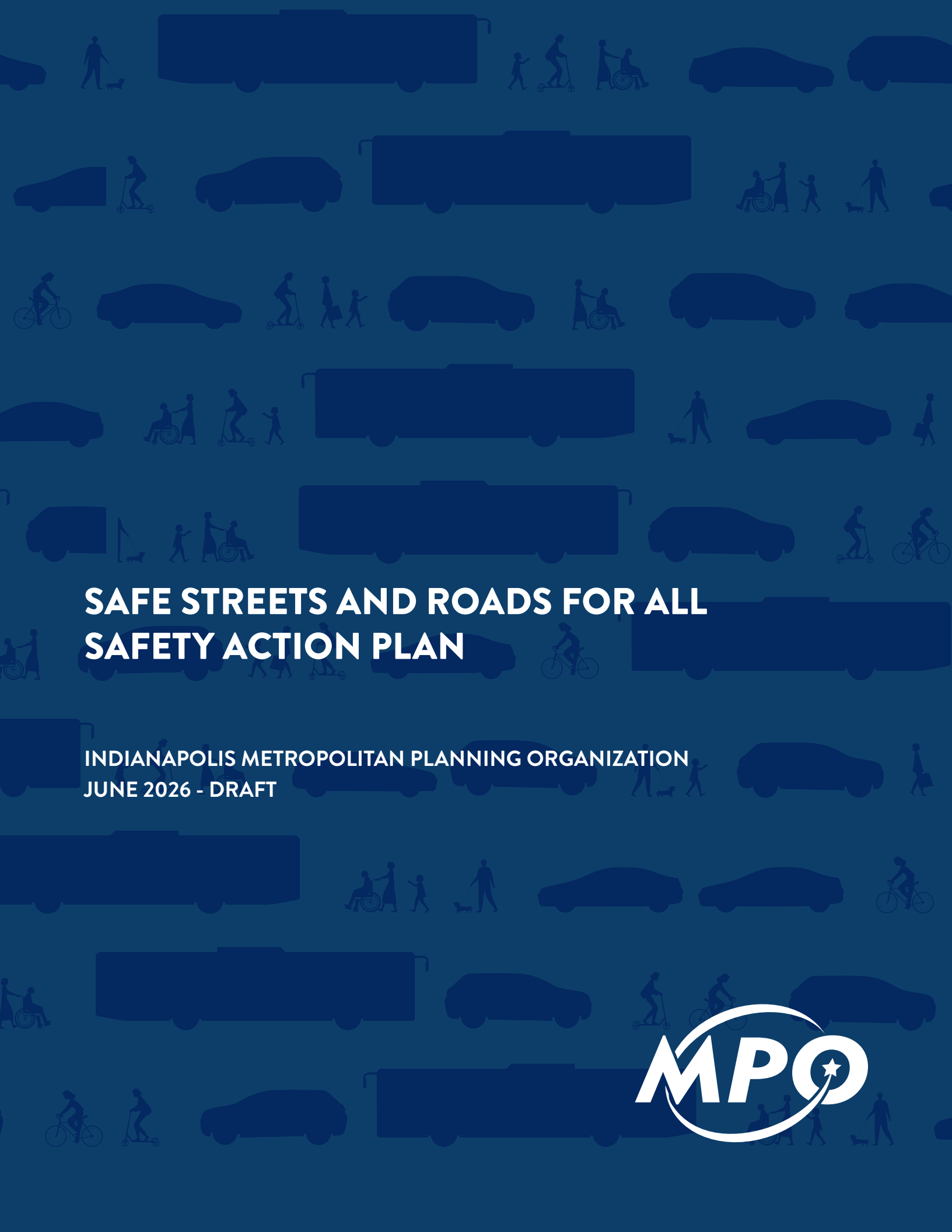


The background of the entire page is a dark blue field filled with a repeating pattern of white silhouettes. These silhouettes represent various modes of transportation and users: cars, buses, bicycles, people walking, people in wheelchairs, people pushing strollers, and people walking dogs. The silhouettes are arranged in a way that suggests movement and flow across the page.

SAFE STREETS AND ROADS FOR ALL

SAFETY ACTION PLAN

INDIANAPOLIS METROPOLITAN PLANNING ORGANIZATION
JUNE 2026 - DRAFT



Acknowledgments

The Indianapolis Metropolitan Planning Organization produced this plan in August 2026 with support from consultant partners and regional stakeholders.

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Part of	Approval/Mod Date	Description	Conformity Date

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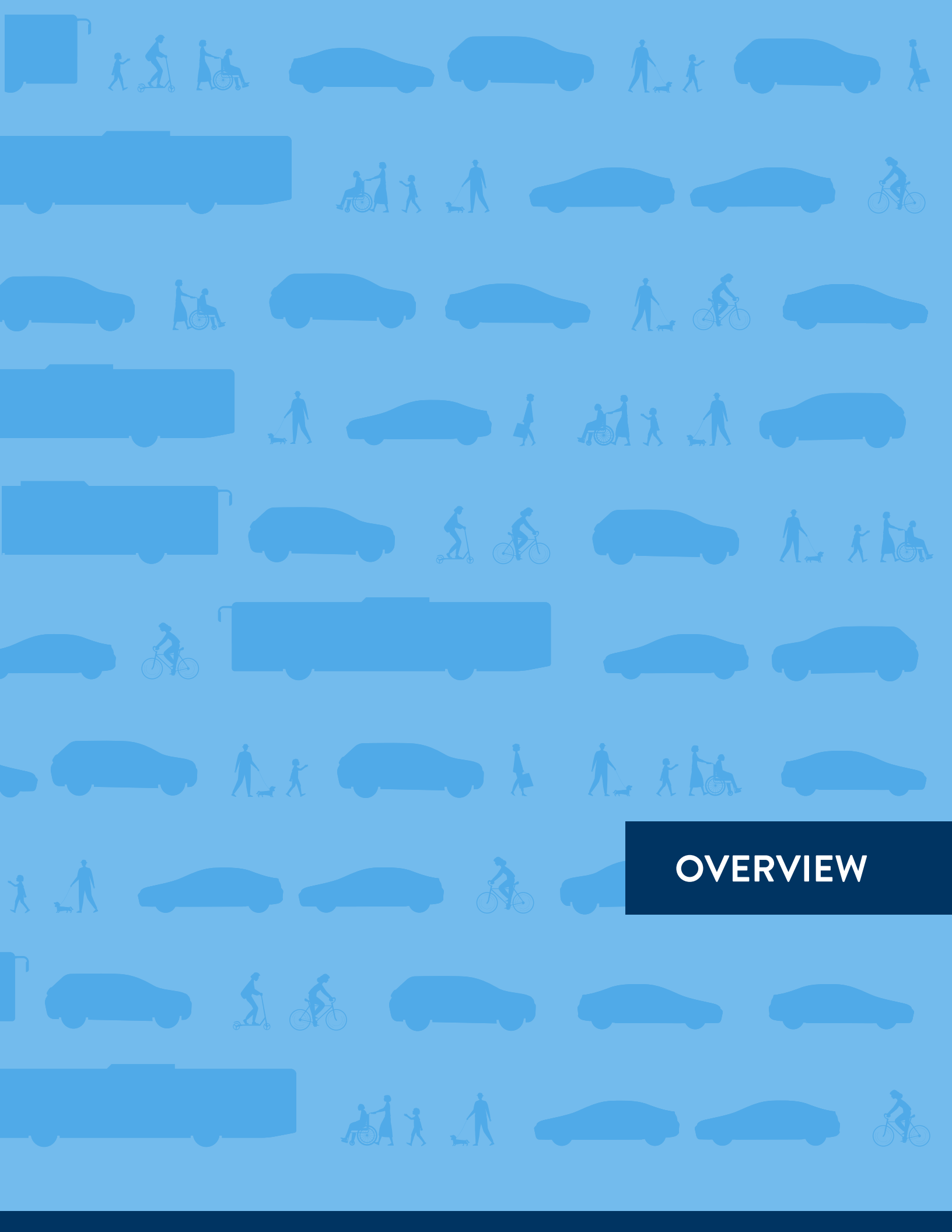
For alternative formats, translation services, or accommodation needs for persons with disabilities, or to view documents in person at our offices please contact us at info@indympo.gov, 317-327-8601 (voicemail), or visit our offices at 200 East Washington Street, Suite 2322, Indianapolis, IN 46204.

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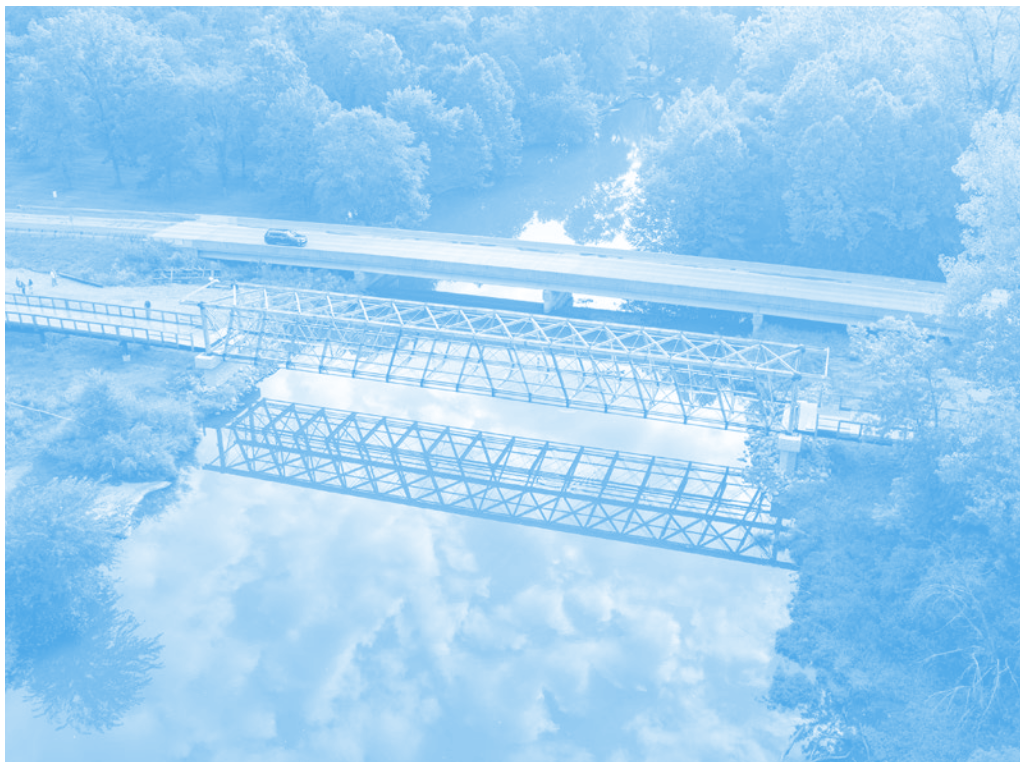
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OVERVIEW

1. OVERVIEW

Each year, more than 40,000 people are killed and hundreds of thousands more are seriously injured in traffic crashes across America. In 2025 in Indiana alone, there were 38,309 crashes resulting in injury or worse. 787 of these were fatal crashes, resulting in 843 fatalities. These deaths are often called traffic "accidents", but we have the responsibility, knowledge, and resources to prevent them. Vision Zero is a worldwide initiative focused on the belief that every death or serious injury resulting from a traffic crash is preventable. Vision Zero champions efforts to reduce the number of deaths and injuries on our roadways to zero. The Indianapolis MPO is on the forefront of making Vision Zero a reality.



1.1 The Indianapolis Metropolitan Planning Organization

The Indianapolis Metropolitan Planning Organization (IMPO) is Central Indiana's federally designated regional planning agency and operates within the boundaries of its Metropolitan Planning Area (MPA). Membership for the IMPO includes over 30 cities, towns, and counties in Central Indiana, as well as regional transit agencies, the Indiana Department of Transportation (INDOT), and other planning partners.

The IMPO develops short- and long-range plans to support local governments and advance the region's goals in transportation, economic development, housing, safety, sustainability, and other quality-of-life issues. The IMPO collects, analyzes, and communicates regional data to inform planning efforts and guide decision-making. It also tracks and distributes specific grant funds to local governments for the planning and construction of roads, trails, transit, and other infrastructure that moves people and goods throughout Central Indiana.

The IMPO operates under its four foundational pillars: convene, inform, plan, and fund.



USDOT Safe Streets and Roads for All Grant Program

The 2021 Bipartisan Infrastructure Law (BIL) created the Safe Streets and Roads for All (SS4A) grant program, allocating \$5 billion over five years to fund regional, local, and Tribal initiatives through grants to prevent roadway deaths and serious injuries. This program provides funding to develop or augment Comprehensive Safety Action Plans as a first stage. With an Action Plan that satisfies the program requirements, jurisdictions can seek implementation funding.

At either stage of local program development, applicants can seek funding for demonstration projects and additional planning or analysis to further develop strategies which will reduce serious and fatal crashes. Securing additional funding for members is one of the IMPO's core pillars - in addition to providing safety information to its members this Safety Action Plan enables members to pursue SS4A Implementation Grants. What follows in this document is a regional safety action plan consisting of effective analysis, convening, and identification of action items to address the mounting roadway safety crisis in Central Indiana, and comply with USDOT required components including:

- Goal setting,
- Safety analysis,
- Public engagement,
- Project opportunity identification,
- Policy and process proposals, and
- Progress reporting.

8 Counties

Boone, Hamilton, Hancock,
Hendricks, Johnson, Marion,
Morgan, and Shelby.

11 Cities

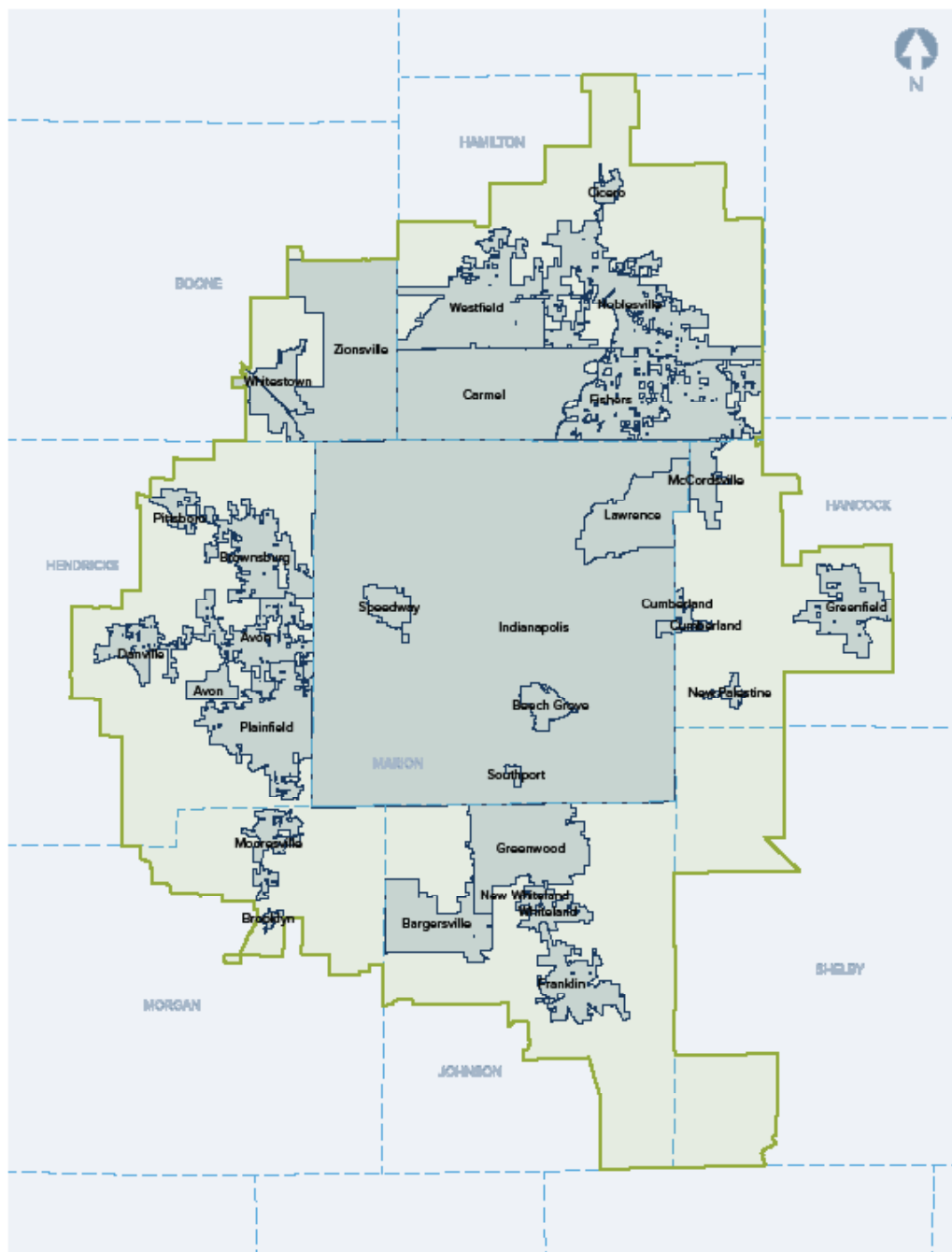
Beech Grove, Carmel,
Fishers, Franklin, Greenfield,
Greenwood, Indianapolis,
Lawrence, Noblesville,
Southport, Westfield, and
Zionsville.

17 Towns

Avon, Bargersville, Brooklyn,
Brownsburg, Cicero,
Cumberland, Danville,
McCordsville, Mooresville,
New Palestine, New Whiteland,
Pittsboro, Plainfield, Speedway,
Whiteland, and Whitestown.

Planning Partners

IndyGo, CIRT, INDOT, Federal
Highway Administration,
Federal Transit Administration,
Indianapolis Airport, and Ports of
Indiana.



Convene

The IMPO regularly brings together regional partners to discuss issues in their fields, analyze data trends, and better understand the root cause of issues. The IMPO's goal is to identify collaborative solutions to move Central Indiana forward. A key strategy in the IMPO Convene pillar is Public Engagement. The IMPO Public Involvement Process (PIP) ensures all segments of the public have an opportunity to be involved in regional transportation planning and programming at all stages of the processes.¹

Inform

The IMPO informs members and the region about safety by setting benchmarks, tracking data and trends, and reporting data to our members and the general public. This “observe and report” role will support planning and decision-making across Central Indiana.

Plan

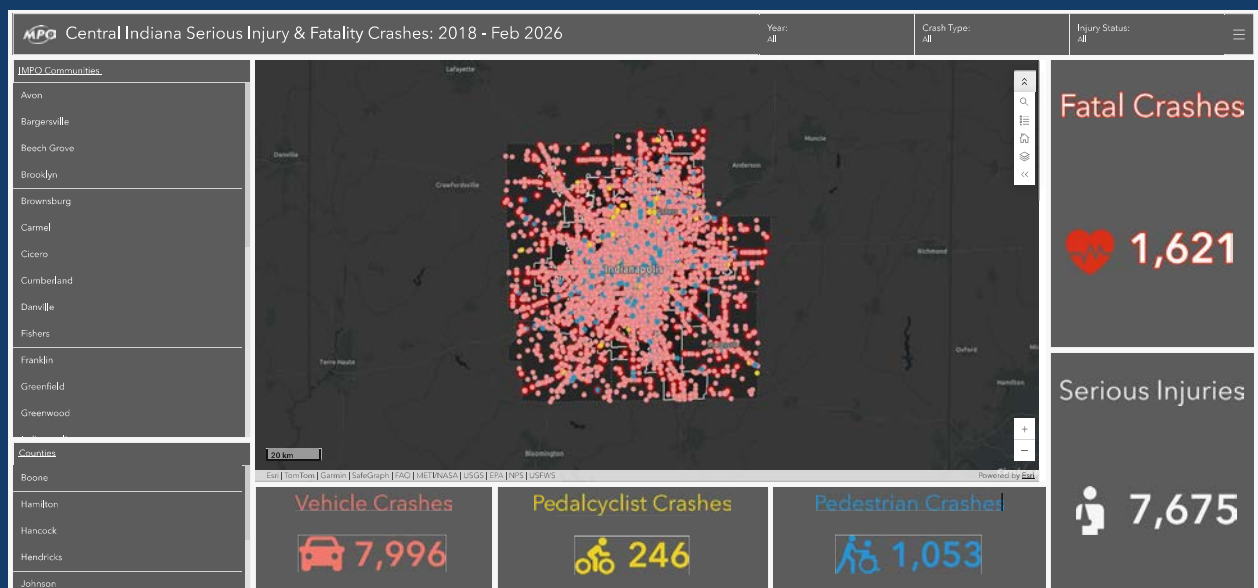
The IMPO's professional planning staff document expert discussions, formalize strategies, and track implementation strategies. The IMPO makes both short- and long-term plans to improve safety and other transportation goals across Central Indiana. This safety action plan serves as a roadmap for future activities to make roadways in the Central Indiana MPA safer for all roadway users.

Fund

The Indianapolis MPO receives an annual allocation of federal funds and operates a program to select projects to fund with federal money. The IMPO uses existing plans, direction from its committees, and public input to select projects that provide Central Indiana with the highest regional transportation benefit.

Crash Dashboard

The IMPO's crash dashboard displays seven years (2018-2025) of fatal and incapacitating injury crash records in the eight-county region. The dashboard, which the IMPO updates regularly as new crash data is available, enables the IMPO's Local Planning Agencies and the public to view the crash data with interactive filters that allow the user to select a specific year, crash type, or jurisdiction. Each individual crash location can also be selected for further details.



¹ As required by “23 CFR 450.316” of the Code of Federal Regulations

Major goals for projects that receive federal funding from the IMPO include:

- Improving air quality (generally by making automobile movements more efficient or reducing automobile usage)
- Efficient movement of goods (on trucks and trains) through the region
- Improving safety for all users of regional travel ways
- Reducing congestion that affects movements of work commuters and goods
- Creating an interconnected transportation system suitable for users of all ages and abilities in Central Indiana

Road Audits of High Crash Intersections

The IMPO regularly identifies high-crash locations within its MPA to conduct safety audits. For each safety audit location, the team reviews crash data and existing conditions, creates a collision diagram, conducts a field check, meets with local engineering and police representatives, and identifies specific improvements to remedy existing safety issues. Recommended improvements range from lower-cost maintenance items, such as signage and pavement markings, to higher-cost capital improvements. The final result includes both a map and technical report with more information about the intersections. The IMPO completed 24 Intersection Safety Studies in 2019, another 19 in 2023, and 25 additional safety audits are scheduled for 2026.

1.2 IMPO Safety Commitment and Previous Work

The IMPO operates under the vision that Central Indiana will thrive when we continuously improve our built environment and expand economic opportunities for all residents.

Ensuring safe, accessible, and desirable transportation in the region is central to this mission. The IMPO strives to support safety across its core programs and works to create a regional transportation system designed to safely and comfortably accommodate all users, of all ages and abilities. This includes motorists, cyclists, pedestrians, transit users, school bus riders, delivery and service personnel, freight haulers, and emergency responders.

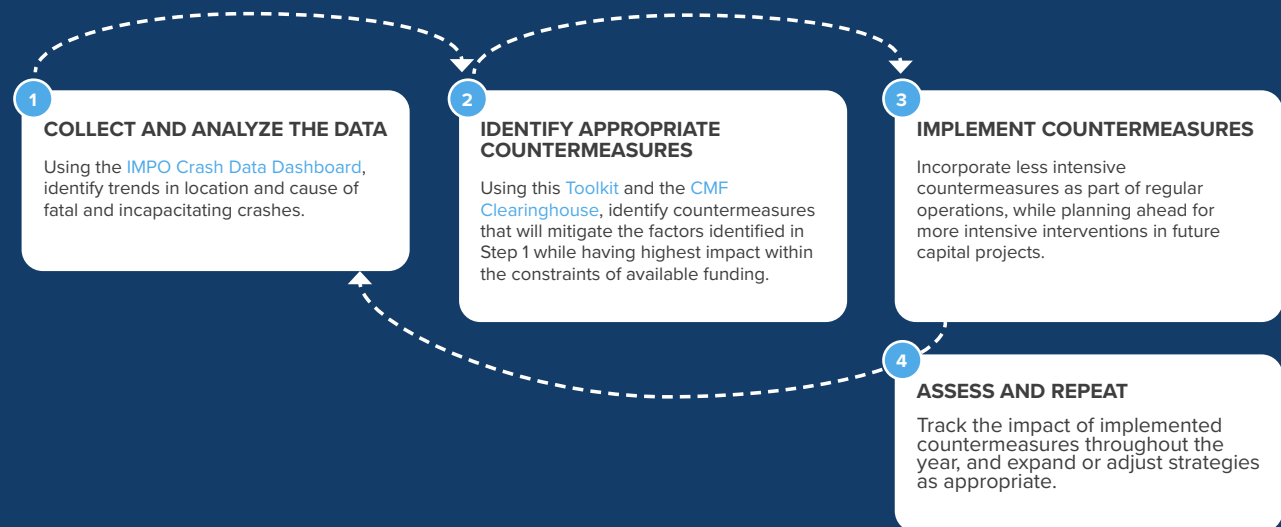
The IMPO's long-standing dedication to improving roadway safety for all users is documented in the following current plans completed between 2017 and 2025. These plans contain substantial engagement and safety components and have been used to inform this plan's approach to public and stakeholder engagement, the project selection process, and goal setting, in addition to other contributions.

Vision Zero Toolkit

The [Vision Zero Toolkit](#) provides Central Indiana communities with information on resources on Vision Zero — the commitment to reach zero traffic fatalities through the implementation meaningful design and policy strategies. The toolkit includes a review of the history of Vision Zero; information on data collection and benchmarking; an overview of policy best practices, a comprehensive guide of design countermeasures; numerous national and local case studies; and communications tools and templates.

Data-Driven Decision Making

From the Vision Zero Toolkit



The Toolkit includes a decision-making matrix organized by type of physical design countermeasures and problems they most effectively combat. Countermeasures are organized into four categories: General Strategies, Pedestrian Strategies, Bicycle Strategies, and Automotive Strategies. Additionally, countermeasures are indexed based on cost and type of approach.

- Temporary Approach: countermeasures that can be “tested” to determine success before finalizing the change (with various exceptions)
- System-Wide Approach: countermeasures that are implemented at all locations (across the community)
- Risk-Reduction Approach: countermeasures that are implemented at locations with the greatest risk (specific locations within the community)
- Site-Specific Approach: countermeasures that are implemented based on crash data that supports continual crashes at one specific site that needs to be addressed (one location within the community)

IMPO Annual Safety Report

Beginning in 2023, the IMPO began publishing an Annual Safety Report (ASR) which tracks progress towards the IMPO’s Vision Zero Goal of achieving a 35% reduction in serious and fatal crashes by 2040. In addition to tracking this goal, the ASR provides additional safety related data, tracking change over time and improving awareness and transparency.

2050 Metropolitan Transportation Plan (MTP)

The MTP lays out the long-range transportation vision for Central Indiana. Every four years, the region revisits the MTP. The plan will guide the region’s transportation network from its present state through 2050.

IMPO completed a significant plan update in 2017 for the 2045 Long Range Transportation Plan (LRTP) – now referred to as the MTP – including the addition of peer region comparisons, an updated vision and goals for the region, and setting a number of regional transportation performance measures, in addition to the federally required ones established by federal transportation bills like MAP-21 and the FAST Act. Many of the policies, goals, and recommendations within that 2045 LRTP were enhanced as part of the 2050 MTP, which was finalized in 2023.

Engagement	Safety Analysis	Policy Review	Progress
X	X	X	X

2020 Regional Bikeways Plan

The IMPO Regional Bikeways Plan documents existing and proposed facilities in the region and provides recommendations to increase the number and length of safe bikeways in Central Indiana. The Regional Bikeways Plan has an updated vision statement, and updated goals that include increasing cycling ridership, improving safety for bicyclists, increasing bikeway access for underserved populations, enhancing the convenience of cycling by focusing on end of trip facilities like bike parking, and strategically increasing connectivity within the bikeway network. This vision and goals were updated with input from the Plan’s steering committee.

Engagement	Safety Analysis	Policy Review	Progress
X	X	X	X

2020 Regional Pedestrian Plan

The IMPO plans for all types of transportation, including walking. This plan sets regional priorities for walkway investments. The Regional Pedestrian Plan builds on the previous pedestrian planning efforts of counties and communities throughout the region and focuses on regional connectivity and pedestrian facilities. It examines and prioritizes gaps in the existing regional pedestrian network. Local roads and interstates were not included as part of this study as pedestrians are prohibited on interstates and local roads are inherently low-volume, narrow roads with less chance of pedestrian/vehicular conflicts occurring.

Engagement	Safety Analysis	Policy Review	Progress
X	X	X	X

IMPO Intersection Safety Study Program

The IMPO Intersection Safety Study Program uses a data-driven approach to identify intersection locations in need of safety improvements. The intersections that are ultimately selected each receive a mini-traffic safety study that includes additional data analysis, site visits with stakeholders, proposed improvements, and preliminary cost estimates. The program began with studies at 24 intersections in 2019 and has continued with additional studies in 2023 and 2026.

Engagement	Safety Analysis	Policy Review	Progress
X	X		X

2024 Regional Active Transportation Plan

The Regional Active Transportation Plan builds upon the IMPO’s 2020 Regional Pedestrian and Bikeways Plans. It provides guidance for implementing a connected network of regional trails, bikeways, and sidewalks across the IMPO MPA. It also analyzes many data sources to recommend high-priority corridors for implementing active transportation improvements, as well as design countermeasures and policy recommendations for the IMPO and its member agencies to consider as part of improving regional active transportation.

Engagement	Safety Analysis	Policy Review	Progress
X	X	X	X

Central Indiana Transit Plan

The Central Indiana Transit Plan, last updated in 2023, includes recommendations that are meant to improve the current transit system in the IMPO MPA. This plan is developed and regularly updated in coordination with IndyGo, CIRTa, and the IMPO as transit providers deploy new routes and services. Each chapter of the plan provides details regarding service for each of the transit providers operating within the IMPO MPA.

Engagement	Safety Analysis	Policy Review	Progress
X		X	X

1.3 The Need for Safety Improvements

Despite the IMPO’s efforts in advancing road safety crashes continue to claim lives and cause disabling injury. While rises in these crashes have been occurring since 2012, 2020 and 2021 saw dramatic increases in serious and fatal crashes. In 2020, as the COVID pandemic changed travel patterns across America, the number of fatal and serious injury crashes in the IMPO MPA rose by 22% compared to previous years; in 2021 an additional 14% increase occurred. Since 2021 fatal and serious crashes have fluctuated but remain far above pre-pandemic levels with 742 fatal and serious crashes occurring in 2025, compared to 586 in 2019. The local trends match nationwide patterns: in 2021, traffic fatalities jumped 10.5% according to National Highway Traffic Safety Administration (NHTSA) data, totaling an estimated 42,915 roadway deaths. These nationwide roadway fatality numbers have also remained elevated above pre-pandemic levels.

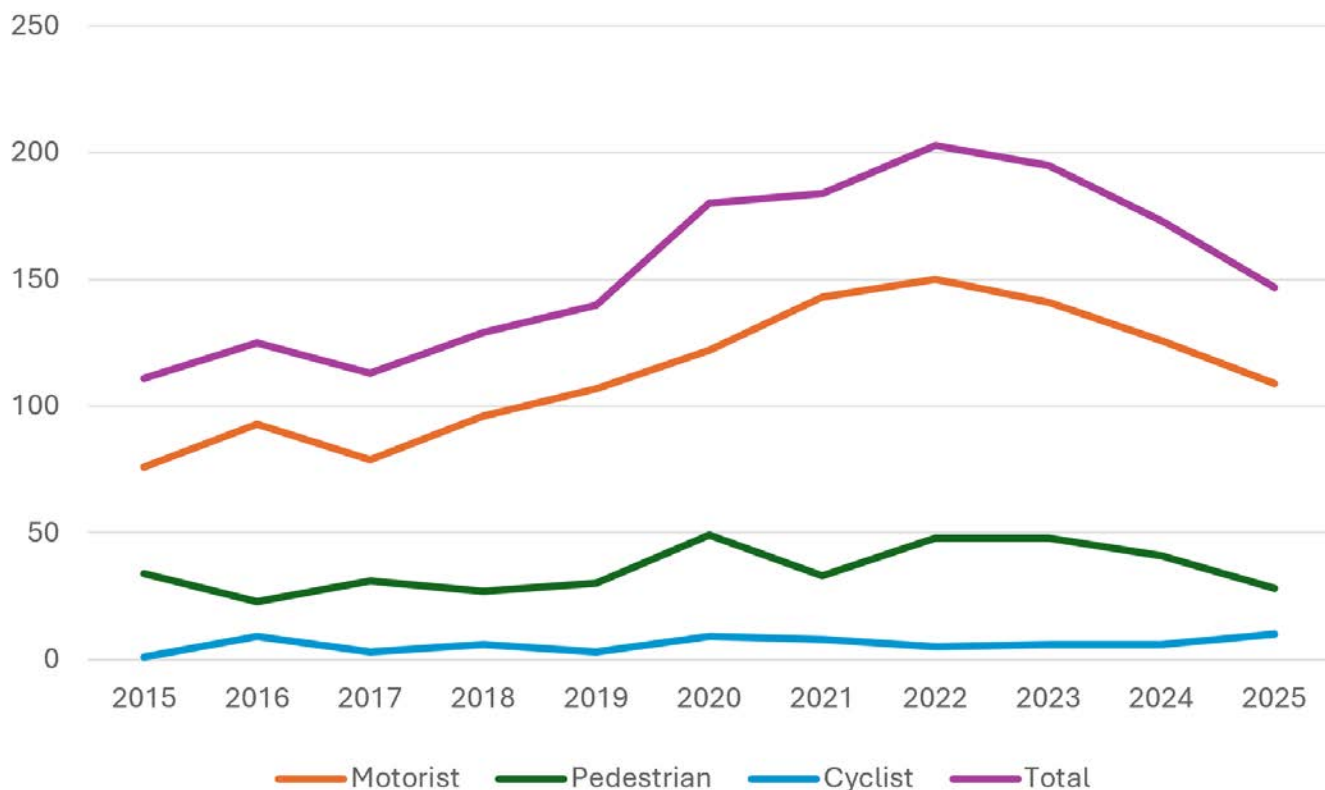
Safety is particularly important for more vulnerable road users — those who are bicycling and walking. Pedestrians and bicyclists continue to be disproportionately represented in fatal crashes,

From 2020 – 2025 the IMPO MPA saw 790 fatal crashes resulting in 825 deaths; during that same period of time an additional 3,800 serious crashes resulting in injury occurred. See Appendix A for detailed fatal and serious injury crash data within the IMPO MPA by year.

making up 22% and 9% of all fatal crashes respectively in 2025. The IMPO recognizes and acknowledges that pedestrians and bicyclists are much more vulnerable to serious injury or death in the event of a crash.

Each of these crashes represents a preventable tragedy with spillover effects on individuals, families, and communities throughout Central Indiana. As state, federal, regional, and local partners strive to realize goals to achieve zero deaths on public roadways, action must be taken to improve traffic safety on MPA roadways.

Fatal Crashes by Road User



Source: ARIES Fatal and Incapacitating Injury Crashes 2015-2025 cleaned and spatially located by IMPO

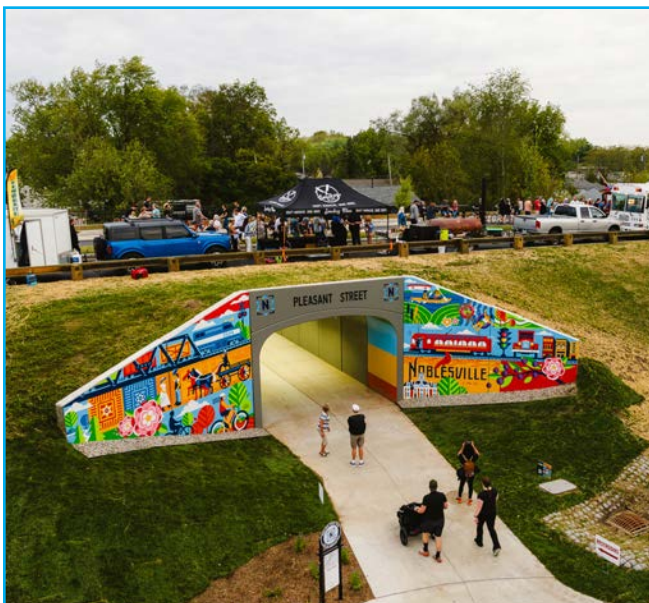
A Note on Crash Data Reporting Changes

Serious crashes within this report are derived from the “Suspected Serious Injury” or “SSI” category in Indiana’s crash reporting system, ARIES (Automated Reporting Information Exchange System). The SSI definition consists of the following Injury Nature types in the ARIES data – Crush, Fracture/Dislocation, Internal, Paralysis, Severe Bleeding, Severe Burn, Severed, Unconscious. It is important to note that the use of SSI for serious crashes has been occurring on a rolling basis from 2020 to 2023 as different jurisdictions and their police departments transitioned from ARIES 5 (which used “incapacitating injuries”) to ARIES 6. As a result SSI numbers prior to 2023 will have some margin of error. This inconsistency comes as an unavoidable part of needed system updates to ARIES. As additional years of data become available in the future the IMPO will look towards 2023 as its new benchmark to ensure data definition consistency.

1.4 Moving Towards Vision Zero

Complete Streets and Safe Systems Design

Roadway infrastructure can increase visibility, improve pedestrian facilities, and force drivers to reduce their speed and be more deliberate in their movements. These all can contribute to decreasing the total number and severity of crashes. The implementation of these roadway safety countermeasures typically results in what is commonly referred to as Complete Streets. The National Complete Streets Coalition defines Complete Streets as “an approach to planning, designing, building, operating, and maintaining streets that enables safe access for all people who need to use them, including pedestrians, bicyclists, motorists and transit riders of all ages and abilities.” Complete Streets is not a “one-size fits all” approach to improving safety. Instead, safety countermeasures are applied to the design of a street based on community context, traffic volumes, and roadway classification and characteristics. Complete Streets countermeasures include, but are not limited to, the following: sidewalks, curb ramps, bike lanes, bus or transit lanes, accessible bus stops, crosswalks, medians, pedestrian refuge islands, pedestrian crossing signals, curb extensions, narrower vehicular travel lanes, streetscape enhancements, and roundabouts.



Vision Zero is a phrase that represents the goal of eliminating traffic fatalities and severe injuries on all roadways. Vision Zero is built on the basis that traffic deaths and severe injuries are preventable. Vision Zero emphasizes a Safe System approach, which acknowledges that people make mistakes, and focuses on influencing system-wide practices, policies, and designs to lessen the severity of crashes.

When applied, these safety countermeasures help to reduce the risk of crashes for all users of a street or road - including motorists - by slowing vehicle speeds and by providing safe and accessible spaces for pedestrians and bicyclists. A National Transportation Safety Board report found that speeding increases the risk of crashes in two ways: (1) by increasing the likelihood of a crash and (2) by increasing the severity of injuries resulting from a crash. Slowing vehicle speeds has a positive impact on improving safety for vulnerable users in particular, as pedestrian fatalities and serious injuries increase rapidly at vehicle speeds 30 mph and above.

When combined with land use strategies that encourage non-vehicular modes of travel, Complete Streets will provide a more safe and equitable transportation network by increasing mobility options and reducing overall vehicular travel. According to research compiled by the Victoria Transport Policy Institute, in higher income countries where annual vehicle miles traveled data is available, research has shown that increased vehicular travel leads to a corresponding increase in traffic deaths per capita. Reducing vehicle miles traveled leads to reduced exposure to vehicular crashes and has been proven to decrease roadway fatality rates. One way this can be accomplished is through the construction of active transportation and transit



projects that together create a safe and accessible multimodal transportation network.

Through the provision of funding for the planning, design, and construction of safe multimodal transportation projects, the IMPO is committed to increasing active transportation and transit access throughout the Central Indiana region. However, the sharp upward trend of pedestrian and bicyclist fatalities in the MPA demonstrates the urgent need for comprehensive safety strategies and safety improvements if Vision Zero is to be achieved. At a macro-level, this requires a continued shift towards viewing and planning the region's transportation network through the lens of mobility and safety as opposed to through the lens of vehicle throughput and speed. At a micro-level, this requires an expedited adoption of transportation infrastructure that incorporates safe systems design principles in order to rebuild the region's transportation network as a truly multi-modal system that is safe for even the most vulnerable users. As a starting point, an existing crash analysis highlighting roadways that have a significant proportion of severe crashes is shown

in later sections of this document. This will assist the IMPO in determining countermeasures for road features associated with higher levels of severe crashes.

Behavior-Based Interventions

Given the role of driver behavior in crashes – two examples are distracted driving and speeding – the question of how to change these behaviors is frequently discussed. Self-enforcing roadways that promote traffic law adherence via infrastructure changes are a strong tool, but can take time to implement over a large network. The question often then turns to other ways of changing driver behavior. The [National Highway Traffic Safety Administration's \(NHTSA\) Countermeasures That Work](#) provides an in-depth analysis of the efficacy of behavioral strategies and countermeasures in reducing crashes. The report groups chapters by major topic areas such as “Alcohol-Impaired Driving” and “Distracted Driving” and is updated regularly with new research findings.

The report provides dozens of effective countermeasures focused on changing driver behavior that can complement infrastructure improvements. Countermeasures vary significantly – ranging from alcohol ignition interlocks to employer-based programs for increased seatbelt use – and for each the existence of some type of enforcement mechanism is critical in ensuring their effectiveness. (Note that an enforcement mechanism in this context is not synonymous with “law enforcement”, though that is one type of

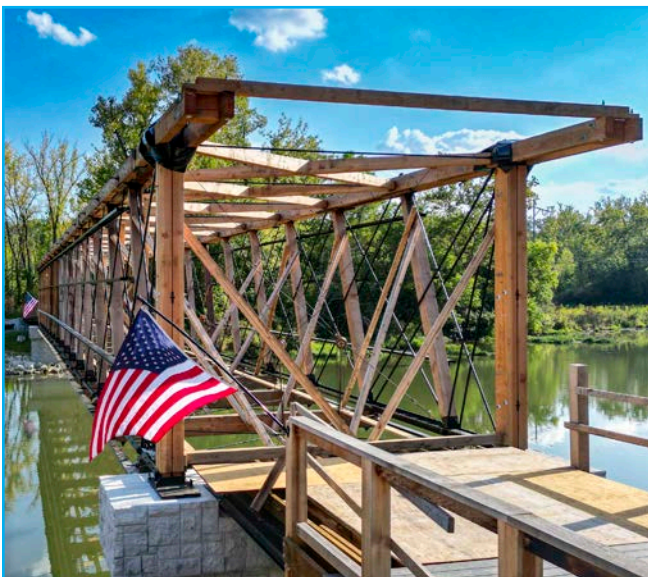


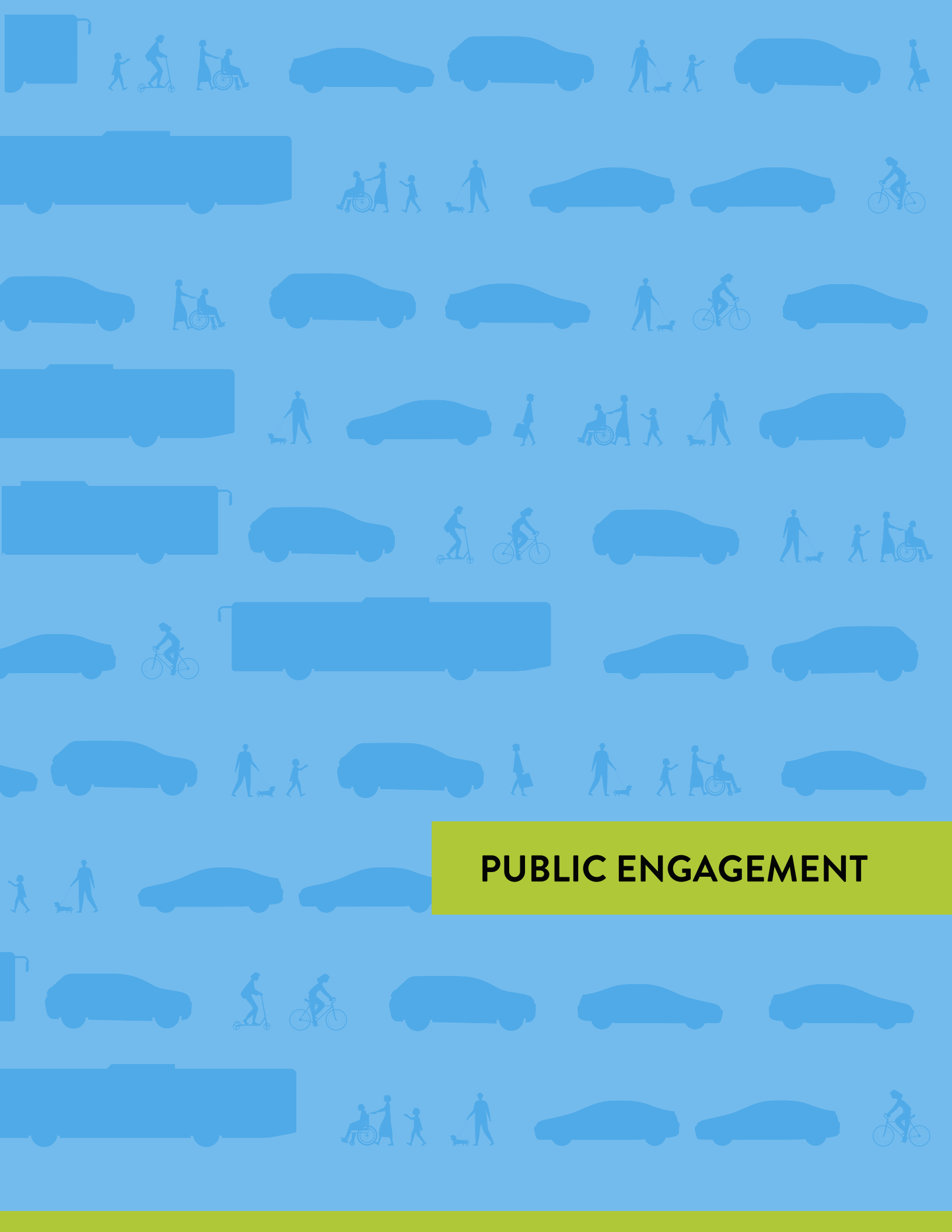
mechanism. For example, in the aforementioned alcohol ignition interlocks, drivers are prevented from starting or operating a vehicle unless their breath sample is below a certain blood alcohol level.)

In contrast, commonly used education and awareness-type campaigns can increase public knowledge about a particular traffic safety issue, but these are very rarely effective on their own in changing behavior. As detailed in the report, “This strategy presumes that the audience lacks key information and that simply learning the information will be sufficient to change behavior.” Human behavior, however, tends to be less straightforward and is influenced by assumptions, perceived risk, and other motivations. Rather, successful campaigns “were carefully planned, well-funded, well-executed, achieved high levels of audience exposure..., had high-quality messages that were pre-tested for effectiveness, and were conducted in conjunction with other impaired-driving activities (usually enforcement).” As a result, many studies have found that most public awareness campaigns have not led to long-term reductions in crashes or injuries.

The use of law enforcement is another popular method for reducing crashes, but while these methods are effective the impacts are also transient. Consistent results require consistent

policing as driver behavior has been found to otherwise revert to what it was previously. Consequently, relying heavily on law enforcement to improve traffic safety requires significant staff time into perpetuity resulting in high personnel costs for a community. Additionally, interactions with law enforcement have the potential to lead to high-stress events for both officers and road users.





PUBLIC ENGAGEMENT

2. PUBLIC ENGAGEMENT

The IMPO is the largest metropolitan planning agency in the State of Indiana, encompassing 8 counties that contain the entirety of the Indianapolis metropolitan area and its estimated 2.2 million people. Though the agency does implement a data-driven approach to much of the work it does, engaging regional stakeholders and the general public is perhaps the most important facet of the regional planning process.



When it comes to traffic safety, no one knows the issues better than the people who travel throughout the region every day. Whether walking down the street to grab groceries or driving to work on the other side of town, there is a lot to be gained by valuing the experiences of the people in our region. The IMPO engages residents and visitors through bi-weekly “TeMPO” Newsletters, posting on social media, holding committee meetings that are open to the public, publishing project-specific public surveys, convening project-specific stakeholder committees, providing time for public comments on all final documents, and more.

The following sections summarize the detailed engagement completed in the development of both previous plans and the Safety Action Plan.

2.1 Previous Plan Engagement

Between 2017 and 2024 the IMPO completed four plans with significant safety components.

2050 MTP Engagement

The CIRCLE 2050 Metropolitan Transportation Plan (MTP) is the IMPO’s guiding long range transportation planning document. Transportation safety is a key component of the MTP, and goals, priorities, and projects identified in the MTP all reflect Central Indiana’s commitment to



transportation safety. During the development of the 2050 MTP, the public was asked to provide input and feedback during several major phases of plan development.

The first phase began in August 2020 with the development and distribution of a statistically significant survey. The survey informed the resource allocation that enables the IMPO to generate a fiscally constrained list of proposed future projects and also included questions to help prioritize transportation concerns and inform plan recommendations. The 2,000 public responses collected were proportional to the number of people living in each Central Indiana county.

Once an early version of the recommended project list was formed, a draft map was posted online between March 22 and April 2, 2021, and the public were encouraged to review it and add comments to specific projects. These comments were shared with the communities who proposed the projects. This input helped shape final project selection and ultimately impacted the projects selected for inclusion in the final document.

In the second phase of engagement, a public comment period on the draft 2050 MTP was held between August 30 and October 15, 2021. The comment period was promoted in the TeMPO newsletter, social media accounts, and in local newspapers. The IMPO also provided a video describing the plan, in addition to on-site listening sessions at public libraries throughout





the region where the concentration of traditionally underrepresented populations is highest. In response to plan changes, a second public comment period was held in November 2021. A public hearing was then held at the Transportation Policy Committee meeting on December 15, 2021.

The 2050 MTP was updated in 2023 and 2024, and as part of the update several additional opportunities for public input were provided. First, a statistically valid survey (with 1,223 respondents) and a broader public survey (with 413 respondents) were both conducted between August and November 2023. Both surveys collected input from Central Indiana residents about a wide range of transportation and land development issues to help guide decisions related to MTP development.

As part of the 2050 MTP public comment period in October 2024, IMPO staff hosted 12 public listening sessions to gather input on the MTP's contents. In person listening sessions were primarily conducted at public libraries throughout central Indiana, and two virtual listening sessions were provided for those who did not attend in

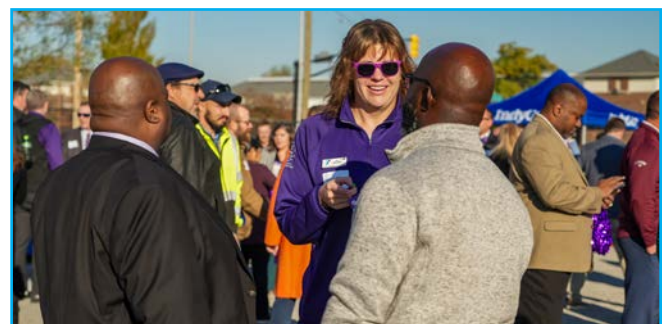
person. Listening sessions were promoted to the public via the use of paid advertising posts to Facebook users who lived within 10 miles of each site. In addition to feedback from the listening sessions, four additional public comments were submitted via phone or email.

2020 Bikeways Plan Engagement

Development of the Regional Bikeways Plan was guided by public engagement throughout the process, including four steering committee meetings, ten focus group meetings, a public survey, several update presentations to the IMPO's Transportation Policy Committee, draft plan public reviews, and a final public hearing.

Four steering committee meetings were held in March, June, and November 2019, and October 2020. The plan's steering committee was comprised of people representing state, county, and local government agencies, transit operators, and bike infrastructure advocates. The purpose of these meetings was to gather feedback on key components of the plan including goals and objectives, survey content, public input strategy, prioritization maps and criteria, and the draft final plan.

Ten focus group meetings were held in two phases; first in June 2019 and then again in October 2020. Each meeting was held in a separate county within the region to maximize the number of community representatives that could attend. In total, 23 community representatives attended these focus group meetings. Community representatives came from a diverse range of backgrounds including local government,



community nonprofits, and health and education entities. Over the course of the plan, the groups were asked for their feedback on the draft vision and goals for the plan, their concerns or ideas regarding the bicycle facility types that the plan focuses on, the draft prioritization criteria, the preliminary public survey results, and the draft plan itself.

A MetroQuest survey was active on the IMPO website from May 1 – June 21, 2019. The survey was advertised in TeMPO (5 times), Facebook (11 posts), Twitter (3 posts), Local News, and shared amongst the counties and municipalities included in the IMPO area. Approximately three weeks after the survey was opened, MPO staff reviewed the demographic results. When compared to the actual demographic proportion of racial/ethnic and income groups within the Metropolitan Planning Area, the survey was skewing toward white, middle/high income people. To attempt to correct this, the survey was extended, translated into Spanish, and a local public engagement firm was tasked with sharing the survey with Black/African American and Latinx people, and to organizations representing the interests of Black/African American, Latinx, and low-income populations. In total, 1,500 people responded to the survey.

Between November 2 and 15, 2020, a complete draft of the plan was made available for public comment. Comments received during this process

were responded to and necessary changes were made. A final public hearing was held December 2, 2020 and resulted in plan adoption.

2020 Pedestrian Plan Engagement

During the development of the 2020 Pedestrian Plan, the IMPO relied heavily upon stakeholder and public engagement to inform the plan development and influence project selection. The IMPO used two public surveys to identify regional pedestrian infrastructure priorities. In total, the IMPO received more than 1,000 responses. Additional public outreach came in the form of attendance at other public events (eight in May 2019), as well as publicizing material on the IMPO website and social media accounts. Four rounds of steering committee meetings provided the opportunity for stakeholders to evaluate three ranking strategies and develop what would ultimately become the priority investment areas indices used to rank strategies for prioritizing implementable strategies. A final public comment period was held for the draft plan.

Ongoing Intersection Safety Studies Engagement

Along with work for the Safety Action Plan, twenty-five intersection safety studies are being conducted in 2026. These studies identify and prioritize high crash intersections on the High Injury Network and result in Road

Action Plan Engagement Toolkit



Stakeholder
Committee



Surveys



Website



Presentations



Public
Comment

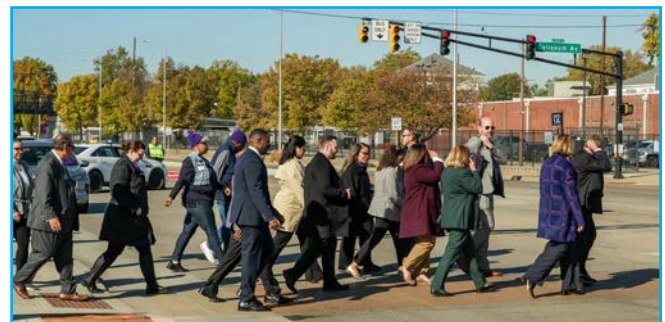


2.2 Safe Streets and Roads for All Action Plan Engagement Overview

The IMPO Safe Streets and Roads for All Action Plan update integrated and expanded on past plans to form a comprehensive regional vision for safety. As of May 2026 the IMPO has developed an SS4A Safety Steering Committee, issued a public survey that generated over 400 responses, and provided updates to the IMPO Transportation Committees. This draft plan will be advertised and made publicly available with ample time provided for public comment. Additionally, the IMPO Transportation Committee will receive an overview of the full plan.

Safety Audits (RSAs) that recommend potential countermeasures to improve safety in the short-term as well as support local agencies applications for funding for higher cost and longer-term safety infrastructure improvements. Five of the twenty-five locations have a pedestrian and bike safety focus, due to a higher prevalence of these crashes and will have a near-miss analysis done using Miovision cameras.

During this process the IMPO and consultant staff create a list of potential intersections for study before collaborating with Local Public Agency (LPA) staff to finalize locations. After a preliminary analysis is performed the IMPO, consultant staff, LPA staff, and emergency services providers meet on-site to observe, discuss crash patterns, and identify preferred countermeasures. In most cases consensus is reached on-site. However, for those where it is not the consultant performs additional analysis after the site visit, and IMPO and consultant staff conduct a follow-up conference call with the LPA representative to discuss findings and obtain consensus for the preferred countermeasure.



Safety Steering Committee

The IMPO convened a safety steering committee made up of representative members and planning partners from around the region. The committee met five times between November 2025 and July 2026 to help develop the vision, refine the goals, and steer the plan towards adoption. Committee members are shown in the table below.

LPA/Agency	Member	Title
Bargersville	Eric Funkhouser	Fire Chief
Beech Grove	James Coffman	Mayor
Boone County	Nick Parr	Highway Director
Brooklyn	Eric Bowlen	Superintendent (Martinsville)
Cicero	Derek Arrowwood	Superintendent (Hamilton Heights)
CIRTA	Christine Altman	Board Member
Columbus MPO	Ashley Beckort	MPO Director / Transport Planner
Fishers	Hatem Mekky	Director of Engineering
Fishers	Rich Bassett	Asset Manager
Franklin	David Clendening	Superintendent (Franklin Community)
Greenwood	Jayne Washel	Fire Chief
Health by Design	Taylor Firestine	Planner
Hendricks County	Tim Dombrosky	Senior Planner
Indianapolis	LeAndre Level	Vision Zero Administrator
Indianapolis	Eddie Honea	Administrator for Current Planning (Zoning)
Indianapolis	Jamey McPherson	Bicycle and Pedestrian Coordinator
Indianapolis	Mark St. John	Chief Engineer

LPA/Agency	Member	Title
Indianapolis	Sean Taylor	Superintendent (MSDWT)
Indianapolis	Chris Boomershine	Chief of Police (Wayne Twnshp Schools)
INDOT	Brandon Burgoa	Statewide Ped and Bike Coordinator
INDOT	Taylor Ruble	Director, Safety Office
IndyGo	Ryan Wilhite	Manager of Special Projects and Regional Mobility Integration
Lawrence	Jim Perron	Director of Communications
McCordsville	Timm Gropp	Town Manager
New Palestine	Andrew Bowman	Assistant Director of Transportation
Noblesville	Andrew Rodewald	Engineering Project Manager
Noblesville	Marley Pagel	Sargent
Plainfield	Kyle Prewitt	Police Chief
Southport	Jim Cooney	Mayor
Westfield	John Nail	City Engineer
Whitestown	Sri Venugopalan	Town Engineer
Zionsville	Rebecca Coffman	Superintendent (Westfield)
IMPO	Andrea Miller	Project Manager
IMPO	Jennifer Dunn	Senior Data Planner

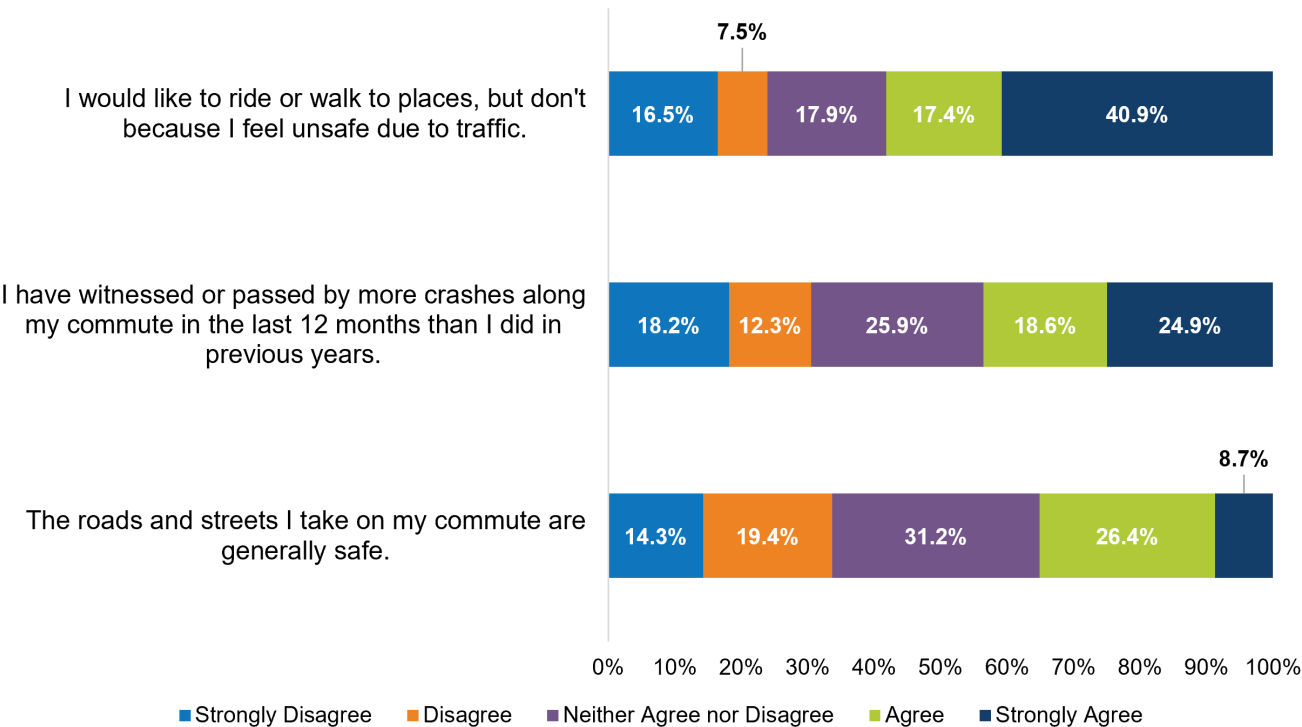
2.3 Action Plan Public Engagement Survey Results

Between February 1 and March 1, 2026, the IMPO hosted an online safety survey focused on Central Indiana's roads. The survey included an overview of the SS4A program, questions about commuter routines, questions about safety project tradeoffs, and a map that provided an opportunity for respondents to drop pins indicating locations where safety could be improved. In total the survey received 413 responses. The survey responses provide valuable insight into how residents and visitors perceive road safety for all modes.

Survey results highlight consistent concerns related to traffic safety and barriers to active transportation. A majority of respondents indicated that traffic conditions limit their ability to walk or bike, with **58.3% agreeing or strongly agreeing that they avoid these modes due to safety concerns**. Similarly, **43.5% agreed or strongly agreed that they have witnessed more crashes in the past 12 months than in previous years**, despite decreases in fatal and serious crashes suggesting heightened awareness of roadway risk.

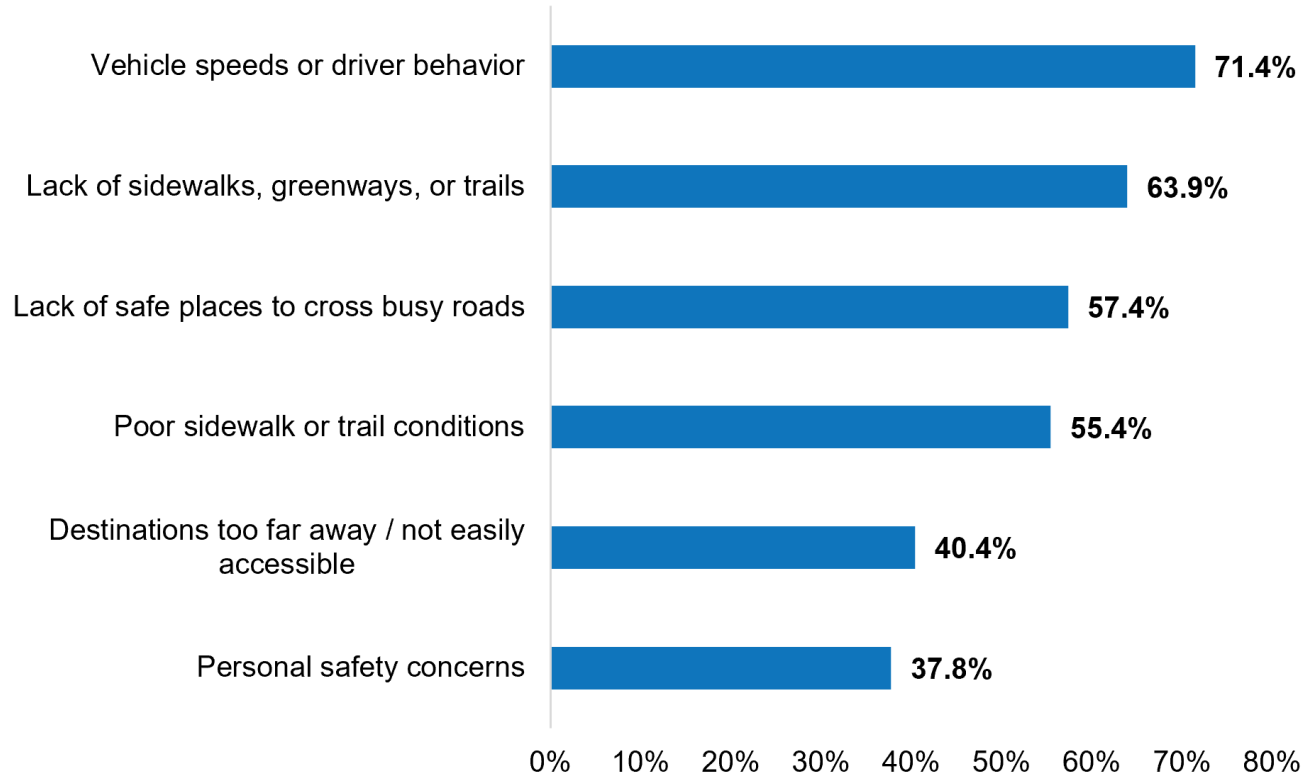
In contrast, perceptions of overall roadway safety were more mixed, with **35.1% of respondents agreeing that the roads and streets they use are generally safe**, while **33.7% disagreed and 31.2% remained neutral**. Despite this ambivalence, a near-supermajority agreed that existing conditions are too unsafe for walking or biking. Across the full sample, respondents broadly want to walk and bike more but perceive current conditions as a barrier, even without a shared sense that safety has meaningfully declined.

General Roadway Safety Public Perceptions



The most frequently cited barrier to walking or biking was **vehicle speeds or driver behavior (71.4%)**, followed by **lack of sidewalks, greenways, or trails (63.9%)**. Concerns related to crossing safety and infrastructure quality were also prominent, with 57.4% citing lack of safe places to cross busy roads and 55.4% noting poor sidewalk or trail conditions. Fewer respondents identified destinations being too far away (40.4%) or personal safety concerns (37.8%) as primary barriers. Overall, these results indicate that **traffic-related safety concerns and gaps in pedestrian and bicycle infrastructure are the most significant factors limiting walking and biking**.

Public Perceptions Regarding Barriers to Walking or Biking



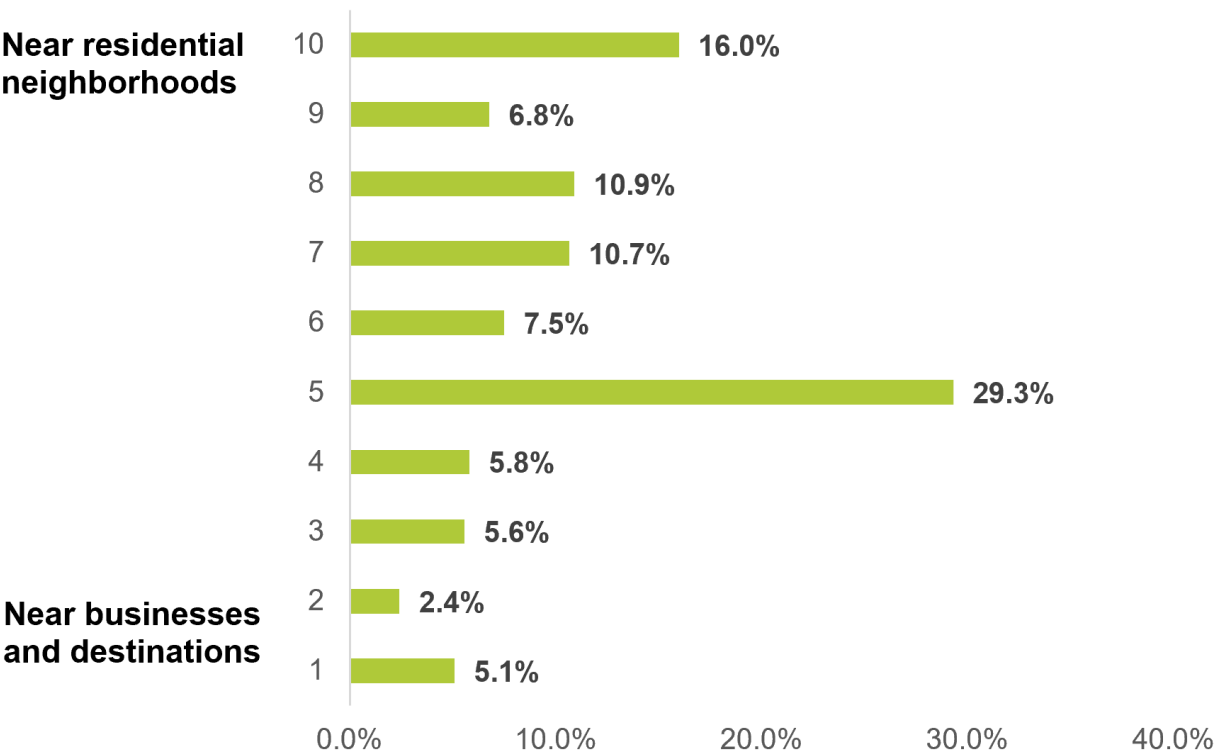
The survey also included an open-ended question about respondents' feelings of personal safety while driving in Central Indiana. Respondents most frequently **cited well-maintained road conditions, clear lane markings, and visible signage** as key factors that improve safety, along with **lower traffic speeds and predictable driver behavior**. Many respondents emphasized the importance of **traffic law compliance and enforcement**, noting concerns about speeding, red-light running, and distracted driving. Respondents also highlighted the role of infrastructure in shaping their perceptions of personal safety, including sidewalks, protected bike lanes, lighting, and separate facilities for pedestrians and cyclists.

At the same time, a meaningful share of respondents expressed that little or nothing about current conditions makes them feel safe when driving. Rather than reflecting a single concern, these responses tended to combine multiple grievances: **poor road maintenance, aggressive or distracted driving,**

and a perceived absence of traffic enforcement. Overall, responses point to a combination of **better maintenance** (mentioned in over 50% of responses), **safer street design** (mentioned in over 30% of responses), and **stronger enforcement** (mentioned in over 50% of responses) as the primary factors influencing perceived safety.

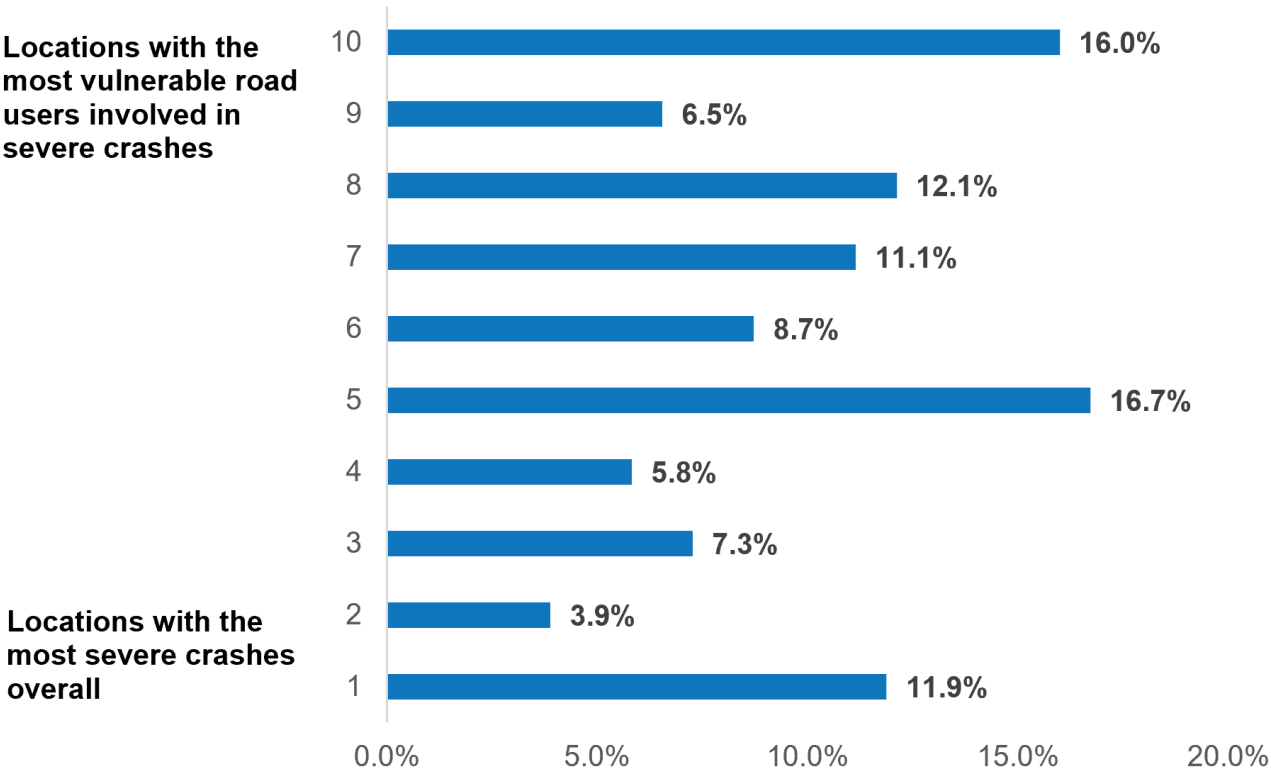
Responses to questions on project selection priorities highlight nuanced preferences across four dimensions of project targeting: where safety investments should be located, who they should prioritize, how projects should be identified, and how funding should be distributed across investments of varying sizes. The chart below presents respondents’ rankings of whether safety projects should target residential neighborhoods versus locations near businesses and destinations. While 36.8% of respondents selected scores of 5 or 6 (representing the midpoint), **the distribution leans toward residential areas: 44.4% of respondents favored a residential focus (scores 6 through 10), compared to just 18.9% selecting a strong preference for commercial districts (scores 1 through 4).** These results suggest that while respondents recognize the need for safety improvements across contexts, they more often **favor directing investments toward residential neighborhoods.**

Should Safety Projects Focus on Residential Neighborhoods or Businesses and Destinations?



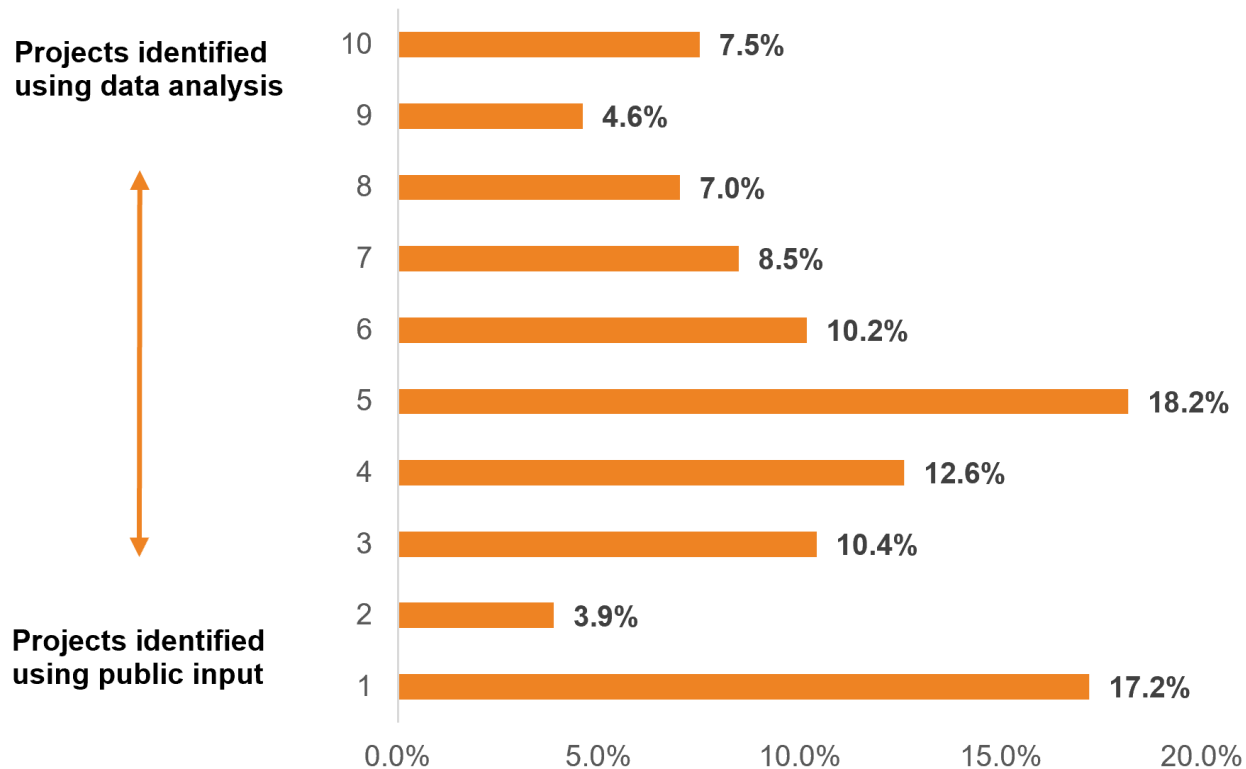
The next question shifted from location type to crash targeting strategy, asking respondents whether safety projects should prioritize locations with the most severe crashes overall versus locations where vulnerable road users are most often involved in severe crashes. Responses again cluster near the midpoint, with 25.4% selecting the midpoint scores of 5 and 6. However, **the distribution trends toward prioritizing vulnerable road users, with 45.7% selecting values 7 through 10, compared to 28.9% selecting locations with the most severe crashes overall (scores 1 through 4).** At the same time, that substantial minority reflects genuine support for a severity-first approach. Taken together, these findings suggest a **preference for centering vulnerable road users in project targeting decisions**, while maintaining consideration for overall crash severity.

Should Safety Projects Focus on Locations with the Most Severe Crashes or the Most Vulnerable Road Users in Severe Crashes?



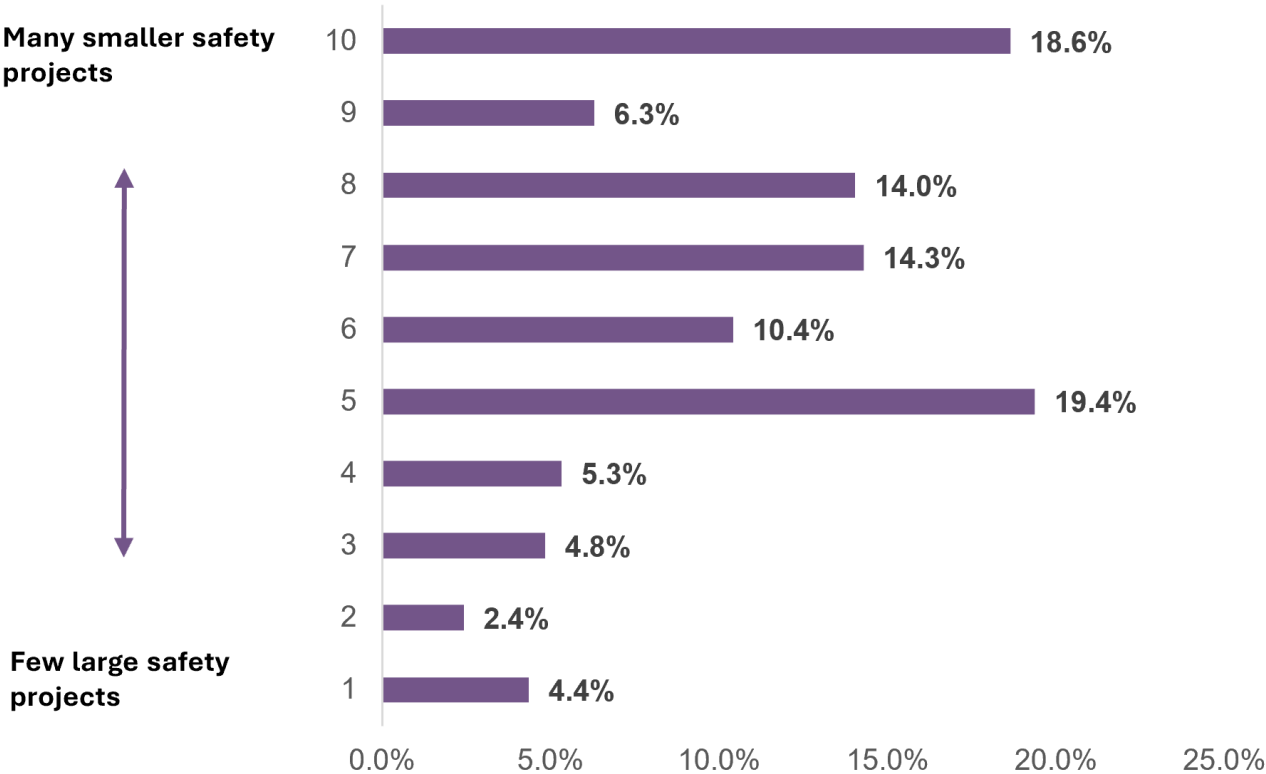
The next question shifted from targeting strategy to identification method, asking respondents whether safety investments should be prioritized using data analysis versus public input. Unlike the previous figures, responses here do not cluster near the midpoint. Instead, **the distribution leans toward public input, with 44.1% selecting scores of 1 through 4, compared to 27.6% selecting scores of 7 through 10 in favor of data-driven identification.** The remaining 28.4% selected midpoint scores of 5 or 6, indicating ambivalence between the two approaches. These findings suggest that **respondents more often favor centering community input in project identification.**

Should Safety Projects be Prioritized using Data Analysis or Public Input?



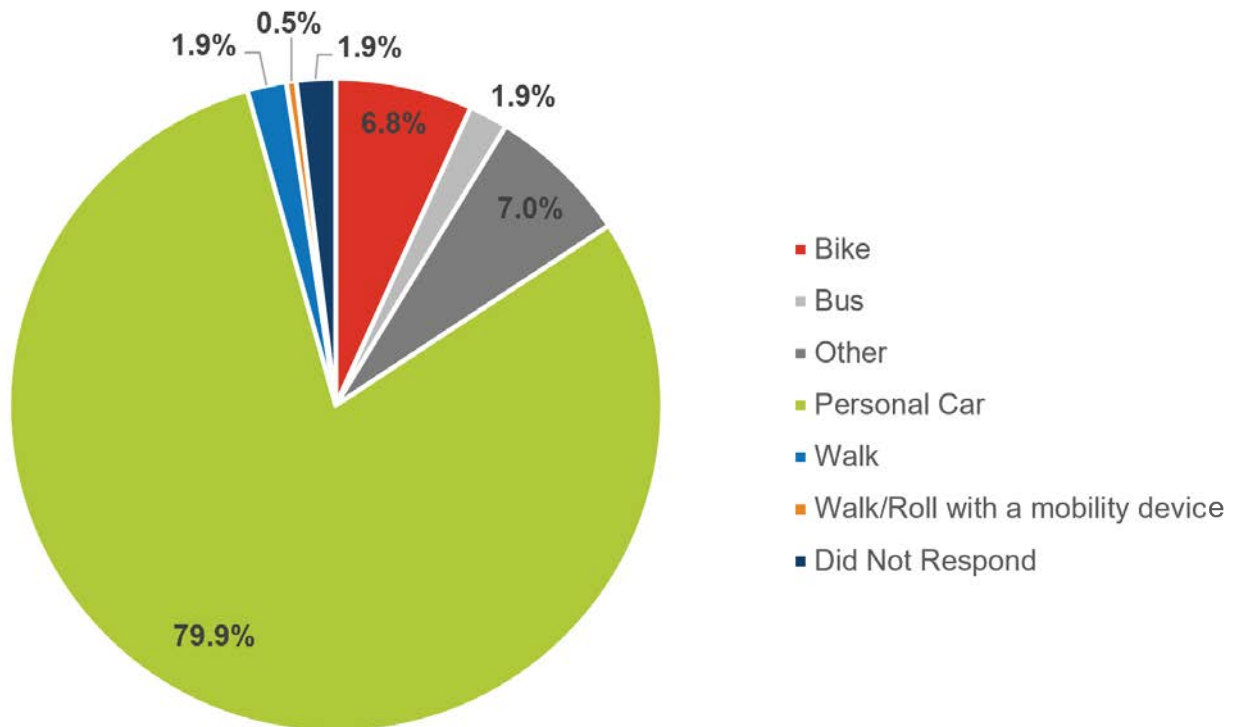
The next question asked respondents to weigh project investment methods, distinguishing between investing in few large safety projects versus many smaller ones. Here, the distribution is notably less balanced than in previous questions: **53.2% of respondents selected values 7 through 10, indicating a clear preference for many smaller projects**, compared to just 16.9% selecting values 1 through 4 in favor of fewer large investments. The remaining 29.8% selected the midpoint scores of 5 or 6. This represents the strongest directional preference observed across the project selection questions, suggesting **broad support for a distributed investment strategy that can address safety needs across more locations rather than concentrating resources in a smaller number of high-investment projects.**

Should Central Indiana Invest in Many Smaller Safety Projects or a Few Large Safety Projects?



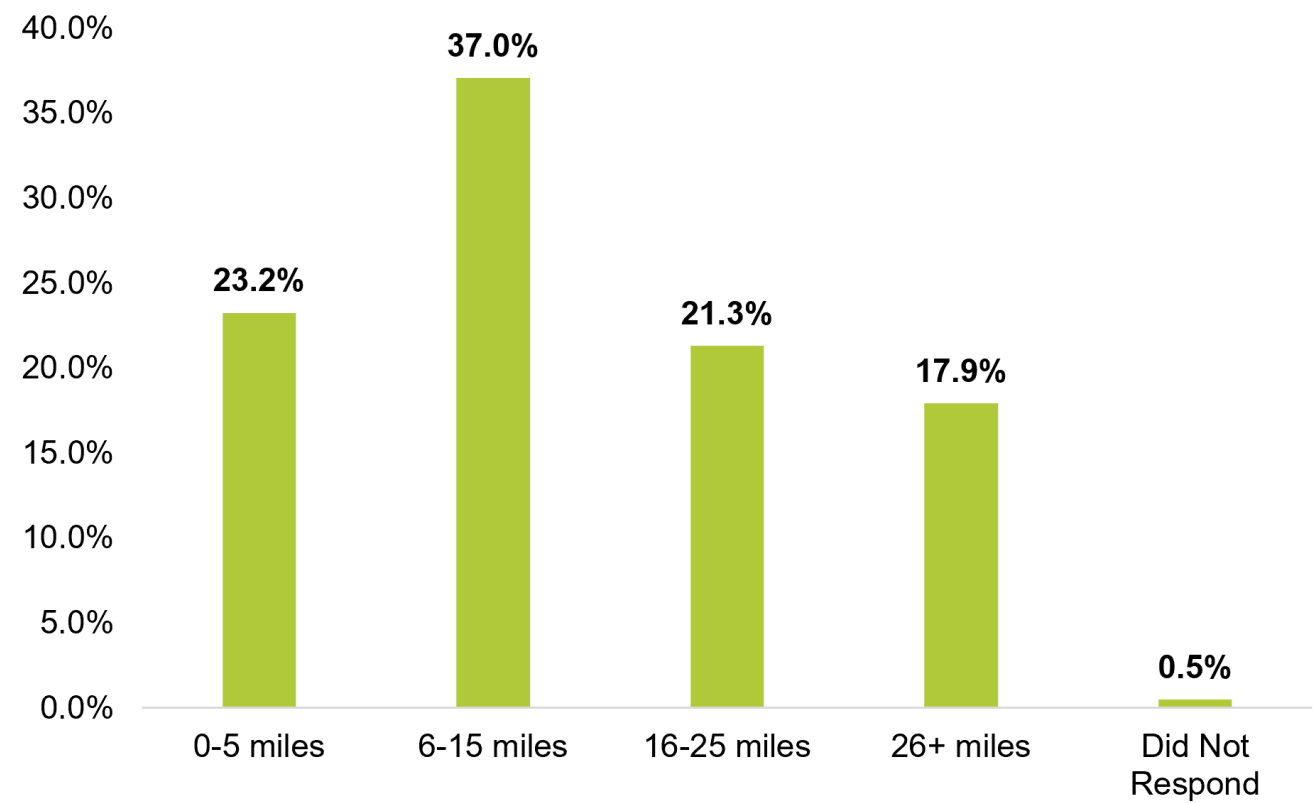
Commute patterns among survey respondents reveal a mode landscape heavily concentrated around personal vehicle use, yet one where trip distances suggest meaningful potential for active transportation. Commuting among survey respondents is dominated by personal vehicle use, with **79.9% of respondents reporting driving as their primary mode**. All other modes represent relatively small shares, including biking (6.8%), while walking, transit, and walking or rolling with a mobility device (including wheelchairs and scooters) use each account for only a small fraction of responses.

Primary Commuting Mode of Survey Respondents



The largest share of respondents commutes between 6 and 15 miles (37.0%), followed by 0 to 5 miles (23.2%) and 16 to 25 miles (21.3%). Fewer respondents travel 26 miles or more (17.9%). The National Household Travel Survey found in 2022 that the median cycling commute is approximately 3.3 miles, and walking trips are most common under one mile (National Household Travel Survey, 2022). By these thresholds, the 23.2% of respondents commuting 5 miles or fewer represent the segment with the clearest potential for mode shift. Realizing that potential depends on conditions: the safety concerns and preference for residential-area investment identified earlier in this survey suggest that infrastructure quality and traffic speed in neighborhood contexts are the primary barriers to broader active transportation adoption.

Commute Distance of Survey Respondents





SAFETY ANALYSIS

3. SAFETY ANALYSIS

This safety analysis of crashes in Central Indiana includes several components. Analysis of recent crashes in aggregate can identify crash types and contributing factors that are more likely to result in severe crash outcomes. A systemic crash analysis can identify geographic, demographic, infrastructure-based, and travel pattern-based risk factors that can be used to predict where severe crashes are most likely to occur in the future. Finally, a location-based analysis of recent crashes can create a High Injury Network (HIN) that the IMPO and its member agencies can use to prioritize where to invest in future roadway safety projects.



3.1 Existing Crash Analysis

Crash factors provide insight into the contributing determinants, locations, and environmental conditions of crashes. To identify crash factors associated with elevated risk of fatal and serious injury crashes occurring in the region, the IMPO analyzed crashes from the Indiana State Police Automated Reporting Information Exchange System (ARIES) between 2020 and 2024 to compare factors. From the analysis of this data, the following trends were discovered:

Three vehicle crash types are associated with 64% of all severe crashes in ARIES over the study period

- **Ran Off Road** crashes accounted for 20% of severe crashes, but only 7% of all crashes.
- **Right Angle** and **Left Turn** crashes accounted for 30% of severe crashes, but only 22% of all crashes.
- **Rear End** crashes accounted for only 14% of severe crashes, but 28% of all crashes.

Responding officers also note the primary crash factor for all crashes to identify common behaviors associated with crash severity. It is important to note that because the responding officer is not present to observe the crash, the primary factor in causing the crash is often underreported. Responding officers conduct thorough investigations of each crash. Due to conflicting narratives from the users involved, a definite root



cause of the crash is often not apparent. The following summarizes the most common primary factors reported by law enforcement:

- **Following Too Closely** was listed as the primary factor for 6% of all severe crashes but 20% of all crashes. This is likely due to its association with rear end crashes, which tend to be less severe. It is likely that vehicles following too closely have a less significant speed differential, and thus lower risk of incapacitating injury or death than other crash types.
- **Failure to Yield Right of Way** and **Disregard Signal/Regulatory Sign** were listed as primary factors for 22% of all severe crashes and 20% of total crashes. These types of crashes are more likely to result in a severe outcome due to the potential for higher speed impacts, since these crashes involve running a red light or pulling into oncoming traffic unexpectedly, leaving little time for other users to adjust and avoid collisions.
- **Unsafe Speed** was listed as the primary factor in 9% of severe crashes but only 3% of all crashes. Unfortunately, the data only captures the primary factor of crash and not all of the contributing factors can be assigned or listed; however, speed could be a secondary factor in nearly every crash factor. The differential with the primary factor alone (3 times more likely to be severe) is cause for concern. As the responding officer is not at the scene prior to the crash, this primary factor may also be under-reported.



3.2 Systemic Crash Analysis

In addition to identifying high-severity crash types and behaviors in the region, the IMPO analyzed design and contextual features of roads that were associated with a high risk of injury (such as lane configuration or whether the roadway was in a rural or urban area). This information can be used to proactively identify opportunities to reduce severe crashes through speed reduction, geometric improvements, or through the implementation of other countermeasures.

A Note on Systemic Crash Analysis

The IMPO's systemic crash analysis was initially completed as part of the 2022 Safety Action Plan. While other crash analyses in this 2025 plan update reflect crash data from 2020-2024, this Systemic Crash Analysis continues to reflect data from 2015-2021, since the aggregation of newer crash data was anticipated to yield results that would not change the scoring system used for the High Risk Network introduced later in this section.

Roadway feature data were extracted from local GIS data sets created by IMPO and partners as well as the Highway Performance Monitoring System (HPMS) data set and Open Street Map. The IMPO then spatially joined roadway segments and intersections to severe crashes cleaned by the IMPO to determine the roadway features that are most frequently associated with severe crashes. To increase the predictive power of the analysis, particularly for crashes involving vulnerable users, the IMPO expanded the number of crash years to 2015-2021.

Interstates and expressways were not included in the high-risk feature analysis. Highway design differs significantly from that of arterial, collector, and local roadways as there are few, if any, intersections. Furthermore, posted speed limits on interstates and expressways are considerably higher and non-motorized users are not allowed access. To provide the greatest insights into which roadway features are most over-represented in severe crashes, all public arterial, collector, and local roadways are included, regardless of ownership.

In total, the IMPO analyzed 55,813 roadway segments, of which 7,575 segments (~13%) were associated with at least one severe crash. The IMPO analyzed contextual features such as demographic factors, land use, and pedestrian/bicyclist exposure as well as roadway features including: functional classification, lane configuration, presence of a median or left turn lane, speed limits, average annual daily traffic (AADT), and presence of sidewalks and bike lanes. All features are based on GIS spatial analysis, not information provided in the ARIES crash report. Where possible a risk factor, the ratio of the share of severe crashes between 2015 and 2021 to the share of centerline miles of the feature, has been included to indicate where severe crashes are over- or under-represented.

The IMPO produced a risk score system to knit together contributing factors into an intelligible index for use by the IMPO and regional partners to prioritize and coordinate safety investments alongside the HIN.

Place Context

Roadway operations, behaviors, and design are shaped by the surrounding built environment, diversity and intensity of local activities and trip types, socioeconomic and demographic characteristics, and other contextual factors. For

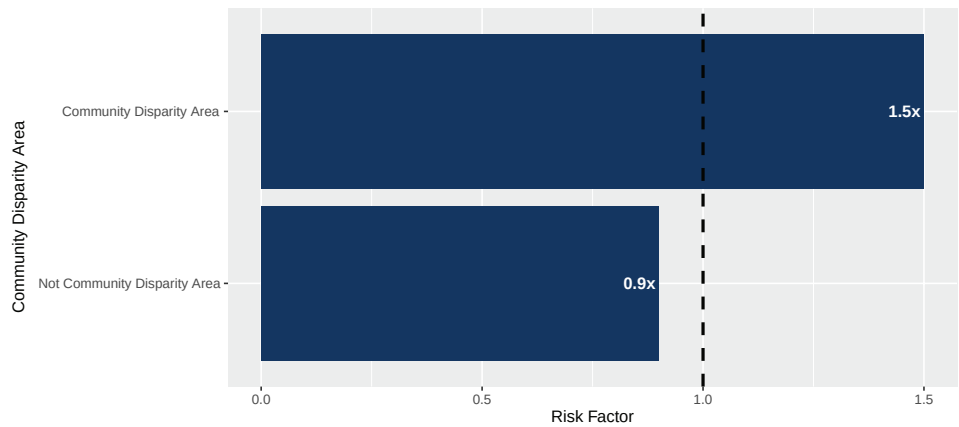
instance, the number and types of conflicts on a two-lane road in an urban area are very different from those in a rural area, even if motor vehicle volumes are similar. This analysis considered the impact of community disparities (areas of persistent poverty), and bicycle/pedestrian exposure patterns to determine where severe crashes are overrepresented based on context.

Community Disparity

Communities with economic disparity, among other factors, have a larger share of fatal and serious injury roadways relative to the number of centerline miles. In general, these areas were 1.5 times more likely to experience fatal and serious injury crashes than the typical community. In 2025, USDOT updated the preferred definition of community disparity to reference Areas of Persistent Poverty (APP).

How to Interpret These Results

These risk factors are based on the proportion of fatal and serious injury crashes to roadway miles. Roadway characteristics with a risk feature above 1 have a higher-than-average risk. For example, a roadway feature with a risk factor of 1.5 has 1.5 times average regional concentration of fatal and serious injury crashes.



Community Disparity Risk

Community Disparity Area	Crashes	Length	Percentage of Total Centerline Miles	Percentage of Total Crashes	Risk Factor
Not in Area	11,282	7,072.1	82.2	73.3	0.9
In Area	4,102	1,531.8	17.8	26.7	1.5

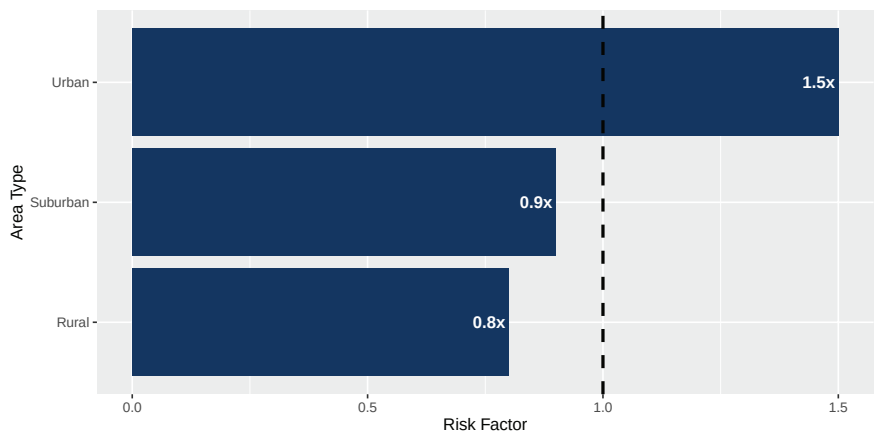
Source: HPMS 2022, USDOT 2023, ARIES data 2015-2021 cleaned and spatially located by IMPO

Area Types

High-level area types were based on the IMPO's Scenario Planning place types:

- **Rural:** Agriculture/Conservation, Rural Estate
- **Suburban:** Airport, Manufacturing/Mining, Office Park/Corporate Campus, Strip Commercial, Suburban mixed Use, Suburban Residential, Warehouse/Logistics
- **Urban:** Campus, Downtown Indy, Mixed-use Urban Infill, Special Events/Uses

Rural and Suburban place types had below average risk factors, where urban place types had above average risk factors.



Area Type Risk

Area Type	Crashes	Length	Percentage of Total Centerline Miles	Percentage of Total Crashes	Risk Factor
Rural	2,954	2,117.9	24.6	19.2	0.8
Suburban	7,914	4,822.7	56.1	51.4	0.9
Urban	4,516	1,663.3	19.3	29.4	1.5

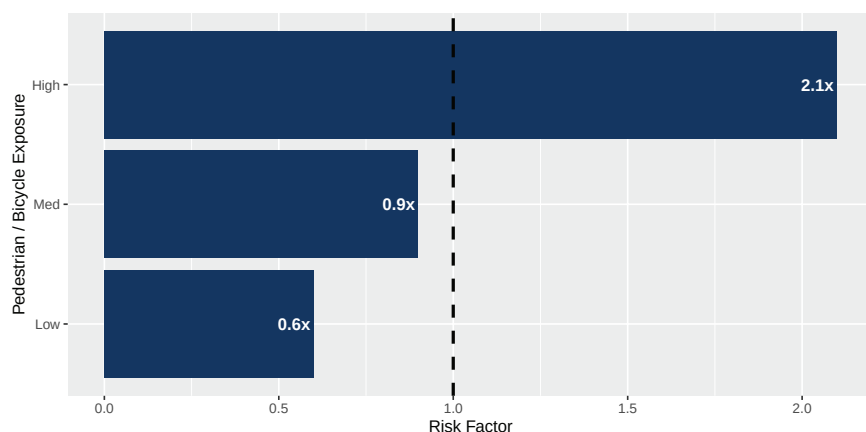
Source: HPMS 2022, IMPO, ARIES data 2015-2021 cleaned and spatially located by IMPO

Pedestrian Bicycle Exposure

Higher levels of pedestrian and bicycle exposure, measured based on estimated mode share statistics provided by Replica, were also associated with higher-than-average levels of risk for all motor vehicle crashes (1.3x the average risk). They were also associated with elevated levels of risk for pedestrian/bicycle crashes (2.1x the average risk).

This correlation is expected, as higher levels of bicycle and pedestrian exposure are a result of greater bicycle and pedestrian traffic. Areas with more bicycle pedestrian activity should be carefully examined to make sure that roadway and intersection elements support safe speeds and safe crossings.

Pedestrian and bicycle exposure is the amount of walking and biking likely to occur in a particular area. Bicycle and pedestrian exposure were estimated using Replica, a nationwide activity-based model. To create categories of bicycle and pedestrian exposure, the share of walking and biking trips were summarized at the Census Tract level. Census Tracts were divided into Low, Medium, and High pedestrian exposure based on whether they were in the lowest (0-8.3% of trips), middle (8.3%-10.4% of trips), or upper third (10.4% of trips or more) of Census Tracts for walking and biking activity.



Pedestrian / Bicycle Exposure Risk

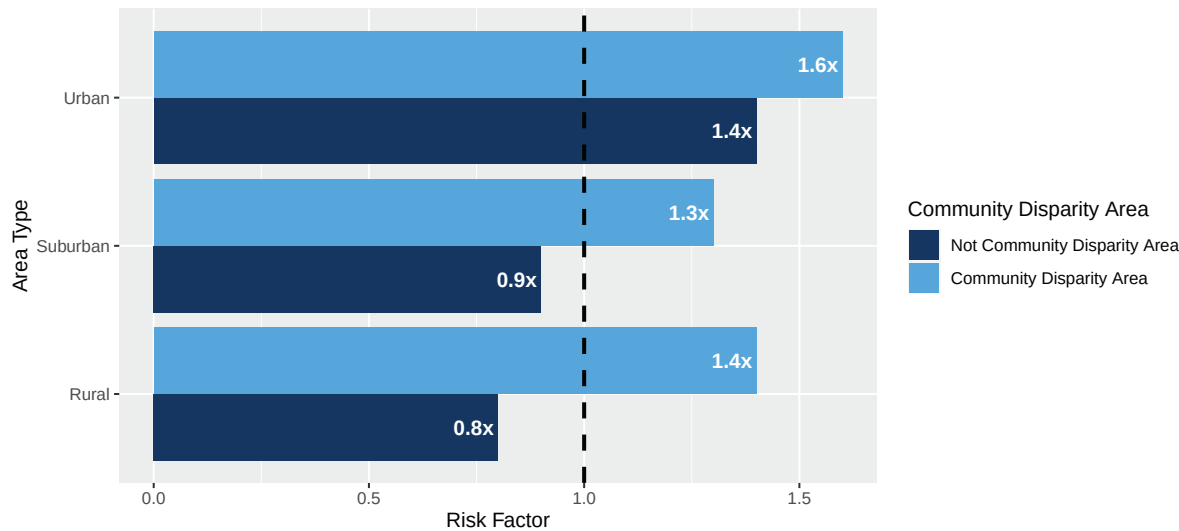
Pedestrian / Bicycle Exposure	Crashes	Length	Percentage of Total Centerline Miles	Percentage of Total Crashes	Risk Factor
Low	378	4,105.4	47.7	29.9	0.6
Medium	374	2,823.0	32.8	29.5	0.9
High	514	1,675.6	19.5	40.6	2.1

Source: HPMS 2022, Replica Fall 2021, ARIES data 2015-2021 cleaned and spatially located by IMPO

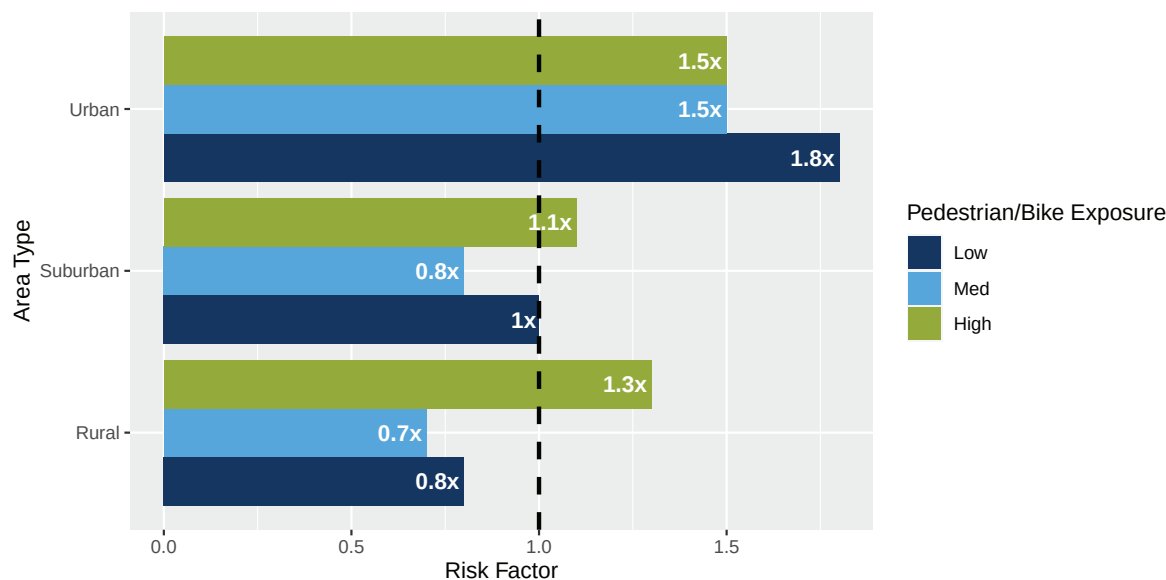
Interactions Between Contexts

Roadways in Areas of Persistent Poverty were associated with greater risk regardless of whether they were in Urban, Suburban, or Rural contexts. Urban areas, regardless of the amount of bicycle and pedestrian exposure, and rural and suburban areas with higher levels of bicycle and pedestrian exposure had higher levels of risk. Areas of Persistent Poverty, regardless of whether they were in low, moderate, or high pedestrian exposure areas, had higher levels of risk.

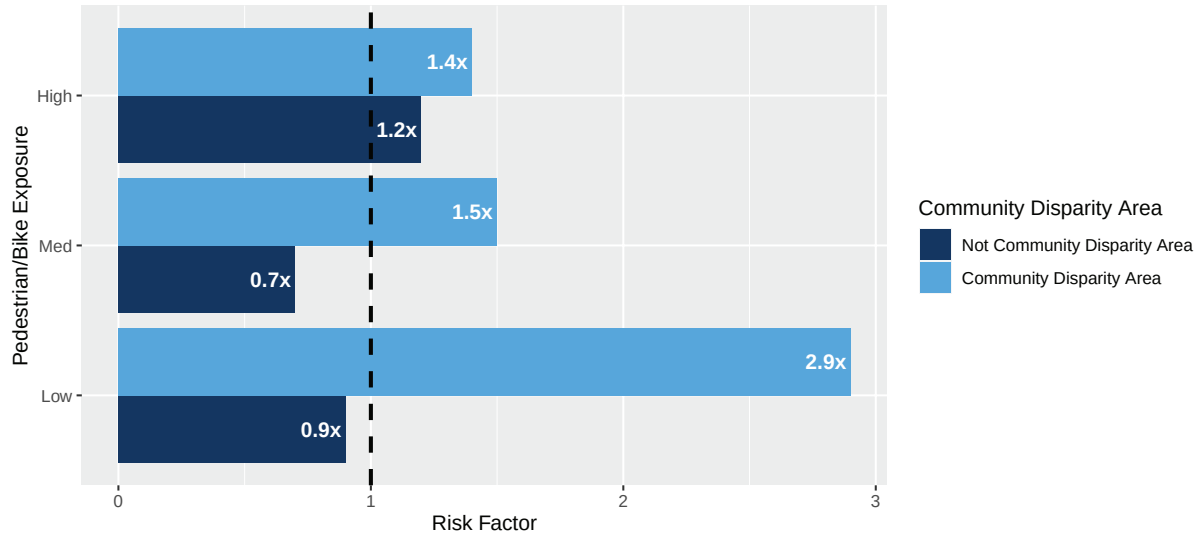
Area Type by Community Disparity Area



Area Type by Pedestrian/Bicycle Exposure



Pedestrian/Bicycle Exposure by Community Disparity Area

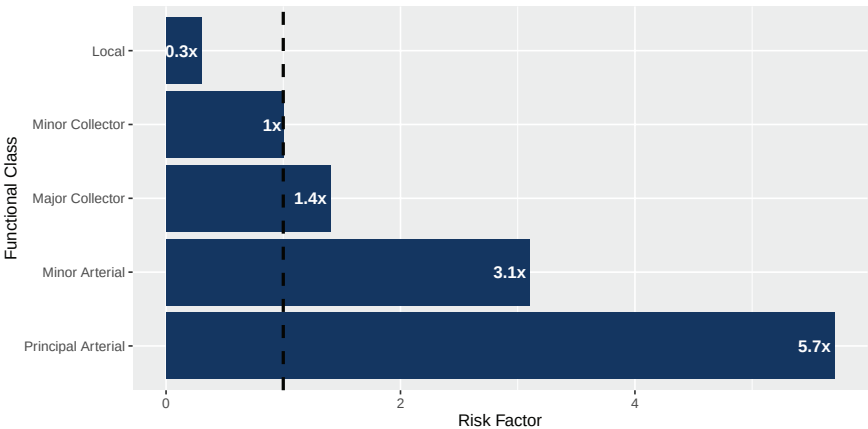


Risk Factor by Defining Roadway Features

Based on data aggregated from HPMS, the IMPO’s regional model, and regional bicycle facility and sidewalk data, the IMPO calculated the relative risk of different street types, operational characteristics such as speed limits and traffic volumes, and design features. **Importantly, these data are associations, they do not prove causation. Many of the risk factors are intertwined; for instance, a principal arterial is likely to have more lanes, higher vehicular volumes, and higher motor vehicle speeds.** The risk factors are helpful, however, in describing the risk relative within each feature class. These roadway features and context elements will contribute to a composite risk score.

Functional Class

Principal and Minor Arterial streets had higher concentrations of fatal and serious injury crashes than other roadway types. Interstate Highways and Limited Access Expressways were excluded from this analysis.



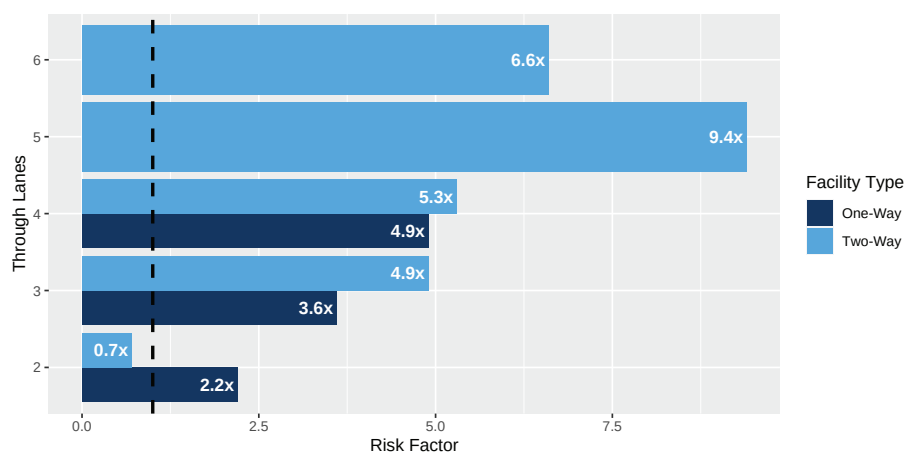
Functional Class Risk

Functional Class	Crashes	Length	Percentage of Total Centerline Miles	Percentage of Total Crashes	Risk Factor
Principal Arterial	4,761	464.1	5.4	30.9	5.7
Minor Arterial	4,337	784.2	9.1	28.2	3.1
Major Collector	2,557	1,016.6	11.8	16.6	1.4
Minor Collector	525	300.7	3.5	3.4	1.0
Local	3,204	6,038.3	70.2	20.8	0.3

Source: HPMS 2022, ARIES data 2015-2021 cleaned and spatially located by IMPO

Lane Configuration & Roadway Type

One-Way streets were generally higher risk than two-way streets with a similar number of lanes. Roadways with more lanes also had higher risk factors.



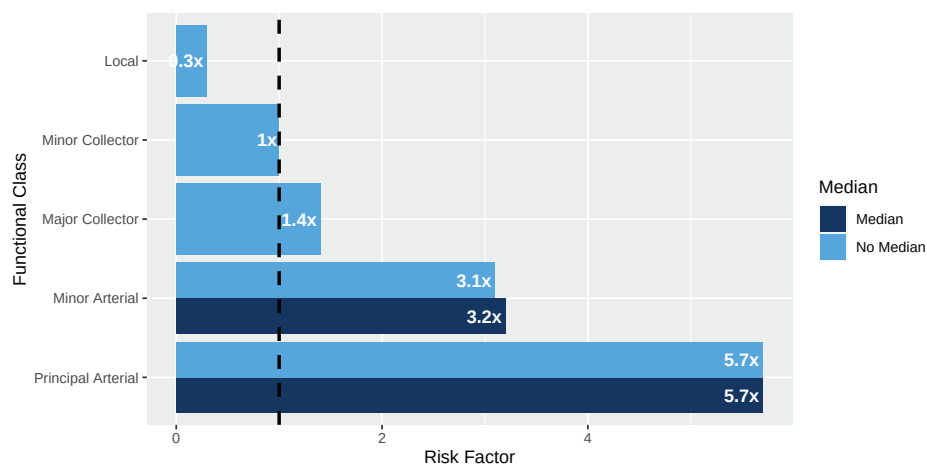
Lane Configuration

Facility Type	Through Lanes	Crashes	Length	Percentage of Total Centerline Miles	Percentage of Total Crashes	Risk Factor
One-Way	2	168	42.6	0.5	1.1	2.2
One-Way	3	91	14.3	0.2	0.6	3.6
One-Way	4	62	7.1	0.1	0.4	4.9
Two-Way	2	9,659	7,977.3	92.7	62.8	0.7
Two-Way	3	198	22.4	0.3	1.3	4.9
Two-Way	4	4,445	472.6	5.5	28.9	5.3
Two-Way	5	178	10.6	0.1	1.2	9.4
Two-Way	6	548	46.4	0.5	3.6	6.6

Source: HPMS 2022, ARIES data 2015-2021 cleaned and spatially located by IMPO

Medians

While roadways with a median generally had a higher risk factor than those without a median, when grouped by functional class, there is little difference in the risk between roadways with or without a median barrier.



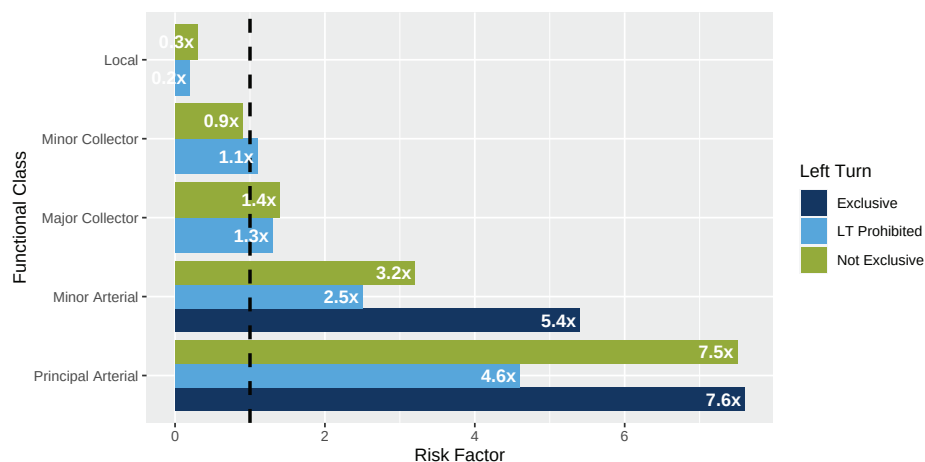
Lane Configuration

Median	Functional Class	Crashes	Length	Percentage of Total Centerline Miles	Percentage of Total Crashes	Risk Factor
Median	Principal Arterial	1,476	144.4	1.7	9.6	5.7
Median	Minor Arterial	142	24.9	0.3	0.9	3.2
No Median	Principal Arterial	3,285	319.7	3.7	21.4	5.7
No Median	Minor Arterial	4,195	759.2	8.8	27.3	3.1
No Median	Major Collector	2,517	1,003.5	11.7	16.4	1.4
No Median	Minor Collector	524	298.7	3.5	3.4	1.0
No Median	Local	3,160	6,014.6	69.9	20.5	0.3

Source: HPMS 2022, ARIES data 2015-2021 cleaned and spatially located by IMPO

Left Turn Lanes

For higher functional class roadways, roadways with prohibited left turns generally had lower risk than exclusive left turn lanes or shared left turn lanes.



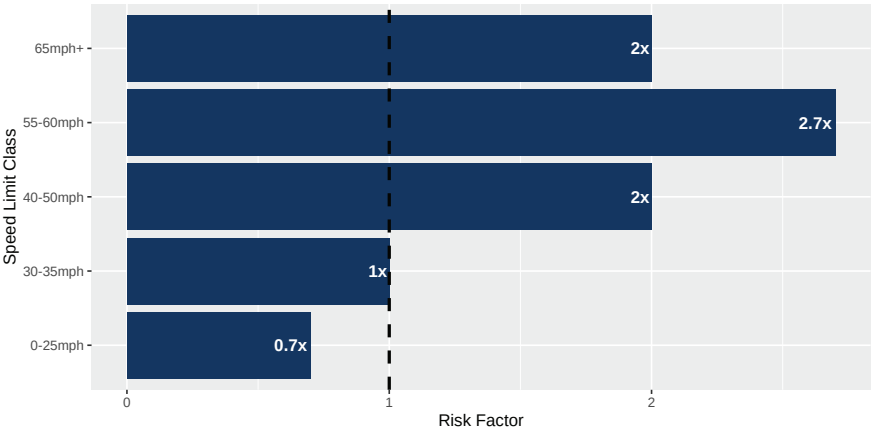
Left Turn Lanes

Left Turn	Functional Class	Crashes	Length	Percentage of Total Centerline Miles	Percentage of Total Crashes	Risk Factor
Exclusive	Principal Arterial	1,056	77.3	0.9	6.9	7.6
Exclusive	Minor Arterial	214	22.1	0.3	1.4	5.4
LT Prohibited	Principal Arterial	2,388	288.5	3.4	15.5	4.6
LT Prohibited	Minor Arterial	1,035	227.4	2.6	6.7	2.5
LT Prohibited	Major Collector	627	263.4	3.1	4.1	1.3
LT Prohibited	Minor Collector	92	45.4	0.5	0.6	1.1
LT Prohibited	Local	280	648.0	7.5	1.8	0.2
Not Exclusive	Principal Arterial	1,317	98.2	1.1	8.6	7.5
Not Exclusive	Minor Arterial	3,088	534.7	6.2	20.1	3.2
Not Exclusive	Major Collector	1,881	747.7	8.7	12.2	1.4
Not Exclusive	Minor Collector	427	254.5	3.0	2.8	0.9
Not Exclusive	Local	2,896	5,385.4	62.6	18.8	0.3

Source: HPMS 2022, ARIES data 2015-2021 cleaned and spatially located by IMPO

Speed Limits

Higher speed limits were generally associated with higher risk. 40-50mph roadways were 2x riskier, and 55-60 mph roadways were 2.7x riskier. There were only 52 miles of 65mph+ roadways that were analyzed (Interstate and Limited Access Freeways were excluded from this analysis), but they had a slightly lower risk factor than 55-60mph roadways.



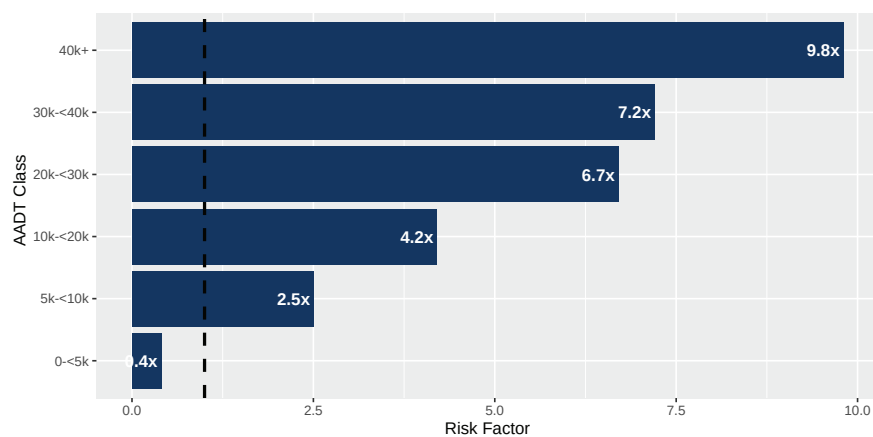
Speed Limits

Speed Limit Class	Crashes	Length	Percentage of Total Centerline Miles	Percentage of Total Crashes	Risk Factor
0-25mph	7,234	5,690.6	66.1	47.0	0.7
30-35mph	2,290	1,327.3	15.4	14.9	1.0
40-50mph	4,891	1,370.7	15.9	31.8	2.0
55-60mph	786	163.9	1.9	5.1	2.7
65mph+	183	51.5	0.6	1.2	2.0

Source: HPMS 2022, ARIES data 2015-2021 cleaned and spatially located by IMPO

AADT (Annual Average Daily Traffic)

Roadways with higher traffic volumes – in particular, those with more than 20,000 vehicles per day – had a higher level of crash risk.



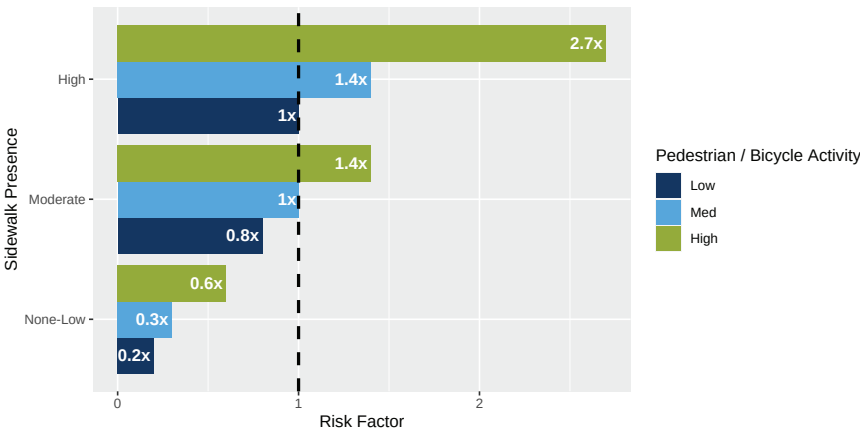
AADT Class

AADT Class	Crashes	Length	Percentage of Total Centerline Miles	Percentage of Total Crashes	Risk Factor
0-<5k	5,775	7,267.7	84.5	37.5	0.4
5k-<10k	2,487	546.0	6.3	16.2	2.5
10k-<20k	4,162	553.1	6.4	27.1	4.2
20k-<30k	2,037	168.9	2.0	13.2	6.7
30k-<40k	756	58.7	0.7	4.9	7.2
40k+	167	9.5	0.1	1.1	9.8

Source: HPMS 2022, ARIES data 2015-2021 cleaned and spatially located by IMPO

Sidewalks

Sidewalks are not an inherently dangerous roadway feature. However, there is an increase in walking and biking on streets with sidewalks. Areas with more pedestrian activity should be carefully examined to make sure that roadway and intersection elements support safe speeds and safe crossings.



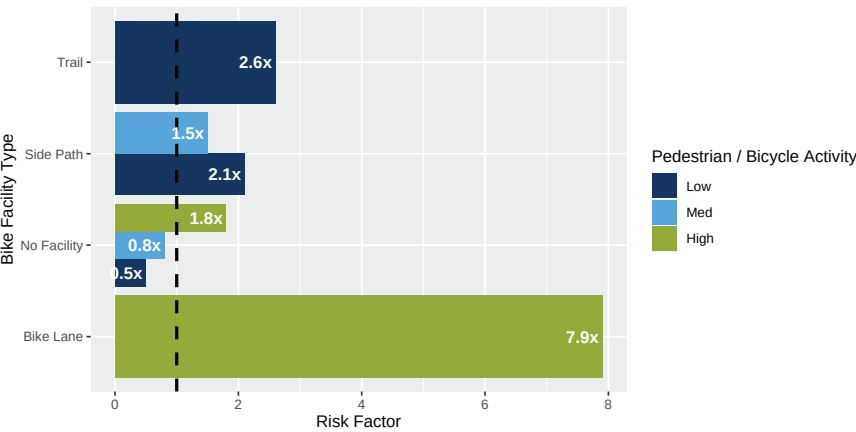
Sidewalk Presence

Sidewalk Presence	Pedestrian / Bicycle Activity	Crashes	Length	Percentage of Total Centerline Miles	Percentage of Total Crashes	Risk Factor
None-Low	Low	67	1,987.0	23.1	5.3	0.2
None-Low	Med	49	1,134.7	13.2	3.9	0.3
None-Low	High	36	402.2	4.7	2.8	0.6
Moderate	Low	26	227.6	2.6	2.1	0.8
Moderate	Med	32	216.2	2.5	2.5	1.0
Moderate	High	36	170.4	2.0	2.8	1.4
High	Low	285	1,890.8	22.0	22.5	1.0
High	Med	293	1,472.1	17.1	23.1	1.4
High	High	442	1,102.9	12.8	34.9	2.7

Source: HPMS 2022, IMPO, ARIES data 2015-2021 cleaned and spatially located by IMPO

Bike Facilities

Similar to sidewalks, bike facilities are not dangerous in and of themselves and are likely to lead to increased user activity. Bike facilities, however, should be carefully selected and planned. As the number of lanes, speeds, and vehicular volumes increase, so should separation to provide a safe, comfortable, and accessible facility for people of all ages and abilities.



Bike Facility Presence

Bike Facility Type	Pedestrian / Bicycle Activity	Crashes	Length	Percentage of Total Centerline Miles	Percentage of Total Crashes	Risk Factor
Bike Lane	High	53	45.9	0.5	4.2	7.9
No Facility	Low	261	3,742.3	43.5	20.6	0.5
No Facility	Med	324	2,699.6	31.4	25.6	0.8
No Facility	High	423	1,575.2	18.3	33.4	1.8
Side Path	Low	86	273.3	3.2	6.8	2.1
Side Path	Med	15	69.1	0.8	1.2	1.5
Trail	Low	31	82.6	1.0	2.4	2.6

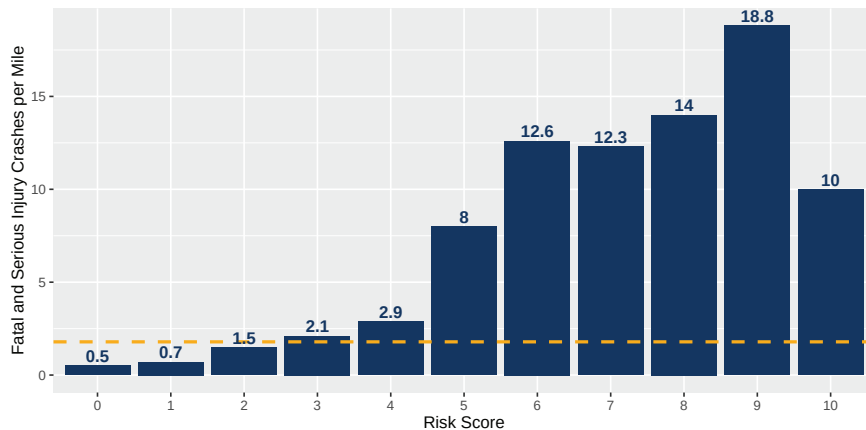
Source: HPMS 2022, ARIES data 2015-2021 cleaned and spatially located by IMPO

Risk Score System

The table below outlines higher-risk roadway attributes and a composite risk score for evaluating the relative safety of streets and roads in the IMPO region.

Risk Score			
Attributes			Points
Community Disparity Area	No		0
	Yes		1
Area Type	Rural		0
	Suburban		0
	Urban		1
Pedestrian / Bicycle Exposure	Low		0
	Medium		0
	High		1
Lanes	One-way	2	1
		3-4	2
	Two-way	2	0
		3-4	1
		5+	2
Left Turn	Restricted		0
	Unrestricted		1
Speed Limits	35 mph or under		0
	40+ mph		1
AADT	Under 5k		0
	5k to <10k		1
	10 to <20k		2
	20k+		3
Total Points Possible			10

A review of the crash data shows more fatal and serious injury crashes per mile on roads with a higher composite risk score.

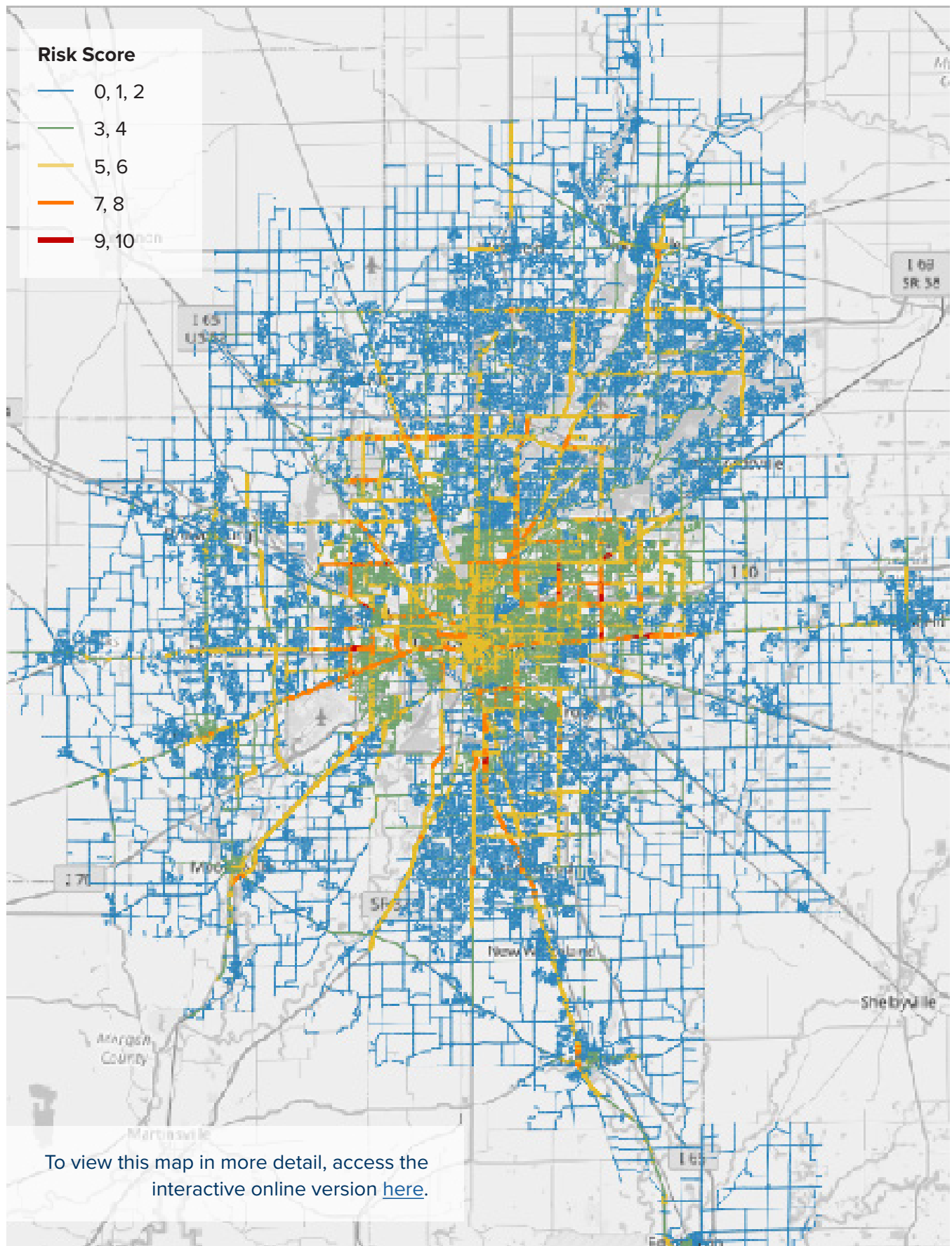


Fatal and serious injury crashes with a risk score of 10 are likely underrepresented due to limited data availability.

Risk Score	Miles	KSI Crashes	KSI per Mile
0	626.0	295	0.5
1	3,779.5	2,531	0.7
2	1,925.2	2,794	1.5
3	986.5	2,096	2.1
4	770.5	2,257	2.9
5	245.0	1,949	8.0
6	178.9	2,262	12.6
7	67.1	826	12.3
8	20.8	292	14.0
9	4.3	81	18.8
10	0.1	1	10.0

Comparing the HIN and High Risk Maps

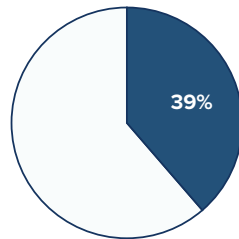
The High Risk Network is a map representation of higher-risk roadway features, where each roadway is assigned a risk score of 0 to 10. Recently completed safety improvements may result in a lower risk score. While the High Injury Network in the next section shows roadways with higher history of crashes, the High Risk Network highlights roadways with higher risk roadway features and contexts.



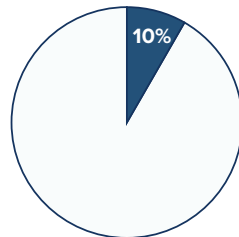
3.3 High Injury Network

In this 2026 Safety Action Plan the IMPO has updated its High Injury Network (HIN) to identify the local corridors with the highest frequencies of crashes resulting in severe injuries and fatalities within the MPA from 2020-2024. The HIN represents the top 10% (239 centerline miles) of regional collector, arterial, and high-volume local streets scored by the number of incapacitating injury and fatal crashes per centerline mile. The HIN enables the IMPO and local public agencies (LPAs) to prioritize safety investments and other strategies on the streets with the highest number of severe crashes to make rapid progress towards regional safety goals.

The HIN represents 39% of crashes resulting in a serious injury or fatality between 2020 and 2024...



...but is located on only 10% of locally owned collector and arterial streets and roads.



Unlike other crash analysis in this plan, the HIN is limited to the arterial, collector, and high-volume local streets that LPAs have jurisdiction over. Thus, all routes owned by INDOT were dropped prior to analysis. INDOT routes typically include interstates, state routes, and numbered US routes. The HIN also excludes all crashes on low-volume local roads – roads with less than 2,000

ADT. These are not directly comparable to high volume roadways that connect local and regional destinations, and therefore excluding them enables the IMPO to conduct a better comparison of significant corridors throughout the region.

To construct the HIN, the IMPO used spatially verified fatal and serious injury vehicle, pedestrian, and cyclist crashes that occurred in the public right of way between 2020 and 2024, excluding crashes on interstates and expressways (with the exception of at-grade intersections and ramp intersections). Severe crashes were joined to eligible intersections and roadway segments. Candidate corridors spanning 0.5 to 2 miles were identified and then scored by the number of severe crashes per mile, with fatal crashes receiving a higher weight. The top 172 corridor segments, totaling 239 miles and representing approximately 10% of the 2,407 miles of arterial, collector, and high-volume local centerline miles not owned by INDOT, were then assigned to the HIN.

The Regional HIN is shown on the map below. Between 2020 and 2024, 1,347 fatal and serious injury crashes occurred within 100 feet of the HIN, representing 39% of all severe crashes on the collector, arterial, and high volume local network. Across the region, severe pedestrian and bicyclist crashes represented 15% of all severe crashes. Of the 172 corridors on the HIN, severe bicycle and pedestrian crashes are overrepresented on 87 corridors spanning 126 miles. Details about each corridor along the HIN are provided in Appendix B.

As part of this plan update, each IMPO LPA without an existing safety action plan received a Community Safety Zone Map that details the roadways with the highest fatality and serious injury crash rates or highest risk network scores. These community safety zone maps are included in Appendix C.

3.4 High Injury Network Corridors

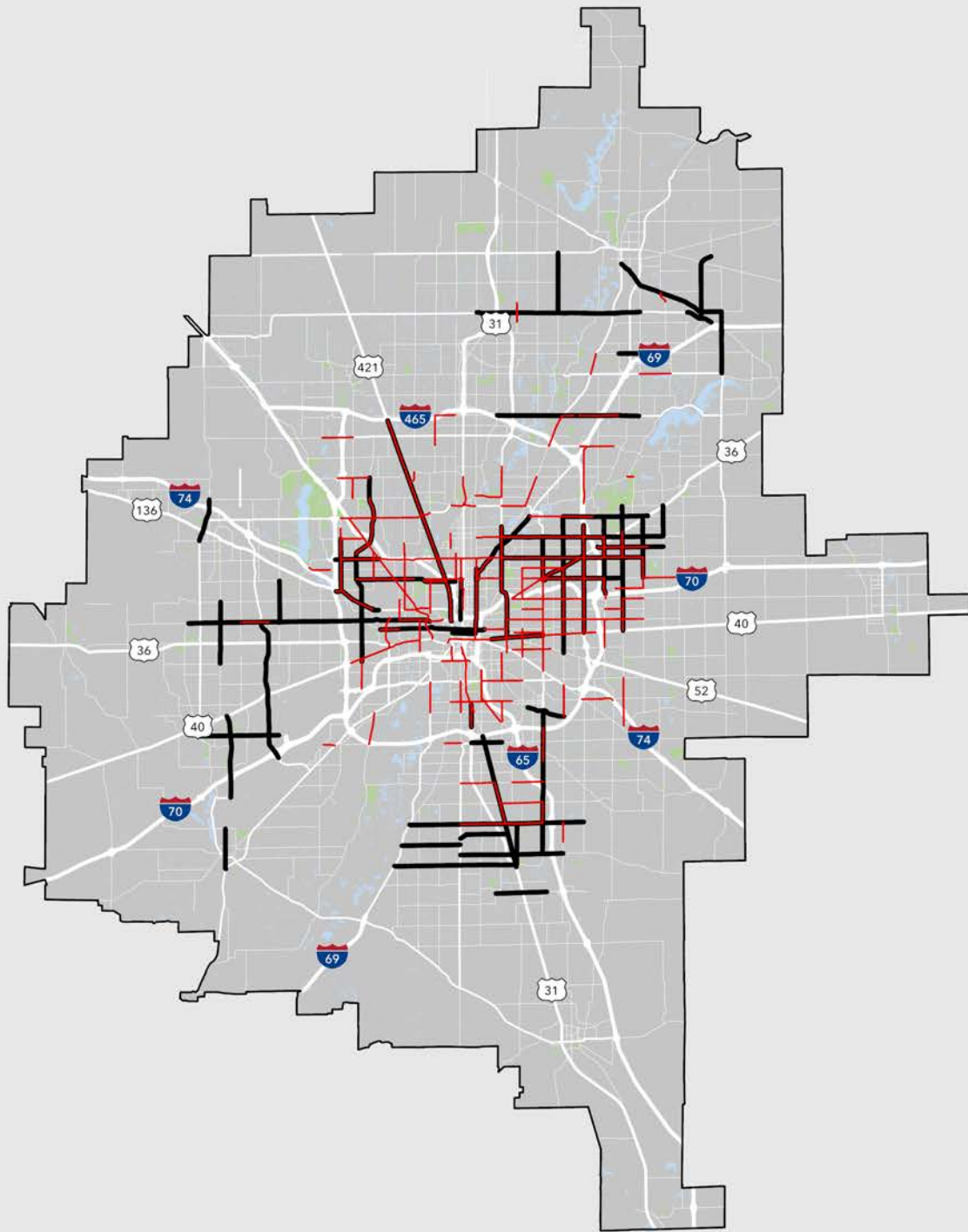
2022 and 2025 High Injury Network Comparison

An analysis was conducted to determine the differences between the HIN created in this SAP update, and the HIN created in the previous version of the SAP in 2022. The 2025 HIN has a total of 239.3 roadway miles, while the 2022 HIN had a total of 234.2 roadway miles. The 2025 HIN was also comprised of shorter segments to better capture unique roadway geographies and areas with high crash concentrations.

The 2025 HIN captures new areas but still encompasses many roads identified in the 2022 HIN. Roughly 100 miles, or 41%, of the 2025 HIN overlap with the 2022 HIN. Some of the corridors that were highlighted on both networks were found on 38th St, Dr. Martin Luther King Jr St/Michigan Rd, Keystone Way/Rural St, Shadeland Ave, Arlington Ave, and College Ave. A map overlaying the 2025 HIN onto the 2022 HIN can be found on the next page.

A Note on HIN Methodology and Results

The IMPO HIN is based solely on fatal and serious injury crash history, which means that the roads with the highest concentration of these crashes are the corridors that appear on the HIN. Many of these HIN corridors are multi-lane arterial roadways, where crashes tend to occur more often regardless of their severity because of the relatively high travel speeds and traffic volumes present along those corridors. As a result, while the IMPO HIN corridors represent the greatest opportunities in terms of overall fatal and serious injury crash reduction potential, these corridors should not be interpreted as the ones that pose the highest individual risk to drivers, pedestrians, bicyclists, and other roadway users. Projects identified along these HIN corridors may include countermeasures that target risk factors such as vehicle speeds, traffic congestion, and bicycle or pedestrian exposure. These projects will be scoped and defined by road owners in the coming years during the implementation phases of this Safety Action Plan.



IMPO Regional High Injury Network Map

- 2025 High Injury Network
- 2022 High Injury Network



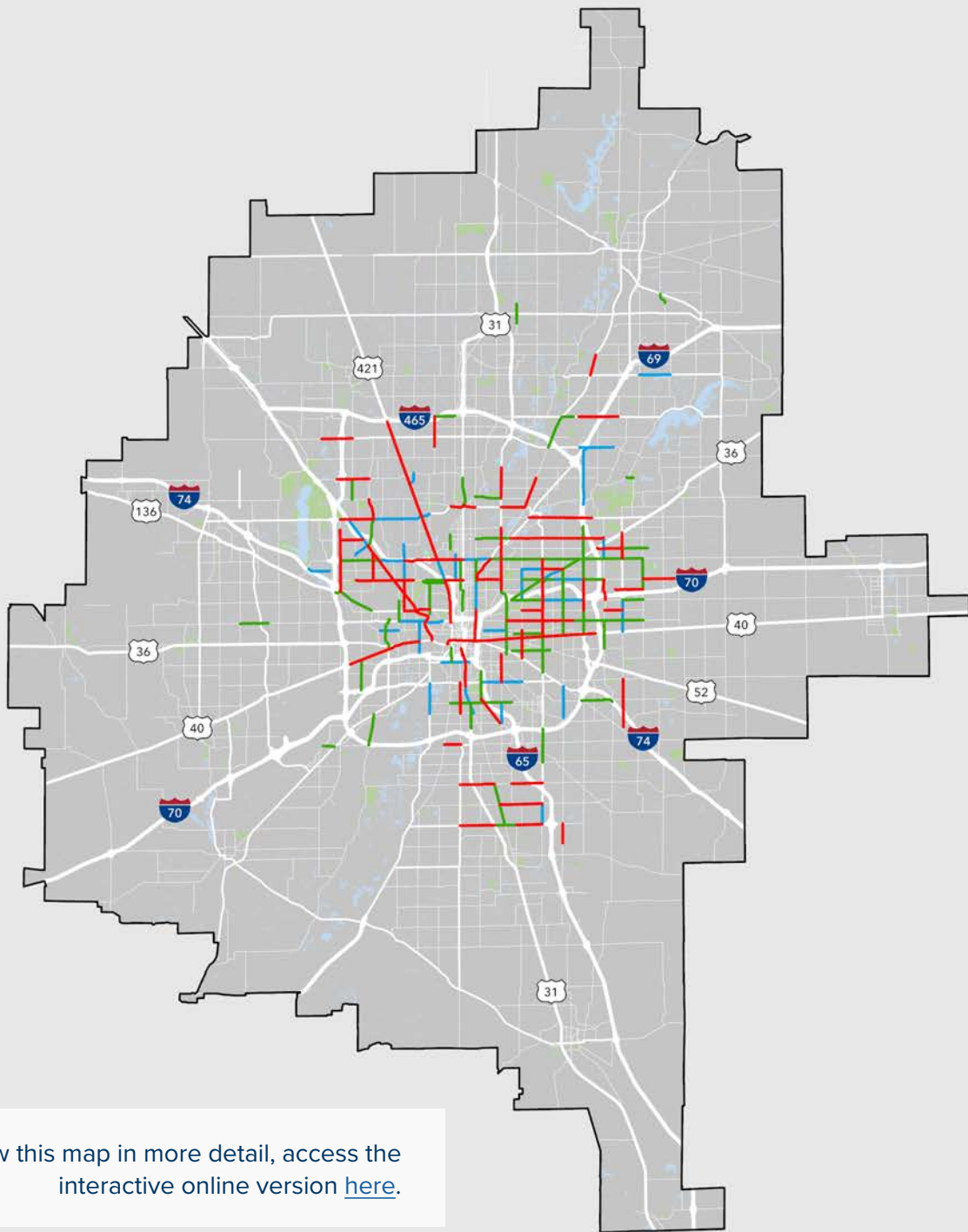
0 10 20 Miles

Crash Trends

People using HIN roads have generally experienced an increase in fatal and serious injury crashes from 2020 to 2024. Along all of the HIN corridors, fatal and serious injury crashes increased from an average of 263 crashes per year in 2020-2021 to 289 crashes from 2023-2024, or an increase of 10%. Two-year averages of fatal and serious injury crashes were grouped by the first two and final two years to reduce the impact of any outlier years on any corridor. Not all corridors had an increase in crashes. Some corridors were about the same (didn't change more than 10% in total) and some decreased. The top 10 relative increase and decrease corridors are shown in the table below, and trends for corridors are shown on the map on the next page.

Top 10 Increasing and Top 10 Decreasing Corridors (Comparing 2020-2021 to 2023-2024)

Increasing		Decreasing	
Corridor	Change in Fatal and Serious Injury Crashes	Corridor	Change in Fatal and Serious Injury Crashes
HIGH SCHOOL ROAD	0.5 to 3 (500%)	BROAD RIPPLE AVENUE	2 to 0 (-100%)
CARSON AVENUE	0.5 to 2.5 (400%)	71ST STREET	1.5 to 0 (-100%)
30TH STREET	0.5 to 2 (300%)	CAREY ROAD	1 to 0 (-100%)
COUNTY LINE ROAD	0.5 to 2 (300%)	THOMPSON ROAD	1 to 0 (-100%)
KESSLER BOULEVARD	0.5 to 2 (300%)	UNION CHAPEL ROAD	0.5 to 0 (-100%)
KESSLER BOULEVARD	0.5 to 2 (300%)	MANN ROAD	0.5 to 0 (-100%)
MERIDIAN STREET	0.5 to 1.5 (200%)	TIBBS AVENUE	0.5 to 0 (-100%)
COLLEGE AVENUE	0.5 to 1.5 (200%)	COLLEGE AVENUE	3.5 to 0.5 (-86%)
MADISON AVENUE	0.5 to 1.5 (200%)	TROY AVENUE	2.5 to 0.5 (-80%)
56TH STREET	1 to 3 (200%)	ILLINOIS STREET	2.5 to 0.5 (-80%)



To view this map in more detail, access the interactive online version [here](#).

IMPO Regional Crash Trends Map

Crash Trends

- Decrease
- About the Same
- Increase



0 10 20 Miles

Vulnerable Road User (VRU) Crashes on the HIN

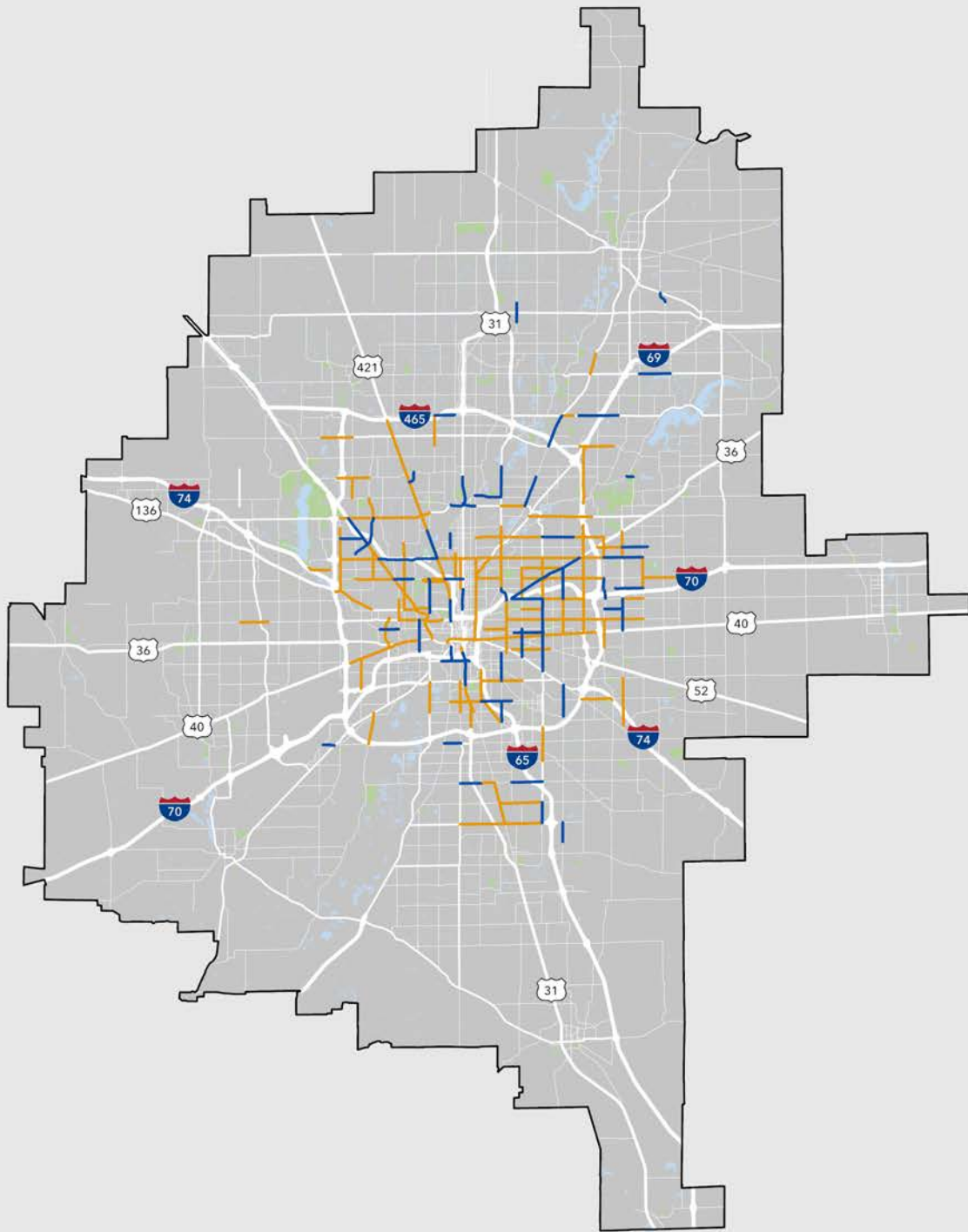
Bicyclists and pedestrians were involved in about 15% of fatal and serious injury crashes in the years 2020- 2024 in the IMPO. Several HIN corridors had a higher-than-average share of bicycle/ pedestrian crashes. The table below shows the top 10 corridors for fatal and serious injury Bicycle & Pedestrian crashes; as well as whether the rate of crashes has been increasing, decreasing, or staying about the same. The map on page 61 also shows individual HIN segments that had experienced at least one severe VRU crash, based on whether they experienced a higher-than-average or lower-than-average rate of vulnerable road user crashes.

Top 10 Corridors in terms of Vulnerable Road User (VRU) Crash Rate

Corridor	Bicycle	Pedestrian	Bike Ped Fatal and Serious Injury Crashes per Mile per Year	Percent Fatal and Serious Injury Crashes involving Bike/Ped	Trend
10TH STREET	1	7	0.90	42%	Increase
SHADELAND AVENUE	0	5	0.89	36%	Decrease
KEYSTONE AVENUE	3	3	0.79	33%	Increase
16TH STREET	0	5	0.79	42%	Decrease
38TH STREET	1	4	0.78	45%	Increase
WASHINGTON STREET	2	2	0.74	36%	Increase
COUNTY LINE ROAD	1	3	0.73	29%	Increase
COLLEGE AVENUE	1	4	0.72	50%	Decrease
WASHINGTON SREET	2	2	0.67	80%	About the Same
WASHINGTON SREET	0	5	0.66	31%	Increase

Crash Movements

Each HIN corridor has a variety of crash types. The primary crash movements per corridor are shown on the table and map on page 62. Right angle crashes were the top crash movement for most corridors on the High Injury Network. This was also the top crash movement for the region.



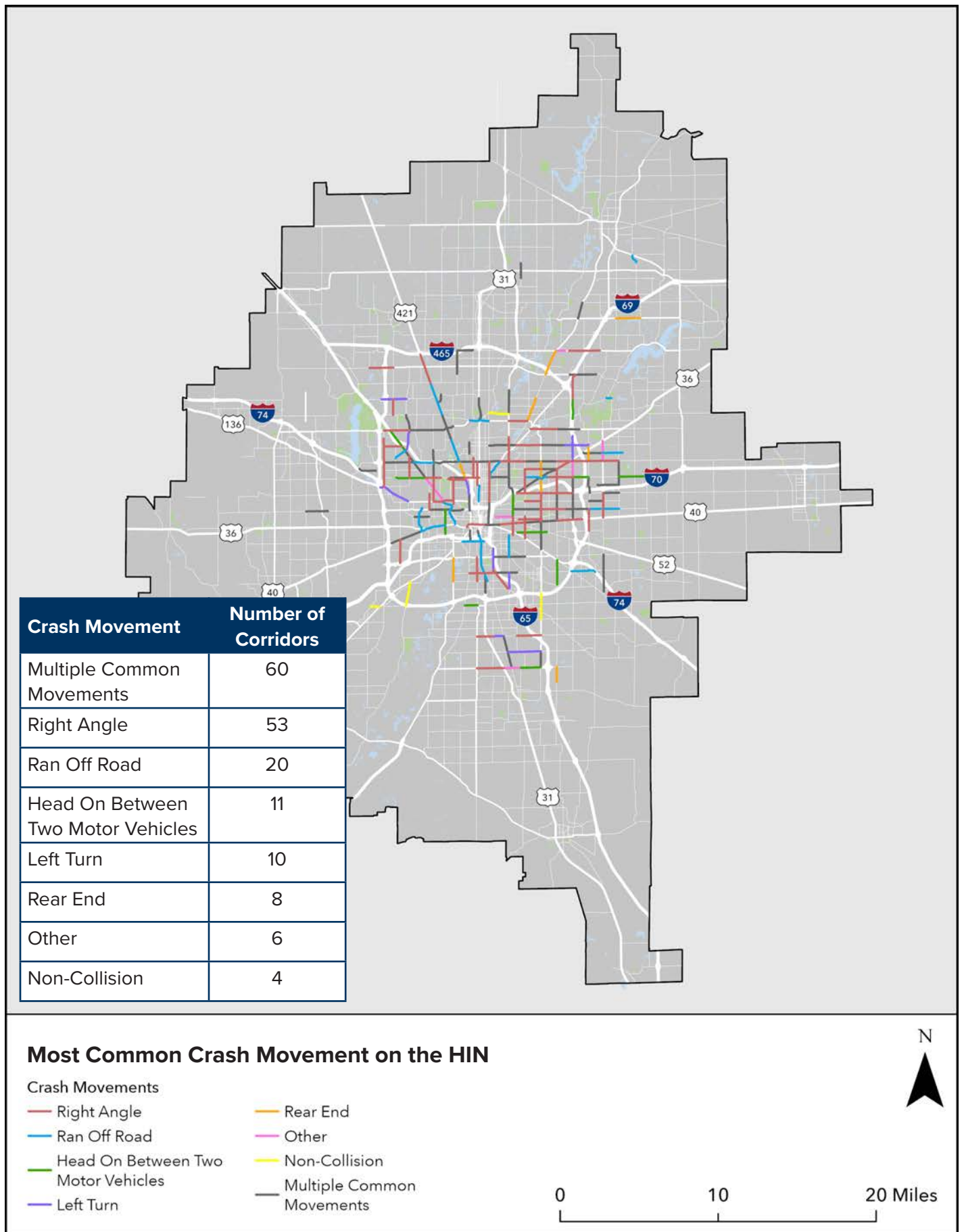
VRU Crash Rates on the HIN

VRU Crash Rate Comparison

- Higher than Average VRU Crash Rate
- Lower than Average VRU Crash Rate



0 10 20 Miles

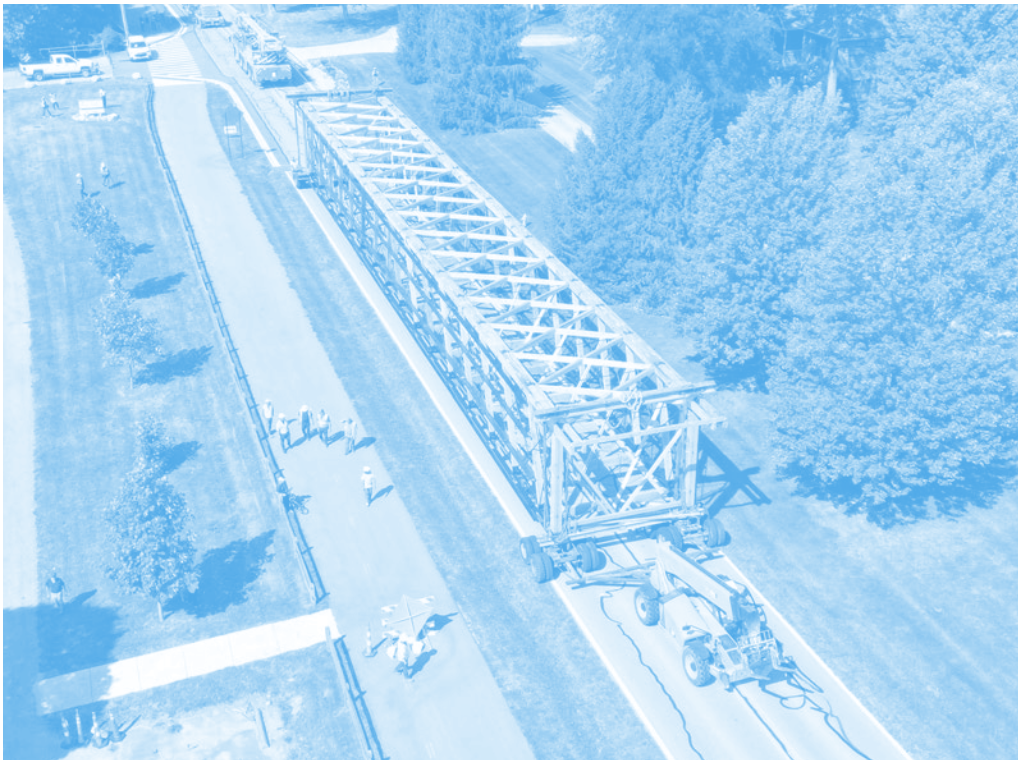




UNDERSERVED COMMUNITIES

4. UNDERSERVED COMMUNITIES

As part of the Indianapolis Metropolitan Planning Organization (IMPO)'s Safe Streets and Roads for All (SS4A) 2026 Safety Action Plan Update, this section summarizes a framework for identifying Underserved Communities (UC) by linking social disadvantage indicators to current transportation system conditions and analyzing safety risk within those UCs.



The analysis in this section highlights areas with the greatest need for investment through a fair, transparent, and replicable approach, while also flagging areas that pose higher safety risks. The methodology is designed to be flexible and easily updated as new datasets and policies emerge, ensuring continued alignment with planning efforts and funding eligibility requirements at multiple levels.

The goal of this analysis is to create a current, evidence-based portrait of need that can guide near-term actions while aligning with the evolving priorities of funding partners and stakeholders around underserved communities and safety. To accomplish this, the underserved communities analysis refreshes key community and safety indicators using the most current datasets and federal/state designations, including updated Areas of Persistent Poverty (APP), as well as locally maintained safety and environmental data. The analysis centers on indicators closely tied to IMPO's safety, community, and regional dynamics, each supported by documented data sources and clear formulas and structured for periodic updates.

By maintaining consistent methods and datasets, and archiving prior results, the IMPO will be able to analyze trends over time to identify what has changed and what progress has been made. When necessary, the IMPO will adjust terminology to meet updated program requirements while preserving underlying methodological consistency



and ensuring comparability across planning cycles.

4.1 Approach

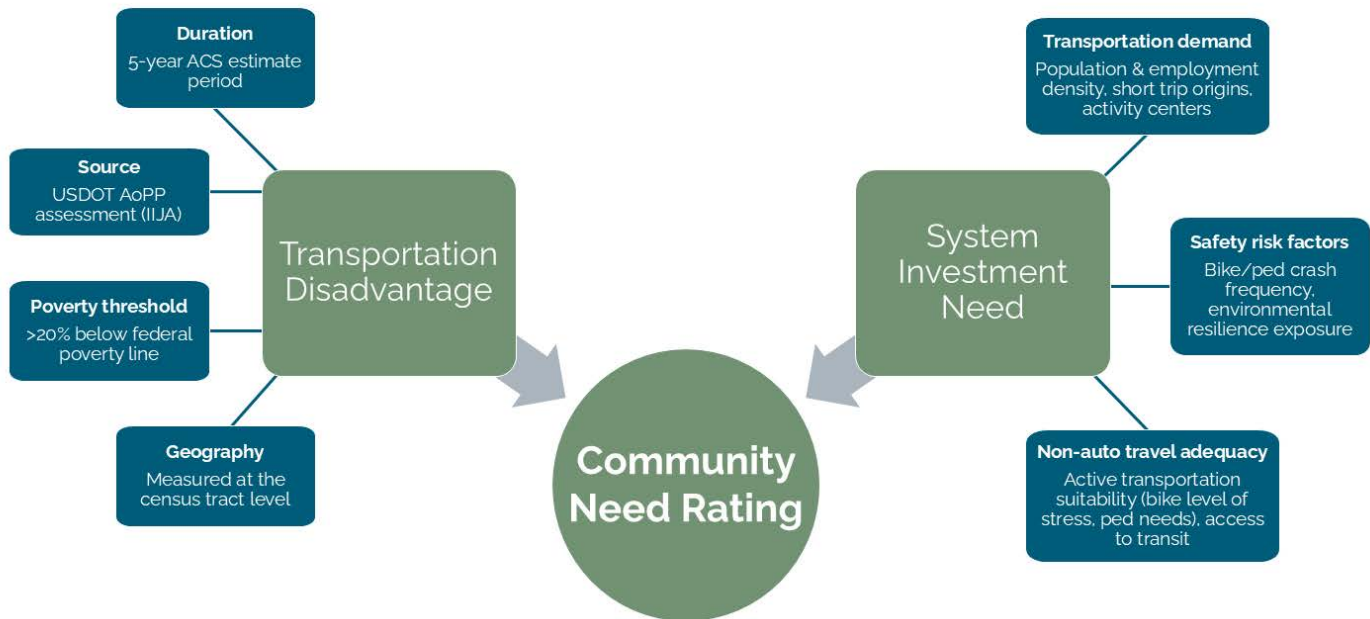
The updated underserved communities prioritization framework combines assessments of transportation disadvantage and system investment need, as described in the section below. By combining separate assessments of social concerns and transportation network needs, the IMPO can target safety investments, prioritize outreach, and guide project development in communities facing the greatest need. This approach is designed to be repeatable, so that the results update as improvement projects conclude and take effect, pointing the way to the next focus areas. This approach directs safety strategies and planning projects toward locations where they can most effectively reduce disparities and improve outcomes for underserved communities. The graphic on the following page illustrates how the two components are combined into a single index.

Transportation Disadvantage

For this framework, transportation disadvantage refers to areas experiencing persistent poverty (APP). The U.S. Congress established this definition in the Infrastructure Investment and Jobs Act, describing persistent poverty as chronic poverty in which households experience relatively low income over multiple consecutive time periods. While this statutory definition provides a durable baseline across executive administrations, the guidance, funding priorities, and program implementation associated with this measure



Community Need Rating Approach



may evolve across executive administrations. The study team will monitor any relevant regulatory or policy updates that could affect how this definition is applied in practice. In this analysis, the study team measures transportation disadvantage at the census tract level and defines it as tracts in which at least 20 percent of the population has lived below the federal poverty line over a five-year period. This measure captures sustained socioeconomic vulnerability rather than short-term income fluctuations.

The transportation disadvantage assessment draws from the most recent APP assessment produced by the U.S. Department of Transportation (USDOT) and can be updated as new American Community Survey (ACS) five-year estimates become available. By flagging tracts where a large share of residents have lived in poverty for a long time, the safety framework can incorporate considerations of underserved communities into project selection and resource allocation and prioritize investments in areas with

the most persistent need. A detailed description of the component score methodology is provided in Appendix D.

System Investment Need

For this framework, system investment need refers to areas where the current transportation system or its condition presents safety challenges for people walking, biking, and rolling; where infrastructure faces high environmental resilience risks; and where residents have limited transportation access to destinations. While the transportation disadvantage assessment focuses on social vulnerability, the system investment need assessment focuses on the condition and performance of the transportation system itself.

The system investment need assessment is built on local policy and data and can be updated as conditions change. Specifically, the assessment incorporates the following inputs:

- Transportation demand indicators, including population and employment density, short trip (less than five miles) origin density, and

the presence of activity centers identified by the IMPO.

- Safety risk factors, including the frequency of fatal and injury bicycle- and pedestrian-involved crashes, and roadway exposure to future physical threats from extreme weather and other resiliency risk factors.
- Inadequacy of non-auto travel options, including:
 - Active transportation suitability, measured using bicycle level of stress and pedestrian improvement needs identified through IMPO's active transportation planning efforts.
 - Access to quality transit, defined as frequent and reliable bus service within walking distance.

The system investment need assessment identifies where the IMPO should invest in the transportation system in accordance with existing local policy on a range of indicators. This approach brings multiple IMPO policies into a single framework and provides flexibility to update or expand source data as updated or better datasets become available. A detailed description of the component score methodology is provided in Appendix D.

4.2 Underserved Communities (UCs) Identification

The Community Need Rating Map, on the following page, was developed using the methodology described in the Approach section. Each census block group in the IMPO region receives two separate ratings: one for transportation disadvantage and one for system investment need. Because transportation disadvantage is calculated at the census tract level, the tract-level score is applied uniformly to all census block groups within that tract. These

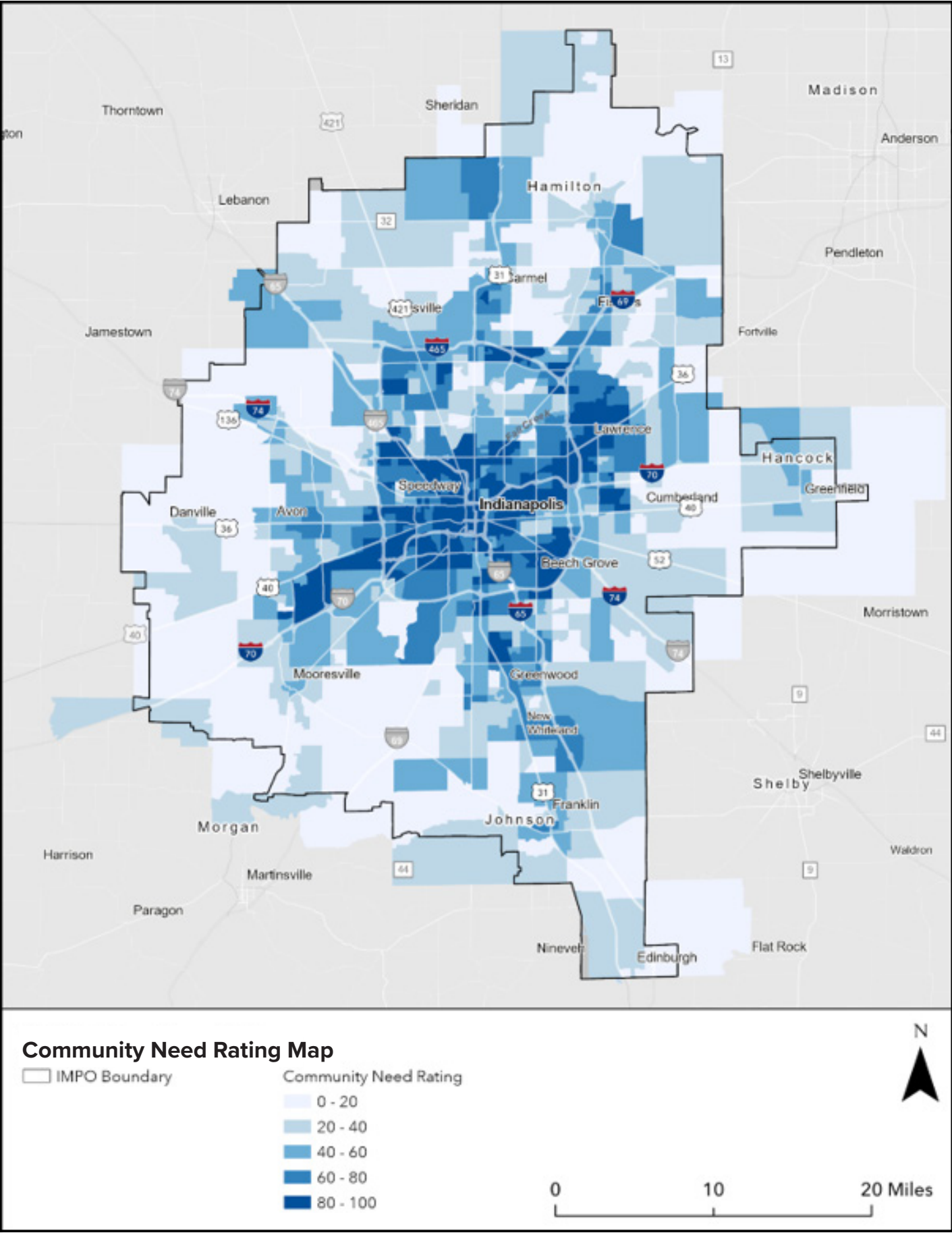
ratings are weighed and combined into a single community need rating that ranges from 0 to 100. Higher community need ratings indicate a greater need for transportation investment, reflecting both underlying social and demographic disadvantages as well as gaps in the built environment and transportation system.

The IMPO uses community need rating to identify the UCs, which consists of census block groups with a community need rating over 80. The map on the next page shows that the UCs in Marion County are concentrated around downtown Indianapolis, with extensions to the northeast and southwest. Higher-need clusters are adjacent to key corridors, including the I-70/US-40 corridor toward Arlington Woods and Lawrence to the northeast, and downtown toward Indianapolis International Airport to the southwest. Outside the downtown core, additional medium-to-high-need pockets appear in both the northern and southern parts of the MPA (e.g., New Whiteland, Carmel, and Hortonville), as well as in neighborhoods west of I-465 and US-31. These patterns indicate that elevated need is distributed across both urban and rural/exurban communities and is not confined to the city center.

4.3 Disparities in Traffic Crashes

This analysis evaluates safety risk by examining the frequency and severity of crashes and their spatial relationships to UCs. The approach illustrates how adverse safety outcomes intersect with social disadvantage and lower quality transportation infrastructure.

The IMPO provided records of severe crashes occurring between 2020 and 2024, including fatal crashes and Suspected Serious Injury (SSI) crashes. Crash locations were spatially joined to census block groups and classified based on UCs status. Average crash counts by severity type were then calculated separately for UCs and non-UCs. By comparing these averages,



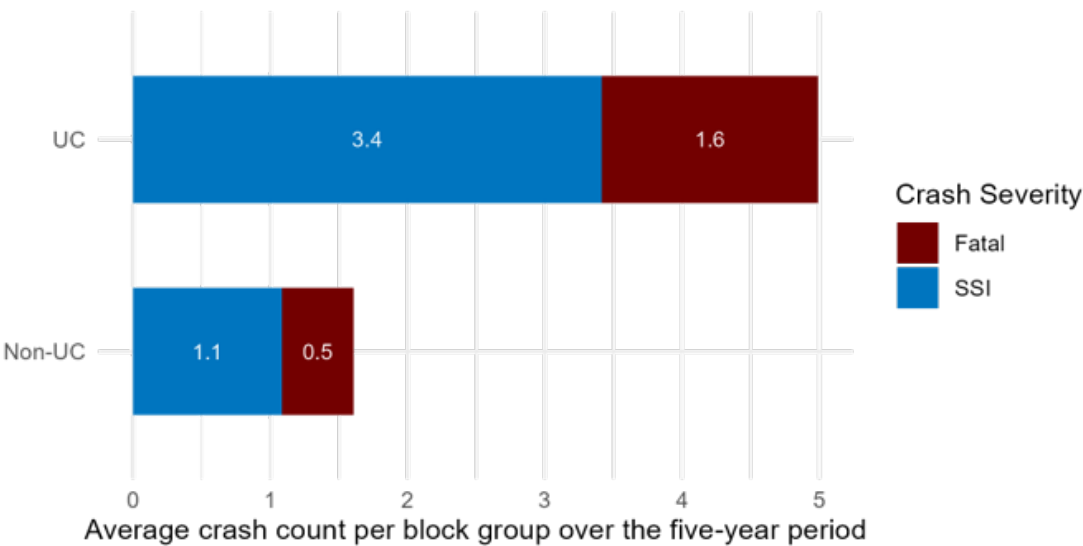
the analysis identifies locations where systemic safety concerns align with existing social and infrastructural disadvantages.

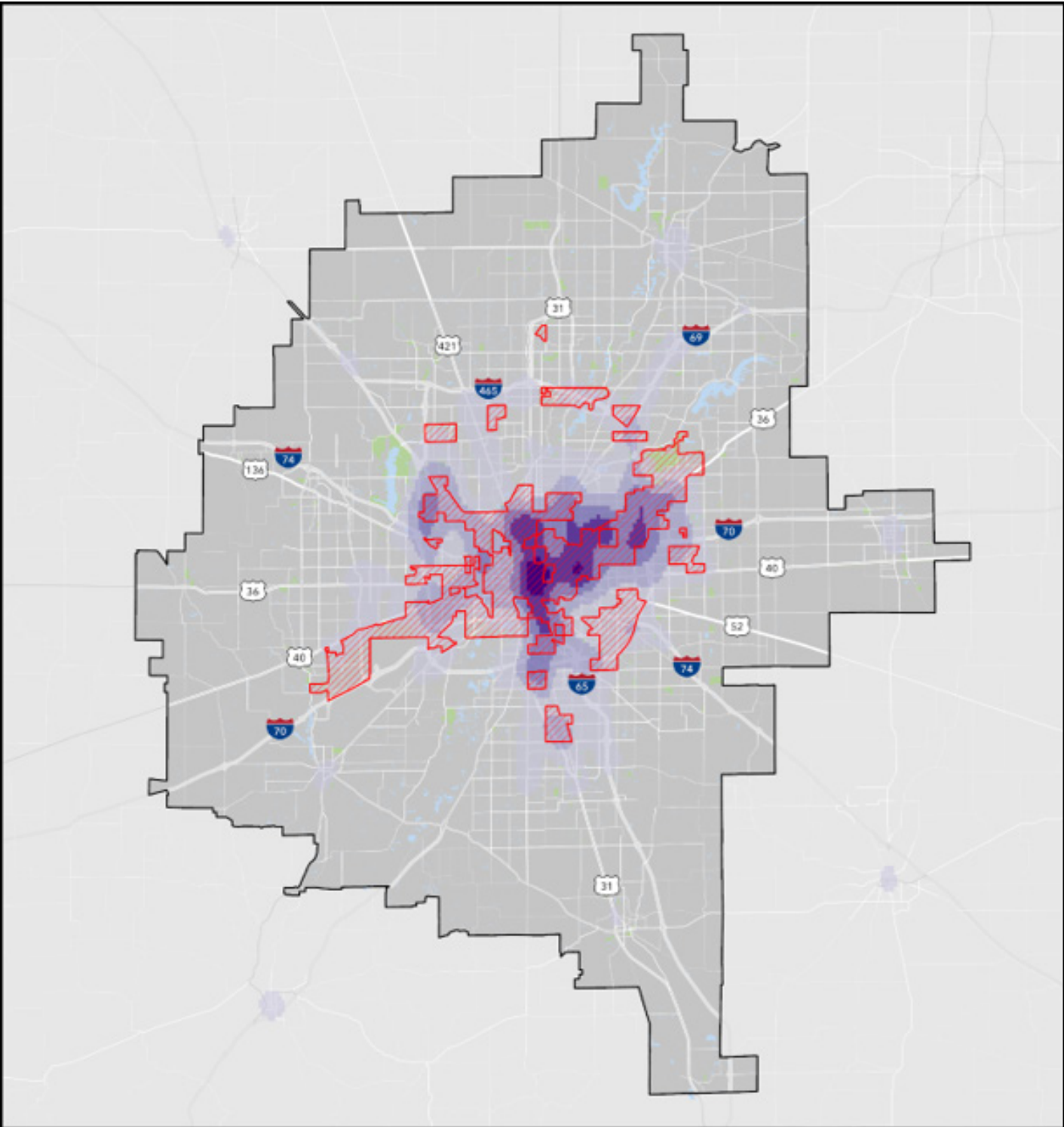
The chart below summarizes the average number of crashes per block group over the full five-year study period, grouped by UC and non-UC status. Using block groups as the unit of comparison allows the analysis to compare crash burden across areas on a consistent geographic basis, rather than being driven by the number or size of individual block groups in each category. Standardizing by block group area or population was intentionally avoided: crash risk is driven directly by the presence and use of the roadway network, not by the size of a block group or how many people live within its boundaries. Overall, UCs experience higher levels of both fatal and SSI crashes than non-UCs. On average, UCs recorded 1.6 fatal crashes, compared to 0.5 in non-UCs. Similarly, UCs averaged 3.4 SSI crashes, approximately three times the non-UC average of 1.1, indicating a substantially higher safety burden in underserved communities.

The following maps illustrate the spatial concentration of fatal and SSI crashes using kernel density estimation (KDE). KDE measures the relative intensity of events across space to identify hot spots. KDE is one way to make a heat map: each crash acts as a source of "heat". Where crashes cluster close together, the heat

accumulates into a hot spot. Areas with isolated crashes appear "cooler." The result is a smooth surface showing where crash activity is most concentrated across the study area. The map on page 68 shows crash density with all fatal and SSI crashes weighted equally, reflecting the overall concentration of crash incidents. The map on page 69 uses the same set of crash records but weights each incident by the number of fatalities associated with the crash, giving greater influence on locations with more severe outcomes. As a result, this map places greater emphasis on areas where fatal crashes are more concentrated.

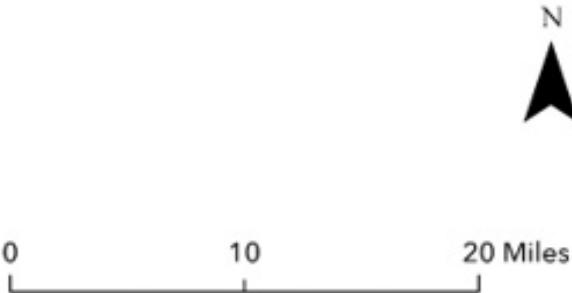
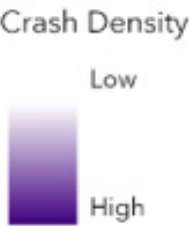
Overall crash density is highest in and around central Indianapolis, with additional clusters east of the city center, particularly along the I-70 corridor west of I-465. When weighted by fatalities, the most severe crash hot spots are even more concentrated on the east side of Indianapolis, especially near the I-70 and I-465 interchange areas. These locations align closely with the UCs identified in the previous analysis. For example, Arlington Woods shows a high density of both total crashes and fatal crashes and is identified as an UC. Mile Square has the highest density of total crashes and is likewise an UC. Together, these patterns indicate that communities facing greater transportation disadvantages also experience disproportionately elevated crash risk and severity.

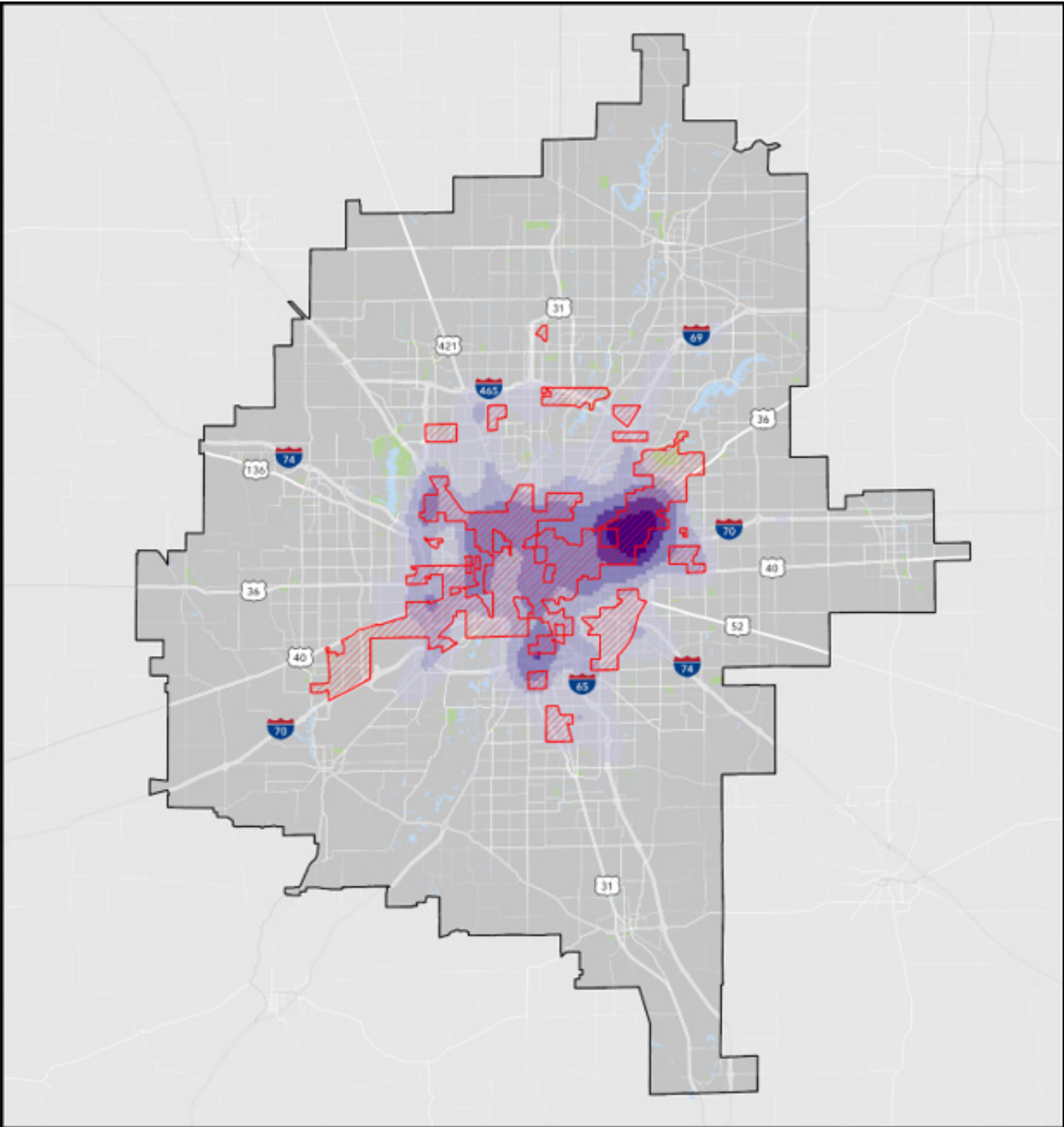




Concentration of Fatal and SSI Crashes

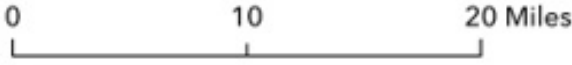
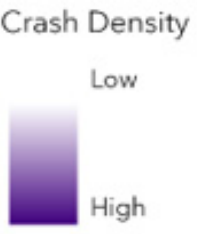
- IMPO Boundary
- Underserved Communities





Concentration of Fatal and SSI Crashes (Weighted by Fatalities)

- IMPO Boundary
- Underserved Communities





POLICY + PROCESS REVIEW

5. POLICY AND PROCESS REVIEW

As the central planning organization for the region, the IMPO advises and educates its local public agencies (LPAs) on all transportation topics, including how to address traffic-related deaths and serious injuries. The IMPO and its member communities have built a strong foundation of safety-related policies, programs, and funding mechanisms over the past decade. This Policy and Process Review documents the existing safety policy landscape across the region, covering local agency plans, IMPO-adopted policies, and state regulatory frameworks, and identifies how these efforts connect to the goals of this Safety Action Plan. This section also outlines the funding and programming tools available to the IMPO and its LPAs to advance safety investments and introduces roadway design best practices that inform the recommendations presented later in this plan.



5.1 IMPO Local Public Agencies

The IMPO Transportation Policy Committee is comprised of the following counties, cities, towns, and other planning partners, referred to as LPAs:

- **Counties:** Boone, Hamilton, Hancock, Hendricks, Johnson, Marion, Morgan, and Shelby.
- **Cities:** Beech Grove, Carmel, Fishers, Franklin, Greenfield, Greenwood, Indianapolis, Lawrence, Noblesville, Southport, Westfield, and Zionsville.
- **Towns:** Avon, Bargersville, Brooklyn, Brownsburg, Cicero, Cumberland, Danville, McCordsville, Mooresville, New Palestine, New Whiteland, Pittsboro, Plainfield, Speedway, Whiteland, and Whitestown.
- **Planning Partners:** IndyGo, Central Indiana Regional Transportation Authority (CIRTA), Indiana Department of Transportation (INDOT), Federal Highway Administration (FHWA), Federal Transit Administration (FTA), Indianapolis Airport, and Ports of Indiana.

LPA Policy and Plan Review

The tables below summarize the safety-related plans and policies adopted by IMPO LPAs. The first table identifies jurisdictions that have developed action plans through the federal Safe Streets and Roads for All (SS4A) grant program. The second table captures additional transportation safety plans and policies across the region, including Complete Streets ordinances, Vision Zero resolutions, and other locally adopted safety policies.

SS4A Action Plans by Member Jurisdiction

LPA	Policy Name	Year	Summary	Update Cycle/ Timeline	Status
City of Carmel	Comprehensive Safety Action Plan - Safe Streets and Roads	2026			In Progress
City of Fishers	<u>Safe Streets & Trails Plan</u>	2025	Uses the U.S. Department of Transportation's Safe System Approach and funding from the SS4A program to prioritize safety on roadways and trails and eliminate serious vehicle crashes.	SS4A plans require annual progress reports with major plan updates typically occurring every 5 years. The next update is expected around 2030.	Approved March 2025. Several projects (Allisonville Road/96th Street roundabout and the Nickel Plate Trail bridge) are in progress or pre-construction, but full implementation of recommendations is in progress.

LPA	Policy Name	Year	Summary	Update Cycle/ Timeline	Status
City of Lawrence	Safe Streets and Roads for All - <i>Not uploaded on City Website</i>	2024	Funded through the SS4A grant program, a U.S. Department of Transportation initiative to improve roadway safety by reducing fatalities and serious injuries.	SS4A plans require annual progress reports with major plan updates typically occurring every 5 years. The next update is expected around 2029.	Unknown
City of Noblesville	<u>Safety Action Plan</u>	2024	The Noblesville Safety Action Plan is a comprehensive framework with the goal of eliminating fatal and serious injury crashes in the city. It pairs detailed crash analysis with actionable strategies to advance safe streets goals and fulfill SS4A requirements.	SS4A plans require annual progress reports with major plan updates typically occurring every 5 years. The next update is expected around 2029.	Approved February 13, 2024.
Town of Whitestown	<u>Safe Streets and Roads for All Comprehensive Safety Action Plan</u>	2025	Aims to foster a safer and more inclusive transportation system for all Whitestown residents in tandem with the town's Vision Zero resolution.	SS4A plans require annual progress reports with major plan updates typically occurring every 5 years. The next update is expected around 2030.	Adopted May 14, 2025.

Additional Transportation Safety Plans and Policies

LPA	Policy Name	Year	Summary	Update Cycle/ Timeline	Status
Town of Avon	<u>Neighborhood Traffic Calming Policy</u>	2021	Recommends practices in assessing, planning, designing, and constructing neighborhood traffic calming devices for existing streets in the Town of Avon.	N/A	Updated and Approved July 2021.
Boone County	<u>Local Road Safety Plan</u>	2020	Identifies transportation needs in Boone County and outlines strategies to meet those needs and reduce the risk of fatalities and serious injuries on local roadways.	A 5-year update cycle is typical for Local Road Safety Plans. As of early 2026, no updated plan has been made publicly available.	Approved September 2020. Implementation of corridor-specific recommended actions is in progress.
Town of Cumberland	<u>Transportation Master Plan</u>	2020	Evaluates the existing roadway system to accommodate future traffic volumes and recommends improvements to mitigate congestion. The plan also incorporates crash data analysis to identify safety needs and includes a Complete Streets Policy to ensure roadways safely serve all users, including pedestrians, bicyclists, and motorists.	A 5-year update cycle is typical for Transportation Master Plans with 10-year planning horizons. As of early 2026, no updated plan has been made publicly available.	Approved March 2020. Implementation of recommendations is in progress.

LPA	Policy Name	Year	Summary	Update Cycle/ Timeline	Status
City of Indianapolis-Marion County	<u>Pedestrian Safety Action Plan</u>	2021	While not a policy, the Action Plan offers key insights for process and policy changes specific to the Indianapolis jurisdiction as well as pedestrian crash analysis and effective countermeasures based on crash type.	Action plans are typically updated every 3-5 years. As of early 2026, no updated plan has been made publicly available.	Unknown
	<u>Complete Streets Policy</u>	2022	The Marion County Complete Streets Policy defines a “complete street” as one that allows safe access for all users, including pedestrians, bicyclists, motorists, and transit users of all ages and abilities. This policy requires City and County agencies, as well as private projects that modify the public right of way, to consider and incorporate facilities for all users in the design and review of new land use and street projects, consistent with the adopted Complete Streets ordinance and checklist.	N/A	Approved April 28, 2022.

LPA	Policy Name	Year	Summary	Update Cycle/ Timeline	Status
City of Indianapolis-Marion County	<u>Policy for Tactical Urbanism</u>	2022	Guides placement of small-scale, low-cost, and temporary demonstration initiatives, such as placing objects and/or pavement markings within the rights-of-way to slow down traffic.	N/A	Adopted in 2022.
	<u>Vision Zero Ordinance</u>	2024	Outlines the commitment to establish a Vision Zero Task Force and Action Plan in pursuit of eliminating traffic injuries and fatalities in Indianapolis and Marion County. The resolution encourages all entities in Marion County to establish aligned Vision Zero goals, policies, and practices. Vision Zero is designed to complement the Indianapolis Complete Streets Policy to promote access, mobility, and health for all road users.	N/A	Passed August 12, 2024.
	<u>Vision Zero Action Plan</u>	2025	Establishes a clear path to make streets safer and friendlier to all users. The strategies put forth in the Action Plan mark the beginning of the City's Vision Zero initiative and are intended to evolve over time.	N/A	Published December 2025

LPA	Policy Name	Year	Summary	Update Cycle/ Timeline	Status
Town of Whitestown	<u>Complete Streets Ordinance</u>	2014	Establishes a Complete Streets program that requires the Town to evaluate every road and transportation project (public and private) for its ability to accommodate all road users and to take reasonable steps to add multimodal facilities where possible.	N/A	Adopted September 9, 2014.
	<u>Vision Zero Resolution</u>	2024	Establishes a holistic strategy aimed at eliminating all traffic fatalities and severe injuries suffered because of roadway crashes in Whitestown.	N/A	Adopted in 2024.



5.2 IMPO Policies and Processes

Active Transportation Plans and Policies

Recognizing that traffic fatalities and serious injuries are preventable rather than inevitable, the IMPO has taken concrete policy action to address rising crash trends in the Central Indiana Metropolitan Planning Area.

Vision Zero Policy

The IMPO Policy Committee first endorsed Vision Zero principles in 2018, but the first formal Vision Zero resolution was adopted by the committee on August 17, 2022. This updated resolution established a measurable target: reducing serious injuries and deaths by 35 percent by 2040. The 2022 Vision Zero resolution is a required component of this Safety Action Plan and authorizes the IMPO to pursue actions necessary to achieve meaningful reductions in transportation-related deaths and serious injuries. The full resolution is available on the [IMPO Safe Streets and Roads for All](#) webpage.

To support local implementation of Vision Zero principles, the IMPO developed a comprehensive

[Vision Zero Toolkit](#) in 2023. The toolkit provides resources for central Indiana LPAs looking to pursue contextually appropriate interventions that will reduce transportation deaths and serious injuries. Interventions may address existing problem areas and implement community-wide prevention strategies. The Vision Zero Toolkit includes educational materials for community stakeholders, concise informational brochures, and an inspiration guide featuring proven design solutions. These tools are accessible through the [Vision Zero Toolkit](#) webpage and provide practical guidance for LPAs working to prevent future deaths and serious injuries on their roadways.

Complete Streets Policy

The IMPO adopted its original Complete Streets policy in 2014, with amendments occurring in 2016 and 2024, to promote the development of transportation infrastructure that accommodates all users, including pedestrians, bicyclists, motorists, and transit riders of all ages and abilities. Complete streets enhance access and mobility by incorporating design elements that make streets safer and more convenient for all users, such as bike lanes, multi-use paths, sidewalks, and transit station amenities.

The [IMPO's Complete Streets policy](#) requires projects utilizing IMPO-managed Surface Transportation Block Grant (STBG) and Transportation Alternatives (TA) Program funding to use complete streets principles – situations in which complete streets are neither reasonable



or context-appropriate require a filed exception that is reviewed by either IMPO staff or the Complete Streets Task Force. USDOT requires the IMPO to use different evaluation criteria for projects funded by other federal programs, such as the Highway Safety Improvement Program (HSIP) and the Congestion Mitigation and Air Quality Improvement (CMAQ) program. Complete street design elements are considered by these programs when they directly support the program's primary objectives.

The IMPO's Complete Streets Policy aligns with similar efforts at the local level, including Marion County's Complete Streets policy adopted in 2012 and updated in 2022. These complementary policies work together to ensure that new development and right-of-way projects throughout the region prioritize safe access for all transportation modes. Project scoring criteria for each IMPO-administered funding source reflect these complete streets principles and are discussed in detail in the Funding and Programming Mechanisms section in this plan.

Central Indiana Transit Plan (2023)

The Central Indiana Transit Plan, originally published in 2016 and updated in 2023, provides a regional vision for expanding public transit to improve mobility, safety, and economic



competitiveness across central Indiana. The plan was developed through collaboration between the IMPO, IndyGo, and CIRTa with extensive public input, and it demonstrates the connection between robust transit systems and safer streets for all users.

The plan focuses on expanding mobility options for central Indiana residents by increasing transit availability; connecting people to employment, healthcare, education, and other destinations; using strategic investments in transit to support economic growth and development; and supporting regional efforts to improve air quality and reduce greenhouse gas emissions through decreased reliance on single-occupancy vehicles.

The Central Indiana Transit Plan identifies corridors for improved and expanded transit service, including the Red Line bus rapid transit, Purple Line and planned Blue Line, and local network improvements. These highlighted corridors are also locations where infrastructure enhancements, such as improved pedestrian crossings, accessible bus stops, sidewalk connections, and traffic calming measures, can maximize safety benefits. Transit expansion in Marion County and planning efforts in Guilford Township and northern Johnson County provide a framework for coordinating roadway safety improvements with transit infrastructure projects, ensuring that investments in complete streets, pedestrian facilities, and intersection safety support transit access while reducing vehicle miles traveled and crash exposure for all road users.





Regional Active Transportation Plan (2024)

The 2024 Regional Active Transportation Plan for central Indiana provides a comprehensive framework to guide the development of safe, connected networks for pedestrians, bicyclists, and all sidewalk users. The 2024 Regional Active Transportation Plan was built on the 2020 Regional Pedestrian Plan and the 2020 Regional Bikeways Plan. It presents a framework for the IMPO staff to implement a cohesive network of regional trails, bikeways, and sidewalks. It also serves as a planning tool for LPAs in the region. The plan identifies gaps in the regional active transportation network and presents specific priorities and recommendations for projects to support active transportation in the IMPO region.

Regional Resiliency Snapshot (2024)

The 2024 Regional Resiliency Snapshot aims to evaluate the region's preparedness to respond to environmental risks and identify vulnerabilities in transportation infrastructure. Additionally, this document identifies potential impacts of future environmental threats on regional resources and evaluates the region's readiness to respond. The Regional Resiliency Snapshot plays a crucial role

in the Safe Streets and Roads for All Action Plan by providing a risk-based assessment that helps the IMPO identify specific areas and transportation infrastructure that are vulnerable to current and future environmental threats.

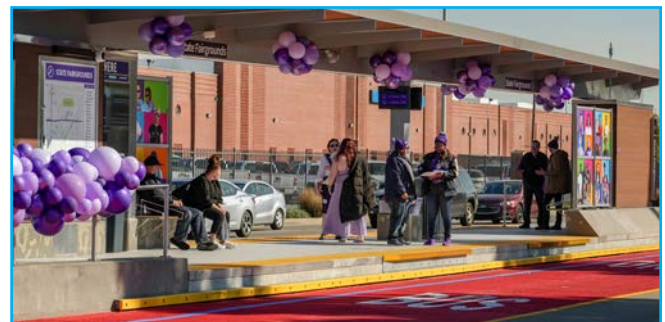
Crash Data Reporting

The IMPO hosts several dashboards containing data relating to safety and road user vulnerability. The Fatality and Serious Injury Crash Dashboard visualizes reported traffic crashes in central Indiana over eight years (2018-2025). The dashboard enables the IMPO's LPAs and the public to view the crash data with interactive filters that allow the user to select a specific year, crash type, injury status, or jurisdiction.

The Vulnerable Road User Crash Dashboard visualizes all crashes involving bikes and pedestrians in the region. Tracking and reporting this data is an important step to make progress towards Vision Zero and can help inform future active transportation project prioritization.

State Laws

Indiana state law historically limited automated traffic enforcement to toll collection on state-operated roads. However, House Enrolled Act (HEA) 1015, which took effect on July 1, 2023, established a pilot program authorizing INDOT and the Indiana State Police to use speed detection cameras in highway construction zones when workers are present. The program allows automated ticketing for vehicles exceeding posted work zone speed limits by 11 mph, with first-time offenders receiving warnings and repeat violators facing escalating fines.



While this expands automated enforcement on state highways, Indiana law does not currently authorize municipalities to deploy automated traffic enforcement systems (such as red-light cameras) on local roadways. Indiana lawmakers have upheld this ban, citing concerns about privacy, due process, and the overall effectiveness of red-light cameras in improving road safety. Without additional state legislation, automated enforcement remains unavailable as a tool for LPAs in the central Indiana region to address roadway safety.

Funding and Programming Mechanisms

IRTIP + MTP Process

The Indianapolis Regional Transportation Improvement Program (IRTIP) is a four-year program of transportation projects proposed by LPAs in the Indianapolis Metropolitan Planning Area using FHWA funds, FTA funds, or INDOT funds. In addition, other projects that are considered regionally significant, such as projects for air quality conformity purposes, are included, regardless of the funding source. Projects selected for inclusion in the IRTIP reflect the region's transportation priorities as established by the Metropolitan Transportation Plan (MTP) and include transit, pedestrian and bicycle, roadway and highway infrastructure construction, operations, and rehabilitation.



The IRTIP assists LPAs in providing a coordinated transportation system for the region by ensuring that the federal funds available to central Indiana are directed to the projects that provide the greatest benefit consistent with the goals of the MTP. The IRTIP also provides a project schedule that LPAs can use to coordinate their local project implementation. It serves as a guide for implementation, support for financial programming and administration, and information for the public.

IMPO Administered Federal Funds

The US Department of Transportation apportions funding for its programs by formula to state departments of transportation, including INDOT, which in turn distribute funding to MPOs for either direct expenditure or future distribution. The IMPO administers a competitive selection process for federal formula funding for several programs and then distributes funding. Funds from these programs are available to be distributed in the region in accordance with the IRTIP and the MTP.

- The Surface Transportation Block Grant (STBG) formula program is administered by the FHWA and FTA, which also set project-level eligibility rules. The STBG program is the largest federal funding source for the IMPO. STBG funds are IMPO's most flexible source of funding and can be used for any type of project.
- Transportation Alternatives (TA) Set-Aside funds are used for community-based, "non-traditional" projects under the STBG program. Funds are primarily directed towards non-motorized transportation projects, such as trails, bicycle and



pedestrian facilities, historic transportation structures, and streetscape improvements.

- The Congestion Mitigation and Air Quality Improvement (CMAQ) Program is designated to help recipients meet the requirements of the National Ambient Air Quality Standards (NAAQS) under the Clean Air Act. CMAQ the second largest source of funding for the IMPO's projects. Funds can be used on transportation project that improve air quality, such as bus fleet improvements, roundabouts, and trails.
- The Carbon Reduction Program (CRP) is a new funding source created by the Infrastructure Investment and Jobs Act (IIJA). The program is intended to reduce transportation carbon dioxide emissions from on-road highway sources. The list of eligible projects largely resembles that of the CMAQ program, with broader sectoral focus on transportation greenhouse gas emissions and a geographic scope not limited to Clean Air Act non-attainment or maintenance areas.
- Highway Safety Improvement Program (HSIP) funds can be used only for projects and plans that improve the safety of the network including but not limited to roundabouts, signage projects, and safety studies.

Programming Projects

Once IMPO receives its annual allocation for each program, local public agencies (LPAs) can submit project proposals to IMPO for funding. Existing plans such as those described in the LPA Policy and Plan Review section, direction from the Transportation Policy Committee, and public input help guide the prioritization and selection of projects. This Section provides an overview of the process of programming projects at the IMPO, which generally involves:

- **MTP Process and Recommendations:** Staff create scorecards for each funding category using best practices, federal guidelines, and input from the IMPO Transportation Policy Committee.
- **Call for Project Applications:** Each year, the Transportation Policy Committee announces an open call for projects and shares available funding amounts and proposal deadlines. During the call LPAs select projects and submit data-driven applications. Applicants also commit to funding a portion of the project cost locally. The MPO typically funds up to 80 percent of construction and construction engineering costs, while the LPA provides a 20 percent local match and fully funds preliminary engineering, right-of-way acquisition, and other project costs. Because demand often exceeds available funds the process remains highly competitive.
- **Project Scoring and Selection:** The IMPO reviews all applications, scores projects using the IRTIP selection criteria, and develops a recommended funding list. Staff

align this list with MTP allocation goals and federal program requirements. Additional information on project scoring and selection can be found in the following section.

- **TPC Approval and Funding Authorization:** Staff submit the final list of recommended projects to the Transportation Policy Committee, which reviews and approves funding.
- **Quarterly Project Tracking:** Staff track every project each quarter to confirm teams meet deadlines and stay within budget.

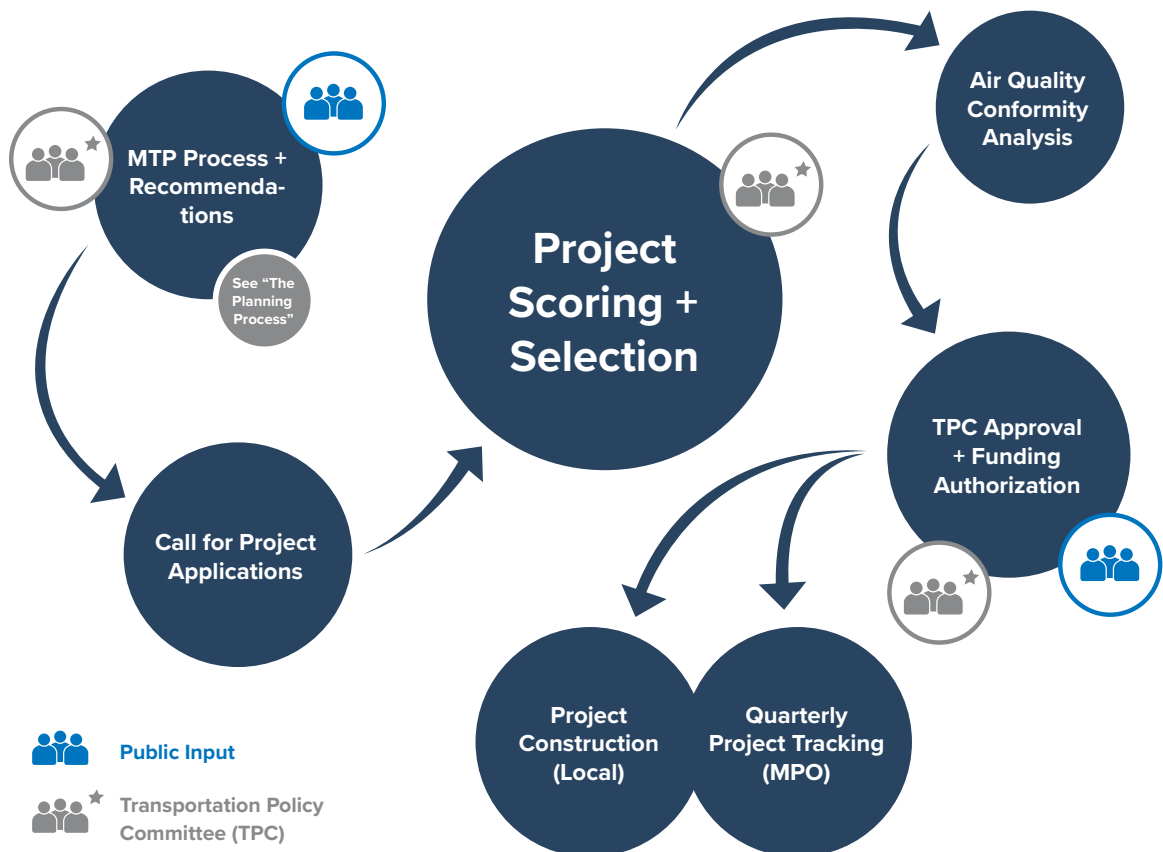
Project Selection Criteria and Weighting

The IMPO uses project selection criteria and weighting to determine which projects are awarded funding, and shapes transportation outcomes in the region in the process. The IMPO

most recently revised its selection criteria for the federal funding programs in 2018, with updates in 2022 to reflect updated plans and policies. The adopted criteria inform the prioritization of these projects for implementation and support the IMPO's overall vision and goals. The project selection criteria are currently undergoing another update, with new criteria expected to be adopted by the end of 2026. This update will reflect changes in federal guidance, regional priorities, and lessons learned from recent programming cycles.

The current selection criteria were developed in 2017 by an IMPO sub-committee that included representatives from the IMPO, LPAs, and consulting firms, and were adopted by both the Technical and Policy committees in May 2018. The criteria adhere to four key policy guidelines

IMPO Project Scoring and Selection Process



emphasizing preservation over expansion, following MTP priorities, supporting economic development and quality of life, and restricting the IMPO funds to construction and construction engineering phases only.

The IMPO maintains separate selection criteria for each federal funding program—STBG, CMAQ, HSIP, and TA—with each reflecting the specific purpose and eligibility requirements of that funding source. The IMPO scored projects based on documented criteria: each applicant must upload supporting documentation to MiTIP, the MPO’s project tracking and communication platform.

Discretionary Funding Opportunities

In addition to the formula-based federal funding programs administered by the IMPO, local jurisdictions can pursue discretionary grant programs at the federal and state level to fund safety-related transportation projects. Unlike formula funds, which are allocated to states and MPOs based on predetermined criteria, discretionary grants are competitive and awarded based on project merit and alignment with program objectives. These programs can supplement formula funding. Having adopted safety actions plans, such as those developed through the SS4A program, strengthens a



jurisdiction’s competitiveness when applying for discretionary grants. The table on the following page summarizes key federal and state discretionary grant programs relevant to roadway safety projects in the IMPO region.

Local Planning Grant Program

In addition to federal formula-based funding and discretionary grant programs at the federal and state levels, the IMPO administers a Local Planning Grant Program to support LPAs in developing transportation-related plans and studies that encourage community growth. This program provides financial assistance for planning activities that align with regional transportation goals and can help LPAs prepare competitive applications for future federal funding programs.

The Local Planning Grant Program typically funds studies such as multimodal transportation plans, corridor studies, feasibility analyses, and other planning efforts that support the development of projects. LPAs contribute to a local match and complete planning studies often position jurisdictions to successfully compete for STBG, CMAQ, HSIP, or TA funding in subsequent programming cycles. The program strengthens regional coordination by ensuring that local planning efforts align with the MTP and federal transportation priorities.

5.3 Roadway Safety Best Practices

Reducing traffic fatalities and serious injuries requires a coordinated approach combining sound policy, data-driven decision-making, and

Federal and State Discretionary Grant Programs

Program	Administering Agency	Safety Relevance	Eligible Applicants	Award Size	Match Requirement
SS4A	USDOT	Focused on eliminating roadway fatalities and serious injuries. Funds action plans and implementation projects.	MPOs, local governments, Tribes.	Varies; planning grants typically smaller than implementation grants.	80 percent federal/20 percent non-federal
BUILD (formerly RAISE/TIGER)	USDOT	Funds multimodal infrastructure with safety as a priority criterion; useful for larger corridor-scale projects.	State/local governments, transit agencies, Tribes,	\$1M minimum (rural), \$5M minimum (urban) for capital grants.	80 percent federal / 20 percent non-federal (higher federal share available in disadvantaged communities)
Community Crossings Matching Grant (CCMG)	INDOT (state program)	Funds road and bridge infrastructure improvements on local roads; not safety-specific but commonly used for safety-related pavement and intersection work.	All Indiana local governments.	Varies	50 percent state/50 percent local or 80 percent state/20 percent local depending on population
INDOT Highway Safety Improvement Program	INDOT	Safety-specific; funds projects like signage, markings, lighting, pedestrian facilities on local roads.	All Indiana local governments.	Varies	Generally 100 percent federal for eligible safety projects



proven design strategies. The following section outlines roadway safety best practices to guide IMPO LPAs as they develop and implement safety improvements. These practices are grounded in the Safe System Approach and support the region's Vision Zero goal of eliminating traffic deaths and serious injuries.

Safe System Approach

Adopted by the U.S. Department of Transportation, the Safe System Approach recognizes that human error and physical vulnerability on American roadways are inevitable. The approach focuses on building and reinforcing redundant safeguards that prevent fatalities and serious injuries. While the IMPO has not yet formally adopted this approach, working with member LPAs to align roadway design standards and policies with Safe System principles could significantly enhance safety.

Accountability, Collaboration, and Leadership

Strong, shared leadership and measurable goals are essential for effective safety outcomes. The

IMPO should foster collaboration across LPAs, develop internal champions, and create shared accountability for progress toward safer streets.

Data Collection and Use

Data should support safety planning by helping the IMPO prioritize limited resources and identify high-risk locations and behaviors. However, data collection is not an end in itself. The region already has sufficient information to act on well-documented safety risks, particularly along corridors and in communities where crash patterns are persistent and severe.

The purpose of continued data use is not to delay implementation or to expand instrumentation unnecessarily, but to ensure that investments are targeted effectively and that outcomes can be evaluated over time. In many cases, existing crash records, community inputs, and roadway condition data provide a strong foundation for action.

Local insights should complement quantitative crash data to ensure a complete understanding of safety challenges. Community knowledge can help identify near-miss patterns, unsafe behaviors, and systemic issues that may not be fully reflected in reported crash data.

Engagement In Underserved Communities

Some road users are more vulnerable than others, and their experience is a valuable input to transportation planning. Public involvement in planning activities, as well as desktop analyses focused on underserved communities, can reveal which users and places would benefit the most from safety improvements. Incorporating this information and user input into project prioritization as well as planning and design can help direct resources where they are needed most.

Roadway and Street Design

Roadway design must prioritize safety by applying engineering, education, enforcement, and evaluation principles. Streets should encourage safe behavior and include continuous, accessible infrastructure for all modes, especially for pedestrians and cyclists. The IMPO encourages the adoption of the U.S. Access Board's Public Right-of-Way Accessibility Guidelines (PROWAG) to improve accessibility of sidewalks, streets, crosswalks, curb ramps, pedestrian signals, and other components of public right-of-way for people with disabilities.

The strategic implementation of roadway design elements such as lane widths, horizontal and vertical curves, and corner radii should also inform the posted speed limit. The chosen speed should consider the physical constraints of the roadway, the function of the roadway, and the speed that cars can reasonably expect to travel on that section of road without posing a threat to other road users.

Equally important, the posted speed should support the safety and comfort of all road users, not only drivers. Transportation agencies should also consider whether the speed limit promotes or undermines non-auto uses of a road section, such as adverse effects on level of traffic stress (LTS).



Drivers should not reasonably expect to travel at speeds that compromise the safety of other road users.

Case Studies

The following case studies highlight successful safety projects from within the IMPO region that demonstrate how communities can apply the best practices discussed in this section. LPAs pursuing similar improvements in their own communities can draw on these examples for practical inspiration and guidance.

Embrace Downtown Noblesville

The Noblesville Safety Action Plan's High Injury Network designated Downtown Noblesville as a priority location, given its high concentration of pedestrian and bicyclist activity and over 300 total crashes from 2018-2022. The Noblesville Safety Action Plan recommended strategic safety interventions such as leading pedestrian intervals, crosswalk visibility enhancements, curb extensions, and raised intersections to improve pedestrian visibility, reduce vehicle speeds, and improve overall safety. In response to these recommendations, Embrace Downtown plans to implement critical infrastructure and design upgrades to downtown to enhance pedestrian mobility and safety and attract more visitors. The project used public engagement and data analysis to inform its strategic planning and design proposals, and it is scheduled to begin construction in 2026.²

² *Embrace Downtown Noblesville*, <https://www.embracedowntownnoblesville.com/about>.



Carmel Arts & Design District

Carmel, Indiana has transformed its downtown Arts & Design District through an aggressive roundabout program that has replaced over 120 signalized intersections since the late 1990s, making it the city with the most roundabouts in the United States. The roundabout conversions have enabled the city to reduce lane widths and repurpose street space for wider sidewalks, tree-lined medians, and separated bike paths, creating a vibrant, pedestrian and bike-friendly downtown. A comprehensive safety study found that roundabout conversions reduced injury crashes by 47 percent overall; double-teardrop roundabouts reduced injury crashes by 84 percent and total crashes by 63 percent.⁴

Indianapolis Cultural Trail

The Indianapolis Cultural Trail project, which was completed in 2013, implemented road diets on several downtown streets, repurposing four to twelve feet of lane width from travel and parking lanes into an eight-mile separated pedestrian and bicycle trail that connects cultural districts in the city. The project included safety features such as curb bulb-outs at intersections to reduce crossing distances, countdown timers, and audible pedestrian signals. Over \$300 million in new development has been constructed along the route since 2008, with tax assessment data showing an increase in property values along the Cultural Trail while nearby areas decreased by 1.2 percent between 2007-2010.³



³ Pedestrian & Bicycle Information Center, "Indianapolis Cultural Trail," webpage. Available at: <http://www.pedbikeinfo.org/data/library/details.cfm?id=4919>

⁴ Wang, Jin, and Jessica B. Cicchino. "Safety effects of roundabout conversions in Carmel, Indiana, the Roundabout City." *Journal of safety research* 82 (2022): 159-165.



STRATEGY AND PROJECT SELECTION

6. STRATEGY AND PROJECT SELECTION

Along with the development of this action plan, the IMPO has cultivated an SS4A project list that is shaped by data and implements best practices. The creation of this project list highlights and prioritizes safety projects for the region.



6.1 SS4A Safety Action Plan: Project Scoring Methodology and Results

Introduction

As part of the Safety Action Plan process the IMPO has created a project list that identifies areas with needed safety improvements, creates general time ranges for when these projects should be deployed, and prioritizes them for implementation. It also provides a framework for identifying appropriate safety countermeasures based on roadway type and surrounding land use context.

Methodology

Data Compilation

The project team compiled the datasets identified in the Community Safety Zone Prioritization Methodology, including Community Safety Zone locations, underlying High Injury Network (HIN) and High Risk Network (HRN) information, the updated Regional High Injury Network, and completed IMPO roadway and intersection safety audit locations. Community Safety Zones identified through the Safety Action Plan screening process served as the project locations for this evaluation.

Project Evaluation

The project team evaluated each Community Safety Zone using the adopted scoring rubric. The evaluation considered five criteria: Safety

As part of this plan update, each IMPO LPA without an existing safety action plan received a Community Safety Zone Map that details the roadways with the highest fatality and serious injury crash rates or highest risk network scores. These community safety zone maps are included in Appendix C.

Zone designation, Top Community Safety Zone designation, Severe Crash History, Regional High Injury Network overlap, and Regional Safety Audit Program locations.

All Community Safety Zones received one point for inclusion within the Community Safety Zone network. The project team assigned additional points based on documented severe crash history, overlap with the Regional High Injury Network, overlap with completed IMPO safety audit locations, and designation as the highest-scoring Community Safety Zone within a community. Total project location scores ranged from one to five points.

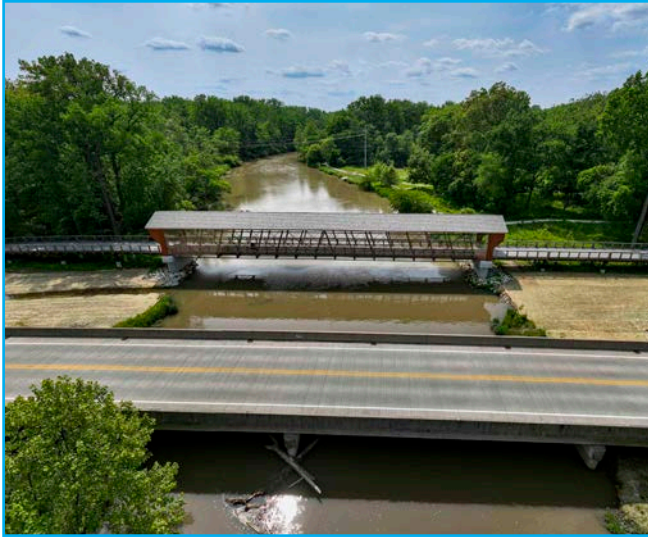
Project Prioritization Tiers

Following project scoring, the project team assigned each Community Safety Zone to one of three priority tiers based on its final score: Tier 1 (3.5 points or greater), Tier 2 (at least 2.0 points but less than 3.5 points), and Tier 3 (less than 2.0 points).

Project Timeframe Assumptions

The project team assigned implementation timeframes on a community-by-community basis by designating the highest-scoring project within each community as a short-term project, the second-highest scoring project as a mid-term project, and all remaining projects as long-term projects. Where tie scores occurred within a community, the project team assigned tied





projects the shortest implementation timeframe available under the methodology.

Roadway Type And Land Use Classification

Following prioritization, the project team classified each Community Safety Zone according to roadway type and land use context. Roadway classifications included arterial and collector/local facilities. Land use classifications included Community Center, Neighborhood, and Rural contexts. Community Center classifications represent downtown areas, commercial districts, and other concentrated activity centers. Rural classifications represent predominantly undeveloped areas. Neighborhood served as the default classification for developed, non-rural locations that did not meet the Community Center definition.

Countermeasure Framework Development

Consistent with the methodology, the Safety Action Plan does not identify project-specific countermeasures for individual Community Safety Zones. Instead, the project team developed a planning-level countermeasure framework based on roadway type and land use context.

The framework draws from the FHWA Proven Safety Countermeasures program and provides guidance for future project development and implementation, so that individual communities can use the framework to develop projects with impactful countermeasures that align with their community properties.

Project Prioritization Results

The project team assigned priority tiers and implementation timeframes to Community Safety Zones to support future decision-making by IMPO and its member communities. The resulting project list provides a consistent framework for identifying near-, mid-, and long-term safety investment opportunities and can be used to support project development, grant applications, capital planning, and future updates to the Safety Action Plan.

The following tables summarize the distribution of Community Safety Zone projects by community and project prioritization tier, implementation timeframe designation, land use classification, and roadway type classification. The final table lists all community safety zones in Central Indiana by community. Community safety zone maps are provided in Appendix C and detailed project scoring analysis is provided in Appendix E.



Count of Project Prioritization Tiers by Community

Community	Tier 1	Tier 2	Tier 3	Total
Arcadia		1		1
Avon	1	2		3
Bargersville	1		2	3
Beech Grove	1	2		3
Boone County		3		3
Brooklyn		1		1
Brownsburg		2		3
Cicero		1		1
Cumberland		1	5	6
Danville		1	2	3
Franklin		3		3
Greenfield		3		3
Greenwood	3	1		4
Hamilton County		3		3
Hancock County		3		3
Hendricks County		3		3
Johnson County	1	2	1	4
Lawrence	1	2		3
McCordsville	1	2		3
Mooresville		3		3
Morgan County		3		3
New Palestine		1	2	3
New Whiteland		2	2	4
Pittsboro		1	4	5
Plainfield		3		3
Shelby County		3		3
Southport	1	1		2
Speedway	2	1		3
Whiteland	1	2		3
Zionsville		2	2	4

Count of Project Timeframe Designations by Community

Community	Long-term	Mid-term	Short-term	Total
Arcadia			1	1
Avon	1	1	1	3
Bargersville		2	1	3
Beech Grove		2	1	3
Boone County			3	3
Brooklyn			1	1
Brownsburg			3	3
Cicero			1	1
Cumberland	4	1	1	6
Danville		2	1	3
Franklin			3	3
Greenfield			3	3
Greenwood		1	3	4
Hamilton County			3	3
Hancock County			3	3
Hendricks County			3	3
Johnson County	1	2	1	4
Lawrence		2	1	3
McCordsville		2	1	3
Mooreville			3	3
Morgan County			3	3
New Palestine		2	1	3
New Whiteland		2	2	4
Pittsboro	3	1	1	5
Plainfield			3	3
Shelby County			3	3
Southport		1	1	2
Speedway		1	2	3
Whiteland		2	1	3
Zionsville		2	2	4

Count of Project Land Use Classification by Community

Community	Community Center	Neighborhood	Rural	Total
Arcadia			1	1
Avon		3		3
Bargersville		1	2	3
Beech Grove		3		3
Boone County	1		2	3
Brooklyn		1		1
Brownsburg		2	1	3
Cicero		1		1
Cumberland		6		6
Danville		2	1	3
Franklin		3		3
Greenfield		3		3
Greenwood	1	2	1	4
Hamilton County		1	2	3
Hancock County	1		2	3
Hendricks County		3		3
Johnson County	1	2	1	4
Lawrence		2	1	3
McCordsville		3		3
Mooreville	2		1	3
Morgan County		1	2	3
New Palestine		1	2	3
New Whiteland		4		4
Pittsboro		1	4	5
Plainfield	2		1	3
Shelby County			3	3
Southport	1	1		2
Speedway	1	2		3
Whiteland		3		3
Zionsville	1	3		4

Count of Project Roadway Classification by Community

Community	Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local	Total
Arcadia					1	1
Avon		2			1	3
Bargersville			1		2	3
Beech Grove		1			2	3
Boone County			1		2	3
Brooklyn			1			1
Brownsburg			2		1	3
Cicero					1	1
Cumberland		2	1		3	6
Danville			2		1	3
Franklin			1		2	3
Greenfield			1		2	3
Greenwood		1	1		2	4
Hamilton County			1		2	3
Hancock County			2		1	3
Hendricks County					3	3
Johnson County			3		1	4
Lawrence	1		1		1	3
McCordsville		1	1		1	3
Mooresville					3	3
Morgan County					3	3
New Palestine					3	3
New Whiteland		2			2	4
Pittsboro	1		1	2	1	5
Plainfield					3	3
Shelby County				1	2	3
Southport		2				2
Speedway		1			2	3
Whiteland			1		2	3
Zionsville			1		3	4

Community Safety Zone Project Scores

Road Name	Community	Final Project Score	Project Tier Assignment	Timeframe Assumption
Main St	Arcadia	3	2	Short-term
E Co Rd 100 N	Avon	4	1	Short-term
Ronald Reagan Pkwy	Avon	2.5	2	Mid-term
Dan Jones Rd	Avon	2	2	Long-term
Whiteland Rd	Bargersville	3.5	1	Short-term
Saddle Club Rd	Bargersville	1.5	3	Mid-term
Stones Crossing Rd	Bargersville	1.5	3	Mid-term
1st Ave	Beech Grove	4.5	1	Short-term
17th Ave	Beech Grove	2	2	Mid-term
Bethel Av	Beech Grove	2	2	Mid-term
County Line Rd	Boone County	2.5	2	Short-term
Cr 100 S	Boone County	2.5	2	Short-term
Main St	Boone County	2.5	2	Short-term
Old Sr 67	Brooklyn	2.5	2	Short-term
56th St	Brownsburg	3	2	Short-term
Hornaday Rd	Brownsburg	3	2	Short-term
Ronald Reagan Pkwy	Brownsburg	3	2	Short-term
High Risk Network Area Near W Jackson St And N Peru St	Cicero	2	2	Short-term
700 W	Cumberland	3	2	Short-term
W 100 N	Cumberland	1.5	3	Mid-term
10th St High Risk Network Segment	Cumberland	1	3	Long-term
600 W High Risk Network Segment	Cumberland	1	3	Long-term
Carroll Rd High Risk Network Segment	Cumberland	1	3	Long-term
German Church Rd High Risk Network Segment	Cumberland	1	3	Long-term
E Main St	Danville	3	2	Short-term
Cartersburg Rd	Danville	1.5	3	Mid-term
S Co Rd 300 E	Danville	1.5	3	Mid-term
Commerce Dr	Franklin	3	2	Short-term
State St	Franklin	3	2	Short-term

Road Name	Community	Final Project Score	Project Tier Assignment	Timeframe Assumption
Westview Dr	Franklin	3	2	Short-term
Broadway St	Greenfield	3	2	Short-term
Greenmeadows Dr	Greenfield	3	2	Short-term
New Rd	Greenfield	3	2	Short-term
Main St	Greenwood	4	1	Short-term
N Graham Rd	Greenwood	4	1	Short-term
Worthsville Rd	Greenwood	4	1	Short-term
Fry Rd	Greenwood	2	2	Mid-term
191st St	Hamilton County	3	2	Short-term
234th St	Hamilton County	3	2	Short-term
E 113th St	Hamilton County	3	2	Short-term
Fortville Pike Rd	Hancock County	3	2	Short-term
W 300 N	Hancock County	3	2	Short-term
W 300 N	Hancock County	3	2	Short-term
E Co Rd 100 N	Hendricks County	3	2	Short-term
E Co Rd 200 N	Hendricks County	3	2	Short-term
E Main St	Hendricks County	3	2	Short-term
Main St	Johnson County	4	1	Short-term
Hurricane Rd	Johnson County	2	2	Mid-term
Morgantown Rd	Johnson County	2	2	Mid-term
N 400 W	Johnson County	1.5	3	Long-term
71st St	Lawrence	5	1	Short-term
Post Rd	Lawrence	3	2	Mid-term
Shadeland Ave	Lawrence	3	2	Mid-term
N 600 W	McCordsville	4	1	Short-term
600 N	McCordsville	2	2	Mid-term
Vail Rd	McCordsville	2	2	Mid-term
Greencastle Rd	Mooreville	3	2	Short-term
Indiana St	Mooreville	3	2	Short-term
Main St	Mooreville	3	2	Short-term
Keller Hill Rd	Morgan County	3	2	Short-term
Landersdale Rd	Morgan County	3	2	Short-term
Waverly Park Rd	Morgan County	3	2	Short-term
S 500 W	New Palestine	3	2	Short-term

Road Name	Community	Final Project Score	Project Tier Assignment	Timeframe Assumption
300 S	New Palestine	1.5	3	Mid-term
S 500 W	New Palestine	1.5	3	Mid-term
Sawmill Rd	New Whiteland	2.5	2	Short-term
Tracy Rd	New Whiteland	2.5	2	Short-term
Tracy Rd High Risk Network Segment	New Whiteland	1	3	Mid-term
Whiteland Rd High Risk Network Segment	New Whiteland	1	3	Mid-term
Jeff Gordon Blvd	Pittsboro	3	2	Short-term
Maple St	Pittsboro	1.5	3	Mid-term
High Risk Network Area Near Osborne Ave And N Meridian St	Pittsboro	1	3	Long-term
Jeff Gordon Blvd	Pittsboro	1	3	Long-term
Jeff Gordon Blvd	Pittsboro	1	3	Long-term
E 800 S	Plainfield	3	2	Short-term
Ronald Reagan Pkwy	Plainfield	3	2	Short-term
Shady Ln	Plainfield	3	2	Short-term
N 675 W	Shelby County	3	2	Short-term
S 800 E	Shelby County	3	2	Short-term
W 950 N	Shelby County	3	2	Short-term
Southport Rd	Southport	3.5	1	Short-term
Madison Ave High Risk Network Segment	Southport	1	3	Long-term
Crawfordsville Rd	Speedway	5	1	Short-term
High School Rd	Speedway	5	1	Short-term
Cossell Rd	Speedway	2.5	2	Mid-term
Whiteland Rd	Whiteland	4	1	Short-term
Tracy Rd	Whiteland	2	2	Mid-term
Whiteland Rd	Whiteland	2	2	Mid-term
Main St	Zionsville	3	2	Short-term
Templin Rd	Zionsville	3	2	Short-term
Oak St	Zionsville	1.5	3	Mid-term
Willow Rd	Zionsville	1.5	3	Mid-term

Proven Safety Countermeasures Matrix

The Safety Action Plan does not identify project-specific countermeasures for individual Community Safety Zones. Instead, the plan provides planning-level guidance based on roadway type and land use context. This approach allows future project sponsors to identify context-sensitive improvements during project development while maintaining consistency with the FHWA Proven Safety Countermeasures program.

The following table provides countermeasure guidance for Community Safety Zones based on roadway functional classification and land use context, adapted from the Federal Highway Administration Proven Safety Countermeasures Program as well as other locally implemented safety countermeasures. The matrix supports

future project development and implementation by identifying safety treatments commonly applied to different roadway and development contexts. The matrix presents representative examples rather than an exhaustive list of countermeasures. Site-specific project development may identify additional treatments based on roadway conditions, user needs, and documented crash patterns.

The Community Safety Zone prioritization process provides IMPO and its member communities with a consistent approach for ranking safety projects and identifying implementation priorities throughout the region. The resulting project tiers, implementation timeframes, and countermeasure matrix provide a foundation for future project development and implementation under the IMPO Safety Action Plan.

	Community Center	Neighborhood	Rural
Arterial	- Leading pedestrian intervals - Pedestrian hybrid beacons - High-visibility crosswalks - Road diets - Access management - Signal timing improvements - Transit stop enhancements	- Pedestrian refuge islands - Enhanced pedestrian crossings - Bicycle facility improvements - Roadway reconfiguration - Access management - Speed management treatments - Lighting improvements	- Intersection improvements - Left- and right-turn lanes - Shoulder widening - Rumble strips - Curve delineation - Access management - Speed management treatments
Collector/ Local	- Raised crosswalks - Curb extensions - Pedestrian lighting - Traffic calming measures - Intersection visibility improvements - Wayfinding enhancements	- Traffic calming measures - Sidewalk gap closures - Neighborhood bicycle facilities - Pedestrian crossing enhancements - Mini roundabouts	- Speed feedback signs - Signing and pavement marking improvements - Intersection warning treatments - Shoulder improvements

Source: Federal Highway Administration Proven Safety Countermeasures Program.



MEASURING PROGRESS

7. MEASURING PROGRESS

The IMPO will measure roadway safety progress through a combination of its existing transportation performance management program, its vision zero policy, and its annual safety report.



The SAP supplements performance measures established through other regional plans. IMPO's 2050 MTP defines four goals — Move, Prosper, Make Safe, and Sustain — that are specific, measurable, available, relevant, and timely. The goals and associated performance measures align directly with national planning measures set by the Federal Highway Administration.

Move – Provide transportation choices for people to easily access homes, jobs, recreation and service.

Prosper – Foster shared economic vitality through strategic investments in regional infrastructure to increase competitiveness and affordability.

Make Safe – Support a safe traveling environment for all users by making strategic investments in our region's infrastructure that preserve and enhance the existing system

Sustain – Ensure a convenient transportation network that offers healthy lifestyle options, is accessible to all people, and preserves or enhances the environment

Two of the four goals are directly relevant to the SAP: Move and Make Safe. Together, these goals aim to make investments in safe streets and connected, complete facilities – key precedents for the region's Vision Zero goal. Additional performance measures identified during the initial creation of the SAP make up the indicators that IMPO will use to track and report out progress towards Vision Zero. Those indicators are shown in the table below.

In 2023 the IMPO published its first Annual Safety Report. This report, which is published each year, fulfills the progress reporting aspect of the plan and will track the Indianapolis MPA's progress towards its Vision Zero Resolution of reducing serious and fatal crashes by 35% by the year 2040.



Performance Targets and Vision Zero Policy

In concert with the creation of the SAP, the SS4A steering committee evaluated potential Vision Zero performance targets and a corresponding timeline. The performance targets and associated timeframe to reduce and eventually eliminate roadway deaths are included in a standalone Vision Zero policy, separate from the Action Plan. During the SAP update process, the safety steering committee recommended maintaining Central Indiana's Vision Zero policy that specifies a reduction of serious and fatal crashes by 35% by the year 2040. In tracking progress on this policy, the committee also recommended using 2023 as a baseline year for crash reduction, and tracking crashes using a five-year rolling average to reduce variability in crash totals from year-to-year and provide a more reliable long term indicator of how crash data is trending.

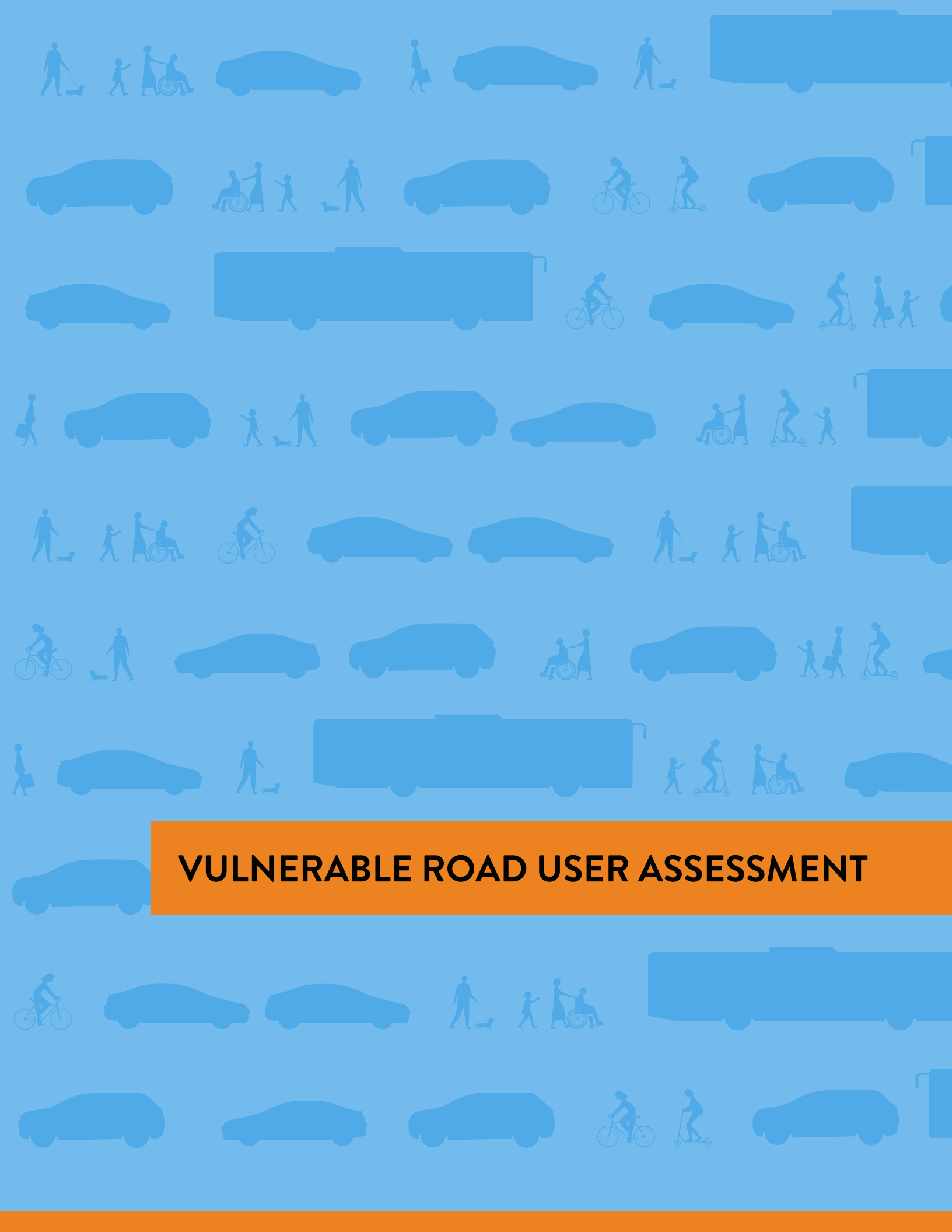
The IMPO Policy Committee adopted the Vision Zero policy on August 17, 2022.

Annual Safety Report

The Annual Safety Report provides a variety of statistics in tracking progress including:

- Percentage change in fatal and serious crashes
- Total number of fatal and serious crashes
- Crashes by travel mode
- How the MPA compares to the state
- Most common crash factors

Type	Performance Measure	Description	Source
Outcomes	Number of serious injuries	The number of serious injuries as the result of a vehicular crash	2050 MTP – Make Safe
	Serious Injuries per 100 million vehicle miles traveled (VMT)	The rate of serious injuries	2050 MTP – Make Safe
	Number of fatalities	The number of fatalities as a result of a vehicular crash	2050 MTP – Make Safe
	Fatalities per 100 million VMT	The rate of fatalities	2050 MTP – Make Safe
	Nonmotorized fatalities and serious injuries	The number of pedestrians killed and serious injuries as a result of a vehicular crash	2050 MTP – Make Safe
	Percentage of people within the metropolitan area who have access to a connected bikeway	The portion of our region's population living close to a connected bikeway.	2050 MTP – Move
	Percentage of people within the metropolitan area who have access to a connected sidewalk	The portion of our region's population living close to a connected sidewalk.	2050 MTP – Move
Outputs	Construct safety improvements on the HIN	Complete at least one safety improvement project on HIN corridors identified in the SAP	New recommendation by this Action plan
	Construct safety improvements on the HIN in EJAs	Complete at least one safety improvement project on HIN corridors identified in the SAP that fall within IMPO EJAs	New recommendation by this Action plan



VULNERABLE ROAD USER ASSESSMENT

8. VULNERABLE ROAD USER ASSESSMENT

Pedestrians and cyclists are disproportionately represented in fatal crashes across Central Indiana, highlighting their enhanced vulnerability. The IMPO completed an additional vulnerable roadway user (VRU) assessment to determine characteristics and areas that are high-risk for cyclists and pedestrians.



The IMPO strives to support safety across its core programs and works to create a regional transportation system designed to safely and comfortably accommodate all users, of all ages and abilities. This includes cyclists, pedestrians, and any other walking or rolling users, who are among the most vulnerable roadway users on the transportation system. Of the total serious injury and fatal crashes reported in the MPA between 2020 and 2024, nearly 15% involved a bicyclist or pedestrian. When looking only at fatal crashes, 27% of crashes involved a bicyclist or pedestrian.

8.1 Purpose of the VRU Assessment

A VRU is defined in 23 U.S.C. 148(a)(15) as a “nonmotorist”, which includes pedestrians, bicyclists, and other cyclists, excluding motorcyclists. The goal of a VRU assessment is to identify areas of higher risk for bicycle and pedestrian crashes, provide insight on areas of necessary infrastructure improvements, and further the objective of achieving a reduction and ultimate elimination of fatalities on the transportation system.

8.2 VRU Assessment Methodology

A data-driven, systemic analysis was conducted to identify locations within the urban core of the central Indiana MPA, as well as locations in the surrounding counties and communities within the MPA. The high-level methodology used for the VRU Assessment is outlined below, with additional information detailing these steps explained later:

- Gather roadway characteristics, land use, and census data
- Conduct spatial crash analysis, connecting crash data to roadway segments and intersections
- Calculate crash rates for three categories of risk factors:



- Roadway characteristics and land use (segment and intersection risk factors)
- Demographic and population characteristics (census block group risk factors)
- Mobility and driver behavior data (Replica Safe Streets Planner)
- Divide roadway segments and categories into eight categories, called category bins, based on the crash type (pedestrian or bicyclist), area type (urban core or surrounding communities), and facility type (road segment or intersection) for evaluation.
- Score and rank roadway segments and intersections using a composite score of the three categories of risk factors.
- The top ten locations for the eight different contexts (category bins) were selected as priority locations.

Crash Data

Crash data was divided into pedestrian crashes and bicycle crashes. Bicycle crashes were classified as any crash involving a Pedalcyclist or Pedalcycle passenger, including a bicycle, tricycle, unicycle, or pedal car. Pedestrian crashes were classified as any crash involving a pedestrian, skateboarder, wheelchair, or any other non-motorist except for those classified as a Pedalcycle.

After this distinction was made, the crashes were spatially joined to roadway segments and

intersections to then assess risk factors and the relationship between the risk factors and the proportion of pedestrian and bicycle crashes.

Risk Factors

Facility characteristics, roadway geometry characteristics, land use characteristics, demographics data, mobility data, and driver behavior data were evaluated to determine high-risk locations within the MPA. In addition to existing crashes, the VRU assessment considered risk factors that are often considered contributing factors to VRU crashes. The risk factors were separated into three categories:

- Segment and Intersection Characteristics: factors that are directly related to segments and intersections, mainly roadway geometry and operational characteristics as well as adjacent land uses
- Census Block Group Characteristics: factors that are related to demographics and population
- Mobility and Driver Behavior Data: factors that estimate the presence of VRUs with increased safety concern (incorporated through analysis of the Replica Safe Streets Planner tool available to the IMPO)

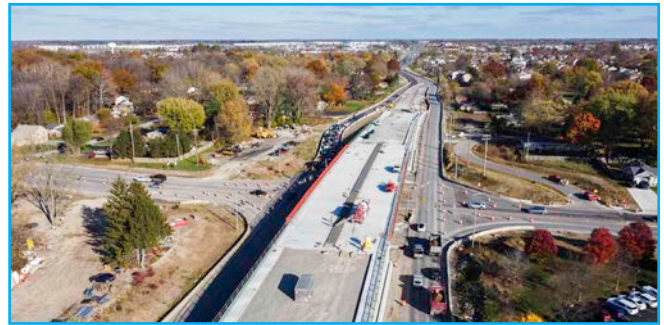
	Risk Factor		Data Source
	Segment	Intersection	
Segment and Intersection Risk Factors	Average Annual Daily Traffic (AADT)	Daily Entering Volume (DEV)	IMPO/HPMS
	Median Types	Intersection Angle	IMPO/HPMS
	Number of Lanes	Number of Lanes	IMPO/HPMS
	Shoulder Width	Number of Legs	IMPO/HPMS
	Speed Limit	Speed Limit	IMPO/HPMS
	N/A	Traffic Control	IMPO/HPMS
	Sidewalk	Crosswalk/Curb Ramp	Ecopia
	Transit Routes and Stops		IMPO
	Schools, Universities, Colleges		Indiana Map
	Public Parks		Indiana Map
	Public Libraries		Indiana Map
Census Block Group Risk Factors	Population Density (population per square mile)		U.S. Census Bureau
	Percent of households in poverty		U.S. Census Bureau
	Percent of households with no vehicle		U.S. Census Bureau
	Proportion of population over 64		U.S. Census Bureau
	Proportion of population under 18		U.S. Census Bureau
	Proportion of population with disabilities		U.S. Census Bureau
Mobility and Driver Behavior Risk Factors (From Replica Safe Streets Planner Tool)	Vehicle Travel Speeds (Speeding)		Replica
	Hard Braking/Hard Accelerating		Replica
	Distracted Driving		Replica
	VRU Volume		Replica

Segments and Intersections

All segments and intersections within the IMPO MPA were included in the analysis, based upon the segment and intersection section of the risk factors table. As segment and intersection crashes involving VRUs often have distinct crash profiles and characteristics, the specific risk factors that were analyzed differed slightly between geometry types. Segment analysis focused on characteristics related to midblock roadway cross sections, traffic volumes, and presence of sidewalk; intersection analysis focused on characteristics related to intersection design and traffic control, daily entering volumes, and presence of crosswalks and curb ramps. Other factors related to land use were assessed in the same manner for both segments and intersection.

Census Block Groups

Census block groups were used to properly aggregate and analyze the census-related data outlined in the risk factors table. Since these factors are identified at the census block group level, most of the spatial analysis, data analysis, and risk scoring was done at the block group level and then later attributed to the individual segments and intersections that are within or on the borders of the census block groups. Segments that cross block group boundaries were given the score of the highest-risk block group that it passed through.



Replica Safe Streets Planner Tool

The Replica Safe Streets Planner tool was also utilized to identify VRU risk on the roadway network and identify locations of high VRU activity and risky driving behavior. Through Replica's data library, the IMPO has access to both driving event data (speeding, distracted driving, hard breaking, etc.) as well as mobility data (AADT, Pedestrian/Cyclist trips). The Safe Streets Planner platform combines these data types to map high conflict corridors and aid in the prioritization of safety improvements. For the VRU Assessment, the mobility data was filtered to only include pedestrian and bicycle trips so that the planner prioritized areas of high pedestrian and cyclist activity where risky driving habits occur.

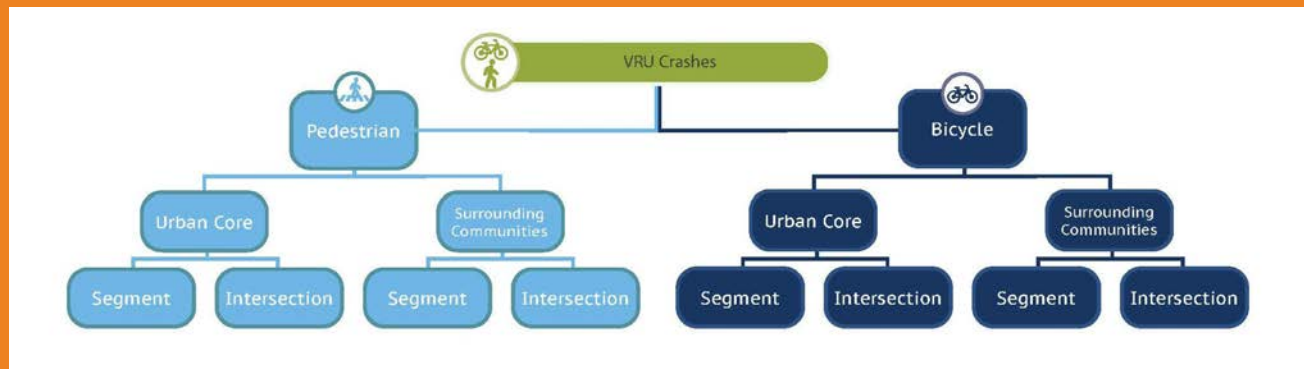
8.3 Evaluation Process

The VRU assessment was completed through a Geographical Information System (GIS) based analysis that used the available MPA-wide data associated with the risk factors mentioned in the previous section to identify potential locations where there is increased risk for pedestrian and bicycle crashes.

This evaluation process involved the scoring of each roadway segment and intersection based on the risk factors identified. As outlined in previous sections, crash data was joined to roadway segments and intersections and then correlations between the risk factor characteristics and the number of crashes within various groups were evaluated for the entire MPA. The roadway segments and intersections were then divided

into eight categories, called category bins, based on the crash type (pedestrian or bicyclist), area type (urban core or surrounding communities), and facility type (road segment or intersection) for evaluation. The urban core refers to crashes, roadway segments, and intersections that are within Marion County, and the surrounding communities refers to the other cities and counties on the periphery of the MPA boundary.

Category Bins for VRU Assessment



Scoring scales for each risk factor in each category bin were developed based on associated crash rates. For example, eight different scoring scales were developed for the risk factor “speed limit”, allowing the analysis to account for how varying conditions affect the relative safety of these contexts. Risk factors with continuous values (AADT, DEV, Intersection Angle, etc.) were broken into bins of equal distribution to develop the scoring scale, while risk factors with categorical values (Median type, traffic control, etc.) were broken up by each category. For example, AADT was binned into the ranges 0-5,500, 5,501-9,500, 9,501-16,000, and more than 16,000 while traffic control was categorized into signalized and unsignalized. The crash rate for each risk factor bin/category was calculated, and then a normalized score was applied so that every risk factor was scored on a 1-10 numeric scale for ease of comparison. These normalized scores are provided as Appendix F.

In order for risk to be adequately compared across crash type, facility type, and area type, a total composite score was calculated by adding and averaging the three component scores:

- The first component score (0 to 100) was assigned to each segment and intersection based on the risk factors associated with each segment and intersection’s characteristics.
- The second component score (0 to 100) was assigned to each segment and intersection based on the risk factors associated with the Census block group containing each segment and intersection location.
- The third component score (0 to 100) was assigned to each segment and intersection based on the results of the Replica Safe Streets Planner tool.

- Intersections were given the score of the highest-risk intersecting corridor from the Replica Safe Streets Planner since the tool only provides results at the corridor level.
- The Replica Safe Streets Planner outputs scores on a scale of 0 to 100, with lower scores indicating lower risk and higher scores indicating higher risk. As this is the inverse of the scoring scale for the rest of the evaluation, the scores from the Replica Safe Streets Planner were inverted to be accurately combined.
- The Replica Safe Streets Planner network did not populate results for every segment in the analysis, therefore any segment or intersection with no nearby Safe Streets Planner information utilized only the facility risk score and the census-related score.

Final Composite Score

The final composite score was calculated by averaging each of the three component risk scores, weighing each evenly. The scores were then compared against all other locations of the same crash type, area type, and facility bin (urban core pedestrian intersections, surrounding communities bicycle segments, etc.) to determine the highest risk locations and prioritize areas in need of improvement.



8.4 VRU Assessment Results

Based on the MPA-wide risk assessment of the roadway network and a manual review of the highest-risk locations, trends were identified and priority locations were selected. The top ten locations for each category bin were selected as priority locations. Additionally, information is provided on the impact of individual risk factors on safety.

The risk scores summarized in this section are like test scores, meaning higher values indicate safer characteristics and locations and lower values indicate unsafe characteristics and locations. As previously stated, the risk scores are normalized values that are based on the crash rate of the associated characteristic. For census-related characteristics, the crash rate represents crashes per 1,000 people, for segments the crash rate represents crashes per 100 million vehicle miles traveled, and for intersections the crash rate represents crashes per 100 million entering vehicles.

Prior to identifying the top locations, general trends and impactful risk factors were identified through a review of the analysis end results. For segments and intersections, the risk factors associated with the highest VRU crash risk included wide roadways (4- to 6-lane cross-sections), medium-to-high traffic volumes, and roadways with little to no shoulder. Additionally, signalized intersections with missing ADA accommodations such as striped crosswalks and curb ramps also experienced increased risk in the analysis results. Areas with a high concentration of pedestrian and bicycle trip generators, such as transit facilities, schools, parks, and libraries, as well as areas with high representation of households without a vehicle and households in poverty were also associated with higher VRU crash risk in end results of the analysis.

Census Block Group Risk Factor Analysis Results

Common characteristics that led to increased VRU risk as it relates to Census block group data were mainly areas with an increased presence of households in poverty and an increased presence of households with no vehicles. The crash rates and associated risk scores for the above-mentioned characteristics are summarized below, and the full set of crash rates and associated risk factor scores can be found in the appendix. Taken together, these Census block group risk factor results form the basis for the Census block group component score for both segment and intersection composite scoring.

Households in Poverty Risk Scoring (Low Score Indicates High Risk)

% Households in Poverty	Bicycle Crash Rate	Bicycle Risk Score	Pedestrian Crash Rate	Pedestrian Risk Score
0	0.3540757	5	1.1379259	6
0.75% - 6.25%	0.3542862	3	1.1545563	5
6.26% - 11.75%	0.3144754	7	0.9981177	9
11.76% - 21.50%	0.2976451	9	1.2693688	3
21.51% - 100%	0.3582587	1	1.9079358	1

Households with No Vehicle Risk Scoring (Low Score Indicates High Risk)

% Households in Poverty	Bicycle Crash Rate	Bicycle Risk Score	Pedestrian Crash Rate	Pedestrian Risk Score
0	0.3285378	8	1.2066543	5
0.50% - 4.75%	0.4986643	1	1.5791036	3
4.76% - 11.25%	0.3883034	4	1.1541241	7
11.26% - 100%	0.3802421	5	1.7172225	1

Roadway Segment Risk Factor Analysis Results

Common characteristics that led to increased risk to VRUs included little to no roadway shoulder present, 4-6 lane roadways, and trip generator presence such as transit routes and stops, schools, parks, and libraries. Additionally, roadway segments with volumes between 5,500 vehicles per day (vpd) and 16,000 vpd were often higher risk for VRUs than roadway segments outside that volume range. The crash rates and associated risk scores for the above mentioned characteristics are summarized in the tables below, and the full set of crash rates and associated risk factor scores can be found in the appendix.

Shoulder Width Risk Scoring (Low Score Indicates High Risk)

Shoulder Width	Bicycle Crash Rate	Bicycle Risk Score	Pedestrian Crash Rate	Pedestrian Risk Score
0	0.0021331	5	0.0053924	5
< 6	0.0046043	2	0.0111345	2
6+	0.0013617	9	0.0034693	9

Lane Number Risk Scoring (Low Score Indicates High Risk)

Number of Lanes	Bicycle Crash Rate	Bicycle Risk Score	Pedestrian Crash Rate	Pedestrian Risk Score
2-3	0.0006739	8	0.0012760	8
4	0.0043778	4	0.0112473	4
5-6	0.0375830	1	0.1355798	1

AADT Risk Scoring (Low Score Indicates High Risk)

AADT	Bicycle Crash Rate	Bicycle Risk Score	Pedestrian Crash Rate	Pedestrian Risk Score
<5500	0.0040695	5	0.0079621	5
5501-9500	0.0041532	4	0.0085090	3
9501-16000	0.0056510	1	0.0147330	1
>16000	0.0026002	9	0.0073534	7

Transit Stop Presence Risk Scoring (Low Score Indicates High Risk)

Transit Stops	Bicycle Crash Rate	Bicycle Risk Score	Pedestrian Crash Rate	Pedestrian Risk Score
0	0.0007251	9	0.0008614	9
1-6	0.0032521	7	0.0111020	6
7-14	0.0216171	3	0.0574818	4
15+	0.0225258	2	0.0772039	2

School Presence Risk Scoring (Low Score Indicates High Risk)

Schools within 0.5 miles	Bicycle Crash Rate	Bicycle Risk Score	Pedestrian Crash Rate	Pedestrian Risk Score
0	0.0007719	9	0.0011875	9
1-2	0.0021886	6	0.0050443	6
3-5	0.0054638	4	0.0158275	4
6+	0.0316898	1	0.0911719	1

High-Risk Roadway Segments

All segments within the MPA were scored and ranked based on these segment criteria, as well as the Census block group criteria and Replica Safe Streets Planner tool mentioned earlier. The tables below summarize the highest bicycle risk segments for both within Marion County as well as the surrounding communities, and the highest pedestrian risk segments for the same geographies based upon each segment's composite score.

Bicycle High-Risk Segments (Low Score Indicates High Risk)

Location	Route Name	Start	End	Community	Route Length (miles)	Risk Factor Score	Census Score	Replica Score	Composite Score
Marion County	Michigan St	N White River Pkwy West Dr	Parkway North Dr	Indianapolis	5.94	33	32	3.89	23
	New York St	Lynn St	N Emerson Ave	Indianapolis	6.01	34	32	3.76	23
	38th St	Cold Spring Rd	N German Church Rd	Indianapolis	12.00	29	32	10.79	24
	Shadeland Ave	E Washington St	E 38th St	Indianapolis	3.57	49	22	1.38	24
	16th St	Olin Ave	Roosevelt Ave	Indianapolis	5.02	46	28	2.89	26
	East St	E Pleasant Run Pkwy North Dr	E Washington St	Indianapolis	2.17	50	28	1.51	27
	Fall Creek Pkwy	Burdsal Pkwy	46th St	Indianapolis	5.11	42	32	5.90	27
	Ohio St	West St	College Ave	Indianapolis	1.13	43	32	5.40	27
	38th St	I-465	Cold Spring Rd	Indianapolis	4.17	42	32	11.42	28
	Delaware St	I-70	Fall Creek Pkwy	Indianapolis	3.63	41	32	9.79	28
Surrounding Communities	County Line Rd	Bluffdale Dr	Five Points Rd	Greenwood	8.65	45	48	11.29	35
	E 96th St	Willow View Rd	Cumberland Rd	Fishers	2.90	70	32	8.85	37
	Madison Ave	US 31	County Line Rd	Greenwood	2.21	54	32	25.60	37
	South St	Morton St	S State St	Franklin	0.84	54	28	N/A	41
	96th St	Westfield Blvd	Hazel Dell Pkwy	Carmel	2.58	68	50	7.65	42
	Center St	I-70	Overlook Trl	Plainfield	4.11	66	37	26.10	43
	CR 200 N	Winchester Blvd	Persimmon Grove Dr	Avon	1.89	65	32	34.25	44
	E 116th St	Wilderness Trl	Spyglass Ridge Dr	Fishers	3.94	42	50	39.15	44
	E 126th St	Rangeline Rd	River Rd	Carmel	3.86	46	42	N/A	44
	Rangeline Rd	116th St	Lowes Way	Carmel	2.34	63	28	42.91	45

Pedestrian High-Risk Segments (Low Score Indicates High Risk)

Location	Route Name	Start	End	Community	Route Length (miles)	Risk Factor Score	Census Score	Replica Score	Composite Score
Marion County	Maryland St EB	Schumacher Way	Cleveland St	Indianapolis	1.19	45	28	0.10	24
	16th St	Olin Ave	Roosevelt Ave	Indianapolis	5.02	45	25	4.94	25
	Ohio St	West St	College Ave	Indianapolis	1.13	43	28	4.74	25
	Washington St	Schumacher Way	Cleveland St	Indianapolis	1.23	38	28	9.29	25
	38th St	Cold Spring Rd	N German Church Rd	Indianapolis	12.00	31	28	17.91	26
	Shadeland Ave	E Washington St	E 38th St	Indianapolis	3.57	55	17	5.32	26
	West St	South St	Indiana Ave	Indianapolis	0.98	50	28	1.36	26
	East St	E Pleasant Run Pkwy North Dr	E Washington St	Indianapolis	2.17	50	25	8.13	28
	38th St	I-465	Cold Spring Rd	Indianapolis	4.17	42	28	14.33	28
Surrounding Communities	Keystone Ave	25th St	63rd St	Indianapolis	4.66	41	28	15.78	28
	E 96th St	Willow View Rd	Cumberland Rd	Fishers	2.90	75	28	8.81	37
	Madison Ave	US 31	E County Line Rd	Greenwood	2.21	55	28	29.14	37
	Rangeline Rd	116th St	Lowes Way	Carmel	2.34	63	25	26.04	38
	Jefferson St	SR 44	Cypress Dr	Franklin	3.27	53	47	12.97	38
	County Line Rd	Bluffdale Dr	Five Points Rd	Greenwood	8.65	47	53	16.55	39
	Northfield Dr	US 136	Creekside Dr	Brownsburg	4.79	61	28	29.33	39
	South St	Morton St	S State St	Franklin	0.84	56	25	N/A	41
	Main St	Harrison Ave	Indiana St	Mooresville	0.53	65	25	31.95	41
	Raceway Rd	E Main St	Dry Creek Dr	Plainfield	2.20	80	28	14.13	41
	Meridian St	Smith Valley Rd	County Line Rd	Greenwood	2.02	70	28	24.88	41

Intersection Risk Factor Analysis Results

Common characteristics that led to increased VRU risk at intersections included signals with missing curb ramps or crosswalks, signals at skewed intersections, 4-6 lane approach intersection legs, and trip generator presence such as transit stops, schools, parks, and libraries. The crash rates and associated risk scores for the above mentioned characteristics are summarized in the tables below, and the full set of crash rates and associated risk factor scores can be found in the appendix.

Intersection Skew Risk Scoring (Low Score Indicates High Risk)

Skew Angle	Bicycle Crash Rate	Bicycle Risk Score	Pedestrian Crash Rate	Pedestrian Risk Score
0 – 80.5	0.5058105	1	0.9164686	8
80.6 – 87.5	0.4621960	3	1.1471371	3
87.6 – 88.0	0.4128581	6	1.1677985	1
88.1 – 89.5	0.4571002	5	1.1063149	5
89.6 - 180	0.2236703	9	0.5943240	9

Approach Lanes Number Risk Scoring (Low Score Indicates High Risk)

Number of Lanes	Bicycle Crash Rate	Bicycle Risk Score	Pedestrian Crash Rate	Pedestrian Risk Score
2-3	0.3007534	8	0.5071098	8
4-5	0.5412452	4	1.4722990	4
6+	0.6344769	2	2.0620499	1

Transit Stop Presence Risk Scoring (Low Score Indicates High Risk)

Transit Stops	Bicycle Crash Rate	Bicycle Risk Score	Pedestrian Crash Rate	Pedestrian Risk Score
0	0.3037837	9	0.4372378	9
1	0.5397021	8	1.6779829	8
2	0.7542468	7	2.8014881	4
3	1.0218564	4	3.0655692	3
4+	1.4660248	2	4.4843110	1

School Presence Risk Scoring (Low Score Indicates High Risk)

Schools within 0.5 miles	Bicycle Crash Rate	Bicycle Risk Score	Pedestrian Crash Rate	Pedestrian Risk Score
0	0.3651033	8	0.6680186	8
1-2	0.4887387	4	1.4502444	2
3+	0.5145542	2	1.3423153	4

High-Risk Intersections

All intersections within the MPA were scored and ranked based on this criteria, as well as the Census block group criteria and Replica Safe Streets Planner tool mentioned earlier. The tables below summarize the highest bicycle risk intersections for both within Marion County as well as the surrounding communities, and the highest pedestrian risk intersections for the same geographies based upon each segment's composite score.

Bicycle High-Risk Intersections (Low Score Indicates High Risk)

Location	Intersection	Community	Traffic Control	Risk Factor Score	Census Score	Replica Score	Composite Score
Marion County	Michigan St at Indiana Ave	Indianapolis	Signalized	34	32	2.51	23
	Michigan St at N Senate Ave	Indianapolis	Signalized	37	32	2.63	24
	Pleasant Run Pkwy S Dr at Shelby St	Indianapolis	Signalized	44	32	0.63	26
	New York St at Capitol Ave	Indianapolis	Signalized	45	32	0.38	26
	New York St at Senate Ave	Indianapolis	Signalized	46	32	0.38	26
	Vermont St at Illinois St	Indianapolis	Signalized	38	32	6.52	26
	Michigan St at West St	Indianapolis	Signalized	44	32	2.63	26
	Southern Ave at Shelby St	Indianapolis	Unsignalized	52	28	0.63	27
	Ohio St at Meridian St	Indianapolis	Signalized	45	32	5.40	27
	Vermont St at Capitol Ave	Indianapolis	Signalized	33	32	16.69	27
Surrounding Communities	County Line Rd at Madison Ave	Greenwood	Signalized	55	32	1.25	29
	County Line Rd at Hardegan St	Greenwood	Unsignalized	64	32	1.13	32
	County Line Rd at Saint Peter St	Greenwood	Unsignalized	65	32	1.13	33
	Madison Ave at Pearly St	Greenwood	Unsignalized	61	28	11.17	33
	County Line Rd at Keystone Ave	Greenwood	Unsignalized	68	32	1.13	34
	96th St at Lantern Rd	Fishers	Unsignalized	62	32	6.65	34
	Rockville Rd at Avon Ave	Avon	Signalized	51	32	18.57	34
	96th St at Hague Rd	Fishers	Signalized	62	32	6.65	34
	Green St at Loraine Dr	Brownsburg	Unsignalized	67	32	5.52	35
	Madison Ave at Surina Way	Greenwood	Unsignalized	61	32	11.17	35

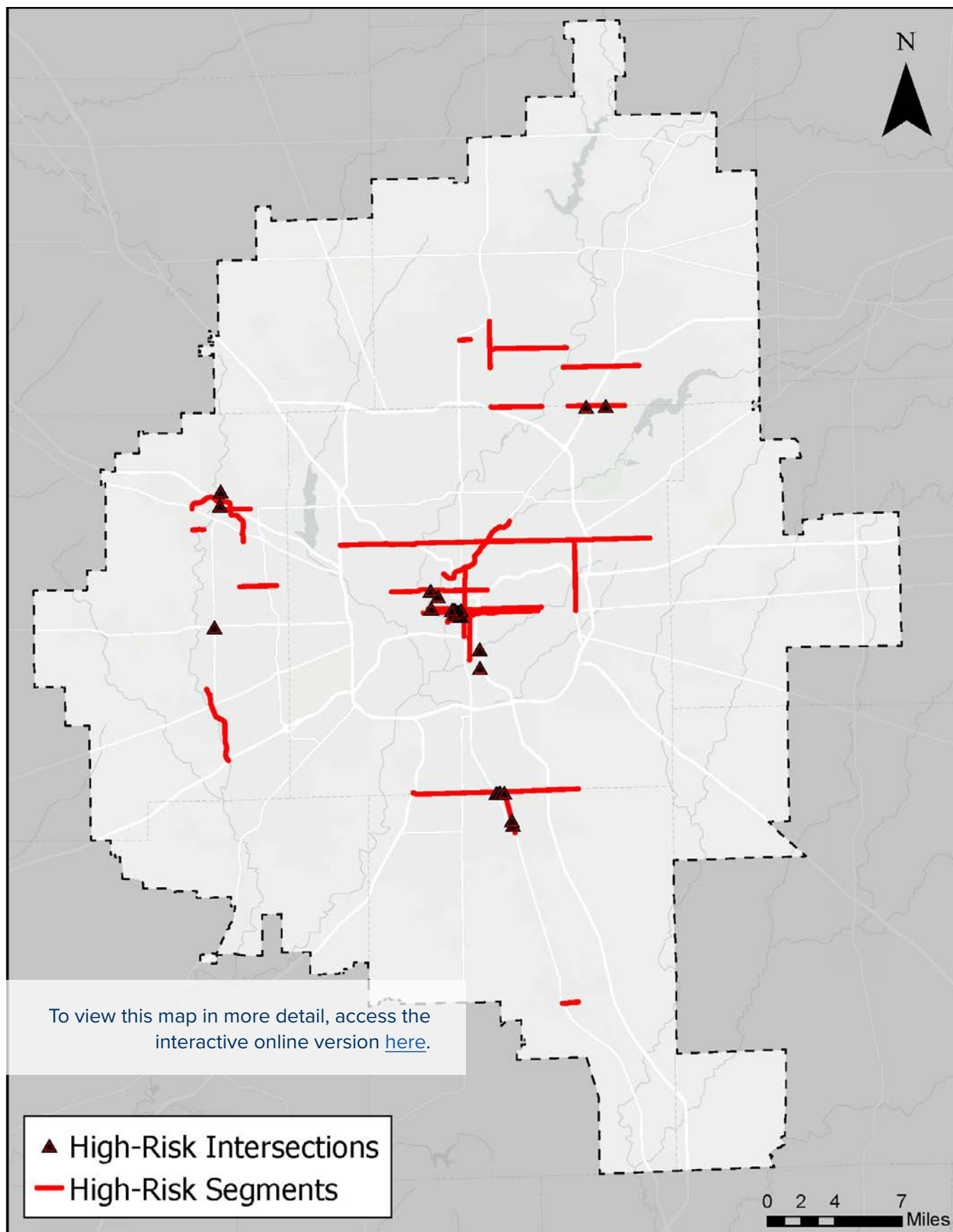
Pedestrian High-Risk Intersections (Low Score Indicates High Risk)

Location	Intersection	Community	Traffic Control	Risk Factor Score	Census Score	Replica Score	Composite Score
Marion County	Vermont St at Delaware St	Indianapolis	Signalized	32	28	0.97	20
	Michigan St at Indiana Ave	Indianapolis	Signalized	32	28	3.19	21
	Michigan St at N Senate Ave	Indianapolis	Signalized	32	28	2.71	21
	Vermont St at Meridian St	Indianapolis	Signalized	32	28	4.45	21
	Ohio St at Meridian St	Indianapolis	Signalized	34	28	4.45	22
	Michigan St at Meridian St	Indianapolis	Signalized	38	25	4.45	22
	Maryland St at Capitol Ave	Indianapolis	Signalized	38	28	0.10	22
	New York St at Capitol Ave	Indianapolis	Signalized	38	28	3.87	23
	Michigan St at University Blvd	Indianapolis	Signalized	37	28	2.71	23
	East St at National Ave	Indianapolis	Signalized	42	17	8.81	23
Surrounding Communities	Rockville Rd at Avon Ave	Avon	Signalized	48	28	6.10	27
	Indiana St at Harrison St	Mooresville	Unsignalized	53	25	5.03	28
	County Line Rd at Saint Peter St	Greenwood	Unsignalized	58	28	0.87	29
	County Line Rd at Keystone Ave	Greenwood	Unsignalized	58	28	0.87	29
	Smith Valley Rd at SR 135	Greenwood	Signalized	57	28	1.06	29
	E Main St at Perry Rd	Plainfield	Signalized	55	28	3.29	29
	County Line Rd at Madison Ave	Greenwood	Signalized	58	28	3.97	30
	Rockville Rd at County Rd 525 E	Avon	Signalized	55	28	6.10	30
	Rockville Rd at Ronald Reagan Pkwy	Avon	Signalized	55	28	6.10	30
	County Rd 600 W at County Rd 225 N	Hancock County	Signalized	55	28	7.26	30

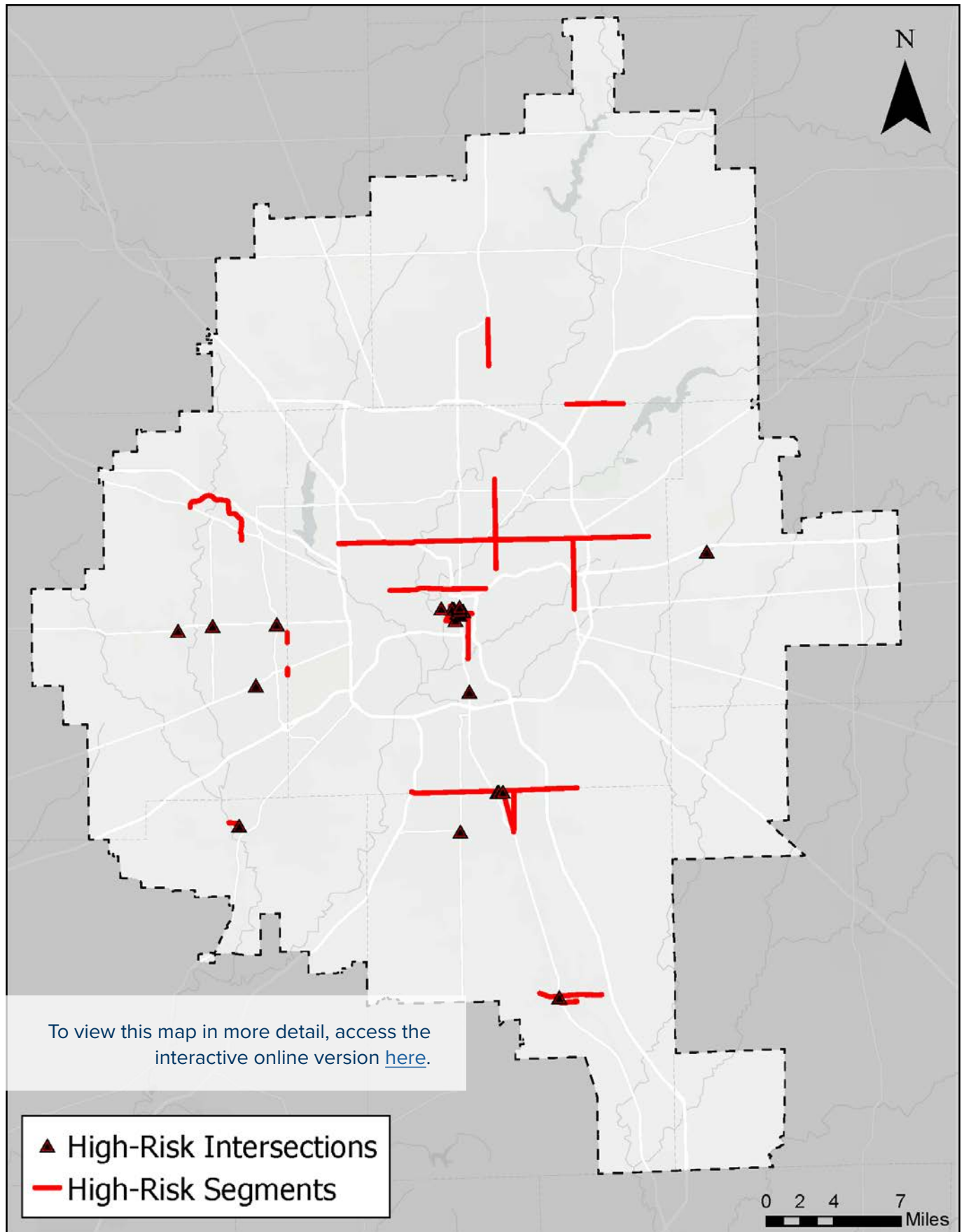
8.5 VRU High Risk Networks

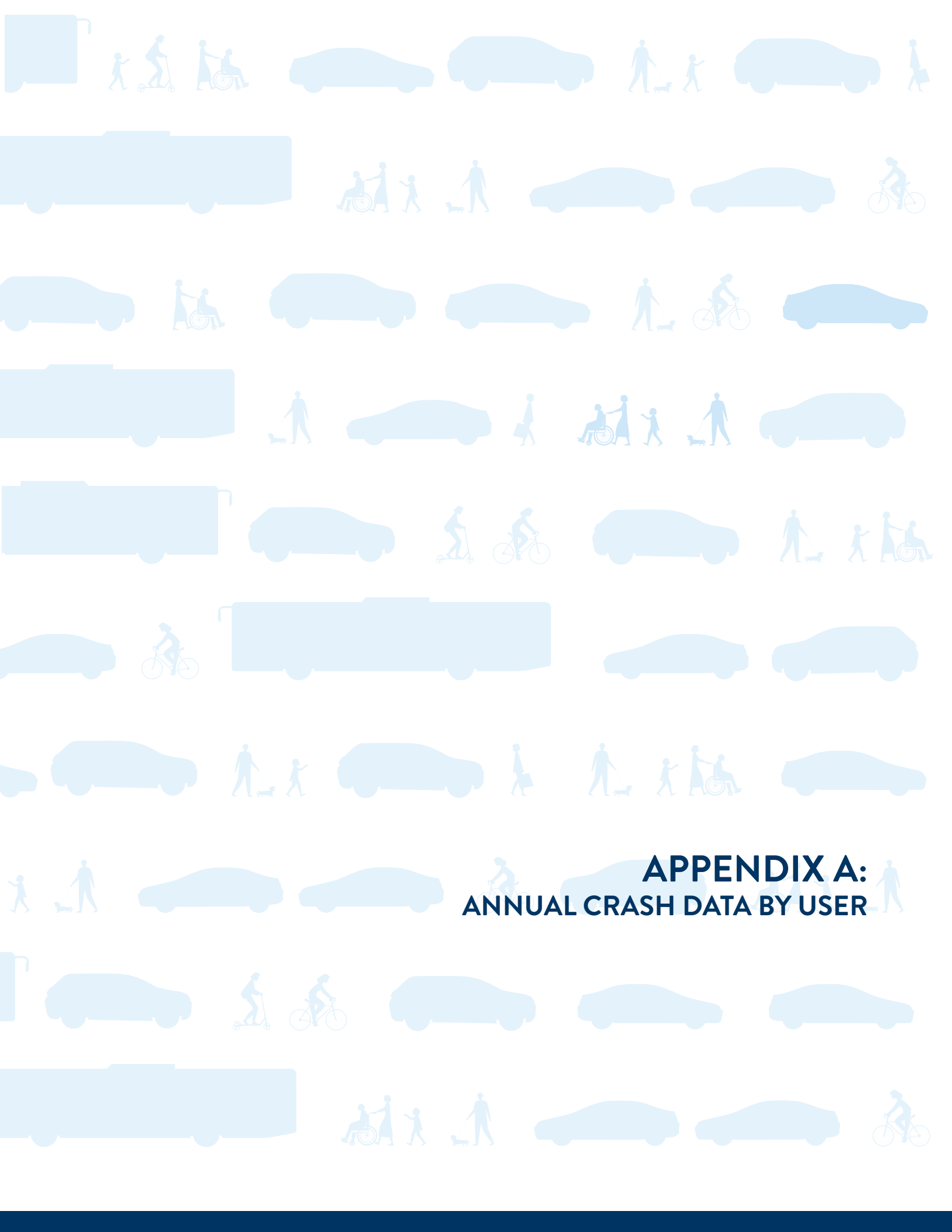
Based on the analysis and results described in the previous sections, high-risk networks for both pedestrians and cyclists were identified for future consideration of bicycle and pedestrian improvements. These networks and priority locations allow the IMPO and local partners to prioritize investment in areas and roadways with greater inherent risk for VRUs as well as make progress towards regional safety goals of reducing and eliminating fatal and serious injury crashes. The VRU high-risk networks shown in the maps below include the 10 highest ranked roadway segments and intersections for each VRU category within Marion County as well as the 10 highest ranked roadway segments and intersections in the surrounding communities.

Bicycle High-Risk Intersections and Segments



Pedestrian High-Risk Intersections and Segments





APPENDIX A:
ANNUAL CRASH DATA BY USER

FATAL CRASHES

User	2020	2021	2022	2023	2024	TOTAL 2020-24	Annual Avg
Pedalcyclist	9	6	4	5	4	28	5.6
Pedestrian	31	22	39	33	23	148	29.6
Vehicle	80	102	90	88	84	444	88.8
TOTAL	120	130	133	126	111	620	124

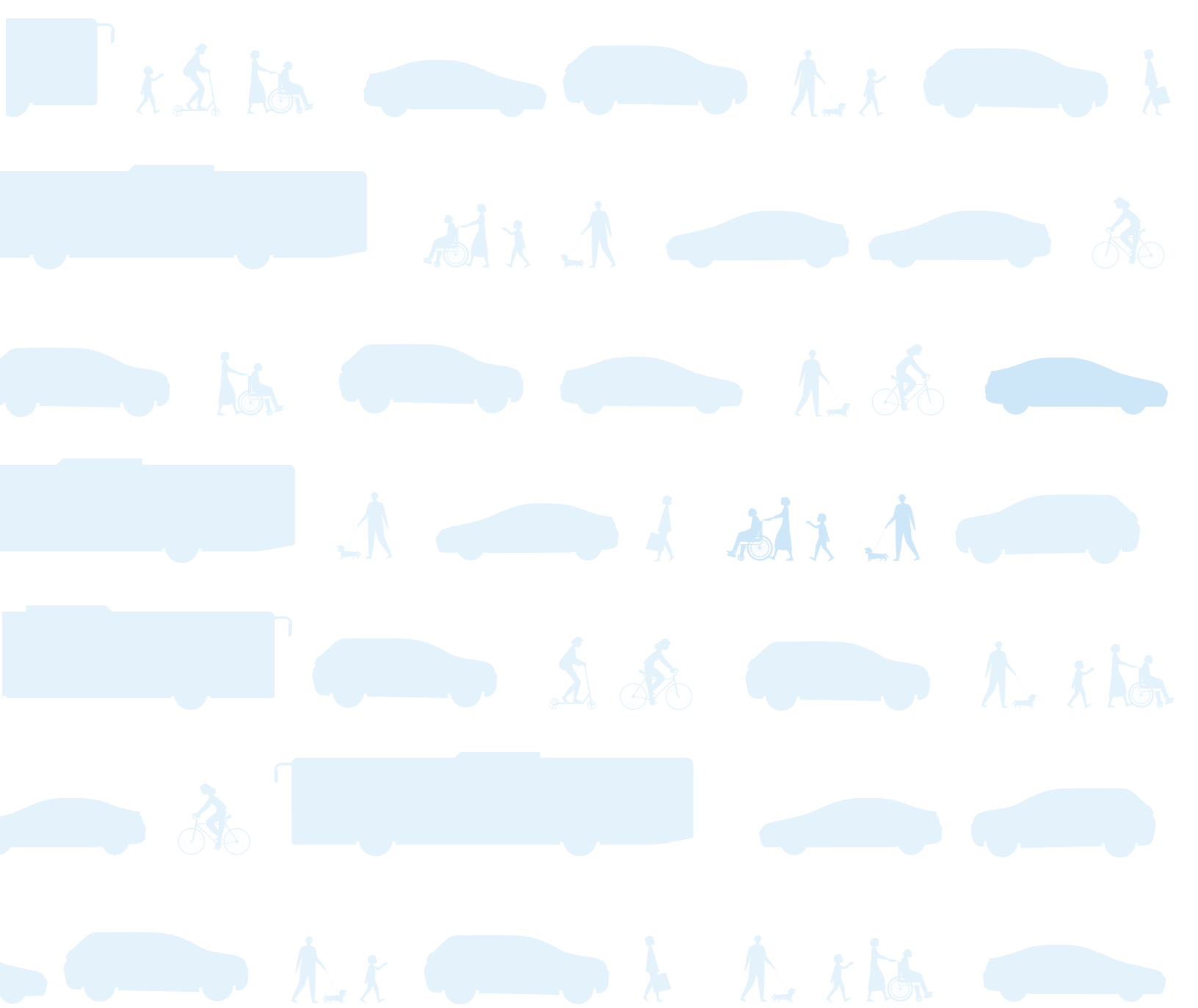
SERIOUS INJURY CRASHES

User	2020	2021	2022	2023	2024	TOTAL 2020-24	Annual Avg
Pedalcyclist	9	20	12	18	16	75	15
Pedestrian	40	68	52	55	72	287	57.4
Vehicle	464	509	443	531	552	2499	499.8
TOTAL	513	597	507	604	640	2861	572.2

ALL FATAL AND SERIOUS INJURY CRASHES

User	2020	2021	2022	2023	2024	TOTAL 2020-24	Annual Avg
Pedalcyclist	18	26	16	23	20	103	20.6
Pedestrian	71	90	91	88	95	435	87
Vehicle	544	611	533	619	636	2943	588.6
TOTAL	633	727	640	730	751	3481	696.2

Source: ARIES Fatal and Serious Injury Crashes 2020-2024 cleaned and spatially located by IMPO



APPENDIX B:
FULL LIST OF HIN CORRIDORS
WITH SCORES AND CRASH CALCULATIONS



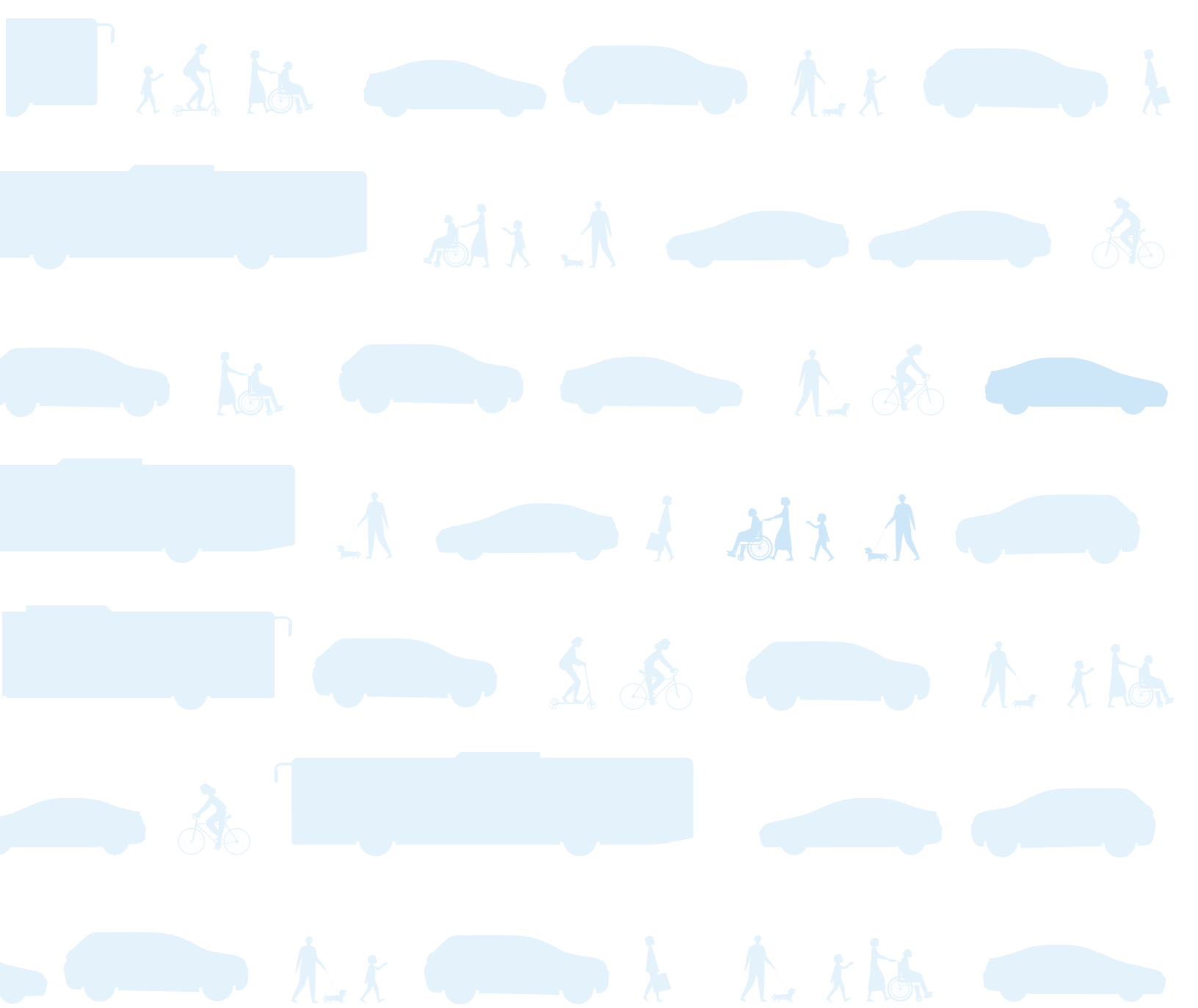
HIN Corridor	From	To	Length (miles)	Severe Crash Score	Severe Crash Score/Mile	Vehicle	Vehicle Fatal	Pedestrian Incapacitating Injury	Pedestrian Fatal	Cyclist Incapacitating Injury	Cyclist Fatal	Pedestrian and Bicyclist Severe Crash Share	Fatal Crashes	SSI Crashes
25TH ST	PLANES DR	MITTHOEFER RD	1.4	9.0	6.6	7	1	0	0	0	0	0%	1	6
DITCH RD	96TH ST	NORTHBROOK DR	1.5	10.0	6.8	5	1	2	0	1	0	38%	1	7
82ND ST	BASH RD	SARGENT RIDGE	1.7	11.0	6.6	5	1	1	1	0	0	29%	2	5
E 96TH ST	WILLOW VIEW RD	LANTERN RD	1.9	11.0	5.7	7	2	0	0	0	0	0%	2	5
N GRAHAM RD	COUNTY LINE RD	KEATON WAY	1.0	8.0	8.4	4	2	0	0	0	0	0%	2	2
CRAWFORDSVILLE RD	I-465	MAIN ST	2.1	18.0	8.8	13	2	1	0	0	0	7%	2	12
EAST ST	MADISON AVE	MILLS AVE	1.1	14.0	12.7	6	2	1	1	0	0	25%	3	5
ENGLISH AV	PLEASANT RUN PKWY DR	BROOKVILLE RD	1.9	17.0	9.1	7	1	3	0	2	1	46%	2	11
HARDING ST	30TH ST	WATERWAY BLVD	1.7	9.0	5.4	7	1	0	0	0	0	0%	1	6
BELMONT AV	10TH ST	OLIVER AVE	1.5	9.0	5.8	7	1	0	0	0	0	0%	1	6
M L KING JR ST	30TH ST	21ST ST	1.1	9.0	8.2	4	0	1	1	1	0	43%	1	6
BROAD RIPPLE AVE	COLLEGE AVE	KEYSTONE AVE	1.3	11.0	8.5	5	3	0	0	0	0	0%	3	2
KEYSTONE WAY	25TH ST	ROOSEVELT AVE	0.7	6.0	8.6	6	0	0	0	0	0	0%	0	6
MASSACHUSETTS AV	34TH ST	EMERSON AVE	1.1	14.0	12.4	8	3	0	0	0	0	0%	3	5
MADISON AV	SOUTH ST	MCCARTY ST	0.3	4.0	11.4	1	0	0	1	0	0	50%	1	1
MERIDIAN ST	RAYMOND ST	SUMNER AVE	1.5	9.0	5.9	3	1	1	1	0	0	40%	2	3
96TH ST	DITCH RD	SPRINGMILL RD	1.0	5.0	5.1	3	1	0	0	0	0	0%	1	2
E 96TH ST	ALLISONVILLE RD	HAMILTON HILLS RD	0.6	5.0	8.8	4	0	1	0	0	0	20%	0	5
10TH ST	RURAL ST	EMERSON AVE	1.8	21.0	11.8	11	0	7	0	0	1	42%	1	18
38TH ST	SHERMAN DR	ARLINGTON AVE	2.0	30.0	14.8	14	2	2	3	1	0	30%	5	15
71ST ST	FALL CREEK RD	LEE RD	0.3	3.0	9.1	1	1	0	0	0	0	0%	1	0
CAREY RD	151ST ST	HAWTHORNE RD	0.9	5.0	5.3	3	1	0	0	0	0	0%	1	2
CARSON AV	SHELBY ST	HANNA AVE	1.5	8.0	5.3	5	1	1	0	0	0	17%	1	5
E CO RD 100 N	GRISWOLD RD	CR 1050	1.4	9.0	6.5	6	0	0	0	0	1	14%	1	6
EMERSON AVE	38TH ST	21ST ST	2.0	17.0	8.4	11	2	2	0	0	0	15%	2	11
FRANKLIN RD	46TH ST	38TH ST	1.0	6.0	5.9	3	0	0	1	0	0	25%	1	3
GEORGETOWN RD	LAFAYETTE RD	GEORGETOWN RD	1.3	7.0	5.2	4	0	0	1	0	0	20%	1	4
THOMPSON RD	DECATUR BLVD	SSR 67	0.6	3.0	5.1	1	1	0	0	0	0	0%	1	0
TROY AV	FRANKLIN RD	I-465	1.6	9.0	5.8	3	0	0	2	0	0	40%	2	3
TOWNSHIP LINE RD	WESTLANE RD	MICHIGAN RD	0.6	4.0	6.4	2	1	0	0	0	0	0%	1	1
UNION CHAPEL RD	GREENFIELD AVE	SPECTACULAR BLVD	0.5	3.0	5.6	1	1	0	0	0	0	0%	1	0
SUNSET AV	49TH ST	42ND ST	0.7	5.0	6.9	3	1	0	0	0	0	0%	1	2
WEST ST	SOUTH ST	MORRIS ST	0.7	5.0	7.2	3	1	0	0	0	0	0%	1	2
SHERMAN DR	34TH ST	21ST ST	1.5	15.0	9.8	13	0	2	0	0	0	13%	0	15
TROY AV	BLUFF RD	SHELBY ST	1.5	13.0	8.5	7	1	1	1	0	0	22%	2	7

HIN Corridor	From	To	Length (miles)	Severe Crash Score	Severe Crash Score/Mile	Vehicle	Vehicle Fatal	Pedestrian Incapacitating Injury	Pedestrian Fatal	Cyclist Incapacitating Injury	Cyclist Fatal	Pedestrian and Bicyclist Severe Crash Share	Fatal Crashes	SSI Crashes
WHITE RIVER PKWY W DR	PERSHING AVE	WASHINGTON ST	1.9	12.0	6.3	7	2	0	0	1	0	13%	2	6
PIKE PLAZA	LAFAYETTE RD	MOLLER RD	0.8	5.0	6.4	3	1	0	0	0	0	0%	1	2
RURAL ST	ROOSEVELT AVE	MICHIGAN RD	1.4	15.0	10.5	11	0	0	1	1	0	15%	1	12
SHADELAND AVE	30TH ST	16TH ST	1.5	16.0	10.6	8	1	3	1	0	0	33%	2	10
SHELBY ST	PLEASANT RUN PKWY DR	TROY AVE	1.6	10.0	6.5	5	1	2	0	1	0	38%	1	7
THOMPSON RD	BLUFF RD	MERIDIAN ST	0.8	9.0	10.8	7	1	0	0	0	0	0%	1	6
WASHINGTON ST	MICKLEY AVE	HOLT RD	2.0	23.0	11.3	14	0	2	2	1	0	26%	2	17
WASHINGTON ST	WASHINGTON ST	NEW JERSEY ST	1.2	9.0	7.6	1	0	0	2	2	0	80%	2	3
FRANKLIN RD	10TH ST	RAWLES AVE	1.4	8.0	5.8	7	0	1	0	0	0	13%	0	8
FRANKLIN RD	30TH ST	21ST ST	1.0	7.0	6.8	5	1	0	0	0	0	0%	1	4
38TH ST	HIGH SCHOOL RD	LAFAYETTE RD	1.9	14.0	7.4	6	0	1	2	1	0	40%	2	8
38TH ST	LAFAYETTE RD	KESSLER BLVD	1.3	7.0	5.6	5	1	0	0	0	0	0%	1	4
38TH ST	KESSLER BLVD	M L KING JR ST	1.6	10.0	6.1	4	3	0	0	0	0	0%	3	1
38TH ST	MERIDIAN ST	FALL CREEK PKWY DR	1.4	7.0	5.2	2	1	0	1	0	0	33%	2	1
38TH ST	FRANKLIN RD	MITTHOEFFER RD	1.9	18.0	9.4	12	3	0	0	0	0	0%	3	9
38TH ST	ARLINGTON AVE	FRANKLIN RD	2.0	13.0	6.5	7	1	1	1	0	0	22%	2	7
38TH ST	FALL CREEK PKWY DR SHERMAN DR		1.5	25.0	16.3	12	3	1	2	0	0	20%	5	10
38TH ST	MICHIGAN RD	MERIDIAN ST	1.3	13.0	10.2	6	0	3	1	1	0	45%	1	10
30TH ST	LAFAYETTE RD	COLD SPRINGS RD	1.0	5.0	5.2	3	1	0	0	0	0	0%	1	2
30TH ST	M L KING JR ST	MERIDIAN ST	0.9	7.0	7.7	5	1	0	0	0	0	0%	1	4
30TH ST	FALL CREEK PKWY DR KEYSTONE AVE		1.2	8.0	6.8	5	0	0	0	0	1	17%	1	5
30TH ST	SHERMAN DR	RITTER AVE	1.6	12.0	7.6	8	0	1	1	0	0	20%	1	9
30TH ST	MOLLER RD	LAFAYETTE RD	1.9	12.0	6.4	8	0	1	1	0	0	20%	1	9
30TH ST	RITTER AVE	SHADELAND AVE	1.5	11.0	7.3	6	1	0	1	0	0	14%	2	5
30TH ST	MITTHOEFFER RD	E COUNTY LINE	2.0	11.0	5.5	7	1	2	0	0	0	22%	1	8
30TH ST	RIVERSIDE DR	M L KING JR ST	0.9	5.0	5.4	2	1	1	0	0	0	33%	1	2
30TH ST	SHADELAND AVE	FRANKLIN RD	1.0	18.0	17.9	9	3	0	1	0	0	10%	4	6
SOUTHPORT RD	MCFARLAND RD	EMERSON AVE	1.5	8.0	5.2	8	0	0	0	0	0	0%	0	8
SOUTHPORT RD	SHELBY ST	MADISON AVE	0.7	4.0	6.0	3	0	1	0	0	0	25%	0	4
SOUTHPORT RD	SR 135	SHELBY ST	1.0	7.0	6.9	3	2	0	0	0	0	0%	2	1
COLLEGE AVE	38TH ST	FALL CREEK PKWY DR	1.1	12.0	10.6	9	0	0	1	0	0	10%	1	9
COLLEGE AVE	FALL CREEK PKWY DR 16TH ST		1.4	14.0	10.0	5	1	3	1	1	0	50%	2	8
COLLEGE AVE	16TH ST	ST CLAIR ST	0.7	4.0	5.3	3	0	1	0	0	0	25%	0	4
COLLEGE AVE	ST CLAIR ST	WASHINGTON ST	0.7	7.0	9.4	2	1	0	1	0	0	33%	2	1
ARLINGTON AV	21ST ST	WASHINGTON ST	1.7	12.0	6.9	4	2	3	0	1	0	50%	2	6

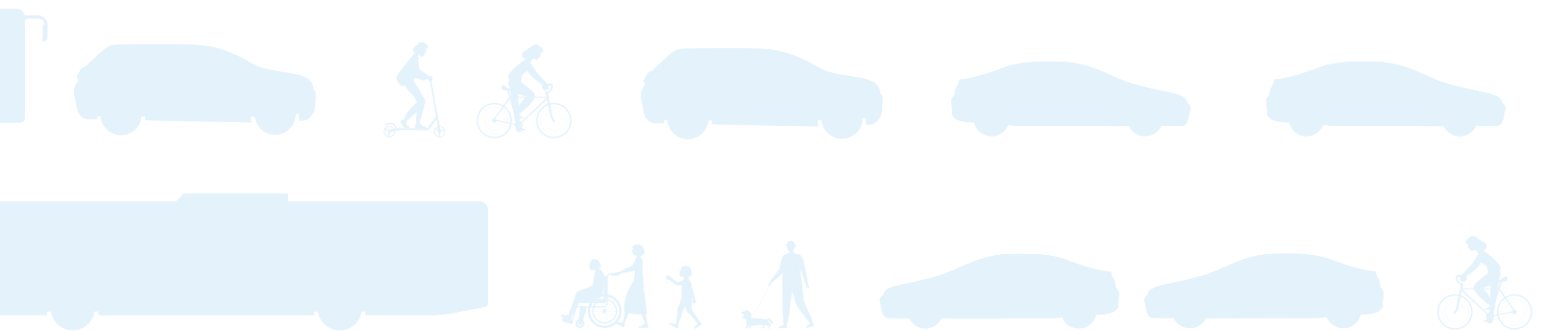
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ARLINGTON AV	34TH ST	21ST ST	1.5	11.0	7.2	7	2	0	0	0	0	0%	2	5
ARLINGTON AV	SOUTHEASTERN AVE	CHURCHMAN AVE	1.5	10.0	6.5	8	1	0	0	0	0	0%	1	7
LAFAYETTE RD	56TH ST	GEORGETOWN RD	1.6	9.0	5.6	5	2	0	0	0	0	0%	2	3
LAFAYETTE RD	30TH ST	16TH ST	1.9	24.0	12.9	10	2	1	2	0	1	29%	5	9
LAFAYETTE RD	PIKE PLAZA	30TH ST	2.1	19.0	8.9	12	1	1	1	1	0	20%	2	13
86TH ST	MOORE RD	ZIONSVILLE RD	1.5	8.0	5.3	5	0	0	1	0	0	17%	1	5
RAYMOND ST	SHELBY ST	SHERMAN DR	2.0	22.0	10.9	12	3	4	0	0	0	25%	3	13
MERIDIAN ST	71ST ST	KESSLER BLVD	1.5	11.0	7.6	7	2	0	0	0	0	0%	2	5
MERIDIAN ST	FALL CREEK PKWY DR	16TH ST	1.0	6.0	6.0	4	1	0	0	0	0	0%	1	3
MADISON AVE	PLEASANT RUN PKWY DR	SUMNER AVE	1.4	14.0	10.0	9	2	1	0	0	0	10%	2	8
MADISON AVE	PENNSYLVANIA ST	PLEASANT RUN PKWY DR	1.6	20.0	12.4	10	5	0	0	0	0	0%	5	5
MADISON AVE	SOUTHPORT RD	COUNTY LINE RD	2.1	20.0	9.6	7	3	1	2	0	0	30%	5	5
POST RD	RAYMOND ST	NORTHEASTERN AVE	2.4	13.0	5.5	8	1	0	1	0	0	11%	2	7
POST RD	21ST ST	US 40	1.6	8.0	5.1	4	2	0	0	0	0	0%	2	2
POST RD	US 36	38TH ST	1.3	16.0	12.6	6	2	2	0	1	1	40%	3	7
10TH ST	FRANKLIN RD	MITTHOEFER RD	1.9	11.0	5.7	4	3	1	0	0	0	20%	3	2
10TH ST	PLEASANT RUN PKWY DR	FRANKLIN RD	1.5	12.0	7.8	5	0	1	2	0	0	38%	2	6
10TH ST	EMERSON AVE	PLEASANT RUN PKWY DR	1.5	11.0	7.4	2	1	1	2	0	0	60%	3	2
10TH ST	TIBBS AVE	INDIANA AVE	2.2	13.0	5.9	6	0	1	2	0	0	33%	2	7
STOP 11 RD	MADISON AVE	EMERSON AVE	2.1	15.0	7.1	6	1	0	2	1	0	33%	3	6
56TH ST	BINFORD BLVD	ARLINGTON AVE	1.6	13.0	7.9	8	2	1	0	0	0	11%	2	7
56TH ST	ARLINGTON AVE	RICHARDT ST	1.4	17.0	11.7	4	3	1	2	0	0	43%	5	2
COUNTY LINE RD	SR 135	US 31	1.7	9.0	5.3	5	0	1	1	0	0	29%	1	6
COUNTY LINE RD	US 31	MERIDIAN ST	1.1	14.0	12.8	10	0	3	0	1	0	29%	0	14
COUNTY LINE RD	MERIDIAN ST	EMERSON AVE	1.3	7.0	5.6	4	0	0	1	0	0	20%	1	4
E 116TH ST	CUMBERLAND RD	HOOSIER RD	1.5	8.0	5.2	4	2	0	0	0	0	0%	2	2
EMERSON AVE	WASHINGTON ST	SOUTHEASTERN AVE	1.8	13.0	7.4	9	2	0	0	0	0	0%	2	7
EMERSON AVE	21ST ST	WASHINGTON ST	1.8	15.0	8.3	13	1	0	0	0	0	0%	1	12
21ST ST	EMERSON AVE	SHADELAND AVE	2.0	30.0	14.9	13	4	0	3	0	0	19%	7	9
21ST ST	POST RD	MITTHOEFER RD	1.0	13.0	12.9	7	1	1	1	0	0	22%	2	7
21ST ST	DEARBORN ST	EMERSON AVE	1.5	11.0	7.2	9	1	0	0	0	0	0%	1	8
MICHIGAN ST	HIGHLAND AVE	RURAL ST	1.1	6.0	5.5	1	0	2	1	0	0	75%	1	3
MICHIGAN ST	COSSELL RD	TIBBS AVE	0.9	8.0	8.7	4	2	0	0	0	0	0%	2	2
KEYSTONE AV	38TH ST	25TH ST	1.5	32.0	21.2	12	2	0	3	1	2	33%	7	11

HIN Corridor	From	To	Length (miles)	Severe Crash Score	Severe Crash Score/Mile	Vehicle	Vehicle Fatal	Pedestrian Incapacitating Injury	Pedestrian Fatal	Cyclist Incapacitating Injury	Cyclist Fatal	Pedestrian and Bicyclist Severe Crash Share	Fatal Crashes	SSI Crashes
KEYSTONE AV	52ND ST	38TH ST	1.5	11.0	7.2	9	0	2	0	0	0	18%	0	11
KEYSTONE AV	75TH ST	BROAD RIPPLE AVE	1.5	9.0	6.0	7	1	0	0	0	0	0%	1	6
46TH ST	COLLEGE AVE	BINFORD BLVD	1.7	9.0	5.2	6	1	0	0	1	0	14%	1	6
46TH ST	BINFORD BLVD	EMERSON AVE	1.6	16.0	10.3	9	2	0	1	0	0	10%	3	7
46TH ST	EMERSON AVE	KITLEY AVE	1.5	9.0	5.9	7	1	0	0	0	0	0%	1	6
46TH ST	KITLEY AVE	FRANKLIN RD	1.5	10.0	6.7	9	0	1	0	0	0	10%	0	10
SHERMAN DR	MICHIGAN RD	SOUTHEASTERN AVE	1.4	13.0	9.4	9	2	0	0	0	0	0%	2	7
WASHINGTON ST	ARLINGTON AVE	MITCHNER ST	1.6	20.0	12.5	10	1	2	2	0	0	29%	3	11
WASHINGTON ST	SHERMAN DR	ARLINGTON AVE	2.0	17.0	8.4	6	2	4	1	0	0	45%	3	8
WASHINGTON ST	STATE AVE	SHERMAN DR	1.5	22.0	14.4	11	1	3	2	0	0	31%	3	13
WASHINGTON ST	NEW JERSEY ST	STATE AVE	1.1	17.0	15.8	7	1	1	1	1	1	36%	3	8
KESSLER BLVD	KEYSTONE AVE	ALLISONVILLE RD	1.2	8.0	6.8	5	1	1	0	0	0	17%	1	5
KESSLER BLVD	56TH ST	COLLEGE AVE	1.2	7.0	5.7	5	1	0	0	0	0	0%	1	4
KESSLER BLVD	COOPER RD	GRANDVIEW DR	1.3	8.0	6.0	7	0	1	0	0	0	13%	0	8
ILLINOIS ST	38TH ST	FALL CREEK PKWY DR	1.5	11.0	7.4	8	0	0	1	0	0	11%	1	8
LYNHURST DR	WASHINGTON ST	PRODUCTION DR	1.5	14.0	9.5	7	2	0	1	0	0	13%	3	5
MICHIGAN RD	GRANDVIEW DR	38TH ST	1.5	14.0	9.6	8	3	0	0	0	0	0%	3	5
MICHIGAN RD	62ND ST	GRANDVIEW DR	1.7	30.0	17.3	13	8	1	0	0	0	7%	8	6
MICHIGAN RD	79TH ST	62ND ST	2.1	25.0	11.7	16	3	0	1	0	0	6%	4	13
MICHIGAN RD	I-465	79TH ST	1.9	25.0	13.2	10	3	0	3	0	0	23%	6	7
FALL CREEK PKWY	38TH ST	30TH ST	1.3	14.0	10.9	9	2	1	0	0	0	10%	2	8
MITTHOEFER RD	38TH ST	25TH ST	1.5	19.0	12.5	10	0	0	3	0	0	23%	3	10
ALLISONVILLE RD	71ST ST	KESSLER BLVD	1.5	8.0	5.2	4	2	0	0	0	0	0%	2	2
ALLISONVILLE RD	96TH ST	82ND ST	1.6	9.0	5.5	7	1	0	0	0	0	0%	1	6
EMERSON AVE	STOP 11 RD	COUNTY LINE RD	1.0	9.0	8.9	5	2	0	0	0	0	0%	2	3
EMERSON AVE	I-465	EDGEWOOD AVE	1.6	14.0	8.5	9	1	2	0	1	0	25%	1	11
ALLISONVILLE RD	126TH ST	116TH ST	1.0	6.0	5.8	3	1	1	0	0	0	25%	1	3
56TH ST	GEORGETOWN RD	KESSLER BLVD	1.5	9.0	6.0	4	1	0	1	0	0	20%	2	3
56TH ST	HIGH SCHOOL RD	GEORGETOWN RD	1.6	12.0	7.3	6	1	1	1	0	0	25%	2	6
NEW YORK ST	LASALLE ST	PLEASANT RUN PKWY DR	1.5	10.0	6.9	6	2	0	0	0	0	0%	2	4
16TH ST	FRANKLIN RD	POST RD	0.9	8.0	8.9	4	2	0	0	0	0	0%	2	2
16TH ST	SHERMAN DR	EMERSON AVE	1.0	6.0	5.9	3	1	1	0	0	0	25%	1	3
16TH ST	KESSLER BLVD	HARDING ST	1.3	20.0	15.7	7	1	2	3	0	0	42%	4	8
MANN RD	KENTUCKY AVE	THOMPSON RD	1.6	8.0	5.1	2	1	1	1	0	0	50%	2	2
KEYSTONE AV	TROY AVE	HANNA AVE	1.0	12.0	11.9	10	1	0	0	0	0	0%	1	9
KEYSTONE AV	HOYT AVE	RAYMOND ST	1.4	8.0	5.8	8	0	0	0	0	0	0%	0	8

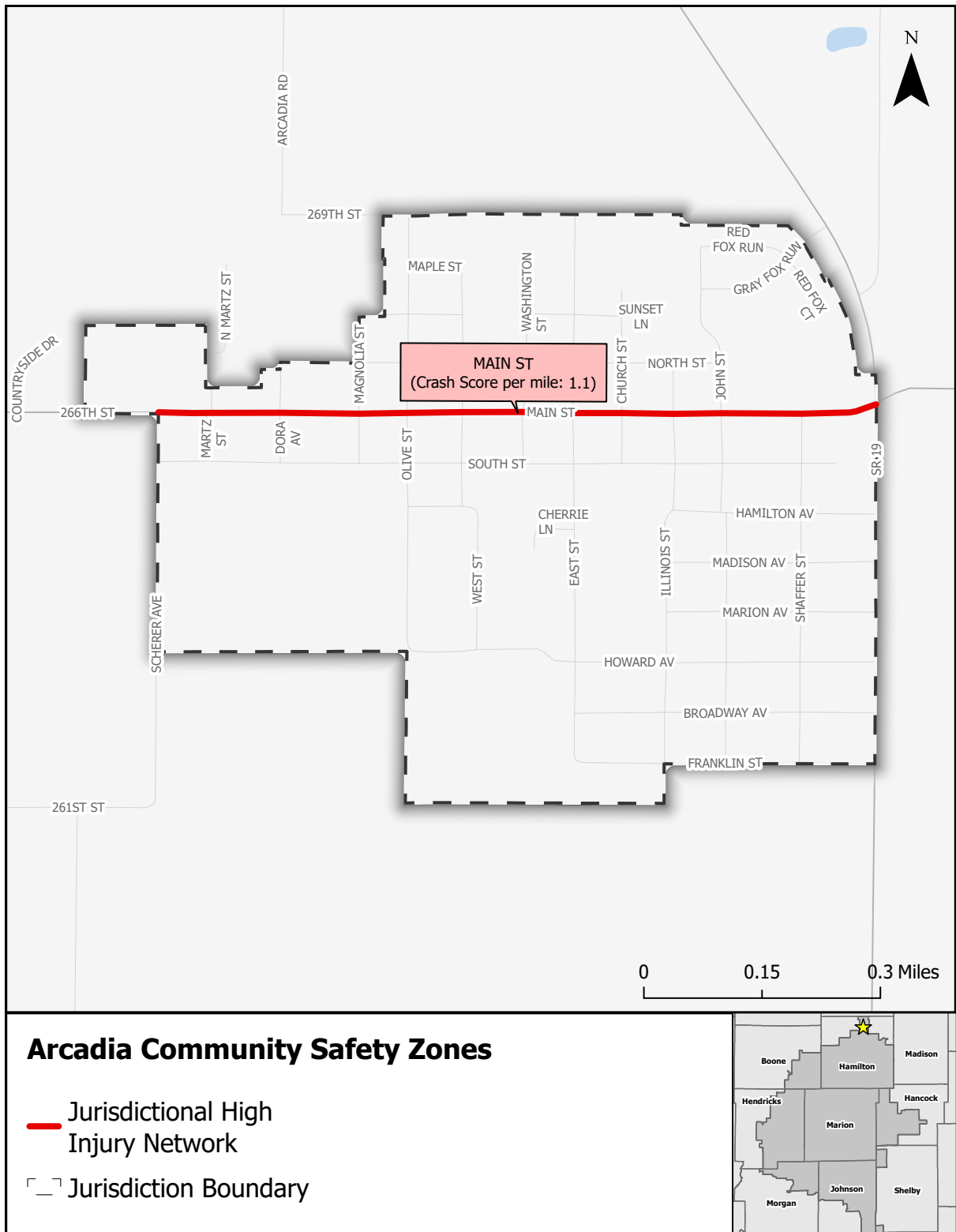
HIN Corridor	From	To	Length (miles)	Severe Crash Score	Severe Crash Score/Mile	Vehicle	Vehicle Fatal	Pedestrian Incapacitating Injury	Pedestrian Fatal	Cyclist Incapacitating Injury	Cyclist Fatal	Pedestrian and Bicyclist Severe Crash Share	Fatal Crashes	SSI Crashes
KESSLER BLVD	44TH ST	30TH ST	1.8	10.0	5.7	5	1	0	1	0	0	17%	2	4
KESSLER BLVD	30TH ST	16TH ST	1.5	13.0	8.6	4	1	1	2	0	0	43%	3	4
ZIONSVILLE RD	71ST ST	62ND ST	1.0	6.0	6.0	3	0	0	1	0	0	25%	1	3
GEORGETOWN RD	56TH ST	LAFAYETTE RD	1.4	7.0	5.1	5	1	0	0	0	0	0%	1	4
GEORGETOWN RD	62ND ST	56TH ST	1.0	11.0	10.9	6	1	0	1	0	0	14%	2	5
MORRIS ST	DROVER ST	EAST ST	1.4	10.0	7.2	8	1	0	0	0	0	0%	1	7
SHADELAND AVE	16TH ST	WASHINGTON ST	1.2	11.0	9.4	4	3	1	0	0	0	20%	3	2
SHADELAND AVE	I-465	PENDLETON PIKE	1.5	19.0	12.8	9	2	0	1	0	1	18%	4	7
SHADELAND AVE	PENDLETON PIKE	30TH ST	1.1	22.0	19.5	9	2	3	2	0	0	36%	4	10
34TH ST	EMERSON AVE	ARLINGTON AVE	1.0	12.0	11.9	5	2	0	0	0	1	17%	3	3
34TH ST	SHERMAN DR	EMERSON AVE	1.0	15.0	14.7	12	1	1	0	0	0	8%	1	12
WASHINGTON ST	HOLT RD	BELMONT AVE	1.6	9.0	5.7	4	1	3	0	0	0	43%	1	6
HOLT RD	OLIN AVE	WASHINGTON ST	1.6	10.0	6.1	5	1	2	0	1	0	38%	1	7
71ST ST	MARSH RD	GEORGETOWN RD	1.6	12.0	7.5	6	1	1	1	0	0	25%	2	6
HARDING ST	RAYMOND ST	SUMNER AVE	1.5	13.0	8.7	5	1	0	0	0	2	29%	3	4
TROY AV	SHELBY ST	PERKINS AVE	1.5	11.0	7.3	7	2	0	0	0	0	0%	2	5
HIGH SCHOOL RD	38TH ST	CRAWFORDSVILLE RD	1.5	14.0	9.1	7	2	0	1	0	0	13%	3	5
HIGH SCHOOL RD	52ND ST	38TH ST	1.5	23.0	15.1	7	2	0	4	0	0	36%	6	5
MASSACHUSETTS AV	DEARBORN ST	EMERSON AVE	1.8	11.0	6.1	7	2	0	0	0	0	0%	2	5
MASSACHUSETTS AV	38TH ST	ARLINGTON AVE	1.0	6.0	6.2	4	1	0	0	0	0	0%	1	3
34TH ST	DANDY TRAIL	EAGLE CREEK PKWY	1.1	6.0	5.5	1	1	0	1	0	0	50%	2	0
TIBBS AV	21ST ST	10TH ST	1.0	6.0	5.9	3	1	1	0	0	0	25%	1	3
M L KING JR ST	21ST ST	WEST ST	1.0	6.0	5.8	4	1	0	0	0	0	0%	1	3
M L KING JR ST	38TH ST	30TH ST	1.1	15.0	14.0	8	2	0	1	0	0	11%	3	6
SHADELAND AV	82ND ST	71ST ST	1.6	11.0	7.0	5	1	1	1	0	0	29%	2	5
SHADELAND AV	71ST ST	I-465	1.3	11.0	8.4	6	2	1	0	0	0	14%	2	5
BOULEVARD PL	40TH ST	30TH ST	1.3	10.0	8.0	0	0	0	2	1	1	100%	3	1
29TH ST	30TH ST	M L KING JR ST	1.1	6.0	5.3	3	1	1	0	0	0	25%	1	3
RURAL ST	MICHIGAN ST	HOYT AVE	1.2	8.0	6.9	4	0	1	0	0	1	33%	1	5
42ND ST	POST RD	CANDY APPLE BLVD	1.3	16.0	12.7	10	3	0	0	0	0	0%	3	7
42ND ST	US 36	POST RD	1.2	10.0	8.1	5	2	1	0	0	0	17%	2	4
46TH ST	HIGH SCHOOL RD	LAFAYETTE RD	1.1	7.0	6.2	5	1	0	0	0	0	0%	1	4

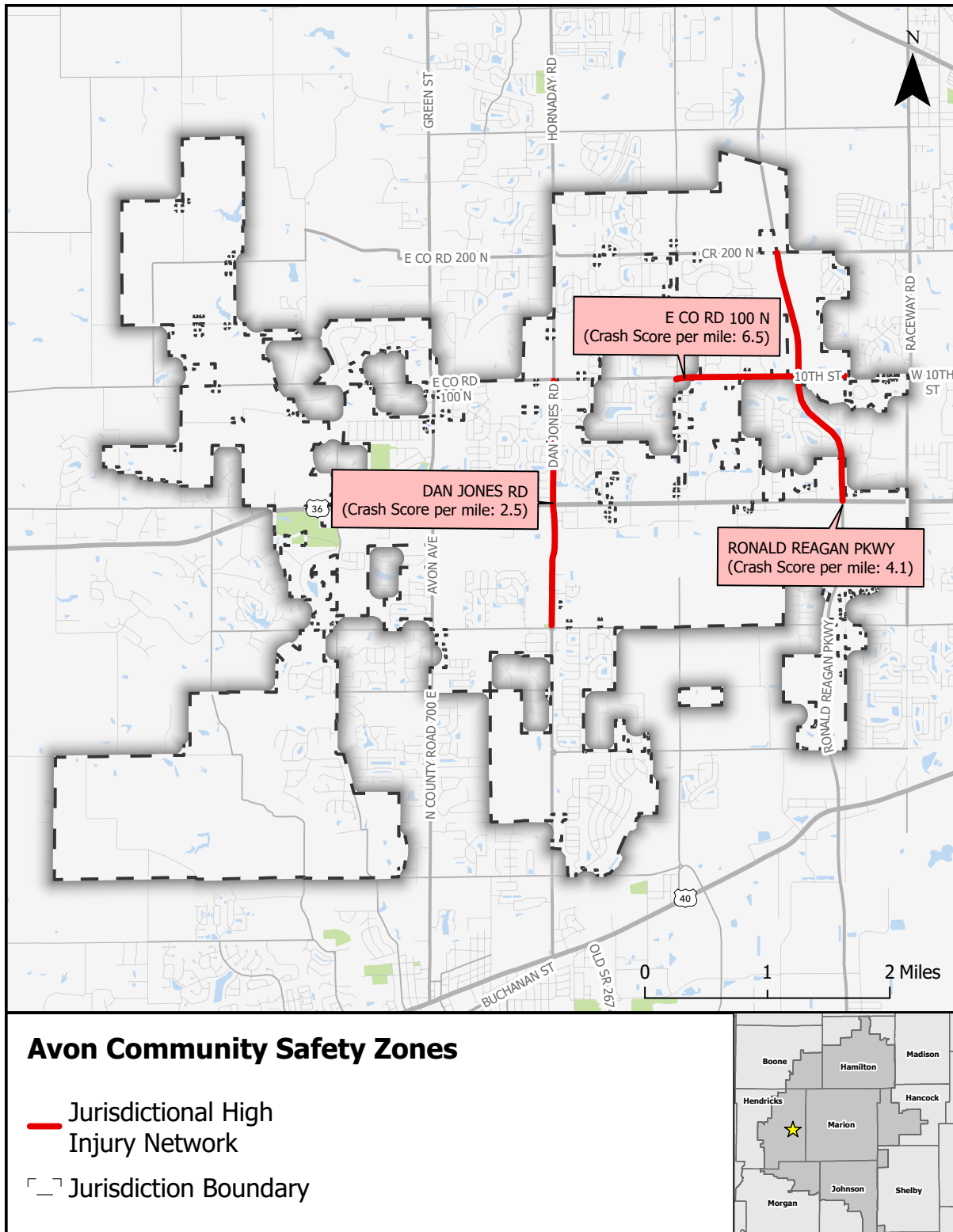


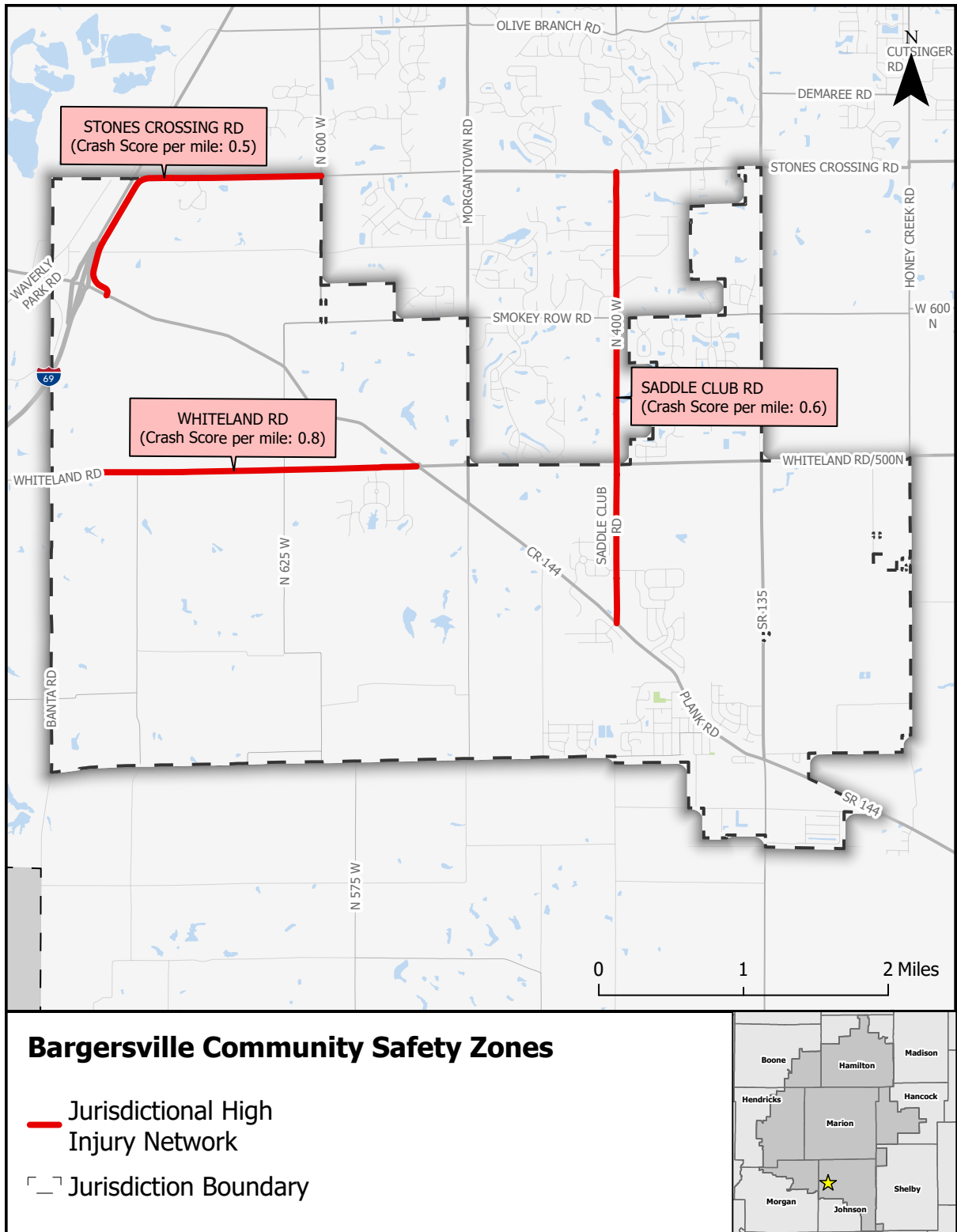
APPENDIX C: COMMUNITY SAFETY ZONE MAPS

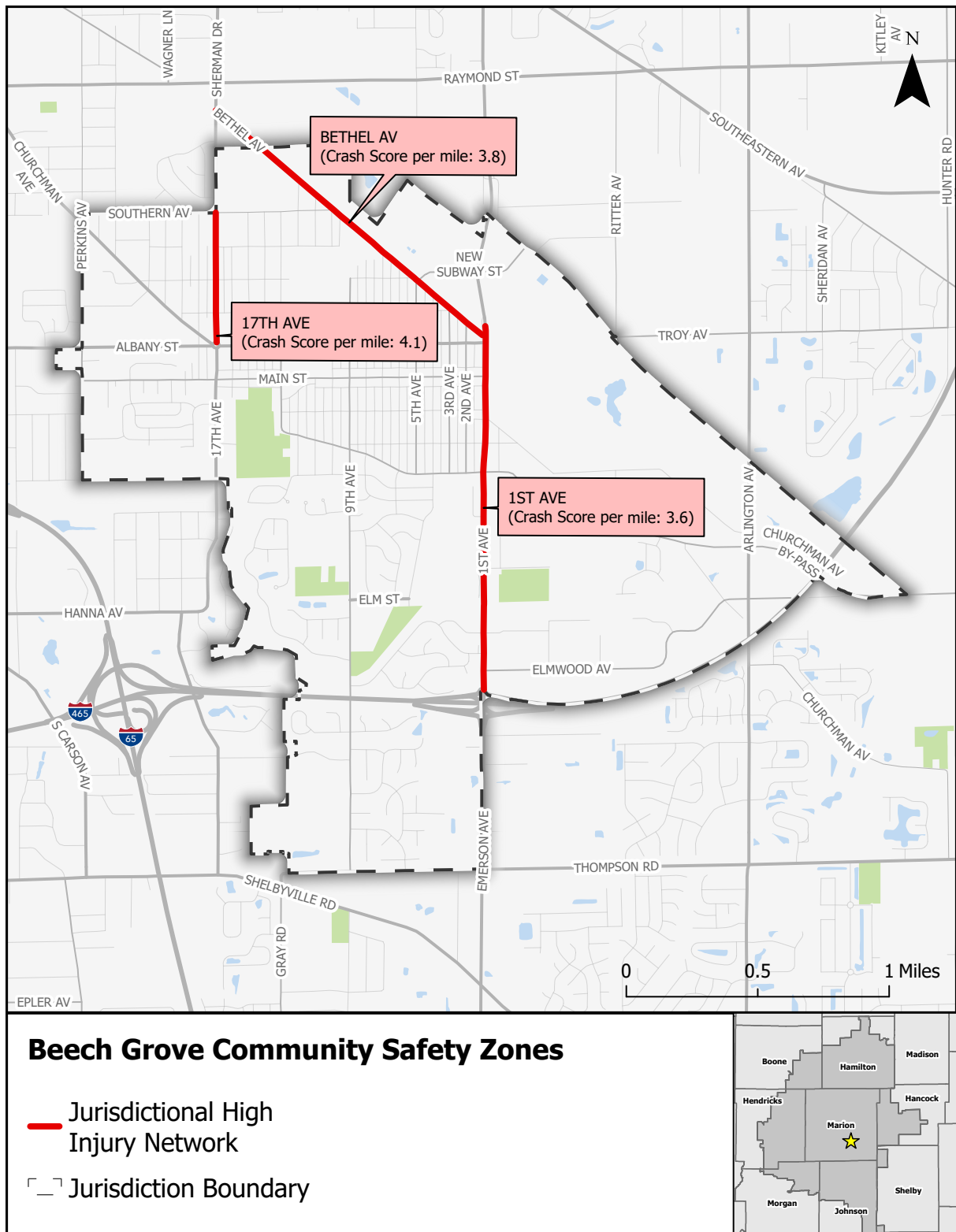


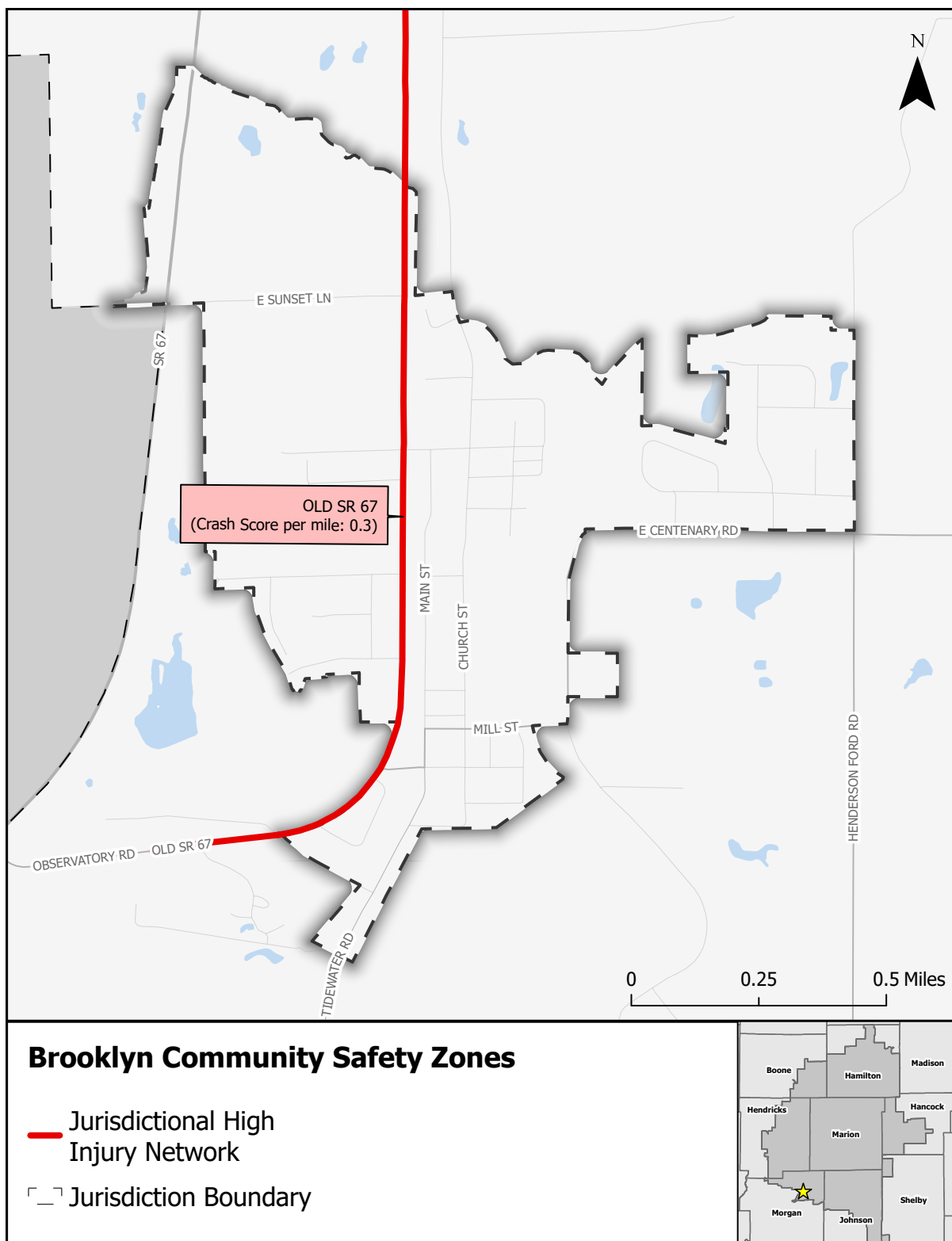
To develop the Community Safety Zones, the top three highest scoring segments (crash score per mile) were identified in each community and county (unincorporated areas) from the scoring methodology used to develop the regional High Injury Network. After this analysis, there were seven communities that had fewer than three segments with a crash score. For those communities, segments with higher risk scores from the High Risk Network were used to identify the remaining Community Safety Zones. For two communities, the majority of roads in the community had the same risk score, so the main road was identified as a Community Safety Zone. For two other communities, the risk score threshold left a cluster of roads, and those areas were kept as Community Safety Zones and identified on the map as High Risk Network Areas.

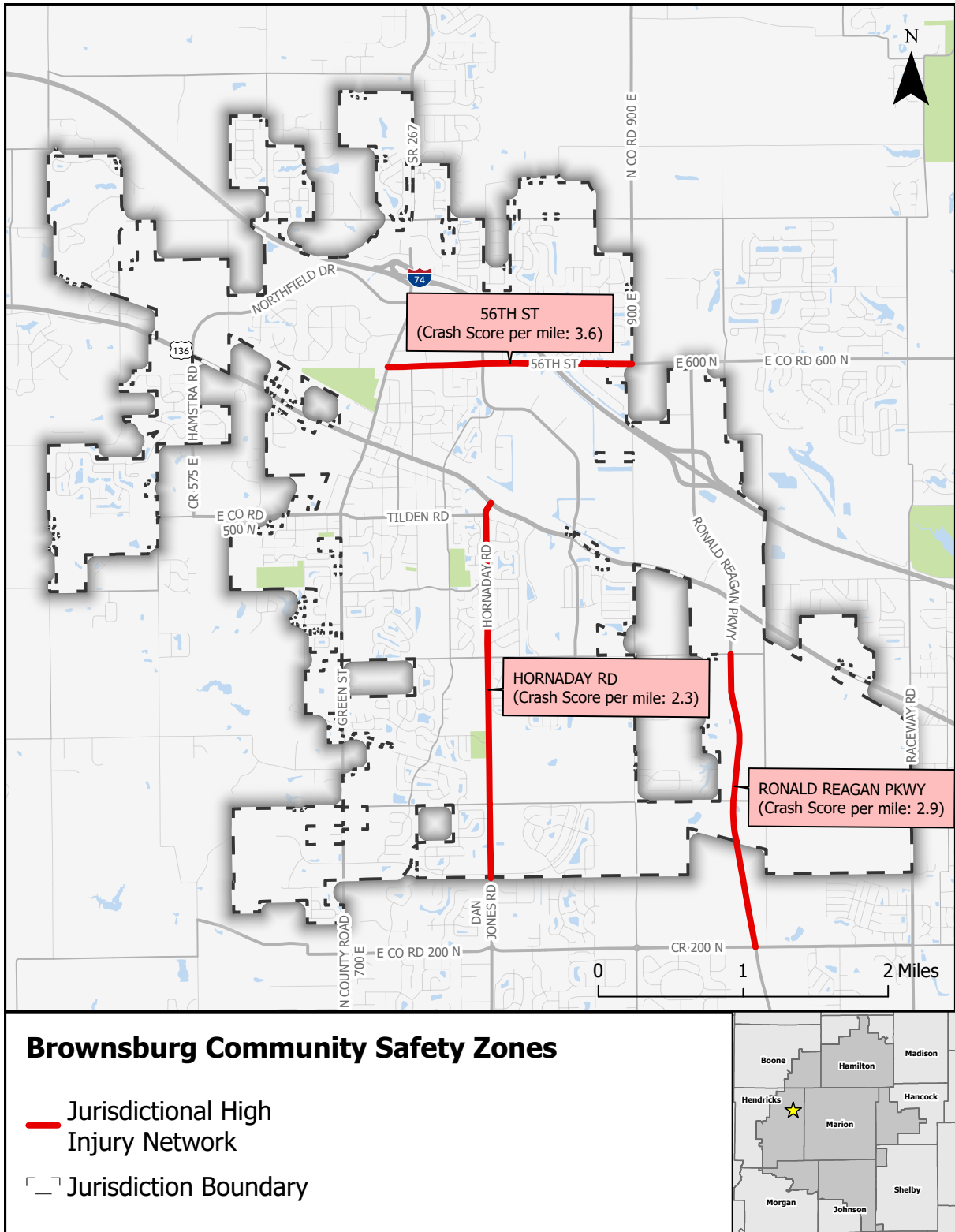


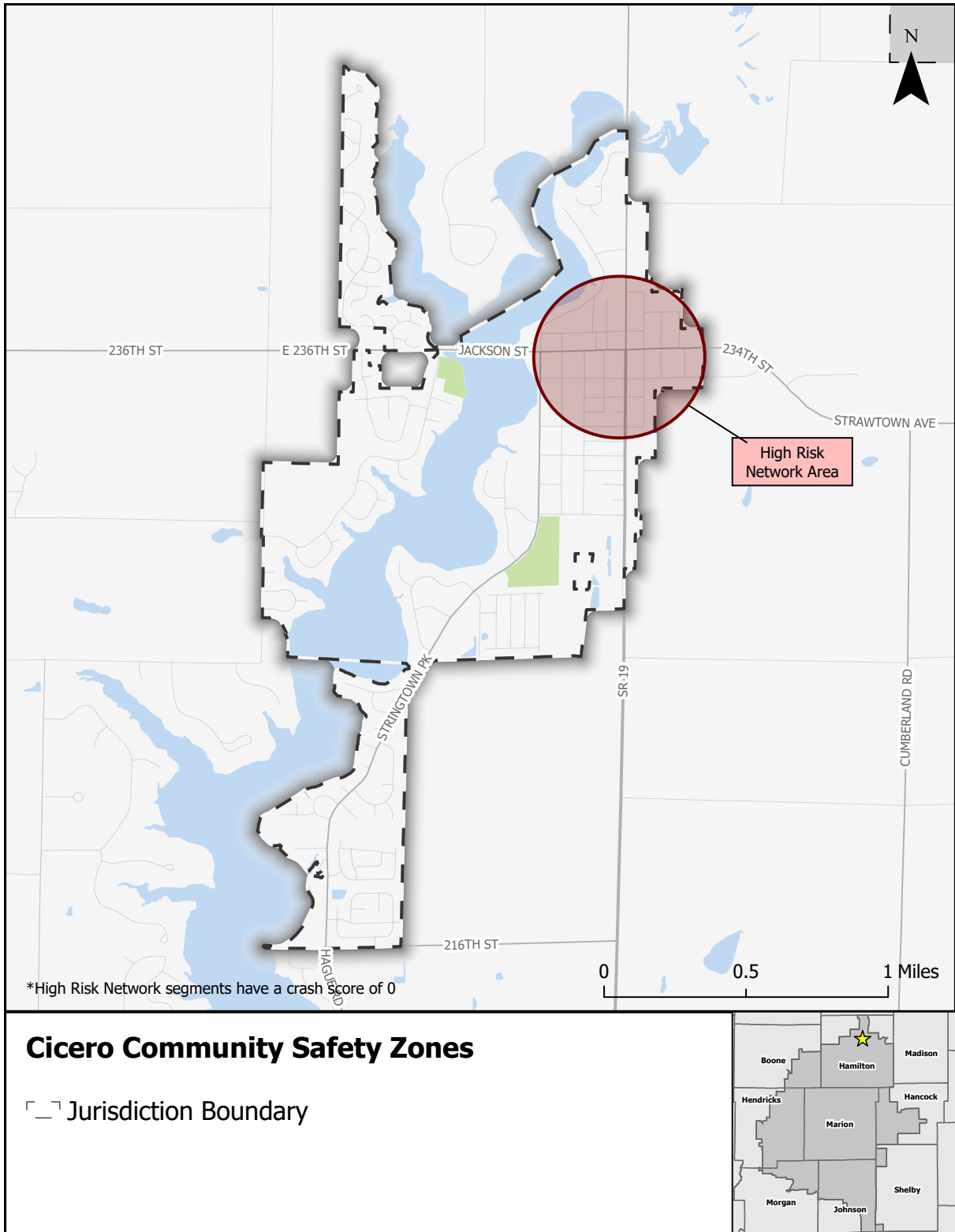


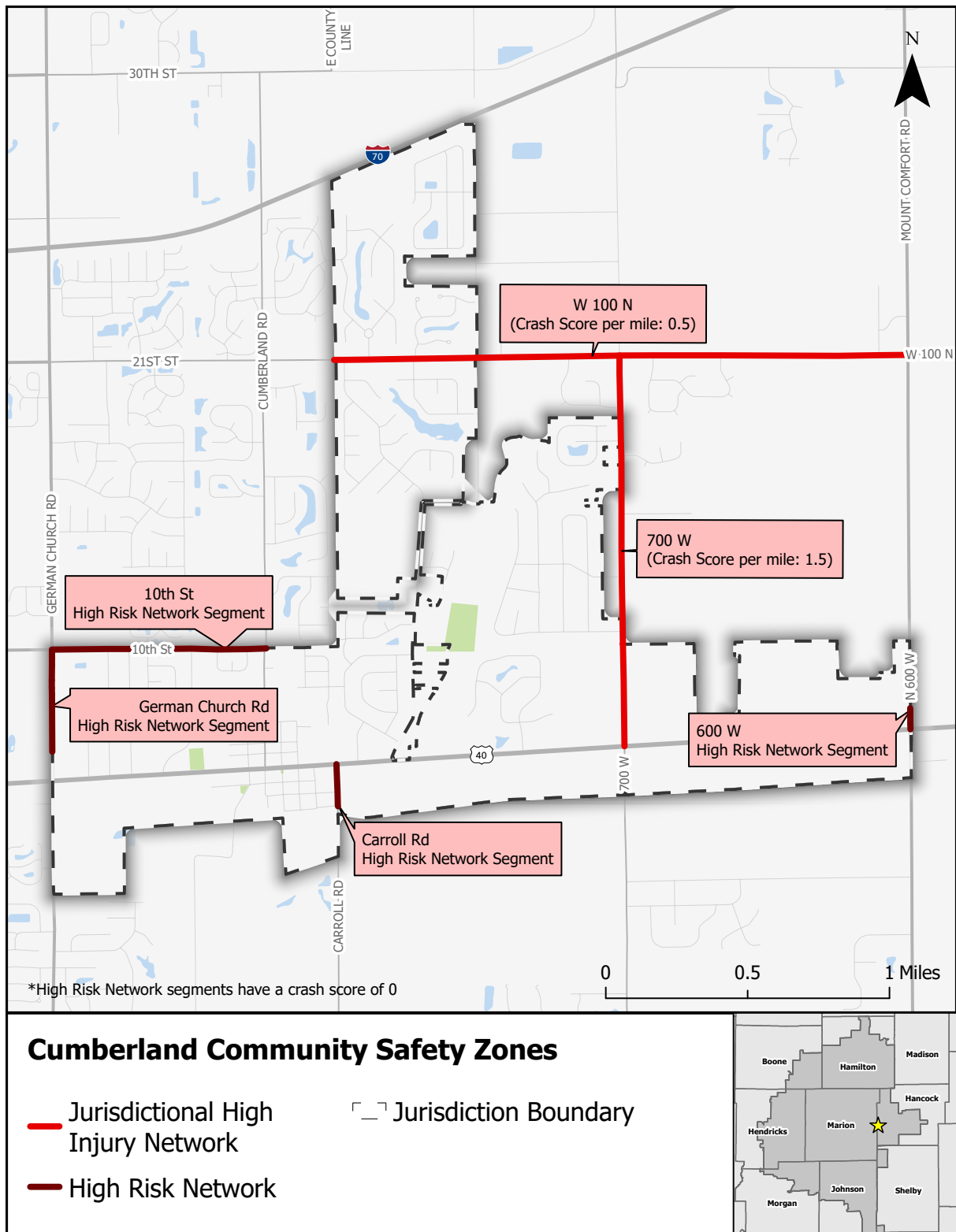


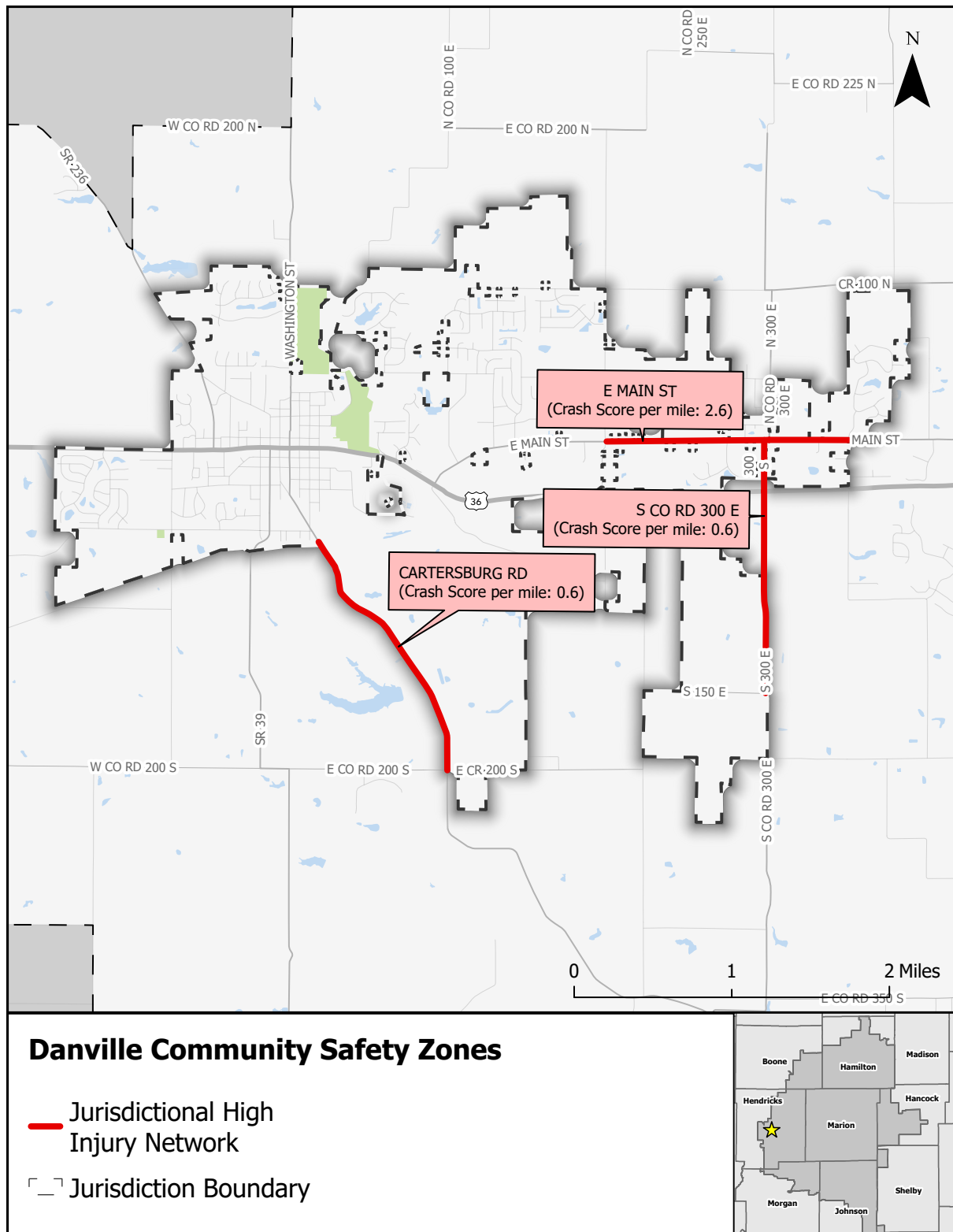


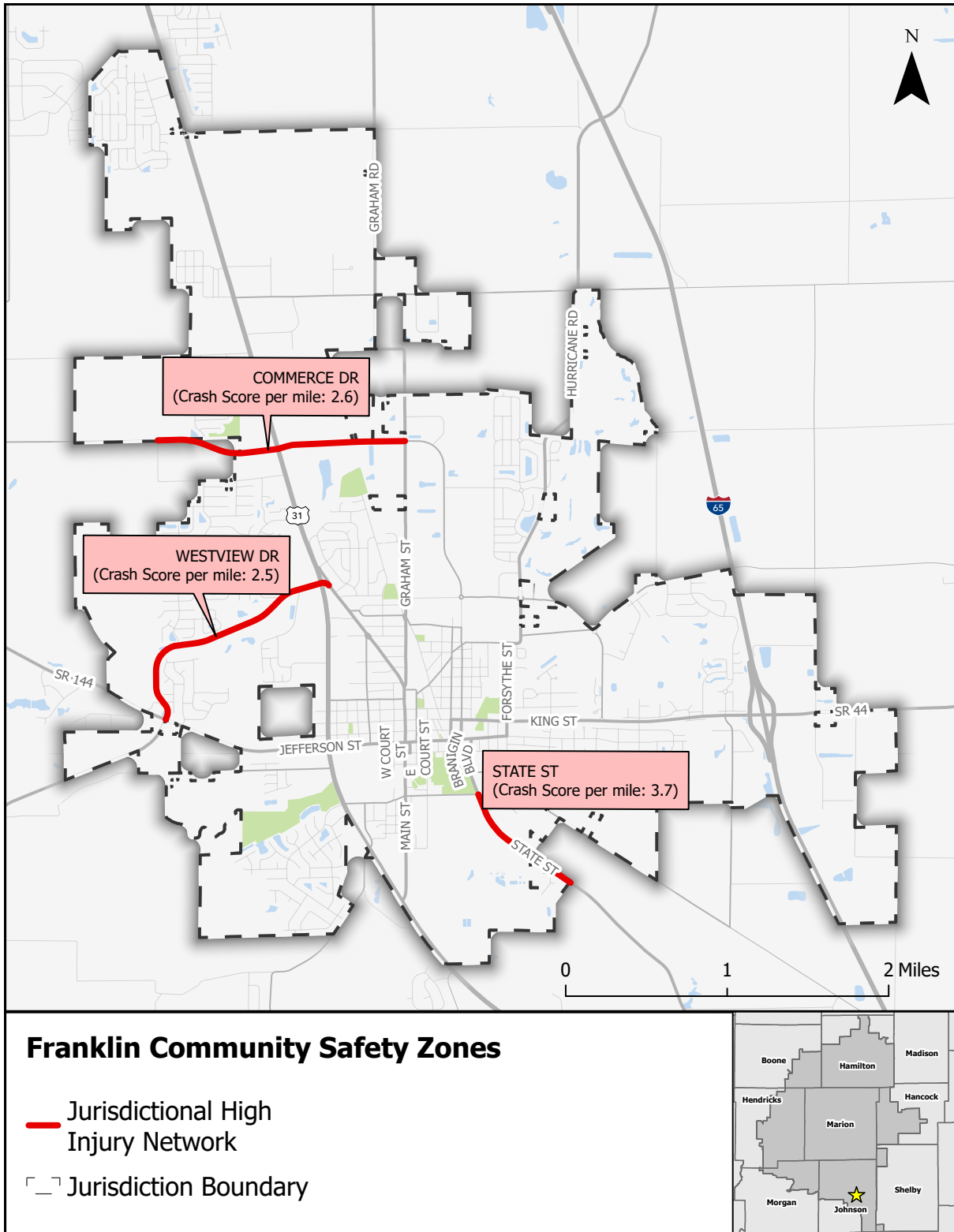


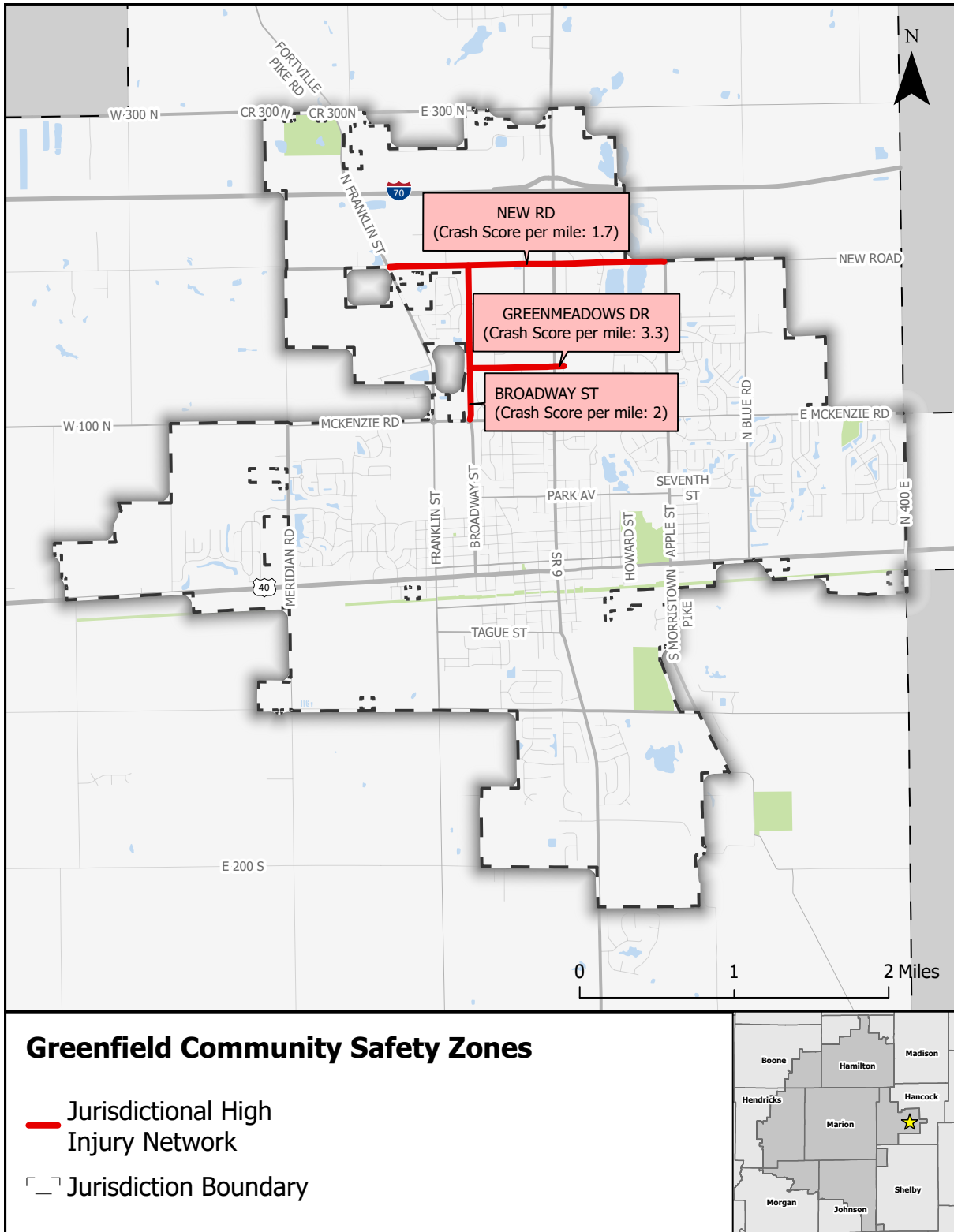


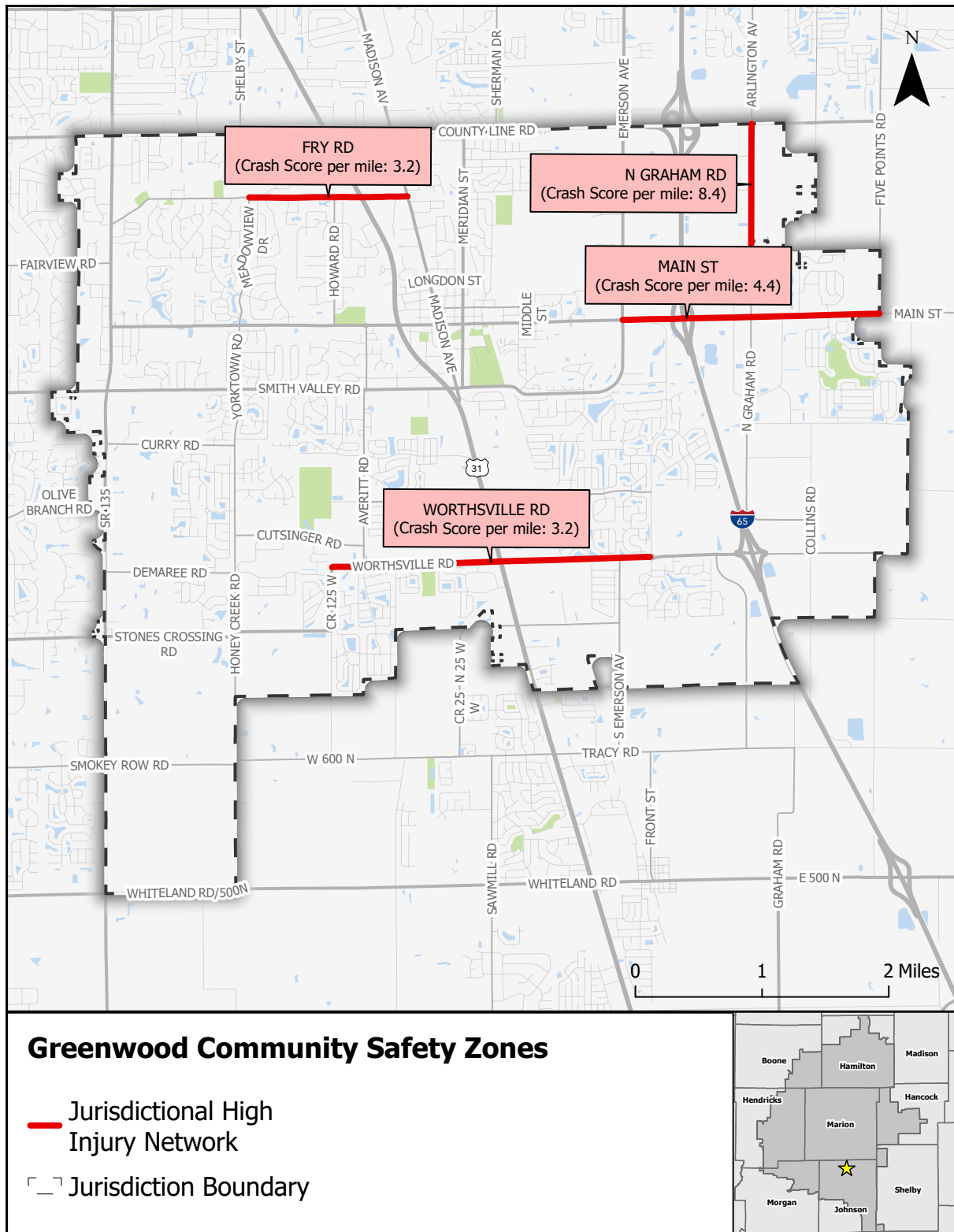


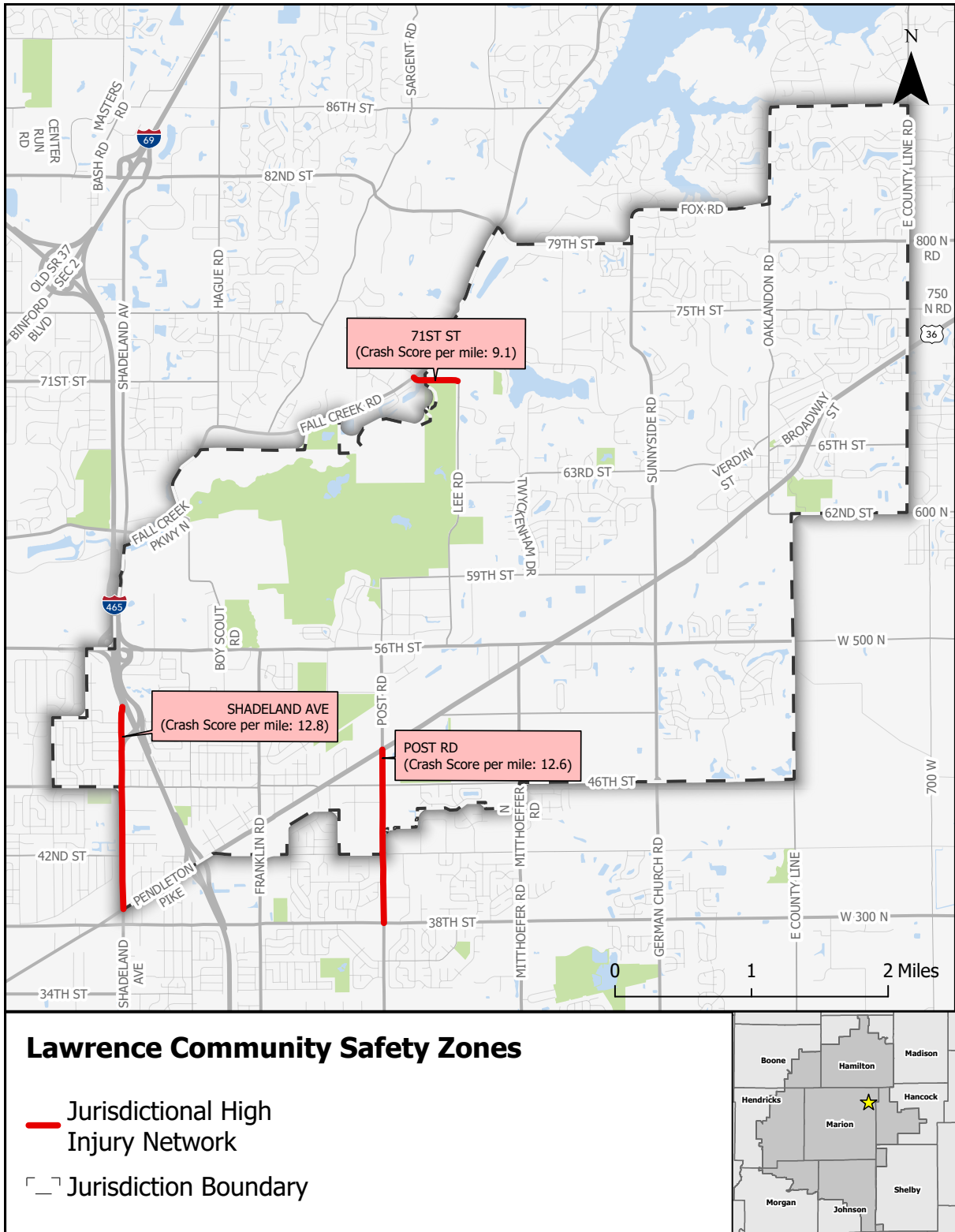


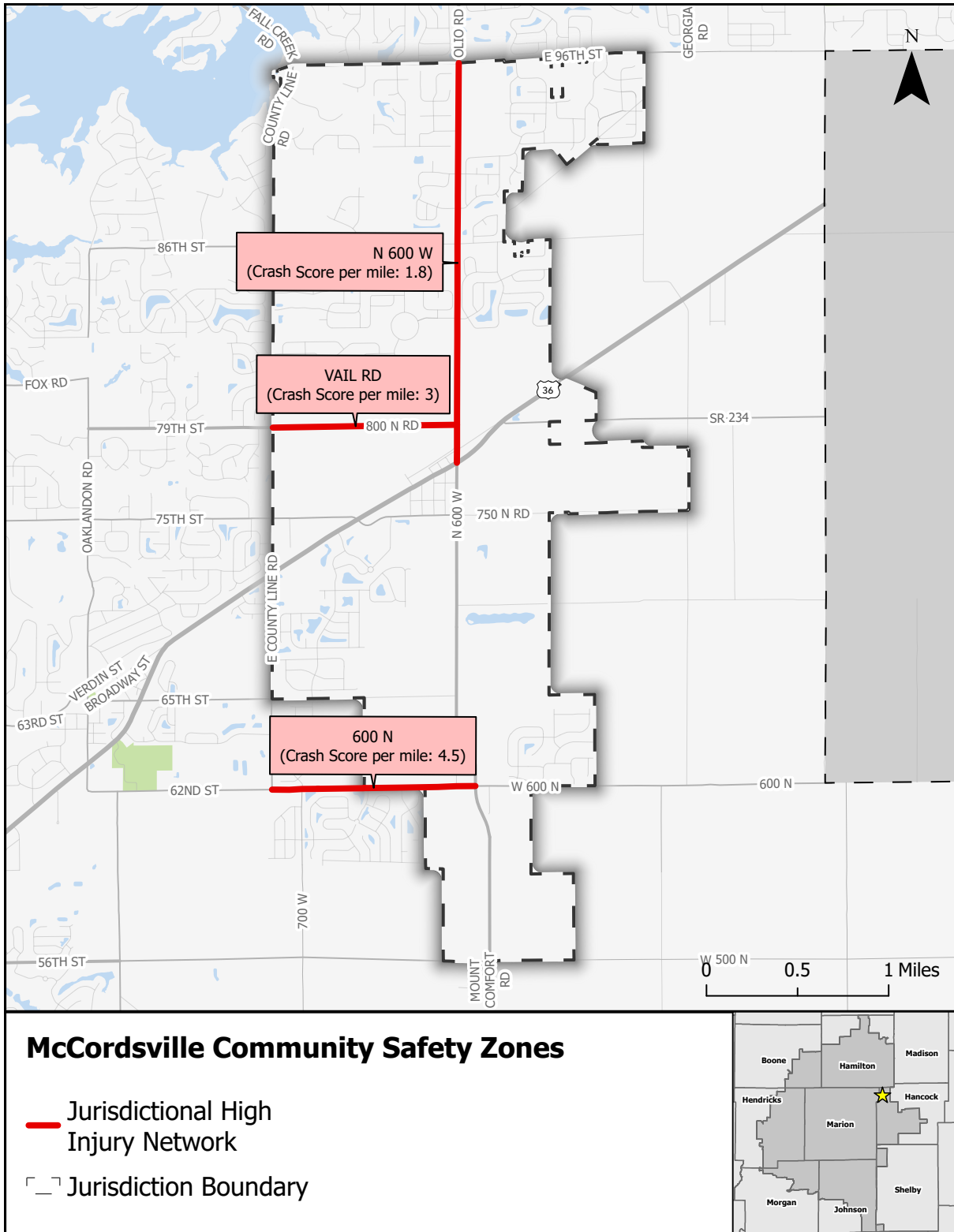


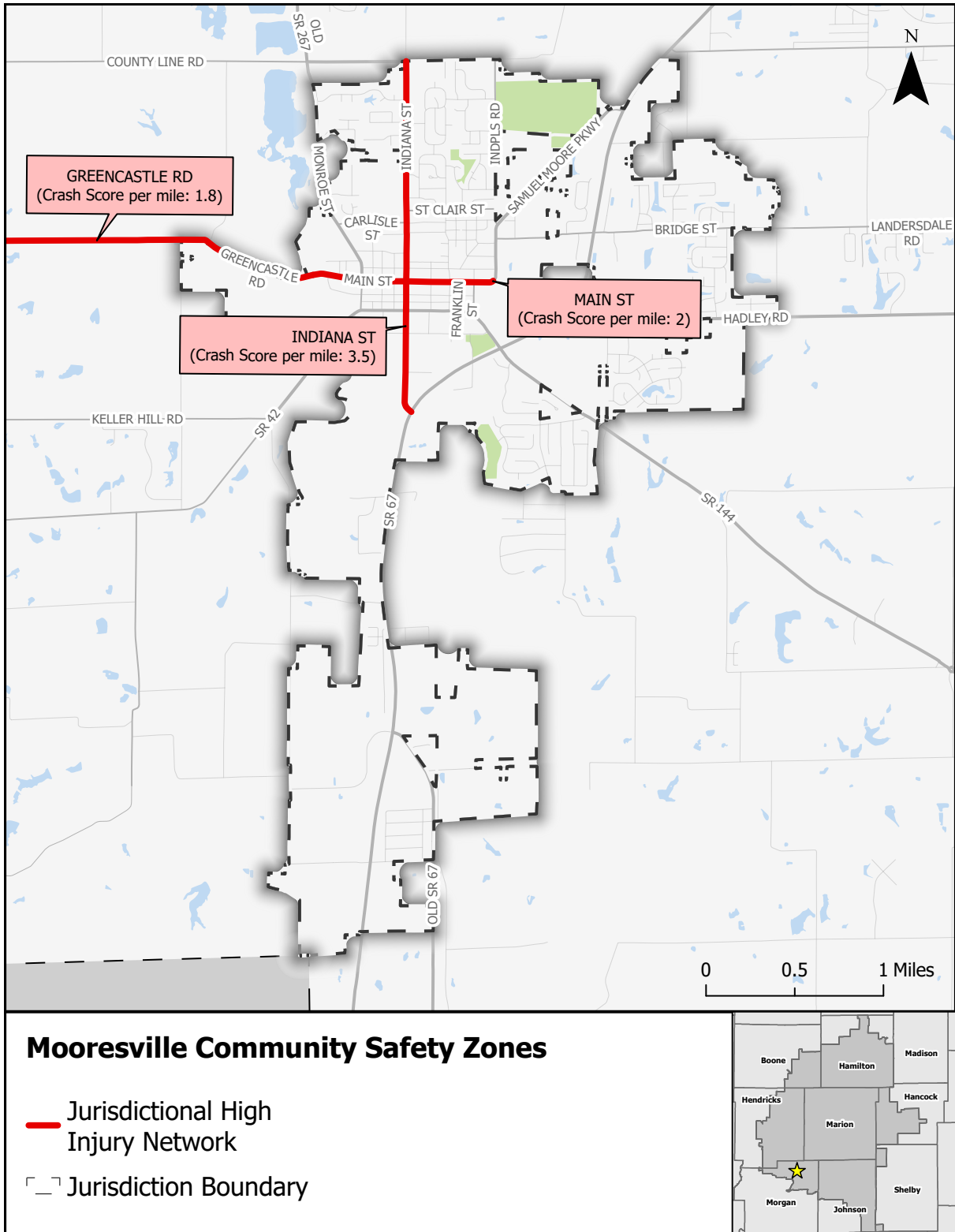


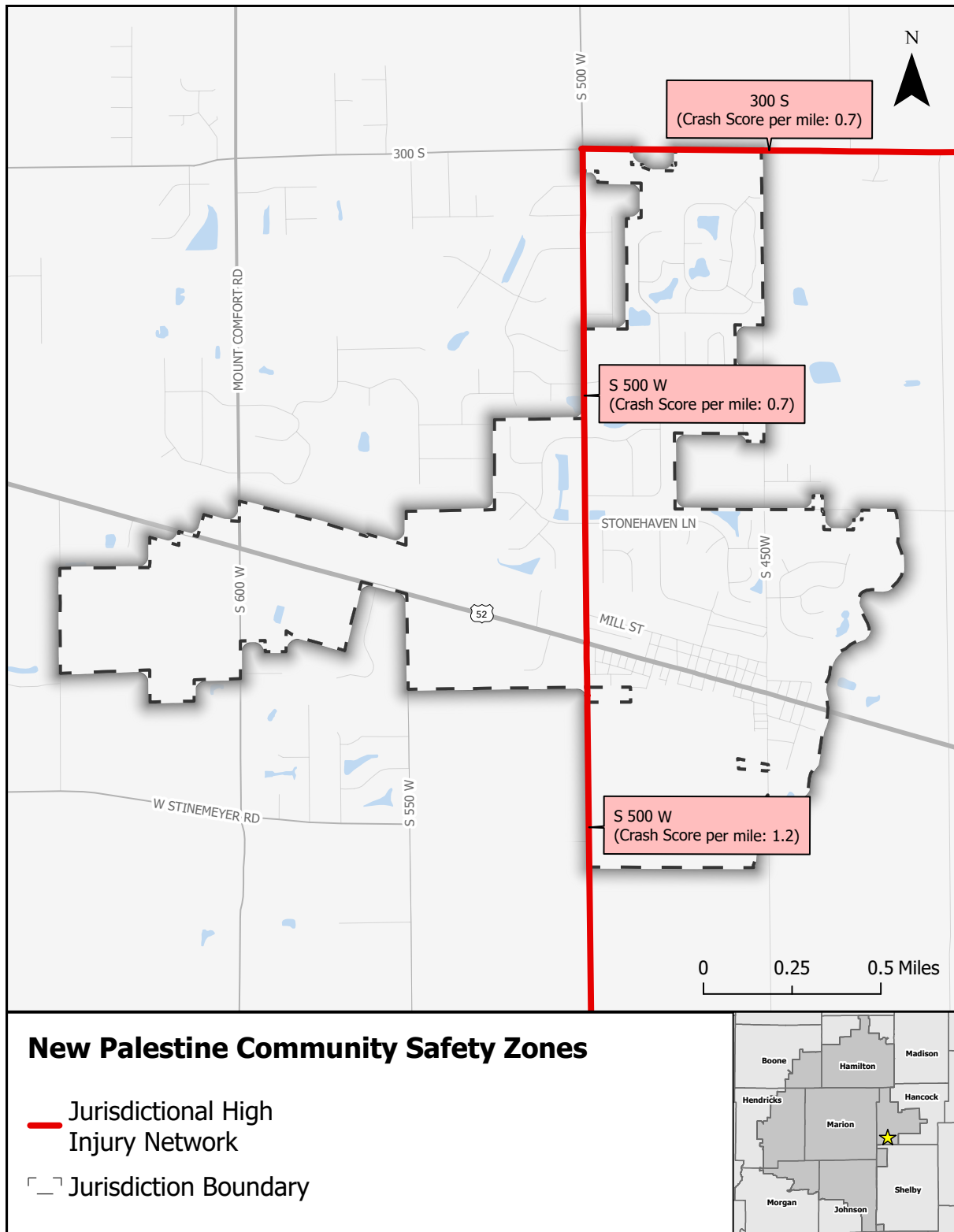


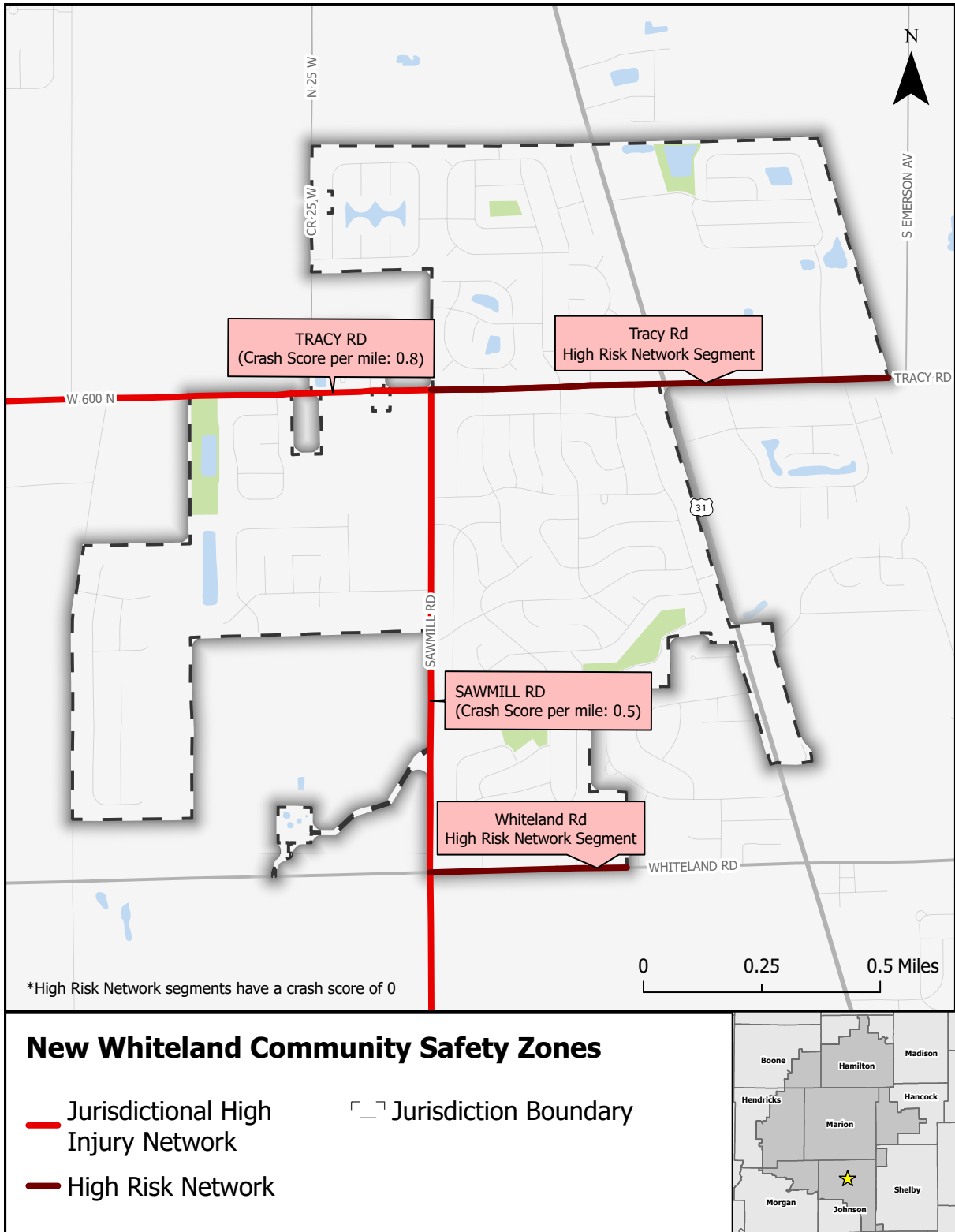


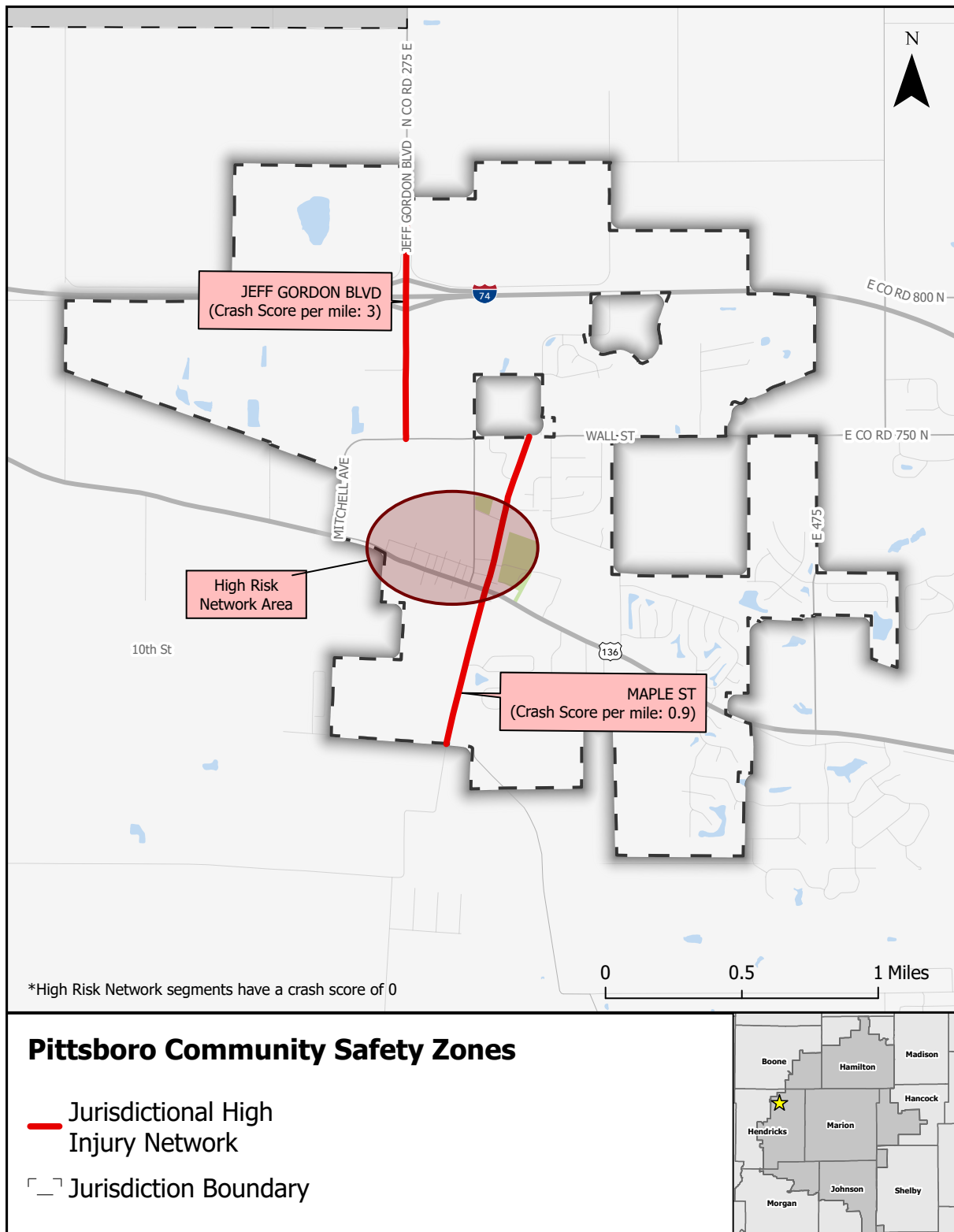


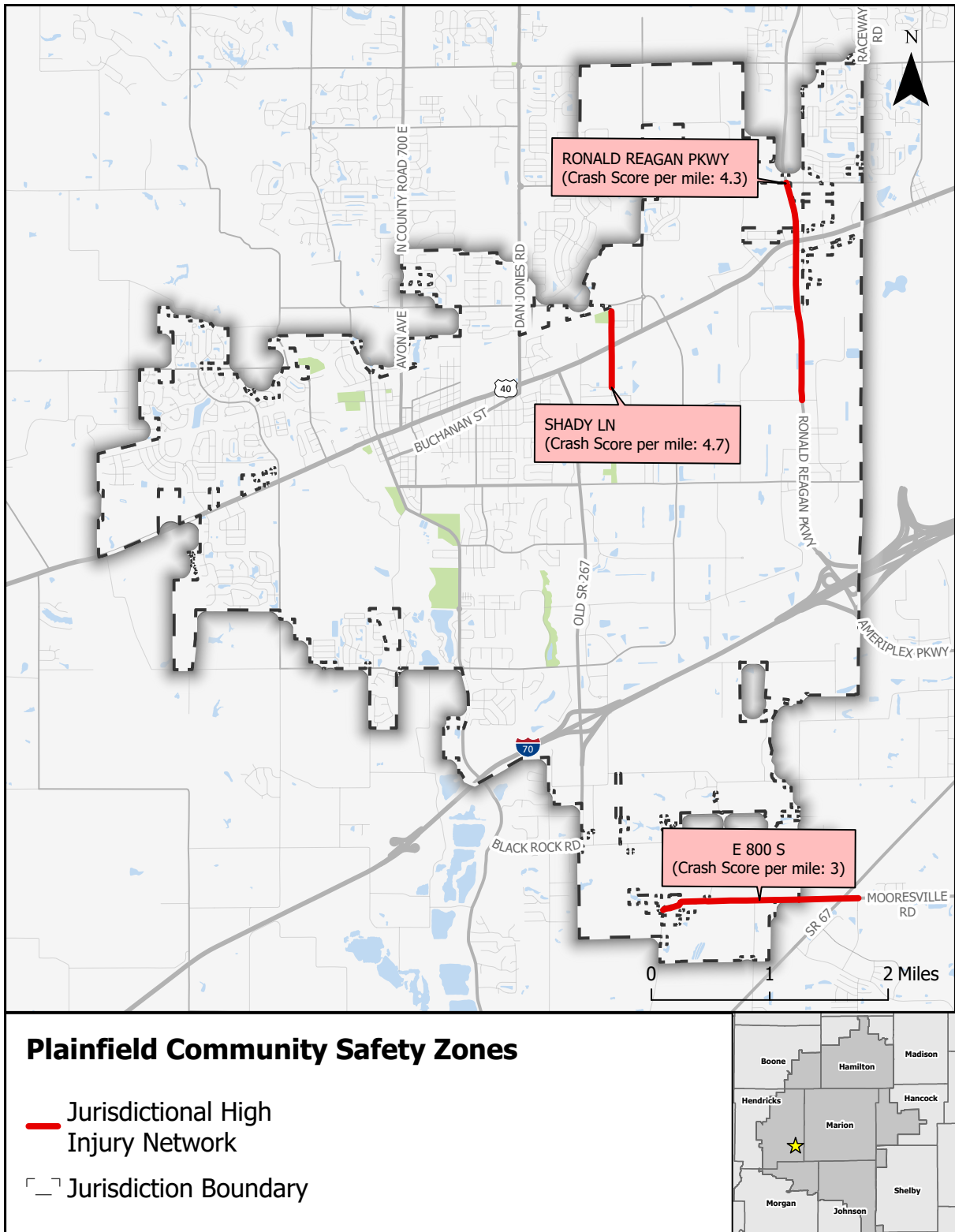


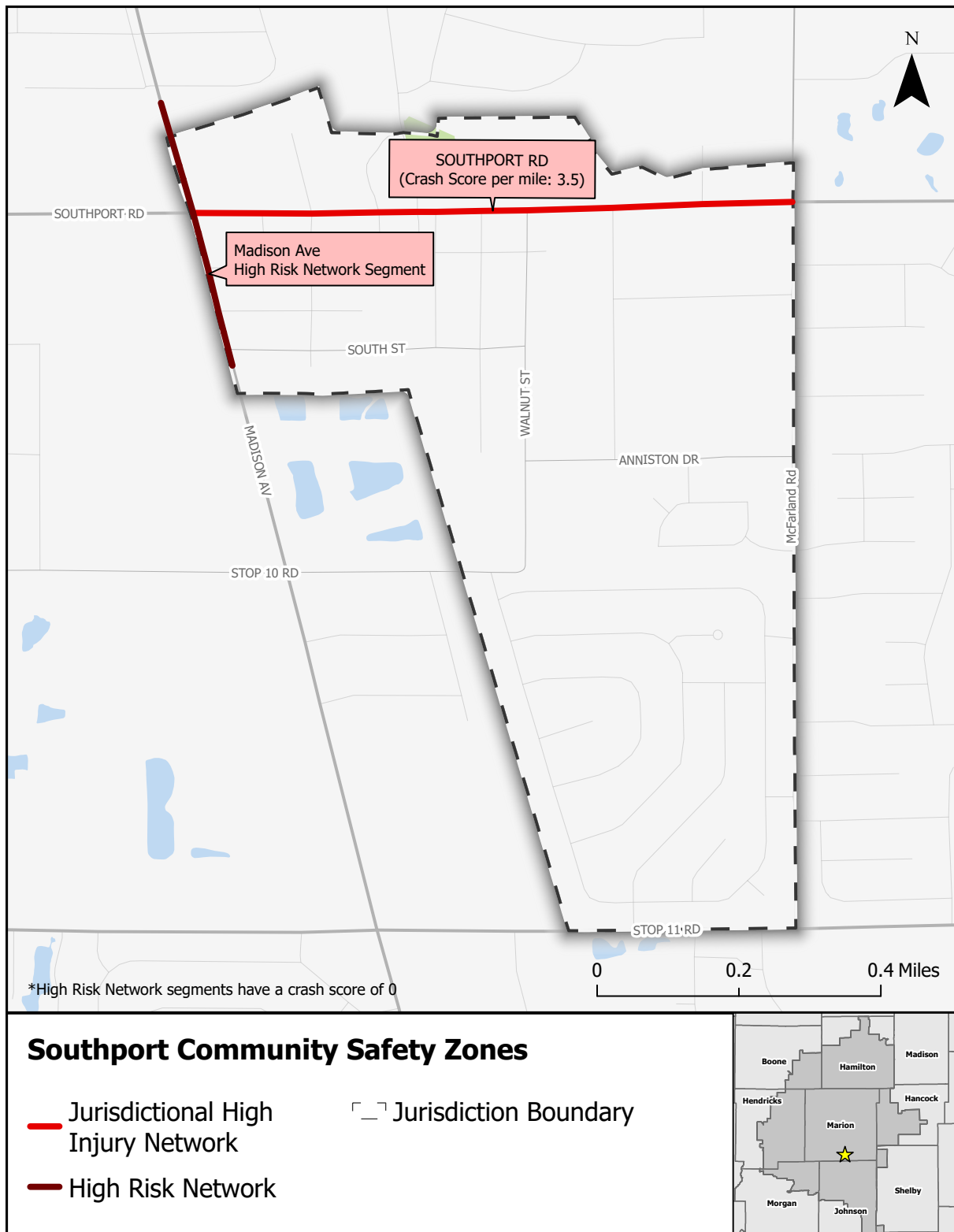


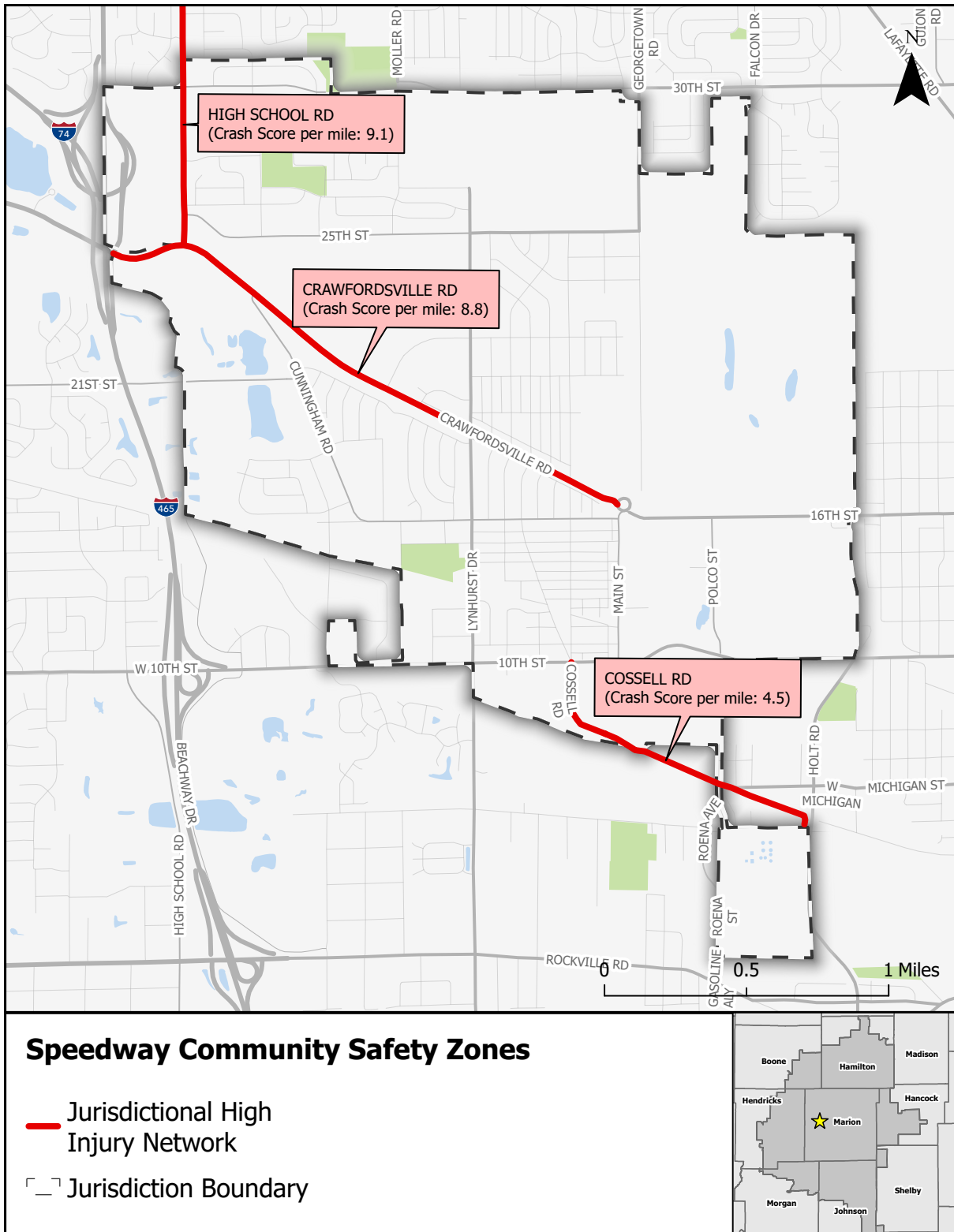


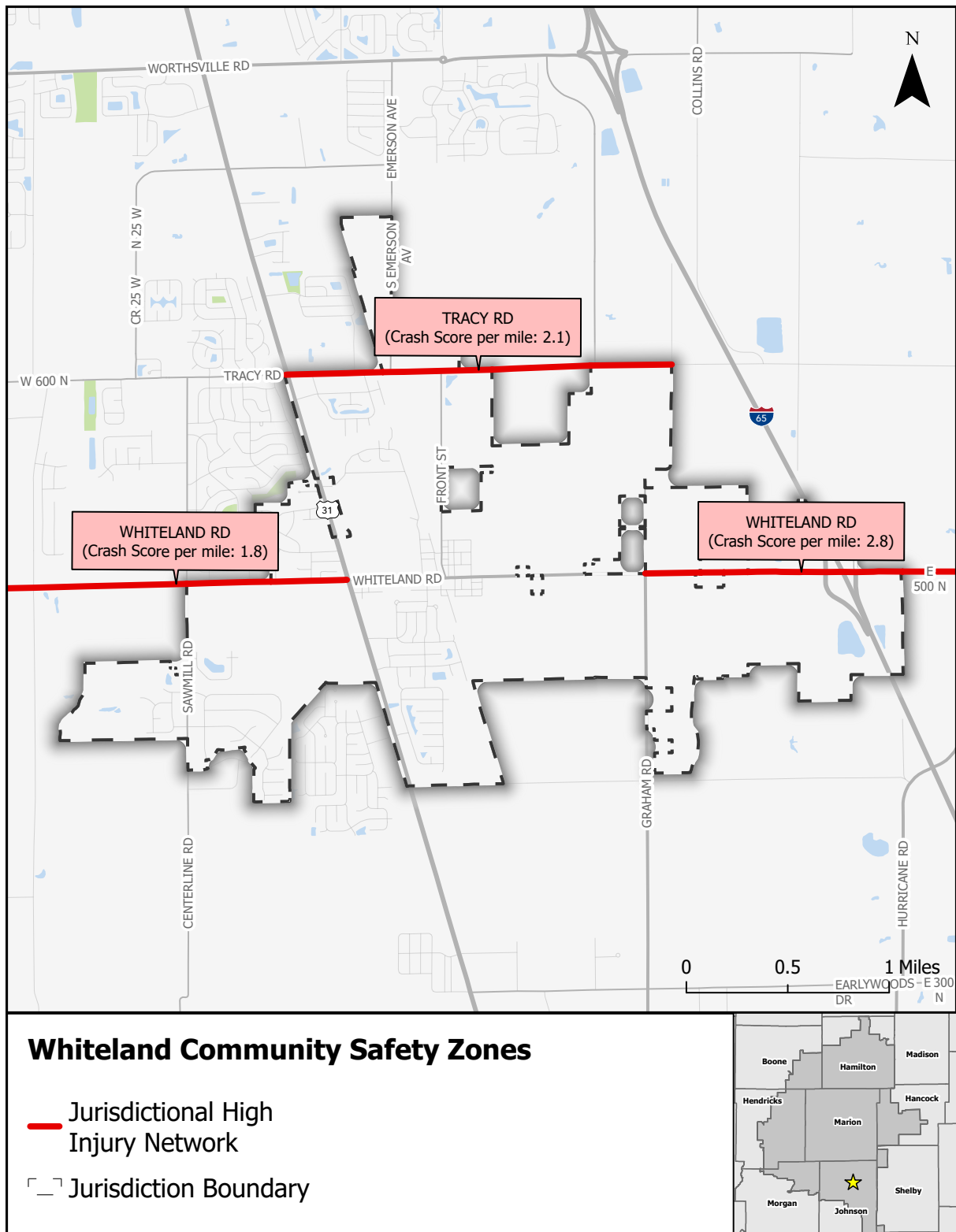


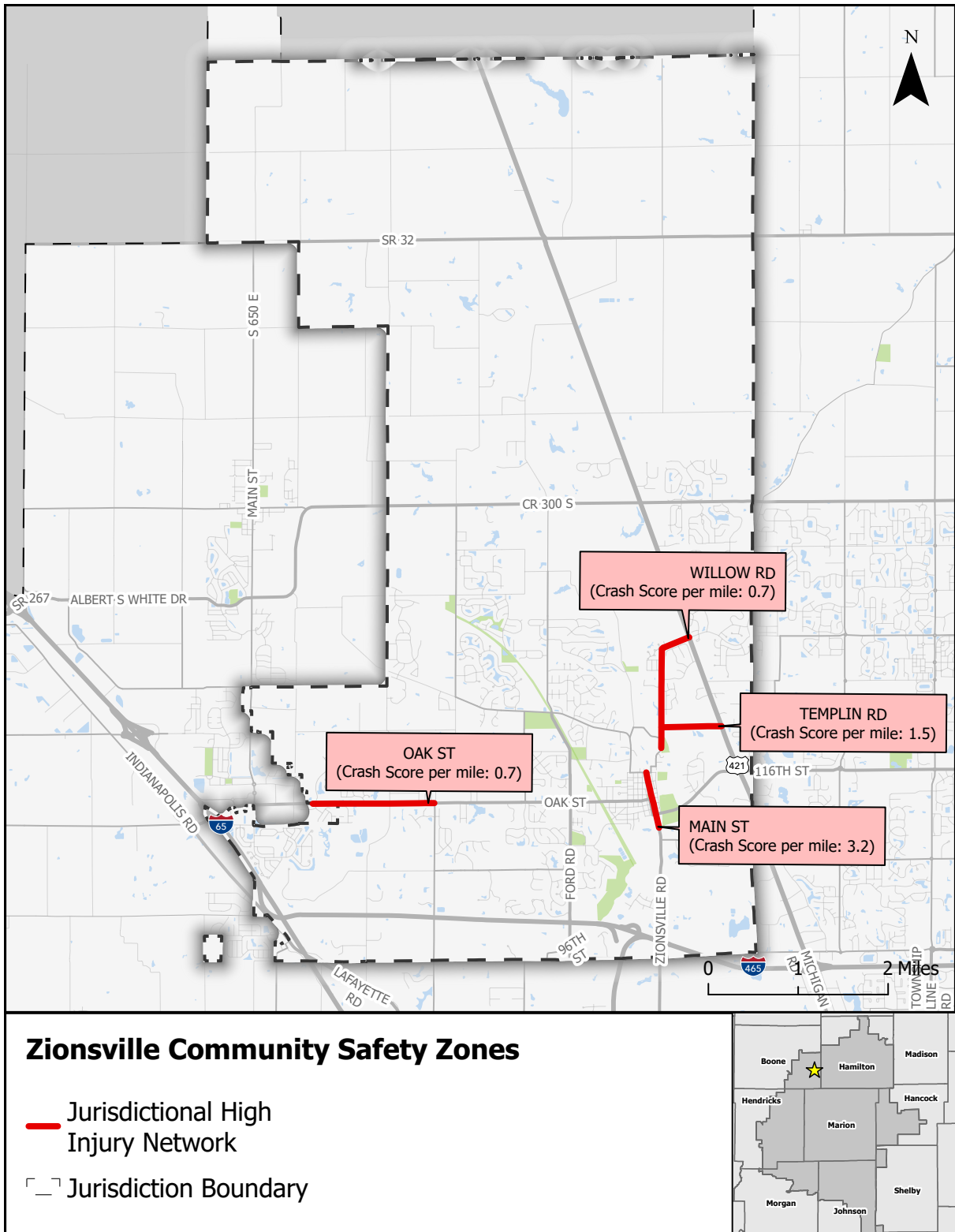


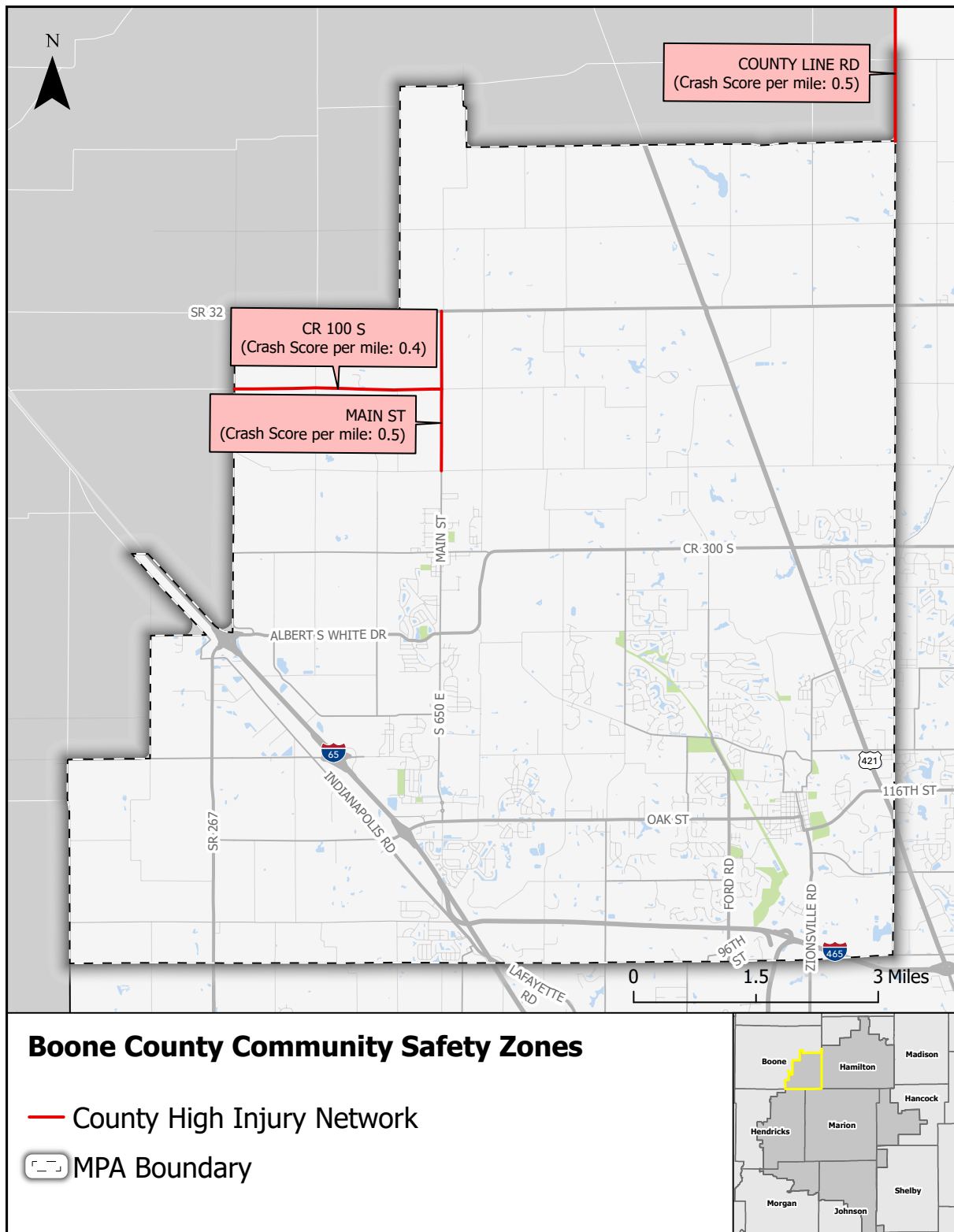


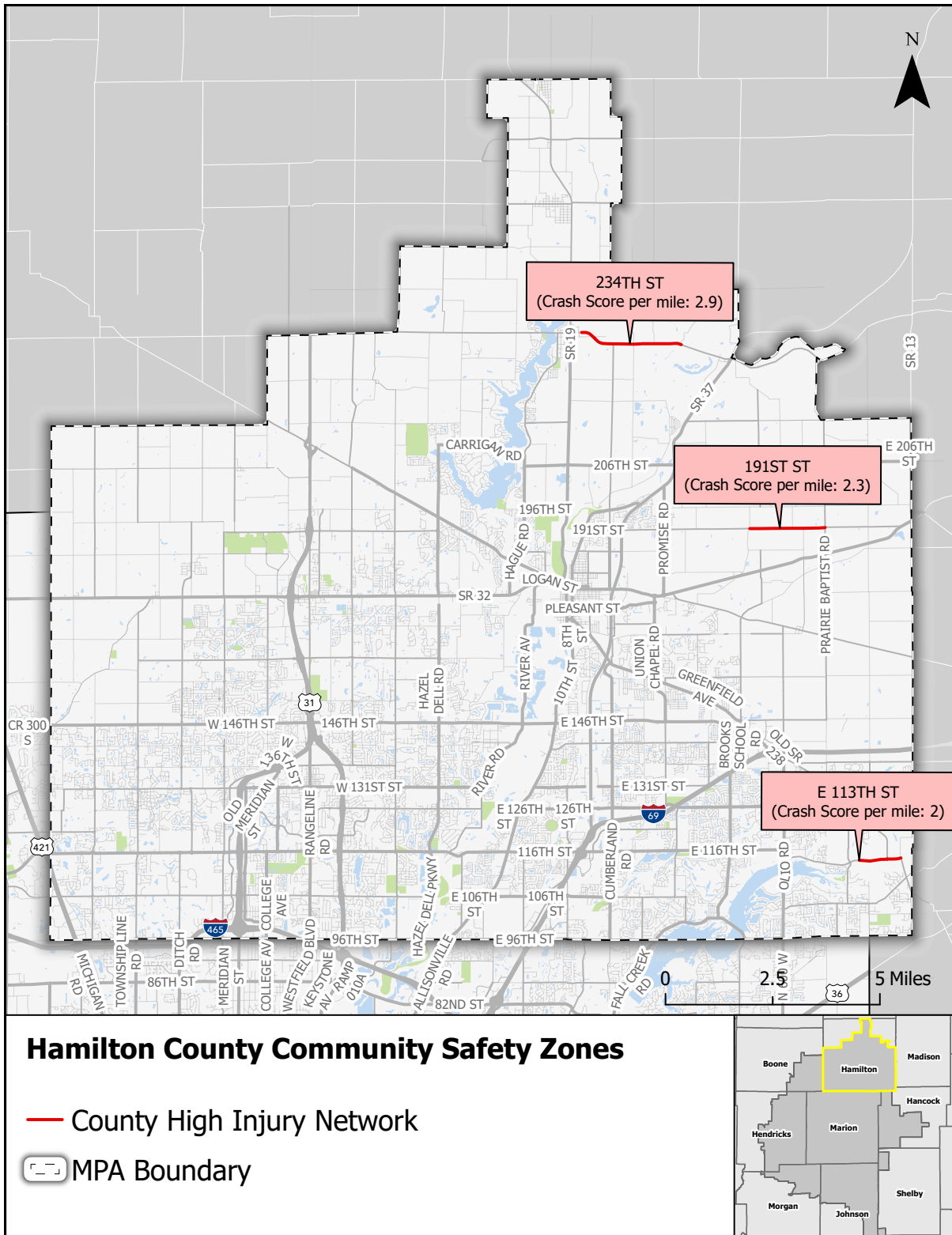


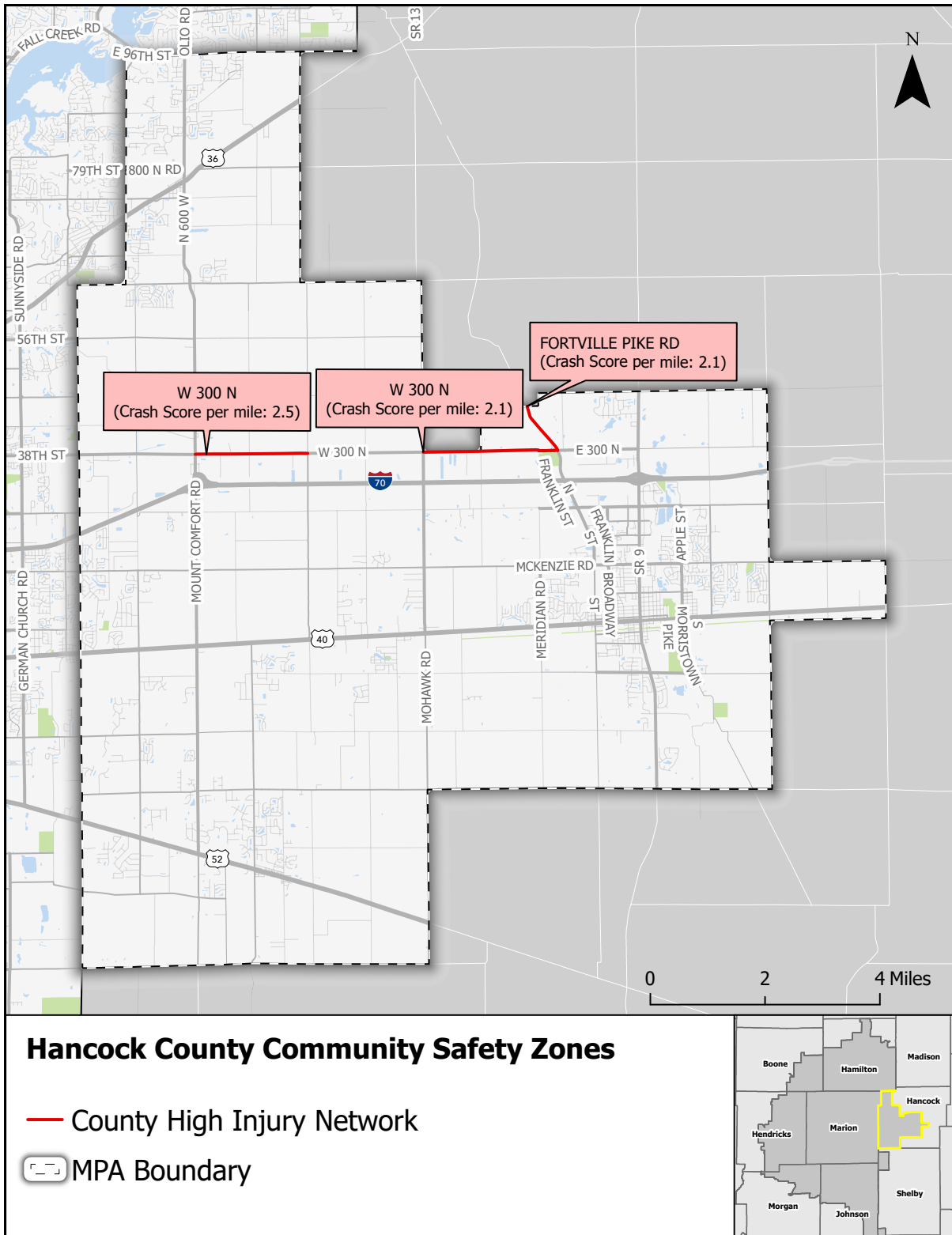


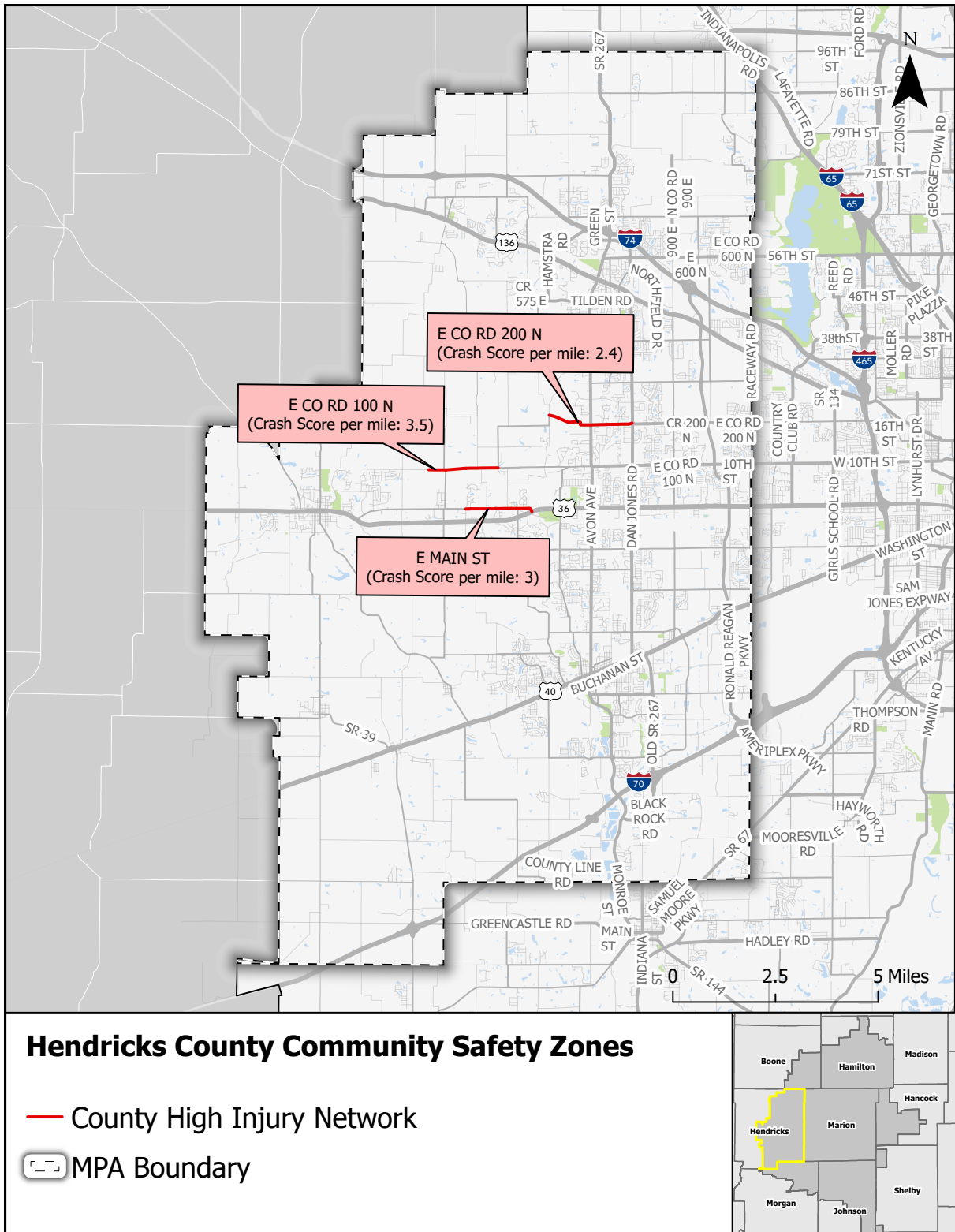


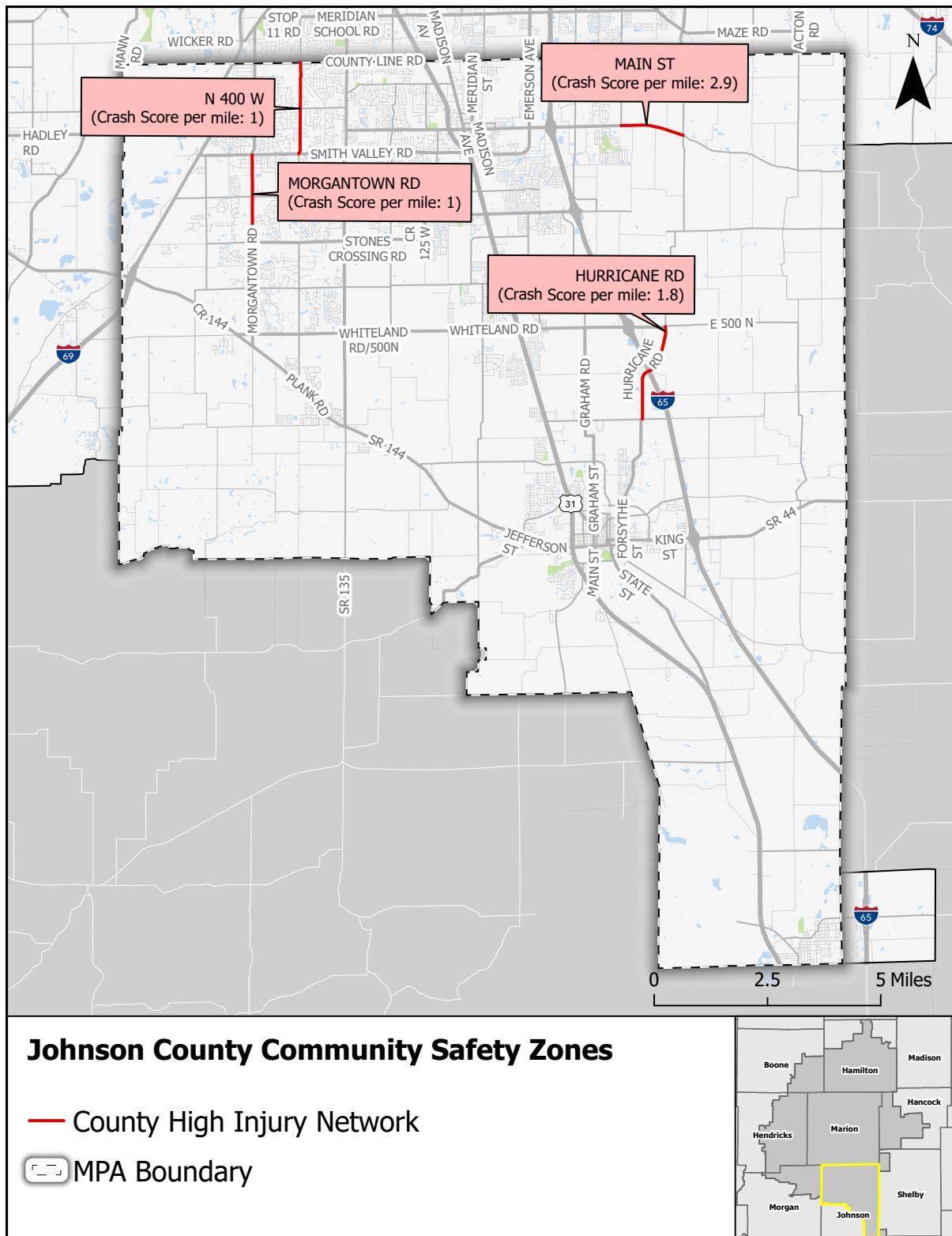


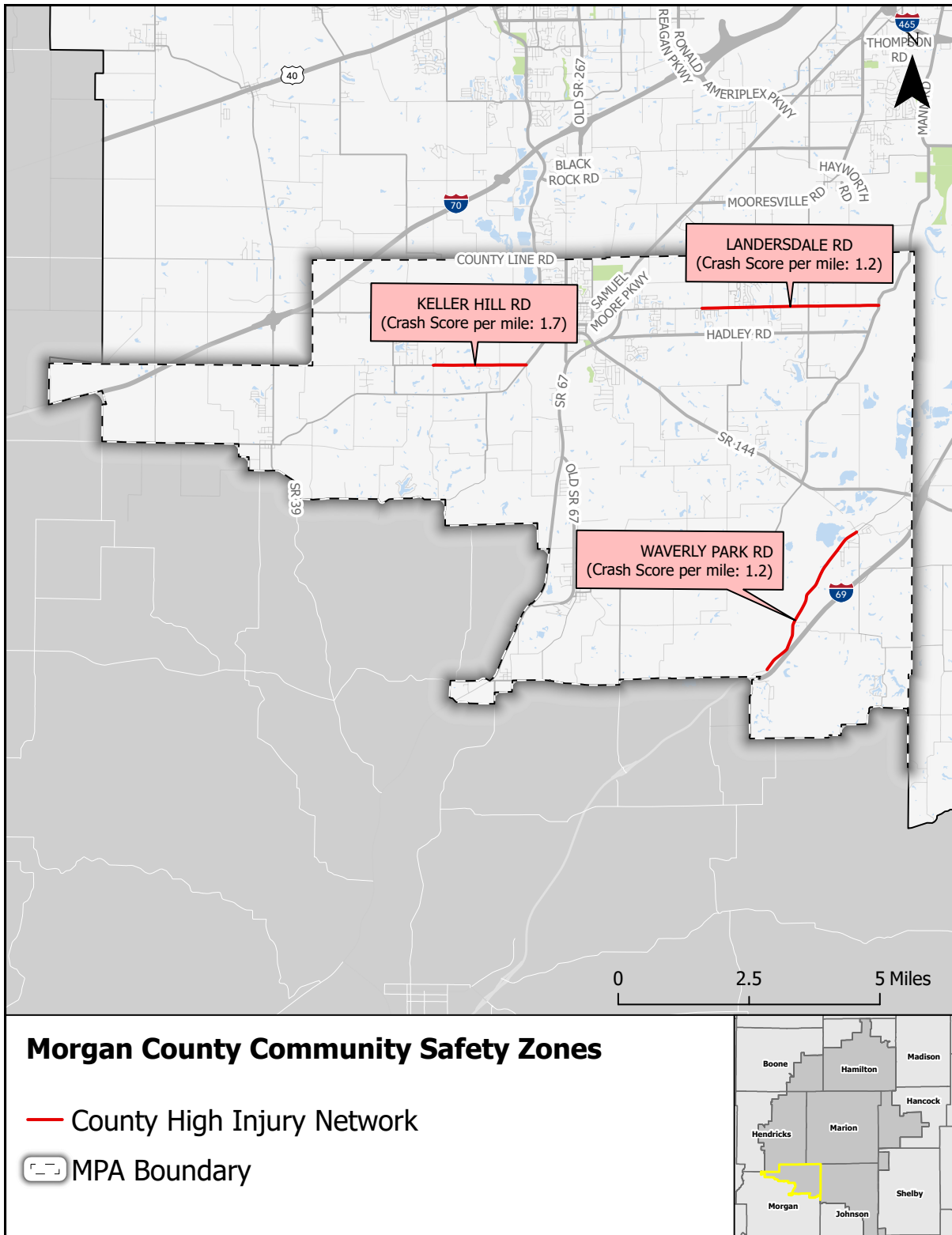


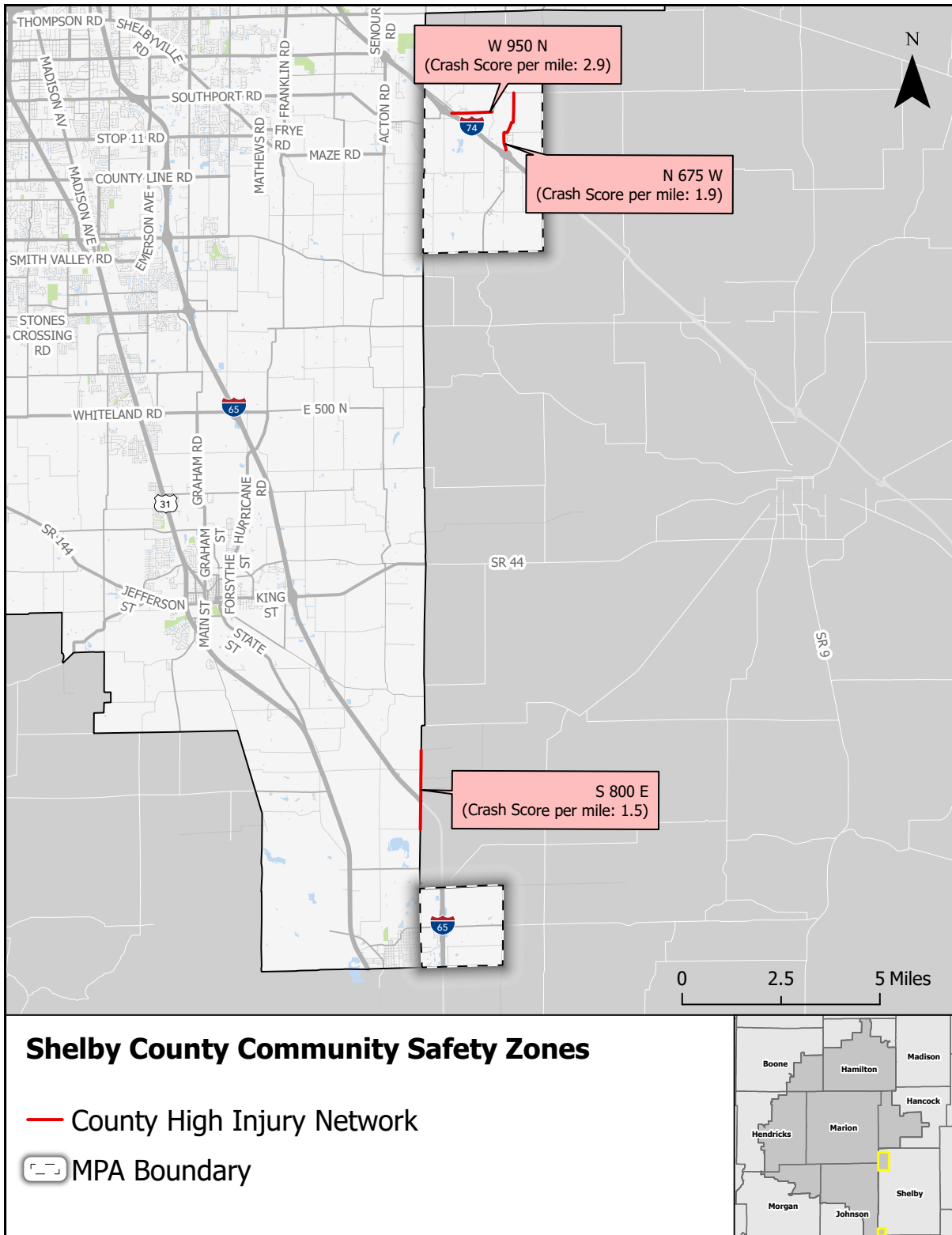


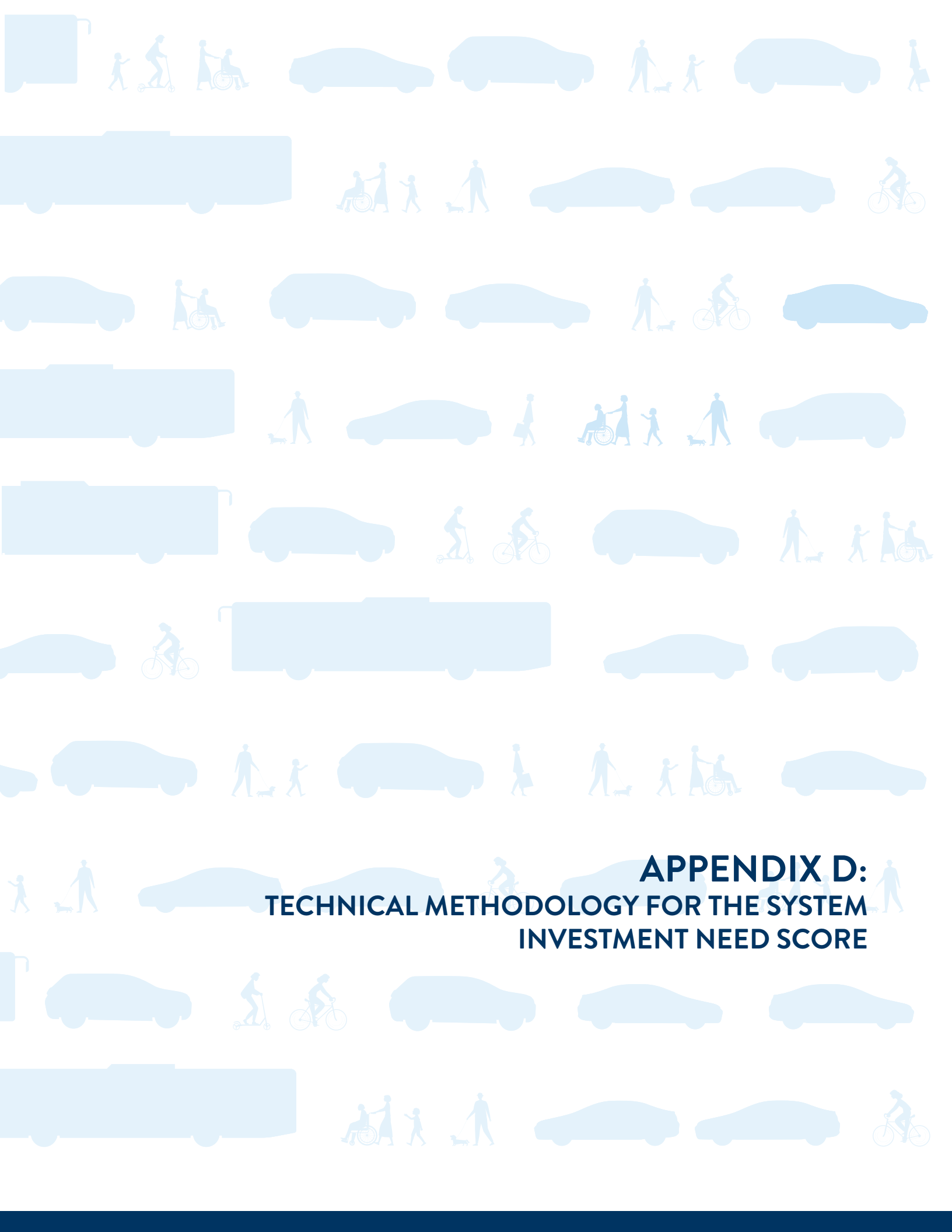












APPENDIX D: TECHNICAL METHODOLOGY FOR THE SYSTEM INVESTMENT NEED SCORE

The following sections describe how the community need rating score was developed. It is composed of two parts: a transportation disadvantage score, and a system investment need score. The combined score identifies where targeted transportation investments are both most needed and most likely to generate outside benefits. The index is tailored to the IMPO region and structured for periodic updates as new local policies and data emerge.

Transportation Disadvantage

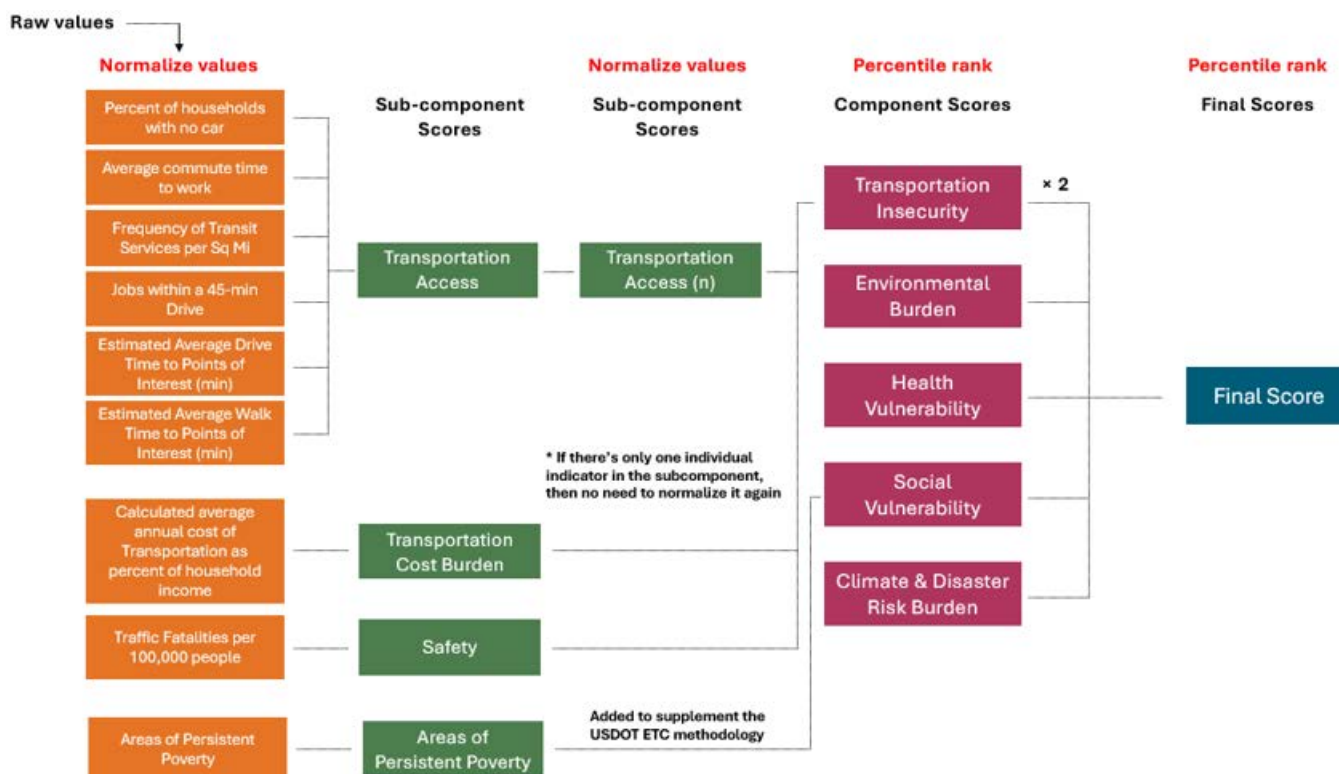
This section describes the components that make up the transportation disadvantage indices and explains how each is calculated. The chart below shows the scoring workflow used for both components. Raw values are normalized to a common zero to one scale, aggregated, and then converted to percentile ranks, yielding a final 0-100 score for each block group, and ensuring consistent comparisons across indicators with different unit scales and distributions. Lower scores indicate less need or suitability for

enhancements (e.g., fewer residents or workers, lower safety risks), while higher scores indicate a higher level of combined disadvantage and has a greater need for improvement.

Transportation Insecurity

The Transportation Insecurity score is a measure of how accessible, affordable, and safe the transportation system is, based on the following indicators:

- Transportation access, which is informed by lack of a personal vehicle, commute time, drive and walk time to point of interest, jobs within a 45-minute drive, and transit frequency per square mile.
- Transportation cost burden, which is informed by individual and household income, hourly income, time value of money, household vehicle miles traveled, cost of gas, vehicle miles per gallon, cars per household, transit and non-transit users, and annual costs of transit and auto ownership.
- Transportation-related fatalities per 100,000 people.



Climate and Disaster Risk Burden

The Climate and Disaster Risk Burden score is a measure of how much an area is expected to bear the cost of climate change and natural disasters.

The score is established using several indicators:

- Annualized hazard losses, which are the average dollar-measured economic loss from natural hazards each year.
- Impervious surfaces.
- Future extreme weather risk. Weather events include increased and more intense hot days, rainy days, dry days, and coastal inundation.

Environmental Burden

The Environmental Burden score is a measure of how much an area bears the burden of various types of pollution resulting from the built environment and nearby land uses. The score is established by an extensive list of factors, including:

- Levels of ozone and PM 2.5 (inhalable particles measuring 2.5 micrometers and smaller).
- Diesel particulate matter.
- Air toxics cancer risk.
- Proximity to hazardous sites, toxic release sites, treatment and disposal sites, sites requiring a Risk Management Program as outlined in the Clean Air Act, coal and lead mines, high-volume roads, railways, airports, and ports.
- Impaired surface water.
- Pre-1980 housing which may have lead-based paint and other environmental hazards.

Health Vulnerability

The Health Vulnerability score is a measure of the prevalence of poor health outcomes resulting from pollution, as well as built environment factors

such as auto-centric land use patterns and long commute times. The score is measured using the prevalence of asthma, cancer, high blood pressure, diabetes, and low mental health.

Social Vulnerability

The Social Vulnerability score is a measure of unfavorable social conditions in an area, based on housing, income, access to utilities, education, and other factors. The score is calculated using several indicators:

- Socioeconomic status, including percentage of people living below the 200% federal poverty line, people with no high school diploma, unemployment, percentage of people that rent their home, housing cost burden, uninsured percentage, lack of internet access, and endemic income inequality.
- Household characteristics, including population over 65 and under 17, disability, limited English proficiency, and mobile homes.

System Investment Need

The system investment need index assesses each of its eight components on a scale from zero to one. Lower values indicate a reduced necessity or suitability for enhancements (i.e., fewer people residing or working in the area, a lower safety risk). Conversely, higher values highlight a greater need for improvement. By aggregating the scores of all components, this system needs index to help evaluate the overall performance of each block group. The resulting score is percentile-ranked across the region and reported as a percentage. Each component is calculated using a distinct methodology, as described in the respective sections.

Population and Employment Density

This measure, which shows the number of people and jobs per acre of land, is based on demographic and employment data from the 2022 Longitudinal Employer-Household Dynamics (LEHD) dataset published by the United States Census Bureau. Population and employment densities were calculated for all block groups in the IMPO region. The analysis process applied a min-max normalization with a range of zero to one, where one represents the block group with the highest population and employment density in the IMPO region. Block groups without population and employment records received a manually assigned value of zero.

Short Trip Origins

A short trip is defined as any trip with a distance of five miles or less. Trip records were extracted from Replica's OD modeled trips dataset (Spring 2025) and filtered to include only trips within the eight counties under the IMPO's jurisdiction. The resulting trips were clipped to the IMPO planning region and summarized as the total number of short trips originating in each census block group. The results underwent min-max normalization, resulting in values ranging from zero to one. Here, a value of one signifies a block group is the origin of the highest number of short trips. Block groups without any recorded short trips were manually assigned them a value of 0.

Safety Risk

To calculate the safety risk score, the study team normalized the ratio of total pedestrian- and bicycle-involved crashes in the surrounding block groups to the total number of active trips originating in those same block groups. An active trip refers to any walking or biking journey; the data for active trips came from the same Replica data source described above, filtered to include

only 'biking' and 'walking' modes. The analysis buffered each crash event by 0.25 miles and intersected the buffers with block groups to count crashes within each block group. The results underwent min-max normalization, ensuring that values ranged between zero and one, with one representing block groups with the highest safety risk due to a higher ratio of crashes.

Bicycle Travel Suitability

The bicycle transportation suitability score uses bicycle level of traffic stress (LTS) data provided by IMPO and normalizes the ratio of the total distance of low-stress roads to high-stress roads within each block group. "Low stress" roads were those with LTS scores of one or two, while "high stress" roads were those with LTS scores of three or four. The analysis joined each road segment to block groups within a 100-foot radius. It then summed the mileage of low- and high-stress roads within each block group and calculated the ratio of low-stress mileage to high-stress mileage to assess bicycle stress conditions. As with the other indicators, it applied min-max normalization to scale the resulting values from zero to one.

Bicycle travel suitability when framed in terms of high- and low-stress road proportion can follow more than one analysis logic. In this case, the analysis followed IMPO's pre-existing use of LTS and assumed that bicycle travel suitability refers to areas where people on two wheels would naturally prefer to ride, i.e. where there are already more low-stress roads. This implies that it would be better to invest in these areas to develop a contiguous network of bicycle infrastructure rather than attempt to bring down the LTS levels along busy roads.

Therefore, in this case, a bicycle travel suitability score of one signifies a block group having the highest proportion of low-stress roads. The study team manually assigned scores where certain

fractions caused mathematical errors: block groups with no low-stress road mileage but containing high-stress roads received a value of zero, indicating low suitability. Conversely, block groups containing low-stress road mileage but no high-stress roads received a value of one, indicating high suitability.

Pedestrian Improvement Need

The IMPO is developing an updated Active Transportation Plan, and updated planning datasets, including sidewalk inventories, are now available for this underserved communities mapping effort. To incorporate pedestrian infrastructure needs into the system investment need index, the active transportation planning team provided sidewalk segments with associated priority scores.

To calculate the pedestrian infrastructure need score, the study team generated a 100-foot buffer around the prioritized sidewalk segments and intersected the buffered areas with census block groups in the metropolitan planning area. The analysis aggregated sidewalk priority scores within each block group's intersected area to represent overall pedestrian improvement need. It then applied min-max normalization across the region, assigning a score of one to the block group with the highest need.

Activity Center Presence

In the IMPO's data, activity centers, including both existing and emerging shopping centers, lifestyle centers, employment centers, and similar areas, are represented as cells and overlaid on the block groups layer. The study team allocated a score of 0.5 to each emerging center and 1 to existing centers. To determine whether a block group was part of an activity center, the analysis calculated an overlap ratio by dividing the area

shared by the activity center cell and the block group by the cell's total area. If this ratio was equal to or exceeded 0.3, the analysis assigned the corresponding activity center score to the block group and added those values to produce a cumulative score for each block group. It then applied min-max normalization to scale the results from zero to one, where one represents the busiest block group with the highest presence of activity centers.

Resiliency Risk

The resiliency risk score draws on data from IMPO's Regional Resiliency Snapshot program. Each infrastructure asset received a risk score and a criticality score, which represents the vulnerability of each asset to potential future physical threats. The methodology combines these two measures and normalizes the result for each road segment. The analysis then links normalized segment scores to block groups within a 100-foot radius, sums the scores within each block group, and applies min-max normalization to produce a final value. Here, a value of one indicates that the infrastructure in the block group is highly vulnerable and infrastructure failure in that area would be catastrophic.

Transit Access and Quality

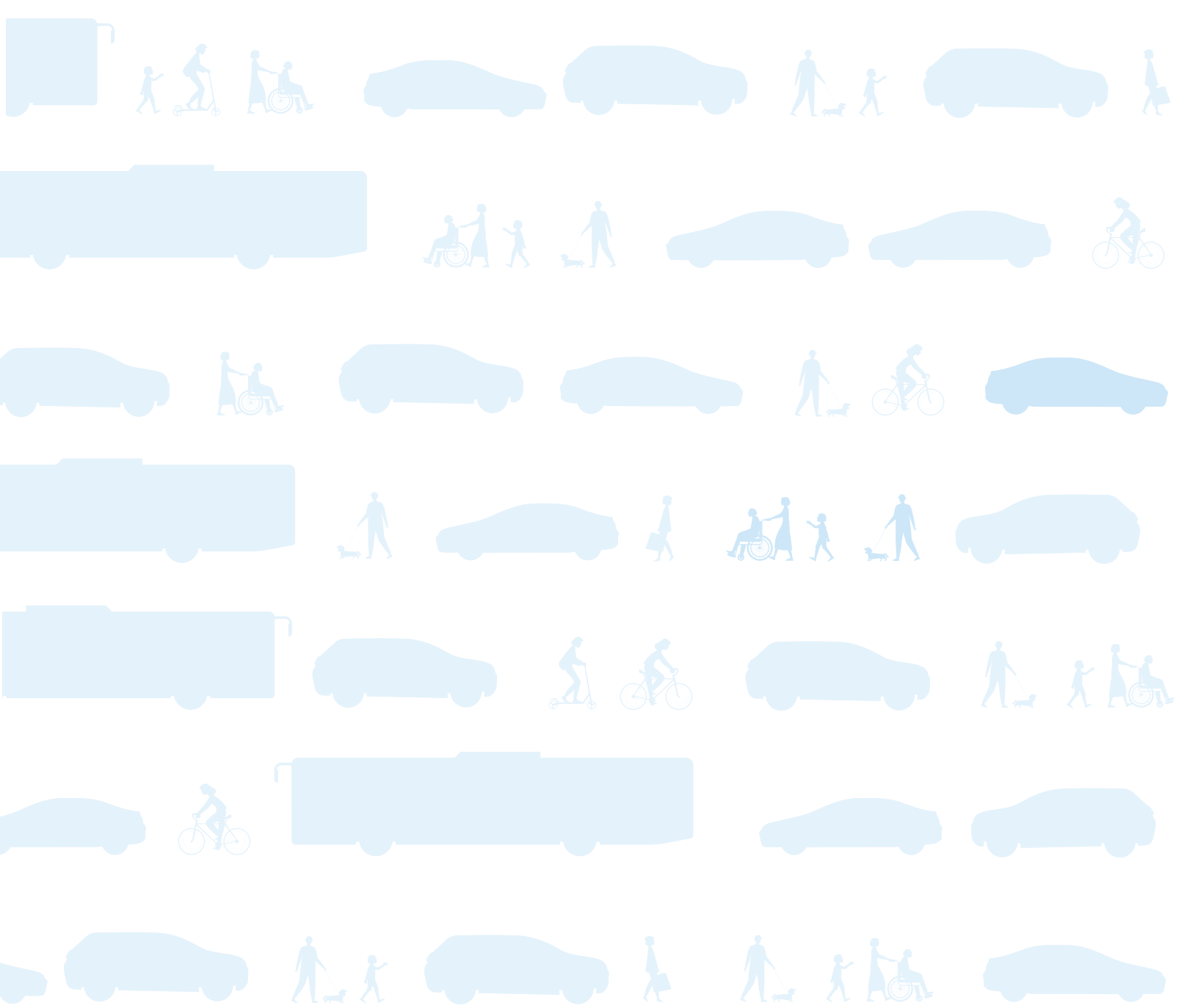
The analysis assessed block group-level transit access and quality using local transit agency GTFS data, focusing on weekday afternoon peak period headways and access from block group centroids.

To assess transit quality, the study team assigned a quality score between zero and one to each stop based on the shortest headway of routes accessing that stop, with shorter headways getting lower scores and longer headways getting higher scores. As with other indicators described in this memo, higher scores indicate higher improvement

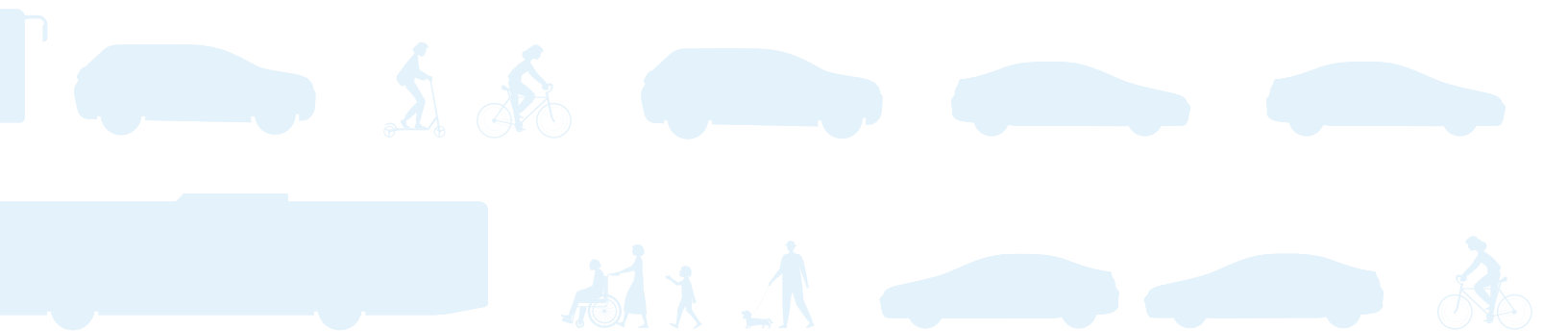
need.

To quantify transit access to quality transit service, the analysis summed the quality scores of all stops within one mile of each block group centroid. Quality scores were adjusted using a distance decay function¹ to account for diminishing utility of bus stops as distance from the stop increases. It then applied min-max normalization, so block groups without transit access received a score of one and block groups with the best access received a score of zero. Finally, as with other component scores, the analysis applied a percentile-ranking to smooth the distribution.

¹ Gutiérrez, Javier & Cardozo, Osvaldo Daniel & García-Palomares, Juan. (2011). Transit ridership forecasting at station level: An approach based on distance-decay weighted regression. *Journal of Transport Geography*. 19. 1081-1092. 10.1016/j.jtrangeo.2011.05.004.



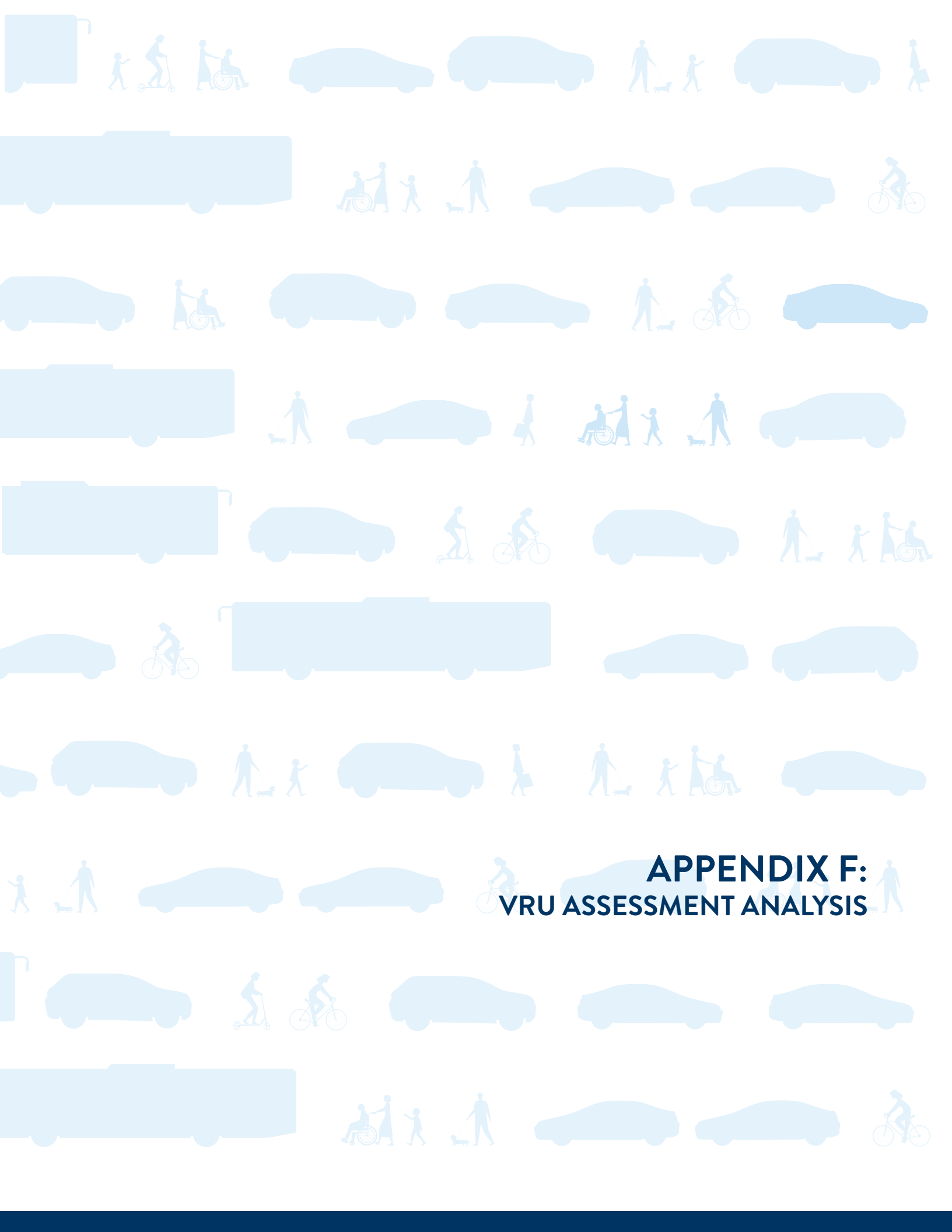
APPENDIX E: COMMUNITY SAFETY ZONE PROJECT SCORING



Road Name	Community	Fatal Crashes	SSI Crashes	Crash Score	Crash Score per Mile	Regional HIN Score	RSA Location Score	Safety Zone Base Score	Severe Crash History Score	Score Subtotal	Top Community Safety Zone Bonus	Final Score Total	Tier Assignment	Timeframe Assumption
MAIN ST	Arcadia	0	1	1	1.10	0	0	1	1	2	1	3	2	Short-term
E CO RD 100 N	Avon	1	6	9	6.53	1	0	1	1	3	1	4	1	Short-term
RONALD REAGAN PKWY	Avon	2	3	9	4.13	0.5	0	1	1	2.5	0	2.5	2	Mid-term
DAN JONES RD	Avon	1	2	5	2.50	0	0	1	1	2	0	2	2	Long-term
WHITELAND RD	Bargersville	0	2	2	0.79	0	1	1	0.5	2.5	1	3.5	1	Short-term
SADDLE CLUB RD	Bargersville	0	2	2	0.64	0	0	1	0.5	1.5	0	1.5	3	Mid-term
STONES CROSSING RD	Bargersville	0	1	1	0.46	0	0	1	0.5	1.5	0	1.5	3	Mid-term
1ST AVE	Beech Grove	0	5	5	3.61	0.5	1	1	1	3.5	1	4.5	1	Short-term
17TH AVE	Beech Grove	0	2	2	4.05	0	0	1	1	2	0	2	2	Mid-term
BETHEL AV	Beech Grove	1	2	5	3.77	0	0	1	1	2	0	2	2	Mid-term
COUNTY LINE RD	Boone County	0	1	1	0.50	0	0	1	0.5	1.5	1	2.5	2	Short-term
CR 100 S	Boone County	0	1	1	0.39	0	0	1	0.5	1.5	1	2.5	2	Short-term
MAIN ST	Boone County	0	1	1	0.51	0	0	1	0.5	1.5	1	2.5	2	Short-term
OLD SR 67	Brooklyn	0	1	1	0.31	0	0	1	0.5	1.5	1	2.5	2	Short-term
56TH ST	Brownsburg	1	3	6	3.56	0	0	1	1	2	1	3	2	Short-term
HORNADAY RD	Brownsburg	1	3	6	2.31	0	0	1	1	2	1	3	2	Short-term
RONALD REAGAN PKWY	Brownsburg	1	3	6	2.94	0	0	1	1	2	1	3	2	Short-term
High Risk Network Area near W Jackson St and N Peru St	Cicero	0	0	0	0.00	0	0	1	0	1	1	2	2	Short-term
700 W	Cumberland	0	2	2	1.45	0	0	1	1	2	1	3	2	Short-term
W 100 N	Cumberland	0	1	1	0.49	0	0	1	0.5	1.5	0	1.5	3	Mid-term
10th St High Risk Network Segment	Cumberland	0	0	0	0.00	0	0	1	0	1	0	1	3	Long-term
600 W High Risk Network Segment	Cumberland	0	0	0	0.00	0	0	1	0	1	0	1	3	Long-term
Carroll Rd High Risk Network Segment	Cumberland	0	0	0	0.00	0	0	1	0	1	0	1	3	Long-term
German Church Rd High Risk Network Segment	Cumberland	0	0	0	0.00	0	0	1	0	1	0	1	3	Long-term
E MAIN ST	Danville	1	1	4	2.60	0	0	1	1	2	1	3	2	Short-term
CARTERSBURG RD	Danville	0	1	1	0.58	0	0	1	0.5	1.5	0	1.5	3	Mid-term
S CO RD 300 E	Danville	0	1	1	0.62	0	0	1	0.5	1.5	0	1.5	3	Mid-term
COMMERCE DR	Franklin	1	1	4	2.58	0	0	1	1	2	1	3	2	Short-term
STATE ST	Franklin	1	0	3	3.69	0	0	1	1	2	1	3	2	Short-term
WESTVIEW DR	Franklin	0	4	4	2.51	0	0	1	1	2	1	3	2	Short-term
BROADWAY ST	Greenfield	0	2	2	2.00	0	0	1	1	2	1	3	2	Short-term
GREENMEADOWS DR	Greenfield	0	2	2	3.27	0	0	1	1	2	1	3	2	Short-term
NEW RD	Greenfield	0	3	3	1.69	0	0	1	1	2	1	3	2	Short-term
MAIN ST	Greenwood	1	6	9	4.43	0	1	1	1	3	1	4	1	Short-term
N GRAHAM RD	Greenwood	2	2	8	8.37	1	0	1	1	3	1	4	1	Short-term
WORTHSVILLE RD	Greenwood	1	5	8	3.18	0	1	1	1	3	1	4	1	Short-term

Road Name	Community	Fatal Crashes	SSI Crashes	Crash Score	Crash Score per Mile	Regional HIN Score	RSA Location Score	Safety Zone Base Score	Severe Crash History Score	Score Subtotal	Top Community Safety Zone Bonus	Final Score Total	Tier Assignment	Timeframe Assumption
FRY RD	Greenwood	0	4	4	3.20	0	0	1	1	2	0	2	2	Mid-term
191ST ST	Hamilton County	1	1	4	2.27	0	0	1	1	2	1	3	2	Short-term
234TH ST	Hamilton County	2	1	7	2.90	0	0	1	1	2	1	3	2	Short-term
E 113TH ST	Hamilton County	0	2	2	2.04	0	0	1	1	2	1	3	2	Short-term
FORTVILLE PIKE RD	Hancock County	0	2	2	2.11	0	0	1	1	2	1	3	2	Short-term
W 300 N	Hancock County	1	2	5	2.13	0	0	1	1	2	1	3	2	Short-term
W 300 N	Hancock County	1	2	5	2.55	0	0	1	1	2	1	3	2	Short-term
E CO RD 100 N	Hendricks County	1	3	6	3.54	0	0	1	1	2	1	3	2	Short-term
E CO RD 200 N	Hendricks County	1	2	5	2.36	0	0	1	1	2	1	3	2	Short-term
E MAIN ST	Hendricks County	1	2	5	3.01	0	0	1	1	2	1	3	2	Short-term
MAIN ST	Johnson County	0	4	4	2.85	0	1	1	1	3	1	4	1	Short-term
HURRICANE RD	Johnson County	1	1	4	1.80	0	0	1	1	2	0	2	2	Mid-term
MORGANTOWN RD	Johnson County	0	2	2	1.03	0	0	1	1	2	0	2	2	Mid-term
N 400 W	Johnson County	0	2	2	0.99	0	0	1	0.5	1.5	0	1.5	3	Long-term
71ST ST	Lawrence	1	0	3	9.12	1	1	1	1	4	1	5	1	Short-term
POST RD	Lawrence	3	7	16	12.60	1	0	1	1	3	0	3	2	Mid-term
SHADELAND AVE	Lawrence	4	7	19	12.84	1	0	1	1	3	0	3	2	Mid-term
N 600 W	McCordsville	1	1	4	1.82	0	1	1	1	3	1	4	1	Short-term
600 N	McCordsville	1	2	5	4.48	0	0	1	1	2	0	2	2	Mid-term
VAIL RD	McCordsville	1	0	3	2.96	0	0	1	1	2	0	2	2	Mid-term
GREENCASTLE RD	Mooresville	1	2	5	1.76	0	0	1	1	2	1	3	2	Short-term
INDIANA ST	Mooresville	0	7	7	3.52	0	0	1	1	2	1	3	2	Short-term
MAIN ST	Mooresville	0	2	2	1.96	0	0	1	1	2	1	3	2	Short-term
KELLER HILL RD	Morgan County	0	3	3	1.69	0	0	1	1	2	1	3	2	Short-term
LANDERSDALE RD	Morgan County	1	1	4	1.18	0	0	1	1	2	1	3	2	Short-term
WAVERLY PARK RD	Morgan County	1	1	4	1.24	0	0	1	1	2	1	3	2	Short-term
S 500 W	New Palestine	0	2	2	1.20	0	0	1	1	2	1	3	2	Short-term
300 S	New Palestine	0	2	2	0.66	0	0	1	0.5	1.5	0	1.5	3	Mid-term
S 500 W	New Palestine	0	1	1	0.72	0	0	1	0.5	1.5	0	1.5	3	Mid-term
SAWMILL RD	New Whiteland	0	1	1	0.52	0	0	1	0.5	1.5	1	2.5	2	Short-term
TRACY RD	New Whiteland	0	2	2	0.80	0	0	1	0.5	1.5	1	2.5	2	Short-term
Tracy Rd High Risk Network Segment	New Whiteland	0	0	0	0.00	0	0	1	0	1	0	1	3	Mid-term
Whiteland Rd High Risk Network Segment	New Whiteland	0	0	0	0.00	0	0	1	0	1	0	1	3	Mid-term
JEFF GORDON BLVD	Pittsboro	1	0	3	2.98	0	0	1	1	2	1	3	2	Short-term
MAPLE ST	Pittsboro	0	1	1	0.86	0	0	1	0.5	1.5	0	1.5	3	Mid-term
High Risk Network Area near Osborne Ave and N Meridian St	Pittsboro	0	0	0	0.00	0	0	1	0	1	0	1	3	Long-term
JEFF GORDON BLVD	Pittsboro	0	0	0	0.00	0	0	1	0	1	0	1	3	Long-term
JEFF GORDON BLVD	Pittsboro	0	0	0	0.00	0	0	1	0	1	0	1	3	Long-term

Road Name	Community	Fatal Crashes	SSI Crashes	Crash Score	Crash Score per Mile	Regional HIN Score	RSA Location Score	Safety Zone Base Score	Severe Crash History Score	Score Subtotal	Top Community Safety Zone Bonus	Final Score Total	Tier Assignment	Timeframe Assumption
E 800 S	Plainfield	1	2	5	2.99	0	0	1	1	2	1	3	2	Short-term
RONALD REAGAN PKWY	Plainfield	1	5	8	4.32	0	0	1	1	2	1	3	2	Short-term
SHADY LN	Plainfield	0	3	3	4.68	0	0	1	1	2	1	3	2	Short-term
N 675 W	Shelby County	1	0	3	1.88	0	0	1	1	2	1	3	2	Short-term
S 800 E	Shelby County	1	0	3	1.50	0	0	1	1	2	1	3	2	Short-term
W 950 N	Shelby County	1	0	3	2.95	0	0	1	1	2	1	3	2	Short-term
SOUTHPORT RD	Southport	0	3	3	3.55	0.5	0	1	1	2.5	1	3.5	1	Short-term
Madison Ave High Risk Network Segment	Southport	0	0	0	0.00	0	0	1	0	1	0	1	3	Long-term
CRAWFORDSVILLE RD	Speedway	2	12	18	8.77	1	1	1	1	4	1	5	1	Short-term
HIGH SCHOOL RD	Speedway	3	5	14	9.12	1	1	1	1	4	1	5	1	Short-term
COSSELL RD	Speedway	1	2	5	4.50	0.5	0	1	1	2.5	0	2.5	2	Mid-term
WHITELAND RD	Whiteland	1	2	5	1.78	0	1	1	1	3	1	4	1	Short-term
TRACY RD	Whiteland	0	4	4	2.10	0	0	1	1	2	0	2	2	Mid-term
WHITELAND RD	Whiteland	1	2	5	2.80	0	0	1	1	2	0	2	2	Mid-term
MAIN ST	Zionsville	0	2	2	3.18	0	0	1	1	2	1	3	2	Short-term
TEMPLIN RD	Zionsville	0	1	1	1.49	0	0	1	1	2	1	3	2	Short-term
OAK ST	Zionsville	0	1	1	0.74	0	0	1	0.5	1.5	0	1.5	3	Mid-term
WILLOW RD	Zionsville	0	1	1	0.70	0	0	1	0.5	1.5	0	1.5	3	Mid-term



APPENDIX F: VRU ASSESSMENT ANALYSIS

Census Block Groups (Demographics) Scoring Summary

Population Density	Sum of Population	Bike Crashes	Pedestrian Crashes	Bike Crash Rate	Bike Risk Score	Pedestrian Crash Rate	Pedestrian Risk Score
0 - 12.6	316058	156	509	0.4935803	3	1.6104639	3
12.7 - 1853.1	323975	171	636	0.5278185	1	1.9631144	1
1853.3 - 4135.5	362288	119	403	0.3284680	5	1.1123747	5
4135.6 - 6771.7	366619	78	311	0.2127549	7	0.8482921	8
6774.1 - 248533.8	377936	74	317	0.1958003	9	0.8387664	9
Total	1746876	598	2176	0.3423254		1.245652239	

* rates expressed as crashes per 1,000 people

Percent of Households in Poverty	Sum of Population	Bike Crashes	Pedestrian Crashes	Bike Crash Rate	Bike Risk Score	Pedestrian Crash Rate	Ped Risk Score
0%	819034	290	932	0.3540757	5	1.1379259	6
0.76% - 6.25%	239919	85	277	0.3542862	3	1.1545563	5
6.27% - 11.71%	219413	69	219	0.3144754	7	0.9981177	9
11.76% - 21.39%	228460	68	290	0.2976451	9	1.2693688	3
21.43% - 100%	240050	86	458	0.3582587	1	1.9079358	1
Total	1746876	598	2176	0.3423254		1.245652239	

* rates expressed as crashes per 1,000 people

Percent of Households with No Vehicle	Sum of Population	Bike Crashes	Pedestrian Crashes	Bike Crash Rate	Bike Risk Score	Pedestrian Crash Rate	Ped Risk Score
0%	1488413	489	1796	0.3285378	8	1.2066543	5
0.51% - 4.76%	84225	42	133	0.4986643	1	1.5791036	3
4.82% - 11.11%	92711	36	107	0.3883034	4	1.1541241	7
11.27% - 100%	81527	31	140	0.3802421	5	1.7172225	1
Total	1746876	598	2176	0.3423254		1.245652239	

* rates expressed as crashes per 1,000 people

Census Block Groups (Demographics) Scoring Summary

Percent of Population Under 19	Sum of Population	Bike Crashes	Pedestrian Crashes	Bike Crash Rate	Bike Risk Score	Pedestrian Crash Rate	Ped Risk Score
0%	361091	172	558	0.4763342	1	1.5453168	1
1.52% - 22.96%	356119	117	371	0.3285419	5	1.0417866	9
22.97% - 27.28%	348950	88	364	0.2521851	9	1.0431294	8
27.29% - 31.58%	345290	125	429	0.3620145	3	1.2424339	5
31.59% - 100%	335426	96	454	0.2862032	7	1.3535027	3
Total	1746876	598	2176	0.3423254		1.245652239	

* rates expressed as crashes per 1,000 people

Percent of Population Over 65	Sum of Population	Bike Crashes	Pedestrian Crashes	Bike Crash Rate	Bike Risk Score	Pedestrian Crash Rate	Ped Risk Score
0%	405571	195	644	0.4808036	1	1.5878847	1
0.38% - 9.1%	346037	119	533	0.3438939	4	1.5402977	3
9.11% - 13.15%	330639	116	395	0.3508358	3	1.1946564	5
13.16% - 18.19%	332719	71	361	0.2133933	8	1.0849997	7
18.2% - 99.99%	331910	97	243	0.2922479	7	0.7321262	9
Total	1746876	598	2176	0.3423254		1.245652239	

* rates expressed as crashes per 1,000 people

Percent of Households with a Disability	Sum of Population	Bike Crashes	Pedestrian Crashes	Bike Crash Rate	Bike Risk Score	Pedestrian Crash Rate	Ped Risk Score
0%	448380	211	711	0.4705830	1	1.5857086	1
0.34% - 15.76%	327409	92	315	0.2809941	8	0.9620994	9
15.79% - 24.17%	322412	86	312	0.2667395	9	0.9677059	8
24.18% - 33.33%	328650	99	372	0.3012323	5	1.1319032	5
33.54% - 100%	320025	110	466	0.3437231	3	1.4561362	2
Total	1746876	598	2176	0.3423254		1.245652239	

* rates expressed as crashes per 1,000 people

Segment Risk Factor Scoring

AADT (vpd)	Sum of Segment Length	Sum of AADT	Bike Crashes	Pedestrian Crashes	Bike Crash Rate	Bike Risk Score	Pedestrian Crash Rate	Pedestrian Risk Score
<5500	1113.689	1158631	115	225	0.0040695	5	0.0079621	5
5501-9500	365.938453	2463640	82	168	0.0041532	4	0.0085090	3
9501-16000	450.767096	3513436	196	511	0.0056510	1	0.0147330	1
>16000	569.241969	7712457	250	707	0.0026002	9	0.0073534	7
Grand Total	2499.636518	14848164	643	1611	0.0007911		0.001982	

* rates expressed as crashes 100 million vehicle miles traveled

Median Type	Sum of Segment Length	Sum of AADT	Bike Crashes	Pedestrian Crashes	Bike Crash Rate	Bike Risk Score	Pedestrian Crash Rate	Pedestrian Risk Score
None	2445.502121	14333778	620	1597	0.0008076	6	0.0020803	8
Unprotected	4.204942	74532	0	2	0.0000000	10	0.2913957	1
Curbed	49.929455	439854	23	12	0.0478210	1	0.0249501	4
Grand Total	2499.636518	14848164	643	1611	0.0007911		0.001982	

* rates expressed as crashes 100 million vehicle miles traveled

Number of Lanes	Sum of Segment Length	Sum of AADT	Bike Crashes	Pedestrian Crashes	Bike Crash Rate	Bike Risk Score	Pedestrian Crash Rate	Pedestrian Risk Score
2-3	1705.405155	8939058	225	426	0.0006739	8	0.0012760	8
4	640.932978	5061077	311	799	0.0043778	4	0.0112473	4
5-6	153.298385	848029	107	386	0.0375830	1	0.1355798	1
Grand Total	2499.636518	14848164	643	1611	0.0007911		0.001982	

* rates expressed as crashes 100 million vehicle miles traveled

Shoulder Width	Sum of Segment Length	Sum of AADT	Bike Crashes	Pedestrian Crashes	Bike Crash Rate	Bike Risk Score	Pedestrian Crash Rate	Pedestrian Risk Score
0	1232.896355	6511090	375	948	0.0021331	5	0.0053924	5
<6	605.281221	2506858	153	370	0.0046043	2	0.0111345	2
6+	661.458942	5830216	115	293	0.0013617	9	0.0034693	9
Grand Total	2499.636518	14848164	643	1611	0.0007911		0.001982	

* rates expressed as crashes 100 million vehicle miles traveled

Speed Limit (mph)	Sum of Segment Length	Sum of AADT	Bike Crashes	Pedestrian Crashes	Bike Crash Rate	Bike Risk Score	Pedestrian Crash Rate	Pedestrian Risk Score
30 or Less	156.788719	1253563	74	191	0.0171920	1	0.0443740	1
35	852.429162	5177568	274	631	0.0028348	9	0.0065283	7
40	699.895677	4765498	154	492	0.0021083	8	0.0067356	6
45	555.309691	2701088	106	197	0.0032269	5	0.0059972	9
50 or more	235.213269	950447	35	100	0.0071488	3	0.0204252	3
Grand Total	2499.636518	14848164	643	1611	0.0007911		0.001982	

* rates expressed as crashes 100 million vehicle miles traveled

Segment Risk Factor Scoring

Sidewalk : Roadway Length Ratio	Sum of Segment Length	Sum of AADT	Bike Crashes	Pedestrian Crashes	Bike Crash Rate	Bike Risk Score	Pedestrian Crash Rate	Pedestrian Risk Score
<0.9	937.338701	2728056	63	142	0.0011250	8	0.0025357	8
0.9-2.5	697.131064	4334300	143	430	0.0021610	6	0.0064982	6
2.6-4.2	508.944983	3744293	171	377	0.0040974	4	0.0090335	4
>4.2	356.22177	4041515	266	662	0.0084367	2	0.0209966	2
Grand Total	2499.636518	14848164	643	1611	0.0007911		0.001982	

* rates expressed as crashes 100 million vehicle miles traveled

Adjacent Transit Routes	Sum of Segment Length	Sum of AADT	Bike Crashes	Pedestrian Crashes	Bike Crash Rate	Bike Risk Score	Pedestrian Crash Rate	Pedestrian Risk Score
0	1609.807828	8825985	224	265	0.0007199	9	0.0008517	9
1	291.093162	2456328	62	197	0.0039594	8	0.0125807	8
2	191.358816	1481255	53	237	0.0085379	6	0.0381791	6
3	109.423937	670358	40	128	0.0248999	4	0.0796795	4
4+	297.952775	1414238	264	784	0.0286082	2	0.0849576	2
Grand Total	2499.636518	14848164	643	1611	0.0007911		0.001982	

* rates expressed as crashes 100 million vehicle miles traveled

Adjacent Transit Stops	Sum of Segment Length	Sum of AADT	Bike Crashes	Pedestrian Crashes	Bike Crash Rate	Bike Risk Score	Pedestrian Crash Rate	Pedestrian Risk Score
0	1650.142851	8930005	234	278	0.0007251	9	0.0008614	9
1-6	371.483154	3288316	87	297	0.0032521	7	0.0111020	6
7-14	172.815821	1075617	88	234	0.0216171	3	0.0574818	4
15+	305.194692	1554226	234	802	0.0225258	2	0.0772039	2
Grand Total	2499.636518	14848164	643	1611	0.0007911		0.001982	

* rates expressed as crashes 100 million vehicle miles traveled

Schools within 0.5 mile	Sum of Segment Length	Sum of AADT	Bike Crashes	Pedestrian Crashes	Bike Crash Rate	Bike Risk Score	Pedestrian Crash Rate	Pedestrian Risk Score
0	994.565962	5412552	91	140	0.0007719	9	0.0011875	9
1-2	779.479417	5620797	210	484	0.0021886	6	0.0050443	6
3-5	467.508377	2770772	155	449	0.0054638	4	0.0158275	4
6+	258.082762	1044043	187	538	0.0316898	1	0.0911719	1
Grand Total	2499.636518	14848164	643	1611	0.0007911		0.001982	

* rates expressed as crashes 100 million vehicle miles traveled

Parks within 0.5 mile	Sum of Segment Length	Sum of AADT	Bike Crashes	Pedestrian Crashes	Bike Crash Rate	Bike Risk Score	Pedestrian Crash Rate	Pedestrian Risk Score
0	2248.804067	12998800	499	1295	0.0007795	9	0.0020229	9
1	188.412125	1442265	122	299	0.0205004	3	0.0502427	2
2+	62.420326	407099	22	17	0.0395323	2	0.0305477	3
Grand Total	2499.636518	14848164	643	1611	0.0007911		0.001982	

* rates expressed as crashes 100 million vehicle miles traveled

Segment Risk Factor Scoring

Libraries within 0.5 mile	Sum of Segment Length	Sum of AADT	Bike Crashes	Pedestrian Crashes	Bike Crash Rate	Bike Risk Score	Pedestrian Crash Rate	Pedestrian Risk Score
0	1969.334932	12051338	332	809	0.0006388	9	0.0015565	9
1	406.524885	2307548	187	453	0.0091025	5	0.0220504	5
2+	123.776701	489278	124	349	0.0934938	1	0.2631399	1
Grand Total	2499.636518	14848164	643	1611	0.0007911		0.001982	

* rates expressed as crashes 100 million vehicle miles traveled

Intersection Risk Factor Scoring

Daily Entering Volume (DEV)	Sum of DEV	Bike Crashes	Pedestrian Crashes	Bike Crash Rate	Bike Risk Score	Pedestrian Crash Rate	Pedestrian Risk Score
0 - 1851	1686805	30	36	0.8121051	2	0.9745262	5
1852 - 3274	4131099	52	79	0.5747694	3	0.8732073	9
3277 - 4757	6410030	64	144	0.4559065	5	1.0257897	3
4758 - 7163	9373981	82	245	0.3994346	7	1.1934326	2
7164 - 42530	17495742	130	343	0.3392867	9	0.8951950	7
Total	39097657	358	847	0.4181077		0.989210148	

* rates expressed as crashes per 100 million entering vehicles

Intersection Skew Angle	Sum of DEV	Bike Crashes	Pedestrian Crashes	Bike Crash Rate	Bike Risk Score	Pedestrian Crash Rate	Pedestrian Risk Score
0 - 80.566786	9117786	101	183	0.5058105	1	0.9164686	8
80.574722 - 87.446464	8199885	83	206	0.4621960	3	1.1471371	3
87.447645 - 88.725231	7742000	70	198	0.4128581	6	1.1677985	1
88.725448 - 89.489909	6892767	69	167	0.4571002	5	1.1063149	5
89.48997 - 179.992799	7145219	35	93	0.2236703	9	0.5943240	9
Total	39097657	358	847	0.4181077		0.989210148	

* rates expressed as crashes per 100 million entering vehicles

Number of Lanes	Sum of DEV	Bike Crashes	Pedestrian Crashes	Bike Crash Rate	Bike Risk Score	Pedestrian Crash Rate	Pedestrian Risk Score
2-3	20800122	137	231	0.3007534	8	0.5071098	8
4-5	16282428	193	525	0.5412452	4	1.4722990	4
6+	2015107	28	91	0.6344769	2	2.0620499	1
Grand Total	39097657	358	847	0.418107713		0.989210148	

* rates expressed as crashes per 100 million entering vehicles

Intersection Legs	Sum of DEV	Bike Crashes	Pedestrian Crashes	Bike Crash Rate	Bike Risk Score	Pedestrian Crash Rate	Pedestrian Risk Score
3	24017972	124	299	0.2357443	8	0.5684480	8
4	14495591	216	519	0.6804147	4	1.6348854	4
5+	584094	18	29	1.4071670	2	2.2671024	1
Grand Total	39097657	358	847	0.418107713		0.989210148	

* rates expressed as crashes per 100 million entering vehicles

Intersection Risk Factor Scoring

Speed Limit	Sum of DEV	Bike Crashes	Pedestrian Crashes	Bike Crash Rate	Bike Risk Score	Pedestrian Crash Rate	Pedestrian Risk Score
25-	1238006	24	83	0.8852061	1	3.0613376	1
30	3522705	58	78	0.7518091	3	1.0110537	5
35	12151626	132	374	0.4960157	5	1.4053778	4
40	13399741	74	224	0.2521687	9	0.7633215	7
45	6737491	50	81	0.3388658	8	0.5489625	8
50+	2048088	20	7	0.4458998	7	0.1560649	9
Grand Total	39097657	358	847	0.418107713		0.989210148	

* rates expressed as crashes per 100 million entering vehicles

Traffic Control	Sum of DEV	Bike Crashes	Pedestrian Crashes	Bike Crash Rate	Bike Risk Score	Pedestrian Crash Rate	Pedestrian Risk Score
Signalized	8483479	163	444	0.8773432	4	2.3898182	3
Unsignalized	30614178	195	403	0.2908492	8	0.6010884	8
Grand Total	39097657	358	847	0.418107713		0.989210148	

* rates expressed as crashes per 100 million entering vehicles

Crosswalks	Bike Risk Score	Pedestrian Risk Score
Signalized Intersection with Missing or No Crosswalks	2	2
Signalized Intersection with Crosswalks on Each Intersection Leg	5	5
Unsignalized Intersection	7	7

Curb ramps	Bike Risk Score	Pedestrian Risk Score
Signalized Intersection with Missing or No ADA Curb Ramps	3	3
Signalized Intersection with 2 Curb Ramps on Each Intersection Leg	7	7
Unsignalized Intersection	8	8

Intersection Risk Factor Scoring

Intersecting Transit Routes	Sum of DEV	Bike Crashes	Pedestrian Crashes	Bike Crash Rate	Bike Risk Score	Pedestrian Crash Rate	Pedestrian Risk Score
0	26003840	173	249	0.3037837	9	0.4372378	9
1	9306673	110	342	0.5397021	8	1.6779829	8
2	2542680	42	156	0.7542468	7	2.8014881	4
3	714967	16	48	1.0218564	4	3.0655692	3
4+	529497	17	52	1.4660248	2	4.4843110	1
Grand Total	39097657	358	847	0.418107713		0.989210148	

* rates expressed as crashes per 100 million entering vehicles

Adjacent Transit Stops	Sum of DEV	Bike Crashes	Pedestrian Crashes	Bike Crash Rate	Bike Risk Score	Pedestrian Crash Rate	Pedestrian Risk Score
0	33227482	283	523	0.3889062	8	0.7187207	8
1	2596471	23	116	0.4044830	6	2.0400011	4
2+	3273704	52	208	0.7253036	2	2.9012143	2
Grand Total	39097657	358	847	0.418107713		0.989210148	

* rates expressed as crashes per 100 million entering vehicles

Schools within 0.5 mile	Sum of DEV	Bike Crashes	Pedestrian Crashes	Bike Crash Rate	Bike Risk Score	Pedestrian Crash Rate	Pedestrian Risk Score
0	22762060	182	333	0.3651033	8	0.6680186	8
1-2	14294552	153	454	0.4887387	4	1.4502444	2
3+	2041045	23	60	0.5145542	2	1.3423153	4
Grand Total	39097657	358	847	0.418107713		0.989210148	

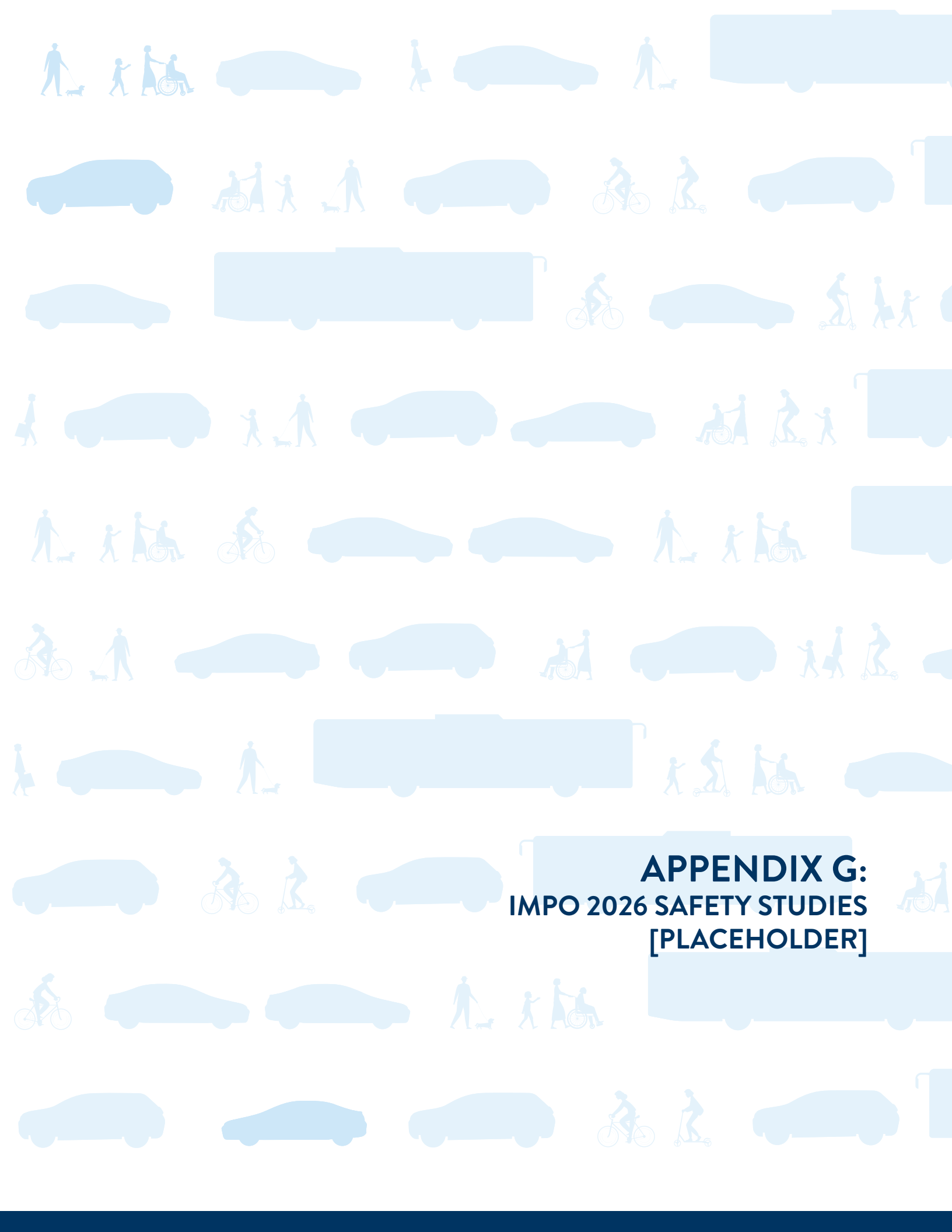
* rates expressed as crashes per 100 million entering vehicles

Parks within 0.5 mile	Sum of DEV	Bike Crashes	Pedestrian Crashes	Bike Crash Rate	Bike Risk Score	Pedestrian Crash Rate	Pedestrian Risk Score
0	36887861	328	790	0.4060189	8	0.9779114	5
1	1768291	26	57	0.6713910	2	1.4718956	2
2+	441505	4	0	0.4136950	4	0.0000000	10
Grand Total	39097657	358	847	0.418107713		0.989210148	

* rates expressed as crashes per 100 million entering vehicles

Libraries within 0.5 mile	Sum of DEV	Bike Crashes	Pedestrian Crashes	Bike Crash Rate	Bike Risk Score	Pedestrian Crash Rate	Pedestrian Risk Score
0	35137828	295	702	0.3833566	8	0.9122588	7
1+	3959829	63	145	0.7264739	3	1.6720431	2
Grand Total	39097657	358	847	0.418107713		0.989210148	

* rates expressed as crashes per 100 million entering vehicles



APPENDIX G:
IMPO 2026 SAFETY STUDIES
[PLACEHOLDER]

