

# Staunton-Augusta-Waynesboro Regional Transportation Safety Plan

January 2023



Prepared for:



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## Introduction

Virginia adopted the vision of Toward Zero Deaths, meaning that all roadway users in the Commonwealth should arrive safely at their destination. To move this forward, the Virginia Department of Transportation (VDOT), in collaboration with State and regional partners developed the 2022-2026 [Strategic Highway Safety Plan](#) (SHSP).<sup>1</sup> The SHSP is a five-year, action-based plan that frames the major safety issues within emphasis areas and identifies strategies and actions to address them. The SHSP prioritizes implementing a [Safe System Approach](#)<sup>2</sup> that is gaining momentum in the United States based on success from associated Vision Zero efforts in Europe. Implementation of the SHSP with a Safe System Approach requires the engagement, cooperation, and effort from the 5Es of highway safety: Engineering, Education, Enforcement, Emergency Response and Medical Services, and Everyone.

The collaborative approach in the SHSP is also vital because roadway fatalities and serious injuries occur on roadways owned and maintained by both the Commonwealth and local agencies. While the SHSP outlines an overarching statewide approach, local and regional safety plans have been shown to address the issues specific to a jurisdiction, further targeting safety improvements. The Staunton-Augusta-Waynesboro Metropolitan Planning Organization (SAWMPO) has committed to support the statewide effort toward reducing fatalities and serious injuries on roadways within its member jurisdictions. Figure 1 shows the SAWMPO jurisdictions.

The Staunton-Augusta-Waynesboro Regional Transportation Safety Plan is a data-driven effort, outlining the primary factors preventing people from arriving safely at their destinations as well as locations where safety improvements could make a difference. The planning process included the following:

- Engagement of multidisciplinary stakeholders to review and discuss safety issues. Stakeholders include the members of the SAWMPO Technical Advisory Committee (TAC) who provide the connection to local elected officials, community representatives, local advocacy groups, schools, places of business, and citizens of the SAWMPO region.
- Identification of safety priority areas including bicycles and pedestrians, distracted driving, unbelted driving, impaired driving, young drivers, infrastructure (e.g., intersections and roadway departure), and speeding.
- Identification of crash locations with the potential for safety improvements.
- Identification of solutions to address behavioral and infrastructure needs.

The remainder of this document details the specific safety challenges in the Staunton-Augusta-Waynesboro region and solutions to proactively address these concerns. The Staunton-Augusta-Waynesboro Regional Transportation Safety Plan includes the following sections:

- Regional Safety Trends: This section highlights general traffic safety trends on all public roads in the region. Comparisons to statewide trends and to trends in other metropolitan areas in Virginia are examined.
- Crash Characteristics: This section reviews the specific characteristics of crashes in the region with a focus towards fatal and injury crashes.

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<sup>1</sup> [The Virginia 2022-2026 Strategic Highway Safety plan](https://www.virginiadot.org/info/resources/SHSP/FR1_VA_SHSP_2022_acc061622.pdf) ([https://www.virginiadot.org/info/resources/SHSP/FR1\\_VA\\_SHSP\\_2022\\_acc061622.pdf](https://www.virginiadot.org/info/resources/SHSP/FR1_VA_SHSP_2022_acc061622.pdf))

<sup>2</sup> Zero Deaths and Safe System, (<https://highways.dot.gov/safety/zero-deaths>)



- **Jurisdictional Safety Assessments:** This section examines the geographic locations of crashes in the cities of Staunton, Waynesboro, and the areas of Augusta County that are within SAWMPO. The section also introduces cross matrices, a High Injury Network (HIN) and Virginia Pedestrian Safety Action Plan (PSAP) analysis for both cities.
- **Next Steps:** This section outlines information that the region should consider for reducing the number of fatalities and serious injuries on its roadways. The region may complete supporting documentation to this report with detailed implementation steps. The following subsections are included:
  - **Proven Countermeasures:** This section describes possible countermeasures with measurable safety benefits that could be implemented by stakeholders in the region.
  - **Implementation Options:** This section reviews options for implementing proposed countermeasures. This includes policies, programs, and projects that address behavioral and infrastructure needs.

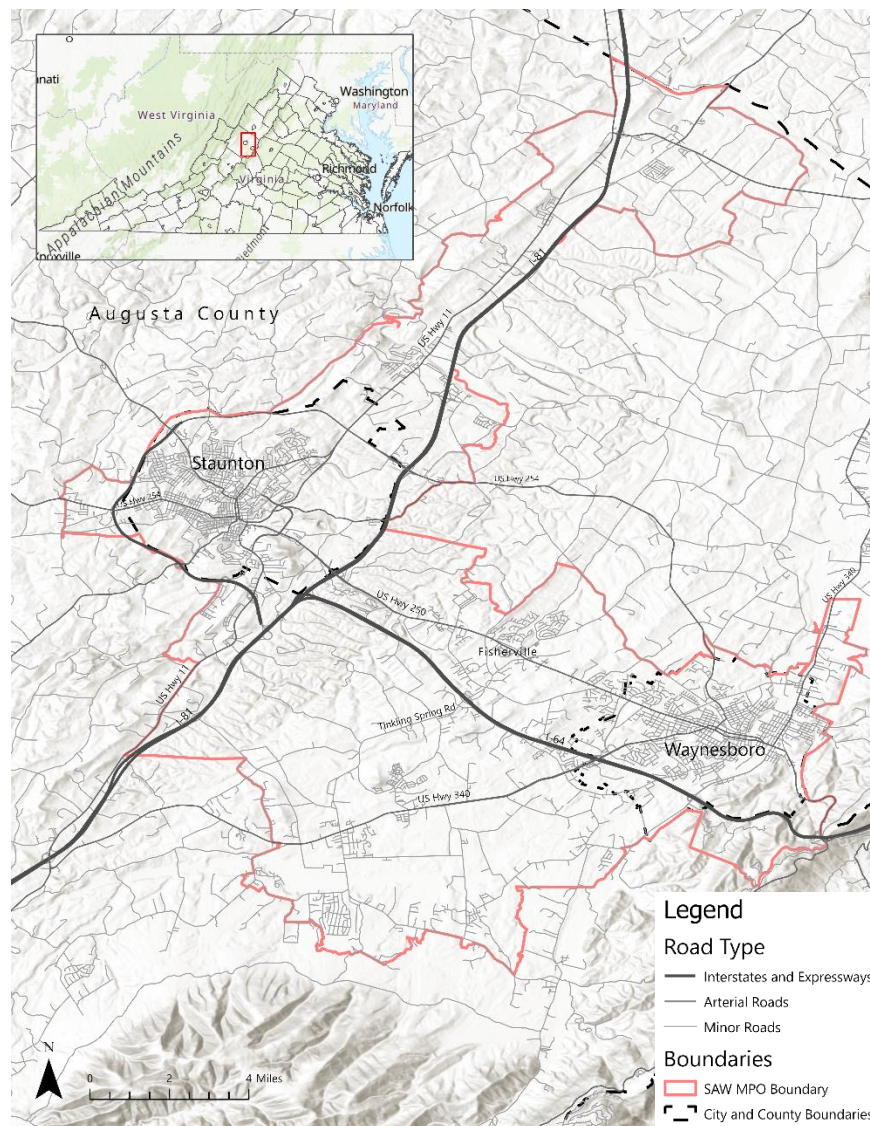


Figure 1: SAWMPO Region (Source: VDOT)

## Regional Safety Trends

### Target Setting

The Safety Performance Management Measures federal regulation supports the Highway Safety Improvement Program (HSIP) and requires State Departments of Transportation (DOTs) and Metropolitan Planning Organizations (MPOs) to set HSIP targets for five safety performance measures. These performance measures include the following:

1. Number of fatalities
2. Rate of fatalities
3. Number of serious injuries
4. Rate of serious injuries
5. Number of non-motorized fatalities and serious injuries

MPOs establish HSIP targets by either (1) agreeing to plan and program projects so that they contribute toward the accomplishment of the State DOT HSIP target or (2) committing to a quantifiable HSIP target for the metropolitan planning area. To provide MPOs with flexibility, MPOs may support all the State HSIP targets, establish their own specific numeric HSIP targets for all performance measures, or any combination. MPOs may support the State HSIP target for one or more individual performance measures and establish specific numeric targets for the other performance measures.

VDOT has developed safety performance statistical models for each measure that incorporate multiple factors, including exposure to crash risk in Vehicle Miles Traveled (VMT), that are predicted for the next year safety targets. Statewide trends indicates that all five measures will continue to increase until 2023. Given these findings, to be submitted to FHWA for 2023 targets, the Commonwealth transportation Board also set optimistic 2023 state targets that follow the SHSP objectives that show a decrease in fatalities and serious injuries as compared to 2020. SAWMPO is currently using the targets for the Staunton region based on the FHWA submitted trends.

### Crash Trends

This section examines the number and rate of crashes and injuries in the Staunton-Augusta-Waynesboro region and how they compare to trends statewide and throughout other MPOs and transportation planning organizations (TPOs) in Virginia. This examination accounts for five years of crash data (2017-2021) from VDOT. Crash severity is defined using the KABCO scale:

- K – fatal injury
- A – suspected serious injury
- B – suspected minor injury
- C – possible injury
- PDO – property damage only

### Crash Frequency and Severity

Over the last five years, a total of 558 people died or were seriously injured (needed post-crash medical facility care) as a result of a crash within the SAWMPO region. 1,285 people had a suspected minor injury during this period.

Figure 2 shows the breakdown of fatal, serious injury, and minor injury (KAB) crashes over the past five years. Fatal crashes in 2018 and 2020 were tied for a low of 4. In 2021, fatal crashes increased to a five-year high of 11. From 2017 to 2020, serious injury crashes decreased and then rose slightly in 2021. From 2017 to 2020, minor injury crashes decreased and then rose slightly in 2021.

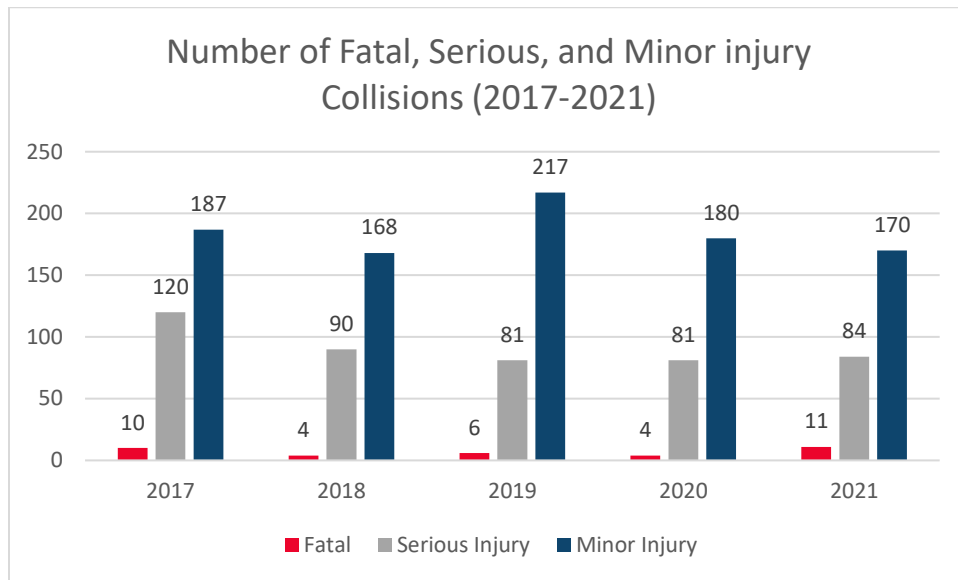


Figure 2: Fatal, Serious, and Minor Injury Collisions, 2017-2021 (Source: VDOT)

Figure 3 shows the total crashes per 100 million vehicle miles traveled (VMT) for MPOs/TPOs in Virginia. SAWMPO’s crash rate in 2020 was approximately 145 crashes per 100 million vehicle miles traveled, making it the third lowest rate out of the MPOs/TPOs.

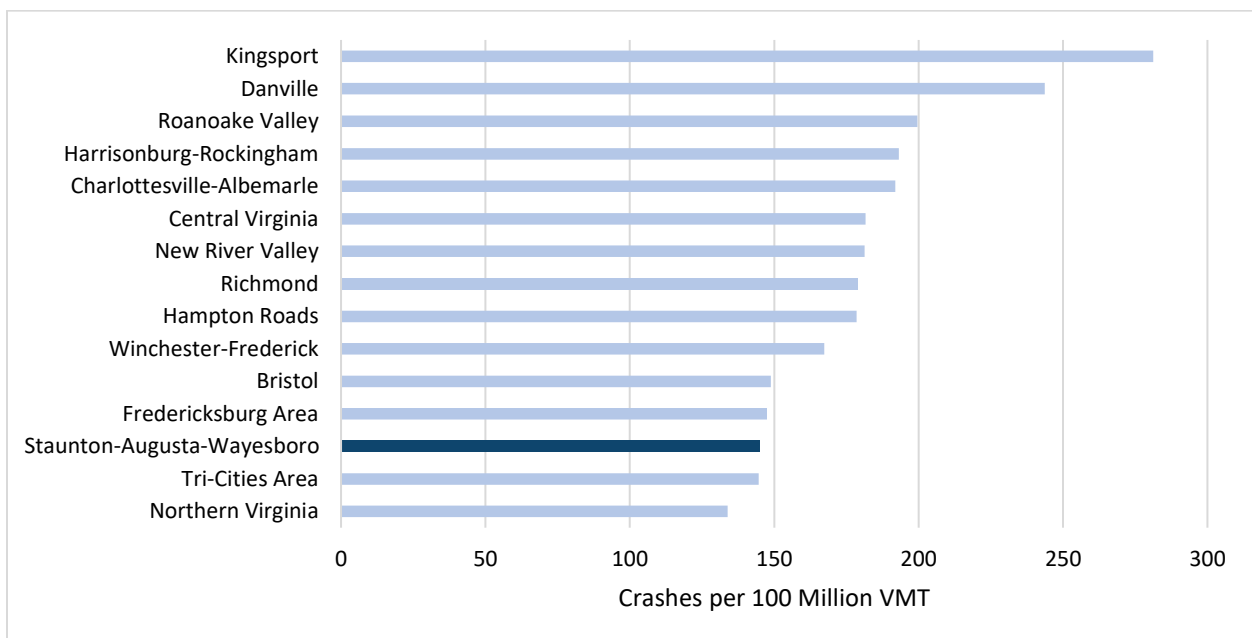


Figure 3: Crashes per 100 Million Vehicle Miles Traveled, 2020 (Source: VDOT). 2021 VMT was not available at the time of publishing of this report.

Similarly, figure 4 shows the fatal crashes per 100 million VMT for MPOs/TPOs in Virginia. SAWMPO has a fatal crash rate of 0.51 fatal crashes per 100 million vehicle miles traveled. This places the MPO towards the lower end of the chart.

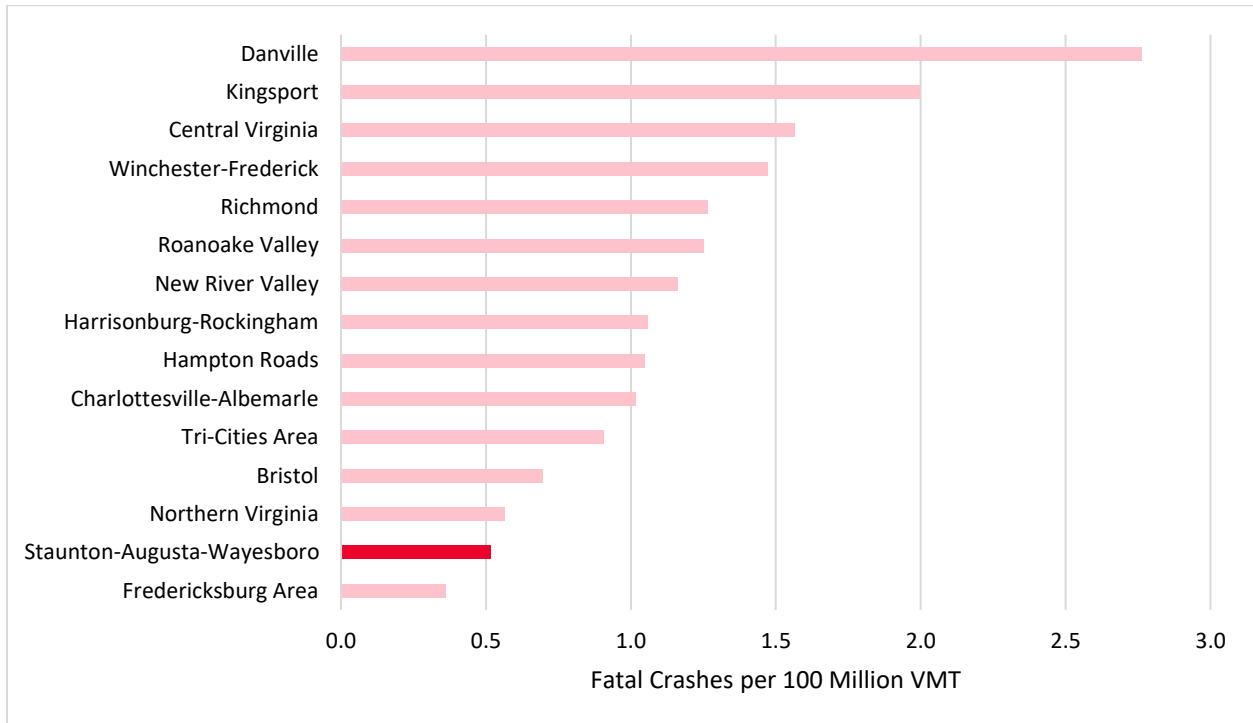


Figure 4: Fatal Crashes per 100 million Vehicle Miles Traveled (Source: VDOT) 2021 VMT was not available at the time of publishing of this report.

### Crash Characteristics

A crash analysis helps to identify priority locations for safety investment and the types of countermeasures used to address identified issues. Crashes can be defined by many characteristics relating to the conditions and/or actions of drivers, vehicles, the roadway, and the environment. Investigating factors such as crash type, the involvement of pedestrians or bicyclists, and time of day on a localized or at the project level helps to determine applicable countermeasures. Crash data on a localized or project level can be viewed on map and downloaded for analysis through VDOT’s [ArcGIS Online](#)<sup>3</sup> account. The investigation of behavioral crash patterns can be considered at a regional or corridor level as road user behavior is not necessarily confined to a specific corridor – a driver may exhibit high risk behavior as they traverse multiple roadways in the region. The implementation of behavioral countermeasures can reference density maps created by the Department of Motor Vehicles (DMV) Highway Safety Office (HSO) in conjunction with the maps provided in this report. This helps to identify priority locations that relate to behavioral crash patterns. Examples of the HSO annual maps provided for statewide, regional, and local enforcement, education, and outreach federal grants are provided in their [2022 Highway Safety Plan](#)<sup>4</sup>.

<sup>3</sup> VDOT Crash Data, (<https://vdot.maps.arcgis.com/home/item.html?id=101101cecac34f28b38c0846e847bd0b>)

<sup>4</sup> 2022 Highway Safety Plan, ([https://www.dmv.virginia.gov/safety/highway\\_safety\\_plan.pdf](https://www.dmv.virginia.gov/safety/highway_safety_plan.pdf))



The following analyses examine the crash characteristics in the region relating to the following priorities in Virginia's SHSP:

- Emphasis areas in Virginia's SHSP
- Time of day
- Overlap of behavioral crash factors (i.e., impaired driving, speed, occupant protection)
- HIN and Health Opportunity Index analysis
- Pedestrian Safety Action Plan Corridors

The Virginia SHSP emphasis areas include the following (and further defined in Appendix A):

- Impaired Driving (Drinking, Drugged, Distracted and Drowsy)
- Speed (over posted limit or appropriate speed for traffic/weather conditions)
- Occupant Protection (unbelted occupants of passenger vehicles and trucks with seat belts)
- Roadway Departure (head-on, sideswipe opposite direction, fixed object, overturn crashes)
- Intersections (within 250 feet of VDOT and 150 feet of locality maintained intersections)
- Young Drivers (crashes involving drivers under 21)
- Aging Road Users (crashes involving drivers and pedestrians aged 65 and older)
- Bicyclists
- Motorcyclists
- Pedestrians

**Error! Reference source not found.** shows the percent cross-representation of fatal and serious injury crashes categorized by emphasis areas in the SHSP. Note that the color scale is meant to be read vertically and the percentages are in relation to the column (refer to examples below); the column percentage sum may exceed 100 percent due to the overlap of multiple emphasis area factors (Note: all the cross-tabulations in this report are read the same way). It is important to note that there are strong overlaps between occupant protection, impaired driving, and speeding crashes. There are also correlations between roadway departure, impaired driving, speeding and occupant protection crashes.

- Intersections has the greatest overlap with all emphasis areas except for roadway departure.
- In occupant protection crashes, 50 percent involved an impaired driver and 31 percent involved speeding.
- In roadway departure crashes, speeding (42 percent), impaired driving (38 percent), and improper occupant protection (36 percent) are the most prevalent factors.
- 100 percent of bicycle crashes occurred in an intersection.
- In impaired driving crashes, Intersections (59 percent), speeding (38 percent), occupant protection (33 percent) and roadway departure (26 percent) are the most prevalent factors.

KA Emphasis Area Table										
KA Crashes	Impaired Driving	Speed	Occupant Protection	Roadway Departure	Inter-sections	Young Drivers	Older Drivers	Bicycles	Pedestrians	Motorcycle Involved
<b>KA Crashes (491)</b>	164	154	107	111	293	72	128	11	29	56
<b>Impaired Driving</b>		41%	50%	38%	33%	35%	20%	9%	41%	16%
<b>Speeding</b>	38%		31%	42%	24%	33%	16%	0%	17%	39%
<b>Occupant Protection</b>	33%	31%		36%	20%	25%	16%	0%	7%	0%
<b>Roadway Departure</b>	26%	31%	26%		8%	18%	12%	0%	0%	27%
<b>Intersections</b>	59%	45%	52%	20%		68%	67%	100%	62%	50%
<b>Young Drivers</b>	15%	16%	17%	12%	17%		6%	18%	10%	4%
<b>Older Drivers</b>	16%	14%	20%	14%	29%	11%		18%	10%	27%
<b>Bicycles</b>	1%	0%	0%	0%	4%	3%	2%		0%	0%
<b>Pedestrians</b>	7%	3%	2%	0%	6%	4%	2%	0%		0%
<b>Motorcycle Involved</b>	5%	14%	0%	14%	10%	3%	12%	0%	0%	
<i>Chart is read vertically. Percentages are in relation to the column. Color scale provided in this row.</i>										

Table 1: KA Crash Proportions by Emphasis Area in SAWMPO, 2017-2021 (Source: VDOT)

Chart example: 68% of young driver involved crashes occurred at an intersection.

Table 2 shows the same cross-representation of emphasis areas with the addition of minor injuries (B) in the analysis.

KAB Emphasis Area Table										
KAB Crashes	Impaired Driving	Speed	Occupant Protection	Roadway Departure	Inter-sections	Young Drivers	Older Drivers	Bicycles	Pedestrians	Motorcycle Involved
<b>KAB Crashes (1413)</b>	387	406	200	344	701	260	346	19	45	98
<b>Impaired Driving</b>		32%	45%	38%	29%	26%	19%	5%	36%	15%
<b>Speed</b>	34%		41%	43%	19%	30%	17%	0%	11%	31%
<b>Occupant Protection</b>	23%	20%		19%	13%	16%	10%	0%	7%	0%
<b>Roadway Departure</b>	34%	37%	34%		2%	20%	9%	0%	0%	19%
<b>Intersections</b>	52%	33%	47%	11%		57%	64%	95%	67%	53%
<b>Young Drivers</b>	18%	19%	21%	15%	21%		12%	21%	11%	3%
<b>Older Drivers</b>	17%	15%	18%	9%	32%	16%		21%	18%	26%
<b>Bicycles</b>	0.3%	0%	0%	0%	3%	2%	1%		0%	0%
<b>Pedestrians</b>	4%	1%	2%	0%	4%	2%	2%	0%		0%
<b>Motorcycle Involved</b>	4%	7%	0%	6%	7%	1%	7%	0%	0%	
<i>Chart is read vertically. Percentages are in relation to the column. Color scale provided in this row.</i>										

Table 2: KAB Crash Proportions by Emphasis Area in SAWMPO, 2017-2021 (Source: VDOT)

Chart example: 43% of roadway departure crashes involved a speeding driver.

The addition of the B level injury crashes to this analysis provides a larger set of crashes to consider when prioritizing potential locations and countermeasures. Short study periods, and lower daily traffic numbers, which can be found in more rural localities, results in fewer KA crashes to analyze. Impaired driving, intersections, and speeding have strong correlations with occupant protection crashes. Roadway departure, and intersections also have strong correlations with impaired driving crashes.

- Intersections have the highest cross-representation in all emphasis areas except speeding and roadway departure.
- In occupant protection crashes, intersections (47 percent), impaired driving (45 percent), and speed (41 percent) have the highest cross-representation.
- In impaired driving crashes, intersections (52 percent), speeding (34 percent), and roadway departure (34 percent) have the highest cross-representation.
- 67 percent of pedestrian crashes occurred in an intersection and 36 percent involved an impaired driver.
- Speeding was a factor in 30 percent of young driver, and 31 percent of motorcycle crashes.

### Comparisons

36 percent of KA roadway departure crashes involved improper occupant protection use versus 19 percent of KAB crashes. Roadway departure is a factor in 26 percent, 31 percent, and 26 percent of KA impaired driving, speeding, and occupant protection crashes respectively versus 34 percent, 37 percent, and 34 percent for KAB crashes respectively for the same categories.

### Venn Diagram Analysis

The following Venn diagrams provide another visualization of cross-representation of the most common crash factors observed in the data, aside from intersections. Intersections were omitted from the Venn diagram analysis due to the anticipated overrepresentation of this emphasis area in a study area with urban form. Figure 5 shows that forty-seven percent of the KA crashes do not have speeding, roadway departure, or occupant protection as a crash factor, while four percent of the crashes have all three. Fourteen percent of the KA crashes have two of the three factors. This chart is reach such that each large “parent circle” represents the amount, and percentage, of crashes that exhibit a single (of the three) emphasis areas. *Example (figure 5): 80 KA crashes involved speeding alone. 26 crashes involved speeding and roadway departure, but not improper occupant protection.*

Figure 6 shows that thirteen percent of KAB crashes have only impaired driving as a factor and another thirteen percent have only speeding involvement. These emphasis areas are represented in fifty-five percent of KAB crashes, with four percent having involvement from all three emphasis areas. Forty-five percent of crashes have no speeding, impaired driving, or roadway departure involvement.

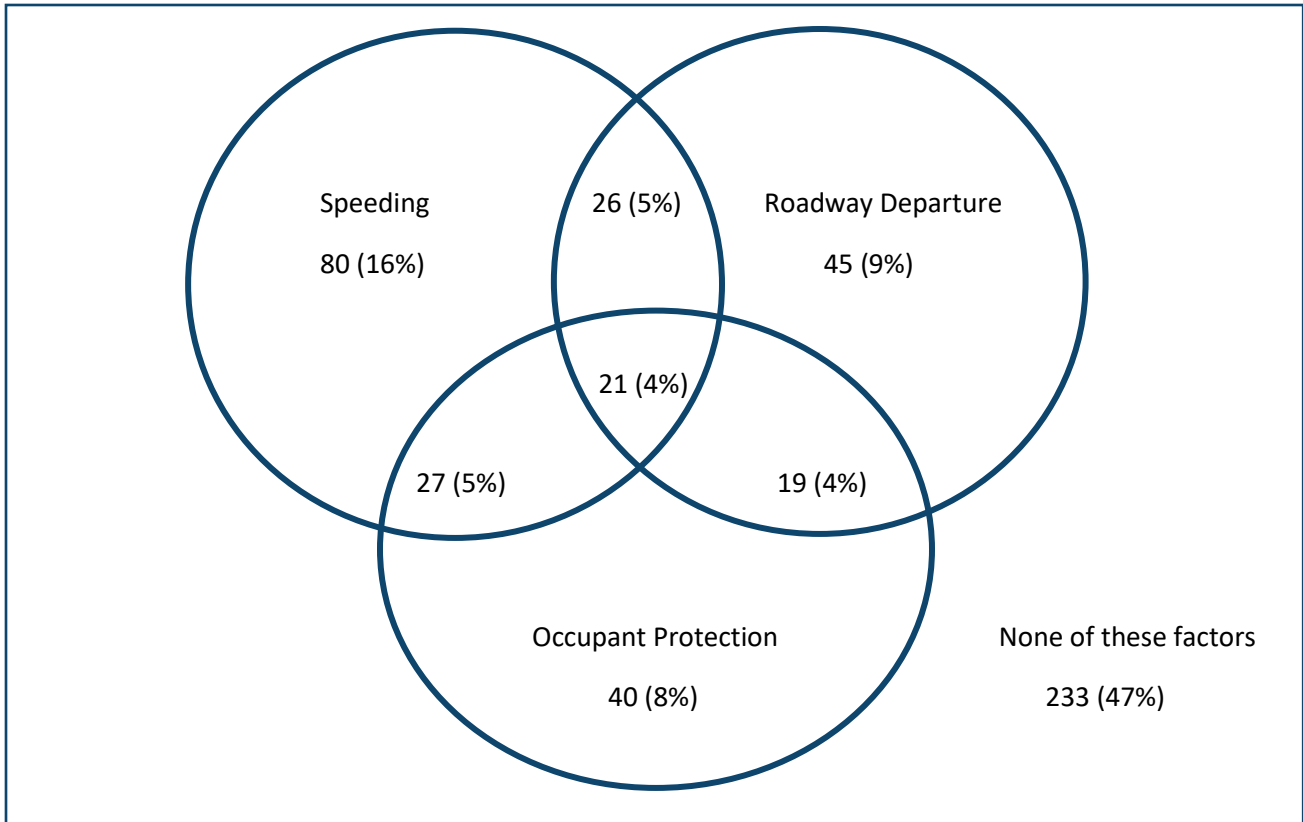


Figure 5: Venn Diagram Analysis of KA Crashes in SAWMPO, 2017-2021 (Source: VDOT)

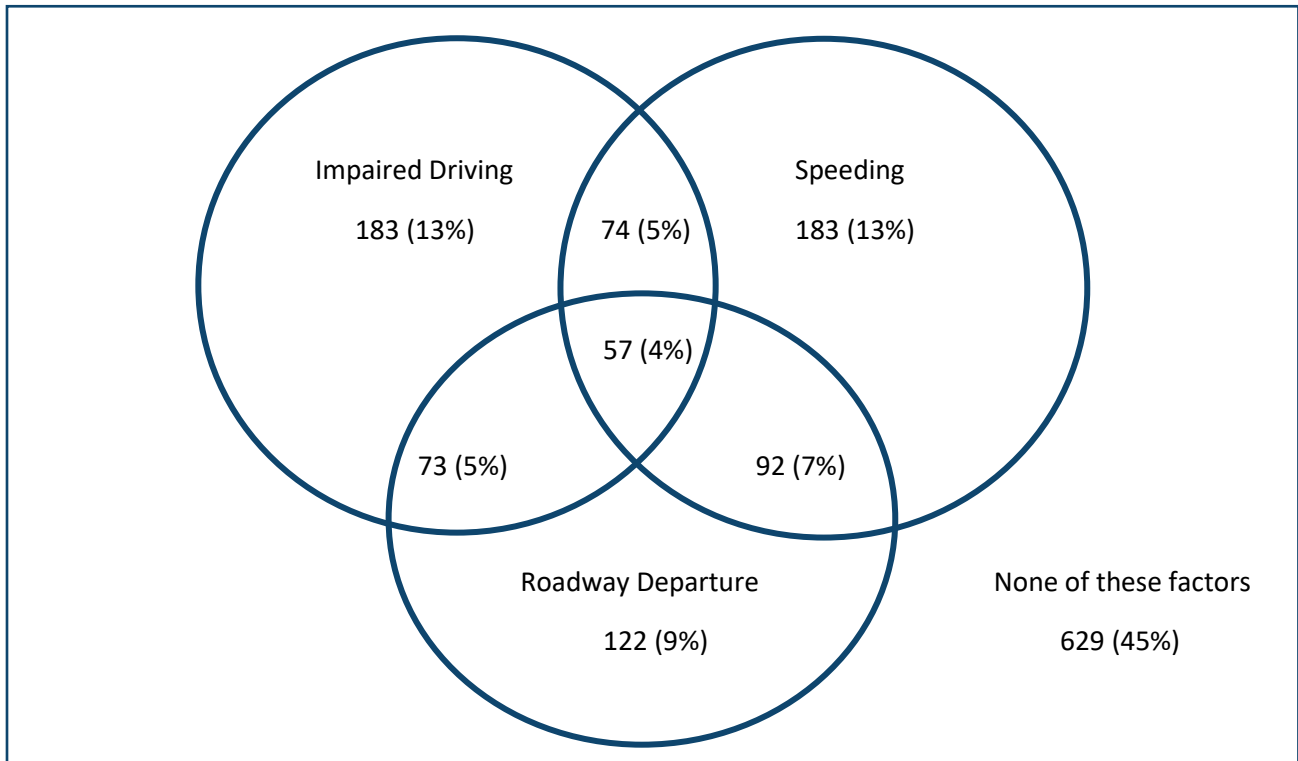


Figure 6: Venn Diagram Analysis of KAB Crashes in SAWMPO, 2017-2021 (Source: VDOT)

Figure 7 shows KAB crashes over the five-year (2017-2021) period based on the time of day they occurred. The highest number of crashes occurred during the PM peak with between 4:00 PM and 4:59 PM having the most – 115, followed by 3:00 PM to 3:59 PM with 114 crashes occurring during that hour. Figure 8 shows the percentage of crashes that occur between 9:00 PM and 5:59 AM. With almost 20 percent or more of KAB crashes occurring during nighttime hours, there is a need for an elevated focus on countermeasures that aim to reduce nighttime crashes.

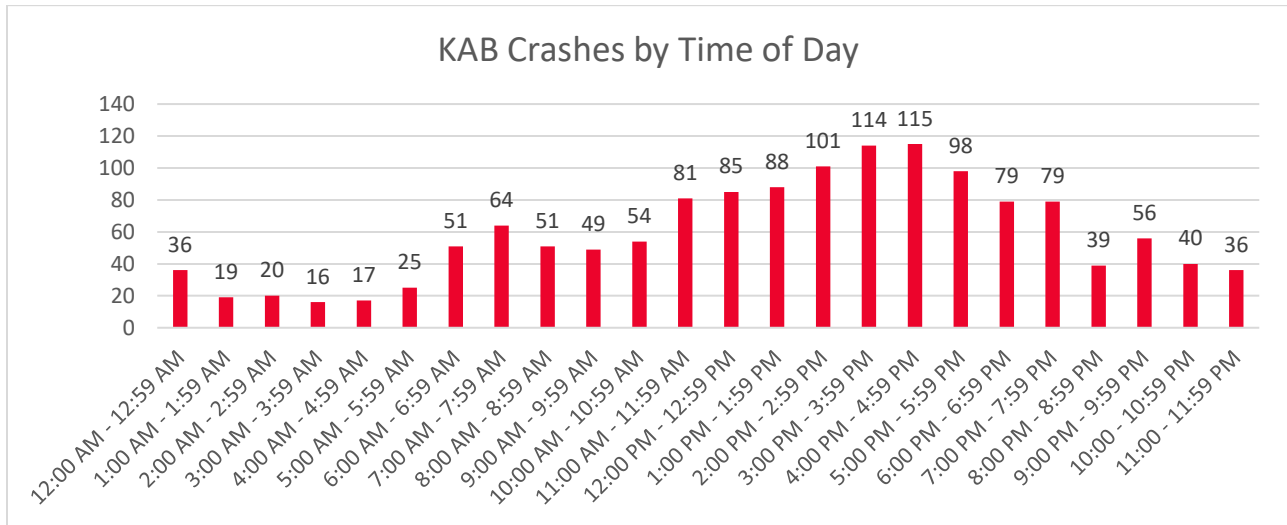


Figure 7: KAB Crashes by Time of Day in SAWMPO, 2017-2021 (Source: VDOT)

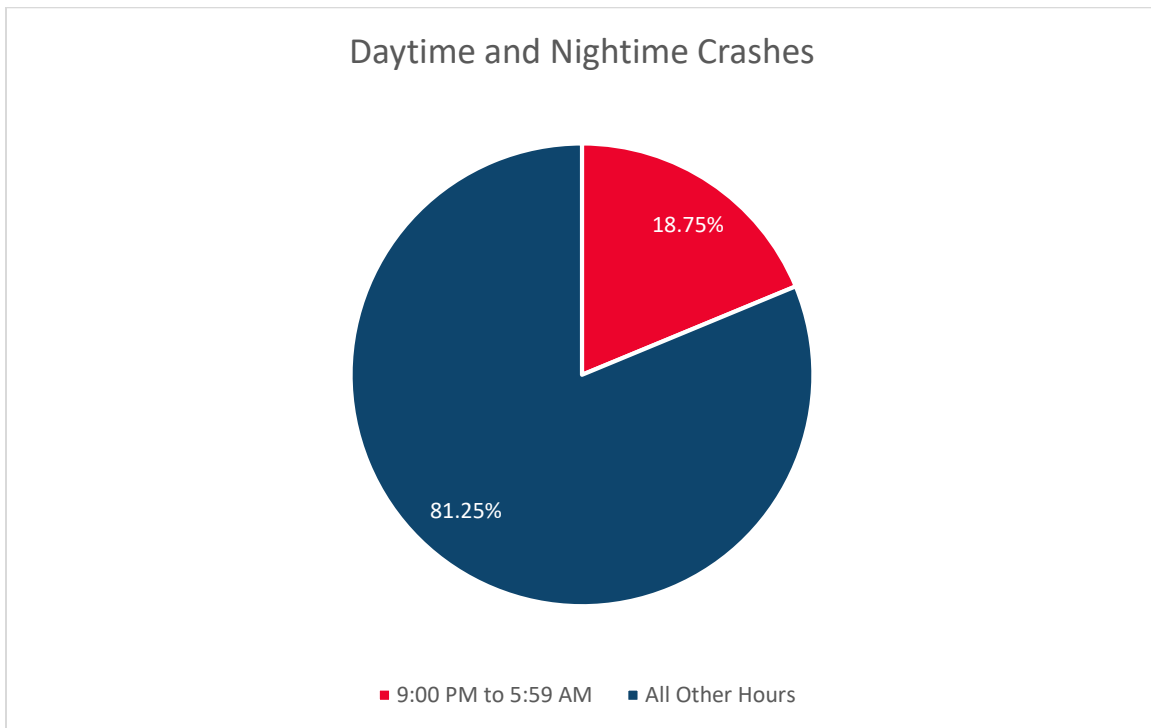


Figure 8: Daytime and Nighttime KAB Crashes, SAWMPO (2017-2021) (Source: VDOT)



## High-Injury Network and Health Opportunity Index

The SAWMPO safety analysis established an HIN for the region and assessed the propensity of severe crash outcomes using the [Health Opportunity Index](#) (HOI) for each census block. The HIN are roadway segments (corridors) with the highest proportion of fatalities and serious injuries. HOI<sup>5</sup> was developed by the Virginia Department of Health (VDH) to promote health equity in the Commonwealth by factoring social, economic, educational, demographic, and environmental factors that are indicators of a community’s well-being and health status of a population. A lower HOI score indicates poorer health outcomes. Correlating the HOI with the HIN helps to prioritize road safety investments alongside those areas that have poor health outcomes. Prior VDOT analyses found a strong statewide spatial correlation of pedestrian crashes in areas with lower HOI ratings.

## Regional Health Opportunity Index

The HIN maps for the region in figures 9 and 10 use an HOI layer as a basemap. Five census tracts are identified as “Very Low” or “Low” in health outcomes. Table 3 shows these tracts are within a city boundary -- four tracts are within the city of Staunton, and one is within the City of Waynesboro.

TRACT ID	LOCATION	HOI SCORE	POPULATION (2019 ACS)
CENSUS TRACT 32	Waynesboro	Very Low	5,502
CENSUS TRACT 6	Staunton	Very Low	4,234
CENSUS TRACT 1	Staunton	Very Low	894
CENSUS TRACT 5	Staunton	Low	3,086
CENSUS TRACT 2	Staunton	Low	3,565

Table 3: Census Tracts with Low and Very Low HOI, SAWMPO (Source: VDOT)

**Error! Reference source not found.** 9 shows a map of the HIN and HOI for the entire region. Segments are labeled based on their rank compared to the rest of the HIN. A lower number (1, 2, 3, etc.,) indicates a higher per mile fatality and serious injury density (concentration). Orange segments, which are called Tier 1 HIN, are above the mean weighted score for fatalities and serious injuries for all HIN segments. Green segments, which are called Tier 2 HIN, are still considered part of the HIN, but are below the mean KABCO crash cost weighted score, using the 2020 values in table 4. A search for segments with a cluster of KA and KAB crashes was performed with a threshold of two KA crashes, or one KA crash and a clustering of several B level crashes. HIN segments were then weighted by multiplying the count of crashes on a given segment by the corresponding severity cost category and then dividing by the length of the segment. For example, a two-mile segment that has two K severity crashes and one B severity crash has a cost of \$27,174,127. After dividing this number by the length (two miles), the weighted score of \$13,587,063 per mile is achieved. Subsequent sections show the HIN and HOI specific to each locality.

SEVERITY	COMPREHENSIVE CRASH COSTS
K	\$13,457,654
A	\$790,242
B	\$258,819
C	\$145,744
O	\$13,743

Table 4: VDOT 2020 Comprehensive Crash Costs (Source: VDOT)

<sup>5</sup> HOI is presently being updated by VDH based on 2020 Census data. Updated HOI information should be provided in 2023 at the link provided, (<https://apps.vdh.virginia.gov/omhhe/hoi/dashboards>).

# Regional High Injury Network

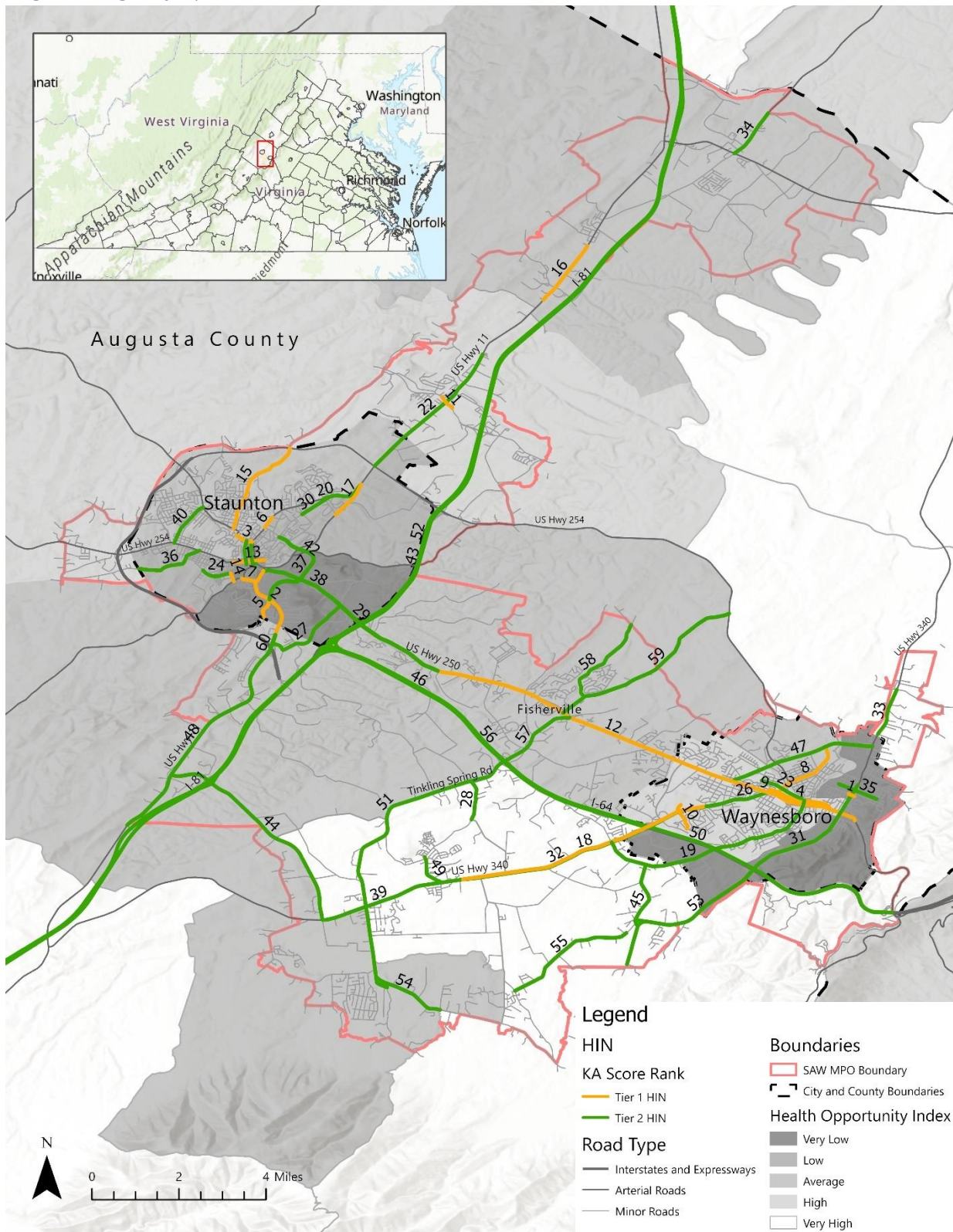


Figure 9: SAWMPO KA HIN, 2017-2021 (Source: VDOT)

Table 5 below shows the top ten KA segments HIN for the SAWMPO region. The table uses the aforementioned weighted scoring system<sup>6</sup> where each crash severity level is assigned a crash cost multiplier, then calculated on a per mile basis. Segments that have a high number of crashes over a short segment length have a higher score. The subsequent sections of this report specific to each of Staunton, Waynesboro, and Augusta County list the top ten segments for each locality.

*Please note that, while B level crashes are included in the table, they were not considered during the weighting of these segments.*

ROUTE	UNIQUE ID	SAWMPO RANK	LENGTH (MI)	TOTAL K	TOTAL A	TOTAL B	TOTAL KAB
<b>5<sup>TH</sup> ST-WAYNESBORO</b> (N COMMERCE AVE TO N WINCHESTER AVE)	31	1*	0.12	0	2	0	2
<b>US-11N (ORCHARD HILL CIR TO RICHMOND AVE)</b>	17	2*	1.71	0	28	4	32
<b>US-250E (N AUGUSTA ST TO THORNROSE AVE)</b>	47	3*	0.33	0	4	0	4
<b>US-250E (FLORENCE AVE TO RANDOLPH AVE)</b>	12	4*	1.29	0	15	14	29
<b>UR-4942N (GREENVILLE AVE TO SOUTHERN STAUNTON CITY LIMIT)</b>	37	5*	0.44	0	5	0	5
<b>BUS US-11N (WOODROW AVE TO EDGEWOOD RD)</b>	50	6*	0.27	0	3	0	3
<b>UR-4900E (MIDDLEBROOK AVE TO GREENVILLE AVE)</b>	40	7*	0.28	0	3	0	3
<b>VA-254E/UR 5107N (W MAIN ST TO HOPEMAN PKWY)</b>	6	8*	1.56	1	10	8	19
<b>US-250E/US-340N (HUNTER ST TO PELHAM DR)</b>	13	9*	3.44	2	22	21	45
<b>TIFFANY DR. (CHATHAM RD TO NEAR ROSSER AVE)</b>	61	10*	0.61	0	4	3	7
<b>TOTAL</b>			<b>10.06</b>	<b>3</b>	<b>96</b>	<b>50</b>	<b>149</b>

Table 5: Regional KA HIN and Crashes by Severity, 2017-2021 (Source: VDOT) Orange font and asterisk (\*) symbol represent a tier one HIN segment and/or corridor.

<sup>6</sup> VDOT Virginia Traffic Crash Costs Memo, ([https://www.virginiadot.org/business/resources/vhsip/VDOT-Crash-Costs-Memo\\_acc050222.pdf](https://www.virginiadot.org/business/resources/vhsip/VDOT-Crash-Costs-Memo_acc050222.pdf))



Similarly, figure 10 shows the HIN overlaid with the HOI index with B injury crashes factored into the HIN. Segments are again weighted based on a VDOT Virginia Traffic Crash Costs memo<sup>7</sup>.

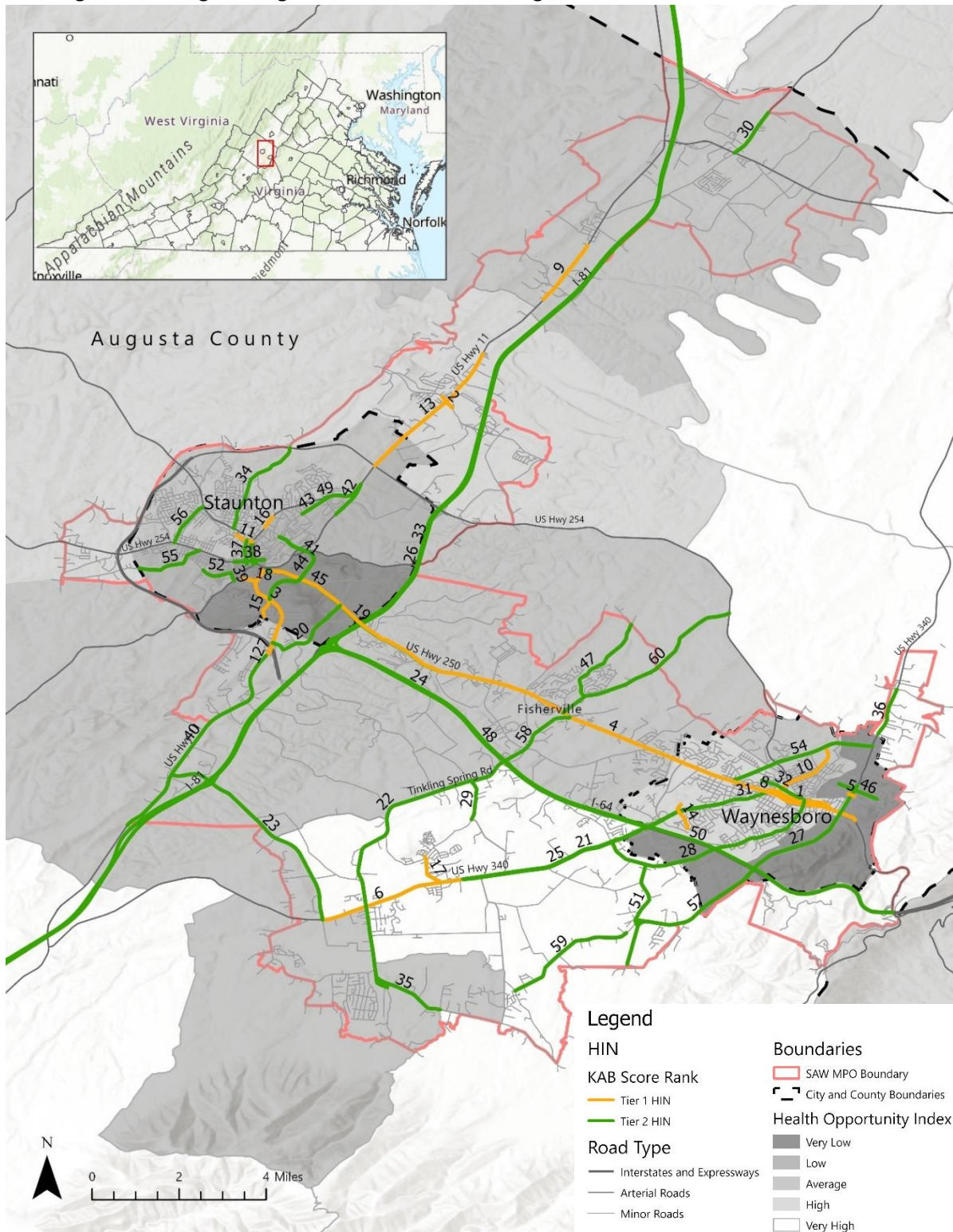


Figure 10: SAWMPO KAB HIN, 2017-2021 (Source: VDOT)

Table 6 below represents the top ten segments in the SAWMPO region for the fatal, serious, and minor injury (K, A, B severity) HIN analysis. The addition of minor injury crashes provides a larger sample size to analyze and helps to account for any subjective discrepancies that may occur in crash reporting where an A level crash is miscategorized as a B level crash. *Please note that repeat names, like US-11N, represent different segments of that route.*

The length of the top ten SAWMPO KAB HIN segments is 18.11 miles versus 10.06 miles for the KA severity HIN. The longer (KAB) HIN has higher totals for all crash severity levels. Half of the segments that make up the top ten KA HIN are also part of the top ten KAB. A complete list of the KA and KAB HINs, with unique identifiers, can be found in the appendices.

ROUTE	UNIQUE ID	SAWMPO RANK	LENGTH (MI)	TOTAL K	TOTAL A	TOTAL B	TOTAL KAB
US-250E (FLORENCE AVE TO RANDOLPH AVE)	12	1*	1.29	0	15	14	29
SC-612E (DUNSMORE RD TO LEE ST)	55	2*	0.32	0	2	5	7
US-11N (ORCHARD HILL CIR. TO RICHMOND AVE.)	17	3*	1.71	0	28	4	32
US-250E (PELHAM DR. TO OLD GOOSE CREEK RD.)	14	4*	4.95	2	28	53	83
5 <sup>TH</sup> ST- WAYNESBORO (N COMMERCE AVE TO N WINCHESTER AVE)	31	5*	0.12	0	2	0	2
US-340N (WHITE HILL RD TO NEAR KING LN)	8	6*	2.73	0	6	39	45
US-11N (ORCHARD HILL CIR. TO ROLLING THUNDER LN.)	19	7*	0.52	0	0	8	8
US-250E/US-340N (HUNTER ST TO PELHAM DR)	13	8*	3.44	2	22	21	45
US-11N (PENTECOST LN. TO SYDNEY LN.)	56	9*	1.47	0	7	11	18
VA-254E/UR 5107N (W MAIN ST TO HOPEMAN PKWY)	6	10*	1.56	1	10	8	19
<b>TOTAL</b>			<b>18.11</b>	<b>5</b>	<b>120</b>	<b>163</b>	<b>288</b>

Table 6: Regional KAB HIN for SAWMPO and Crashes by Severity, 2017-2021 (Source: VDOT) Orange font and asterisk (\*) symbol represent a tier one HIN segment and/or corridor.



## Pedestrian Safety Action Plan Corridors

In 2018, VDOT published the first [Pedestrian Safety Action Plan<sup>8</sup>](#) (PSAP). VDOT worked with a multidisciplinary group of stakeholders to identify and address pedestrian safety concerns through a data driven approach. This approach included identifying and addressing locations with a history of pedestrian safety crashes along with proactively addressing pedestrian crash risk through the identification of priority corridors. The PSAP complements and supports prioritizing many pedestrian safety efforts in Virginia, including the Virginia 2022–2026 SHSP, VDOT HSIP, SMART SCALE, Transportation Alternatives Program, and Safe Routes to School program.

VDOT created an online [PSAP Map Viewer<sup>9</sup>](#) tool that shows pedestrian corridors and crash clusters based on statewide and district ranking. Version 3 is based on pedestrian and bicyclist crashes that occurred between 2016 and 2020 and the priority corridors are organized into four tiers and shown in figures 11 and 12. The PSAP methodology was re-analyzed for the area and network within the SAWMPO boundary for regional comparison. Below, table 7 provides a summary of PSAP corridors in Staunton, Waynesboro, and Augusta County.

PSAP CORRIDOR TYPE	STAUNTON	WAYNESBORO	AUGUSTA COUNTY
DISTRICT 1%	1.23 miles	7.52 miles	5.88 miles
DISTRICT 5%	20.20 miles	18.37 miles	18.41 miles
STATEWIDE 1%	0.97 miles	6.18 miles	8.09 miles
STATEWIDE 5%	10.37 miles	22.28 miles	22.74 miles

*Table 7: Pedestrian Safety Action Plan Summary (Source: VDOT)*

## Regional Pedestrian Safety Action Plan Highlights

Notable district and statewide PSAP corridors shown on figures 11 and 12 include US HWY 250, US HWY 11, US HWY 340, Quick’s Mill Road and White Hill Road. Significant overlap is also observed between the district and statewide PSAP corridors – particularly on US-250, US-340, US-11 -- and between the PSAP corridors and the KA and KAB HINs. The following sections specific to each SAWMPO locality feature a map showing PSAP corridors.

<sup>8</sup> PSAP Report, ([https://www.virginiadot.org/business/resources/VDOT\\_PSAP\\_Report\\_052118\\_with\\_Appendix\\_A\\_B\\_C.pdf](https://www.virginiadot.org/business/resources/VDOT_PSAP_Report_052118_with_Appendix_A_B_C.pdf))

<sup>9</sup> [Pedestrian Safety Action Plan \(PSAP\)](#), (<https://bit.ly/VDOTPSAP>)

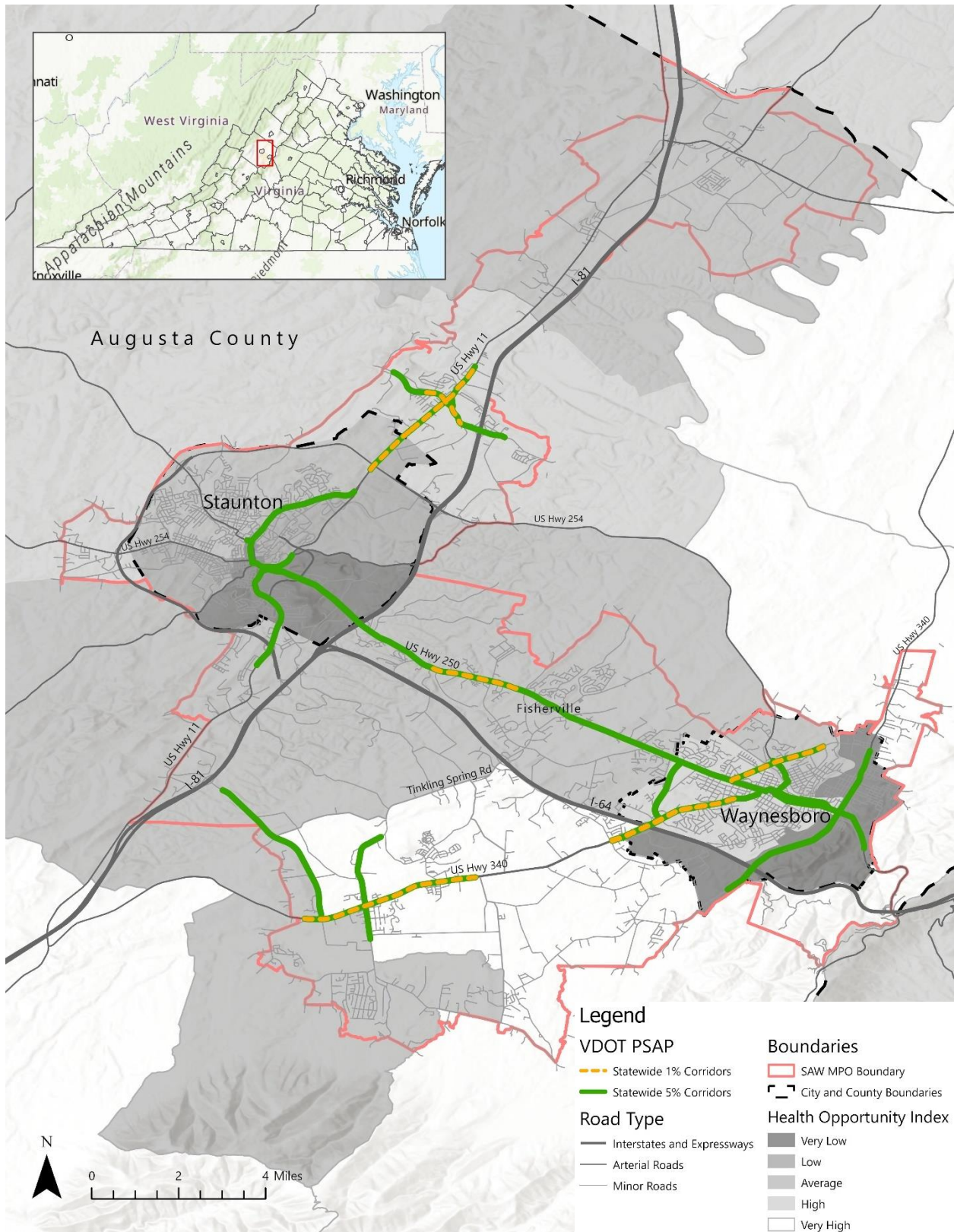


Figure 11: SAWMPO Statewide PSAP Corridors (Source: VDOT)



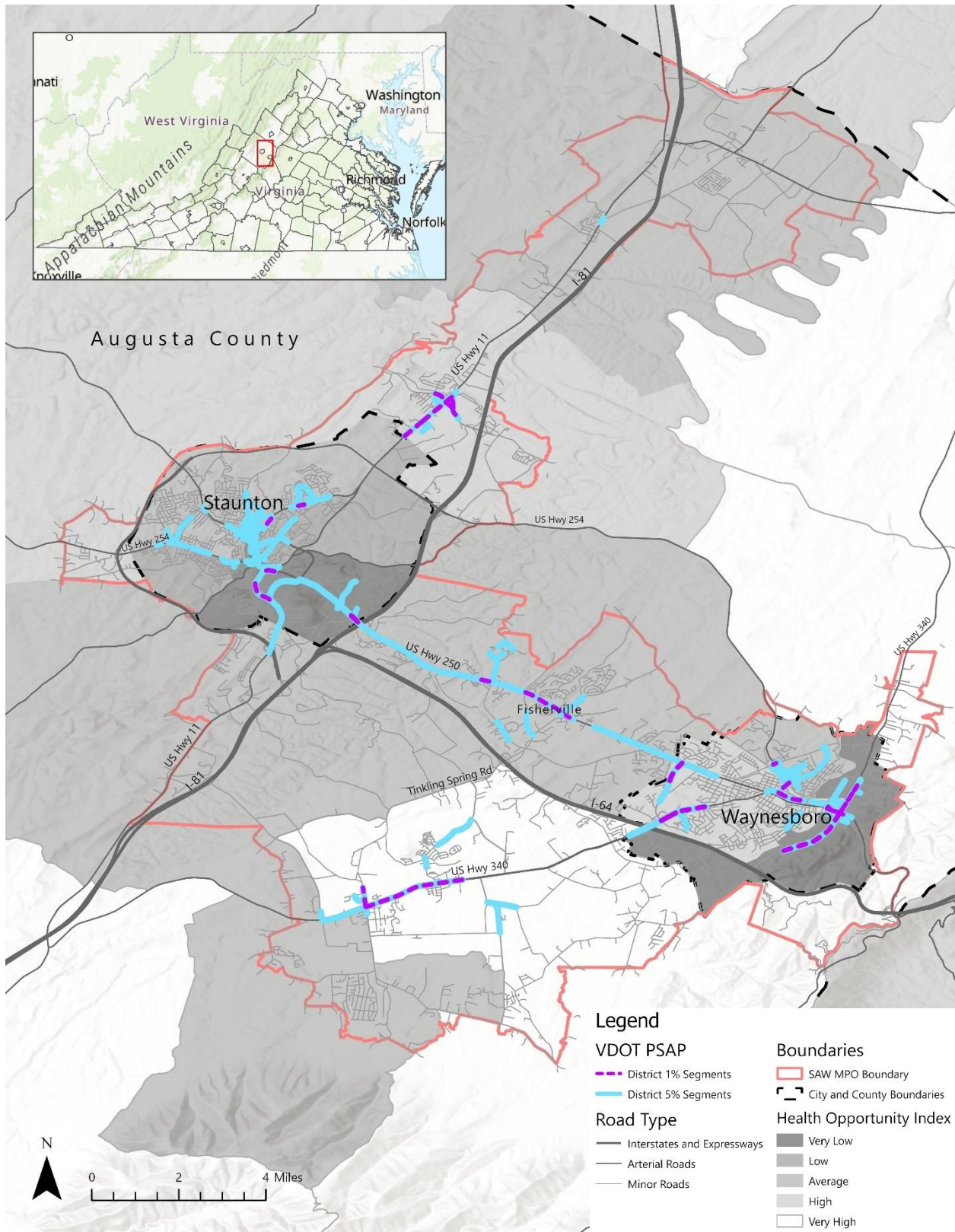


Figure 12: SAWMPO District PSAP Corridors (Source: VDOT)

## USDOT – Underserved Census Tracts – Regional Highlights

The United States Department of Transportation (USDOT) defines disadvantaged Census Tracts, as exceeding the 50th percentile (75th for resilience) across at least four of the following six transportation disadvantaged indicators:

1. Transportation Access disadvantage – identifies communities that spend more, and longer, to get where they need to go.
2. Health disadvantage – identifies communities based on variables associated with adverse health outcomes, disability, as well as environmental exposure.
3. Environmental disadvantage - identifies communities with disproportionate pollution burden and inferior environmental quality.
4. Economic disadvantage – identifies areas and populations with high poverty, low wealth, lack of local jobs, low homeownership, low educational attainment, and high inequality.
5. Resilience disadvantage – identifies communities vulnerable to hazards caused by climate change.
6. Equity disadvantage – identifies communities with a high percentile of persons who speak English “less than well”.

Additional information on these indicators can be found at the [USDOT Equity Justice40 website<sup>10</sup>](#).

The basemap on figure 13 displays census tracts with gradient shading displaying how many of the six disadvantaged indicators are met. It is important to note that no census tracts within the region meet the minimum of four to be considered as disadvantaged. There are several census tracts within the region that show scores in at least three categories and thus considered to be “at-risk”. Table 8 shows the census tracts within the SAWMPO region that are considered “at-risk”.

TRACT ID	LOCATION	POPULATION (2019 ACS)	KAB COUNT	TOTAL CRASHES
<b>CENSUS TRACT 31</b>	Waynesboro	1,102	49	343
<b>CENSUS TRACT 32</b>	Waynesboro	5,502	90	572
<b>CENSUS TRACT 33</b>	Waynesboro	4,482	22	204
<b>CENSUS TRACT 706</b>	Augusta County	10,199	224	770
<b>CENSUS TRACT 2</b>	Staunton	3,565	16	142
<b>CENSUS TRACT 5</b>	Staunton	3,086	41	294
<b>CENSUS TRACT 6</b>	Staunton	4,234	77	653

Table 8: USDOT "At-Risk" Census Tracts in SAWMPO (Source: VDOT)

<sup>10</sup> USDOT Justice40 Initiative, (<https://www.transportation.gov/equity-Justice40>)



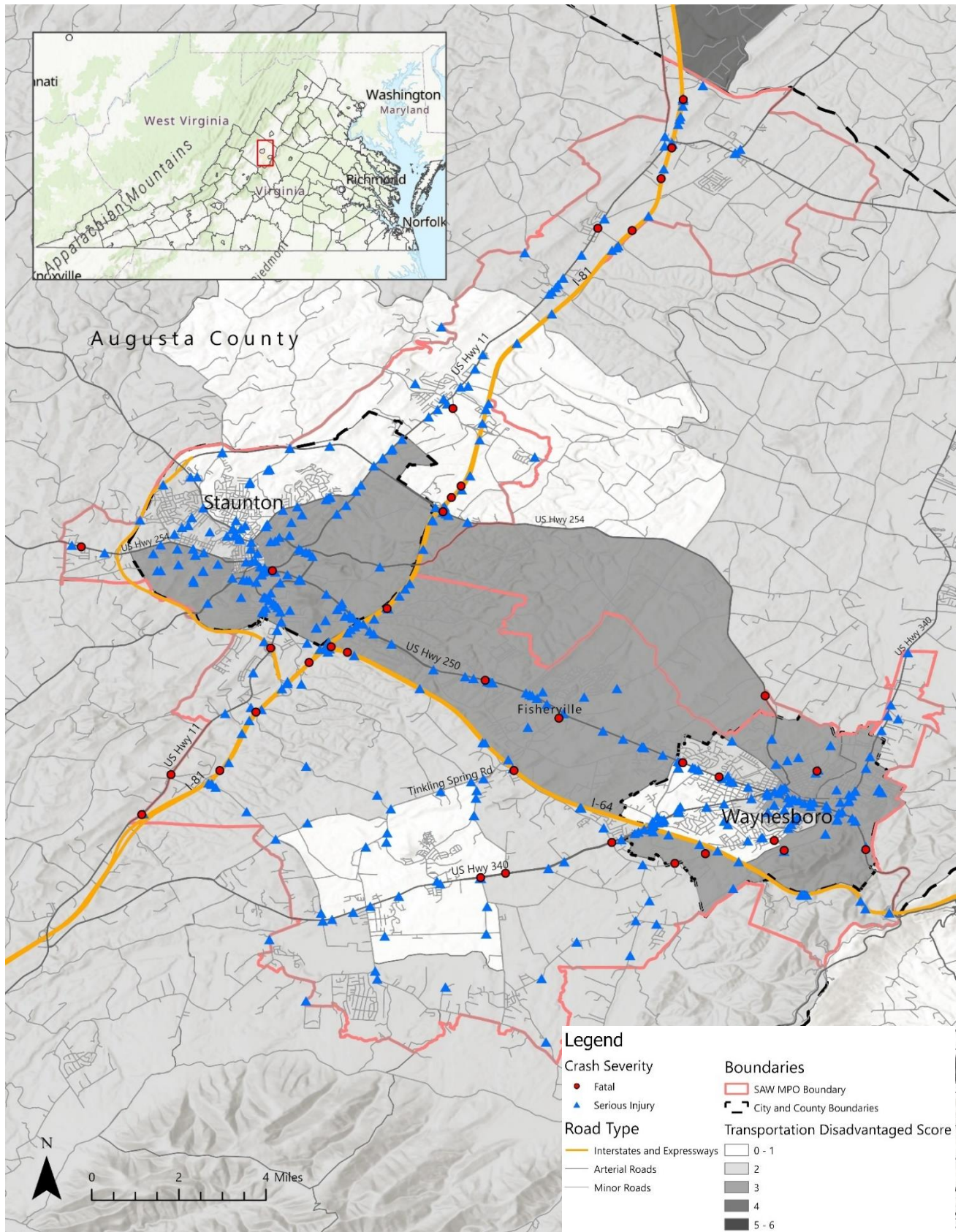


Figure 13: "At-Risk" Transportation Disadvantaged Census Tracts, USDOT (Source: VDOT, USDOT)



## Jurisdictional Safety Assessments

The following sections show a separate data analysis for each incorporated jurisdiction, including the cross-representation of crash factors based on emphasis areas from Virginia’s 2022-2026 SHSP. These proportions inform the focus of Safe System efforts and collaboration between the 5Es to identify and prioritize actions. These sections also include the HIN maps and tables listing route segment names, lengths, and their weighted scores to inform resources and efforts. Similarly, the PSAP maps show priority corridors for vulnerable users and how they rank based on a regional and statewide levels of comparison. Mitigating the most severe crashes on the identified route segments help to reduce the likelihood of possible injury and property damage crashes and their associated economic costs.

Table 9 below shows the summary of KA and KAB crashes over the last five years by emphasis area for the cities of Staunton, Waynesboro and Augusta County. All data referenced as Augusta County represent crashes that occur in the area of Augusta County that falls within the SAWMPO limits. Any crashes outside of the SAWMPO borders were not considered in our analysis. Please note that the sum of all emphasis areas is greater than the total for KA and KAB severity levels. Multiple emphasis areas may be represented in a single crash -- For example, one crash event involving an impaired driver who is speeding will be considered in each emphasis area.

<b>Emphasis Area</b>	<b>KA Crashes - Staunton</b>	<b>KAB Crashes - Staunton</b>	<b>KA Crashes - Waynesboro</b>	<b>KAB Crashes - Waynesboro</b>	<b>KA Crashes - Augusta Co.</b>	<b>KAB Crashes - Augusta Co.</b>
<b>Total Crashes</b>	136	193	126	266	229	954
<b>Impaired Driving</b>	49	64	51	94	64	229
<b>Speed</b>	32	44	39	64	83	298
<b>Occupant Protection</b>	24	33	32	49	51	198
<b>Roadway Departure</b>	20	23	14	34	77	287
<b>Intersections</b>	103	139	101	203	89	359
<b>Young Drivers</b>	22	35	22	54	28	171
<b>Older Drivers</b>	39	58	41	71	48	217
<b>Bicycles</b>	2	3	7	11	2	5
<b>Pedestrians</b>	8	9	7	14	14	22
<b>Motorcycle Involved</b>	11	15	17	29	28	54

Table 9: Emphasis Area Summary, Staunton, Waynesboro, and Augusta County, 2017-2021 (Source: VDOT)

## Augusta County

### Key Highlights

Table 10 shows the emphasis area cross-matrix for KAB crashes in Augusta County that are within the SAWMPO boundary. Intersections, roadway departure and speeding have the highest cross-representation in the matrix. Focused education, outreach and enforcement initiatives that target roadway departure and speeding is recommended. Reviewing high crash intersections and implementing improvements where possible is also recommended.

Augusta County KAB Cross Matrix										
KAB Crashes - Augusta Co.	Impaired Driving	Speed	Occupant Protection	Roadway Departure	Inter-sections	Young Drivers	Older Drivers	Bicycles	Pedestrians	Motorcycle Involved
<b>Total Crashes (954)</b>	229	298	118	287	359	171	217	5	22	54
<b>Impaired Driving</b>		28%	35%	36%	22%	22%	16%	0%	36%	11%
<b>Speeding</b>	37%		41%	44%	17%	30%	17%	0%	9%	35%
<b>Occupant Protection</b>	18%	16%		17%	11%	12%	10%	0%	0%	0%
<b>Roadway Departure</b>	45%	43%	42%		3%	26%	12%	0%	0%	26%
<b>Intersections</b>	34%	20%	32%	4%		44%	53%	100%	55%	35%
<b>Young Drivers</b>	17%	17%	17%	16%	21%		12%	0%	14%	2%
<b>Older Drivers</b>	15%	12%	18%	9%	32%	15%		40%	27%	19%
<b>Bicycles</b>	0%	0%	0%	0%	1%	0%	1%		0%	0%
<b>Pedestrians</b>	3%	1%	0%	0%	3%	2%	3%	0%		0%
<b>Motorcycle Involved</b>	3%	6%	0%	5%	5%	1%	5%	0%	0%	
<i>Chart is read vertically. Percentages are in relation to the column. Color scale provided in this row.</i>										

Table 10: Augusta County KAB Cross Matrix, 2017-2021 (Source: VDOT)

Chart example: 37 percent of impaired driving crashes involved speeding.

### High Injury Network and Health Opportunity Index

Figure 14 below shows all KAB crashes, the HIN, and HOI for Augusta County within the SAWMPO boundary. Tier 1 segments are found on the following routes: SC-612E, US-250E, US-340N, SC-649N, and two sections of US-11N.

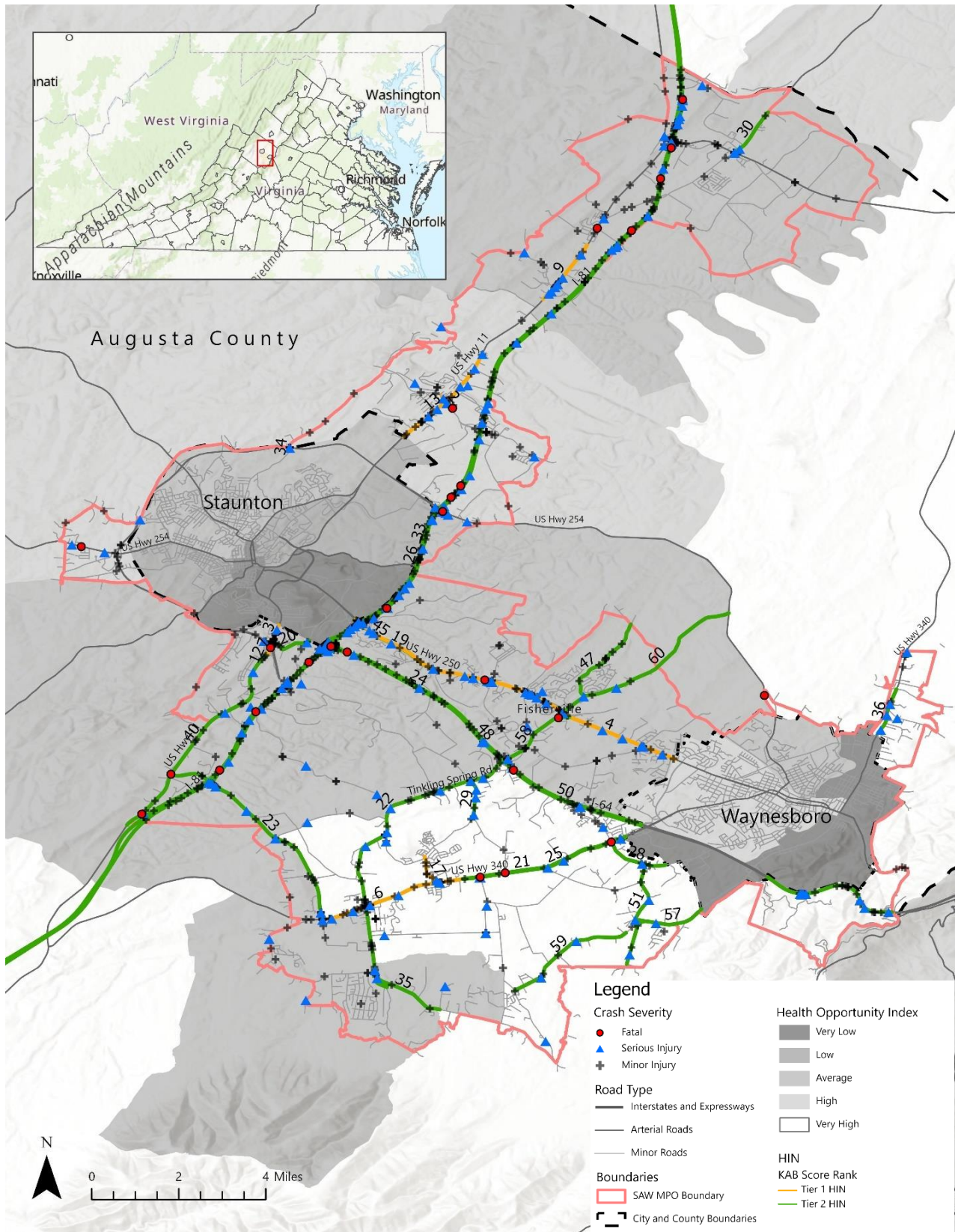


Figure 14: Augusta County KAB HIN (Source: VDOT)

## Augusta County High Injury Network Segments and Corridors

Table 11 shows the top ten KAB segments within Augusta County within the SAWMPO boundary. Two of the segments are below a mile in length, the rest of them range from 1.47 to 6 miles in length. There are a total of 6 fatal injuries, 94 serious injury, and 239 minor injury crashes on the top ten segments of the KAB HIN. Focusing improvements on corridors that are on the KAB HIN is recommended.

ROUTE	UNIQUE ID	SAWMPO RANK	LENGTH (MI)	TOTAL K	TOTAL A	TOTAL B	TOTAL KAB
SC-612E (DUNSMORE RD TO LEE ST)	55	2*	0.32	0	2	5	7
US-250E (STONE RIDGE DR. TO OLD GOOSE CREEK RD.)	14	4*	4.95	2	28	53	83
US-340N (WHITE HILL RD TO NEAR KING LN)	8	6*	2.73	0	6	39	45
US-11N (PENTECOST LN. TO SYDNEY LN.)	56	9*	1.47	0	7	11	18
US-11N (WOODROW WILSON PKWY TO PRUCHNICH LN.)	54	13*	6.00	0	12	26	38
SC-649N (STUARTS DRAFT HWY TO ROUND HILL DR)	59	17*	0.72	0	1	7	8
US-340S (NEAR KING LN TO NORTHGATE AVE)	10	21	4.79	1	20	16	37
SC-608N (STUARTS DRAFT HWY TO LADD RD)	23	22	4.67	0	6	30	36
SC-654E (LEE JACKSON MEM. HWY TO STUARTS DRAFT HWY)	21	23	4.71	1	7	27	35
I-64W (TINKLING SPRINGS RD TO I-81)	3	24	4.45	2	5	25	32
<b>TOTAL</b>			<b>34.79</b>	<b>6</b>	<b>94</b>	<b>239</b>	<b>339</b>

Table 11: Augusta County KAB HIN Segments and Corridors (Source: VDOT) Orange font and asterisk (\*) symbol represent a tier one HIN segment and/or corridor.

## Pedestrian Safety Action Plan Corridors

Figures 15 and 16 below show the statewide and district corridors for Augusta County within the SAWMPO boundary. Significant overlap can be seen between the statewide and district corridors on the following roads: US-340, US-250, US-11, and Laurel Hill Road.



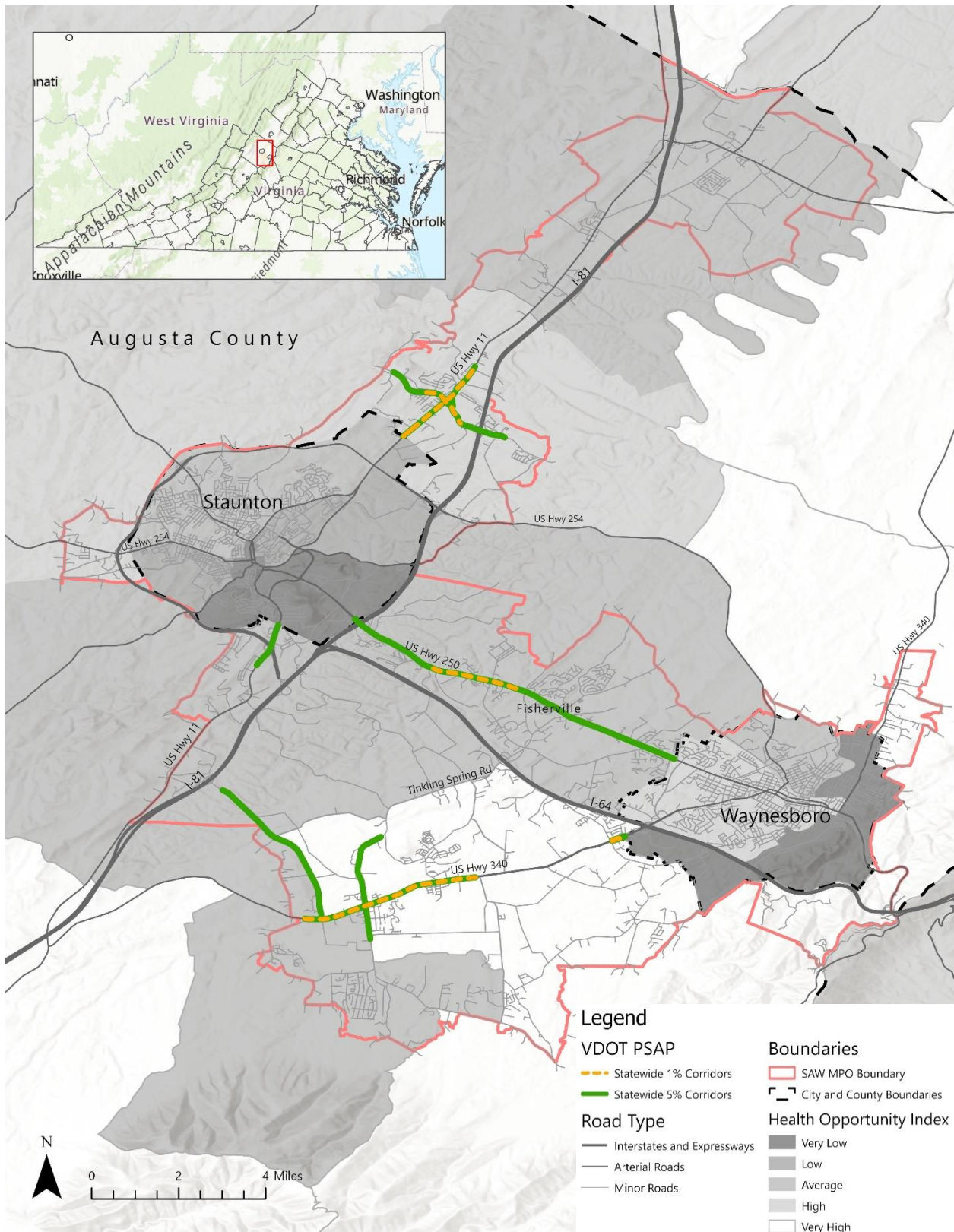


Figure 15: Augusta County Statewide PSAP Corridors (Source: VDOT)

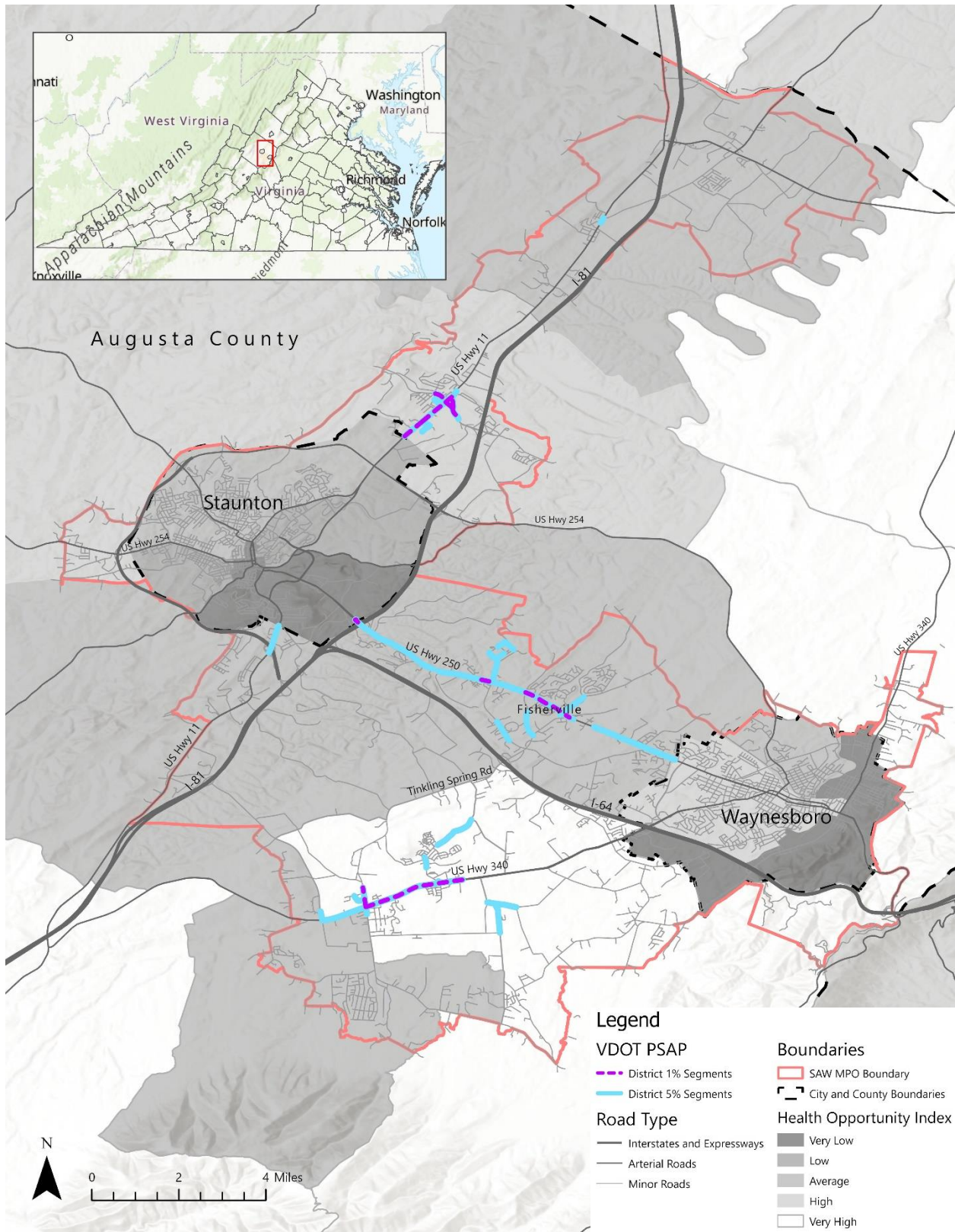


Figure 16: Augusta County District PSAP Corridors (Source: VDOT)



# Staunton

## Key Highlights

Table 12 shows the emphasis area cross-matrix for KAB crashes in the City of Staunton. Intersections, impaired driving, speeding, and occupant protection are frequent factors in the cross-matrix.

Intersections are the highest factor for all emphasis areas, which is anticipated in an urbanized area.

Focused education, outreach and enforcement initiatives that target impaired driving, speeding and occupant protection are recommended. Education and outreach to older populations is recommended, given the overrepresentation of this population in intersection and motorcycle crashes.

Staunton KAB Cross Matrix										
KAB Crashes Staunton	Impaired Driving	Speed	Occupant Protection	Roadway Departure	Inter-sections	Young Drivers	Older Drivers	Bicycles	Pedestrians	Motorcycle Involved
<b>Total Crashes (193)</b>	64	44	33	23	139	35	58	3	9	15
<b>Impaired Driving</b>		45%	48%	43%	37%	34%	21%	0%	22%	13%
<b>Speed</b>	31%		39%	30%	20%	31%	14%	0%	11%	27%
<b>Occupant Protection</b>	25%	30%		30%	17%	23%	10%	0%	0%	0%
<b>Roadway Departure</b>	16%	16%	21%		9%	3%	9%	0%	0%	13%
<b>Intersections</b>	80%	64%	70%	52%		83%	81%	100%	78%	73%
<b>Young Drivers</b>	19%	25%	24%	4%	21%		7%	33%	0%	7%
<b>Older Drivers</b>	19%	18%	18%	22%	34%	11%		0%	0%	47%
<b>Bicycles</b>	0%	0%	0%	0%	2%	3%	0%		0%	0%
<b>Pedestrians</b>	3%	2%	0%	0%	5%	0%	0%	0%		0%
<b>Motorcycle Involved</b>	3%	9%	0%	9%	8%	3%	12%	0%	0%	
<i>Chart is read vertically. Percentages are in relation to the column. Color scale provided in this row.</i>										

Table 12: Staunton KAB Cross Matrix, 2017-2021 (Source: VDOT)

Chart example: 31 percent of impaired driving crashes involved speeding.

## High Injury Network and Health Opportunity Index

Figure 17 below shows all KAB crashes, the HIN, and HOI for the City of Staunton. Four of the segments identified in the HIN are below a mile in length. Shorter segments are included to identify roads with a clustering of crashes to help identify where limited traffic safety improvements may be made.



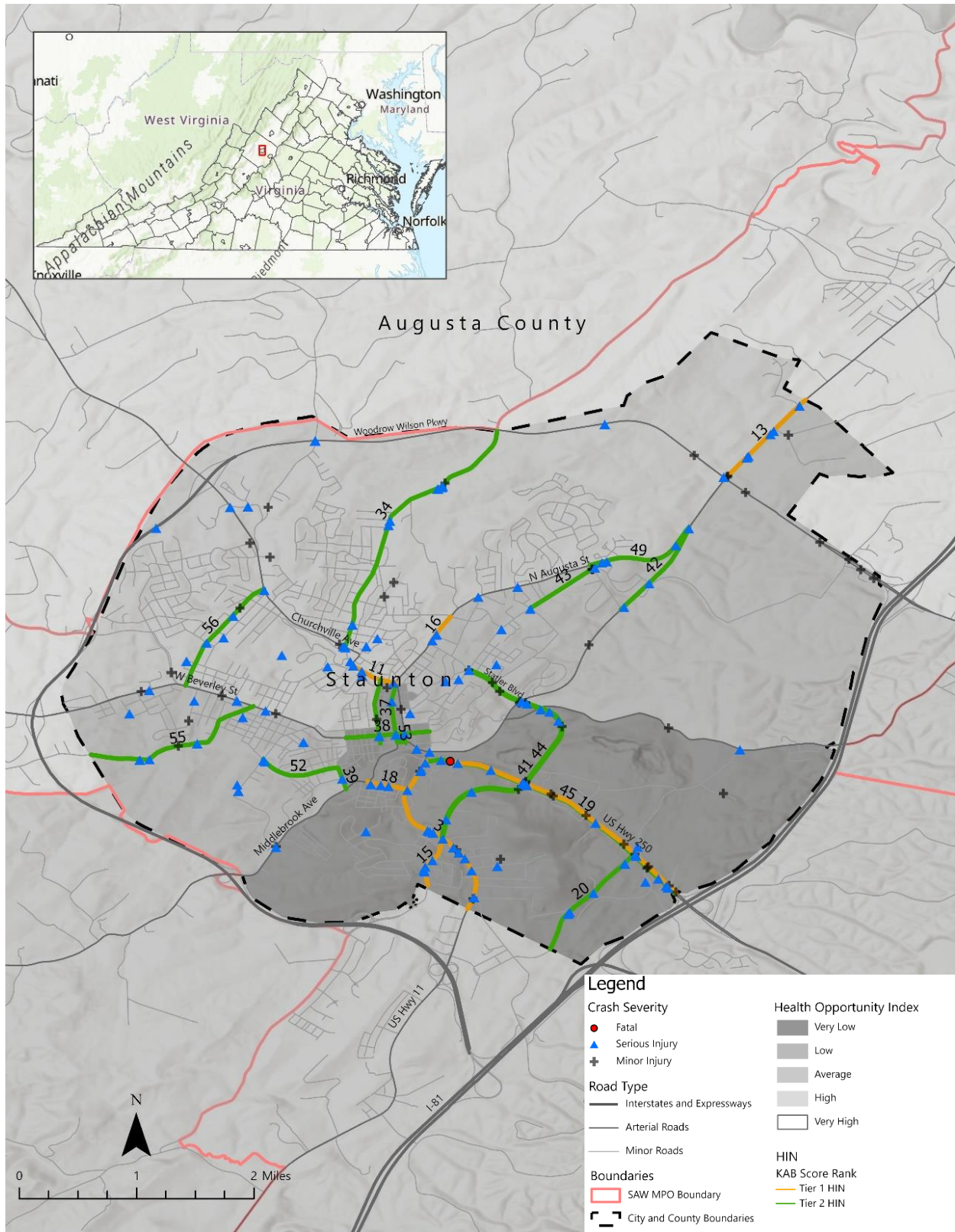


Figure 17: City of Staunton KAB HIN, 2017-2021 (Source: VDOT)

## City of Staunton High Injury Network Segments and Corridors

Below, Table 13 shows the HIN segments and corridors within the City of Staunton. Only one of the top ten SAWMPO segments, US 11-N, falls within the city. Half of the segments are less than mile long, while the other half are between 1.71 and 3.83 miles long. Focusing improvements on shorter segments may help ameliorate safety concerns at specific intersections, while focusing improvements over the extent of a corridor may do more to reduce the total number of injuries and deaths throughout the HIN, and city. With 146 KAB crashes over 14.76 miles, there are approximately 9.9 KAB crashes per HIN mile.

*Note: Orange font and asterisk (\*) symbols in table 13 represent a tier one HIN segment and/or corridor.*

ROUTE NAME	UNIQUE ID	RANK	LENGTH (MI)	TOTAL K	TOTAL A	TOTAL B	TOTAL KAB
US-11N (ORCHARD HILL CIR. TO RICHMOND AVE.)	17	3*	1.71	0	28	4	32
US-250E (N AUGUSTA TO THORNROSE AVE)	47	11*	0.33	0	4	0	4
US-11N (WOODROW WILSON PKWY TO PRUCHNICH LN.)	54	13*	3.33	0	12	26	38
UR-4924N (GREENVILLE AVE TO SOUTHERN STAUNTON CITY LIMIT)	37	15*	0.44	0	5	0	5
BUS US-11N (EDGEWOOD RD TO WOODROW AVE)	50	16*	0.27	0	3	0	3
UR-4900E (MIDDLEBROOK AVE TO GREENVILLE AVE)	40	18*	0.28	0	3	0	3
US-250W (VILLAGE DR TO NEAR I-81)	16	19*	3.83	1	11	19	31
SC-664E/UR-4944N (NEAR BARTERBROOK RD TO RICHMOND AVE)	36	20	1.80	0	6	8	14
UR-4927N (CHURCHVILLE AVE TO WOODROW WILSON PKWY)	49	34	2.23	0	11	2	13
VA-252N/UR-4905N (W JOHNSON ST TO CHURCHVILLE AVE)	48	37	0.55	0	2	1	3
<b>TOTAL</b>			<b>14.76</b>	<b>1</b>	<b>85</b>	<b>60</b>	<b>146</b>

*Table 13: City of Staunton KAB HIN Segments and Corridors, 2017-2021 (Source: VDOT) Orange font and asterisk (\*) symbol represent a tier one HIN segment and/or corridor.*

## Pedestrian Safety Action Plan Corridors

In addition to the HIN, the locality can focus safety investment on the corridors with identified pedestrian safety needs. Figures 18 and 19 show the Statewide and District PSAP corridors in Staunton.

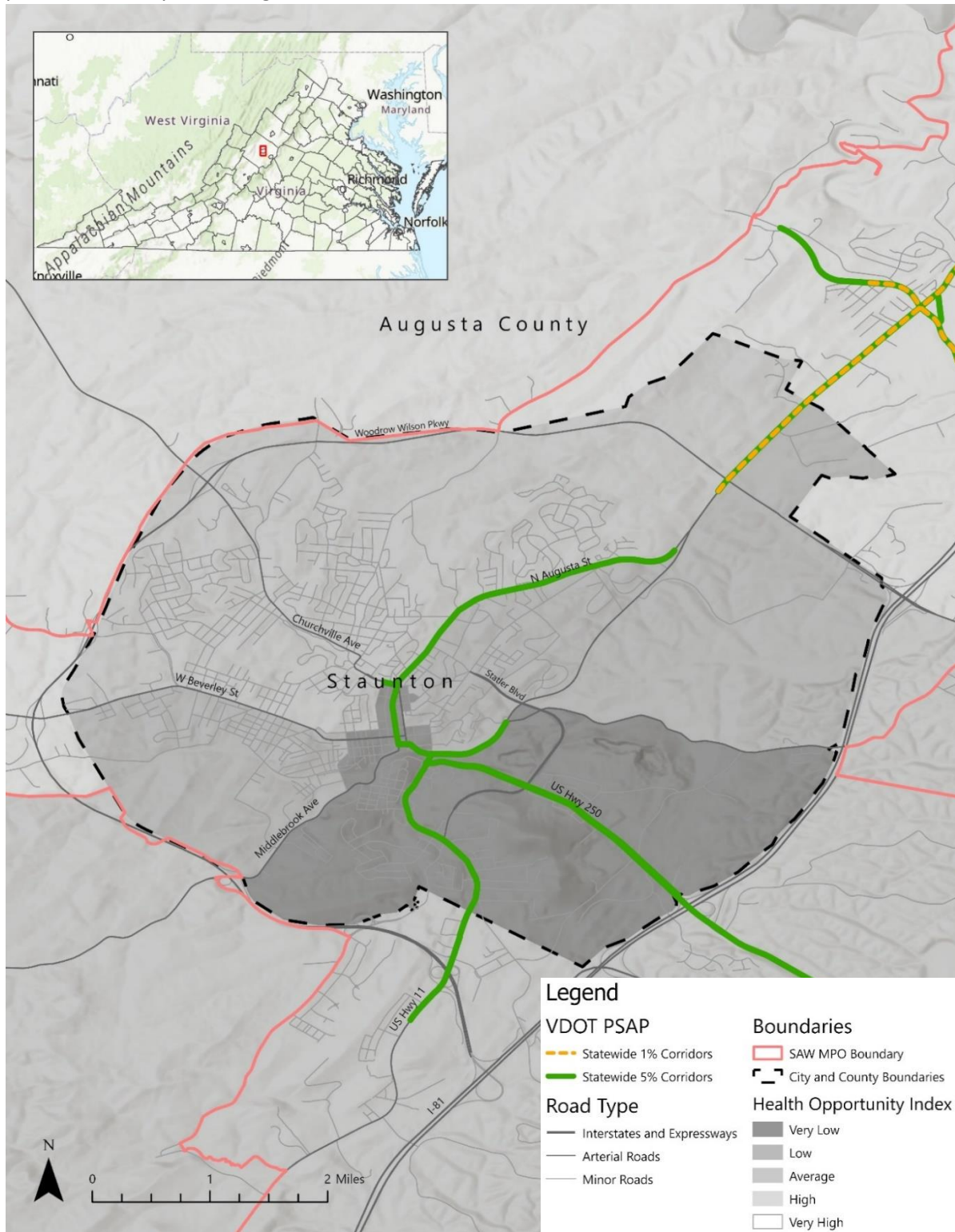


Figure 18: Staunton Statewide PSAP Corridors (Source: VDOT)



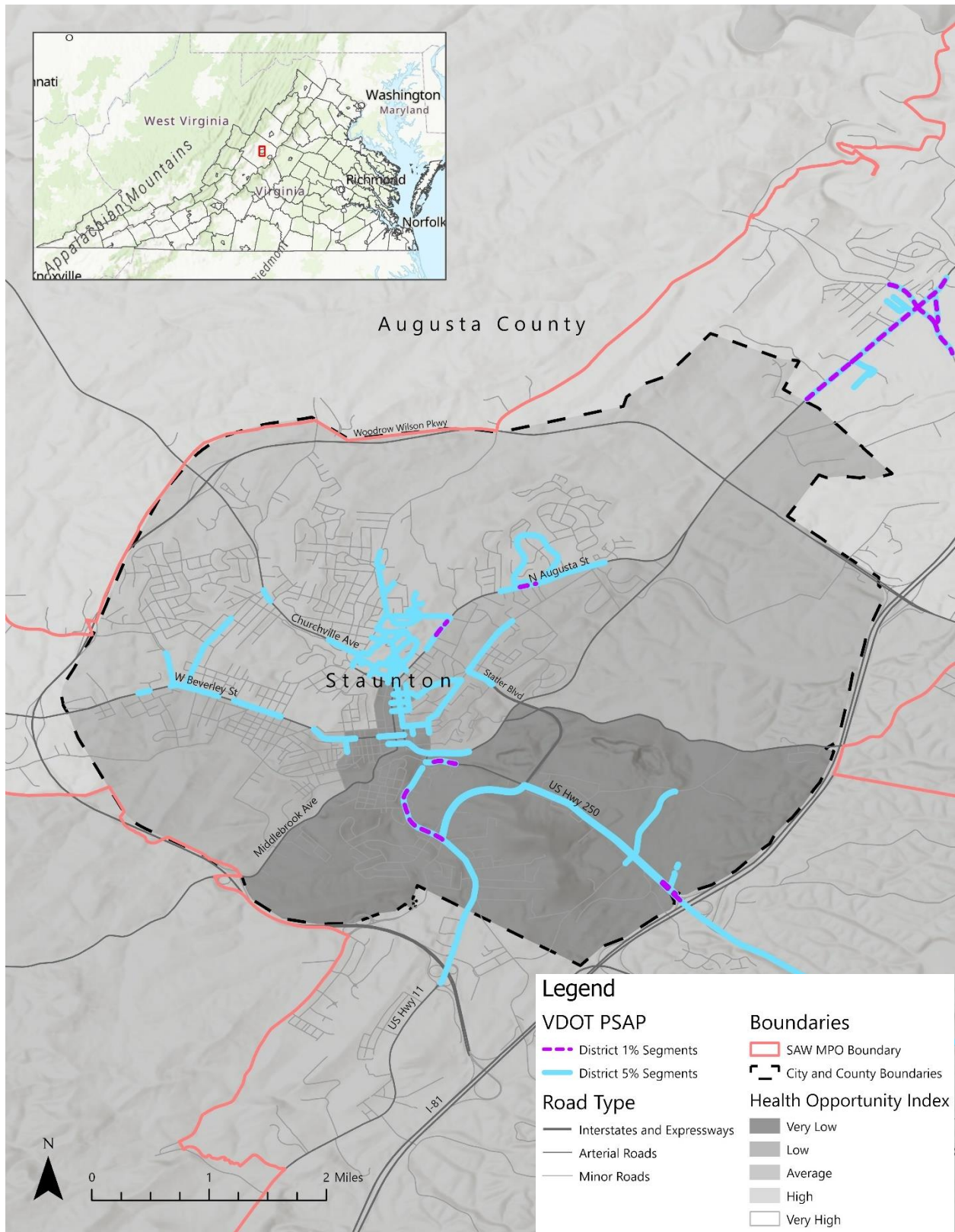


Figure 19: Staunton District PSAP Corridors (Source: VDOT)



# Waynesboro

## Key Highlights

Table 14 shows the emphasis area cross-matrix for KAB crashes in the city of Waynesboro. Impaired driving, intersections, and speeding are the top cross-represented emphasis areas. Intersections are the most prevalent factor in all emphasis areas, except for roadway departure crashes, which is anticipated in an urbanized area.

Waynesboro KAB Cross Matrix										
KAB Crashes Waynesboro (266)	Impaired Driving	Speed	Occupant Protection	Roadway Departure	Inter-sections	Young Drivers	Older Drivers	Bicycles	Pedestrians	Motorcycle Involved
<b>Total Crashes (266)</b>	94	64	49	34	203	54	71	11	14	29
<b>Impaired Driving</b>		42%	65%	47%	36%	33%	30%	9%	43%	24%
<b>Speed</b>	29%		41%	44%	22%	28%	21%	0%	14%	24%
<b>Occupant Protection</b>	34%	31%		29%	16%	24%	13%	0%	21%	0%
<b>Roadway Departure</b>	17%	23%	20%		7%	11%	0%	0%	0%	10%
<b>Intersections</b>	77%	69%	65%	41%		81%	86%	91%	79%	76%
<b>Young Drivers</b>	19%	23%	27%	18%	22%		17%	27%	14%	3%
<b>Older Drivers</b>	22%	23%	18%	0%	30%	22%		18%	14%	28%
<b>Bicycles</b>	1%	0%	0%	0%	5%	6%	3%		0%	0%
<b>Pedestrians</b>	6%	3%	6%	0%	5%	4%	3%	0%		0%
<b>Motorcycle Involved</b>	7%	11%	0%	9%	11%	2%	11%	0%	0%	
<i>Chart is read vertically. Percentages are in relation to the column. Color scale provided in this row.</i>										

Table 14: City of Waynesboro KAB Cross Matrix, 2017-2021 (Source: VDOT)

Chart example: 44 percent of roadway departure crashes involved speeding.

## High Injury Network and Health Opportunity Index

Figure 20 shows the KAB HIN for the city of Waynesboro. The table that follows shows the top ten individual segments and corridors in Waynesboro. Some segments are very short due to the weighting method, which considers crash rates on a per mile basis. These segments are included to pinpoint unique streets and intersections where injury and fatal crashes occur.

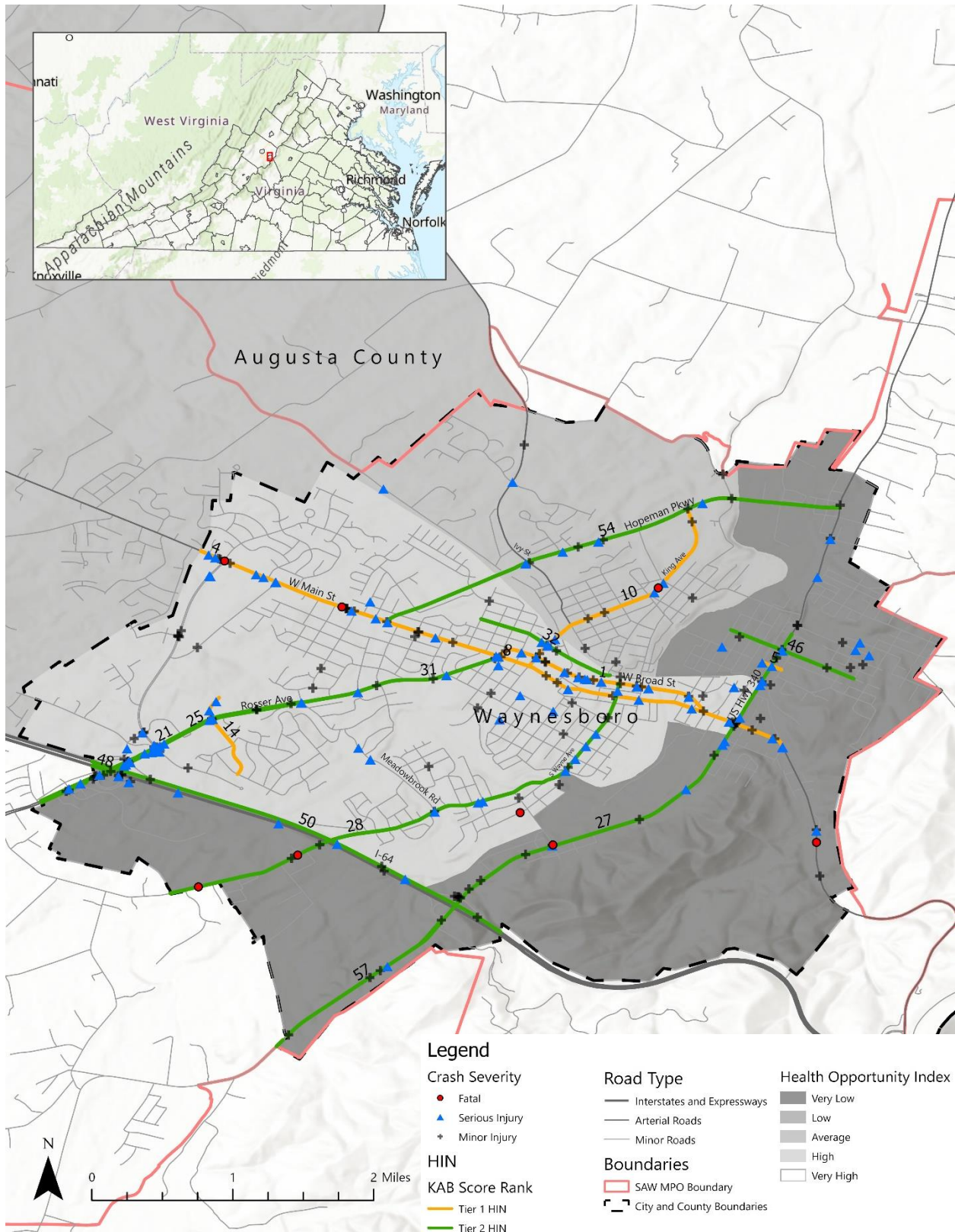


Figure 20: City of Waynesboro KAB HIN, 2017-2021 (Source: VDOT)

## City of Waynesboro High Injury Network Segments and Corridors

Table 15 below shows the HIN segments and corridors within the City of Waynesboro. Three of the segments are less than a mile long, and the remaining segments range from 1.15 to 4.95 miles long. Five of the top ten weighted segments are also within the top ten for the regional, SAWMPO HIN. With 267 KAB crashes over 23.42 miles, there are approximately 11.4 KAB crashes per HIN mile.

ROUTE NAME	UNIQUE ID	RANK	LENGTH (MI)	TOTAL K	TOTAL A	TOTAL B	TOTAL KAB
US-250E (N BATH AVE TO PARK RD)	12	1*	1.29	0	15	14	29
US-250E (PELHAM DR TO STONE RIDGE DR)	14	4*	4.95	2	28	53	83
5 <sup>TH</sup> STREET (N COMMERCE AVE TO N WINCHESTER AVE)	31	5*	0.12	0	2	0	2
US-250E/US-340N (HUNTER ST TO PELHAM DR)	13	8*	3.44	2	22	21	45
VA-254E/UR-5107N (W MAIN ST TO HOPEMAN PKWY)	6	10*	1.56	1	10	8	19
TIFFANY DRIVE (CHATHAM RD TO NEAR ROSSER AVE)	61	14*	0.61	0	4	3	7
US-340S (NORTHGATE AVE TO GRANDVIEW DR)	10	21	4.79	1	20	16	37
US-340N (NORTHGATE AVE TO GRANDVIEW DR)	9	25	4.67	2	12	19	33
US-340N (US-64, EXT 96, TO 3 <sup>RD</sup> ST)	30	27	2.93	0	9	11	20
SC-631E/SC-664N OHIO STREET (NEAR WOODS LN TO W BROAD ST)	35	28	4.33	3	14	12	29
<b>TOTAL</b>			<b>28.69</b>	<b>11</b>	<b>136</b>	<b>157</b>	<b>304</b>

Table 15: City of Waynesboro KAB HIN Segments and Corridors, 2017-2021 (Source: VDOT) Orange font and asterisk (\*) symbol represent a tier one HIN segment and/or corridor.

## Pedestrian Safety Action Plan Corridors

In addition to the HIN, the locality can focus safety investment on the corridors with identified pedestrian safety needs. Figures 21 and 22 show statewide and district PSAP corridors in Waynesboro.

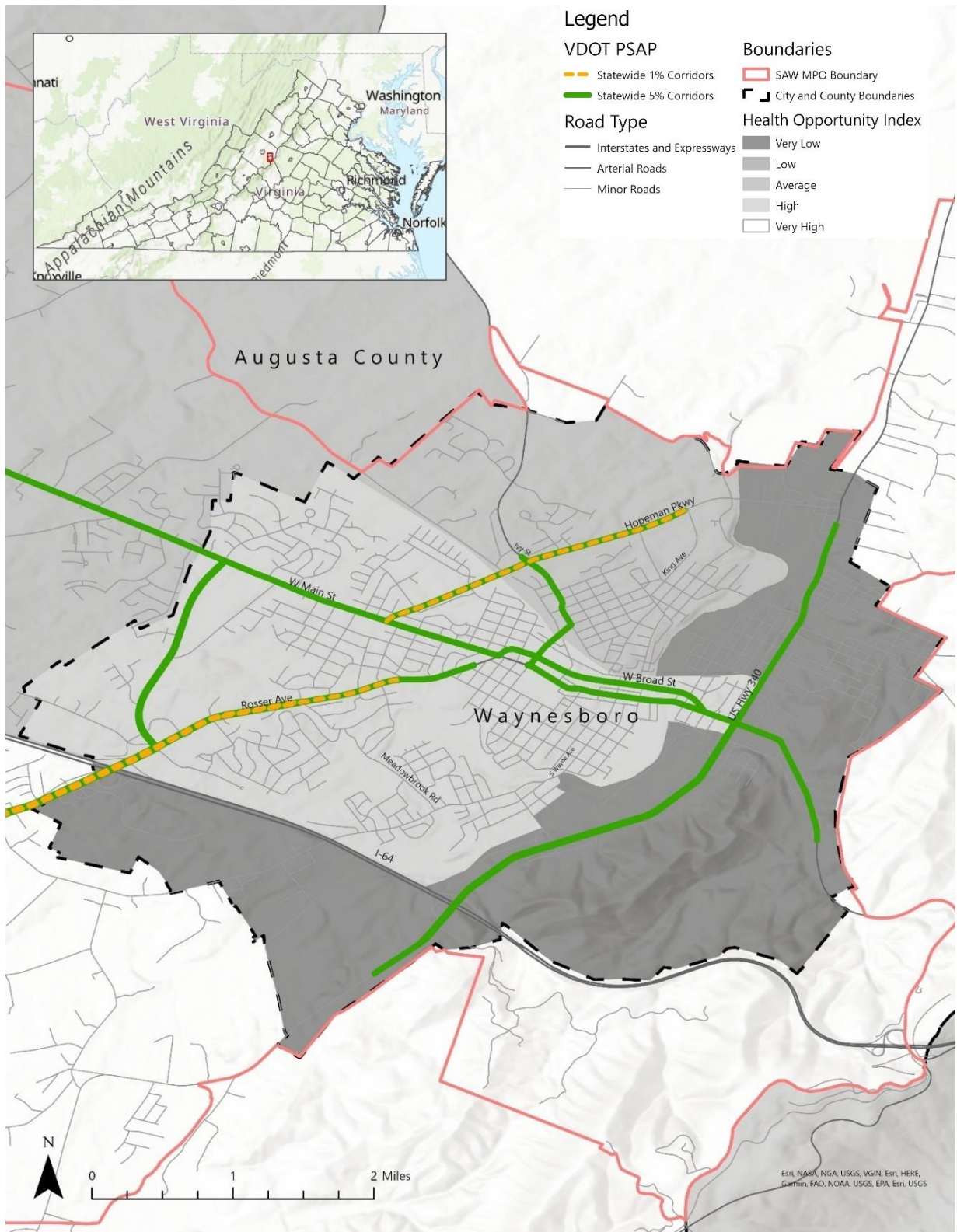


Figure 21: City of Waynesboro Statewide PSAP Corridors (Source: VDOT)



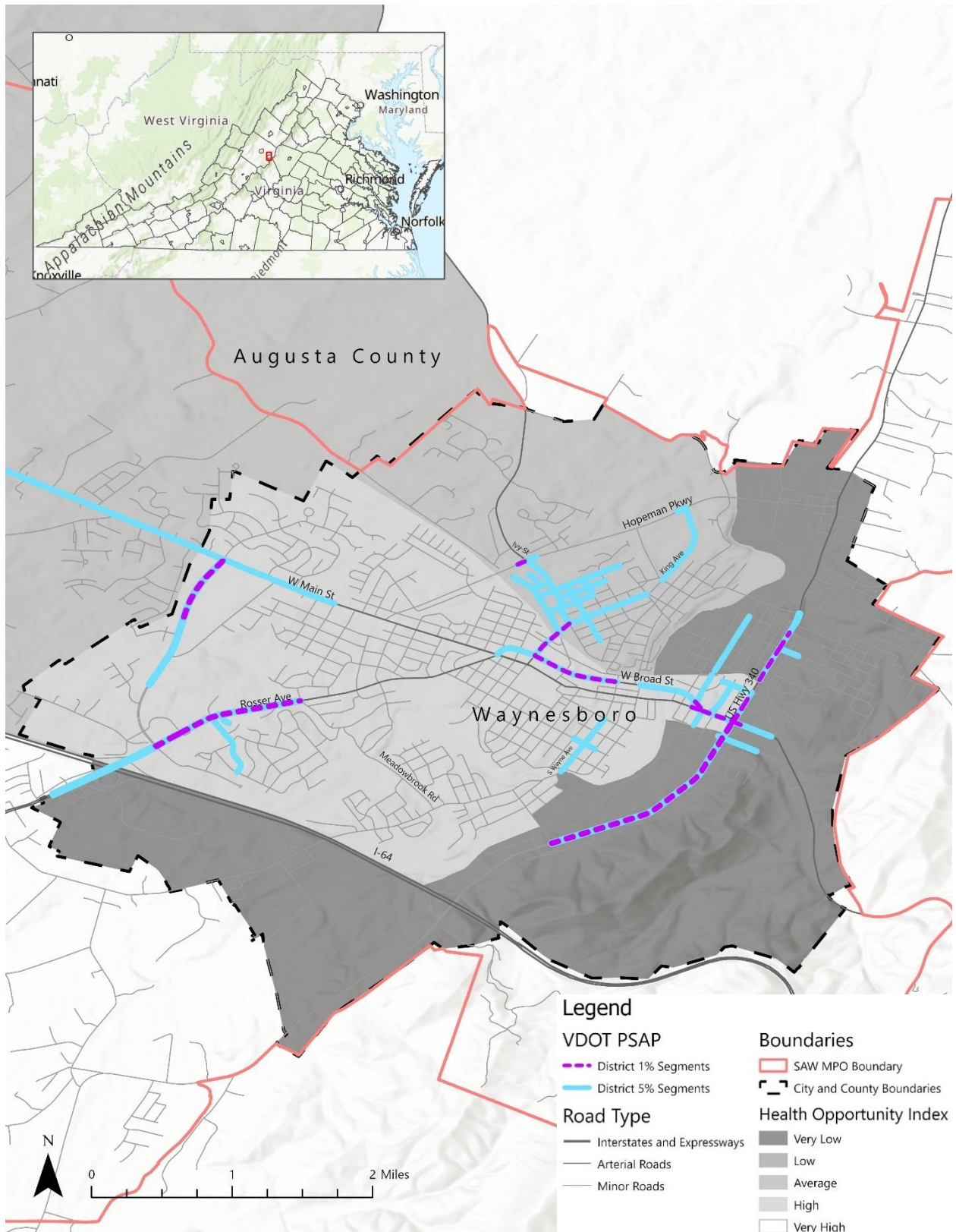


Figure 22: Waynesboro District PSAP Corridors (Source: VDOT)

## General Countermeasures

There are several resources that list behavioral and infrastructure countermeasures effective in reducing fatalities and serious injuries. These resources include the following:

- National Highway Traffic Safety Administration (NHTSA) [Countermeasures That Work](#).
- National Cooperative Highway Research Program (NCHRP) [500 Series Reports](#).
- Federal Highway Administration (FHWA) [Proven Safety Countermeasures](#).

At the State level, VDOT published a list of preferred crash modification factors <sup>11</sup>(CMFs) for certain countermeasures based on the FHWA [CMF Clearinghouse](#) published studies. A CMF is a multiplicative factor used to calculate the expected number of crashes at a given site after implementing a specific countermeasure. For example, a 0.80 CMF indicates and expected 20 percent reduction in crashes. VDOT also presently prioritizes nine proven safety countermeasures in its Systemic Safety Plan, which aligns with emphasis areas of the SHSP. A compilation of effective pedestrian treatments is included in the Virginia PSAP.

The following sections list proven behavioral and infrastructure strategies for consideration by stakeholders within the region. The sources listed above may be referenced for more detailed information. There are many additional countermeasures that have been tried and documented, but the following sections highlight those that have proven successful at local and regional levels.

## Behavioral Countermeasures

- Intersections
  - Provide information to older populations on how to safely traverse challenging intersections. Older populations were overrepresented in intersection crashes.
- Impaired Driving
  - High-visibility saturation patrols
  - Publicized sobriety checkpoints (Drive Sober or get Pulled Over)
  - Preliminary breath test devices (increases arrests)
  - DWI courts
  - Limits on diversion & plea agreements (increases conviction)
  - Court monitoring
  - Mass media campaigns
  - Enforcement of drug-impaired driving
  - Educate drivers on the dangers of cell phone usage while driving
  - Enforce existing cell phone and other handheld devices usage laws
- Speeding
  - Communications and outreach supporting enforcement
  - Automated enforcement (e.g., speed safety cameras) as permitted in School and Work Zones
  - High-visibility enforcement
  - Diversion and plea agreement restrictions, traffic violator school
  - Variable speed limits

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<sup>11</sup> [VA-State-Preferred-CMF-List\\_acc050222.pdf \(virginia.gov\)](#)  
([https://www.vdot.virginia.gov/business/resources/vhsip/VA-State-Preferred-CMF-List\\_acc050222.pdf](https://www.vdot.virginia.gov/business/resources/vhsip/VA-State-Preferred-CMF-List_acc050222.pdf))

- Seat belts and Child Restraints
  - Short-term, high-visibility seat belt law enforcement
  - Integrated nighttime seat belt enforcement
  - School-based programs
  - Seat belt use laws
  - Publicize and engage in Click-it or ticket campaigns
- Young Drivers
  - Graduated driver licensing (GDL)
  - Parental roles in teaching and managing young drivers
  - Enforcement of GDL and zero-tolerance laws
  - Communications and outreach
  - GDL intermediate license nighttime restrictions
- Older Drivers
  - General communications and education
  - License screening and testing
  - Referring older drivers to licensing agencies
  - License restrictions
  - Law enforcement roles
- Bicycles
  - Encourage bicycle helmet use by children
  - Safe routes to school
  - Encourage bicycle helmet use by adults
  - Active lighting and rider conspicuity
  - Promote bicycle helmet use with education
  - *Share the road* awareness programs
  - Driver training
  - Educate motorists on laws requiring motorists to change lanes when passing bicyclists
- Pedestrians
  - Communications and outreach addressing impaired pedestrians
  - Driver training
  - Child school bus training
  - Encourage the use of reflectors, reflective clothing, and lights while walking at night

## Infrastructure Countermeasures

- Intersections
  - Improve access management
  - Install roundabouts and/or traffic circles
  - Improve sight distance for users exiting minor streets
  - Provide enhanced and advance warning signage for unsignalized intersections
  - Install intersection lighting
  - Install red-light cameras
  - Install backplates with reflective borders (traffic signal heads)
  - Add left and right turn lanes
  - Install high-visibility crosswalks at intersections to enhance pedestrian safety

- Speeding
  - Set appropriate, context sensitive speed limits
  - Provide appropriate corridor speed progression and adequate change and clearance intervals at signalized intersections
  - Variable speed limits
  - Speed feedback signs
  - Traffic Calming
- Roadway departure
  - Widen edge lines
  - Apply High Friction Surface Treatment (HFST) to roadways, especially in locations where clusters of wet-weather roadway departure crashes have occurred
  - Install SafetyEdge<sup>SM</sup> (wedge of pavement on outside edge to enable drop off recovery)
  - Enhanced delineation for horizontal curves
    - Chevron signs or delineators
    - Retroreflective strips on signposts
    - In-lane curve warning pavement markings
    - Dynamic curve warning signs (including speed radar feedback signs)
  - Longitudinal rumble strips and stripes
  - Install median barriers and high-visibility guardrails
  - Install in-lane curve warning pavement markings
  - Install “no passing bicyclists” signage at curves
- Bicycles
  - Install painted on-street bike lanes, off-street shared use (pedestrian and bicycle) paths, and cycle-tracks (on-street barrier separated bike lanes) where possible.
  - Install *share the road* signs
  - Install “Bikes May Use Full Lane” signage
  - Institute road diets
- Pedestrians
  - Crosswalk visibility enhancements (e.g., high visibility crosswalk markings, enhanced signing, and pavement markings)
  - Leading pedestrian interval
  - Install sidewalks, walkways, and curb ramps
  - Install Rectangular Rapid Flashing Beacons (RRFBs)
  - Pedestrian hybrid beacons
  - Pedestrian refuge islands
  - Implement road diets
  - Install lighting/crosswalk illumination measures
- VDOT [Systemic Safety Plan](#) – 9 Proven Safety Countermeasures<sup>12</sup>
  - High-visibility backplates on signals (up 15-percent crash reduction)
  - Flashing yellow arrow on signals (up to 20-percent crash reduction)
  - Curve signs (up to 40-percent crash reduction)
  - Pedestrian crossings (up to 55-percent crash reduction)

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<sup>12</sup> Systemic Safety Plan informational webpage, ([https://www.virginiadot.org/business/ted\\_app\\_pro.asp](https://www.virginiadot.org/business/ted_app_pro.asp))



- Unsignalized intersection signing and marking enhancements (up to 10-percent crash reduction)
- Shoulder wedge (up to 20-percent crash reduction)
- Center line rumble strips (up to 60-percent crash reduction)
- Edge line rumble strips (up to 50-percent crash reduction)
- Road conversion (dial) (up to 45 percent reduction)

## General Implementation Options

The overall goal of safety analysis and planning is to help the SAWMPO region progress toward its safety performance targets by reducing fatalities and serious injuries from motor vehicle crashes. This progress can occur through the implementation of policies, programs, and projects that address both behavioral and infrastructure needs. The sections below outline suggestions, with specific action items, to advance safety efforts in the region. Additionally, with the recently passed federal transportation funding bill and the 2020 Virginia transportation bill both providing more behavioral and infrastructure safety program resources, SAWMPO is well positioned to develop highway safety actions, initiatives, and projects to mitigate the impact of crashes.

### Organizational

#### Safety Culture

The SAWMPO region has several transportation priorities, but a Safe System Approach highlights the importance of prioritizing transportation safety. Shifts in leadership, staff, and stakeholder thinking can bring about this safety focus. A good resource for leading the shift is [Zero Road Deaths and Serious Injuries: Leading a Paradigm Shift to a Safe System<sup>13</sup>](#), a report that describes a paradigm shift in road safety policy being led by a handful of countries. Another resource is FHWA's [Safe System Approach<sup>14</sup>](#) webpage, which includes a subsection on [safety culture<sup>15</sup>](#).

- SAWMPO staff read these resources and propose next steps for the region through technical committees and policy boards.

#### Education

Ensuring local jurisdictions, transportation and safety stakeholders, and elected officials understand the key safety issues, needs, and opportunities identified in this analysis will be an important first step to educating everyone about the role they can play in safety planning and programming.

- SAWMPO staff present a summary of this analysis to stakeholders.
- SAWMPO gives safety briefings to the police board on a regular basis.

#### Safety Committee/Working Group

Holding regularly scheduled meetings with regional transportation and safety stakeholders may help advance discussions about safety implementation activities, evaluate successes and challenges, and sustain momentum on safety policies, programs, and projects. A full multidisciplinary committee would

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<sup>13</sup> Zero Road Deaths and Serious Injuries, (<https://www.oecd.org/publications/zero-road-deaths-and-serious-injuries-9789282108055-en.htm>)

<sup>14</sup> Zero Deaths and Safe System, (<https://highways.dot.gov/safety/zero-deaths>)

<sup>15</sup> Zero Deaths – Safety, ([https://safety.fhwa.dot.gov/zerodeaths/safety\\_culture.cfm](https://safety.fhwa.dot.gov/zerodeaths/safety_culture.cfm))

consist of member from law enforcement, emergency services, engineering, research, health departments, advocacy groups and government. Coordinating with these wide-ranging disciplines ensures viewpoint diversity and diverse stakeholder engagement.

- Create a multidisciplinary safety committee/working group.
- Conduct regularly scheduled meetings and engagement.

### Action Plan

The Virginia 2022-2026 SHSP includes action plans for each of the emphasis areas. Safety action plans outline specific approaches to determine which countermeasures will be implemented, by whom, and in what timeframe. Developing a regional action plan can provide an organizational structure to address behavioral and infrastructure implementation priorities.

- Convene a stakeholder committee and discuss the benefits and feasibility of developing a Regional Safety Action Plan with implementation details
- Develop a comprehensive safety action plan with prioritized list of projects and safety programs for implementation

### Behavioral

#### Countermeasures Being Implemented

Behavioral strategies and actions are already being implemented in the region. Other proven solutions, including those that are presented in this document, could be implemented to address highway behavioral and active transportation safety issues. The cities of Staunton and Waynesboro have elected to implement projects in Selective Enforcement for speeding<sup>16</sup>. The Staunton region is also engaged in coordinating and/or assisting with at least five NHTSA Standardized Child Passenger Safety Technician Courses, four Child Passenger Technician Refreshes Courses, one Renewal Course and two Child Passenger Safety Special Needs Certification Courses. Augusta County has elected to implement Selective Enforcement projects that target occupant protection, alcohol (impaired driving), and speeding.

- Compile local and regional activities and programs, with consideration of the above resources, to determine priority regional behavioral countermeasures to support and implement.
- Track and share results of behavioral strategies and actions across the region.

#### Resource/Information Sharing

Statewide campaigns are led every year around vulnerable road users, occupant protection, impaired drivers, speeding and young drivers. Utilizing and sharing the resources developed for these campaigns at the regional and local level can help spread the word about transportation safety. It also saves time and resources as information is already available and can be customized to meet the specific needs in the region.

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<sup>16</sup> [Virginia Highway Safety Plan \(https://www.dmv.virginia.gov/safety/highway\\_safety\\_plan.pdf\)](https://www.dmv.virginia.gov/safety/highway_safety_plan.pdf)

- Implement statewide and regional campaigns and schedules through Virginia’s [SHSP<sup>17</sup>](#) initiative and DMV’s HSP to identify outreach and education opportunities. For example, the Metropolitan Washington [Street Smart Campaign](#).

### Emphasis Area Crash Mapping

The regional and city HIN and KA and KAB crash maps could be shared with law enforcement to better target education and enforcement efforts. Additional emphasis area maps could be developed to supplement the maps and data prepared by Virginia DMV for NHTSA funded grant programs. The DMV prepares an interactive map through the [Traffic Records Electronic Data System \(TREDS\)<sup>18</sup>](#) for all jurisdictions and [behavioral program maps](#) for all legislative boundaries.

- Shares HIN and PSAP maps with local enforcement partners to collaborate on a safe-system and 5E approaches.
- Develop maps for behavioral emphasis area HINs as needed using DMV [online tools<sup>19</sup>](#) or VDOT’s [Crash Analysis Tool<sup>20</sup>](#).

### Infrastructure

#### Studies and Funded Projects

Below is a list and brief descriptions of studies and projects that have been conducted in the SAWMPO area within the data analysis period (since 2016) that are addressing safety concerns for specific locations with the region.

- SAWMPO Wilson Workforce and Rehabilitation Center (WWRC) Study
  - Analyzed operational and safety conditions to identify short-term and long-term improvements to reduce congestion and delay at the entrance to the WWRC Campus.
- SAWMPO Rosser Avenue Study
  - Updated coordinated signal timing plans and identified operational and safety improvements to nine intersections along the Rosser Avenue corridor.
- SAW Richmond Road Study
  - Evaluated safety, multi-modal connectivity, and operational needs along Richmond Road between Frontier Drive and the I-81 Exit 222 interchange.
- SAW Exit 235 Study
  - Identified and evaluated solutions to address congestion at Exit 235 and anticipated long-term corridor needs and accommodate future growth.
- VDOT Greenville Avenue (US-11) STARS Study
  - Identified improvement recommendations with a focus on enhancing mobility and safety for all users, while improving the overall aesthetics of the gateway corridor. Recommendations aimed for improving access management and connectivity for non-motorized modes of travel, with intersection improvements and new sections of sidewalk, on-street bicycle lanes and pedestrian crossing improvements.

<sup>17</sup> Toward Zero Deaths, (<https://tzdva.org/>)

<sup>18</sup> Traffic Records Electronic Data System, (<https://www.treds.virginia.gov/UI/Security/Login.aspx>)

<sup>19</sup> Virginia Department of Motor Vehicles ([https://www.dmv.virginia.gov/safety/#crash\\_data/index.asp](https://www.dmv.virginia.gov/safety/#crash_data/index.asp))

<sup>20</sup> VDOT Crash Analysis Tool, (<https://app.powerbigov.us/view?r=eyJrjoiMjhlZjFhZDAtNTljMC00MDA1LWVhOTMtYWYwM2NiMmRiMmRkIiwidC16IjYyMGFINWE5LTRIYzEtNGZhMC04NjQxLTVkOWYzODZjNzMwOSJ9>)

- VDOT US 250 STARS Study
  - Evaluated operational and safety conditions and identified short and long-term improvements for the US-250, between Hopeman Parkway and Old White Bridge Road/Goose Creek Road. At the time of the study, three intersections within the corridor ranked in the top 100 of the 2013-2017 VDOT Potential Safety Improvement (PSI) Intersection List.
- VDOT City of Staunton PSI Intersection Study
  - Studied PSI intersections within the City of Staunton to identify safety and pedestrian accessibility improvements.
- VDOT Route 254 Safety Evaluation
  - Planned improvements along the 5.8-mile-long corridor include shoulder widening, guardrail installations and new edgeline rumble strips.

Figures 23 and 24 below show the PSI intersections in the City of Staunton, and a map of the other plans described above overlaid on the HIN, respectively. The plans are symbolized by color.

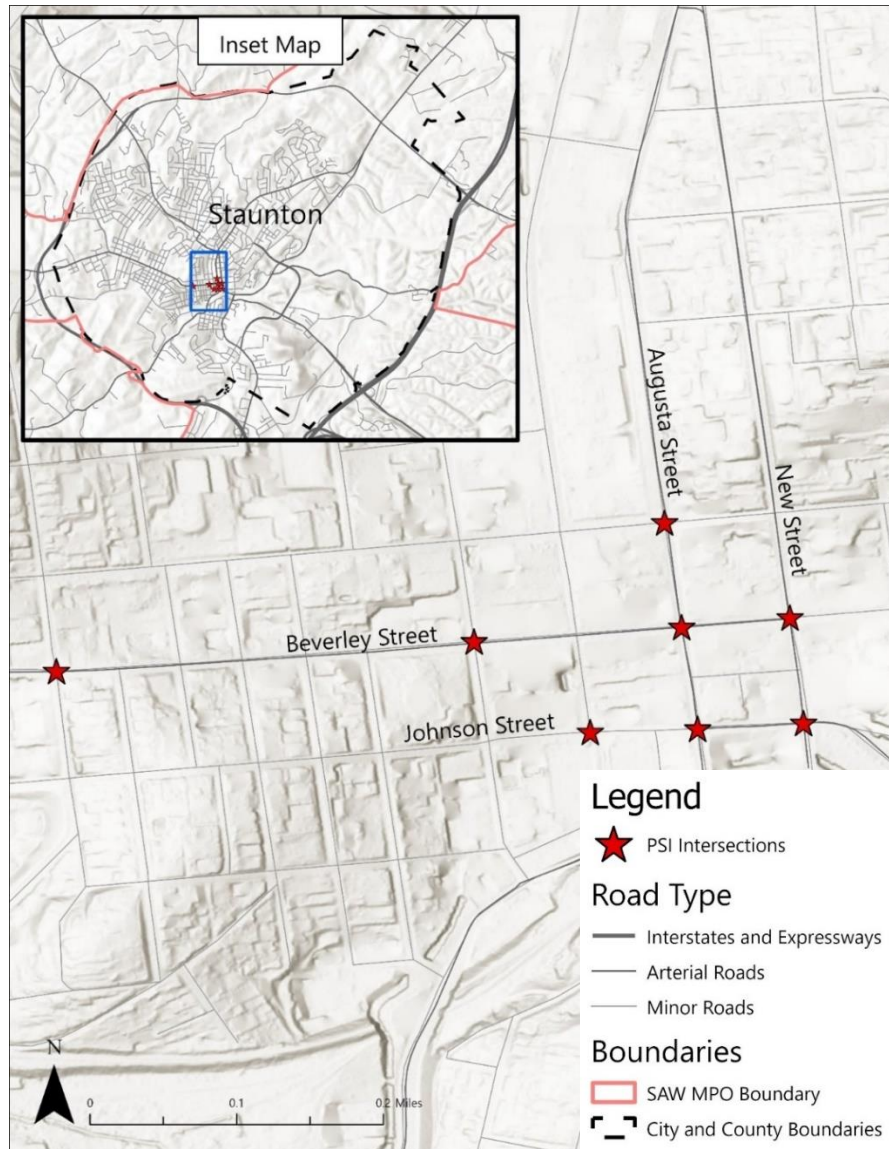


Figure 23: PSI Intersection Locations (Source: VDOT)



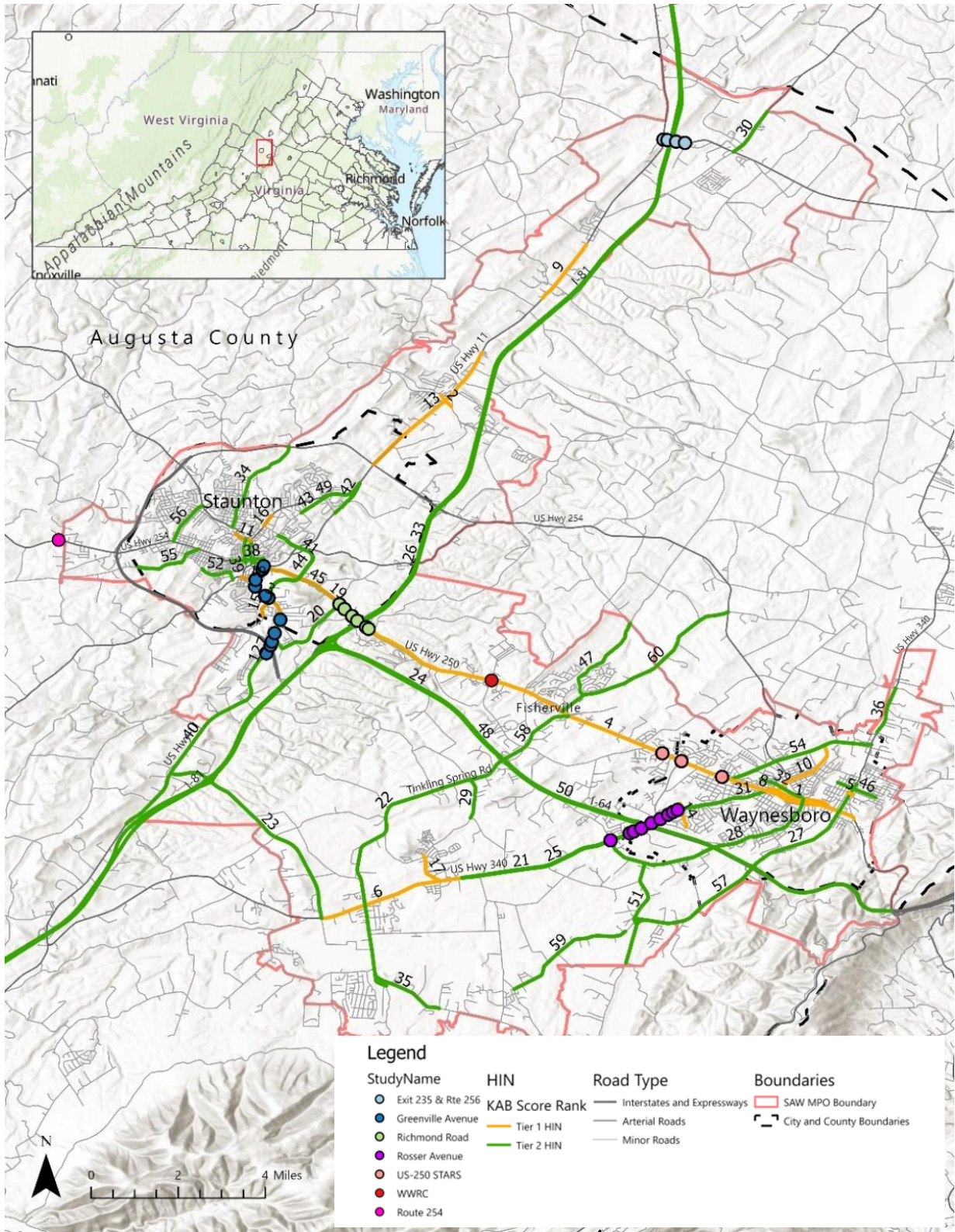


Figure 24: SAWMPO Planning Studies since 2016 (Source: VDOT)

## Policies

At the regional level, there are opportunities to institutionalize safety principles into the planning and programming process. For example, many MPOs and localities have instituted complete streets policies to ensure transportation projects are identified and later designed with the safety of all users in mind. *Zero Road Deaths and Serious Injuries: Leading a Paradigm Shift to a Safe System* provides policy ideas to implement.

- Read *Zero Road Deaths and Serious Injuries* and other Safe System related resources and propose next steps for the region<sup>21</sup>.

## Priority Locations

This study identifies the HIN as well as pedestrian crash risk roadway segments with the potential for safety improvement. Additional network screening results for safety project locations are published for the [VTRANS mid-term needs](#). The site includes a mapping tool with a drop-down selection that identifies roads based on a category of need. The VTRANS safety needs<sup>22</sup> locations have been normalized by traffic exposure to identify critical segments and intersections. There are other needs related to safety that may also be helpful for planning treatments. For example, the “Need – Pedestrian Access (RN)” selection identifies where additional pedestrian facilities may be beneficial. Thus, overlaying with the HIN will help refine problem identification. The SAWMPO, in coordination with the VDOT District Office and member agencies, can prioritize locations and identify systemic or spot treatments to address the key needs.

- Establish priority locations for VDOT STARS and OIPI (SMART SCALE) Project Pipeline Studies
- Engage in STARS and Pipeline studies, particularly those that are multi-jurisdictional, to promote safety considerations with alternatives analysis. SAWMPO staff can conduct or facilitate road safety assessments (RSAs or other safety analyses) with 5E stakeholders to identify improvements to submit for funding.

## Project Selection

SAWMPO is required to set annual safety performance targets and demonstrate progress toward meeting those targets through transportation projects. To make progress toward meeting targets, select transportation projects that address the safety issues identified in this study or in any future analysis.

- Elevate and support safety considerations during project planning studies for SMART SCALE, TAP, Revenue Sharing, etc. applications.
- Adopt safety as a high priority for regional projects and support local project prioritized based on safety needs (for example, KAB crashes impacted).

## Safety Planning

Changes to population, commercial and residential development, and other factors over time impact where and why crashes occur. It will be important for the SAWMPO to regularly study crash trends and

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<sup>21</sup> World Road Association (PIARC) [Road Safety Manual](#) provides good safe system implementation information and additional references. The Vision Zero Network also provides [MPO resources](#).

<sup>22</sup> The VTRANS pedestrian safety needs published in 2021 use the PSAP Version 2 top one percent locations, so the PSAP version 3 and this study provide the most up to date information.

roadway data to revise the priority list and emphasis areas, as necessary. Updates to this analysis should be considered on a three- to five-year cycle.

- Update analysis every three to five years with the latest data from the above referenced VDOT GIS and Crash Analysis Tool.
- Revise priority list and emphasis areas based on updated analysis.
- Update countermeasures options using the latest Federal and State recommendations.

## Appendix A – Virginia Strategic Highway Safety Plan (SHSP) Emphasis Areas

[Virginia's 2022-2026 Strategic Highway Safety Plan \(SHSP\)](#)<sup>23</sup> identified eleven emphasis areas (EAs) for targeted countermeasure implementation. These eight driving behaviors, crash types/locations, and user groups encompass a large percentage of contributing factors to fatal and serious injury crashes in Virginia. The definitions of these EAs from the SHSP are as follows:

- 1) **Impaired Driving:** Impaired driving encompasses crash statistics for the 4 Ds – drinking, drugs, distracted, and drowsy. A crash is classified with an impaired driving factor when one of the drivers involved in the crash is identified as being affected by any one of these four Ds.
- 2) **Speed:** Speeding crashes are defined as driving too fast for conditions or exceeding the posted speed limit.
- 3) **Occupant Protection:** A crash is classified with an occupant protection factor when one of the injured individuals was not utilizing a seat belt or child car seat.
- 4) **Roadway Departure:** Roadway departure crashes involve vehicles leaving the travel lane (to the left or right), encroaching into the opposite lanes, or onto the shoulder and roadside environment.
- 5) **Intersections:** A crash is classified as occurring at an intersection if it occurs at a location where two or more roads cross or merge. These are locations where there is an inherent possibility for conflict between all road users.
- 6) **Young Drivers:** In Virginia's SHSP, young drivers are defined as persons between the ages of 15 and 20. A crash is classified with this factor if one or more of the involved drivers meets the young driver criteria.
- 7) **Aging Road Users:** A crash involving a driver or pedestrian who is aged 65 or older.
- 8) **Bicycles:** A bicycle crash is one that involves one or more bicycles.
- 9) **Pedestrians:** A pedestrian crash is one that involves one or more pedestrians.
- 10) **Heavy Trucks:** A crash involving a heavy vehicle body type. This includes commercial vehicles, large trucks (semi-trailers, single-unit trucks with two or three axels) and buses
- 11) **Motorcyclists:** A crash involving a motorcycle, scooter, or moped operator.

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<sup>23</sup> Virginia 2022-2026 SHSP,  
([https://www.virginiadot.org/info/resources/SHSP/VA\\_2017\\_SHSP\\_Final\\_complete.pdf](https://www.virginiadot.org/info/resources/SHSP/VA_2017_SHSP_Final_complete.pdf))



Appendix B – KA Severity High Injury Network Segments

ROUTE NAME	UNIQUE ID	RANK	LENGTH (MILES)	FATALITY COUNT	SERIOUS INJURY COUNT	MINOR INJURY COUNT
<b>5TH STREET (WAYNESBORO)</b>	31	1	0.12	0	2	0
<b>US-11N</b>	17	2	1.71	0	28	4
<b>US-250E</b>	47	3	0.33	0	4	0
<b>US-250E</b>	12	4	1.29	0	15	14
<b>UR-4942N</b>	37	5	0.44	0	5	0
<b>BUS US-11N</b>	50	6	0.27	0	3	0
<b>UR-4900E</b>	40	7	0.28	0	3	0
<b>VA-254E/UR 5107N</b>	6	8	1.56	1	10	8
<b>US-250E/US340N</b>	13	9	3.44	2	22	21
<b>TIFFANY DR</b>	61	10	0.61	0	4	3
<b>SC-612E</b>	55	11	0.32	0	2	5
<b>US-250E</b>	14	12	4.95	2	28	53
<b>VA-254E</b>	45	13	0.56	0	3	0
<b>UR-4909N</b>	42	14	0.19	0	1	0
<b>UR-4927N</b>	49	15	2.23	0	11	2
<b>US-11N</b>	56	16	1.47	0	7	11
<b>US-11N</b>	53	17	0.84	0	4	0
<b>US-340S</b>	10	18	4.79	1	20	16
<b>SC-631E/SC-664N/UR-5105N</b>	35	19	4.33	3	14	12
<b>BUS US-11N</b>	52	20	0.80	0	3	0
<b>VA-252N/UR-4905N</b>	48	21	0.55	0	2	1
<b>US-11N</b>	54	22	3.33	0	12	26
<b>OHIO ST</b>	34	23	0.83	0	3	2
<b>UR-4935E</b>	41	24	0.56	0	2	0
<b>US-250E</b>	46	25	0.57	0	2	0
<b>US-340N</b>	11	26	1.15	0	4	3
<b>SC-664E/UR-4944N</b>	36	27	1.80	0	6	8
<b>SC-635N</b>	60	28	0.92	0	3	3
<b>US-250W</b>	16	29	3.83	1	11	19
<b>UR-4903N (STAUNTON)</b>	51	30	0.64	0	2	1
<b>US-340N/UR5118N</b>	30	31	2.93	0	9	11
<b>US-340N</b>	9	32	4.67	2	12	19
<b>US-340N</b>	58	33	1.09	0	3	3
<b>VA-276N</b>	57	34	1.12	0	3	4
<b>UR-5110E</b>	32	35	0.77	0	2	1
<b>UR-4902N</b>	43	36	1.29	0	3	1
<b>VA-261N</b>	38	37	2.22	0	5	5

ROUTE NAME	UNIQUE ID	RANK	LENGTH (MILES)	FATALITY COUNT	SERIOUS INJURY COUNT	MINOR INJURY COUNT
US-250E	15	38	3.99	1	8	8
US-340N	8	39	2.73	0	6	39
UR-4919N	44	40	0.99	0	2	1
US-11S	18	41	0.51	1	0	5
VA-261S	39	42	2.20	0	4	7
I-81N	2	43	18.66	2	30	79
SC-654E	21	44	4.71	1	7	27
SC-664N	28	45	2.42	0	4	5
I-64W	3	46	4.45	2	5	25
UR-5104N	7	47	2.74	0	4	5
US-11N/US-11S	20	48	4.83	3	4	18
SC-649N	59	49	0.72	0	1	7
I-64W	4	50	8.53	0	11	21
SC-608N	23	51	4.67	0	6	30
I-81S	5	52	20.71	7	19	119
SC-624N/UR-5118N/UR-5118S	29	53	2.94	0	3	5
SC-608N/SC-610E/SC-912N	22	54	3.40	0	3	16
SC-624N	27	55	2.60	0	2	4
I-64E	1	56	7.45	1	4	23
VA-285N	24	57	1.86	1	0	4
SC-608N	25	58	3.15	0	1	11
SC-796N	26	59	3.41	0	1	2
US-11N	19	60	0.52	0	0	8
<b>TOTAL</b>			<b>166.98</b>	<b>31</b>	<b>398</b>	<b>725</b>

## Appendix C – KAB Severity High Injury Network Segments

ROUTE NAME	UNIQUE ID	RANK	LENGTH (MILES)	FATALITY COUNT	SERIOUS INJURY COUNT	MINOR INJURY COUNT
US-250E	12	1	1.29	0	15	14
SC-612E	55	2	0.32	0	2	5
US-11N	17	3	1.71	0	28	4
US-250E	14	4	4.95	2	28	53
5TH STREET (WAYNESBORO)	31	5	0.12	0	2	0
US-340N	8	6	2.73	0	6	39
US-11N	19	7	0.52	0	0	8
US-250E/US340N	13	8	3.44	2	22	21
US-11N	56	9	1.47	0	7	11
VA-254E/UR 5107N	6	10	1.56	1	10	8
US-250E	47	11	0.33	0	4	0
US-11S	18	12	0.51	1	0	5
US-11N	54	13	3.33	0	12	26
TIFFANY DR	61	14	0.61	0	4	3
UR-4942N	37	15	0.44	0	5	0
BUS US-11N	50	16	0.27	0	3	0
SC-649N	59	17	0.72	0	1	7
UR-4900E	40	18	0.28	0	3	0
US-250W	16	19	3.83	1	11	19
SC-664E/UR-4944N	36	20	1.80	0	6	8
US-340S	10	21	4.79	1	20	16
SC-608N	23	22	4.67	0	6	30
SC-654E	21	23	4.71	1	7	27
I-64W	3	24	4.45	2	5	25
US-340N	9	25	4.67	2	12	19
I-81S	5	26	20.71	7	19	119
US-340N/UR5118N	30	27	2.93	0	9	11
SC-631E/SC-664N/UR-5105N	35	28	4.33	3	14	12
SC-635N	60	29	0.92	0	3	3
VA-276N	57	30	1.12	0	3	4
US-340N	11	31	1.15	0	4	3
OHIO ST	34	32	0.83	0	3	2
I-81	2	33	18.66	2	30	79
UR-4927N	49	34	2.23	0	11	2
SC-608N/SC-610E/SC-912N	22	35	3.40	0	3	16
US-340N	58	36	1.09	0	3	3
VA-252N/UR-4905N	48	37	0.55	0	2	1
VA-254E	45	38	0.56	0	3	0
UR-4909N	42	39	0.19	0	1	0

ROUTE NAME	UNIQUE ID	RANK	LENGTH (MILES)	FATALITY COUNT	SERIOUS INJURY COUNT	MINOR INJURY COUNT
US-11N/US-11S	20	40	4.83	3	4	18
VA-261S	39	41	2.20	0	4	7
US-11N	53	42	0.84	0	4	0
UR-4903N (STAUNTON)	51	43	0.64	0	2	1
VA-261N	38	44	2.22	0	5	5
US-250E	15	45	3.99	1	8	8
UR-5110E	32	46	0.77	0	2	1
SC-608N	25	47	3.15	0	1	11
I-64E	1	48	7.45	1	4	23
BUS US-11N	52	49	0.80	0	3	0
I-64W	4	50	8.53	0	11	21
SC-664N	28	51	2.42	0	4	5
UR-4935E	41	52	0.56	0	2	0
US-250E	46	53	0.57	0	2	0
UR-5104N	7	54	2.74	0	4	5
UR-4902N	43	55	1.29	0	3	1
UR-4919N	44	56	0.99	0	2	1
SC-624N/UR-5118N/UR-5118S	29	57	2.94	0	3	5
VA-285N	24	58	1.86	1	0	4
SC-624N	27	59	2.60	0	2	4
SC-796N	26	60	3.41	0	1	2
<b>TOTAL</b>			<b>166.98</b>	<b>31</b>	<b>398</b>	<b>725</b>

#### Appendix D – ArcGIS Online Web Address

To view the GIS data from this Safety Plan, please visit the VDOT ArcGIS Online page -

<https://vdot.maps.arcgis.com/apps/webappviewer/index.html?id=aebca8ede5d845dcabf90cfaf56bdfc8>

#### Appendix E – Cover Photo Credit

The cover photo was provided by the Central Shenandoah Planning District Commission.