



FIRST CITY

Vision Zero

City of Leavenworth

ACTION PLAN

FALL 2024



Explore



MESSAGE FROM *Mayor Martin*

The First City of Kansas continues our commitment to ending traffic deaths and serious injuries on our streets.

A new initiative called Vision Zero is an approach to improving traffic safety, with the goal of eliminating all fatal and serious injury traffic crashes.

To accomplish the goal of Vision Zero, the City of Leavenworth is creating the First City Vision Zero Action Plan which will set us on a clear path toward eliminating pedestrian and traffic deaths.

This is the result of significant collaboration between the City Commission, City staff, the Kansas Department of Transportation, Fort Leavenworth, USD 453, other key stakeholders and local residents. The plan will result in greater inter-agency communication and coordination as identified projects pursue future funding.

Leavenworth has committed to eliminating traffic deaths and significantly reducing serious injuries on our streets. We recognize that no loss of life is acceptable and strive to incorporate the First City Vision Zero Action Plan goals, principles, and values into all our efforts.

Sincerely,
Mayor Griff Martin

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VISION ZERO Pledge

Leavenworth has committed to eliminating traffic deaths and significantly reducing serious injuries on our streets.

We recognize that no loss of life is acceptable and strive to incorporate the First City Vision Zero Action Plan goals, principles, and values into all our efforts.

Patrick Kitchens
Interim City Manager
/ Police Chief

Penny Holler
Assistant City Manager

Mike Stephan
Deputy Public Works Director

Brian Faust
Public Works Director

Julie Hurley
Planning and Community
Development Director

Brian Bailey
Deputy Parks and
Recreations Director

ACKNOWLEDGMENTS

The First City Vision Zero effort was a year-long analysis, planning, and public engagement process that involved community members, city officials, and transportation experts. This plan is the outcome of that process and outlines a wide range of strategies and actions that are intended to reduce traffic-related fatalities and injuries by addressing the underlying causes of crashes.

Project Team

CITY OF LEAVENWORTH

Penny Holler
Assistant City Manager*

Paul Kramer
Former City Manager*

Mike Stephan
Deputy Public Works Director*

Brian Faust
Public Works Director*

Julie Hurley
Planning and Community Development
Director*

Brian Bailey
Deputy Parks and Recreations Director*

Melissa Bower
Public Information Officer

WSP

David Church
Josh Boehm
Tim Adams
Le Zhang
Steff Hedenkamp
Liz DiPaola Murray

Leslie Lee
Andy Fry
Lauren Brown
Joe Milsap
Kevin Carder
Lauren Plinka

KIMLEY-HORN

Anthony Gallo
Riley Mitts
Ciara Hogsett

Luke Jackson
Sophia Ung
Jeff McKerrow

Technical Advisory Committee & Focus Area Group Members

Dr. Kellen Adams
USD 453 Superintendent

Myranda Agnew
Director of the Interfaith Community of
Hope / Transit Committee Member

Brian Golubski
Transportation Director at The Guidance
Center

Sgt. Brandon Mance
Leavenworth Police Department

Matthew Messina
Kansas Department of Transportation Bureau
Chief of Multimodal Transportation**

Maggie Myers
Chief Operating Officer/CCBHC Director at
The Guidance Center

Terry Peters
Fort Leavenworth, Garrison Safety

Michael Polk
Fort Leavenworth, Installation Command

Jake Potter
Director of Public Relations

Brendan Sheehan
Sante Fe Trails Bike Shop**

*also on Technical Advisory Committee

** members of Focus Area Groups but not the Technical Advisory Committee

EXECUTIVE

Summary

Leavenworth, the “First City” to be founded in Kansas, was incorporated in 1854 and has experienced many firsts – 170 year later, Leavenworth became the first city in Kansas to create a Vision Zero Action Plan and dedicate efforts towards improving transportation safety for all. This First City Vision Zero Action Plan aims to maximize the City’s potential to reduce the number of fatalities and severe injuries to zero across the local transportation system.

This plan includes several proven strategies for Leavenworth to achieve Vision Zero, including:



Safe Users:

These strategies are intended to make Leavenworth’s streets safer for drivers, pedestrians, cyclists, and other vulnerable road users. This includes supporting communication and outreach efforts, expanding multimodal transportation options, enhanced police enforcement, and traffic safety education.

Safe Speeds:

Reducing speeds on Leavenworth’s streets is one of the most important things we can do to prevent traffic fatalities and serious injuries. The plan includes several strategies to reduce speeds, such as traffic calming devices, reconfiguring lanes, and speed management strategies.

Safe Streets:

These strategies are intended to make Leavenworth’s streets themselves safer and more accessible to people of all ages and abilities. These strategies include improving road design with a more context-sensitive approach and addressing new and existing policies through the perspective of a Safe System Approach.

This Vision Zero Action Plan outlines the City of Leavenworth’s ongoing and authentic commitment to a systems-based and equitable safety approach for the First City through a data-driven strategy to eliminate traffic fatalities and severe injuries among all road users.



WHY VISION ZERO?



The First City of Kansas recognizes that no loss of life on its streets is acceptable.

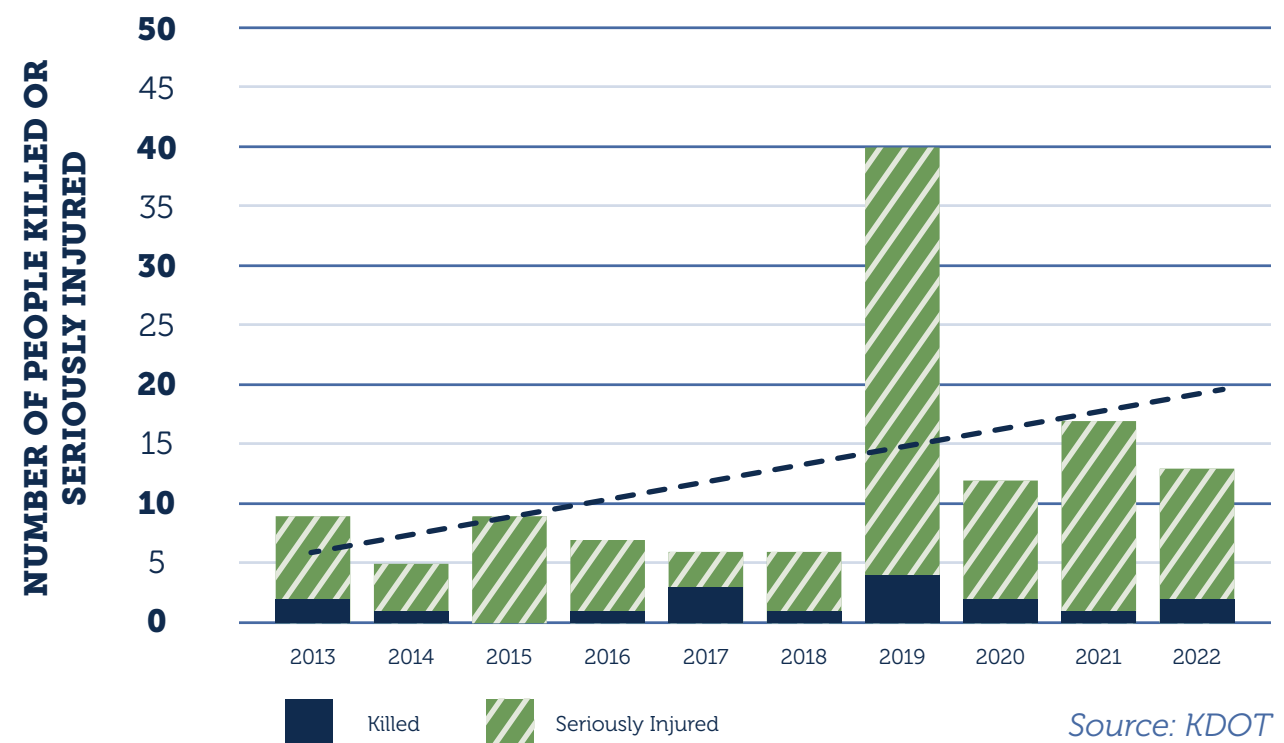
The City of Leavenworth is committed to significantly reducing or eliminating fatal and serious injury crashes by 2035. This Vision Zero Action Plan sets out strategies and recommendations to maximize the City's potential to achieve this goal.

This plan will also allow the First City to become more competitive when applying for federal and state grant dollars for actions that support safety for all road users.

In the ten years from 2013-2022, 17 people were killed in traffic crashes in the City of Leavenworth and another 107 people were left with serious lifelong injuries. Like many other communities across the country, Leavenworth has experienced an upward trend in fatal and serious injury crashes in recent years. With each of these crashes, there is a story of immense loss for the victims and their loved ones. Their loss stresses the urgency of taking action to minimize the likelihood of further deaths and serious injuries.



FATAL AND SERIOUS CRASH TREND IN LEAVENWORTH, KS



Source: KDOT

WHAT IS VISION ZERO?

Vision Zero is a global traffic safety initiative that originated in Sweden in the late 1990s and is now endorsed by the U.S. Department of Transportation. The core principle of Vision Zero is the belief that all traffic fatalities and serious injuries are preventable, and that no loss of life is acceptable. The goal of Vision Zero is to create a transportation system that prioritizes safety above all else, using data-driven analysis to identify the root causes of traffic crashes and addressing them with comprehensive strategies rooted in a Safe System Approach.

TRADITIONAL APPROACH

Traffic deaths are **INEVITABLE**
PERFECT human behavior
 Prevent **COLLISIONS**
INDIVIDUAL responsibility
 Saving lives is **EXPENSIVE**

VS

Vision Zero

Traffic deaths are **PREVENTABLE**
 Integrate **HUMAN FAILING** in approach
 Prevent **FATAL** and **SEVERE CRASHES**
SYSTEMS approach
 Saving lives is **NOT EXPENSIVE**

THE SAFE SYSTEM APPROACH

Over the previous five decades, traffic fatalities in Kansas decreased from 4.1 fatalities per 100 million vehicle miles (HMVA) in 1970 to 1.0 fatalities per HMVA in 2015. In those 45-years we should be proud of the lives saved, but the same strategies have either been exhausted or failed to adapt to current conditions. This incredible progress has been reversed over the last decade with a 15% uptick in fatalities in 2022. The Safe System Approach is a new, holistic way of addressing transportation safety.

The Safe System Approach is a comprehensive strategy for managing road safety that is closely aligned with Vision Zero principles. Developed by the Federal Highway Administration (FHWA), the goal of the Safe System Approach is to create a transportation system that is forgiving of human error and that does not rely on individual road users to be perfect. Instead, the approach recognizes that people will make mistakes and that the transportation system must be designed to the extent possible to protect the road user from the consequences of those mistakes.

The Safe System Approach is based on six foundational principles*.

DEATHS AND SERIOUS INJURIES ARE UNACCEPTABLE: A Safe System Approach prioritizes the elimination of crashes that result in death and serious injuries.

HUMANS MAKE MISTAKES: People will inevitably make mistakes and decisions that can lead or contribute to crashes, but the transportation system can be designed and operated to accommodate certain types and levels of human mistakes and avoid death and serious injuries when a crash occurs.

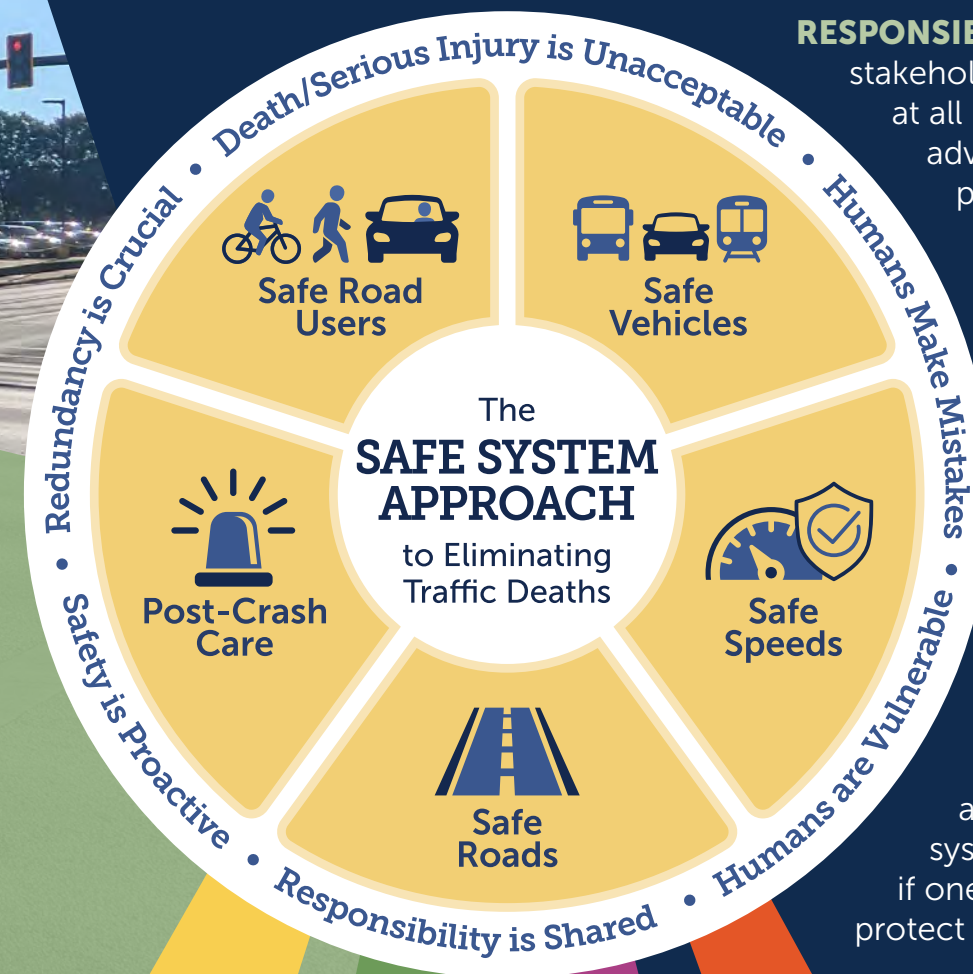
HUMANS ARE VULNERABLE: Human bodies have physical limits for tolerating crash forces before death or serious injury occurs; therefore, it is critical to design and operate a transportation system that is human-centric and accommodates physical human vulnerabilities.

RESPONSIBILITY IS SHARED: All stakeholders—including government at all levels, industry, non-profit/advocacy, researchers, and the public—are vital to preventing fatalities and serious injuries on our roadways.

SAFETY IS PROACTIVE: Proactive tools should be used to identify and address safety issues in the transportation system, rather than waiting for crashes to occur and reacting afterwards.

REDUNDANCY IS CRUCIAL: Reducing risks requires that all parts of the transportation system be strengthened, so that if one part fails, the other parts still protect people.

Source: U.S. Department of Transportation



Leavenworth's rate of people killed in crashes over the past 10 years puts it in the middle of the pack when compared to other cities in the surrounding region, but there is still significant room for improvement.

By applying the Safe System Approach and proven safety countermeasures that have been successful in other communities, Leavenworth can effectively work toward the goal of significantly reducing and eventually eliminating traffic fatalities on its streets.

◀ Crash Fatalities per 100,000 Population per year	
<i>Source: NHTSA, 2013-2022 Data</i>	
Leawood, KS	2.1
Bellevue, NE	2.3
Lawrence, KS	2.4
Atchison, KS	2.8
Manhattan, KS	4.1
Emporia, KS	4.2

Leavenworth, KS 4.8

Salina, KS	5.5
St Joseph, MO	9.5
Topeka, KS	9.9
Wichita, KS	10.1
Kansas City, KS	12.9
Kansas City, MO	14.8



VISION ZERO GUIDING PRINCIPLES



ALL TRANSPORTATION
Eliminate traffic deaths for people walking, biking, accessing transit, and driving



EQUITY
Prioritize areas of greatest need to ensure safe access is available to everyone



DATA-DRIVEN SOLUTIONS
Based on industry best practices, evidence-based solutions, and data analysis



PUBLIC INPUT
Community Informed and guided by public feedback



EDUCATION
Teach the importance of Vision Zero and a shared responsibility of all roadway users



COMMITMENT AND ACCOUNTABILITY
Guide alignment of funding, policies, and processes with leadership



URGENCY
Focus actions to address urgent need to stop loss of life and severe injuries

COMMUNITY ENGAGEMENT

Community engagement is the cornerstone of the Vision Zero Action Plan, its implementation, and long-term success.

Pop-up events were hosted at the Leavenworth Public Library and at various community events. By listening to the public and incorporating this input into solutions, the plan can address traffic safety issues for everyone who lives, works, and plays in the City of Leavenworth. Seven pop-up events were held between February and June 2024 to share project information and receive public feedback. This feedback was incorporated into the plan's recommendations. On August 7, 2024, a public open house was held at the Riverfront Community Center. Comment forms were received following a two-week comment period. Appendix A contains a comprehensive summary of all community and public engagement activities.



POP UP EVENTS

- 2/22/24: Leavenworth Public Library
- 3/23/24: Leavenworth Easter Egg Hunt
- 3/23/24: The Heritage Center Flower, Home and Garden Show
- 4/16/24: Kiwanis Club of Leavenworth
- 5/29/24: Late Night Under the Lights Bike Race
- 6/6/24: Lions Club of Leavenworth
- 6/15/24: Juneteenth Parade and Festival



TECHNICAL ADVISORY COMMITTEE

The Vision Zero Technical Advisory Committee (TAC) was formed to review data analysis and public input, determine safety focus areas, as well as filter, prioritize, and implement recommendations from the public. The TAC is made up of City of Leavenworth department staff, partnering agencies representatives, and members of community advocacy groups. The committee's input was critical to the development of the First City Vision Zero Action Plan.

ONLINE ENGAGEMENT

To ensure engagement activities for this project were accessible and transparent to as many City of Leavenworth residents as possible, the First City Vision Zero website was launched in February 2024 to provide project information, materials, and engagement opportunities. The site provides information on upcoming events and encourages the public to share their input through surveys and an interactive engagement map, which allows citizens to identify areas they feel unsafe driving, walking, or biking on Leavenworth streets.

Organizations of the TAC include:

- ◆ City Manager's Office
- ◆ Public Works Department
- ◆ Planning & Community Development Department
- ◆ Parks & Recreation Department
- ◆ Leavenworth Police Department
- ◆ The Guidance Center
- ◆ Interfaith Community of Hope
- ◆ Unified School District 453
- ◆ Fort Leavenworth



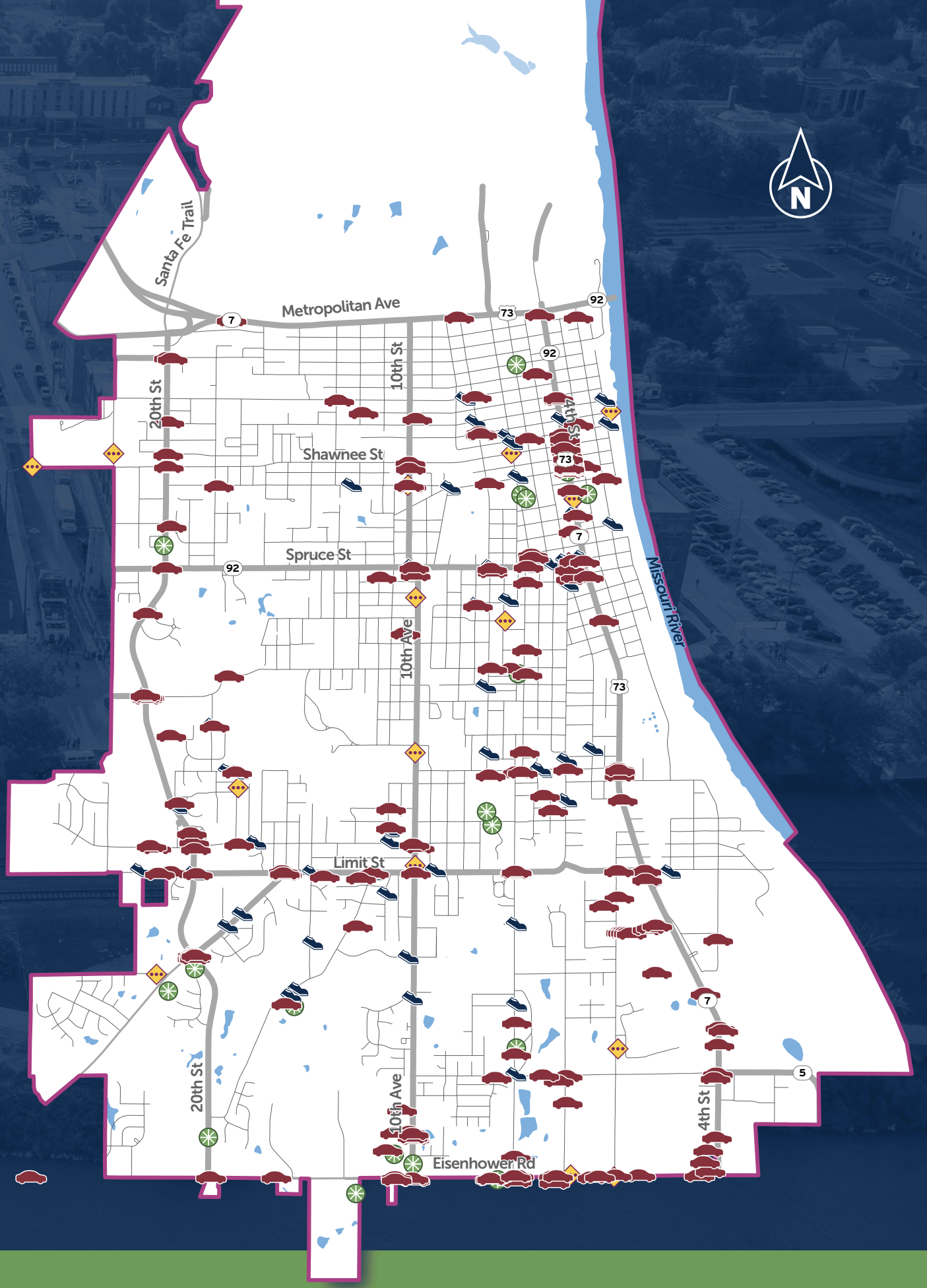


PUBLIC INPUT

Over the course of the planning process, we received public input from seven pop-up events and the project website.

The icons on this map represent areas mentioned during this outreach.

-  Driving
-  Walking
-  Cycling
-  Other





KEY THEMES FROM PUBLIC INPUT

The following were common themes in the input provided during pop-up events and through the project website:

- ◆ Potholes, distracted driving, and people driving too fast were the top three safety concerns reported.
- ◆ Many residents expressed a desire for increased enforcement for speeding and drivers not yielding or stopping at intersections.
- ◆ Many Leavenworth residents identified locations where they feel unsafe while walking or bicycling due to a lack of sidewalks, crosswalks, pedestrian crossing signage and signals, and quality bicycle facilities.
- ◆ Residents would like to see improved sight distance, clear pavement markings, and enhanced traffic control measures on Leavenworth streets.
- ◆ There is strong support for safety education efforts, such as the S.A.F.E. program, to be implemented at Leavenworth schools.

LOCAL, STATE, AND NATIONAL RESOURCES

While Leavenworth is the first city in the State of Kansas to complete a Vision Zero action plan, there are many example Vision Zero action plans or safety action plans from across the country from which Leavenworth can incorporate best practices and lessons learned.

During development of this Vision Zero Action Plan, the project team reviewed several of these plans and identified best practices related to public engagement, data analysis, equity considerations, safety countermeasures development, and implementation that helped to guide the development of this plan.

This Vision Zero Action Plan also aligns with and builds upon several state, regional, and local plans, such as the Kansas Strategic Highway Safety Plan, the Connected KC 2050 Regional Long Range Transportation Plan, the Downtown / North Leavenworth Redevelopment Area Master Plan, and the Leavenworth 2030 Comprehensive Plan.

The projects and strategies in this plan will require funding to be allocated – much of which may come from non-City funds. The First City Vision Zero Action Plan project team reviewed and compiled a list of available programs for funding transportation safety – whether those are infrastructure projects or educational/enforcement initiatives.

All these relevant plans and potential funding programs are described in Appendix B.



2 DATA & FOCUS AREAS







The First City carried out a comprehensive analysis of ten years of crash data across the city. Applying data-driven solutions is a guiding principle of this action plan and is essential for successful implementation.

This data-driven approach aids in identifying patterns in where crashes occur, who is involved, and what factors contribute to serious injuries and fatalities. By merging this data analysis with active involvement from the Vision Zero Technical Advisory Committee and public input, we established purposeful areas for enhancement, identified effective countermeasures, and created an Action Plan poised to propel Leavenworth's journey towards Zero fatalities and serious injuries on its streets.

CRASH MAPPING

ALL FATAL & INJURY CRASHES, 2013-2022

The First City's goal is to significantly reduce or eliminate crashes that result in people being killed or seriously injured (KSI crashes) in the City of Leavenworth by 2035. A total of 108 crashes have resulted in people being killed or seriously injured, with another 1,125 crashes resulting in a non-incapacitating (minor) or possible injuries. Although non-injury crashes (aka property damage only crashes) account for more than three-quarters of all crashes in Leavenworth, the data analysis for the Vision Zero Action Plan focuses only on KSI crashes. KSI crashes are by far the most impactful and life-altering type of crashes.

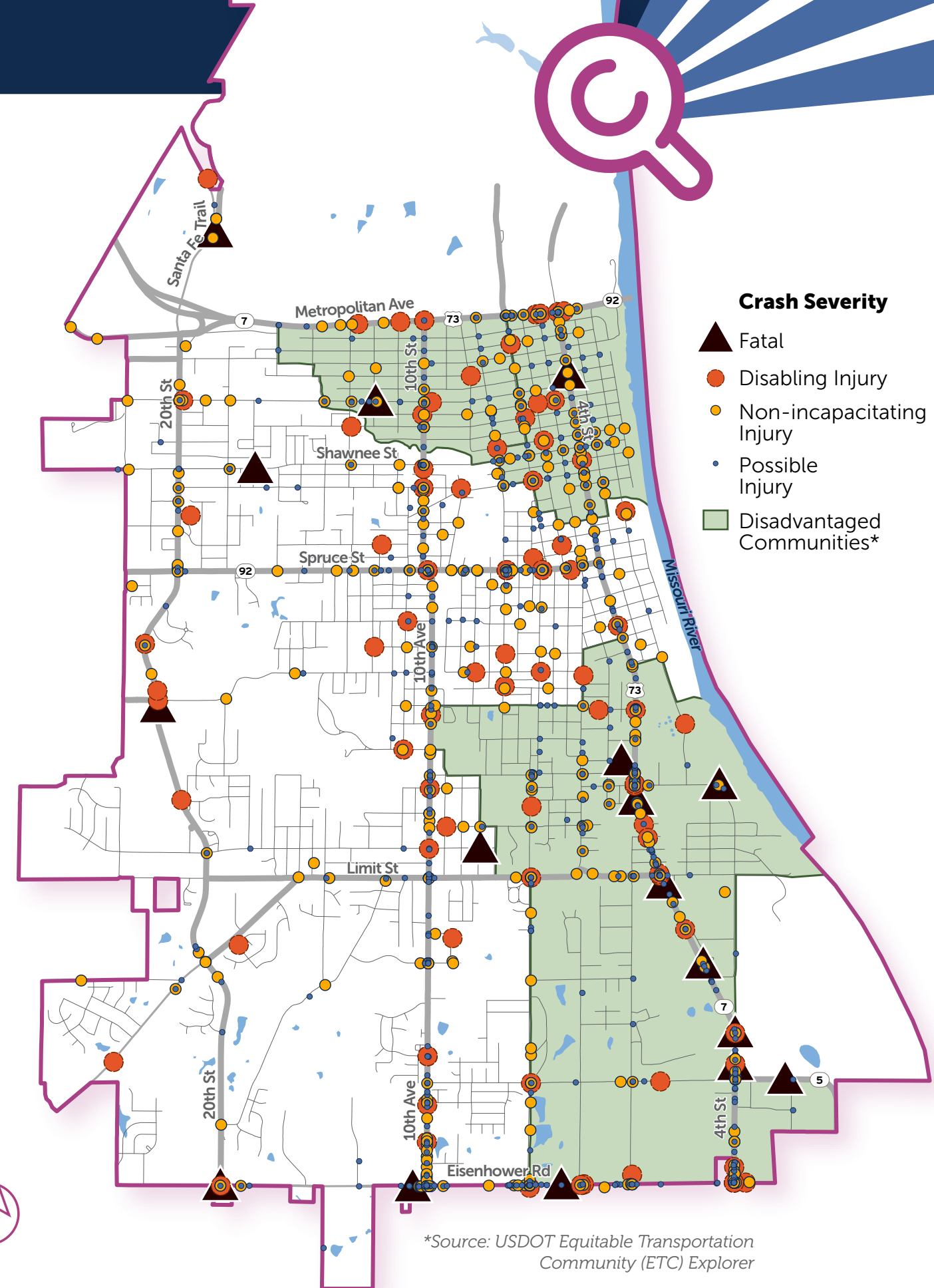
Crash Severity	# of Crashes
 Fatal	17
 Disabling Injury	91
 Non-Incapacitating Injury	452
 Possible Injury	673
Not Injured	4,154
Total	5,387

By mapping crashes through multiple methods, Leavenworth can identify how to make the most impactful change as timely as possible with limited resources.



With this goal in mind, the data indicates that significant priority should be given to projects in disadvantaged communities as defined by socio-economic indicators identified by the USDOT. These disadvantaged communities are more likely to be impacted by fatal and serious crashes: **they account for 49% of KSI crashes but 30% of road miles.**

By prioritizing the areas of greatest need, the disparities in KSI crash rates for disadvantaged communities will be reduced.
By simply following the data, we can start creating equitable solutions that get us to Zero.



Crash Severity

-  Fatal
-  Disabling Injury
-  Non-incapacitating Injury
-  Possible Injury
-  Disadvantaged Communities*

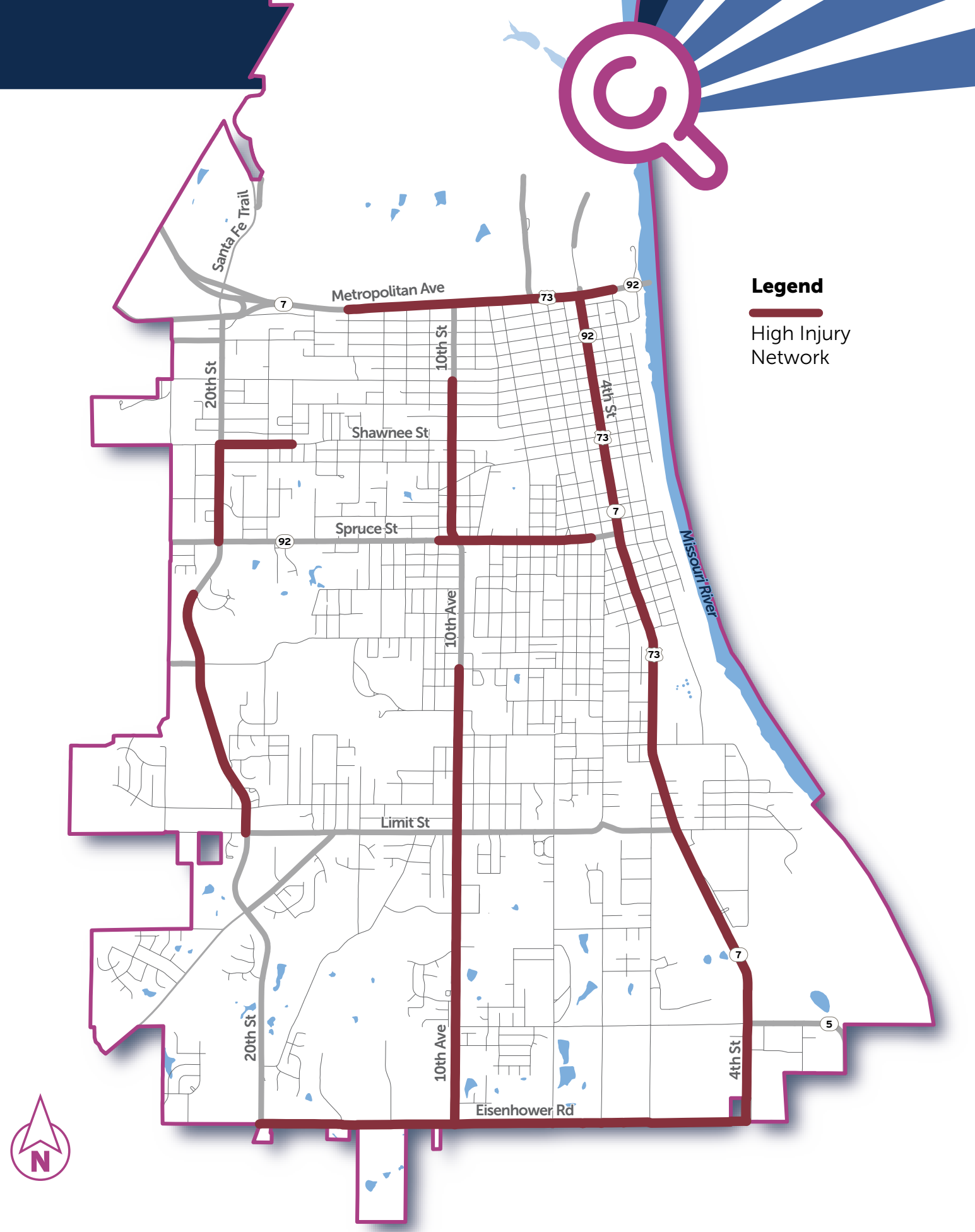
*Source: USDOT Equitable Transportation Community (ETC) Explorer

HIGH INJURY NETWORK

The High Injury Network (HIN) is a mapping tool to help identify where the highest number of people are being killed and seriously injured (KSI) on Leavenworth's transportation system. This data-driven approach helps the First City focus resources in areas of most urgent need. The most recently available 10-years of crash data (2013–2022) was used to create the HIN.

The HIN accounts for 58% of KSI crashes but 9% of road miles. This shows that on these 16.7 miles of road, KSI crashes are over 6x more likely to occur.

	KSI Crashes		Road Miles	
	#	%	#	%
HIN	43	58%	16.7	9%
Citywide	2553	100%	184.0	100%



HIGH INJURY INTERSECTIONS

The High Injury Intersections (HII) are another key mapping tool in the Vision Zero toolbox. Like the HIN, the HII uses 10-years of injury crash data to identify the most dangerous intersections in order to most effectively allocate City resources and give context to transportation safety problems.


The HII locations have the highest concentration of intersection crashes. Leavenworth has over 1,100 intersections and just 11 “High Injury Intersections” had 25 KSI crashes and 156 total crashes (excluding property damage only crashes) during the 10-year analysis period.

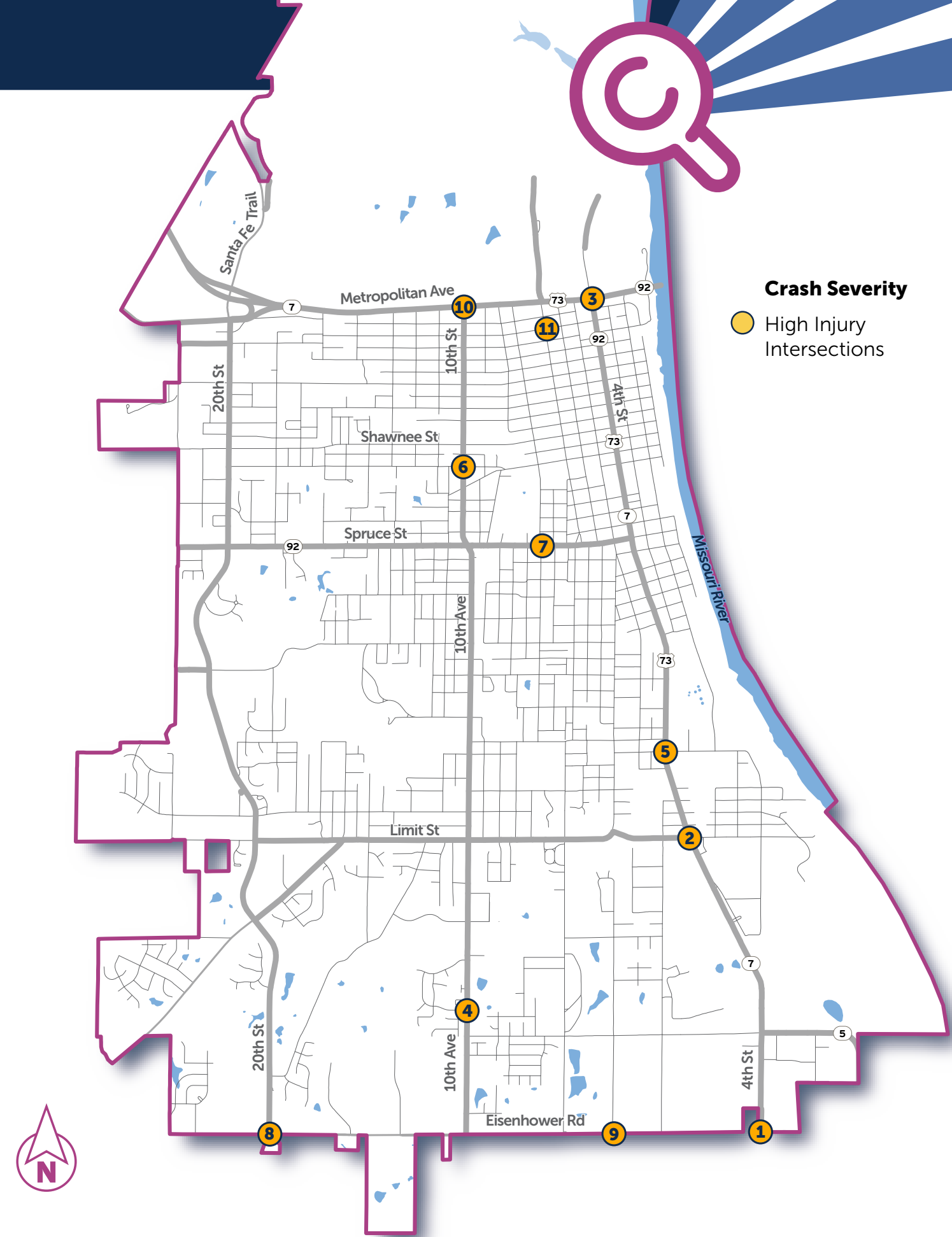
In total, the HII identifies 1% of intersections that account for 41% of KSI intersection crashes in Leavenworth.

Rank	Intersection	KSI Crashes	All Crashes*
1	S 4th St / Eisenhower Rd**	3	39
2	S 4th St / Limit St	3	29
3	N 4th St / Metropolitan Ave	2	26
4	10th Ave / Wallis Ln	3	6
5	S 4th St / Marion St	2	17
6	S 10th St / Cherokee St	2	14
7	S Broadway St / Spruce St	2	10
8	S 20th St / Eisenhower Rd**	2	5
9	Lakeview Dr / Eisenhower Rd	2	5
10	N 10th St / Metropolitan Ave	2	3
11	N 7th St / Pawnee St	2	2

*Excluding Property Damage Only crashes

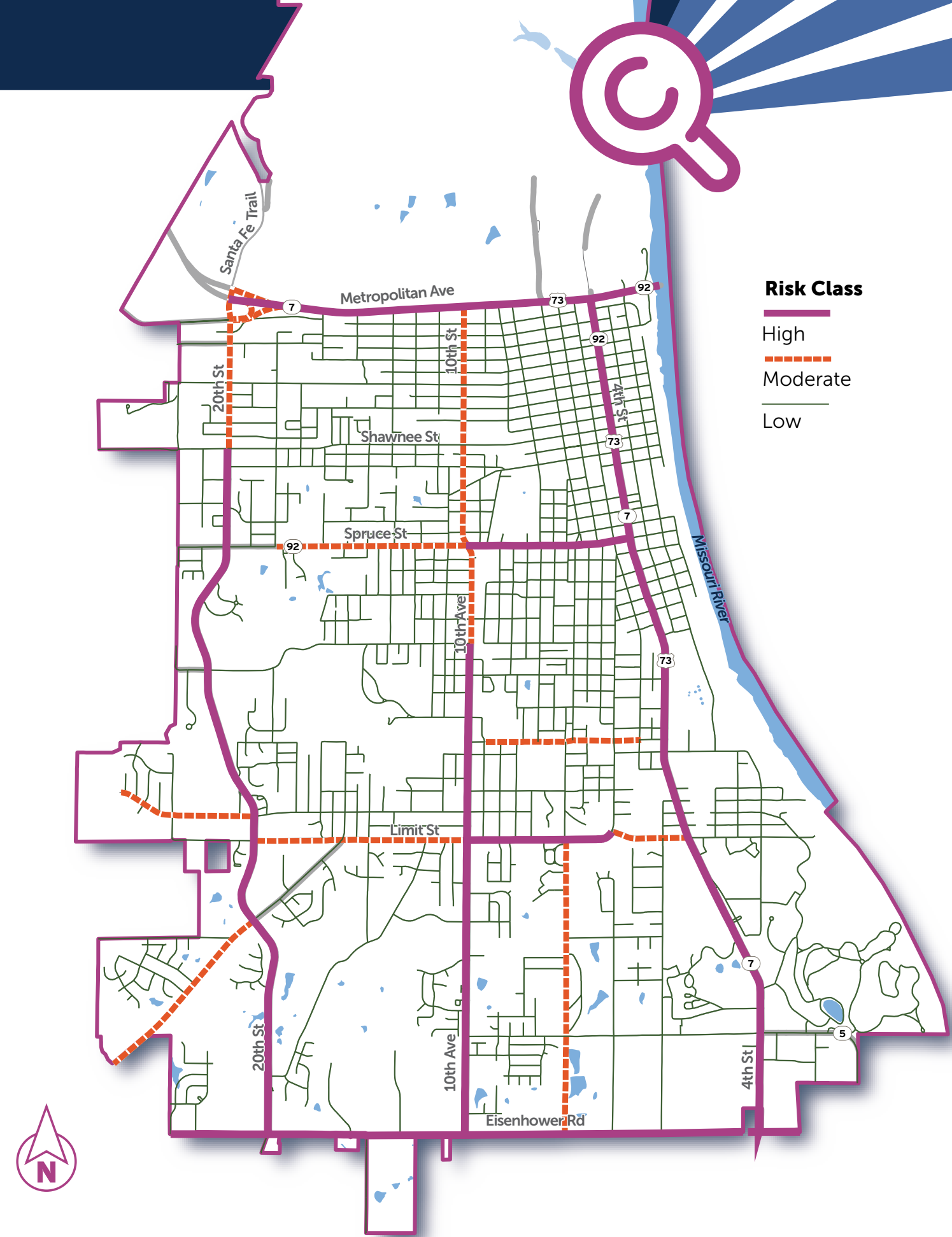
**Recently improved

	KSI Crashes		Road Miles	
	#	%	#	%
 HII	25	41%	11	1%
Citywide	61	100%	1120	100%



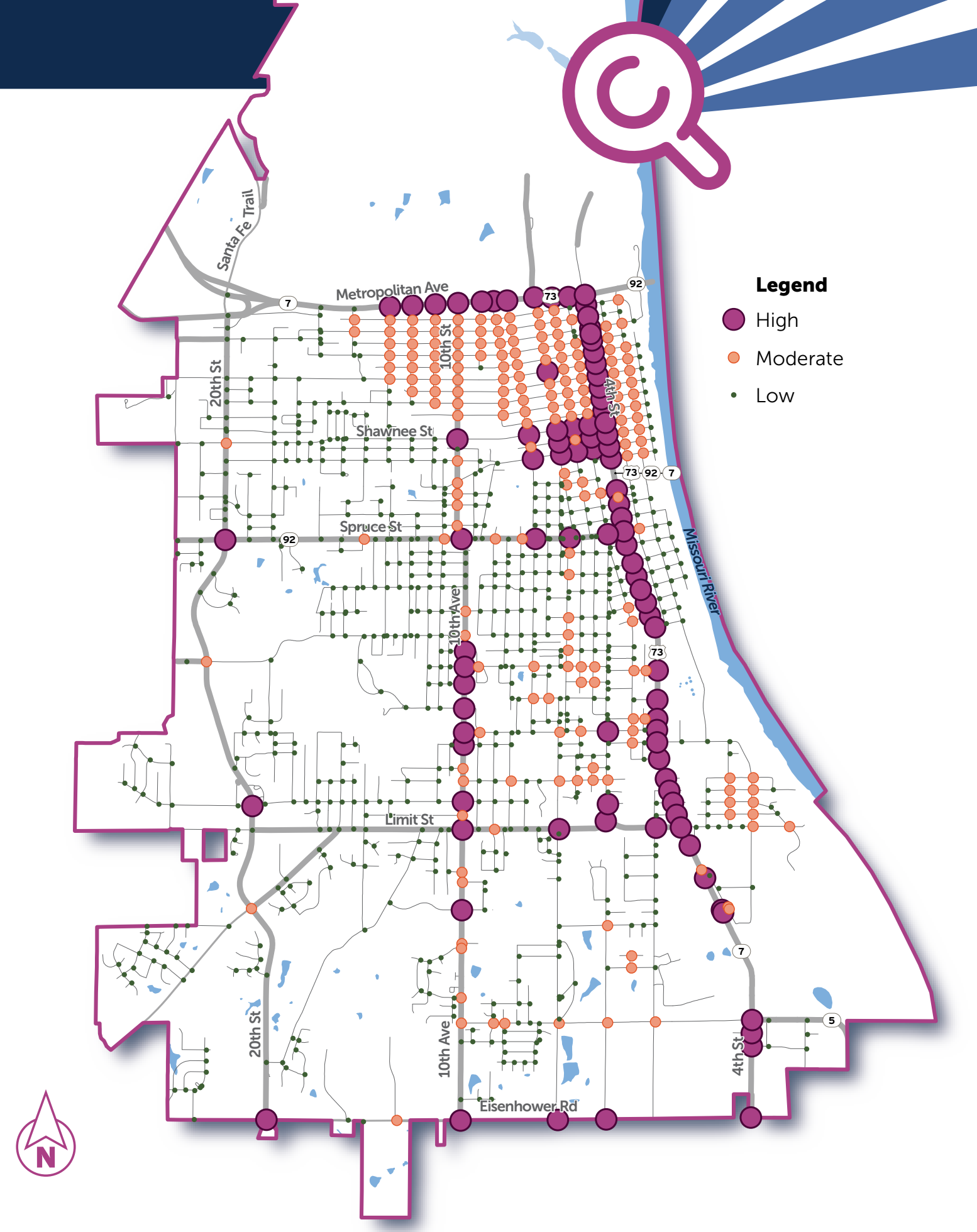
HIGH RISK NETWORK

Both the HIN and HII are based on historical crash data, which is very useful in addressing existing problems where we have data. Since we know that killed and seriously injured (KSI) crashes are a small share of total vehicle interactions and near misses never get reported, some of the most dangerous roadways may not be represented in the HIN and HII data. Therefore, the High Risk Network (HRN) can be used to identify streets where KSI crashes are likely to occur based on existing attributes, such as number of lanes, traffic volumes, truck route designation, and location within disadvantaged communities.



HIGH RISK INTERSECTIONS

Similar to the High Risk Network, existing intersection characteristics can be used to identify intersections where KSI crashes are most likely to occur, based on attributes such as traffic volume, traffic control type (stop signs, yield signs, or traffic signals), intersection geometry, and location within disadvantaged communities. These High Risk Intersections (HRI) are most concentrated in the northeast part of Leavenworth and along major arterials including 4th St, Eisenhower Rd, 10th Ave, Limit St, and Spruce St.



- Legend**
- High
 - Moderate
 - Low

FOCUS AREAS

The Vision Zero Technical Advisory Committee (TAC) determined five focus areas based on the findings of the data analysis. Focus areas provide specific issues for the action plan to address. These include:



◆ **Vulnerable Road Users**

◆ **Impaired and Distracted Driving**

◆ **Speed**

◆ **Young Drivers**

◆ **Arterial Streets & Signalized Intersections**



The following sections highlight the relationship between each focus area, KSI crashes, and their respective over- or under-representation in the data.

Crashes by Focus Areas in Leavenworth*

Focus Area	KSI Crashes	All Crashes
Vulnerable Road Users	22%	2%
Impaired/Distracted Driving	27%	26%
Speed	16%	6%
Young Drivers	34%	40%
Arterial Streets & Signalized Intersections	60%	64%

*Percentages do not total 100% because crashes can be associated with several contributing factors



VULNERABLE ROAD USERS

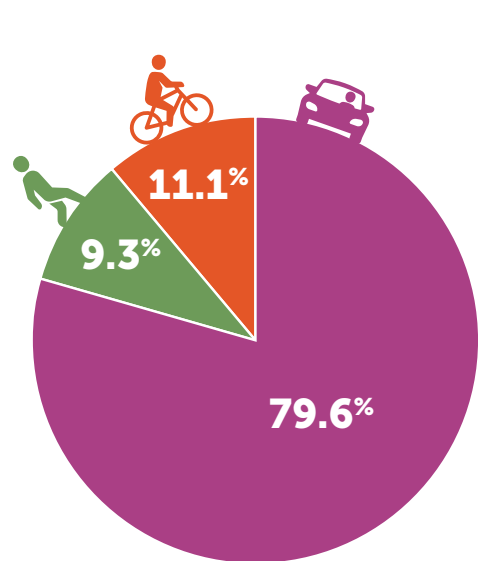
Vulnerable road users, made up of pedestrians, bicyclists, and other non-motorized vehicles, account for over 22% of all KSI crashes. Most vulnerable road users KSI crashes occur in Downtown. When we examine transportation mode share in Leavenworth, vehicle traffic makes up 88.3% of commute trips but less than 79.6% of KSI crashes. This means that the other modes of travel in Leavenworth are far over-represented:

Pedestrians are **x4 more likely** to be KSI crashes based on modeshare

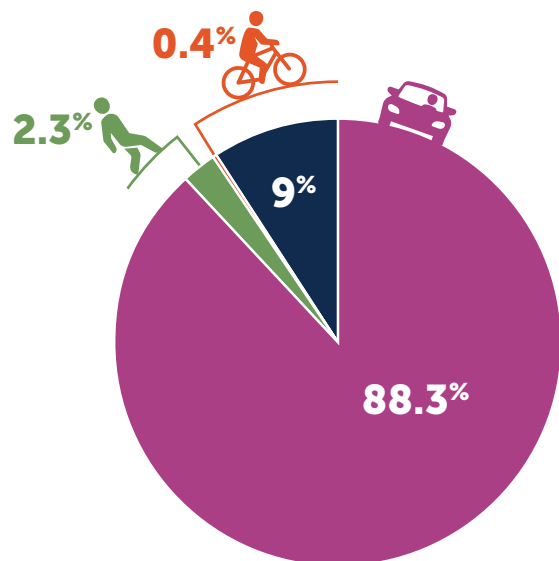
Bicyclists are **x27 more likely** to be KSI crashes based on modeshare



Crashes resulting in injury or death of people walking or bicycling are concentrated primarily in and around the downtown and neighborhoods in northeast Leavenworth. There are also concentrations of these vulnerable road user crashes along arterials and major intersections, most notably along 10th Avenue near Leavenworth Senior High School.



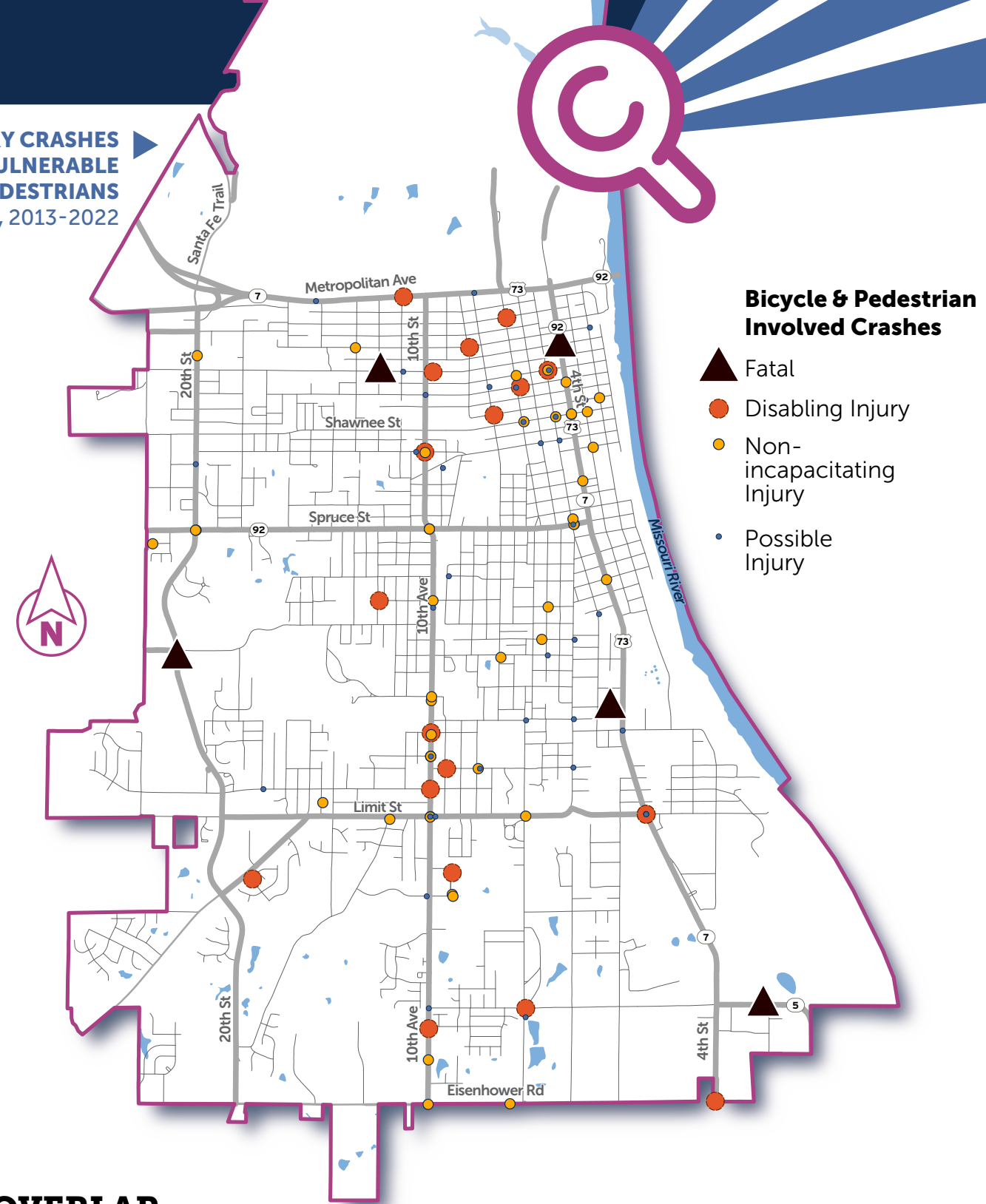
All Leavenworth KSI Crashes by Mode



Leavenworth Commute Mode Share

Vehicle Pedestrian Bicyclist Other

FATAL AND INJURY CRASHES INVOLVING VULNERABLE ROAD USERS (PEDESTRIANS & BICYCLISTS), 2013-2022



OVERLAP WITH OTHER FOCUS AREAS

Of the 37 KSI crashes involving vulnerable road users:

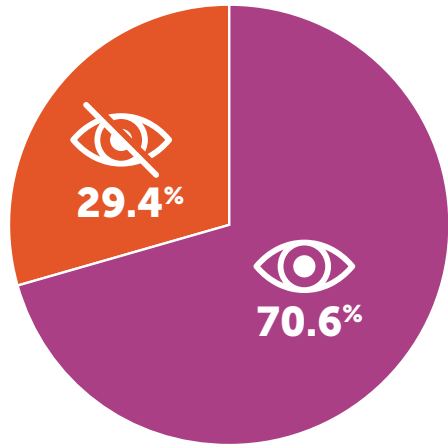
22.7% involved young drivers

36.4% occurred at signalized intersections or along arterials



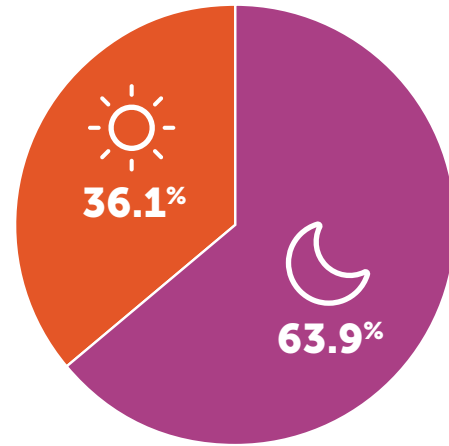
IMPAIRED & DISTRACTED DRIVING

People aren't perfect. Sometimes, they make mistakes and poor decisions—however, they should not have to pay with their lives or live their lives permanently altered because of a single moment or choice. Some behaviors may be considered reckless, or even negligent, and have an outsized impact on KSI crashes. Impairment, the use of alcohol or drugs while traveling, is one of those.



Nearly 30% of All Fatal Crashes Involved Impaired Driving

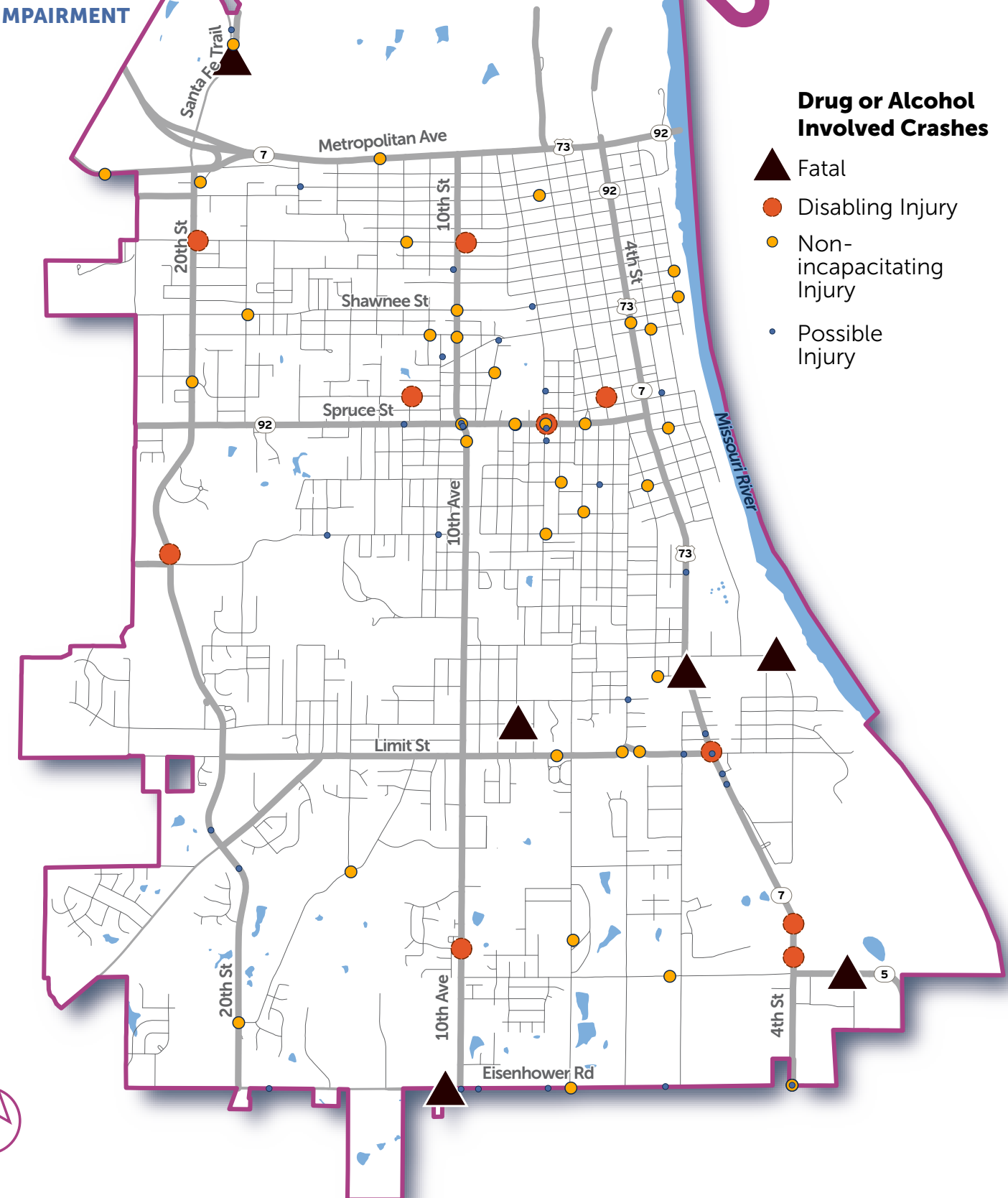
- Non-Impaired Driving
- Impaired Driving



63.9% of Impairment-Related KSI Crashes Occur Between 7PM-3AM

- 19:00 - 03:00
- 03:00 - 19:00

FATAL AND INJURY CRASHES INVOLVING ALCOHOL OR DRUG IMPAIRMENT



Drug or Alcohol Involved Crashes

- Fatal
- Disabling Injury
- Non-incapacitating Injury
- Possible Injury



The highest concentration of impaired-related crashes in Leavenworth occur on Spruce Street between 5th Avenue and Newman Street.

The map shows the location of crashes* involving alcohol or drug impairment.

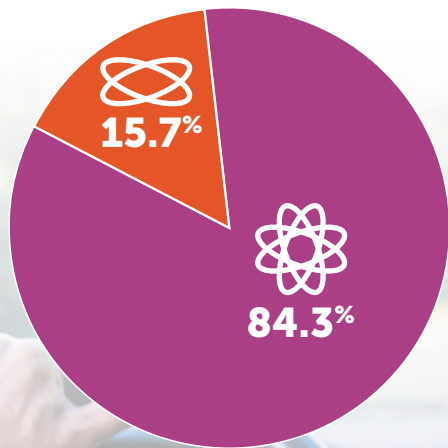
*Excluding Property Damage Only crashes





IMPAIRED & DISTRACTED DRIVING

Distracted driving is another behavior that may be considered reckless or negligent, as drivers keep their attention away from their environment and other road users. Distracted driving was reported as a factor in over 15% of KSI crashes.

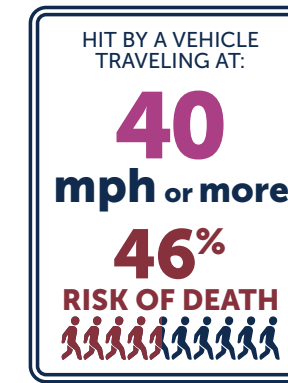
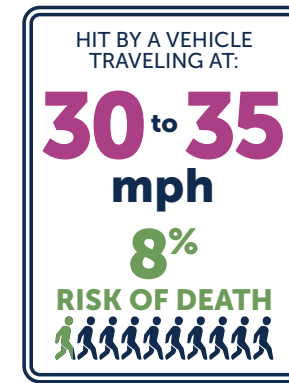


All Leavenworth KSI Crashes by Distraction

- Distracted Driving
- Other Contributing Factors

SPEED

Speed is one of, if not the most, important factor that dictates if a crash results in a serious injury or fatality rather than a minor injury or merely property damage. 65% of KSI crashes happened where the posted speed limits were 35 mph or higher.



Source: Tefft, B.C. (2011). *Impact Speed and a Pedestrian's Risk of Severe Injury or Death*. AAA Foundation for Traffic Safety

Streets with the highest speed limits (40mph or more) have a 5x higher representation of KSI crashes for all modes, when compared to all Leavenworth streets. Streets with speed limits of 30mph or 35mph have the lowest representation of KSI crashes, while lower speed streets (with speed limits of 25mph or less) have a 2x higher representation of KSI crashes compared to all Leavenworth streets.

This over-representation of lower speed streets may seem counter-intuitive. However, these crashes are mostly concentrated in and around the downtown area, such as along 4th Street, Shawnee Street, and Broadway Street, where the posted speed is 20 mph or 25 mph, but the physical design characteristics of the streets are similar to higher speed roadways. The higher representation of KSI crashes in this area is also influenced by the higher traffic volumes and greater numbers of pedestrians and bicyclists, who are more vulnerable to being killed or seriously injured in a crash.

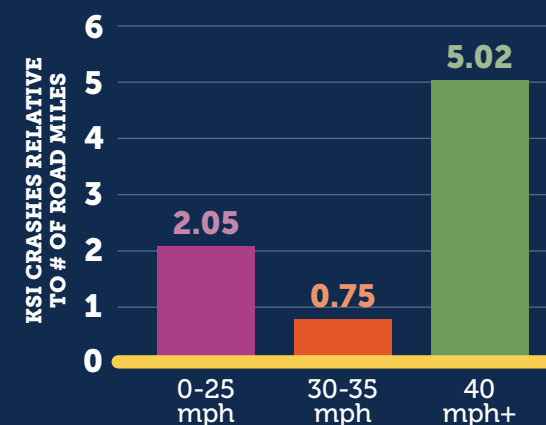
OVERLAP WITH OTHER FOCUS AREAS

Of the 29 KSI crashes where impaired or distracted driving were noted as a contributing factor:

27.6%
involved young drivers

62.1%
occurred at traffic signals or along arterials

KSI CRASHES BY POSTED SPEED LIMIT



OVERLAP WITH OTHER FOCUS AREAS

Of the 17 KSI crashes where speeding was noted as a contributing factor:

47.1%
involved young drivers

52.9%
occurred at traffic signals or along arterials



YOUNG DRIVERS

Based on the age analysis of the road users involved in crashes, young drivers—drivers aged 25 and under—are involved in one-third of all KSI crashes. When normalizing these KSI crashes to the population of Leavenworth, users aged 15-19 are 2.5 more likely to be involved in a KSI crash than the average.

KSI CRASHES BY AGE



OVERLAP WITH OTHER FOCUS AREAS

Of the 37 KSI crashes involving young drivers:

13.5%
involved vulnerable road users

21.6%
involved impairment or distraction

21.6%
involved speeding

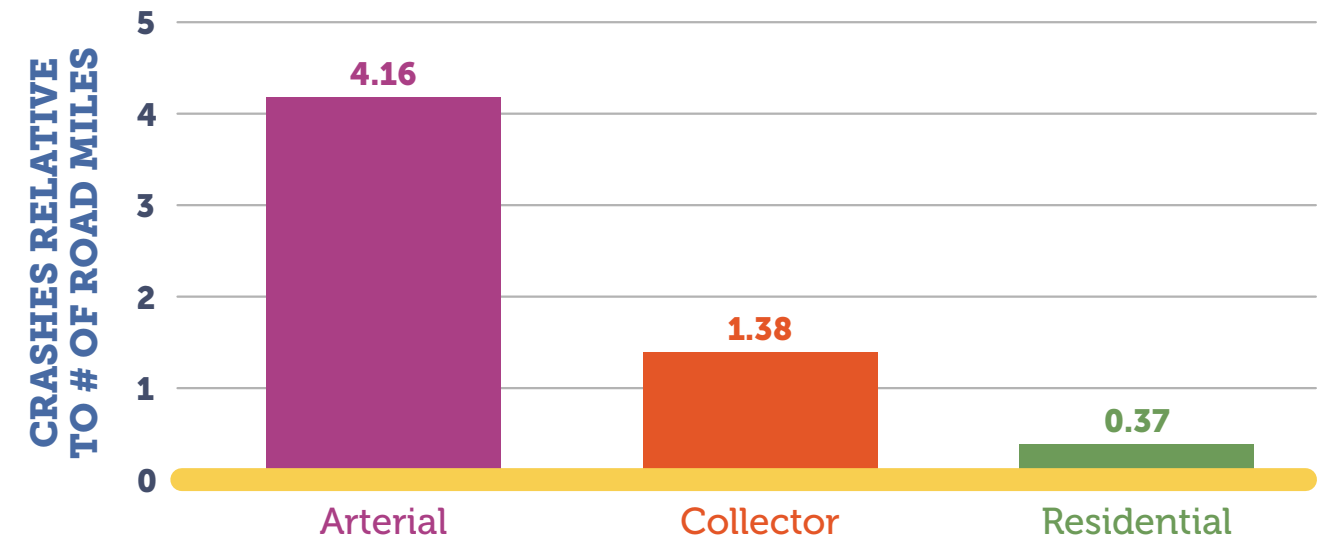
62.2%
were on arterial streets



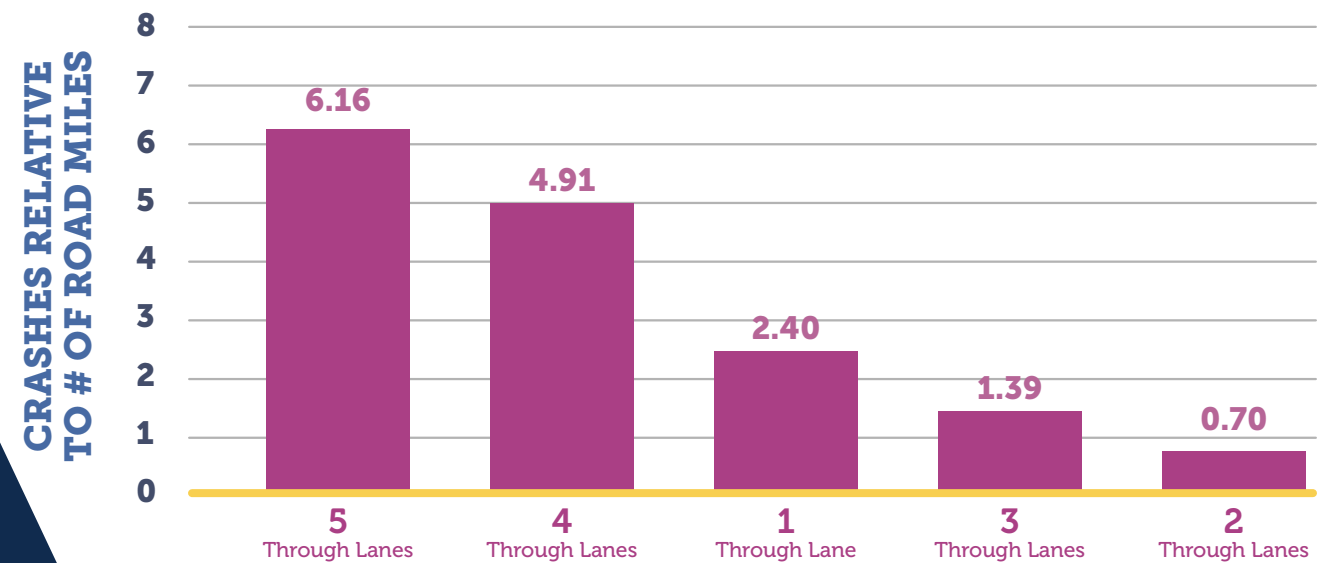
ARTERIAL STREETS & SIGNALIZED INTERSECTIONS

The majority of KSI crashes occur on a minority of streets in Leavenworth. Arterial roadways are over-represented in the data by a factor of 4x. Additionally, more lanes of travel translates to a higher risk in KSI crashes.

KSI CRASHES BY ROAD CLASSIFICATION



KSI CRASHES BY NUMBER OF THROUGH LANES

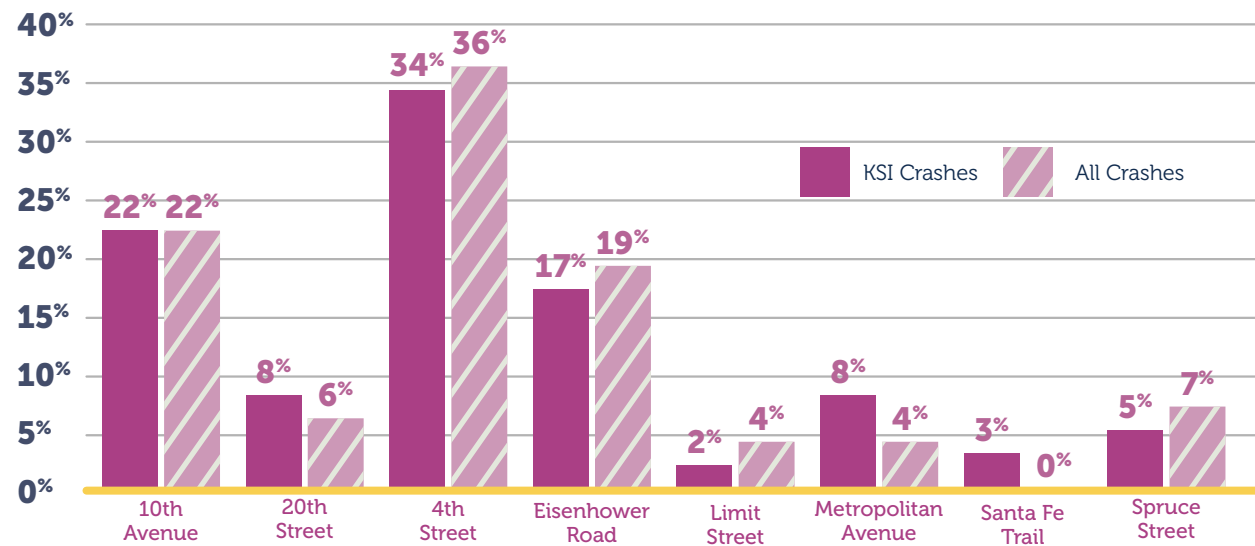


Approximately half of KSI crashes in Leavenworth occur at intersections, compared to mid-block segments.

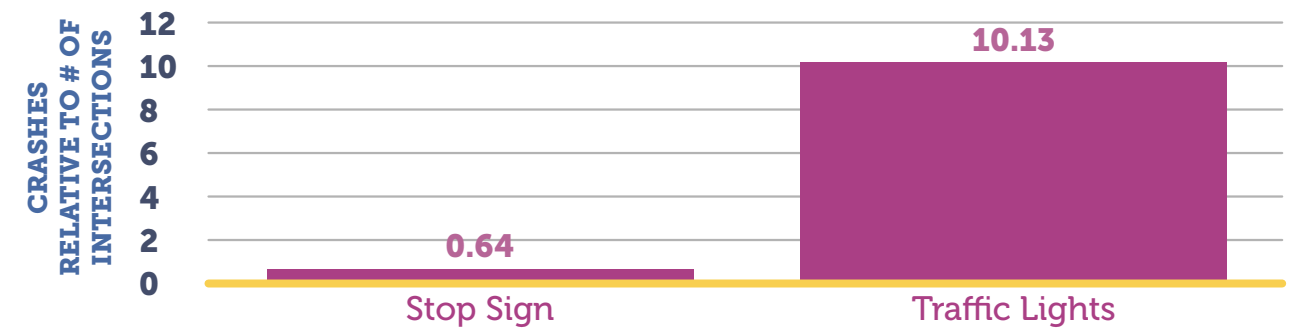
Intersections account for a higher share of KSI crashes (38%) than overall crashes (30%). Comparing signalized intersections to stop-controlled (all-way and two-way stop signs) intersections, signalized intersections are over 10x more likely to have a KSI crash occur. Stop controlled intersections are safest when used in low to moderate traffic volume situations, as shown in the data.



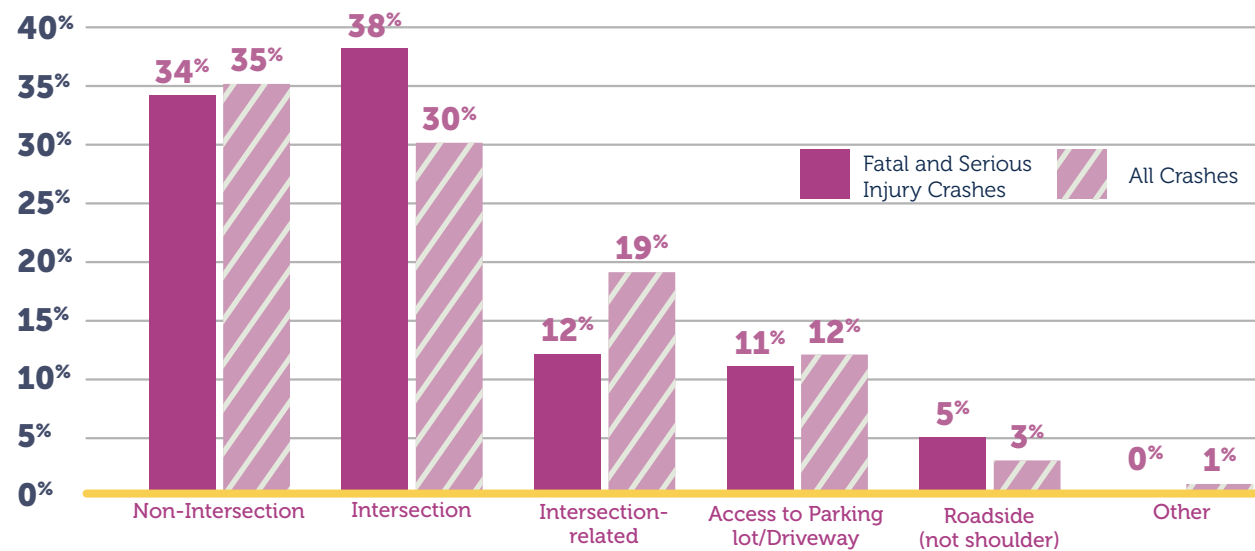
CRASHES BY ARTERIAL ROADWAY



KSI CRASHES BY INTERSECTION CONTROL



CRASH LOCATIONS - BASED ON CRASH REPORTS



OVERLAP WITH OTHER FOCUS AREAS

Of the 65 KSI crashes along arterials or at signalized intersections:

12.3%
involved vulnerable road users

13.8%
involved speeding

27.7%
involved impairment or distraction

35.4%
involved young drivers

3 TOOLBOX OF SAFETY COUNTER MEASURES




The First City has created a toolbox of infrastructure countermeasures, from engineering and design solutions like signage or traffic signal improvements to education campaigns that raise awareness about safe road behaviors.

With this toolbox, the City of Leavenworth can tailor its approach to specific road user groups, locations, and conditions, ensuring a holistic and effective strategy towards Vision Zero.



ROADWAY COUNTERMEASURES

COUNTERMEASURE	DESCRIPTION	COST	POTENTIAL CRASH REDUCTION
Pavement Reallocation 	Pavement reallocation (also known as a road diet) is a context-sensitive strategy that reduces the number of lanes or the width of lanes, resulting in several safety benefits. The freed-up space can be repurposed for safety infrastructure, such as facilities for pedestrians or cyclists. Additionally, this has the potential to reduce the number of potential conflict points, contribute to slower and safer operating speeds for motor vehicles, and even decrease crossing distances by either eliminating a lane or introducing pedestrian median islands.	\$\$	40%
Lane Narrowing	Lane narrowing reduces lane width, typically by two or more feet, while maintaining the existing number of lanes. By reducing the lane width, motorists are encouraged to drive slower, and pedestrians have a shorter distance to cross. The reclaimed space can be used for pedestrian and bicyclist-friendly spaces, such as a wider sidewalk, establish a shared-use path, or create a protected/ dedicated bicycle lane. In downtown or other locations with on-street parking, on-street parking can be striped out to visually narrow travel lanes.	\$\$	15%
Roadway Lighting	Street lighting enhances safety and accessibility by illuminating key areas and improving visibility. Improved visibility decreases crash risk. This tool is particularly effective at controlled and uncontrolled intersections, at midblock crossings, along sidewalks, and in areas with high pedestrian volumes like transit stops, commercial zones, schools, and parks.	\$\$	10%
Traffic Calming	Traffic Calming is a deliberate set of design strategies and measures implemented on roadways to improve the safety of all users by slowing down vehicle speeds. Introducing physical changes to the road (such as speed humps, chicanes, raised crosswalks, and narrowed travel lanes) is a proven strategy to reduce speeds and enhance roadway safety between different users.	\$\$	30%
Raised Medians and Access Management	Medians separate opposing streams of traffic, reducing the number of head-on, cross-median crashes that can be especially dangerous. Raised medians, medians built higher than the road level, offer VRU refuges mid-crossing, limit motor vehicle turns, and mitigate head-on collisions. These types of medians are applicable at intersections, along blocks, and midblock crossings for VRUs, particularly beneficial at intersections where left turns need restriction due to safety concerns like inadequate yielding or high speeds.	\$\$\$	45%
Curve Delineation Improvements	Installation of retroflective chevron signs and advance curve warning sign is shown to significantly reduce crashes along curves, especially nighttime crashes and in rural areas.	\$	15%



SUCCESS STORY

COLUMBIA, MO Neighborhood Traffic Management Program

Columbia's Neighborhood Traffic Management Program focuses on increasing safety, reducing speed, and reducing volumes. The program categorizes traffic calming devices based on their desired effect.

Columbia prioritizes requests with a ranking system based on traffic volume, speed (highest weighted), proximity to schools, proximity to pedestrian generators, collisions, and locations along bicycle routes. This traffic calming program is focused on local/neighborhood facilities.



Traffic Calming



Curve Delineation Improvements

INTERSECTIONS

GEOMETRIC DESIGN COUNTERMEASURES



SUCCESS STORY

FLINT HILLS METROPOLITAN PLANNING ORGANIZATION

Quick-Build Safety Improvements

The Flint Hills MPO has been implementing low-cost, quick-build safety improvement projects for several years. The MPO has also developed helpful guides, templates, and tutorial videos intended to serve as resources for communities in the Flint Hills region and beyond looking to implement their own quick-build projects.

COUNTERMEASURE	DESCRIPTION	COST	POTENTIAL CRASH REDUCTION
Roundabouts 	Roundabouts are the safest intersection control type known and are much safer than signalized intersections. This versatile tool reduces the number of and the severity of crashes due to speed reduction, elimination of angle collisions, and reduced crossing distances for vulnerable road users (VRUs). Roundabouts can be customized by shape, size, and design to fit a variety of traffic conditions, creating a safer intersection among all modes of transportation.	\$\$\$	80%
Curb Radius Reduction 	A Curb Radius Reduction reduces turning speeds, shortens crossing distance, and improves sight distance by sharpening the corner through temporary materials or by permanently changing the curb line, which increases yielding to pedestrians in the crosswalk and other roadway compliance that can reduce the number and severity of crashes.	\$\$	30%
Intersection Daylighting 	Intersection daylighting improves the sight-distance for road users as they enter and navigate an intersection by restricting curb parking spaces leading up to an intersection. Restrictions can be accomplished through the use of pavement markings and flexible guideposts.	\$	30%
Curb Extensions/ Bulb Outs 	Curb Extension and Bulb-Outs extend sections of sidewalks into the roadway, primarily at intersections and crossings, to decrease VRU crossing distances and enhance visibility and comfort. Curb extensions prove to be effective across various locations, ranging from mid-block crosswalks to signalized intersections. They can be implemented within all-day parking lanes or spacious shoulders, particularly suited for transitioning into lower-speed zones.	\$\$	30%



INTERSECTIONS

SIGNAL & SIGNAGE COUNTERMEASURES



COUNTERMEASURE	DESCRIPTION	COST	POTENTIAL CRASH REDUCTION
Systemic Traffic Signal Improvements	Systemic traffic signal improvements achieve a balance between safety and efficiency by adjusting motorist behaviors through smaller scale tools. These improvements include adjustments to signal timings (especially yellow and all-red timings to reduce red-light running), protected left-turn phasing, installation of flashing yellow arrows, adding retroreflective or light-up LED backplates to signal heads, and implementing Leading Pedestrian Intervals (LPIs). In particular, LPIs increase pedestrian visibility and reinforce pedestrian right-of-way to improve yielding behavior by motorists. To improve visibility and reduce red-light running at signals in the downtown area, all of the road-side pedestal-mounted traffic signals should be converted to overhead mast-arm signals.	\$\$	40%
Right-Turn-on-Red (RTOR) Restrictions	Right-Turn-on-Red (RTOR) Restrictions prevent motorists from turning right at a red light for select periods or entirely. RTOR creates potential risks for pedestrians, as some motorists prioritize their movement over pedestrians (e.g., pulling into the crosswalk, focused on approaching traffic that they don't look for approaching pedestrians, etc.), especially at intersections with wide turning radii. Restricting RTOR improves safety for pedestrians by eliminating potential conflict with right-turning motorists. RTOR restrictions pair well with curb radius reduction and Leading Pedestrian Intervals. RTOR Restrictions are especially beneficial for locations with higher pedestrian crossing activity, such as in downtown or near schools.	\$	15%
All-way Stop Control Conversion (from 2-way)	All-way Stop Control Conversion is the conversion of an unwarranted signalized intersection or a two-way stop-controlled intersection to be stop-controlled on all approaches. All-way stops, as compared to two-way stops, reduces the need for drivers to wait for a safe gap in traffic to go and are more predictable. This countermeasure can serve as a temporary solution for other, more expensive traffic control solutions, such as roundabouts.	\$	60%
Systemic Intersection Signage & Markings Improvements	Signage and marking improvements at stop-controlled and signalized intersections can mitigate location-specific safety issues. These improvements include dashed pavement marking extensions through intersections, improving visibility of stop signs (doubling-up signs on both sides of the intersection and adding retroreflective red strips to the signposts), improving visibility of painted stop bars, and installing signage such as "stop ahead," "cross traffic does not stop," or "signal ahead" signage.	\$	10%





PEDESTRIAN COUNTERMEASURES

COUNTERMEASURE	DESCRIPTION	COST	POTENTIAL PEDESTRIAN CRASH REDUCTION
Pedestrian Traffic Control Devices	Rectangular Rapid-Flashing Beacons (RRFB) and Pedestrian Hybrid Beacons (PHB) or High intensity Activated crossWALK (HAWK Signals) use flashing lights to improve vehicle stopping and yielding behavior to crossing pedestrians at unsignalized locations. Beacon activation occurs only when pedestrians are present. RRFBs, which use a bright, rapid-pulsing flash rate, are most effective at multi-lane crossings with speed limits less than 40 mph; roadways with speeds higher than this are better suited for PHBs, which use flashing and solid-colored lights.	\$\$	55%
High Quality Pedestrian Crossings	This roadway feature prioritizes the safety, accessibility, and convenience of pedestrians of all ages and abilities by providing pedestrians with a secure and easily recognizable path to cross busy streets. These crossings often include clearly marked crosswalks, pedestrian-activated signals or buttons, ample lighting, refuge islands, and well-defined signage. By enhancing visibility and ensuring dedicated time for pedestrians to cross, high-quality pedestrian crossings contribute to reducing the risk of dangerous conflicts with vehicles that could result in a serious or fatal crash.	\$	60%
Sidewalks	Utilizing sidewalks and paved shoulders as safety measures serves to enhance pedestrian and cyclist safety by providing designated spaces for their movement, separate from vehicular traffic. Integrating ADA-compliant features guarantees equitable access and promotes inclusivity, fostering a safer and more accommodating environment for all community members. Existing sidewalks can be improved in conjunction with road diets.	\$\$	65%
Midblock Crossing	Midblock Crossings designate a space via a marked crosswalk for pedestrians to cross between major intersections, increasing connectivity within the existing transportation network. Through this designated space, other road users are warned of possible crossings and are better prepared to stop, decreasing the number of potential conflicts. Midblock crossings pair well with additional tools, such as curb extensions/bulb-outs, raised crossings, RRFBs, and PHBs, to reduce crossing distance and improve yielding/stopping behavior.	\$\$	15%
Off-Street Trails	Off-street trails contribute to enhanced safety and accessibility for active transportation and recreation by offering designated paths outside the curb and away from potential conflict with vehicles. These trails are designed to cater to the needs of both bicyclists and pedestrians. These shared-use paths can accommodate two-way traffic and are often situated along railway or utility corridors, as well as public land areas.	\$\$\$	65%
Raised Crossings	Raised Crossings are flush with the sidewalk, encouraging motorists to yield to pedestrians in the crosswalk and reinforcing slower speeds. Accessibility of the crossing is improved with raised crosswalks, as it allows pedestrians to cross at the same height as the sidewalk. Raised crosswalks can be implemented at mid-block locations or at intersections in the form of a raised intersection.	\$\$	45%
Street Trees and Landscaped Buffers	Street trees and providing wider landscaped buffers between sidewalks and the roadway can significantly improve the pedestrian experience on urban streets. Mature tree canopy can visually narrow the roadway and potentially provide a traffic calming effect.	\$\$	NA



SUCCESS STORY

LENEXA, KS & CHARLOTTESVILLE, VA

Sidewalk Inventory & Improvements

Lenexa, KS, recently completed a sidewalk inventory, updated their standards for sidewalks, and began a phased improvement project as part of their Complete Streets program.

Charlottesville, VA, uses a public bike/ped advocate group to filter and prioritize projects (due to lack of City staff availability) that are requested by citizens. Charlottesville recently completed a sidewalk prioritization effort, staff noted considerations around the following:

- ◆ **Inventory:** this is the most resource intensive step. Once the inventory is created, it is recommended to continually update the GIS layer as projects impact sidewalk conditions and new facilities are built to keep the dataset up to date.
- ◆ **Prioritization:** Charlottesville has different prioritization frameworks for new facilities versus improvements to existing facilities. For new facilities, gaps in the network are scored based on element such as proximity to transit, schools, parks, roadway speed, etc. There is also a qualitative exercise that is necessary to evaluate project readiness, political feasibility, and constructability. For existing facilities, prioritization is primarily a GIS-based effort using condition, estimated pedestrian activity, ADA compliance, etc.



Raised Midblock Crossing



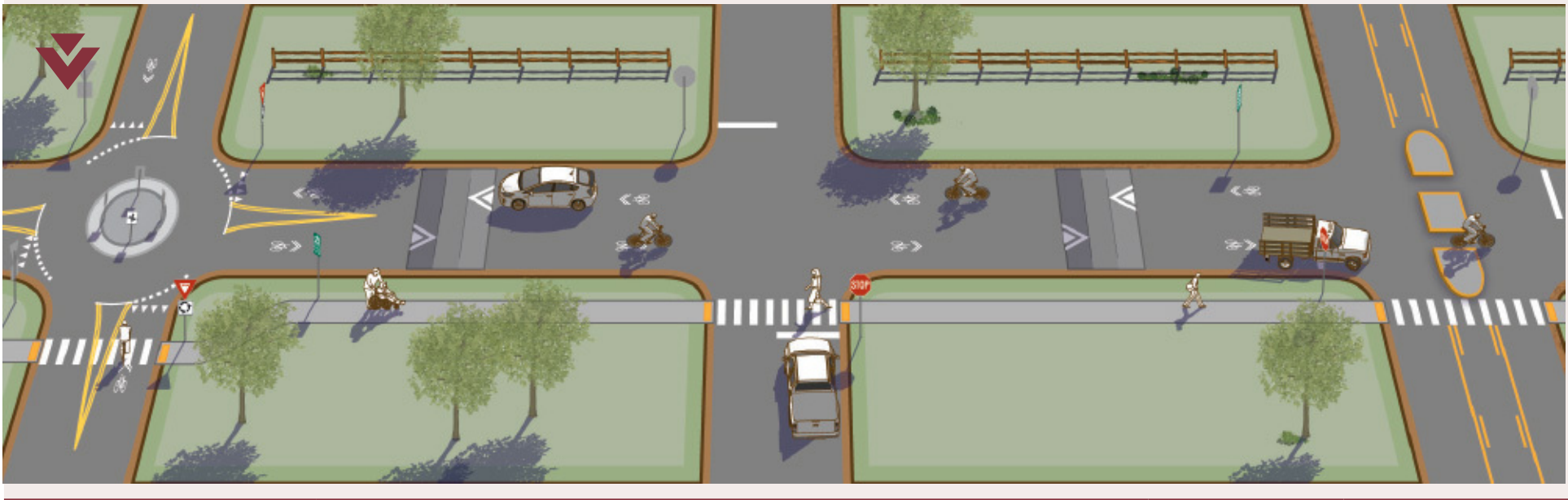
BIKE COUNTERMEASURES



COUNTERMEASURE	DESCRIPTION	COST	POTENTIAL BICYCLE CRASH REDUCTION
Bicycle Lanes	Bicycle lanes are dedicated facilities on or along roadways that make bicycling safer and more comfortable; they can mitigate or prevent interactions, conflicts, and crashes between bicyclists and motor vehicles. Bicycle lanes can be established through paint striping or separation by vertical elements like posts, curbs, or vegetation.	\$\$	60%
Protected Bicycle Lanes / Cycle Tracks	Protected bicycle lanes are integral to Vision Zero implementation as they establish physically separated spaces for pedal cyclists, substantially reducing cyclist-vehicle collisions. With a physical barrier, these lanes enhance safety by preventing risky interactions, thus curbing severe injuries and fatalities; the physical barrier also improves perceived safety, which may encourage more users to bike as a form of transportation.	\$\$\$	70%
Bicycle Boulevards	Bicycle boulevards (also called "neighborhood greenways") are streets with low motorized traffic volumes and speeds, designed to offer priority for bicyclists operating within a roadway shared with motor vehicle traffic. Bicycle Boulevards use signs, pavement markings, and speed and volume management measures to create safe, convenient bicycle crossings of busy arterial streets.	\$	60%



Protected Bicycle Lane



Example of potential Bicycle Boulevard treatments
Source: Small Town & Rural Design Guide





BEHAVIORAL COUNTERMEASURES



COUNTERMEASURE	DESCRIPTION	COST	POTENTIAL CRASH REDUCTION
High Visibility Enforcement	High Visibility Enforcement (HVE) is a universal traffic safety approach designed to create deterrence and change unlawful traffic behaviors. HVE combines highly visible and proactive law enforcement targeting a specific traffic safety issue. Law enforcement efforts are combined with visibility elements and a publicity strategy to educate the public and promote voluntary compliance with the law.	\$\$	NA
Roadway Feedback Signs	Speed Feedback Signs, posted alongside the Posted Speed Limit, register and display approaching drivers' speeds as they approach the sign to make them aware of their current speed. If the driver's speed is above the posted speed limit, the displayed speed numbers will flash. Speed Feedback Signs can be temporarily or permanently installed. Previous studies have shown these to be highly effective at reducing speeds.	\$	5%
Safe Routes to School	Safe Routes to School promotes children to take active modes of transportation to school and educates them on how to walk and bike safely; Safe Routes to Schools also facilitates the planning, development, and implementation of projects that supports healthy, active, and safe walking and biking habits. Some example projects include: assemblies, poster contests, pedestrian safety walks, bike lessons and safety training (BLAST), bicycle rodeos, bicycle gardens, bicycle buses/trains, and relevant quick-build projects.	\$\$	30%
Speed Limit Reduction	Speed Limit Reductions are the systematic reduction of speed limits based on context, activity level, and conflict density, which reduces the number of and severity of crashes. Greater reductions in crash frequency and severity is possible when pairing this countermeasure with other traffic calming or speed management countermeasures.	\$	25%
Slow Zones	Slow Zones are areas that designate lower speeds than other areas nearby to create safe spaces for vulnerable populations (e.g., children, seniors, pedestrians, and bicyclists) that frequent them, such as parks, school zones, work zones, senior areas, neighborhoods, and downtowns. These areas typically are signed for 15 or 20 miles per hour.	\$	30%



4 IMPLEMENTATION PLAN



The First City Vision Zero Action Plan is an ambitious, data-driven, and comprehensive roadmap toward safer streets and the ultimate elimination of traffic related fatalities and severe injuries.

In the final section of this transformative document, we adjust our focus from understanding the challenges and setting the stage for change, to setting out tangible Action Steps, Priority Corridors & Intersections, and Performance Measures that will guide us toward the realization of our Vision Zero goals.

As we turn the pages of this final chapter, let us keep in mind that our efforts here extend beyond policies, strategies, and projects. They reach into the lives of every resident, every family, and every person who travels the streets of Leavenworth. The journey ahead will demand collaboration, persistence, and a shared belief in the attainability of our Vision Zero goals.

ACTION STEPS

The following action step recommendations are based on discussions with the First City Vision Zero Technical Advisory Committee and Focus Area Working Groups, as well as review of the City's current policies, programs, and processes related to transportation safety.

Additional information and context around many of these recommendations is provided in Appendix C, along with a summary of federal funding opportunities that could be leveraged to support implementation of the recommended policies, programs, and projects in this chapter.

This set of targeted action steps spans three crucial categories based on the Safe Systems Approach:

- ◆ Safe Speeds will explore measures to curtail excessive speeds, a key contributor to the severity of traffic collisions.
- ◆ Safe Users will tackle education and awareness, fostering a culture of shared responsibility among all road participants.
- ◆ Safe Streets will underscore the need for well-designed infrastructure that accommodates diverse modes of travel.

Each action step is accompanied by a suggested lead implementation department or agency, as well as a recommendation on the timeline to begin implementing the action step.

CONTEXT-SENSITIVE SPEED LIMITS

Reducing and enforcing speed limits increases reaction time and reduces the severity of crashes, thus reducing fatalities and serious injuries. The City should implement updated federal guidelines emphasizing land-use context for setting speed limits. For the City of Leavenworth, this means speed limits can be modified to better fit land-use context or other factors such as pedestrian and bicyclist activity, crash history, intersection and driveway spacing, roadway geometry, and traffic volumes. The Manual on Uniform Traffic Control Devices (MUTCD) specifically calls out the use of traffic calming, geometric design, and increased enforcement in tandem with reduced speed limits.

 **START YEAR**
Year 1

 **RESPONSIBLE PARTY**
Public Works

TRAFFIC & SPEED STUDY PROGRAM

The City should increase its capacity through internal hiring or on-call consultation to conduct traffic studies and respond to citizen complaints about speeding. This could free up the time and resources the Leavenworth Police Department currently spends providing these services.

 **START YEAR**
Year 2

 **RESPONSIBLE PARTY**
Public Works

DYNAMIC SPEED DISPLAY / FEEDBACK SIGNS

Speed feedback signs dynamically show the driver's speed alongside the posted speed limits and have been shown to slow overall speeds where deployed; they also can educate drivers on the importance of safe speeds. The City should deploy speed feedback signs (temporary/mobile or permanent) in locations determined through a data-driven process, targeting locations with high rates of speed-related crashes, a high rate of prevailing speeds, a high number of pedestrian and bicycle users, and based on public input.

 **START YEAR**
Year 2

 **RESPONSIBLE PARTY**
Public Works

TRAFFIC CALMING PROGRAM

Traffic Calming refers to physical improvements—such as speed humps, lane narrowing, medians, or mini-roundabouts—whose design is to reduce motor vehicle speeds or volumes and improve safety for motorists, pedestrians, and cyclists. The City of Leavenworth should institute a formal traffic calming program. Peer communities' traffic calming programs typically document and outline the traffic calming process functions. Traffic calming initiatives can be spurred by public requests or identified by city personnel, which are then prioritized based on pre-established criteria. A traffic calming program identifies tiers of improvements, outlines eligibility requirements for the different tiers of projects, involves a public input phase (depending on the tier of the project), deploys the project, and monitors its effectiveness.

 **START YEAR**
Year 3

 **RESPONSIBLE PARTY**
Public Works



SAFE USERS

SAFE PROGRAM IN SCHOOLS

From the SAFE webpage: "SAFE (Seatbelts Are for Everyone) is a free, student-led program for high school students focusing on peer-to-peer promotion of traffic safety. Through education, rewards, and enforcement, SAFE highlights the importance of wearing a seatbelt, driving alert, and following traffic laws with the goal of decreasing the number of teen injuries and deaths from vehicle crashes."

Over half of Kansas Counties have schools with SAFE programs, including all counties bordering Leavenworth County. There are not currently any schools that participate in the SAFE program in the City of Leavenworth or Leavenworth County. The Leavenworth Unified School District should coordinate with the Kansas Traffic Safety Resource Office to bring the SAFE Program into its schools.

 **START YEAR**
Year 1

 **RESPONSIBLE PARTY**
Leavenworth Unified School District

GRADUATED DRIVER LICENSING AWARENESS

The Kansas Graduated Drivers License process allows teen drivers increased driving privileges with age and experience. The process eases teens into licensure so that they may build skills in an environment that minimizes factors shown to cause the greatest risk for new drivers. However, there is a need for increased education to increase awareness of the Graduated Drivers License process and to provide parents with the tools they need to monitor, coach, and support their new teen driver. Through a program similar to Missouri's "First Impact" program, trained law enforcement officers and facilitators could help to coach parents of teen drivers by presenting them with key facts and proven strategies to lower their teen's crash risk by utilizing the Kansas GDL law.

 **START YEAR**
Year 2

 **RESPONSIBLE PARTY**
Kansas Traffic Safety Resource Center

TARGETED ENFORCEMENT AND INTER-AGENCY COORDINATION

Enforcement is a critical component in limiting unsafe roadway behaviors such as speeding, distracted driving, impaired driving, red light running, and more. Increased police visibility and enforcement are effective in limiting dangerous driving behaviors.

Conversations with the Leavenworth Police Department (LPD) noted that the biggest challenge currently is having a visible presence, given staffing limitations. With the addition of new members of the traffic division team, additional resources may be available. Discussions with LPD suggested the following actions:

- ◆ Coordinate with the County Sheriff and Kansas Highway Patrol to share resources and best practices for targeted enforcement techniques, such as saturation patrols or DUI checkpoints.
- ◆ Implement targeted enforcement campaigns focusing on impaired driving, red light running, and speeding.
- ◆ Pair enforcement campaigns with pro-enforcement, safety-focused media coverage.

 **START YEAR**
Year 1

 **RESPONSIBLE PARTY**
Police Dept

COMMUNICATIONS AND OUTREACH SUPPORTING ENFORCEMENT

To effectively promote traffic safety priorities and engage the public, communication campaigns should focus on curtailing speeding, red-light running, impaired driving, not wearing seatbelts, and distracted driving. These campaigns should emphasize the personal and human toll of these risky driving behaviors, employ persuasive marketing materials, and utilize carefully crafted messaging. The city should leverage outreach channels such as mailing lists, websites, public space signage, and coordinate with churches and schools (such as publishing safety campaign messaging in their newsletters) to ensure widespread dissemination of the messaging.

 **START YEAR**
Year 1

 **RESPONSIBLE PARTY**
Public Information Office



SAFE ROUTES TO SCHOOL PLAN

Safe Routes to School (SRTS) is a program that promotes walking and bicycling to school through technical assistance and through providing resources and project funding. SRTS includes both infrastructure and non-infrastructure countermeasures and programs. Eligible projects include trails/paths, ADA/sidewalk upgrades, streetscape improvements, educational initiatives, and more.

The City of Leavenworth should work with KDOT to develop an updated Safe Routes to School Plan. KDOT can do SRTS plans in-house. No agreements are required (just a memorandum of understanding). The City of Leavenworth is eligible, considering the age of its current SRTS plan.

 **START YEAR**
Year 1

 **RESPONSIBLE PARTY**
Public Works

QUICK-BUILD & DEMONSTRATION DEPLOYMENTS

The City should consider using low-cost, quick-build safety countermeasures. Quick-build projects are easily reversible and adjustable safety improvements that can be designed and installed in months or even weeks and are intended to be evaluated within the first 24 months of construction. These deployments typically utilize bollards, paint, parking stops, planters, and other widely-available, low-cost materials.

Examples of quick-build projects include intersection daylighting, paint-and-post curb extensions, mobility (bike) lanes, mini-roundabouts, and pavement reallocation projects.

 **START YEAR**
Year 2

 **RESPONSIBLE PARTY**
Public Works

INTERSECTION TRAFFIC CONTROL EVALUATION POLICY

All public and private street improvements shall evaluate warrants for existing or new traffic signals. Traffic volume warrants should be based on the 8-hour warrants in the MUTCD. If a traffic signal is warranted, the intersection should be evaluated for either a roundabout, all-way stop control, or other alternative intersection design (e.g. Reduced Left-Turn Conflict Intersection). Signalized intersections should be considered only if costs for other intersection control types exceed available funds or the cost exceeds the value of potential benefits.

 **START YEAR**
Year 1

 **RESPONSIBLE PARTY**
Public Works

UPDATE TRAFFIC SIGNAL TIMINGS & EQUIPMENT

The City should leverage its recently completed traffic signal equipment inventory and prioritize several key traffic signal timing and infrastructure improvements

- ◆ **Signal Timing Updates:** Implement Leading Pedestrian Intervals (LPIs) to give pedestrians a 3-7 second head start, making them more visible to turning vehicles. Use pedestrian recall to automatically call the pedestrian phase. Shorten cycle lengths to better accommodate foot traffic. Adjust yellow light timings and add all-red intervals to reduce red light running and reduce severe right-angle crashes.
- ◆ **Signal Equipment Updates:** Upgrade signal infrastructure with retroreflective backplates and pedestrian countdown timers. Add high-visibility crosswalk striping at signalized intersections. Improve coordination with advanced signal communications. Replace roadside pedestal-mounted signals, only if warranted based on the Intersection Traffic Control Evaluation Policy, with overhead mast arms for better visibility.

Prior to implementing any signal equipment updates, the intersection should be evaluated based on signal warrants (using 8-hr traffic volume warrants) and unwarranted signals should be evaluated for conversion to all-way stop signs.

 **START YEAR**
Year 2

 **RESPONSIBLE PARTY**
Public Works

ACCESS MANAGEMENT POLICY

Access Management is the proactive management of locations of driveways, side streets, and alleyway accesses along roadways. Good access management promotes safe and efficient use of the transportation network.

KDOT has statewide guidance; however, their policy only pertains to state highways and links. The City of Leavenworth should adopt an access management policy that focuses on city-owned facilities and provides guidance based on context and functional classification of the roadway, similar to other cities such as Overland Park, Kansas, and Lee’s Summit, Missouri. These guidelines should outline criteria on driveway throat length, access spacing, access density, access alignment, sight distance, turn lane requirements, median openings, and connection geometry.

 **START YEAR**
Year 2

 **RESPONSIBLE PARTY**
Public Works

SIDEWALK INVENTORY AND PRIORITIZATION

One key step to improving pedestrian safety—and increasing the utility of the transportation system for pedestrians—is to inventory and prioritize existing gaps in the sidewalk network and where the existing sidewalk network needs to be improved. The City completed a sidewalk conditions assessment in 2023. The City should leverage this data and develop a prioritization framework and implementation strategy for sidewalk improvements. The sidewalk inventory should be continuously updated as projects impact sidewalk conditions and new facilities are built. The prioritization framework should score network gaps based on proximity to schools and parks, roadway speed, project readiness, constructibility, etc. Prioritization for updating and improving existing facilities should be based on condition, estimated pedestrian activity, and ADA compliance.

 **START YEAR**
Year 2

 **RESPONSIBLE PARTY**
Public Works

BICYCLE AND PEDESTRIAN PLAN

The City should develop a Bicycle and Pedestrian Plan that identifies corridors/paths/connections for the future and evaluates funding opportunities (federal grants, MARC grants, or resurfacing budget) to incrementally move toward the network vision.

The plan should be developed with community outreach, with the goal of getting input from the full spectrum of users (e.g., every experience level of bicyclist, as well as other non-auto uses such as motorized wheelchair or scooter users). The planning effort should identify what type of bicycle facilities the community desires and what works with the existing infrastructure in Leavenworth.

 **START YEAR**
Year 2

 **RESPONSIBLE PARTY**
Planning & Community Development

PEDESTRIAN SAFETY ZONES

Pedestrian Safety Zones are geographic areas containing a high concentration of severe crashes involving pedestrians or in areas with high pedestrian usage where severe pedestrian crashes could occur. These locations should be identified, followed by creating a plan to systematically improve pedestrian safety and slow vehicle speeds in the area. Cities that have implemented pedestrian safety zones have seen severe pedestrian crashes reduced by up to 40% within them. Strategies for improving pedestrian safety should follow the Safe System approach, aiming to create safer roads, safer users, and safer/slower vehicle speeds through roadway countermeasures, public education, and active traffic enforcement.

 **START YEAR**
Year 3

 **RESPONSIBLE PARTY**
Public Works



PRIORITY CORRIDORS & INTERSECTIONS

A set of high Priority Corridors & Intersections profiles were developed to guide the City's future street improvement efforts and to maximize its progress toward eliminating deaths and serious injuries on its streets.

These profiles provide detailed recommendations for safety improvements that draw on the tools summarized in the Safety Countermeasures Toolbox.



Seven Priority Corridors (divided into 17 segments) and Ten Priority Intersections are profiled in Appendix D. These corridors and intersections were selected based on their ranking on the High Injury Network and the High Risk Network. In other words, these locations should be prioritized for improvements due to the severity of safety issues demonstrated by their crash history and the potential for additional severe crashes based on existing risk factors.

The Priority Corridor & Intersection Profiles provide both short-term and long-term improvement recommendations:

Short-Term Improvement Examples

- ◆ Signage improvements
- ◆ Adding retroreflective traffic signal backplates
- ◆ Updating/enhancing pavement markings (e.g. high visibility crosswalks)
- ◆ Street lighting improvements
- ◆ Clearing landscaping/vegetation sight obstructions
- ◆ Signal coordination improvements
- ◆ Rectangular Rapid Flashing Beacons (RRFBs) at unsignalized pedestrian crossings
- ◆ Improving ADA curb ramps
- ◆ Replacing signal heads and modifying timings
- ◆ Pavement reallocation (aka "road diet") projects*

Long-Term Improvement Examples

- ◆ Constructing roundabouts
- ◆ Constructing center medians
- ◆ Constructing sidewalks or trails*

* Can be short-term or long-term depending on the scope of the specific improvements and timing of opportunities to complete in conjunction with other improvements, such as street resurfacing projects.

The scope and proposed improvement recommendations for each Priority Corridor and Intersection found in Appendix D should not be taken as conclusive, but rather a starting place for further study when moving toward implementation.



PROJECT PRIORITIZATION

The tables that follow provide an overview of the approximate safety benefit-to-cost ratio (BCR) for each Priority Corridor & Intersection, based on their full set of short-term and long-term proposed improvement recommendations. This benefit-to-cost ratio is intended to aid in prioritizing locations with the most significant potential impact. All BCR calculations were based on the latest FHWA guidance.

Priority Corridors

Corridor	Approximate Cost of Recommended Improvements*	Benefit-to-Cost Ratio	Priority Rank
Eisenhower Road: From 10th Avenue to 20th Street	\$ 220,000	27.55	1
Spruce Street: From 4th Street to 10th Avenue	\$ 80,000	23.13	2
4th Street: From Eisenhower Road to Limit Street	\$ 3,230,000	12.53	3
Metropolitan Avenue: From 10th Street to 20th Street	\$ 160,000	11.19	4
4th Street: From Limit Street to Spruce Street	\$ 1,790,000	9.47	5
4th Street: From Spruce Street to Metropolitan Avenue	\$ 2,730,000	7.52	6
10th Avenue: From Eisenhower Road to Limit Street	\$ 1,470,000	6.84	7
20th Street: From Limit Street to Spruce Street	\$ 2,760,000	6.56	8
10th Street: From Spruce Street to Metropolitan Avenue	\$ 980,000	5.22	9
Eisenhower Road: From 4th Street to 10th Avenue	\$ 1,960,000	3.39	10
20th Street: From Eisenhower Road to Limit Street	\$ 5,250,000	2.98	11
Spruce Street: From 10th Avenue to 20th Street	\$ 1,360,000	2.38	12
Limit Street: From 4th Street to 10th Avenue	\$ 2,310,000	2.06	13
10th Avenue: From Limit Street to Spruce Street	\$ 2,670,000	2.03	14
Metropolitan Avenue: From 4th Street to 10th Street	\$ 2,700,000	1.83	15
20th Street: From Spruce Street to K7/US-73	\$ 3,620,000	0.56	16
Limit Street: From 10th Avenue to 20th Street	\$ 2,900,000	0.11	17

Priority Intersections

Intersection	Approximate Cost of Recommended Improvements*	Benefit-to-Cost Ratio	Priority Rank
10th Ave & Wallis Ln	\$ 60,000	10.67	1
Shrine Park Rd & Muncie Rd	\$ 60,000	6.33	2
Broadway St & Spruce St	\$ 1,370,000	4.13	3
10th St & Cherokee St	\$ 270,000	3.93	4
4th St & Limit St	\$ 2,940,000	3.49	5
Limit St and Maple St/Shrine Park Rd	\$ 1,310,000	3.05	6
Spruce Street and 7th Street/5th Avenue	\$ 1,410,000	2.52	7
10th St & Spruce St	\$ 620,000	1.84	8
10th Ave & Eisenhower Rd	\$ 2,980,000	1.61	9
4th St & Idaho St	\$ 670,000	0.91	10

*Cost estimates are rounded up to the nearest \$10,000.

Note: Some intersections that ranked highly on the High Injury Network were excluded from the Priority Intersections Profiles due to the fact that they already had recent safety improvements completed by the City. Several other high ranking intersections are not profiled because they are minor unsignalized intersections (e.g. 10th & Metropolitan Ave; 4th St & Pennsylvania Ave) where the recommendations for improvements are limited or the appropriate improvements could be addressed through implementation of the Priority Corridor Profile recommendations.



VULNERABLE ROAD USERS

Target Outputs

1. Create a Bicycle and Pedestrian Plan by 2028.
2. Establish a dedicated local funding set-aside to leverage federal funding opportunities for implementation of sidewalk, trail, and bike infrastructure improvements.
3. Implement “quick-build” or permanent pedestrian safety countermeasures in at least one location per year.
4. Implement at least five miles of bicycle lanes or trails by 2030.



Target Outcome:

Reduce KSI crashes involving pedestrians and bicyclists by at least

50%
by 2035



PERFORMANCE MEASURES

The following performance measures, including target outputs (actions) and outcomes (desired results) are recommended for each of the five Focus Areas of the First City Vision Zero Action Plan.

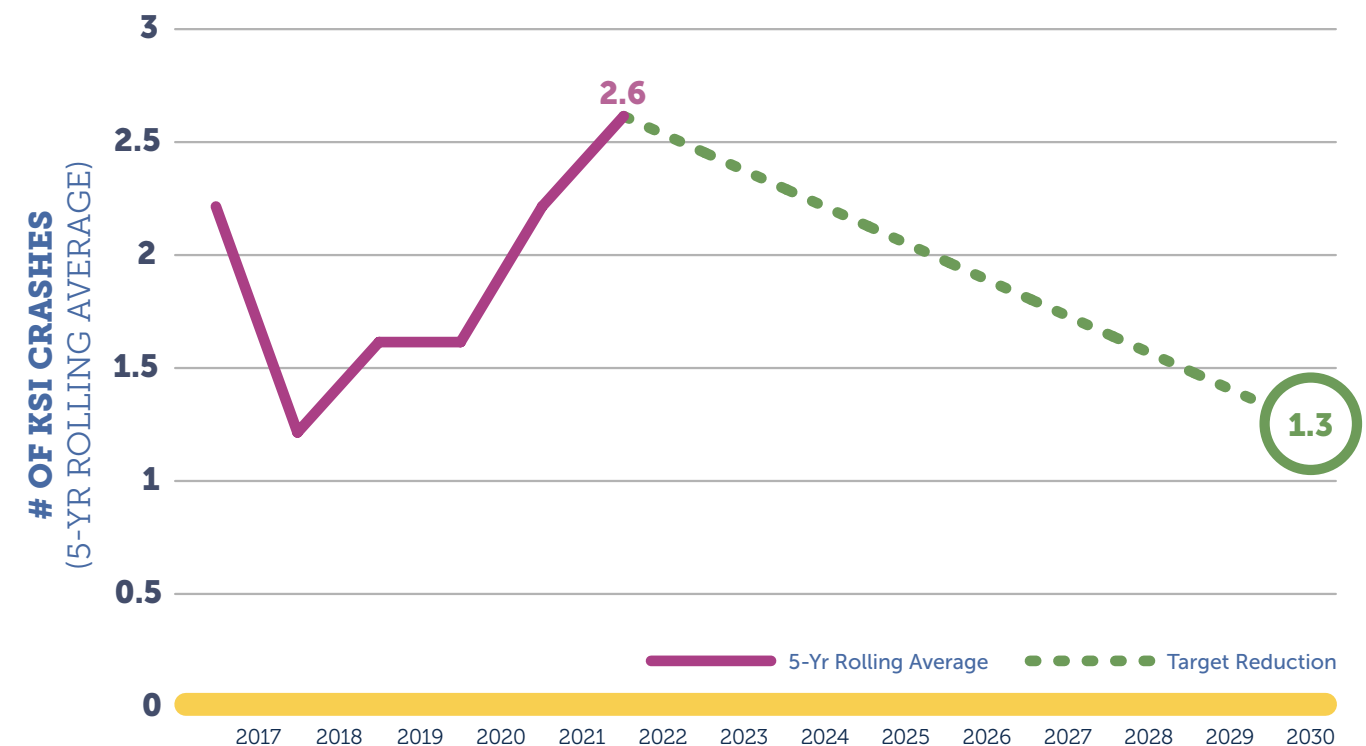


The Target Outputs are intended to guide actions in the near/intermediate term (next five years) with the aim of propelling the First City toward the Target Outcomes (significant reductions in traffic fatalities and serious injuries) in the longer term, by 2035. All of the Target Outputs for each focus area aim for a minimum 50% reduction in their related KSI crashes by 2035, using a five-year rolling average of total KSI crashes.*

At least every five years, this Vision Zero Action Plan should be revised and updated, including regularly reviewing progress toward these performance measures and updating them as needed.

* Using a five-year rolling average is recommended to control for outliers. To calculate the five-year rolling average for 2035, you would calculate the average number of KSI crashes per year from 2031-2035.

KSI CRASHES INVOLVING PEDESTRIANS AND BICYCLISTS
(5-YR ROLLING AVERAGES)



Target Outputs

1. Install speed feedback signs (permanent or temporary) in at least 2 locations per year.
2. Complete speed studies or city-wide Speed Management Plan along all of the High Injury Network and High Risk Network (risk levels "High" and "Highest") corridors, aiming to identify where speed limits could be lowered based on updated federal guidance and opportunities to implement appropriate safety countermeasures.
3. Implement "quick-build" or permanent traffic calming countermeasures in at least 5 locations per year.

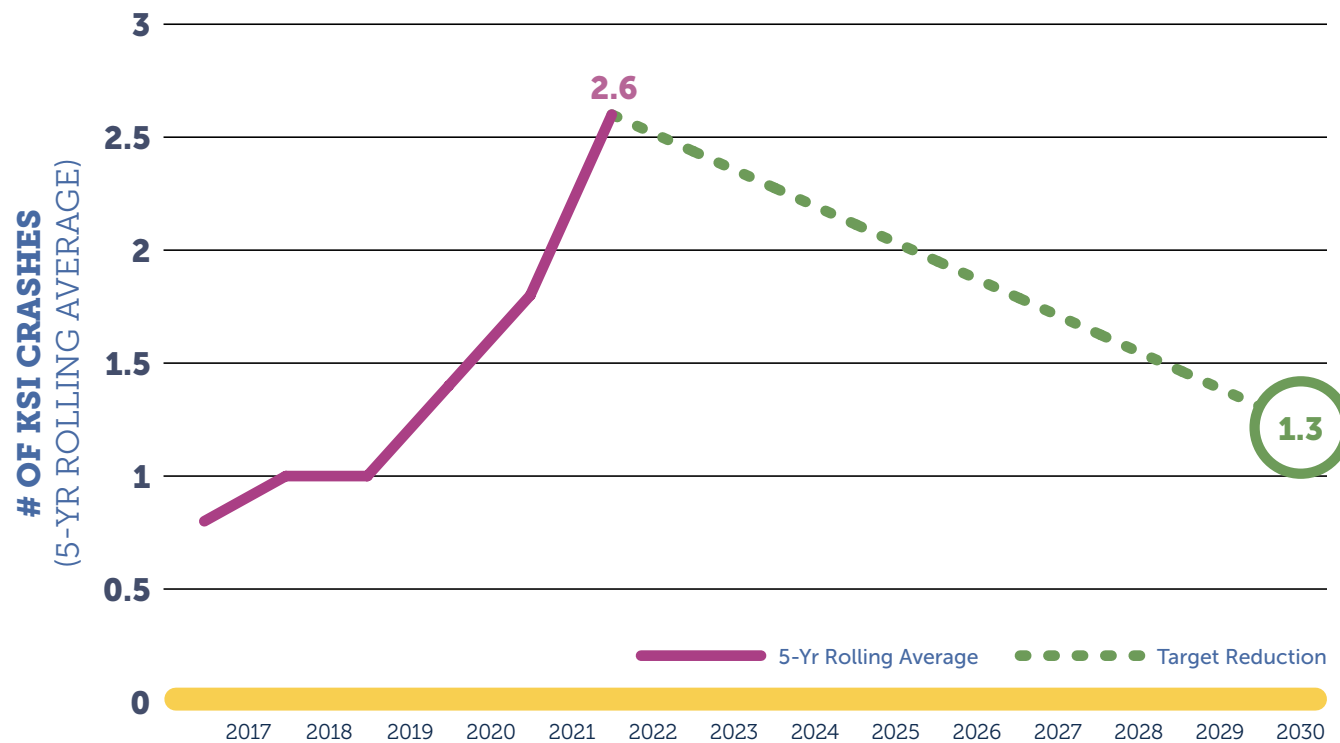


Target Outcome:

Reduce KSI crashes involving speeding by at least



KSI CRASHES INVOLVING SPEEDING (5-YR ROLLING AVERAGES)



Target Outputs

1. Conduct at least one targeted enforcement campaign (e.g. publicized sobriety checkpoints; saturation patrols) per year aimed at reducing impaired driving.
2. Implement education and outreach campaigns aimed at reducing impaired driving and distracted driving.

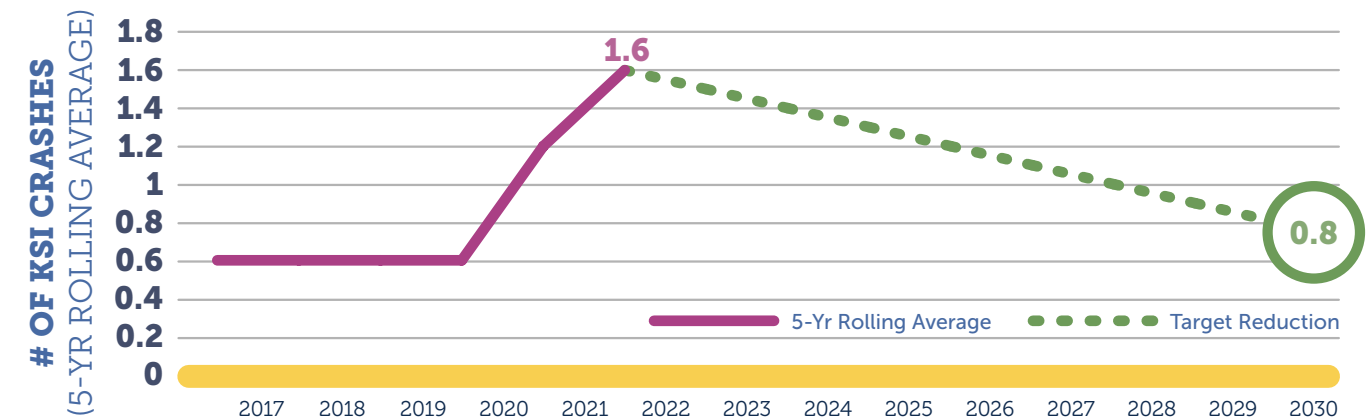


Target Outcome:

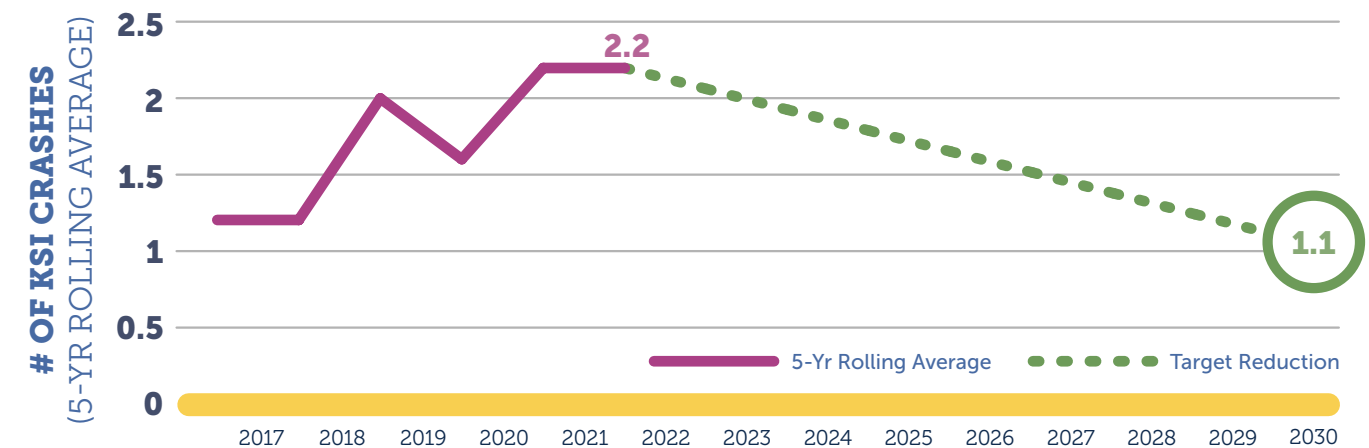
Reduce KSI crashes involving alcohol, drug-impaired and distracted driving by at least



KSI CRASHES INVOLVING IMPAIRED DRIVING (5-YR ROLLING AVERAGES)



KSI CRASHES INVOLVING DISTRACTED DRIVING (5-YR ROLLING AVERAGES)





YOUNG DRIVERS

Target Outputs

1. Establish an active S.A.F.E. (Seatbelts Are For Everyone) program at Leavenworth High School.
2. Create a Safe Routes to Schools Plan that identifies infrastructure and non-infrastructure recommendations for all schools in Leavenworth. By 2030, obtain funding for implementation of the Safe Routes to School plan.

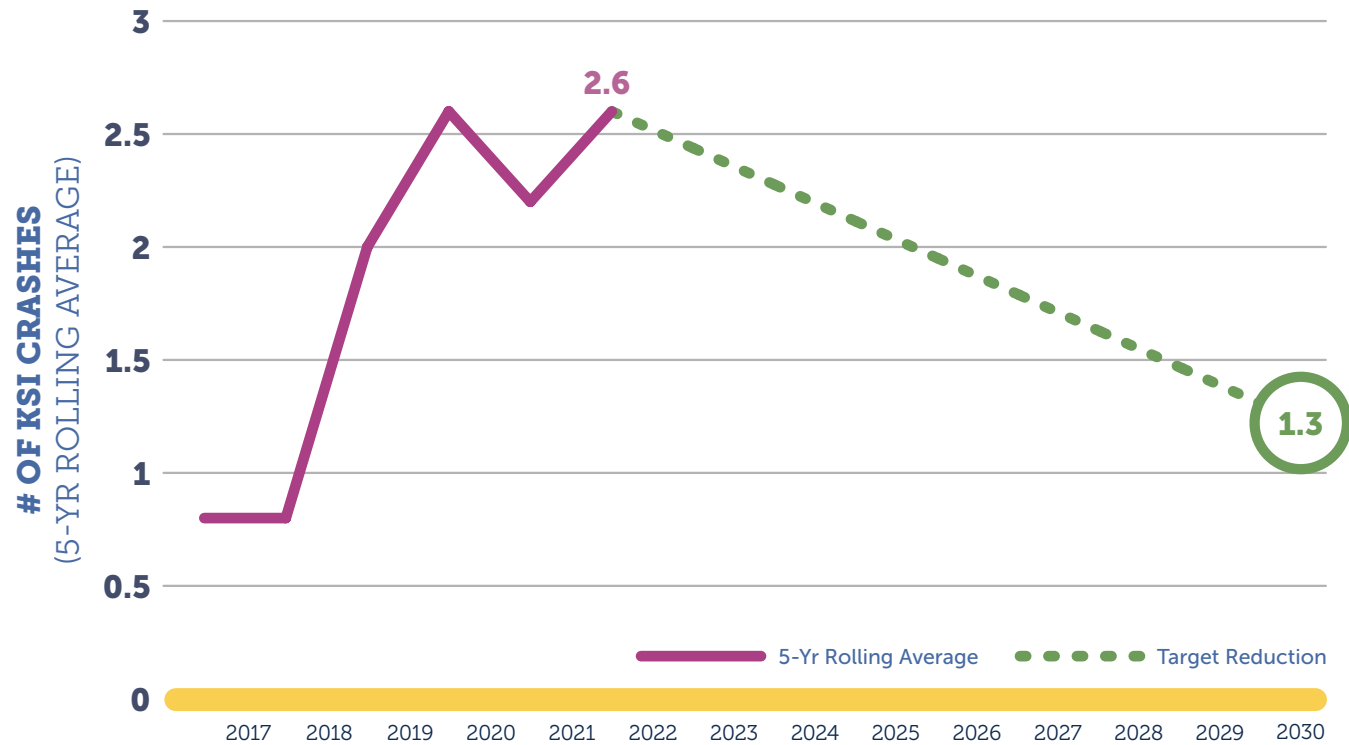


Target Outcome:

Reduce KSI crashes involving young drivers by at least



KSI CRASHES INVOLVING YOUNG (AGE 15-19) DRIVERS (5-YR ROLLING AVERAGES)



SIGNALIZED INTERSECTIONS & ARTERIALS

Target Outputs

1. Implement safety improvements at a minimum of one of the Priority Intersections per year over the next five years.
2. Implement safety improvements along, at minimum, one of the Priority Corridors per year over the next five years.
3. Implement an education, outreach, and targeted enforcement campaign aimed at reducing red-light running.

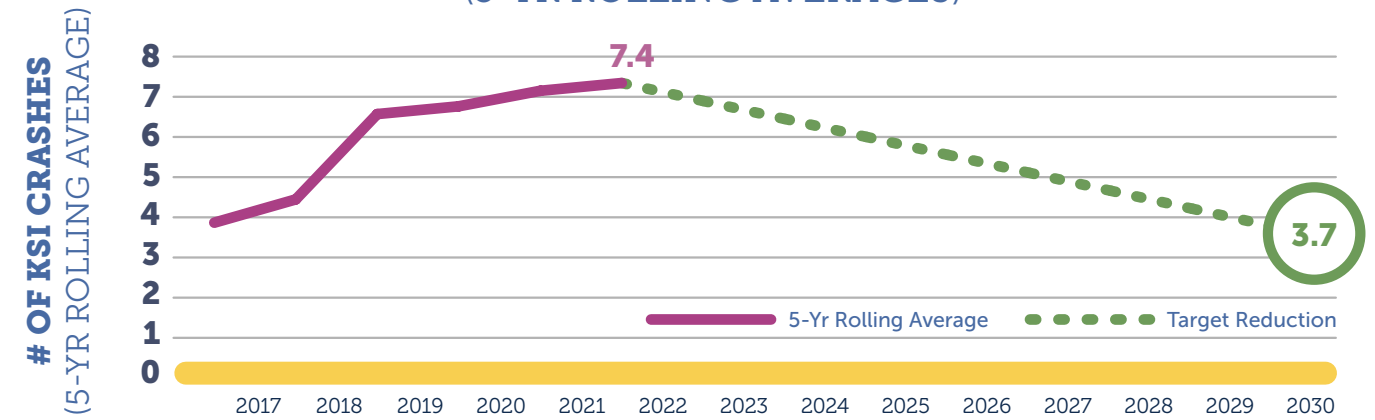


Target Outcome:

Reduce KSI crashes along Arterials and at Signalized Intersections by at least



KSI CRASHES ALONG ARTERIALS (5-YR ROLLING AVERAGES)



KSI CRASHES ALONG SIGNALIZED INTERSECTIONS (5-YR ROLLING AVERAGES)

