



On the Road to Safety, Every Life Counts

Mt. Washington, KY

Safety Action Plan



6/25/2025



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Appendices

Appendix A – Safety Countermeasure Cost Estimate Ranges and Project Implementation Timeline Reference Chart



Contributors

KENTUCKIANA REGIONAL PLANNING & DEVELOPMENT AGENCY (KIPDA)

Andy Rush | Transportation Director

Mick Logsdon | Transportation Planner

Spencer Williams | Transportation Planner

MT. WASHINGTON

Stuart Owen | Mayor, City of Mt. Washington

Dawn Hardin | City Administrator, City of Mt. Washington

Mike Hightchew | Director of Public Works, City of Mt. Washington

Dan Kelty | Chief, Mt. Washington Police Department



Introduction

In 2023, Mt. Washington, 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 pivotal component of the broader federal initiative aimed at improving road safety across the United States. The goal of the Safety Action Plan Grant is to create a safer transportation network by supporting the development and implementation of comprehensive safety plans that are data-driven, equitable, and community-focused.



Mt. Washington is dedicated to achieving zero traffic deaths and serious injuries by 2050. Achieving this goal will require a clear focus on prioritizing safety for all road users. The Mt. Washington Safety Action Plan follows the eight key components identified in the SS4A Grant.



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. This 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

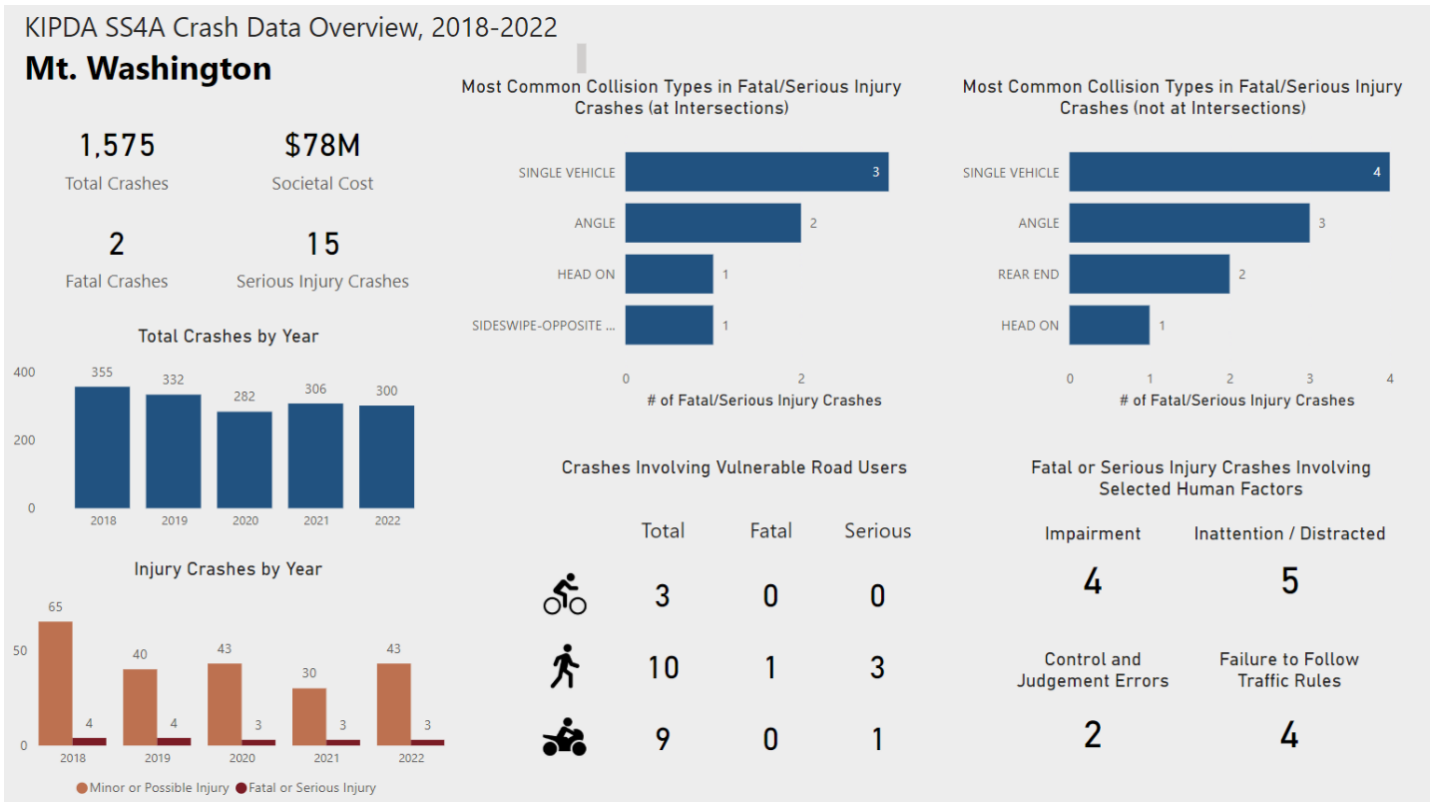
The traditional approach to road safety often relies on perfect human behavior from all road users and tends to react to crashes *after* they occur, focusing on individual accountability. In contrast, the Safe System Approach acknowledges that humans are fallible and will inevitably make mistakes. This 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.

Traditional approach	Safe System approach
Prevent crashes	Prevent death and serious injuries
Improve human behavior	Design for human mistakes/limitations
Control speeding	Reduce system kinetic energy
Individuals are responsible	Share responsibility
React based on crash history	Proactively identify and address risks



Overview

Mt. Washington had 2 fatal crashes and 15 serious injury crashes during the five-year period from 2018-2022, for a total of 17. There were 1,575 total crashes during this time. The total societal cost of all crashes was \$78 million (including economic and quality of life factors). The figure below provides an overview of the crash data.



Important safety findings for Mt. Washington include:

- Fatal and serious injury crashes are concentrated along KY-44 / Old Mill Rd and US-31E / Bardstown Rd, and US-31E / Mt. Washington Bypass
- The highest density of all crash types occurs at the intersections of Old Mill Rd and Bardstown Rd and Old Mill Rd and Mt. Washington Bypass
- 7 of 17 fatal / serious injury crashes were single-vehicle crashes
- 4 of 17 fatal / serious injury crashes involved a pedestrian or bicyclist
- 4 of 17 fatal / serious injury crashes involved failure to yield right of way
- 5 of 17 fatal / serious injury crashes involved driver inattention / distraction



1. Leadership Commitment and Goal Setting

Mt. Washington is dedicated to ensuring safety for all users on the City’s streets and highways. The City’s commitment is demonstrated by the resolution on the following page, which states that its leaders aspire “to reduce and eventually eliminate traffic fatalities and serious injuries on its roadways” and have established “a goal of achieving zero traffic fatalities and serious injuries by the year 2050.”

Mt. Washington’s commitment and leadership in implementing safety-focused projects, strategies, and policies are also supported by current programs and policies.

The 2015 Bullitt County Comprehensive Plan, adopted with representation from Mt. Washington, 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.”

The Mt. Washington SmartCode, adopted in 2018, is a context-based land-use alternative to conventional zoning aimed at creating compact, walkable neighborhoods. This SmartCode emphasizes community planning and outlines procedures for developing new plans and allocating context zones to promote safe and efficient movement of people. The design standards prioritize the placement and form of transportation elements to enhance pedestrian comfort and improve traffic flow.



RESOLUTION 2024-09

A RESOLUTION OF THE CITY OF MT. WASHINGTON IN SUPPORT OF VISION ZERO

WHEREAS, the USDOT has developed a discretionary grant program to address roadway safety through the Safe Street and Roads for All (SS4A) program and BULLITT COUNTY, KY was awarded a SS4A grant; and

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

WHEREAS the CITY OF MT. WASHINGTON aspires to reduce and eventually eliminate traffic related fatalities and serious injuries on its roadways; and

WHEREAS the CITY OF MT. WASHINGTON is moving toward implementation of the SS4A 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 MT. WASHINGTON hereby establishes a goal of achieving zero traffic fatalities and serious injuries by the year 2050.

This resolution shall become effective upon passage as required by law. Introduced and enacted on September 9, 2024. This Resolution passed by a vote of the City Council 6 in favor, and 0 against. CITY OF Mt. WASHINGTON, KENTUCKY By:



Stuart Owen, Mayor

ATTEST:



Elizabeth Hardin, City Clerk

RESOLUTION  2024-09



2. Planning Structure

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

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 the City of Mt. Washington. It also included KIPDA and Regional Transportation Council (RTC) 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

Mt. Washington Leadership Meetings and Plan Review

Meetings were held with city 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 city leadership to identify, confirm, and prioritize critical safety issues. The second meeting gave city 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 Mt. Washington to be adequately addressed in the plan.

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

Safety Committee

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 City of Mt. Washington met jointly with Bullitt County and the City of Shepherdsville. The Committee consisted of a multidisciplinary team comprising key stakeholders from the community, including:

- City of Mt. Washington Mayor
- 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
- Kentuckiana Regional Planning & Development Agency (KIPDA)

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 Mt. Washington, Kentucky, as shown in Figure 3-1. This study includes all public streets and roads within the City except interstate highways, private streets, and parking lots.

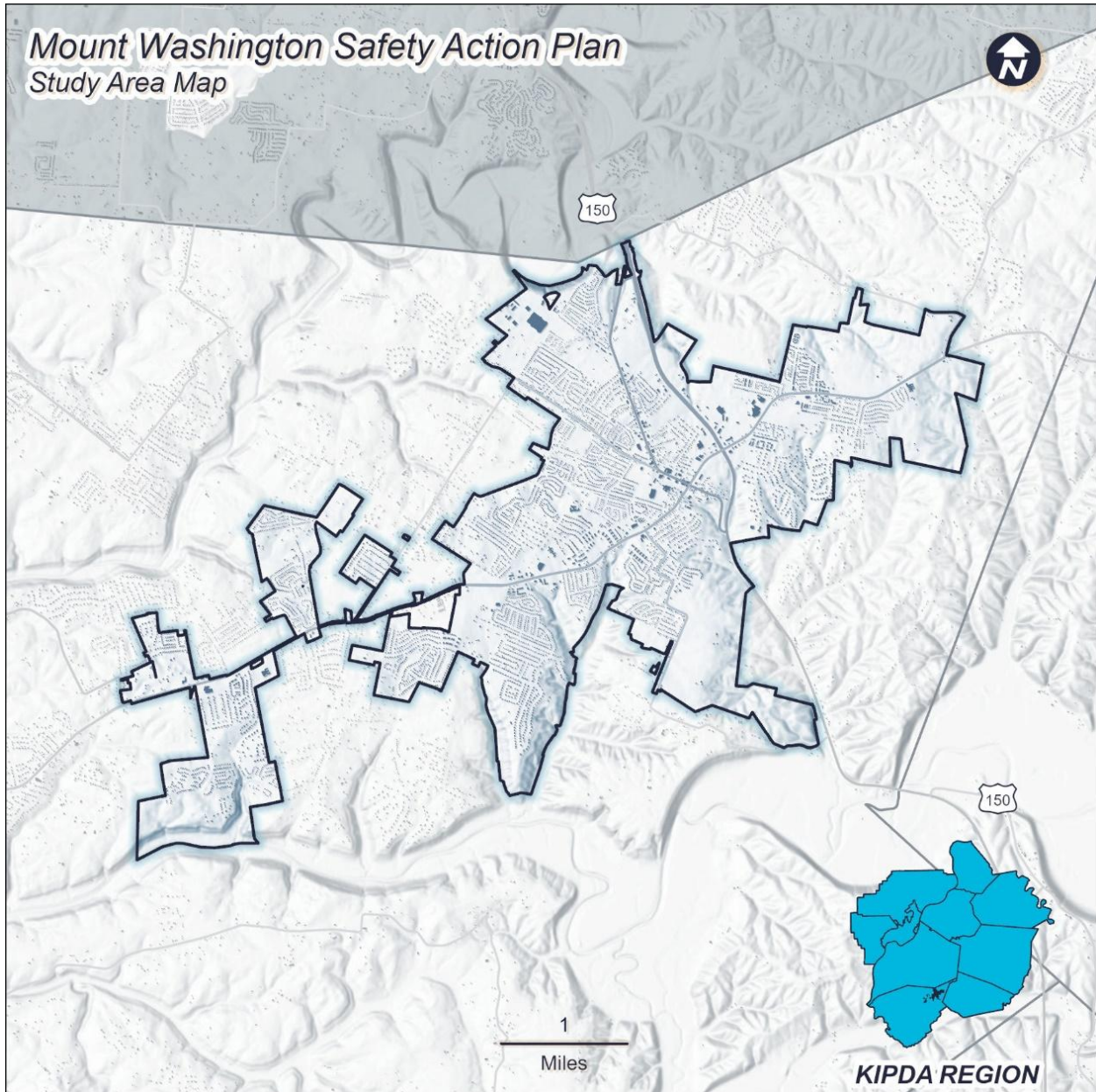


Figure 3-1. Study Area



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 all crashes across Mt. Washington 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 included 1,575 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. The table below provides a breakdown of the crashes in Mt. Washington by severity.



Severity	MMUCC Severity Description	Crashes (2018-2022)	%
K	Fatal Injury	2	<1%
A	Suspected Serious Injury	15	1%
B	Suspected Minor Injury	105	7%
C	Possible Injury	116	7%
O	No Apparent Injury	1,337	85%
Total		1,575	

Table 3-1. Crashes by Severity

The figure below shows the location of all 1,575 crashes. Density of crashes is shown with a gradient scale. The highest number of crashes during the study period occurred near the intersections of Old Mill Road and Bardstown Road and Old Mill Road and Mt. Washington Bypass.

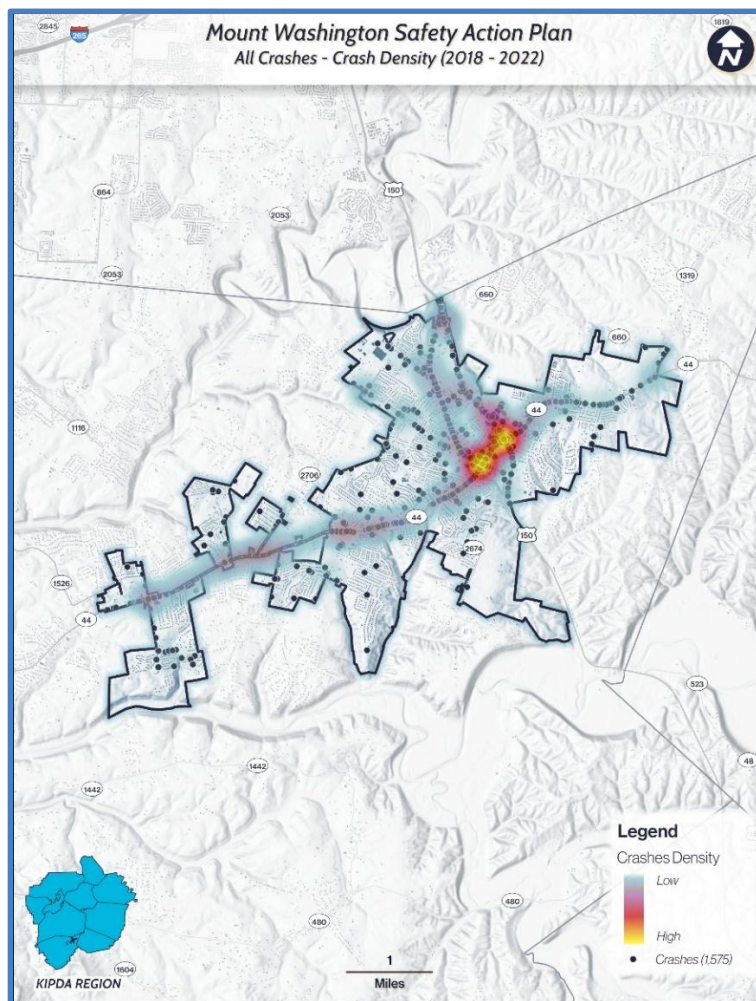


Figure 3-2. Crash Density Map



The figure below shows the locations of fatal and suspected serious injury crashes. These crashes are located throughout the city and are not clustered in the same manner as the lower severity crashes.

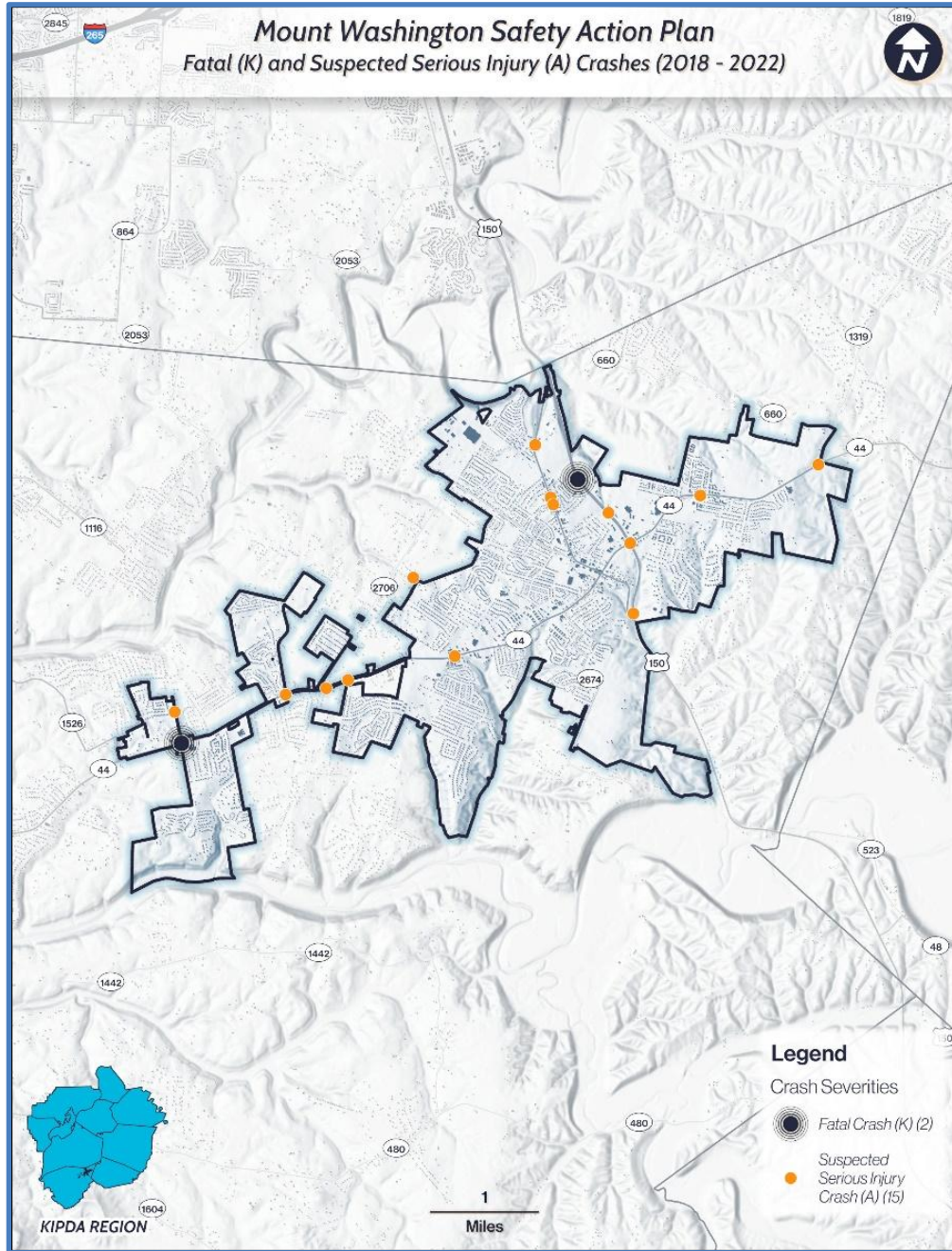


Figure 3-3. Fatal and Suspected Serious Injury Crash Map



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 Mt. Washington reveals a slight downward trend in overall crashes over the five-year period. The highest number of crashes occurred in 2018, followed by a decrease in subsequent years. The lowest point was in 2020 (282 crashes), which aligns with the COVID-19 pandemic which, greatly affected traffic patterns and volumes. It also likely led to an underreporting of crashes, especially low severity crashes. In early 2020, police operating procedures were modified to minimize potential exposure to the virus. Consequently, the reported number of crashes in 2020 may not reflect all the crashes that occurred during that year. Crashes rose again in 2021 (306) before continuing to reduce in 2022.

The figure below shows the number of severe fatal (K) and suspected serious injury (A) crashes through the study period. These severe crashes remained relatively steady, ranging from three to four reported annually.



Figure 3-4. Overall Crashes per Year

Crash Occurrence

Month

The following charts present the crashes by month over the five-year study period. This monthly crash data shows a moderate variation in crash frequency and severity throughout the year. The highest total crashes occurred in October and November, with 157 and 149 crashes, respectively. March and July accounted for 36% of all fatal and serious injury crashes, despite making up only 16% of all crashes. October also shows a spike in severity, with 12% of the severe crashes.



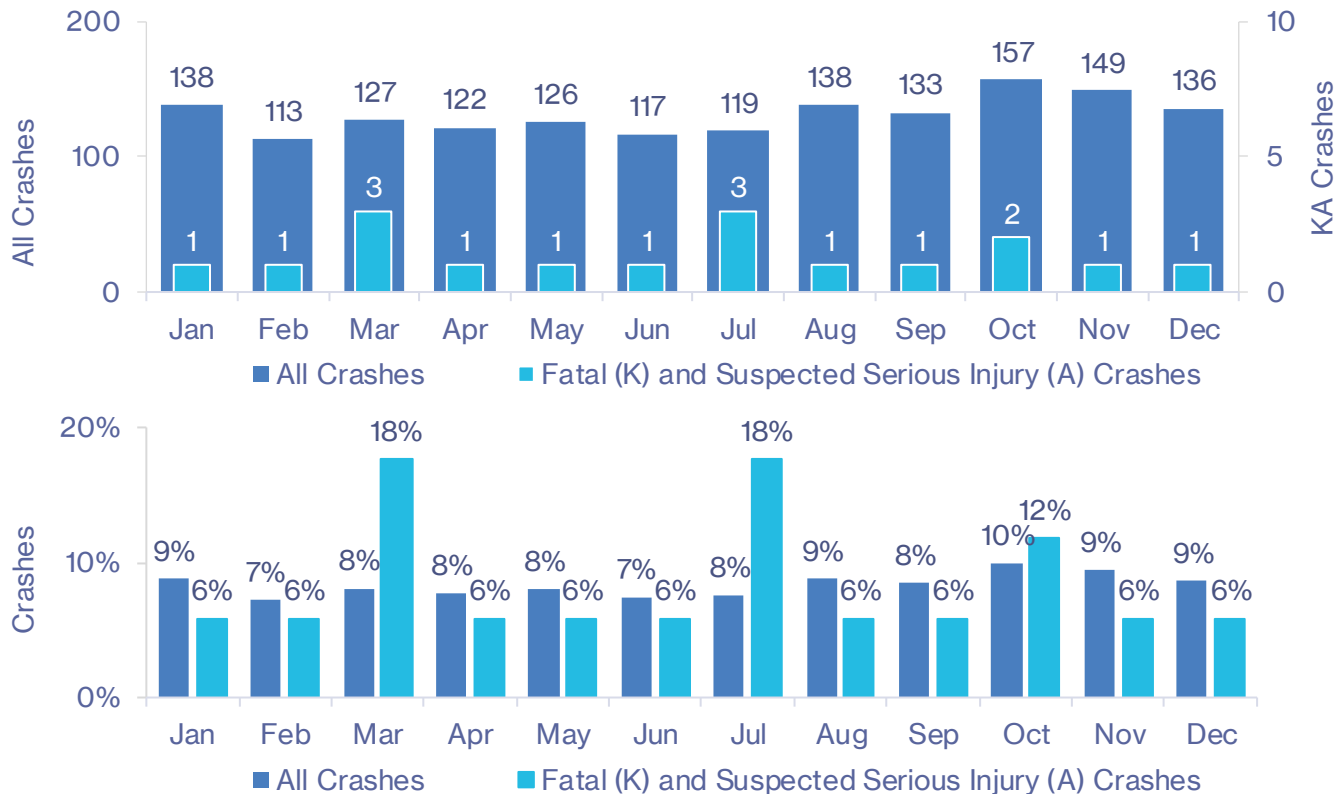


Figure 3-5. Monthly Crash Breakdown

Day of Week

The daily crash data for Mt. Washington reveals a slight increase in total crashes as the week progresses, peaking on Friday with 288 crashes, respectively. Weekends have the lowest number of crashes, with Sunday having roughly less than 50% as many crashes as a typical weekday. The decrease in weekend crashes is most likely attributed to lower traffic exposure and non-existent peak period congestion, lowering the potential for crashes. Saturday has a disproportionately high number of fatal and suspected serious injury crashes (7).

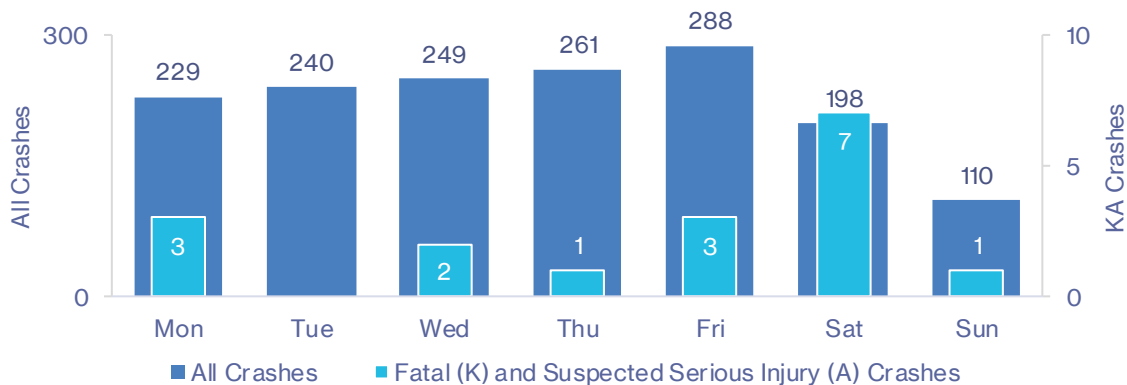


Figure 3-6. Crashes by Day of Week



Time of Day

The peak traffic period between 3-6 pm experiences the highest number of crashes, with 474, accounting for 30% of all crashes. While this time frame experienced the most significant number of crashes, the 6-9 pm period shows elevated crash severity, with six fatal and suspected serious injury crashes. Similarly, the 12-3 pm period also has an increased crash severity with four fatal and suspected serious injury crashes despite fewer crashes than the peak period.

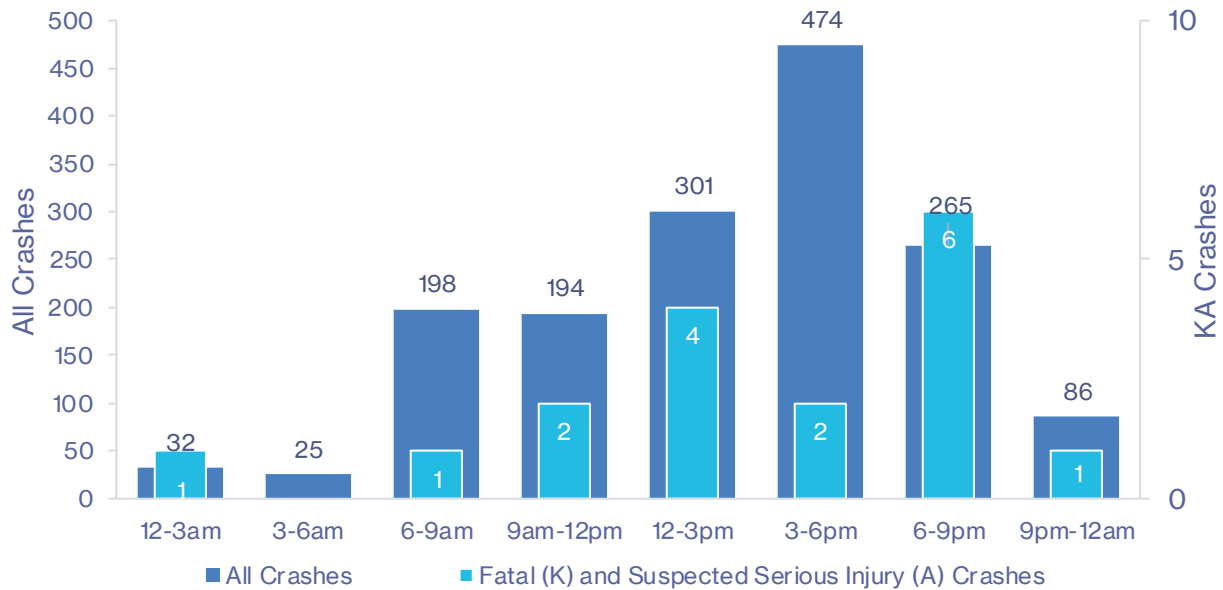


Figure 3-7. Crashes by Time of Day



Manner of Collision

Rear-end crashes are the most common, accounting for 39% of all crashes. While single-vehicle crashes account for only 15% of all crashes, they account for 41% of fatal and suspected serious injury crashes. Head-on crashes, while only comprising 2% of all crashes, contribute to 12% of fatal and suspected serious injury crashes, demonstrating that they are disproportionately severe when they occur.

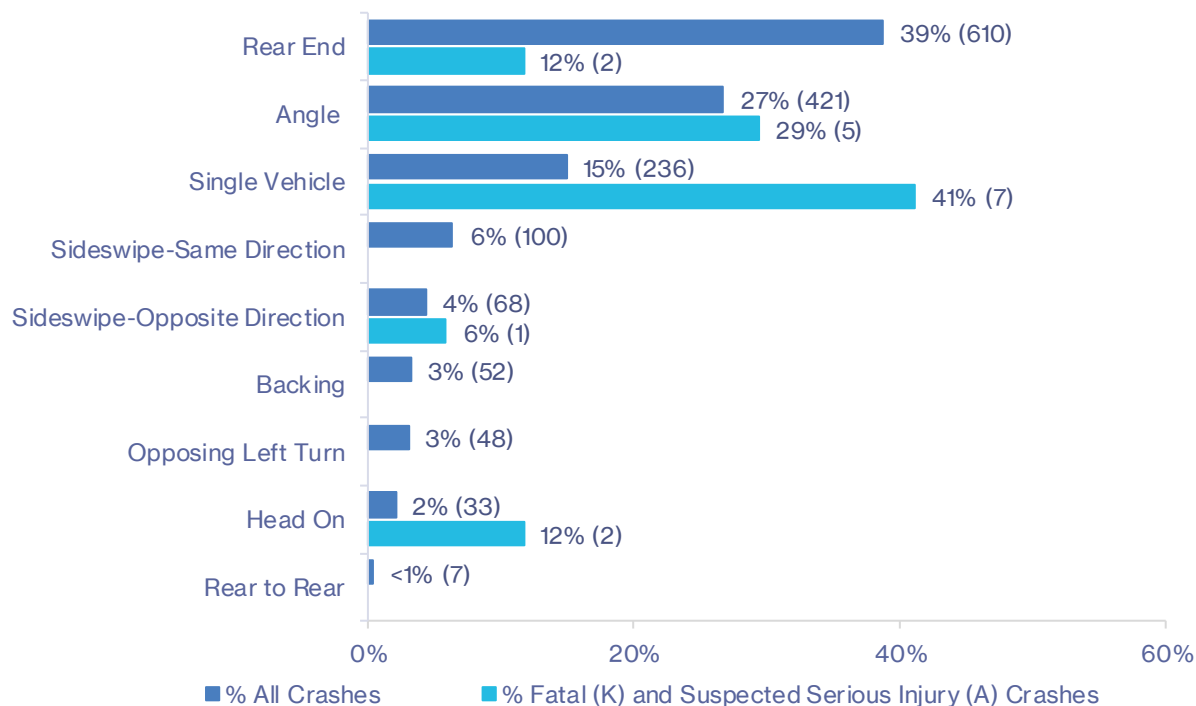
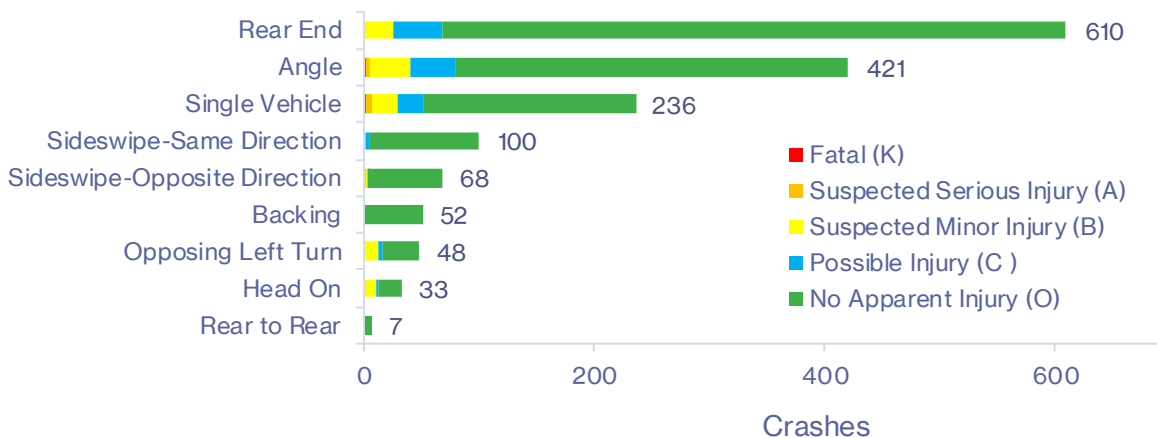


Figure 3-8. Manner of Collision by Severity



Driver Behavior

Driver behavior is a shared responsibility and can be the determining factor in a crash. The actions and decisions drivers make can significantly influence the likelihood and severity of crashes. Addressing key areas of concern, such as aggressive, distracted, and impaired driving, is essential to fostering a safer roadway environment. These three behavior areas have been selected as key to promoting safety in Mt. Washington.

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 the right of way
- Following too close
- Traveling too fast for conditions
- Disregarding traffic control
- Exceeding the 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. While aggressive driving behaviors are present in 23% of all crashes, they account for 29% of crashes resulting in fatalities and severe injuries. This indicates a higher risk of severity associated with aggressive driving behaviors. Figure 3-9 depicts the aggressive driver crashes by severity.

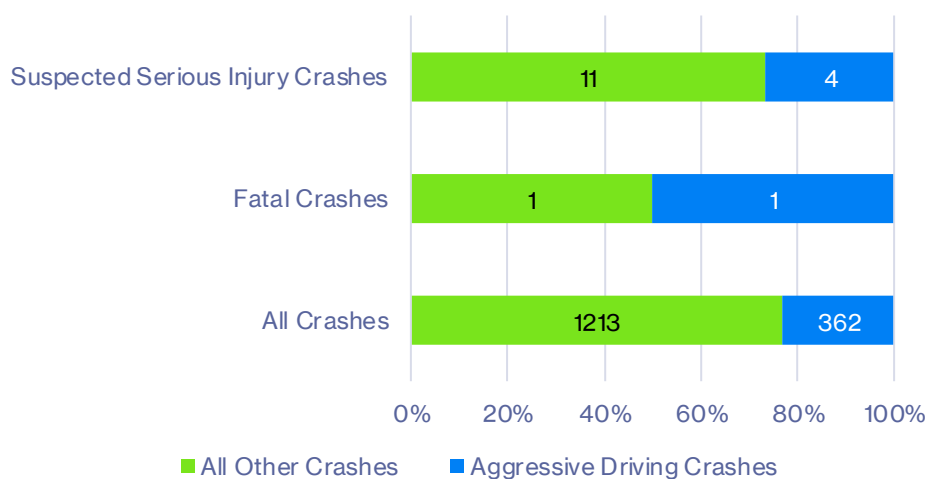


Figure 3-9. Aggressive Driver Crashes by Severity



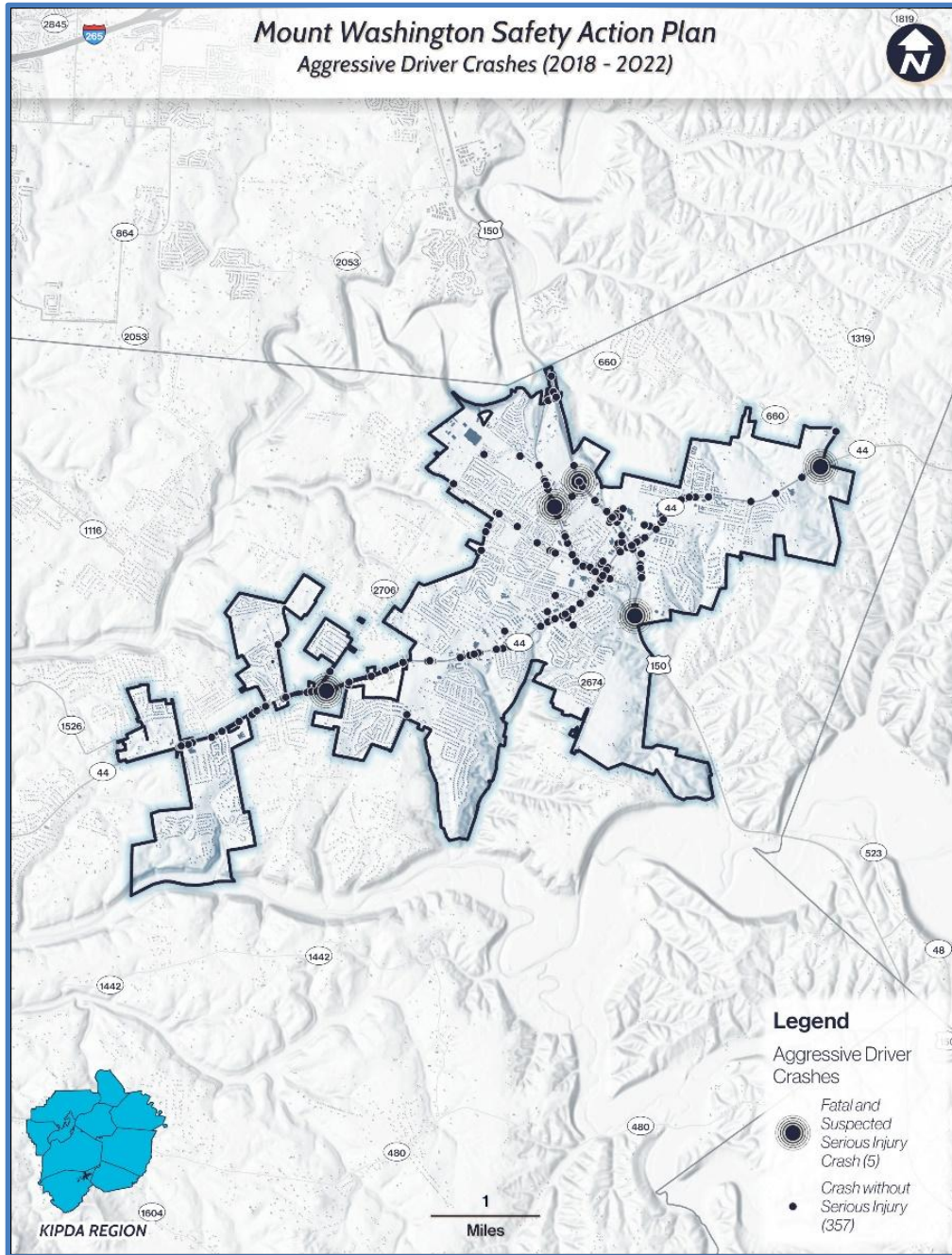


Figure 3-10. Aggressive Driver Crashes Map

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 minds away from driving. In Mt. Washington, fatal and suspected serious injury crashes linked to distracted driving were consistent throughout the study period.



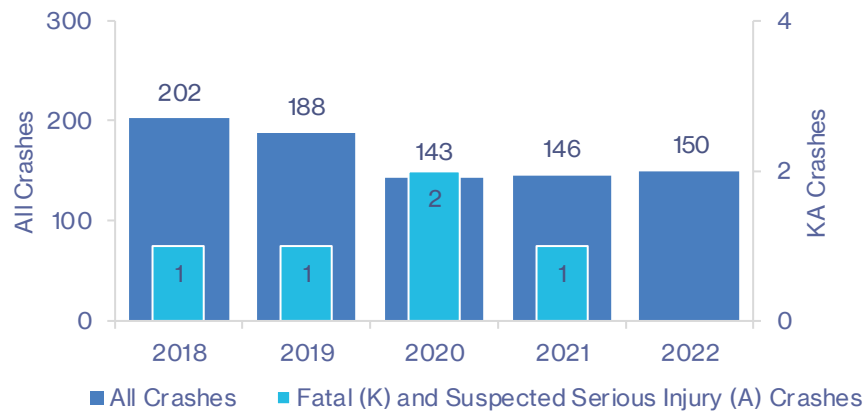
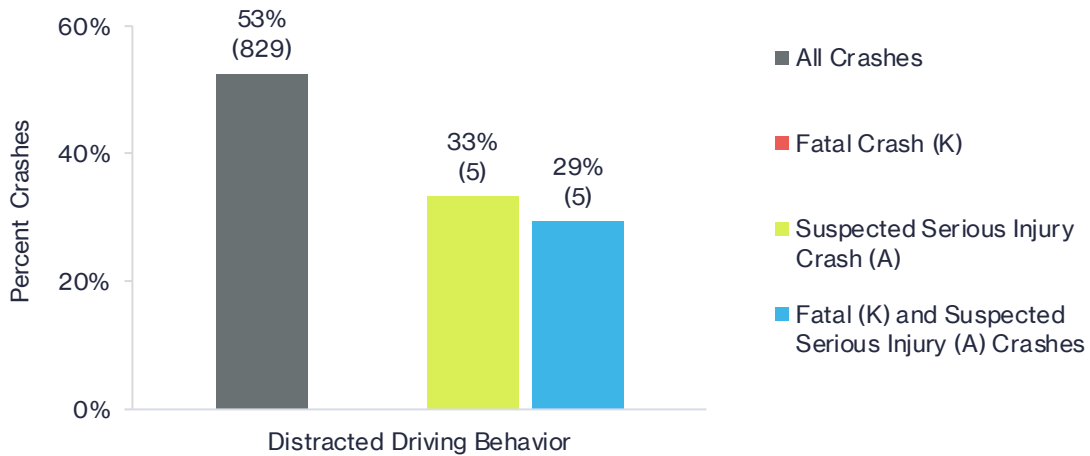


Figure 3-11. Distracted Driver Crashes by Year

In Mt. Washington, distracted driving is a significant factor in crashes, accounting for 53% (829) of all crashes. Additionally, 29% of fatal and suspected serious injury crashes were linked to distracted driving. The number of crashes attributed to distracted driving reduced over the study period.



	All Crashes	Fatal Crashes	Serious Injury Crashes	Fatal & Serious Injury Crashes
All Other Crashes	746	2	10	12
Distracted Driving Crashes	829	0	5	5
Total	1575	2	15	17

Figure 3-12. Distracted Driver Crashes by Severity



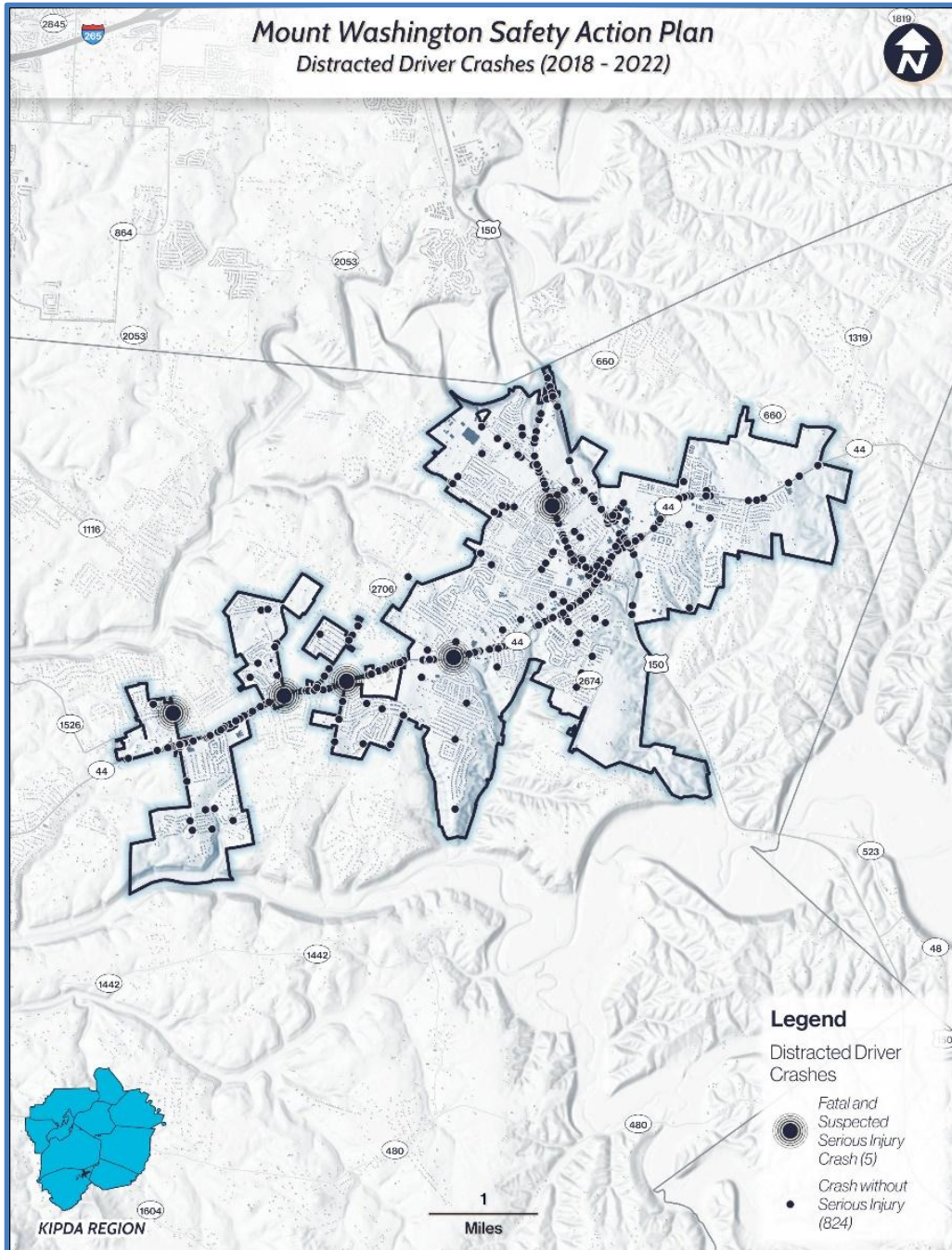


Figure 3-13. Distracted Driver Crashes Map

Impaired Driving

Impaired driving is the act of driving a motor vehicle while under the influence of alcohol or narcotics. Impairment affects reaction time, judgment, and coordination, which are critical to safely operating a vehicle. In Mt. Washington, impaired driving crashes varied from 17 in 2021 to nine in 2019 and 2022.



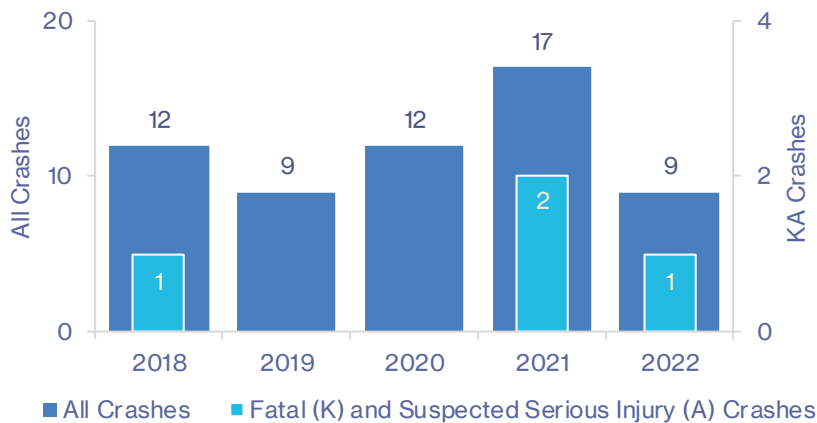


Figure 3-14. Impaired Driver Crashes by Year

The data reveals a critical issue with impaired driving. Although impaired driving accounts for approximately 4% of all crashes, it disproportionately contributes to more severe crashes. Specifically, impaired driving accounts for 24% 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 3-15 breaks down the crashes by severity. Figure 3-16 shows the locations of impaired driving crashes in Mt. Washington.

	All Crashes	Fatal Crashes	Serious Injury Crashes	Fatal and Serious Injury Total
All Other Crashes	1516	2	11	13
Impaired Crashes	59	0	4	4
	1575	2	15	17

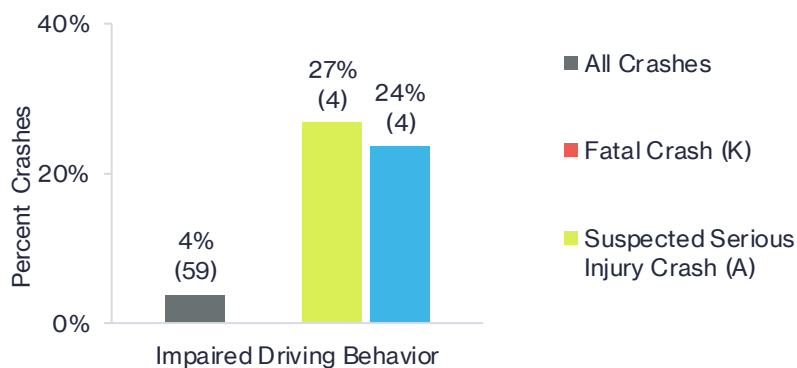


Figure 3-15. Impaired Driver Crashes by Severity



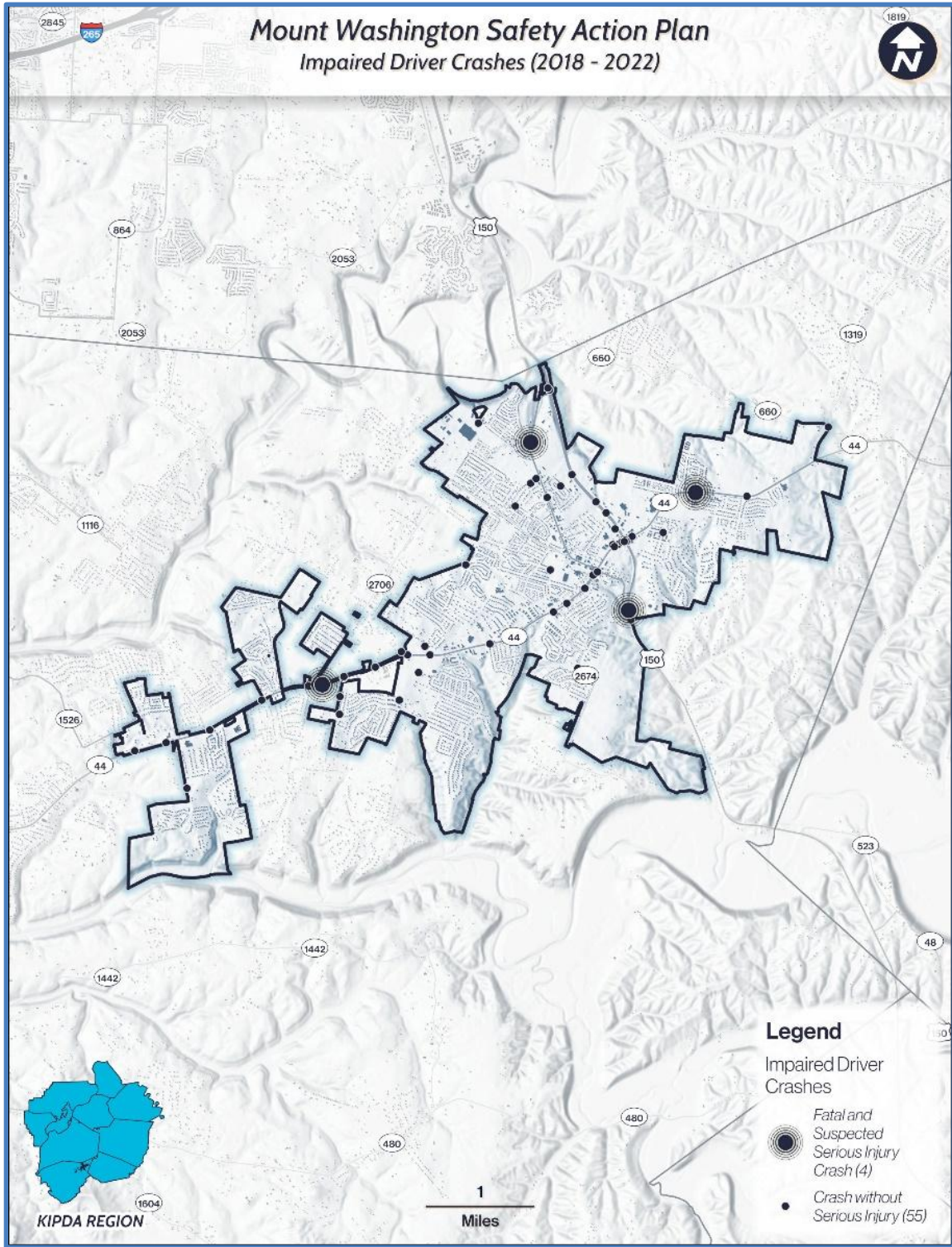


Figure 3-16. Impaired Driver Crashes Map



Lighting Conditions

Roadway lighting is a safety factor that impacts visibility and reaction times. However, the documentation of lighting infrastructure is not comprehensive. The available crash data provides only anecdotal evidence regarding the lighting conditions during 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.

As shown in Figure 3-17, most crashes in Mt. Washington occurred during daylight conditions, accounting for 75% (1,183 crashes) of all crashes and 71% of fatal and suspected serious injury crashes. Non-daylight dark conditions accounted for 17% of all crashes and 18% of fatal and suspected serious injury crashes. In comparison, 8% of all crashes and 12% of fatal and suspected injury crashes occurred in non-daylight (dark) conditions with highway lighting on. Although most crashes occurred during daylight, severe crashes are slightly overrepresented in non-daylight conditions.

Lighting Condition	Total Crashes	Fatal (K) and Suspected Serious Injury (A) Crashes
Daylight	75% (1,183)	71% (12)
Non-Daylight - Dark Condition	17% (266)	18% (3)
Non-Daylight - Highway Lighting On*	8% (122)	12% (2)
Unknown/Other	<1% (4)	0

* This is officially designated as Dark – Highway Lighting On

Figure 3-17. Crashes by Light Condition



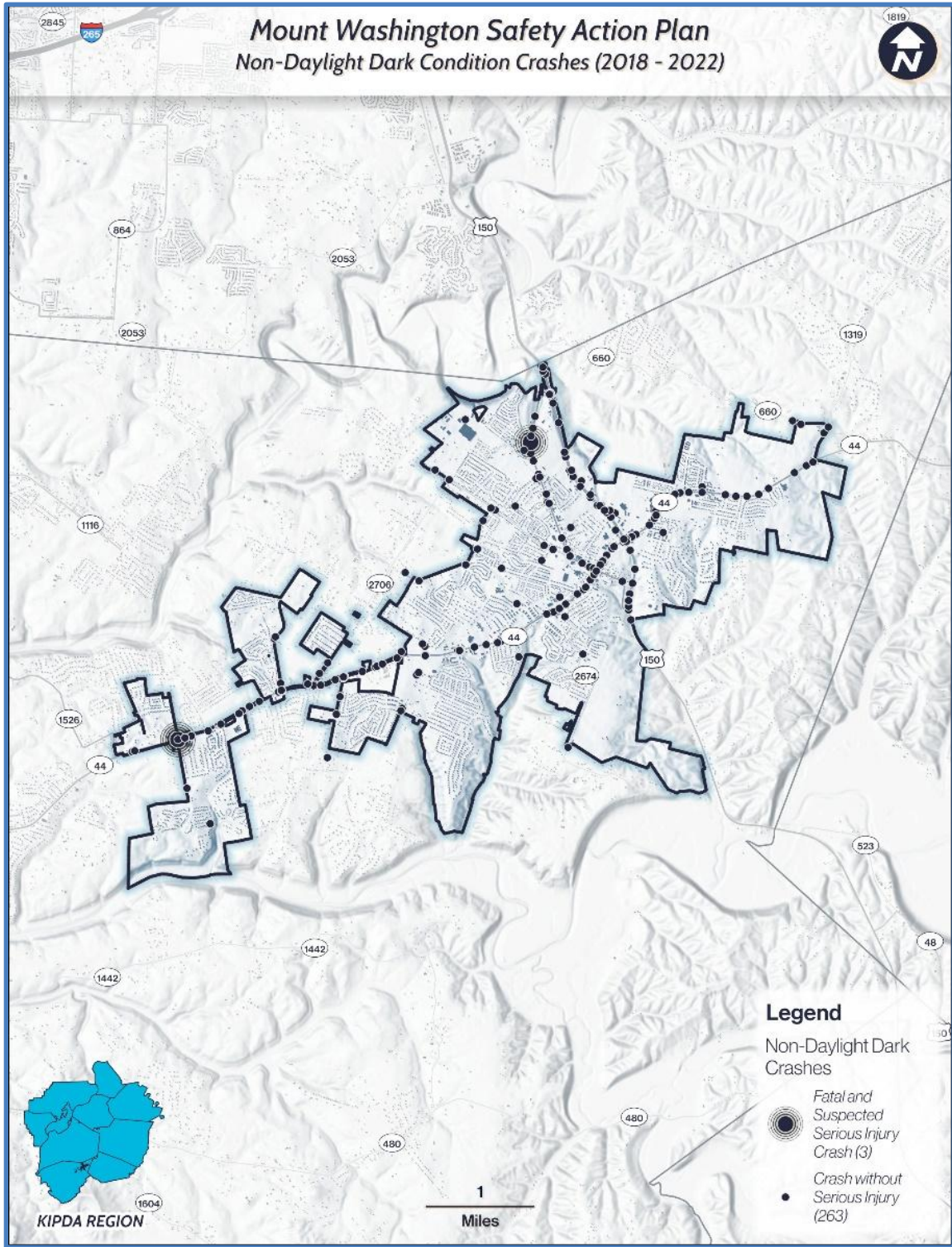


Figure 3-18. Lighting Condition: Non-Daylight Dark Condition Crashes Map



Crashes by Locations

The analysis identified crashes based on their location: intersections or highway segments. In Mt. Washington, a significant majority of crashes occurred at intersections, accounting for 68% (1,068 crashes) of all crashes and 65% (11 crashes) of fatal and suspected serious injury crashes. This is expected for an urban area where intersections serve as high-conflict points for vehicles, pedestrians, and cyclists. Roadway segments, by comparison, accounted for 32% (507 crashes) of all crashes and 35% (6 crashes) of severe crashes.

	All Crashes	Fatal and Serious Injury Crashes
Intersection	68% (1068)	65% (11)
Segment	32% (507)	35% (6)

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 indicates that roadway departure crashes significantly contribute to severe outcomes. Although roadway departure crashes account for 19% of all crashes, they represent a higher percentage of fatal and serious injury crashes. Specifically, 24% of fatal and suspected injury crashes are related to roadway departures.

	All	Fatal Crashes	Serious Injury Crashes
All Other Crashes	1276 (81%)	2 (100%)	11 (73%)
Roadway Departure Crashes	299 (19%)	0 (0%)	4 (27%)
Total	1575	2	15

Figure 3-20. Roadway Departure Crashes by Severity



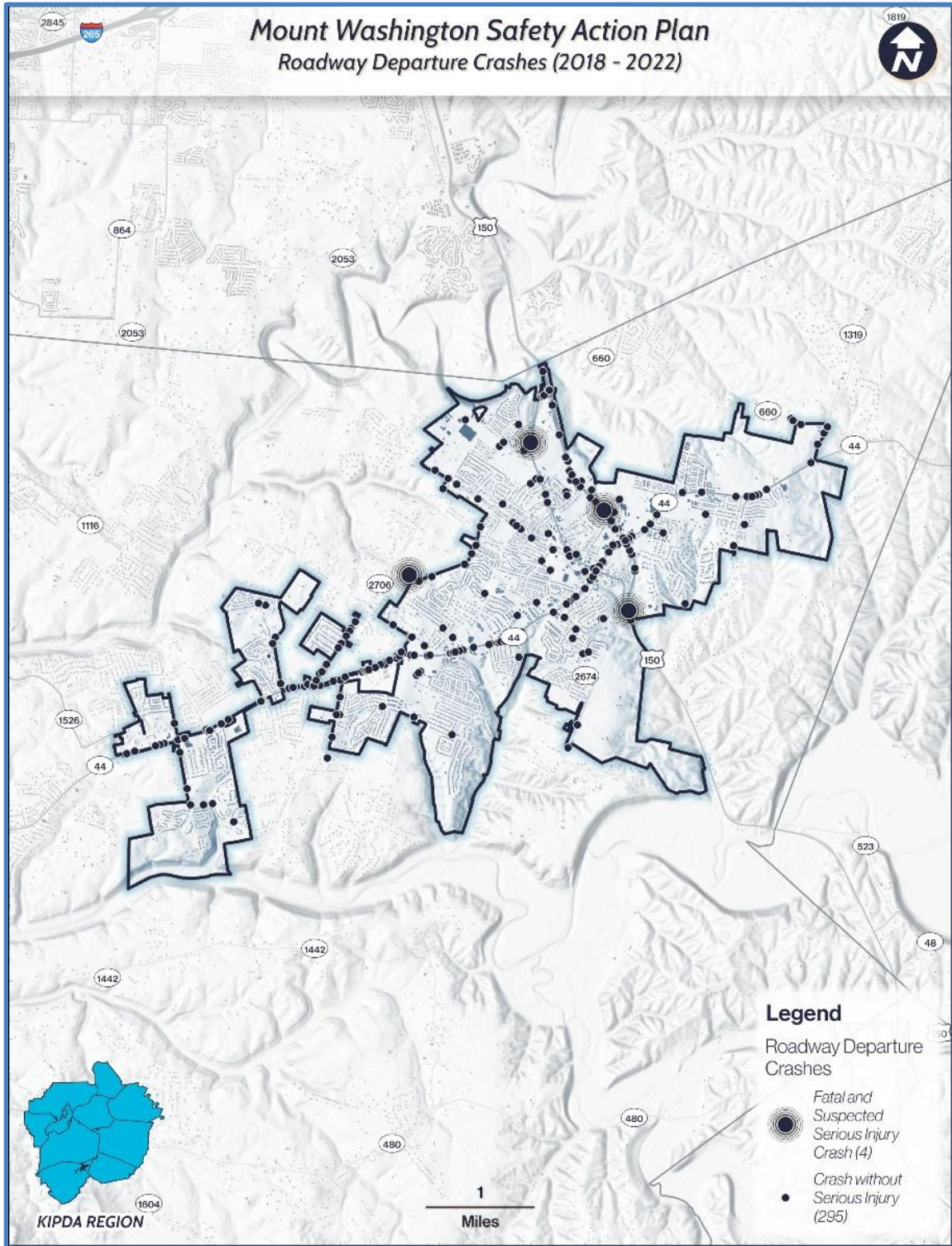


Figure 3-21. Roadway Departure Crashes Map



Vulnerable Road Users

Vulnerable road users, including pedestrians and bicyclists, are at 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 there is little to no buffer between these users and the force of a collision. The table below summarizes the data.

Bicyclist

A total of three bicyclist crashes were reported in Mt. Washington. Two of the crashes were suspected minor injury crashes, while one crash resulted in no apparent injury. There were no fatal or suspected serious injury crashes involving bicyclists.

Pedestrians

Ten pedestrian crashes occurred in Mt. Washington during the study period. Of all pedestrian crashes, 40% were fatal or suspected serious injury crashes. Although pedestrian crashes are relatively infrequent in the city, they tend to result in injuries when they do occur. This highlights the need for continued emphasis on pedestrian safety.

Severity	Description	Crashes	%
K	Fatal	1	10%
A	Suspected Serious Injury	3	30%
B	Suspected Minor Injury	5	50%
C	Possible Injury	-	-
O	No Apparent Injury	1	10%
TOTAL		10	

Table 3-2. Pedestrian Crashes by Severity



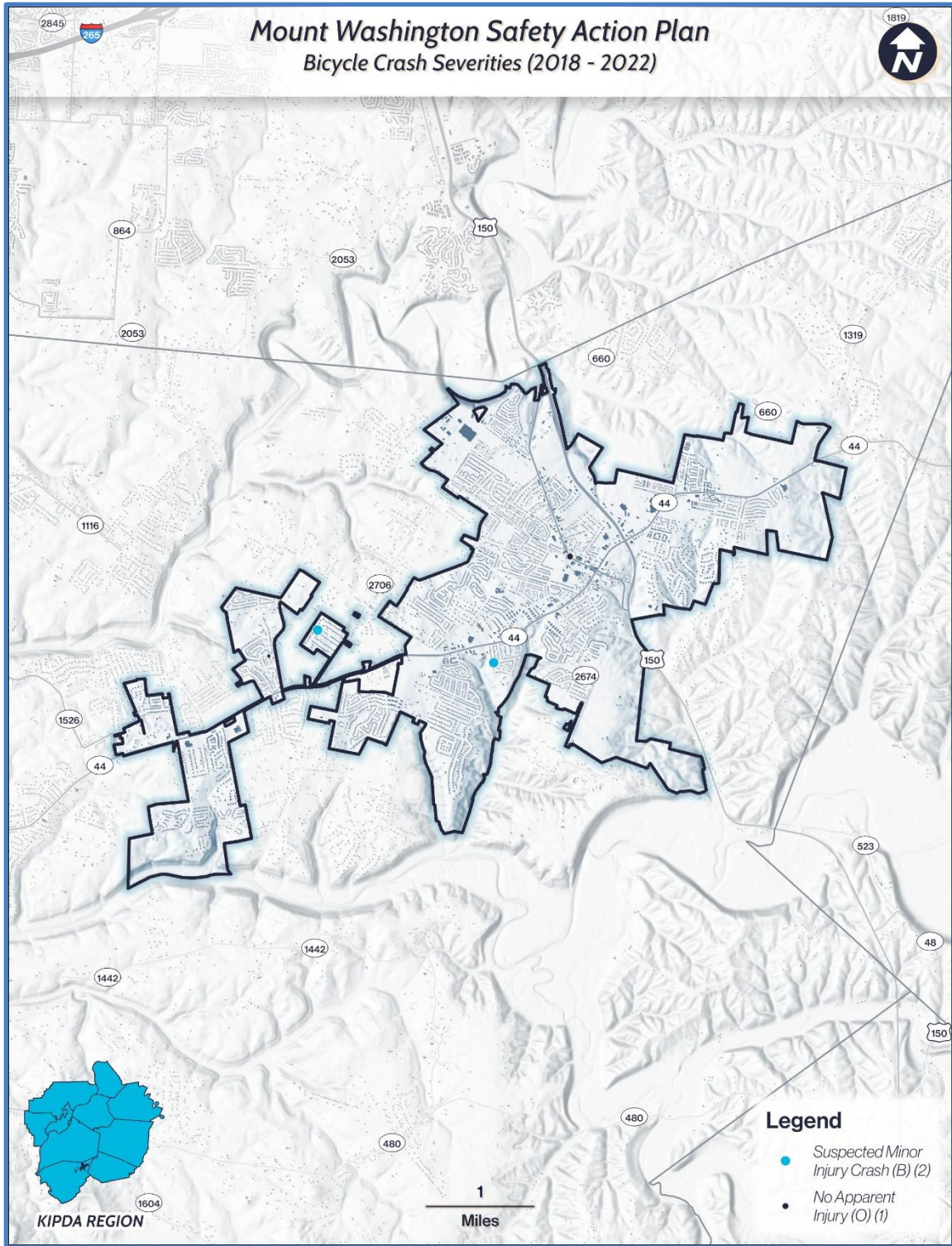


Figure 3-22. Bicyclist Crash Map



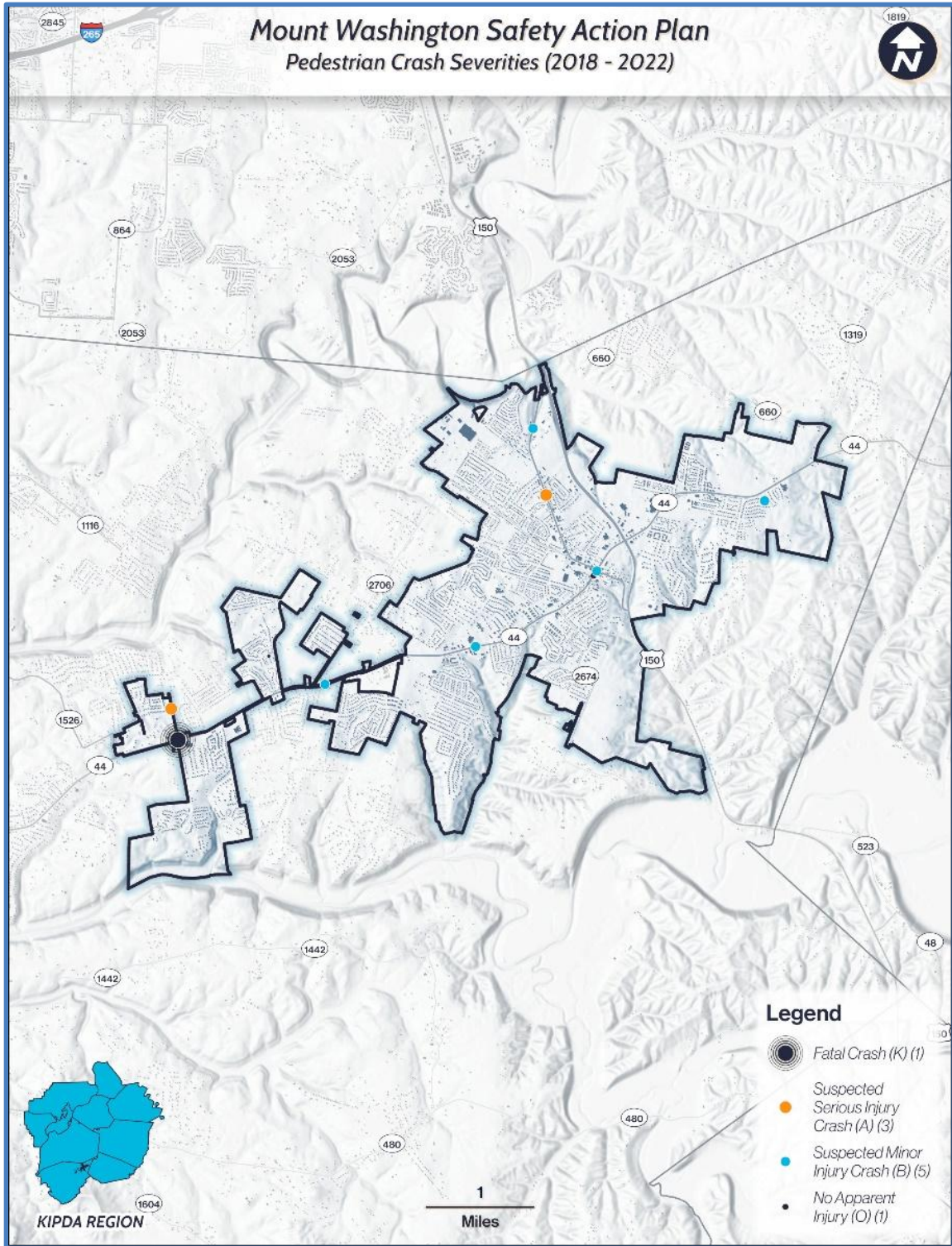


Figure 3-23. Pedestrian Crash Map



Occupant Protection

Occupant protection involves any device 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 whether all vehicle occupants were restrained. The crash was considered unrestrained if an occupant was unrestrained, not wearing a seatbelt.

In Mt. Washington, the data shows a clear relationship between restraint usage and crash severity. Among fatal crashes, 50% involved occupants who were all restrained, meaning that 50% of these crashes had at least one unrestrained occupant, such as someone not wearing a seatbelt. Restraint usage increases as crash severity decreases, with 80% of suspected serious injury crashes, 95% of suspected minor injury crashes, 95% of possible injury crashes, and 98% of crashes with no apparent injury involving all occupants restrained.

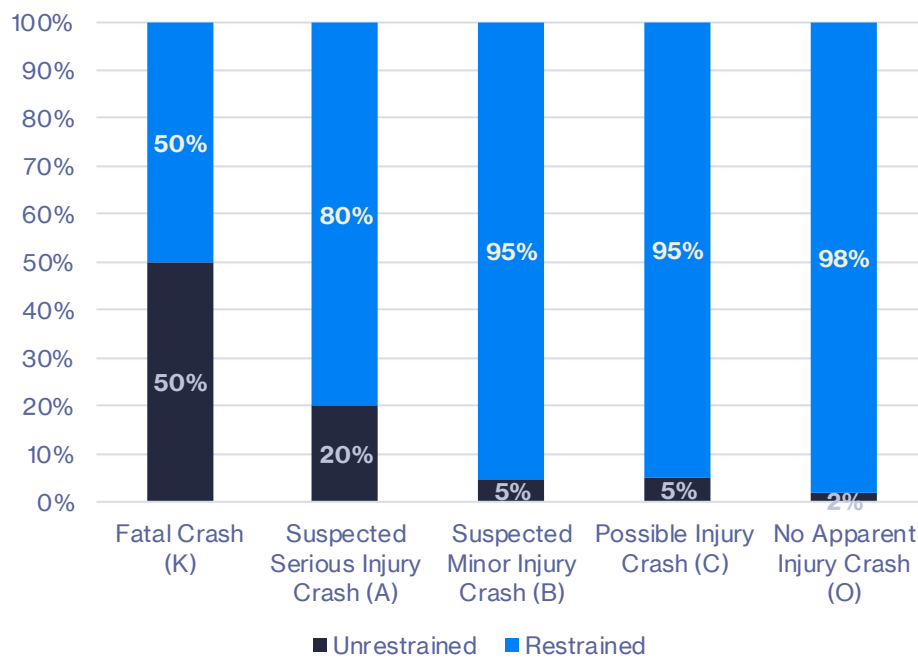


Figure 3-24. Restraint Use in Crashes



Driver Age

In Mt. Washington, there are disproportionate peaks for younger and older drivers with respect to high severity crashes. This shows the importance of education, enforcement, and encouragement (safety culture) initiatives to address these driver populations. It also shows the need for improved signage (possibly oversized) and markings (possibly wider) to help these driver populations. Both young drivers and older drivers could benefit from outreach and education programs.

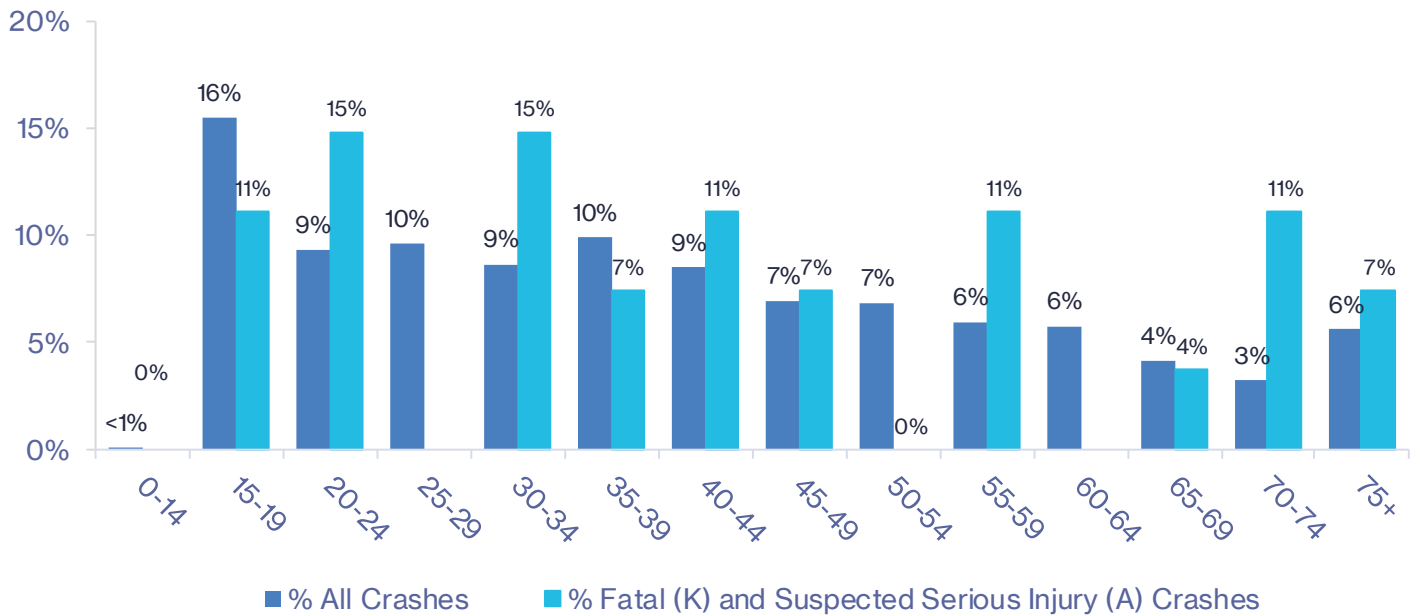


Figure 3-25. Crash Percentages by Driver Age



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.

In Mt. Washington, Driver Inattention is the leading factor, contributing to 772 crashes, followed by Failed to Yield Right of Way (274 crashes) and Not Under Proper Control (211) crashes. Figure 3-26 lists the number of crashes attributed to each human factor.

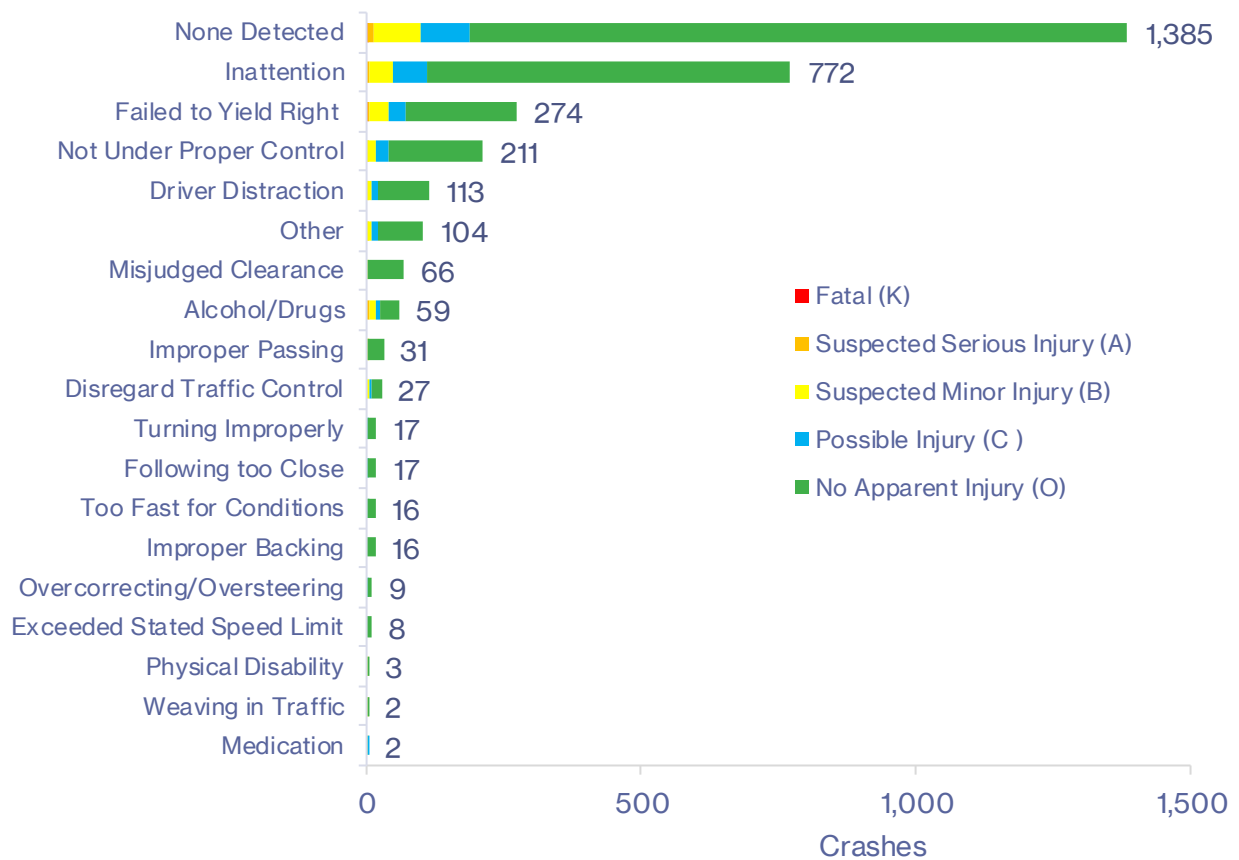


Figure 3-26. Crashes by Human Factor



Of the fatal and suspected serious injury crashes, 29% (five) were attributed to driver inattention. Additionally, failure to yield the right-of-way and alcohol and drug involvement each contributed to four fatal and suspected serious injury crashes. Figure 3-27 depicts the number of crashes attributed to each.

Given the high proportion of severe crashes involving drivers being inattentive or aggressive drivers, 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

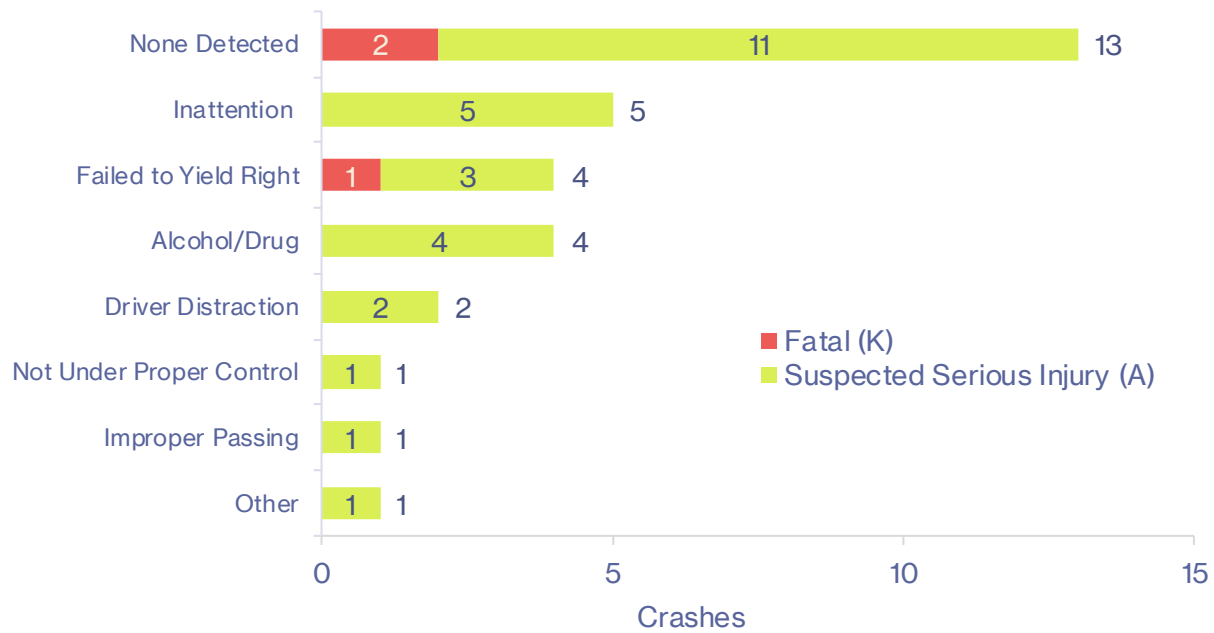


Figure 3-27. Fatal and Suspected Serious Injury Crashes by Human Factor



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 18% of all crashes and fatal and suspected serious injury crashes, while icy, snow and slushy road conditions account for less than 1% of all crashes. This suggests that most crashes in Mt. Washington 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	1,271	81%	14	82%
Wet	280	18%	3	18%
Snow/Slush	17	1%	-	-
Ice	4	<1%	-	-
Water (Standing or Moving)	3	<1%	-	-

Table 3-3. 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. Following the Safe System Approach, the HIN also corresponds to the Safe Roads pillar. This pillar focuses on designing roadway environments to mitigate human mistakes and account for injury intolerances, encourage safe behaviors, and 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, 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. Key feedback included:

- Verify the status of the active projects
- Consider utilizing raised medians along with traffic calming mechanisms
- Highlight existing roundabout projects

Safety Committee

Mt. Washington participated in a combined Safety Committee with Bullitt County and Shepherdsville, comprised of diverse members from the community, such as emergency response representatives and local planning staff, played a key role in developing the Mt. Washington 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 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.

Meeting Two

During the second meeting, the Committee reviewed the draft prioritized HIN corridor segments, prioritized intersections, and potential safety countermeasures. The data provided included a

ACTIVITY A
IMPROVING SAFETY

Write your comments in the boxes below to share your ideas. You do not need to fill out every box - just fill in the categories that you have ideas for. Once you are done, discuss your ideas with the group.

VEHICULAR SAFETY	PEDESTRIAN SAFETY
BICYCLIST SAFETY	OTHER SAFETY CONCERNS



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 agreed in particular that US 31E (Bardstown Road) from KY 44 north to Jefferson County (Segment 2) should be considered as a high priority.

Activity B: Potential Corridor Improvements – There was general agreement with about half of the possible improvement options that could be considered. There was interest in curb and gutters and widening to accommodate shoulders and turn lanes.

Activity C: Prioritizing Intersections – The committee expressed interest in prioritizing the intersections of US 31E Bardstown Rd (US-31E) & Shepherdsville Rd (KY-44) and Mt Washington Bypass (US-31E) & Village Ln. These locations have been highlighted in **Chapter 6. Strategy and Project Selection**.

Activity D: Potential Intersection Safety Countermeasures – The committee mainly agreed with the recommendations but also proposed additional improvements at several of the intersections and proposed removing roundabouts and alternative intersection alignments and some of them.

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 Mt. Washington, 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.

ACTIVITY B

SAFETY COUNTERMEASURES

Potential Segment Countermeasures

Countermeasure	Description	Safety Impact
	Reconfigure lane space with roadway based on number of vehicles per day to meet traffic volume and improve safety for all users.	All Crashes ↓ 30%
	Enhanced signs and striping on alert drivers to upcoming curves, the direction of curves, and sharpness of the curve.	Night-time Crashes ↓ 25%
	Alerting drivers through utilization of sound, these alert drivers that their vehicle has left the travel lane.	CLRS ↓ 41.61% FIRS ↓ 13.61%
	Provide a painted median that removes left-turning traffic (which is slowing or stopping) from the travel lanes.	All Crashes ↓ 24%

Figure 4-1. Meeting Two Handout: Potential Safety Countermeasures

Figure 4-2. Promotional Flyer for Community Survey



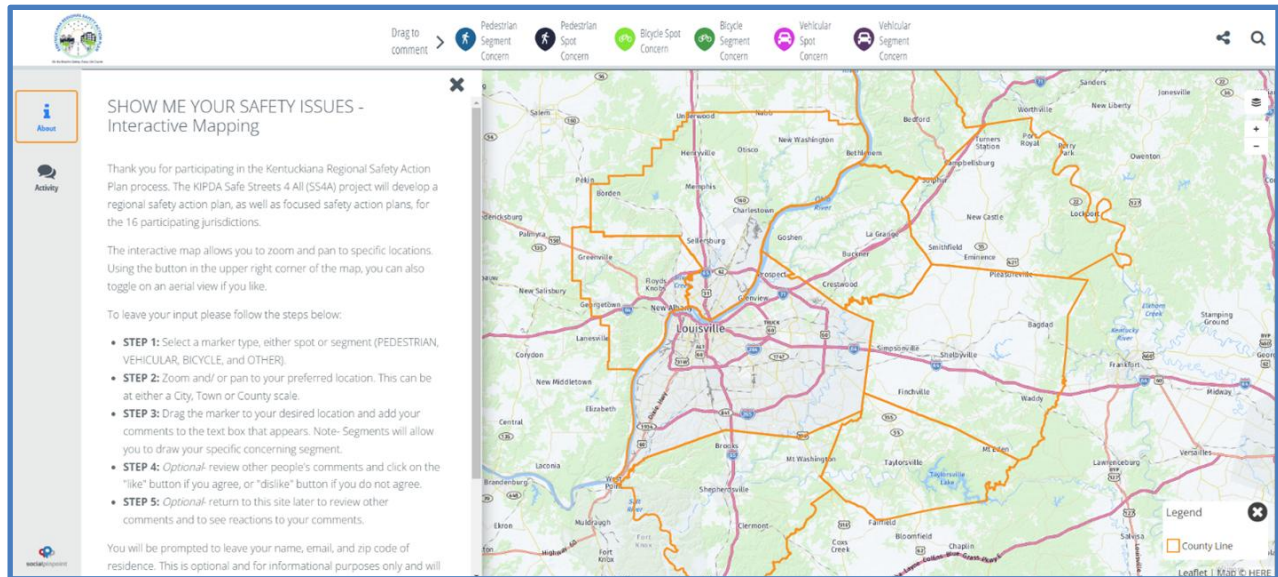


Figure 4-3. Social Pinpoint Online Engagement

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 16 comments located within Mt. Washington. Figure 4-4 provides an example view of the engagement map and a summary of the responses within Mt. Washington.

Vehicular Safety Concerns

- Signalization
- Blind Turns/Hills
- Intersection Improvements
- Speed Limits
- Vertical Curves
- Traffic/Congestion
- Narrow Roads

Pedestrian Safety Concerns

- Adding sidewalks
- Adding crosswalks

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 Mt. Washington 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 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 at the two intersections just north of KY 44 on US 31E (Bardstown Road).



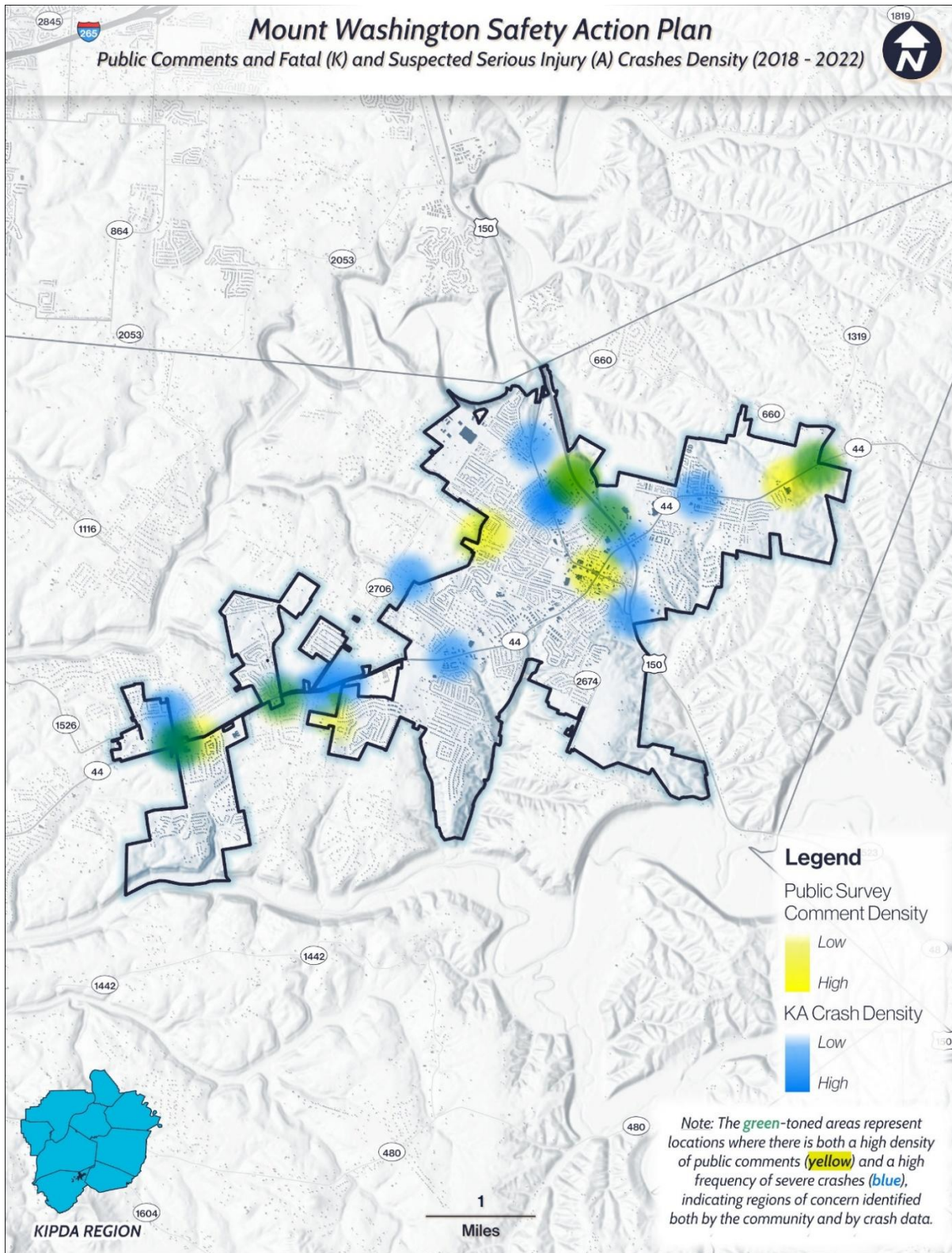


Figure 4-4. Public Comments and Fatal and Serious Injury Crash Density



Survey Two

The project team and committees conducted a second public survey for the Safety Action Plan. Residents within the KIPDA Region, including Mt. Washington, 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 77 responses located within Mt. Washington. Many of those respondents supported upgrades to KY 44 from US 31E (Bardstown Road) west to the City Limits. There were also many follow-up comments regarding KY 44. The highest priority intersection for the survey respondents was the KY 44 / US 31E (Bardstown Road) intersection with the US-31E / Village Lane and KY 44 / Bethel Church Road intersections also rating high.

Left turn lanes and intersection and highway lighting were the top two rated improvement types, followed by center two-way left turn lanes and shoulder treatments. Low-cost upgrades at stop-controlled intersections and crosswalk visibility enhancements also received high support. Ways to reduce speeds and sidewalks were some of the topics frequently mentioned in the comments



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 Mt. Washington 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	5-43.00 / 4-80329.00	KY 44	25.27	26.286	Planned	Widen Hwy 44E for safety improvements, congestion relief and economic growth with additional lanes
2	5-150.50	KY 44	22.8	23.25	Planned	Section 5 from US 31EX to US 31E Bypass
3	5-347.50 / 5-80320.00	KY 44	23.14	25.44	Planned	Widen KY 44E for safety improvements, congestion relief, and economic growth with additional lanes between MP 23.14 to MP 25.44
4	5-80103.00	KY 44	18.527	20.997	Planned	Reconstruct KY 44 from Bogard Lane to Armstrong Lane
5	5-80354.00	US 31E	0	3.53	Planned	Improve traffic operations and improve safety along US 31E (Louisville – Bardstown Road) from the Bullitt / Nelson county line to KY 44. Consider a 2+1 configuration and / or innovative intersections

Note: The portion of project 5 in Spencer County is not shown on the map.

Table 4-1. Current Highway Plan Projects



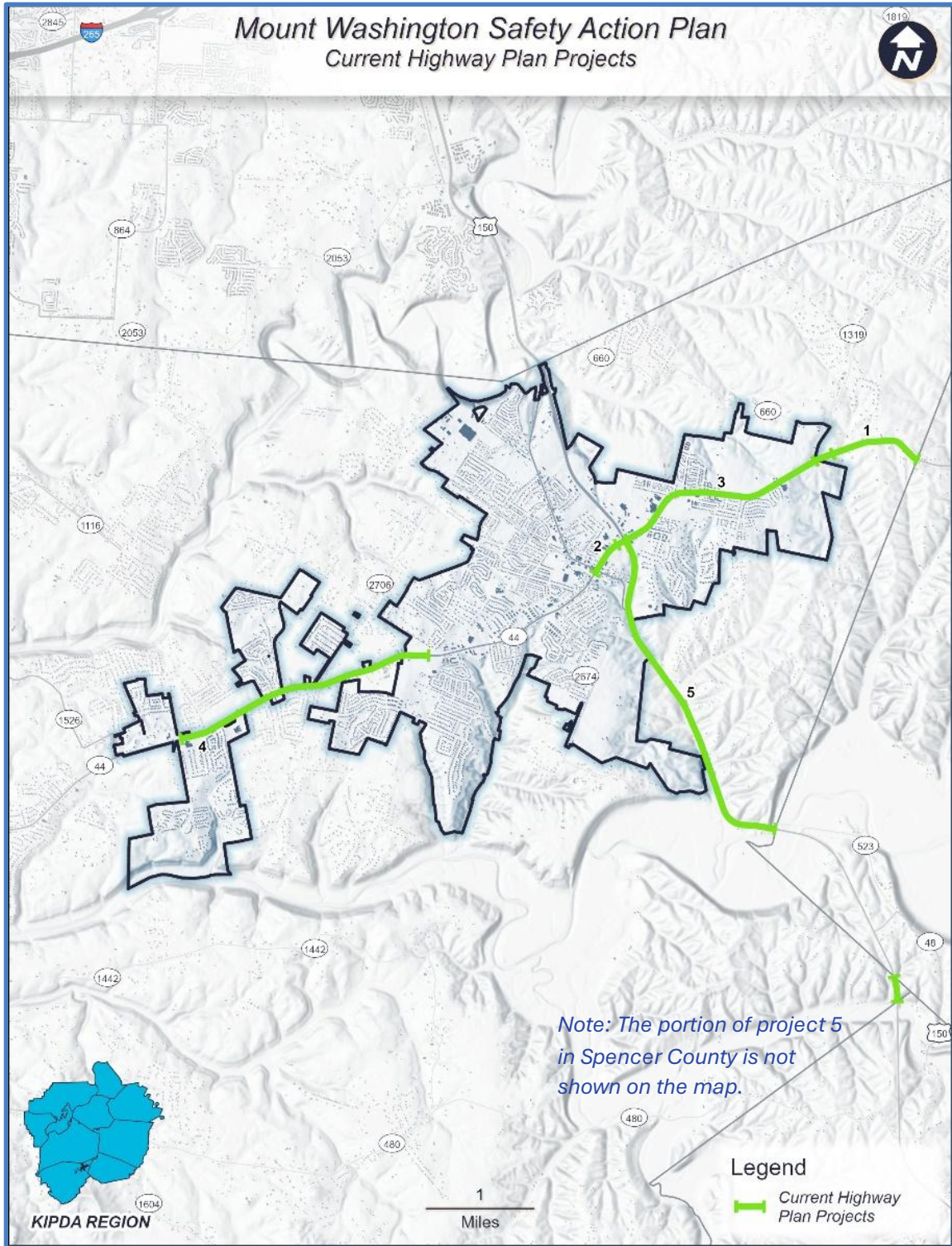


Figure 4-5. Highway Plan Map



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.

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.*

Mt. Washington is not located within a designated Area of Persistent Poverty.



Community Demographic Summary

The following four populations were analyzed using the US Census American Community Survey (ACS) data. The 2022 ACS five-year table was used.

Elderly Population

Approximately 16.2% of the population in Mt. Washington is 65 or older as shown on Figure 4-6. Portions of Mt Washington 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.

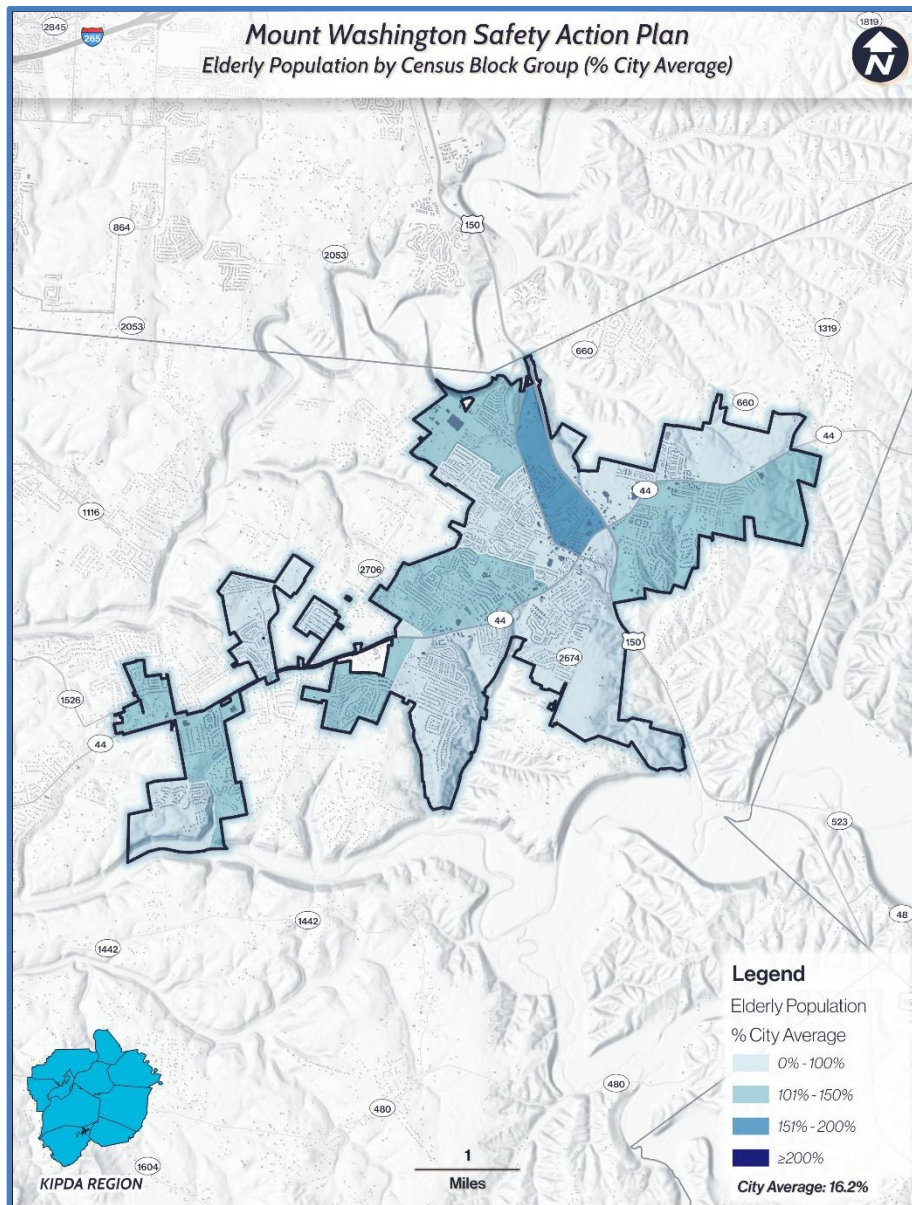


Figure 4-6. Elderly Population by Census Block Group Map



Population Impacted by Disability

In Mt. Washington approximately 26.5% 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.

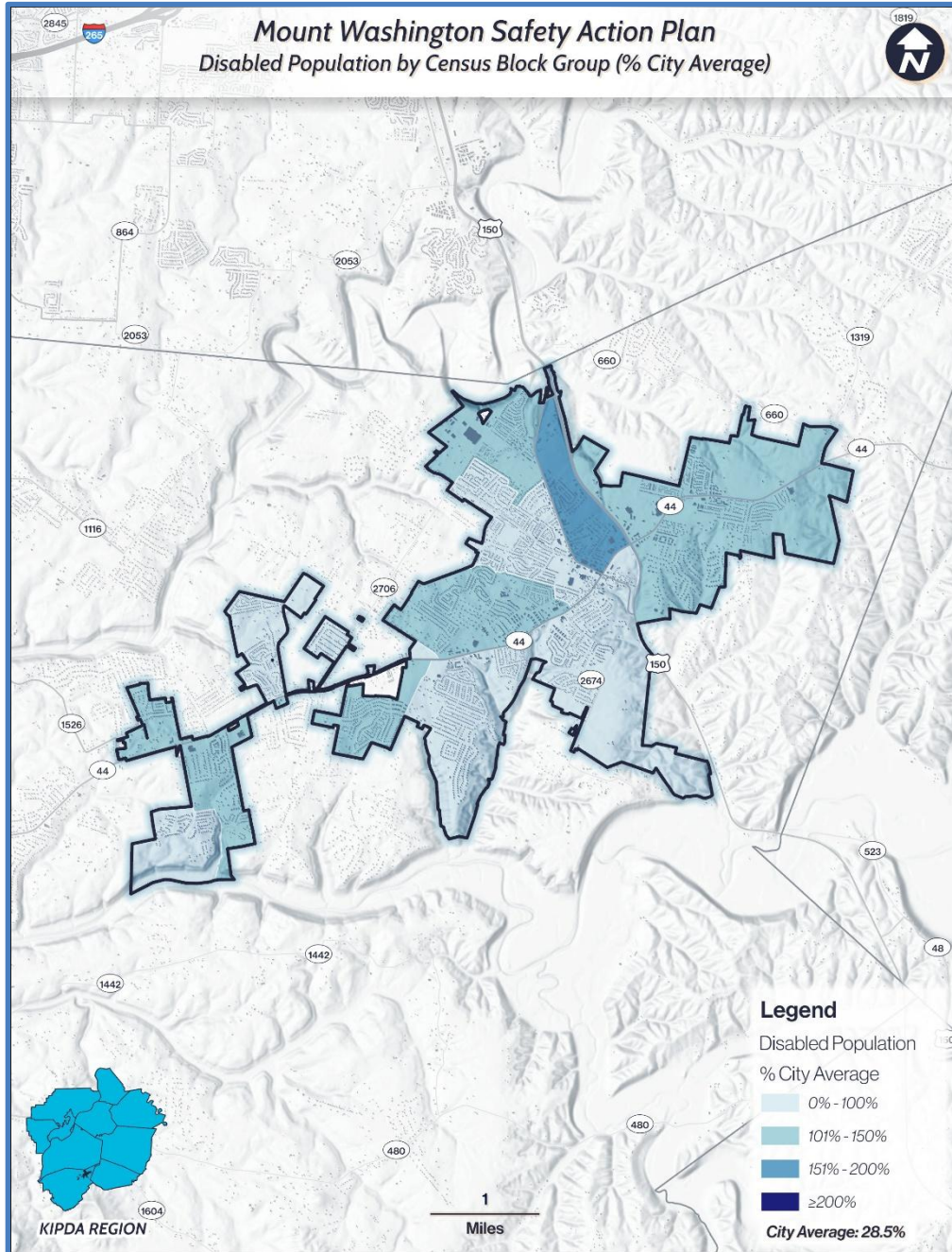


Figure 4-7. Disabled Population by Census Block Group Map



Population Experiencing Poverty

Approximately 6.0% of the population are considered impoverished. Areas with high poverty rates are often areas of underinvestment with regard to infrastructure and safety.

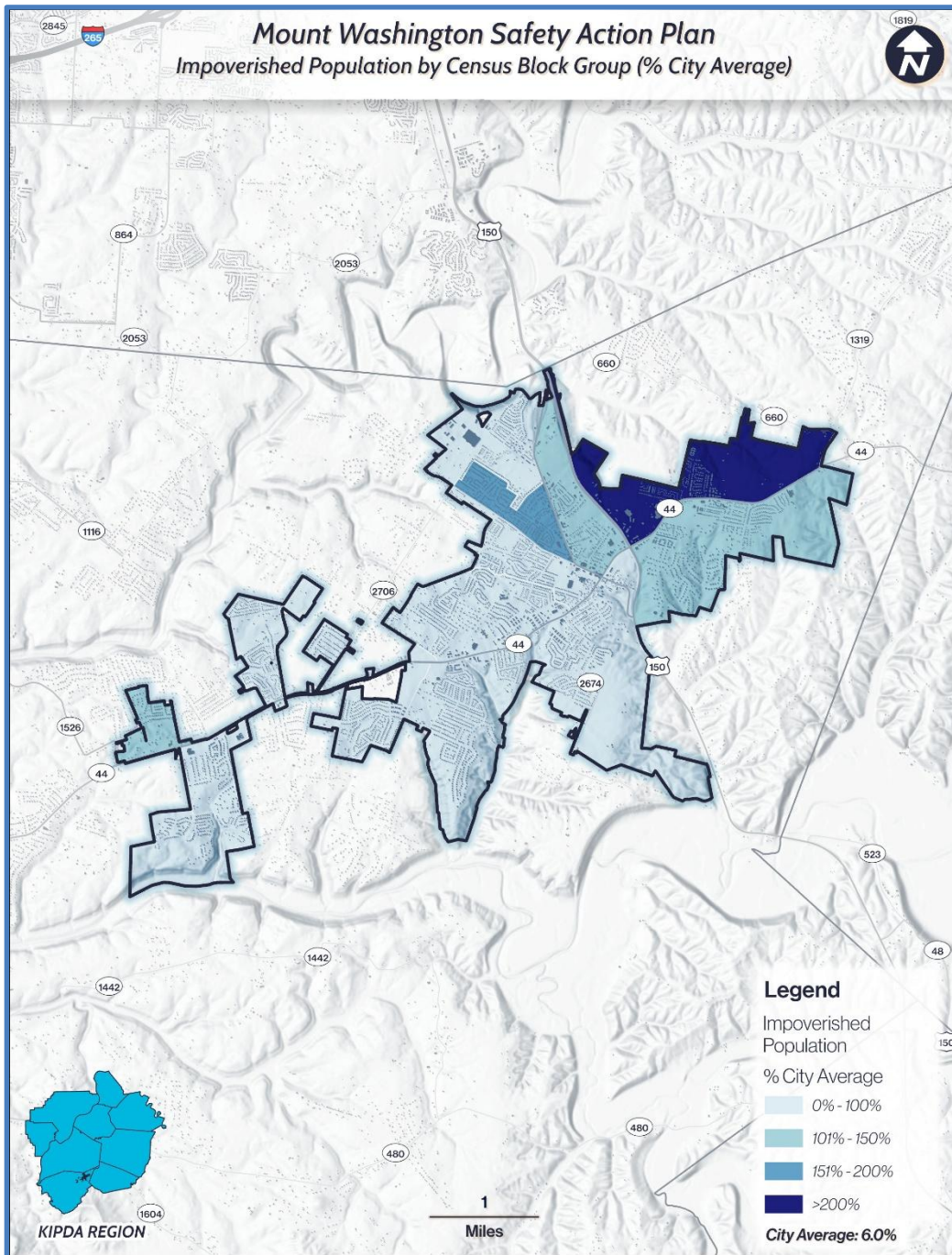


Figure 4-8. Impoverished Population by Census Block Group Map



Minority Population

Approximately 5.5% of the population of Mt. Washington identifies as non-white, with many of those residents living in the areas noted on the figure below.

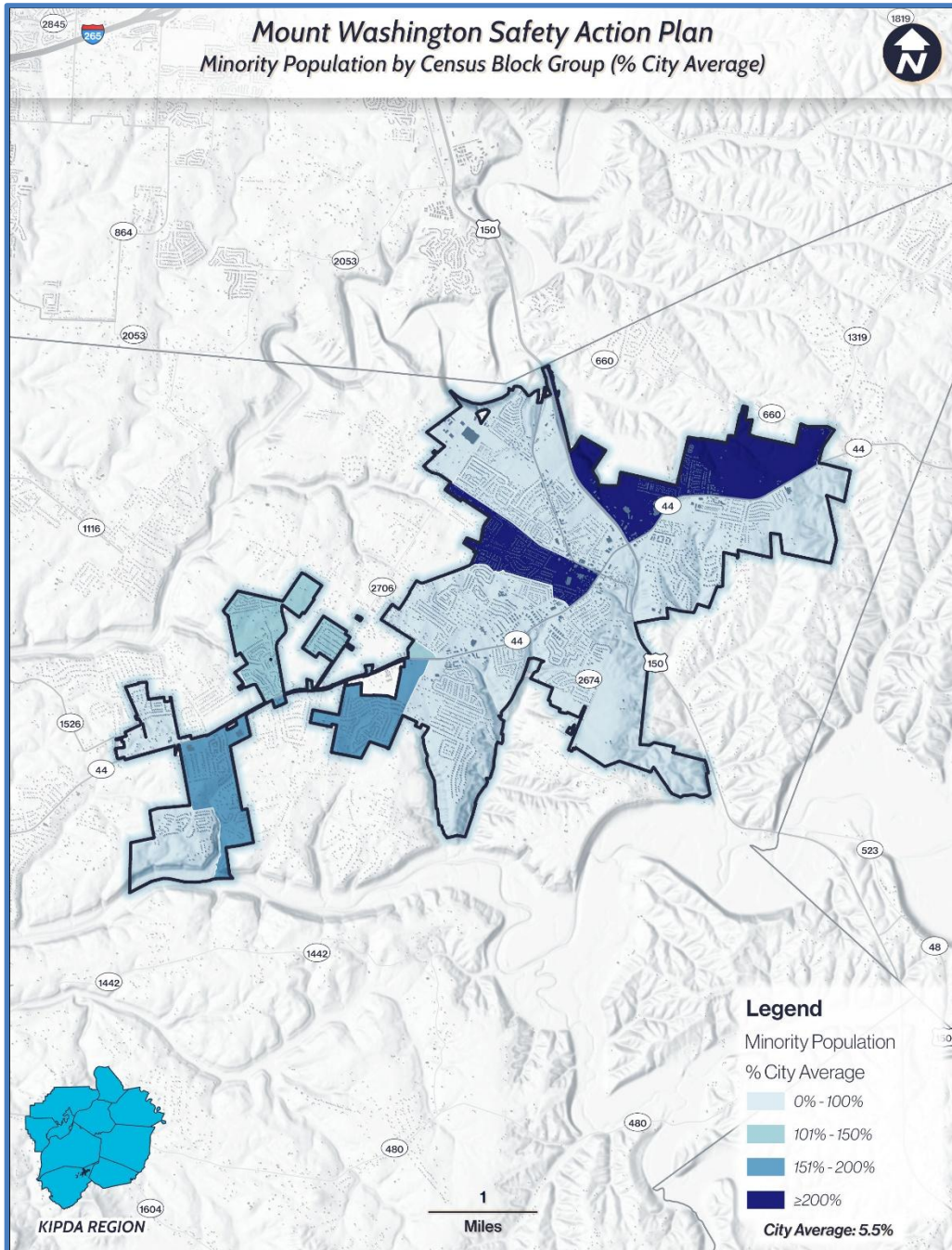


Figure 4-9. Minority Population by Census Block Group Map



5. Policy and Process Changes

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

The City of Mt. Washington 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 2015, provides a framework for the county's development. It emphasizes providing a safe transportation system, maintaining and improving existing infrastructure, creating a balanced transportation system supporting all travel modes, and integrating 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 ADA accessible.
- Improvements to existing transportation facilities should be made to optimize traffic flow while reducing the crashes at intersections, at bends in roadways, at bridges, and at other locations where free flow of travel is hindered.



Future Comprehensive Plan Recommendations

Implement Complete Streets 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.



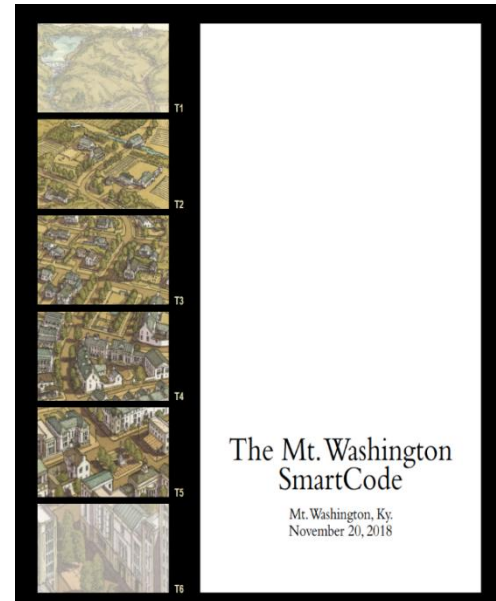
Promote Safe and Accessible Transportation for All: Encourage transportation improvements that address the needs of all community members. Conduct periodic community-focused analyses to identify and mitigate transportation safety and access hot spots.

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.

Mt. Washington Smart Code

Link: [Mt. Washington Smart Code](#)

In 2018, Mt. Washington adopted a SmartCode form-based code that emphasizes a transition from auto-centric development to a more walkable, bike-friendly, and safety focused community. The SmartCode promotes transect-based planning, which encourages the creation of compact, mixed-use neighborhoods that support safe pedestrian and bicycle movement. Narrower streets, connected pathways, and pedestrian-oriented layouts are key design elements used to calm traffic and enhance safety through thoughtful urban planning.



Future Plan Considerations

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 development to support safe access for all vulnerable road users. Sidewalks should meet accessibility standards and provide safe crossings at all intersections. Consider the inclusion of dedicated pathways or multi-use trails in all new developments and promote connectivity for 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, and active engagement with stakeholders and the community, and an assessment of Areas of Persistent Poverty (APP). 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. The table below 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 referred to as a Property Damage Only property damage only (PDO) crash costs, to develop the weights. The following table shows the breakdown of the comprehensive costs and EPDO value 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. KIPA EPDO Crash Value

As shown in Table 6-2, the comprehensive cost of a fatal crash (K) in comparison with the other crash severities is significant. The EPDO method may overly emphasize fatal crashes, potentially skewing the focus towards areas with fewer crashes. To address this imbalance, a modified EPDO (MEPDO) approach was used 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.

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

* 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. KIPA 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. The crash data was joined with GIS information to facilitate a detailed analysis by identifying the location of the crashes by road segment and intersection.

After joining the crashes to the roadway segments and intersections, the MEPDO method was applied 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 promoting a Safe System approach. Evaluating roadway features such as geometrics and traffic operation and control is essential 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

Mt. Washington experienced 11 fatal and suspected serious injury crashes at intersections, representing 65% of all fatal and suspected serious injury crashes. These crashes occurred at both signalized and unsignalized intersections. 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 7-4 lists the top 10 intersections by MEPDO and illustrates this approach of prioritizing intersections. These top 10 intersections account for all 11 fatal and suspected serious injury crashes at intersections (two occurred at KY 44 and Bogard Lane).



Ranking	Intersection	K	A	B	C	O	KA	TOTAL	MEPDO
1	Shepherdsville Rd (KY-44) & Bogard Ln	1	1	1	3	19	2	25	427
2	Bardstown Rd (US-31E) & Shepherdsville Rd (KY-44)	0	1	3	2	97	1	103	343
3	Mt Washington Bypass (US-31E) & Village Ln	1	0	3	5	12	1	21	286
4	Shepherdsville Rd (KY-44) & Bethel Church Rd	0	1	3	1	22	1	27	258
5	Shepherdsville Rd (KY-44) & Kings Church Rd (KY-1319)	0	1	2	2	13	1	18	244
6	Shepherdsville Rd (KY-44) & Bleemel Ln	0	1	2	1	19	1	23	240
7	N Bardstown Rd & Village Ln	0	1	2	1	9	1	13	230
8	S Bardstown Rd (US-31E) & Hope St	0	1	1	0	6	1	8	203
9	N Bardstown Rd & Apollo Dr	0	1	0	0	7	1	8	189
10	Fernwood Dr & Lloyd Ln	0	1	0	0	0	1	1	182

Table 6-4 Prioritized Intersections by MEPDO



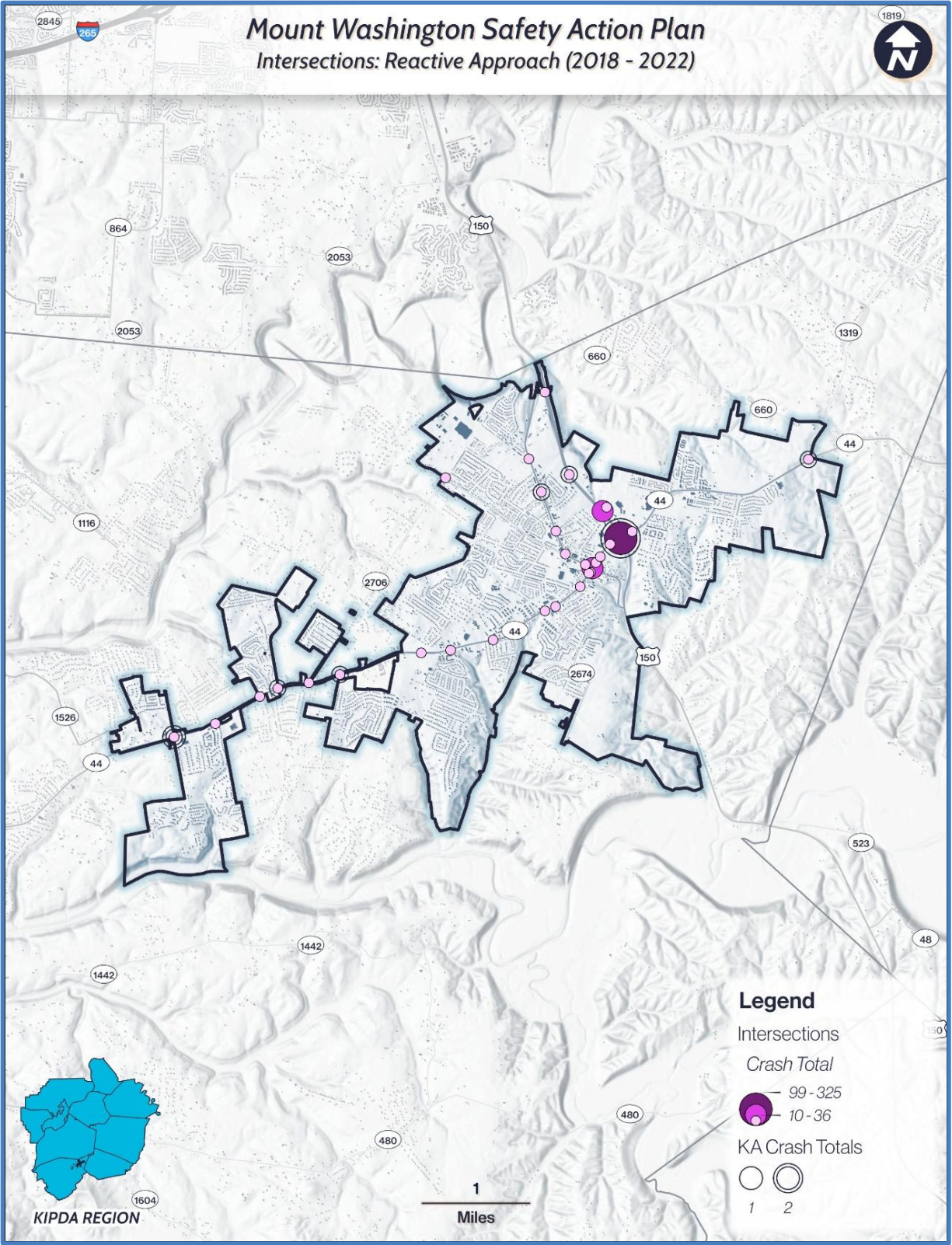


Figure 6-1. Intersections: Reactive Approach Map



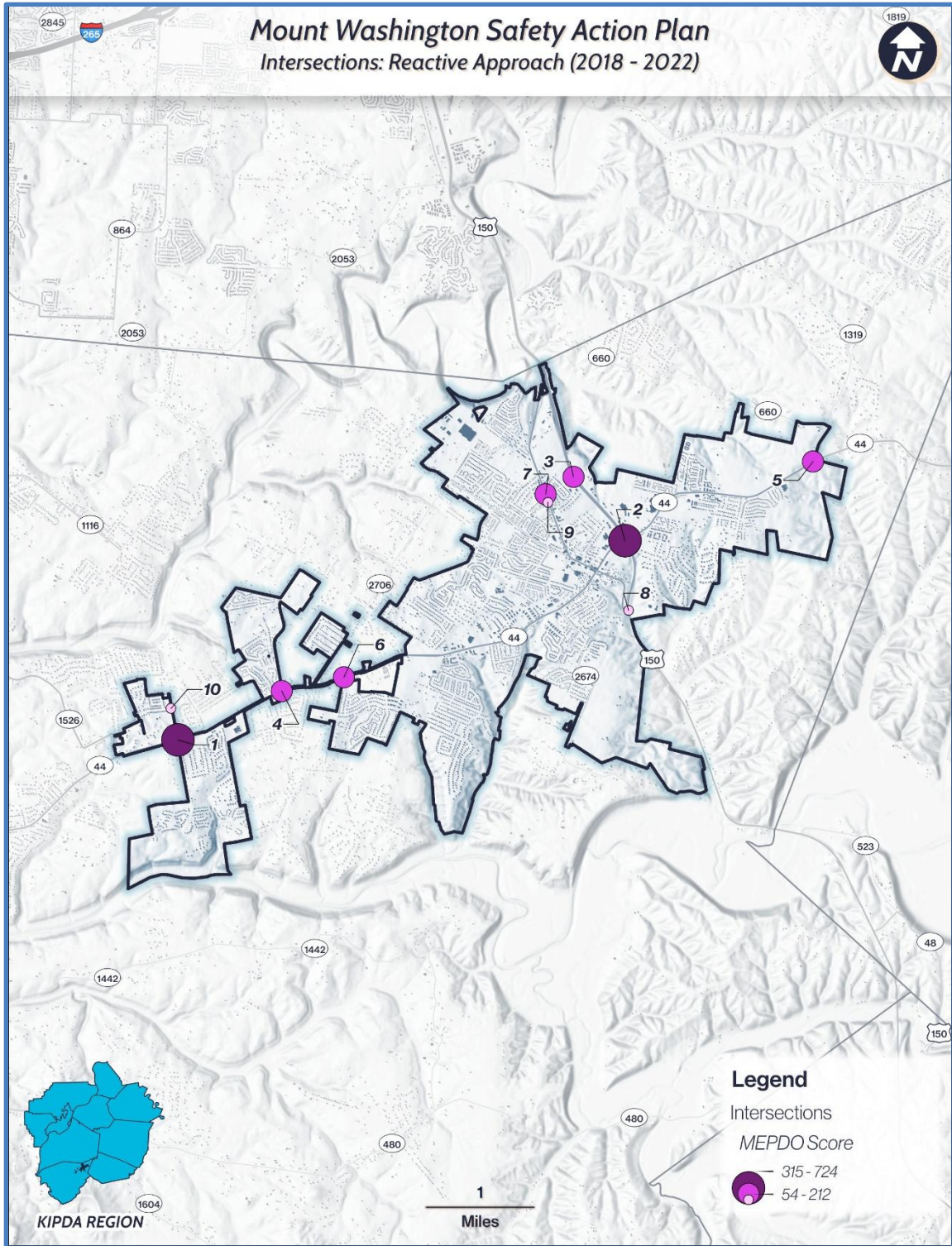


Figure 6-2. Intersections Prioritized by EPDO Map



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. Mt. Washington’s HIN was developed using detailed crash data analysis and GIS mapping to pinpoint corridors with the highest concentration of severe crashes. The following table and maps illustrate Mt. Washington’s HIN, highlighting its overlap with locations of fatal and serious injury crashes and prioritized intersections based on MEPDO analysis.

Ranking	Route	Begin	End	Length (mile)	MEPDO	MEPDO/mile
1	Old Mill Rd (KY-44)	Bells Mill Rd (KY-1526)	Central Blvd	3.32	2,176	655
2	Bardstown Rd (US-31E)	Old Mill Rd (KY-44)	Jefferson County Line	1.87	1,213	650
3	Old Mill Rd (KY-44)	Bardstown Rd (US-31E)	Kings Church Rd (KY-1319)	2.03	919	453
4	North Bardstown Rd	Old Mill Rd (KY-44)	Bardstown Rd (US-31E)	1.95	878	450
5	Old Mill Rd (KY-44)	Central Blvd	Bardstown Rd (US-31E)	1.97	801	407
6	Bardstown Rd (US-31E)	South 31E Loop	Old Mill Rd (KY-44)	1.19	239	200
7	Oakbrook Dr	Old Mill Rd (KY-44)	Bardstown Rd (US-31E)	0.40	69	174

Table 6-5 Prioritized Corridors - High Injury Network



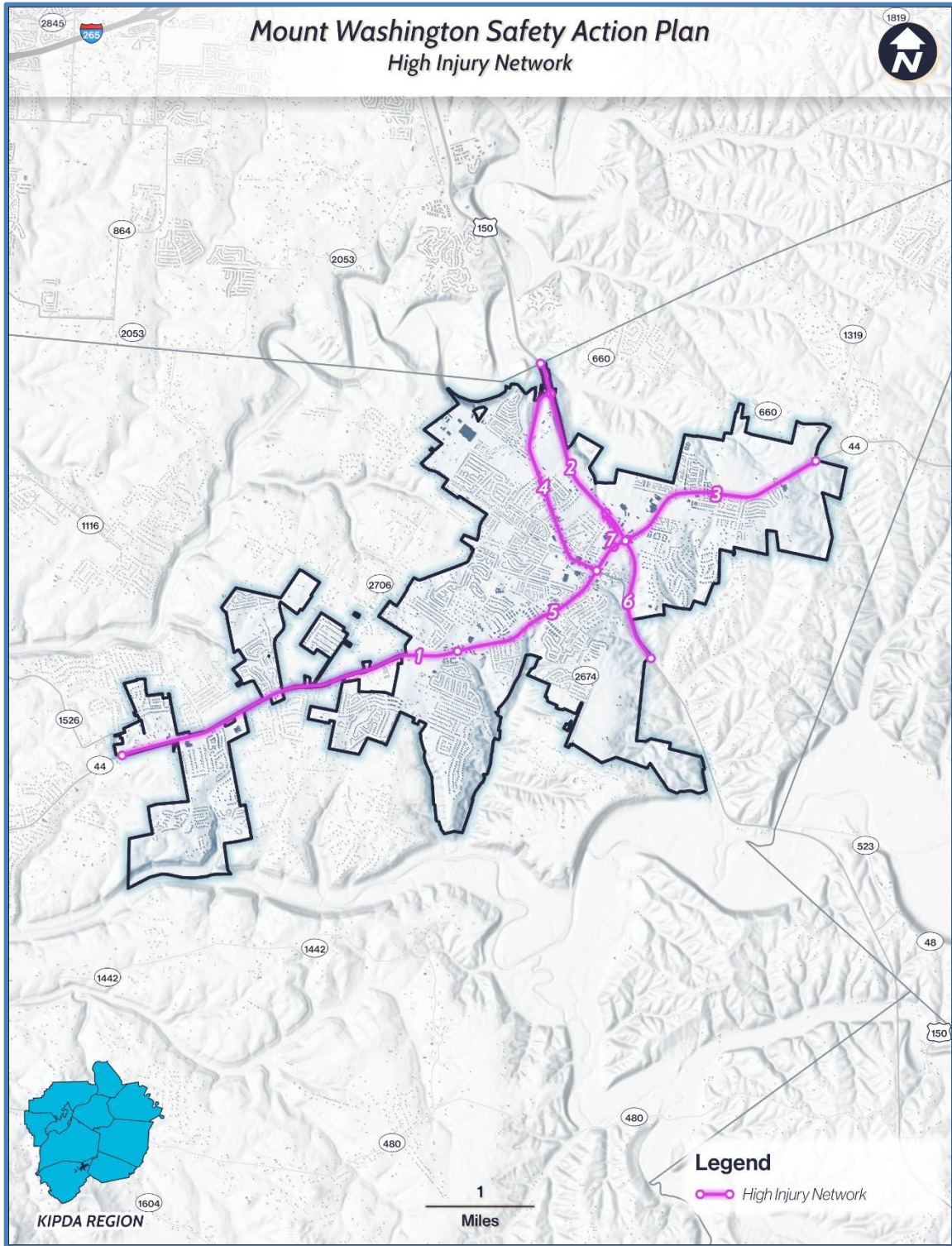


Figure 6-3. High Injury Network



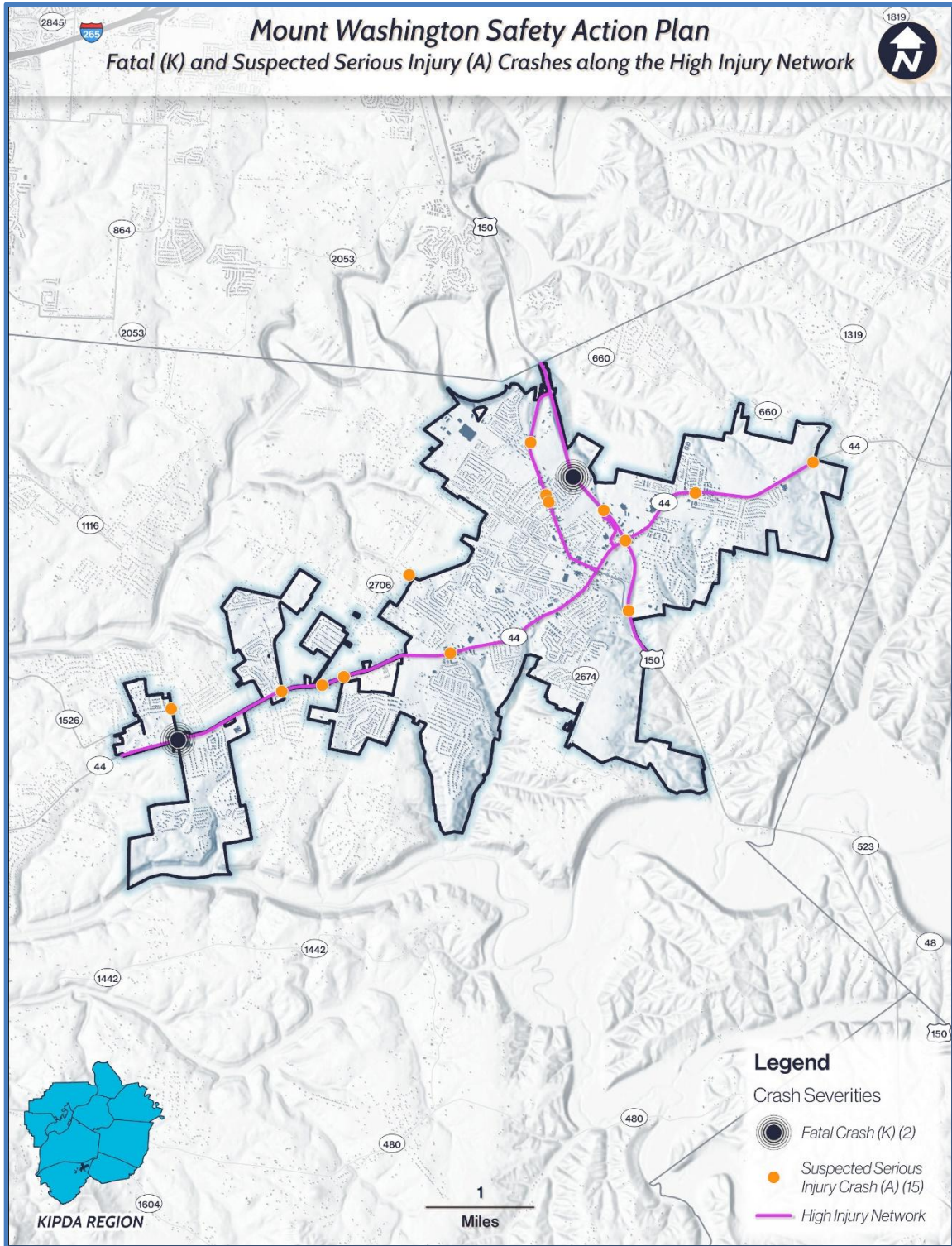


Figure 6-4. High Injury Network and Fatal and Suspected Serious Injury Crashes



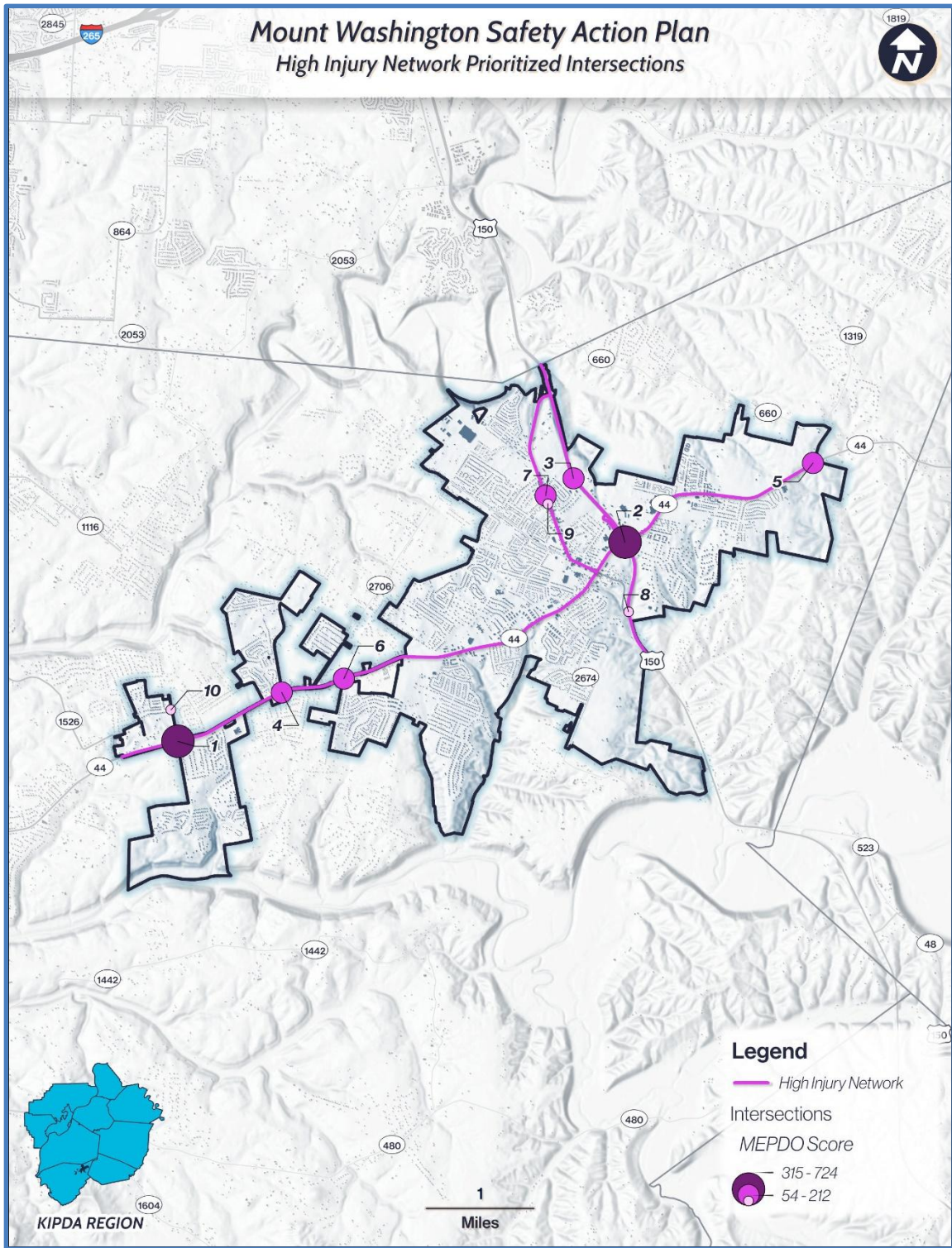


Figure 6-5. High Injury Network and Prioritized Intersections



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 community 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>





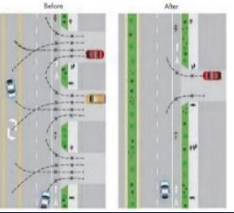





Example Segment Countermeasures							
Countermeasure	Description	Safety Impact	Links	Countermeasure	Description	Safety Impact	Links
Enhanced Delineation for Horizontal Curves				Roadside Design Improvements at Curves			
	High visibility markings and delineators around curves provide drivers with better 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 Clearing house		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




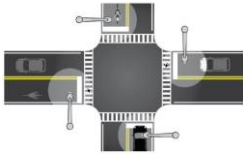





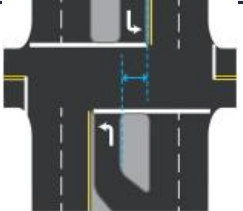
Example Intersection Countermeasures							
Countermeasure	Description	Safety Impact	Links	Countermeasure	Description	Safety Impact	Links
Access Management (intersection treatments)				Intersection Lighting			
	This refers to the design and control of access points including intersections which can enhance 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													
Ranking	Intersection	Potential Countermeasures											
		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) & Bogard Ln <i>Signal recently installed</i>	X				X	X	X	X		X		
2*#	Bardstown Rd (US-31E) & Shepherdsville Rd (KY-44)				X	X	X	X	X		X		
3	Mt Washington Bypass (US-31E) & Village Ln	X				X	X	X				X	
4*	Shepherdsville Rd (KY-44) & Bethel Church Rd	X	X			X	X	X					X
5*	Shepherdsville Rd (KY-44) & Kings Church Rd (KY-1319)	X	X				X	X				X	X
6	Shepherdsville Rd (KY-44) & Bleemel Ln	X	X			X	X					X	X
7#	N Bardstown Rd & Village Ln					X	X			X	X		X
8*	S Bardstown Rd (US-31E) & Hope St	X		X		X	X	X					
9	N Bardstown Rd & Apollo Dr					X	X						X
10	Fernwood Dr & Lloyd Ln					X	X						X

* Indicates a potential active planning, design or construction project

Indicates local priority

Table 6-8 Potential Intersection Strategies

Potential High Injury Network Corridor Strategies

The following table 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 severe crashes. These routes can be further studied to guide implementation efforts.



Rank	Route Name	Begin and End Limits	Length (mile)	Potential Project Strategies
1*	Old Mill Rd (KY-44)	Bells Mill Rd (KY-1526) to Central Blvd	3.32	Innovative intersections, turn lanes or center turn lane, shoulder widening, rumble strips, pedestrian facilities, enhanced pedestrian crossings, intersection lighting Active Project: 5-80103.00 - Reconstruct KY 44 from Bogard Ln to Armstrong Ln (2020CCN) (2022CCR)
2*	Bardstown Rd (US-31E)	Old Mill Rd (KY-44) to Jefferson County Line	1.87	Innovative intersections, RCUT corridor, intersection lighting, right turn lanes, bicycle and pedestrian facilities
3*	Old Mill Rd (KY-44)	Bardstown Rd (US-31E) to Kings Church Rd (KY-1319)	2.03	Access management, turn lanes or center turn lane, enhanced pedestrian facilities and crossings, bike facilities, curve signing, intersection lighting, speed management, transition zone treatments Active Project: 5-347.50 - Widen KY 44 for safety improvements, congestion relief, and economic growth with additional lanes between MP 23.14 to MP 25.44
4	North Bardstown Road	Old Mill Rd (KY-44) to Bardstown Rd (US-31E)	1.95	Innovative intersections, roundabouts, pedestrian facilities, enhanced pedestrian crossings, access management, widen for centerline rumbles (rural), intersection turn lanes, Be Prepared to Stop activation, speed management, transition zone treatments
5	Old Mill Rd (KY-44)	Central Blvd to Bardstown Rd (US-31E)	1.97	Innovative intersections, turn lanes or center turn lane, shoulder widening, rumble strips, pedestrian facilities, enhanced pedestrian crossings, intersection lighting, speed management Active Project: 5-150.50 - Section 5 from US31EX to US31E Bypass
6	Bardstown Rd (US-31E)	South 31E Loop to Old Mill Rd (KY-44)	1.19	Maintain access management, innovative intersections, examine lane drops/adds, left/right turn lanes, smaller corner radii, pedestrian facilities Active Project: 5-80354 - Improve traffic operations and improve safety along US31E (Louisville-Bardstown Rd) from the Bullitt/Nelson County Line to KY 44. Consider a 2+1 configuration and/or innovative intersections (MP 0.0 - 3.53 Bullitt; MP 0.0 - 1.882 Spencer). Design currently programmed for 2025. (2024CCN)
7	Oakbrook Drive	Old Mill Rd (KY-44) to Bardstown Rd (US-31E)	0.40	Enhanced striping, lighting, stripe for left turn lanes and center two-way left turn lane, enhanced pedestrian crossings, consider traffic calming, raised median

* Indicates local priority

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 Mt. Washington'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 aggressive driving.

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 Mt. Washington, 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 distracted driving, aggressive driving, and rural to urban transition zones	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 Mt. Washington, with support from KIPDA, is committed 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 incorporating feedback to continuously enhance our 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

Mt Washington 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

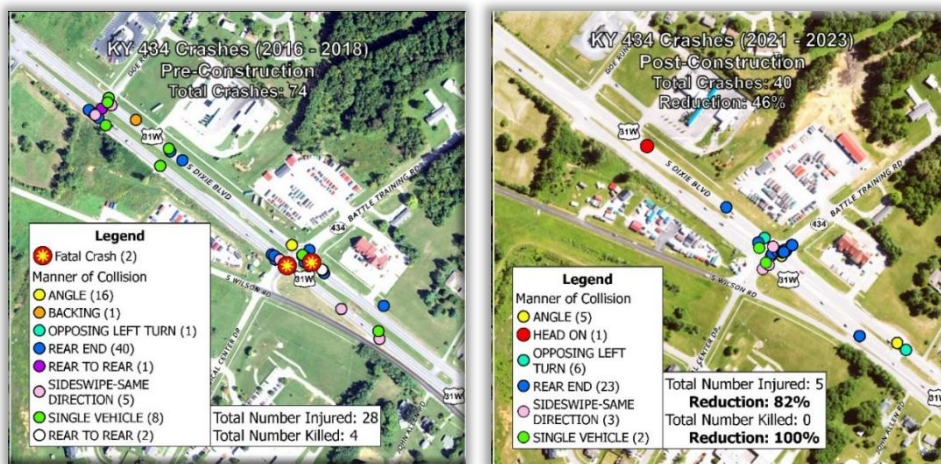
This performance measure tracks the number of safety-focused improvement projects constructed from the potential improvements listed in **Chapter 6. Policy and Process Changes**. The total number of safety improvements implemented at the intersection and along the corridors identified on the HIN would 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

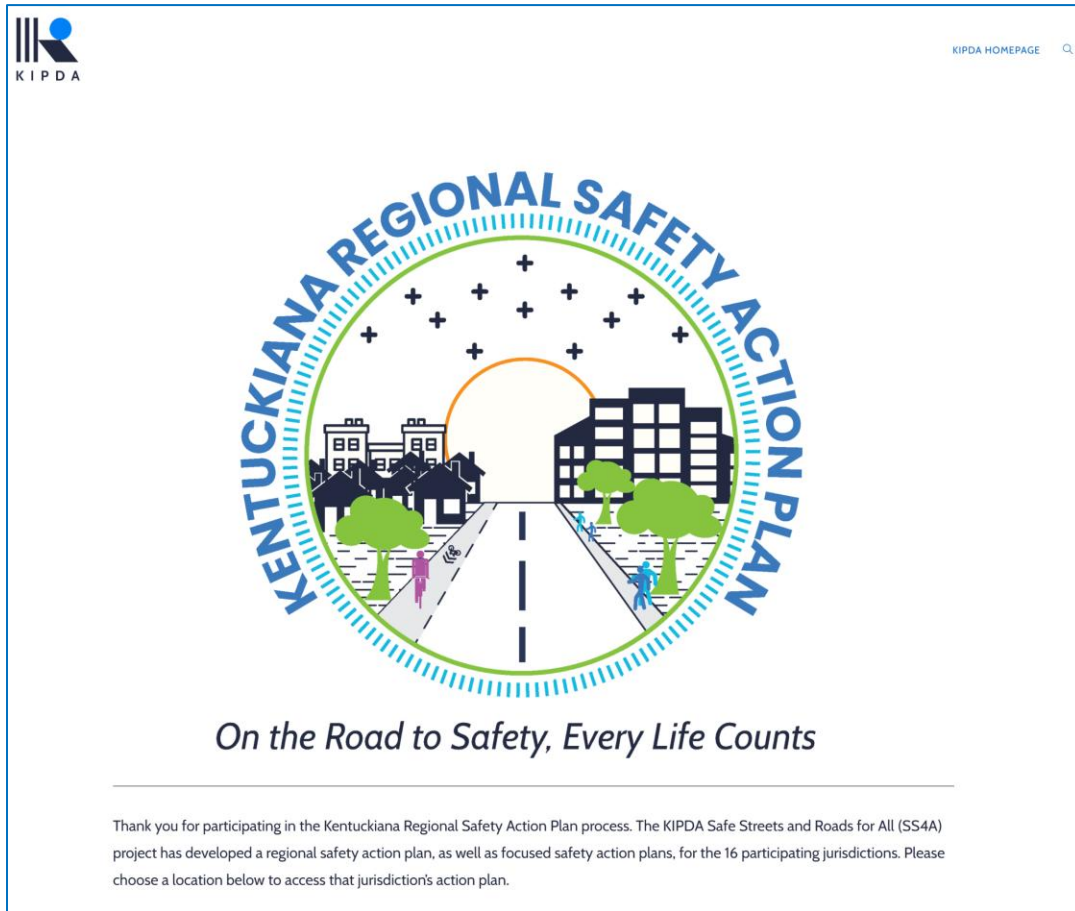


POST-CONSTRUCTION



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 Mt. Washington 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

		Cost Percentages ==>										(7%/yr compounded)		
		5%	15%	20%	10%	12%	15%		50%		61%	61%		
Project	Unit	Design and Environmental				Construction		Low Planning Level	High Planning Level	Low Total 2025	High Total 2025	Low Total 2032	High Total 2032	
		Planning	Permitting	Right-of-Way	Utilities	Inspection	Construction	Subtotal	Contingency	Contingency	Cost	Cost	Cost	Cost
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

