



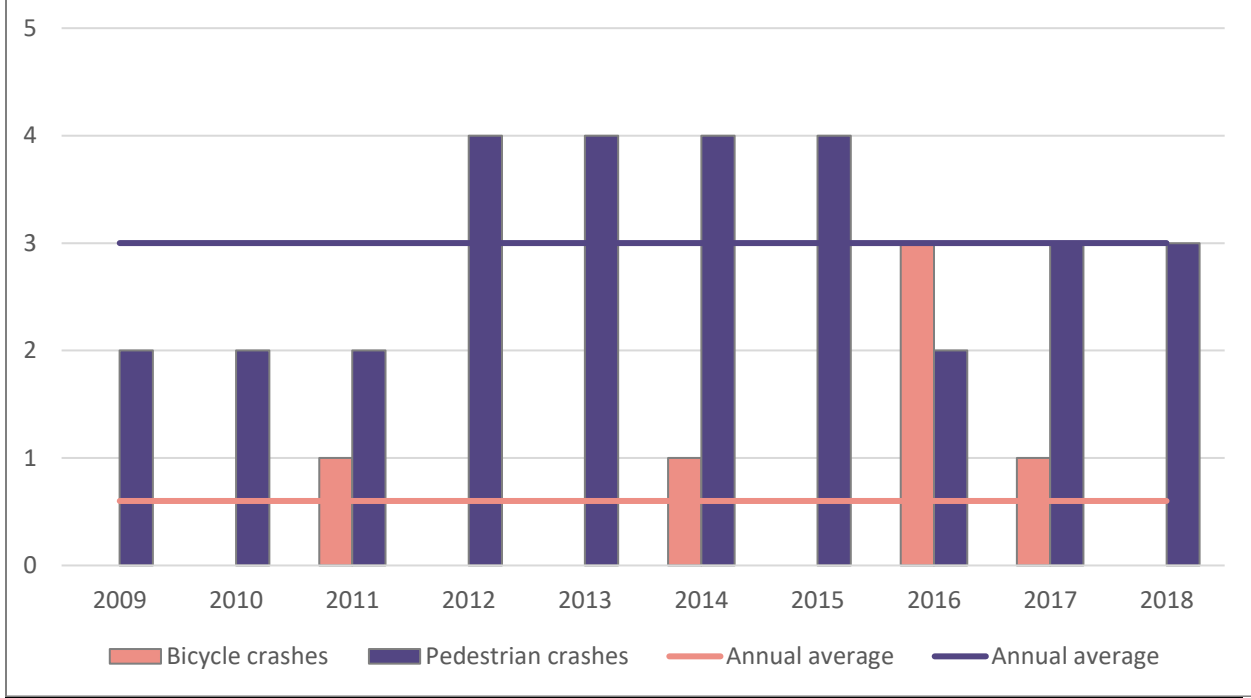
## OVERVIEW

- Between January of 2009 and June of 2019, there were 39 crashes involving either pedestrians or bicyclists. This results in a rate of 0.3 crashes per month, 4 crashes per year.
- 33 crashes (85 percent) involved pedestrians, while 6 involved bicyclists.
- Almost all of the crashes (37, or 95 percent) involved the injury of a person walking or bicycling.
  - 6 out of 37 (16 percent) injury-only crashes involved serious injuries.<sup>1</sup>
- **Chart 1** shows the number of crashes by year. **Chart 2** shows the number of fatal and serious injury crashes by year.

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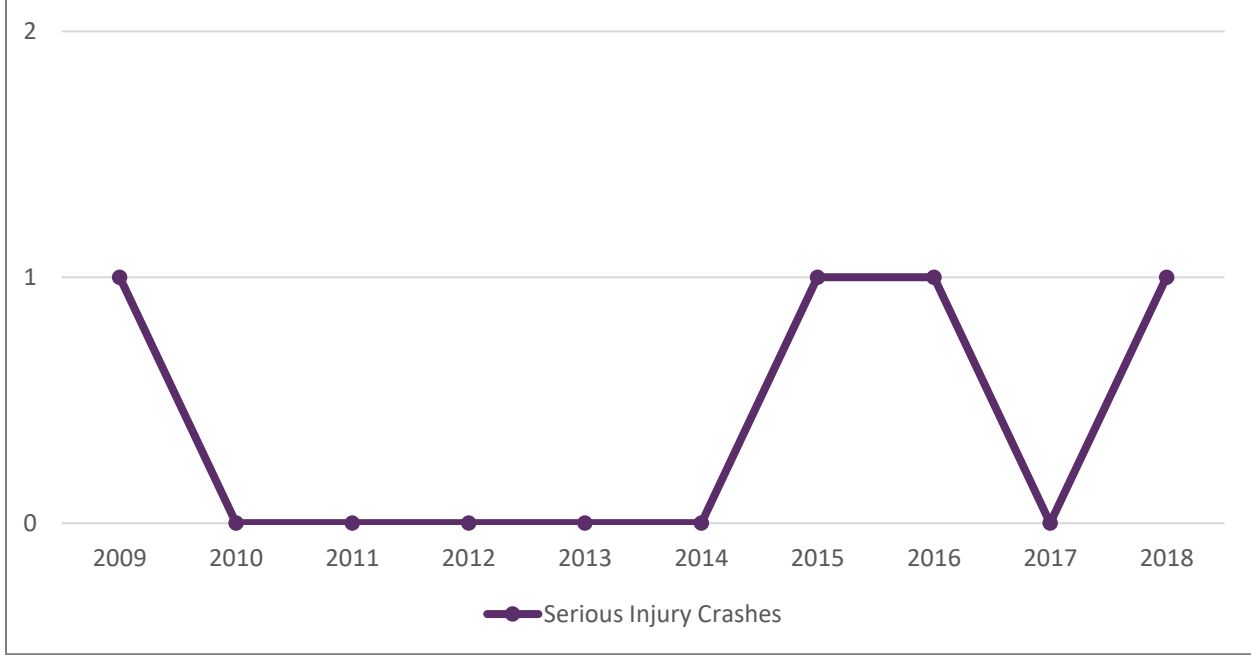
<sup>1</sup> Crash reports rank the severity of crashes as either fatal, suspected serious injury, suspected minor injury, possible injury, or no injury. Suspected serious injury crashes used to be reported as “incapacitating,” and suspected minor injury crashes were reported as “non-incapacitating.” For this report, suspected serious and incapacitating crashes are combined as “serious injury” crashes.

**Chart 1: Pedestrian/Bicycle Crashes in Lenoir City by Year**



Bike	0	0	1	0	0	1	0	3	1	0
Ped	2	2	2	4	4	4	4	2	3	3
Total	2	2	3	4	4	5	4	5	4	3

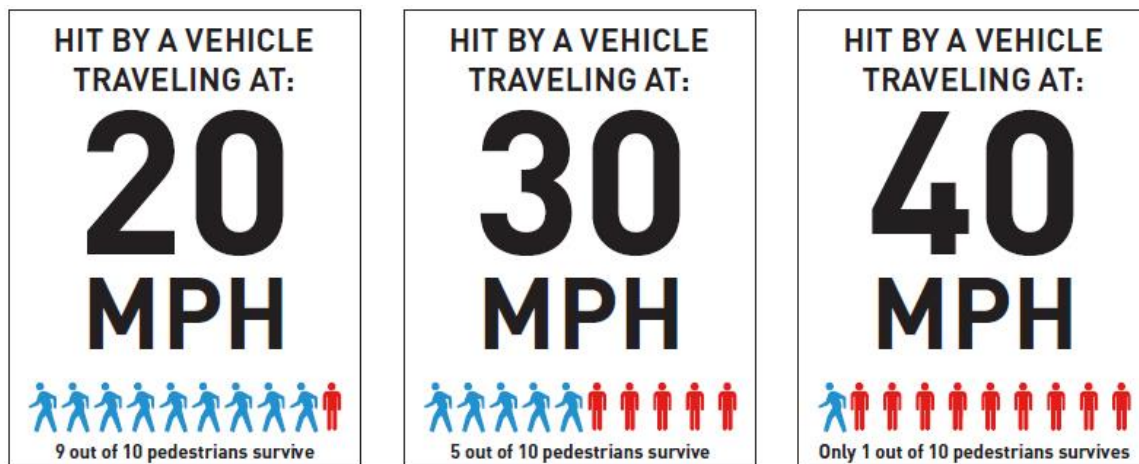
**Chart 2: Pedestrian/Bicycle Crashes in Lenoir City Resulting in Serious Injury**



## CRASH SEVERITY

Crashes in suburban and rural locations are less common, but tend to be more severe. This is likely due to higher travel speed of motor vehicles, compared with speeds in urban areas. For example, Cumberland Avenue in Knoxville has the most pedestrian/bicycle crashes per mile of any corridor in the Region, yet it hasn't seen any pedestrian/bicycle fatalities since 2007. By contrast, Oak Ridge Highway in Knox County saw only five pedestrian/bicycle crashes over eight years, but three of those crashes resulted in fatalities.

The graphic below illustrates the likelihood of a pedestrian being killed in a crash based on the speed of the motor vehicle.



## MAJOR ARTERIALS

- A disproportionate share of pedestrian/bicycle crashes, especially serious crashes, occurred on major arterials (streets such as U.S. 321 and Broadway Street).
  - 31 percent of crashes (12 crashes) occurred on major arterials. 7 took place on U.S. 321, while 5 occurred on Broadway Street (U.S. 11).
  - 9 of the major arterial crashes involved people walking, while 2 involved bicyclists
  - Crashes on major arterials resulted in 2 serious injuries, which is 33 percent of all serious injuries resulting from pedestrian/bicycle crashes.

## TYPES OF CRASHES ANALYZED IN THIS REPORT

This report analyzes certain crash factors. It focuses on identifying locations and behaviors where interventions – in the form of design changes, education, or enforcement – may help to prevent future crashes. 17 (44 percent) of the 39 total crashes fit into one of these categories. Categories of crashes analyzed in this report are:

- **Drivers failing to yield while turning.** These are crashes where the report indicates that the pedestrian or bicyclist was behaving properly while traveling along or across a street, and the driver failed to yield while making a turn. These crashes suggest the need for changes to the geometry of the intersections and/or to the function of the traffic signals to prevent future crashes. Education and traffic enforcement can also help prevent these types of crashes.
- **People struck by cars while walking in locations without sidewalks.** These are crashes where the report indicates the pedestrian was walking along a street without sidewalks and was struck by a car. These crashes indicate the need for sidewalks to be installed.
- **Drivers failing to yield while going straight.** These are crashes where the report indicates that the pedestrian or cyclist was crossing the street in a legal crosswalk<sup>2</sup>, either marked or unmarked, and was struck by a driver. These crashes indicate the need for better design of crossing locations, which may include reducing crossing distances and the addition of signs, beacons, or signals. Education and traffic enforcement can also help prevent this type of crash.
- **Bicyclists riding in locations without safe facilities.** This category encompasses two crash factors: crashes where a bicyclist was struck from behind, or was struck while riding on the sidewalk.<sup>3</sup> These crashes indicate the need for a safe bicycle facility along a corridor.
- **People struck by cars while crossing a street outside of an intersection or marked midblock crossing.** These are crashes where the report indicates a pedestrian was struck while crossing a street at a location other than an intersection or a marked midblock crossing. These crashes suggest the need for additional crossings, as the existing crossings may be dangerous or inconvenient. Education of pedestrians can also help prevent this type of crash.
- **Bicyclists riding in an unsafe manner or location.** This category encompasses two crash factors: crashes where the bicyclist was either riding on the street against traffic, or riding at night with no lights. These crashes suggest the need for education for bicyclists.

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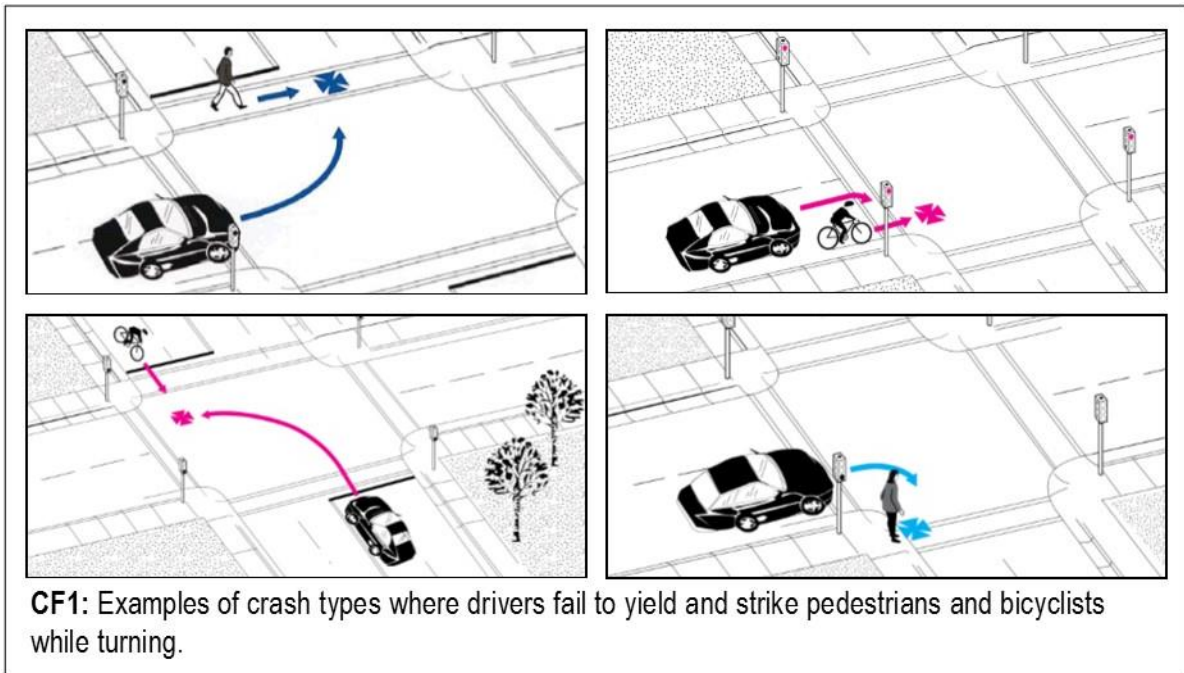
<sup>2</sup> Tennessee Code Annotated 55-8-101 (11) defines “crosswalk” as “(A) That part of a roadway at an intersection included within the connections of the lateral lines of the sidewalks on opposite sides of the highway measured from the curbs or, in the absence of curbs, from the edges of the traversable roadway; or (B) Any portion of a roadway at an intersection or elsewhere distinctly indicated for pedestrian crossing by lines or other markings on the surface.”

<sup>3</sup> Riding a bicycle on the sidewalk is legal. Bicycle safety educators generally warn against it, because of the danger from turning motor vehicles.

TABLE 1: Crash Factors		Number of Crashes			Percent of Crashes*
		Ped	Bike	Total	
1. Drivers failing to yield while turning (8 total crashes)	Turning left	1	1	2	12
	Turning right (not right on red)	4	1	5	29
	Turning right on red light	1	0	1	6
	Direction of turn unclear	0	0	0	0
2. Pedestrian struck while walking along corridor without sidewalks		1	n/a	1	6
3. Driver failing to yield while going straight		2	0	2	12
4. Bicyclist riding on sidewalk		n/a	0	0	0
5. Pedestrian crossing street outside of an intersection or marked crosswalk		4	n/a	4	24
6. Bicyclist riding against traffic		n/a	2	2	12
7. Driver striking bicyclist from behind		n/a	0	0	0
8. Bicyclist riding at night with no lights		n/a	0	0	0

\*Percentages may not total to 100 due to rounding

## Crash Factor 1: Drivers failing to yield while turning



Of the crashes where a crash factor has been identified, 8 (47 percent) involved a pedestrian or bicyclist hit by a car whose driver failed to yield properly when turning.<sup>4</sup>

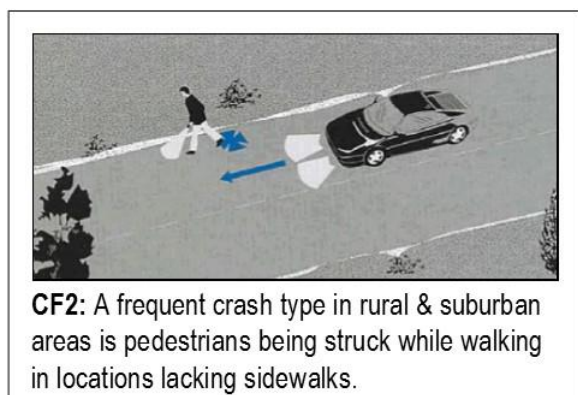
- Of these, 2 crashes involved drivers turning left; 5 involved a right turn (not on a red light); and 1 involved a right turn on red.
- 7 of these crashes involved injuries, none of them serious injuries or fatalities.
- 6 of these crashes involved pedestrians, and the remaining 2 involved bicyclists.
- 3 corridors saw multiple crashes of this type:
  - 3 crashes along U.S. 321
  - 2 crashes along East Broadway Street
  - 2 crashes in parking lots along Abbie Drive
- **Table 2** has more details about the locations of these crashes.

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<sup>4</sup> This crash factor is identified only where the bicyclist or pedestrian involved was traveling safely and within the law and the driver failed to yield

<b>TABLE 2: Locations of failure-to-yield crashes (number in red indicates bicyclist involved)</b>				
<b>Corridor</b>	<b>Cross street/area</b>	<b>Left turns</b>	<b>Right turn (not on red)</b>	<b>Right turn on red</b>
Abbie Dr	Home Depot parking lot		1	
	Wal-Mart parking lot	1		
E Broadway St	Hill St		1	
	Kingston St		1	
Rock Springs Rd	Rock Springs Annex	1		
U.S. 321	Frosty Proaps Dr			1
	I-40 Westbound off-ramp		1	
	Hickman St.		1	

## Crash Factor 2: People struck by cars while walking in locations without sidewalks



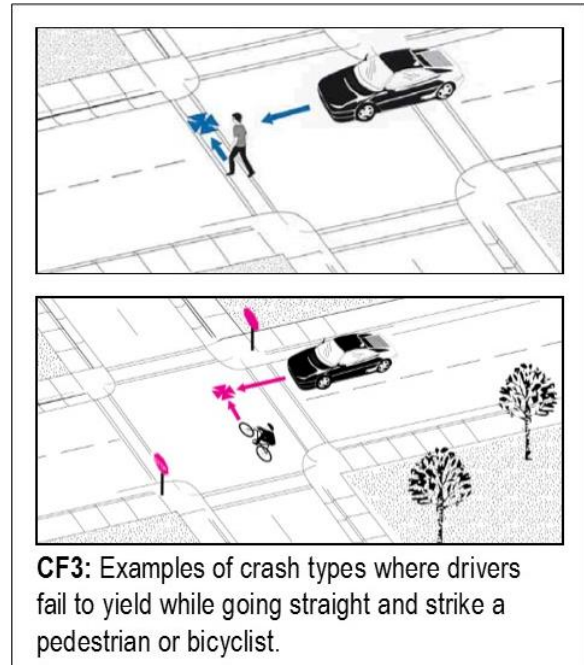
In 1 crash, a person walking along a street without a sidewalk was hit by a driver.<sup>5</sup> The crash involved a serious injury. The crash occurred on West Hills Drive near Grayson Freedman Lane.

<sup>5</sup> This crash factor is identified only where the crash report finds that the pedestrian was walking along the side of the road when the crash happened, not cases where pedestrians entered the road to cross.

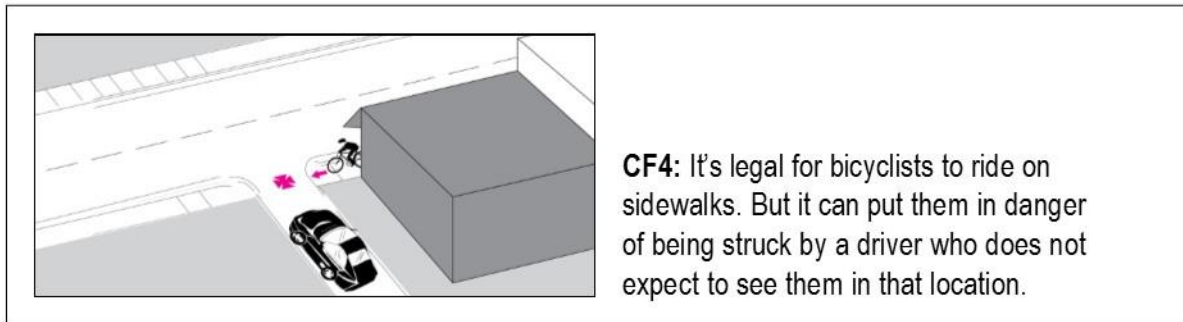
### Crash Factor 3: Driver failing to yield while going straight

In 2 crashes, drivers were going straight and failed to yield for a person walking or bicycling across the street in a legal crosswalk, either marked or unmarked, or who otherwise had the right of way.<sup>6</sup>

Both crashes involved pedestrians and were injury crashes. One crash occurred where the greenway crosses McGhee Boulevard near Rock Springs Road, the other on Harrison Road at the driveway to Lenoir City High School.



### Crash Factor 4: Bicyclist riding on sidewalk



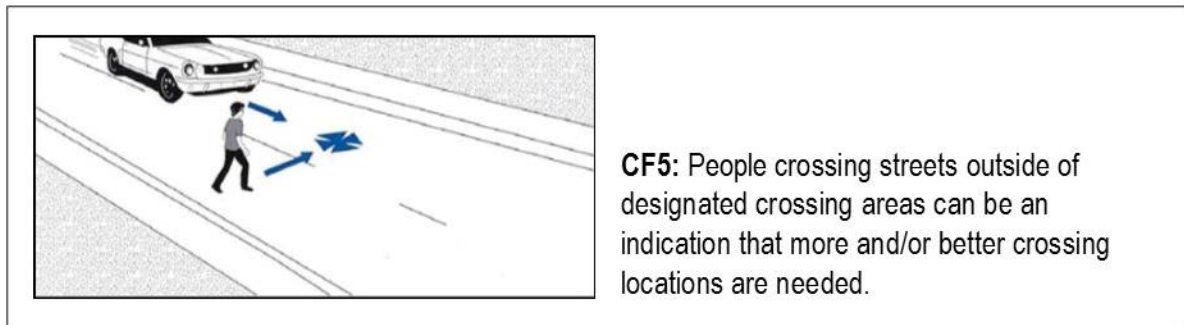
No crashes of this type were reported in Lenoir City during the time analyzed in this report.

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<sup>6</sup> This crash factor is not identified where the crash report finds that the person walking or bicycling entered the street in a way that failed to give the driver sufficient time to yield the right of way.



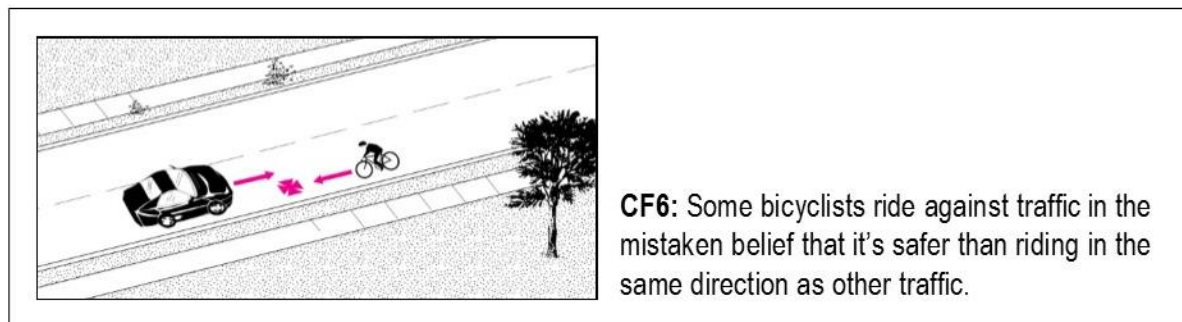
## Crash Factor 5: Pedestrian crossing street outside of an intersection or marked crosswalk



In 4 crashes (24 percent), pedestrians were crossing the street outside of an intersection or marked crosswalk. 3 of these crashes involved injuries, 2 of them serious injuries. 3 of these crashes occurred on U.S. 321. **Table 3** shows the locations of all crashes of this type.

<b>TABLE 3: Areas with pedestrians struck while crossing outside of an intersection or marked crosswalk</b>	
<b>Crash occurred on this street</b>	<b>In this area</b>
U.S. 321	east of White Wing Rd
	south of Hickman St
City Park Dr	east of the TVA access road
Wilson St	north of Panther Dr

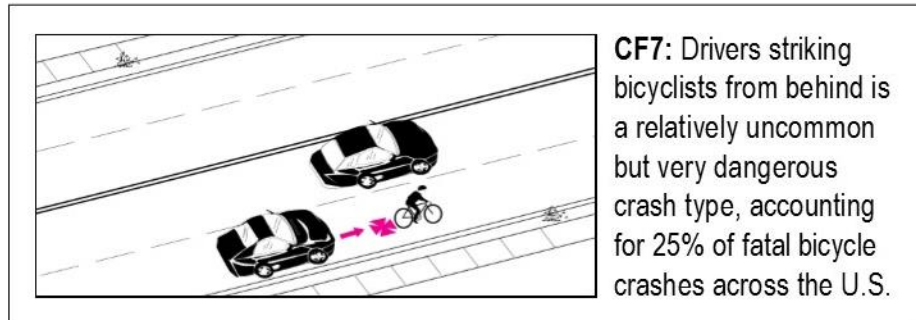
## Crash Factor 6: Bicyclist riding against traffic



2 bicyclists were struck while riding against traffic. Both crashes involved injuries, 1 a serious injury. One occurred along Nelson Street near Evans Lane, while the other took place along U.S. 321 south of Pearl Drive.

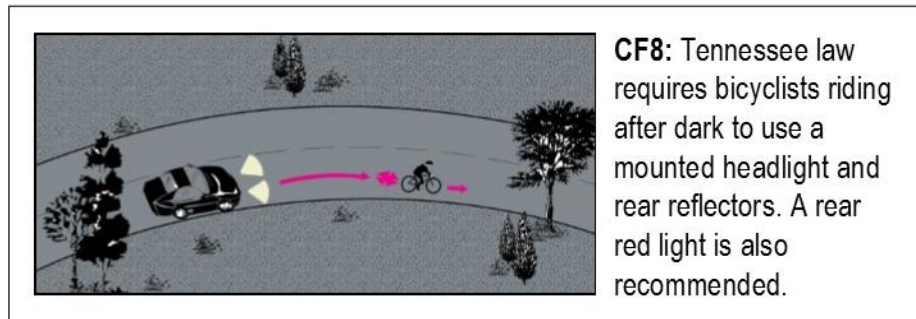
## Crash Factor 7: Driver striking bicyclist from behind

No crashes of this type were reported in Lenoir City during the time analyzed in this report.



## Crash Factor 8: Bicyclist riding at night with no lights

No crashes of this type were reported in Lenoir City during the time analyzed in this report.



## Methodology

Crash data were downloaded from the TITAN database maintained by the State of Tennessee. Crashes were mapped in ArcMap GIS software based on latitude/longitude or closest intersection, where lat/long data were not available. TPO staff then reviewed the location of each crash to correct data errors. TPO staff assigned crash factors based on information obtained from individual crash reports, including crash narratives and information about citations issued.

## Image credit

All crash type images are from the Pedestrian and Bicycle Crash Analysis Tool (PBCAT), which was developed by the Federal Highway Administration (FHWA), in cooperation with the National Highway Traffic Safety Administration (NHTSA). The purpose of the PBCAT is to assist with analysis of pedestrian/bicycle crashes with the goal of preventing them.