MARCH 2026
Revised August 2026

MEMPHIS SAFETY ACTION PLAN

Prepared for the City of Memphis, Tennessee

Prepared by Kimley-Horn & Associates, Inc.

REVISIONS

- Table 2.9: HIN Intersections Based On KA Pedestrian Crash Frequency - Removed duplicate rows (May 2026)
- Replaced draft Executive Order with signed Executive Order (August 2026)

Prepared For:

MEMPHIS SAFETY ACTION PLAN

Prepared By:

Kimley»Horn

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DISCLAIMER

23 United States Code Section 407

Discovery and admission as evidence of certain reports and surveys

Notwithstanding any other provision of law, reports, surveys, schedules, lists, or data compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential accident sites, hazardous roadway conditions, or railway-highway crossings, pursuant to sections 130, 144, and 148 of this title or for the purpose of developing any highway safety construction improvement project which may be implemented utilizing Federal-aid highway funds shall not be subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.

STEERING COMMITTEE MEMBERS

- City of Memphis Engineering
- Memphis and Shelby County Division of Planning & Development
- City of Memphis Police Department
- City of Memphis Fire Department
- Memphis Area Transit Authority (MATA)
- Downtown Memphis Commission (DMC)
- Innovate Memphis
- Memphis Medical District Collaborative (MMDC)
- Explore Bike Share
- The Heights Community Development Corporation (CDC)
- Memphis and Shelby County Community Redevelopment Agency (CRA)
- Hyde Family Foundation
- Memphis Hightailers Club & Foundation
- Hospitality Hub

PROJECT TEAM MEMBERS

The Carter Malone Group LLC
DRIVEN. TRUSTED. PROVEN.

Kimley»Horn

TOOLE DESIGN

OHM Advancing Communities

Mayor Young Executive Order

City of MEMPHIS TENNESSEE

PAUL A. YOUNG
MAYOR

CITY OF MEMPHIS, TENNESSEE

EXECUTIVE ORDER ADOPTING THE MEMPHIS SAFETY ACTION PLAN AND COMMITMENT TO SAFE STREETS AND ROADS FOR ALL

WHEREAS, the City of Memphis is committed to protecting human life and recognizes that traffic fatalities and serious injuries are preventable; and

WHEREAS, roadway crashes resulting in death and serious injury represent a critical public health, safety, and equity challenge affecting all roadway users across the City of Memphis; and

WHEREAS, the United States Department of Transportation ("USDOT") awarded federal funding to the City of Memphis to develop a comprehensive action plan consistent with the USDOT's Safe Streets and Roads for All program ("SS4A") requirements; and

WHEREAS, the City of Memphis commissioned the development of such a safety action plan, which was published on March 31, 2026; and

WHEREAS, said safety action plan is titled the Memphis Safety Action Plan; and

WHEREAS, the Memphis Safety Action Plan establishes a comprehensive, data driven, and community informed framework to significantly reduce traffic fatalities and serious injuries for all roadway users across the City of Memphis; and

WHEREAS, the Memphis Safety Action Plan was developed through a data-driven and community-informed process that included, (1) the analysis of five years of crash trends covering the periods of 2019-2023; (2)the development of a High Injury Network (an identification of roadway segments and intersections with the highest concentrations of fatal and serious injury crashes); (3) public and stakeholder engagement; and (4) the selection of proven safety countermeasures and strategies; and

WHEREAS, the Memphis Safety Action Plan establishes clear goals, including interim targets for reducing fatal and serious injury crashes and an eventual goal of eliminating roadway fatalities and serious injuries; and

WHEREAS, effective implementation of the Memphis Safety Action Plan requires sustained leadership commitment, cross-departmental coordination, accountability, and transparency;

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NOW, THEREFORE, I, Paul A. Young, Mayor of the City of Memphis, Tennessee by virtue of the executive and administrative authority vested in me by the Home Rule Charter of the City of Memphis, do hereby direct and order as follows:

1. The Memphis Safety Action Plan, dated March 31, 2026, is hereby formally adopted as the City of Memphis's official roadway safety framework and safety action plan for purposes of the SS4A program and related federal, state, and local transportation safety initiatives.

2. The City of Memphis hereby makes a public and enduring commitment to the following goals with the eventual goal of eliminating roadway fatalities and serious injuries:
   - By 2030, a 10% reduction in all fatal and serious injury crashes.
   - By 2035, a 25% reduction in all fatal and serious injury crashes and a 50% reduction in Vulnerable Road User fatal and serious injury crashes.
   - By 2045, a 50% reduction in all fatal and serious injury crashes and a 75% reduction in Vulnerable Road User fatal and serious injury crashes.

3. All divisions of City government shall integrate the Memphis Safety Action Plan into policies, programs, and capital investments, by establishing a working group comprised of a representative from all Divisions of the City of Memphis responsible for maintenance of the public right-of-way, law enforcement and public safety. The working group shall identify and seek the allocation of capital improvement funds to target those areas identified by the Memphis Safety Action Plan as included in the High Injury Network.

4. The City of Memphis will create a Safe Streets Coordinator role which shall oversee and be accountable for implementation of the Memphis Safety Action Plan and any required reporting related thereto.

5. The City shall publicly report progress and update safety data annually, at https://memphissafetyactionplan.com/..

Upon signature, this order shall become effective.

Paul A. Young, Mayor, City of Memphis

Executed this 27th day of July, 2026

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INTRODUCTION

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2 Introduction

The Memphis Safety Action Plan (SAP) provides a strategic framework for preventing roadway fatalities and serious injuries for all road users in the City of Memphis, Tennessee. The purpose of the plan is to identify road safety countermeasures and strategies that lead to effective implementation with an eventual goal of eliminating all fatal and serious injury crashes. In 2024, the City of Memphis was awarded federal funding to develop the Memphis SAP to establish a comprehensive and well-defined strategy to prevent fatal and serious injury crashes.

Safe Streets and Roads for All (SS4A) Program

The SS4A Program was established by the Bipartisan Infrastructure Law (BIL) to fund planning and implementation projects for local and regional organizations with the overall goal of preventing roadway deaths and serious injuries. The program is guided by the U.S. Department of Transportation's (USDOT) National Roadway Safety Strategy and Safe System Approach. As a result, SS4A prioritizes all types of road users with an emphasis on redundant layers of protection to both prevent crashes and minimize the harmful outcomes of crashes.

Safety Action Plan Components

To fulfill the purposes of the SS4A program, a SAP includes the following components:

1. **Leadership Commitment and Goal Setting**
   The governing body should make a public commitment to an eventual goal of eliminating roadway fatalities and serious injuries. This goal can establish a target date for achieving zero roadway fatalities and serious injuries or establish a target date for an ambitious reduction with an eventual goal of achieving zero roadway fatalities and serious injuries.

2. **Planning Structure**
   A group of members committed to overseeing the development, implementation, and monitoring of the Action Plan.

3. **Safety Analysis**
   An analysis of historical crash data and existing conditions to identify trends related to fatal and serious injury crashes across the study area. This analysis considers contributing factors to crash events and detailed crash data elements, such as severity, sequence of events, road user type, and weather conditions. A location-specific and systemic crash analysis identifies specific safety needs by location and across the study area. The analysis results in a geospatial identification of a High Injury Network (HIN) that identifies locations with the highest fatalities and serious injuries.

4. **Engagement and Collaboration**
   Engagement with the public and relevant stakeholders across public and private sectors is conducted to collect representative community input. Collaboration between involved stakeholders and the governing body is conducted to ensure effective coordination with existing plans and processes. Information received during this process is included in the Action Plan.

5. **Policy and Process Changes**
   Existing policies and processes are assessed to identify potential improvements that would better prioritize roadway safety. New or revised policies or processes are proposed for implementation.

6. **Strategy and Project Selections**
   A list of strategies and projects are identified by the preceding Action Plan Components. The strategies and projects are consistent with the USDOT's Safe System Approach and prioritize multidisciplinary efforts to improve roadway safety. Prioritization of strategies and projects is conducted to provide strategic implementation timeframes.

7. **Progress and Transparency**
   Outcome data is used to measure progress toward the project's goal. At minimum, the Action Plan's outline and resulting progress reports should be publicly posted each year.

Memphis SAP Development Process

The Memphis SAP was developed by a project team consisting of City of Memphis staff and consultants to give the City a well-defined strategy to reduce fatal and serious injury crashes. The Memphis SAP was developed in line with the SS4A program's components of a SAP.

The Memphis SAP was driven by data, through closely analyzing crash data from 2019 through 2023 and the development of a citywide High Injury Network (HIN). The HIN, detailed in the HIN Analysis section, identifies roadway segments and intersections within the city's transportation network that have the highest frequency of fatal and serious injury crashes. Establishing a HIN enables safety improvements to focus on road segments and intersections that are historically causing the most harm to roadway users, thereby guiding future project implementation and safety efforts.

Extensive public and stakeholder engagement, as detailed in the Public Engagement section, was performed with the goal of identifying areas of transportation safety concern within the community that could also be incorporated into the Plan's priorities. This safety analysis along with public and stakeholder input helped establish and prioritize locations where the use of transportation safety countermeasures, detailed in the Countermeasures and Strategies section, can be most effectively implemented to reduce fatal and serious injury crashes. Systemic improvements, which are improvements that can be widely implemented based on high-risk features that are correlated with particular types of crashes, were also identified for the City. Details can be found in the Systemic Analysis section. To encourage continued investments in safety improvements, safe designs, and safe operation of the system, the SAP also recommends policies that can be implemented to influence safer streets and roads. Additional information can be found in the Countermeasures and Strategies section.

SS4A Self Certification Activity		Found In Chapter(s)
1	Leadership Commitment and Goal Setting	Introduction (pg. 6)
2	Planning Structure	Introduction (pg. 4)
3	Safety Analsis	HIN Analysis (pg. 10)
4	Engagement and Collaboration	Public Engagement (pg. 29)
5	Policy and Process Selections	Plan and Policy Review (pg. 71)
6	Identify Projects and Strategies	Countermeasures and Strategies (pg. 60)
7	Progress and Transparency	Implementation (pg. 72)
8	Action Plan Date	Adopted by Executive Order in March 2026

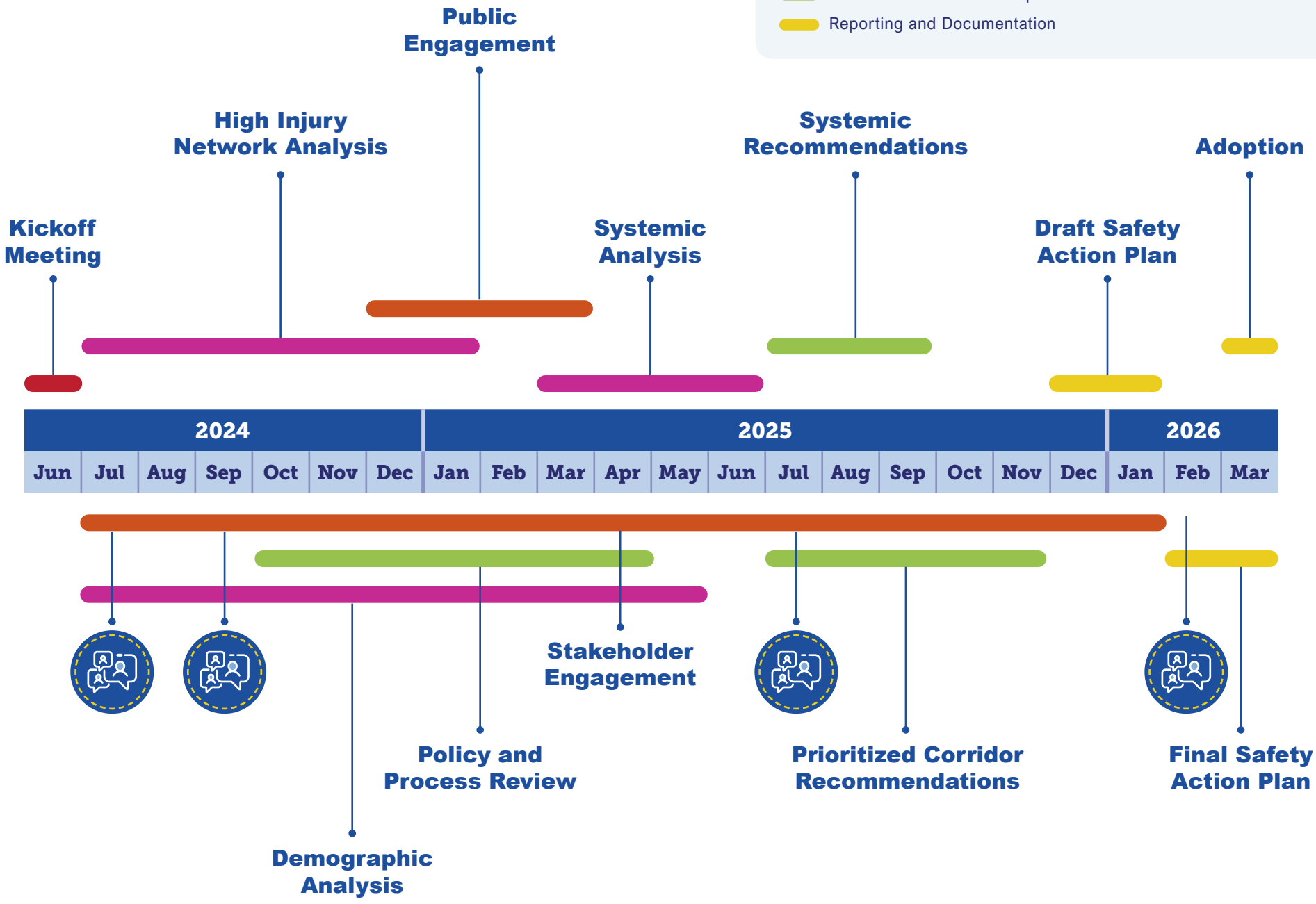
The following table presents the timeline for the Memphis SAP process:

PHASE KEY

- Data Collection And Analysis
- Demographics and Engagement
- Recommendations Development
- Reporting and Documentation

ICON KEY

Stakeholder meetings



PROJECT TEAM

A project team was established and tasked with overseeing development, implementation, and monitoring of the Memphis SAP. The Project Team represents a variety of organizations and agencies across all modes of roadway safety and represent a group of multi-disciplinary professionals. Members of the Project Team represent Carter Malone Group, Kimley-Horn, OHM Advisors, Toole Design, and City of Memphis Departments such as Bike and Pedestrian Program, Division of Planning and Development, Police, and Traffic Engineering. This project team will be designated as stakeholders of the Memphis SAP.

Goals and Guiding Principles

To carry out its purpose, the City of Memphis commits to the following progression of goals with the ultimate goal of zero fatalities and serious injuries on the road network:

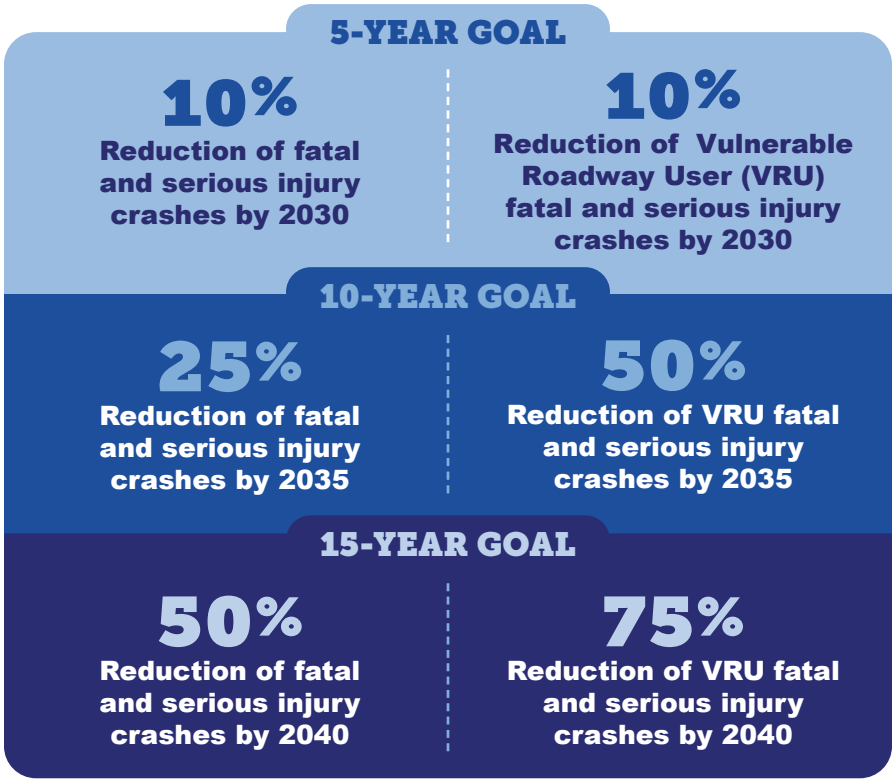


FIGURE 1.1: The City of Memphis' Progression of Goals

SAFE SYSTEM APPROACH

The Safe System Approach was pioneered in the 1990s by Swedish road safety expert, Claes Tingvall. The Safe System Approach is the framework and mechanism by which this SAP can be implemented. There are six key principles that can be utilized to implement the Safe System Approach:

Death or Serious Injury is Unacceptable – Focusing attention on preventing fatal and severe crashes over minor crashes so residents are better protected on the City's roads.

Humans Make Mistakes – Human error is inevitable, inevitably leading to crashes, but a roadway system that accounts and accommodates for this fact can mitigate the effects (avoiding serious injury or death).

Humans are Vulnerable – Human tolerance to crashes is a recognized and measurable benchmark (e.g., kinetic energy transfer can be measured) and should be incorporated into design considerations.

Responsibility is Shared – No single party is responsible for crash prevention alone, but collectively all parties are responsible. This includes transportation designers and engineers, users, law enforcement, vehicle manufacturers, and publicly appointed decision makers.

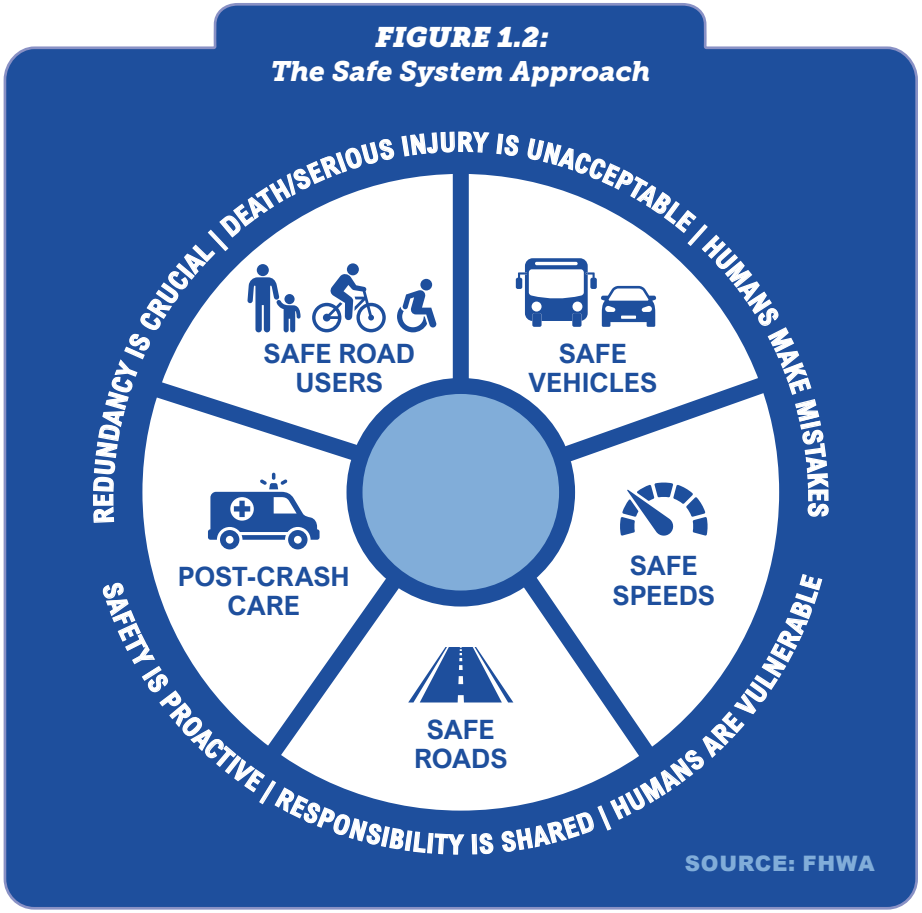
Safety is Proactive – Rather than responding to tragedy, measures should be taken beforehand to identify and mitigate potential risks.

Redundancy is Crucial – Affecting change requires strengthening of all Safe System elements. In the case that one element fails, redundancy prevents systemwide failure, ensuring people are protected.

SOURCE: FHWA

A principle-based approach intended to eliminate serious and fatal injuries, the Safe System Approach relies on accommodating human mistakes and keeping potential impacts on the human body at tolerable levels. Accommodation for human mistakes can be accomplished through roadway design features and technological advancements in vehicles (e.g., lane departure assist, autonomous emergency breaking, etc.) Efforts to mitigate the physical impacts on the human body include reducing speeds, physically separating automobiles from alternative mode users, as well as technological advancements in vehicles. There are five complementary objectives outlined by the USDOT that correspond and support implementation of the Safe System Approach as provided in ***FIGURE 1.2***.

FIGURE 1.2:
The Safe System Approach



Safe Road Users bear the burden of responsibility for complying with the rules and regulations of the roadway.

Safe Vehicles are responsible for mitigating or preventing the potential impacts of crashes. Active safety measures can help prevent crashes from occurring, while passive measures can lessen implications of a crash.

Safe Speeds have a direct correlation with increased rate of survival in crashes. Reducing speeds reduce impact, improve visibility, and afford drivers additional braking time.

Safe Roads are not defined by their design alone. Rather, the road design, construction, maintenance, operation, and countermeasures work collaboratively to improve safety.

Post-Crash Care accounts for the actions of those that respond to a crash, whether it be emergency services, law enforcement, or clean up.

FIRST HORIZON
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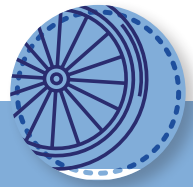
YMCA
GARAGE

2

HIGH INJURY NETWORK ANALYSIS



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2 High Injury Network (HIN) Analysis

The Components of the HIN Analysis are:

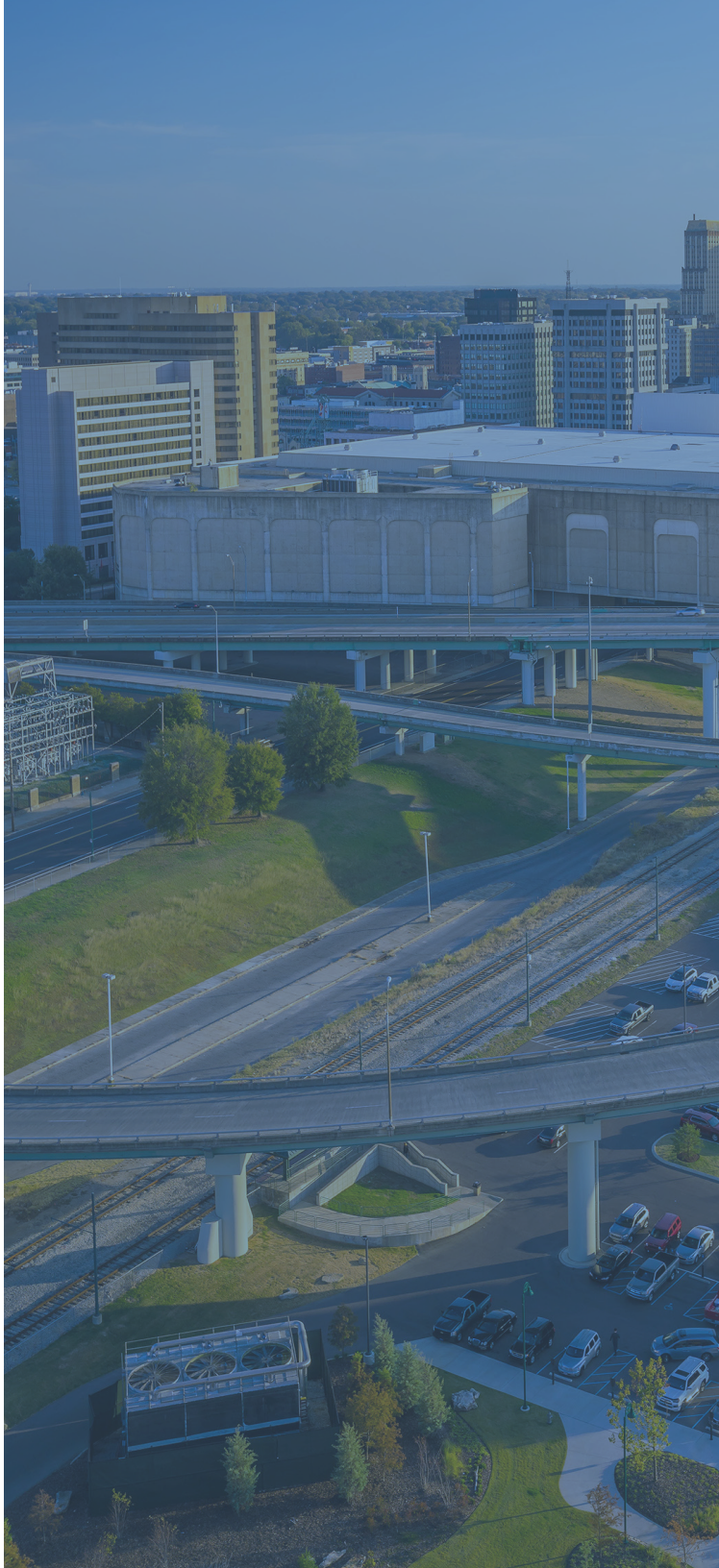
- Data Collection
- Citywide Crash Data Analysis
- Targeted Crash Analysis
- High Injury Network

This chapter summarizes the safety and HIN analysis for the Memphis SAP. One of the primary activities within a SAP is to analyze crash data and identify key trends, as well as locations, that suffer from a higher frequency of fatalities and risk of injury. These locations are then studied and recommendations for projects that would significantly reduce crash frequency are identified. Analysis of crash data related to safety is paramount to identifying the needs of the City of Memphis and the travelling public.

The HIN analysis aims to assess the existing conditions and historical trends that describe the baseline roadway safety conditions in Memphis, TN. All road users, vehicles and non-motorists, were considered throughout the HIN analysis process. The HIN analysis also considers all crash severities; however, fatal crashes (K), suspected serious injury crashes (A), pedestrian-related crashes, and bicycle-related crashes were analyzed with more detail to emphasize areas with more dangerous conditions for vehicles and non-motorists.

Data Collection

Crash data was obtained from Tennessee Department of Transportation's (TDOT) AASHTOWare Safety1 online crash database for all crashes occurring in the City of Memphis from January 1, 2019, through December 31, 2023. Crash data spanning the year 2024 had not been processed by TDOT at the time of this project's safety analysis. This five-year crash data set was reviewed to identify any data reporting issues related to crash locations and other significant crash report elements. The accuracy, uniformity, and completeness of crash reports greatly affect the ability to provide effective safety results and conclusions. Additionally, volume data for City of Memphis road segments was obtained from Replica's Annual Average Daily Traffic (AADT) Network Explorer volume data. Additional map data was pulled from various GIS databases available online such as TDOT Geospatial Data, Shelby County GIS Hub, and City of Memphis Data Hub.



One of the most crucial classifications of the crash data set is the crash severity. The crash severity identifies whether a crash event is life-threatening or not. Originally developed by the National Safety Council (NSC), the KABCO Injury Classification Scale is a common system used to categorize injury severity resulting from vehicular crash events. The State of Tennessee and City of Memphis utilize the following KABCO injury classification scale with definitions provided by the Federal Highway Administration (FHWA):

(K) FATAL INJURY

- Any injury that directly results in the death of a living person within 30 days of a motor vehicle crash.

(A) SUSPECTED SERIOUS INJURY

- **Incapacitating Injury:** Any injury other than a fatal injury, which prevents the injured person from walking, drlving, or normally continuing the activities the person was capable of performing before the injury occurred
- **Inclusions:** Severe lacerations, broken or distorted limbs, skull or chest injuries, abdominal injuries, unconsciousness at or when taken from the scene, unable to leave the scene without assistance, and others.
- **Exclusions:** Momentary unconsciousness, and others.

(B) SUSPECTED MINOR INJURY

- **Non-Incapacitating Injury:** Any injury other than a fatal injury or an incapacitating injury, which is evident to observers at the scene.
- Inclusions: Lump on head, abrasions, bruises, minor lacerations, and others.
- Exclusions: Limping (the injury cannot be seen) and others.

(C) POSSIBLE INJURY

- **Possible Injury:** Any injury reported or claimed which is not a fatal injury, incapacitating injury or non-incapacitating evident injury.
- Inclusions: Momentary unconsciousness, claim of injuries not evident, complaint of pain, limping, nausea, hysteria, and others.

(O) PROPERTY DAMAGE (PDO)

- **No Apparent Injury, or Non-Injury:** No personal injury.
- Inclusions: Harm to wild animals, or birds, which have monetary value and others.
- Exclusions: Mechanical failure during normal operation, such as tire blowout, broken fan belt or axle

Historical Crash Data Analysis

The historical crash data analysis focuses on trends in crash data over time. These trends help to determine baseline crash occurrence and identify realistic goals for improving safety. The five-year data set shows an average of approximately 27,375 total crashes per year, including an average of 593 fatal and/or serious injury crashes per year. The complete crash data set is summarized by severity and year in ***TABLE 2.1***. The fatal and serious injury crashes along with the trendlines are shown by year in ***FIGURE 2.1***.

TABLE 2.1: Severity of Crashes by Year

CRASH SEVERITY	YEAR					TOTAL
	2019	2020	2021	2022	2023	
Fatal (K)	110	196	198	190	207	**901**
Suspected Serious Injury (A)	349	426	438	414	435	**2,062**
Suspected Minor Injury (B)	4,501	2,495	787	672	566	**9,021**
Possible Injury (C)	1,462	3,112	5,055	4,807	4,980	**19,416**
No Apparent Injury (O)	23,657	19,884	21,689	20,833	19,412	**105,475**
Total	**30,079**	**26,113**	**28,167**	**26,916**	**25,600**	**136,875**

FIGURE 2.1: Fatal And Serious Injury Crashes (2019-2023)

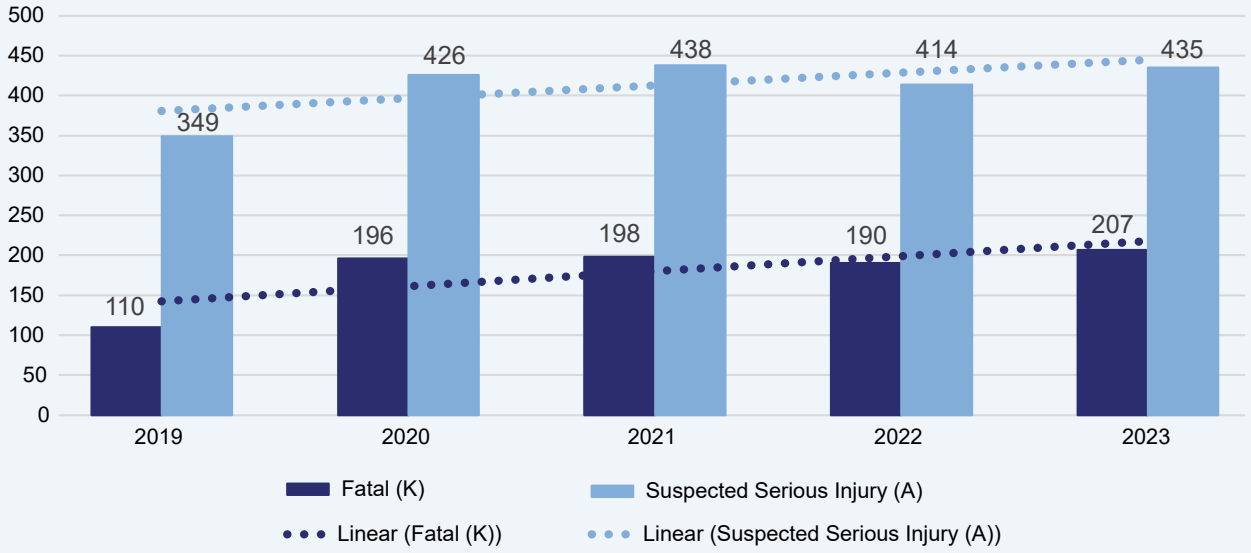


TABLE 2.2 shows a breakdown of the fatal and serious injury crashes by crash type and year. This table shows that the highest crash types in Memphis resulting in fatal and/or serious crashes are Single Vehicle, Angle, and Pedestrian.

Research conducted by the Federal Highway Administration (FHWA) indicates that crashes involving Vulnerable Road Users (VRUs) are among the most underreported types of traffic incidents. This underreporting highlights the need for improved data collection and reporting methodologies to better understand and address the safety challenges faced by VRUs.

TABLE 2.2: Fatal and Serious Injury Crashes by Crash Type

CRASH TYPE	YEAR										TOTAL
	2019		2020		2021		2022		2023		
	K	A	K	A	K	A	K	A	K	A	
Angle	34	136	65	188	73	185	57	176	75	181	**1,170**
Bicyclist	0	4	3	5	3	7	2	5	2	10	**41**
Head-On	9	27	17	25	27	27	15	33	18	24	**222**
Pedestrian	35	63	54	68	45	74	79	66	45	79	**608**
Rear-End	5	29	7	23	5	21	5	15	6	25	**141**
Sideswipe	1	8	2	4	5	5	3	5	3	5	**41**
Single Vehicle	60	138	104	167	85	184	108	162	101	183	**1,292**
Other	1	11	1	19	3	16	2	23	4	17	**97**

TABLE 2.3 shows a breakdown of the fatal and serious injury crashes by lighting condition. This table shows that approximately 55% of crashes occur during non-daylight conditions (i.e., Dark, Dark – Not Lighted, Dark – Lighted, Dusk, Dawn, and other). Proper lighting along roadways and at intersections can increase driver awareness and improve safety of the roadways and intersections.

TABLE 2.3: Fatal and Serious Injury Crashes by Lighting Conditions

LIGHTING	YEAR										TOTAL
	2019		2020		2021		2022		2023		
	K	A	K	A	K	A	K	A	K	A	
Dark-Lighted	59	130	111	154	94	163	114	148	107	179	**1,259**
Dark-Not Lighted	5	15	5	26	11	20	14	27	19	22	**164**
Dawn/Dusk	3	22	10	25	8	24	8	26	10	35	**171**
Daylight	40	174	65	210	83	225	53	205	69	192	**1,316**
Other	3	8	5	11	2	6	1	8	2	7	**53**

TABLE 2.4 shows a breakdown of the fatal and serious injury crashes by roadway surface conditions. Wet pavement can reduce traction and contribute to the frequency and severity of vehicle crashes. This table shows that approximately 14% of crashes occur during wet road surface conditions (i.e., Wet, Ice, Snow, and Other).

TABLE 2.4: Fatal and Serious Injury Crashes by Road Surface

ROAD SURFACE	YEAR										TOTAL
	2019		2020		2021		2022		2023		
	K	A	K	A	K	A	K	A	K	A	
Dry	94	293	168	355	177	370	167	358	168	376	**2,526**
Ice	0	0	0	0	0	1	0	1	1	0	**3**
Snow	0	0	0	0	0	2	0	0	0	1	**3**
Wet	14	55	28	55	19	62	22	52	38	54	**399**
Other	1	0	0	0	1	2	0	0	0	0	**4**

TARGETED CRASH ANALYSIS

The targeted crash analysis analyzes the geospatial location of crashes within the City of Memphis. Hot spots, defined by a higher concentration of data points relative to the rest of the study area, identify locations with the highest frequency of crashes.

A heat map helps to identify the density of crashes based on frequency and geospatial location. A data set including just fatal and serious injury crash severities in the City of Memphis from 2019 to 2023 shows the highest density of crashes along Shelby Dr., Lamar Ave., Hickory Hill Dr., And Ridgeway Rd. These hot spots are shown in the heat map in ***FIGURE 2.3***.

FIGURE 2.2: KA Crashes Heat Map

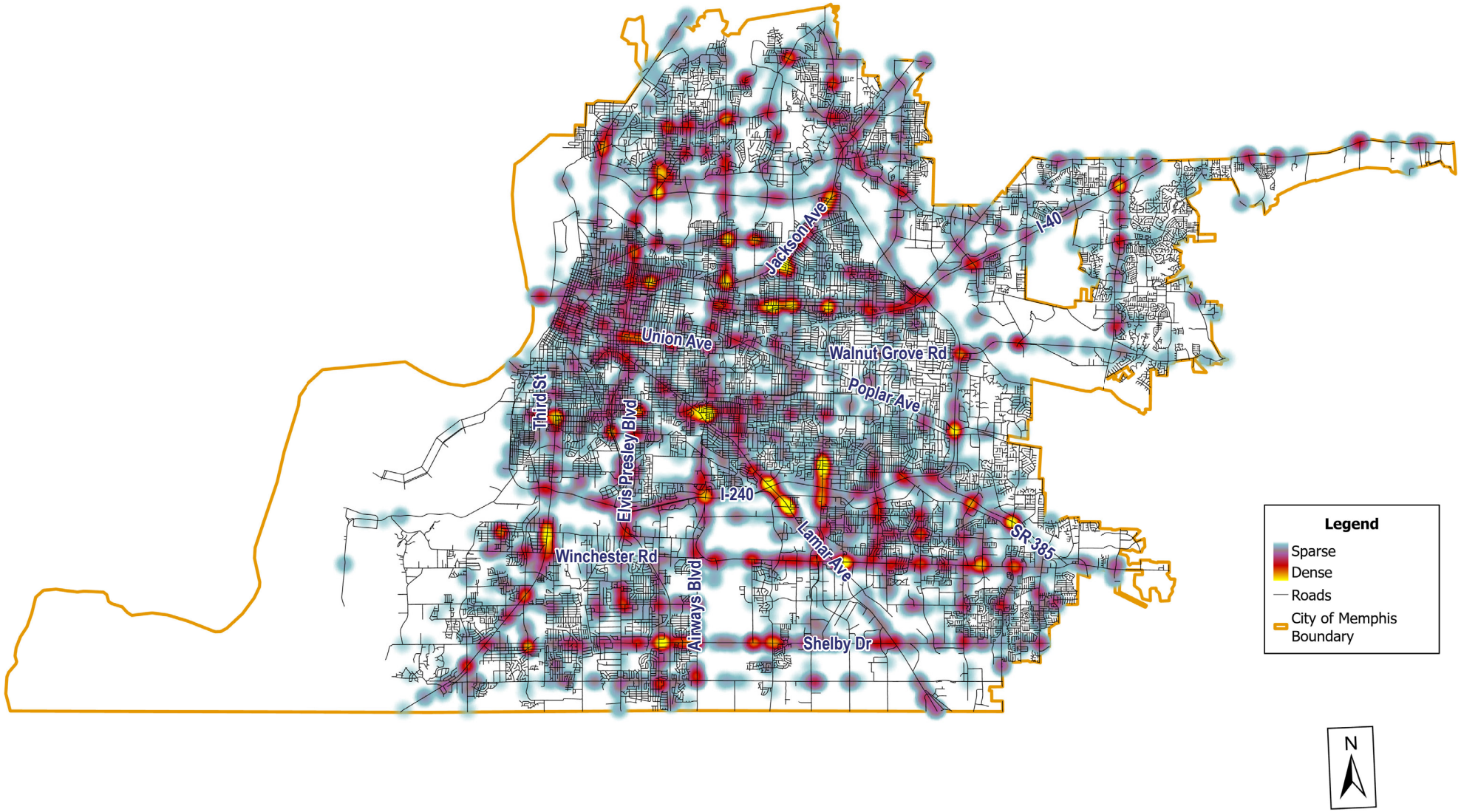


FIGURE 2.3: Pedestrian KA Crash Heat Map

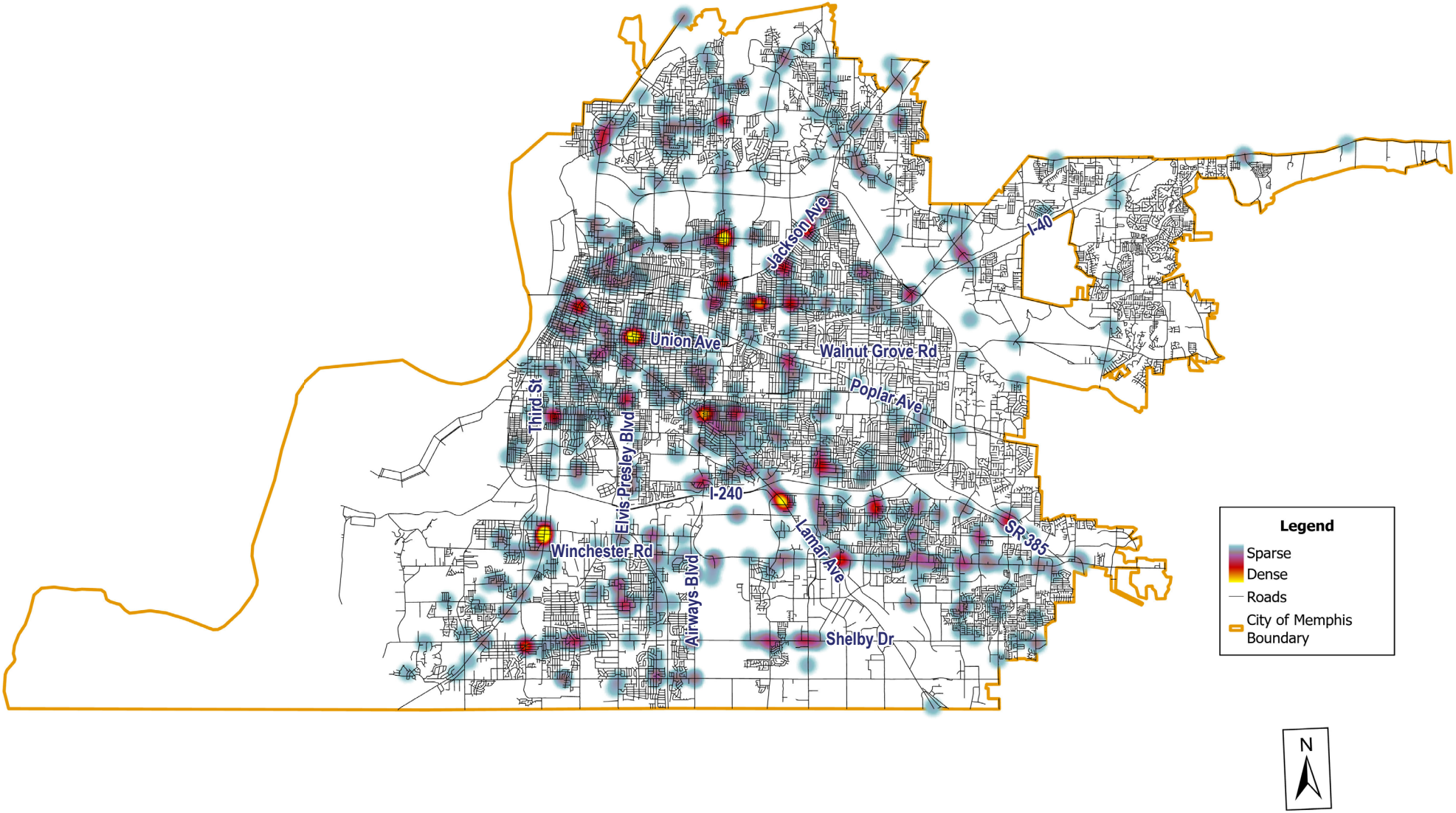
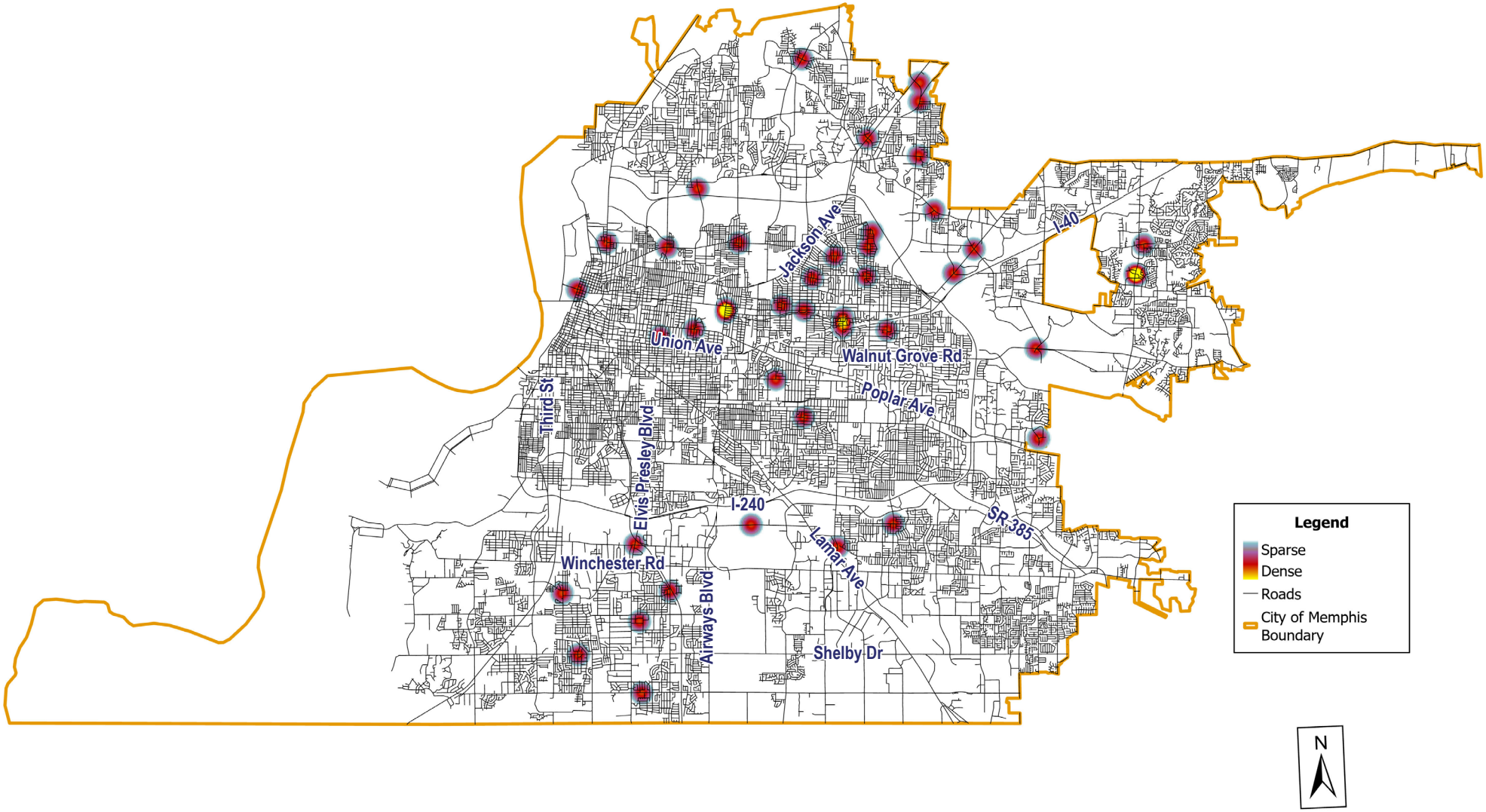


FIGURE 2.4: Bicycle Crash Heat Map



HIGH INJURY NETWORK

The geospatial identification of a HIN is a crucial part of the Memphis SAP. It utilizes a data-driven approach to identify locations with the highest fatal and serious injury crashes, pedestrian crashes, and bicyclist crashes as compared with other locations across the study area. The HIN is made up of a set of High Injury Segments and High Injury Intersections. HINs were developed for the following scenarios:

HINS Were Developed For The Following Scenarios:

All fatal and serious injury crashes

Pedestrian related fatal and serious injury crashes

Bicyclist related fatal and serious injury crashes

METHODOLOGY

Crashes with a severity of fatal or suspected serious injury and VRU related crashes were considered in the development of the HIN. The HIN was developed utilizing the following methodology:

1. **Spatial Join:** Base roadway lines provided by TDOT and the Memphis GIS database were geospatially mapped in a geographic information systems (GIS) database. Properties such as roadway functional classification and ADT were joined to the roadway lines. A nationwide transportation model, Replica, dataset based off crowd sourced location data was used to estimate ADT where traffic volumes were not publicly available. The crash dataset was overlayed with the roadway lines by geospatial mapping according to each crash event's reported latitude and longitude.

For the roadway segments, crashes were spatially joined to the closest roadway within a proximity of 25 feet. This produced a dataset of roadways with a corresponding count of fatal and serious injury crashes.

For intersections, crashes located within 200 feet of an intersection were spatially joined to the closest intersection by proximity.

THESE SPATIAL JOIN PROCESSES PRODUCED TWO DATA SETS:

- ☑ Roadway lines with the corresponding total, KA, pedestrian, and bicyclist crash information
- ☑ Intersection points with the corresponding total, KA, pedestrian, and bicyclist crash information

2. **Roadway Segmentation:** This segmentation process was determined by roadway attributes such as ADT, the provided segment identification number, and intersections with other roadways. Each of the resulting roadway segments represent a traveled way defined by unique road attributes that road users would experience while traveling on the segment. The resulting roadway segments have an average length of 0.36 miles.
3. **Ranking by Frequency:** The resulting segments which had more than three KA crashes, more than one pedestrian KA crash, or one bicyclist KA crash for each respective HIN analysis were included in the HIN.

The resulting intersections which had more than two KA crashes, more than one pedestrian KA crash, or one bicyclist KA crash were included in the HIN. The HIN intersections represent 22% of the total KA crashes, 54% of the total pedestrian KA crashes, and 100% of the bicycle KA crashes in the City of Memphis. ***FIGURE 2.5*** shows the Overall High Injury Network Segments and Intersections while ***FIGURE 2.6*** and ***FIGURE 2.7*** show the Pedestrian and Bicycle High Injury Networks, respectively. Segments and intersections included on the HINs are listed in ***TABLES 2.5*** through ***2.10***.

While the HIN covers 122 roadway miles or approximately 8% of the study area, it represents **50% of all KA crashes**, **27% of the pedestrian KA crashes**, and **100% of the bicycle KA crashes**. This shows that a focus on safety improvements to a relatively small portion of the network can have a large impact on safety and the reduction in crashes.

FIGURE 2.5: Overall High Injury Network Segments and Intersections

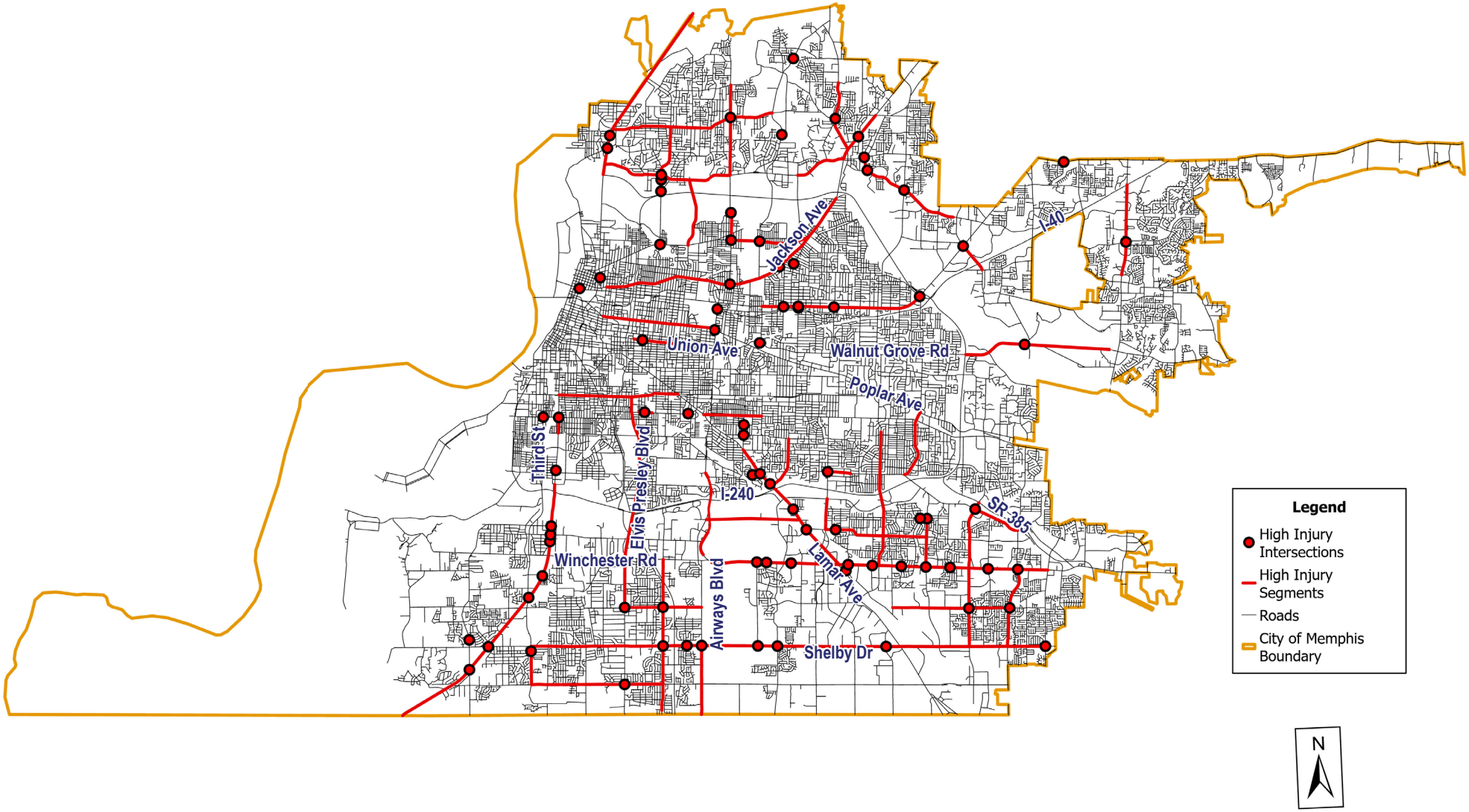


FIGURE 2.6: Pedestrian High Injury Network

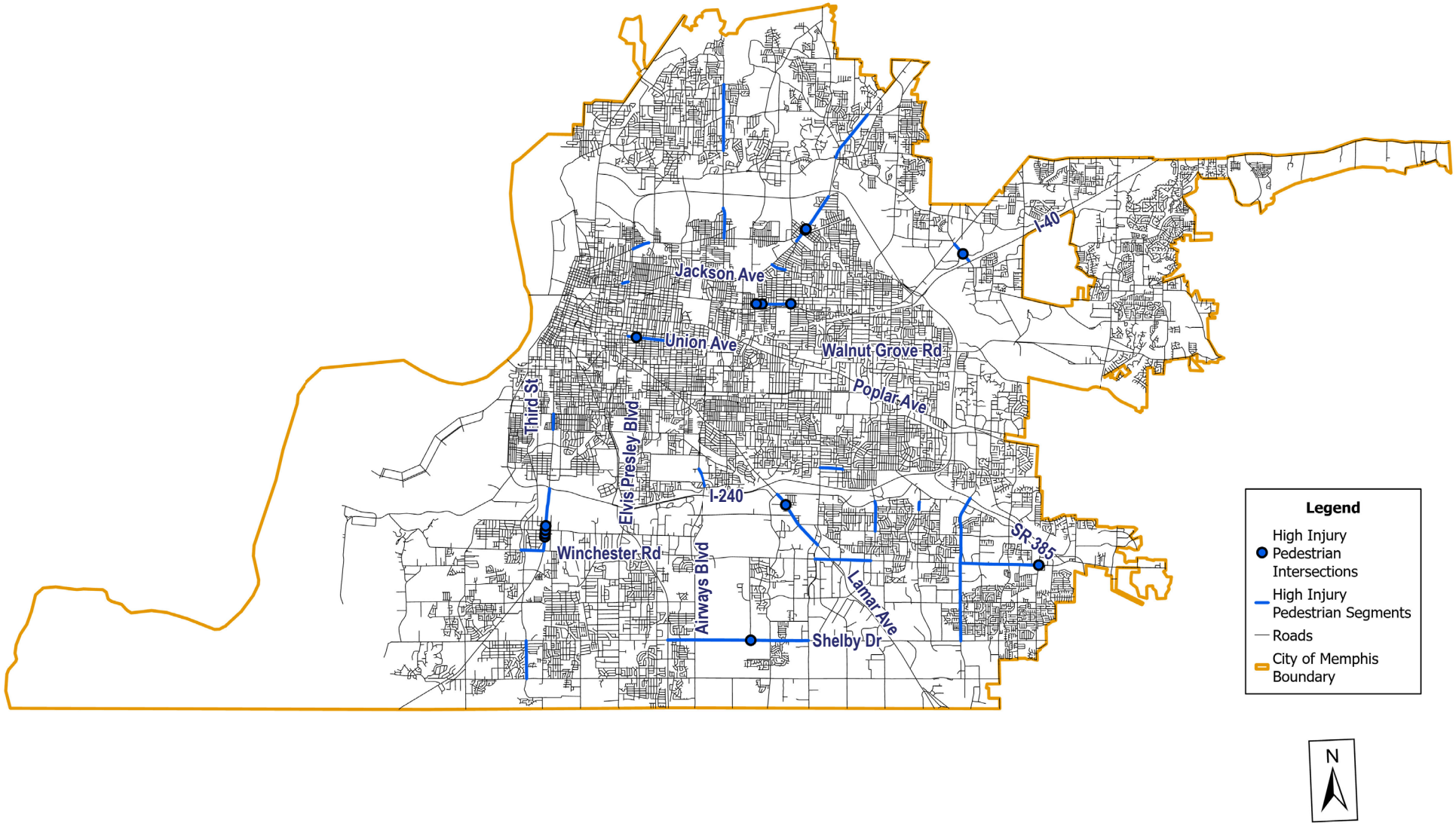


FIGURE 2.7: Bicycle High Injury Network

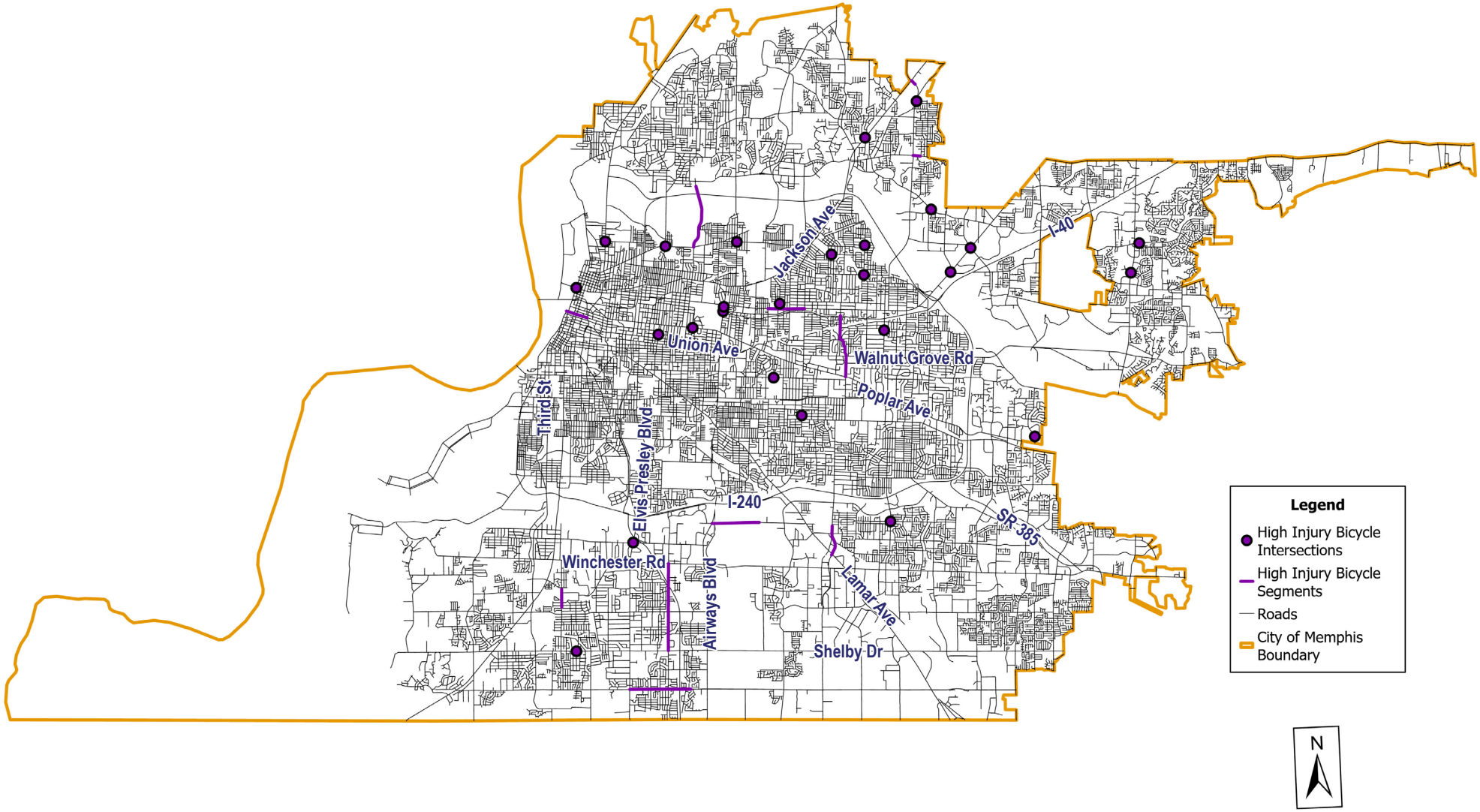


TABLE 2.5: HIN Segments Based On KA Crash Frequency

ROAD	From	To	Fatal & Serious Injury Crashes
Shelby Dr.	Airways Blvd.	Getwell Rd.	17
Lamar Ave.	American Way	New Getwell Rd.	16
Hickory Hill Rd.	Bill Morris Pkwy	Winchester Rd.	14
Winchester Rd.	Holly Circle	Old Getwell Rd.	13
S. Third St.	I-55	Winchester Rd.	13
Winchester Rd.	New Getwell Rd.	S. Perkins Rd.	13
Thomas St.	Watkins Street	I-40	11
Winchester Rd.	Hickory Hill Rd.	Riverdale Rd.	11
Austin Peay Hwy.	Yale Rd.	James Rd.	9
Jackson Ave.	I-40	National St.	9
E. Raines Rd.	Elvis Presley Blvd.	Airways Blvd.	8
S. Bellevue Blvd.	E. McLemore Ave.	Ball Rd.	8
Plough Blvd.	Democrat Rd.	Winchester Rd.	8
Walnut Grove Rd.	Humphreys Blvd.	N. Germantown Pkwy.	7
Perkins Rd.	American Way	Knight Arnold Rd.	7
Mill Branch Rd.	Winchester Rd.	E. Shelby Dr.	7
Raleigh-Lagrange Rd.	Stage Rd.	Covington Pike	7
Stage-Delano Ave.	I-55	N Hollywood St.	7
N. Watkins St.	Frayser Blvd.	Dupont Ave.	7
Democrat Rd.	Airways Blvd.	Business Park Dr.	7
Holmes Rd.	Horn Lake Rd.	Craigwood Dr.	7
Lamar Ave.	I-240	New Getwell Rd.	7
Union Ave.	S. Bellevue Blvd.	S. McLean Blvd.	6
Summer Ave.	Highland St.	I-40	6
Jackson Ave.	N Trezevant St.	Macon Rd.	6
Hickory Hill Dr.	Winchester Rd.	E. Shelby Dr.	6
Raines Rd.	Outland Rd.	Hickory Hill Rd.	6
Airways Rd.	E Shelby Dr.	Spirit of 76 Dr.	6
Shelby Dr.	Horn Lake Rd.	Elvis Presley Blvd.	6
Shelby Dr.	I-55	Airways Blvd.	6
Summer Ave.	N. Perkins Rd.	I-40	6
S. Third St.	Stateline Rd.	Weaver Rd.	6
Range Line Rd.	Saint Elmo Ave.	Whitney Ave.	6
Perkins Rd.	Dee Rd.	I-240	6
Range Line Rd.	Whitney Ave.	James Rd.	6
Plough Blvd.	I-240	Democrat Rd.	6
S. Third St.	S. Parkway E.	E. Person Ave.	6
Airways Blvd.	Memphis Depot Pkwy.	I-240	6
Shelby Dr.	Hickory Hill Rd.	N Watkins St.	5
Thomas St.	Stateline	Old Millington Rd.	5
Knight Arnold Rd.	Getwell Rd.	Castleman St.	5
Raleigh-Lagrange Rd.	Covington Pike	Sycamore View Rd.	5
Lamar Ave.	Kimball Ave.	I-240	5
Winchester Rd.	Outland Rd.	S Mendenhall Rd.	5
S. Third St.	Shelby Dr.	Horn Lake Rd.	5
Summer Ave.	Tillman St.	N. Highland St.	5
Shelby Dr.	Woodridge Dr.	I-55	5
Elvis Presley Blvd.	Ball Rd.	Springbrook Ave.	5
Southern Ave.	Latham St.	Lamar Ave.	5
Elvis Presley Blvd.	Craft Rd.	E. Raines Rd.	5
Airways Blvd.	Memphis Depot Pkwy.	Ketchum Rd.	5
Chelsea Ave.	Bryan St.	Jackson Ave.	5
Germantown Rd.	I-40	Cordova Rd.	4
Poplar Ave.	N Manassas St.	E Parkway	4
Frayser-Raleigh Rd.	N Watkins St.	New Allen Rd.	4
Kirby Pkwy.	Winchester Rd.	E Shelby Rd.	4
Shelby Dr.	Malone Rd.	Lamar Ave.	4
White Station Rd.	Poplar Ave.	Mount Moriah Rd.	4
Mt. Moriah Rd. Extd	Hickory Hill Rd.	Kirby Pkwy.	4
Prescott Rd.	Radford Rd.	Lamar Ave.	4
Elvis Presley Blvd.	Winchester Rd.	Craft Rd.	4
Mendenhall Rd.	Cottonwood Rd.	Winchester Rd.	4
Walnut Grove Rd.	I-240	Humphreys Blvd.	4
Ramill Rd.	Yale Rd.	Saint Elmo Ave.	4
James Rd.	N Highland St.	Jackson Ave.	4
Shelby Dr.	New Getwell Rd.	S Mendenhall Rd.	4
New Getwell Rd.	American Way	Comanche Rd.	4
Frayser Blvd.	Thomas St.	N. Watkins St.	4
N Hollywood St.	E. Bellmont Circle	Chelsea Ave.	4
Mill Branch Rd.	Shelby Dr.	Buxton Rd.	4
Shelby Dr.	Wild Plum Ct.	Getwell Rd.	4
Perkins Rd.	Knight Arnold Rd.	Winchester Rd.	4
Ramill Rd.	Yale Rd.	Jackson Ave.	4
S. Third St.	Weaver Rd.	W. Shelby Dr.	4
N. Mclean Blvd.	James Rd.	Chelsea Ave.	4
Horn Lake Rd.	W. Shelby Dr.	W. Holmes Dr.	4
New Willow Ave.	Getwell Rd.	Goodlett St.	4
S. Third St.	E. Industrial Ave.	I-55	4

TABLE 2.6: HIN Segments Based On KA Pedestrian Crash Frequency

ROAD	From	To	Fatal & Serious Injury Pedestrian Crashes
Winchester Rd.	New Getwell Rd.	S Perkins Rd.	6
Lamar Ave.	American Way	New Getwell Rd.	5
Jackson Ave.	I-40	National St.	4
Perkins Rd.	American Way	Knight Arnold Rd.	4
S. Third St.	S. Parkway E.	Person Ave	4
Shelby Dr.	I-55	Airways Blvd.	4
Shelby Dr.	Airways Blvd.	Getwell Rd.	3
Winchester Rd.	Hickory Hill Rd.	Riverdale Rd.	3
Hickory Hill Dr.	Winchester Rd.	E. Shelby Dr.	3
Hickory Hill Dr.	Mount Moriah Road Ext.	Winchester Rd.	3
Range Line Rd.	Saint Elmo Ave.	Whitney Ave.	3
S. Third St.	I-55	Winchester Rd.	3
Austin Peay Hwy.	James Rd.	Yale Rd.	3
Union Ave.	S. Bellevue Blvd.	S. McLean Blvd.	3
Horn Lake Rd.	W. Shelby Dr.	W Holmes Rd.	3
Summer Ave.	Tillman St.	N. Highland St.	3
N Hollywood St.	Blue Rd.	Chelsea Ave.	3
Shelby Dr.	Chevron Rd.	Getwell Rd.	3
New Willow Ave.	Getwell Rd.	S Goodlett St.	3
Chelsea Ave.	I-40	N Watkins St.	3
Mitchell Rd.	New Horn Lake Rd.	Third St.	2
Sycamore View Rd.	Summer Ave.	I-55	2
Airways Blvd.	Memphis Depot Pkwy	Ketchum Rd.	2
Macon Rd.	Jackson Ave.	National St.	2
Mendenhall Rd.	Meadowlake Dr. N.	Cottonwood Rd.	2
Jackson Ave.	Breedlove St.	N. Bellevue Blvd.	2

TABLE 2.7: HIN Segments Based On KA Bicycle Crash Frequency

ROAD	From	To	Fatal & Serious Injury Bicycle Crashes
Graham St.	Sam Cooper Blvd.	Poplar Ave.	2
Mill Branch Rd.	Winchester Rd.	E Shelby Dr.	1
N. Mclean Blvd.	James Rd.	Chelsea Ave.	1
Holmes Rd.	Elvis Presley Blvd.	Hudgins Rd.	1
Democrat Rd.	Airways Blvd.	Business Park Dr.	1
Summer Ave.	Tillman St.	N. Highland St.	1
New Getwell Rd.	Knight Arnold Rd.	Lamar Ave.	1
Adams Ave.	N Riverside Dr.	Danny Thomas Blvd.	1
Neely Rd.	E. Fairway Ave.	Bonita Dr.	1
Stage Rd.	Covington Pike	Canyon Rd.	1
New Covington Pk.	Austin Peay Hwy.	Covington Pike	1

TABLE 2.8: HIN Intersections Based On KA Crash Frequency

N-S STREET	E-W STREET	Fatal & Serious Injury Crashes
Swinnea Rd.	Shelby Dr.	10
Mill Branch Rd.	Shelby Dr.	9
New Allen Rd.	Ridgemont Rd.	8
Germantown Rd.	Dexter Rd.	8
Lamar Ave.	Pearson Rd.	8
S. Third St.	Horn Lake Rd.	7
Mill Branch Rd.	E. Raines Rd.	7
Boeingshire Dr.	Shelby Dr.	7
Swinnea Rd.	Winchester Rd.	7
Mendenhall Rd.	Winchester Rd.	7
Weaver Rd.	S. Third St.	6
S. Third St.	South Pkwy. E.	6
Hickory Hill Dr.	Raines Rd.	6
Hollywood St.	Jackson Ave.	6
Summer Ave.	White Station Rd	6
S. Third St.	E. Peebles Rd., Peebles Rd.	6
Getwell Rd.	New Willow Ave.	6
Coleman Rd.	Stage Rd.	6
S. Third St.	Brooks Rd.	6
Airways Rd.	Shelby Dr.	6
Austin Peay Hwy.	Coleman Rd.	6
Warfod St.	Chelsea Ave.	5
N. Hollywood St.	Chelsea Ave.	5
S. Third St.	Shelby Dr.	5
S. Third St.	Rollins Rd.	5
S. Third St.	Fairway Ave.	5
Holmes St.	Summer Ave.	5
Thomas St.	Whitney Ave.	5
Graham St.	Summer Ave.	5
Clarke Rd.	Winchester Rd.	5
Elvis Presley Blvd.	E. Raines Rd.	5
Ramill Rd.	Yale Rd.	5
Prescott Rd.	Lamar Ave.	5
Tchulahoma Rd.	Shelby Dr.	5
Ridgeway Rd.	Winchester Rd.	5
S. Cleveland St.	Union Ave	5
Covington Pk.	Raleigh-Lagrange Rd.	5
Farm Rd.	Walnut Grove Rd.	5
Mendenhall Rd.	Cottonwood Rd.	5
Lake Park Dr.	Winchester Rd.	5
Worthington St.	South Pkwy E.	4
Florida St.	South Pkwy. W.	4
Hoover Dr.	Raleigh-Lagrange Rd.	4
Ashwood St.	Knight Arnold Rd.	4
S. Third St.	E. Gage Ave.	4
N. Hollywood St.	Blue Rd.	4
Thomas St.	Cindy Ln.	4
Tillman St.	Walnut Grove Rd.	4
Elvis Presley Blvd.	Holmes Rd.	4
Pendelton St.	Barron Ave.	4
N. Watkins St.	Delano Ave.	4
S. Third St.	E. Mclemore Ave.	4
N. Watkins St.	Overton Crossing Rd.	4
N. Highland St.	Summer Ave.	4
Jackson Ave.	Macon Rd.	4
Clearbrook St.	Winchester Rd.	4
Range Line Rd.	Frayser Blvd.	4
N. Watkins St.	Chelsea Ave.	4
Semmes St.	Lamar Ave.	4
Pleasant Hill Rd.	Shelby Dr.	4
Knight Arnold Rd.	Lamar Ave.	4
Kirby Pky.	Raines Rd.	4
Riverdale Rd	Shelby Dr.	4
Kirby Pkwy.	Winchester Rd.	4
East Pkwy. N.	Poplar Ave.	4
Hickory Hill Dr.	Mt. Moriah Rd. Extd.	4
Summer Ave.	Sycamore View Rd.	4
East Pkwy. N.	Sam Cooper Blvd.	4
Covington Pk.	Pleasant View Rd.	4
Bishops Bridge Rd.	Winchester Rd.	4
Goodlet Rd.	Winchester Rd.	4
Knight Rd.	Winchester Rd.	4
Weaver Rd.	Parkrose Ave.	3
Castleman St.	Cottonwood Rd.	3
Pendelton St.	Deadrick Ave.	3
National St.	Buchanan Ave.	3
Southwall St.	Semmes St.	3
N. Highland St.	Forrest Ave.	3
Horn Lake Rd.	Falls Rd., Hewlett Rd.	3
New Allen Rd.	Allen Rd.	3
Dunnavant St.	South Pkwy. E.	3
N. Third St.	A.W. Willis Ave.	3
Dormedary Dr., Santa Valley St.	Us-Hwy 64	3
Thomas St.	Looney Ave.	3
N. Watkins St.	Ontario Ave.	3
Lamar Ave.	Goodlett Rd.	3

TABLE 2.9: HIN Intersections Based On KA Pedestrian Crash Frequency

N-S STREET	E-W STREET	Fatal & Serious Injury Pedestrian Crashes
S. Third St.	Rollins Rd.	5
S. Cleveland St.	Union Ave.	4
Lamar Ave.	Pearson Rd.	3
Swinnea Rd.	Shelby Dr.	2
Riverdale Rd.	Winchester Rd.	2
S. Third St.	Biscayne Rd.	2
S. Third St.	Brooks Rd.	2
S. Third St.	Eastman Rd.	2
Baltic St.	Summer Ave.	2
N. Highland St.	Summer Ave.	2
Franklin St.	Summer Ave.	2
Sycamore View Rd.	Shelby Oaks Dr. N.	2
Jackson Ave.	Orchi Rd.	2

TABLE 2.10: HIN Intersections Based On KA Bicycle Crash Frequency

N-S STREET	E-W STREET	Fatal & Serious Injury Pedestrian Crashes
Germantown Rd.	Club Pkwy.	2
Hodge Rd.	Shelby Dr.	1
Elvis Presley Blvd.	Brooks Rd.	1
Perkins Rd.	Cottonwood Rd.	1
Kirby Rd.	Great Oaks Rd.	1
S. Highland St.	Douglass St.	1
Lafayette St.	Central Ave.	1
Mc Neil St.	Court Ave.	1
Perkins R. Extd.	S. Erwin Dr.	1
Kenilworth St., N. Tucker St.	Poplar Ave.	1
East Pkwy. N.	Sam Cooper Blvd.	1
East Pkwy. N.	Forrest Ave.	1
Pope St.	Pacific Ave.	1
N. Front St.	A.W. Willis Ave	1
Waring Rd.	Macon Rd.	1
Summer Ave.	Bartlett Rd., Shelby Oaks Dr. N.	1
Wrenwood St.	Bayliss Rd.	1
Sycamore View Rd.	Summer Ave.	1
N. Watkins St.	Chelsea Ave.	1
Wells Station Rd.	Westover Ave.	1
Bonnie Ln.	Dexter Rd.	1
N. Hollywood St.	Chelsea Ave.	1
Thomas St.	Firestone Ave.	1
Raleigh-Lagrange Rd.	Elmore Rd.	1
Coleman Rd.	Austin Peay Hwy.	1
Covington Pk.	Downs Dr.	1

DEMOGRAPHIC ANALYSIS

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3 Demographic Analysis

Underserved communities are more likely to shoulder the burdens of the transportation system or have benefits of the system withheld due to the ongoing effects of past policies and investment patterns. This results in disparate transportation experiences and a transportation system that meets the needs of some but does not meet the needs of others. For the City of Memphis to address transportation safety holistically, it must respond to the needs of those with fewer transportation choices and greater barriers to mobility. A full copy of the Demographic Analysis for the City of Memphis SAP can be found in **Appendix A.**

Equity considerations were a required component of a SAP when development of the Memphis SAP began. However, the SS4A Program and its required components for a SAP were updated in the March 2025 SS4A Notice of Funding Opportunity (NOFO). This update removed the requirement of the Equity Consideration component but notes that equitable investment in the safety needs of underserved communities is still a priority of the SS4A Program. The 2025 NOFO states that "Underserved Community will use the same definition as Areas of Persistent Poverty for the purposes of this NOFO." Therefore, Areas of Persistent Poverty data is analyzed in the Memphis SAP.

Federal Data Analyses

To support the SAP, the demographic analyses began with a review of US Department of Transportation (USDOT) data on underserved communities. USDOT defines underserved communities as "areas of persistent poverty," meaning counties that have had 20 percent or more of the population living in poverty over the past 30 years, or census tracts with a poverty rate of at least 20 percent in American Community Survey data from the Census Bureau. Approximately 65 percent of the City of Memphis is within a USDOT-designated area of persistent poverty. However, 76 percent of fatal and serious injury crashes occurred in these areas, indicating that underserved communities are overrepresented when it comes to negative transportation safety outcomes in Memphis.

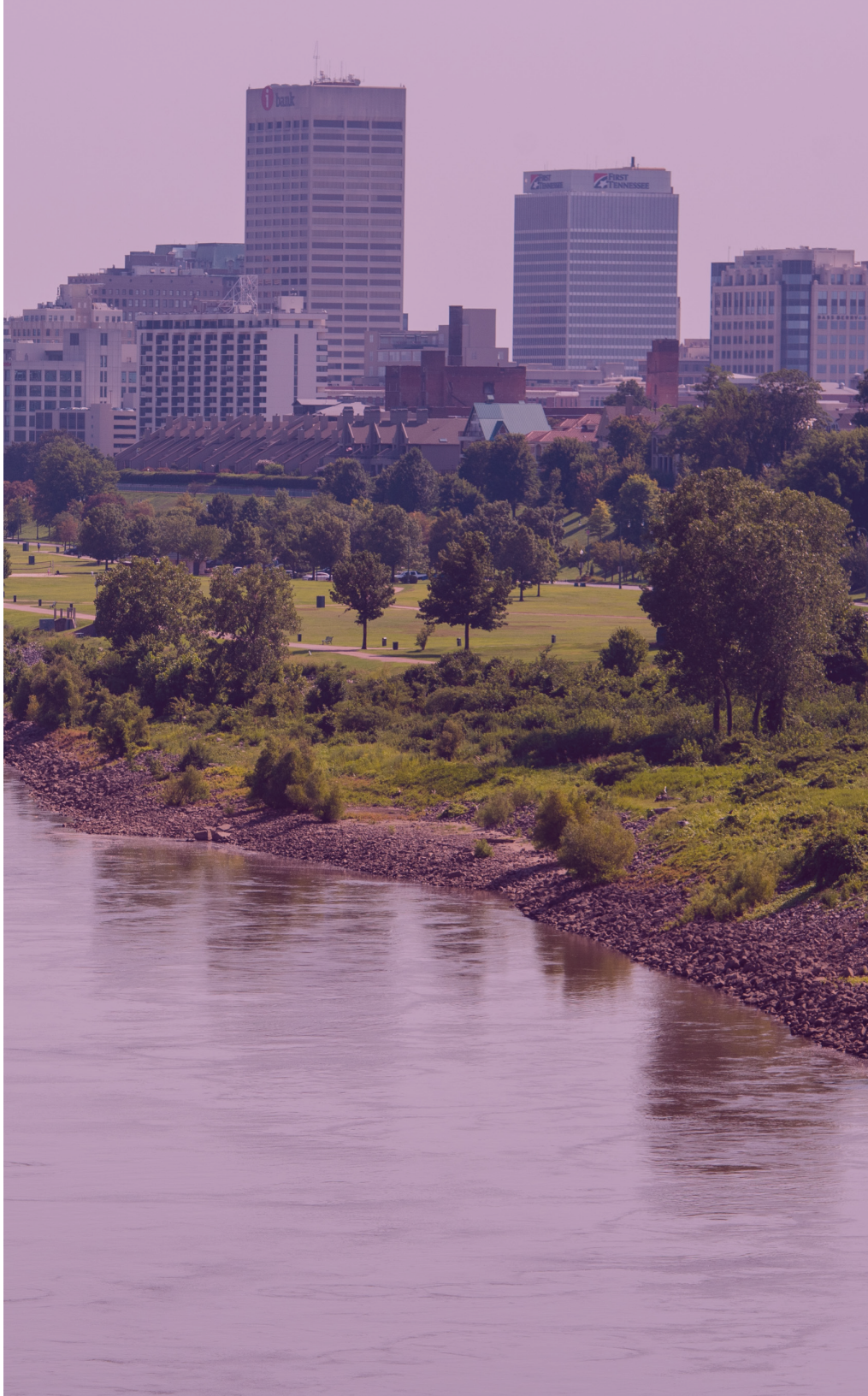
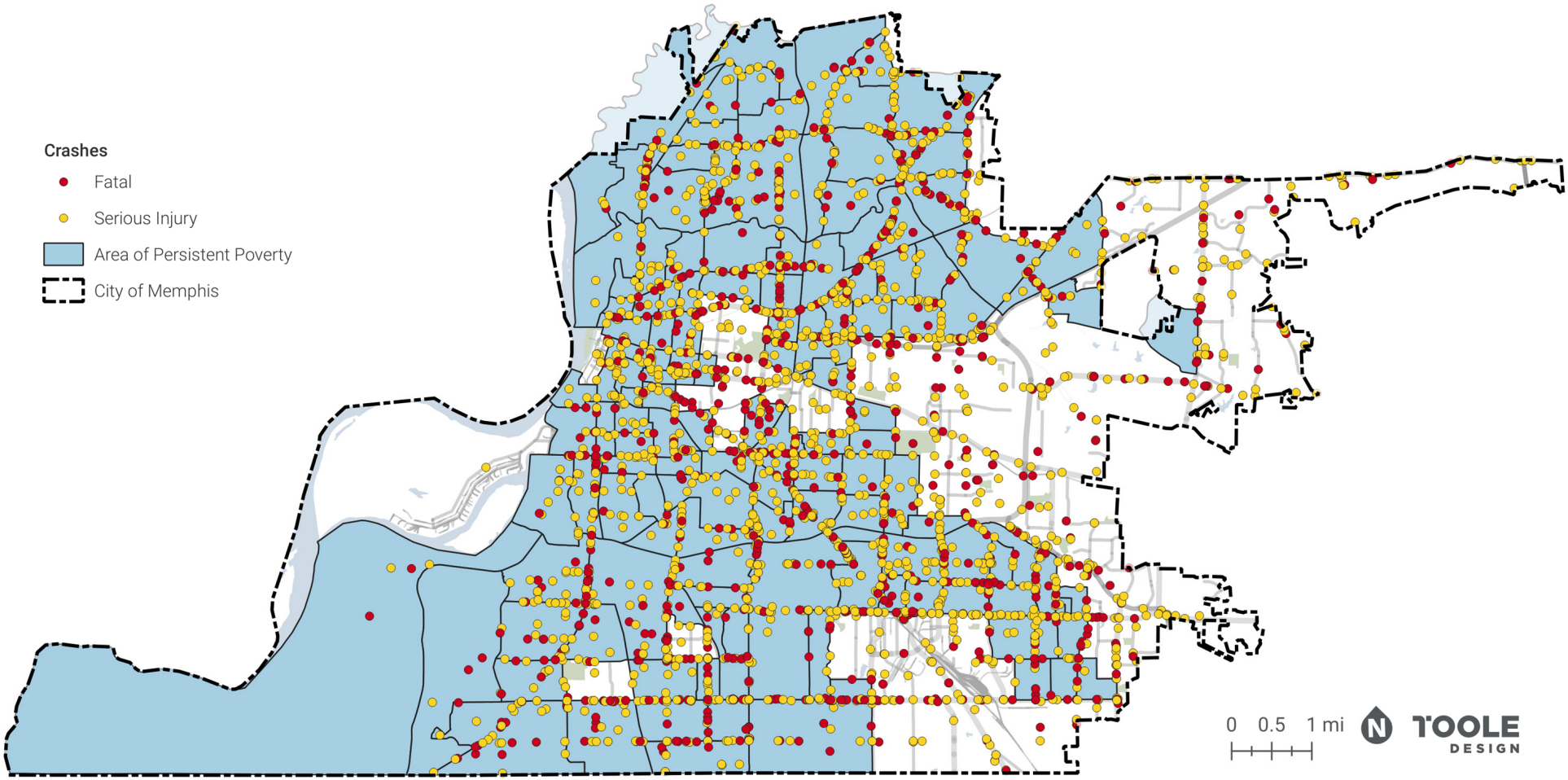


FIGURE 3.1: USDOT Areas Of Persistent Poverty & Fatal And Serious Injury Crashes (2019 – 2023)



Local Demographic Analyses

Following a review of USDOT data, local demographic data was analyzed to better understand the distribution of four priority vulnerable populations identified based on socioeconomic factors that can influence transportation disadvantages in different ways.

- Households in poverty may spend an outsized portion of their income on travel expenses.
- People with disabilities are less likely to drive and more likely to rely on public transportation than non-disabled residents, meaning safe, accessible, and intuitive infrastructure is critical to help ensure people with vision, hearing, cognitive, or mobility-related disabilities can go about their daily lives.
- Lack of safe and convenient transportation is a major barrier for households facing food insecurity. For households facing food insecurity or located in food deserts, affordable transportation options are essential for accessing healthy foods and/or free food services.
- People with lower levels of English proficiency may face challenges understanding or communicating in safety-critical situations.

The local demographic analysis began with mapping the areas across Memphis with high concentrations of the four priority populations. This was followed by a comparative safety analysis to assess the overlap between areas with a high concentration of priority populations and fatal and serious injury crashes. This approach will help inform the City's approach to prioritizing distribution of finite resources and improve transportation safety outcomes in areas of greatest need.

The analysis found that there are disproportionate amounts of fatal and serious injury crashes in areas with high concentrations of food insecure households and people with low English proficiency.

TABLE 3.1 below provides an overview of the roadway mileage, percentage of crashes, and percentage of fatal and serious injury crashes for each of the four priority populations. Prioritizing projects in these high-crash areas will help address safety disparities across the City.

	ROADWAY MILEAGE (% of total city mileage)	TOTAL CRASHES (% of total crashes)	FATAL AND SERIOUS INJURY CRASHES (% of total fatal and serious injury crashes)
City of Memphis	2,818 mi (100%)	139,132 (100%)	3,021 (100%)
High Poverty Census Tracts	1,099 mi (39%)	39,363 (28%)	1,074 (36%)
High Disability Population Census Tracts	1,028 mi (37%)	30,170 (22%)	813 (27%)
High Food Insecure Population ZIP Codes	1,758 mi (62%)	79,298 (57%)	2,197 (72%)
High Limited English Proficiency Population Census Tracts	1,131 mi (40%)	56,094 (40%)	1,279 (42%)

TABLE 3.1 : Comparison of priority populations, total crashes, and fatal and serious injury crashes

[1] Bureau of Transportation Statistics. (2011). Data Analysis. U.S. Department of Transportation. https://www.bts.gov/archive/publications/freedom_to_travel/data_analysis Shieh JA, Leddy AM, Whittle HJ, et al. Perceived Neighborhood-Level Drivers of Food Insecurity Among Aging Women in the United States: A Qualitative Study. J Acad Nutr Diet. 05 2021;121(5):844-853. doi:10.1016/j.jand.2020.12.019. https://pubmed.ncbi.nlm.nih.gov/33547033/

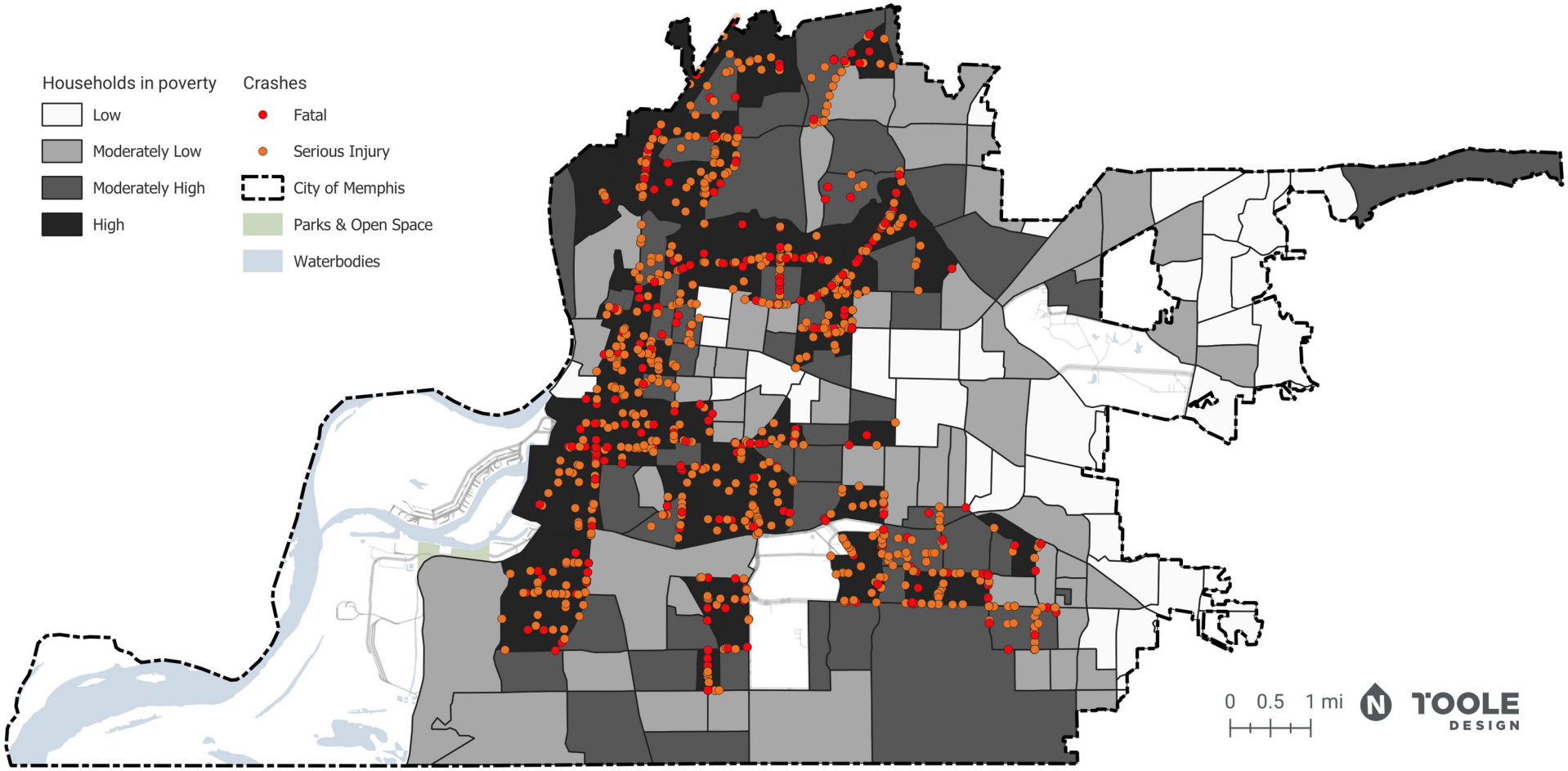
[2] Shieh JA, Leddy AM, Whittle HJ, et al. Perceived Neighborhood-Level Drivers of Food Insecurity Among Aging Women in the United States: A Qualitative Study. J Acad Nutr Diet. 05 2021;121(5):844-853. doi:10.1016/j.jand.2020.12.019. https://pubmed.ncbi.nlm.nih.gov/33547033/

[3] Marudut Bernadtua Simanjuntak. (2024). The Impact Of English Communication On Transportation Safety Practices. International Journal of Educational Development, 1(2), 79–87. https://doi.org/10.61132/ijed.v1i2.38

HOUSEHOLDS IN POVERTY

Neighborhoods with high concentrations of households in poverty are primarily located in the northwest, west-central, and south-central areas of the City. This includes much of the Frayser, North Memphis, Hollywood, Hyde Park, South Memphis, and Parkway Village neighborhoods. About 36 percent of fatal and serious injury crashes in Memphis occurred in areas with a high concentration of households in poverty.

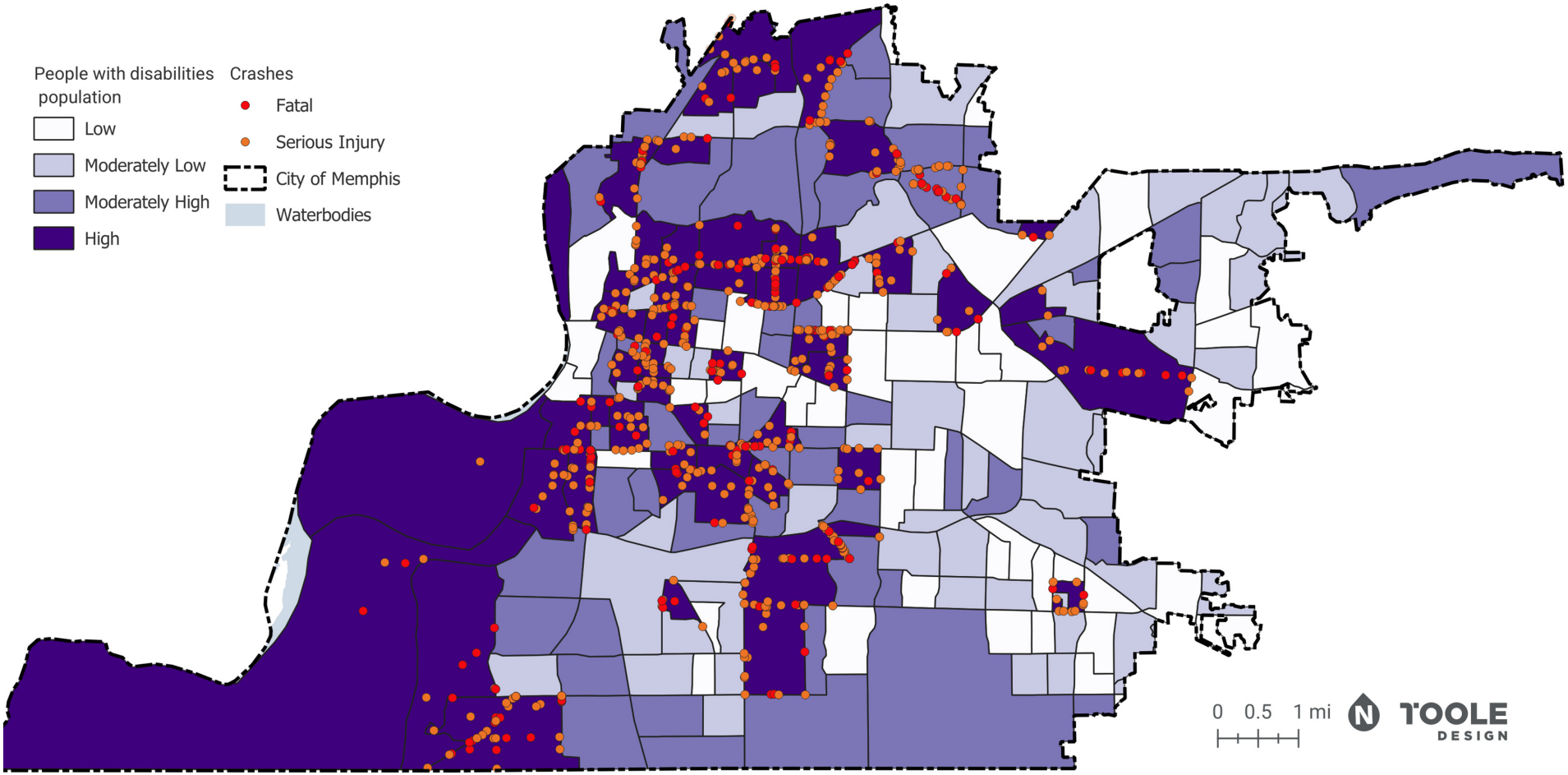
FIGURE 3.2: Households in Poverty & Fatal and Serious Injury Crashes



People with Disabilities

There are households with disabilities located across Memphis; however, the northwest and southwest areas of the city, along with neighborhoods surrounding the Lamar Avenue and East Shelby Drive corridors, have higher concentrations of this population. In Memphis, 27 percent of all fatal and serious injury crashes occurred in areas with a high number of people with disabilities.

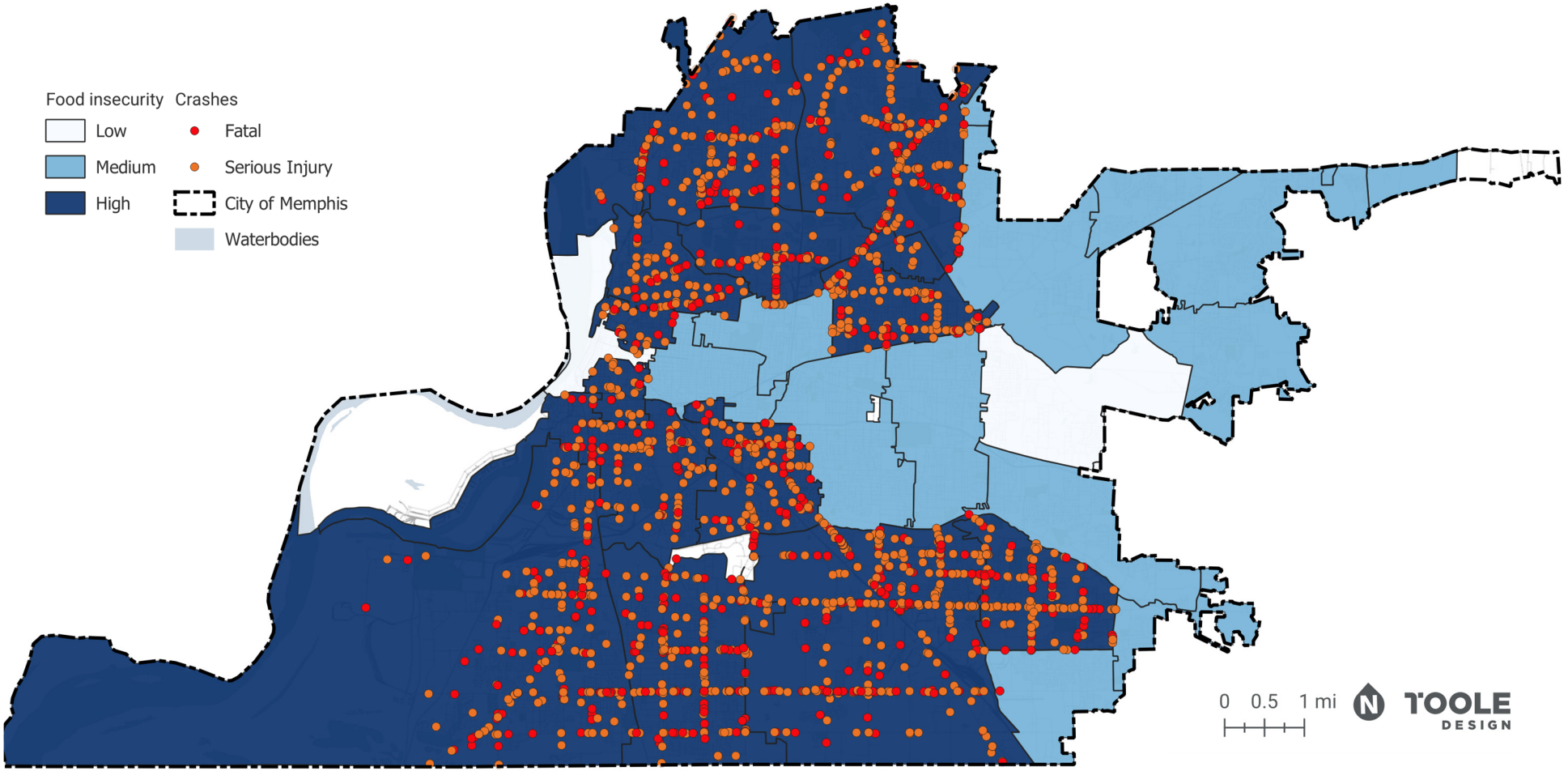
FIGURE 3.3: People with Disabilities Population & Fatal and Serious Crashes



FOOD INSECURE HOUSEHOLDS

The northwest and southern areas of Memphis have high concentrations of households facing food insecurity and there is significant overlap between these populations and negative transportation outcomes. Over 72 percent of all fatal and serious injury crashes in Memphis occurred in a neighborhood with high levels of food-insecure households.

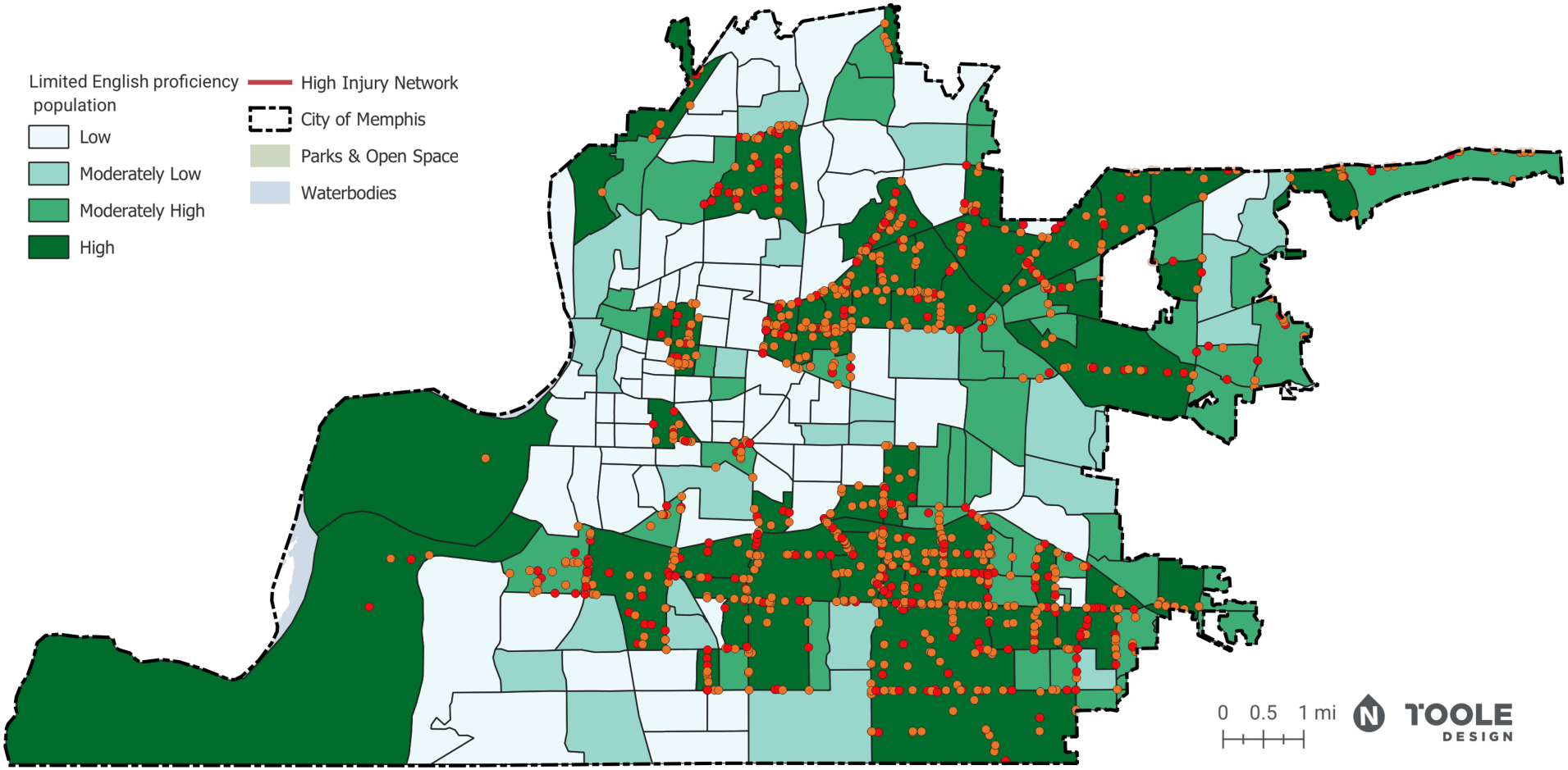
FIGURE 3.4: Food Insecurity & Fatal and Serious Injury Crashes



PEOPLE WITH LIMITED ENGLISH PROFICIENCY

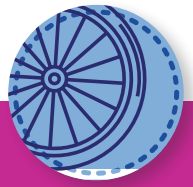
Memphis residents with low levels of English proficiency are generally concentrated in northeast and southeast areas of the City, although a few areas near Westside Park (west of US-51) and around the intersection of James Road and Mountain Terrace Street also have high concentrations of this population. About 42 percent of all fatal and serious injury crashes were in an area with a high concentration of people with limited English proficiency.

FIGURE 3.5: Limited English Proficiency and Fatal and Serious Injury Crashes



4

PUBLIC ENGAGEMENT



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Summary of Comments Received from Online Survey 50

Summary of In-Person Activities and Results 50

4 Public Engagement

This chapter summarizes the public engagement activities conducted for the Memphis SAP conducted by the City of Memphis. As part of public outreach, an online project website was created that provided access to an interactive comment map, a survey, and a crash data dashboard. Additionally, the project website contained information about the project as well as dates for upcoming in-person public engagement meetings.

Public Engagement Activity Included:

- **Online project website** *(WordPress and Kubio)*
- **Online public engagement interactive map** *(Esri StoryMap)*
- **Survey** *(Microsoft Forms)*
- **In-person public engagement meetings with activities**
- **Virtual public engagement meeting** *(ZOOM)*
- **Community stakeholder meetings**

ONLINE PROJECT WEBSITE

An online project website was developed using the WordPress and Kubio platform to provide residents and stakeholders with background information related to the goals and objectives of the Memphis, SAP. The website included an overview of the project, dates of upcoming public engagement meetings, a crash data dashboard, and links to the survey and interactive comment map. The project website was made available to the public starting September 23, 2024.

The online project website can be accessed at https://memphissafetyactionplan.com/

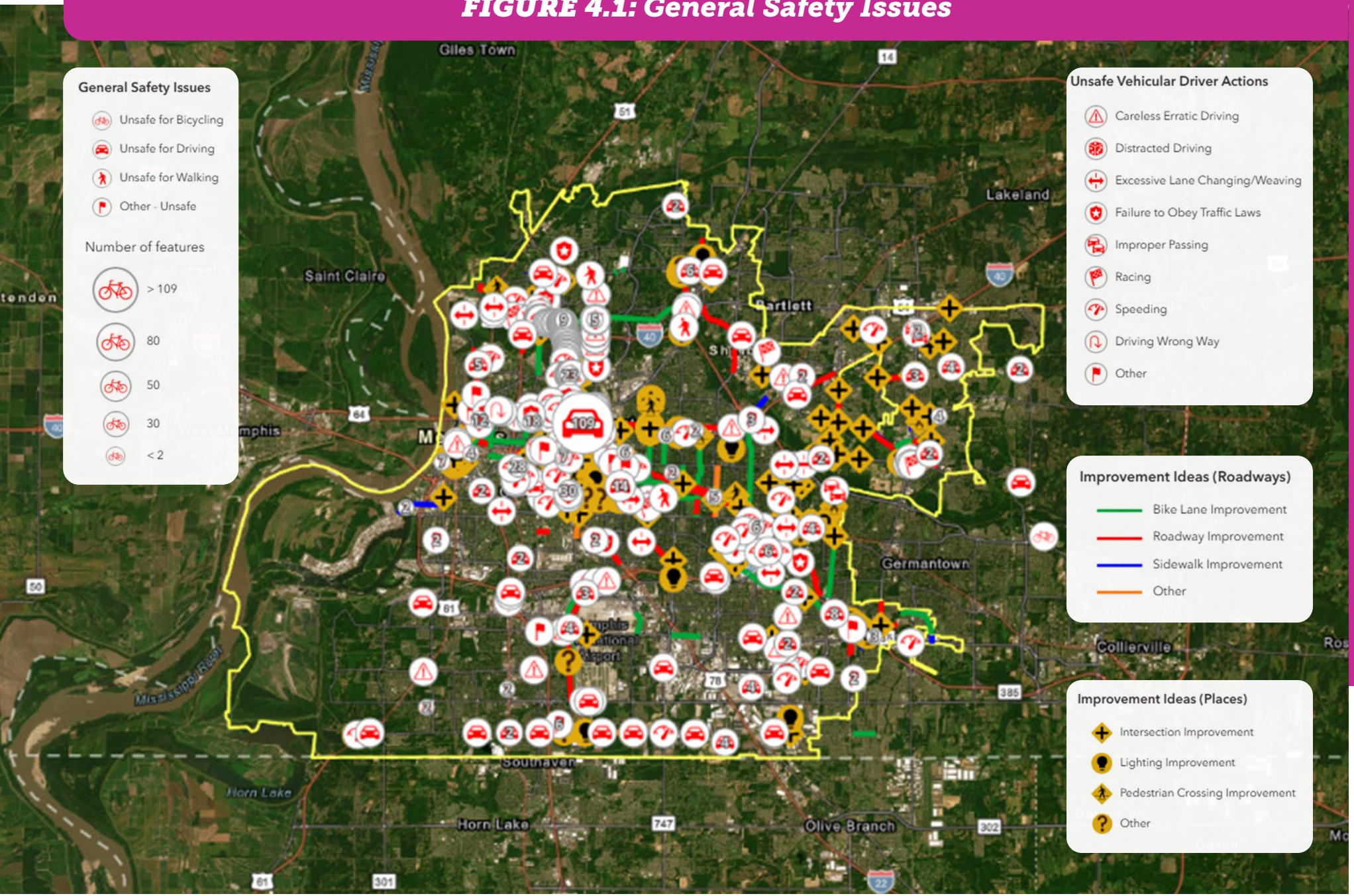
ONLINE INTERACTIVE MAP

The project website also included a link to the interactive comment map.

Through the online interactive map, members of the public had the opportunity to identify safety issues, traffic-related areas of concern, and suggest potential locations for infrastructure improvements within the City of Memphis. Members of the public were able to place icons or line segments representing specific recommendations directly on the map at the locations related to their recommendations. When the icon or segment was placed on the map, the user was prompted to add a comment describing their concern or improvement.

Figures on the following page show screenshots of the online interactive map interface.

FIGURE 4.1: General Safety Issues



Summary of Comments Received from Online Interactive Map

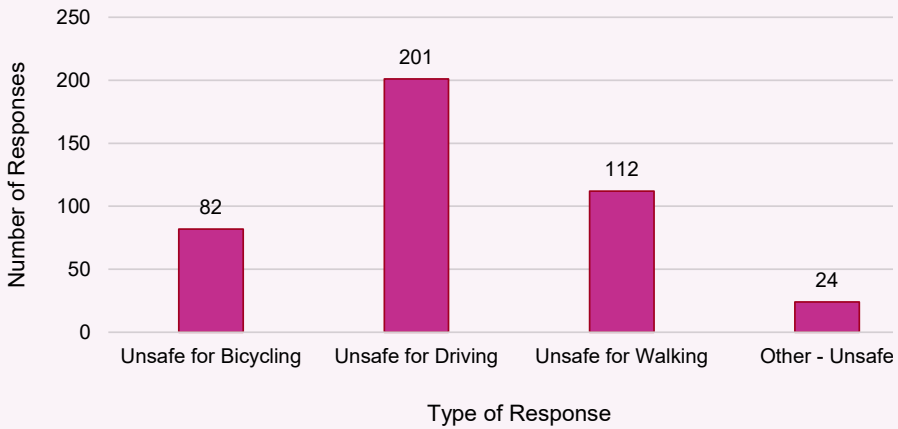
A total of 1,829 responses were submitted via the online public comment map. These comments were categorized under general safety issues, unsafe vehicular driver actions, improvement ideas (points), and improvement ideas (lines). Of the total comments, there were 413 general safety issue comments, 519 unsafe vehicular driver action comments, 732 point improvement ideas, and 159 line improvement ideas. Below is a summary of that information collected from the interactive comment map.

OVERVIEW OF PUBLIC COMMENTS BY CATEGORY

GENERAL SAFETY ISSUES

- Frequent mentions of speeding (i.e. Riverdale Road, Southern Avenue, and Quince Road)
- Frequent mentions of needing to implement traffic control measures and traffic calming measures (stop signs, speed bumps, roundabouts, intersection improvements, safe route connecting from Greenline to downtown)
- Frequent concerns about poor road conditions such as potholes, no existing shoulder, need for repaving, and need for road widening
- Frequent concerns for bicyclist and pedestrian safety (unsafe bike lanes, no protection from cars, unsafe for kids crossing the street to get to school, and no sidewalks)
- Frequent mentions of visibility issues (vegetation along Central Avenue blocks turning movements, vegetation at Elvis Presley Boulevard and Elliston blocking southbound right-turn lane, and poor visibility for pedestrians to cross the street)

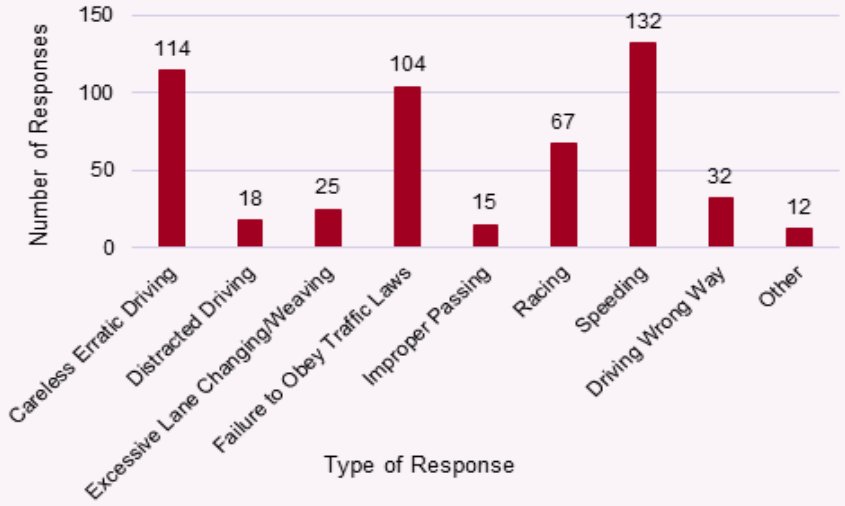
FIGURE 4.2: Number of Comments – General Safety Issues



UNSAFE VEHICULAR DRIVER ACTIONS

- Frequent comments regarding issues with speeding through certain corridors, residential areas, and at night (e.g., Jackson Avenue, Mt. Moriah Road, Silverleaf Road, and Central Avenue)
- Frequent concerns of drivers speeding through red lights across the City and disregarding the no right-turn on red during pedestrian crossing phase at Sam Cooper Boulevard and East Parkway
- Frequent mentions of reckless/aggressive driving such as racing, weaving in and out of traffic, passing cars in the bike lane, passing cars on double lines and no passing zones, and passing cars on Prescott Road after road diet
- Frequent comments regarding lack of compliance with traffic control measures (disregard of yield signs, failure to stop before turning right at signalized intersections, and failure to stop at four-way stops)
- Frequent concerns for bicyclist and pedestrian safety (pedestrians crossing the street when they are not permitted to, cars using bike lanes to pass other cars, and cars parking in bike lanes)
- Frequent mentions of poor road markings and signage (signage needed on Main Street to prevent wrong-way driving from Gayoso Avenue to Front Street, yield lines that require supporting signage, and pavement markings needed to prevent confusion of when exit-only lanes start)

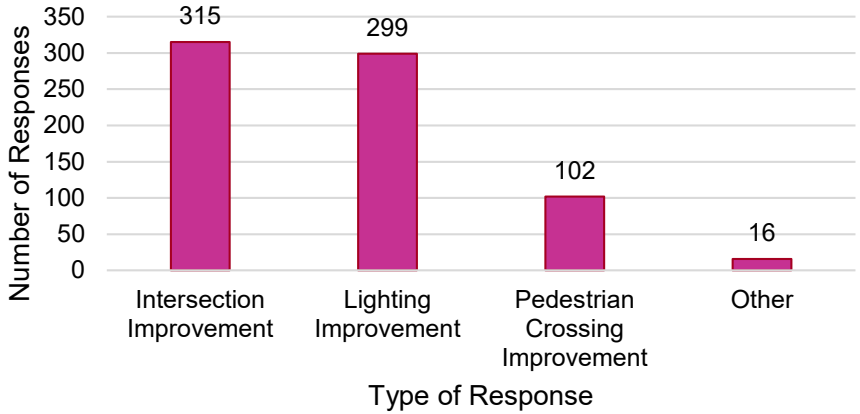
FIGURE 4.3: Number of Comments – Unsafe Vehicular Driver Actions



IMPROVEMENT IDEAS (POINTS)

- Intersection improvements such as implementation of new traffic signals, updates to existing signal timings, adding turn lanes, and improving visibility for left turns
- Implementing traffic calming measures such as speed bumps and roundabouts
- Pedestrian and bicyclist improvements such as installing crosswalks with flashing beacons, adding lighting for crosswalks, updating markings/signage along Main Street, and allowing pedestrian/bike access from Greenline to Cordova Station Avenue/Macon Depot Lane
- Improvements of road surface and maintenance such as repaving rough roads, fixing drainage issues, repairing potholes, and replacing flickering streetlights
- Implementation of more streetlights to improve safety
- Additional signage and pavement markings for lane changes and exit lanes to reduce confusion.

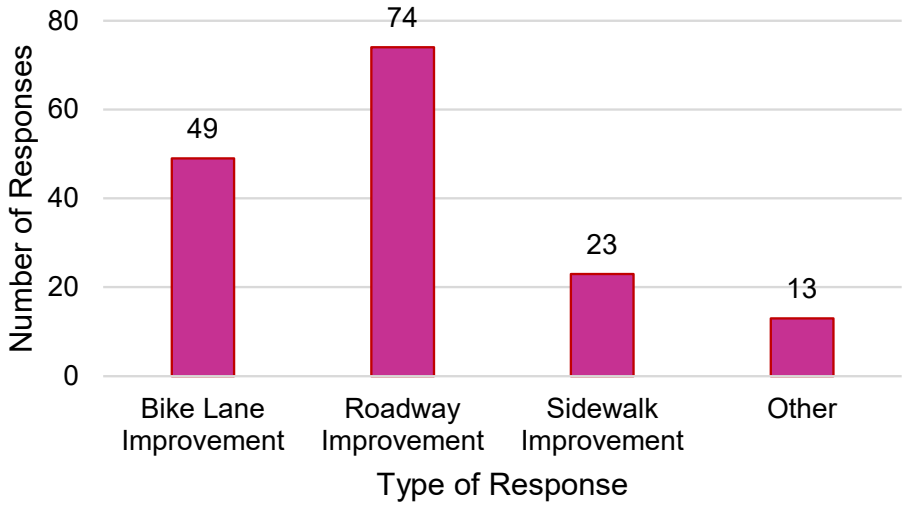
FIGURE 4.4: Number of Comments - Improvement Ideas (Points)



IMPROVEMENT IDEAS (LINES)

- Need for protected bike lanes and new infrastructure (Central Avenue—from Greenline to Poplar Avenue—to allow access to Fenwick Road and Southern Avenue; access to downtown; extension of McLean Boulevard cycle track to James Road; and access from Ridgeway Road to White Station Road)
- Need for new sidewalks and maintenance of existing sidewalks (sidewalk connection from Greenline to Shelby Farms Dog Park, sidewalk access to Chickasaw Garden Park, repair cracked sidewalks, and create buffer from traffic on existing sidewalks)
- Need for roadway maintenance and improvements (road widening, repaving, pothole repairs, additional turn lanes, and striping and signage upgrades)
- Need for traffic calming measures to reduce speeding such as speed bumps, speed humps, Skyhawk cameras, and lowering of speed limits in certain areas

FIGURE 4.5: Number of Comments – Improvement Ideas (Lines)

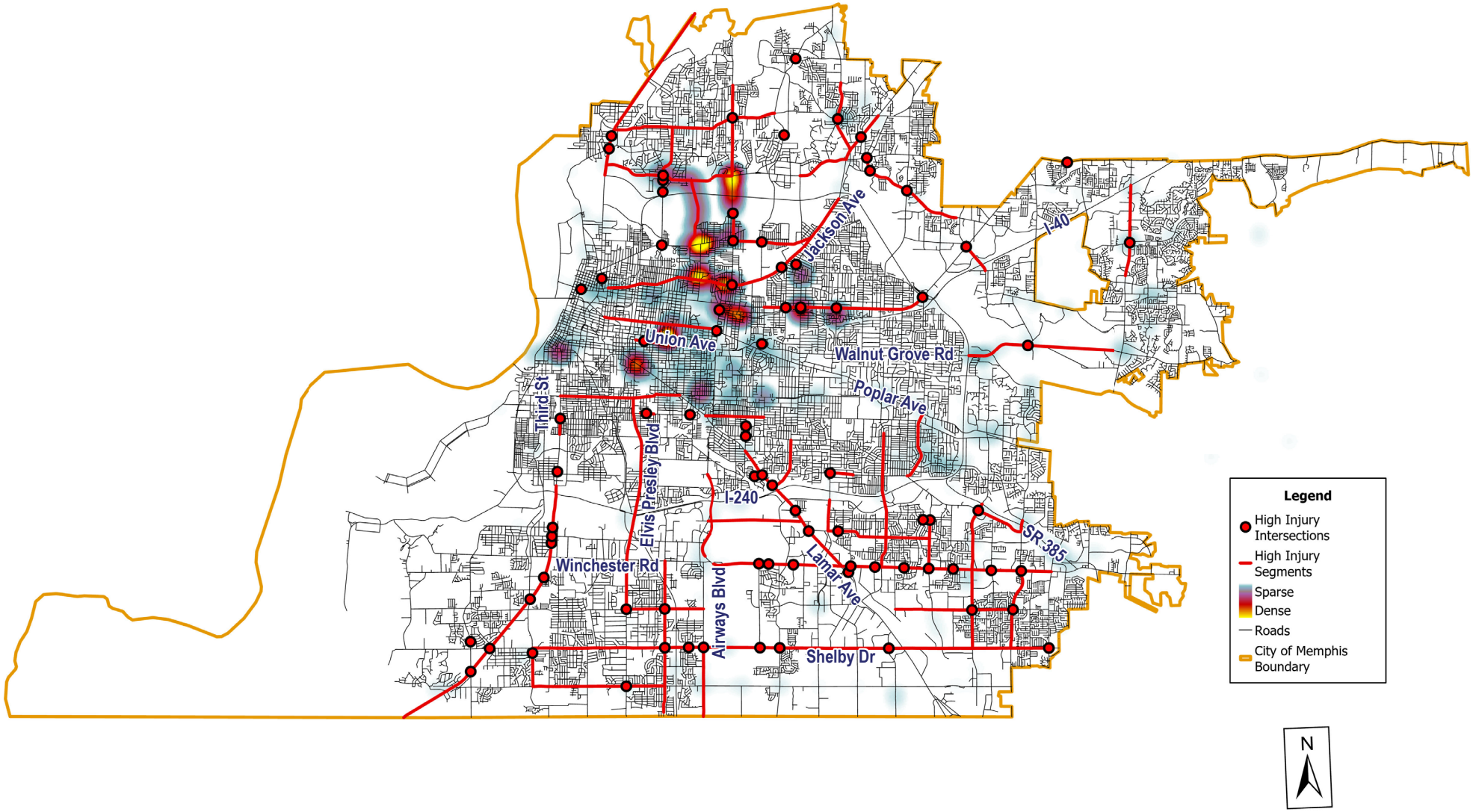


A summary of comments listed under "Other – Unsafe" is as follows:

- Several mentions of large potholes and poor road surface conditions
- Several mentions of speeding, frequent crashes at specific intersections/road segments, and the need for Skyhawk cameras to reduce crime and speeding

A heat map representing the locations that received comments from the interactive map overlaid with the HIN is shown in ***FIGURE 4.6.***

FIGURE 4.6: Heat Map of Public Engagement Comments



Summary of Comments Received from Online Survey

A total of **739 responses** were recorded in the online survey, which consisted of fifteen questions. Below are questions selected from the online survey. The complete list of survey questions and a detailed breakdown of the responses are available in **Appendix B.**

1. What is your primary mode of transportation to essential services? I.E. Place of employment, daycare, school, grocery, pharmacy, etc.
2. What is your primary mode of transportation to secondary services? I.E. Parks or recreation activities, religious activities or place of worship, visiting friends and family, etc.
3. What is your biggest transportation challenge or concern in Memphis?
4. What are the top three safety issues you experience when driving a vehicle?
5. What are the top three safety issues you experience when using public transit?
6. Which specific intersection in Memphis would you describe as most unsafe? Why?
7. Which specific segment of roadway in Memphis would you describe as most unsafe? Why?

Summary of In-Person Activities and Results

This section summarizes the in-person activities and results that were received throughout the public engagement portion of this SAP. There were multiple project-specific public engagement meetings held across the City of Memphis that gave citizens the opportunity to express their concerns, identify problem areas, and suggest potential solutions. Additionally, during Memphis 3.0 community meetings, a resource table for the Memphis SAP was set up to provide information about the project and collect feedback.

Public engagement meetings were promoted by leveraging media coverage and implementing social media marketing strategies. Additionally, public service announcement scripts were developed for the Mayor and Police Chief to encourage community members to attend the meetings and visit the project website to access further information and share feedback. ***TABLE 4.1*** and ***TABLE 4.2*** present the locations and dates of Memphis SAP public engagement meetings and the Memphis 3.0 community meetings, respectively.

TABLE 4.1: Public Engagement Meeting Dates

LOCATION	DATE(S)
Ed Rice Community Center	December 12th, 2024
Hickory Hill Community Center	February 6th, 2025
Saint Andrew AME Church	February 12th, 2025
Benjamin Hooks Library	February 12th, 2025

TABLE 4.2: Memphis 3.0 Meeting Dates

LOCATION	DATE(S)
Pine Hill Community Center	September 26th, 2024
Orange Mound Community Center	October 10th, 2024
Leftwich Tennis Center	October 22nd, 2024
Dave Wells Community Center	October 29th, 2024
Raleigh Community Center	November 14th, 2024

Each category listed below was delegated as a station at each public engagement meeting. Attendees had the opportunity to participate at each station, and project team members were available to guide the activities and answer any questions. The results of each station are summarized below.

MAPPING STATION

This station consisted of multiple printed-out maps of the specific area of the city in which the meeting was held. These maps showed the fatal and serious injury crashes on the road network as well as bicyclist and pedestrian crashes. Comments were added to the project's online interactive map at this station by project team members as attendees pointed out their concerns and possible solutions. Comments were also added to the physical maps and then transfered to the online map following the meeting. The summary of results received at this station were previously mentioned in the "Summary of Comments Received from Online Interactive Map" section of this document.

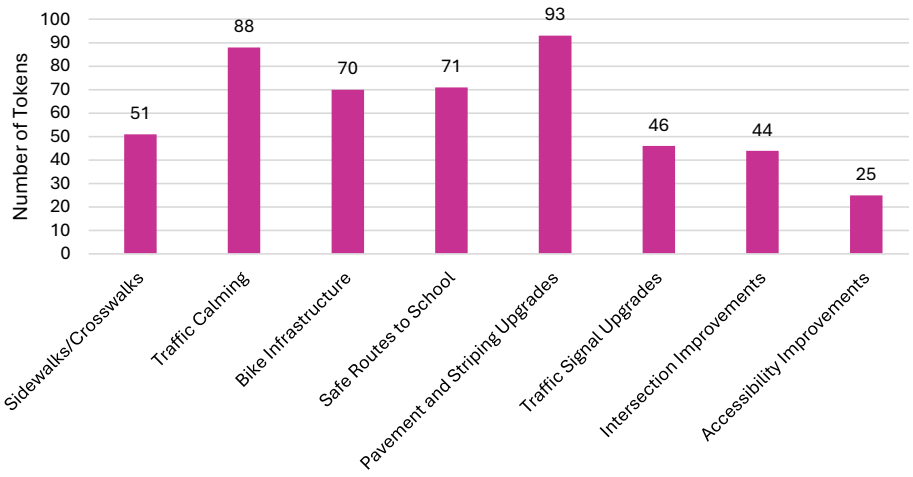
SURVEY STATION

This station consisted of several computers which gave attendees the opportunity to complete the public survey. One project team member was designated to cover this station and answer any questions that the participants may have had while filling out the survey. The summary of responses received at this station were previously mentioned in the "Summary of Comments Received from Online Survey" section of this document.

INVESTMENT BUCKET ACTIVITY

This station consisted of eight different categories of investments that attendees could choose to invest in to improve the roadways across the city. Each attendee was given ten tokens which represented 100% of their total budget. They were asked to distribute their tokens to the categories that felt the most important to them, and they could put multiple tokens in a single bucket as they deemed necessary. The results of this activity are shown in ***FIGURE 4.7.*** Pavement and Striping Upgrades and Traffic Calming were the most popular investment areas, with other areas such as Safe Routes to School and Bike Infrastructure also garnering high desires for investment.

FIGURE 4.7: Investment Activity Results



WORD CLOUD ACTIVITY

This station consisted of two different categories of responses from meeting attendees. Question #1 asked, "In one word or phrase, what makes the roads in the City of Memphis feel unsafe to you?" The results of this question are shown in a word cloud in ***FIGURE 4.7.*** Question #2 asked, "In one word or phrase, what would make the roads in the City of Memphis safer in the future?" The results of this question are shown in a word cloud in ***FIGURE 4.8.***

"In one word or phrase, what makes the roads in the City of Memphis feel unsafe to you?"

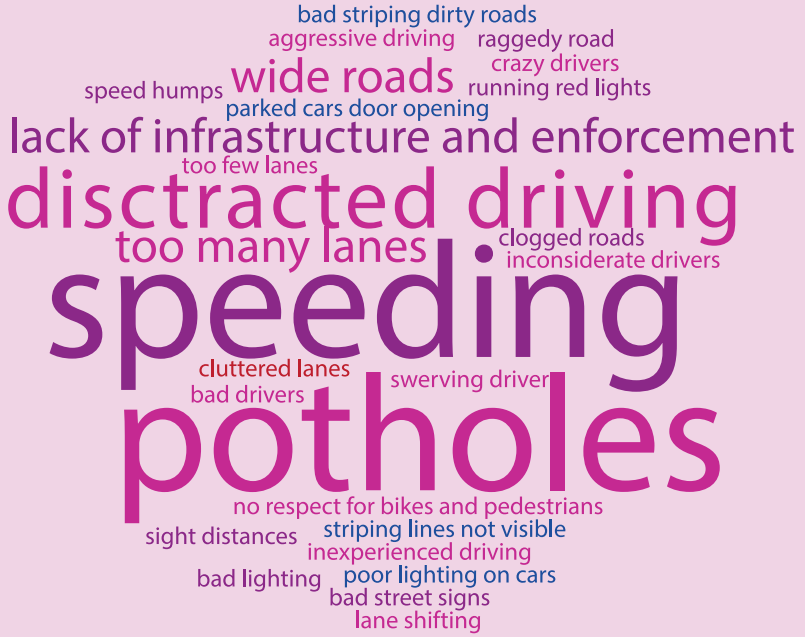


FIGURE 4.7: Question #1 Results

The top three results for Question #1 were Speeding, Potholes, and Distracted Driving.

See **Appendix C** for maps detailing the types of comments and the total comment map.

"In one word or phrase, what would make the roads in the City of Memphis safer in the future?"

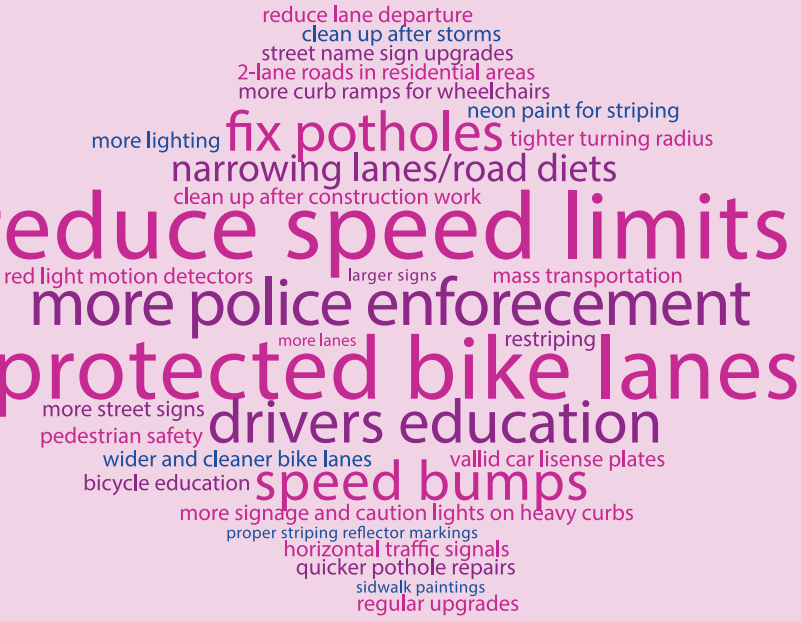


FIGURE 4.8: Question #2 Results

The top three results for Question #2 were Reduce Speed Limits, Protected Bike Lanes, and More Police Enforcement.

SUMMARY OF VIRTUAL PUBLIC ENGAGEMENT MEETING

An online virtual public engagement meeting was held via ZOOM on March 3, 2025, for anyone that was not able to attend the in-person meetings. This meeting consisted of the same material as the in-person meetings except Mentimeter was used to collect feedback in place of the stations discussed above. ***FIGURE 4.9*** illustrates a Mentimeter question along with its results as displayed during the virtual meeting.

What is your primary mode of transportation to essential services? I.E. Place of employment, school, grocery, etc.

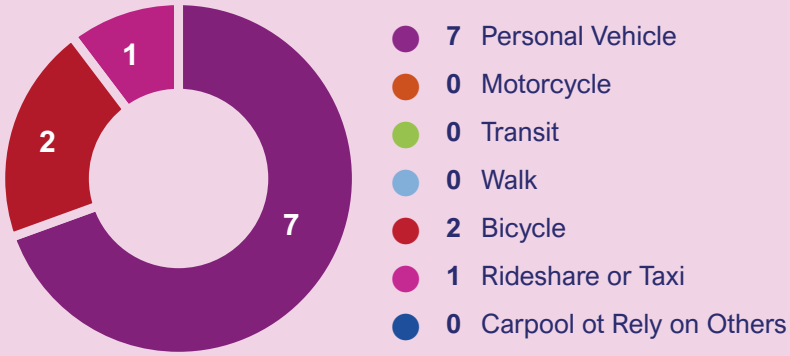


FIGURE 4.9: Mentimeter Results Slide

PROJECT STEERING COMMITTEE SUMMARY

A community stakeholder group was assembled to provide focused feedback on key aspects of the Memphis SAP. The stakeholder group consisted of the project team and members from the following organizations and agencies:

- City of Memphis Engineering
- Memphis and Shelby County Division of Planning & Development
- City of Memphis Police Department
- City of Memphis Fire Department
- Memphis Area Transit Authority (MATA)
- Downtown Memphis Commission (DMC)
- Innovate Memphis
- Memphis Medical District Collaborative (MMDC)
- Explore Bike Share
- The Heights Community Development Corporation (CDC)
- Memphis and Shelby County Community Redevelopment Agency (CRA)
- Hyde Family Foundation
- Memphis Hightailers Club & Foundation
- Hospitality Hub

Two in-person stakeholder meetings were held at key milestones throughout the development of the plan. The purpose of these meetings was to address current challenges faced on Memphis roadways, gather input from stakeholders, and establish objectives for future goals. Locations and dates of these stakeholder meetings are shown in ***TABLE 4.3***.

TABLE 4.3: Community Stakeholder's Meeting Dates

LOCATION	DATE(S)
Playhouse on the Square	September 25, 2024
The Circuit Playhouse	July 17, 2025

The meeting held on September 25, 2024, provided stakeholders an introduction to the Memphis SAP and the SS4A program and centered around discussions related to the following:

- Location Specific Issues in Transportation
- Systemic and Behavior Issues in Transportation
- Demographic Analysis and Policy in Transportation

The meeting held on July 17, 2025, centered around gathering feedback on the following topics:

- Prioritization Criteria for Intersections and Segments
- Establishing Safety Goals and Reduction Targets
- Developing Countermeasures and Action Strategies

The stakeholder group was also given the opportunity to provide comments and feedback on the draft Memphis SAP. This feedback was included in the development of the Final Memphis SAP.

5

PRIORITIZATION

Prioritization 58
Location Prioritization Scoring Process 58
Prioritization Results 60

5 Prioritization

The prioritization process helps identify the locations on the HIN that exhibit the greatest need for safety countermeasures relative to other locations throughout the City of Memphis. The outcome of this process is a prioritized list of locations that requires strategic investment of resources for future safety improvements, which directly aligns with the Memphis SAP's goal of reducing and ultimately eliminating fatal and serious crashes in Memphis. The ten highest scoring HIN road segments and the ten highest HIN intersections were selected for project development. The prioritization scoring criteria met key objectives of the SS4A Program by prioritizing locations with the highest number of fatal and serious injury crashes and locations with a higher presence of vulnerable road users.

Location Prioritization Scoring Process

The prioritization process assigns scores to each location so that all road segments and all intersections can be ranked against each other based on similar criteria. The scoring criteria and corresponding point values were developed based on input received from the City and project stakeholders. The final prioritization criteria consisted of components related to demographic data, crash data, proximity to emerging crash hotspots, location information, and public input for both HIN intersections and segments. An additional component related to congestion was also considered for the HIN road segments. The score values for the segment and intersection scoring criteria are shown in ***FIGURE 5.1*** respectively. Each segment can receive a maximum of 145 points, while each intersection can receive a maximum of 125 points.

FIGURE 5.1: **Scoring Criteria Weighting**

Demographic Data *(Total of 10 points)*

The demographic data component includes roadways located near or within regions identified as areas of persistent poverty.

Crash Data *(Total of 60 points)*

Number of Fatal and Serious Injury Crashes *(20 points)*

The total number of fatal and serious injury crashes at an intersection or segment.

Number of Vulnerable Road User-Related Crashes *(20 points)*

The total number of crashes that involve pedestrians or bicycles at an intersection or segment.

Crash Rate Compared to Statewide Average *(20 points)*

The ratio of the location's crash rate divided by the Tennessee statewide average for similar facility types.

Congestion Characteristics *(Total of 10 points)*

Regional Integrated Transportation Information System (RITIS) Bottleneck Scores: For segment scoring only, congestion characteristics represent the degree of roadway congestion. This scoring criteria was only used for the prioritization of roadway segments and not intersections. Bottleneck congestion is identified through rankings assigned to each segment. While congestion does not tie directly to severity of crashes, heavy traffic can lead to a higher frequency of collisions, aggressive driving behaviors, and reduced emergency response times, all of which contribute to greater safety risks for all road users.

Location *(Total of 40 points)*

Proximity to Public Services *(10 points)*

The proximity to public services component evaluates whether an intersection or segment is located near facilities such as schools, parks, libraries, transit stops, and hospitals.intersection and roadway segment.

Speeding *(10 points)*

For segments, the speeding component establishes the 85th percentile speed in relation to the posted speed.

Resurfacing Score *(10 points)*

The resurfacing score assesses the current state of the road's surface, with ratings that span from excellent to failed condition.

Pedestrian Level of Stress *(10 points)*

The pedestrian level of stress component determines the roadway walkability based on infrastructure and traffic conditions. This scoring system was provided by TDOT

Public Input *(Total of 15 points)*

Public input characteristics define the unique comments for each intersection and segment.

Emerging Hotspots *(Total of 10 points)*

Proximity to Areas that are Emerging to Crashes

Prioritization Results

Each HIN road segment and intersection was scored based on the criteria discussed in the previous section. The full prioritization scoring results for each of the HIN road segments and intersections are provided in **Appendix D** and **Appendix E**. The top ten HIN road segments are presented in ***TABLE 5.1*** and ***FIGURE 5.2***. The top eleven HIN intersections are presented in ***TABLE 5.2.*** and ***FIGURE 5.3.*** For project development, the intersections of Summer Avenue & N. Highland Street and Forest Avenue & N. Highland Street will be treated as a single intersection due to their close proximity. All ten HIN road segments and intersections were selected for further evaluation and project development. The intersection of North Hollywood Street and Chelsea Avenue was excluded from recommendations due to a recent City funded intersection improvement project. Additionally, the intersection of Shelby Drive and Swinnea Road was added due to it having the highest frequency of KA crashes for an intersection.

TABLE 5.1 Top HIN Road Segments Prioritization Scores

S	STREET NAME	BOUNDARIES	TOTAL SCORE
S-1	Mill Branch Road	Winchester Road - E Shelby Drive	115
S-2	Hickory Hill Drive	Mount Moriah Road Ext - Winchester Road	105
S-3	Lamar Avenue	American Way - New Getwell Road	105
S-4	E Raines Road	Elvis Presley Boulevard - Airways Boulevard	105
S-5	Winchester Road	New Getwell Road - S Perkins Road	102
S-6	Austin Peay Highway	Yale Road - James Road	100
S-7	Jackson Avenue	I-40 - National Street	100
S-8	Shelby Drive	I-55 - Airways BlvdBoulevard	92
S-9	Winchester Road	Hickory Hill Road - Riverdale Road	90
S-10	Perkins Road	American Way - Knight Arnold Road	90

TABLE 5.2: Top HIN Intersection Prioritization Scores

I	INTERSECTION	TOTAL SCORE
I-1	Summer Avenue and N Highland Street	95
I-2	Raines Road and Hickory Hill Drive	85
I-3	Winchester Road and Mendenhall Road	85
I-4	Holmes Road and Elvis Presley Blvd	80
I-5	Union Avenue and S Cleveland Street	80
I-6	Raleigh-Lagrange Road and Hoover Drive	80
I-7	Stage Road and Coleman Road	80
I-8	Rollins Road and S Third Street	80
I-9	New Willow Avenue and Getwell Road	80
—	Chelsea Avenue and N Hollywood Street	75
I-11	Shelby Drive at Swinnea Road	57

FIGURE 5.2: Prioritized HIN Road Segments

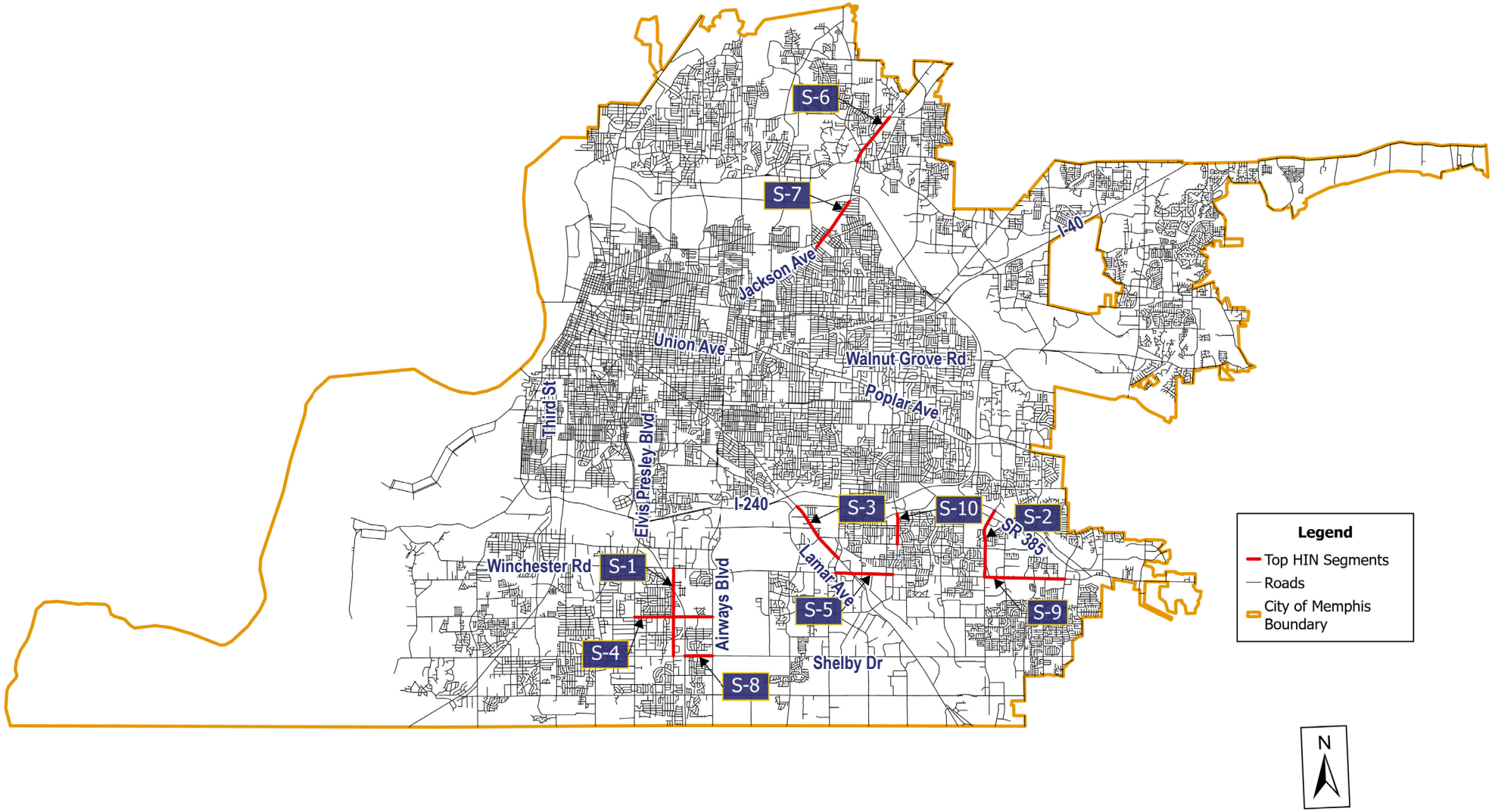
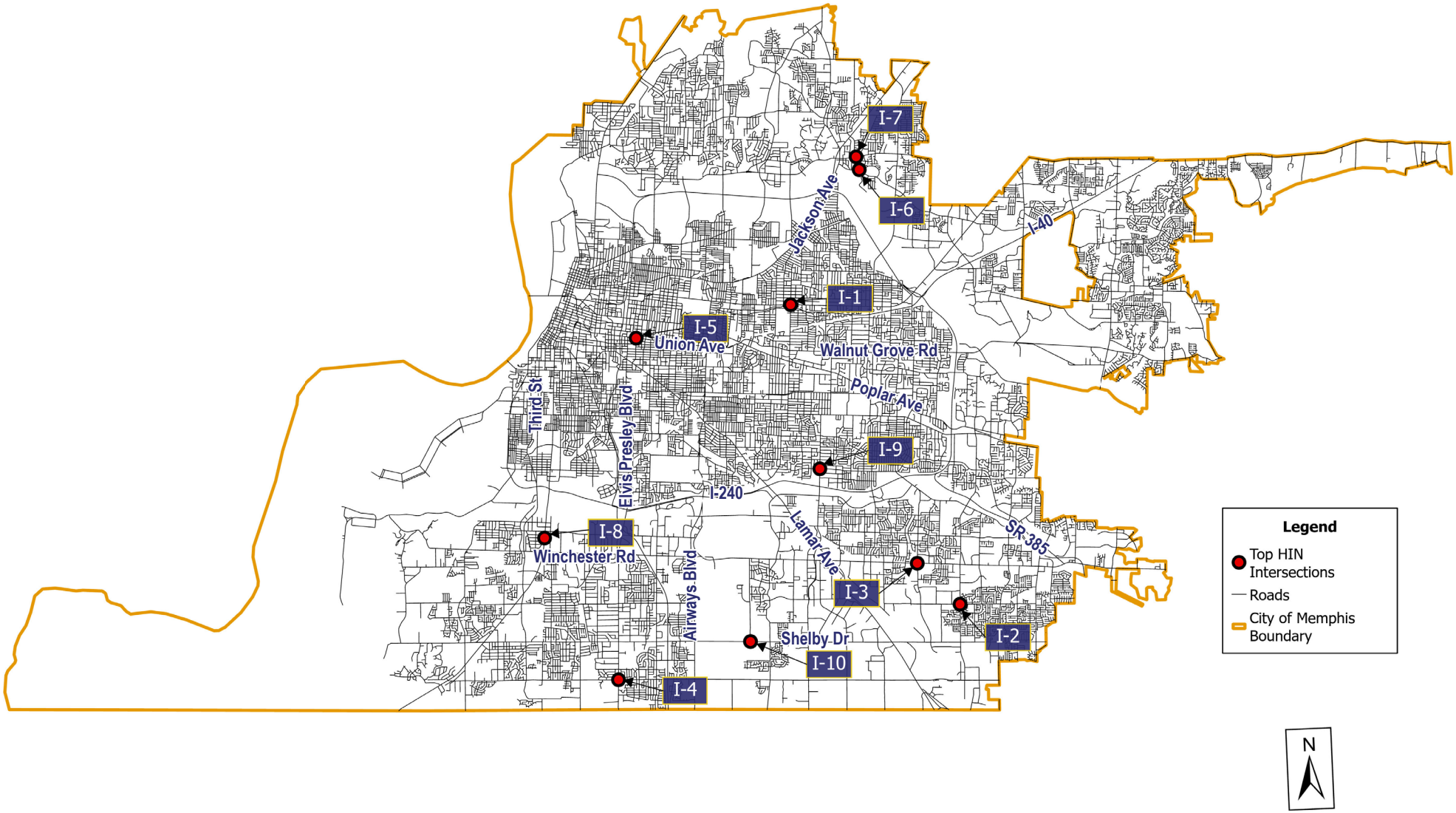


FIGURE 5.3: Prioritized HIN Intersections

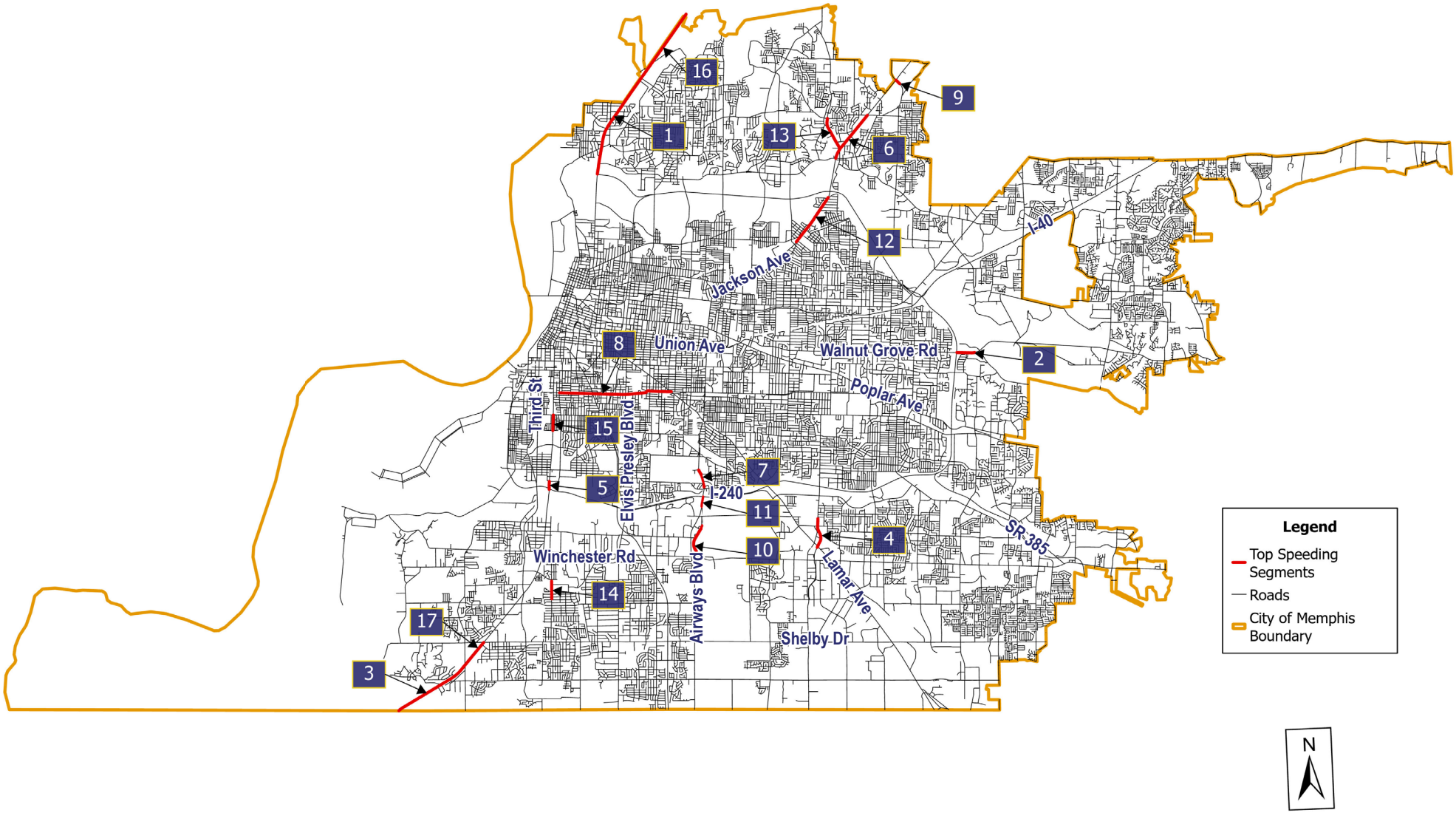


HIN segments that were not selected to move forward into project development still present notable issues. There are significant disparities between free flow speed data and the posted speed limits on many of these segments, which can be addressed despite their lower priority. ***TABLE 5.3*** shows HIN segments where speeding of 1 mph or more has occurred according to data collected from RITIS, presented starting with those with the highest speed disparity. The lines with bold text represent the HIN segments that were selected for specific project recommendations. The remaining HIN segments have not been chosen for project recommendations, but can still be considered areas where countermeasures could help reduce speeding. Refer to ***TABLE 6.3*** for recommended countermeasures on high speed segments.

TABLE 5.3: HIN Prioritization

SEGMENT #	STREET NAME	BOUNDARIES	PRIORITIZATION TOTAL SCORE	Speed Limit (ETRIMS)	85th Percentile Speed (RITIS)	SPEED DIFFERENCE
1	Thomas St	Watkins Street - I-40	85	40	57	17
2	Walnut Grove Rd	I-240 - Humphreys Blvd	80	40	53	13
3	S Third St	Stateline Rd - Weaver Rd	60	45	58	13
4	New Getwell Rd	Knight Arnold Rd - Lamar Ave	60	40	49	9
5	S Third St	E Industrial Ave - I-55	57	40	49	9
6	**Austin Peay Hwy**	**Yale Rd - James Rd**	**100**	**45**	**52**	**7**
7	Airways Blvd	Memphis Depot Pkwy - I-240	90	40	47	7
8	Southern Ave	Latham St - Lamar Ave	75	35	41	6
9	New Covington Pk	Austin Peay Hwy - Covington Pike	70	45	51	6
10	Plough Blvd	Democrat Rd - Winchester Rd	87	50	55	5
11	Plough Blvd	I-240 - Democrat Rd	72	50	55	5
12	**Jackson Ave**	**I-40 - National St**	**100**	**40**	**44**	**4**
13	Ramill Rd	Yale Rd - Jackson Ave	80	40	44	4
14	Neely Rd	E Fairway Ave - Bonita Dr	60	35	39	4
15	S Third St	S Parkway E - E Person Ave	70	40	41	1
16	Thomas St	Watkins Street - Fite Road	67	55	56	1
17	S Third St	Weaver Rd - W Shelby Dr	60	45	46	1

FIGURE 5.4: Top Speeding Segments



TRANSIT STOP CRASH ANALYSIS

An additional crash analysis was performed to analyze the geospatial location of crashes within the City of Memphis around bus transit stops. Hot spots, defined by a higher concentration of data points relative to the rest of the study area, help to identify locations with the highest frequency of crashes.

A heat map helps to identify the density of crashes based on frequency and geospatial location. A data set including just vulnerable road user crashes around transit stops in the City of Memphis from 2019 to 2023 shows the highest density of crashes around Cleveland Street, Union Avenue, and Lamar Avenue. This heat map along with the highest frequency transit stops based on fatal and serious injury pedestrian crashes and all severity vulnerable road user crashes are shown in ***FIGURE 5.5*** and ***FIGURE 5.6.*** Each of the high-risk intersections identified in the figures can be found listed in ***TABLE 5.4*** and ***TABLE 5.5***. Refer to ***TABLE 6.3*** for recommended countermeasures at high-risk transit stop locations.

TABLE 5.4: High-Risk Transit Stop Intersections Based on All Severity Vulnerable Road User Crash Frequency

N-S STREET	E-W STREET	Fatal & Serious Injury Pedestrian Crashes	All Severity Vulnerable Road User Crashes
S Cleveland Street	Union Avenue	4	17
Hollywood Street	Chelsea Avenue	4	10
N Cleveland Street	Poplar Avenue	1	9
N Highland Street	Summer Avenue	5	8
S Highland Street	Poplar Avenue	2	7
Bellevue Boulevard	Lamar Avenue	2	7
S Cooper Street	Union Avenue	1	7
Third Street	E Brooks Road	3	6
Elvis Presley Boulevard	Norris Road	0	6
Auburndale Street	Union Avenue	2	6
Millbranch Road	E Holmes Road	2	6
Lamar Boulevard	Pearson Road	2	6
Covington Pike	Stage Road	0	6

TABLE 5.5: High-Risk Transit Stop Intersections Based on KA Pedestrian Crash Frequency

N-S STREET	E-W STREET	Fatal & Serious Injury Pedestrian Crashes	All Severity Vulnerable Road User Crashes
N Highland Street	Summer Avenue	5	8
S Cleveland Street	Union Avenue	4	17
Hollywood Street	Chelsea Avenue	4	10
Jackson Avenue	Orchi Road	4	5
Third Street	E Brooks Road	3	6
Third Street	S Parkway E	3	5
Lamar Avenue	Mobile Drive	3	5
Summer Avenue	White Station Road	3	4
Perkins Road	Judy Lynn Avenue	3	4
Franklin Street	Summer Avenue	3	5
Thomas Street	Whitney Avenue	3	4
Baltic Street	Summer Avenue	3	5
Horn Lake Road	Geeter Road	3	5
Getwell Road	New Willow Road	3	4

FIGURE 5.5: High-Risk Transit Stop Intersections Based on KA Pedestrian Crash Frequency

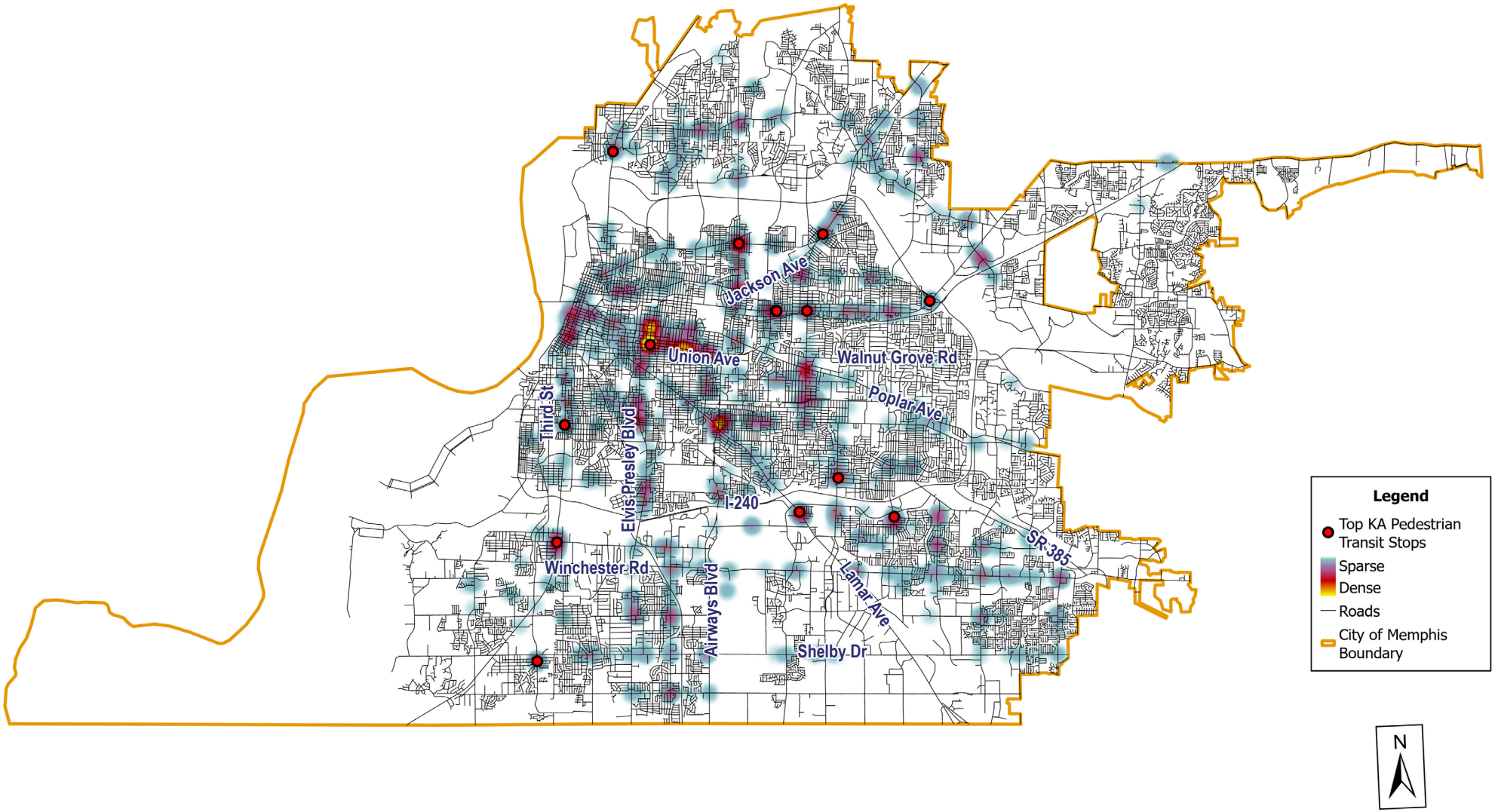
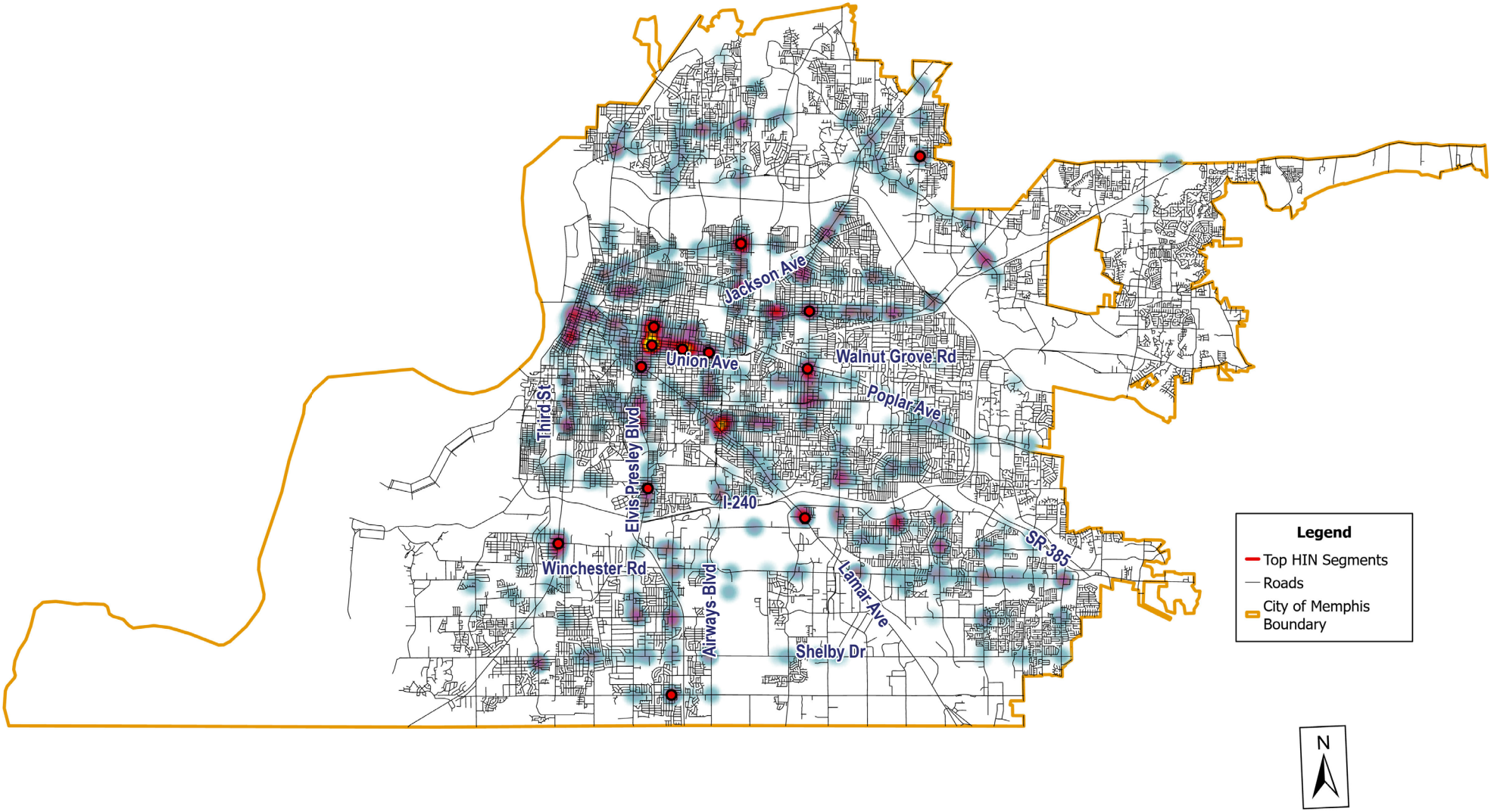


FIGURE 5.6: High-Risk Transit Stop Intersections Based on All Severity Vulnerable Road User Crash Frequency



6

SYSTEMIC ANALYSIS

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6 Systemic Analysis

This chapter summarizes the systemic analysis of vehicular crash data in Memphis, TN. The purpose of this systemic analysis is to identify trends and connections between "emphasis areas" in the five most recent years of crash data. The TDOT Strategic Highway Safety Plan (SHSP) for 2025-2029 identifies 13 focus areas that are representative of the state's most critical roadway safety challenges and contribute to a large number of fatal and serious injury crashes.

THESE SAFETY EMPHASIS AREAS ARE DEFINED AS FOLLOWS:

Roadway Departures
This addresses crashes where a vehicle crosses an edge line or a center line, including running into an adjacent travel lane or running off the roadway altogether.

Intersections
This addresses crashes occurring at or near a junction where roadways intersect other roadways.

Unrestrained Occupants
This addresses crashes where an occupant was not using a seatbelt or vehicle safety equipment.

Older Drivers
This addresses crashes where a driver is over the age of 65 years old.

Teen Drivers (13-19)
This addresses crashes where a driver is between the ages of 13 and 19 years old.

Impaired Driving
This addresses crashes where a driver is physically impaired, under the influence of medication/drugs, or under the influence of alcohol.

Inattentive, Distracted, and Drowsy Drivers
This addresses crashes where the driver is not paying attention to the road or not fully awake.

Aggressive Driving and Speeding
This addresses crashes where unsafe driving behaviors performed intentionally with disregard for safety or driving over the speed limit.

Motorcycles
This addresses crashes where a motorcycle is involved.

Heavy Vehicles
This addresses crashes where large, commercial motor vehicles are involved.

Vulnerable Road Users
This addresses crashes that involve people who are more at risk of suffering a fatal or serious injury like bicycles or pedestrians.

Railroad Crossings
This addresses crashes that occur at a railroad crossing.

Work Zone
This addresses crashes that occur in roadway work zones.

Data Analysis

Analysis was performed based on the frequency of fatal and serious injury (KA) crashes, non-"property damage only" (PDO) crashes, and the total crashes for the emphasis areas outlined in the TDOT SHSP for 2025-2029. The analyzed crash data was collected from AASHTOWare using their Crash Query tool. The frequency of crashes in the Memphis network based on the categories above are as follows: 2,963 KA crashes, 31,400 non-PDO crashes, and 136,875 total crashes. Access Point crashes were defined as angle crashes that happened at driveways or business entrances, and as shown below, these crashes account for 18% of the total crashes in the network. A breakdown of the crashes per emphasis area and the percentage of crashes per emphasis area can be found in ***TABLE 6.1***. Speeding appears as a low percentage in the data mainly due to it is not usually known and/or recorded in crash reports. This highlights the need for additional data sources and resources to better identify when speeding contributes to crashes.

TABLE 6.1: Crashes Per Emphasis Area

Emphasis Areas	KA Crashes (% of KA Crashes)	Non-PDO Crashes (% of Non-PDO Crashes)	Total Crashes (% of Total Crashes)
Intersections	1,869 (63%)	21,379 (68%)	86,431 (63%)
Teen Drivers (13-19)	755 (25%)	8,314 (26%)	50,708 (37%)
Vulnerable Road Users	705 (24%)	2,050 (7%)	2,234 (2%)
Aggressive Driver	622 (21%)	6,067 (19%)	23,275 (17%)
Roadway Departures	562 (19%)	3,777 (12%)	14,505 (11%)
Unrestrained	516 (17%)	1,488 (5%)	3,508 (3%)
Senior Drivers (65+)	319 (11%)	4,328 (14%)	18,433 (13%)
Access Point Crashes	310 (10%)	4,475 (14%)	24,333 (18%)
Distracted Drivers	262 (9%)	5,368 (17%)	24,528 (18%)
Impaired	254 (9%)	580 (2%)	1,099 (1%)
Motorcycle	182 (6%)	556 (2%)	750 (1%)
Heavy Vehicles	170 (6%)	1,516 (5%)	7,601 (6%)
Speeding Related	95 (3%)	368 (1%)	1,036 (1%)

As shown in ***FIGURE 6.1*** (right), the top three emphasis areas by frequency of total crashes are Intersections, Teen Drivers (13-19), and Distracted Drivers with Intersections being the most prevalent by far. The top three areas of emphasis by frequency of KA crashes are Intersections, Teen Drivers (13-19), and Vulnerable Road Users. From the table above, the top seven emphasis areas for KA and total crash frequency were chosen for year-over-year analysis.

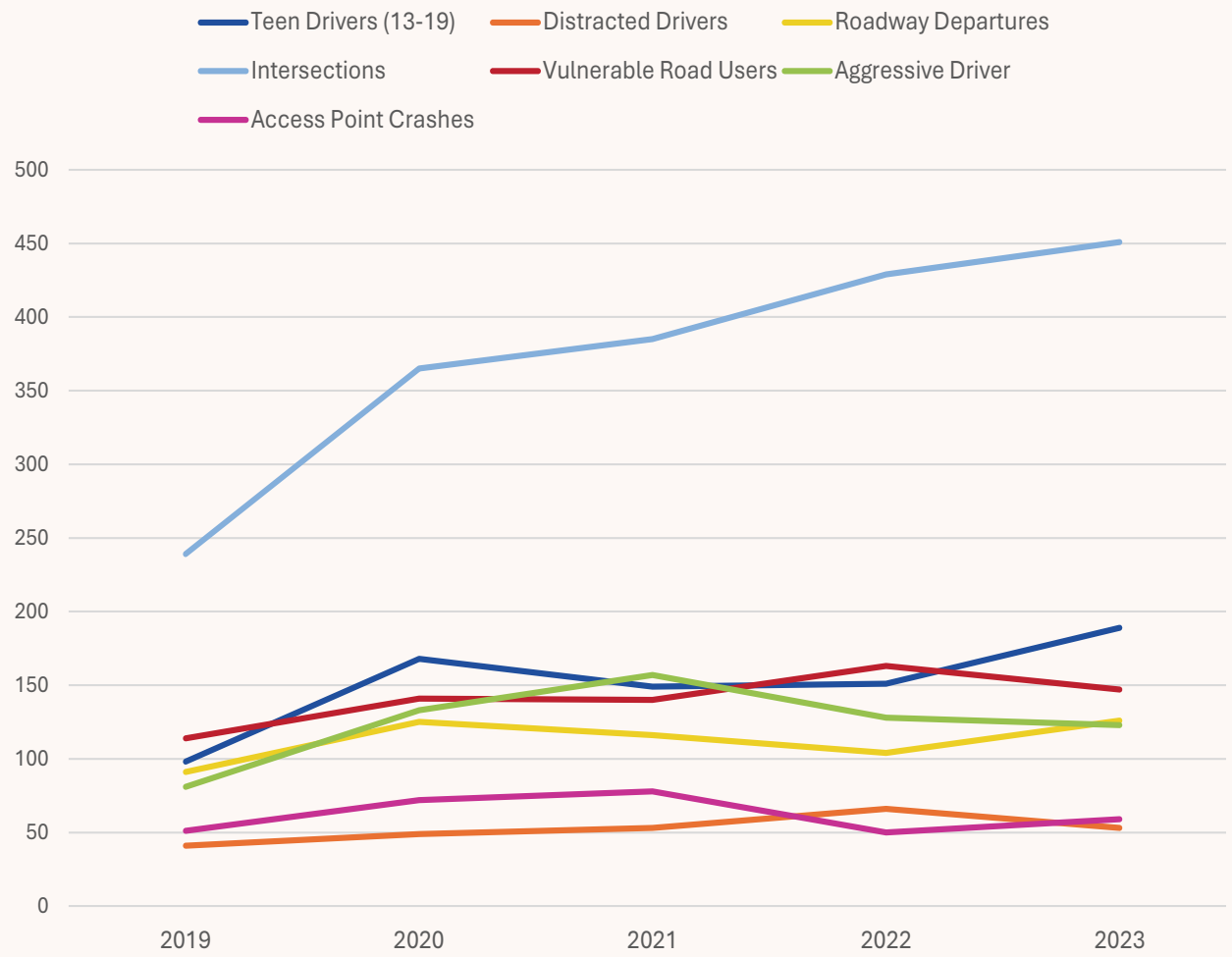
This data highlights the significant disparity between the total number of crashes involving Vulnerable Road Users (VRUs) and the percentage that result in a fatality or serious injury (KA). No other emphasis area exhibits a ratio that comes close to this magnitude. VRUs are disproportionately affected by severe outcomes in crashes, underscoring the critical need for targeted safety measures and interventions.

FIGURE 6.1: Crashes Per Emphasis Area Per Severity

TABLE 6.2: KA Crashes per Emphasis Area by Year

Emphasis Areas	2019	2020	2021	2022	2023
Teen Drivers (15-21)	10316	9807	10631	10184	9770
Distracted Drivers	5353	4400	4990	5086	4699
Roadway Departures	2763	3105	3103	2875	2659
Intersections	17467	15329	17371	18613	17651
Vulnerable Road Users	480	433	426	460	435
Aggressive Driver	4136	4210	4876	4787	5266
Access Point Crashes	5579	4878	5196	4311	4369

FIGURE 6.2: KA Crashes per Emphasis Area by Year



The data shows that Intersections nearly doubled over the last five years. There has been a general increase in frequency of KA crashes over the last five years from Vulnerable Road Users, Teen Drivers (13-19), Aggressive Drivers, and Roadway Departures. Emphasis areas that show little to no increase are Distracted Drivers and Access Point Crashes.

The crash data set provided the opportunity to accurately assess all the Tennessee SHSP emphasis areas. The systemic analysis identified younger drivers, intersections, and distracted drivers as the most prevalent focus areas based on total crashes while intersections, younger drivers, and vulnerable road users are the most prevalent based on fatal and serious injury crashes.. Non-motorist and motorcycle crashes show the highest fatal or serious injury rate per total crashes, demonstrating these types of crashes as particularly vulnerable. The crash data set filtered by the 13 Tennessee SHSP emphasis areas and non-motorist crashes is shown in ***FIGURE 6.3***.

TABLE 6.3 shows a comparison of the City of Memphis fatal and serious injury crashes to statewide totals for crashes reported between 2019 and 2023 by emphasis area. As shown in the table, Memphis experienced a higher percentage of fatal and serious injury crashes for several emphasis areas, including crashes involving Intersections, Teen Drivers (13-19), Aggressive Drivers/Speeding, Pedestrians, and Bicycles. 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 be added to equal the exact totals. Bold Text shows which contributing factors were more prevalent in the City of Memphis than the statewide data over the five-year study period. The unshaded cells show which contributing factors were less prevalent in the City of Memphis.

TABLE 6.3: City of Memphis Fatal and Serious Injury Crashes by Safety Emphasis Areas

Category	Emphasis Area	City of Memphis (2019–2023)		State of Tennessee (2019–2023)	
		% Fatal & Serious Injury Crashes	Total	% Fatal & Serious Injury Crashes	Total
All Severe Crashes		100.0%	2963	100.0%	31075
Roadway	Roadway Departure	19.0%	562	41.6%	12938
	Intersections	**63.1%**	**1869**	**30.6%**	**9508**
Drivers	Unrestrained Occupants	17.4%	516	19.0%	5901
	Senior Drivers (65+)	10.8%	319	19.5%	6048
	Teen Drivers (13-19)	**25.5%**	**755**	**21.3%**	**6614**
	Impaired Drivers	8.6%	254	15.8%	4913
	Inattentive, Distracted, and Drowsy Drivers	8.8%	262	9.5%	2950
	Aggressive Drivers /Speeding	**24.2%**	**717**	**11.9%**	**3686**
Vehicles	Motorcycles	6.1%	182	14.0%	4340
	Large Trucks	5.7%	170	5.8%	1805
Vulnerable Road Users	**Pedestrians**	**22.4%**	**664**	**8.1%**	**2507**
	Bicycles	**1.4%**	**41**	**1.1%**	**335**

Countermeasures

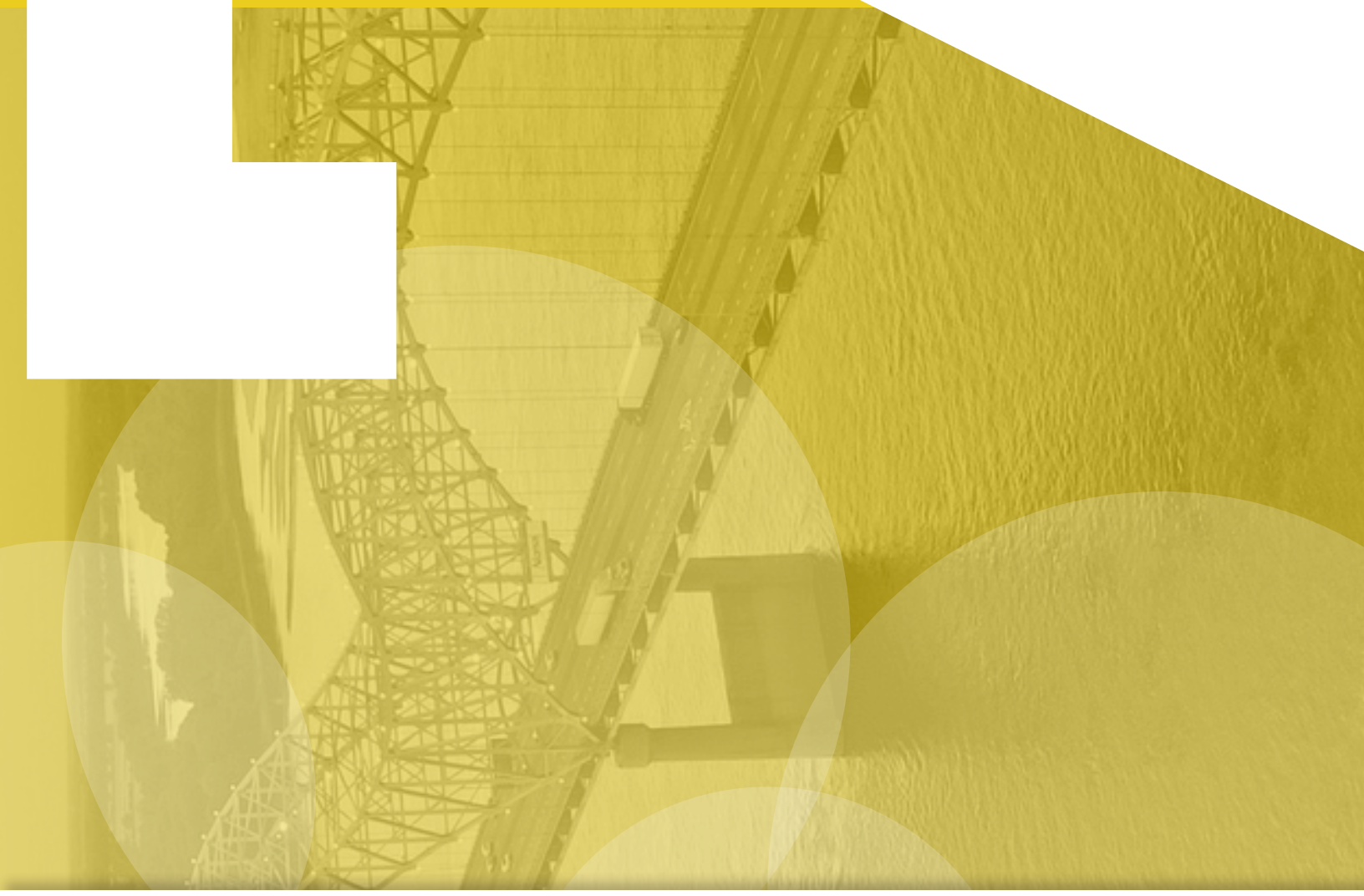
Additionally, countermeasures were selected based on proven countermeasures found in the TDOT SHSP for 2025-2029, whether it be education, enforcement, or engineering modifications. Multiple proven countermeasures were sourced from the TDOT SHSP for 2025-2029 and the countermeasures deemed most effective for the project area are shown in the table below. ***TABLE 6.4*** shows the countermeasure(s) per emphasis area ranked by emphasis areas with the highest frequency of fatal and serious injury crashes. A Crash Modification Factor (CMF) is provided for each countermeasure if one is available from the CMF Clearinghouse.

TABLE 6.4 : Proven Countermeasures per Emphasis Area

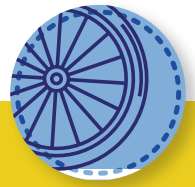
Emphasis Areas	KA Crashes	Countermeasure(s) *(CMFs where available)*	
Intersections	1869	✓ Use crash data to find specific intersections that have a high risk due to the frequency of KA crashes then provide improvements such as improving geometry, traffic control, lighting, and pedestrian infrastructure ✓ Spot Safety Program - limited cost projects like, sight distance issues, turn lanes, flashing beacon, or school flashing signals ✓ Install retroreflective backplates on signal heads (0.85) ✓ Enhance corridor access management (0.93) ✓ Dedicated left and right turn lanes at intersections (0.98 and 1.36 respectively) ✓ Decrease left turn conflict points with RCUT and J-Turn intersections (0.8 and 0.652 respectively)	✓ Install roundabouts (0.28-0.56) ✓ Re-evaluate yellow change intervals at intersections (1.14) ✓ Perform Road Safety Audits at key locations ✓ Dedicated left and right turn lanes at intersections (0.98 and 1.36 respectively) ✓ Decrease left turn conflict points with RCUT and J-Turn intersections (0.8 and 0.652 respectively) ✓ Install roundabouts (0.28-0.56) ✓ Re-evaluate yellow change intervals at intersections (1.14) ✓ Perform Road Safety Audits at key locations
Teen Drivers (15-21)	755	✓ Focused campaigns towards 15-21 aged drivers and campus areas to address standard driving procedures ✓ Increased legislation on Graduated Driver's License and Permit	✓ Enforcement of the Graduated Driver's License ✓ Programs to assist parents of young drivers
Vulnerable Road Users	705	✓ Encourage the utilization of Complete Street Policies ✓ Improve pedestrian and bike facilities with increased lighting at high-risk locations and segments (0.581-0.792) ✓ Re-evaluate design speeds and target speeds on roads (0.856) ✓ Increase driver awareness using social media and websites ✓ Conduct high visibility campaigns on low-speed limit compliance, right on red, and low yield compliance in high frequency areas ✓ Training for law enforcement about laws that apply to bicyclists and pedestrians ✓ Use leading pedestrian intervals at intersections (0.81-0.9)	✓ Increased pedestrian refuges and medians in urban/suburban areas (0.860-0.910) ✓ Increased use of pedestrian hybrid beacons (0.808-0.883) ✓ Increased use of rectangular rapid flashing beacons (0.27-0.31) ✓ Elementary-Age Child Pedestrian Safety ✓ Safe Routes to School (0.87) ✓ Bicycle Safety Education for Children ✓ Install Sidewalk (0.598) ✓ Install High Visibility Crosswalk Pavement Markings (0.600-0.810) ✓ Install Bike Lane (0.435-0.571)

Emphasis Areas	KA Crashes	Countermeasure(s) *(CMFs where available)*	
Aggressive Drivers	622	✓ Decrease or manage speed through engineering design (0.68-0.85)	✓ Enforcement programs in high frequency areas
Roadway Departures	562	✓ Develop an inventory based on the Manual on Uniform Traffic Control Devices (MUTCD) to ensure current roadways are complying with these requirements ✓ Identify segments with increased occurrences of roadway departure crashes. Fund and provide improvements to these segments (pavement markings, signing, delineation, rumble strips, resurfacing) (0.592-0.91) ✓ Enhanced delineations for horizontal curves (0.76)	✓ Increased use of rumble strips (0.75) ✓ Increased use of median barriers (0.29-0.45) ✓ Use of SafetyEdge to decrease the amount of vertical road drop-offs on rural roads (0.591-0.863) ✓ Wider shoulders (0.67) ✓ Pavement friction treatments (0.422-0.522)
Unrestrained	516	✓ Increased high visibility campaigns or legislation on seatbelt usage on passenger cars, restraint training targeting 15–21-year-old drivers ✓ Pursue legislation on incentivizing the use of seatbelts ✓ Short-Term, High-Visibility Seat Belt Law Enforcement	✓ Short-Term, High-Visibility Child Passenger Safety Law Enforcement ✓ Child Restraint Inspections Points ✓ Communication Strategies for Low-Belt-Use Groups
Senior Drivers (65+)	319	✓ Legislation to require driver's license renewal and vision testing for drivers over 75 years old ✓ Effort to link seniors to transit systems with adequate infrastructure and increased awareness ✓ Outreach programs targeted at older drivers ✓ License Screening and Testing	✓ Increase retro reflective pavement markings and delineators (0.717-0.852) ✓ License Restrictions ✓ In-Person Renewal ✓ Courses for Older Drivers
Access Point Crashes	310	✓ Create better policy or enforcement of policy to dissuade developers from building unsafe access points	✓ Enhance corridor access management (0.93)
Distracted Drivers	262	✓ Enforce the Hands-Free Law with high visibility ✓ Education on distracted driving	✓ High-Visibility Cell Phone Enforcement ✓ Graduated Drivers Licensing Nighttime Restrictions
Impaired	254	✓ Increase detection of impaired driving ✓ Introduce checkpoints in highly impaired areas ✓ Reduce minors' ability to purchase alcohol through training on underage sales ✓ Impaired driving education targeted to teens and college campus areas	✓ DWI Offender Monitoring ✓ High-Visibility Patrols ✓ Sobriety Checkpoints ✓ Alcohol Vendor Compliance Checks

Emphasis Areas	KA Crashes	Countermeasure(s) *(CMFs where available)*	
Motorcycle	182	✓ Encourage entry-level and advanced training for riders	✓ Alcohol-Impaired Motorcyclists Detection
Heavy Vehicles	170	✓ Enforcement to contact commercial vehicle companies when seen driving dangerously around passenger vehicles	✓ Increase training required to operate a commercial vehicle ✓ Improve scales located at weigh stations
Speeding Related	95	✓ Increase detection of high-speed driving ✓ Decrease or manage speed through engineering design (0.68-0.85) ✓ Variable Speed Limit signs (0.92)	✓ Lower speed limits and increased penalties (0.856) ✓ Speed camera enforcement (0.78-0.95) ✓ High visibility enforcement
Vulnerable Road User – Transit Stops	348	✓ Improve pedestrian and bike facilities with increased lighting at high-risk locations and segments (0.581-0.792) ✓ Use leading pedestrian intervals at intersections (0.81-0.9) ✓ Increased pedestrian refuges and medians in urban/suburban areas (0.860-0.910) ✓ Increased use of pedestrian hybrid beacons (0.808-0.883) (for unsignalized intersection and midblock transit stop locations only)	✓ Increased use of rectangular rapid flashing beacons (0.27-0.31) (for unsignalized intersection and midblock transit stop locations only) ✓ Install Sidewalk (0.598) ✓ Install High Visibility Crosswalk Pavement Markings (0.600-0.810) ✓ Implement No Right Turn on Red ✓ Install Protected Only Left-Turn Phasing (0.69-0.975)



COUNTERMEASURES & STRATEGIES



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7 Countermeasures and Strategies

The Memphis SAP's data-driven analysis, combined with stakeholder and public input, helped to identify transportation safety issues across the City of Memphis. Effective countermeasures and strategies were carefully reviewed and selected as recommendations to best fit the needs and goals of the Memphis SAP. Both targeted and systemic recommendations were identified to reduce fatal and serious injury crashes at specific locations and across the entire road network in Memphis. Location-specific recommendations were developed by identifying countermeasures aligned with the emphasis areas outlined in **Section 6**.

LOCATION SPECIFIC RECOMMENDATIONS

The ten highest ranked HIN road segments and HIN intersections from the prioritization process described in Chapter 5 were selected for project development. Location specific recommendations were then identified for each of the selected locations. These recommendations include countermeasures and strategies targeting locations where fatal and serious injury crashes have occurred in recent years.

Location specific recommendations are provided for each of the following ten prioritized HIN road segment locations:

1. Millbranch Road between Winchester Road and East Shelby Drive
2. Hickory Hill Drive between Mount Moriah Road and Winchester Road
3. Lamar Avenue between American Way and New Getwell Road
4. East Raines Road between Elvis Presley Boulevard and Airways Boulevard
5. Winchester Road between New Getwell Road and South Perkins Road
6. Austin Peay between Highway Yale Road and James Road
7. Jackson Avenue between I-40 and National Street
8. Shelby Drive between I-55 and Airways Boulevard
9. Winchester between Hickory Hill Road and Riverdale Road
10. Perkins Road between American Way and Knight Arnold Road

Location specific recommendations are provided for each of the following ten prioritized HIN intersection locations:

1. North Highland Street at Summer Avenue/ Forrest Avenue
2. Hickory Hill Drive at Raines Road
3. Mendenhall Road at Winchester Road
4. Elvis Presley Boulevard at Holmes Road
5. South Cleveland Street at Union Avenue
6. Hoover Drive at Raleigh-Lagrange Road
7. Coleman Road at Stage Road
8. South Third Street at Rollins Road
9. Getwell Road at New Willow Avenue
10. Shelby Dr at Swinnea Road

The intersection of North Hollywood Street and Chelsea Avenue was excluded from specific recommendations due to a recent City funded intersection improvement project.

Additionally, the intersection of Shelby Street and Swinnea Road was added due to it having the highest frequency of KA crashes for an intersection.

ROAD SEGMENT PROJECT SHEETS

PAGE 1: Summary of existing roadway characteristics, public input, crash data, and a crash map detailing locations of fatal and serious crashes along with vulnerable road user crashes.

PAGE 2: Shows a heat map of all crashes along with locations for the selected countermeasures.

PAGE 3: Provides additional details regarding the crash data and the selected countermeasures for the location

INTERSECTION PROJECT SHEETS

PAGE 1: Summary of existing roadway characteristics, public input, and crash data.

PAGE 2: Shows a crash map displaying fatal and serious injury crashes along with vulnerable road user crashes.

PAGE 3: Provides additional details regarding the crash data and the selected countermeasures for the location

Additional information pertaining to each recommendation is indicated by the following icons:

- The blue check mark symbol represents a countermeasure identified as a Proven Safety Countermeasure by the FHWA.
- The orange check mark represents a countermeasure supported by a quality Crash Modification Factor according to the Crash Modification Factors Clearinghouse.

A quality CMF is defined as one with a 4-star rating or higher.

A full table of the countermeasures utilized for the selected locations along with their respective emphasis areas and crash types can be found in **Appendix F**.

Recommended Countermeasures

Strategic selection of safety countermeasures and strategies helps implement the Safe System Approach so that redundant layers of protection are built into the road network to prevent crashes and/or minimize their severity. A safety countermeasure is defined as a specific action designed to mitigate existing or predicted safety issues. A strategy is defined as a high-level plan intended to guide efforts towards mitigating existing or predicted safety issues. Strategies oftentimes include plans or policies encouraging stakeholders and road users to mitigate life-threatening crashes.

Each of the countermeasures and strategies are accompanied by an anticipated timeframe of implementation. These time frames account for any planning, design, or construction necessary to implement an item. The time frames provided for the countermeasures consist of the following:

- Short-term (less than 2 years)
- Mid-term (2-5 years)
- Long-term (more than 5 years)

FHWA PROVEN SAFETY COUNTERMEASURES

The (FHWA Proven Safety Countermeasures (PSC) provide twenty-eight countermeasures and strategies that can offer significant and measurable improvements to safety affecting all road users. Each countermeasure addresses at least one of the USDOT's safety focus areas, which include speed management, intersections, roadway departures, and pedestrians/bicyclists. Some of the PSC's are considered crosscutting, which identifies countermeasures that address more than one safety focus area at a time. The twenty-eight PSC's broken up by safety focus area, are as follows:

SPEED MANAGEMENT

- **Speed Safety Cameras (Short-term)**
  Can detect speeding vehicles and store data for use in a ticket, ultimately encouraging drivers to slow down to acceptable speeds. Arkansas state law currently requires an officer to be present and limits the use of speed safety cameras to school zones, railroad crossings, and highway work zones.
- **Variable Speed Limits (Mid-term)**
  Allows for a real-time change of the posted speed limit to accommodate varying driving conditions such as congestion, crashes, and weather. Variable speed limits can mitigate unexpected safety issues by providing safer driving conditions.
- **Appropriate Speed Limits for All Road Users (Short-term)**
  Utilizes an engineering study conducted in accordance with the MUTCD along with engineering judgment to determine the appropriate speed limit for road users. This speed limit determination should also consider non-motorist activity, crash history, nearby land use, and observed speeds.

ROADWAY DEPARTURE

- **Wider Edge Lines (Short-term)**
  Increases driver awareness of the edge of the travel lane, effectively reducing the likelihood of roadway departure crashes. The installation of wider edge lines provides a high benefit cost ratio with significant safety improvements and low cost of materials and labor.
- **Enhanced Delineation for Horizontal Curves (Short-term)**
  Includes a variety of countermeasures aimed at increasing driver awareness of curves. Pavement markings, retroreflective strips on signposts, delineators, chevron signs, and dynamic curve warning signs can be used to enhance delineation for horizontal curves.
- **Longitudinal Rumble Strips and Stripes on Two-Lane Roads (Short-term)**
  Provide textured pavement strips and pavement markings to increase driver awareness of the edge of the travel lane, effectively reducing the likelihood of roadway departure crashes. This countermeasure provides a high benefit cost ratio with its generally low cost of implementation and significant safety benefits.
- **SafetyEdgeSM (Short-term)**
  Provides a thirty-degree slope on a roadways edge of pavement. This reduces the pavement edge's vertical drop off and provides vehicles with an opportunity to regain control during a potential roadway departure crash event.
- **Roadside Design Improvements at Curves (Short-term)**
  Includes a variety of countermeasures aimed at improving safety at roadside areas along the outside of horizontal curves. Widened shoulders, flattened side slopes, widened clear zones, barriers, and guardrails can be used to improve roadside design at curves.
- **Median Barriers (Mid-term)**
  Aims to redirect vehicles departing from the roadway into a median. These barriers can be made of cable, concrete, or metal-beam guardrail.
-

INTERSECTIONS

- **Backplates with Retroreflective Borders (Short-term)**
  Utilizes a retroreflective yellow border to improve signal head visibility during both daytime and nighttime.
- **Corridor Access Management (Long-term)**
  Aims to reduce potential conflicts between road users through the strategic control of entry and exit points along a corridor. Reducing driveway density, managing space between intersections, restricting specific movements, raised medians, and roundabouts can be used individually or in combination to improve corridor access management.
- **Dedicated Left- and Right-Turn Lanes at Intersections (Mid-term)**
  Utilizes auxiliary turn lanes to provide physical separation for turning vehicles to decelerate or stop in a queue of vehicles prior to a turn.
- **Reduced Left-Turn Conflict Intersections (Mid-term)**
  Adjusts the design of a left turn to reduce the likelihood of dangerous crashes. Restricted Crossing U-Turns and Median U-Turns are two effective designs that reduce left-turn conflicts at intersections.
- **Roundabouts (Mid-term)**
  Is designed to reduce vehicle speeds and potential conflict points by utilizing channelized approaches and circulating traffic flow. When installed at the appropriate locations, roundabouts can reduce delay and queuing when compared to other intersection alternatives.

INTERSECTIONS CONT.

- **Systemic Application of Multiple Low-Cost Countermeasures at Stop-Controlled Intersections (Short-term)**
  Includes a variety of countermeasures aimed at improving signing and marking across many stop-controlled intersections. Doubled-up oversized advance intersection warning signs, retroreflective sheeting on signposts, enhance pavement marking that delineate through lane edge lines, properly placed stop bar, removal of vegetation, and double arrow warning sign at the stem of T-intersections are low-cost countermeasures effective in improving safety at stop-controlled intersections.

- **Yellow Change Intervals (Short-term)**
  Evaluates signal timing based on the MUTCD's requirements and recommendations concerning yellow change interval timing. An appropriately timed yellow signal indication can reduce red light running or rear-end crashes at signalized intersections

PEDESTRIANS/BICYCLISTS

- **Crosswalk Visibility Enhancements (Short-term)**
  Includes various countermeasures to improve the visibility of crosswalks and their users to drivers. High-visibility crosswalks, improved lighting, and enhanced signing and pavement markings are countermeasures used to effectively enhance crosswalk visibility.

- **Bicycle Lanes (Mid-term)**
  Provides a dedicated lane for bicyclists to travel in a different lane than motorized vehicles. It decreases potential conflicts with vehicles and provides a more attractive and comfortable environment for bicyclists. Separated bicycle lanes, which use vertical elements—such as flexible delineator posts, curbs, or vegetation—between the bicycle lane and motorized traffic lanes provide additional safety benefits. For a marked bike lane without vertical elements, a lateral offset with marked buffer can help to further separate bicyclists from vehicle traffic.

- **Rectangular Rapid Flashing Beacons (RRFB) (Short-term)**
  Utilizes rectangular-shaped, flashing lights to increase awareness of pedestrians crossing a roadway. RRFB's supplement marked crosswalks and a pedestrian warning sign. An engineering study should be conducted in accordance with the MUTCD to determine the appropriate application of an RRFB. An RRFB is typically mounted on the side of the road but can be incorporated with signs overhead for increased visibility and effectiveness.

- **Leading Pedestrian Interval (LPI) (Short-term)**
  Modifies signal timing so that pedestrians can enter the intersection approximately three to seven seconds before vehicles receive a green light. LPI's can reduce potential conflicts and increase the visibility of pedestrians crossing a roadway, especially for vehicles making turning movements. An engineering study should be conducted in accordance with the MUTCD to determine the appropriate application of an LPI at a signalized intersection.

- **Median and Pedestrian Refuge Islands in Urban and Suburban Areas (Long-term)**
  Creates physical separation between opposing traffic by use of pavement markings, raised medians, or islands. A pedestrian refuge is a specific type of median that provides a protected area for pedestrians crossing a roadway. Medians and pedestrian refuges can improve safety by effectively reducing vehicle speeds and decreasing crossing distance for non-motorists.

- **Pedestrian Hybrid Beacons (PHB) (Mid-term)**
  Utilizes a signal to stop vehicles and provide the right-of-way to pedestrians crossing a roadway. PHB's are generally installed at uncontrolled intersections or midblock locations and are mounted overhead like traditional traffic signals. An engineering study should be conducted in accordance with the MUTCD to determine the appropriate application of a PHB.

PEDESTRIANS/BICYCLISTS CONT.

- **Road Diets (Roadway Reconfiguration) (Long-term)**
  Reduces the amount of travel lanes and oftentimes the lane widths so that allocation of space can be utilized for alternative uses. Road diets can reduce vehicle speeds, reduce potential conflict points, and allocate dedicated space for non-motorists.
- **Walkways (Mid-term)**
  Provides a dedicated sidewalk for pedestrians. It decreases potential conflicts with vehicles and provides a more attractive and comfortable environment for pedestrians.

CROSSCUTTING

- **Pavement Friction Management (Short-term)**
  Utilizes textured pavement to enhance friction and skid resistance for vehicles. Pavement friction management can reduce roadway departure, rear-end, and non-motorist crashes, especially at curves, steep grades, and intersections that require road users to come to sudden stops.
- **Lighting (Mid-term)**
  Provides improved visibility for all road users through adequate light sources. Lighting is especially important for improving the safety of non-motorists at intersections and pedestrian crossings.
- **Local Road Safety Plans (LRSP) (Short-term)**
  Mimics a SAP in that it provides a strategic framework for preventing roadway fatalities and serious injuries for all road users. LRSPs focus on safety improvements for local roads, while aligning with any overlapping state SHSP or regional SAP.
- **Road Safety Audit (RSA) (Short-term)**
  Utilizes a multidisciplinary team to identify safety issues along a particular roadway and identify potential solutions for safety improvements. RSAs should be conducted as early as possible in a project's development process so that safety issues can be mitigated and solved before construction is completed.

CRASH MODIFICATION FACTORS (CMF)

Because funding for infrastructure improvements is limited, Crash Modification Factors (CMF) can be used to identify and select effective engineering countermeasures. FHWA maintains the CMF Clearinghouse, a searchable database of CMFs along with guidance and resources on using CMFs in the road safety practice. CMFs quantify the potential benefit of safety countermeasures and indicate the potential crash reduction associated with a specific countermeasure.

The following provides guidance to consider when selecting countermeasures and applying their respective CMFs:

- To provide a large enough sample size, use a minimum of three years of crash data for urban and suburban sites
- CMFs should be selected from FHWA's CMF Clearinghouse website (https://cmfclearinghouse.fhwa.dot.gov)
- 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.

OTHER RELEVANT COUNTERMEASURES

- **Removing Channelizing Right Turns:** Aims to redesign the right turn movements at intersections, specifically addressing current safety issues. The removal of channelized right turn lanes can enhance pedestrian safety and reduce vehicle turning speeds.
- **Reduce Right Turn Radii:** Enhances the safety of right-turn movements for vehicles at intersections. Modifying the curb radii can effectively lower vehicle speeds and improve pedestrian visibility at the intersection.
- **Install Reflective Tape on Utility Poles:** Enhances the visibility of utility poles along the roadway, promoting safety for motorists. Utility pole offsets contributed to collisions involving utility poles, especially under low-light or nighttime conditions. The installation process is efficient and represents a cost-effective approach.
- **Install/Modify Median to Restrict Side-Street Left-Turn Movements:** Prevents direct left-turns and thru movements from side streets significantly reduces conflict points, which is one of the strongest predictors of crash likelihood and severity. By eliminating the high-risk left-turn and thru maneuvers across multiple lanes of opposing traffic, medians help prevent serious angle and head-on collisions.
- **Update and Modernize Outdated Signal Equipment:** Involves upgrading and modernizing outdated signal equipment at signalized intersections. Such improvements can address issues like limited sight distance at intersections. Enhancing signal heads or pedestrian equipment as part of this countermeasure helps improve intersection safety.
- **Install Americans with Disabilities Act (ADA) Compliant Curb Ramps:** Provides safe transitions between sidewalks and crossings located on paved roadway surfaces. Curb ramps are designed for non-motorists and meet specific requirements outlined in the ADA to provide safer transportation for users with physical disabilities. Refer to the Public Right-of-Way Accessibility Guidelines (PROWAG) for more information on curb ramps.
- **Increased Speed Enforcement:** Aims to reduce speeding-related crashes by increasing driver awareness and compliance with posted speed limits. It is considered a temporary countermeasure, as its effectiveness typically depends on the visible presence of enforcement and may diminish once enforcement activities are reduced or removed. This approach is often used to address short-term safety concerns or to supplement longer-term engineering or policy solutions.
- **No Right Turn On Red:** Improves intersection safety by eliminating conflicts between turning vehicles and people crossing or traveling through the intersection. Prohibiting right turns on red simplifies driver decision-making, reinforces pedestrian right-of-way, and reduces surprise vehicle movements during the pedestrian phase—particularly at locations with high foot traffic, bike activity, or limited sight distance.

COUNTERMEASURE TOOLBOX

A countermeasure toolbox is a comprehensive collection of strategies and interventions designed to address specific traffic safety issues and challenges. It provides transportation professionals with a range of options and resources to effectively mitigate risks, improve safety, and enhance the overall performance of roadways and transportation systems.

The following details are systemic countermeasures that can be implemented in all areas of the City to improve safety, not limited to previous recommendations and study corridors. The City of Memphis systemic countermeasure toolbox is provided in ***TABLE 7-1.*** The table provides the countermeasure along with the associated emphasis area and crash types that the countermeasure applies to. Priority should be given to roads along the HIN and in areas of disadvantaged populations to lessen severity among crashes.

FHWA Focus Area	FHWA Proven Safety Countermeasure	Crash Types Targeted												
		Unrestrained Occupants	Lane Departure	Intersections	Teen Drivers	Impaired Drivers	Vulnerable Road Users	Motorcycles	Distracted Drivers	Older Drivers	Heavy Vehicles	Aggressive Driving	Railroad Crossing	Work Zone
Speed Management	Appropriate Speed Limits for All Road Users	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓
	Speed Safety Cameras			✓			✓					✓		
	Variable Speed Limits	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓
Pedestrian/ Bicyclist	Bicycle Lanes		✓	✓			✓							
	Crosswalk Visibility Enhancements			✓			✓		✓	✓				
	Leading Pedestrian Interval			✓			✓					✓		
	Medians and Pedestrian Refuge Islands in Urban and Suburban Areas		✓	✓		✓	✓		✓			✓		
	Pedestrian Hybrid Beacons			✓			✓		✓			✓		
	Rectangular Rapid Flashing Beacons (RRFB)			✓			✓		✓			✓		
	Road Diets (Roadway Reconfiguration)		✓	✓			✓		✓	✓	✓	✓		✓
	Walkways		✓				✓							
Roadway Departure	Enhanced Delineation for Horizontal Curves		✓			✓			✓	✓		✓		
	Longitudinal Rumble Strips and Stripes on Two-Lane Roads		✓			✓	✓		✓	✓				
	Median Barriers		✓			✓			✓		✓	✓		✓
	Roadside Design Improvements at Curves		✓			✓			✓			✓		✓
	SafetyEdge℠		✓			✓			✓			✓		
	Wider Edge Lines		✓			✓			✓	✓		✓		

Table 7.1: Countermeasures Toolbox | FHWA Proven Safety Countermeasures and Crash Types Targeted

FHWA Focus Area	FHWA Proven Safety Countermeasure	Crash Types Targeted												
		Unrestrained Occupants	Lane Departure	Intersections	Teen Drivers	Impaired Drivers	Vulnerable Road Users	Motorcycles	Distracted Drivers	Older Drivers	Heavy Vehicles	Aggressive Driving	Railroad Crossing	Work Zone
Intersections	Backplates with Retroreflective Borders			✓		✓			✓	✓		✓		
	Corridor Access Management		✓	✓			✓		✓	✓	✓	✓		
	Dedicated Left- and Right-Turn Lanes at Intersections			✓							✓			
	Reduced Left-Turn Conflict Intersections		✓	✓			✓							
	Roundabouts			✓										
	Systemic Application of Multiple Low-Cost Countermeasures at Stop-Controlled Intersections		✓	✓		✓	✓		✓	✓	✓	✓	✓	✓
	Yellow Change Intervals			✓			✓		✓			✓		
Crosscutting	Lighting		✓	✓		✓	✓			✓				
	Local Road Safety Plans	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Pavement Friction Management		✓	✓			✓	✓				✓		
	Road Safety Audit		✓	✓		✓	✓		✓	✓	✓	✓	✓	✓

Table 7.1: Countermeasures Toolbox | FHWA Proven Safety Countermeasures and Crash Types Targeted

SEGMENT 1: MILLBRANCH ROAD

Between East Shelby Drive and Winchester Road

- Includes High Injury Network Segment(s)
- Includes High Injury Intersection(s)

ROADWAY CHARACTERISTICS

Functional Class: Minor Arterial

Speed Limit: 40 mph

Number of Lanes: 4

Roadway Section: Two-way, not-divided, with a continuous two-way left turn lane

Roadway Grade: Crest, Level, & Sag

Roadway Alignment: Straight

Presence of Sidewalk: Yes

Average Daily Traffic: Approximately 25,000 vehicles per day

PUBLIC INPUT

Other Unsafe: potholes

EXISTING CONDITIONS

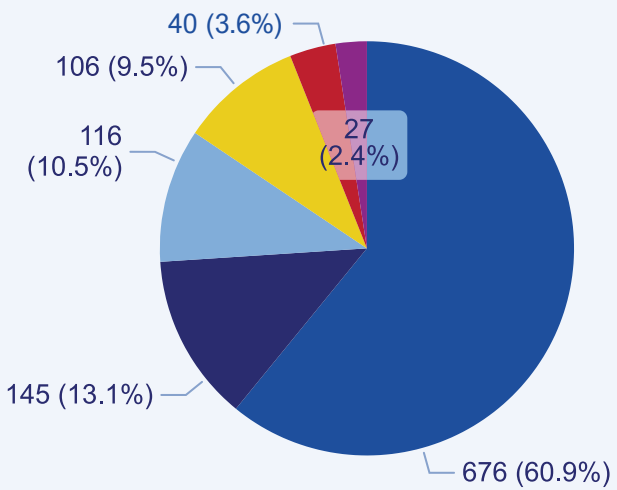
Access Management: High density of intersections and acces driveways

Crosswalks: Transverse crosswalks are obsolete along this segment

Curb Ramps: Some curb ramps are not ADA compliant

Pedestrian Signals: Pedestrian signal heads are outdated at Millbranch Roach and Winchester Road.

MANNER OF COLLISION CHART



Crash Data (2019 – 2023)	
8	Fatal
26	Serious Injury
68	Minor Injury
210	Possible injury
798	PDO

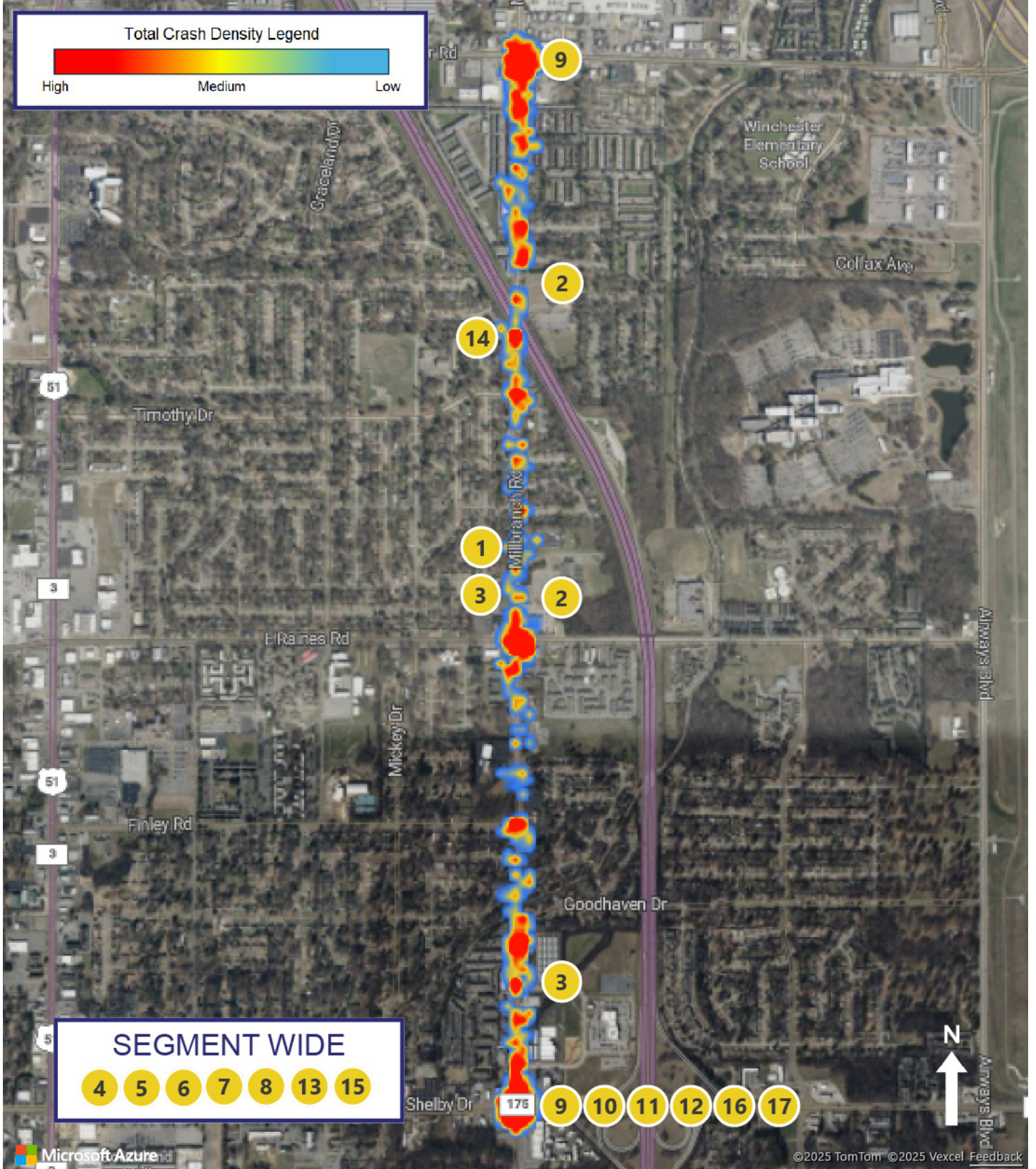
Fatal And Suspected Serious Injury Crash Map (2019–2023)

Crash Severity

- Fatal (K)
- Suspected Serious Injury (A)
- VRU Crash

SEGMENT 1: MILLBRANCH ROAD

Between East Shelby Drive and Winchester Road



SEGMENT 1: MILLBRANCH ROAD

Between East Shelby Drive and Winchester Road

COUNTERMEASURES SUMMARY

The countermeasures identified for Millbranch Road between Winchester Road and East Shelby Drive are intended to address the recent fatal and serious injury crashes along this segment, which include majority angle crashes with single vehicle, pedestrian, teen and intersection crashes.

Crash Type	Fatal Crashes	Serious Injury Crashes	Total Crashes
Intersection	5	22	**837**
Angle	3	11	**676**
Pedestrian	3	4	**22**
Teen	3	7	**440**
Distracted Driving	1	0	**199**
Aggressive Driving	1	8	**191**

**The sum of fatal crashes by crash type does not equal the total fatalities, as individual crashes may be classified under more than one crash type.*

The blue check mark symbol represents a countermeasure identified as a Proven Safety Countermeasure by the FHWA.

The orange check mark represents a countermeasure supported by a quality Crash Modification Factor according to the Crash Modification Factors Clearinghouse.

ID	Countermeasure	Cost	Schedule	Source Matrix	
1	Install automated section speed enforcement system (school zone)	$$	Mid-Term	✓	✓
2	Install high-visibility longitudinal type crosswalks at schools	$$	Short-Term	✓	✓
3	Install a pedestrian crosswalk at midblock at schools	$$	Short-Term		✓
4	Replace TWLTL with raised median	$$$	Long-Term	✓	✓
5	Upgrade/Install street lighting	$$	Mid-Term	✓	✓
6	Install separated bicycle lane	$$$	Long-Term	✓	✓
7	Upgrade existing markings to thermoplastic pavement markings and raised pavement markings	$	Short-Term		
8	Access Management Plan (From Planning to Implementation)	$$$	Long-Term	✓	
9	Convert protected/permissive left turn phasing to protected only phasing	$$	Mid-Term		✓
10	Install red-light cameras	$	Short-Term		✓
11	Extend median and install pedestrian refuges	$$	Mid-Term	✓	
12	Remove channelized right turn lanes	$$$	Mid-Term		
13	Evaluate the corridor for a road diet and implement if applicable	$$$	Long-Term	✓	
14	Restrict left-turn movements	$$	Mid-Term		
15	Install reflective tape on utility poles	$	Short-Term		
16	Reduce right turn radii	$$$	Mid-Term		
17	Improve left-turn lane offset to create positive offset	$$	Mid-Term		✓

SEGMENT 2: HICKORY HILL ROAD

Between Winchester Rd and Bill Morris Pkwy

- Includes High Injury Network Segment(s)
- Includes High Injury Intersection(s)

ROADWAY CHARACTERISTICS

Functional Class: Other Principal Arterial

Speed Limit: 45 mph

Number of Lanes: 6

Roadway Section: Two-way, divided, with a raised median

Roadway Grade: Crest & Level

Roadway Alignment: Straight & Curve

Presence of Sidewalk: Yes

Average Daily Traffic: Approximately 38,000 vehicles per day

PUBLIC INPUT

Careless Erratic Driving: Running red lights

Speeding: Speeding

Unsafe for Driving: Lots of carshes at the intersection of Hickory Hill Rd and Mount Moriah Rd.

EXISTING CONDITIONS

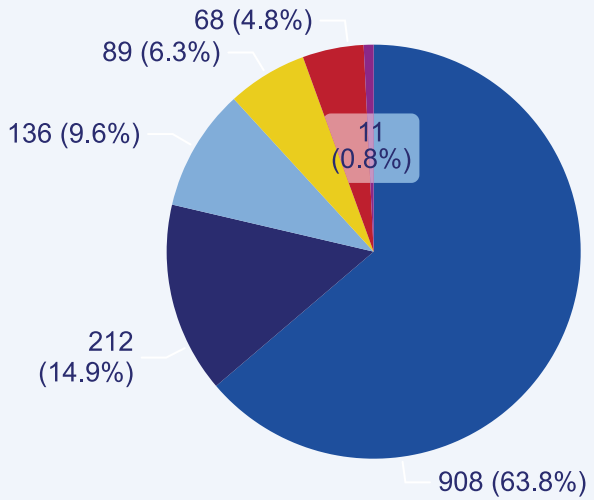
Access Management: High density of intersections and acces driveways

Crosswalks: No high visibility pavement markings are present at unsignalized intersections crossing Hickory Hill Road where curb ramps were recently constructed

Curb Ramps: Curb ramps have recently been constructed along the segment.

Pedestrian Signals: Pedestrian refuge facilities have recently been constructed crossing Hickory Hill Road.

MANNER OF COLLISION CHART

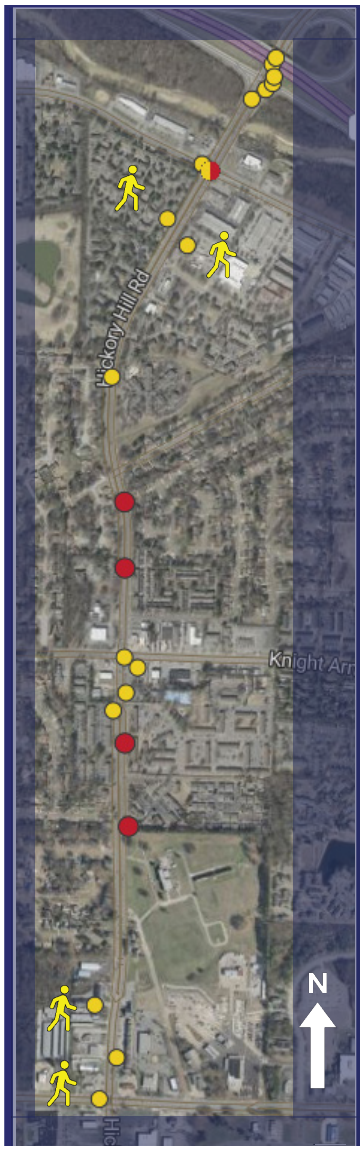


MANNER OF COLLISION

- Angle
- Single Vehicle
- Rear-End
- Sideswipe
- Other
- Head-On

Crash Data (2019 – 2023)	
5	Fatal
20	Serious Injury
95	Minor Injury
205	Possible injury
1099	PDO

Fatal And Suspected Serious Injury Crash Map (2019–2023)

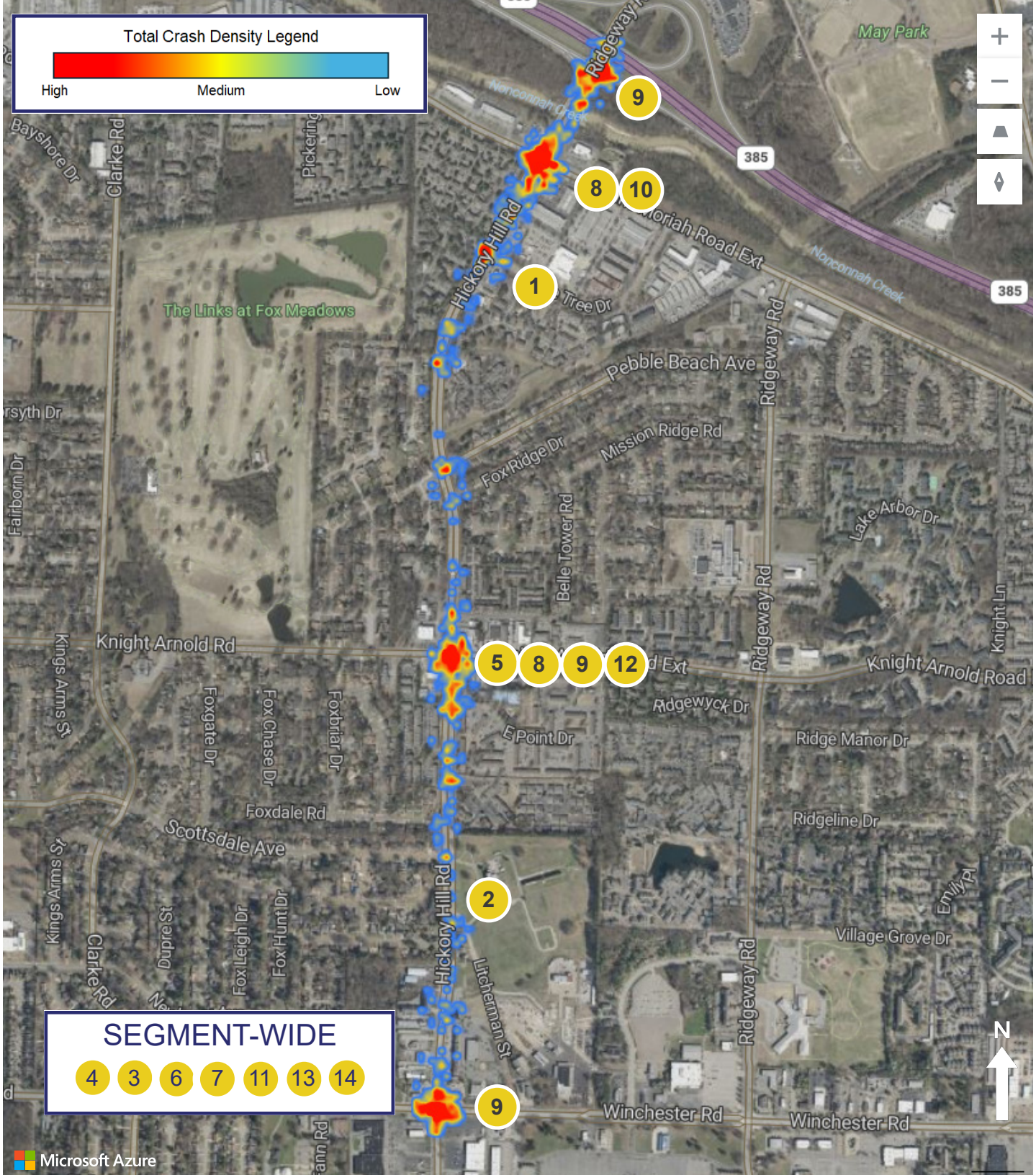


Crash Severity

- Fatal (K)
- Suspected Serious Injury (A)
- VRU Crash

SEGMENT 2: HICKORY HILL ROAD

Between Winchester Rd and Bill Morris Pkwy



SEGMENT 2: HICKORY HILL ROAD

Between Winchester Rd and Bill Morris Pkwy

COUNTERMEASURES SUMMARY

The countermeasures identified for Hickory Hill Road between Bill Morris Parkway and Winchester Road are intended to address the recent fatal and serious injuty crashes along this segment, which include angle, single vehicle, pedestrian, and intersection crashes.

Crash Type	Fatal Crashes	Serious Injury Crashes	Total Crashes
Angle	4	10	**908**
Intersection	3	6	**829**
Pedestrian	0	3	**13**
Rear End	0	3	**212**
Teen	0	4	**516**

**The sum of fatal crashes by crash type does not equal the total fatalities, as individual crashes may be classified under more than one crash type.*

The blue check mark symbol represents a countermeasure identified as a Proven Safety Countermeasure by the FHWA.

The orange check mark represents a countermeasure supported by a quality Crash Modification Factor according to the Crash Modification Factors Clearinghouse.

ID	Countermeasure	Cost	Schedule	Source Matrix	
1	Install pedestrian hybrid beacon (PHB or HAWK)	$$$	Long-Term	✓	✓
2	Install a pedestrian crosswalk at locations	$$	Mid-Term		✓
3	Replace TWLTL with raised median	$$$	Long-Term	✓	✓
4	Evaluate and implement speed limit reduction along corridor, if applicable	$	Short-Term	✓	✓
5	Install Red-light cameras	$	Short-Term		✓
6	Install separated bicycle lane	$$	Mid-Term	✓	✓
7	Access Management Plan (From Planning to Implementation)	$$$	Long-Term	✓	
8	Reduce right turn radii	$$$	Mid-Term		
9	Convert protected/permissive left turn phasing to protected only phasing	$$	Mid-Term		✓
10	Improve left-turn lane offset to create positive offset	$$	Mid-Term		✓
11	Evaluate the corridor for a road diet and implement if applicable	$$$	Long-Term	✓	
12	Remove the additional receiving lane and install bumpouts	$$$	Long-Term		
13	Install reflective tape on utility poles	$	Short-Term	✓	
14	Enhanced speed enforcement	$$	Short-Term		

SEGMENT 3: LAMAR AVENUE

Between New Getwell and American Way

- Includes High Injury Network Segment(s)
- Includes High Injury Intersection(s)

ROADWAY CHARACTERISTICS

Functional Class: Urban Principal Arterial

Speed Limit: 40 mph

Number of Lanes: 6

Roadway Section: Two-way, divided, with a continuous two-way left turn land

Roadway Grade: Level

Roadway Alignment: Straight & Curve

Presence of Sidewalk: Yes

Average Daily Traffic: Approximately 37,000 vehicles per day

PUBLIC INPUT

Comments: No public comments along the segment.

EXISTING CONDITIONS

Access Management: High density of heavy vehicles, intersections, and access driveways.

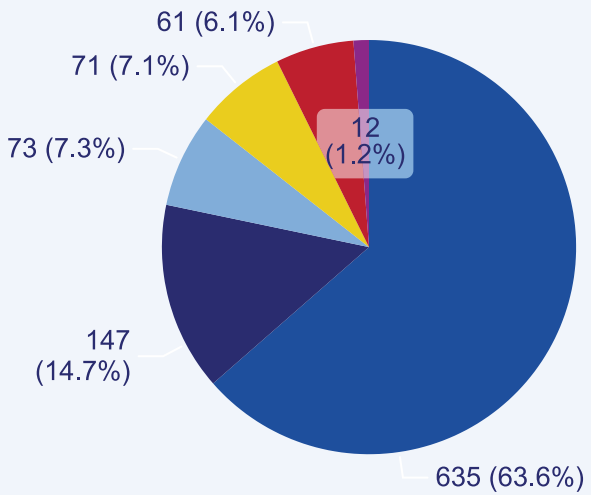
Curb Ramps: Curb ramps have recently been constructed along the segment.

Traffic Signals: The signal head palcement on Lamar Avenue and Knight Arnold Road does not align with the number of lanes.

Curb and Gutter: In some areas, the curb is less than the standard six inches

Sidewalk: Vehicles block sidewalk in some locations, impacting pedestrian movements

MANNER OF COLLISION CHART

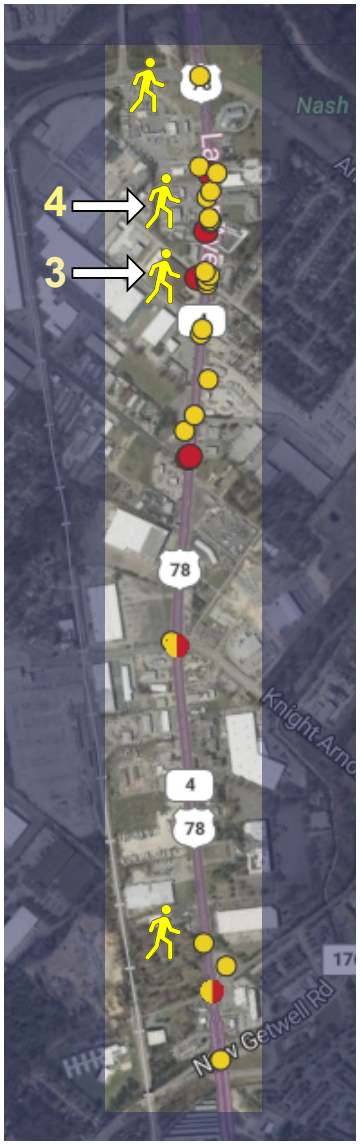


MANNER OF COLLISION

- Angle
- Sideswipe
- Rear-End
- Single Vehicle
- Other
- Head-On

Crash Data (2019 – 2023)	
7	Fatal
28	Serious Injury
54	Minor Injury
121	Possible injury
789	PDO

Fatal And Suspected Serious Injury Crash Map (2019–2023)

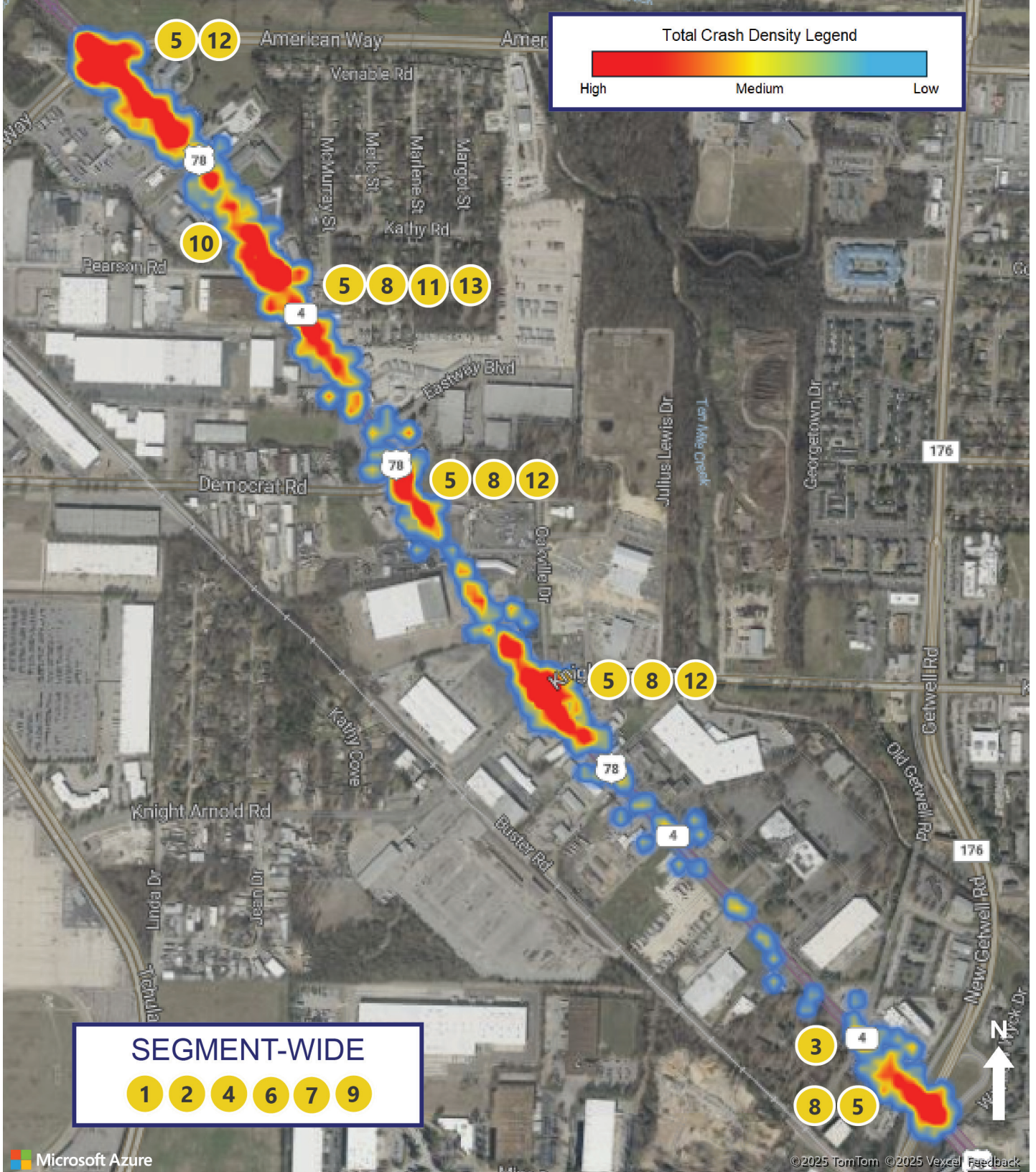


Crash Severity

- Fatal (K)
- Suspected Serious Injury (A)
- VRU Crash

SEGMENT 3: LAMAR AVENUE

Between New Getwell and American Way



SEGMENT 3: LAMAR AVENUE

Between New Getwell and American way

COUNTERMEASURES SUMMARY

The countermeasures identified for Lamar Avenue between New Getwell Road and American Way are intended to address the recent fatal and serious injury crashes along this segment, which include majority angle and single vehicle crashes with head on and rear end crashes.

Crash Type	Fatal Crashes	Serious Injury Crashes	Total Crashes
Angle	6	14	**635**
Dark Conditions	5	16	**327**
Intersection	5	15	**602**
Aggressive Driving	1	6	**178**
Pedestrian	1	6	**18**
Teen	0	7	**349**

**The sum of fatal crashes by crash type does not equal the total fatalities, as individual crashes may be classified under more than one crash type.*

The blue check mark symbol represents a countermeasure identified as a Proven Safety Countermeasure by the FHWA.

The orange check mark represents a countermeasure supported by a quality Crash Modification Factor according to the Crash Modification Factors Clearinghouse.

ID	Countermeasure	Cost	Schedule	Source Matrix	
1	Install curb and gutter	$$$	Long-Term		✓
2	Replace TWLTL with raised median	$$$	Long-Term	✓	✓
3	Install a pedestrian crosswalk at midblock locations	$$	Mid-Term		✓
4	Install wider edgelines (4 in to 6 in)	$$	Short-Term	✓	✓
5	Install pedestrian countdown display	$	Short-Term		✓
6	Access Management Plan (From Planning to Implementation)	$$$	Long-Term	✓	
7	Upgrade existing markings to thermoplastic pavement markings and raised pavement markings	$	Short-Term		
8	Convert protected/permissive left turn phasing to protected only phasing	$$	Mid-Term		✓
9	Upgrade/Install street lighting	$$	Mid-Term	✓	✓
10	Install a pedestrian hybrid beacon (PHB or HAWK)	$$$	Long-Term	✓	✓
11	Install red-light cameras	$	Short-Term		✓
12	Remove channelized right turn lanes	$$$	Mid-Term		
13	Implement leading pedestrian interval	$	Short-Term	✓	✓

SEGMENT 4: EAST RAINES ROAD

Between Elvis Presley Boulevard and Airways Boulevard

- Includes High Injury Network Segment(s)
- Includes High Injury Intersection(s)

ROADWAY CHARACTERISTICS

Functional Class: Urban Minor Arterial

Speed Limit: 40 mph

Number of Lanes: 4

Roadway Section: Two-way, divided, with a continuous two-way left turn lane

Roadway Grade: Level

Roadway Alignment: Straight

Presence of Sidewalks: Yes

Average Daily Traffic: Approximately 22,000 vehicles per day

PUBLIC INPUT

Unsafe for Driving: Drivers have been seen using the two-way left-turn lane as a driving lane.

EXISTING CONDITIONS

Access Management: High density of intersections, home driveways, and access driveways.

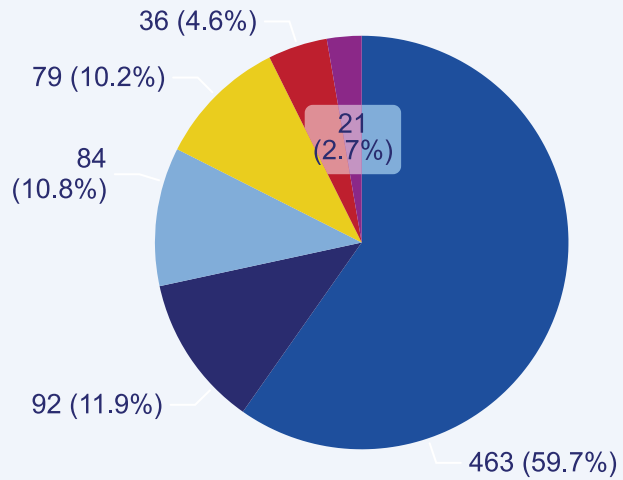
Sidewalks: The sidewalk along the segment ranges from no offset to a 5 foot offset from the curb.

Curb Ramps: A number of curb ramps are either not ADA compliant or do not exist.

Pedestrian Signals: Pedestrian signal heads are out dated at Millbranch Road and Winchester Road.

Central Median: A median exists from Elvis Presley Boulevard to Faronia Road which has dedicated left turn lanes.

MANNER OF COLLISION CHART



Crash Data (2019 – 2023)	
8	Fatal
20	Serious Injury
45	Minor Injury
162	Possible injury
540	PDO

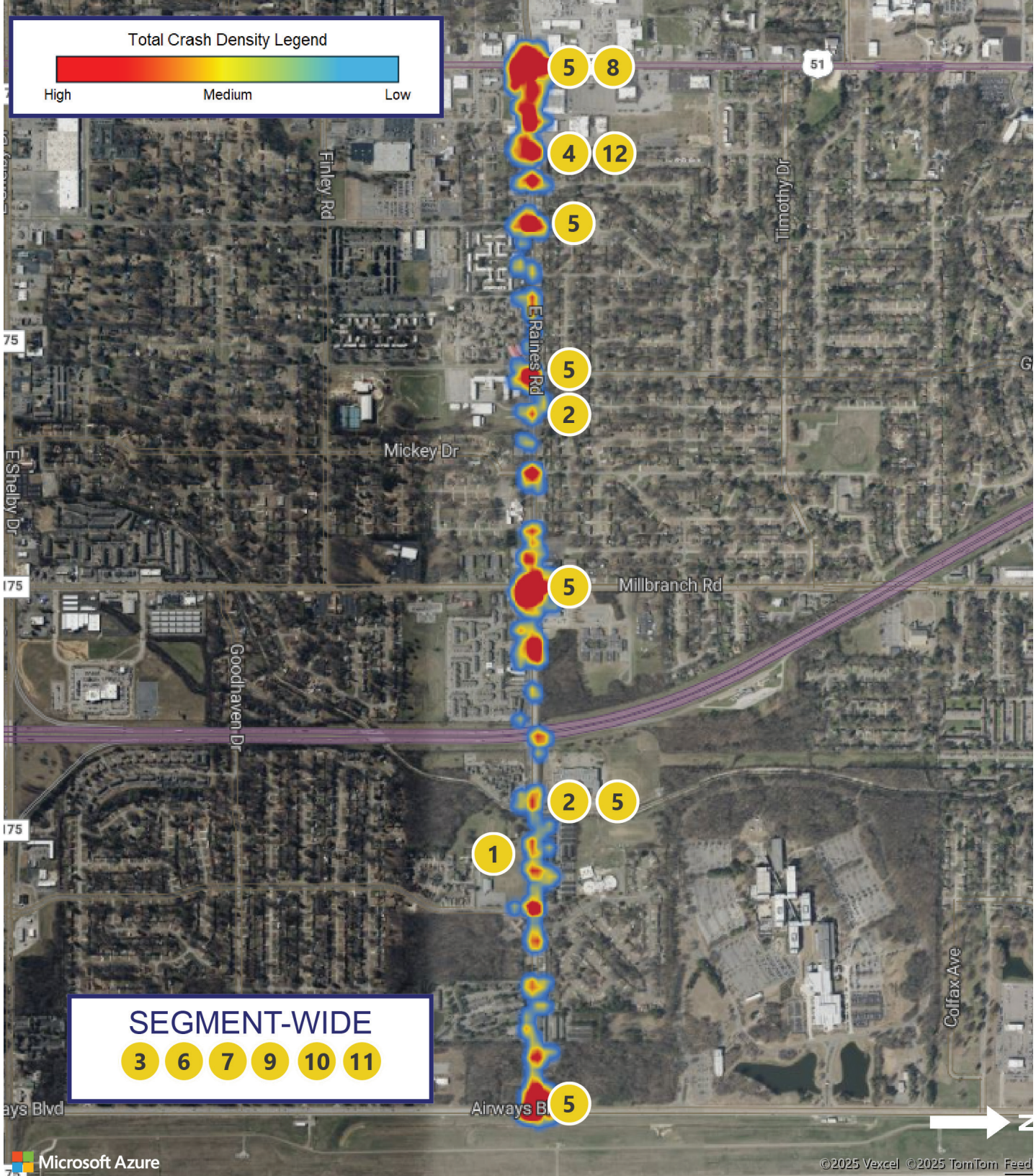
Fatal And Suspected Serious Injury Crash Map (2019–2023)

Crash Severity

- Fatal (K)
- Suspected Serious Injury (A)
- VRU Crash

SEGMENT 4: EAST RAINES ROAD

Between Elvis Presley Boulevard and Airways Boulevard



SEGMENT 4: EAST RAINES ROAD

Between Elvis Presley Boulevard and Airways Boulevard

COUNTERMEASURES SUMMARY

The countermeasures identified for East Raines Road between Elvis Presley Blvd and Airways Blvd are intended to address the recent fatal and serious injury crashes along this segment, which includes a majority of angle, pedestrian, aggressive driving crashes and aggressive driving crashes.

Crash Type	Fatal Crashes	Serious Injury Crashes	Total Crashes
Intersection	6	14	**594**
Dark Conditions	4	10	**228**
Angle	3	8	**463**
Aggressive Driving	2	6	**110**
Pedestrian	2	3	**22**
Distracted Driving	1	1	**143**

**The sum of fatal crashes by crash type does not equal the total fatalities, as individual crashes may be classified under more than one crash type.*

The blue check mark symbol represents a countermeasure identified as a Proven Safety Countermeasure by the FHWA.

The orange check mark represents a countermeasure supported by a quality Crash Modification Factor according to the Crash Modification Factors Clearinghouse.

ID	Countermeasure	Cost	Schedule	Source Matrix	
1	Install a pedestrian hybrid beacon (PHB or HAWK)	$$$	Long-Term	✓	✓
2	Install automated speed enforcement system (school zone)	$$	Mid-Term	✓	✓
3	Replace TWLTL with raised median	$$$	Long-Term	✓	✓
4	Install a pedestrian crosswalk at midblock locations	$$	Mid-Term		✓
5	Install pedestrian countdown display	$	Short-Term		✓
6	Upgrade/Install street lighting	$$	Mid-Term	✓	✓
7	Install separated bicycle lane	$$	Mid-Term	✓	✓
8	Install red-light cameras	$	Short-Term		✓
9	Upgrade existing markings to thermoplastic pavement markings and raised pavement markings	$	Short-Term		
10	Access Management Plan (From Planning to Implementation)	$$$	Long-Term	✓	
11	Install reflective tape on utility poles	$	Short-Term		
12	Install rectangular rapid flashing beacon (RRFB)	$$	Short-Term	✓	✓

SEGMENT 5: WINCHESTER ROAD

Between New Getwell Road and South Perkins Rd

- Includes High Injury Network Segment(s)
- Includes High Injury Intersection(s)

ROADWAY CHARACTERISTICS

Functional Class: Urban Principal Arterial

Speed Limit: 45 mph

Number of Lanes: 6

Roadway Section: Two-way, divided, with a continuous two-way left turn lane

Roadway Grade: Level

Roadway Alignment: Straight

Presence of Sidewalks: Yes

Average Daily Traffic: Approximately 34,000 vehicles per day

PUBLIC INPUT

Improvements: Comments have requested a bike lane be installed along the segment or improvements to bicycle infrastructure.

EXISTING CONDITIONS

Access Management: High density of intersections and access driveways.

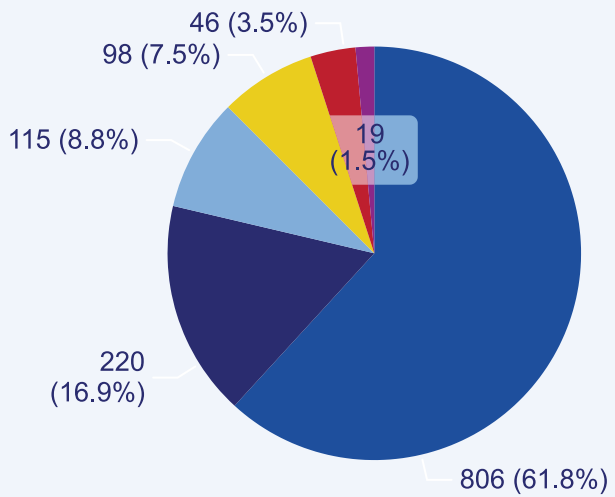
Crosswalks: There are no midblock crosswalks along this segment. Crosswalks located at the intersections are in disrepair.

Curb Ramps: Some curb ramps are either not ADA compliant or do not exist.

Pedestrian Signals: Pedestrian signal heads are out dated at most intersections along the segment.

Central Median: A median exists from New Getwell Road to Lamar Avenue which has designated left-turn lanes.

MANNER OF COLLISION CHART

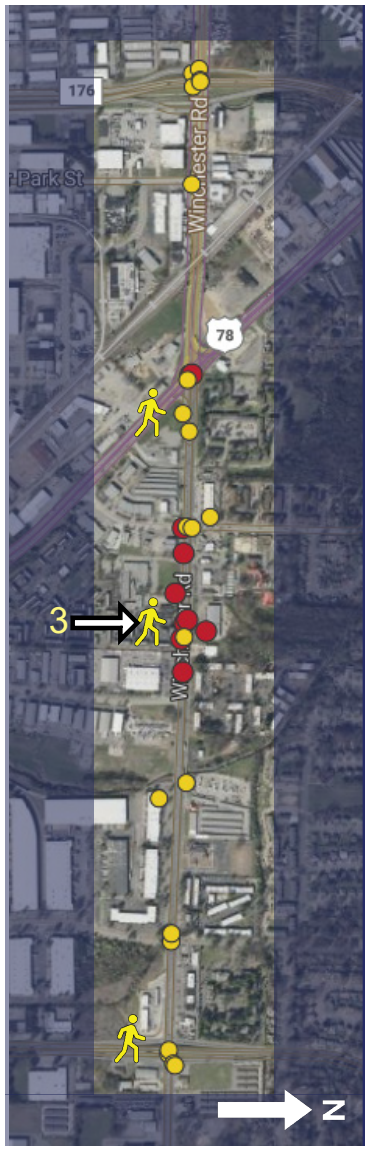


MANNER OF COLLISION

- Angle
- Other
- Rear-End
- Sideswipe
- Single Vehicle
- Head-On

Crash Data (2019 – 2023)	
10	Fatal
23	Serious Injury
92	Minor Injury
202	Possible injury
977	PDO

Fatal And Suspected Serious Injury Crash Map (2019–2023)

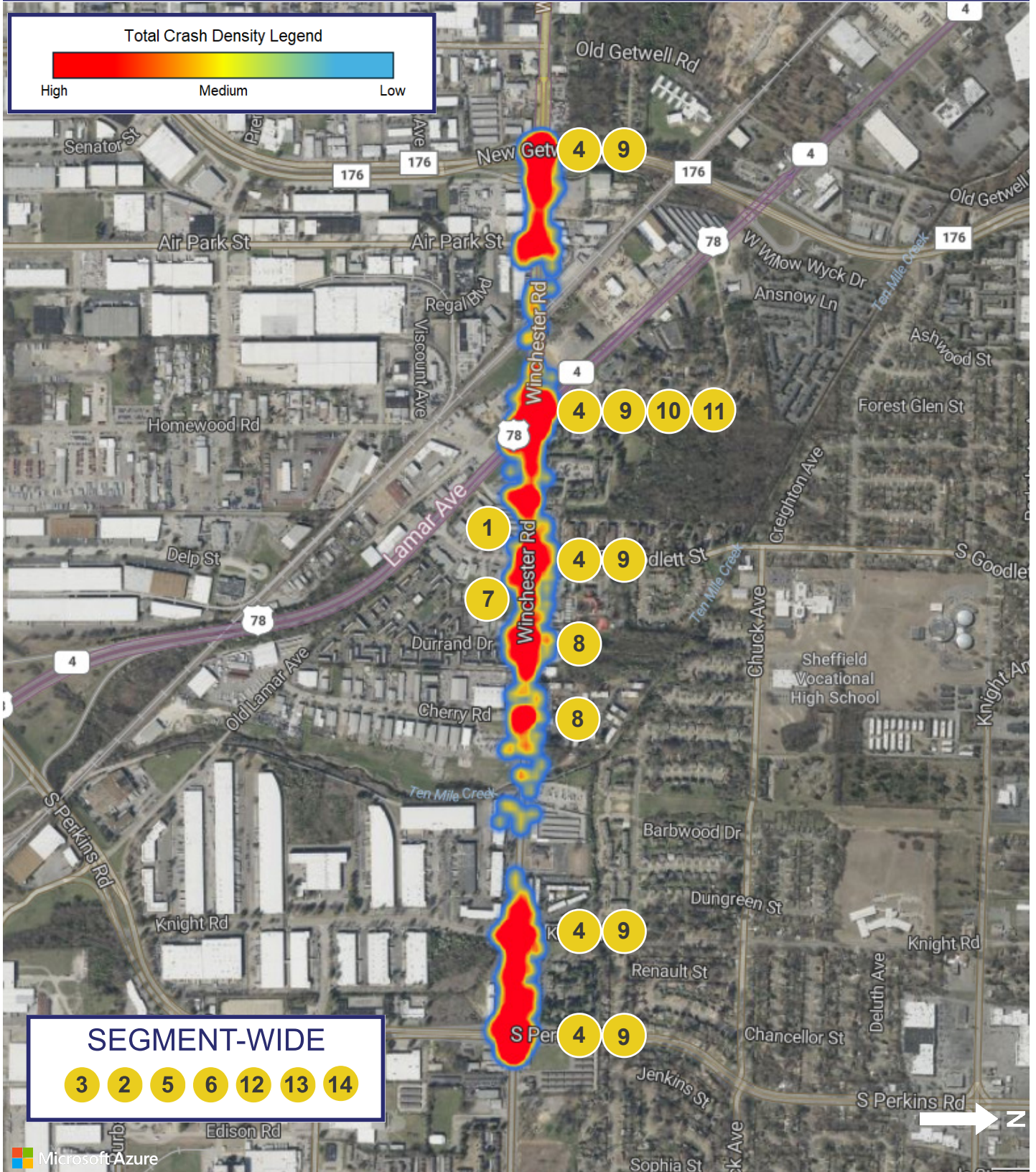


Crash Severity

- Fatal (K)
- Suspected Serious Injury (A)
- VRU Crash

SEGMENT 5: WINCHESTER ROAD

Between New Getwell Road and South Perkins Rd



SEGMENT 5: WINCHESTER ROAD

Between New Getwell Road and South Perkins Rd

COUNTERMEASURES SUMMARY

The countermeasures identified for Winchester Road between New Getwell Road and South Perkins Road are intended to address the recent fatal and serious injury crashes along this segment, which includes a majority of angle, rear-end, aggressive driving, and intersection crashes.

Crash Type	Fatal Crashes	Serious Injury Crashes	Total Crashes
Dark Conditions	7	10	**422**
Angle	4	12	**806**
Intersection	3	16	**878**
Pedestrian	3	3	**11**
Aggressive Driving	2	7	**197**
Rear-End	0	0	**220**

**The sum of fatal crashes by crash type does not equal the total fatalities, as individual crashes may be classified under more than one crash type.*

The blue check mark symbol represents a countermeasure identified as a Proven Safety Countermeasure by the FHWA.

The orange check mark represents a countermeasure supported by a quality Crash Modification Factor according to the Crash Modification Factors Clearinghouse.

ID	Countermeasure	Cost	Schedule	Source Matrix	
1	Install a pedestrian crosswalk at midblock locations	$$	Mid-Term		✓
2	Install wider edgelines (4 in to 6 in)	$$	Short-Term	✓	✓
3	Replace TWLTL with raised median	$$$	Long-Term	✓	✓
4	Install pedestrian countdown display	$	Short-Term		✓
5	Evaluate and implement speed limit reduction along corridor, if applicable	$$	Mid-Term	✓	✓
6	Upgrade/Install street lighting	$	Short-Term	✓	✓
7	Install a pedestrian hybrid beacon (PHB or HAWK)	$$$	Long-Term	✓	✓
8	Replace standard stop sign with flashing LED stop sign	$	Short-Term		✓
9	Convert protected/permissive left turn phasing to protected only phasing	$$	Mig-Term		✓
10	Remove channelized right turn lanes	$$$	Long-Term		
11	Install red-light cameras	$	Short-Term		✓
12	Install reflective tape on utility poles	$	Short-Term		
13	Access Management Plan (From Planning to Implementation)	$$$	Long-Term	✓	
14	Enhanced speed enforcement	$$	Short-Term		

SEGMENT 6: AUSTIN PEAY HIGHWAY

Between Yale Road and James Road

- Includes High Injury Network Segment(s)
- Includes High Injury Intersection(s)

ROADWAY CHARACTERISTICS

Functional Class: Urban Principal Arterial

Speed Limit: 45 mph

Number of Lanes: 6

Roadway Section: Two-way, divided, with a continuous two-way left turn lane

Roadway Grade: Level

Roadway Alignment: Straight; Curved between James Road and Jones Road

Presence of Sidewalks: Yes

Average Daily Traffic: Approximately 38,000 vehicles per day

PUBLIC INPUT

Unsafe for Driving: Multiple instances of aggressive and high speed driving have been experienced along this segment.

EXISTING CONDITIONS

Access Management: High density of intersections and access driveways.

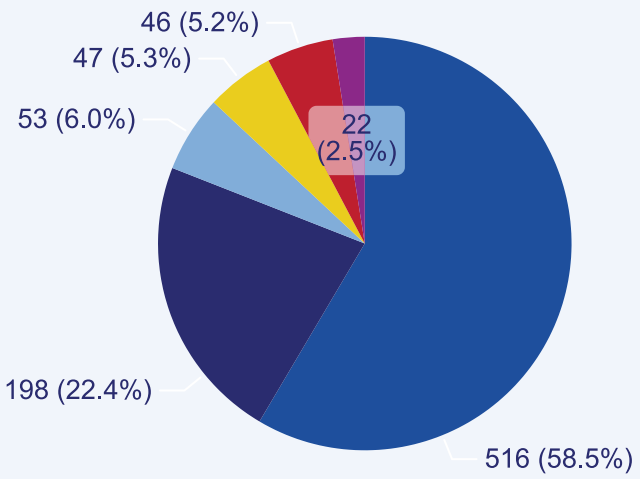
Crosswalks: There are no midblock crosswalks along this segment. Some crosswalks at intersections are in disrepair.

Sidewalk: The sidewalk is at a 3' offset from the face of the curb.

Pedestrian Signals: Pedestrian signal heads are outdated at some intersections along the segment.

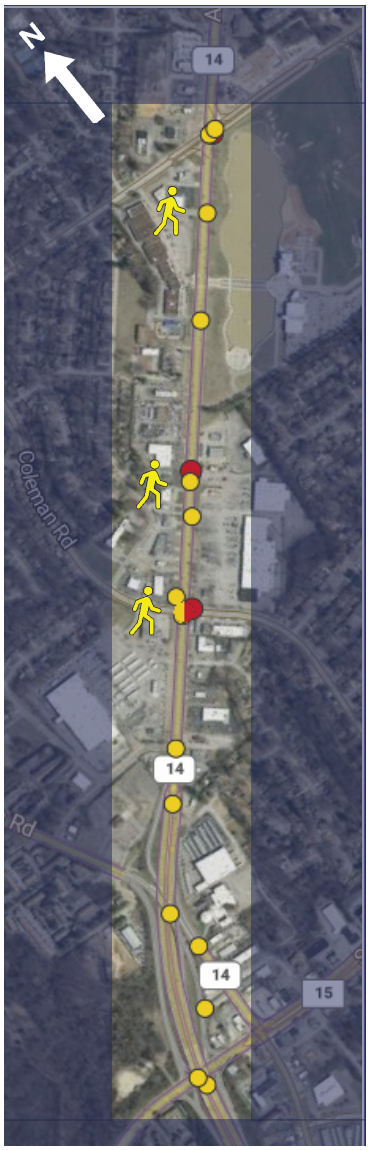
Slip Lanes: There are existing slip lanes at Yale Road.

MANNER OF COLLISION CHART



Crash Data (2019 – 2023)	
4	Fatal
17	Serious Injury
75	Minor Injury
156	Possible injury
630	PDO

Fatal And Suspected Serious Injury Crash Map (2019–2023)



Crash Severity

- Fatal (K)
- Suspected Serious Injury (A)
- VRU Crash

SEGMENT 6: AUSTIN PEAY HIGHWAY

Between Yale Road and James Road

SEGMENT 6: AUSTIN PEAY HIGHWAY

Between Yale Road and James Road

COUNTERMEASURES SUMMARY

The countermeasures identified for Austin Peay Highway between James Road and Yale Road are intended to address the recent fatal and serious injury crashes along this segment, which includes a majority of angle, rear-end, intersection crashes.

Crash Type	Fatal Crashes	Serious Injury Crashes	Total Crashes
Dark Conditions	3	9	**213**
Intersection	3	10	**601**
Angle	1	10	**516**
Rear-End	1	0	**198**
Aggressive Driving	0	2	**114**
Distracted Driving	0	2	**141**

**The sum of fatal crashes by crash type does not equal the total fatalities, as individual crashes may be classified under more than one crash type.*

- The blue check mark symbol represents a countermeasure identified as a Proven Safety Countermeasure by the FHWA.
- The orange check mark represents a countermeasure supported by a quality Crash Modification Factor according to the Crash Modification Factors Clearinghouse.

ID	Countermeasure	Cost	Schedule	Source Matrix	
1	Install a pedestrian crosswalk at midblock locations	$$	Mid-Term		✓
2	Replace TWLTL with raised median	$$$	Long-Term	✓	✓
3	Install pedestrian countdown display	$	Short-Term		✓
4	Evaluate and implement speed limit reduction along corridor, if applicable	$	Short-Term	✓	✓
5	Evaluate the corridor for a road diet and implement if applicable	$$$	Long-Term	✓	
6	Install red-light cameras	$	Short-Term		✓
7	Convert protected/permissive left turn phasing to protected only phasing	$$	Mid-Term		✓
8	Remove channelized right turn lanes	$$$	Long-Term		
9	Access Management Plan (From Planning to Implementation)	$$$	Long-Term	✓	
10	Reduce right turn radii	$$$	Mid-Term		
11	Install raised pavement markers	$$	Short-Term	✓	✓
12	Install red-light cameras	$	Short-Term		✓
13	Install dynamic speed feedback sign	$	Short-Term		
14	Enhanced speed enforcement	$$	Short-Term		

SEGMENT 7: JACKSON AVENUE

Between I-40 and National Street

- Includes High Injury Network Segment(s)
- Includes High Injury Intersection(s)

ROADWAY CHARACTERISTICS

Functional Class: Urban Principal Arterial

Speed Limit: 40 mph

Number of Lanes: 6

Roadway Section: Two-way, divided, with a continuous two-way left turn lane

Roadway Grade: Level

Roadway Alignment: Straight

Presence of Sidewalks: Yes

Average Daily Traffic: Approximately 25,000 vehicles per day

PUBLIC INPUT

Comments: No public comments along the segment.

EXISTING CONDITIONS

Access Management: High density of access driveways but only two signalized intersections.

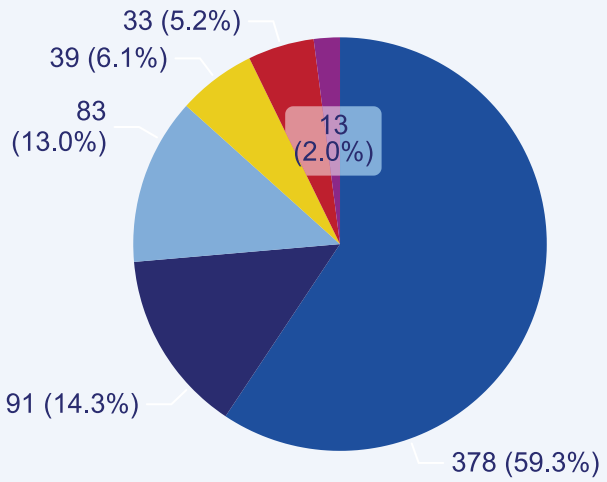
Crosswalks: There are no midblock crosswalks along this segment. Crosswalk only exist at the signalized intersections.

Curb Ramps: Some curb ramps are either not ADA compliant or do not exist.

Sidewalks: The sidewalks along the segment are at a five foot offset from the face of the curb.

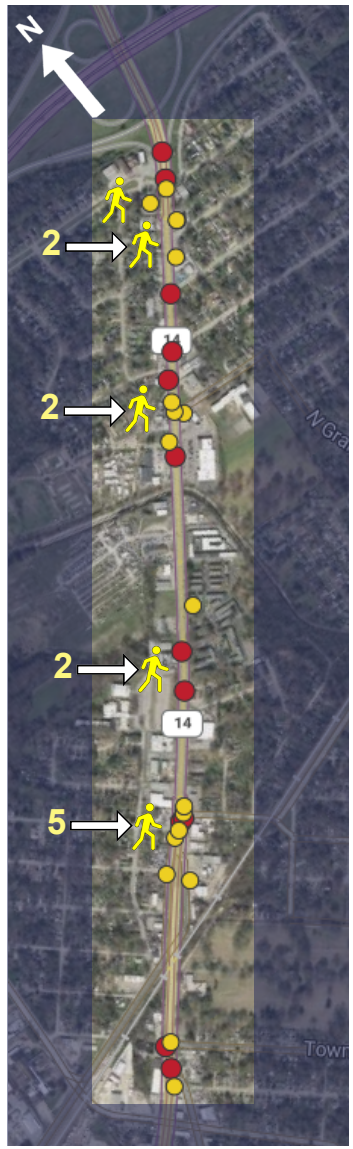
Roadway: The roadway travel lanes are approximately 10-11 feet wide with no shoulder.

MANNER OF COLLISION CHART



Crash Data (2019 – 2023)	
12	Fatal
18	Serious Injury
47	Minor Injury
125	Possible injury
435	PDO

Fatal And Suspected Serious Injury Crash Map (2019–2023)



Crash Severity

- Fatal (K)
- Suspected Serious Injury (A)
- VRU Crash

SEGMENT 7: JACKSON AVENUE

Between I-40 and National Street

SEGMENT 7: JACKSON AVENUE

Between I-40 and National Street

COUNTERMEASURES SUMMARY

The countermeasures identified for Jackson Avenue between Interstate 40 and National Street are intended to address the recent fatal and serious injury crashes along this segment, which includes a majority of angle, single vehicle, pedestrian, dark-lighted, and intersection crashes.

Crash Type	Fatal Crashes	Serious Injury Crashes	Total Crashes
Intersections	8	13	**461**
Dark Conditions	8	10	**210**
Single Vehicle	8	7	**91**
Pedestrian	7	5	**18**
Distracted Driving	1	1	**124**
Angle	1	9	**378**

**The sum of fatal crashes by crash type does not equal the total fatalities, as individual crashes may be classified under more than one crash type.*

- The blue check mark symbol represents a countermeasure identified as a Proven Safety Countermeasure by the FHWA.
- The orange check mark represents a countermeasure supported by a quality Crash Modification Factor according to the Crash Modification Factors Clearinghouse.

ID	Countermeasure	Cost	Schedule	Source Matrix	
1	Install a pedestrian crosswalk at midblock locations	$$	Mid-Term		✓
2	Replace TWLTL with raised median	$$$	Long-Term	✓	✓
3	Install red-light cameras	$	Short-Term		✓
4	Install a pedestrian hybrid beacon (PHB or HAWK)	$$$	Long-Term	✓	✓
5	Upgrade/Install street lighting	$$	Mid-Term	✓	✓
6	Install wider edgelines (4 in to 6 in)	$$	Short-Term	✓	✓
7	Install right-in-right-out (RIRO) operations at stop-controlled intersections	$	Short-Term		✓
8	Access Management Plan (From Planning to Implementation)	$$$	Long-Term	✓	
9	Convert protected/permissive left turn phasing to protected only phasing	$$	Mid-Term		✓
10	Install reflective tape on utility poles	$	Short-Term		
11	Upgrade existing markings to thermoplastic pavement markings at stop controlled intersections	$	Short-Term	✓	
12	Install dynamic speed feedback sign	$	Short-Term		
13	Install/modify median to restrict side-street left-turn movements	$$$	Mid-Term	✓	✓
14	Enhanced speed enforcement	$$	Short-Term		

SEGMENT 8: SHELBY DRIVE

Between I-55 and Airways Boulevard

- Includes High Injury Network Segment(s)
- Includes High Injury Intersection(s)

ROADWAY CHARACTERISTICS

Functional Class: Urban Principal Arterial

Speed Limit: 40 mph

Number of Lanes: 6

Roadway Section: Two-way, divided, with a continuous two-way left turn lane

Roadway Grade: Level

Roadway Alignment: Straight

Presence of Sidewalks: Yes, in select areas along the segment, large sidewalk gap along the southern side of the segment

Average Daily Traffic: Approximately 37,000 vehicles per day

PUBLIC INPUT

Comments: No public comments along the segment.

EXISTING CONDITIONS

Access Management: High density of intersections and access driveways.

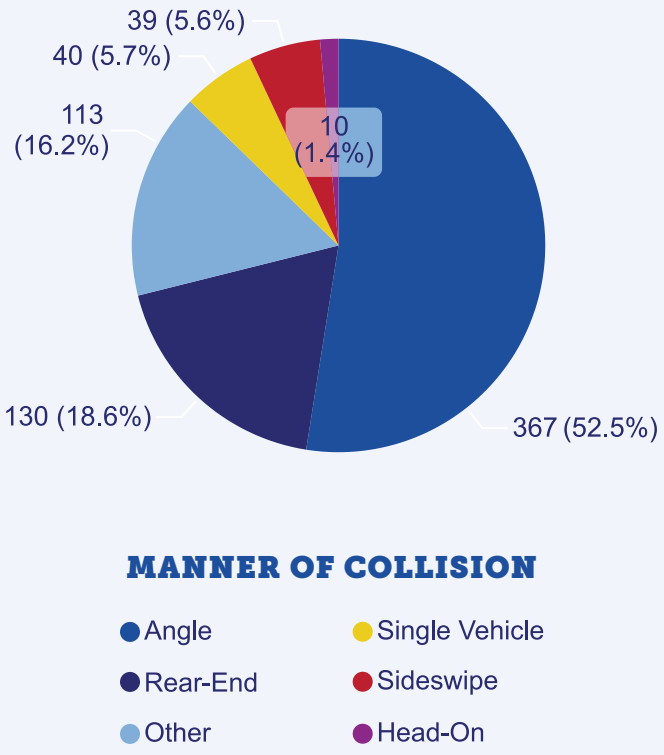
Crosswalks: There are no midblock crosswalks along this segment. Crosswalks only exist at the signalized intersections.

Curb Ramps: Most curb ramps are either not ADA compliant or do not exist.

Pedestrian Signals: Pedestrian signal heads are out dated at all signalized intersections.

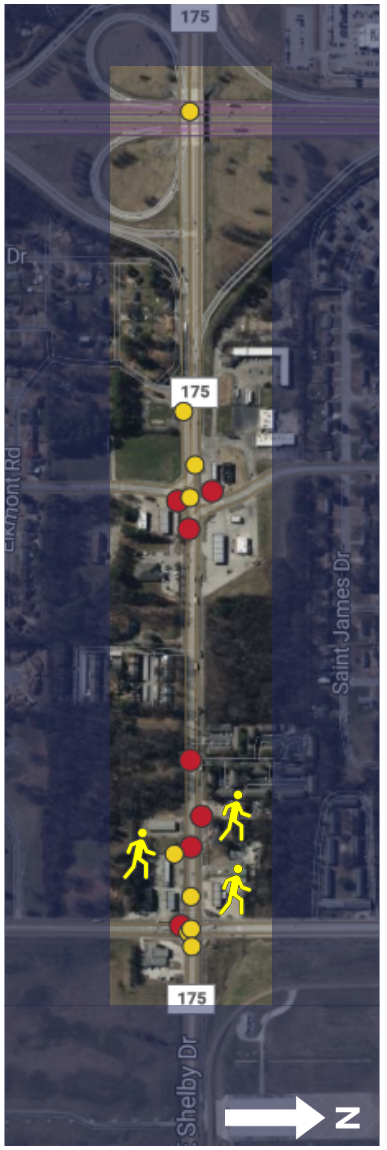
Roadway: The roadway travel lanes are approximately 11-12 feet wide with no shoulder.

MANNER OF COLLISION CHART



Crash Data (2019 – 2023)	
7	Fatal
15	Serious Injury
41	Minor Injury
104	Possible injury
532	PDO

Fatal And Suspected Serious Injury Crash Map (2019–2023)

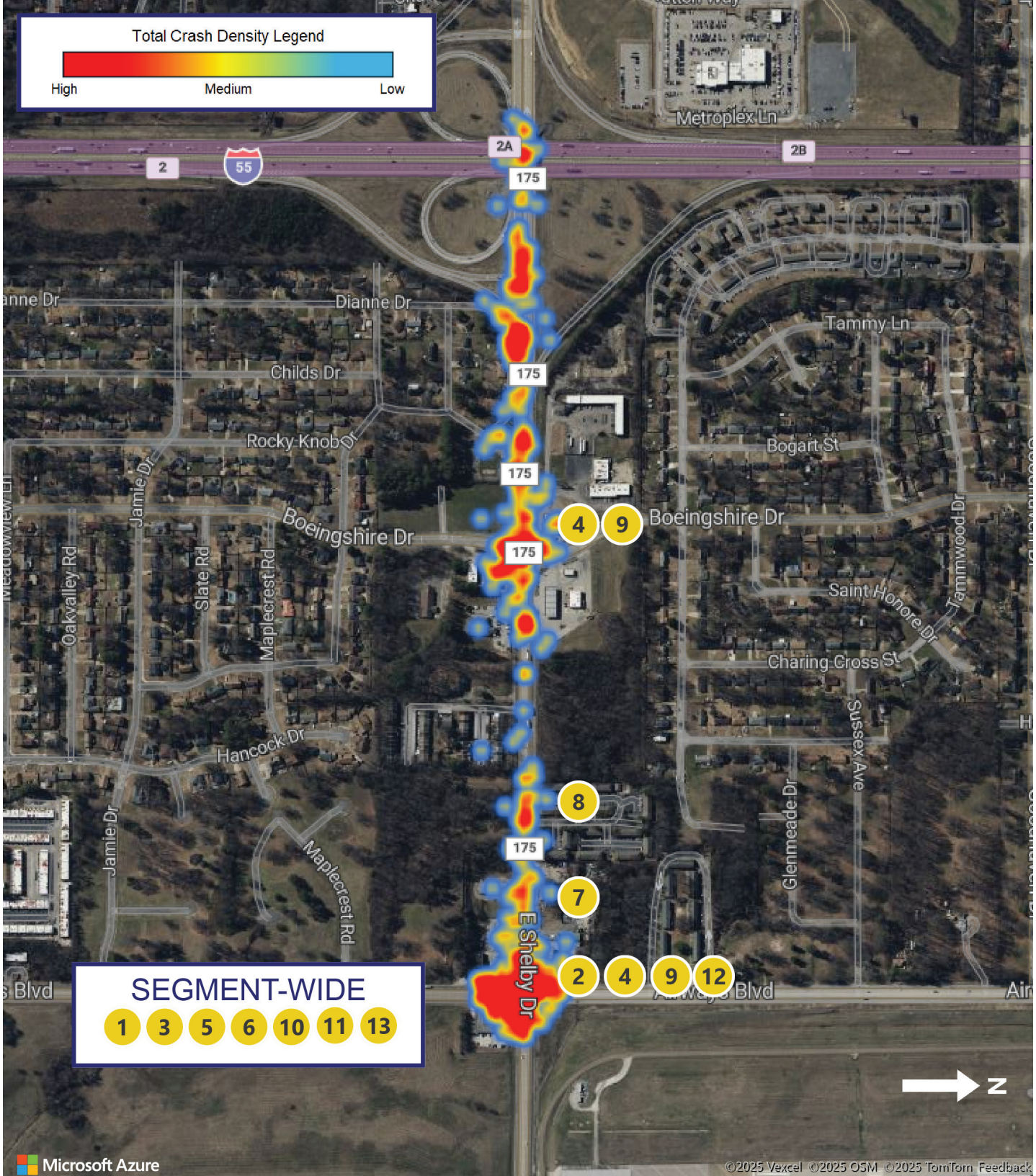


Crash Severity

- Fatal (K)
- Suspected Serious Injury (A)
- VRU Crash

SEGMENT 8: SHELBY DRIVE

Between I-55 and Airways Boulevard



SEGMENT 8: SHELBY DRIVE

Between I-55 and Airways Boulevard

COUNTERMEASURES SUMMARY

The countermeasures identified for Shelby Drive between Interstate 55 and Airways Boulevard are intended to address the recent fatal and serious injury crashes along this segment, which includes a majority of angle, rear-end, and intersection crashes.

Crash Type	Fatal Crashes	Serious Injury Crashes	Total Crashes
Lane Departures	7	15	**699**
Angle	5	11	**367**
Intersection	4	11	**442**
Dark Conditions	3	5	**178**
Rear End	0	1	**130**

**The sum of fatal crashes by crash type does not equal the total fatalities, as individual crashes may be classified under more than one crash type.*

The blue check mark symbol represents a countermeasure identified as a Proven Safety Countermeasure by the FHWA.

The orange check mark represents a countermeasure supported by a quality Crash Modification Factor according to the Crash Modification Factors Clearinghouse.

ID	Countermeasure	Cost	Schedule	Source Matrix	
1	Replace TWLTL with raised median	$$$	Long-Term	✓	✓
2	Install red-light cameras	$	Short-Term		✓
3	Upgrade/Install street lighting	$$	Mid-Term	✓	✓
4	Remove channelized right turn lanes	$$$	Long-Term		
5	Resurface pavement	$$$$	Long-Term		✓
6	Evaluate and implement speed limit reduction along corridor, if applicable	$	Short-Term	✓	✓
7	Install a pedestrian crosswalk at midblock locations	$$	Mid-Term		✓
8	Replace standard stop sign with flashing LED stop sign	$	Short-Term		✓
9	Convert protected/permissive left turn phasing to protected only phasing	$$	Mid-Term		✓
10	Access Management Plan (From Planning to Implementation)	$$$	Long-Term	✓	
11	Upgrade existing markings to thermoplastic pavement markings and raised pavement markings	$	Short-Term		
12	Reduce right turn radii	$$$	Mid-Term		
13	Install reflective tape on utility poles	$	Short-Term		

SEGMENT 9: WINCHESTER ROAD

Between Hickory Hill Road and Riverdale Road

- Includes High Injury Network Segment(s)
- Includes High Injury Intersection(s)

ROADWAY CHARACTERISTICS

Functional Class: Urban Principal Arterial

Speed Limit: 45 mph

Number of Lanes: 6

Roadway Section: Two-way, divided, with a continuous two-way left turn lane

Roadway Grade: Crest & Level

Roadway Alignment: Straight

Presence of Sidewalks: Yes

Average Daily Traffic: Approximately 38,000 vehicles per day

PUBLIC INPUT

Intersection Improvement: Construction has been going on for months, causing a dangerous intersection.

Unsafe for Driving: I was involved in a serious injury crash in 2023.

EXISTING CONDITIONS

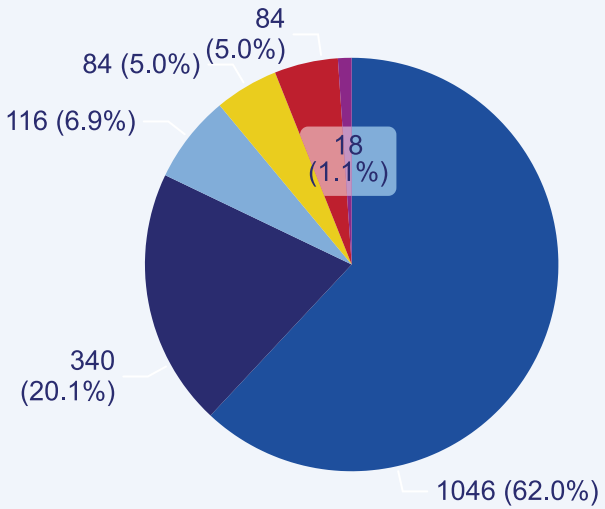
Access Management: High density of intersections, and access driveways.

Bike Lanes: Bike lanes were recently installed at two intersections, but are absent elsewhere along the segment.

Raised Median: Raised medians currently exist at some intersections to facilitate left turn lanes Existing medians are level with the road rather than raised.

Traffic Signals: Two intersections along the segment have been reconstructed with mast arms and pedestrian equipment.

MANNER OF COLLISION CHART

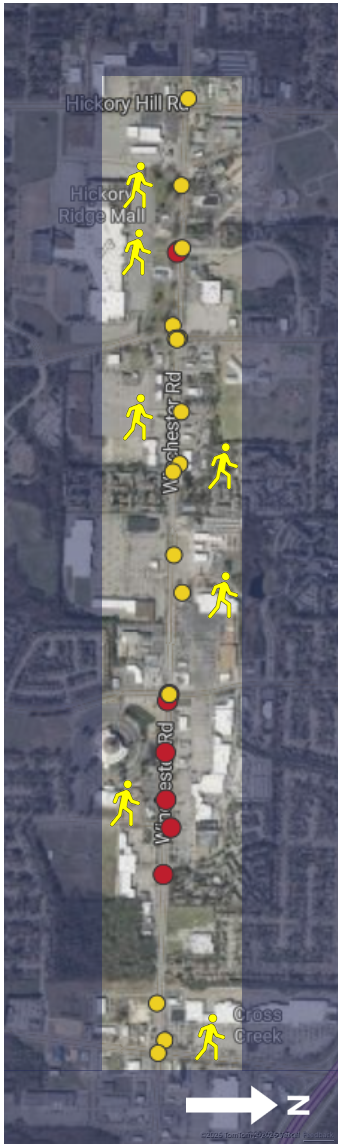


MANNER OF COLLISION

- Angle
- Sideswipe
- Rear-End
- Single Vehicle
- Other
- Head-On

Crash Data (2019 – 2023)	
8	Fatal
20	Serious Injury
113	Minor Injury
260	Possible injury
1288	PDO

Fatal And Suspected Serious Injury Crash Map (2019–2023)



Crash Severity

- Fatal (K)
- Suspected Serious Injury (A)
- VRU Crash

SEGMENT 9: WINCHESTER ROAD

Between Hickory Hill Road and Riverdale Road

- Includes High Injury Network Segment(s)
- Includes High Injury Intersection(s)

SEGMENT 9: WINCHESTER ROAD

Between Hickory Hill Road and Riverdale Road

COUNTERMEASURES SUMMARY

The countermeasures identified for Winchester Road between Hickory Hill Road and Riverdale Road are intended to address the recent fatal and serious injury crashes along this segment, which include majority angle with single vehicle, pedestrian, rear end, and intersection crashes.

Crash Type	Fatal Crashes	Serious Injury Crashes	Total Crashes
Intersections	6	11	**1254**
Angle	5	8	**1046**
Agressive Driving	2	4	**292**
Distracted Driving	1	3	**301**
Pedestrian	1	5	**340**
Rear End	1	5	**340**

**The sum of fatal crashes by crash type does not equal the total fatalities, as individual crashes may be classified under more than one crash type.*

The blue check mark symbol represents a countermeasure identified as a Proven Safety Countermeasure by the FHWA.

The orange check mark represents a countermeasure supported by a quality Crash Modification Factor according to the Crash Modification Factors Clearinghouse.

ID	Countermeasure	Cost	Schedule	Source Matrix	
1	Replace TWLTL with raised median	$$$	Long-Term	✓	✓
2	Install automated speed enforcement system (school zone)	$	Mid-Term	✓	✓
3	Install pedestrian countdown display	$	Short-Term		✓
4	Upgrade existing markings to thermoplastic pavement markings and raised pavement markings	$	Short-Term		
5	Install right-in-right-out (RIRO) operations at access point driveways	$	Short-Term	✓	✓
6	Replace standard stop sign with flashing LED stop sign	$	Short-Term		✓
7	Resurface pavement	$$$	Long-Term		✓
8	Access Management Plan (From Planning to Implementation)	$$$	Long-Term	✓	
9	Convert protected/permissive left turn phasing to protected only phasing	$$	Mid-Term		✓
10	Modernize traffic signal equipment	$$$	Long-Term		✓
11	Reduce right turn radii	$$$	Mid-Term		
12	Install a pedestrian hybrid beacon (PHB or HAWK)	$$$	Long-Term	✓	✓
13	Install reflective tape on utility poles	$	Short-Term		
14	Enhanced speed enforcement	$$	Short-Term		

SEGMENT 10: PERKINS ROAD

Between American Way and Knight Arnold Road

- Includes High Injury Network Segment(s)
- Includes High Injury Intersection(s)

ROADWAY CHARACTERISTICS

Functional Class: Urban Principal Arterial

Speed Limit: 45 mph

Number of Lanes: 6

Roadway Section: Two-way, divided, with a continuous two-way left turn lane, & raised median

Roadway Grade: Crest & Level

Roadway Alignment: Curve & Straight

Presence of Sidewalks: Yes

Average Daily Traffic: Approximately 45,000 vehicles per day

PUBLIC INPUT

Comments: No public comments along the segment.

EXISTING CONDITIONS

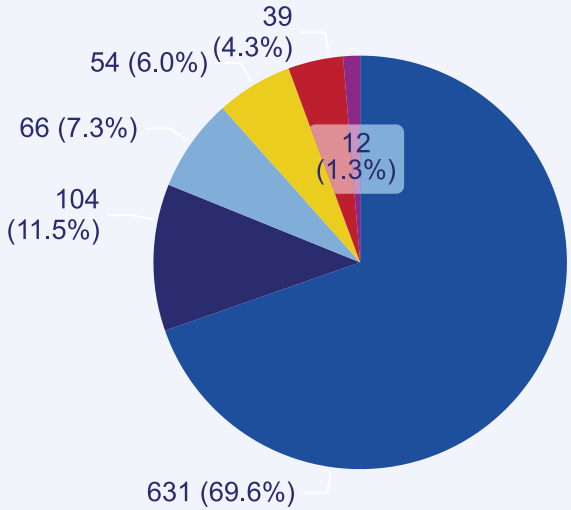
Access Management: High density of access driveways.

Raised Median: Raised medians currently exist at some intersections to facilitate left turn lanes.Existing medians are level with the road rather than raised.

Traffic Signals: Perkins Road at Knight Arnold Road has been reconstructed with mast arms and pedestrian equipment. Other signalized intersections use span wires and have non-compliant pedestrian equipment.

Roadway: The pavement along this segment is aging with significant cracking and potholes along the entire corridor.

MANNER OF COLLISION CHART

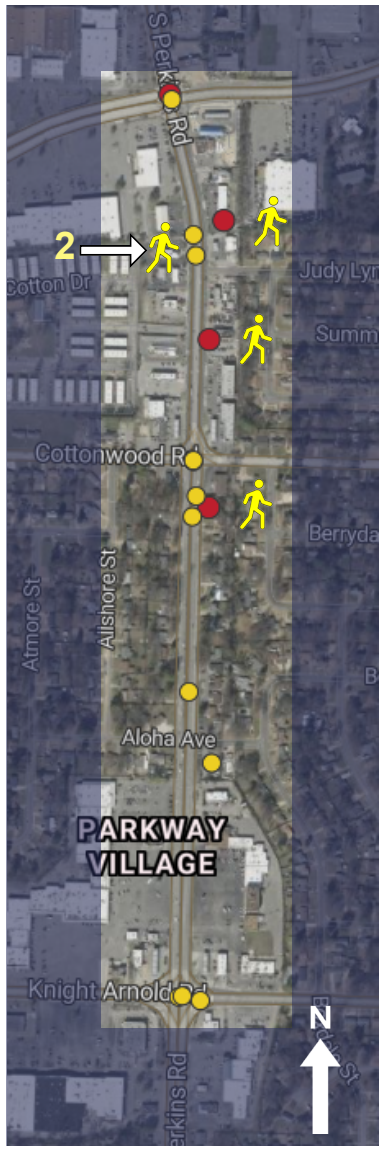


MANNER OF COLLISION

- Angle
- Single Vehicle
- Rear-End
- Sideswipe
- Other
- Head-On

Crash Data (2019 – 2023)	
4	Fatal
13	Serious Injury
51	Minor Injury
144	Possible injury
694	PDO

Fatal And Suspected Serious Injury Crash Map (2019–2023)

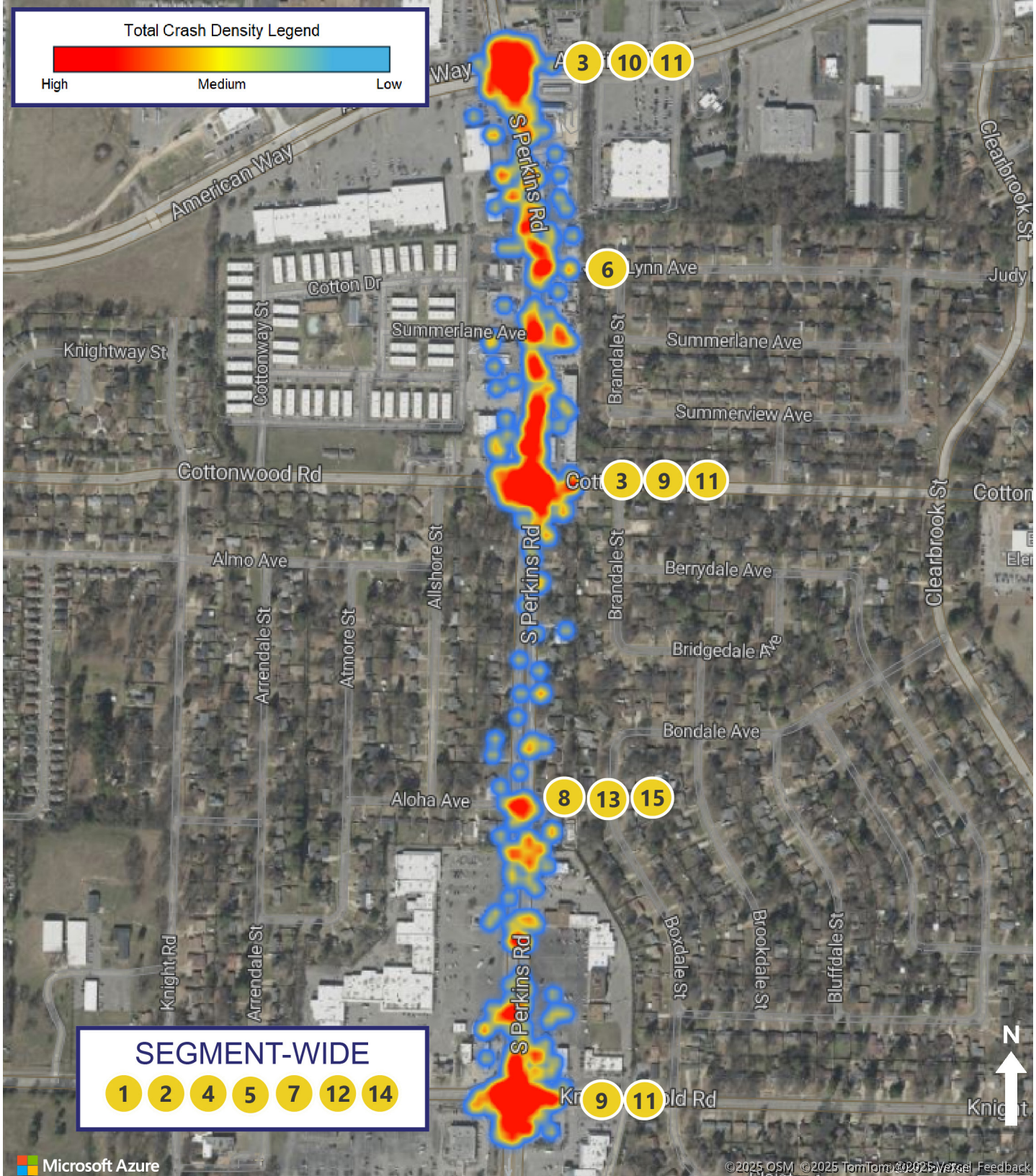


Crash Severity

- Fatal (K)
- Suspected Serious Injury (A)
- VRU Crash

SEGMENT 10: PERKINS ROAD

Between American Way and Knight Arnold Road



SEGMENT 10: PERKINS ROAD

Between American Way and Knight Arnold Road

COUNTERMEASURES SUMMARY

The countermeasures identified for Perkins Road between American Way and Knight Arnold Road are intended to address the history of fatal and serious injury crashes along this segment, which include a significant number of angle and single vehicle crashes. Three out of the four fatal crashes along the segment were crashes involving pedestrians.

Crash Type	Fatal Crashes	Serious Injury Crashes	Total Crashes
Pedestrian	3	4	**14**
Dark Conditions	2	7	**295**
Angle	1	6	**631**
Intersections	1	9	**664**
Aggressive Driving	0	2	**180**
Rear End	0	0	**104**

**The sum of fatal crashes by crash type does not equal the total fatalities, as individual crashes may be classified under more than one crash type.*

The blue check mark symbol represents a countermeasure identified as a Proven Safety Countermeasure by the FHWA.

The orange check mark represents a countermeasure supported by a quality Crash Modification Factor according to the Crash Modification Factors Clearinghouse.

ID	Countermeasure	Cost	Schedule	Source Matrix	
1	Improve existing median	$$$	Long-Term	✓	
2	Replace TWLTL with raised median	$$$	Long-Term	✓	✓
3	Install pedestrian countdown display	$	Short-Term		✓
4	Resurface pavement	$$$	Long-Term		✓
5	Install right-in-right-out (RIRO) operations at access point driveways	$	Short-Term	✓	✓
6	Install a pedestrian hybrid beacon (PHB or HAWK)	$$$	Long-Term	✓	✓
7	Upgrade/Install street lighting	$$	Mid-Term	✓	✓
8	Replace standard stop sign with flashing LED stop sign	$	Short-Term		✓
9	Remove channelized right turn lanes	$$$	Long-Term		
10	Reduce right turn radii	$$	Mid-Term		
11	Convert protected/permissive left turn phasing to protected only phasing	$$	Mid-Term		✓
12	Upgrade Existing marking to wet-reflective pavement marketings	$	Short-Term	✓	✓
13	Improve left-turn lane offset to create positive offset	$$$	Mid-Term		✓
14	Access Management Plan (From Planning to Implementation)	$$	Mid-Term	✓	
15	Install raised median with marked crosswalk (uncontrolled)	$$	Long-Term		✓

INTERSECTION 1:
N. Highland Street and Summer/Forrest Avenue

Signalized and Unsignalized Intersections

ROADWAY CHARACTERISTICS

Intersection Type: Four-Way and Three-Way Intersections

Control Type: Signalized and Stop-Controlled

Speed Limit: 40 mph along N. Highland St and Summer Ave with 30 mph along Forrest Avenue

Number of Lanes: 4 lanes along N. Highland St, 6 lanes along Summer Ave, and 2 lanes along Forrest Ave

Roadway Section: Two-way, undivided, with a continuous two-way left turn lane along N. Highland St and Summer Ave with a two-way, undivided along Forest Ave

Roadway Grade: Level

Roadway Alignment: Straight

Presence of Sidewalks: Yes

Average Total Entering Volume: Approximately 26,000 vehicles per day

PUBLIC INPUT

Unsafe for Driving: Lots of accidents at the intersection.

EXISTING CONDITIONS

Curb Ramps: Signal and utility poles are obstructing the curb ramps and sidewalk.

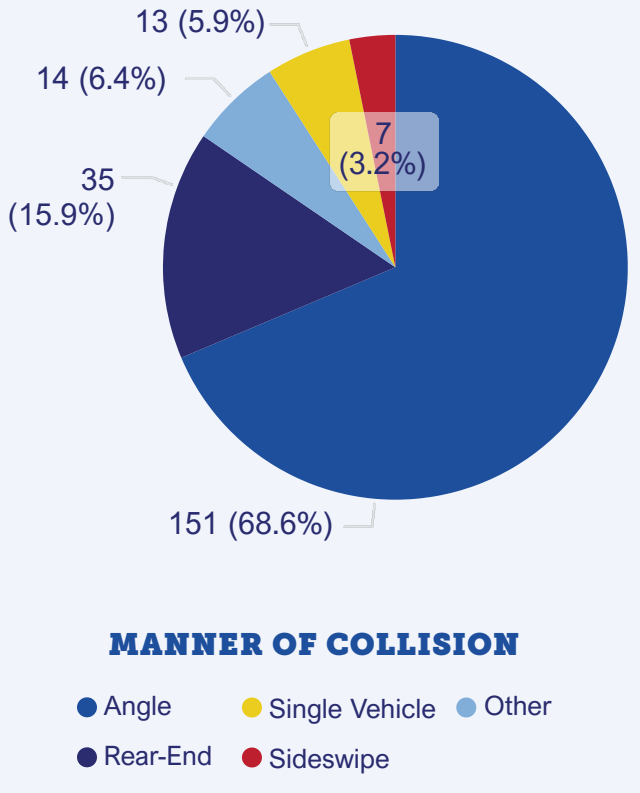
Driveway Access: Driveways are too close to the intersection corners.

Pavement Markings: Pavement markings are fading at the intersection.

Traffic Signal: Signal heads do not represent the amount of lanes existing.

Intersection Access: There is no signage to alert drivers of an approaching intersection on Forest Avenue.

MANNER OF COLLISION CHART



Crash Data (2019 – 2023)	
2	Fatal
7	Serious Injury
13	Minor Injury
31	Possible injury
169	PDO

INTERSECTION 1:
N. HIGHLAND STREET AND SUMMER/ FORREST AVENUE

INTERSECTION CRASH MAP

INTERSECTION 1: N. HIGHLAND STREET AND SUMMER/FORREST AVENUE

COUNTERMEASURES SUMMARY

The countermeasures identified for N. Highland Street and Summer Avenue with N. Highland Street and Forest Avenue are intended to address the recent fatal and serious injury crashes at this intersection, which include angle and pedestrian crashes.

The Angle Crash Type table to the right provides a detailed breakdown of angle crashes, categorizing them by type to determine appropriate countermeasures.

Crash Type	Fatal Crashes	Serious Injury Crashes	Total Crashes
Pedestrian	2	3	**7**
Impaired Driving	1	0	**3**
Angle	0	4	**151**
Agressive Driving	0	1	**42**
Teen	0	4	**84**

Angle Crash Type	Fatal Crashes	Serious Injury Crashes
Major/Minor Road - Right Turn	0	1
Major/Minor Road - Thru	0	2
Major/Minor Road - U-Turn	0	1

**The sum of fatal crashes by crash type does not equal the total fatalities, as individual crashes may be classified under more than one crash type.*

- The blue check mark symbol represents a countermeasure identified as a Proven Safety Countermeasure by the FHWA.
- The orange check mark represents a countermeasure supported by a quality Crash Modification Factor according to the Crash Modification Factors Clearinghouse.

ID	Countermeasure	Cost	Schedule	Source Matrix	
1	Convert Forrest Avenue into a one-way street or Right-in/Right-out only	$$	Mid-Term		
2	Evaluate and set appropriate clearance intervals for vehicles and pedestrians	$$	Mid-Term	✓	✓
3	Implement leading pedestrian intervals	$	Short-Term	✓	✓
4	Update and modernize outdated signal equipment	$$	Mid-Term		
5	Evaluate no right turn on red	$	Short-Term		
6	Install red-light cameras	$$	Mid-Term		✓
7	Remove tapered curb on northwest corner to reduce pedestrian crossing distances	$$	Mid-Term		
8	Eliminate driveways located near intersections	$$$	Long-Term		✓
9	Reduce lane widths on N. Highland St and expand the sidewalks to enhance pedestrian accessibility	$$$	Long-Term		
10	Restripe faded pavement markings	$$	Mid-Term		

INTERSECTION 2:
HICKORY HILL ROAD AT E. RAINES ROAD

Signalized Intersection

ROADWAY CHARACTERISTICS

Intersection Type: Four-Way Intersection

Control Type: Signalized

Speed Limit: 45 mph along Hickory Hill Rd and E. Raines Rd

Number of Lanes: 6 lanes along Hickory Hill Rd and 6 lanes along E. Raines Rd

Roadway Section: Two-way, not divided, with a continuous two-way left turn lane along Hickory Hill Rd and two-way, not divided along E. Raines Rd

Roadway Grade: Level

Roadway Alignment: Straight

Presence of Sidewalks: Yes

Average Total Entering Volume: Approximately 23,000 vehicles per day

PUBLIC INPUT

Failure to Obey Traffic Laws: Running red lights at night.

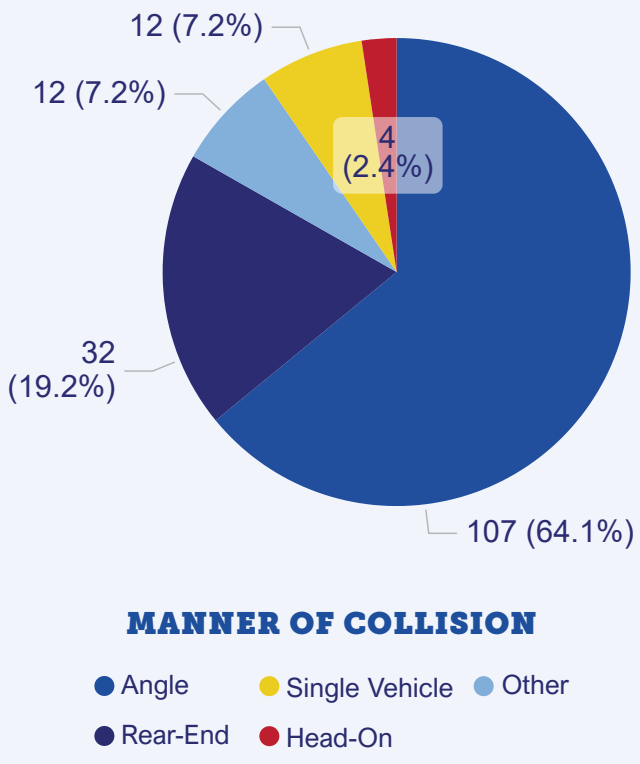
EXISTING CONDITIONS

Crosswalks: Transverse crosswalks are obsolete along this segment. Raised median is located within the crosswalk access.

Pedestrian Signals: Pedestrian signal heads are outdated.

Pavement Markings: Pavement markings are fading at the intersection.

MANNER OF COLLISION CHART



Crash Data (2019 – 2023)	
3	Fatal
3	Serious Injury
19	Minor Injury
37	Possible injury
106	PDO

INTERSECTION 2:
HICKORY HILL ROAD AT E. RAINES ROAD

INTERSECTION 2: HICKORY HILL ROAD AT E. RAINES ROAD

COUNTERMEASURES SUMMARY

The countermeasures identified for Hickory Hill Road and E. Raines Road are intended to address the recent fatal and serious injury crashes along this segment, which include majority angle, head on, and rear end crashes.

The Angle Crash Type table to the right provides a detailed breakdown of angle crashes, categorizing them by type to determine appropriate countermeasures.

Crash Type	Fatal Crashes	Serious Injury Crashes	Total Crashes
Agressive Driving	2	0	**34**
Angle	1	3	**107**
Head-On	1	0	**4**
Rear End	1	0	**32**
Teen	0	1	**55**

Angle Crash Type	Fatal Crashes	Serious Injury Crashes
Major/Minor Road - Thru	1	0
Opposing Thru - Left Turn	0	3

**The sum of fatal crashes by crash type does not equal the total fatalities, as individual crashes may be classified under more than one crash type.*

- The blue check mark symbol represents a countermeasure identified as a Proven Safety Countermeasure by the FHWA.
- The orange check mark represents a countermeasure supported by a quality Crash Modification Factor according to the Crash Modification Factors Clearinghouse.

ID	Countermeasure	Cost	Schedule	Source Matrix	
1	Convert protected/permissive left turn phasing to protected only phasing	$$	Short-Term		✓
2	Remove existing median on west leg and remove negative offset for left turn movement	$$$	Long-Term		✓
3	Install pedestrian countdown displays	$$	Short-Term		✓
4	Evaluate and set appropriate clearance intervals for vehicles and pedestrians	$$	Short-Term		✓
5	Modernize traffic signal equipment	$$	Short-Term	✓	✓
6	Install high-visibility longitudinal crosswalk markings	$$	Short-Term		
7	Reduce right turn radii and install dual curb ramps on corners	$$$	Mid-Term		✓

INTERSECTION 3:
MENDENHALL ROAD AT WINCHESTER ROAD

Signalized Intersections

ROADWAY CHARACTERISTICS

Intersection Type: Four-Way Intersection

Control Type: Signalized

Speed Limit: 45 mph along Mendenhall Rd and Winchester Rd

Number of Lanes: 6 lanes along Mendenhall Rd and 6 lanes along Winchester Rd

Roadway Section: Two-way, partially divided, with a continuous two-way left turn lane along Mendenhall Rd and two-way, divided along Winchester Rd

Roadway Grade: Level

Roadway Alignment: Straight

Presence of Sidewalks: Yes

Average Total Entering Volume: Approximately 28,000 vehicles per day

PUBLIC INPUT

Unsafe for Driving: Lots of accidents at the intersection.

EXISTING CONDITIONS

Raised Medians: Raised medians are flushed with the roadway.

Curb Ramps: Curb ramps are not ADA compliant.

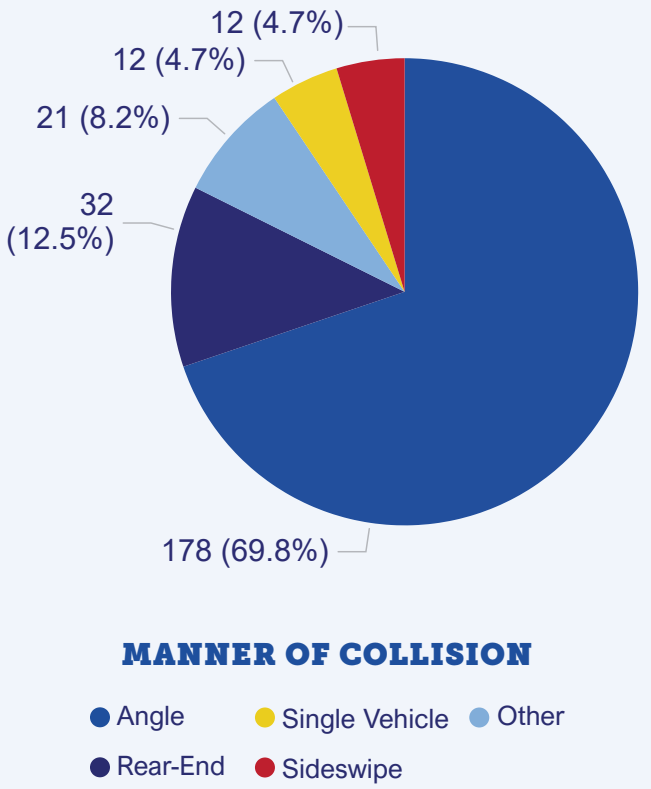
Pedestrian Signals: Pedestrian signal heads are out dated.

Pavement Markings: Pavement markings are fading at the intersection.

Lighting: Lighting is present along the roads but not at the intersection itself.

Traffic Signal: Signal heads do not represent the number of existing lanes.

MANNER OF COLLISION CHART



Crash Data (2019 – 2023)	
8	Serious Injury
31	Minor Injury
39	Possible injury
180	PDO

INTERSECTION 3: MENDENHALL ROAD AT WINCHESTER ROAD

INTERSECTION 3: MENDENHALL ROAD AT WINCHESTER ROAD

COUNTERMEASURES SUMMARY

The countermeasures identified for Mendenhall Road and Winchester Road are intended to address the recent fatal and serious injury crashes at this intersection, which include majority angle crashes. One out of the eight crashes involved a pedestrian.

The table below provides a detailed breakdown of angle crashes, categorizing them by type to determine appropriate countermeasures.

Crash Type	Fatal Crashes	Serious Injury Crashes	Total Crashes
Aggressive Driving	0	3	**53**
Angle	0	6	**178**
Head On	0	1	**3**
Pedestrian	0	1	**4**
Teen	0	3	**98**

Angle Crash Type	Fatal Crashes	Serious Injury Crashes
Opposing Thru - Left Turn	0	3
Opposing Thru - Left Turn	0	2
Other	0	1

**The sum of fatal crashes by crash type does not equal the total fatalities, as individual crashes may be classified under more than one crash type.*

- The blue check mark symbol represents a countermeasure identified as a Proven Safety Countermeasure by the FHWA.
- The orange check mark represents a countermeasure supported by a quality Crash Modification Factor according to the Crash Modification Factors Clearinghouse.

ID	Countermeasure	Cost	Schedule	Source Matrix	
1	Improve visibility of signal heads	$$	Short-Term		✓
2	Install pedestrian countdown displays	$$	Short-Term		✓
3	Modernize traffic signal equipment	$$	Short-Term		
4	Convert protected/permissive left turn phasing to protected only phasing	$$	Mid-Term		✓
5	Install ADA compliant curb ramps	$$$	Long-Term		
6	Remove channelized right turn lanes	$$$	Long-Term		
7	Reduce right turn radii	$$	Mid-Term		
8	Restripe faded pavement markings	$$	Long-Term		
9	Reconfigure intersection to bring bike lanes into sidewalk area	$$$	Long-Term		
10	Remove existing medians at intersection and remove negative offsets for left turn movements	$$$	Mid-Term		
11	Install red-light cameras	**$**	Short-Term		✓

INTERSECTION 4:
ELVIS PRESLEY BOULEVARD AT HOLMES ROAD

Signalized Intersection

ROADWAY CHARACTERISTICS

Intersection Type: Four-Way Intersection

Control Type: Signalized

Speed Limit: 40 mph along Elvis Presley Blvd and Holmes Rd

Number of Lanes: 4 lanes along Elvis Presley Blvd and Holmes Rd

Roadway Section: Two-way, undivided, with a continuous two-way left turn lane along Holmes Rd and Elvis Presley Blvd

Roadway Grade: Level

Roadway Alignment: Straight

Presence of Sidewalks: Yes

Average Total Entering Volume: Approximately 11,000 vehicles per day

PUBLIC INPUT

Unsafe for Driving: Lots of potholes at the intersection.

EXISTING CONDITIONS

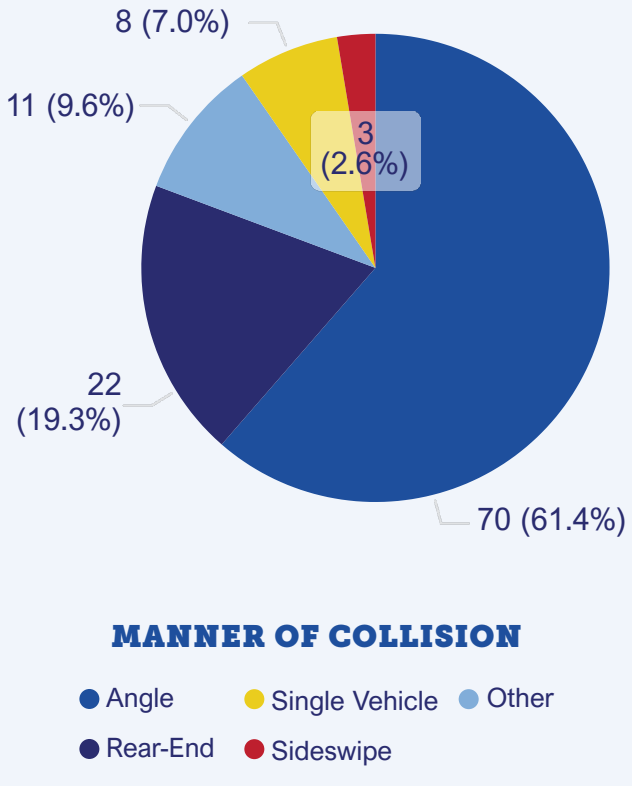
Curb Ramps: Curb ramps are not ADA compliant.

Pedestrian Signals: Pedestrian signal heads are outdated.

Pavement Markings: Pavement markings at the intersection are fading and need to be refreshed.

Pavement: Pavement is outdated and requires resurfacing.

MANNER OF COLLISION CHART



Crash Data (2019 – 2023)	
4	Serious Injury
6	Minor Injury
26	Possible injury
80	PDO

INTERSECTION 4: ELVIS PRESLEY BOULEVARD AT HOLMES ROAD

INTERSECTION 4: ELVIS PRESLEY BOULEVARD AT HOLMES ROAD

COUNTERMEASURES SUMMARY

The countermeasures identified for Elvis Presley Boulevard and Holmes Road are intended to address the recent serious injury crashes at this location, which include angle, distracted driving, head-on, and pedestrian crash.

The Angle Crash Type table to the right provides a detailed breakdown of angle crashes, categorizing them by type to determine appropriate countermeasures.

Crash Type	Fatal Crashes	Serious Injury Crashes	Total Crashes
Angle	0	2	**70**
Distracted Driving	0	2	**24**
Head-On	0	1	**2**
Pedestrian	0	1	**2**

Angle Crash Type	Fatal Crashes	Serious Injury Crashes
Major/Minor Road - Thru	0	2

**The sum of fatal crashes by crash type does not equal the total fatalities, as individual crashes may be classified under more than one crash type.*

- The blue check mark symbol represents a countermeasure identified as a Proven Safety Countermeasure by the FHWA.
- The orange check mark represents a countermeasure supported by a quality Crash Modification Factor according to the Crash Modification Factors Clearinghouse.

ID	Countermeasure	Cost	Schedule	Source Matrix	
1	Install pedestrian countdown displays	$$	Short-Term		✓
2	Install ADA compliant curb ramps	$$	Mid-Term		
3	Install sidewalk on west side of Elvis Presley Blvd to intersection with compliant curb ramps	$$	Mid-Term		
4	Evaluate and set appropriate clearance intervals for vehicles and pedestrians	$$	Short-Term	✓	✓
5	Evaluate removal of east/west right turn lanes	$$$	Long-Term		
6	Reduce right turn radii	$$$	Long-Term		
7	Resurface Intersection	$$	Mid-Term		
8	Restripe faded pavement markings	$$	Mid-Term		
9	Relocate existing communication lines to improve visibility of signal displays	$$$	Long-Term		
10	Install red-light cameras	$	Short-Term		✓

INTERSECTION 5:
S. CLEVELAND STREET AND UNION AVENUE

Signalized Intersections

ROADWAY CHARACTERISTICS

Intersection Type: Four-Way Intersection

Control Type: Signalized

Speed Limit: 35 mph along S. Cleveland St and Union Ave

Number of Lanes: 2 lanes along S. Cleveland St and 6 lanes along Union Ave

Roadway Section: Two-way, undivided, with a two-way left turn lane along the eastbound approach of Union Ave and two-way, undivided, with a continuous two-way left turn lane along Cleveland St

Roadway Grade: Level & Sag

Roadway Alignment: Straight

Presence of Sidewalks: Yes

Average Total Entering Volume: Approximately 57,000 vehicles per day

PUBLIC INPUT

Comments: No public comments at the intersection.

EXISTING CONDITIONS

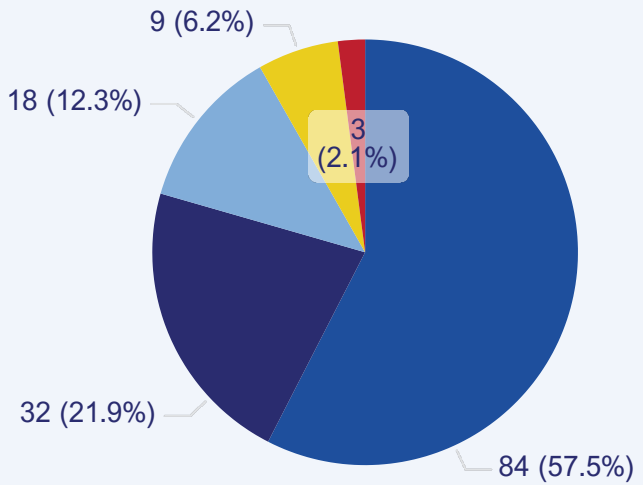
Curb Ramps: Curb ramps are not ADA compliant.

Pavement Markings: Pavement markings at the intersection are fading and need to be refreshed.

Pavement: Pavement is outdated and requires repair.

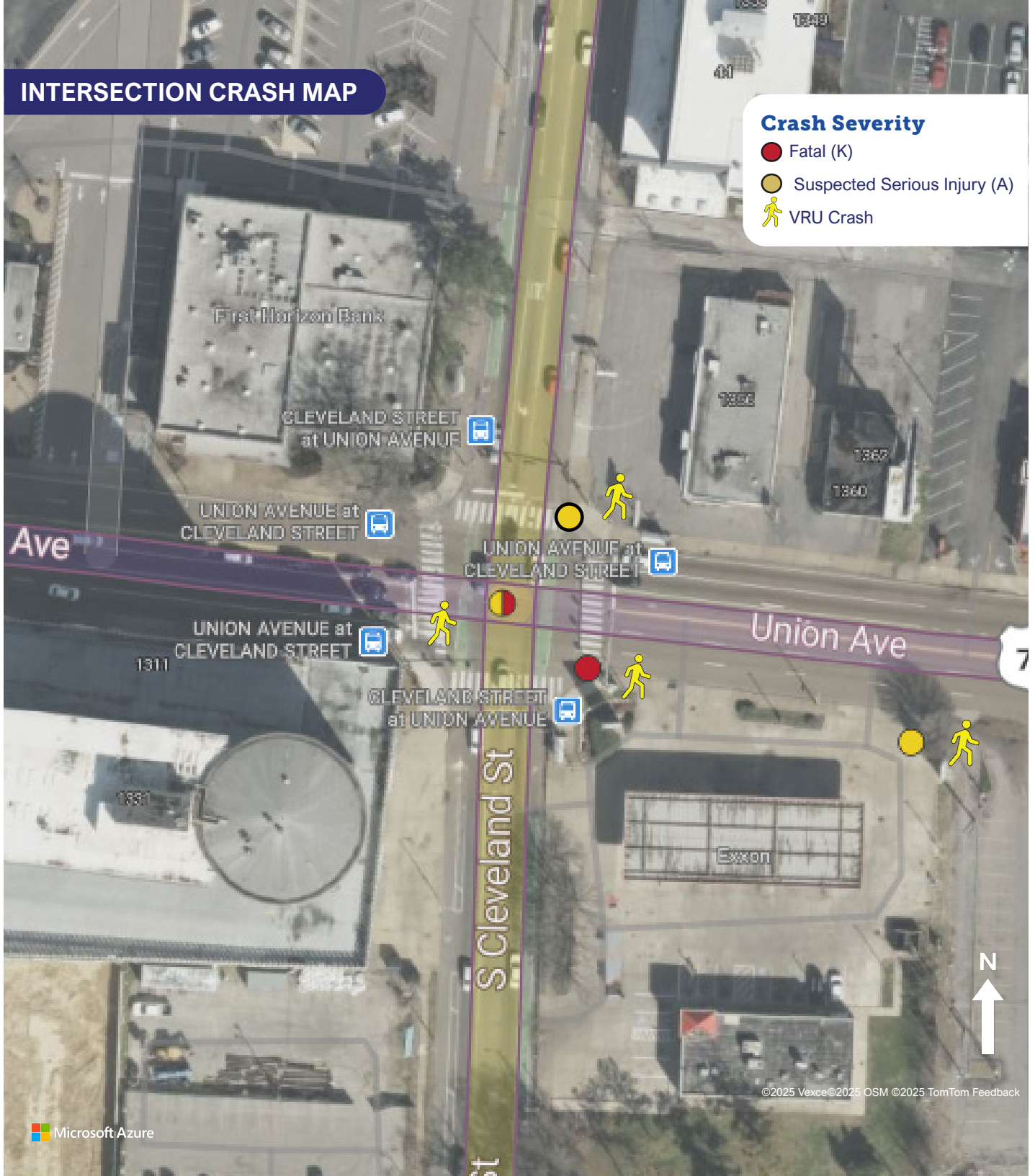
Pedestrian Pushbuttons: Pedestrian pushbuttons are located too far from the existing curb ramps, making them non-compliant with ADA standards.

MANNER OF COLLISION CHART



Crash Data (2019 – 2023)	
2	Fatal
3	Serious Injury
8	Minor Injury
23	Possible Injury
111	PDO

INTERSECTION 5:
S. CLEVELAND STREET AND UNION AVENUE



INTERSECTION 5: S. CLEVELAND STREET AND UNION AVENUE

COUNTERMEASURES SUMMARY

The countermeasures identified for S. Cleveland Street and Union Avenue are intended to address the recent fatal and serious injury crashes at this location, which include aggressive driving, pedestrian crashes, sideswipe, and teen crashes.

Crash Type	Fatal Crashes	Serious Injury Crashes	Total Crashes
Agressive Driving	1	1	**20**
Pedestrian	1	3	**18**
Sideswipe	1	0	**9**
Teen	1	3	**40**

**The sum of fatal crashes by crash type does not equal the total fatalities, as individual crashes may be classified under more than one crash type.*

- The blue check mark symbol represents a countermeasure identified as a Proven Safety Countermeasure by the FHWA.
- The orange check mark represents a countermeasure supported by a quality Crash Modification Factor according to the Crash Modification Factors Clearinghouse.

ID	Countermeasure	Cost	Schedule	Source Matrix	
1	Install ADA compliant curb ramps	$$	Mid-Term		
2	Implement leading pedestrian intervals	$	Short-Term	✓	✓
3	Evaluate and set appropriate clearance intervals for vehicles and pedestrians	$$	Short-Term	✓	✓
4	Evaluate no right turn on red	$	Short-Term		
5	Restripe faded pavement markings	$$	Mid-Term		
6	Modify existing bike lane to provide hardened buffer	$$	Mid-Term		✓
7	Eliminate driveways located near intersection	$$$	Long-Term		✓

INTERSECTION 6:
HOOVER DRIVE AND RALEIGH LAGRANGE ROAD

Unsignalized Intersection

ROADWAY CHARACTERISTICS

Intersection Type: Four-Way Intersection

Control Type: Unsignalized

Speed Limit: 45 mph along Raleigh Lagrange & 35 mph along Hoover Dr

Number of Lanes: 2 lanes along Hoover Dr & 6 lanes along Raleigh Lagrange Rd

Roadway Section: Two-way, undivided along Hoover Dr and two-way undivided, with a continuous two-way left turn along Raleigh Lagrange Rd

Roadway Grade: Level

Roadway Alignment: Curve

Presence of Sidewalks: Yes

Average Total Entering Volume: Approximately 25,000 vehicles per day

PUBLIC INPUT

Comments: No public comments at the intersection.

EXISTING CONDITIONS

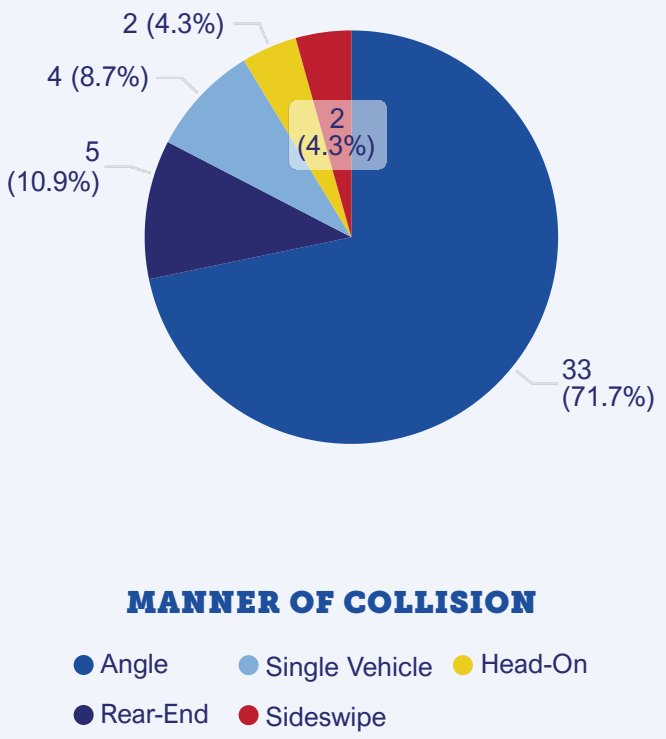
Crosswalks: No crosswalks crossing at intersection.

Intersection Layout: Intersection layout is too large for an uncontrolled intersection.

Pavement Markings: No pavement markings on Hoover Drive.

Slip Lanes: A large slip lane on Raleigh Lagrange Road.

MANNER OF COLLISION CHART



Crash Data (2019 – 2023)	
2	Fatal
2	Serious Injury
2	Minor Injury
10	Possible injury
31	PDO

INTERSECTION 6: HOOVER DRIVE AND RALEIGH LAGRANGE ROAD

INTERSECTION 6: HOOVER DRIVE AND RALEIGH LAGRANGE ROAD

COUNTERMEASURES SUMMARY

The countermeasures identified for Hoover Drive and Raleigh Lagrange Road are intended to address the recent fatal and serious injury crashes at this location, which include aggressive driving, angle, head on, and sideswipe crashes.

The Angle Crash Type table to the right provides a detailed breakdown of angle crashes, categorizing them by type to determine appropriate countermeasures.

Crash Type	Fatal Crashes	Serious Injury Crashes	Total Crashes
Angle	1	0	**33**
Aggressive Driving	1	1	**7**
Head-On	1	1	**2**
Sideswipe	0	1	**2**

Angle Crash Type	Fatal Crashes	Serious Injury Crashes
Major/Minor Road - Thru	1	0

**The sum of fatal crashes by crash type does not equal the total fatalities, as individual crashes may be classified under more than one crash type.*

- The blue check mark symbol represents a countermeasure identified as a Proven Safety Countermeasure by the FHWA.
- The orange check mark represents a countermeasure supported by a quality Crash Modification Factor according to the Crash Modification Factors Clearinghouse.

ID	Countermeasure	Cost	Schedule	Source Matrix	
1	Conduct signal warrants for installation of a traffic signal	$	Short-Term		
2	Convert intersection to restricted crossing U-turn (RCUT) intersection, if signal warrant not met	$$$	Long-Term	✓	✓
3	Install raised median	$$$	Long-Term		✓
4	Remove channelized right turn lanes	$$$	Long-Term		

INTERSECTION 7:
COLEMAN ROAD AND STAGE ROAD

Signalized Intersections

ROADWAY CHARACTERISTICS

Intersection Type: Four-Way Intersection

Control Type: Signalized

Speed Limit: 40 mph along Coleman Rd & 45 mph along Stage Rd

Number of Lanes: 6 lanes along Coleman Rd & Stage Rd

Roadway Section: Two-way, undivided, with a continuous two-way left turn lane along Coleman Rd and two-way divided along Stage Rd

Roadway Grade: Level

Roadway Alignment: Straight

Presence of Sidewalks: Yes

Average Total Entering Volume: Approximately 29,000 vehicles per day

PUBLIC INPUT

Comments: No public comments at the intersection.

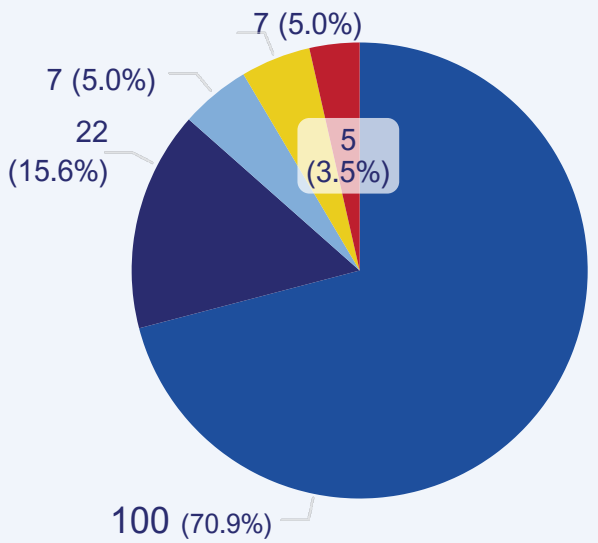
EXISTING CONDITIONS

Crosswalks: Crosswalks are both high visibility and transverse.

Pavement Markings: Pavement markings at the intersection are fading and needs to be refreshed.

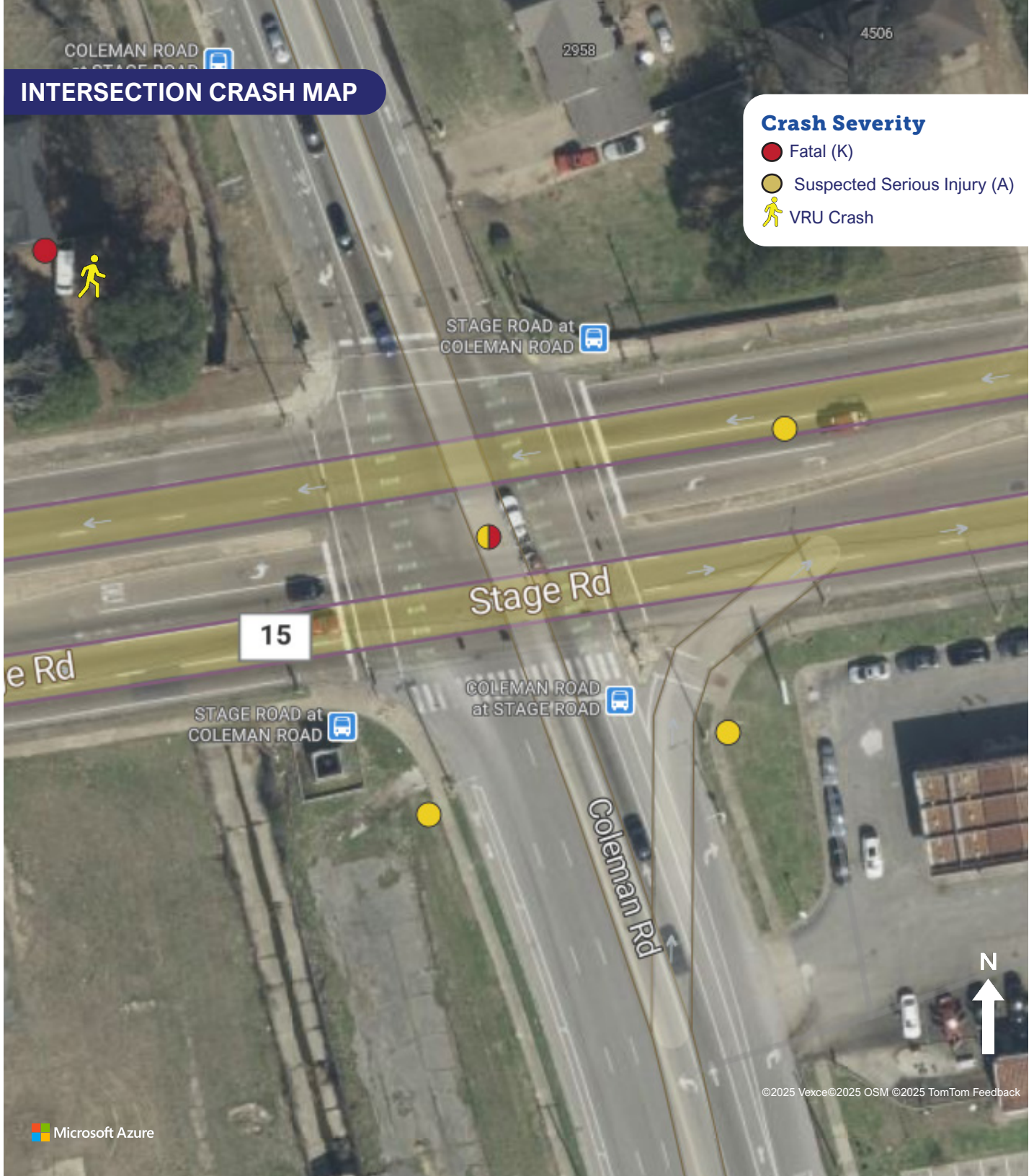
Raised Median: Raised concrete median is not raised and level with the pavement due to resurfacing.

MANNER OF COLLISION CHART



Crash Data (2019 – 2023)	
2	Fatal
4	Serious Injury
7	Minor Injury
37	Possible Injury
95	PDO

INTERSECTION 7: COLEMAN ROAD AND STAGE ROAD



INTERSECTION 7: COLEMAN ROAD AND STAGE ROAD

COUNTERMEASURES SUMMARY

The countermeasures identified for Coleman Road and Stage Road are intended to address the recent fatal and serious injury crashes at this location, which include majority angle with head-on and pedestrian crashes.

The Angle Crash Type table to the right provides a detailed breakdown of angle crashes, categorizing them by type to determine appropriate countermeasures.

Crash Type	Fatal Crashes	Serious Injury Crashes	Total Crashes
Angle	1	3	**100**
Pedestrian	1	0	**2**
Head-On	0	1	**4**

Angle Crash Type	Fatal Crashes	Serious Injury Crashes
Opposing Thru - Left Turn	1	2
Major/Minor Road - Thru	0	1

**The sum of fatal crashes by crash type does not equal the total fatalities, as individual crashes may be classified under more than one crash type.*

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- The orange check mark represents a countermeasure supported by a quality Crash Modification Factor according to the Crash Modification Factors Clearinghouse.

ID	Countermeasure	Cost	Schedule	Source Matrix	
1	Convert protected/permissive left turn phasing to protected only phasing	$$	Mid-Term		✓
2	Evaluate and set appropriate clearance intervals for vehicles and pedestrians	$$	Short-Term	✓	✓
3	Install ADA compliant curb ramps and high-visibility crosswalk markings	$$	Mid-Term		
4	Install separated bicycle lane	$$	Mid-Term	✓	✓
5	Remove channelized right turn lane	$$$	Long-Term		
6	Remove existing medians on Stage Road and remove negative offsets for left turn movements	$$$	Long-Term		
7	Relocate existing communication lines to improve visibility of signal displays	$$$	Long-Term		
8	Install red-light cameras	$	Short-Term		✓

INTERSECTION 8:
S. THIRD STREET AND ROLLINS ROAD

Unsignalized Intersections

ROADWAY CHARACTERISTICS

Intersection Type: Three-Way Intersection

Control Type: Unsignalized

Speed Limit: 45 mph along S. Third St & 25 mph along Rollins Rd

Number of Lanes: 6 lanes along S. Third St & 2 lanes along Rollins Rd

Roadway Section: Two-way, undivided, with a continuous two-way left turn lane along Coleman Rd and two-way divided along Stage Rd

Roadway Grade: Level

Roadway Alignment: Straight

Presence of Sidewalks: Yes

Average Total Entering Volume: Approximately 48,000 vehicles per day

PUBLIC INPUT

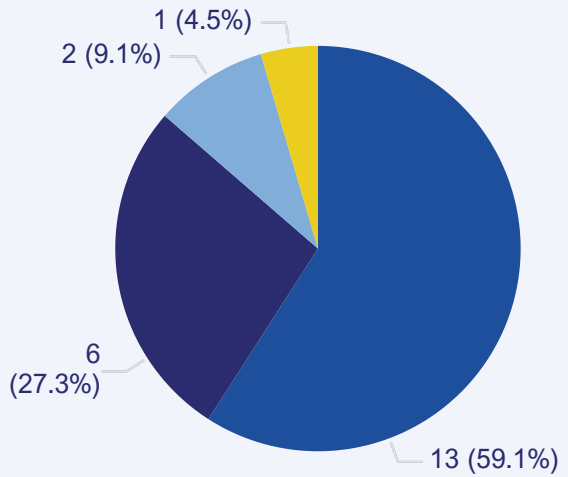
Comments: No public comments at the intersection.

EXISTING CONDITIONS

Pedestrians: High volume of pedestrian use.

Pavement Markings: No pavement markings on Rollins Rd.

MANNER OF COLLISION CHART



Crash Data (2019 – 2023)	
1	Fatal
4	Serious Injury
1	Minor Injury
3	Possible Injury
13	PDO

INTERSECTION 8:
S. THIRD STREET AND ROLLINS ROAD

INTERSECTION 8: S. THIRD STREET AND ROLLINS ROAD

COUNTERMEASURES SUMMARY

The countermeasures identified for S. Third Street and Rollins Road are intended to address the recent fatal and serious injury crashes at this location, which include dark-lighted and pedestrian crashes.

Crash Type	Fatal Crashes	Serious Injury Crashes	Total Crashes
Dark-Lighted	1	3	**7**
Pedestrian	1	4	**5**

**The sum of fatal crashes by crash type does not equal the total fatalities, as individual crashes may be classified under more than one crash type.*

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- The orange check mark represents a countermeasure supported by a quality Crash Modification Factor according to the Crash Modification Factors Clearinghouse.

ID	Countermeasure	Cost	Schedule	Source Matrix	
1	Install additional street lighting at intersection	$$	Mid-Term	✓	✓
2	Install a pedestrian refuge island on north leg	$$$	Long-Term	✓	
3	Install a pedestrian hybrid beacon (PHB or HAWK)	$$$	Long-Term	✓	✓

INTERSECTION 9:
GETWELL ROAD AND NEW WILLOW AVENUE

Signalized Intersection

ROADWAY CHARACTERISTICS

Intersection Type: Four-Way Intersection

Control Type: Signalized

Speed Limit: 40 mph along Getwell Rd & 35 mph along New Willow Ave

Number of Lanes: 4 lanes along Getwell Rd & 2 lanes along New Willow Ave

Roadway Section: Two-way, undivided, with a continuous two-way left turn lane along Getwell Rd and two-way undivided along New Willow Ave

Roadway Grade: Level

Roadway Alignment: Straight

Presence of Sidewalks: Yes

Average Total Entering Volume: Approximately 43,000 vehicles per day

PUBLIC INPUT

Intersection Improvement: Widen New Willow Avenue with a smoother sidewalk and curbs.

EXISTING CONDITIONS

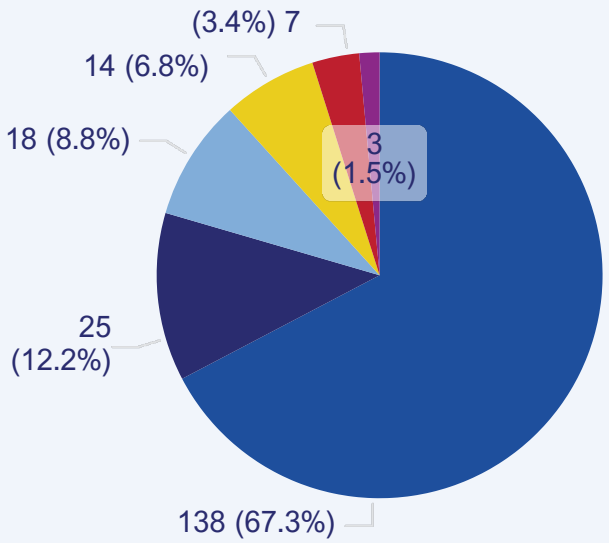
Curb Ramps: Signal and utility poles are obstructing the curb ramps and sidewalk.

Driveway Access: Driveways are too close to the intersection corners.

Pavement Markings: Pavement markings are fading at the intersection.

Pedestrian Signals: Pedestrian signal heads are out dated and do not apply to ADA standards.

MANNER OF COLLISION CHART



Crash Data (2019 – 2023)	
2	Fatal
4	Serious Injury
10	Minor Injury
21	Possible injury
168	PDO

INTERSECTION 9: GETWELL ROAD AND NEW WILLOW AVENUE

INTERSECTION 9: GETWELL ROAD AND NEW WILLOW AVENUE

COUNTERMEASURES SUMMARY

The countermeasures identified for Getwell Road and New Willow Avenue are intended to address the recent fatal and serious injury crashes at this location, which include angle, head-on, pedestrian crashes.

The Angle Crash Type table to the right provides a detailed breakdown of angle crashes, categorizing them by type to determine appropriate countermeasures.

Crash Type	Fatal Crashes	Serious Injury Crashes	Total Crashes
Angle	1	2	**138**
Pedestrian	1	1	**5**
Head-On	0	1	**3**

Angle Crash Type	Fatal Crashes	Serious Injury Crashes
Major Road/Driveway	1	0
Other (Reported Incorrectly)	0	2

**The sum of fatal crashes by crash type does not equal the total fatalities, as individual crashes may be classified under more than one crash type.*

- The blue check mark symbol represents a countermeasure identified as a Proven Safety Countermeasure by the FHWA.
- The orange check mark represents a countermeasure supported by a quality Crash Modification Factor according to the Crash Modification Factors Clearinghouse.

ID	Countermeasure	Cost	Schedule	Source Matrix	
1	Modernize traffic signal equipment	$$$	Long-Term		✓
2	Convert East/West to split phase	$$	Mid-Term		
3	Convert protected/permissive left turn phasing to protected only phasing	$$	Mid-Term		✓
4	Evaluate and set appropriate clearance intervals for vehicles and pedestrians	$$	Short-Term	✓	✓
5	Install ADA compliant curb ramps and push buttons	$$	Mid-Term		
6	Reducing driveway width or fully close driveways near Intersection	$$$	Long-Term		✓
7	Restripe faded pavement markings	$$	Mid-Term		
8	Install reflective tape on ultility poles	$	Short-Term		
9	Upgrade intersection lighting	$$	Mid-Term	✓	✓

INTERSECTION 10:
E SHELBY DRIVE AND SWINNEA ROAD

Signalized Intersections

ROADWAY CHARACTERISTICS

Intersection Type: Three-Way Intersection

Control Type: Signalized

Speed Limit: 45 mph along E Shelby Dr & 50 mph along Swinnea Rd

Number of Lanes: 6 lanes along E Shelby Dr & 4 lanes along Swinnea Rd

Roadway Section: Two-way, undivided, with a continuous two-way left turn lane along E Shelby Dr and two-way, undivided, with a continuous two-way left turn lane along Swinnea Rd

Roadway Grade: Level

Roadway Alignment: Straight

Presence of Sidewalks: No

Average Total Entering Volume: Approximately 58,000 vehicles per day

PUBLIC INPUT

Comments: No public comments at the intersection.

EXISTING CONDITIONS

Crosswalk: Transverse striping is faded and difficult to identify.

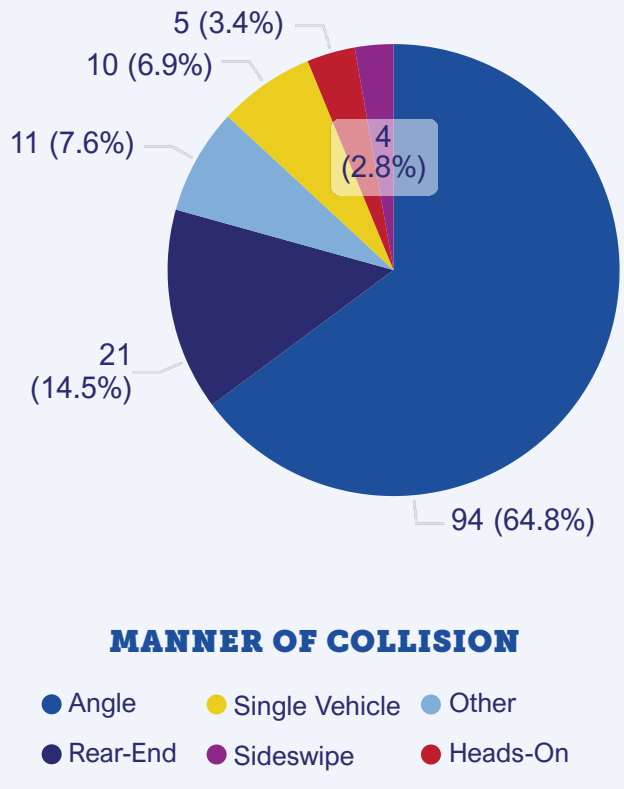
Sidewalk: Little to no sidewalk presence at the intersection.

Pedestrian Signals and Curb Ramps: Pedestrian signal heads are out dated and curb ramps do not apply to ADA standards.

Lighting: No intersection lighting.

Pavement Markings: No stop bar located along Swinnea Rd.

MANNER OF COLLISION CHART



Crash Data (2019 – 2023)	
3	Fatal
6	Serious Injury
10	Minor Injury
32	Possible Injury
94	PDO

INTERSECTION 10:
E SHELBY DRIVE AND SWINNEA ROAD

INTERSECTION 10: E SHELBY DRIVE AND SWINNEA ROAD

COUNTERMEASURES SUMMARY

The countermeasures identified for E Shelby Drive and Swinnea Road are intended to address the recent fatal and serious injury crashes at this location, which include angle, head-on, pedestrian crashes.

The Angle Crash Type table to the right provides a detailed breakdown of angle crashes, categorizing them by type to determine appropriate countermeasures.

Crash Type	Fatal Crashes	Serious Injury Crashes	Total Crashes
Angle	2	4	**94**
Pedestrian	1	0	**1**
Head-On	0	2	**5**

Angle Crash Type	Fatal Crashes	Serious Injury Crashes
Opposing Thru - Left Turn	1	2
Other	1	1
Major/Minor Road - Right Turn	0	1

- The blue check mark symbol represents a countermeasure identified as a Proven Safety Countermeasure by the FHWA.
- The orange check mark represents a countermeasure supported by a quality Crash Modification Factor according to the Crash Modification Factors Clearinghouse.

ID	Countermeasure	Cost	Schedule	Source Matrix	
1	Install intersection lighting	$$	Mid-Term	✓	✓
2	Protected/permissive to protected-only left turn phasing	$$	Mid-Term		✓
3	Evaluate and set appropriate clearance intervals for vehicles and pedestrians	$$	Short-Term	✓	
4	Install ADA compliant curb ramps and high-visibility crosswalk markings	$$	Mid-Term	✓	
5	Reduce right turn radii	$$$	Long-Term		
6	Modernize traffic signal equipment	$$$	Long-Term		
7	Install red-light cameras	$	Short-Term	✓	✓
8	Evaluate and set appropriate speed limit for the roadway	$$	Short-Term		

PLAN AND POLICY REVIEW

REVIEW PROCESS

The project team conducted a structured review of existing local and regional plans, policies, and procedures relevant to transportation safety. The process included:

- Identifying relevant plans and policies—city planning documents, regional MPO plans, modal plans, corridor studies, design manuals, and neighborhood plans.
- Reviewing documents for safety-related content—opportunities, barriers, and themes relevant to multimodal safety outcomes.
- Synthesizing key takeaways to inform SAP recommendations.

KEY FINDINGS FOR SAP INTEGRATION

The review showed that, while there is a strong basis for safety in the city's previous planning efforts, Memphis lacks a unified safety framework at the local level. Plans and policies demonstrate support for Complete Streets and safe multimodal transportation options, emphasizing strategies like lane reductions, lane narrowing, pedestrian crossings, midblock treatments, bike infrastructure, and context-appropriate design. There is also a continuous theme of school-related safety investments, with plans highlighting crash concentrations near schools and the need for crossings, sidewalks, and midblock improvements.

There are elements of design recommendations that address traffic calming and speed management, including candidate intersections for roundabouts and corridor-specific safety improvements. A number of high-risk or high-priority corridors are identified across the plans, with frequently repeated corridors including: Frayser Boulevard, Winchester Road, Raines Road, Shelby Drive, Summer Avenue, Park Avenue, Poplar Avenue, MLK Jr. Avenue, Chelsea Avenue, Hollywood Street.

The FHWA Safe System Approach is generally endorsed, with local and regional plans stressing road diets, slower speeds, multimodal improvements, visibility enhancements, and intersection redesigns. Plans also acknowledge and illustrate that significant investments are already underway. Accelerate Memphis and Memphis 3.0 Small Area Plans include numerous investments in crossings, sidewalks, protected bike lanes, and multimodal improvements.

OVERALL CONCLUSION

Memphis has strong safety-related planning but no unified citywide strategy. The Memphis SAP is a significant opportunity for integrating existing themes—speed management, multimodal safety, school zones, traffic calming, and Safe System principles—into a cohesive framework aligned with Safe Streets for All. For a full copy of the plan and policy review report, see **Appendix G**.

ACTION STRATEGIES

The Memphis SAP establishes specific, actionable strategies for the City and partners to follow for building safer streets and a culture of safety within the City. Each of the strategies are guided by the research and engagement within the SAP and follow the Safe System Approach. The safety actions include short-, medium-, and long-term efforts that may be inexpensive or require significant funding.

Table 7-2 details specific safety actions, including project, programs, policies, guidelines, and partnerships, that will guide the City towards safer streets. A full copy of this table with all elements can be found in **Appendix H**.

UNDERSTANDING THE ACTION STRATEGIES TABLE

- **Action ID**: A unique task number for each action.
- **Action Category**: The general area of focus for each action item
  - Access and Demand Management
  - Commercial Motor Vehicles (CMV) & Freight
  - Communications and Education
  - Coordination and Partnerships
  - Crossings and Intersections
  - Emergency Response and Enforcement
  - Guidelines and Standards
  - Implementation & Accountability
  - Maintenance and Operations
  - Multimodal Networks
  - Speed Management
- **Action Items**: Each safety action listed as a discrete and specific effort.
- **Timeframe**: A generalized time frame that aligns with a level of effort for completing the action. Timeframes include:
  - **Short-term**: less than 2 years
  - **Medium-term**: 2 - 5 years
  - **Long-term**: more than 5 years
- **Cost**: An anticipated cost level associated with each step based on the following ranges:
  - **Low:** $
  - **Moderate:** $$
  - **High:** $$$
  - **Very High:** $$$$
- **Priority:** Designation for High and the Highest priority actions
- **Safe System Approach (SSA):** The SSA category influenced by each action item:
  - Safer Road Users
  - Safer Road
  - Safer Speeds
  - Safer Vehicles
  - Post-Crash Care

ACCESS & DEMAND MANAGEMENT

Action ID #	Action	Timeframe	Cost	Priority	SSA
1	Manage the ROW with mobility hub elements (transit, shared mobility, and multimodal integration, e.g.) and emerging technology (wayfinding, real-time information, and dynamic lighting, e.g.) where appropriate. Adopt curbside management policies that prioritize multimodal access and support Safe Streets for All and SAP goals.	Long	$$$		Safe Roads
2	Create an **Access Management Policy** based on the findings of the SAP and related plans and the recommended **Access Management Needs Assessment** to strengthen standards and prioritize access management projects, in particular hardened centerline and median installations, in the City's capital improvements.	Short	$$	High	Safe Roads
3	**Access Management Needs Assessment:** Conduct a detailed analysis of traffic conditions and crashes related to vehicle turning movements, commercial motor vehicle (CMV) access, and VRU needs on thoroughfares and other applicable roadways citywide (beginning with the HIN and high-priority bicycle and pedestrian corridors) to identify locations where access management improvements can be used to improve safety for all modes.	Short	$$	High	Safe Roads
4	Using the results of the Access Management Needs Assessment and the updated **Access Management Policy,** identify capital projects where elements like driveway closures, centerline and median treatments, and cross-access between land uses can be integrated into designs. Explore a dedicated funding source for implementation through public projects and incentives to private entities for both new build and retrofit projects.	Medium	$	High	Safe Roads
5	Update, adopt, and implement land use, Transportation Demand Management (TDM), and street design policies that increase safety, reduce Vehicle Miles Travelled (VMT), and decrease dependence on single-occupancy vehicle (SOV) trips	Medium	$$		Safe Roads

CMV & FREIGHT

Action ID #	Action	Timeframe	Cost	Priority	SSA
6	Develop engineering and design standards for freight routes that meet anticipated freight needs while considering need for safe and continuous bicycle and pedestrian facilities.	Medium	$$$		Safe Roads
7	Invest in safety infrastructure upgrades along freight corridors, particularly where community streets intersect.	Long	$$$		
8	Tighten turning radii to reduce turning speeds and include truck aprons on freight routes	Long	$$$		Safe Roads; Safe Speeds

Table 7.2: Action Strategies

COMMUNICATIONS & EDUCATION

Action ID #	Action	Timeframe	Cost	Priority	SSA
9	Develop and implement fleet safety standards and practices, starting with public fleets (city vehicles, school buses, etc.) and expanding to private commercial fleets through partnerships and incentives. Safety features and guidelines to be considered should include: • Intelligent speed assistance (ISA) • Audible vehicle turn alerts for pedestrians and VRUs • Driver alert systems and other tools to reduce unsafe passing, such as entended stop arms for school buses • Speed and collision monitoring and reporting systems • Blind zone mitigation, including surround cameras, back up sensors, and in-cab alerts • Mandatory urban safety and defensive driver training for operators	Medium	$	High	Safe Road Users; Safe Vehicles
10	Develop a Safe Streets for All web page to provide ongoing and updated information on transportation safety efforts, resources for safer travel, and community events and programs, including: • Information on safe driving • Walking and biking maps • Events like Bike to Work Day, No Car Days, Celebrity Rides, Open Streets, and Safety Fairs • Information on rideshare, carpooling, vanpooling, etc. • Transit information and training	Short	$		Safe Road Users
11	Develop a comprehensive multimedia public communications safety campaign to educate the community and promote transportation safety for all roadway users and all modes. Key considerations and tactics should include: • Focusing on storytelling, such as stories of the personal and social impacts of traffic violence, neighborhood and project success stories, and messaging from trusted community leaders. • Content tailored to specific audiences and platforms, including short-form video, earned media, and social media content, targeted print media, radio, television, and streaming services. • Outreach to media partners to report traffic crashes more accurately and avoid victim blaming, specifically for VRUs. • Messaging and media targeting drivers to promote safer driving, reduce driver distractions, and improve yielding to pedestrians and other VRUs. • Use languages, messaging, and ambassadors representative of the cultural, generational, and demographic diversity of the Memphis community.	Short	$$		Safe Road Users

Table 7.2: Action Strategies

COMMUNICATIONS & EDUCATION CONT.

Action ID #	Action	Timeframe	Cost	Priority	SSA
12	**Safety Projects and Program Engagement:** Embed transportation safety into existing community engagement efforts and increase staff capacity for outreach related to safety-focused programs, policies, and infrastructure projects. Develop standard language regarding Safe Streets for All and roadway safety and conduct training for city agencies, staff, and partners to promote consistent messaging when interacting with media, community partners, and the public. Specific tactics may include: • Maintaining communications tools that aid staff in sharing traffic safety-related information when doing engagement on street projects. • Developing processes and funding to support community-based organization participation in the development and delivery of safety efforts. • Piloting follow-up engagement at select locations where traffic safety improvements were installed as part of project evaluation. • Routinely incorporating community input – specifically from underrepresented communities - throughout planning and implementation of transportation safety projects. • Hosting Safe Streets for All/Complete Streets design trainings/workshops for local government staff, elected officials, consultants, and other stakeholders in project delivery	Short	$$		Safe Road Users
13	**Safety Education - Lifelong Learning:** Develop a suite of educational tools to reach community members at various stages of learning, from early childhood through post-secondary education and vocational training. These tools should include curriculum and educational materials suitable for a wide variety of settings, audiences, and delivery methods, including: • Elementary and middle school age children and parent organizations • High-school and post-secondary level driver education • Professional driver education and fleet training and management • Volunteer and civic learning programs such as Citizens Police Academy • Employers and office campuses	Medium	$$		Safe Road Users
14	Work with state agencies to revisit driver licensing requirements, including testing with updated laws related to yielding to non-motorists, requiring drivers to re-test periodically for renewal, a points system for moving violations and crashes, and enhanced requirements and restrictions on younger and older drivers. Consider reintroducing vehicle inspections to focus on ensuring safe vehicles.	Long	$		Safe Road Users; Safe Vehicles

COORDINATION & PARTNERSHIPS

Action ID #	Action	Timeframe	Cost	Priority	SSA
15	Work with planning and funding partners (i.e. transit agencies, health agencies, schools, emergency response, regional organizations, state agencies, etc) to adopt the SAP's goals, integrate the Safe System Approach, and support the ongoing implementation of the SAP's project, policy, and programming recommendations.	Medium	$		All

Table 7.2: Action Strategies

COORDINATION & PARTNERSHIPS CONT.

Action ID #	Action	Timeframe	Cost	Priority	SSA
16	Under the leadership of the city's Chief of Development and Infrastructure, coordinate between Engineering, Public Works, Planning and Development, and other relevant agencies to update project delivery workflows and processes to ensure safety is core to all investments, speed-up permitting, public outreach and implementation of projects, and document the decision-making process for policy compliance, public transparency, and accountability.	Medium	$		Safe Roads; Safe Speeds
17	Create a management level staff Safe Streets for All Coordinator position within City government tasked with promoting collaboration, managing implementation, and evaluating transportation safety progress across agencies and organizations. This position should be supported by cross-departmental staff assigned to collaborative implementation of this plan's and may provide additional support in regional and state-level planning and implementation processes. This Coordinator role will be instrumental in measuring progress and stakeholder engagement, for example, by maintaining data dashboards and reports, and by coordinating the work of the Safe Streets for All Task Force. Additionally, assess and consider increasing departmental capacity by redesignating or creating new positions dedicated to planning, designing, and implementing Safe Streets for All and other safety projects.	Short	$$	Highest	All
18	Develop guidelines and a city-supported program for short-term, community-identified, pilot, or tactical urbanism projects to help residents, businesses, and other stakeholders enact quick-build demonstrations that address safety and other concerns with a focus on active mobility, e.g., crosswalks and bicycle lanes, including: • Addressing missing or faded striping and markings • Reducing excessive lane widths, curb cuts, and corner radii • Introducing landscaping, public art, and other placemaking elements	Medium	$		Safe Roads; Safe Road Users; Safe Speeds

CROSSINGS & INTERSECTIONS

Action ID #	Action	Timeframe	Cost	Priority	SSA
19	Evaluate warrant requirements and guidance to update city policies according to best practice for the placement, design, and installation of high-visibility crossing treatments, mid-block crossings, flashing or hybrid beacons, pedestrian refuge islands, grade separated active transportation crossings, and safety-focused signal enhancements.	Medium	$$		Safe Roads
20	Evaluate existing signal timing, crossing distances, and crosswalk spacing to prioritize pedestrian crossing improvements including leading pedestrian intervals, median refuge islands, high-visibility mid-block crossings, rapid rectangular flashing beacons (RRFB), pedestrian hybrid beacons (PHB), and pedestrian friendly cycle lengths based on a maximum 3.5' per second of walking speed.	Long	$$$		Safe Roads

Table 7.2: Action Strategies

CROSSINGS & INTERSECTIONS CONT.

Action ID #	Action	Timeframe	Cost	Priority	SSA
21	Install median refuges, pedestrian refuge islands, high visibility crosswalks, and pedestrian crossing signals (RRFB or PHB) consistently along the High Injury Network, at transit stops, and at high pedestrian activity locations, especially at locations with long crossing distances and along corridors with long distances between signalized intersections.	Long	$$$		Safe Roads
22	Prioritize the redesign and reconfiguration of skewed intersections, particularly along the HIN, to improve safety and reduce conflicts, considering realignment as a perpendicular intersection, restriction of turning movements, and reallocation of excess pavement to greenspace and traffic calming installations.	Long	$$$$		Safe Roads
23	Develop design guidance and ensure that bicycle and pedestrian facilities are well-defined and continuous at and through intersection, including crosswalk and bike lane striping, accessible surface conditions, protected intersection treatments, proper signalization, etc.	Short	$$		Safe Roads
23	Where appropriate, consider the installation of roundabouts or traffic circles to address angle, t-bone, and head-on crashes, particularly along the HIN. Roundabouts may be single or double-lane and should include design considerations for non-motorist safety.	Medium	$$$		Safe Roads
24	Identify and prioritize opportunities for systemic application of low-cost intersection modifications that prioritize vulnerable road users' safety and address left-angle and other turn-related crashes, including: • Leading pedestrian intervals (LPIs), automatic pedestrian recall, and passive detection devices • Closing slip lanes where applicable/feasible • Restricting permissive left turns during pedestrian phase • Hardened centerlines • Reduce left-turn conflicts	Short	$$		Safe Roads
25	Where appropriate, consider the installation of roundabouts or traffic circles to address angle, t-bone, and head-on crashes, particularly along the HIN. Roundabouts may be single or double-lane and should include design considerations for non-motorist safety.	Medium	$$$		Safe Roads
26	Identify and prioritize opportunities to address speeds, right-turn conflicts, and general safety and operations at intersections; develop criteria and guidelines for design improvements, including: • No right on red • Slip lane closure • Curb extensions and narrower corner radii • Raised or textured crossings • Bike boxes and two-stage turn boxes • Bicycle signals	Short	$$$		Safe Roads; Safe Speeds
27	Identify priority locations for "daylighting" at intersections, i.e., removing obstacles that impair sight lines and formalizing on-street parking restrictions to maximize visibility and crossing w, beginning along the HIN and in downtown/neighborhood centers and high-volume pedestrian areas.	Short	$$		Safe Roads

Table 7.2: Action Strategies

EMERGENCY RESPONSE & ENFORCEMENT

Action ID #	Action	Timeframe	Cost	Priority	SSA
28	Set explicit post-crash care targets--for example, targets related to response times, data sharing protocols, and equipment standards--with EMS/trauma centers/health agencies.	Short	$$		Post-Crash Care
29	Improve the emergency response Opticom infrastructure for emergency vehicles	Long	$$$		Post-Crash Care
30	Deepen transportation staff's partnership with Memphis law enforcement and emergency services. Collaborative tactics may include: • Enhanced training for first responders related to safety priorities, equitable enforcement, and detailed reporting of crashes, particularly those involving people walking and bicycling, to inform future safety analyses and projects • Focused enforcement on leading factors in the City's most severe crashes – i.e., speeding, racing, distracted driving, red light/stop sign running, school and speed zone violations, and truck traffic • Continuing education for law enforcement officers to deepen their understanding of traffic laws related to pedestrian, bicycle, and micromobility travel • Expansion of assigned school crossing guards and enforcement to all K-12 schools, in particular elementary and middle schools • Establishing equitable zero tolerance policies and diversion or incentive programs to reduce and eliminate speeding and unsafe driver behavior • Enlisting both law enforcement and code enforcement to ensure that walkways and bikeways are kept clear of obstructions and hazards, such as trash cans, temporary signage, and parked vehicles	Short	$$		Safe Road Users; Safe Speeds; Post-Crash Care

GUIDELINES & STANDARDS

Action ID #	Action	Timeframe	Cost	Priority	SSA
31	Incorporate NACTO design guidelines into city standards, with specific focus on speed management (i.e. narrow lanes, tighter corner radii, street trees, etc), preventing left-angle crashes, and reducing pedestrian and bicycle risks (i.e. shorter crossing distances, separated facilities, refuge islands, bulb outs, etc).	Short	$		Safe Roads; Safe Speeds
32	Develop joint City and MATA guidelines for the placement and design of transit stops, including connectivity with active transportation infrastructure, to ensure safe and comfortable transit journeys for riders.	Medium	$$		Safe Roads; Safe Road Users
33	Modify land use plans and zoning requirements to enhance off-street parking efficiency, improve urban design quality, and encourage active mobility. Requiring on-site bicycle parking facilities, limiting auto-oriented development and applying frontage requirements may represent early tactics to achieve a pedestrian-friendly environment (i.e., TOD zones and infill development).	Long	$$		Safe Roads

Table 7.2: Action Strategies

GUIDELINES & STANDARDS CONT.

Action ID #	Action	Timeframe	Cost	Priority	SSA
35	Codify design flexibility and anticipate revisions to the International Fire Code for safer street design; involve Emergency Responders in safety planning and education efforts	Medium	$		Safe Roads; Safe Road Users; Post-Crash Care
36	Adopt a formal Complete Streets Policy and related design standards based on the City's Complete Streets Design Guide, including a multimodal safety toolbox that identifies strategies available to address safety concerns for all modes	Short	$		Safe Roads; Safe Speeds
37	Review street design standards to ensure consistency with Complete Street guidelines, FHWA Proven Safety Countermeasures, and equitable traffic calming policies. Ensure that design guidance promotes human-scaled streets that accommodate a diversity of modes.	Short	$		Safe Roads; Safe Speeds
38	Adopt a formal Roadway Reconfiguration (i.e. road diet or right-sizing) policy to prioritize reconfigurations of high-risk roads - determine locations and design standards to reduce unnecesssary travel lanes and reallocate space to multimodal transportation. Evaluate entire High Injury Network (HIN) for locations with excessive lane capacity, high speeds, and gaps in the multimodal network.	Short	$	High	Safe Roads; Safe Speeds

IMPLEMENTATION & ACCOUNTABILITY

Action ID #	Action	Timeframe	Cost	Priority	SSA
39	Establish a citywide multimodal trafffic count program, including regular assessment of pedestrian, bicycle, transit, and automobile traffic, to inform risk exposure on HIN, ongoing mode shift to safer modes, and other evaluation metrics for plan success.	Medium	$$	High	Safe Roads; Safe Speeds
40	Prioritize safety investments and street improvements using performance-based measures that track improvements in safety and efficiency, aligning with federal regulations and goals. These measures should derive from regular pedestrian, bicycle, transit, and automobile counts, and include a focus on safety for all modes in evaluating level of service, traffic stress, and comfort. An example would be to target an off-peak vehicle LOS of D along multimodal corridors to improve conditions for other modes of travel.	Medium	$$		Safe Roads; Safe Speeds
41	Develop a sidewalk improvement program involving regular condition assessment and maintenance through combination of public and property owner funding (similar to a pavement asset management system)	Medium	$$		Safe Roads
42	Evaluate the Memphis Pedestrian and School Safety Action Plan for needed revisions and move to fund and implement recommendations to improve safety for students and families walking to schools and adjacent amenities.	Long	$$$		Safe Roads

Table 7.2: Action Strategies

IMPLEMENTATION & ACCOUNTABILITY CONT.

Action ID #	Action	Timeframe	Cost	Priority	SSA
43	Develop guidelines to prioritize Safe Streets for All and other safety-focused investments in communities of concern (low-income communities, communities of color, immigrant communities, and communities with fewer transportation options), i.e. capital projects, transportation infrastructure and maintenance, and safer street designs. Staff should analyze geographic need for mobility improvements based on economic and health outcomes and prioritize infrastructure improvements that have the greatest potential to improve social equity. These guidelines and decisions should be developed collaboratively with community service providers and marginalized communities to ensure equitable delivery of improvements.	Short	$$		Safe Roads
44	Limit funding for new or widened roadways by prioritizing projects that focus on lower-cost, operational improvements to improve safety and reliability through reducing congestion, supporting non-motorized travel, enhancing safety, boosting economic development, or aiding freight movement	Long	$$$		Safe Roads
45	Prioritize active transportation infrastructure that links people to anchors and transit nodes, balances the needs of pedestrians, and supports surrounding land use	Medium	$$$		Safe Roads
46	**Establish a permanent Safe Streets for All Task Force or Advisory Committee** which includes diverse perspectives from city departments and key stakeholders to advise and support implementation of the SAP. This body should include representatives from Engineering, Public Works, Planning, Community Development, Communications, Police, Fire, Emergency Services, Health Department, and Community Engagmenet and be charged with reviewing crash reports and safety data and making recommendations for site-specific and systemic changes to eliminate future risk. Staff should provide the group with regular updates on traffic safety data, training in accessing and understanding traffic safety data, and support for tracking performance toward the city's goals and determining strategies for improvements.	Short	$$	Highest	All
47	Establish a multi-disciplinary Crash Response Team of experts under the guidance of the Safe Streets for All committee to conduct multimodal road safety audits that evaluate locations of fatal and serious injury crashes and make recommendations for site-specific and systemic changes to eliminate future risk.	Short	$$		Safe Roads

MAINTENANCE & OPERATIONS

Action ID #	Action	Timeframe	Cost	Priority	SSA
48	Upgrade, replace, or install lighting consistently along the length of the HIN, especially at high-collision locations, including: • within and leading up to intersections • pedestrian crossings • trail crossings	Long	$$$		Safe Roads

Table 7.2: Action Strategies

MAINTENANCE & OPERATIONS CONT.

Action ID #	Action	Timeframe	Cost	Priority	SSA
49	Assess pavement and striping conditions along city streets, in coordination with the city's resurfacing, restriping, and maintenance programs; identify locations where safer road designs may be implemented through maintenance and repair, prioritizing the HIN and other locations where compliance with the adopted streets plan and design standards may be incomplete.	Short	$$$		Safe Roads
50	Incorporate low-cost systemic safety measures and Complete Street designs into road maintenance projects.	Long	$$$		Safe Roads; Safe Speeds

MULTIMODAL NETWORKS

Action ID #	Action	Timeframe	Cost	Priority	SSA
51	Develop guidance and coordinate with external stakeholders to ensure that access for people walking, bicycling, and using transit is maintained during roadway or site construction, special events, inclement weather, and other short-term closures	Short	$$		Safe Roads
52	Install proven safety countermeasures along pedestrian corridors and popular trip generators, such as schools, to provide protection and separation from traffic, including: • sidewalk and sidepath buffers (e.g., paint, greenspace, trees, etc.) • high visibility crosswalks and midblock crossings • walkways and bikeways • enforcement measures • protected and/or buffered bike lanes • median barriers • pedestrian refuge islands	Long	$$$		Safe Roads; Safe Speeds

Table 7.2: Action Strategies

MULTIMODAL NETWORKS CONT.

Action ID #	Action	Timeframe	Cost	Priority	SSA
53	Develop an Active Transportation Plan to guide investment in multimodal facilities and green infrastructure to improve non-motorist safety and mobility, build resilient infrastructure, and increase network connectivity. The plan should include focus areas such as: • Neighborhood greenways and traffic calming • Transit access, comfort, and safety • Use of both on-street and off-street (parks, rail/utility corridors, etc.) corridors • Increased separation for bikeways along higher speed/volume roadways in accordance with the FHWA Bikeway Selection Guide • Widening existing sidewalks in areas of high pedestrian demand • Implementation of a sidewalk gap program to complete the pedestrian network • Include green infrastructure to manage stormwater, address heat island effects, and improve comfort for non-motorists • Increasing parking and other end-of-trip bicycle facilities at destinations, housing developments, and multimodal connections	Medium	$$		Safe Roads
54	Develop roadway safety scoping studies for HIN corridors, with analysis and recommendations to reduce crash risk, including: • safe street design improvement • frequent crash types • systemic risk factors • travel speeds • multimodal facilities • crossing frequencies and distances • lighting.	Short	$$		Safe Roads; Safe Speeds

SPEED MANAGEMENT

Action ID #	Action	Timeframe	Cost	Priority	SSA
55	Evaluate and update the City's policy for setting posted speed limits on local roadways to deemphasize the 85th percentile approach and use a more contextual approach to speed limit setting (SLS). Engage state legislature to revise appropriate legislation toward more contextual speed limit setting. The City's SLS policy should rely on the latest best practice in understanding the impact of speeds on roadway safety -- particularly along arterials and the HIN -- and be paired with design and infrastructure improvements to set and enforce safe speeds. Additional factors for SLS should include traffic volumes, signange, signal timing, road geometry, traffic control devices, multimodal access needs, and surrounding land use and development density.	Medium	$$		Safe Speeds

Table 7.2: Action Strategies

SPEED MANAGEMENT CONT.

Action ID #	Action	Timeframe	Cost	Priority	SSA
56	Develop methodologies for data collection on vehicle speeds, red-light running, and near miss incidents. Analyze priority locations for traffic enforcement and advocate for changes to state law to expand and strengthen the use of automated safety cameras in local context zones, such as school zones, work zones, or areas of high pedestrian activity.	Short	$$		Safe Roads; Safe Road Users; Safe Speeds
57	Implement traffic calming design and infrastructure improvements to achieve safe speeds, in particular along the HIN, at transitions between roadway contexts, and in high bicycle and pedestrian usage areas. Strategies considered should include: • Lane reconfigurations (4-to-3 lane conversions) • Lane width reductions • Signal timing and signage • Protected left turns and no-right-on-red • Visual narrowing through gateways, street trees, public art, and street walls • Addition of on-street parking • Curb extensions (bulbouts), medians, hardened centerlines, and bollards • Speeds and raised crossings/intersections • Vehicle and pedestrian-scale lighting"	Long	$$$		Safe Roads; Safe Speeds
58	Engage law enforcement agencies and key stakeholders to evaluate enforcement-related policies and enhance strategic enforcement of speeding and reckless driving. Strategies considered should include: • Develop a vehicle speed monitoring system to collect speed data citywide, focusing on the high injury network, for monitoring, evaluation, and identification of focus areas for strategic enforcement and infrastructure interventions • Use speed monitoring data and citizen reports to identify and target enforcement in areas with chronically high speeding, street racing, and other reckless driving behaviors • Explore expanding the use of automated speed enforcement to encourage people to drive at a safe speed; focus areas may include school zones, work zones, and areas with high pedestrian activity • Explore enhanced enforcement policies that focus on 'super-speeders,' i.e., repeat offenders and reckless speeding	Short	$	High	Safe Road Users; Safe Speeds

Table 7.2: Action Strategies

MEMPHIS
RAYMOND JAMES
FIRST HORIZON
bank

8

IMPLEMENTATION

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8 Implementation

Progress and Transparency

This SAP is intended to be a living document that will guide the City of Memphis toward comprehensive roadway safety objectives for the benefit of all roadway users. The intent is for this plan to be updated at regular intervals (e.g., 5 years) as new data becomes available and as projects are implemented across the study area.

Transparency serves as the essential element of the Memphis SAP, bridging the gap between municipal strategy and public impact. Providing clear visibility into project milestones builds public trust and confidence in the long-term efficacy of the SAP. Furthermore, a transparent framework ensures strict accountability for the implementation of safety improvements and the equitable allocation of resources. By making data and progress accessible, the plan encourages consistent stakeholder engagement and community participation, ensuring that the evolution of the City's infrastructure remains a collaborative and verifiable process.

The SAP recommends actions that will support the successful implementation and monitoring of recommended projects and strategies. The City must collaborate with related departments and agencies to implement the recommended projects and policy changes and assume joint responsibility for the Plan.

The Safe Streets Coordinator role identified in Action #18 in **Table 7.2** will be a critical element to the implementation as well as the progress and transparency of this plan. They will be the responsible party for a majority of the actions listed in Chapter 8 as well.

Advocacy

A subset of the Project Steering Committee should be restructured into a Road Safety Task Force to advocate for and direct the SAP implementation, monitoring, and future progress. The Task Force should convene regularly after the adoption of the SAP to review progress and make adjustments to the course of action as necessary. 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.

RECOMMENDED ACTIONS:

- ☑ Conduct quarterly Safety Task Force meetings to give updates on the progress of safety projects occurring throughout the study area, as well as the implementation of any driver-related strategies.
- ☑ Actively share and promote the SAP within the local community and with other relevant stakeholders.
- ☑ Assess and revise safety targets as necessary on an annual basis.

DATA MAINTENANCE

The City will maintain current crash information within its jurisdiction for public access and update it regularly. This will help provide transparency for residents and students and allow them to see the results of efforts toward safer roadways.

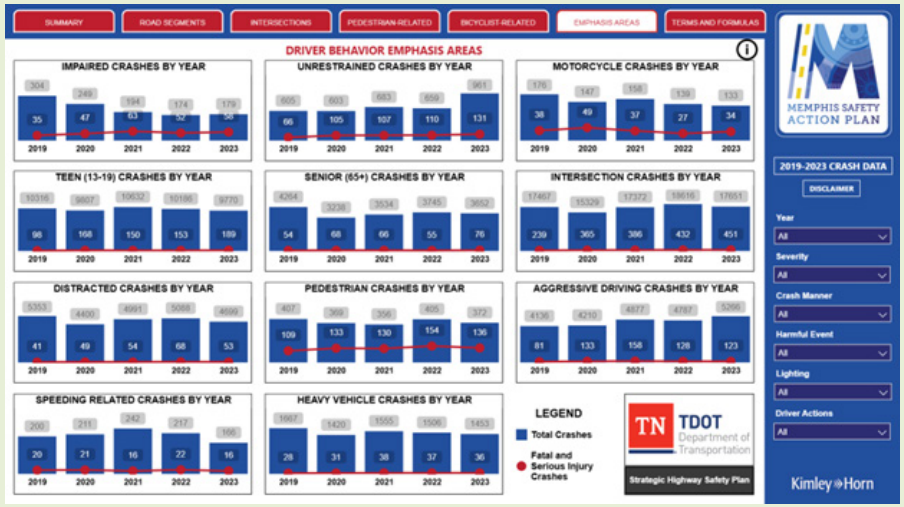
RECOMMENDED ACTIONS:

- ☑ The Safety Task Force should periodically update the online crash data dashboard using TDOT's most recent data to inform the public of the progress toward the leadership's interim reduction goals and the long-term goal of zero traffic deaths and serious injuries. These updates should take place annually at a minimum.
- ☑ Conduct before-and-after studies as projects and/or strategies are implemented and report crash data collected from both periods. This process will help assess the effectiveness of the mitigations and provide transparency to the public regarding the changes that have been implemented.

EVALUATION AND REPORTING

The Safety Task Force will report on progress toward implementing the projects and strategies recommended in this SAP through a three-tiered approach to maintain transparency and provide the community with verifiable updates on safety initiatives. This structured reporting process ensures that data remains accessible and that progress is measured against the plan's foundational objectives. The following actions are recommended to provide full transparency and accountability as the Plan moves forward:

Figure 8.1: Online Crash Data Dashboard



1. **Public Document Accessibility:** Post the fully adopted SAP on the project website, as well as on any internal city websites, providing a permanent and accessible public record of the city's safety strategy: https://memphissafetyactionplan.com/
2. **Performance and Goal Tracking:** Publish periodic (e.g., annual) posts detailing specific progress and outcomes toward the adopted goals. These updates directly correspond to the Goals and Guiding Principles established in the Introduction (**Page 9**), allowing for a clear snapshot of progress toward the adopted goals.
3. **Interactive Data Visualization:** Provide and regularly update an interactive map on the project website, offering a dynamic view of the SAP's key takeaways. This tool would display critical spatial data, including historical crash trends, the identified HIN, and the 20 priority project recommendations, enabling residents to track improvements within their specific neighborhoods. The website should maintain an "open comment form" allowing the public to provide their input and feedback as projects move into the concept, design, and construction phases.

SAFE STREETS AND ROADS FOR ALL (SS4A) IMPLEMENTATION GRANT

Purpose: Implementation Grants provide Federal funds to implement projects and strategies identified in an Action Plan to address a roadway safety problem. Eligible projects and strategies can be infrastructural, behavioral, and/or operational activities.

Minimum Award: $2,500,000

Maximum Award: $25,000,000

Required Match: 20%

PROJECT TYPES:

- Low-cost Safety Treatments
- Network Risk Reduction *(e.g., improving pedestrian crosswalks by adding high-visibility pavement markings, lighting, and signage at transit stops)*
- Complete Streets Improvements
- Bike Network Development
- Pedestrian Safety Enhancements *(e.g., closing sidewalk gaps, crosswalk visibility enhancements, beacons, refuge islands, road diets, signal improvements)*
- Safe Routes to School and Transit
- Safety Technologies and Strategies

BETTER UTILIZING INVESTMENTS TO LEVERAGE DEVELOPMENT (BUILD) GRANT

Purpose: To fund transportation projects that will have a significant local or regional impact that advance the Departmental priorities of safety; environmental sustainability; quality of life; mobility and community connectivity; economic competitiveness and opportunity including tourism; state of good repair; partnership and collaboration; and innovation.

Minimum Award: Planning N/A | Construction $1,000,000

Maximum Award: Planning $25,000,000 | Construction $25,000,000

Required Match: Planning 20% | Construction 20%

PROJECT TYPES:

- Regional Connectivity Study
- Complete Street Improvements
- Multimodal Improvements
- Active Transportation Facilities
- Pedestrian and Vehicular Safety Eenhancements
- Light Rail Station
- Mobility Hub Development or Planning

NATIONAL HIGHWAY TRANSPORTATION SAFETY ADMINISTRATION (NHTSA) PASS-THROUGH FUNDING

Purpose: The Tennessee Highway Safety Office provides grants to behavioral programs which are designed to reduce the number of fatalities, injuries and related economic losses resulting from traffic crashes on Tennessee's roadways.

Minimum/maximum award and required match are unavailable.

GRANTS ARE AVAILABLE IN THE FOLLOWING AREAS:

- Bicycle and Pedestrian Safety
- Child Passenger Safety and Occupant Protection
- Community Traffic Safety Programs
- Distracted Driving
- DUI Prosecution
- Emergency Medical Services
- Impaired Driving Enforcement
- Impaired Driving Education
- Motorcycle Safety
- Older Driver Safety
- Police Traffic Services: Multiple Violations
- Teen Driver Safety Education
- Traffic Records

MULTIMODAL ACCESS GRANT

Purpose: TDOT's Multimodal Access Grant is a state-funded program created to support the transportation needs of pedestrians, bicyclists, and transit users through infrastructure projects that address existing gaps along state routes.

Minimum Award: N/A

Maximum Award: $1,250,000

Required Match: 5-10%

PROJECT TYPES:

- Sidewalks
- Pedestrian Crossing Improvements
- Bike Lanes
- Complete Streets
- ADA Improvements
- Lighting
- Intersection Signalization
- Multiuse Path

TRANSPORTATION ALTERNATIVES PROGRAM

Purpose: The Tennessee Department of Transportation has awarded grants through the Transportation Alternatives Program since 1991, funding projects with local or regional impact that improve access and provide a better quality of life for people in the state of Tennessee.

Minimum Award: N/A

Maximum Award: N/A

Average Award: $350,000

Required Match: 20%

PROJECT TYPES:

- Sidewalk Construction
- Bike Lane Construction
- ADA Accessibility Updates
- Renovation of Historic Transportation Facilities
- Landscaping
- Pedestrian Bridge
- Trail Development
- Pedestrian Safety Improvements

NATIONALLY SIGNIFICANT MULTIMODAL FREIGHT & HIGHWAY PROJECTS (INFRA)

Purpose: INFRA (the Nationally Significant Multimodal Freight & Highway Projects program) awards competitive grants for multimodal freight and highway projects of national or regional significance to improve the safety, efficiency, and reliability of the movement of freight and people in and across rural and urban areas.

Minimum Award: $5,000,000

Maximum Award: N/A

Required Match: 40%, of which half may be Other Federal Funds

PROJECT TYPES:

- A highway freight project on the National Highway Freight Network
- A highway or bridge project on the National Highway System
- A freight intermodal, freight rail, or freight project within the boundaries of a public or private freight rail, water (including ports), or intermodal facility and that is a surface transportation infrastructure project necessary to facilitate direct intermodal interchange, transfer, or access into or out of the facility
- A highway-railway grade crossing or grade separation project
- A wildlife crossing project
- A surface transportation project within the boundaries or functionally connected to an international border crossing that improves a facility owned by Fed/State/local government and increases throughput efficiency
- A project for a marine highway corridor that is functionally connected to the NHFN and is likely to reduce road mobile source emissions
- A highway, bridge, or freight project on the National Multimodal Freight Network

HIGHWAY SAFETY GRANT PROGRAM

Purpose: The Tennessee Office of Highway Safety offers funding opportunities to law enforcement agencies, state agencies, community partners, and academic institutions through a competitive grant application process. Available funding supports programs in the following areas: Alcohol (DUI-only), Impaired Driving (Alcohol and Drug), Occupant Protection (Seatbelt and Child Restraint), Police Traffic Services, Traffic Records and Data Systems, Youth Education Programs, and Adult Education Programs.

Additional details and example project types are not publicly available.

COMMUNITY CHALLENGE FLAGSHIP GRANT

Purpose: The American Association of Retired Persons (AARP) provides small grants to fund quick-action projects that can help communities become more livable for people of all ages.

Minimum Award: $500

Maximum Award: $50,000

Required Match: None

PROJECT TYPES:

- Creating vibrant public places that improve open spaces, parks, and access to other amenities
- Transportation and mobility options that increase connectivity, walkability, bike-ability, and access to public and private transit
- Supporting community resilience through investments that improve disaster management, preparedness, and mitigation for residents

COMMUNITY PROJECT FUNDING

Purpose: Community Project Funding enables Members of Congress to directly fund specific, local projects that address critical needs in their districts, like infrastructure or public facilities.

Not a grant. This is an appropriation request through the U.S. House of Representatives.

Minimum Award: None

Maximum Award: None

Required Match: None

PROJECT TYPES:

- Technology Enhancement
- Fire Station/EMS Building Construction
- Emergency Operations Center Construction
- Water System Improvements
- Airport Apron Rehabilitation
- Roadway Reconstruction/ Reconfiguration

CONGRESSIONAL DIRECTED SPENDING

Purpose: Congressionally Directed Spending enables Members of Congress to directly fund specific, local projects that address critical needs in their districts, like infrastructure or public facilities.

Not a grant. This is an appropriation request through the U.S. Senate.

Minimum Award: None

Maximum Award: None

Required Match: None

PROJECT TYPES:

- Roadway Improvements
- University Facility Improvements
- Drainage Improvements
- Bridge Construction
- New Road Construction
- Pedestrian and Traffic Safety Improvements

PRIORITY IMPLEMENTATION PROJECTS

PLANNING PROJECTS

Planning projects are intended to conduct additional specific research, data collection, and analysis along a corridor regarding a specific safety issue. These studies can provide the City a more detailed review and recommendation along with a more accurate estimate of costs for implementing the recommended countermeasures before proceeding forward with design and construction. The following are studies that were identified to be conducted along the prioritized segments.

ROAD DIET EVALUATIONS

- Millbranch Road
- Hickory Hill
- Austin Peay Highway

ACCESS MANAGEMENT PLANS

- Millbranch Road
- East Raines Road
- Jackson Avenue
- Hickory Hill
- Winchester Road
- Shelby Drive
- Lamar Avenue
- Austin Peay Highway
- Perkins Road

SYSTEMIC LEVEL PROJECTS

Along with targeted projects on each of the priority corridors to address location-specific safety issues identified with the SAP, systemic level projects can be implemented to target driver behavior trends or safety issues that have been identified on a system-wide level. Below are projects that address systemic level issues identified in the crash analysis and public input portion of the project.

MIDBLOCK PEDESTRIAN CROSSING INSTALLATIONS

- School zone signing and marking upgrades/installations
- Updated street lighting installations
- Traffic signal pedestrian equipment upgrades
- Curb ramp replacements
- Left turn phasing modifications
- Implementation of Leading Pedestrian Intervals
- Removal of offset left turns at intersections

DESIGN AND CONSTRUCTION PROJECTS

Design and Construction projects form the backbone of the implementation phase of an SS4A Action Plan because they translate the plan's data-driven safety strategies into tangible, on the ground improvements. While the Action Plan identifies high risk locations and selects proven safety countermeasures through analysis and stakeholder engagement, implementation occurs when these countermeasures are physically built. These projects will position the City to see real progress towards the goal of reducing and ultimately eliminating fatal and serious injury crashes.

Based on the data analysis, public input, and City feedback, the following implementation projects were identified as priorities for the City. For each project, a brief description, high level summary of countermeasures, and planning level cost estimate was provided. The City should consider allocating local funding or pursuing grant funding opportunities for these projects.

SEGMENT PRIORITY PROJECT 1

Millbranch Road between East Shelby Drive and Winchester Road

The countermeasures selected for Millbranch Road between Winchester Road and East Shelby Drive are intended to address the recent fatal and serious injury crashes along this segment, which include majority angle crashes with single vehicle, pedestrian, and intersection crashes. The proposed safety improvements include adding medians, refining pedestrian crossings, adjusting left turn operations, and improving intersection geometry to reduce angle crashes and enhance pedestrian visibility.

COUNTERMEASURES SELECTED ARE AS FOLLOWS:

- ☑ Midblock pedestrian crossings
- ☑ Access management
- ☑ Median installations and modifications
- ☑ Intersection geometry improvements
- ☑ Traffic signal modernization
- ☑ Signal phasing and timing modifications
- ☑ Protected bike lane using quick-build materials

Estimated Cost Breakdown

Estimated Construction Cost	**$4,500,000**
Contingency (20%)	**$950,000**
Design/CEI (20%)	**$950,000**
Total Estimated Cost (2025)	**$6,400,000**
Inflated Estimated Cost (2028)	**$7,200,000**

SEGMENT PRIORITY PROJECT 2

Hickory Hill Road between Winchester Road and Bill Morris Pkwy

The countermeasures selected for Hickory Hill Road between Bill Morris Parkway and Winchester Road are intended to address the recent fatal and serious injury crashes along this segment, which include angle, single vehicle, pedestrian, and intersection crashes. The proposed safety improvements include adding medians, refining pedestrian crossings, access management, adjusting left-turn operations, upgrading signal equipment, and improving intersection geometry to reduce angle crashes and enhance pedestrian visibility.

COUNTERMEASURES SELECTED ARE AS FOLLOWS:

- Midblock pedestrian crossings
- Access management
- Median installations and modifications
- Intersection geometry improvements
- Intersection Safety Improvements at Hickory Hill and Mount Moriah Intersection
- Traffic signal modernization
- Signal phasing and timing modifications

Estimated Cost Breakdown

Estimated Construction Cost	**$3,600,000**
Contingency (20%)	**$750,000**
Design/CEI (20%)	**$750,000**
Total Estimated Cost (2025)	**$5,100,000**
Inflated Estimated Cost (2028)	**$5,700,000**

SEGMENT PRIORITY PROJECT 3

Lamar Boulevard between New Getwell Road at American Way

The countermeasures identified for Lamar Avenue between American Way and New Getwell Road are intended to address the recent fatal and serious injury crashes along this segment, which include majority angle and single vehicle crashes with head on and rear end crashes. The proposed safety improvements include adding medians, refining pedestrian crossings, access management, adjusting left-turn operations, upgrading signal equipment, and improving intersection geometry to reduce angle crashes and single vehicle crashes.

COUNTERMEASURES SELECTED ARE AS FOLLOWS:

- Median installation
- Access management
- Intersection geometry improvements
- Traffic signal modernization
- Signal phasing and timing modifications
- Restriping

Estimated Cost Breakdown

Estimated Construction Cost	**$5,100,000**
Contingency (20%)	**$1,050,000**
Design/CEI (20%)	**$1,050,000**
Total Estimated Cost (2025)	**$7,200,000**
Inflated Estimated Cost (2028)	**$8,100,000**

SEGMENT PRIORITY PROJECT 4

East Raines Road between Elvis Presley Boulevard and Airways Boulevard

The countermeasures identified for East Raines Road between Elvis Presley Blvd and Airways Blvd are intended to address the recent fatal and serious injury crashes along this segment, which includes a majority of angle, pedestrian, aggressive driving crashes. The proposed safety improvements include adding medians, refining pedestrian crossings, pedestrian hybrid beacons, rapid rectangular flashing beacons (RRFBs), access management, upgrading signal equipment, and improving intersection geometry to reduce angle crashes and enhance pedestrian visibility.

COUNTERMEASURES SELECTED ARE AS FOLLOWS:

- Pedestrian midblock crossing with Pedestrian Hybrid Beacon
- Pedestrian midblock crossing with RRFB
- Median installation
- Access management
- Intersection geometry improvements
- Traffic signal modernization
- Improved school zone signing and marking

Estimated Cost Breakdown

Estimated Construction Cost	**$4,400,000**
Contingency (20%)	**$900,000**
Design/CEI (20%)	**$900,000**
Total Estimated Cost (2025)	**$6,200,000**
Inflated Estimated Cost (2028)	**$7,000,000**

SEGMENT PRIORITY PROJECT 5

Winchester Road between New Getwell Road and South Perkins Road

The countermeasures selected for Millbranch Road between Winchester Road and East Shelby Drive are intended to address the recent fatal and serious injury crashes along this segment, which include majority angle crashes with single vehicle, pedestrian, and intersection crashes. The proposed safety improvements include adding medians, refining pedestrian crossings, adjusting left turn operations, and improving intersection geometry to reduce angle crashes and enhance pedestrian visibility.

COUNTERMEASURES SELECTED ARE AS FOLLOWS:

- Midblock pedestrian crossings
- Access management
- Median installations and modifications
- Intersection geometry improvements
- Traffic signal modernization
- Signal phasing and timing modifications
- Protected bike lane using quick-build materials

Estimated Cost Breakdown

Estimated Construction Cost	**$2,900,000**
Contingency (20%)	**$600,000**
Design/CEI (20%)	**$600,000**
Total Estimated Cost (2025)	**$4,100,000**
Inflated Estimated Cost (2028)	**$4,600,000**

SEGMENT PRIORITY PROJECT 6

Austin Peay Highway between Yale Road and James Road

The countermeasures identified for Austin Peay Highway between James Road and Yale Road are intended to address the recent fatal and serious injury crashes along this segment, which includes a majority of angle, rear-end, intersection crashes. The proposed safety improvements include adding medians, refining pedestrian crossings, pedestrian hybrid beacons, rapid rectangular flashing beacons (RRFBs), access management, adjusting left-turn operations, upgrading signal equipment, and improving intersection geometry to reduce angle crashes and intersection crashes.

COUNTERMEASURES SELECTED ARE AS FOLLOWS:

- Access management
- Median installation
- Intersection geometry improvements
- Traffic signal modernization
- Midblock pedestrian crossing with Pedestrian Hybrid Beacon
- Signal phasing and timing modifications
- Dynamic speed feedback signs

Estimated Cost Breakdown

Estimated Construction Cost	**$2,000,000**
Contingency (20%)	**$400,000**
Design/CEI (20%)	**$400,000**
Total Estimated Cost (2025)	**$2,800,000**
Inflated Estimated Cost (2028)	**$3,100,000**

SEGMENT PRIORITY PROJECT 7

Jackson Avenue between I-40 and National Street

The countermeasures identified for Jackson Avenue between Interstate 40 and National Street are intended to address the recent fatal and serious injury crashes along this segment, which includes a majority of angle, single vehicle, pedestrian, and intersection crashes. The proposed safety improvements include adding medians, refining pedestrian crossings, pedestrian hybrid beacons, access management, adjusting left-turn operations, improving intersection operations, and speed feedback signs to reduce speeding and angle crashes.

COUNTERMEASURES SELECTED ARE AS FOLLOWS:

- Median installations
- Access management
- Midblock pedestrian crossing with Pedestrian Hybrid Beacon
- Dynamic speed feedback signs
- Conversion of full movement intersections to right-out side street operations

Estimated Cost Breakdown

Estimated Construction Cost	**$1,100,000**
Contingency (20%)	**$250,000**
Design/CEI (20%)	**$250,000**
Total Estimated Cost (2025)	**$1,600,000**
Inflated Estimated Cost (2028)	**$1,800,000**

SEGMENT PRIORITY PROJECT 8

Shelby Drive between I-55 and Airways Boulevard

The countermeasures identified for Shelby Drive between Interstate 55 and Airways Boulevard are intended to address the recent fatal and serious injury crashes along this segment, which includes a majority of angle, rear-end, intersection crashes. The proposed safety improvements include adding medians, refining pedestrian crossings, rapid rectangular flashing beacons (RRFBs), access management, adjusting left-turn operations, improving intersection operations, upgrading signal equipment, and improving intersection geometry to reduce angle crashes and intersection crashes.

COUNTERMEASURES SELECTED ARE AS FOLLOWS:

- Median installation
- Access management
- Intersection geometry improvements
- Traffic signal modernization
- Conversion of full movement intersection to right-in/right-out
- Signal phasing and timing modifications

Estimated Cost Breakdown

Estimated Construction Cost	**$3,100,000**
Contingency (20%)	**$650,000**
Design/CEI (20%)	**$650,000**
Total Estimated Cost (2025)	**$4,400,000**
Inflated Estimated Cost (2028)	**$4,900,000**

SEGMENT PRIORITY PROJECT 9

Winchester Road between Hickory Hill Road and Riverdale Road

The countermeasures identified for Winchester Road between Hickory Hill Road and Riverdale Road are intended to address the recent fatal and serious injury crashes along this segment, which include majority angle with single vehicle, pedestrian, rear end, and intersection crashes. The proposed safety improvements include adding/modifying medians, access management, pedestrian hybrid beacons, adjusting left-turn operations, upgrading signal equipment, and improving intersection geometry to reduce pedestrian crashes and intersection crashes.

COUNTERMEASURES SELECTED ARE AS FOLLOWS:

- Median installation and modifications
- Access management
- Intersection geometry improvements
- Traffic signal modernization
- Signal phasing and timing modifications

Estimated Cost Breakdown

Estimated Construction Cost	**$4,000,000**
Contingency (20%)	**$850,000**
Design/CEI (20%)	**$850,000**
Total Estimated Cost (2025)	**$5,700,000**
Inflated Estimated Cost (2028)	**$6,400,000**

SEGMENT PRIORITY PROJECT 10

Perkins Road between American Way and Knight Arnold

The countermeasures identified for Perkins Road between American Way and Knight Arnold Road are intended to address the history of fatal and serious injury crashes along this segment, which include a significant number of angle and single vehicle crashes. The proposed safety improvements include adding medians, refining pedestrian crossings, pedestrian hybrid beacons, rapid rectangular flashing beacons (RRFBs), access management, adjusting left-turn operations, upgrading signal equipment, and improving intersection geometry to reduce angle crashes and single vehicle crashes.

COUNTERMEASURES SELECTED ARE AS FOLLOWS:

- Median installation
- Access management
- Midblock pedestrian crossing with Pedestrian Hybrid Beacon
- Intersection geometry improvements
- Traffic signal modernization
- Signal phasing and timing modifications

Estimated Cost Breakdown

Estimated Construction Cost	**$4,500,000**
Contingency (20%)	**$950,000**
Design/CEI (20%)	**$950,000**
Total Estimated Cost (2025)	**$6,400,000**
Inflated Estimated Cost (2028)	**$7,200,000**

INTERSECTIONS PRIORITY PROJECT 1

North Highland Street and Summer/Forrest Avenue

The countermeasures identified for N. Highland Street and Summer Avenue with N. Highland Street and Forest Avenue are intended to address the recent pedestrian, angle, aggressive driving, and fatal and serious injury crashes at this intersection. The proposed safety improvements include improving intersection equipment, improving intersection operations, improving intersection geometry, leading pedestrian intervals (LPIs), clearance interval adjustments, access management, signal retiming, and restriping to reduce angle crashes and enhance pedestrian visibility.

COUNTERMEASURES SELECTED ARE AS FOLLOWS:

- Traffic signal modernization
- Convert Forrest Avenue to right-in right-out or one-way operations
- Access management
- Signal phasing and timing modifications
- Sidewalk expansion between Summer Avenue and Sam Cooper Boulevard
- Resurface and restripe Highland Avenue between Summer Avenue and Sam Cooper Boulevard

Estimated Cost Breakdown

Estimated Construction Cost	**$1,700,000**
Contingency (20%)	**$350,000**
Design/CEI (20%)	**$350,000**
Total Estimated Cost (2025)	**$2,400,000**
Inflated Estimated Cost (2028)	**$2,700,000**

INTERSECTIONS PRIORITY PROJECT 2

Raines Road and Hickory Hill Drive

The countermeasures identified for Hickory Hill Road and E. Raines Road are intended to address the recent fatal and serious injury crashes along this segment, which include majority angle, head on, and rear end crashes. The proposed safety improvements include improving intersection equipment, improving intersection geometry, leading pedestrian intervals (LPIs), clearance interval adjustments, access management, signal retiming, and left-turn phasing changes to reduce angle crashes and enhance pedestrian visibility.

COUNTERMEASURES SELECTED ARE AS FOLLOWS:

- Traffic signal modernization
- Access management
- Signal phasing and timing modifications
- Intersection geometry modifications

Estimated Cost Breakdown

Estimated Construction Cost	**$1,100,000**
Contingency (20%)	**$250,000**
Design/CEI (20%)	**$250,000**
Total Estimated Cost (2025)	**$1,600,000**
Inflated Estimated Cost (2028)	**$1,800,000**

INTERSECTIONS PRIORITY PROJECT 3

Mendenhall Road and Winchester Road

The countermeasures identified for Mendenhall Road and Winchester Road are intended to address the recent fatal and serious injury crashes at this intersection, which include majority angle crashes. One out of the eight crashes involved a pedestrian. The proposed safety improvements include improving intersection equipment, improving intersection geometry, restriping, leading pedestrian intervals (LPIs), clearance interval adjustments, access management, and signal retiming to reduce angle crashes and enhance pedestrian visibility.

COUNTERMEASURES SELECTED ARE AS FOLLOWS:

- Traffic signal modernization
- Access management
- Signal phasing and timing modifications
- Intersection geometry modifications
- Restriping

Estimated Cost Breakdown

Estimated Construction Cost	**$1,400,000**
Contingency (20%)	**$300,000**
Design/CEI (20%)	**$300,000**
Total Estimated Cost (2025)	**$2,000,000**
Inflated Estimated Cost (2028)	**$2,200,000**

INTERSECTIONS PRIORITY PROJECT 4

Elvis Presley Boulevard and Holmes Road

The countermeasures identified for Elvis Presley Boulevard and Holmes Road are intended to address the recent fatal and serious injury crashes at this intersection, which include majority angle and rear-end crashes. The proposed safety improvements include improving intersection equipment, improving intersection geometry, restriping, leading pedestrian intervals (LPIs), clearance interval adjustments, access management, and signal retiming to reduce angle crashes and enhance pedestrian visibility.

COUNTERMEASURES SELECTED ARE AS FOLLOWS:

- Traffic signal modernization
- Access management
- Signal phasing and timing modifications
- Intersection geometry modifications
- Restriping

Estimated Cost Breakdown

Estimated Construction Cost	**$1,100,000**
Contingency (20%)	**$250,000**
Design/CEI (20%)	**$250,000**
Total Estimated Cost (2025)	**$1,500,000**
Inflated Estimated Cost (2028)	**$1,700,000**

INTERSECTIONS PRIORITY PROJECT 5

S. Cleveland Street and Union Avenue

The countermeasures identified for S. Cleveland Street and Union Avenue are intended to address the recent fatal and serious injury crashes at this location, which include majority pedestrian crashes and one sideswipe. The proposed safety improvements include improving intersection geometry, bike lane modifications, curb ramp modifications, leading pedestrian intervals (LPIs), clearance interval adjustments, access management, and signal retiming to reduce angle crashes and enhance pedestrian visibility.

COUNTERMEASURES SELECTED ARE AS FOLLOWS:

- Access management
- Signal phasing and timing modifications
- Bike lane modifications
- Curb ramp upgrades
- Intersection geometry modifications

Estimated Cost Breakdown

Estimated Construction Cost	**$400,000**
Contingency (20%)	**$80,000**
Design/CEI (20%)	**$80,000**
Total Estimated Cost (2025)	**$560,000**
Inflated Estimated Cost (2028)	**$560,000**

INTERSECTIONS PRIORITY PROJECT 6

Hoover Drive and Raleigh-Lagrange Road

The countermeasures identified for Hoover Drive and Raleigh Lagrange Road are intended to address the recent fatal and serious injury crashes at this location, which include angle, head on, and sideswipe crashes. The proposed safety improvements include improving intersection geometry, improving intersection operations, and restriping to reduce angle crashes and enhance intersection operations.

COUNTERMEASURES SELECTED ARE AS FOLLOWS:

- ☑ Traffic signal warrant
  - Estimated project cost assumes that a traffic signal is not warranted and other improvements are needed. If traffic signal is warranted, an additional $750,000 should be included in the project cost to install equipment.
- ☑ Intersection geometry improvements
- ☑ Intersection operation improvements
- ☑ Restriping

Estimated Cost Breakdown

Estimated Construction Cost	**$900,000**
Contingency (20%)	**$180,000**
Design/CEI (20%)	**$180,000**
Total Estimated Cost (2025)	**$1,260,000**
Inflated Estimated Cost (2028)	**$1,400,000**

INTERSECTIONS PRIORITY PROJECT 7

Coleman Road and Stage Road

The countermeasures identified for Coleman Road and Stage Road are intended to address the recent fatal and serious injury crashes at this location, which include majority angle with head on and pedestrian crashes. The proposed safety improvements include improving intersection equipment, improving intersection geometry, leading pedestrian intervals (LPIs), clearance interval adjustments, signal retiming, left-turn phasing modifications, and bike lane improvements to reduce angle crashes and enhance pedestrian visibility.

COUNTERMEASURES SELECTED ARE AS FOLLOWS:

- ☑ Traffic signal modernization
- ☑ Intersection geometry modifications
- ☑ Signal retiming and phasing modifications
- ☑ Bike lane improvements

Estimated Cost Breakdown

Estimated Construction Cost	**$1,500,000**
Contingency (20%)	**$300,000**
Design/CEI (20%)	**$300,000**
Total Estimated Cost (2025)	**$2,100,000**
Inflated Estimated Cost (2028)	**$2,400,000**

INTERSECTIONS PRIORITY PROJECT 8

Third Street and Rollins Road

The countermeasures identified for S. Third Street and Rollins Road are intended to address the recent fatal and serious injury crashes at this location, which include only pedestrian crashes. The proposed safety improvements include improving street lighting, pedestrian refuge island, and a pedestrian hybrid beacon.

COUNTERMEASURES SELECTED ARE AS FOLLOWS:

- Upgrade street lighting
- Installation of pedestrian refuge island
- Installation of Pedestrian Hybrid Beacon

Estimated Cost Breakdown

Estimated Construction Cost	**$400,000**
Contingency (20%)	**$85,000**
Design/CEI (20%)	**$85,000**
Total Estimated Cost (2025)	**$570,000**
Inflated Estimated Cost (2028)	**$600,000**

INTERSECTIONS PRIORITY PROJECT 9

Getwell Road and New Willow Avenue

The countermeasures identified for Getwell Road and New Willow Avenue are intended to address the recent fatal and serious injury crashes at this location, which include angle, head on, pedestrian crashes. The proposed safety improvements include improving intersection equipment, improving intersection geometry, leading pedestrian intervals (LPIs), clearance interval adjustments, signal retiming, access management, and intersection lighting to reduce angle crashes and enhance pedestrian visibility.

COUNTERMEASURES SELECTED ARE AS FOLLOWS:

- Traffic signal modernization
- Intersection geometry modifications
- Signal phasing and timing modifications
- Access management
- Intersection lighting upgrades

Estimated Cost Breakdown

Estimated Construction Cost	**$1,000,000**
Contingency (20%)	**$200,000**
Design/CEI (20%)	**$200,000**
Total Estimated Cost (2025)	**$1,400,000**
Inflated Estimated Cost (2028)	**$1,600,000**

INTERSECTIONS PRIORITY PROJECT 10

Shelby Drive and Swinnea Road

The countermeasures identified for E Shelby Drive and Swinnea Road are intended to address the recent fatal and serious injury crashes at this location, which include angle, rear-end, aggressive driving, and dark-lighted crashes. The proposed safety improvements include improving intersection equipment, improving intersection geometry, leading pedestrian intervals (LPIs), clearance interval adjustments, signal retiming, and left-turn phasing modifications to reduce angle crashes and enhance visibility.

COUNTERMEASURES SELECTED ARE AS FOLLOWS:

- ☑ Traffic signal modernization
- ☑ Intersection geometry modifications
- ☑ Signal phasing and timing modifications

Estimated Cost Breakdown

Estimated Construction Cost	**$1,000,000**
Contingency (20%)	**$200,000**
Design/CEI (20%)	**$200,000**
Total Estimated Cost (2025)	**$1,400,000**
Inflated Estimated Cost (2028)	**$1,600,000**

MEMPHIS SAFETY ACTION PLAN