LEAVENWORTH COUNTY

Vision Zero Action Plan

MARCH 2025

LEAVENWORTH COUNTY
KANSAS

Kimley»Horn

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MESSAGE FROM BOARD OF COMMISSIONERS

Dear Residents of Leavenworth County,

We, the Board of Commissioners, are thrilled to introduce the Leavenworth County Vision Zero Action Plan for our community. Our goal with this plan is to outline a framework to create a safe and sustainable transportation system that eliminates traffic fatalities and severe injuries on our roads. We firmly believe that every life is valuable, and it is our collective responsibility to prioritize safety and protect the well-being of all road users.

Through the Vision Zero Action Plan, we aim to address the underlying causes of traffic crashes and develop effective strategies to prevent them. We recognize that achieving Vision Zero requires a comprehensive approach, involving education, infrastructure improvements, enforcement, and collaboration with all stakeholders. This plan is intended to serve as a guiding document to help inform decision-makers as the County balances multiple competing needs with limited funds.

We invite all residents of Leavenworth County to join us in this important endeavor. By working together, we can create a future where every person can travel safely and confidently on our roads. Let us unite in our commitment to Vision Zero and make Leavenworth County a model for safe and sustainable transportation.

Acknowledgments

VISION ZERO TECHNICAL ADVISORY COMMITTEE (TAC)

- **William Noll,** County Public Works
- **Joe McAfee,** County Public Works
- **John Jacobson,** County Planning
- **Andrew Dedeke,** County Sheriff
- **Greg Kaaz,** County Port Authority (LCPA)
- **Jeremy Greenamyre,** County Development Corporation (LCDC)
- **Robert Larsen,** Fort Leavenworth
- **Todd Geiger,** Geiger Ready-Mix (Major Employers Representative)
- **Loren Feldkamp,** USD 464

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01. Introduction

Leavenworth County, like many communities across Kansas and the nation, faces significant challenges in ensuring the safety of all who use its roads. Since 2000, many countries in the developed world have observed a continued decrease in the number of traffic-related deaths. Over the past decade, however, that trend has not continued in the U.S. and Leavenworth County, where both fatalities and serious injuries have flatlined or are on the rise. Data from the Kansas Department of Transportation (KDOT) shows a persistent increase in vehicle-related deaths, reflecting national trends that emphasize the urgent need for action. **It is against this backdrop that Leavenworth County embarks on the creation of its Vision Zero Action Plan (VZAP), with the overarching goal of eventually eliminating traffic fatalities and severe injuries within the County.**

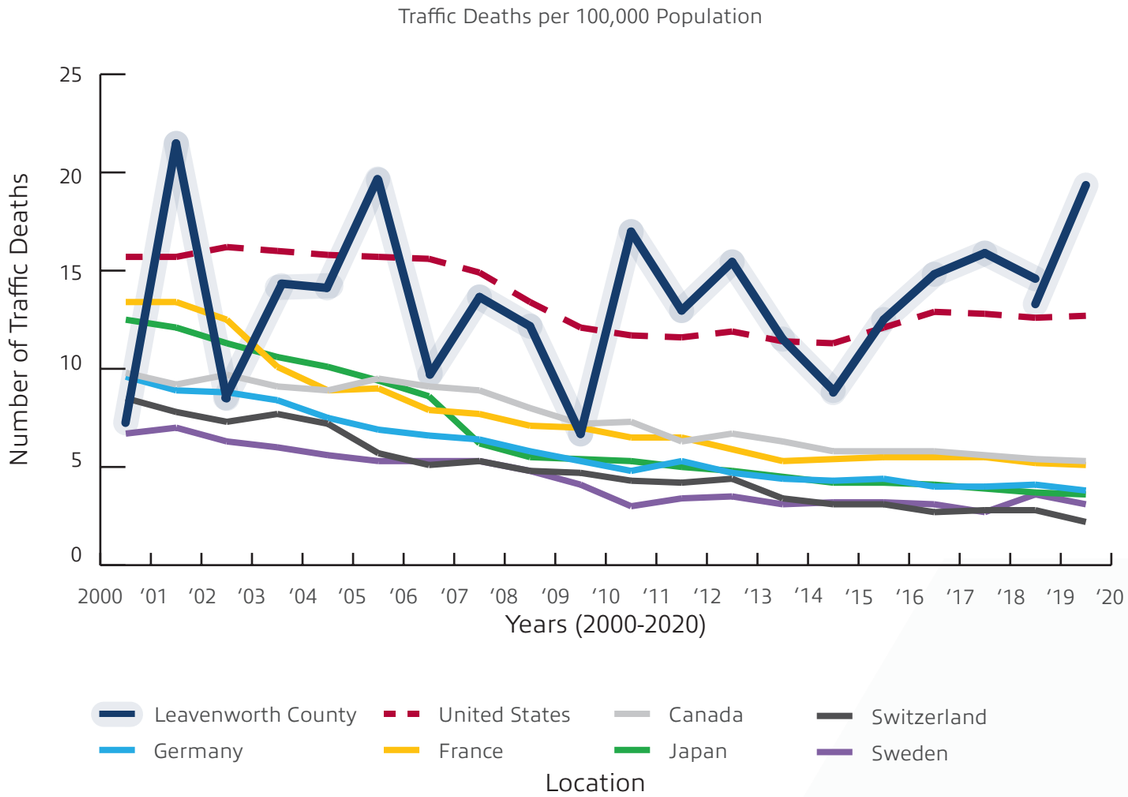


Figure 1: Traffic Death Rates by Country

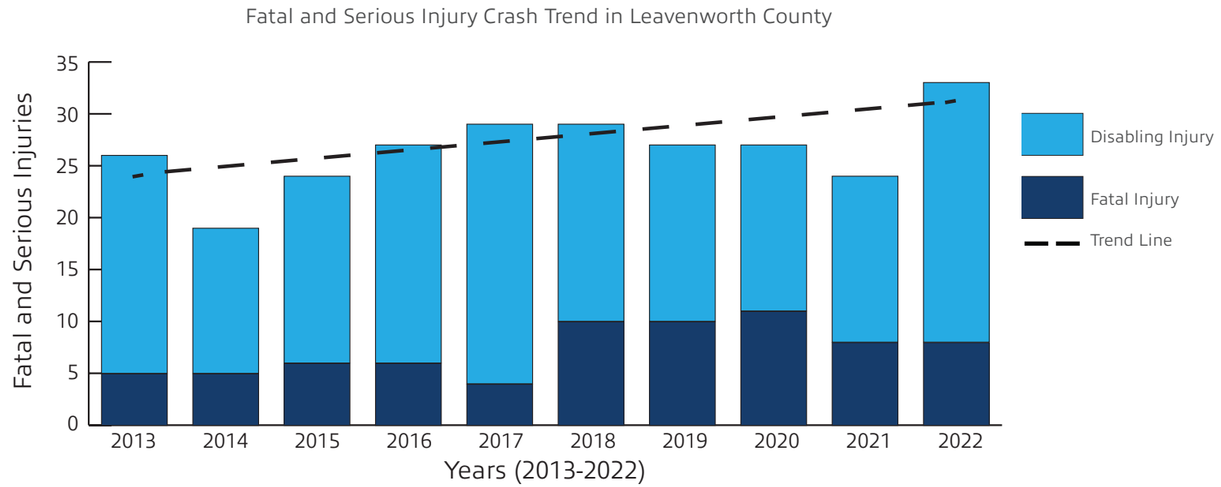


Figure 2: Fatal and Serious Injury Crash Trend in Leavenworth County

This plan is funded by the U.S. Department of Transportation's (USDOT) Safe Streets and Roads for All (SS4A) grant program, reflecting the federal commitment to making roadways safer. The grant allows Leavenworth County to focus on data-driven solutions to combat its rising traffic safety issues and provides the resources to develop effective, community-centered strategies for saving lives.

Comparisons with neighboring counties reveal that Leavenworth County's fatality and injury rates are slightly above the Kansas state average and comparable to neighboring Wyandotte, Jefferson, and Atchison Counties, but notably higher than neighboring Johnson and Douglas Counties. Additionally, there are specific high-risk corridors that stand out and demand immediate attention. Using examples from established peer Vision Zero communities around Kansas and the U.S., this plan leverages both peer data and local insights to ensure the most effective solutions are adopted.

Through engineering improvements, community education, and targeted enforcement, Leavenworth County's Vision Zero Action Plan sets a clear course for reducing traffic-related deaths to zero by 2050. Achieving this ambitious goal requires a collective effort from County officials, local stakeholders, and residents alike. The commitment to safe streets is not only about reducing statistics but saving lives and fostering a culture where traffic fatalities are recognized as preventable, rather than inevitable.

WHAT IS VISION ZERO?

Vision Zero is an international initiative that began in Sweden in the late 1990s, built around a powerful, simple goal: to eliminate all traffic-related fatalities and serious injuries. Unlike traditional road safety efforts, which often view traffic crashes as inevitable, **Vision Zero recognizes that these tragedies are preventable and stem from the premise that no loss of life is acceptable**. The philosophy emphasizes the need to reshape our approach to transportation safety by prioritizing human life over speed, convenience, and other factors.

In Leavenworth County, adopting the Vision Zero framework means we are committing to an ambitious but achievable goal—creating streets and intersections where all road users can safely reach their destination. It challenges traditional traffic safety paradigms that often focus on individual behavior and mistakes, shifting the focus toward system-wide safety improvements intended to minimize the impact of human error.

How Vision Zero Differs from Traditional Safety Analysis

Traditional safety analysis often focuses on the assumption that individual errors—such as speeding or distracted driving—are the primary causes of traffic accidents. To eliminate fatal and serious injuries we need to perfect human behavior. The typical response is to enforce laws that aim to reduce these behaviors through penalties or education. While these efforts are critical, they place much of the responsibility on road users themselves and overburden law enforcement officers, often without addressing the design and systemic flaws that contribute to unsafe conditions.

Vision Zero shifts this responsibility toward creating a Safe System. It recognizes that human decisions, roadway conditions, and vehicle design all play critical roles in the safety of our roadways. It is only with concentrated and consistent effort in all these areas that we are able to effectively move towards a vision of zero traffic deaths or serious injuries in Leavenworth County.

The Safe System Approach

Vision Zero is underpinned by the Safe System Approach. This approach takes a holistic view of traffic safety, focusing on five critical elements:

Safer Roads: Roadways are designed or redesigned to reduce conflict points and control vehicle speeds to limit the severity of collisions.

Safer Speeds: Speed limits and traffic-calming measures are implemented to ensure that in the event of a crash, the impact is survivable.

Safer Vehicles: Advancements in vehicle technology are used to prevent collisions or reduce their severity.

Safer People: Educational campaigns and enforcement efforts encourage responsible behavior, while also acknowledging the inherent unpredictability of human actions.

Post-Crash Care: Emergency response systems are optimized to provide quick and effective care, reducing the severity of injuries.

GUIDING PRINCIPLES OF THIS ACTION PLAN

The USDOT has outlined a set of eight components which are critical to an effective Action Plan. These are:

Leadership Commitment and Goal Setting

The County Board of Commissioners provided a message and signed a pledge to work towards 100% elimination of all traffic-related deaths by 2050.

Planning Structure

A Technical Advisory Committee (TAC) was charged with overseeing Action Plan development, implementation, and monitoring. The TAC is comprised of members of the County Government, staff from Fort Leavenworth, major businesses, County School Districts, and community advocates.

Safety Analysis (Chapter 2)

The project team evaluated existing conditions, historical trends, and risk attributes, including the number, types, and causes of crashes, traffic volumes, and other relevant information.

Engagement and Collaboration (Chapter 3)

Efforts included four bi-monthly TAC meetings, a project website and online survey to County residents, social media content posted on County accounts, focus groups with key stakeholders, and collateral material including facts sheets, newsletters, and e-blasts.

Equity Considerations (Throughout)

The project team conducted an equity analysis to identify any major demographic or socioeconomic trends and disparities in serious injury or fatal crashes.

Policy and Process Changes (Chapter 4)

The project team conducted a written policy review, gleaned information on policies and processes from stakeholder interviews, and provided policy recommendations.

Strategy and Project Selection (Chapter 5)

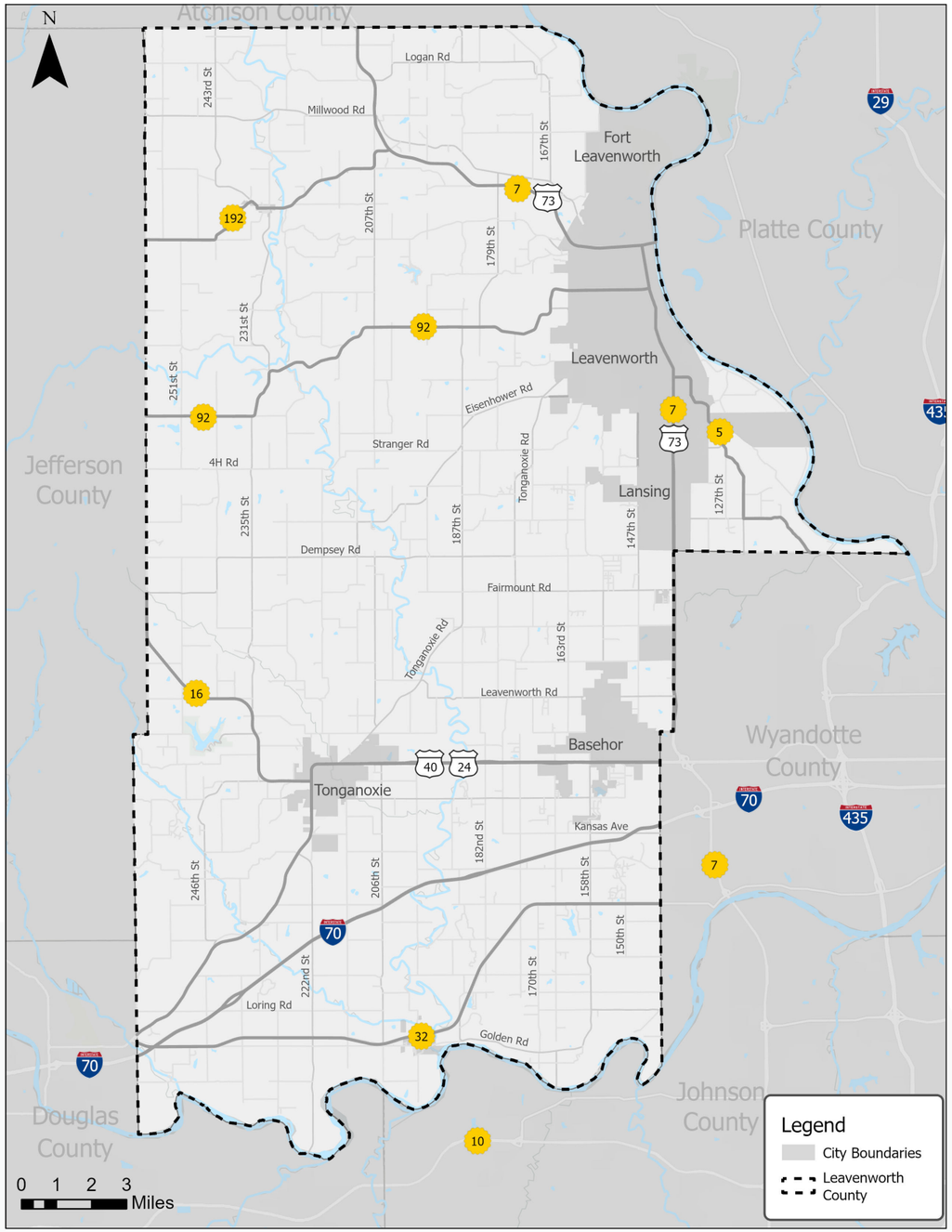
This plan addresses five key focus areas: Roadway Departure, Two-Way Stop Controlled Intersections, Motorcyclists, Impaired Driving, and Young Drivers. Specific recommendations for each focus area and a comprehensive set of safety strategies are included in the Plan.

Progress and Transparency (Chapter 6)

The Implementation Plan, found in Chapter 6, provides a framework for assessing progress toward the goal of Vision Zero by 2050.

Focus on Unincorporated Leavenworth County

This plan has been developed in coordination with County Public Works staff and is generally focused on roads maintained by Leavenworth County, which are mainly in the unincorporated portions of the County. It includes an assessment of state highways in the County that intersection with County roads but generally excludes (1) I-70 / Kansas Turnpike and (2) roads in the incorporated Cities of Leavenworth, Lansing, Basehor, and Tonganoxie, which are owned and maintained by those respective jurisdictions. The map to the right shows the unincorporated portions of the county that were included in this study.



Map 1: Unincorporated Leavenworth County Road Network

02. Crash and Data Analysis

One of the key components of this action plan is a data-driven Safety Analysis. This chapter summarizes that analysis and provides a comprehensive understanding of existing conditions, historical trends, and risk attributes associated with fatal and serious injuries from traffic crashes. This data-driven analysis, coupled with the public and stakeholder feedback described in Chapter 3 and the Plan and Policy analysis described in Chapter 4, provide the baseline for understanding what the most pressing transportation safety issues are in Leavenworth County. These efforts to transparently document "what are the issues?" dovetail into the recommended courses of action, or "what should we do to address?" in Chapters 5 and 6.

Note while this chapter summarizes the major findings from the crash and data analysis, Appendix A contains a much more detailed technical review of these analyses.

DATA SOURCES

The Leavenworth County Vision Zero Action Plan is built on a foundation of reliable, comprehensive data. The following key data sources informed the identification of high-risk locations ("hotspots"), the development of safety interventions, and the evaluation of progress:

- **Crash Data from KDOT:** KDOT compiles crash data from all law enforcement agencies across the state and provides in-depth information on the type of crash (e.g. angle, head-on, rear-end), the roadway where the crash occurred, the people involved, driver behaviors, and the vehicles involved in the crash. This data allows for a comprehensive analysis of crash patterns and trends within Leavenworth County.
- **Road Network Data:** Information on the public road network within Leavenworth County, including traffic volumes and attributes such as speed limits and lane configurations, is used to assess the safety of different road segments. The built environment can induce motorists and pedestrians to behave in certain ways, so it is important to understand these attributes when evaluating how to build safer roads.
- **Intersection Data:** Information on the public intersections within Leavenworth County, including traffic volumes, intersection skew (angles), and attributes such as intersection control and lane configurations, is used to assess the safety of different intersections.

COUNTY-WIDE TRENDS

This section summarizes the broader safety challenges across Leavenworth County based on crash data between 2013 and 2022. It covers trends relating crash types (e.g., rear-end, head-on), contributing circumstances (e.g., impaired driving, distracted driving, speeding), crash severity, and then presents "heat maps" of areas with high concentrations of severe crashes.

When reviewing crash data, it is important to remember that there is overlap between contributing circumstances and crash types, as well as other metrics. There are almost always multiple factors that lead to a crash. Particularly with fatal and serious injury crashes, these are crashes where many aspects of the system (the driver, the vehicle, the roadway, the speed, and/or post-crash care) failed, allowing a tragedy to occur.

Crash Types

The most common type of crashes in Leavenworth County involved conflicts with animals, which comprise approximately 28% of all crashes and 2% of fatal and serious injury crashes. These types of crashes are to be expected in areas with large populations of animals such as deer, which can suddenly and unexpectedly enter the roadway in the path of traffic. The second most common crash type involved collisions with fixed objects (approximately 26%), followed by overturned vehicles at approximately 12%, rear end crashes at 11%, and angle crashes at just over 10% of all crashes. **However, among the subset of crashes that resulted in fatal or serious injuries (FSIs), overturned vehicles were the most common crash type at about 34%, followed by fixed object crashes, which occurred in about a quarter of all fatal and serious injury incidents**. Figure 3 shows the percentage of each crash type occurring in Leavenworth County between 2013 and 2022.

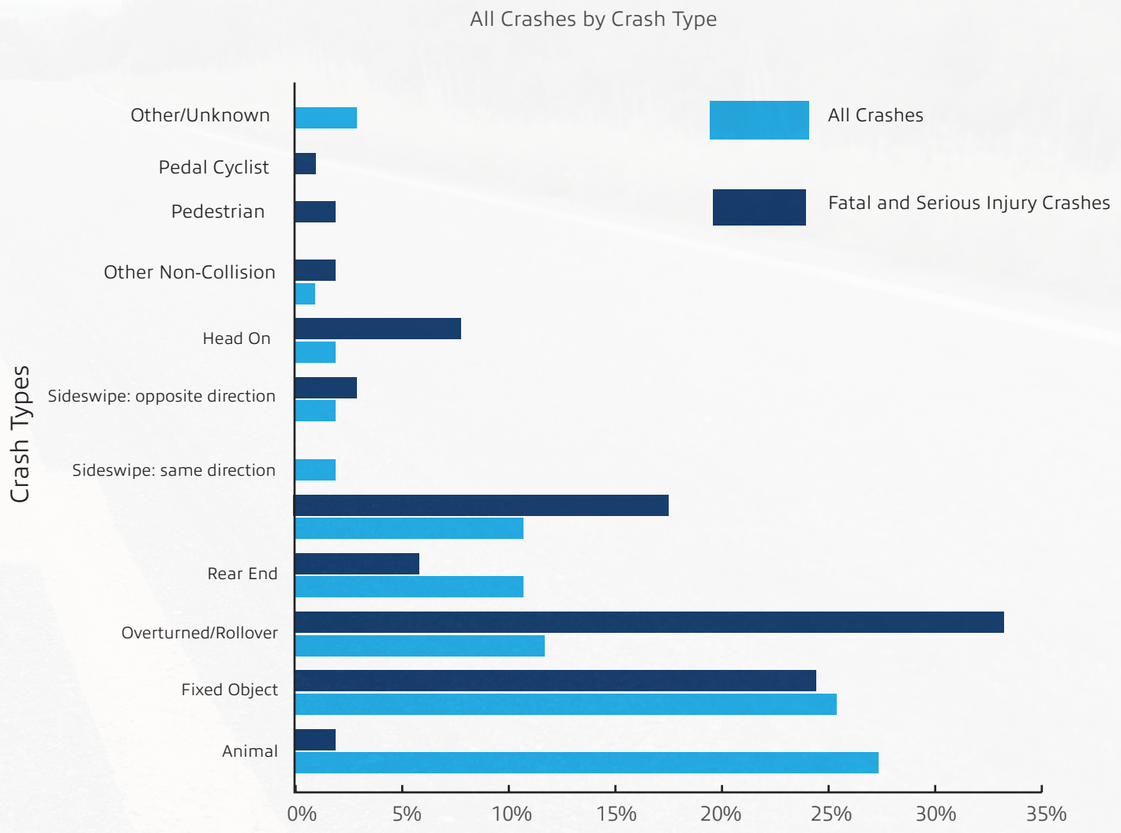


Figure 3: County Crash Types as Percentages of Overall Totals (2013-2022)

Contributing Circumstances

The project team also examined data on contributing circumstances that factored into crashes, as depicted in Figure 4. Distracted driving was the most common circumstance that was observed among all crashes, factoring into about 17.5% of all crashes during that 10-year period. No specific circumstance could be identified in about 12% of all crashes, and speeding was found to be the most prominent circumstance in about 7.5% of all crashes. **When looking at the subset of crashes that resulted in deaths or serious injuries, the most common circumstance contributing to crashes was impairment resulting from alcohol or drug use, factoring into roughly 21% of all fatal or serious injury crashes.** Distracted driving was the second most common circumstance, contributing to about 16% of all fatal or serious injury crashes. Speeding was the third most common circumstance contributing to fatal and serious injury crashes at about 9% of all incidents over the 10-year period.

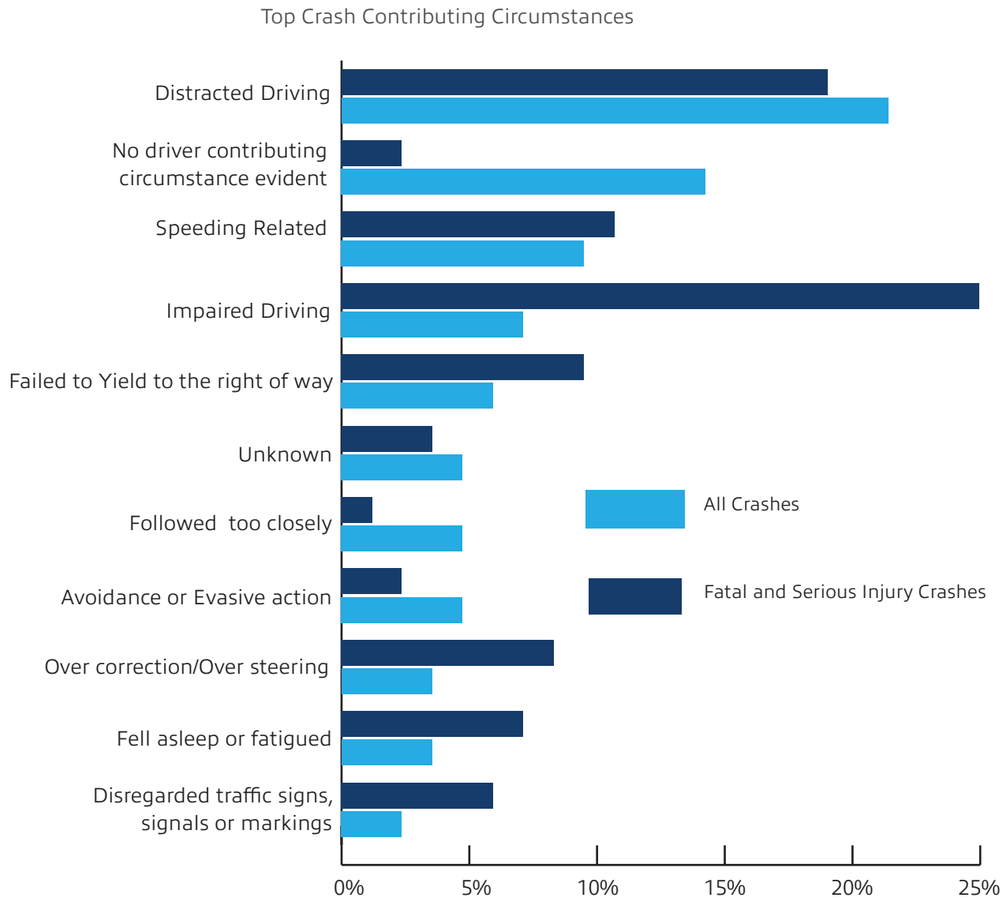


Figure 4: Crash Contributing Circumstances as Percentages of Overall Totals (2013-2022)

It is important to note that crash attributes, such as contributing circumstances, crash types, or transportation mode have overlap.

Many of the contributing circumstances are factors that have been traditionally labeled as "human error". As a community, we will never be able to perfect human behavior. However, we can improve behavior through education, enforcement, and social norming. Roadways can also be designed to limit impacts when drivers inevitably make mistakes or bad decisions. Countermeasures are covered in more detail in Chapter 5.

CRASH SEVERITY BY MODE

The project team looked at the severity of crashes broken down by transportation mode, as depicted in Figure 5. While comprising relatively few compared to the total number of vehicular crashes, crashes that involve bicyclists and pedestrians typically result in a fatality or injury. Notably in Leavenworth County, there are significant number of motorcyclist and ATV crashes, with 149 motorcycle crashes and another 19 ATV crashes. Nearly 90% of these crashes result in a fatality or injury. As noted later in this chapter, motorcyclist crashes were identified as a key focus area for this planning effort based on these findings, as 23% of fatal and serious injury crashes in the County involve a motorcyclist.

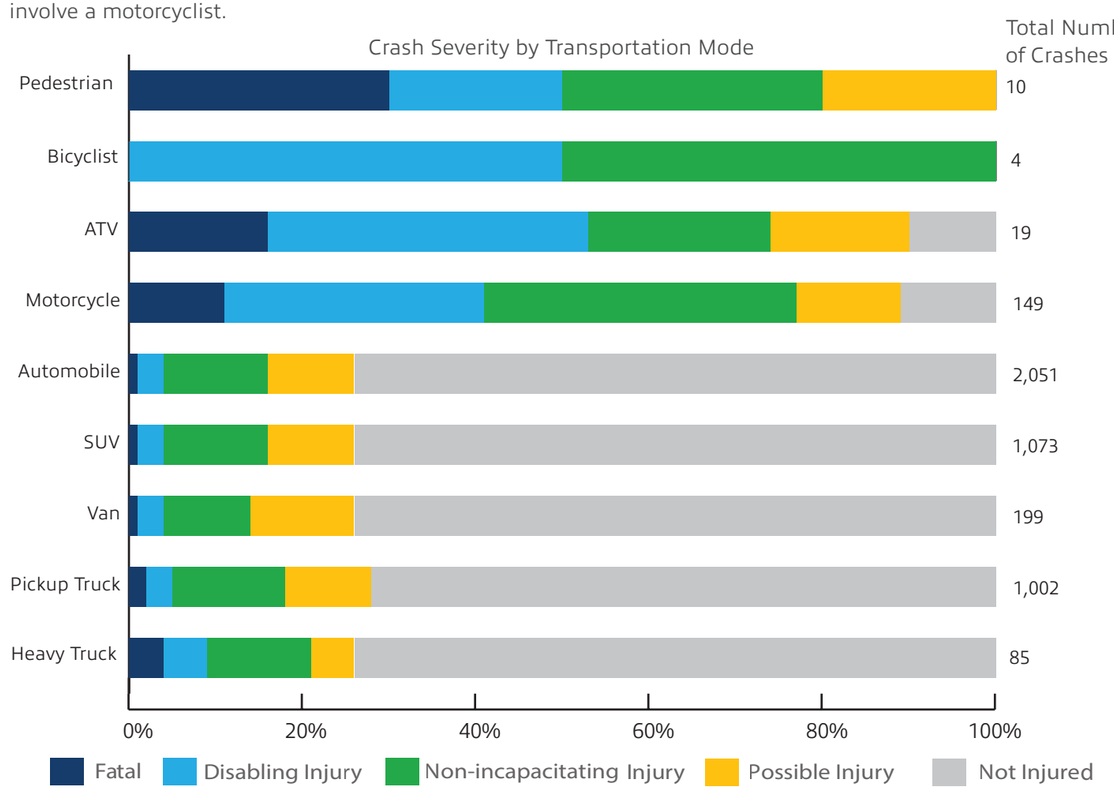


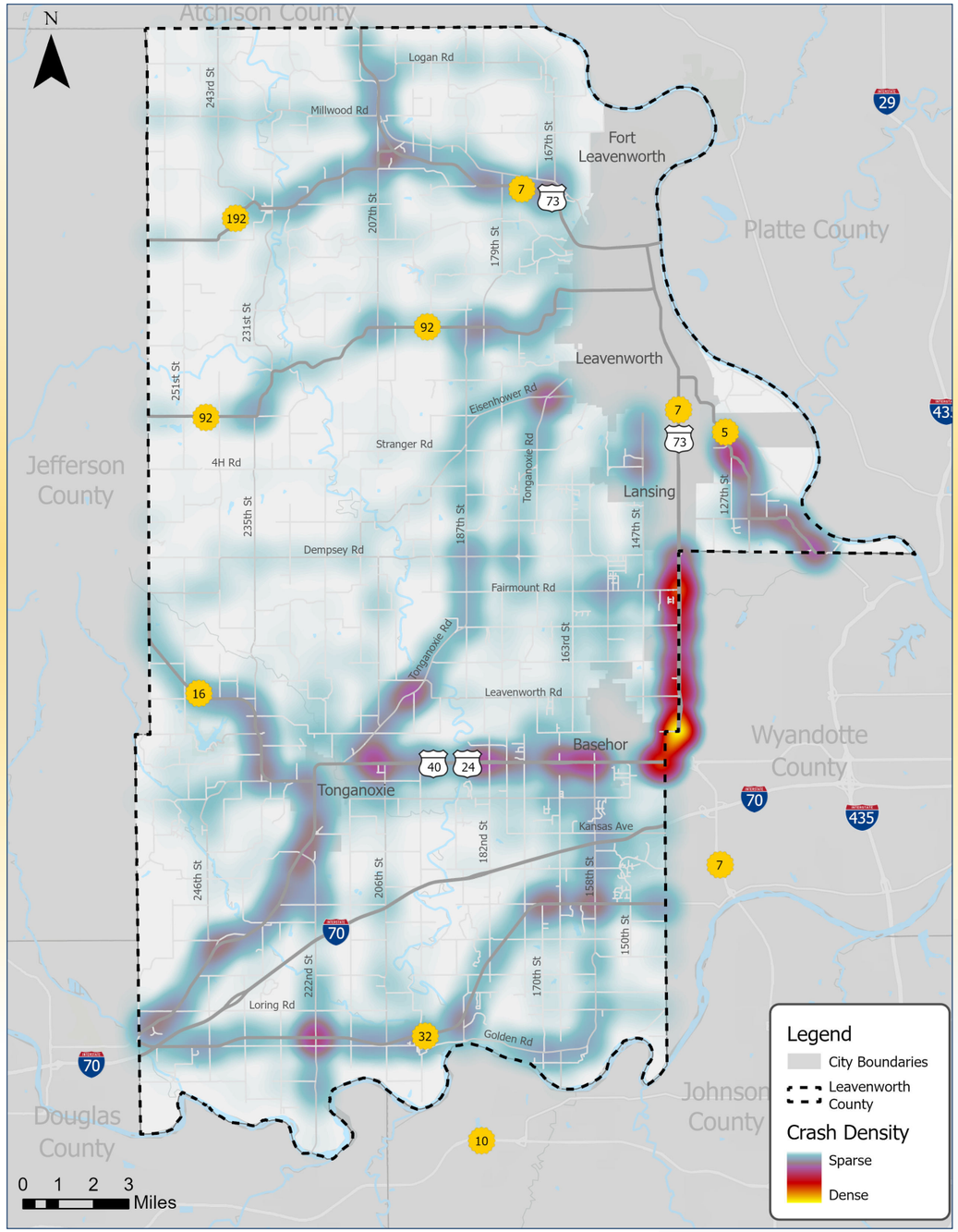
Figure 5: Number and Percentage of Crashes by Severity and Mode

HEAT MAPS

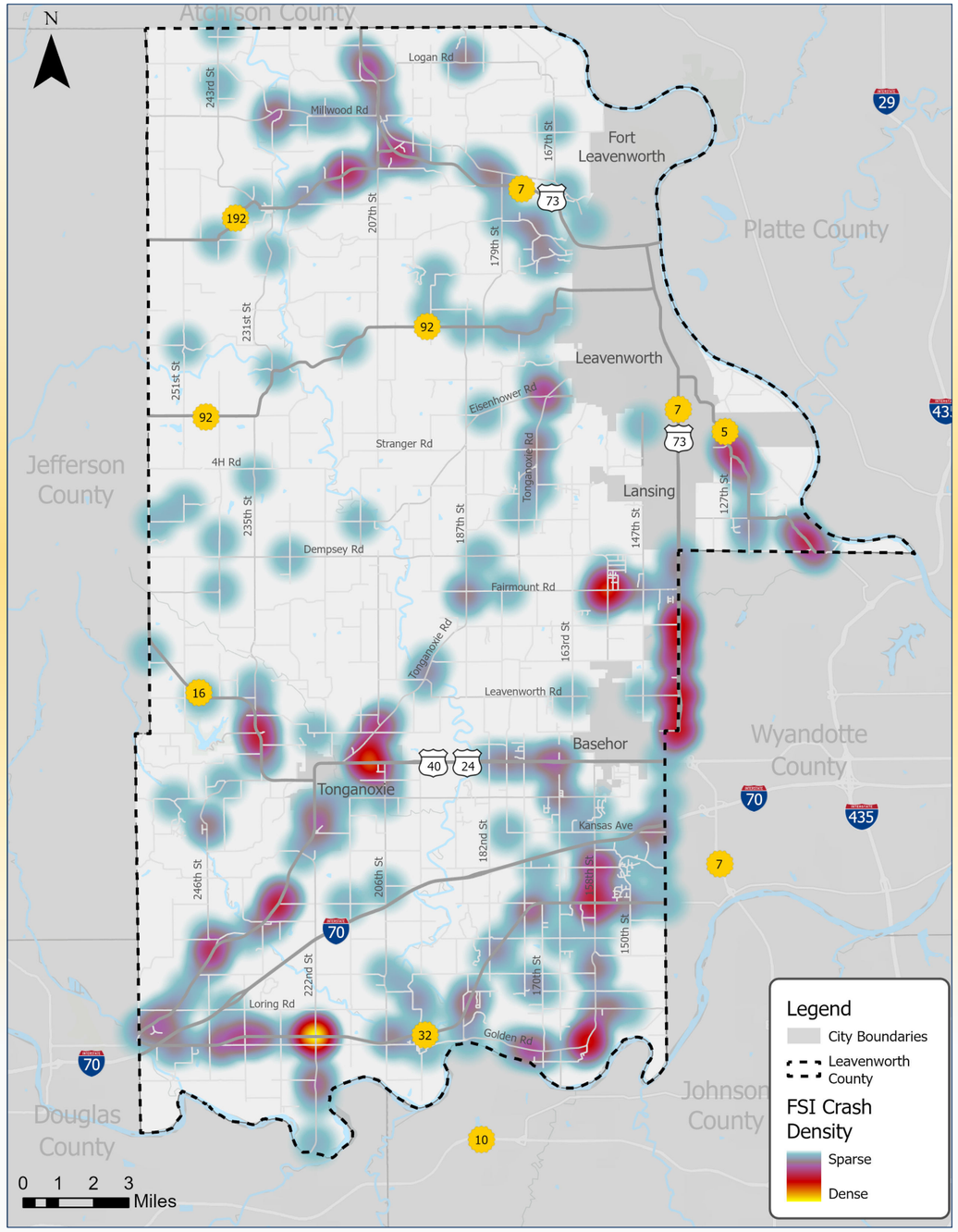
Map 2 and Map 3 depict heat maps of crash locations for all crashes and FSI crashes, respectively, around Leavenworth County between 2013 and 2022. While not identical, the maps show similar intersection and road segment hotspots that are overrepresented in crash statistics at all severity levels. For example, one of those hotspots is the intersection of K-7 and Parallel Parkway, which was recently reconstructed to a Restricted Crossing U-Turn (RCUT) to mitigate both safety and congestion concerns.

Equity Considerations

Data across the state of Kansas and nationwide shows that many communities that have historically been underserved by investment are also overrepresented when it comes to fatalities and serious injuries from traffic crashes. We recognize the importance of equity in ensuring the well-being of all community members. While no tracts within the unincorporated County are identified as disadvantaged by the USDOT's Equitable Transportation Community (ETC) Explorer, it is crucial to address the various transportation metrics that score poorly. Particularly in the southern portion of the County, many tracts score poorly in traffic safety and transportation access. Our plan focuses on improving transportation infrastructure and accessibility to ensure that all residents have equal opportunities to travel safely and efficiently.



Map 2: Heat Map of All Crashes in Unincorporated Leavenworth County (2013-2022)



Map 3: Heat Map of Fatal & Serious Injury (FSI) Crashes in Unincorporated Leavenworth County (2013-2022)

CRITICAL LOCATIONS

In this section, we take a data-driven approach to identify **specific locations** where safety is a concern based on both **crash history and crash risk (i.e., roadway attributes).** By analyzing key factors such as past incidents and road conditions, we can identify the key locations most in need of targeted interventions to improve traffic safety.

High Injury Network (HIN)

The High Injury Network (HIN) focuses on road segments and intersections with the highest historic concentration of fatal and serious injury crashes. This network helps prioritize locations where historical crash data indicates a significant safety concern.

- **HIN Intersections**: This network contains just 3% of intersections in the study area but 59% of intersection FSI crashes. Intersections on the HIN were scored based on their number of FSI crashes, while also accounting for factors such as equity and frequency of use (i.e. intersections with higher traffic counts were prioritized over rural intersections with fewer numbers of vehicles passing through).
- **HIN Corridors (Segments):** The HIN contains just 13% of roadway miles but 68% of FSI crashes. Roadway segments on the HIN were scored based on their number of FSI crashes per mile, while also factoring in equity considerations and traffic volumes.

Map 4 shows the intersections and corridors comprising the HIN; note that this includes both County-owned and state-owned highways in the unincorporated area of the County. In addition, because it is based off 10 years of crash data, it includes a few locations with notable crash history where recent investments have been made by the County or KDOT to mitigate these issues. Appendix A provides a separate HIN for only County-owned roads and a more detailed documentation of the methodology for how the HIN is developed and can be updated in the future.

High Risk Network (HRN)

The High Risk Network (HRN) identifies locations that are inherently more dangerous due to roadway attributes, such as high traffic volumes, road geometry, or lane departure crash rate, regardless of whether or not a crash has taken place at that location in the past. This analysis allows us to predict and prevent future crashes, even in areas without a high crash history.

- **HRN Intersections:** This network contains 4% of all intersections in the study area and 27% of intersection FSI crashes.
- **HRN Corridors (Segments):** This network contains 20% of roadway miles and 35% of FSI crashes.

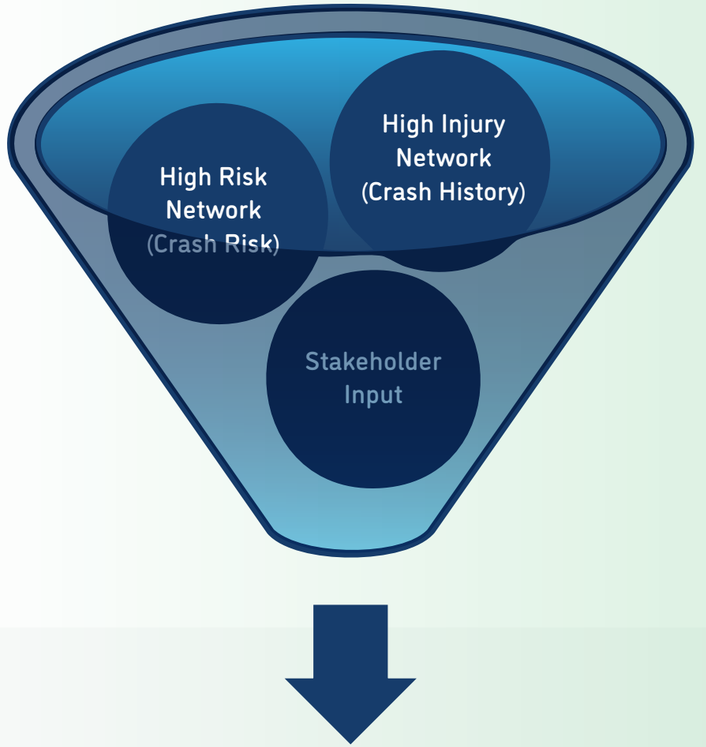
Because this network is based on crash risk and not crash history, it makes sense that the network captures a smaller percentage of overall crash history compared to the HIN.

Map 5 shows the intersections and corridors comprising the HRN; note that this includes both County-owned and state-owned highways in the unincorporated area of the County. Similar to the HIN, because it is based off 10 years of crash data, it includes a few locations with notable crash history where recent investments have been made by the county or KDOT to mitigate these issues. Appendix A provides a separate HRN for only County-owned roads and a more detailed documentation of the methodology for how the HRN is developed and can be updated in the future.

Combined Networks

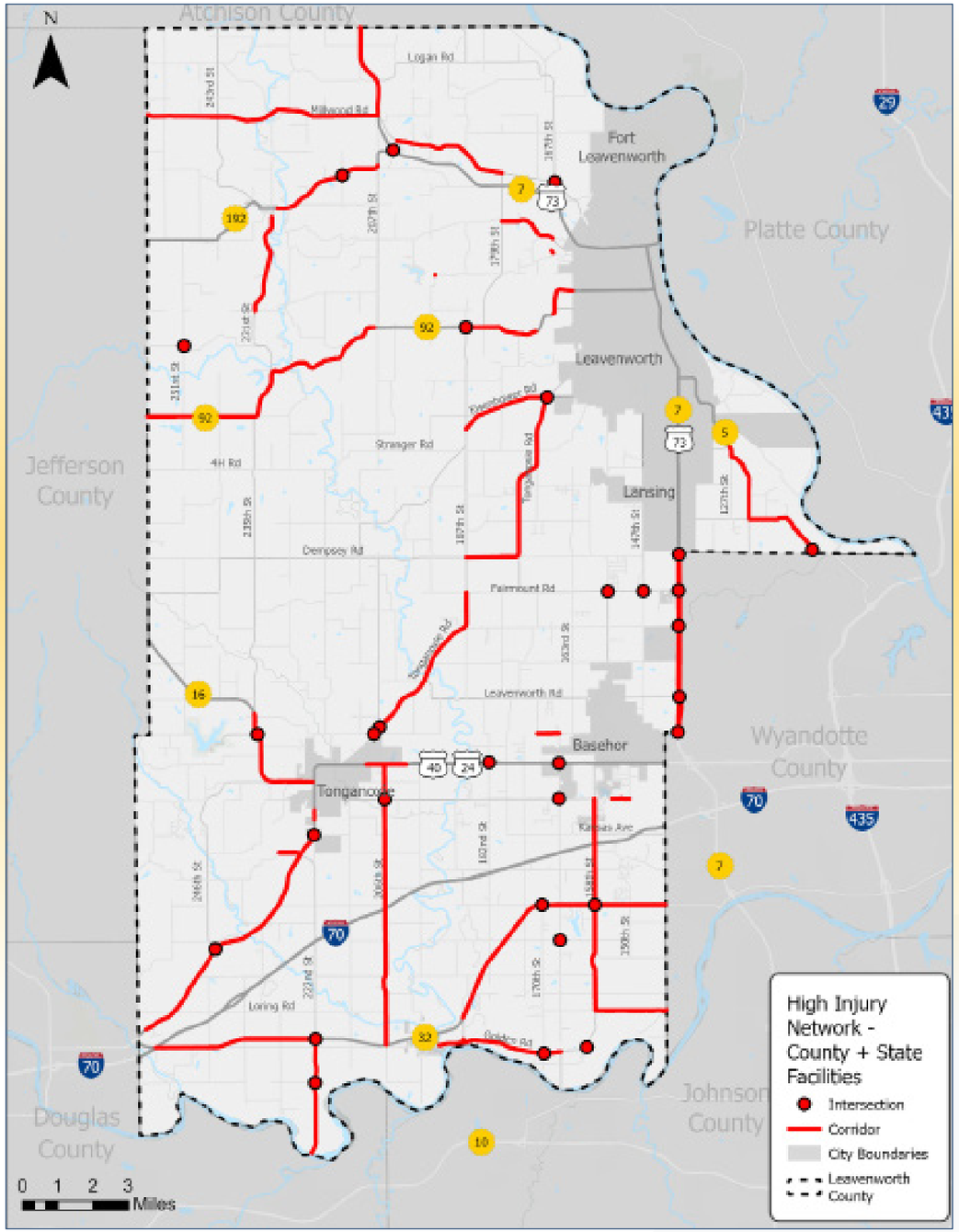
By overlaying the HIN and HRN, we create a comprehensive map that shows both (1) historically crash-prone areas and (2) locations with risk factors that contribute to dangerous conditions. These combined networks include both intersections and road segments, providing a clear visual guide for prioritizing safety improvements. Map 6 shows the overlay of the HIN and HRN combined.

Catalyst Projects, which are described further in Chapter 5, were selected based on the overlay of these networks, discussions with county staff and feedback from the project Technical Advisory Committee (TAC), whose role is discussed further in the next chapter. These projects target critical locations with a high potential for reducing crashes and improving safety across Leavenworth County.

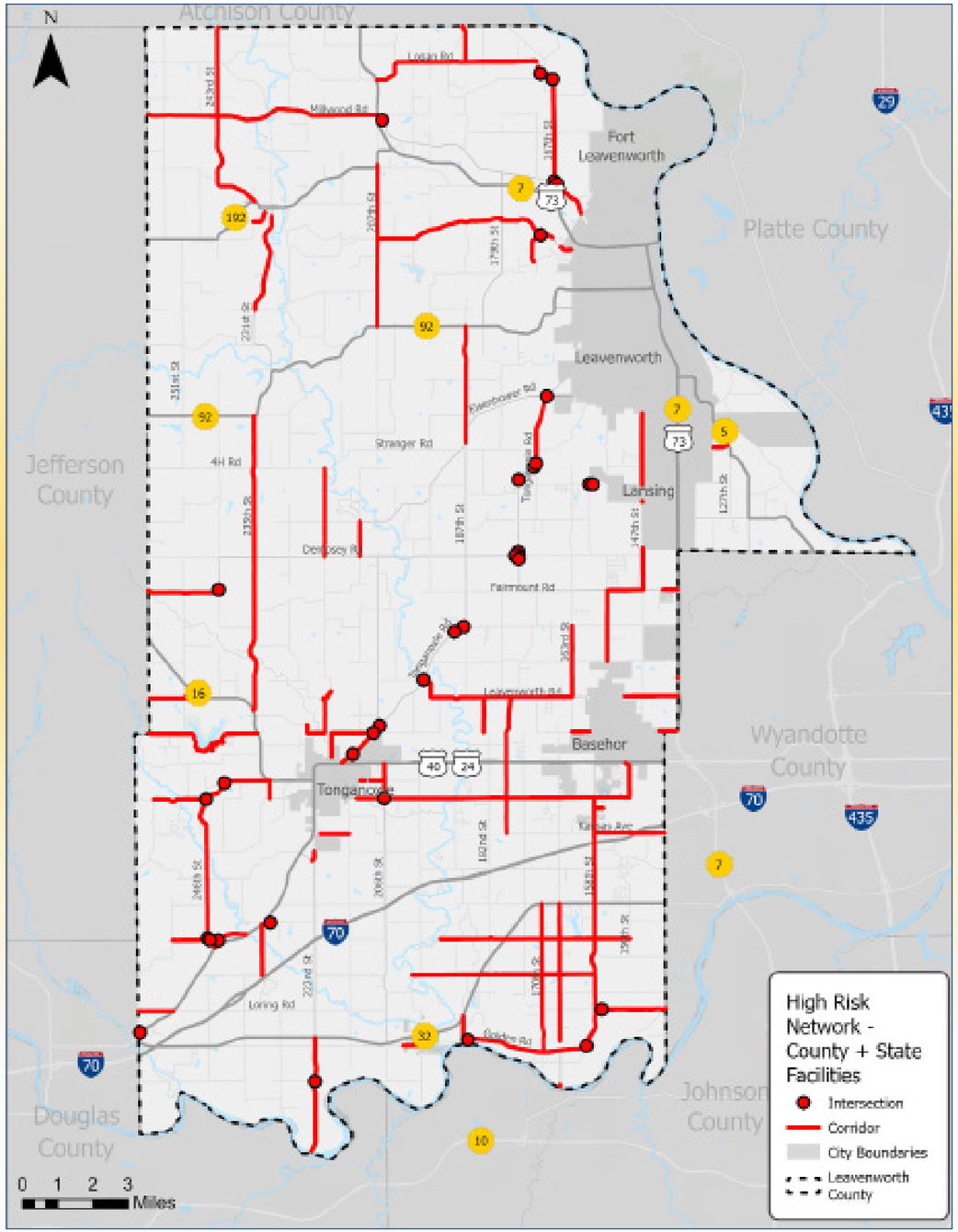


"Catalyst Project" Locations

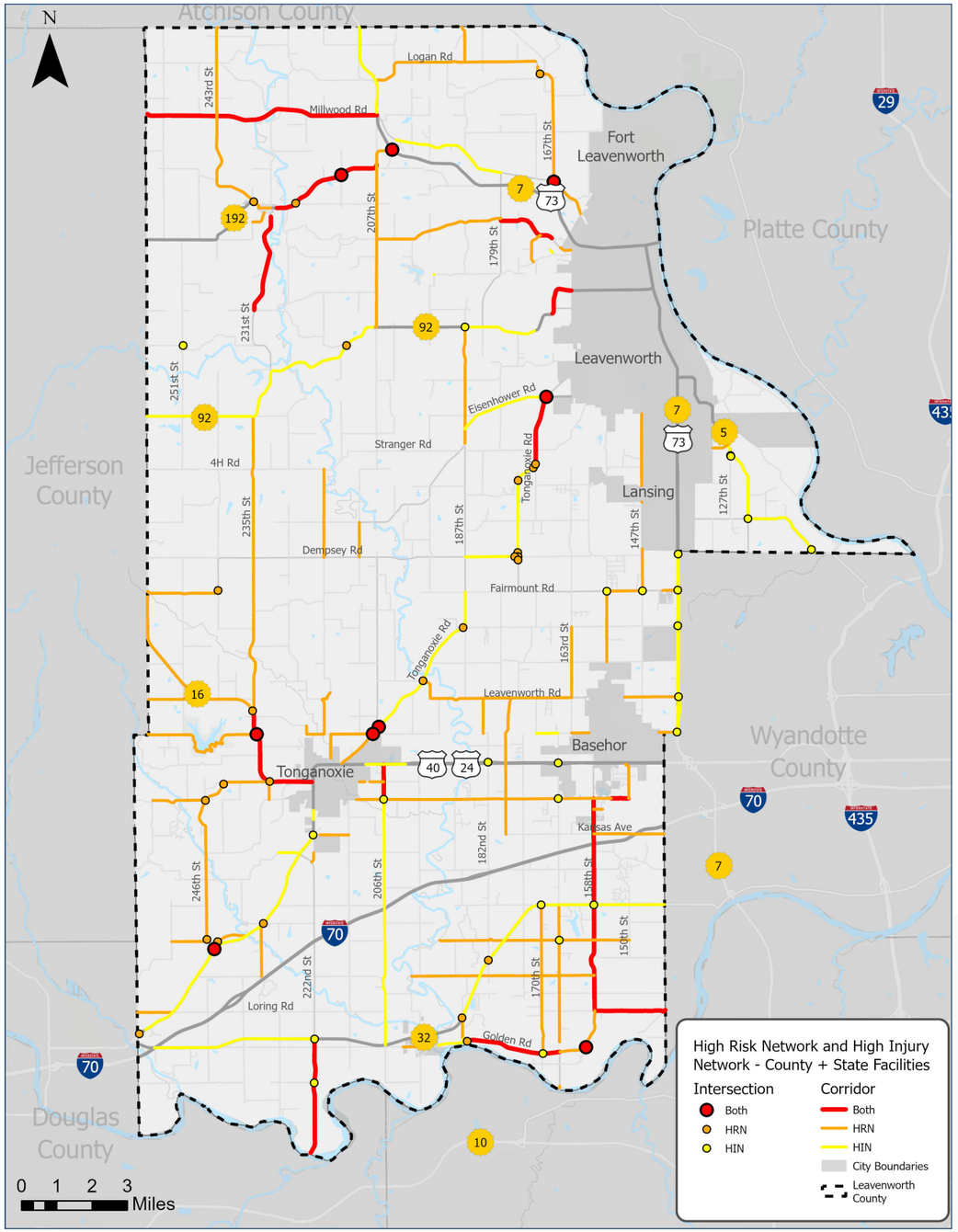
The "Catalyst Projects" described in Chapter 5, as well as several projects recently completed or already being advanced by Leavenworth County, address locations that are on the HIN, HRN, or both.



Map 4: High Injury Network for Leavenworth County



Map 5: High Risk Network for Leavenworth County



Map 6: Combined HIN-HRN Overlay for Leavenworth County

KEY TAKEAWAYS AND FOCUS AREAS

Based on the crash and data analysis, and in coordination with our stakeholder TAC, five focus areas were identified for and targeted interventions:

- Roadway Departure
- Two-Way Stop Controlled Intersections
- Motorcycles
- Impaired Driving
- Young Drivers

If these five focus areas were to be remedied, it would eliminate 95% of fatal and serious injury crashes in the County (see Figure 6). That is, 95% of all FSI crashes in the County touch one or more of these focus areas. By addressing these key areas, we aim to create a safer environment for all who live, work, and play in Leavenworth County. Note that many fatal and serious injury crashes involve more than one focus area. For example, a roadway departure can be simultaneously alcohol related and unrestrained occupant related.

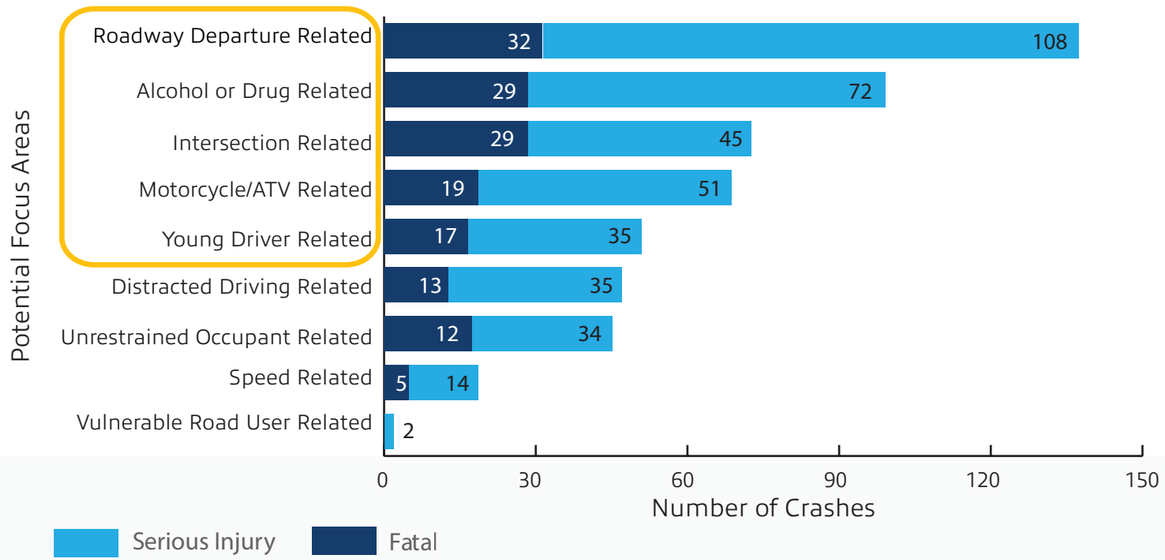


Figure 6: Number of Fatal and Serious Injury Crashes Related to Each "Potential Focus Area"

Major Road	Minor Road	Ownership	Control Type	Fatal Crashes	Serious Crashes	Total Crashes
US-73/K-7 Hwy	Easton Rd	KDOT/County	Side Street Stop	0	3	20
158th St	161st St	County	Side Street Stop	0	2	10
US-24/US-40 Hwy	24th St	KDOT/County	Side Street Stop	0	2	8
167th St	Santa Fe Trl	County	Side Street Stop	0	0	5
K-16 Hwy	Parallel Rd	KDOT/County	Side Street Stop	2	1	7
Eisenhower Rd	Tonganoxie Dr	County	Side Street Stop	0	1	21
Tonganoxie Dr	Parallel Rd	County	Side Street Stop	0	2	8
K-192 Hwy	215th St	KDOT/County	Side Street Stop	0	1	7
Tonganoxie Dr	207th St	County	Side Street Stop	1	0	8

Table 1: Table of Intersections on Both the HIN and HRN

Road Name	Extents	Roadway Owner	Classification	Fatal Crashes	Serious Crashes	Total Crashes
Mt Olivet Rd	179th St to Boeppler Rd	County	Minor Collector	2	2	8
231st St	Lecompton Rd to Broad St	County	Major Collector	2	0	18
Loring Rd	158th St to 142nd St	County	Major Collector	2	2	28
Golden Rd	189th St to 166th St	County	Major Collector	1	2	27
158th St	Loring Rd to Evans Rd	County	Major Collector	2	5	57
Millwood Rd	US-73/K-7 Hwy to 255th St	County	Major Collector	1	2	33
K-16 Hwy	US-24/US-40 Hwy to George Rd	KDOT	Minor Arterial	0	2	69
K-192 Hwy	Gardner St to 207th St	KDOT	Minor Arterial	0	5	38
206th St	Evans Rd to State Ave	County	Major Collector	0	1	19
Tonganoxie Dr	4H Rd to Eisenhower Rd	County	Major Collector	1	0	30
222nd St	K-32 Hwy to Kansas River	County	Major Collector	2	1	26
K-92 Hwy	Lecompton Rd to 20th St	KDOT	Major Collector	0	1	18

Table 2: Table of Segments on Both the HIN and HRN

Focus Area #1: Roadway Departure

Roadway departure crashes, when a vehicle leaves the travel lane and run off the road, are a leading cause of severe crashes in Leavenworth County and throughout Kansas. These incidents often result in vehicles rolling over or striking fixed objects such as trees, poles, or ditches, leading to significant injuries or fatalities. Map 7 provides a heat map of roadway departure crashes between 2013 and 2022.

60% of fatal and serious injury crashes in the County involve roadway departures.

High speeds are a notable factor in roadway departure crashes (see Figure 7 showing that many of these incidents occur on facilities with posted speed limits of 50 mph or higher). In addition, roadway departure crashes often involve other contributing circumstances, including the other focus areas identified the planning effort (see Figure 8). Many of these incidents occur on rural, high-speed roadways with minimal shoulders, sharp curves, and limited visibility. Addressing roadway departure crashes will require implementing targeted safety measures such as rumble strips, clear zones, guardrails, and roadway geometry improvements, especially in high-risk areas identified in both the High Injury and High Risk Networks. More information on these safety measures is discussed in Chapter 5.

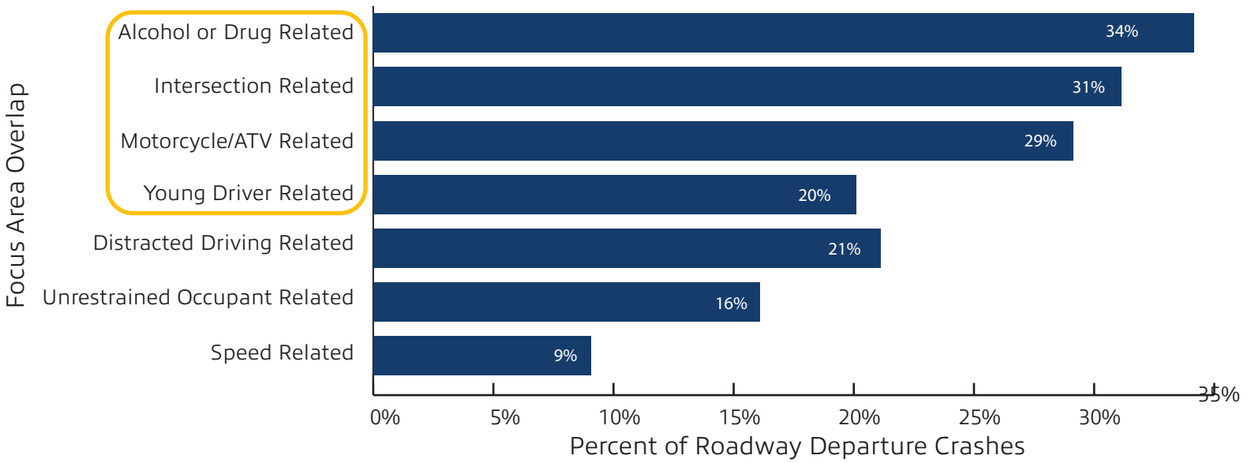


Figure 7: Focus Area Overlap of Roadway Departure Crashes

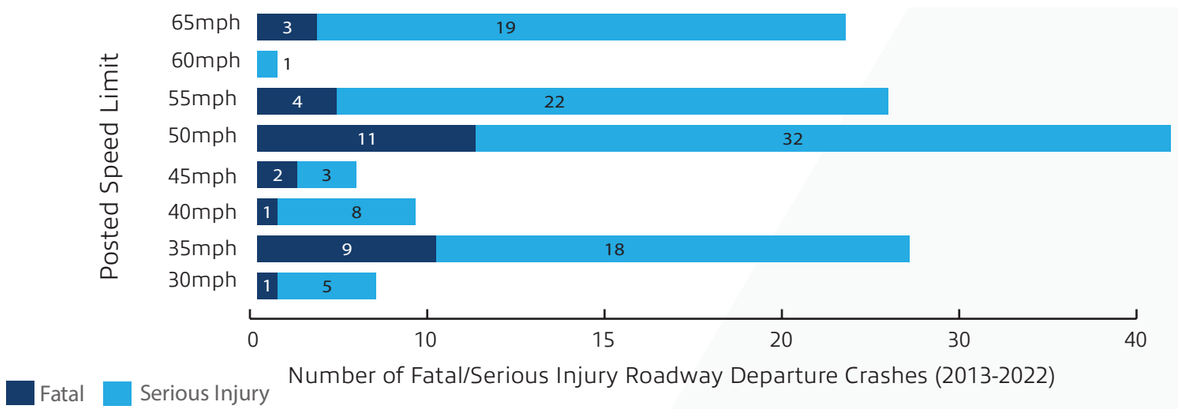
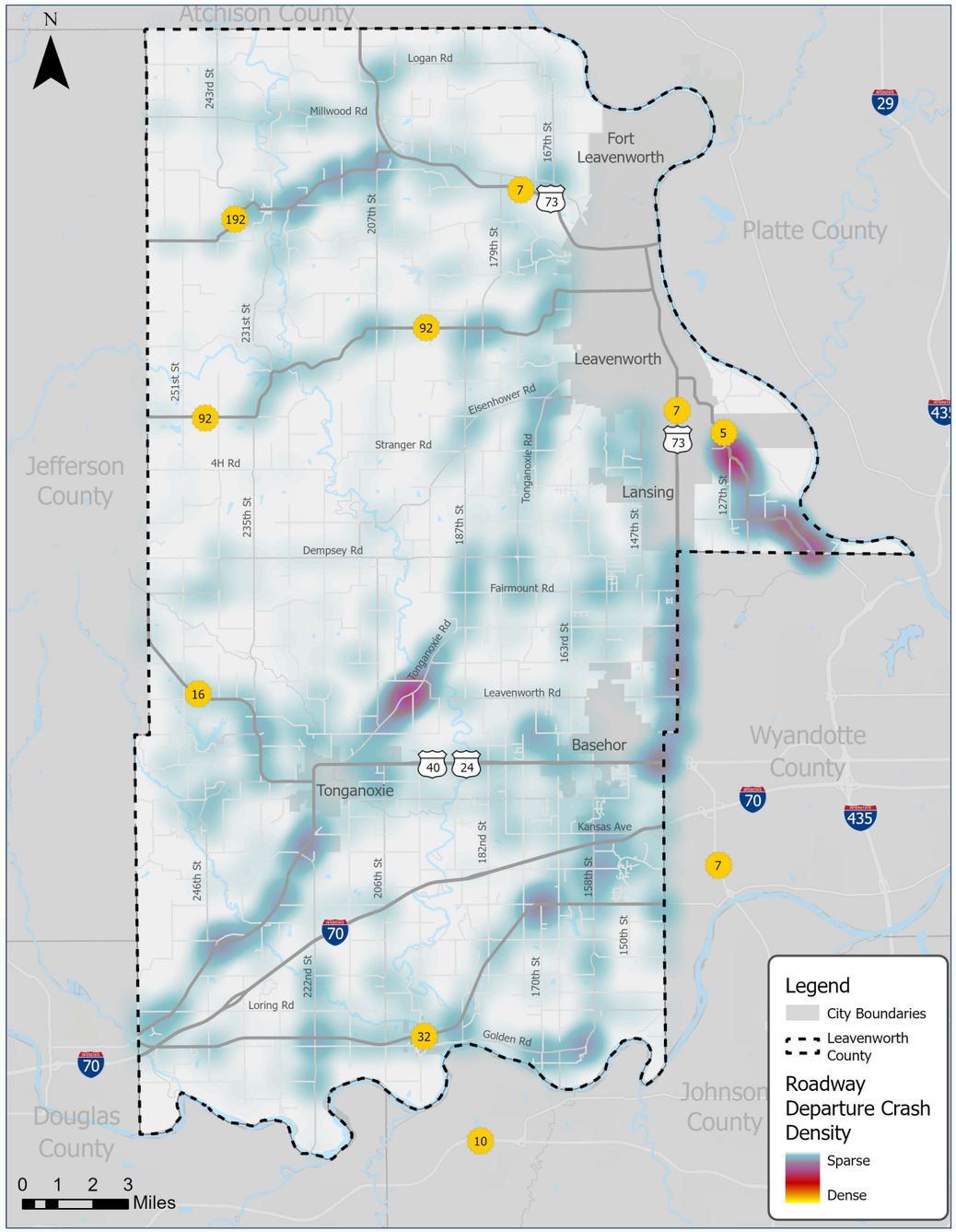


Figure 8: Posted Speed Limit of Roadway Departure Crashes



Map 7: Heat Map of Roadway Departure Crashes in Unincorporated Leavenworth County (2013-2022)

Focus Area #2: Intersections

Intersections are another critical focus area for improving road safety in Leavenworth County, accounting for 38% of fatal and serious injury crashes. These crashes often result from vehicles failing to yield, running red lights or stop signs, and making improper turns (e.g., misjudging time to make a turn, not having adequate sight distance), particularly at two-way stop intersections (see Figure 7). High-speed impacts at intersections can cause severe injuries or fatalities, particularly those that result in right-angle collisions, making them a key area for targeted interventions. Intersections in both rural and urban areas are prone to these types of crashes, with many issues stemming from poor visibility, inadequate signage, or complex turning movements. Map 8 provides a heat map of intersection crashes in Leavenworth County between 2013 and 2022.

38%
of fatal and serious injury crashes in the County are intersection-related.

To address these severe crash risks, safety improvements may include enhanced signage, implementation of dedicated turn lanes, improved lighting, or installation of traffic signals or roundabouts. Additionally, road design changes such as intersection reconfigurations can help reduce the likelihood of crashes. More information on these safety measures is discussed in Chapter 5.

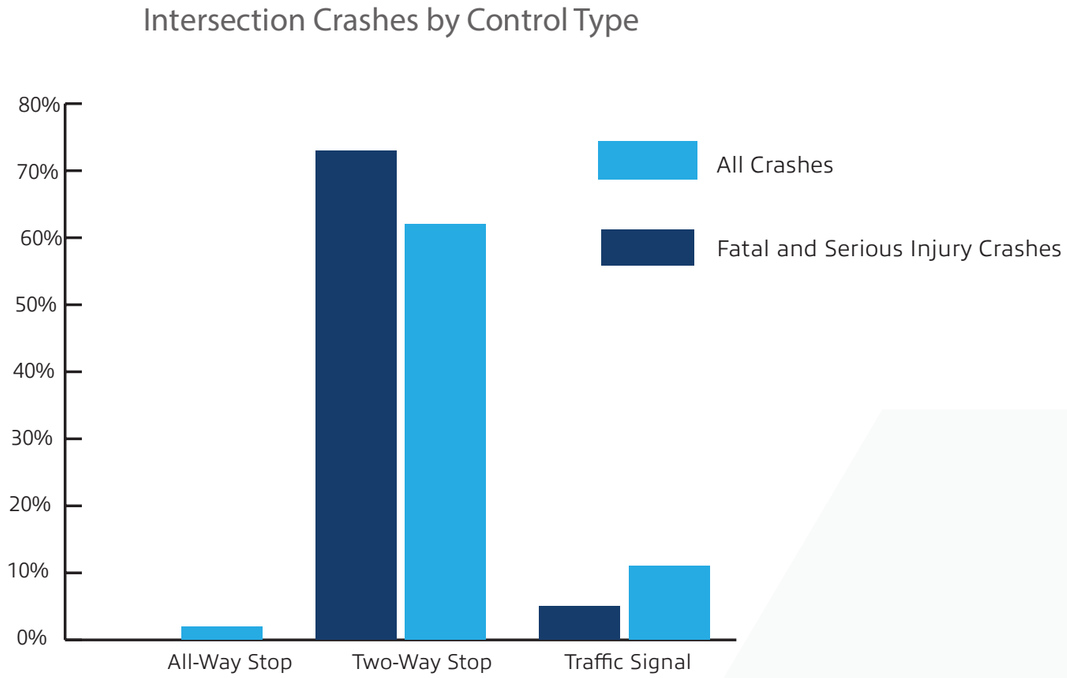
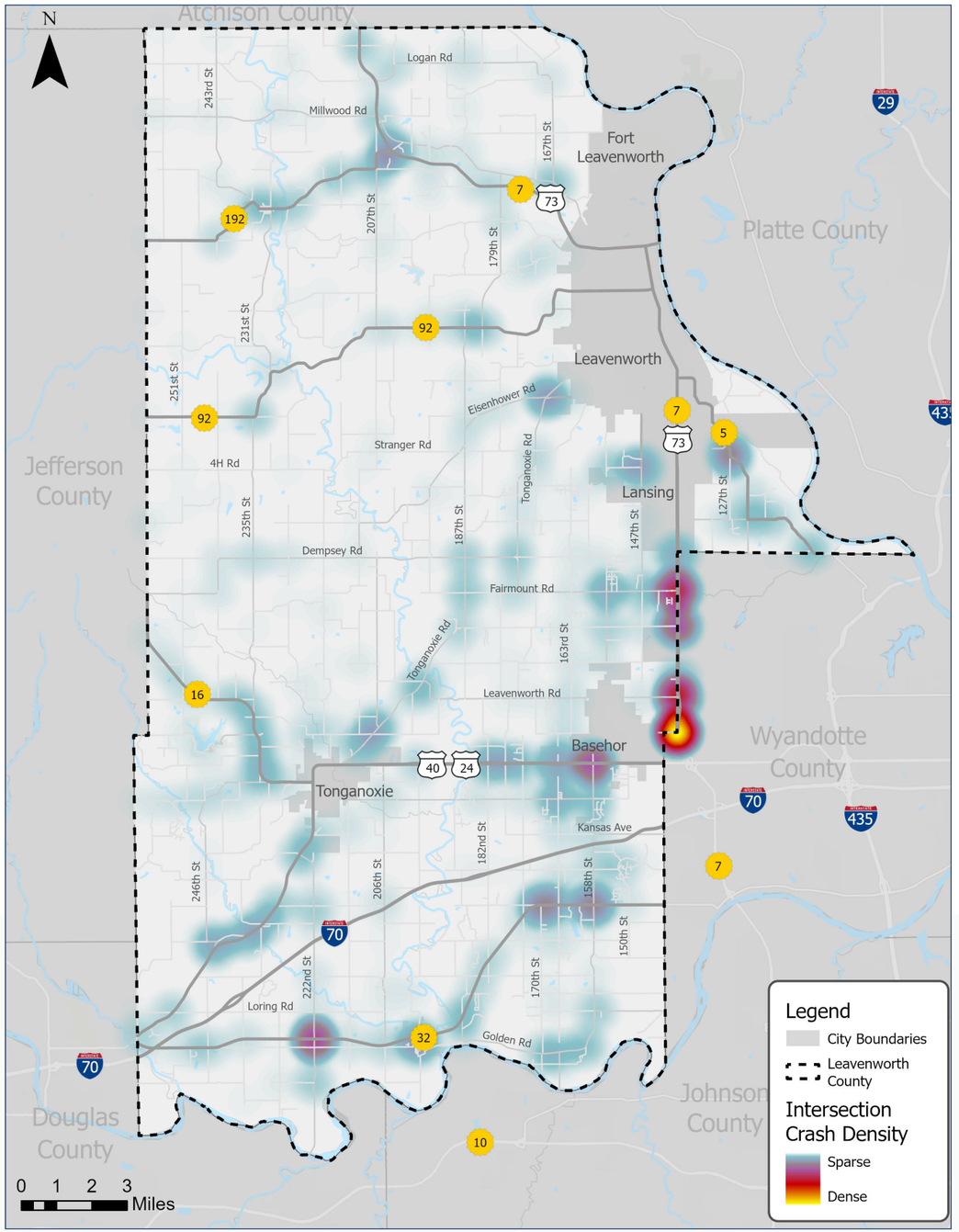


Figure 9: Control Type for Intersection Crashes as Percentages of Overall Totals (2013-2022)



Map 8: Heat Map of Intersection Crashes in Unincorporated Leavenworth County (2013-2022)

Focus Area #3: Motorcycles

Motorcycle crashes represent a significant portion of fatal and serious injury crashes in Leavenworth County, accounting for 23% of such crashes (see Figure 8). Motorcyclists are particularly vulnerable in crashes due to the lack of protective barriers compared to other vehicles, leading to more severe outcomes when crashes occur. Note that crashes involving motorcycles often result from a combination of factors, including speeding, impaired driving, and failure of other drivers to see motorcycles in traffic.

23%
of fatal and serious injury crashes in the County involve a motorcyclist

Many of these crashes occur at intersections or during lane changes, where motorcyclists are not easily visible to other drivers. Additionally, rural roads with higher speed limits pose a significant risk for motorcyclists, particularly when navigating sharp curves or deteriorating pavement. Map 9 provides a heat map of intersection crashes in Leavenworth County between 2013 and 2022.

To reduce motorcycle-related fatalities and serious injuries, safety measures may include public awareness campaigns focused on sharing the road, improved signage at high-risk locations, and targeted enforcement of speed limits and impaired driving laws. Infrastructure improvements, such as better lane markings and the addition of motorcycle-friendly barriers, can also help reduce the risk of crashes. More information on these safety measures is discussed in Chapter 5.

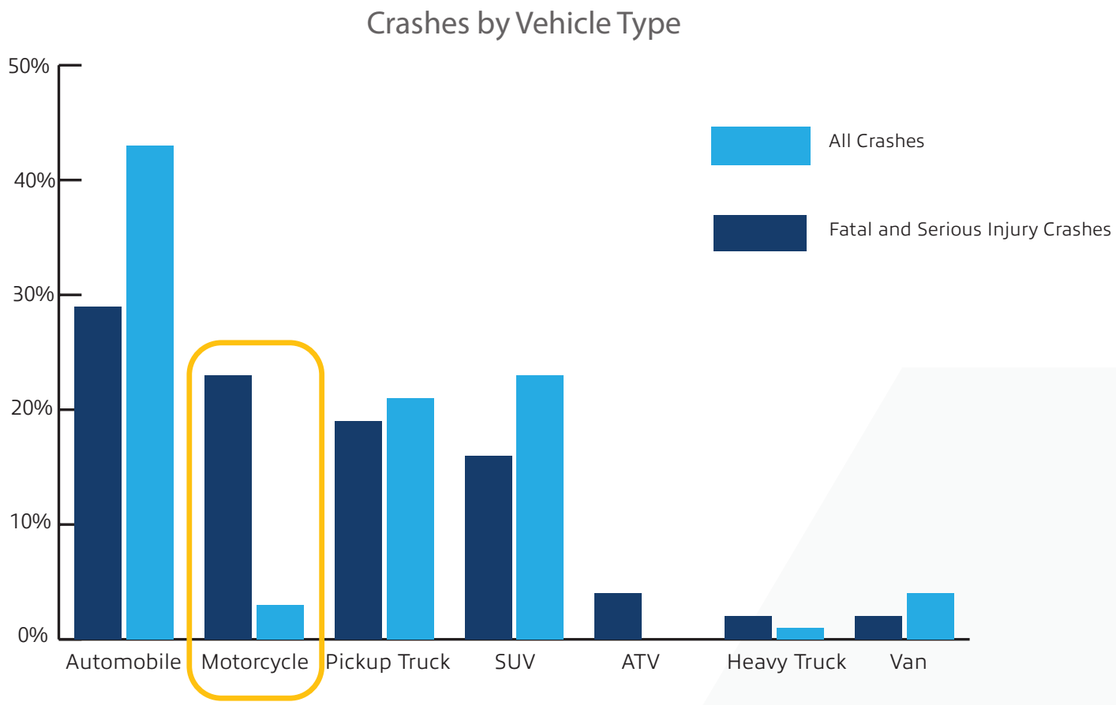
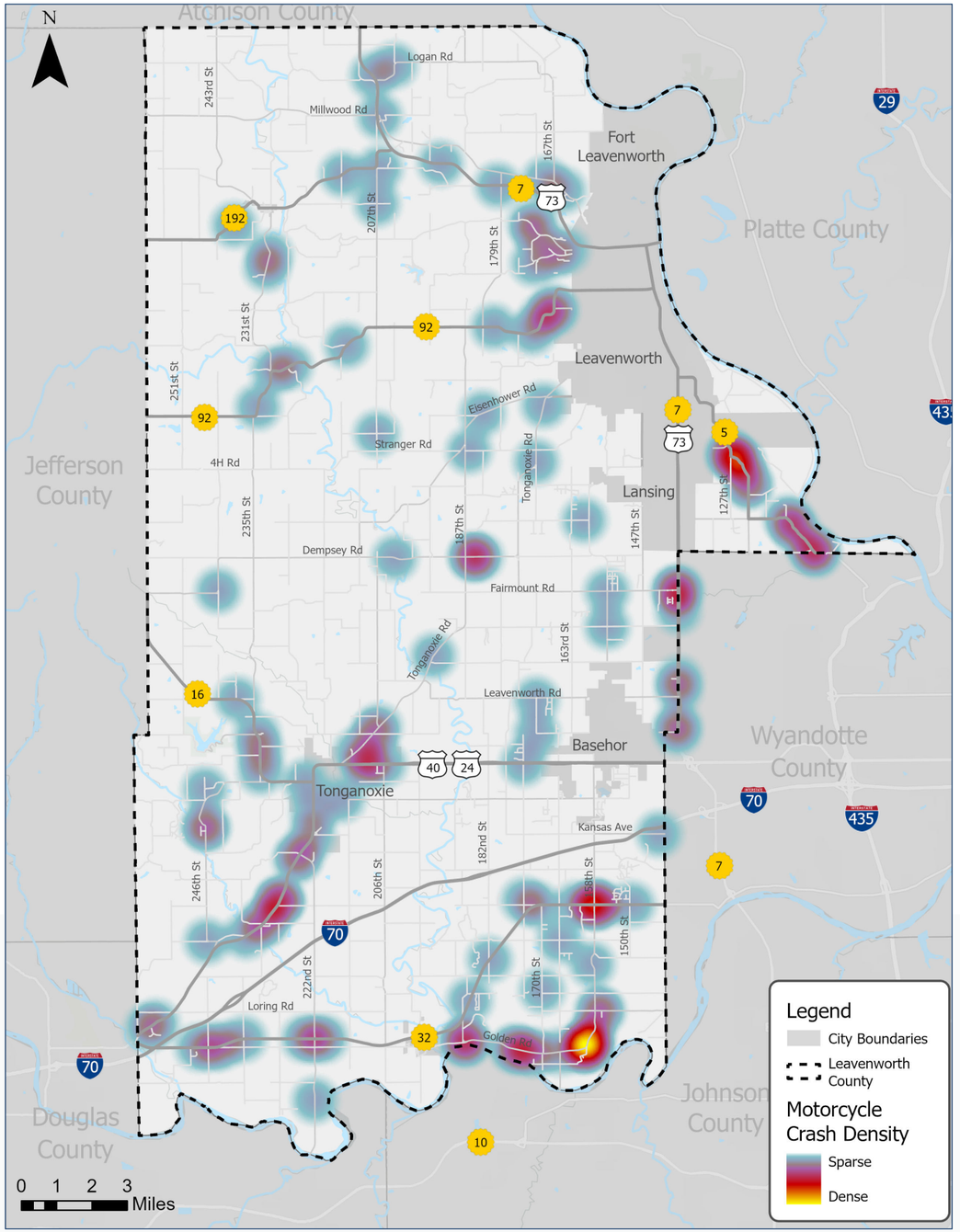


Figure 10: Crashes by Vehicle Type as Percentages of Overall Totals (2013-2022)



Map 9: Heat Map of Motorcycle Crashes in Unincorporated Leavenworth County (2013-2022)

Focus Area #4: Impaired Driving

Impaired driving is another significant factor in severe crashes across Leavenworth County, contributing to 28% of fatal and serious injury crashes (see Figure 9). Driving under the influence of alcohol or drugs dramatically increases the likelihood of crashes, as it impairs reaction time, judgment, and the ability to control a vehicle. The crash data analysis has shown impaired driving as a persistent problem, particularly on rural roads and during evening and weekend hours.

Many of these crashes occur on high-speed roadways, where the consequences of impaired driving can be especially severe. Additionally, impaired driving frequently leads to roadway departures, intersection crashes, and head-on collisions, further increasing the potential for fatalities and serious injuries. Map 10 provides a heat map of impaired driving crashes in Leavenworth County between 2013 and 2022.

28%
of fatal and serious injury crashes in the County involve impairment from alcohol or drugs

To address impaired driving, Leavenworth County can focus on a combination of enforcement, education, and infrastructure improvements. Increased DUI checkpoints, public awareness campaigns about the dangers of impaired driving, and collaboration with local law enforcement are key strategies. Infrastructure measures such as rumble strips and enhanced lighting can also help mitigate the effects of impaired driving by providing additional safeguards when drivers are less attentive. More information on these safety measures is discussed in Chapter 5.

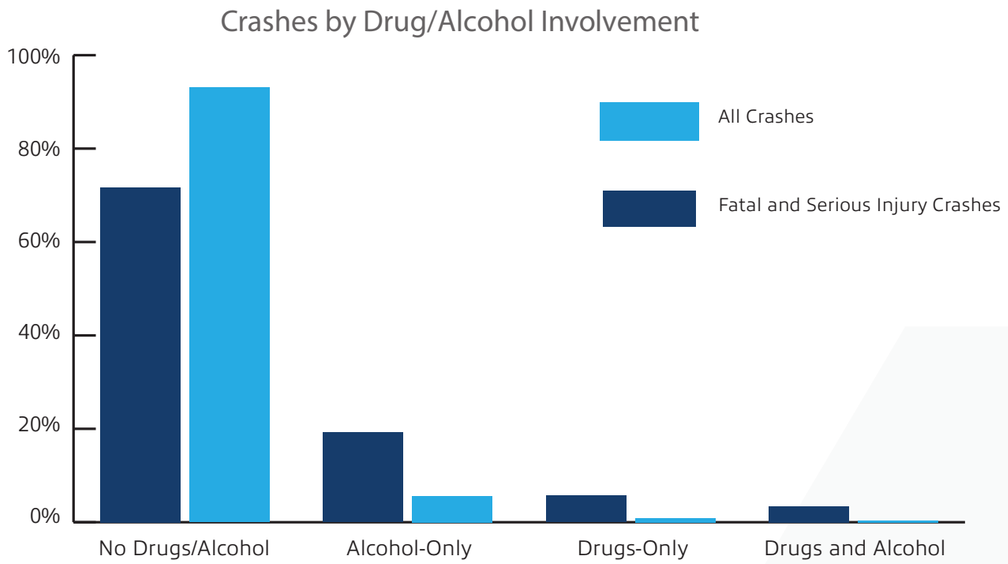
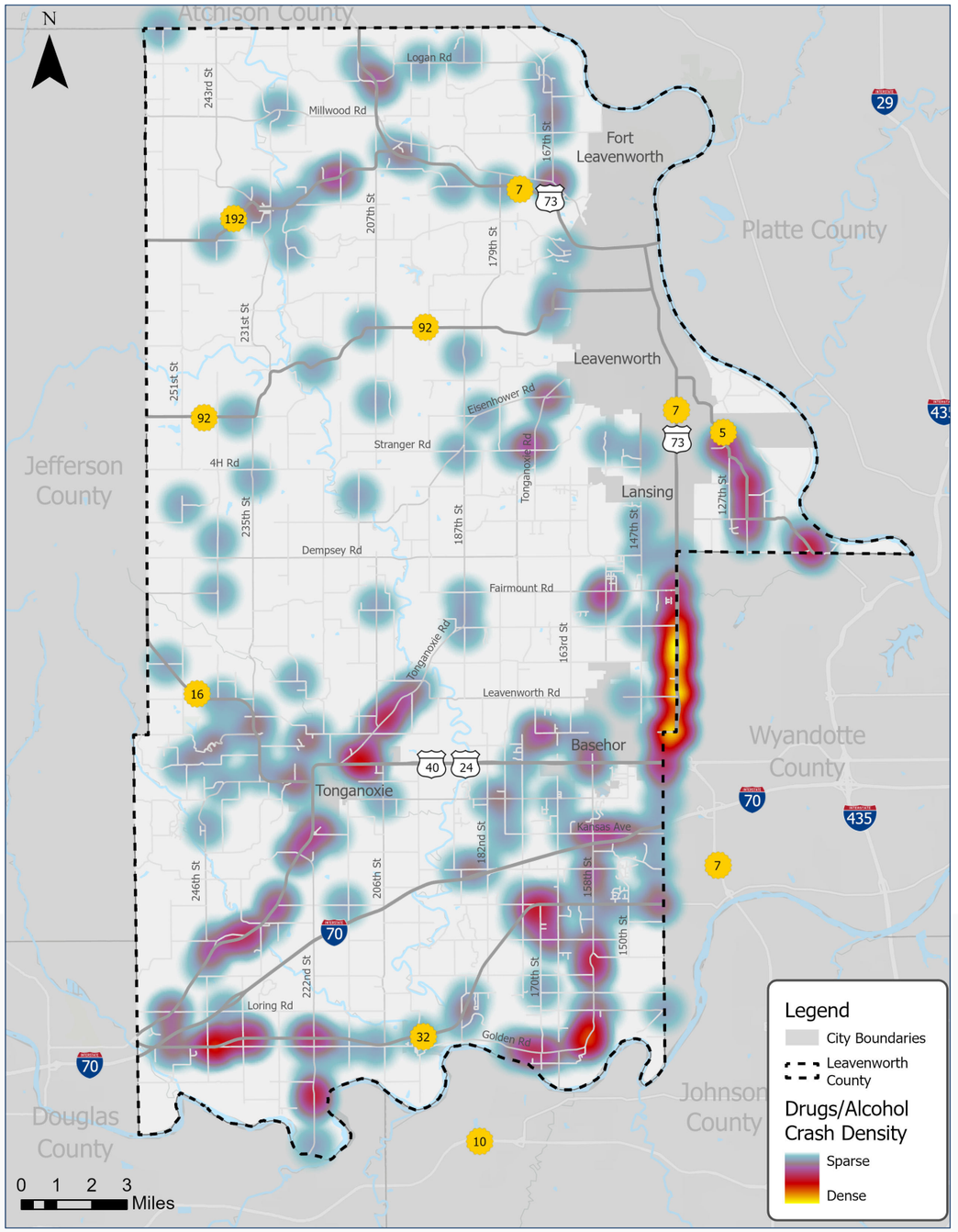


Figure 11: Crashes by Driver Impairment as Percentages of Overall Totals (2013-2022)



Map 10: Heat Map of Crashes Involving Drugs or Alcohol in Unincorporated Leavenworth County (2013-2022)

Focus Area #5: Young Drivers

Young drivers, particularly those under the age of 25, account for 20% of fatal and serious injury crashes in Leavenworth County (see Figure 10). Inexperienced drivers are more likely to engage in risky behaviors such as speeding, distracted driving, and failure to yield, all of which contribute to severe crashes. Data presented to the TAC shows that crashes involving young drivers often occur on high-speed rural roads and at intersections, where lack of experience can lead to dangerous situations.

20%
of fatal and serious injury crashes in the County involve a driver under the age of 25

Additionally, young drivers are more prone to distractions, including the use of mobile phones, and may not fully understand the risks of impaired driving or the need for defensive driving techniques. These factors increase the likelihood of collisions, particularly in complex traffic environments or during adverse weather conditions. Map 11 provides a head map of crashes by drivers 25 and younger in Leavenworth County between 2013 and 2022.

To improve safety for young drivers, Leavenworth County can focus on educational programs that emphasize safe driving habits, such as the dangers of distracted and impaired driving. Targeted enforcement of speed limits and seat belt laws, as well as public awareness campaigns, can also help reduce the risk of crashes among young drivers. Infrastructure improvements, such as better signage and traffic calming measures around schools and neighborhoods, can further enhance safety. More information on these safety measures is discussed in Chapter 5.

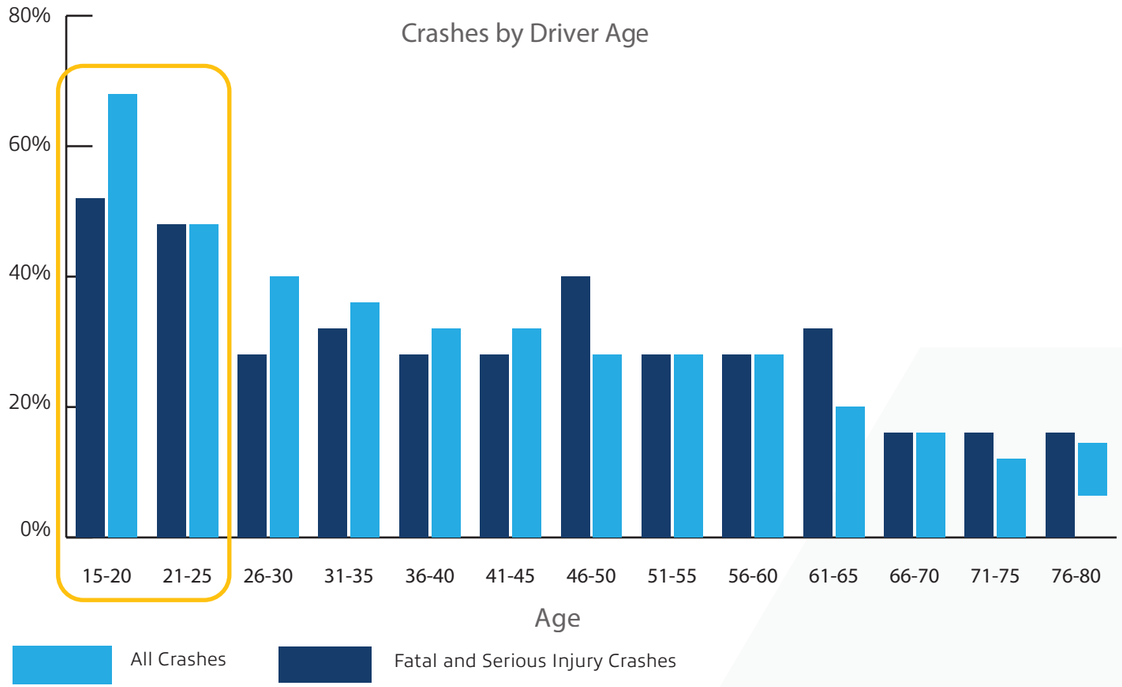
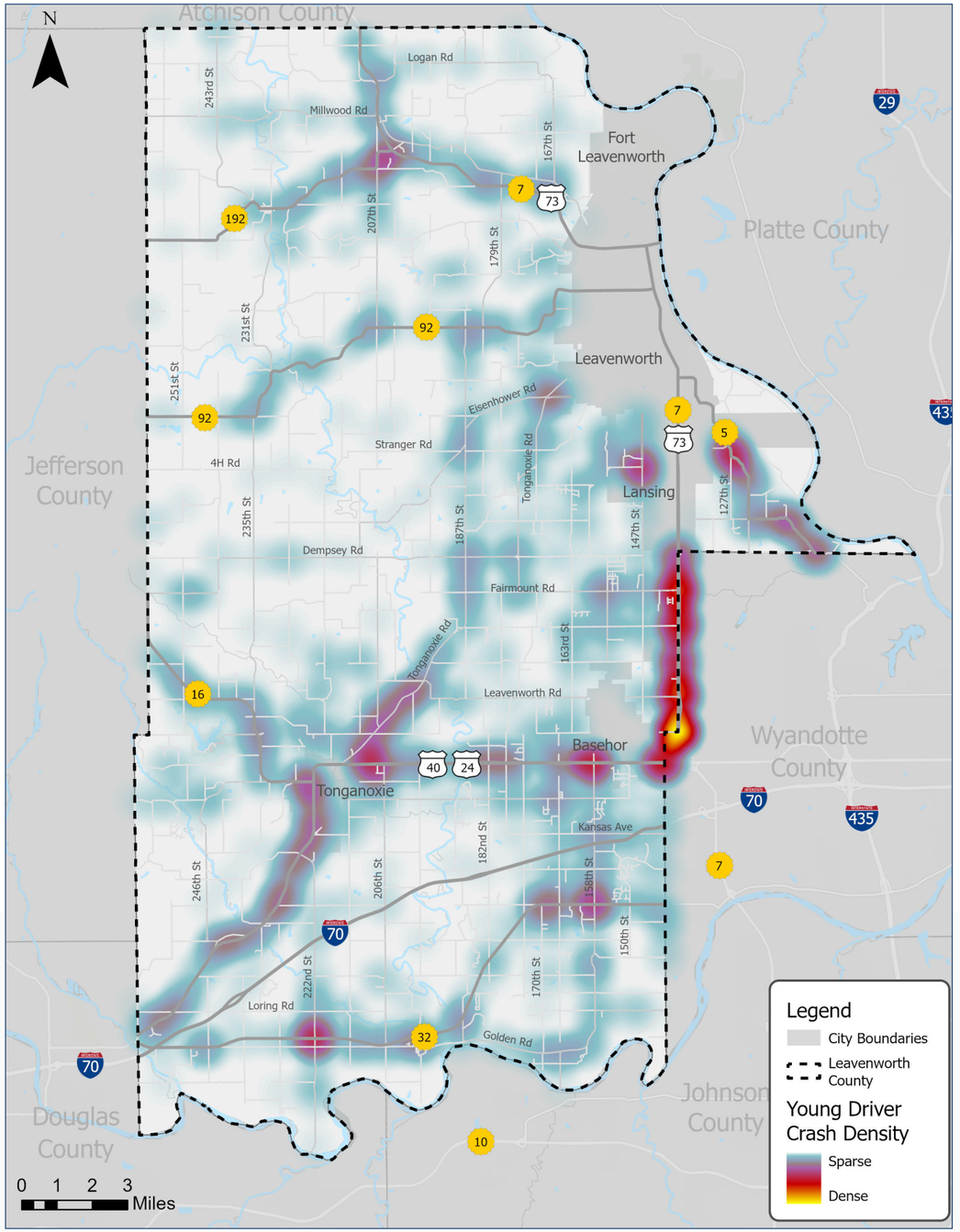


Figure 12: Crashes by Driver Age as Percentages of Overall Totals (2013-2022)



Map 11: Heat Map of Crashes by Drivers 25 and Younger in Unincorporated Leavenworth County (2013-2022)

03. Public and Stakeholder Engagement

Community engagement is an important component of this Vision Zero Action Plan, its implementation, and long-term success. By listening to public opinions and incorporating this input into solutions, the plan can best address traffic safety issues for everyone who lives, works, and plays in Leavenworth County. Throughout the planning process, the Leavenworth County website hosted project-related information, including Action Plan guiding principles, a Vision Zero fact sheet, and an interactive public engagement map that let residents share their traffic safety issues and ideas on how to reduce fatality and serious injury crashes. A stakeholder Technical Advisory Committee guided the planning process, and further stakeholder conversations with key members and organizations of the community were utilized to gain targeted input on specific issues. Appendix B contains a comprehensive summary of all community and public engagement activities.

TECHNICAL ADVISORY COMMITTEE

The Leavenworth County Vision Zero Technical Advisory Committee (TAC) was formed to help shape the Action Plan. The TAC played many roles throughout the plan's development, including promoting the plan to encourage public engagement, identifying potential focus areas, identifying specific members of the community to engage with targeted focus area conversations, providing input on potential countermeasures, and helping shape the plan overall.

The TAC is made up of various representatives from across Leavenworth County and their input has been critical to the development of the Leavenworth County Vision Zero Action Plan. Organizations of the TAC include:

- County Public Works
- County Planning and Zoning
- County Sheriff's Office
- Leavenworth County Development Corporation
- Fort Leavenworth
- Leavenworth County's Business Community

BUILDING FROM RECENT COUNTY PLANNING EFFORTS

Leavenworth County has recently undergone other major County-wide transportation efforts, such as the Leavenworth County Comprehensive Plan and the Priorities for Progress: Connecting Community Opportunities prioritization plan. This Vision Zero Action Plan sought to build upon these efforts and their engagement findings. These and other recent planning efforts are discussed further in Chapter 4.

- The Leavenworth County Comprehensive Plan hosted in-person and online engagement opportunities to understand respondents' demographics, why residents live in Leavenworth County, and respondents' thoughts on growth and other relevant topics within the County. As a result of this engagement, the project team learned that respondents' **greatest concerns for the County are the maintenance of existing roads and the construction of new roads.**
- The Priorities for Progress effort sought to gather refreshed information through in-person and online engagement opportunities specifically related to respondents' priorities for Capital Improvement Projects.

As part of the 2023 Priorities for Progress planning effort, the top transportation priorities from the general public in Leavenworth County, after economic impact, were:

- Safety
- Congestion
- Mobility

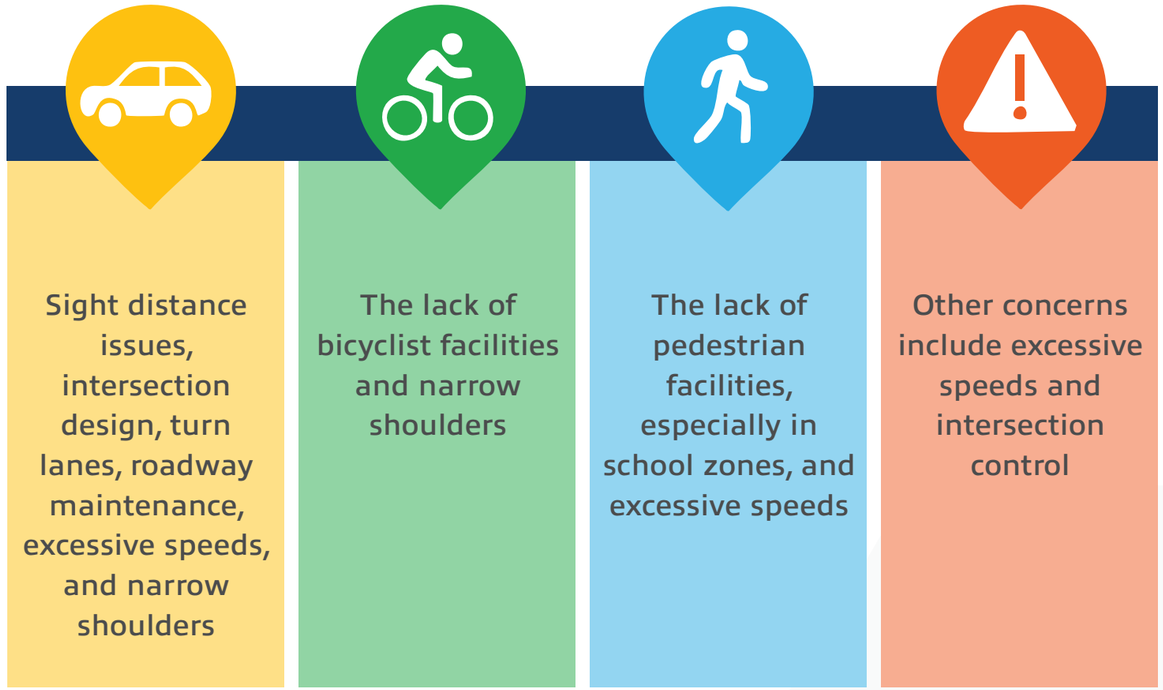
ONLINE PUBLIC ENGAGEMENT

To ensure engagement activities for this project were accessible and transparent to as many Leavenworth County residents as possible, the Leavenworth County Vision Zero website was launched in May 2024 to provide project information, project updates, and engagement opportunities. The site presents information and encourages the public to share their input through an online survey and interactive comment map, which allows citizens to identify areas they feel unsafe driving, walking, or biking on Leavenworth County roads.

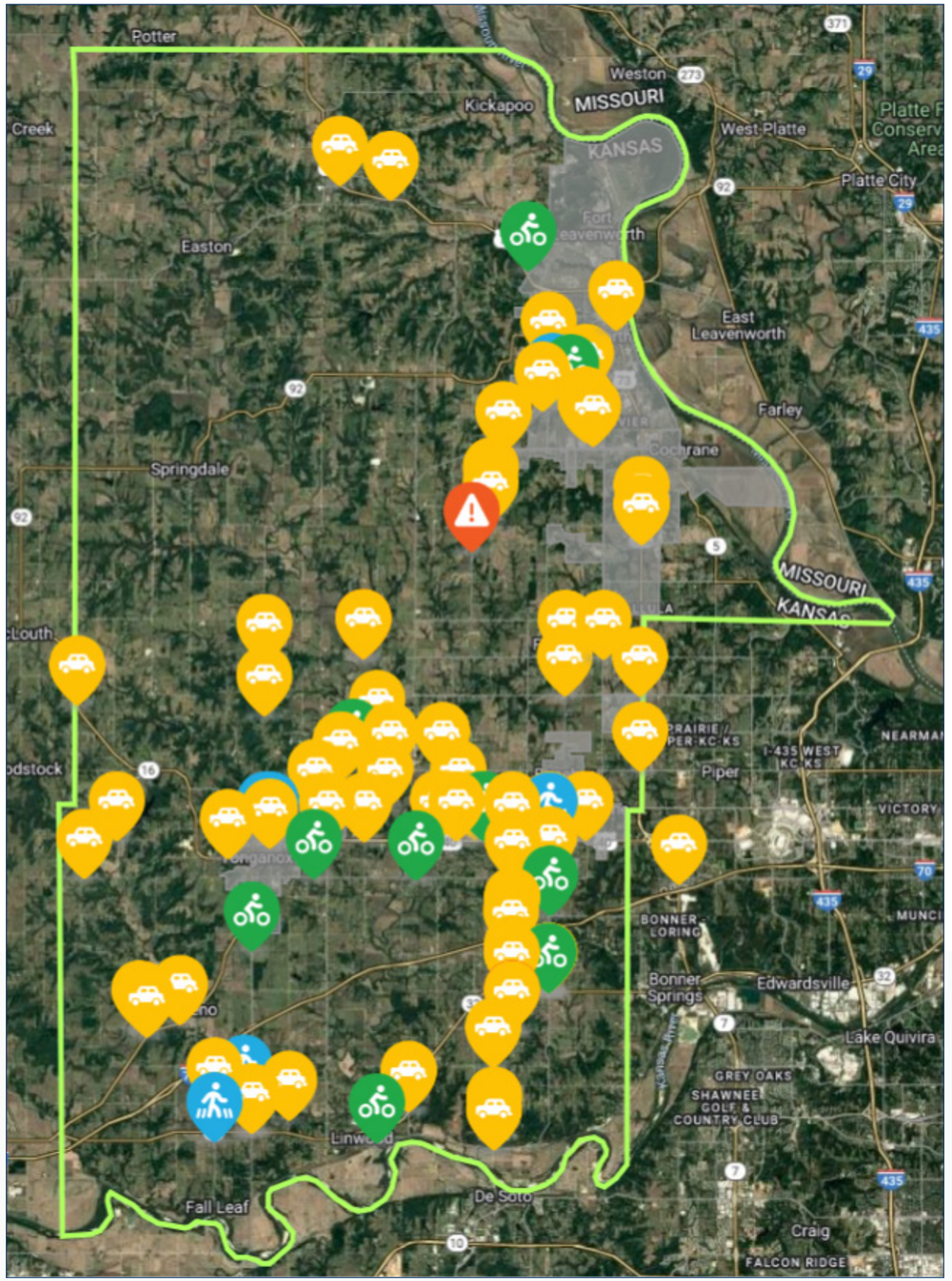
Key Themes from Public Input

The following were common themes from the input provided by the survey and through the interactive map:

- According to respondents of the quick poll surveys, the top issues affecting safety in Leavenworth County are distracted drivers (54.1%), lack of shoulders on rural roads (49.2%), and poorly maintained roads (45.9%).
- From the engagement map, respondents' top concerns were:



Sight distance issues, intersection design, turn lanes, roadway maintenance, excessive speeds, and narrow shoulders	The lack of bicyclist facilities and narrow shoulders	The lack of pedestrian facilities, especially in school zones, and excessive speeds	Other concerns include excessive speeds and intersection control



Online Interactive Comment Map Identifying Safety Issues in Leavenworth County

STAKEHOLDER ENGAGEMENT

1-on-1 / Focus Group Meetings

In addition to the TAC and the public engagement, targeted one-on-one or focus group conversations were held to discuss key safety focus areas identified through the comprehensive data analysis: Young Drivers, Motorcycle Safety, and Impaired Driving. Members of the community whose role led them to having first-hand experiences with these areas were identified and invited to provide their thoughts, experiences, and input on countermeasures that will help improve safety regarding these topics.

Key stakeholder conversations were held with representatives from the following entities:

- Basehor-Linwood School District (USD 456)
- Basehor Police Department
- Kansas Department of Transportation's Bureau of Traffic Safety
- City of Lansing Public Works Department
- City of Leavenworth Police Department
- Leavenworth County Planning and Zoning
- Leavenworth County Sheriff's Office

Key Themes from Stakeholder Conversations

The following were key themes in the input provided through stakeholder conversations:

Drinking

- The Lake Perry and Missouri River areas have a drinking culture.
- Enforcement presence has a deterrent effect on impaired driving, whether their presence is for holidays associated with impairment (e.g., July 4 or Labor Day) or every-day.
- To limit impaired driving, educational events are being held, such as the Sheriff's Office's Citizen's Academy and mock crashes that rotate between high schools within the County.

Young Drivers

- The biggest concern with young drivers is their tendencies to drive distracted and to drive above the speed limit, which is exacerbated by their inexperience.
- There are barriers preventing driver's education from being provided at schools throughout the county, such as funding and staffing.
- Seatbelt usage by students is pretty good, and should further improve as schools in Leavenworth County begin to take part in the Seatbelts Are For Everyone (S.A.F.E.) program (the first schools in the County, Lansing High School and Tonganoxie High School, joined the program in 2024).

Motorcyclists

- Leavenworth County draws in a lot of motorcyclists from around the area, as it has a lot of curvy, "fun" roads – the curves and geometry may be fun, but can be dangerous for inexperienced riders, especially in areas with poor sight distance.
- Being a motorcyclist carries a lot of risks, internally (some riders driver too fast, some don't wear proper safety gear, and the sport has a culture of "drinking and riding") and externally (other road users are sometimes unaware of motorcyclists, roadway surface issues, and roadway hazards)
- The State of Kansas does not currently have a universal helmet law, though it does have a law stating that individuals under 18 years of age must wear a helmet. In addition, eye protection is required by law (with some exceptions based on windshield height, if the driver is above the age of 18).

04. Plan and Policy Analysis

A comprehensive review of existing plans and policies, along with ongoing planning efforts in Leavenworth County, highlights both the strengths and opportunities for improvement in safety-related policies. Additionally, insights from peer communities' Vision Zero efforts provide valuable information for enhancing local initiatives. This chapter identifies key policy opportunities for improving roadway safety in Leavenworth County.

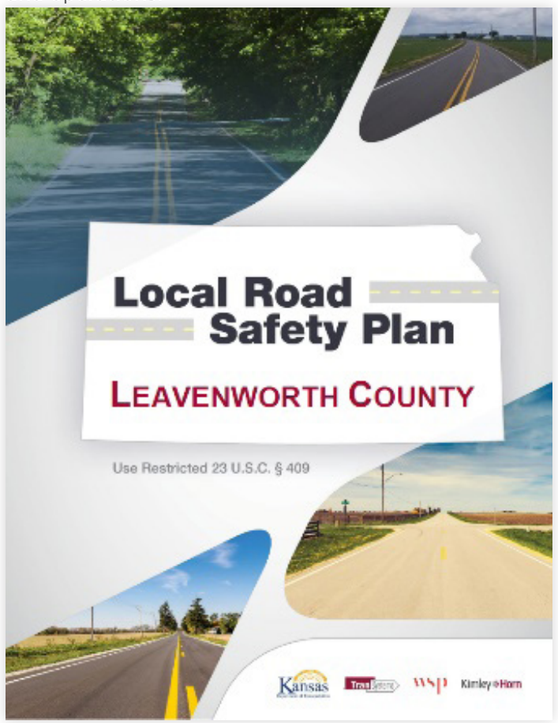
REVIEW OF EXISTING PLANS AND POLICIES

Several local, regional, and statewide plans, including those noted in Chapter 3, contain goals, policies, strategies, or proposed projects aimed at improving safety of the transportation system in Leavenworth County. Additionally, policies and standards at the local, state, and national level provide guidance and a regulatory framework that shapes how the County can address safety on its roadway network. A more detailed review of these and other relevant documents can be found in Appendix C.

Recent Planning Efforts

Leavenworth County Comprehensive Plan

The Leavenworth County Comprehensive Plan was adopted in 2020. The plan sets out a vision for the County's future development and provides current detail for roadway classifications, along with the County's zoning and subdivision regulations. A major concern found during public engagement efforts is people driving over the speed limit, posing a threat to other road users. The Plan also outlines roadway safety strategies, including an implementation matrix and an examination of the safety of the County's transportation system, structures, and operations.



Leavenworth County Priorities for Progress: Connecting Community Opportunities

This multi-agency planning effort prioritized already-identified projects within the County to obtain funding. Two top priorities that emerged out of this effort include the Tonganoxie-Eisenhower corridor project and the K-5 corridor project, which was recently selected for initial project discovery in KDOT's Eisenhower Legacy Transportation Program (IKE) program.

Leavenworth County Local Road Safety Plan (LRSP)

The County's LRSP encompasses all major County-owned collectors and paved roads and outlines potential safety improvements eligible for Highway Safety Improvement Program (HSIP) funding. The **LSRP emphasizes low-cost systemic improvements and focuses on proactive measures while targeting crash hotspots. The LRSP identified and prioritized ten proactive safety improvement projects to reduce fatal and serious injury crashes.** So far, of those ten projects, High Risk Rural Roads (HRRR) funding has been awarded for two projects on the Tonganoxie Road corridor.

Table 3: Leavenworth County LRSP Project Locations, Opinion of Probable Cost, and Project Status

Project Location / Description	Est. Project Total	Project Status
Tonganoxie Dr between Tonganoxie city limit and 195th St/Mitchell Rd	$2,328,000	Funded, In Design
Tonganoxie Dr between 187th to 189th Streets	$1,807,000	Funded, In Design
155th St between Donahoo Rd and Fairmount Rd	$1,005,000	
Kansas Ave between 158th St and 142nd St	$1,121,000	
158th St/Golden Rd between 166th St and Kansas Ave	$3,351,000	See Chapter 5
Millwood Rd between 243rd St and US-73	$2,393,000	See Chapter 5
Fairmount Rd between Tonganoxie Dr and US-73/K-7	$3,029,000	See Chapter 5

Statewide Plans

The 2020-2024 Kansas Strategic Highway Plan (SHSP) focuses on strategic investments to reduce traffic injuries and fatalities. **The SHSP targets emphasis areas with the highest rates of fatal and serious injury cases, including roadway departures, intersections, impaired driving, and young drivers.**

An addendum to the SHSP in 2023, the Vulnerable Road User Safety Assessment (VRUSA), tries to better understand the conditions and behaviors linked to fatal and serious injury crashes involving vulnerable road users (VRUs) such as bicyclists and pedestrians. **The VRUSA identified a statewide priority network where agencies should consider safety countermeasures for pedestrian and bicyclist safety.** Within Leavenworth County, most of the priority network segments fall within the incorporated cities of Basehor, Lansing, Leavenworth, and Tonganoxie, but there are also some VRU priority segments in the unincorporated area.

The Kansas Active Transportation Plan was released in 2023. It addresses the needs of individuals who walk, cycle, and other non-motorized modes of transportation. The plan includes various toolkits and resources to support implementing active transportation in local communities.

COUNTY POLICIES, PRACTICES AND RESOLUTIONS

Leavenworth County has established standards for entrance permits and speed limits. However, the County does lack formalized public policies for road sign maintenance and pavement markings. Having strong polices, practices, and resolutions will be key to improving overall road safety.

County Road Entrance Permits/ Access Management

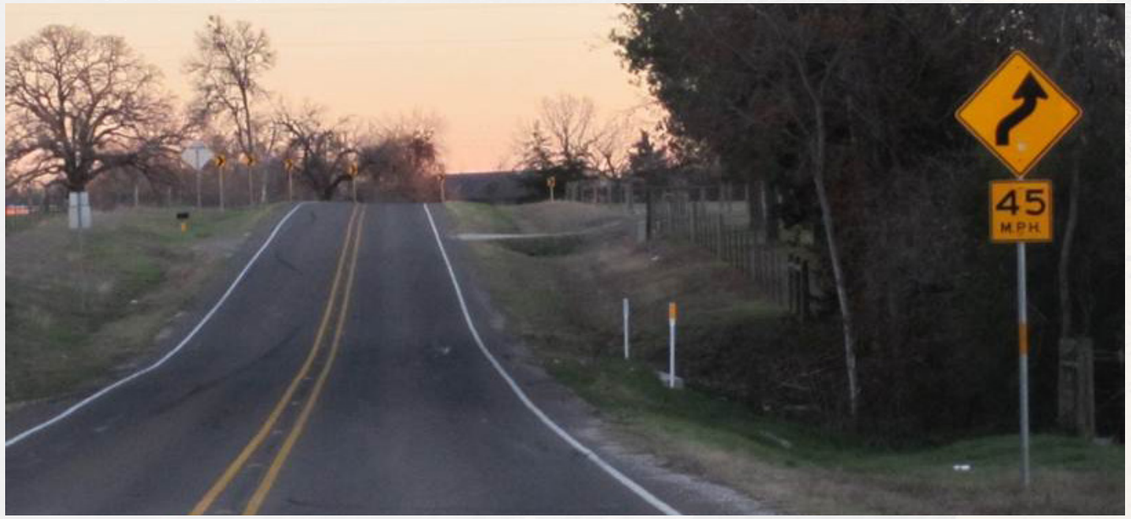
The Federal Highway Administration (FHWA) has found that where access management policies are implemented, users experience a 5% to 23% reduction in all crashes along two-lane rural highways. Additionally, KDOT's Access Management Policy (2013 Edition) acknowledges that providing better access management improves overall safety. The 2020 Leavenworth County Entrance Permit application effectively implements access management on County roads and ensures that driveways on County roads meet the County's standards, including minimum spacing between driveways.

County Road Speed Limits by Kansas State Statute

Kansas state statutes govern the maximum speed limits among county roads, as well as processes for modifying speed limits. The maximum lawful speed limits are categorized by urban districts (30 mph), separated multilane highways (75 mph), county or township highways (55 mph), and all other highways (65 mph). Although these limits exist, there are additional statutes which include parameters that allow for raising or lowering speed limits. Leavenworth County has established resolutions for non-hard surface roads and dust abatement roads, setting a speed limit to no greater than 35 mph and requiring the speed limit signs to be in place on these roads. Paved county roads have, in general, a default 55 mph speed limit.

Signing and Markings Maintenance

Leavenworth County does not have published policies regarding road sign maintenance. Current practice for the County is to conduct visual nighttime inspections to make sure signs meet minimum retroreflectivity requirements. For guidance, the Manual of Uniform Traffic Control Devices (MUTCD) outlines the minimum standards public agencies must maintain regarding sign retroreflectivity. Likewise, Leavenworth County does not have published policies for pavement markings maintenance. The current practice is to perform yearly maintenance on painted roads by chipping and sealing one-third of the hard surfaced road and repainting the remaining two-thirds. The MUTCD includes information on standards for including center-line markings based on the traffic volume, the width of the road, and the context of the road. It also mandates the standards for edge lines on freeways, expressways, and certain rural roads.



Roadside Maintenance

The County does not have any published guidelines on roadside mowing and clearing, although it has several practices for regular maintenance schedules for mowing within the right-of way and clearing of vegetation. Currently, the planned maintenance schedule for mowing—which can be impacted by breakdowns, available staffing, and weather—is three times a year along all hard surface roads and twice a year for gravel roads. The clearing of landscaping (e.g., brush, trees, etc.) is completed as reported and seen by crews.

Snow Removal

The 2019 Policy on Snow and Ice provides guidelines for efficiently managing snow and ice on roadways during winter weather. Operations Supervisors have the authority to make decisions and adjust plans based on their judgment and real-world conditions. The policy outlines condition criteria based on factors like snowfall amounts, road conditions, and prioritizes hard surface roads based on primary, secondary, and tertiary classifications. The plan outlines operational support, command and communication, documentation practices, and shift schedules. The County does not maintain a bare pavement policy for snow removal.

Traffic Impact Fee Policy and Fee Schedule

The 2021 Traffic Impact Policy in Leavenworth County addresses the transportation demands of new developments by establishing fees based on roadway type and expected vehicle traffic to cover roadway maintenance. If proposed traffic exceeds certain limits, a Traffic Impact Study and or/roadway assessment is required. The policy outlines responsibilities for conducting studies and ensuring that any additional roadway or infrastructure improvements meet county and state standards.

PEER COMMUNITIES BEST PRACTICES

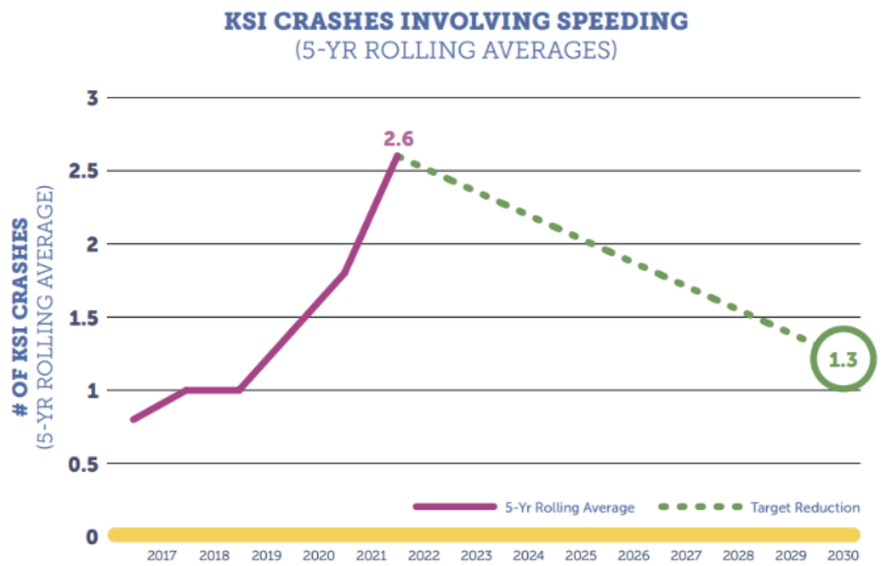
Vision Zero Action Plans from other communities were used as case studies to evaluate best practices to incorporate in Leavenworth County's Vision Zero Action Plan. The following plans and polices were reviewed because of similarity and, or proximity to Leavenworth County: Leavenworth City, KS; Shawnee County, KS; Sonoma County, CA; Mooresville, NC; Omaha, NE; Montgomery County, MD; and Carver County, MN. Several key themes emerged from peer communities:

- Speed management is a primary focus, underscoring the need to create a culture of safety for all road users, especially the vulnerable.
- Setting specific target goals helps track progress and ensures accountability.
- Creating a dashboard creates a central place to highlight existing projects, specific target metrics, and other various traffic data.

Leavenworth City, Kansas – City of Leavenworth Vision Zero Action Plan

The City of Leavenworth finished their own Vision Zero Action Plan in the fall of 2024. Their action plan focuses on three specific categories: Safe Speeds, Safe Users, and Safe Streets. For planning and policy items relation to Safe Speeds, the plan suggests adding feedback signs, implementing a formalized traffic calming program, and conducting speed studies. Recommendations for Safer Users include adding safety programs in schools and evaluating traffic enforcement. Elements such as quick-build demonstrations, intersection traffic studies, and access management policies are recommended. The plan has also established target performance measures to review progress towards their goals.

*See K.S.A. 8-1558 through 8-1560



City of Leavenworth Performance Goals

MTPO, City of Topeka, and Shawnee County – Transportation Safety Plan

The Metropolitan Topeka Planning Association (MTPO), City of Topeka, and Shawnee County Transportation Safety Plan acknowledges that the key to reaching zero traffic deaths is actually implementing the plan. Their efforts include Short-Term (1-5 years), Medium-Term (5-7 years), and Long-Term (7 to 10 years) goals. Example short-term goals include instituting a "distracted driving" ordinance, enhancing the City's current traffic calming program, and various in-school educational initiatives. Example long-term goals include reconstruction of intersections with alternative designs to reduce the number of conflict points (i.e., roundabouts) and install rectangular rapid flashing beacons (RRFBs) and high-visibility crosswalks at intersections. As part of implementation efforts, the MTPO evaluates their crash data on an annual basis for their countermeasure implementation.

Sonoma County, California – Vision Zero Action Plan

Sonoma County's Vision Zero Action Plan emphasizes local Vision Zero goals, including reviewing speed limits, eliminating impaired driving, and fostering a culture of safety. It highlights how the County wants to work closely with schools to improve road safety. One initiative they are taking is implementing a process to reduce speed limits to 25 mph or below in areas near schools, parks, and transit stations. The plan advocates for the expansion of automated traffic enforcement (ATE) in addition to a policy framework that supports Vision Zero Safety objectives.

Carver County, Minnesota – Policies

Carver County, Minnesota has a well-organized set of policies posted publicly on their county website. Their Rumble Strip Policy weighs safety benefits with the noise nuisance associated with rumble strips. It also provides uniformity for applicants and installers of edge line and centerline rumble strips on rural county roads. Carver County has a Snow and Ice Policy that provides clear steps for snow and ice removal on the county highway system. Their extensive Sign Policy recognizes that the Minnesota MUTCD is the standard, and that their traffic control devices must conform to the statues. Carver Counties Policies website also includes an Access Policy, Right-of-Way Ordinance, Landscape Policy, Mailbox Policy, and Pedestrian Crossing Policy for Uncontrolled Crossings.

Mooresville, North Carolina – Vision Zero Action Plan

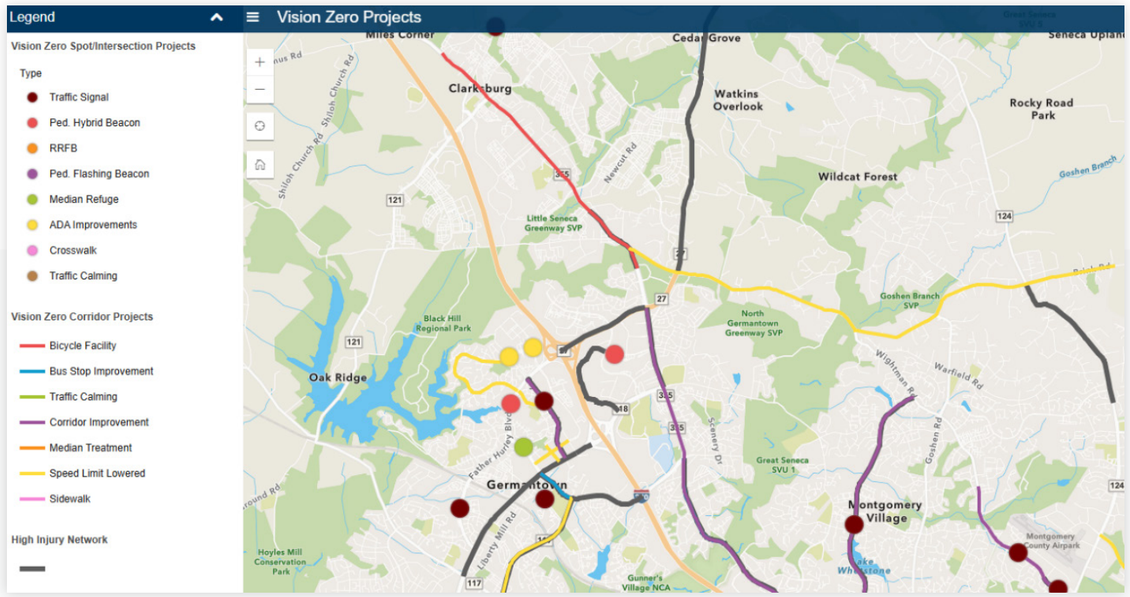
Mooresville, North Carolina aims to create safer streets for all users and foster a culture around safety with increased implementation of safety improvements. Key strategies within their plan include evaluating speed reductions to 25 mph in the Downtown area, requiring traffic calming measures in new developments, and identifying opportunities for road diets. The plan recommends a Vision Zero Task Force meet bi-annually to review safety data. The plan also emphasizes continuous tracking of relevant data, and the impacts of safety improvements.

Omaha, Nebraska – Vision Zero Action Plan

The Vision Zero Action Plan for Omaha, Nebraska aims to eliminate traffic fatalities through collaboration, policy improvements, and strategic initiatives. Key components include implementing road diets, traffic calming measures, improved roadway lighting, raised medians, and access management. It also highlights using speed feedback signs and enhanced speed enforcement. Additional elements involve conducting road safety assessments, developing a Vision Zero dashboard for data management, and producing an annual report to update and evaluate the plans' progress.

Montgomery County, Maryland – Vision Zero Action Plan

Montgomery County's Vision Zero Action Plan highlights three areas of Action: Complete Streets; Multimodal Future; and Culture of Safety. Montgomery County annually publishes a Vision Zero progress report that highlights on-going and completed action items. They also release quarterly reports showing the status of each project. After Fiscal Year 2023, Montgomery County saw a 13% decrease in serious and fatal crashes due to their implementation of listed projects from their Vision Zero Plan. As an example, during 2023 the County was able to start/complete 115 work items from the plan. Highlights from the work plan include 11 high injury network corridors under study, design or construction; 11 spot improvements competed for Safe Routed to School; 7 pedestrian beacons and traffic signals installed, and more. This process is on-going as Montgomery's County Vision Zero Action Plan goal is zero traffic deaths by 2030.



Montgomery County, MD, Vision Zero Projects Interactive Map

KEY POLICY OPPORTUNITIES

The review of existing plans and policies, as well as peer communities' policies and plans, reveals several opportunities to enhance roadway safety in Leavenworth County through new or updated policies.

County Road Speed Limits

Recommendation: Initiate a County road speed limit study to review existing posted speed limits and recommend any adjustments to those speed limits based on factors provided in the 11th Edition of the MUTCD. . A desktop-level assessment of speeds on County roads using sampled in-vehicle data (e.g., cell phones, GPS) was performed as part of this planning effort and its outputs are included in Appendix C; this analysis recommends spot locations for more detailed study and guidance on what those studies should entail.

Why: Operating speeds on local roadways play a large role in whether a crash is severe (serious injury or fatality) or property damage only. Setting appropriate speed limits based on roadside conditions, development context and other factors can impact the speed at which drivers travel on the local roadway system.

Intersection Lighting

Recommendation: Currently, Leavenworth County has no public streetlights on county managed roads. The County should create a policy for evaluating and installing lighting at intersections. A "draft" intersection lighting policy is included in Appendix C and provides a decision flow-chart for prioritizing intersection locations. This includes considerations around the availability of power and the ability to mount on existing utility poles.

Why: A recent study completed in January 2021 found that installing rural intersection lighting can reduced all crashes by up to 20%.

Rumble Strips

Recommendation: The County should develop a rumble strip policy for centerlines, edge lines, and shoulders. This policy should be based on best practices for other counties in Kansas and surrounding states. KDOT already has a Longitudinal Rumble Strip Policy for the Shoulder and Centerline that accommodates the needs of cyclists. . A "draft" rumble strip policy is included in Appendix C and provides a decision flow-chart for prioritizing locations for installation

Why: Rumble strips make a significant difference in preventing severe crashes on rural roads. A study done by Kansas State University recommends shoulder rumble strips on all rural roadways with narrow shoulders, regardless of the traffic volume.

Sign Inspections and Replacement

Recommendation: Leavenworth County should establish a clear set of policies for sign inspections and replacement. This includes writing standards for the inspection process done by technicians.

Why: Establishing clear sign policies for inspections is important for safety and consistently along County roadways. Standardized procedures will ensure that signs meet MUTCD retroreflectivity standards.

Pavement Marking Maintenance

Recommendation: Adopt a policy or resolution regarding painting after roadway resurfacing and planned maintenance. Create a documented process for the timing and methods for chipping, sealing, and repainting roads. Increase the width of painted edge lines in rural areas from 4 inches to 6 inches for better visibility.

Why: To enhance overall safety and visibility for drivers, and to streamline maintenance process. The policy should be created based on Average Annual Daily Traffic (AADT), road classification, and safety considerations.

Roadside Maintenance

Recommendation: Create a clear guideline focused on the upkeep of roadsides. Develop specific instructions for maintaining roadside vegetation. A maintenance schedule should be included with hard surface roads three times a year, and gravel roads twice a year.

Why: Effective upkeep helps to promote safety for drivers and pedestrians, while improving the aesthetics of the road and improving the visibility of wildlife.

Stormwater

Recommendation: Assess and revise the County's Road Construction and Stormwater standards. The Standards should align with best management practices, peer county practices, and guidance from FHWA.

Why: Stormwater management is vital for effective drainage, reducing flooding, and protecting water quality. Proper stormwater management can enhance the county's infrastructure resilience and promote environmental sustainability.

Public Accessibility

Recommendation: Enhance the public's ability to research county-related information. Ensure that the portals for the Public Works, and Planning and Zoning Departments have clear labels.

Why: Leavenworth County currently lacks essential labeling and maps for showing roadways with commercial vehicles or "preferred routes" for motorcycles or bicyclists. The "How Do I" should provide examples of what each departments requires to handle requests. This should be updated for transparency to the public.

05. Safety Strategies and Projects

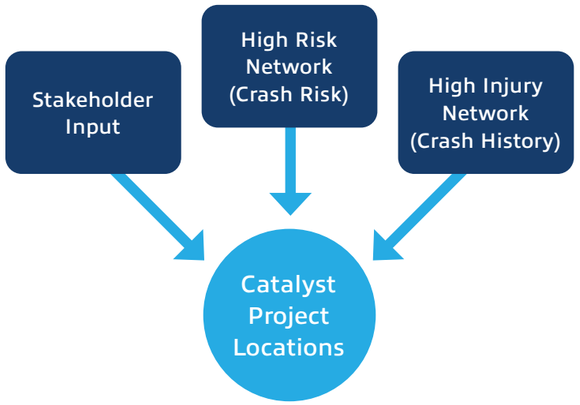
Chapters 2 through 4 transparently document "what are the issues?" with regard to transportation safety in Leavenworth County – based on a detailed analysis of historic crash data, input from County stakeholders and the general public, and a review of County policies and processes against peer agencies. This chapter dovetails into "what should we do to address these issues?" It provides a Countermeasures Toolbox to serve as a "menu" of strategies that can be applied proactively throughout the County, as well as recommendations for Catalyst Projects at key targeted locations most in need of safety improvements.

COUNTERMEASURES TOOLBOX

The following pages provide a menu of countermeasures, or strategies that are proven to reduce fatalities and serious injuries from traffic crashes. These countermeasures include infrastructure-based strategies – changes to the built environment – as well as behavioral strategies aimed at modifying the behavior of drivers. The Leavenworth County Countermeasures Toolbox was developed in coordination with the project TAC and is rooted in established national guidance, such as FHWA's Proven Safety Countermeasures (focused on infrastructure strategies) and the National Highway Traffic Safety Administration's (NHTSA's) Countermeasures That Work (focused on behavioral strategies). Many of these strategies have been adopted by KDOT and recommended in the County's 2021 Local Road Safety Plan, and many of these are already in place in Leavenworth County or in neighboring communities. Appendix D provides a more detailed version of this Toolbox for reference.

PROJECT PRIORITIZATION

While the countermeasures in the toolbox represent a menu of potential strategies, the next step is to combine one or more of these strategies into projects at targeted locations for design, funding, and implementation. As first laid out in Chapter 2 and Appendix A, this Vision Zero Action Plan identified a High Injury Network (HIN) and High Risk Network (HRN), which are overlaid onto each other in Map 12 again for reference. By overlaying these two networks together, and by incorporating key stakeholder input, the catalyst projects described in the next section were identified. Moving forward, the matrix below summarizes a basic prioritization methodology that should be applied when prioritizing where to implement safety improvements.



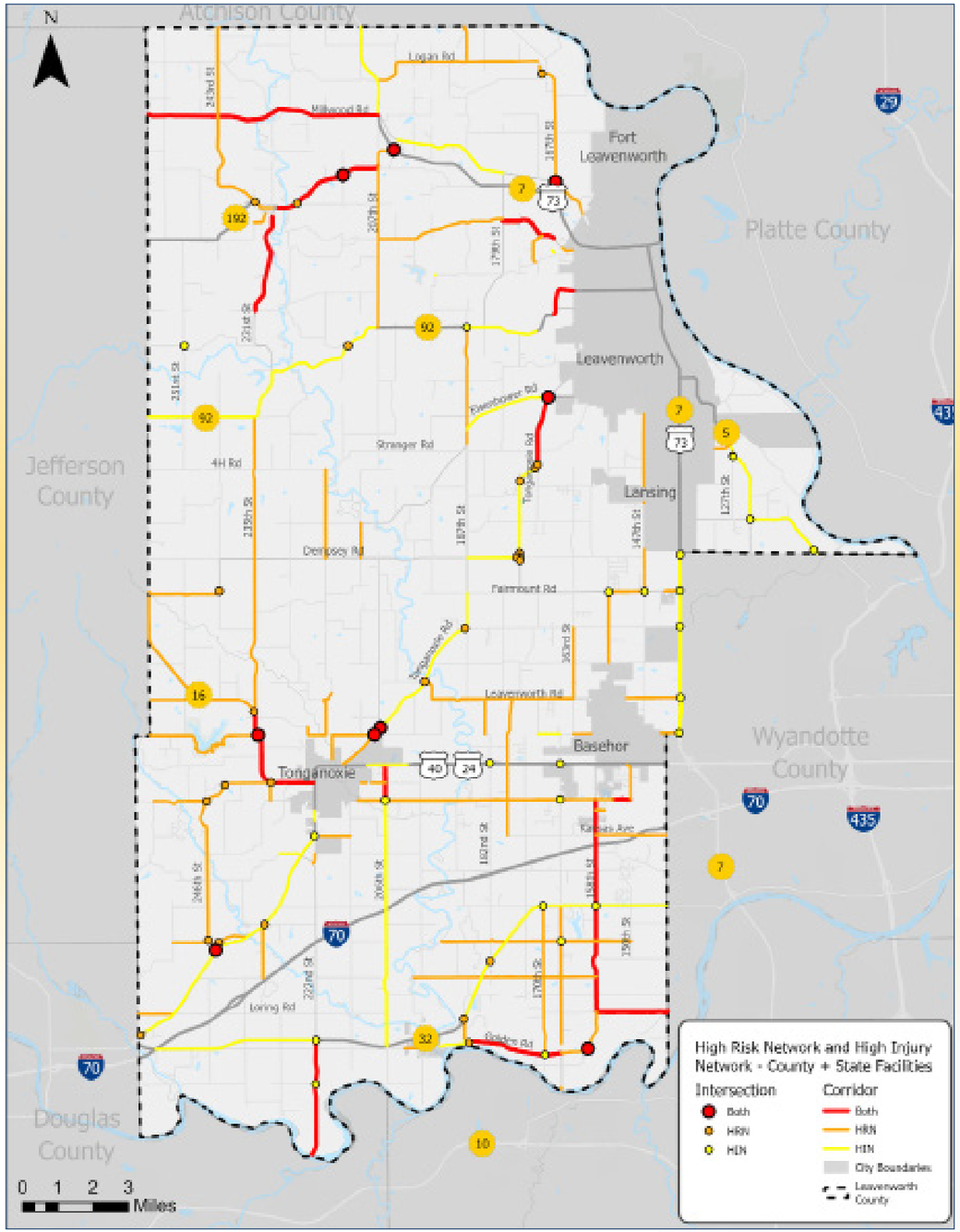
Safety Project Scoring Matrix		Is location on High Risk Network?	
		Yes	No
Is Location on Highway Injury Network?	Yes	3 (Highest Priority)	2 (High Priority)
	No	1 (Medium Priority)	Not Prioritized

TARGETED SAFETY PROJECTS (CATALYST PROJECTS)

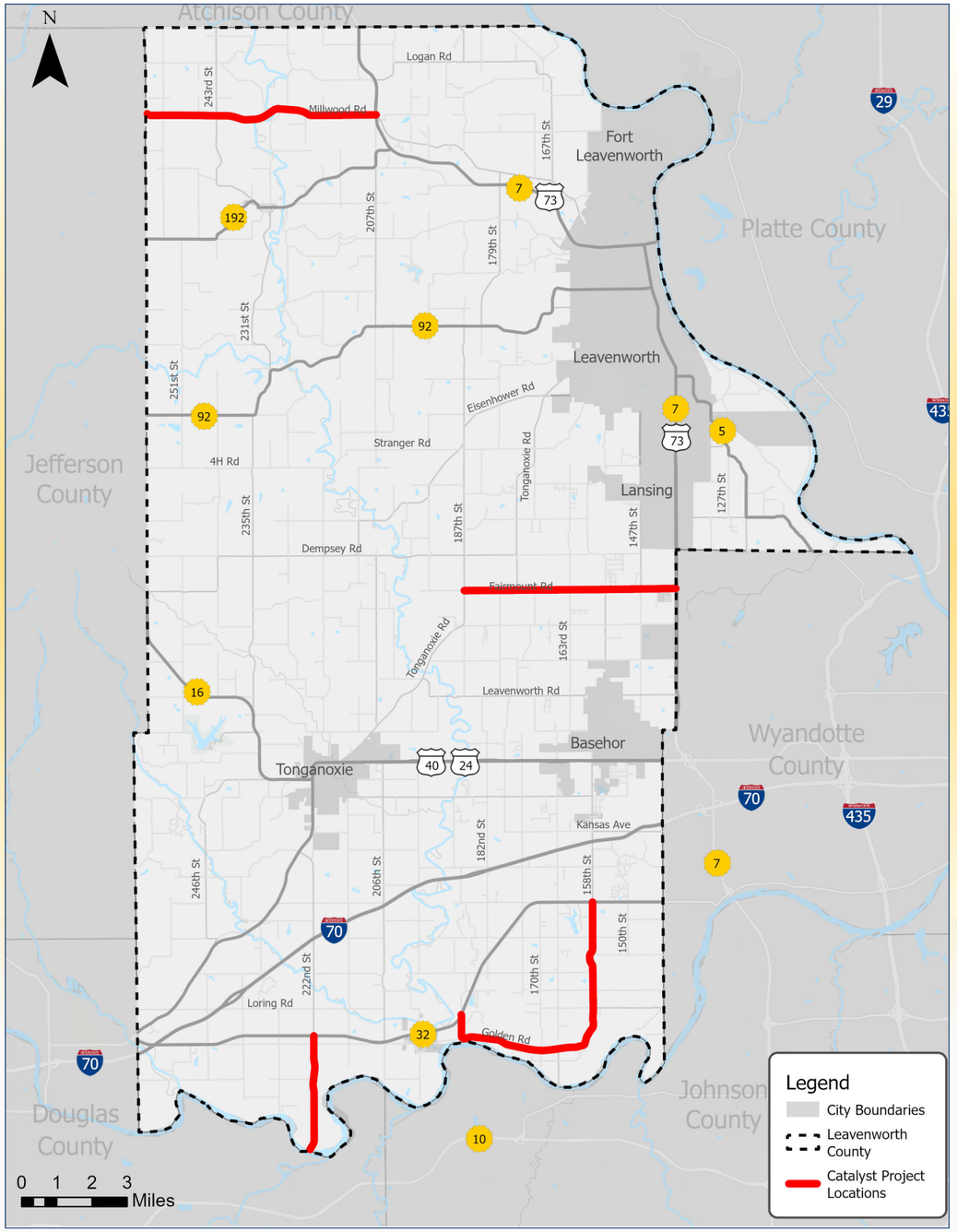
The TAC identified four catalyst projects, which are described in Table 2 and shown on Map 13. Detailed profiles for each of these projects are provided in Appendix E, including a detailed narrative of crash history and risk, specific locational issues and recommendations, and planning-level cost estimates.

Table 4: Catalyst Project Descriptions

Name	Length	Cost ($M)	Description
158th Street & Golden Road	8.37 miles	$20M	Corridor with 2,000 AADT linking growing De Soto area in Johnson County to K-32 and southeastern Leavenworth County. Key issues include roadway departure and fixed-object crashes, especially for motorcyclists and impaired drivers. Much of corridor includes tight curves, skewed intersections, narrow lanes, steep foreslopes, and limited lighting. Proposed enhancements include shoulder widening, rumble strips, improved signage, intersection realignments, and roundabouts to support anticipated growth and improve safety.
222nd Street	3.26 miles	$9.6M	Corridor with 3,500 AADT connecting Tonganoxie and I-70/Kansas Turnpike south to Eudora and K-10 in Johnson County. The corridor faces crash risks at intersections, especially for motorcyclists and nighttime drivers. Corridor issues include steep foreslopes, narrow clear zones, high speeds, and dangerous two-way stop control intersections with K-32 and Alexander Road. Despite recent improvements at the K-32 intersection, challenges persist due to road conditions and driver expectations. Proposed enhancements include shoulder widening where applicable, rumble strips, improved signage, and intersection improvements.
Fairmount Road	6.02 miles	$2.5M	Corridor with 3,000 AADT linking K-7 to 163rd St. Safety challenges include high intersection crash rates, narrow lanes, limited clear zones, aggressive foreslopes, and poor lighting. Issues like loose aggregate and limited pavement markings increase risks. Recent signage upgrades help, but additional measures like rumble strips, guardrails, and slope flattening are needed to reduce fixed-object and intersection crashes.
Millwood Road	6.64 miles	$3.4M	Corridor with 600 AADT, connecting K-7 to the County border. Safety challenges include high rates of roadway departures and single-vehicle crashes, especially in dark conditions. Narrow lanes, minimal shoulders, steep foreslopes, tight curves, and overgrown vegetation contribute to risk. Recent bridge work helped structurally, but additional measures like rumble strips, guardrails, and high-friction surfaces are needed to prevent crashes.



Map 12: Combined HIN/HRN Overlay for Leavenworth County (for Project Prioritization)



Map 13: Catalyst Projects

Table 5: Countermeasures Toolbox - Focus Area #1: Roadway Departure

Focus Area	Countermeasure	Description	Cost (Relative)	Estimated Crash Reduction (%)
Roadway Departure	Rumble Strip	Textures installed into paved roadways, running parallel with the directions of travel, that create a physical vibration and an audible warning whenever a motorist crosses them. Three types of rumble strips are commonly used: center line, shoulder, and edge line.	$	20%
	Roadside Design Improvements	Improvements to the side of the roadway including the establishment of Clear Zones, flattening slopes, adding or widening shoulders, or installing roadside barriers, which allow for a safe recovery for a motorist who has left the roadway or to stop safely.	$-$$	20%
	Safety Edge	Installing a strong, durable 30-degree transition between the edge of a paved roadway and the adjacent graded material, mitigating the problems associated with a vertical drop-off (such as tire scrubbing and motorists losing control of their vehicle trying to return to the roadway).	$$	50%
	Enhanced Curve Delineation	Retroreflective chevron signs around curves and advance curve warning signage; these are shown to significantly reduce crashes along curves, especially nighttime crashes and in rural areas.	$	30%
	Striping Center Lines/Edge Lines	Striping of center lines and edge lines, which separates the opposing flows of traffic and indicates the edge of the paved roadway from the shoulder/the adjacent graded materials. Striping center lines and edge lines, especially in areas where nighttime driving causes cues to changes in alignment to be unclear, can help motorists position their vehicle correctly in the roadway and avoid collisions with other vehicles.	$	25%
	Widening Edge Lines	A "wider" edge line measuring at six inches wide (the maximum normal line width), which is two inches wider than what edge lines are typically painted. This makes the edge of the travel lanes more visible and easier for motorists to identify, and these and are the most effective in reducing crashes on rural two-lane highways (especially single-vehicle crashes).	$	20%
	Pavement Friction Management (PFM)(Not at Intersections)	Measuring, monitoring, and maintaining pavement friction to maintain skid resistance. PFM should be implemented at locations where vehicles often slow down, stop, and/or turn, as well as curves or slopes. For Roadway Departure crashes a high friction surface treatment (HFST) - a layer of specialized aggregate locked onto the roadway surface - should be used at interchange ramps, horizontal curves, and locations with a history of rear-end and weather related crashes.	$$	55%

Rumble Strips

Wider Edgelines and Retroflective Pavement Markings

Enhanced Curve Delineation

Table 6: Countermeasures Toolbox – Focus Area #2: Intersections

Focus Area	Countermeasure	Description	Cost (Relative)	Estimated Crash Reduction (%)
Intersections	Roundabouts	An intersection with a circular configuration that safely and efficiently moves traffic. They are designed with channelized, curved approaches that reduce vehicle speed, entry yield control that gives right-of-way to circulating traffic, and counterclockwise flow around a central island that minimizes conflict points. The net result of lower speeds and reduced conflicts at roundabouts is an environment where crashes that cause injury or fatality are substantially reduced.	$$$	45%
	Intersection Warning Signage	Signage installed in advance of the intersection (e.g., Stop Ahead, Yield Ahead, Signal Ahead) to notify unaware motorists and increase conspicuity and compliance with the traffic control.	$	30%
	Retroreflective Sign Post Panels	A strip of retroreflective material attached to the front of an existing sign post to increase the visibility of the sign, particularly at night; these should be implemented at locations with issues of poor visibility of existing signage and/or compliance with intersection traffic control.	$	30%
	Double Up / Enlarged Signage	Double-up signage is when signage is posted on both the right and left side of the roadway on the approach to an intersection (e.g., having "Stop Ahead" signs on both sides of the road). By doubling-up and enlarging signage, it increases the visibility of the signage for road users to increase compliance with the posted signage.	$	30%
	Cross Traffic Does Not Stop / Double Arrow Warning	The Cross Traffic Does Not Stop (W4-4P) sign can be used at two-way stop-controlled intersections, mounted below the stop signs, in areas that potentially or currently are misinterpreted as a all-way stop. This sign can be used with a Two-Direction Large Arrow (W1-7) for side streets at a T-intersection to remind motorists to look both ways before turning left or right.	$	30%
	Approach Rumble Strips	Transverse rumble strips installed into the pavement in advance of stop-controlled approaches that create a physical vibration and audible warning to alert the motorist of the upcoming approach so they can safely stop in time.	$	30%
	All-Way Stop Control Conversion	Converting an unwarranted signalized intersection or a two-way (side street only) stop-controlled intersection to be stop-controlled on all approaches. All-way stops, as compared to two-way stops, reduce the need for drivers to wait for a safe gap in traffic to go and are more predictable. This countermeasure can also serve as a temporary solution for other, more expensive traffic control solutions, such as roundabouts. Note that the MUTCD has warrants for all-way stop control and signalization, and it is important to review current data to understand if a location meets warrants.	$	60%
	Pavement Friction Management (Intersections)	Measuring, monitoring, and maintaining pavement friction to maintain skid resistance. PFM should be implemented at locations where vehicles often slow down, stop, and/or turn, as well as curves or slopes. For Intersection crashes specifically, high friction surface treatment (HFST) - a layer of specialized aggregate locked onto the roadway surface - should be used on intersection approaches (especially intersections with steep downward grade and higher-speed stop-controlled and signalized intersections), crosswalk approaches, and locations with a history of crashes due to weather, failure to yield, red-light running, and/or rear-end.	$$	55%
	Lighting	Installing lighting at spot locations such as intersections to reduce nighttime crashes. The nighttime fatality rate is three times the daytime rate because at nighttime, vehicles traveling at higher speeds may not have the ability to stop once a hazard or change in the road becomes visible by a vehicle's headlights.	$$	35%
	Intersection Daylighting	Intersection daylighting improves the sight distance for road users as they enter and navigate an intersection by restricting curbside vehicle parking spaces or clearing of sight distances leading up to an intersection. Restrictions can be accomplished through the use of pavement markings and flexible guideposts	$	30%

Table 7: Countermeasures Toolbox – Focus Area #3: Motorcyclists

Focus Area	Countermeasure	Description	Cost (Relative)	Estimated Crash Reduction (%)
Motorcyclists	Kansas Motorcycle Task Force	An all-volunteer group managed by the Kansas Traffic Safety Resource Office (KTSRO) dedicated to reducing injuries and fatalities for motorcyclists through awareness, education, improving safety, and licensing for riders. Increased awareness of motorcyclists and education on how to safely ride (learned through the licensing process or through supplemental means) can help reduce injuries and fatalities.	$	NA
	Motorcycle Priority Network	A Motorcycle Priority Network is a public-facing map that establishes a system of motorcyclist facilities; by publicizing routes (e.g., K-5, US-73/K-7, etc.), motorcyclists can know which routes to take that are best suggested for them and the public can know to expect motorcycles on these routes, increasing driver awareness of motorcyclists.	$	NA
	Motorcycle Rider Training	Encourage participating in local motorcycle rider training through Johnson County Community College (JCCC), Kansas City, Kansas Community College (KCKCC) or other local training for new riders.	$	NA
	Strategies to Increase Rider Conspicuity and Use of Protective Clothing	The National Highway Traffic Safety Administration (NHTSA) suggests that riders should wear clothing that provides both protection and visibility, including well-constructed jackets, pants, boots, gloves, and helmets with face shields, as well as encouraging continuous headlight use to increase conspicuity.	$	NA

Table 8: Countermeasures Toolbox - Focus Area #4: Younger Drivers

Focus Area	Countermeasure	Description	Cost (Relative)	Estimated Crash Reduction (%)
Young Drivers	S.A.F.E. Program in High Schools	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.	State Funded	NA
	Kansas Education Programs for New Drivers	Several programs are available for new drivers in Kansas to increase and promote education on how to drive and how to do it safely, including a Driver Education Toolkit from KTSRO, driving schools (e.g., Ford Driving Skills for Life and B.R.A.K.E.S. Teen Driving School), driver improvement programs (e.g., KHP's AAA Driver Improvement Program), and financial assistance for individuals for driver's education.	$$	NA

Table 9: Countermeasures Toolbox – Focus Area #4: Impaired Driving

Focus Area	Countermeasure	Description	Cost (Relative)	Estimated Crash Reduction (%)
Impaired Driving	High-Visibility Saturation Patrols | NHTSA	A saturation patrol (also called a blanket patrol or dedicated DWI patrol) consists of a large number of law enforcement officers patrolling a specific area looking for impaired drivers. These patrols usually take place at times and locations where impaired-driving crashes commonly occur. Like publicized sobriety checkpoint programs, the primary purpose of publicized saturation patrol programs is to deter driving after drinking by increasing the perceived risk of arrest. To do this, saturation patrols should be publicized extensively and conducted regularly, as part of an ongoing program.	$	NA
	Publicized Sobriety Checkpoints | NHTSA	Sobriety Checkpoints are highly visible, regularly conducted stops of motorists at predetermined locations to investigate whether motorists are impaired. Stops are conducted per vehicle or at a regular interval (e.g., every third vehicle). Although the primary purpose of checkpoints is to deter driving after drinking among the general population due to the perceived risk, sobriety checkpoints also remove impaired drivers from the road.	$	NA
	Integrated Enforcement | NHTSA	Integrated Enforcement is a type of high visibility enforcement focused primarily on behavioral activities, such as driving under the influence, speeding, and seat-belt usage, and is seen in both regular traffic enforcement and crash investigations to specialized checkpoints and saturation patrols. Special enforcement activities focused on speeding or seat-belt use offer an additional opportunity to detect impaired drivers, especially at night, as impaired drivers often speed or fail to wear seat belts.	$	NA
	Alternative Transportation | NHTSA	Alternative Transportation Programs reduce the need for individuals to drive while under the influence; these include for-profit rideshare services, nonprofit safe ride programs, and public transportation (such as buses).	$	NA
	Mass Media Campaigns | NHTSA	Mass Media Campaigns are intensive communication and outreach activities focusing on key topics regarding safety, health, and well-being (such as driving under the influence) that use radio, television, print, social, and other mass media platforms. Some campaigns publicize a deterrence or prevention measure, such as a change in a State's DWI laws or through a highly visible enforcement program; others promote specific behaviors (such as designated drivers) illustrating the repercussions of these actions. Campaigns vary enormously in quality, size, duration, funding, and many other ways. Effective campaigns identify a specific target audience and communications goal and develop messages and delivery methods that are appropriate to—and effective for—the audience and goal.		

06. Implementation Plan

This final chapter discusses how to move from the strategies and projects identified in Chapter 5 forward into implementing these projects, monitoring progress, and ultimately reducing and eventually eliminating fatalities and serious injuries from traffic crashes in Leavenworth County.

TRANSPORTATION SAFETY FUNDING SOURCES

Funding for these projects and strategies can come from a variety of sources, many of which are outside the County. Table 8 outlines available funding options at the regional, state, and federal levels respectively. Much more detailed information on each of these funding sources is provided in Appendix F, including examples of typical projects and local examples, the estimated funding pool and award amounts, match requirements, and other supporting information. The state of Kansas has also established the Kansas Infrastructure Hub to assist communities in accessing funding from the Bipartisan Infrastructure Law. This resource center offers technical assistance and guidance for identifying and connecting with appropriate funding sources.

Table 10: Safety Funding Sources

Provider	Program
Regional Level: MARC These generally represent Federal formula-based funding to jurisdictions in the greater Kansas City metro area that MARC has discretion to allocate (via competitive applications).	Transportation Safety
	Planning Sustainable Places
	Carbon Reduction Program
	Surface Transportation Block Grant (STBG)
	STBG Set-Aside for Transportation Alternatives (TA)
State Level: KDOT This represents funding that KDOT provides for individual projects, including state-funded programs and federal programs that KDOT has discretion to allocate.	Safe Routes to School (SRTS)
	Transportation Alternatives (TA)
	Cost Share
	Innovative Technology
	High Risk Rural Roads (HRRR)
	Access Management
	Other HSIP Programs
	IKE Program - Modernization
	IKE Program - Expansion
	IKE Program - Preservation
Federal Level: USDOT Competitive Grants Dozens of grants available, including many new programs from BIL	SS4A: Safe Streets and Roads for All - Supplemental Planning & Demonstration
	SS4A: Safe Streets and Roads for All - Implementation
	RAISE: Rebuilding American Infrastructure with Sustainability and Equity (Formerly TIGER / BUILD)

ACTION STEPS

The following pages provide an Action Step Matrix that lists specific actions, lead entities, timeframes, and potential funding sources. Where applicable, action steps are broken out by focus area (Roadway Departure, Intersections, Motorcyclists, Young Drivers, and Impaired Drivers), although many of these apply to multiple focus areas. These actions consolidate the recommended safety projects, policy updates, and behavioral strategies provided in previous chapters.

Note that an initial action step listed is to apply for an SS4A Implementation grant to fund the four identified catalyst projects. These projects can also be funded through other federal, state, or MARC funding sources, although the SS4A Implementation grant program provides an opportunity to join these projects together into one strategic initiative to "catalyze" changes in transportation safety in Leavenworth County.

PERFORMANCE MEASURES

Regular data collection, evaluation, and reporting are essential for accountability as the Vision Zero Action Plan is implemented. Leavenworth County Public Works should issue annual updates on the progress toward the overall goal of eventually eliminating all traffic deaths and serious injuries. These updates will include progress on projects implemented as well as tracking of fatal and injury crashes.

Near-Term Goal: "30 by 30"

Reduce Fatalities and serious injuries by 30% (from 2022 peak of 33) by 2030.

Table 11: Annual Performance Measures

Provider	Program
All	Total number of traffic fatalities and serious injuries (K & A crashes)
	Total number of traffic fatalities and injuries (K, A, B, and C crashes)
	Rate of fatalities and serious injuries per 100 million vehicle miles traveled (rate per VMT)
	Fatalities and serious injuries per 100,000 residents (rate per capita)
	Number of transportation projects with a safety element implemented
	Non-capital improvements (policies, processes, or programs) started or completed annually that contribute to improving traffic safety
Roadway Departure	Fatalities and serious injuries involving a roadway departure
	Miles of rumble strips implemented
Intersections	Fatalities and serious injuries involving a two-way stop-controlled intersection
Motorcyclists	Fatalities and serious injuries involving a motorcyclist
Younger Drivers	Fatalities and serious injuries involving a driver under the age of 25
	Number of schools involved in SAFE Program
Impaired Driving	Fatalities and serious injuries involving an impaired driver
	Number of impaired driving citations

Table 12: Focus Area Description and Measures

Focus Area (s)	Action Step	Description	Action Step Lead	Cost	Funding Source(s)	Timeline	
All (Especially Roadway Departure and Intersections)	Catalyst Projects	Apply for SS4A Implementation Grant to fund all or some of the four catalyst projects identified in this plan. Upon receiving grant, advance preliminary design, NEPA (likely a Categorical Exclusion), full design, and construction.	County Public Works	TBD - local match will be 5-10% of overall cost depending on KDOT contribution	SS4A Implementation Grant	Short-Term	Apply for Grant in 2nd Quarter 2025
	Remaining LRSP Projects	Apply for HRRR funding to advance design and construction of the remaining projects in the 2021 Local Road Safety Plan that have not already been advanced and are not included in the SS4A Implementation Grant projects.	County Public Works	Should be 100% federally funded	HRRR	Medium-Term	Continue to apply for funding on annual or bi-annual basis
Roadway Departure	Rumble Strip Policy	Develop a rumble strip policy for centerlines, edge lines, and shoulders. This policy should be based on best practices for other counties in Kansas and surrounding states.	County Public Works	N/A	N/A	Short-Term	Implement by 2nd Quarter 2025
Roadway Departure	Roadside Maintenance Policy	Create a clear guideline focused on the upkeep of roadsides. Develop specific instructions for maintaining roadside vegetation. A maintenance schedule should be included with hard surface roads three times a year, and gravel roads twice a year.	County Public Works				
All (Especially Roadway Departure and Intersections)	Sign Inspections and Replacement Policy	establish a clear set of policies for sign inspections and replacement. This includes writing standards for the inspection process done by technicians.	County Public Works				
	Pavement Marking Maintenance Policy	Adopt a policy or resolution regarding painting after roadway resurfacing and planned maintenance. Create a documented process for the timing and methods for chipping, sealing, and repainting roads. Increase the width of painted edge lines in rural areas from 4 inches to 6 inches for better visibility.	County Public Works				
	County Road Speed Limit Study and Updates	Initiate a County road speed limit study to review existing posted speed limits and recommend any adjustments to those speed limits based on factors provided in the 11th Edition of the MUTCD. A desktop assessment using Replica speed data is provided as part of this VZAP. A full engineering field study, including field data collection and updates to signage, could be funded through an SS4A Supplemental Planning and Demonstration grant (likely multiple funding windows per year through 2027).	County Public Works	$200,000	SS4A Supplemental Planning & Demonstration Grant	Medium-Term	Apply for Grant in 2025
Intersections	Intersection Lighting Policy	Create a policy for evaluating and installing lighting at intersections.	County Public Works	N/A	N/A	Short-Term	Implement by 2nd Quarter 2025

Focus Area (s)	Action Step	Description	Action Step Lead	Cost	Funding Source(s)	Timeline	
Motorcyclists	County Involvement in Kansas Motorcycle Task Force	Involvement by one or more representative from Leavenworth County in the Kansas Motorcycle Task Force which is managed by the Kansas Traffic Safety Resource Office (KTSRO). This can be implemented immediately by Leavenworth County with existing funding	County Health Department / Public Works	N/A	N/A	Short-Term	Implement by 2nd Quarter 2025
	Priority Motorcycle Network / Promotion to Increase Driver Awareness	Create a Priority Motorcycle Network and publicize (e.g., K-5, US-73/K-7, multiple County routes). Publicize these routes via the County website and other means to let the public know to expect motorcycles on these routes.	County Public Works	N/A	N/A	Medium-Term	Implement by 2nd Quarter 2026
	Financial Support for Motorcycle Rider Training	Encourage by providing financial support to participate in local motorcycle rider training through Johnson County Community College (JCCC), Kansas City, Kansas Community College (KCKCC), or other local training for new riders.	County Health Department / Public Works	$15,000	MARC Transportation Safety Grant	Short-Term	Implement by 4th Quarter 2025
	Outreach Campaign to Increase Rider Conspicuity and Use of Protective Clothing (Including Helmet Use)	One way to increase conspicuity is to wear brightly colored clothing, use white or bright- colored helmets (for increased visibility during daylight), and incorporate retroreflective materials or devices (for increased visibility at night). Good communications and outreach campaigns can be expensive to develop and implement. Information promoting protective and conspicuous clothing is available from various sources including MSF, other motorcyclist organizations, and states that have conducted these campaigns.	County Health Department / KTSRO	TBD	TBD	Medium-Term	Implement by 4th quarter 2025
Younger Drivers	SAFE Program in Leavenworth County High Schools	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. As of Fall 2024, multiple high schools in the County have expressed interest, and Leavenworth High School is moving forward with initiating this program.	County Sheriff's Department County School Districts	Free (through KTSRO)	N/A	Short-Term	Implement by 2025-2026 School Year
	Graduated Driver Licensing (GDL) Awareness Toolkits	Order and distribute GDL Awareness toolkits to adults of new drivers. The toolkit was designed in partnership with KDOT, Kansas Department of Revenue, Kansas State Department of Education, Safe Kids Kansas and the Kansas Highway Patrol. The kit is used primarily for driver's education parent meetings, presentations at service organization and local community groups.	County Health Department	Free (through KTSRO)	N/A	Short-Term	Implement by 4th quarter 2025
	Kansas Driver Education Reimbursement Grants	KDOT has established a pilot Driver Education Reimbursement Grant program to provide financial assistance (up to $200 per eligible student) to driver's education programs to help individuals who may otherwise not have been able to participate. Promote this grant program to County schools and with major employers.	County Sherrif's Department	Free (Through KDOT)	N/A	Short-Term	Implement by 4th quarter 2025
	KHP AAA Driver Improvement Program	Coordinate with Kansas Highway Patrol (KHP) and local Public Resource Officers to promote KHP's AAA Driver Improvement Program. This program provides a fresh awareness of driver safety with an emphasis in managing visibility, time, and space. Students and employers may be eligible for discounted insurance premiums upon completion of the program.	County School Districts	$20/person			
	Annual National Driving Schools in Kansas City Metro Area	Promote and support registration of new drivers to participate in either of the two national driving schools hosted in Kansas City each summer: (1) Ford Driving Skills for Life and (2) B.R.A.K.E.S. Teen Driving School	Major Employers	Free (may require deposit)			
Impaired Driving	High Visibility Saturation Patrols	Conduct saturation patrols featuring a large number of law enforcement officers patrolling a specific area looking for impaired drivers and sobriety checkpoints where law enforcement stop vehicles at predetermined locations. These patrols and checkpoints usually take place at times and locations where impaired driving crashes commonly occur (the project team developed a PowerBI crash data dashboard to support County staff with identifying these locations and times). These efforts should be publicized extensively and conducted regularly, as part of an ongoing program. Coordinate with local municipal law enforcement agencies and KHP.	County Sheriff's Department	TBD; possible current constraints with staffing	N/A	Medium-Term	Implement by 2nd Quarter 2026
Impaired Driving	Publicized Sobriety Checkpoints		County Sheriff's Department				
Impaired Driving	Integrated Enforcement Activities		County Sheriff's Department				

Appendix A.

Crash and Data Analysis Detailed Review

APPENDIX A: CRASH AND DATA ANALYSIS DETAILED REVIEW

INTRODUCTION

The County of Leavenworth is developing a Vision Zero Action Plan (VZAP) to identify and eliminate fatal and serious injury crashes for all road users in Leavenworth County. With community input, this plan will prioritize roadway and infrastructure projects that address safety challenges for residents, workers, and visitors of Leavenworth County and support future funding opportunities for safety projects. The purpose of this crash and data analysis appendix is to summarize countywide crash trends, which will inform the recommendations throughout the plan by providing a detailed assessment of existing conditions and historical trends of crashes in Leavenworth County.

This analysis includes the evaluation of national and statewide crash trends, ten-year crash trends in Leavenworth County, an equity analysis of crashes in the County, a proposed High Injury Network based on historical crash data, and a High Risk Network for Leavenworth County facilities.

DATA SOURCES

Crash Data

The analysis of crash trends in Leavenworth County is based on data from the Kansas Department of Transportation (KDOT). This crash data does not include data on near misses or any crashes that were not reported to the police. While the crash dataset does have some shortcomings, it is the most comprehensive dataset available for analysis.

This analysis is based on all crashes within the County of Leavenworth from January 1, 2013, through December 31, 2022. During this period, there were 4,705 crashes in unincorporated Leavenworth County. Crashes that occurred within the cities of Leavenworth, Lansing, Basehor, Tonganoxie, or Interstate 70 were excluded from this analysis. The 4,705 crashes that occurred on surface streets within the unincorporated County of Leavenworth (including state-owned roadways) are the focus of this analysis.

Roadway and Intersection Data

Roadway data was compiled from a variety of sources into a single dataset. The compilation of roadway data started with KDOT centerlines for all roads in the County, before combining it with other sources to create a comprehensive roadway dataset. Sources of data include:

- KDOT
- Replica
- Leavenworth County
- Census
- Open-Source GIS Data
- Local Road Safety Plan Data
- Aerial Data
- Streetview

Many of the roadway attributes were carried over to the intersection dataset. For example, the intersection Daily Entering Vehicles (DEVs) were calculated based on the Annual Average Daily Traffic (AADT) of the intersecting roadway segments. This produced a dataset for roadway segments and intersections, which was used for the analysis of Leavenworth County facilities in tandem with historic crash data.

Census Data

The equity analysis of Leavenworth County is based on data from the USDOT Equitable Transportation Community (ETC) Explorer. Population data for Leavenworth County and Kansas from the 2020 US Census was used to calculate the fatality rate per 100,000 people in their respective jurisdictions.

CRASH TRENDS

Kansas / National

Over the past decade, there has been a rise in the fatality rate of crashes in Leavenworth County, mirroring a troubling state and national trend. Figure 1 compares the fatality rates in Leavenworth County to fatality rates in Kansas and nationally from 2013 to 2022. Over that 10-year period, Leavenworth's fatality rate was typically below state and national averages. Leavenworth's fatality rate generally increased over the period, with a large jump in fatality rate in 2018. It should be noted that for this graph, fatalities in the cities of Leavenworth, Lansing, Tonganoxie, and Basehor were included because the population for the entire County was used. If the same calculation was done for unincorporated Leavenworth County, the fatality rates would be higher.

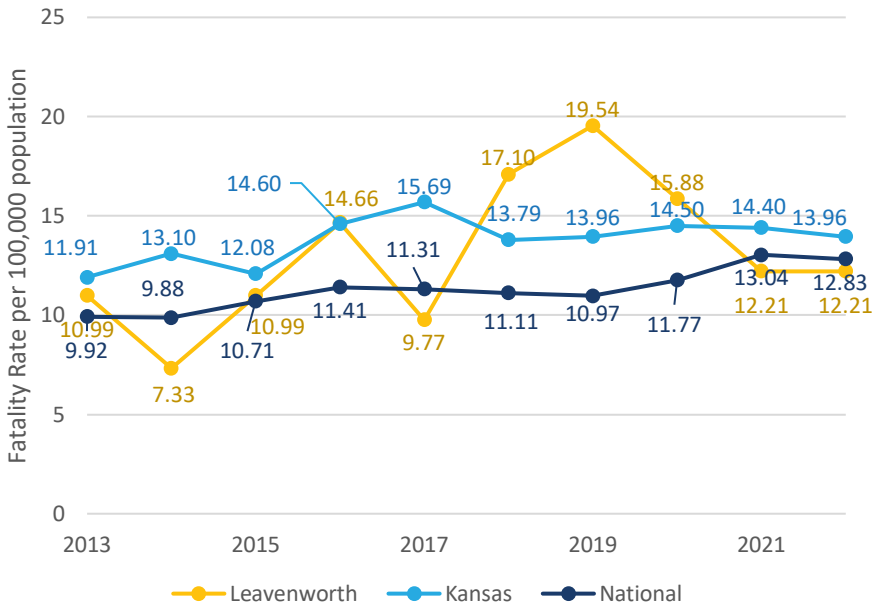


Figure 1: Fatality rates per 100,000 Population, 2013-2022. Source: FARS, KDOT, and Census

Leavenworth County

Between 2013 and 2022, there were 4,705 crashes in unincorporated Leavenworth County; this results in an average of 471 crashes per year. For most the of 10-year period from 2013 to 2022, the number of fatal and serious injuries followed a similar trend to the overall number of crashes. Both the total crash rate and fatal and serious injury crash rate peaked in 2017 and experienced a general decrease until 2022. In 2022 the total crash rate for Leavenworth County increased marginally, while the fatal and serious injury crash rate increased by 33% (Figure 2).

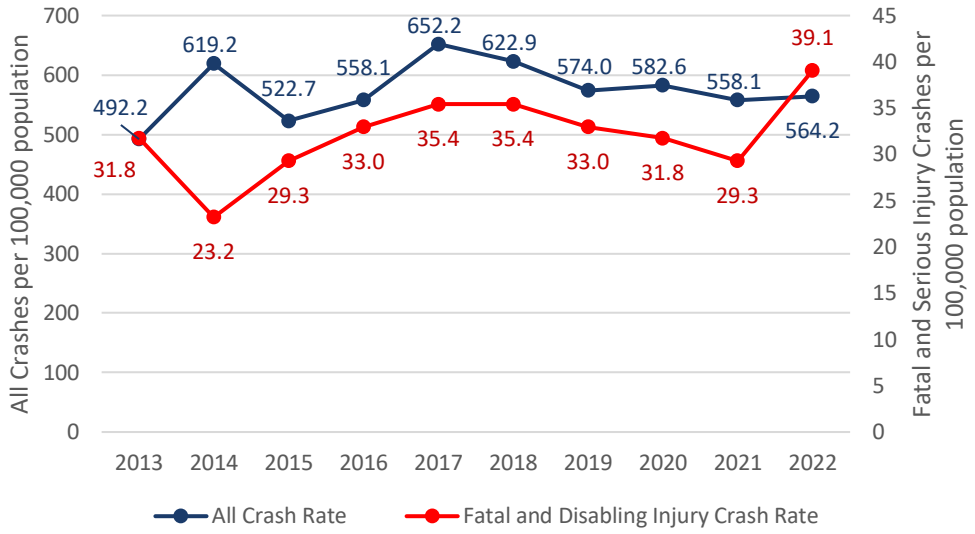


Figure 2: Total crashes and Fatalities rate per 100,000 population, 2013-2022. Source: KDOT and Census

The number of fatalities and serious injuries in Leavenworth County experienced an increase from 2013 to 2022 (Figure 3).

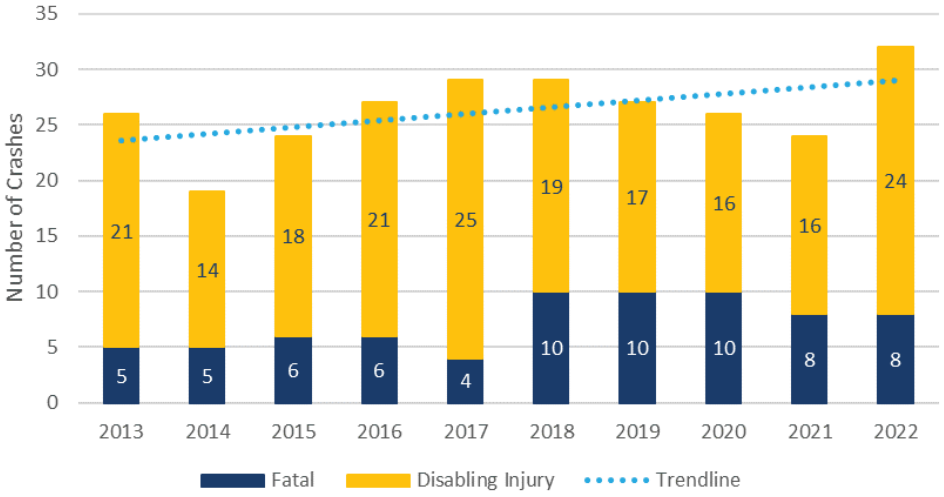


Figure 3: Fatal and Serious Injuries, 2013-2022. Source: KDOT

The map in Figure 4 shows areas of the County where there were higher concentrations of crashes between 2013 and 2022. K-7 stands out as a location with a higher crash volume, but it also has a much larger traffic volume than other roadways in Leavenworth County.

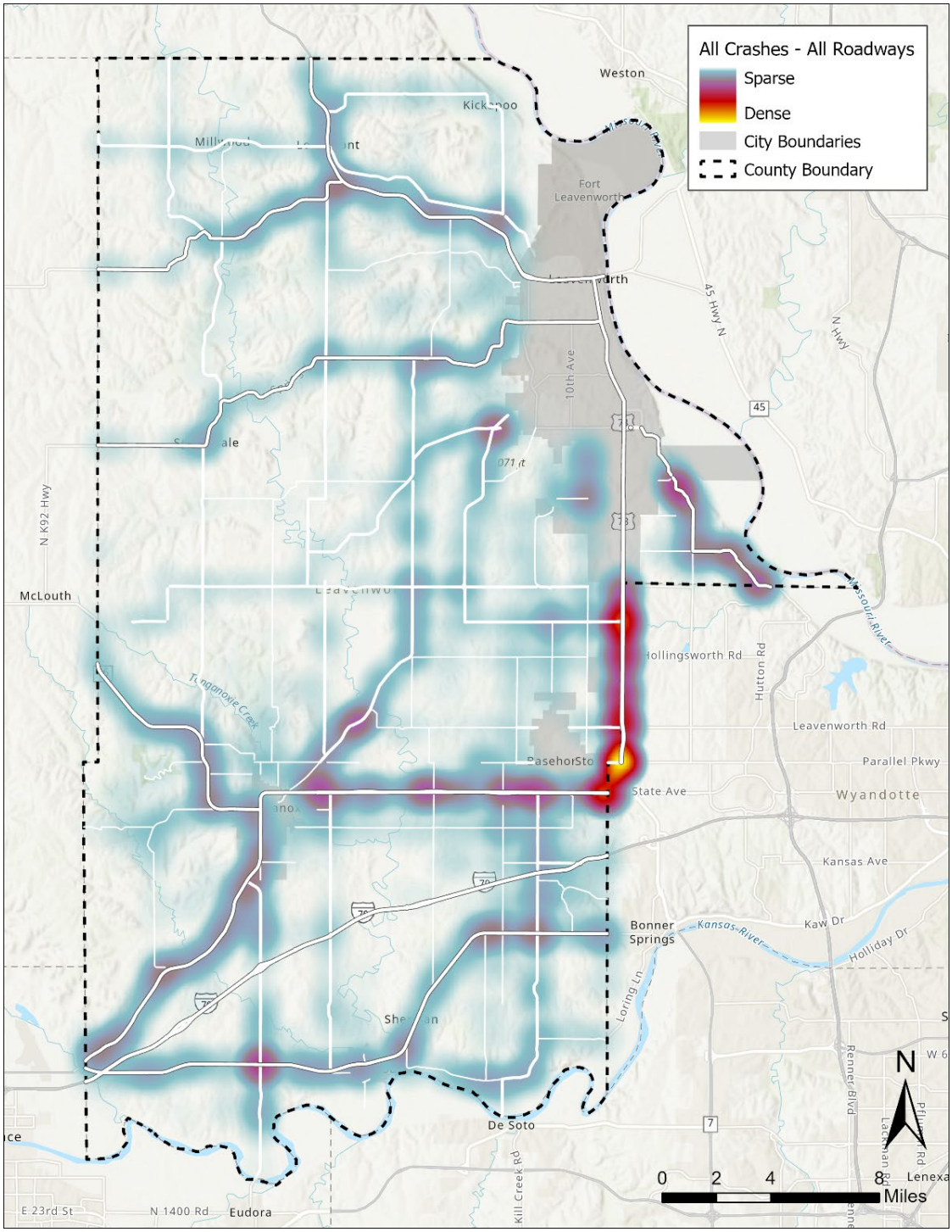


Figure 4: Heat Map of All Crashes on All Roadways, 2013-2022. Source: KDOT

The map in Figure 5 shows crashes located only on County-owned roadways. Tonganoxie Road, the Tonganoxie Road and Eisenhower Road intersection, 222nd Street (County Road 1), 158th Street, and Golden Road all have a high concentration of crashes.

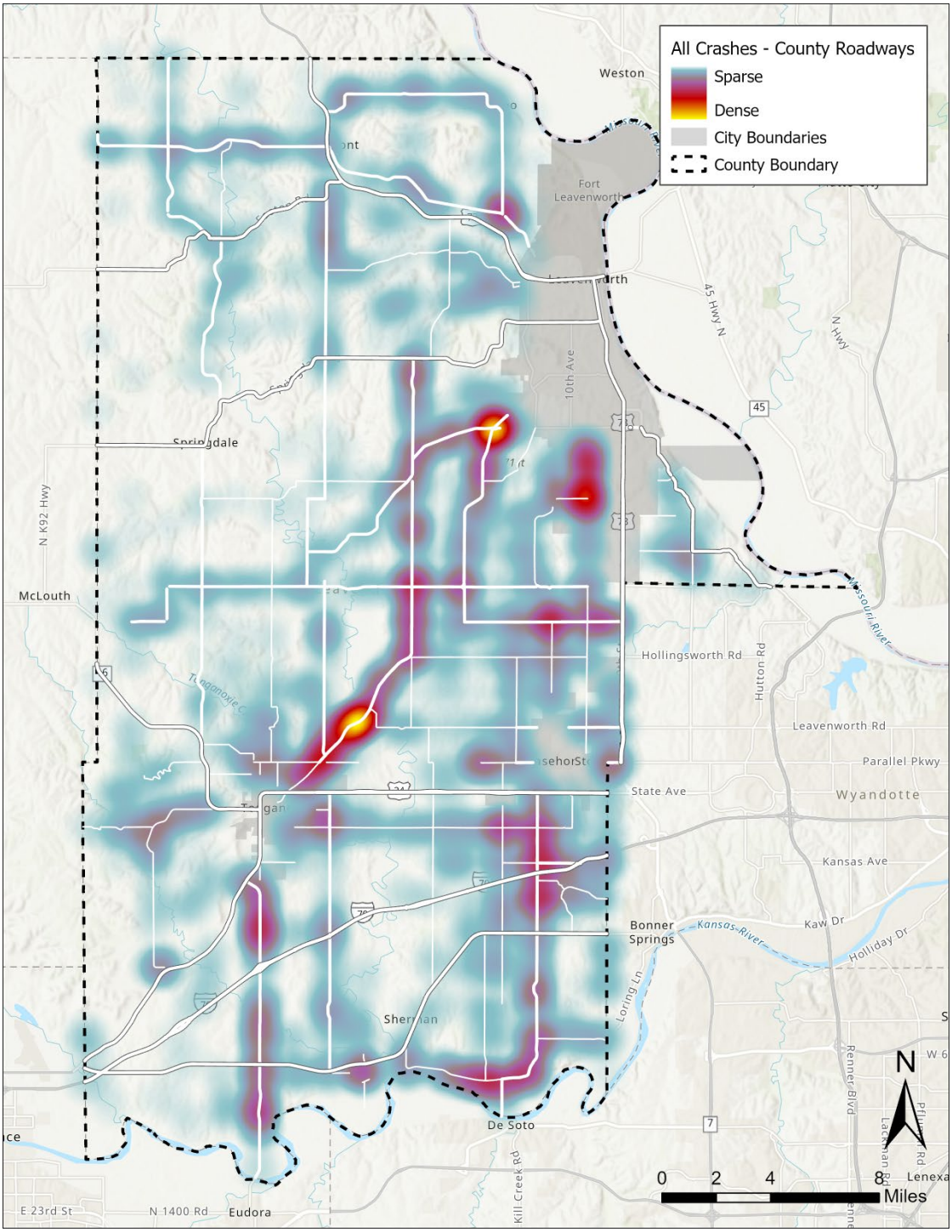


Figure 5: Heat Map of All Crashes on County Roadways, 2013-2022. Source: KDOT

Crash Severity Trends

Understanding trends in fatal and serious injury crashes is an important step toward the overall goal to reduce fatalities and serious injuries. KDOT defines crash severity in five categories: Fatal, Serious Injury, Non-incapacitating Injury, Possible Injury, and Not Injured.

In the study period there were 72 fatal crashes, and 191 serious injury crashes. Based on KDOT data, fatal crashes make up 2 percent and serious injury crashes make up 4 percent of all crashes in Leavenworth County. Figure 6 shows the 10-year crash trend for fatal and serious injury crashes.

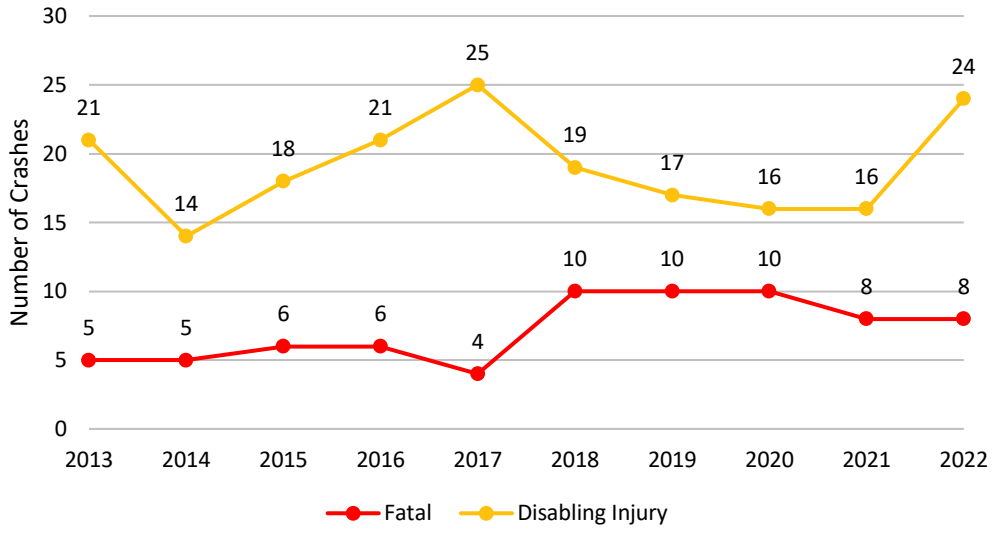


Figure 6: Fatal and Serious Injury Crash Trend, 2013-2022. Source: KDOT

The map in Figure 7 shows fatal and serious injury crashes on all roadways. There are several hotspots on the state system, notably the K-32 and 222nd Street intersection that was improved by KDOT in 2021.

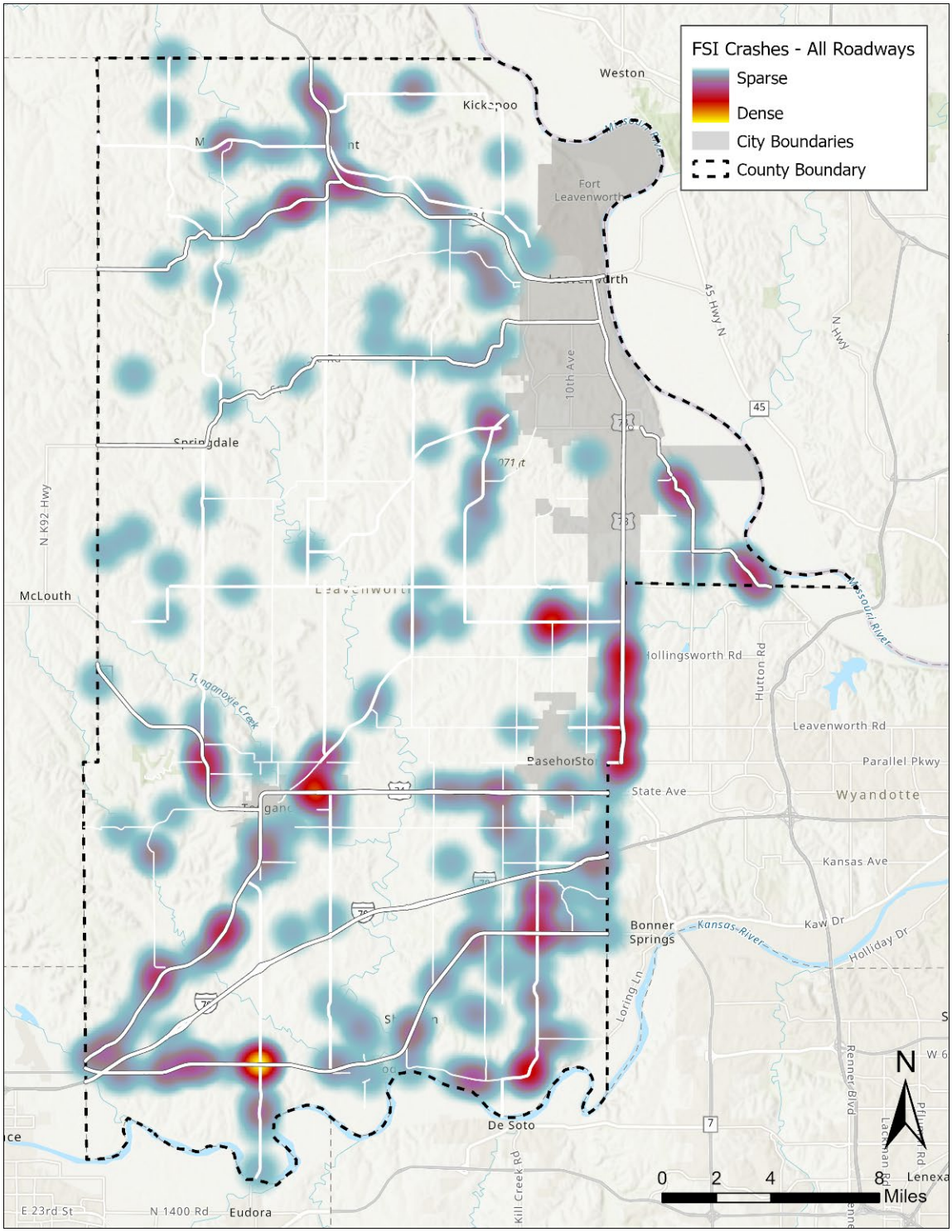


Figure 7: Heat Map of Fatal and Serious Injury Crashes on All Roadways, 2013-2022. Source: KDOT

The map in Figure 8 shows the fatal and serious injury crashes on County roadways. There are several hotspots on the county system, notable locations include Fairmount Road near 155th Street and the 158th Street and Golden Road curve.

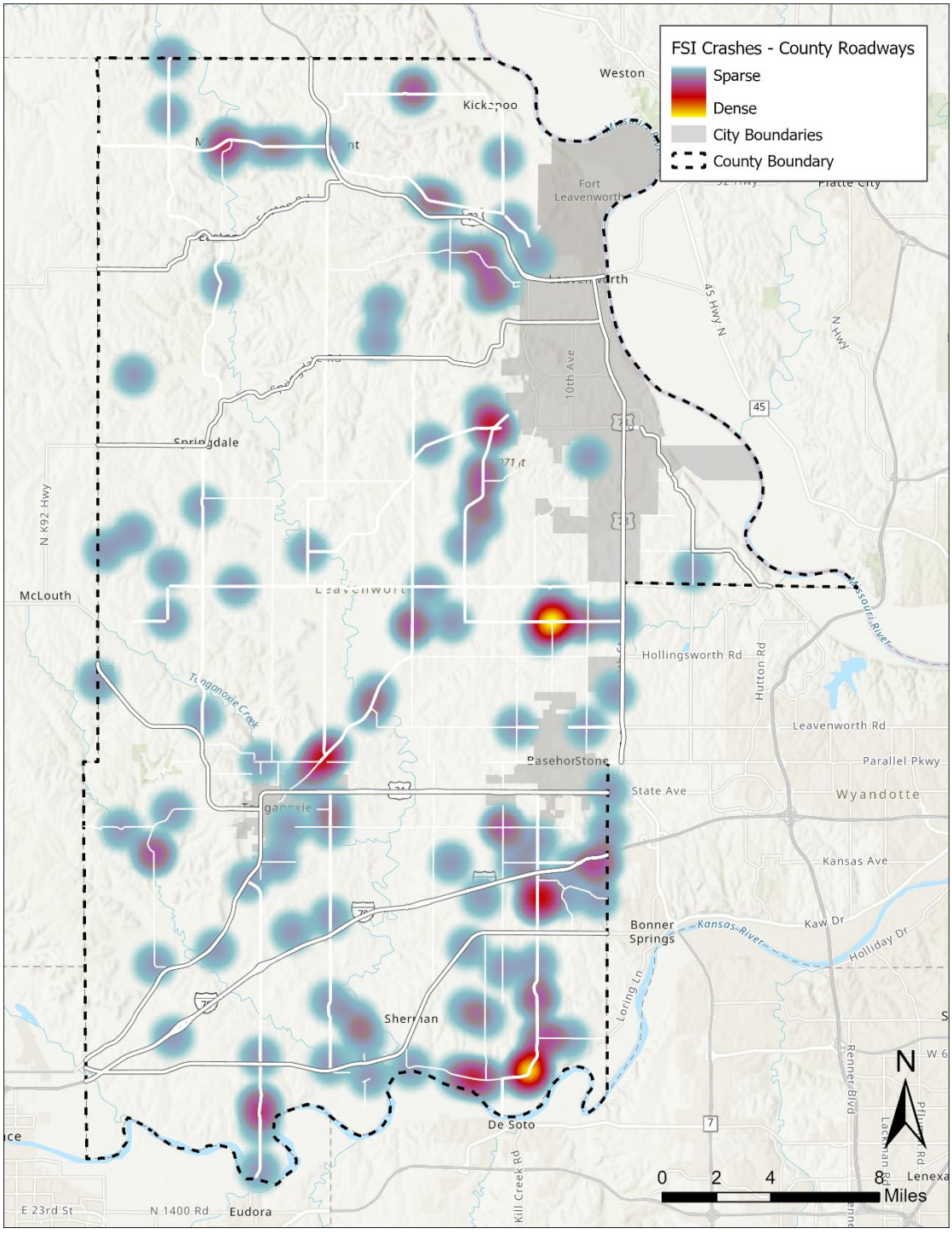


Figure 8: Heat Map of Fatal and Serious Injury Crashes on County Roadways, 2013-2022. Source: KDOT

HIGH INJURY NETWORK

The High Injury Network (HIN) is a network of roadway segments and intersections that are the most dangerous based on crash history. The HIN is weighted towards more severe crashes and shows where the highest number of fatalities and serious injuries are occurring. HIN locations in Leavenworth County were identified based on two equally weighted factors: Critical Crash Rate (CCR) and Equivalent Property Damage Only (ePDO). The HIN is based on historical data and can be misleading if safety projects have recently been implemented. The following sections describe the methodology used for each of the factors and how the two were combined to create a composite ranking of high-crash road segments and high-crash intersections.

Methodology

Crash Costs/weighting

Crash costs are an approach commonly used in benefit-cost analyses to understand the "societal cost" of crashes, including factors such as property damage, medical care, insurance payouts, and missed work. Calculating the total economic value of a crash allows a comparison between different types of intersections and street segments. The crash cost for each intersection and segment was calculated based on summing the total economic cost of each crash joined to that location using 2024 crash costs developed by KDOT.

- Fatal Crash: $13,999,597
- Serious Injury Crash: $748,852
- Minor Injury Crash: $240,505
- Possible Injury Crash: $133,671
- No Injury/Property Damage Crash: $11,691

Data Join

Crashes were spatially joined to intersections and roadway segments within GIS to associate crashes with intersection and roadway segment attributes. Crashes were joined to intersections if they occurred within 250 feet of the intersection, based on the latitude and longitude of the crash. Additionally, crashes were joined to segments within 500 feet. If multiple segments were within the specified distance, the closest location was associated.

Intersections and roadway segments were not treated as mutually exclusive. If a crash occurred within the vicinity of an intersection, the crash was also joined to the nearest segment. This was done so that dangerous corridors were not overlooked due to crashes occurring at intersections. Additionally, crashes can occur at an intersection but be unrelated to the intersection geometry or attributes.

GIS Visualizations

The map in Figure 9 shows roadway segment and intersection crash rankings for Leavenworth County facilities, and the map in Figure 10 shows roadway segment and intersection crash rankings for Leavenworth County and State facilities. If a facility appears in red on the map, the location has a significant crash history and is part of the HIN. Key locations identified through the HIN include 158th and Golden Road, Tonganoxie Road, Leavenworth County Road 14 in the northern part of the County, and 222nd Street to Eudora.

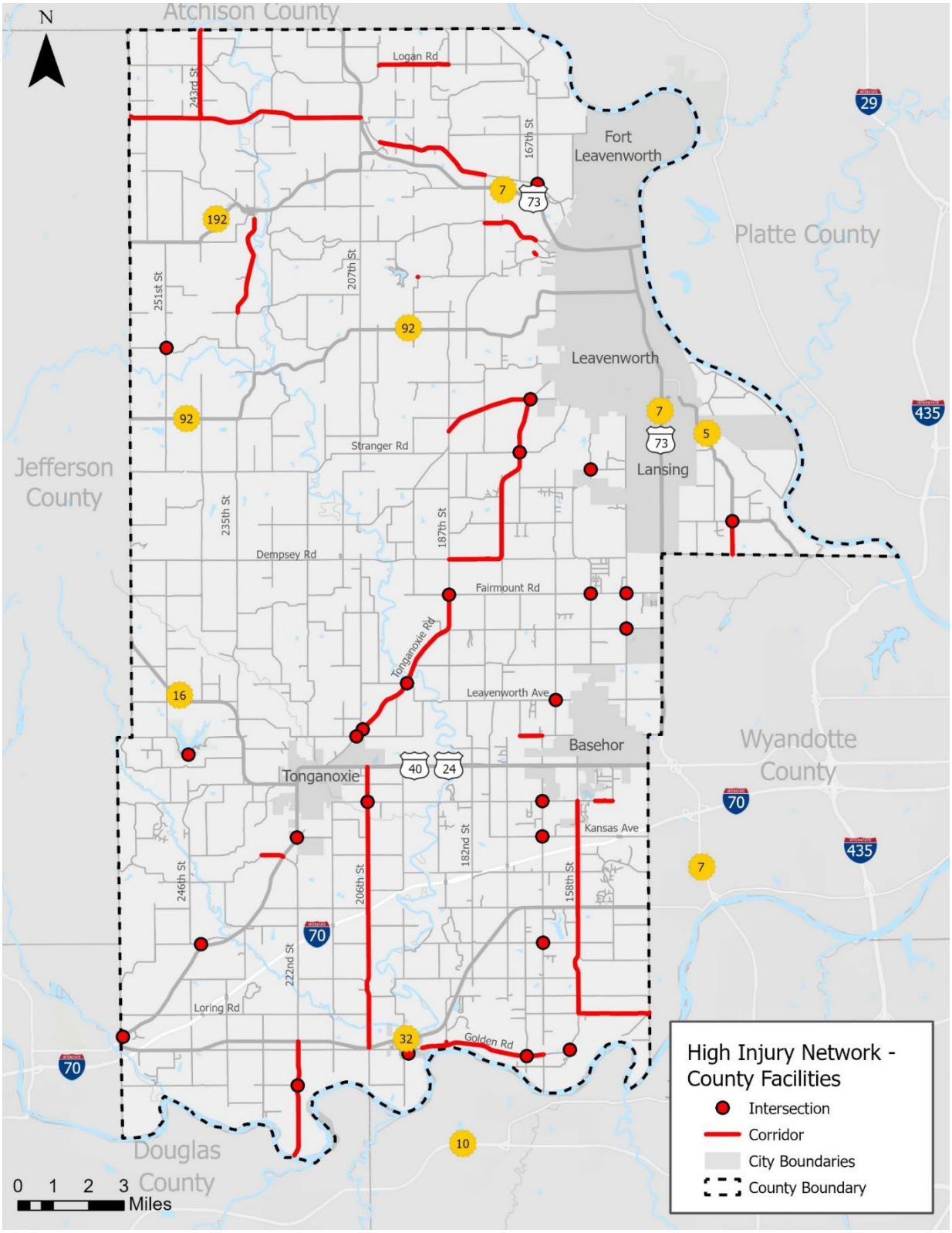


Figure 9: Map of HIN for County Facilities

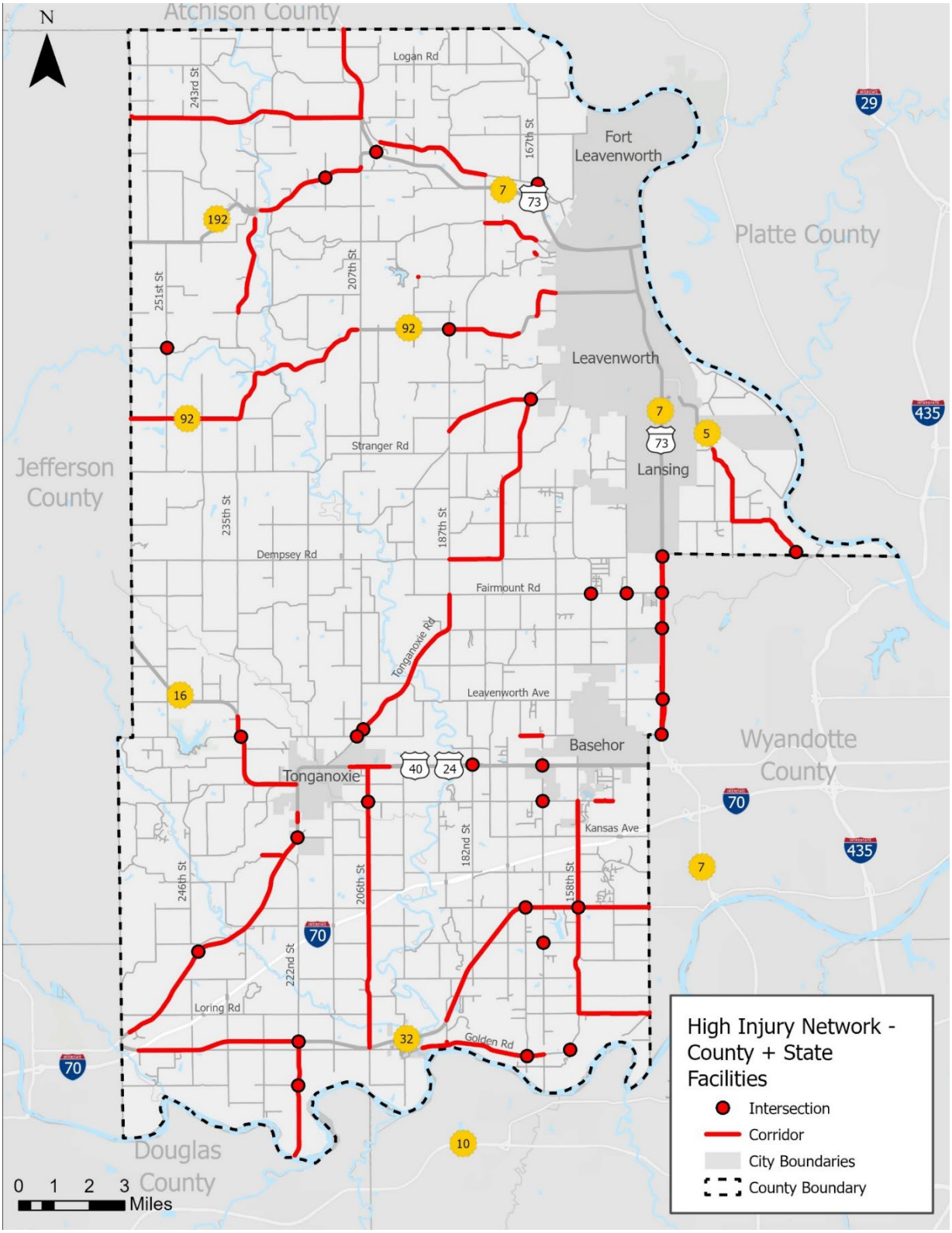


Figure 10: Map of HIN for County and State Facilities

HIGH RISK NETWORK

The High Risk Network (HRN) is a network of roadways and intersections that are scored based on the risk associated with the facility attributes. Locations in the HRN are identified by risk of the attributes like volume, speed, presence of shoulder, rumble strips, etc. A similar method to the County's 2021 Local Road Safety Plan (LRSP) was used with equity analysis included to become SS4A compliant. The following sections describe how equity was defined, the methodology used to score each of the roadway attributes, and how they were combined to create a composite ranking of high risk segments and intersections.

Equity Analysis

The USDOT Equitable Transportation Community (ETC) Explorer was used as a basis for disadvantage scores. The ETC Explorer provides disadvantage scores for each census tract. The overall disadvantage score has five components:

- Climate and Disaster Risk Burden
- Environmental Burden
- Health Vulnerability
- Social Vulnerability
- Transportation Insecurity

Each of the components are composed of subcomponents that generally trace back to underlying census data. If the average of the five component percentile scores is greater than 65 percent, the census tract is defined as being disadvantaged. The average of the five components is the overall disadvantage score.

No areas in unincorporated Leavenworth County are considered disadvantaged by the tool. However, some census tracts within the County score very highly in the transportation insecurity category. To provide variation across the County, the transportation insecurity score was used to define equity areas within Leavenworth County. Transportation insecurity has three sub-components:

- Transportation Access
- Transportation Cost Burden
- Transportation Safety

The map in Figure 11 shows how the overall disadvantage score of the different census tracts in Leavenworth County. Note the only tracts showing up as disadvantaged (in red) are within Leavenworth City. The map in

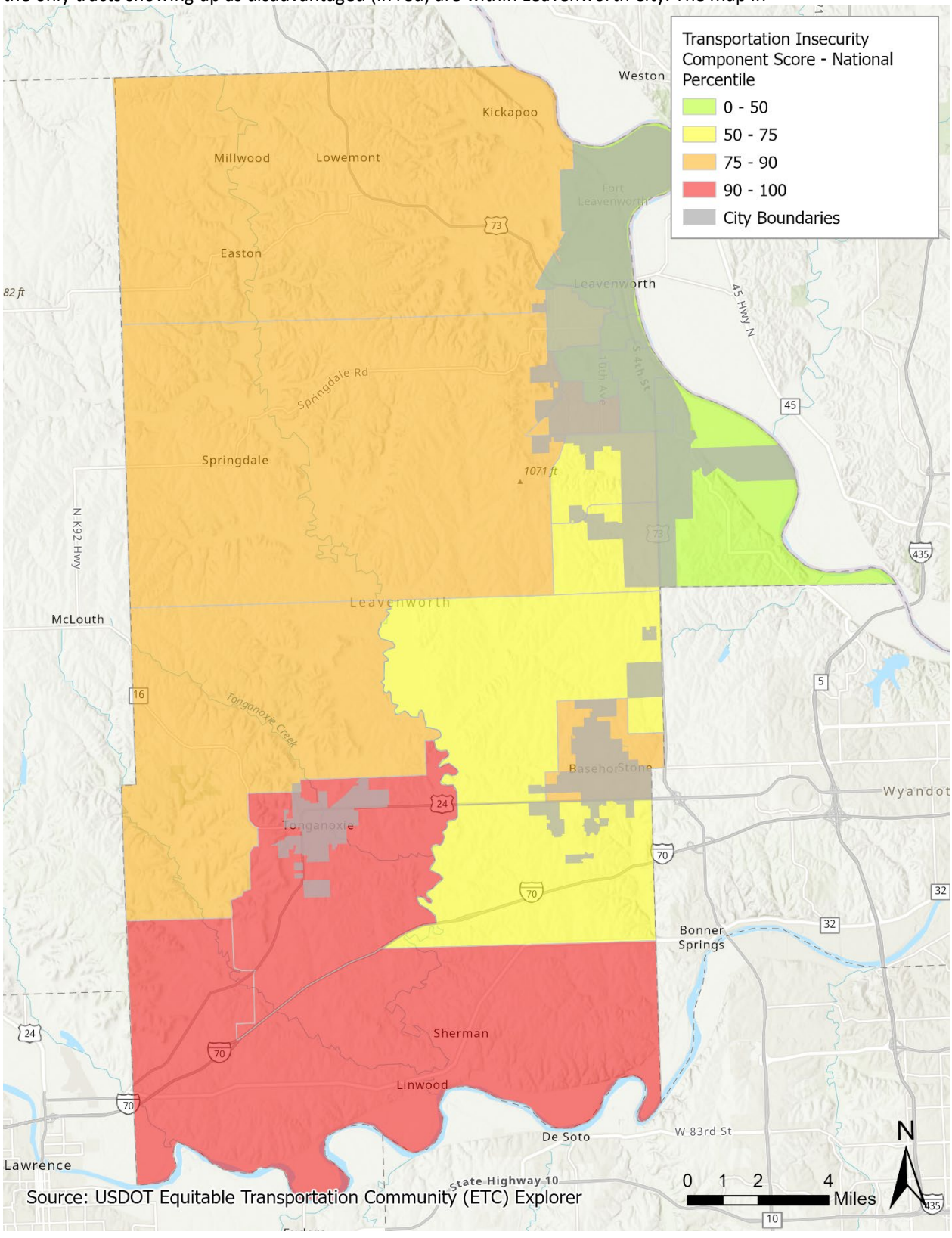


Figure 12 shows the overall **transportation disadvantage** score of the different census tracts in Leavenworth County. The southern portion of the County has the highest (worst) scores for transportation insecurity.

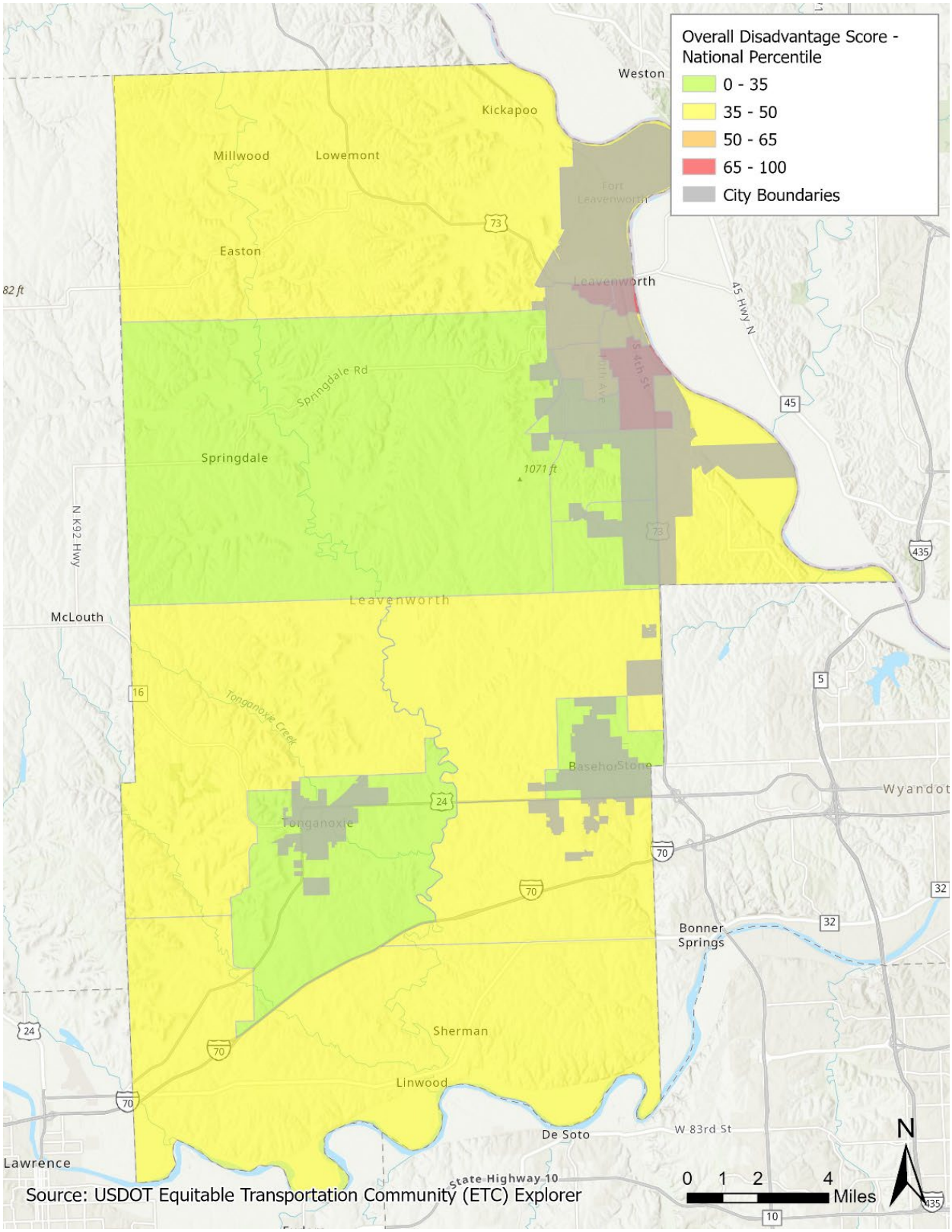


Figure 11: Map of National Percentile Disadvantage Score. Source: USDOT ETC Explorer

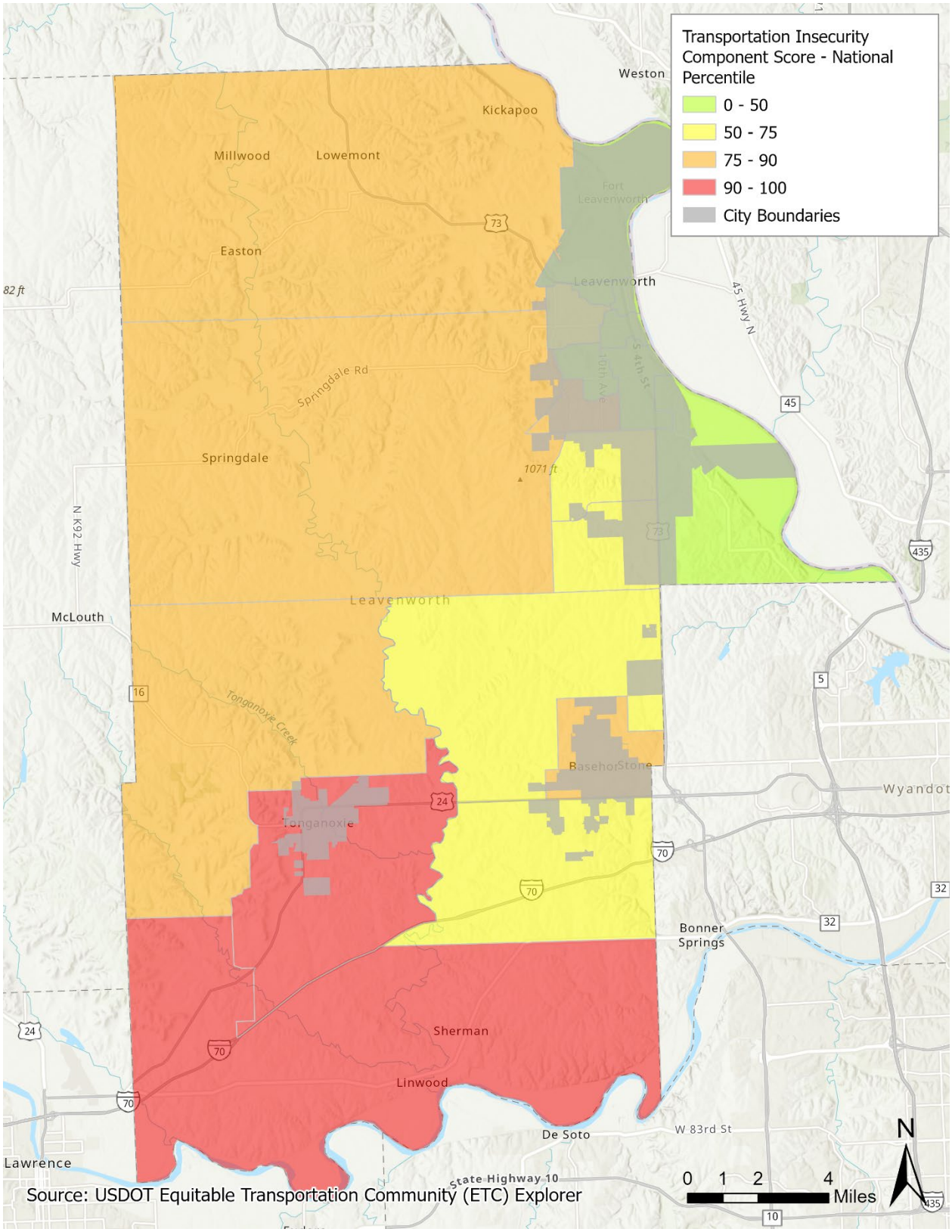


Figure 12: Map of National Percentile of Transportation Insecurity. Source: USDOT ETC Explorer

Methodology

The scoring from the LRSP was updated to include KDOT-owned facilities and non-LRSP facilities owned by the County. Most updates to the scoring methodology stemmed from the addition of the new facilities and the variations in available data among the different facility types.

In this analysis, LRSP facilities, KDOT facilities, and non-LRSP facilities were scored differently. This differentiation was due to the varying data available for each group. The LRSP had an in-depth data collection effort that rated edge conditions, sight distance, and roadside assessments among other attributes. Consequently, LRSP intersections and roadway segments needed to be scored differently from other facilities to take advantage of this data. Similarly, KDOT facilities had data on rumble strips, pavement markings, and shoulder width, among other attributes, so those intersections and roadway segments were also scored separately to make full use of the available data.

Each grouping was ultimately given a score out of 100 by dividing the intersection and roadway segment score by the total possible score. This methodology allowed for the comparison of risk scores across various facility types while still utilizing all available data effectively.

Scoring Attributes

This section outlines the attributes that were scored for the HRN, defines the attributes, and explains how they were calculated and/or measured. The primary underlying data sources are data collected from the Leavenworth LRSP and KDOT REST services data. Other sources were used to supplement data when needed.

Table 1 and Table 2 provide the intersection and roadway segment attributes used in the HRN scoring, a brief description, and the source of the data.

Table 1: Intersection Attribute Descriptions and Sources

Attribute	Description	Source/Methodology
DEV	Daily Entering Vehicles (DEV) is the average number of vehicles passing through an intersection per day.	DEV was calculated based on the ADTs of the intersecting roadway segments.
Number of Driveways or Accesses within 500 feet	The number of driveways, accesses, or intersections within 500 feet of the intersection.	Data came from the LRSP.
Sight Distance	Binary adequate/limited score of sight distance at each intersection.	Data came from the LRSP. The LRSP data is based on field observations.
Location on a Curve	Binary yes/no if the intersection is located on a curve.	Data came from the LRSP.
Crash History	History of fatal or serious injury crashes at the intersection.	This was calculated to include the most recent ten years of available crash data.
Distance from Previous Stop Sign	Length in miles to the nearest stop sign.	Data came from the LRSP.
Skew	Binary yes/no, an intersection was marked as skewed if the intersecting angle was 75 degrees or less.	Data came from the LRSP and a manual review of aerial imagery for KDOT facilities.
Intersection Control	This is the method in which traffic is controlled at the intersection (I.E. yield, none, etc.).	Data came from the LRSP and a manual review of KDOT facilities.
Left-turn Lane Presence	Binary yes/no if any dedicated left-turn lanes are present at the intersection.	Data was manually populated for intersections along KDOT facilities.
Equity	This is the ETC Explorer national transportation insecurity score of the census tract the intersection is located in.	Data came from the USDOT ETC Explorer and was joined to intersections.
Proximity to Schools	Binary yes/no if there is a school within half a mile of the intersection.	School data was pulled from the DASC Kansas Geoportal then joined to intersections.
Proximity to Parks	Binary yes/no if there is a park within half a mile of the intersection.	Park data was pulled from the US Census Bureau then joined to intersections.

Table 2: Segment Attribute Descriptions and Sources

Attribute	Description	Source/Methodology
ADT	Average Daily Traffic (ADT) along the roadway segment.	ADTs were pulled in from the LRSP, Leavenworth County, KDOT, and Replica. Based on the facility ownership, the best ADT value was pulled. Replica ADTs were used to supplement locations where we didn't have KDOT, County, or LRSP data.
Access Density	The number of accesses per mile of roadway.	The LRSPs collected this data. For KDOT facilities this was manually calculated based on aerial data.
Edge Condition	Rating of one through three based on edge drop off distance, foreslopes, and rollover risk	Data came directly from the LRSP, edge conditions were ranked while driving the roadways.
Roadside Assessment	Rating of one through three based on the location of fixed objects, fixed object frequency, and clear zone distance.	Data came directly from the LRSP, roadside assessment rankings were completed while driving the roadways.
Roadway Width	Width of the roadway in feet.	Data came from KDOT and the LRSP.
Shoulder Width	Width of the shoulder in feet.	Data came from KDOT and the LRSP.
Lane Departure Crash Rate	The number of lane departure crashes per million vehicle miles traveled (MVMT). MVMT was calculated based on ADT and segment length.	This was calculated to include most recent ten years of available crash data.
Presence of Rumble Strips	This is the presence of edgeline or centerline rumble strips along the roadway.	Data came from KDOT and the LRSP.
Presence of Pavement Markings	This is the presence of edgeline or centerline pavement markings along the roadway.	Data came from KDOT and the LRSP.
Surface Type	The surface type of the roadway (paved or unpaved).	Data came from KDOT and the LRSP.
Equity	This is the ETC Explorer national transportation insecurity score of the census tract the roadway segment is located in.	Data came from the ETC Explorer and was joined to roadway segments.
Proximity to Schools	Binary yes/no if there is a school within half a mile of the roadway segment.	School data was pulled from the DASC Kansas Geoportal then joined to roadway segments.
Proximity to Parks	Binary yes/no if there is a park within half a mile of the roadway segment.	Park data was pulled from the US Census Bureau then joined to roadway segments.

Scoring Tables

Scoring of intersections and roadway segments for the HRN is largely based on the LRSP conducted for Leavenworth County. Table 3: Intersection Scoring Table and Table 4 detail the scoring breakdown for the intersections and roadway segments. Greyed out cells indicate facilities without data and were therefore not scored.

From Table 3, the DEV of an intersection was sorted into percentiles to be scored. The 100th percentile equates to the highest volume intersection in the County; similarly, the 0th percentile equates to the lowest volume intersection in the County. Intersections were sorted in this manor to be consistent with the LRSP methodology and to provide an equal number of intersections in each scoring group.

Table 3: Intersection Scoring Table

Attribute	Points	LRSP Facilities	KDOT Facilities	Non-LRSP County Facilities	Available Points
DEV (Percentile)	0	0% - 14.3%	0% - 14.3%	0% - 14.3%	6
	1	14.3% - 28.6%	14.3% - 28.6%	14.3% - 28.6%	
	2	28.6% - 42.9%	28.6% - 42.9%	28.6% - 42.9%	
	3	42.9% - 57.1%	42.9% - 57.1%	42.9% - 57.1%	
	4	57.1% - 71.4%	57.1% - 71.4%	57.1% - 71.4%	
	5	71.4% - 85.7%	71.4% - 85.7%	71.4% - 85.7%	
	6	85.7% - 100%	85.7% - 100%	85.7% - 100%	
Number of Driveways or Accesses within 500 feet	0	0			2
	1	1 to 2			
	2	2+			
Sight Distance	0	Adequate			3
	3	Limited			
Location on a Curve	0	No			3
	3	Yes			
Crash History	0	None	None	None	3
	3	1 or more FSI	1 or more FSI	1 or more FSI	
Distance from Previous Stop Sign	0	1.5 Miles or less			3
	2	1.5 to 5 miles			
	3	5 miles or more			
Skew (roadways meet at less than 75 degrees)	0	No	No		3
	3	Yes	Yes		
Intersection Control	0	yield/none	yield/none		1
	1	Stop	Stop		
Equity (Percentile of Transportation Score)	0	0% - 65%	0% - 65%	0% - 65%	3
	1	65% - 75%	65% - 75%	65% - 75%	
	2	75% - 85%	75% - 85%	75% - 85%	
	3	85% - 100%	85% - 100%	85% - 100%	
Left-turn Lane Presence	0		Yes		2
	2		No		
Proximity to Schools	0		No	No	2
	2		Yes	Yes	
Proximity to Parks	0		No	No	2
	2		Yes	Yes	
Total Score		**27**	**22**	**16**	

From Table 3, the ADT of an intersection was sorted into percentiles to be scored. The 100th percentile equates to the highest volume roadway segment in the County; similarly, the 0th percentile equates to the lowest volume roadway segment in the County. Roadway segments were sorted in this manor to be consistent with the LRSP methodology and to provide an equal number of roadway segments in each scoring group.

A similar methodology was applied to access density. First the number of accesses per mile was calculated for each KDOT and LRSP roadway segment. Then access density was sorted into percentiles. The 100th percentile equates to the highest accesses density roadway and the 0th percentile would be a roadway with no accesses.

The edge condition and roadside assessment ratings are from the LRSP. A score of three to either indicates safe conditions (no pavement edge drop offs, relatively low foreslopes, low rollover risk, 15+ feet of clear zone, and very few fixed objects). Lower scores indicate higher risk conditions. Anything scoring above a 2.75 was taken out and scored at 0; all other values were scored based on a percentile system.

Table 4: Segment Scoring Table

Attribute	Points	LRSP Facilities	KDOT Facilities	Non-LRSP County Facilities	Available Points
ADT (percentile)	0	0% - 14.3%	0% - 14.3%	0% - 14.3%	6
	1	14.3% - 28.6%	14.3% - 28.6%	14.3% - 28.6%	
	2	28.6% - 42.9%	28.6% - 42.9%	28.6% - 42.9%	
	3	42.9% - 57.1%	42.9% - 57.1%	42.9% - 57.1%	
	4	57.1% - 71.4%	57.1% - 71.4%	57.1% - 71.4%	
	5	71.4% - 85.7%	71.4% - 85.7%	71.4% - 85.7%	
	6	85.7% - 100%	85.7% - 100%	85.7% - 100%	
Access Density	0	0% - 33.3%	0% - 33.3%		2
	1	33.3% - 66.7%	33.3% - 66.7%		
	2	66.7% - 100%	66.7% - 100%		
Edge Condition	0	2.75 - 3			3
	1	Top third of remaining ratings			
	2	Middle third of remaining ratings			
	3	Bottom third of remaining ratings			
Roadside Assessment	0	2.75 - 3			3
	1	Top third of remaining ratings			
	2	Middle third of remaining ratings			
	3	Bottom third of remaining ratings			
Roadway Width	0	22'+	22'+		2
	2	<22'	<22'		
Shoulder Width	0	4'+	4'+		2
	1	2' - 4'	2' - 4'		
	2	<2'	<2'		
Lane Departure Crash Rate	0	0% - 25%	0% - 25%	0% - 25%	3
	1	25% - 50%	25% - 50%	25% - 50%	
	2	50% - 75%	50% - 75%	50% - 75%	
	3	75% - 100%	75% - 100%	75% - 100%	
Presence of Rumble Strips	0	Both Centerline and Edgeline	Both Centerline and Edgeline		2
	1	Centerline or Edgeline	Centerline or Edgeline		
	2	None Present	None Present		
Presence of Pavement Markings	0	Both Centerline and Edgeline	Both Centerline and Edgeline		2
	1	Centerline or Edgeline	Centerline or Edgeline		
	2	None Present	None Present		
Surface Type	0	Paved	Paved		1
	1	Unpaved	Unpaved		
Equity (Percentile of Transportation Score)	0	0% - 65%	0% - 65%	0% - 65%	3
	1	65% - 75%	65% - 75%	65% - 75%	
	2	75% - 85%	75% - 85%	75% - 85%	
	3	85% - 100%	85% - 100%	85% - 100%	
Proximity to Schools	0		No	No	2
	2		Yes	Yes	
Proximity to Parks	0		No	No	2
	2		Yes	Yes	
Total Score		**29**	**27**	**16**	

GIS Visualizations

Figure 13 shows a map of high risk County segments and intersections and Figure 14 shows a map of high risk County and State segments and intersections. Key locations on the HRN include 158th Street and Golden Road, Tonganoxie Road, and Leavenworth County Road 14.

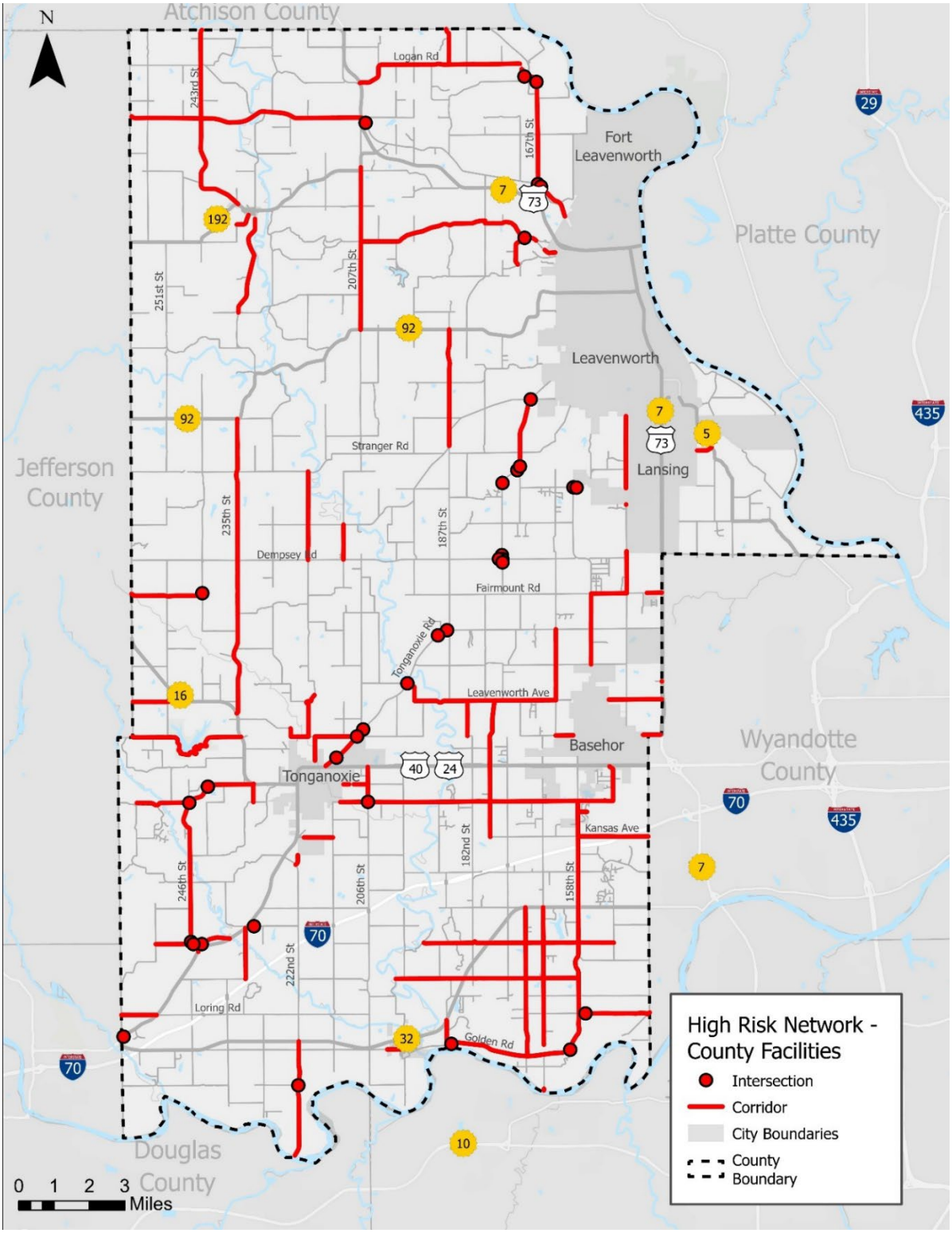


Figure 13: Map of HRN for County Facilities

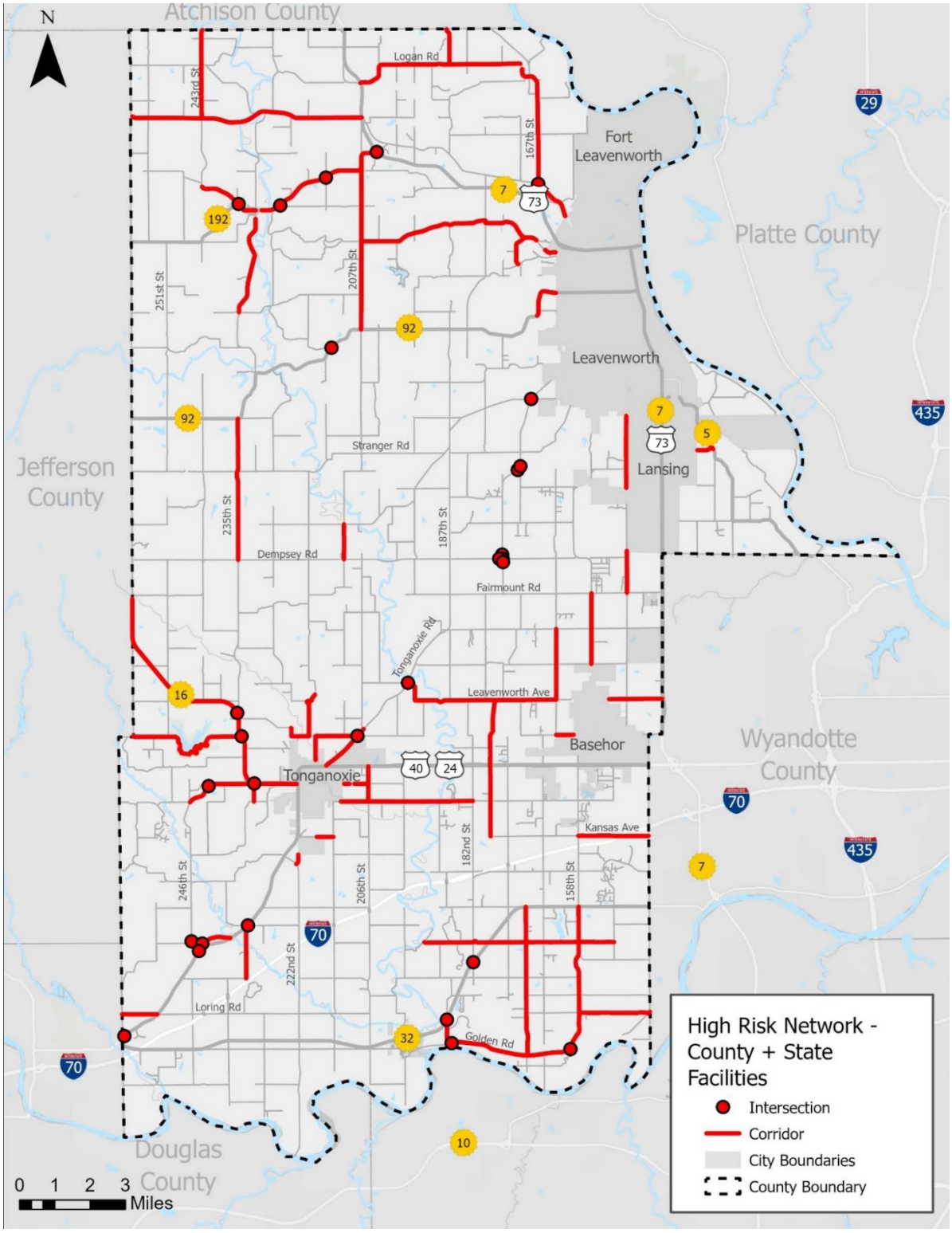


Figure 14: Map of HRN for County and State Facilities

HIGH INJURY NETWORK AND HIGH RISK NETWORK OVERLAY

High Injury and High Risk Network are both effective at identifying safety challenges in roadways and intersections, however they each have different strengths and weaknesses when identifying the most dangerous locations. Generally, high risk networks are better for analyzing low volume or rural locations because they remove the randomness and infrequency of crash data. Table 5 shows the pros and cons of these two analysis lenses used to evaluate roadway segments and intersections within Leavenworth County.

Table 5: High Injury Network, High Risk Network Comparison Table

	High Injury Network	High Risk Network
Positive	• Based primarily on crash data • Prioritizes locations where historical crashes are occurring, especially more severe crashes • Best for analyzing urban, high crash locations	• Accounts for recent changes to the roadway network • Is not influenced by the random nature of crashes, removes a level of variability • Better for analyzing rural low crash areas
Negatives	• Does not account for recent changes to the roadway network • Crashes are infrequent, it can be challenging to draw conclusions from crash data in low volume rural locations • One random severe crash can be enough to highlight an intersection or segment, even if the crash was not caused by the roadway features	• Limited by quantity of data available • Time intensive to populate key attributes when data is unavailable • Does not always identify high crash locations

While both the High Injury Network and High Risk Network have drawbacks, they are most effective when they are overlaid to identify locations that are present in both networks. This way locations with crash history as well as high-risk attributes are identified for further study and improvements. Figure 15 provides a map of all facilities within Leavenworth County and if they are on the HIN, the HRN, or both.

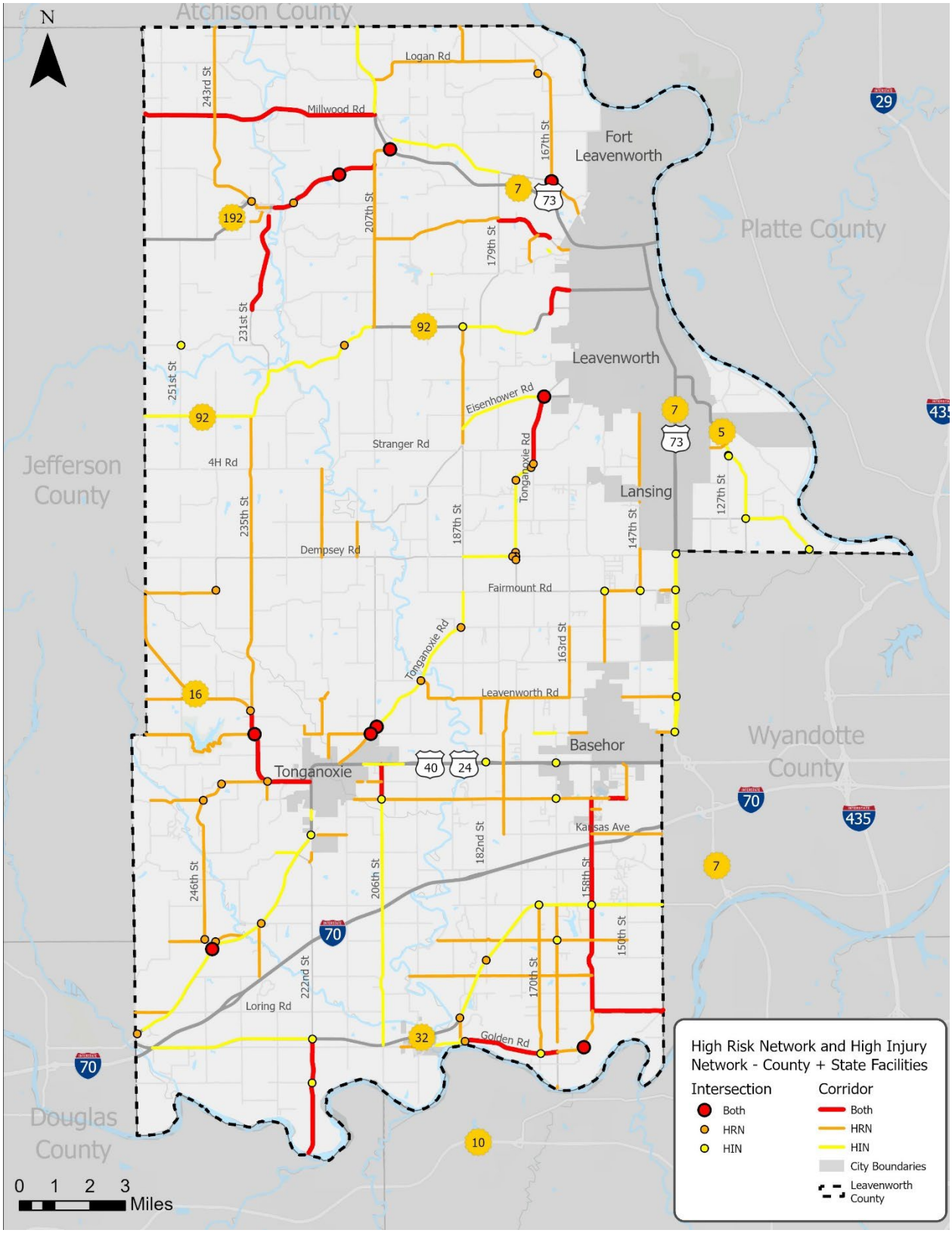


Figure 15: Map of HIN and HRN for County and State Facilities.

Table 6 and Table 7 provide a tabulated list of the intersections and roadway segments that are shown in Figure 15.

Table 6: Top Scoring Intersections

Major Road	Minor Road	Ownership	Control Type	Fatal Crashes	Serious Injury Crashes	Total Crashes	HIN/HRN
US-73/K-7 Hwy	Easton Rd	KDOT/County	Side Street Stop	0	3	20	Both
158th St	161st St	County	Side Street Stop	0	2	10	Both
US-24/US-40 Hwy	24th St	KDOT/County	Side Street Stop	0	2	8	Both
167th St	Santa Fe Trl	County	Side Street Stop	0	0	5	Both
K-16 Hwy	Parallel Rd	KDOT/County	Side Street Stop	2	1	7	Both
Eisenhower Rd	Tonganoxie Dr	County	Side Street Stop	0	1	21	Both
Tonganoxie Dr	Parallel Rd	County	Side Street Stop	0	2	8	Both
K-192 Hwy	215th St	KDOT/County	Side Street Stop	0	1	7	Both
Tonganoxie Dr	207th St	County	Side Street Stop	1	0	8	Both
Evans Rd	206th St	County	Side Street Stop	1	0	4	HIN
222nd St	Alexander Rd	County	Side Street Stop	1	0	8	HIN
K-32 Hwy	170th St	KDOT/County	Side Street Stop	0	1	20	HIN
K-5 Hwy	Wolcott Rd	KDOT/County	Side Street Stop	0	1	8	HIN
K-32 Hwy	222nd St	KDOT/County	Side Street Stop	2	4	45	HIN
Fairmount Rd	155th St	County	Side Street Stop	1	3	14	HIN
Golden Rd	170th St	County	Side Street Stop	0	1	8	HIN
Kansas Ave	222nd St	County	All Way Stop	1	0	4	HIN
K-32 Hwy	158th St	KDOT/County	Side Street Stop	1	3	27	HIN
Fairmount Rd	147th St	County	Side Street Stop	0	1	9	HIN
US-73/K-7 Hwy	Parallel Pkwy	KDOT/County	Restricted Crossing U-Turn	1	3	118	HIN
K-92 Hwy	187th St	KDOT/County	Side Street Stop	0	1	6	HIN
Evans Rd	166th St	County	Side Street Stop	1	1	13	HIN
K-5 Hwy	123rd St	KDOT/County	Side Street Stop	0	1	5	HIN
US-73/K-7 Hwy	Marxen Rd	KDOT/County	Side Street Stop	1	0	10	HIN
K-5 Hwy	Marxen Rd	KDOT/County	Side Street Stop	0	1	10	HIN
US-73/K-7 Hwy	Leavenworth Rd	KDOT/County	Signalized	1	3	42	HIN
K-5 Hwy	127th St	KDOT/County	Side Street Stop	0	0	16	HIN
US-24/US-40 Hwy	166th St	KDOT/County	Side Street Stop	1	1	19	HIN
US-73/K-7 Hwy	Hollingsworth Rd	KDOT/County	Side Street Stop	0	3	38	HIN
US-24/US-40 Hwy	182nd St	KDOT/County	Side Street Stop	1	0	13	HIN
166th St	Stillwell Rd	County	Side Street Stop	0	1	3	HIN
US-73/K-7 Hwy	Fairmount Rd	KDOT/County	Signalized	0	0	44	HIN
251st St	Limit Rd	County	Side Street Stop	1	0	1	HIN
Stillwell Rd	243rd St	County	Side Street Stop	0	0	7	HRN
Tonganoxie Dr	Mitchell Rd	County	Side Street Stop	0	1	6	HRN
K-32 Hwy	182nd St	KDOT/County	Side Street Stop	0	1	5	HRN
K-32 Hwy	189th St	KDOT/County	Side Street Stop	0	1	9	HRN
US-24/US-40 Hwy	262nd St	KDOT/County	Side Street Stop	1	0	6	HRN
246th St	Stillwell Rd	County	Side Street Stop	1	0	1	HRN
Tonganoxie Dr	Dempsey Rd/175th St	County	Side Street Stop	0	0	6	HRN
K-16 Hwy	235th St	KDOT/County	Side Street Stop	1	0	4	HRN

Major Road	Minor Road	Ownership	Control Type	Fatal Crashes	Serious Injury Crashes	Total Crashes	HIN/HRN
Golden Rd	189th St	County	Side Street Stop	0	1	1	HRN
Sandusky Rd	Knight Rd	County	Side Street Stop	0	1	1	HRN
Fairmount Rd	243rd St	County	Side Street Stop	1	0	2	HRN
K-92 Hwy	Limit Rd	KDOT/County	Side Street Stop	0	1	1	HRN
K-192 Hwy	Turner Rd	KDOT/County	Side Street Stop	0	1	5	HRN
K-192 Hwy	Potter Rd	KDOT/County	Side Street Stop	0	1	3	HRN
US-24/US-40 Hwy	Woodend Rd	KDOT/County	Side Street Stop	0	0	4	HRN
K-16 Hwy	Sandusky Rd	KDOT/County	Side Street Stop	0	0	2	HRN
US-24/US-40 Hwy	Woodend Rd	KDOT/County	Side Street Stop	0	0	2	HRN
Tonganoxie Dr	171st St	County	Side Street Stop	0	0	2	HRN
Tonganoxie Dr	Hollingsworth Rd	County	Side Street Stop	0	0	2	HRN
Sandusky Rd	Evans Rd	County	Side Street Stop	0	0	2	HRN
Tonganoxie Dr	4H Rd	County	Side Street Stop	0	0	1	HRN
Kickapoo Rd	170th St	County	Side Street Stop	0	0	0	HRN
Tonganoxie Dr	175th St	County	Side Street Stop	0	0	0	HRN

Table 7: Top Scoring Roadway Segments

Road Name	Extents	Roadway Owner	Classification	Fatal Crashes	Serious Injury Crashes	Total Crashes	HIN/HRN
Mt Olivet Rd	179th St to Boeppler Rd	County	Minor Collector	2	2	8	Both
231st St	Lecompton Rd to Broad St	County	Major Collector	2	0	18	Both
Loring Rd	158th St to 142nd St	County	Major Collector	2	2	28	Both
Golden Rd	189th St to 166th St	County	Major Collector	1	2	27	Both
158th St	Loring Rd to Evans Rd	County	Major Collector	2	5	57	Both
Millwood Rd	US-73/K-7 Hwy to 255th St	County	Major Collector	1	2	33	Both
K-16 Hwy	US-24/US-40 Hwy to George Rd	KDOT	Minor Arterial	0	2	69	Both
K-192 Hwy	Gardner St to 207th St	KDOT	Minor Arterial	0	5	38	Both
206th St	Evans Rd to State Ave	County	Major Collector	0	1	19	Both
Tonganoxie Dr	4H Rd to Eisenhower Rd	County	Major Collector	1	0	30	Both
222nd St	K-32 Hwy to Kansas River	County	Major Collector	2	1	26	Both
K-92 Hwy	Lecompton Rd to 20th St	KDOT	Major Collector	0	1	18	Both
K-32 Hwy	I-70 to 222nd St	KDOT	Minor Arterial	2	8	56	HIN
US-24/US-40 Hwy	262nd St to Kansas Ave	KDOT	Minor Arterial	4	7	178	HIN
K-5 Hwy	Mary St to 107th St	KDOT	Major Collector	1	7	154	HIN
206th St	K-32 Hwy to Evans Rd	County	Major Collector	1	2	25	HIN
US-24/US-40 Hwy	Park Dr to 206th St	KDOT	Minor Arterial	2	4	49	HIN
Parallel Rd	171st St to 166th St	County	Local	0	0	11	HIN
Tonganoxie Dr	207th St to Fairmount Rd	County	Major Collector	0	3	94	HIN
K-32 Hwy	189th to 142nd St	KDOT	Minor Arterial	3	5	86	HIN
Eisenhower Rd	187th St to Tonganoxie Rd	County	Major Collector	1	1	29	HIN
US-24/US-40 Hwy	262nd St to Kansas Ave	KDOT	Minor Arterial	0	1	10	HIN

Road Name	Extents	Roadway Owner	Classification	Fatal Crashes	Serious Injury Crashes	Total Crashes	HIN/HRN
US-73/K-7 Hwy	Parallel Pkwy to Marxen Rd	KDOT	Principal Arterial	1	3	165	HIN
K-92 Hwy	187th St to Dietrich Ln	KDOT	Major Collector	0	2	35	HIN
Tonganoxie Dr	187th to 4-H Rd	County	Major Collector	1	2	31	HIN
K-92 Hwy	Union Rd to 207th St	KDOT	Major Collector	0	1	66	HIN
Santa Fe Trail	Easton Rd to 179th St	County	Major Collector	1	1	15	HIN
Mitchell Rd	Tonganoxie Rd to 195th St	County	Major Collector	0	0	1	HRN
219th St	Parallel Rd to Leavenworth Rd	County	Minor Collector	0	0	4	HRN
232nd St	Evans Rd to Sandusky Rd	County	Local	0	0	0	HRN
Mt Olivet Rd	172nd St to 164th St	County	Major Collector	0	0	1	HRN
Tonganoxie Dr	US-24/US-40 Hwy to Hollingsworth Rd	County	Major Collector	0	0	16	HRN
Leavenworth Rd	195th St to US-73/K-7 Hwy	County	Major Collector	0	0	26	HRN
Kansas Ave	158th St to US-73/K-7 Hwy	County	Major Collector	0	2	25	HRN
167th St	Santa Fe Trail to Kickapoo Rd	County	Major Collector	0	1	13	HRN
195th St	Leavenworth Rd to Mitchell Rd	County	Major Collector	0	0	0	HRN
243rd St	US-24/US-40 Hwy to Stillwell Rd	County	Major Collector	0	0	0	HRN
K-192 Hwy	Seven Sisters Rd to US-73/K-7 Hwy	KDOT	Minor Arterial	0	0	9	HRN
155th St	Donahoo Rd to Fairmount Rd	County	Major Collector	0	0	8	HRN
158th St	161st St to Loring Rd	County	Major Collector	0	3	11	HRN
163rd St	Leavenworth Rd to Hollingsworth Rd	County	Minor Collector	0	0	6	HRN
170th St	K-32 Hwy to Golden Rd	County	Minor Collector	0	1	6	HRN
172nd St	Dakota St to Mt Olivet Rd	County	Local	0	0	2	HRN
178th St	Kansas Ave to Leavenworth Rd	County	Local	0	0	2	HRN
218th St	State Ave to Parallel Rd	County	Minor Collector	0	0	2	HRN
222nd St	Honey Creek Rd to Business Pk Dr	County	Local	0	0	1	HRN
223rd St	Parallel Rd to George Rd	County	Minor Collector	0	0	0	HRN
234th St	Cantrell Rd to US-24/US-40 Hwy	County	Local	0	0	4	HRN
Golden Rd	166th St to 158th St	County	Major Collector	0	1	5	HRN
Kansas Ave	222nd St to 214th St	County	Local	0	0	0	HRN
Kickapoo Rd	Renensland Rd to Logan Rd	County	Major Collector	0	0	0	HRN
Loring Rd	262nd St to US-24/US-40 Hwy	County	Minor Collector	0	0	1	HRN
Parallel Rd	223rd St to Tonganoxie Rd	County	Minor Collector	0	0	4	HRN
Parallel Rd	163rd St to 158th St	County	Minor Collector	0	0	4	HRN
Potter Rd	Woodward Rd to K-192 Hwy	County	Major Collector	0	0	4	HRN
Sandusky Rd	Whileshire Dr to 206th St	County	Minor Collector	0	0	4	HRN
Stillwell Rd	190th St to 150th St	County	Local	0	0	4	HRN
Stranger Rd	Hillbrook Dr to Wolcott Dr	County	Major Collector	0	0	3	HRN
Parallel Rd	259th St to McLouth Rd	County	Local	0	0	4	HRN

Road Name	Extents	Roadway Owner	Classification	Fatal Crashes	Serious Injury Crashes	Total Crashes	HIN/HRN
K-192 Hwy	235th St to 231st St	KDOT	Minor Arterial	0	0	0	HRN
Logan Rd	203rd St to Kickapoo Rd	County	Major Collector	1	0	18	HRN
Stillwell Rd	254th St to US-24/US-40 Hwy	County	Local	0	0	0	HRN
187th St	Logan Rd to Oaks Mills Rd	County	Major Collector	0	1	1	HRN
189th St	Golden Rd to K-32 Hwy	County	Major Collector	0	0	5	HRN
203rd St	Edwards Dr to Logan Rd	County	Major Collector	0	0	2	HRN
207th St	K-92 Hwy to K-192 Hwy	County	Major Collector	0	0	24	HRN
211th St	Dempsey Rd to McIntyre Rd	County	Major Collector	0	0	2	HRN
Edwards Dr	US-73/K-7 Hwy to 203rd St	County	Major Collector	0	0	3	HRN
Mt Olivet Rd	207th St to 179th St	County	Minor Collector	0	0	7	HRN
Sandusky Rd	Evans Rd to K-16 Hwy	County	Major Collector	0	0	13	HRN
Santa Fe Trail	167th St to Fort Riley Blvd	County	Major Collector	0	1	6	HRN
243rd St	Potter Rd to 206th Rd	County	Major Collector	0	1	14	HRN
Kansas Ave	222nd St to 214th St	County	Local	1	0	1	HRN
235th St	George Rd to K-92 Hwy	County	Major Collector	0	2	9	HRN
Evans Rd	Rogers Rd to 156th Terr	County	Major Collector	0	0	48	HRN
K-5 Hwy	127th St to Avery St	KDOT	Major Collector	0	0	2	HRN
K-16 Hwy	George Rd to Fairmount Rd	KDOT	Minor Arterial	0	1	67	HRN
150th St	State Ave to Evans Rd	County	Minor Collector	0	0	6	HRN
166th St	K-32 Hwy to Golden Rd	County	Local	0	0	3	HRN
183rd St	Parallel Rd to Leavenworth Rd	County	Minor Collector	0	0	1	HRN
187th St	Jarbola Rd to Springdale Rd	County	Major Collector	0	0	30	HRN
219th St	Dempsey Rd to 4H Rd	County	Minor Collector	0	0	2	HRN
246th St	Stillwell Rd to Evans Rd	County	Major Collector	0	2	13	HRN
Cantrell Rd	200th St to 158th St	County	Local	0	0	5	HRN
Cemetery Rd	235th St to Broad St	County	Local	0	0	3	HRN
Fairmount Rd	McLouth Rd to 243rd St	County	Major Collector	0	0	7	HRN
Fairmount Rd	155th St to US-73/K-7 Hwy	County	Major Collector	0	2	14	HRN
Glenwood Dr	158th St to 157th St	County	Local	0	0	0	HRN
Golden Rd	206th St to Main St	County	Local	0	0	0	HRN
Leavenworth Rd	259th St to McLouth Rd	County	Local	0	0	1	HRN
Parallel Rd	147th St to US-73/K-7 Hwy	County	Major Collector	0	0	6	HRN

KEY FINDINGS / NEXT STEPS

Focus Groups

The crashes were grouped into nine different potential focus areas based on the characteristics of each crash (Figure 16). Focus groups were selected based off crash analysis and stakeholder input. The five focus groups selected for Leavenworth County are:

- roadway departure
- intersections
- impaired driving
- motorcycles
- young drivers

The following sections detail findings from the crash analysis that helped select the five focus areas for Leavenworth County.

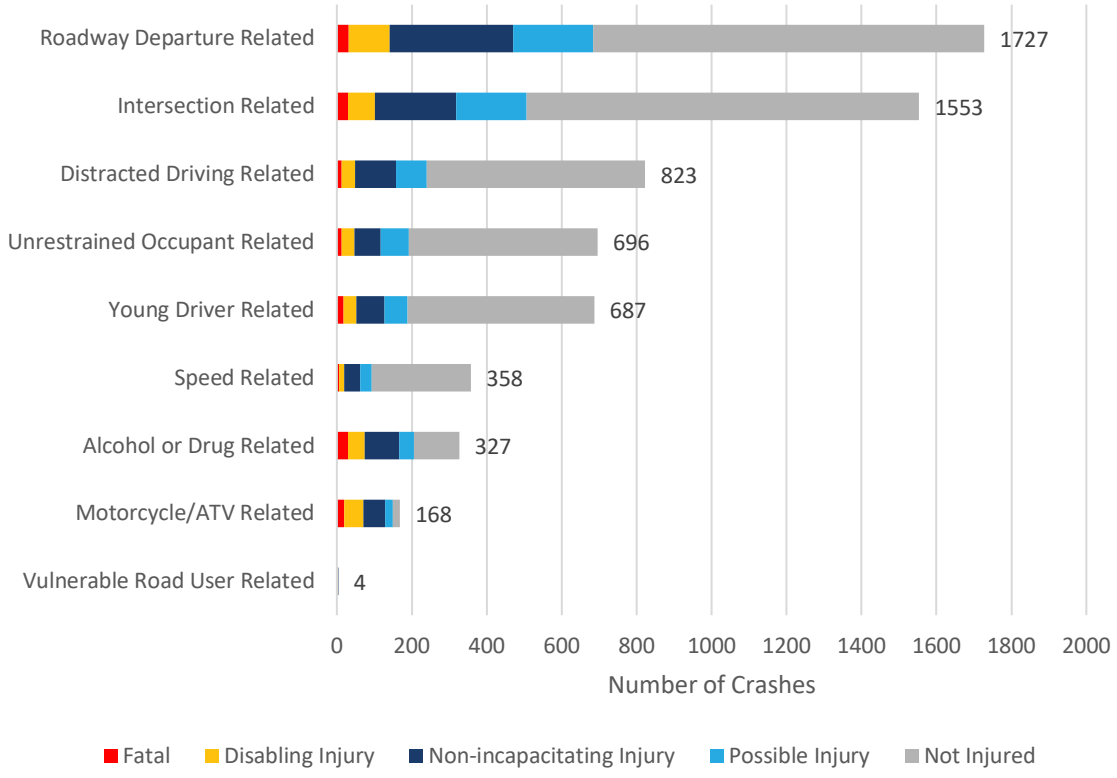


Figure 16: Crashes by Contributing Circumstance and Severity, 2013-2022. Source: KDOT

Roadway Departure

Approximately 40 percent of fatal and serious injury crashes were fixed object crashes, and 13 percent of crashes were overturned/rollover crashes (Figure 17). These two manners of collisions are categorized as roadway departure related crashes. **The data suggest that roadway departure crashes are the most dangerous manner of collision in the County, accounting for over half of all fatal and serious injury crashes in the County.**

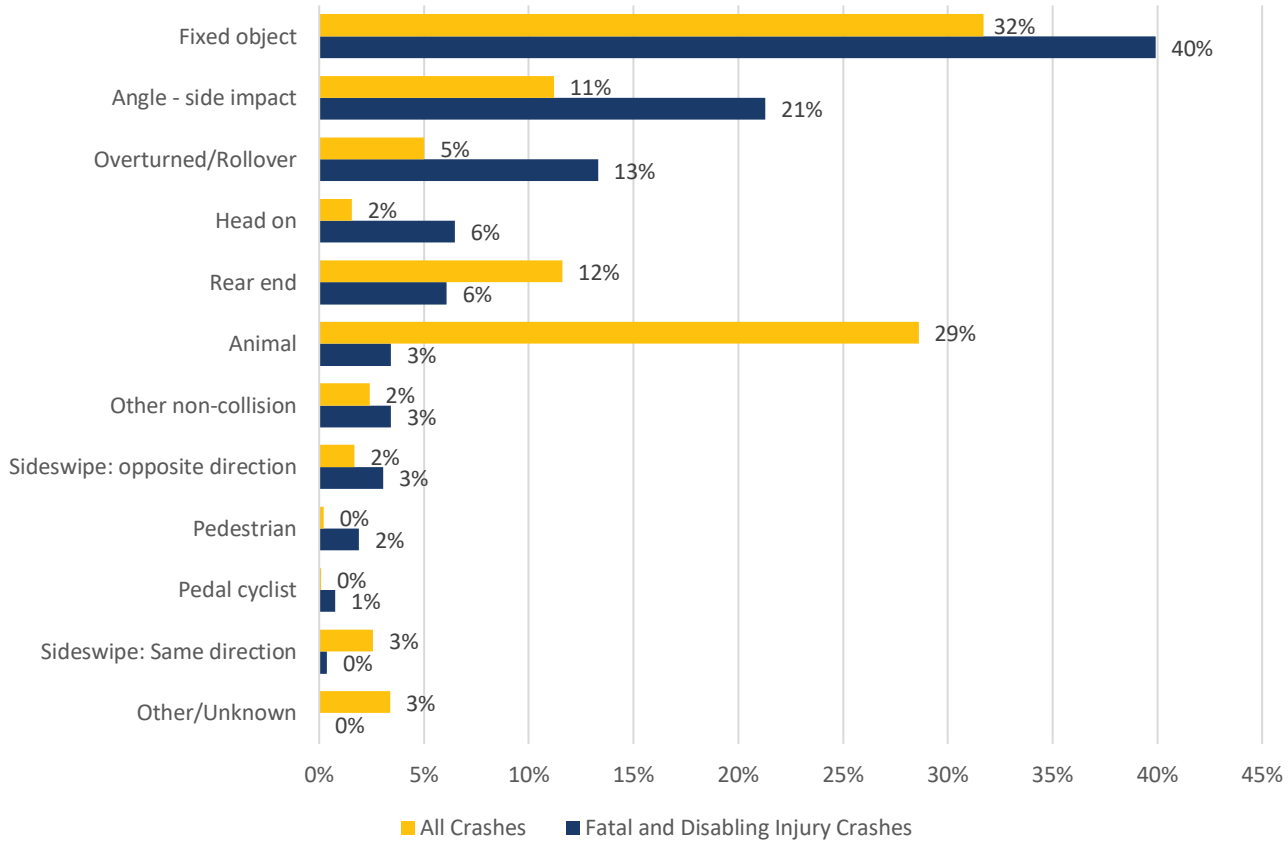


Figure 17: Crashes by Manner of Collision and Severity, 2013-2022. Source: KDOT

The map in Figure 18 shows the concentration of Non-Property Damage only (non-PDO) roadway departure crashes. Non-PDO is any severity level from possible injury to fatality. Notably, areas on K-5 (Wolcott Road) and on Tonganoxie Road from Parallel Road to 195th Street have higher concentrations of non-PDO roadway departure crashes. While there are hotspots that roadway departure crashes have occurred more frequently, it should be noted that the entire County has a significant amount of these crashes making systemic countermeasures appealing for this crash trend.

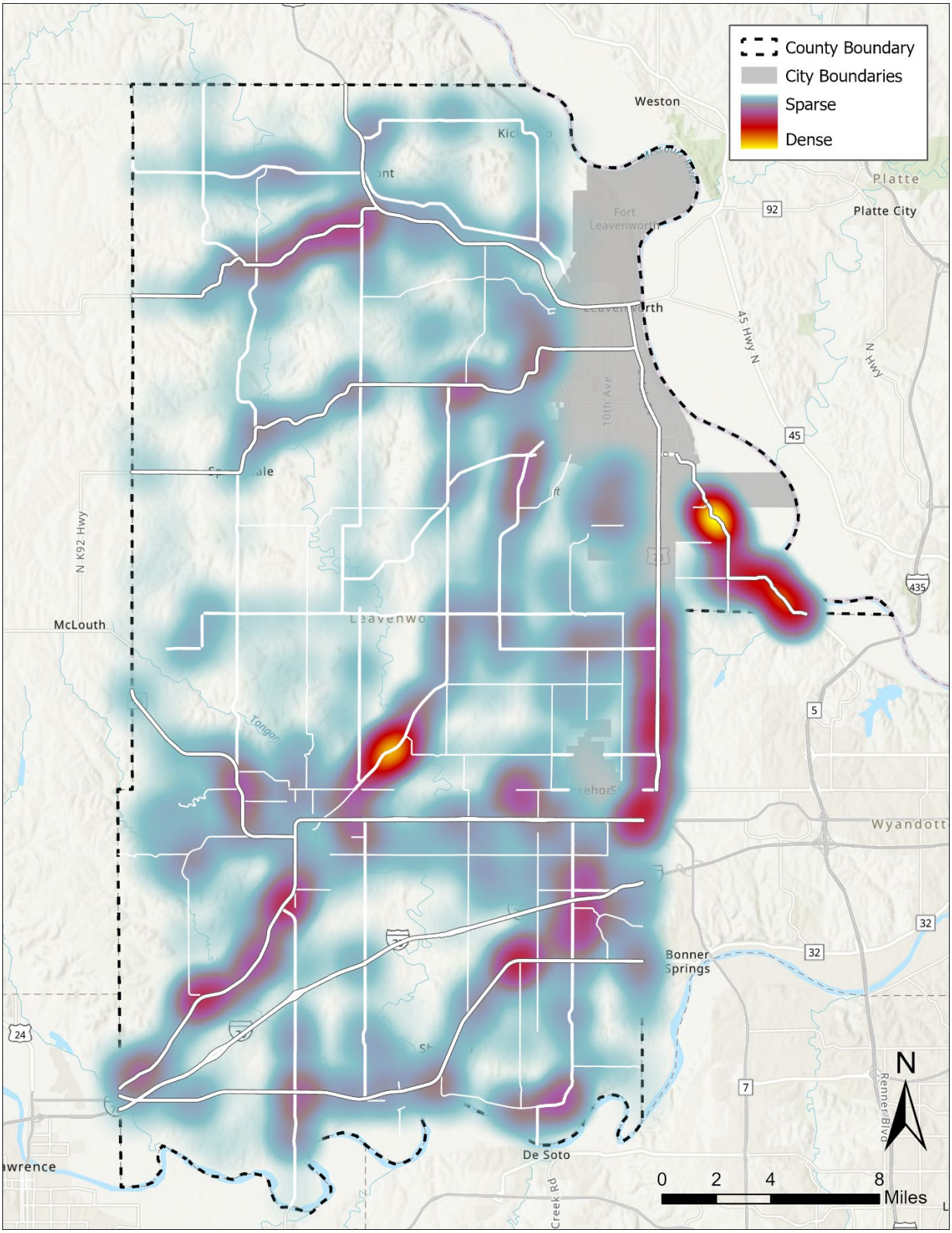


Figure 18: Heat Map of Non-PDO Roadway Departure Crashes, 2013-2022. Source: KDOT

Intersections

1 in 3 crashes (33 percent) in Leavenworth County occur at intersections, and the data suggests that crashes at intersections or interchanges are more likely to involve fatalities and serious injuries. To significantly improve traffic safety, intersections should be a priority target of future safety improvements.

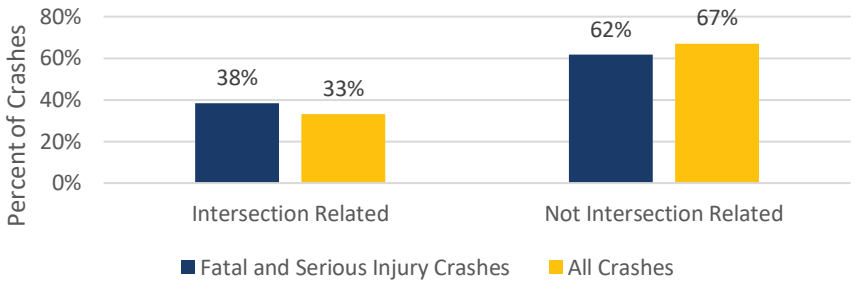


Figure 19: Crashes by Intersection Relationship and Severity, 2013-2022. Source: KDOT

Approximately 74 percent of all intersection crashes occurred at two-way (side street) stop controlled intersections, followed by 24 percent at signalized intersections, and 2 percent at all-way stop intersections (Figure 20). **An overwhelmingly large proportion of fatal and serious occurred at intersections with two-way stop control (89 percent).** This is consistent with the fact that 95 percent of all intersections in Leavenworth County are two-way stop-controlled[1]. Targeting safety improvements at two-way stop-controlled intersections is anticipated to have a high impact on fatal and serious injury, intersection crash reduction.

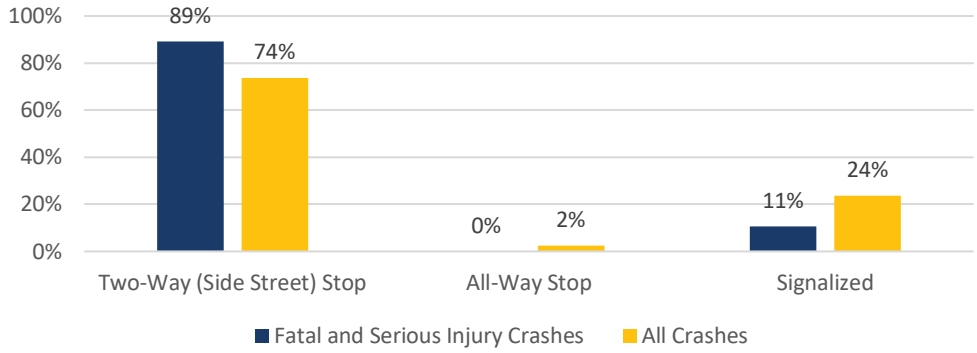


Figure 20: Intersection Crashes by Intersection Control and Severity, 2013-2022. Source: KDOT

The heat map in Figure 21 shows the concentration of non-PDO crashes that occurred at two-way stop-controlled intersections. Notably, K-32 (Linwood Road) and 222nd Street, K-32 and 170th Street, K-32 and N 158th Street, and K-7 and Hollingsworth Road appear as hotspots for non-PDO, intersection crashes.

[1] Data cataloging intersections in Leavenworth County is incomplete. There are at least 342 two-way (side street) stop-controlled intersections.

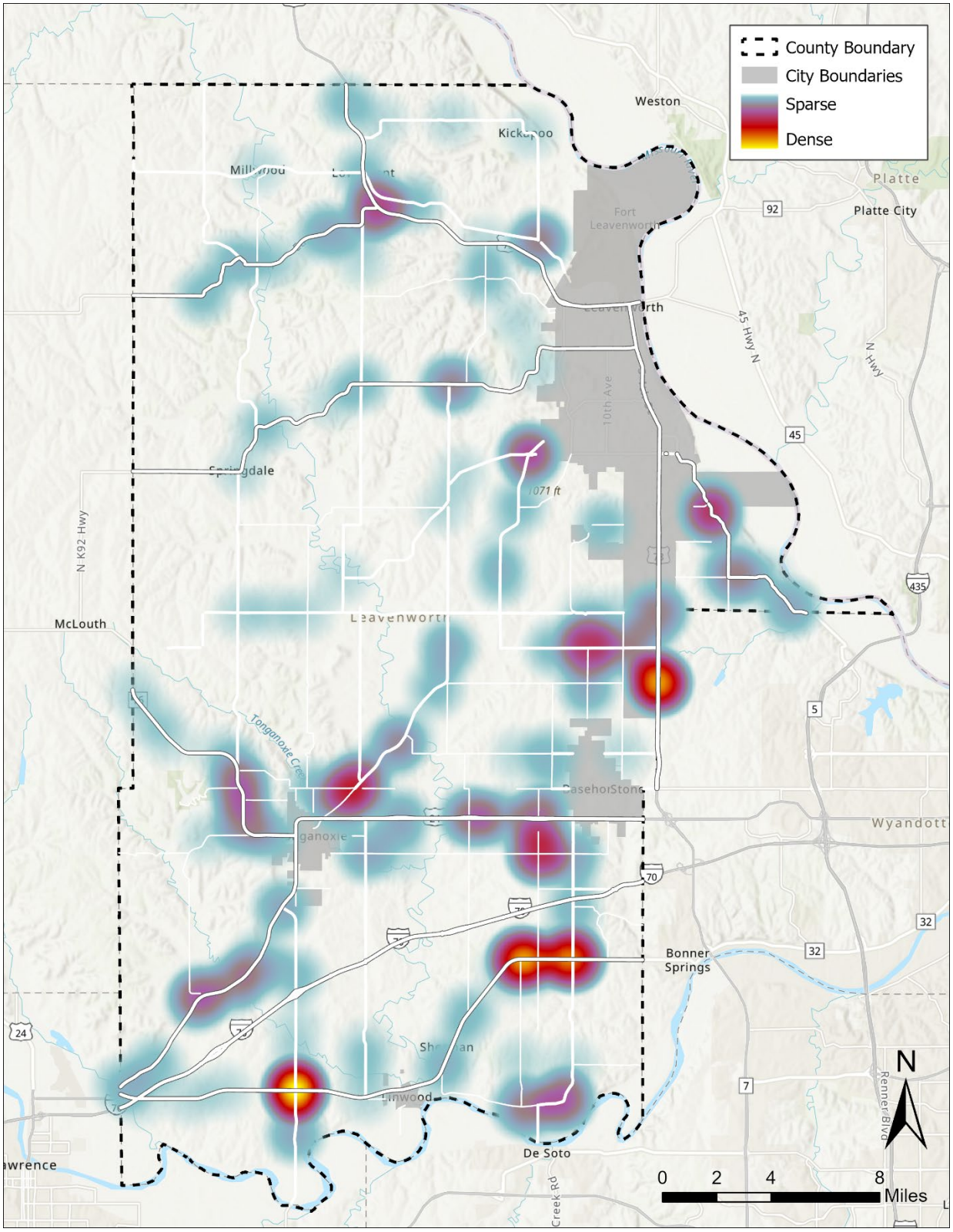


Figure 21: Heat Map of Non-PDO Crashes at Two-Way (side street) Stop Intersections, 2013-2022. Source: KDOT

Motorcycles

Approximately 3 percent of crashes involved a motorcycle; however, nearly a quarter of fatal and serious injury crashes involved a motorcycle (Figure 22). A higher proportion of motorcyclists are involved in fatal and serious injury crashes, which is expected since the vehicles are smaller than an automobile and do not provide the same protection to the driver/rider involved in a crash. **The number of fatal and serious injury motorcycle crashes is disproportionate and would suggest that motorcycles present a serious safety concern in Leavenworth County.**

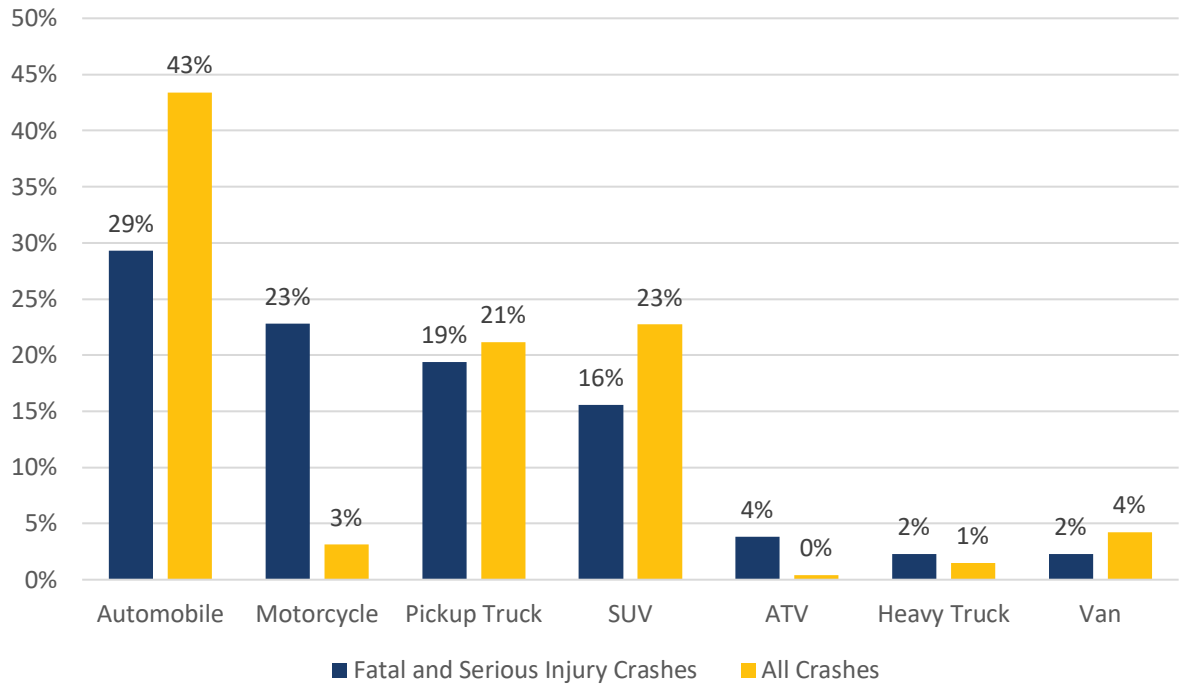


Figure 22: Crashes by Vehicle Type and Severity, 2013-2022. Source: KDOT

After bicycle, pedestrian, and ATV crashes, motorcycle crashes tend to be the most severe crash types by mode of travel (Figure 23). While bike, pedestrian, and ATV crashes result in a higher likelihood of serious or fatal injury, these three transportation modes combined are involved in approximately a fifth the number of motorcycle crashes occurring in Leavenworth County. Hence the emphasis on motorcyclists in the County. The data suggests that improvements specifically targeted to reducing motorcycle crashes (Like education programs) would be beneficial in improving traffic safety in Leavenworth County.

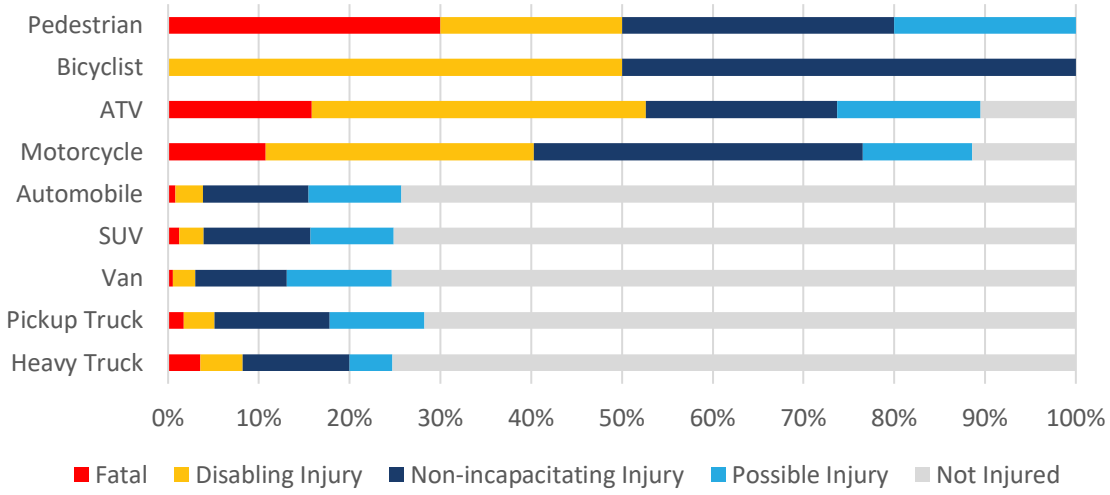


Figure 23: Crashes by Transportation Mode and Severity, 2013-2022. Source: KDOT

The heat map in Figure 25 shows the location of non-PDO motorcycle crashes. There are a larger proportion of motorcycle crashes in the southern part of the county on and around the K-32 (Linwood Road) and Golden Road.

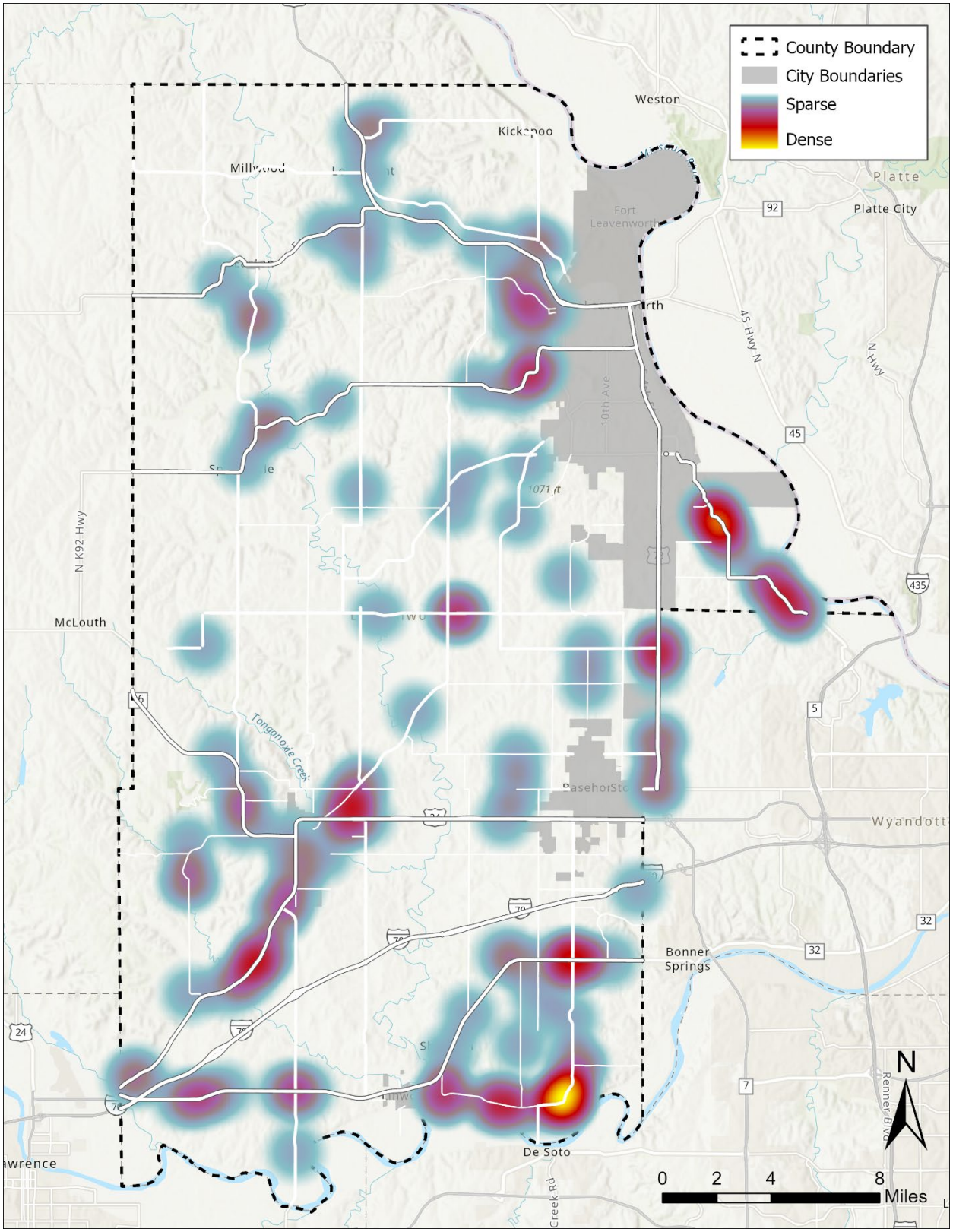


Figure 24: Map of Non-PDO Motorcycle, 2013-2022. Source: KDOT

The map in Figure 25 shows the location of fatal and serious injury motorcycle crashes and the involvement of alcohol in these crashes. There are a larger number of fatal and serious injury motorcycle crashes involving alcohol that occurred in the southern portion of the County.

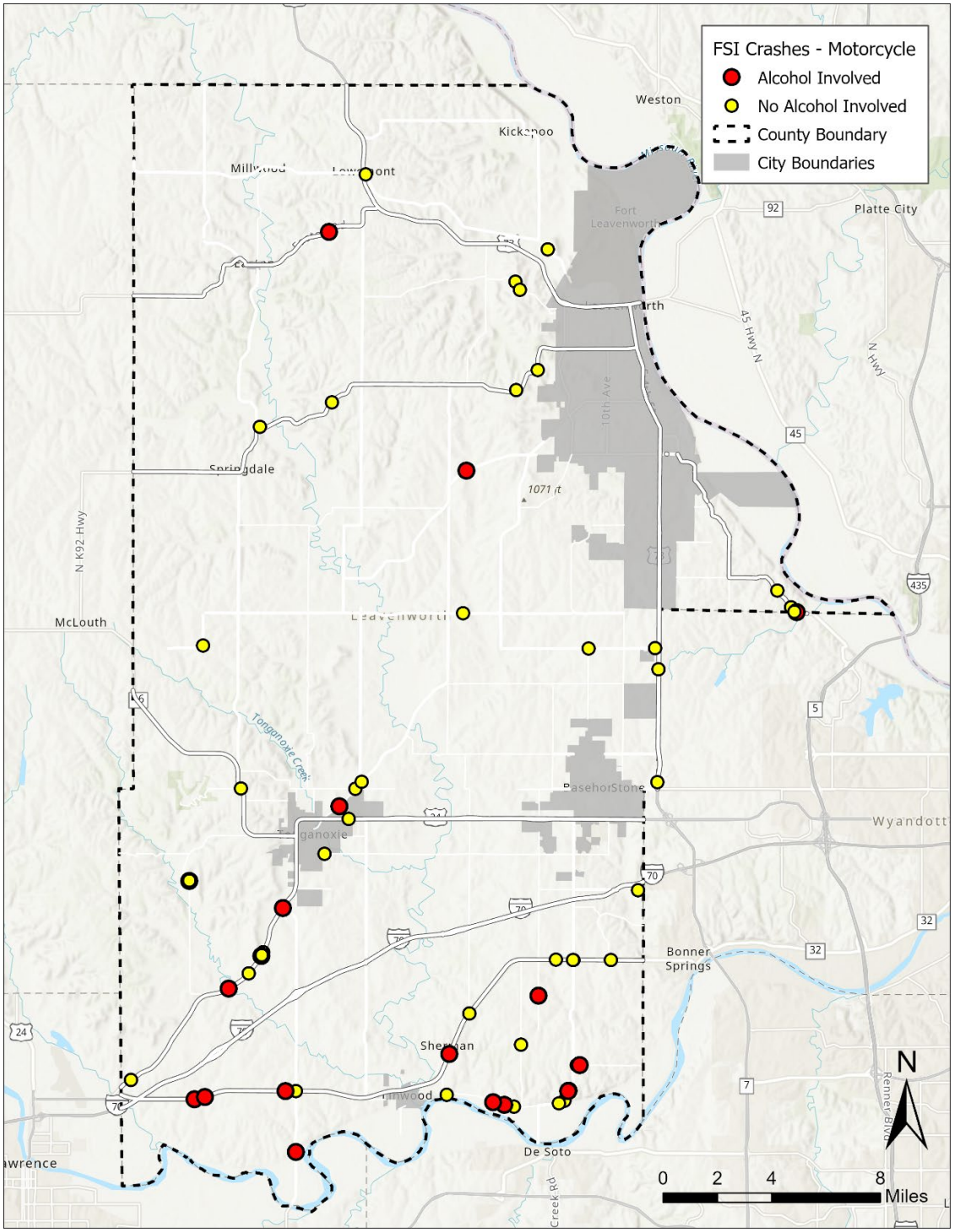


Figure 25: Map of Fatal and Serious Injury Motorcycle and ATV Crashes, 2013-2022. Source: KDOT

Impaired Driving

For all crashes, 6.9 percent of motorists were under the influence of alcohol or illicit drugs. Fatal and serious injury crashes were more likely to be attributed to drivers under the influence of alcohol or illicit drugs, with 28.3 percent of serious crashes involving an impaired driver. **Nearly one-third of fatal and serious crashes involving alcohol or drugs.**

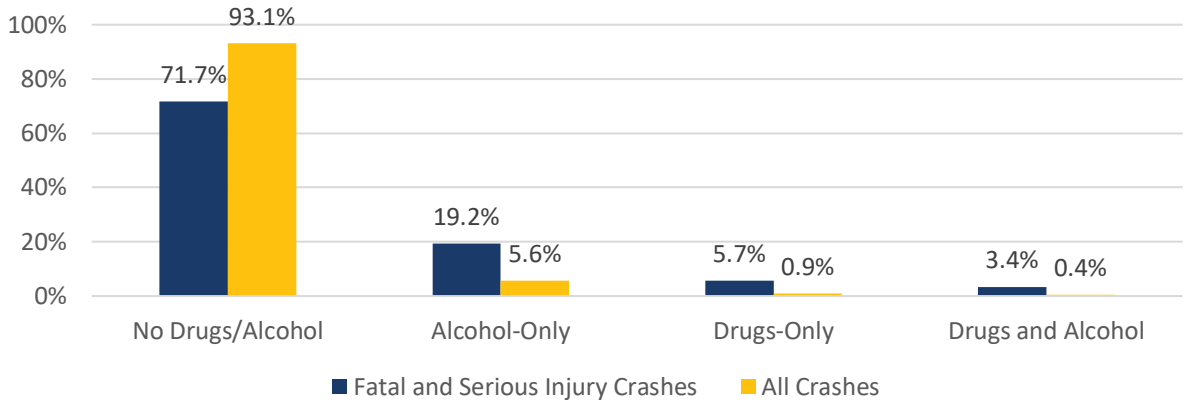


Figure 26: Crashes by Alcohol and Drug Involvement, 2013-2022. Source: KDOT

The heat map in Figure 27 shows the concentration of crashes involving alcohol or drugs. Notably, the K-7 corridor from Hollingsworth Road to Parallel Parkway stands out as a location with more crashes involving alcohol or drugs. This is largely a result of the high volumes along K-7.

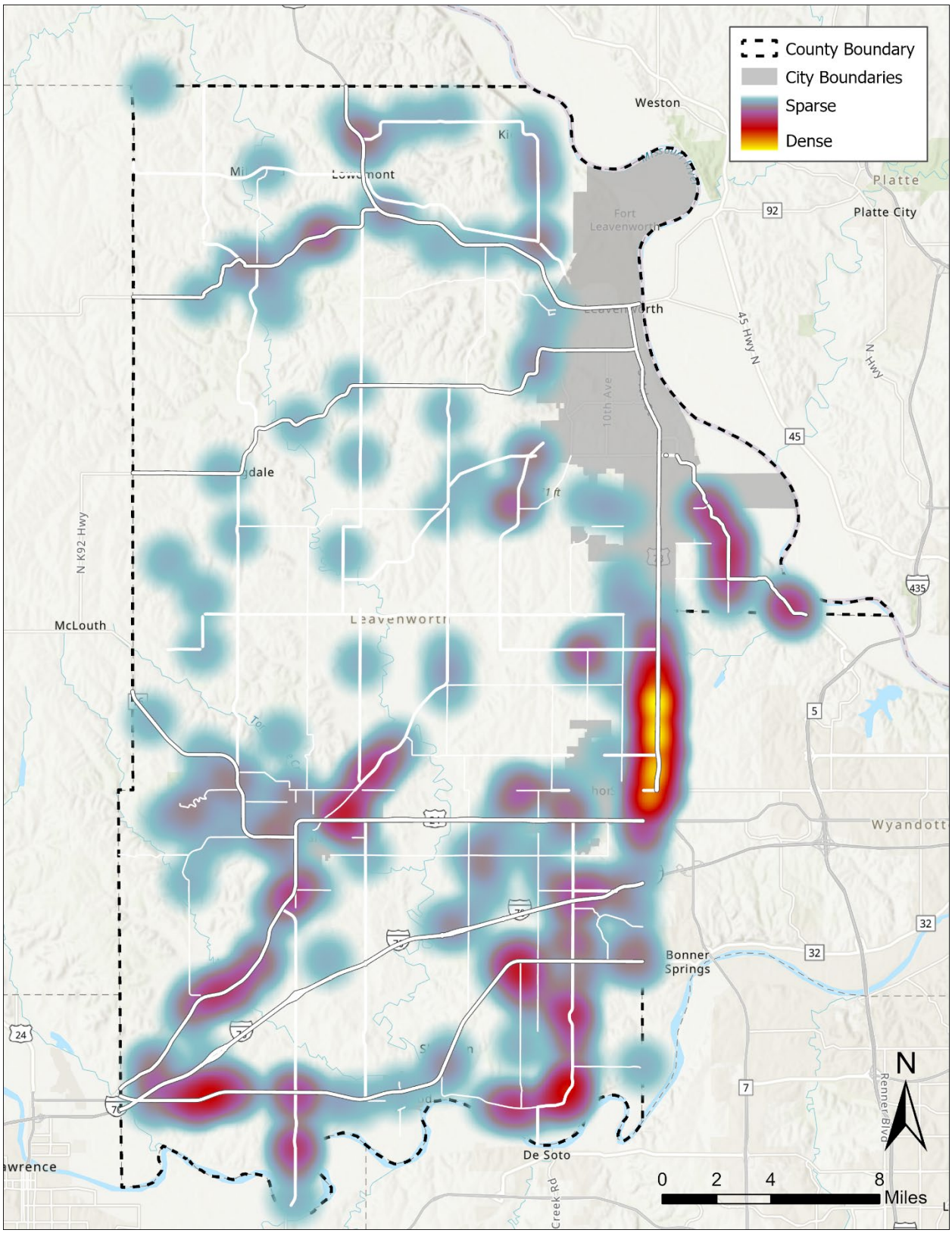


Figure 27: Heat Map of Non-PDO Impaired Driving Related Crashes, 2013-2022. Source: KDOT

Young Drivers

There is a general decreasing trend of all crashes and fatal and serious injury crashes as driver age increases with a slight peak in the 46-50 age group. Approximately 32 percent of all crashes and 28 percent of fatal and serious injury crashes involved motorists under the age of 25 (Figure 28). **Over a quarter fatal and serious injury crashes involving drivers under the age of 25 indicates this is a demographic group in Leavenworth County that needs additional focus.**

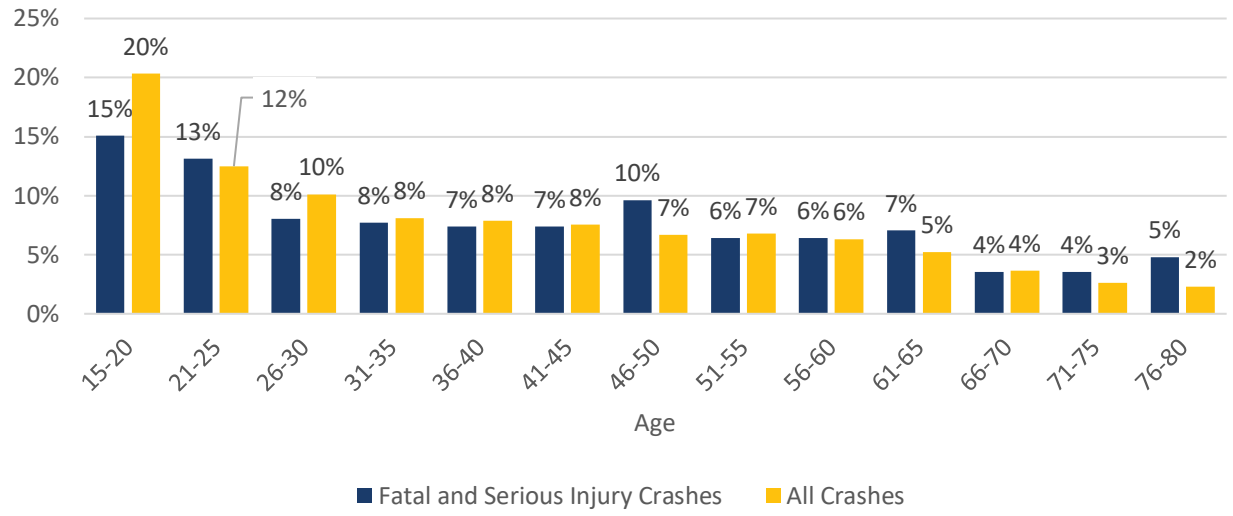


Figure 28: Crashes by Age of Driver, 2013-2022. Source: KDOT

Drivers of age 17 and 18 represent the largest proportion of all crashes severities for young drivers. **However, 21-year-old drivers represent the largest proportion of the fatal and serious injury crashes** (Figure 29).

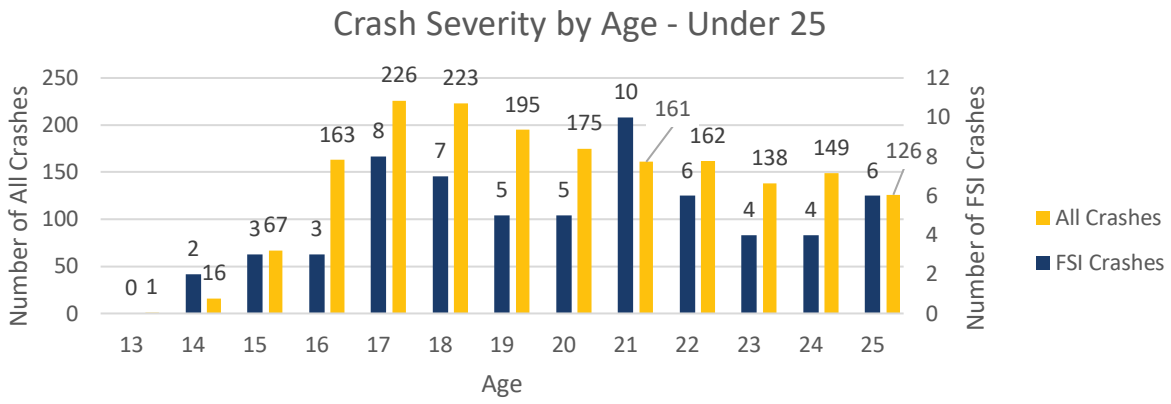


Figure 29: Crashes by Age of Driver for Drivers Under 25, 2013-2022. Source: KDOT

The heat map in Figure 30 shows the concentration of crashes involving drivers, age 25 or younger. There is a hotspot of young driver related crashes on K-7 near Parallel Road and Parallel road near Basehor-Linwood High School.

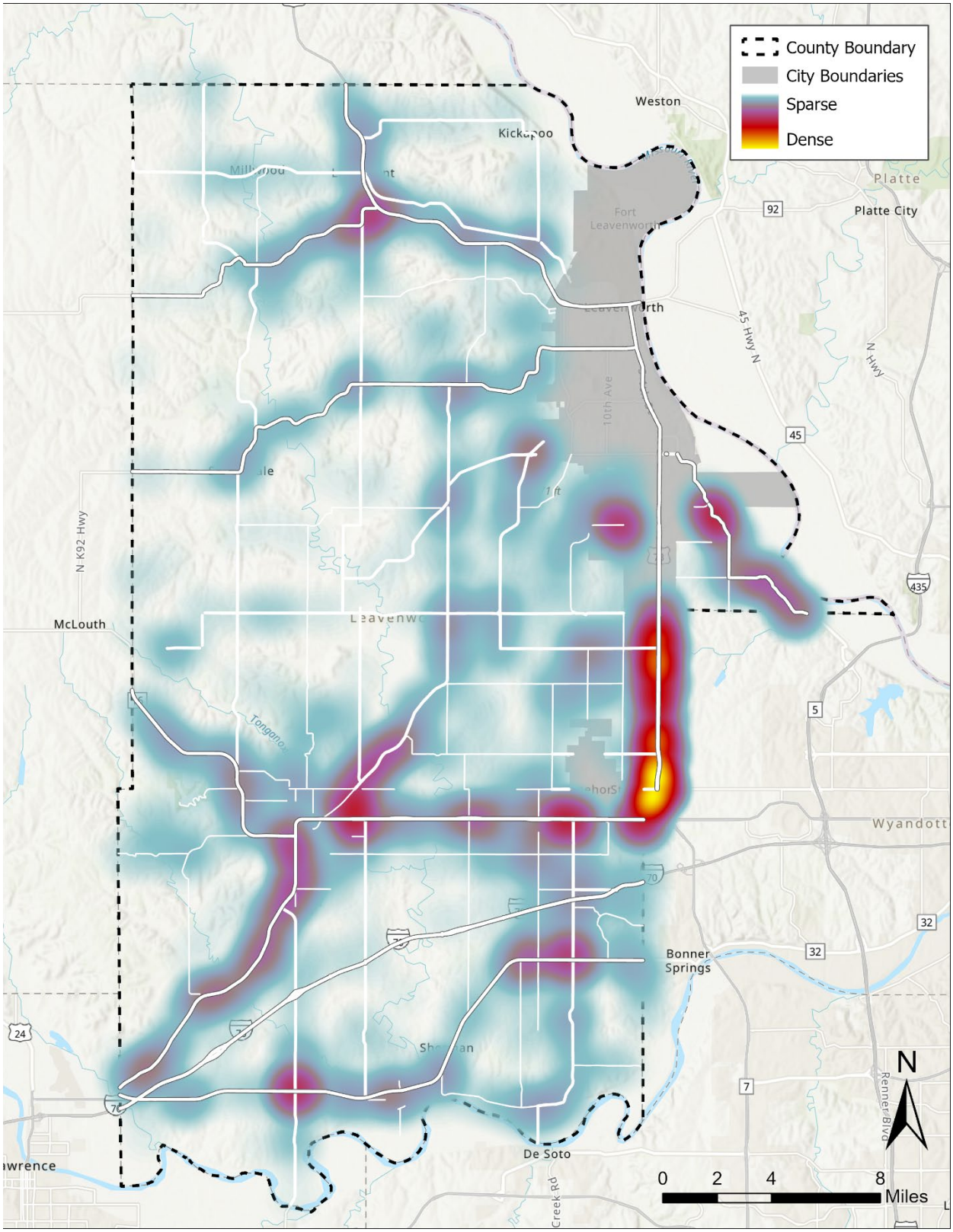


Figure 30: Heat Map of Non-PDO Young Driver Related Crashes, 2013-2022. Source: KDOT

Conclusion

The crash and data analysis supports the Vision Zero Action Plan (VZAP) for Leavenworth County by identifying key trends that are leading to fatal and serious injury crashes within the County. This comprehensive analysis evaluates crash trends from January 1, 2013, through December 31, 2022, using crash data from the Kansas Department of Transportation (KDOT). The analysis identified key locations based on crash history and crash risk, forming the High Injury Network (HIN) and the High-Risk Network (HRN). In addition to pinpointing these locations, the analysis also identified five key attributes most common in fatal and serious injury crashes:

- Roadway Departure
- Intersection Related
- Motorcyclist
- Impaired Driving
- Young Drivers

Ninety-five percent of fatal and serious injury crashes in Leavenworth County over the past 10 years have included at least one of these five key attributes listed above. This appendix focuses on identifying and defining the safety challenges facing the County. For more information on how to mitigate these issues, please review the main body of the VZAP.

Appendix B.

Public and Stakeholder Engagement Summary

APPENDIX B: PUBLIC AND STAKEHOLDER ENGAGEMENT SUMMARY

WHAT IS PUBLIC ENGAGEMENT?

Communicating early and transparently with key audiences who currently live and work throughout the County, as well as major stakeholders, has helped to build trust-based relationships and further establish two-way communication. The public and stakeholder engagement efforts associated with the Leavenworth County Vision Zero Action Plan assisted with establishing shared goals, objectives, and critical community priorities for the project. By mapping the conversation and community vision, and by gathering and reviewing community feedback on specific focus areas, this Action Plan integrates community feedback to ensure Leavenworth County residents and stakeholders are looped in at every step of the process. By ensuring the County adopts the "nothing about me without me" principle for its public engagement efforts, this Action Plan is representative of the community.

STRATEGIC MEETINGS

Technical Advisory Committee

The Technical Advisory Committee (TAC) is a group comprised of City of Leavenworth staff, partnering agencies, and members of community advocacy groups (Table 1). The purpose of the TAC is to review data analysis and public input and determine safety focus areas, as well as filter, prioritize, and implement recommendations from specialized Focus Area Working Groups and public engagement into the First City Vision Zero Action Plan. The TAC met four (4) times from May 2024 through November 2024.

Table 1: TAC Members

Representative	Organization/Advocacy Groups
Andy Dedeke	Leavenworth County Sheriff
Todd Geiger	Geiger Ready-Mix Co
Jeremy Greenamyre	Leavenworth County Development Corporation
John Jacobson	Leavenworth County Planning and Zoning
Robert Larsen	Fort Leavenworth
Joe McAfee	Leavenworth County Public Works
Bill Noll	Leavenworth County Public Works
Josh Patzwald	Leavenworth County Sheriff's Office
Jim Shirley	Leavenworth County Sheriff's Office

TAC Meeting Dates:

- Meeting #1: 05/30/24
- Meeting #2: 07/30/24
- Meeting #3: 10/01/24
- Meeting #4: 12/17/24

One-on-One Focus Groups

Specific focus groups were identified for one-on-one or small group targeted meetings, based on conclusions developed through the comprehensive data analysis and TAC meetings. These focus groups were aimed at behavioral safety issues and included: young drivers (those aged 25 and under), impaired driving (driving under the influence of alcohol or drugs), and motorcyclists. Each of the following subsections has a brief overview of the focus area, followed summaries of meetings or correspondence with representatives related to each focus group.

Young Drivers

Background

Since 2017, injury crashes involving young drivers have been increasing. These types of crashes tend to have more severe consequences, as 7% of crashes involving young drivers resulted in a fatality and more than 17% resulted in serious injuries. Furthermore, while rivers under the age of 16 only account for 3% of total crashes in Leavenworth County, they account for nearly 7% of fatal and serious injury crashes.

Young Drivers Focus Group Correspondence/Meetings

Basehor-Linwood School District (USD 458) – 09/19/2024

ATTENDEES:

- **Devon Duffield,** Traffic Safety Specialist – SAFE, KTRSO
- **Jennifer LeManske,** School Resource Officer (SRO), Basehor Police Department/USD 458
- **Lt. Peter Martin,** Basehor Police Department
- **Riley Mitts,** Kimley Horn
- **David Church,** WSP
- **Lauren Brown,** WSP

Lt. Peter Martin and Officer Jennifer LeManske of the Basehor Police Department and Devon Duffield, Traffic Safety Specialist – SAFE at the KTSRO and former City of Coldwater Police Chief, bring their experiences in enforcement and working with young drivers. Officer LeManske is the school resource officer for the USD 458 district and has been since the beginning of the 2022 school year, serving as the SRO for all seven schools within the district. Lt. Martin, Officer LeManske, and Devon Duffield were brought together to get their experiences and knowledge as it relates to traffic safety with young drivers within Basehor-Linwood and from other cities within Leavenworth County. The following bullet points summarize their thoughts:

- Observations from Basehor-Linwood
    - This week alone – 3 crashes
        - Parallel eastbound near 151st: at the time when the sun hits drivers directly in their eyes
        - 158th/State Ave: only a few cars can make it across before the light turns
        - 155th/State Ave: signal changes fast; considered a highway
    - There are buses (4 to 9) based on the given day
        - Do have a couple shorter buses
        - Transport vans/vehicles
        - Our neighboring school in Tonganoxie brings in students
    - Students driving to/from school
        - Lt. Martin's experience with young drivers is **speed and inattention**; students need to take into consideration that experience makes you a better driver
        - A large number of vehicles in the parking lot driven in by students
        - **Struggling to get funding for parking blocks to help prevent crashes between motorists/motorists and motorists/pedestrians**
    - Does Bashor-Linwood have a drivers ed instructor?
        - Used to have the biggest program, but outsourcing to the Johnny Roland, POW in KCK (testing, take to get license, etc.)
        - Barriers preventing from having this program are staffing, funding, etc.
        - Have a roundabout outside of the school, about how to enter and exit it
        - How a routine traffic stop works
    - WeCanDrive
        - Focus is getting foster kids their driver's license
        - Wichita area has same issue where students just prefer ride-share options instead of getting their license
- KDOT did a survey counting people who are wearing their seatbelts, on their phone, etc.
    - Seatbelt usage is pretty good
- Parents need to be held responsible because their children are not adequately trained to use the vehicle
- Technology would be a huge bonus; have better cameras to assist what is occurring on school properties and events that happen nearby

Impaired Driving

Background

Alcohol or drug impairment is among the primary contributing factors of crashes; 28% of all fatal and serious injury crashes involved impairment. There is a culture within another focus area, motorcyclists, of drinking and riding; 32% of all fatal or serious injury motorcycle crashes involved alcohol.

Impaired Driving Focus Group Correspondence/Meetings

Leavenworth County Sheriff's Office – 08/29/2024

ATTENDEES:

- **Undersheriff James Sherley,** Leavenworth County
- **Captain Joshua Patzwald,** Leavenworth County
- **Riley Mitts,** Kimley Horn

- **David Church,** WSP

Undersheriff James Sherley and Captain Joshua Patzwald of the Leavenworth County Sherrif's Office oversee many of the Sherriff's Office divisions. Major Sherley, who has been with the Sheriff's Office since 1996, has served as a Detention Officer, Patrol Deputy, Detective, and Patrol Sergeant, as well as a jail S.O.R.T team member, Tactical Assistance Group member and Leader, Defensive Tactics Instructor, Field Training Officer and as School Resource Officer at Basehor-Linwood High School. Captain Patzwald is the one who oversees the patrol division, investigations/evidence division, emergency management division, drone unit and fleet management. They both offered their experiences and knowledge as it relates to traffic safety, impaired driving, and other relevant experiences within Leavenworth County and other local areas and thoughts on what countermeasures could be implemented to limit impaired driving and promote safer driving habits, which are summarized in the bullets below. Due to the varied nature of their work, they also provided information and knowledge as it relates to motorcyclists, which will be described further in the next section.

Impaired Driving:

- Bars in Linwood, Eudora, one in Douglas County, and Bonner Springs (Kobi's)
    - Golden Road / 158th Street are backroads when folks want to avoid K-32
    - Lake Perry or the Missouri River have a drinking culture, not a ton of river usage/access of the KAW
- Targeting enforcement for impaired driving for Labor Day weekend
    - Try to participate in any "You Drink, You Drive, You Lose" statewide targeted enforcement campaigns
    - Sgt. Brandon Mance (Leavenworth PD) looking to partner with the County Sheriff's dept
- What is being done to limit impaired driving?
    - Citizens academy - course that the County Sheriff's Office puts on every year
        - Specific section that is directed at alcohol testing
        - People spread the word and teach other members of the community
    - A family lost their son to a drunk driver in the City of Leavenworth; they speak in this/other statewide campaigns
    - Prom Mock crash - rotate between High Schools in the county; this year is Pleasant Ridge
- Things were worse in the early 2000s; have made significant progress since then.
- County Sheriff's Office has one active DRE (drug recognition expert), and a couple staff who have taken the course but who are not currently certified
    - Standard is general alcohol field testing
    - ARIDE certified
    - DRE - requires large commitment from person and agency
    - Difficult to get convictions in court for drug impairment
    - Can pull a DRE from other agencies and vice versa
- Holiday (drinking) - platform to communicate safety, trifolds/QR codes are well received
- Knowing there is additional enforcement is out there (even randomly) has a deterrent effect
    - Sherriff's Office conducts occasional saturation patrols

Motorcyclists

Background

Leavenworth County has seen fluctuating trends involving motorcyclists. Fatal and serious injury crashes were on the rise between 2013 and 2016, reaching a peak in 2016 before falling to their lowest point in 2019; however, the number of motorcycle injury crashes rebounded from this and has reached similar levels as seen in

2016. Motorcycle crashes have higher injury rates than other motor vehicle crashes, with approximately 11% resulting in fatalities and 30% causing serious injuries. In contrast, regular motor vehicles have fatality and serious injury rates of 1.4% and 3.9%, respectively. Motorcycle drivers aged 36 to 45 experience the highest rates of crashes by age, followed by young motorcycle drivers (aged 16 to 25) as the second largest group. Motorcycle drivers involved in crashes are predominately male.

Motorcyclists Focus Group Correspondence/Meetings

Correspondence with the Kansas Department of Transportation – Bureau of Traffic Safety

Maura Fitzgerald, Behavior Safety Coordinator at the Kansas Department of Transportation's (KDOT) Bureau of Traffic Safety, recommended the Kansas Traffic Safety Resource Office (KTRSO) for resources and information regarding motorcycle safety. The KTRSO offers a wide range of resources for motorcyclists, including how to get a motorcycle license in Kansas, Kansas laws about motorcycle riding, Kansas motorcycle education programs, motorcycle trainings, motorcyclists riding safety tips and videos, motorcycle statistics from the National Highway Traffic Safety Administration (NHTSA), 2022 motorcycle crash data for the state of Kansas, and more. They offer safety tips and guidelines for a variety of situations motorcycle drivers may experience as they ride, including (but not limited to) areas with wild and domestic animals, riding in spaces with semi-trucks, and riding in groups.

To get a motorcycle license in the State of Kansas, applicants must follow four steps (discussed in further detail here):

1. Decide what type of license the applicant needs (i.e., a Kansas motorcycle permit, a restricted/non-restricted (for minors), or Class M endorsement on an adult license)
2. Take the Knowledge test on the Kansas Motorcycle Handbook at a driver license exam station
3. Pass a Skills Driving Test or Take a Motorcycle Safety Course
4. Get a license (by providing the required documentation, passing a vision screening, and paying the required fees)

Kansas laws regarding riding a motorcycle includes:

- Individuals under 18 years of age must wear a helmet.
- Eye protection is required unless the motorcycle has a windshield that is at least 10 inches tall; individuals under 18 must wear eye protection.
- Individuals operating a motorcycle must have a Class M driver's license; those caught operating without a motorcycle license, of which the penalty is a Class B misdemeanor, could pay up to $1,000 in fines and/or up to six months in jail.
    - Individuals who passed a test on a two-wheeled motorcycle may operate a trike. If an individual takes the test operating a trike, their license will be restricted to trike operation only.
- Motorized bicycle operators do not need a Class M license or insurance.
    - A motorize bicycle, as defined by Kansas law, is a device with 49cc or less that has two tandem wheels or three wheels and is propelled by human power and/or a help motor which has: (1) a motor which produces not more than 3.5 brake horsepower, (2) a cylinder capacity of not more than 130 cubic centimeters, (3) an automatic transmission, and (4) the capacity of a maximum design speed of no more than 30 mph.
- Lane splitting—when motorcycle drivers ride in the space between vehicles—is illegal.

The KTSRO is a part of the Kansas Motorcycle Task Force, an all-volunteer group that is "dedicated to improving safety, awareness, education, and licensing for motorcycle riders… [aiming] to reduce injuries and fatalities, to increase citizen awareness of the presence and needs of riders, and to educate motorcyclists and the public about riding on Kansas roads." Other organizations represented in the Kansas Motorcycle Task Force are:

- A Brotherhood Against Totalitarian Enactments (ABATE) of Kansas
- Fort Riley
- Johnson County Community College
- Kansas Department of Education
- Kansas Department of Revenue
- Kansas Highway Patrol
- Kansas Department of Transportation – Bureau of Traffic Safety
- NHTSA – Region 7
- Smart Motorcyclists Attend Rider Training (SMART) Motorcycle Training

Considering the presence of motorcyclists within Leavenworth County, it is recommended that the County itself become a member of the Kansas Motorcycle Task Force; this could include Leavenworth County Public Works, Leavenworth County Health Department, and/or local law enforcement.

An additional resource that Leavenworth County could utilize is NHTSA's Motorcycle Safety 5-Year Plan, which includes effective strategies that could be recommended in the Leavenworth County Vision Zero Action Plan. Their core objectives for motorcycle safety remain, as identified in 1997:

- Increasing access to rider education programs;
- Increasing the proportion of motorcyclists who are properly licensed;
- Reducing the number of motorcyclists riding while impaired;
- Increasing motorcyclists' visibility/conspicuity;
- Increasing enforcement of motorcyclist safety laws;
- Incorporating motorcyclist safety into the design of roadways;
- Increasing the survivability of motorcyclists who are involved in crashes;
- Increasing the use of personal protective equipment;
- Increasing helmet use; and
- Increasing motorists' awareness of motorcyclists' riding behaviors.

Strategies that NHTSA identified that align with these core objectives include:

- Roadway Information Database
- Informal Databases
- Observational Surveys
- Conspicuity and Personal Protective Equipment
- Exposure Data Research
- Rider Behavior and Crash Avoidance
- Crash Causation Study

Leavenworth County Sheriff's Office – 08/29/2024

ATTENDEES:

- **Undersheriff James Sherley,** Leavenworth County
- **Captain Joshua Patzwald,** Leavenworth County
- **Riley Mitts,** Kimley Horn
- **David Church,** WSP

Motorcyclist safety issues discussed:

- After winter - people are riding on salt/road dust
- Fresh layer of asphalt/chip seal - accidents related to loose surface
- Recent motorcycle fatality just outside of city limits on K-92
    - Run off the road and don't know why
- Motorcycles increase crash severity
    - Culture difference (lifestyle runs/between bars)
    - Seasonal issues (animals on the roadway, farming/combining/hunting - drives animals onto the roadways
        - Something as small as a rabbit can dump a rider
    - Sport bikers occasionally misbehave; generally motorcyclists are speed compliant (Harley, road bikes, etc.)
- See more helmets than not trending in the positive directions (older guys are the ones not wearing helmets)
- Seatbelts are well ingrained in the culture

Seatbelt culture (regarding motor vehicles, not motorcyclists):

- New vehicles have annoying bells/whistles to get people to wear them
- Recent fatal crash in southern portion of the county
    - Driver was drunk, had seatbelt isolators. Actively told passengers to not wear seatbelts. Got into a crash that killed his son, got 2nd degree murder conviction.

Meeting with Michael Spickelmier (City of Lansing) – 09/11/2024

ATTENDEES:

- **Michael Spickelmier,** Public Works Director, Lansing, KS
- **Jeff McKerrow,** Kimley Horn
- **Riley Mitts,** Kimley Horn
- **Lauren Brown,** WSP

Michael Spickelmier, the current Public Works Director for Lansing, Kansas, and the former Public Works Director for Leavenworth County, is an avid motorcyclist who has seen what it is like to be a motorcyclist from the perspective of a rider and from the perspective of a safety professional as Public Works Director. He offered his experiences and knowledge as it relates to motorcyclist culture in Leavenworth County and other local areas and his thoughts on what countermeasures could be implemented to increase safety and decrease fatal and serious injury crashes; the following bullet points summarize the discussion and his thoughts.

- Walk-through of Leavenworth County Vision Zero PowerBI dashboard – motorcyclist crash statistics
    - 30% of fatal and serious injury crashes involve motorcyclists
    - 80% of motorcyclist crashes are single vehicle-crashes, 70% of which are roadway departure
    - 65% of crashes are without a helmet
    - Most crashes are happening on Saturdays and Sundays in the afternoons
    - K-5 and County Road 2 are hotspots of motorcyclists crashes
        - The stats are not surprising, but sad to hear
- K5 is the curviest, "fun road" that the area has to ride, which draws in a lot of motorcyclists
    - Curves and geometry create a fun but dangerous ride
    - Inexperienced riders
    - Poor sight distance
- Other problem areas in the area include: US 24-40 to Lawrence, Sherman to De Soto (tight turn)
- Active Facebook bike groups in Leavenworth and the surrounding areas include:
    - Kansas City Sport Bike Society
        - Refer to as "squids"
        - Don't have a lot of gear, spend a lot of their income on it, then hotrod since they spend a lot of their money on their hotrod
    - Kansas City Motorcycle Group
        - 12,800 members
    - Blip Sunday Meetup
        - Motorcycle coffee shop: known colloquially as a "motorcycle church," as a lot of folks like to travel here on Sundays
        - 6,000 members
- Risks:
    - Internal: too fast, no helmet, and a culture of drinking and riding
    - External: people (drivers of cars) texting and driving, lane changes, chip seal (loose aggregate can be challenging to navigate), crack seal (super slick on hot days), debris in the roadway
- Possible countermeasures:
    - Rumble strips (to catch the motorcycle driver's attention)
        - Don't want through curves
    - Rub rail

Meeting with John Jacobson – Leavenworth County, Kansas

ATTENDEES:

- **John Jacobson,** Director of Planning and Zoning for Leavenworth County
- **David Church,** WSP
- **Lauren Brown,** WSP

John Jacobson, the Director of Planning and Zoning for Leavenworth County, is an avid motorcyclist who has seen what it is like to be a motorcyclist from the perspective of a rider and from the perspective of a safety professional as the Director of Planning and Zoning for Leavenworth County. He offered his experiences and knowledge about dangerous intersections within Leavenworth County and his thoughts on what countermeasures could be implemented to increase safety and decrease fatal and serious injury crashes; the following bullet points summarize the discussion and his thoughts.

- What's your experience as a motorcyclist within Leavenworth County? Any thoughts on how we can improve motorcyclist safety?
    - Not going to be able to do all of the geometric improvements, as riding motorcycles has inherent risk
- Main thoroughfares
    - Tonganoxie Rd (on the way to Lawrence)
    - K-5
    - County Road 33 (towards Amelia Earhart)
    - K-92
    - 187th Street
- Signage prior to critical intersections, especially before you get to the vertical curve; LED lighted signs to bring riders attention to the sign
- Critical intersections:
    - 147th/Fairmont
    - 171st/Tonganoxie
    - 187th/K-92
    - Anything on K5
- Any risky behavior like "drinking and riding?"
    - John said that he thinks the amount of "drinking and riding" is about the same, if not less, than "drinking and driving"
    - Motorcyclists know that they have less protection if they get in a crash
- Peak crash days are Friday through Sunday, where folks come in from surrounding counties to ride
    - Follow up with John on what time of day that these crashes are occurring
- John suggested creating "Scenic Routes" map for motorcyclists
    - Develop an online map
    - Could help with motorcycle tourism
    - Select routes that avoid the high crash intersections
    - Select routes that have popular destinations
        - Angel falls in Lansing is currently a part of a 7-fall motorcycle tour
            - https://www.kansascityhiker.com/waypoints/angel-falls-lansing-kansas
        - Restaurants, landmarks, other.
        - Include "Scenic Route" signage for motorcyclists.
        - Have a pamphlet for riders to pick up at popular destinations
        - Kansas | Motorcycle Roads
- You can search for routes in Kansas and it brings up a lot across the state
    - Two of the top motorcycle routes in Kansas are in Leavenworth County
    - US-73 / K-7
    - K-5

Correspondence With Sgt. Brandon Mance – City of Leavenworth Police Department Meeting

Sgt. Brandon Mance with the City of Leavenworth Police Department manages the duties involving traffic and parking enforcement issues. As Leavenworth is the county seat and the most populated city, Sgt. Mance can provide his knowledge and experience working in Leavenworth and apply it to the crash trends in Leavenworth County. The following bullet points summarize these thoughts.

- Leavenworth County is seeing an increase in motorcycle crash numbers (which, in a way mirrors, what Sgt. Mance has seen in the City of Leavenworth proper) due to:

- The number of unlicensed riders (either lacking a class M endorsement or permit riders w/ licensed rider) or riders lacking skills
- An increase in number of motorcycle owners/riders, with a high rider density peak time
  - Leavenworth County is a corridor for numerous organized rides (increased motorcycle traffic on Fridays, Saturdays, and Sundays),
- Other motorists on the roadway lack skills
- Reduced sight lines on corridors (K-192, K-92, US-73 @ K-192, K-16; Sgt. Mance is mostly familiar with north half of county and what he has experienced)
  - The sides of the roadways are mowed only occasionally, and the trees are trimmed back even less.
- It's a 50/50 on riders' vs other motorists' fault, in his opinion
  - Is curious to hear what the data shows.
  - Wants to confirm that the data doesn't include side by side/UTV's; Sgt. Mance has noted an increase in the number of "Off-Road Only" type vehicles on the roadway – many without the required light equipment or capability to operate at highway speeds.

- Sgt. Mance doesn't believe that it is LVSO's practice to enforce any of those traffic violations.
  - Those vehicles aren't solely being used for farm-use, but to/from school events, the mom & pops markets in the rural areas, and throughout the smaller towns without a dedicated police department.

ONLINE ENGAGEMENT

Quick Poll Survey

A Quick Poll survey on the project website was used to understand the public's opinion of the major safety issues in the community. The poll question asked: **What are your top three (3) safety concerns in Leavenworth County?**

The following results were recorded, with more than half of respondents citing that the top issues affecting safety in Leavenworth County are distracted drivers (54.1%), lack of shoulders on rural roads (49.2%), and poorly maintained roads (45.9%). These results were shared with the Leavenworth County Vision Zero team and may guide Vision Zero policies and projects moving forward. The total number of contributions was 61.

Responses:

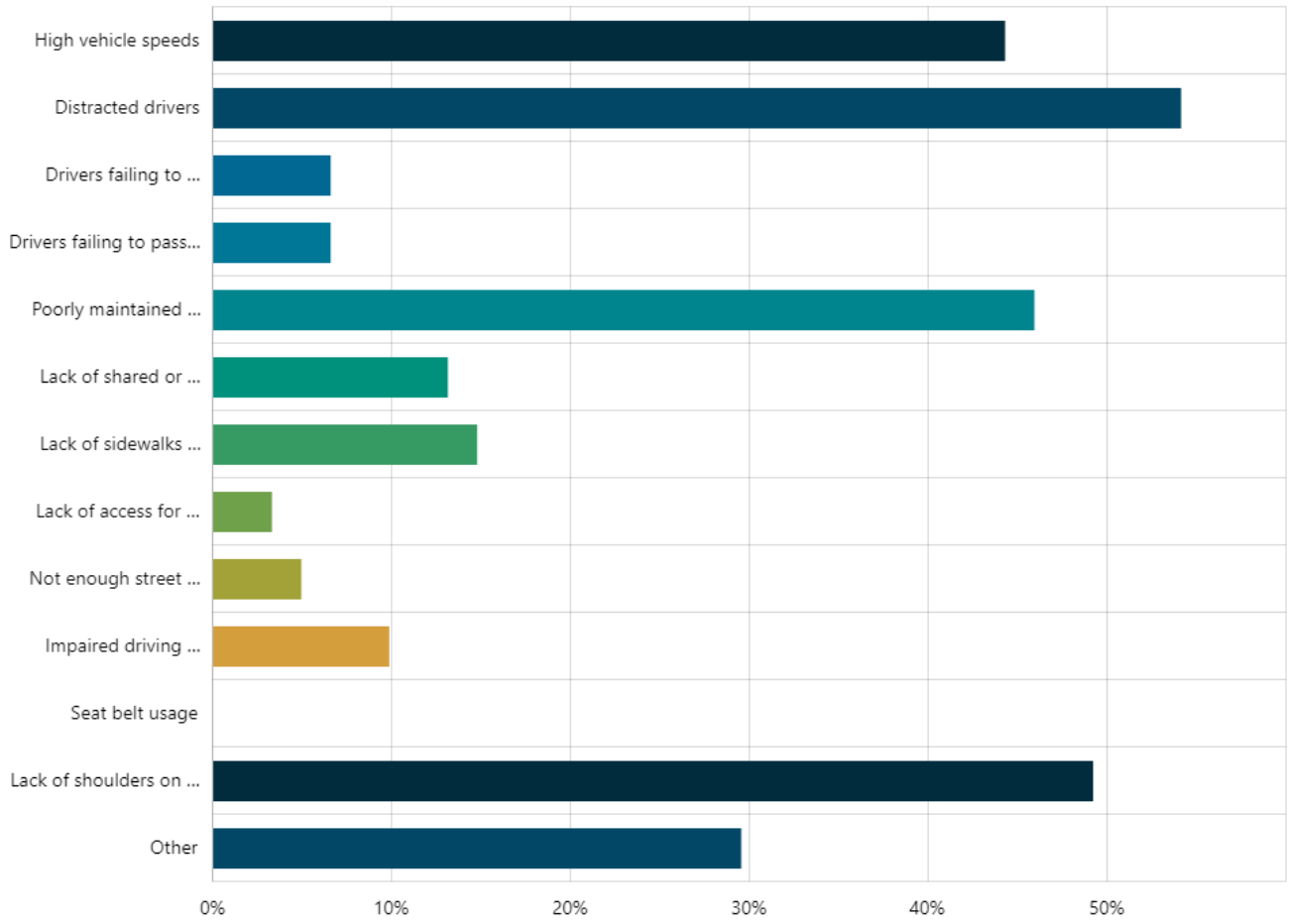
- Distracted driving: 54.1%
- Lack of shoulders on rural roads: 49.2%
- Poorly maintained roads: 45.9%
- High vehicle speeds: 44.3%
- Lack of sidewalks and crosswalks: 14.8%
- Lack of shared or separated bike lanes: 13.1%
- Impaired driving (drugs/alcohol): 9.8%
- Drivers failing to yield or stop to pedestrian: 6.6%
- Drivers failing to pass bicyclists safely: 6.6%
- Not enough street lighting: 4.9%
- Lack of access for people with disabilities: 3.3%
- Other

Comments left for "Other":

- "I selected high vehicle speeds and Lack of shoulders on rural roads as well as other to explain further, I don't feel current speeds should be lowered but rather provide the necessary improvements to allow drivers to safely get on and off the existing roadways while traffic continues its current flow. Whichever result shows the most safety data for the situation, that being dedicated turn lanes, widening roads, flattening roadways for visibility near intersections, stop lights, roundabouts, dedicated turn light and timing for existing stop lights, etc. All locations I encounter on a regular basis are identified on the engagement map and mostly consist of 24-40/State Ave and Hwy 7 going in and out of the City of Basehor as well as roads south of State Ave to the southern border of the county. Too many of these areas share responsibility between City, County & State (KDOT) and I feel this is the largest hurdle and collaboration efforts are needed to improve these areas. With a few exceptions Leavenworth County is still very heavily Rural, I love the idea of growth to be more inclusive for all people (i.e. bicyclists, runners/walkers, ease of access for those with disabilities) but I feel the truth is those are secondary improvements where the prerequisite should be making the roads safe for drivers first. Only when the situation allows for collaboration of efforts such as budgets, approved funds or timing provide a benefit for improved on both, simultaneously. Trails such as the ones MARC are working towards are a wonderful idea, I will always believe separating those trails from vehicle roadways is the best route. No law in place can provide safety for multi-ton vehicles and

pedestrians to exist in same proximity using the exact same pathways without proper barriers and separation."

- "166th & Evans Rd. Driving south on 166th, stop at stop sign, the view from the east is not clear due to the high weeds. Oncoming traffic is very hard to see and puts busses at risk. We are big and people do not slow down topping the hill coming west on Evans Rd. same as the corner on 166th and Linwood Rd."
- "Drivers failing to yield or stop for other vehicles"
- "Vehicles not stopping at stop signs or running lights"
- "Mowing corners and roadsides for visibility"
- "Very poor signage. 3 vehicles traveling west on Fairmont road have blasted through the stop sign at CO. 5. No signage change. Jefferson county has warnings and large stop signs. No cars have crashed into the corner post on the northwest corner of the intersection since I posted a reflective sign."
- "Failure to square their turns, and failure to know and follow right-of-way rules at complex intersections."
- "Running red lights"
- "Lack of pavement on most county roads"
- "ATV and other off-roader flying up and down the back roads. Alot of the kids you see aren't more than 12 - 14"
- "Drivers ignoring stop signs"
- "Lack of visibility around trees or shrubs at stop signs."
- "Lack of traffic speed enforcement"
- "Drivers not heeding to the rules of the road, pulling out in front of others, cutting off other vehicles without caring"
- "Bicycles only following rules of road when it suits them"
- "Inconsistent lane sizes and poor roadway edges on rural roads."
- "Lack of funding (state and federal) for roadway infrastructure improvements (i.e. paving of gravel roads, widening of existing paved high-traffic arterial roads, etc.)"
- "Lack of center lines painted on rural paved roads"

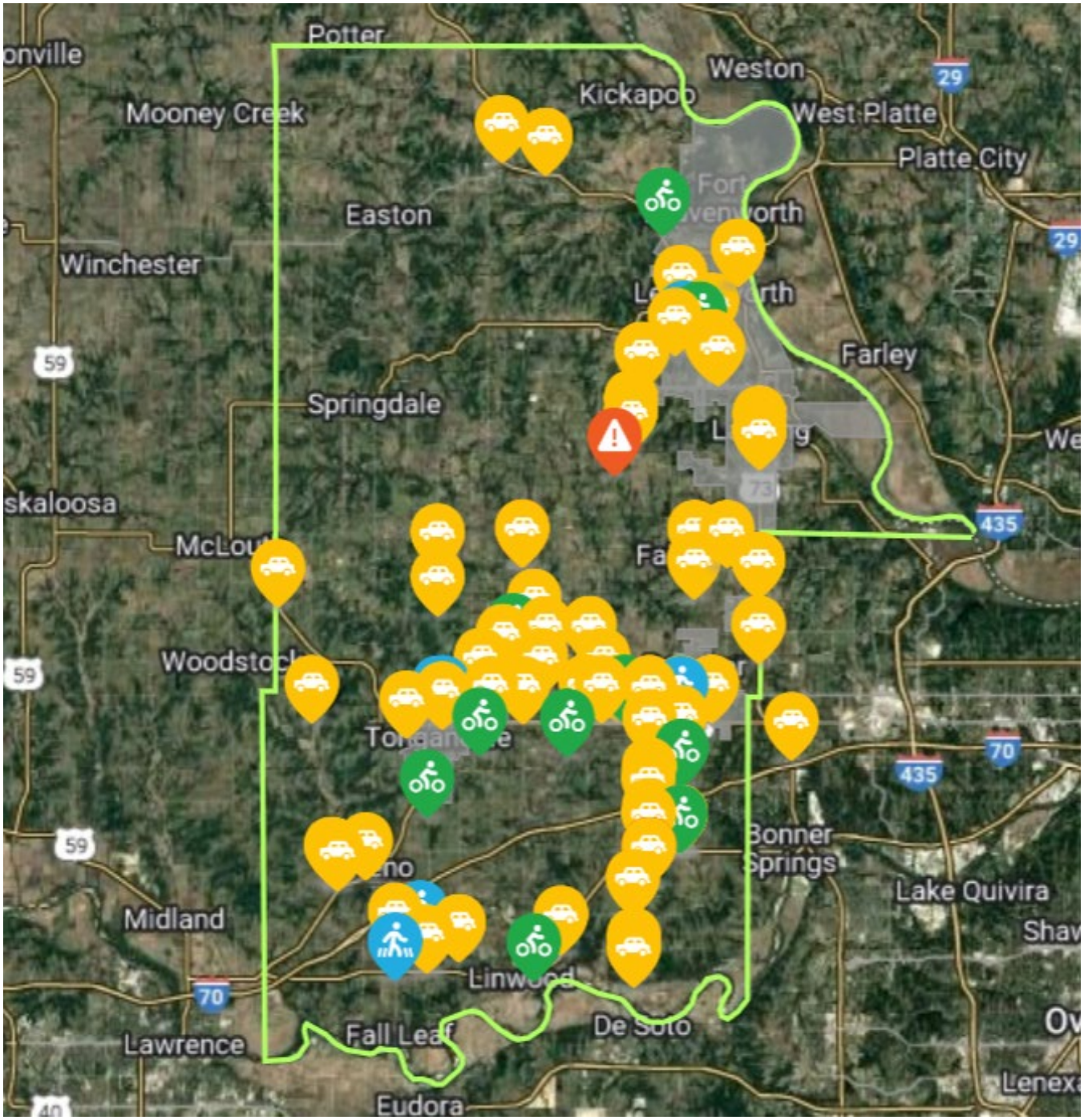


Engagement Map

The Leavenworth County Vision Zero Action Plan website included an interactive Engagement Map that allowed the public to share locations where they felt unsafe while traveling in Leavenworth County. Community members dropped markers in areas they felt unsafe driving, walking, cycling, or otherwise traveling in Leavenworth and provided associated comments to describe the safety issue they experienced. The following are results from the Engagement Map. The total number of contributions to the Engagement Map was 95.

Responses:

- Driving: 79.8%
- Cycling: 10.6%
- Walking: 6.4%
- Other: 3.2%



The following comments were provided by the public to describe safety issues on Leavenworth County streets. These comments are diving into the marker categories of driving, walking, cycling, and other.

Comments left for driving:

- "The amount of dust by the numerous amounts of vehicles traveling down the road creates dangerous driving conditions especially around blind corners"
- "Passing stripes allow passing through intersection. Double yellow used to extend through intersection. Southbound traffic begin to pass with traffic turning east on Stranger road…dangerous and wrecks have happened here in the past since striping has changed."
- "This section of Kansas Highway 7 is bordered by a small ravine and turns steeply. During winter, ice builds up here quickly and thickly and doesn't melt right away. It's a risk for drivers because of the highway speeds typically used. Older drivers who live in this area slow down below the required speed limit during ice storms, putting everyone else at risk for fatal traffic accidents."
- "This is a dangerous intersection because there is a small highway that intersects with another along a blind curve. Drivers pull out onto K-7 without being able to fully see if there is oncoming traffic. Drivers turning left onto 192 will stop in the middle of the highway to turn left, forcing drivers traveling 65 mph to brake suddenly. Additionally, this is near a high school where inexperienced drivers often have to travel before they are fully ready to drive on a two-lane highway."
- "We need a right hand turn lane at 73 and Hollingsworth Rd. When the light turns green at Polfer Rd the traffic gets up to the 65 mph by the time it gets to Hollingsworth Rd so if we had a right turn lane it would be much safer!"
- "This hill has no visibility to oncoming traffic."
- "7/2/24 The last two days two different vehicles west bound on Eisenhower, after stopping, made a left turn in front of south bound vehicles on Tonganoxie Dr.In both cases they turned into the north bound turning lane for Tonganoxie Dr!! They may have thought Tongie Dr. is four lane. Their action caused on-coming vehicles to take immediate evasive action!! Improved signage is needed, eg. Cross traffic does not stop, Four lane ends, Larger stop sign, etc. Thank you"
- "Cut back the trees on the north side of Golden so that southbound traffic turning on to Golden can see oncoming cars better. Golden traffic moves faster than posted most of the time which can make turning onto it treacherous."
- "Widen 166th on the south side of the intersection so that larger vehicles or those pulling trailers can better navigate turns without crossing into the oncoming lane. This is a problem for north bound turning east and eastbound turning south."
- "Needs a stop light or round about; the hill plus the bushes coming out of Walmart make this a busy and hard corner to navigate safely."
- "The amount of dust from the gravel is unsafe. You cannot see when following or passing another car making it dangerous. I've never seen dust this bad. The pic I included is the road dust. Not gravel"
- "Please finish paving this short section of 230th street just south of Loring. Not sure why the rest is paved but they didn't do this stretch."
- "This is a very unsafe intersection. There are always accident at this corner. I live near by and can hear the crashes from my house. When someone at the intersection has to build a wall out of concrete blocks to feel safe in their home, it's time for something to be done!"
- "People do not see the stop sign and run right through the intersection from 222nd st. Multiple accidents have occurred here. It needs a stoplight or flashing stop sign."
- "When parking lot is full there is no visibility of the south bound traffic for people turning out of the access road on school property."
- "Dangerous intersection. Strange angle four way intersection."
- "Multiple cars have gone in the ditch here. It is also a favorite spots for cars and atv's to spin out."
- "The road is narrow over a hill with no visibility. Narrowly escaped multiple head on collisions in past years."

- "This is a very dangerous intersection. Numerous people have nearly been killed multiple times from people running the stop sign at 60 mph. It needs to have the entire intersection changed to an intersection eliminating the two diagonal entrances off of 171st and 4H road to Tonganoxie Drive. It is becoming a very busy intersection with the growth this direction."
- "Dangerous intersection when driving on Fairmount road, as many drivers run stop signs, despite larger signs that were placed. Drivers stopped on south 155th, sometimes decide to either cross road, or turn east, right in front of the car going east on Fairmount road. Obstructed view due hill going east on Fairmount, making it hard for those at stop sign to see what's coming."
- "Speed limits on Tonganoxie Road are not enforced within the city limits. It is not unusual to see vehicles traveling 25-35 miles faster than the posted 35 mph speed limit on this stretch of road. Several years ago two individuals were killed and there have been several severe accidents, to include one in which the car went down into a creek."
- "Beyond question County Hwy from Tonganoxie is most dangerous and heavily traveled road in the county. The road is crooked with poor sight and for the most part there is no shoulder - the edge of the asphalt is the end of any perceived shoulder."
- "Lack of signage and enforcement of one way street."
- "Traffic from eastbound has tendency not to stop, perhaps larger stop sign would be helpful. Examples….. Tonganoxie Dr & 20th Street, Fairmount Road & 155th, Thank you for this opportunity!"
- "Two issues at K-7 and Gilman. The first is lane alignment (the left turn lane from West Gilman to north on K-7 is well beyond the midline of the median crossing. The second is that a number of drivers have forgotten how to drive at such a crossing (namely, some drivers turning left from Gilman to K-7 will go to the far left--or north--part of the median--blocking other traffic; some drivers turning from north on K-7 to west onto Gilman will hold back--to the south--instead of pulling all the way forward to the north portion of the median crossing, ruining right-of-way flow)."
- "Need a right turn lane to help alleviate backup at the light."
- "170th is marked as a passing zone at the intersection with Cantrell. I was westbound turning north on 170th when a southbound vehicle tried to pass at the intersection as I was pulling into the intersection. If a southbound vehicle is turning east and doesn't use their turn signal they could be broadsided if someone tries to pass. After my close call I noticed that other intersections allow passing on 170th and 158th. Also on Golden at 170th. In my opinion, passing should never be allowed at an intersection."
- "Nearly impossible for northbound traffic to cross or get on K32 due to limited sight distance and high speed"
- "Narrow bridge with crumbling pavement."
- "The South side of the intersection is not a smooth transition from K32 to 166th so people cut the corner when turning onto 166th from westbound K32 so that their vehicles don't rock as bad. The pavement on the southeast corner has collapsed. The north side of the intersection needs to be leveled out with k32 to improve visibility and prevent wheel spinning when starting from a stop."
- "The hill makes it impossible to see westbound traffic"
- "I would like to see a shoulder or turn-out lane added near this intersection. It's a hard right turn onto K-16 for those that live down 259th, and the sight distances are short and there is a lot of traffic doing 10-15 mph over the speed limit. I feel lucky to have not been t-boned yet."
- "The brush on the northeast corner makes it difficult to see traffic coming from the north unless you pull out into traffic. ALSO, that's a passing section near an intersection on a hill. Very dangerous."
- "There are numerous accidents at this right turn merge lane. Could be easily fixed by extended the lane to Riverview Ave."

- “The lines need to be painted again here. It's very hard to see which lane you are supposed to be in, especially at night”
- “The grass is so long on this corner that it's very hard to see if anyone's coming”
- “Speed limit is 40 mph from 10th and Vilas to Esinhower. Vehicles constantly exceed speed limit and race up and down this section. Speed limit should be reduced. Section contains, housing area, school, church and commercial (Walmart, nursery). Reduce speed limit.”
- “This road was intended for a very small number of drivers in a tiny neighborhood. Drivers going to and from church are often speeding, adding extreme amounts of congestion on a small neighborhood road not intended for Church traffic.”
- “Poor line of site, cars speed on Fairmount Rd making it difficult to cross over Fairmount if you're on 147th. At least one death at the intersection that I'm aware of.”
- “Unsafe intersection. Many crashes”
- “There is not enough signage on 222nd to let drivers know there is a stop sign ahead and that K32 traffic does not stop. There are constant wrecks and near misses. The added turn lanes to K32 made this problem worse. We pass this intersection daily and almost every day we see a car, truck, or semi drive through the 222nd stop sign without stopping. I couldn’t begin to count the times I have had to slam on my breaks to avoid hitting one of these vehicles. A flashing red light would prevent these wrecks and near misses.
- “Always loose gravel causing fishtailing with this blind hill. Very dangerous in the winter.”
- “No turn lanes on State Ave. (in a 65 mph zone) to 150th. Also, people turn out in front of you from 150th. Turning drivers gang up in the middle median. Dangerous intersection!”
- “Need left turn flashing arrows. People get tired of waiting when no other vehicles are coming, then they run a light.”
- “Need a right turn lane here at Leavenworth road and k7”
- “There are not turn lanes from 24/40 to 150th. People travel at a high rate of speed and traffic piles up and becomes unsafe when individuals are trying to turn onto 150th going both north and south.”
- “People drive very fast on this stretch of road, where it goes from paved to gravel back to paved. It is dangerous with the change in road surface. It would be beneficial if they would pave this small remaining stretch of 219th street.”
- “There is a yellow street sign immediately to the South of my driveway. It blocks the view of the road, making it difficult to see oncoming traffic until you are partially into the road.”
- “Finish paving this road.....”
- “dangerous intersection. sight and speed issues”
- “This turn off is heavily used and dangerous. The trees too the north need to be trimmed for higher visibility for oncoming traffic. Especially high speed semi-trucks. The 243rd St shoulders are dilapidated and storm drains (concrete) are failing for the creek crossing. It is a dangerous intersection for farm vehicles. Visibility is poor as no is mowing the ROW or trimming overgrown trees.”
- “This turn off is too narrow if a person is driving a truck & livestock trailer. There needs to be a tight turn lane added to the highway. With the dilapidated highway shoulder and narrow, switch back drive lanes with stacked cars for the Grinter agritourism event, it is hard to get safely off the highway.”
- “This is a hidden driveway. When driving north on 170th St, there is a spot in the road where you can't see when these people leave their driveway.”
- “Dangerous here when entering k32 and their is a hill and often you can't tell if a car is coming until they are right behind you.”
- “SO many accidents at this intersection.”
- “This bridge is very narrow. When larger vehicles cross it is pretty much a one-lane bridge as they need both lanes to safely cross.”

- “When traveling on K32 and turning onto 158th, other drivers use the turn lanes to pass cars on the right while they are turning north or south onto 158th. The hill east of the church reduces visibility of oncoming traffic.”
- “This is a steep hill with reduced eastward visibility. The tall weeds along K32 plus the hill make it hard to see oncoming traffic if pulling off of 166th onto westbound K32. During icy weather, this incline is slick making it even harder to pull onto K32.”
- “This turn is a hairpin turn. When eastbound on K32 turning onto 198th, turning is difficult.”
- “From this point to the bridge has become to congested and the speed needs to be dropped to a appropriate level. Cars have popped up over the rise and they were on me quickly. The speed limit is now set at 55 mph. Hours have been added on both sides of the road lately.”
- “K16 going west out of Tongie is full of potholes, a slab of road that has sunk about 9" and no shoulders until you crest Hubble hill.”
- “The chip and seal is falling apart causing an extremely rough road surface.”
- “Getting on K32 from Golden road requires a sharp left turn with limited vision. When going north on K32 the turn onto Golden road requires the driver to almost come to a complete stop to make the turn.”
- “People don’t stop when getting on the paved road (Stilwell)”
- “Poor visibility in all directions. Especially turning left/west onto gravel road. Overgrown weeds & trees in multiple locations. Dead tree on ROW on 246th. Overgrown culvert on Stillwell ROW, can’t see traffic to east to get out of our driveway.”
- “Turn lanes onto 206th would keep flow of traffic for the state highway but allow navigation onto county roads. I understand this is probably not possible from the county since they don't have jurisdiction on 24/40, but I hope this would inspire working with KDOT to study/add them between Basehor and Tonganoxie.”
- “Turn lane off of 24/40 onto 198th would keep flow of traffic for the state highway but allow navigation onto county roads. I understand this is probably not possible from the county since they don't have jurisdiction on 24/40, but I hope this would inspire working with KDOT to study/add them between Basehor and Tonganoxie.”
- “Turn lanes onto 182nd on both sides of the road would keep flow of traffic for the state highway but allow navigation onto county roads. I understand this is probably not possible from the county since they don't have jurisdiction on 24/40, but I hope this would inspire working with KDOT to study/add them between Basehor and Tonganoxie.”
- “Turn lanes onto 178th on both sides of the road would keep flow of traffic for the state highway but allow navigation onto county roads. I understand this is probably not possible from the county since they don't have jurisdiction on 24/40, but I hope this would inspire working with KDOT to study/add them between Basehor and Tonganoxie.”
- “Turn lanes onto 174th on both sides roads would keep flow of traffic for the state highway but allow navigation onto county roads. I understand this is probably not possible from the county since they don't have jurisdiction on 24/40, but I hope this would inspire working with KDOT to study/add them between Basehor and Tonganoxie.”
- “Turn lanes onto 166th on both sides roads would keep flow of traffic for the state highway but allow navigation onto county roads. I understand this is probably not possible from the county since they don't have jurisdiction on 24/40, but I hope this would inspire working with KDOT to study/add them between Basehor and Tonganoxie.”
- “No lines on paved road”
- “Unsafe bridge crossing I-70”
- “no left turn light driving on Levee 7/Lansing Lane across K7”
- “busier than average cross-street with no light”

- "My husband was killed at this intersection 3.5 years ago and there has been little done to improve the safety. Just in the last 2 weeks there have been 2 non-fatal accidents. There is a long history of issues at this intersection, why hasn't this been made a priority? I know my husband isn't the only fatality incident there."

Comments left for cycling:

- "I often see what appears to be active duty military trying to bicycle along Amelia Earhart Highway. It's a really beautiful highway and I suppose it would be somewhat safe for bicyclists in groups, but single riders are not safe. There are limited shoulders, steep hills and curves, and drivers aren't used to bicyclists here."
- "County Comprehensive Plan and MARC both designate this as a bicycle route area, yet roadway is not even signed for Shared Use. While there is a reasonable shoulder present, it should be marked & maintained if it is intended for bike use. Shoulders are not designed for traffic use, but for emergency pullover or parking (how many breakdowns on a 40mph road???). Bicyclists, like motorists, are supposed to ride on the roadway under KS law, not the shoulder, unless you designate, mark & maintain it as a bike lane (which it SHOULD be)."
- "Very little shoulder on many sections of Tonganoxie Dr between Tonganoxie & Leavenworth, and various roadways in LV county. A plan to widen roadways to incorporate bike lanes throughout LV county would increase safety, connect ability between towns, and increase quality of living for residents."
- "Very little shoulder on many sections of Evans road between Tonganoxie & Basehor, and various roadways in LV county. A plan to widen roadways to incorporate bike lanes throughout LV county would increase safety, connect ability between towns, and increase quality of living for residents."
- "MARC lists 24-40 as a bikeway on their new regional map due to shoulders. You would have to be suicidal to ride there. https://www.marc.org/regional-trails-bikeways-map"
- "Very hard to see people driving over the hill coming from the east on 32 as I cycle across the street on 158th"
- "Roadway is signed for Shared Use, but there's not a safe way to get there. (2 miles on 65mph highway with 12"" shoulder). Alternates would be paving KS Avenue 214 to 222 for access, or a Shared Use off-highway path. (Tonganoxie?) In addition, while there is a reasonable shoulder present, it should be marked & maintained if it is intended for bike use. Shoulders are not designed for traffic use, but for emergency pullover or parking. Bicyclists, like motorists, are supposed to ride on the roadway under KS law, not the shoulder. With a 55mph speed limit on this roadway, it's unsafe to do so."
- "Pedestrian/Multi-Use Bridge needed. Keep the jogger/ walkers / cyclists OFF K-32. Golden Road is a high use alternative transportation corridor connecting Bonner/Lenexa/Desoto/Lawrence. I bet there's grant $ available for this..."
- "High traffic bicycle area. Evans is the only paved east/west route mid-county. No Signage within miles & Infrastructure non-existent. MARC map shows 24-40 as bicycle route - NOBODY rides there."
- "Bicycling needs their own side lane. The bicyclists tend to ride in the middle of a lane at times or too close to vehicles, especially in the county on Santa fe trail. its dangerous for both vehicle and bikes."

Comments left for walking:

- "Ever since Loring Rd was paved a couple years back it's been a speedway up and down this road. I would love to be able to go out for walks but with the slight hills and the speed vehicles drive it's not safe. Just some basic speed enforcement would be great. Watch for the Z&M Twisted Vines van. They have been clocked at 67mph at this location before."
- "Several students use this area to cross from the neighborhood and Sonic to the school property."
- "Children cross this intersection to get to school, park, pool, etc and it is dangerous for them to cross the highway."

- "There is no way to cross State Ave safely on foot."
- "Very high traffic road with multiple businesses running trucks and heavy equipment daily, most of which drive 40-50mph on the loose gravel."
- "Tons of people walk and ride bikes down this road but tgere ate no sidewalks. Also would help for kids that walk to school"

Comments left for "other":

- "Cars going over 70mph passing each other at my driveway makes getting my mail a frightening event."
- "I'm at 25070 tonganoxie dr, and cars begin passing eachother one driveway north of my address. Getting my mail each day is terrifying. One day I will probably be hit and killed by a cars passing eachother driving nearly 100 mph. This is NO JOKE!!!"
- "Needs to become a 4 way stop Cant see traffic from 3 sides of this intersection until you are right there. Currently stops only for 166th. Pretty much all residents in area would like this to be 4 way."

Appendix C.

Plan and Policy Review

APPENDIX C: LEAVENWORTH COUNTY POLICY AND PLANS REVIEW

This document summarizes existing policy, practices and resolutions regarding transportation related items including planning, design and maintenance of the County transportation system. It also provides recommendations to support Leavenworth County's Vision Zero initiative.

DOCUMENTS, POLICIES, AND PRACTICES REVIEWED

Leavenworth County Comprehensive Plan

The Leavenworth County Comprehensive Plan (adopted in 2020) is a document which lays out the goals for the future of the County and its development over the coming years. Its guiding principles are to elevate growth and development, preserve the character of the area, and coordinate with the communities in the area through a living document. As a part of its strategy for growth, the plan details and lists the roadway classifications as well as the organizations in charge, as Leavenworth County consists of a wide variety of roadways from dirt roads to major interstates maintained by the Kansas Department of Transportation (KDOT). Additionally, the plan details County zoning and subdivision regulations of land and roadways as they play a critical part in future determinations of land use as well as informing legal requirements via zoning. This plan should be regularly audited by the community so that desired needs are being met and that desired outcomes are reflected. The comprehensive plan should also be updated every five years.

The plan includes a transportation and mobility implementation matrix which serves as a guidance for best practices and policies to obtain roadway and connectivity improvements detailing specific measures to advance. These policies are informed by ongoing meetings with the public and engagement with the community. Specific steps are provided to achieve the desired levels of development while still maintaining the rural character of the County. Recommended policies include reviewing and potentially updating county road standards based on best management practices, peer county practices, and FHWA guidance, as well as hosting quarterly transportation meetings with representatives from each municipality's public works department, as well as KDOT, to ensure a coordinated strategy for the incorporated and unincorporated roadways.

The Plan also outlines several strategies and practices for dealing with roadway safety included in its mobility plan. Each strategy includes an implementation matrix and specific impact to safety and examines the safety of the County's transportation system, structures, and operations.

Local Road Safety Plan

KDOT's Local Roady Safety Plan (LRSP) program is helping all 105 counties within the State of Kansas develop a LRSP, which contains a list of potential safety improvements for the county; these improvements can then be considered for Highway Safety Improvement Program (HSIP) safety funding when the county applies. Leavenworth County applied in 2019 and had a plan developed in 2021; the goal of this Plan is to identify and prioritize roadway safety improvements for Leavenworth County owned facilities, recommending ten specific proactive safety improvement projects to reduce fatal and serious injury crashes. Thus far, High Risk Rural Roads (HRRR) funding has been awarded for two adjacent projects on Tonganoxie Road corridor.

Leavenworth County Priorities for Progress

The Leavenworth County Priorities for Progress: Connecting Community Opportunities was a collaborative planning effort between the County, the four major Cities within the County, KDOT, MARC, and Leavenworth County Port Authority to prioritize projects within the County to seek regional, state, or federal funding. Two of the top priorities out of this planning effort were the K-5 corridor project, which was recently awarded $35 million of Eisenhower Legacy Transportation Program (IKE) funding, and the Tonganoxie-Eisenhower corridor project.

County Roads Policies and Standards

County Road Permits

According to KDOT's Access Management Policy (2013 Edition), a compelling benefit of access management is safety. National research consistently shows that about 40 percent of all crashes are access related (National Highway Traffic Safety Administration, Traffic Safety Facts 2009 (Early Edition)). The FHWA captured national data which showed that areas where access management policies were implemented experienced a 5 to 23 percent reduction in all crashes along two-lane rural highways.

Entrance Permit

The 2020 Leavenworth County Entrance Permit is an application that outlines the specifications by the County Engineer for an entrance (or access) to a County road. The permit requires that the applicant submit all required documents, including a site plan, and serves to ensure that the entrance location and culvert size are within regulations prior to installation.

Temporary Special Use Permit Application

The 2020 Temporary Special Use Permit Application is used to permit non-permanent activities to take place within Leavenworth County. The permit requires a description of the event and the proposed infrastructure for the event, potential conflict with surrounding parcels to the site in question, the steps to be taken to make the event compatible with surrounding parcels to the site in question,

logistics information (e.g., hours of operation, traffic routes, expected traffic volumes, staffing levels, methods of operation, available/proposed off-street parking, available parking spaces on the property plus the reasoning behind the number provided, duration of the event, etc.), and any other reasonable, relevant information.

County Road Speed Limits by Kansas State Statute

Several Kansas State Statutes govern the speed of vehicles including maximum posted speed limits on county roads including:

> **8-1557. Basic rule governing speed of vehicles.** No person shall drive a vehicle at a speed greater than is reasonable and prudent under the conditions and having regard to the actual hazards then existing. Consistent with the foregoing, every person shall drive at a safe and appropriate speed when approaching and crossing an intersection or railroad grade crossing, when approaching and going around a curve, when approaching a hill crest, when traveling upon any narrow or winding roadway, and when special hazards exist with respect to pedestrians or other traffic or by reason of weather or highway conditions.
>
> **History:** L. 1974, ch. 33, § 8-1557; July 1.
>
> **8-1558. Maximum speed limits.** (a) Except as provided in subsection (b) and except when a special hazard exists that requires lower speed for compliance with K.S.A. 8-1557, and amendments thereto, the limits specified in this subsection or established as authorized by law shall be maximum lawful speeds, and no person shall operate a vehicle at a speed in excess of such maximum limits:
>
> (1) In any urban district, 30 miles per hour;
>
> (2) on any separated multilane highway, as designated and posted by the secretary of transportation, 75 miles per hour;
>
> **(3) on any county or township highway, 55 miles per hour; and**
>
> (4) on all other highways, 65 miles per hour.
>
> (b) No person shall drive a school bus to or from school, or interschool or intraschool functions or activities, at a speed in excess of the maximum speed limits provided in subsection (a), except that the board of education of any school district may establish by board policy lower maximum speed limits for the operation of such district's school buses. The provisions of this subsection relating to school buses shall apply to buses used for the transportation of students enrolled in community colleges or area vocational schools, when such buses are transporting students to or from school, or functions or activities.

(c) The maximum speed limits in this section may be altered as authorized in K.S.A. 8-1559 and 8-1560, and amendments thereto.

History: L. 1974, ch. 33, § 8-1558; L. 1976, ch. 40, § 7; L. 1984, ch. 39, § 6; L. 1996, ch. 15, § 5; L. 2003, ch. 100, § 4; L. 2011, ch. 45, § 5; July 1.

8-1559. Alteration of maximum speed limits; establishing speed limits in road construction zones; powers of secretary of transportation. (a) The secretary of transportation may determine and declare:

(1) Based on an engineering and traffic investigation that an existing speed limit is greater or less than what is reasonable or safe under the conditions found to exist at any intersection or other place or upon any part of the state highway system, or upon any city street which is a state highway connecting link; or

(2) based on information or circumstances known to the secretary, without an engineering or traffic investigation, that a speed less than the maximum otherwise allowed is warranted. If the secretary determines to designate a speed limit under authority of this paragraph the secretary shall prepare a statement and notice of alteration of maximum speed limit. The statement shall be in writing, shall specify the designated maximum speed limit, the route or routes affected, or any segment thereof, the factors upon which the decision is based and the date on which the speed limit shall be effective. The notice shall specify the route or routes affected, or segments thereof, the designated maximum speed limit and the effective date. The notice required under this paragraph shall be sent to the Kansas highway patrol and the sheriff of any county in which the affected route or routes are located prior to the effective date of the new maximum speed limit.

(b) Any maximum speed limit declared under subsection (a) may be effective at all times or at designated times; and differing speed limits may be established for different times of day, different types of vehicles, varying weather conditions, or other factors bearing on safe speeds. In addition to any other requirement imposed on the secretary of transportation, no alteration in the speed limits under subsection (a) shall be effective until posted upon appropriate fixed or variable signs.

(c) The secretary of transportation may establish the speed limit within a road construction zone, as defined in K.S.A. 8-1458a, and amendments thereto, upon any highway under the jurisdiction of the secretary, and the speed limit shall be effective when appropriate signs giving notice thereof are erected.

(d) The secretary of transportation shall not establish any maximum speed limit in excess of the maximum speed limits established by K.S.A. 8-1558, and amendments thereto, except that the secretary may establish a speed limit which exceeds the limit established under K.S.A. 8-1558(a)(4), and amendments thereto, by five miles per hour on any such highway located outside of an urban district. Prior to increasing any speed limit authorized pursuant

to this subsection, the secretary shall consider the effects of K.S.A. 8-1560c and 8-1560d before establishing a higher speed limit.

(e) The secretary of transportation shall not alter any speed limit established under K.S.A. 8-1560(a)(4), and amendments thereto, without first obtaining approval from the local authority.

History: L. 1974, ch. 33, § 8-1559; L. 1975, ch. 427, § 24; L. 1994, ch. 220, § 7; L. 1996, ch. 15, § 6; L. 2016, ch. 60, § 5; July 1.

8-1560. Alteration of maximum speed limits; powers of local authorities, limitations and restrictions; establishing speed limits in road construction zones. (a) Whenever local authorities in their respective jurisdictions determine on the basis of an engineering and traffic investigation that the maximum speed permitted is greater or less than is reasonable and safe under the conditions found to exist upon a highway or part of a highway, the local authority may determine and declare a reasonable and safe maximum limit thereon which:

(1) Decreases the limit at intersections;

(2) increases the limit within an urban district but not to exceed the maximum speed of 65 miles per hour;

(3) decreases the limit outside an urban district, but not to less than 20 miles per hour, except as authorized by K.S.A. 8-1560a, and amendments thereto;

(4) decreases the limit within an urban district in a school zone to not less than 20 miles per hour, except that any such decreased limit shall apply only during the hours in which students are normally en route to or from school, such zones and hours to be determined by ordinance or resolution of such local authority; or

(5) decreases the limit within any residence district, but not to less than 20 miles per hour.

(b) Except as provided in subsection (h), local authorities in their respective jurisdictions may determine by an engineering and traffic investigation the proper maximum speed for all arterial streets and shall declare a reasonable and safe maximum limit thereon which may be greater or less than the maximum speed permitted under this act for an urban district or other location in which the arterial street is situated, except that in no event shall any local authority establish any such maximum limit in excess of 65 miles per hour.

(c) Except as otherwise provided in paragraph (4) of subsection (a), any altered limit established as authorized shall be effective at all times or during hours of darkness or at other times as may be determined when appropriate signs giving notice thereof are erected upon such street or highway.

(d) Any alteration of maximum limits on city connecting links shall not be effective until such alteration has been approved by the secretary of transportation.

(e) If local authorities in their respective jurisdictions have established a speed limit within any residence district which is less than 30 miles per hour, prior to the effective date of this act, such speed limit shall be deemed valid and shall not require an engineering and traffic investigation.

(f) Local authorities in their respective jurisdictions may establish the speed limit within a road construction zone, as defined in K.S.A. 8-1458a, and amendments thereto, upon any highway under the jurisdiction of such local authorities.

(g) The provisions of K.S.A. 8-1560b, and amendments thereto, shall apply to the limitations on speed limits provided by subsection (a) of this section.

(h) Local authorities who have jurisdiction over county or township highways may determine based on an engineering and traffic investigation or without an engineering and traffic investigation the proper maximum speed for such county or township highways and shall declare a reasonable and safe maximum limit thereon which may be greater or less than the maximum speed permitted under this act, except that in no event shall any local authority establish any such maximum limit in excess of 65 miles per hour.

History: L. 1974, ch. 33, § 8-1560; L. 1975, ch. 39, § 11; L. 1975, ch. 427, § 25; L. 1978, ch. 271, § 2; L. 1994, ch. 220, § 8; L. 1996, ch. 15, § 7; L. 1997, ch. 80, § 3; July 1.

K.S.A. 8-1560 allows Leavenworth County to reduced regulatory speed limits on county roads by performing an engineering study making such recommendations or with "an engineering and traffic investigation" to establish a reasonable and safe speed limit on those roadways under their jurisdiction.

Resolution on Max Speed on Non Hard-Surfaced Roads

The 1998 resolution Max Speed on Non Hard-Surfaced Roads sets the maximum speed limit on all non-hard surface roads (rock, gravel, or dirt) at 35 mph unless otherwise posted and that the Department of Public Works shall place speed limit signs showing the maximum allowable speed per hour in accordance with the MUTCD on roadways under the control and jurisdiction of the Board of County Commissioners.

Resolution on Dust Abatement Maximum Speed Limits

The 2020 resolution Dust Abatement Maximum Speed Limits resolution sets the maximum speed limit on listed dust abatement roads at 35 mph and required that the Public Works Department place appropriate signage indicating the maximum speed.

No "Children at Play" Signs

Leavenworth County published an informational flyer (~2006) about why the County will not put up "Children at Play" signs. This flyer, as well as the Public Works' "Frequently Asked Questions" page on the County website, says that this is due to Federal Standards (i.e., the Manual on Uniform Traffic Control Devices) discourages the use of these signs as studies have shown that the signs failed to achieve the desired safety benefits. Federal Standards outline specific warning signs for schools, playgrounds, parks, and other recreational facilities for use where clearly justified.

County Road Signing Maintenance

Based on the readily available documentation from the County, Leavenworth County does not have any public-facing resolutions, policies, etc. about guidelines or requirements for maintenance of County road signing. Current practice is to utilize visual nighttime inspection as the primary method to determine when signs need to be replaced to meet minimum retroreflectivity requirements.

The Manual on Uniform Traffic Control Devices (11th Edition) includes the following information regarding minimum retroreflectivty requirements for signing:

> *Section 2A.22 Maintaining Minimum*
>
> *Retroreflectivity*
>
> *Support:*
>
> *01 Retroreflectivity is one of several factors associated with maintaining nighttime sign visibility (see Section 2A.21).*
>
> ***Standard:***
>
> ***02 Public agencies or officials having jurisdiction shall use an assessment or management method that is designed to maintain sign retroreflectivity at or above the minimum levels in Table 2A-5.***
>
> *Support:*
>
> *03 Compliance with the Standard in Paragraph 2 of this Section is achieved by having a method in place and using the method to maintain the minimum levels established in Table 2A-5. Provided that an assessment or management method is being used, an agency or official having jurisdiction would be in compliance with the Standard in Paragraph 2 of this Section even if there are some individual signs that do not meet the minimum retroreflectivity levels at a particular point in time.*
>
> *Guidance:*

04 Except for those signs specifically identified in Paragraph 5 of this Section, one or more of the methods described in "Maintaining Traffic Sign Retroreflectivity," (FHWA-SA-07-020, Revised 2013), FHWA, or a method developed based on an engineering study, should be used to maintain sign retroreflectivity at or above the minimum levels in Table 2A-5. Signs that are identified through the agency's method as being below the minimum levels should be replaced.

Option:

05 Highway agencies may exclude the following signs from the retroreflectivity maintenance guidelines described in this Section:

A. Parking, Standing, and Stopping (R7 and R8 series) signs;

B. Walking/Hitchhiking/Crossing (R9 series, R10-1 through R10-4b) signs;

C. Acknowledgment signs; and

D. Bikeway signs that are intended for exclusive use by bicyclists or pedestrians.

Table 2A-5. Minimum Maintained Retroreflectivity Levels[1]

Sign Color	Beaded Sheeting Type (ASTM D4956)			Prismatic Sheeting	Additional Criteria
	I	II	III		
White on Green	W*; G ≥ 7	W*; G ≥ 15	W*; G ≥ 25	W ≥ 250; G ≥ 25	Overhead
	W*; G ≥ 7	W ≥ 120; G ≥ 15			Post-mounted
White on Blue	W*; B ≥ 3	W*; B ≥ 5	W*; B ≥ 12	W ≥ 250; B ≥ 12	Overhead
	W*; B ≥ 3	W ≥ 120; B ≥ 7			Post-mounted
White on Brown	W*; Br ≥ 1	W*; Br ≥ 5	W*; Br ≥ 10	W ≥ 350; Br ≥ 10	Overhead
	W*; Br ≥ 1	W ≥ 150; Br ≥ 5			Post-mounted
Black on Yellow or Black on Orange	Y*; O*	Y ≥ 50; O ≥ 50			[2]
	Y*; O*	Y ≥ 75; O ≥ 75			[3]
White on Red	W ≥ 35; R ≥ 7				[4]
Black on White	W ≥ 50				–

[1] The minimum maintained retroreflectivity levels shown in this table are in units of cd/lx/m² measured at an observation angle of 0.2° and an entrance angle of -4.0°.
[2] For word legend and fine symbol signs measuring at least 48 inches and for all sizes of bold symbol signs
[3] For word legend and fine symbol signs measuring less than 48 inches
[4] Minimum sign contrast ratio ≥ 3:1 (white retroreflectivity ÷ red retroreflectivity)
* This sheeting type shall not be used for this color for this application

Bold Symbol Signs

- W1-1,2 – Turn and Curve
- W1-3,4 – Reverse Turn and Curve
- W1-5 – Winding Road
- W1-6,7 – Large Arrow
- W1-8 – Chevron
- W1-10 – Intersection in Curve
- W1-11 – Hairpin Curve
- W1-15 – 270 Degree Loop
- W2-1 – Cross Road
- W2-2,3 – Side Road
- W2-4,5 – T and Y Intersection
- W2-6 – Circular Intersection
- W2-7,8 – Double Side Roads
- W3-1 – Stop Ahead
- W3-2 – Yield Ahead
- W3-3 – Signal Ahead
- W4-1 – Merge
- W4-2 – Lane Ends
- W4-3 – Added Lane
- W4-5 – Entering Roadway Merge
- W4-6 – Entering Roadway Added Lane
- W6-1,2 – Divided Highway Begins and Ends
- W6-3 – Two-Way Traffic
- W10-1,2,3,4,11,12 – Grade Crossing Advance Warning
- W11-2 – Pedestrian Crossing
- W11-3,4,16-22 – Large Animals
- W11-5 – Farm Equipment
- W11-6 – Snowmobile Crossing
- W11-7 – Equestrian Crossing
- W11-8 – Fire Station
- W11-10 – Truck Crossing
- W12-1 – Double Arrow
- W16-5P,6P,7P – Pointing Arrow Plaques
- W20-7 – Flagger
- W21-1 – Worker

Fine Symbol Signs (symbol signs not listed as bold symbol signs)

Special Cases

- W3-1 – Stop Ahead: Red retroreflectivity ≥ 7
- W3-2 – Yield Ahead: Red retroreflectivity ≥ 7; White retroreflectivity ≥ 35
- W3-3 – Signal Ahead: Red retroreflectivity ≥ 7; Green retroreflectivity ≥ 7
- W3-5 – Speed Reduction: White retroreflectivity ≥ 50
- For non-diamond shaped signs, such as W14-3 (No Passing Zone), W4-4P (Cross Traffic Does Not Stop), or W13-1P,2,3,6,7 (Speed Advisory Signs), use the largest sign dimension to determine the proper minimum retroreflectivity level.

Note: the Kansas Department of Transportation (KDOT) has until January 18, 2026 (two years after its publication) to adopt the 11th Edition of the MUTCD. Until that time, the 2009 Edition of the MUTCD is the current edition in the state of Kansas.

Pavement Markings

Based on the readily available documentation from the County, Leavenworth County does not have any public-facing resolutions, policies, etc. about guidelines or requirements for pavement markings. Approximately 80% of the County's hard surface roads are painted. The current practice is to chip and seal approximately 1/3 of hard surfaced County roads and then repaint yearly; the remaining hard surface roads (2/3) are painted at the end of the summer each year.

The Manual on Uniform Traffic Control Devices (11th Edition) includes the following information and more regarding the use of pavement markings on roadways:

> ***Section 3B.02 Warrants for Yellow Center Lines***
>
> ***Standard:***
>
> ***01 Center line markings shall be placed on all paved undivided two-way urban arterials and collectors that have a traveled way of 20 feet or more in width and an ADT of 6,000 vehicles per day or greater. Center line markings shall also be placed on all paved undivided two-way streets or highways that have three or more lanes for moving motor vehicle traffic.***
>
> *Guidance:*
>
> *02 Center line markings should be placed on paved urban arterials and collectors that have a traveled way of 20 feet or more in width and an ADT of 4,000 vehicles per day or greater. Center line markings should also be placed on all rural arterials and collectors that have a traveled way of 18 feet or more in width and an ADT of 3,000 vehicles per day or greater. Center line markings should also be placed on other traveled ways where an engineering study indicates such a need.*
>
> *03 Engineering judgment should be used in determining whether to place center line markings on traveled ways that are less than 16 feet wide because of the potential for traffic encroaching on the pavement edges, traffic being affected by parked vehicles, and traffic encroaching into the opposing traffic lane.*
>
> *Option:*
>
> *04 Center line markings may be placed on other paved two-way traveled ways that are 16 feet or more in width.*
>
> *05 If a traffic count is not available, the ADTs described in this Section may be estimates that are based on engineering judgment.*
>
> ***Section 3B.10 Warrants for Use of Edge Lines***
>
> ***Standard:***

01 Edge line markings shall be placed on paved streets or highways with the following characteristics:

A. Freeways,

B. Expressways, and

C. Rural arterials with a traveled way of 20 feet or more in width and an ADT of 6,000 vehicles per day or greater.

Guidance:

02 Edge line markings should be placed on paved streets or highways with the following characteristics:

A. Rural arterials and collectors with a traveled way of 20 feet or more in width and an ADT of 3,000 vehicles per day or greater.

B. On other paved streets and highways where an engineering study indicates a need for edge line markings.

03 Edge line markings should not be placed where an engineering study or engineering judgment indicates that providing them is likely to decrease safety for all road users.

Option:

04 Edge line markings may be placed on streets and highways with or without center line markings.

05 Edge line markings may be excluded, based on engineering judgment, for reasons such as if the traveled way edges are delineated by curbs, parking, or other markings.

06 If a bicycle lane is marked on the outside portion of the traveled way, the edge line that would mark the outside edge of the bicycle lane may be omitted.

07 Edge line markings may be used where edge delineation is desirable to minimize unnecessary driving on paved shoulders or on refuge areas that have lesser structural pavement strength than the adjacent roadway.

Section 3A.05 Maintaining Minimum Pavement Marking Retroreflectivity

Standard:

01 Except as provided in Paragraph 5 of this Section, a method designed to maintain retroreflectivity at or above 50 mcd/m2/lx under dry conditions shall be used for longitudinal markings on roadways with speed limits of 35 mph or greater.

Guidance:

02 Except as provided in Paragraph 5 of this Section, a method designed to maintain retroreflectivity at or above 100 mcd/m2/lx under dry conditions should be used for longitudinal markings on roadways with speed limits of 70 mph or greater.

03 The method used to maintain retroreflectivity should be one or more of those described in "Methods for Maintaining Pavement Marking Retroreflectivity" (FHWA-SA-22-028), 2022 Edition, FHWA or developed from an engineering study based on the values in Paragraphs 1 and 2 of this Section.

Support:

04 Retroreflectivity levels for pavement markings are measured with an entrance angle of 88.76 degrees and an observation angle of 1.05 degrees. This geometry is also referred to as 30-meter geometry. The units of pavement marking retroreflectivity are reported in mcd/m2/lx, which means millicandelas per square meter per lux.

Option:

05 The following markings may be excluded from the provisions established in Paragraphs 1 and 2 of this Section:

A. Markings where ambient illumination assures that the markings are adequately visible;

B. Markings on streets or highways that have an ADT of less than 6,000 vehicles per day;

C. Dotted extension lines that extend a longitudinal line through an intersection, major driveway, or interchange area (see Section 3B.11);

D. Curb markings;

E. Parking space markings; and

F. Shared-use path markings.

Support:

06 The provisions of this Section do not apply to non-longitudinal pavement markings including, but not limited to, the following:

A. Transverse markings;

B. Word, symbol, and arrow markings;

C. Crosswalk markings; and

D. Chevron, diagonal, and crosshatch markings.

07 Special circumstances will periodically cause pavement marking retroreflectivity to be below the minimum levels. These circumstances include, but are not limited to, the following:

A. Isolated locations of abnormal degradation;

B. Periods preceding imminent resurfacing or reconstruction;

C. Unanticipated events such as equipment breakdowns, material shortages, and contracting problems; and

D. Loss of retroreflectivity resulting from snow maintenance operations.

08 When such circumstances occur, compliance with Paragraphs 1 and 2 of this Section is still considered to be achieved if a reasonable course of action is taken to resume maintenance of minimum retroreflectivity in a timely manner according to the maintaining agency's method(s), policies, and procedures.

Note: the Kansas Department of Transportation (KDOT) has until January 18, 2026 (two years after its publication) to adopt the 11th Edition of the MUTCD. Until that time, the 2009 Edition of the MUTCD is the current edition in the state of Kansas.

Road Construction and Stormwater Standards

The 2003 Road Construction and Stormwater Standards outlines and describes standards for the construction of roads or stormwater drainage, with a chapter discussing project plan submittal, responsibilities during construction, general plan requirements, design criteria and specifications, detail drawings requirements for collector streets, residential streets (within and outside of urban growth areas), example forms (e.g., maintenance bond form), and resolutions adopting (1) a new road construction and storm drainage standards and (2) adopting a new storm sewer design code and standard specification for road and bridge construction.

Policy on Local Service Roads

The 2019 Leavenworth County Policy on Local Service Roads serves as a way for County residents to obtain road and right-of-way improvements. This policy specifies instructions for the (1) opening of a new road, (2) the opening of a road which is recorded as having right-of-way in a platted subdivision or platted town, or (3) improving an existing unmaintained road which is recorded as having dedicated

right-of-way. The Policy on Local Service roads define certain roadways to be minimum maintenance road (aka low volume roads and further defined in the KSA 68-5,102) that can be bladed upon request, at most, twice a year at a convenient time within the established road maintenance schedule. In the case of school bus turnaround areas, the County will provide sufficient rock surfacing to lessen damage caused by the bus if all stated conditions are met.

Regarding signage, this policy states that minimum maintenance roadways (aka low volume roads and further defined in the KSA 68-5,102) must be signed as "Minimum Maintenance, Travel at Your Own Risk."

Resolution on Commercial Vehicle Restrictions

The 2009 Resolution on Commercial Vehicle Restrictions prohibits the use of certain roadways under Leavenworth County's jurisdiction by commercial vehicles while outlining exceptions and violations. This policy defines a commercial vehicle, stating that this definition shall apply to all vehicles in excess of 24,000 lbs in Gross Vehicle Weight except for those whose purpose is transporting students to school/school sanctioned events and motor vehicles/motorized equipment used for agricultural purposes. This document lists roads restricted by the resolution but notes that the provided list is not an exhaustive list. The Leavenworth County Public Works Department must place traffic signs at appropriate entrances to said restricted roadways.

Regarding signage, this resolution states that traffic signs giving notice of this regulation shall be posted at appropriate entrances to the roadways with restricted access to commercial vehicles.

Policy on Subdivision Roads

The 2001 Policy on Subdivision Roads outlines how existing gravel roads in subdivisions can be improved to hard surface road standards and includes a list of gravel roadways that were deemed to be improved under the policy. The entire length of the road must be improved (the County will not improve portions). The County Department of Public Works will improve the roads listed if the persons living within the subdivision agree to pay for the total costs of the materials, as calculated by the County Engineer's office; the total costs would have to be paid to the County by March 31st of each year to allow the Public Works Department to schedule it into the maintenance program. The County can only schedule two subdivisions per year for improvement due to maintaining existing roads. Once the road is improved to hard surface standards, the County will maintain the road as a hard surface road.

Policy on Snow & Ice Removal

The 2019 Policy on Snow & Ice Removal serves as a guideline for inclement winter weather operations to utilize Public Works resources to remove snow and ice from the roadways in an economical, efficient manner. This policy is implemented and executed under the direction of the Director, Road & Bridge Superintendent, and Operations Supervisor. Operations Supervisors will have the authority to make decisions based upon their judgment and experience and adjust this plan as needed during

operations, as real-world conditions are variable. The Road and Bridge Superintendent is the individual who will determine the effort and need of the crew and will designate an Operations Supervisor.

The policy outlines important decision criteria for snow and ice removal operations, including forecast snowfall amounts, icy conditions, drifting snow, and storm intensity in response to peak travel times. The hard surface roadways can have three different types of priority based on road classification type: primary, secondary, and tertiary. Leavenworth County has a map of these priority routes, published in 2020. Essential County parking lots, including the sidewalks up to the front door, will be plowed and chemically treated prior to open hours.

Snow and ice removal operations include different operation levels, including Snow Preparation Operations, Limited Operations, Full Operations, Motor Grade Operations, and Monitoring. Operations should have snow and ice cleared within a predetermined timeframe (following the end of the storm) based on the type of storm event, such as:

- Minor snowfall – 36 hours
- Moderate snowfall (2”-6”) – 48 hours
- Heavy snow fall (6” or more) – 72 hours

The plan also outlines operational support, command and communications, documentation practices, and shift schedules.

It is important to note that the County does not have a bare pavement policy.

Road and Bridge Closures

Leavenworth County has their planned road and bridge closures posted online from the present (September 2024) until the end of January 2025. These closure notices include the beginning and ending dates of the closure, the roads/bridges that will be closed, the location of advance notice warning barricades, and outlines access management (as applicable).

These notices do not include signed detours due to the absence of paved road alternate routes in the area.

Traffic Impact Fee Policy and Fee Schedule

The 2021 Traffic Impact Policy, proposed and recommend by the office of Planning and Zoning, will help accommodate the demands on Leavenworth County’s transportation system created by new development. Fees are broken down by surface of roadway (e.g., gravel, hard surfaced), the number of passenger vehicles per day, and the number of commercial vehicles per day. In instances where a predetermined number of passenger vehicles trips/day or commercial vehicle trips are exceeded, the policy requires a Traffic Impact Study (50+ Passenger Vehicle trips per day or 10+ Commercial Vehicle trips per day) and/or a physical roadway assessment along the proposed traffic route (299+ Passenger Vehicles trips per day or 10+ Commercial Vehicle trips per day).

In instances where an applicant's traffic study indicates that the traffic generated by the proposed use will have a detrimental impact on the safety of the public—or will require the County to subsidize the business as a result of the roadway degradation due to the additional traffic—roadway improvements will be a part of the approval of the Special Use Permit. The Traffic Impact Policy outlines the requirements of who shall complete the Traffic Impact Study, Road Assessment, and/or Drainage Structure Assessment, who is responsible for the costs incurred by the County for these studies, who is responsible for the cost of improvements, and states that improvements must be built per County and/or State standards and specifications, etc. The policy states that the County Engineer has authority to require a Traffic Impact Study, Road Assessment, and Structures Assessment on utilized roadways following the initial review of the application

Public Engagement

Leavenworth County Public Service Requests

Leavenworth County hosts a public service request portal where residents may report incidents at specific locations within the County as they relate to the Public Works Department or the Planning and Zoning Department. County staff will take these incidents, review them, and submit a response, if necessary; some complaints do not warrant a response. If the County needs additional information or would like to provide feedback, the County will contact the individual who made the original report.

Maps

Leavenworth County has a dedicated section for maps **here** and currently hosts 20 maps in a PDF format, including an official road map, a high-volume roads map, a road classification map, a bridge and culvert map, a subdivision boundaries map, a completed maintenance map, a current project status map, a three-year cycle projected maintenance map (2025), a priority snow routes map, a commercial vehicle restrictions map, and township maps. The County also hosts an interactive map **here.**

Additional Documents Review

This section lists out additional documents reviewed, briefly describing each one. Other important information, such as the agency (or agencies) involved and relevance to the Leavenworth County Vision Zero Action Plan, are included in the Relevant Documents Matrix section. The Funding Sources Matrix section includes information about funding opportunities at the regional, state, and federal level and includes program names, example local projects, local match requirements, notes regarding relevancy to the plans reviewed here, Leavenworth County eligibility, and the next call for projects.

Statewide Plans

Kansas 2020-2024 Strategic Highway Safety Plan

The Kansas' statewide 5-year transportation safety plan, published in 2020, intended to drive strategic investments that reduce traffic injuries and deaths, focusing on factors that take place in the highest number of fatal or serious injury crashes ("emphasis areas"). The Plan is currently being updated as the "Drive to Zero Plan" with adoption by KDOT in mid-2025.

Kansas Vulnerable Road User Safety Assessment (VRUSA)

The 2023 Kansas Vulnerable Road User Safety Assessment (VRUSA) is an addendum to the 2020-2024 SHSP in accordance with the federal Bipartisan Infrastructure Law (BIL) that aims to improve understanding of the conditions and behaviors present in fatal and serious injury crashes involving VRUs (pedestrians, cyclists, and others using non-motorized modes of transportation). This document includes guidance for the next SHSP update and guidance for implementing VRU safety programs and projects in Kansas.

Kansas Active Transportation Plan

The 2023 Kansas Active Transportation Plan is the state's first Active Transportation Plan since 1995 and explores the needs of people who walk, cycle, use mobility assistance devices, scoot, and more. In addition to the Plan, several toolkits and resources that complement the Plan and advance the needs of active transportation in local communities are available.

Regional Plans

ConnectedKC 2050 (Regional Long-Range Transportation Plan)

ConnectedKC 2050, published in 2020, is the Kansas City metro's federally required long-range transportation plan (LRTP) for the next 30 years that identifies specific significant transportation projects. Projects in the plan include those that can be completed within projected revenues ("constrained" projects) as well as illustrative projects that will require resources beyond what we can reasonably expect today. This plan is updated every 5 years, with its next update in 2025. The plan proposed improvements to County Road 5, County Road 30, the K-7 corridor, and highway extensions for Highway 152.

Regional Bikeway Plan

The 2014 Regional Bikeway Plan aims to create a Kansas City metro region-wide bicycle network for both recreational and transportation-oriented riders; envisions a 2,000-mile network of both on-and off-road facilities across the 8-county region. The Plan proposes several conceptual trail routes that would connect Leavenworth County to the broader regional bikeways network. These mostly would follow waterways or former railroad corridors.

Leavenworth County KCATA Transit Plan

The 2018 Leavenworth County KCATA Transit Plan is a MARC study conducted as part of the SmartMoves 3.0 initiative (regional long-range transit plan) evaluating potential transit options within Leavenworth County. The plan recommended focusing on providing a demand-response service in the near-term that covers much of the City of Leavenworth as well as a portion of the City of Lansing. In the longer term, the plan recommends creating a fixed route service connecting from the City of Leavenworth to the Village West retail/entertainment district in western Wyandotte County, where passengers could make connections to the regional transit network.

Plans for Municipalities within Leavenworth County

Several communities in Leavenworth County have adopted recent updates to their comprehensive plans, which serves as a guide for how theses cities should develop and defines their visions, goals, strategies, local actions, and policies to accomplish these. Thes communities include:

- Leavenworth 2030 (published in 2021)
- Lansing 2030 (published in 2014)
- Basehor Comprehensive Plan and Parks Master Plan (published in 2022)
- Vision 2020 For Tonganoxie, Kansas, (published in 2006 and updated in 2017)

RECOMMENDATIONS

Intersection Lighting

Currently, Leavenworth County has no public lighting within its unincorporated areas. It is recommended that Leavenworth County develop a policy on the evaluation and installation of intersection lighting to improve safety when warrants are met. A recent study completed in January 2021 found that installing rural intersection lighting can reduce all crashes by up to 20%.

In conjunction with this Vision Zero Action Plan, a "draft" Intersection Lighting Policy, as well as a GIS-based framework for evaluating priority locations for installing intersection lighting, has been shared with County Public Works staff.

County Road Speed Limits

Operating speeds on local roadways play a large role in whether a crash is severe (serious injury or fatality) or property damage only. Setting appropriate speed limits based on roadside conditions, development context and other factors can impact the speed at which drivers travel on the local roadway system. It is recommended that Leavenworth County initiate a County road speed limit study to review existing posted speed limits and recommend any adjustments to those speed limits based on factors provided in the 11th Edition of the MUTCD. KDOT's Traffic Engineering Assistance Program (TEAP) will pay an on-call traffic engineering consultant to perform traffic studies for cities and counties in Kansas at no cost to the public agency.

In conjunction with this Vision Zero Action Plan, an assessment of speeds on County roads was conducted using a third-party data source (e.g., sampled cell phone and in-vehicle devices) to identify locations with observed average and 85th percentile speeds in excess of posted speed limits. This assessment has been shared with County Public Works staff.

Rumble Strips (Centerline, Edge Line, and Shoulder)

Single vehicle run off the road crashes are the single most common type of crash on rural roadways, many of which result in serious injuries or fatalities. Keeping rural drivers on the roadway is of critical importance to prevent severe crashes. It is recommended that Leavenworth County develop a rumble strip (centerline, edge line, and shoulder) policy based on best practices in other counties in Kansas and within other states. Engagement with local bicycle stakeholders to best accommodate rural cyclists' needs on County roads with and without shoulders is recommended. One example is Carver County, who periodically assesses the rural county highway system based on "County Road Safety Plan, traffic volumes, road departure crashes, bike use, shoulder characteristics, land use, and residential density" to determine if rumble strips are necessary or not. Carver County's policy aims to balance the safety benefit with the noise nuisance—outlining key criteria such posted speed limit, proximity to a residence, proximity to a use bicycle route, location context, and the aforementioned assessment attributes—to ensure appropriate usage of rumble strip.

Kansas State University completed research (Report No. K-TRAN: KSU-10-7: Study of KDOT Policy on Lane and Shoulder Minimum Width for Application of Centerline Rumble Strips) in August 2012. The study recommends Shoulder Rumble Strips (SRS) on rural roadways with narrow shoulders at all AADT levels (see Figure 1, originally Figure 7.6 within the linked report, below).

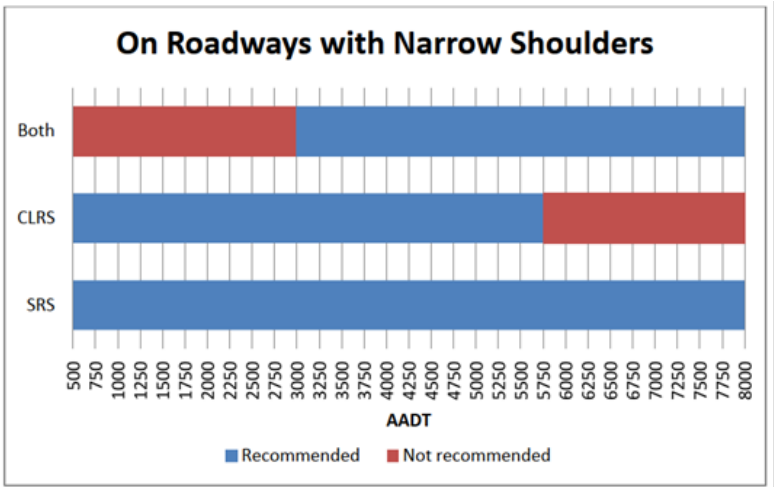


Figure 1: Recommendations for Highways with Narrow Shoulders by AADT

KDOT has a Longitudinal Rumble Strip Policy (Shoulder and Centerline) which addresses the needs of cyclists riding on the shoulder:

- Edge line rumble stripes are a form of shoulder rumble strip, differing in that the rumble strip is in the same vertical plane as the marked edge line. They offer the advantage of improved wet-weather visibility and allow a right-side warning for roadways with little or no shoulder. They may be as narrow as 6.0 in. Edge line rumble stripes may be installed where:
  - The locations are deemed appropriate by the District Engineer
  - The route is identified as a designated bicycle route (including "Routes Across Kansas" and U.S. Bicycle Route) in the KanPlan layer titled "Designated and Priority Bicycle Routes", and a minimum 3 ft of clear, paved shoulder will be provided for cyclists to travel outside the milled edgeline rumble stripe. For routes identified as a priority bicycle route, check with the Pedestrian & Bicycle Coordinator in the Bureau of Multimodal Transportation before taking any action.

Note that in Leavenworth County, the KDOT-designated bicycle routes are all state highways (e.g., K-5, US-73) or facilities in the municipal limits of Leavenworth, Lansing, and Basehor; however, this policy can be considered for non-state highways, as well.

In conjunction with this Vision Zero Action Plan, a "draft" Shoulder Rumble Strip Policy, as well as a GIS-based framework for evaluating priority locations for installing rumble strips and stripes, has been shared with County Public Works staff.

Signage Review and Replacement

The MUTCD allows for flexibility for agencies regarding meeting federal standards on sign retro reflectivity. Current procedures for maintaining and replacing signs do not have a written policy directive. However, Leavenworth County's sign technician completes basic retroreflectivety inspections during the winter in accordance with the guidelines that are in place in the MUTCD and have been provided by the state. Therefore, it is recommended that, for clarity, policies regarding sign review and replacement be written to remove any uncertainty. This strategy would be in line the transportation and mobility matrix (originally Table 7.3 in the Comprehensive Plan) shown in Table 1.

In conjunction with this Vision Zero Action Plan, a "draft" Signing and Pavement Marking Maintenance Policy has been shared with County Public Works staff.

Table 1: Transportation and Mobility Implementation Matrix

Transportation and Mobility Implementation Matrix

Strategy	Strategy Owner and Participants	Time Frame	Overall Impact To				Barriers to Implementation		
			Safety	Infrastructure	Quality of Life	Economics	Political Will	No. of Parties	Cost Impact
STRATEGY 1: DEVELOP AND ADOPT A TRANSPORTATION MASTER PLAN	**Planning & Zoning Dep't,** County Administrator, Public Works Dep't, Commissioners	**Immediately**	**High**	**High**	**Medium**	**Medium**	**Medium**	**Medium**	**Medium**
Strategy 1 Tasks			*Category*		*Task Owner and Participants*		*Time Frame*		*Cost Impact*
Allocate funding for a transportation master plan in the county's upcoming budget cycle			Plan		**Planning & Zoning Dep't**, Public Works Dep't, Commissioners		Immediately		Medium
Prepare a scope of services for a transportation master plan that covers all modes of transportation, including maintenance of roads (including paving guidelines), road construction or upgrades, trails, pedestrian and bicycle facilities, transit, freight, railroads, and aviation; attention should be placed on funding			Process		**Planning & Zoning Dep't**, County Administrator, Public Works Dep't, Commissioners		Immediately		Low
The transportation master plan should take into consideration regional and municipal planning activities, including but not limited to the Kansas City Regional Bike Plan, MetroGreen Regional Greenway System, KDOT planned improvements, MARC's Regional Transportation Plan 2050, KCATA transit plans, and Leavenworth County's Council on Aging			Process		**Planning & Zoning Dep't**, Public Works Dep't, KDOT, KCATA, MARC, Leavenworth County Council on Aging, Commissioners		Short-Term		Low
Use the recommendations illustrated on *Figure 5.1* Transportation Plan as a starting point for the transportation master plan			Process		**Planning & Zoning Dep't**, Public Works Dep't, Commissioners		Short-Term		Low
Following existing conditions analysis, public engagement, and formulation of transportation recommendations, present the master plan to the Planning Commission for recommendation of adoption and to the County Commission for adoption			Process		**Planning & Zoning Dep't**, Public Works Dep't, Commissioners		Short-Term		Low
STRATEGY 2: IMPROVE CONNECTIVITY IN THE COUNTY'S TRANSPORTATION NETWORK	**Public Works Dep't,** Planning & Zoning Dep't, Commissioners	**Continuous**	**High**	**High**	**Medium**	**Medium**	**Medium**	**High**	**High**
Strategy 2 Tasks			*Category*		*Task Owner and Participants*		*Time Frame*		*Cost Impact*
Align transportation improvements with development and redevelopment projects to link activity centers with appropriate roadway infrastructure			Policy		**Public Works Dep't,** Planning & Zoning Dep't, Commissioners		Continuous		Medium
Regularly coordinate with the Leavenworth County Port Authority to address barge and rail operations and determine their role in the regional transportation network			Process		**Planning & Zoning Dep't,** Public Works Dep't, Leavenworth County Port Authority		Continuous		Low
STRATEGY 3: UPDATE THE COUNTY'S ROAD STANDARDS	**Public Works Dep't,** Commissioners	**Immediately**	**High**	**High**	**High**	**High**	**Medium**	**Medium**	**Low**
Strategy 3 Tasks			*Category*		*Task Owner and Participants*		*Time Frame*		*Cost Impact*
Review and potentially update the county road standards, based on best management practices, peer county practices, and FHWA guidance			Process		**Public Works Dep't,** Commissioners		Immediately		Low
Regularly (every one to three years) review the updated county road standards and revise them to follow national best practices			Process		**Public Works Dep't,** Commissioners		Continuous		Low
STRATEGY 4: ACTIVELY COORDINATE WITH OTHER MUNICIPALITIES ON THE COUNTY ROADWAY SYSTEM	**Public Works Dep't,** KDOT, Municipalities	**Continuous**	**Medium**	**Medium**	**Low**	**Medium**	**Medium**	**High**	**Low**
Strategy 4 Tasks			*Category*		*Task Owner and Participants*		*Time Frame*		*Cost Impact*
Host quarterly transportation meetings with representatives from each municipality's public works department, as well as KDOT, to ensure a coordinated strategy for the incorporated and unincorporated roadways			Process		**Public Works Dep't,** KDOT, Municipalities		Continuous		Low
Proactively communicate with municipalities about the updated county road standards			Process		**Public Works Dep't,** Municipalities		Continuous		Low
STRATEGY 5: MONITOR TRANSIT NEEDS COUNTYWIDE	**Leavenworth County Council on Aging,** Planning & Zoning Dep't, KCATA	**Continuous**	**Low**	**Low**	**High**	**Low**	**Low**	**Medium**	**Low**
Strategy 5 Tasks			*Category*		*Task Owner and Participants*		*Time Frame*		*Cost Impact*
Meet annually with KCATA to evaluate how well the current transit system is meeting demand			Process		**Leavenworth County Council on Aging,** Planning & Zoning Dep't, KCATA		Continuous		Low
Continue allocating appropriate funds to operate the Leavenworth County's Council on Aging on-demand meals and transportation service to seniors			Program?		**Commissioners,** Leavenworth County Council on Aging, Planning & Zoning Dep't		Continuous		Low

Pavement Markings

The County has several practices currently that are not explicitly in writing (i.e., policies, resolutions, etc.) regarding painting after roadway resurfacing and planned paint maintenance. Current painting practices for newly resurfaced roadways range from same day to six days post-resurfacing by the contractor. 80% of all hard-surfaced roadways are painted; of this, approximately one-third of the hard surfaced roads get chip and sealed and then repainted each year, while the majority of the other two-thirds of roads are painted at the end of the summer each year. It is recommended that these items be discussed by the appropriate parties and put into writing to ensure transparency, clarity, and consistency in paint/pavement marking standards. Additionally, this document could go into further detail about specific pavement markings preferred (e.g., centerlines, edge lines, stop bars, advance warning labels, etc.) and the pavement marking material types.

It is recommended that Leavenworth County consider widening painted edge lines (going from 4" to 6"), which is a proven safety countermeasure for roadway departure crashes. Research performed in 2012 on the safety benefits of increasing the width of edge lines from 4" to 6" in rural areas reduced serious injury and fatal crashes by 36.8%.

Within the Leavenworth Comprehensive Plan are strategies regarding the growth and upgrades for roadways within the County. Among the recommended policies are the creation of a specific policy that can act as a guide for future roadway pavement installation based on factors such as, but not limited to, AADT, classification, and safety considerations. Among the recommendations from the Leavenworth County Comprehensive Plan, there are several noteworthy items worth reiterating:

- Host quarterly transportation meetings with representatives from each municipality's public works department, as well as KDOT, to ensure a coordinated strategy for the incorporated and unincorporated roadways.
- Review and potentially update the County's Road Construction and Storm Water Drainage Standards, based on best management practices, peer county practices, and FHWA guidance. A review of these standards revealed several opportunities to update the manual's Street Design Criteria to incorporate additional safety-related guidance, such as the following:
- Incorporate roadway marking and edge treatment (e.g. rumble strips) policies and design standards for rural collectors and arterials.
- Consider updating the Design Speed criteria to provide more context-sensitive guidance, such as lowering Design Speed for local streets within urban areas (subdivisions within urban growth boundaries of incorporated Cities) to 25 mph.
- Develop traffic calming standards and design criteria for Urban Streets.

In conjunction with this Vision Zero Action Plan, a "draft" Signing and Pavement Marking Maintenance Policy has been shared with County Public Works staff.

Roadside Maintenance

The County could benefit from having additional policies/regulations regarding the maintenance of roadsides, as many of their current published policies, resolutions, etc. regard the maintenance of roadways. The County has several practices that they currently are implementing without having described within writing (i.e., policies, resolutions, etc.) regarding maintenance schedules for mowing within the right-of way and clearing of landscaping that potentially hinders intersection sight distance. Currently, the planned maintenance schedule for mowing, which depends on equipment, manpower, and weather, is three times a year along all hard surface roads and twice a year for gravel roads. The clearing of landscaping (e.g., brush, trees, etc.) is completed as reported and seen by crews.

In conjunction with this Vision Zero Action Plan, a "draft" Roadside Maintenance Policy has been shared with County Public Works staff.

Public Engagement

There is some ambiguity in how the public service request portals are implemented. Also, the portals for public service request for the Public Works Department and Planning and Zoning Department do not have an indication of which map belongs to which service. For clarity purposes, it would be helpful to have the respective department on the respective portal. Also, as a part of the "How Do I?" portion of the webpage, it would be helpful to give examples of what kind of requests would go to which departments and to describe how these requests will be handled.

Map for Commercial Vehicle Restrictions

Although Leavenworth County has a wide assortment of maps, it currently does not have a map that reflects its roadways that have commercial vehicle restrictions.

Appendix D.

Countermeasures Toolbox

APPENDIX D: COUNTERMEASURES TOOLBOX

Roadway Departure Countermeasures

Countermeasure	Description	Cost (Relative)	Estimated Crash Reduction (%)
Rumble Strip	Rumble Strips are textures installed into paved roadways, running parallel with the directions of travel, that create a physical vibration and an audible warning whenever a motorist crosses them. Three types of rumble strips are commonly used: center line, shoulder, and edge line. • Center line rumble strips are installed between opposing directions of travel on two-lane, two-way roads (with pavement marking materials applied on top of the strips) to warn drivers whose vehicles are crossing the center line to reduce head-on collisions and opposite direction sideswipes. • Shoulder rumble strips are installed along the shoulder and are effective in reducing run-of-the-road collisions. • Edge line rumble strips, a variation of the shoulder rumble strip, are placed in the location where the edge line pavement markings typically go, with the pavement marking placed on top of the rumble strip.	$	20%
Roadside Design Improvements	Roadside Design Improvements, including the establishment of Clear Zones, flattening slopes, adding or widening shoulders, or installing roadside barriers, allow for a safe recovery for a motorist who has left the roadway or to stop safely. • Clear Zones are areas along the roadside that have been cleared of natural materials and debris, compacted, and leveled; the width of a Clear Zone depends on a variety of factors, including traffic volumes, speeds, slopes, fixed objects, terrain, and other factors that affect risk. • Slope Flattening is the reduction of slope to create a more even area for motorists to stop or regain control of their vehicle, should the vehicle leave the roadway. Reduced slops increases the motorists ability to stabilize, regain control of their vehicle, and avoid potential obstacles. • Adding shoulders, or widening shoulders that already exists, allocates more space for motorists to recover. • Roadside barriers act as a shield to roadside hazards that cannot be redesigned, relocated, or removed, such as steep embankments or unmovable objects. The three main barriers, from the greatest deflection to least deflection, are cable barriers (made from steel cables on weak steel posts), metal-beam guardrail (W-beam or box-beam mounted on timber or steel posts), and concrete barriers.	$-$$	20%
Safety Edge	A Safety Edge is a strong, durable 30 degree transition between the edge of a paved roadway and the adjacent graded material, mitigating the problems associated with a vertical drop-off (such as tire scrubbing and motorists losing control of their vehicle trying to return to the roadway). Additionally, a Safety Edge can make the pavement more durable, leading to reduced edge raveling.	$$	50%
Enhanced Curve Delineation	Enhanced Curve Delineation is the installation of retroreflective chevron signs and advance curve warning signage; these are shown to significantly reduce crashes along curves, especially nighttime crashes and in rural areas.	$	30%
Striping Center Lines/Edge Lines	Roadway striping, in the form of center lines and edge lines, separates the opposing flows of traffic and indicates the edge of the paved roadway from the shoulder/the adjacent graded materials. Striping center lines and edge lines, especially in areas where nighttime driving causes cues to changes in alignment to be unclear, can help motorists position their vehicle correctly in the roadway and avoid collisions with other vehicles.	$	25%
Widening Edge Lines	Wider edge lines decrease the risk of roadway departure, as they make the edge of the travel lanes more visible and easier for motorists to identify. A "wider" edge line measures at six inches wide (the maximum normal line width), which is two inches wider than what edge lines are typically painted. Wider edge lines can be use on all facility types in both rural and urban areas, and are the most effective in reducing crashes on rural two-lane highways (especially single-vehicle crashes).	$	20%
Pavement Friction Management (Not at Intersections)	Pavement Friction Management (PFM) involves measuring, monitoring, and maintaining pavement friction to maintain skid resistance; PFM should be implemented at locations where vehicles often slow down, stop, and/or turn, as well as at places where the roadway geometry relies more on friction between the surface and the vehicle (such as curves or slopes). For Roadway Departure crashes specifically, high friction surface treatment (HFST) - a layer of specialized aggregate locked onto the roadway surface - should be used at interchange ramps, horizontal curves, and locations with a history of rear-end and weather related crashes.	$$	55%

Intersection Countermeasures

Countermeasure	Description	Cost (Relative)	Estimated Crash Reduction (%)
Roundabouts	The modern roundabout is an intersection with a circular configuration that safely and efficiently moves traffic. Roundabouts feature channelized, curved approaches that reduce vehicle speed, entry yield control that gives right-of-way to circulating traffic, and counterclockwise flow around a central island that minimizes conflict points. The net result of lower speeds and reduced conflicts at roundabouts is an environment where crashes that cause injury or fatality are substantially reduced. Roundabouts reduce 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.	$$$	45%
Intersection Warning Signage	Stop Ahead (W3-1), Yield Ahead (W3-2), or Signal Ahead (W3-3) signage can be installed in advance of the intersection to notify unaware motorists and increase conspicuity and compliance with the traffic control. The advance placement of intersection warning signage depends on the posted or 85th-percentile speed, as well as the difference between posted and advisory speeds.	$	30%
Retroreflective Sign Post Panels	Retroreflective Sign Posts Panels are a strip of retroreflective material attached to the front of an existing sign post to increase the visibility of the sign, particularly at night; these should be implemented at locations with issues of poor visibility of existing signage and/or compliance with intersection traffic control (especially if the non-compliance contributed to a crash history). The strip should be two inches wide, extend the entire length of the post (within two feet of the ground), and the color should match the background color of the sign, with the exception for YIELD (R1-2) and DO NOT ENTER (R5-1), which should be red.	$	30%
Double Up / Enlarged Signage	Double-up signage is when signage is posted on both the right and left side of the roadway on the approach to an intersection (e.g., having "Stop Ahead" signs on both sides of the road). By doubling-up and enlarging signage, it increases the visibility of the signage for road users to increase compliance with the posted signage.	$	30%
Cross Traffic Does Not Stop / Double Arrow Warning	The Cross Traffic Does Not Stop (W4-4P) sign can be used at two-way stop controlled intersections, mounted below the stop signs, in areas that potentially or currently are misinterpreted as a all-way stop. This sign can be used with a Two-Direction Large Arrow (W1-7) for side streets at a T-intersection to remind motorists to look both ways before turning left or right.	$	30%
Approach Rumble Strips	Approach rumble strips are transverse rumble strips installed into the pavement in advance of stop-controlled approaches. The rumble strips, when crossed by tires, create a physical vibration and an audible warning that alerts the motorist of the upcoming approach so that they can safely stop in time.	$	30%
All-Way Stop Control Conversion	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, reduce the need for drivers to wait for a safe gap in traffic to go and are more predictable. This countermeasure can also serve as a temporary solution for other, more expensive traffic control solutions, such as roundabouts.	$	60%
Pavement Friction Management (Intersections)	Pavement Friction Management (PFM) involves measuring, monitoring, and maintaining pavement friction to maintain skid resistance; PFM should be implemented at locations where vehicles often slow down, stop, and/or turn, as well as at places where the roadway geometry relies more on friction between the surface and the vehicle (such as curves or slopes). For Intersection crashes specifically, high friction surface treatment (HFST) - a layer of specialized aggregate locked onto the roadway surface - should be used on intersection approaches (especially intersections with steep downward grade and higher-speed stop-controlled and signalized intersections), crosswalk approaches, and locations with a history of crashes due to weather, failure to yield, red-light running, and/or rear-end.	$$	55%
Lighting	Installing lighting at spot locations such as intersections. The nighttime fatality rate is three times the daytime rate because at nighttime, vehicles traveling at higher speeds may not have the ability to stop once a hazard or change in the road becomes visible by a vehicle's headlights. Adequate lighting (i.e., at or above minimum acceptable standards) is based on research recommending horizontal and vertical illuminance levels to provide safety benefits to all users of the roadway environment. Adequate lighting can also provide benefits in terms of personal security for users as they travel along and across roadways.	$$	35%
Intersection Daylighting	Intersection daylighting improves the sight distance for road users as they enter and navigate an intersection by restricting curbside vehicle parking spaces or clearing of sight distances leading up to an intersection. Restrictions can be accomplished through the use of pavement markings and flexible guideposts	$	30%

Motorcyclist Countermeasures

Countermeasure	Description	Cost (Relative)	Estimated Crash Reduction (%)
Kansas Motorcycle Task Force	The Kansas Motorcycle Task Force, managed by the Kansas Traffic Safety Resource Office (KTSRO), is an all-volunteer group dedicated to reducing injuries and fatalities for motorcyclists through awareness, education, improving safety, and licensing for riders. Increased awareness of motorcyclists and education on how to safely ride (learned through the licensing process or through supplemental means) can help reduce injuries and fatalities.	$	NA
Motorcycle Priority Network	A Motorcycle Priority Network is a public-facing map that establishes a system of motorcyclist facilities; by publicizing routes (e.g., K-5, US-73/K-7, etc.), motorcyclists can know which routes to take that are best suggested for them and the public can know to expect motorcycles on these routes, increasing driver awareness of motorcyclists.	$	NA
Motorcycle Rider Training	Encourage participating in local motorcycle rider training through Johnson County Community College (JCCC), Kansas City, Kansas Community College (KCKCC) or other local training for new riders.	$	NA
Strategies to Increase Rider Conspicuity and Use of Protective Clothing	The National Highway Traffic Safety Administration (NHTSA) suggests that riders should wear clothing that provides both protection and visibility, including well constructed jackets, pants, boots, gloves, and helmets with face shields, as well as encouraging continuous headlight use to increase conspicuity.	$	NA

Younger Drivers Countermeasures

Countermeasure	Description	Cost (Relative)	Estimated Crash Reduction (%)
S.A.F.E. Program in High Schools	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.	State Funded	NA
Kansas Education Programs for New Drivers	Several programs are available for new drivers in Kansas to increase and promote education on how to drive and how to do it safely, including a Driver Education Toolkit, driving schools, driver improvement programs, and financial assistance for individuals for driver's education. • The KTSRO offers a Driver Education Toolkit, which includes information about the Kansas Graduated Driver's License, the stages of getting licensing, restrictions, distractions, and resource materials for relevant laws (i.e., occupant protection, DUI, distracted driver, etc.) • Annual nation-wide driving schools are available in Kansas City each summer, including the Ford Driving Skills for Life and B.R.A.K.E.S. Teen Driving School. These schools educate the importance of safe and responsible driving by addressing common driving situations that involve teens through hazard recognition, vehicle handling, speed management, space management, and distracted and impaired driving. • The Kansas Highway Patrol's AAA Driver Improvement Program operates similarly, providing a student guidebook to discuss these topics. • To encourage and support the education of safe and lawful driving, KDOT has a education reimbursement grant that provides financial assistance to driver's education programs for individuals who may otherwise not have been able to participate.	$$	NA

Impaired Driving Countermeasures

Countermeasure	Description	Cost (Relative)	Estimated Crash Reduction (%)
High-Visibility Saturation Patrols | NHTSA	A saturation patrol (also called a blanket patrol or dedicated DWI patrol) consists of a large number of law enforcement officers patrolling a specific area looking for impaired drivers. These patrols usually take place at times and locations where impaired-driving crashes commonly occur. Like publicized sobriety checkpoint programs, the primary purpose of publicized saturation patrol programs is to deter driving after drinking by increasing the perceived risk of arrest. To do this, saturation patrols should be publicized extensively and conducted regularly, as part of an ongoing program.	$$	NA
Publicized Sobriety Checkpoints | NHTSA	Sobriety Checkpoints are highly visible, regularly conducted stops of motorists at predetermined locations to investigate whether motorists are impaired. Stops are conducted per vehicle or at a regular interval (e.g., every third vehicle). Although the primary purpose of checkpoints is to deter driving after drinking among the general population due to the perceived risk, sobriety checkpoints also remove impaired drivers from the road.	$$	10%
Integrated Enforcement | NHTSA	Integrated Enforcement is a type of high visibility enforcement focused primarily on behavioral activities, such as driving under the influence, speeding, and seat-belt usage, and is seen in both regular traffic enforcement and crash investigations to specialized checkpoints and saturation patrols. Special enforcement activities focused on speeding or seat-belt use offer an additional opportunity to detect impaired drivers, especially at night, as impaired drivers often speed or fail to wear seat belts.	$$	Varies
Alternative Transportation | NHTSA	Alternative Transportation Programs reduce the need for individuals to drive while under the influence; these include for-profit rideshare services, nonprofit safe ride programs, and public transportation (such as buses).	$$	Varies
Mass Media Campaigns | NHTSA	Mass Media Campaigns are intensive communication and outreach activities focusing on key topics regarding safety, health, and well-being (such as driving under the influence) that use radio, television, print, social, and other mass media platforms. Some campaigns publicize a deterrence or prevention measure, such as a change in a State's DWI laws or through a highly visible enforcement program; others promote specific behaviors (such as designated drivers) illustrating the repercussions of these actions. Campaigns vary enormously in quality, size, duration, funding, and many other ways. Effective campaigns identify a specific target audience and communications goal and develop messages and delivery methods that are appropriate to—and effective for—the audience and goal.	$$	Varies

Appendix E.

Catalyst Project Profiles and Cost Estimates

158th Street & Golden Road

Catalyst Project Profile

Safety Issues

Crash Risk Attributes:
- Edge conditions - up to 50% (1:1) foreslopes
- Wooded and narrow clear zone in areas throughout corridor
- Sharp horizontal curves at high speeds with poor sight lines
- 2,000 vehicles per day
- Narrow shoulders and loose gravel at 158th & Golden curve
- Poor lighting conditions

Crash History and Existing Conditions

All Crashes
- Sparse
- Dense
- Fatal Crash
- Serious Injury Crash
- Leavenworth County Boundary
- Project Location

High traffic volume and high speeds crossing K-32 along 158th Street (two-way stop-controlled intersection).

Curve in road, high speeds, and vehicles entering roadway.

Curved roads and steep grades with narrow shoulders increase risk of roadway departure crashes.

High number of roadway departures - specifically motorcycles due to loose gravel and high speeds entering curve.

Crashes involving alcohol are frequent along the corridor.

32

Cantrell Road

170th Street

158th Street

189th Street

Golden Road

Leavenworth County

Douglas County

N

0 0.2 0.4 Miles

Crash-History by Focus Area (2013-2022)

Focus Area	Fatal	Disabling Injury	Non-incapacitating Injury	Possible Injury	Not Injured	Total in Each Focus Area
Roadway Departure	1	14	14	10	28	67
Intersection	1	8	15	8	42	74
Motorcycle	2	9	5	3	0	19
Impaired Driver	1	6	7	3	5	22
Young Driver	0	6	8	6	39	59
Total Crashes*	2	17	28	16	86	149

* Focus area crashes will not sum to the total number of crashes due to overlaps between focus areas.

Recommendations

Corridor-Wide Recommendations

Short-term: Retroreflective edgelines and centerlines to increase visibility and Rumble Strips to alert drivers of lane departures. Delineators to mark roadside hazards and improve driver awareness.

Long-term: Upgrade guardrails with reflectors to improve visibility. Re-grade the foreslopes to improve vehicle recovery. Clear and grub and removing objects in the clear zone to increase driver visibility.

Legend
- Culverts
- Clear and Grub
- Guardrails
- Bridges
- Project Location

K-32 and 158th Street roundabout planned.

Clearing and grubbing should occur at specific locations throughout the corridor; refer to Legend.

A 2-foot paved shoulder should be added in areas with shoulders under 2 feet.

Long-term: intersection realignment at 189th / K-32 to improve skew; see 189th Street and K-32 intersection profile for more details.

Install delineators at access points that provide a hazard near the roadway; refer to cost estimate table for #.

Widen shoulders and clear zones for more recovery space.

Long-term: roundabout or all-way stop control at 166th; see Golden Road and 166th Street intersection profile for more details.

Addition of rumble strips, chevrons, and high-friction surface treatment to reduce roadway departure crashes; see Golden Road Curve and 161st Street curve profile for more details.

32

Cantrell Road

170th Street

158th Street

189th Street

Golden Road

Leavenworth County

Douglas County

N

0 0.2 0.4 Miles

LEAVENWORTH COUNTY VISION ZERO

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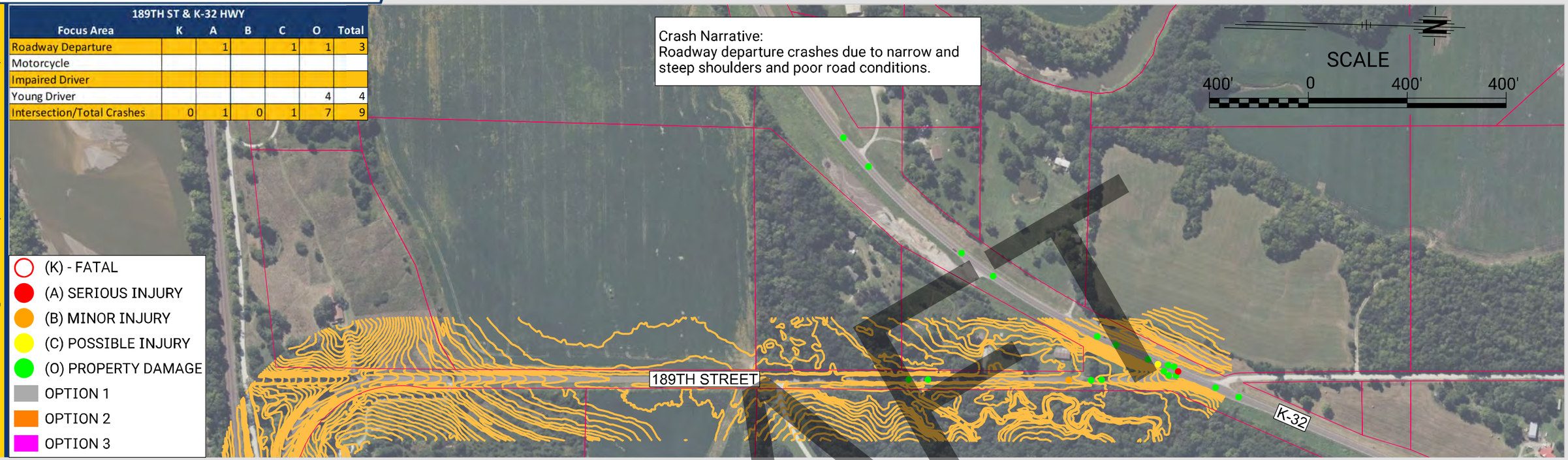
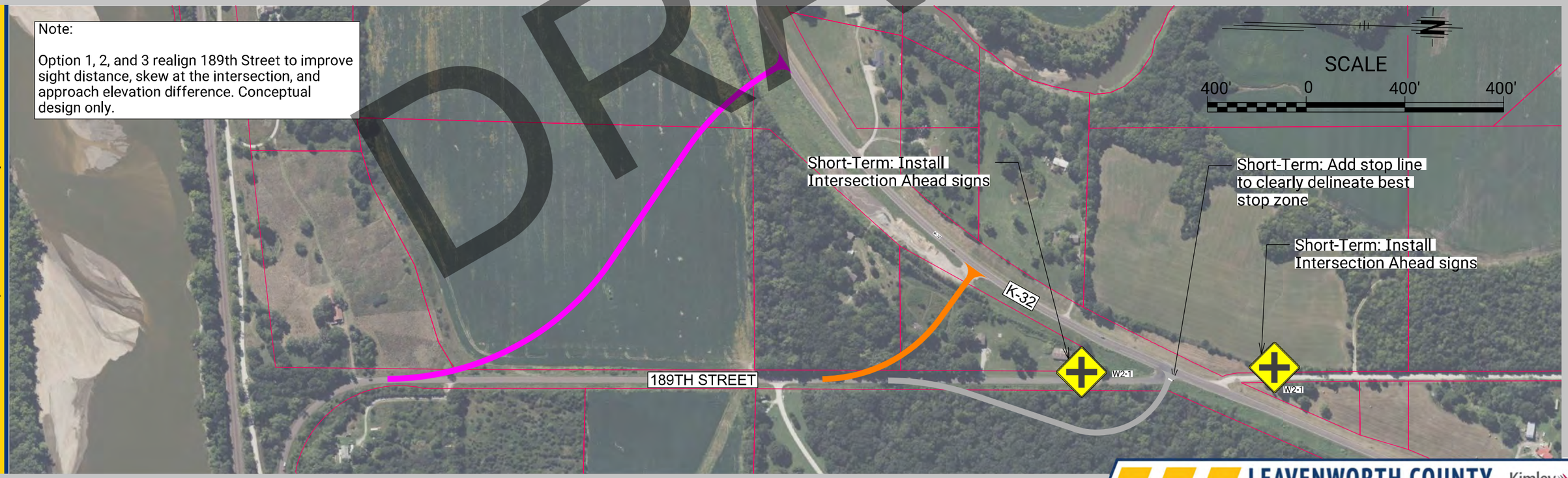
Existing Conditions (Crash Data 2013 - 2022)

189TH ST & K-32 HWY						
Focus Area	K	A	B	C	O	Total
Roadway Departure		1		1	1	3
Motorcycle						
Impaired Driver						
Young Driver					4	4
Intersection/Total Crashes	0	1	0	1	7	9



Improvement Summary

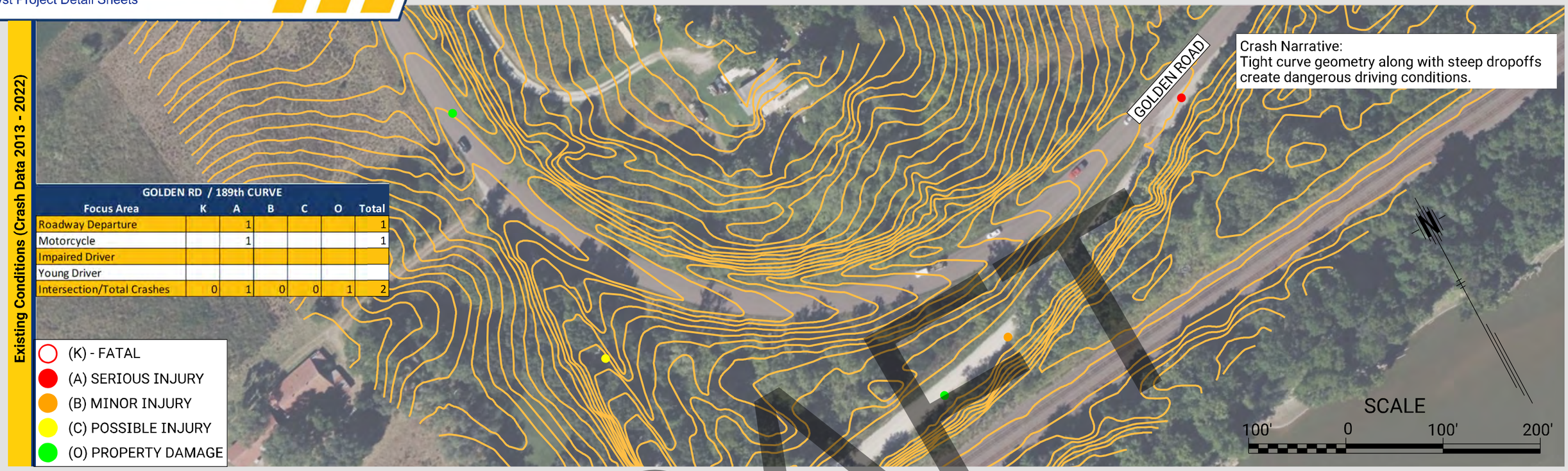


Golden Road Curve

Catalyst Project Detail Sheets

Existing Conditions (Crash Data 2013 - 2022)

GOLDEN RD / 189th CURVE						
Focus Area	K	A	B	C	O	Total
Roadway Departure		1				1
Motorcycle		1				1
Impaired Driver						
Young Driver						
Intersection/Total Crashes	0	1	0	0	1	2



Improvement Summary

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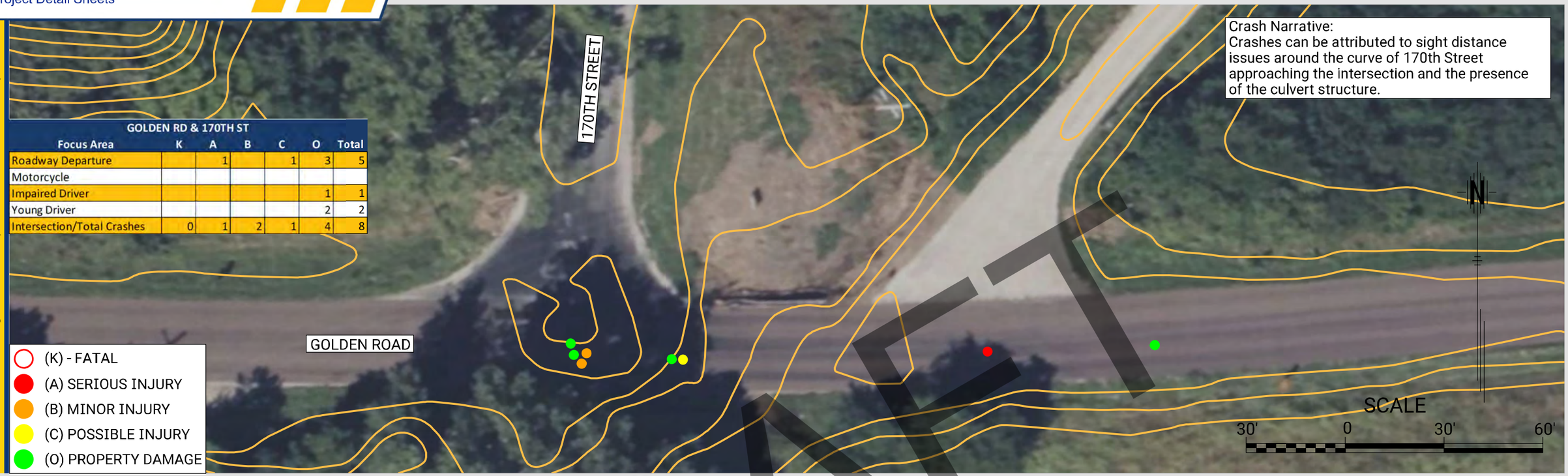
Golden Road and 170th Street

Catalyst Project Detail Sheets

Existing Conditions (Crash Data 2013 - 2022)

GOLDEN RD & 170TH ST						
Focus Area	K	A	B	C	O	Total
Roadway Departure		1		1	3	5
Motorcycle						
Impaired Driver					1	1
Young Driver					2	2
Intersection/Total Crashes	0	1	2	1	4	8



Improvement Summary

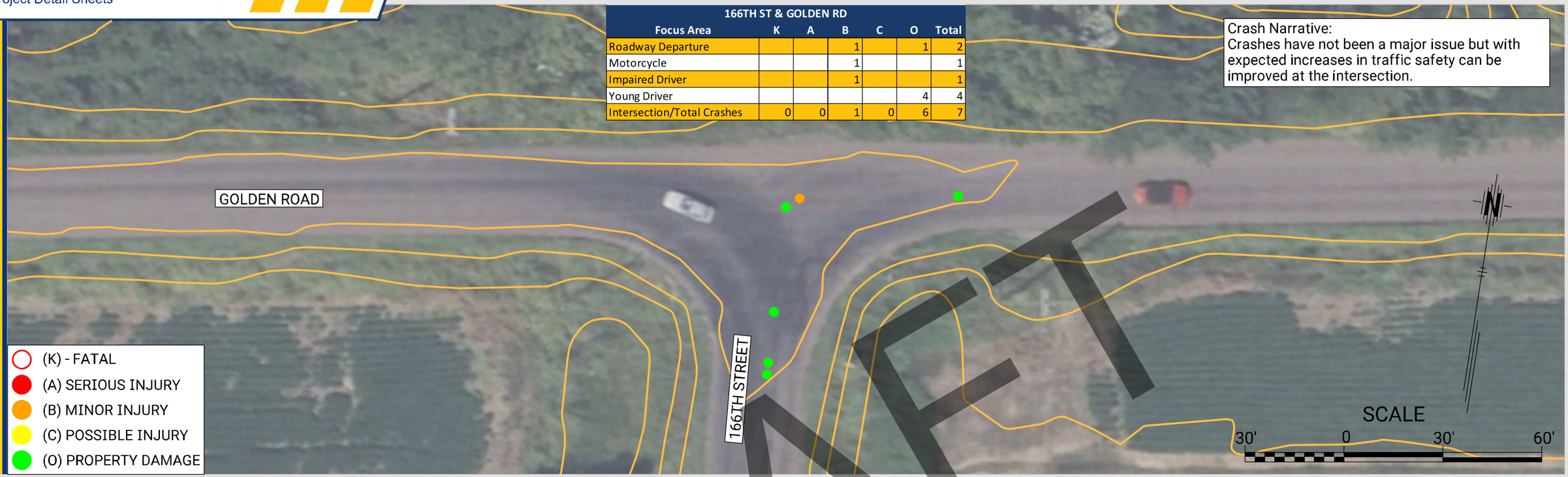
Golden Road and 166th Street

Catalyst Project Detail Sheets

Existing Conditions (Crash Data 2013 - 2022)

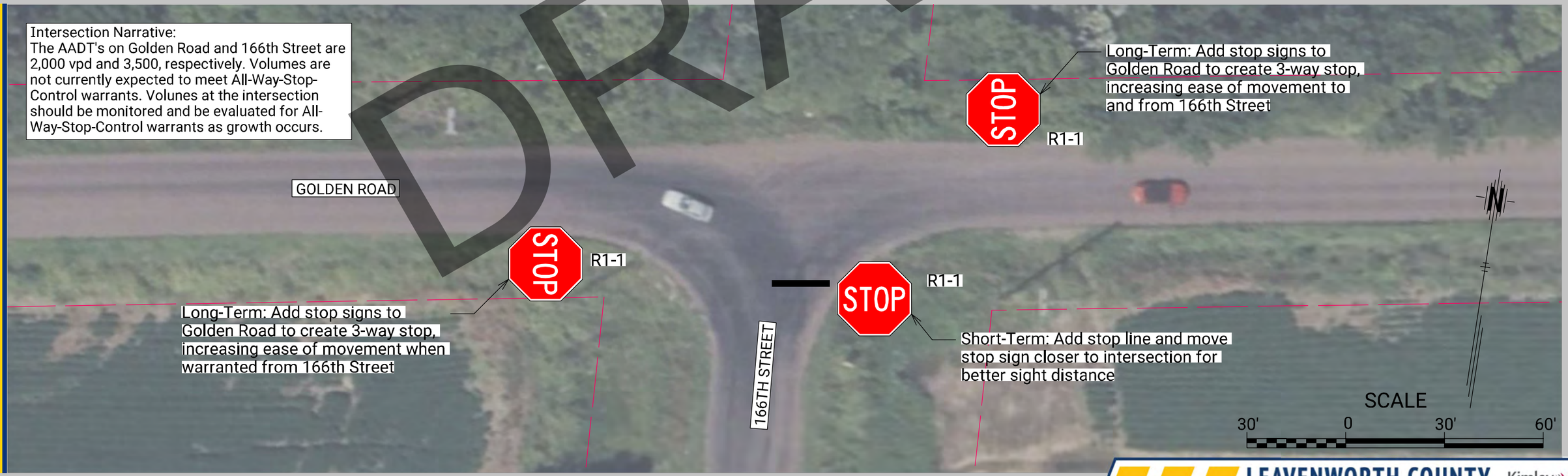
166TH ST & GOLDEN RD						
Focus Area	K	A	B	C	O	Total
Roadway Departure			1		1	2
Motorcycle			1			1
Impaired Driver			1			1
Young Driver					4	4
Intersection/Total Crashes	0	0	1	0	6	7

Crash Narrative:
Crashes have not been a major issue but with expected increases in traffic safety can be improved at the intersection.



Improvement Summary

Intersection Narrative:
The AADT's on Golden Road and 166th Street are 2,000 vpd and 3,500, respectively. Volumes are not currently expected to meet All-Way-Stop-Control warrants. Volunes at the intersection should be monitored and be evaluated for All-Way-Stop-Control warrants as growth occurs.



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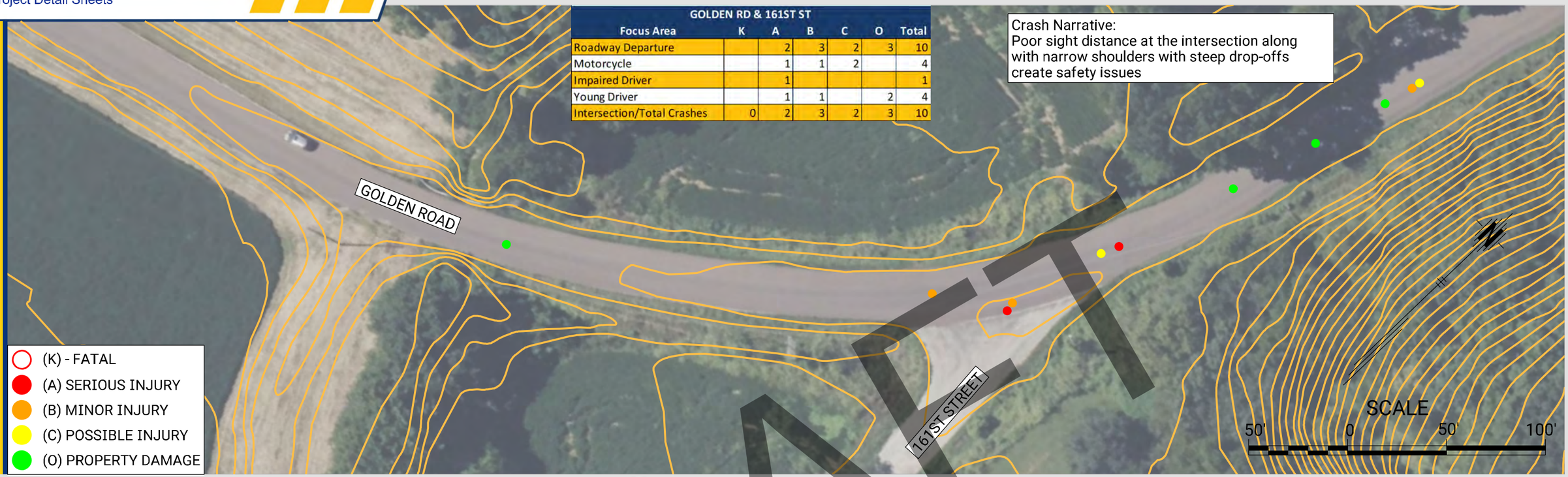
Golden Road Curve and 161st Street

Catalyst Project Detail Sheets

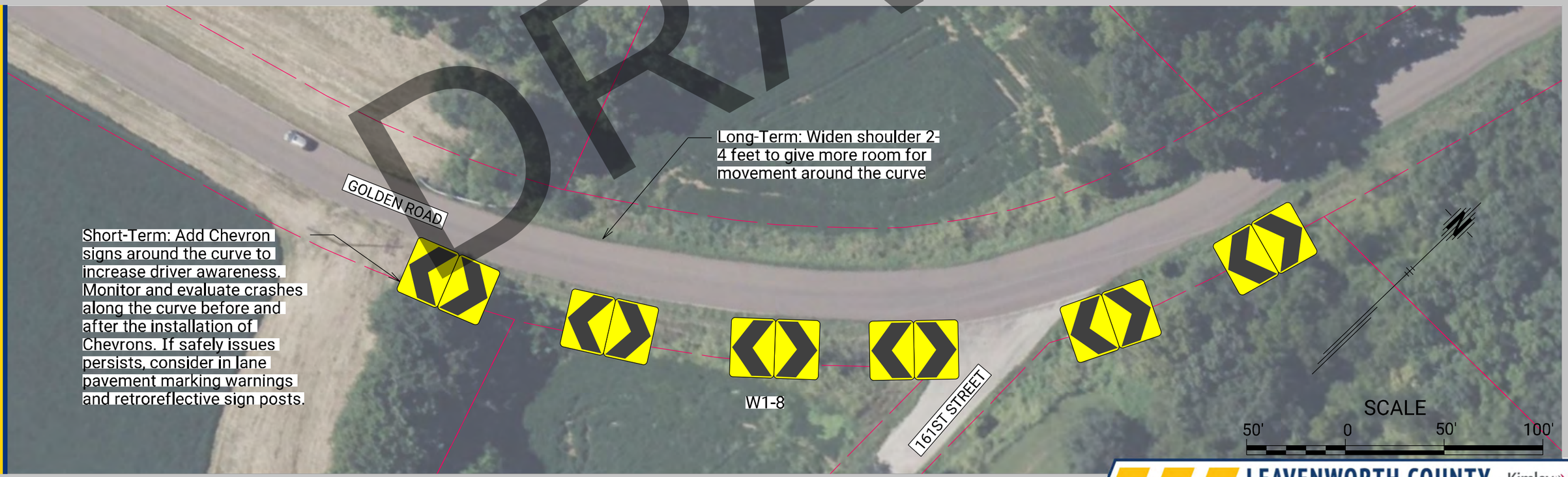
Existing Conditions (Crash Data 2013 - 2022)

GOLDEN RD & 161ST ST						
Focus Area	K	A	B	C	O	Total
Roadway Departure		2	3	2	3	10
Motorcycle		1	1	2		4
Impaired Driver		1				1
Young Driver		1	1		2	4
Intersection/Total Crashes	0	2	3	2	3	10

Crash Narrative:
Poor sight distance at the intersection along with narrow shoulders with steep drop-offs create safety issues



Improvement Summary



LEAVENWORTH COUNTY VISION ZERO

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158th Street & Golden Road - Cost Estimate Worksheet

LEAVENWORTH COUNTY VISION ZERO

Short Term Improvements				
Item Description	Quantity	Unit	Unit Price	Item Cost
Install 6" Retroreflective Edgeline (Both Sides of Road)	8.37	Mile	$6,000	$50,220
Install 4" Retroreflective Centerline	8.37	Mile	$3,000	$25,110
Delineate Roadside Hazards with Retroreflective Markers	68	Each	$100	$6,800
Clear and Grub (15 Feet Off Edge of Road)	2.00	Mile	$30,000	$60,000
Improve Edge Rut Conditions with Aggregate at Edge Drop-off Locations	8.37	Mile	$5,000	$41,850
Install Edgeline Rumble Strips	8.37	Mile	$5,000	$41,850
Install Centerline Rumble Strips	8.37	Mile	$2,000	$16,740
Post-Mounted Delineators	8.37	Mile	$5,000	$41,850
Review and Upgrade Curve Signage to Meet MUTCD and KDOT Standards	8	Curve	$1,000	$8,000
Install Curve Signage to Meet MUTCD and KDOT Standards (If Needed)	4	Curve	$3,500	$14,000
Install In-Lane Curve Warning Pavement Markings	12	Curve	$2,000	$24,000
Retroreflective Strips on Curve Signage	12	Curve	$500	$6,000
Long Term Improvements				
Item Description	Quantity	Unit	Unit Price	Item Cost
Remove/Relocate Fixed Objects in Clear Zone	1	Each	$1,000	$1,000
Pave 2' Shoulder with Safety Edge (Both Sides of Road - Includes Earthwork)	8.37	Mile	$150,000	$1,255,500
Install/Upgrade Guardrail with Reflectors	1,128	Foot	$85	$95,880
Flattening and Widening Foreslopes (Excludes Culvert Extensions)	8.37	Mile	$85,000	$711,450
Install High Friction Surface Treatment (HFST) on Curve	2	Curve	$50,000	$100,000
Culvert Extensions	4	Each	$15,000	$60,000
Realignment of K-32 and 189th Street Intersection	1	Each	$10,000,000	$10,000,000

Probable Cost	
Item Description	Item Cost
Short Term Improvements	$336,000
Longer Term Improvements	$12,224,000
Construction Subtotal	***$12,560,000***
Mobilization*	$75,000
Traffic Control (5% of Construction Subtotal)	$628,000
Contingency (20% of Construction Subtotal)	$2,512,000
Estimated Construction Cost	***$15,775,000***
PE Design (12% of Estimated Construction Cost)	$1,893,000
Utilities**	
ROW**	
CE (Inspection) (15% of Estimated Construction Cost)	$2,366,000
Estimated Project Total	**$20,034,000**

*Mobilization is 10% of the subtotal with a minimum of $2,500 and a maximum of $75,000

**To be considered by county as they move forward with design of the recommendations

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Project Description

The 158th Street and Golden Road corridor spans 8.37 miles, linking the growing De Soto area in Johnson County to K-32 and southeastern Leavenworth County. The corridor experiences significant safety challenges, particularly around tight curves and skewed intersections, which contribute to roadway departure and fixed-object crashes. Over the most recent 10 years of available data (2013-2022), the corridor has seen 149 total crashes, including 2 fatalities, 17 disabling injuries, and another 44 minor or possible injury crashes. A high percentage of severe crashes involve motorcyclists and impaired drivers, often occurring in dark conditions due to limited lighting. Key risk factors include narrow lanes, minimal shoulders, steep foreslopes, and an unforgiving cross-section, making it difficult for drivers to recover if they leave the roadway.

Recent improvements, including planned roundabouts and increased signage, aim to mitigate these risks. However, due to the anticipated growth and development in nearby De Soto, further safety enhancements—such as shoulder widening, rumble strips, and upgraded signage—are critical for reducing crash rates and enhancing overall road safety.

Next Steps

Evaluate opportunities to implement short-term improvements; many of these are relatively inexpensive and can be completed as maintenance is needed along the corridor. For example, the next time the roadway needs to be restriped, utilize a retroreflective paint and increase the edgeline width.

Coordinate with KDOT on the planned roundabout at K-32/158th and the proposed improvements at K-32/189th. Make them aware of safety concerns at the intersection and what is going on here.

Apply for funding for detailed design and construction. Suggested funding sources are provided below. Note that projects using federal funding will be required to conform to federal environmental review (NEPA).

Potential Funding Sources

SS4A Implementation
KDOT High-Risk Rural Roads (HRRR)
KDOT Cost Share
KDOT IKE Programs
MARC Surface Transportation Block Grant (STBG)

County Road 1 (222nd Street)

Catalyst Project Profile

Safety Issues

This fatal crash was an impaired driver that departed the roadway.

This serious injury crash was an impaired motorcyclist that departed the roadway. This crash did not involve a train.

Two fatalities within proximity of the intersection of 222nd Street and Alexander Road. Both crashes involved roadway departure; one was a head-on collision and the other was a fixed object collision with a tree. Alexander Road is a gravel facility.

Highest-crash location along corridor is at K-32 intersection, including two fatalities and four serious injuries. KDOT improved intersection geometry in 2021 by installing eastbound and westbound left and right turn lanes along K-32. Three of these fatal or serious injury crashes occurred after KDOT intersection improvements.

To Eudora

To Tonganoxie

Union Pacific Railroad

Alexander Road

Golden Road

32

Crash Risk Attributes: (South of the Railroad Crossing):
- Foreslopes are more gradual with a flat vertical profile
- Crops with sparse trees
- 3,500 vehicles per day
- Gradual horizontal curves, adequate sight lines

Crash Risk Attributes (North of the Railroad Crossing):
- Edge conditions - up to 50% (1:1) foreslopes
- Vertical elevation change, wooded, narrow clear zone
- Gradual horizontal curves
- Good sight lines
- 3,500 vehicles per day
- 28-foot cross-section (11-foot lanes, 3-foot paved shoulders)

Leavenworth County

Douglas County

0 0.1 0.2 0.4 Miles

N

Crash History and Existing Conditions

All Crashes
- Sparse
- Dense

Fatal Crash

Serious Injury Crash

Leavenworth County Boundary

Project Location

Crash-History by Focus Area (2013-2022)

Focus Area	Fatal	Disabling Injury	Non-incapacitating Injury	Possible Injury	Not Injured	Total in Each Focus Area
Roadway Departure	2	0	7	1	11	21
Intersection	3	4	15	3	33	58
Motorcycle	1	1	0	0	1	3
Impaired Driver	2	1	3	1	2	9
Young Driver	2	1	9	2	20	34
Total Crashes*	5	5	18	5	51	84

* Focus area crashes will not sum to the total number of crashes due to overlaps between focus areas.

Recommendations

Corridor-Wide Recommendations

Short-term: Retroreflective edgelines and centerlines to increase visibility and Rumble Strips to alert drivers of lane departures. Delineators to mark roadside hazards and improve driver awareness.

Long-term: Upgrade guardrails with reflectors to improve visibility. Re-grade the foreslopes to improve vehicle recovery. Clear and grub and removing objects in the clear zone to increase driver visibility.

Install delineators at access points that provide a hazard near the roadway; refer to cost estimate table for #.

A 2-foot paved shoulder should be added in areas with shoulders under 2 feet.

Clearing and grubbing should occur at specific locations throughout the corridor; refer to Legend.

Enhance signage, visibility, and foreslopes to limit speeds, increase line of sight, and improve foreslope grade to limit crashes; see 222nd Street and Alexander Road intersection profile for more details.

Long-term: Recommended roundabout at K-32 due to high number of FSI crashes; see 222nd Street and K-32 intersection profile for more details.

Union Pacific Railroad

Alexander Road

Golden Road

32

Leavenworth County

Douglas County

0 0.1 0.2 0.4 Miles

N

Legend
- Culverts
- Clear and Grub
- Guardrails
- Bridges
- Project Location

LEAVENWORTH COUNTY VISION ZERO

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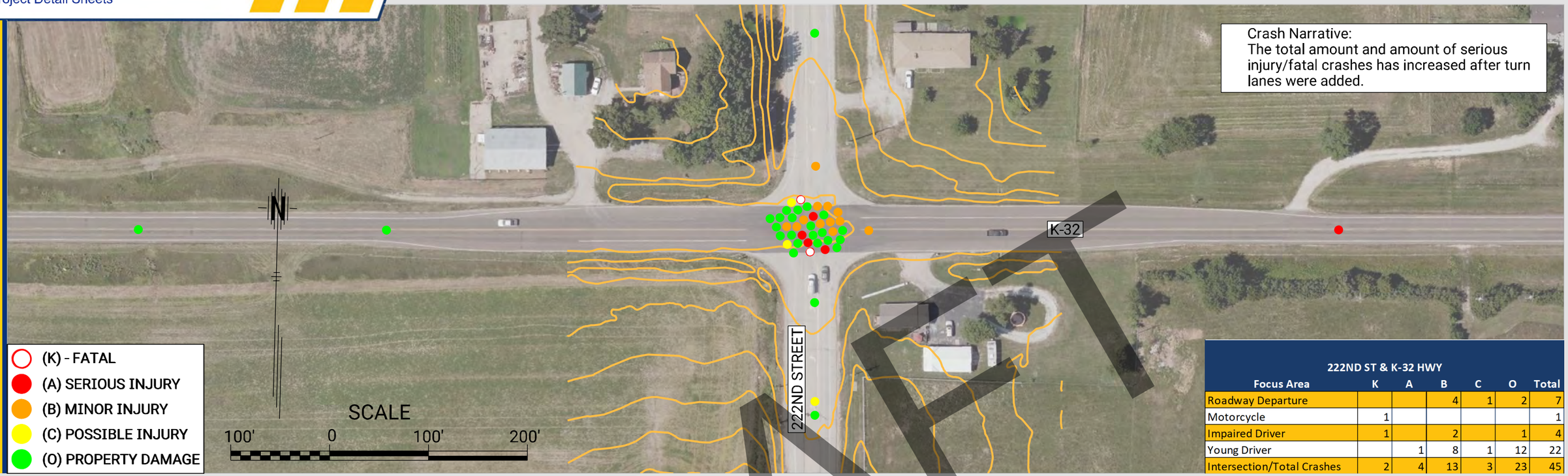
WSP

222nd Street & K-32

Catalyst Project Detail Sheets

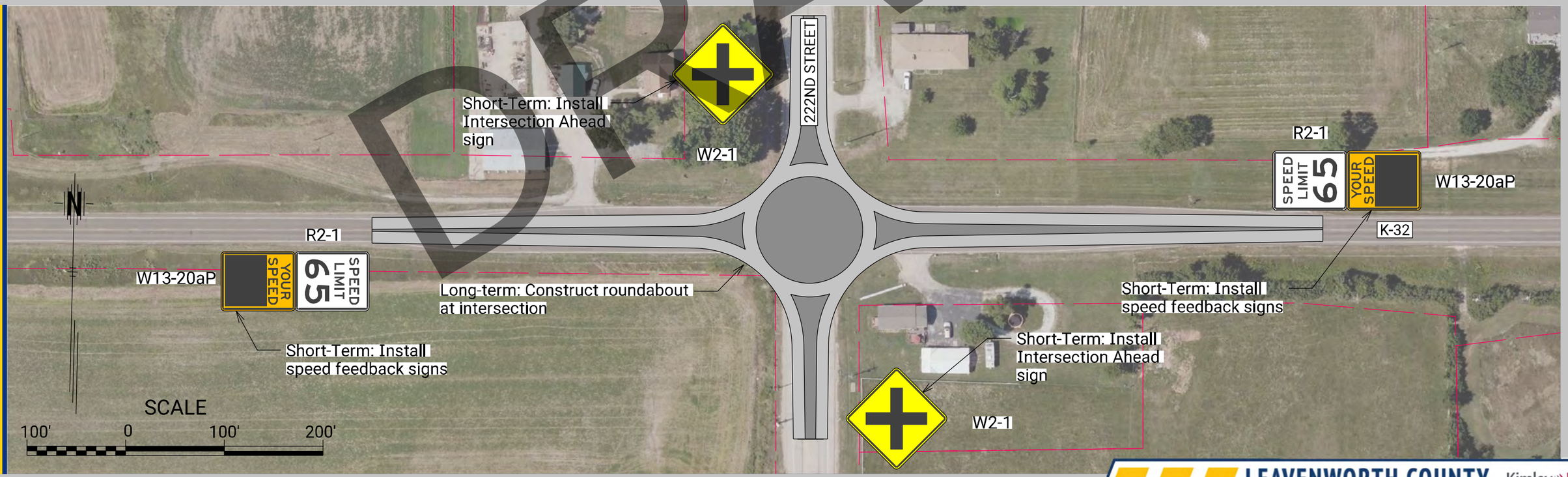
Existing Conditions (Crash Data 2013 - 2022)



Crash Narrative:
The total amount and amount of serious injury/fatal crashes has increased after turn lanes were added.

222ND ST & K-32 HWY						
Focus Area	K	A	B	C	O	Total
Roadway Departure			4	1	2	7
Motorcycle	1					1
Impaired Driver	1		2		1	4
Young Driver		1	8	1	12	22
Intersection/Total Crashes	2	4	13	3	23	45

Improvement Summary



LEAVENWORTH COUNTY VISION ZERO

Kimley»Horn

WSP

222nd Street and Alexander Road

Catalyst Project Detail Sheets

Existing Conditions (Crash Data 2013 - 2022)

222ND ST & ALEXANDER RD						
Focus Area	K	A	B	C	O	Total
Roadway Departure			1		2	3
Motorcycle						
Impaired Driver						
Young Driver	1		1		2	4
Intersection/Total Crashes	1	0	2	0	5	8

Improvement Summary

LEAVENWORTH COUNTY VISION ZERO

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County Road 1 (222nd Street) - Cost Estimate Worksheet

LEAVENWORTH COUNTY VISION ZERO

Short Term Improvements				
Item Description	Quantity	Unit	Unit Price	Item Cost
Install 6" Retroreflective Edgeline (Both Sides of Road)	3.26	Mile	$6,000	$19,560
Install 4" Retroreflective Centerline	3.26	Mile	$3,000	$9,780
Delineate Roadside Hazards with Retroreflective Markers	16	Each	$100	$1,600
Clear and Grub (15 Feet Off Edge of Road)	0.53	Mile	$30,000	$15,900
Improve Edge Rut Conditions with Aggregate at Edge Drop-off Locations	3.26	Mile	$5,000	$16,300
Install Edgeline Rumble Strips	3.26	Mile	$5,000	$16,300
Install Centerline Rumble Strips	3.26	Mile	$2,000	$6,520
Post-Mounted Delineators	3.26	Mile	$5,000	$16,300
Install Curve Signage to Meet MUTCD and KDOT Standards (If Needed)	1	Curve	$3,500	$3,500
Install In-Lane Curve Warning Pavement Markings	1	Curve	$2,000	$2,000
Retroreflective Strips on Curve Signage	1	Curve	$500	$500

Long Term Improvements				
Item Description	Quantity	Unit	Unit Price	Item Cost
Remove/Relocate Fixed Objects in Clear Zone	1	Each	$1,000	$1,000
Install/Upgrade Guardrail with Reflectors	600	Foot	$85	$51,000
Flattening and Widening Foreslopes (Excludes Culvert Extensions)	3.26	Mile	$85,000	$277,100
Culvert Extensions	5	Each	$15,000	$75,000
Roundabout (K-32 & 222nd St)	1	Each	$5,500,000	$5,500,000

Probable Cost	
Item Description	Item Cost
Short Term Improvements	$108,000
Longer Term Improvements	$5,904,000
Construction Subtotal	***$6,012,000***
Mobilization*	$75,000
Traffic Control (5% of Construction Subtotal)	$301,000
Contingency (20% of Construction Subtotal)	$1,202,000
Estimated Construction Cost	***$7,590,000***
PE Design (12% of Estimated Construction Cost)	$911,000
Utilities**	
ROW**	
CE (Inspection) (15% of Estimated Construction Cost)	$1,139,000
Estimated Project Total	**$9,640,000**

*Mobilization is 10% of the subtotal with a minimum of $2,500 and a maximum of $75,000

**To be considered by county as they move forward with design of the recommendations

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Project Description

The 222nd Street catalyst project encompasses a 3.26-mile stretch of 222nd Street from the Leavenworth/Douglas County border to K-32. 222nd Street is a critical corridor because it functions as one of the two crossings of the Kansas River on the south side of Leavenworth County, connecting Tonganoxie and I-70/Kansas Turnpike (the only Turnpike access point in Leavenworth County) to Eudora and K-10 in Douglas County. Over the most recent 10 years of available data (2013-2022), the corridor has seen 84 total crashes, including 5 fatalities, 5 disabling injuring, and another 23 minor or possible injury crashes. The primary crash concerns are intersections (K-32 & 222nd Street), roadway departure, and nighttime driving.

To address crash issues and safety concerns along the corridor, this project encompasses intersection improvements to the K-32 and 222nd Street intersection, a variety of roadside design improvements, and intersection lighting in key locations.

Next Steps

Evaluate opportunities to implement short-term improvements; many of these are relatively inexpensive and can be completed as maintenance is needed along the corridor. For example, the next time the roadway needs to be restriped, utilize a retroreflective paint and increase the edgeline width.

Coordinate with KDOT on further improvements at the K-32 and 222nd Street intersection. This location has the highest crash history along the corridor and has seen multiple fatal or serious injury crashes in the time since KDOT constructed improvement in 2021. Make them aware of safety concerns at the intersection and what is going on here.

Apply for funding for detailed design and construction. Suggested funding sources are provided below. Note that projects using federal funding will be required to conform to federal environmental review (NEPA).

Potential Funding Sources

SS4A Implementation
KDOT High-Risk Rural Roads (HRRR)
KDOT Cost Share
KDOT IKE Programs
MARC Surface Transportation Block Grant (STBG)

Fairmount Road
Catalyst Project Profile

Safety Issues

Crash Risk Attributes:
- Narrow shoulders and limited clear zones
- Steep foreslopes along the roadway
- Frequent roadway departures
- High-speed travel and overcorrection incidents
- Failure to stop at stop signs
- Intersections with limited line of sight

155th Street intersection has experienced fatal and serious crashes involving overcorrection, stop sign violations, and impaired driving.

147th Street intersection has seen multiple serious incidents, including impaired driving, a fatal right-angle collision, and roadway departure involving high-speed travel.

155th Street
163rd Street
147th Street
7
N
0 0.1 0.2 0.4 Miles

Crash History and Existing Conditions
All Crashes
Sparse
Dense
Fatal Crash
Serious Injury Crash
Leavenworth County Boundary
Project Location

Crash-History by Focus Area (2013-2022)

Focus Area	Fatal	Disabling Injury	Non-incapacitating Injury	Possible Injury	Not Injured	Total in Each Focus Area
Roadway Departure	0	2	5	2	15	24
Intersection	1	4	15	11	60	91
Motorcycle	0	2	0	0	1	3
Impaired Driver	1	0	3	0	3	7
Young Driver	0	2	3	4	34	43
Total Crashes*	2	6	17	14	72	111

* Focus area crashes will not sum to the total number of crashes due to overlaps between focus areas.

Recommendations

Corridor-Wide Recommendations

Short-term: Retroreflective edgelines and centerlines to increase visibility and Rumble Strips to alert drivers of lane departures. Delineators to mark roadside hazards and improve driver awareness.

Long-term: Upgrade guardrails with reflectors to improve visibility. Re-grade the foreslopes to improve vehicle recovery. Clear and grub and removing objects in the clear zone to increase driver visibility.

Install "stop ahead" sign at intersection.

A 2-foot paved shoulder should be added in areas with shoulders under 2 feet.

Clearing and grubbing should occur at specific locations throughout the corridor; refer to Legend.

Install delineators at access points that provide a hazard near the roadway; refer to cost estimate table for #.

Install and improve signage at key intersections to improve visibility and awareness.

K-7 and Fairmount intersection is prone to crashes due to heavy traffic volumes on K-7, congestion, and limited visibility.

Recommended improvements at K-7 include adding signage and lighting.

147th Street
163rd Street
155th Street
7
N
0 0.1 0.2 0.4 Miles

Legend
Culverts
Clear and Grub
Guardrails
Bridges
Project Location

LEAVENWORTH COUNTY VISION ZERO
Kimley»Horn
WSP

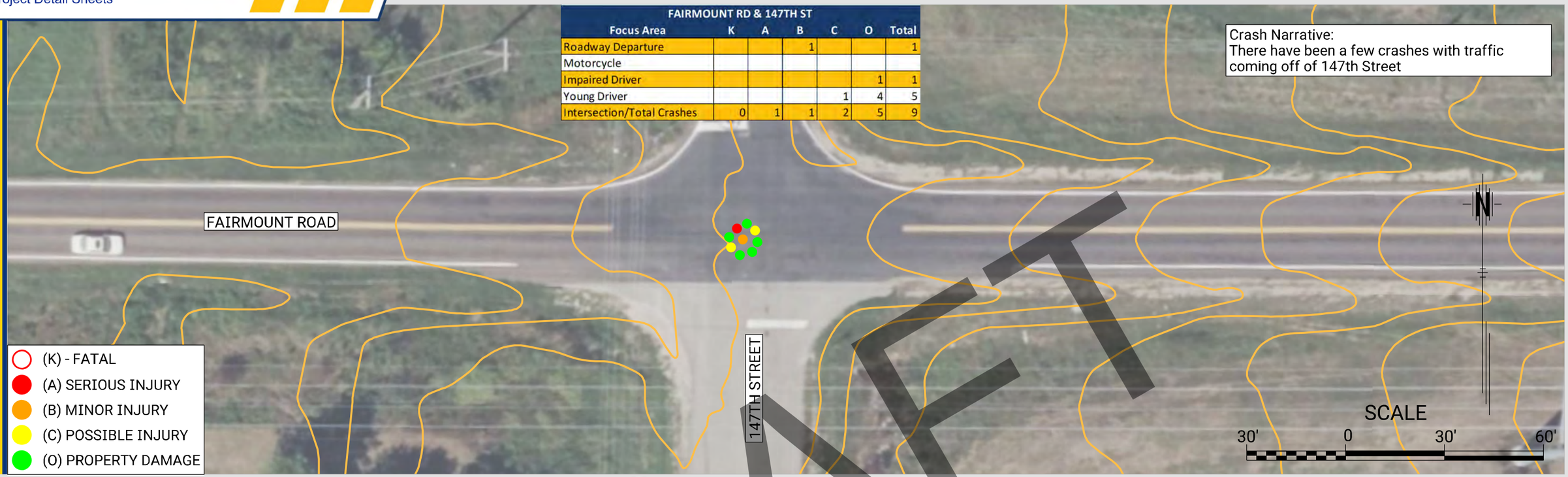
Fairmount Road and 147th Street

Catalyst Project Detail Sheets

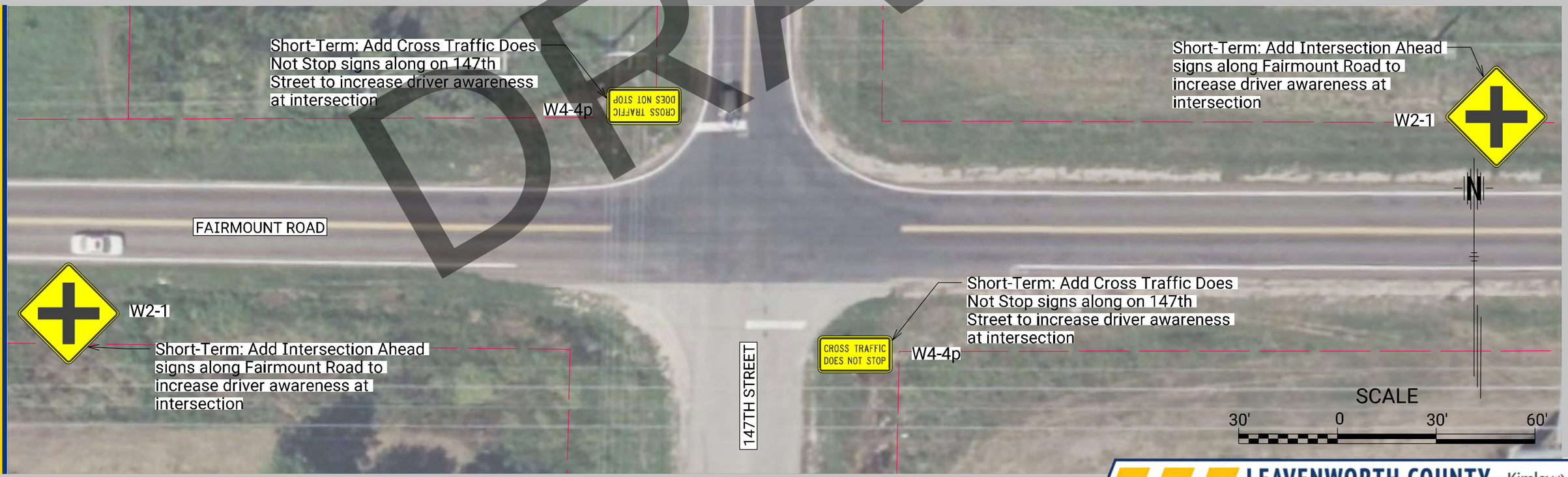
Existing Conditions (Crash Data 2013 - 2022)

FAIRMOUNT RD & 147TH ST						
Focus Area	K	A	B	C	O	Total
Roadway Departure			1			1
Motorcycle						
Impaired Driver					1	1
Young Driver				1	4	5
Intersection/Total Crashes	0	1	1	2	5	9

Crash Narrative:
There have been a few crashes with traffic coming off of 147th Street



Improvement Summary



LEAVENWORTH COUNTY VISION ZERO

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WSP

Fairmount Road - Cost Estimate Worksheet

LEAVENWORTH COUNTY VISION ZERO

Short Term Improvements				
Item Description	Quantity	Unit	Unit Price	Item Cost
Install 6" Retroreflective Edgeline (Both Sides of Road)	6.02	Mile	$6,000	$36,120
Install 4" Retroreflective Centerline	6.02	Mile	$3,000	$18,060
Delineate Roadside Hazards with Retroreflective Markers	61	Each	$100	$6,100
Clear and Grub (15 Feet Off Edge of Road)	1.23	Mile	$30,000	$36,900
Improve Edge Rut Conditions with Aggregate at Edge Drop-off Locations	6.02	Mile	$5,000	$30,100
Install Edgeline Rumble Strips	6.02	Mile	$5,000	$30,100
Install Centerline Rumble Strips	6.02	Mile	$2,000	$12,040
Post-Mounted Delineators	6.02	Mile	$5,000	$30,100
Long Term Improvements				
Item Description	Quantity	Unit	Unit Price	Item Cost
Pave 2' Shoulder with Safety Edge (Both Sides of Road - Includes Earthwork)	4.50	Mile	$150,000	$675,000
Install/Upgrade Guardrail with Reflectors	904	Foot	$85	$76,840
Flattening and Widening Foreslopes (Excludes Culvert Extensions)	6.02	Mile	$85,000	$511,700
Culvert Extensions	5	Each	$15,000	$75,000

Probable Cost	
Item Description	Item Cost
Short Term Improvements	$200,000
Longer Term Improvements	$1,339,000
Construction Subtotal	***$1,539,000***
Mobilization*	$75,000
Traffic Control (5% of Construction Subtotal)	$77,000
Contingency (20% of Construction Subtotal)	$308,000
Estimated Construction Cost	***$1,999,000***
PE Design (12% of Estimated Construction Cost)	$240,000
Utilities**	
ROW**	
CE (Inspection) (15% of Estimated Construction Cost)	$300,000
Estimated Project Total	**$2,539,000**

*Mobilization is 10% of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be considered by county as they move forward with design of the recommendations

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Project Description

The Fairmount Road project focuses on improving safety along a 3-mile corridor from K-7 to 163rd Street, which accommodates around 3,000 vehicles daily. Over the most recent 10 years of data (2013-2022), the corridor has seen 111 total crashes, including 2 fatalities, 6 disabling injuries, and another 31 minor or possible injury crashes.This corridor experiences a high rate of severe crashes, especially at intersections, including side-impact and sideswipe collisions. Contributing factors include narrow road width, minimal clear zones, and aggressive foreslopes that increase the risk of roadway departure, particularly near drop-offs and ditches.

Current issues such as unmarked edges and centerlines, loose aggregate, and inadequate lighting contribute to frequent nighttime crashes. While recent signage upgrades have been made, further improvements are necessary. Planned enhancements include installing rumble strips, upgrading guardrails, and flattening foreslopes to create safer recovery zones. These efforts aim to reduce fixed-object and intersection-related crashes along this busy corridor.

Next Steps

Evaluate opportunities to implement short-term improvements; many of these are relatively inexpensive and can be completed as maintenance is needed along the corridor. For example, the next time the roadway needs to be restriped, utilize a retroreflective paint and increase the edgeline width.

Coordinate with KDOT on any proposed improvements at the intersection with K-7.

Apply for funding for detailed design and construction. Suggested funding sources are provided below. Note that projects using federal funding will be required to conform to federal environmental review (NEPA).

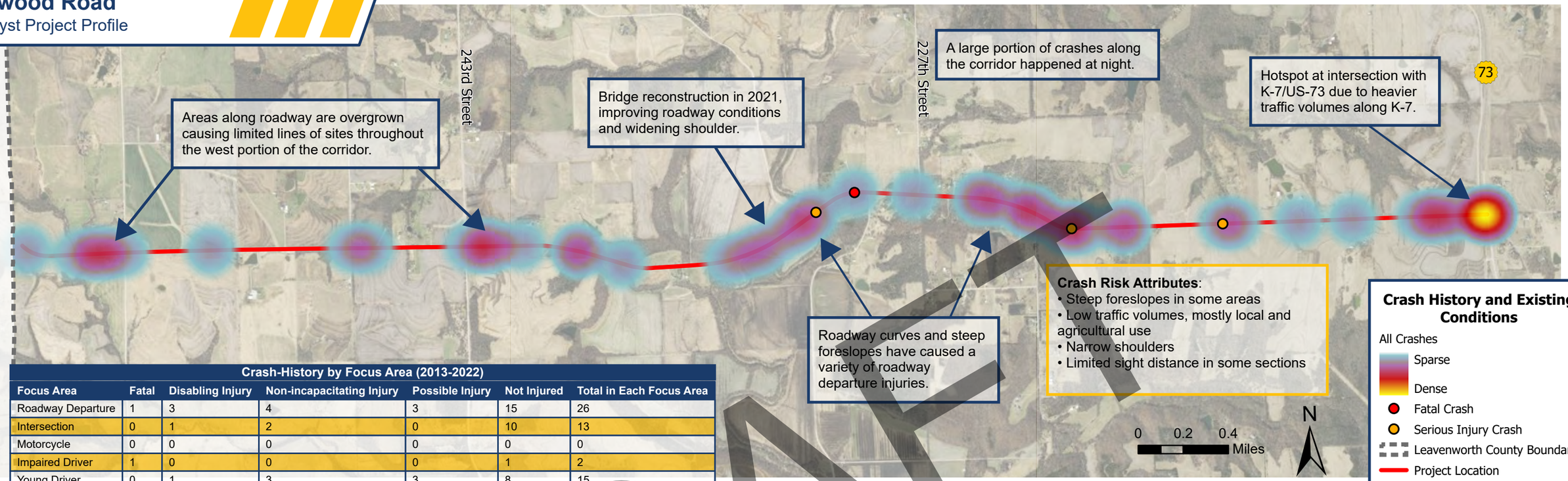
Potential Funding Sources

SS4A Implementation
KDOT High-Risk Rural Roads (HRRR)
KDOT Cost Share
KDOT IKE Programs
MARC Surface Transportation Block Grant (STBG)

Millwood Road

Catalyst Project Profile

Safety Issues



Crash-History by Focus Area (2013-2022)

Focus Area	Fatal	Disabling Injury	Non-incapacitating Injury	Possible Injury	Not Injured	Total in Each Focus Area
Roadway Departure	1	3	4	3	15	26
Intersection	0	1	2	0	10	13
Motorcycle	0	0	0	0	0	0
Impaired Driver	1	0	0	0	1	2
Young Driver	0	1	3	3	8	15
Total Crashes*	1	3	7	6	29	46

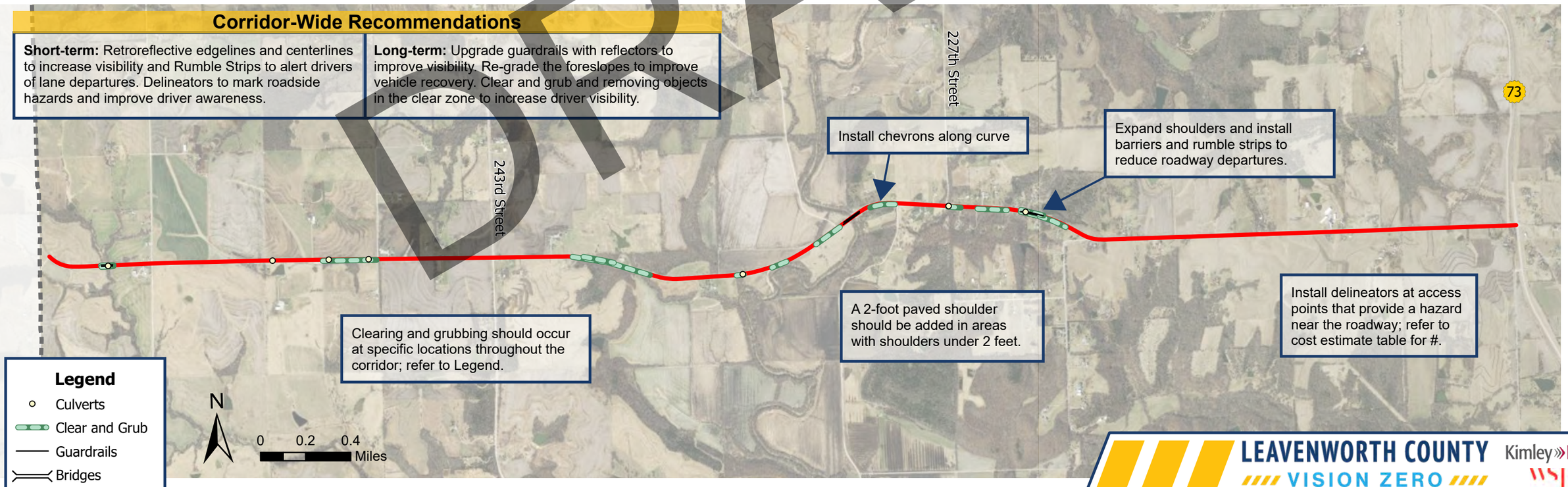
* Focus area crashes will not sum to the total number of crashes due to overlaps between focus areas.

Recommendations

Corridor-Wide Recommendations

Short-term: Retroreflective edgelines and centerlines to increase visibility and Rumble Strips to alert drivers of lane departures. Delineators to mark roadside hazards and improve driver awareness.

Long-term: Upgrade guardrails with reflectors to improve visibility. Re-grade the foreslopes to improve vehicle recovery. Clear and grub and removing objects in the clear zone to increase driver visibility.



LEAVENWORTH COUNTY VISION ZERO

Kimley»Horn

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Millwood Road - Cost Estimate Worksheet

LEAVENWORTH COUNTY VISION ZERO

Short Term Improvements				
Item Description	Quantity	Unit	Unit Price	Item Cost
Install 6" Retroreflective Edgeline (Both Sides of Road)	6.60	Mile	$6,000	$39,600
Install 4" Retroreflective Centerline	6.60	Mile	$3,000	$19,800
Delineate Roadside Hazards with Retroreflective Markers	40	Each	$100	$4,000
Clear and Grub (15 Feet Off Edge of Road)	1.67	Mile	$30,000	$50,100
Improve Edge Rut Conditions with Aggregate at Edge Drop-off Locations	6.60	Mile	$5,000	$33,000
Install Edgeline Rumble Strips	6.60	Mile	$5,000	$33,000
Install Centerline Rumble Strips	6.60	Mile	$2,000	$13,200
Post-Mounted Delineators	6.60	Mile	$5,000	$33,000
Review and Upgrade Curve Signage to Meet MUTCD and KDOT Standards	3	Curve	$1,000	$3,000
Install In-Lane Curve Warning Pavement Markings	3	Curve	$2,000	$6,000
Retroreflective Strips on Curve Signage	3	Curve	$500	$1,500
Long Term Improvements				
Item Description	Quantity	Unit	Unit Price	Item Cost
Remove/Relocate Fixed Objects in Clear Zone	1	Each	$1,000	$1,000
Pave 2' Shoulder with Safety Edge (Both Sides of Road - Includes Earthwork)	6.60	Mile	$150,000	$990,000
Install/Upgrade Guardrail with Reflectors	2,306	Foot	$85	$196,010
Flattening and Widening Foreslopes (Excludes Culvert Extensions)	6.60	Mile	$85,000	$561,000
Culvert Extensions	7	Each	$15,000	$105,000

Probable Cost	
Item Description	Item Cost
Short Term Improvements	$236,000
Longer Term Improvements	$1,853,000
Construction Subtotal	***$2,089,000***
Mobilization*	$75,000
Traffic Control (5% of Construction Subtotal)	$104,000
Contingency (20% of Construction Subtotal)	$418,000
Estimated Construction Cost	***$2,686,000***
PE Design (12% of Estimated Construction Cost)	$322,000
Utilities**	
ROW**	
CE (Inspection) (15% of Estimated Construction Cost)	$403,000
Estimated Project Total	**$3,411,000**

*Mobilization is 10% of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be considered by county as they move forward with design of the recommendations

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Project Description

The Millwood Road project addresses safety challenges along a 6.64-mile rural corridor from K-7 to the Leavenworth County border, which sees around 600 vehicles daily. Over the most recent 10 years of available data (2013-2022), the corridor has seen 46 total crashes, including 1 fatality, 3 disabling injuries, and another 13 minor or possible injury crashes. This corridor experiences a high rate of roadway departure crashes, particularly in low-light conditions, due to narrow lanes, minimal shoulders, steep foreslopes, and limited clear zones. These factors, combined with sharp curves and overgrown vegetation obstructing signage, contribute to frequent single-vehicle crashes, including overturns.

While a bridge reconstruction in 2020/2021 resolved some structural concerns, further safety improvements are necessary. Planned enhancements include edge line rumble strips, guardrails with reflectors, and high-friction surface treatments. These measures aim to reduce roadway departures and improve overall driver safety along Millwood Road.

Next Steps

Evaluate opportunities to implement short-term improvements; many of these are relatively inexpensive and can be completed as maintenance is needed along the corridor. For example, the next time the roadway needs to be restriped, utilize a retroreflective paint and increase the edgeline width.

Apply for funding for detailed design and construction. Suggested funding sources are provided below. Note that projects using federal funding will be required to conform to federal environmental review (NEPA).

Potential Funding Sources

SS4A Implementation
KDOT High-Risk Rural Roads (HRRR)
KDOT Cost Share
KDOT IKE Programs
MARC Surface Transportation Block Grant (STBG)

Appendix F.

Funding Sources

APPENDIX F: FUNDING SOURCES MATRIX

Regional Level Funding Sources

These generally represent Federal formula-based funding to jurisdictions in the greater Kansas City metro area that MARC has discretion to allocate (via competitive applications).

Program	Typical Projects	Example Local Projects	Amounts / Funding Pool	Local Match Requirement	Notes	Leavenworth County Eligibility	Next Call for Projects
Transportation Safety	Non-infrastructure projects: • Youth / older driver outreach programs • Emergency response: Stop the Bleed training • Enforcement: message boards, handheld RADAR	• KDOT Seatbelts Are For Everyone (SAFE) program • Buckle Up Phone Down (BUPD) program	$100 to $30,000 Avg $11,000	N/A	Law enforcement equipment eligible if agency actively participates in KDOT STEP program	Yes	Early 2025
Planning Sustainable Places	Planning studies (prior to detailed design and environmental review), with a focus on placemaking, multimodal connections, and green infrastructure	• Leavenworth County Transit Plan • Basehor Downtown Corridor • Improvement Plan • Mission City-Wide Bike/Pedestrian and Trail Connections Study • Rainbow Boulevard Complete Street Plan	Historically $50,000 to $300,000	Likely 20%	Leavenworth County Priorities for Progress (P4P) CIP Prioritization effort suggested two potential PSP studies for the County; could tailor Vision Zero elements within each of these.	Yes	Agencies submit in 2026; consultant selections late 2026 – early 2027
Carbon Reduction Program	Planning / Design / Implementation: • Public transit projects • Bike / pedestrian / non-motorized facilities and micro-mobility projects • Green infrastructure in transportation rights-of-way • Energy-efficient street lighting and traffic control devices • Alternative fuel projects	• Platte County Running Horse Road and NW 136th Street shared use path extension and crosswalk • Northeast KCK Heritage Trail • City of Gardner Traffic Signal Interconnect along US-56 and Moonlight Road Corridors • North Kansas City Burlington cycle track	Approx. $2 million annual pool for Kansas jurisdictions in MARC region (approx. $10 million over 5 years) FY 23 awards in KS range from $100,000 to nearly $1.5 million, with most under $500,000	20%	New BIL program that MARC allocates FY 2022-2024 program is from FY 23 awards FY 2025-2026 program will come from FY 24 awards No jurisdictions within Leavenworth County applied in FY 23.	Yes	Agencies submitted in 2024 for FY 2025-2026 projects
Congestion Mitigation Air Quality (CMAQ)	Projects intended to reduce air pollution, often through congestion mitigation techniques: • Alternative fuel vehicles / charging infrastructure • Bike / ped facilities • Outreach / promotional activities to reduce vehicle trips • Traffic flow projects that reduce delay but without adding capacity • Transit projects	• Operation Green Light (OGL) signal enhancements • Bikeshare expansion in Wyandotte County	Total cost of at least $50,000 for capital or operating projects and $25,000 for programs Historically $100,000 to more than $2 million	20%	Program specifically applies to Air Quality Attainment areas in urban areas; Leavenworth County is not part of this area for the Kansas City metro region.	No	N/A

Program	Typical Projects	Example Local Projects	Amounts / Funding Pool	Local Match Requirement	Notes	Leavenworth County Eligibility	Next Call for Projects
Surface Transportation Block Grant (STBG)	Roadway projects on federal-aid highway system, capital improvements for public transportation, and multimodal projects	• 155th Street Improvements in Basehor	Historically $500,000 to more than $10 million	20%		Yes	Most recent call for projects was in early 2024
STBG Set-Aside for Transportation Alternatives (TA)	Smaller projects including bike / facilities and trails, historic preservation and vegetation management, environmental mitigation	• Vilas Street ADA and Sidewalk Upgrades in Leavenworth • Parallel Road and 158th St Bike/Ped Improvements in Basehor • Basehor Civic Campus Trails	Typical projects of less than $500,000	20%	County is newly eligible under analogous KDOT TA program; areas in SE portion of County including Basehor have been proposed to be incorporated into the urbanized region in 2024	Yes	Most recent call for projects was in early 2024

State Level Funding Sources

This represents funding that KDOT provides for individual projects, including state-funded programs and federal programs that KDOT has discretion to allocate.

Program	Typical Projects	Example Local Projects	Amounts / Funding Pool	Local Match Requirement	Notes	Leavenworth County Eligibility	Next Call for Projects
Safe Routes to School (SRTS)	Non-construction projects: • SRTS master plan development • Education/programming	• City of Manhattan 2023 SRTS Plan (USD 383) • City of Plainville 2023 SRTS Plan (USD 270)	No max on SRTS master plans Up to $50,000 for activities / programs	None for 2024 - KATE state funds will cover the 20% match	Lansing and Leavenworth Cities have completed SRTS plan in the 2007-2015 timeframe, but nothing else has been completed in Leavenworth County	Yes	Early 2025 (Likely)
Transportation Alternatives (TA)	Construction projects (including PE/CE): • On/off-road bike/ped facilities • Improvements for non-driver access to public transportation / enhanced mobility • Planning / designing / constructing boulevards in ROW of former highways • Scenic / environmental / historic applications	• Osawatomie John Brown South Levee Loop Connection Trail • Vilas Street ADA and Sidewalk Upgrades in City of Leavenworth • Redbud trail - connection to City of Augusta	Approx. $30 million annual pool for Kansas jurisdictions outside of MARC / WAMPO urbanized areas Historically $500,000 to more than $2 million	20%; except for specific projects that qualify for HSIP funding to cover local match (locations identified through VRU assessment specifically in rural / disadvantaged areas)	**New for 2024: non-urbanized communities in MARC region are eligible, including Leavenworth County**	Yes	Early 2025 (Likely)
Cost Share	Flexible program intended for construction projects that improve safety, support job retention and growth, improve access / mobility, and/or relieve congestion. All transportation projects are eligible - roadway, rail, airport, bike/ped, and public transit.	• Leavenworth County 235th Street roadway improvements • Shawnee County SW Auburn Road and SW 29th Street improvements • Osawatomie 6th Street reconstruction	Historically approx. $12 million per bi-annual round $1 million max award	15% non-state	Only funds construction (no PE)	Yes	Early 2025 (Likely) Opens 2x per year (fall / spring)
Innovative Technology	Deployments of technology that does not currently exist in the local community of the project; includes projects along roadways (including off-state system), rail, aviation, unmanned aerial systems, bike / ped, public transit, software, and hardware; intended for technology investments and not on road construction or "commonly used technology" such as fiber optic lines.	• Little River pedestrian warning system with radar speed signs • Havensville digital speed sign • Johnson/Wyandotte County microtransit integration	$2 million per year total funding; no more than $1 million per project	25% non-state		Yes	Fall 2025
High-Risk Rural Roads (HRRR)	Signing, pavement marking, and rumble strips for rural roads with a history of crashes; a road's crash rate must be higher than the statewide average or the potential for the crash rate to increase to higher than the statewide average.	• Leavenworth County Tonganoxie Road 187th to 189th and 199th to Mitchell	Historically $1 to $2 million per project	10%	Limited to functional classification of rural major collectors / minor collectors / local roads. County Local Road Safety Plans are intended to facilitate identification and prioritization of projects	Yes	Annual

Program	Typical Projects	Example Local Projects	Amounts / Funding Pool	Local Match Requirement	Notes	Leavenworth County Eligibility	Next Call for Projects
Other HSIP Programs	8 programs managed by KDOT: • Lighting, Pavement Marking, and Guardrail are exclusive to the state highway system • Intersections and General Safety Improvement may include off-system local roads HRRR is one of these programs and is exclusive to local collectors	Examples statewide include adding traffic signal heads, improving retroreflectivity, horizontal curve lighting, intersection realignments	Nearly $50 million in total was authorized in FY 2022 across the 8 sub-programs		Competitive application process for each sub-program	Yes	
Access Management	Projects to manage access and increased traffic caused by future development		Up to $2 million per project	0%, but only for construction phase; PE / ROW / utilities / CE not eligible	Projects must support a Corridor Management Plan, Access Management Plan, Area Transportation Plan, or Corridor Master Plan; this likely applies to US 24/40 between Tonganoxie and Basehor	Yes	Throughout the year
City Connecting Link Improvement Program (CCLIP)	Projects on the state highway system located within the corporate limits of a city: • Surface preservation • Pavement restoration • Geometric improvements	• Leavenworth received $400,000 for surface preservation for FY 2025	Up to $1.5 million per project	0-25% depending on city population size		No	Unclear
IKE Program - Modernization	• Narrow shoulders, unsafe intersections, tight curves • Traffic congestion • Pavement issues	• K-92 reconstruction in Wabaunsee County including turn lanes / guard rail replacement • K-10 / US 40 diverging diamond interchange	$5.6 billion over 10 years, including $1.8 billion for District 1		2-year rolling program Local consult process for localities and residents to express priorities Projects first enter development pipeline (preliminary engineering) and then some move on to construction pipeline	Yes	Fall 2025
IKE Program - Expansion	Projects adding capacity - new lanes, new interchanges, new highways	• K-92 Centennial Bridge replacement in City of Leavenworth • K-10 South Lawrence Trafficway				Yes	
IKE Program - Preservation	Major maintenance projects to improve pavement condition and geometrics/safety	• K-92 recycle and seal in Leavenworth County • K-5 mill and overlay in Leavenworth County • ADA curb ramps and signal improvements in Tonganoxie			Selected using an objective formula based on geometrics/safety, capacity, and pavement condition	Yes	

Federal Level Funding Sources

This section covers USDOT competitive grants. There are dozens of grants available, including many new programs from the Bipartisan Infrastructure Law (BIL).

Program	Typical Projects	Example Local Projects	Amounts / Funding Pool	Local Match Requirement	Notes	Leavenworth County Eligibility	Next Call for Projects
SS4A: Safe Streets and Roads for All Supplemental Planning & Demonstration	• Supplemental Planning: funding for additional safety planning (beyond an Action Plan) for speed management, VRUs, safety focused ITS, or lighting; road safety audits; follow-up data collection/analysis; further engagement • Demonstration Activities: quick-build / low-cost temporary safety improvements to determine potential benefits; MUTCD engineering studies; pilot behavioral / operational programs	• Pinellas County, FL: Follow up analysis of toxicology data to identify trends, conditions, and policy recommendations to mitigate DUI crashes. Testing of RRFBs, education/enforcement campaigns, and physical barriers • Columbia, MO: Conduct roadway safety audits and test high-friction surface treatments at a targeted intersection, a municipal traffic offender pilot program, and a behavior modification pilot program • Macomb Couty, MI: pilot of video analytic platforms to identify safety issues at signalized intersections	$100,000 to $10 million range Typical supplemental planning / demonstration activities are $500,000 to $1 million	20%; *KDOT currently providing 10% or more depending on need*	Can apply while working on an Action Plan	Yes	Early 2025
SS4A: Safe Streets and Roads for All Implementation	Design and implementation of specific safety projects and strategies, including corridor improvements and off-road bike / ped facilities	• Independence, KS: Proven Safety Countermeasures along High-Injury Network (ped enhancements, ADA improvements, speed management, etc.) • Fayette County, IA: Shoulder Widening, Rumble Strips, and Low-Cost Countermeasures Along 50 Miles of Roadway • Mackenzie County, ND: enhanced pavement markings, signing improvements, shoulder and centerline rumble strips, streetlights, signing improvements, and a separate bike/ped path • Casper, WY: to improve pedestrian safety through lighting infrastructure Virginia Beach: Regional Bike/Ped Trail	$2.5 million to $25 million Average award size through FY 23 has been approximately $21.5 million	20%; *KDOT currently providing 10% or more depending on need*	Must have an approved Action Plan in order to apply	Yes	Early 2025
RAISE: Rebuilding American Infrastructure with Sustainability and Equity (Formerly TIGER / BUILD)	Major projects with a significant local or regional impact, especially improving accessibility for all modes and located in federally designated historically disadvantaged communities or areas of persistent poverty. Grants provided for (1) Planning and (2) Capital Improvements	• Planning: Bi-State Sustainable Reinvestment Corridor through KCK/KCMO/Independence ($5.6M) • Capital: Flint Hills Trail project ($24.8M), Old Smoky Hill River Bridge Replacement in Salina ($22.1M)	Maximum award of $45 million	As low as 0%	Typically require active support from elected officials including US Congress	Yes	Early 2025 (Likely)

Refer to the Kansas Infrastructure Hub for additional Federal Discretionary Grant Opportunities within the BIL. The Hub also provides technical assistance, collaboration, grant tracking, and financial match support via the Build Kansas Fund.