APRIL
2025

SAFETY ACTION PLAN

DRAFT FOR PUBLIC COMMENT

CITY OF Hagerstown

Michael Baker INTERNATIONAL

FEHR PEERS

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ACKNOWLEDGEMENTS

The City of Hagerstown and the Hagerstown/Eastern Panhandle Metropolitan Planning Organization (HEPMPO) would like to thank the Stakeholder Advisory Committee (SAC) for its valuable contributions throughout the planning process and development of the Safety Action Plan.

- Hagerstown City Council
- Hagerstown City Engineering Department
- Hagerstown Department of Public Works
- Hagerstown Fire Department
- Hagerstown Police Department
- Washington County Division of Engineering
- Washington County Public Schools
- Washington County Transit
- City of Williamsport
- Maryland Department of Transportation – The Secretary's Office
- Maryland Department of Transportation – State Highway Administration Office of Planning and Preliminary Engineering
- Maryland Department of Transportation – State Highway Administration District 6
- Federal Highway Administration – Maryland

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HAGERSTOWN CITY COUNCIL RESOLUTION

CHAPTER 1: NEED FOR A ROADWAY SAFETY PLAN

Roadway Safety Crisis

Safety Action Plans (SAPs) are designed to enhance road safety for all users, promoting a unified commitment to reducing traffic-related injuries and fatalities. These plans establish a comprehensive framework aimed at mitigating and eliminating severe injuries and fatal crashes. By leveraging data analysis, SAPs pinpoint specific roadway safety challenges, enabling communities to implement targeted projects and strategies that address the most pressing safety risks effectively.

In 2022, the USDOT introduced the National Roadway Safety Strategy (NRSS) to address the safety crisis on our Nation's roadways—the loss of more than 30,000 lives annually in motor vehicle crashes from 2010 to 2020; a number that jumped to 42,795 deaths in 2022.

The NRSS declares a goal of zero deaths and adopts the Safe System Approach (SSA) as the guiding paradigm for addressing roadway safety and achieving this goal. The SSA helps transportation agencies and stakeholders re-think and evaluate existing safety efforts and implement other intentional solutions to achieve the goal of zero deaths.

Safe System Approach

The SSA aims to eliminate fatal and serious injuries for all road users by keeping impacts on the human body at tolerable levels and accommodating human mistakes. The graphic shows the six principles and five elements that guide the SSA.

Figure 1: FHWA Safety System Approach

Source: FHWA Safe System Approach

Making a commitment to zero deaths means addressing every aspect of crash risks across the entire road system. It differs from the traditional approach in the primary ways shown below. The SSA acknowledges the vulnerability of the human body should be considered when designing and operating a transportation network to minimize serious consequences of crashes.

Creating a Safe System means shifting some responsibility from road users to those who plan and design the transportation system. While road users are responsible for their own behavior, there is a shared responsibility with those who design, operate, and maintain the transportation network.

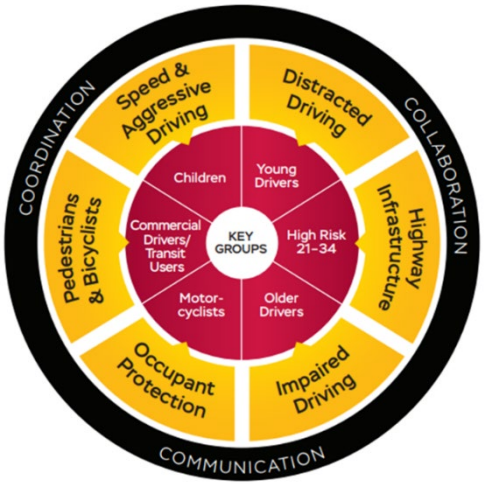
In a Safe System, road system designers and operators take on the highest level of ethical responsibility to design and build our transportation system in a way that encourages safer behavior and provides redundancies. The SSA is built on the six principles and five elements described on the following pages.

Figure 2: Safe System Approach VS Traditional Road Safety Practices

Source: FHWA Safe System vs Traditional Approach

Need for a Safety Action Plan

Figure 3: Maryland Safe Street and Roads for All Approach



Source: 2021-2025 Maryland Strategic Highway Safety Plan

As a State priority, the Maryland Highway Safety Office has adopted the Safe Street and Roads for All (SS4A) approach to reduce killed and seriously injured (KSI) crashes across Maryland through the Strategic Highway Safety Plan. This plan outlines key priorities, emphasis areas, and effective strategies, targeting at-risk groups to achieve Vision Zero goals. It also aligns with grant opportunities and funding sources to implement safety measures. Between 2019 and 2023, Maryland experienced 2,860 fatal crashes and over 143,000 serious injury crashes.

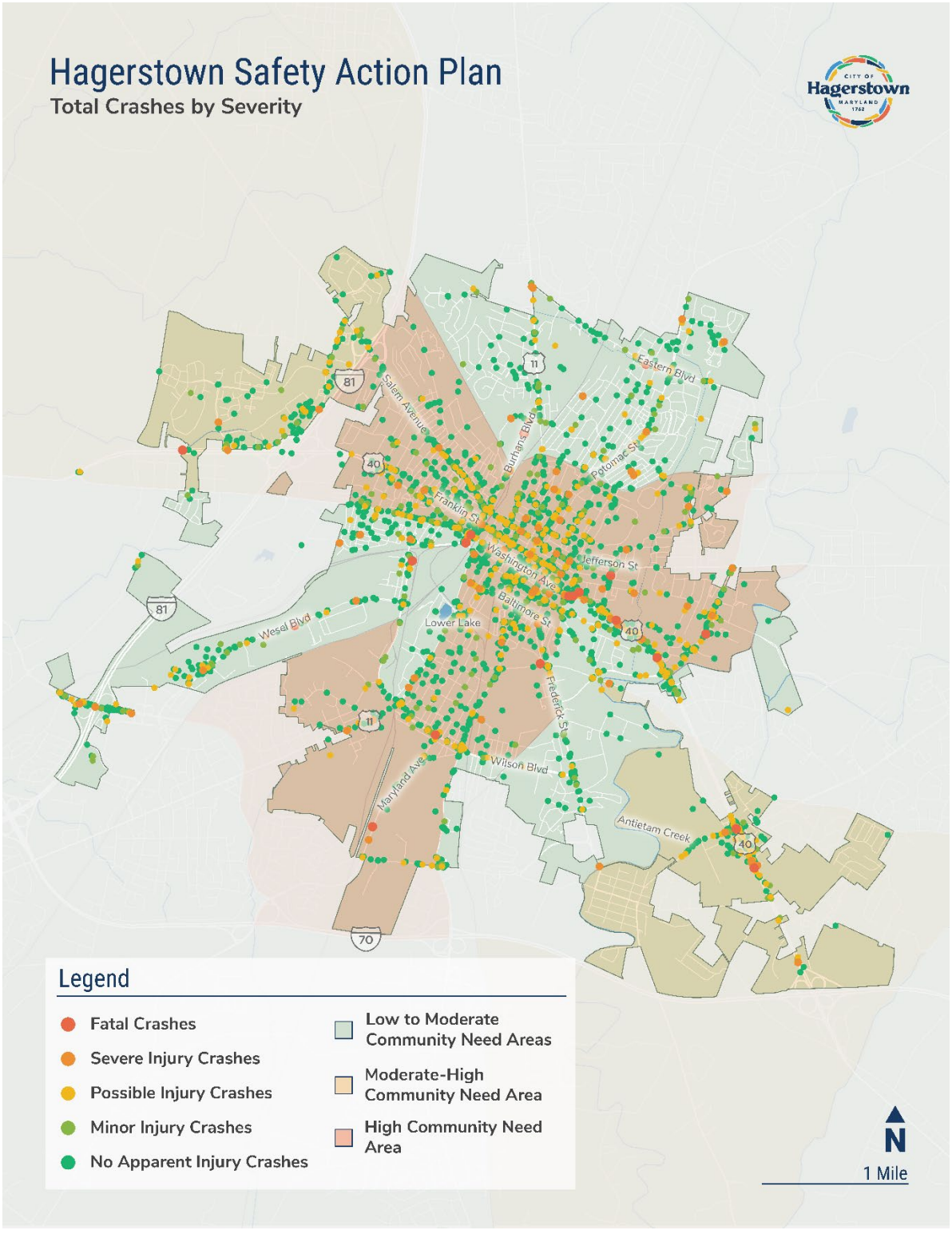
For the City of Hagerstown, roadway safety is a significant issue impacting our communities. Between 2019 and 2023, 20 fatal crashes occurred in Hagerstown on local and state roadways (excluding I-81, and I-70), 6 of which involved a person walking, 6 of which involved a person riding a motorcycle, and 1 fatal crash involved a person riding a bicycle. In addition, another 95 crashes occurred where a person was severely injured, and collectivity, these crashes resulting in a person being killed or severely injured are referred to as KSI. These are all tragic losses of someone's friend or family member, and it is our goal to continuously strive for zero traffic deaths.

To understand where and why fatal and severe injury crashes occurred and reduce the severity and frequency of these crashes, the City of Hagerstown prepared this Comprehensive Roadway SAP, rooted in the core elements of the SSA. This plan was funded through a grant from the SS4A program. The Action Plan is our roadmap as we work toward eliminating fatal and severe injury crashes in our city for people who drive, walk, ride a motorcycle and bike. It identifies projects, programs, and strategies aimed at eliminating fatalities and severe injuries on the roadways within the region by 2050 and allows the City to apply for additional funding through the SS4A grant program and other federal and state safety-related grant programs.

Importantly, the Action Plan aligns with the prerequisites for the SS4A grants—a substantial $5 billion federal funding source dedicated to critical safety enhancements. This Action Plan serves as the

qualifying plan for the City of Hagerstown enabling them to apply for SS4A supplemental planning/demonstration and implementation grants, which are integral to the Infrastructure Investment and Jobs Act (IIJA).

Figure 4: Total Crashes by Severity



Planning Criteria

Table 1 outlines the essential components of the SS4A action plan. These components are necessary to meet eligibility requirements for applying for funding. The table cross-references specific plan sections and describes how each component has been fulfilled.

Table 1: Planning Criteria

	Comprehensive Safety Action Plan Element Criteria	How the City of Hagerstown Achieved It
1	Governing body in the jurisdiction is publicly committed to an eventual goal of zero roadway fatalities and serious injuries.	The Hagerstown City Council is the governing body that reviews and approves the plan.
	Set targets to achieve significant declines in roadway fatalities and serious injuries.	Outlined in Chapter 1: Need for a Roadway Safety Plan. The region's goal is to reach zero traffic fatalities and severe injuries by 2050.
2	To develop the Action Plan, a committee, task force, implementation group, or similar body is established and charged with the plan's development, implementation, and monitoring.	Stakeholder Advisory Committee was formed to help outline the plan and develop strategies. Outlined in Chapter 2: Plan Development and Engagement.
3	Analysis of existing conditions and historical trends to baseline the level of crashes involving fatalities and serious injuries across a jurisdiction, locality, Tribe, or region.	An online map was created to show 2019–2023 Crashes in the City of Hagerstown and outlined in Chapter 3: Understanding Crash Trends and Roadway Safety in Hagerstown.
	Analysis of systemic and specific safety needs is performed as needed (e.g., high risk).	Outlined in Chapter 3: Understanding Crash Trends and Roadway Safety in Hagerstown.
	Analysis of the location where there are crashes, the severity, as well as contributing factors and crash types.	Outlined in Chapter 3: Understanding Crash Trends and Roadway Safety in Hagerstown.
	A geospatial identification (geographic or locational data using maps) of higher risk locations.	A High Injury Network (HIN) was created and shown on a map in Chapter 3: Understanding Crash Trends and Roadway Safety in Hagerstown.
4	Engagement with the public and relevant stakeholders, including the private sector and community groups.	The team met with Stakeholders through a series of meetings. There were also a public outreach survey, comment period and a public meeting. Outlined in Chapter 2: Plan Development and Engagement.
	Incorporation of information received from the engagement and collaboration into the plan.	Feedback from an outreach survey was incorporated into the plan's strategies.

	Comprehensive Safety Action Plan Element Criteria	How the City of Hagerstown Achieved It
		Outlined in Chapter 2: Plan Development and Engagement.
	Coordination that included inter- and intragovernmental cooperation and collaboration, as appropriate.	The Stakeholder Advisory Committee is detailed in Chapter 2: Plan Development and Engagement.
5*	Considerations of different communities using inclusive and representative processes.	Identifying communities of need was a key factor in public outreach, safety analysis, the policy assessment, and project and program prioritization. Outlined in Chapter 2: Plan Development and Input.
	Identified underserved communities through data.	The Action Plan used USDOT's Equitable Transportation Community Explorer tool and results during analysis and outreach. Outlined in Chapter 2: Plan Development and Input.
	Community analysis in collaboration with appropriate partners, focused on initial community impacts.	As part of the Stakeholder meetings discussed in Chapter 2, the Stakeholders reviewed the analysis inputs.
6	The plan development included an assessment of current policies, plans, guidelines, and/or standards to identify opportunities to improve how processes prioritize safety.	The policy and benchmarking assessment was conducted to gauge the region's alignment with the SSA and safety best practices. The assessment reviewed existing plans, reports, and studies from the county and region. Outlined in Chapter 3: Understanding Crash Trends and Roadway Safety in Hagerstown.
7	The plan identifies a comprehensive set of projects and strategies to address the safety problems in the Action Plan, time ranges when projects and strategies will be deployed, and explain project prioritization criteria.	Outlined in Chapter 4: Project and Strategy Development
8	A description of how progress will be measured over time that includes, at a minimum, outcome data.	Outlined in Chapter 5: Plan of Action and Monitoring Progress
	The plan is posted publicly online.	The Plan is available on the City's website.
9	The plan was finalized and/or last updated between 2018 and 2025	The Plan was finalized in May 2025.

*Note: *This criterion was explicitly stated in the grant agreement between the City of Hagerstown and FHWA for the SS4A Award.*

CHAPTER 2: PLAN DEVELOPMENT AND ENGAGEMENT

Plan Development Structure

The City of Hagerstown's SAP aims to establish a comprehensive strategy to achieve zero fatalities or a significant decline in roadway incidents. This plan will serve as the foundation for qualifying for Safe Streets for All (SS4A) implementation grants under IIJA. The SAP focuses on developing and implementing well-defined safety strategies for all road users, including pedestrians, bicyclists, public transportation users, and commercial vehicle operators.

Key objectives of the plan include:

- Adhering to Federal Highway Administration (FHWA) guidelines to ensure compliance with grant requirements.
- Assisting jurisdictions in identifying actionable activities for SS4A Implementation Grants.
- Integrating the SSA throughout the project to institutionalize this methodology within the City of Hagerstown's programs.
- Confirming priority actions to prevent roadway fatalities and serious injuries.
- Engaging both public and private stakeholders.
- Exploring innovative technologies and strategies to promote safety.

The development structure for the SAP, shown in **Figure 5**, included a project team comprising City of Hagerstown and HEPMPO staff, a stakeholder advisory committee, and the public through outreach efforts**.**

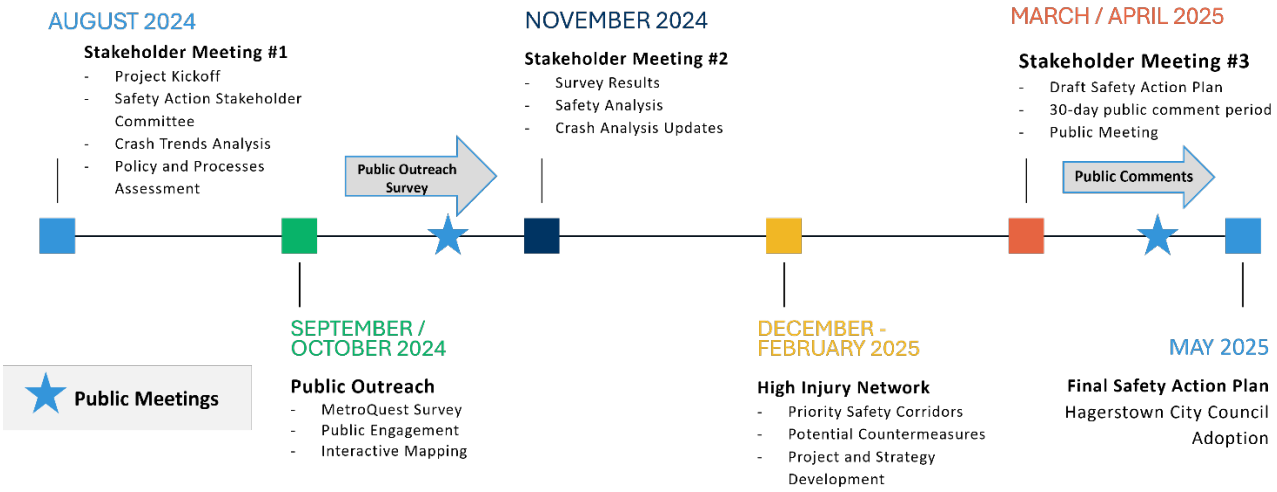
Figure 5: SAP Development Structure

The project team conducted analyses and led the Plan's development. The stakeholder committee reviewed analysis results, aligned key priorities across the City, and provided critical feedback during three stakeholder meetings. Public input was integral, guiding the vision for the plan, identifying safety concerns through a survey, and reviewing the plan elements during a 30-day public comment period and a public meeting.

The SAP builds on previous work, including the HEPMPO Regional SAP, various safety studies and plans from the State, Washington County and the City of Hagerstown to ensure a data-driven and community-engaged approach.

This collaborative effort aims to create a safer roadway environment for all users in Hagerstown, leveraging data-driven insights and community engagement to achieve the ultimate goal of zero fatalities.

Development Timeline and Elements



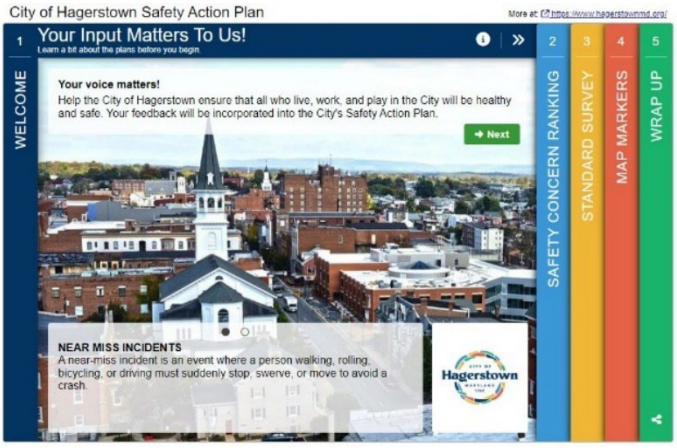
Stakeholder and Public Engagement

Stakeholder and public engagement played a key role in the development of this SAP. As discussed previously, input and feedback from both stakeholders and the public were solicited throughout the SAP process through stakeholder and public meetings, a survey, and a public comment period.

Survey

A web-based survey was developed to gather public input by allowing respondents to identify top pedestrian, bicycle, driver, and roadway concerns, as well as, map safety issues, near misses, and potential improvement ideas within the City of Hagerstown. Respondents could also provide additional comments on issues and concerns. The survey was open for 30 days from September 4th through October 4, 2024, and garnered over 1,900 respondents, which was the largest number of responses to a HEPMPO survey to date.

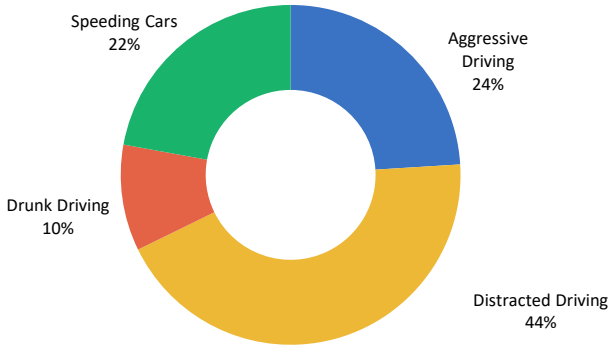
Figure 6: MetroQuest Survey



Driver Concerns

Approximately 44% of respondents identified distracted driving as the primary driving-related concern, followed by aggressive driver (27%), speeding cars (22%), and drunk driving (10%). Using the comment box, respondents provided additional explanation on driver concerns in Hagerstown. These include drivers frequently running red lights, drivers using phones while driving, drivers impaired by alcohol and recreational drugs, poorly marked lanes, and lack of signage.

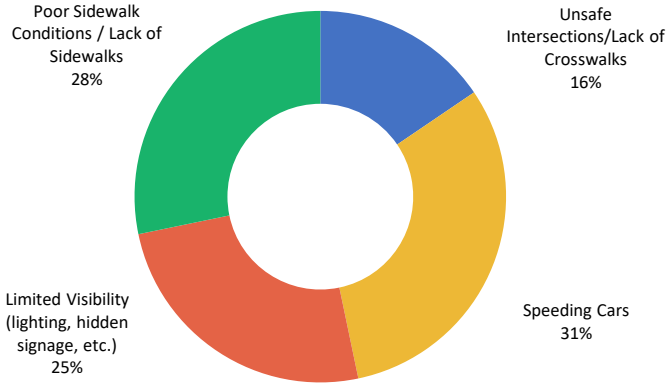
Figure 7: Driver Concerns



Pedestrian Concerns

Approximately 31% of respondents identified speeding cars as the primary pedestrian-related concern, followed by poor sidewalk conditions/lack of sidewalks (28%), limited visibility (22%), and unsafe intersections/lack of crosswalks (16%). Using the comment box, respondents provided additional explanation on pedestrian concerns in Hagerstown. These include vehicles running stop signs, pedestrians not paying attention, pedestrians not using crosswalks or sidewalks, as well as, walking into traffic.

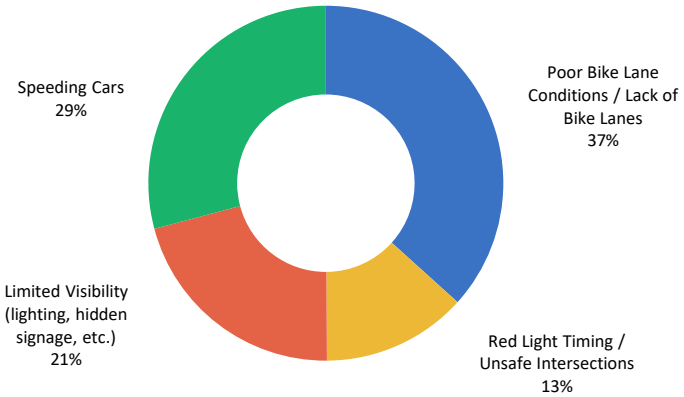
Figure 8: Pedestrian Concerns



Bike Concerns

Approximately 37% of respondents identified poor bike lane conditions/lack of bike lanes as the primary bike-related concern, followed by speeding cars (29%), limited visibility (21%), and red-light timing/unsafe intersections (13%). Using the comment box, respondents provided additional explanation on bicycle concerns in Hagerstown. These include cars not sharing the road with bikes and scooters, bicyclists riding head on into cars, bicyclists not adhering to traffic lights or stops, and use of bikes in an unsafe manner.

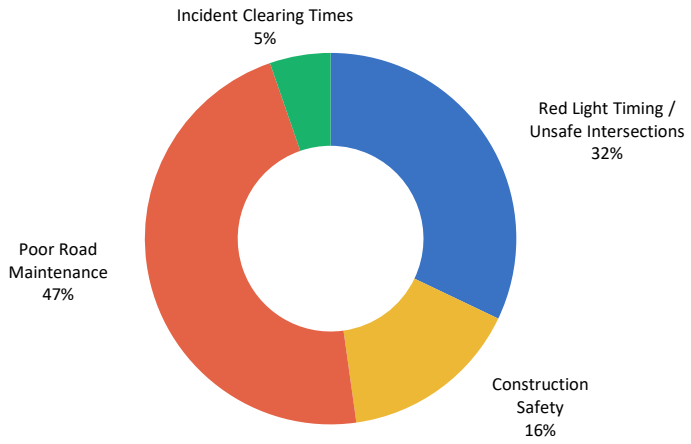
Figure 9: Bike Concerns



Road Conditions

Approximately 47% of respondents identified poor roadway maintenance as the primary road conditions concern, followed by red-light timing/unsafe intersections (32%) construction safety (16%), and incident clearing times (5%). Using the comment box, respondents provided additional explanation on road conditions in Hagerstown. These include delays caused by construction, poorly marked lanes, speed bumps with no signage, and traffic lights without dedicated left turn signal.

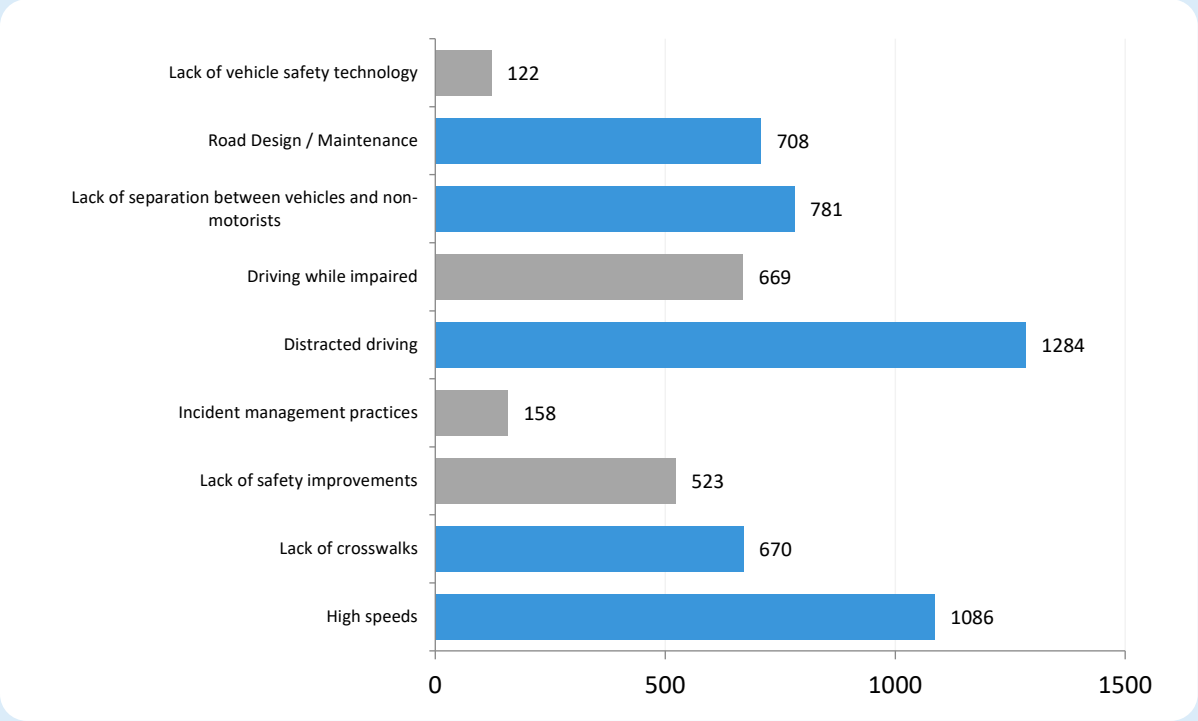
Figure 10: Road Conditions



Pedestrian Safety

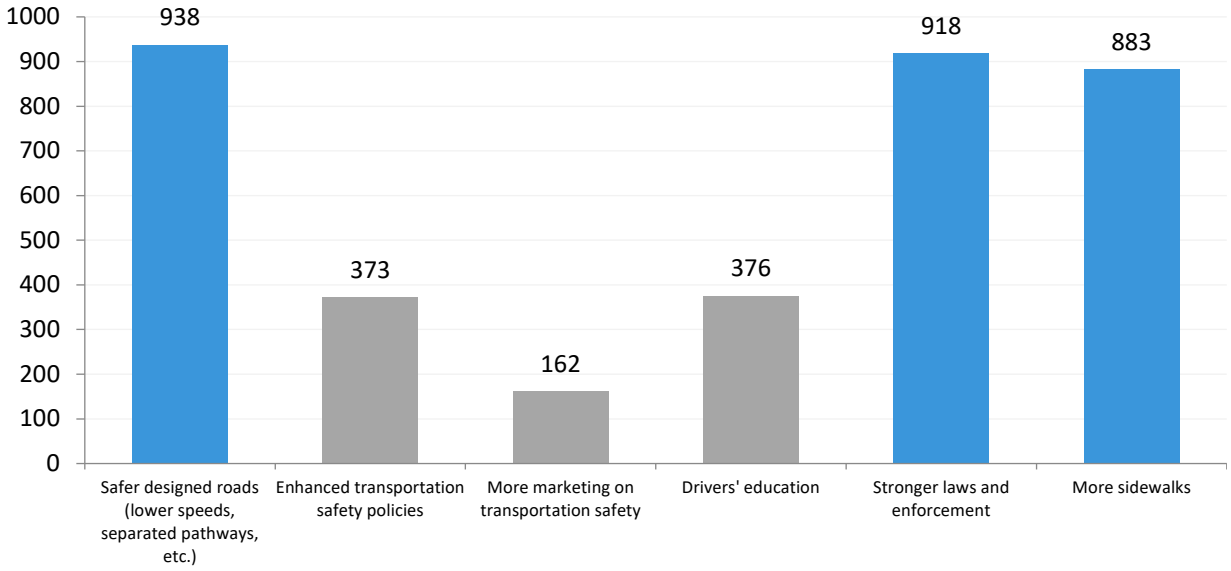
Approximately 57% of respondents walk in their area. Respondents identified road design/maintenance, lack of separation between vehicles and non-motorists, distracted driving, lack of cross walks, and high speeds as the top five contributors of safety problems for those who choose to walk, with distracted driving being the number one contributor.

Figure 11: Top 5 Contributors of Safety Problems for Pedestrians



Respondents identified safer designed roads (lower speeds, separated pathways, etc.), stronger laws and enforcement, and more sidewalks were identified as the three contributors that would make respondents feel safer to choose walking.

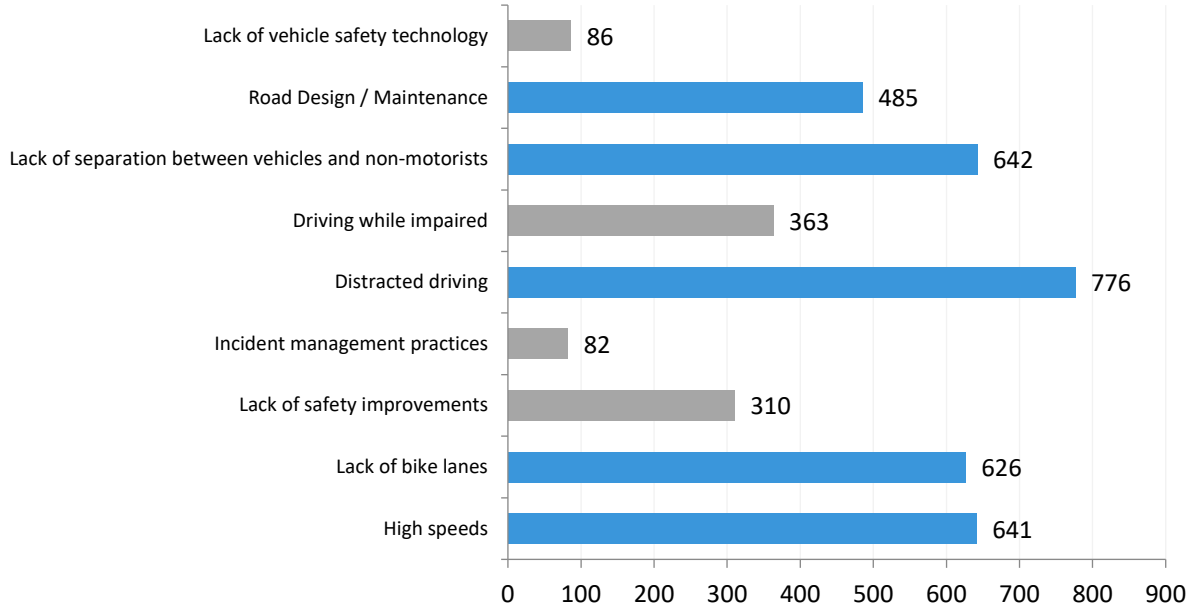
Figure 12: Contributors that would make Pedestrians Feel Safer



Bike Safety

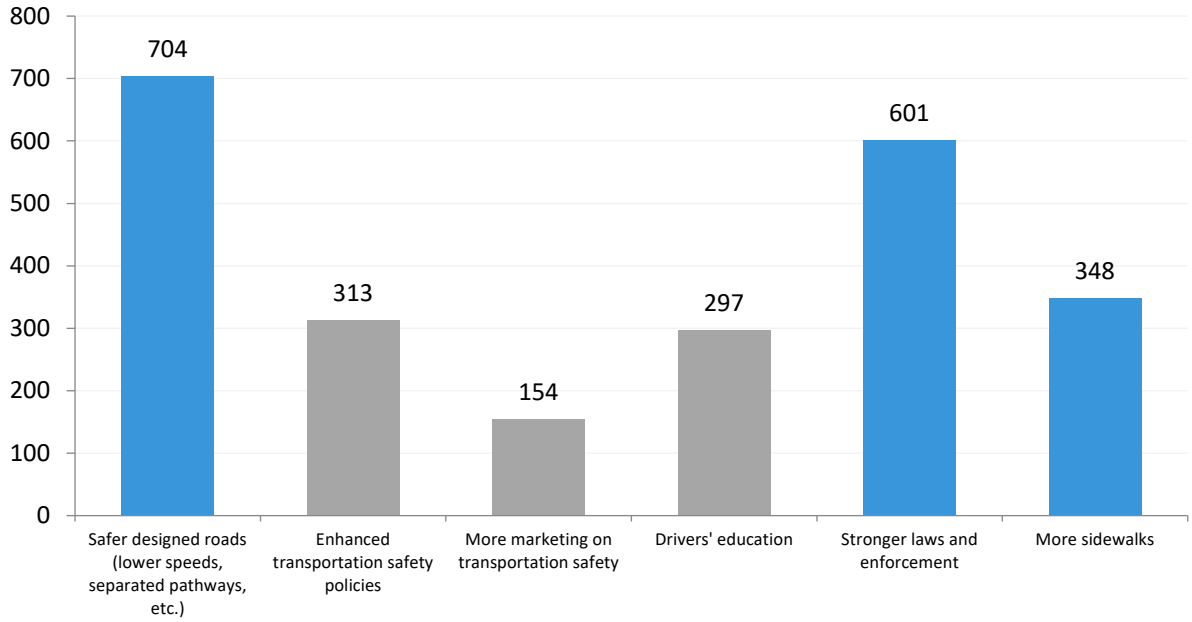
Approximately 17% of respondents bike in their area. Similar to those in pedestrian safety, respondents identified road design/maintenance, lack of separation between vehicles and non-motorists, distracted driving, lack of cross walks, and high speeds as the top five contributors of safety problems for those who choose to bike, with distracted driving being the number one contributor.

Figure 13: Top 5 Contributors of Safety Problems for Bicyclists



Similar to those in pedestrian safety, respondents identified safer designed roads (lower speeds, separated pathways, etc.), stronger laws and enforcement, and more sidewalks were identified as the three contributors that would make respondents feel safer to choose biking.

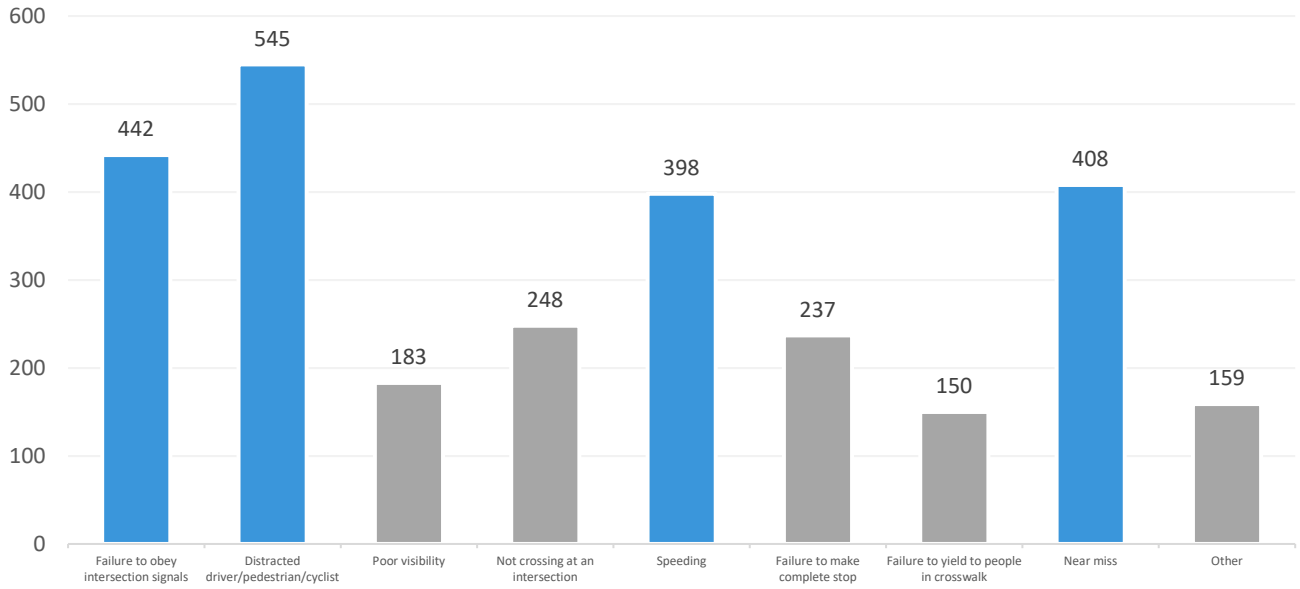
Figure 14: Contributors that would make Bicyclists Feel Safer



Safety Incident

Approximately 68% of respondents experienced a safety incident within the last year. Respondents identified near misses, distracted driver/pedestrian/cyclist, and failure to obey intersection signals as the three primary types of incidents. Of these, nearly 91% of the incidents occurred while the respondent was driving in a vehicle.

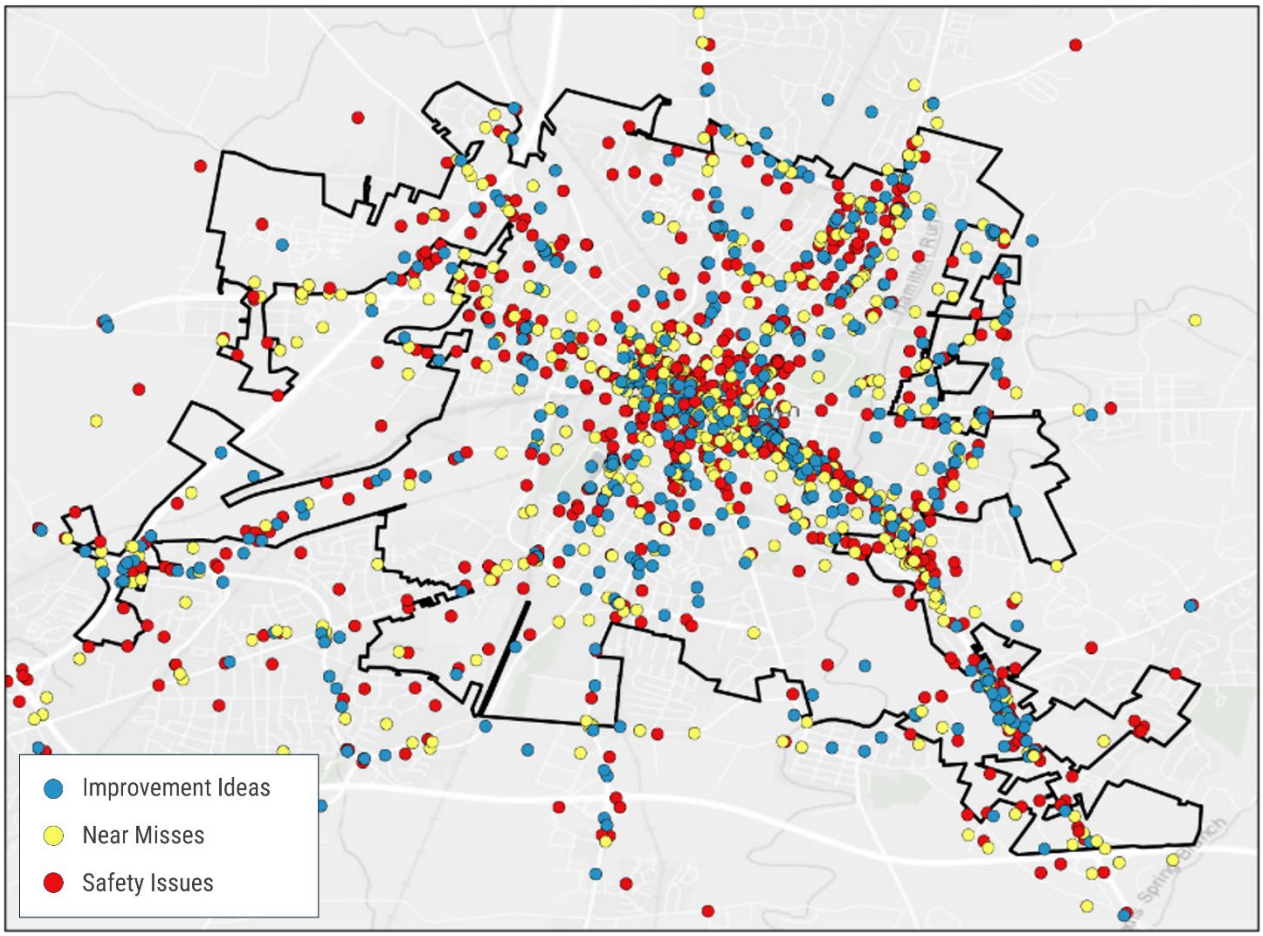
Figure 15: Nature of the Safety Incident



Mapping

Respondents were asked to identify safety issues, near misses, as well as potential improvement ideas. In total, respondents placed nearly 2,120 map markers identifying 958 safety issues, 622 near misses, and 535 improvement ideas, with most placed in the downtown area along US 40. Additional mapping analyses can be found in **APPENDIX A: Public Meeting & Outreach Summaries** and an online map of data can be found here [Hagerstown SAP Data Map](#).

Figure 16: MetroQuest Mapping



Public Comment

Once the draft SAP was completed, the public was given a 30-day period from April 2 – May 2, 2025, to review the draft plan and provide comments in accordance with federal and state regulations. All comments received during this time were addressed by HEPMPO and the City of Hagerstown. A summary of the comments and responses can be found in the **APPENDIX A: Public Meeting & Outreach Summaries**.

CHAPTER 3: UNDERSTANDING CRASH TRENDS AND ROADWAY SAFETY IN HAGERSTOWN

An analysis of crash trends and existing policy and program efforts was conducted to understand Hagerstown's safety story. A two-pronged approach was used as a starting point to understand the broader safety challenges in the city. This included: (1) a policy and benchmarking assessment to gauge the city's alignment with the SSA and safety best practices and (2) a safety analysis to understand historical crash patterns and what contributes to KSI and vulnerable road user crashes.

Policy Scan and Benchmarking Assessment

A policy and benchmarking assessment were conducted to assess Hagerstown's alignment with the SSA and safety best practices. The assessment reviewed existing plans, reports, and studies from Maryland, Washington County, and the city. The assessment identified safety strengths, challenges, and opportunities for action items. The policy and benchmarking process is outlined below.

Step 1 – Identified and Reviewed Relevant Policies and Plans.

- Hagerstown Bicycle Master Plan
- Access Management Policy
- George Street Pedestrian Study
- Washington Street Road Safety Audit
- Dual Highway Speed Management Study
- Northern Avenue Road Diet
- Residential Traffic Calming Program
- MDOT Vulnerable Road User Safety Assessment
- Hagerstown Bicycle and Pedestrian Priority Area Plan
- Livable Street Design Guides
- HEPMPO Regional Safety Action Plan
- Maryland Strategic Highway Safety Plan
- Washington County Strategic Highway Safety Plan

Step 2 – Extracted and Documented Data from Reviewed Policies and Plans.

- Document name
- Document description
- Safety vision, goals and policies
- Safety data and analysis
- Countermeasures
- Safe System element alignment
- Opportunities for safety program and action items

Step 3 – Populated the Benchmarking Tool by Elements and Categories, shown in **Table 2**, with Findings from Step 2

Table 2: Benchmarking Tool by Elements & Categories

Benchmark Elements	Benchmark Categories
Safety Planning & Culture	Leadership and Commitment Meaningful Engagement Data and Analysis Funding Development Review Communities First
Safe Users	Education Enforcement Research
Safe Roadways	Collision Avoidance Kinetic Energy Reduction Policies and Tradeoffs Innovation
Safe Vehicles	Supportive Infrastructure Fleet Management Data
Safe Speeds	Design and Operations Enforcement Policy and Training
Post-Crash Care	Crash Investigation Partnerships

Step 4 – Coordinated with Stakeholders to Select Final Benchmarks for Action Plan

Table 3: Final Benchmarks for Action Plan

Action Item	Responsible Agency and Partners	Timeline
Enhance existing Safe Routes to School program by building closer partnership between schools and City, and prioritizing sidewalk repairs, enhancing route markings, and conducting walk audits near schools.	City of Hagerstown, Washington County Public School System	Medium
Evaluate meaningful engagement strategies to enhance outreach with populations that are traditionally underserved and consider restarting previous outreach efforts such as Children's Village and annual fire department visit to schools.	City of Hagerstown, Washington County Public School System	Medium

Action Item	Responsible Agency and Partners	Timeline
Develop guidelines to address kinetic energy reduction/proactive safety elements at intersection, including red light camera expansion. Consider incorporating FHWA Safe System Project Based Alignment framework into review process.	City of Hagerstown	Short
Enhance geospatial data collection and maintenance across city departments to augment future safety analysis, prioritization, and project development.	City of Hagerstown	Medium

Safety Analysis

A safety analysis was conducted to understand historical crash patterns and what contributes to KSI and vulnerable road user crashes. Five years of crash data, 2019 – 2023, was obtained from the Maryland Department of State Police crash data portal. The safety analysis focused on local and state roadway crashes. The data was cleaned and reviewed for geospatial accuracy and can be found in **APPENDIX C: Technical Memos**.

A total of 3,873 crashes occurred in the city, 114 of which resulted in a fatality or severe injury, 1,043 resulted in a minor or possible injury, and 2,716 resulted in no injury. **Table 4** summarizes the total non-interstate crashes by severity and by mode.

Table 4: Hagerstown All Non-Interstate Crashes by Mode and Injury Severity

Mode	No Injury	Possible Injury	Minor Injury	Serious Injury	Fatality	Total
Bicycle	19 (0.7%)	15 (2.6%)	23 (4.8%)	3 (3.2%)	1 (5%)	61 (1.6%)
Motorcycle	20 (0.7%)	9 (1.6%)	24 (5.1%)	16 (17%)	3 (15%)	72 (1.9%)
Pedestrian	9 (0.3%)	47 (8.3%)	66 (13.9%)	21 (22.3%)	6 (30%)	149 (3.8%)
Vehicle	2,668 (98.2%)	497 (87.5%)	362 (76.2%)	54 (57.4%)	10 (50%)	3,591 (92.7%)
Total	**2,716**	**568**	**475**	**94**	**20**	**3,873**

Source: Maryland State Police Crash Data, Replica, Fehr & Peers.
Notes: Excludes interstate facilities (e.g., I-81, I-70) crashes.

Overall crash trends

Between 2019 and 2023, non-interstate roadways in Hagerstown experienced an average of four fatal crashes per year and approximately 19 crashes per year resulting in serious injuries. While motor vehicle collisions represent the majority of crashes, incidents involving pedestrians, bicyclists, and motorcyclists are disproportionately more likely to result in severe outcomes.

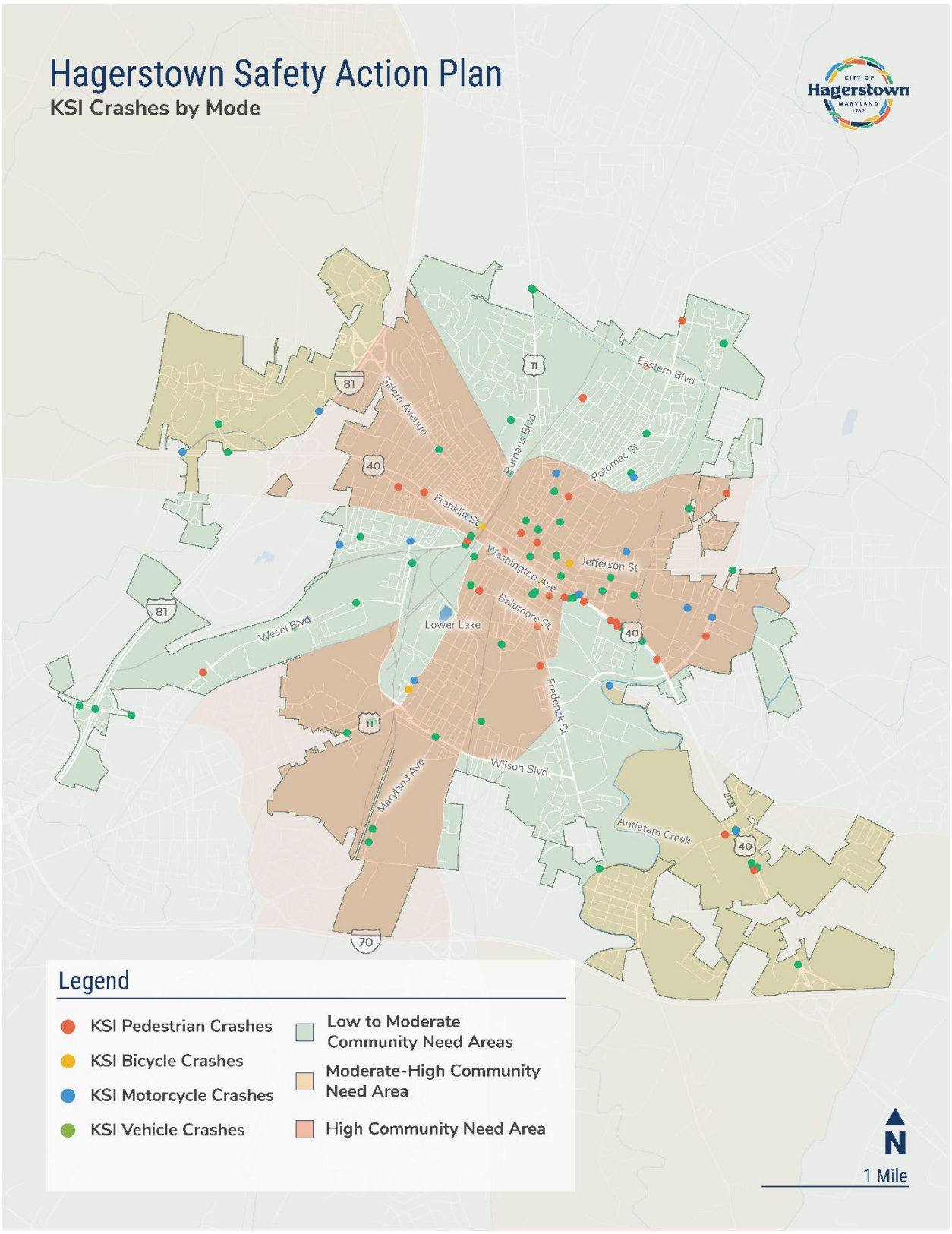
Crash patterns vary based on location and roadway characteristics. Most crashes occur at intersections; however, crashes resulting in fatalities or serious injuries more frequently take place along roadway segments. **Figure 17** illustrates KSI crashes by mode, showing that bicycle-related KSI crashes occur more often at signalized intersections, whereas pedestrian KSI crashes are more common along roadway segments. Among all crash types, single-vehicle, straight-movement, and rear-end collisions are the most frequent. However, when considering only KSI crashes, single-vehicle and head-on collisions are

the most prevalent. It is important to note that crash report data may not always accurately categorize bicycle and pedestrian collisions, particularly single-vehicle crashes.

Speed and roadway design also play a significant role in crash severity. Roads with posted speed limits of 30–35 mph, which make up only 6.7% of roadways, account for 17% of all crashes and 14.9% of KSI crashes, with motorcycle crashes representing a particularly high share (36.8%). Furthermore, the percentage of crashes increases as the number of lanes increases—although roads with four or more lanes make up only 1% of centerline miles in the city, they account for 4.5% of all crashes.

When comparing crash rates, Hagerstown's fatal crash rate—including interstate crashes—is 10.5 per 100,000 people, which is slightly lower than Washington County's rate of 11.2. Additionally, traffic citations indicate that speeding and failure to stop at traffic control devices are common violations, highlighting enforcement priorities in the city.

Figure 17: KSI Crashes by Mode



Community Needs Assessment

Addressing severe crashes where they occur most is a critical factor in achieving zero traffic fatalities and severe injuries. Certain communities and locations are disproportionately affected by serious and fatal crashes. In Hagerstown, 64 percent of KSI crashes occur in areas with lower average incomes and limited transportation options.

To address these disparities, the City of Hagerstown's SAP incorporates demographic data as a key lens for analyzing traffic safety impacts. This information was integrated into the crash analysis, refinement of the High-Injury Network, and project prioritization efforts.

Crashes in Hagerstown are more prevalent in certain communities as identified by the 2050 Maryland Statewide Bicycle and Pedestrian Master Plan. As part of this analysis, areas with Moderate-High and High Need were compared to those with Low to Moderate Need. Most overall crashes, regardless of mode, occur in areas designated as having Moderate-High to High Need, as shown in **Table 5**. Notably, bicycle and pedestrian crashes occur at a higher rate in these areas compared to other modes, underscoring the need for targeted safety improvements.

Table 5: All Crashes within Community Need Areas

Community Need	Motor Vehicle	Motorcycle	Bicycle	Pedestrian	Total
Moderate-High to High	2,570 (71.6%)	50 (69.4%)	48 (78.7%)	112 (75.2%)	2,780 (71.8%)
Low to Moderate	1,021 (28.4%)	22 (30.6%)	13 (21.3%)	37 (24.8%)	1,093 (28.2%)
Total	**3,591**	**72**	**61**	**149**	**3,873**

Source: Maryland State Police Crash Data, Replica, MDOT Statewide Bicycle and Pedestrian Master Plan, Fehr & Peers. Notes: Excludes interstate facilities (e.g., I-81, I-70) crashes.

High Injury Network

A High-Injury Network (HIN), shown in **Figure 18**, was developed to identify roadway corridors with a history of KSI collisions and crashes involving vulnerable road users. A dynamic version of the HIN is available on the Hagerstown SAP Data Map under the "Hagerstown HIN v3 Draft" tab. The HIN was developed using the same methodology as the HEPMPO SAP HIN.

Hagerstown has approximately 122 centerline miles of roadway, and crashes within the identified HIN corridors account for 45 percent of all KSI crashes in the region. These corridors also see a disproportionate share of crashes involving vulnerable road users, with 56 percent of pedestrian KSI crashes, 50 percent of bicyclist KSI crashes, and 53 percent of motorcyclist KSI crashes occurring on these roadways, as summarized in **Table 6**.

Table 6: Hagerstown HIN Statistics

	All Roadways*	All Roadways HIN	HIN % of All Roadways	HIN % In Transportation Disadvantage Communities
Centerline miles	122	23.3	19.1%	63%
All collisions**	3,873	1,221	32%	76%
KSI (All modes)	114	51	45%	67%
Ped KSI	27	15	56%	80%
Bike KSI	4	2	50%	50%
Motorcycle KSI	19	10	53%	70%

Source: Maryland Crash Data, Replica, Fehr & Peers.
*Notes: * All roads in Replica dataset excluding limited access (interstate, privates roads, tolls, etc)*
***Collisions within 100' of network*

HIN Development

The HIN was developed through a prioritization process that incorporated key safety criteria. The SSA was used to focus on eliminating fatal and severe injury crashes while recognizing human vulnerability. Under this framework, crashes resulting in a fatal or severe injury were given greater weight than other injury or non-injury crashes. Similarly, crashes involving pedestrians, bicyclists, or motorcyclists were weighted higher than vehicle-only crashes. Once the initial HIN was established, it was refined using state-designated vulnerable road user corridors, pedestrian safety priority corridors, transportation-disadvantaged areas, and public input, including near-miss reports and other safety concerns.

HIN Top Corridors

The final HIN for Hagerstown includes 27 corridors. Each corridor was evaluated and ranked based on a safety score, which was calculated by summing the severity of each collision and factoring in the crash mode. The top corridors based on this ranking are included in **Table 7**.

Table 7: Hagerstown Top HIN Corridors

Rank	Road Name	Extents	Miles	VRU Crashes	KSI Crashes	Transportation Disadvantage Community[1]
1	Edgewood Drive	City Boundary to Langley Drive	0.69	5	5	Yes
2	East Avenue	Potomac Street to Cannon Avenue	0.34	5	2	Yes
3	Church Street	Norway Avenue to Potomac Street	0.63	11	2	Yes
4	Locust Street	Potomac Street to McComas Street*	1.28	9	7	Yes
5	Burhans Boulevard	Ridge Avenue to Hillcrest Road	1.57	6	8	Yes

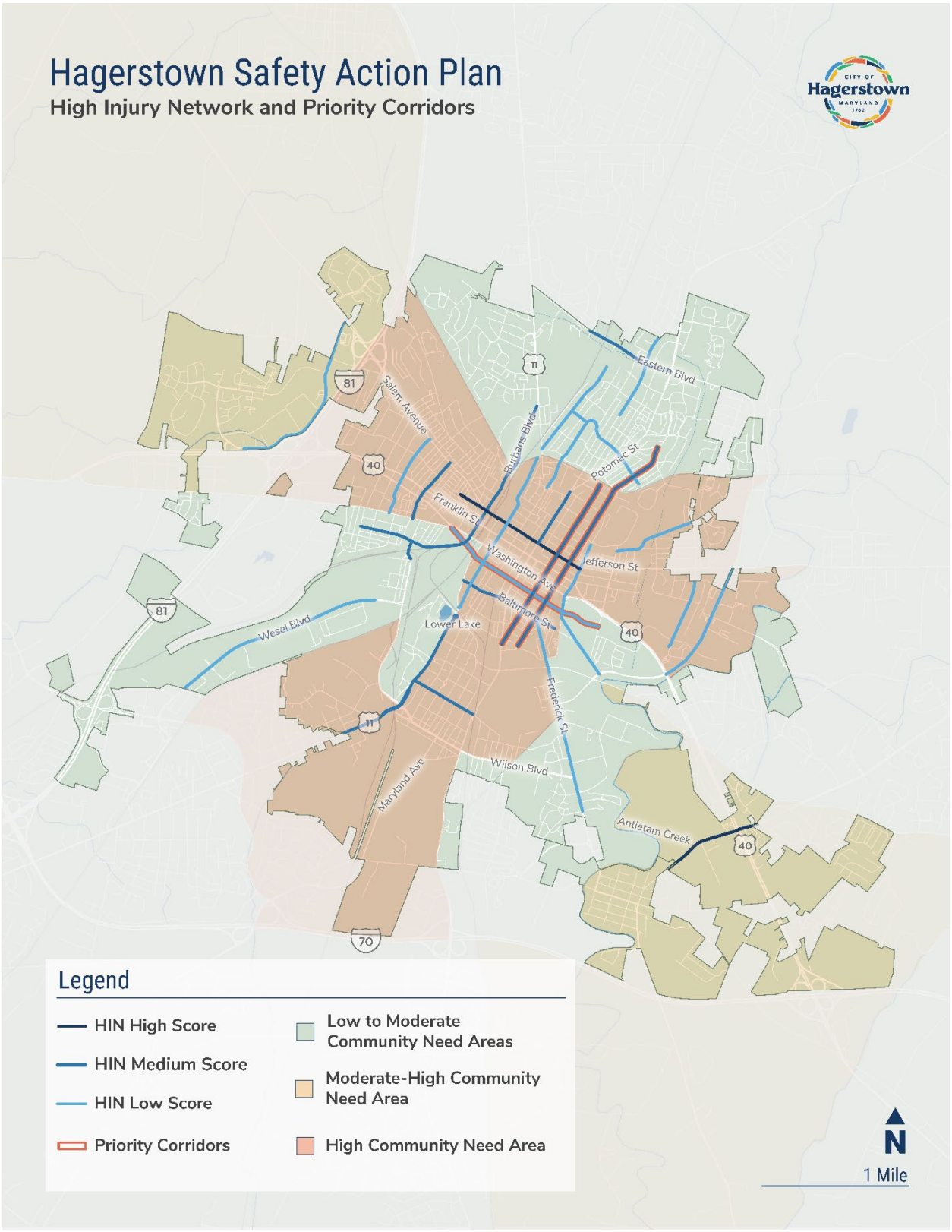
Rank	Road Name	Extents	Miles	VRU Crashes	KSI Crashes	Transportation Disadvantage Community[1]
6	Lanvale Street	East Place to Burhans Boulevard	0.37	1	1	Yes
7	Potomac Street	East Avenue to Wayside Avenue	0.41	6	1	Yes
8	Virginia Avenue	City Boundary to Key Street	1.48	5	5	Yes
9	Northern Avenue	Fountain Head Road to Potomac Avenue	0.63	5	2	No
10	Mulberry Street	Ray Street to Irvin Avenue	1.67	15	4	Yes

Source: Maryland Crash Data, Replica, Fehr & Peers.

1. *Transportation disadvantage occurs when people are unable to access the needs of their daily life regularly, reliably, and safely.*

**McComas Street is the northern terminus of Locust Street; however, the majority of northbound traffic turns right or left at Fairgrounds Avenue, and only a small percentage continues straight ahead to McComas Street*

Figure 18: Hagerstown HIN and Priority Corridors



CHAPTER 4: PROJECT AND STRATEGY DEVELOPMENT

Five priority focus areas were selected from the safety analysis for a more in-depth evaluation of crash trends, safety concerns, and potential countermeasures. Three of the priority areas focused on citywide systemic issues, and two focused on specific corridors selected from the HIN.

Table 8: Five Priority Focus Areas

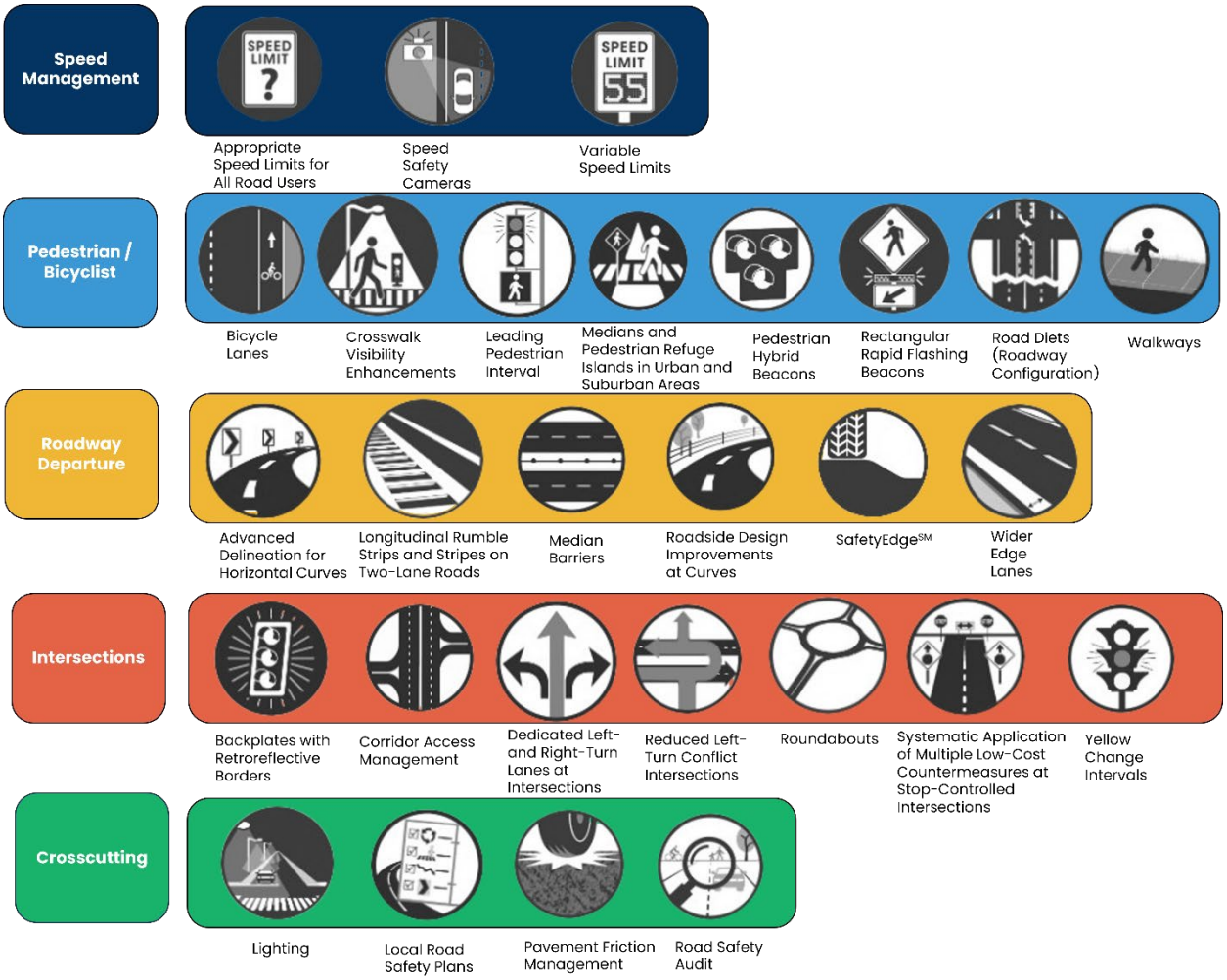
FOCUS AREA	LOCATION
Signalized Intersections	Citywide
Midblock Pedestrian Crossings	Citywide
Speeding	Citywide
Antietam St	from W Washington St to S Cleveland Ave
Locust St &	from S Potomac St to McComas St
Mulberry St	from Ray St to E Irvin Ave

For each focus area or corridor, a suite of recommended safety countermeasures unique to the focus area was developed. The following sources and strategies were utilized in the selection of recommended countermeasures:

- FHWA Proven Safety Countermeasures
- Safe System Roadway Design Hierarchy
- MDOT SHA Context Driven Guide
- Crash Modification Factor (CMF) Clearinghouse
- MUTCD Standards
- Best Practices
- Engineering Judgement

One-page graphic summaries for each of the priority focus areas have been prepared depicting safety countermeasures recommended for locations within the focus area. FHWA Proven Safety Countermeasures are identified in **Figure 19**.

Figure 19: FHWA Toolbox of Proven Safety Measures

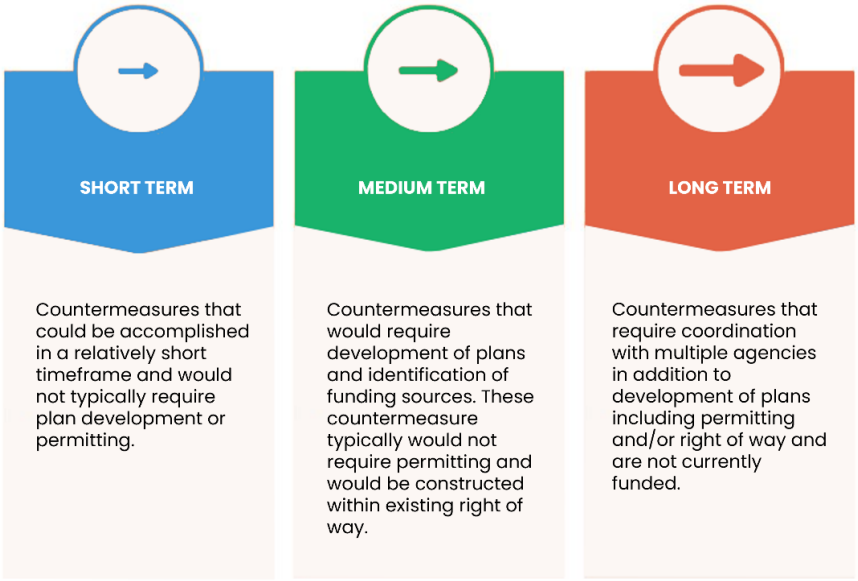


The graphics also summarize the crash history within the focus area, any crash trends noted within the crash data that are relevant to the focus area, and other highway improvements planned, underway, or recently completed.

The recommended countermeasures identified for each of the priority focus areas are summarized in **APPENDIX B: Countermeasure Details and Cost Estimates**. The tables contain more site-specific details about each recommended countermeasure, as well as time ranges for project deployment and a planning level cost estimate. The time ranges were divided into three categories, as shown in **Figure 20**.

The planning level cost estimates represent expected effort in engineering costs, construction costs, inspection costs, and traffic control costs. Where a countermeasure would require additional right-of-way (ROW), a flat ROW acquisition cost was assumed, however caution should be exercised in utilizing the planning level estimate in these cases, since ROW acquisition costs are very site/business/residence specific by location and region.

Figure 20: Project Deployment Time Ranges



Priority Citywide Systemic Safety

Citywide signal strategy

The City of Hagerstown has 113 signalized intersections. This does not include SHA-maintained signals along Dual Highway. Of these 56 (50%) are within the Interconnected Downtown Network. Crash analysis revealed that 72% of KSI crashes at signalized intersections within the city limits occurred at signals within this network. Similarly, 67% of pedestrian crashes and 77% of bicycle crashes occurring at signalized intersections occurred at signals within the Interconnected Downtown Network. As a result, recommended countermeasures for this Citywide Systemic Safety Strategy are focused on the signals within the Interconnected Downtown Network.

Midblock pedestrian crossings/crashes

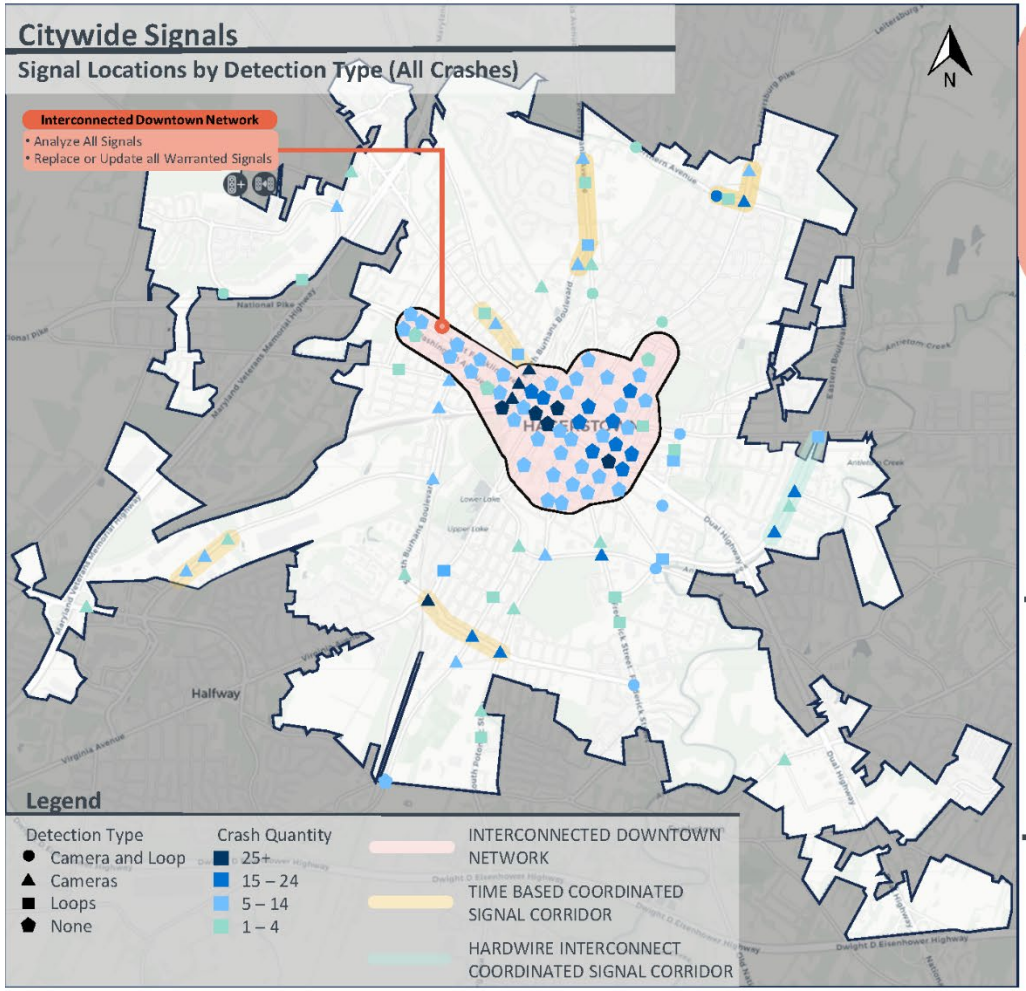
The City of Hagerstown experienced 81 midblock pedestrian crashes in the five year period between 2019-2023. Citywide systemic proven safety countermeasures have been identified and recommended to mitigate this safety concern. Additionally, three specific clusters of these type of crashes were identified: Salem Ave near Alexander St, West Church St near Market Place, and North Burhans Blvd near George St. These locations were reviewed, and site-specific countermeasures were recommended.

Speeding

According to the FHWA Proven Safety Countermeasures website “there is broad consensus among global roadway safety experts that speed control is one of the most important methods for reducing fatalities and serious injuries.” As a result, citywide systemic countermeasures focusing on reducing speeding are recommended.

Additionally, speeding was identified as a common safety concern theme among comments left on the Hagerstown MetroQuest Survey. Specific corridors that had a concentration of crashes attributed to speeding and were concurrently noted as areas of speeding concern in the survey comments were identified (and are shown on the graphic) and considered for more specific spot countermeasures. All but two of these corridors (South Burhans Blvd and Salem Ave) were on either the Hagerstown HIN or the HEPMPO Regional HIN.

*Figure 21: Citywide Signal Strategy**

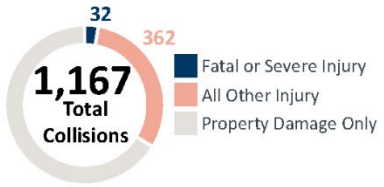


Countermeasures

Analyze All Signals
- Conduct Turning Movement Traffic Counts
- Conduct Traffic Signal Warrant Analysis

Replace or Update All Warranted Signals
- Pedestrian Heads and APS
- High Visibility Crosswalks
- Vehicular Detection
- FRA/Variable Mode (for Left Turn Lanes)
- Retroreflective Backplates
- Green Bike Lane Crossing Pavement Markings
- Update Phasing and Timing

Collision History (2019-2023)



	Total Collisions	Fatal or Severe Injury
	1,091	18
	15	4
	22	2
	39	8

Notable Collision Patterns


Angle at Signal


Rear End at Signal

Planned Work

- Long Range Transportation Plan
  - Edgewood Dr – Widen to Four Lanes
  - MD 60 – Multi-Lane Urban Reconstruction
  - MD 65 - Widen to Four Lanes
  - US 11 - Widen to Four Lanes
- US-40 PSAP Pedestrian Signals
  - Locust St and Franklin St
  - Locust St and Washington St
  - Mulberry St and Washington St
  - Mulberry St and Franklin St
  - Prospect St and Washington St

**Does not include Dual Highway SHA-maintained signals*

Figure 22: Midblock Pedestrian Crossing/Crashes

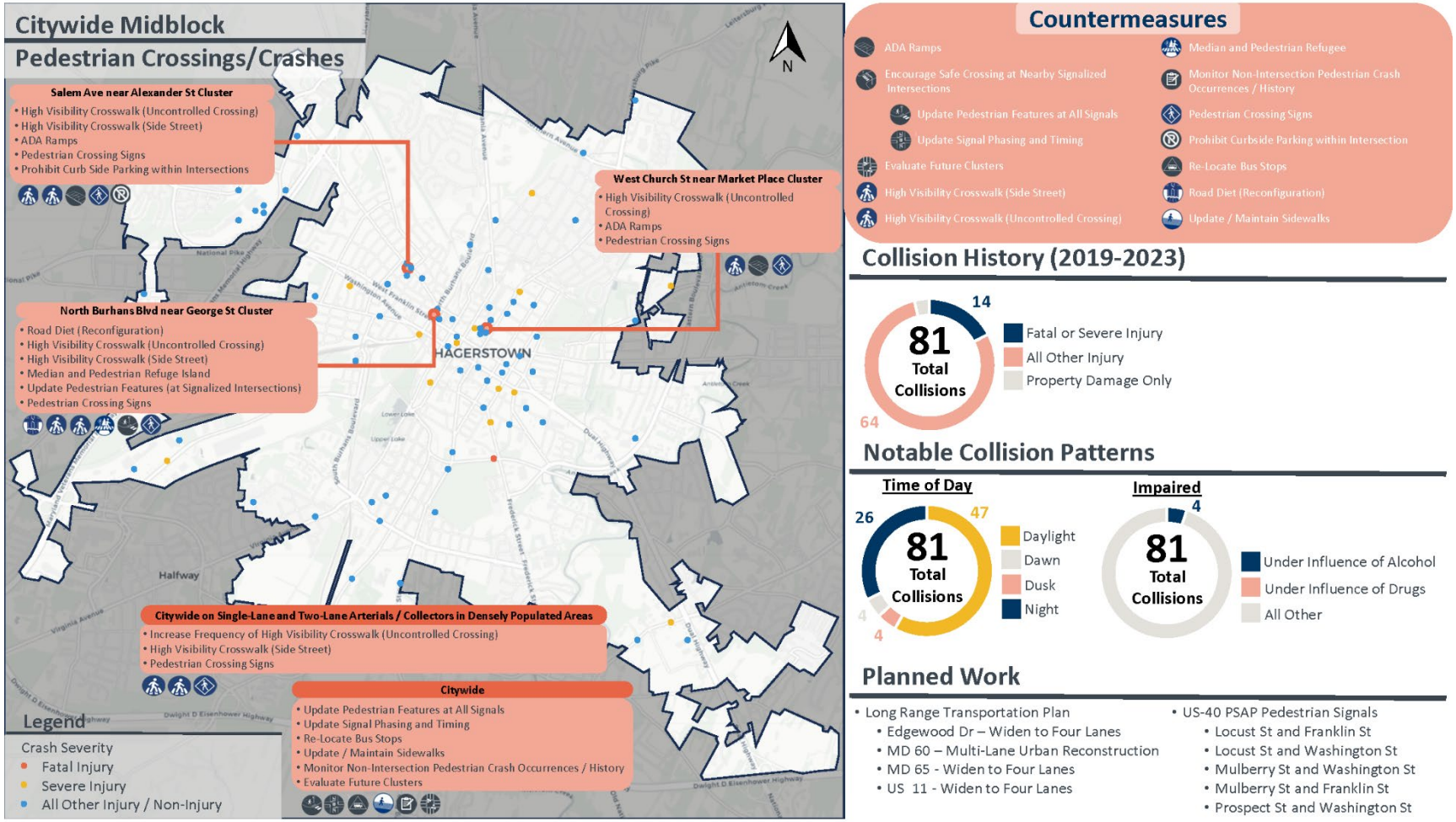
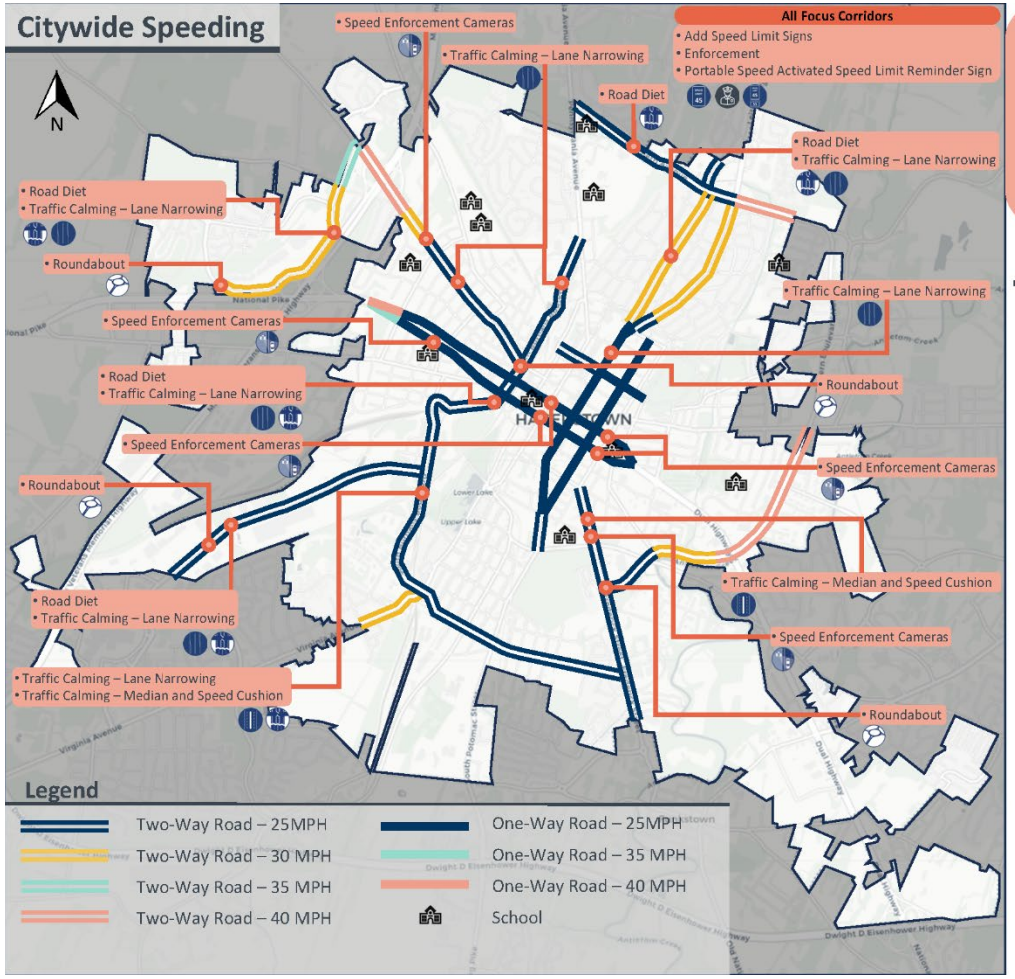


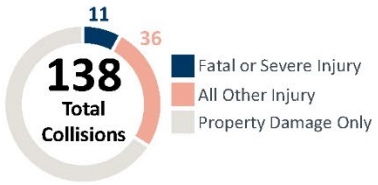
Figure 23: Citywide Speeding



Countermeasures

- Add Speed Limit Signs
- Enforcement
- Road Diet
- Roundabout
- Portable Speed Activated Speed Limit Reminder Sign
- Speed Enforcement Cameras
- Speed Feedback Signs
- Traffic Calming – Lane Narrowing
- Traffic Calming – Median and Speed Cushion

Citywide Speeding Collision History (2019-2023)



	Total Collisions	Fatal or Severe Injury
	128	7
	9	4
	0	0
	1	0

Citywide Speeding Notable Collision Patterns

Planned Work

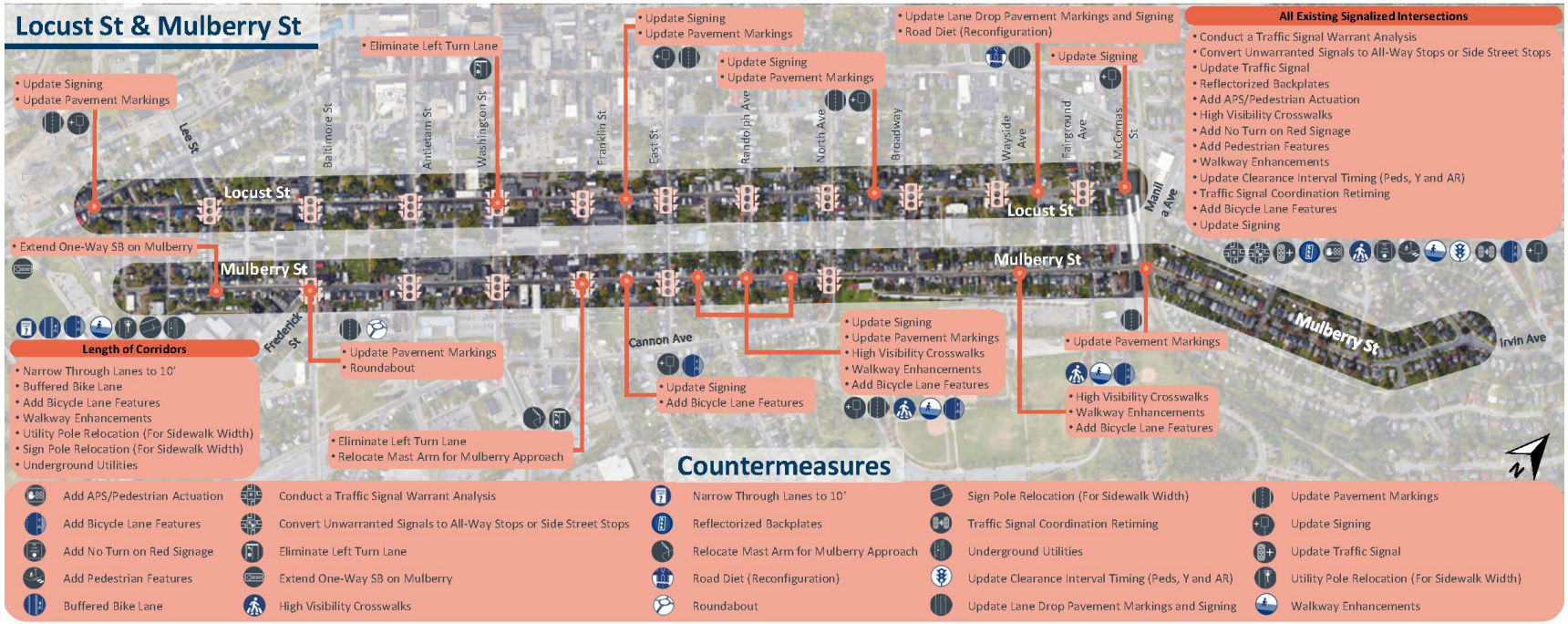
- Long Range Transportation Plan
  - US 11 - Widen to Four Lanes
  - Wesel Blvd – Widen to Four Lanes
- US-40 PSAP Pedestrian Signals
  - Locust St and Franklin St
  - Locust St and Washington St
  - Mulberry St and Washington St
  - Mulberry St and Franklin St
  - Prospect St and Washington St

Priority Corridor Profiles

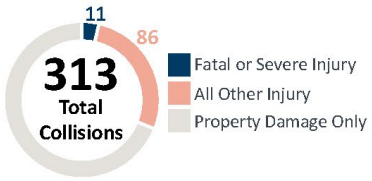
As noted above, specific corridors on the HIN were identified for additional focus. One-page graphic summaries for each of the priority corridor areas have been prepared depicting safety countermeasures recommended for locations along the corridor.

Locust Street & Mulberry Street

Figure 24: Locust & Mulberry Street Countermeasures

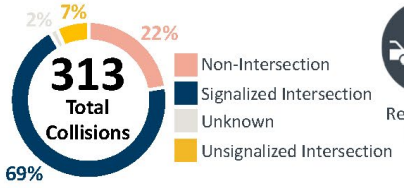


Collision History (2019-2023)



	Total Collisions	Fatal or Severe Injury
	286	7
	4	1
	12	2
	11	1

Notable Collision Patterns




Rear End at Signal

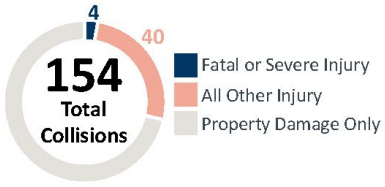

Angle at Signal

Planned Work

- US-40 PSAP Pedestrian Signals
  - Locust St and Franklin St
  - Locust St and Washington St
  - Mulberry St and Washington St
  - Mulberry St and Franklin St

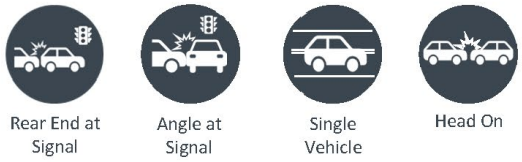
Figure 25: Antietam Street Countermeasures

Collision History (2019-2023)



	Total Collisions	Fatal or Severe Injury
	147	4
	1	0
	2	0
	4	0

Notable Collision Patterns



Planning References

- Bike/Pedestrian
  - Designated VRU Corridor

CHAPTER 5: PLAN OF ACTION AND MONITORING PROGRESS

Action Items

Table 9 outlines safety action items aimed at fostering a culture of traffic safety. This involves implementing proactive operational safety measures, promoting awareness among all road users, and educating them to be responsible stewards. It also emphasizes the importance of prioritizing safety over mobility when necessary.

Table 9: Action Items

Action Item	Responsible Agency and Partners	Timeline
Implement safety improvements and countermeasures along priority corridors (Antietam Street, Locust Street, and Mulberry Street). Seek opportunities to further study and fund implementation of priority corridor projects.	City of Hagerstown, Maryland DOT	Long
Systemically install safety countermeasures at locations that match the concerns identified for the citywide strategies (Midblock Pedestrian Crashes, Speeding, Signal and Intersection Improvement). Seek opportunities to fund installation of countermeasures.	City of Hagerstown	Medium
Promote the release of the Action Plan. Consider conducting a media launch, targeted outreach, and hosting a training or roll-out webinar.	City of Hagerstown, HEPMPO	Short
Evaluate meaningful engagement strategies to enhance outreach with populations that are traditionally underserved and consider restarting previous outreach efforts such as Children's Village and annual fire department visit to schools.	City of Hagerstown, Washington County Public School System	Medium
Enhance existing Safe Routes to School program by building closer partnership between schools and City, and prioritizing sidewalk repairs, enhancing route markings, and conducting walk audits near schools.	City of Hagerstown, Washington County Public School System	Medium
Develop guidelines to address kinetic energy reduction/proactive safety elements at intersection. Consider incorporating FHWA Safe System Project Based Alignment framework into review process.	City of Hagerstown	Short

Action Item	Responsible Agency and Partners	Timeline
Incorporate HIN as prioritization criteria. Utilize HIN in budgeting and project decision-making.	City of Hagerstown	Short
Establish a SAP Committee. Committee would conduct evaluation and monitoring, including developing Action Plan Progress reports.	City of Hagerstown, HEPMPO	Short
Enhance geospatial data collection and maintenance across city departments to augment future safety analysis, prioritization, and project development.	City of Hagerstown	Medium

Safety Action Committee

A Safety Action Committee must be established to evaluate and monitor the Action Plan. The City of Hagerstown's Board of Traffic and Parking should be considered as the formal committee to monitor the SAP progress. Additionally, the committee should align with annual monitoring and reporting conducted by the Hagerstown/Eastern Panhandle Metropolitan Planning Organization (HEPMPO) to streamline efforts, increase efficiency, and reduce redundancy.

The Safety Action Committee will be responsible for developing an annual progress report. The progress report will be generated based on the release of the previous year's crash data. The progress report will calculate and compare performance metrics, shown in **Table 10**, overtime within the City of Hagerstown along non-interstate roadways, as well as highlight progress made toward Action Items. The annual progress report will be shared with Hagerstown City Council and posted online.

Table 10: Performance Metric Criteria

Performance Metric Criteria
Total fatalities
Fatality rate
Total serious injuries
Serious injury rate
Non-motorized fatalities and serious injuries

Action Plan Updates

From plan adoption, the City of Hagerstown SAP will be refreshed or fully updated every five years. A five-year cycle will provide the most up-to-date crash data and incorporate new safety best practices and guidelines.

Funding

The SS4A program supports jurisdictions like the City of Hagerstown with a comprehensive SAP that identifies the most significant roadway safety concerns. SS4A provides grant opportunities for the

implementation of projects and strategies to address these concerns. The Fiscal Year (FY) 2026 Notice of Funding Opportunity (NOFO) for the SS4A grants is expected to be released in the Spring of 2025. The program offers funding for two distinct types of grants:

1. Planning and Demonstration Grants: These grants allocate federal funds to develop, complete, or enhance an Action Plan. Demonstration activities are temporary safety improvements that inform comprehensive safety action plans (referred to as "Action Plans") by testing proposed project and strategy approaches to determine future benefits and future scope.
2. Implementation Grants: These grants provide federal funds to execute projects and strategies outlined in an Action Plan, specifically aimed at addressing roadway safety issues. Eligible projects and strategies may encompass infrastructure, behavioral, and operational activities. HEPMPO will exclusively seek to apply for implementation grants.

There are various federal and state funding sources available for safety improvements in addition to SS4A grants. These opportunities are included in the following tables.

Table 11: Federal & State Funding Opportunities

Funding Program	Description
Safe Streets and Roads for All (SS4A)	The SS4A program funds regional, local, and Tribal initiatives through grants to prevent roadway deaths and serious injuries.
Better Utilizing Investments to Leverage Development (BUILD) Grant Program	The program provides grants for surface transportation infrastructure projects with significant local or regional impact.
Transportation Alternatives Program (TAP)	The TAP provides funding for programs and projects defined as transportation alternatives, including on- and off-road pedestrian and bicycle facilities, infrastructure projects for improving non-driver access to public transportation and enhanced mobility, community improvement activities, and environmental mitigation; recreational trail program projects; safe routes to school projects; and projects for planning, designing, or constructing boulevards and other roadways largely in the right-of-way of former Interstate System routes or other divided highways.
Carbon Reduction Program (CRP)	Provides funds for projects designed to reduce transportation emissions, defined as carbon dioxide (CO2) emissions from on-road highway sources.
Infrastructure for Rebuilding America Discretionary Grant Program (INFRA)	Funds available for multimodal freight and highway projects of national or regional significance to improve the safety, efficiency, and

Funding Program	Description
	reliability of the movement of freight and people in and across rural and urban areas.
Reconnecting Communities Pilot Program (RCP)	Planning grants and capital construction grants, as well as technical assistance, to restore community connectivity through the removal, retrofit, mitigation, or replacement of eligible transportation infrastructure facilities.
Federal Transit Administration Capital Funds (FTA)	Funds transit capital investments, including heavy rail, commuter rail, light rail, streetcars, and bus rapid transit.
Areas of Persistent Poverty Program (AoPP)	Funds projects that provide access to transit in disadvantaged communities, including safety improvements.
Congestion Mitigation and Air Quality Improvement Program (CMAQ)	Provides funds to States for transportation projects designed to reduce traffic congestion and improve air quality, particularly in areas of the country that do not attain national air quality standards.
Highway Safety Improvement Program (HSIP)	HSIP is a core Federal-aid program with the purpose to achieve a significant reduction in traffic fatalities and serious injuries on all public roads, including non-State-owned roads and roads on tribal land. The HSIP requires a data-driven, strategic approach to improving highway safety on all public roads with a focus on performance.
Railway-Highway Crossings (Section 130) Program (RHCP)	The Railway-Highway Crossings (Section 130) Program provides funds for the elimination of hazards at railway-highway crossings.
National Highway Performance Program (NHPP)	Provides support for the condition and performance of the National Highway System (NHS), for the construction of new facilities on the NHS, and to ensure that investments of Federal-aid funds in highway construction are directed to support progress toward the achievement of performance targets established in a state's asset management plan for the NHS.
Promoting Resilient Operations for Transformative, Efficient, and Cost Saving Transportation (PROTECT)	Used to help make surface transportation more resilient to natural hazards, including climate change, sea level rise, flooding, extreme weather events, and other natural disasters through support of planning activities, resilience

Funding Program	Description
	improvements, community resilience and evacuation routes, and at-risk costal infrastructure.
Surface Transportation Block Grant Program (STBG)	Provides flexible funding that may be used by States and localities for projects to preserve and improve the conditions and performance on any Federal-aid highway, bridge and tunnel projects on any public road, pedestrian and bicycle infrastructure, and transit capital projects, including intercity bus terminals.
Safe Routes to School Program (SRTS)	Projects that improve safety for students going to school.

Table 12: Maryland Funding Opportunities

Source	Program
MDOT System (Program) Funding	Sidewalk Reconstruction for Pedestrian Access New Sidewalk Construction for Pedestrian Access Bicycle Retrofit
Additional State Grant Opportunities	Community Legacy Program Program Open Space Community Parks and Playgrounds Maryland Heritage Areas Program Maryland Bikeways Program
Maryland Highway Safety Grants	The MHSO administers grant-funded programs that address priority areas such as impaired driving prevention, distracted driving prevention, speeding and aggressive driving prevention, occupant protection, and the safety of pedestrians, bicyclists, motorcyclists, young and older drivers. In addition, grant funds can be awarded toward projects that help improve the quality of traffic safety data.

Disclaimer

Under 23 U.S. Code § 409 and 23 U.S. Code § 148, safety data, reports, surveys, schedules, lists compiled or collected for the purposes of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or railway-highway crossings are not subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damage arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.

The analysis and recommendations in this report are conceptual in nature based upon limited information, and before implementing any changes, or using any of its information for design or construction, HEPMPO or local jurisdiction, should conduct a more detailed analysis and make sure that the design or construction documents reflect specific, detailed, local and field conditions.

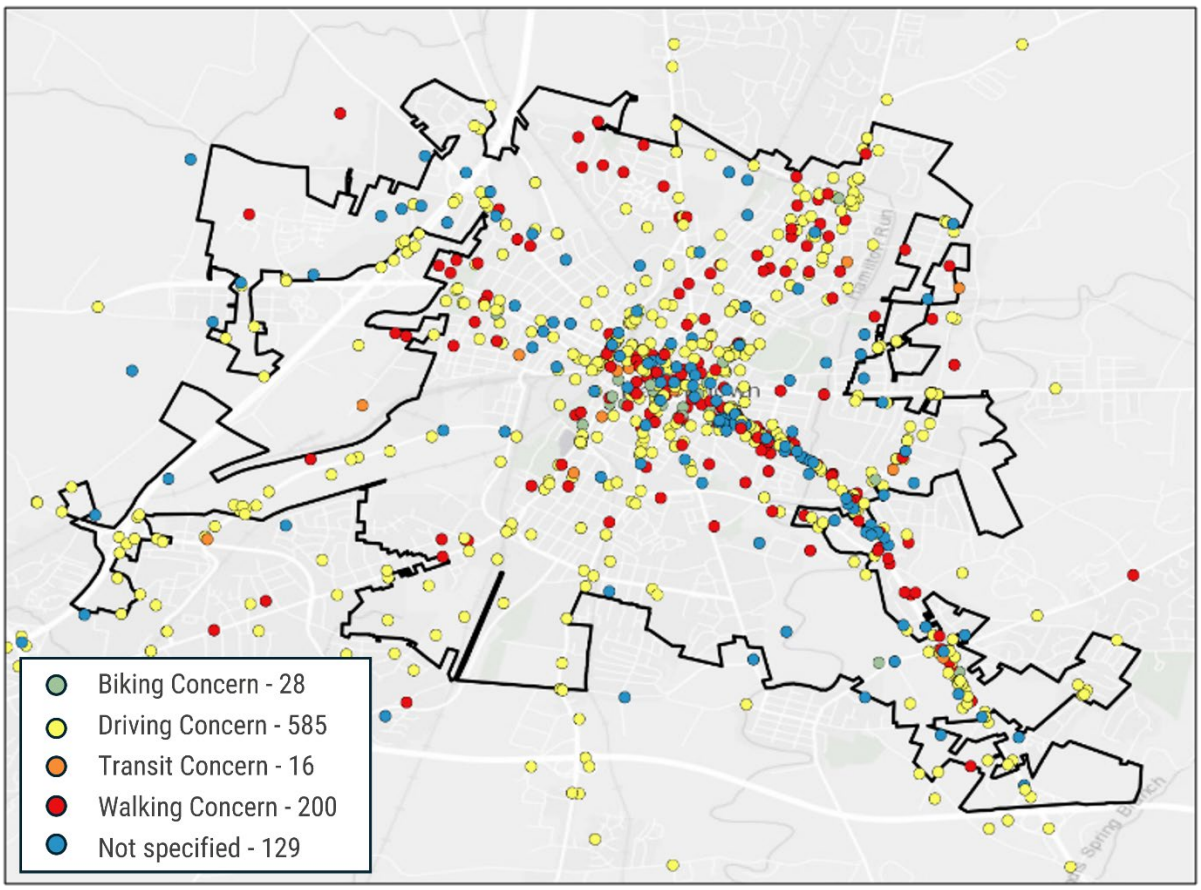
The scope of this work, including study locations, time frame, and topics, was determined by the client. While it is possible that some locations or issues were not addressed in this report, nothing should be inferred by their omission.

APPENDIX A: Public Meeting & Outreach Summaries

Public Engagement Survey

An online map of data from the survey can be found here Hagerstown SAP Data Map.

Safety Issues



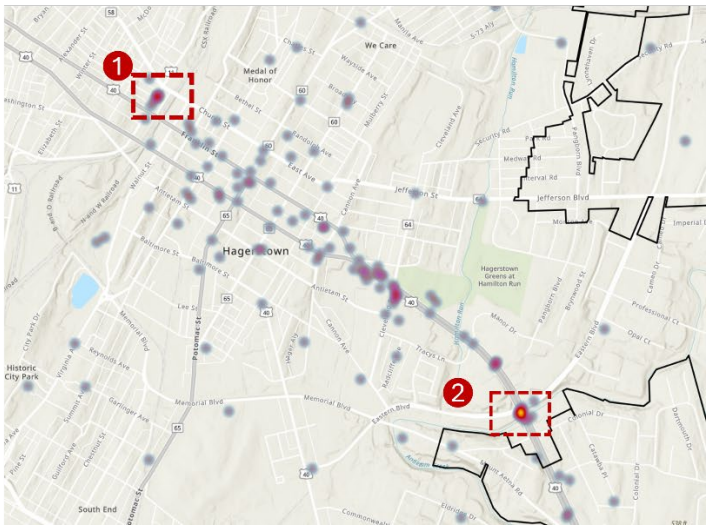
Walking Concerns

1 US 11 (US 40 to Church Street)

- "Pedestrians not using proper crosswalks and walking into traffic."
- "Pedestrians do not follow designated crosswalks. They should be funneled to certain areas for their safety and the safety of driver."
- "Walkers who walk in front of car."
- "Pedestrians are not navigating to crosswalks. They cross in between cars."
- "People crossing the road unsafely."

2 US 40 @ Eastern Blvd

- "Walking out into oncoming traffic when the traffic signal is green."
- "People do not use a crosswalk."
- "Panhandling"
- *Unsafe Intersection*
- *Lack of Sidewalks/Sidewalk Conditions*



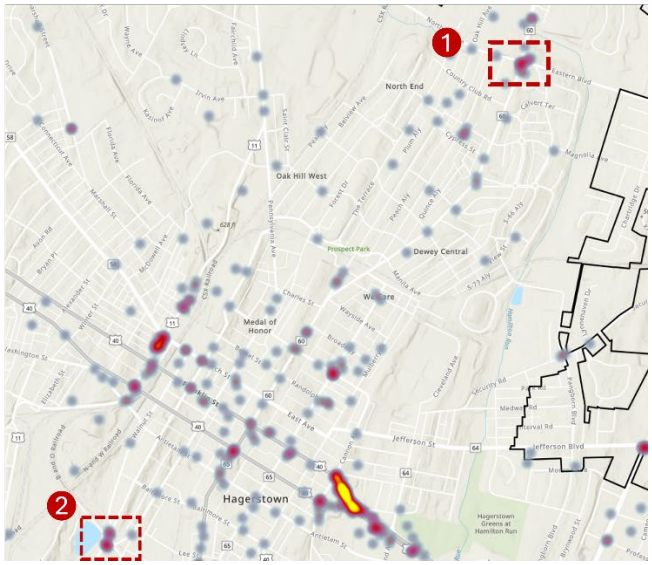
Driving Concerns

1 Potomac Ave @ Eastern Blvd

- "Cars regularly try to illegally pass at intersection. Cars speed through yellows and I have seen cars run red lights (and cause accidents)."
- "Getting passed from the right turn lane and getting cut off going straight through the light, both ways on Potomac."
- *Unsafe Intersection*
- *Speeding*
- *Aggressive Driving*

2 Roundabout (Virginia Ave)

- "The majority of drivers coming off of Virginia Ave do not obey the yield sign to vehicles already traveling in the circle I have almost been hit multiple times because my right of way was ignored."
- "That intersection is too confusing for people unfamiliar with it."
- "People stop in the middle of the roundabout and can't make up their mind of where they're going."
- "This roundabout is a bit complicated, and lots of speeding in the area. Maybe patrol to slow it down near the park."



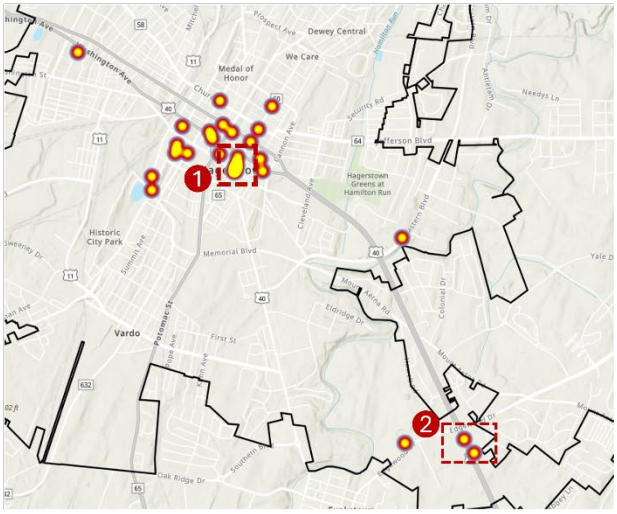
Biking Concerns

1 Potomac Street (Antietam Street to Broadway)

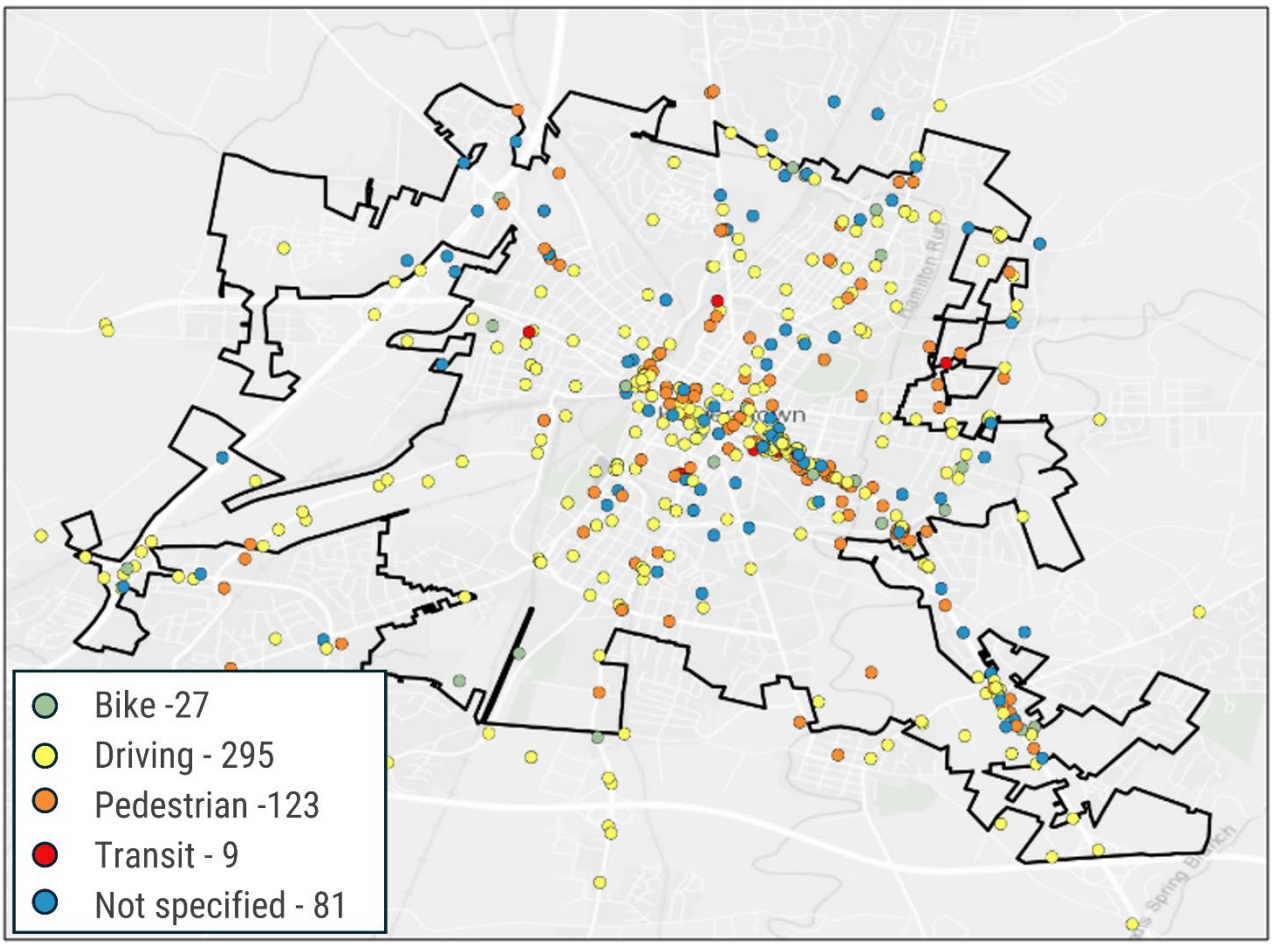
- "Cyclists run the red light consistently."
- "Bikers are aggressive and doing stunts between Antietam and Broadway at night."
- "Riding in bike lane the wrong way."
- *Speeding*

2 Dual Hwy (Hebb Rd to Edgewood Dr)

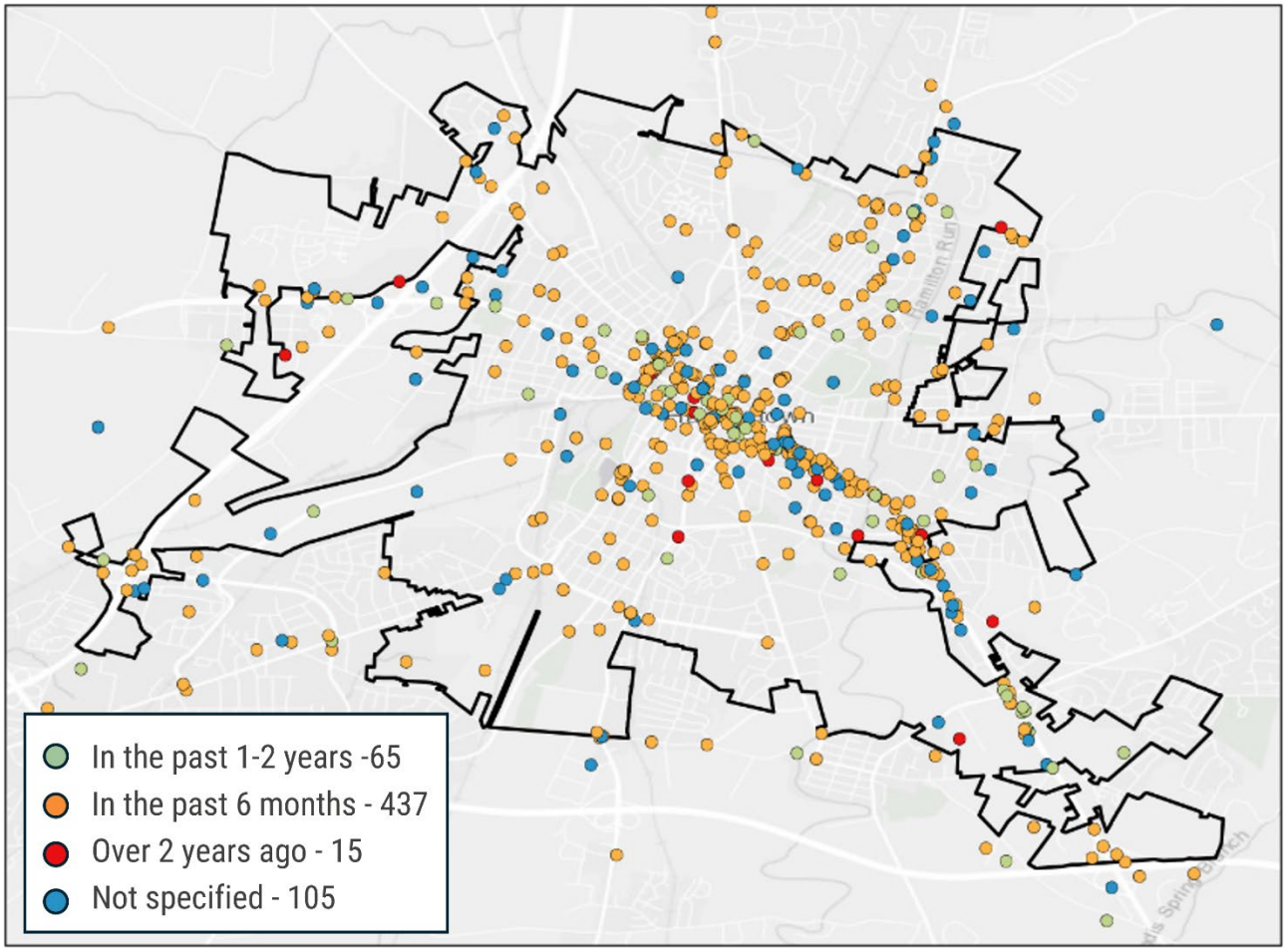
- "Proximity of bike lanes in the middle of vehicle lanes."
- "The bike lanes here are dangerous, being sandwiched between 2 vehicle travel lanes and people making a left from the opposite side of 40 into the Liquor Locker or one of the other stores. The turn lane to go to Martin's is great, but the other turn lane."



Improvement Ideas



Near Misses


In the past 1-2 years -65
In the past 6 months - 437
Over 2 years ago - 15
Not specified - 105

APPENDIX B: Countermeasure Details and Cost Estimates

Mid-Block Pedestrian Crossing Focus

Location	Action Item Description	FHWA Proven Safety Countermeasure	Action Item Details	Implementation Horizon	Planning Level Cost
Citywide	Update Pedestrian Features at All Signalized Intersections	No	Encourage safer pedestrian crossings at nearby signals by reducing delay and making those signals more responsive to pedestrians. Includes APS pushbuttons/ pedestrian detection, countdown pedestrian signal heads, adjusted signal timing.	Medium Term	$100,000 - $125,000 per intersection
	Update Signal Phasing and Timing at All Signalized Intersections	No		Medium Term	$15,000 - $20,000 per intersection
	Relocate Bus Stops	No	Encourage safer pedestrian crossings at nearby locations by locating pedestrian generators closer to intersections with crosswalks.	Short Term	$25,000 - $35,000
	Upgrade/Maintain Sidewalks	Yes	Encourage pedestrians to stay out of traffic lanes and cross at crosswalks by ensuring sidewalks are well maintained, free of obstructions and tripping hazards, and are ADA compliant.	Long Term	$10,000,000 - $15,000,000
	Monitor Non-Intersection Pedestrian Crash Occurrence/History	No	Identify trends and high frequency locations.	Medium Term	Staff Time & Resources
	Evaluate Future Clusters	No	Identify and implement site specific countermeasures at problem locations.	Medium Term	Staff Time &Resources
Citywide in Densely Populated Areas with Single-lane or Two-lane Arterials/Collectors	High Visibility Crosswalk (Uncontrolled Crossing)	Yes	Identify pedestrian generators and common pedestrian routes along single-lane or two-lane two-way arterials and collectors. Provide marked uncontrolled crossings to address pedestrian 'traffic' needs for crossing these roadways at convenient frequencies. Use high visibility crosswalk pavement markings and pedestrian crossing signs to clearly bring attention to these desired crossing locations. Do not use this approach on multi-lane roadways.	Medium Term	$50,000 - $60,000 per location
	Pedestrian Crossing Signs	Yes		Medium Term	$4000 - $5,000 per crossing
	High Visibility Crosswalk (Side Street)	Yes	Install high visibility crosswalks and set back stop bars on stop controlled side streets on roadways with consistent pedestrian traffic.	Short Term	$5000 - $6,000 per crossing

Location	Action Item Description	FHWA Proven Safety Countermeasure	Action Item Details	Implementation Horizon	Planning Level Cost
Salem Avenue near Alexander Street	High Visibility Crosswalk (Uncontrolled Crossing)	Yes	Install high visibility crosswalk to acknowledge and bring attention to the uncontrolled crossing at either Alexander Street or Central Avenue. This area appears to experience high pedestrian traffic due to dense residential development on both sides of Salem Avenue, as well as the mixed use land development and the additional pedestrian destination at the Penny Mart.	Medium Term	$100,000 - $120,000 (All)
	High Visibility Crosswalk (Side Street)	Yes	Install high visibility crosswalks on the stop controlled side streets between West Side Avenue and Kinslow Street.	Short Term	$50,000 - $60,000
	Pedestrian Crossing Signs	Yes	Install pedestrian crossing signs to bring attention to the uncontrolled pedestrian crossing proposed on Salem Avenue.	Medium Term	$4000 - $5,000
	ADA Ramps	No	ADA ramps are required for marked and unmarked crosswalks. There are currently no ADA ramps provided for any of the unmarked crosswalks across Salem Avenue at the stop controlled Tee intersections. They should be included as part of any new marked uncontrolled crosswalk projects.	Medium Term	$30,000 - $40,000
	Prohibit Curbside Parking Within Intersection	No	To provide clear line of sight for pedestrians using crosswalks across Salem Avenue parking should be prohibited within intersections and within 20 ft of any crosswalk.	Short Term	$4000 - $5,000
North Burhans Boulevard near George Street	Road Diet (Reconfiguration)	Yes	Implement a road diet (roadway reconfiguration to provide only one through lane in each direction and develop turn lanes only at signalized intersections). Thereby reduce the potential conflicts for marking an uncontrolled crosswalk at this intersection. This will require modification to the incoming lane striping and signal phasing at the signalized intersections at those streets.	Medium Term	$350,000 - $400,000 (All)
	High Visibility Crosswalk (Uncontrolled Crossing)	Yes	With the road diet, install a high visibility crosswalk at the uncontrolled crosswalk at George Street. to acknowledge and bring attention to the unmarked crosswalk at George Street. The shopping center is a pedestrian trip generator adjacent to a densely populated residential area. Do not install if Burhans remains a multi-lane roadway through this area.	Medium Term	$50,000 - $60,000
	High Visibility Crosswalk (Side Street)	Yes	Install a high visibility crosswalk and set back the stop bar George Street.	Short Term	$5000 - $6,000

Location	Action Item Description	FHWA Proven Safety Countermeasure	Action Item Details	Implementation Horizon	Planning Level Cost
	Pedestrian Crossing Signs	Yes	With the road diet and high visibility crosswalk at the uncontrolled crosswalk at George Street, install pedestrian crossing signs. Do not install if Burhans remains a multi-lane roadway through this area.	Medium Term	$4000 - $5,000
	Median and Pedestrian Refuge Island	Yes	If marking a high visibility uncontrolled crosswalk at George Street does not provide sufficient pedestrian protection - construct a median island wide enough to serve as a pedestrian refuge and create an 'uncontrolled' marked pedestrian crossing at George Street. Make George Street RIRO only.	Medium Term	$30,000 - $40,000
	Update Pedestrian Features (at Signalized Intersections)	No	Update pedestrian features at the signals at Salem Avenue and at Franklin Street to include high visibility crosswalk markings, pedestrian actuation, LPI timing.	Medium Term	$200,000 - $225,000
West Church Street near Market Place	High Visibility Crosswalk (Uncontrolled Crossing)	Yes	There is an existing midblock shared use path on Franklin with a traffic signal which leads to the midblock parking area backing on Church Street and seems to terminate there. There is an additional municipal parking area across Church Street in this same mid-block area, as well as an adjacent liquor store as pedestrian generators. Install a high visibility midblock crosswalk on Church Street between the two municipal parking areas to acknowledge this alignment with the existing path and provide additional signing through parking lot to shared use midblock path leading to Franklin Street between buildings.	Medium Term	$5000 - $6,000
	ADA Ramps	No	ADA Ramps.	Medium Term	$30,000 - $40,000
	Pedestrian Crossing Signs	Yes	Pedestrian Crossing Signs.	Medium Term	$4000 - $5,000

Signal Focus

Task	Action Item Description	FHWA Proven Safety Countermeasure	Action Item Details	Implementation Horizon	Planning Level Cost
Analyze All Signals in Network	Conduct 24 hour Turning Movement Counts	No	Obtain current traffic operational details for conducting traffic signal warrant analysis and updated signal timing, phasing, coordination, cycle lengths and Time of Day operation.	Short Term	$75,000 - $100,000
	Conduct Traffic Signal Warrant Analysis	No	Remove unwarranted signals and replace with all -way stop for most intersections in downtown area. Sight distance constraints require all way stop for safe operation. Side-street stop if no sight distance constraints and volumes don't warrant all-way. All stop-controlled intersections should have increases size stop signs, stop bars, and high visibility crosswalks installed with Stop Retrofit.	Medium Term	$175,000 - $200,000 (analysis)
Update All Warranted Signals	Pedestrian Heads and Audible Pedestrian Signals (APS)	No	Add countdown pedestrian heads and APS pedestrian detection/pushbuttons at all signalized intersections.	Medium Term	$100,000 -$125,000 per intersection
	High Visibility Crosswalks	Yes	Install continental /high visibility crosswalks at all crosswalks on all legs of each signalized intersection.	Short Term	$10,000 - $15,000 per intersection
	Vehicular Detection	No	Install vehicular detection for all approaches and movements at all traffic signals. Update controllers as needed to accommodate. This will allow for reduced delays of vehicles during off peak and for FYR left turn phasing where applicable, as well as pedestrian actuation overrides, and off-peak free operation of some corridors/or intersections.	Medium Term	$50,000 - $60,000 per intersection
	Flashing Red Arrow/Variable Mode (For Left Turn Lanes	Yes/Partial	Install FRA for all approaches with dedicated left turn lanes. Update traffic signal timing and phasing accordingly. Can provide protected left turns and protected /permissive left turns based on time-of-day operation (which allows for differing types of operation based on expected congestion levels). Also allows for omission of permissive on ped call.	Medium Term	$60,000 - $100,000 per intersection
	Retroreflective Backplates	Yes	Install backplates with retroreflective borders on all vehicular traffic signal heads.	Short Term	$8,000 -$10,000 per intersection
	Green Bike Lane Crossing Pavement Markings	Yes/Partial	Add green bike lane crossing pavement markings across all intersections where designated bike lanes pass through intersections to provide additional awareness to both cyclists and motorists.	Short Term	$3,000 - $6,000 per intersection

Task	Action Item Description	FHWA Proven Safety Countermeasure	Action Item Details	Implementation Horizon	Planning Level Cost
	Update Phasing and Timing /Update Traffic Signal Coordination	Yes/Partial	Revise traffic signal phasing and timing to provide coordination to correspond with speed limit, progression speed and queue clearance based on time-of-day traffic volumes and turning movements. Also update all pedestrian, yellow change and all red clearance intervals. Also prohibit Turn on Red for all sight distance constrained movements (where buildings are at back of sidewalk on corners), including one-way to one-way left on reds. Evaluate free operation during non-peak hours.	Medium Term	$15,000 - $20,000 per intersection
Replace All Warranted Signals	Include all of the Action Items listed in the Update All Signals List Above	See above	See above - If full replacements include OH Street Name signs, OH Turn Prohibition signs and OH One-way signs with all new installations (as applicable). Also include walkway/sidewalk upgrades and proper pole and cabinet placement to ensure ADA compliant PAR widths and ADA ramps.	Long Term	$400,000 - $550,000 per intersection

Speeding Focus Corridors

Location	Action Item Description	FHWA Proven Safety Countermeasure	Action Item Details	Implementation Horizon	Planning Level Cost
All Focus Corridors	Add Speed Limit Signs	No	Increase the frequency of posted speed limit signs to ensure motorists have awareness of what the speed limit is and that there is seriousness about communicating and enforcing the speed limit.	Short Term	$70,000 - $80,000
	Enforcement	Yes	Speed limit enforcement has been proven to reduce travel speed and crashes. Consistent enforcement on specific corridors creates a community awareness and seriousness regarding obeying speed limits on those corridors.	Short Term	Staff Time & Resources
	Portable Speed Activated Speed Limit Reminder Sign	Yes	Implementing these devices has been shown to reduce 85th percentile speed by 5mph on major roads.	Short Term	$70,000 - $80,000
Garland Groh Boulevard	Road Diet	Yes	Implement a road diet to reconfigure this shopping center access roadway. Eliminate left turn lanes and center painted buffer. Provide reduced width through lanes and bicycle lanes or construct center medians/islands similar to Bartow Drive.	Medium Term	$150,000 - $200,000
	Traffic Calming - Lane Narrowing	Yes	Use pavement marking edge lines within the curbed sections to narrow the travel lanes to 10 or 11 ft.	Short Term	$20,000 - $30,000
	Roundabout	Yes	Install a roundabout at Garland Groh Boulevard and Bartow Drive intersection as a traffic calming feature in lieu of the existing traffic signal.	Long Term	$3,500,000 - $4,000,000
Salem Avenue	Speed Enforcement Cameras	Yes	Install permanent Speed Enforcement Cameras at the limits of the school zone(2 locations) allowed for Salem Avenue Elementary School. This will serve as a permanent speed enforcement zone between the hours of 6:00 am and 8:00 pm per state law and Hagerstown Ordinance.	Short Term	$30,000 - $35,000
	Traffic Calming - Lane Narrowing	Yes	Delineate the parking lane and/or use pavement marking edge lines within the curbed sections to create travel lanes of 10-11 ft in width for the entire length of the corridor between West Side Avenue and Delaware Lane.	Short Term	$10,000 - $20,000
	Roundabout	Yes	Install a roundabout at the five-leg intersection with N Burhans Boulevard and Church Street.	Long Term	$4,500,000 - $5,000,000

Location	Action Item Description	FHWA Proven Safety Countermeasure	Action Item Details	Implementation Horizon	Planning Level Cost
North Burhans Boulevard	Traffic Calming - Lane Narrowing	Yes	Delineate the parking lane or use pavement marking edge lines within the curbed sections to create travel lanes of 11 ft in width between Mechanic Street and Pennsylvania Avenue. Concurrently implement a painted center buffer for this purpose from the railroad bridge to Park Lane.	Short Term	$55,000 - $65,000
	Road Diet	Yes	Reduce the multilane sections of North Burhans Boulevard to a single through lane (with additional turn lanes at intersections) to serve as a traffic calming measure, reduce speeds, increase pedestrian safety and reduce angle crashes at intersections. Reported traffic volumes support this as a possibility.	Medium Term	$275,000 - $300,000
Northern Avenue	Road Diet	Yes	Implement a classic road diet of reducing the existing 4 lanes to two thru lanes, a center-turn lane and bike lanes. Reported traffic volumes support this as a possibility.	Medium Term	$375,000 - $400,000
Oak Hill Avenue	Traffic Calming - Lane Narrowing	Yes	Paint buffered centerline and edge lines to create narrowed travel lanes.	Short Term	$100,000 - $125,000
	Road Diet	Yes	Utilize pavement markings to provide parking lanes, buffered bicycle lanes and narrowed travel lanes in each direction or implement more construction intensive streetscape improvements such as decorative median or curb bumpouts and buffered bike lanes.	Medium Term	$200,000 - $300,000
Potomac Street	Traffic Calming - Lane Narrowing	Yes	Delineate the parking lane and/or use pavement marking edge lines within the curbed sections to create travel lanes of 10-11 ft in width between Charles Street and Broadway.	Short Term	$3,000 - $5,000
Washington Street	Speed Enforcement Cameras	Yes	Three schools are listed on Google as being located near Washington St. If these schools are still in operation, install permanent Speed Enforcement Cameras at the limits of the school zones allowed for: St Mary's Catholic School, Hagerstown Children's School, and Truth Christian Academy. These will serve as a permanent speed enforcement zone between the hours of 6:00 am and 8:00 pm per state law and Hagerstown Ordinance.	Short Term	$30,000 - $125,000
South Burhans Boulevard	Traffic Calming - Lane Narrowing	Yes	Paint buffered centerline and edge lines to create narrowed travel lanes	Medium Term	$100,000 - $125,000

Location	Action Item Description	FHWA Proven Safety Countermeasure	Action Item Details	Implementation Horizon	Planning Level Cost
	Traffic Calming - Median and Speed Cushion	Yes	Implement traffic calming via median and speed cushion near Chase Street and south of the railroad bridge.	Medium Term	$150,000 - $175,000
Franklin Street	Speed Enforcement Cameras	Yes	Two schools are listed on Google as being located near Franklin St. If these schools are still in operation, install permanent Speed Enforcement Cameras at the limits of the school zones allowed for: St Mary's Catholic School and Hagerstown Children's School. These will serve as a permanent speed enforcement zone between the hours of 6:00 am and 8:00 pm per state law and Hagerstown Ordinance.	Short Term	$30,000 - $60,000
Frederick Street	Speed Enforcement Cameras	Yes	Install permanent Speed Enforcement Cameras at the limits of the school zone allowed for Bester Elementary School. This will serve as a permanent speed enforcement zone between the hours of 6:00 am and 8:00 pm per state law and Hagerstown Ordinance.	Short Term	$30,000 - $35,000
	Traffic Calming - Median and Speed Cushion	Yes	Implement traffic calming via median and speed cushion north of Hager Street.	Medium Term	$150,000 - $175,000
	Roundabout	Yes	Install a roundabout at Frederick Street and Eastern Boulevard intersection as a traffic calming feature in lieu of the existing traffic signal.	Long Term	$3,500,000 - $4,000,000
Wesel Boulevard	Roundabout	Yes	Install a roundabout at Wesel Boulevard and Sister City Drive intersection as a traffic calming feature in lieu of the existing traffic signal.	Long Term	$3,500,000 - $4,000,000
	Road Diet	Yes	Reduce the multilane sections of Wesel Boulevard to a single through lane (with additional turn lanes at intersections) to serve as a traffic calming measure, reduce speeds, increase pedestrian safety and reduce angle crashes at intersections. Reported traffic volumes support this as a possibility.	Medium Term	$300,000 - $350,000
	Traffic Calming - Lane Narrowing	Yes	Restripe the pavement markings with narrower 11 ft lanes to serve as a traffic calming measure.	Medium Term	$300,000 - $350,000

Antietam Street Focus Corridor

Location	Action Item Description	FHWA Proven Safety Countermeasure	Action Item Details	Implementation Horizon	Planning Level Cost
Length of Corridor	EB One-Way Conversion	No	Convert all or part (Washington Street to Potomac Avenue) of the corridor to one-way eastbound. The roadway is significantly constrained under the Prospect Road underpass (with what appears to be less than 9' lane widths for opposing traffic), signal head sight distance constraints as a result of RR overpass for WB approach to Burhans intersection, insufficient walkway/sidewalk widths at various locations. Crash history indicates there are twice as many head-on crashes as would normally be expected and signalized intersections on crossing arterials (carrying much more traffic) could increase capacity and decrease delay and conflict points.	Medium Term	$200,000 - $250,000
	Road Diet (Roadway Reconfiguration)	Yes	With conversion to one-way, a road diet (roadway reconfiguration) provides sufficient room to implement a roadway reconfiguration with enhanced, ADA compliant sidewalk widths and continuity and bike lanes.	Medium Term	$1,250,000 - $1,500,000
	High Visibility Crosswalks	Yes	Install high visibility crosswalks across all side street stop-controlled crossings and at existing signalized intersection crosswalks.	Short Term	$125,000 - $150,000
All Existing Signalized Intersections	Retroreflective Backplates	Yes	Install retroreflective backplates on all signal heads.	Short Term	$40,000 - $50,000
	High Visibility Crosswalks	Yes	Install high visibility crosswalks at all existing crosswalk locations.	Short Term	$120,000 - $130,000
	Countdown Pedestrian Signals and APS Actuation	No	Upgrade all existing traffic signal locations to include full suite of pedestrian features: countdown pedestrian traffic signal heads, APS pushbutton detection, ADA ramps and updated pedestrian timings.	Medium Term	$1,800,000 - $2,000,000
	Walkway Enhancements	Yes	Update all corners with pedestrian crossings or existing sidewalk to ADA standards, with compliant ADA ramps, PAR widths, and pedestrian pushbutton accessibility.	Medium Term	$4,000,000 - $4,500,000
	Traffic Signal Coordination Retiming	No	Obtain current 24-hour turning movement counts and update traffic signal cycle lengths and time of day coordination. Consider running some TOD cycles free. Update timings and coordination accordingly if EB one-way conversion implemented.	Medium Term	$100,000 -$150,000

Location	Action Item Description	FHWA Proven Safety Countermeasure	Action Item Details	Implementation Horizon	Planning Level Cost
	Update Y and AR Clearance Intervals	Yes	Signal related crashes constitute 73% of the crashes on the corridor. Evaluate and update all Y and AR times to ensure safest operation.	Medium Term	$40,000 - $50,000
	Vehicular Detection	No	Install vehicle detection and implement vehicle actuated phasing and timing schemes for off peak operation and more efficient peak operation. Add left turn phasing where warranted. This should address angle crashes, TOD crashes and improve pedestrian safety.	Medium Term	$400,000 - $500,000
	Update Traffic Signal	No	Utilize 24 hour turning movement counts to analyze phasing and timing of all signals on corridor. Update/replace all signal equipment to provide all of the above signal related countermeasures.	Medium Term	$5,000,000 - $5,500,000
Washington Street Intersection	Update Pavement Markings	No	Add a yield line for Washington Street EB yield. Remove marked parking spaces within intersection.	Short Term	$5,000 - $6,000
	Eliminate Parking Within Intersection	No	Eliminate the and prohibit parking currently marked within the intersection. Per MUTCD and standard practice, parking should be prohibited within intersections. Motorists/vehicles parked within the intersection cannot determine which signal phase to respond to when initiating movement, and also parking should be prohibited within 20-50 ft crosswalks.	Short Term	$1,000 - $2,000
	Roundabout	Yes	Install a roundabout to include Washington Street, Washington Avenue and Antietam Street legs of this intersection.	Long Term	$3,500,000 - $4,000,000
Antietam Street between Washington Street and Burhans Boulevard	Road Diet (Roadway Reconfiguration)	Yes	Existing curb to curb is appx 20 ft wide. Implement One-way roadway reconfiguration to include one vehicular travel lane and painted buffered bicycle lane. Increase sidewalk width.	Medium Term	$150,000- $200,000
	Walkway Enhancements	Yes	Utility poles and existing residence stoops create many sidewalk constrictions within this block. Widen sidewalks toward properties where possible, relocate utility poles where possible, and reconstruct curbline in conjunction with road diet to enhance walkway to continuously meet current PAR standards.	Medium Term	$350,000 - $450,000
Burhans Blvd Intersection	Update Signal Phasing	No	Update traffic signal phasing and retime signal for updated /recommended lane configuration revisions, pedestrian features, and vehicle detection	Medium Term	$10,000 - $15,000

Location	Action Item Description	FHWA Proven Safety Countermeasure	Action Item Details	Implementation Horizon	Planning Level Cost
	Auxiliary/ Supplemental Signal Heads	No	Add auxiliary pole mounted signal heads for WB Antietam approach for signal head visibility under RR overpass.	Medium Term	$5,000 - $6,000
	Flashing Red Arrow Left Turn/Time of Day	No	Replace non-MUTCD compliant 4-section protected permissive signal heads with either FRA and standard 3-Section heads, or 5-section protected permissive heads as applicable to lane configuration. Operate FRA heads as protected or protected/permissive based on congestion (traffic volume) by time of day.	Medium Term	$100,000 - $150,000
	Revise Lane Configuration	No	Revise lane designations to provide left turn lane on Antietam WB and combined thru-right. Similarly, revise approach striping of Burhans approaches to single through lane and dedicated left turn lanes with protected permissive FRA/TOD left turn heads.	Medium Term	$120,000 - $160,000
Antietam Street between Burhans Boulevard and Walnut Street	Road Diet (Roadway Reconfiguration)	Yes	Implement a road diet to reconfigure roadway to narrow travel lanes and install bike lanes and widen sidewalks.	Medium Term	$150,000 - $200,000
	Walkway Enhancements	Yes	Widen sidewalks toward properties where possible and relocate utility poles out of existing sidewalks to provide ADA compliant walkway areas and move away from back of curb. Utility poles obstruct sidewalk. Narrow sidewalk on northeast side of roadway under RR overpass.	Medium Term	$500,000 - $600,000
	Update Pavement Markings	No	Revise mid segment pavement markings for approaches to signals at Burhans and Walnut to more clearly indicate through lanes v. turn lanes.	Medium Term	$10,000 - $15,000
Walnut Street Intersection (7 head-on crashes occurred at this intersection)	Update Signal Phasing (Left Turns)	No	Update traffic signal phasing and retime signal for protected permissive left turn phasing for left turn lanes on Walnut and Antietam. Add vehicle detection to enable this phasing to be traffic responsive and reduce delay.	Medium Term	$75,000 - $100,000
	Auxiliary/ Supplemental Signal Heads	No	Provide auxiliary signal heads for correct advance visibility from EB Antietam approach.	Medium Term	$15,000 - $25,000
	Flashing Red Arrow Left Turn/Time of Day	No	Add FRA protected permissive left turn phasing and heads for Antietam Street WB Left turn lane (if opposing visibility is adequate, otherwise protected left turns only). Also provide for left turn phasing/TOD for Walnut Street left turn lanes.	Medium Term	$100,000 - $125,000

Location	Action Item Description	FHWA Proven Safety Countermeasure	Action Item Details	Implementation Horizon	Planning Level Cost
	Eliminate Channelized Right Turn	No	For pedestrian safety, eliminate channelized right turn lane on Walnut Street. Reconstruct corner curb line to provide standard at-intersection right turn movement. (Will require signal pole relocations and pedestrian, Y and AR timing adjustments.	Medium Term	$450,000 - $500,000
	Walkway Enhancements	Yes	Signal pole was placed in ADA walkway in channelizing island. Reconfigure walkway or relocate signal equipment/poles. Large utility poles near intersection constrict PAR, widen sidewalk in these areas or relocate utility poles.	Medium Term	$150,000 - $200,000
	Road Diet (Roadway Reconfiguration)	Yes	In conjunction with a one-way conversion, -roadway reconfiguration to one travel lane, bike lane and a continuous sidewalk under Prospect Street overpass.	Medium Term	$150,000 - $200,000
	EB One-Way Conversion	No	Narrow, substandard overpass necessitates one lane operation in this vicinity. A one-way conversion addresses this issue.	Medium Term	$50,000 - $60,000
Antietam Street between Walnut Street and Summit Avenue	Install Delineation	No	Utility poles in pavement/ in travel lane under Prospect Road overpass. Bedrock in pavement, sidewalk constrained by stoop on west side of overpass. Install delineation on overpass walls/bedrock outcroppings and utility poles. Install object marker at lower height on barrier leading into overpass.	Short Term	$2,000 - $3,000
	Update Pavement Markings	No	Provide ramp-type gore/edge line striping at EB Antietam Street Ramp.	Short Term	$2,000 - $3,000
	Add Bicycle Lane Features	Yes	Install additional bicycle sharrows in lanes approaching overpass.	Short Term	$5,000 - $6,000
	Update Signing	No	Provide narrow lane/ narrow underpass advance warning signs in advance of Prospect Street overpass.	Short Term	$4,000 - $5,000
Summit Avenue Intersection	Prohibit Right On Red	No	With buildings and a stone wall at the back of sidewalk on the intersection corners, vehicles must advance well into/past the crosswalks for visibility. Prohibit Right on Red on the Antietam Street approaches.	Short Term	$2,000 - $3,000
	Add No Turn Signage	No	Install overhead NO RIGHT TURN and NO LEFT TURN signs on the Antietam Street approaches to reinforce the one-way cross street and discourage wrong way turns.	Short Term	$3,000 - $4,000

Location	Action Item Description	FHWA Proven Safety Countermeasure	Action Item Details	Implementation Horizon	Planning Level Cost
	Add Bicycle Lane Features	Yes	Bicycle markings should be placed in bicycle lanes at the beginning and end of blocks and at frequent intervals along the lane. In this case, to provide clarity to turning vehicles, add a bicycle lane pavement marking at the beginning of the lane on Summit north of Antietam. Add Green Bicycle lane crossing markings through the intersection.	Short Term	$4,000 - $5,000
Antietam Street between Summit Avenue and Potomac Street	Relocate Utility Poles	No	Utility poles between Rochester Place and Potomac Street placed immediately behind curb line, with additional equipment that may further constrict roadway. Relocate these poles or bury utilities underground in this area.	Long Term	$150,000 - $200,000
Potomac Street Intersection	Add No Turn Signage	No	Install overhead NO RIGHT TURN and NO LEFT TURN signs on the Antietam Street approaches to reinforce the one-way cross street and discourage wrong way turns.	Short Term	$4,000 - $5,000
	EB One-Way Conversion	No	If there is resistance to a complete conversion and considering a partial conversion to EB one-way of Antietam Street, this intersection would present as a context/conversion limit, based on roadway width and adjacent land uses/trip destinations. Could convert to EB one-way between Washington Street and Potomac and leave as two way between Potomac and Cleveland.	Medium Term	$200,000 - $250,000
	Update Signing	No	Relocate the pedestrian crossing signs closer to the crosswalks on Antietam Street.	Short Term	$2,000 - $3,000
	Update Pavement Markings	No	Relocate the Potomac stop bar to be 4 ft or greater from the crosswalk (per MUTCD).	Short Term	$1,000 - $2,000
Antietam Street between Potomac Street and Locust Street	Update Signing	No	Relocate pedestrian ahead warning sign near Cramer Alley. Current location makes it unclear where to expect pedestrians.	Short Term	$1,000 - $2,000
	Update Pavement Markings	No	Revise double yellow centerline to provide minimum 10 ft lane widths. Add double yellow centerline pavement marking between Cramer Alley and Locust Street.	Short Term	$8,000 - $10,000
Locust Street Intersection	Flashing Red Arrow Left Turn/Time of Day	No	Remove non-complaint 4 section traffic signal head and add FRA protected permissive left turn phasing and 3-section heads for Antietam Street EB left turn lane. With vehicle detection, this signal head could run variable mode/ protected only by time of day.	Medium Term	$30,000 - $40,000
	Update Traffic Signal	No	Relocate Locust Street signal heads for improved visibility.	Short Term	$15,000 - $20,000

Location	Action Item Description	FHWA Proven Safety Countermeasure	Action Item Details	Implementation Horizon	Planning Level Cost
	Prohibit Right On Red	No	With buildings at the back of sidewalk on the intersection corners, vehicles must advance well into/past the crosswalks for visibility. Prohibit Right on Red on all approaches.	Short Term	$2,000 - $3,000
Antietam Street between Locust Street and Mulberry Street	Update Pavement Markings	No	Add double yellow centerline pavement markings.	Short Term	$2,000 - $3,000
Mulberry Street Intersection	Update Traffic Signal	No	Replace non-compliant 4-section signal head with a 5-section protected permissive section signal head. Signal poles on west corner may constrict PAR to less than 4 ft. If so, update/ relocate signal pole installations.	Medium Term	$8,000 - $10,000
Canon Avenue/Mill Street Intersection	Update Traffic Signal	No	Relocate/add mast arm to provide 40 ft between stop bar and both signal indications for WB Antietam Street to meet MUTCD recommendations.	Medium Term	$70,000 - $80,000
	Prohibit Right On Red	No	There are sight distance constraints on all four intersection corners (buildings, wall, hill) vehicles must advance well into/past the crosswalks for visibility. Prohibit Right on Red on all approaches.	Short Term	$5,000 - $6,000
	Update Pavement Markings	No	Provide skip lines for positive guidance through this offset/skew intersection for Antietam Street through movements.	Short Term	$1,000 - $2,000
Antietam Street between Mill Street and Cleveland Avenue	Add Bicycle Lane Features	Yes	Consider narrowing travel lanes and painting buffered bike lanes. Add bike lane signing and greater frequency of bike lane pavement markings.	Short Term	$75,000 - $85,000
Cleveland Avenue Intersection	Update Pavement Markings	No	Revise pavement markings for EB approach to clearly delineate end to bike lane and development of left turn lane. Provide positive guidance to taper into thru- right lane.	Short Term	$4,000 - $5,000

Locust Street & Mulberry Street Focus Corridors

	Location	Action Item Description	FHWA Proven Safety Countermeasure	Action Item Details	Implementation Horizon	Planning Level Cost
Locust Street from Potomac Street to McComas Street & Mulberry Street from Ray Street to Irvin Avenue	Length of Corridor	Narrow Through Lanes to 10 Ft	Yes	Narrow through lanes to 10Ft min. to reduce travel speed and relinquish width to provide a painted buffer for the adjacent bike lane.	Short Term	$25,000 - $30,000
		Buffered Bike Lane	Yes	Provide a 2 Ft painted buffered bike lane. May add flexible delineator posts in buffered area to more clearly separate bike lanes from travel lanes.	Short term	$100,000 - $150,000
		Add Bicycle Lane Features	Yes	Add additional bike lane pavement markings in bike lanes. Place at beginning and end of each block and add additional markings mid-block for longer blocks. Stripe all intersections and alley crossings with green bike path crossing markings (as shown in MUTCD Fig 9E-2).	Short Term	$200,000 - $250,000
		Walkway Enhancements	Yes	Update all corners with pedestrian crossings or existing sidewalk to ADA standards, with compliant ADA ramps, PAR widths, and pedestrian pushbutton accessibility.	Medium Term	$3,000,000 - $4,000,000
		Utility Pole Relocation (For Sidewalk Width)	No	Utility poles and sign poles combined with close buildings and stoops appear to constrict ADA compliant sidewalk width in many locations. Revise pole locations wherever possible to optimize width potential.	Long Term	$500,000 - $600,000
		Sign Pole Relocation (For Sidewalk Width)	No	Utility poles and sign poles combined with close buildings and stoops appear to constrict ADA compliant sidewalk width in many locations. Revise pole locations wherever possible to optimize width potential.	Short Term	$8,000 - $10,000
		Underground Utilities	No	Investigate putting utilities underground to eliminate sidewalk constrictions and roadside hazards.	Long Term	$6,000,000 - $7,000,000
	All Existing Signalized Intersections	Conduct a Traffic Signal Warrant Analysis	No	Conduct a traffic signal warrant analysis for all signals on both corridors (with the exception of Washington Street and Franklin Street Intersections). Many public comments about motorists being impatient for signal delay. Crash history supports this concept. Traffic volumes on MD AADT map indicate many signals may not be warranted.	Medium Term	$85,000 - $100,000
		Convert Unwarranted Signals to All-Way Stops or Side Street Stops	No	Convert unwarranted signals to all-way stops for most locations based on sight distance constraints//warrants. Crash expectation at all-way stops is much less than at a number of these signals.	Medium Term	$300,000 -$400,000

Location	Action Item Description	FHWA Proven Safety Countermeasure	Action Item Details	Implementation Horizon	Planning Level Cost
	Update Traffic Signal	No	Install vehicle detection and implement vehicle actuated phasing and timing schemes for off peak operation and more efficient peak operation.	Medium Term	$500,000 - $600,000
	Retroreflective Backplates	Yes	Install retroreflective backplates on all signal heads.	Short Term	$60,000 - $70,000
	Add APS/Pedestrian Actuation	No	Install APS pedestrian pushbuttons/detection at all signalized intersections.	Medium Term	$1,500,000 - $2,000,000
	High Visibility Crosswalks	Yes	Install high visibility crosswalks at all existing crosswalk locations.	Short Term	$200,000 - $250,000
	Add NO TURN ON RED Signage	No	With buildings at the back of sidewalk on the intersection corners, vehicles must advance well into/past the crosswalks for visibility. Prohibit Right on Red on all approaches (or Left on red if one-way to one-way left).	Short Term	$50,000 - $60,000
	Add Pedestrian Features	No	Upgrade all existing traffic signal locations to include full suite of pedestrian features: countdown pedestrian traffic signal heads, APS pushbutton detection, ADA ramps and updated pedestrian timings.	Medium Term	$1,700,000 - $2,000,000
	Walkway Enhancements	Yes	Update all corners with pedestrian crossings or existing sidewalk to ADA standards, with compliant ADA ramps, PAR widths, and pedestrian pushbutton accessibility.	Medium Term	$500,000 - $600,000
	Update Clearance Interval Timing (Peds, Y and AR)	Yes	Evaluate and update all Ped, Y and AR times to ensure safest operation.	Medium Term	$100,000 - $200,000
	Traffic Signal Coordination Retiming	No	Obtain current 24- hour turning movement counts and update traffic signal cycle lengths and time of day coordination. Consider running some TOD cycles free. Update timings and coordination accordingly.	Medium Term	$200,000 - $300,000
	Add Bicycle Lane Features	Yes	Add additional bike lane pavement markings in bike lanes at signalized intersections. Place at beginning and end of each block. Stripe intersection crossings with green bike path crossing markings.	Short Term	$75,000 - $85,000

Location	Action Item Description	FHWA Proven Safety Countermeasure	Action Item Details	Implementation Horizon	Planning Level Cost
	Update Signing	No	Install overhead ONE-WAY and NO LEFT TURN or NO RIGHT TURN signs at all intersections as applicable.	Short Term	$60,000 – $70,000
Potomac Street and Locust Street Intersection	Update Signing	No	Develop and install additional traffic control signing for splitter island turn access from Potomac SB to Locust Street NB.	Medium Term	$5,000 - $6,000
	Update Pavement Markings	No	Develop and install additional traffic control pavement marking for splitter island turn access from Potomac SB to Locust Street NB.	Medium Term	$5,000 - $6,000
Washington Street and Locust Street Intersection	Eliminate Left Turn Lane	No	Eliminate substandard width left turn lane on Washington Street. Prohibit left turn on red for Washington Street.	Short Term	$3,000 - $4,000
Center Alley	Update Signing	No	Provide traffic control signing for Center Alley (STOP signs, ONE-WAY signs).	Short Term	$2,000 - $3,000
Locust Street from Potomac Street to McComas Street	Update Pavement Markings	No	Install green bike lane crossing markings in front of alley.	Short Term	$3,000 - $4,000
Alley between North Avenue and Broadway	Update Signing	No	Provide traffic control signing for alley (STOP signs, ONE-WAY signs).	Short Term	$2,000 - $3,000
	Update Pavement Markings	No	Install green bike lane crossing markings in front of alley.	Short Term	$3,000 - $4,000
Locust Street between Wayside Avenue and Fairground Avenue	Update Lane Drop Pavement Markings and Signing	No	Revise auxiliary lane drop pavement markings to match new MUTCD Figure 3B-12.	Short Term	$10,000 - $15,000
	Road Diet (Reconfiguration)	Yes	Reconfigure roadway to eliminate left turn lane and widen parking lanes and implement a painted bike lane buffer to thereby reduce travel lane width and discourage dual lane use. Traffic volumes don't support the need for dual lanes, and dual lane free flow through this block increases conflict areas and is more un-safe for pedestrian crossings.	Medium Term	$15,000 -$20,000

Location	Action Item Description	FHWA Proven Safety Countermeasure	Action Item Details	Implementation Horizon	Planning Level Cost
McComas Street and Locust Street Intersection	Update Signing	No	Update signing to include ONE-WAY signs on Locust Street stop signpost. Update McComas signing to make it clear to unfamiliar motorists that incoming McComas is two-way, but outgoing is one-way.	Short Term	$3,000 -$4,000
Lee Street and Mulberry Street Intersection	Extend One-Way SB on Mulberry	No	Existing travel way between parking is only 17 ft - 18 ft wide. This is insufficient for opposing traffic. There have been 3 head-on crashes in this area. Continue Mulberry One-way through this section so there is only one travel lane.	Medium Term	$5,000 - $6,000
Frederick Street, Baltimore Street and Mulberry Street Intersection	Update Pavement Markings	No	Revise the end of bike lane transition to through lane pavement markings to direct through motorists into the through lane, and to hi-lite the bike conflict (use green as shown in MUTCD Chapter 9.). Also install a double yellow centerline on Mulberry opposing, so it is clear to motorists that Mulberry has become a tow way street and that is the through movement leg.	Short Term	$15,000 - $20,000
	Roundabout	Yes	Install a roundabout at this five-point intersection.	Long Term	$3,500,000 -$4,500,000
Mulberry Street from Ray Street to Irvin Avenue	Franklin St and Mulberry St Intersection	Eliminate Left Turn Lane	No	Eliminate substandard width left turn lane on Franklin Street. Prohibit left turn on red for Franklin Street.	Short Term	$3,000 - $4,000
		Relocate Mast Arm for Mulberry Approach	No	The mast arm is significantly beyond the intersection (33 ft) and may lead to depth of field issues for approaching motorists. Consider placing signal pole closer to intersection.	Medium Term	$60,000 - $70,000
	Center Alley	Update Signing	No	Provide traffic control signing for Center Alley (STOP signs, ONE-WAY signs).	Short Term	$2,000 - $3,000
		Add Bicycle Lane Features	Yes	Install green bike lane crossing markings in front of alley.	Short Term	$3,000 - $4,000
	Stop Controlled Tee Intersections between East Avenue and North Avenue /Cannon Avenue	Update Signing	No	Install pedestrian crossing warning signs at uncontrolled crosswalks crossing Mulberry Street at these intersections.	Short Term	$10,000 - $20,000
		Update Pavement Markings	No	Install set back stop bars behind new high visibility side street crosswalks.	Short Term	$2,000 - $3,000

Location	Action Item Description	FHWA Proven Safety Countermeasure	Action Item Details	Implementation Horizon	Planning Level Cost
	High Visibility Crosswalks	Yes	Install high visibility crosswalks across Mulberry at these intersections. Also install high visibility crosswalks for side street crosswalks.	Short Term	$30,000 - $40,000
	Walkway Enhancements	Yes	Add ADA ramps for crossing Mulberry at these Tee intersections, as well as crossing the side street.	Medium Term	$400,000 -$450,000
	Add Bicycle Lane Features	Yes	Install green bike lane crossing pavement markings on side street entrances that cross bike lane.	Short Term	$30,000 - $40,000
All Stop Controlled Intersections between North Avenue/ Cannon Avenue and Manila Avenue	High Visibility Crosswalks	Yes	Install high visibility crosswalks across Mulberry at these intersections. Also install high visibility crosswalks for side street crosswalks.	Short Term	$60,000 -$70,000
	Walkway Enhancements	Yes	Add ADA ramps for crossing Mulberry at these Tee intersections, as well as crossing the side street.	Medium Term	$250,000 - $300,000
	Add Bicycle Lane Features	Yes	Install green bike lane crossing pavement markings on side street entrances that cross bike lane.	Short Term	$7,000 -$8,000
Manila Avenue and Mulberry Street Intersection	Update Pavement Markings	No	Provide Mulberry centerline skip marks through Manila intersection leading through RR tracks for positive guidance in the unmarked stretch. Add high visibility crosswalks for all crossings (and pedestrian crossing warning signs for uncontrolled crosswalks).	Short Term	$20,000 - $25,000

APPENDIX C: Technical Memos

Hagerstown Safety Action Plan – Crash Analysis

Memorandum

TO	Jim Bender, City of Hagerstown
FROM	Tory Gibler, Zahra Khan, and Nicole Waldheim, Fehr & Peers
DATE	June 10, 2024
SUBJECT	Hagerstown Safety Action Plan – Crash Analysis

Introduction

Between 2019 and 2023, 20 fatal crashes occurred in Hagerstown on non-interstate roadways, 6 of which involved a person walking, and 3 of which involved a person riding a motorcycle. A single bicycle fatality occurred during the study timeframe. In addition to the people who died in non-interstate traffic crashes, another 95 serious injury crashes occurred.

To understand where and why crashes that result in fatalities and serious injuries are most likely to occur and how to reduce the severity and frequency of these crashes, Hagerstown is preparing a Safety Action Plan, rooted in the core elements of the Safe System Approach (SSA). The overall purpose of the Action Plan is to identify projects, programs and strategies that will eliminate fatalities and serious injuries on the roads within the City of Hagerstown to apply for the next round of funding through the Safe Streets for All (SS4A) grant program and other safety related grant programs.

This memo summarizes the fatality crash rate and the methodology to analyze the crash data, identify trends in the data, and complete a contextual analysis to understand the characteristics of roads where a disproportionate number of collisions that result in someone being killed or seriously injured (KSI) occur. Together, these collision types are referred to as KSI collisions throughout this memo. The contextual analysis methodology consists of a series of high-level descriptive summary tables to capture relationships between collision data and contextual variables, like posted speed limit. These tables explore overall crash trends and patterns that can be used to guide the selection of other variables warranting deeper analysis, new road behavior programs, policy changes, or the selection of safety countermeasures for project development. The report is organized as follows:

1. Key Findings
2. Methodology and Data Sources
3. Fatal Crash Rate
4. Crash Trends
5. Contextual Factors
6. Behavioral Factors

Key Findings

- Between 2019 and 2023, about 4 crashes per year resulted in a fatality on non-interstate roadways within Hagerstown, and another 19 crashes on average resulted in a serious injury.
- 95% of all crashes and 97% of KSI crashes occurred on local roads.
- Overall, motor vehicle collisions comprise most of the collisions in Hagerstown, but collisions involving people walking, biking, or riding a motorcycle have a disproportionately higher chance of resulting in crash where someone is killed or seriously injured (KSI).
- Single vehicle, straight movement and rear end collisions are the most common, but single vehicle and head-on collisions are the most common when the collision resulted in a KSI.
- There may be crash report data limitations to understanding the most common collision type where bicycle and pedestrians are involved, specifically regarding single vehicle reports and how collision types are categorized.
- Most crashes occurred at intersections, but most KSI crashes occurred along road segments.
- Bicycle KSI crashes occur at signalized intersections at a higher rate compared to other modes. Pedestrian KSI crashes occur along roadway segments at a higher rate compared to other modes.
- Roads with posted speed limit of 30 – 35 MPH (6.7%) have a disproportionate percentage of crashes (17%) and KSI crashes (14.9%) occurring on them, particularly for crashes involving motorcycles (36.8%).
- Most crashes for all modes occur within areas designated as having Moderate-High to High Equity Need in Hagerstown.
- Bicycle and pedestrian crashes occur at a higher rate compared to other modes within Moderate-High to High Equity Need Areas.
- The percentage of crashes increases as the number of lanes increases. Roads with 4 or more lanes only make up 1% of centerline miles in the City, but 4.5% of crashes occur on these roads.
- Most crashes for all modes occur on Municipal Roads, and bicycle and pedestrian crashes are more likely to occur on these facilities.
- The fatal crash rate, including interstate crashes, per 100,000 people for the City of Hagerstown is 10.5, which is less than Washington County's fatal crash rate of 11.2.
- More citations were observed for people Speeding and Failure to Stop at Traffic Control Devices.

Methodology and Data Inputs

Roadway Network

The roadway network that served as the basis for this analysis was obtained from Replica, which is a land use and transportation platform built upon Open Streets Map and usable across GIS mapping platforms. Preparation of the crash trends primarily excluded all interstate facilities in the network (e.g., I-81, I-70). Additionally, the Hagerstown Centerline shapefile was retrieved from the City and used to spatially layout crashes and contextual data in relation to crashes.

Spatial Data

The City of Hagerstown geospatial boundary data was retrieved from Washington County's online GIS portal. Signalized intersection GIS data was obtained from the Hagerstown/Eastern Panhandle

Metropolitan Planning Organization (HEPMPO) and clipped to the Hagerstown boundary for the purpose of this analysis.

Collision Dataset

The analysis was completed based on collision data reflective of 2019 to 2023 for the City of Hagerstown, downloaded from the Maryland State Police online crash data portal in 2024.

All non-interstate collision data was mapped based on the geolocation associated with each crash record, which revealed some crashes with incomplete or incorrect information, such as crashes that did not actually occur in the City. After removing incorrectly geolocated collisions (i.e., those not actually located within Hagerstown), a total of 3,873 collisions, including 20 that resulted in a fatality, 94 that resulted in a serious injury, 1,043 that resulted in some injury, and 2,716 that resulted in no injury are considered in the analysis (**Table 1**).

Table 1: All Crashes by Severity

Crash Severity	Crashes
No Injury	2,716 (70.1%)
Possible Injury	568 (14.7%)
Minor Injury	475 (12.3%)
Serious Injury	94 (2.4%)
Fatality	20 (0.5%)
Grand Total	3,873

Source: 2019 – 2023 Maryland State Police Crash Data.

Equity Need Index

The Equity Need Index was developed by the Maryland Department of Transportation (MDOT) for the 2050 Maryland Statewide Bicycle and Pedestrian Master Plan (BPMP) (2024).

The BPMP's project prioritization framework incorporates several measures intended to address social and economic disparities for the purpose of project prioritization. In accordance with current federal guidance, MDOT developed the equity index that reflects an interest in four primary area characteristics:

1. **Current Disadvantage**: Derived from the United States Department of Transportation (USDOT) disadvantaged areas and communities (DACs), which uses 22 indicators grouped across six categories, including transportation access disadvantage.
2. **Historical Disadvantage**: These are "Areas of Persistent Poverty" as designated by USDOT. An Area of Persistent Poverty has high levels of poverty reported by the Census from 1990 through 2021, has high levels of poverty reported by the ACS for 2014-2018, or is a territory or possession of the United States.
3. **Geographic Isolation**: Low population densities and less local tax revenue make rural areas expensive to provide social services, often resulting in a social services gap. Greater geographically isolated Census tracts receive a higher equity score due to lower population.
4. **Population Density**: Active transportation investments in high-density areas facilitate more trips for people and accordingly, the equity need index emphasizes population density.

MDOT uses these indicators to establish a framework for prioritizing improvements based on their expected impact, and targeting active transportation infrastructure investments to benefit historically

marginalized communities. The resulting Equity Need Index was grouped into five categories. High, High-Moderate, Moderate, Moderate-Low, and Low. For the purposes of this analysis, the High and High-Moderate groups were used to identify areas of equity need.

Population Data

The population of each County within the region was pulled from the American Community Survey 5-year estimates for 2020, as required by USDOT for the fatality rate calculation. The population for Hagerstown and Washington County were downloaded for the purpose of this analysis.

Analysis

The collision and population datasets were used to measure the fatality rate per 100,000 people for Hagerstown and for Washington County following USDOT's calculation formula. The roadway network, collision dataset, equity need index, and additional spatial data layers were used to analyze crash trends, contextual impacts, and behavioral factors. Crash trends reviewed crashes by year, crashes by mode, and crashes by collision type. The contextual factors analysis reviewed crashes by signalized intersection, posted speed limit, high equity need areas, lighting, number of lanes and facility type. Behavioral factors analysis looked at factors such as alcohol and drug impairment, distracted driving, and occupant protection.

Where applicable, a comparative analysis was made between modes (i.e., all modes versus pedestrians and bicyclists) or by injury severity (i.e., all crashes versus KSI crashes only).

Fatal Crash Rate

As part of the Safe Streets for All (SS4A) Planning and Demonstration Grant criteria, the USDOT has added an additional award selection consideration for the 2024 grant application cycle. The award selection consideration is for applicants that have a fatality rate of 17.0 fatalities per 100,000 persons or greater. USDOT is looking to prioritize funding for communities with high fatality rates through planning and demonstration activities. **Table 2** summarizes the fatality crash rate for Washington County and Hagerstown for all crashes and for non-interstate crashes.

Table 2: Fatal Crash Rate Per County and Region

	Fatality Crash Rate Per 100,000 People (All Crashes)	Fatality Crash Rate Per 100,000 People (Non-Interstate Crashes)
Washington County, MD	10.9	8.0
Hagerstown, MD	10.5	10.0

Source: 2019 – 2023 Maryland State Police Crash Data, American Community Survey 2020 5-Year Estimate.

Crash Trends

The following sections summarize non-interstate crash data from 2019 through 2023 to provide trends by year, by mode, severity, and crash type.

Crashes by Year

The number of crashes by year by injury severity on all non-interstate roads in the region are summarized in **Table 3** for reported crashes from 2019 through 2023. The severity level reflects the maximum injury severity of any crash participant and is reflected as:

- No Injury – crashes where no persons were reported to be injured. Also known as property damage only crashes. Maryland State Police crash reports use the label "No Apparent Injury."
- Possible Injury – crashes where there is a possible injury. Maryland State Police crash reports use the label "Possible Injury."
- Minor Injury – crashes where there is a non-incapacitated injury which may or may not require hospitalization. Maryland State Police crash reports use the label "Suspected Minor Injury."
- Serious Injury – crashes where there is an incapacitating injury, such as burns, lacerations, or broken bones that require hospitalization. Maryland State Police crash reports use the label "Suspected Serious Injury."
- Fatality – crash results in a fatality. Maryland State Police crash reports use the label "Fatal Injury."

Table 3: All Crashes by Year

Year	No Injury	Possible Injury	Minor Injury	Serious Injury	Fatality	Total
2019	513 (66.9%)	144 (18.8%)	80 (10.4%)	23 (3%)	7 (0.9%)	767
2020	558 (70.6%)	115 (14.6%)	96 (12.2%)	17 (2.2%)	4 (0.5%)	790
2021	559 (71.6%)	103 (13.2%)	94 (12%)	24 (3.1%)	1 (0.1%)	781
2022	527 (69.9%)	112 (14.9%)	99 (13.1%)	13 (1.7%)	3 (0.4%)	754
2023	559 (71.6%)	94 (12%)	106 (13.6%)	17 (2.2%)	5 (0.6%)	781
Total	2,716 (70.1%)	568 (14.7%)	475 (12.3%)	94 (2.4%)	20 (0.5%)	3,873

Source: Maryland Police Crash Data, Replica, Fehr & Peers.
Notes: Excludes interstate facilities (e.g., I-81, I-70) crashes.

Between 2019 and 2020, the number of crashes in Hagerstown increased and in the following two years, it decreased. This reduction in total crashes, but with a percent increase in fatal or serious injury, in 2021 was likely influenced by the COVID-19 pandemic. The pandemic led to a significant reduction in overall travel for a portion of 2020. This reduction in travel led to an increase in serious crashes as a proportion of overall crashes as people tended to be driving faster, worsening crash outcomes. During this time, there was also an overall decrease in reporting for non-injury crashes related to social distancing.

Crashes by Mode

Table 4 summarizes non-interstate crashes by injury severity and mode. Crashes involving cars and trucks only (also referred to as Vehicle crashes) accounted for almost 93% of all crashes in Hagerstown. Pedestrians were involved in 4% of all crashes, and motorcyclists and bicyclists were involved in the remaining crashes, with each mode involved in about 1.5-2% of the total crashes.

Table 4: All Crashes by Mode

Mode	No Injury	Possible Injury	Minor Injury	Serious Injury	Fatality	Total
Bicycle	19 (0.7%)	15 (2.6%)	23 (4.8%)	3 (3.2%)	1 (5%)	61 (1.6%)
Motorcycle	20 (0.7%)	9 (1.6%)	24 (5.1%)	16 (17%)	3 (15%)	72 (1.9%)
Pedestrian	9 (0.3%)	47 (8.3%)	66 (13.9%)	21 (22.3%)	6 (30%)	149 (3.8%)
Vehicle	2,668 (98.2%)	497 (87.5%)	362 (76.2%)	54 (57.4%)	10 (50%)	3,591 (92.7%)

Total	2,716	568	475	94	20	3,873

Source: Maryland State Police Crash Data, Replica, Fehr & Peers.
Notes: Excludes interstate facilities (e.g., I-81, I-70) crashes.

While motor vehicle crashes accounted for the largest share of both overall crashes and KSI crashes, when vulnerable road users (VRU) were involved in a crash (defined for the purposes of this memorandum as someone outside a vehicle, including a pedestrian, bicyclist or motorcyclist) the risk of death or serious injury increased disproportionately; vulnerable road users were involved in about 7% of overall crashes, but 43% of serious injury crashes and 50% of fatal crashes.

Crashes by Type

Table 5 summarizes non-interstate crashes based on the recorded crash type for all crashes where a crash type is known and includes the crash type's percent of all crashes, and percent of KSI crashes. The most common collision types in Hagerstown are straight movement angle, single vehicle and same direction rear end crashes. The most common collision types that result in a KSI are single vehicle, straight movement angle and head on crashes.

Table 5: All Crashes by Collision Type

Collision Type	No Injury	Possible Injury	Minor Injury	Serious Injury	Fatality	Total	Percent of Total	Percent of KSI Crashes
Angle Meets Left Head On	11	1	1	-	-	13	0.3%	0.0%
Angle Meets Left Turn	10	3	2	-	-	15	0.4%	0.0%
Angle Meets Right Turn	13	3	-	1	-	17	0.4%	0.0%
Head On	66	11	25	6	3	111	2.9%	7.9%
Head On Left Turn	84	25	30	2	1	142	3.7%	2.6%
Opposite Direction Both Left Turn	5	-	1	-	-	6	0.2%	0.0%
Opposite Direction Sideswipe	33	9	7	1	-	50	1.3%	0.0%
Same Direction Both Left Turn	12	1	1	-	-	14	0.4%	0.0%
Same Direction Left Turn	54	13	7	-	-	74	1.9%	0.0%
Same Direction Rear End	546	162	75	7	1	791	20.4%	7.0%
Same Direction Rear End Left Turn	12	3	3	-	-	18	0.5%	0.0%
Same Direction Rear End Right Turn	14	3	1	-	-	18	0.5%	0.0%
Same Direction Right Turn	49	8	3	2	-	62	1.6%	0.0%
Same Direction Sideswipe	216	23	15	1	-	255	6.6%	0.0%
Single Vehicle	573	76	92	30	10	781	20.2%	35.1%

Straight Movement Angle	487	156	133	22	2	800	20.7%	21.1%
Unknown/Other	531	71	79	22	3	706	18.2%	21.9%
Total	2,716	568	475	94	20	3,873	100.0%	100.0%

Source: Maryland State Police Crash Data, Replica, Fehr & Peers.
Notes: Excludes interstate facilities (e.g., I-81, I-70) crashes.

Table 6 summarizes the collision types for bicycle and pedestrian crashes. The most common collision type for bicycle and pedestrian involved crashes are categorized as "Other / Unknown." This demonstrates a limitation of crash reporting and understanding the movements and collision types that impact people walking and biking. The second most common type is "Single Vehicle." When a crash involves a pedestrian or bicyclist, the collision type is typically recorded as "Single Vehicle" as only one motor vehicle is involved in the crash. This is likely an incorrect use of "Single Vehicle" as that collision type is intended for a motor vehicle crash that involved no other parties/modes. While this is considered the second most common collision type for bicycle and pedestrian crashes in Hagerstown, it does not necessarily paint an accurate reflection of the movement of both the motor vehicle and the bicycle/pedestrian prior to the crash. Beyond other/unknown and single vehicle, the most common crash type for bicycle and pedestrian crashes in the region are straight movement angle, and same direction sideswipe.

Table 6: Bicycle and Pedestrian Crashes by Collision Type

Collision Type	No Injury	Possible Injury	Minor Injury	Serious Injury	Fatality	Total	Percent of Total	Percent of KSI Crashes
Head On	-	-	2	-	-	2	1.0%	-
Opposite Direction Both Left Turn	-	-	1	-	-	1	0.5%	-
Opposite Direction Sideswipe	-	1	1	-	-	2	1.0%	-
Straight Movement Angle	9	8	11	3	1	32	15.2%	12.9%
Same Direction Both Left Turn	-	-	1	-	-	1	0.5%	-
Same Direction Left Turn	-	1	1	-	-	2	1.0%	-
Same Direction Rear End	1	-	2	-	-	3	1.4%	-
Same Direction Right Turn	-	1	-	-	-	1	0.5%	-
Same Direction Sideswipe	2	1	2	-	-	5	2.4%	-
Single Vehicle	4	21	32	10	4	71	33.8%	45.2%
Unknown/Other	12	29	36	11	2	90	42.9%	41.9%
Grand Total	28	62	89	24	7	210	100.0%	100.0%

Source: Maryland State Police Crash Data, Replica, Fehr & Peers.
Notes: Excludes interstate facilities (e.g., I-81, I-70) crashes.

Table 7 summarizes motorcycle crash types. Unlike bicycle and pedestrian crashes, motorcycle crashes that are considered "Single Vehicle" indicate that only the motorcycle was involved in the crash, and no

other party was involved. Single vehicle and same direction rear end are the most common motorcycle collision types after other/unknown, and the most common KSI motorcycle collision types.

Table 7: Motorcycle Crashes by Collision Type

	No Injury	Possible Injury	Minor Injury	Serious Injury	Fatality	Total	Percent of Total	Percent of KSI Crashes
Head On Left Turn	-	-	3	-	1	4	5.6%	5.3%
Opposite Direction Sideswipe	1	-	2	1	-	4	5.6%	5.3%
Straight Movement Angle	5	3	4	2	-	14	19.4%	10.5%
Same Direction Left Turn	1	-	1	-	-	2	2.8%	0.0%
Same Direction Rear End	4	3	3	2	1	13	18.1%	15.8%
Same Direction Rear End Right Turn	1	-	-	-	-	1	1.4%	0.0%
Same Direction Right Turn	-	-	1	1	-	2	2.8%	5.3%
Same Direction Sideswipe	1	-	1	-	-	2	2.8%	0.0%
Single Vehicle	-	2	6	6	1	15	20.8%	36.8%
Unknown/Other	7	1	3	4	0	15	20.8%	21.1%
Total	20	9	24	16	3	72	100.0%	100.0%

Source: Maryland State Police Crash Data, Replica, Fehr & Peers.
Notes: Excludes interstate facilities (e.g., I-81, I-70) crashes.

Contextual Factors

The following section summarizes crash outcomes relative to contextual factors such as signalized intersection, posted speed limit, equity need areas, lighting, number of lanes and facility type.

Signalized Intersections

Table 8 summarizes non-interstate crashes that were flagged as an intersection crash within the crash report. Of the intersection crashes, those within 250 feet of a signalized intersection for all modes of travel were categorized as signalized intersection and the remaining were categorized as unsignalized intersection. Crashes that were not flagged as intersection crash crashes within the crash report are categorized as non-intersection. About 31% of all crashes occur at a signalized intersection. All crashes are more likely to occur at intersections (signalized and unsignalized combined), while pedestrian crashes' highest rate is at non-intersections.

Table 8: All Crashes by Mode at Intersections

	Motor Vehicle	Motorcycle	Bicycle	Pedestrian	Total
Signalized Intersection	1,141 (31.8%)	19 (26.4%)	21 (34.4%)	36 (24.2%)	1,217 (31.4%)
Unsignalized Intersection	652 (18.2%)	18 (25%)	15 (24.6%)	21 (14.1%)	706 (18.2%)

Non-Intersection	1,584 (44.1%)	30 (41.7%)	22 (36.1%)	79 (53%)	1,715 (44.3%)
Unknown	214 (6%)	5 (6.9%)	3 (4.9%)	13 (8.7%)	235 (6.1%)
Total	3,591 (92.7%)	72 (1.9%)	61 (1.6%)	149 (3.8%)	3,873 (100%)

Source: Maryland State Police Crash Data, Replica, Fehr & Peers.
Notes: Excludes interstate facilities (e.g., I-81, I-70) crashes.

Table 9 summarizes non-interstate KSI crashes at signalized intersections, unsignalized intersections, and non-intersections for all modes of travel. The majority of KSI crashes did not occur at signalized intersections (31.6%), but bicycle KSI crashes had the highest rate at signalized intersections in comparison to all modes.

Table 9: KSI Crashes by Mode at Intersections

	Motor Vehicle	Motorcycle	Bicycle	Pedestrian	Total
Signalized Intersection	24 (37.5%)	4 (21.1%)	3 (75%)	5 (18.5%)	36 (31.6%)
Unsignalized Intersection	9 (14.1%)	4 (21.1%)	-	1 (3.7%)	14 (12.3%)
Non-Intersection	29 (45.3%)	10 (52.6%)	1 (25%)	18 (66.7%)	58 (50.9%)
Unknown	2 (3.1%)	1 (5.3%)	-	3 (11.1%)	6 (5.3%)
Total	64 (56.1%)	19 (16.7%)	4 (3.5%)	27 (23.7%)	114 (100%)

Source: Maryland State Police Crash Data, Replica, Fehr & Peers.
Notes: Excludes interstate facilities (e.g., I-81, I-70) crashes.

Posted Speed Limit

The number of reported crashes by the speed limit of the road where the crash occurred is summarized in **Table 10**. Roadways with posted speed limits of 25 MPH have the greatest number of crashes. Most of the road segments within the City are likely 25 MPH. When comparing the percentage of roads in Hagerstown at a given posted speed limit to the percentage of crashes on those roads, a disproportion number of crashes are occurring on miles posted at 30 – 35 MPH. Despite only making up 6.7% of roadways in Hagerstown, 17% of all crashes occurred on 30 – 35 MPH roads.

Table 10: All Crashes by Post Speed Limit and Mode

	% of Centerline Miles with Posted Speed Limit	Motor Vehicle	Motorcycle	Bicycle	Pedestrian	Total
≤25 MPH	83.8%	2,245 (62.5%)	38 (52.8%)	36 (59%)	88 (59.1%)	2,407 (60%)
30 - 35 MPH	6.7%	618 (17.2%)	15 (20.8%)	9 (14.8%)	17 (11.4%)	659 (17%)
40 – 45 MPH	4.2%	2 (0.1%)	-	-	-	2 (0.1%)
≥50 MPH	5.3%	2 (0.1%)	-	-	1 (0.7%)	3 (0.1%)
Unknown	0%	724 (20.2%)	19 (26.4%)	16 (26.2%)	43 (28.9%)	802 (20.7%)
Total	100%	3,591 (92.7%)	72 (1.9%)	61 (1.6%)	149 (3.8%)	3,873 (100%)

Source: Maryland State Police Crash Data, Replica, City of Hagerstown, Fehr & Peers.
Notes: Excludes interstate facilities (e.g., I-81, I-70) crashes. Not all crashes included a posted speed limit.

KSI crashes by the posted speed limit of the road where the crash occurred is summarized in **Table 11**. Like all crashes, a disproportionate percentage of KSI crashes occur on roads posted at 30 – 35 MPH, particularly for crashes involving motorcycles.

Table 11: KSI Crashes by Post Speed Limit and Mode

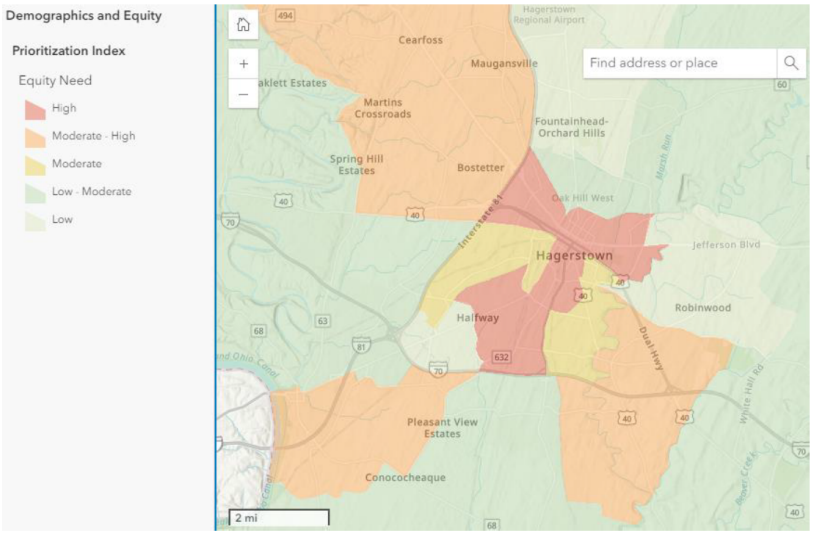
	% of Centerline Miles with Posted Speed Limit	Motor Vehicle	Motorcycle	Bicycle	Pedestrian	Total
>25 MPH	83.8%	46 (76.6%)	9 (47.4%)	1 (25%)	16 (59.3%)	72 (65.8%)
35 MPH	6.7%	7 (10.9%)	7 (36.8%)	1 (25%)	2 (7.4%)	17 (14.9%)
40 MPH	4.2%	-	-	-	-	-
50 MPH	5.3%	-	-	-	-	-
Unknown	0%	8 (12.5%)	3 (15.8%)	2 (50%)	9 (33.3%)	22 (19.3%)
Total	100%	64 (56.1%)	19 (16.7%)	4 (3.5%)	27 (23.7%)	114 (100%)

Source: Maryland State Police Crash Data, Replica, City of Hagerstown, Fehr & Peers.
Notes: Excludes interstate facilities (e.g., I-81, I-70) crashes. Not all crashes included a posted speed limit.

Equity Need Areas

Table 12 summarizes non-interstate crashes that occurred within areas designated as having "high" or "moderate-high" equity needs, based on Equity Need Index values calculated for the 2050 Maryland Statewide Bicycle and Pedestrian Master Plan (**Figure 1**).

Figure 1: MDOT Statewide Bicycle and Pedestrian Master Plan - Equity Index for Hagerstown, MD



Source: Maryland Statewide Bicycle and Pedestrian Master Plan

Most crashes occur within moderate-high and high equity need areas in Hagerstown. Pedestrian and bicycle crashes are especially high in these areas.

Table 12: All Crashes within Equity Need Areas

Equity Need	Motor Vehicle	Motorcycle	Bicycle	Pedestrian	Total
Moderate-High to High	2,570 (71.6%)	50 (69.4%)	48 (78.7%)	112 (75.2%)	2,780 (71.8%)
Low to Moderate	1,021 (28.4%)	22 (30.6%)	13 (21.3%)	37 (24.8%)	1,093 (28.2%)
Total	3,591	72	61	149	3,873

Source: Maryland State Police Crash Data, Replica, MDOT Statewide Bicycle and Pedestrian Master Plan, Fehr & Peers.
Notes: Excludes interstate facilities (e.g., I-81, I-70) crashes.

Table 13 summarizes non-interstate KSI crashes that occurred within areas designated as having "high" or "moderate-high" equity needs, by mode. Most KSI crashes occur within moderate-high and high equity need areas, and motorcycle and bicycle crashes in particular occur at a higher rate within these areas compared to other modes.

Table 13: KSI Crashes within Equity Need Areas

Equity Need	Motor Vehicle	Motorcycle	Bicycle	Pedestrian	Total
Moderate-High to High	39 (60.9%)	14 (73.7%)	3 (75%)	17 (63%)	73 (64%)
Low to Moderate	25 (39.1%)	5 (26.3%)	1 (25%)	10 (37%)	41 (36%)
Total	64	19	4	27	114

Source: Maryland State Police Crash Data, Replica, MDOT Statewide Bicycle and Pedestrian Master Plan, Fehr & Peers.
Notes: Excludes interstate facilities (e.g., I-81, I-70) crashes.

Lighting

Table 14 shows all non-interstate crashes in Hagerstown by lighting conditions at the time of crash. Most crashes occur during the day, but crashes that occur at night are more likely to result in KSI crash.

Table 14: All Crashes by Lighting Conditions

Lighting	No Apparent Injury	Possible Injury	Minor Injury	Serious Injury	Fatality	Total
Daylight	1,712 (63%)	392 (69%)	322 (67.8%)	47 (50%)	13 (65%)	2,486 (64.2%)
Dawn	48 (1.8%)	15 (2.6%)	7 (1.5%)	1 (1.1%)	1 (5%)	72 (1.9%)
Dusk	65 (2.4%)	11 (1.9%)	13 (2.7%)	4 (4.3%)	-	93 (2.4%)
Dark (Lighting)	722 (26.6%)	116 (20.4%)	107 (22.5%)	35 (37.2%)	5 (25%)	985 (25.4%)
Dark (No Lighting)	69 (2.5%)	20 (3.5%)	12 (2.5%)	3 (3.2%)	1 (5%)	105 (2.7%)
Unknown/Other	100 (3.7%)	14 (2.5%)	14 (2.9%)	4 (4.3%)	-	132 (3.4%)
Total	2,716	568	475	94	20	3,873

Source: Maryland State Police Crash Data, Replica, Fehr & Peers.
Notes: Excludes interstate facilities (e.g., I-81, I-70) crashes.

Number of Lanes

Table 15 shows all non-interstate crashes in Hagerstown by number of lanes on the roadway on which the crash took place. Most crashes for all modes occur on roads with one to three lanes. This is particularly true for bicycles and pedestrians. This may be attributed to the higher number of bicycles and pedestrians using these facilities. Most of Hagerstown roadways have three or less lanes (99%), but roadways with more lanes have a disproportionate number of crashes. Roads with 4 or more lanes only make up 1% of centerline miles in the City, but 4.5% of crashes occur on these roads.

Table 15: All Crashes by Number of Lanes

Lanes	% of Centerline Miles with # of Lanes	Motor Vehicle	Motorcycle	Bicycle	Pedestrian	Total
≤3	99%	3,115 (86.7%)	62 (86.1%)	57 (93.4%)	130 (87.2%)	3,364 (86.9%)
4-5	1%	154 (4.3%)	4 (5.6%)	1 (1.6%)	3 (2%)	162 (4.2%)
6+		9 (0.3%)	1 (1.4%)	-	-	10 (0.3%)
Unknown	0%	313 (8.7%)	5 (6.9%)	3 (4.9%)	16 (10.7%)	337 (8.7%)
Total	100%	3,591	72	61	149	3,873

Source: Maryland State Police Crash Data, Replica, City of Hagerstown, Fehr & Peers.
Notes: Excludes interstate facilities (e.g., I-81, I-70) crashes.

Facility Type

Table 16 and **Table 17** show all non-interstate crashes and KSI crashes in Hagerstown by facility or roadway type, respectively. For both total and KSI crashes, most crashes across all modes occur on Municipal Roads, with bicycle and pedestrian crashes being more prevalent on these facilities.

Table 16: All Crashes by Facility Type

Facility Type	% of Centerline Miles with Facility Type	Motor Vehicle	Motorcycle	Bicycle	Pedestrian	Total
County Road	22%	145 (4%)	-	-	-	145 (3.7%)
Maryland Route	24.4%	102 (2.8%)	2 (2.8%)	-	2 (1.3%)	106 (2.7%)
Municipal Road	61.2%	2,142 (59.6%)	41 (56.9%)	48 (78.7%)	95 (63.8%)	2,326 (60.1%)
Other Public Road	–	7 (0.2%)	-	-	-	7 (0.2%)
United States Route	–	976 (27.2%)	24 (33.3%)	10 (16.4%)	38 (25.5%)	1,048 (27.1%)
Unknown		219 (6.1%)	5 (6.9%)	3 (4.9%)	14 (9.4%)	241 (6.2%)
Total		3,591	72	61	149	3,873

Source: Maryland State Police Crash Data, Replica, Fehr & Peers.
Notes: Excludes interstate facilities (e.g., I-81, I-70) crashes.

Table 17: KSI Crashes by Facility Type

Facility Type	% of Centerline Miles with Facility Type	Motor Vehicle	Motorcycle	Bicycle	Pedestrian	Total
County Road	22%	2 (3.1%)	-	-	-	2 (1.8%)
Maryland Route	24.4%	3 (4.7%)	-	-	1 (3.7%)	4 (3.5%)
Municipal Road	61.2%	36 (56.3%)	12 (63.2%)	2 (50%)	14 (51.9%)	64 (56.1%)
Other Public Road	–	-	-	-	-	-
United States Route	–	21 (32.8%)	6 (31.6%)	2 (50%)	9 (33.3%)	38 (33.3%)

Facility Type	% of Centerline Miles with Facility Type	Motor Vehicle	Motorcycle	Bicycle	Pedestrian	Total
Unknown		2 (3.1%)	1 (5.3%)	-	3 (11.1%)	6 (5.3%)
Total		64	19	4	27	114

Source: Maryland State Police Crash Data, Replica, Fehr & Peers.
Notes: Excludes interstate facilities (e.g., I-81, I-70) crashes.

Behavioral Factors

The following section summarizes crash outcomes relative to behavioral factors such as alcohol and drug impairment, distracted driving, and occupant protection.

Alcohol Impairment

Table 18 summarizes all non-interstate crashes by alcohol impairment and crash severity. For this analysis, a crash is alcohol involved if the driver or non-motorist's condition was reported as "Had Been Drinking", or if the driver/non-motorist's blood alcohol content was greater than or equal to 0.08. This amount is the legal driving limit for alcohol in Maryland.

Results show that crashes have a higher rate of serious injury and fatality if alcohol is involved (12 of 166 crashes.) Although alcohol-involved crashes only account for 4.3% of all crashes, 10.5% of all KSI crashes involved alcohol.

Table 18: All Crashes by Alcohol Impairment

Alcohol Involved?	No Apparent Injury	Possible Injury	Minor Injury	Serious Injury	Fatality	Total
Yes	114 (4.2%)	21 (3.7%)	19 (4%)	10 (10.6%)	2 (10%)	166 (4.3%)
No	2,602 (95.8%)	547 (96.3%)	456 (96%)	84 (89.4%)	18 (90%)	3,707 (95.7%)
Total	2,716	568	475	94	20	3,873

Source: Maryland State Police Crash Data, Replica, Fehr & Peers.
Notes: Excludes interstate facilities (e.g., I-81, I-70) crashes.

Drug Impairment

Table 19 summarizes non-interstate crashes by drug impairment and crash severity. This finding is made when the crash report shows the driver or the non-motorist condition was "Using Drugs." Like alcohol impairment, drug-involved crashes account for a small percentage of all crashes (1.7%), but a much higher percentage of KSI crashes (7%.)

Table 19: All Crashes by Drug Impairment

Drugs Involved?	No Apparent Injury	Possible Injury	Minor Injury	Serious Injury	Fatality	Total
Yes	38 (1.4%)	11 (1.9%)	7 (1.5%)	6 (6.4%)	2 (10%)	64 (1.7%)
No	2,678 (98.6%)	557 (98.1%)	468 (98.5%)	88 (93.6%)	18 (90%)	3,809 (98.3%)
Total	2,716	568	475	94	20	3,873

Source: Maryland State Police Crash Data, Replica, Fehr & Peers.
Notes: Excludes interstate facilities (e.g., I-81, I-70) crashes.

Distracted Driving

Table 20 summarizes crashes where distracted driving was noted in the crash report. A total of 981 crashes involved distracted driving, comprising 25.3% of all crashes. Results show that distracted driving evenly contributes to crashes of different severity, and that fatal crashes are least likely to have involved distracted driving, according to crash reports.

In many cases, multiple behavioral factors can be present. For example, a person driving under the influence of alcohol may also be distracted.

Table 20: All Crashes by Distracted Driving

Distracted Driving?	No Apparent Injury	Possible Injury	Minor Injury	Serious Injury	Fatality	Total
Yes	685 (25.2%)	157 (27.6%)	112 (23.6%)	24 (25.5%)	3 (15%)	981 (25.3%)
No	2,031 (74.8%)	411 (72.4%)	363 (76.4%)	70 (74.5%)	17 (85%)	2,892 (74.7%)
Total	2,716	568	475	94	20	3,873

Source: Maryland State Police Crash Data, Replica, Fehr & Peers.
Notes: Excludes interstate facilities (e.g., I-81, I-70) crashes.

Occupant Protection

Table 21 summarizes crashes where an occupant not utilizing safety equipment was noted in the crash report. Although only 4.6% of total crashes involved an occupant without safety equipment, these crashes make up more than 13% of all serious injury crashes, and 5% of all minor injury crashes.

Table 21: All Crashes by Occupant Protection

Occupant Protection Used?	No Apparent Injury	Possible Injury	Minor Injury	Serious Injury	Fatality	Total
Yes	99 (3.6%)	25 (4.4%)	39 (8.2%)	13 (13.8%)	1 (5%)	177 (4.6%)
No	2,617 (96.4%)	543 (95.6%)	436 (91.8%)	81 (86.2%)	19 (95%)	3,696 (95.4%)
Total	2,716	568	475	94	20	3,873

Source: Maryland State Police Crash Data, Replica, Fehr & Peers.
Notes: Excludes interstate facilities (e.g., I-81, I-70) crashes.

Enforcement Information

Citation data was received from the Hagerstown Police Department for traffic enforcement related citations between 2018 - 2022 Of the X total citations, citations were grouped into four primary categories: speeding, failure to stop at stop-sign, phone usage, and alcohol involvement, and were mapped by block. **Table 22** summarizes the total number of citations per category, and lists the top 3 citations blocks.

Table 22: Hagerstown Police Citations 2018 - 2022

Citation Category	Total Citations	Top 3 City Blocks
Speeding	1,404	
Failure to Stop at Traffic Control Device	975	
Phone Usage	611	
Alcohol Impaired Driving	517	

Source: Hagerstown Policy Department

Next Steps

This memo draft includes crash findings in the City of Hagerstown to help identify safety solutions as part of the City's Safety Action Plan. The key findings from the crash trends and contextual analysis will help inform countermeasures and strategy selection for safety improvements. The selected countermeasures could be included in the final Hagerstown Safety Action Plan as Action Items or systemwide project improvements.

Memorandum

TO	Jim Bender, City of Hagerstown
FROM	Tory Gibler, Charmelis Reyes, and Nicole Waldheim, Fehr & Peers
DATE	September 25, 2024
SUBJECT	Hagerstown Safety Action Plan – Policy Benchmarking Summary

Overview

This memorandum summarizes the results of a policy review and benchmarking assessment of transportation and land-use policies, plans, guidelines, and standards against a framework of the Safe System elements for the Hagerstown Safety Action Plan. The review sought to identify potential policy barriers to reaching zero serious injuries and fatalities on roads throughout the City and identify opportunities to integrate recommended Action Items as part of the Action Plan.

As a part of the Hagerstown Safety Action Plan, a policy benchmarking assessment was conducted. The policy review and benchmarking assessment consisted of the following steps:

1. Identify and review relevant documents and procedures.
2. Populate the benchmarking tool with findings from the policy and plan review.
3. Stakeholders select top benchmarking opportunities.
4. Develop the Action Plan.

Safe System Approach

In 2022, the United States Department of Transportation introduced the National Roadway Safety Strategy (NRSS) to address the safety crisis on our Nation's roadways. The NRSS declares a goal of zero deaths and adopts the Safe System Approach (SSA) as the guiding paradigm for addressing roadway safety and achieving this goal. The Safe System Approach equips us with a structured decision-making framework, enabling us to deliberately address five key elements and six guiding principles (Figure 1) during planning and implementation. It prioritizes human fallibility and vulnerability, ultimately designing a protective system for all.

Figure 1: Safe System Approach Principles and Elements

The Safe System principles and elements provide a framework for what an effective safety program encompasses. Evaluating existing policies, programs, and projects against the core elements, along with safety planning and culture, helped Hagerstown understand what is working to reduce severe crashes and what gaps exists in their safety programs. This information was then used to inform the development of stronger safety-related policies and programs as part of the City's Action Plan.

Policy Review and Benchmarking

The following presents the results of the policy review and benchmarking as applied to the City of Hagerstown.

Step 1 – Identify and Review Relevant Policies and Plans

The following documents were identified by the project team to be included in the policy review:

- Bicycle Master Plan
- Access Management Policy
- George Street Pedestrian Study
- Washington Street Road Safety Audit
- Dual Highway Speed Management Study
- Northern Avenue Road Diet
- Residential Traffic Calming Program
- Vulnerable Road User Safety Assessment
- Hagerstown Bicycle and Pedestrian Priority Area Plan
- Livable Street Design Guides

As a part of the benchmarking process, clear documentation of critical information from each plan is important. For each document reviewed the following information was documented. Each summary element is defined below.

Document Name: Name of document (and link to where the document can be found).
Document Description: One to three sentence description of the purpose of the document.
Safety Vision, Goals and Policies: Documentation of what is intended to be achieved with transportation safety and supporting guidance, rules, procedures to achieve it.
Safety Data and Analysis: Documentation of existing safety data/analysis or known challenges (if any).
Countermeasures: Documentation of proposed or programmed safety solutions to address key needs.
Safe System Element: How the document addresses one or more of the Safe System Approach elements (see Table 1), or Safey Planning and Culture.
Opportunities for Safety Program and Action Items: Initial ideas for Action Items to introduce new safety practices or institutionalize current or occasional safety practices.

Data Extraction Summary

- The City of Hagerstown's current safety work **most aligns with the Safe System Approach benchmarks with Safe Roads and Safe Users,** and the **Safe Vehicles and Post Crash Care has the least alignment**.

- There are opportunities to include innovative measures or emerging transportation technologies such as Electric Vehicle, ride sharing/deliveries (curb management), data collection practices, etc. **The city particularly noted the deficiencies in signals and the need for upgrades to achieve improved safety outcomes.**
- **An evolution of safety planning and culture is evident in policies and plans overtime**, as older documents emphasize education, enforcement, and engineering, while newer documents more closely align with the Safe System Approach.
- **Currently there is no safety resolution by the City of Hagerstown** adopting a safety program or the Safe System Approach - this plan will address this gap.
- **Equity** has been included in previous work but **could be enhanced as a metric used in analysis or prioritization criteria** through the Safety Action Plan.

Step 2 – Populate the Benchmarking Tool with Findings from the Policy and Plan Review

The project team populated the benchmarking tool with findings from the policy and plan review conducted in step 1. Table 1 highlights the elements and categories in the benchmarking tool. Each benchmark category can have between one and six individual benchmarks. The benchmarking tool is intended to assess what the City is currently doing well related to SSA and where potential changes to policies, programs and practices could be considered as a part of the development of their Hagerstown Safety Action Plan. The benchmarking tool also assessed if the benchmark is an occasional practice, an institutional practice, or not a current practice by the agency.

Table 1: Benchmarking Tool Elements & Categories

Benchmark Elements	Benchmark Categories
Safety Planning & Culture	Leadership and Commitment Meaningful Engagement Data and Analysis Funding Development Review Equity First
Safe Users	Education Enforcement Research
Safe Roadways	Collision Avoidance Kinetic Energy Reduction Policies and Tradeoffs Innovation
Safe Vehicles	Supportive Infrastructure Fleet Management Data
Safe Speeds	Design and Operations Enforcement Policy and Training

Benchmark Elements	Benchmark Categories
Post-Crash Care	Crash Investigation Partnerships

Next, City staff were interviewed, and the benchmark tool results were modified because of the discussion. At the conclusion of Step 2, the top ten benchmark strengths of Hagerstown's safety program where highlighted (Table 2), as well as the top ten benchmark opportunities (Table 3).

Table 2: City of Hagerstown Top 10 Benchmark Strengths

Element	Category	City of Hagerstown Safety Strength
Safety Planning & Culture	Safety Routes to School	Successful SRTS project, with ongoing efforts despite funding challenges.
	Data and Analysis	• Citizen Reporting System: System for reporting safety hazards, ensuring timely responses. • Collaboration with the County to reduce severe injuries through targeted safety analysis.
	Funding	Seeking non-traditional safety funding, focusing on bicycle safety with HEPMPO's assistance.
Safe Users	Enforcement	Police and city joint efforts for risk mitigation and safety enforcement.
Safe Roadways	Safety Countermeasures	Incorporating safety features in new projects and addressing retrofitting challenges.
	Speed Management Standards	Implementing design standards for safer speeds and road geometries.
	Construction Safety and Accessibility	Adhering to MDSHA guidelines to maintain safety and accessibility during projects.
Safe Speeds	Roadway Safety Classification	Classifying roadways to prioritize safety measures systematically.
Post Crash Care	Collision Reporting Improvements	Enhancing data collection for more detailed and accurate road safety analysis.

Table 3: City of Hagerstown Top 10 Benchmark Opportunities

Element	Category	City of Hagerstown Safety Opportunity
Safety Planning & Culture	Data and Analysis	• Lack of advanced data method to detect safety issues. • Safety considerations tend to be reactive rather than proactive.
	Meaningful Engagement and Equity	Lack of meaningful engagement with traditionally underserved populations.
Safe Users	Enforcement	Surveillance strategies raise concerns for potential disproportionate impacts.
	Education	Public disagreement hindering active transportation infrastructure connectivity.

Element	Category	City of Hagerstown Safety Opportunity
	Research	Shortfall in robust demographic data collection in crash reporting.
Safe Roadways	Kinetic Energy Reduction	Gap in standardizing intersection design evaluations for reduced kinetic energy transfer.
	Innovation	Absence of smarter roadways and Intelligent Transportation Systems infrastructure.
Safe Vehicles	Policy guidance	Lack of safe vehicle policies.
Safe Speeds	Policy and training	Lack of speed limit setting methodologies based on land use, roadway, and/or modal priority contexts.

Step 3 – Stakeholders Select Top Benchmark Opportunities

The Stakeholder Committee was identified as the critical group to review the benchmark tool results and identify the top five benchmark opportunities. The Stakeholder Committee met in-person, reviewed benchmarks results, and discussed which benchmark opportunities should be examined as part of the study and which should be incorporated as potential Action Items in the plan (Table 4). The Stakeholder Committee then brainstormed potential Action Item solutions to the top benchmark opportunities.

Table 4: City of Hagerstown Selected Benchmark Opportunities

Element	Category	City of Hagerstown Safety Opportunity
Safety Planning & Culture	Safe Routes to School	Work more closely with schools/program coordinators to identify specific needs for SRTS participants.
	Safety is Proactive	Improve proactive safety considerations, such as: • Conduct city-wide safety assessment to identify at risk variables and locations. • Collect at-risk data and incorporate in analysis. • Better anticipate pedestrian movements/desire lines and tracking pedestrian incidents. • Develop a project lifecycle process and incorporate safety considerations in all projects, and/or in development review. • Host staff trainings as part of Safety Action Plan rollout.
	Meaningful Engagement and Equity	• Develop an equity strategy playbook that can be available to city staff for any public engagement opportunity. Strategies could include in-person and virtual attendance opportunities, availability of materials in different languages, ASL interpreter, etc., that are accessible and welcoming to all members of the community, specially underserved populations. • Assess ability to re-engage with schools and revitalize Children's Village program.

Element	Category	City of Hagerstown Safety Opportunity
Safe Roadways	Kinetic Energy Reduction	• Draft intersection design evaluation guidelines that focus on reducing kinetic energy transfer, based on FHWA recommendations and best practices in traffic safety. • Establish a review process to periodically assess the effectiveness of the intersection designs and adjust based on emerging research and technology in traffic safety. • Conduct city-wide kinetic energy transfer risk assessment.

Step 4 – Develop the Action Plan

Based on the benchmarking effort and findings, actions and next steps were identified to enhance the City's safety program. Drawing from the challenges and ideas generated at the Stakeholder Meeting, the project team developed Table 5, a list of proposed Action Items to be included in the final Hagerstown Safety Action Plan based on the policy review and benchmarking assessment. A safety resolution is recommended to be included with the adoption of the Hagerstown Safety Action Plan.

Table 5: Proposed Hagerstown Safety Action Plan Action Items from Benchmarking Assessment

Action Item	Responsible Agency and Partners	Timeline
Enhance existing Safe Routes to School program by building closer partnership between schools and City, and prioritizing sidewalk repairs, enhancing route markings, and conducting walk audits near schools.	City of Hagerstown, Hagerstown Public School System	Medium
Enhance geospatial data collection and maintenance across city departments to augment future safety analysis, prioritization, and project development.	City of Hagerstown	Medium
Evaluate meaningful engagement strategies to enhance outreach with populations that are traditionally underserved and consider restarting previous outreach efforts such as Children's Village and annual fire department visit to schools.	City of Hagerstown, Hagerstown Public School System	Medium
Develop guidelines to address kinetic energy reduction/proactive safety elements at intersection. Consider incorporating FHWA Safe System Project Based Alignment framework into review process.	City of Hagerstown	Short