



Section 2

GENERAL SAFETY DATA

This section of the report provides an overview of general safety data for the City of Fort Collins. Unless otherwise noted, the data represents a compilation or average of five years of data (2018-2022).

CRASH NUMBERS

Total reported crashes are shown in **Figure 2** and are generally declining. 2020 is understood to be a unique year due to the pandemic, with reduced travel volumes throughout the year. Compared to pre-pandemic 2019, total reported crashes declined by more than 20%.

Severe crashes are those that are coded (documented) as 'suspected minor injury', 'suspected major injury' or 'fatal'. The numbers of those crashes are generally increasing – up 38% when compared to 2019 (pre pandemic). 2020 is considered to be an anomaly.

Comparisons to other cities are in a later section (page 21).

Percent of crashes each year that were severe:
6.9% 7.7% 10.5% 11.1% 13.9%

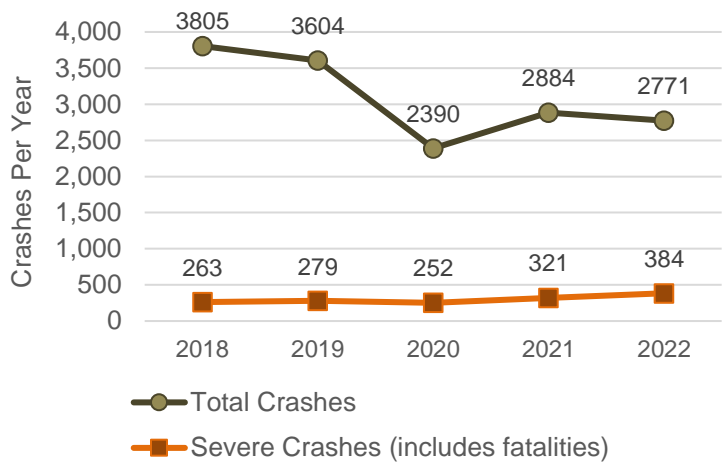


Figure 2. Total and Severe Crashes 2018-2022

Compared to 2019: Total crashes are down **23%**

But severe crashes are up **38%**

A **'severe'** crash is one that involves a suspected minor injury, suspected serious injury or fatality.

CRASH SEVERITY

The majority (almost 75%) of crashes do not result in any injury. See **Figure 3**. Crashes that are included within the 'severe' category throughout this report include those coded in the police report as 'suspected minor injury', 'suspected major injury' or fatal crashes. Severe crashes represent 9.7% of all reported crashes.

9.7%
of crashes involve an injury/fatality

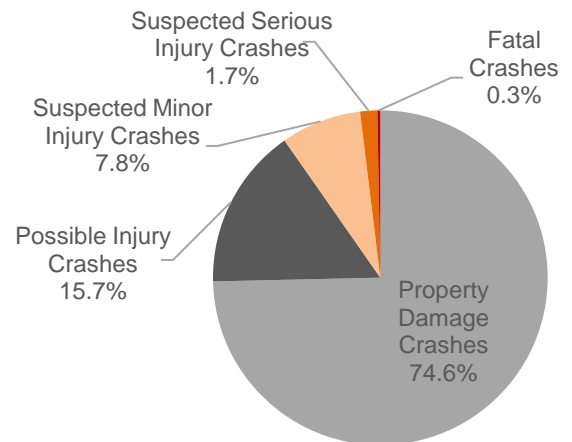


Figure 3. Overall Crash Severity



A review of whether that percentage has changed in the last years indicates that crashes in Fort Collins have become more severe (see values in the top of **Figure 2**). Pre-pandemic, the percent of severe crashes was about 7 - 8%. In 2020 the percentage was 10.5% and in 2022 the percentage of crashes that were severe jumped to 13.9%. This increase reflects the combination of generally lower overall crash numbers (more non-injury crashes reported just to the state) but increasing severe crash trends. This phenomenon was seen across the United States during the pandemic – lower overall crash numbers likely due to reduced volumes, but higher severe crashes.

Figure 4 shows the five-year crash trends by severity. Severe crashes are trending upward, with the largest increase occurring among minor injury crashes. Fatal crashes are down significantly in 2022. It is however important to note that fatal crash numbers fluctuate more due to the small number of crashes and due to regression to the mean. Regression to the mean is the statistical tendency for data points to adjust towards the long-term average. Because of this, caution is needed when looking for trends in the fatal crash numbers.

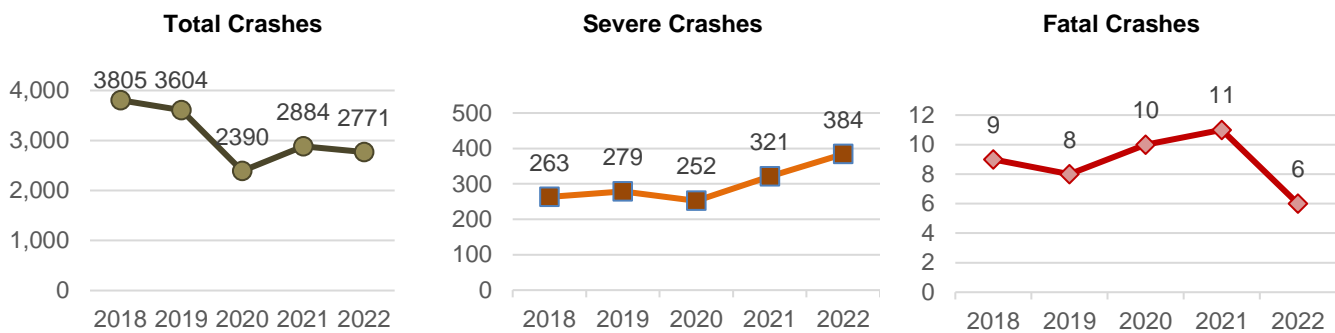


Figure 4. Crash Trends by Severity

CRASHES BY MODE

Figure 5 shows trends in severe crashes when separated by modes. Crashes involving only motor vehicles represent the largest percentage of severe crashes – about 2 of every 3 severe crashes. There has been an especially large increase in minor injury crashes involving just motor vehicles.

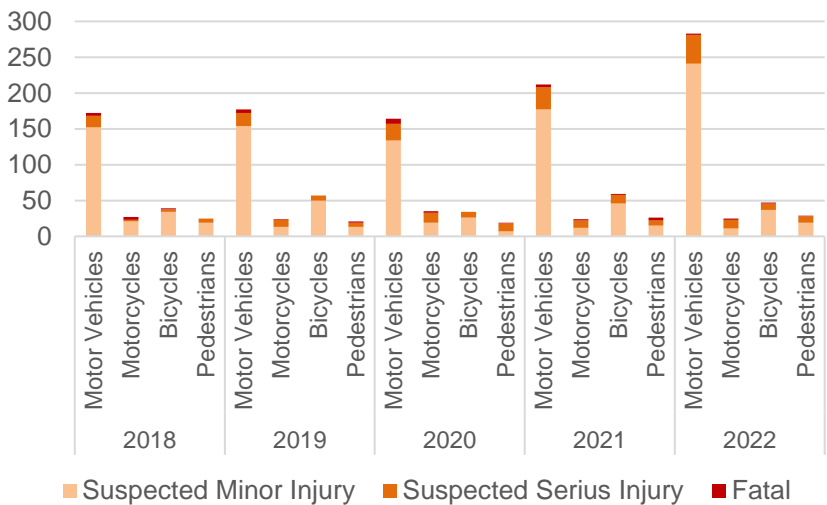


Figure 5. Severe Crash Trends by Mode

IMPACT ON VULNERABLE ROAD USERS

When vulnerable road users (motorcyclists, bicyclists, and pedestrians) are involved in a crash, it tends to be severe. While crashes involving only motor vehicles remain by far the most prevalent (94% of all crashes), they account for just 50% of fatalities. See **Figure 6**.

Vulnerable road users are involved in
6% of all crashes but
50% of fatal crashes

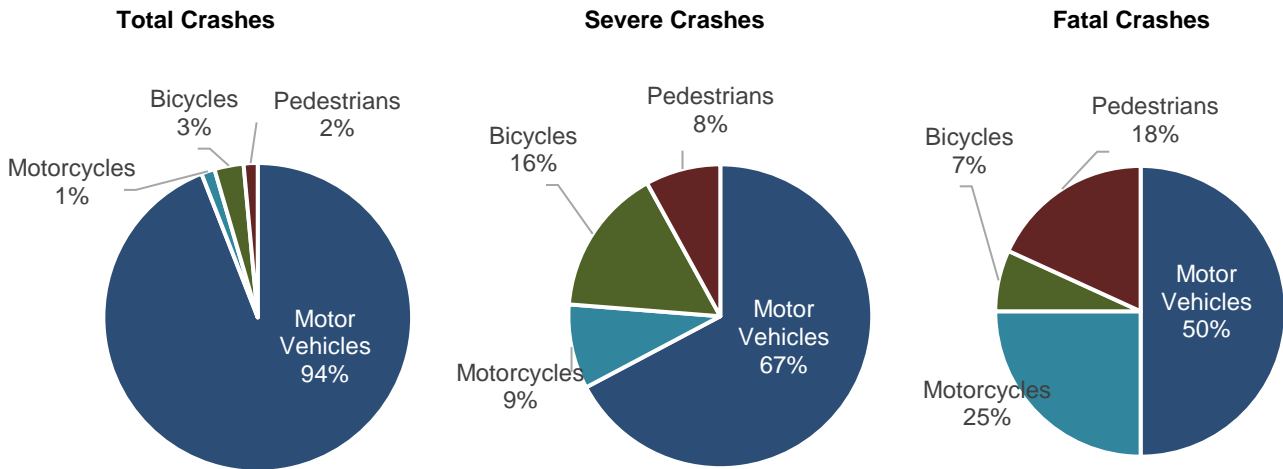


Figure 6. Severity Impact on Vulnerable Road Users

Trends in the past five years for crashes that involve a vulnerable user are shown in **Figure 7**. Bicycle crashes, while trending downward, remain the most frequent type of vulnerable user crash. In the two years since the pandemic impacted year of 2020, pedestrian crashes are increasing while motorcycle crashes are decreasing.

The number of severe crashes by mode over the past five years is shown in **Figure 8**. Severe bicycle crashes vary quite a bit from year to year but are trending down since 2019 (excluding COVID year of 2020). Severe pedestrian crashes are slowly trending up.

More detailed information on crashes involving bicyclists and pedestrians is presented later in this report.

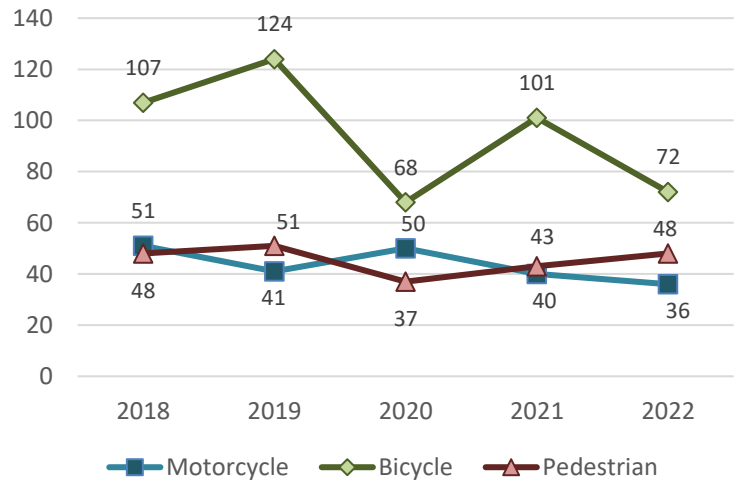


Figure 7. Vulnerable User Crash Trends (Total Crashes)

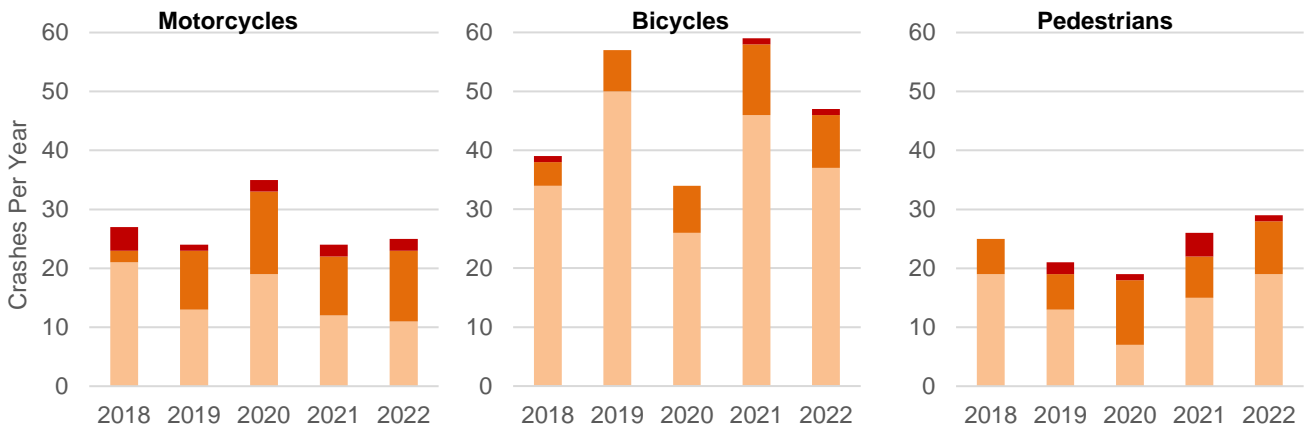


Figure 8. Vulnerable User Crash Trends By Mode (Severe Crashes)



FATAL CRASHES

There were 27 crashes that resulted in fatalities in the past three years. The locations of these crashes are shown in **Figure 14** with 24 of the 27 occurring on arterial streets. The number and type of mode involved in the crash is shown in **Figure 9**. The information in **Figure 10** shows a breakdown of fatal crash by mode in each of the past three years.

Fatal crashes are down significantly (by 45%) in 2022. It is important to recognize that due to low numbers, there can be relatively high variations from year to year. Also, while the decrease is encouraging news, any number of fatalities remains a tragedy and work continues to eliminate these types of crashes.

One of the tenants of the Vision Zero plan is to take a data driven approach to crash trends and utilize the knowledge to develop specific actions for the City to take to achieve Vision Zero. A detailed review of some of the common circumstances around fatal crashes is noted below. This is not intended to place blame, but rather to understand the most common factors to develop focus areas for countermeasures.

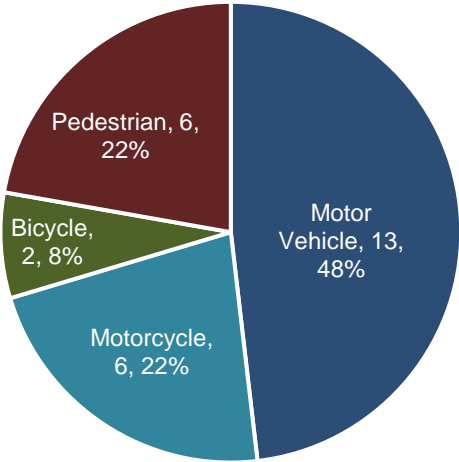


Figure 9. Fatal Crashes by Mode (2020-2022)

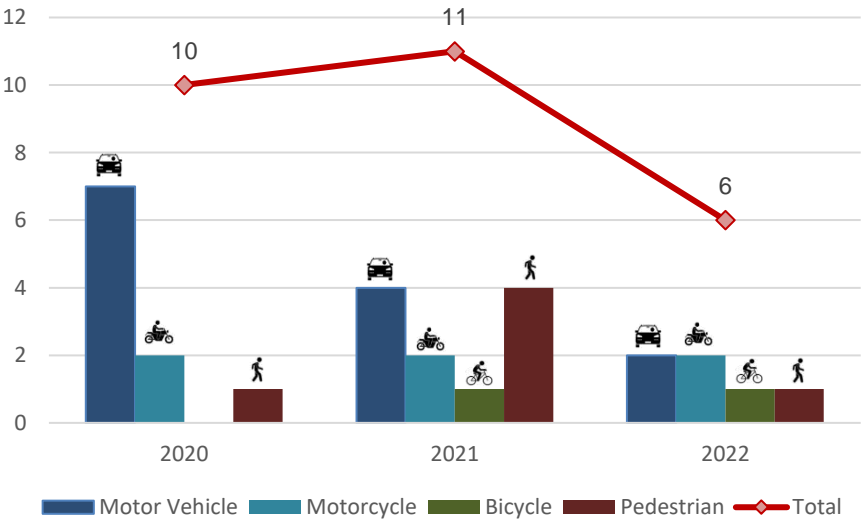


Figure 10. Fatal Crash Trend by Mode (2020-2022)

Note: The national fatal database doesn't include finalized 2022 numbers. All fatal data in this section is from City of Fort Collins crash reports.

Fatalities Involving Only Motor Vehicles

From 2020-2022 there were 13 fatal crashes involving only motor vehicles.

- 5 crashes were vehicles running off the road.
- 2 crashes were non-intersection head-on collisions.
- 2 crashes were approach turn crashes at signalized intersections.
- 2 crashes were right angle crashes at unsignalized intersections.
- 1 crash was a high-speed mid-block side swipe.
- 1 crash was a multi-vehicle (15 vehicle) pileup.



Fatalities Involving Motorcycles

From 2020-2022 there were six fatal crashes that involved motorcycles.

- 2 crashes were right angle crashes where a motor vehicle hit a motorcyclist at an unsignalized intersection.
- 2 involved a motorcycle running off the road.
- 1 involved a motorcycle turning left in front of oncoming traffic.
- 1 involved a motorcycle rear-ending a motor vehicle.

Fatalities Involving Bicycles

From 2020-2022 there were two fatal crashes involving people riding a bicycle. One occurred in 2021 and one occurred in 2022 and both occurred during daylight hours at unsignalized intersections.

- 1 crash was a bicyclist that turned right from a side road onto a main road into traffic.
- 1 crash was a person on a motorized bicycle that turned left in front of oncoming traffic.

Fatalities Involving Pedestrians

From 2020-2022 there were six crashes that resulted in pedestrian fatalities. Four of those crashes occurred in 2021. There was only one crash in 2022. All of the pedestrians were adults ranging in age from 20 to 74, and five of six were male.

- 5 of the 6 crashes occurred at non-intersection locations with pedestrians that entered the roadway without the right-of-way.
- One pedestrian was a construction worker fatally struck by a vehicle leaving the roadway.
- 4 of the 6 crashes occurred after dark. This is a recurring theme with severe pedestrian crashes.

Addressing Fatal Crashes

Addressing fatal crashes will require continued work focused on all modes of travel. The data above, especially when combined with trends from other injury crashes will help identify focus areas. These can include:

- Intersection safety,
- Education around the dangers of being impaired, and
- Bicycle and pedestrian education to support safe bicycling and walking behaviors.



LOCATION OF CRASHES

Crash reports generally show information on relative location such as cross streets, and an indication whether a crash was related to some type of intersection. As typical in an urban area, almost three in every four crashes (74%) occur at an intersection, driveway, or alley access. See **Figure 11**. This illustrates the importance of prioritizing intersections in efforts to improve traffic safety and the importance of reducing the number of driveways/accesses when possible.

74%
of crashes occur at an intersection, driveway, or alley access

Crash reports now generally include a geo-coded location that can be evaluated through mapping efforts. This allows for a visual depiction of crash prevalence at specific locations or along corridors. **Figure 12** is a citywide heat map of crashes in the last three years in Fort Collins (2020-2022).

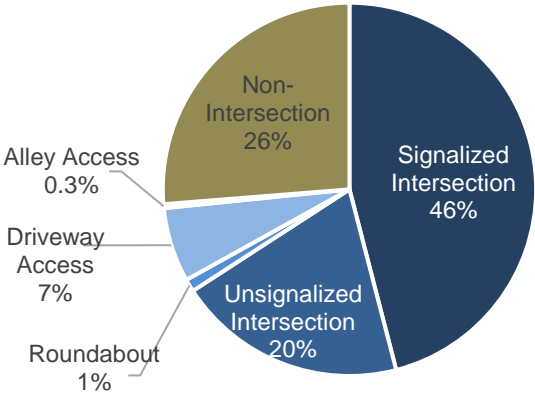


Figure 11. Location of Crashes

Care should be taken to understand that ‘hot spots’ on the map are simply number based, and neither correlated to volumes, nor necessarily indicative of statistically based higher than expected crash locations. Heat maps provide an overall sense of crash locations and can be used to understand geospatial patterns, guide resources and target enforcement areas. More detailed heat maps related to specific types of crashes (including crashes involving pedestrians and bicyclists) are shown later in this report.

Arterials as Priority Corridors

Three years of data from 2020-2022 (shown in **Figure 12**) was reviewed to determine what types of streets are most crash prone. Arterial streets are the major streets in the city intended to provide citywide connectivity and intercity travel. Specifically, they are the streets that are classified as either a minor arterial (2 lane) or major arterial (4 lane or 6 lanes) on the City of Fort Collins’ Master Street Plan (such as College Avenue, Harmony Road, Laporte Avenue, Overland Trail, etc.).

In 2020-2022
87% of ALL crashes occurred on an arterial
79% of ALL crashes occurred at an intersection or driveway on an arterial

Most crashes occur on arterials. 87% of all crashes and 89% of severe crashes occurred on an arterial. This is depicted in **Figures 12 and 14**. Arterials are those roadways with the highest traffic volumes, creating the greatest number of potential conflicts. Arterials are also the roadways with the highest traffic speeds within the City, which can result in less time for reaction, and when crashes occur the higher speeds tend to result in greater severity. The data in these maps was used to create the High Injury Network identified through the Vision Zero Action Plan - shown in **Figure 16**.

As the City pursues traffic safety improvements, the priority corridors for action must be the arterial street system (and especially at intersections). Almost 80% of all crashes occur at an arterial intersection or driveway. These are the locations where improvements have the largest opportunity for reduction in number and severity of crashes.

Although the priority is on arterials, it should be noted that roadway safety along collector roads and local neighborhood streets remains an important element of the transportation system. Crash evaluation should continue to be completed on all roadways, with programs, projects, and spot improvements made throughout the City as appropriate.

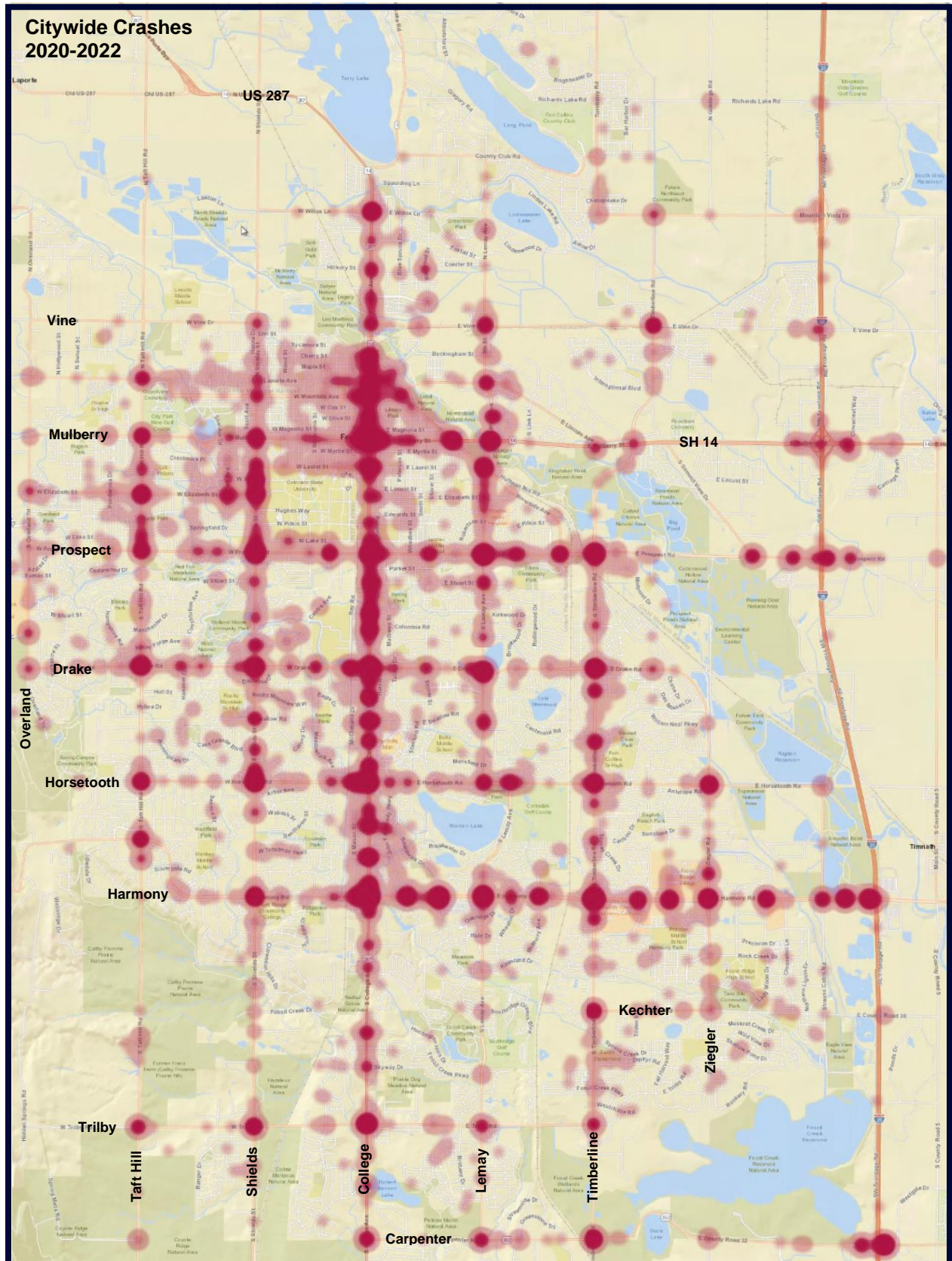


Figure 12. Citywide Heat Map of Crashes (2020-2022)



Locations of Severe Crashes

Figure 14 shows the location of severe crashes in the City in the past three years. Eighty-nine percent of severe crashes occur on the arterial system, 81% at intersections, and 50% at signalized intersections.

The heat map also helps to identify potential locations not related to intersections where severe crashes are occurring. For instance, 16 of the 27 fatal crashes in the past three years (59%) were not at intersections. More discussion is on page 8, as fatal crashes tend to be somewhat more random in location. The locations of fatal crashes are highlighted in **Figure 14**.

Severe Crashes (2020-2022)

89% of **SEVERE** crashes occurred on an arterial

81% of **SEVERE** crashes occurred at an intersection or driveway on an arterial

Non-Intersection Crashes

Crashes that are not specifically tied to the function or operations at an intersection are classified as non-intersection crashes (also sometimes listed as mid-block crashes). They represent about 33% of reported crashes. These include almost all parking related crashes, run-off-the-road and fixed object crashes, and crashes that occur at driveways. Fixed object crashes can be the result of a variety of causes such as slow speed sliding into curbs during inclement weather, or high-speed impaired drivers leaving the road. The location of non-intersection crashes is shown in **Figure 15**. Seventy three percent of non-intersection crashes occur on arterial streets. This is somewhat lower than intersection crashes and reflects that most local street crashes involve parked cars. Other obvious 'hot spots' are parking related crashes downtown, and heavily used driveways for commercial businesses.

Non -Intersection Crashes

1,028 crashes each year
8.5% are severe

The type of non-intersection crashes for both overall crashes and severe crashes are shown in **Figure 13**.

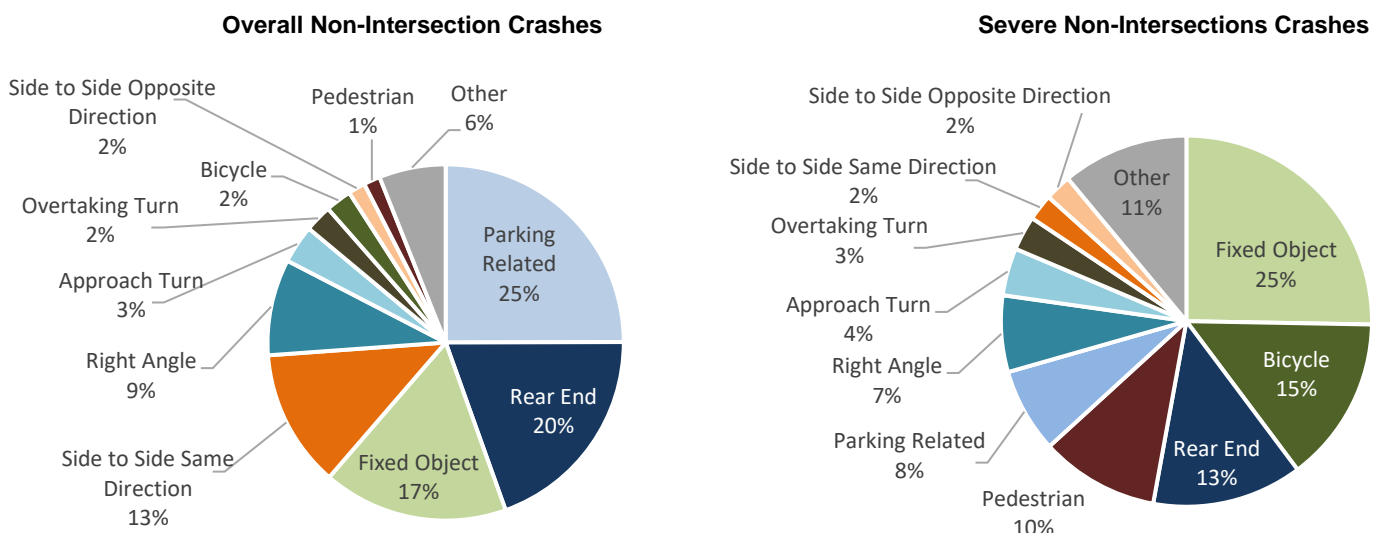


Figure 13. Crash Types For Non-Intersection Crashes

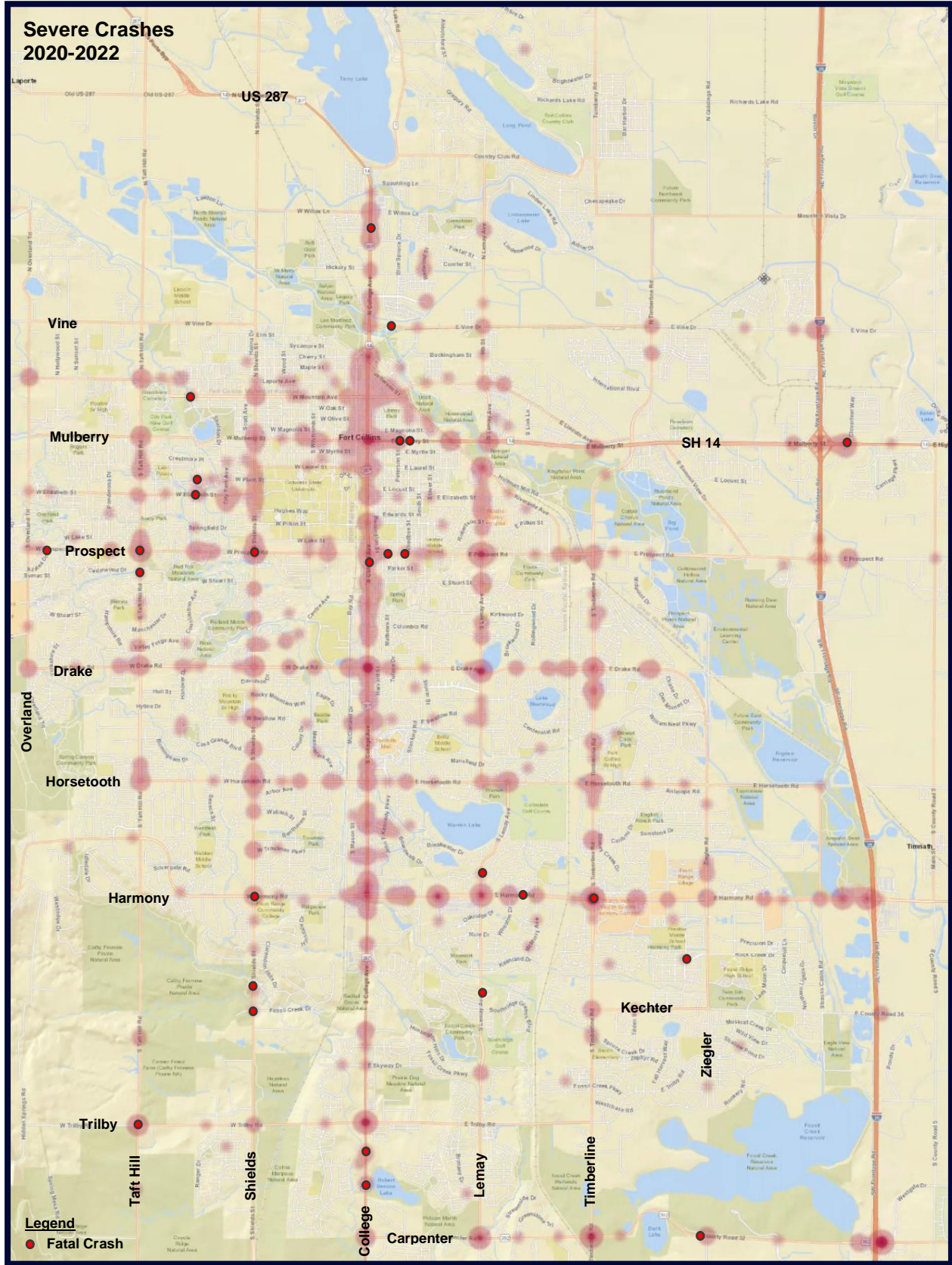


Figure 14. Severe Crash Heat Map (2020-2022)

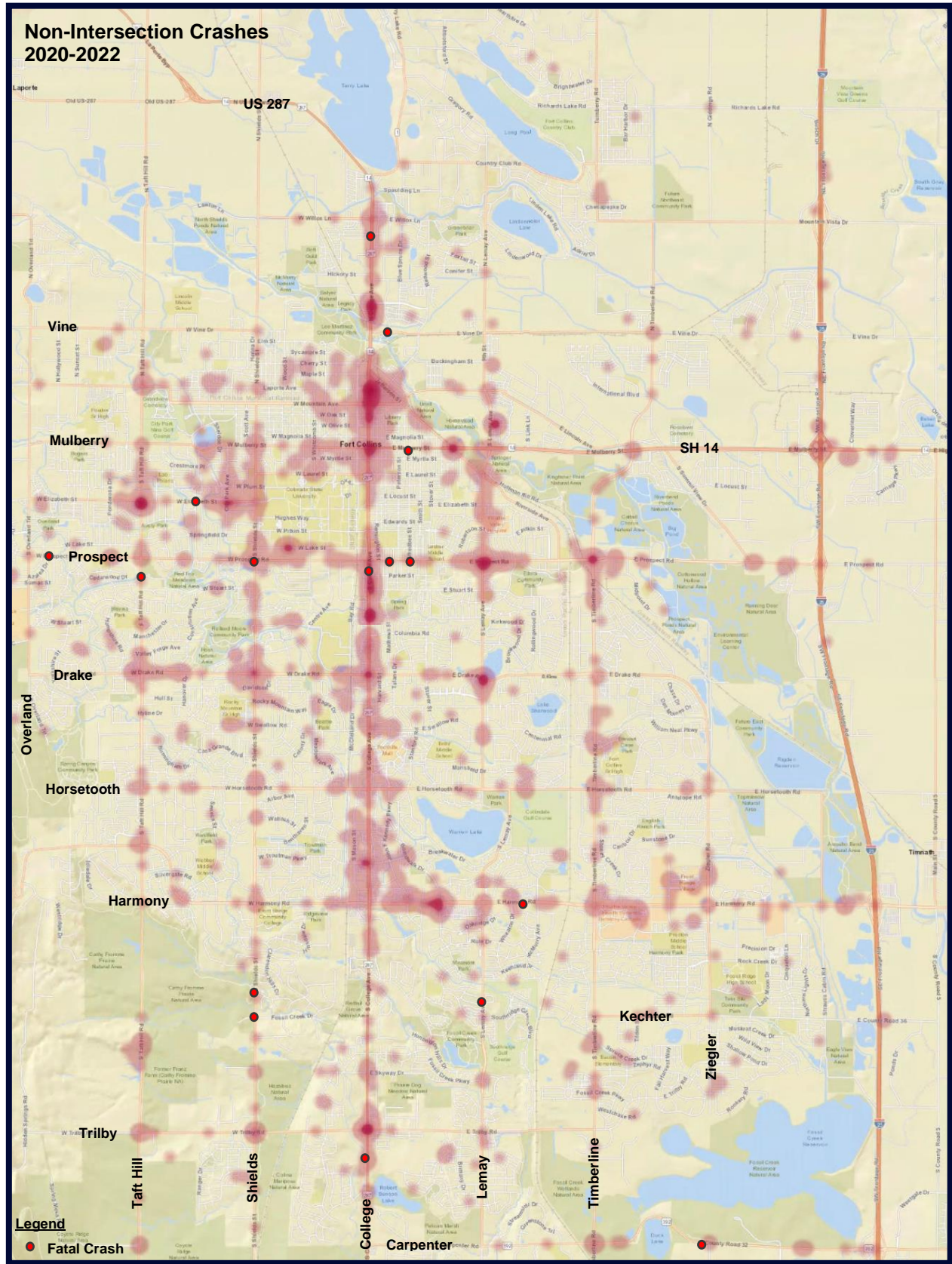


Figure 15. Non-Intersection Crash Heat Map (2020-2022)

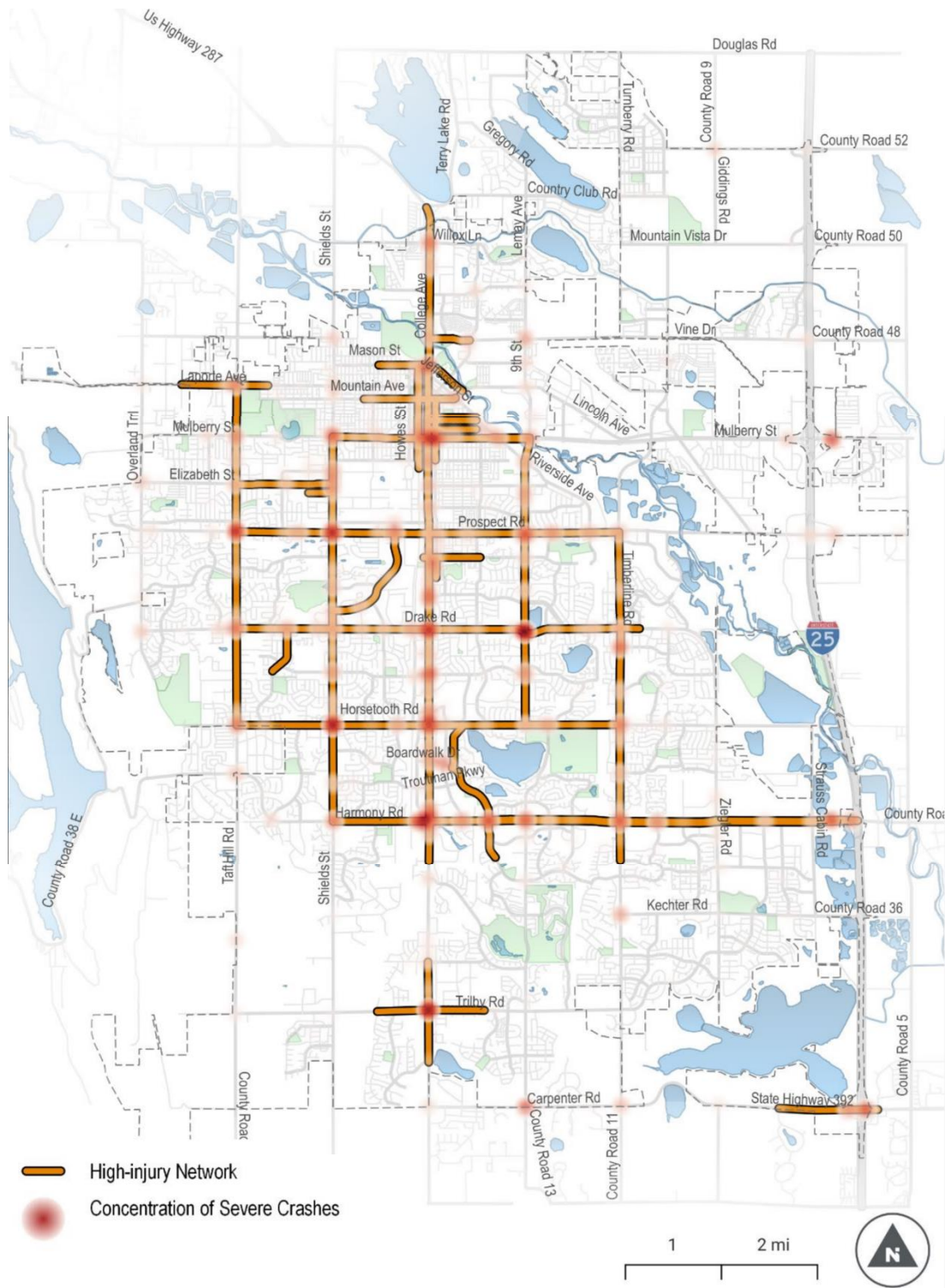


Figure 16. Fort Collins High Injury Network (2017-2021) as Identified in the Vision Zero Action Plan



CRASHES BY MONTH, DAY, AND TIME

The variations of crashes in intervals of time can help identify when crashes are more prevalent, and especially when crash rates are higher than expected when compared to traffic volumes. This offers information that can be used to target educational campaigns and/or enforcement. The analysis represents an average of five years of data (2018-2022). The traffic volume data for the month and day of week analysis comes from City of Fort Collins traffic counts, while the hourly time of day data comes from State Highway 14 continuous counters west of I-25.

Crashes by Month of the Year

A review of injury/fatal crashes by month shows that the number of severe crashes vary substantially (between an average of 15 to 40 each month). The most crashes occur during the late summer months and into the fall (perhaps coinciding with the start of school, including the influx of university students). Although traffic volumes are highest then as well, the number of severe crashes is overrepresented. See **Figure 17**.

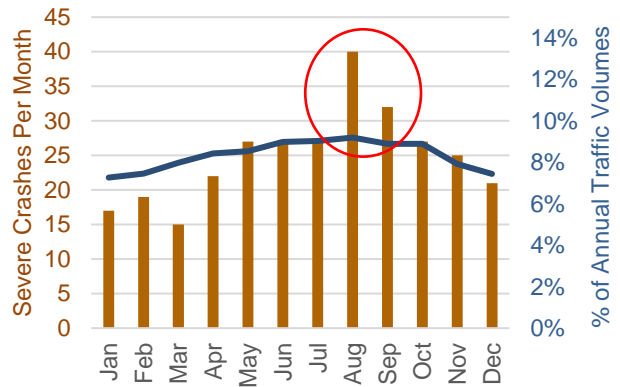


Figure 17. Injury/Fatal Crashes by Month

Crashes by Day of the Week

Figure 18 shows that more crashes occur on Fridays than any other day of the week. Daily variation in crashes generally tracks with daily variation in traffic volumes.

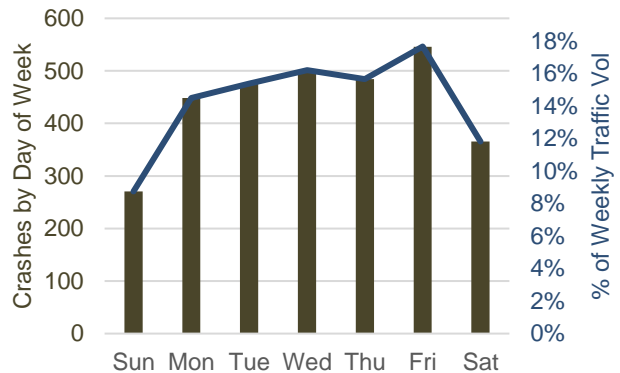


Figure 18. Crashes by Day of the Week

Crashes by Time of Day

Crashes are shown by time of day in **Figure 19**. The most striking takeaway for this information is the overrepresentation of crashes at noon and between 3 p.m. and 5 p.m. That is also the time when traffic volumes are highest, but the increase in crashes is not proportional to the increase in volumes.

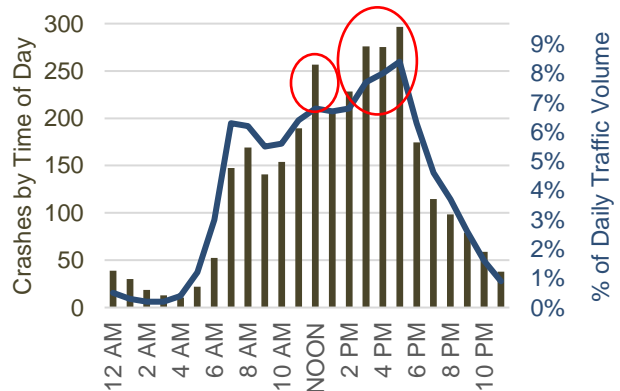


Figure 19. Crashes by Time of Day



CRASH INFORMATION BY DRIVER AGE

Figure 20 compares the number of crashes by age of at-fault drivers with the percent of licensed drivers in that age category. Drivers aged 15-19 are almost three times as likely to be involved in a crash as would be expected given the number of licensed drivers in that age group. Drivers aged 20-24 are also more likely to be involved in crashes. All other age groups are under-represented in crashes.

This trend of higher numbers than expected of young drivers in crashes is not unique to Fort Collins. It does indicate the impact of driver inexperience (and perhaps higher risk taking) as likely key factors in crashes and offers insight into potential countermeasures to address this challenge.

Teenagers represent **5%** of all drivers
but are involved in **15%** of all crashes

Although older drivers are generally underrepresented in crashes, there are certain types of crashes where they are overrepresented. **Figure 21** compares the types of crashes that older drivers (aged 65+) are involved in against the prevalence of those crashes among all drivers. Older drivers have higher numbers of approach turn crashes relative to all drivers. An approach turn crash is a left turning crash that involves judging oncoming vehicle speeds and choosing an appropriate gap. These tend to be crashes that cause more injury due to higher speeds.

MOTORCYCLE CRASHES

From 2018-2022 there were a total of 218 reported motorcycle crashes, including 11 fatalities. Although there was an increase in crashes during 2020, the general trend is downward. See **Figure 22**. While motorcycle crashes can follow the same patterns as other crashes, they tend to be more severe as shown **Figure 23**. Overall, only 25% of all crashes result in some type of injury while 80% of motorcycle crashes result in injury (62% are classified as severe).

Motorcycle Crashes
44 crashes each year
61.9% are severe

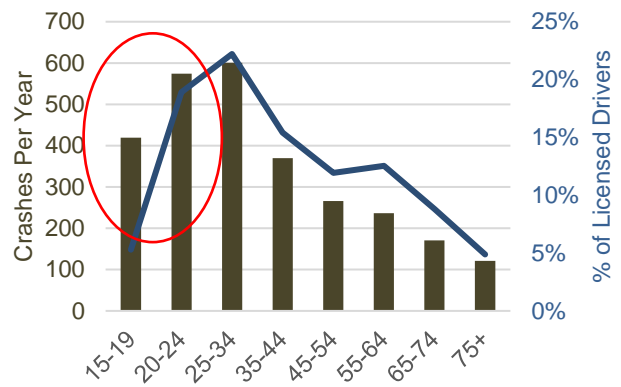


Figure 20. At Fault Drivers By Age

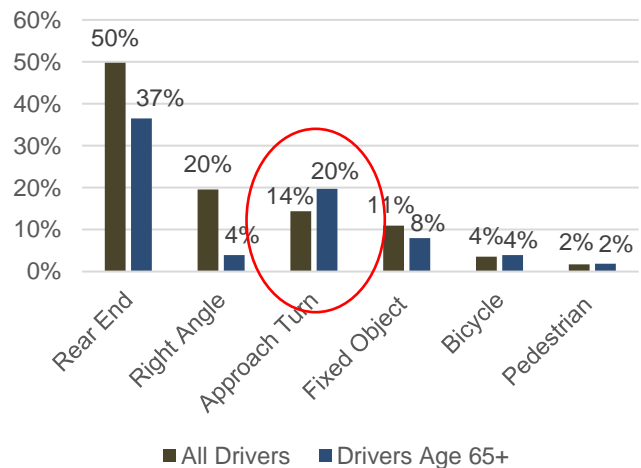


Figure 21. Crash Type by Driver Age

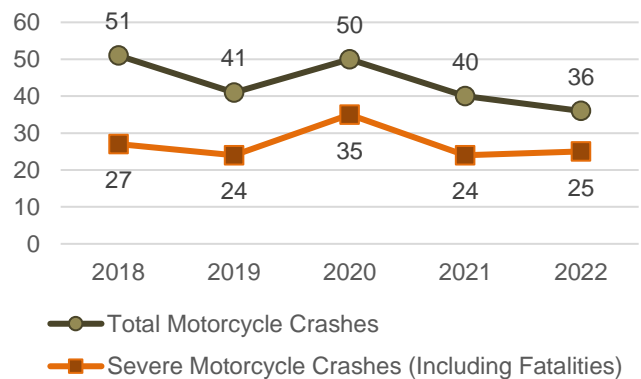


Figure 22. Motorcycle Crash Trends

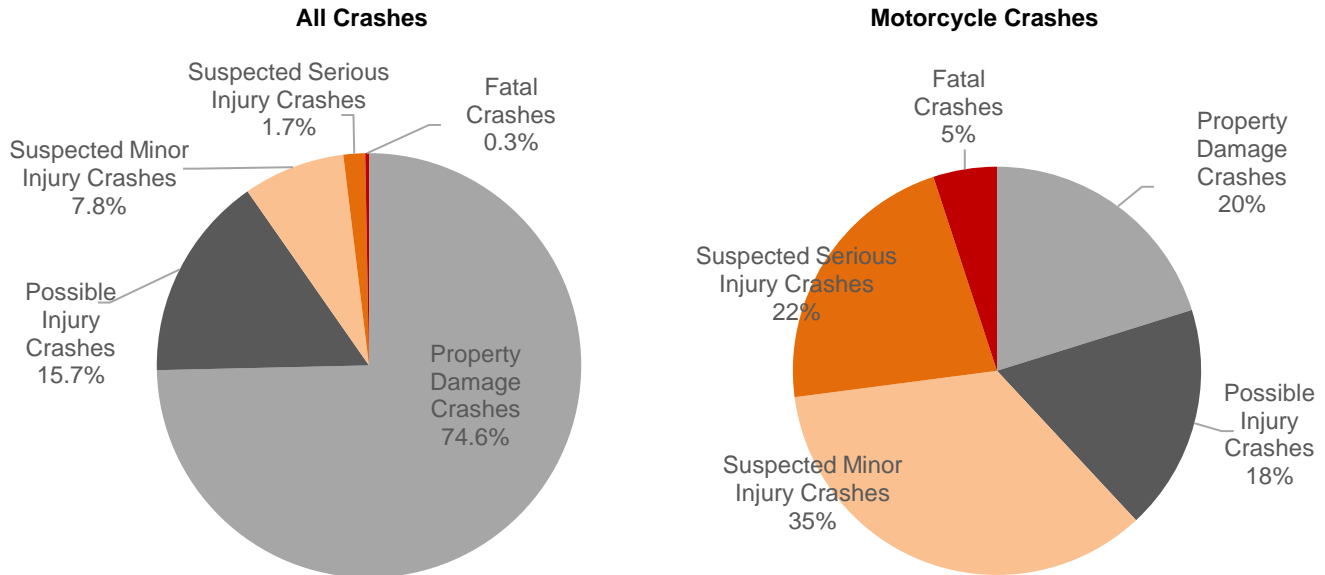


Figure 23. Severity Impact on Motorcycle Crashes

Motorcycle crashes have several idiosyncrasies that are different from overall crash trends:

- They are the mode of travel that result in the highest percentage of severe crashes - 67%. (In comparison, only 9% of motor vehicle crashes, 58% of bicycle crashes and 58% of pedestrian crashes are severe.)
- In addition, 21% of motorcycle crashes are single vehicle crashes (the overall percentage of single vehicle crashes is 13%).

The takeaway for motorcycle crashes is that they tend to be severe, and more frequently than other crashes occur as single vehicle non-intersection crashes.

In a crash, motorcyclists are **6** times as likely to be injured and **16** times as likely to be killed than people in motor vehicles.

Motorcycle Crashes:
26% Non-intersection
85% on arterials
21% Single Vehicle

CRASHES INVOLVING YOUTH

Crashes involving young people (aged 0-17) are of special interest. These crashes include crashes involving a young pedestrian, a young bicyclist, or a young motor vehicle driver. The data does not include youths that are passengers in vehicles involved in a crash. (So the bicyclist and pedestrian data includes all ages of youth, while the motor vehicle data represents just 16 and 17 year olds.)

Figure 24 shows the trends in crashes that involve youths. Like in many other instances, 2020 was an anomaly, but in general youth crashes are decreasing – overall crashes are down 35% in five years. However, crashes that are considered severe involving youth are increasing, up 60% in five years.

In the last five years, overall crashes involving youths are down **35%**
 While severe crashes are up **60%**



The mode split for crashes involving youths is shown in **Figure 25 and Figure 26**. Most of these crashes involve young drivers. Using five years of data, the average youth are:

- 255 vehicle crashes
- 15 bicycle crashes
- 7 pedestrian crashes
- 1 motorcycle crash

Figures 27, 28, and 29 show the trends in crashes involving youths by mode. Motor vehicle crashes are decreasing, while crashes involving young pedestrians saw an increase in 2022.

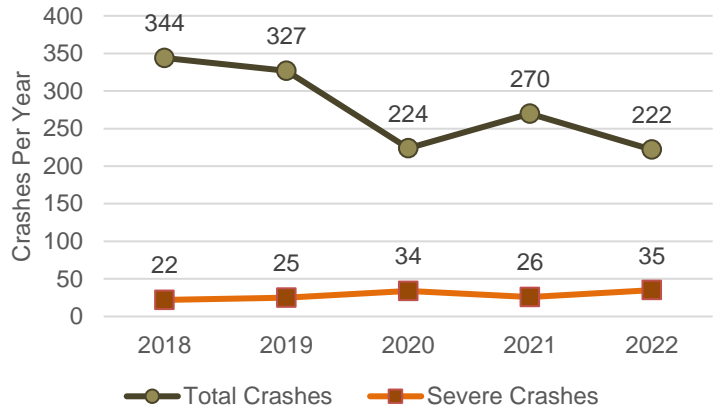


Figure 24. Trends for Crashes Involving Youths

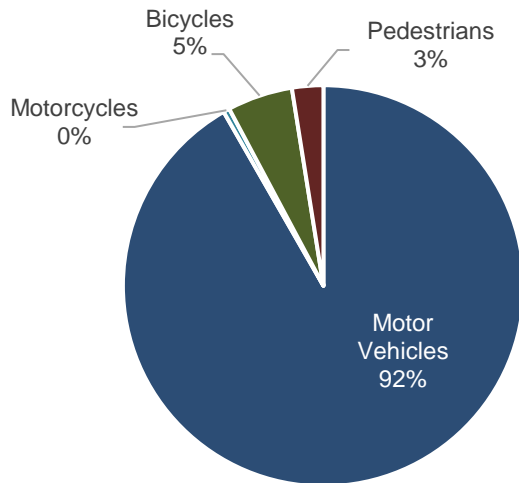


Figure 25. Mode Split for Crashes Involving Youths

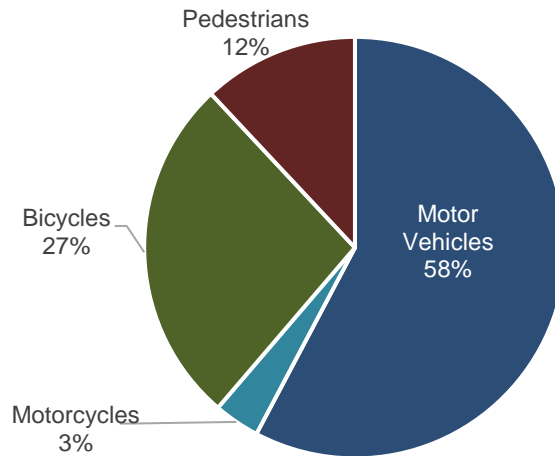


Figure 26. Mode Split for Severe Crashes Involving Youths

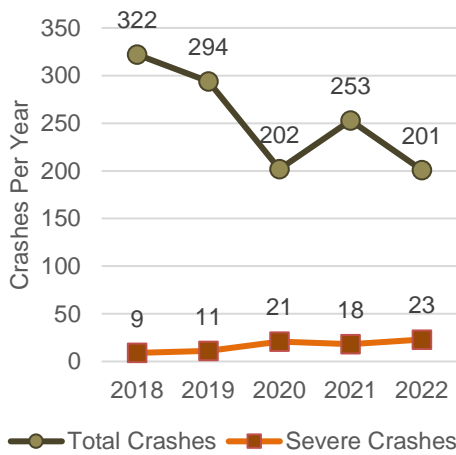


Figure 27. Crashes Involving Young Drivers

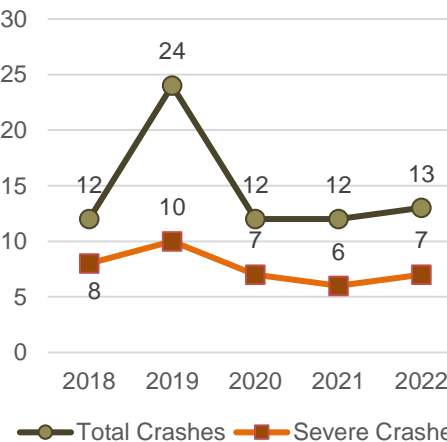


Figure 28. Crashes Involving Young Bicyclists

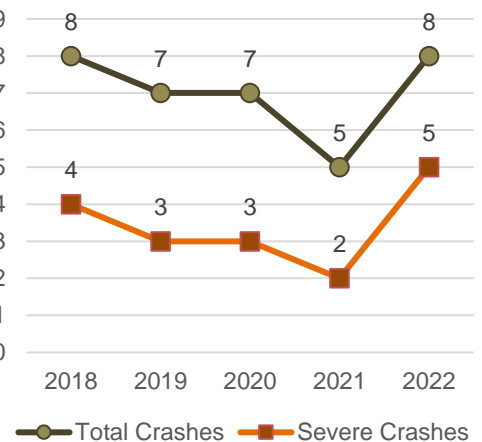


Figure 29. Crashes Involving Young Pedestrians



ECONOMIC IMPACT OF CRASHES

Using numbers determined by the Federal Highway Administration and published in the Highway Safety Manual, an estimation of economic costs associated with crashes in Fort Collins can be made. The costs are weighted by severity and adjusted to 2022 numbers (see Section 4 for more details). The annual societal cost of traffic crashes in Fort Collins is about \$161 million. See **Table 1**. The crash costs shown are adjusted to reflect 2022 values. Crash costs include monetary losses associated with medical care, emergency services, property damage, and lost productivity. They also include costs related to the reduction in the quality of life related to injuries.

Societal cost of crashes in Fort Collins in 2022:
\$161 million

A study completed by the National Highway Traffic Safety Administration (NHTSA) identified who pays the costs of the economic impact of crashes. The NHTSA study found that society at large pays for about 75% of all costs incurred for traffic crashes. Those costs are passed on to the public through insurance premiums, taxes, direct out of pocket payments for goods/services, and increased medical costs.

Crash Severity	Number of Crashes	Cost Per Crash	Societal Cost
Property Damage Crashes	2,039	\$ 12,400	\$ 25,283,600
Possible Injury Crashes	348	\$ 76,300	\$ 26,552,400
Non-Incapacitating Injury Crashes	308	\$ 135,200	\$ 41,641,600
Incapacitating Injury Crashes	70	\$ 370,000	\$ 26,552,400
Fatal Crashes	6	\$ 6,970,800	\$ 41,824,800
Total	2,771		\$ 161,202,400

Table 1. Economic Impact of Traffic Crashes in Fort Collins, 2022

Crash cost source: FHWA Highway Safety Manual Table 4A-1 adjusted to 2022 dollars.

COMPARISON TO OTHER CITIES

The most consistent way to compare Fort Collins' crash frequency with that of other cities is to compare the fatal crash rate (crashes per 100,000 population). Fatal crashes are used for this comparison as they are most consistently reported due to federal reporting requirements. **Tables 2 and 3** are sorted by fatal crash rate and compare Fort Collins to other cities in Colorado and also other peer cities nationwide with similar populations (90,000 to 200,000).

Colorado crash data is from the Colorado Department of Transportation (CDOT). Crash data for communities outside Colorado (peer cities) was obtained from the National Highway Traffic Safety Administration's Fatal Accident Reporting System (FARS) which contains data through 2021. Population estimates are from the U.S. Census.



Colorado Cities								
City	Population	Fatal Crashes, 2018 - 2022					Avg.	Fatal Crash Rate (Crashes / 100,000 Pop.)
		2018	2019	2020	2021	2022		
Pueblo	111,456	16	12	13	18	13	14.4	12.9
Lakewood	156,120	17	19	12	7	17	14.4	9.2
Longmont	98,687	6	12	5	6	2	6.2	6.3
Avg. CO Cities	125,511	8.3	8.7	8.2	6.0	7.9	7.8	6.2
Greeley	109,209	9	4	13	2	5	6.6	6.0
Westminster	114,533	10	5	6	1	10	6.4	5.6
Fort Collins	169,249	9	8	10	11	6	8.8	5.2
Thornton	143,282	1	13	8	3	12	7.4	5.2
Arvada	121,581	5	3	4	2	5	3.8	3.1
Boulder	105,485	2	2	3	4	1	2.4	2.3

Table 2. Fatal Crash Rate Comparison to Other Colorado Cities

Peer Cities								
City	Population	Fatal Crashes, 2017-2021*					Avg.	Fatal Crash Rate (Crashes / 100,000 Pop.)
		2017	2018	2019	2020	2021		
Springfield, MO	170,067	17	18	15	27	27	20.8	12.2
Boca Raton, FL	99,009	6	10	6	11	15	9.6	9.7
Norman, OK	129,627	9	9	5	12	10	9	6.9
San Angelo, TX	99,112	4	5	3	9	10	6.2	6.3
Fort Collins, CO	169,249	13	9	8	10	11	10.2	6.0
Avg. Peer Cities	139,971	6.8	6.5	6.2	8.5	9.1	7.4	5.4
Broken Arrow, OK	117,911	7	7	3	4	9	6	5.1
Richardson, TX	118,802	4	5	5	9	7	6	5.1
Cedar Rapids, IA	136,429	5	9	9	5	6	6.8	5.0
Coral Springs, FL	133,369	7	3	4	8	7	5.8	4.3
Overland Park, KS	197,726	8	2	9	7	5	6.2	3.1
Olathe, KS	145,616	3	6	6	3	4	4.4	3.0
Naperville, IL	149,936	3	1	3	2	5	2.8	1.9
Bellevue, WA	152,767	2	1	4	4	2	2.6	1.7

Table 3. Fatal Crash Rate Comparison to Similar Peer Cities Nationwide

* Note: 2021 is most current national data available