



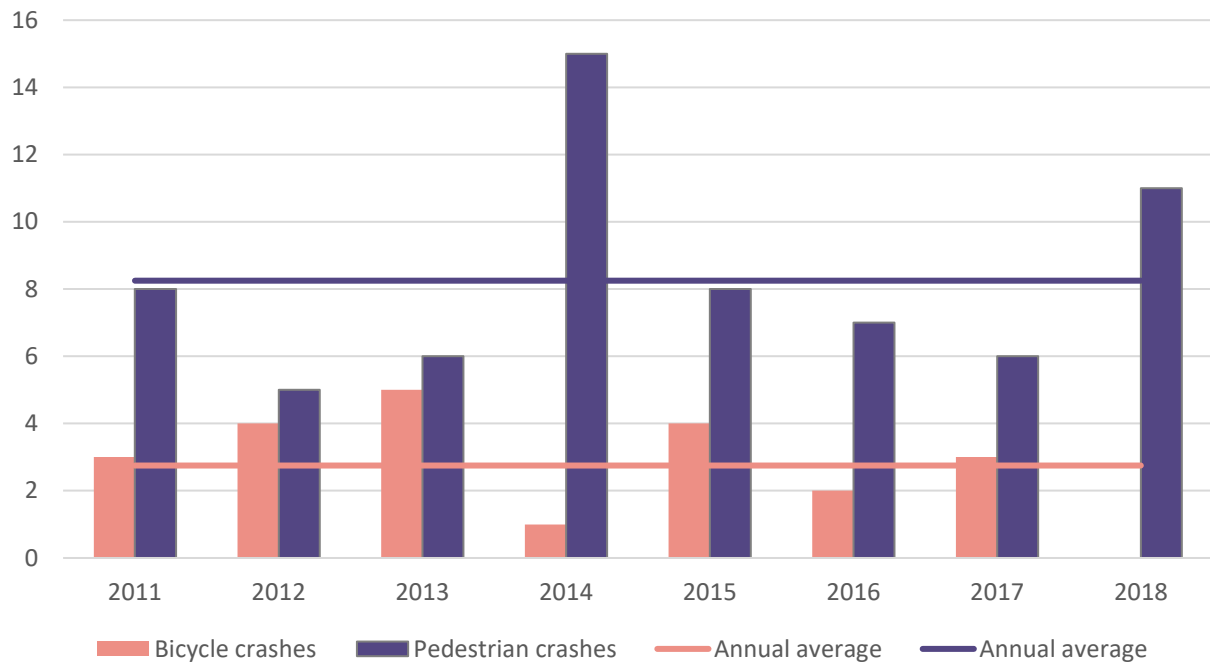
## OVERVIEW

- Between September of 2010 and June of 2019, there were 96 crashes involving either pedestrians or bicyclists. This results in a rate of 0.9 crashes per month, 11 crashes per year.
- 71 crashes (74 percent) involved pedestrians, while 25 involved bicyclists.
- Almost all of the crashes (81, or 84 percent) involved the injury or death of a person walking or bicycling.
  - 78 crashes involved injuries only, and another 3 involved a fatality. All 3 fatalities were people walking.
  - 16 out of 76 (20 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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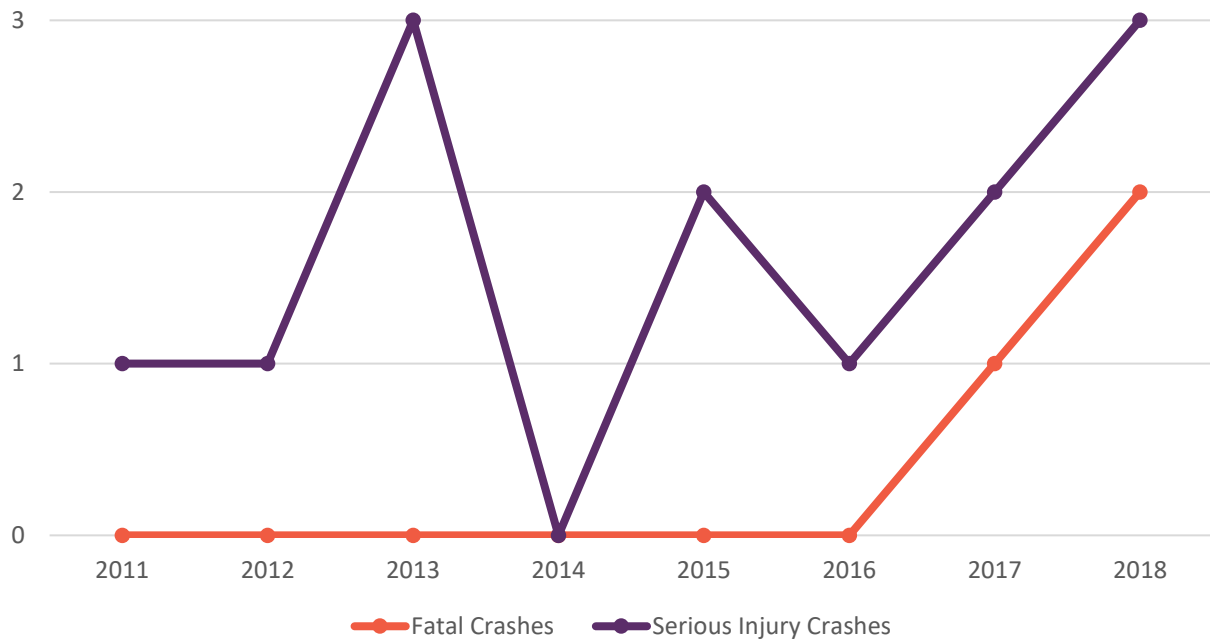
<sup>1</sup> Crash reports rank the severity of crashes as either fatal, suspected serious injury, suspected minor injury, possible injury, or no injury. Suspected serious injury crashes used to be reported as “incapacitating,” and suspected minor injury crashes were reported as “non-incapacitating.” For this report, suspected serious and incapacitating crashes are combined as “serious injury” crashes.

**Chart 1: Pedestrian/Bicycle Crashes in Maryville by Year**



Bike	3	4	5	1	4	2	3	0
Ped	8	5	6	15	8	7	6	11
Total	11	9	11	16	12	9	9	11

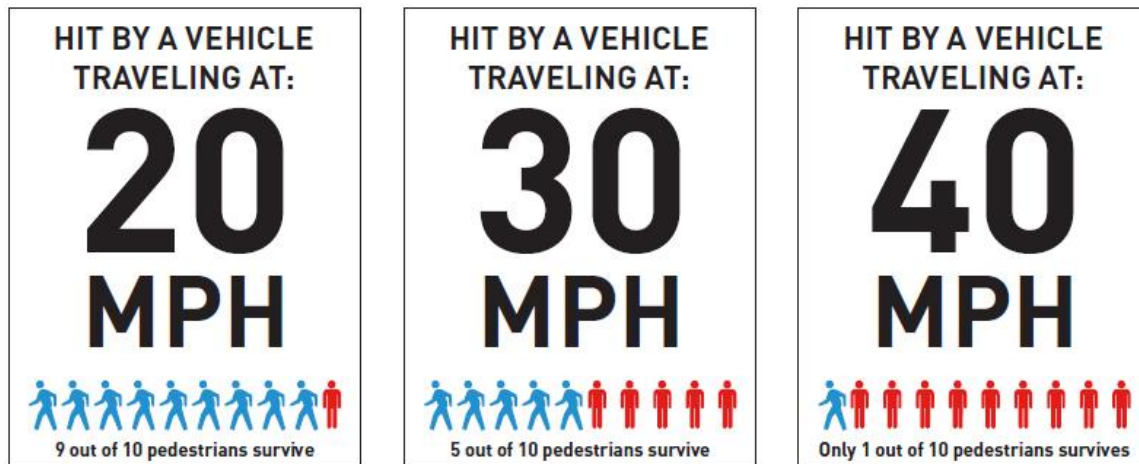
**Chart 2: Pedestrian/Bicycle Crashes in Maryville Resulting in Fatality or Serious Injury**



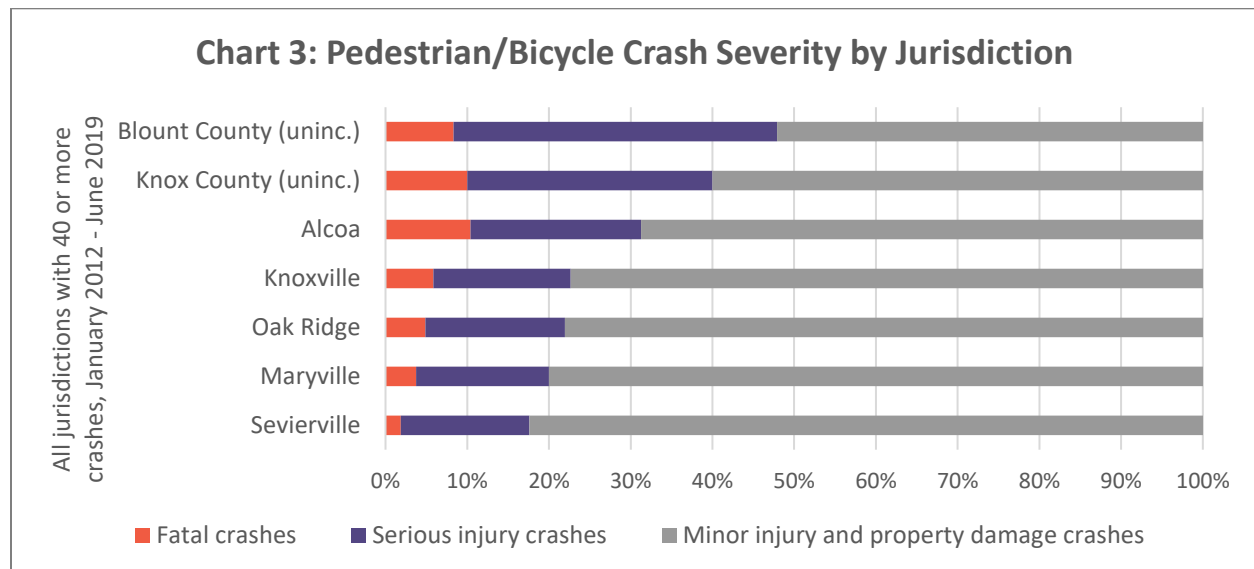
## CRASH SEVERITY

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.



**Chart 3** compares the prevalence of fatal and serious injuries in pedestrian/bicycle crashes among all jurisdictions with more than 40 pedestrian/bicycle crashes between January 2012 and June 2019.



The location of 3 crashes in Maryville is uncertain because of incomplete information in the crash reports. The remainder of this report focuses on the 93 crashes that occurred on surface streets (non-Interstates) where the location is certain.

## **MAJOR ARTERIALS**

- A disproportionate share of pedestrian/bicycle crashes, especially serious crashes, occurred on major arterials (streets such as U.S. 321 and Washington Street).
  - 29 percent of crashes (27 crashes) occurred on major arterials. 19 of the crashes on major arterials occurred on one street: U.S. 321. The remainder of the major arterial crashes occurred on Washington Street (4 crashes); Sevierville Road (2 crashes); and U.S. 129 (2 crashes).
  - Crashes on major arterials resulted in 7 serious injuries, which is 44 percent of all serious injuries resulting from pedestrian/bicycle crashes.
  - Crashes on major arterials resulted in 1 of the 3 pedestrian fatalities.

## 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. 39 (42 percent) of the 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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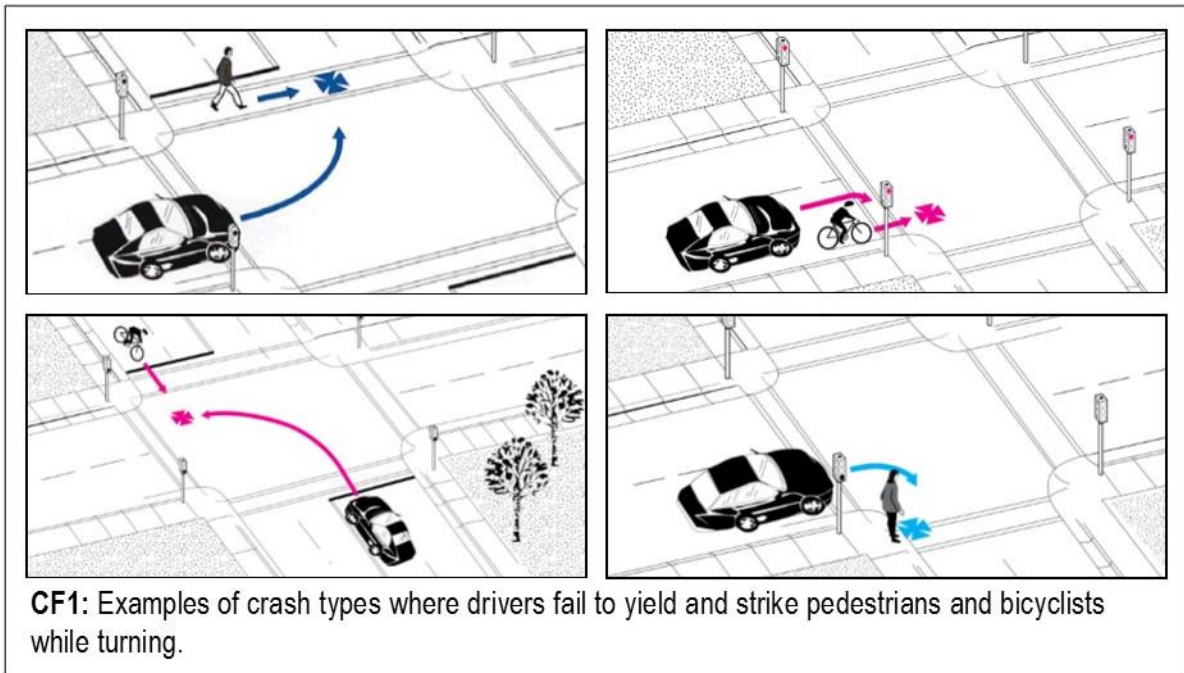
<sup>2</sup> Tennessee Code Annotated 55-8-101 (11) defines “crosswalk” as “(A) That part of a roadway at an intersection included within the connections of the lateral lines of the sidewalks on opposite sides of the highway measured from the curbs or, in the absence of curbs, from the edges of the traversable 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 (17 total crashes)	Turning left	8	3	11	28
	Turning right (not right on red)	2	2	4	10
	Turning right on red light	0	0	0	0
	Direction of turn unclear	1	1	2	5
2. Pedestrian struck while walking along corridor without sidewalks		7	n/a	7	18
3. Driver failing to yield while going straight		4	0	4	10
4. Bicyclist riding on sidewalk		n/a	7	7	18
5. Pedestrian crossing street outside of an intersection or marked crosswalk		2	n/a	2	5
6. Bicyclist riding against traffic		n/a	2	2	5
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, 17 (44 percent) involved a pedestrian or bicyclist hit by a car whose driver failed to yield properly when turning.<sup>4</sup>

- Of these, 11 crashes involved drivers turning left; 4 involved a right turn (not on a red light); there were no right turn on red crashes; and in 2 the direction of the turn was unclear based on information in the crash report.
- 15 of these crashes involved injuries, 3 of them serious injuries, with 1 fatality.
- 11 of these crashes involved pedestrians, and the remaining 6 involved bicyclists.
- Two corridors saw multiple crashes of this type:
  - 3 crashes along U.S. 321
  - 2 crashes along Montvale Road
- **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

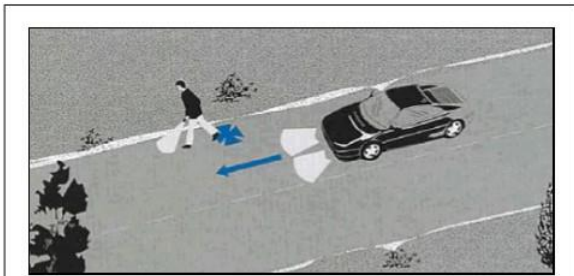
**TABLE 2: Locations of failure-to-yield crashes (number in red indicates bicyclist involved)**

Corridor	Cross street/area	Left turns	Right turn (not on red)	Right turn on red	Turn direction unclear
E Lincoln Rd	E Broadway Ave	1			
Highland Ave	East of Cunningham St	1			
McGinley St	Irwin Ave	1			
Montvale Rd	Mountain View Ave		1		
	W Goddard Ave		1		
Montvale Station Rd	Best St	1			
N Cusick St	Harper Ave	1			
Park Dr	North of Lincoln Rd				1
Scenic Dr	Cardinal St	1			
Sevierville Rd	West of S Everett High Rd				1
S Washington St	Lamar St	1			
U.S. 129	Walmart parking lot	2			
U.S. 321	Chantilly Lane	1			
	Morganton Square		1		
	S Washington St		1		
White Ave	East of S Magnolia St	1			

Number in red indicates that crashes involved a bicyclist.



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



**CF2:** A frequent crash type in rural & suburban areas is pedestrians being struck while walking in locations lacking sidewalks.

In 7 crashes (18 percent), a person walking along a street without a sidewalk was hit by a driver.<sup>5</sup> 6 of these crashes involved injuries, with no fatalities.

**Table 3** shows the locations of all crashes of this type.

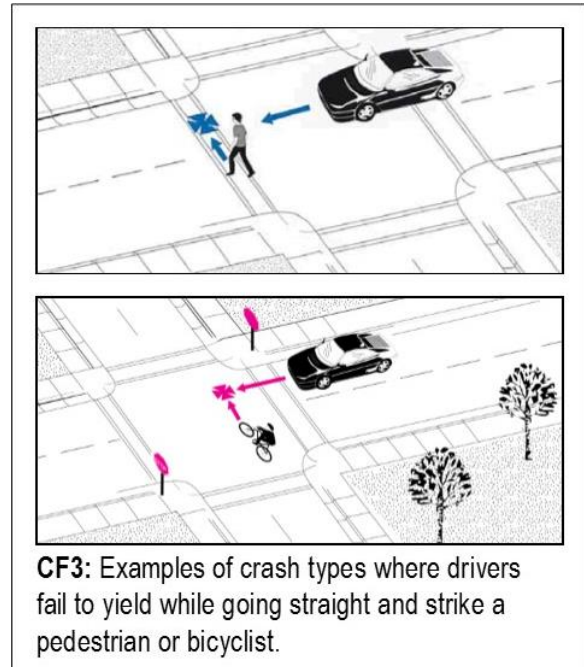
<b>TABLE 3: Locations of people being struck while walking along streets without sidewalks</b>	
<b>Crash occurred on this street</b>	<b>Near the intersection with this street</b>
Effler Rd	Montvale Rd
Montvale Rd	Turnberry Ln
Old Knoxville Pike	Horn St
S Everett High Rd	Morningside Ave
Sevierville Rd	Brown School Rd
U.S. 129	Fairview Dr
U.S. 321	Ross Dr

<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 4 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>

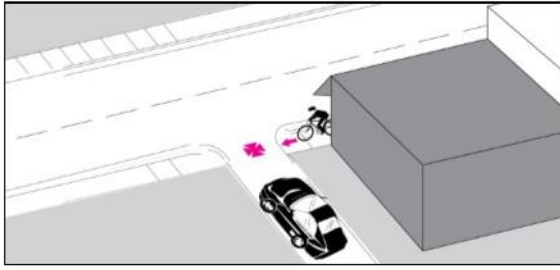
All 4 of these crashes involved pedestrians, and 3 involved injuries, 1 of them serious. **Table 4** shows the locations of all crashes of this type.



<b>TABLE 4: Areas with pedestrians struck by drivers going straight and failing to yield</b>	
<b>Crash occurred on/near this street</b>	<b>In this area</b>
E Broadway Ave	8 <sup>th</sup> St
Foothills Mall Dr	Foothills Mall parking lot
N Foothills Plaza Dr	Foothills Plaza parking lot
W Church Ave	Crosswalk east of Lombardy Ln

<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 4: Bicyclist riding on sidewalk

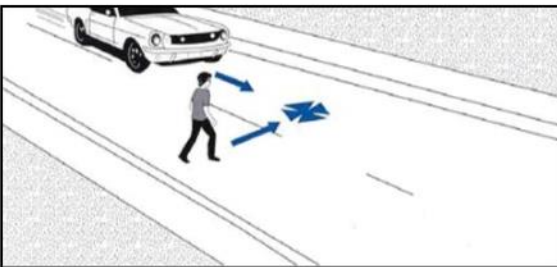


**CF4:** It's legal for bicyclists to ride on sidewalks. But it can put them in danger of being struck by a driver who does not expect to see them in that location.

7 crashes (18 percent) were associated with bicyclists riding on the sidewalk. 4 of these crashes involved injuries, with no fatalities. 2 of these crashes occurred on Montvale Rd, and another 2 on U.S. 321. **Table 5** shows the locations of all crashes of this type.

Crash occurred on this street	In this area
Montvale Rd	<ul style="list-style-type: none"> <li>• Mountain View Ave</li> <li>• Tristan Lane</li> </ul>
N Cusick St	driveway to Blount County Public Library
S Magnolia St	White Ave
S Washington St	Ellis Ave
U.S. 321	<ul style="list-style-type: none"> <li>• Belfast St</li> <li>• Dunlap St</li> </ul>

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

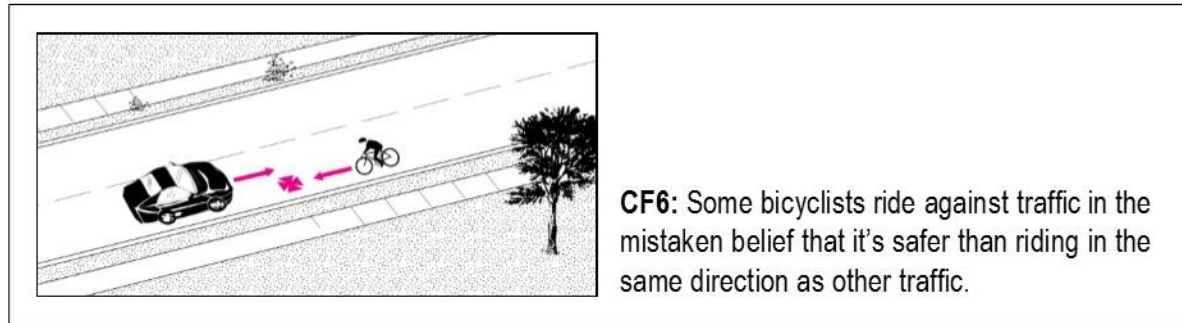


**CF5:** People crossing streets outside of designated crossing areas can be an indication that more and/or better crossing locations are needed.

In 2 crashes (5 percent), pedestrians were crossing the street outside of an intersection or marked crosswalk. 1 of these crashes involved an injury, with no fatalities. **Table 6** shows the locations of all crashes of this type.

Crash occurred on this street	In this area
Horn St	Old Knoxville Pike
Camellia Trce	U.S. 321

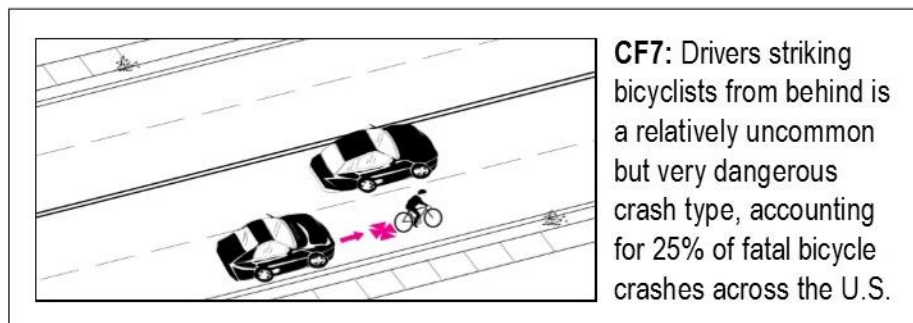
## Crash Factor 6: Bicyclist riding against traffic



2 bicyclists were struck while riding against traffic. Both crashes involved injuries, with no fatalities. Both crashes occurred along U.S. 321, one crash near Foothills Mall Drive, and the other east of Tuckaleechee Pike.

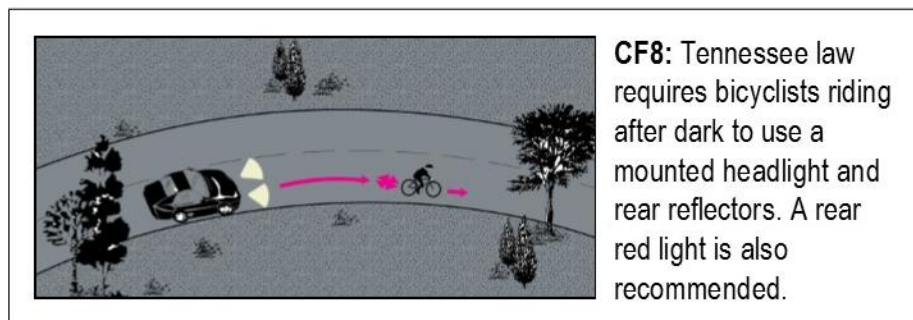
## Crash Factor 7: Driver striking bicyclist from behind

No crashes of this type were reported in Maryville 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 Maryville 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.