

# APPENDIX I - Pedestrians and Bicyclists Action Plan

## Introduction

*Pedestrians and Bicyclists* is one of nine emphasis areas of the North Carolina Strategic Highway Safety Plan. This emphasis area focuses on serious injuries and fatalities among pedestrians and bicyclists on North Carolina's roadways.

## State of the Problem

From 2009 – 2013, an average of 168 pedestrians and 19 bicyclists were killed annually in collisions with motor vehicles in North Carolina. This represents 14 percent of total fatal crashes in North Carolina. In addition, the five-year average of serious-injury crashes involving pedestrians and bicyclists and motor vehicles is 170 and 40, respectively (see Table I-1).

More than two-thirds (71 percent) of pedestrian crashes in North Carolina from 2004 – 2013 occurred within municipal limits, likely due to many more people walking in urbanized areas. Specific risk factors for pedestrians include age (10 percent of crashes involving pedestrians 61 and

older are fatal), seasonality (September through December typically see the highest number of crashes), light conditions (44 percent of crashes occur during non-daylight hours), and street lighting (crashes on unlighted roadways are three times more likely to result in a fatality compared with lighted roadways). Speed also contributes to the severity of the crash; 72 percent of all pedestrian fatalities occur on roadways with speed limits of 40 mph and higher, even though these roadways only account for 28 percent of pedestrian crashes in the State (NCDOT Pedestrian Crash Facts Summary Report, 2014).

Bicycle crashes in North Carolina are occurring predominantly in urban areas (70 percent); however, 57 percent of fatal bicycle crashes occur in rural-designated areas. Of bicyclists involved in crashes, 85 percent on average are male, and 38 percent are black. In contrast to the pedestrian crash averages, bicycle crashes occur most often during the warmer months (from May to September). Crashes also tend to occur during

**Table I-1:** Pedestrian and Bicycle Crashes in North Carolina (2008 – 2012).

	2009	2010	2011	2012	2013	Annual Avg.
<b>Pedestrian Crashes</b>	1,708	1,867	1,906	2,251	2,095	1,965
<b>Pedestrian Serious (A) Injuries</b>	149	171	159	203	170	170
<b>Pedestrian Fatalities</b>	148	170	159	191	174	168
<b>Bicycle Crashes</b>	603	687	716	709	606	664
<b>Bicycle Serious (A) Injuries</b>	38	38	54	38	31	40
<b>Bicycle Fatalities</b>	13	19	22	23	19	19

peak afternoon travel times, with 51 percent occurring between the hours of 3 and 9 PM. Seventy-three (73) percent of bicycle crashes occur during daylight hours, with half of the nighttime crashes occurring on lighted roadways and half occurring on unlighted roadways. As with the pedestrian crashes, speed affects the crash severity, with less than one percent of crashes on roadways with speed limits of 35 mph and under resulting in a fatality. The vast majority of bicyclist fatalities in North Carolina (79 percent) occur on roadways with speed limits of 40 mph and higher (NCDOT Bicycle Crash Facts Summary Report, 2012).

There have been many efforts to understand and address the pedestrian and bicycle crashes that are occurring in North Carolina. These efforts include developing a high-quality database of crash locations and types, mapping pedestrian and bicycle facilities across the State, and collecting information on when and where people are walking and bicycling. This information has been instrumental in developing awareness campaigns and efforts with local law enforcement, such as the Watch for Me NC program. In addition, policy changes—such as the Complete Streets policy—have led to the development of training opportunities and resources on how to plan and design the roadways in North Carolina to be safe for all street users.

There are several national efforts underway to better understand strategies that are effective at reducing pedestrian and bicycle crashes. These efforts are being conducted under the leadership of FHWA and the National Cooperative Highway Research Program (NCHRP) and will provide

critical information on effective strategies and associated estimates of the potential to reduce pedestrian and bicycle crashes. Once complete, the results of these efforts should be reviewed and the emphasis area plan should be modified as necessary to incorporate effective strategies for implementation in North Carolina.

### Emphasis Area Goal

In 2013, there were 174 pedestrian fatalities and 170 serious injuries, and 19 bicyclist fatalities and 31 serious injuries from crashes in North Carolina. The goals of this action plan are to reduce pedestrian and bicyclist fatalities and serious injuries in North Carolina.

### Strategies and Supporting Actions

The following section outlines strategies needed to achieve the desired goals of improved safety with regard to pedestrians and bicyclists. They are not proposed as isolated, standalone measures. Rather, to effectively address pedestrian and bicycle safety on North Carolina's road network, coordinated and concerted efforts statewide across agencies and partners are required. Listed below each strategy are several recommended actions to support it, as well as one or more North Carolina agencies identified as having a potentially significant role in its implementation and the current status of the action.

## Strategy 1

### Continue to develop training and education programs for pedestrian and bicycle safety.

#### Supporting Actions

1. Continue to develop staff knowledge on safe pedestrian and bicycle planning and design at all staff levels and agencies through training workshops, desktop and web-based resources, toolkits, and other in-person and online trainings.

*Potential Implementing Agencies:*

NCDOT, Local agencies, Consulting firms

*Status:* In progress

2. Continue to expand targeted education and enforcement activities under the Watch for Me NC program.

*Potential Implementing Agencies:*

NCDOT, Law enforcement

*Status:* In progress

3. Continue to develop bicycle safety messaging to encompass skills and awareness information including bright apparel, distractions, proper lighting, helmet use, and the rules of the road.

*Potential Implementing Agencies:*

NCDOT, Local agencies, Law enforcement

*Status:* In progress

4. Promote and enforce laws pertaining to pedestrian and bicycle safety through law enforcement training and targeted outreach campaigns.

*Potential Implementing Agencies:*

NCDOT, Local agencies, Law enforcement

*Status:* In progress

5. Expand education in schools through the

implementation of Let's Go NC! and other programs that encourage safe walking and riding behaviors.

*Potential Implementing Agencies:* NCDOT, NCDPI

*Status:* In progress

6. Encourage law enforcement participation in the Watch for Me NC program, and provide additional training opportunities at the Justice Academy, roll call, and through reference materials.

*Potential Implementing Agencies:*

NCDOT, Law enforcement

*Status:* In progress

7. Encourage additional professional education at the university level through collaboration on teaching materials and lectures.

*Potential Implementing Agencies:* NCDOT,

University partners, Professional organizations

*Status:* In progress

## Strategy 2

### Implement and develop plans, policies, and resources.

#### Supporting Actions

1. Update design guidance, as appropriate, to provide the latest in safe facility design.

*Potential Implementing Agencies:* NCDOT

*Status:* Needed

2. Continue to implement programs and countermeasures to address high speeds in urban, suburban, and rural areas.

*Potential Implementing Agencies:* NCDOT, Local agencies, Law enforcement

*Status:* Needed

3. Implement the existing statewide and regional plans, and continue to foster the development

and updates of plans with a focus on safety and performance measures.

*Potential Implementing Agencies:*

NCDOT, Local agencies

*Status:* Planned

4. Identify and implement system-wide improvements and policies to improve pedestrian and bicycle safety.

*Potential Implementing Agencies:* NCDOT

*Status:* Needed

5. Continue to construct safe pedestrian and bicycle networks.

*Potential Implementing Agencies:*

NCDOT, Local agencies

*Status:* In progress

6. Define target for NCDOT or local-led Road Safety Audits and Reviews with a focus on bicycle and pedestrian safety.

*Potential Implementing Agencies:*

NCDOT, Local agencies

*Status:* Needed

7. Identify ways local agencies can conduct more Road Safety Audits and Reviews in compliance with NCDOT standards.

*Potential Implementing Agencies:*

NCDOT, Local agencies

*Status:* Needed

8. Connect Road Safety Audits and Reviews with the new prioritization process for bicycle and pedestrian improvements.

*Potential Implementing Agencies:* NCDOT

*Status:* Needed

## Strategy 3

**Continue to develop communication and leadership support for pedestrian and bicycle safety.**

### *Supporting Actions*

1. Demonstrate support for pedestrian and bicycle safety through continued investment in Complete Streets and Safe Routes to School.

*Potential Implementing Agencies:* NCDOT

*Status:* Needed

2. Continue to develop interdepartmental and interagency coordination to improve safety and efficiency on pedestrian and bicycle efforts.

*Potential Implementing Agencies:* NCDOT, GHSP, NHTSA, Commerce, NC DHHS, NCDPI, FHWA, ECHS, Local agencies

*Status:* In progress

3. Support communication between departments and agencies through the use of Road Safety Audits.

*Potential Implementing Agencies:* NCDOT, Local agencies, Law enforcement, FHWA

*Status:* In progress

4. Increase investments in pedestrian and bicycle safety projects and grant programs.

*Potential Implementing Agencies:* NCDOT

*Status:* Needed

5. Collaborate with municipalities on land use and transportation decisions to identify the best designs for safe bicycle and pedestrian infrastructure, access, and site design.

*Potential Implementing Agencies:*

NCDOT, Local agencies

*Status:* Needed

## Strategy 4

### Build on strong data and evaluation programs.

#### Supporting Actions

1. Continue to support research on safer pedestrian and bicycle infrastructure (e.g., pilot installations and evaluations) and programs.

*Potential Implementing Agencies:* NCDOT

*Status:* In progress

2. Incorporate evaluation and benchmarking in programs and investments.

*Potential Implementing Agencies:* NCDOT

*Status:* Needed

3. Link Road Safety Audits and Reviews to enforcement efforts and evaluate effectiveness when jointly implemented.

*Potential Implementing Agencies:* NCDOT

*Status:* Needed

4. Apply proactive tools to identify strategic improvements for bicycle and pedestrian safety based on roadway and land use characteristics.

*Potential Implementing Agencies:* NCDOT

*Status:* Needed

5. Target high-frequency crash locations for analysis, evaluation, improvements, and/or spot enforcement.

*Potential Implementing Agencies:*

NCDOT, Local agencies

*Status:* In progress

6. Continue to code and geocode pedestrian and bicycle crashes, and continue to update and maintain a statewide geodatabase of existing and planned facilities.

*Potential Implementing Agencies:*

NCDOT, Law enforcement

*Status:* In progress

7. Continue to establish and build out a non-motorized traffic monitoring program.

*Potential Implementing Agencies:*

NCDOT, Local agencies

*Status:* In progress

8. Use counting techniques and surveys to understand the movement and demand of pedestrians and bicyclists around the State.

*Potential Implementing Agencies:*

NCDOT, Local agencies

*Status:* In progress

9. Develop performance measures and benchmarks for departments, projects, and programs to evaluate their effect and progress toward pedestrian and bicycle safety.

*Potential Implementing Agencies:* NCDOT

*Status:* Needed

## Working Group Members

The working group for this emphasis area includes the following representatives from five agencies committed to achieving the goals of this Action Plan:

- Paul Black, French Broad River MPO
- Lauren Blackburn, North Carolina Department of Transportation
- Catherine Bryant, North Carolina Department of Transportation
- Brad Hibbs, Federal Highway Administration North Carolina Division
- Kristy Jackson, NCSU Institute for

- Transportation Research and Education
- Jeff Jaeger, North Carolina Department of Transportation
- Ed Johnson, North Carolina Department of Transportation
- Brian Mayhew, North Carolina Department of Transportation
- Sarah O'Brien, NCSU Institute for Transportation Research and Education
- Chris Oliver, North Carolina Department of Transportation
- Shawn Troy, North Carolina Department of Transportation
- Charlie Zegeer, UNC Highway Safety Research Center

## Supporting Material

The following are considered valuable resources to the implementation of the Pedestrians and Bicyclists Emphasis Area Action Plan:

- North Carolina Department of Transportation Statewide Pedestrian and Bicycle Plan.  
<http://bit.ly/1IlgTVn>
- North Carolina Department of Transportation Crash Data Tool and Reports.  
<http://bit.ly/1u2vHeu>
- North Carolina Department of Transportation Complete Streets Policy  
<http://www.completestreetsnc.org/>
- NHTSA's Countermeasures that Work: A Highway Safety Countermeasure Guide for State Highway Safety Offices  
<http://bit.ly/1AbynCV>
- Pedestrian and Bicycle Countermeasure Selection System  
<http://www.pedbikesafe.org/>
- Crash Modification Factors Clearinghouse  
<http://www.cmfclearinghouse.org/>
- Watch for Me NC  
<http://www.watchformenc.org/>
- Let's Go NC! - Pedestrian and Bicycle Safety Curriculum.  
<http://bit.ly/1y8EZXE>
- National Association of City Transportation Officials Urban Street Design Guide and Urban Bikeway Design Guide.  
<http://nacto.org/usdg/> (Street Design Guide)  
<http://bit.ly/1gPhKHi> (Bikeway Design Guide)
- American Association of State Highway and Transportation Officials (AASHTO) bicycle and pedestrian design guides
- Institute of Transportation Engineers Designing Urban Walkable Thoroughfares.  
<http://www.ite.org/css/RP-036A-E.pdf>