

MEMORANDUM

February 17, 2024

To: Todd Nickleski; City of River Falls

From: Mitch Coffman, Uy Nguyen, Ophelia Washington; Toole Design

Project: River Falls Safety Action Plan

Re: Safety Analysis Memo

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Introduction

The Safety Analysis Memo (Memo) summarizes the results of the safety analysis conducted for River Falls, Wisconsin's Safety Action Plan. This Memo provides a data-driven basis for understanding the history of crashes on roadways in River Falls as well as risk factors for crashes. It outlines the methods and results of three types of safety analyses: the Descriptive Safety Analysis (DSA), the High Injury Networks (HIN), and the Risk Assessment. Each analysis and its findings are presented in a separate section of this Memo.

This Memo will be used as a guide to identify factors or locations that require further examination, develop safety programs, modify policies, select and justify safety countermeasures, and prioritize locations for interventions.

There is a heavy focus on **fatal and serious injury (FSI)** crashes, which is based on the city's goal of eliminating crashes resulting in fatalities and serious injuries. This will allow the city and partners to understand where and why FSI crashes are occurring to reduce and ultimately eliminate fatalities and life-altering injuries through proven, innovative, and comprehensive strategies.

Data and Limitations

The safety analysis methodology consisted of data collection, consolidation, and analysis based on provided crash data and various other data such as roadways, schools, and demographics. Crash data used in this analysis was retrieved from the WisTransPortal system, accessed on May 5, 2025. It consists of all crash data from 2014 to 2023 within the city of River Falls. Intersection crashes were identified as those crashes within 100 feet of an at-grade intersection. Crash severity was summarized at the crash level, not the unit level, as WisTransPortal does not provide detailed information regarding the number of people sustaining serious or minor injuries, possibly injured, or only experienced property damage per crash.

Crashes that occurred during a period of ten years, from 2014 to 2023, were studied. The compiled roadway data reflects current conditions according to the data made available at the time of this analysis. It can be assumed that some changes in roadway design and operations have occurred over the previous years that cannot be accounted for. As crash data is viewed at an aggregate level within this document, the impacts of these temporal inconsistencies are expected to be minor.

The analyses reported here show crash density but do not adjust for exposure rates based on volumes by modes. This is because real-world pedestrian and bicycle traffic volume data is not available. The lack of exposure data must be kept in mind to avoid misinterpreting analysis results. For example, in many communities, pedestrian crashes are more common during daylight conditions than dark conditions. This does not mean that daylight

The **Descriptive Crash Analysis** describes the characteristics, factors, and patterns of past crashes in River Falls.

The **High Injury Networks (HIN)** identify street segments with elevated crashes densities weighted by severity.

The **Risk Assessment** identifies factors correlated with increased likelihood of severe and injury crashes.

conditions are more dangerous than dark conditions. Rather, it reflects the fact that people are more likely to travel, especially by walking, in light conditions than in dark conditions.

As the Safe System Approach is used throughout the project area, additional data can assist River Falls and its partners in understanding crash risk and take a more proactive approach to safety. Below are some recommendations for additional data components that may be valuable for future study.

- Bicycle and pedestrian volume data would allow for a measure of crash exposure for bicyclists and pedestrians.
- A more comprehensive roadway dataset would help to identify risk factors. Roadway attributes could include vehicle operating speeds, marked crosswalks and crosswalk enhancements and crosswalk style, street and/or lane widths, traffic signal phasing, transit frequency and boarding/alighting counts, and location of fixed objects (raised medians, barriers, utility poles, etc.).

Key Terms

FSI crashes = fatal and serious injury crashes. Fatal crashes are those that result in death of at least one person. Serious injury crashes are those that result in at least one person sustaining an injury that prevents them from carrying out normal daily activities.

MPI crashes = minor or possible injury crashes. Minor injury crashes are those that result in at least one person sustaining an injury but that injury does not prevent them from carrying out normal daily activities. Possible injury crashes are those that result in at least one person reporting to be injured but said injury is not visible or apparent.

PDO crashes = property damage only crashes. PDO crashes result in the damage of property but do not result in an injury or fatality.

FSI + MPI crashes = combination of all fatal, serious injury, minor injury, and possible injury crashes.

Total crashes = combination of all crashes, regardless of severity (FSI, MPI, and PDO crashes).

Motorist crashes = crashes that involve at least one motor vehicle and do not involve a bicyclist or pedestrian.

Pedestrian crashes = crashes that involve someone walking or using a personal mobility device such as a wheelchair.

Bicyclist crashes = crashes that involve someone on a bicycle or similar type device.

VRU crashes = Vulnerable Road User crashes. VRU crashes are those that involve a pedestrian or bicyclists (or other similar road user).

Descriptive Crash Analysis

The descriptive analysis describes the overall characteristics, factors, and patterns of traffic crashes. The descriptive safety analysis methodology consisted of data collection, consolidation, processing, and contextualization based on available crash and roadway attribute data. A series of high-level descriptive summaries capture relationships between citywide crash data, infrastructure data, and contextual variables. These statistics explore overall crash trends and patterns that can be used to guide the selection of variables warranting deeper analysis, new roadway behavior programs, policy changes, or the selection of safety countermeasures for project development.

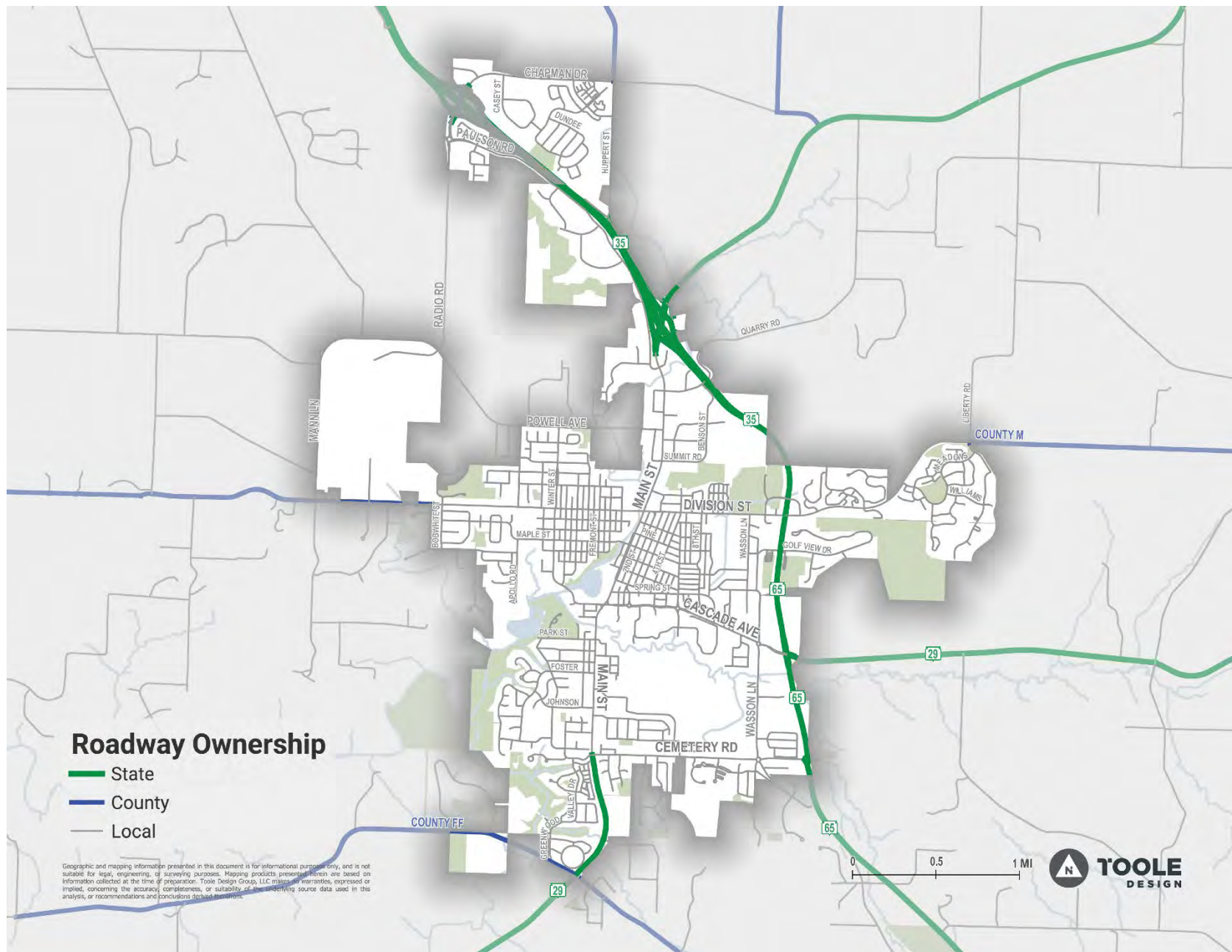
Crashes by Roadway Ownership

The safety analysis includes crash data for all roadways in River Falls along with insights into the different crash characteristics for roadways owned by the City of River Falls as well as Pierce County, St. Croix County, and WisDOT. Using GIS data provided by the City, Table 1 summarizes the miles of roadway under each jurisdiction and the percent of total roadway miles, and Map 1 illustrates the roadway ownership within River Falls's city limits.

Table 1: Roadway Ownership

Roadway Ownership	Miles of Roadway	% of Roadway Miles
City of River Falls	85.7	74%
Pierce and St. Croix County	7.5	6%
State of Wisconsin	22.7	20%
Total	116.0	100%

Map 1: Roadway Ownership



Crashes by Mode, Severity, and Roadway Ownership

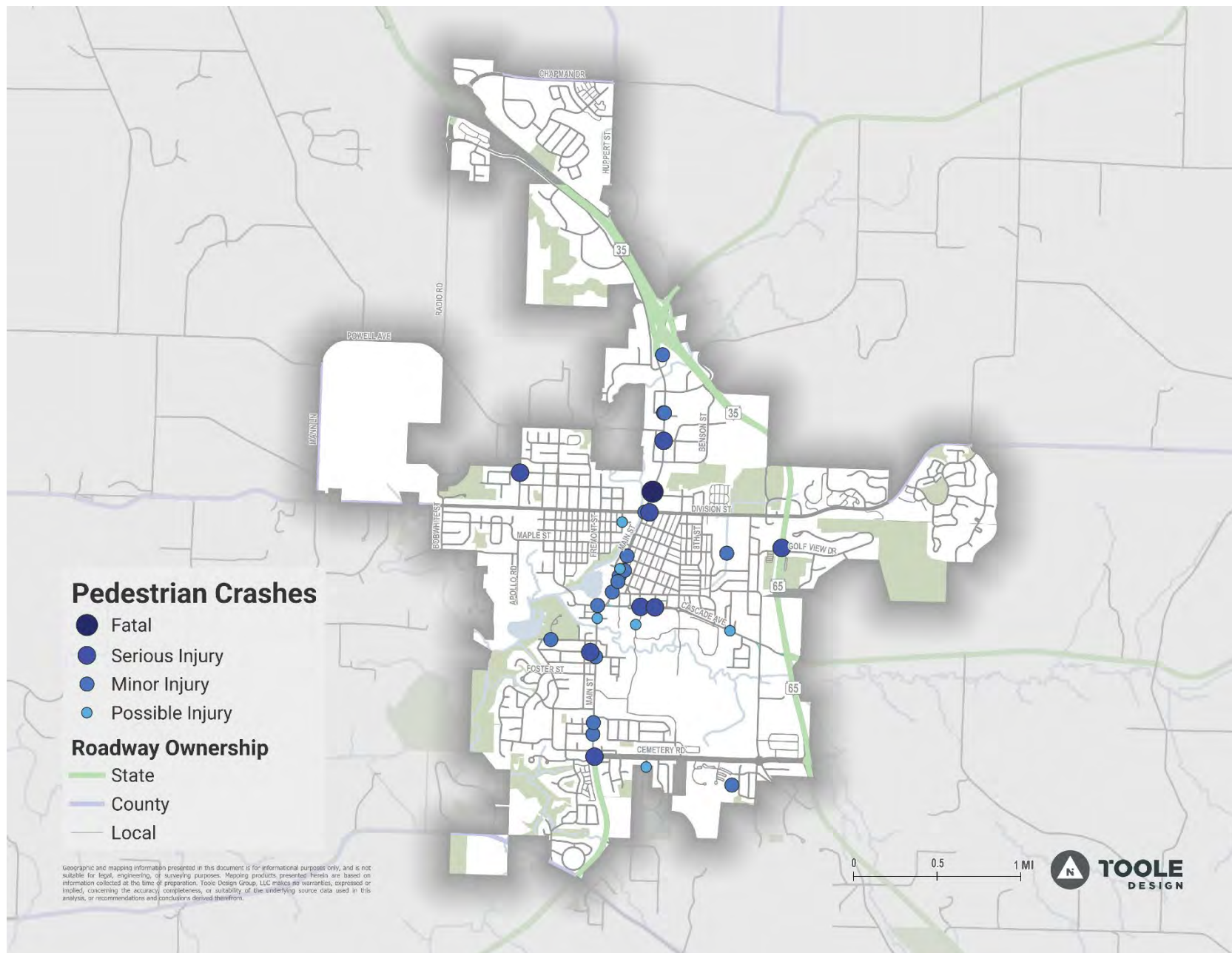
Table 4 shows crashes by individual mode, modal category, and total for all modes in River Falls and breaks down the number of crashes by severity and roadway owner. Map 2, Map 3, and Map 4 show the location and severity of pedestrian, bicyclist, and motorist (including motorcyclist) crashes, respectively. Key takeaways include:

- There were 2,519 total crashes on the roadways in River Falls between 2014 and 2023, or about two crashes every three days.
- There were 30 FSI crashes (one fatal and 29 serious injury), averaging out to one FSI crash every four months.
- There were 318 MPI crashes, averaging about one MPI crash every two weeks.
- 92% of VRU FSI+MPI and 75% of motorist FSI+MPI crashes occurred on local streets.
- 74% of motorist-only FSI+MPI crashes occurred on local streets. That percent was higher for other modes; 91% for pedestrian crashes, 94% for bicyclist crashes, and 94% for motorcyclist crashes occurred on local streets.

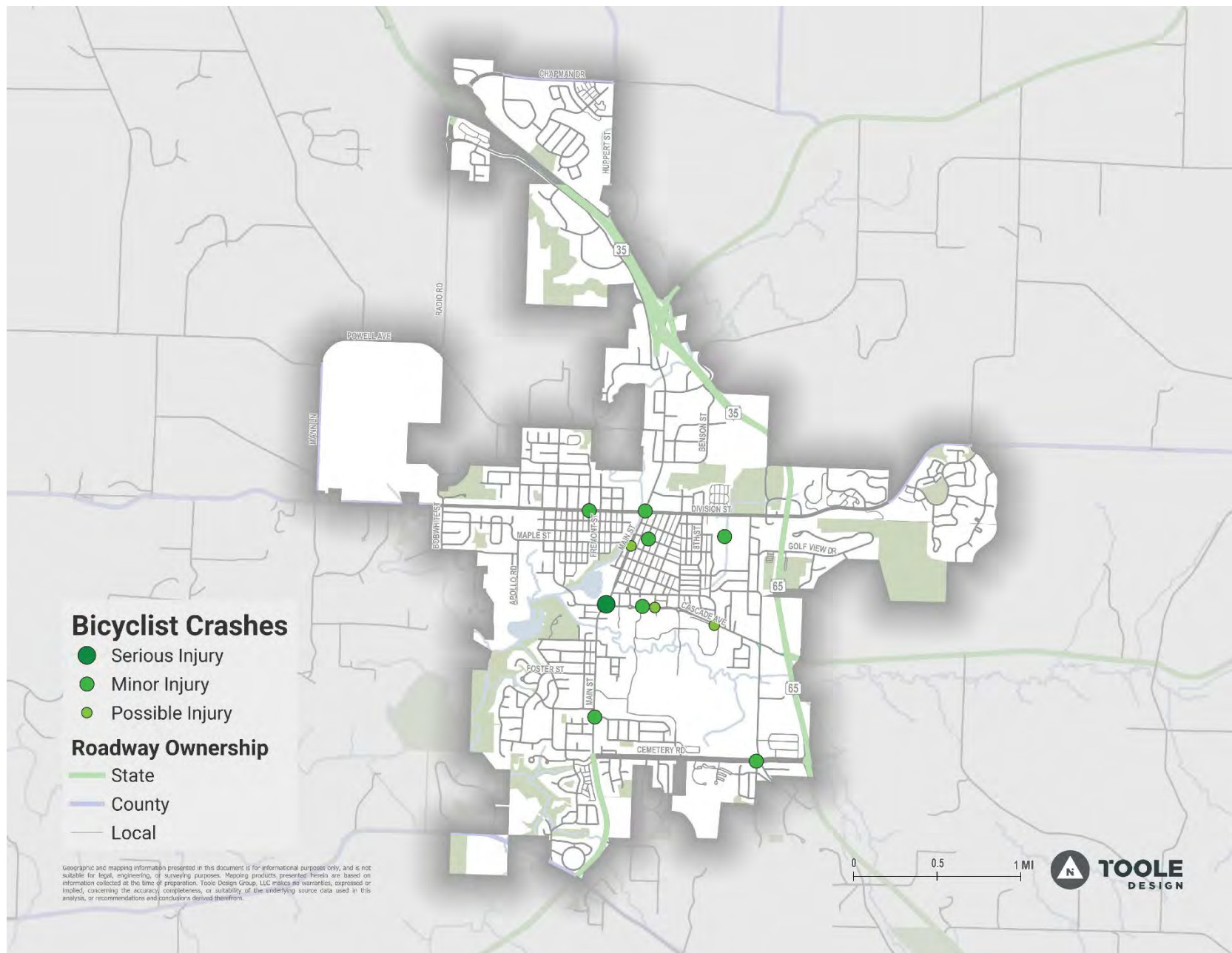
Table 4: Crashes by Mode and Modal Category by Severity and Roadway Owner

Mode	Severity	State	County	Local	Total
Total					
All Crashes (All Modes)	FSI	4	3	23	30
	MPI	65	7	246	318
	FSI+MPI	69	10	269	348
	PDO	379	25	1,767	2,171
	Total	448	35	2,036	2,519
Modal Categories					
VRU Crashes (Pedestrian- and Bicyclist-Involved)	FSI	2	1	8	11
	MPI	1	0	36	37
	FSI+MPI	3	1	44	48
	PDO	1	0	2	3
	Total	4	1	46	51
Motorist Crashes (Motorcyclist-Involved and Motorist-Only)	FSI	2	2	15	19
	MPI	64	7	210	281
	FSI+MPI	66	9	225	300
	PDO	378	25	1,765	2,168
	Total	444	34	1,990	2,468
Individual Modes					
Pedestrian-Involved Crashes	FSI	2	1	7	10
	MPI	0	0	22	22
	FSI+MPI	2	1	29	32
	PDO	1	0	1	2
	Total	3	1	30	34
Bicyclist-Involved Crashes	FSI	0	0	1	1
	MPI	1	0	14	15
	FSI+MPI	1	0	15	16
	PDO	0	0	1	1
	Total	1	0	16	17
Motorcyclist-Involved Crashes	FSI	0	0	3	3
	MPI	1	0	13	14
	FSI+MPI	1	0	16	17
	PDO	1	0	4	5
	Total	2	0	20	22
Motorist-Only Crashes	FSI	2	2	12	16
	MPI	63	7	197	267
	FSI+MPI	65	9	209	283
	PDO	377	25	1,761	2,163
	Total	442	34	1,970	2,446

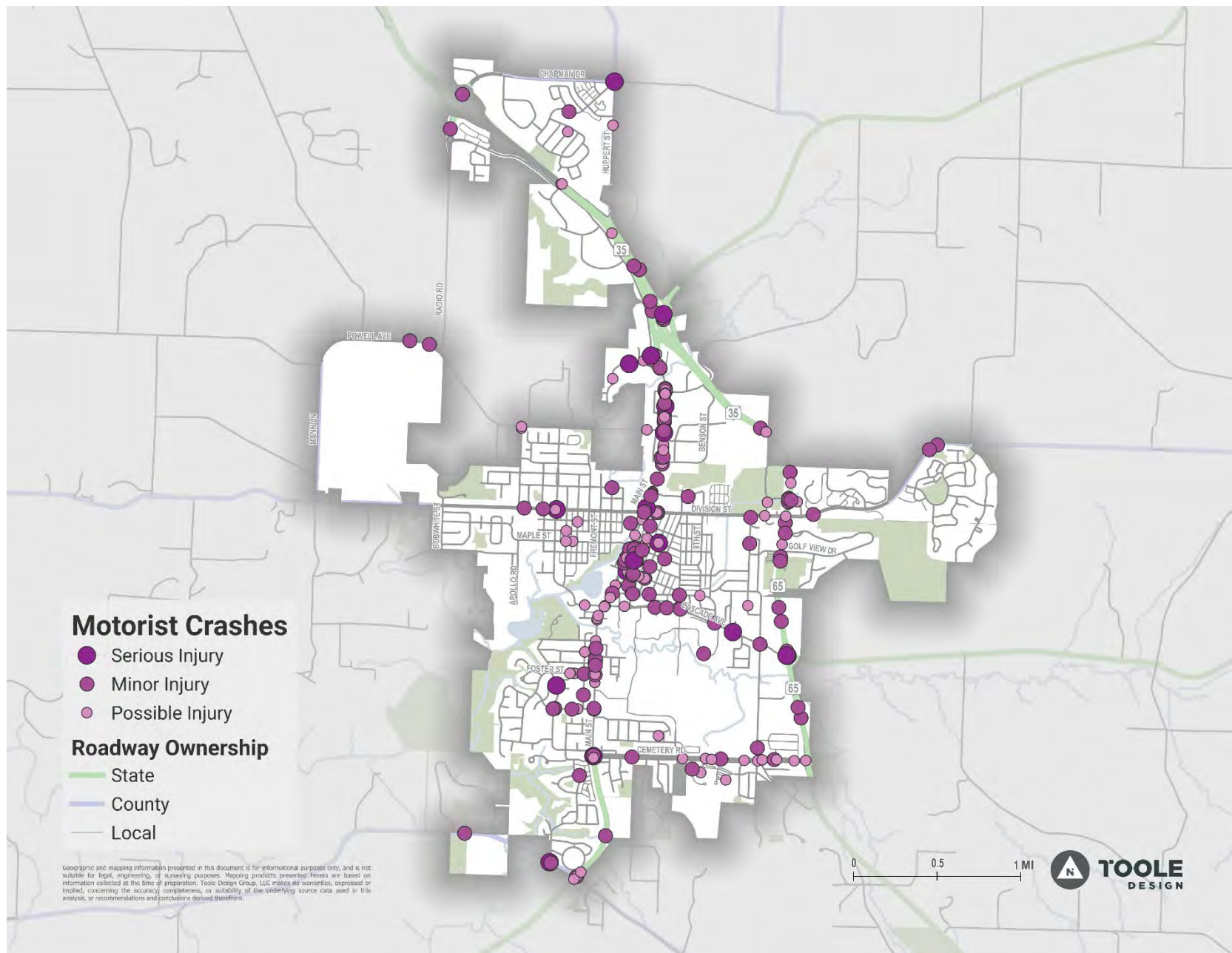
Map 2: Pedestrian Crashes



Map 3: Bicyclist Crashes



Map 4: Motorist Crashes



Vulnerability by Mode

Figure 1, Figure 2, Figure 3, and Figure 4 show the percentage of crashes for each crash severity category for pedestrian, bicyclist, motorcyclist, and motorist crashes, respectively.

Crashes involving pedestrians, bicyclists, or motorcyclists were far more likely to result in a fatality, serious injury, or minor injury than motorist-only crashes.

Figure 1: Pedestrian Crashes by Severity on All Roadways

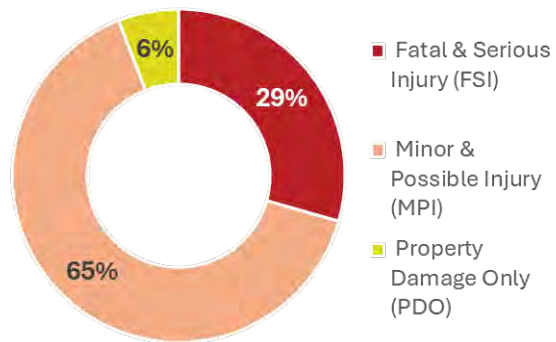


Figure 3: Motorcyclist Crashes by Severity on All Roadways

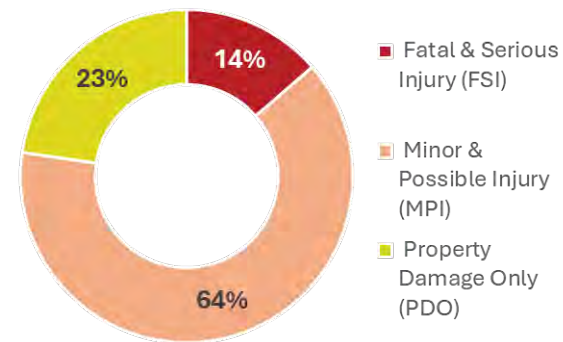


Figure 2: Bicyclist Crashes by Severity on All Roadways

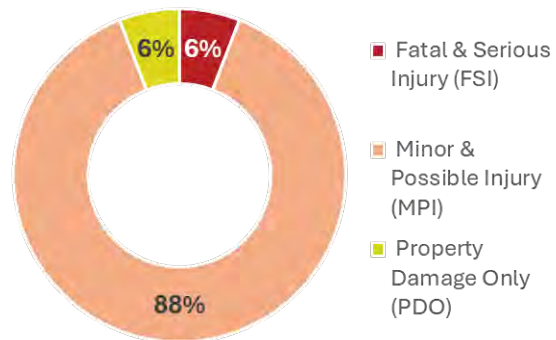
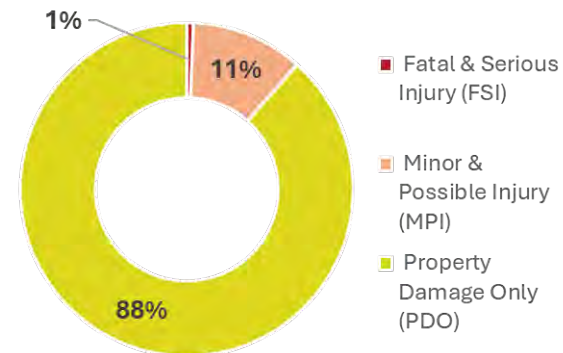


Figure 4: Motorist-Only Crashes by Severity on All Roadways



Crash Types

Figure 5 shows the number of FSI and MPI crashes on all roadways for each type of crash. Figure 6 shows the same type of information for local roadways only. Key Takeaways include:

- The most common FSI crash types on all roadways were no collision with another vehicle and angle crashes.

- The most common MPI crash types on all roadways were rear end, angle, and no collision with another vehicle.
- FSI and MPI crashes on local roadways were similar to all roadways.

Figure 5: Number of Crashes by Crash Type on All Roadways

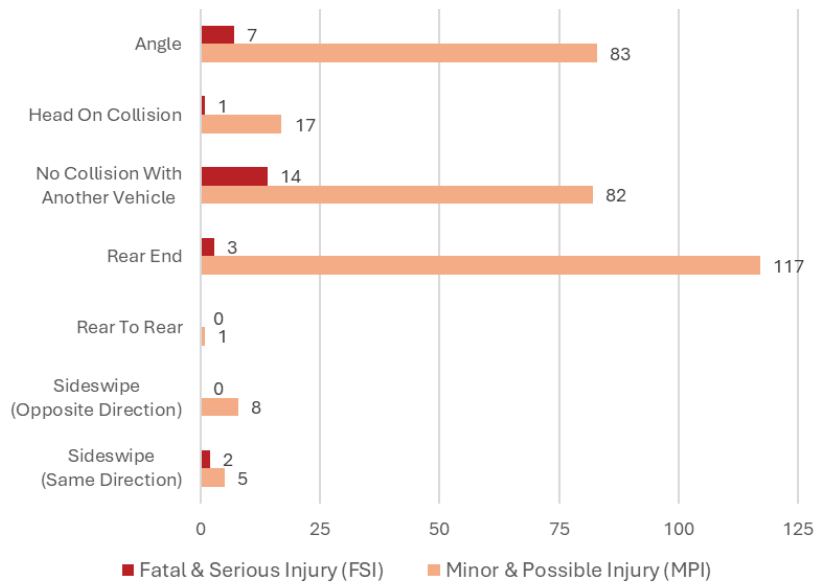
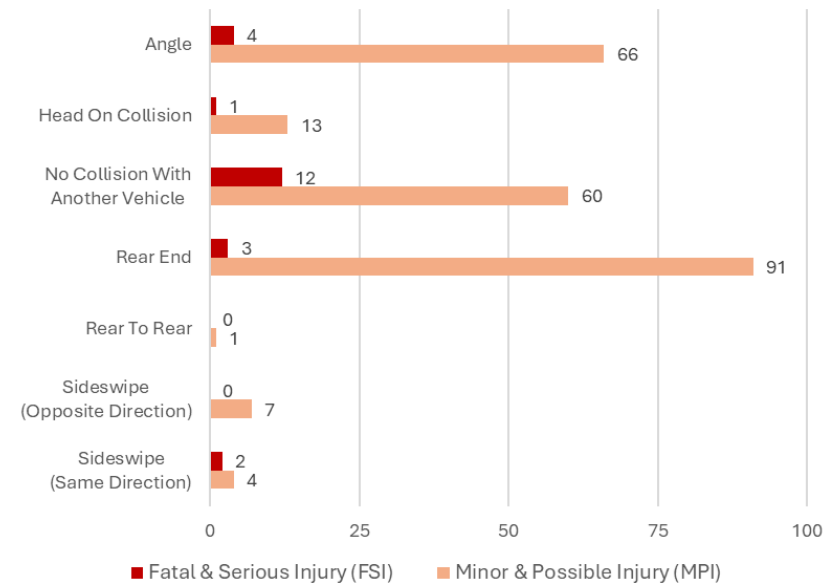


Figure 6: Number of Crashes by Crash Type on Local Roadways



Crash Types by Severity

Figure 7 shows the percentage of FSI, MPI, and PDO crashes for the various crash types on all roadways. shows the same type of information for local roadways only. These figures communicate the likelihood of a fatality, serious injury, and injury resulting from each crash type. Key takeaways include:

- Head on collisions have the highest likelihood of resulting in a fatality, serious injury, minor injury, or possible injury on both all roadways and local roadways.
- Crashes on all roadways have a similar likelihood of resulting in a fatality, serious injury, minor injury, or possible injury when compared to crashes on local roadways.

Figure 7: Severity of Crashes for Crash Types on All Roadways

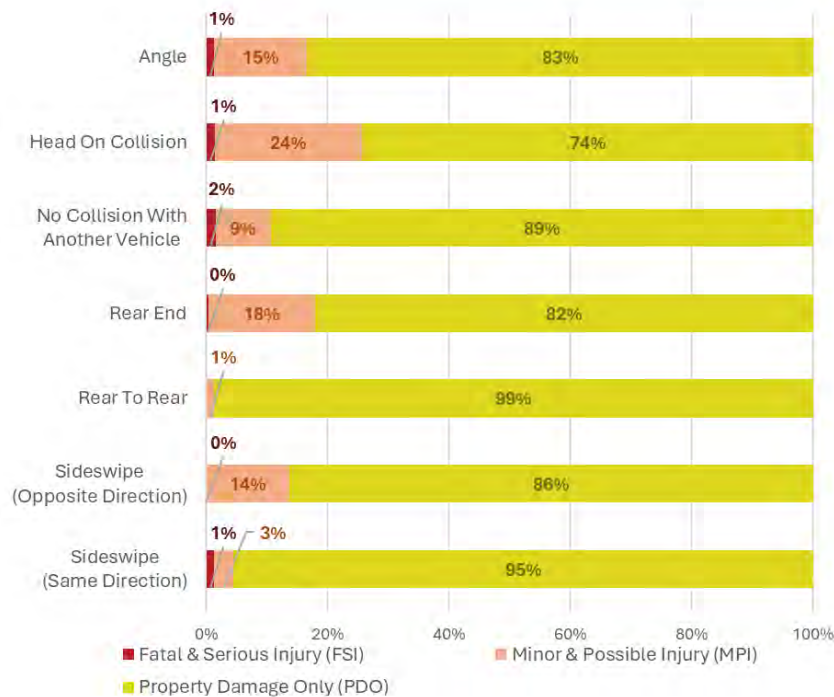
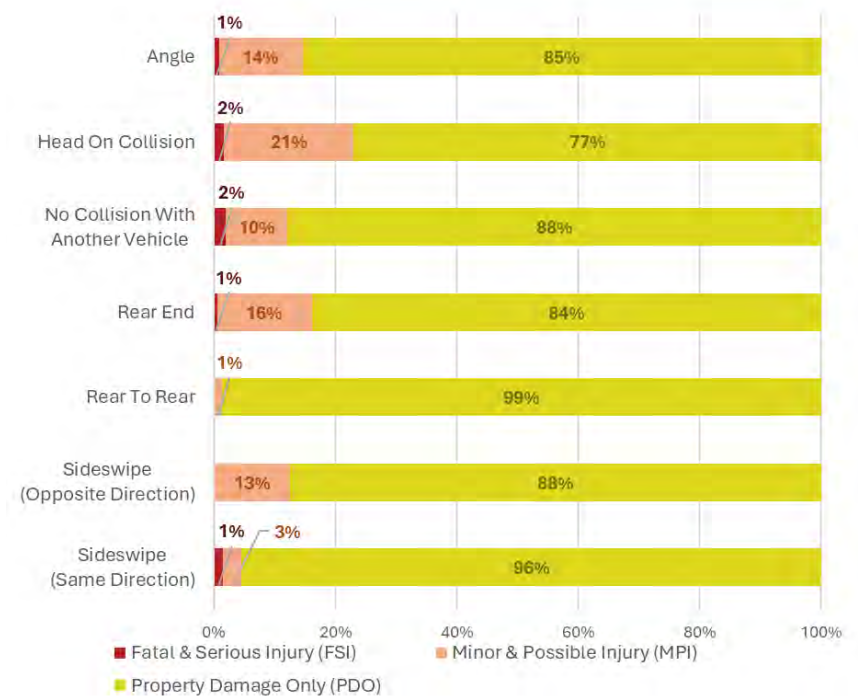


Figure 8: Severity of Crashes for Crash Types on Local Roadways



Intersection-Related

Crashes were identified as being intersection related if they were located within 100 feet of an at-grade intersection. Figure 9 shows a snapshot of the intersection-related crashes by severity for all roadways and Figure 10 shows the same data for local roadways only. Table 4 shows the detailed breakdown of intersection-related crashes by severity, mode, and roadway ownership. Key takeaways include:

- About half of all crashes were intersection-related.
- Crashes at intersections were more likely to result in a minor or possible injury and much more likely to result in a fatality or serious injury than non-intersection crashes. This increase is more pronounced when looking at local roadways only.
- All VRU FSI crashes on local roadways were intersection-related and 82% of VRU FSI crashes on all roadways were intersection-related.

Figure 9: Intersection-Related Crashes by Severity on All Roadways

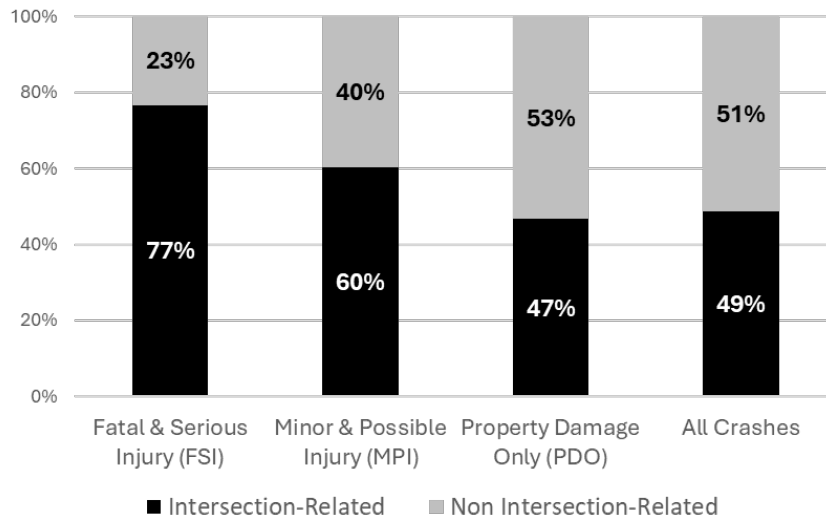


Figure 10: Intersection-Related Crashes by Severity on Local Roadways

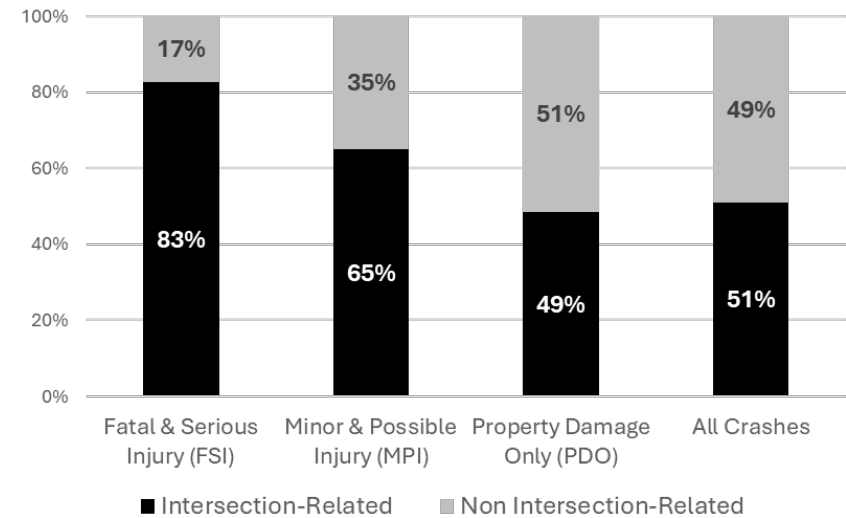


Table 4: Intersection-Related Crashes

		Pedestrian Crashes	Bicyclist Crashes	Motorcyclist Crashes	Motorist- Only Crashes	All Crashes
All Roadways	Crashes (#)	34	17	22	2,446	2,519
	Total Crashes					
	Intersection-Related Crashes (#)	23	15	19	1,171	1,228
	Intersection-Related Crashes (%)	68%	88%	86%	48%	49%
	Crashes (#)	10	1	3	16	30
	FSI Crashes					
	Intersection-Related Crashes (#)	8	1	2	12	23
	Intersection-Related Crashes (%)	80%	100%	67%	75%	77%
	Crashes (#)	22	15	14	267	318
Local Roadways	MPI Crashes					
	Intersection-Related Crashes (#)	14	14	12	152	192
	Intersection-Related Crashes (%)	64%	93%	86%	57%	60%
	Crashes (#)	30	16	20	1,970	2,036
	Total Crashes					
	Intersection-Related Crashes (#)	22	14	17	983	1,036
	Intersection-Related Crashes (%)	73%	88%	85%	50%	51%
	Crashes (#)	7	1	3	12	23
	FSI Crashes					
Local Roadways	Intersection-Related Crashes (#)	7	1	2	9	19
	Intersection-Related Crashes (%)	100%	100%	67%	75%	83%
	Crashes (#)	22	14	13	197	246
	MPI Crashes					
	Intersection-Related Crashes (#)	14	13	11	122	160
Local Roadways	Intersection-Related Crashes (%)	64%	93%	85%	62%	65%

Crashes Trend Over Time by Severity

Figure 11 shows the VRU crashes per year for all roadways and local roadways only. Figure 12 shows total crashes per year on all roadways in River Falls as well as by crash severity. Figure 13 shows the same type of information for local roadways only. Key takeaways include:

- PDO crashes made up the larger proportion of total crashes.
- 2018 and 2019 had a large spike in total crashes, with a large dip in 2020 and then an increase in 2021. This trend is similar with PDO and MPI crashes, although MPI crashes have not increased at the same rate as PDO crashes since 2020. This trend is not evident in FSI crashes, which appear a bit random over time.
- Crash severity on local roadways generally mirrors those on all roadways.
- VRU crashes mostly occur on local roadways, with only a few on county or state roadways.

Figure 11: VRU Crashes by Year

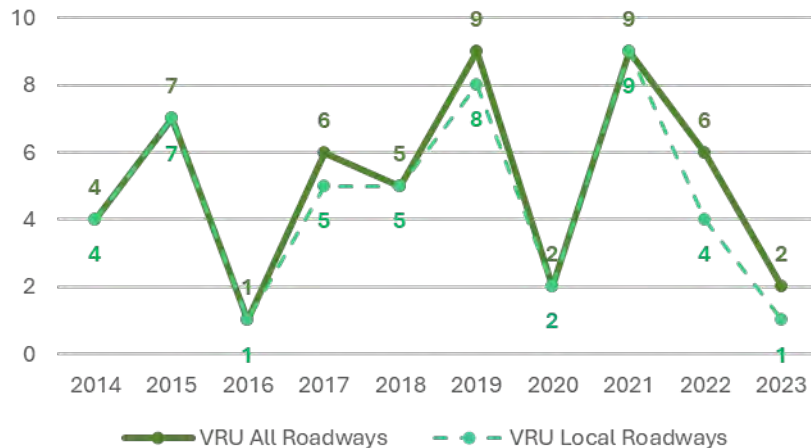


Figure 12: Crashes by Year and Severity on All Roadways

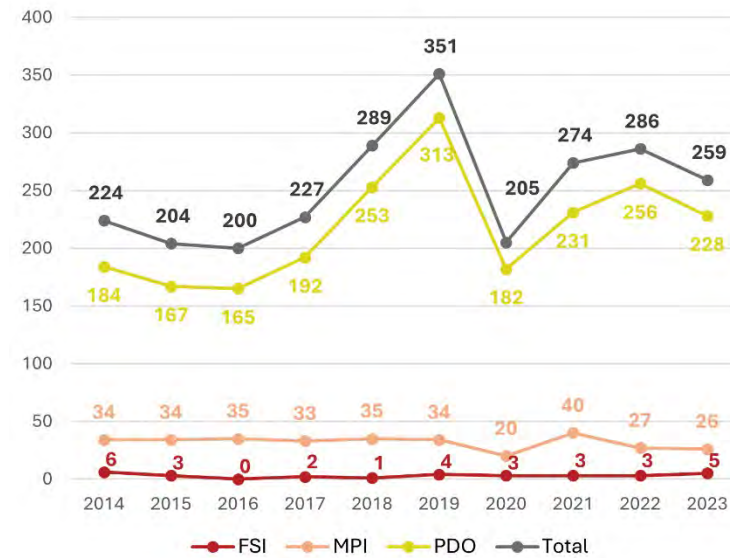
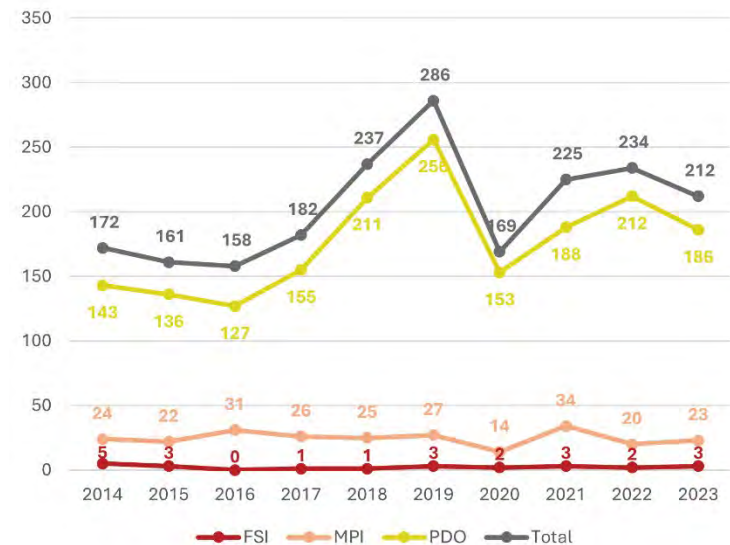


Figure 13: Crashes by Year and Severity on Local Roadways



Crashes by Month

Figure 14 shows FSI, MPI, VRU, and total crashes that occurred in each month. Figure 15 shows the same type of information for local roadways only. Key takeaways include:

- Local roadways were very similar to all roadways.
- There is a noticeable spike in MPI and VRU crashes in late summer / early fall.
- FSI crashes were generally more prevalent from May to December.

Figure 14: Crashes by Month on All Roadways

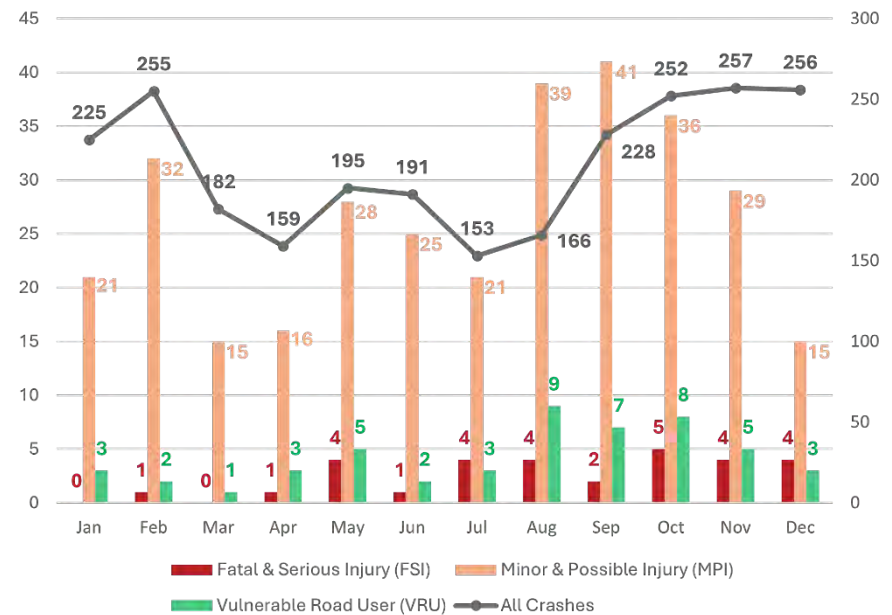


Figure 15: Crashes by Month on Local Roadways



Crashes by Day of Week and Time of Day

Figure 16 shows the number of FSI crashes per day and by time of day. Figure 17 shows the same type of information for local roadways only. Key takeaways include:

- On all roadways, Wednesday had the highest number of FSI crashes, with Thursday having the second highest.
- 47% of FSI crashes on all roadways occurred on Wednesday or Thursday. 48% of FSI crashes on local roadways occurred on those two days.
- 50% of FSI crashes on all roadways occurred between 12pm and 6pm. 77% of FSI crashes on all roadways occurred after 12pm.

Figure 16: FSI Crashes by Day of Week and Time of Day on All Roadways

	Mon	Tues	Wed	Thurs	Fri	Sat	Sun	Total
12am - 3am	0	0	0	0	0	1	0	1
3am - 6am	0	0	0	0	0	0	0	0
6am - 9am	1	1	0	2	1	0	0	5
9am - 12pm	0	0	0	1	0	0	0	1
12pm - 3pm	0	0	2	3	0	1	1	7
3pm - 6pm	0	0	4	0	3	1	0	8
6pm - 9pm	2	1	1	0	0	0	1	5
9pm - 12am	0	1	1	0	0	1	0	3
Total	3	3	8	6	4	4	2	30

Figure 17: FSI Crashes by Day of Week and Time of Day on Local Roadways

	Mon	Tues	Wed	Thurs	Fri	Sat	Sun	Total
12am - 3am	0	0	0	0	0	1	0	1
3am - 6am	0	0	0	0	0	0	0	0
6am - 9am	1	1	0	2	1	0	0	5
9am - 12pm	0	0	0	1	0	0	0	1
12pm - 3pm	0	0	0	2	0	1	0	3
3pm - 6pm	0	0	4	0	2	0	0	6
6pm - 9pm	2	0	1	0	0	0	1	4
9pm - 12am	0	1	1	0	0	1	0	3
Total	3	2	6	5	3	3	1	23

Crashes by Time of Day

Figure 18 shows the percentage distribution of crashes by time of day for FSI, MPI, VRU, and all crashes. Figure 19 shows the same type of information for local roadways only. Comparing the FSI, MPI, and VRU crashes to all crashes shows if there is an overrepresentation of certain types of crashes during specific periods of the day. Key takeaways include:

- FSI crashes on all roadways were most overrepresented from 6 to 9 am and 6 to 9 pm.
- FSI crashes on local roadways were most overrepresented from 6 to 9 am.
- MPI and VRU crashes on all roadways and local roadways were most overrepresented from 3 to 6 pm.

Figure 18: Crashes on All Roadways by Time of Day

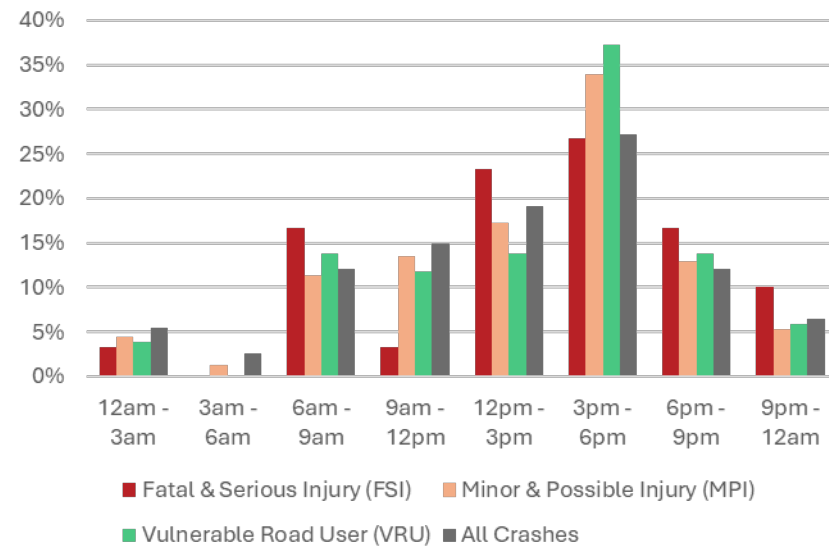
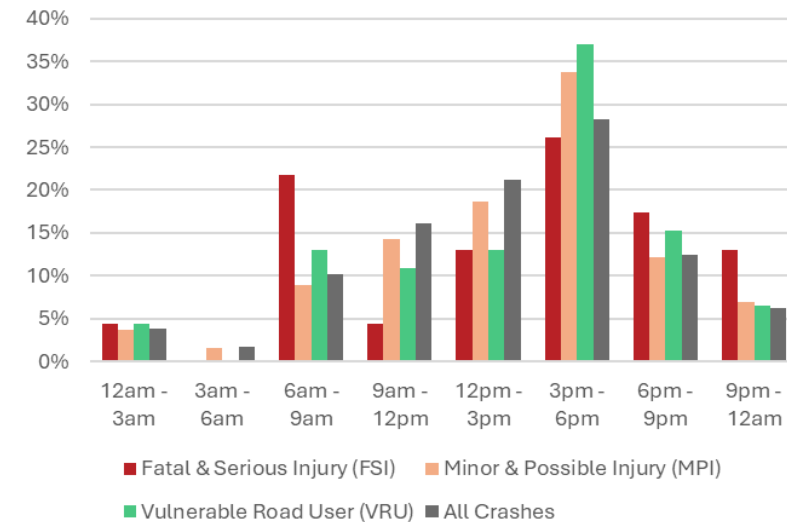


Figure 19: Crashes on Local Roadways by Time of Day



High Injury Networks (HIN)

The High Injury Networks (HIN) identify roadway segments with heightened crash densities weighted by crash severity. This section outlines the data sources, methodology, applied thresholds and findings from a sliding window analysis of crashes in River Falls, which was used to develop three HINs:

- All Modes All Roadways HIN
- All Modes Local Roadways HIN
- Vulnerable Road User (VRU) All Roadways HIN
- VRU Local Roadways HIN
- Motorist All Roadways HIN
- Motorist Local Roadways HIN

For River Falls, private roadways are included in all HIN.

Methodology

Sliding Windows Analysis

Sliding window analyses are the primary tool in developing HINs. The outcome of the analysis is the identification of streets within a transportation network with an elevated density of crashes with additional weight accounting for fatal and serious injury crashes. For River Falls, the analysis was performed by determining the number and severity of crashes in a half-mile window on a roadway and shifting that window along the roadway .1-mile at a time. This process is depicted in Figure 20.

The HIN analyzed fatal, serious injury, minor injury, and possible injury crashes with a 3:3:2:1 severity weighting respectively. Based on their weighted crash score, roadway segments were classified into low, medium, or high crash density. The crash score thresholds were determined by first plotting the cumulative crash score against mileage, from there the threshold was set as the point where X% of the roadway results in (100-X)% of crashes. For motorist crashes along all roads, X was set to be 15; so, the threshold became the top 15% of roadway accounting for 85% of motorist crashes. Sliding window analyses were done for All Modes, Motorist, and VRU crashes; for each of these crash modes, one analysis was done along all roads in the city and another along only local roads. Shown in Table 5 are the crash thresholds for all crash modes along both local and all roads. It is important to note that due to the low number of VRU crashes reported, the crash density threshold is 10% instead of 15% as it is for all modes and motorist.

Figure 20: Example of Sliding Window Analysis

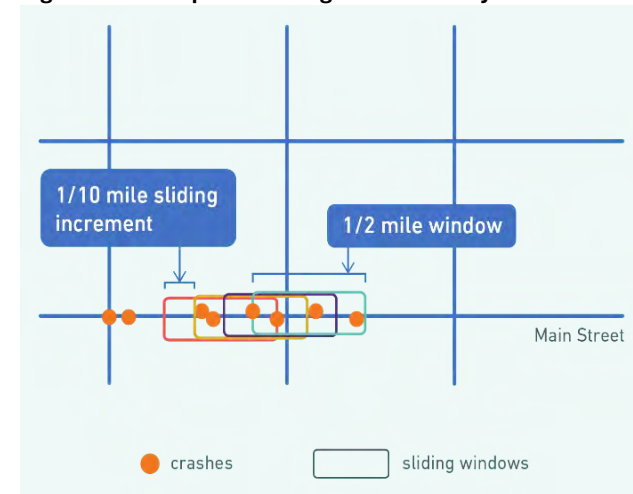


Table 5: Weighted Crash Score Thresholds by Crash Mode

Crash Mode	Local or All Roads	Low Crash Density	Medium Crash Density	High Crash Density
All Modes	Local Roads	15%	10%	5%
	All Roads	15%	10%	5%
Motorist	Local Roads	15%	10%	5%
	All Roads	15%	10%	5%
VRUs	Local Roads	n/a	10%	5%
	All Roads	n/a	10%	5%

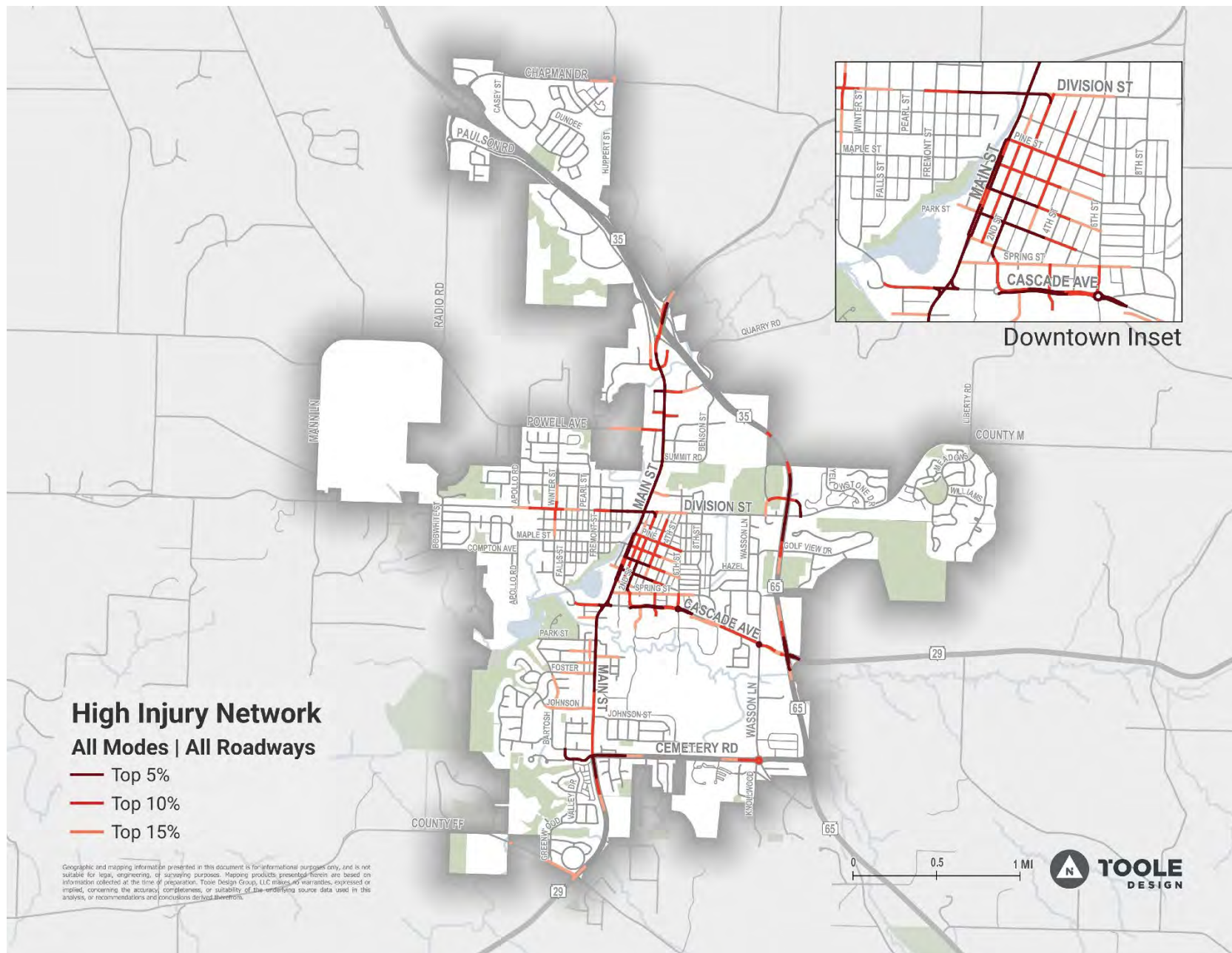
High Injury Networks

All Modes High Injury Networks

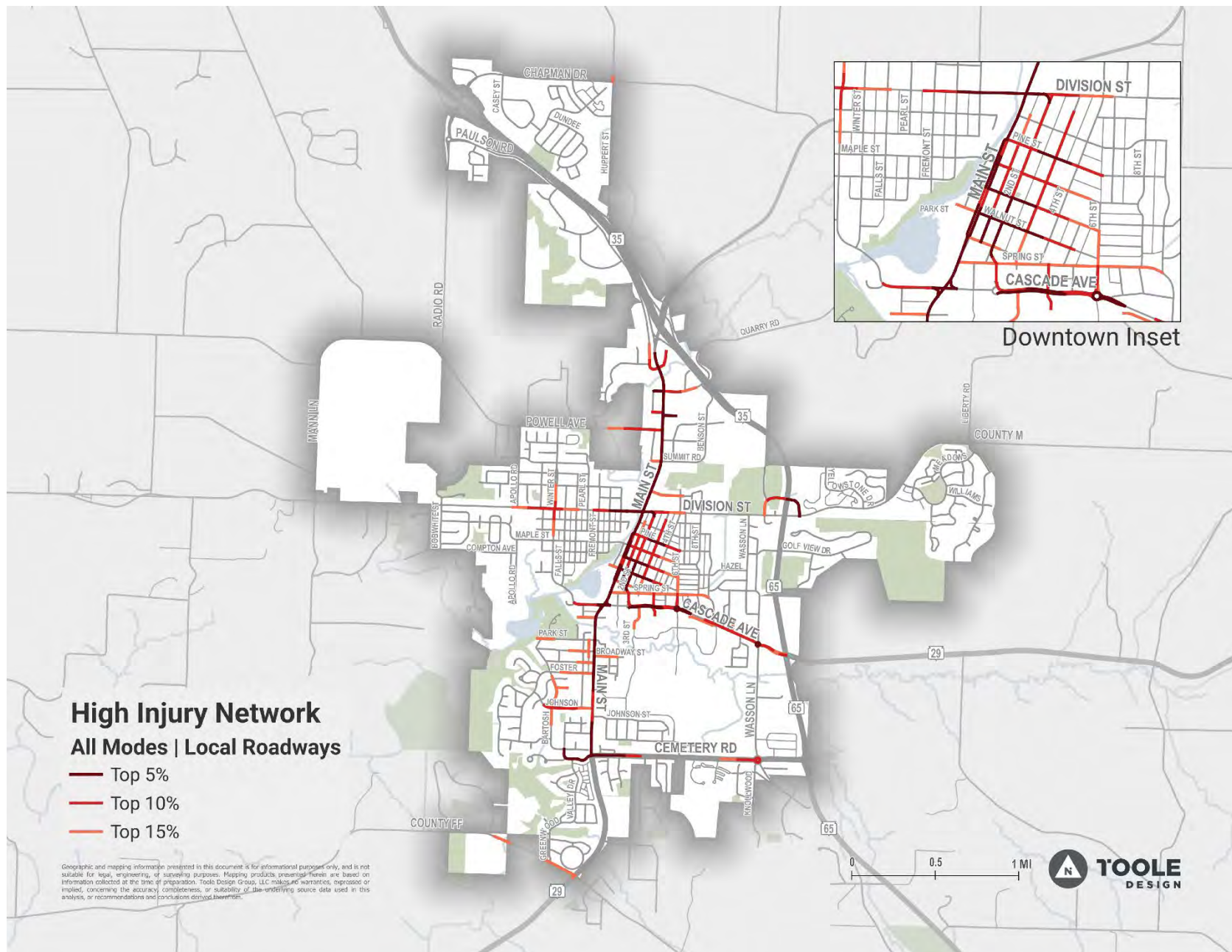
The All Modes All Roadways HIN (Map 5) shows that a significant amount of the high weighted crash density roadway sections are along North and South Main St. In fact, nearly the entire stretch of N Main St has a high crash density. Other high crash density roadways are Division St, N 2nd St, East Elm St, East Walnut St, E Division St To STH 35, Cascade Ave (and its three roundabout intersections), Highway 35, and Cemetery Rd. Many of the high crash density roadways are within commercial areas of River Falls.

The All Modes Local Roadways HIN (Map 6) reveals roadways with high weighted crash density to be primarily within the commercial district area to the east of Main Street between East Cascade Ave and E Division St. HIN roadways within this section include a section of E Division St, E Pine St, E Elm St, E Walnut St, a strip of an alley and S 2nd St. Over half of South and North Main St throughout the city have a high crash density. Additional spots to note with high crash densities are W Quarry Rd and E Pomeroy St in mixed-use and industrial areas; E Division Street to STH 35; the three roundabouts along Cascade Ave; and the eastern portions of Cemetery Rd near the University.

Map 5: All Modes All Roadways HIN



Map 6: All Modes Local Roadways HIN

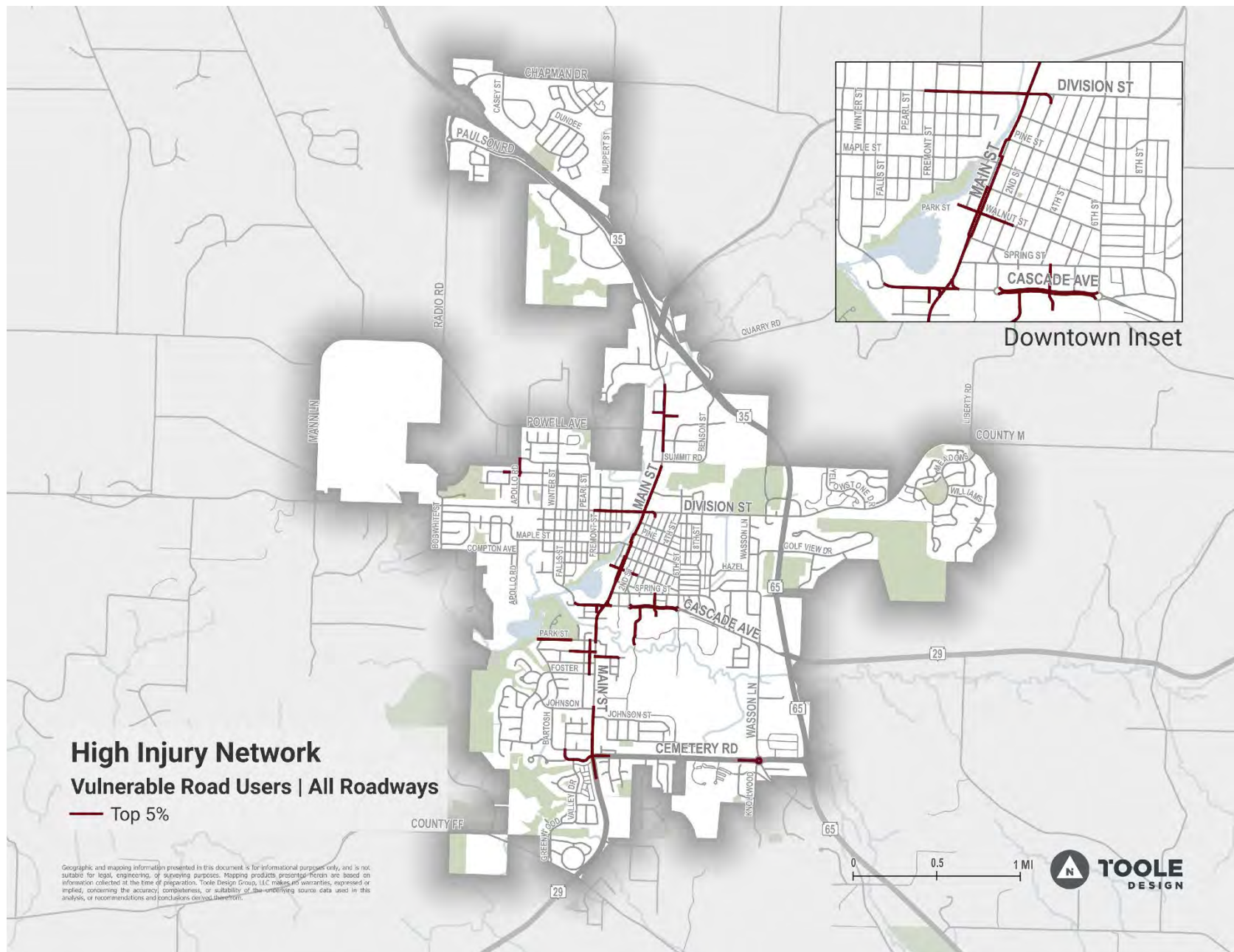


Vulnerable Road User High Injury Networks

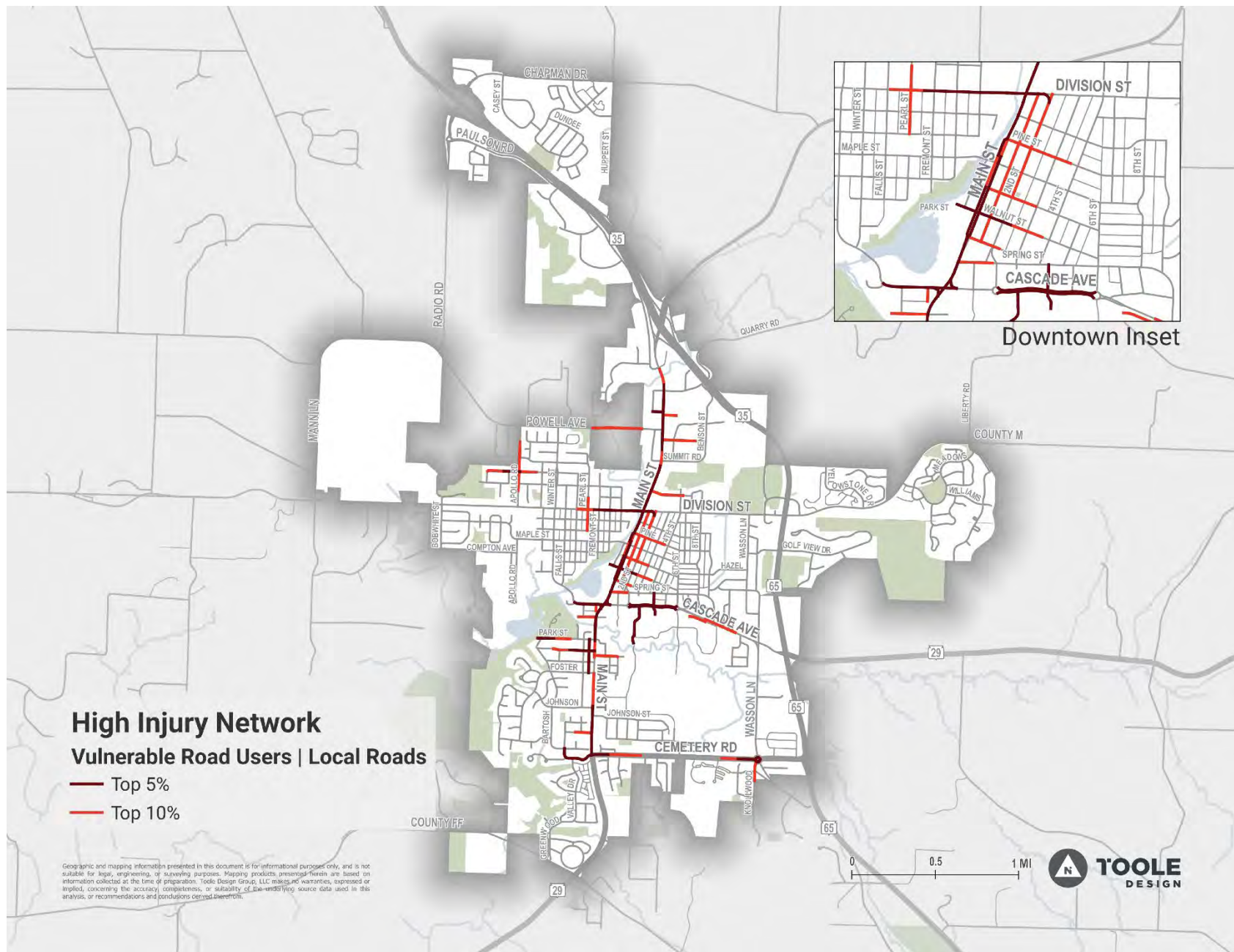
The VRU All Roadways HIN (Map 7) shows roadways with high weighted crash density to primarily be principal arterials: Main St, and E Cascade Ave; and minor arterials: Division St, and Cemetery Rd. Local roads with high crash density include W Park St, Church St, the alley in between S Main St and State St, S 3rd St, S 4th St, E Walnut St, Sunset Lane, and W Pomeroy St. It is important to note that a significant number of high crash density roadway segments are within or near the University (S 3rd St, S 4th St, Broadway St, E Cascade Ave, Church St, W Park St, Slate St, Cemetery Ave, and S Main St).

The VRU Local Roadways HIN (Map 8) shows roadways with high weighted crash density to be very similar to those of the VRU all roadways HIN. Once again, segments with high weighted crash density are primarily along principal arterials: Main St, and E Cascade Ave; and minor arterials: Division St, and Cemetery Rd. In addition, many high weighted crash density segments are near or within the University: W Park St, Church St, S 3rd St, S 4th St, the alley in between S Main St and State St. Other local roads included in the high weighted crash density HIN are E Walnut St, Sunset Lane, and W Pomeroy St.

Map 7: VRU All Roadways HIN



Map 8: VRU Local Roadways HIN

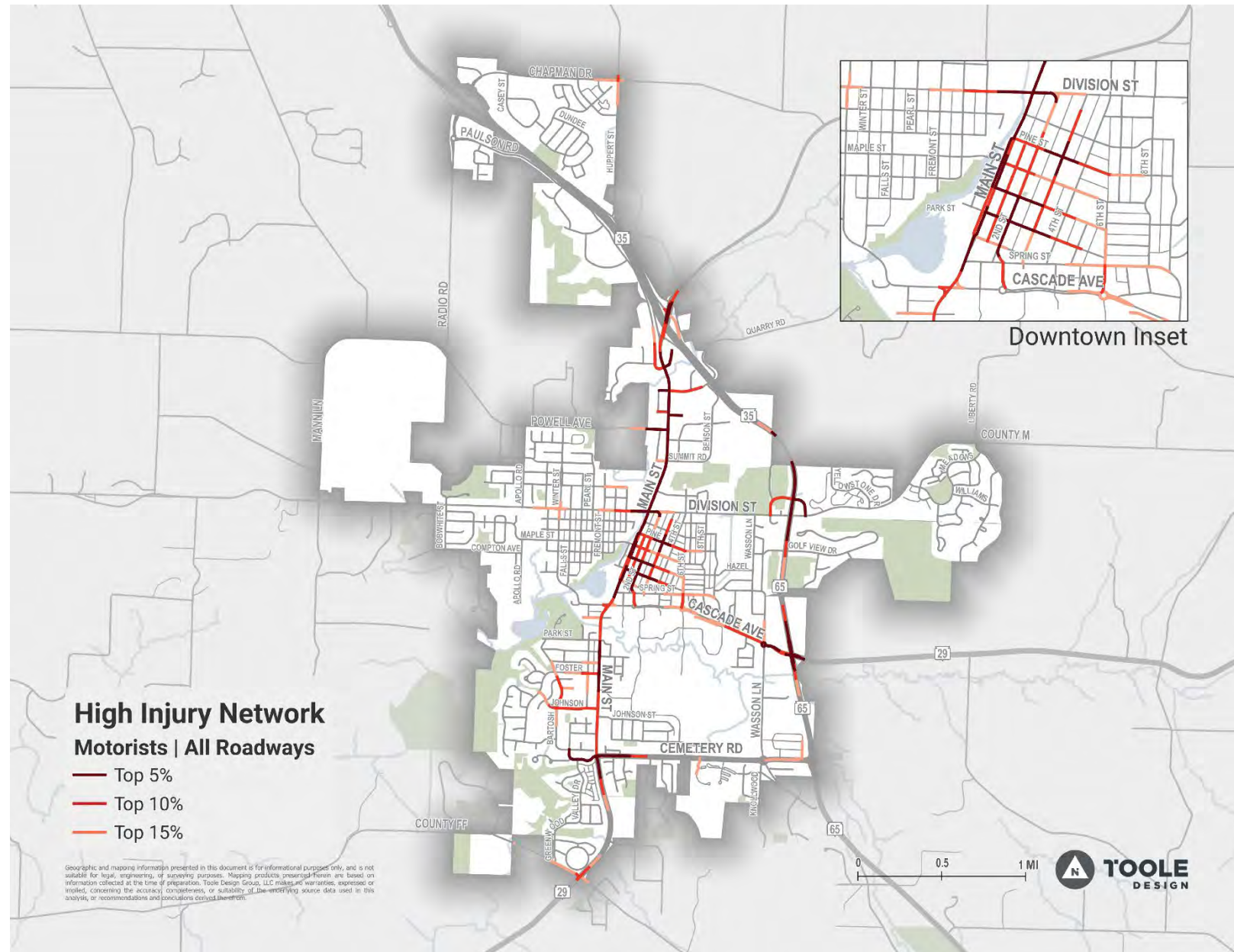


Motorist High Injury Networks

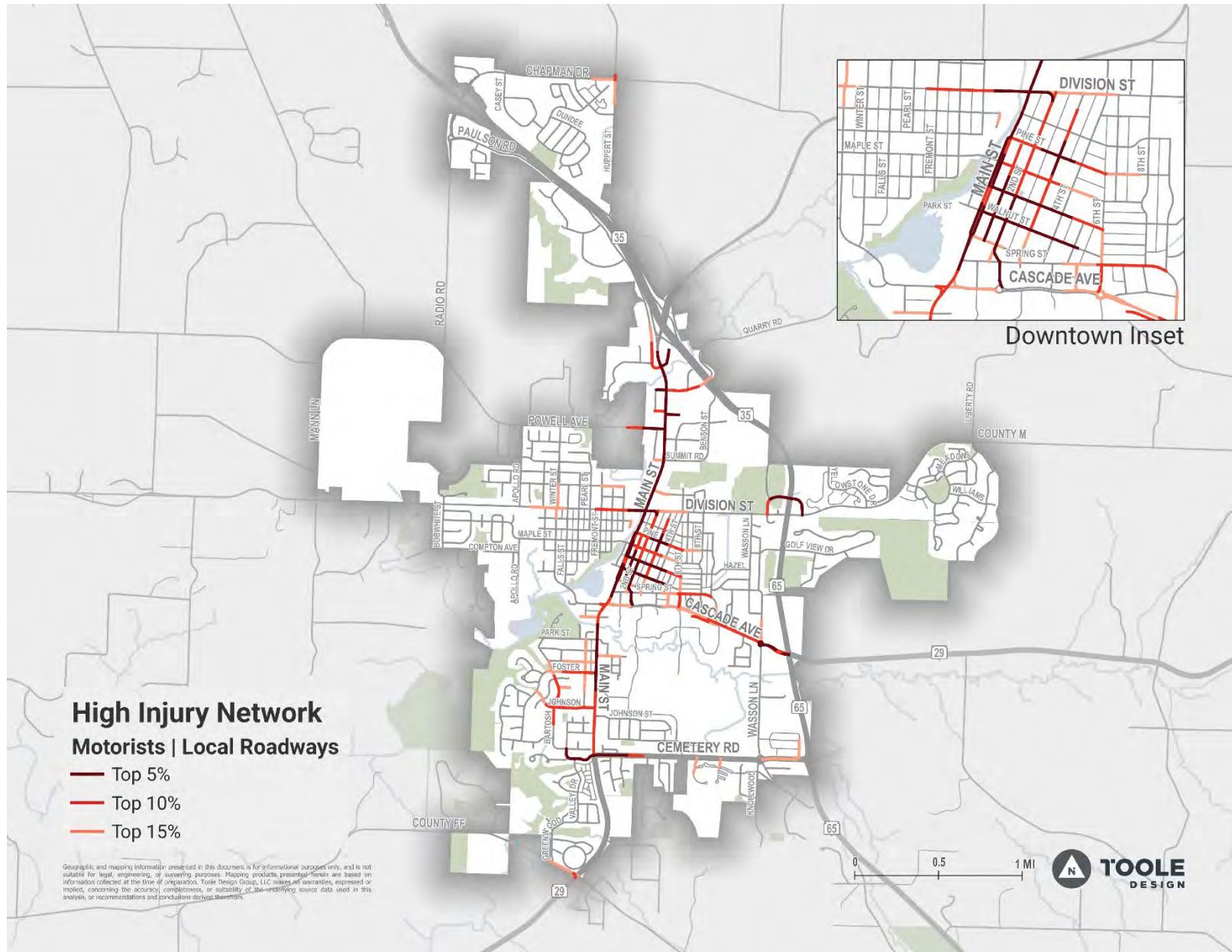
The Motorist All Roadways HIN (Map 9) shows that roadways with high weighted crash are primarily along or near intersections on Main St. and within the commercial areas along N Main St. The intersections include Cemetery Rd and South Main St, the easternmost roundabout along East Cascade Ave, Cascade Ave and STH 35 and STH 29, and East Pine St and N 3rd St. Other high crash density roadways are grouped primarily along North Main St from Spring St to Highway 35. This corridor transitions from downtown commercial in the south (South 2nd St, East Walnut St, East Elm St, E Pine St, N 3rd St) to highway commercial further north (County Rd M, Powell Ave, E Pomeroy St, W Quarry Rd, Sullivan Ct.).

The Motorist Local Roadways HIN (Map 10) show roadways with the high weighted crash density to be primarily within the commercial downtown area along North Main Street between East Cascade Ave and County Road M. Streets within this section include East Pine St, North 3rd St, East Elm St, East Walnut St, South 2nd St, and the alley in between Main St and South 2nd St. Outside of the commercial area, roadways with high crash density are Cemetery Road near South Main St, East Cascade Ave near STH 35, and North Main St from County Road M and north. The N Main St corridor, characterized by highway commercial land use, includes the segments near Powell Ave, Hossman Pl, East Division to STH 35, E Pomeroy St, W Quarry Rd, and Sullivan Ct.

Map 9: Motorist All Roadways HIN



Map 10: Motorist Local Roadways HIN



Risk Assessment

The Risk Assessment identifies factors correlated with an increased likelihood of FSI and MPI crashes. While the HINs summarize dense areas of historical crashes, the Risk Assessment identified roadways with factors that can contribute to higher crash risks, regardless of crash history. This proactive approach can help identify roadways with the greatest potential for safety improvement.

Methodology

The primary outcome of the Risk Assessment is the identification of roadway and contextual characteristics, or factors, that correlate with high crash frequency. Many factors were considered but were limited based upon available data. Factors with available data were screened to determine accuracy of data. The factors ultimately selected include:

- **Proximity to Areas with High Zero Vehicle Households:** within or adjacent to Census Block Groups where a high number of households do not have access to a motor vehicle.
- **Proximity to Areas with High Poverty:** within or adjacent to Census Block Groups where a high number of the population lives in poverty.
- **Proximity to Areas with High Youth Population:** within or adjacent to Census Block Groups where a high percentage of the population is 17 years old or younger.
- **Proximity to Areas with High Senior Population** within or adjacent to Census Block Groups where a high percentage of the population is 65 years old or older.
- **Proximity to Public Parks:** within 1/8 of a mile of a public park.
- **Proximity to Schools:** within 1/8 of a mile of a school.
- **Proximity to Libraries:** within 1/8 of a mile of a library.
- **Proximity to University of Wisconsin – River Falls:** within 1/4 of a mile of University of Wisconsin - River Falls.
- **Roadway Functional Classification:** Principal Arterial, Minor Arterial, Collector, or Local roadways.
- **Roadway Speed Limit**

When evaluating the Risk Assessment, it is important to keep in mind that these factors do not necessarily indicate a causal relationship, nor that these individual factors should be the target of safety improvement measures. For example, though the presence of nearby pedestrian generators may be found as a factor that correlates with elevated pedestrian crash frequencies, this does not mean that these generators should be removed, but instead that facilities near such generators may require additional safety investment. Screening factors should be studied from a practical and policy-driven perspective to determine what components may be reasonable targets of safety improvements and which should be viewed primarily as non-causal correlations.

Data Limitations

Raw crash data is provided through local law enforcement agencies' crash reports. Despite crash reports currently being the best way to obtain information about a large number of crashes, they have their limitations. The severity of crashes in the reports may have limited accuracy because those completing reports typically have little to no medical training, additionally, victims of crashes may be unaware of internal injuries especially while adrenaline is high. The total number of crashes may be underreported by victims due to fears, language barriers, financial concern, and more. First responders are typically on the scene after the crash has occurred and witnesses outside of a crash are not typically interviewed, leading to crash reports not fully capturing the effects of speed. Even when crash reports are perfect, they do not record near crashes or the self-limiting behavior of travelers who don't feel safe in the currently configured networks. When using the crash data, it is useful to keep these limitations in mind, and to vet data with priority populations as part of the planning process.

Additional roadway attributes can provide improved insights into the infrastructure improvement needs to reduce crash risks. Below are further roadway-related attributes that can improve this analysis but are not currently available and/or accurate:

- Traffic volumes
- Presence and type of medians
- Presence and/or types of shoulders
- Lane width
- Right-of-way width
- Land use

Crash Risk

There are 116 miles of roadways in River Falls. There were 30 FSI crashes and 318 MPI crashes across the city, equating to a total of 348 weighted FSI+MPI crashes. River Falls had a city-wide average of 3.54

weighted FSI+MPI crashes per mile. Factors correlated with higher-than-average frequency of FSI+MPI crashes were areas within 1/8 of a mile of the library, roadways classified as principal arterials, roadways with a speed limit of 30-35 MPH, areas with high poverty, areas within 1/4 of a mile of the University of Wisconsin – River Falls (UW – River Falls), roadways classified as minor arterials, areas with high zero vehicle households, areas within 1/8 of a mile of a school, roadways with speed limits above 35 MPH, areas with a high senior population, and areas with a high youth population. Factors correlated with lower-than-average frequency of FSI+MPI crashes were areas within 1/8 of a mile of a park, roadways classified as collectors, roadways with a speed limit of 25 MPH or lower, and roadways classified as local. The factors and associated weighted FSI+MPI crashes per mile are shown in Table 6.

Table 6. Weighted FSI + MPI Crash Risk Factors

Factor	Weighted Crash Score per Mile
Library Buffer	30.53
Classification - Principal Arterials	12.42
Speed Limit – 30-35 MPH	10.08
High Poverty	5.67
University of Wisconsin – River Falls Buffer	5.26
Classification - Minor Arterials	4.85
High Zero Vehicle Households	4.84
Schools Buffer	4.75
Speed Limit – Above 35 MPH	4.32
High Senior Population	4.12
High Youth Population	4.07
City Average	3.54
Parks Buffer	3.09
Classification - Collectors	2.99
Speed Limit – 25 MPH or Lower	2.73
Classification - Local Roads	1.24

Roadways that fit within the definition of a factor with higher weighted FSI+MPI crash risk compared to the average were given a score of 1 to 11, with 11 given to the highest crashes per mile (library buffer) and 1 given to the lowest crashes per mile (high youth population). The scores were added to calculate the total weighted FSI+MPI crash risk score. Figure 31 shows the results (High Risk Network).

Roadways with elevated crash risk are primarily located in the downtown area to the east of the river; roadways in this area include Main St, Spruce St, 2nd St, 3rd St, 4th St, 5th St, 6th St, 7th St, Division St, E Cedar St, E Maple St, E Elm St, E Walnut St, E Locust St, Spring St, Cascade Ave, and the alleys between Main St and 6th St. To the east of the downtown region, roadways with elevated crash risk are Falcon Dr, Crescent St, Morgan Rd, Oak Knoll Ave, Birch St, Birchcrest Ln, Wasson Ct, Wasson Ln, and 9th St. Within the University of Wisconsin – River Falls, roadways with elevated crash risk include Spruce St, 3rd St, 4th St, 6th St, and Wild Rose Ave. To the east of UW – River Falls, Valley View Dr, Broadway St, South Fork Dr, and Wasson Ln. To the south of UW – River Falls is Cemetery Road. On the west side of South Main St, County Road FF has an elevated crash risk and to the north of it, W Johnson St does as well. W Cascade Ave, S Winter St, N Grove St, and W Division St are included in roadways with elevated crash risk. North of Division St, roadways with elevated crash risk are Highway 35, Hoffman Place, Union St, the parking lot alleys near St Bridget’s Church and School, Powell Ave, Huppert St, and Chapman Dr.

Map 11: High Risk Network

