REGIONAL SAFETY ACTION PLAN REPORT

METROPOLITAN COUNCIL

December 2024

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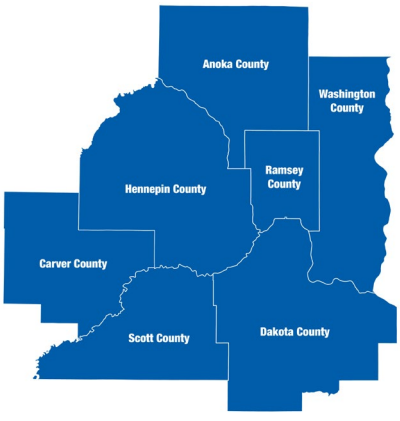

The Metropolitan Council is the regional planning organization for the seven-county Twin Cities area. It serves as the metropolitan planning organization for transportation planning in the seven-county Twin Cities area and the urbanized portions of Sherburne and Wright counties. The Council operates the regional bus and rail system, collects and treats wastewater, coordinates regional water resources, plans and helps fund regional parks, and administers federal funds that provide housing opportunities for low- and moderate-income individuals and families. The 17-member Council board is appointed by and serves at the pleasure of the governor.

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Table of Contents

Section 1. Plan Overview

1.1 Summary

The Regional Safety Action Plan is a comprehensive traffic safety action plan to help prevent fatalities and serious injuries within the 9-county metropolitan planning area for the Minneapolis-St. Paul region (illustrated in Figure 1). For the purposes of federal transportation planning, the metropolitan area includes all of Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, and Washington Counties, and the contiguous urbanized parts of Sherburne and Wright counties.

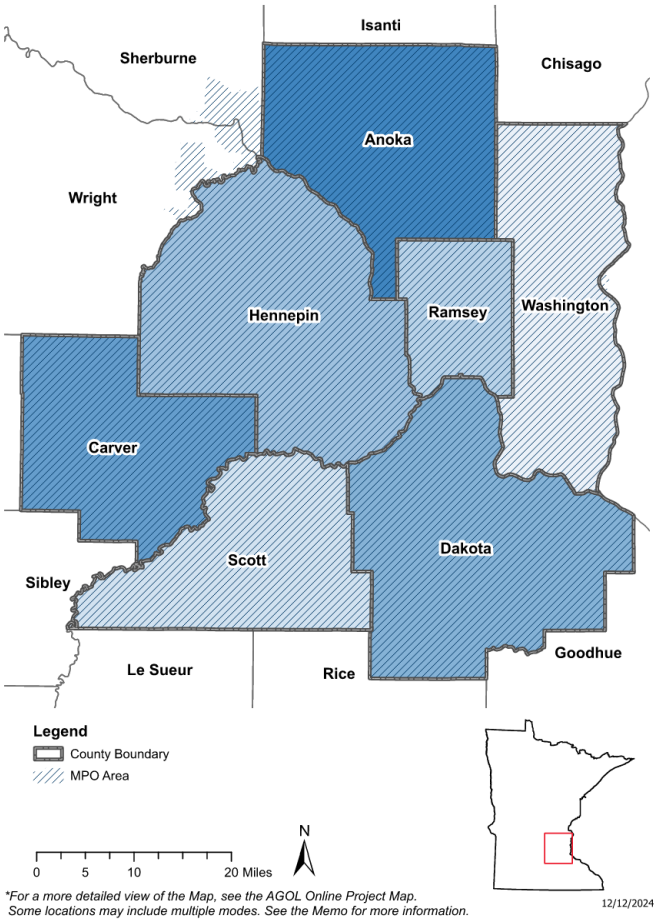

Figure 1. The Metropolitan Planning Area

The Metropolitan Council is driven to make a difference and reduce the number of fatal and serious injury traffic crashes in the region through this people-focused safety action plan. Anticipated benefits of developing and implementing this plan include:

- Comprehensively inventorying safety programs to highlight gaps/redundancies in how federal, state, regional, and local safety resources are spent within the 9-county region.
- Identifying opportunities to coordinate safety data across jurisdictions.
- Identifying the roles of equity and community engagement in safety planning.
- Creating opportunities for promoting best practices in safety planning across the region through resource sharing and other forms of implementation support targeted at local roadways.

The Minnesota Strategic Highway Safety Plan (SHSP) acknowledges that fatal and serious injury crashes occur on all roads, with an over representation of crashes on local roads. The Met Council's decision to fund development of this action plan aligns with the goals and objectives of the SHSP, and the region's Transportation Policy Plan's performance-based planning framework. The 2050 Transportation Policy Plan includes a goal that our communities are healthy and safe, along with an objective that people do not die or face life-changing injuries from crashes when using any form of transportation.

The Regional Safety Action Plan emphasizes the Safe System approach focused on proactively eliminating severe crashes. While acknowledging that humans are vulnerable and make mistakes, the plan identifies a combination of programs, policies, and engineering design recommendations to transform the region's transportation system into one that consistently accommodates humanity. The Regional Safety Action Plan aims to achieve this goal through thorough data analysis, rigorous public engagement, strategic design, and updated policies and programming.

Included within this summary report is an overview of the leadership and community engagement conducted for the plan, the analysis performed, and the results. The summary also includes how the region intends to implement the plan to **eliminate fatalities and serious injuries from traffic crashes by 2050.**

1.2 The Safe System Approach

The Safe System Approach is a roadway safety framework that seeks to eliminate road traffic deaths and serious injuries by designing and building roadways to accommodate human mistakes and human vulnerability.[1] USDOT's adoption of the Safe System Approach is a paradigm shift from a conventional safety approach, which was reactive and focused on the comfort, convenience, and safety of drivers and vehicle passengers above other road users.

The Safe System Approach originated in the 1990s in Sweden as a part of the Vision Zero program. "Vision Zero," like the Safe System Approach, asserts that even one transportation system-related death is unacceptable.[2] The Safe System Approach is the guiding framework to realize Vision Zero. The Safe System Approach was adopted and implemented in various European countries in the early 2000s and resulted in substantial reductions in road traffic fatalities (in some cases, over a 50% reduction). With the Safe System Approach's success, other countries – such as the United States – have committed to zero deaths and implementing the approach nationally.[3]

The Safe System Approach was founded by two scientifically supported observations: humans make mistakes, and human bodies have a limited ability to tolerate crash impacts. Implementing the Safe System Approach involves designing roadway infrastructure to anticipate human mistakes, reduce the likelihood of mistakes, and when a mistake does lead to a crash, to reduce the impact on the human body and the likelihood of a fatality or a serious injury. Because the speed of a vehicle striking a human body is often the most significant indicator of whether a crash results in a serious injury in a fatality, the Safe System Approach advocates for road design and management that encourages safe speeds and

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[1] What Is a Safe System Approach? (October 2022). United States Department of Transportation. https://www.transportation.gov/NRSS/SafeSystem

[2] Zero Deaths and Safe System (August 2024). United States Department of Transportation Federal Highway Administration. https://highways.dot.gov/safety/zero-deaths

[3] Doctor, M., and C. Ngo. (2022). Making our Roads Safer through a Safe System Approach. *Public Roads - Winter 2022,* Vol. 85 No. 4. Publication Number: FHWA-HRT-22-002. https://highways.dot.gov/public-roads/winter-2022/01

designing a system with redundancies that protect everyone, including the most vulnerable road users.[4][5]

Source: FHWA.

Figure 2. The Safe System Approach Principles and Elements

The Safe System Approach is based on a set of six principles[2], illustrated in Figure 2 around the wheel, including:

- Death and Serious Injuries are Unacceptable – all road users deserve a safe, sustainable, and efficient transportation system; deaths and serious injuries should not be the price to pay for mobility.
- Humans Make Mistakes – to err is human; the Safe System Approach acknowledges that road users will make mistakes, however, through careful design and operations of vehicles and road system, some of these mistakes can be mitigated to prevent fatal and serious injury crashes.
- Humans are Vulnerable – human bodies are vulnerable to the extreme forces transferred to them in crashes with motor vehicles. It is critical to keep these forces below the tolerance limit for human bodies in order to prevent deaths and serious injuries.
- Responsibility is Shared - All stakeholders (i.e., government, industry, non-profit/advocacy, researchers, and general public) share in the responsibility of and play a role in preventing fatalities and serious injuries on our roadways.
- Safety is Proactive – Rather than waiting to address safety issues after crashes occur, a proactive approach and tools should be used to identify transportation system issues and address them beforehand.

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[4] Zero Deaths and Safe System (August 2024). United States Department of Transportation Federal Highway Administration. https://highways.dot.gov/safety/zero-deaths

[5] What Is a Safe System Approach? (October 2022). United States Department of Transportation. https://www.transportation.gov/NRSS/SafeSystem

- Redundancy is Crucial – A multi-layered approach relies on strengthening all parts of the transportation system so if one fails, the remaining parts will still provide protection.

These six principles combine to create the Safe System Approach with the following objectives, illustrated in Figure 2 within the section of the wheel:

- Safe Road Users – safe and responsible driving behavior can reduce errors and prevent crashes.
- Safe Vehicles – new and improved vehicle safety features can help prevent crashes or lessen injuries sustained by vehicle occupants and those outside vehicles when crashes do occur.
- Safe Speeds – Safer speeds on roadways can be accomplished through various means, including design, and retrofit, operation (setting speed limits), outreach and education.
- Safe Roads – road design should be forgiving to road user mistakes and provide separation (space and time) for different roads users (drivers, pedestrians, bicyclists).
- Post-Crash Care – Ensuring faster access to emergency medical care can enhance the survivability of crashes. In addition, secondary crashes (or first responders or other road users) can be prevented through robust traffic incident management practices at crash scenes.

A recent paper[6] by Ederer et al. (2023) noted that while there has been significant research on how transportation affects health outcomes, little is known about the application of public health concepts to transportation safety, thus presenting an opportunity for transportation professionals to apply health principles to safety efforts. The authors adapted the Health Impact Pyramid framework, developed in 2010 by Frieden (depicted in Figure 3) into the Safe System Pyramid for roadway safety practitioners (depicted in Figure 4). The matrix illustrates six tiers, which differentiates between potential interventions at the bottom of the pyramid that require less effort and have the greatest population impact vs those at the top that require the most individual effort and have the least population impact.

[6] Ederer et al. The Safe Systems Pyramid: A new framework for traffic safety, Transportation Research Interdisciplinary Perspectives, Volume 21, 2023: https://www.sciencedirect.com/science/article/pii/S2590198223001525

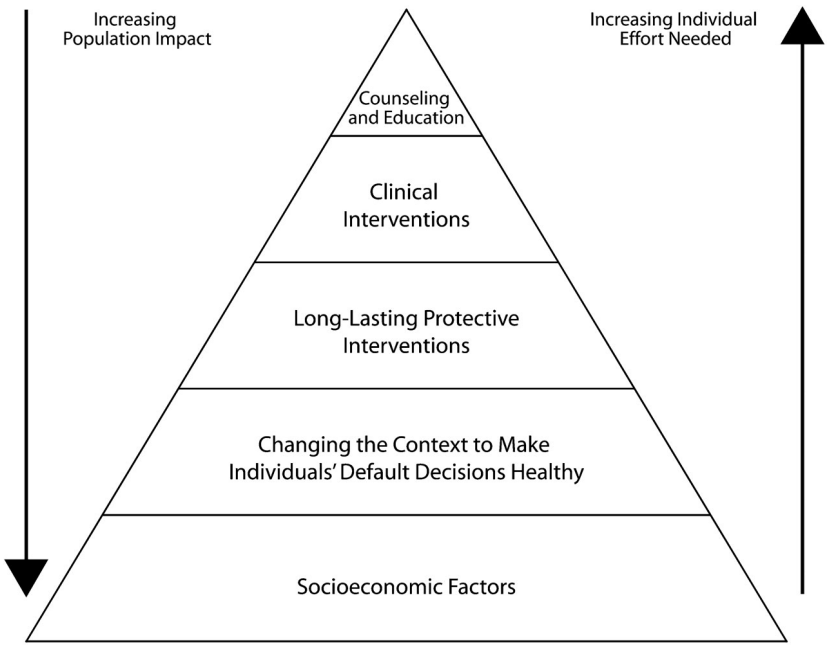

Figure 3. Public Health Pyramid developed by Frieden (2010)

Figure 4. Safe System Pyramid developed by Ederer et al (2023).

As shown in Figure 4, the bottom tier of the pyramid includes socioeconomic factors and their intervention examples; these interventions have the greatest potential for impact on health outcomes because they reach the largest portion of the population and require less individual effort to be effective. Each subsequent intervention above the last requires slightly more effort and is less impactful. These tiers, starting with the bottom tier, and their example programs/interventions are as follows:

- Socioeconomic factors - Affordable housing near transit, zoning reform that reduces vehicle miles traveled, safety features on commercial fleets, etc.
- Built environment – Road designs and countermeasures that reduce vehicular speeds and separate road users, such as roundabouts, speed humps, chicanes, raised crosswalks, sidewalks, bicycle infrastructure.
- Latent safety measures – Signal timing that encourages slower traffic progression, leading pedestrian intervals, air bags, automated emergency braking systems, speed governors, alcohol ignition interlocks.
- Active measures – Signals and signs indicating that one should stop or yield, forward, rear, and side collision warning, seat belts, helmets.
- Education - Driver education programs, Slow Down Campaigns

Several of these health impact categories are also reflected in the principles of the Safe System Approach, including redesigning roadways and implementing countermeasures that manage vehicular speeds, separating road users in space and time, and adding vehicle safety technologies.

In response to a recommendation from the informational report on Integrating the Safe System Approach into the HSIP, FHWA developed the Safe System Roadway Design Hierarchy[7] (depicted in Figure 5), a tool which is consistent with the Safe System Pyramid and that characterizes countermeasures and strategies relative to their alignment with the Safe System Approach. With an underlying goal of eliminating traffic related deaths and serious injuries, the purpose of the Safe System Roadway Design Hierarchy is to aid transportation agencies and practitioners in identifying and prioritizing countermeasures and strategies when developing transportation projects.

[7] Hopwood, C., Little, K., and D. Gaines. (2024). Safe System Roadway Design Hierarchy: Engineering and Infrastructure-related Countermeasures to Effectively Reduce Roadway Fatalities and Serious Injuries. Report No. FHWA-SA-22-069. Federal Highway Administration.

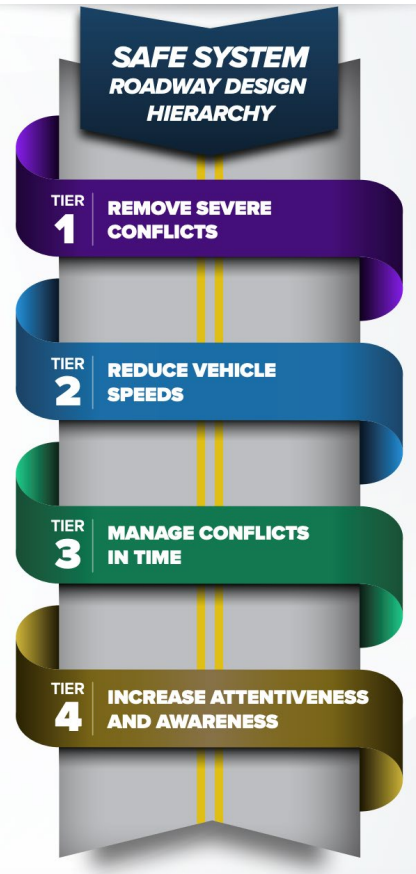

Figure 5. Safe System Roadway Design Hierarchy Countermeasure Tiers

The Safe System Roadway Design Hierarchy includes four tiers of countermeasures that are arranged from the most to least aligned with the Safe System Approach principles. The first three tiers focus on countermeasures related to roadway design and operations, aiming to remove roadway conflicts, manage speeds, and separate road users in space and time, to ultimately reduce the impact of kinetic energy should a crash occur. The last tier focuses on countermeasures that improve attentiveness and awareness of road users so they can take appropriate action. Much like the Safe System Pyramid, the Safe System Roadway Design Hierarchy categorizes the countermeasure tiers from the ones that have the greatest impact to most people (Tier 1: Remove Severe Conflicts) to the ones least effective due to relying on road users to take appropriate action (Tier 4: Increase Attentiveness and Awareness).

1.3 Leadership and engagement

Guidance and direction for the development of the Regional Safety Action Plan was given from multiple perspectives.

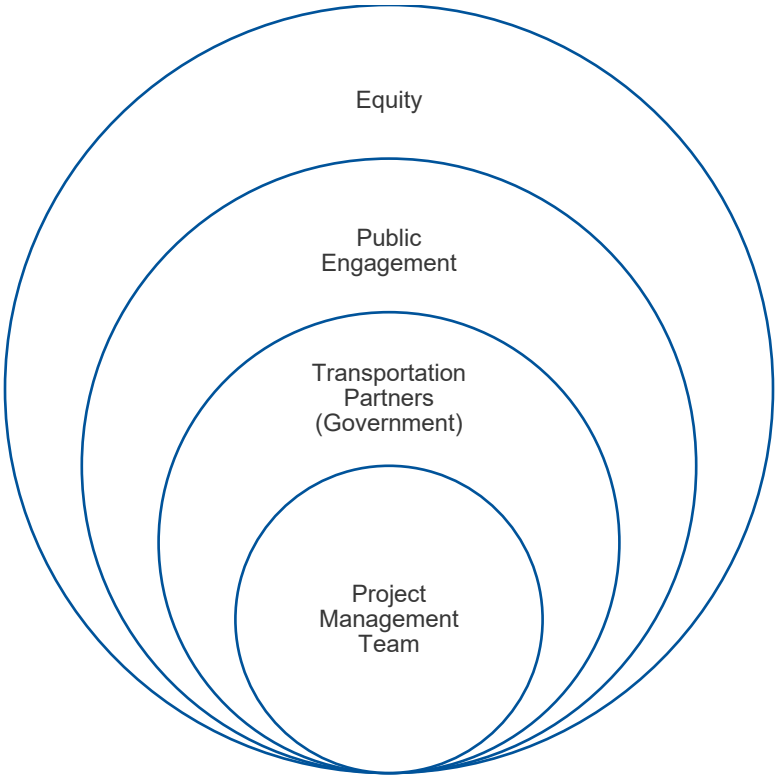

Figure 6. Multiple perspectives that guided the development of the Regional Safety Action Plan.

Project Management Team

The Project Management team (PMT) directed the development of the plan and was made up of Metropolitan Council staff and representatives from local stakeholders. The group included:

- Metropolitan Council – Heidi Schallberg (Agency Project Manager); Liz Roten; Jed Hanson; Bethany Brandt-Sargent; Sara Maaske
- Minnesota Department of Transportation (MnDOT) – Derek Leuer; Suzy Scotty; Michael Samuelson
- SRF Consulting Group - Nicole Bitzan; Renae Kuehl (Consultant Team Project Manager)
- Safe Streets - Jessica Schoner
- Alta Planning + Design - Alia Awwad; Collin Hodges
- Isthmus Engineering – Mary Karlsson

Technical Advisory Group

Metropolitan Council formed and hosted a Technical Advisory Group to guide the Regional Safety Action Plan process and help finalize findings and results. These final draft findings and results were also presented to the Transportation Advisory Board, the Metropolitan Council, and the Technical Advisory Committee. Together, these groups represent the entities that have influence and/or transportation authority in the planning area affected by plan outcomes.

The following individuals participated in the Technical Advisory Group meetings:

- Anoka County – Jack Forslund; Sean Thiel

- Carver County – Whitney Schroeder
- Dakota County – Pranav Sharma
- Hennepin County – Tom Musick
- Scott County – Jon Rudolph
- Washington County – Joe Gustafson
- Wright County – Sara Buermann
- City of Minneapolis – Ethan Fawley; Luke Hanson
- City of Saint Paul – David Peterson
- City of Columbia Heights – Sulmaan Khan
- City of Bloomington – Amy Marohn
- Metro Transit – Mark Christianson
- MnDOT – Suzy Scotty; Kaare Festvog; Ashley Hansen; Derek Leuer; Michael Samuelson; Lars Impola; Eric Lauer-Hunt; Shirley Schoening Scheuler
- FHWA – Kristi Sebastian
- Metropolitan Council – Heidi Schallberg; Liz Roten; Jed Hanson; Bradley Bobbitt; Bethany Brandt-Sargent
- SRF Consulting Group - Nicole Bitzan; Renae Kuehl; Dan Tinklenberg; Peter Dirks
- Alta Planning + Design - Alia Awwad; Matthew Dyrdahl; Collin Hodges; David Wasserman
- Safe Streets - Jessica Schoner
- Isthmus Engineering – Joe Lehman
- Zan Associates – Tom Holmes

Public engagement and equity

In addition to the leadership teams, the Regional Safety Action planning process connected with two segments of the general public:

- *General public* that travels within and through the planning area
- *Underrepresented populations* that live, work, or play in the planning area

General public

The Metropolitan Council partners assembled previous traffic-safety related engagement results to inform the Regional Safety Action Plan. Previous results were received from five of the nine MPO counties (Anoka, Carver, Dakota, Ramsey, and Washington) and the region's largest cities (Minneapolis and Saint Paul).

Underrepresented populations

To support an equitable engagement and decision-making process that gives all stakeholders a voice, the Metropolitan Council engaged underrepresented populations about traffic safety. Zan Associates designed and performed the engagement effort. Underrepresented populations engaged as a part of this planning process include: people living with disabilities; queer, non-binary and transgender people; higher-population cultural communities (e.g. African American, Latinx, Hmong, Somali, Oromo); people living in suburban and rural cities and towns; and Black people, Indigenous people, people of color, and immigrants in suburban and rural cities and towns.

1.4 Analysis approach

The Regional Safety Action Plan development team analyzed existing traffic crash conditions and historic trends using a human- and number-focused approach.

Used a Safe System Approach

The results of this plan advance the implementation of a safe system approach in the Metropolitan Council region. The safe system approach is a holistic and proactive strategy designed to enhance overall safety by both recognizing that human error is inevitable and aiming to mitigate the consequences of human mistakes. The approach incorporates design, efficient traffic management, comprehensive education, and enforcement policies.

Incorporated equity throughout the work

The Metropolitan Council and Zan Associates identified underrepresented populations for engagement by reviewing results from the public engagement, mapping the previous efforts, and comparing them to the known locations of underrepresented populations within the metropolitan planning area. Zan's engagement strategy focused on ensuring the plan engaged identified underrepresented populations. To ensure participation from underrepresented populations, Zan collaborated with community-based organizations to guide the plan's engagement strategy. The underrepresented population engagement was performed in June/July 2024 and a summary of participation by underrepresented groups is included in Appendix A. These results are documented in detail in *Appendix A. Engagement Summary*. Equity was also considered in the crash trend summary.

Involved the community

Metropolitan Council leveraged online and in-person engagement to inform the Regional Safety Action Plan. Activities facilitated traffic safety-focused connections with underrepresented populations, the public, and city, county, state, and other transportation partners. Guided by recommendations from community-based organizations, Zan used a combination of in-person, virtual, and hybrid hour-long focus groups and a table activity at an existing event to gather public feedback about the community's traffic safety concerns. Focus group and tabling activities were visual and recorded participants' comments and preferences for various pictured transportation facilities. Overall, the project team connected with over one hundred participants in June/July 2024. In addition to project-specific engagement, the Metropolitan Council assembled and reviewed previously generated traffic safety-focused engagement results. These results are documented in detail in *Appendix A. Engagement Summary*.

Comprehensively studied safety in the region

The plan comprehensively inventoried safety data and programs to highlight outcomes as well as gaps/redundancies in how federal, state, regional, and local safety resources have been invested. Results from these analyses are summarized in the map of high injury streets, crash data analysis and trend summary, and public engagement summary. These results are documented in *Appendices B, C, D, and E.*

Provides recommendations for implementors

Leveraging the data analysis and engagement results, the Metropolitan Council and its partners developed recommendations for implementors. These recommendations include revised traffic safety-related policy in the 2050 Transportation Policy Plan Update. The plan's results also helped to identify funding recommendations, corridors for future safety study, and a list of countermeasures. These results are highlighted in the *Recommendations* section and documented in detail in *Appendices F, G, and H*.

Meets or exceeds requirements for the Safe Streets and Roads for All program

This plan and related Council reports, materials, and processes comprehensively satisfy the eligibility requirements for a Safe Streets and Roads for All Action Plan. A copy of the self-certification worksheet is included in *Appendix I.*

1.5 Methods

State of the practice review

The State of Practice Review examined the current transportation safety planning practices employed by other metropolitan planning organizations (MPOs) and local, county, and regional governments within Minnesota. It also explored best practices from both domestic and international sources by reviewing essential guidance and resource documents that focused on planning and designing safe infrastructure with consideration of vulnerable road users. This work informed the methodologies used for engagement and reactive and proactive safety analysis. The work is documented in detail in *Appendix B*.

Crash data analysis and trend summary

Between 2018 and 2022, the nine-county Metropolitan Council region recorded 4,094 crashes resulting in fatal or serious injuries. An analysis of these crashes identified trends among three modes: auto, bike, and motorcycle. Pedestrian crashes were incorporated by reference based on work completed previously as part of the Regional Pedestrian Safety Action Plan[8]. The crash data analysis and trend summaries include an examination of the crashes by mode and basic crash report variables, roadway characteristics, and demographic and economic factors. The correlations identified in the crash trend summary informed development of the Crask Risk Index, priority reactive and proactive corridors, and countermeasures, and may be used by road authorities within the Metropolitan Council planning area to help prioritize roadway safety investments in the future. This work is documented in detail in *Appendix C*.

High Injury Streets map

A High Injury Streets map was developed and optimized for the region to enable the Metropolitan Council to provide technical support to local partners and prioritize regional investments to maximize safety impacts. The development of the High Injury Streets accounted for land use context (urban vs suburban) and roadway context (non-highway vs highway). Freeways and limited-access highways were eliminated from the analysis and the development of the High Injury Streets. This is a standard practice because these facilities are operationally different from other streets, having higher speeds, more lanes, higher volumes, and access control. Further, since they are not owned by local agencies, including them among the High Injury Streets could lead to a list of regional priorities that local partners have no authority to act on.

The process included developing a project roadway network and generating sliding windows along it, which is a geospatial analysis approach used to measure concentrations of crashes in moving segments along the network. Five years of crashes (2018-2022) were joined to the network and four separate High Injury Streets models were developed for each mode (pedestrians, bicyclists, motorcyclists, motorcyclists, motorcyclists, motorcyclists, motor vehicles. Crashes where the vehicle type was null or listed as parked/stalled, and motor vehicle injury B crashes were excluded from the analysis. For scoring criteria thresholds, fatal crashes (K) and major suspected injury crashes (A) were

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[8] Regional Pedestrian Safety Action Plan (September 2022). Appendix C-1 Task 4 Crash Data Analysis and Trend Summary Memo available at: https://metrocouncil.org/Transportation/System/Bicycle-and-Pedestrian/Studies/Regional-Pedestrian-Safety-Action-Plan/Appendix-C.aspx

given a weight of three, minor suspected injuries (for pedestrians, bicyclists, and motorcyclist crashes only) were given a weight of one, and all other crashes were given a weight of zero.

This work is documented in detail in *Appendix D*.

Systemic analysis

Systemic safety involves enhancing a transportation system's safety by comprehensively evaluating risk factors across the street network.[9] Like the crash data analysis, the Regional Safety Action Plan builds on work previously completed as part of the Regional Pedestrian Safety Action Plan.[10] To develop a Bicycle Crash Risk Index score and a Motor Vehicle Crash Risk Index score across the region, the project team applied an approach similar to the one used in the Regional Pedestrian Safety Action Plan. The resulting crash index scores suggest which road segments and intersections have the highest risk of bicyclist and motor vehicle crashes. This work informed the development of regional priority lists for proactive safety needs. This work is documented in detail in *Appendix E*.

Public engagement

The Regional Safety Action Plan engagement process was designed to:

1. **Honor** previous community engagement efforts and fatigue by leveraging existing traffic safety-related engagement results
2. **Deepen** understanding of previous engagement results among metropolitan planning organization partners
3. **Intentionally engage** with previously underrepresented populations

The Metropolitan Council used a combination of meetings and online engagement to inform the Regional Safety Action Plan. The Council used an online map and survey to assemble previously generated traffic safety engagement results for analysis. The data was assembled in August and September 2023, and it consisted of public engagement results generated in the summer of 2024. The Council hosted online meetings for the PMT and Technical Advisory Group from June 2023 through December 2024, in-person meetings for the Transportation Advisory Board, Metropolitan Council, and sub-committees in 2023 and 2024.

The Metropolitan Council and Zan Associates identified target underrepresented populations for engagement in this planning process by reviewing results from recent public engagement, mapping the previous efforts, and comparing them to the known location of underrepresented populations within the metropolitan planning area. Target underrepresented populations have not been adequately involved in recent transportation projects. The project team identified target underrepresented populations by reviewing results from recent public engagement, mapping the previous efforts, and comparing them to the known location of underrepresented populations within the metropolitan planning area. Zan's engagement strategy collaborated with community-based organizations to reach as many target underrepresented populations as possible during the engagement period. The underrepresented population engagement was performed in June/July 2024. This work is documented in detail in *Appendix A*.

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[9] Federal Highway Administration (FHWA). Potential Risk Factors. Washington, D.C. Accessible at: https://safety.fhwa.dot.gov/systemic/pdf/FHWA_SystemicApproach_PotentialRiskFactors.pdf

[10] Regional Pedestrian Safety Action Plan (September 2022) accessible at: https://metrocouncil.org/Transportation/System/Bicycle-and-Pedestrian/Studies/Regional-Pedestrian-Safety-Action-Plan/Regional-Pedestrian-Safety-Action-Plan.aspx

Section 2. Findings

2.1 Public engagement – what we learned

The following are key findings from the focus groups and tabling events, combined with transportation infrastructure findings from previous engagement projects. Findings are loosely ordered on how frequently they were discussed. Additional details on underrepresented groups are included when relevant.

- Transportation facilities that are separated by travel mode make people feel safer. During the table activity and focus groups, participants emphasized their preference for transportation facilities that separate travel modes (e.g., separated bicycle lanes, sidewalks, etc.) as well as crossings that are safe and accessible.
- Transit stops (bus or transit stations) are uncomfortable, inaccessible, and unsafe. Participants were particularly concerned about unsheltered, poorly lit stops that were too close to high-speed roadways.
- Improved lighting is important for making people feel safer in areas where they walk. Participants pushed for improved lighting near crosswalks or bus stops to improve visibility and improve perceptions of personal safety.
- Greener and cleaner spaces are appreciated. Among participants, there was a widespread desire to improve perceptions of unclean and unsafe spaces for walking. Participants suggested more shade, tree coverage, clean and functioning trash cans, and more public gathering spaces to decrease loitering at bus stops.
- Interconnected walking and biking systems are essential for safer travel. Participants noted a lack of connection in biking and walking facilities, which functions as a deterrent to walking or biking. This was especially true for people who walk or bike in suburban or rural areas, as well as young participants and people living with disabilities.
- Pedestrians and bicyclists need safe and accessible crossings. Several focus groups discussed the need for safer crossings, particularly on fast-moving roads in urban and suburban areas. Traffic control devices were discussed at length, as well as insufficient curb ramps for walkers with mobility impairments or for people who are rolling to cross the street.
- Clear signage is necessary for safe travel. Participants repeated their appreciation for clear signage. Non-driving participants connected clear signage to a feeling of safety as a pedestrian or bicyclist.
- Slower streets are preferred in residential areas and in areas with community destinations. Speeding was emphasized as a problem throughout the region and many participants were concerned about their personal safety and that of children in their community. Participants expressed support for speed bumps and flashing pedestrian signals at crossings.
- Poor pavement conditions, including potholes, are a traffic safety concern and create dangerous conditions for people living with disabilities and older adults.
- Roundabouts slow drivers down but are difficult for pedestrians to navigate. Participants – particularly those with mobility impairments – noted that drivers slow down but do not yield or look for people who are waiting to cross.
- Addressing driver behavior is a high priority for residents, including speeding, reckless driving, failing to yield, and drivers running red lights and stop signs, driving under the influence, and distracted driving.

- Improved bicycle infrastructure, such as more bike lanes and protected bike lanes, better maintenance of existing bike infrastructure, and improved crossings at roads are needed especially for vulnerable people biking.

See *Appendix A* for detailed findings.

2.2 Best practices

Based on the state of the practice review, the planning team identified the following best practices:

- Identifying characteristic crash profiles that contribute to the region's High Injury Streets or other areas with high concentrations of crashes, especially severe injuries, and fatal crashes.
- Prioritizing locations for investments that improve safety for vulnerable road users to guide future funding.
- Implementing strategies to improve safety and addressing crashes on high-speed corridors, including developing traffic operations recommendations, establishing local street design guidelines, collaborating with law enforcement and stakeholders, and policy review and recommendations.
- Aligning with the USDOT National Roadway Safety Strategy and other Vision Zero and Safe Systems Approach initiatives.
- Conducting engagement with stakeholders and community members to inform safety strategies and prioritization of projects.

See *Appendix B* for detailed findings.

2.3 Crash data analysis

Crash data for the Metropolitan Council region, obtained from MnDOT for the years 2018-2022, was analyzed to identify patterns associated with three road user groups: drivers, motorcyclists, and bicyclists. Pedestrian crashes were not investigated further since the analysis was recently completed as a part of the Regional Pedestrian Safety Action Plan. The analysis includes an examination of the crashes by mode by basic crash report variables, roadway characteristics, and demographic and economic factors. These correlations identified in the crash trend summary may be used by communities within the Metropolitan Council boundary to help prioritize roadway safety investments in the future. Key findings of the crash data analysis include:

- The counties that experienced the highest number of fatal and serious injury crashes were Hennepin, Anoka, and Ramsey. The counties with the highest fatal and serious injury rates (per 100,000 residents) were Scott, Carver, and Anoka.
- Speeding was a contributing factor in three of four (74%) crashes.
- More than half of all crashes (58%) occurred at an intersection.
- Of all road user groups, motorcyclists were the most likely to be killed or seriously injured in crashes (26% of all crashes) followed by bicyclists (11% of all crashes).

Data on helmet use by motorcyclists was available for less than a quarter of the motorcyclist-involved crashes. A comparison of motorcyclist-involved fatality and lower severity crashes on a subset of crash data where helmet use was available shows that two out of three motorcyclists involved in fatality crashes were not wearing a helmet. On the other hand, half of motorcyclists involved in lower severity crashes were not wearing a helmet. This points to helmet use as a way for motorcyclists to reduce the severity of potential injuries.

Between 2018 and 2022, the nine-county Metropolitan Council region recorded over 4,094 total crashes resulting in fatal or serious injuries. According to the Minnesota Department of Transportation's Metropolitan Council Focus Area Summary Sheet (2023), the region experienced an increase of +8.6 percent fatal crashes per year (fatalities increased +8.3% per year), while serious injury crashes increased +5.7 percent per year (serious injuries increased +4.9% per year). The top five crashes involving an interaction with the Strategic Highway Safety Plan's defined focus areas within the region include intersections, impaired users, speed, unlicensed driver, and single vehicle run-off-road as shown in Table 1.

Table 1. Fatal and Serious Crashes within the Metropolitan Council Region by Strategic Highway Safety Plan Focus Areas

Focus Area	All Severe Crashes	Percentage of Severe Crashes (%)
Intersection	2,387	58.3
Impaired User	1,037	25.3
Speed	943	23.0
Unlicensed Driver	930	22.7
Single Vehicle Run-off-road	925	22.6

Over 190,000 crashes involving a motor vehicle, bicycle, or motorcycle within the Metropolitan Council region were recorded over the five-year period. Table 2 indicates that bicycle and motorcycle related crashes are at a higher risk of resulting in a life altering crash compared to those involving motor vehicles only. That said, crashes resulting in cyclist and pedestrian injuries remain underreported. Therefore, all the risks of the most vulnerable roadway users remain unknown. Table 2 discusses the crash severity by mode observed in the region. More information can be found in *Appendix E.*

Table 2. Crash Severity by Mode

Mode	Percentage of Severe Crashes to Total Crashes by Mode (%)	Fatal	Serious Injury	Minor Injury	Possible Injury	Property Damage Only	Total
Motor Vehicle	1.2	383	1,951	14,369	28,641	146,421	**191,765**
Bicycle	11.6	21	172	798	545	133	**1,669**
Motorcycle	26.1	134	515	1,023	499	319	**2,490**

See *Appendix C* for detailed findings.

2.4 High Injury Streets

High Injury Streets were identified throughout the region in a manner that included local context. The Technical Advisory Group identified several thresholds to identify and categorize these streets. The thresholds are summarized in Table 3. **The High Injury Streets shows that 30.8% of fatal or serious injury crashes happen on just 1.8% of the regional network.**

The maximum associated long window score was used for the threshold selection on each of the mode specific High Injury Streets models. Two approaches were examined, selecting a threshold using geographic stratification or a threshold for the entire region. Table 3 summarizes the recommended thresholds for each mode and illustrates (for each mode and geography) the a) threshold value

selected, b) miles of network covered by High Injury Streets, c) number of severe crashes in the High Injury Streets, and d) severe crash density (severe crashes per mile).

Table 3. Summary of threshold value, miles of network and severe crashes for each High Injury Streets model (by mode and geography)

Mode	Geography	Threshold	Miles	Severe Crashes	Severe Crash Density per Mile
Pedestrians	Urban Center	12	77.3 (2.8%)	185 (50.1%)	2.39
Pedestrians	Rest of Region	7	52.0 (0.3%)	51 (21.9%)	.98
Pedestrians	*Entire Region Subtotal*		*129.3 (0.7%)*	*236 (39.2%)*	*1.82*
Bicyclists	Entire Region	5	163.7 (0.8%)	104 (44.3%)	.64
Motorcyclists	Entire Region	9	35.8% (0.2%)	70 (12.1%)	1.96
Motorists	Entire Region	12	129.6 (0.6%)	301 (17.4%)	2.32
Composite/All Modes	Entire Region		370.7 (1.8%)	968 (30.8%)	2.61

Figure 7 illustrates the regional High Injury Streets combining all modes. See *Appendix D* for individual maps of the High Injury Streets by mode.

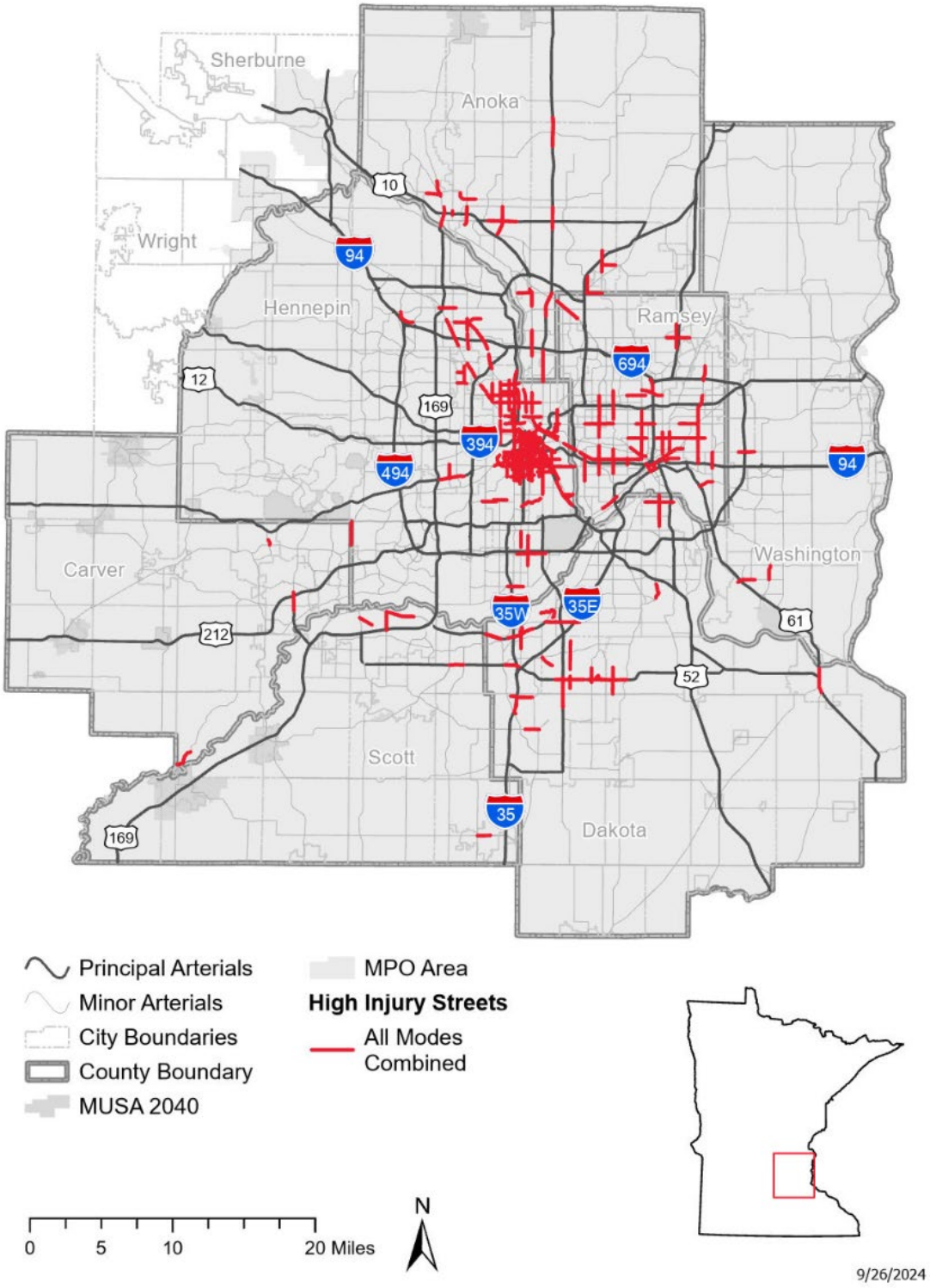

Figure 7. Regional High Injury Streets (All Modes) Map

2.5 Crash risk systemic analysis

A systemic safety analysis, consistent with the Safe System Approach endorsed by FHWA, was performed to identify high-risk streets in the Met Council region by understanding the risk factors leading to high rates of fatal and serious crashes. Historical crashes were examined to understand which road types and built environment characteristics may lead to higher risk of injury or death. Since a pedestrian safety analysis had already been conducted as part of the 2022 Metropolitan Council Regional Pedestrian Safety Action Plan, this analysis focused only on bicyclists and motor vehicles using the same approach as the Pedestrian Action Plan, which involved the following steps:

1. **Adding context to crashes.** Road characteristics and land use information, within 200 ft of road centerline, were linked to crashes to understand which road types and built environment characteristics lead to higher crash risks.
2. **Compare crash contexts.** Crashes were examined across different road types, built environment characteristics, and other factors such as overall crash severity, traffic control devices, and number of lanes.
3. **Calculate severe crash risk.** Roadways with the highest crash risks were identified by creating a Crash Risk Index. This index evaluated select roadway characteristics and built environment factors (number of lanes, posted speed limit, and AADT) associated with each roadway segment and intersection. Crash severity was also weighted (4 points for fatal and serious injury crashes and one point for B injury crashes) to emphasize roadways carrying a high risk of fatalities and serious injuries.

The crash risk indices were used to create an interactive ArcGIS Online map[11] to visualize high risk roadway segments and intersections across the region. The map allows for the exploration of various datasets as layers and the a) Crash Risk Index scores for each mode (visible when clicking each segment), b) location of fatal and serious injury crashes, and c) top 1% of Crash Risk Index scores (separate for bicycles and motor vehicles and separate for midblock and intersection locations). Figures 8 and 9 illustrate the regional Crash Risk Index maps by motor vehicle and bicycle.

The results of Crash Risk Index for bicycles, as illustrated in Figure 9, show the highest risks tend to appear on large arterial and collector roads with posted speeds over 30mph, Average Annual Daily Traffic (AADT) over 9,000, and 3 or more vehicle lanes. Figure 9 also shows pockets of high risk in downtown Minneapolis and on smaller urban roads.

A lower number of these large roads throughout the region results in high Crash Risk Index scores for motor vehicles (as compared to bicycles). Lower density population areas show lower risk for bicyclists, and even lower risks for motor vehicles, even in rural and suburban downtown areas.

[11] See Website for the ArcGIS Online Map - https://metrocouncil.org/Transportation/Goals/Safety-and-Security/Regional-Safety-Action-Plan.aspx

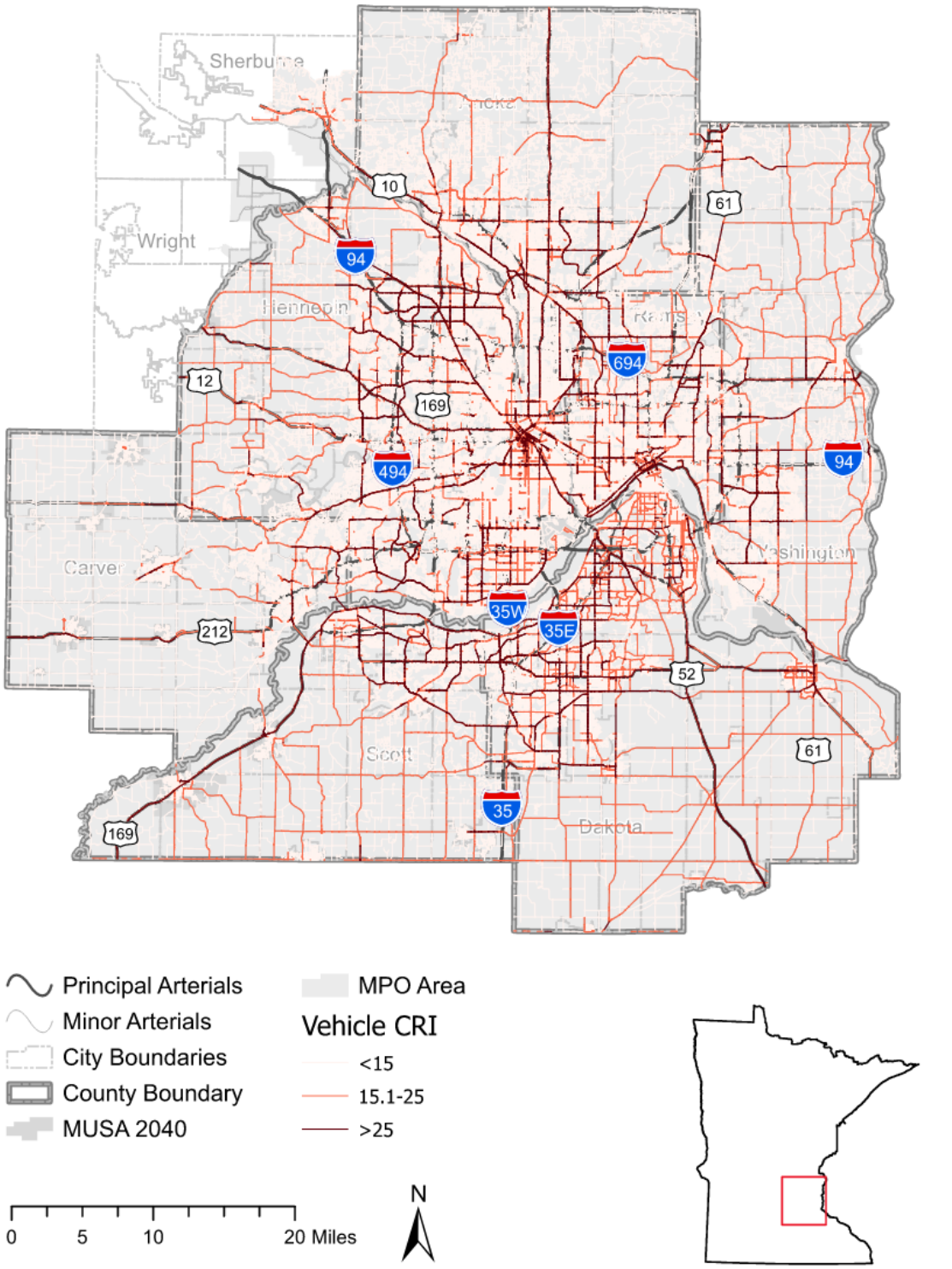

Figure 8. Regional Crash Risk Index (Motor Vehicle) Map

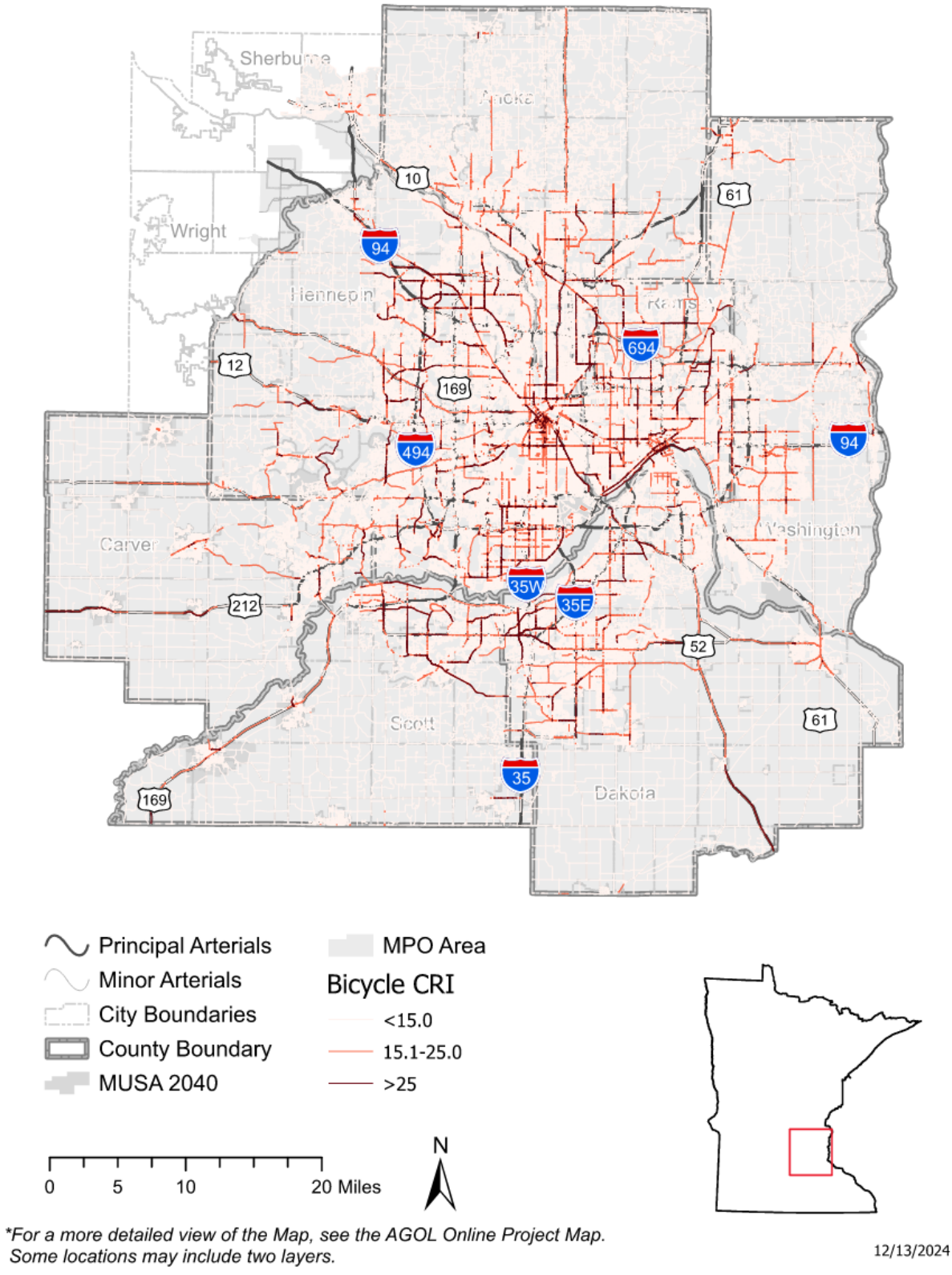

Figure 9. Regional Crash Risk Index (Bicycle) Map

In addition to the Crash Risk Index, crash rates were calculated for intersections and segments using a standard methodology from the Highway Safety Manual. Crash rates were calculated using regional Annual Average Daily Traffic data for motorist-only crashes and bicyclist volume estimates from a data vendor (Replica) for bicyclist crashes. Figures 10 and 11 illustrate the regional Crash Rate maps by motor vehicle and bicycle.

See *Appendix E* for detailed findings.

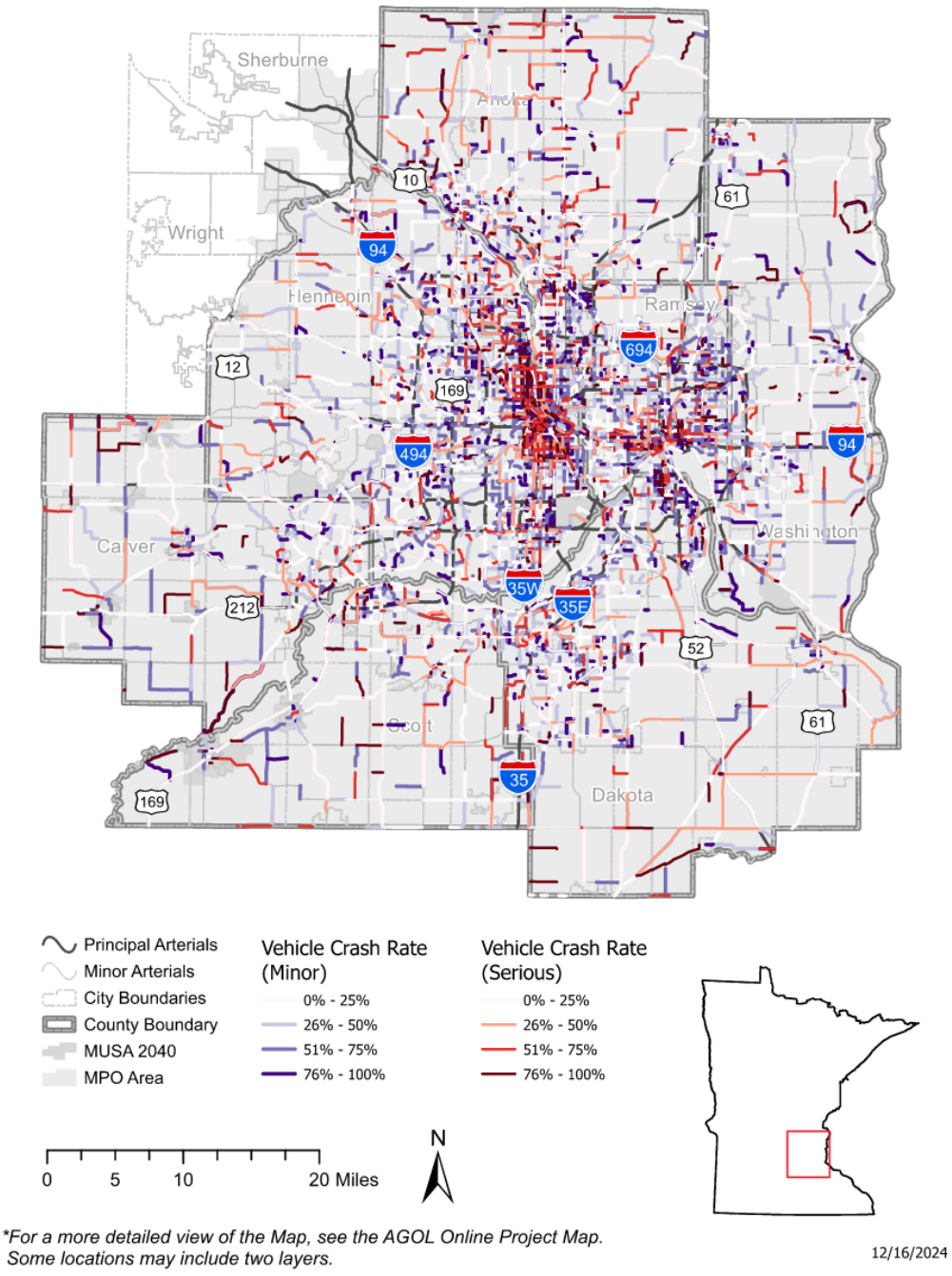

Figure 10. Regional Crash Rate (Motor Vehicle) Map

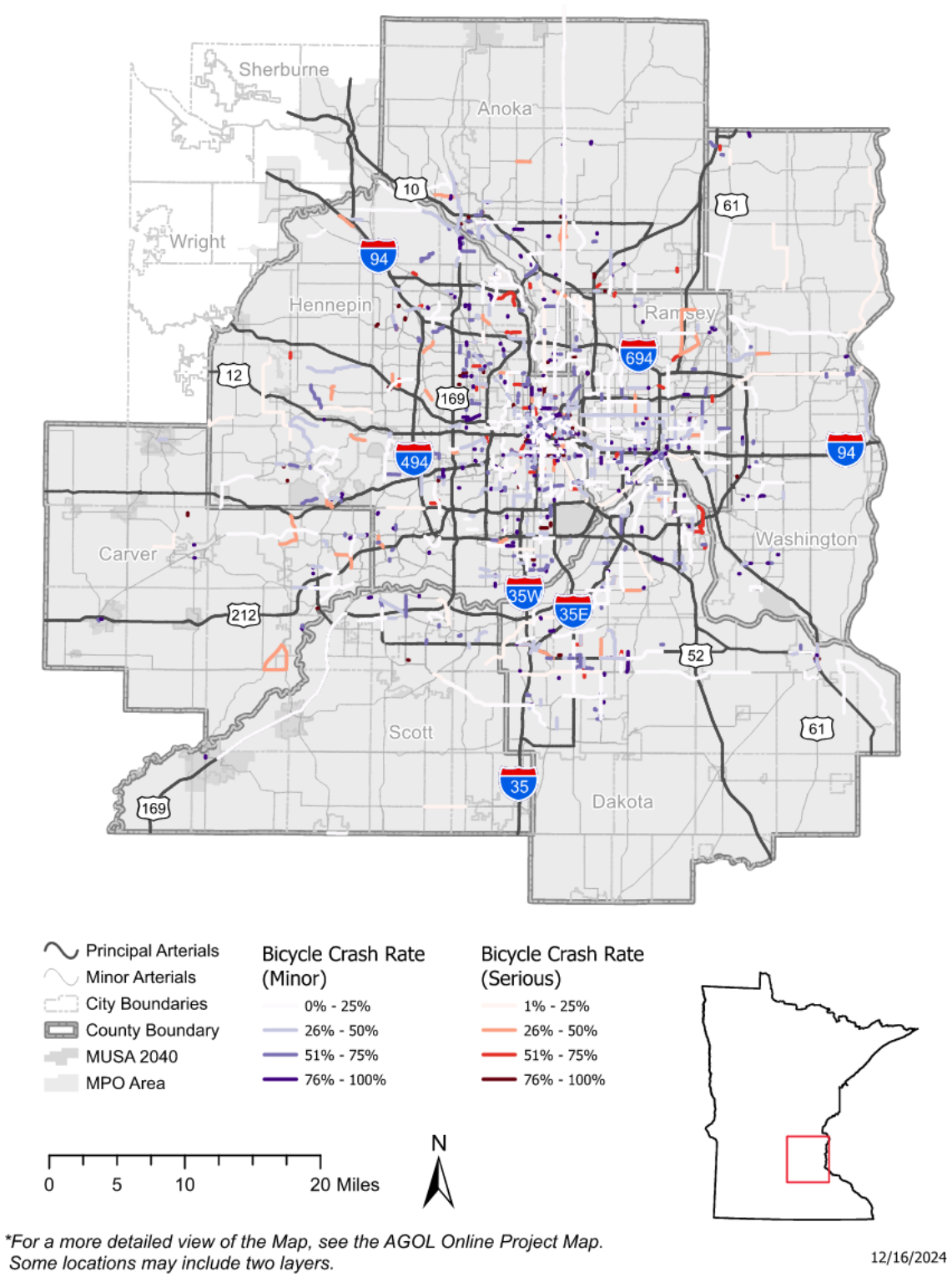

Figure 11. Regional Crash Rate (Bicycle) Map

Section 3. Recommendations

Policy, program, and project recommendations were developed based on the results of the engagement and analysis presented in this report. These recommendations satisfy the Safe Streets and Roads for All requirements, having been developed based on a robust safety analysis and public engagement process for the region and relying on the best available evidence and noteworthy practices for safety planning and implementation.

3.1 Revisions to 2050 Transportation Policy Plan

The region's Transportation Policy Plan was also being updated for 2050 concurrently with the development of this action plan. As part of the 2050 Transportation Policy Plan update, existing policies were reviewed for needed updates. Feedback from this action plan policy review process was woven into the overall Transportation Policy Plan update.

The 2050 Transportation Policy Plan was developed with the experience and perspective of implementing partners, including a plan Technical Working Group representing partners at the federal, state, county, and city levels of government and non-profit and academic stakeholders. More detail about the engagement for the Transportation Policy Plan is included in the plan's Overview chapter.

The 2050 Transportation Policy Plan includes the goal that our communities are healthy and safe with two safety-focused objectives:

- People do not die or face life-changing injuries when using any form of transportation.
- People feel safer, more comfortable, and more welcome when using any form of transportation.

Supportive safety-focused policies for these plan objectives include emphasizing and prioritizing the safety of people outside of vehicles and working to eliminate fatalities and serious injuries from traffic crashes by 2050 through implementation of the Safe System Approach.

Supportive actions for these policies focus on investment priorities, local planning, technical capacity building, guidance for partners, and work program activities. The Policies and Actions chapter of the 2050 Transportation Policy Plan details the actions for each policy for the safety goal and objectives. Investment priorities focus on reducing deaths and serious injuries from crashes and include direction to consider regional and local safety action plans, High Injury Streets, and systemic risk factors.

3.2 Programmatic recommendations

To aid the Metropolitan Council in eliminating roadway fatalities and serious injuries in the region, a program of five main strategies was developed. Each strategy includes several action items, and their timelines set based on their priority and time horizon as a) ongoing, b) short-term (0-2 years), medium-term (3-5 years), and d) long-term (6-10 years). Table 4 summarizes the five strategies developed and the action items for each of them.

Table 4. Summary of Program Strategies and Action Items

Strategy (Action)	Description
Strategy 1	Produce a new or updated Regional Safety Action Plan regularly, including underlying comprehensive crash analysis and reactive and proactive screenings for all modes.
1.1	Combine future Regional Safety Action Plans and updates to focus on safety for all road users.
1.2	Update Regional Safety Action Plan and supporting analyses on a recurring, data-driven schedule.
1.3	Investigate opportunities to strengthen regional safety-related data.
1.4	Develop and implement more nuanced pedestrian and bicyclist screening methods that account for countermeasures/mitigation.
Strategy 2	Implement a Safety in All Policies philosophy throughout the Council's planning efforts and activities.
2.1	Review all future TPP policies and actions, even those not explicitly related to safety, through the lens of a Safe System Approach.
2.2	Evaluate the potential to incorporate safety into comprehensive planning activities.
2.3	Conduct a study to evaluate the minor arterial system through a safety lens and recommend design guidance or minimum safety standards for these facilities.
2.4	Review and update traffic safety metrics that are monitored regularly by the Council.
Strategy 3	Assess and evaluate how the Council allocates resources to ensure that investments improve safety conditions for all road users and do not sacrifice safety or comfort in the name of convenience, throughput, or delay.
3.1	Develop region-specific guidance about implementing the Safe System Road Design Hierarchy to address safety for all road users.
3.2	Conduct a study to apply the Safe System Policy-based Alignment Framework to the Regional Solicitation, HSIP, and other funding programs to assess their potential impacts on safety and recommend revisions that may increase safety benefits.
3.3	Critically assess non-safety elements of the Regional Solicitation and other funding programs for their indirect or unintended impacts on safety through a Safety in All Policies lens.
3.4	Monitor and evaluate safety-related performance measures of the projects that receive funding using short-term and long-term measures.
3.5	Assess safety-related scoring criteria for opportunities to shift toward more systemic project effectiveness metrics than the existing benefit-cost ratio.
3.6	Explore opportunities for the Council to offer funding for local safety planning efforts.
Strategy 4	Use the results from the network screening analyses in the Regional Safety Action Plan and Pedestrian Safety Action Plan to inform Council decision-making, investments, policies, and other activities.

Strategy (Action)	Description
4.1	When the Council aims to prioritize safety investments that specifically focus on existing safety concerns, focus first on reactive analyses.
4.2	Cross-reference non-safety projects and investments with these results to identify safety-related needs.
4.3	Incorporate analysis results into Council geospatial analyses.
Strategy 5	Encourage and support local agencies in using the results from the network screening analyses in the Regional Safety Action Plan and Pedestrian Safety Action Plan to inform each agency's decision-making, investments, policies, and other activities.
5.1	Continue to maintain an online mapping application containing the results of the High Injury Streets, Crash Risk Index, and Crash Rate analysis for local and partner agency use.
5.2	Publish (or make available upon request) GIS layers plus accompanying methodologies containing results from the safety screening analyses from the Regional Safety Action Plan.

See *Appendix F* for detailed findings.

3.3 Recommended corridors for further work

Priority lists were generated from the reactive (High Injury Streets) and proactive (Crash Risk Index and Crash Rate) analyses described in Sections 2.5 and 2.6. The locations identified as a part of these analyses were prioritized to support local agencies identify a set of opportunities to address safety concerns within their jurisdiction and allocate future funds. The recommendations are prioritized accordingly as shown in Figure 12.

Figure 12. Location Prioritization

Reactive lists: The High Injury Streets were sorted by mode based on the underlying sliding windows crash density scores that were generated as part of the analysis. Then the top twenty-five corridors for the region by mode and top ten locations by county for all mode were selected for inclusion in the list. In some cases, manual adjustments to the start and endpoints of the corridors were necessary due to small gaps. These locations were made into larger contiguous corridors. The Regional Top 25 Reactive Lists by Mode can be found in Tables 5-8.

Table 5. Top 25 Motor Vehicle Reactive Corridors in the Metropolitan Council Region

N°	Corridor	Start	End	County	City	Length (mi)
1	26th St E	Columbus Ave	34th Ave S	Hennepin	Minneapolis	2
2	3rd Ave S	E 22nd St	1st St S	Hennepin	Minneapolis	1.7
3	7th St E	Mounds Blvd	Ocean St	Ramsey	Saint Paul	1.7
4	Bottineau Blvd	63rd Ave N	79th Ave N	Hennepin	Brooklyn Park	2
5	Broadway Ave W/Broadway St NE	Bryant Ave N	Central Ave NE	Hennepin	Minneapolis	2.1
6	Brooklyn Blvd	51st Ave N	70th Ave N	Hennepin	Brooklyn Center	2.5
7	Butler Ave W	Mahnomen Ave	20th Ave N	Dakota	West Saint Paul, South Saint Paul	2
8	Cedar Ave S	E 46th St	24th St SE	Hennepin	Minneapolis	2.7
9	Dowling Ave N	Newton Ave N	Washington Ave N	Hennepin	Minneapolis	1.1
10	Franklin Ave W	Emerson Ave S	14th Ave S	Hennepin	Minneapolis	1.9
11	Hanson Blvd NW	Gateway Dr	133rd Ave NW	Anoka	Coon Rapids	2
12	Hiawatha Ave	E 33rd St	13th Ave S	Hennepin	Minneapolis	2
13	Highway 65 NE	73rd Ave NE	85th Ave NE	Anoka	Fridley, Spring Lake Park	1.7
14	Highway 7	Highway 169	Wooddale Ave S	Hennepin	Hopkins, Saint Louis Park	2
15	Lowry Ave N	Aldrich Ave N	Quincy St NE	Hennepin	Minneapolis	1.9
16	Lyndale Ave N	35th Ave N	51st Ave N	Hennepin	Minneapolis	1.9
17	Lyndale Ave N	Glenwood Ave	Plymouth Ave N	Hennepin	Minneapolis	0.9
18	Lyndale Ave S	Vineland Pl	31st Ave N	Hennepin	Minneapolis	2.9
19	Lyndale Ave S	W 31st St	Ridgewood Ave	Hennepin	Minneapolis	1.1

N°	Corridor	Start	End	County	City	Length (mi)
20	Main St SW	Coon Creek Blvd	Olive St NW	Anoka	Coon Rapids	2
21	Minnehaha Ave E	Hazelwood St	Ruth St N	Ramsey	Saint Paul	1
22	Olson Mem Hwy	Thomas Ave N	7th St N	Hennepin	Minneapolis	1.3
23	Rice St	University Ave W	Jessamine Ave N	Ramsey	Saint Paul	1.3
24	Robert St S	Carol Ln	Annapolis St E	Dakota	West Saint Paul	2.2
25	University Ave NE	15th Ave NE	32nd Ave NE	Hennepin	Minneapolis	1.4

Table 6. Top 25 Pedestrian Reactive Corridors in the Metropolitan Council Region by Mode

N°	Corridor	Start	End	County	City	Length (mi)
1	31st St	Bryant Ave S	Chicago Ave S	Hennepin	Minneapolis	1.4
2	4th St SE	Central Ave SE	17th Ave SE	Hennepin	Minneapolis	1.3
3	7th St N	Oak Lake Ave N	13th Ave S	Hennepin	Minneapolis	2
4	Bloomington Ave	32nd St E	24th St E	Hennepin	Minneapolis	1
5	Broadway Ave	Ilion Ave N	West River Rd N	Hennepin	Minneapolis	1.3
6	Brooklyn Blvd	Zane Ave N	69th Ave N	Hennepin	Brooklyn Center, Brooklyn Park	1.4
7	Cedar Ave S	38th St E	24th St E	Hennepin	Minneapolis	1.7
8	Cedar Ave S	7th St S	Washington Ave S	Hennepin	Minneapolis	0.4
9	Central Ave NE	37th Ave NE	53rd Ave NE	Anoka	Columbia Heights	2.1
10	Dale St N	Caroll Ave	Sherburne Ave	Ramsey	Saint Paul	0.6
11	Franklin Ave	Emerson Ave S	22nd Ave S	Hennepin	Minneapolis	2.6
12	Hennepin Ave	16th St N	1st St N	Hennepin	Minneapolis	1.2

N°	Corridor	Start	End	County	City	Length (mi)
13	Hennepin Ave	32nd St W	Franklin Ave W	Hennepin	Minneapolis	1.3
14	Lake St E/W	Bde Maka Ska Dr	22nd Ave S	Hennepin	Minneapolis	5.4
15	Lexington Pkwy N	Summit Ave	Sherburne Ave	Ramsey	Saint Paul	1
16	Lowry Ave N	Upton Ave N	Marshall St NE	Hennepin	Minneapolis	2
17	Lyndale Ave S	W 31st St	Ridgewood Ave	Hennepin	Minneapolis	1.1
18	Maryland Ave E	Westminster St	Van Dyke St	Ramsey	Saint Paul	3.1
19	Olson Memorial Hwy	Penn Ave N	5th St N	Hennepin	Minneapolis	1.4
20	Penn Ave N	Golden Valley Rn	43rd Ave N	Hennepin	Minneapolis	2.4
21	Rice St	University Ave W	Minnesota Ave W	Ramsey	Saint Paul, Roseville, Little Canada	3.7
22	Robert St S	Marie Ave	Bernard St E	Dakota	West Saint Paul	1.7
23	Snelling Ave N	Summit Ave	Thomas Ave	Ramsey	Saint Paul	1.2
24	University Ave SE	5th Ave SE	17th Ave SE	Hennepin	Minneapolis	1
25	University Ave W	Cleveland Ave N	Rice St	Ramsey	Saint Paul	4

Table 7. Top 25 Bicycle Reactive Corridors in the Metropolitan Council Region

N°	Corridor	Start	End	County	City	Length (mi)
1	11th Ave S	24th St E	W River Pkwy	Hennepin	Minneapolis	1.4
2	150th St W	Pilot Knob Rd	Chippendale Ave	Dakota	Apple Valley, Rosemount	1.9
3	15th Ave SE	University Ave SE	Como Ave SE	Hennepin	Minneapolis	0.7
4	28th St W	Harriet Ave	16 Ave S	Hennepin	Minneapolis	1.7
5	3rd Ave S	24th St W	8th St SE	Hennepin	Minneapolis	2.6

N°	Corridor	Start	End	County	City	Length (mi)
6	5th St SE	10th Ave SE	Oak St SE	Hennepin	Minneapolis	0.8
7	Broadway Ave W/Broadway St NE	Bryant St	Jackson St NE	Hennepin	Minneapolis	1.2
8	Chicago Ave S	36th St E	3rd St S	Hennepin	Minneapolis	3
9	Franklin Ave W	Humbolt Ave S	Minnehaha Ave	Hennepin	Minneapolis	2.7
10	Galaxie Ave	Flagstone Trl	130th St W	Dakota	Apple Valley	1.3
11	Godfrey Pkwy	Minnehaha Ave	Ford Pkwy	Hennepin	Minneapolis	0.5
12	Hawthorne Ave	N 12th St	8th St N	Hennepin	Minneapolis	0.3
13	Hennepin Ave	Franklin Ave W	Vineland Pl	Hennepin	Minneapolis	0.5
14	Hennepin Ave E	5th Ave Se	18th Ave SE/Stinson Blvd NE	Hennepin	Minneapolis	0.3
15	Lake of the Isles Pkwy	W Lake St	E Lake of the Isles Pkwy	Hennepin	Minneapolis	0.2
16	Lake St/Marshall Ave	James Ave S	Prior Ave	Hennepin	Minneapolis	3
17	Lexington Ave N	County Rd B	Oakcrest Ave	Ramsey	Roseville	1.6
18	Lowry Ave N	Knox Ave N	4th St NE	Hennepin	Minneapolis	2
19	Park Ave	E 33rd St	E 14th St	Hennepin	Minneapolis	1.8
20	Portland Ave	26th St E	W River Pkwy	Hennepin	Minneapolis	1.9
21	Portland Ave S	E 81st St	E 70th St	Hennepin	Bloomington, Richfield	1.4
22	Stinson Blvd NE	E Hennepin Ave	18th Ave NE	Hennepin	Minneapolis	1.1
23	University Ave NE	4th Ave NE	16th Ave SE	Hennepin	Minneapolis	1.6
24	Vermillion St	18th St W	3rd St W	Dakota	Hastings	1.1
25	Washington Ave S	Hennepin Ave	12 Ave S	Hennepin	Minneapolis	1.1

Table 8. Top 25 Motorcycle Reactive Corridors in the Metropolitan Council Region

N°	Corridor	Start	End	County	City	Length (mi)
1	260th St E	Natchez Ave	Xerxes Ave	Scott	Elko New Market	0.9
2	28th St W	Emerson Ave S	Portland Ave	Hennepin	Minneapolis	1.3
3	Broadway Ave W	Knox Ave N	N 4th St	Hennepin	Minneapolis	0.8
4	Canterbury Rd S	Shakopee Byp S	CR 101 E	Scott	Shakopee	1.3
5	Centerville Rd	Greenhaven Dr	Deer Hills Dr	Ramsey	Vadnais Heights, White Bear Lake	1.5
6	Central Ave NE	121st Ave NE	133rd Ave NE	Anoka	Blaine	1.5
7	Chicago Ave S	Lake St E	Franklin Ave E	Hennepin	Minneapolis	1
8	Cliff Rd E	Hwy 13 E	Lenore Ln	Dakota	Burnsville, Eagan	2.4
9	Edgerton St N	Payne Ave	Sherwood Ave	Ramsey	Saint Paul	1.5
10	Franklin Ave W	Emerson Ave S	11th Ave S	Hennepin	Minneapolis	1.8
11	Hennepin Ave	W 32nd St	Franklin Ave W	Hennepin	Minneapolis	1.3
12	Kenrick Ave	173rd St W	165th St W	Dakota	Lakeville	1.1
13	Lake St W	Bde Maka Ska Pkwy	Clinton Ave	Hennepin	Minneapolis	2.3
14	Lyndale Ave N	Plymouth Ave N	39th Ave N	Hennepin	Minneapolis	2.3
15	Lyndale Ave S	W 31st St	Ridgewood Ave	Hennepin	Minneapolis	1.1
16	Maryland Ave E	Clarance St	Ruth St N	Ramsey	Saint Paul	1.5
17	Maryland Ave W	Mackubin St	Abell St	Ramsey	Saint Paul	1.1
18	Robert Trl S	93rd St E	82nd St E	Dakota	Inner Grove Heights	1.1
19	Scenic Byway Rd	Hwy 25	188th St	Carver	Belle Plaine	1.5
20	University Ave NE	15th Ave NE	32nd Ave NE	Hennepin	Minneapolis	1.4

N°	Corridor	Start	End	County	City	Length (mi)
21	University Ave SE	3rd Ave SE	Saint Marys Ave SE	Hennepin	Minneapolis	1.9
22	White Bear Ave N	CR B E	Gervais Ave	Ramsey	Maplewood	0.5
23	White Bear Ave N	Lacrosse Ave	Idaho Ave E	Ramsey	Saint Paul	1.3

Proactive lists: Based on 400,000 Crash Risk Index scored segments that were reviewed, lists of the top twenty-five crash risk corridors and top twenty-five crash risk intersections in the Metropolitan Council region were developed. The list contained corridors that had high Crash Risk Index scores AND which improvements could benefit both cyclists and motor vehicles and provide a reasonable geographic spread. The results showed that the riskiest intersections and corridors were located within Hennepin County; however, a list of the top ten corridors and intersections was developed for each county, based on county Crash Risk Index scores, to allow the Metropolitan Council to better understand crash risks within each of those jurisdictions. These resulting lists of corridors and intersections should be referenced alongside the corridors identified in the High Injury Streets analysis, which identifies roads with high concentrations of existing crashes. The Regional Top 25 Proactive Lists by Corridor and Intersection can be found in Tables 9 and 10.

Table 9. Top 25 Proactive Corridors in the Metropolitan Council Region

N°	Corridor	Start	End	County	Municipality	Mode	Length (mi)
1	24th Ave S	S Killebrew Dr	American Blvd E	Hennepin	Bloomington	Both	0.5
2	Lakeland Avenue	N 47th Ave	N Corvalis Ave	Hennepin	Crystal	Motor Vehicle	0.4
3	Olson Memorial Highway	N Thomas Ave	N 7th St	Hennepin	Minneapolis	Motor Vehicle	1.2
4	France Ave S	W American Blvd	W 66th St	Hennepin	Bloomington, Edina	Both	2
5	Hiawatha Ave	E Franklin Ave	Veteran Affairs Medical Center	Hennepin	Fort Snelling, Minneapolis	Bike	5.1
6	Cedar Ave	W 138th St	W 160th St	Dakota	Apple Valley, Lakeville	Motor Vehicle	2.3
7	County Road 5	W 150th St	W County Road 42	Dakota	Burnsville	Bike	1
8	County Road 42	Dakota/Scott County line	I-35W & Brick Hill Rd	Dakota	Burnsville	Both	2.2
9	Riverside Ave	S 19th Ave	Butler Pl	Hennepin	Minneapolis	Motor Vehicle	0.7
10	Washington Ave S	I-35 W	Portland Ave	Hennepin	Minneapolis	Motor Vehicle	0.5
11	7th St N	N Oak Lane Ave	N 10th St	Hennepin	Minneapolis	Both	0.4
12	Shepard Rd	Randolph Ave	N Wabasha St	Ramsey	Saint Paul	Both	1.8
13	US Route 52	Cannon River/ Dakota County southern boundary	E 240th St	Dakota	Hampton, Randolph	Both	6.8
14	US Route 61	MN State Highway 36	Nevada Ave E	Ramsey	Saint Paul, Maplewood	Both	1.7
15	Eden Prairie Rd	Pioneer Trail	Valley View Rd	Hennepin	Eden Prairie	Both	2.2
16	McAndrews Rd E	Burnhaven Dr	W 140th St	Dakota	Apple Valley, Burnsville	Both	2.3

N°	Corridor	Start	End	County	Municipality	Mode	Length (mi)
17	Weaver Lake Rd	N Elm Creek Blvd	County Road 81	Hennepin	Brooklyn Park, Maple Grove	Both	2.9
18	Elm Creek Blvd N	N 93rd Ave	Weaver Lake Rd	Hennepin	Maple Grove	Both	1.4
19	93rd Ave N	Upland Ln	N Elm Creek Blvd	Hennepin	Maple Grove	Both	1.7
20	MN State Highway 96 W	Before road splits at McMenemy St	Otter Lake Rd	Ramsey	Vadnais Heights, White Bear Lake	Both	2.7
21	France Ave S	W 90th St	W 102nd St	Hennepin	Bloomington	Motor Vehicle	1.5
22	Lexington Ave S	Golfview Dr	Diffley Rd	Dakota	Eagan	Both	1.9
23	Diffley Rd	Rahn Rd	Lexington Ave S	Dakota	Eagan	Both	3.2
24	1st Ave E	Before road splits at Veteran’s Memorial Park	Valley Park Dr	Scott	Shakopee	Both	2.7
25	Mystic Lake Dr NW	Eagle Creek Blvd	Flandreau Trl NW	Scott	Prior Lake, Shakopee	Both	3.1

Table 10. Top 25 Proactive Corridors in the Metropolitan Council Region

N°	Corridor	Crossing Road	County	Municipality	Mode
1	Normandale Highlands Dr	Normandale Blvd	Hennepin	Bloomington	Both
2	W 84th St	Norman Center Dr	Hennepin	Bloomington	Both
3	Penn Ave S	W 82nd St	Hennepin	Bloomington	Both
4	Penn Ave S	W 81st St	Hennepin	Bloomington	Both
5	Cedar Ave	W 153rd St	Dakota	Apple Valley	Both
6	24th Ave S	Lindau Ln	Hennepin	Bloomington	Both
7	Hiawatha Ave/State Highway 55	Franklin Ave E	Hennepin	Minneapolis	Bike
8	Hiawatha Ave/State Highway 55	Cedar Ave S	Hennepin	Minneapolis	Bike
9	White Bear Ave N	Woodlynn Ave E	Ramsey	Maplewood	Both
10	White Bear Ave N	Lydia Ave E	Ramsey	Maplewood	Both
11	N 7th St	N 10th St	Hennepin	Minneapolis	Bike
12	N 7th St	N 5th Ave	Hennepin	Minneapolis	Bike
13	Round Lake Blvd NW	River Rapids Dr NW	Anoka	Coon Rapids	Both
14	Round Lake Blvd NW	Riverdale Blvd	Anoka	Coon Rapids	Both
15	Kellogg Blvd	Robert St N	Ramsey	Saint Paul	Both
16	Lexington Ave	Erskin St NE	Anoka	Blaine	Both
17	Olson Memorial Highway	Penn Ave N	Hennepin	Minneapolis	Both
18	Coon Rapids Blvd NW	Crooked Lake Blvd NW	Anoka	Coon Rapids	Bike
19	Riverside Ave	Butler Pl	Hennepin	Minneapolis	Bike
20	W 98th St	Old Shakopee Rd W	Hennepin	Bloomington	Bike
21	Coon Rapids Blvd NW	Coon Rapids Blvd Extension NW	Anoka	Coon Rapids	Both
22	France Ave S	W 76th St	Hennepin	Edina	Both
23	Excelsior Blvd	Quentin Ave S	Hennepin	Saint Louis Park	Both
24	Excelsior Blvd	Park Nicollet Blvd	Hennepin	Saint Louis Park	Both
25	S 4th St	Norm McGrew Pl	Hennepin	Minneapolis	Motor Vehicle

Some of the reactive and proactive priority corridors and intersections may have recent or upcoming projects on them. Locations with recent or upcoming projects have not been filtered out because they may be good candidates for further monitoring to see if projects successfully addressed the safety concerns raised by the High Injury Streets analysis or Crash Risk Index analysis. If a potential project's status on the reactive and/or proactive list is used to evaluate funding eligibility or competitiveness, the full context of recent or near-future projects should be considered.

This Safety Action Plan does not make specific project recommendations for corridors and intersections on these lists. The Metropolitan Council does not own or operate any roads. Instead, these lists can support local, county, or state agencies in identifying significant regional safety concerns and planning projects to address them. The Countermeasures Toolkit described in Section 3.4 offers further guidance.

See *Appendix G* for detailed findings and the County Prioritized Lists.

3.4 Potential countermeasures

A toolkit of potential countermeasures was developed to be used by the Metropolitan Council and local partners to address safety issues identified. The toolkit includes five countermeasure categories: speed management, pedestrian and bicyclists, roadway departure, intersections, and crosscutting. Since the Metropolitan Council does not own or operate any roads, specific countermeasures have not been prescribed for priority corridors or intersections from the regional priority lists described in 3.3 Recommended corridors for further work. Instead, this toolkit offers useful information for local, county, or state agencies attempting to address safety concerns on most facilities, including the locations identified in the regional priority lists.

The toolkit focuses primarily on infrastructure improvements. Complimentary strategies, campaigns, and multi-method initiatives should be considered when implementing traffic safety countermeasures to support a change to safety culture. Other information provided in the matrix included:

- Countermeasure ID
- Countermeasure name – as commonly known/cites in resources reviewed.
- Estimated implementation cost – based on information included in the resources reviewed; classified as "low," "moderate," or "high."
- Implementation effectiveness – based on the values of crash modification or crash reduction factors as cited in the resources reviewed; classified as "low," "moderate," or "high."
- Safe System Roadway Design Hierarchy Tiers – checkmark for whether the specific countermeasure falls under one of the four tiers of the SSRDH (i.e., remove severe conflicts, reduce vehicle speeds, manage conflicts in time, and increase attentiveness and awareness)
- Equity – checkmark for whether the countermeasure meets criteria for addressing risk factors in underserved communities (based on resources reviewed)
- Resources – if the specific countermeasure is found in one of the following resources reviewed, such as CMF Clearinghouse (with CMF ID), Federal resources (such as FHWA Proven Safety Countermeasure), Minnesota specific (such as Minnesota District Safety Plan Big Book of Ideas), and research reports (such as NCHRP 926).
- Relevance to key findings – marks if each countermeasure addresses a particular type of crash or risk factor identified through the analysis.

The list of the potential countermeasures, by category, includes the following shown in Table 11.

Table 11. Potential Countermeasures by Category (Speed Management, Pedestrians and Bicyclists, Roadway Departure, and Crosscutting)

	Speed Management
SM.1	Speed feedback signs
SM.2	Reduce speed limit to 5 mph below engineering recommendation
SM.3	Chicanes
SM.4	Corridor signal timing to reduce high-speed flow
SM.5	Speed safety cameras
SM.6	Appropriate speed limits for all users
SM.7	Traffic calming
SM.8	Lane narrowing
SM.9	Transverse rumble strips
	Pedestrians and Bicyclists
BP.1	Protected intersections
BP.2	Road diet
BP.3	Refuge island
BP.4	Parking restriction on crosswalk approach
BP.5	Add bike lanes
BP.6	Shared use path
BP.7	Improve bike lane protection
BP.8	Leading ped/bike interval
BP.9	High Visibility Crosswalk markings
	Roadway Departures
RD.1	Safety edge
RD.2	Wider shoulders
RD.3	Side slope enhancements
RD.4	Median
RD.5	Add chevron signs
RD.6	Wider edge lines
RD.7	Dynamic chevrons/curve signing
RD.8	Edgeline/shoulder rumble strips
RD.9	Centerline rumble strips
RD.10	Oversized signs (curve/advance intersection)
RD.11	High reflectivity signs (curve/advance intersection)
	Crosscutting
CR.1	High friction surface treatment (HFST)
CR.2	Lighting (segment)
CR.3	Lighting (intersection)

Table 11 (continued). Potential Countermeasures by Category (Intersections)

	Intersections
IN.1	Roundabouts
IN.2	Driveway improvement (access management)
IN.3	Alternative intersections - Unsignalized RCUT
IN.4	Alternative intersections - Continuous Green T
IN.5	Alternative intersections - Signalized RCUT
IN.6	Alternative intersections - MUT
IN.7	Introducing zero or positive offset left-turn lane on crossing roadway
IN.8	Improve the Angle of Channelized Right Turn Lane
IN.9	Change right-turn lane geometry to increase line of sight (Intersection Level)
IN.10	Change right-turn lane geometry to increase line of sight (Approach Level)
IN.11	Change Intersection Sight Distance
IN.12	Change Intersection Skew Angle
IN.13	Hardened centerlines
IN.14	Protected-only left/right turns
IN.15	All way stop control
IN.16	Install traffic signal
IN.17	Adaptive signal control
IN.18	Advanced Dilemma Zone
IN.19	Flashing Yellow Arrow (FYA) signals
IN.20	Appropriately Timed Yellow Change Intervals
IN.21	Reflective Signal backplates
IN.22	Advance signal warning flashers
IN.23	Improved advance signage and marking visibility (systemic signing/marking) signalized
IN.24	Improved advance signage and marking visibility (systemic signing/marking), stop-controlled
IN.25	Intersection conflict warning system (unsignalized int.)
IN.26	Increase triangle sight distance

See *Appendix H* for the toolkit.

Section 4. Conclusion and next steps

This Regional Safety Action Plan leveraged best practices for equitable engagement and robust geospatial safety analysis to develop recommended projects, policy changes, strategies, and actions for advancing safety in the region and working toward the regional goal of zero fatalities by 2050.

As the Metropolitan Council continues to work toward the goal of zero traffic deaths, the agency will monitor safety performance in the region and progress toward these recommendations.

Appendices

A. Engagement Summary
B. State of the Practice Technical Memo
C. Crash Identification Technical Memo
D. High Injury Streets Technical Memo
E. Systemic Analysis Technical Memo
F. Policy Analysis Technical Memo
G. Corridors for Future Work Technical Memo
H. Countermeasures Toolkit
I. SS4A Self Certification Checklist

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