KENTUCKIANA REGIONAL SAFETY ACTION PLAN

On the Road to Safety, Every Life Counts

Shepherdsville, KY

Safety Action Plan

6/25/2025

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Contributors

KENTUCKIANA REGIONAL PLANNING & DEVELOPMENT AGENCY (KIPDA)

Andy Rush	Transportation Director
Mick Logsdon	Transportation Planner
Spencer Williams	Transportation Planner

SHEPHERDSVILLE

Arthur Jones	City Engineer, City of Shepherdsville
Mark Timperman	Shepherdsville Police Department
Scott Fleming	Operations Manager, City of Shepherdsville

Introduction

In 2023, Shepherdsville, in collaboration with the Kentuckiana Regional Planning & Development Agency (KIPDA) and 15 other participating cities and counties, applied for and successfully received the Safe Streets and Roads for All (SS4A) Action Plan Grant. The SS4A Action Plan Grant is a vital component of the broader federal SS4A initiative to improve road safety across the United States. The goal of the SS4A Program is to create a safer transportation network by supporting the development and implementation of comprehensive safety plans that are data-driven and community-focused.

Shepherdsville is dedicated to working towards a goal of zero traffic deaths and serious injuries by 2050. To reach this objective, a clear focus on prioritizing safety for all road users is essential. The Shepherdsville Safety Action Plan addresses the seven key safety components outlined in the SS4A Program. Each component is a chapter in the Safety Action Plan.

- Leadership Commitment and Goal Setting
- Planning Structure
- Safety Analysis
- Engagement and Collaboration
- Policy and Process Changes
- Strategy and Project Selections
- Progress and Transparency

Safe System Approach

The Safe System Approach is a comprehensive approach based on the understanding that humans are fallible and make mistakes, but those mistakes should not result in fatalities or serious injuries. There are five broad impact areas for achieving this goal: **Safer People, Safer Vehicles, Safer Speeds, Safer Roads, and Post-Crash Care**. This approach significantly expands the traditional safety plan focus on roadway infrastructure. Six key principles undergird the approach.

Safe System Key Principles

Death and Serious Injuries are Unacceptable: Every human life is invaluable, and ensuring safety is the highest priority.

Humans Make Mistakes: Recognizing that human error is inevitable, we design and manage our roads to be forgiving, mitigating the potential consequences of these errors to prevent serious harm.

Humans are Vulnerable: We design the roadway system to account for the biological limits the human body can tolerate in a crash.

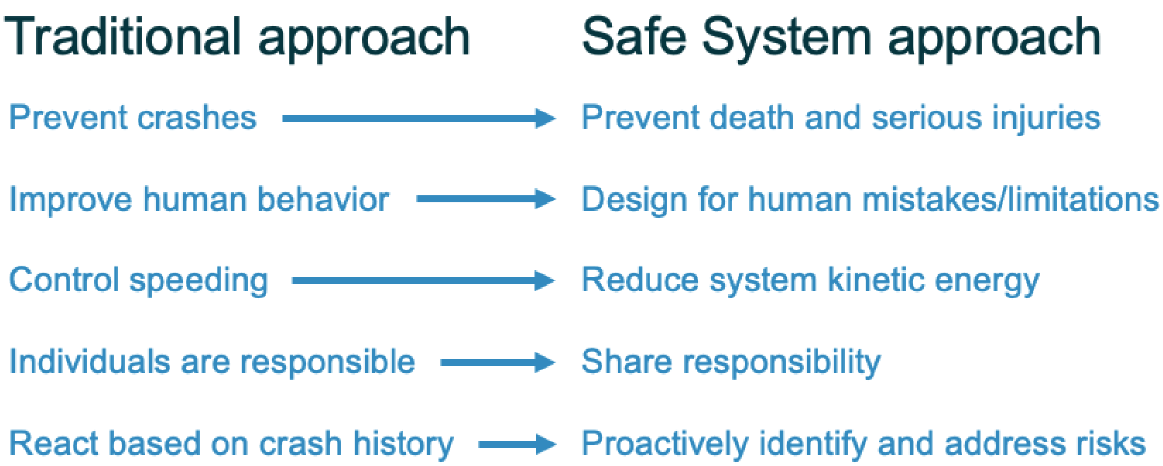
Responsibility is Shared: Preventing fatal and serious injuries is a shared responsibility. All stakeholders must work together to enhance road safety.

Safety is Proactive: Taking a proactive stance on safety means anticipating and addressing risks before they result in crashes. Being proactive involves identifying potential hazards and implementing measures to mitigate them.

Redundancy is Crucial: Embedding multiple layers of safety within the transportation system is important, so that if one layer fails, others can still protect people. This redundancy is vital for creating a resilient transportation network.

Safe System Approach vs Traditional Approach

The traditional approach to road safety often relies on perfect human behavior from all road users and tends to react to crashes *after* they occur, focusing on individual accountability. In contrast, the Safe System Approach acknowledges that humans are fallible and will inevitably make mistakes. This approach builds a system designed to minimize the severity of crashes resulting from those errors. This shift from an individual-focused model to a system-centric one highlights all stakeholders' shared responsibilities. The comparative graphic below illustrates this fundamental shift, showcasing how the Safe System Approach aims to create a safer, more forgiving transportation system.



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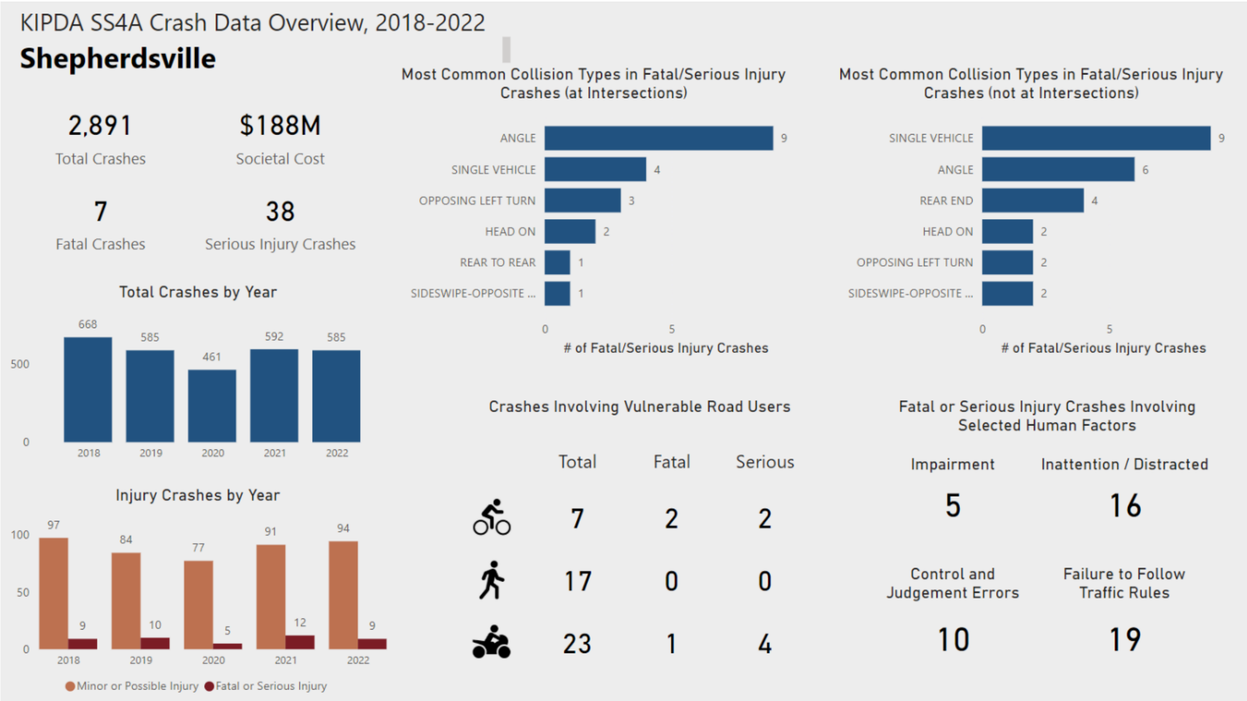
Overview

Shepherdsville had 7 fatal crashes and 38 serious injury crashes during the five-year period from 2018 to 2022, for a total of 45. There were 2,891 total crashes during this time. The total societal cost of all crashes was $188 million (including economic and quality of life factors). The figure below provides an overview of the crash data.



- Angle Crashes were the most common collision type for those crashes that were fatal or caused serious injury – with a total of 15
- 4 of 45 fatal or serious injury crashes involved a pedestrian or a cyclist
- 16 fatal or serious crashes between 2018-2022 involved a driver who was distracted
- 19 fatal or serious crashes involved a failure to comply with existing traffic rules

1. Leadership Commitment and Goal Setting

Shepherdsville is dedicated to ensuring safety for all users that utilize its streets and roads. The community's commitment is demonstrated by the resolution on the following page, which states that its leaders have established the goal of "achieving zero traffic fatalities and serious injuries by the year 2050."

The 2015 Bullitt County Comprehensive Plan, adopted with Shepherdsville, is implemented through the coordinated efforts of the County Planning Commission, local government officials, and community stakeholders. Goal III in the comprehensive plan states, "A safe transportation system should be provided," and it goes on to discuss an objective related to reducing crashes. The plan also emphasizes the importance of access management and installing pedestrian and bicycle facilities.

The current draft of the Bullitt County Comprehensive Plan, which is expected to be adopted later this year, continues to emphasize safety. It sets the following goal: "Prioritize and implement road safety projects and policies to minimize crashes and support the County's Safe Streets for All (SS4A) plan."

CITY OF SHEPHERDSVILLE

RESOLUTION 2024-014

A RESOLUTION OF THE CITY OF SHEPHERDSVILLE IN SUPPORT OF VISION ZERO

WHEREAS, the USDOT has developed a discretional grant program to address roadway safety through the Safe Street and Roads for All (SS4A) program and the CITY OF SHEPHERDSVILLE, KY was awarded a SS4A grant; and

WHEREAS, through the adoption and implementation of the BULLITT COUNTY Comprehensive Plan, the CITY OF SHEPHERDSVILLE, KY established improving safety of its transportation system as one of the community goals; and

WHEREAS, the CITY OF SHEPHERDSVILLE, KY aspires to reduce and eventually eliminate traffic related fatalities and serious injuries on its roadways; and

WHEREAS, the CITY OF SHEPHERDSVILLE, KY is moving toward implementation of the AA4A grant through the efforts of developing various reports from data analysis and a community engagement program to identify safety improvement projects.

NOW, THEREFORE BE IT RESOLVED that THE CITY OF SHEPHERDSVILLE, KY hereby establishes a goal of achieving zero traffic fatalities and serious injuries by the year 2050.

Adopted by a vote of 6 in favor, 0 against, 0 abstention, this 9th day of September 2024.

José Cubero Mayor, City of Shepherdsville

September 9, 2024
Date

Attest:
Brenda Weidekamp, City Clerk, City of Shepherdsville

September 9, 2024
Date

2. Planning Structure

The planning structure for the City of Shepherdsville Safety Action Plan consisted of various committees, each playing a crucial role. The following describes these bodies and their collaborative efforts in the development of the plan.

Regional Steering Committee

The Regional Steering Committee provided oversight and strategic direction for the Safety Action Plan development process. The Committee was composed of representatives from 16 local government agencies, including Shepherdsville. It also included KIPDA staff. Steering Committee meetings were held at key points to provide information and gather input and feedback. Topics covered during the meetings included:

- Purpose of safety action plans
- Data collection and safety analysis
- Identification of high crash highways and intersections
- Countermeasure identification and prioritization
- Documentation and implementation opportunities

Shepherdsville Leadership Meetings and Plan Review

Meetings were held with city and county leadership at two key points during the plan development to receive and relay detailed input and feedback. The first meeting focused on presenting the initial data analysis and prioritization of needs, allowing leadership to identify, confirm, and prioritize critical safety issues. The second meeting gave leadership the opportunity to provide feedback on the draft High Injury Network (HIN) and potential safety countermeasures. These interactions allowed the unique concerns and priorities of Shepherdsville to be adequately addressed in the plan.

The final Safety Action Plan was also reviewed by leadership to provide feedback and yield a plan that is useful for moving Shepherdsville forward toward a safer future.

Safety Committee Meetings

The Safety Committee is the cornerstone of the planning structure, providing localized oversight and input into the plan. The Safety Committee also provides a means of continuing the safety planning and project implementation process in the future. The Committee consisted of a multidisciplinary team comprising key stakeholders from the community, including:

- City of Shepherdsville Mayor
- City of Shepherdsville Police Department
- Bullitt County Chief Financial Officer / Community Development

- Bullitt County Emergency Management Services
- Bullitt County Emergency Management Agency
- Bullitt County Planning
- Bullitt County Sheriff's Office
- Engineering Department, City of Shepherdsville
- Shepherdsville Office of Code Enforcement
- Kentuckiana Regional Planning & Development Agency (KIPDA) staff

The Safety Committee provided advice and feedback on the plan development, and is intended to continue this advisory role as the plan moves into implementation and monitoring. The Committee provided input and feedback on potential safety needs and possible reactive and systemic safety countermeasures. Having many different perspectives and agencies in the meetings facilitates effective communication and results in a more effective safety action plan that better addresses the five elements of the Safe System Approach. A detailed review of the Safety Committee Meetings is provided in **Chapter 4. Engagement and Collaboration.** The dialogue is expected to continue in the future, facilitated by KIPDA staff, as the plan is implemented, updated, and enhanced over time.

3. Safety Analysis

Study Area

The study area for the safety analysis includes the entirety of Shepherdsville, Kentucky, as shown in Figure 3-1. This study includes all public streets and roads within the city, with the exception of Interstate 65 (I-65). Private owned facilities, parking lots, and I-65 are not included in the study.

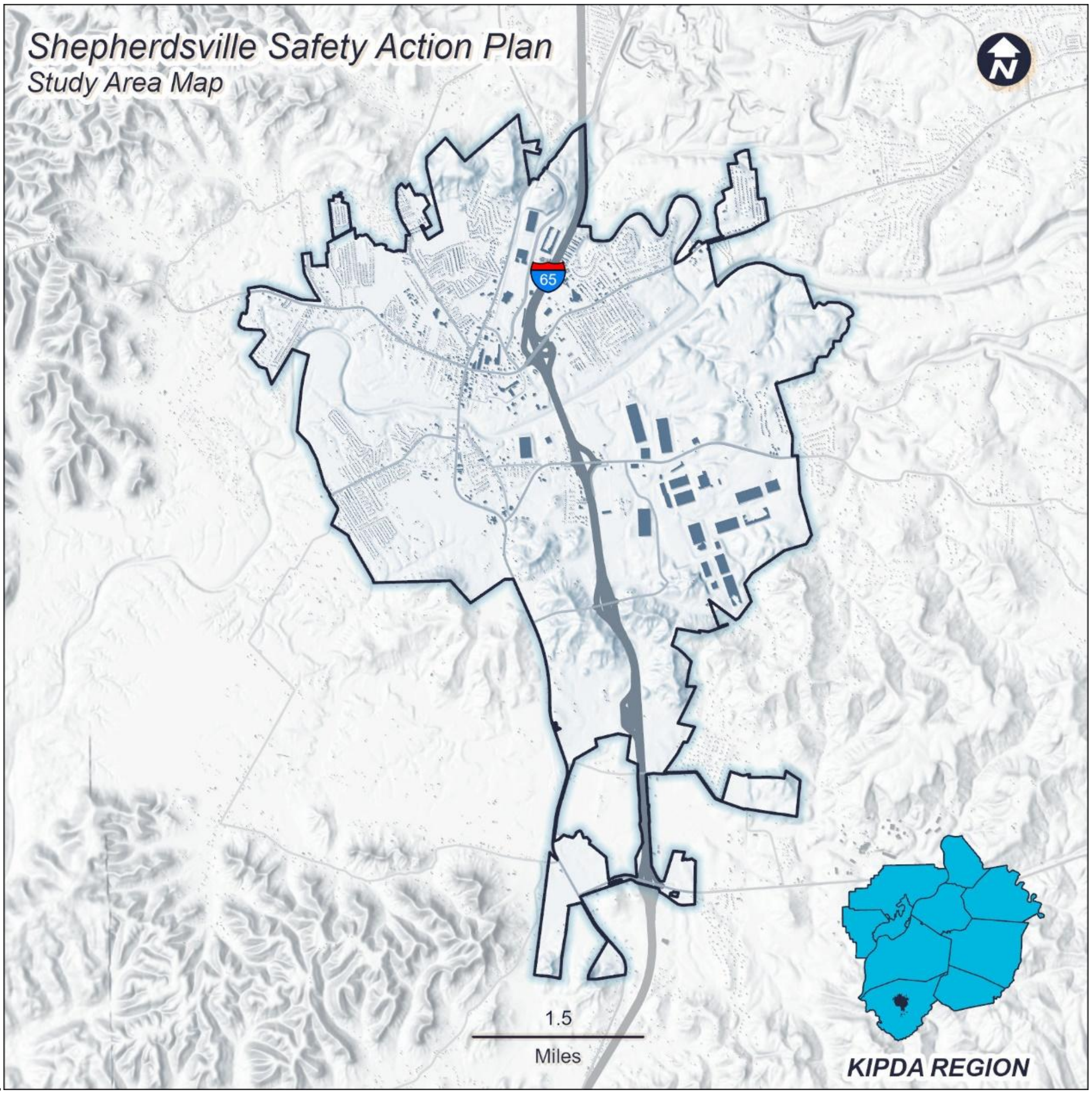


Figure 3-1. Study Area

Crash Data

The safety analysis was conducted using the five years of crash data between 2018 and 2022. This period was selected based on the desire to study consistent crash trends over a consecutive period, the availability of data when the project started, and expectations regarding future funding application data requirements.

The project team obtained the crash data from the Kentucky State Police (KSP) Crash Database through a custom dataset provided by the Kentucky Transportation Cabinet (KYTC) in partnership with the Kentucky Transportation Center (KTC). This data is primarily collected by city, county, and state police department crash investigation teams when they complete a Kentucky Uniform Police Traffic Collision Report form. This form captures critical information about the crashes, including location, type, severity, individuals and units involved, environmental factors, and the contributing factors of each crash. Departments enter this information into a database maintained by KSP.

The initial crash data collected from KYTC included crashes across Shepherdsville from 2018 to 2022. Crashes located in parking lots were removed from the dataset. Additionally, some crashes could not be linked to the GIS roadway due to missing information. After these adjustments, the final crash database used for the study was 2,891 crashes.

This report focuses on crash events based on the most severe injury sustained in each incident. Since the analysis is event-based rather than individual-based, a single crash involving multiple injuries is counted as one event, categorized by the highest severity level recorded. Pedestrian crashes involve at least one pedestrian and one motor vehicle. Similarly, bicycle crashes refer to crashes involving at least one bicycle and one motor vehicle. Vehicle crashes involve at least one vehicle and do not involve a pedestrian or a bicycle.

KYTC provided geographic information system (GIS) files of roadway characteristics and traffic data for state-owned roadways, known as the Highway Information System (HIS) database. The crash data was joined with GIS information to create a crash database that facilitates detailed analyses to identify crash trends, areas of opportunity, and risk factors to assist in prioritizing projects.

Crash Severity

The crash database provided by KYTC uses the KABCO Injury Classification Scale. The KABCO injury classification system categorizes traffic crash injuries into five levels: Fatal (K), Suspected Serious (A), Suspected Minor (B), Possible (C), and No Apparent Injury (O). The KABCO scale is the recommended best practice for individual injury reporting by the Model Minimum Uniform Crash Criteria (MMUCC), developed by the National Highway Traffic Safety Administration (NHTSA). KSP uses the KABCO scale and MMUCC during field data collection and reporting the injury severity of a crash. Crash severity is determined by the most severe injury occurring in the crash. For example, if a fatality occurs, the crash is classified as a “K” or fatal injury crash. Table 3-1 provides a breakdown of the crashes in Shepherdsville by severity.

Severity	MMUCC Severity Description	Crashes (2018-2022)	%
K	Fatal Injury	7	<1%
A	Suspected Serious Injury	38	1%
B	Suspected Minor Injury	206	7%
C	Possible Injury	237	8%
O	No Apparent Injury	2,403	83%
	Total	**2,891**	

Table 3-1. Crashes by Severity

The following map shows the location of all 2,891 crashes documented during the study period. The density of crashes is shown with a gradient scale. The highest number of crashes during the study period occurred in the heart of Shepherdsville. Figure 3-3 shows the location of the fatal and suspected serious injury crashes.

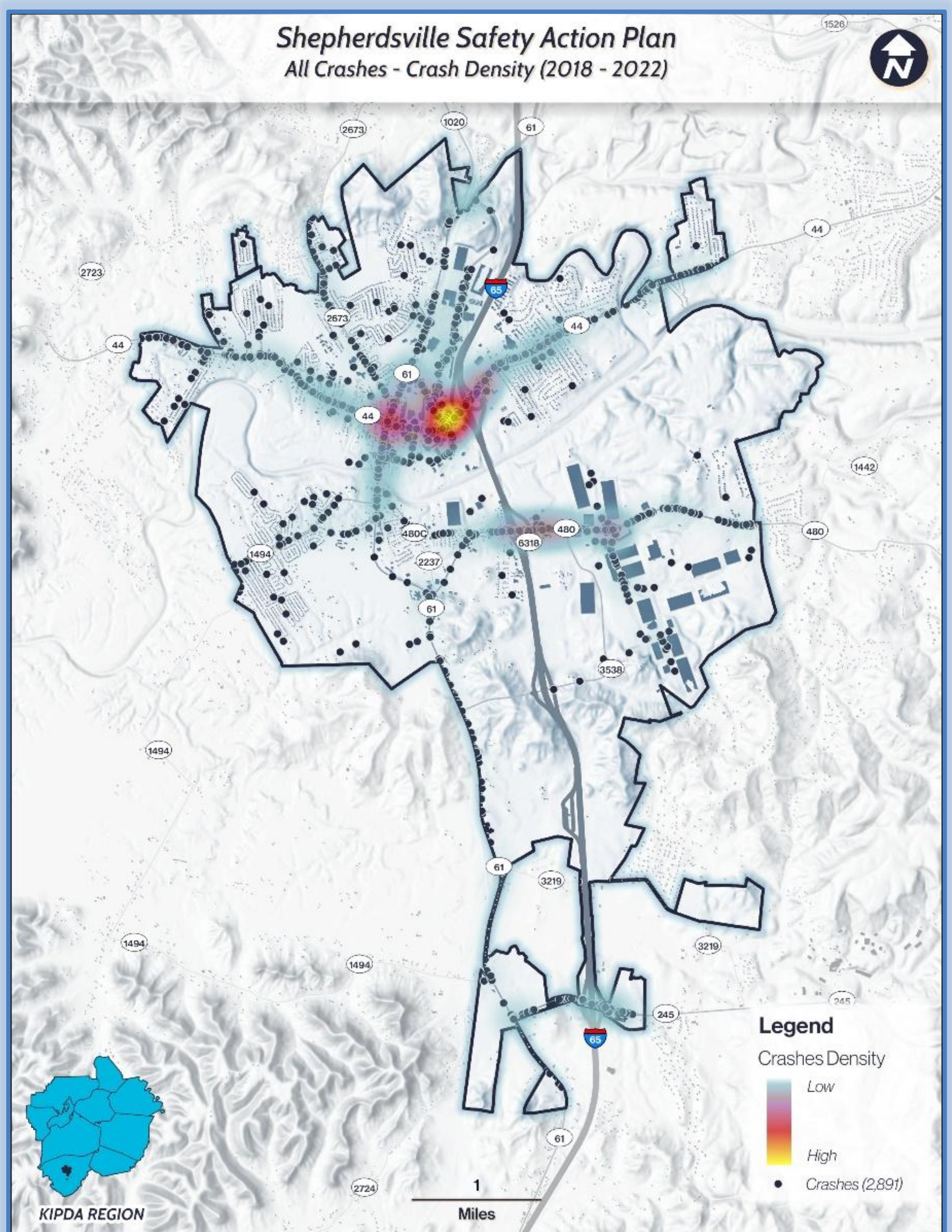


Figure 3-2. Crash Density Map

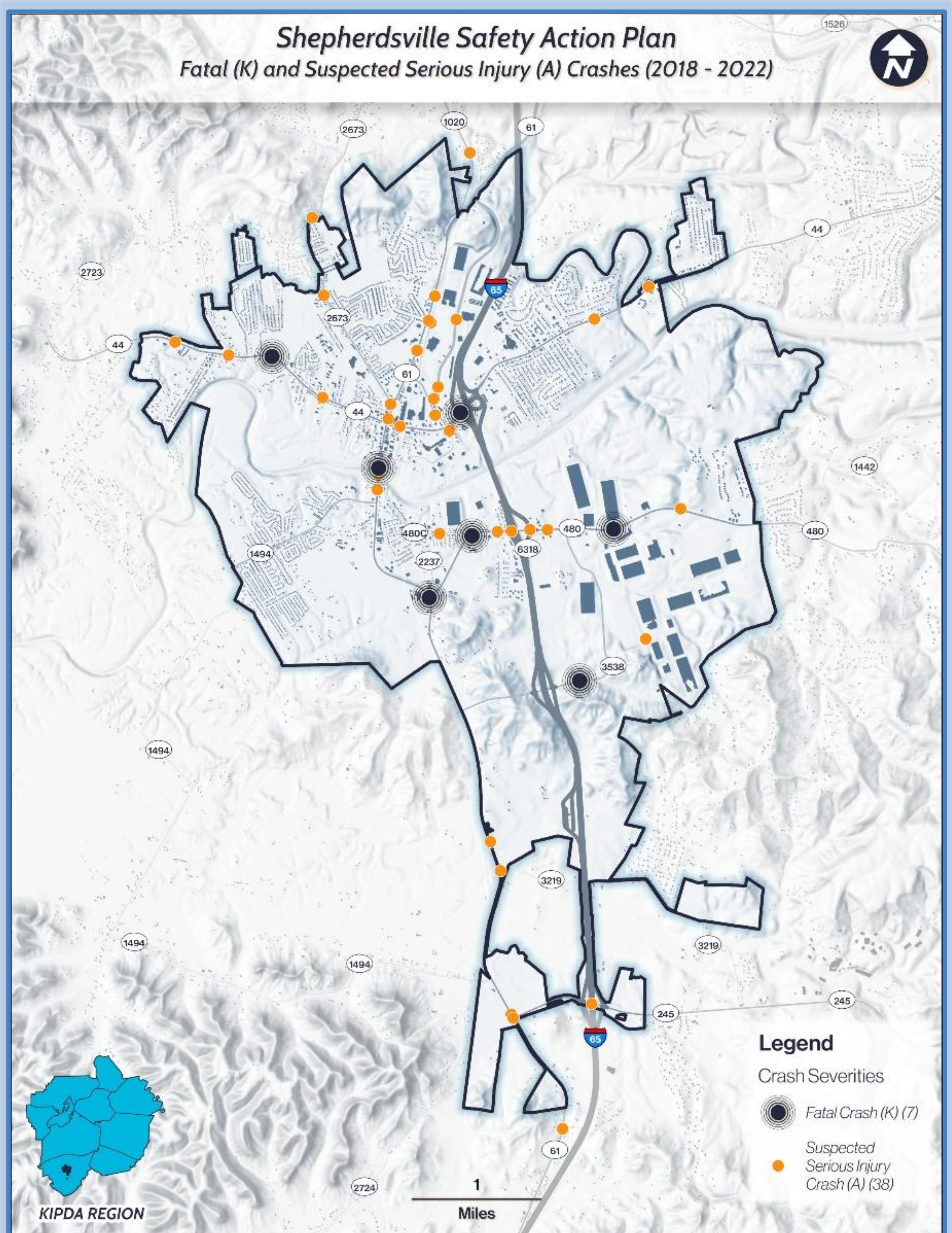


Figure 3-3. Fatal and Suspected Serious Injury Crash Map

Crash Trends

The crash data has been examined considering a number of different factors to identify patterns and safety needs. This trend analysis also provides information about potential safety countermeasures and approaches that could be explored to address those needs.

Annual Crash Trends

The 2018-2022 crash analysis for Shepherdsville reveals a slight downward trend in overall crashes over the five-year period, with a slight decrease in 2020. This is summarized in Figure 3-4. The COVID-19 pandemic greatly affected traffic patterns and crash reporting. In early 2020, police operating procedures were modified to minimize potential exposure. Consequently, the reported number of crashes in 2020 is likely distorted, as crashes were underreported.

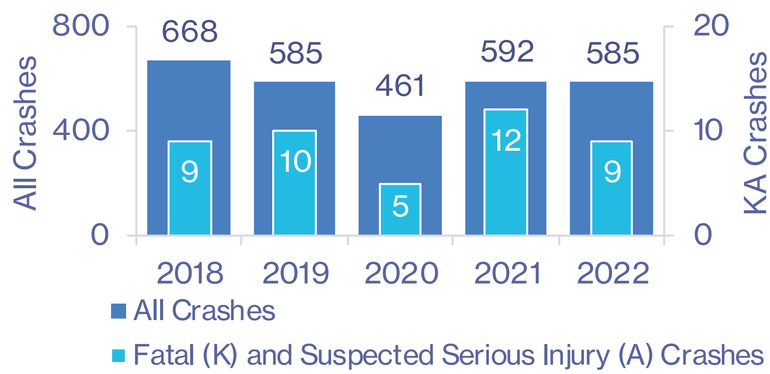


Figure 3-4. Overall Crashes per Year

The above figure shows that the fatal and suspected serious injury crashes remained relatively consistent, except for the decrease in 2020.

Crash Occurrence

Month

The following charts present the crashes by month over the 5-year study period. The monthly crash data shows notable variations in the severity of crashes throughout the year. While the total number of crashes is consistent, June and October exhibit significantly higher percentages of fatal and suspected serious injury crashes, with 16% and 20%, respectively, despite accounting for only 9-10% of all crashes. In contrast, the months of March and April have lower severity rates, with only 2% of fatal and serious injury crashes each, despite accounting for 8% of all crashes. There were no fatal or suspected serious injury crashes reported in January.

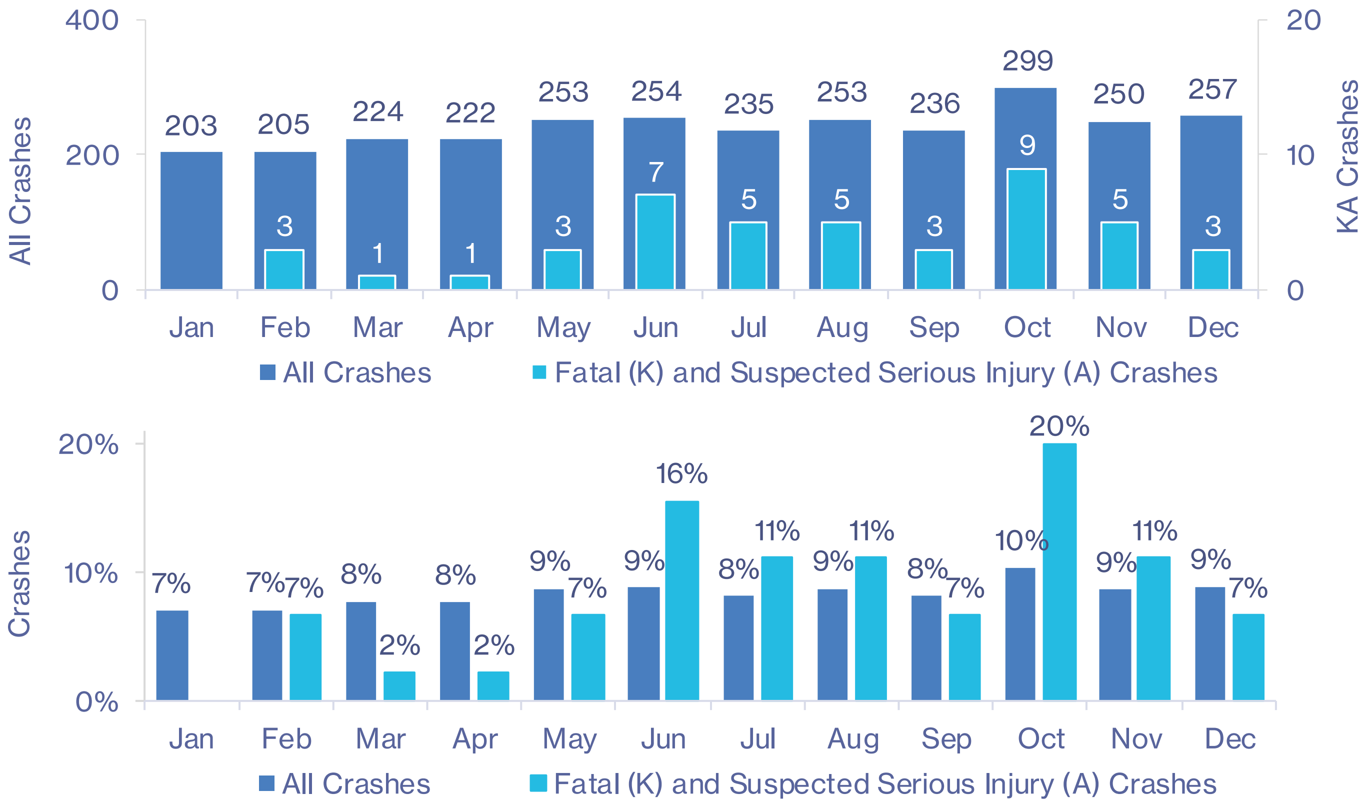


Figure 3-5. Monthly Crash Breakdown

Day of Week

As seen in the following chart, crashes are largely flat across the weekdays with a slight peak on Fridays. Weekends have the lowest number of crashes, with Sunday having roughly 50% of the total crashes as a typical weekday. The decrease in weekend crashes is most likely attributed to lower traffic exposure and non-existent peak-period congestion, which lowers the potential for crashes to occur. Despite having the lowest number of crashes on Sunday (230), this does not correspond to a proportionately high number of fatal and suspected serious injury crashes (8), indicating that while fewer crashes occur on weekends, they tend to be more severe.

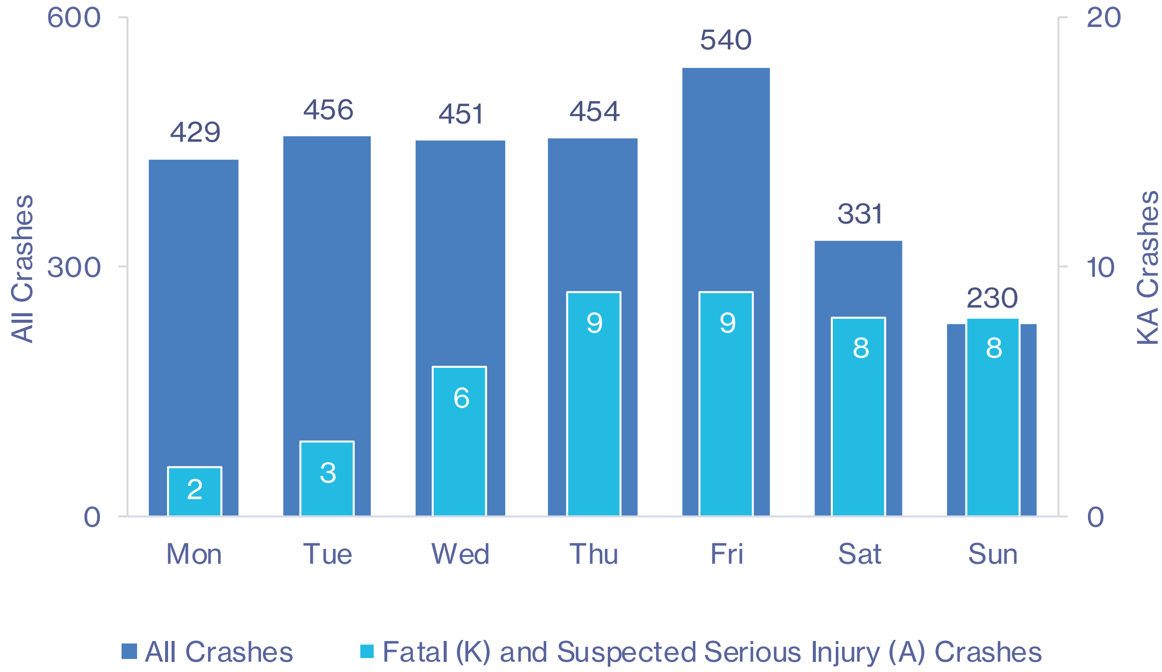
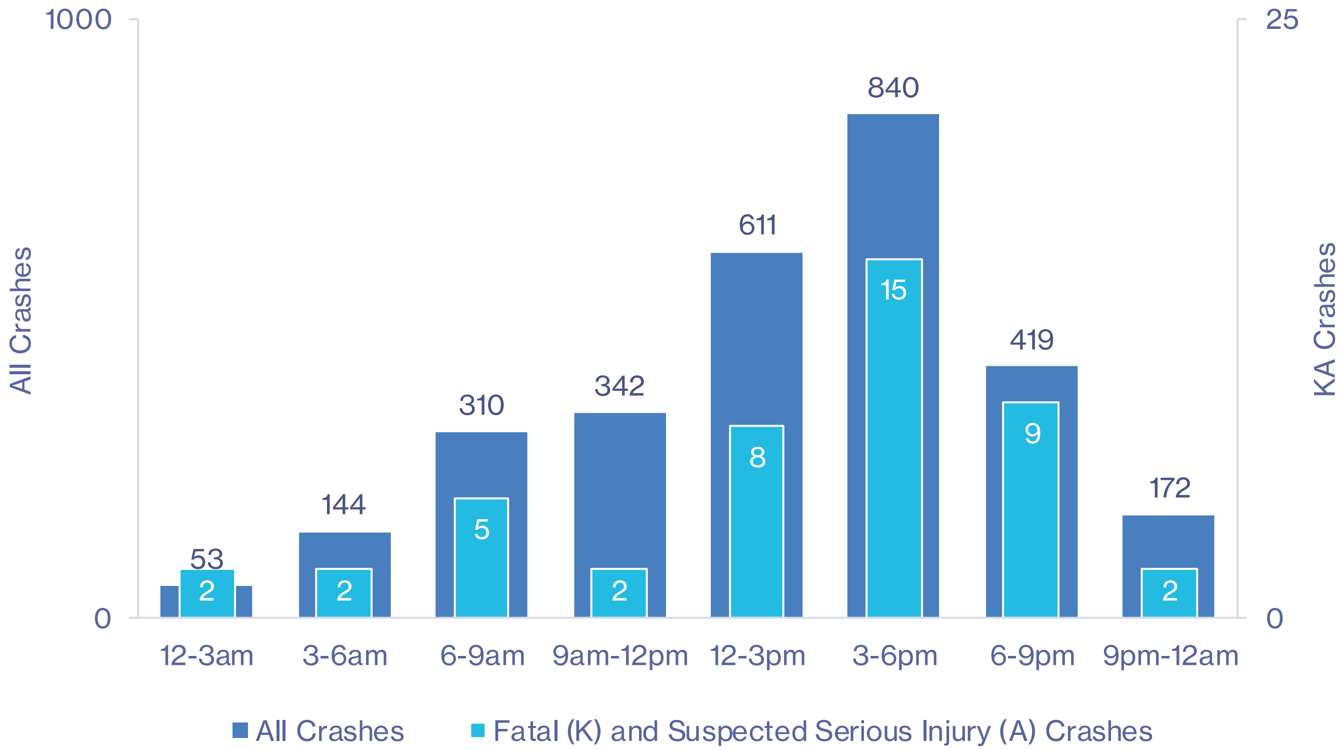


Figure 3-6. Crashes by Day of Week

Time of Day

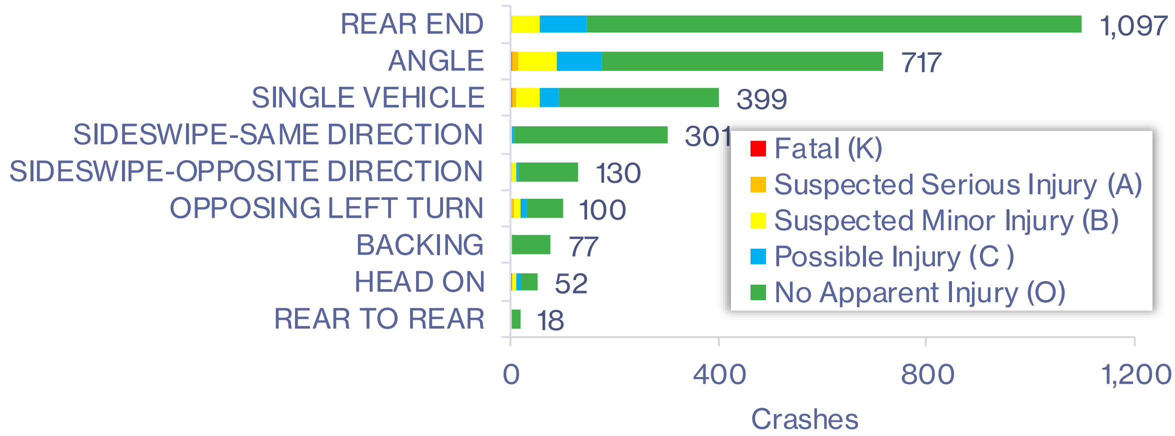
The period between 3 and 6 pm experiences the highest number of crashes, with 840 crashes, accounting for 29% of all crashes, and 15 fatal and suspected serious injury crashes (which make up 33% of all fatal and suspected serious injury crashes) as seen below. This indicates that both crash frequency and severity peak during this time, typically characterized by the evening rush hour.

Figure 3-7. Crashes by Time of Day



Manner of Collision

As shown below, rear-end crashes are the most common, accounting for 44% of all crashes. Angle crashes are 29% of all crashes and 33% of fatal and suspected serious injury crashes. Head-on crashes, although comprising only 2% of all crashes, contribute to 9% of fatal and suspected serious injury crashes, demonstrating that they are disproportionately severe when they occur.



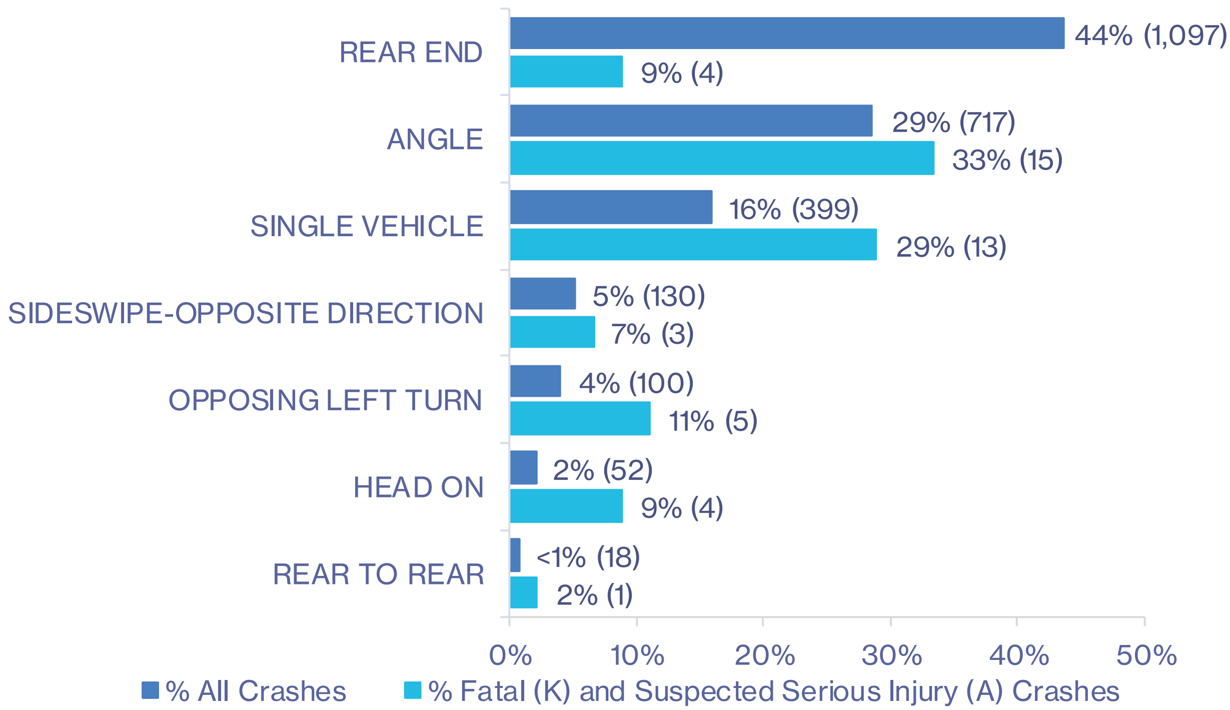


Figure 3-8. Manner of Collision by Severity

Driver Behavior

Driver behavior is a shared responsibility and can be the determining factor in a crash. The actions and decisions made by drivers can significantly influence the likelihood and severity of crashes. Addressing key areas of concern, such as aggressive driving, distracted driving, an d impaired driving, is essential for fostering a safer roadway environment.

Aggressive Driving

Aggressive driving is generally defined as behavior by drivers that negatively impacts the safety of other motorists or pedestrians, contributing to crashes. Aggressive crashes are coded to have the following behaviors.

- Failure to yield to right of way
- Following too close
- Traveling too fast for conditions
- Disregarding traffic control
- Exceeding posted speed limit
- Improper passing
- Weaving in traffic

Crashes involving aggressive driving contribute disproportionately to fatal and suspected serious injury crashes compared to all crashes, as seen in the figure below. While aggressive driving behaviors are present in 22% of all crashes, they account for 47% of crashes resulting in fatalities and severe injuries. This indicates a higher risk of severity associated with aggressive driving behaviors. Figure 3-10 shows the location of these crashes.

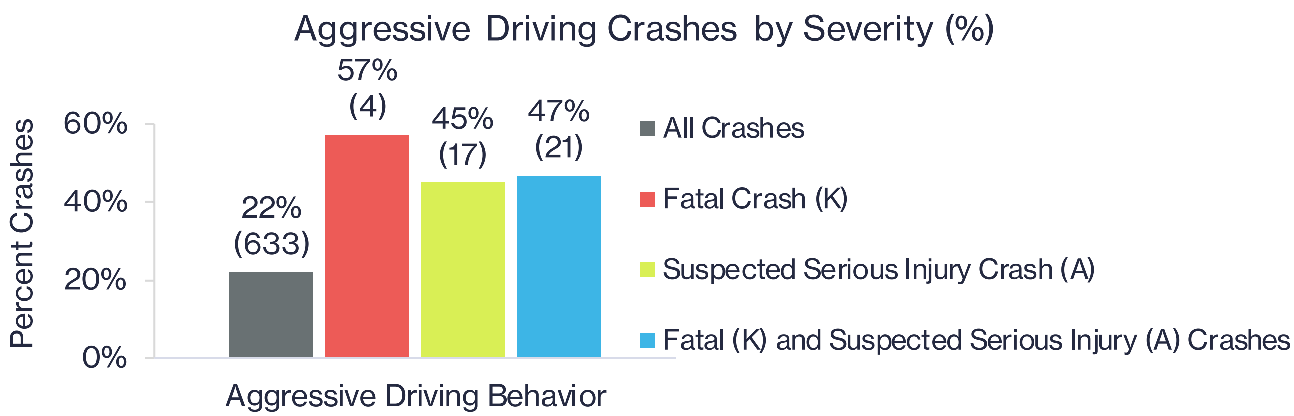


Figure 3-9. Aggressive Driver Crashes by Severity

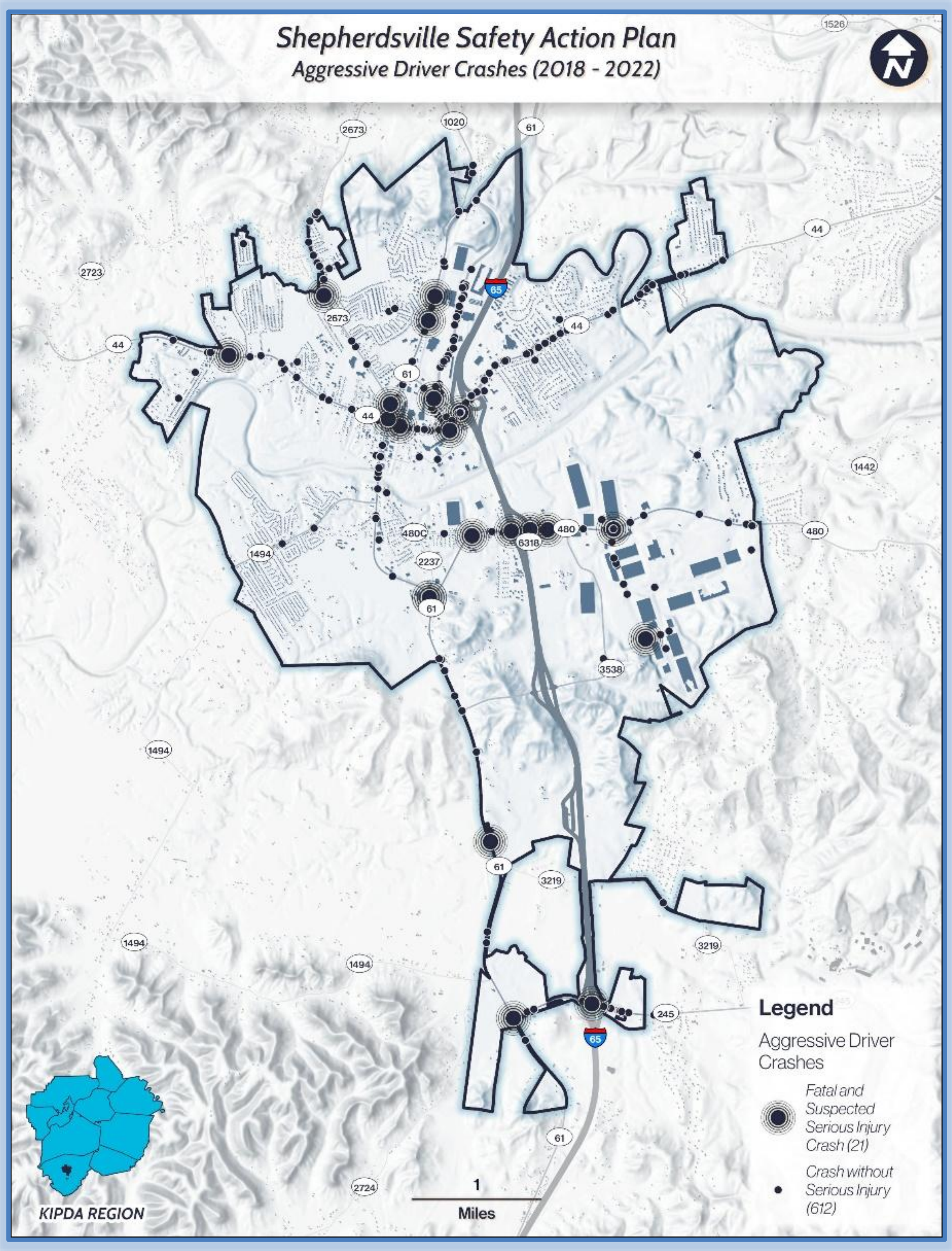


Figure 3-10. Aggressive Driver Crashes Map

Distracted Driving

Distracted driving refers to any activity by a vehicle operator that diverts their attention from the primary task of driving, thereby increasing the risk of a crash. The three main types of distracted driving involve drivers taking their eyes off of the road, hands off the wheel, and mind away from driving. In Shepherdsville, there was a general decline in distracted driving crashes throughout the study period.

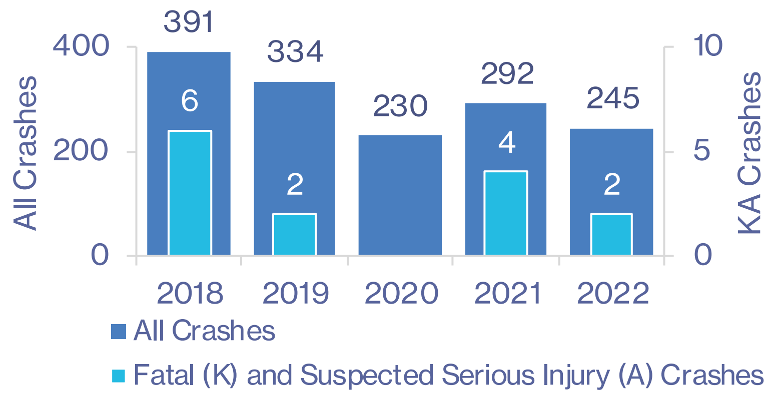


Figure 3-11. Distracted Driver Crashes by Year

In Shepherdsville, distracted driving is a significant factor in crashes, accounting for 52% (1,492 crashes) of all crashes. Additionally, 31% of fatal and suspected serious injury crashes were linked to distracted driving. Figure 3-13 shows the location of these crashes.

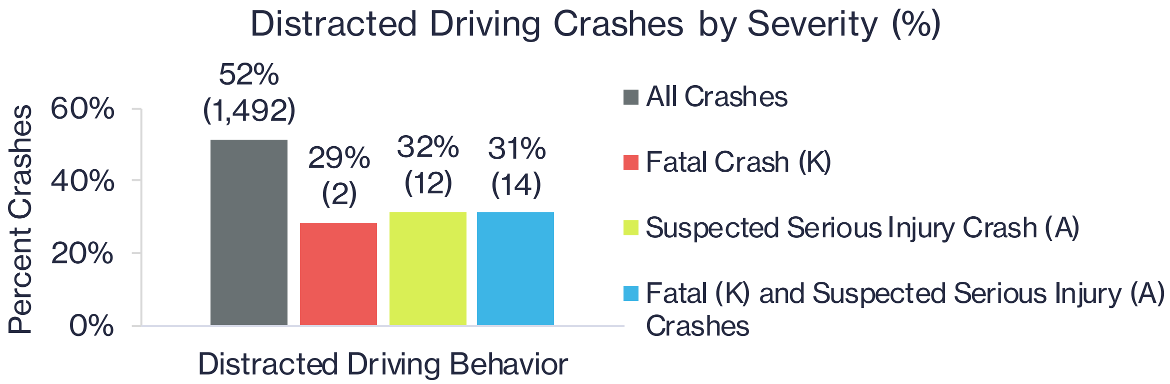


Figure 3-12. Distracted Driver Crashes by Severity

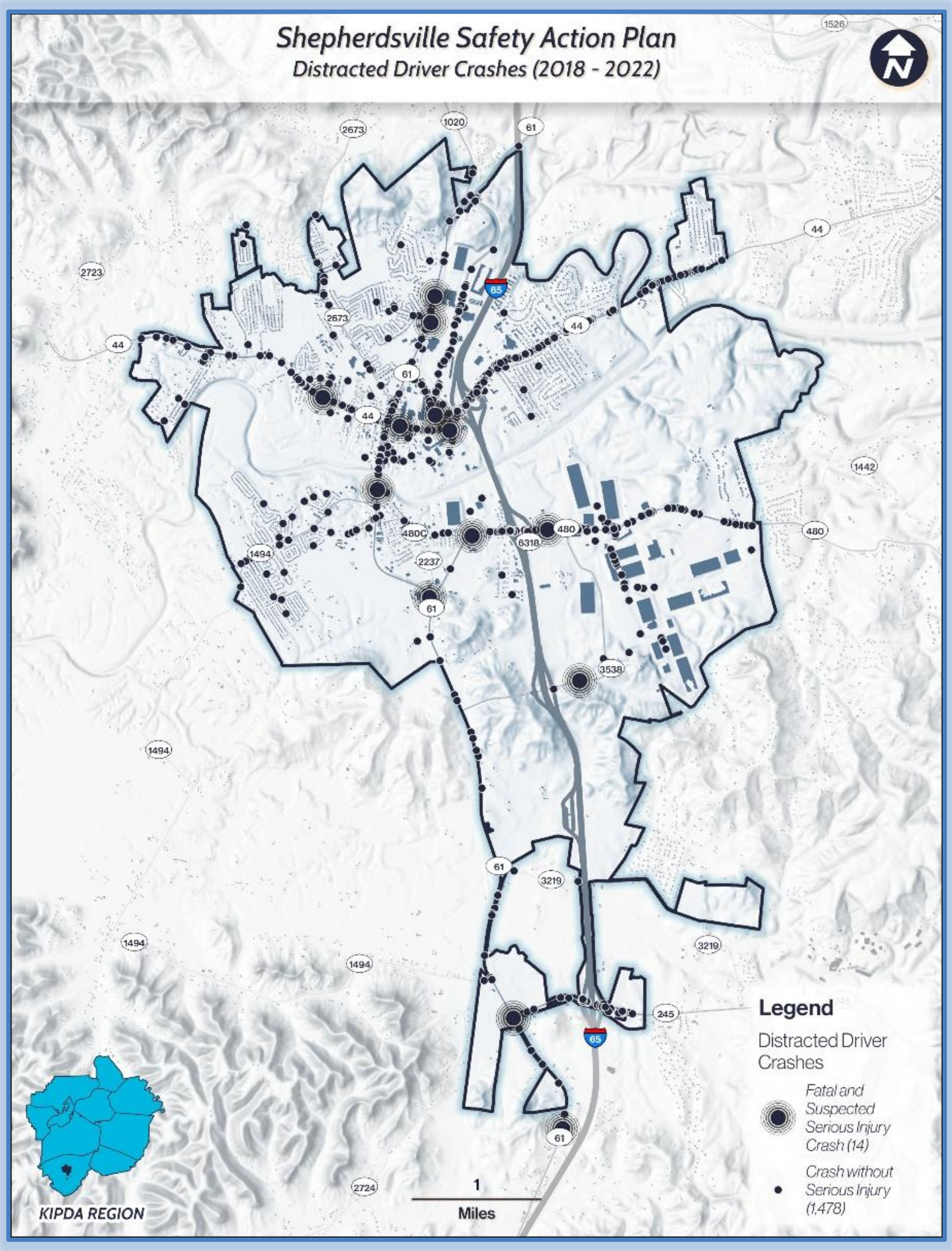


Figure 3-13. Distracted Driver Crashes Map

Impaired Driving

Impaired driving is recognized as driving a motor vehicle while under the influence of alcohol or narcotics. Impairment affects reaction time, judgment, and coordination, all of which are critical to safely operating a vehicle. Between 2018 and 2022, as seen below, Shepherdsville experienced fluctuating numbers of impaired driving crashes, with annual totals ranging from 5 to 13. While the number of crashes varied year by year, the number of fatal or suspected serious injury crashes remained relatively low, peaking at 2 in 2019. In 2022, although there were 10 impaired driving crashes, none resulted in severe injuries or fatalities.

Figure 3-14. Impaired Driver Crashes by Year

While impaired driving behaviors are identified in only 2% of all crashes, they disproportionately contribute to more severe crashes. Impaired driving is involved in 11% of fatal and suspected serious injury crashes. This data highlights the heightened risk that impaired driving poses, as crashes involving impaired drivers are much more likely to result in fatal or serious injuries compared to non-impaired driving crashes. Figure 3-16 shows the location of these crashes.

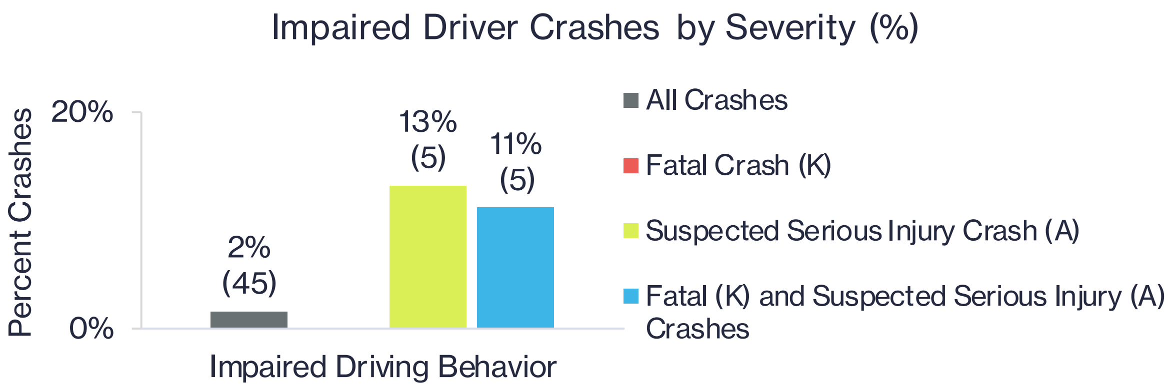


Figure 3-15. Impaired Driver Crashes by Severity

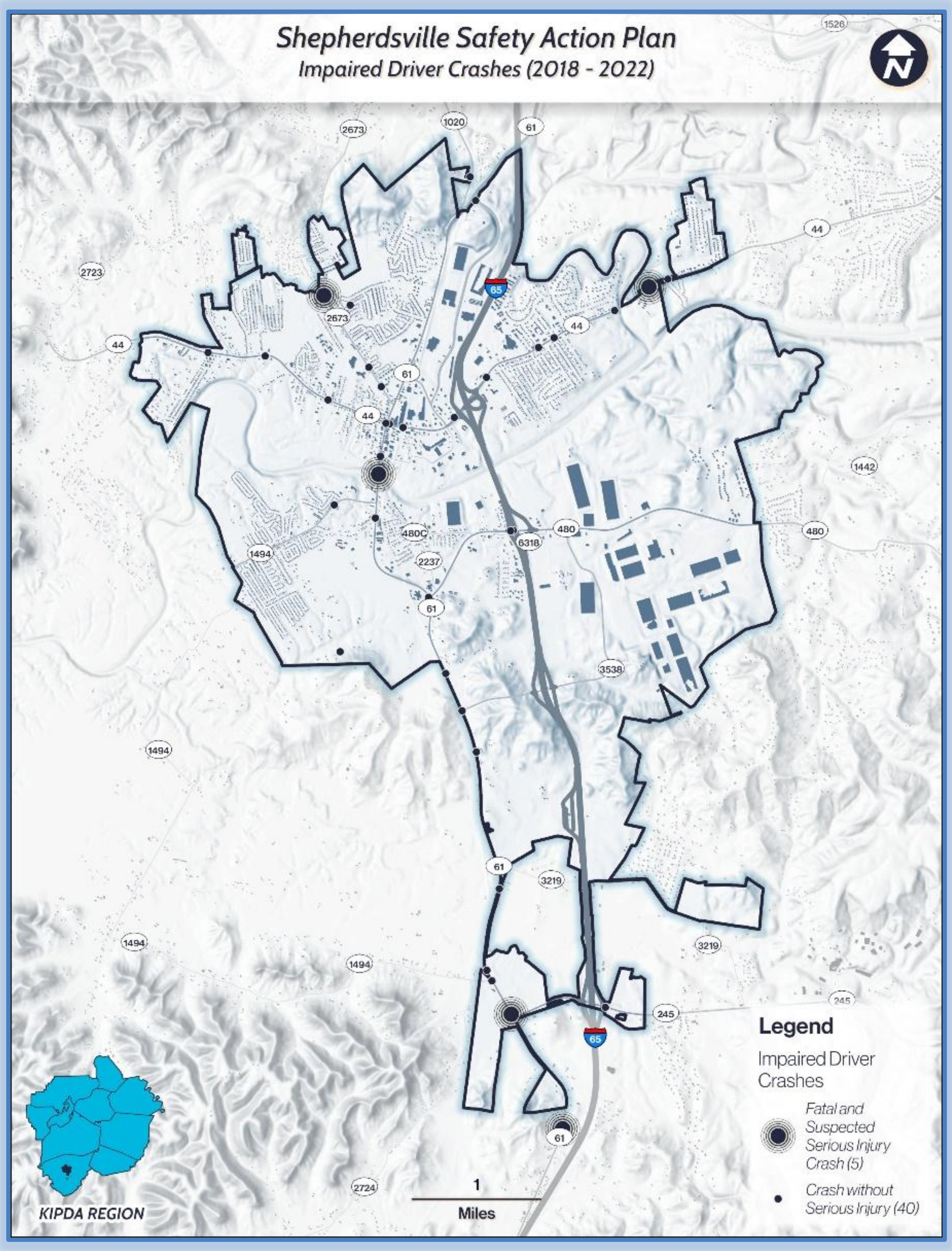


Figure 3-16. Impaired Driver Crashes Map

Lighting Condition

Roadway lighting is a safety factor, influencing visibility and reaction times. However, the documentation of lighting infrastructure is not comprehensive. The available crash data provides only anecdotal evidence regarding the lighting condition at the time of a crash. Currently, there is no established infrastructure database detailing the presence and condition of street lighting, making it challenging to analyze the correlation between illumination and road safety.

The following chart indicates that while most of the crashes occurred during daylight conditions, a disproportionate percentage of fatal and suspected serious injury crashes happen in dark conditions – 20% versus the 16% of all crash severities. This suggests that reduced visibility at night may contribute to the increased severity of crashes. Figure 3-18 shows the location of those crashes.

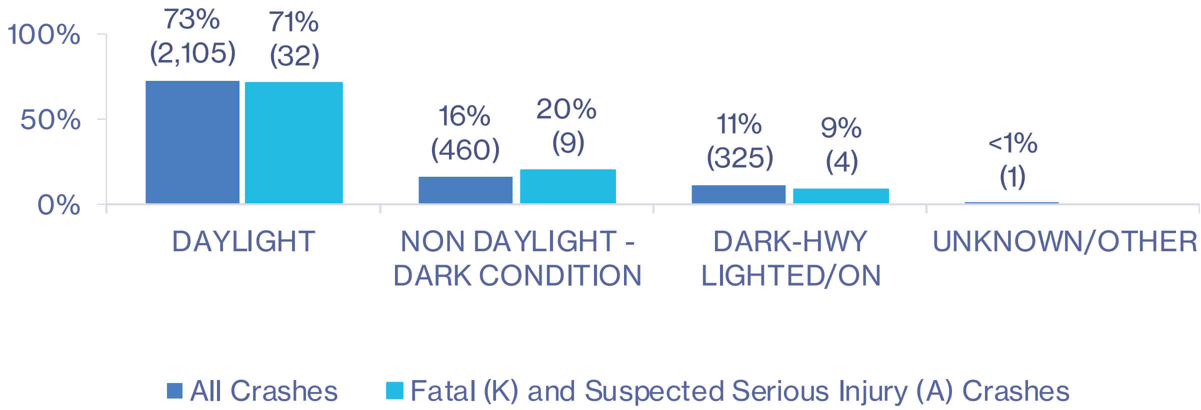


Figure 3-17. Crashes by Light Condition

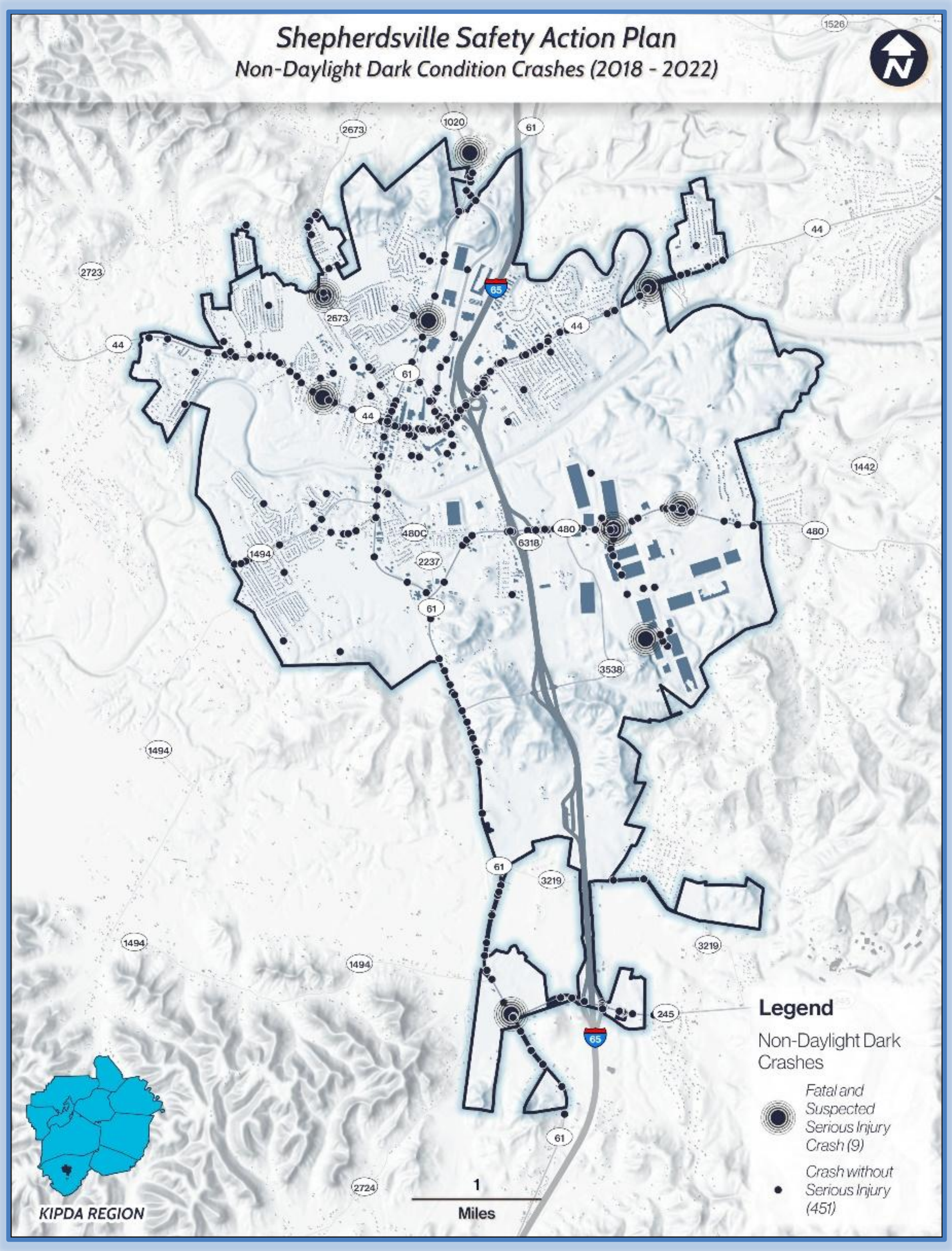


Figure 3-18. Lighting Condition: Non-Daylight Dark Condition Crashes Map

Crashes by Locations

In the analysis below, crashes were identified based on their location: intersections and segments. In Shepherdsville, most crashes occurred at intersections, accounting for 64% (1,858 crashes) of all crashes and 53% (24 crashes) of fatal and suspected serious injury crashes. This distribution is expected in an urban area where intersections serve as high-conflict points for vehicles, pedestrians, and cyclists. Roadway segments, on the other hand, accounted for 36% (1,033 crashes) of all crashes but disproportionately accounted for 47% (21 crashes) of severe crashes.

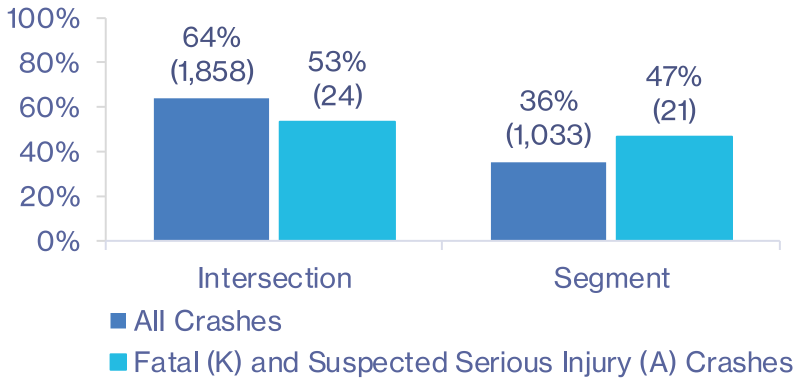


Figure 3-19. Crashes by Location

Roadway Departure Crashes

Roadway departure crashes occur when a vehicle crosses an edge line, a centerline, or leaves the traveled way. These crashes often lead to some of the most severe outcomes due to the increased risk of collision with fixed objects, overturning, or encountering unsafe roadside conditions. The inherent dangers of leaving the roadway contribute to higher rates of serious injuries and fatalities compared to other crash types.

The crash data below indicates that roadway departure crashes are a significant contributor to severe outcomes. Although roadway departure crashes account for 21% of all crashes, they disproportionately represent a higher percentage of fatal and serious injury crashes. Specifically, 27% of fatal and suspected injury crashes are related to roadway departures. Figure 3-21 shows the location of these crashes.

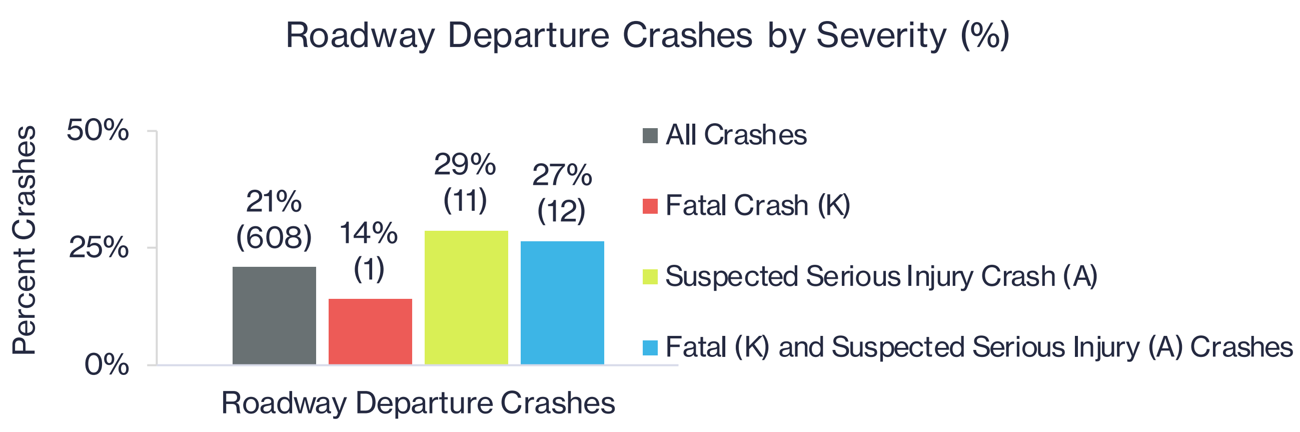


Figure 3-20. Roadway Departure Crashes by Severity

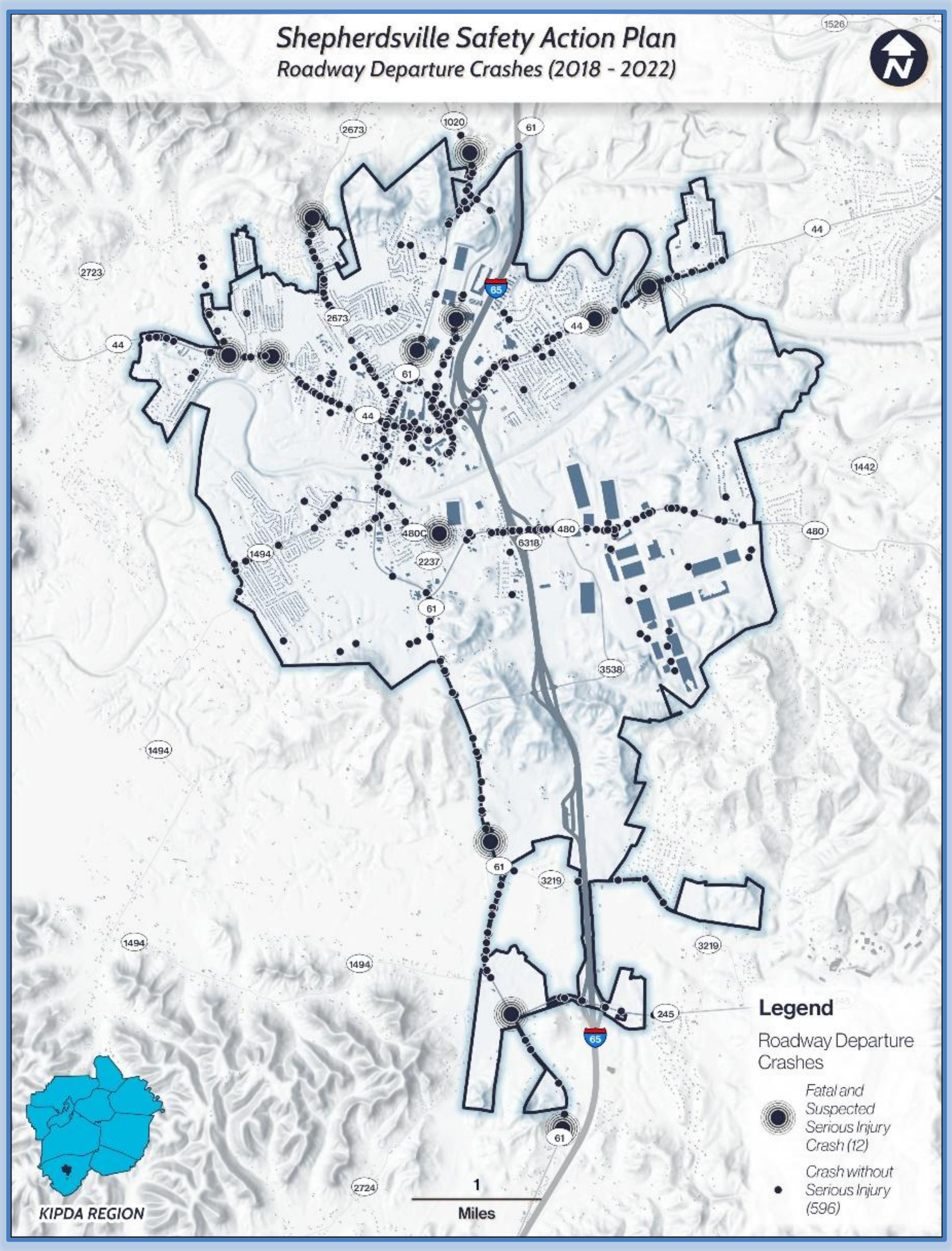


Figure 3-21. Roadway Departure Crashes Map

Vulnerable Road Users

Vulnerable road user crashes, including pedestrians and bicyclists, are at a greater risk due to their lack of physical protection compared to motor vehicle occupants. These crashes typically result in more severe injuries and fatalities because they have little to no buffer between them and the force of the collision.

Bicyclist

A total of seven bicyclist crashes were reported in Shepherdsville, including two fatal bicyclist crashes and two suspected serious injury crashes, which together accounted for over half of the bicyclist crashes. Additionally, there were two suspected minor injury bicycle crashes and one bicyclist crash with no apparent injury. This indicates a disproportionate number of bicycle crashes in Shepherdsville are severe. Figure 3-22 shows the location of these crashes.

Severity	Description	Crashes	%
K	Fatal	2	28%
A	Suspected Serious Injury	2	28%
B	Suspected Minor Injury	2	28%
C	Possible Injury	0	0%
O	No Apparent Injury	1	14%
	TOTAL	7	

Table 3-2: Bicyclist Crashes by Severity

Pedestrians

In Shepherdsville, 17 pedestrian crashes occurred during the study period. Notably, there were no fatal or suspected serious injury crashes. There were seven suspected minor injury crashes, six possible injury crashes, and four crashes with no apparent injury. This highlights the importance of maintaining a focus on pedestrian safety to prevent future severe crashes. Figure 3-23 shows the location of these crashes.

Severity	Description	Crashes	%
K	Fatal	-	-
A	Suspected Serious Injury	-	-
B	Suspected Minor Injury	7	41%
C	Possible Injury	6	35%
O	No Apparent Injury	4	24%
	TOTAL	17	

Table 3-3 Pedestrian Crashes by Severity

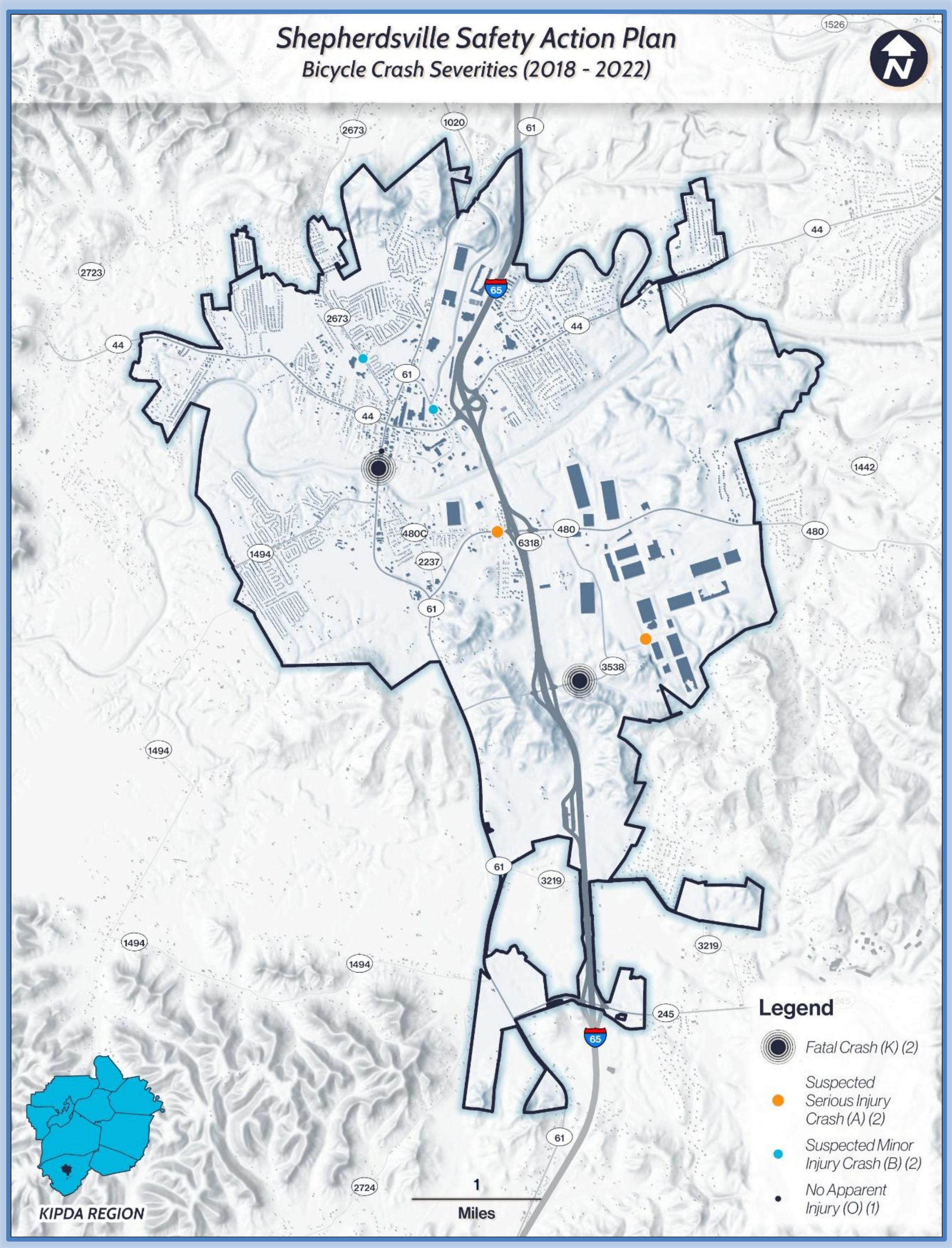


Figure 3-22. Bicyclist Crash Map

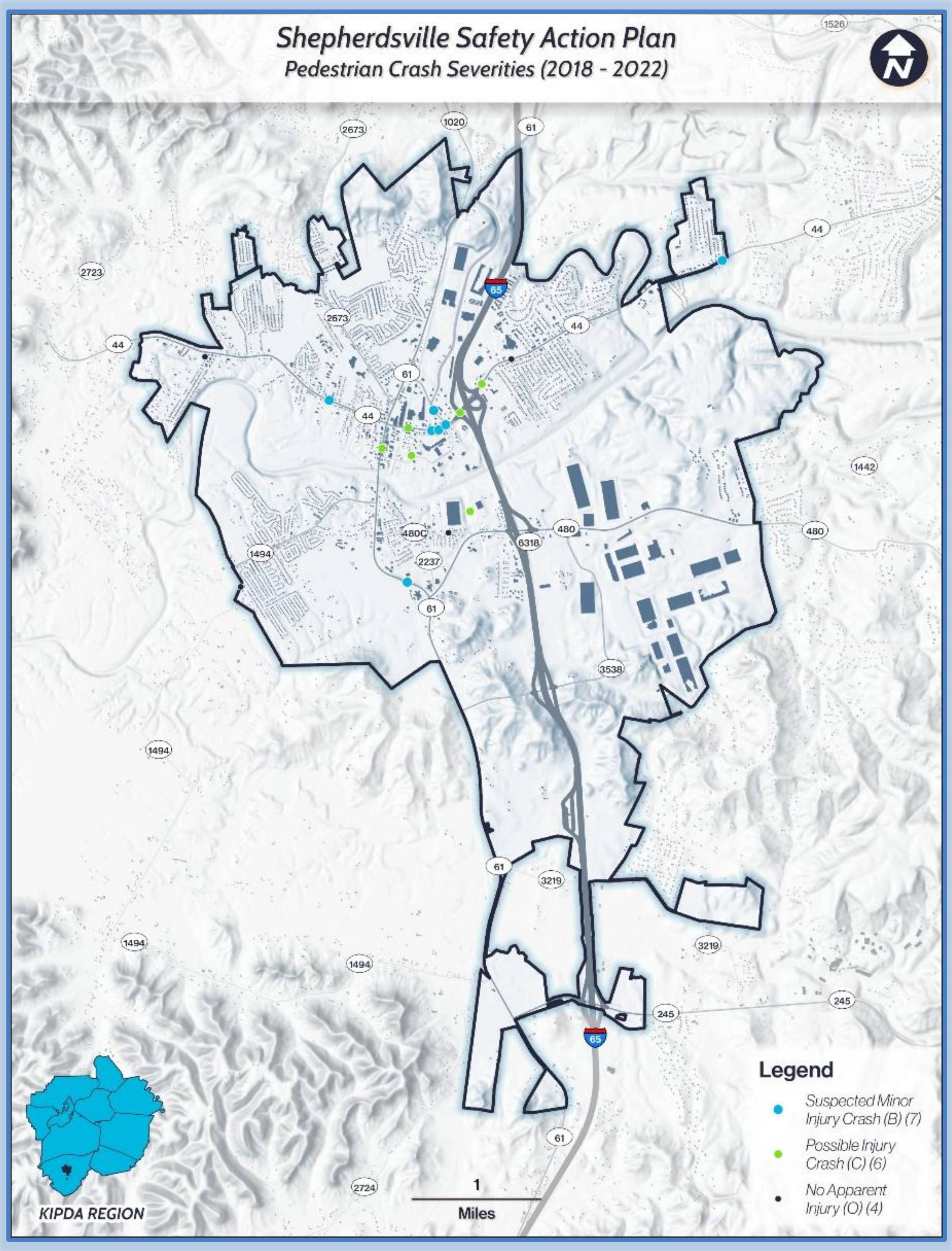


Figure 3-23: Pedestrian Crash Map

Occupant Protection

Occupant Protection involves any device that is intended for protective use in a vehicle, such as a seatbelt, airbag, child safety seat, or booster seat, which helps prevent death or serious injury in the event of a crash. The restraint crash data used for this study was based on all vehicle occupants being restrained. If a single occupant was unrestrained, i.e., not wearing a seatbelt, then the crash was categorized as unrestrained.

The data on occupant protection in Shepherdsville, as shown below, reveals a high rate of restraint use across all crash severities. Restraint use was observed in 71% of fatal crashes and 79% of suspected serious injury crashes, increasing to 92% for suspected minor injury crashes, 92% for possible injury crashes, and 99% for no apparent injury crashes. This trend highlights the critical role of occupant protection devices in mitigating the severity of crashes. The high percentage of unrestrained occupants in fatal and severe crashes underscores the need for targeted education campaigns to promote consistent and proper restraint usage.

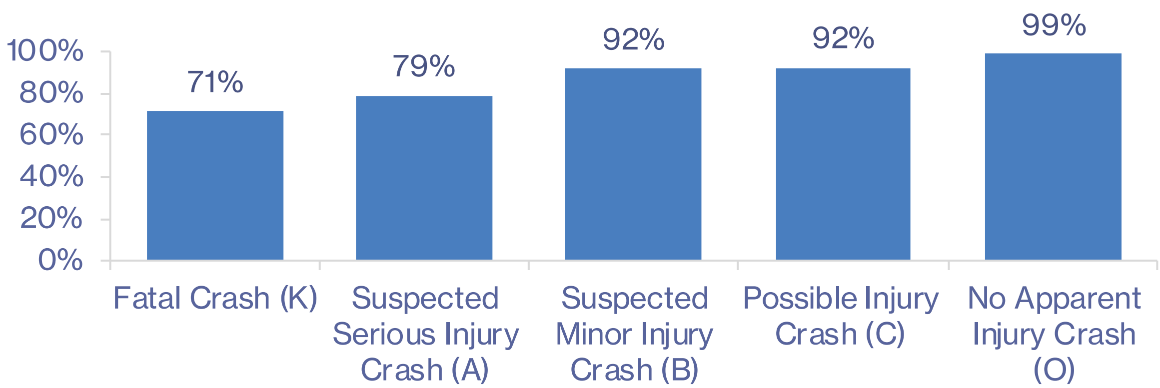


Figure 3-24. Restraint Use in Crashes

Driver Age

Analysis of crash data by driver age group, shown below, reveals several age groups that are disproportionately represented in fatal and suspected serious injury crashes. Drivers aged 20–24 account for 15% of severe crashes, despite making up only 11% of all crashes. Similarly, the 15–19 age group is also overrepresented, with 12% of severe crashes compared to 9% of total crashes. Older drivers, particularly those aged 60–69, also show a disproportionate share of severe crashes relative to their overall involvement. In contrast, drivers aged 25–29 and 40–44 are underrepresented in severe crashes, suggesting relatively lower risk in those age groups. Both young drivers and older drivers could benefit from outreach and education programs.

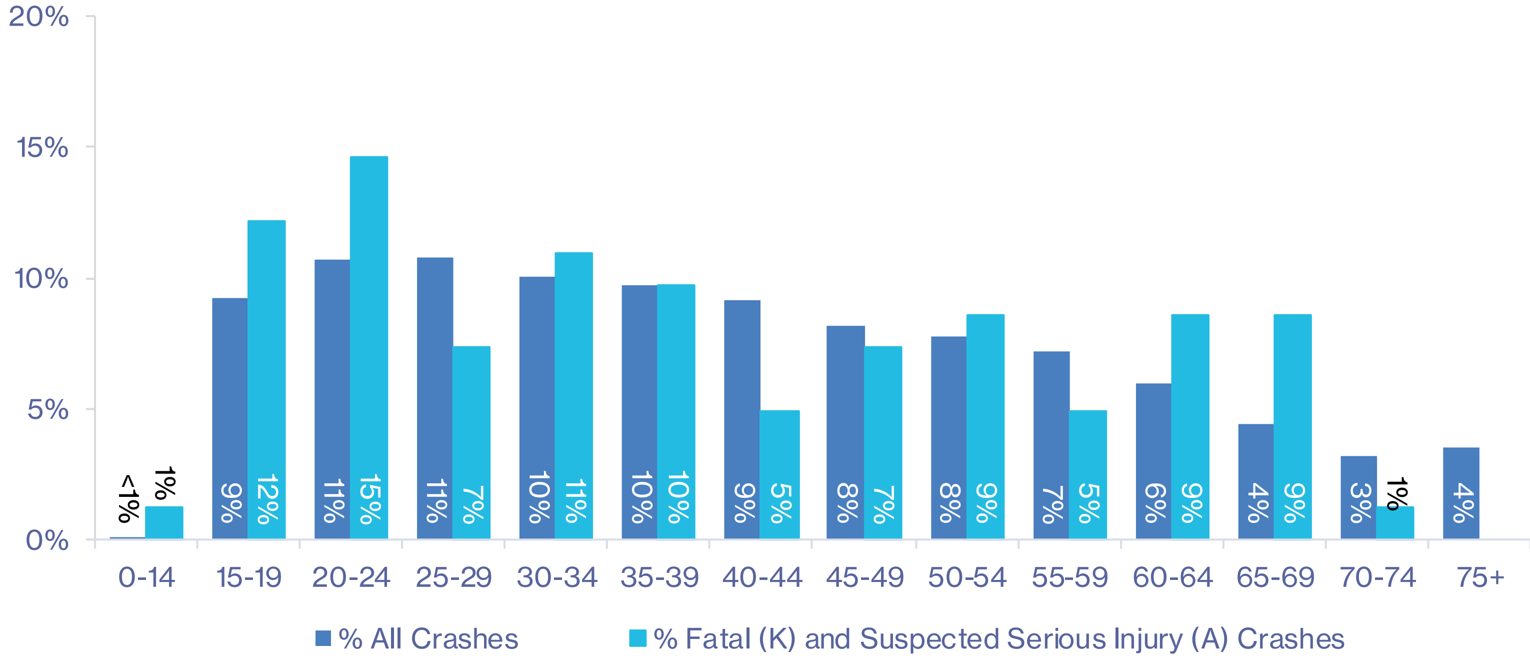


Figure 3-25 Crash Percentages by Driver Age

Contributing Human Factors

Human factors play a significant role in crash occurrences, often tied to errors in judgment and risky behaviors. These factors include speeding, failing to yield, distractions, fatigue, and the influence of alcohol or drugs.

As seen in the data below in Shepherdsville, driving inattention is the leading factor, contributing to 1,419 crashes, followed by driver failing to yield right of way (412) and misjudging clearance (288).

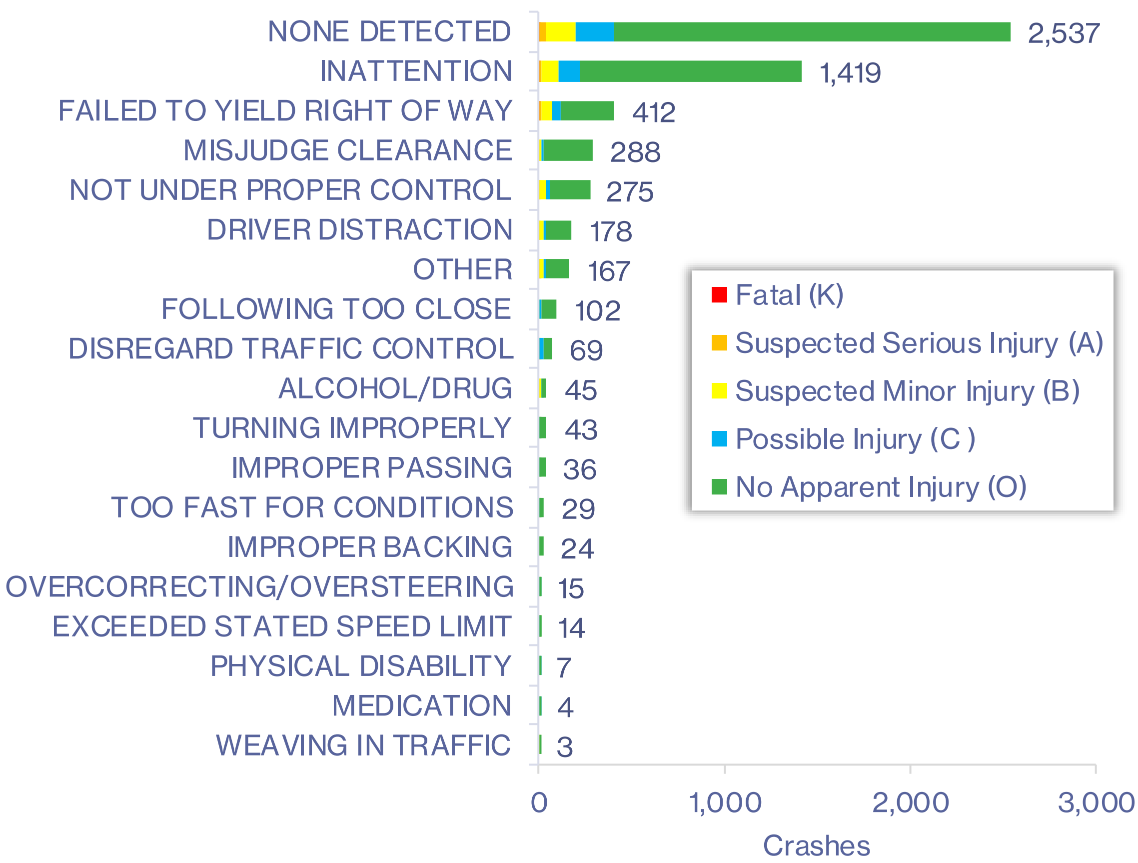


Figure 3-26. Crashes by Human Factor

Of the fatal and suspected serious injury crashes, 38% (17) were categorized as Failed to Yield Right Of Way. Driver inattention contributed to 27% (12) of fatal and suspected serious injury crashes, as detailed below.

Given the high proportion of severe crashes involving aggressive drivers or drivers being inattentive, a speed management program is recommended. This would be designed to encourage drivers to make better decisions regarding their speed in various conditions. It could include infrastructure, behavioral, educational, and enforcement elements.

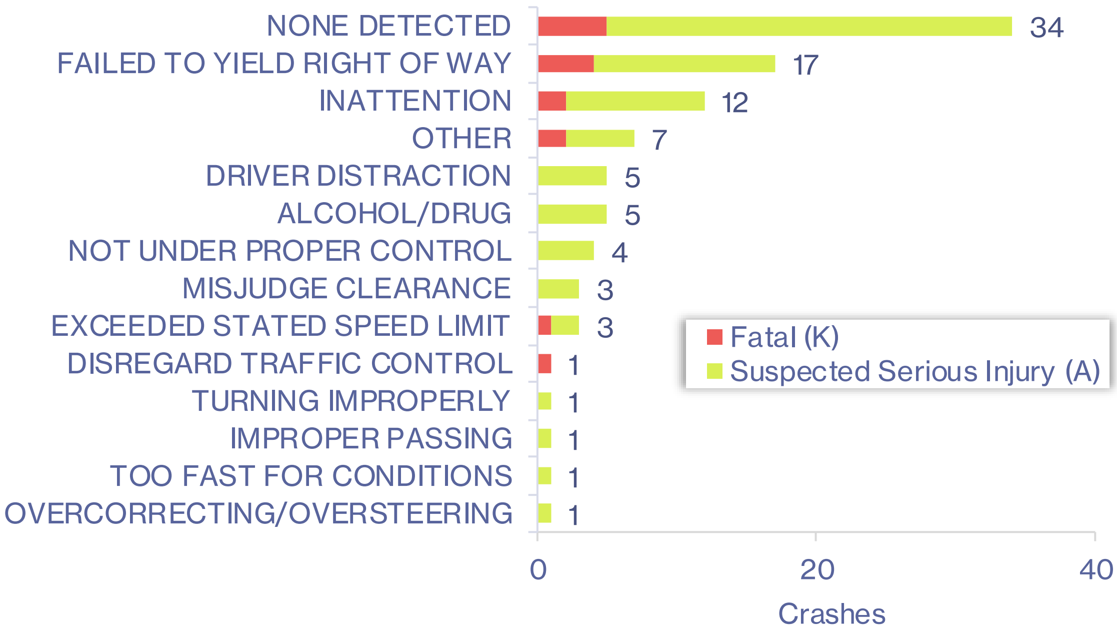


Figure 3-27. Fatal and Suspected Serious Injury Crashes by Human Factor

Environmental and Roadway Conditions

Environmental roadway conditions do not appear to be a significant contributing factor to crash occurrence or severity. Adverse roadway conditions, defined as wet, snow, ice, or less common road conditions, make up a small portion of the overall crashes. Wet roads account for 17% of all crashes and 7% of fatal and suspected serious injury crashes. Ice, snow, slush, standing water, and other conditions combined account for less than 2% of all crashes with no associated severe outcomes. This suggests that most crashes in Shepherdsville occur under typical dry conditions, with no clear pattern indicating that adverse environmental conditions play a substantial role in crash severity.

Roadway Condition	All Crashes		Fatal and Suspected Serious Injury Crashes	
	#	%	#	%
Dry	2,367	82%	42	93%
Wet	481	17%	3	7%
Snow/Slush	14	<1%	-	-
Ice	13	<1%	-	-
Sand-Mud-Dirt-Oil-Gravel	8	<1%	-	-
Water (Standing or Moving)	8	<1%	-	-

Table 3-4 Crashes by Roadway Condition

High Injury Network

A High Injury Network (HIN) is a data-driven approach used to identify roadway segments that account for a disproportionate amount of a community's fatal and serious injury crashes. The HIN enables communities to concentrate their limited resources on improving safety along those high priority, dangerous corridors. Additionally, following the Safe System Approach, the HIN corresponds to the Safe Roads pillar. This pillar focuses on designing roadway environments to mitigate human mistakes and account for injury intolerances, to encourage safe behaviors, and to facilitate safe travel by the most vulnerable users.

The HIN provides a data-driven and focused list of corridors where a majority of the community's fatal and suspected serious injury crashes are occurring. The routes identified in the HIN will guide the development of strategies and project selection. These strategies and more information on the HIN can be found in **Chapter 6. Strategy and Project Selection.**

4. Engagement and Collaboration

A key component of the planning process is meaningful engagement with both the public and stakeholders. Throughout the development of this Safety Action Plan, engagement took various forms, allowing for a deeper understanding of current conditions, safety concerns, and challenges. These insights provide crucial context for the safety analysis. The following summarizes the community and stakeholder engagement completed for this Safety Action Plan .

Safety Action Plan Community Engagement

Regional Steering Committee

The Regional Steering Committee, comprised of diverse members from the region, was the guiding force and planning structure for the Safety Action Plan development. The Safety Action Plan's development evolved through a series of Committee meetings.

The first meeting provided an overview of the Safe Streets for All (SS4A) program and plan components, an explanation of the safety analysis process, an outline of the engagement process connection points and tools, an overview of community considerations, and an overview of the project selection strategy and potential countermeasures. The second meeting reviewed detailed preliminary findings from the crash analysis. The project team identified focus areas based on feedback and local insights. Then, the project team guided the communities to adopt a Leadership Commitment resolution, setting a goal for each community to achieve the eventual goal of zero fatalities and serious injuries. The third meeting focused on the data collected from the public engagement to date and updates to the draft Safety Action Plan documents. During the fourth meeting, the discussions of the Committee centered on how the communities can use the Safety Action Plans, project identification, and potential improvements at the prioritized intersections and corridors on the High Injury Network (HIN).

Stakeholder Meetings

Twice during the planning process, the project team held one-on-one meetings with key stakeholders in the community to discuss elements brought up during the overall steering committee meetings. Local community engagement with the Safety Action Plan provided invaluable local knowledge and insight.

Meeting One

In July 2024, the first meeting introduced the project and set expectations for the project team and local leadership. The meeting included a request for previous plans and initiatives for community safety and future commitment goals to safety. The project team informed Stakeholders that the team would form Safety Committees following the first stakeholder meeting. The project team then provided a more extensive discussion of the currently available data and facilitated a discussion focusing on local conflict areas.

Meeting Two

The second meeting, held in February 2025, focused on reviewing the crash analysis dashboard and getting feedback on the initial prioritized High Injury Network (HIN) segments and priority intersections. Data on the dashboard included the location of the crash, mode of transportation, directional analysis, manner of collision, roadway condition, light condition, and the updated human factor. The group then discussed edits to the presented HIN potential corridor strategies, priority intersections, and potential intersection strategies.

Safety Committee

Shepherdsville participated in a combined Safety Committee with Bullitt County and Mt. Washington, comprised of diverse members from the community, such as emergency response representatives and local planning staff, played a key role in developing the Shepherdsville Safety Action Plan. Participants provided valuable feedback and insights into existing safety issues and concerns through two safety committee meetings.

Meeting One

Nine committee members attended the first meeting, which introduced the Safety Action Plan, its key components, and the Safe System Approach. The committee discussed historic crashes and brainstormed improvements for their local vehicular, pedestrian, and cyclist safety concerns. Data provided to the Committee included detailed crash maps organized by severity – including those for pedestrians and bicyclists – and intersection crash maps showing total and severe crashes. The committee's discussion focused on overpass safety, diverting traffic, widening specific roadways and turning lanes, and better lighting near crosswalks and major crossings. Other safety topics identified in the meeting included stronger enforcement of bicycle laws and supporting local ordinances.

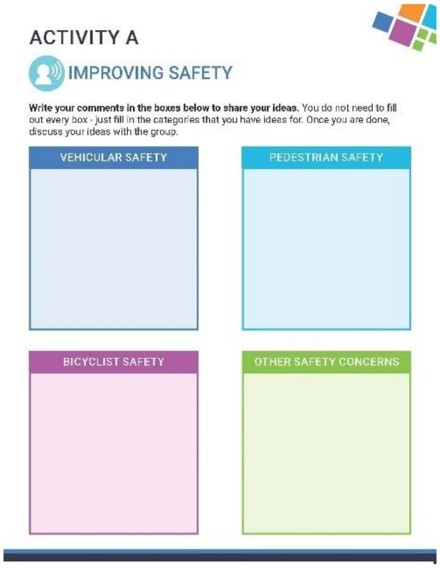


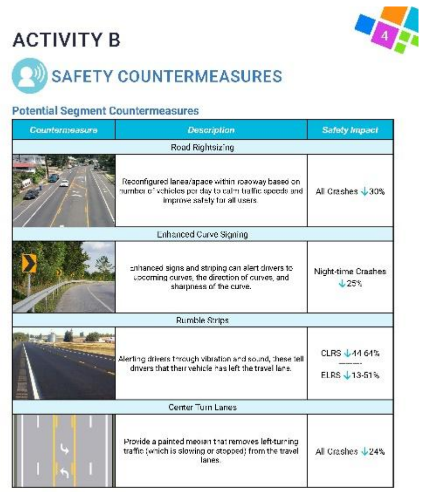
Figure 4-1: Meeting One Brainstorming Exercise

Meeting Two

The Committee reviewed the draft prioritized HIN corridor segments, prioritized intersections, and potential safety countermeasures. The data provided included a preliminary ranking for each intersection and HIN corridor. It also included descriptions of potential countermeasures with their expected safety impacts. The project team provided maps of the HIN corridors and intersections for reference. The committee provided their priorities for both the HIN and the intersection list. They also provided feedback on what improvements they thought would be most appropriate and beneficial. There were four activities designed to elicit this information.

Activity A: Prioritizing HIN Corridors – The committee expressed interest in prioritizing several segments that they thought were critical even though they were ranked in the 20s. Specifically, the committee thought KY 44 on the west side of Shepherdsville and KY 2673 from KY 61 to Chillicoop should be considered as high priorities.

Activity B: Potential Corridor Improvements - Most participants noted that half of the recommendations were appropriate with notes about adding curb and gutter, widening to accommodate shoulders and turn lanes, and widening to accommodate I-65 traffic.


ACTIVITY B

SAFETY COUNTERMEASURES

Potential Segment Countermeasures

Countermeasure	Description	Safety Impact
Road Rightsizing		
	Reconfigured lanes/space within roadway based on number of vehicles per day to calm traffic speeds and improve safety for all users.	All Crashes ↓30%
Enhanced Curve Signing		
	Enhanced signs and striping can alert drivers to upcoming curves, the direction of curves, and sharpness of the curve.	Night-time Crashes ↓25%
Rumble Strips		
	Alerting drivers through vibration and sound, these tell drivers that their vehicle has left the travel lane.	CLRS ↓44-64% ELRS ↓13-51%
Center Turn Lanes		
	Provide a painted median that removes left-turning traffic (which is slowing or stopped) from the travel lanes.	All Crashes ↓24%

Figure 4-2: Meeting Two Handout: Potential Safety Countermeasures

Activity C: Prioritizing Intersections – The committee expressed interest in prioritizing several intersections that they thought were critical. Specifically, KY 44 / Hillview Ln and KY 480 / Buffalo Run Rd were noted and they are highlighted in **Chapter 6. Strategy and Project Selection**.

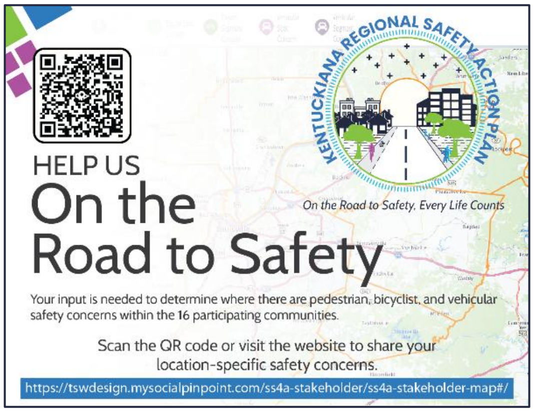
Activity D: Potential Intersection Safety Countermeasures – The committee largely agreed with the recommendations but also proposed additional improvements at several intersections, including the removal of roundabouts and alternative intersection alignments. These suggestions have been incorporated into **Chapter 6. Strategy and Project Selection**.

The committee also discussed the need to prioritize adding an alternative crossing point over the Salt River.

Public Engagement

Survey One

The project team and committees conducted public engagement for the Safety Action Plan through an interactive online map. Residents within the KIPDA Region, including Shepherdsville, could provide input by identifying specific pedestrian, bicycle, or vehicle concerns on a map. Participants could add comments, images, and review or react to the contributions of others. This input offered valuable community perspectives on local safety issues.



The survey was available between July 9, 2024, and October 18, 2024. A total of 1,047 comments were collected for the entire region, with 4 comments located within Shepherdsville. Figure 4-4 provides an example view of the engagement map.

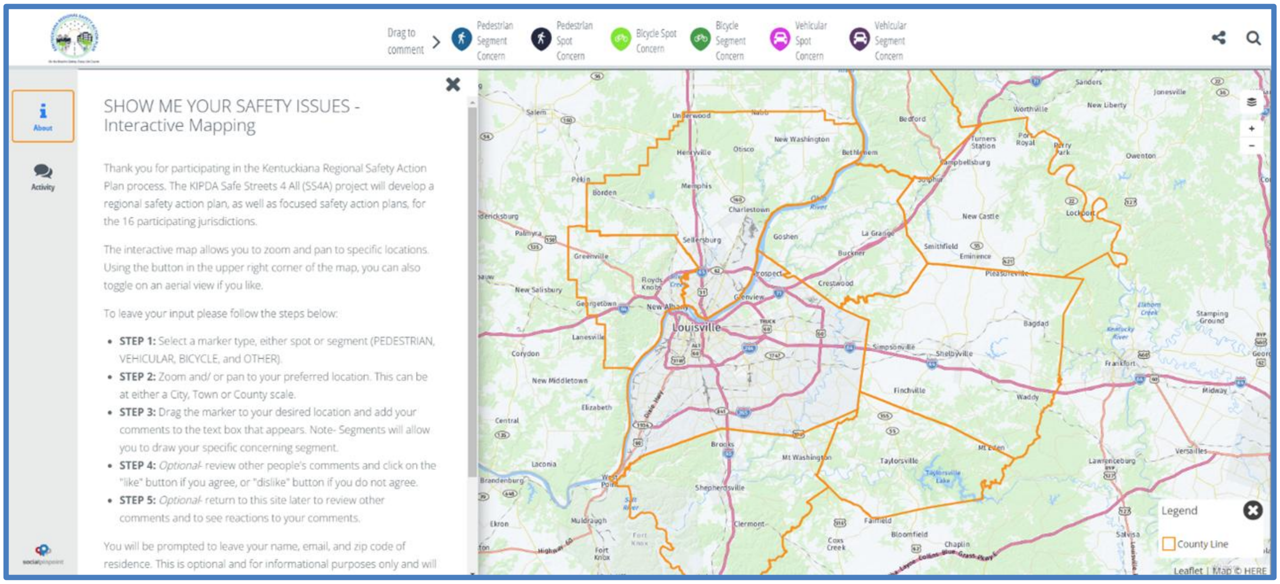


Figure 4-3: Social Pinpoint Online Engagement

Vehicular Safety Concerns

- Signalization
- Blind Turns/Hills
- Narrow roads
- Speed Limits
- Vegetation Viewshed
- Roadway Width
- Intersection Improvements
- Signage
- Turning lanes
- Interstate Access Points

Pedestrian Safety Concerns

- Adding sidewalks
- Adding crosswalks

Bicycle Safety Concerns

- Separated Protected Bike Lanes
- Revised Bike Routes

Other Safety Concerns

- All roads are too narrow for traffic levels
- School Bus Stops

The feedback collected from this platform played an integral role in identifying high-risk areas and shaping safety strategies so that the KIPDA Regional Safety Action Plan and the Shepherdsville Safety Action Plan address the concerns and needs of the public. The project team compared comment locations to the fatalities (K) and suspected serious injuries (A) in the 2018-2022 crash data to compare public perception of safety and data-driven crash densities. The following map shows the crash locations (blue) with the public comments (yellow). The locations where these two colors overlap (green-toned areas) represent locations where the perception of a safety issue is consistent with where severe crashes have occurred. An example of this is the intersection of State Road 44 and State Road 61.

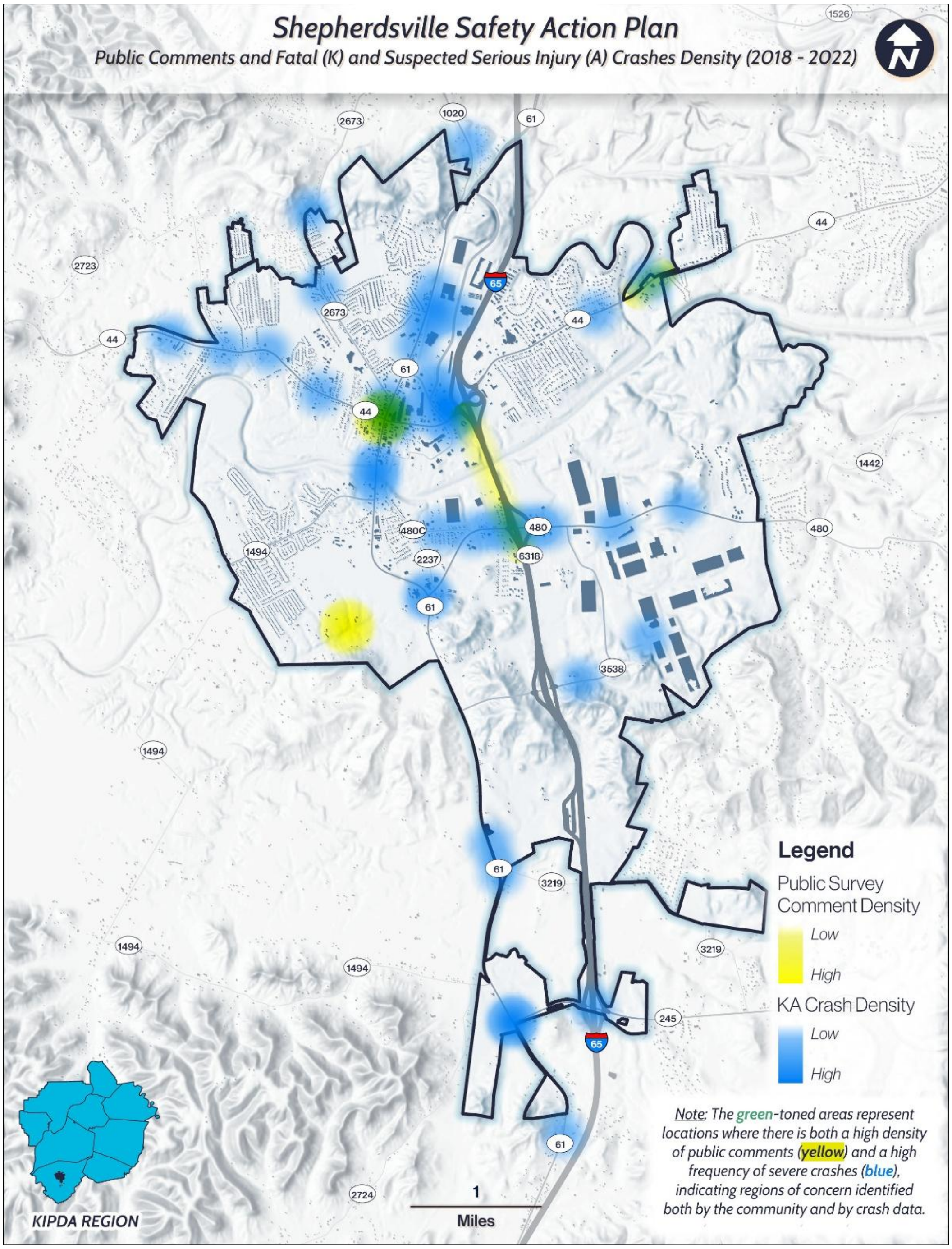


Figure 4-4. Spot Comments and Crash Density

Survey Two

The project team and committees conducted a second public survey for the Safety Action Plan. Residents within the KIPDA Region, including Shepherdsville, could provide input on the results of the crash data analysis and potential countermeasures to improve safety in each community. Participants could provide opinions on whether the identified recommended strategies and safety improvements were appropriate for each community. Links to additional information about the recommended strategies were included for reference.

The survey was available between April 1, 2025, and April 30, 2025. A total of 524 responses were collected for the entire region, with 17 responses located within Shepherdsville. The respondents generally rated portions of KY 480, KY 44, and KY 61 as most important. Conestoga Pkwy was also a high priority. These same facilities were rated highly for intersections, especially KY 480. Three of the top ranked countermeasures were left-turn lanes, shoulder treatments, and rumble strips.

Active and Planned Projects

The transportation plans of all relevant stakeholders, including the Kentucky Transportation Cabinet Enacted Highway Plan (2024-2030) and KIPDA Transportation Improvement Program (TIP), as well as ongoing Shepherdsville projects, were coordinated to identify and document project overlaps and stages of project development. This collaborative effort is summarized in the following table and map highlighting the current projects with committed funds that are actively moving forward.

Map No.	KYTC Item (CHAF ID)	Route	Begin	End	Status	Description
1	5-150.02	KY 44	13.1	15.1	Planned	Reconstruct KY 44 from I-65 to Chimney Rock Drive
2	5-391.30	KY 480	0.8	1.3	Committed	Improve operational performance of the I-65 / KY 480 interchange including ramp improvements and turning lanes
3	5-8509.00	KY 245	4.425	6.415	Committed	Widen KY 245 from Bernheim Forest to the Community College
4	5-80338.00	KY 44	9.2	10.3	Planned	Raise the roadway by 4 feet, widen it from 2 to 3 lanes (adding a two-way left turn), and replacing bridge ID #015B00020N

Table 4-1. Current Highway Plan Projects

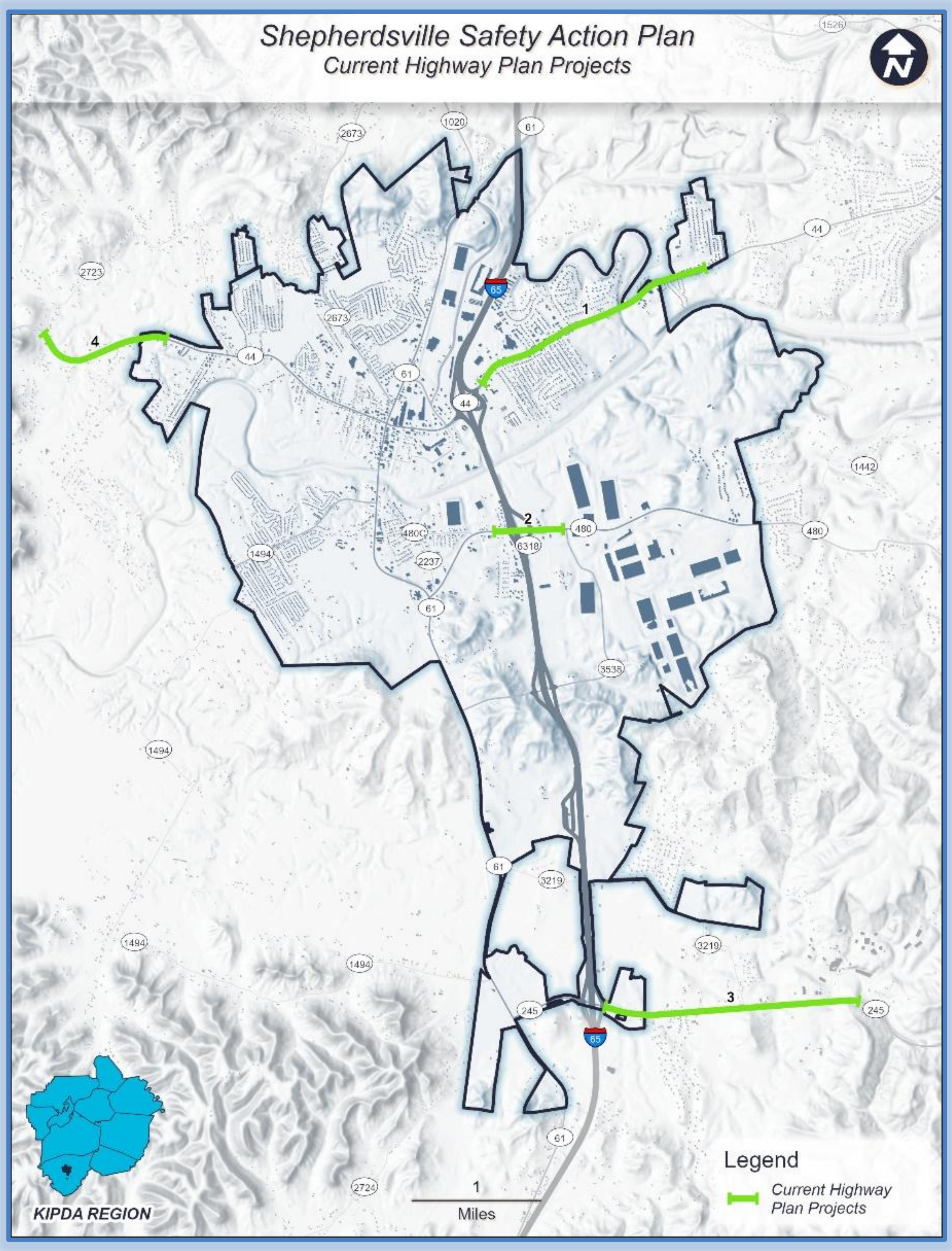


Figure 4-5. Highway Plan Map

Community Considerations

The Safety Action Plan analyzed socio-economic and demographic data together with the crash data to determine if there are important trends, findings, or considerations related to specific areas or communities within the city.

Areas of Persistent Poverty

The Safe Streets and Roads for All 2025 Notice of Funding Opportunity defines Areas of Persistent Poverty based on the Infrastructure Investment and Jobs Act (IIJA, 49 U.S.C. 6702(a)(1)). It also states that this applies as the definition of Underserved Communities. Based on this definition, a project is located in an Area of Persistent Poverty if:

1. *The County in which the project is located consistently had greater than or equal to 20% of the population living in poverty in all three of the following datasets: (a) the 1990 decennial census; (b) the 2000 decennial census; and (c) the most recent (2021) Small Area Income Poverty Estimates; OR*

2. *The Census Tract in which the project is located has a poverty rate of at least 20% as measured by the 2014-2018 5-year data series available from the American Community Survey of the Bureau of the Census; OR*

3. *The project is located in any territory or possession of the United States.*

Shepherdsville is not located within a designated Area of Persistent Poverty.

Community Demographic Summary

The following four populations were analyzed based on the United States Census American Survey (ACS). The 2022 ACS five-year table was used. Maps showing this data are in Figure 4-6, Figure 4-7, Figure 4-8, and Figure 4-9.

Elderly Population

Approximately 17.7% of the population in Shepherdsville is 65 or older, as shown on the next page. Portions of the city with high elderly populations should consider tailored roadway safety countermeasures. Oversized signage, lighting, pedestrian refuge islands, leading pedestrian intervals (LPIs), and raised crosswalks are some of the countermeasures that benefit elderly populations.

Population Impacted by Disability

Approximately 40.2% of households have one or more occupants with a disability. Similar to elderly populations, there are safety countermeasures available that support disabled populations. Many of these relate to pedestrian facilities such as curb ramps.

Population Experiencing Poverty

Approximately 19.5% of the population is at or below the poverty line. Areas with high poverty rates are often areas of underinvestment with regard to infrastructure and safety. Many of the severe crashes have occurred in or along the border of the southeast portion of the city; therefore, consideration should be given to investing in safety upgrades in this area.

Minority Population

The minority population of Shepherdsville encompasses all individuals who identify as non-white. Shepherdsville has approximately 7.3% of all individuals who meet this definition.

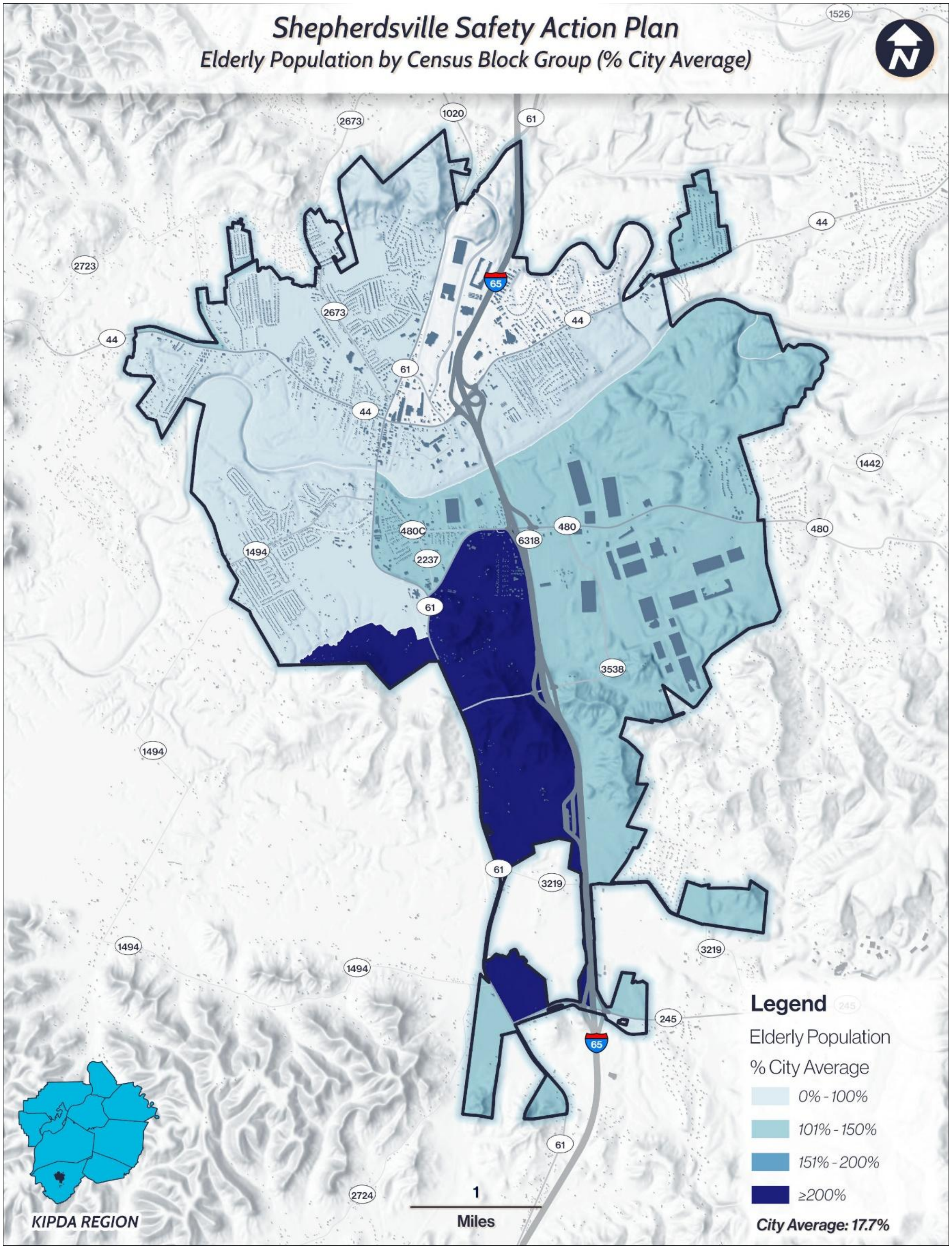


Figure 4-6. Elderly Population by Census Block Group Map

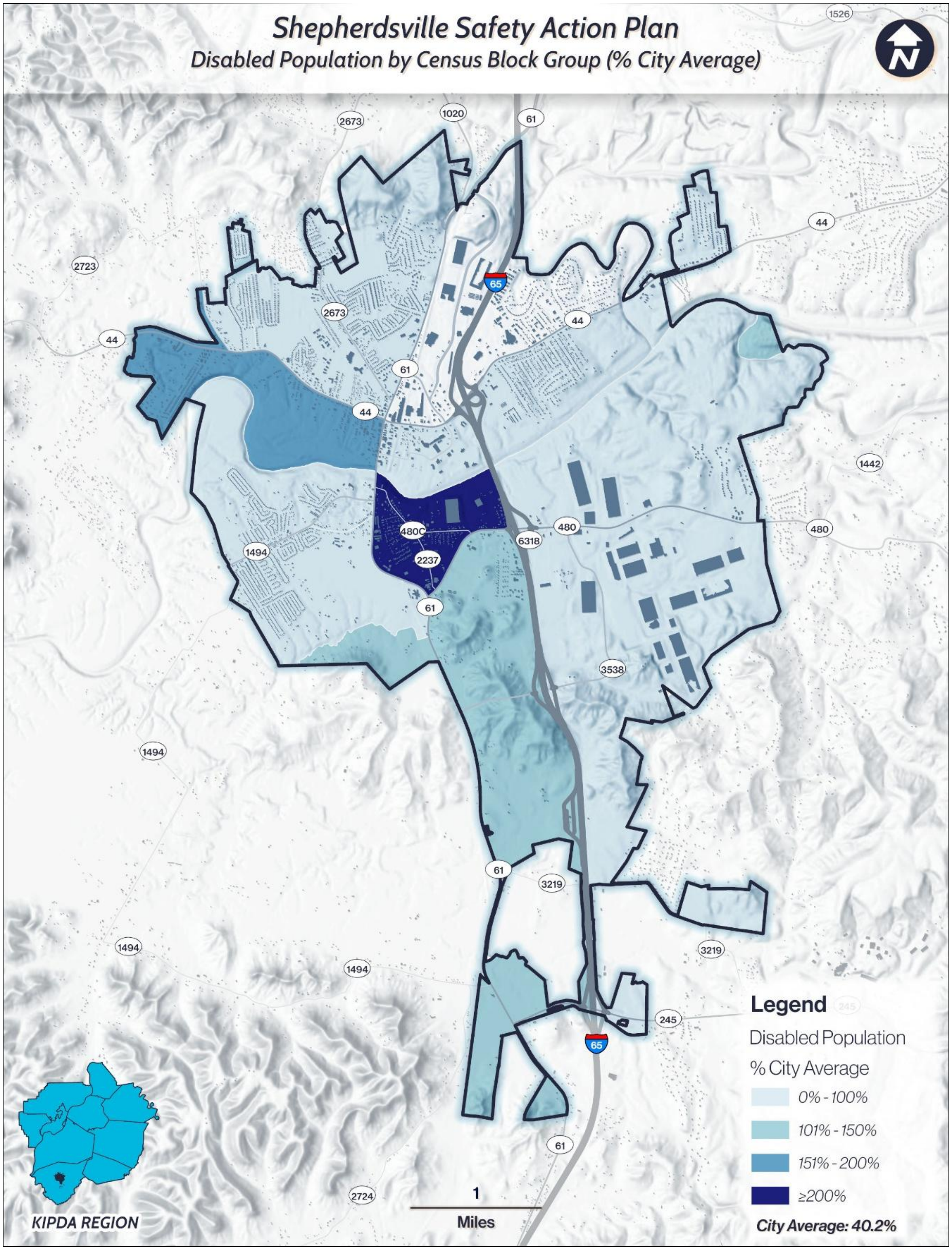


Figure 4-7. Disabled Population by Census Block Group Map

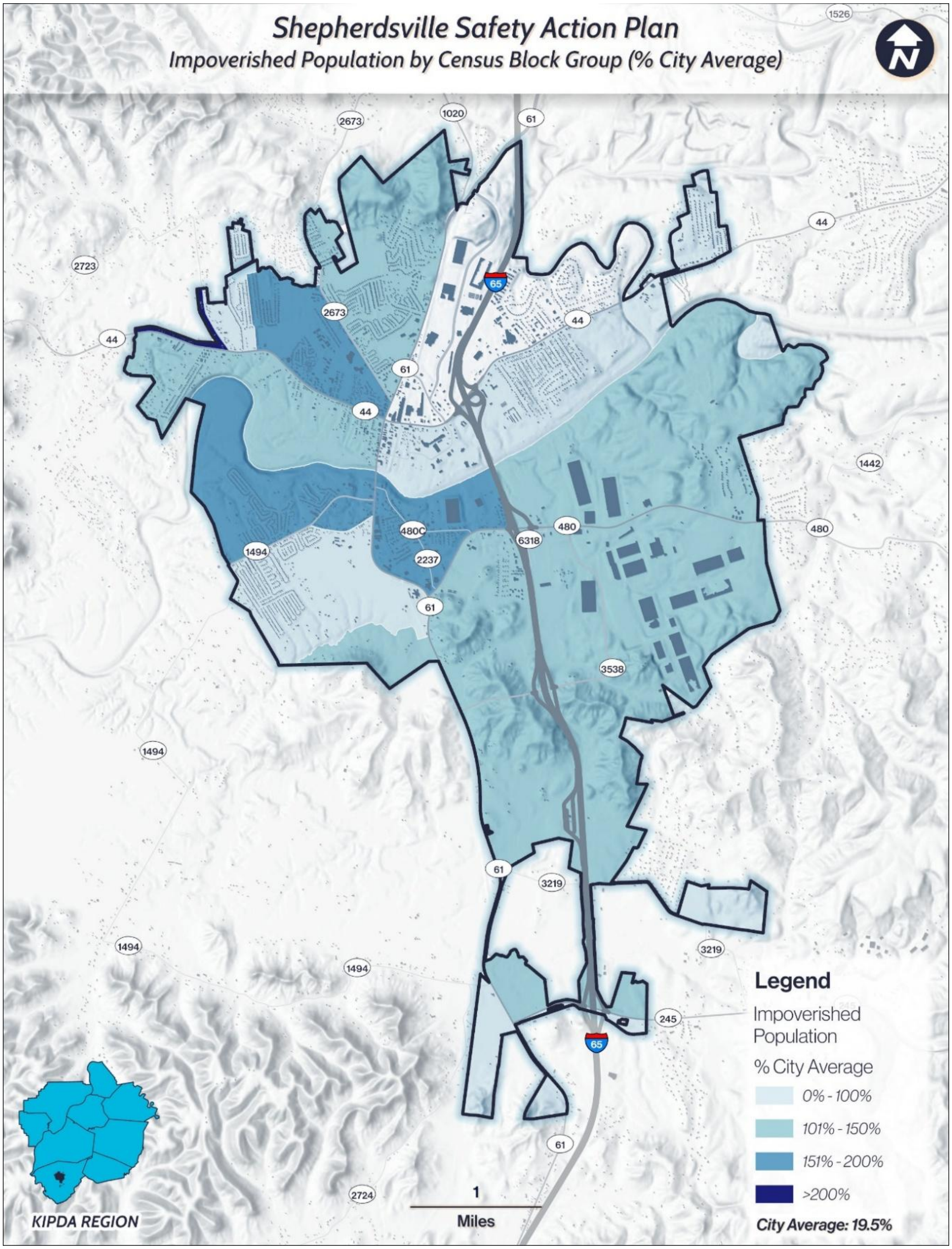


Figure 4-8. Impoverished Population by Census Block Group Map

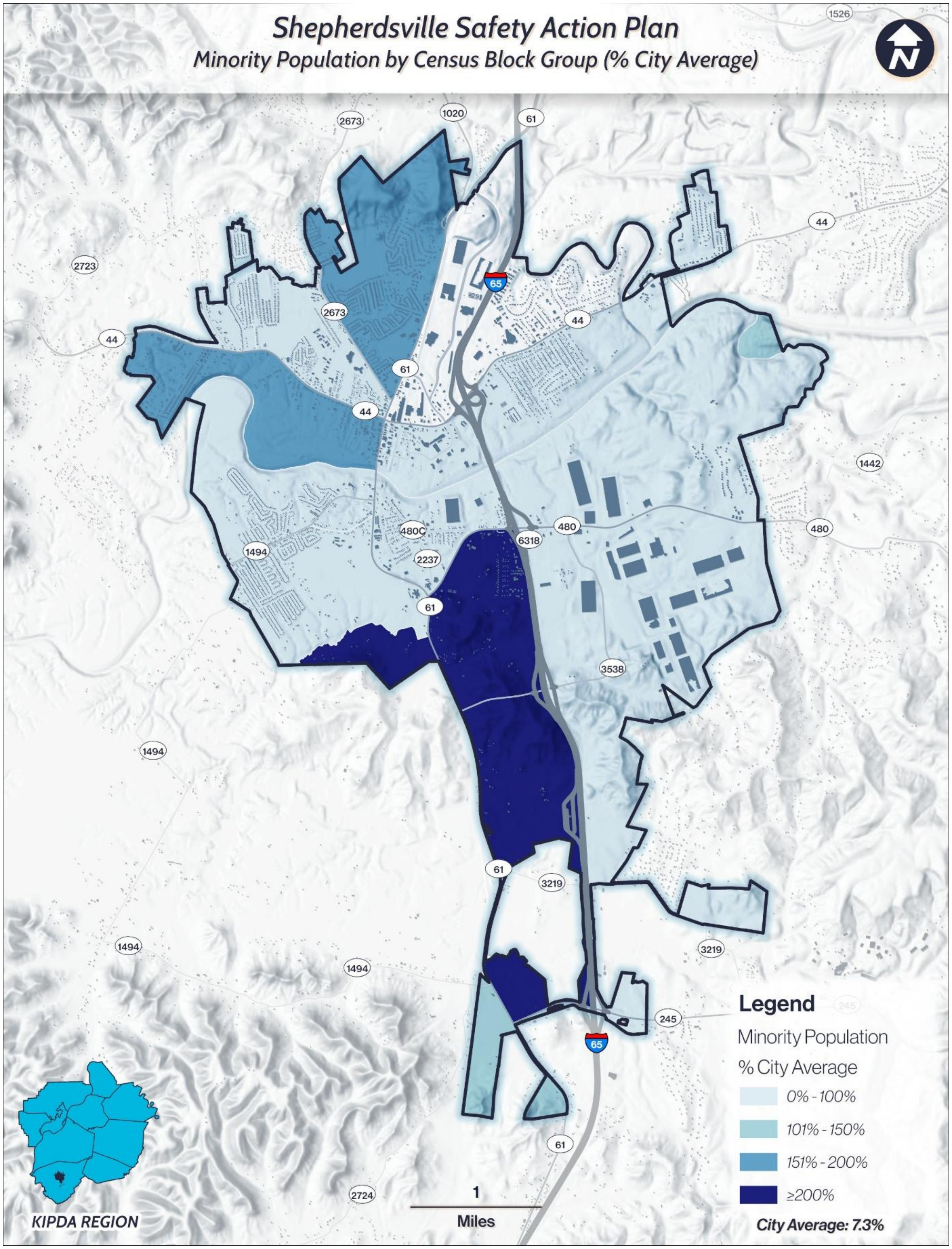


Figure 4-9. Minority Population by Census Block Group Map

5. Policy and Process Changes

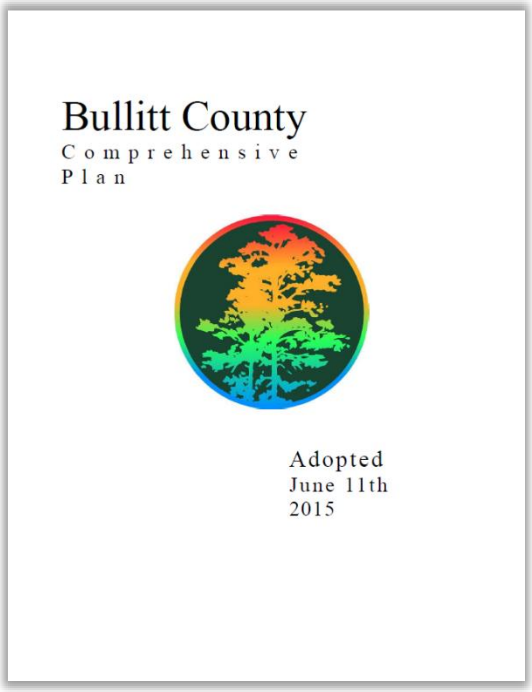
A comprehensive review of the City of Shepherdsville's existing policies, plans, guidelines, and standards has identified key opportunities to enhance transportation safety. The city aims to elevate safety as a priority while also creating a more inclusive and accessible transportation network for all users.

The City of Shepherdsville does not have its own comprehensive plan, but instead uses the Bullitt County Comprehensive Plan as an overarching framework for the city.

Bullitt County 2015 Comprehensive Plan

Link: [Bullitt County Comprehensive Plan]

The Bullitt County Comprehensive Land Use Plan, adopted in 2018, provides a framework for the county's development, emphasizing the maintenance and improvement of existing infrastructure, the creation of a balanced transportation system that supports all travel modes, and the integration of transportation planning with land use decisions to promote sustainable growth. The following are objectives related to transportation safety.



- Requirement for future private road development to meet county road standards as detailed in Bullitt County Ordinance 06 -14 and the Bullitt County Subdivision Regulations
- It is recommended that a Bullitt County Bicycle and Pedestrian Plan be developed to emphasize the importance of incorporating bicycling and pedestrian facilities in all transportation planning activities and roadway projects (both local and state).
- All new public facilities, including sidewalks, must be handicapped accessible

Future Considerations

It is recommended that future comprehensive plans and/or amendments consider the following:

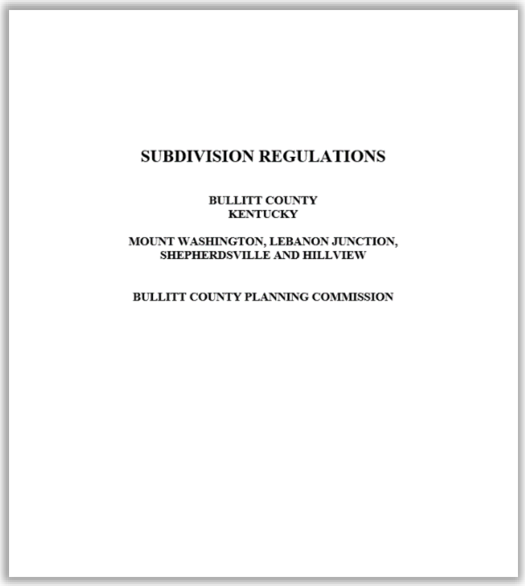
Implement Context Sensitive and Active Transportation Street Policies: To improve how processes prioritize safety, it is recommended to develop and context-sensitive street guidelines that support safety, connectivity, comfort, and accessibility for all users. These guidelines would be applied to new and existing road projects, ensuring that streets are designed to accommodate pedestrians, cyclists, motorists, and transit riders.

Promote Safe and Accessible Transportation for All: Promote transportation improvements to address the needs of all community members. Conduct periodic community-focused analyses to identify and mitigate transportation safety and access hot spots.

Strengthen Public Engagement and Transparency: Enhance public engagement processes by providing multiple avenues for community input, including online platforms, public meetings, focus groups and surveys. Feedback should be incorporated into planning decisions and updates on progress should be regularly communicated to the public. Enhancing public engagement and transparency will build public trust and support.

Subdivision Regulations

Link: Subdivision Regulations


SUBDIVISION REGULATIONS

BULLITT COUNTY
KENTUCKY

MOUNT WASHINGTON, LEBANON JUNCTION,
SHEPHERDSVILLE AND HILLVIEW

BULLITT COUNTY PLANNING COMMISSION

The City of Shepherdsville does not have their own set of subdivision regulations, but instead uses the Bullitt County Comprehensive Plan as an overarching framework for the city.

These regulations provide a procedure and minimum standards of design construction by which the Bullitt County Planning Commission can equitably appraise all future proposed plats, for land subdivision plat preparation, review, and approval requirements. These regulations shall govern all subdivision of land within the boundaries of Bullitt County, Kentucky, hereafter established; provided that if a developer has recorded a subdivision plat prior to March 11, 1983, which is a part of a parcel of land owned by that developer, he shall be permitted to develop remainder of said parcel as a subdivision without complying with these subdivision regulations.

Future Considerations

These recommendations include guidance for future plan amendments that support eliminating road deaths and serious injuries.

Traffic Calming Measures: Consider updating regulations to include guidelines for traffic calming measures, such as roundabouts, speed humps, chicanes, and raised intersections and crosswalks in residential subdivisions to reduce vehicle speeds and enhance safety for pedestrians and bicyclists. Implementing traffic calming strategies will reduce the risk and severity of crashes.

Active Transportation Infrastructure: Consider updating active transportation infrastructure requirements for new developments to encourage safe access for all vulnerable road users. Sidewalks should meet accessibility standards and provide safe crossings at all intersections. Consider incorporating dedicated pathways or multi-use trails in all new developments and promote connectivity to existing pedestrian and active transportation networks.

Traffic Safety Analysis and Improvements: Consider including language that requires a traffic safety analysis to demonstrate that the development or subdivision is not significantly impacting safety on nearby roads or intersections. Language could also be integrated into zoning and subdivision ordinances to provide for the analysis of, and recommendations for, potential countermeasures to address any potential impacts.

6. Strategy and Project Selection

The development of strategies and project selection is based on a comprehensive analysis of historical crash data, implementation of best practices, active engagement with stakeholders and the community, and an assessment of Areas of Persistent Poverty (APP) and Underserved Communities. The reactive approach involves a detailed examination of crash data by frequency, severity, and location to identify the areas needing improvement the most. The following sections detail the methodology for prioritizing projects and strategy selection.

Prioritization

The City's goal is to eliminate fatal and serious injury crashes; therefore, crash severity is a critical factor in prioritizing projects and strategy selection. Comprehensive crash costs combine the economic cost of a crash and monetized pain and suffering. The Federal Highway Administration (FHWA) developed national crash costs to use as default crash unit values (Crash Costs for Highway Safety Analysis), that states and municipalities can adjust based on regional differences. Table 6-1 provides the comprehensive cost per crash adjusted to the KIPDA region as prescribed in the FHWA Crash Costs for Highway Safety Analysis.

Severity	Severity Description	Comprehensive Cost Per Crash (2022 Dollars)
K	Fatal Injury	$10,175,024
A	Suspected Serious Injury	$594,471
B	Suspected Minor Injury	$182,274
C	Possible Injury	$116,572
O	No Apparent Injury	$12,220

Table 6-1 KIPDA Comprehensive Crash Cost

Equivalent Property Damage Only Method

The Equivalent Property Damage Only (EPDO) is a method of weighting crashes by severity using the equivalent number of No Apparent Injury Crash costs, also called Property Damage Only (PDO) crash costs, to develop the weights. The following table shows the comprehensive costs and EPDO value breakdown by crash severity.

Severity	Comprehensive Cost Per Crash (2022 Dollars)	EPDO Weighted Value
K	$10,175,024	833
A	$594,471	49
B	$182,274	15
C	$116,572	10
O	$12,220	1

Table 6-2. KIPDA EPDO Crash Value

As shown above, the comprehensive cost of a fatal crash (K) compared to the other crash severities is significant. The EPDO method, however, may overly emphasize fatal crashes, potentially skewing focus towards areas with fewer crashes. To address this imbalance, analyst s used a modified EPDO (MEPDO) approach to equally consider both fatal and suspected serious injury crashes by blending their values based on their comprehensive costs and frequency.

Table 6-3 presents a breakdown of the MEPDO, providing a more balanced evaluation while maintaining a focus on fatal and suspected serious injury crashes. The crashes for the entire KIPDA region were used to calculate weighted average costs and MEPDO.

<table>
<tr><th>Severity</th><th>Crashes</th><th>Comprehensive Cost Per Crash (2022 Dollars)</th><th>Severity</th><th>Weighted Average Costs*</th><th>MEPDO Value</th></tr>
<tr><td>K</td><td>618</td><td>$10,175,024</td><td rowspan="2">KA</td><td rowspan="2">$2,224,193</td><td rowspan="2">182</td></tr>
<tr><td>A</td><td>3,015</td><td>$594,471</td></tr>
<tr><td>B</td><td>12,841</td><td>$182,274</td><td>B</td><td>$182,274</td><td>15</td></tr>
<tr><td>C</td><td>11,770</td><td>$116,572</td><td>C</td><td>$116,572</td><td>10</td></tr>
<tr><td>O</td><td>113,611</td><td>$12,220</td><td>O</td><td>$12,220</td><td>1</td></tr>
</table>

** KA Cost = (618*$10,175,024+3,015*$594,471) / (618+3,015) = $2,224,193*
*** KA Value = $2,224,193 / $12,220 = 182*

Table 6-3. KIPDA MEPDO Crash Value

Reactive Approach

Methodology

The reactive approach for analyzing crashes includes joining the crash data with roadway data. KYTC provided geographic information system (GIS) files of roadway and traffic data, known as the Highway Information System (HIS) database. HIS data includes roadway characteristics and traffic data for state-owned roadways. Analysts combined the crash data with GIS information to facilitate detailed analysis by identifying the location of the crashes by road segment and intersection.

After joining the crashes to the roadway segments and intersections, analysts applied the MEPDO method to generate lists of prioritized intersections and corridors.

The lists are for planning purposes only. The intersections and corridors identified could potentially benefit from safety countermeasures; however, it is not necessary to make improvements in the listed order. In addition, there may be other high priority locally identified safety projects. Therefore, these lists provide high-level planning guidance for future agency consideration.

Intersections

Enhancing safety at intersections is vital for achieving a Safe System Approach. Evaluating roadway features such as geometrics and traffic operation and control is necessary for eliminating fatal and serious injury crashes. Intersections are deliberate points of interaction where vehicles and non-motorized users converge, significantly impacting the overall safety performance of the transportation system. These conflict points are historically where fatal and serious injury crashes occur. Therefore, intersection projects present unique opportunities to incorporate Safe System principles into planning, design, and operational decisions. Improving intersections can play a significant role in eliminating fatal and serious injury crashes.

Prioritized Intersections

Shepherdsville experienced 36 fatal and suspected serious injury crashes at intersections, representing 40% of all fatal and suspected serious injury crashes. Both types of intersections contain multiple conflict points and offer significant opportunities to enhance safety for all users. MEPDO was calculated for each intersection and ranked.

Table 6-4 lists the top 20 intersections by MEPDO. These top 20 intersections account for 21 fatal and suspected serious injury crashes at intersections. Table 6-4. Prioritized Intersections by MEPDO and Figure 6-1 illustrates this approach of prioritizing intersections.

Ranking	Intersection	K	A	B	C	O	KA	TOTAL	MEPDO
1	Shepherdsville Rd (KY-44) & I-65 SB Ramps	1	1	9	17	214	2	242	874
2	Clermont Rd (KY-245) & Preston Hwy (KY-61)	0	2	2	4	13	2	21	445
3	Preston Hwy (KY-61) & Cedar Grove Rd (KY-480)	1	1	0	0	13	2	15	377
4	Cedar Grove Rd (KY-480) & Amazon.com Blvd	1	0	4	2	52	1	59	313
5	Cedar Grove Rd (KY-480) & I-65 SB Ramps	0	1	1	4	50	1	56	285
6	Cedar Grove Rd (KY-480) & I-65 NB Ramps	0	1	2	5	22	1	30	282
7	Cedar Grove Rd (KY-480) & Buffalo Run Rd (KY-6318)	0	1	2	2	37	1	42	268
8	Conestoga Pkwy & Keystone Crossroad Dr	0	1	0	3	22	1	26	233
9	Preston Hwy (KY-61) & Cedar Grove Rd (KY-480C)	0	1	0	3	13	1	17	224
10	Shepherdsville Rd (KY-44) & Adam Shepherd Pkwy	0	0	3	5	126	0	134	218
11	Preston Hwy (KY-61) & Chapeze Ln (KY-3219)	0	1	2	0	5	1	8	217
12	Preston Hwy (KY-61) & Mallard Lake Blvd	0	1	1	1	6	1	9	212
13	Cedar Grove Rd (KY-480) & Cedar Grove Rd (KY-480C)	1	0	1	0	10	1	12	207
14	Preston Hwy (KY-61) & W First St	1	0	1	0	4	1	6	201
15	Cedar Grove Rd (KY-480) & Mooney Ln	0	1	0	0	9	1	10	191
16	Shepherdsville Rd (KY-44) & I-65 NB Ramps	0	0	4	7	64	0	75	190
17	W Blue Lick Rd (KY-2673) & Village Dr	0	1	0	0	7	1	8	189
18	Preston Hwy (KY-61) & Northside Ave	0	1	0	0	5	1	6	187
19	Cedar Grove Rd (KY-480) & Sparrow Dr (KY-6317)	0	1	0	0	4	1	5	186
20	Ohm Dr & Omega Pkwy	0	1	0	0	4	1	5	186

Table 6-4. Prioritized Intersections by MEPDO

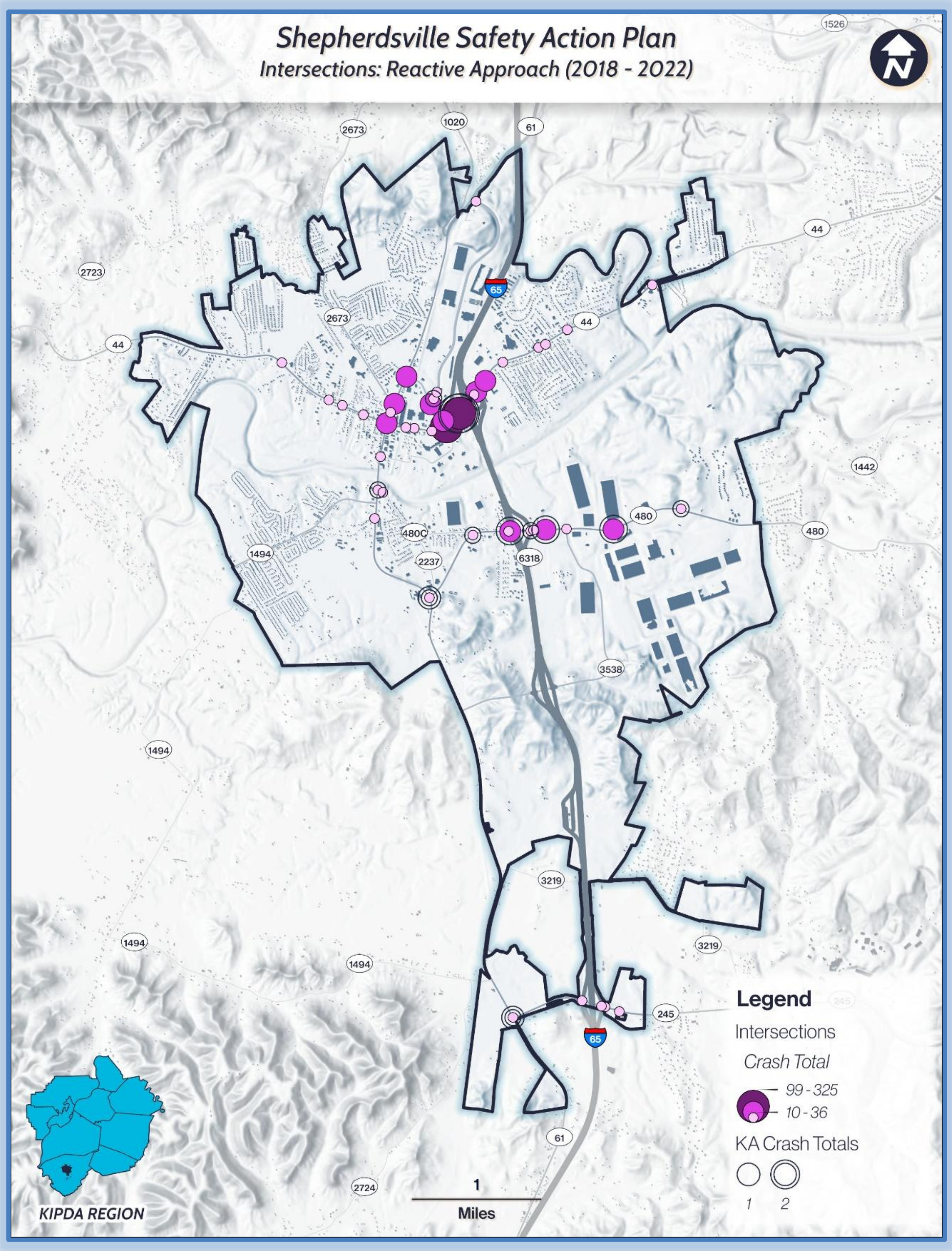


Figure 6-1. Intersections: Reactive Approach Map

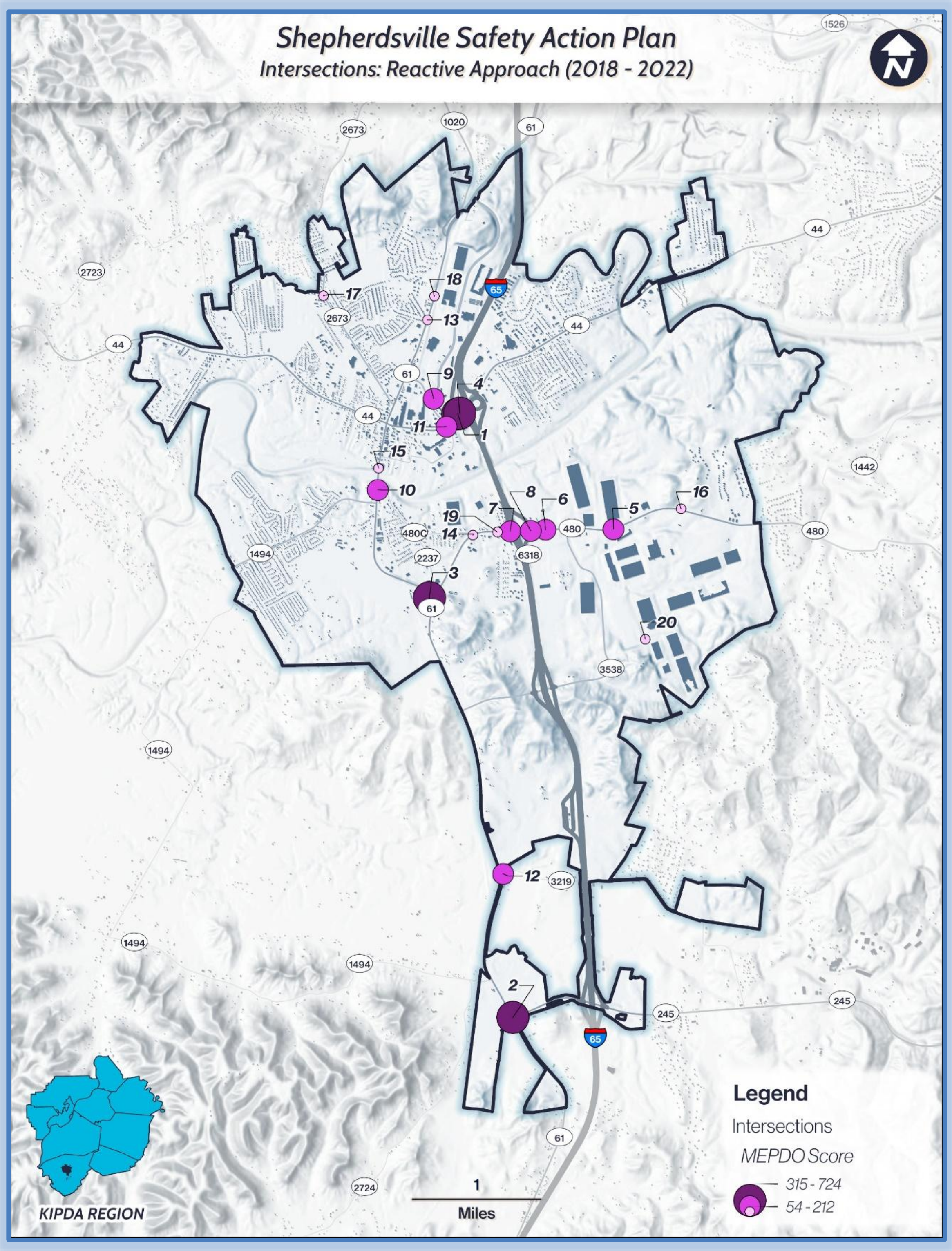


Figure 6-2. Intersections Prioritized by EPDO Map

High Injury Network and Prioritized Corridors

A High Injury Network (HIN) is a data-driven approach to identify roadway segments that experience a disproportionately high number of fatal and serious injury crashes. This approach enables communities to focus resources on improving safety along those high priority corridors. Shepherdsville's HIN was developed using detailed crash data analysis and GIS mapping to pinpoint corridors with the highest concentration of severe crashes. Table 6-5 details Shepherdsville's HIN, highlighting its overlap with locations of fatal and serious injury crashes, and prioritized intersections based on MEPDO analysis. Figure 6-3, Figure 6-4, and Figure 6-5 illustrate the location and prioritization of this network.

Ranking	Route	Begin	End	Length (mile)	MEPDO	MEPDO/ mile
1	Cedar Grove Rd (KY-480)	Cedar Grove Rd (KY-480C)	Buffalo Run Rd	0.57	1,036	1,815
2	East 4th St (KY-44)	Buckman St (KY-61)	Mellwood Dr	1.37	2,430	1,778
3	S Buckman St (KY-61)	Cedar Grove Rd (KY-480C)	East 4th St (KY-44)	0.54	697	1,302
4	N Buckman St (KY-61)	East 4th St (KY-44)	Conestoga Pkwy	1.91	1,722	900
5	Adam Shepherd Pkwy	East 4th St (KY-44)	N Buckman St (KY-61)	0.53	446	850
6	Cedar Grove Rd (KY-480)	Buffalo Run Rd (KY-6318)	Park Loop Rd	1.67	1,200	719
7	West 4th St (KY-44)	Old Pitts Point Road	Buckman St (KY-61)	2.11	1,495	707
8	Charles Hamilton Way (KY-480)	Preston Hwy (KY-61)	Cedar Grove Rd (KY-480C)	0.59	398	676
9	Conestoga Pkwy	Adam Shepherd Pkwy	Preston Hwy (KY-61)	1.84	1,079	587
10	West Blue Lick Rd (KY-2673)	N Buckman St (KY-61)	Chillicoop Rd	1.62	823	508
11	East 4th St (KY-44)	Mellwood Drive	St Andrews Way	1.72	855	498
12	Clermont Rd (KY-245)	Audubon Drive	Preston Hwy (KY-61)	0.88	423	480
13	N & S Joe B Hall Ave	East 4th St (KY-44)	Carpenter St	0.55	227	410
14*	Preston Hwy (KY-61)	Clermont Rd (KY-245)	Ohm Dr Connector (KY-3538)	2.52	807	320

** further review needed*

Table 6-5. Prioritized Corridors - High Injury Network

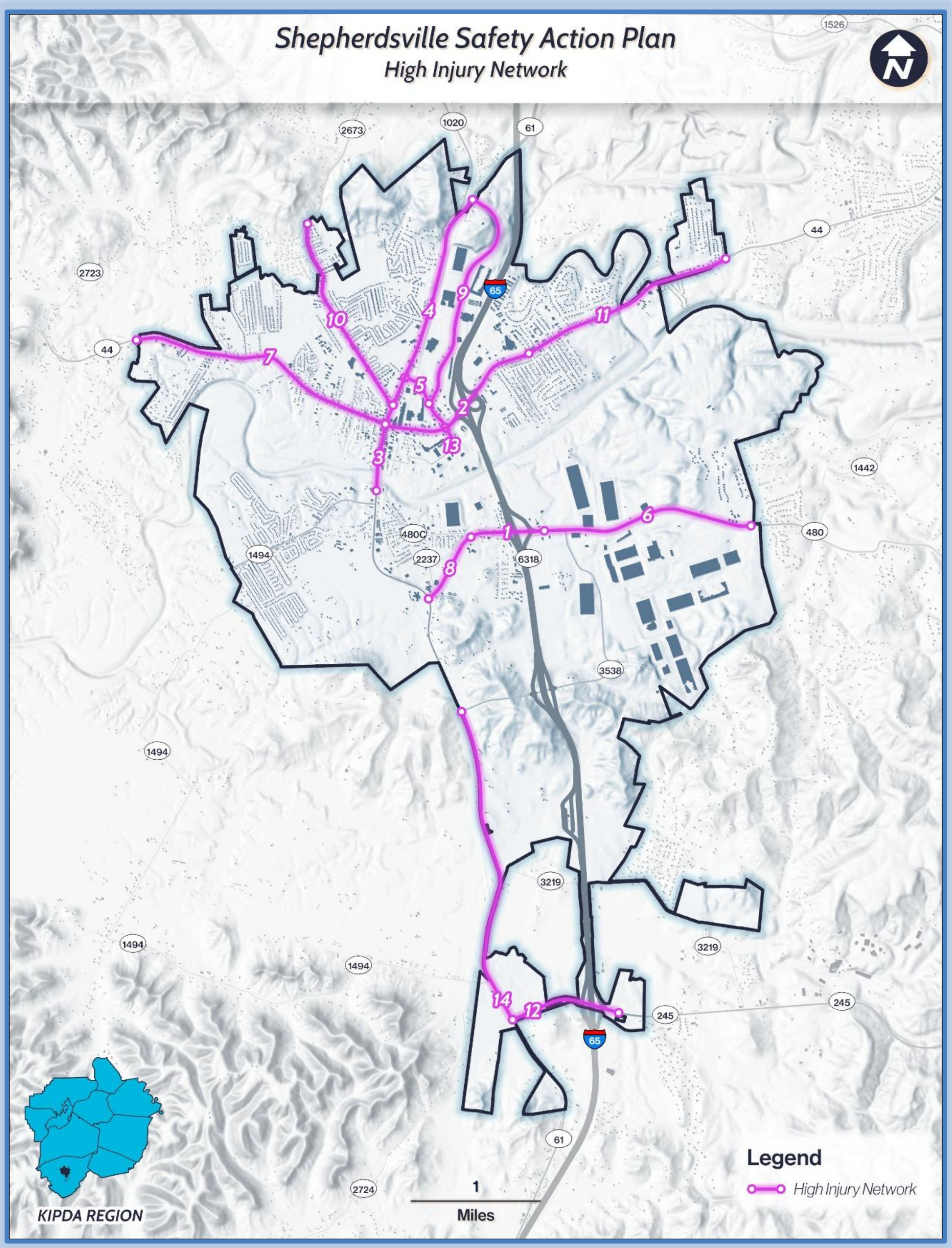


Figure 6-3. High Injury Network

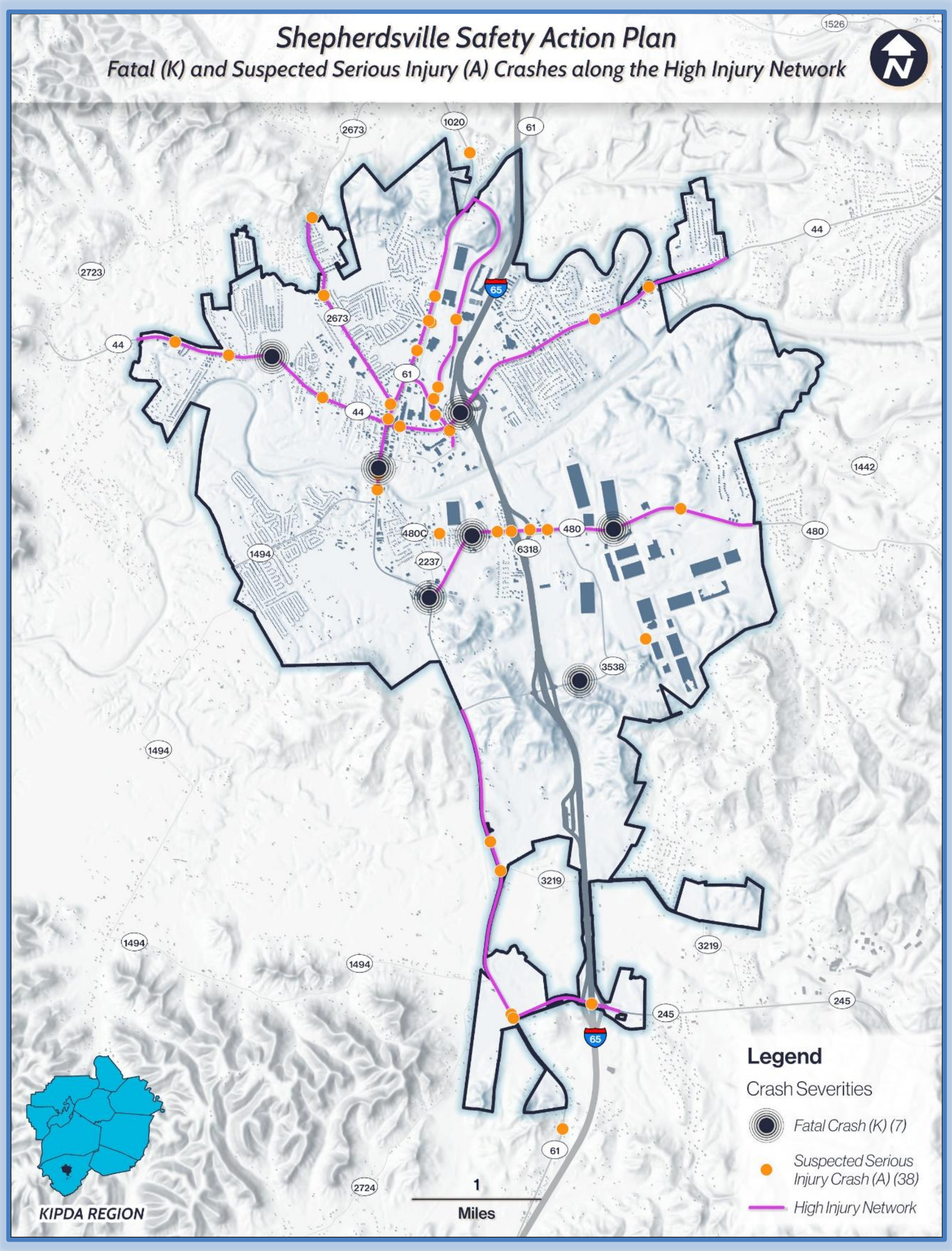


Figure 6-4. High Injury Network and Fatal and Suspected Serious Injury Crashes

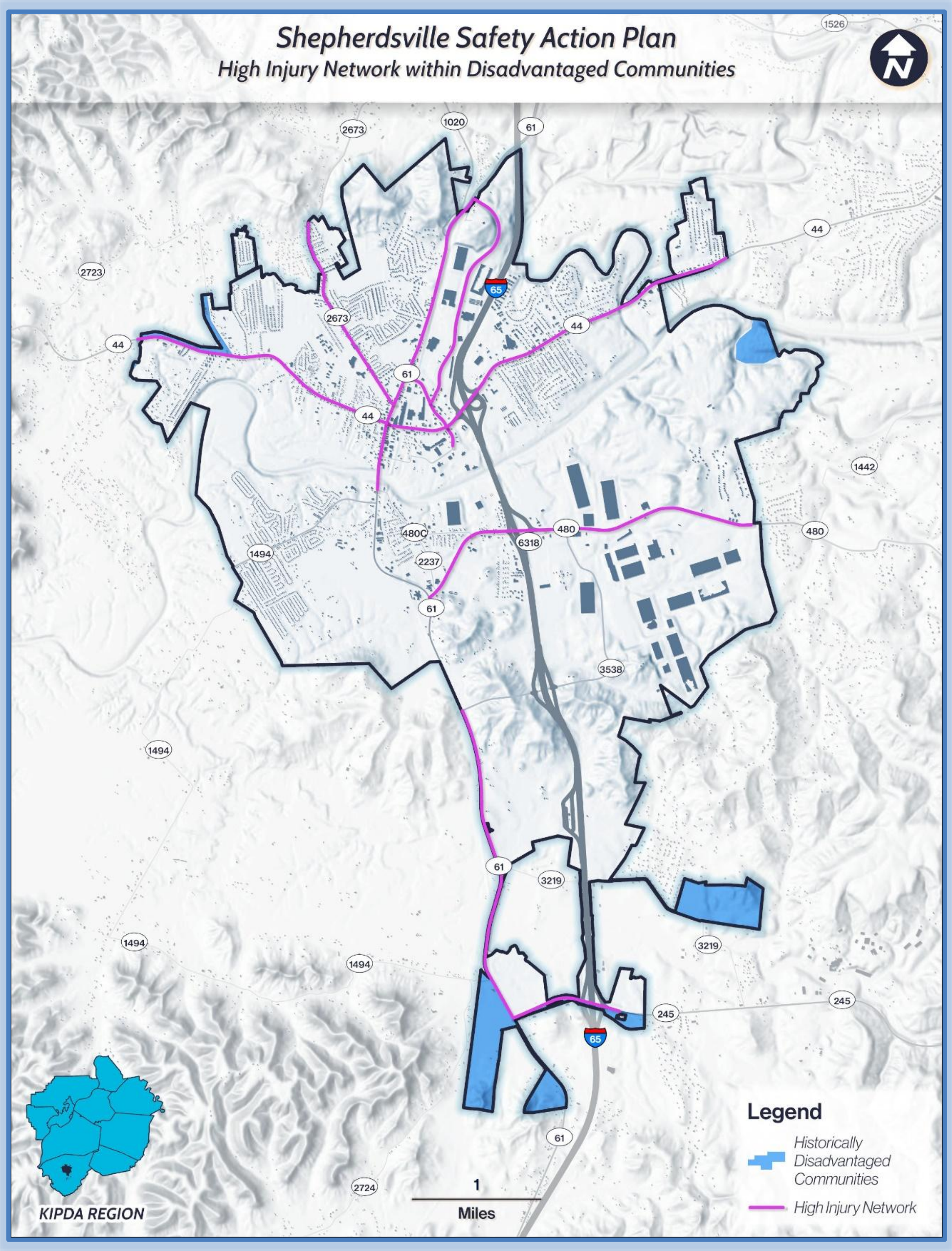


Figure 6-5.High Injury Network and Prioritized Intersections

Project Selection

A comprehensive set of recommended strategies and safety improvements was developed for the top-ranked intersections and corridors within the HIN. The improvements are based on the results of the safety analysis, feedback from Safety Committee and the public, and are guided by considerations and the principles of the Safe System Approach.

Proven Safety Countermeasures

The following tables present a selection of proven safety countermeasures designed to reduce crashes. These measures are informed by before-and-after crash data from case studies. The countermeasures are organized into roadway segment and intersection improvement tables. The countermeasures includes an image, a description of the countermeasure's safety benefits, estimated safety impact statistics, and a link for further information.

Countermeasures should be implemented as appropriate based on the prioritized project locations. Estimated cost ranges for safety countermeasures can be found in Appendix A. This appendix also includes a project implementation timeline reference chart, which provides high-level guidance on the time required to complete a range of potential safety improvement projects. Please refer to the notes on the chart during the development of project timelines.

Additional information on potential safety countermeasures can be found using these links:

Proven Safety Countermeasures (Federal Highway Administration)
https://highways.dot.gov/safety/proven-safety-countermeasures

Innovative Intersections (Virginia Department of Transportation)
https://www.vdot.virginia.gov/about/our-system/highways/innovative-intersections/virginia-icap/

Federal Highway Administration Safety Programs
Intersection Safety - https://highways.dot.gov/safety/intersection-safety/about
Roadway Departure Safety – https://highways.dot.gov/safety/RwD
Speed Management Safety - https://highways.dot.gov/safety/speed-management
Pedestrian and Bicycle Safety – https://highways.dot.gov/safety/pedestrian-bicyclist
Local and Rural Safety - https://highways.dot.gov/safety/local-rural
Safety Data Analysis and Tools - https://highways.dot.gov/safety/data-analysis-tools

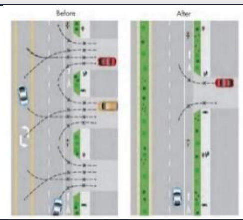
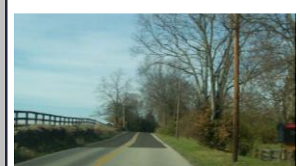
Example Segment Countermeasures							
Countermeasure	Description	Safety Impact	Links	Countermeasure	Description	Safety Impact	Links
Enhanced Delineation for Horizontal Curves				**Roadside Design Improvements at Curves**			
	High visibility markings and delineators around curves provide drivers with better information about curves.	Severe crashes ↓15-18%	FHWA		Includes treatments that improve horizontal curves, giving drivers the opportunity to recover safely or reducing crash severity.	Single Vehicle or All Crashes ↓8-44%	FHWA
Access Management (segment treatments)				**Medians and Pedestrian Refuge Islands**			
	Reducing the number and proximity of access points to focus turning traffic to fewer locations. Reduces turning conflicts.	2-lane Rural Road Crashes ↓5-23% Urban Severe Crashes ↓25-31%	FHWA		Provide curbed median between opposing travel lanes to provide separation, reduce left-turn risks, and improve pedestrian safety.	Ped Crashes ↓46-56% Vehicle Crashes ↓15%	FHWA and FHWA
Roadway Reconfiguration (Right Sizing or Road Diet)				**Shoulder Treatment – Safety Edge**			
	Often involves converting a 4-lane undivided road to a 3-lane road with 2 through lanes and a center two-way left-turn lane, which slows traffic and reduces conflicts.	All Crashes ↓19-47%	FHWA		Shoulder edge upgrades to improve recoverability for roadway departures.	Severe ↓11% Run-Off-Road ↓21% Head-On ↓19%	FHWA
Dynamic Speed Feedback Signs				**Pavement Friction Management**			
	Provide positive and negative feedback to drivers regarding their speed.	All Crashes ↓5%	FHWA (pg 5) FHWA Clearinghouse		High Friction Surface Treatment (HFST) can prevent roadway departure, intersection, and pedestrian-related crashes.	Severe Crashes at Curves ↓48% Crashes at Intersections ↓48%	FHWA

Table 6-6. Example Segment Countermeasures

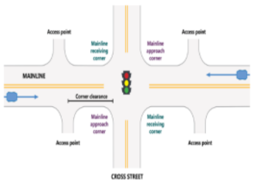
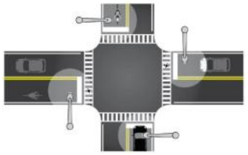
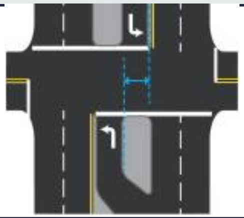
Example Intersection Countermeasures							
Countermeasure	**Description**	**Safety Impact**	**Links**	**Countermeasure**	**Description**	**Safety Impact**	**Links**
Access Management (intersection treatments)				**Intersection Lighting**			
	This refers to the design and control of access points including intersections which can enhance safety for all modes.	2-lane Rural Road Crashes ↓5-23% Urban Severe Crashes ↓25-31%	FHWA		Increased visibility at nighttime can improve safety for all modes of travel.	Nighttime Ped Injuries ↓42% Nighttime Crashes ↓33-38%	FHWA
Crosswalk Visibility Enhancement				**Reflective Backplates**			
	High-visibility crosswalks can reduce pedestrian injury crashes.	Pedestrian Injury Crashes ↓40%	FHWA		Improve the visibility of the illuminated face of the signal by introducing a controlled-contrast background.	Total Crashes ↓15%	FHWA
Low-Cost Countermeasures at Stop-Controlled Intersections				**Modern Roundabouts (RAB)**			
	Deploying a package of low-cost countermeasures, including enhanced signing and pavement markings increasing driver awareness.	Severe Crashes ↓10% Night Crashes ↓15% Rural Severe Crashes ↓27%	FHWA		Converting an intersection (stop or signal) into a roundabout can slow traffic. It also minimizes conflicts and reduces crash severity.	2-way Stop to RAB Severe Crashes ↓82% Signal to RAB Severe Crashes ↓78%	FHWA
Left and Right Turn Lanes				**Positive Offset Left-Turn Lane**			
	Left and right turn lanes provide physical separation between through traffic and turning traffic that is slowing or stopped.	Left Turn Lane ↓28-48% Right Turn Lane ↓14-26%	FHWA		Provides increased visibility for drivers turning left. It prevents opposing left turning vehicles from blocking sightlines.	Severe crashes ↓36%	FHWA

Table 6-7. Example Intersection Countermeasures

Potential Intersection Strategies

The following table lists the prioritized intersections based on their MEPDO values. Each intersection was evaluated for its existing condition. Relevant safety countermeasures were identified as potential improvements for each intersection.

Intersections – Reactive Approach													
			Potential Countermeasures										
Ranking	Intersection	Roundabouts / Alternative Int.	Turn Lanes	Tighten Intersection	Reflective Backplates	Enhanced Striping	Enhanced Signing	Access Management / Raised Median	Lighting	Sight Distance Improvements	Pedestrian Enhancements	Re-Align Intersection	Speed Management
1	Shepherdsville Rd (KY-44) & I-65 SB Ramps	X					X				X		X
2	Clermont Rd (KY-245) & Preston Hwy (KY-61)	*Signal recently installed; monitor safety performance*											
3	Preston Hwy (KY-61) & Cedar Grove Rd (KY-480)	X		X		X			X	X			X
4	Cedar Grove Rd (KY-480) & Amazon.com Blvd					X			X				X
5	Cedar Grove Rd (KY-480) & I-65 SB Ramps	***Active Project:** 5-391.30 - Improve operational performance of interchange*											
6	Cedar Grove Rd (KY-480) & I-65 NB Ramps												
7	Cedar Grove Rd (KY-480) & Buffalo Run Rd (KY-6318)					X	X	X			X		X
8	Conestoga Pkwy & Keystone Crossroad Dr					X	X	X					
9	Preston Hwy (KY-61) & Cedar Grove Rd (KY-480C)	X	X	X		X							
10	Shepherdsville Rd (KY-44) & Adam Shepherd Pkwy	X			X	X		X		X	X		
11	Preston Hwy (KY-61) & Chapeze Ln (KY-3219)	X	X			X							
12	Preston Hwy (KY-61) & Mallard Lake Blvd	X				X				X			X
13	Cedar Grove Rd (KY-480) & Cedar Grove Rd (KY-480C)	X				X	X						X
14	Preston Hwy (KY-61) & W First St					X			X			X	X
15	Cedar Grove Rd (KY-480) & Mooney Ln	X				X		X					X
16	Shepherdsville Rd (KY-44) & I-65 NB Ramps			X		X							

Intersections – Reactive Approach													
		Potential Countermeasures											
Ranking	Intersection	Roundabouts / Alternative Int.	Turn Lanes	Tighten Intersection	Reflective Backplates	Enhanced Striping	Enhanced Signing	Access Management / Raised Median	Lighting	Sight Distance Improvements	Pedestrian Enhancements	Re-Align Intersection	Speed Management
17	W Blue Lick Rd (KY-2673) & Village Dr					X							
18	Preston Hwy (KY-61) & Northside Ave					X							X
19	Cedar Grove Rd (KY-480) & Sparrow Dr (KY-6317)	***Active Project:*** *5-391.30 - Improve operational performance of interchange*											
20	Ohm Dr & Omega Pkwy	*Recently completed project to improve intersection*											

Table 6-8. Potential Intersection Strategies

Potential High Injury Network Corridor Strategies

Table 6-9 outlines potential safety improvement strategies for routes along the HIN. The list of improvements was developed using proven safety countermeasures aimed at reducing and eventually eliminating sever crashes. These routes can be further studied to guide implementation efforts. The table also highlights current improvements along Lagrange Road (KY-146), as well as the N Main Street (KY-55) corridor currently in the planning and design phases of future projects.

Rank	Route Name	Begin and End Limits	Length	Potential Project Strategies
1	Cedar Grove Rd (KY-480)	Cedar Grove Rd (KY-480C) to Buffalo Run Rd	0.57	Corridor currently under construction. **Active Project:** 5-391.30 - Improve operational performance of interchange
2	East 4th St (KY-44)	Buckman St (KY-61) to Mellwood Drive	1.37	Access Management, interchange ramp improvements, pedestrian and bicycle facilities with safe crossings, innovative intersections, intersection lighting **Planned:** 5-150.02 – Reconstruct KY-44 from I-65 to Chimney Rock Dr
3	S Buckman St (KY-61)	Cedar Grove Rd (KY-480C) to East 4th St (KY-44)	0.54	Innovative intersections, curb extensions, enhanced pedestrian facilities, bicycle facilities, intersection lighting, speed management, gateway treatment, elevate out of the flood plain, widen bridge to include pedestrian and cyclist facilities **Active Project:** Streetscape planning in progress with effort to connect Parks.

Rank	Route Name	Begin and End Limits	Length	Potential Project Strategies
4	N Buckman St (KY-61)	East 4th St (KY-44) to Conestoga Pkwy	1.91	Access management, innovative intersection concepts, corridor lighting, enhanced pedestrian and cyclist facilities, speed management. Five-lane cross section recently completed. Crash data may not include current behavior.
5	Adam Shepherd Pkwy	East 4th St (KY-44) to N Buckman St (KY-61)	0.53	Access management, innovative intersections, pedestrian connectivity, enhanced pedestrian crossings, lighting.
6	Cedar Grove Rd (KY-480)	Buffalo Run Rd (KY-6318) to Park Loop Rd	1.67	Innovative intersections, pedestrian and cyclist facilities, lighting at school, speed management **Active Project:** 5-20036.00 – Address pavement condition of KY-480 from milepoint 0.00 to 5.14
7	West 4th St (KY-44)	Old Pitts Point Road to Buckman St (KY-61)	2.11	Add center turn lane, access management, innovative intersections, edge rumble strips, enhanced pedestrian crossings, enhanced signing for intersections and curves **Active Project:** under construction
8	Charles Hamilton Way (KY-480)	Preston Hwy (KY-61) to Cedar Grove Rd (KY-480C)	0.59	Innovative intersections, intersection lighting, intersection signing, shoulder rumble strips **Active Project:** 5-20036.00 – Address pavement condition of KY-480 from milepoint 0.00 to milepoint 5.14
9	Conestoga Pkwy	Adam Shepherd Pkwy to Preston Hwy (KY-61)	1.84	Access management, road diet, innovative intersections, pedestrian facilities and enhanced crossings, lighting.
10	West Blue Lick Rd (KY-2673)	N Buckman St (KY-61) to Chillicoop Rd	1.62	Intersection signing, widen for shoulder, edgelines, and edge/center rumbles, turn lanes at intersections, pedestrian facilities and enhanced crossings, trim trees, curve signing, curve widen, 3-lane cross-section Water department completing project in corridor
11	East 4th St (KY-44)	Mellwood Drive to St Andrews Way	1.72	Minor widening for center rumbles, major widening for center turn lane, upgrade pedestrian and cyclist facilities, turn lanes at intersections **Active Project:** 5-150.02 – Reconstruct KY 44 from I-65 to Chimney Rock Dr
12	Clermont Rd (KY-245)	Audubon Drive to Preston Hwy (KY-61)	0.88	Innovative intersections including at interchange, lighting, access management and turn lanes with new development
13	N & S Joe B Hall Ave	East 4th St (KY-44) to Carpenter St	0.55	Innovative intersections, enhanced pedestrian crossings, access management, lighting.
14	Preston Hwy (KY-61)	Clermont Rd (KY-245) to Ohm Dr Connector (KY-3538)	2.52	Widen for center rumbles, innovative intersections, guardrail improvement, curve widen, curve signing

Table 6-9. Potential Corridor Strategies

System Level Approach and Strategies

The system level (or systemic) approach to safety identifies and addresses high-risk features across the entire roadway network rather than focusing solely on specific crash locations, as in the reactive approach. Risk factors for Shepherdsville's roadway network were identified by analyzing crash and roadway data. The major safety challenges appear to be at intersections and key challenges are related to driver inattention/distraction, failure to follow traffic rules, and control and judgment errors.

Systemic strategies involve implementing widespread improvements to reduce the likelihood and severity of crashes across an area, not just at specific locations. These strategies proactively identify and mitigate potential hazards to prevent crashes.

Strategy 1 – Intersection Safety Improvements

Given the aggressive driving and driver errors are leading to severe crashes in Shepherdsville, it is recommended that the city consider countermeasures that could either reduce the likelihood of the error or reduce the severity when a crash occurs.

The types of countermeasures that could reduce the likelihood of the errors include citywide implementation of backplates on signals, upgraded intersection lighting, upgraded intersection striping, smaller intersection turning radii (with truck aprons where needed).

Improvements that would reduce the severity of the crashes when they occur include the implementation of roundabouts, lane narrowing (using striping only), speed feedback signs, and other designs and operational measures that help reduce vehicles speeds.

Strategy 2 – Modifications to Wide Arterials and Collectors

Roadway width, number of lanes (including turn lanes), and the presence of nearby driveways are some of the factors that can contribute to driver control and judgement errors. If possible, the city could work with KYTC and others to simplify and narrow some of the wider streets and highways. This would not include the elimination of lanes, but rather a reallocation of the width and possible new access control measures. The implementation of RCUT intersections is one example of this approach. These intersections are much simpler for drivers to navigate, leading to substantial reductions in both total and severe crashes.

Strategy 3 – Vulnerable Road User Safety Upgrades

Many of the countermeasures listed above would benefit pedestrians and bicyclists. In particular, improved crosswalk striping and intersection lighting would be beneficial. Other upgrades could include completion of missing sidewalk connections and lighting along roadways, especially near side-streets and driveways.

Safety Action Plan Implementation

This plan has documented and prioritized many safety challenges. Based on the data, agency / stakeholder input, and best practices, it has also identified potential strategies and projects that would address these challenges. The focus continues to be on reducing high-severity crashes across the community. This section outlines an initial action plan for deploying potential strategies, projects, and safety programs. The actions are proposed to be implemented in four time ranges: short-term (0-3 years); mid-term (4-6 years); long term (7+ years); and ongoing. They cover the main intervention categories: infrastructure, behavioral safety, operational safety, and policies/procedures.

The implementation of each project, strategy, or program is dependent on funding availability. It is also dependent on the support of all relevant agencies and the City's capacity to execute each action. In cases where the City does not have primary authority for implementing the action, they will need to play a supporting role.

Timeframe	No	Project / Strategy / Program Description	Document Reference	Recommended First Step	Primary Category
Short Term (0 to 4 years)	1	Adopt updated traffic calming and/or updated safety related codes and policies	Chapter 5	Work with KIPDA to obtain model policies for adoption	Policy / Procedures
	2	Submit agreed on joint application for SS4A grant funding for one of top HIN segments	Chapter 6; Table 6-9	Work with KYTC to identify and agree on a project and match funding	Infrastructure
	3	Begin outreach and education initiative with young and older drivers	Chapter 3	Collaborate with school district, public agencies, and non-profits	Behavioral
	4	Implement initial low-cost Speed Management strategies on HIN corridors	Chapters 3, 4 and 6; Systemic Sec.	Work with law enforcement and KYTC to identify key corridors	Operational
	5	Continue to support targeted speed and traffic control enforcement	Chapter 3 and 4	Work with law enforcement and KYTC to identify key locations	Operational
Mid Term (4 to 8 years)	6	Implement one easy to implement systemic infrastructure focused project	Chapters 3 and 6; Systemic Sec.	Work with KYTC to identify a promising project and funding	Infrastructure
	7	Implement high priority HIN segment project	Chapter 3 and Chapter 6	Work with KYTC to identify a promising project and funding	Infrastructure
	8	Implement high priority intersection project	Chapter 3 and Chapter 6	Work with KYTC to identify a promising project and funding	Infrastructure
	9	Implement safety focused local street/highway upgrades and maintenance	Chapter 3 and Chapter 6	Use local funds to advance priority local projects / maintenance	Infrastructure
	10	Initiate citywide safety outreach; Consider focusing on aggressive driving, distracted driving, rural to urban transition zones, and impaired driving	Chapter 3	Work with KIPDA and other jurisdictions to develop a multi-agency outreach approach	Behavioral
Long Term (9+ years)	11	Implement additional systemic infrastructure focused projects (goal is one or more every five years)	Chapters 3 and 6; Systemic Sec.	Build long-term partnership with KYTC (District 5 and HSIP) to identify and address key systemic needs	Infrastructure
	12	Implement additional infrastructure projects on HIN (goal is one or more every five years)	Chapter 3 and Chapter 6	Build long-term partnership with KYTC (District 5 and HSIP) to identify and address key HIN needs	Infrastructure
	13	Implement additional intersection infrastructure projects (goal is one or more every five years)	Chapter 3 and Chapter 6	Build long-term partnership with KYTC (District 5 and HSIP) to identify and address key intersection needs	Infrastructure
	14	Implement additional safety focused local street/highway improvements (goal is one or more every five years)	Chapter 3 and Chapter 6	Increase local funds to advance priority local projects / maintenance	Infrastructure
Ongoing	15	Continue Local Safety Meetings	Chapters 2 and 4	Schedule quarterly meetings	Policy / Procedures
	16	Collaborate with KIPDA to monitor, assess, and publicly report progress	Chapter 7	Coordinate with KIPDA to implement reporting plan	Policy / Procedures
	17	Continue building staff/agency knowledge regarding highway safety	Chapters 4, 5, and 6	Coordinate with KIPDA to schedule annual sessions	Policy / Procedures

Table 6-10. Implementation Action Plan Timeline

7. Progress and Transparency

The City of Shepherdsville, with support from KIPDA, is dedicated to ensuring the success of this Safety Action Plan. Effective communication, continuous monitoring, and evaluation are crucial to eliminating fatalities and serious injury crashes by 2050. Maintaining ongoing transparency through public accessibility and clear communication of outcome data is also essential.

The following chapter outlines the plan for measuring progress, maintaining transparency, and continuously incorporating feedback to enhance this road safety initiative.

Safety Performance Measurement

Safety improvements are measured using community-wide performance metrics to assess progress. Additionally, project-specific performance is monitored to promote effective implementation and positive safety impacts. The following sections outline the annual public and accessible progress reporting structure and proposed metrics.

Annual Safety Performance Measures

Crash Severity

The City and KIPDA expect to monitor the total number of crashes annually by crash severity: Fatal, Suspected Serious Injury, Suspected Minor Injury, Possible Injury, and No Apparent Injury. In addition, the crash rate for the total number of crashes would be estimated. The crash rate is the total number of crashes per vehicle miles traveled in the City.

Fatal and Suspected Serious Injury Crashes

Evaluating fatal and suspected serious injury crash trends is a key focus. Fatal and suspected serious injury crashes should be monitored annually. The measurement includes monitoring the total number of fatal and suspected serious injury crashes and the crash rate. The crash rate is the number of fatal and suspected serious injury crashes per vehicle miles traveled in the City annually.

Vulnerable Road User Crashes

Crashes involving vulnerable road users should be monitored annually, focusing on fatal and suspected serious injury crashes. Since a significant portion of severe crashes involve vulnerable road users, this metric is critical for assessing safety improvements.

Community Focused

The City and KIPDA expect to assess the above safety performance metrics by Census Tract to explore underlying factors contributing to crash trends. By comparing these metrics to city-wide results, patterns can be identified, allowing for tailored solutions and resources to meet the needs of different parts of the community. This approach aims to create a safer environment for all, by addressing concerns and promoting safety across the different parts of the community.

Project-Specific Performance Measures

The safety action plan recommends improvements using both the reactive and systemic approaches. Monitoring focuses on project-specific improvements at prioritized signalized intersections, unsignalized intersections, and along the corridors identified on the High Injury Network. Key project-specific measures anticipated to be collected include:

Safety Improvement Projects Implemented at Prioritized Locations

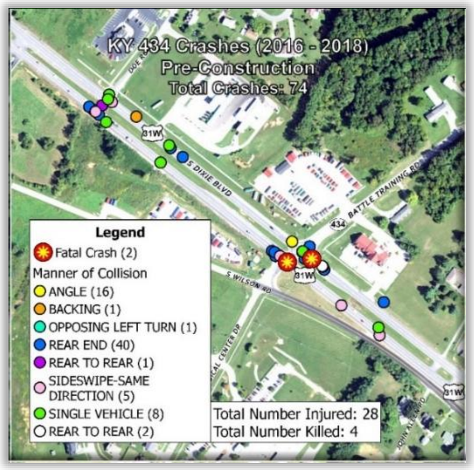
This performance measure tracks the number of safety-focused improvement projects constructed from the potential improvements listed in **Chapter 6 Strategy and Project Selection.** The total number of safety improvements implemented at the intersection and along the corridors identified on the HIN would be recorded annually.

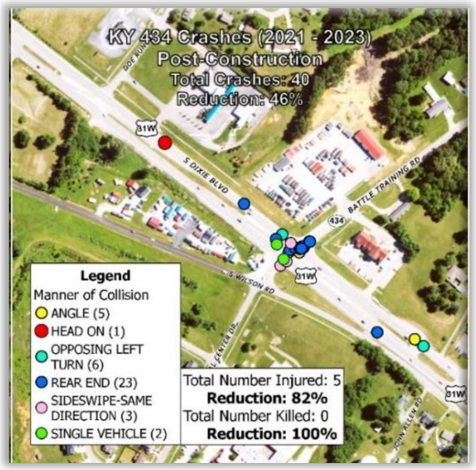
Crash Trends at Project Locations

When a safety improvement project has been constructed, pre-construction and post-construction crash data can be collected to document the realized crash reduction benefit. Crash trends would be assessed for each project specific improvement to aid decision-makers in future safety improvement decisions. This performance measure tracks fatal and suspected serious injury crashes for each improvement project.

Safety Studies and Design

The status of safety studies and design plans would be monitored annually. These studies and design plans, which include cost estimates, public engagement, NEPA documentation, and project readiness, move projects closer to construction and the ultimate goal of eliminating fatal and suspected serious injury crashes.



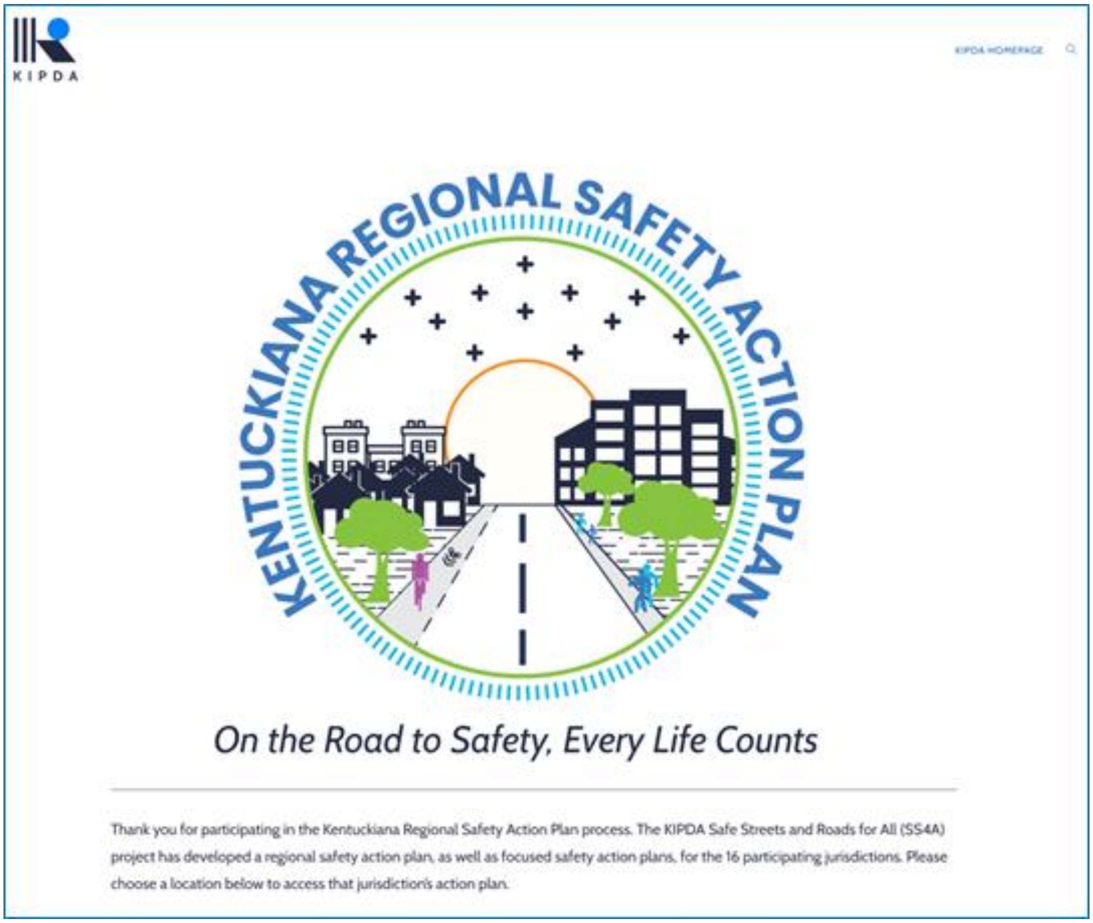


Geospatial representation of crash trends for specific projects is an effective method to demonstrate their impact to the community. Illustrating pre and post-construction crash data, with a focus on the decrease in fatal and suspected serious injury crashes, clearly communicates safety improvements.

PRE-CONSTRUCTION ⟶ **POST-CONSTRUCTION**

Transparency

The development of the Safety Action Plan has been shared publicly with residents and other relevant stakeholders through the KIPDA website. The MPO utilized its website to engage the community and disseminate further resources, including maps, the Safe Streets and Roads for All Grant Program, and the Safe Systems Approach. The Shepherdsville Safety Action Plan is posted publicly online at [SS4A – KIPDA Transportation](). The KIPDA website will continue to be the platform to engage the community and serve as a source of information and updates to the public.



Feedback and Continuous Improvement

Creating the Safety Action Plan involved a collaborative effort with active community participation. The project team conducted comprehensive public surveys and facilitated stakeholder discussions through Stakeholder and Safety Committees. This engagement underscored the importance of continuous improvement in achieving safety goals. By advancing ongoing dialogue, feedback is used to assess the plan's efficacy and provides for regular plan amendments. This can help keep the Safety Action Plan relevant and effective in addressing community needs.

Appendix A

Safety Countermeasure Cost Estimate Ranges

and

Project Implementation Timeline Reference Chart

Planning Level Safety Countermeasure Cost Estimate Ranges

Values are based on an assumed construction cost and percentages for all other categories
Results are for order of magnitude cost estimation only
6/12/2025

Notes:
Low Cost *Assumes Minimal Scope, Low Cost Approaches, and/or Ideal Conditions*
High Cost *Assumes Full Scope and Several Project Challenges*
All category and contingency percentages may need to be adjusted based on project size and complexity

Project	Unit	Planning	Design and Environmental Permitting	Right-of-Way	Utilities	Construction Inspection	Construction	Subtotal	Low Planning Level Contingency	High Planning Level Contingency	Low Total 2025 Cost	High Total 2025 Cost	Low Total 2032 Programming Cost	High Total 2032 Programming Cost
													(7%/yr compounded)	
Cost Percentages ==>		*5%*	*15%*	*20%*	*10%*	*12%*			*15%*	*50%*			*61%*	*61%*
Curve Realignment (moderate right-of-way/utilities)	Curve	$37,500	$112,500	$150,000	$75,000	$90,000	$750,000	$1,215,000	$182,250	$607,500	$1,397,250	$1,822,500	$2,243,678	$2,926,537
Dynamic Speed Feedback Sign	Each	$1,250	$3,750	$5,000	$2,500	$3,000	$25,000	$40,500	$6,075	$20,250	$46,575	$60,750	$74,789	$97,551
Enhanced Signing/Striping - Curves	Curve	$750	$2,250	$3,000	$1,500	$1,800	$15,000	$24,300	$3,645	$12,150	$27,945	$36,450	$44,874	$58,531
Enhanced Signing/Striping - Intersection	Intersection	$1,500	$4,500	$6,000	$3,000	$3,600	$30,000	$48,600	$7,290	$24,300	$55,890	$72,900	$89,747	$117,061
Enhanced Signing/Striping - Transition Zones	Location	$1,500	$4,500	$6,000	$3,000	$3,600	$30,000	$48,600	$7,290	$24,300	$55,890	$72,900	$89,747	$117,061
Enhanced Striping - Highway	Mile	$1,000	$3,000	$4,000	$2,000	$2,400	$20,000	$32,400	$4,860	$16,200	$37,260	$48,600	$59,831	$78,041
Guardrail Upgrades (minimal regrading)	500 Feet	$1,500	$4,500	$6,000	$3,000	$3,600	$30,000	$48,600	$7,290	$24,300	$55,890	$72,900	$89,747	$117,061
High Friction Surface Treatments ($40/sq yd)	Curve	$5,000	$15,000	$20,000	$10,000	$12,000	$100,000	$162,000	$24,300	$81,000	$186,300	$243,000	$299,157	$390,205
Lighting - Highway (multilane)	Mile	$30,000	$90,000	$120,000	$60,000	$72,000	$600,000	$972,000	$145,800	$486,000	$1,117,800	$1,458,000	$1,794,943	$2,341,229
Lighting - Intersection	Intersection	$3,750	$11,250	$15,000	$7,500	$9,000	$75,000	$121,500	$18,225	$60,750	$139,725	$182,250	$224,368	$292,654
Pedestrian Enhancements (signs, striping, ADA, bulb outs)	Location	$5,000	$15,000	$20,000	$10,000	$12,000	$100,000	$162,000	$24,300	$81,000	$186,300	$243,000	$299,157	$390,205
Pedestrian Enhancements (signs, striping, ADA, refuge)	Location	$2,500	$7,500	$10,000	$5,000	$6,000	$50,000	$81,000	$12,150	$40,500	$93,150	$121,500	$149,579	$195,102
Positive Offset Left Turn Lanes	Each	$15,000	$45,000	$60,000	$30,000	$36,000	$300,000	$486,000	$72,900	$243,000	$558,900	$729,000	$897,471	$1,170,615
Raised Median (no widening)	Sq Yards	$8	$23	$30	$15	$18	$150	$243	$36	$122	$279	$365	$449	$585
Reflective Backplates (no signal rebuild)	Intersection	$1,250	$3,750	$5,000	$2,500	$3,000	$25,000	$40,500	$6,075	$20,250	$46,575	$60,750	$74,789	$97,551
Reflective Backplates (with signal rebuild)	Intersection	$10,000	$30,000	$40,000	$20,000	$24,000	$200,000	$324,000	$48,600	$162,000	$372,600	$486,000	$598,314	$780,410
Restricted Crossing U-Turn Crossing Intersection (un-signalized)	Location	$87,500	$262,500	$350,000	$175,000	$210,000	$1,750,000	$2,835,000	$425,250	$1,417,500	$3,260,250	$4,252,500	$5,235,249	$6,828,586
Restricted Crossing U-Turn Crossing Intersection (signalized)	Location	$150,000	$450,000	$600,000	$300,000	$360,000	$3,000,000	$4,860,000	$729,000	$2,430,000	$5,589,000	$7,290,000	$8,974,713	$11,706,147
Road Reconfiguration (Convert 4-lane to 3-lane, w/ resurfacing)	Mile	$25,000	$75,000	$100,000	$50,000	$60,000	$500,000	$810,000	$121,500	$405,000	$931,500	$1,215,000	$1,495,785	$1,951,024
Roundabout (dual-lane)	Each	$120,000	$360,000	$480,000	$240,000	$288,000	$2,400,000	$3,888,000	$583,200	$1,944,000	$4,471,200	$5,832,000	$7,179,770	$9,364,918
Roundabout (single lane)	Each	$50,000	$150,000	$200,000	$100,000	$120,000	$1,000,000	$1,620,000	$243,000	$810,000	$1,863,000	$2,430,000	$2,991,571	$3,902,049
Rumble Strips - Center (no widening)	Mile	$1,000	$3,000	$4,000	$2,000	$2,400	$20,000	$32,400	$4,860	$16,200	$37,260	$48,600	$59,831	$78,041
Rumble Strips - Edge (no widening, both sides)	Mile	$1,250	$3,750	$5,000	$2,500	$3,000	$25,000	$40,500	$6,075	$20,250	$46,575	$60,750	$74,789	$97,551
Rural Re-Align Skewed Intersection (limited ROW/utilities)	Intersection	$37,500	$112,500	$150,000	$75,000	$90,000	$750,000	$1,215,000	$182,250	$607,500	$1,397,250	$1,822,500	$2,243,678	$2,926,537
Rural to Urban Transition Zone Treatments (high-cost)	Location	$37,500	$112,500	$150,000	$75,000	$90,000	$750,000	$1,215,000	$182,250	$607,500	$1,397,250	$1,822,500	$2,243,678	$2,926,537
Rural to Urban Transition Zone Treatments (low-cost)	Location	$12,500	$37,500	$50,000	$25,000	$30,000	$250,000	$405,000	$60,750	$202,500	$465,750	$607,500	$747,893	$975,512
Shoulder Widening & Roadside Improvements (limited ROW/utilities)	Mile	$60,000	$180,000	$240,000	$120,000	$144,000	$1,200,000	$1,944,000	$291,600	$972,000	$2,235,600	$2,916,000	$3,589,885	$4,682,459
Sidewalks - Highway (one side only)	Mile	$20,000	$60,000	$80,000	$40,000	$48,000	$400,000	$648,000	$97,200	$324,000	$745,200	$972,000	$1,196,628	$1,560,820
Sidewalks - Intersection (includes ADA)	Intersection	$4,000	$12,000	$16,000	$8,000	$9,600	$80,000	$129,600	$19,440	$64,800	$149,040	$194,400	$239,326	$312,164
Sight Distance Improvements (vegetation)	Intersection	$1,000	$3,000	$4,000	$2,000	$2,400	$20,000	$32,400	$4,860	$16,200	$37,260	$48,600	$59,831	$78,041
Signal Timing - Cycle Length, Clearance and Leading Ped Intervals	Intersection	$500	$1,500	$2,000	$1,000	$1,200	$10,000	$16,200	$2,430	$8,100	$18,630	$24,300	$29,916	$39,020
Signal Upgrade (may be required for protected left turn phasing)	Intersection	$10,000	$30,000	$40,000	$20,000	$24,000	$200,000	$324,000	$48,600	$162,000	$372,600	$486,000	$598,314	$780,410
Tighten Intersection (small intersection, limited drainage)	Each	$17,500	$52,500	$70,000	$35,000	$42,000	$350,000	$567,000	$85,050	$283,500	$652,050	$850,500	$1,047,050	$1,365,717
Tree Trimming	Linear Foot	$3	$8	$10	$5	$6	$50	$81	$12	$41	$93	$122	$150	$195
Turn Lanes (one turn lane, 150 ft plus taper)	Each	$12,500	$37,500	$50,000	$25,000	$30,000	$250,000	$405,000	$60,750	$202,500	$465,750	$607,500	$747,893	$975,512
Urban Re-Align Skewed Intersection (limited ROW/utilities)	Intersection	$75,000	$225,000	$300,000	$150,000	$180,000	$1,500,000	$2,430,000	$364,500	$1,215,000	$2,794,500	$3,645,000	$4,487,356	$5,853,073
Access Management (Low Complexity)	Mile	$75,000	$225,000	$300,000	$150,000	$180,000	$1,500,000	$2,430,000	$364,500	$1,215,000	$2,794,500	$3,645,000	$4,487,356	$5,853,073
Adjusted Cost Percentages ==>		*3%*	*12%*	*20%*	*10%*	*10%*			*10%*	*35%*			*61%*	*61%*
Access Management (Moderate Complexity)	Mile	$120,000	$480,000	$800,000	$400,000	$400,000	$4,000,000	$6,200,000	$620,000	$2,170,000	$6,820,000	$8,370,000	$10,951,430	$13,440,391
Access Management (High Complexity, Often Complete Rebuild)*	Mile	$300,000	$1,200,000	$2,000,000	$1,000,000	$1,000,000	$10,000,000	$15,500,000	$1,550,000	$5,425,000	$17,050,000	$20,925,000	$27,378,574	$33,600,977

Project Implementation Timeline Reference Chart
6/23/2025

This chart is intended to provide high-level guidance on the time required to complete a range of potential safety improvement projects.
1) The time required to secure funding for each phase (federal, state, or local) is not included. The time to execute federal grant agreements or other state or federal project agreements is also not included.
2) Time to procure planning, design, or other professional services should be added as required. Construction and inspection procurement are included if they can reasonably be accommodated during the pre-construction phases.
3) Local agencies should coordinate with state and KIPDA staff to estimate the time required for each task. This applies to local public agency (LPA) projects and includes projects using federal, state, and KIPDA funding.

To use this table, please determine the level of complexity for each phase of the project you are considering. For example, a project may be moderate with respect to planning, design, and construction, but complex with respect to right-of-way and utility coordination. This would likely result in a project that is somewhere between those two categories for the total project timeline.

Level of Complexity for Each Phase	Planning	Preliminary Engineering and Environmental	Final Design	Right-of-Way (ROW)	Utility Coordination	Construction	Estimated Total Project Timeline
Simple	3-6 months Few alternatives Limited or no public involvement No anticipated controversy No TIP/STIP issues	6 - 9 months Minimal design No survey or geotech NEPA CE (programmatic or low level)	6 months Minimal design effort	N/A Within existing ROW	3-6 months Notification only No relocations	6 - 9 months <$500K No phasing needed	2 to 3 years
Moderate	6–12 months Several alternatives Public involvement May require TIP/STIP mods	6–12 months Straightforward design Survey required NEPA CE (with public input)	6-12 months Moderate design effort Agency reviews	6–12 months Easements and/or minor acquisitions	6-18 months Relocations possible Agreements possible	6–12 months $500K–$2M Lane closures/phasing	3 to 6.5 years
Complex	12–18 months Numerous alternatives Public involvement May require TIP/STIP mods Multiple agencies involved	12–18 months Alternatives analysis Extensive design (survey, traffic, geotech) NEPA EA or CE (with public input)	12-18 months Major design effort Extensive permitting Environmental constraints	12–24 months Full ROW Relocations/eminent domain	12–18 months Major relocations Agreements required	12–24 months $2M+ Detours or complex staging	6 to 10 years

Notes:
Schedule estimates assume all required project funding is available
NEPA = National Environmental Policy Act of 1969
CE = Categorical Exclusion
EA = Environmental Assessment
TIP/STIP = Transportation Improvement Program / State Transportation Improvement Program