures were speeding, unbelted, motorcycle, teen and alcohol crashes ([www.coverlab.org/shp](http://www.coverlab.org/shp)).

What's Missing? While a centrally accessible web map for visualizing crash patterns helps increase the Patrol's ability to prioritize enforcement activities and focus resources where they are most needed, it is only part of the solution. When put into the context of the 'big picture', there is a need to both align the performance measurement needs of the Patrol with GHSP's Highway Safety Plan as well as build and deploy a comprehensive performance measurement decision support analytic suite to improve the Patrol's enforcement effectiveness and subsequently reduce crashes and improve safety.

The Vision: The primary goal of the North Carolina State Highway Patrol (NCSHP) is to "reduce collisions and make the highways of North Carolina as safe as possible" (North Carolina State Highway Patrol). As such, the Patrol has a mandate for increasing the efficiency and effectiveness of its enforcement activities to make North Carolina a leader in meeting state and national crash reduction performance goals.

Wrapping up these tools into a centrally accessible online "NCSHP Analytic Center" will provide NCSHP command staff, NCSHP field supervisors and GHSP planning staff with views specific for their needs will be a major milestone for increasing operational efficiency of each agencies shared crash reduction objectives. Ultimately, the bottom line goal for this project is to have an NCSHP patrol-wide version of the existing MCE analytic center. Figure 2 shows an example of how this transition might occur.

This 'operational planning' analytic solution fits into a larger operations model called a Common Operating Picture (COP). This COP serves as a framework for NCSHP's overall strategic technology plan, where smart strategic and tactical planning capabilities are crucial for effectively carrying out the NCSHP enforcement mission and efficiently managing mission critical resources.

Performance Measures: Each year, NHSTA provides guidelines for states to establish crash reduction goals. As the primary crash reduction enforcement arm for North Carolina, the Patrol has a responsibility to take the lead to standardize and align its crash reduction performance measures with North Carolina's Highway Safety Plan.

ITRE and the NCSHP's Research and Planning Department propose aligning NCSHP crash reduction performance measures with GHSP Highway Safety Plan (HSP). This provides the foundation for directly linking enforcement activities with crash reduction outcomes. This foundation is one of the main concepts that NHTSA has laid out for understanding and measuring enforcement effectiveness (National Highway Traffic Safety Administration, 2008). Figure 3 below shows an example of how a specific GHSP goal reduction might be aligned with specific NCSHP Troops.

By aligning performance measures for crash reduction goals, safety improvement strategies can be shifted to potentially be more effective. Much like a company needs to align business objectives with performance goals, the Patrol and GHSP can align strategic operational plans with shared performance goals. By utilizing online analytic tools commonly used in the business

world for making better business decisions, the Patrol in partnership with GSHP can flexibly change enforcement strategies to more effectively improve traffic safety.

**Online Analytics:** The NCSHP enforcement performance is currently being tracked and reported manually using Excel spreadsheets. While using spreadsheets is convenient at the desktop level, distribution of these spreadsheets and Troop-wide tracking is cumbersome and complex. Significant improvements in timeliness, accuracy and accessibility can be gained by migrating each of the four existing reports to appropriately tagged new technologies.

Online analytics provide NCSHP MCE with online scorecards to track performance for meeting operational goals, dashboards for in-depth trend and comparison analysis, dynamic reports to streamline and simplify reporting requirements, and geospatial analytics to prioritize times and locations for prioritized enforcement. These technologies include web-based scorecard performance tracking, interactive reporting, dashboard visualization, and map analytics. Figure 4 below shows an example of these analytic tools and their respective purpose.

These technologies are already being utilized by the MCE section of the Patrol for tracking and optimizing operational enforcement planning activities. An extension of these solutions to the non-MCE “traditional” side of the Patrol would leverage existing IT infrastructure that is already in place, providing significant cost savings while increasing operational efficiency.

**Performance Areas:** Completeness, Timeliness, Accessibility

**Performance Measures:** Provide both GSHP and NCSHP with a common performance measure online “scorecard” for monitoring and tracking shared crash reduction performance goals. GSHP would be able to continuously monitor HSP performance measures online as well as view the relative performance of NCSHP against those measures. Conversely, the NCSHP would be able to see their performance relative to GSHP HSP statewide goals. An interactive dashboard will provide at-a-glance visualization for exposing trends while providing additional drill-down analytic capabilities for crashes and enforcement. ITRE will request and integrate crash data from NCDOT and enforcement data from NCSHP into the scorecard. Updates will be requested monthly for continuous monitoring.

This scorecard will be part of an NCSHP Analytic Center. Just like the NCSHP MCE section uses COVERLAB Analytics for MCE operational planning, a non-MCE NCSHP analytics center would be developed for the traditional side. This analytic center is a single web portal that contains all analytic capabilities in one place: performance measure scorecard, dashboards, reports and maps.

**Status:** In progress and will continue.

**Sponsoring Agency:** GSHP (\$422,231)

**Total budget:** \$422,231

**For more information, contact:** Frank Hackney, 919-814-3659, [fhackney@ncdot.gov](mailto:fhackney@ncdot.gov)

## **5.) A Performance-Based Web Analytic Solution for NCSHP Operational Planning Decision**

### **Support - PHASE II**

**Number(s):** M3DA-15-16-06

**Agency(ies):** NCSU / ITRE

**Project Leader(s):** Greg Ferrara

**Performance Period:** 10/1/2014 – 9/30/2015

**Description:**

1. Public Map Analytics -- Develop a map analytic application to help the public identify high crash locations for exposing awareness of traffic fatalities to the driving public using an interactive visual tool. Users will be able to filter for crash attributes to interactively visualize the results on both the map, graphs and data table. Filtered results can be shown as a heat map to expose spatial patterns. This first year, ITRE will:
  - Define requirements and audiences for application
  - Adapt data holdings to service VANTAGE for NCVisionZero
  - Adapt existing design to requirements
  - Build a prototype based on existing VANTAGE for MCE
  - Test application
  - Release application
2. Vision Zero Analytics Improvements — ITRE will develop functional improvements and maintain the existing scorecard, dashboard and reports.
  - Align improvements with NCSHP MCE's COVERLAB Analytics improvements.
  - Maintain existing data updates, security and architecture necessary to support both applications.

**Performance Areas:** Integration, Uniformity, Accessibility

**Performance Measures:** Number of distinct website hits. Number of times website accessed.

**Status:**

This project has two components:

1. Public Crash Map Analytics – Technology options and design have been completed. Initial development begins in May. First version delivered in September 2015.
2. Vision Zero Analytics Updates / Improvements – Trained ~400 NCSHP supervisors and civilian trainers. Embedded VZA into NCSHP reporting regime in the Strategic Leadership Forum. Identified Law Enforcement Liasons as additional user group. Identified technology option for embedding the map into the dashboard views.

**Sponsoring Agency 1:** NC GHSP (\$142,909)

**Total budget:** \$142,909

**For more information, contact:** Greg Ferrara, 919-515-8656, [gpferrar@ncsu.edu](mailto:gpferrar@ncsu.edu)

**6. ) Alcohol Facts Website 2016**

**Number(s):** TR-16-07-03

**Agency(ies):** UNC HSRC

**Project Leader:** Natalie O'Brien

**Performance Period:** 10/01/15 – 09/30/16

**Description:** We propose to update this site to include 2014 and 2015 crash and conviction data as soon as they become available for the screening, formatting and analysis needed to include the information on the web site. We will add these two additional years' data to the current site and will re-configure the user interface to make these data accessible to the public along with existing data from 2000 through 2015. Graphic illustrations of county-specific information

on the web site will also be updated to represent the most recent information on DWI and alcohol-related crashes.

**Performance Areas:** Accessibility

**Performance Measures:** Overall crash and fatality rates, as well as speed-related fatalities, motorcyclist fatalities, unbelted fatalities in addition to alcohol-related fatalities specifically are influenced by drinking-driving. Alcohol use is uncommon among crash-involved 16- and 17-year-old drivers, but it increase sharply for 18- and especially 19-year-olds. The proposed activity is meant to support all activities of all groups, organizations and institutions in North Carolina. These include judicial, law enforcement, educational and awareness-promoting efforts.

**Status:** In progress and will continue until all upgrades are made.

**Sponsoring Agency:** GHSP (\$40,030)

**Total Budget:** \$40,030

**For more information, contact:** Frank Hackney, 919-814-3659, [fhackney@ncdot.gov](mailto:fhackney@ncdot.gov)

### **7.) EMS PIC Linkage Project**

**Agency(ies):** EMSPIC

**Project Leader(s):** Jeff Robertson

**Performance Period:** 01/2015 – 12/2015

**Description:** To maintain ongoing linkages with the following data sources: EMS, Trauma, Crash, Emergency Department, Hospital Discharge, Stroke and RACE. Maintain and continue creation of an online reporting system that includes reports of the linked data. Currently, these are developed on an as-needed basis. Create security levels for various stakeholders, including the NC TRCC members.

NOTE #1: EMSPIC does not maintain current linkages with RACE at this time.

NOTE #2: We also download and link against the AOC database every night to crosscheck EMS personnel (with existing certifications or seeking new certifications) against known violations.

NOTE #3: We do not have current crash data or Hospital Discharge data. Once received and loaded we will update the status for their associated linkages.

**Performance Areas:** Accuracy, Completeness, Timeliness

**Performance Measures:**

- Maintain Linkages when available for EMS to: 1) Trauma Registry, 2) Crash, 3) 24-hour Emergency Department, 4) Stroke Registry, 5) EMS to EMS, 6) AOC, 7) Hospital Discharge.
- Maintain ability to provide linkages as requested and approved by Offices of EMS and associated linkage data providers.
- For each category above, attempt to achieve a linkage percentage  $\geq 40\%$  for linkable records, and  $\geq 10\%$  for 24ED visits. Linkable records are those having all fields completed facilitating a linkage attempt for that record.

**Status:** EMS maintains linkages to Trauma (On demand), Crash (Yearly), 24-hour ED (Daily), Stroke Registry (Daily), Hospital Discharge (Quarterly), EMSToEMS (Daily), AOC (Daily). All linkages mentioned are current except for Hospital Discharge.



EMSPIC serves a significant number of research requests that include linkages, from independent researchers (both non-profit and for profit), internal EMS state offices and agencies, educational institutions, and grant funders. We have not tracked historical counts in these categories.

EMS-to-Trauma Registry (56% linkage with EMS on average): Note that the NC Trauma Registry began transitioning to a new software version of the Trauma Registry developed by Digital Innovation, Inc. in 2013. We are building a completely new linkage process to run against both version 4 and version 5 of the Trauma Registry together. At present we have a 1) 51.5% linkage between EMS and version 4 Trauma Registry records, 1) 61.4% linkage between EMS and version 5 Trauma Registry records.

EMS-to-Crash (46.3% linkage with EMS in 2011): Year 2012-2015 crash data has just been obtained by the EMSPIC, and linkage results are not yet available at this time.

EMS-to-24HourED (14.4% linkage with EMS): We typically expect about 10% of all ED visits to arrive by EMS transport (due to very high number of walk-ins). In 2015 we had a 14% linkage.

EMS-to-Stroke Registry (53.1% linkage with EMS in 2014): The EMSPIC wrote and maintains the Stroke Registry application for NC. 83.1% linkage with EMS in 2015.

EMS-to-EMS: We have not determined an accurate way to measure the success of EMS-to-EMS linkages at this time. We will update this once we determine a metric.

AOC-to-EMS: We do not have an accurate way to measure the success of linkages between AOC (Office of the Courts) and EMS. This is because not all EMS folks will be found in the AOC database.

Hospital Discharge: We just obtained historical Hospital Discharge data, no report on status for this item until it is loaded and linked.

**For more information, contact:** Jeff Robertson, 919-843-0201, [jrobertson@emspic.org](mailto:jrobertson@emspic.org)

## **8.) Ignition Interlock Management System**

**Agency(ies):** NCDOT

**Project Leader(s):** Ken Bagnal

**Performance Period:** 10/1/2014 – 09/30/2016

**Description:** The primary objective of the project is to automate the receipt and processing of data from the ignition interlock vendors. The current system involves labor intensive, manual processes. Data is manually entered into SADLS and Excel with paper copies being filed and transferred to Field Hearing Officers when required. This project will provide an alternative solution which will eliminate or significantly reduce the manual processing and paper handling currently being undertaken.

- Functional Requirements – Efficient, secure access for DMV Ignition Interlock Hearings and Driver License staff to the submitted data; provide standard reporting on

participant compliance with ad hoc reporting capabilities; secure access for vendors to validate installation information.

- Process Improvements – To provide a solution in which data can be imported and analyzed to automatically update participant records; to streamline the manual review of device logs for violations and errors; 25% reduction in the number of man hours required to manage and evaluate participant data; to standardize format of the data submitted to DMV.
- Operational Objectives - To increase the efficiency and accuracy of the data through automation, resulting in a 20% improvement in audit capabilities for participant compliance.
- Business Goals – To reduce consumable usage by 75% (currently 100 or more cases of paper per year, 25 or more toners per year); to provide the capacity to manage additional vendors; to provide the capacity to manage additional Ignition Interlock program participants without adding additional staff.

**Performance Areas:** Accuracy, Completeness, Integration, Timeliness, Uniformity, Accessibility

**Performance Measures:**

- Accuracy: In the As-is state, all data is manually entered into the SADLS database. In doing so, there is strong possibility of errors that cause re-work and waste in time and efficiencies. To-be state leverages Web Services to automatically take data directly from the vendors and load the data directly into SADLS without human intervention. Humans are only involved in the case of errors or a decision around violations must be handled.
- Integration: Leveraging Web Services through BizTalk simplifies transactional information from vendors directly with the SADLS database; thus, eliminating the need for human data entry of installations, de-installations, changeover vehicles or changeover devices for Ignition Interlock Devices.
- Uniformity: Currently, the three vendors submit information in different formats that are not consistent; however, leveraging the new system will require the vendors to submit data in a consistent and uniform manner that will prevent re-work and data failure. Should automated validation detect an error in the submitted data, the vendor is immediately notified and corrective action can be taken by the vendor.
- Completeness: Using BizTalk, all data is validated and confirmed automatically by comparing information with the SADLS database. If any data is not complete, the vendor is notified and requested to provide the required information. If the data is erroneous, and IIMS employee is notified to take action to resolve the error(s).
- Timeliness: In the non-automated state, most vendors submit a report every 30 days; however, due to the current manual nature of data entry, it can take anywhere from 60 to 120 or more days to take action on a violation. In the new state, timeliness can be tracked automatically from the time a violation occurs and the time the Field Hearing officer takes action as all interactions are captured by the IIMS system. Time can be tracked from data arrival to action. Case loads can be measured as well as accuracy of data. Even appeals can be tracked as needed.



- **Accessibility:** In the current state, all information is managed using a paper intensive process where files are scanned and attached to data in SADLS. So accessibility is time limited based on the speed at which information can be manually entered into the system. In the automated environment being produced. Information is automated transmitted and pushed into the SADLS database. Violations are automatically routed to the appropriate Field Hearing Officer for action based on business rules handled by In-Rule, the rules engine chosen for this project. Using this method, only the appropriate Field Hearing Officer is engaged; however, should the appropriate Field Hearing Officer not be available, a supervisor can reassign the violation to a substitute.

**Status:** The project has re-planned and slotted for delivery no later than September 30<sup>th</sup>, 2016. At present the project is Green trending Green with a potential better than expected release date. A number of last minute changes during the Execution and Build phase were introduced; however, there is little or no impact to schedule or budget. This is being achieved via iterative development that was started in February 2016 when a new Project manager was assigned.

IIMS is currently in the Integration environment and testing has begun. Anticipated entry into QC is July 6<sup>th</sup>, 2016. The possibility of moving into the production environment early is a real possibility. This will enable comparative analysis prior to a go-live date of September 30<sup>th</sup>, 2016.

**Sponsoring Agency 1:** NTSA (\$885,920)

**Sponsoring Agency 2:** NCDOT (\$422,169)

**Total Budget:** \$1,308,089

**For more information, contact:** Jackie S. Mitchell, 919-861-3557, [jsmitchell@ncdot.gov](mailto:jsmitchell@ncdot.gov)

### **9.) Motor Vehicle Crash Injuries in Wake County, NC: Exploring available data sources and potential data linkages**

**Number(s):** TR-16-07-02

**Agency(ies):** Carolina Center for Health Informatics and the UNC Injury Prevention Research Center

**Project Leader(s):** Anna Waller

**Performance Period:** 10/01/15 – 09/30/16

**Description:** This project will describe motor vehicle traffic crash (MVTC) injury in Wake County during calendar year 2013 using several different data sources. We obtained crash data from crash reports, emergency departments (EDs), and emergency medical services (EMS). In year one, we described the picture of MVTC injury presented from each data source separately. Additionally, we linked EMS and crash report data in year one. In year two, we are using deterministic linkage methods to link all three MVTC data sources.

The goals and objectives that are relevant to Year Two are below:

1. Develop detailed plan of data linkage process for each recommended linkage.
2. Based on Year 1 recommendations, attempt data linkage between data sets.
3. After attempting data linkage between various data sources, following Year 1 recommendations, prepare brief reports on each attempt.

**Performance Areas:** Completeness, Timeliness

**Performance Measures:** We are required to submit quarterly progress reports to GHSP updating them on our progress of completing our quarterly goals. If we are unable to meet one of the goals for that quarter, we are required to list the reasoning for why we have failed to complete one of the pre-assigned goals.

**Status:** We are working on linking the three MVC data sources: crash reports, EMS data, and ED data. We are using exact deterministic methods to link the data sources on the following variables: event date, event time, patient gender, patient date of birth. Currently, we linked the crash report and EMS data and the ED data to the matched crash report-EMS data. Next, we are going to attempt to link the crash report data to the ED data.

We are also working on developing a manuscript to submit to the NC Medical Journal describing the impact MVC case definition has on MVC injury surveillance when using ED data.

Below is a summary of the linkage results:

- We were able to successfully link 62% of the EMS records for motor vehicle crash injury to crash reports.
  - o Matched records had 91% agreement on patient race and 97% agreement on patient transfer when we compared crash reports and EMS data.
  - o At first we attempted to use age vs. date of birth to link the data; however this resulted in duplicated records since multiple people the same age and gender were often involved in a crash. Using exact date of birth was important for linkage.
  - o We tried alternating the time window of the event linkage and found that a 30 minute window provided the best yield without limiting the data quality.
- We were able to successfully link 32% of the ED visits for motor vehicle crash injury to the matched crash report-EMS data when using a subset of the ED data that was most likely to match (e.g. patients that arrived to the ED via EMS transport or with transportation mode to the hospital missing.)

When we expanded the linkage to all ED visits for motor vehicle crash injury regardless of transport mode to the hospital we were only able to link 17% of ED visits to the crash-report-EMS linked data.

**Sponsoring Agency:** NC GHSP

**Total Budget:** \$136,474

**For more information, contact:** Anna Waller or Jennifer Jones, 919- 843-2361 or 678-793-7141  
[anna\\_waller@med.unc.edu](mailto:anna_waller@med.unc.edu) or [jjones86@live.unc.edu](mailto:jjones86@live.unc.edu)

### **10.) NC Traffic Safety Information Systems Strategic Plan Update**

**Number(s):** TR-17-07-03

**Agency(ies):** UNC HSRC

**Project Leader(s):** David Harkey

**Performance Period:** 10/01/2016 – 09/30/2017

**Description:** The North Carolina Strategic Plan for Traffic Safety Information Systems is currently being updated for 2017. The plan documents the roles of the Executive Committee for Highway Safety and the Traffic Records Coordinating Committee (TRCC); provides strategic direction for improving transportation data systems in the state; provides progress reports on ongoing safety data projects; and includes status information about the various traffic records systems in North Carolina. Included in the plan is a mission statement for the TRCC, which reads as follows:

“Provide the leadership to establish and maintain a level of coordination, communication and cooperation between agencies and stakeholders to maximize utilization and improve functionality, data accuracy, timeliness and linkages, and to advance electronic data collection, protect privacy, minimize redundancies in traffic records systems and better accomplish individual agencies’ goals.”

The objective of this project is to update the 2016 North Carolina Strategic Plan for Traffic Safety Information Systems. The plan will be updated in consultation with the Governor’s Highway Safety Program and will be completed in time for submission of the plan with the 2018 grant application for Section 405(c) funds from the National Highway Traffic Safety Administration. The vision, mission, goals and objectives in the current plan will serve as a starting point for updating strategic goals and objectives to be carried out by the committee and the agencies working on projects related to the mission of the TRCC. Performance measures will be established for each objective that will serve as a means of establishing baselines and assessing progress.

Specific tasks required to complete this task include:

a) Review of Existing Materials – Several documents will be reviewed to provide input to the plan. Examples include:

- 2016 Plan; important to use a benchmark for progress.
- 2017 Traffic Records Assessment.
- Sample Plans from NHTSA/FHWA.
- Final Report on Revision of the DMV349 Police Accident Report.
- Documentation on the NC Spatial System for Roadway Inventory.
- NC GHSP FY17 Highway Safety Plan.
- FHWA Roadway Data Capabilities Assessment (2012)
- Traffic Records Improvement Program Reporting System (TRIPRS) input

b) Acquire Input from TRCC Membership – The TRCC members will be solicited to provide input to the update of the strategic plan and to review the plan before submission to GHSP. Members will be asked to participate in at least one (and possibly two) strategic planning sessions. These sessions will be used to update goals and objectives for NC traffic records for the next 5 years. Members will also be asked to update progress on projects that have been initiated since the last plan and to develop scoping statements for possible projects in the future. Finally, the strategic planning sessions will be used to address other aspects of the plan or TRCC operations, such as prioritization of projects, decision-making authority, and other operating principles that

are required to be included in the plan. The sessions will be conducted in the winter and spring of 2017.

**Performance Areas:**

**Performance Measures:** The draft strategic plan will be developed using the input from the TRCC membership planning sessions and the review of the existing materials. A draft plan will be developed by the end of May, 2017, and delivered to GHSP and the TRCC members for review. The final plan will be submitted at the end of June, 2017, and will incorporate the recommended changes. These dates may have to be adjusted to meet any deadlines established by NHTSA for delivery of final plans and reports.

**Status:** In progress and will continue.

**Sponsoring Agency:** GHSP (\$72,573)

**Total budget:** \$72,573

**For more information, contact:** Frank Hackney, 919-814-3659, [fhackney@ncdot.gov](mailto:fhackney@ncdot.gov)

### **11.) Quick Response System**

**Number(s):** TR-17-07-02

**Agency(ies):** UNC HSRC

**Project Leader(s):** Eric Rodgman

**Performance Period:** 10/01/2016 – 09/30/2017

**Description:** GHSP, NC Law Enforcement agents, and citizens of the state of North Carolina continue to request the most up-to-date and accurate data and information on a wide variety of motor vehicle safety issues using the NC DMV 349 Crash Report data, the NC AOC DWI Conviction Summary Report data, the NC driver license record data, and the NC vehicle registration data. The information varies from summary counts of young drivers (ages 15-19) in crashes in a selected county to the number of DWI convictions in a county for all drivers in a particular year. For years HSRC has provided personnel resources and time to help GHSP be responsive to the citizens of the state. The number of calls and requests has stayed about the same for each of the last several years. There are typically about 100 calls / contacts per year about crashes, various vehicle types, and the ethnicity and injury to persons involved in crashes. These usually involve calls where the information and/or summary counts are defined for the time period (e.g., 1-3 years), the location (e.g., the entire state, a specific county or city), and the summary counts of interest (e.g., counts of all reportable crashes, the number of pedestrians, the number of underage drinking aged drivers ages 15-20 driving passenger vehicles). Once a request has been specified, HSRC provides the data analyst/data management skills to write the query and then run the query on the NC DOT Oracle crash data at HSRC to summarize the data as requested. The data is checked and sent out in the form requested by the user (mostly as an email attachment, but sometimes as a fax document, or, in rare instances, printed and sent via US Mail).

An average request takes about 1-3 hours if it requires running a data query and formatting it for the user. Some Safe Community city and/or county health and safety advocates, many law enforcement officers and high school safety resource officers, special groups such as El Pueblo and El Centro, local concerned citizens, and numerous radio, TV, and print media representatives make up the typical callers requesting special information or statistics on crash data to better understand a local safety issue or problem. They frequently ask for the latest and most up-to-date data available.

The data from the NC DMV 349 Crash Report has been collected in basically the same format since the beginning of the year 2000. Many needed changes have already been identified through the Data Mapping Project and through numerous queries of the data by HSRC staff. Even today, there is still a lot of interest in those passengers in vehicles who died in crashes, but were not wearing their seat belt. Local and state safety advocates are still trying different methods to raise the belt usage among those who typically do not wear them.

HSRC still does not have direct access to the NC DOT Oracle crash data system. HSRC is waiting on the copy of the latest, updated NC Crash Data for 2014 from NC DMV. HSRC will use these data to continue to provide crash data updates to those making requests. HSRC has worked with NC DOT TEB through the Crash Data computer listserv and through the NC Traffic Records Coordinating Committee (TRCC) meetings. HSRC will continue to provide the necessary database analyst and traffic safety consulting support to address and to support the needs of North Carolina citizens.

**Performance Areas:** Accessibility

**Performance Measures:** HSRC proposes continuing to provide these quick response resources. This includes information stored at HSRC in the form of available data (selected and formatted on request usually by county or city), published material on specific topics and safety information, and up-to-date information on important personal contacts, computer web sites, and agencies which can usually help. As in the last several years, HSRC plans to dedicate the necessary database analyst and traffic safety consulting support to address all the needs of our North Carolina citizens.

**Status:** Ongoing.

**Sponsoring Agency:** GHSP (\$24,687)

**Total budget:** \$24,687

**For more information, contact:** Frank Hackney, 919-814-3659, [fhackney@ncdot.gov](mailto:fhackney@ncdot.gov)

### **12.) Traffic Records**

**Number(s):** TR-17-07-01

**Agency(ies):** NCGHSP

**Project Leader(s):** Frank Hackney

**Performance Period:** 10/01/2016 – 09/30/2017

**Description:** This is an ongoing project to provide partial funding for the state Traffic Records Coordinator position. This position will act as the liaison to the TRCC and other state agencies as well as stakeholders in NC, other states and NHTSA

**Performance Areas:** Accuracy, Integration, Uniformity, Completeness, Timeliness, Accessibility

**Performance Measures:** Increase percentage of citations versus paper citations.

**Status:** Ongoing.

**Sponsoring Agency:** GHSP (\$119,800)

**Total budget:** \$119,800

**For more information, contact:** Frank Hackney, 919-814-3659, [fhackney@ncdot.gov](mailto:fhackney@ncdot.gov)

### **13.) Truck Crash Geocoding**

**Agency(ies):** ITRC/NCSU

**Project Leader(s):** Greg Ferrara/Burke Foley

**Performance Period:** 2001-present

**Description:** ITRE, in partnership with the Motor Carrier Enforcement (MCE) section of the North Carolina State Highway Patrol, have been developing a geospatial database of truck crashes in North Carolina since 2001. Approximately 98 percent of all commercial motor vehicle (CMV) crashes have been geo-located. This project is part of an NCSHP-sponsored technical assistance program in support of FMCSA's Motor Carrier Safety Assistance Program. The intent is to provide accessibility to truck crash locations for enforcement personnel to help increase enforcement effectiveness.

**Performance Areas:** Accessibility

**Performance Measures:** MCE planning staff are provided access to CMV crash locations through an online application called COVERLAB Analytics. Accessibility is measured with page hits and site login frequencies.

**Sponsoring Agency:** NCHSP

**Status:** This project is being continuously updated annually, and dependent on sponsorship funding. Currently, the holdings are from 2001-2015, with 2016 in progress.

**Traffic Records Coordinating Committee Certification**

The following NC TRCC members have electronically certified this document:

<b>Name</b>	<b>Agency</b>	<b>Email Address</b>
Brian Mayhew	NCDOT, Traffic Safety Unit	bmayhew@ncdot.gov
Eric Rodgman	UNC HSRC	rodgman@hsrc.unc.edu
Eric Bellamy	NCDMV	edbellamy@ncsu.edu
Cynthia Blackwell	NCAOC	cynthia.g.blackwell@nccourts.org
Alan Dellapenna	NCDPH, Injury/Violence Prev.	alan.dellapenna@dhhs.nc.gov
Greg Ferrara	ITRE	gpferrar@ncsu.edu
Frank Hackney	NC GHSP	fhackney@ncdot.gov
Brian Murphy	NC DOT Safety Planning Group	bgmurphy@ncdot.gov
Eric Schaberg	NCSHP	eric.schaberg@ncshp.org
Vish Tharuvesanchi	DOT-IT	vtharuvesanchi@ncdot.gov
Anna Waller	UNC Dept of Emergency Med., CCHI	anna_waller@med.unc.edu

**Model Minimum Uniform Crash Criteria**

The TRCC recognizes the Model Minimum Uniform Crash Criteria (MMUCC) and recommends continuing adherence and implementation of standardized data elements to promote comparability of data within the highway safety community. The use of standardized data elements provides the necessary foundation for North Carolina's crash data system.

The crash report form (DMV-349) was last revised in the year 2000 and has been in use since January 1, 2000. The form was revised in a collaborative effort involving numerous agencies, law enforcement, research interests, medical outcome interests, as well as outside input from MMUCC expert panel members, and others. In 2010, the form was reviewed and decisions were made regarding updating form elements and attributes. However, due to the State fiscal crisis, the effort to implement these changes was postponed.

Plans are to update and modify the North Carolina crash report form in the future when funding is available to revise the form and associated databases and IT systems. When this is initiated, effort will be made to increase compliance on the crash report form and in the data dictionaries. The goal would be to adopt the MMUCC elements and attribute recommendations as much as possible and document the reasoning for any deviations from MMUCC. The current 96% compliance on the crash report form demonstrates this intent.

A summary of N.C.'s MMUCC compliance can be found in the table below.

**N.C.'s MMUCC Compliance can be summarized as follows:**

The State of North Carolina certifies that it will undertake projects as part of the Traffic Safety Information System Improvement Program which will endeavor to collect the missing data elements and attributes as soon as practical. The North Carolina TRCC will review the 2016 MMUCC Guideline (5<sup>th</sup> Edition) which has been released.



**National EMS Information System NEMSIS**

North Carolina's emergency medical data system is the PreHospital Medical Information System (PreMIS). PreMIS is technically located within the North Carolina Office of EMS, but it is administered through the University of North Carolina, Department of Emergency Medicine, EMS Performance Improvement Center in Chapel Hill. North Carolina has been one of the founding states involved with the NEMSIS and Greg Mears, MD was the principal investigator for NEMSIS for NHTSA's Office of Emergency Medical Services.

N.C. is one of the initial five states to begin submitting data into the National EMS Database. North Carolina collects all of the NEMSIS "national elements" with the exception of the two outcome data elements, Emergency Department Disposition and Hospital Disposition. The information required for these two data elements is not known at the time of an EMS event and therefore is not currently collected by EMS Systems across the state. Linkage has been done with hospital, trauma registry and plans for linking the medical examiner data sources to obtain the required information for these two elements. These two data elements would also be extremely valuable to highway safety as well as traffic records, which could be linked to EMS records containing this outcome information. It is a goal of the TRCC to obtain funding to work on this linkage.

A summary of N.C.'s NEMSIS compliance can be found in the table below.

**N.C.'s NEMSIS Compliance can be summarized as follows:**

- The State of North Carolina **does** maintain a state EMS pre-hospital database.
- The database currently collects all of the national data elements with the exception of the outcome data elements, E22\_01 (Emergency Department Disposition) and E22\_02 (Hospital Disposition) currently defined in NEMSIS.
- The system currently collects data per the NEMSIS standard from all 100 EMS Systems within N.C.
- The state of North Carolina certifies that it currently **is** capable of exporting data to the NHTSA EMS data repository.
- The State of North Carolina certifies that it will undertake project as part of the State Traffic Safety Information System Improvement Program which will establish a NEMSIS compliant, state EMS pre-hospital database to collect the missing national data elements and attributes; and to be able to export data to the NHTSA EMS data repository as soon as practical.

## Appendix E – MMUCC, NEMESIS, MIRE

### **Model Inventory of Roadway Elements (MIRE)**

The North Carolina Department of Transportation has reviewed the MIRE, 1<sup>st</sup> Edition, data elements as well as the Fundamental Data Elements (a subset of MIRE). Both of these documents were produced by the FHWA. MIRE includes 202 unique data elements and the FDE includes 38 data elements that are included in a number of safety analysis tools and seen as critical for safety analysis.

In 2011, North Carolina began integrating their roadway inventory data into a geographic information system (GIS). The result of this migration was the ability to assess the quality of the roadway inventory data throughout the almost 80,000 miles of roads in the network. The short-term strategy for the department is to enhance the quality of the data that currently exist and fill gaps in the inventory by completing missing information for elements that already exist.

NCDOT has completed a gap assessment of the MIRE fundamental data elements (completed in 2016). The largest gaps currently exist for intersection elements. NCDOT has recently partnered with a consultant on a pilot project to collect intersection characteristic data at 3,000 rural intersections in the State. The knowledge gathered from this project will help to inform future efforts by the Department to collect more MIRE elements.