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***Comprehensive Safety Document/  
Product***

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Highway Safety Research Center  
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**2011-10 Final Report**

**COMPREHENSIVE SAFETY DOCUMENT/PRODUCT**

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The contents of this report reflect the views of the author(s) and not necessarily the views of the University. The author(s) are responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of either the North Carolina Department of Transportation or the Federal Highway Administration at the time of publication. This report does not constitute a standard, specification, or regulation.





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## **EXECUTIVE SUMMARY**

With 100 counties and more than 800 cities, towns, and township governments in North Carolina, there is a tremendous need to disseminate road safety information at the local level. For safety gains to be made in NC communities there needs to be both a “top-down” and “bottom-up” approach. In other words, agencies such as the NCDOT routinely plan and provide for roadway improvements, but local government and safety leaders need to be informed about their safety problems and the full array of potential solutions so as to be participants in road safety decisions that impact their community. The lack of access and knowledge of the information needed to proactively address road safety issues is a key issue for improving road safety at the local level.

The specific objectives of this effort were:

- To produce a template of a comprehensive safety document (CSD) for NCDOT that will enable the department to tailor solutions for a community’s specific highway safety issues. Test the template in at least two NC counties or communities.
- To develop a website that will provide communities with guidance and a list of tools and resources for applicable education, enforcement, and engineering countermeasures that could be applied to address the community’s issues.
- To provide NCDOT with the necessary guidance and information on how best to sustain the future development of the CSD for NC communities. This was accomplished by developing a marketing plan for the CSD that can be used by NCDOT.

In order to meet the objectives, the following tasks were undertaken after a kickoff/scoping meeting with NCDOT:

- Conduct a review of the literature.
- Conduct a market analysis.
- Develop draft CSD templates.
- Review and modify CSD templates based on comments from NCDOT and key stakeholders
- Finalize CSD templates
- Develop community road safety resources website
- Develop CSD marketing plan

Following is a brief overview of each task and the outcomes from this project.

### Literature Review

The project team worked to compile a series of example resources that may prove useful in the development of the CSD. These resources ranged from documents/resources developed by other state DOTs with a similar objective or groups/commissions that have been charged with a similar task.

## Market Analysis

In order to develop the template CSDs, it was necessary to gather detailed input from local road safety professionals across the state on the types of information they need and how this information should be presented. Following the review of the literature, telephone interviews and focus groups were conducted to obtain the information needed to start the development of the CSDs.

## Develop Draft CSD Templates

Based on the review of the literature and the market analysis, it was clear that the level of data and technical content needed to remain at a “30,000 foot level” in order for this document to be relevant and usable for the variety of intended audiences. The project team started with a draft template outlining the different sections of the CSD. This was then discussed with NCDOT. The next step was to develop draft CSDs for Randolph County and Kinston. In order to develop the draft CSDs for these two communities, it was necessary to query NCDOT’s crash data to obtain the severity and the percentages of different levels within each crash variable in the NCDOT crash file.

## Review and Modify Templates

The draft CSDs were first sent to NCDOT for their review, and then sent to the respective communities for their review. Several versions of the document were developed to address the comments from NCDOT and the communities.

## Finalize CSD Templates

The final versions of the CSDs for Randolph county and Kinston were submitted to NCDOT. Here is an overview of the key elements in the CSD:

- The first page includes an estimate of the monetary cost of crashes in the community, the number of crashes by driver age and gender, the number of pedestrian and bicycle crashes, and the number of crashes associated with specific crash types (e.g., alcohol crashes, crashes involving speeding) for the 2006-2010 period.
- The second page is a map showing the locations of crashes based on information from NCDOT.
- The rest of the document provides lists of hazardous locations (based on information from NCDOT), specific problem crashes in the county or community as compared to statewide crashes of that type, what can be done to reduce crashes in the community, and the list of web sites and other resources.

## Develop Community Road Resources Website

In addition to developing the CSDs, the project team and NCDOT felt that a website would be a valuable resource for local communities in North Carolina to obtain further information to help reduce crashes and injuries in their community. The website is intended to serve a wide audience from professionals to the public and decision-makers.

### Develop CSD Marketing Plan

A marketing plan was developed for NCDOT to use in marketing the CSDs and the community road safety resources website.





## 1. INTRODUCTION

With 100 counties and more than 800 cities, towns, and township governments in North Carolina, there is a tremendous need to disseminate road safety information at the local level. For safety gains to be made in NC communities there needs to be both a “top-down” and “bottom-up” approach. In other words, agencies such as the NCDOT routinely plan and provide for roadway improvements, but local government and safety leaders need to be informed about their safety problems and the full array of potential solutions so as to be participants in road safety decisions that impact their community. The lack of access and knowledge of the information needed to proactively address road safety issues is a key issue for improving road safety at the local level.

For the sake of this report, a “road safety professional” is defined as any individual or organization that holds road safety as an important and pressing issue in their professional capacity. This list includes – at a minimum – transportation planners, engineers, county commissioners, city/town council members and other elected officials, staff at MPOs and RPOs, law enforcement, public health professionals, occupational safety and health professionals, and emergency medical personnel. The intent of this project was to compile relevant information that will inform and empower the road safety professionals with the data, tools, and resources needed to take action on their road safety issues.

The specific objectives of this effort were:

- To produce a template of a comprehensive safety document (CSD) for NCDOT that will enable the department to tailor solutions for a community’s specific highway safety issues. Test the template in at least two NC counties or communities. The user testing of the finished CSD will provide valuable insight into its use and application.
- To develop a website that will provide communities with guidance and a list of tools and resources for applicable education, enforcement, and engineering countermeasures that could be applied to address the community’s issues.
- To develop a marketing plan for the CSD to provide NCDOT with the necessary guidance and information on how best to sustain the future development of the CSD for NC communities

In order to meet the objectives, the following tasks were undertaken after a kickoff/scoping meeting with NCDOT:

- Conduct a review of the literature
- Conduct a market analysis
- Develop draft CSD templates
- Review and modify CSD templates based on comments from NCDOT and key stakeholders
- Finalize CSD templates
- Develop community road safety resources website
- Develop CSD marketing plan

The rest of the report describes these tasks along with the implementation plan. The Appendices provide the specific products developed as part of this project.



## 2. REVIEW OF THE LITERATURE

The project team worked to compile a series of example resources that may prove useful in the development of the CSD. These resources ranged from documents/resources developed by other state DOTs with a similar objective or groups/commissions that have been charged with a similar task. Following is a list of resources that were reviewed including a brief summary of each resource:

### **Cost of deaths from motor vehicle crashes. Centers for Disease Control and Prevention.**

Retrieved from <http://www.cdc.gov/Motorvehiclesafety/statecosts/index.html>

This document looked at the costs of crash deaths by state and found that half of all costs were found in 10 states. The ten states with the highest medical and work loss costs were California (\$4.16 billion), Texas (\$3.50 billion), Florida (\$3.16 billion), Georgia (\$1.55 billion), Pennsylvania (\$1.52 billion), North Carolina (\$1.50 billion), New York (\$1.33 billion), Illinois (\$1.32 billion), Ohio (\$1.23 billion), and Tennessee (\$1.15 billion). The information is presented in a concise, two-page overview document.

### **Georgia Department of Transportation County Crash Profile. Accessed at**

[http://www.ghmpo.org/files/pdfs/GHMPO/Hall\\_County\\_Crash\\_Profile.pdf](http://www.ghmpo.org/files/pdfs/GHMPO/Hall_County_Crash_Profile.pdf)

The Hall County Crash Profile describes crash locations and statistics, including total crash numbers, crash rates, severity, injuries and fatalities, hotspots, and comparison with neighboring counties. The information reported in this profile is intended to be used for evaluating the safety of transportation facilities and identifying priorities for improvement. The Georgia Department of Transportation (GDOT) is currently in the process of establishing a system for project prioritization to be used throughout the state. These tables and maps are derived from Critical Analysis Reporting Environment (CARE) software, which compiles data from GDOT. Data on Vehicle miles traveled (VMT) are obtained directly from GDOT. All data covers the eight-year period of 2000-2007 unless otherwise stated. Due to understandable imperfections in data reporting, about five percent of the 49,528 total crash points in Hall County have location errors, meaning they cannot be mapped.

### **New York: Motor Vehicle Traffic Injuries by County of Crash and County of Residence.**

**New York State Department of Health (2007) Retrieved from**

[http://www.health.ny.gov/statistics/prevention/injury\\_prevention/traffic/index.htm](http://www.health.ny.gov/statistics/prevention/injury_prevention/traffic/index.htm).

This resource includes data tables on motor vehicle traffic crashes in New York State during 2007, and is based on the location of crashes. The data in these tables comes from multiple sources. The main data source is the Crash Outcome Data Evaluation System (CODES). CODES is a database that matches individual records from the NYS Department of Motor Vehicles Accident Information System to the NYS Department of Health emergency medical services database (Pre-Hospital Care Reports or PCR), emergency department (ED) database, and the Hospital Discharge database.

### **Iowa Department of Transportation Crash Analysis County-by-County Resource.**

Retrieved at <http://www.iowadot.gov/crashanalysis/county.htm>.

This is a web site that includes a compilation of crash data profiles, including maps and data on

crash data-related topics. The Web-based resource includes county data, city data, district data and school district data. An additional example can be found developed through the IPRC Injury Reports (not limited to just traffic-related injuries but includes injuries of any type) produced by the Injury Prevention Research Center (IPRC) at the University of Iowa thru collaboration with the Iowa Department of Public Health (IDPH). For example, see <http://www.public-health.uiowa.edu/iprc/resources/reports/Butler-County.pdf>.

**Michigan Safe Communities; Texas Safe Communities. *Assessing Community Traffic Safety (ACTS)*. Retrieved from**

[http://www.nhtsa.gov/people/outreach/safedige/winter2002/W02\\_W15\\_MI.htm](http://www.nhtsa.gov/people/outreach/safedige/winter2002/W02_W15_MI.htm).

The Assessing Community Traffic Safety (ACTS) is a web-based tool for Michigan and Texas. ACTS provides community groups with surveys on the perception of traffic safety in the community to assist them in identifying the resources they have to address their traffic safety problems. The survey responses are combined with safety and crash data to create a report for each community on their assets and deficits relating to traffic safety. Using this information, a strategic plan is drawn up to help the communities implement solutions to reduce traffic injuries and increase traffic safety.

**European Commission Road Safety Country Profiles. Retrieved from**

[http://ec.europa.eu/transport/road\\_safety/observatory/country\\_profiles\\_en.htm](http://ec.europa.eu/transport/road_safety/observatory/country_profiles_en.htm)

General profile documents on the state of road safety in various countries. Statistical data in these country profiles are up-to-date as of October 2005.

**Rural Transportation Safety and Security Center. *Traffic Safety Evaluations*. Retrieved from**

<http://www.ugpti.org/rtssc/resources/tse.php>.

A Transportation Safety Evaluation (TSE) is an evaluation of the existing or proposed roadways by an outside team in a given community. The TSE helps identify safety problems for all road users and improve safety and safe design practices by conducting a site review and evaluation of a selected road or site. Following the review, recommendations are made to improve the safety of the road or site for all users and to prevent future traffic problems. The TSE group provides low-cost solutions for several issues as well as more detailed engineering improvements.

**Maryland State Highway Administration. *Regional Traffic Safety Programs*. Retrieved from**

<http://www.roads.maryland.gov/index.aspx?PageId=4>.

The Regional Traffic Safety Programs (RTSPs) cover all 23 counties of Maryland individually or in regional groups of two or more counties. The RTSP allows the Highway Safety Office to evaluate traffic safety problems unique to each county or regional area in order to provide more effective solutions for each community. The RTSP coordinators work with county-level task forces to identify the traffic safety issues, gather data, and develop countermeasures applicable to the community.

**ITS Berkley. *Free Traffic Safety Evaluation Service for Your City*. Retrieved from**

<http://www.techtransfer.berkeley.edu/tse/>

Tech Transfer's Traffic Safety Evaluation (TSE) service reviews a city's or county's traffic safety conditions, programs and needs, as well as provides recommendations for developing and implementing new strategies to improve local traffic safety. A request for the TSE service can be

initiated by either a local public works or police department. ITS Berkley schedules a two-day visit to the city or county on a first-come, first-served basis.

**Price County Sherriff's Department. (2008, May). *Wisconsin Highway Traffic Safety Commissions*. Retrieved from**

<http://www.co.price.wi.us/government/CountySheriffsOffice/TrafficSafety.htm>

The purpose of a Traffic Safety Commission (TSC) is to monitor local traffic safety issues and coordinate efforts to address problems. A commission is required to include the county's chief traffic law enforcement officer, highway safety coordinator (if there is one), highway commissioner, an engineer from the regional office, Regional Program Manager (RPM) from the DOT Bureau of Transportation Safety (BOTS), State Patrol trooper/inspector, along with representatives from education (e.g. driver education instructor, high school principal), medicine (e.g. doctor, nurse, EMS provider) and law (e.g. DA's office, municipal prosecutor).

**Florida Department of Transportation. (2009, December). *Florida's Community Traffic Safety Teams*. Retrieved from**

<http://www.dot.state.fl.us/Safety/CTST/ctst.htm>

Florida's Community Traffic Safety Teams (CTSTs) are locally based groups of highway safety advocates who are committed to solving traffic safety problems through a comprehensive, multi-jurisdictional, multi-disciplinary approach. Members include local city, county, state, and occasionally federal agencies, as well as private industry representatives and local citizens. The community boundaries are determined by the individuals comprising the team, and can be a city, an entire county, a portion of a county, multiple counties, or any other jurisdictional arrangement.

**Wisconsin Department of Transportation. (2009, December). *Traffic Safety for Local Agencies*. Retrieved from**

<http://www.wsdot.wa.gov/LocalPrograms/Traffic/TrafficSafety.htm>

Traffic Services offers technical assistance, programs, and funding to cities, counties, and tribal governments in the area of traffic safety. Communities can work with the Traffic Services Branch Manager for assistance with the City/County Corridor Safety Program, Road Safety Evaluations, and Operational Reviews.

**National Institute of Justice. (2009, December). *Data-Driven Approaches to Crime and Traffic Safety*. Retrieved at**

<http://www.ojp.usdoj.gov/nij/topics/law-enforcement/traffic-safety/ddacts.htm>

DDACTS integrates location-based crime and traffic data to establish effective and efficient methods for deploying law enforcement and other resources. Using geo-mapping to identify areas that have high incidences of crime and crashes, DDACTS uses traffic enforcement strategies that play a dual role in fighting crime and reducing crashes and traffic violations. Drawing on the deterrent of highly visible traffic enforcement and the knowledge that crimes often involve the use of motor vehicles, the goal of DDACTS is to reduce the incidence of crime, crashes, and traffic violations across the country.



### 3. MARKET ANALYSIS

In order to develop the template CSDs, it was necessary to gather detailed input from local road safety professionals across the state on the types of information they need and how this information should be presented. Following the review of the literature, telephone interviews and focus groups were conducted to obtain the information needed to start the development of the CSDs.

#### Telephone Interviews

The market analysis included in-depth phone interviews with various members of the road safety professional community within North Carolina. Participants were selected and recruited from a master list of market analysis prospects, compiled by the project team and approved by NCDOT. Members of the project teams conducted 13 phone interviews with the following individuals:

Phil Wylie, PE  
Safety Programs Consultant, PART  
Greensboro, NC

Hanna Cockburn  
Planning Program Manager, RPO  
Piedmont Triad Council of Governments  
Greensboro, NC

Sheriff Rick Davis  
Region 10 GHSP Law Enforcement Liaison  
Henderson County Sheriff's Office  
Hendersonville, NC

Ellie Kinnaird, State Senator  
District 23, NC State Senate

Jennifer Woody, MPA  
NC Department of Health and Human Services  
Injury and Violence Prevention Branch  
Raleigh, NC

James B. Martin, NC LTAP Director  
Institute for Transportation Research and Education  
(ITRE)  
North Carolina State University  
Raleigh, NC

Don Nail, Deputy Director  
Governor's Highway Safety Program  
Raleigh, NC

Brendan Byrnes  
Manager of Public Relations  
AAA Carolinas  
Charlotte, NC

Anthony D. Wyatt, PE, PTOE  
Central Regional Field Operations Engineer  
NCDOT-Traffic Safety Unit  
Garner, NC

P. Haywood Daughtry, III, PE, CPM  
Eastern Regional Field Operations Engineer  
NCDOT-Traffic Safety Unit  
Wilson, NC

D.D. (Bucky) Galloway, PE  
Western Regional Field Operations Engineer  
NCDOT-Traffic Safety Unit  
Fletcher, NC

Denise Boswell  
Planning and Development Services Department  
City of Wilson  
Wilson, NC

Dale McKeel  
Durham Bicycle and Pedestrian Coordinator  
City of Durham  
Durham, NC

## **Focus Groups**

In addition to gathering input from a broad range of road safety professionals, the project team also conducted two focus groups within North Carolina counties/communities. These focus groups served as an additional market analysis tool to gather more in-depth information on the safety needs of North Carolina counties or communities, the types of information they would find helpful in the CSD, and the ways the CSD should best be marketed to them.

The focus groups brought together a mixture of road safety professionals in that local area, with a wide range of participants. The project team – along with NCDOT – decided to focus on two specific locations for the focus groups – Randolph County and the City of Kinston.

**Focus Group Community: Randolph County**  
**Date and Time: Tuesday, May 31, 2011, 10 AM – 12 PM**  
**Location: Piedmont Triad Council of Governments**

**Attendees included:**

Jesse Day, Planner  
Piedmont Triad Council of Government

Hanna Cockburn, Planner  
Piedmont Triad Council of Government

Shea Cox, Health Educator  
Randolph County Health Department

Reuben Blakley  
NCDOT Division 8

Phil Wylie, Safety Programs Consultant  
Piedmont Authority for Regional Transportation

Kim Johnson,  
Piedmont Triad Council of Government  
Area Agency on Aging

Vickie Embry  
NCDOT Triad Regional Traffic Engineer

David Hyder, Executive Director  
High Point MPO

Tony Wyatt  
NCDOT Central Region Field Operations Engineer

**Focus Group Community: City of Kinston**  
**Date and Time: Wednesday, June 8, 2011, 9 AM – 11 AM**  
**Location: City of Kinston Offices, HR Room**

**Attendees included:**

Officer Travis Moore  
Kinston Department of Public Safety

Bobby Merritt, Councilman  
Kinston City Council

Steve Miller, Water Resources Manager  
Kinston Public Services

Adrian King,  
Pride of Kinston, Economic Development

Amanda Engesether, City Planner  
City of Kinston

Scott Hill, Assistant City Manager  
City of Kinston



## **Key Findings**

The general consensus on the appropriate content for the CSD was that it needs to remain at a “30,000 foot level” and should not involve too many details. If too detailed, users of the CSD could “drown in the data” and lose the overall meaning of the document – to make road safety an important and lasting issue in the community. In their dealings with the general public and elected officials, our focus group participants in particular have been told repeatedly to make the presentation of data “shorter and simpler.”

The various types of data cited as “candidates” for this document and how they might be presented include:

- Not only fatality information, but injury data as well
- Functional classification of roadway
- Crashes by age or age group
- Intersections versus other locations
- Type of crash or most harmful event – some interest in contributing circumstances
- Some interest in alcohol use
- General statistics for the entire state of NC in some type of introduction or as a comparison for a particular data item
- Comparisons of crash data with other “public health” data to show the relative scope of the problem compared to the attention other issues get. For example, showing law enforcement the crash numbers compared to numbers of homicides in the county
- Crash location (further discussed in section below)
- Broken down into terms or “anecdotes” the public can understand (e.g., “This year, the equivalent of three jetliners worth of people died on our roadways.”)
- Emphasis on the human side of the numbers, not JUST the numbers

A great deal of emphasis should be placed on how to best portray an issue beyond the simple numbers. Several participants had concerns surrounding how smaller communities might misinterpret lower crash numbers as “not a problem” when in fact they are, relative to the rest of the state.

The use of rates was also discussed in how to present the various types of data. It was noted that the concept of 100 MVM traveled is a difficult subject for the general public to understand, and suggested presenting rates based on population if rates were used.

## Mapping Crashes

The focus group participants and telephone interviewees were also interested in the mapping of crashes. The Piedmont Triad RPO in Randolph County is quite facile with map making capabilities, while the City of Kinston does little mapping of crashes. NCDOT is able to plot

crashes on state-maintained routes to roadway center lines. These could perhaps be used, but many crashes that could be important at the local level would be missing. More specifically, some 25 to 30 percent of pedestrian crashes may occur in parking lots. In a recent project for the National Highway Traffic Safety Administration involving focus cities in NC, HSRC used SAS and Google Earth software to accurately map all pedestrian and bicyclist crashes. Although a time consuming task, locals have been quite interested in the resulting maps.

The focus group participants or telephone interviewees also mentioned the use of county profiles developed by NCDOT. They can be found at <http://www.ncdot.org/doh/preconstruct/traffic/safety/crashdata/data/profiles/County2008.pdf>.

The website known as “Dashboard” was also noted: <https://apps.dot.state.nc.us/dot/dashboard/safer.aspx>.

Additional NCDOT maps were reviewed at the following url: <http://www.ncdot.org/travel/statemapping/default.html>

A map of fatal crashes for Lenoir County was examined: <http://www.ncdot.gov/doh/preconstruct/traffic/safety/crashmaps/data/fatal/pdffiles/Lenoir.pdf>

Thus, NCDOT has a variety of mapping capabilities, and these were used in the final CSDs; however, keeping these maps up to date for subsequent CSDs should be considered by NCDOT as part of their implementation.

### Peer Community Comparison

Various individuals also discussed the issue of displaying county or community-specific data in relation to how it “ranks” within the surrounding communities. Several individuals thought this might help support “friendly competition” and that communities would naturally want to know what was also going on in surrounding counties. At the same time, several individuals also felt this might instill a false sense of security if a community ranks “better” for their area. They may look at their comparison, thinking to themselves, “Oh, we’re not that bad compared to other counties, we must be doing everything just fine.”

A better approach may be to compare figures to a state-level average. This could provide counties or communities with the “big picture” for the state, while giving them some type of guidance on where they stand compared to the rest of the state. Having such a comparison could be useful in explaining why certain projects are being implemented at the local level. This technique was used in the CSD templates.

### Discussion of Audiences

Participants were also asked to share information on the types of target audiences who might use or request this document, as well as audiences they would like to see receive this document.

Overall, the NC Metropolitan Planning Organizations (MPOs) and Rural Planning Organizations (RPOs) were repeatedly listed among the organizations that could and would most likely use this document, as well as distribute it to their various boards and members. MPOs and RPOs are already working with their NCDOT divisions and regions to request this type of information, so it seems like a natural fit that these organizations would also take the lead in requesting the CSD as well.

The market analysis also revealed that there are several uses for this document when speaking to elected officials and key staffers for elected officials. Planners and engineers were eager to use the document as a way to demonstrate the community-specific issue of road safety in terms that an elected official might better understand. As referenced earlier, “simpler and shorter” information is commonly requested, but the process of boiling down the information into key talking points is not an easy task. By providing this document to state and local planners and engineers, they may feel better prepared to discuss road safety with elected officials in a format that may be better received. In addition, elected officials may use this document themselves to engage the public and inform them on their motivations for certain decisions. As one individual put it, elected officials are often in need of supporting evidence as a way to defend the funds they allocate for certain projects. It was suggested this document could serve that purpose, by helping to improve the scoping of the issue in terms that the general public can understand.

In addition, the public health community in North Carolina should be a powerful ally in the development and dissemination of this document. The document can be used by health educators working with community groups. Many of these individuals already serve on various coalitions and commissions and typically have great venues for disseminating information to other public health practitioners, as well as the general public.

It will be important to reach out to North Carolina Emergency Management, in particular Emergency Management Coordinators, within each department. “First Responders” see the impact of road injuries and fatalities in our state firsthand.

Law enforcement individuals and agencies were also repeatedly mentioned as a prime target audience for this document, specifically the State Highway Patrol. A certain participant has had great success in working directly with the First Sergeant in a particular area, as they are usually very informed on the issues within that area. The GHSP also maintains a law enforcement liaison group across the state.

In addition to the target audiences discussed above, the following were mentioned specifically within the discussions with market analysis participants:

- North Carolina School Resource Officers
- NC Department of Insurance
- Safe Kids North Carolina, Safe Kids Coordinators
- NC League of Municipalities
- NC ITE
- The NC Legislature
- NCDOT Transportation Planning Branch
- NC AARP and county AARPs

## Existing Resources and Processes

As the project team discussed this document with the participants in our market analysis, many individuals brought up various existing resources and processes that should be acknowledged moving forward in the development of the CSD.

Several participants mentioned the County Profile Sheets or “Crash Facts” document developed by NCDOT. Several participants who work in the public health discipline mentioned the North Carolina Community Health Assessment as an existing process worth examining in the development of the CSD. (Please see <http://www.healthycarolinians.org>) Healthy Carolinians is a statewide network of local partnerships that address health and safety issues at the community level. Founded on the principles of collaboration, community mobilization and empowerment, Healthy Carolinians uses community assessment to identify priority health issues and intervention planning to build healthier communities, with the ultimate goal of making North Carolina the healthiest state in the nation. At a minimum, communities can be identified who list “Injury Prevention” as a priority area for marketing purposes.

Additional resources cited by participants as potentially helpful include:

- Resources on how to work with NCDOT or how to get a project completed with NCDOT
- Complete Streets implementation materials
- Available trainings and technology transfer on a variety of topics
- Resources for crash data, including FARS, Crash Facts, NC Crash Data Query site
- Information on available curricula
- Information on available funding streams, specifically NC foundations with an interest in road safety

## Document Format and Presentation

When asked to describe their preferred format for a document like the CSD, participants leaned heavily towards an electronic format, either Web-based or a PDF document with the ability to print.

Several individuals also commented on the importance and need for visual elements within the document. It was noted that showing the “human” side of this issue is important and to accomplish this either by displaying the numbers in a more personal way or making sure to include photos. For example, if we are attempting to convey the number of fatalities that occurred in a community or county, perhaps we may include a “stick figure” icon for each fatality to show the magnitude of the issue as opposed to simply including a number.

When discussing the countermeasure/solution side of this resource, it is evident that some participants prefer to access resources via the Web as opposed to having only a “laundry list” of resources within the document itself. Perhaps this Web resource could even include a searchable database of resources, which could be updated on a regular basis.

## Marketing Considerations

The market analysis also included guidance on the marketing and implementation of the CSD. The marketing strategy will need to include distribution and marketing of this document to individuals and organizations that are most likely to request this document from NCDOT and should also include guidance and ideas on how these individuals might use the document.

It was noted that marketing of this document can and should be integrated within existing networks, organizations, and events that include individuals and agencies who share a vested interest in road safety.

Specific potential organizations, events and outlets mentioned include:

- North Carolina ITE (<http://www.nc-ite.org>)
- NC Chapter, American Planning Association
- NC Division of Public Health
- NC Public Health Association
- NCAMPO Annual Conference
- North Carolina Law Enforcement Officers Association (<http://www.ncleoa.org/>)
- North Carolina Chapter of the Association of Public Safety Communications Officials
- NC 911 Conference (<http://www.nc911conference.com>)

To help reach individuals who may not be able to attend conferences or events due to travel restrictions, consider hosting a Webinar and marketing it through the LTAP and NCDOT Divisions, as well as other organizations like the MPOs, local health departments, etc. The Webinar could also include a demo of the Web portion of the CSD process.

In addition, it was suggested that we seek out agencies that still conduct “Citizen Academies” in which law enforcement agencies reach out to the general public to inform them of the various processes and policies for public safety issues. This may be a venue to distribute the document to the general public.

Additional marketing strategies mentioned that may be considered include:

- Distribution to various state and local listservs
- Webinar offered to a variety of target audiences, including the LTAP centers across the state
- Email blasts to members of NCSITE, ITRE, HSRC
- Attending regional and state-level meetings and conferences to pass out materials
- Work within the national “Towards Zero Deaths” initiative
- Work with existing channels available through GHSP
- Present/provide information at Law Enforcement Liaison meetings held 3 times a year
- Use case studies moving forward, particularly to show other communities how the CSD was able to advance road safety in a community



#### 4. COMPREHENSIVE SAFETY DOCUMENTS

Based on the review of the literature and the market analysis, it was clear that the level of data and technical content needed to remain at a high level in order for this document to be relevant and usable for the variety of intended audiences. A mapping element was considered important as well with the understanding that the maps developed by NCDOT would only show the crashes on state maintained roads. A Web-based or electronic delivery of this document was considered an important component to both the usability and sustainability of the future CSDs. There needs to be a section of the document that should provide the “Resources”, which is expected to be an extremely helpful, stand-alone asset for road safety professionals and others. Finally, the marketing strategy should include an integrated approach to connect with various audiences across the state.

The project team started with a draft template outlining the different sections of the CSD. This was then discussed with NCDOT. The next step was to develop draft CSDs for Randolph County and Kinston. In order to develop the draft CSDs for these two communities, it was necessary to query NCDOT’s crash data to obtain the following:

- The number of crashes by severity from 2006 to 2010 in the two communities and the state of North Carolina.
- For the different crash variables in the NCDOT crash file, determine the percentages of different levels within each crash variable. Examples include the percentage of crashes associated with speeding and percentage of crashes involving older or younger drivers. These percentages were used to determine if a particular crash type/characteristic was over-represented in Randolph County or Kinston compared to the rest of the state.

Based on the NCDOT estimated monetary cost of different crash severity levels, the total monetary cost associated with crashes was estimated for the two communities. The draft CSDs also included information about hazardous locations in the two communities (based on information from NCDOT), possible actions to reduce crashes, and resources that could be used by these communities to get further information. The CSDs were developed using Adobe’s desktop publishing software product called *InDesign CS6*. Support images and graphics placed into this template were produced using Adobe Illustrator and Adobe Photoshop.

The draft CSDs were first sent to NCDOT for their review and comments, and then sent to the respective communities for their review and comments. Several versions of the document were developed to address the comments from NCDOT and the communities. The final versions of the documents were submitted to NCDOT on March 1, 2013, and are provided in Appendices A and B in this report.

Here is an overview of the key elements in the CSD:

- The first page includes an estimate of the monetary cost of crashes in the community, the number of crashes by driver age and gender, the number of pedestrian and bicycle crashes, and the number of crashes associated with specific crash types (e.g., alcohol crashes, crashes involving speeding) for the 2006-2010 period.
- The second page is a map showing the locations of crashes based on information from NCDOT.

- The rest of the document provides lists of hazardous locations (based on information from NCDOT), specific problem crashes in the county or community as compared to statewide crashes of that type, what can be done to reduce crashes in the community, and the list of web sites and other resources.



## **5. COMMUNITY ROAD SAFETY RESOURCES WEBSITE**

In addition to developing the CSDs, the project team and NCDOT felt that a website would be a valuable resource for local communities in North Carolina to obtain further information to help reduce crashes and injuries in their community. The website is intended to serve a wide audience from professionals to the public and decision-makers.

In the website, the searchable data for each resource consists of four text fields (title, author, description, tags), and five sets of descriptive categories (behavior, solution, mode, environment, audience). A given resource may have information in some or all of the text fields, and will fall into at least one category. The resources search was designed with a text input for entering a search term or terms, and a set of selection menus for categories. All resources are classified as either a website or a document type.

By clicking on a button on the website called “Get All NC Resources”, users are taken to a list of documents and websites that are specific to North Carolina. The website is available through the following link: [www.ncroadsafetyresources.com](http://www.ncroadsafetyresources.com).



## 6. MARKETING PLAN

As discussed earlier, one of the objectives of this effort was to develop a marketing plan that NCDOT can use to market the CSDs and the community road safety resources website. The project team first developed a draft marketing plan based on communities or counties learning of the availability of the CSD and making a formal request, and this plan was submitted to NCDOT for review. Following comments from NCDOT, a revised marketing plan was submitted to account for a second scenario, whereby NCDOT would select the communities or counties to receive the CSDs. Following is a brief overview of the revised marketing plan. The entire plan is available in Appendix C.

### Overview of Marketing Plan

The marketing plan envisions two scenarios. In scenario 1, the marketing plan aims to communicate the availability and value of the CSD to community stakeholders. In this scenario, the end goal would be for NCDOT to receive requests from interested community members (i.e., local traffic safety champions). In scenario 2, NCDOT would select specific communities for which to develop the CSDs and then support the use of the documents. In this scenario, the marketing plan aims to identify ways to guide interested community members (i.e., local traffic safety champions) on how to leverage and share the information included in the CSD to impact safety decisions in their communities.

The marketing plan for both scenarios includes target audiences and tactics. Shown below are the proposed tactics for the two scenarios:

#### Tactics for Scenario 1

- Tactic 1: Develop promotional materials for a CSD media kit
- Tactic 2: Develop distribution list
- Tactic 3: Develop CSD webinar
- Tactic 4: Promote CSD messages through partner organizations
- Tactic 5: Market at statewide conferences
- Tactic 6: Trade media relations

#### Tactics for Scenario 2

- Tactic 1: Develop a multifaceted CSD toolkit
- Tactic 2: Develop sample community contact list
- Tactic 3: Plan and execute in-person launch and follow up meetings

Since scenario 2 would involve NCDOT selecting specific communities for developing the CSDs, there needs to be a selection procedure to identify communities that may benefit the most from these documents. Appendix D provides a discussion of a few methods that could be considered for identifying communities.



## 7. IMPLEMENTATION AND TECHNOLOGY TRANSFER

This project has developed the following products:

- Comprehensive Safety Document (CSD) for Randolph County – Appendix A
- Comprehensive Safety Document (CSD) for Kinston – Appendix B
- Community Road Safety Resources website - [www.ncroadsafetyresources.com](http://www.ncroadsafetyresources.com)
- Comprehensive Safety Document Marketing Plan – Appendix C
- Possible Methods for Identifying Communities for CSD – Appendix D

The CSDs can be used by the respective local communities to identify and implement safety improvements with their communities. As discussed in the marketing plan, NCDOT can choose to communicate the availability of the CSD and the website to community stakeholders or select specific communities for which to develop CSDs. NCDOT could consider the methods outlined in Appendix D to select communities.

Development of the CSDs required the project team to analyze the crash data from each community and make some judgments about what exactly to include in a particular CSD. NCDOT will have to undergo a similar process in order to develop CSDs for other communities. Future research could investigate different ways of fully or partially automating the process of creating CSDs.

The community road safety resources website is a valuable resource for local communities in North Carolina to obtain information about a variety of ways to help reduce crashes and injuries in their community. The website is intended to serve a wide audience from professionals to the public and decision-makers.



## **APPENDICES**





**Appendix A: Comprehensive Safety Document for Randolph County**

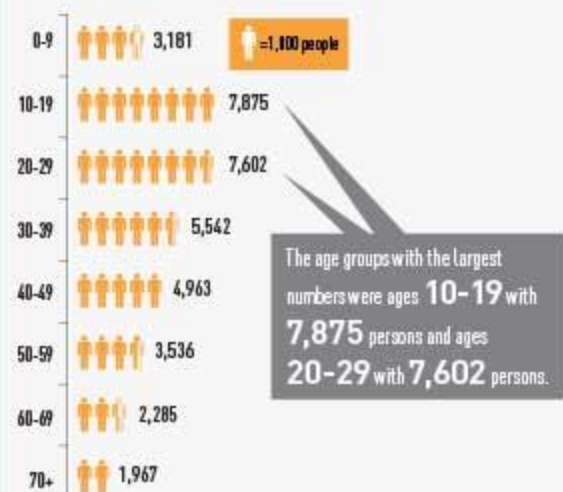


## RANDOLPH COUNTY ROAD SAFETY REPORT

From 2006-2010, there were approximately 15,500 motor vehicle crashes in Randolph County where the crash severity was identified.



### AGE GROUPS IN CRASHES FROM 2006-2010



More than **38,000** persons were involved in these 15,500+ crashes. 54% were male - 46% were female.

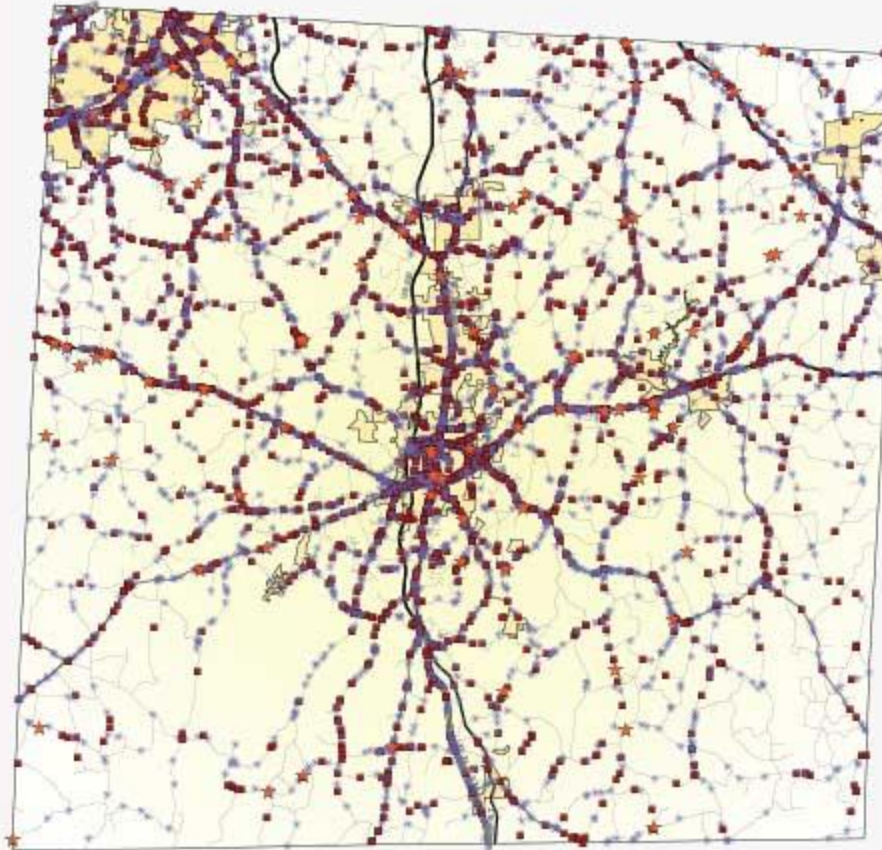
**35** bicyclists and **131** pedestrians were involved in the crashes.

Randolph County Road Safety Report

- Of the approximate **15,500** crashes:
- 5,941** took place on state secondary roads
- 4,820** crashes occurred on US routes.
- 1,485** occurred on local streets.
- 4,124** crashes happened on dark roads with no roadway lighting.
- 2,742** crashes involved speeding.
- 923** crashes involved alcohol.
- 850** crashes involved running off the road.

### Randolph County Crashes on State-Maintained Roads, 2007-2011\*

\*Only included misreported crashes that could be mapped to state roads (about 77%)



This map shows concentrations of crashes in Asheboro and Archdale, along US routes, and on the state secondary routes throughout the county. Fatal crashes are widely spread.

- | Crash Severity |                      |
|----------------|----------------------|
| ★              | Fatal                |
| ■              | Injury               |
| ●              | Property damage only |
- 
- | Road Class      |                           |
|-----------------|---------------------------|
| — (thick green) | Interstate                |
| — (black)       | US Hwy                    |
| — (blue)        | NC Route                  |
| — (thin grey)   | Local and State Secondary |
| ■ (yellow)      | City or Town              |

## Hazardous Locations Based on Number of Crashes

From an examination of crash data for 2006-2010, the NC Department of Transportation shows the following top 5 intersections in Randolph County with the most number of crashes to be:

Town	Locations	Crashes
Asheboro	US 64 at NC 42	77
Asheboro	US 64 at US 220	72
Asheboro	US 64 at South Park St (SR 1451)	63
Archdale	I 85 at SR 1009	54
Asheboro	US 64 at NC 159	45

Route	From Road	To Road	Crashes
I 85	Turnpike Rd (SR 1558)	US 311	235
I 85	Finch Farm Rd (SR 1547)	Turnpike Rd (SR 1558)	134
US 64	Executive	NC 42	107
I 85	CL-Davidson	Finch Farm Rd (SR 1547)	89
US 220	Pineview Rd (SR 1712)	US 311	83

From an examination of crash data for 2006-2010, the NC Department of Transportation shows the following top 5 sections of roadway in Randolph County with the most number of crashes to be:

### Hazardous Locations Based on the 2011 NCDOT Highway Safety Improvement Plan

The 2011 Highway Safety Improvement Plan (HSIP) prepared by the NC Department of Transportation is based on more than number of crashes and is intended to identify and review potentially hazardous locations throughout the state. Each location has been "flagged as potentially exceeding at least one safety warrant." Further, "each location listed has a targeted pattern of crashes that can be identified, analyzed, investigated, and recommended for appropriate countermeasures where applicable."

The list below shows the top 5 potentially hazardous intersections in Randolph County to be:

- ⊃ I 85 at US 311
- ⊃ US 64 at Andrew Hunter (SR 2235)
- ⊃ Church St (SR 1707) at Wainman
- ⊃ Caraway Mountain Rd (SR 1004) at Old County Farm (SR 1415)
- ⊃ US 220 Business at Park Drive (SR 1462)

The top 5 potentially hazardous sections of roadway in Randolph County listed in the HSIP are:

- ⊃ I 85 in the vicinity of Finch Farm Road (SR 1547)
- ⊃ New Salem Road (SR 2116) in the vicinity of Riveroaks Drive (SR 2386)
- ⊃ I 85 in the vicinity of Archdale Road (SR 1577)
- ⊃ Caraway Mountain Rd (SR 1004) in the vicinity of Snowberry
- ⊃ I 85 in the vicinity of Finch Farm Road (SR 1547)

### Review the HSIP and Crash Data Locations

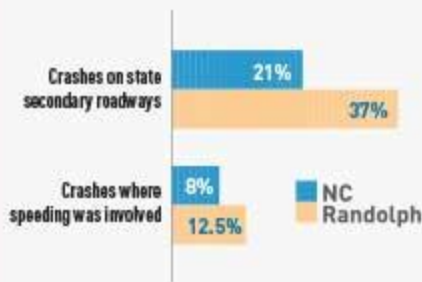
Both sets of intersections and roadway sections shown above should be reviewed to determine if specific types of crashes could be remedied with cost-effective treatments. For example, signal timing changes at a hazardous intersection may be effective in reducing crashes. Improving the shoulders or removing hazardous fixed objects may be in order for hazardous sections of roadways. Unless there are many crashes at a particular location, roadway alignment changes may not be considered to be feasible, as these are quite expensive.

If this review cannot be done by local or county staff, contact the District or Division office of the NCDOT for Randolph County or the Traffic Safety and Systems Section within the state level NCDOT to see if they can assist. In addition, examine any current studies or plans relevant to transportation safety for the county. The Piedmont Triad Rural Planning Organization ([www.ptrc.org](http://www.ptrc.org)) is involved in many of these activities.

## Specific Randolph County Crash Issues

### Compared to the State of NC: A 5-Year View

Another way to identify problems is to compare Randolph County crashes to those for the State of NC. The pattern of crashes reflects the rural makeup of the county and the considerable travel on state secondary roads. This analysis shows that Randolph County has more than its share of the following types of crashes from 2006-2010:



There are many miles of two-lane, rural paved roads in the county that were not designed to present standards for 55 mph roads. Sight distance is often limited due to curves. Crashes on these roads are often associated with speeding and running off the roadway. Many crashes involve striking fixed objects.

## What Can Be Done?

### Crashes on Two-Lane, Secondary Roadways

57% of the fatal crashes, 53% of the A (disabling) injury crashes, and 63% of the speed-related crashes occurred on state secondary roadways. A close examination of the crash locations on the state secondary roadways and road audits would be helpful in determining if there are particular problem intersections or sections of roadway. Contact the District or Division office of the NCDOT for Randolph County or the Traffic Safety and Systems Section within the state level NCDOT for assistance.

### Other Crash Types

Compared to crashes in the State of NC as a whole, crashes at curves on hills are overrepresented in Randolph County (11% Randolph versus 6% across the state). Candidate improvements that are designed to reduce the likelihood of a vehicle leaving the roadway or crossing the centerline include advanced warning of dangerous curves, enhanced delineation along the curve, installation of shoulder or centerline rumble strips, improving the skid resistance of the pavement, providing lighting, preventing edge drop-offs, and modifying the alignment.

Crashes involving the shoulder are also overrepresented (18% Randolph versus 9% across the state). NCDOT recommends use of the safety edge, a beveled treatment to prevent loss of control and possible rollovers that can occur with pavement edge drop-offs. (<http://ncdot.gov/doh/preconstruct/traffic/safety/reports/safetiedge.html>)

Randolph County has more than its share of fixed object crashes compared to the entire state (25% Randolph versus 17% across the state). Possible treatments in hazardous locations include safer slopes and ditches, removing or relocating fixed objects, delineating roadside hardware, and adding or improving roadside hardware (e.g., guardrail).

### Speeding Crashes

Speeding crashes on all types of roadways are overrepresented in Randolph County, but the problem is acute on two-lane, secondary roadways, where 63% of the speeding crashes occur, as compared to 41% on secondary roads across the state. Speeding reduces a driver's reaction and maneuvering ability and increases the stopping distance of the vehicle. Speeding increases the severity of the crash, particularly for pedestrians, bicyclists, and motorcyclists. Efforts involving engineering, education, and enforcement can be effective in reducing speeding crashes.

In regard to engineering, speed limits should be set appropriately and should reflect the roadway context and the expectations of the driver. Roadway design (e.g., sight distance) and traffic control (e.g., speed warning signs) elements can be considered for use at hazardous locations.

Making drivers aware of the risks of speeding is an example of an education effort. Increasing public awareness of the need to wear safety belts could be a part of the same educational effort.

Speed enforcement programs need to be sustained over time to be effective and can be targeted to hazardous locations or even county wide. Effective communication strategies are necessary to ensure that the public realizes that increased enforcement is underway and that the chance of being cited for speeding is significantly increased. A speed enforcement program could also be combined with the Governor's Highway Safety Program (GHSP) No Need to Speed campaign. Other

GHSP campaigns include Click It or Ticket operations, designed to improve safety belt use, and Booze It and Lose It operations to deter driving under the influence of alcohol. Working with local district attorneys and judges to ensure proper adjudication of speeding and alcohol offenses is a related strategy.

## Web Sites and Other References

1. For broad-based information about a variety of road users, behaviors, environments, and solutions, please visit Community Road Safety Resources at <http://katana.hsrrc.unc.edu/ncrsr/>
2. To obtain crash information for your locality, go to NC Crash Data Query Web Site at <http://www.hsrrc.unc.edu/crash/>
3. For pedestrian- and bicycle-motor vehicle crashes for your locality, go to <http://www.pedbikeinfo.org/pbcat/index.cfm>
4. The NC Governor's Highway Safety Program has many kinds of safety programs. You can also learn how to apply for a safety grant at <http://www.ncdot.gov/programs/ghsp>
5. Another useful resource is the Crash Modification Factors Clearinghouse, a searchable website where information about expected reductions in crashes for particular improvements is provided. See CMF Clearinghouse at <http://www.cmfclearinghouse.org/index.cfm>
6. NC LTAP's Roads Scholar Program provides a curriculum of training to enable transportation workers to study road fundamentals, safety, drainage, snow and ice removal, and training management. <http://www.itre.ncsu.edu/LTAP/education/RS/index.html>
7. The NCDOT has several ways to help with local improvements through the North Carolina Highway Safety Improvement Program (HSIP), the Spot Safety Program, and the Hazard Elimination program. For more information go to NCDOT Safety Programs at <http://www.ncdot.org/doh/preconstruct/traffic/Safety/Programs/>
8. The NCDOT also has evaluation information about many kinds of traffic safety improvements which can be found at: NCDOT evaluation report at <http://ncdot.gov/doh/preconstruct/traffic/safety/reports/completed.html>



For frequently asked questions of the NCDOT, go to <http://www.ncdot.org/download/contact/contactFAQ.pdf>  
To pose a question for NCDOT, go to <https://apps.dot.state.nc.us/contactus/PostComment.aspx?Unit=PIO#0>  
or call 1-800-DOT4YOU



Randolph County Road Safety Report

COMMUNITY  
ROAD SAFETY RESOURCES

[www.ncroadsafetyresources.org](http://www.ncroadsafetyresources.org)



**Appendix B: Comprehensive Safety Document for Kinston**



## KINSTON ROAD SAFETY REPORT

From 2006-2010, there were approximately 2,300 motor vehicle crashes in Kinston where the crash severity was identified.



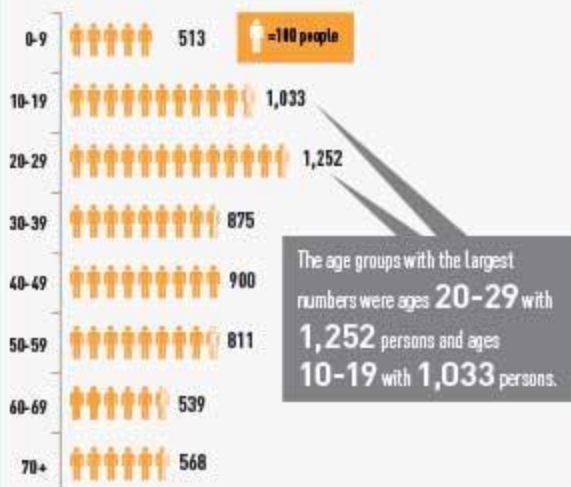
**\$100,500,000**

The estimated monetary cost of crashes for Kinston

Total Crashes by Year

2006	559
2007	473
2008	450
2009	432
2010	440

### AGE GROUPS IN CRASHES FROM 2006-2010



The age groups with the largest numbers were ages 20-29 with 1,252 persons and ages 10-19 with 1,033 persons.

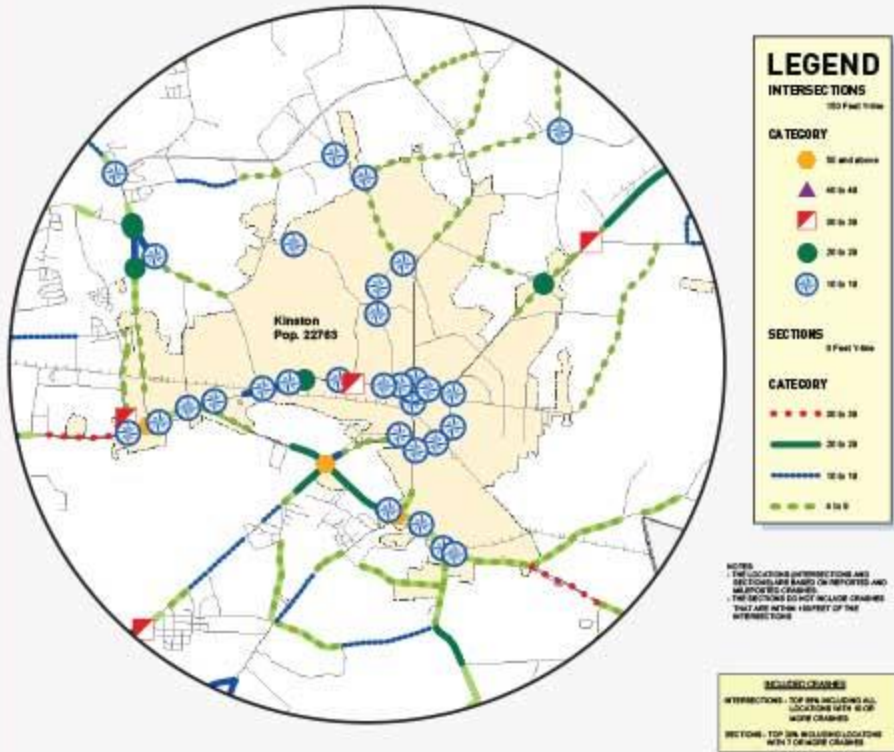
Of the approximate 2,300+ crashes:

- 1,232 occurred on local streets.
- 1,100+ took place at or near an intersection.
- 550+ involved at least one older driver.
- 731 crashes occurred on US routes.
- 109 crashes involved alcohol.

More than 6,500 persons were involved in these 2,300+ crashes. 51% were male- 49% were female.

50 bicyclists and 137 pedestrians were involved in the crashes.

# Lenoir County Crashes on State-Maintained Roads, 2006-2010



## Hazardous Locations Based on Number of Crashes

The map shown on the previous page shows a concentration of crashes along US 70, US 70/258, and NC 11.

From an examination of crash data for 2006-2010, the NC Department of Transportation shows the following top 5 intersections in Lenoir County with the most number of crashes to be:

Town	Locations	Crashes
Kinston	US 70 at US 258	54
Rural	US 70 at NC 11	54
Kinston	US 70 at US 258	54
Kinston	US 70 at Hill Farm (SR 1548)	35
Rural	NC 11 at NC 55	33

Route	From Road	To Road	Crashes
US 70	Norwood Hill Rd (SR 1520)	Barwick Station Rd (SR 1334)	39
US 70	Industrial Drive (SR 2003)	Dodson	38
US 70	Promise Land Rd (SR 1323)	NC 903	36
US 70	Neuse Rd (SR 1804)	Whaley Rd (SR 1903)	34
NC 58	Rusty Lee Rd (SR 1916)	Southwood Rd (SR 1914)	32

From an examination of crash data for 2006-2010, the NC Department of Transportation shows the following top 5 sections of roadway in Lenoir County with the most number of crashes to be:

### Hazardous Locations Based on the 2011 NCDOT Highway Safety Improvement Plan

The 2011 Highway Safety Improvement Plan (HSIP) prepared by the NC Department of Transportation is based on more than number of crashes and is intended to identify and review potentially hazardous locations throughout the state. Each location has been "flagged as potentially exceeding at least one safety warrant." Further, "each location listed has a targeted pattern of crashes that can be identified, analyzed, investigated, and recommended for appropriate countermeasures where applicable."

The list below shows the top 5 potentially hazardous **intersections** in Lenoir County to be:

- ⊃ NC 11 at NC 118
- ⊃ US 70 at Hill Farm Rd (SR 1548)
- ⊃ NC 11 at John Green Smith Rd (SR 1141)
- ⊃ US 258 at Daly Waldrop Rd (SR 1554)
- ⊃ Independence at Washington (Kinston)

The top 4 potentially hazardous **sections** of roadway in Lenoir County listed in the HSIP are:

- ⊃ NC 58 in the vicinity of Elijah Loftin Rd (SR 1913)
- ⊃ US 258 in the vicinity of Bill Stroud Rd (SR 1908)
- ⊃ US 258 in the vicinity of John Green Smith Rd (SR 1141)
- ⊃ NC 11 in the vicinity of Cunningham Rd (SR 1745)

### Crashes at Intersections

Due to inherent design and operation of intersections where multiple roads cross, the potential for crashes is always higher at intersections. Crashes involving intersections are overrepresented in Kinston compared to the rest of the state. There are many ways to reduce the frequency and severity of crashes at intersections including the following

- Provide advance-guide and street name signs. A study conducted by the Federal Highway Administration found that advance street name signs may reduce sideswipe crashes by about 10 percent.
- Provide offset left-turn lanes at intersections. A study conducted by the Federal Highway Administration concluded that positive offset left turn lanes may be effective in reducing left turn crashes by almost 38 percent.
- Provide protected left turn signal phases. The recently published Highway Safety Manual indicates that protected left turn signal phases can substantially reduce crashes involving left turns and opposing through traffic.
- Provide left and right turn lanes. The recently published Highway Safety Manual indicates that turn lanes can be effective in reducing crashes at both stop controlled and signalized intersections.
- Provide all way stops at appropriate intersections. A recent study conducted by NCDOT found that conversion from two-way to four-way stop control could reduce injury and fatal crashes by more than 75 percent.
- Install traffic signals at appropriate intersections. Traffic signals can be effective in reducing angle crashes, but often also lead to an increase in less severe rear end crashes.
- Photo-enforcement at signalized intersections. Similar to traffic signals, photo-enforcement (also called red-light cameras) at signalized intersections can be effective in reducing angle crashes but at the same time increase rear end crashes.
- Provide roundabouts at appropriate intersections. Roundabouts have been shown to be effective in reducing speeds and consequently reduce injury and fatal crashes at intersections.
- Provide traffic calming on intersection approaches. Traffic calming on intersection approaches can be effective in reducing approach speeds and possibly reduce injury and fatal crashes.

Further information about the effectiveness of specific treatments can be found in the Crash Modification Factor Clearinghouse and in the list of crash reduction factors published by NCDOT. Before countermeasures are selected, a detailed investigation is necessary in order to determine whether a particular countermeasure is appropriate for a particular location.

## Web Sites and Other References

1. For broad-based information about a variety of road users, behaviors, environments, and solutions, please visit Community Road Safety Resources at <http://katana.hsrrc.unc.edu/ncrsr/>
2. To obtain crash information for your locality, go to NC Crash Data Query Web Site at <http://www.hsrrc.unc.edu/crash/>
3. For pedestrian- and bicycle-motor vehicle crashes for your locality, go to <http://www.pedbikeinfo.org/pbcat/index.cfm>
4. The NC Governor's Highway Safety Program has many kinds of safety programs. You can also learn how to apply for a safety grant at <http://www.ncdot.gov/programs/ghsp>
5. Another useful resource is the Crash Modification Factors Clearinghouse, a searchable website where information about expected reductions in crashes for particular improvements is provided. See CMF Clearinghouse at <http://www.cmfclearinghouse.org/index.cfm>
6. NC LTAP's Roads Scholar Program provides a curriculum of training to enable transportation workers to study road fundamentals, safety, drainage, snow and ice removal, and training management. <http://www.itre.ncsu.edu/LTAP/education/RS/index.html>
7. The NCDOT has several ways to help with local improvements through the North Carolina Highway Safety Improvement Program (HSIP), the Spot Safety Program, and the Hazard Elimination program. For more information go to NCDOT Safety Programs at <http://www.ncdot.org/doh/preconstruct/traffic/Safety/Programs/>
8. The NCDOT also has evaluation information about many kinds of traffic safety improvements which can be found at: NCDOT evaluation report at <http://ncdot.gov/doh/preconstruct/traffic/safety/reports/completed.html>



For frequently asked questions of the NCDOT, go to <http://www.ncdot.org/download/contact/contactFAQ.pdf>  
To pose a question for NCDOT, go to <https://apps.dot.state.nc.us/contactus/PostComment.aspx?Unit=PIO#0>  
or call 1-800-DOT4YOU

Kinston Road Safety Report

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ROAD SAFETY RESOURCES

[www.ncroadsafetyresources.org](http://www.ncroadsafetyresources.org)





**Appendix C: Comprehensive Safety Document Marketing Plan**



# **Comprehensive Safety Document Marketing Plan**

Research Project No. 2011-10

Prepared for: North Carolina Department of Transportation

Prepared by: UNC Highway Safety Research Center



## **Project Background and Overview**

With 100 counties and more than 800 cities, towns and township governments in North Carolina, there is a tremendous need to disseminate road safety information at the local level. The North Carolina Department of Transportation (NCDOT) has developed a Comprehensive Safety Document (CSD) and road safety resource website to get useful safety information into the hands of the local road safety professional and other interested community members. The CSD and website will inform and empower local governments and communities with the information, tools and access to high quality resources needed to take action on their road safety issues.

The CSD documents and website will assist the state's road safety professionals and community members in identifying their specific highway safety issues and inform them of the potential education, enforcement and engineering countermeasures that could be applied to help address them. These issues will cover a broad range of highway safety topics (roadway problems, alcohol, speed, occupant restraint, younger and older drivers, pedestrians, bicyclists, motorcyclists, etc.). The documents will vary based on the specific crash problems within the community, while the website provides a searchable database of knowledge and resources available to help address the problems.

## **Marketing Goals**

The CSD could be marketed in two different ways, depending on if the document is developed by request based on individual community needs OR if communities are selected or targeted by NCDOT to receive the CSD document.

Scenario 1 (Requested by community):

In this scenario, the marketing plan aims to communicate the availability and value of the CSD document to community stakeholders. The end goal would be for NCDOT is to receive requests from interested community members (i.e., local traffic safety champions).

The following steps could be leveraged to achieve this goal:

- identify target CSD markets
- explore existing communication channels available for CSD marketing activities and present potential collaborative opportunities
- identify potential future communication channels for CSD marketing
- provide guidance on how best to proceed in promoting CSD documents and the Community Road Resources website

Scenario 2 (Selected by NCDOT):

In this scenario, NCDOT would select specific communities for which to develop the CSD documents (selection process to be determined) and then support the use of the documents. The marketing plan aims to identify ways to guide interested community members (i.e., local traffic safety champions) on how to leverage and share the information included in the CSD to impact safety decision in their communities.

The following steps could be leveraged to achieve this goal:

- develop a multifaceted CSD toolkit
- develop sample community contact list
- plan and execute in-person launch and follow up meetings

Following, please find two individually exclusive marketing plans based on this differentiation (i.e., CSDs that are either requested or selected).

## **Marketing Plan for Scenario One (Requested by Community)**

### **Target Audiences**

The CSD and Community Road Resources website could be marketed to a variety of individuals and organizations. This could include professionals whose job functions specifically relate to road safety, as well as private citizens and advocates who are interested in improving their respective communities.

### **Tactics**

The following tactics could be considered by NCDOT for implementation to promote and market the CSD documents and website to identified target audiences.

#### ***Tactic 1: Develop promotional materials for a CSD media kit***

NCDOT could develop a CSD and Community Road Resources website media kit. A media kit is a packet of marketing materials that provides background and information on a particular topic in a succinct and visually appealing manner. The purpose of putting together this kind of marketing information is not only to provide consistent messaging and information for target audiences, but also to help create context for an issue. It also makes promotional materials available in a very user friendly way (i.e., content for a community newsletter could be quickly derived from a media kit).

A CSD media kit could include:

- fact sheet on CSDs and the website
- background document on road safety in North Carolina
- tip sheet on how CSDs and the website could be used to effect change in local communities, including advice on who to target with the information, etc.
- sample approach letter for elected officials and other local representatives
- PowerPoint presentation template for in-person meetings and presentations
- CSD promotional post card for use at meetings, conferences and other in-person marketing opportunities

The branding – or “look and feel” – of these materials would align with the branding of the CSD documents and website as a way to provide further visual continuity for the project. Also, quotes from pilot communities could be featured whenever possible in these materials. A page could be

added to the Community Road Safety Resources website to house a digital version of this information.

***Tactic 2: Develop distribution list***

A comprehensive list of target audiences could be developed for distribution of CSD marketing materials. Distribution methods could be electronic (i.e., email and listserv messages), printed (i.e., newsletters) and/or in-person (i.e., conferences or meetings).

The following candidate target audiences could be considered for this list:

- community road safety champions (citizen academies, Mothers Against Drunk Driving representatives, Safe Kids coordinators, Safe Routes to School coordinators)
- first responders (emergency medical technicians, firefighters)
- law enforcement officials, including school resource officers
- public health professionals (hospital staff, county public health officials)
- state and local lawmakers (state legislators, county commissioners, city/town council members, other elected officials)
- staff at local planning organizations (metropolitan planning organizations and regional planning organizations)
- transportation safety professionals (city planners, engineers)
- member of local Chambers of Commerce
- local business groups (such as Raleigh's Hillsborough Street Business Improvement District Community Services Corporation, [www.hillsboroughstreet.org](http://www.hillsboroughstreet.org))
- local walking and bicycling advocacy groups
- local media outlets

***Tactic 3: Develop CSD webinar***

To kick-start the marketing efforts of the both Community Road Safety Resources website and the CSDs, NCDOT could host a free, informational webinar.

The launch webinar could:

- provide background/overview information about the CSD documents and the Community Road Safety Resources website (purpose, how it can be used, etc.)
- explain how to request a CSD from NCDOT
- integrate the local perspective (i.e., a speaker from Randolph County could discuss how she plans to use the information included in the Randolph County CSD)
- provide a venue for a question and answer session

Invitations to attend the live webinar could be sent to target audience groups, and a recording of the webinar could be placed on the Community Road Safety Resources website.

As budget-cutting pressures continue throughout the State, webinars are a cost-effective alternative to in-person meetings. The digital archive capability of webinars is also a strength of this tactic. The UNC Highway Safety Research Center (HSRC) leverages the webinar hosting software, GoToWebinar, and has successfully hosted many webinars across a variety of highway safety focus areas, targeting both professionals and local community members.

Additional webinar topics could be developed in the future, including guest speakers discussing how they used the information and implemented change in their communities. Discussion topics would be informed by interest in the program.

***Tactic 4: Promote CSD messages through partner organizations***

As revealed in the American Association of State Highway and Transportation Officials (ASSHTO) Standing Committee on Highway Traffic Safety focus groups conducted by FHWA, State decision-makers and practitioners prefer to receive communication from their peers, as well as through conferences, workshops, and published materials from trusted organizations.

State- and local-level organizations within North Carolina could be engaged to include CSD promotional materials in their respective newsletters and listserv, and on their websites, as appropriate. NCDOT could consider targeting the following organizations for this effort:

- [American Planning Association, North Carolina Chapter](#)
- [North Carolina Department of Transportation Planning Group](#)
- [North Carolina Governor's Highway Safety Program](#)
- [North Carolina Institute for Public Health](#)
- [North Carolina Institute of Transportation Engineers](#) and individual college/university chapters
- [North Carolina Joint Legislative Oversight Committee on Justice & Public Safety](#) and the [North Carolina Joint Legislative Transportation Oversight Committee](#)
- [North Carolina League of Municipalities](#)
- [North Carolina Local Technical Assistance Program](#)

***Tactic 5: Market at Statewide Conferences***

NCDOT could also conduct in-person sessions to provide CSD promotional materials at NC-level conferences and events, such as:

- Governor's Highway Safety Program Regional Law Enforcement Liaison Network
- GHSP Highway Safety Symposium meeting
- North Carolina Association of County Commissioners Annual Conference
- North Carolina Association of Metropolitan Planning Organizations Annual Conference
- North Carolina Association of Regional Planning Organization meetings
- North Carolina Association of School Resource Officers Annual Conference
- North Carolina Hospitals Association Annual Meeting
- North Carolina Institute of Transportation Engineers Annual Meeting
- North Carolina League of Municipalities Annual Conference or meetings
- North Carolina Metropolitan Mayors Coalition meeting
- North Carolina Public Health Association meeting
- North Carolina Alliance of Public Health Agencies meeting
- Mothers Against Drunk Driving, North Carolina meetings/events
- Safe Kids, North Carolina Annual Meeting

Materials from the media kit (such as the fact sheet, tip sheet and background document) could be used to support CSD spokespeople (presumably NCDOT or other project staff) attending and/or presenting at these meetings.

### ***Tactic 6: Trade media relations***

Another way to reach target audiences for this effort would be to include CSD messages in publications and materials they may already be reading. If it is determined that the CSD documents and website could be marketed beyond the state and community level, an effort could be made to place articles promoting the CSD document in related trade publications.

A target trade media list would need to be created to drive this tactic. Potential targets include:

- *Accident Analysis and Prevention*
- *ITE Journal*
- *Journal of Transportation Engineering*
- *Public Roads*
- *Transportation Research Record*
- *Transportation Tracks* ([North Carolina Local Technical Assistance Program](#) newsletter)

### **Evaluation Metrics**

By pointing all announcements to a centralized location on the website, it would be possible to track the web visits and page view for that particular page. This would provide a metric for the number of individuals actually viewing and/or downloading the resource as a result of the marketing strategies. Additional anecdotal evidence can be used as connections and partnerships are made during the marketing strategies.

## **Marketing Plan for Scenario Two (Selected by NCDOT)**

### **Target Audiences**

In this scenario, depending on NCDOT's selection process, traffic safety may or may not be a concern of members of the selected community. The value of the CSD and Community Road Resources website could be marketed to a variety of individuals and organizations. This could include professionals whose job functions specifically relate to road safety, as well as private citizens and advocates who are interested in improving their respective communities.

### **Tactics**

The following tactics could be considered by NCDOT for implementation to encourage and support use of the CSD documents and website by identified target audiences.

#### ***Tactic 1: Develop a multifaceted CSD toolkit***

NCDOT could develop a CSD and Community Road Resources website toolkit. This packet of materials would provide background and information on the CSD document and website – highlighting the value of and how to leverage the resources. The purpose of putting together this



toolkit is not only to provide user friendly information for local traffic safety champions, but also to help support advocates' efforts to address traffic safety issues and needs, as appropriate.

A CSD toolkit could include:

- fact sheet on CSDs and the website
- background document on road safety in North Carolina
- tip sheet on how CSDs and the website could be used to affect change in local communities, including advice on who to target with the information, etc.
- sample approach letter for elected officials and other local representatives
- sample pitch letter to approach local media and “Media Relations 101” guide
- PowerPoint presentation template for in-person meetings and presentations
- road safety table-top display and materials for local community events

The branding – or “look and feel” –of these materials would align with the branding of the CSD documents and website as a way to provide further visual continuity for the project. Also, quotes from pilot communities could be featured whenever possible in these materials. A page could be added to the Community Road Safety Resources website to house a digital version of this information.

Materials from the toolkit (such as the fact sheet, tip sheet and background document) could be used to support local traffic safety champions attending and/or presenting at local community events (i.e., public health fairs, hospital information booths, farmers markets, etc.).

***Tactic 2: Develop sample community contact list***

A sample list of community contacts could be developed to help local traffic safety champions identify potential targets with whom to discuss traffic safety concerns/issues and the CSD (i.e., who to send a letter of concern, present on local issues, etc.)

Contacts at the following community organizations could be considered for this list:

- state and local lawmakers and elected officials (state legislators, county commissioners, city/town council members)
- staff at local planning organizations (metropolitan planning organizations and regional planning organizations)
- public health professionals (hospital staff, county public health officials)
- member of local Chambers of Commerce
- local business groups (such as Raleigh’s Hillsborough Street Business Improvement District Community Services Corporation, <http://www.hillsboroughstreet.org/>)
- local walking and bicycling advocacy groups
- local media outlets

***Tactic 3: Plan and execute in-person launch and follow up meetings***

To kick-start the use and understanding of both the CSD documents and the Community Road Safety Resources website, NCDOT could plan and execute an in-person launch meeting with each selected community. These meetings could include the NCDOT project manager and other key staff assigned to monitor and assist communities with the CSD documents, as well as the local road safety champions who will be using these resources.

The kick-off meeting could:

- encourage “buy in” and support from local road safety champions
- provide an introduction to the CSD documents and the Community Road Safety Resources website (purpose, how it can be used, etc.)
- provide additional background/support on specific community issues
- review the toolkit resources available
- answer any questions local champions may have

In addition, NCDOT could plan and execute a follow-up meeting with each selected community six months to one year after the community begins using the CSD document and Community Road Safety Resources website to check in, gather feedback and assess progress.

The follow-up meeting could:

- recognize the efforts and accomplishments of local road safety champions
- address any follow-up questions and provide additional information needed by the local community members
- gauge the effectiveness of the CSD document and Community Road Safety Resources website, and collect information on improvements that could be made in future years

*Alternative to in-person meetings: As budget-cutting pressures continue throughout the state, webinar-style meetings are a cost-effective alternative to in-person meetings. HSRC leverages the meeting hosting software GoToMeeting, which is an example of software that could be considered for this purpose. The value of in-person meetings for this effort, however, should be considered before opting for the webinar option.*

## **Evaluation Metrics**

Evaluation for these marketing tactics will vary depending on NCDOT’s selection process for this effort. For example, a focus group with CSD users from the selected communities could be held after one year to inform NCDOT’s efforts in year two. A survey (online or in-person at community meetings) could also be developed to better understand what was most helpful for CSD users. Evaluation could be further discussed once the selection process is finalized.

## **Conclusion**

This marketing plan identifies target audiences for the CSD project and includes the HSRC team’s recommendations on how to best reach these audiences with the appropriate messages based on two different CSD distribution processes, requested or selected.

## **Appendix D: Possible Methods for Identifying Communities for CSD**



<b>Method</b>	<b>Comments</b>
<p><u>Method A: Ratio of Actual to Expected Crash Rates based on urban and rural VMT</u></p> <p>This method is best illustrated using a hypothetical example:  Let us assume that the rural crash rate (rural crashes divided by VMT) for North Carolina is 2.5 and the urban crash rate is 1.7. In community A, the proportion of VMT that is rural is 0.60 and the proportion of VMT that is urban is 0.40. The “expected crash rate” for community A is as follows: <math>2.5 \times 0.6 + 1.7 \times 0.4 = 2.18</math>. If the observed crash rate for community A is 2.5, the ratio of actual to expected rate is <math>2.5 / 2.18 = 1.15</math>.</p> <p>Suppose in community B, the proportion of rural VMT is 0.40 and the proportion of urban VMT is 0.60, then its expected crash rate is: <math>2.5 \times 0.4 + 1.7 \times 0.6 = 2.02</math>. If the observed crash rate of community B is also 2.5 (same as community A), the ratio of actual to expected rate is <math>2.5 / 2.02 = 1.24</math>.</p> <p>Although the observed rates for communities A and B are the same, based on this method, community B could be selected for further review.</p>	<p>This method explicitly accounts for the fact that rural rates are usually higher than urban rates (especially for fatal crashes). However, it may be difficult to explain this to the communities. For a recent project, HSRC proposed a similar method to FHWA to identify focus States and as far as we know FHWA is planning on using it.</p>
<p><u>Method B: Ratio of Actual to Expected Crash Rates based on urban and rural population</u></p> <p>Method B is similar to method A except that population is used to calculate the rates instead of VMT.</p>	<p>Similar to Method A, this method tries to account for inherent differences between urban and rural areas, but it may be more difficult to explain. In addition, since population is used to calculate the rates, some communities in the Eastern and Western part of the State may get selected simply because they get more tourist traffic compared to other counties.</p>

<b>Method</b>	<b>Comments</b>
<p><u>Method C: Compare crash rates in a community with the crash rates of a group of similar communities</u></p> <p>Communities can be divided into different groups based on population, population density, geography, and mix of urban and rural VMT. For each group, we calculate the crash rate (based on VMT and/or population). We can then compare the crash rate for a community within that group to the crash rate of the group.</p> <p>The comparisons can be done for different types of crashes including run off road, lane departure, night crashes, wet pavement crashes, young driver crashes, older driver crashes, alcohol crashes, rear end crashes, angle crashes, pedestrian crashes, and bicycle crashes.</p>	<p>There is no unique way to determine the groups, and how groups are determined may lead to different communities being selected.</p>
<p><u>Method D: Compare proportion of crashes in a community with the proportion in a group of similar communities</u></p> <p>Method D is similar to Method C in the sense that the comparison is done with a group of similar communities. However, the comparison is done for the proportion of a particular crash type (e.g., % of crashes that are run off road) rather than the crash rate.</p>	<p>Similar to Method C, there is no unique way to determine the groups. It is not clear if using proportions will provide a different outcome compared to using rates.</p>
<p><u>Method E: Rate of run off road crashes on rural two lane roads</u></p> <p>Two lane roads are a major area of focus for NCDOT. This method makes use of the number of run off road crashes per mile of rural two lane road as a measure for identifying counties.</p>	<p>This method was proposed by HSRC to FHWA to identify focus states for run off road crashes. We had also proposed this method to FHWA identify states that may benefit the most from friction treatments on horizontal curves.</p> <p>Here is the logic for computing the rate based on miles: Shoulder treatments including rumble strips are one of the proven countermeasures to reduce run off road crashes. Suppose rumble strips can reduce run off road crashes by 15%, counties with more run off road crashes will benefit more from the treatment (assuming they don't already have a treatment in place). If we assume that the cost of the treatment is proportional to the number of miles of two lane rural roads, then the ratio of the number of run off road crashes to the number of miles can be thought as a benefit to cost ratio.</p>