NORTH CAROLINA
Traffic Safety Information Systems

STRATEGIC PLAN

2018

Developed by the
UNC Highway Safety Research Center
in collaboration with the
NC Traffic Records Coordinating Committee

Asheville, North Carolina

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Commonly Used Abbreviations

AASHTO – American Association of State Highway and Transportation Officials

ACIS – Automated Criminal Infraction System

CSC – Clerk of Superior Court

EMSPIC – Emergency Medical Services Performance Improvement Center

FARS – Fatality Analysis Reporting System

FHWA – Federal Highway Administration

HSRC – Highway Safety Research Center

IPRC – Injury Prevention Research Center

ITRE – Institute for Transportation Research and Education

IVPB – Injury and Violence Prevention Branch

LEA – Law Enforcement Agencies

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

NCDMV – 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 Caroline State Highway Patrol

NHTSA – National Highway Traffic System Administration

PI – Principal Investigator

PreMIS – Prehospital Medical Information System

SADLS – State Automated Driver License System

SHSP – Strategic Highway Safety Plan

Commonly Used Abbreviations

STARS – State Titling and Registration System

TEAAS – Traffic Engineering Accident Analysis System

TRCS – Traffic Records Communication System

TraCS – Traffic and Criminal Software

TR – Traffic Records

UNC – University of North Carolina

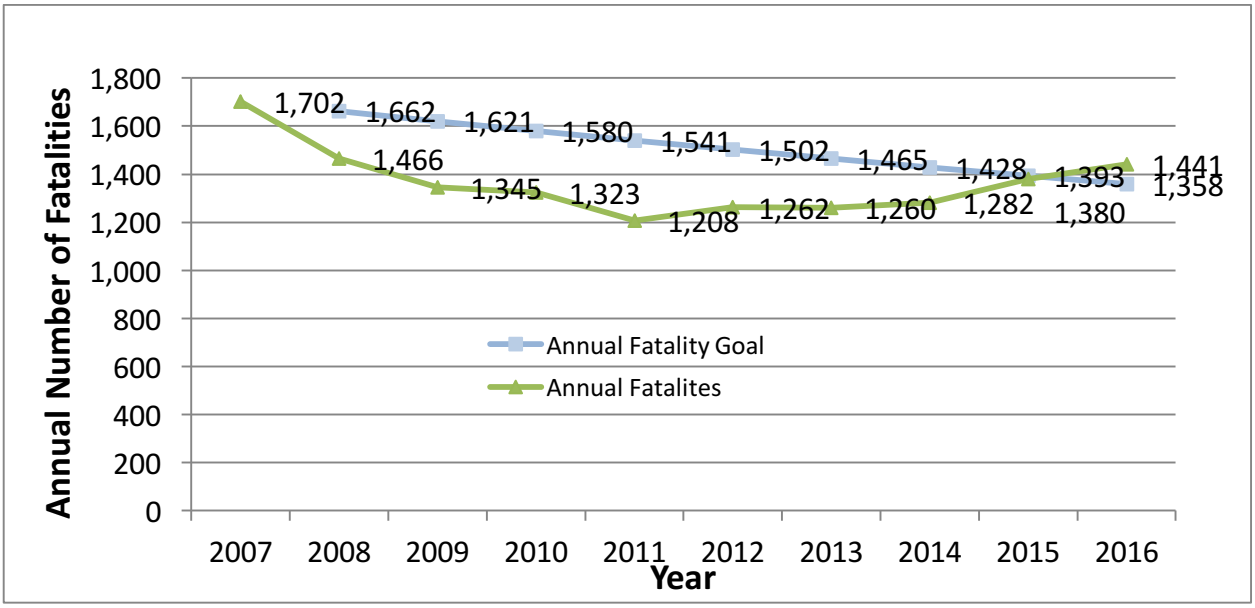
Introduction

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 2016, there were 267,525 reported crashes on public roads that resulted in 1,441 people killed and 130,137 injured (data note: A Level Injuries in NC went up beginning in September 2016 because the definition changed at the recommendation of NHTSA, National Highway Traffic System Administration). The economic impact of these crashes is costly, resulting in an estimated annual loss of $25.65 billion to the economy of North Carolina annually (based on a three-year average as noted in the 2016 NC Traffic Crash Facts Report on page 38).

In 2016, the North Carolina Department of Transportation (NCDOT) updated the state's Strategic Highway Safety Plan (SHSP) 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 and the total serious injuries by 1,055 before 2030. Progress toward this goal will be tracked on the NC SHSP online dashboard, http://ncshsp.org/progress.

Previous efforts by the NCDOT to reduce fatalities by 2.5 percent per year from 2007 onward have been mostly successful until the last two years. As shown in the chart below, the state is starting to fall behind ending with 2016.



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 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 Traffic Records (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 Official's (AASHTO) 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 NCDOT 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
- Alan Dellapenna, NCDPH, Injury and Violence Prevention Branch
- Adam Fischer, Transportation Director, City of Greensboro
- Daniel Carter, Interim Director, UNC HSRC
- W. A. "Tony" Hayes, President and Chief Executive Officer, Transformative Ideas Calculated Success
- Tim M. Little, Chief Engineer, NCDOT
- Chris Lukasina, President of the NC Association of Metropolitan Planning Organizations
- Johanna I. Cockburn, Director, NCDOT Bicycle and Pedestrian Division
- Torre Jessup, Commissioner, NC DMV
- 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
- Mark Ezzell, 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
- Nancy Lefler (NC TRCC – TR Strategic Plan PI), UNC HSRC
- Alan Dellapenna, NCDPH, Injury and Violence Prevention Branch
- Greg Ferrara, ITRE
- Cindy Blackwell, NC AOC
- Bob Stevens (State Traffic Records Coordinator), NC GHSP

- Brian Murphy, NC DOT Safety Planning Group
- Reba Calvert, NC DMV (Vehicle)
- Genia Newkirk, NC DMV (Driver)
- Jeff Robertson, EMSPIC
- Eric Schaberg, NCSHP
- Vish Tharuvesanchi, NCDOT-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 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. The current representative is Bob Stevens from NC GHSP who has replaced the previous Coordinator, Frank Hackney, who retired in April 2018.

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Email: bkstevens3@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 (NCDMV)
- 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 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, including NCDOT, the State Bureau of Investigation (SBI), and the Department of Public Safety (DPS).

All reportable traffic offenses are transmitted nightly to NCDMV. Charges and convictions for all serious misdemeanor and felony offenses (including death by motor vehicle) are reported nightly to the SBI 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 NCDMV.

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 NCDMV 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 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 Law Enforcement Agencies (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 ACIS and 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 NCDMV: This interface automatically prefills demographic and vehicle data using the driver's license or vehicle plate number.

Enhancement of the existing system is currently underway. Upon release, law enforcement officers will have the ability to efficiently transition from the cite-and-release process in eCitation to the arrest process through an electronic interface between eCitation and NCAWARE, the North Carolina Warrant Repository system.

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 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 NCDMV. 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, payNCticket can potentially allow for a ticket to be paid and disposed within minutes after it was issued.

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

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

Online Request for Reduction of Speeding

Online request for reduction of speeding is the latest addition to the suite of online services offered by the NCAOC as part of eCourts, the larger initiative to modernize the North Carolina court system. The service provides a fast, convenient means of requesting reduction for speeding offenses online and potentially avoiding a trip to court. Currently, the service is limited to two speeding offenses and subject to eligibility requirements. The primary eligibility requirements to request a reduction online include:

- Defendant must be 18 years of age or older and have a valid NC driver license.
- Driver license must not be a commercial driver license (CDL).
- Arraigned/charged speed must be between 10 and 19 miles over the posted limit.
- Arraigned/charged speed must not exceed 80 mph.
- If citation has a second offense (apart from speeding) the offense must be a driver license, registration, or inspection offense for which the defendant has complied with the NCDMV, or a driving without insurance offense, for which the defendant must upload an image of a valid DL-123 or FS-1 through online services as a proof of compliance.

Online requests must be submitted at least seven business before the assigned court date. If the district attorney offers a reduction, the requestor will receive an email confirming what offense the district attorney is offering to reduce to, along with the cost associated with that offense. Online reduction offers are limited to nine miles over the posted limit or improper equipment, in the district attorney's discretion. If the reduction offer is accepted, the defendant must pay the cost online through NC courts' Online Services page by 5:00 p.m. the day before the assigned court date or the offer will be vacated.

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 (CCHI) in the University of North Carolina (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 Prehospital Medical Information System (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 North Carolina Division of Public Health (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 Fatality Analysis Reporting System (FARS).

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 NCSHP 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 MCE section of the 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 GHSP 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 (GIS)
The main objectives of the NCDOT 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 NCDOT 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 still in a period of transition and restructuring, NCDOT has recommended and the NC TRCC has agreed to wait until next year to update the NC TR Strategic Plan for 2019 to accurately describe and summarize the NCDOT GIS group.

Traffic Engineering Accident Analysis System (TEAAS)
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 NCDMV. 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 (NCSA) of the NHTSA 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 NCDMV 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 NCDMV 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 NCDMV Traffic Records Communication System (TRCS) application or NCDMV 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 NCDMV 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 NCDMV receives the report. Crash data that must be manually entered from the DMV-349 form are usually available within 30 days after the NCDMV 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 NCDMV 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 (TraCS)
The North Carolina TraCS is the NCDMV's implementation of the national model of the TraCS package. TraCS enables law enforcement officers to record and retrieve incident information from the field wherever and whenever an incident occurs. The NCDMV TraCS is an enhancement of the current CRS that enables NCDMV to receive and process crash reports electronically.

NC TraCS and NCDMV 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 NCDMV maintains the 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 STARS is a database maintained by the NCDMV 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; historical information on 2,900,000 cancelled titles; and 25,800,000 previous years' registrations. 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 NCDMV 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). The crash must result in at least one of the following: a fatality, an injury or involve a towed vehicle. In addition, a crash must also meet the following criteria to be sent to SAFETYNET:

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 UNC-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 NCOEMS 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 NCOEMS maintains the North Carolina Trauma Registry through a contract with UNC-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.

2018 Strategic Plan

Overview

In 2018, the NC TRCC began the process of updating the 2017 Strategic Plan. The UNC Highway Safety Research Center (HSRC) 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
- NCDMV
- 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, 2017.* 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 in this current form, first developed in 2010, 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.*

Objective	*Performance Measure/Target*	*4/1/16-3/31/17**	*4/1/17-3/31/18**
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.	Discuss DMV membership with current DMV representative to determine if additional expertise is needed on TRCC committee.	Ongoing. Annual review has been conducted. Seeking additional members as gaps identified.
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. *(Note: Schedule for the approved protocol will need to align with the GHSP proposal process.)*	Ongoing (related to measure below)	Ongoing. Formal project identification form has been created.

Objective	*Performance Measure/Target*	*4/1/16-3/31/17**	*4/1/17-3/31/18**
	A set of guidelines created for use in identifying and prioritizing projects.	Ongoing. Plans for the October 2017 TRCC include reviewing this item.	Ongoing. Process will be finalized at the next TRCC meeting
	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.	Ongoing (will be done following the guideline development noted above)	Ongoing
Monitor and measure progress on existing goals and objectives.	Annual update of TRCC Strategic Plan.	Completed	Completed
	Periodic review of ongoing projects, focusing on progress toward meeting performance measures outlined in the strategic plan.	Completed	Completed
	Feedback to NC ECHS to report on progress made and new strategies proposed by the TRCC.	As needed for specific purposes or when requested (will ask to be on agenda for fall 2017 meeting)	Updates provided at quarterly NC ECHS meetings.
	Review NHTSA recommendations for TRCC activities to align our goals with the assessment document focus questions.	2017 assessment (received mid-May 2017) being reviewed by all stakeholders to find future opportunities for information systems improvements.	Ongoing
Identify gaps in the current traffic records systems and explore new solutions.	Establishment and revision of goals and objectives as part of development of the next strategic plan. (*Note: Explore external funding opportunities. Examples*	Completed (May 2017)	Completed (June 2018)

Objective	*Performance Measure/Target*	*4/1/16-3/31/17**	*4/1/17-3/31/18**
	include: 405C, NC ECHS, FHWA, NHTSA, CDC).		
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, pending availability of resources.	Future effort, pending availability of resources. Collecting lat/long information for severe injury crashes from ITRE.
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.	Held stakeholders meeting in April 2017. Project moving forward with the NHTSA GoTeam effort. TRCC members plan to attend the Traffic Records Forum in New Orleans in August 2017, present on activities in NC.	Ongoing. Presentations were made in 2017 and will be made in 2018 at the Traffic Records forum. Several TRCC members attended the 2017 Traffic Records forum and plan to attend 2018. Division of Public Health collaborated with CDC Injury Center sharing traffic records with health data. Ongoing NHTSA GoTeam effort to improve injury surveillance data system. Peer exchange in Louisiana related to state safety data systems (specifically

Objective	*Performance Measure/Target*	*4/1/16-3/31/17**	*4/1/17-3/31/18**
			regarding roadway system).
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.	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 NHTSA GoTeam effort to improve injury surveillance data system. Peer exchange in Louisiana related to state safety data systems (specifically regarding roadway system).
	Review of promising strategies from other states, or items shared w/ other states, and sharing back with group.	Ongoing	Evaluating other state's electronic crash reporting methodologies (Possible XML based pdf form).
	Monitor USDOT/other state's TRCCs for ideas for consideration.	Ongoing	Continued involvement and attendance at Traffic Records Forum in New Orleans (August 2017). NC is a HSIS state and has an annual peer exchange on traffic record topics.
Ensure that state highway safety plans include traffic safety information systems as a major component.	Review of NC State Highway Safety Plan (SHSP).	2016 plans were completed and submitted.	Next update will be in 2019.
	Review of Highway Safety Improvement Plan (HSIP).	Completed (2016)	HSIP 2017 plans were completed and submitted.

Objective	*Performance Measure/Target*	*4/1/16-3/31/17**	*4/1/17-3/31/18**
	Review of NC Highway Safety Plan (HSP).	Completed (2017)	Completed (HSP 2018).
Expand performance measures for remaining Core Data Systems.	Performance measures for vehicle, driver, roadway, and injury surveillance.	Ongoing	Future effort

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.

Objective	*Performance Measure/Target*	*4/1/16-3/31/17**	*4/1/17-3/31/18**
Continue to enhance and expand electronic crash reporting by all enforcement agencies in the State.	Number or percentage of law enforcement agencies submitting to the electronic crash reporting system (minimum of 50% electronic submissions).	23.33%	25.81%
	Number or percentage of reported crashes submitted via the electronic crash reporting system.	72.67%	74.30%
	Integration and use of additional features or options for crash reporting. *(Example: geo-locating using an XML based pdf from.)*	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*	*4/1/16-3/31/17**	*4/1/17-3/31/18**
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.	Periodic meetings with third-party vendors to share business rules and communicate changes. Periodic review and validation of third-party vendors' compliance capabilities. Initial review and validation for new third-party vendors.	Biweekly meeting conducted by NCDMV. Initial tests by NCDMV, but no period review yet. Currently 4 vendors in place (0 new vendors in progress).	Continuing biweekly meetings. Currently 4 vendors in place (1 new vendor in progress).
Explore the feasibility of LEA-level metrics for improving crash reporting.	Feasibility study on the potential range and use of LEA-specific metrics. *(Note: Report on types of errors made and time period for reporting, compared to peers) Next: Review and see if it can be enhanced or built upon in the future/broadened to include quality.*	Published crash data submission performance and LEA-specific assessments in LEA newsletter as a means of providing peer agency performance results.	Ongoing
Continue to enhance the integration of crash data systems.	Continuing to correct CRS records on the basis of analysis of TEAAS data. Periodic review of the integration process between the traffic safety unit and DMV.	When error is identified. Monthly meetings to resolve any issues.	Ongoing Ongoing
Ensure that crash data continue to be submitted accurately and in a timely manner to the CRS.	Average lapsed time between the time of the crash and the time of the submission. Percentage of crash reports submitted within 10 days. (GS 20-166.1 indicates that a law enforcement agency who receives an accident report	27.56 days (print submissions) 4.01 days (electronic submissions) 68.60%	29.89 days (print submissions) 4.26 days (electronic submissions) 71.98%

Objective	*Performance Measure/Target*	*4/1/16-3/31/17**	*4/1/17-3/31/18**
	must forward it to the NCDMV within 10 days after receiving the report.)		
Ensure that crash data continue to be accurately recorded and reported to the CRS.	The percentage of rejected crash reports. (Note: no reports are accepted to the CRS until the errors in mandated data elements are corrected.) Periodic summary of crash report rejection reasons. Periodic review of business rules to target inaccurate fields.	3.66% (electronic submission only) Future effort to be revisited in conjunction with the development of the new crash system.	3.75% (electronic submission only) Periodic summary of rejections provided. Identify new business rules with new form design.
Ensure that crash data continues to be recorded as completely as possible.	Percentage of reports that have no missing critical data elements. *(Note: Must define critical elements; see notes under prior objective.)* Periodic review of business rules to address completeness. Feedback to LEAs with respect to their data quality. Year-to-year comparison of the number of reports received to review for possible missing data.	All critical data elements are required for electronically submitted reports by business rules. Ongoing Ongoing and covered in monthly meetings. Ongoing	Completed MMUCC 5 assessment of crash variables (February 2018). Ongoing Ongoing, bi-weekly calls. Ongoing
Ensure that crash data is recorded uniformly.	Percentage of data elements that are MMUCC compliant.	*Note: Personal injury variable definitions have been changed to NHTSA standards.	MMUCC Analysis was completed in 2018. MMUCC Mapping Score 67.7%

Objective	*Performance Measure/Target*	*4/1/16-3/31/17**	*4/1/17-3/31/18**
	Year-to-year comparison of reportable vs. non-reportable crashes by LEAs.	75.34% reportable 24.66% non-reportable	75.33% reportable 24.67% 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). *Note: Sanitized crash data set that can be supplied to outside users.	DMV is working with stakeholders as data needs arise. ITRE has received a snapshot of data back to 2000. UNC HSRC received a snapshot of data from 1991 – 1999 for a specific project they are working on. Still a future effort. Sanitized crash data has been completed.
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.)* Number of law enforcement officers who receive training, including a breakdown of standard and more extensive training. Review of the current Basic Law Enforcement Training.	Ongoing Trained 79 law enforcement train-the-trainer officers between April 1, 2016 and March 31, 2017. Currently being updated for North Carolina training and standards. Traffic	Ongoing Trained 109 law enforcement train-the-trainer officers between April 1, 2017 and March 31, 2018. Coming January 2019. Does not address electronic reporting.

Objective	*Performance Measure/Target*	*4/1/16-3/31/17**	*4/1/17-3/31/18**
		Crash rollout approximately 2018.	
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.	Review of the implications on the CRS database. Review of the implications on safety analysis and decision making. *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.*	Future effort (when new forms are developed that include data element/attribute changes) Future effort (same as above)	Future effort Future effort
Develop standards for reporting location information.	Publication of spatial location reporting standards available to third-party vendors for ECRS.	Ongoing	Ongoing
	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.	Meetings held in Fall 2017. Progress discussed. Do away with paper pads and move toward electronic crash collection.

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.

Objective	*Performance Measure/Target*	*4/1/16-3/31/17**	*4/1/17-3/31/18**
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. *(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.)*	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. *(Note: This is a low priority issue based on recent discussions with NHTSA and will be discussed at a later time.)*	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.	Decided not to do it.
Conduct demonstration projects to illustrate the feasibility and value of data integration.	Data Linkage Project and Repeat Offenders Project.	Ongoing	In progress

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.

Objective	*Performance Measure/Target*	*4/1/16-3/31/17**	*4/1/17-3/31/18**
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 completed, improving the stability and tracking of citation issuance to include passed/failed citation transmissions.	Based on user feedback the previous software grade system stability has improved and fewer instances of "lost" citations reported. No relevant effort currently underway for tracking unused citations.
Continue to improve the electronic citation submission statewide.	Length of time for citations to be received at AOC.	87.63% received within 3 days	88.33% 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.	Four reports were reviewed by NCAOC and judicial officials. Next steps have not been defined.	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.	In progress	eCitation and NCWARE Interface project is near completion. Target implementation date set for Summer 2018.
Capture and store large video as evidence in a secure location in data center.	Expand discovery automation system to handle remote blob storage.	Partially implemented (25% of the prosecutorial districts implemented; project on hold due to	Future effort

		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.	Future effort	The NCAOC has begun the RFP process for an Integrated Case Management System. A vendor contract award is targeted for 1Q19.

Injury Surveillance Systems

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

Objective	*Performance Measure/Target*	*4/1/16-3/31/17**	*4/1/17-3/31/18**
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.	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.	Continuing the data linkage project to connect crash data and health data. Held second strategic planning meeting in December 2017
	Development of a work plan for the demonstration project.	Ongoing	Add demonstration projects to go deep within the health data to help identify costs.
	Demonstration project report.	Final report for the Wake County Demonstration project submitted in September 2016.	Determine what elements are needed to create a sustainable system.

Objective	*Performance Measure/Target*	*4/1/16-3/31/17**	*4/1/17-3/31/18**
			Utilizing NHTSA GoTeam as barriers are identified. Working with UNC Trauma Registry Data.
Meet with key stakeholders to i**mprove interfaces across** the health care **databases** (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.	Ongoing meetings to continue to refine the linkage.

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.

Objective	*Performance Measure/Target*	*4/1/16-3/31/17**	*4/1/17-3/31/18**
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.	ROME completed. Integration in progress. Future effort	Integration with various business units is ongoing. Future effort Project underway to provide functionality to link crashes on non-system roads to LRS non-system

Objective	*Performance Measure/Target*	*4/1/16-3/31/17**	*4/1/17-3/31/18**
			roads for spatial display purposes.
Conduct a feasibility assessment of the development of supplemental roadway files that may be used in safety analysis. (*Examples include horizontal curves and grades.)*	Feasibility report that includes priorities for the development of supplemental files.	Currently collecting information for primary highways. Looking to expand to include additional state-maintained roads.	Collecting data for all state-maintained roadways.
Explore the feasibility of an intersection database (in support of FHWA Fundamental Data Elements (FDE)).	Feasibility report.	Pilot project underway. Estimated completion December 2017.	Pilot project complete 2017 for rural, stop controlled intersections. Currently exploring options for the development of an enterprise level intersection database.
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.	Ongoing

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.

Objective	*Performance Measure/Target*	*4/1/16-3/31/17**	*4/1/17-3/31/18**
Provide online a basic summary of the number of licensed North Carolina drivers, which includes their age, race, sex and county of residence. *(Note: the publication should include motorcycle endorsements, commercial licenses and learner's permits.)*	Annual online publication as part of NC Crash Facts.	Find out more information about access to this data during the mini-assessment meeting(s).	Ongoing
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.	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	In progress: data dictionary

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.

Objective	*Performance Measure/Target*	*4/1/16-3/31/17**	*4/1/17-3/31/18**
Publish a summary of the number of NC registered vehicles – by type of vehicle and county.	Annual publication as part of NC Crash Facts.	Completed	Completed 2017

Objective	*Performance Measure/Target*	*4/1/16-3/31/17**	*4/1/17-3/31/18**
Hold a mini-assessment meeting(s) with key individuals in vehicle registration information systems to address the issue of data quality control.	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	Key individuals with vehicle registration systems are participating in the NC TRCC.

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 archive 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. At this point, the NC TRCC has agreed informally on a basic format for a project prioritization protocol which would be finalized and approved at the next NC TRCC meeting.

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
	405(c)-funded projects				
1	eCitation Printers	M3DA-18-14-02	NCAOC	$312,822	GHSP
2	Data Documentation for Linking Crash and Health Data in North Carolina	M3DA-18-14-05	IPRC	$76,402	GHSP
3	Linking Crash Reports to Medical Data in North Carolina	M3DA-18-14-03	IPRC	$252,860	GHSP
4	Records Management Grant FY2017-2018	M3DA-18-14-04		$30,000	GHSP
5	Vision Zero-North Carolinas Fatality Reduction Program	M3DA-18-14-01	ITRE	$476,951	GHSP
	Non-405(c)-funded projects				
6	Crash Location Geocoding Infill		ITRE	$31,073	NCDOT
7	NC Traffic Safety Information Systems Strategic Plan Updated	TR-18-07-03	HSRC	$52,063	GHSP
8	Quick Response System	TR-18-07-02	HSRC	$24,975	GHSP

Cross Ref. #	Project	Project Number	Coordinating Agency	Budget	Budget Source
9	Traffic Records	TR-18-07-01	GHSP	$111,800	GHSP
10	Truck Crash Geocoding		ITRE		NCSHP
11	xPDF Electronic Crash Reporting Form		NCDMV		

Appendix A – Conference Participation

Presentations by NC TRCC members

2018 NC Traffic Safety Conference & Expo
Wilmington, NC

Unified Technologies: North Carolina eCitation Interface with NCAWARE

Attendees received a sneak peek of the soon to be released enhancement of eCitation with an electronic interface to NCAWARE. The newest release of eCitation will streamline the process for Law Enforcement Officers in the field by providing a seamless electronic transition from the nonarrest violation process in eCitation to the arrest process in NCAWARE. Additional benefits of interfacing the two successful systems include reduced paper production and the ability for Magistrates to receive and resume the arrest process in an electronic manner.

Speaker: Jennifer Barbour, Business Analyst, NC Administrative Office of the Courts

Appendix B – NC TRCC Participants

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

Name	Agency	Email Address
Brian Mayhew (Co-chair)	NCDOT	bmayhew@ncdot.gov
Eric Rodgman (Co-chair)	UNC HSRC	rodgman@hsrc.unc.edu
Jeff Robertson	EMSPIC	jrobertson@emspic.org
Brad Hibbs	FHWA	bradley.hibbs@fhwa.dot.gov
Aaron Williams	FHWA	aaron.williams@dot.gov
Alan Dellapenna	NC DHHS	alan.dellapenna@dhhs.nc.gov
Eleanor Fleming	NC DHHS	eleanor.fleming@dhhs.nc.gov
Bob Stevens	NC GHSP	bkstevens3@ncdot.gov
Mark Ezzell	NC GHSP	mezzell@ncdot.gov
Mark Scaringelli	NC GHSP	mascaringelli@ncdot.gov
David Williams	NC GHSP	dswilliams4@ncdot.gov
Warren Smith	NC GHSP	wgsmith@ncdot.gov
Jennifer Barbour	NCAOC	jennifer.h.barbour@nccourts.org
Cynthia Blackwell	NCAOC	cynthia.g.blackwell@nccourts.org
Ashley Clowes	NCDOT	aeclowes@ncdot.gov
Brian Murphy	NCDOT	bgmurphy@ncdot.gov
Shawn Troy	NCDOT	stroy@ncdot.gov
Roger Smock	NCDOT	rdsmock@ncdot.gov
Vishwatheja Tharuvesanchi	NCDOT-IT	vtharuvesanchi@ncdot.gov
Michael E. Thomas	NCDOT-IT	methomas@ncdot.gov
Eric Bellamy	NCDMV	edbellamy@ncdot.gov
Jonathan Puryear	NCDMV	jpuryear@ncdot.gov
Reba Calvert	NCDMV	rcalvert@ncdot.gov
Genia Newkirk	NCDMV	gnewkirk@ncdot.gov
Todd Messer	NCOEMS	todd.messer@dhhs.nc.gov
David Langley	NCSHP	david.langley@ncdps.gov
Eric Schaberg	NCSHP	eric.schaberg@ncshp.org
Cameron Taylor	NCSHP	cameron.taylor@ncshp.org
Greg Ferrara	NCSU ITRE	gpferrar@ncsu.edu
Elizabeth Daniel	NCSU ITRE	eadanie4@ncsu.edu
Nancy Lefler	UNC HSRC	lefler@hsrc.unc.edu
Colleen Oliver	UNC HSRC	oliver@hsrc.unc.edu

Marie Melendez	UNC HSRC	melendez@hsrc.unc.edu
Seth LaJeunesse	UNC HSRC	lajeunesse@hsrc.unc.edu
Sharon Schiro	UNC School of Medicine	sharon_schiro@med.unc.edu
Anna Waller	UNC School of Medicine	anna_waller@med.unc.edu

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
408/405(c)-funded Projects				
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	NCDMV	$56,109	GHSP
eCitation Printers	K9-13-11-03	NCAOC	$214,500	GHSP
eCitation Printers	M3DA-15-16-05	NCAOC	$303,050	GHSP
eCitation Printers	M3DA-17-14-01	NCAOC	$303,421	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 to NCAWARE interface update	M3DA-17-14-02	NCAOC	$711,660	GHSP
eCitation/NCAWARE Arrestables Interface	K9-13-11-06	NCAOC	$133,572	GHSP
eCitation Upgrade	M3DA-16-14-01	NCAOC	$288,104	GHSP
Electronic Submission of Crash Reports (DMV-349) from NCSHP	K9-08-11-04	NCSHP	$331,240	GHSP
Geocode Pedestrian Crashes Statewide and Traffic Records Strategic Plan	K9-12-11-04	HSRC	$51,421	GHSP

Project	Project Number	Coordinating Agency	Budget	Budget Source
eCitation Upgrade	M3DA-15-16-03	NCAOC	$282,804	GHSP
GIS location of Crashes	K9-11-11-03	ITRE	$15,898	GHSP
Linking Crash Reports to Medical Data in North Carolina	M3DA-17-14-04	IPRC	$215,526	GHSP
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 - NC Highway Patrol	K9-10-11-07	NCSHP	$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	GHSP

Project	Project Number	Coordinating Agency	Budget	Budget Source
NC DOT Traffic Engineering TR Guidebook	K9-09-11-06	NCDOT	$6,342	GHSP
NC DOT Traffic Engineering TRCC Support	K9-09-11-07	NCDOT	$33,000	GHSP
NC Traffic Safety Information Systems Strategic Plan Update	M3DA-16-16-03	HSRC	$90,843	GHSP
NC Traffic Safety Information Systems Strategic Plan Update	M3DA-15-16-04	HSRC	$39,263	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	ITRE	$28,049	GHSP
Performance-based Web Analytic Solution for NCSHP	M3DA-15-16-06	ITRE	$135,648	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

Project	Project Number	Coordinating Agency	Budget	Budget Source
State Highway Patrol (SHP) Mobile Data Computers	K9-09-11-03	SHP	$445,639	GHSP
Systems Gap Analysis	K9-10-11-10	NCDMV	$117,420	GHSP
Quick Response System	M3DA-16-14-02	HSRC	$43,841	GHSP
TRACS Upgrade	K9-14-11-03	NCDMV	$43,300	GHSP
Vision Zero- North Carolinas Fatality Reduction Program	M3DA-17-14-03	ITRE	$422,231	GHSP
eCitation to NCAWARE interface update	M3DA-17-14-02	NCAOC	$711,660	GHSP
eCitation Printers	M3DA-17-14-01	NCAOC	$303,421	GHSP
Non-408/405(c)-funded Projects				
2013 North Carolina Traffic Safety Information Systems Strategic Plan Update	TR-13-10-03	HSRC	$22,807	GHSP
A Performance-Based Web Analytic Solution for NCSHP Operational Planning Decision Support - PHASE II		ITRE	$142,909	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 Website 2016	TR-16-07-03	HSRC	$40,030	GHSP
Alcohol Facts Web Site 2014	TR-14-10-03	HSRC	$40,066	GHSP
Automated Criminal Infraction System (ACIS)		NCAOC		NCAOC
eCitation		NCAOC	$2,001,616	GHSP/Governor's Crime Commission

Project	Project Number	Coordinating Agency	Budget	Budget Source
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
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
EMS PIC Linkage Project		EMSPIC		GHSP, NCDOT, AOC, NCSHP, etc.
Electronic Compliance and Dismissal (ECAD)		NCAOC	$338,000	NCAOC
Ignition Interlock Management System		NCDOT	$1,308,089	NTSA, NCDOT
Local Law Enforcement MDT Projects		Local PD	$19,682	GHSP
Linkage Project		EMSPIC		EMSPIC
Motor Vehicle Crash Injuries in Wake County, NC: Exploring available data sources and potential data linkages	TR-16-07-02	IPRC	$136,474	GHSP
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 IPRC	$135,430	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	GHSP
payNCticket		NCAOC	$185,459	NCAOC

Project	Project Number	Coordinating Agency	Budget	Budget Source
North Carolina Traffic Safety Information Systems Strategic Plan Update	TR-17-07-03	HSRC	$72,573	GHSP
North Carolina Warrant Repository/NCAWARE		NCAOC	$13,000,000	NCAOC
PreMIS migration to NEMSIS v3 Standard		EMSPIC		OEMS
Quantifying and Describing EMS Patient Transports following Motor Vehicle Crashes in North Carolina		EMSPIC		EMSPIC
Quick Response System	TR-17-07-02	HSRC	$24,687	GHSP
Quick Response System	K9-15-15-02	HSRC	$44,640	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	TR-17-07-01	GHSP	$119,800	GHSP
Traffic Records Support Position	M3DA-14-20-02	NCDMV	$176,800	GHSP
Truck Crash Geocoding		ITRE	$69,000	NCSHP
Vision Zero- North Carolinas Fatality Reduction Program	M3DA-16-14-03	ITRE	$299,863	GHSP

Project	Project Number	Coordinating Agency	Budget	Budget Source
UNC HSRC Crash Web Site Update		HSRC	$48,483	GHSP
Weldon Electronics Enhancement	TR-15-14-03	Weldon PD	$18,000	GHSP
Web Site Using NC Crash Data	TR-13-10-02	HSRC	$55,421	GHSP

2018 Traffic Records Current Project Status Reports

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

1. eCitation Printers Distribution

Number(s): M3DA-18-14-02
Agency(ies): NCAOC
Project Leader(s): Jennifer Barbour
Performance Period: 10/01/2017 – 09/30/2018
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 eCitations 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 ($312,822)
Total budget: $312,822
For more information, contact: Cynthia Blackwell, 919-890-2059, cynthia.g.blackwell@nccourts.org

2. Data Documentation for Linking Crash and Health Data in North Carolina

Number(s): M3DA-18-14-05
Agency(ies): UNC IPRC
Project Leader(s): Anna Waller
Performance Period: 10/01/2017 – 09/30/2018
Description: The lack of data documentation between motor vehicle crashes and health was determined to be a major limiting factor to moving forward with data linkage efforts. The 2017 North Carolina Traffic Records Assessment noted similar deficiencies. This is a two-year project designed to address such issues.

Year 1 of this project will identify data documentation methods used in other states in an effort to develop and test a data documentation template in North Carolina and create a prioritized list of data sources to document.
Performance Areas: Accuracy, Integration, Uniformity, Completeness, Timeliness, Accessibility
Performance Measures: Completion of the implementation plan for linkage of crash and health data; execution of the implementation plan; sharing results of the project.
Status: This project is ongoing at this time.
Sponsoring Agency: GHSP ($76,402)
Total budget: $76,402
For more information, contact: Bob Stevens, 919-814-3661, bkstevens3@ncdot.gov

3. Linking Crash Reports to Medical Data in North Carolina
Number(s): M3DA-18-14-03
Agency(ies): UNC IPRC
Project Leader(s): Anna Waller
Performance Period: 10/01/2017 – 09/30/2018
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 NCDOT crash report for the incident.

NCDOT crash report data have been linked to EMS response data, through a collaboration between NCDOT 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 NCDOT 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.

After efforts to build coalitions of stakeholders and conducting planning meetings in Year 1 to develop an implementation plan for data linkage, Year 2 should see the implementation of selected components of this plan.
Performance Areas: Accuracy, Integration, Uniformity, Completeness, Timeliness, Accessibility
Performance Measures: Completion of the implementation plan for linkage of crash and health data; execution of the implementation plan; sharing results of the project.
Status: This project is ongoing at this time.
Sponsoring Agency: GHSP ($252,860)
Total budget: $252,860
For more information, contact: Bob Stevens, 919-814-3661, bkstevens3@ncdot.gov

4. Records Management Grant FY2017-2018
Number(s): M3DA-18-14-04
Agency(ies): Elizabeth City (North Carolina) Police Department
Project Leader(s): Yvette M. Chamblee
Performance Period: 10/01/2017 – 09/30/2018

Description: This is a one-year project to purchase MDT's to enable the Elizabeth City Police Department the ability to transition to electronic crash reporting. This effort will increase the percentage of crash reports received electronically in support of the Traffic Safety Information Systems Strategic Plan goals.
Performance Areas: Accuracy, Integration, Uniformity, Completeness, Timeliness, Accessibility
Performance Measures: This project will further the goals of the Traffic Safety Information Systems Strategic Plan goals.
Status: This project is ongoing at this time and will be completed in the 2018 grant year.
Sponsoring Agency: GHSP ($30,000)
Total budget: $30,000
For more information, contact: Bob Stevens, 919-814-3661, bkstevens3@ncdot.gov

5. Vision Zero- North Carolinas Fatality Reduction Program
Number(s): M3DA-18-14-01
Agency(ies): NCSU ITRE
Project Leader(s): Greg Ferrara
Performance Period: 10/01/2017 – 09/30/2018
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).

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 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 (NHTSA, 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. 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 a 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: GHSP ($476,951)
Total budget: $476,951
For more information, contact: Bob Stevens, 919-814-3661, bkstevens3@ncdot.gov

6.Crash Location Geocoding Infill
Number(s): N/A
Agency(ies): ITRE/NCSU
Project Leader(s): Greg Ferrara / Burke Foley
Performance Period: February 1, 2018 – May 31, 2019
Description: ITRE proposes to manually geo-locate (geocode) fatal (K) and serious injury (A) crashes from 2012-2018 that have not been automatically geo-located using the NCDOT-approved linear referencing system mile-posting method. ITRE also proposes to document the methods used for geo-locating these crashes for purposes of creating a standardized and uniform process for official adoption by NCDOT. ITRE will work closely with NCDOT Traffic Safety Unit personnel to ensure that the methods, deliverables, and documentation are compliant with NCDOT guidelines.
Performance Areas: Accuracy, Completeness
Performance Measures: The percent of fatal and serious injury (K+A) crashes geo-located. Currently the percent is approximately 67%. The goal of this project is to increase this percent for K and A crashes to 98% for data from 2012-2018.
Status: In progress and will continue.
Sponsoring Agency: NCDOT
Total budget: $31, 073
For more information, contact: Elizabeth Daniel, 919-946-3841, elizabeth_daniel@ncsu.edu

7. NC Traffic Safety Information Systems Strategic Plan Update
Number(s): TR-18-07-03
Agency(ies): UNC HSRC
Project Leader(s): Nancy Lefler
Performance Period: 10/01/2017 – 09/30/2018
Description: The North Carolina Strategic Plan for Traffic Safety Information Systems is currently being updated for 2018. 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 2018 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 2019 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:

- 2017 Plan; important to use a benchmark for progress.
- 2018 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.
Performance Areas:
Performance Measures: Develop a draft of the revised plan by April 30, 2018. Obtain approval from all TRCC members and produce a final updated TR Strategic Plan by June 15. Submit a final plan to GHSP and NHTSA by June 30, 2018 as required.
Status: In progress and will continue.
Sponsoring Agency: GHSP ($52,063)
Total budget: $52,063
For more information, contact: Bob Stevens, 919-814-3661, bkstevens3@ncdot.gov

8. Quick Response System
Number(s): TR-18-07-02
Agency(ies): UNC HSRC
Project Leader(s): Eric Rodgman
Performance Period: 10/01/2017 – 09/30/2018
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 NCAOC 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 NCDOT 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 NCDMV 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 NCDOT Oracle crash data system. HSRC is waiting on the copy of the latest, updated NC Crash Data for 2014 from NCDMV. 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 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 ($24,975)
Total budget: $24,975
For more information, contact: Bob Stevens, 919-814-3661, bkstevens3@ncdot.gov

9. Traffic Records
Number(s): TR-18-07-01
Agency(ies): NCGHSP
Project Leader(s): Vacant
Performance Period: 10/01/2017 – 09/30/2018
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. GHSP is working diligently to fill the vacant position.
Performance Areas: Accuracy, Integration, Uniformity, Completeness, Timeliness, Accessibility
Performance Measures: Increase percentage of eCitations versus paper citations.
Status: Ongoing.
Sponsoring Agency: GHSP ($111,800)
Total budget: $111,800
For more information, contact: Bob Stevens, 919-814-3661, bkstevens3@ncdot.gov

10. 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% 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 (MCSAP). 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, as well as a public facing data visualization tool available at coverlab.org. Accessibility is measured with page hits and site login frequencies.
Sponsoring Agency: NCSHP
Status: This project is being continuously updated annually, and dependent on sponsorship funding. Currently, the holdings are from 2001-present, with 2018 in progress.

11. xPDF Electronic Crash Reporting Form

Agency(ies): NCDMV

Project Leader(s): NCDMV – Traffic Records Leadership

Performance Period: November 2018 – October 2019

Description: The xPDF DMV-349 crash reporting form is a fillable PDF that can be utilized by law enforcement to electronically collect and send crash data in an XML format to NCDMV. NCDMV would like this to be our top priority; however, TraCS 10 is no longer supported by the developer (TEG) and is not security compliant. At this time, IT is pushing to update TraCS to the latest version (TraCS 17). IT does not have enough resources to implement the xPDF at the same time; therefore, Traffic Records plans on writing a grant request for one programmer to code and implement the xPDF. This effort is being introduced due to the recommendations to push for 100 percent electronic crash collection and submission included in the 2013 CDIP and 2017 Traffic Records Assessment.

Performance Areas: Accuracy, Accessibility, Completeness, timeliness, Uniformity

Performance Measures: Electronic submissions help with timeliness, accuracy, uniformity, and completeness. The Electronic Submission Success Rates Report is analyzed to foster a competition amongst the LEAs submitting crashes electronically. The report encourages the LEAs to correct rejections in a timely manner. This helps with timeliness, completeness, and accuracy. The LEA Monthly Report helps track electronic crash submission volumes and is analyzed to identify irregularities so that Traffic Records can notify the LEA of any issues. This helps with timeliness and completeness.

Sponsoring Agency: GHSP

Status: The project is in the beginning/planning stages. Traffic Records management has requested a meeting with executive leadership but has not heard back from them regarding our plan. The project stems from recommendations of the 2017 NC Traffic Records Assessment, the 2013 CDIP, and the 2018 MMUCC 5 Mapping of North Carolina's Crash Data. NCDMV-Traffic Records Management met with the State of Connecticut to discuss how they were able to reach 100 percent eSubmission through the use of an XML-based pdf (xPDF) crash reporting form. At the conclusion of the meeting, the State of Connecticut offered to share their source code for the XML-based PDF (xPDF) Crash Reporting Form. NCDMV's plan for this project is to work with Law Enforcement Agency stakeholders, NCDOT (IT Support), and NCDMV executive leadership to create a similar crash reporting form for North Carolina.

Traffic Records Coordinating Committee Certification

The following NC TRCC members have electronically certified this document:

Name	Agency	Email Address
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
Mark Scaringelli	NCGHSP	mascaringelli@ncdot.gov
Brian Murphy	NCDOT Safety Planning Group	bgmurphy@ncdot.gov
Eric Schaberg	NCSHP	eric.schaberg@ncshp.org
Vish Tharuvesanchi	NCDOT-IT	vtharuvesanchi@ncdot.gov
Anna Waller	UNC Dept of Emergency Med., CCHI	anna_waller@med.unc.edu

Appendix E – MMUCC, NEMSIS, MIRE

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 67% compliance on the crash report form demonstrates this intent.

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

NC'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 reviewed the 2017 MMUCC Guideline (5th Edition) which was recently released.

Appendix E – MMUCC, NEMSIS, MIRE

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.

NC 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 NC's NEMSIS compliance can be found in the table below.

NC'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 NC.
- 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, NEMSIS, MIRE

Model Inventory of Roadway Elements Fundamental Data Elements (MIRE FDE) Data Collection Plan

This section provides and overview of North Carolina's strategy for meeting the Model Inventory of Roadway Elements Fundamental Data Elements (MIRE FDE) data requirements in accordance with 23 CFR, Part 924.11.

Current Status of the MIRE FDE Collection

There are approximately 107,000 miles of public roads in the State of North Carolina. Of those, the NCDOT maintains approximately 80,000, which equates to approximately 75% of all public roadways in the State. It is important to note that for the purposes of this plan, when referencing State and Non-State in terms of what the State collects it refers to ownership/maintenance; when referencing Non-Local and Local in terms of the MIRE FDE, it refers to functional class.

The Operations Program Management Unit is responsible for collecting and maintaining the roadway inventory, and the GIS unit is responsible for the line work. ESRI Roads and Highways is used to maintain the LRS and many roadway inventory elements. A roadway characteristics file is published every quarter. Anyone can access the roadway inventory GIS files; they are available on the Connect NCDOT website, (https://connect.ncdot.gov/resources/gis/Pages/GIS-Data-Layers.aspx).

The Division of Highways has the authority/responsibility for determining the improvements needed to achieve compliance with the MIRE FDE requirements. These decisions are made jointly between Safety, GIS, and the Operations Program Management Unit, with safety driving the need for new elements.

NCDOT completed a gap assessment in January 2017 comparing their roadway inventory to the FDE listing. The gap assessments results are summarized in this section.

Non-Local Paved Roads

Segments

NCDOT collects and maintains all of the segment elements on all State-owned Non-Local Paved roads. NCDOT collects and maintains almost all of the segment elements on all Non-State owned, Non-Local Paved roads. The exceptions are Surface Type, Median Type, Access Control, One/Two Way Operations, and Type of Governmental Ownership.

Intersections

The largest gaps in the FDEs for NCDOT are for Intersection data elements. NCDOT does not currently have the majority of the intersection FDEs on Non-Local Paved roads.

Appendix E – MMUCC, NEMSIS, MIRE

Interchange/Ramp
Of the 11 Interchange/Ramp elements on non-local paved roads, NCDOT maintains 7 on both State and Non-State roads. The 4 missing elements are Interchange Identifier, Location Identifier for Beginning Ramp Terminal, Roadway Type at Beginning Ramp Terminal, and Interchange Type.

Local Paved Roads
Of the nine (9) FDEs on Local Paved Roads, all but one (1) (AADT) are collected on all State Roads; and all but 4 (Surface Type, Number of Through Lanes, AADT, and Type of Governmental Ownership) are collected on all Non-State roads.

Unpaved Roads
NCDOT intends to opt out of collecting FDEs on unpaved roads. NCDOT understands: no HSIP funds can be spent on these roadways; they must consult with affected Indian tribes; and they must notify their FHWA Division Office via letter to the Division Administrator.

Appropriate Data Collection Methodology

For the MIRE FDE currently collected, the elements are updated as new roads are added. The GIS group updates the line work annually based on snapshots provided by the Counties.

There are business edits and data checks built into the system to help ensure the quality of the data, however there are no additional formal QA/QC processes. NCDOT is looking into developing performance measures to help formalize their quality practices.

There are two current pilot projects underway to help NCDOT fill the two biggest data gaps – Intersection elements and AADT. NCDOT conducted a pilot to collect data at 3,000 intersections, with the goal of developing a framework for a larger scale data collection effort. With regard to AADT, NCDOT has contracted with the University of North Carolina Charlotte on a research effort to develop a process for developing AADT on all public roads. The project is set to begin in August 2018 and be completed within two years.

Coordination with Other Agencies
The largest data gaps exist on Non-State roads. NCDOT plans to analyze the mileage and ownership for the roadways with missing FDEs. Once that effort is complete, NCDOT can determine where there are the largest data gaps and what outreach mechanism might be most effective to working with those local agencies. This will help NCDOT determine if they can utilize information already being collected by local agencies, or if a State sponsored data collection effort is needed to obtain the data on these roadways.

Appendix E – MMUCC, NEMSIS, MIRE

Prioritization Criteria for Collection MIRE FDE on All Public Roads

The FDE collection priorities are as follows:

- Short-term: Non-Local Paved Roads Segment elements and Intersection elements, as well as AADT on all public roads.
- Mid-term: Non-Local Paved Road Interchange elements, and any other remaining Non-Local paved road elements.
- Long-term: Remaining needed Local Paved Roads elements.

The data will be collected using a variety of tools including deriving elements from existing data, collecting from video logs, utilizing current pavement collection efforts to determine what else might be able to be collected at the same time, and utilizing data already being collected from local agencies. This includes exploring what additional information might be collected when the annual linework is collected from the Counties and what additional mechanisms might need to be put in place to be able to obtain these data. NCDOT is also exploring if the E911 effort might be able to be utilized to obtain additional data. NCDOT will also explore utilizing the available FHWA technical assistance programs, primarily the Roadway Data Extraction Technical Assistance Program (RDETAP), to help fill in data gaps.

The Safety Group will be responsible for the data collection effort, with support from the Operations Program Management Unit. The data will be integrated into the existing GIS system and be made available through the same portal as other roadway inventory data. The update cycle will vary based on element.

Costs and Resources for Data Collection

NCDOT has not yet developed cost estimates, but recognize this is one of the next steps needed to be conducted. NCDOT will review the FHWA *MIRE Fundamental Data Elements Cost-Benefit Estimation* report as a starting point, https://safety.fhwa.dot.gov/rsdp/downloads/fhwasa16035_051916v10.pdf.

As mentioned above, NCDOT will also explore utilizing the available FHWA technical assistance programs, namely the RDETAP, to help fill in data gaps, as well as utilizing available TRCC funds for data collection efforts.

Appendix F – Responses to the 2017 NC TR Assessment Overall Recommendations

Responses to the 2017 NC TR Assessment Overall Recommendations:

As taken from the 2017 NC TR Assessment published on May 5, 2017 on pages 4-5, North Carolina should address the recommendations below by implementing changes to improve the ratings for the assessment questions in those section modules with lower than average scores. North Carolina can also apply for a NHTSA Traffic Records GO Team, for targeted technical assistance. Here are the 2018 responses to the current overall TR Assessment recommendations:

Crash Recommendations

Recommendation	Addressed	Not Addressed
Improve the procedures/process flows for the Crash data system to reflect best practices identified in the Traffic Records Program Assessment Advisory	NC DMV and DOT have process flow checks in place for the Crash data being submitted by NC LE. Errors and consistency are monitored as noted in the Advisory.	NC DOT and NC DMV are both working on additional improvements to comply better with this recommendation. See pages 27-32 of the 2018 Plan.
Improve the interfaces with the Crash data system to reflect best practices identified in the Traffic Records Program Assessment Advisory.	NC DOT has met regularly with independent vendors helping submit NC Crash data with specific LE agencies to improve the interface procedure for NC Crash data as noted in the Advisory.	NC DOT and NC DMV are both working on additional improvements to comply better with this recommendation. See pages 27-32 of the 2018 Plan.
Improve the data quality control program for the Crash data system to reflect best practices identified in the Traffic Records Program Assessment Advisory.	Procedures are in place addressing the Crash data quality and error rates are monitored as noted in Advisory.	NC DOT and NC DMV are both working on additional improvements to comply better with this recommendation. See pages 27-32 of the 2018 Plan.

Vehicle Recommendations

Recommendation	Addressed	Not Addressed
Improve the data quality control program for the Vehicle data system to reflect best practices identified in the Traffic Records Program Assessment Advisory.	For now, this is a future effort.	Agency has data quality control procedures for the vehicle registration data but has not yet provided documentation consistent with the Advisory best practices. The TRCC has

Appendix F – Responses to the 2017 NC TR Assessment Overall Recommendations

		only recently added vehicle registration agency representatives to assist with this recommendation. See pages 37-38 of the 2018 Plan.

Driver Recommendations

Recommendation	Addressed	Not Addressed
Improve the data quality control program for the Driver data system to reflect best practices identified in the Traffic Records Program Assessment Advisory.	For now, this is a future effort.	Agency has data quality control procedures for the Driver License data but has not yet provided documentation consistent with the Advisory best practices. The TRCC has only recently added driver license agency representatives to assist with this recommendation. See page 37 of the 2018 Plan.
Improve the data dictionary for the Driver data system to reflect best practices identified in the Traffic Records Program Assessment Advisory.	For now, this is a future effort.	Agency has an informal data dictionary but has not yet provided a formal data dictionary consistent with the Advisory best practices. The TRCC has only recently added Driver License agency representatives to assist with this recommendation. See page 37 of the 2018 Plan.
Improve the data quality control program for the Driver data system to reflect best practices identified in the Traffic Records Program Assessment Advisory.	For now, this is a future effort.	Agency has data quality control system parts in place for the Driver License data but has not yet provided formal documentation consistent with the Advisory best practices. The TRCC has only recently added Driver License agency representatives to assist with

Appendix F – Responses to the 2017 NC TR Assessment Overall Recommendations

		this recommendation. See page 37 of the 2018 Plan.

Roadway Recommendations

Recommendation	Addressed	Not Addressed
Improve the data quality control program for the Roadway data system to reflect best practices identified in the Traffic Records Program Assessment Advisory.	For now, this is an ongoing effort.	Agency has data quality control system parts in place for the Roadway System data but has not yet provided formal documentation consistent with the Advisory best practices. The agency has been working on improving the quality control procedures for their Roadway data. See pages 35-36 of the 2018 Plan.

Citation / Adjudication Recommendations

Recommendation	Addressed	Not Addressed
Improve the interfaces with the Citation and Adjudication systems to reflect best practices identified in the Traffic Records Program Assessment Advisory.	For now, this is an ongoing effort.	Agency has interfaces for the Citation and Adjudication systems but has not yet provided formal documentation consistent with the Advisory best practices. The agency has been working on improving the interfaces for the Citation and Adjudication systems. See pages 33-34 of the 2018 Plan.
Improve the data quality control program for the Citation and Adjudication systems to reflect best practices identified in the	For now, this is an ongoing effort.	Agency has data quality control system parts in place for the Citation and Adjudication systems but has not yet provided formal documentation consistent with the Advisory

Appendix F – Responses to the 2017 NC TR Assessment Overall Recommendations

Traffic Records Program Assessment Advisory.		best practices. The agency has been working on improving the quality control procedures for their Citation and Adjudication systems. See pages 33-34 of the 2018 Plan.

EMS / Injury Surveillance Recommendations

Recommendation	Addressed	Not Addressed
Improve the interfaces with the Injury Surveillance systems to reflect best practices identified in the Traffic Records Program Assessment Advisory.	For now, this is an ongoing effort.	Agency has interfaces for all the Injury Surveillance systems but has not yet provided formal documentation consistent with the Advisory best practices. The agency has been working on improving the interfaces for all the Injury Surveillance data systems. See pages 34-35 of the 2018 Plan.
Improve the data quality control program for the Injury Surveillance systems to reflect best practices identified in the Traffic Records Program Assessment Advisory.	For now, this is an ongoing effort.	Agency has data quality control system parts in place for all the Injury Surveillance data systems but has not yet provided formal documentation consistent with the Advisory best practices. The agency has been working on improving the quality control procedures for all their Injury Surveillance data systems. See pages 34-35 of the 2018 Plan.

The considerations for the NC agencies for the above areas not addressing the overall recommendations as noted in the most recent five-year 2017 NC TR Assessment Report can be summarized as being **not** addressed due to the following reasons:

Appendix F – Responses to the 2017 NC TR Assessment Overall Recommendations

1) The issue is currently not a priority to the NC agency at this time.
2) The NC agency presently does not have the necessary personnel and financial resources to address the issue. A NHTSA GoTeam or 405(c) grant has not yet been requested.
3) The NC agency has prioritized other issues which must be addressed and/or completed as directed by the senior administration of the NC agency and/ or as mandated by the NC legislature.
4) NC agency changes in personnel have affected addressing some issues. The changes include retirements, new administrators or directors have been appointed, and changes in personnel within the NC TRCC.