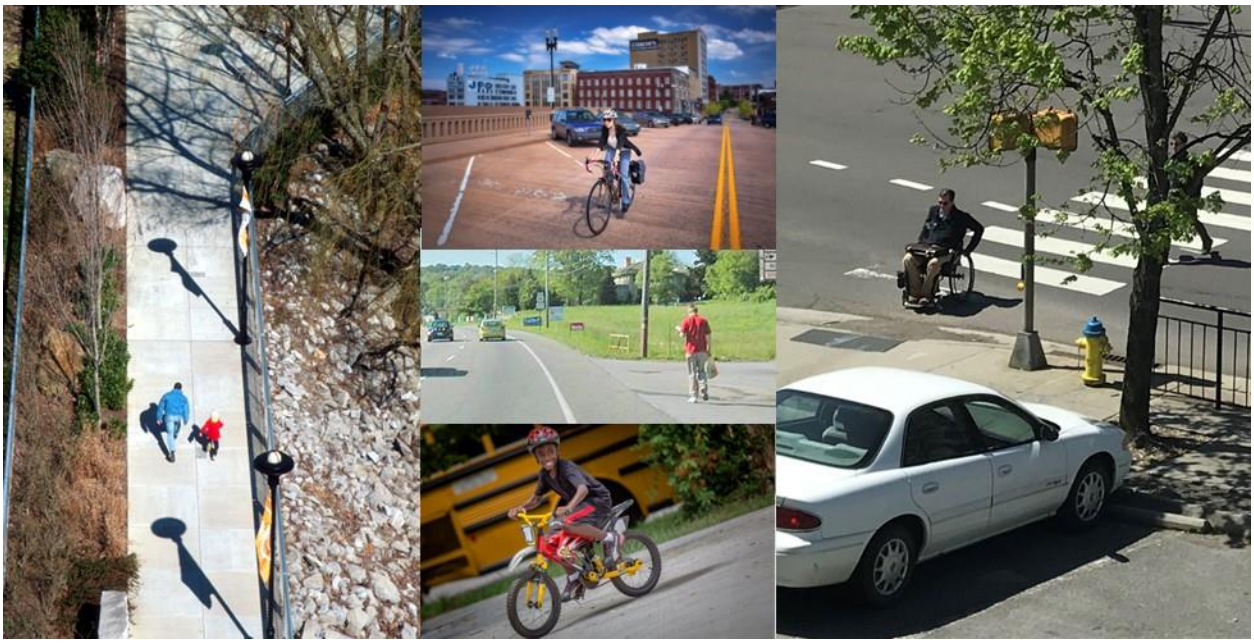
Pedestrian & Bike Crashes

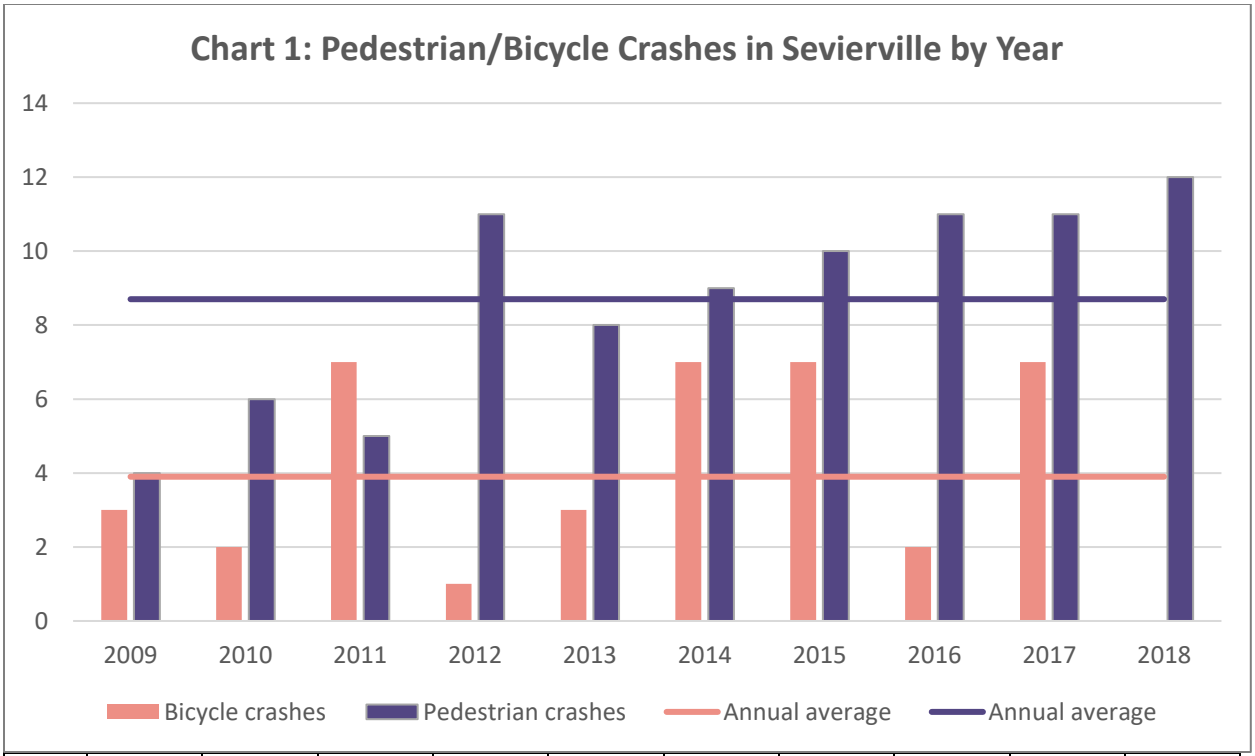
Sevierville: January 2009 – June 2019



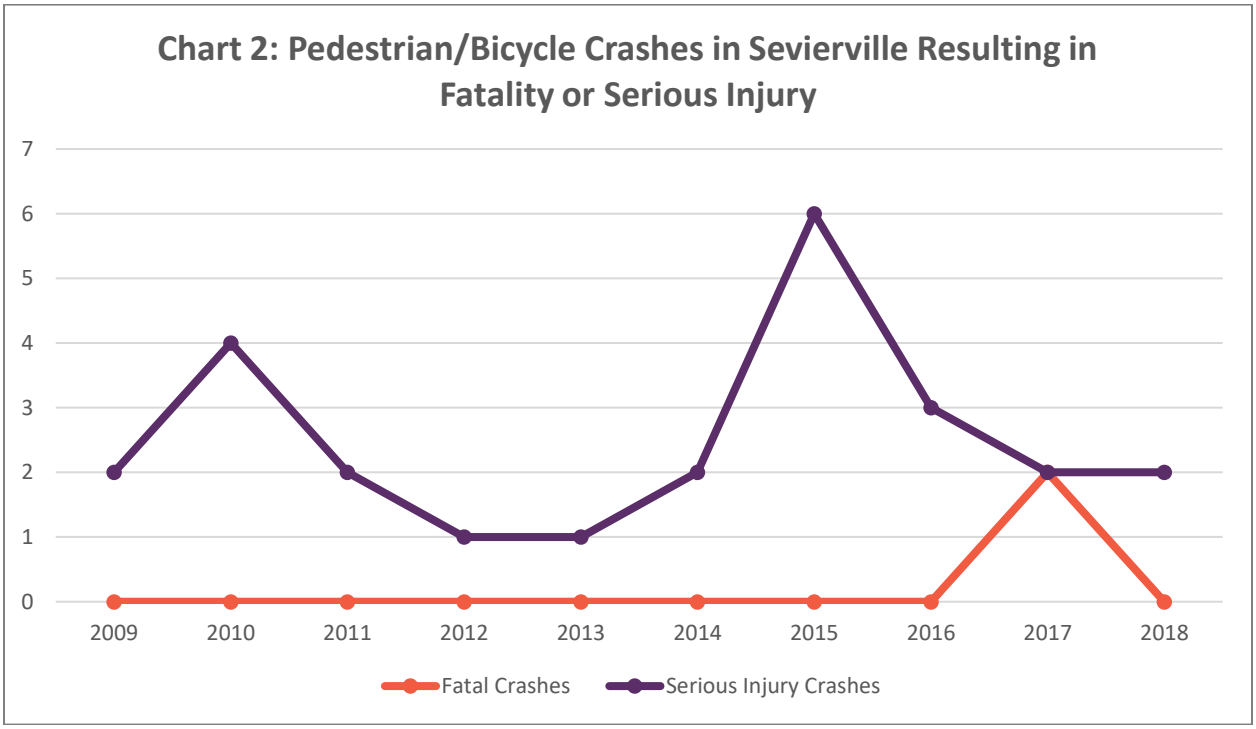
OVERVIEW

- Between January of 2009 and June of 2019, there were 135 crashes involving either pedestrians or bicyclists. This results in a rate of 1.1 crashes per month, 13 crashes per year.
- 94 crashes (70 percent) involved pedestrians, while 41 involved bicyclists.
- Almost all of the crashes (124, or 92 percent) involved the injury or death of a person walking or bicycling.
    - 122 crashes involved injuries only, and another 2 involved a fatality. Both fatalities were people walking.
    - 25 out of 122 (21 percent) injury-only crashes involved serious injuries.[1]
- **Chart 1** shows the number of crashes by year. **Chart 2** shows the number of fatal and serious injury crashes by year.

[1] 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.



Bike	3	2	7	1	3	7	7	2	7	0
Ped	4	6	5	11	8	9	10	11	11	12
Total	7	8	12	12	11	16	17	13	18	12



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.

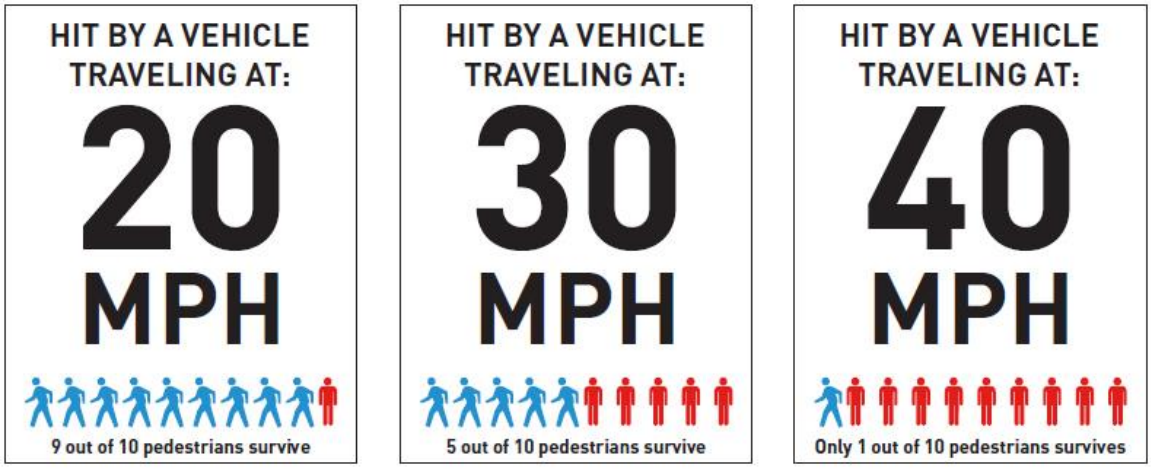
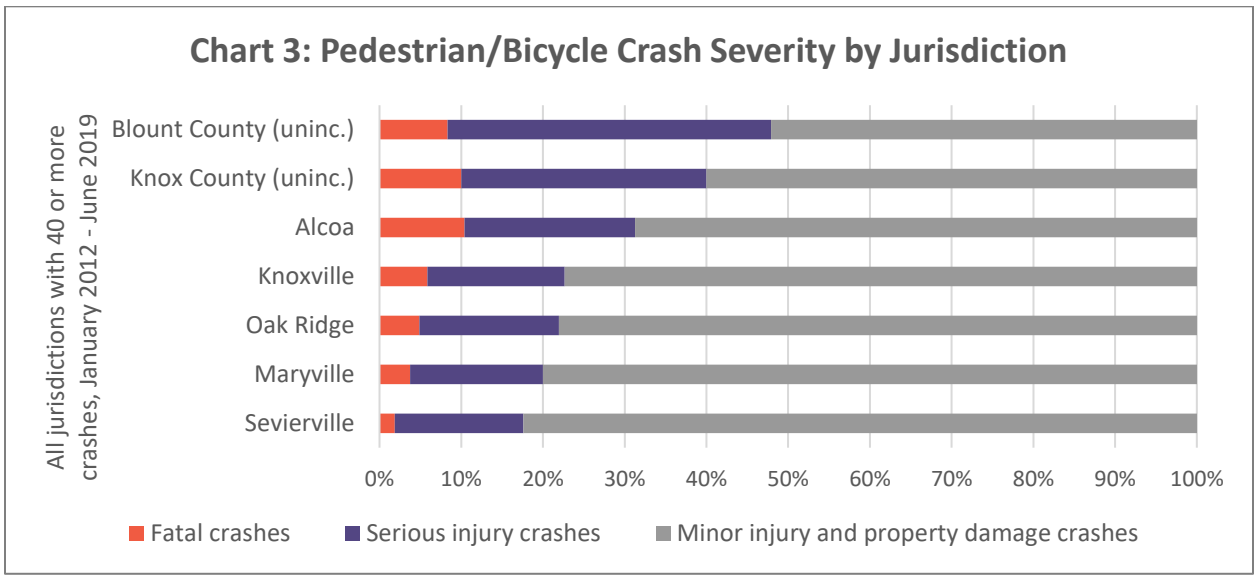


Chart 3 compares the prevalence of fatal and serious injuries in pedestrian/bicycle crashes among all jurisdictions with more than 40 pedestrian/bicycle crashes between January 2012 and June 2019.



The location of 1 crash in Sevierville is uncertain because of incomplete information in the crash reports. The remainder of this report focuses on the 134 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 the Parkway [U.S. 441] and Winfield Dunn Parkway).
    - 40 percent of crashes (54 crashes) occurred on major arterials. 25 of the 54 crashes on major arterials occurred on one street: the Parkway (U.S. 441).
    - Crashes on major arterials resulted in 11 serious injuries, which is 42 percent of all serious injuries resulting from pedestrian/bicycle crashes.
    - Crashes on major arterials resulted in 1 of the 2 pedestrian fatalities.
    - For more information on crashes along major arterials, see the Appendix.

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. 67 (50 percent) of the 134 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[2], 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.[3] 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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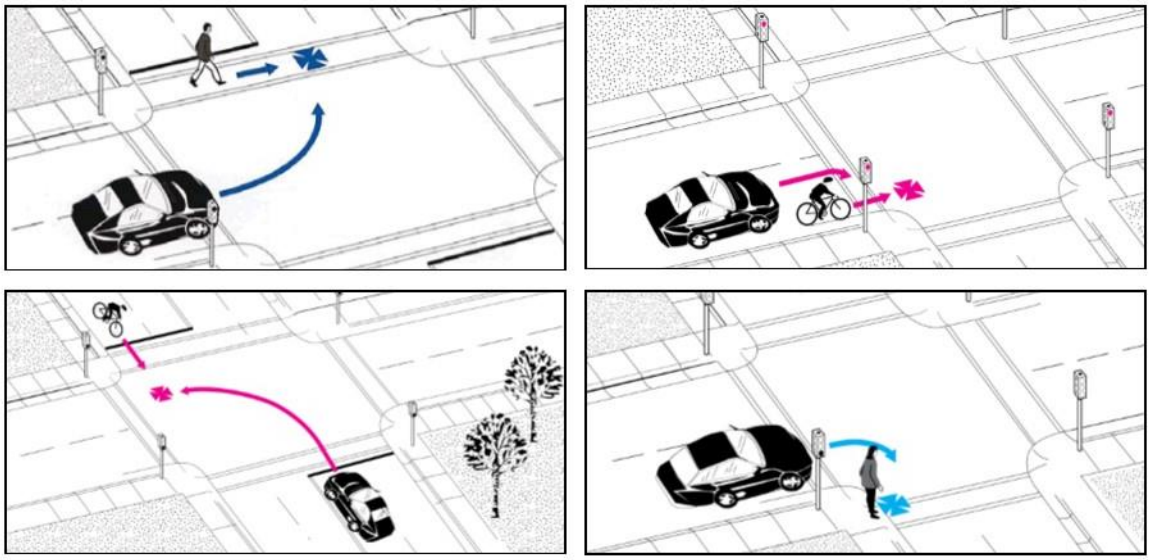
[2] Tennessee Code Annotated 55-8-101 (11) defines "crosswalk" as "(A) That part of a roadway at an intersection included within the connections of the lateral lines of the sidewalks on opposite sides of the highway measured from the curbs or, in the absence of curbs, from the edges of the traversable 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."

[3] 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 (22 total crashes)	Turning left	6	2	8	12
	Turning right (not right on red)	5	1	6	9
	Turning right on red light	1	6	7	10
	Direction of turn unclear	1	0	1	1
2. Pedestrian struck while walking along corridor without sidewalks		10	n/a	10	15
3. Driver failing to yield while going straight		2	0	2	3
4. Bicyclist riding on sidewalk		n/a	11	11	16
5. Pedestrian crossing street outside of an intersection or marked crosswalk		11	n/a	11	16
6. Bicyclist riding against traffic		n/a	2	2	3
7. Driver striking bicyclist from behind		n/a	7	7	10
8. Bicyclist riding at night with no lights		n/a	2	2	3

*Percentages may not total to 100 due to rounding

Crash Factor 1: Drivers failing to yield while turning



CF1: Examples of crash types where drivers fail to yield and strike pedestrians and bicyclists while turning.

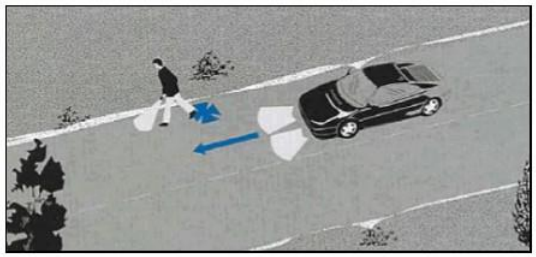
Of the crashes where a crash factor has been identified, 22 (33 percent) involved a pedestrian or bicyclist hit by a car whose driver failed to yield properly when turning.[4]

- Of these, 8 crashes involved drivers turning left; 6 involved a right turn (not on a red light); 7 involved a right turn on red; and in 1 the direction of the turn was unclear based on information in the crash report.
- 19 of these crashes involved injuries, 2 of them serious injuries, with no fatalities.
- 13 of these crashes involved pedestrians, and the remaining 9 involved bicyclists.
- 4 corridors saw multiple crashes of this type:
  - 12 crashes along the Parkway
  - 3 crashes along Forks of the River Parkway
  - 3 crashes along Dolly Parton Parkway
  - 2 crashes along Winfield Dunn Parkway
- **Table 2** has more details about the locations of these crashes.

[4] 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**
Dolly Parton Pkwy	Henderson Ave	1			
	Traffic signal 16.7	1		1	
Forks of the River Pkwy	Driveway north of Rivertrail Ln		1		
	Rivertrail Ln	1			
	South of Main St	1			
Mayors Dr	Counselor Dr	1			
Parkway (U.S. 441)	Driveway south of Collier Dr				**1**
	Fox Rd			1	
	Entrance to Miller's Landing		1		
	New Era Rd			2	
	North of Chilhowee Dr		1		
	South Blvd			2	
	South of Lynn Dr		1		
	Traffic signal 14.8	1		1	
Railroad St	High St	1			
W. Main St	Driveway west of Kilby St		1		
Winfield Dunn Pkwy	Access road to Floyd Garrett's Muscle Car Museum	1			
	North of Douglas Dam Rd		1		

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 10 crashes (15 percent), a person walking along a street without a sidewalk was hit by a driver.[5] 9 of these crashes involved injuries, 1 serious injury, and no fatalities.

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

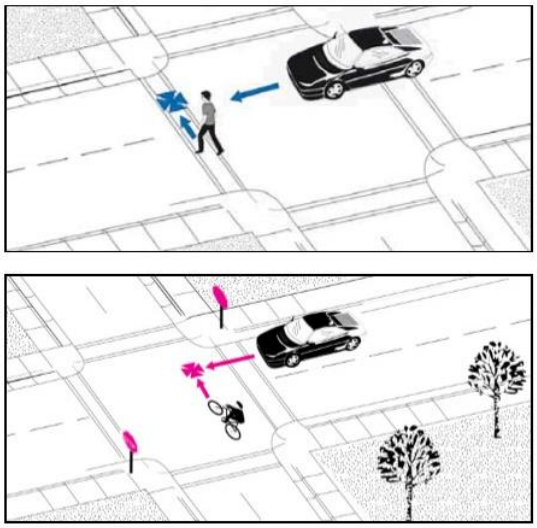
TABLE 3: Locations of people being struck while walking along streets without sidewalks	
Crash occurred on this street	**Near the intersection with this street**
Avery Ln	Cornus Ave
Country Meadows Dr	Rivergate Dr
Douglas Dam Rd	Piney Rd
E Main St	Gary Wade Blvd
Ernest McMahan Rd	Middle Creek Rd
Huskey Dr	Eastgate Rd
Nichols St	Sunnyside Ave
Old Knoxville Hwy	E Loop Rd
Old Newport Highway	Dolly Parton Pkwy
W Dumplin Valley Rd	Hodges Rd

[5] 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.[6]

Both of these crashes involved pedestrians in parking lots, and both involved injuries. **Table 4** shows the locations of all crashes of this type.

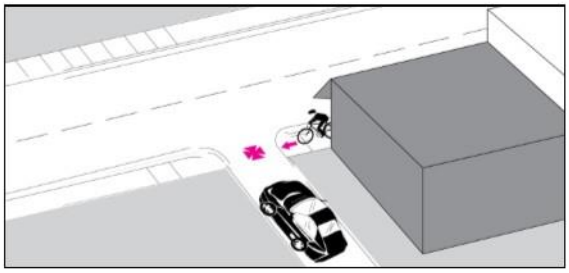


CF3: Examples of crash types where drivers fail to yield while going straight and strike a pedestrian or bicyclist.

TABLE 4: Areas with pedestrians struck by drivers going straight and failing to yield	
Crash occurred on this street	**In this area**
Parkway (U.S. 441)	Walmart parking lot
Winfield Dunn Pkwy	Exxon parking lot

[6] 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



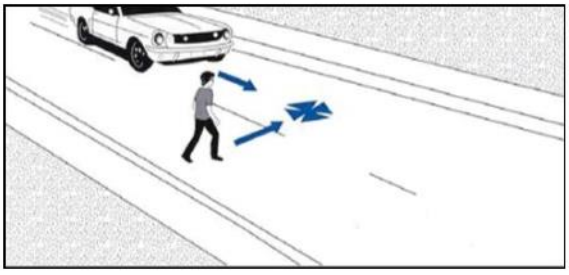
CF4: It's legal for bicyclists to ride on sidewalks. But it can put them in danger of being struck by a driver who does not expect to see them in that location.

11 crashes (16 percent) were associated with bicyclists riding on the sidewalk. 7 of these crashes involved injuries, with 2 serious injuries and no fatalities. 7 of the crashes took place along the Parkway, and 2 each along Dolly Parton Parkway and the Forks of the River Parkway. **Table 5** shows the locations of all crashes of this type.

TABLE 5: Locations of bicyclists being struck while riding on sidewalks

Crash occurred on this street	In this area
Dolly Parton Pkwy	• At McMahan Ave • East of Robert Henderson Rd
Forks of the River Pkwy	North of Rivertrail Ln (2 crashes)
Parkway (U.S. 441)	• Near Chilhowee Dr • North of Carl St • At Collier Dr • South of Lynn dr • At Prince St • Near traffic signal 14.8 (2 crashes)

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

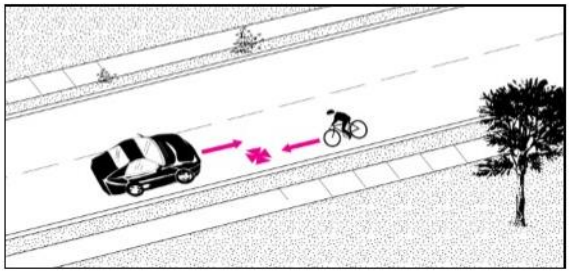


CF5: People crossing streets outside of designated crossing areas can be an indication that more and/or better crossing locations are needed.

In 11 crashes (16 percent), pedestrians were crossing the street outside of an intersection or marked crosswalk. 10 of these crashes involved injuries, 3 of them serious injuries, with 1 additional fatality. **Table 6** shows the locations of all crashes of this type.

TABLE 6: Areas with pedestrians struck while crossing outside of an intersection or marked crosswalk	
Crash occurred on this street	**In this area**
Court Ave	South of Bruce St
Dolly Parton Pkwy	East of Veterans Blvd West of Industry Dr
High St	North of Eastgate Rd
Eastgate Rd	East of Henderson Ave
Parkway (U.S. 441)	North of Collier Dr (fatality) North of John L. Marshall Dr North of Scenic Dr
Veterans Blvd	North of Collier Dr
Winfield Dunn Pkwy	North of North Pkwy South of W Dumplin Valley Rd

Crash Factor 6: Bicyclist riding against traffic

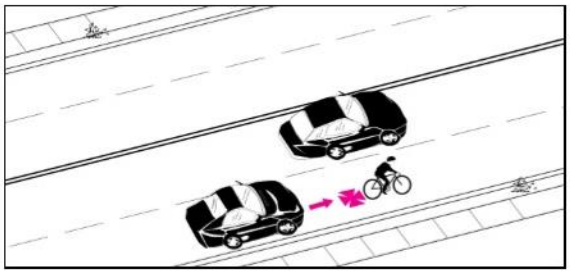


CF6: Some bicyclists ride against traffic in the mistaken belief that it's safer than riding in the same direction as other traffic.

2 bicyclists were struck while riding against traffic. Both crashes involved an injury. One occurred along Forks of the River Parkway south of Main Street, and the other took place along Jersey Drive north of Topside Rd.

Crash Factor 7: Driver striking bicyclist from behind

7 bicyclists were struck from behind by drivers (10 percent of crashes). All of these crashes involved injuries, with one serious injury and no fatalities. **Table 7** shows the locations of all crashes of this type.

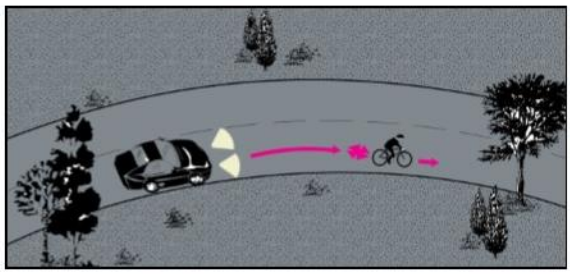


CF7: Drivers striking bicyclists from behind is a relatively uncommon but very dangerous crash type, accounting for 25% of fatal bicycle crashes across the U.S.

TABLE 7: Locations with bicyclists being struck from behind by drivers	
Crash occurred on this street	**In this area**
Dolly Parton Pkwy	West of Robert Henderson Rd
Old Knoxville Hwy	• North of E Loop Rd • North of Riverpark Way • South of West View St
Hardin Ln	West of E Hardin Ln
Veterans Blvd	North of Center View Rd
Winfield Dunn Pkwy	North of Kyker Ferry Rd

Crash Factor 8: Bicyclist riding at night with no lights

2 bicyclist were struck while riding at night with no lights. Both were injury crashes, 1 of them a serious injury.



CF8: Tennessee law requires bicyclists riding after dark to use a mounted headlight and rear reflectors. A rear red light is also recommended.

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.

Appendix: Pedestrian/bicycle crashes on major arterials in Sevierville

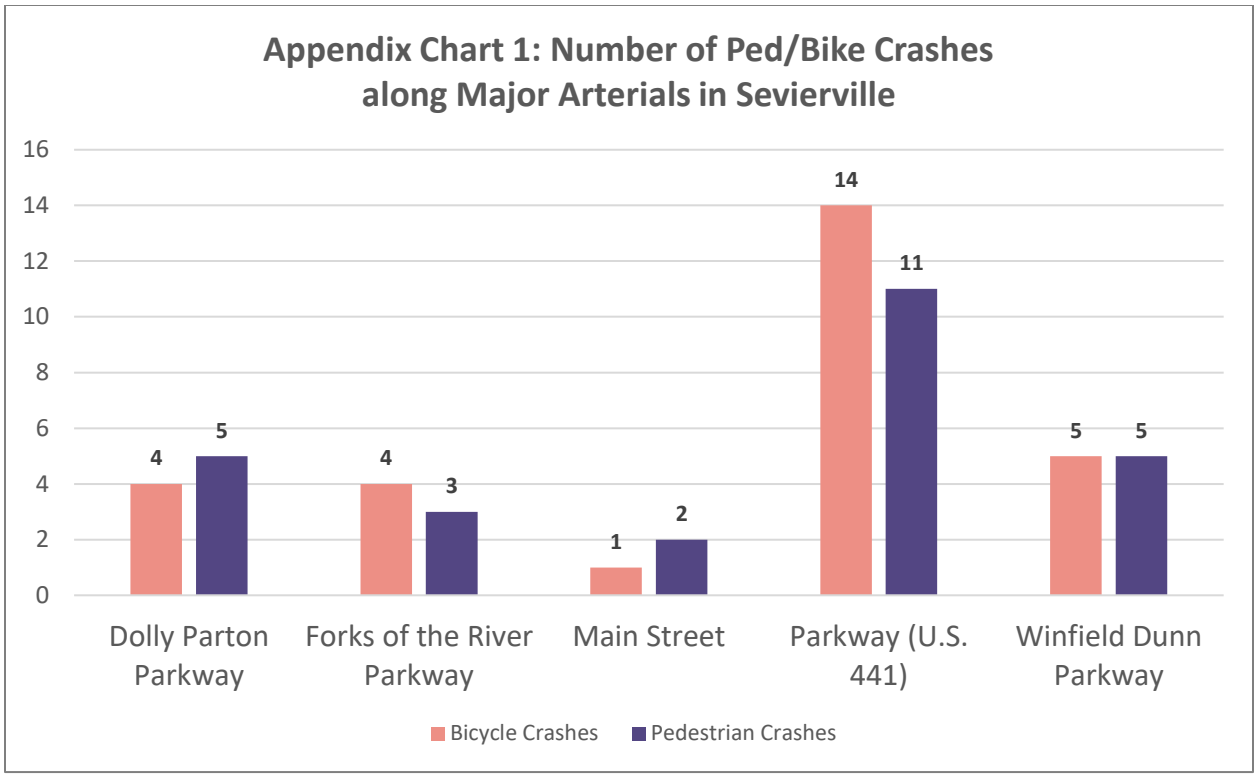
As described in the full report on pedestrian/bicycle crashes in Sevierville, a disproportionate share of crashes and fatalities occur on major arterials (streets such as the Parkway [U.S. 441] and Winfield Dunn Parkway).

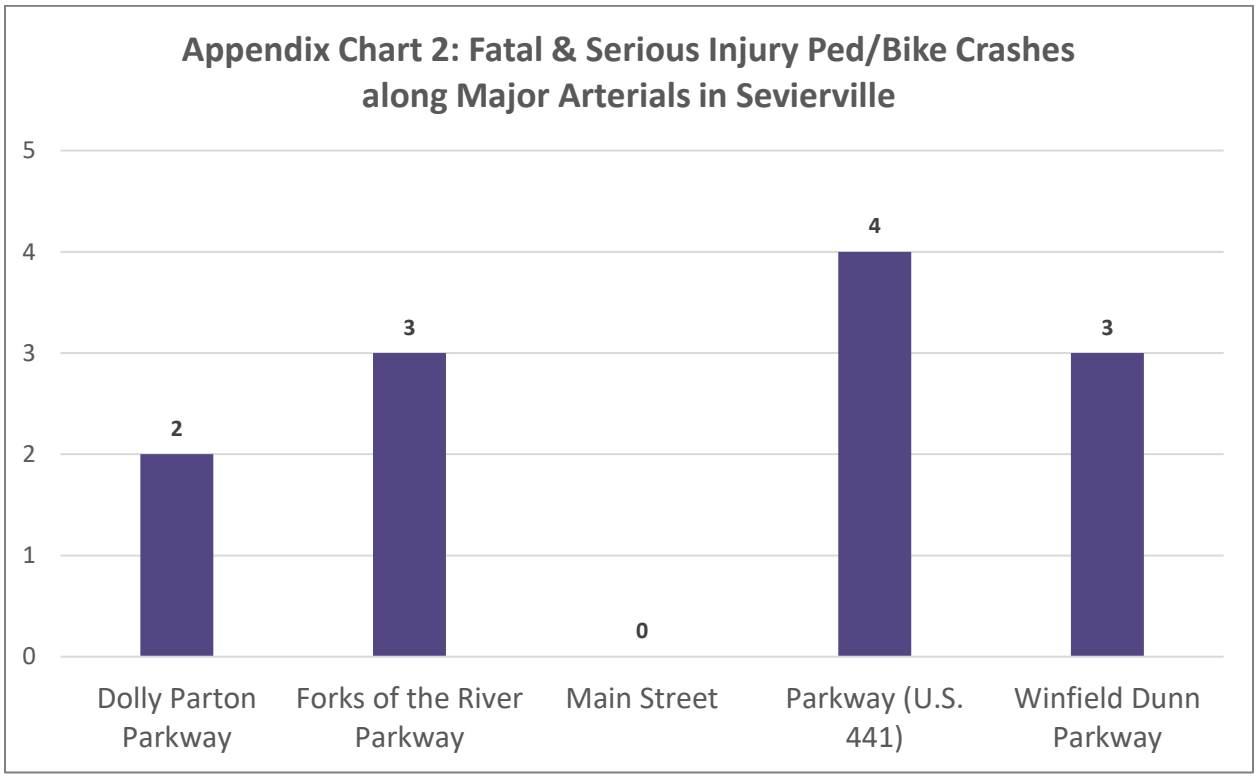
This confluence of pedestrian/bicycle crashes along major arterials happens for several reasons. Major arterials tend to be wide streets with high volumes of fast-moving traffic. High speeds make drivers less able to detect people walking and bicycling, and less able to stop quickly to avoid a collision.

Major arterials also tend to feature transit routes and other frequent destinations for people walking and bicycling, resulting in a concentration of walkers and bicyclists on these streets.

- Of the crashes where locations are certain, 40 percent (54 crashes) occurred on major arterials. 25 of the 54 crashes on major arterials occurred on one street: the Parkway (U.S. 441).
- Crashes on major arterials resulted in 11 serious injuries, which is 42 percent of all serious injuries resulting from pedestrian/bicycle crashes. 7 of the 11 serious injuries involved people bicycling.
- Crashes on major arterials resulted in 1 of the 2 pedestrian/bicycle fatalities. The person killed was walking.
- A disproportionate share of crashes along major arterials involved bicyclists (28 bicyclists vs. 26 pedestrians).
- The most common crash factor in crashes along major arterials is pedestrians crossing the street outside of an intersection or marked crosswalk, which accounted for 7 crashes on major arterials and 4 fatal crashes.

The charts and table that follow provide more data about crashes on major arterials.


Appendix Chart 1: Number of Ped/Bike Crashes along Major Arterials in Sevierville
16
14
12
10
8
6
4
2
0
4
5
4
3
1
2
14
11
5
5
Dolly Parton Parkway
Forks of the River Parkway
Main Street
Parkway (U.S. 441)
Winfield Dunn Parkway
Bicycle Crashes
Pedestrian Crashes


Appendix Chart 2: Fatal & Serious Injury Ped/Bike Crashes along Major Arterials in Sevierville
5
4
3
2
1
0
2
3
0
4
3
Dolly Parton Parkway
Forks of the River Parkway
Main Street
Parkway (U.S. 441)
Winfield Dunn Parkway

Appendix Table 1: Ped/Bike Crashes Along Major Arterials in Sevierville -- Jan. 2009-June 2019				
Major Arterial	Number of Crashes	Number of Fatalities	Number of Serious Injuries*	Fatal + Serious
Dolly Parton Parkway	9	0	2	2
Forks of the River Parkway	7	0	3	3
Main Street	3	0	0	0
Parkway (U.S. 441)	25	1	3	4
Winfield Dunn Parkway	10	0	3	3

* 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 were reported as "non-incapacitating." For this report, suspected serious and incapacitating crashes are combined as "serious injury" crashes.