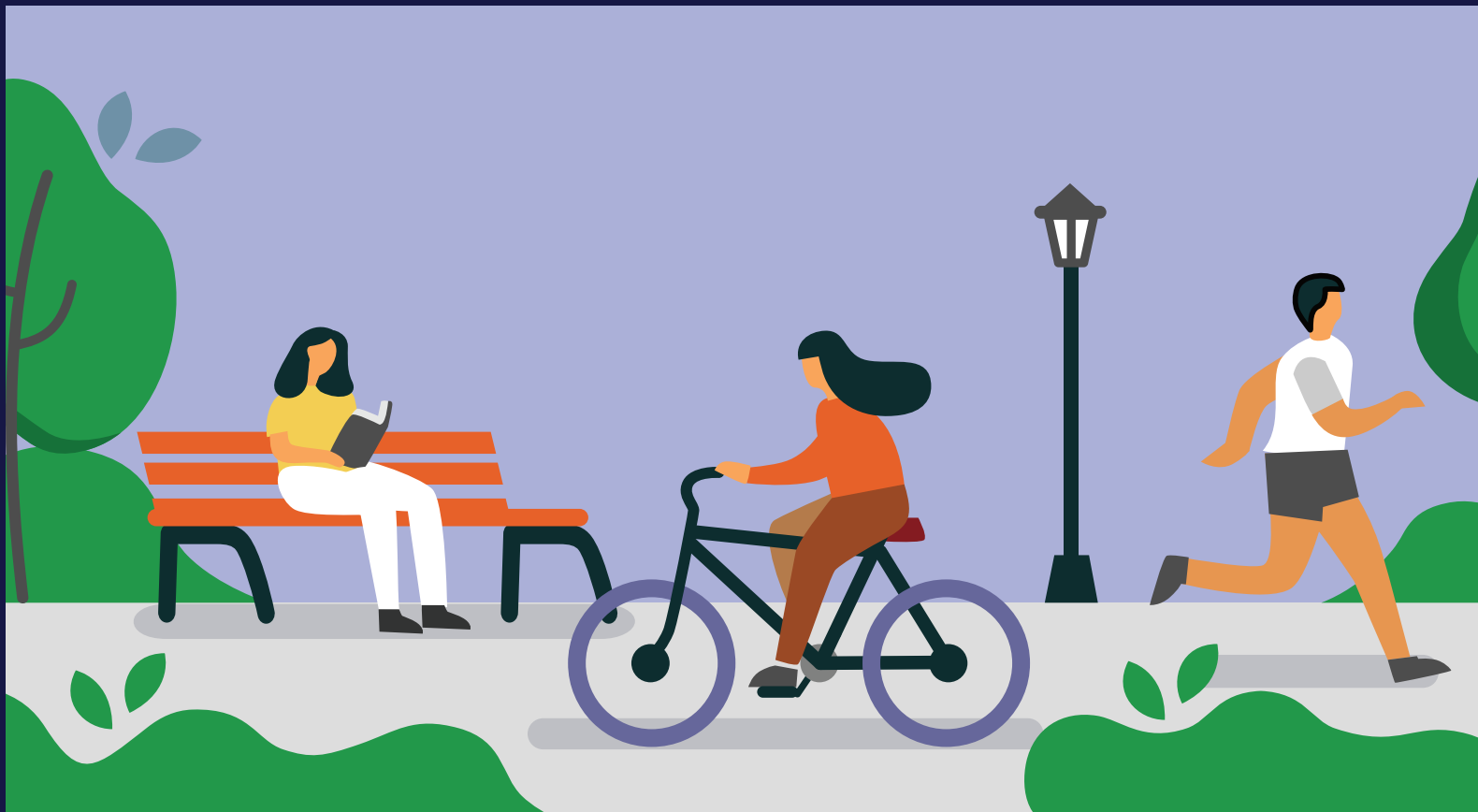
HARRIMAN
SAFE STREETS

City of Harriman, TN

Safe Streets and Roads For All

April 2025



Message from the Mayor

Dear Residents of Harriman,

Harriman, Tennessee, often referred to as "the town that temperance built," was founded in 1889 by Frederick Gates along the Emory River and the Cincinnati-Southern Railroad line. The town was planned as an alcohol-free utopian experiment, a model industrial city where no intoxicating beverages would be manufactured, stored, or sold. This unique history has shaped Harriman into a charming city that combines a rich past with modern amenities and natural beauty.

Located in the heart of Roane County, Harriman is known for its historic downtown, vibrant arts and culture scene, and outdoor recreational opportunities. Whether you're exploring the unique shops and delicious restaurants downtown, enjoying the scenic Riverfront Park, or participating in outdoor activities in the nearby mountains, rivers, and lakes, Harriman offers something for everyone. With a population of around 6,000, our city provides a tight-knit community feel, making it an excellent place to live, work, and raise a family. Ensuring the safety of our roadways is a top priority for our community. Our roads are essential for connecting us to work, school, healthcare, and leisure activities. It is our duty to make sure that these roads are safe for everyone.

From 2019 to 2023, Harriman experienced 1,035 reported crashes on our roadways. Tragically, 4 of these crashes were fatal, and 35 resulted in serious injuries. These incidents are heartbreaking for the victims, their families, and our entire community. We believe that traffic fatalities and serious injuries are preventable, and we are dedicated to reducing and ultimately eliminating these occurrences.

To achieve this goal, we need to work together with community members, city departments, and advocacy groups. By collaborating, we can develop and implement programs, create ordinances, and establish infrastructure improvements that address common safety issues such as speeding or impaired driving. Through these collective efforts, we aim to eliminate preventable crashes and fatalities.

Our Comprehensive Safety Action Plan is a critical step toward this goal. This plan is based on available crash and public input data and provides actionable steps to improve safety on our roads. It is designed to benefit everyone in Harriman, regardless of their income, location, race, or age. The success of this plan depends on the support and participation of our community and partner agencies. Everyone has a role to play in making our roads safer. This Safety Action Plan will guide us on what actions to take first, what to do next, and how to track our progress.

We are just beginning this journey, but having a solid plan is essential for achieving our goals and preventing these tragedies. We are committed to making Harriman a zero-fatalities city. This means implementing engineering countermeasures, driver-related countermeasures, and policy changes that prioritize safety. We will work on improving intersections, managing speed, enhancing pedestrian and cyclist infrastructure, and ensuring our roads are designed to be safe for all users. Our efforts will be guided by data, community input, and best practices in transportation safety.

Thank you for your interest in roadway safety in Harriman. Together, we can make our city a safer place for everyone.

Sincerely,

Wayne Best

Mayor, City of Harriman

Special Thanks

We extend our sincere appreciation and gratitude to the residents, advocacy groups, stakeholders, and the public who assisted in the public surveys, meetings, and the entire planning process. The critical input guided the development of the Safety Action Plan and in turn will have a positive impact on the City.

City of Harriman

Scott Mason – Harriman City Manager

Keta Mize – Assistant to the City Manager

Jesse Rittenhouse - Beautification

David Branam – Maintenance Supervisor

Zack Sterner – Assistant Parks & Rec Director

Jared Underwood – Harriman Police Department

Nicole Darby – Harriman Police Department

Johnny Brackett – Harriman Council Member

Jon Johnson – Harriman Fire Department

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Introduction

Alignment with SS4A

The Bipartisan Infrastructure Law (BIL) established the Safe Streets and Roads for All (SS4A) discretionary program to fund regional, local, and Tribal initiatives through grants to prevent roadway deaths and serious injuries.

One of the initiatives funded by the SS4A program is the development of a Comprehensive Safety Action Plan. A Safety Action Plan is a planning document that prioritizes safety improvements and justifies investment decisions. Having a formal plan will help the City of Harriman communicate clearly with stakeholders and access funding opportunities.

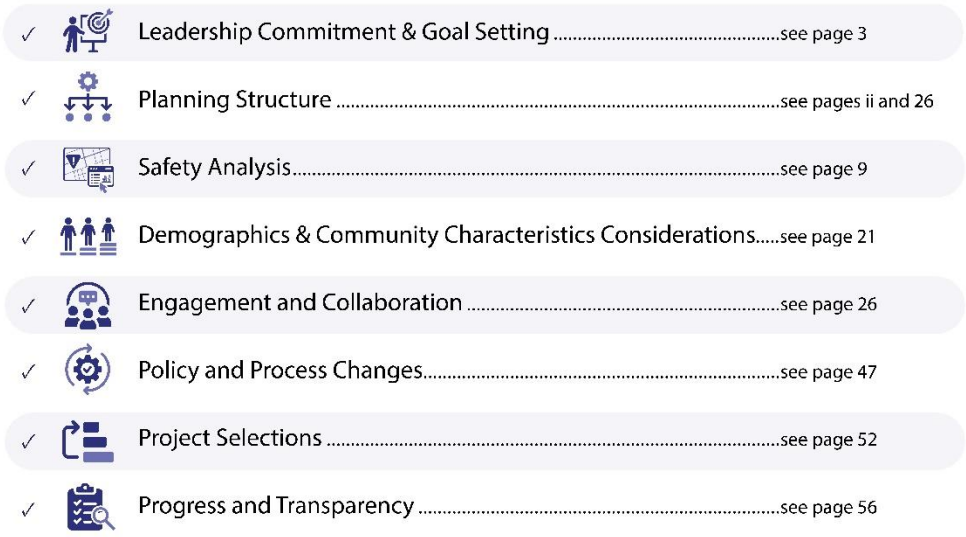

Figure 1: Alignment with SS4A

Document Organization

The City of Harriman SAP is organized into the following Chapters:

- **Introduction**: Presents the project background, goals, and purpose of the SAP
- **Safety Analysis**: Provides an overview of citywide crash trends and explains how demographics and community characteristics informed the SAP
- **Demographics & Community Characteristics Considerations**: Identifying undeserved communities through data and partner collaboration and analyzing population characteristics impacts of proposed projects and strategies.
- **Engagement and Collaboration**: Provides a summary of the City's efforts to inform, consult, involve, collaborate with and empower the public in the development of this plan.
- **Strategies**: Describes potential engineering and driver-related countermeasures
- **Policy and Process Changes**: Includes an assessment of current policies, plans, and standards to identify opportunities for prioritizing transportation safety, with implementing through adopting revised or new policies and guidelines.
- **Project Selection**: Includes criteria for prioritizing project and corridors, indicating where improvements should be implemented first.
- **Progress and Transparency**: Includes a description of measures the City will take over time to ensure transparency with stakeholders, including annual reporting on progress toward reducing roadway fatalities and serious injuries and posting the Action Plan online.

Purpose of the SAP

The Harriman SAP provides a framework for identifying and prioritizing safety improvements that can be implemented. The SAP recommendations focus on transportation improvements that can be used to reduce fatal and suspected serious injury crashes guided by the principles established in the TN SHSP and through a systemic data analysis conducted specifically for Harriman.

The Harriman SAP serves as an SS4A Action Plan, aligning with the components required to apply for SS4A Implementation Grant funding. As such, the SAP involves a community-informed and data-driven approach to roadway safety, with commitment from City leadership to reducing roadway fatalities and suspected serious injuries.

Leadership Commitment and Goal Setting

The City of Harriman's leadership commits to making progress toward the long-term goal of zero traffic deaths and serious injuries with an interim goal of a 20-percent reduction in fatal and serious injury crash rates (expressed in crashes per 1 million vehicle miles traveled [VMT]) by 2035 from the projected trend. With a 50-percent reduction by the year 2045. **Figure 1** illustrates the five-year rolling averages of fatal/serious injury crash rates for the years 2019 to 2023. More detail is included in the Crash Data Analysis section of this document. The activities conducted during this study build upon the Federal Safe System Approach, the TN SHSP, and City-specific data analysis findings and community feedback.

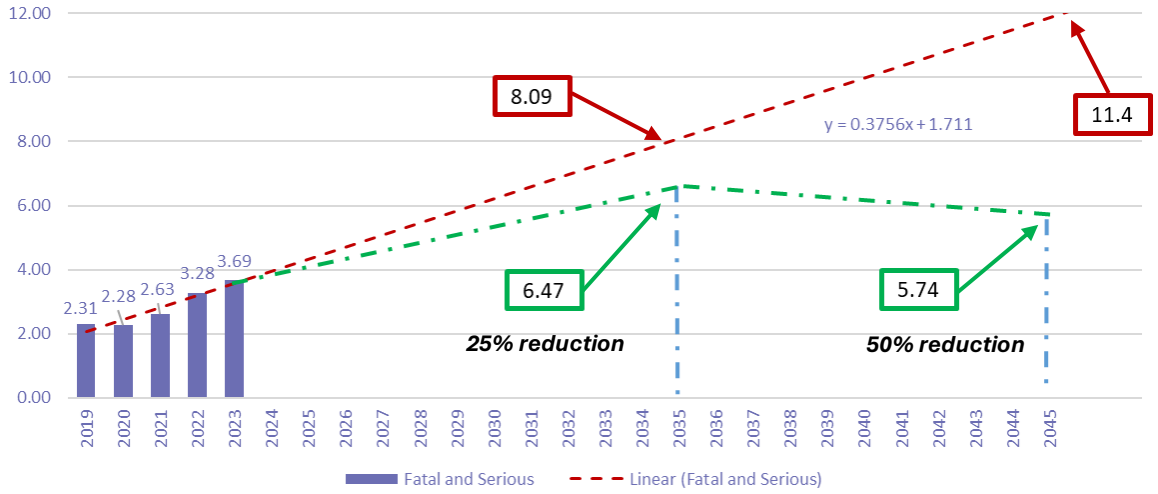

Figure 2: Harriman Fatal and Serious Injury Crash Rate Trend

The Safe System Approach is the guiding paradigm of the USDOT regarding roadway safety (see **Figure 1**). It prioritizes the elimination of crashes that result in death or serious injury. This approach is a shift from the conventional safety approach in that it focuses on both human mistakes and human vulnerability and seeks to design a system with multiple layers of protection. See **Figure 2** for a comparison between the traditional approach versus Safe System Approach. This Safety Action Plan will integrate the Safe System Approach by analyzing the transportation system holistically and proposing solutions and strategies across the spectrum of principles that make up the Safe System Approach. Those principles are as follows:

- Deaths and Serious Injuries are Unacceptable
- Humans Make Mistakes
- Humans Are Vulnerable
- Responsibility is Shared
- Safety is Proactive
- Redundancy is Crucial

Figure 3: Elements of the Safe Streets Approach (Source: USDOT)

Traditional Approach	vs	Safe Systems Approach
Traffic Deaths and Serious Injuries are INEVITABLE		Traffic Deaths and Serious Injuries are PREVENTABLE
IMPROVE human behavior		INTEGRATE human error into approach
INDIVIDUAL responsibility		SHARED responsibility
Prevent COLLISIONS		Prevent FATAL AND SERIOUS INJURY CRASHES
REACT based on crash history		PROACTIVELY identify and address risks
Saving lives is EXPENSIVE		Saving lives is NOT EXPENSIVE

Figure 4: Traditional Approach vs Safe Streets Approach

Study Area

The City of Harriman, located within Roane County, Tennessee, is home to approximately 6,000 residents. The city sits on the western outskirts of Knoxville, along the I-40 thoroughfare towards Nashville. Harriman covers over 10.5 square miles of land, including a small section of the Emory River, and sits at roughly 883 feet in elevation.

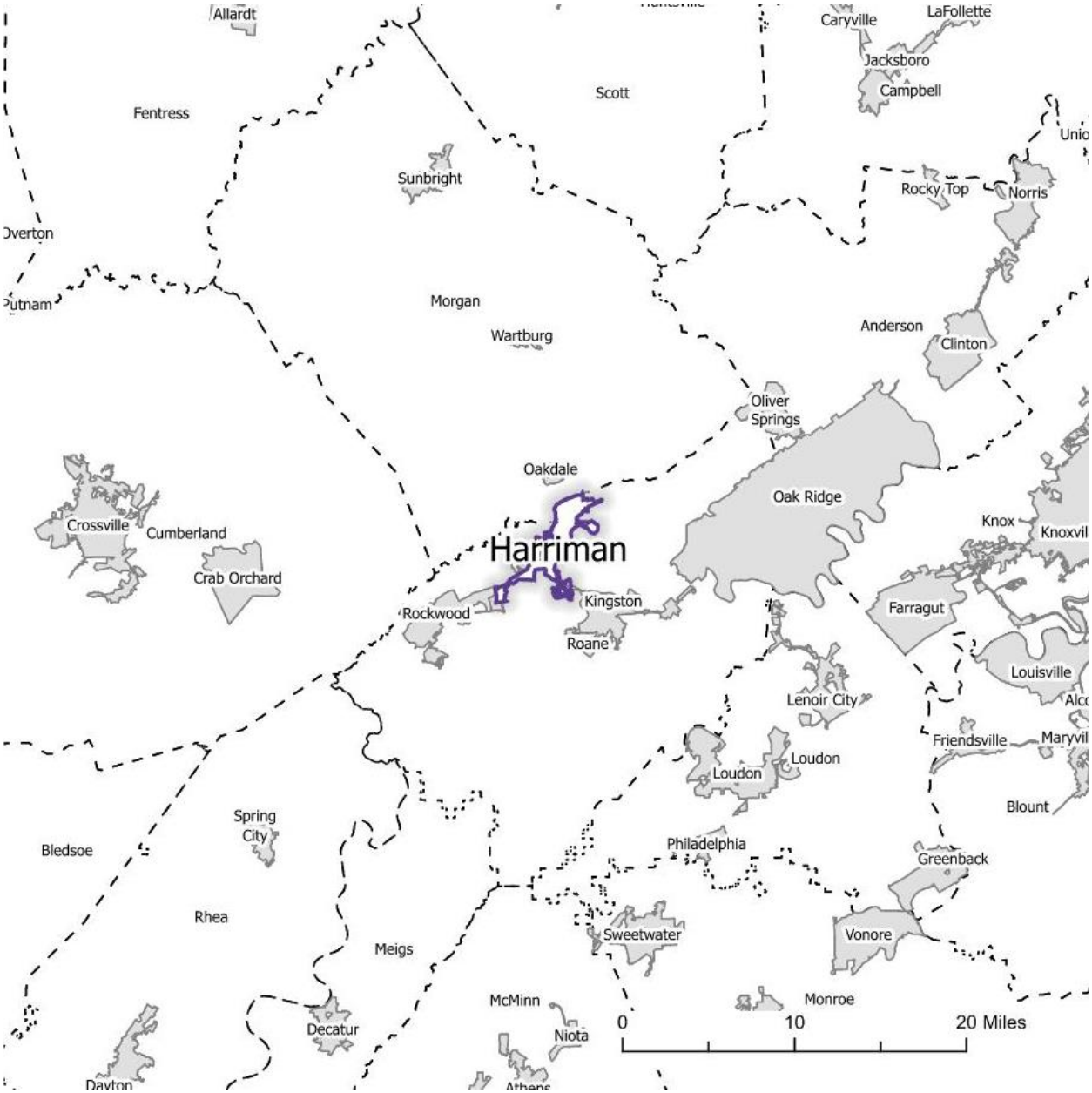

Figure 5: Vicinity Map of Harriman

History

The city was originally founded in 1889 by Frederick Gates, as head of a group of New York City-based investors intending to create an alcohol-free utopian environment. Due to these temperance advocates, Harriman is often referred to as “the town that temperance built”. With a population of approximately 6,000 residents, Harriman is known for its small-town hospitality and proximity to the Tennessee Valley and nearby Appalachian Mountains.

Land Uses and Attractions

Roane Medical Center is located off Roane State Highway, near the southernmost end of Harriman, providing medical services to most of the area. The City of Harriman is home to the Tennessee College of Applied Technology – Harriman.

Schools

The are three schools located within the City of Harriman, including one (1) elementary school, one (1) middle school, and one (1) high school.

- Bowers Elementary School
- Harriman Middle School
- Harriman High School

Roadway Networks

The City of Harriman is mainly settled along an approximately 8.5-mile-long stretch of US-27 (N/S Roane Street), with a small section of the city spanning down to the I-40 and US-70 (Roane State Highway) throughfares. These thoroughfares are the main connectors from the city to the larger metropolitan areas of Nashville and Knoxville. Downtown Harriman is structured in a grid-like pattern between N Roane Street and Emory Drive, where a majority of the city's businesses and industry takes place.

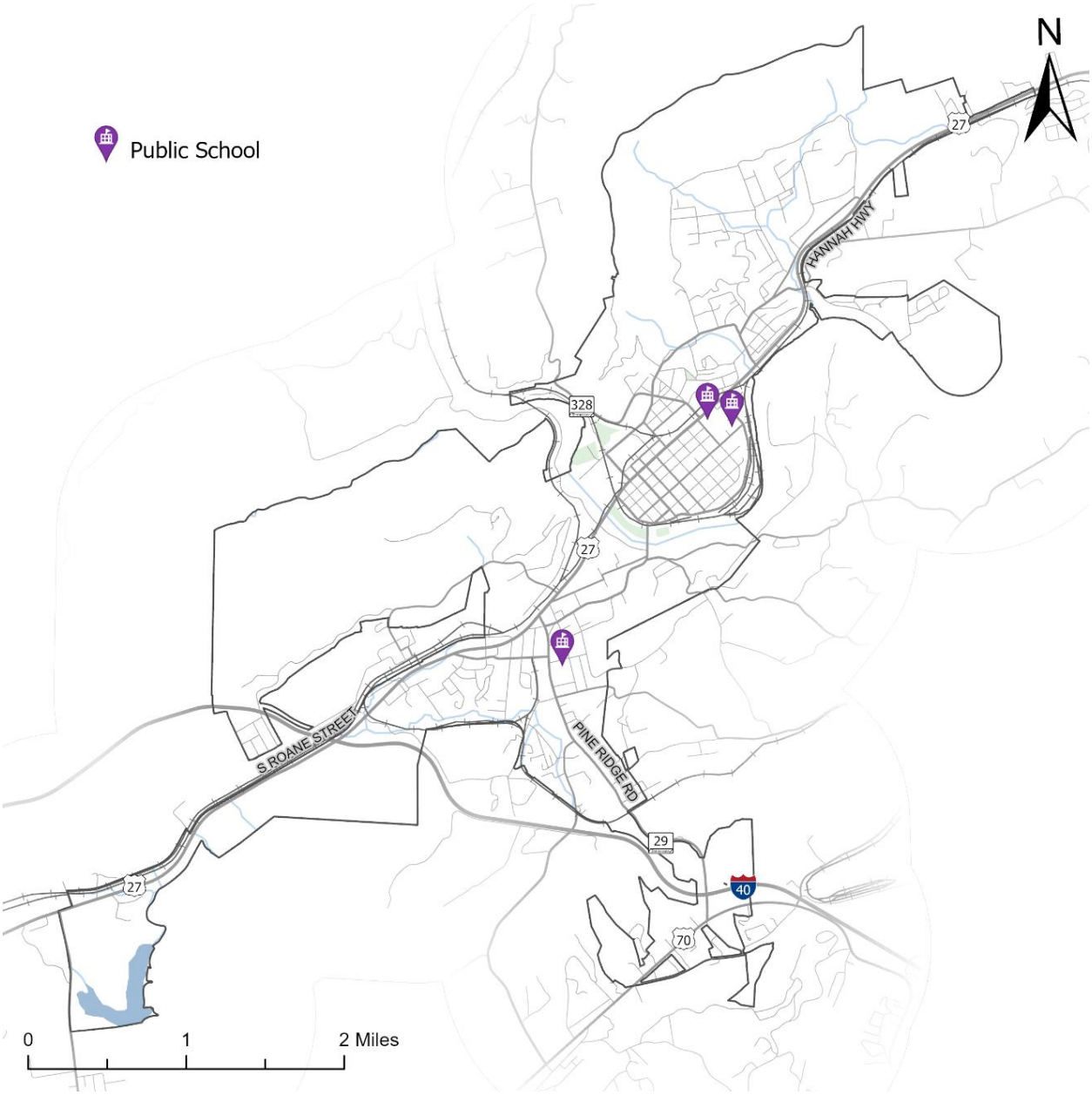

Figure 6: Roadway Networks of Harriman

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Safety Analysis

Safety Analysis

The safety analysis for the Harriman SS4A Action Plan explored city-wide historical trends to understand where crashes occurred, crash severities, and their contributing factors. This safety analysis section explored data sources, safety emphasis areas, city-wide crash trends, input received from the first phase of community outreach, transportation demographics and community characteristics considerations, and the identification of a high-injury network. The safety analysis findings helped inform the development of engineering projects and strategies identified in this plan.

KABCO Crash Severity: The KABCO scale measures the injury severity for any person involved in the crash and is defined as K for fatal injury, A for suspected serious injury, B for suspected minor injury, C for possible injury, and O for no apparent injury. From January 2019 to December 2023, there were 1,035 reported crashes on roadways in the City of Harriman, of which 39 resulted in fatalities or serious injuries.

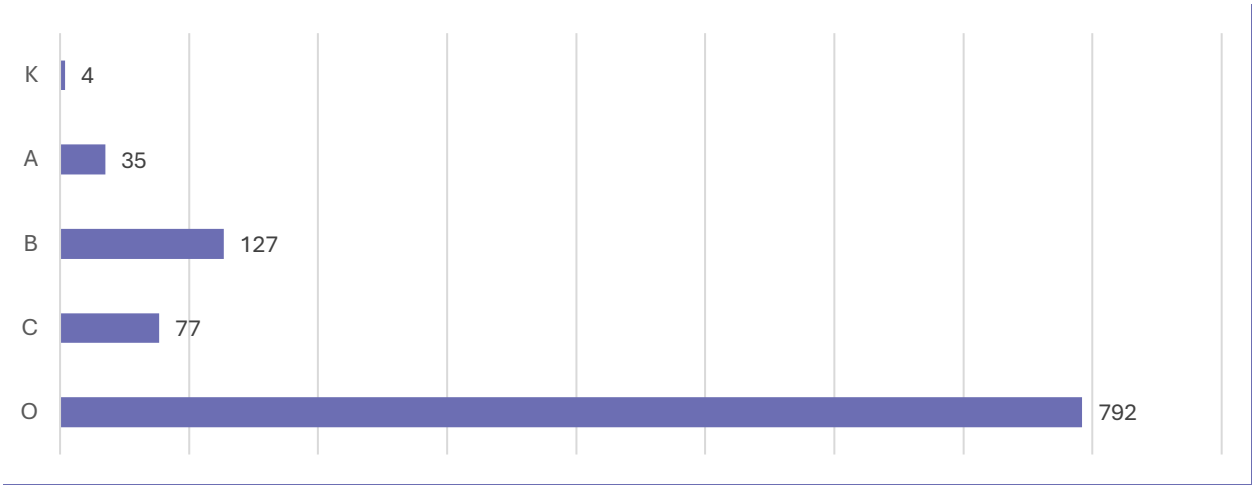

Figure 7: Crashes in Harriman by KABCO Scale

Data Gathering

Historical crashes were obtained from Tennessee Department of Transportation's (TDOT) AASHTOWare Safety[1] online crash database for crashes reported from 2019 to 2023. These findings are intended to represent trends for the study area, and the absolute values may not match different statewide crash data reporting sources. The data was combined and cleaned at a high level to provide a more complete record of crashes within the City. This cleaning included filtering out interstate crashes, duplicate crashes, erroneous crash information, and geographically inaccurate crash data. The analysis also incorporated roadway ownership information and additional roadway characteristics (such as road type and signal locations) provided by TDOT.

[1] TDOT, AASHTOWare Safety
https://tdot.aashtowaresafety.com/signin

Emphasis Areas

The Tennessee Department of Transportation, TDOT, are required to develop Strategic Highway Safety Plans under the Federal Highway Administration's (FHWA) direction to identify safety emphasis areas based on historical crash trends and severities. Crashes resulting in fatalities and suspected serious injuries were evaluated in the 2020-2024 Tennessee Strategic Highway Safety Plan (TN SHSP) to identify the top statewide safety emphasis areas. These analysis results help inform how transportation safety funding should be directed to reduce statewide fatal and serious injury crashes for all road users.

Table 1 shows a comparison of the City of Harriman fatal and serious injury crashes to statewide totals for crashes reported between 2019 and 2023. Table 1 is formatted to emulate the emphasis areas documented in the TN SHSP and intends to highlight how the emphasis areas in Harriman compare to statewide trends. Harriman experienced higher percentages for several emphasis areas, including crashes involving Intersections, Senior Drivers (65+), and Aggressive Drivers / Speeding. Note, that individual crash events may be associated with more than one emphasis area. For example, a roadway departure crash could have involved an impaired young driver. As such, the values in the columns may not add to equal the exact totals. In **Table 1**, green shaded cells show which contributing factors were more prevalent in the City of Harriman than the statewide data over the five-year study period while the blue shaded cells show which contributing factors were less prevalent in the City of Harriman.

Table 1: Crashes in Harriman by Contributing Factors

Category	Emphasis Areas	City of Harriman (2019-2023)				State of Tennessee (2019-2023)			
		# of Fatal Crashes	# of Suspected Serious Injury Crashes	Total	% Fatal & Serious Injury Crashes	# of Fatal Crashes	# of Suspected Serious Injury Crashes	Total	% Fatal & Serious Injury Crashes
All Severe Crashes		4	35	39	100.0%	5344	25731	31075	100.0%
Roadway	Roadway Departure	1	7	8	20.5%	2892	10046	12938	41.6%
	Intersections	2	20	22	56.4%	1241	8267	9508	30.6%
Drivers	Unrestrained Occupants	0	3	3	7.7%	1659	4242	5901	19.0%
	Senior Drivers (65+)	3	10	13	33.3%	1155	4893	6048	19.5%
	Teen Drivers (13-19)	0	4	4	10.3%	941	5673	6614	21.3%
	Impaired Drivers	0	1	1	2.6%	1418	3495	4913	15.8%
	Inattentive, Distracted, and Drowsy Drivers	0	0	0	0.0%	341	2609	2950	9.5%
	Aggressive Drivers / Speeding	2	4	6	15.4%	916	2770	3686	11.9%
Vehicles	Motorcycles	1	2	3	7.7%	782	3558	4340	14.0%
	Large Trucks (Truck/Bus)	0	3	3	7.7%	474	1331	1805	5.8%
Special Users	Pedestrians	0	0	0	0.0%	754	1753	2507	8.1%
	Bicycles	0	0	0	0.0%	49	286	335	1.1%

Crash Data Analysis

Table 2 summarizes crashes by KABCO Scale severity and year occurring on all roadways (excluding interstates) within the City of Harriman.

Table 2: Yearly Crashes in Harriman by Severity

Year	Fatal Crash (K)	Suspected Serious Injury (A)	Suspected Minor Injury (B)	Possible Injury (C)	Property Damage Only (O)	Total
2019	0	4	34	5	160	203
2020	1	6	26	11	154	198
2021	1	8	20	19	159	207
2022	1	7	24	19	159	210
2023	1	10	23	23	160	217
Total	4	35	127	77	792	1035
Percentage of All Crashes	0%	3%	12%	7%	77%	100%

For the purposes of this study, the data includes the total number of fatalities and serious injuries resulting from crashes within the analysis period. It is important to note that a single fatal crash can result in multiple fatalities, and similarly, a serious injury crash can lead to multiple serious injuries. Normalizing the crashes in a year by million vehicle miles traveled (VMT) allows for a comparison between trends as historical traffic fluctuates. Historical crash rates were calculated using crash records from TDOT's AASHTOWare Safety and annualized with VMT information for Roane County obtained from TDOT's Highway Performance Monitoring System. Figures 7-10 provide the VMT information used and the five-year rolling averages of total fatalities, total severe injuries, and fatal and severe injuries combined for the period of 2019-2023. The historic data points are considered to have a "best fit" with the fatality trend as all values fall along or are close to the projected trendline. As shown in the figures, the overall trend for all three charts indicates an increase in fatal and severe injuries year over year.

Vehicle Miles Traveled

Vehicle Mile Traveled data was collected through the TDOT's Highway Performance Monitoring System, organized by administrative systems, functional class, or county. From 2014 to 2023, Roane County experienced approximately 3.6% growth in millions of vehicle miles traveled.

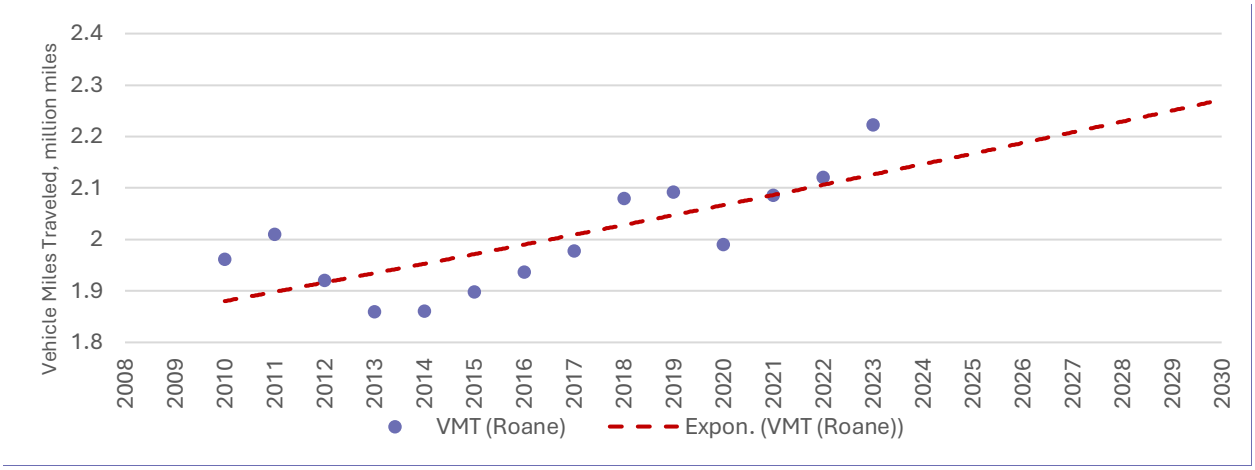

Figure 8: Vehicle Miles Traveled, Roane County

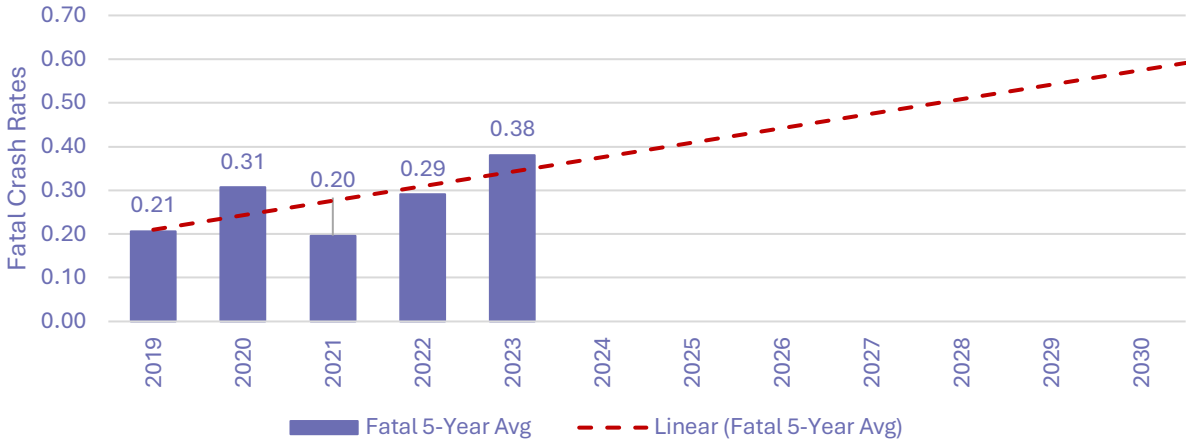

Figure 9: Fatal Injuries: Rates

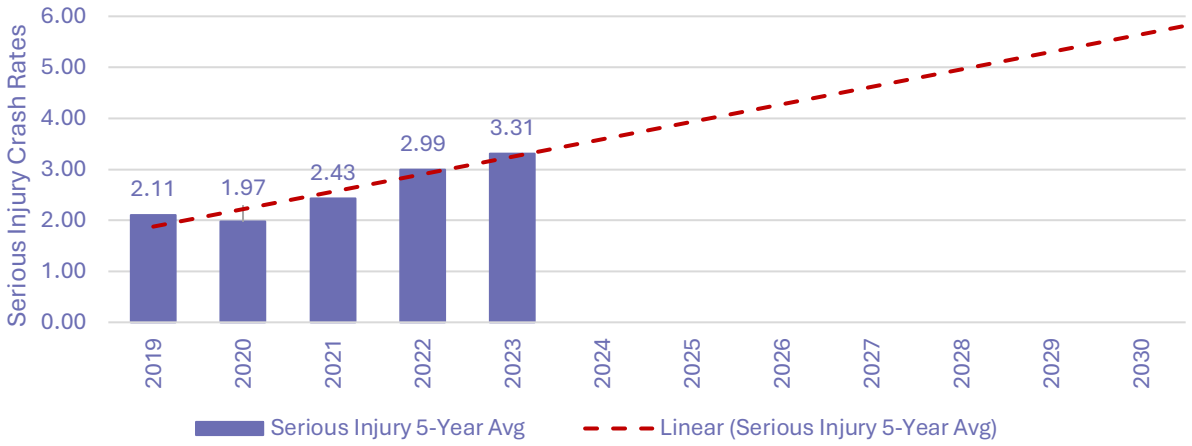

Figure 10: Serious Injuries: Rates

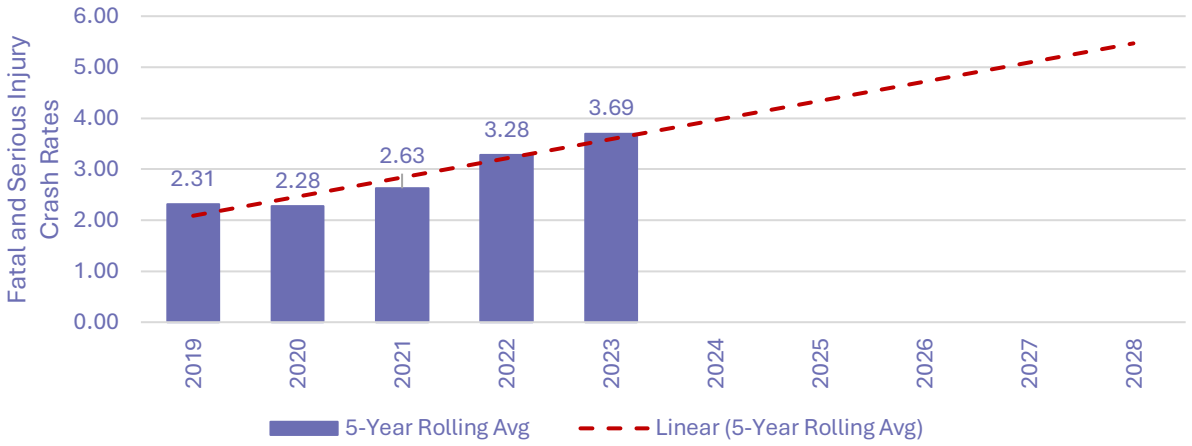

Figure 11: Five-Year Rolling Average of Fatal and Serious Injury Crash Rates

Crash Density

Crash density can be defined as the total amount of crashes per unit of road length, commonly defined as crashes per mile. **Figure 12** displays a total crash density map while highlighting locations where fatal and suspected serious injury crashes occurred along the roadway network. The highest crash densities are usually observed at locations with higher traffic volumes as this translates to more exposure and potential risk for all road users. The highest crash density can be found along the US-70 (Roane State Highway) corridor, near Interstate 40, where there is a large frequency of intersections and road skew at high speeds.

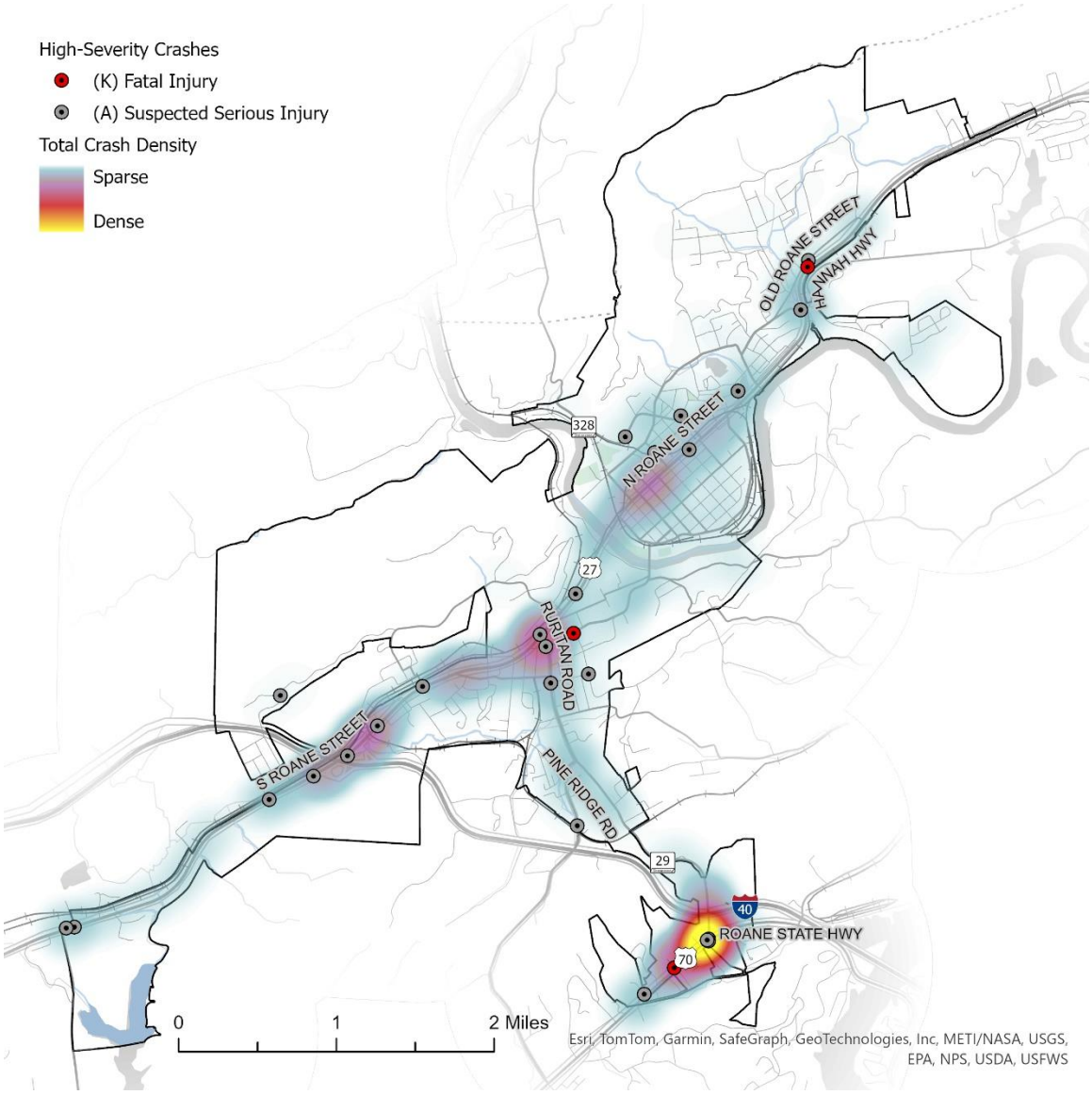

Figure 12: KA Crash Heatmap

Crashes by Type

Crash type is indicated on crash reports submitted by law enforcement agencies. Rear End crashes were the most common crash type. These types of crashes often occur in congested traffic or when drivers are distracted. These types of crashes tend to be less severe because they often occur at lower speeds with less damaging crash angles. Angle crashes were the second most common crash type over the study period. These types of crashes commonly occur at or near intersections and tend to be more severe than many of other crash types.

Table 3: Crashes in Harriman by Type

Type of Crash	2019	2020	2021	2022	2023	Total
Rear End	54	62	70	68	63	317
Angle	45	47	55	52	53	252
No Collision with Motor Vehicle	42	37	31	44	46	200
Sideswipe - Same Direction	23	16	12	11	13	75
Sideswipe - Opposite Direction	6	7	9	12	8	42
Head On	4	5	6	3	8	26
Rear to Side	2	2	2	1	1	8
Rear to Rear	1	1	0	0	0	2
Other	26	21	22	19	25	113
Total	203	198	207	210	217	1035

Compared to statewide data, the City of Harriman experienced a higher percentage of rear-end crashes and a lower percentage of angle crashes. This is largely due to the City of Harriman exhibiting more urban characteristics than other areas within the state, resulting in more traffic congestion and driver conflicts. Single vehicle crashes often occur along curves and uninterrupted rural sections of roadways, which usually tends to be outside of a city's limits.

Compared to other urban areas within the State of Tennessee, Harriman experienced a much lower percentage of angle crashes, but a higher percentage of rear-end crashes. Overall, the trend comparisons between the City of Harriman and the State of Tennessee are relatively consistent, with the general order of crash types remaining similar.

Crashes by Lighting Conditions

Street lighting can be a streetscaping asset if it fits the context of the community and built environment. Approximately 29% of crashes in Harriman occurred during non-daylight conditions (I.e., Dark, Dark – Not Lighted, Dark – Lighted, Dusk, and Dawn) which is extremely similar to the statewide average of 29.5% percent.

Table 4: Crashes in Harriman by Lighting Conditions

Lighting Condition	2019	2020	2021	2022	2023	Total
Daylight	133	135	157	152	158	735
Dark - Lighted	34	24	18	27	29	132
Dark - Not Lighted	15	21	8	14	8	66
Dusk	6	3	4	4	7	24
Dawn	2	1	4	1	0	8
Other	13	14	16	12	15	70
Total	203	198	207	210	217	1035

Crashes by Road Surface Conditions

Pavement friction affects how vehicles interact with the roadway and directly influences the frequency of crashes. Wet pavement can further reduce traction and exacerbate the frequency and severity of vehicle crashes. Approximately 19% of crashes in Harriman occurred during non-dry road surface conditions, which is higher than the statewide average of 16.5% over the same period.

Table 5: Crashes in Harriman by Roadway Surface Conditions

Surface Condition	2019	2020	2021	2022	2023	Total
Dry	163	150	172	175	177	837
Wet	28	34	25	24	29	140
Snow	0	1	0	1	0	2
Ice	1	0	0	0	0	1
Other	11	13	10	10	11	55
Total	203	198	207	210	217	1035

High-Crash Locations

The total number of crashes at a location does not tell the whole story, as areas with a higher traffic volume are more likely to experience a greater absolute number of crashes. Furthermore, locations with high traffic volumes often experience congestion which may result in lower crash severities. Crash rate calculations account for the traffic volumes at specific locations to provide a more effective comparison between similar locations with safety concerns. The crash rates shown below are expressed as crashes per 100 million vehicle-miles of travel and were calculated in AASHTOWare using the FHWA Roadway Departure Safety manual methodology. The following tables summarize the top 10 city roadway segments and intersections, respectively, ranked by total crashes and crash rates. Identifying these segments and intersections was an important step toward defining the High-Injury Network, which is introduced in a later section.

Table 6: High Crash Segments

ID	Segment (Milepost Length)	Segment (miles)	Crashes	Rank by Crashes	Segment AADT	Crash Rate	Rank by Crash Rate
1	S Roane St (3.39-5.47)	2.07	78	1	14032	1.5	6
2	Pine Ridge Rd (4.57 - 5.97)	1.40	56	2	10227	2.1	4
3	S Roane St (5.62-7.02)	1.39	48	3	11429	1.6	5
4	S Roane St (9.57-11.96)	2.39	36	4	8612	1.0	7
5	Spring City Hwy (4.4 - 4.57)	0.17	27	5	20040	4.5	2
6	US-70 (13.87-14.73)	0.86	19	6	13210	0.9	8
7	Riggs Chapel Rd (9.50-11.76)	2.26	19	7	925	5.0	1
8	S Roane St (7.26-7.84)	0.59	16	8	16817	0.9	8
9	Roane State Hwy (12.36 - 13.42)	1.06	14	9	11173	0.6	10
10	State St (0 - 0.82)	0.82	13	10	3857	2.2	3

Table 7: High Crash Intersections

ID	Intersection	Crashes	Rank by Crashes	TEV	Crash Rate	Rank by Crash Rate
1	Roane State Hwy at Pine Ridge Rd	124	1	17262	4.4	1
2	Roane State Hwy at Micah Way	37	2	11173	1.0	2
3	S Roane St at Ruritan Rd	34	3	22006	0.9	3
4	S Roane St at Patton Ln	27	4	17617	0.9	3
5	Roane State Hwy at Tyler Way	26	5	11173	0.7	6
6	S Roane St at Carlock Ave	18	6	12730	0.9	3
7	Ruritan Rd at State St	16	7	14434	0.7	6
8	S Roane St at Childs Rd	15	8	11429	0.4	9
9	S Roane St at Fairchild St	12	9	11429	0.3	10
10	N Roane St at Walden Ave	12	10	11387	0.6	8

Crashes Involving Vulnerable Users

Vulnerable road users (VRU) include pedestrians, cyclists, mobility device users (e.g., wheelchairs), and shared micromobility riders (e.g., e-scooter). VRUs are more exposed and at-risk in the event of a crash with motorists. Over 30% of crashes involving VRUs resulted in serious injuries or fatalities in Tennessee between 2019 to 2023[2]. Furthermore, fatal and serious injury pedestrian and cyclist crashes increased by over 44% and 18%, respectively, from 2018 to 2022. The City of Harriman far exceeds that percentage, as over 36.36% of crashes involving vulnerable road users result in fatalities or serious injuries. In Harriman, serious injuries were the most likely outcome of a VRU crash, at roughly 27.27% (9.09% fatal). The percentage for serious injuries exceeds other urban areas in the state by over 10% (20.3% statewide urban areas). The characteristics of roadways and their surrounding areas such as retail density, number of travel lanes, and roadway speed limits can pinpoint locations with potentially higher risk for VRUs.

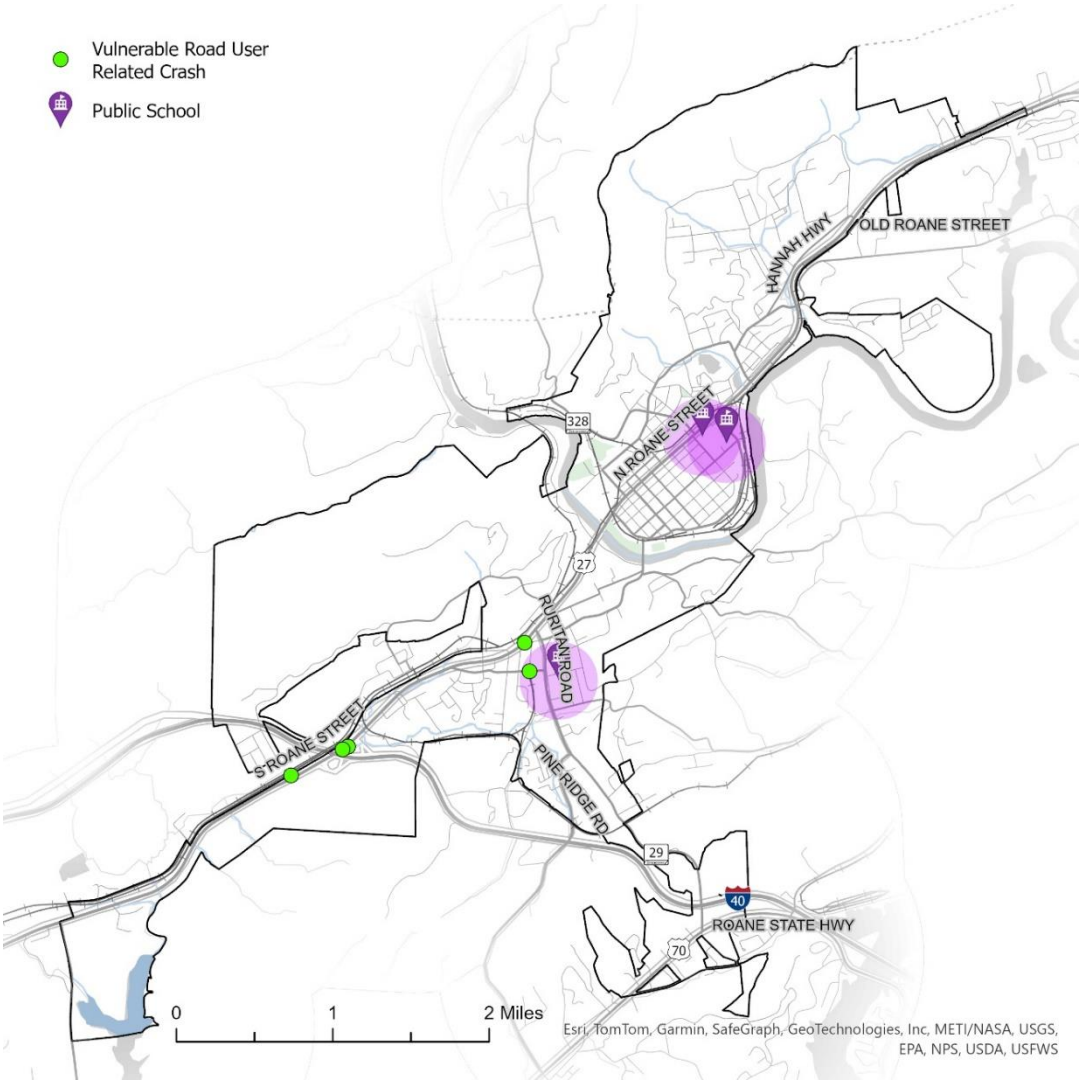

Figure 13: VRU Crashes with School Proximity

[2]TDOT, Tennessee VRU Safety Assessment, 2023 https://www.tn.gov/content/dam/tn/tdot/strategic/TDOT%202023%20VRU%20Safety%20Assessment%20Final%20w%20Appendix%2011-15-2023.pdf

Identifying a High Injury Network

A High-Injury Network (HIN) was developed to identify the routes with the most fatal and serious injury crashes in the City of Harriman. A HIN is a collection of corridors where a disproportionate number of these crashes occur, as well as corridors that may pose higher risks for all road users. Developing a HIN allows for the proper allocation of effort and funds towards specific areas of the City that need it most. While the HIN typically includes the major thoroughfares of a study area, the methodology used also allows for minor roads to be considered for improvements. Creating the HIN is a key step toward focusing resources in the right direction to develop projects that will help reduce fatal and serious injury crashes for all road users in the City of Harriman.

Methodology

The HIN was identified by first evaluating segments along the City of Harriman roadway network with the highest reported crash rates during the study period (2019-2023) using TDOT's AASHTOWare Safety Network Screening platform. 11 high-crash-rate segments were identified at logical termini (i.e., municipal boundary, road name changes, or roadway characteristics such as number of lanes) **Figure 14** shows the HIN identified in the table.

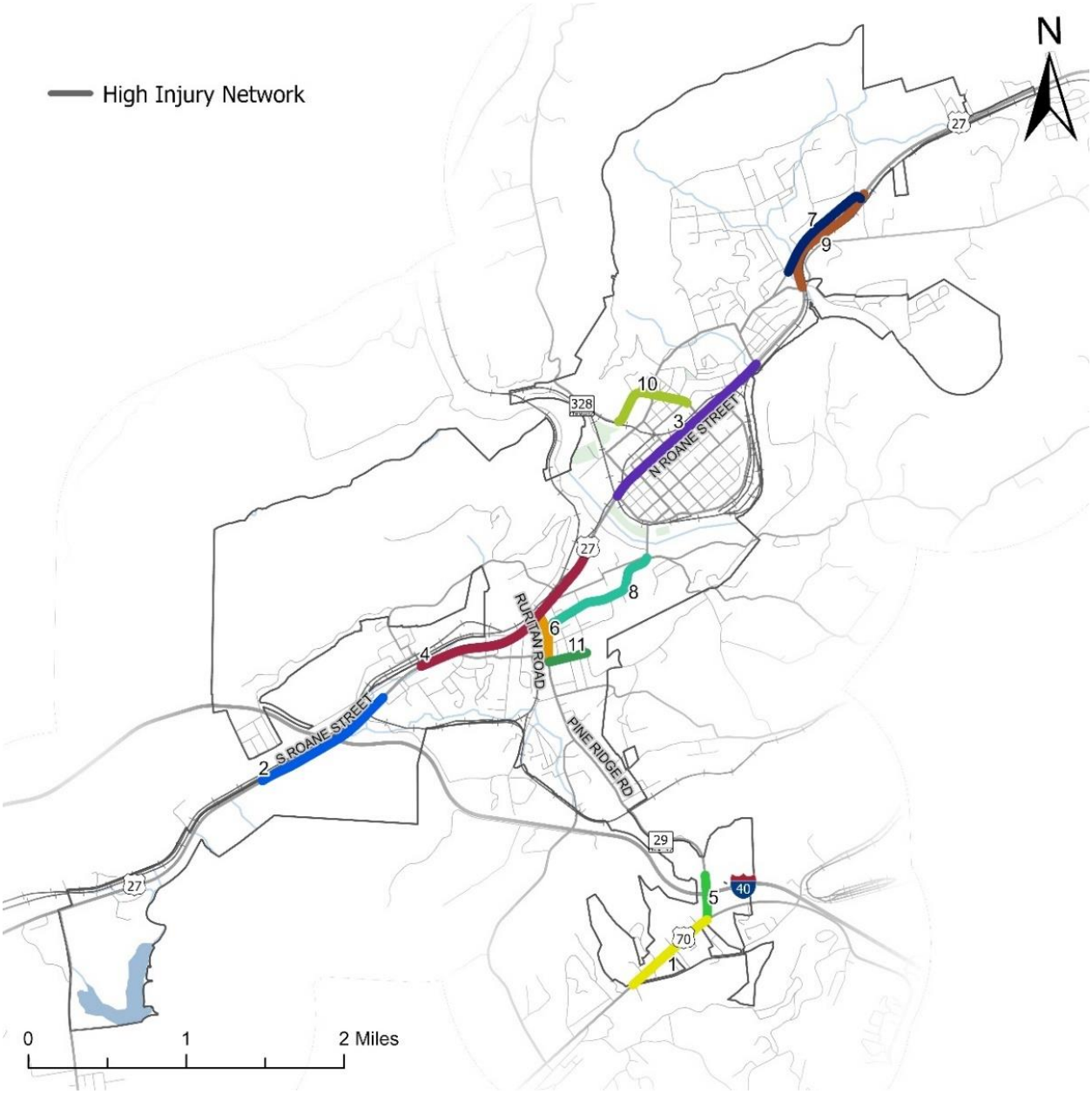

Figure 14: Harriman High Injury Network

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Demographics and Community Characteristics Considerations

Demographics & Community Characteristics Considerations

Demographics and community characteristics considerations are integral to addressing the needs of disadvantaged communities or vulnerable populations. The following three demographics and community characteristics measures were utilized in the City of Harriman SAP process: the Centers for Disease Control (CDC) Social Vulnerability Index, Area of Persistent Poverty designation, and Historically Disadvantaged Community designation. Justice40 Interim Guidance defines these measures as follows:

- The CDC's Social Vulnerability Index uses a combination of socioeconomic factors, household characteristics, racial and ethnic minority status, and housing and transportation issues to rank the social vulnerability of each census tract across the City. Those falling in or above the Medium-High or High Vulnerability groups were considered tracts of concern in the Harriman SAP.
- Areas of Persistent Poverty meet at least one of the following conditions:
  - The City in which the project is located consistently had greater than or equal to 20 percent 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
  - The Census Tract in which the project is located has a poverty rate of at least 20 percent as measured by the 2014-2018 5-year data series available from the American Community Survey of the Bureau of the Census; OR
  - The project is in any territory or possession of the United States.
- Historically Disadvantaged Communities have been "marginalized by underinvestment and overburdened by pollution or include any Federally Recognized Tribe or Tribal entity, whether or not they have land".

The City of Harriman SAP considered these three measures in developing project implementation prioritization as these geographic areas are representative of demographic and community characteristics concerns. **Figures 16 to 18** show areas of demographics and community characteristics consideration.

The public and stakeholder involvement activities which were part of the City of Harriman SAP were done in person and virtually to be inclusive and representative of a broad cross-section of the City's residents.

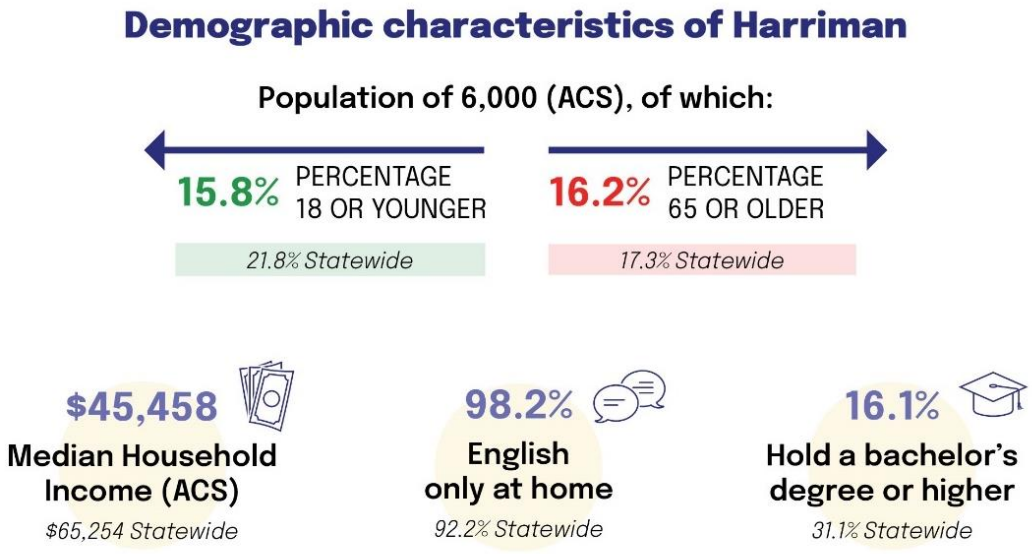

Figure 15: Demographics of Harriman

Social Vulnerability Index

The Centers for Disease Control and Prevention (CDC) developed the Social Vulnerability Index (SVI)[3] tool that considers four overall categories of vulnerability: Socioeconomic Status, Household Characteristics, Racial & Ethnic Minority Status, and Housing Type & Transportation. Between these four categories, 159 individual sub-categories are scaled and calculated to form an overall index score, ranging from 0 to 1 (where an index value of 1 is defined as the most socially vulnerable). Of the 39 KA crashes occurring in Harriman, 6 crashes were found to have occurred in areas of high social vulnerability and 21 were found to take place within areas of medium-high social vulnerability.

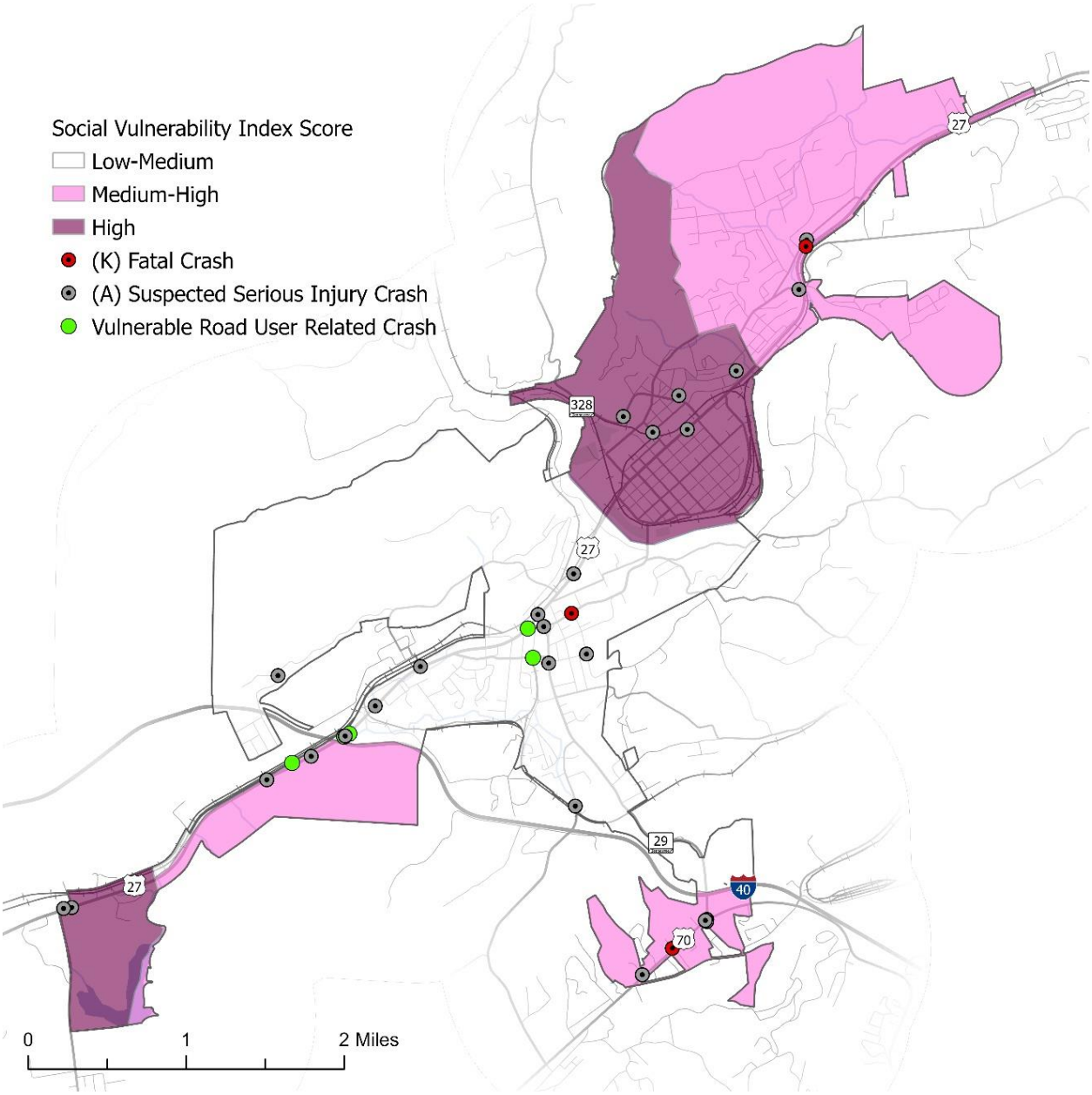

Figure 16: Social Vulnerability Index Map

[3] CDC/ATSDR SVI, https://www.atsdr.cdc.gov/placeandhealth/svi/index.html

Area of Persistent Poverty

Of the 1,035 crashes occurring in Harriman, 272 were found to have occurred in areas of persistent poverty, with 9 resulting in a fatality of suspected serious injury. These numbers represent approximately 23.1% of all total fatalities or suspected serious injury crashes within the City for the period between 2019 and 2023.

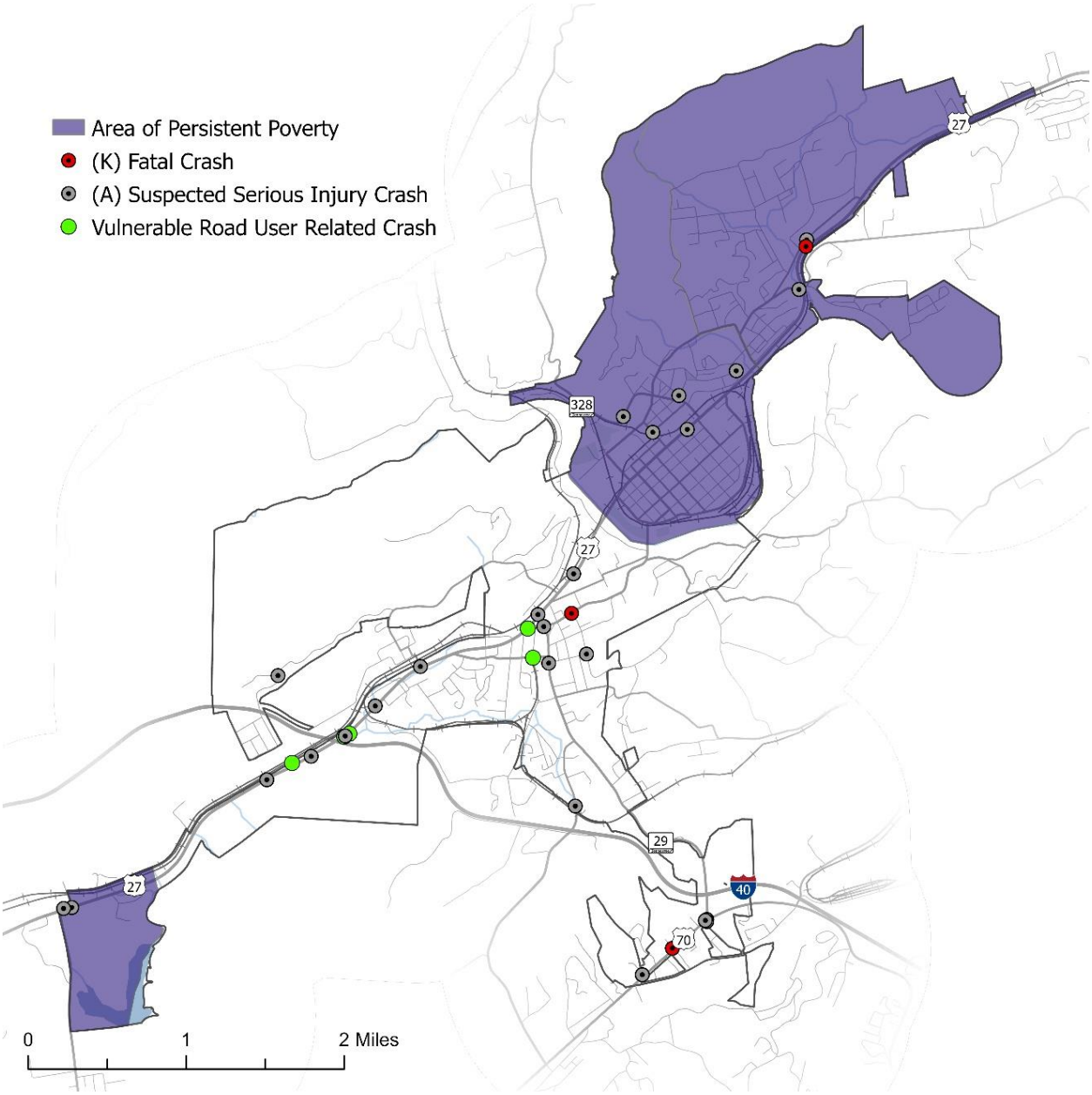

Figure 17: Areas of Persistent Poverty Map

Historically Disadvantaged Communities

The Climate and Economic Justice Screening Tool highlights disadvantaged census tracts nationwide. A community is considered disadvantaged if it is located within a census tract that meets the threshold for one or more environmental, climate, or other burdens, and at least two associated socioeconomic burdens. Of the 1,035 crashes that took place in Harriman during the study period, all 1,035 occurred in areas determined by the USDOT to be labeled as a Historically Disadvantaged Community, with 39 resulting in a fatality or suspected serious injury. Those numbers represent approximately 100% of all total fatalities or suspected serious injury crashes within the City, for the period between 2019 and 2023.

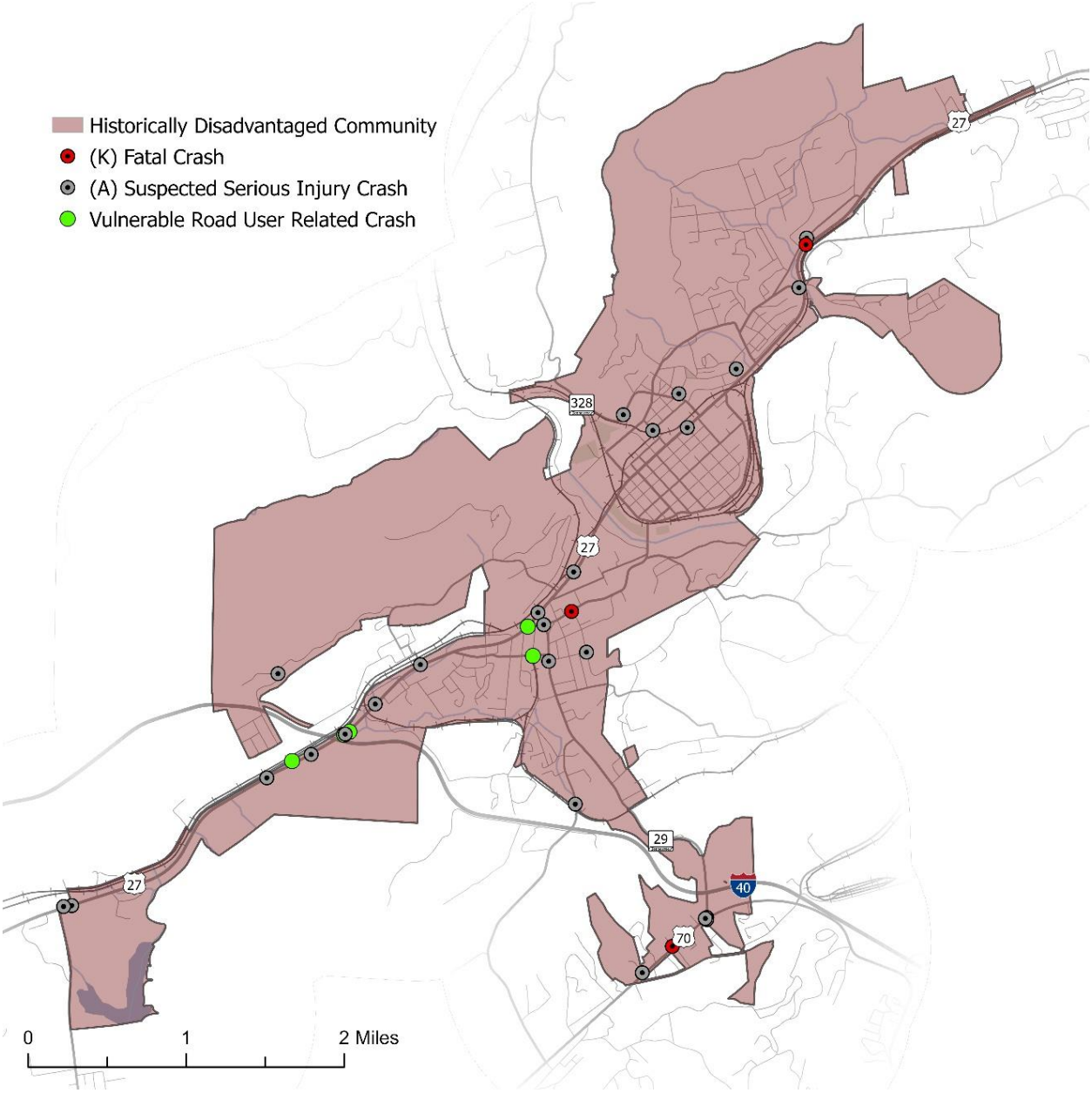

Figure 18: Historically Disadvantaged Community Map

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Engagement and Collaboration

Engagement and Collaboration

Introduction

Public Outreach and Engagement plays a crucial role in collecting valuable insight into what community residents encounter daily while travelling routes in the study area, whether it is by car, bike, foot or bus. During the study, multiple opportunities for participation and input were offered to community stakeholders. This included in-person events, targeted e-mail outreach, social media postings and a dedicated project website to gather and record public input as well as providing for the dissemination of information regarding the SS4A Grant Program. Through this variety of methods to gather input, it was intended to capture feedback from all residents, especially those that are traditionally underserved population.

Following the kick-off meeting in July 2024, the following engagement schedule was followed:

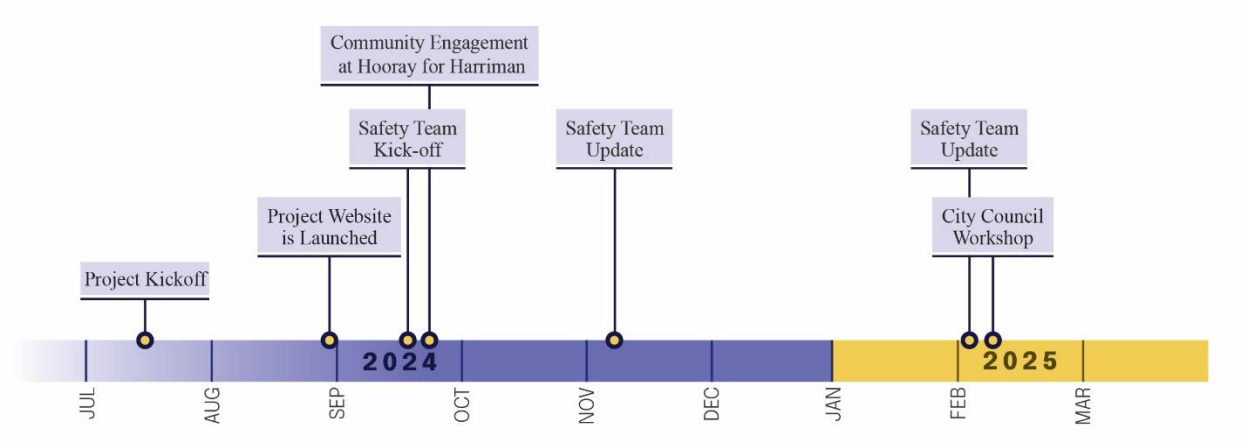


Figure 19: Engagement and Collaboration Schedule

Formation of a Steering Committee

To help guide the study, we leveraged the existence of an already created Safety Team, which we used as the Steering Committee for the project. The Safety Team meets on a monthly basis to discuss safety concerns across the City. The role of the Safety Team was two-fold: first, to provide local, informed input regarding current conditions and opportunities for improvement in Harriman; and secondly, the members of the Steering Committee acted as outreach conduits to the community. During the data collection phase, the city and members of the Steering Committee engaged the community through direct email communications, social media blasts, or direct communication to groups in the community, encouraging them to get involved and provide input. The work of this committee is largely responsible for the success of the Public Outreach portion of this study.

Outreach Activities

Project Website

To facilitate the dissemination of crash related information as well as to provide a portal for input and information gathering from community stakeholders, a project specific website was created, www.harrimansafestreets.com. Within the website, users could find information on what a Safety Action Plan is, how it can benefit the community, and how they can participate by providing input. This site **yielded nearly 2,312 individual page views.**

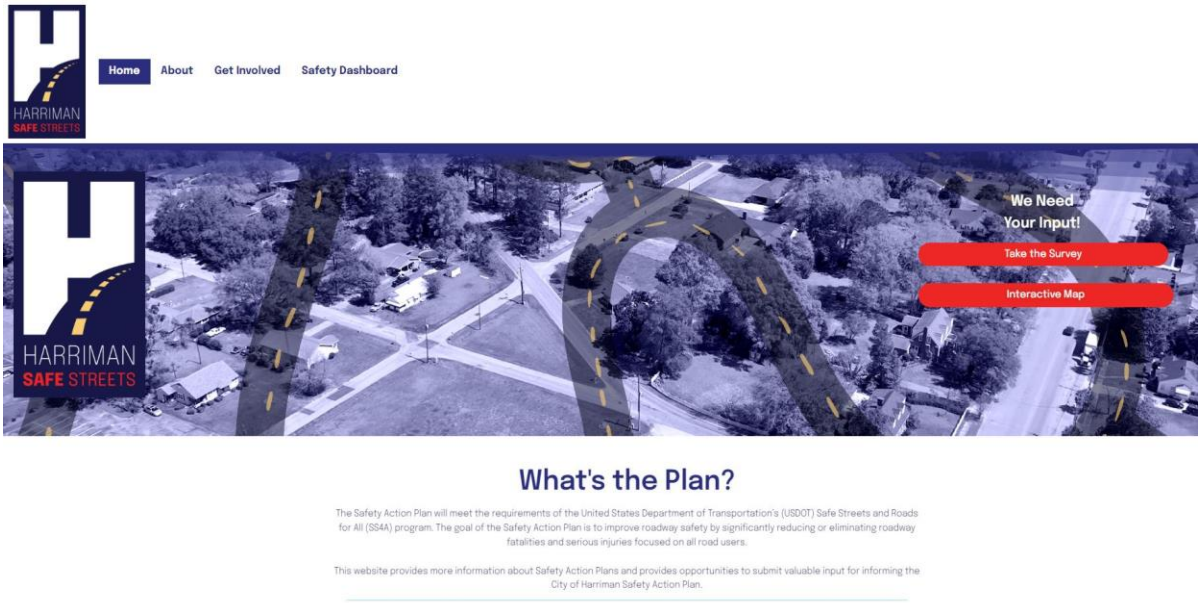


Figure 20: Harriman SS4A Website

Public Meetings

In early September 2024, Harriman attended Hooray for Harriman to inform residents about the new Safety Action Plan aimed at enhancing local safety measures. At this event, our team provided detailed information on the plan's objectives and implementation strategies. To ensure inclusive community engagement, QR codes were made available, allowing attendees to easily access the plan's website and complete an online survey to share their feedback and suggestions. These initiatives were a collaborative effort to create a safer environment for all Harriman residents through proactive public involvement. Additionally, this event occurred in areas of persistent poverty (APP), historically disadvantaged census (HDC) tracts, and locations with a high social vulnerability index (SVI), highlighting an effort to engage underserved and harder-to-reach populations.

Public Engagement Process (Online Engagement)

Public notification of the on-line survey and interactive map were achieved through a combination of tools as outlined in this section, each intended to drive traffic to and through the project website for ease of data collection and dissemination of project information.

Online Survey

In addition to providing a broad range of safety information, the website hosted two key participation avenues. The first was an **on-line** survey that focused on user demographics and concerns. A total of **157 participants completed the on-line survey**, providing input and background data, ranging from travel related characteristics and demographic information to specific safety concerns. Embedded within the survey were open ended questions that served to measure participant sentiment, which resulted in a broad range of inputs as shown below.

Figure 21: Online Survey Input by Improvement Category

Figure 22: Online Survey Improvement-Related Public Comments

The desire for multimodal infrastructure was expressed most frequently in the online survey along with the need for pavement repairs. Additionally, people frequently mentioned law enforcement and cited speeding as a concern. The data gathered from the on-line survey as well as individual comments provided were shared with the Steering Committee as part of their review and ranking of projects during a steering committee meeting.

Interactive Map

The second avenue for interactive input via the website was an interactive map that allowed users to identify concerns related to vehicle, pedestrian and bike safety as well as general concerns. This map allowed the users to drop 'pins' at specific locations where they had or have experienced safety related concerns.

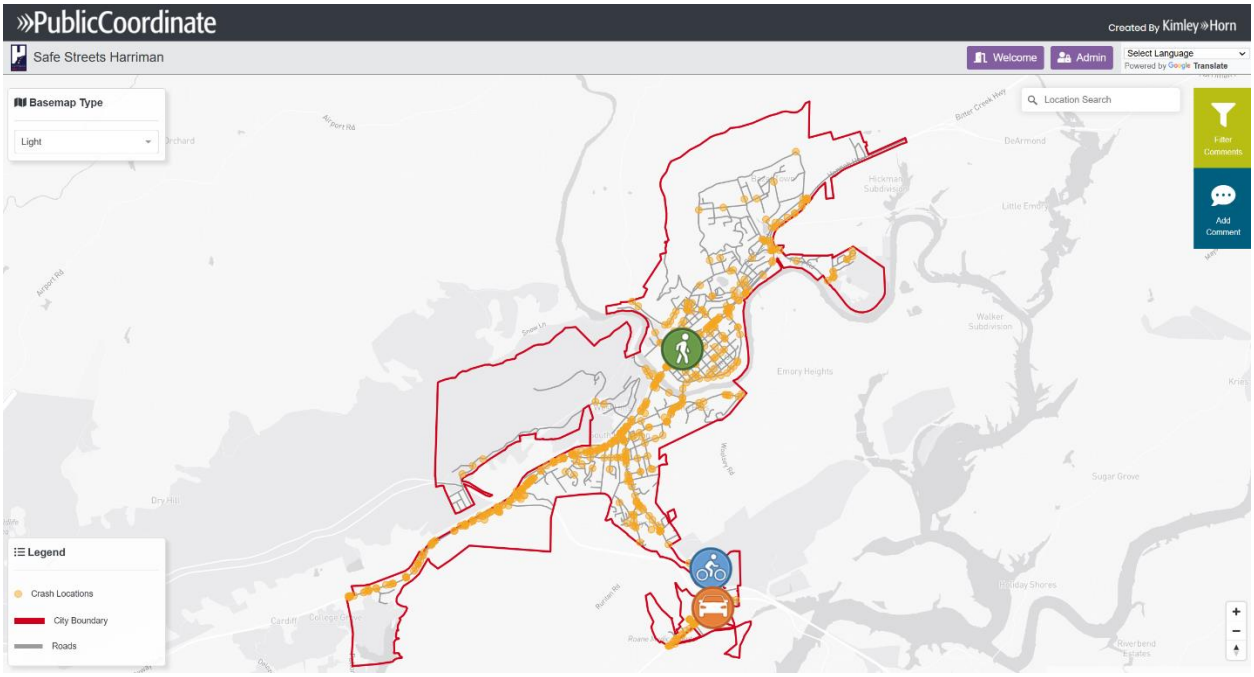


Figure 23: Results from Interactive Map

This map provided 3 separate comments or replies to comments in the categories of pedestrian, near crash, mobility, driver, and bicyclist. Individual comments were analyzed and placed in descriptive categories for review by the Steering Committee as part of their considerations in project ranking. Below, a word cloud summarized many of the comments received via the interactive map.

Figure 24: Interactive Map Input by Improvement Category

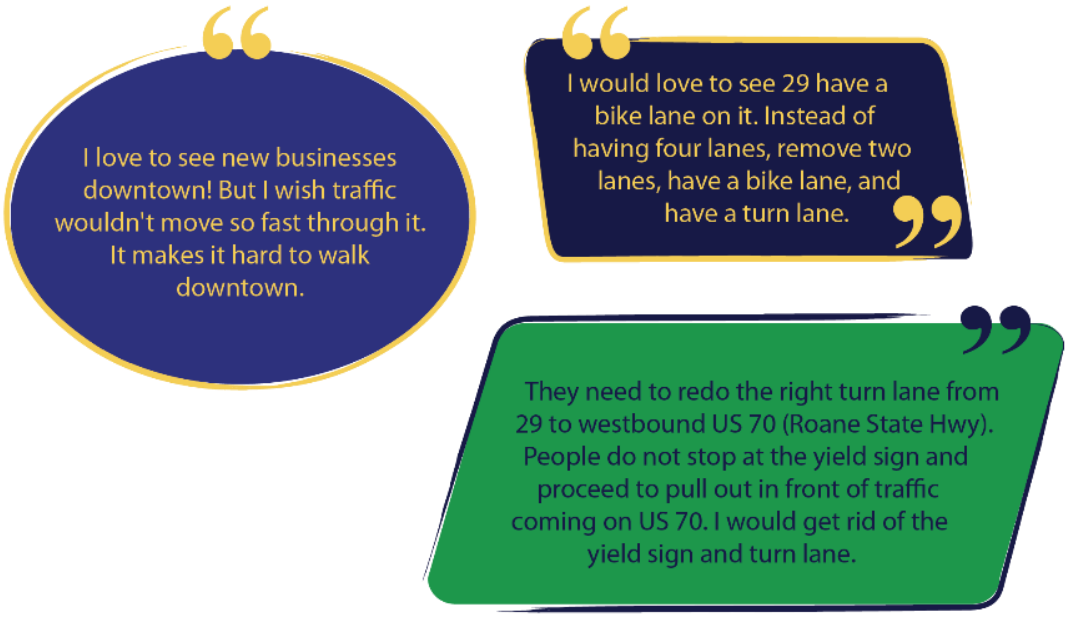


Figure 25: Interactive Map Improvement-Related Public Comments

Public Outreach and Engagement Summary

Throughout the course of this study, thousands of community members were reached across a variety of events and platforms as described above. This resulted in a robust response with nearly 2,312 pageviews being logged on the project website. Additional engagement metrics are shown below.

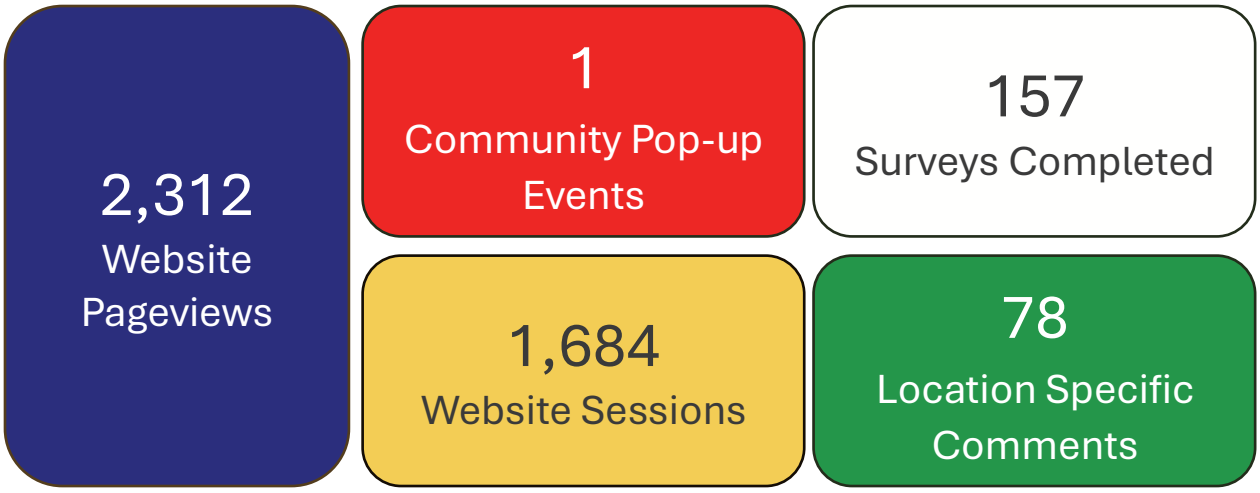
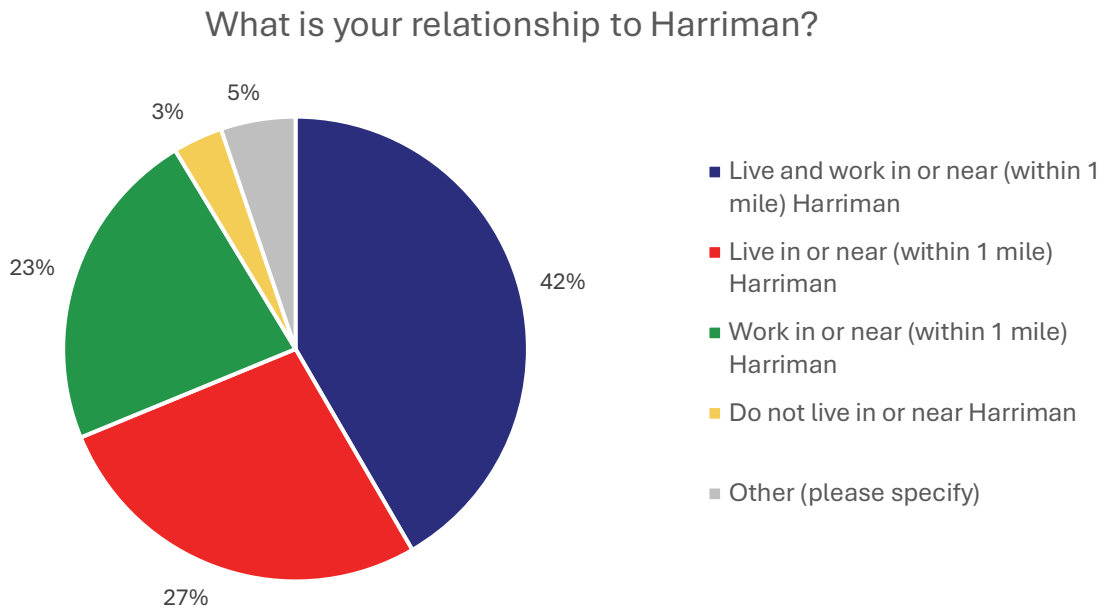


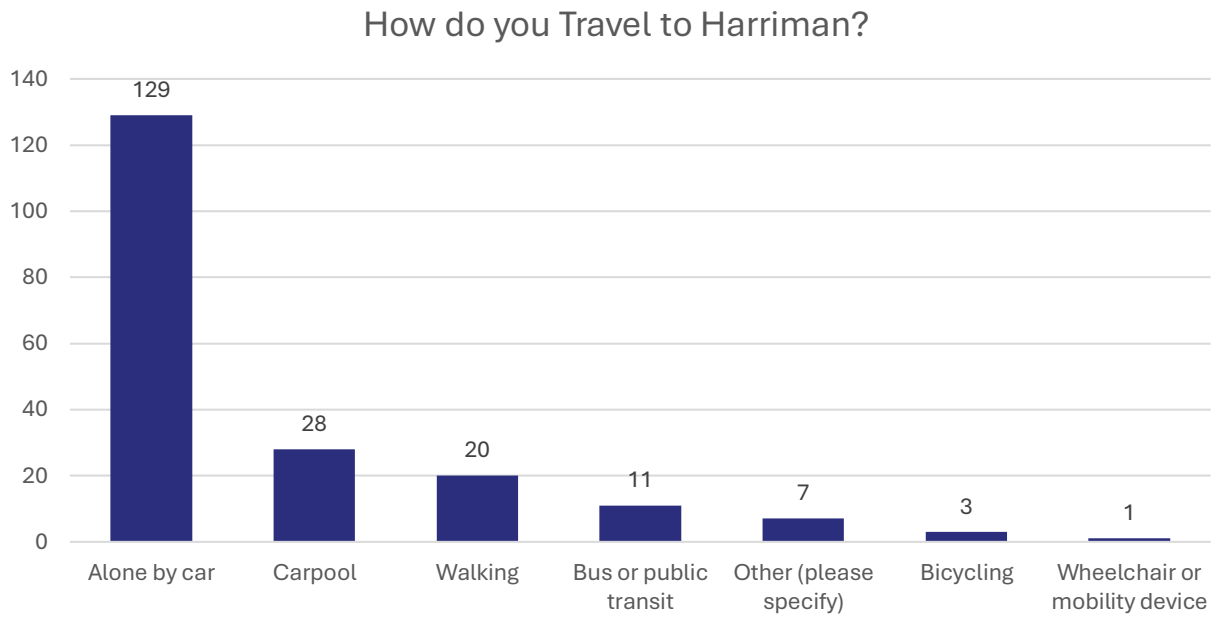
Figure 26: Engagement and Collaboration Summary

The online survey was designed to gather feedback from people in Harriman about safety issues or concerns they may have. The survey asked a series of questions to understand trends, concerns, and improvements that the public would like to see. The first few questions were about the respondents' relationship to the area and how they usually get around. Then, the survey asked about specific improvements for driving, walking/biking, and intersections. Finally, there were optional questions about the respondents' demographics. The goal of the survey was to gather a wide range of perspectives and suggestions to help improve safety in Harriman.

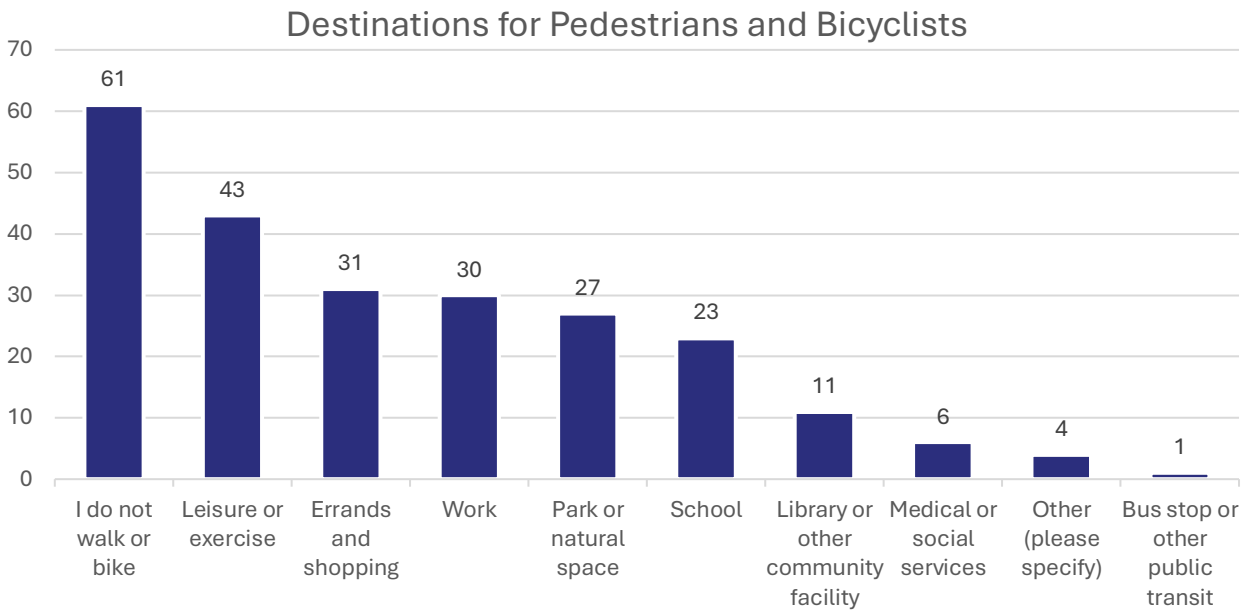
At the beginning of the survey, members were asked what their relationship to Harriman was, whether they live or work in the area. 92% of all respondents live or work either in or within one mile of Harriman, further validating that their experiences are focused on areas within the county.



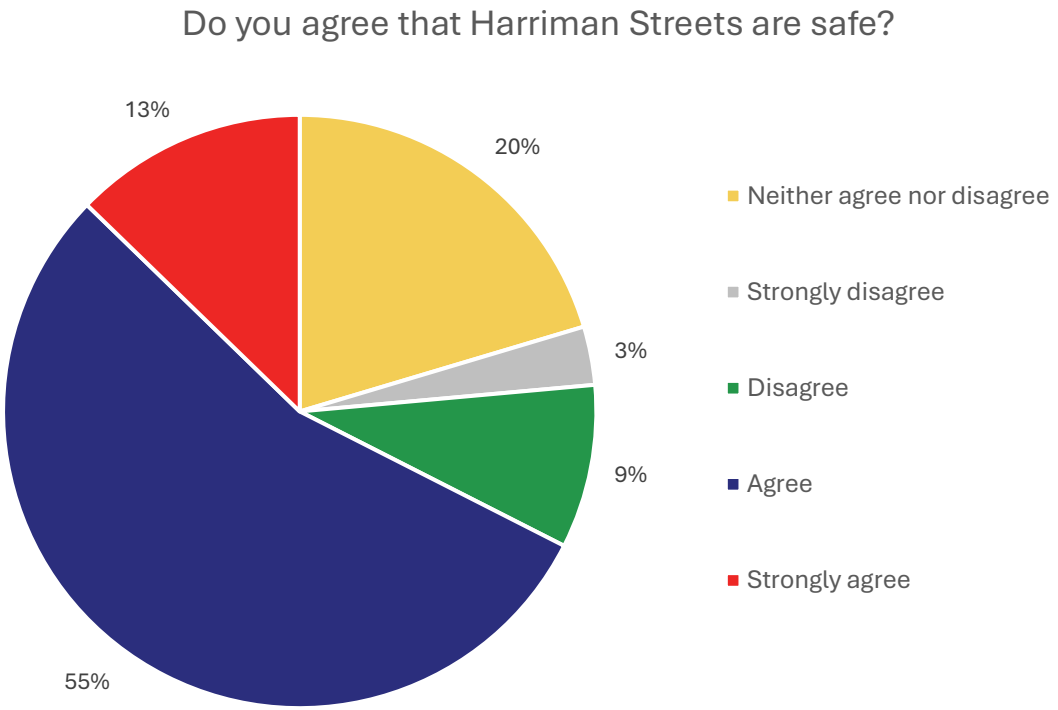
In the response to one question, people provided information on how they travel to Harriman. They were allowed to select all modes of travel that apply to them. Most respondents travel alone by car (129 responses). Some people carpool (28 responses) and walk (20 responses).



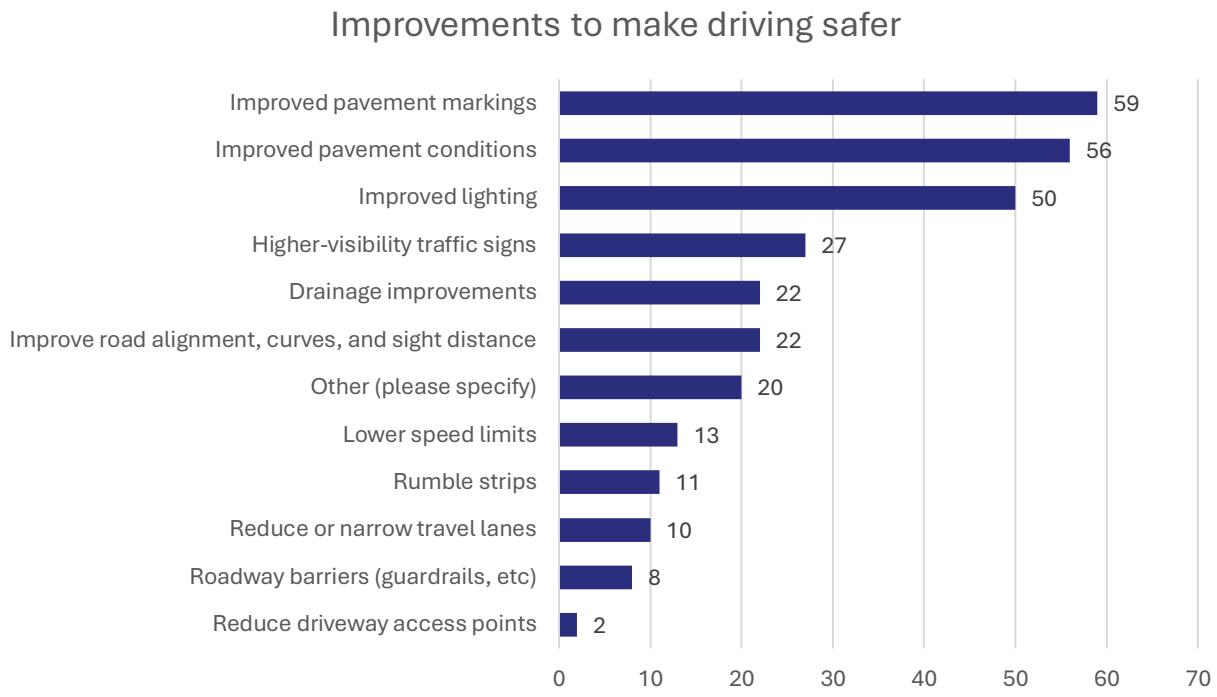
For people that walk or bike in Harriman, they were asked to select what destination they are going to. The top two responses were that they either do not walk or bike (61 responses) or do so for leisure or exercise (43 responses).



Respondents were also asked how strongly they agree that Harriman streets are safe. About a 68% of respondents felt that Harriman streets were safe. Around 12% of respondents disagree however, indicating that they feel unsafe on the streets in Harriman.

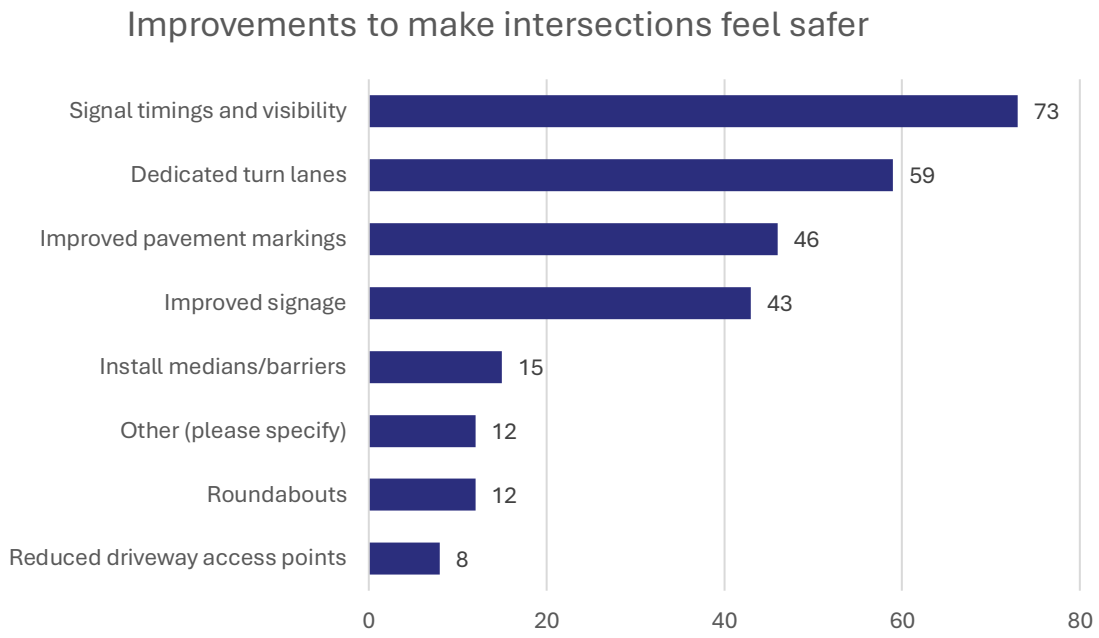


Respondents were asked to select up to three improvements that would make driving in Harriman feel safer. The top three responses were improved pavement markings (59 responses), improved pavement conditions (56 responses), and improved lighting (50 responses).

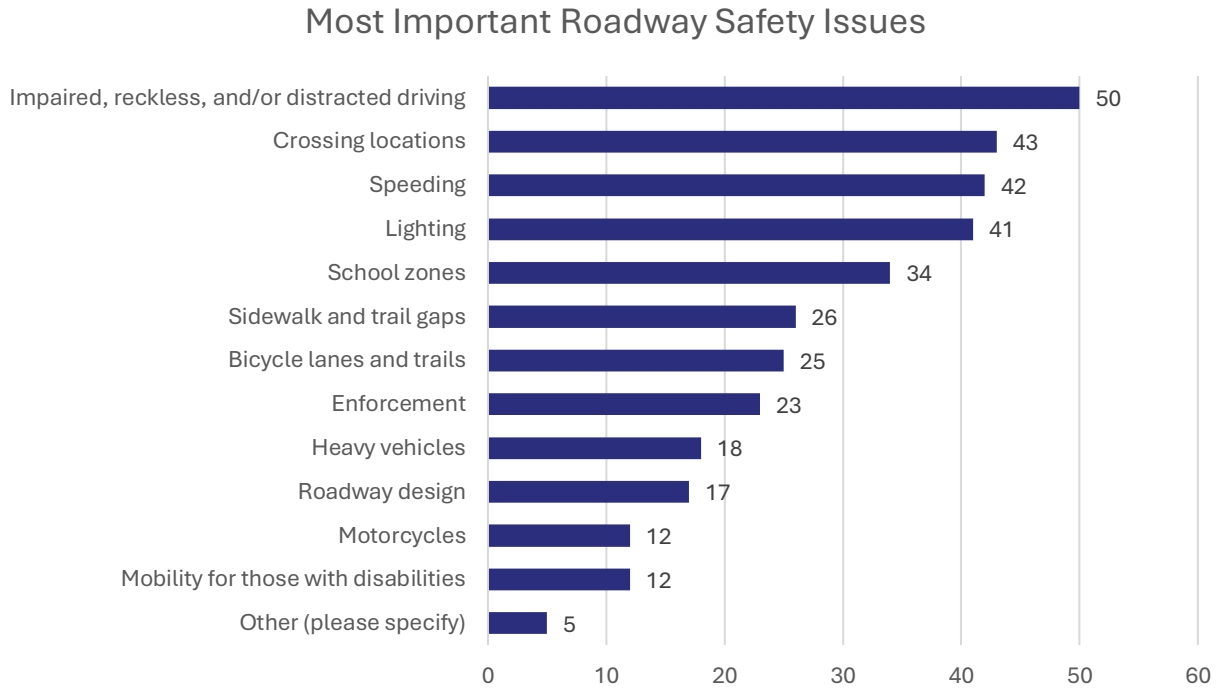


Respondents selected up to three improvements that may make walking/biking feel safer in Harriman. The top three were new sidewalk/crosswalk/bike connections (75 responses), improved sidewalks (60 responses), and improved lighting (45 responses).

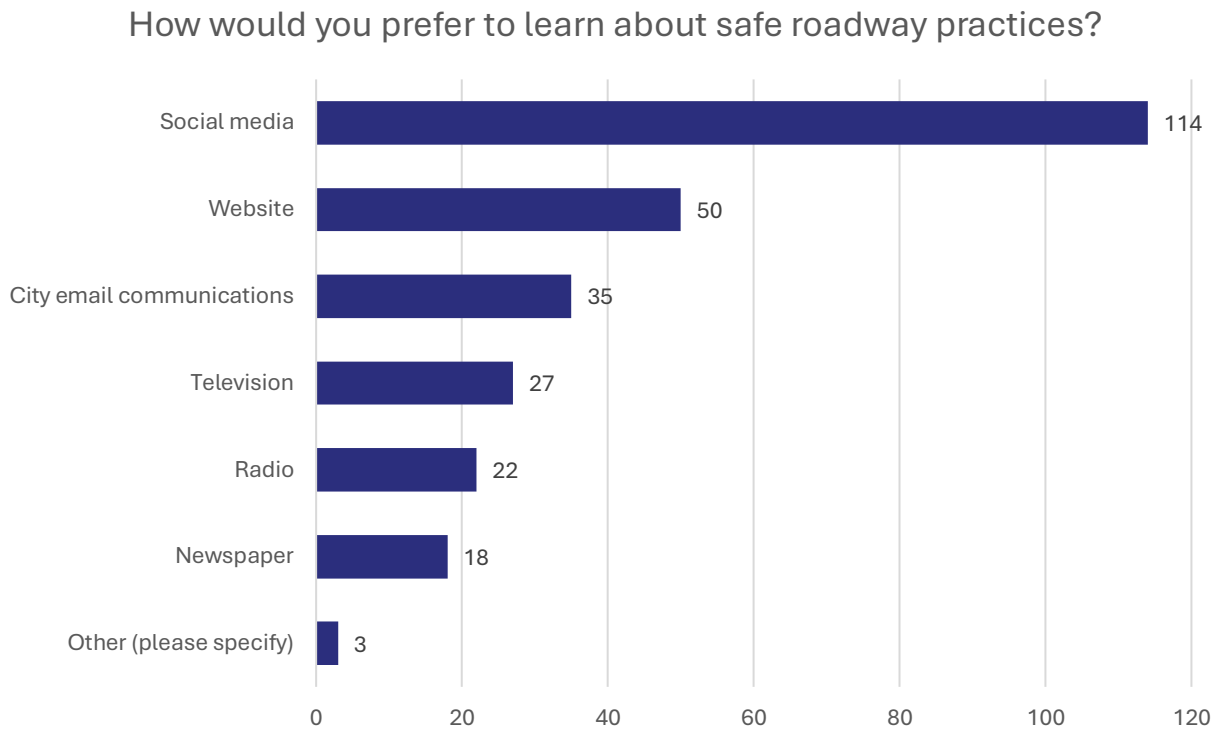
Respondents then selected up to three improvements that would make intersections feel safer. Signal timings and visibility improvements (73 responses) received the highest count followed by dedicated turn lanes (59 responses) and improved pavement markings (46 responses).



Respondents were then given the opportunity to select up to three safety issues that are most important to them. The most selected issue was impaired, reckless, and/or distracted driving (50 responses) then improved crossing locations (43 responses) and speeding (42 responses), which indicate a desire for enforcement and operational improvements.

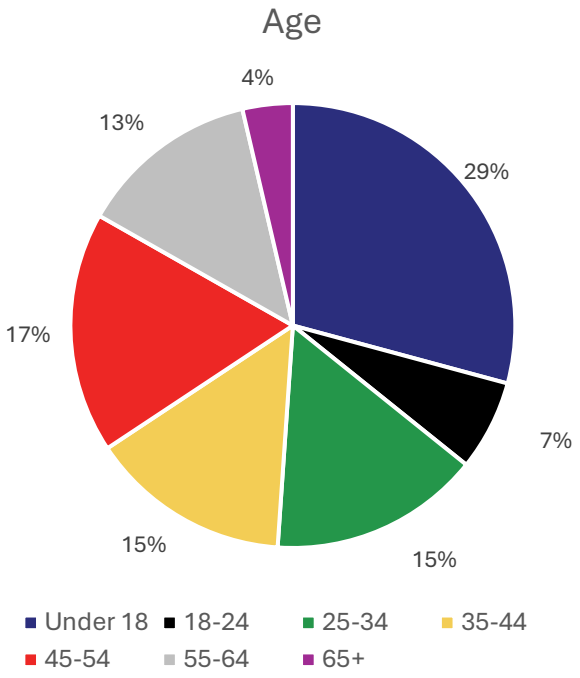


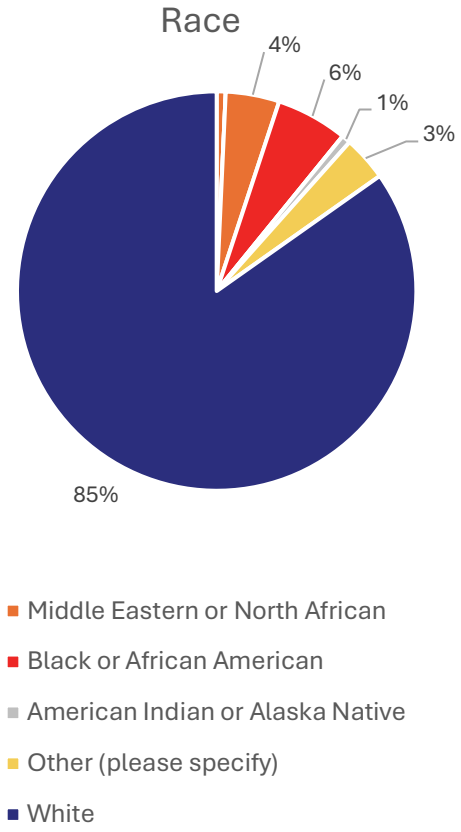
The next question then asked the preferred way people want to learn about safe roadway practices. The most common response was social media (114 responses). The second and third highest were by website (50 responses) and by City email communications (35 responses), both of which were significant, indicating a broad communication approach would best serve the City.

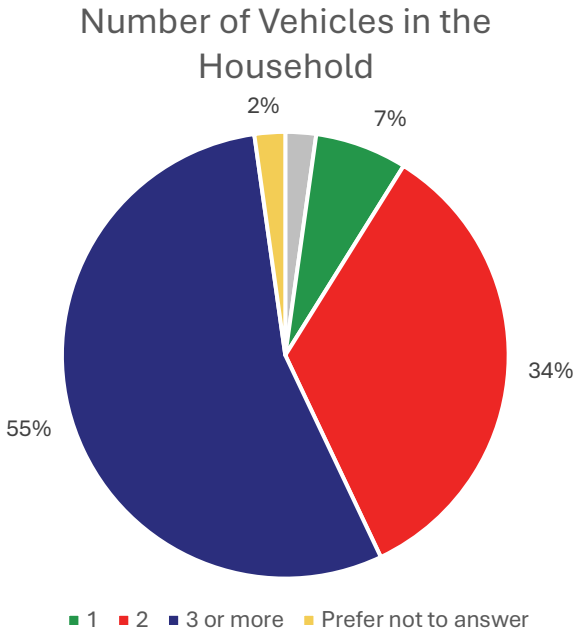


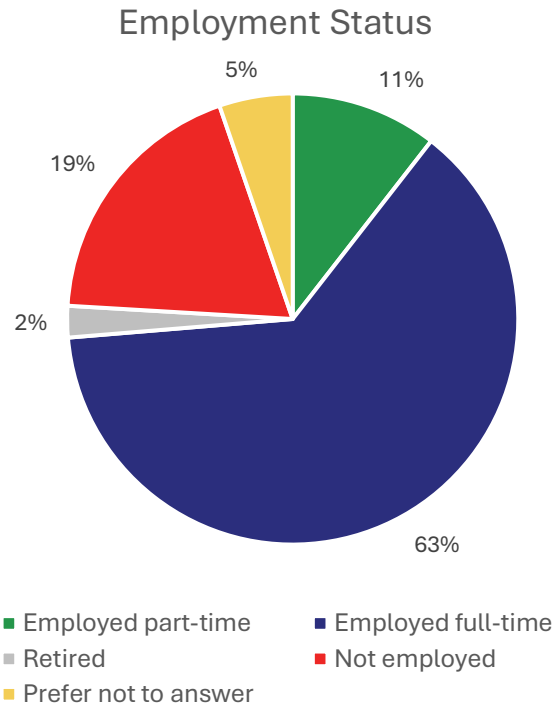
Key Demographics

The survey concluded with asking demographic questions that members could choose to answer. Responses were fairly representative of the community makeup.









Summary of Survey Results

The survey results reveal that a significant number of respondents reside and work in Harriman, primarily relying on driving alone for their transportation needs. Respondents reported mostly biking or walking for leisure purposes. Though many participants felt that Harriman streets are safe, around a third felt they were unsafe. There was strong support for various improvements, including better lighting, improve pavement conditions, new sidewalk/crosswalk/bike connections, creating dedicated turn lanes, and addressing signal timing and visibility. The survey also highlighted that the most prominent roadway issue in Harriman is reckless driving and roadway design. Concerns were expressed about intersections in Harriman, including a need for better signage, lane adjustments, and pedestrian crossings. Additionally, respondents indicated a preference for accessing safety information through social media platforms, City email communications, or the website.

Public Input Heat Map

A heat map was created to visualize the density of public comments received from the Public Coordinate Platform as well as survey responses regarding specific areas of concern. Figure 19 represents the heat map. As shown in the map, there is a direct correlation between the crash density heat map presented earlier in the report and the areas receiving the most public comments for safety concerns. Specifically, Roane State Highway near the I-40 interchange received a large number of comments, as well as the downtown ares of the City. The map also features polygons representing Areas of Persistent Poverty (APP), regions with a high Social Vulnerability Index (SVI), and Historically Disadvantaged Communities (HDC). The heat map highlights that multiple comments have been made within these regions, indicating the community's needs and concerns.

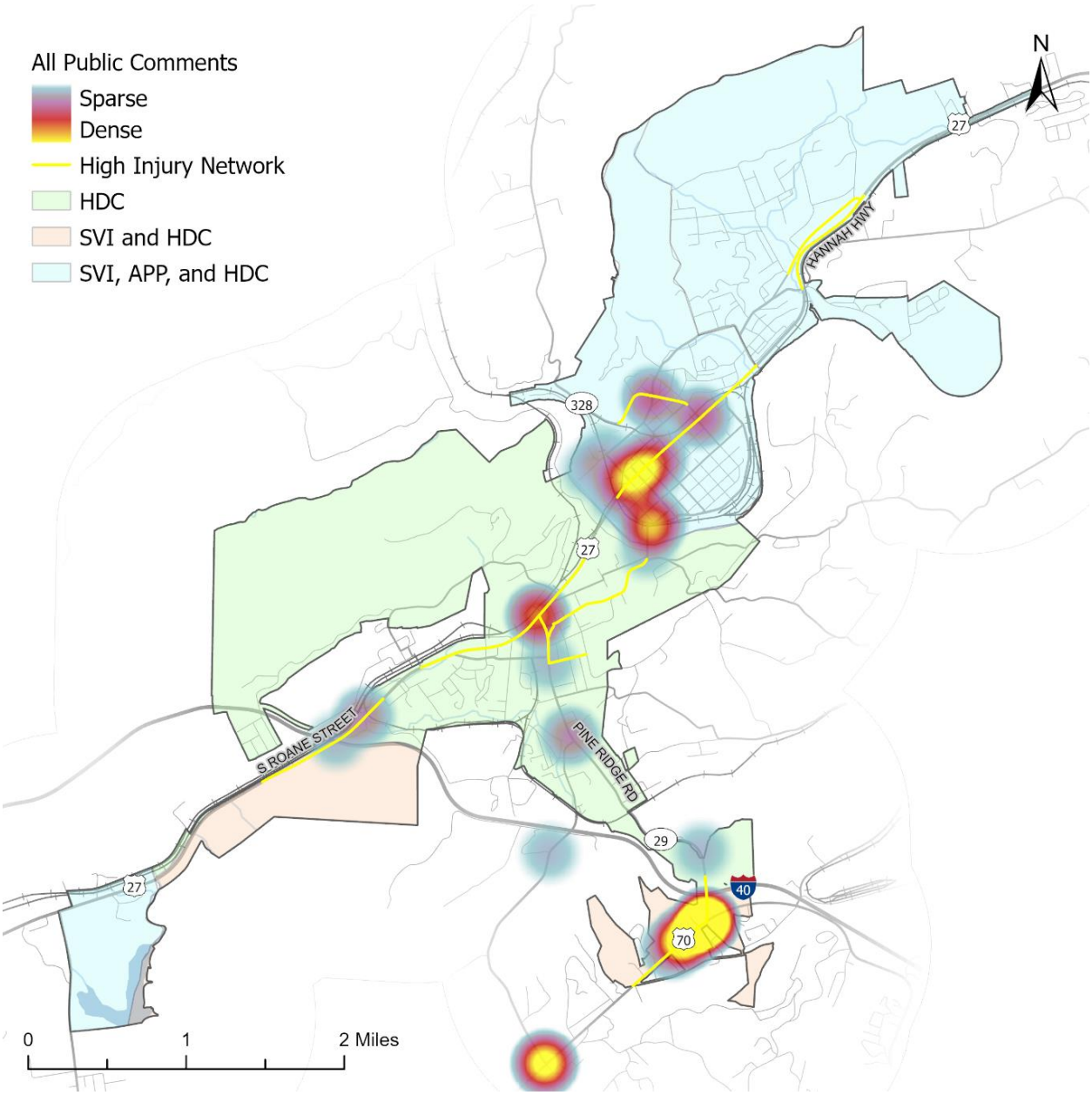


Figure 27: Concentration of Location Specific Public Comments

Key Takeaways

Based on the comments placed on the interactive map, most of the comments are pedestrian-related concerns and crash-related concerns. Many comments call for multimodal infrastructure along with pavement repairs. These suggestions aim to reduce accidents, improve traffic flow, foster better driving habits, and protect all road users. Furthermore, there are several comments asking to increase law enforcement and address speeding and stop sign violations. These comments align with the need to address safety concerns in locations that have a higher likelihood of accidents or injuries, as reflected in the high injury network. By incorporating improvements in these areas, it allows for a targeted approach to enhance transportation safety for both drivers and pedestrians.

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Strategies

Strategies

The SAP identifies countermeasures and strategies addressing the City's fatal/suspected serious injury emphasis areas mentioned in the Safety Analysis Section. The countermeasures are classified into two categories: (1) Engineering Countermeasures (project recommendations) and (2) driver related countermeasures (Education, Enforcement, and Emergency Medical Services).

Engineering Countermeasures

Engineering Countermeasures in a Safety Action Plan refer to specific physical changes or improvements made to the roadway environment to enhance safety and reduce the likelihood of crashes. These measures can include:

- Traffic signal upgrades: Installing or improving traffic signals to better manage traffic flow and reduce collisions.
- Roadway design changes: Modifying road layouts, such as adding roundabouts, medians, or bike lanes, to improve safety for all users.
- Pedestrian and cyclist infrastructure: Enhancing crosswalks, sidewalks, and bike paths to protect non-motorized road users.
- Speed management: Implementing measures like road diets, bulb-outs, chicanes, or road narrowing to control vehicle speeds.
- Visibility improvements: Increasing street lighting, adding reflective signs, and improving road markings to enhance visibility for drivers.

These countermeasures are designed based on data analysis and safety studies to address specific risks and improve overall road safety.

Crash Modification Factors

Because funding for infrastructure improvements is limited, the City of Harriman can benefit from a way to quantify and compare the potential benefit of safety countermeasures and treatments. Crash Modification Factors (CMF) can be used to assess the potential safety impact of improvements. A CMF is a numerical value that indicates the proportion of crashes that would be expected at a location after implementing a safety countermeasure. A CMF with a value of less than 1.0 indicates an expected decrease in crashes. Conversely, a CMF with a value greater than 1.0 indicates an expected increase in crashes. The FHWA maintains the CMF Clearinghouse, an online repository of CMFs documented in the Highway Safety Manual (HSM) and other industry resources. The following provides guidance to be considered when selecting and applying CMFs:

- Use a minimum of three years of crash data for urban and suburban sites and five years of crash data for rural sites.
- CMFs should be selected from Part D of the HSM or FHWA's CMF Clearinghouse website (https://www.cmfclearinghouse.org/).
- If possible, use CMFs with star ratings of four or five. The star rating indicates the quality or confidence in the results of the study producing the CMF.

CMFs are multiplicative. However, the application of multiple CMFs can overestimate the expected crash reduction. It is recommended to use no more than three (3) independent CMFs at a particular site.

Engineering Countermeasures Toolkit

A toolkit of engineering countermeasures was compiled based on general applicability in the study area, their level of evidence in crash reduction, and stakeholders and public feedback obtained during the public engagement. Table 8 provides a summary of these countermeasures, their source, their crash modification factor (where available), and the order pf magnitude cost for their implementation.

Table 8: City of Harriman Toolkit

Source	Countermeasure	Cost
● ● ●	Optimize Signal Cycle & Timings	$
● ●	Implement Access Management (Minimizing/Closing Median Openings)	$$$
●	Install/Upgrade Striping & Signage	$
● ●	Install Various Pavement Friction Applications	$$
● ●	Consider Converting Intersection to Restricted Crossing U-turn (RCUT) / Median U-turn (MUT)	$$$
●	Consider Left-Turn Phasing (FYAs / Protected-Only)	$$
	Restrict U-Turns along Mainline (Install Left-Turn Lanes if Allowing)	$$
●	Evaluate Right-Turn Lane for Optimal Travel Flow	$$$$
●	Extend Merge Lanes at Interstate Ramps	$$$$
●	Install Flashing Yellow Arrows (FYAs)	$
●	Upgrade Rail Crossing Signage & Advance Warning Facilities	
● ●	Install/Extend Guardrail, where warranted	
● ●	Install Combination Centerline / Edge line Rumble Strips	$
●	Install Positive Separation between Opposing Travel Lanes	$
● ●	Conduct Intersection Control Evaluation (ICE)	$$
● ● ●	Install/Upgrade Sidewalks & Pedestrian Facilities	$$$
●	Evaluate Left-Turn Lane Storage & Taper Lengths	$
● ●	Various Speed Reducing Countermeasures	$
●	Convert to Minor-Street Approach to Right-in Right-out Movements Only	$$
● ● ●	Evaluate Optimal Speed Limit for All Road Users	$
● ● ●	Install High-Visibility Crosswalks	$
●	Realign Intersection Side Streets	$$
●	Install Rail Crossing Gates	$$$$
● ●	Install Speed Feedback Signage & Facilities	$
●	Install Acceleration Lanes	$$$$
●	Install Optical Speed Bars on Minor Streets in Advance of Mainline	$
●	Install Raised Medians between Opposing Through & Left-Turn Travel Lanes	$$$
● ● ●	Implement Various Speed Reducing Countermeasures	

●	FHWA Proven Safety Countermeasure
●	Crash Modification Factors Countermeasure
●	Vulnerable Road User Related Countermeasure

$	0 - 50,000
$$	50,001 - 100,000
$$$	100,001 - 500,000
$$$$	> 500,0000

Driver-Related Countermeasures

As described and presented in the Safety Analysis Section. The data shows the City of Harriman experienced higher percentages of crashes involving senior drivers and aggressive drivers than the State of TN average. The following includes specific strategies to reduce crashes on these emphasis areas. These strategies incorporate the remaining three Es of traffic safety: Education, Enforcement, and Emergency Medical Services.

Senior Drivers (65+)

Older Drivers refers to drivers aged 65 and older. This group is often considered due to age-related changes in vision, physical fitness, and cognitive abilities, which can affect driving performance and increase crash risk. As shown earlier in the Safety Analysis Section, 33.3% (13 crashes) of all fatal and severe injury crashes between 2019 and 2023 in the City of Harriman involved older drivers. This is 13.8% percent higher than the TN State Average of 19.5 percent. The following are recommended strategies that should be implemented to reduce fatal and serious injury crashes involving older drivers:

Table 9: Senior Drivers (65+) Countermeasures

Countermeasure	Strategy
License Renewal Process	Support the pursue of legislation to require in-person driver license renewal and vision testing for older drivers every five years starting at age 75
Educational Programs	Support education programs for older drivers including Yellow Dot, AAA Driver Improvement Program, and Car Fit check events.
Encourage Alternative Transportation Options	Encourage efforts to link seniors to the Southeast Tennessee Human Resource Agency (SETHRA) Transit System, and other ride-share options and increase awareness of public and private transportation alternatives to driving.

Aggressive Drivers/Speeding

Aggressive Drivers refer to individuals who engage in unsafe driving behaviors with deliberate disregard for safety. These behaviors can include speeding, tailgating, weaving in and out of traffic, running red lights, and other actions that endanger other road users. The data shows that 15.4 % (6 crashes) of all fatal and severe injury crashes between 2019 and 2023 in the City of Harriman involved aggressive drivers and/or speeding. This is 3.5 percent higher than the TN State average of 11.9%. The following are recommended strategies that should be implemented to reduce fatal and serious injury crashes involving aggressive drivers and or speeding:

Table 10: Aggressive Drivers/Speeding Countermeasures

Countermeasure	Strategy
Enforcement at high frequency areas	Develop and implement enforcement program aimed at aggressive driving in high frequency areas.
Develop a City-wide Traffic Calming Program	Develop an initiative designed to implement various measures across the city to reduce vehicle speeds, involving physical changes to the roadway environment, such as roundabouts, curb extensions, and improved pedestrian crossings, to alter driver behavior and create safer conditions for all road users.

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Public and Policy Changes

Policy and Process Changes

Documents Reviewed

Existing City's plans and policies were reviewed and compiled as a part of the SAP process to gain perspective on the existing efforts for transportation-related improvements within Harriman. High-level key points regarding transportation improvements and safety-related topics were identified to inform recommendations in the SAP. Table 8 outlines the pertinent existing and past plans or policies that impact the City of Harriman.

Table 11: Existing Plan Summary

Document	Summary/Goals
The Harriman Municipal Code - Title 15 and 16	• Title 15 of the Harriman Municipal Code established standards for Motor Vehicles, Traffic and Parking and includes chapters on emergency vehicles, speed limits, turning movements, stopping and yielding, parking and enforcement. • Title 16 of the Harriman Municipal Code established standards for Streets and sidewalks and includes chapters on street cuts, construction and repair of sidewalks, railroads, street names, and street numbers.
Harriman Historic Design Guidelines, 2015	• The Harriman Historic Districts Design Review Guidelines, adopted in 2015, was created to preserve the character of historic districts throughout the city, ultimately improving livability and quality of life. • The guidelines provide property owners, real estate agents, developers contractors, tenants, and architects with standards to abide by during projects that effect the exterior of a buildings.
Strategic Planning Retreat Report, City of Harriman, Tennessee, 2019	• In Spring 2019, the City of Harriman held a Strategic Planning Retreat to review the 2017 Strategic Plan, capital funding requests, and the city's SWOT analysis. • Board members identified which efforts the city should keep doing, which to stop, and what the city needs to begin doing.
Roane County Tennessee 10 Year Parks & Recreation Master Plan, 2020	• The Roane County Tennessee 10 Year Parks and Recreation Master Plan, adopted in 2020, assessed existing parks and recreation facilities and created a prioritized list of future improvements and new developments. • An implementation plan was also established, and the recommendations for capital improvements were categorized into short term, mid-term, and long term. • The City of Harriman is in Roane County and is home to multiple recreational facilities, including the Roane County Park.
Harriman ADA Self-Evaluation & Transition Plan, 2021	• The 2021 ADA Self-Evaluation and Transition Plan assessed Harriman's existing procedures and programs to ensure compliance with the Titles of the ADA Act. • Projects were prioritized and an implementation plan was developed based on findings from a previous evaluation of public facilities, sidewalks, and ramps.
City of Harriman Comprehensive Plan Draft, 2024	• The comprehensive plan for the City of Harriman was created to guide population growth by establishing a shared long-range vision, addressing current and future issues, and guiding land use, zoning, and policy decisions. • It also focused on engaging stakeholders, accommodating growth, managing investments and development policies, and balancing interests to sustain quality of life.

Plan Checklist

To ensure the safety and well-being of all individuals, it is imperative for agencies to have a set of plans and guidelines in place. A set of plans and guidelines have been compiled to serve as a roadmap for addressing safety concerns and implementing appropriate measures. The plans include Complete Street Policy Guidelines, the ADA Transition Plan, a Multi-Modal Plan, Traffic Impact Study Guidelines, and a Comprehensive Plan. These plans provide strategies for designing and managing streets that prioritize safety, address accessibility needs, promote various transportation modes, assess traffic impacts of new developments, and outline a long-term vision for land use, transportation, and community development with a focus on safety considerations. Table 9 contains the list of plans and the corresponding plan in Harriman.

Table 12: Alignment of Safety Roadmap with Existing Plan

Checklist	Plan	Corresponding City of Harriman Plan
○	**Complete Street Policy Guidelines**	
●	**ADA Transition Plan**	Harriman 2021 ADA Self-Evaluation & Transition Plan
○	**Multi-Modal Plan**	
○	**Traffic Impact Study Guidelines (with Safety)**	
●	**Comprehensive Plan**	City of Harriman Comprehensive Plan Draft
○	**Pavement Management Plan**	
● = Has Plan ◐ = Mentioned in Other Plans ○ = Does Not Have Plan		

Recommendations

Policy recommendations were derived from the checklist of critical guidelines and policies described above, as well as a review of the emphasis areas that experienced high rates of serious and fatal injuries within the City. The top three emphasis areas identified were roadway intersections, accounting for 56.4% of total serious and fatal injury crashes, followed by senior drivers (65+) at 33.3%, and roadway departures at 20.5%. The recommendations listed below aim to address these areas and create a safer place for all roadway users.

Table 13: Policy and Process Changes Recommendations

Action	Timeframe	Lead
Integrate safety policy into all existing documents	Short-Term	Harriman Planning Commission
Update roadway and intersection design standards to promote safety for all roadway users and address deficiencies	Short-Term	Harriman Planning Commission and Harriman Public Works
Establish a targeted enforcement program (for aggressive driving and high speeds) and coordinate with local law enforcement.	Short-Term	Harriman Police Department and Harriman Public Works
Continue the "Safety Champion" position/role within the City to organize educational campaigns/ provide information through community outreach. • Topics include: driving behavior, speed awareness, seatbelt usage, safe practices, for bicyclists and pedestrians • Celebrate projects that improve safety and positive movements toward the City's Safety Action Plan's goal annually. • Create increased awareness withing agency departments	Short-Term	Harriman City Manager's Office
Create a Safe Routes to School Partnership Program, coordinating with School Districts to organize Bike or Ride to School Days.	Short-Term	County Schools
Partner with existing organizations that promote VRU safety.	Short-Term	Harriman City Manager's Office
Create complete street policies regarding meeting the needs of the emergency responders.	Short-Term	Harriman Planning Commission and Fire/Police Department
Update Municipal Codes Titles 15 and 16	Short-Term	Harriman City Manager's Office
Implement a speed management program and traffic calming program	Mid-Term	Harriman Public Works
Create Traffic Impact Study guidelines for future development, considering Safety. If projects are proposed on corridors within the HIN network, an evaluation of countermeasure to be implemented by the development project should be part of the process.	Mid-Term	Harriman Planning Commission
Incorporate ADA compliance requirements for sidewalks and intersections.	Mid-Term	Harriman Public Works
Reprioritize future projects that achieve safety goals for future funding allocations.	Mid-Term	Harriman City Council
Implement streetscaping techniques to reduce distracted driving.	Mid-Term	Harriman Public Works
Develop an Access Control Plan	Mid-Term	Harriman Planning Commission and Harriman Public Works

Incorporate proposed safety projects from this plan into future developments and transportation projects	Long-Term	Harriman Planning Commission and Harriman Public Works
Implement the use of ITS technologies as appropriate. Develop and ITS Master Plan and identify system upgrades such as TMC, etc.	Long-Term	Harriman Public Works
Conduct detailed studies on crash hotspots and regularly update the High Injury Network (HIN) with future crash data and update project priorities as needed.	Long-Term	Harriman Police Department
Encourage businesses and special event permit holders to promote mobility alternatives for patrons through the permit process by identifying things such as bike parking areas or bike/ped connectors from parking areas to the event(s).	Long-Term	Harriman City Manager's Office
Develop a Pavement Management Plan	Long-Term	Harriman Public Works

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Project Selections

Project Selections

Prioritization

After the review and validation of the HIN by the Steering Committee, ranking weight was determined for each of the following variable to be used for the project prioritization:

- The number of total crashes along the segment (20%).
- The number of fatal and serious injury crashes along the segment (30%).
- The number of pedestrian/bicycle crashes along the segment (15%).
- The segment crash rate expressed in crashes per million vehicle miles traveled per day (20%).
- Demographics and community characteristics consideration, defined as the HIN segment crossing an area of the City with an SVI score of medium or high, an Area of Persistent Poverty, or a Historically Disadvantaged Community area (15%).

Appendix B provides a summary of the HIN prioritization exercise. The results indicate that Roane State Highway between Keylon Drive and Pine Ridge Road was the TDOT-owned facility with the highest score, while Old Roane Street between Meadowview Drive and Hannah highway was the highest-scoring local roadway.

Recommended Projects

Following the initial assessment, a list of high-scoring city-maintained and State Route roadway segments and intersections was reviewed with City staff. Locations with known programmed capital improvements were removed from the list and replaced with subsequent high-ranking locations. City staff provided feedback on the highest-scoring segments and intersections to identify five (5) road segments that would be candidates for engineering improvements. The five (5) recommended locations are shown in **Figure 20** and listed below:

- Roane State Highway from Keylon Drive to Pine Ridge Road
- Pine Ridge Road from Highway 70 to N I-40 Ramps
- S Roane Street from Comfort Inn to Fairchild Street
- N Roane Street from Emory Drive to Hickory Street
- Hannah Highway from N Roane Street to City Limits

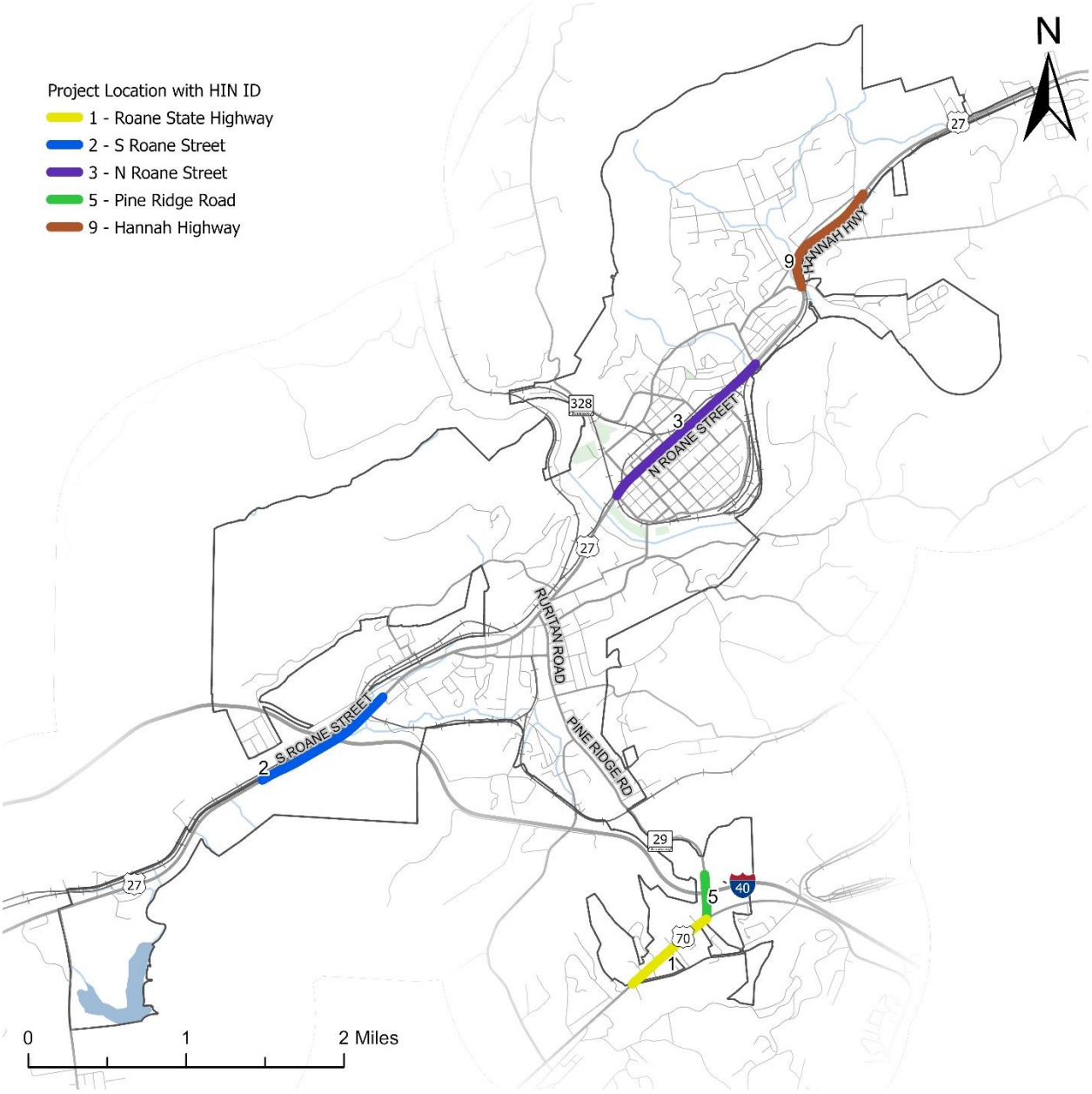

Figure 28: Recommended Corridors for Early Project Implementation

Recommended Project Fact Sheets

Following the selection of the top five (5) project locations, safety improvement recommendations were developed for each location using the Engineering Countermeasures Toolkit presented earlier in the SAP.

Project fact sheets were developed for each of the five (5) locations and are included in **Appendix B**. The fact sheets summarize the crash data analysis, public input, and selected engineering countermeasures with their benefits. The draft project sheets were reviewed by City staff for input related to engineering judgment and site-specific knowledge. The fact sheets provide a concise summary of each priority project location for ease of reference in future funding and project programming opportunities.

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Progress and Transparency

Progress and Transparency

The Harriman SAP recommends a set of actions that will support the successful implementation and monitoring of the recommended projects and strategies.

Task Force Implementation and Monitoring

It is recommended that a subset of the Steering Committee reconvene in the future as a Harriman Safety Task Force to direct the SAP implementation, monitoring, and future progress. The Task Force can consist of Public Works staff, other City of Harriman departments, Harriman Police Department, other local emergency service providers, key Harriman City staff, key TDOT staff, other adjacent communities, and other stakeholders as needed. It is recommended that this group convene annually after the adoption of the Harriman SAP to review the latest available crash data trends, engineering project completion progress, and driver-related strategy performance measures. The Task Force will discuss opportunities to build upon the plan to address any changing crash trends alongside community needs, new technologies, and additional resources available to assist in implementation.

Public Posting of the Harriman SAP

Upon completion and adoption, this plan will be made public on a dedicated project website and the City's website. It is recommended the project website be maintained to update the public with new crash data trends and the implementation status of accomplishments.

Figure 29: Harriman SAP Website

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APPENDIX A

City of Harriman

Resolution R0425-01

A RESOLUTION ADOPTING THE CITY OF HARRIMAN SAFETY ACTION PLAN AND ITS SAFETY TARGETS

WHEREAS, there were 1,035 crashes reported within the city limits of Harriman from 2019 to 2023; and

WHEREAS, 4 people lost their lives in crash-related deaths on Harriman roadways in the five-year period; and

WHEREAS, there were 35 people with suspected serious injuries caused from crashes on Harriman roadways in the five-year period; and

WHEREAS, the City of Harriman is committed to the goal of significantly reducing and ultimately eliminating roadway fatalities and serious injuries on roadways within the City's police jurisdiction.

NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND THE CITY COUNCIL OF THE CITY OF HARRIMAN, TENESSEE, that the City adopts an interim target of reducing fatal and serious injury crash rates expressed in crashes per 100 million vehicle miles travel by twenty (20) percent by the year 2035; and

BE IT FURTHER RESOLVED that the City adopts a target of reducing fatal and serious injury crash rates expressed in crashes per 100 million vehicle miles traveled by fifty (50) percent by the year 2045.

BE IT FURTHER RESOLVED that the City adopts this Safety Action Plan, of the Safe Streets and Roads for All initiative, to serve as a guiding document for the City as it works toward achieving its safety performance goals.

This resolution shall become effective immediately upon its adoption as required by on this the 4th day of MARCH 2025.

READ AND ADOPTED this the 1st Day of April, 2025.

Mayor Wayne Best

City Clerk Theresa Beard

HARRIMAN
SAFE STREETS

APPENDIX B

City of Harriman - High Injury Network Prioritization Summary

HIN ID	Road Name	From	To	Length	AADT	Total Crashes	KA Crashes	Crash Rate	Demographics & Community Characteristics	VRU Crashes	Total Screening Points
1	Roane State Hwy	Wood Dr	Pine Ridge Rd	0.62	11,000	231	16	18.6	5	0	64.1
5	TN SR-29 (1)	Roane State Hwy	N I-40 Ramps	0.37	8,000	194	12	35.9	5	0	63.0
2	S Roane St	Comfort Inn	Fairchild St	0.92	13,000	113	4	5.2	5	3	38.9
3	N Roane St	Emory Dr	Hickory St	1.23	9,300	98	1	4.7	20	0	28.0
7	Old Roane St	Meadowview Dr	Hannah Hwy	0.67	500	13	2	21.3	15	0	28.0
4	S Roane St	Emory Gap Rd	W of Emory River Bridge	1.37	9,000	128	3	5.7	0	1	24.9
10	TN SR 29A	Mayberry St	Curve of Railroad	0.64	1,500	10	1	5.7	20	0	20.9
6	TN SR-29 (2)	Breazeale St	S Roane St	0.31	8,500	64	3	13.3	0	0	18.6
9	Hannah Hwy	N Roane St	City Limit	0.75	7,500	25	2	2.4	15	0	18.5
11	Breazeale St	Ruritan Rd	Vernal Dr	0.23	500	5	2	23.8	0	0	17.5
8	Pansy Hill Rd	Ruritan Rd	Swan Pond Rd	0.81	1,900	21	1	7.5	0	0	7.9

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APPENDIX C

Roane State Highway (Highway 70)
from Keylon Drive to Pine Ridge Road

VRU (0)
Serious Injury (14)
Fatal (2)

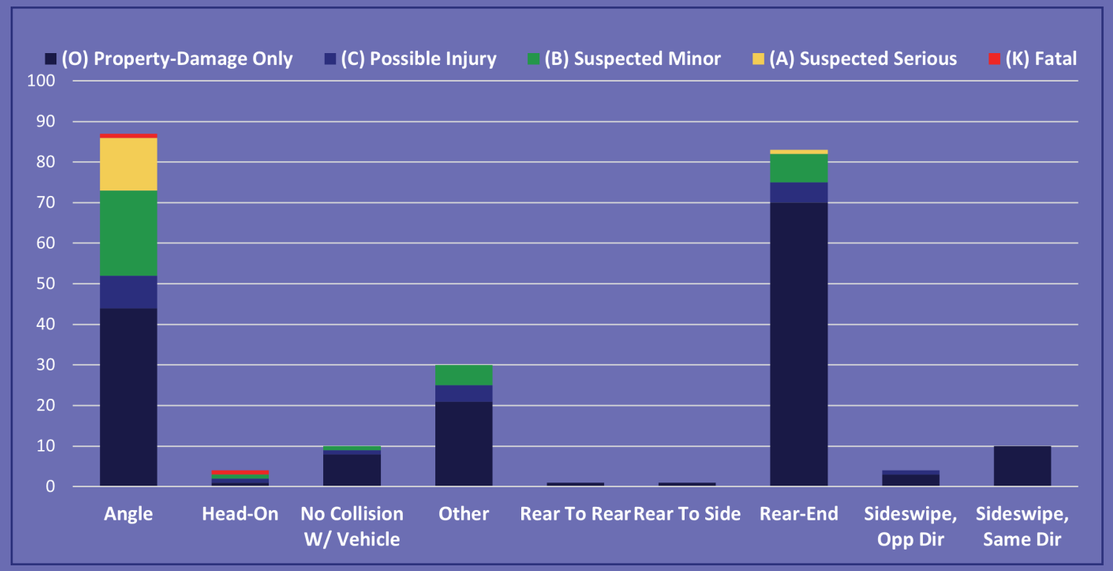
Federal Route

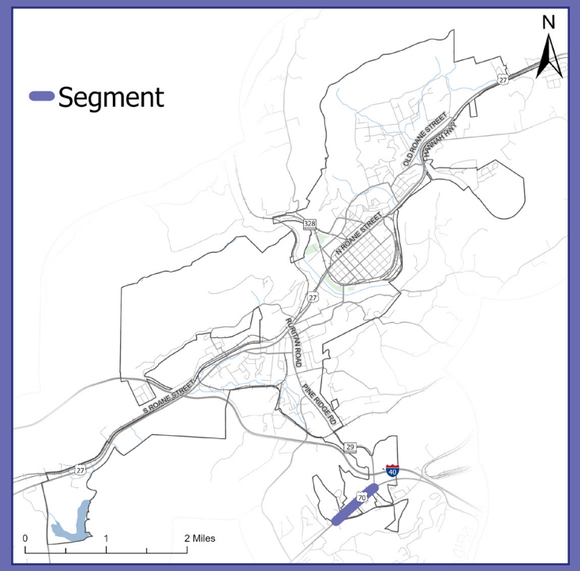
Speed Limit	45 mph
Lanes	4
Veh/Day	11,000
Crashes	231
HIN Intersections	4

Characteristics

This segment of Roane State Highway is a two-way, divided highway, with a straight alignment,and rolling grade. There are no sidewalks or bicycle/ pedestrian facilities present on this segment.

Along Roane State Highway, Facing West, Just West of Pine Ridge Road





Overall Ranking: 1

Ranking Index

Fatal & Serious Injury Crashes:
low — high

Vulnerable Road User Crashes:
low — high

Crash Rate:
low — high

Demographics Consideration:
low — high

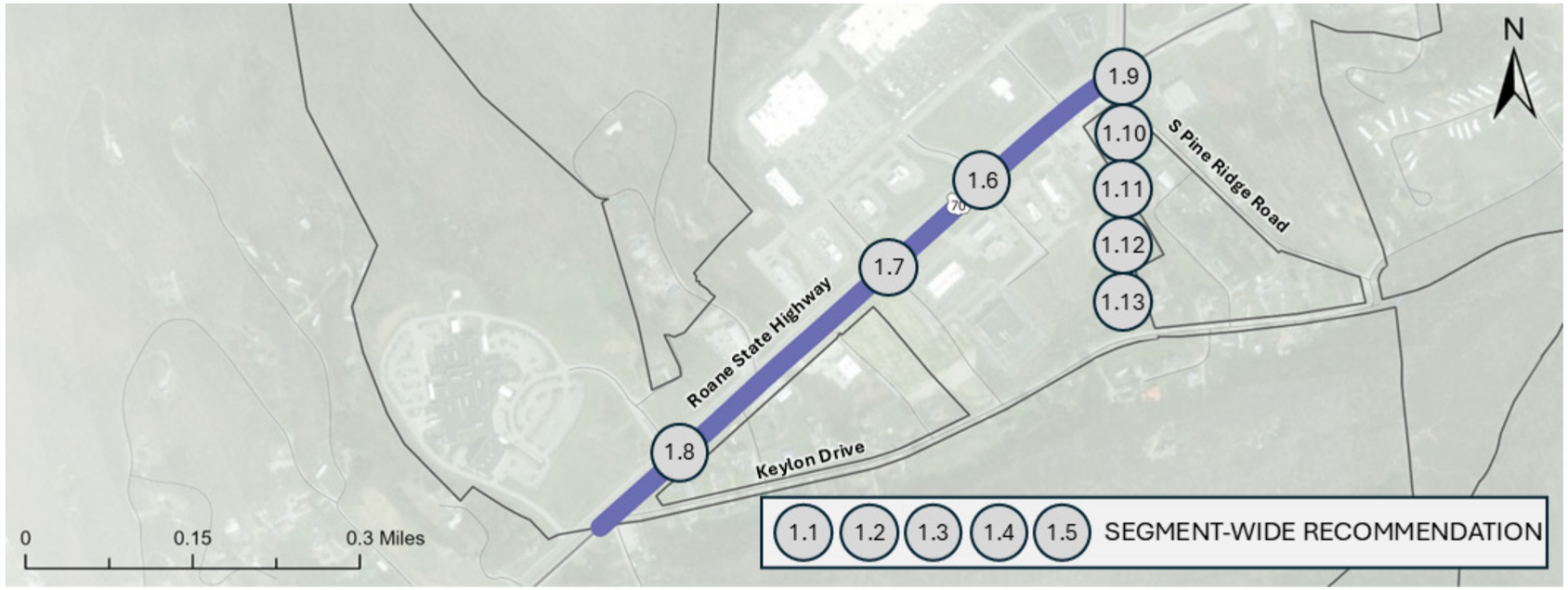
Community Input

- The primary concern was with the intersection at Pine Ridge Road.
- There has been confusion around who has the right of way at Pine Ridge Road. The light needs to be fixed so people stop blowing through the light.
- People want to see roadway improvements around the stores along this corridor, such as Walgreens and Lowe's.

Roane State Highway (Highway 70)
from Keylon Drive to Pine Ridge Road

Roane State Highway (Highway 70)
from Keylon Drive to Pine Ridge Road

Recommended Countermeasures



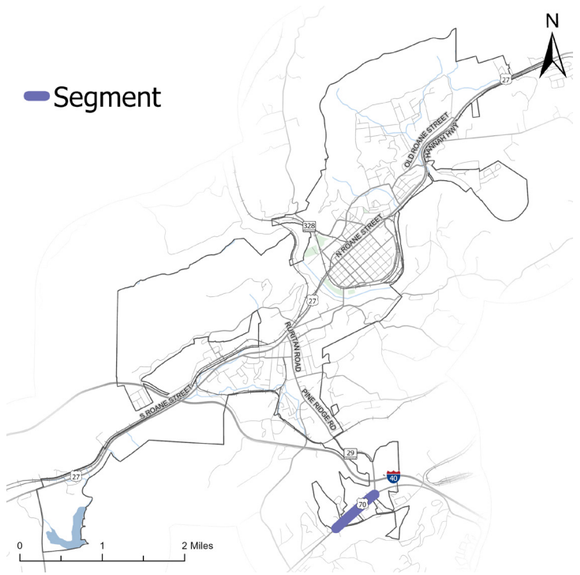
	ID	Countermeasure	Cost	Schedule	Project Readiness
● ○	1.1	Optimize Signal Cycle Lengths and Splits	$	Short-Term	Ready
● ○	1.2	Evaluate Signal Clearance Intervals	$	Short-Term	Ready
● ○	1.3	Implement Access Management (Minimizing/Closing Median Openings)	$$$	Long-Term	● ●
○	1.4	Install/Upgrade Striping & Signage	$	Short-Term	Ready
● ○	1.5	Install Various Pavement Friction Applications	$$	Short-Term	Ready
● ○	1.6	Consider Converting Intersection to RCUT	$$$	Long-Term	● ●
○	1.7	Consider Left-Turn Phasing (FYAs / Protected-Only)	$$	Mid-Term	Ready
	1.8	Restrict U-Turns along Mainline (Install Left-Turn Lanes if Allowing)	$$	Mid-Term	Ready
○	1.9	Extend Storage/Taper Length of WB Right-Turn Lane & Convert to Smart-Channel	$$$$	Long-Term	Ready
○	1.10	Convert EB Left-Turn to Protected-Only	$$	Short-Term	Ready
○	1.11	Implement Various Red-Light Running Countermeasures	$$	Short-Term	Ready
	1.12	Install Upgraded Delineation & Signage for SB Right-Turn	$	Short-Term	Ready
○	1.13	Optimize SB Approach Skew	$$$	Long-Term	Ready

$ - 0 to 50,000; $$ - 50,001 to 100,000; $$$ - 100,001 to 500,000; $$$$ - Over 500,000

● FHWA Proven Safety Countermeasure
○ Crash Modification Factors Countermeasure
○ Vulnerable Road User Related Countermeasure
● Requires ROW Acquisition
● Requires Utility Relocation

Benefit Summary

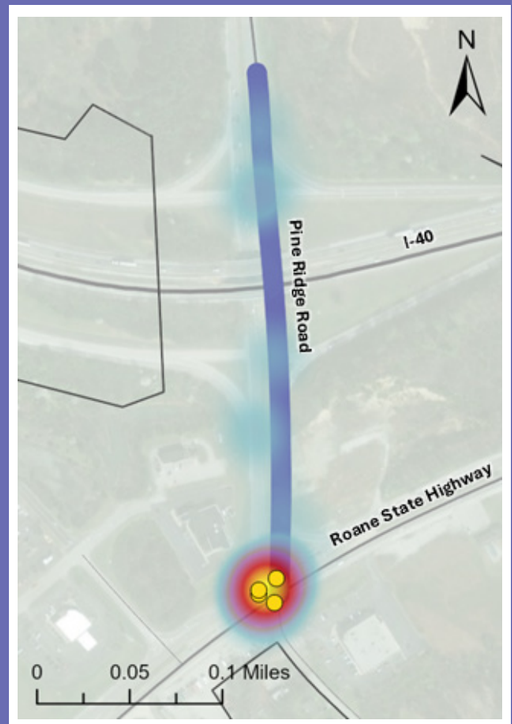
- Access management controls where vehicles can turn, thereby reducing unpredictable movements that can lead to crashes.
- High-friction surfaces help to minimize skidding and hydroplaning, particularly in wet conditions. Higher friction levels can also help reduce the impact speed, potentially decreasing the severity of injuries and vehicle damage. Applying high-friction surfaces in high-risk areas such as intersections, curves, pedestrian crossings, and steep gradients can significantly reduce crashes in these locations.
- Studies have shown that flashing yellow arrows significantly reduce the number of left-turn crashes by providing a more distinct indication that drivers are required to yield during the permissive phase.
- By eliminating conflicts with oncoming traffic and pedestrians, protected-only left turns significantly reduce the risk of collisions.
- Red-light running enforcement through traffic cameras enhances road safety by reducing violations, accidents, fatalities, and injuries, while promoting safer driving behaviors.
- Properly timed signals can encourage more uniform speeds, improve driver compliance with traffic signals, and may decrease incidences of red-light running.



Roane State Highway (Highway 70)
from Keylon Drive to Pine Ridge Road

HARRIMAN SAFE STREETS

Pine Ridge Road
from Highway 70 to N I-40 Ramps



● VRU (0) ● Serious Injury (12) ● Fatal (0)

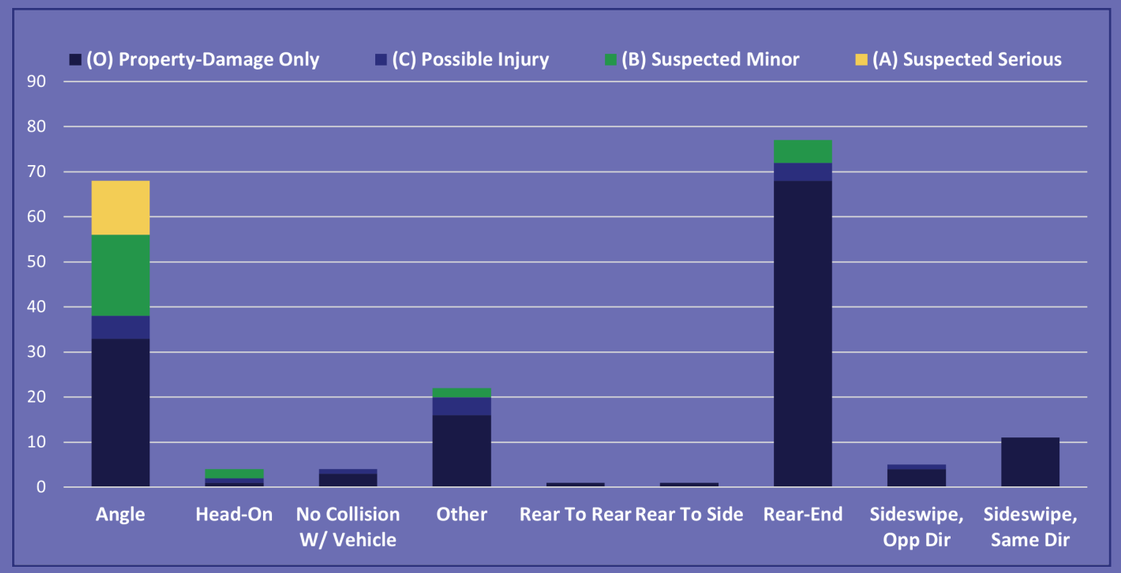
State Route

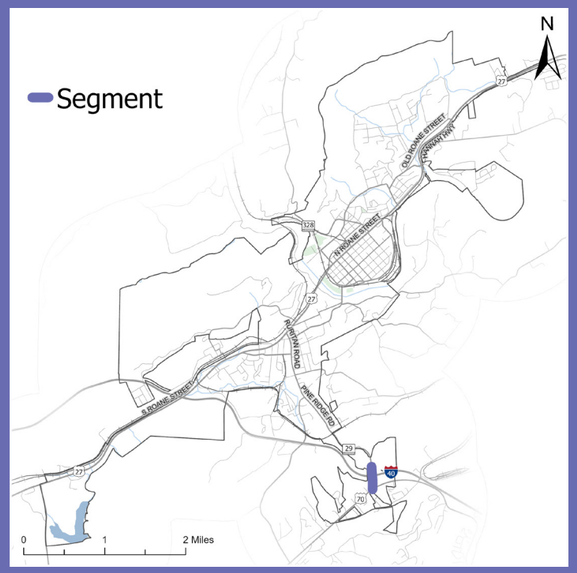
Speed Limit	40 mph
Lanes	4
Vehicles/Day	8,000
Total Crashes	194
HIN Intersections	1

Characteristics

This segment of Pine Ridge Road is a two-way roadway, divided by a grass median. This section follows a straight alignment, with a minor rolling grade. There are no sidewalks present on this section of Pine Ridge Road.

Along Pine Ridge Road, Facing North, Just North of Roane State Highway





Overall Ranking: 2

Ranking Index

Fatal & Serious Injury Crashes:
low — high

Vulnerable Road User Crashes:
low — high

Crash Rate:
low — high

Demographics Considerations:
low — high

Community Input

- They need to redo the right turn lane from Pine Ridge Road to westbound US 70 (Roane State Hwy). People do not stop at the yield sign and proceed to pull out in front of traffic coming on US 70.

Pine Ridge Road
from Highway 70 to N I-40 Ramps

Pine Ridge Road
from Highway 70 to N I-40 Ramps

	ID	Countermeasure	Cost	Schedule	Project Readiness
●	2.1	Extend Merge Lanes at Interstate Ramps	$$$$	Long-Term	●
●	2.2	Optimize SB Approach Angle to Eliminate Skew	$$	Long-Term	Ready
●	2.3	Install Flashing Yellow Arrows (FYAs) for NB Approach	$	Short-Term	Ready
● ● ●	2.4*	Install Sidewalks & Pedestrian Facilities from Interstate to Dogwood Court	$$$$	Long-Term	Ready
●	2.5*	Upgrade Rail Crossing Signage & Advance Warning Facilities	$$	Mid-Term	●
● ●	2.6*	Install/Extend Guardrail, where warranted	$$	Mid-Term	●
● ●	2.7	Install Combination Centerline / Edge line Rumble Strips	$	Short-Term	Ready
●	2.8	Install Positive Separation between Opposing Travel Lanes	$	Short-Term	Ready
● ●	2.9	Implement Various Speed Reducing Countermeasures	$$	Short-Term	Ready
● ●	2.10	Install Various Pavement Friction Applications	$	Short-Term	Ready
●	2.11	Implement Various Red-Light Running Countermeasures	$	Short-Term	Ready
●	2.12	Install Upgraded Delineation & Signage for SB Right-Turn	$	Short-Term	Ready

* Includes Outside City Limits at Railroad Crossing

$ - 0 to 50,000; $$ - 50,001 to 100,000; $$$ - 100,001 to 500,000; $$$$ - Over 500,000

● FHWA Proven Safety Countermeasure

● Crash Modification Factors Countermeasure

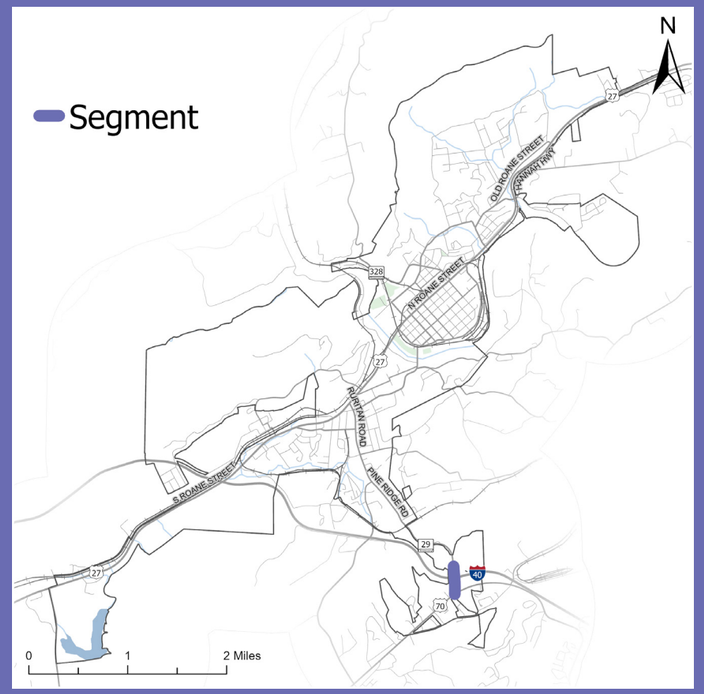
● Vulnerable Road User Related Countermeasure

● Requires ROW Acquisition

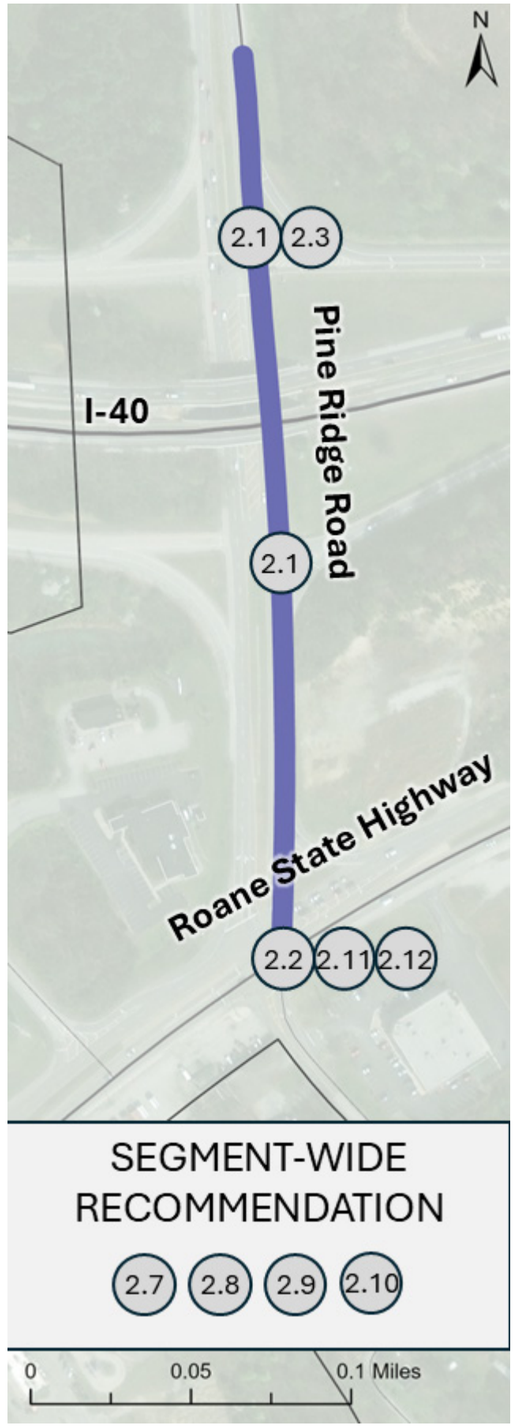
● Requires Utility Relocation

Benefit Summary

- Speed-reducing countermeasures make it clear to drivers that lower speeds are expected and required. Safer speeds have been shown to lead to lower crash severity, increased driver reaction time, enhanced pedestrian and cyclist safety, and environmental benefits.
- Grooved edge/centerlines provide tactile and auditory feedback to drivers when their vehicle strays from the lane, helping to reduce the risk for roadway departure crashes and head-on collisions.
- Red-light running enforcement through traffic cameras enhances road safety by reducing violations, accidents, fatalities, and injuries, while promoting safer driving behaviors.
- Pavement friction applications are particularly effective at preventing roadway departure, intersection, and pedestrian-related crashes. This is crucial in areas where vehicles frequently turn, slow down, or stop
- Flashing Yellow Arrows at intersections reduce left-turn crashes, improve driver comprehension, enhance traffic flow, and increase safety for all road users.

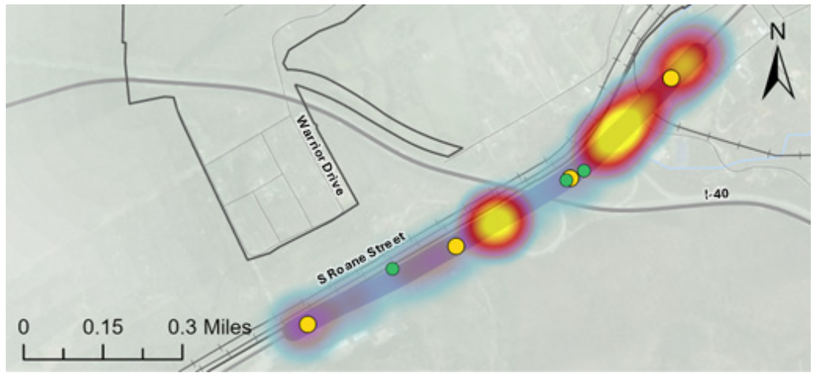


Recommended Countermeasures



Pine Ridge Road
from Highway 70 to N I-40 Ramps

S Roane Street (Highway 27)
from Comfort Inn Driveway to Fairchild Street



- VRU (3)
- Serious Injury (4)
- Fatal (0)

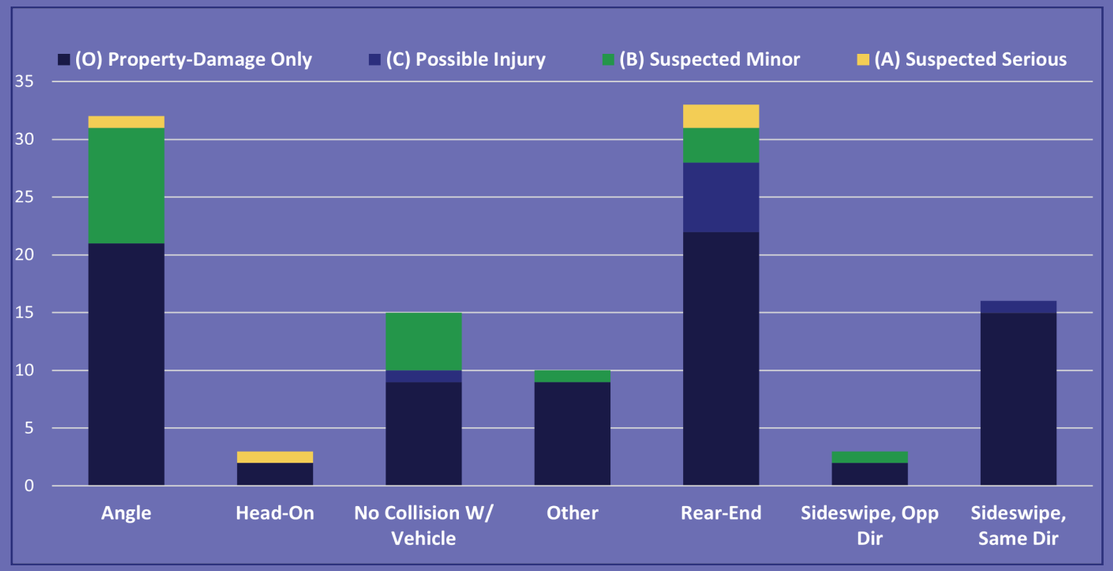
Federal Route

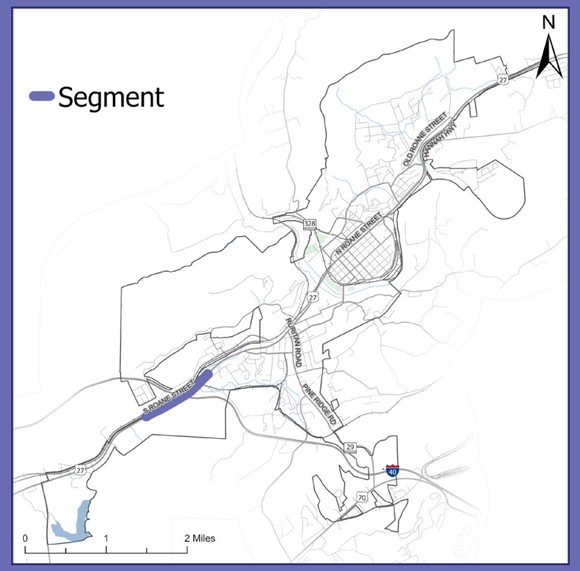
Speed Limit	50 mph
Lanes	4
Vehicles/Day	13,000
Total Crashes	113
HIN Intersections	2

Characteristics

This section of S Roane Street is a two-way roadway, divided by a grass median. This segment follows a largely straight alignment, with a minor rolling grade. Sidewalks are not present along this section of S Roane Street.

Along S Roane Street, Facing East, Just West of Fairchild Street





Overall Ranking: 3

Ranking Index

Fatal & Serious Injury Crashes:

low — high

Vulnerable Road User Crashes:

low — high

Crash Rate:

low — high

Demographics Consideration:

low — high

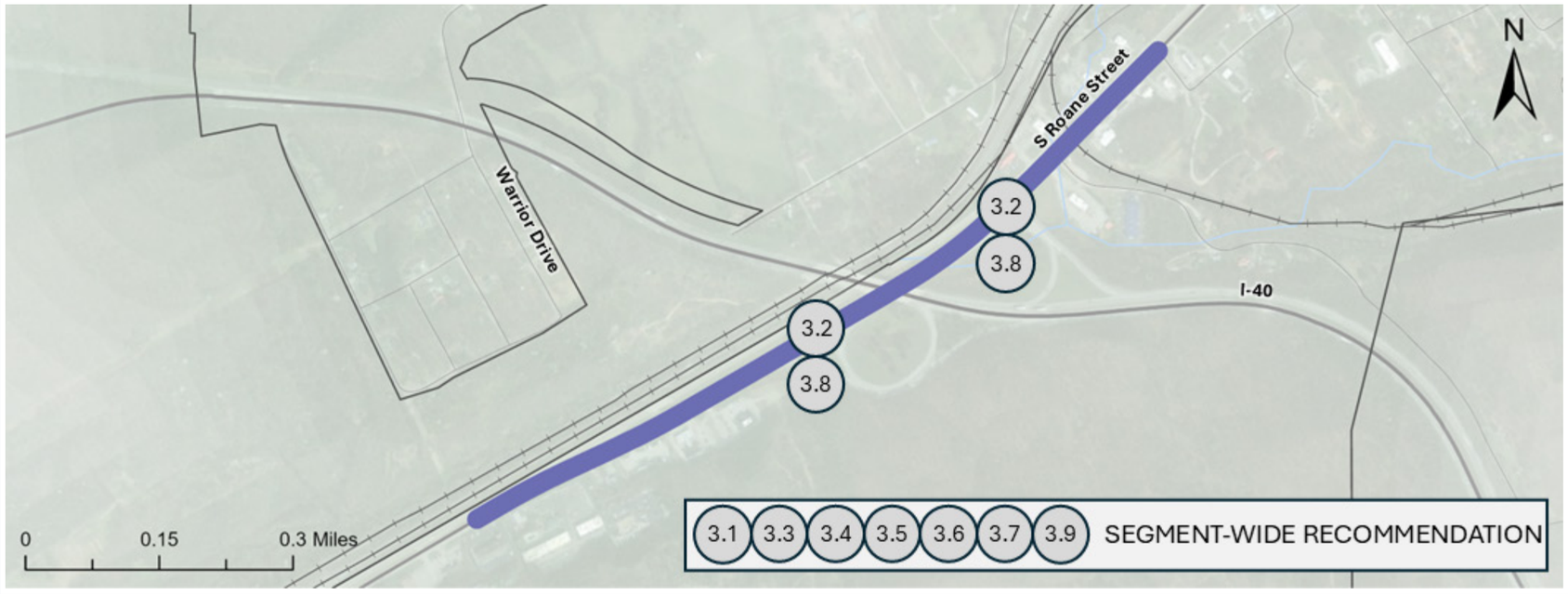
Community Input

- The roads are confusing near I-40 entrance and exit ramps. There are a lot of accidents there and people going the wrong way sometimes.
- S Roane Street needs better places to make left hand turns.

S Roane Street (Highway 27)
from Comfort Inn Driveway to Fairchild Street

S Roane Street (Highway 27)
from Comfort Inn Driveway to Fairchild Street

Recommended Countermeasures



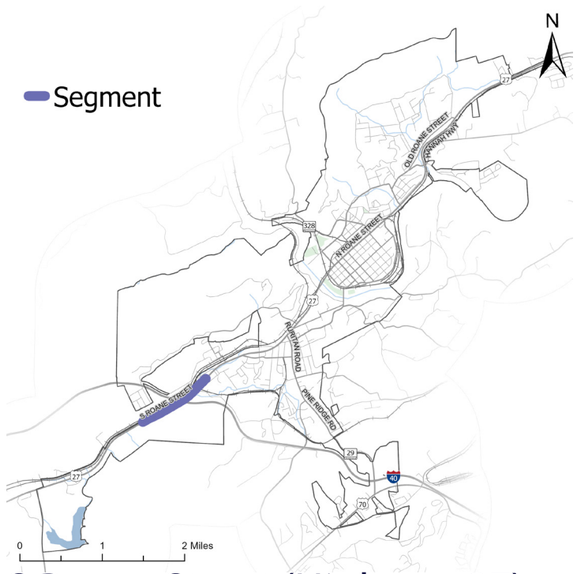
	ID	Countermeasure	Cost	Schedule	Project Readiness
● ●	3.1	Implement Access Management (Minimizing/Closing Median Openings)	$$$$	Long-Term	● ●
● ○	3.2	Conduct Intersection Control Evaluation (ICE) at Both Ramp Intersections	$$	Mid-Term	● ●
● ● ○	3.3	Install/Upgrade Sidewalks & Pedestrian Facilities	$$$	Long-Term	● ●
●	3.4	Evaluate Left-Turn Lane Storage & Taper Lengths	$	Short-Term	Ready
●	3.5	Install/Upgrade Signage & Striping	$	Short-Term	Ready
● ● ○	3.6	Optimize Signal Cycle & Timings	$	Short-Term	Ready
● ●	3.7	High-Visibility Enforcement	$	Short-Term	Ready
●	3.8	Install Directional Striping at Stop-Controlled Ramps	$	Short-Term	Ready
●	3.9	Install Raised Pavement Markers (RPMs)	$	Short-Term	Ready

$ - 0 to 50,000; $$ - 50,001 to 100,000; $$$ - 100,001 to 500,000; $$$$ - Over 500,000

● FHWA Proven Safety Countermeasure
● Crash Modification Factors Countermeasure
○ Vulnerable Road User Related Countermeasure
● Requires ROW Acquisition
● Requires Utility Relocation

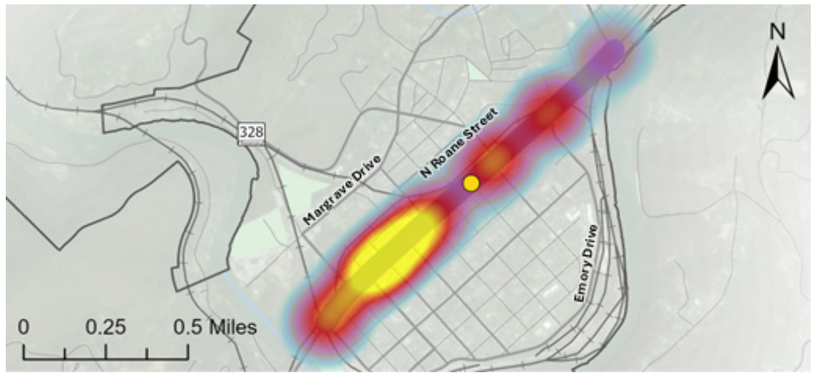
Benefit Summary

- Properly timed signals can encourage more uniform speeds, improve driver compliance with traffic signals, and may decrease incidences of red-light running.
- Sidewalks offer a dedicated walking space and provide pedestrians with access to destinations along the corridor, decreasing the likelihood of vehicle/pedestrian conflicts within the roadway. Sidewalks provide a safer environment for those who rely on walking as their primary mode of transportation.
- RPMs are highly reflective, making them visible in low-light conditions and during inclement weather. This helps drivers maintain lane discipline and navigate safely, especially at night.
- High-Visibility Enforcement creates a strong deterrent effect against dangerous driving behaviors such as speeding, drunk driving, and distracted driving. The visible presence of law enforcement encourages drivers to comply with traffic laws.
- Conducting an Intersection Control Evaluation (ICE) at ramps improves safety by identifying the safest and most cost-effective intersection designs, ensuring transparency, and considering innovative solutions.
- Access management controls where vehicles can turn, thereby reducing unpredictable movements that can lead to crashes.



S Roane Street (Highway 27)
from Comfort Inn Driveway to Fairchild Street

N Roane Street
from Emory Drive to Hickory Street



- VRU (0)
- Serious Injury (1)
- Fatal (0)

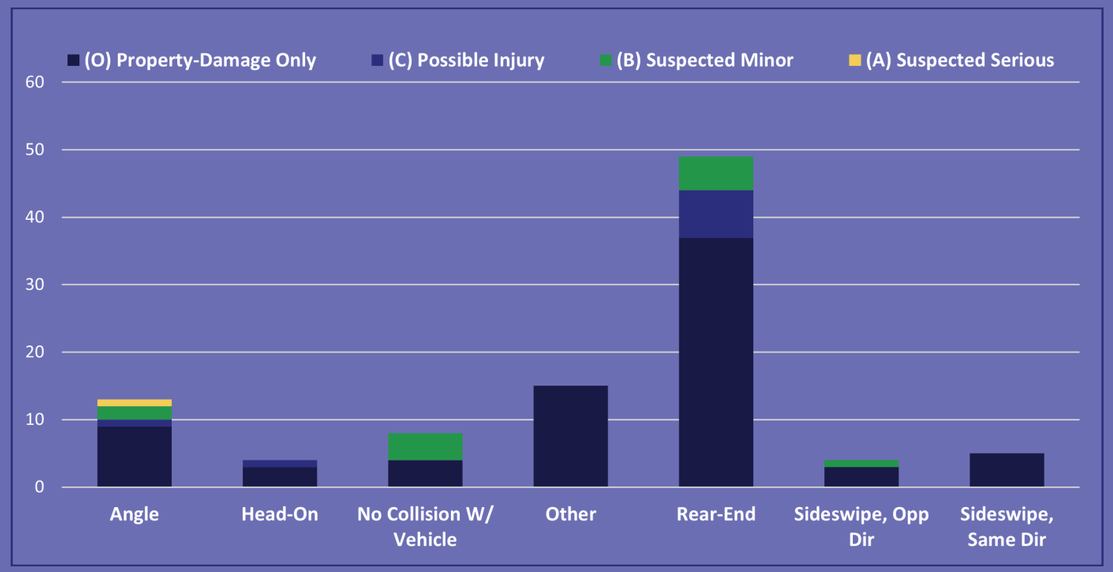
Federal Route

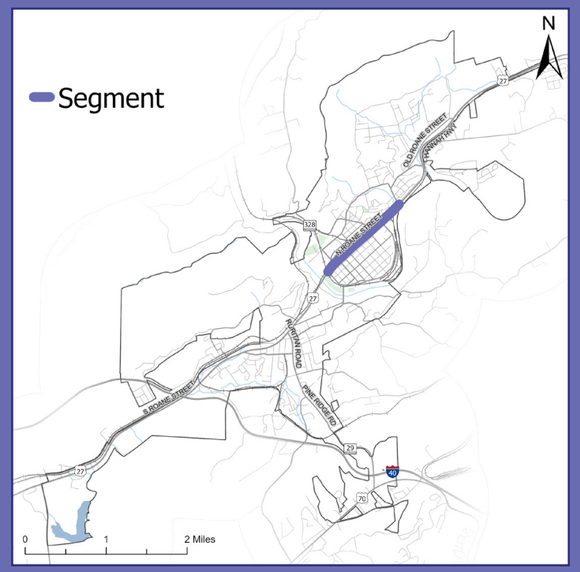
Speed Limit	35 mph
Lanes	4
Vehicles/Day	9,300
Total Crashes	98
HIN Intersections	0

Characteristics

This section of N Roane Street is a two-way roadway, divided by a two-way left-turn lane (TWLTL). This segment follows a largely straight alingment, with a mild rolling grade. Sidewalks & pedestrian facilities are present along both sides of this segment, as it runs through the downtown area of Harriman.

Along N Roane Street, Facing East, Just East of Walden Street





Overall Ranking: 4

Ranking Index

Fatal & Serious Injury Crashes:

low — high

Vulnerable Road User Crashes:

low — high

Crash Rate:

low — high

Demographics Consideration:

low — high

Community Input

- Safety concerns have been raised regarding the intersection with Carter Avenue due to limited visibility.
- Residents suggest adding a crosswalk and crosswalk flashers at the intersection of N Roane Street and Emory Drive to slow down traffic for pedestrians.
- There is a general consensus among the community on the need for improvements in the downtown area, specifically mentioning the intersections of Byrd Avenue and Morgan Avenue.

N Roane Street
from Emory Drive to Hickory Street

N Roane Street
from Emory Drive to Hickory Street

Recommended Countermeasures

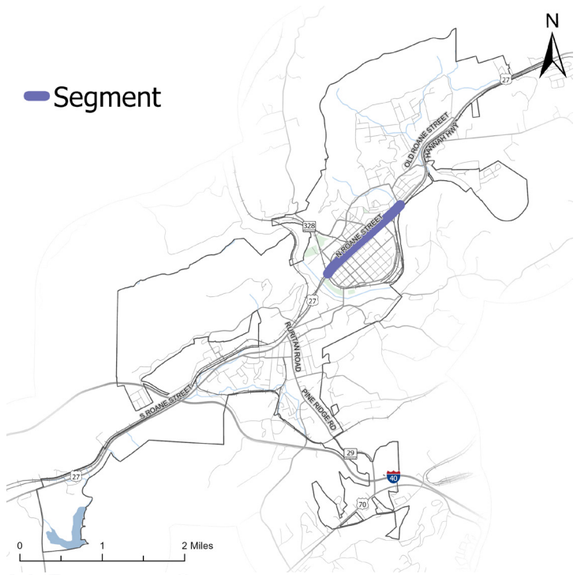
	ID	Countermeasure	Cost	Schedule	Project Readiness
●	4.1	Convert to Minor-Street Approach to Right-in Right-out Movements Only	$$	Mid-Term	Ready
● ●	4.2	Implement Access Management (Minimizing Driveway Density)	$$	Mid-Term	🟡
● ● ○	4.3	Evaluate Optimal Speed Limit for All Road Users	$	Short-Term	Ready
● ●	4.4	Implement Various Speed Reducing Countermeasures	$	Short-Term	Ready
●	4.5	Install/Upgrade Striping & Signage	$	Short-Term	Ready
● ● ○	4.6	Install High-Visibility Crosswalks	$	Short-Term	Ready
●	4.7	Install Positive Separation between Opposing Travel Lanes	$	Short-Term	Ready
●	4.8	Realign Intersection Side Streets	$$	Mid-Term	🔴 🟡
● ● ○	4.9	Evaluate & Upgrade Pedestrian Facilities	$$	Mid-Term	🟡
● ● ○	4.10	Optimize Signal Cycles & Timings	$	Short-Term	Ready

$ - 0 to 50,000; $$ - 50,001 to 100,000; $$$ - 100,001 to 500,000; $$$$ - Over 500,000

● FHWA Proven Safety Countermeasure
● Crash Modification Factors Countermeasure
○ Vulnerable Road User Related Countermeasure
🔴 Requires ROW Acquisition
🟡 Requires Utility Relocation

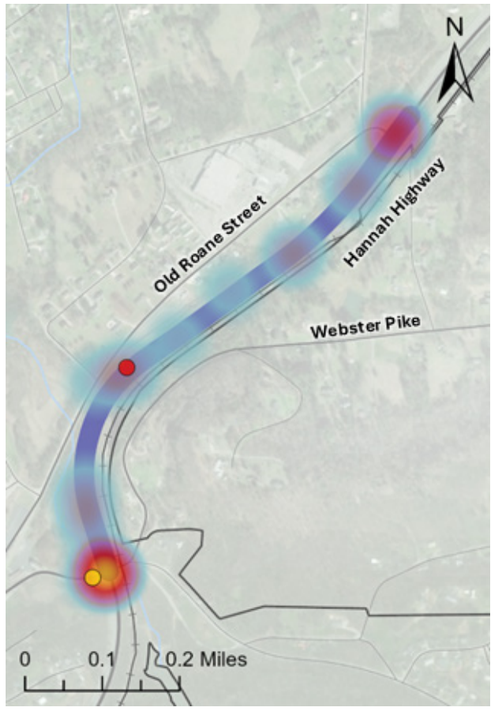
Benefit Summary

- When speed limits are set based on thorough traffic studies and are reasonable, drivers are more likely to comply with them, leading to a safer road environment.
- Correcting a skew can improve sight lines and reduce blind spots, allowing drivers to see oncoming traffic more clearly and make safer crossing or turning decisions.
- High-emphasis crosswalks are designed to improve pedestrian safety by making crosswalks more visible and conspicuous to drivers.
- By clearly delineating opposing traffic lanes, positive separation helps maintain orderly traffic flow and reduces confusion, especially in high-speed or high-traffic areas. Positive separation helps prevent vehicles from accidentally entering the wrong lane, which can lead to dangerous situations.
- Properly timed signals can encourage more uniform speeds, improve driver compliance with traffic signals, and may decrease incidences of red-light running.
- Access management controls where vehicles can turn, thereby reducing unpredictable movements that can lead to crashes.



N Roane Street
from Emory Drive to Hickory Street

Hannah Highway
from N Roane Street to City Limits



● VRU (0) ● Serious Injury (1) ● Fatal (1)

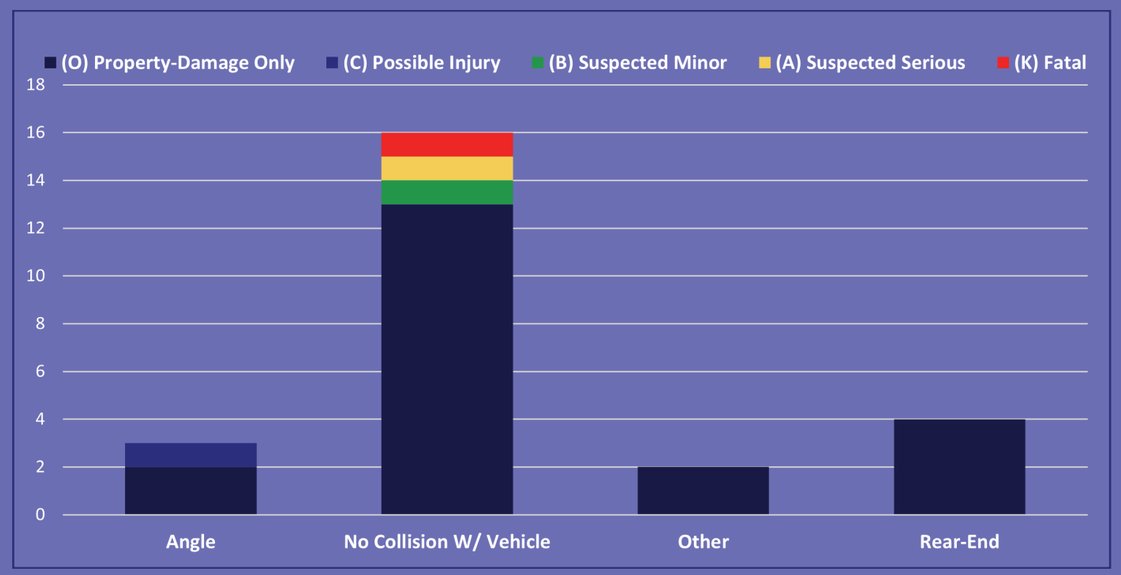
Federal Route

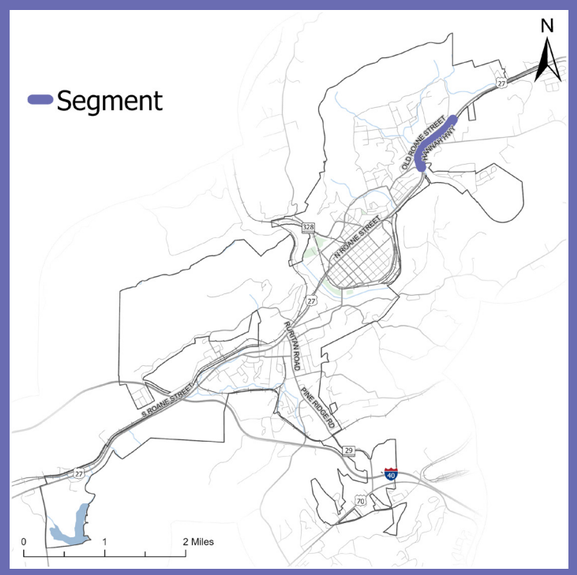
Speed Limit	55 mph
Lanes	4
Vehicles/Day	7,500
Total Crashes	25
HIN Intersections	1

Characteristics

This section of Hannah Highway is a two-way roadway, divided by a 12' paved median with guardrail separation. This segment follows a curved alignment, with a minor rolling terrain. Sidewalks are not present along this section of Hannah Highway.

Along Hannah Highway, Facing East, Just North of Webster Road





Overall Ranking: 9

Ranking Index

Fatal & Serious Injury Crashes:
low — high

Vulnerable Road User Crashes:
low — high

Crash Rate:
low — high

Demographics Considerations:
low — high

Community Input

- N/A

Hannah Highway
from N Roane Street to City Limits

Hannah Highway
from N Roane Street to City Limits

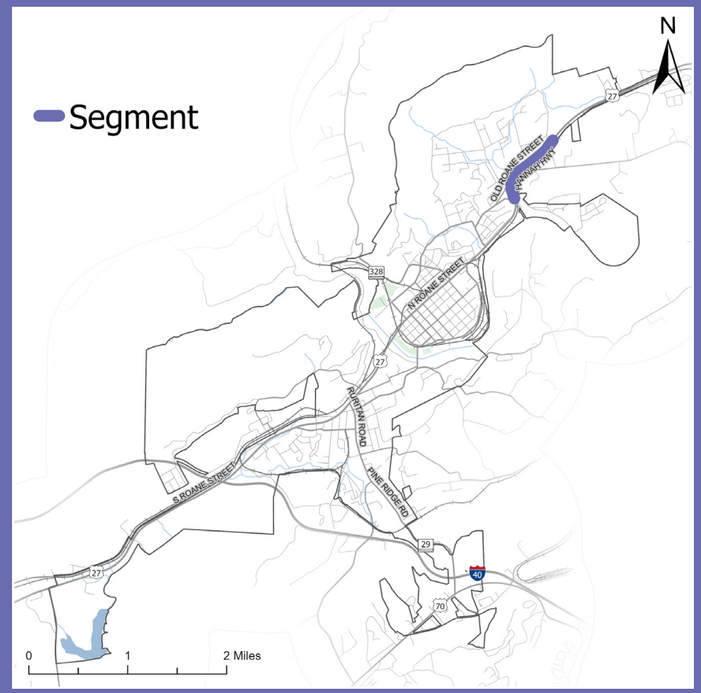
	ID	Countermeasure	Cost	Schedule	Project Readiness
●	9.1	Increase Left-Turn Storage Lane Lengths	$$$	Long-Term	● ●
●	9.2	Install Rail Crossing Gates	$$$$	Long-Term	● ●
● ●	9.3	Install Speed Feedback Signage & Facilities	$	Short-Term	Ready
●	9.4	Install Acceleration Lanes onto Hannah Highway from Old Roane Street	$$$$	Long-Term	● ●
●	9.5	Install Optical Speed Bars on Minor Streets in Advance of Mainline	$	Short-Term	Ready
●	9.6	Install Raised Medians between Opposing Through & Left-Turn Travel Lanes	$$$	Long-Term	Ready
● ●	9.7	Implement Speed Feedback Signage	$	Short-Term	Ready
● ●	9.8	Install Various Pavement Friction Applications	$$	Short-Term	Ready
● ●	9.9	Extend Guardrail on SB Outside Shoulder	$	Short-Term	● ●
● ●	9.10	High-Visibility Enforcement	$$	Short-Term	Ready
● ●	9.11	Install Raised Pavement Markers (RPMs)	$	Short-Term	Ready

$ - 0 to 50,000; $$ - 50,001 to 100,000; $$$ - 100,001 to 500,000; $$$$ - Over 500,000

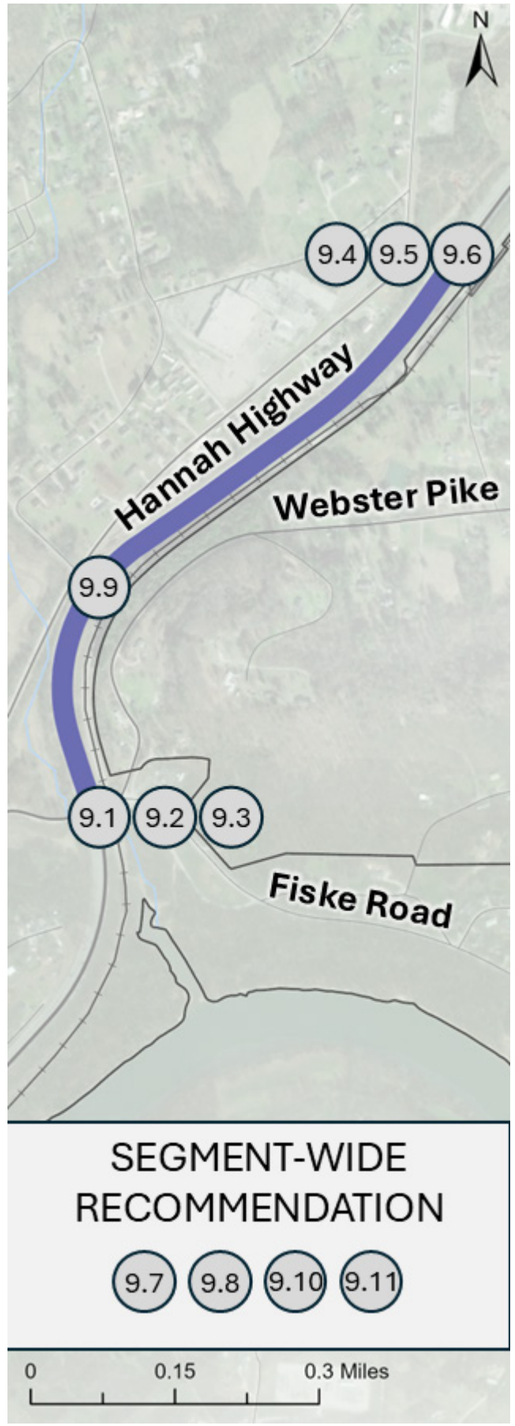
● FHWA Proven Safety Countermeasure
● Crash Modification Factors Countermeasure
● Vulnerable Road User Related Countermeasure
● Requires ROW Acquisition
● Requires Utility Relocation

Benefit Summary

- Railroad crossing gates act as a physical barrier between vehicles and an approaching train, significantly reducing the risk of train/vehicle collisions. Advance signage provides guidance and visibility to drivers approaching the crossing.
- High-friction surfaces help to minimize skidding and hydroplaning, particularly in wet conditions. Higher friction levels can also help reduce the impact speed, potentially decreasing the severity of injuries and vehicle damage. Applying high-friction surfaces in high-risk areas such as intersections, curves, pedestrian crossings, and steep gradients can significantly reduce crashes in these locations.
- High-Visibility Enforcement creates a strong deterrent effect against dangerous driving behaviors such as speeding, drunk driving, and distracted driving. The visible presence of law enforcement encourages drivers to comply with traffic laws.
- RPMs are highly reflective, making them visible in low-light conditions and during inclement weather. This helps drivers maintain lane discipline and navigate safely, especially at night.
- Speed feedback signs increase driver awareness of their speed, encouraging them to adhere to posted speed limits. This heightened awareness can lead to more consistent and safer driving behaviors
- Other speed-reducing countermeasures make it clear to drivers that lower speeds are expected and required. Safer speeds have been shown to lead to lower crash severity, increased driver reaction time, enhanced pedestrian and cyclist safety, and environmental benefits.



Recommended Countermeasures



Hannah Highway
from N Roane Street to City Limits

HARRIMAN
SAFE STREETS