

# **Bicycle Safety in Orange County, NC**

Report to the  
Orange Unified Transportation Board

and the  
Orange County  
Board of County Commissioners

by the  
Bicycle Safety Task Force

February 15, 2017

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# THE REPORT

## Summary

In mid-2016, the Orange County Board of County Commissioners (BOCC) formed a Bicycle Safety Task Force, charged to provide recommendations to improve road safety for cyclists and motorists in the unincorporated areas of Orange County. The task force consisted of cyclists, community advocates, public safety and transportation officials, school leaders, and county staff.

After six months of research and deliberation, the task force is recommending a public education and awareness campaign targeting all rural road users. The campaign, “Drive Safely, Ride Safely” intentionally shifts from hostile motorist/cyclist conflict toward the premise that most motorists and cyclists want to share the road safely. It is designed to foster mutual respect and shared interest in road safety.

During its study, the task force discovered that many motorists and cyclists do not know the laws that pertain to cycling, including new state laws designed to allow safe passing. The group felt that education on laws and best practices was paramount, especially those relevant to motorists passing cyclists and to large groups of riders, two key areas identified by the task force.

Anecdotally, the group also learned that the reports available through NC DOT and Orange County EMS likely under-report crashes and other incidents involving cyclists.

The task force recommends a series of actions designed to improve rural road safety, centered on a public education and awareness campaign, improved data collection and measurements, and traffic safety improvements. The recommendations include:

- Motorist and cyclist education, with local signage and messaging that focuses on common-sense safety and mutual respect. Campaign will emphasize safe passing, the importance of motorists and cyclists yielding to emergency vehicles, best practices for large groups of riders, and safety equipment for bicycles.
- Instituting improved data collection and measurement about road incidents involving cyclists, as well as improved data counts on all types of road users.
- Improving traffic signals to be triggered by bicycles as well as cars, and recommendations that align with the County’s adopted Safe Routes to Schools.

The task force also recommends the creation of a future task force to study infrastructure improvements in areas of the County where cycling is especially popular.

A budget of \$15,000 and appropriate County Staff support is requested to launch the campaign. Cycling advocacy groups and local civic groups will be approached, along with other possible partners, to provide volunteer resources and possibly additional funding to assist in the campaign.

The plan anticipates participation from the County Sheriff and other law enforcement agencies, Orange County Schools, EMS and others to help encourage safe ways to share the road.

## **The Process**

The Bicycle Safety Task Force was asked to examine the safety of our road users, and especially cyclists, on roads in unincorporated areas of Orange County. (See Attachment 1 for the background of the creation of the Task Force, Attachment 2 for the 2015 safety report, Attachment 3 for the task force, and Attachment 4 for full membership),

The Task Force began its study by going over crash data in the Orange County Bicycle Crash Report, 2007– 2013 (Attachment 5). For the purpose of this study, we kept our focus on unincorporated areas. During the six-year period covered in the crash report, there were 34 bicycle crashes in the rural part of our county that were reported to and documented by the State Highway Patrol's office. We saw that preventable crashes resulting in injuries or even fatalities are occurring on our roads.

Though 34 crashes over six years does not yield a lot of data, we were able to see that a majority of the crashes reported occurred when a motorist was attempting to, or in the process of overtaking a cyclist, and a majority of them occurred on straight roads with no special features. Geographically, many of them occurred either in the area west of Carrboro or in the area between Hillsborough and Durham along Old Highway 10. Anecdotally from members of the Bicycle Safety Task Force, we know that numerous bicycle-vehicle crashes go unreported and that there are many more “near misses” and “close calls” that occur in Orange County. Additional data from Emergency Services indicate that many more calls reporting unsafe roadway movements were received as well.

The Task Force also went over existing as well as new North Carolina laws (Attachment 6), pertaining to cycling, with special attention to the new law enacted in Section 5.5(a) of GS 20-150(e), which allows motorists to cross a double yellow line when passing a cyclist.

We covered several areas in which safety should be addressed, but one area that emerged as especially important was to encourage more respect on the roads. In general, motorists and cyclists are doing their best to share the road, though cyclists expressed frustration with motorists trying to pass them in an unsafe and dangerous manner, and motorists expressed frustration at finding themselves behind large groups of riders without opportunities to safely pass them. We invited a member of the Highway Safety Research Center (HSRC) to one of our meetings, and he cited studies that have shown that the best way to change behavior is not through laws, but through presenting expected behavior as the norm, which led us to consider promoting a theme of “Drive Safely, Ride Safely” throughout the County. This discussion of promoting respectful behavior as the norm guided much of the discussion in meetings and the educational campaign that follows.

## The Campaign

Three subcommittees were formed to help keep the group on schedule. The first subcommittee was tasked with listing the specific safety issues we hope to solve with a county-wide campaign, what the goal should be to effect change in behavior, what the messaging should be, and which audiences should be targeted. A **summary** of the nine areas that were approved by the BSTF is below. **Please refer to the Appendix for the complete descriptions.**

- I. Motorist and cyclist education** was identified as our top priority. Though norms influence behavior, laws are important for safety. And, in order for people to follow laws, they need to know them, so education is of utmost importance. New laws passed by the state are intended to make the roads safer for cyclists and to allow safer passing, but if laws are not known, they won't do any good. Education of both motorists and cyclists will require multiple forms of communication.
- II. Responding to EMS, fire trucks, and law enforcement vehicles** with lights and sirens running was identified as another area where education of all road users is needed. Emergency vehicles need to be able to get where they are going quickly, and when cars and cyclists do not pull over and stop, it slows down the emergency vehicles.
- III. Better data collection** was determined to be important in order to evaluate the effectiveness of a safety campaign, and was also seen as a beneficial tool when discussing greenways systems or other infrastructure improvements in our county. While car counts and car crashes are fairly well recorded, crashes involving cyclists and cyclists or cyclists and motorists can often go unreported. Additionally, the number of cyclists using the road is not known, as data counts of cyclists are just now beginning to be collected, and only in a few locations. Better data could also lend perspective to the number and type of users on the road.
- IV. Safety equipment for cyclists**, and especially lights when riding at night—is crucial. Bicycle lights are required by law, and are important because they make cyclists visible to other users of the road. Non-recreational riders, who use their bikes for transportation and who travel at night, need their bikes equipped with lights, even when cost is a hardship. Visibility during the day and encouragement of helmet use were included in this area of discussion.
- V. Education and safety in situations with large groups of riders** was discussed at length. When there are large groups of riders out on the road, safe passing can be difficult, though new passing laws for drivers offer some help when passing cyclists on rural roads. Although this one issue got the most discussion time, it was also recognized that it may be difficult to resolve completely. A combination of suggestions was discussed. Since many of the large group rides occur on a regular schedule and largely take place on

County-designated bike routes, there may be ways to post routes so motorists can take alternate routes. There are currently some best practices for clubs and groups to consider when there are many cyclists riding together or in pace lines on the roads. There are also safety reasons for cyclists to “take the lane” which drivers may not understand. Sharing this information and getting all to respect each other is key here. (Refer to the Appendix for the detailed list.)

**Vi. Orange County signage and messaging that focuses on cyclist and motorist safety and respect** can help educate the community. Again, using the idea that promoting as the norm the behavior we want to see, the County should be promoting positive messages and interactions. The Task Force suggests that there be a motto developed that could be used for this purpose. The BSTF suggests, “Ride Friendly, Drive Friendly”—with a graphic showing both cyclist and motorist—be adopted as the slogan.

**VII. Improvements to traffic signals to allow bicycles to trigger the traffic signal** will keep cyclists from getting stuck at intersections with loops that do not pick up bicycles. As signals are installed, or intersections are upgraded, bike-sensitive sensors should be specified.

**VIII. Non-infrastructure recommendations of the adopted Safe Routes to School (SRTS) plan within the County’s jurisdiction** should be supported as they come up for discussion. They are closely related to bicycle safety, since making bicycling to school a safer and more appealing transportation option encourages a healthy and active lifestyle from an early age.

**IX. Creation of a Future Task Force to Study Infrastructure** will provide the County ways to explore the creation of new infrastructure (greenways, bike lanes, etc.) and possible funding sources for it, since infrastructure was beyond the scope of this Task Force.

## **SUGGESTIONS FOR IMPLEMENTATION**

Subcommittee Two of the Task Force looked at messaging campaigns and ideas that other communities have used, and discussed their successes and applicability for use in Orange County. Subcommittee Three took the suggestions from that group, and compiled an action plan of suggested next steps, noting ease of implementation along with relative expenses.

The next three pages provide a list of potential actions and a timeline for implementation. Attachment 7 offers rough estimates of staff time and expenses associated with the actions. We anticipate that local advocacy groups, nonprofits, and others will partner with the County to provide volunteer services and perhaps additional funding. These partners could reduce the amount of actual staff time.

With these implementations, we are hoping to achieve

- Reduction in crashes
- Better compliance with the laws
- Increase in safety
- Respect for and from all road users
- Orange County seen as bicycle friendly

## **Potential Actions**

### STAFF TIME ONLY

<b>Action</b>	<b>Responsible Party</b>
School Outreach Apps/Programs	County Staff/ School Officials
Safety Message to listservs	County Staff
Create Static Website with Safety Information - Chapel Hill/Carrboro will provide link and safety message on their Websites	County Staff / Town of Chapel Hill Staff / Town of Carrboro Staff
Social Media – e.g., Orange County Facebook Events Page	County Staff
Tabling at Community Events	County Staff/ Volunteers/ Advisory Group Members/ Cycle Clubs
Coordination with Transportation Demand Management Professionals at the local, county, and university levels	County Staff
News/Media Integration (Earned Media)	County Staff
Best Safety Video Contest	County Staff
Crash Reporting Enhancements – Suggestions	County Staff / NCDOT
Evaluation	County Staff
Convene Implementation Committee	County Staff

### LIKELY INEXPENSIVE

<b>Action</b>	<b>Responsible Party</b>
Bumper Stickers/Magnets	County Staff
Posters	County Staff
Partner with CommunityWatch to add Signage* in Rural Neighborhoods	County Staff
Yard Signs (\$15 each)	County Staff/ Volunteers
Bike Rodeo for Kids	County Staff/ Volunteers/ School District
Public Safety Announcements (PSAs) on Respect between Modes	County Staff/ Volunteers

\* Top Tagline Options: **Ride Friendly, Drive Friendly** (Winner), Expect Bikes! Pass Safely, Roll with Respect, Courtesy is crucial! Bike and Drive Safely

MODERATELY EXPENSIVE

<b>Action</b>	<b>Responsible Party</b>
Signage at Multiple Entry Points in County	County Staff / NCDOT
Classes for Law Enforcement and Emergency Response Personnel	County Staff / NCDOT / DMV
Real-Time EMT Incident Reporting	County Staff/EMT Dispatch Staff
Data Collection (e.g., Bike Counts)	County Staff/ MPO/ NCDOT
Launch Campaign Kickoff – Signs, Contests, Ads	County Staff

VERY EXPENSIVE

<b>Action</b>	<b>Responsible Party</b>
Radio/TV Spots	County Staff

## Implementation Timeline

SHORT-TERM (WITHIN 1 YEAR)	NOTES
Signage Design and Placement at Multiple Entry Points in County	Promote slogan, draw attention to campaign; approx. \$450 per sign, 5–25 signs
Bumper Stickers/Magnets	\$200 for 500 bumper stickers
Posters and flyers	\$200 for 200 11 x 17 posters; \$700 for 7000 flyers
Website Development	staff
Partner with CommunityWatch to add Signage in Rural Neighborhoods Yard Signs (\$15 per sign)	Show support for all road users in rural areas; \$15/sign for 50-100 signs May be placed on private or county property without the restrictions of NCDOT
Social Media - Kickoff	
Launch Campaign Kickoff – Signs, Contests, Ads	\$2000 for materials and ads; \$600 for prizes
Convene Implementation Committee	

ONGOING POST-LAUNCH ACTIVITIES	NOTES
School Outreach Apps/Programs	Utilize Peachjar or school newsletters, PTAs, etc.
Safety Message to listservs	Utilize local governments and advocacy groups, riding clubs, rural listservs; have links from other websites to OC site
OC Bicycle Website Safety Message	
Social Media (Facebook Event page)	Use to announce events
Tabling at Community Events	
Coordination with Transportation Demand Management Professionals at the Local, County, and University levels	
News/Media Engagement	Invite media to any events held
Best Safety Video Contest	Invite public to create; offer prizes
Real-Time EMT Incident Reporting	\$5000 in system development
Bike Counts, Data Collection	\$5000—15,000, depending on method
Crash Reporting Enhancements	

LATER-TERM	NOTES
Utility Bill Inserts	
Bike Rodeo for Kids	
Radio/TV Spots	
PSAs on Respect among road users	
Evaluation	

## **REQUEST FOR FUNDING, AN IMPLEMENTATION COMMITTEE, AND A COMMITTEE TO STUDY IMPROVEMENTS TO INFRASTRUCTURE**

The Bicycle Safety Task Force requests that the Orange County Board of County Commissioners appoint an implementation committee and set a line item in the 2017/2018 budget that will allow for the completion of the short term items and the beginning of the ongoing post-launch activities in the chart above.

With the cost estimates presented in the above table in mind, we would suggest a line item of \$15,000 for the year 2017/2018. We would also request that the BOCC have the implementation committee report back to the BOCC in January or February 2018 to give an update on funding and progress, and to bring a line item budget request for 2018/2019. While much time is listed as County Staff time, we feel there may be opportunities to work with other groups in the area to facilitate some of the programs.

In addition to funding, we request that the BOCC, should the report from the BSTF be accepted and approved, form the implementation committee as soon as possible in order to have some of the staff only items addressed (such as slogan/signage/launch planning) and ready to roll out as soon as the new fiscal year begins. A design for the signs and other advertising materials will require lead time, and we would hope that the launch of the campaign could occur before the end of summer. Finally, we request that the BOCC form a committee to study improvements to infrastructure, which was outside the scope of this committee.

### **CONCLUDING REMARKS**

The Bicycle Safety Task Force provided a diverse group of citizens a chance to discuss from many different viewpoints laws and safety measures pertaining to cyclists and motorists sharing the road. All agreed from the onset that it was a small group of cyclists and motorists that caused most of the problems. The challenge, therefore, remains how to get necessary information to those who need it, and how to bring changes in attitudes so that all can use our beautiful county roads in harmony.

The Task Force has considered many different outlets for getting information out. We have included churches, restaurants, schools, public centers and buildings, the media, cycling groups, advocacy groups and rural groups. We have suggested signage that can be posted on individual mail posts (similar to the "Community Watch" signage). We have ideas for events as well as for ways to utilize social media.

The BOCC has shown its interest in safer roads by the creation of this Task Force. We are asking the Board now to continue that commitment with funding and staff time. We believe that if we can educate people on the laws, get all to follow them, AND promote positive behaviors, we can make Orange County one of the best—and safest—places in our state for cycling, and that our campaign can work as a model for other counties.

# Bicycle Safety Task Force Report, Attachment 1

## **Background / Timeline**

### **November 6, 2014:**

The Board of County Commissioners presented a petition to the Orange County Planning staff asking them to review policies related to bicycle and pedestrian safety, and to begin working with cycling groups, law enforcement and transportation officials to develop a culture of sharing the road in Orange County.

The petition outlined the following objectives:

- Review County authority and State law
- Provide copy of County-endorsed bicycle routes (map)
- Get updated on topic and recent activities
- Define current problem statement
- Create broad categories for addressing problems (education, law enforcement, NCDOT, etc.)
- Suggest/recommend policies, procedures, etc., for addressing problems
- Identify agencies, County departments, etc. for addressing problems

### **February 3, 2015:**

Planning Staff developed a plan to address the petition, which was provided to the BOCC as an Information Item at its meeting. The Staff Plan addressed representation from the BOCC, citizen participation, public outreach, and task objectives, and proposed a report back to the BOCC in June with recommendations and a plan.

The Orange Unified Transportation Board (OUTBoard) was charged with preparing a report with an implementation plan to address the petition's objectives.

### **June 2015:**

The report, titled the Draft Bicycle and Pedestrian Safety Report, was presented to the Board of County Commissioners (Attachment 1). The BOCC received the report and directed staff to: (1) Review the list of recommended actions (Charge 5) in the Report with regard to financial costs, staffing capabilities, and required coordination with other agencies/entities; and (2) Return to the BOCC in fall 2015 with information relevant to implementing the lists of actions.

### **November 6, 2015:**

The Planning Staff presented a resolution to the BOCC, and several citizens spoke. The BOCC did not accept the resolution, but asked staff to come back with certain aspects clarified at a meeting in early 2016.

**March 2016:**

The BOCC adopted a resolution (slightly revised in June 2016) supporting the formation of a Bicycle Safety Task Force (Attachment 2).

**June 2016:**

The Orange County Board of County Commissioners appointed a Bicycle Safety Task Force of 18 members (Attachment 3), and charged them with the following:

- Develop a campaign for bicycle safety education and research
- Develop an implementation timetable with estimated funding request and to present it to the OUTBoard for review and recommendation, and review and approval by the BOCC
- Develop an implementation report and to present it to the OUTBoard for review and recommendation, and review and approval by the BOCC

**July 11, August 9, October 31, December 5, 2016, January 30, 2017:**

The full membership of the Bicycle Safety Task Force (BSTF) met.

**February 13, 2017**

The final report was submitted to the full BSTF committee for approval and was approved with a unanimous vote of those at the meeting:

- |                     |                      |
|---------------------|----------------------|
| 1. Heidi Perry      | 6. Todd Jones        |
| 2. Chuck Edwards    | 7. Eli Belz          |
| 3. Buddy Hartley    | 8. Cliff Leath       |
| 4. Brian Whitehurst | 9. Bill Langston     |
| 5. Peter Klopfer    | 10. Abigaile Pittman |

In addition to those present at the meeting, written approval was received from Peter Leousis, Alyson West, Jeff Charles, and Matt Day, members unable to attend the meeting. Written approval was received from Bonnie Hauser, who arrived at the meeting after the vote was taken, and reiterated her approval of the report verbally when she arrived. The following members did not attend the final meeting, nor did they express any opinion about the report: Sara Pitts and Kim Tesoro. Commissioner Liaison Renee Price and supported the report. Orange County planning staff Transportation Planner, and Abigaile Pittman,

**March 1, 2017:**

The approved report was submitted to the OUTBoard for its review and recommendation to the BOCC.

**Orange United Transportation Board Report to the  
Orange County Board of County Commissioners  
on Bicycle and Pedestrian Safety in Orange County**

**Charge 1. Review County Authority and State Law.**

In view of **NC House Bill 232** (*“An act to direct the Department of Transportation to study the bicycle safety laws in this state and make recommendations as to how the laws may be revised to better ensure the safety of bicyclists and motorists on the roadways.”*), which was passed by the House and is currently going through the state Senate, the OUTBoard recommends waiting to hear the outcome of that bill before putting a lot of time into reviewing the State laws. (NOTE: Because much of our report pertains to rural parts of the county, the focus is mainly on cycling, though through education efforts, the importance of walking on the correct side of the road and visibility at night can be done through posters and more.)

However, regardless of the outcome of HB 232, people who drive or cycle in Orange County could be better educated on the current laws, and methods of doing that should be put into place now. (See Charge 5, no 1)

**Charge 2. Provide copy of County-endorsed bicycle routes (map).**

Many if not most rural recreational cyclists find riding routes via online services such as Map My Ride,<sup>1</sup> or through cue sheets provided by clubs such as the Carolina Tarwheels. Even NC DOT is currently in the process of making the statewide bicycling maps available electronically at WalkBikeNC.<sup>2</sup> The website is currently under development, but will be an interactive site where cyclists will be able to find, create, or comment on routes around our state.

1. It would be useful to have an online map available for Orange County that pointed out potentially hazardous spots or areas of high traffic to cyclists. This information could be included in the print version of the Orange County cycling map when it is updated. The state laws for cyclists should be included both on an online map website and on the updated print map.
2. We recommend the county also look into providing an app version of the map (in addition to an online version of the map) for the use of cyclists who do not have easy access to a printed map and who are accessing routes through small mobile devices.

**Charge 3. Give update on topic and recent activities.**

The most recent and possibly most affecting recent activity is state House Bill 232 which was passed by the House in early April and described above. The Senate has referred the bill to the committee on rules and regulations. The OUTBoard would recommend waiting until the outcome of this bill is known before creating too many printed materials with the state laws on them. If the bill is passed by the Senate as currently proposed, the committee that will be formed will be asked to provide recommended legislation to the Senate and House by the end of 2015.

## Bicycle Safety Task Force Report, Attachment 2, page 2

In a recent related activity, the OUTBoard was presented with a list of resurfacing projects at its April meeting, and it endorsed the DCHC MPO's requests for wide shoulders as a part of the resurfacing on the following roads: Old NC 86 from Farm House Drive to New Hope Church Road, Arthur Minnis Road from Old NC 86 to Rocky Ridge Road, New Hope Church Road from Old NC 86 to NC 86. In addition, the OUTBoard endorsed the Staff's request for wide shoulders on Walker Road from NC 57 to New Sharon Church Road, and on Lake Orange Road from NC 86 to the End of Maintenance on that road.

### **Charge 4. Current problem statement.**

The problem is how to ensure the safety of all users of roads in our county. The majority of the cyclists and motorists are respectful of each other on our county roads. There are some in each of these categories, however, who allow feelings of entitlement to the road to overtake their good sense, and it is in those situations that conflicts between the two groups can occur.

The OUTBoard would like to see the county embrace, promote, and fund programs that could help mitigate these conflicts. First and foremost in these efforts would be a program to educate the public on the laws, and to humanize the potential conflict situations that occur in a way that fosters respect, understanding, and coexistence on the road.

### **Charge 5. Addressing the issues.**

To improve the safety of bicycling and walking in Orange County, the OUTBoard recommends the following actions be adopted and implemented by the Board of County Commissioners:

1. Have current state laws posted at high-traffic rural spots. Two that were mentioned were Maple View and Honeysuckle Tea House. In addition, locations such as car dealerships, gas stations, schools, churches, and car repair shops should be approached. With permission from the establishment's owners, posters could be posted in several locations. These posters would include state laws for both cyclists and motorists. Include on the posters the importance of respect for all on the road.
2. Become a partner with NCDOT in their "Watch for Me NC" bicycle and pedestrian safety campaign. They provide a large amount of information including posters, bumper stickers, handouts with laws, reflective gear, and even bike lights. Combine this with an enforcement, education, and awareness program for cyclists and motorists.<sup>3</sup>
3. Provide law enforcement officers with education tools explaining road cycling and the state's laws – such a program has been developed by the statewide advocacy group BikeWalk NC. It could be shown in a classroom setting with or without assistance from local League of American Cyclists Certified Cycling instructors.<sup>4</sup>

## Bicycle Safety Task Force Report, Attachment 2, page 3

4. Arrange for a bike ride or other type of “field trip” with Orange County Commissioners, law enforcement, Orange County staff, and local cycling advocates to allow all to see both the possibilities and the obstacles that exist for cycling on rural county roads.
5. Have a county-wide contest to produce PSA posters or videos as a way to bring in citizen participation. Prepare a series of PSAs to air on local radio and television stations and in the local newspapers, and as posters around Orange County, as have been promoted in other locations: See sample posters in Appendix A. Contact the Journalism school at UNC to see if they would be interested in helping create these spots and helping us determine the correct venues for placing them.
6. Meet with the regional director of Active Routes to School and with school PE instructors to be sure they are aware of the Bike and Pedestrian Safety program available on NCDOT’s website. <sup>5</sup>
7. Support BikeWalk NC in its efforts to produce a statewide online education class<sup>6</sup> that could be utilized in Driver’s Ed classes, and in classes for driving offenders that are seeking to reduce points on their insurance. A component for the younger age groups who are mainly pedestrians is also planned.
8. Utilize national resources such as the National Highway Traffic Safety Administration,<sup>7</sup> People for Bikes,<sup>8</sup> and the Alliance for Biking and Walking<sup>9</sup> for materials that can be used locally.
9. Create and promote an interactive wiki map that cyclists and motorists can use to identify spots that need attention to improve safety. (The map could be referenced on all of the posters and other PSAs.)
10. Examine bicycling in Orange County as an economic development tool by sending a local staff person (or someone from Orange County Visitors Bureau) to the Bicycle Tourism conference in San Diego, CA, being held Nov. 4–7 in 2015.<sup>10</sup>
11. Pursue a tourism (or other) grant to fund bicycling safety and share the road public service announcements on popular local AM/FM radio stations.
12. Include a line item in the budget for county funding to use as grant-matching funding.
13. Improve bicycle infrastructure in the community. Instruct staff to review with the OUTBoard roads that are scheduled for resurfacing and recommend 4-foot shoulders on roads identified as rural bikeways.
14. Explore lowering speed limits on some rural county roads to 40 mph. Begin with a pilot on Dairyland Road. This reduction in speed was recently approved by NCDOT for a small section of Old 86 (from Calvander to the Carrboro Town Limit).

## Bicycle Safety Task Force Report, Attachment 2, page 4

15. Discuss with the NC DOT (District Seven Engineer) the implementation of roadways safety shoulders (costing \$500,000 or less) at blind hills and curves on highly used bike routes. One of the following locations could be used as a pilot for this safety measure:
  - Sugar Ridge area of Orange Grove Road
  - “S” curve on Dairyland Road between Bethel Hickory Grove and Union Grove Church Roads
  - Dairyland Road segment between Green Rise Road and new gas line
  - Old Greensboro Highway segment between Niche Gardens and Collins Creek Roads
  - Old Greensboro Highway segment between Phil’s Creek and Jones Ferry Roads
16. Enhance the use of our bikeways by:
  - a. Supplementing the existing Orange County Bicycle Map with online-accessible “Cue Sheets” for specific preferred bicycling road. Assistance in the development of these sheets should be sought from the local bicycle organizations like the Carolina Tarwheels
  - b. Adding MUTCD-approved signage at “choke points” identified by area cyclists alerting drivers to the likelihood of cyclists, such as “watch for cyclist” or “bikes may use full lane”
  - c. Including multi-use paths in the vicinity of and within County Parks and along Cane Creek reservoir perimeter.
17. Hold a Community Event. To provide a safe cycling experience for novice to expert riders, a different selected segment of a rural road would be closed to all but local motorist traffic and converted to a dedicated bikeway on a weekend day once a month from April to October for a period of about two to four hours. To hold this event:
  - a. a one-weekend day pilot would be organized to prove and refine the concept.
  - b. Coordination between existing local bicycle clubs, rural residents, the State Department of Transportation, Sheriff’s Department and Orange County government would develop the specific parameters of the proposed bikeway. Cue Cards for the ride would be developed and made available on-line and as handouts. The event would need to be widely publicized, and local churches along the dedicated route could chose to stage events to introduce riders to their fund raising events offering items such as baked goods, refreshments etc. Significant historic sites could be signed and other points of interest highlighted. Experienced riders wishing to stage a race or time trial event would go first, and thereafter the segment would be open to all cyclists. Volunteers could be positioned along the route to coordinate assistance as needed.
18. Add links on the county’s website to resources for cyclists from BikeWalkNC.org and from NCDOT’s bike program. Include links to laws and to safety videos.<sup>1112</sup>

**Charge 6. Suggest/recommend policies, procedures for advancing bike and pedestrian safety in the county.**

1. Create a Task Force to put together an action plan for implementing the list of actions suggested in Charge 5, and have the action plan reviewed by the OUTBoard and presented to the BOCC. Have one member of the BOCC serve as a member of the Task Force.
2. Charge the Task Force with providing a list of roadways or areas in Orange County that need improvements for the OUTBoard to review, and send to the BOCC or to staff for approval.
3. Have staff create a list of goals for improving the roadways identified by the Task Force, including desired timelines and approximate costs.
4. Instruct staff to review with the OUTBoard roads that are scheduled for resurfacing and recommend wide shoulders or other appropriate improvements on roads identified as rural bikeways.
5. Ask NCDOT to adhere to their Complete Streets manual and to their written policies concerning rumble strips when installing them on rural roads (see Appendix B)
6. Receive semi-annual updates and annual written reports from staff regarding progress of the above noted action items and goals for the past and the upcoming year.

**Charge 7. Identify agencies, departments, groups that might work to move this forward.**

All of the following, in addition to every Orange County resident, are stakeholders who should work together to make our roads safer.

1. Law enforcement agencies (Sheriff's Department, Highway Patrol)
2. School representatives
3. Orange County Visitor's Bureau
4. NCDOT staff
5. County and regional planning staff
6. Elected representatives
7. County businesses
8. Bicycle advocacy groups
9. Those who work with driver's education classes and traffic offenders

## Bicycle Safety Task Force Report, Attachment 2, page 6

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<sup>1</sup> Map My Ride: <http://www.mapmyride.com>

<sup>2</sup> WalkBikeNC statewide map program:  
<https://apps.ncdot.gov/newsreleases/Image.ashx?id=2992&orig=1>

<sup>3</sup> Watch For Me NC program: <https://apps.ncdot.gov/newsreleases/details.aspx?r=11035>

<sup>4</sup> The powerpoint for the presentation can be seen here:  
<http://www.bikewalknc.org/learn/education-resources-for-police/>.

<sup>5</sup> The program guide for Let's Go NC is here:  
<http://www.ncdot.gov/bikeped/safetyeducation/letsgonc/>

<sup>6</sup> A similar model for a statewide online education class created for Illinois can be seen here: <http://www.bikesafetyquiz.com/>

<sup>7</sup> National Highway Traffic Study: <http://www.nhtsa.gov/Bicycles>

<sup>8</sup> People for Bikes: <http://www.peopleforbikes.org/>

<sup>9</sup> Alliance for Biking and Walking: <http://www.bikewalkalliance.org/>

<sup>10</sup> National Bicycle Tourism Conference: <http://www.bicycletournetwork.org/>

<sup>11</sup> Bike Laws: <http://www.bikewalknc.org/important-nc-traffic-laws-applicable-to-bicyclists/>, and  
<http://www.ncdot.gov/BIKEPED/>

<sup>12</sup> Sample safety videos (from other states):  
<https://www.youtube.com/watch?v=A3QN5U567jE>  
<https://www.youtube.com/watch?v=iXC2UFRJ5Y4>

Appendix A: Possible ideas for PSA posters



Sample video PSAs can be found here:

<http://bikepgh.org/care/>

<http://georgiabikes.org/index.php/resources/35-georgia-resources/180-psa>

Appendix B: NCDOT Documents pertaining to rumble strips and bicycle traffic

R-44

- The beginning of a rumble strip/stripe pattern should be delineated in accordance with MUTCD criteria (Section 9C.06) on any facility that bicycles are legally allowed to operate.
- The NCDOT Division of Bicycle and Pedestrian Transportation will be provided an opportunity to comment on any project implementing rumble strips/stripes on facilities subject to this practice.
- Turn bay rumbles may continue to the beginning of the full width lane, if the paved shoulder width remains the same as the through-lane shoulder width.
- NCDOT recognizes and is sensitive to the fact that noise may be an issue. However, if there is a documented safety problem where no other reasonable cost effective solution is available then rumble strips should be installed. This approach has been supported through other Departmental actions.

**CONSIDERATIONS FOR BICYCLE TRAFFIC**

The following should be considered for all facilities where bicycles are legally allowed to operate:

- It is desirable to provide a nominal width of four (4) feet of useable shoulder between the outside edge of the shoulder rumble strip/stripe to the edge of pavement. However, even though a four foot nominal width is desired, it will not preclude the installation of a proven safety countermeasure where there is the presence of treatable lane departure events. Also, the condition of the shoulder itself should be considered in determining whether or not to provide the four foot nominal riding width for bicycle traffic.
- The width of shoulder rumble strips/stripes may vary between 8 and 16 inches. The engineer should determine design and placement.
- Gaps in milled patterns, varying between 6 and 12 feet, may be provided to allow bicyclists to move between the through lane and the right shoulder to avoid vehicles, debris, etc., but the pattern should be a minimum of a 5:1 rumble-to-gap ratio. The Engineer should determine design and placement.
- No gaps should be provided on the left (median) side of divided highways. Gaps should not be provided on interstate or freeway facilities.
- Consideration should be given to the alignment of the roadway in the direction of travel from the perspective of bicyclists.
- Consideration should be given to the grade and speed at which bicyclists may be traveling.

become sunken below the pavement surface, utility covers should be installed flush with the adjacent street surface and/or adjusted when streets are reconstructed or resurfaced.

## Shoulder Rumble Strips

A shoulder rumble strip is a safety feature for motorists installed on a paved shoulder near the outside edge of the travel lane. It is made of a series of milled or raised elements intended to alert inattentive drivers (through vibration and sound) that their vehicles have left the travel lane. Rumble strips are placed as a countermeasure for driver error, rather than street deficiencies, and are typically used on high speed facilities in rural areas. They are less applicable on urban and suburban street types. Where they are used, rumble strips on shoulders should be designed to lessen impacts on other users (specifically bicyclists). Shoulder rumble strips with a narrow offset of 9 inches or less from the edge of the pavement marking (travel lane) have been shown to be the most effective, because the driver is alerted sooner and it provides a slightly larger recovery area after being alerted.

Characteristics of and concerns about rumble strips that limit their usefulness or application include low traffic speeds, noise for adjacent residences, limited pavement width, presence of curb and gutter, significant turning movements, and other conflicts for motorists, pedestrians and bicyclists.

Bicyclists are affected by rumble strips. As legal street and road users, bicyclists may be in the travel lane, but where paved shoulders are available and clear, bicyclists will often use them to avoid conflicts with faster moving vehicles in the travel lane. As described in Chapters 3 and 4, paved shoulders, if wide enough, can be an appropriate facility type for bicyclists on some higher speed roadways, such as parkways or rural roads. There are a number of measures that should be considered to accommodate bicyclists when installing rumble strips:

- Wide outside paved shoulders improve safety for all highway and road users. Where existing cross-section exists or is available, allow

at least four feet beyond the rumble strips to the edge of the paved shoulder. Where guardrail, curb or other continuous obstructions exist, additional width (2 feet extra width) may be needed to provide adequate clearance for bicyclists.

- Bicycle gaps (recurring short gaps) should be designed in the continuous rumble strip pattern to allow for ease of movement of bicyclists from one side of the rumble to the other. A typical pattern is gaps of 10 to 12 feet between groups of the milled-in elements at 60 feet intervals.
- Decreased width of rumble strip and/or decreased offset width to the edge line (travel lane) may provide additional space usable to bicyclists.

Rumble strips have typically been used in rural areas where run-off-road crash problems exist, and their use on urban freeways and possibly urban parkways should be determined on the merit of the street cross-section and context. Rumble strips are generally not necessary on other complete street types. Installation will be considered on rural roads where posted speed limits and/or statutory speeds are at 55 miles per hour and above. Installation will be considered along specific rural roads where significant numbers of run-off-road-crashes that include any form of motorist inattention has been identified.



**ORANGE COUNTY BOARD OF COMMISSIONERS**

**Revised Resolution Authorizing the Creation of a Bicycle Safety Task Force,  
Charge, Term and Composition of Members to Serve on the Task Force**

WHEREAS, the issue of bicycle safety has been a topic of interest by various County groups over the past several years, including discussions by the Orange Unified Transportation Board (OUTBoard), the Board of County Commissioners (BOCC), and citizen groups; and

WHEREAS, a petition related to bicycle safety was brought forward at the BOCC's November 6, 2014 meeting during Petitions by Board Members and subsequently reviewed by the Chair/Vice Chair/Manager agenda team; and

WHEREAS, in response to the petition the Manager, Chair and Vice Chair discussed the topic with NCDOT at its regular quarterly meeting; and Planning staff worked with the OUTBoard and a subcommittee to develop recommendations; and

WHEREAS, the BOCC received the OUTBoard's Bicycle and Pedestrian Safety Report, including recommendations, at its June 16, 2015 meeting; and

WHEREAS, there exists a need to address bicycle safety in accordance with the recommendations of the OUTBoard's Bicycle and Pedestrian Safety Report; and

WHEREAS, the creation of the Bicycle Safety Task Force and approval of the composition, charge and term to same is within the purview of the BOCC; and

WHEREAS, it is the best interest of the citizens of Orange County to create a Bicycle Safety Task Force;

NOW, THEREFORE, BE IT RESOLVED that the Orange County Board of Commissioners, by approval of this resolution, does authorize the creation of a Bicycle Safety Task Force with member composition in accordance with the following guidelines:

- A. Size and Composition --
  - 1. No larger than **18** people total
  - 2. Stakeholders from each of the groups below be included in the membership, and a Board of County Commissioner liaison:
    - a. Law enforcement agencies (Sheriff's Department, Highway Patrol)
    - b. School representatives
    - c. Orange County Visitor's Bureau
    - d. NCDOT staff
    - e. County and regional planning staff

Bicycle Safety Task Force Report, Attachment 3, page 2

- f. County business
  - g. A representative from the Hillsborough/Orange County Chamber of Commerce and the Chapel Hill/Carrboro Chamber of Commerce
  - h. Bicycle advocacy groups
  - i. Those who work with driver's education classes and traffic offenders
  - j. Up to six (6) additional interested and concerned Orange County residents
  - k. Two (2) OUTBoard members.
- B. Appointment – The Bicycle Safety Task Force shall be appointed by the BOCC. The staff shall return to the BOCC in May with an OUTBoard recommended list of individuals to be appointed to the Task Force.
- C. Term – The Bicycle Safety Task Force shall operate for a term not to exceed one (1) year from the future appointment date of the Bicycle Safety Task Force.
- D. Charge – The charge of the Bicycle Safety Task Force shall be the following;
- 1. Develop a campaign for bicycle safety education and research;
  - 2. Develop an implementation timetable with estimated funding request information within the first 5 meetings, and present it to the OUTBoard for review and recommendation, and review and approval by the BOCC; and
  - 3. Develop an implementation report and present it to the OUTBoard for review and recommendation, and review, approval and funding commitment by the BOCC.

Upon motion of Commissioner Rich, seconded by Commissioner Peluse the foregoing resolution was adopted this the 21st day of June, 2016.

I, Donna Baker, Clerk to the Board of Commissioners for the County of Orange, North Carolina, **DO HEREBY CERTIFY** that the foregoing is a true copy of so much of the proceedings of said Board at a meeting held on June 21, 2016, as relates in any way to the adoption of the foregoing and that said proceedings are recorded in the minutes of said Board.

WITNESS my hand and the seal of said County, this 22 day of June, 2016.

Donna Baker  
Clerk to the Board of Commissioners



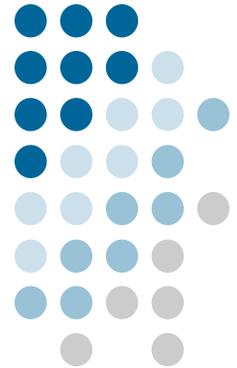
## Bicycle Safety Task Force Report, Attachment 4

### **Bicycle Safety Task Force Applicants**

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Membership Category	Applicants
Law enforcement agencies (Sheriff's Department, Highway Patrol)	Deputy Brian Whitehurst
School representative	Sara Pitts, Director for Environmental Health and Safety
Orange County Visitor's Bureau	Anthony Carey
NCDOT staff	Chuck Edwards, NCDOT
County and regional planning staff	Matt Day, TARPO Abigaile Pittman, Orange County Planning Department
County business	Eli Belz
Hillsborough/Orange County Chamber of Commerce	Kim Tesoro
Chapel Hill/Carrboro Chamber of Commerce	Anthony Carey
Bicycle advocacy groups	Alyson West Todd Jones William Langston
Those who work with driver's education classes and traffic offenders	Buddy Hartley, Driver's education teacher/coordinator
Interested and concerned Orange County residents	Peter Leousis Clifford Leath Peter Klopfer Bonnie Hauser
OUTBoard members	Heidi Perry Jeff Charles

07/15/2016



# Orange County Bicycle Crash Report

2007—2013 Bicycle Crash Analysis for  
Orange County, NC

\* Picture Credit: Sustainable Cities Collective, 2015: <http://www.sustainablecitiescollective.com/global-site-plans-grid/1118566/orange-county-poised-become-premier-cycling-destination-north-carolin>

## Introduction

In order to support and inform the efforts of the Bicycle Safety Task Force, Orange County Transportation Planning staff has prepared this report on bicycle-motor vehicle crashes in the rural parts of Orange County. This report analyzes a total of 34 bicycle-motor vehicle crashes that occurred in Orange County between January 1, 2007 and December 31, 2013 and includes information about age, types of injuries, demographics, crash types, and road and light conditions as well as information about driver demographics, driver speeds, driver vehicle types, and whether the crash was a hit and run crash. The Town of Hillsborough was not included in this analysis as no bicycle crashes occurred within the town limits during this time period. The final section of this document presents a crash cluster map, indicating where bicycle crashes are occurring more frequently in Orange County. The overall intent of this document is to provide meaningful information about bicycle safety and those people involved in bicycle-motor vehicle crashes, allowing the Bicycle Safety Task Force to base any future

recommendations on verified data and to help target specific audiences with bicycle safety educational messaging.

## Data Sources

The North Carolina Department of Transportation (NCDOT) provides

specific locational data for pedestrian and bicycle crashes as well as associated information about each crash in a format compatible with the most common mapping software, ArcGIS. The crash data is provided for the entire state of North Carolina. Orange County Transportation Planning staff obtained the data from NCDOT using their online portal (Figure 1 - <http://www.arcgis.com/home/item.html?id=b4fcdc266d054a1ca075b60715f88aef>); clipped the crash data to the Orange County boundary, also removing crash data from Chapel Hill/Carrboro; and performed a spatial analysis on the remaining bicycle crashes. The results of this analysis are presented in the following sections.

This crash data is periodically updated by NCDOT. This analysis will be updated upon receipt of the new data, with 2014 data available this winter.

## Crash Analysis

The report is divided into two sections. In the first section, Orange County Transportation Planning staff will present information about bicyclist age, injury severity, race and sex of motor vehicle crash-involved bicyclists, crash types, road conditions, and light conditions. In the second section, information regarding the bicycle crash-involved drivers will be presented, including driver race and sex, driver age, driver

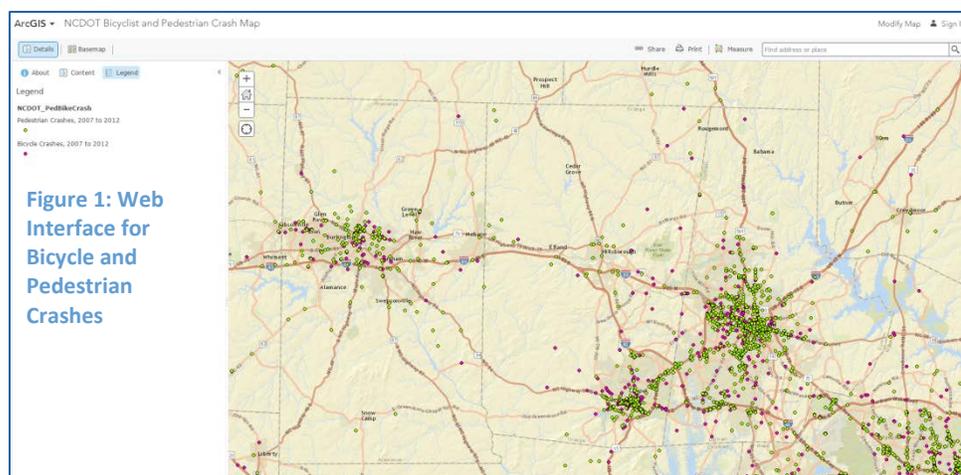


Figure 1: Web Interface for Bicycle and Pedestrian Crashes

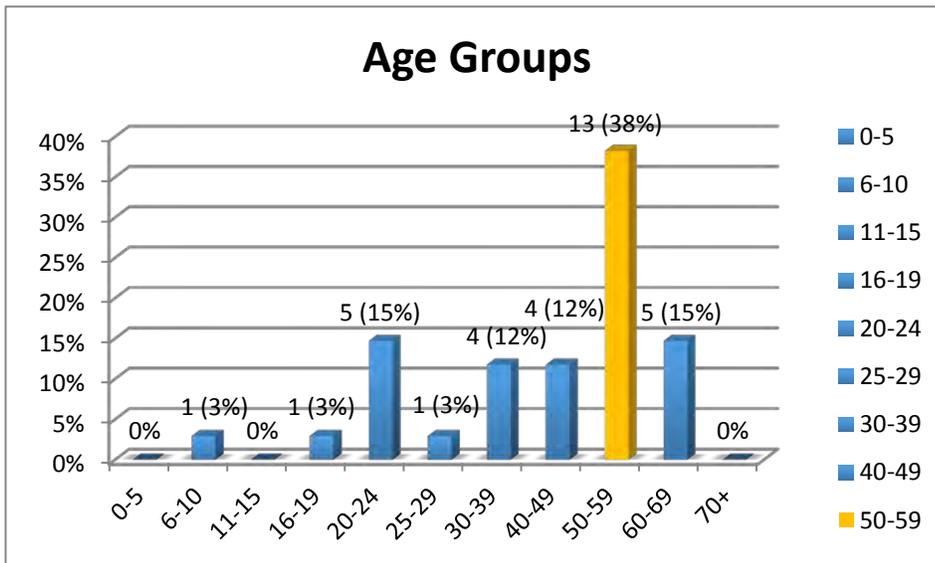
## Bicycle Safety Task Force Report, Attachment 5, page 3

speeds, driver vehicle types, and whether the crash was a hit and run crash. This information will hopefully yield some information about which types of drivers are most involved in crashes and allow for targeted outreach efforts to these specific groups.

### Bicycle Crash Information

Overall, 34 bicycle crashes occurred in Orange County (outside of Chapel Hill/Carrboro) between January 1, 2007 and December 31, 2013. All of these crashes were defined as occurring in rural areas, did not occur in any municipality or other jurisdiction and, in each case, the bicyclists involved in these crashes were in the travel lane riding with traffic. In all but one case, the weather was clear; the other instance occurred on a cloudy day, just after a storm event. It is also important to note that in three cases, crashes involved bicyclists under the influence of alcohol. All three of these cases occurred on major

roadways (NC 54, US 70, and US 15-501) and two resulted in a bicyclist fatality. The two bicyclists killed on major roads were both African-American men. The other fatality occurred around 8:00 AM in the morning to a white male.



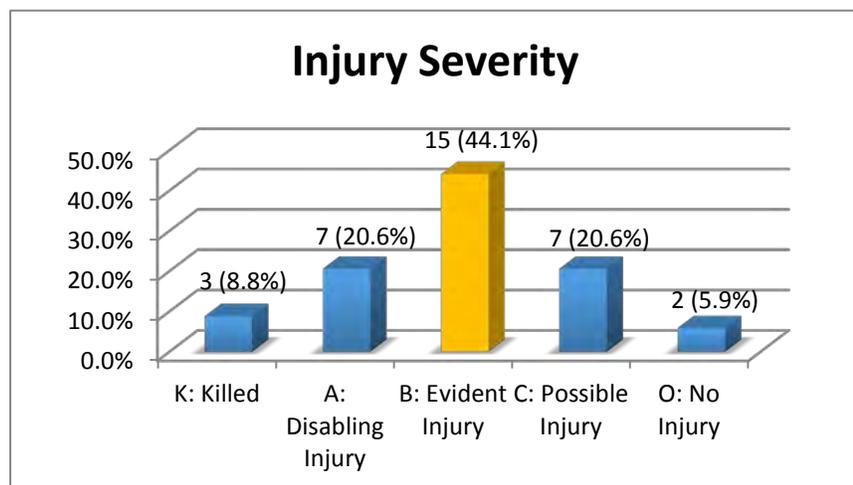
### Bicyclist Age

Of the 34 crashes occurring in Orange

County between January 1, 2007 and December 31, 2013, 13 or 38% of crashes involved bicyclists between the age of 50 and 59, while bicyclists between the age of 20 and 24 and bicyclists between the age of 60 and 69 accounted for the second-highest affected age groups. It is unclear if older adults represent a higher percentage of bicycle crashes or if crashes are equally distributed among the age groups of riders in rural Orange County.

### Injury Severity

Of the 34 bicycle crashes, three (3) crashes resulted in a fatality, seven (7) in a disabling injury, 15 in an evident injury, seven (7) in a possible injury, and two (2) in no injury. Overall, more than one half of crashes (64.7 percent) resulted in a

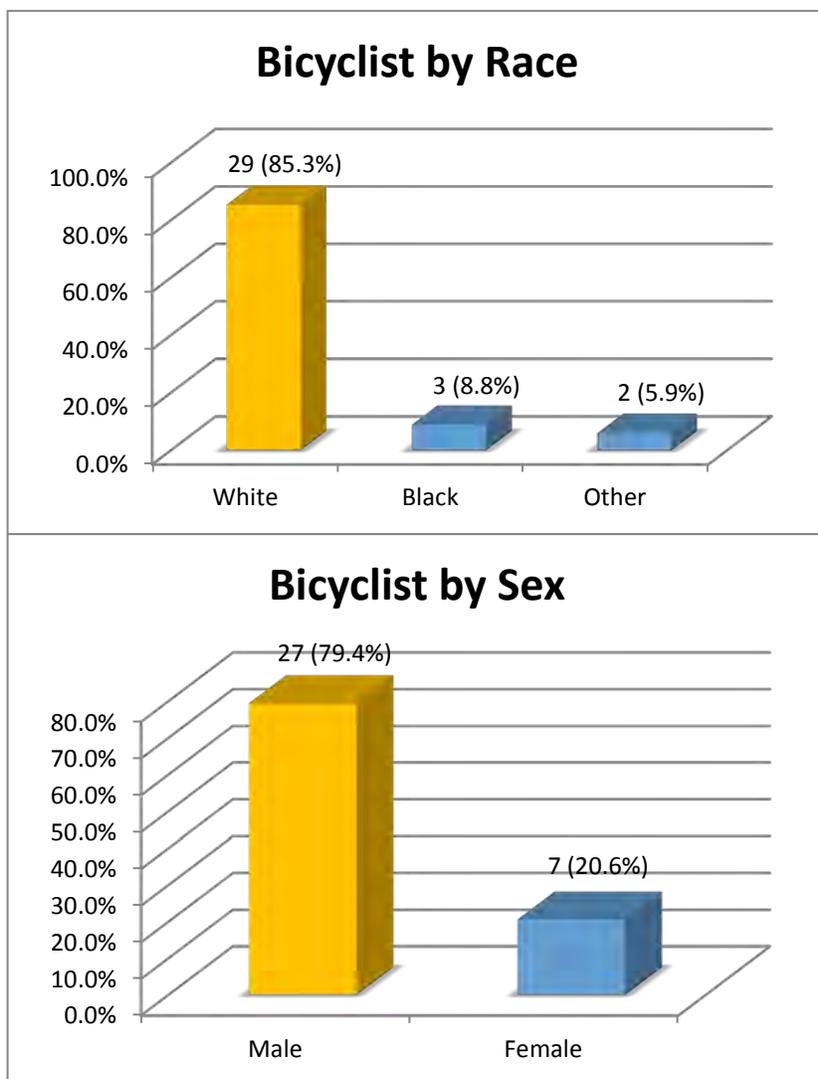


## Bicycle Safety Task Force Report, Attachment 5, page 4

serious injury (disabling and evident injuries). Considering that 20 crashes occurred in areas with a speed limit of 40 – 45 miles per hour and 11 crashes occurred in areas with a speed limit of 50 – 55 miles per hour, these severities are not surprising. Only three (3) crashes occurred in an area with a speed limit of 30 – 35 miles per hour. These severities highlight the fact that crashes in rural areas are likely to be more severe, based on the higher automobile speeds and limited space on rural roads to accommodate joint bicycle and automobile traffic. It is also important to note that crashes that do not result in injuries or “close shaves” are often not reported. This may account for the low number of “No Injury” crashes.

### *Race and Sex*

In terms of bicyclist race and sex, 85 percent of bicyclists involved in a crash are white and 79 percent are male. Only three cyclists involved in a crash were black and one was categorized as “other”, while 21 percent of crash-involved cyclists are female. Without good information about the demographics of



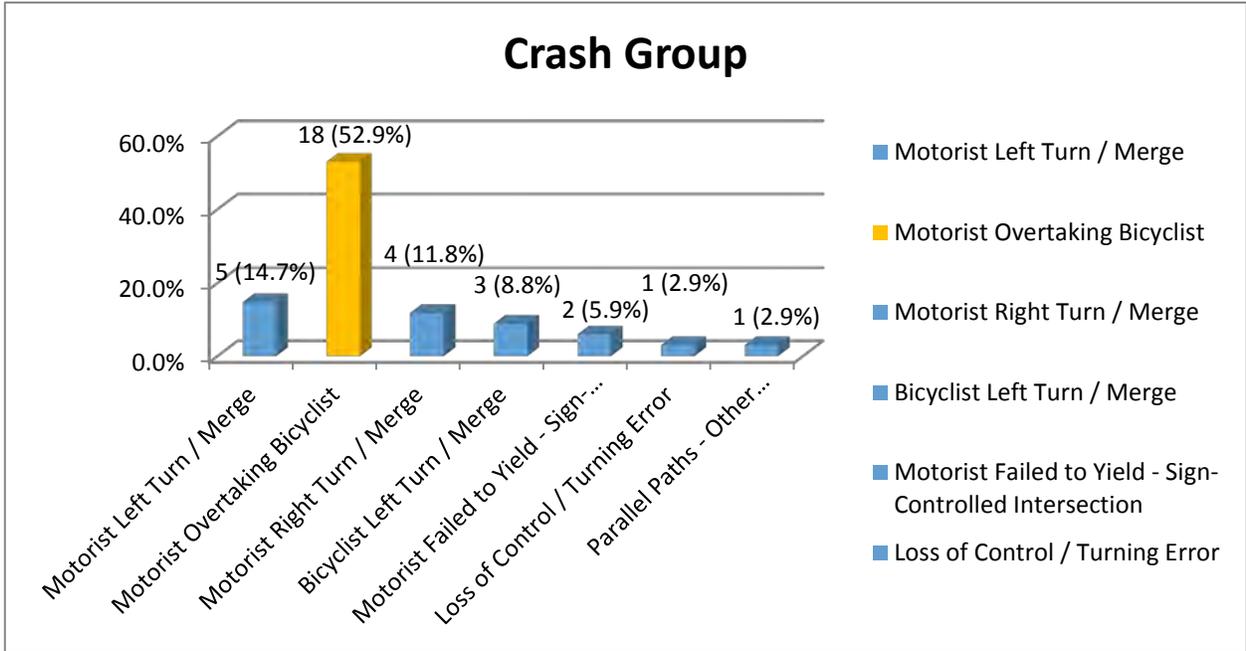
bicyclists riding in rural Orange County, it is hard to state definitively that one group of people is more likely to be involved in a crash than any other. However, this information generally reflects the demographics of bicyclists on Orange County rural roads based on anecdotal evidence and likely does support the conclusion that white male cyclists tend to be involved in a crash to a larger degree than female bicyclists or people of other races.

### *Crash Group/Type*

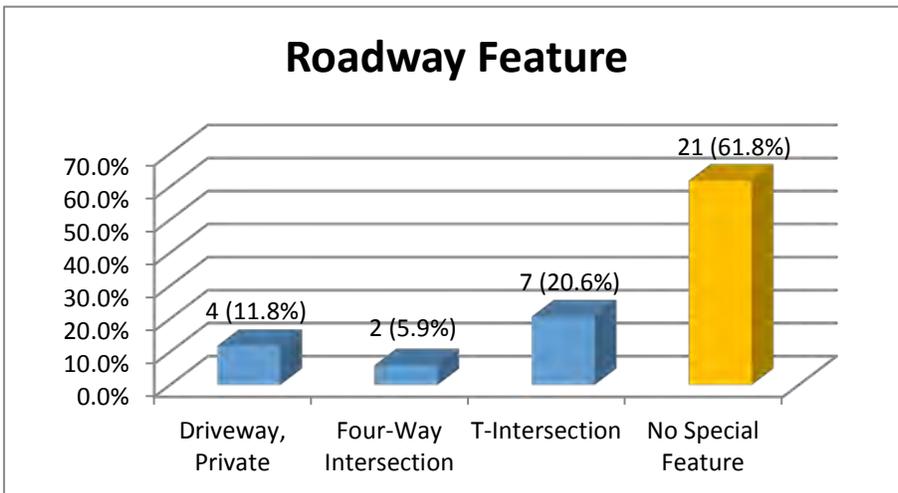
Perhaps the most important information included as part of the bicycle and pedestrian crash data is the crash group/crash type. This information provides a clearer picture of how the crash occurred and is helpful in determining which, if any, infrastructure or behavior issues are creating unsafe conditions

for motorists or bicyclists. For those bicycle crashes occurring in Orange County, the “Motorist Overtaking Bicyclist” crash group is, perhaps unsurprisingly, the most prevalent, accounting for more

than half (53 percent) of all crashes involving bicyclists. In examining this in more detail, the specific crash types are “Motorist Overtaking – Misjudged Space”, “Motorist Overtaking – Undetected Bicyclist”, and “Motorist Overtaking – Other/Unknown.” This crash type is directly related to the existing conditions for bicyclists on rural Orange County roads, namely narrow, high-speed travel lanes, minimal shoulders, and, at least in some areas, limited sight distances at curves. Other crash groups, including



“Motorist Left Turn/Merge”, “Motorist Right Turn/Merge”, and “Bicyclist Left Turn/Merge”, relate directly to turning movements by either the bicyclist or the motorist as the primary reason for the crash, while “Motorist Failure to Yield” is similar to “Motorist Overtaking Bicyclist.” Only one reported “Loss of Control/Turning Error” crash and one “Parallel Paths – Other/Unknown” crash occurred over this seven year period. Generally, the interaction of motor vehicles and bicycles away from intersections accounts for the largest percentage of crashes, while conflict points during turning movements by either motorists or bicyclists are also significant crash considerations. These conclusions are reinforced by an



examination of the roadway character and roadway features at the crash locations.

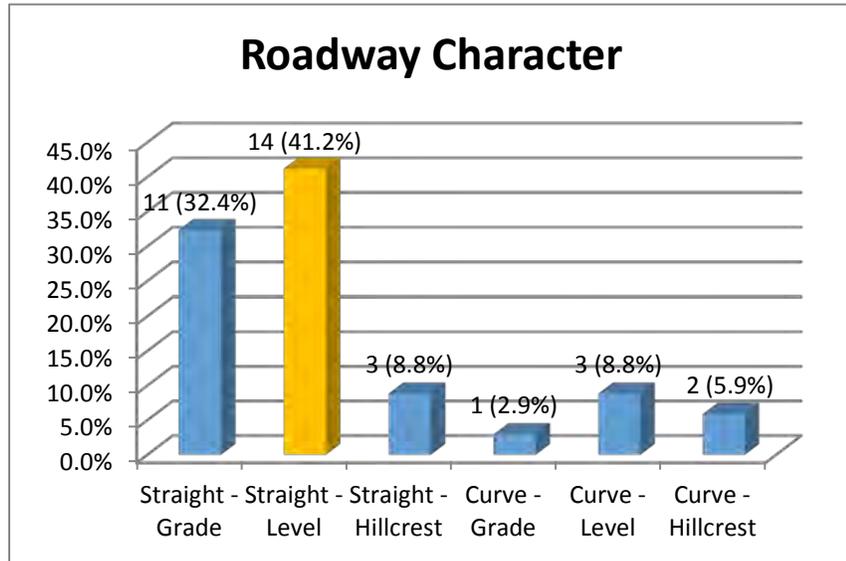
**Roadway Features and Roadway Character**

As expected, an examination of roadway features at crash locations confirms that, while traditional conflict points such as driveways, four-

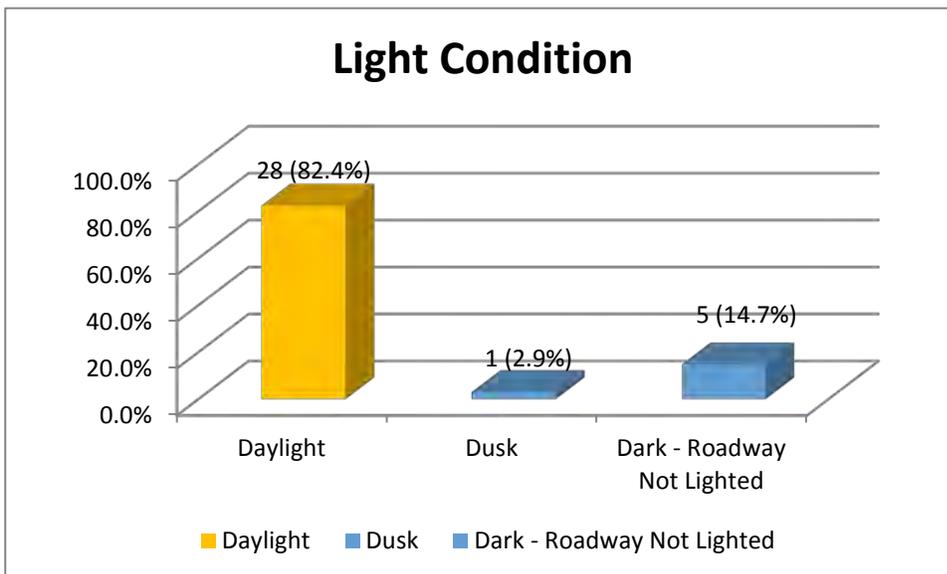
way stops, and T-intersections can be treacherous locations for bicyclists, particularly in rural areas where drivers may not be expecting non-motorized users, most bicycle crashes in rural Orange County (62 percent) occur along areas of roadway with no special features. In fact, the character of the roadway is more often straight and level (41 percent of crashes) or straight and at a grade (32 percent of crashes), than curved at a grade, curved and level, or curved and at a hillcrest (total 26 percent). This would indicate that, at least in a rural context, situations involving the interaction of motorists and bicyclists at speed along sections of open road are more dangerous for bicyclists than at intersections, where traffic is slower.

**Light Conditions**

In terms of the light conditions at the time of a bicycle-motor vehicle crash, more than 80 percent of



crashes (28) occurred during daylight, with one (1) crash, or 3 percent, occurring at dusk, and five (5) crashes, or 15 percent, occurring at night on an unlighted roadway. This is likely due the lower number of trips made by bicycle at night in rural Orange County. Each of the crashes that occurred under dark

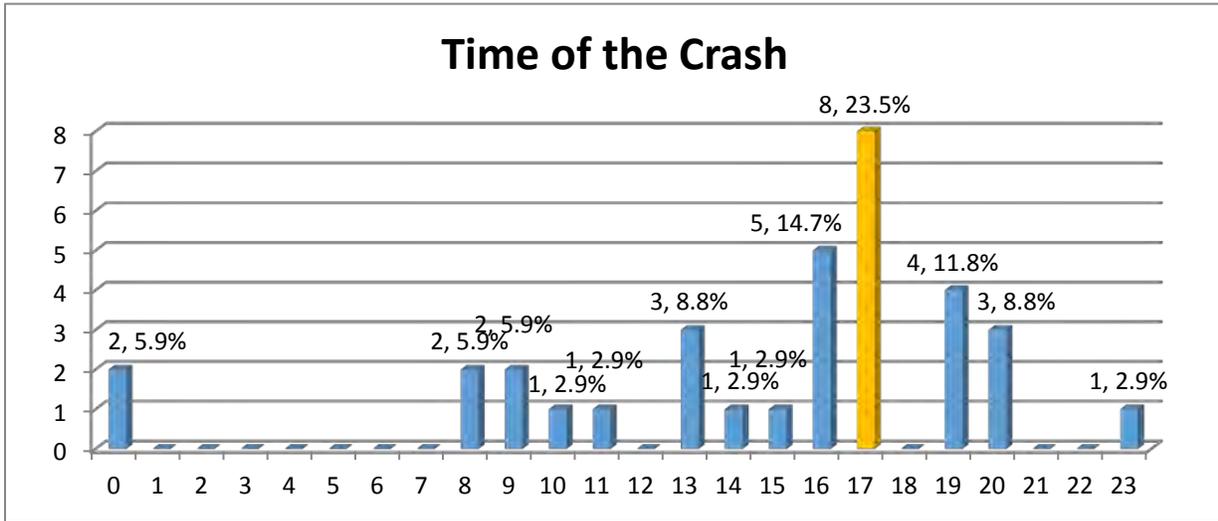


conditions was a “Motorist Overtaking Bicyclist” crash, of which two (2) resulted in a fatality. The remaining four (4) crashes all resulted in an injury. Crashes occurring away from intersections in dark conditions were particularly likely to result in a more severe injury.

**Time of Crash**

Bicycle crashes in Orange County occurred predominantly in the afternoon hours with only six (6) crashes occurring during the morning hours. Two Crashes occurred between 12:00 AM and 1:00 AM,

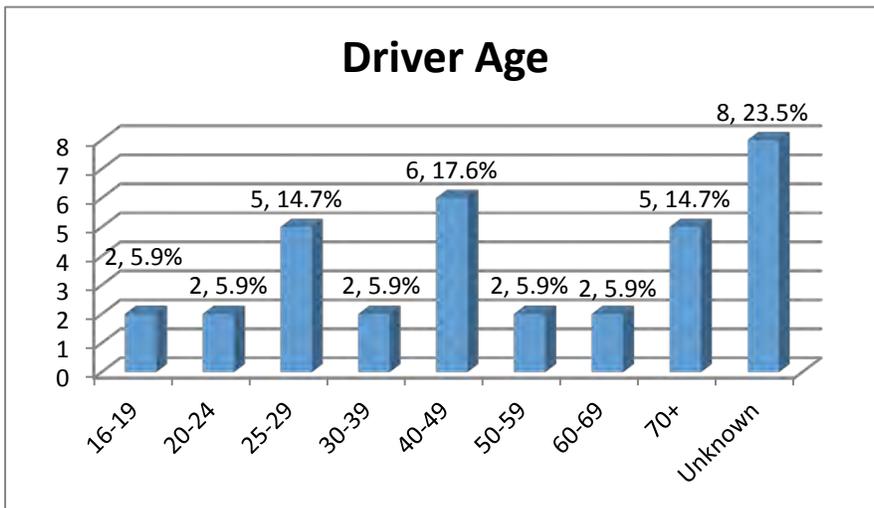
with one resulting in a fatality. The crash that occurred after 11:00 PM was also a fatality. Generally, crashes tended to occur in the afternoon, with peak commuting hours accounting for higher numbers of



crashes. The crash data does not indicate a substantial difference in the day of the crash, though fewer crashes occurred on Saturday, possibly as a result of less automobile traffic on rural Orange County roads.

Overall, this analysis indicates certain notable trends about motor vehicle-bicyclist crashes in rural areas of Orange County. More likely than not, bicycle crashes will result in some kind of injury, are the result of a motorist overtaking the cyclist, and occur away from intersections during daylight conditions. While intersection crash types are also notable for their frequency, crashes involving overtaking vehicles on

roadways without special features constitute the most common bicycle crash during this time period.



**Driver Crash Information**  
Information about bicycle crash-involved drivers is also provided in the crash data and is part of the information collected at the scene of the crash by law enforcement officials.  
Orange County

Transportation Planning staff presents some of the key information about the drivers in this section. As eight (8) out of 34 crashes, or slightly more than 20 percent of crashes, were hit and run crashes, information about a subset of the drivers is not known. The information provided in this section will hopefully provide guidance to the Bicycle Safety Task Force in targeting education efforts to those groups most often involved in crashes with bicyclists between 2007 and 2013.

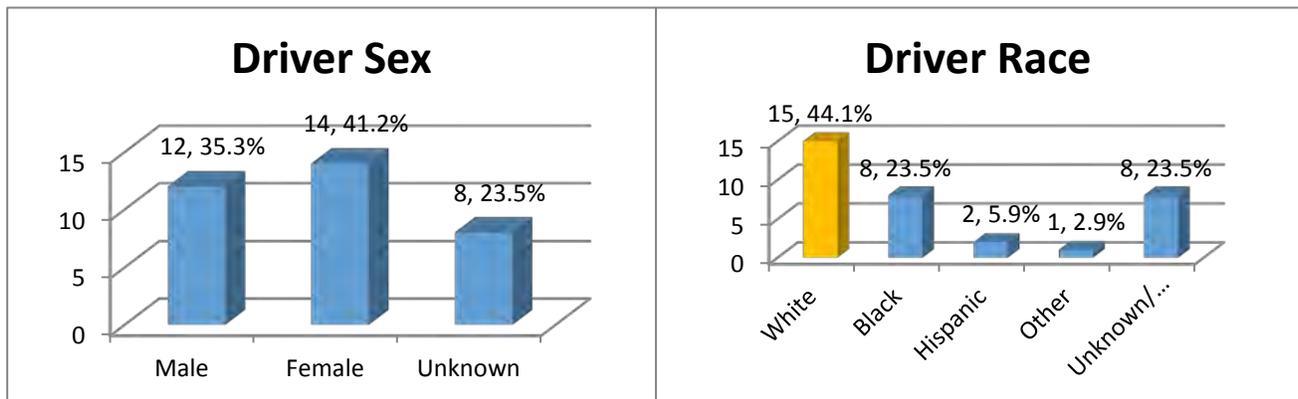
## Bicycle Safety Task Force Report, Attachment 5, page 8

### Driver Age

In terms of the age of drivers involved in a crash with a bicyclist, the data does not pinpoint a specific age group that is particularly likely to be involved in a crash. People over the age of 70, between the ages of 40 and 49, and between the ages of 20 and 29 have high representation in this data, but no clear pattern emerges. As such, education efforts around how bicyclists and automobiles should safely interact on rural Orange County roads should be targeted at age groups across the board.

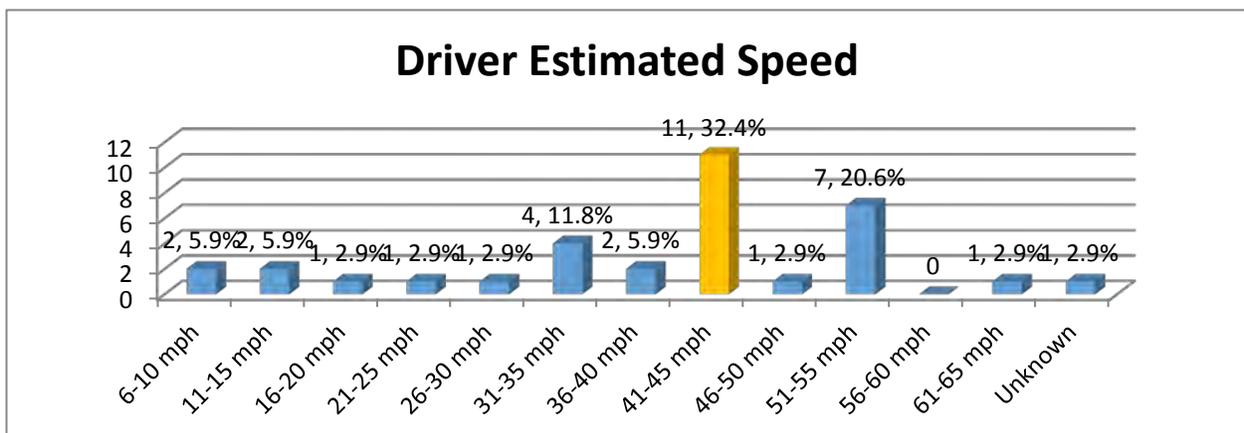
### Driver Race and Sex

In terms of the race and sex of drivers involved in a crash with a bicyclist in Orange County, again, no clear pattern emerges. While more white people are involved in motor vehicle-bicycle crashes as drivers, it is unclear how many people driving in the County identify as white, so it is difficult to definitely state that white people are more likely to be involved in a crash. Additionally, male and female drivers are likely to be involved in a crash with a bicyclist in roughly equal proportions. Based on this information, targeting people of all races and genders with any educational messaging around driver and bicyclist safety is likely the best approach.



### Driver Estimated Speed

Speed limits on Orange County rural roads range between 35 miles per hour (mph) and 55 mph. As crash reporting occurs after the incident, speeds can only be estimated subjectively, in fact, drivers may state their speed incorrectly on purpose to avoid receiving a ticket. With this caveat in mind, one third of driver estimated speeds in Orange County for those drivers involved in a crash with a bicyclist were between 41 and 45 mph. One fifth of crash-involved drivers were driving between 51-55 mph, while a



large number of drivers were also driving at a speed of less than 40 mph. Only one driver was traveling between 61-65 mph, at least according to this estimated data.

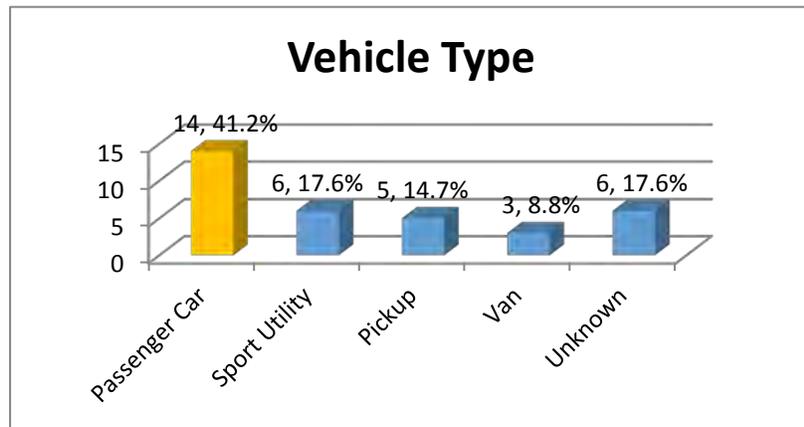
As indicated earlier, traveling at higher speeds increases the likelihood of a serious or fatal injury in the event of a bicycle-motor vehicle crash. The three crashes that resulted in a bicyclist fatality involved vehicles traveling at speeds greater than 50 mph. With this in mind, speed enforcement in rural Orange County may be a successful method of reducing crash severities.

### *Driver Vehicle Type*

Likely in proportion to the types of vehicles on the road, the vehicle types involved in crashes are skewed toward passenger cars, though significant numbers of other vehicle types, including sport utility vehicles, pickups, and vans, are also represented in the crash data.

### *Hit and Run Statistics*

Of the bicycle-motor vehicle crashes that occurred in rural Orange County, eight (8) or 23.5 percent were hit and run crashes, while the remaining 26 crashes, or 76.5 percent, of drivers remained on the scene.

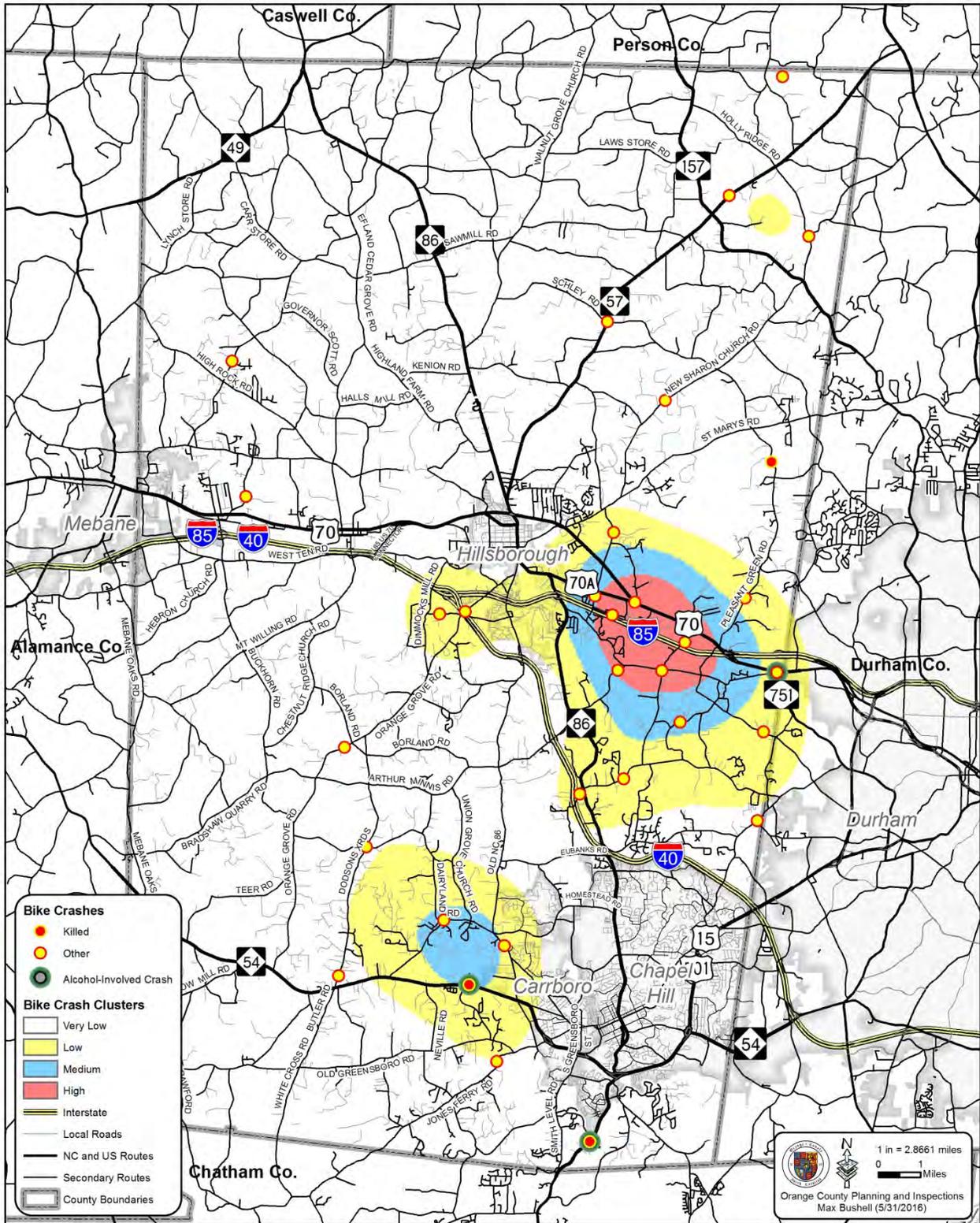


### *Crash Map*

Using the data provided by NCDOT, Orange County Transportation Planning staff prepared a map of all bicycle crashes occurring in rural Orange County. Crashes that resulted in a fatality are indicated in red and all other crashes are displayed using yellow. One fatality occurred on NC 54 at Hatch Road, one occurred on Pleasant Green Road just south of St Marys Road, and the other occurred on NC 751 at US 70. Green circles around the crash locations indicate that those crashes involved a bicyclist under the influence of alcohol.

Using the Kernel Density tool in ArcGIS, the clustering of crash points was calculated and mapped using red, blue, and yellow to emphasize high, medium, and low levels of clustering, respectively. As expected, one major cluster of bicycle crashes is located to the west of Carrboro; this area is very popular with recreational riders and rides originating in Carrboro often terminate at Mapleview Dairy, which lies just outside the crash cluster. More surprising is the large crash cluster between the Town of Hillsborough and the City of Durham, which encompasses areas of the Eno River State Park, the confluence of three highways (US 70, US 70A, and NC 751), and a favored bicycle route, Old State Highway 10. Thirteen (13) of 34 crashes in the entire rural area of the County can be found in this area, making it a particularly dangerous area for bicyclists.

## Pedestrian and Bicycle Crash Clusters - Orange County



### Conclusion

This analysis verifies what many bicyclists in rural Orange County already know, namely that motorists overtaking bicyclists can create hazardous conditions for both road users and that intersections also pose a threat in terms of safety. As most roads are narrow, have a limited shoulder, and have speed limits higher than 35 miles per hour, bicycle crashes are also likely to result in an injury, so it is especially important to be aware of the risks. Based on anecdotal evidence, bicycle crashes are occurring in areas with substantial numbers of cyclists, most notably to the west of Carrboro. However, the area between the Town of Hillsborough and the City of Durham may not have as high a volume of bicyclists, indicating that this area is particularly dangerous. Both the area west of Carrboro and the area between the Town of Hillsborough and the City of Durham merit special consideration in terms of safety infrastructure improvements, education efforts, and enforcement. Additionally, more information about high volume bicycle routes and areas where people are bicycling should be gathered to enhance this analysis. For drivers, it is clear that drivers exceeding 50 mph are likely to cause a serious or fatal injury to a bicyclist in the event of a conflict. Reducing or enforcing speed limits more rigorously may be a strategy to reduce the severity of bicycle crashes in rural Orange County. This information can hopefully help target efforts to improve safety and also inform the creation of a priority bicycle network in rural Orange County.

GENERAL ASSEMBLY OF NORTH CAROLINA  
SESSION 2015

SESSION LAW 2016-90  
HOUSE BILL 959

AN ACT TO MAKE VARIOUS CHANGES TO THE TRANSPORTATION LAWS OF THE STATE, AS RECOMMENDED BY THE JOINT LEGISLATIVE TRANSPORTATION OVERSIGHT COMMITTEE.

The General Assembly of North Carolina enacts:

**PART I. DIVISION OF HIGHWAYS**

**SMALL TRANSPORTATION PROJECTS/LOCAL CONSULTATION**

**SECTION 1.** G.S. 136-11.1 reads as rewritten:

**"§ 136-11.1. Local consultation on transportation projects.**

Prior to any action of the Board on a transportation project, the Department shall inform all municipalities and counties affected by a planned transportation project and request each affected municipality or county to submit within 45 days a written resolution expressing their views on the project. A municipality or county may designate a Transportation Advisory Committee to submit its response to the Department's request for a resolution. Upon receipt of a written resolution from all affected municipalities and counties or their designees, or the expiration of the 45-day period, whichever occurs first, the Board may take action. The Department and the Board shall consider, but shall not be bound by, the views of the affected municipalities and counties on each transportation project. The failure of a county or municipality to express its views within the time provided shall not prevent the Department or the Board from taking action. The Department shall not be required to send notice under this section if it has already received a written resolution from the affected county or municipality on the planned transportation project. "Action of the Board", as used in this section, means approval by the Board of: the Transportation Improvement Program and amendments to the Transportation Improvement Program; the Secondary Roads Paving Program and amendments to the Secondary Roads Paving Program; and individual applications for access and public service road projects, contingency projects, small urban projects, and spot safety projects that exceed ~~one two hundred fifty thousand dollars (\$150,000)~~ (\$250,000). The 45-day notification provision may be waived upon a finding by the Secretary of Transportation that emergency action is required. Such findings must be reported to the Joint Legislative Transportation Oversight Committee."

**BROADBAND AND FIBER OPTIC IN DOT RIGHT-OF-WAY/STUDY FEES**

**SECTION 2.(a)** G.S. 136-18(2) reads as rewritten:

**"§ 136-18. Powers of Department of Transportation.**

The said Department of Transportation is vested with the following powers:

- (2) Related to right-of-way:
- a. To take over and assume exclusive control for the benefit of the State of any existing county or township roads, and to roads.
  - b. To locate and acquire rights-of-way for any new roads that may be necessary for a State highway system, and subject system.
  - c. Subject to the provisions of G.S. 136-19.5(a) and (b) also (b), to use existing rights-of-way, or locate and acquire such additional rights-of-way rights-of-way, as may be necessary for the present or future relocation or initial location, above or below ground, of telephone, of:



prohibited by State law or a Department ordinance applicable to a specific road."

**SECTION 2.1.(b)** G.S. 20-119 is amended by adding a new subsection to read:

**"(i)** One, two, or three steel coils, transported on the same vehicle, shall be considered a nondivisible load for purposes of permit issuance pursuant to this section."

**SECTION 2.1.(c)** This section becomes effective October 1, 2016.

#### **DELAY SUNSET FOR SIX MONTHS ON DOT PARTNERSHIPS WITH PRIVATE DEVELOPERS**

**SECTION 2.3.** Section 2 of S.L. 2009-235, as amended by Section 7 of S.L. 2014-58, reads as rewritten:

**"SECTION 2.** This act is effective when it becomes law. This act shall expire on ~~December 31, 2016.~~ July 1, 2017."

#### **PART II. NORTH CAROLINA TURNPIKE AUTHORITY**

##### **ALLOW ELECTRONIC BILLING FOR TOLLS**

**SECTION 3.** G.S. 136-89.214(a) reads as rewritten:

**"(a)** Bill. – If a motor vehicle travels on a Turnpike project that uses an open road tolling system and a toll for traveling on the project is not paid prior to travel or at the time of travel, the Authority must send a bill by first-class mail to the registered owner of the motor vehicle or the person who had care, custody, and control of the vehicle as established under G.S. 136-89.212(b) for the amount of the unpaid ~~toll~~ toll; provided, however, that with the written consent of the registered owner of the motor vehicle or the person who had care, custody, and control of the vehicle as set forth above, the Authority may send the bill via electronic mail to a designated electronic mail account rather than by first-class mail. The Authority must send the bill within 90 days after the travel occurs, or within 90 days of receipt of a sworn affidavit submitted under G.S. 136-89.212(b) identifying the person who had care, custody, and control of the motor vehicle. If a bill is not sent within the required time, the Authority waives collection of the toll. The Authority must establish a billing period for unpaid open road tolls that is no shorter than 15 days. A bill for a billing period must include all unpaid tolls incurred by the same person during the billing period."

##### **TURNPIKE AUTHORITY REPORT ON ONE-TIME FACILITY USER FEES AND PENALTIES**

**SECTION 3.1.** The North Carolina Turnpike Authority shall report to the Joint Legislative Transportation Oversight Committee on January 31, 2017, and in its annual report thereafter, the number of one-time toll facility users who are charged more than fifty dollars (\$50.00) in processing fees imposed under G.S. 136-89.215 and civil penalties assessed under G.S. 136-89.216. With the first report on such users, the Turnpike Authority shall propose statutory changes to Part 2 of Article 6H of Chapter 136 of the General Statutes that are expected to have the aggregate effect of improving efficiency or reducing costs in collecting tolls while significantly reducing the possibility one-time users are charged more than fifty dollars (\$50.00) in processing fees imposed under G.S. 136-89.215 and civil penalties assessed under G.S. 136-89.216.

##### **REPEAL NCTA SEMIANNUAL REPORTS TO JLTOC**

**SECTION 4.** G.S. 136-89.193(c) is repealed.

#### **PART III. DIVISION OF BICYCLE AND PEDESTRIAN TRANSPORTATION**

##### **REPEAL REQUIREMENT TO MAINTAIN OFF-ROAD CYCLING RECORDS**

**SECTION 5.** G.S. 143B-135.100 reads as rewritten:

**"§ 143B-135.100.** Use of State land for bicycling; creation of trails by volunteers.

...

**(b)** Notwithstanding the provisions of subsection (a) of this section, any land may be restricted or removed from use by bicyclists if it is determined by the State, an agency of the State, or the holder of land purchased or leased with State funds that the use would cause substantial harm to the land or the environment or that the use would violate another State or

federal law. Before restricting or removing land from use by bicyclists, the State, the agency of the State, or the holder of the land purchased or leased with State funds must show why the lands should not be open for use by bicyclists. Local cycling groups or organizations shall be notified of the intent to restrict or remove the land from use by bicyclists and provided an opportunity to show why cycling should be allowed on the land. ~~Notice of any land restricted or removed from use by bicyclists pursuant to this subsection shall be filed with the Division of Bicycle and Pedestrian Transportation of the Department of Transportation.~~

~~(e) The Division of Bicycle and Pedestrian Transportation of the Department of Transportation shall keep a record of all lands made open and available for use by bicyclists pursuant to this section and shall make the information available to the public upon request.~~

...  
(e) Notwithstanding any other provision of this section, any hiking, walking, or use of bicycles on game lands administered by the Wildlife Resources Commission shall be restricted to roads and trails designated for vehicular use. Hiking, walking, or bicycle use by persons not hunting shall be restricted to days closed to hunting. The Wildlife Resources Commission may restrict the use of bicycles on game lands where necessary to protect sensitive wildlife habitat or species and shall file notice of any restrictions with the ~~Division of Bicycle and Pedestrian Transportation of the Department of Transportation.~~ species."

**BICYCLE MUST HAVE RED REAR LIGHT OR OPERATOR MUST WEAR REFLECTIVE VEST WHEN OPERATED AT NIGHT**

**SECTION 5.1.(a)** G.S. 20-129(e) reads as rewritten:

"(e) Lamps on Bicycles. – Every bicycle shall be equipped with a reflex mirror on the rear and both of the following when operated at night on any public street, public vehicular area, or public greenway:

- (1) A lighted lamp on the front thereof, visible under normal atmospheric conditions from a distance of at least 300 feet in front of such ~~bicycle, and shall also be equipped with a reflex mirror or bicycle.~~
- (2) A lamp on the rear, exhibiting a red light visible under like conditions from a distance of at least ~~200-300~~ feet to the rear of such bicycle, ~~when used at night or the operator must wear clothing or a vest that is bright and visible from a distance of at least 300 feet to the rear of the bicycle.~~

**SECTION 5.1.(b)** This section becomes effective December 1, 2016, and applies to offenses committed on or after that date.

**BICYCLE SAFETY LAW REVISIONS**

**SECTION 5.5.(a)** G.S. 20-150(e) reads as rewritten:

"(e) The driver of a vehicle shall not overtake and pass another on any portion of the highway which is marked by signs, markers or markings placed by the Department of Transportation stating or clearly indicating that passing should not be attempted. The prohibition in this section shall not apply when the overtaking and passing is done in accordance with all of the following:

- (1) The slower moving vehicle to be passed is a bicycle or a moped.
- (2) The slower moving vehicle is proceeding in the same direction as the faster moving vehicle.
- (3) The driver of the faster moving vehicle either (i) provides a minimum of four feet between the faster moving vehicle and the slower moving vehicle or (ii) completely enters the left lane of the highway.
- (4) The operator of the slower moving vehicle is not (i) making a left turn or (ii) signaling in accordance with G.S. 20-154 that he or she intends to make a left turn.
- (5) The driver of the faster moving vehicle complies with all other applicable requirements set forth in this section."

**SECTION 5.5.(b)** G.S. 20-149(a) reads as rewritten:

"(a) The driver of any such vehicle overtaking another vehicle proceeding in the same direction shall pass at least two feet to the left thereof, and shall not again drive to the right side of the highway until safely clear of such overtaken vehicle. This subsection shall not apply when the overtaking and passing is done pursuant to the provisions of ~~G.S. 20-150.1.~~ G.S. 20-150(e) or G.S. 20-150.1."

## Bicycle Safety Task Force Report, Attachment 6, page 4

**SECTION 5.5.(c)** G.S. 20-154 reads as rewritten:

**"§ 20-154. Signals on starting, stopping or turning.**

...  
(a1) A person who violates subsection (a) of this section and causes a motorcycle or bicycle operator to change travel lanes or leave that portion of any public street or highway designated as travel lanes shall be responsible for an infraction and shall be assessed a fine of not less than two hundred dollars (\$200.00). A person who violates subsection (a) of this section that results in a crash causing property damage or personal injury to a motorcycle or bicycle operator or passenger shall be responsible for an infraction and shall be assessed a fine of not less than five hundred dollars (\$500.00) unless subsection (a2) of this section applies.

(a2) A person who violates subsection (a) of this section and the violation results in a crash causing property damage in excess of five thousand dollars (\$5,000) or a serious bodily injury as defined in G.S. 20-160.1(b) to a motorcycle or bicycle operator or passenger shall be responsible for an infraction and shall be assessed a fine of not less than seven hundred fifty dollars (\$750.00). A violation of this subsection shall be treated as a failure to yield right-of-way to a motorcycle or bicycle, as applicable, for purposes of assessment of points under G.S. 20-16(c). In addition, the trial judge shall have the authority to order the license of any driver violating this subsection suspended for a period not to exceed 30 days. If a judge orders suspension of a person's drivers license pursuant to this subsection, the judge may allow the licensee a limited driving privilege for a period not to exceed the period of suspension. The limited driving privilege shall be issued in the same manner and under the terms and conditions prescribed in G.S. 20-16.1(b)(1), (2), (3), (4), (5), and G.S. 20-16.1(g).

(b) The signal herein required shall be given by means of the hand and arm in the manner herein specified, or by any mechanical or electrical signal device approved by the Division, except that when a vehicle is so constructed or loaded as to prevent the hand and arm signal from being visible, both to the front and rear, the signal shall be given by a device of a type which has been approved by the Division.

~~Whenever~~ Except as otherwise provided in subsection (b1) of this section, whenever the signal is given the driver shall indicate his intention to start, stop, or turn by extending the hand and arm from and beyond the left side of the vehicle as hereinafter set forth.

Left turn – hand and arm horizontal, forefinger pointing.

Right turn – ~~hand and upper arm horizontal, forearm and hand pointed upward.~~

Stop – ~~hand and arm upper arm horizontal, forearm and hand pointed downward.~~

All hand and arm signals shall be given from the left side of the vehicle and all signals shall be maintained or given continuously for the last 100 feet traveled prior to stopping or making a turn. Provided, that in all areas where the speed limit is 45 miles per hour or higher and the operator intends to turn from a direct line of travel, a signal of intention to turn from a direct line of travel shall be given continuously during the last 200 feet traveled before turning.

Any motor vehicle in use on a highway shall be equipped with, and required signal shall be given by, a signal lamp or lamps or mechanical signal device when the distance from the center of the top of the steering post to the left outside limit of the body, cab or load of such motor vehicle exceeds 24 inches, or when the distance from the center of the top of the steering post to the rear limit of the body or load thereof exceeds 14 feet. The latter measurement shall apply to any single vehicle, also to any combination of vehicles except combinations operated by farmers in hauling farm products.

**(b1)** Notwithstanding the requirement set forth in subsection (b) of this section that a driver signal a right turn by extending his or her hand and arm from beyond the left side of the vehicle, an operator of a bicycle may signal his or her intention to make a right turn by extending his or her hand and arm horizontally, with the forefinger pointing, from beyond the right side of the bicycle.

...."  
**SECTION 5.5.(d)** This section becomes effective October 1, 2016, and applies to offenses committed on or after that date.

### **PART IV. DIVISION OF MOTOR VEHICLES**

#### **COMMERCIAL DRIVERS LICENSE CHANGES**

**SECTION 6.(a)** G.S. 20-7(m) reads as rewritten:

AMEND "MOPED" DEFINITION

SECTION 13.(a) G.S. 20-4.01 reads as rewritten:

"§ 20-4.01. Definitions.

Unless the context requires otherwise, the following definitions apply throughout this Chapter to the defined words and phrases and their cognates:

...  
(7a) **Electric Assisted Bicycle.** – A bicycle with two or three wheels that is equipped with a seat or saddle for use by the rider, fully operable pedals for human propulsion, and an electric motor of no more than 750 watts, whose maximum speed on a level surface when powered solely by such a motor is no greater than 20 miles per hour.

(7a)(7b) Electric Personal Assistive Mobility Device. – A self-balancing nontandem two-wheeled device, designed to transport one person, with a propulsion system that limits the maximum speed of the device to 15 miles per hour or less.

(7b)(7c) Employer. – Any person who owns or leases a commercial motor vehicle or assigns a person to drive a commercial motor vehicle and would be subject to the alcohol and controlled substance testing provisions of 49 C.F.R. § 382 and also includes any consortium or third-party administrator administering the alcohol and controlled substance testing program on behalf of owner-operators subject to the provisions of 49 C.F.R. § 382.

...  
(21a) ~~Moped. – A type of passenger vehicle as defined in G.S. 105-164.3.~~

...  
(23) Motor Vehicle. – Every vehicle which is self-propelled and every vehicle designed to run upon the highways which is pulled by a self-propelled vehicle. Except as specifically provided otherwise, this term shall not include ~~mopeds as defined in G.S. 20-4.01(27)d1~~ mopeds or electric assisted bicycles.

...  
(27) Passenger Vehicles. –

...  
c2. Motor-driven bicycle. – A vehicle with two or three wheels, a steering handle, one or two saddle seats, pedals, and a motor that cannot propel the vehicle at a speed greater than 20 miles per hour on a level surface. This term shall not include an electric assisted bicycle as defined in subdivision (7a) of this section.

d. Motorcycles. – Vehicles having a saddle for the use of the rider and designed to travel on not more than three wheels in contact with the ground, including autocycles, motor scooters, and motor-driven bicycles, but excluding tractors and utility vehicles equipped with an additional form of device designed to transport property, three-wheeled vehicles while being used by law-enforcement agencies, electric assisted bicycles, and mopeds as defined in ~~subdivision d1-sub-subdivision d1~~ of this subsection-subdivision.

d1. Moped. – ~~Defined in G.S. 105-164.3~~ A vehicle, other than a motor-driven bicycle or electric assisted bicycle, that has two or three wheels, no external shifting device, a motor that does not exceed 50 cubic centimeters piston displacement and cannot propel the vehicle at a speed greater than 30 miles per hour on a level surface. The motor may be powered by electricity, alternative fuel, motor fuel, or a combination of each.

...  
(49) **Vehicle.** – Every device in, upon, or by which any person or property is or may be transported or drawn upon a highway, excepting devices moved by human power or used exclusively upon fixed rails or tracks; provided, that for the purposes of this Chapter bicycles and electric assisted bicycles shall be deemed vehicles and every rider of a bicycle or an electric assisted

bicycle upon a highway shall be subject to the provisions of this Chapter applicable to the driver of a vehicle except those which by their nature can have no application. This term shall not include a device which is designed for and intended to be used as a means of transportation for a person with a mobility impairment, or who uses the device for mobility enhancement, is suitable for use both inside and outside a building, including on sidewalks, and is limited by design to 15 miles per hour when the device is being operated by a person with a mobility impairment, or who uses the device for mobility enhancement. This term shall not include an electric personal assistive mobility device as defined in ~~G.S. 20-4.01(7a)~~subdivision (7b) of this section.

...."

**SECTION 13.(b)** G.S. 20-10.1 reads as rewritten:

**"§ 20-10.1. Mopeds.**

It shall be unlawful for any person who is under the age of 16 years to operate a moped as defined in ~~G.S. 105-164.3~~G.S. 20-4.01(27)d1. upon any highway or public vehicular area of this State."

**SECTION 13.(c)** G.S. 20-171.1 reads as rewritten:

**"§ 20-171.1. Definitions.**

As used in this Part, except where the context clearly requires otherwise, the words and expressions defined in this section shall be held to have the meanings here given to them:

**Bicycle.** – A nonmotorized vehicle with two or three wheels tandem, a steering handle, one or two saddle seats, and pedals by which the vehicle is ~~propelled~~propelled, or an electric assisted bicycle, as defined in G.S. 20-4.01(7a)."

**SECTION 13.(d)** G.S. 20-175.6 reads as rewritten:

**"§ 20-175.6. Electric personal assistive mobility devices.**

(a) Electric Personal Assistive Mobility Device. – As defined in ~~G.S. 20-4.01(7a)~~G.S. 20-4.01(7b).

...."

**SECTION 13.(e)** Reserved.

**SECTION 13.(f)** G.S. 58-37-1 reads as rewritten:

**"§ 58-37-1. Definitions.**

As used in this Article:

- (6) "Motor vehicle" means every self-propelled vehicle that is designed for use upon a highway, including trailers and semitrailers designed for use with such vehicles (except traction engines, road rollers, farm tractors, tractor cranes, power shovels, and well drillers). "Motor vehicle" also means a motorcycle, as defined in G.S. 20-4.01(27)d. "Motor vehicle" does not mean a moped, as defined in ~~G.S. 105-164.3~~G.S. 20-4.01(27)d1., or an electric assisted bicycle, as defined in G.S. 20-4.01(7a). Notwithstanding any other provisions of this Article, liability insurance on a moped is not eligible for cession to the Facility.

...."

**SECTION 13.(g)** Reserved.

**SECTION 13.(h)** G.S. 105-164.3 reads as rewritten:

**"§ 105-164.3. Definitions.**

The following definitions apply in this Article:

- (22) Moped. – ~~A vehicle that has two or three wheels, no external shifting device, and a motor that does not exceed 50 cubic centimeters piston displacement and cannot propel the vehicle at a speed greater than 30 miles per hour on a level surface.~~As defined in G.S. 20-4.01(27)d1.

...."

**SECTION 13.(i)** G.S. 20-51(14) reads as rewritten:

**"§ 20-51. Exempt from registration.**

The following shall be exempt from the requirement of registration and certificate of title:

....

# Bicycle Safety Task Force Report, Attachment 7, page 1

## Time and Cost Estimates for Bicycle Safety Task Force Potential Actions

Staff Time Only					
Action	Responsible Party	Other Partners/Specific Department	Sub-Tasks	Hours Estimated*	Expenses
School Outreach Apps/Programs	County Staff/ School Officials	Active Routes to School Coordinator, Walkable Hillsborough Coalition	Initial Coordination	440	-
			Kick-Off		-
			Content Development		-
			Updates		-
			Ongoing Maintenance		-
Safety Message to Listservs	County Staff	-	Coordination		-
			Content Development		-
Create Static Website with Safety Information - Chapel Hill/Carrboro will provide link and safety message on their Websites	County Staff / Town of Chapel Hill Staff / Town of Carrboro Staff	Orange County Community Relations	Content Development	30	-
			Coordination		-
Social Media – e.g., Orange County Facebook Events Page	County Staff	Orange County Community Relations	Content Development	10	-
Tabling at Community Events and cycling events	County Staff/ Volunteers/ Advisory Group Members/ Cycle Clubs	Planning Department, Orange County Schools, OUTBoard	Set up/Take down	80	-
			Tabling		-
Coordination with Transportation Demand Management Professionals at the local, county, and university levels	County Staff	Orange County Asset Management Services (AMS)	Coordination	20	-
News/Media Integration (Earned Media)	County Staff	Orange County Community Relations	Coordination	40	-
Best Safety Video Contest	County Staff	Orange County Community Relations	Coordination	30	-
			Review		-
Crash Reporting Enhancements – Suggestions	County Staff / NCDOT	NCDOT Traffic Safety Division/ Orange County Emergency Services	Coordination	60	-
			Review		-
Evaluation	County Staff	-	Data Collection		-
			Document Preparation		-
Convene Implementation Committee	County Staff	BOCC	Initial Coordination	400	-
			Kick-Off		-
			Content Development		-
			Meetings		-
			Document Preparation		-

\* Estimated hours includes staff time as well as time required from other partners, including volunteers and interns.

## Bicycle Safety Task Force Report, Attachment 7, page 2

### Time and Cost Estimates for Bicycle Safety Task Force Potential Actions

Likely Inexpensive					
Action	Responsible Party	Other Partners/Specific Department	Sub-Tasks	Hours Estimated*	Expenses
Bumper Stickers (100-150 stickers)/Magnets (100 magnets)	County Staff	Orange County Community Relations, Community Organizations	Design	15	\$200
			Review		
Posters (100)	County Staff	Orange County Community Relations, Community Organizations	Design	50	\$1,000
			Review		
Partner with CommunityWatch to add Signage** in Rural Neighborhoods (50)	County Staff	Orange County Community Relations, Community Organizations	Coordination	45	\$1,000
			Design		
			Review		
Yard Signs (100 for \$15 each)	County Staff/ Volunteers	Orange County Community Relations, Community Organizations	Design	50	\$1,500
			Review		
Bike Rodeo for Kids	County Staff/ Volunteers/ School District	PTA, Walkable Hillsborough Coalition, Active Routes To School group, School Board	Planning	70	\$500
			Coordination		
			Staffing		
Video/Audio Public Safety Announcements (PSAs) on Respect between Modes	County Staff/ Volunteers	Orange County Community Relations, Professional Videographer	Production	100	\$2,000
			Review		

\* Estimated hours includes staff time as well as time required from other partners, including volunteers and interns.

\*\* Top Tagline Options: **Ride Friendly, Drive Friendly** (Winner),

others considered; Expect Bikes! Pass Safely, Roll with Respect, Courtesy is crucial! Bike and Drive Safely

## Bicycle Safety Task Force Report, Attachment 7, page 3

### Time and Cost Estimates for Bicycle Safety Task Force Potential Actions

Moderately Expensive					
Action	Responsible Party	Other Partners/Specific Department	Sub-Tasks	Hours Estimated*	Expenses
Signage at Multiple Entry Points in County	County Staff / NCDOT	Orange County Community Relations	Design	70	\$450/each x 25 signs for total of ~ \$12,000
			Review		
			Approval		
Classes for Law Enforcement and Emergency Response Personnel	County Staff / NCDOT / DMV	Highway Safety Research Center	Coordination	140	\$3,000 for 100 hours of course time
			Teaching Time		
Real-Time EMT Incident Reporting	County Staff/EMT Dispatch Staff	Orange County IT	Coordination	180	\$5,000 in System Development Costs/Training
			Incident Reporting System Development		
			Training		
Data Collection (e.g., Bike Counts)	County Staff/ MPO/ NCDOT	Highway Safety Research Center/Institute for Transportation Research and Education?	Coordination	140	\$5,000 - \$15,000 Dependent on Method
			Training		
			Data Collection Time		
Launch Campaign Kickoff – Signs, Contests, Ads	County Staff	Orange County Community Relations, Volunteers	Coordination	30	\$2,000 to develop materials, run ads, buy contest prizes
			Hold Meeting		

Very Expensive					
Action	Responsible Party	Other Partners/Specific Department	Sub-Tasks	Hours Estimated*	Expenses
Radio/TV Spots	County Staff	Local TV Stations/Orange County Community Relations	Coordination	100	Approximately \$1,500 per TV spot, \$1,200 per Week of Radio Advertising
			Advertisement Creation		

\* Estimated hours includes staff time as well as time required from other partners, including volunteers and interns.

# Bicycle Safety Task Force Report, Appendix

## Appendix: Identifying problem areas, goals, messaging, and target audiences

### I. Motorist and Cyclist Education

*Problem:* New and existing car drivers, and many cyclists, are not learning the laws that pertain to cyclists and are not learning how to interact with each other on the road. Because they do not know the laws, some motorists and cyclists may each feel that the other is disrespectful of their place on the road. In addition to existing laws, new state laws affecting cyclists and motorists, including new passing laws, went into effect in October 2016, and the public needs to be aware of them.

Non-recreational (e.g., transportation and commuter) bicyclists include riders who are inexperienced, who are new to our communities, or who may have language barriers and cannot find the rules pertaining to bicycling in their language. Non-recreational cyclists may include riders who choose bicycling as their mode of transportation because they do not have funds for other forms of travel.

Existing crash analysis can help prioritize the messaging.

#### *Goals:*

- A. To be sure that all users of the road know the laws, including cyclists, motorists, commercial drivers, and law enforcement, so that misinformation can be eliminated. (Piggyback on state publicity for getting word out about the new law.)
- B. To be sure all users of the road understand the best practices for sharing the road when they encounter other vehicles, paying special attention to the area of passing.
- C. To make mutual respect the norm by emphasizing and promoting best practices, including: be courteous, be aware of your space in relation to those around you, use common sense and courtesy, ride and drive with respect for all.
- D. To move expectations beyond rights and laws to common sense courtesies. Define what is understood as courtesy for passing and focus on safe passing. Look at Defensive Driving/Riding courses.

*Message:* Cyclists fare best and are safest when they act like and are treated like drivers of vehicles. Learn the laws of the road, including:

- 1) Bicycles are considered vehicles and the same rules of the road apply to cyclists and motorists unless otherwise stated.
- 2) Cyclists must ride in the same direction as other vehicles.
- 3) Cyclists should ride as far to the right as practicable, and have the right to use the full lane or ride abreast when that is the safest position (e.g., to be more visible, to discourage unsafe passing, or to avoid obstacles in the road).
- 4) On Oct. 1, 2016, new law GS 20-150(e) allows the driver of a vehicle to pass a cyclist or moped on a road with a double yellow line, provided the driver gives a minimum of 4 feet between the car and the cyclist, or the driver completely enters the other lane of the highway. (Note that all other requirements of passing, such as having clear sight distance, must be observed). A full recap of the new laws can be found in Appendix 1.
- 5) In Orange County we watch out for each other on the roads:  
"Ride Friendly, Drive Friendly"

*Target audiences:* New and existing drivers, cyclists (recreational and non-recreational), law enforcement

**Safety benefits:** Knowing and following the laws should make all movements safer and more predictable, but making following the laws and courtesy on the road the norm is the most effective tool to achieve the goals of compliance and of mutual respect. The new passing law may also help mitigate some of the conflict currently seen between cyclists and motorists. Lowering frustrations and raising respect between road user groups will lead to less impatience, safer interactions, and a more positive perception of sharing the road.

## II. EMS, Fire Trucks, Law Enforcement

*Problem:* Vehicles, including cyclists, do not always pull over for emergency vehicles.

*Goal:*

- A. To achieve full compliance with this law

*Message:* The law requires **all** vehicles, including cyclists, to pull over and stop when an emergency vehicle (EMS, Fire Truck, and Public Safety vehicle) sounding its siren and flashing its lights approaches. When cyclists do not pull over and come to a stop, the emergency vehicles are unable to predict their movements, which hampers their ability to pass. In addition, cyclists need to follow the directions of flagmen who are directing traffic on the road.

*Target audiences:* Cyclists and motorists

**Safety benefits:** Emergency vehicles are traveling at high rates of speed and their ability to arrive at a situation quickly can be a matter of life and death. Improved compliance with this law will ensure that emergency responders arrive where they are needed as quickly as possible.

## III. Better Data Collection

*Problem:* No definitive way to collect data on cyclists' behavior or on amount/percentage of cyclist traffic on the road. No way to observe motorist behavior. This leads to the use of anecdotal or perceptual information instead of data, and also provides no way to judge the effectiveness of a safety campaign.

*Goals:*

- A. To be able to measure current behavior and vehicle counts, perhaps with the use of motion cameras as well as with other equipment, prioritizing data collection in known problem areas.
- B. To be able to measure effectiveness of the Bicycle Safety Task Force (BSTF) campaign, and to be able to demonstrate possible need for road safety improvements.
- C. To work with other agencies (e.g., law enforcement, EMT) to get more comprehensive and precise information for all incidents involving cyclists, and to have information forwarded in real time to the Orange County Planning Department.

*Message:* Data are necessary

- 1) To measure the extent of a problem based on data and not on personal observations.
- 2) To determine if education mitigates or has any positive effect on behavior.
- 3) To have data available to present to NCDOT, which bases many of its decisions for infrastructure improvements on data. (If there is no collection of data, then proposed projects may score poorly.)

*Target audiences:* Transportation planners, Board of County Commissioners (BOCC), overseers of BSTF implementation, NCDOT, law enforcement, EMT services

**Safety benefits:** NCDOT is more likely to respond to a request for road safety improvements if data can be amassed to show the need and support for it. If county funds are being used to implement safety programs, data will provide taxpayers and the elected officials with information about the effectiveness of the use of those funds.

#### **IV. Safety Equipment for Cyclists**

*Problem:* Cyclists who cannot be seen are a danger to themselves and to motorists. Some cyclists may be unaware of the laws requiring lights. Many non-recreational bicyclists ride at night, making safety equipment for night riding especially important. For some, the cost of lights and helmets may be a hardship. New laws that went into effect in October 2016 require a front light, plus a rear light or reflective clothing in addition to a rear reflector. Also, parents and cyclists need to be aware of the law requiring helmets on anyone younger than 16 years of age.

*Goals:*

- A. To strive to make all cyclists aware of the laws, to strive to have all bikes used at night equipped with required lights and reflectors, and to strive to have all children under 16 wearing helmets.
- B. To recommend best practices including use of lights during the day, wearing brightly colored clothing, and use of helmets for all ages.
- C. To make cyclists aware of the importance of being visible to others.

*Message:* Cyclists must equip their bikes as state law requires for lights and reflectors when riding at night, and cyclists must be seen to be safe.

*Target audience:* Primary: cyclists; secondary: bike shops

**Safety benefit:** Visibility is a key component of safety. Cyclists must be visible to other road users at night. Helmet use has been shown in some studies to prevent or lessen head injuries.

#### **V. Education and Safety around Large Groups of Riders**

*Problem:* Group rides can pose unique challenges and safety issues for sharing the road, and sometimes groups can include less experienced riders who are unaware of best practices. In addition, large groups of riders present challenges to motorists who are trying to safely pass them.

*Goals:*

- A. To get ideas for best practices for group riding into the hands of all who ride in groups, and to have the best practices followed.
- B. To recommend riding 2 abreast, and breaking into more manageable group sizes when vehicles are trying to pass.
- C. To define where and when large groups most often ride, and make those routes and alternative routes available to county residents so they can plan their routes accordingly.
- D. To get motorists and cyclists to recognize a reasonable expectation for passing time, and to use videos or PSAs to illustrate passing a large group of riders from both cyclists' and motorists' perspectives
- E. To make motorists aware of the new law allowing them to cross double yellow lines to pass when safe to do so.

*Message:* Some motorists can become frustrated or impatient when they find themselves behind a very large group of riders and are unclear about how best to safely pass them. By demonstrating best practices and by getting cyclists and motorists to see the challenges from the other's viewpoint, a better coexistence may be achieved.

*Target audiences:* Primary: riding clubs in and around Orange County; secondary: individual cyclists, motorists, large groups (pelotons)

**Safety benefits:** Educating large groups of cyclists will make them aware of behaviors that make motorists nervous and frustrated, and will let them know what they can do to improve safe passing. Educating motorists at the same time will make them aware of ways to pass groups safely.

## **VI. Advocate for Orange County Signage/Messaging That Focuses on Cyclist and Motorist Safety**

*Problem:* A small number of motorists and cyclists have exhibited and experienced less than friendly interactions on the roads. For both recreational and non-recreational riders, unfriendly interactions can lead to a feeling of vulnerability and fear. It may also discourage beginning cyclists or those who would like try biking for transportation or recreation. Cycling can keep our communities healthier and our air cleaner, and cyclists also bring tax dollars into Orange County. All who want to ride bikes here should feel welcome.

*Goals:*

- A. To develop a safety message that elected officials will adopt that promotes Orange County as a bicycling destination and that will promote respect between motorists and cyclists as the expected norm.

- B. To evaluate the effectiveness of the statewide “Watch for Me” campaign and to consider having Orange County participate in the program. (*Note: this program has just been evaluated by the Highway Safety Research Center and results will be available soon.*)
- C. To have Orange County evaluated by the national League of American Bicyclists as part of their Bicycle Friendly Community program

*Message:* Orange County offers beautiful roads for cycling, whether it is for transportation, health, or recreation. We want cyclists who come to Orange County to ride to know they are welcome in our county. Studies have shown that positive words and expectations (norms) can influence behavior. Consider promoting a “Ride Friendly / Drive Friendly” slogan for Orange County.

*Target audiences:* Primary: Orange County elected officials and staff; secondary: motorists and cyclists who use Orange County roads (many of whom do not live in Orange County)

**Safety benefits:** more cyclists and more awareness of cyclists on the roads makes cycling safer on the roads.

## VII. Improvements to Traffic Signals to Allow Bicycles to Trigger Traffic Signal

*Problem:* Bicycles do not trip lights at most traffic signals due to the type of tripper used or the way it has been calibrated. This makes it difficult for a cyclist to get through a red light on a road with little motor traffic.

*Goal:*

- A. To give cyclists at intersections a green light to proceed lawfully through an intersection

*Message:* When installing new traffic signals or when adjusting existing signals, install and calibrate trippers, or other technologies that recognize cyclists.

*Target audiences:* primary: NCDOT, with county and town traffic /transportation planners and BOCC aware so these improvements can be requested when trippers are installed

**Safety benefit:** Allows safe and legal travel through signaled intersections

## VIII. Non-infrastructure Recommendations of the Adopted Safe Routes to School (SRTS) Plan within the County’s Jurisdiction

*Problem:* The non-infrastructure recommendations of the adopted SRTS Plan share common goals with the charge of the Bicycle Safety Task Force in that they emphasize education and safety. Implementation of these SRTS recommendations has been delayed due primarily to limited funding for related infrastructure projects because of the revision in project criteria at the state level, and lack of any local matching funds.

*Goal:*

- A. To promote the implementation of related SRTS non-infrastructure recommendations that coincide with Bicycle Safety Task Force recommendations.

*Message:* The County's school-age children are a part of our bicycling community, and

- 1) Making bicycling to school a safer and more appealing transportation option encourages a healthy and active lifestyle from an early age.
- 2) Facilitating the planning, development, and implementation of projects and activities will improve safety and reduce traffic, fuel consumption, and air pollution in the vicinity of our schools.

*Target Audiences:* Primary: Orange County School Board, Orange County elected officials and staff, and parents and other residents; secondary: motorists and cyclists who use Orange County roads (many do not live in Orange County)

**Safety benefit:** Make bicycling to school safer for children

## **IX. Creation of a Future Task Force to Study Infrastructure**

*Problem:* Despite the efforts of this task force to make Orange County roads safer, some cyclists or potential cyclists will prefer infrastructure and greenways improvements. Because improvements to infrastructure were beyond the scope of this task force, we recommend that the BOCC appoint a task force that can look at infrastructure and possible funding sources for it.

*Goal:*

- A. To offer additional opportunities for active transportation for residents and visitors to our county

*Message:* Greenways and bike infrastructure are part of the complete streets policies set forth by NCDOT. There are recommendations for rural areas as well as for urban areas. Exploring these areas could enhance the cycling experience for several different types of riders.

*Target audience:* Cyclists and potential cyclists (as well as walkers and hikers)