Knoxville ped/bike crashes: Jan. 2007-March 2018

Overview

- Between January of 2007 and March of 2018, there were 1,291 crashes involving either pedestrians or bicyclists. This results in a rate of 10 crashes per month, 115 crashes per year.
- 956 crashes (74 percent) involved pedestrians, 331 involved bicyclists, and 4 crashes involved both.
- Almost all of the crashes (1,179, or 91 percent) involved the injury or death of a person walking or bicycling.
 - 1,142 crashes involved injuries only, and another 37 involved a fatality. One crash resulted in 2 fatalities, for a total of 38 people killed while walking or bicycling. Of the 38 total fatalities, 36 were killed while walking, the other 2 while bicycling.
 - Between January 2015 and March 2018, 21 percent of 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. Chart 3 shows the percentage of crashes by injury type.



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 were reported as "non-incapacitating." For this report, suspected serious and incapacitating crashes are combined as "serious injury" crashes. City of Knoxville crash reports began to include reliable information about the severity of injuries in 2015.





• The location of 38 crashes (3 percent) is uncertain because of incomplete information in the crash reports. The remainder of this report focuses on the 1,253 crashes where the location is certain.

Major arterials

- Major arterials make up 6 percent of the surface street mileage within Knoxville. A disproportionate share of pedestrian/bicycle crashes and fatalities occur on major arterials (streets such as Broadway and Kingston Pike). Chart 4 depicts this data.
 - 29 percent of crashes (376 crashes) occurred on major arterials. 89 percent (335) of the crashes on major arterials occurred on six streets: Broadway, Chapman Hwy, Cumberland Ave, Kingston Pike, Magnolia Ave, and Western Ave.
 - Since 2015, crashes on major arterials resulted in 22 serious injuries, which is 34 percent of all serious injuries resulting from pedestrian/bicycle crashes.
 - Crashes on major arterials resulted in 15 fatalities, which is 39 percent of all fatalities resulting from pedestrian/bicycle crashes.



• 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. 515 (40 percent) of the 1,291 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 crosswalk², 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.

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 Fa	ctors	Numb	er of Crash	ies	Percent of
		Ped	Bike	Total	Crashes*
	Turning left	114	28	142	28%
1. Drivers failing to yield while turning	Turning right (not right on red)	27	15	42	8%
(235 total crashes, 46% of crashes	Turning right on red light	34	5	39	8%
with crash factor)	Direction of turn unclear	9	3	12	2%
2. Pedestrian struck corridor without side	while walking along walks	68	0	68	13%
 Driver failing to yie straight 	eld while going	51	6	57	11%
4. Bicyclist riding on	sidewalk	0	52	52	10%
5. Pedestrian crossin intersection or market	ng street outside of an ed crosswalk	62	0	62	12%
6. Bicyclist riding aga	ainst traffic	0	18	18	3%
7. Driver striking bic	clist from behind	0	14	14	3%
8. Bicyclist riding at	night with no lights	0	9	9	2%

Crash Factor 1: Drivers failing to yield while turning



while turning.

- Of the crashes where a crash factor has been identified, 235 (46 percent) involved a pedestrian or bicyclist hit by a car whose driver failed to yield properly when turning.⁴ Of these, 142 crashes involved drivers turning left; 42 involved a right turn (not on a red light); 39 involved a right turn on red; and in 12 the direction of the turn was unclear based on information in the crash report.
- 209 of these crashes involved injuries, and 1 additional crash was a fatality (a pedestrian killed at Kingston Pike and Forest Glen Drive).
- 184 of these cases involved pedestrians, and the remaining 51 involved bicyclists.
- 42 intersections experienced multiple instances of failure-to-yield crashes, accounting for a total of 108 crashes of this type. A table with more details about this intersections follows, followed by maps of the intersections with the most turning 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: Intersections with multipl	e failure-to-	-yield crashe	es		
Intersection	Left	Right	Right	Turn	Total
	turns	turn (not	turn on	direction	crashes
		on red)	red	unclear	
17 th St & Dale Ave		1		1	2
17 th St & Highland Ave	2				2
17 th St & White Ave	1	1			2
Broadway & 5 th	1		1		2
Broadway & Highland Dr	2		1		3
Broadway & McCroskey Ave	2		2		4
Broadway & Northgate Shopping	2	1		1	4
Center entrance	2	1		'	
Broadway & Oglewood Ave	2				2
Cedar Bluff Rd & Sherrill Blvd	1	1			2
Central St & Summit Hill Dr	1	1			2
Chapman Hwy & Woodlawn Pk	2				2
(south of Young High Pike)					
Cherry St & Mitchell St	1	1			2
Clinch Ave & 11 th St	1		1		2
Clinch Ave & 16 th St	2				2
Clinch Ave & 17 th St	2				2
Clinch Ave & Henley St	1		1		2
Clinch Ave & Locust St	1	1	1		3
Clinch Ave & Walnut St	2				2
Cumberland & 16 th /Volunteer	2				2
Cumberland & 17 th /Melrose Pl	3	1	6, <mark>1</mark>		11
Cumberland Ave & 18 th St	1	1			2
Cumberland Ave & 19th St	1	1			2
Cumberland Ave & 21st St		2			2
Cumberland & James Agee	2	1			3
Downtown West & Ray Mears	2				2
Emory Rd & Heiskell Rd		1	1		2
Gay St & 5 th Ave	2				2
Gay St & Cumberland Ave	3				3
Gay St & Hill Ave	1, <mark>1</mark>				2
Gay St & Main St	4		1		5
Gay St & Summit Hill Dr	1, <mark>1</mark>	1	1		4
Kingston Pk & Alcoa Hwy off-ramp			1, <mark>2</mark>		3
Kingston Pk & Killarney		2			2
Rd/Londonderry Rd		2			2
Martin Luther King Jr. Ave &	2				2
Chestnut St	2				2
Melrose PI & Lake Ave	1	1			2
Morrell Rd & Gleason Dr			2		2
Sevier Ave & Atchley St	2				2
Sevier Ave & Jones St		3			3
Summit Hill Dr & Hall of Fame Dr	2				2
Summit Hill Dr & Walnut St	1		1		2
Western Ave & Henley St	2				2
Western Ave & Middlebrook Pk	1		1		2

Number in red indicates that crashes involved a bicyclist.

Maps 1-6: Intersections with the most crashes where drivers failed to yield while turning



The intersection of Cumberland Avenue with Melrose/17th had 11 failure to yield while turning crashes, including 7 right turn on red crashes and 3 left turn crashes.



The intersection of Gay Street with Summit Hill Drive saw 4 failure to yield while turning crashes, including 2 left turns, 1 right turn, and 1 right turn on red.



The intersection of Broadway with McCroskey Avenue saw 4 failure to yield while turning crashes, including 2 left turns, 1 right turn, and 1 right turn on red.



The intersection of Gay Street with Main Street saw 5 failure to yield while turning crashes, including 4 left turns and 1 right turn on red.



The intersection of Gay Street with Cumberland Avenue had 3 failure to yield while turning crashes, all of them left turns.



Broadway at the Northgate Shopping Center entrance saw 4 failure to yield while turning crashes, including 2 left turns, 1 right turn, and 1 with unclear direction.

Legend: ○ Left turn; ● Right turn on red; ○ Right turn (not on red); ○ Unclear direction; ○ Other crash factors. Crashes indicated with a square involve bicyclists.

Maps 7-11: Intersections with the most crashes where drivers failed to yield while turning



The intersection of Broadway with Highland Drive had 3 failure to yield while turning crashes, including 2 left turns and 1 right turn on red.



The intersection of Cumberland Avenue with James Agee Street saw 3 failure to yield while turning crashes, including 2 left turns and 1 right turn on red.



The intersection of Clinch Avenue with Locust Street saw 3 failure to yield while turning crashes, including 1 left turn, 1 right turn, and 1 right turn on red.



The intersection of Kingston Pike with the off-ramps from Alcoa Highway had 3 failure to yield while turning crashes, all of them right turns on red.



The intersection of Sevier Avenue with Jones Street had 3 failure to yield while turning crashes, all right turns.

Legend: ○ Left turn; ● Right turn on red; ○ Right turn (not on red); ○ Unclear direction; ○ Other crash factors. Crashes indicated with a square involve bicyclists. 22 corridors experienced multiple failure-to-yield crashes, in addition to those at the intersections above:

TABLE 3: Corridors	s with multiple failure-to-	yield crashes	5		
Corridor	Cross street	Left turns	Right turn (not on red)	Right turn on red	Turn direction unclear
5 th Ave	Jessamine St	1			
	Winona St	1			
Broadway	Adair Dr	1			
	Cecil Ave			1	
	Coker Ave				1
	Mineral Springs Ave	1			
	Old Broadway	1			
	Powers St		1		
	Rennoc Rd	1			
	Washington Pike	1			
	Wells Ave		1		
Central St	Anderson Ave		1		
	Baxter		1		
	Heiskell Ave	1			
	Quincy Ave	1			
	Woodland Ave	1			
Chapman Hwy	E Moody Ave	1			
	E Young High Pk	1			
	Hawthorne Ave	1			
	Lippencott St		1		
	Martin Mill Pk		1		
Clinch Ave	14 th St	1			
	17 th St	1			
	Gay St	1			
	James Agee St	1			
	World's Fair Park Dr	1			
Cumberland Ave	11 th St			1	
	20 th St	1			
	Circle Dr	1			
	Estabrook Rd	1			
	Locust St	1			
	Volunteer Blvd (not 16 th)			1	
Fairmont Blvd	Clearview St	1			
	Whittle Springs Rd	1			
Gill Ave	Eleanor St	1			
	Irwin St	1			
Hill Ave	Howard Baker Ave	1			
	State St		1		

Number in red indicates that crashes involved a bicyclist.

Corridor	Cross street	Left turns	Right turn (not	Right turn on	Turn direction
			on red)	red	unclear
Kingston Pk	Buckingham Dr		1		
0	Deane Hill Dr	1			
	Forest Glen Dr (fatality)		1		
	Gallaher View Rd				1
	Mohican St		1		
	Lyons View Pk	1			
	Montvue Rd				1
	Newcom Ave		1		
	Papermill Dr	1			
	Signal between Morrell			1	
	and Cheshire				
Magnolia Ave	Harrison St	1			
	Hembree St	1			
	Jessamine St			1	
	Olive St	1			
	Winona St			1	
Main St	Henley St		1		
	Walnut St	1			
Merchant Dr	Davida Rd			1	
	Tillery Dr	1			
Middlebrook Pk	Citico St	1			
	Vanosdale Rd			1	
Morrell Rd	Signal at south		1		
	entrance to West Town				
	School Access (Rocky	1			
	Hill Elem)				
Neyland Dr	Alcoa Hwy off-ramp		1		
	Joe Johnson Dr		1		
Pleasant Ridge Rd	Bradshaw Rd	1			
	Pleasant Trace Cr		1		
	Wilson Rd	1			
Sevier Ave	Baker Ave	1			
	Davenport Rd		1		
	Dixie St				1
Summit Hill Dr	Patton St	1			
	State St		1		
Sutherland Ave	Hollywood Rd			1	
	Tobler Rd	1			
Volunteer Blvd	Pat Head Summit St	1			
	Andy Holt Ave	1			
Western Ave	Knoxville College Dr	1			
	Schofield 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 68 crashes (13 percent), a person walking along a street without a sidewalk was hit by a driver.⁵ 63 of these crashes involved injuries, and an additional 2 were fatalities. Eight corridors saw multiple crashes of this type: Breda Drive (2), Central Avenue Pike (3), Chapman Highway (2), Dutch Valley Drive (2), W. Inskip Drive/E. Inskip Drive/Inskip Road (6), Gleason Drive (3), Millertown Pike (2), and Piney Grove Church Road (2).

Map 12 shows a 5-block stretch of Inskip Drive where 5 of these crashes occurred.

Below are the locations of all crashes of this type:

Map 12: Pedestrians struck while walking along Inskip Drive



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.

TABLE 4: Locations of people being struck wh	ile walking along streets without sidewalks
Crash occurred on this street	Near the intersection with this street
Aubrey Ln	Yates Ln
Ball Camp Pk	Kingsmore Dr
Bluff Ave	Folsom Ave
Boyds Bridge Pk	Pickering St
Breda Dr	The Hague
Breda Dr	The Hague
Bruhin Rd (fatality)	Breda Dr
Cedar Ln	Willoway Dr
Central Avenue Pk	Merchant Dr
Central Avenue Pk	Murray Dr
Central Avenue Pk	Naueda Dr
Chapman Hwy	Gwinfield Dr
Chapman Hwy	Martin Mill Pk
Clyde St	Middlebrook Pk
Dutch Valley Dr	Plummer Rd
Dutch Valley Dr	Ridge Grove LN
E Inskip Dr	Coster Rd
E Martin Mill Pk	Chapman Hwy
Edgeview Way	Shipman Dr
Fairway Dr	Forestdale Ave
Fillmore Ave	Glenn Ave
Fleetwood Dr	Dewine Rd
Fulton Dr	Villa Rd
Gleason Dr	Beaverton Rd
Gleason Dr	Danbury Rd
Gleason Dr	Forest Oak Dr
Heiskell Ave	Huray LN
Hillvale Turn East	Kingston Pk
Hoitt Ave	Boone St
Inskip Rd	South Park Cir
Kim Watt Dr	Frank Watts Rd
Knott Rd	Tenwood Dr
Lonas Dr	Pawnee Rd
Loves Creek Rd (fatality)	Buffat Mill Rd
Lyons Way	Valley View Dr
Merchant Dr	Tillery Dr
Millertown Pk	Brookwood Rd
Millertown Pk	Brookwood Rd
Murray Dr	Central Avenue Pk

Crash occurred on this street	Near the intersection with this street
Neubert Springs Rd	Lake Glenn Ln
Neyland Dr	Walnut St
N Northshore Dr	Westover Dr
Overbrook Dr	Gayview Dr
Piney Grove Church Rd	Glade Hill Dr
Piney Grove Church Rd	Glade Hill Dr
Price Ave	South Haven Rd
Primus Rd	Murray Dr
Rambling Rd	Drifting Rd
Riverside Dr	Lombard PI
Rugby Ave	Marshall St
S Cherry St	Wilson Ave
Sanderson Rd	Keith Ave
Sevier Ave	Pearson Ave
Sevierville Pk	Colchester Ct
Sims Rd	Avenue A
Tazewell Pk	Beverly Park Cir
Valley View Dr	Cross Valley Rd
Valley View Dr	Katey Springs Way
W Baxter Ave	Beaumont Ave
W Inskip Dr	Central View Rd
W Inskip Dr	E Inskip Dr
W Inskip Dr	Schubert Rd (2 crashes)
W Moody Ave	Tomlinson St
W Oldham Ave	McSpadden St
W Young High Pk	Chapman Hwy
Westland Dr	Morrell Rd
Wilson Ave	S Beaman St

Crash Factor 3: Driver failing to yield while going straight

- In 57 crashes (11 percent), 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 51 of these crashes involved pedestrians, while the remaining 6 involved bicyclists. 49 of the pedestrian crashes and 4 bicycle crashes involved injuries, and an additional pedestrian crash was a fatality.
- In the 6 cases involving bicvclists. the drivers either failed to stop at stop signs, or pulled out from a stop sign, side street, or parking spot into the path of the bicyclist. These occurred at the following locations:



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

- White Ave/16th St intersection (driver eastbound on White)
- Lake Ave/19th St intersection (driver northbound on Lake)
- Highland Ave/23rd St intersection (driver northbound on 23rd)
- Gay St/Vine Ave intersection (driver westbound toward Vine)
- Walnut St/Clinch Ave intersection (driver southbound [wrong way] on Walnut)
- North of Jackson on Gay (driver pulling from parking spot into path of northbound bicyclist).
- Several areas saw multiple crashes of this type involving pedestrians:

TABLE 5: Areas with multiple pedestri	ans struck by drivers going straight and failing to
yield	
Areas	Number of crashes and location details
Marked crosswalks on Broadway near Magnolia Ave	5 crashes at crosswalk north of Magnolia; 1 at crosswalk at Broadway/Magnolia
Intersections and driveways along Cumberland Ave	6 crashes between 17 th and 21 st streets
Marked crosswalks on Central St	1 crash at Willow Ave; 1 at Jackson Ave; 2 at crosswalk between Willow and Jackson
Marked crosswalks on Volunteer Blvd near Melrose Ave	2 crashes
Marked crosswalk on Hall of Fame Dr north of Church Ave	2 crashes

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.

52 crashes (10 percent) were associated with bicyclists riding on the sidewalk. 40 of these crashes involved injuries, and none were fatalities. 6 corridors saw more than one of this crash type:

TABLE 6: Locations with multip	le bicyclists being struck while riding on sidewalks
Corridor	Number of crashes and locations
Cumberland Ave/Kingston Pk	10 crashes between 17 th St & Alcoa Hwy
Western Ave	7 crashes between 11 th St & News Sentinel Dr
Broadway	4 crashes between Cecil Ave and Atlantic Ave
Chapman Hwy	2 crashes near Lippencott St, 1 near Mimosa Ave
Middlebrook Pk	2 crashes, one at Citico St, one at Proctor St
Central St	2 crashes, one at Oak Hill Ave, one at Hinton Ave

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 62 crashes (12 percent), pedestrians were crossing the street outside of an intersection or marked crosswalk. 56 of these crashes involved injuries, and 4 others were fatalities. 7 corridors saw multiple crashes of this type:

TABLE 7: Location crosswalks	ns with multiple pedestrians being struck while crossing outside of
Corridor	Number of crashes and locations
Broadway	13 total crashes: 6 near Magnolia Ave; 2 between Grainger and Bluff avenues; 2 near Oglewood Ave (1 south and 1 north); 1 south of Powers St; 1 north of Highland Dr; 1 north of McCroskey Ave
Western Ave	5 total crashes: 1 crash near 17 th St; 1 between Texas and Mynderse avenues; 1 east of McKamey Rd; 1 between Knoxville College Dr and University Ave; 1 east of Sanderson Rd
Magnolia Ave	4 total crashes: 2 crashes between Mary and Castle streets; 1 east of Spruce St; 1 west of Kyle St (fatality)
Middlebrook Pk	4 total crashes: 2 near Clyde St; 1 east of Sutherland Ave; 1 west of 21st St (fatality)
Chapman Hwy	3 total crashes: 1 north of Lippencott St; 1 west of Lindy Dr; 1 north of Overbrook Dr
Cedar Bluff Rd	2 total crashes: 1 between Cross Park Dr and Sherrill Blvd; 1 south of N Peters Rd
Rutledge Pk	2 total crashes: 1 east of the I-40 interchange; 1 west of the I-40 interchange (fatality)

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.

18 bicyclists were struck while riding against traffic. 15 crashes involved injuries, with no fatalities.

> • There was a cluster of 3 of these crashes along Broadway near the offramp from westbound I-640 (see Map 13). The rest were scattered around the City.

Map 13: Bicyclists struck while riding against traffic



Broadway near the westbound I-640 off-ramp saw 3 crashes where bicyclists were struck while riding against traffic.

Legend:

- Bicyclists struck while riding against traffic;
- Other crash factors

Crash Factor 7: Driver striking bicyclist from behind

14 bicyclists were struck from behind by drivers. The crashes were scattered around the City. 13 crashes involved injuries, with no fatalities.



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.

Crash Factor 8: Bicyclist riding at night with no lights

9 bicyclists were struck while riding at night with no lights. These crashes were scattered around the City. 7 crashes involved injuries, with no fatalities.



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 obtained directly from KPD (all crashes prior to June 2009) or 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 the City of Knoxville

As described in the full report on pedestrian/bicycle crashes in Knoxville, a disproportionate share of crashes and fatalities occur on major arterials (streets such as Broadway and Kingston Pike).

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.

- Major arterials make up 6 percent of the surface street mileage within Knoxville.
- Of the crashes where locations are certain, 29 percent (376 crashes) occurred on major arterials. 89 percent (335) of the crashes on major arterials occurred on six streets: Broadway, Chapman Highway, Cumberland Avenue, Kingston Pike, Magnolia Avenue, and Western Avenue.
- The two major arterials with the most pedestrian/bicycle crashes were Broadway, with 113 crashes, and Cumberland Avenue, with 71 crashes. Factoring in the length of the street, Cumberland has the most pedestrian/bicycle crashes per mile (59.2), followed by Broadway (17.4).
- Crashes on major arterials resulted in 15 fatalities, which is 39 percent of all fatalities resulting from pedestrian/bicycle crashes. Five streets accounted for 13 of the 15 fatal crashes on major arterials: Broadway (3), Chapman Highway (3), Clinton Highway (2), Kingston Pike (3), and Rutledge Pike (2). Clinton Highway had the most fatalities per mile.
- Two major arterials had a relatively small number of crashes, but a high percentage of crashes resulting in fatalities. On both Clinton Highway and Rutledge Pike, 40 percent of all pedestrian/bicycle crashes resulted in a fatality, well above the fatality rate for any other arterial.
- 14 of the 15 fatalities on major arterials involved people walking. The 1 bicycle fatality occurred on Western Ave.
- Since 2015, crashes on major arterials resulted in 22 serious injuries⁷, which is 34 percent of all serious injuries resulting from pedestrian/bicycle crashes.

⁷ 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. City of Knoxville crash reports began to include reliable information about the severity of injuries in 2015.

- Combining fatal and serious injury (F+SI) crashes, 4 streets accounted for 68 percent of these crashes: Broadway (9 F+SI crashes), Chapman Highway (5), Kingston Pike (6), and Western Avenue (5). Broadway has the most F+SI crashes per mile.
- Three major arterials had a relatively small number of crashes, but a high percentage of crashes resulting in F+SI: Rutledge Pike (60 percent), Alcoa Highway (50 percent), and Clinton Highway (40 percent).
- The most common crash factor (51 percent) in crashes along major arterials is drivers making a turning movement and failing to yield. More than half of these turning movement crashes are left turns.
- The most dangerous crashes on arterials by crash factor are:
 - "Driver striking bicyclist from behind" (50 percent of crashes resulted in a fatality or serious injury).
 - "Pedestrian crossing the street outside of an intersection or marked crosswalk" and "pedestrian struck while walking along corridor without sidewalks" (for each of those crash types, 33 percent of crashes resulted in a fatality or serious injury).

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











APPENDIX TAE	SLE 1: Ped/	bike crash	es along n	najor arter	ials in the	City of Kn	L – allivyor	lan. 2007-N	March 2018	8						
	Number of	Rank by number of	Length of arterial	Crashes	Rank by crashes	Number of	Fatalities	Rank by fatalities	Percent of crashes resulting	Rank by percentage of	Number of serious	Fatal + serious injury (SI)	Fatal + SI	Rank by F+SI per	Percentage of crashes resulting	Rank by percent crashes
Major arterial	crashes	crashes	(in miles)	per mile	per mile	fatalities	per mile	per mile	in fatality	fatalities	injuries*	total	per mile	mile	in F+SI	F+SI
Alcoa Hwy	2	13	7.3	0.3	14	0	0.00				1	1	0.14	11	50.0%	2
Asheville Hwy	7	6	5.8	1.2	12	0	0.00				1	1	0.17	10	14.3%	5 (tie)
Broadway	113	1	6.5	17.4	2	3	0.46	3	2.7%	5 (tie)	6	6	1.38	1	8.0%	7
Chapman Hwy	32	9	5.9	5.4	7	3	0.51	2	9.4%	3	2	5	0.85	4	15.6%	4
Clinton Hwy	5	10 (tie)	3.8	1.3	11	2	0.53	1	40.0%	1 (tie)	0	2	0.53	8	40.0%	3
Cumberland Ave	71	2	1.2	59.2	1	0	0.00				1	1	0.83	5	1.4%	11
Fifth Ave	+	14	0.5	2.0	6	0	0.00				0	0				
Henley St	8	7 (tie)	0.8	10.0	5	0	0.00				1	1	1.25	2	12.5%	8
Kingston Pike	42	3	12	3.5	8	3	0.25	6	7.1%	4	3	6	0.50	6	14.3%	5 (tie)
Magnolia Ave	40	4	3.5	11.4	4	1	0.29	5	2.5%	7	2	3	0.86	3	7.5%	10
Main St	8	7 (tie)	0.5	16.0	3	0	0.00				0	0				
Neyland Dr	5	10 (tie)	2.9	1.7	10	0	0.00				0	0				
Rutledge Pike	5	10 (tie)	5.6	0.9	13	2	0.36	4	40.0%	1 (tie)	1	3	0.54	7	60.0%	1
Western Ave	37	5	6.6	5.6	9	1	0.15	7	2.7%	5 (tie)	4	5	0.76	9	13.5%	7
* Crash reports I	ank the sev	rerity of cra	shes as eit	her fatal, su	ispected se	erious injur	y, suspecte	ad minor inj	iury, possib	ile injury, oi	r no injury.	Suspected	serious inj	ury crashe	s used to be	0
reported as "inc¿	apacitating,*	and suspe	cted minor	injury were	s reported ¿	as "non-inc	apacitating	." For this r	eport, susp	pected seric	ous and inc	apacitating	crashes al	re combine	ed as "serio	us injury"
crashes. City of	Knoxville cr.	ash reports	began to i	include relis	able informa	ation about	the severi	ty of injurie.	s in 2015.							