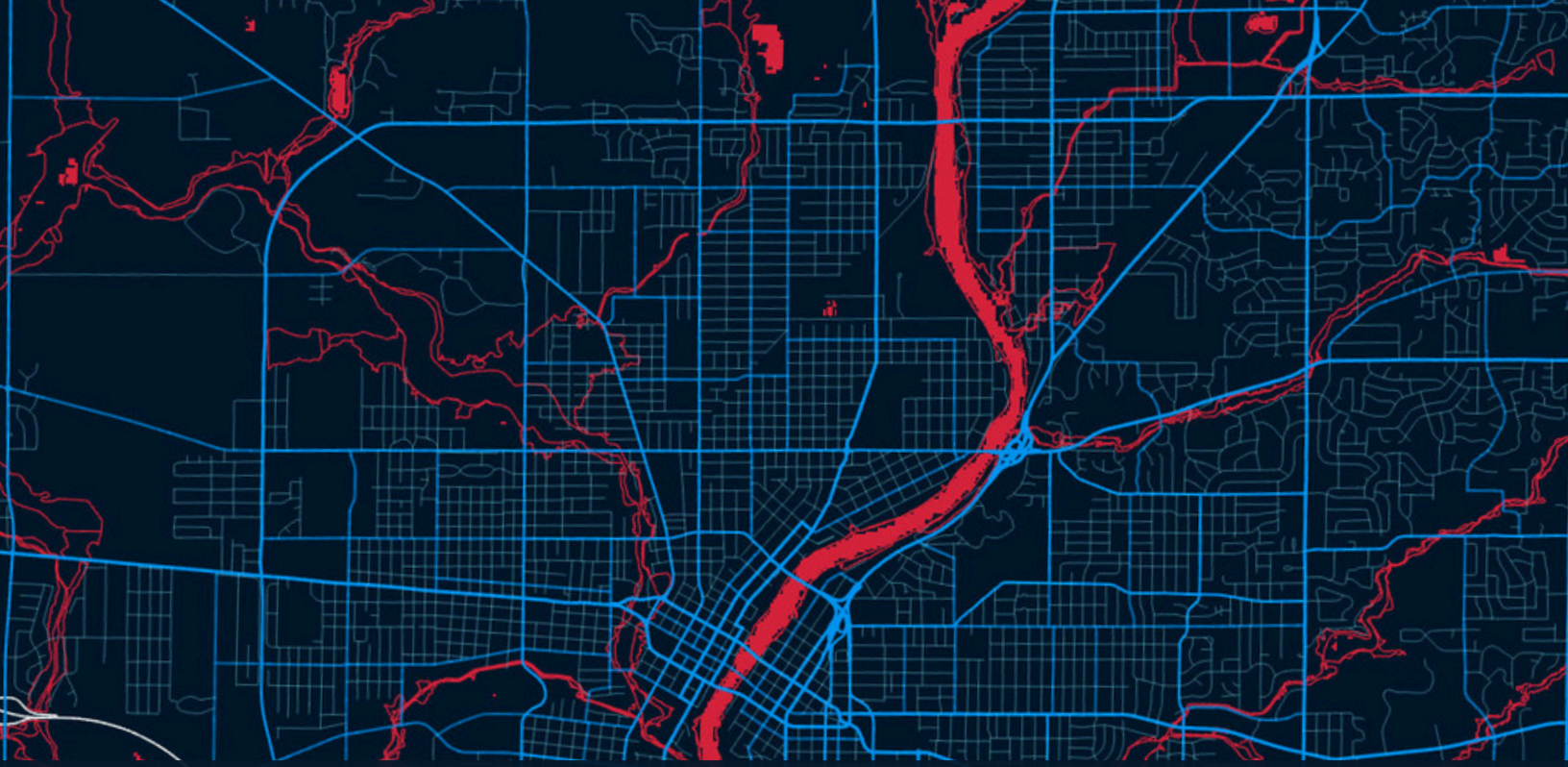


REGIONAL TRAFFIC SAFETY ACTION PLAN

Technical Report #2: High Risk Network

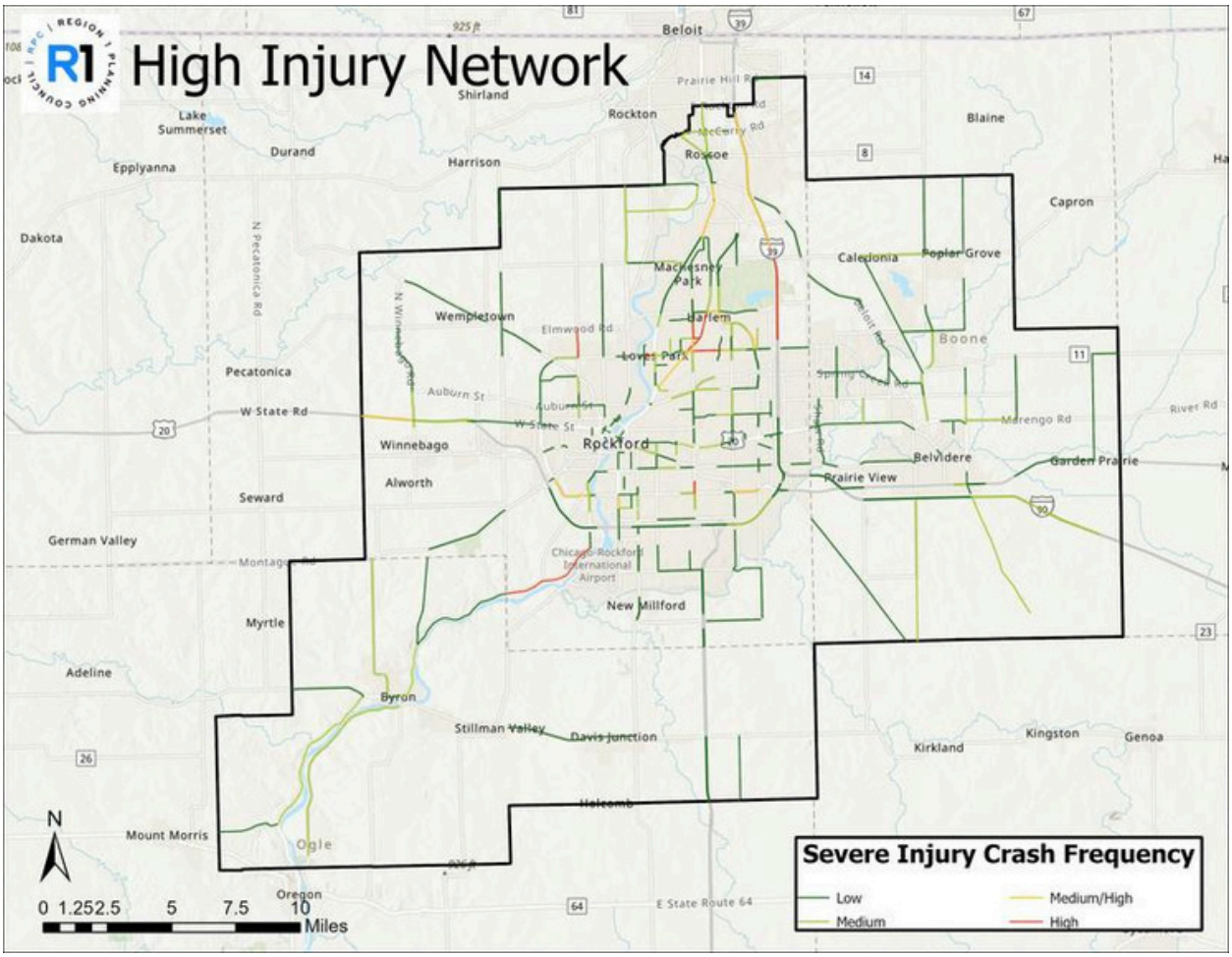


FINAL REPORT

2026

Introduction

Region 1 Planning Council (R1) has developed the Regional Traffic Safety Action Plan for the Rockford Region under the United States Department of Transportation's (USDOT) Safe Streets and Roads for All (SS4A) Grant Program. The plan identifies several vulnerabilities and gaps within the region's transportation infrastructure that need to be addressed in order to lower the frequency and severity of crashes resulting in injuries. A crucial focal point of the plan was the mapping of the region's High Injury Network (HIN), which outlines roadway segments where the highest volumes of serious and fatal crashes are occurring, based on crash data from 2017 – 2022. The HIN provides a foundation for planning and prioritization, allowing local partners to target projects with the greatest potential for reducing the frequency and severity of crashes. A map of the HIN is shown below, and is included in "Part 4: Data Analysis and Summary" of the Regional Traffic Safety Action Plan.

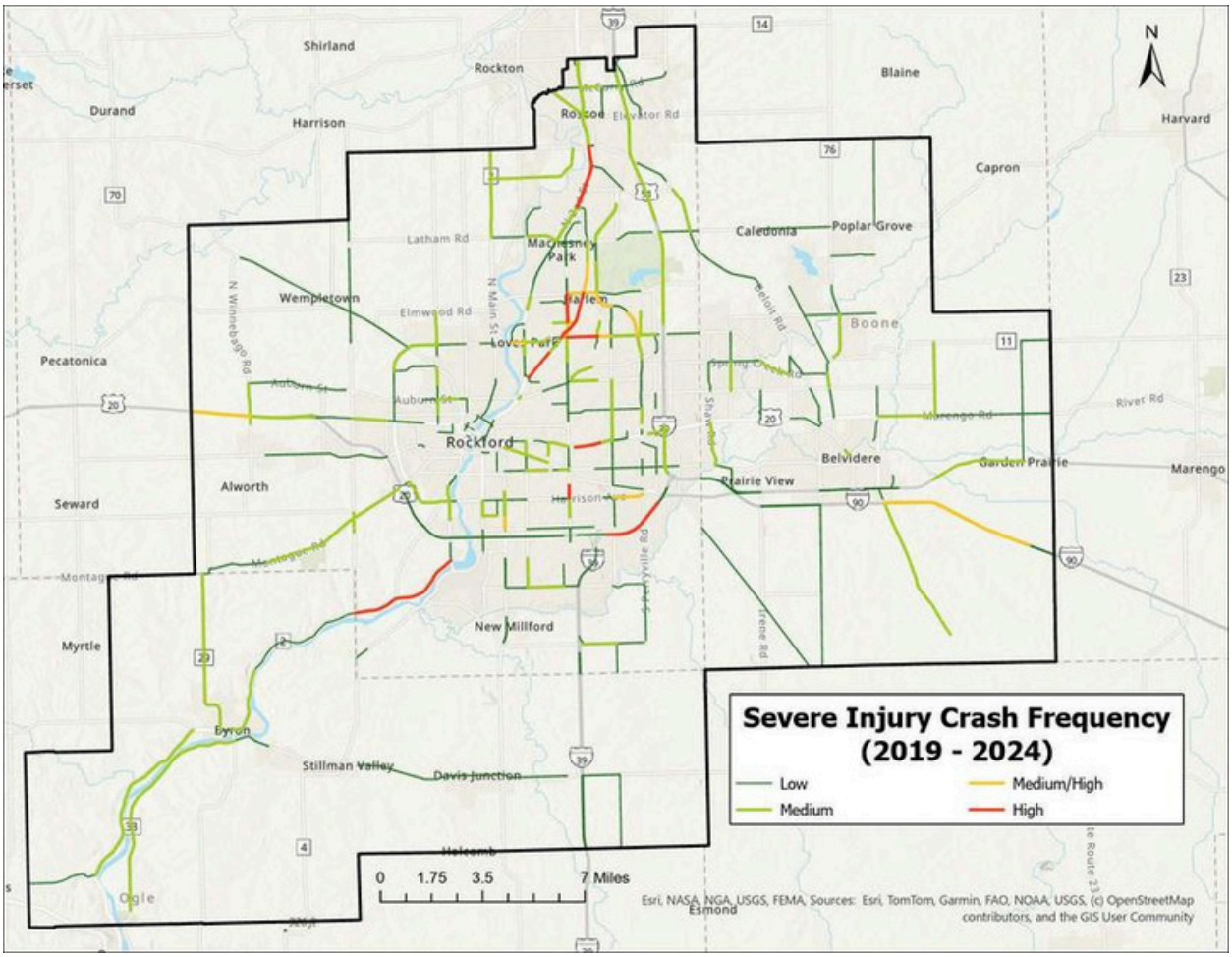


This technical report builds on the foundation provided by the HIN through the development of the High-Risk Network. While the HIN is a strong starting point, it is limited insofar that it is built

on data from crashes that occurred within a limited timeframe and, thus, may not paint a comprehensive picture of the roads exhibiting the highest potential for severe and fatal crashes in the future. This is best exemplified in the map below, which is a recreation of the High Injury Network map using more recent crash data from the period of 2019 – 2024. When compared with the map created for the Regional Traffic Safety Action Plan, it can be seen that many roads in the region exhibited different frequencies of severe injury crashes, despite the multi-year overlap of crash data from the two periods examined (2017 – 2022 and 2019 – 2024).

The High-Risk Network was developed to fill in these gaps by identifying roadway characteristics that are commonly exhibited by the roadway segments that fall on the HIN, as well as those associated with injury and fatal crashes, allowing for a more holistic view of the roads and infrastructure characteristics that pose the greatest safety risk to drivers in the Rockford Metropolitan Planning Area (MPA).

Severe Injury Crash Frequency



Risk Factors

The firststep in identifying roads with the most potential for severe crash outcomes is identifying the factors that contribute to an increased risk of severe outcomes. These are called risk factors for the purpose of this technical report. Risk factors were identified through an analysis of the severe and fatal crashes that occurred in the MPA from 2017 – 2022 to identify the roadway characteristics that were most commonly exhibited by the roadway segments the crashes occurred on. It is assumed that uncovering these commonalities may provide additional context to the conditions that are most frequently leading to severe outcome crashes in the MPA. This additional context allows for the improved targeting of roadway safety improvements on roads that may not have fallen on the HIN during the period of 2017 – 2022, but could in the future if conditions are not changed. Roadway characteristics of segments on the region's HIN were also used as a reference point to ensure that the risk factors identified were consistent with factors that are present in the region's current most dangerous corridors.

Urban vs Rural Risk Factors

During the initial stages of identifying risk factors, it became apparent that although the most dangerous corridors exhibit many of the same characteristics, there are clear trends that separate a dangerous road in an urban environment and a dangerous road in a rural environment. Urban and rural roads tend to support fundamentally different purposes. For example, urban roads typically feature many stop lights, intersections, and access points to neighborhoods and commercial developments; whereas rural roads typically serve to funnel traffic across greater distances, featuring minimal access points to developments and exhibiting far less frequent intersections. Due to these differences, urban and rural roads were analyzed separately in the creation of risk factors and the resulting High-Risk Network. The table below shows the risk factors that were identified for both urban and rural roadways.

Segment Characteristic	**Urban Risk Factors**	**Rural Risk Factors**
Traffic Volume (Measured by Annual Average Daily Traffic (AADT))	> 2,500 vehicles per day	> 9,000 vehicles per day
Posted Speed Limit	≥ 45 miles per hour	≥ 50 miles per hour
Outside Shoulder Width	≥ 4 feet	≥ 6 feet

Lane Width	≥ 12 feet	≥ 12 feet
Number of Lanes	≥ 4 lanes	≥ 4 lanes

Itshould be noted that the risk factors identified describe the conditions of a road where severe outcome crashes may be likely, and do not necessarily describe the features of a road that are directly leading to these crashes. For example, outside shoulder width was identified as a risk factor. While wider shoulders likely are not leading to crashes on their own, they are typically found on corridors with higher speeds and higher volumes, where there is a greater chance for an accident to lead to serious injuries or fatalities.

High-Risk Network

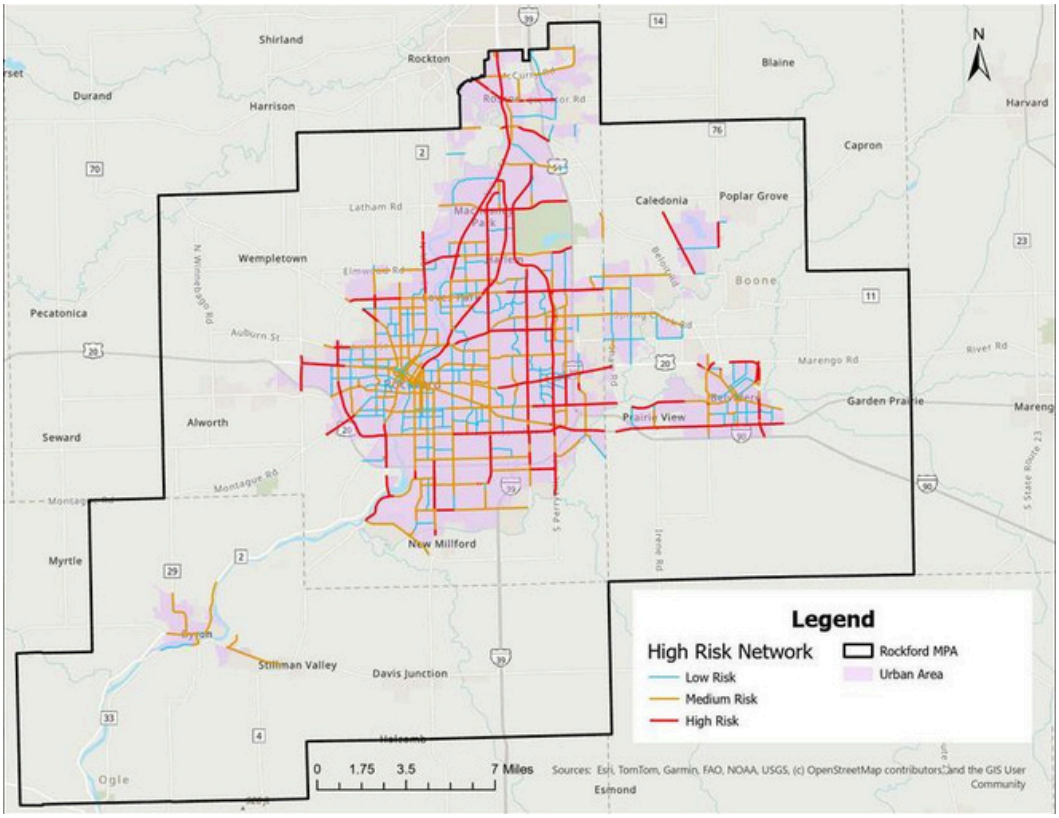
Upon establishing the risk factors, MPA roadway segments were analyzed for the amount of risk factors present in each segment. This process was conducted through a series of Geographic Information Systems (GIS) data analyses. Roadway segments were assigned risk score of low risk, medium risk, and high risk based on the number of risk factors present. More specifically, corridors that exhibited 0-1 risk factors received a risk score of low, corridors that exhibited 2-3 risk factors received a risk score of medium, and corridors that exhibited 4-5 risk factors received a risk score of high. Risk scores are intended to depict the likelihood that vehicular crashes occurring on a particular roadway segment will result in serious injuries and/or fatalities.

High-Risk Network Maps

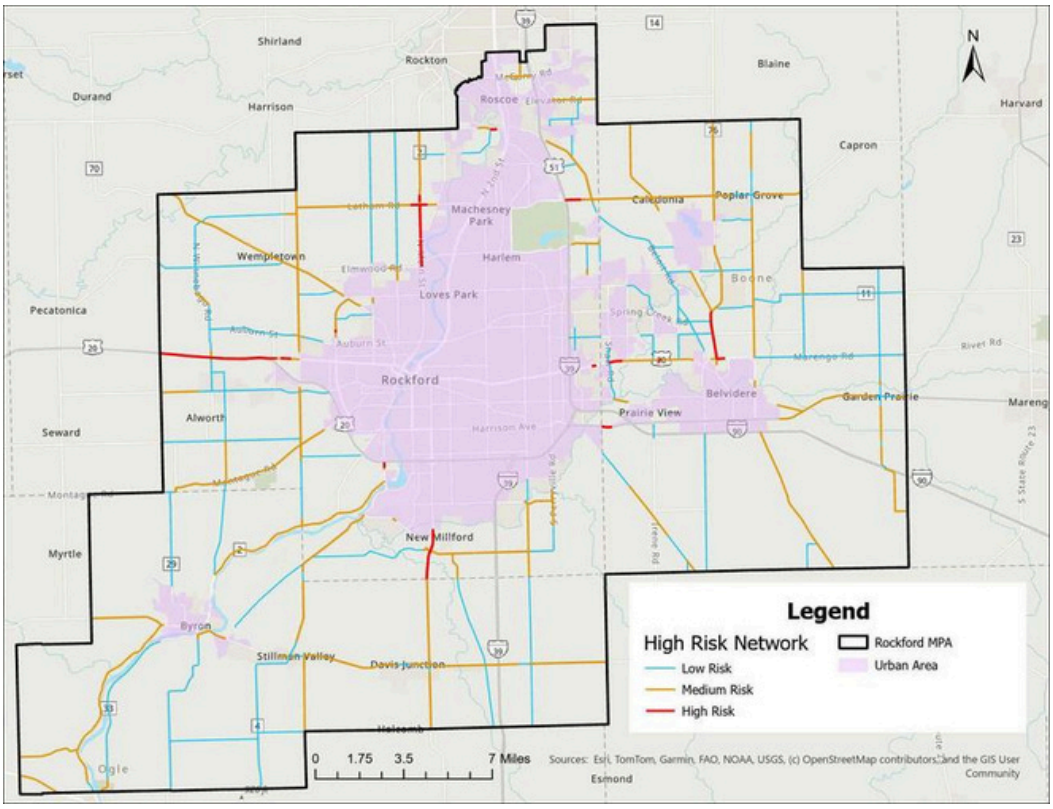
As previously mentioned, urban and rural roadways were analyzed separately. This was done by including roadway segments that had any extents within an urban area, as designated by the US Census Bureau, in the urban category. Roadway segments that did not have any extents falling within an urban area were considered rural roadway segments.

As such, the mapping process for the High-Risk Network was conducted in a piecemeal fashion, with urban and rural High-Risk Network maps initially constructed separately and later combined into a comprehensive map of the MPA's High-Risk Network. This is reflected in the maps below. Also included below is a map showcasing roadway segments that fall on the HIN compared against the High-Risk Network. This was done to highlight the fact that only considering high-injury segments to be high-risk paints an incomplete picture of local roadways that may facilitate severe crashes. The segments from the High-Injury Network included on this map were those that were categorized as medium/high and high in terms of the frequency of severe outcome crashes on those corridors.

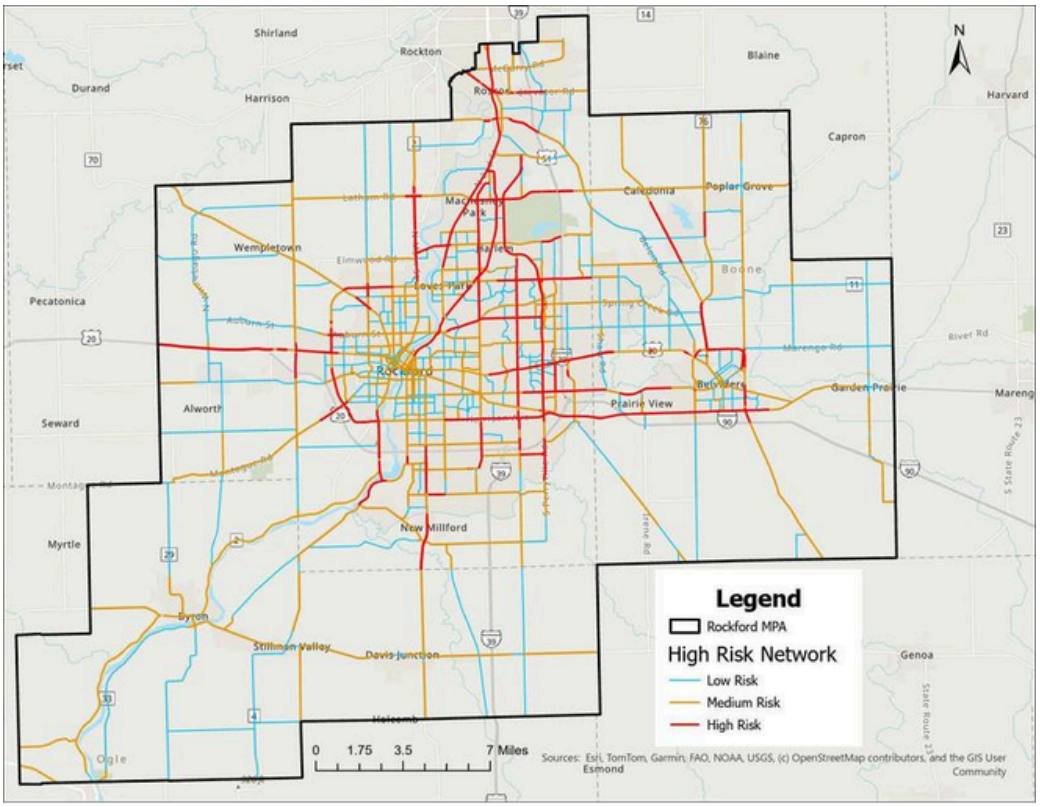
Urban High-Risk Network



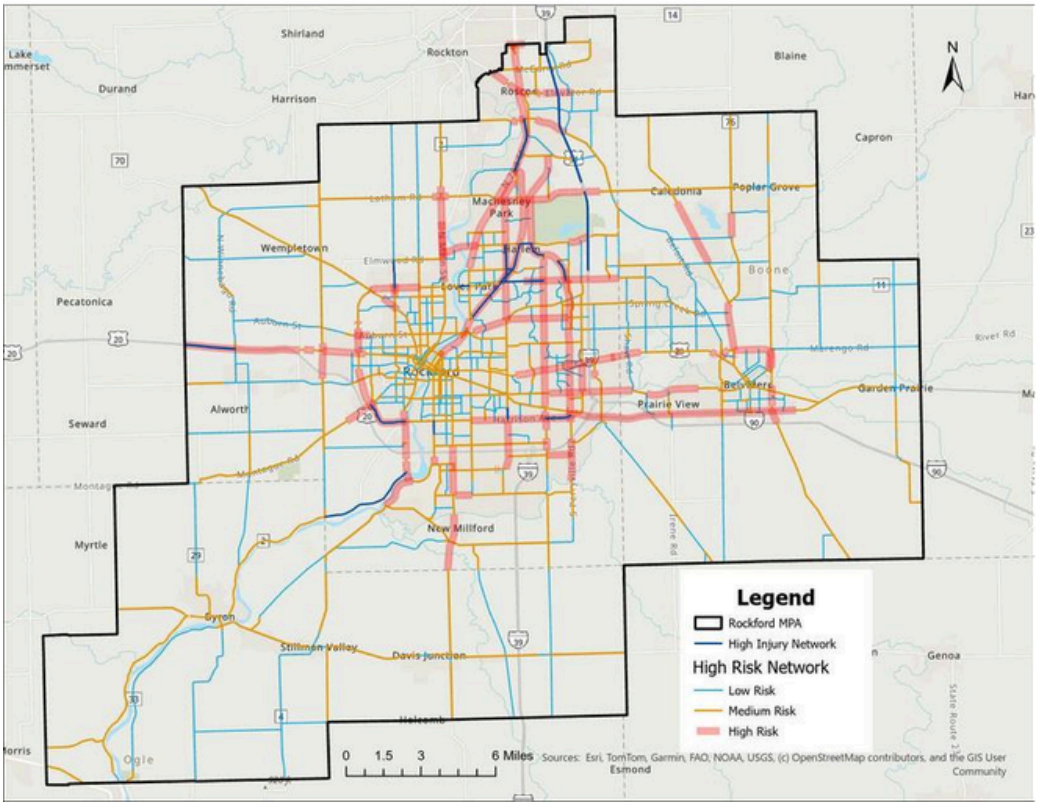
Rural High-Risk Network



MPA High-Risk Network



High-Risk Network with HIN Underlay



Data

Intotal, the data analyses for this report included 6,250 roadway segments within the MPA, equating to roughly 855 centerline miles of roadway. The total centerline mileage of all roadways in the MPA is 2,914, meaning a little under one-third of all roads were analyzed. The remaining two-thirds of MPA roads are mostly comprised of neighborhood and residential streets that fall under lower functional classifications. These were not included in this technical report, as conditions on these roads are typically conducive to lower frequencies of severe and fatal crashes, exhibiting low volumes and low travel speeds. Additionally, these roads often do not adhere to strict design standards or posted speed limits and, thus, do not have the associated data necessary for the analyses conducted for this report.

Of the roads that were analyzed, a few trends can be seen, specifically in the differences between rural and urban roadways. These are broken down below.

Urban

When it comes to urban roadways in the MPA, segments falling under medium risk received the largest share of the three risk categories, representing 2,173 segments accounting for 195.67 centerline miles. Low-risk segments represented the next largest share of centerline miles, with 971 segments accounting for 143.2 miles. High-risk segments represented the second largest share of segments and were close behind low-risk segments in terms of centerline mileage. There were 1,640 urban roadway segments that fell under the safety risk category of high, accounting for 122.32 centerline miles. Below is a table highlighting these numbers.

Corridor Risk Classification	**Low Risk**	**Medium Risk**	**High Risk**
# of Roadway Segments	971 segments	2,173 segments	1,640 segments
Centerline Mileage Total	143.2 miles	195.67 miles	122.32 miles

Rural

Rural roads had a much smaller share of high-risk segments when compared to urban roads, indicating that rural areas may be exhibiting safer roadway conditions in the MPA. The table below showcases the number of roadway segments, and corresponding centerline mileage totals, for each of the safety risk categories.

Corridor Risk Classification	**Low Risk**	**Medium Risk**	**High Risk**
# of Roadway Segments	498 segments	821 segments	147 segments
Centerline Mileage Total	199.86 miles	178.45 miles	15.38 miles

Data Tables for High-Risk Roads

In order to supplement the High-Risk Network maps and provide additional context on the roads that have the highest risk of crashes resulting in severe outcomes, additional analyses were conducted to identify which specific roads are categorized as high risk. This was done by isolating every road segment that was assigned a score of high risk, and then sorting to remove all duplicate road names. This allowed for an isolated look at roads that had at least one segment that was assigned a score of high risk. The county that each road resides in, along with any associated highway classification, were also included to provide additional context on jurisdiction. In total, there were 77 roads with at least one high-risk segment (63 urban, 14 rural), 249 roads with at least one medium-risk segment (183 urban, 66 rural), and 307 roads with at least one low-risk segment (223 urban, 84 rural). The resulting data tables for urban and rural high-risk corridors are given below.

Data Table for Urban High-Risk Roads

Road Name	**Highway (if applicable)**	**County**
N/A (U.S. Highway)	U20	Boone
N/A (State Highway)	S02	Winnebago
N/A (State Highway)	S251	Winnebago

N/A (U.S. Highway)	U20B	Boone
11th St	S251	Winnebago
Airport Dr		Winnebago
Auburn Rd		Winnebago
Auburn St		Winnebago
Bell School Rd		Winnebago
Belt Line Rd		Winnebago
Belvidere Rd	U20B	Boone
Belvidere Rd	S76	Boone
Belvidere Rd		Winnebago
Blackhawk Rd		Winnebago
Caledonia Rd		Boone
Central Ave		Winnebago

Charles St.		Winnebago
Cunningham Rd		Winnebago
E State St		Winnebago
E Riverside Blvd		Winnebago
Elevator Rd		Winnebago
Fairgrounds Rd		Boone
Forest Hills Rd		Winnebago
Frank Bauer Pkwy		Winnebago
Genoa Road		Boone
Guilford Road		Winnebago
Harlem Rd		Winnebago
Harrison Ave		Winnebago

Harrison Ave	U20	Winnebago
Hononegah Rd		Winnebago
James Gang Pkwy	U20B	Boone
Kilburn Ave	S70	Winnebago
Kishwaukee Rd		Winnebago
Kishwaukee St		Winnebago
Linden Rd		Winnebago
Lyford Rd		Winnebago
McFarland Rd		Winnebago
Meridian Rd		Winnebago
Montague Rd		Winnebago
Mulford Rd		Winnebago

N 2nd St	S251	Winnebago
N Alpine Rd		Winnebago
N Main St	S02	Winnebago
N Perryville Rd		Winnebago
Newburg Rd		Winnebago
Old Mill Rd		Winnebago
Olde Creek Rd		Winnebago
Owen Center Rd		Winnebago
Poplar Grove Rd		Boone
Rockford Rd	U20B	Boone
Rockton Rd		Winnebago
Roscoe Rd		Winnebago

S Alpine Rd		Winnebago
S Main St	S02	Winnebago
S Appleton Rd		Boone
S Perryville Rd		
Samuelson Rd		Winnebago
Spring Creek Rd		Winnebago
Springfield Ave		Winnebago
West Lane Rd	S173	Winnebago
W Riverside Blvd		Winnebago
W State St		Winnebago

Data Table for Rural High-Risk Roads

Road Name	**Highway (if applicable)**	**County**

N/A (U.S. Highway)	U20	Boone
N/A (U.S. Highway)	U20B	Boone
N/A (State Highway	S251	Winnebago
Belvidere Rd	S76	Boone
E State St	U20B	Winnebago
James Gang Pkwy	U20B	Boone
Latham Rd		Winnebago
N Main St	S02	Winnebago
Roscoe Rd		Winnebago
S Main St	S02	Winnebago
Springfield Ave		Winnebago
W State St	U20	Winnebago
West Lane Rd	S173	Winnebago

Conclusion

When looking at the High-Risk Network maps and supplementary data, it becomes clear that many of the MPA's primary travel corridors are currently at a high risk of crashes resulting in serious injuries or fatalities. This is of particular concern to the Rockford Region, as the local transportation network is currently oriented heavily towards vehicular travel. Because the region exhibits a relatively high amount of urban sprawl, with large travel distances between its many activity centers, most residents rely heavily on cars for their daily travel needs. It is of the utmost importance that those who use the region's transportation network regularly are able to do so safely. Thus, the current conditions of the region's roadways likely need to be altered to facilitate an environment where crashes lead to a declining frequency of severe outcomes. There are a number of methods and initiatives that can be done to start this process. R1 regularly works with local partners on their many roadway projects and continues to publish plans that focus on creating a safer transportation experience throughout the MPA. Planning initiatives such as the Regional Traffic Safety Action Plan, Green Streets Guide, Bicycle and Pedestrian Plan, Complete Streets Design Guidelines, and various corridor studies all provide general guidelines, recommendations, and best management practices (BMPs) that can be implemented to begin moving the region to a safer, more comprehensive transportation network.