

Lake Champlain/  
Lake George  
Regional Planning Board

# ADIRONDACK GATEWAY Safety Action Plan

Prepared for:



LAKE CHAMPLAIN-LAKE GEORGE  
**REGIONAL  
PLANNING**

Prepared by:





# Table of Contents

<b>I. Introduction.....</b>	<b>8</b>
A. Study Area.....	11
B. SS4A Program.....	12
C. Program Goals .....	13
D. Safe System Approach.....	14
E. Emphasis Areas.....	15
<b>II. Crash Trends.....</b>	<b>17</b>
A. Regional Crash Rates .....	18
B. Crash Density .....	19
C. Crash Mode Analysis.....	20
D. Collision Type Analysis.....	21
E. Crash Tree Summary .....	22
<b>III. Community Engagement .....</b>	<b>25</b>
A. Public Outreach Plan.....	25
B. Project Core Team.....	26
C. Safety Partners Meeting.....	27
D. Online Survey.....	28
E. Public Engagement and Tabling Events .....	28
F. Stakeholder Outreach .....	29
G. Overall Findings/Themes .....	30
<b>IV. Plan, Policy, and Best Practice Review.....</b>	<b>32</b>
A. Review of Existing Policy Documents .....	32
<b>V. Project Identification and Prioritization .....</b>	<b>38</b>
A. Crash Hotspot Analysis .....	38
B. Equity Analysis .....	39
C. Systemic Risk Factor Analysis .....	41
D. Multi-Layer Analysis .....	42
<b>VI. Crash Mitigation Strategies.....</b>	<b>44</b>
A. Data-Driven and Proven Strategies.....	45
B. Project Examples.....	73
<b>VII. Implementation and Reporting .....</b>	<b>76</b>
A. Progress and Transparency .....	76
B. Data Collection and Evaluation .....	76
C. Public Reporting .....	77
D. Public Education and Awareness .....	77
E. Integration with the Plan .....	77
F. Action Plan Adoption .....	77
<b>VIII. Appendix A: Priority Intersections .....</b>	<b>79</b>
<b>IX. Appendix B: Crash Tree Analysis.....</b>	<b>87</b>

# List of Figures

Figure 1: Regional Planning Board Logo .....	8
Figure 3: "Glens Falls, New York" by Dougtone is licensed under CC BY-SA 2.0. ....	10
Figure 4: Adirondack Gateway Study Area .....	11
Figure 5: SS4A Logo.....	12
Figure 6: Fatal & Serious Injury Trends .....	17
Figure 7: Fatal and Serious Injury Crashes .....	18
Figure 8: Crash Heat Map of Fatal and Serious Injury Crashes in the Three County Region .....	19
Figure 9: Crash Heat Map of Fatal and Serious Injury Crashes in Glens Falls .....	19
Figure 10: Fatal and Serious Injury Crashes by Mode.....	20
Figure 11: Crashes by Collision Type .....	21
Figure 12: Kenneth C. Zirkel, CC BY-SA 3.0 .....	22
Figure 13: "Bridge Street in Fort Edward, New York" by Tyler A. McNeil is licensed under CC BY-SA 4.0. ....	25
Figure 14: Project Website.....	25
Figure 15: Safety Partners Meeting .....	27
Figure 16: Online Survey Heatmap.....	28
Figure 17: Adirondack Gateway Tabling Event .....	28
Figure 18: "Glens Falls, New York" by Dougtone is licensed under CC BY-SA 2.0. ....	29
Figure 19: Tyler A. McNeil, CC0, via Wikimedia Commons .....	30
Figure 20: Main Street in South Glens Falls, New York 2021 Tyler A. McNeil .....	30
Figure 21: FHWA Integrating the Safe System Approach with the Highway Safety Improvement Program: An Informational Report (Finkle et al., 2020).....	32
Figure 22: Crash Hotspot Analysis.....	38
Figure 23: Equity Areas Map.....	40
Figure 24: Systemic Risk Factor Analysis.....	41
Figure 25: Preliminary Priority Locations .....	42
Figure 26: Upper Glen St & Aviation Rd .....	73
Figure 27: Quaker St & Rawson Ave .....	73
Figure 28: Spier Falls Rd & Saratoga Rd.....	74

# List of Tables

Table 1: Adirondack Gateway SAP Core Team.....	26
Table 2: Priority Intersections.....	79
Table 3: Priority Segments.....	82
Table 4: Intersection-Related Crash Trees.....	87
Table 5: Age-Related Crash Trees.....	88
Table 6: Roadway Departure Crash Trees.....	89
Table 7: Alternative Road Vehicle Crash Trees.....	90
Table 8: Aggressive Driving Crash Trees.....	91
Table 9: VRU Crash Trees .....	92
Table 10: Drive Responsibly Crash Trees.....	93

# List of Acronyms

<b>LCLGRBP</b>	Lake Champlain-Lake George Regional Planning Board
<b>NYSDOT</b>	New York State Department of Transportation
<b>A/GFTC</b>	Adirondack/Glens Falls Transportation Committee
<b>GTSC</b>	Governor's Traffic Safety Commission
<b>CLEAR</b>	Crash Location & Engineering Analysis Repository
<b>SS4A</b>	Safe Streets for All
<b>SAP</b>	Safety Action Plan
<b>EA</b>	Emphasis Area
<b>DAC</b>	Disadvantaged Community
<b>NHTSA</b>	National Highway Traffic Safety Administration
<b>CMF</b>	Crash Modification Factors
<b>TTCP</b>	Temporary Traffic Control Plans
<b>PSC</b>	Prove Safety Countermeasures
<b>FHWA</b>	Federal Highway Administration

# Introduction

# I. Introduction

Since 2018, the Adirondack Gateway region of New York State - which includes Warren, Washington, and part of Saratoga Counties - has seen hundreds of vehicle-related fatalities and injuries. In response to these tragic losses, the Lake Champlain-Lake George Regional Planning Board (LCLGRPB) has united its member communities in a shared commitment: to reduce traffic-related deaths and serious injuries on their roadways by 2050. Achieving this ambitious goal will require coordinated action and strategic direction, both of which are outlined in this Safety Action Plan (SAP).

The Lake Champlain-Lake George Regional Planning Board (LCLGRPB) is the region's economic development and planning entity for Clinton, Essex, Hamilton, Warren, and Washington Counties in northeastern New York.

LCLGRPB provides strategic guidance and capacity-building support to member counties and communities, developing local and regional initiatives that support economic growth, community development, infrastructure improvements, and transportation planning.

With expertise in grant writing and administration, water quality programs, community building, comprehensive planning, and municipal and broadband infrastructure, LCLGRPB's mission is to promote sustainable economic development that strengthens our communities, provides quality jobs, and preserves the unique natural, historical, and cultural characteristics of the region.

The purpose of Safe Streets and Roads for All (SS4A) grants is to improve roadway safety by significantly reducing or eliminating roadway fatalities and serious injuries through the development of a SAP focused on all users including pedestrians, bicyclists, public transportation users, motorists, personal conveyance and micromobility users, and commercial vehicle operators. LCLGRPB was awarded funding in 2023 through the SS4A program to develop SAPs for their entire service area.

The goal of a SAP is to develop a holistic, well-defined strategy to prevent roadway fatalities and serious injuries in a locality, Tribal area, or region.



LAKE CHAMPLAIN-LAKE GEORGE  
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Figure 1: Regional Planning Board Logo

LCLGRPB is committed to working with communities to provide safer roadways for all users and eliminating all serious injury and fatal crashes throughout the region by 2025. This SAP serves as a roadmap to help communities reach that critical objective.

### THIS PLAN INCLUDES:

- An in-depth analysis of the factors that contribute to fatal and serious injury crashes throughout the study area
- An understanding and acknowledgment of the communities most impacted by traffic crashes, and the needs of those communities
- A description of projects that utilize data-driven strategies proven to reduce crash incidence and severity
- Policy recommendations that change the way the region selects and designs future projects
- Recommendations for programs involving enforcement, education, and partnerships with other agencies
- A focus on equity to ensure that projects are selected, funded, designed, and implemented in a way that aligns with the region's goals
- Suggestions for implementing the strategies in this plan
- A focus on equity to ensure that projects are selected, funded, designed, and implemented in a way that aligns with the city's goals
- A roadmap for implementing the strategies in this Plan, including detailed guidance for the next five years and ten years



Figure 2: "View north along I-87, Adirondack Northway, in Warren County, NY" by Anguel Case, son of Daniel Case is licensed under CC BY-SA 3.0.

The development of the SAP was supported by a collaborative team including Creighton Manning Engineering, VHB and Planning4Places, LLC. Creighton Manning Engineering, a GAI Company, is a leading civil engineering firm in New York State, specializing in transportation planning, design, and safety improvements. VHB, a transportation and engineering firm specializing in roadway safety, provided national expertise in technical analysis and strategy development. The VHB team leveraged extensive experience in creating safety plans, facilitating training sessions, and providing support in developing data systems such as New York's CLEAR platform for enhanced crash analysis. Planning4Places, LLC, specialized in public engagement and coordination, ensuring inclusive participation and thorough consideration of community needs throughout the planning process.

For this project, a Core Team was established, including representatives from the LCLGRP, the SS4A Planning Team, and participating counties and municipalities, and other stakeholders to provide insight and feedback throughout the plan's development. The process began with a kick-off

meeting to introduce the project scope, goals, guiding principles, study area boundaries, data requirements, and communication strategies. Crash data trends, including fatalities and serious injuries, were presented using static visuals and an interactive web dashboard to facilitate comprehensive review and discussion. Monthly Core Team meetings occurred to monitor project progress, review technical findings, and address ongoing needs.

Public engagement was further supported by two Safety Partners Committee meetings. The initial virtual meeting introduced the project to a broad group of stakeholders, gathered input on safety concerns, and initiated dialogue through focused discussions. Draft safety strategies were refined based on feedback from the Core Team and stakeholders before being presented at a second Safety Partners Committee meeting for further discussion and input. All meeting materials and presentations were made available online to ensure transparency and encourage additional community participation.



Figure 3: "Glens Falls, New York" by Dougtone is licensed under CC BY-SA 2.0.

## A. Study Area

The Adirondack Gateway region is a broadly defined area consisting of Washington, Warren, and parts of Saratoga County in upstate New York (see Figure 4). Surrounding Lake George, this historic and mountainous region plays a significant role in tourism and has many roadway challenges. It contains many rural roads with busy town centers, posing various safety issues for pedestrians and cyclists alike.

The project area is the planning and programming area of the Adirondack/Glens Falls Transportation Council<sup>1</sup> (A/GFTC), the Metropolitan Planning Organization (MPO) designated by the State of New York to conduct the regional transportation planning process in and around urbanized areas with populations over 50,000<sup>2</sup>.

A/GFTC consists of two principal working groups, the Planning Committee and the Policy Committee. Each committee is advised by representatives of member counties and communities and representatives from regional, federal, and state agencies. This Policy Committee is responsible for reviewing and approving all planning activities undertaken by A/GFTC and its staff. The Planning Committee is a group composed of the technical staffs of the Policy Committee members. It meets regularly to oversee the operation of A/GFTC and make recommendations to the Policy Committee.

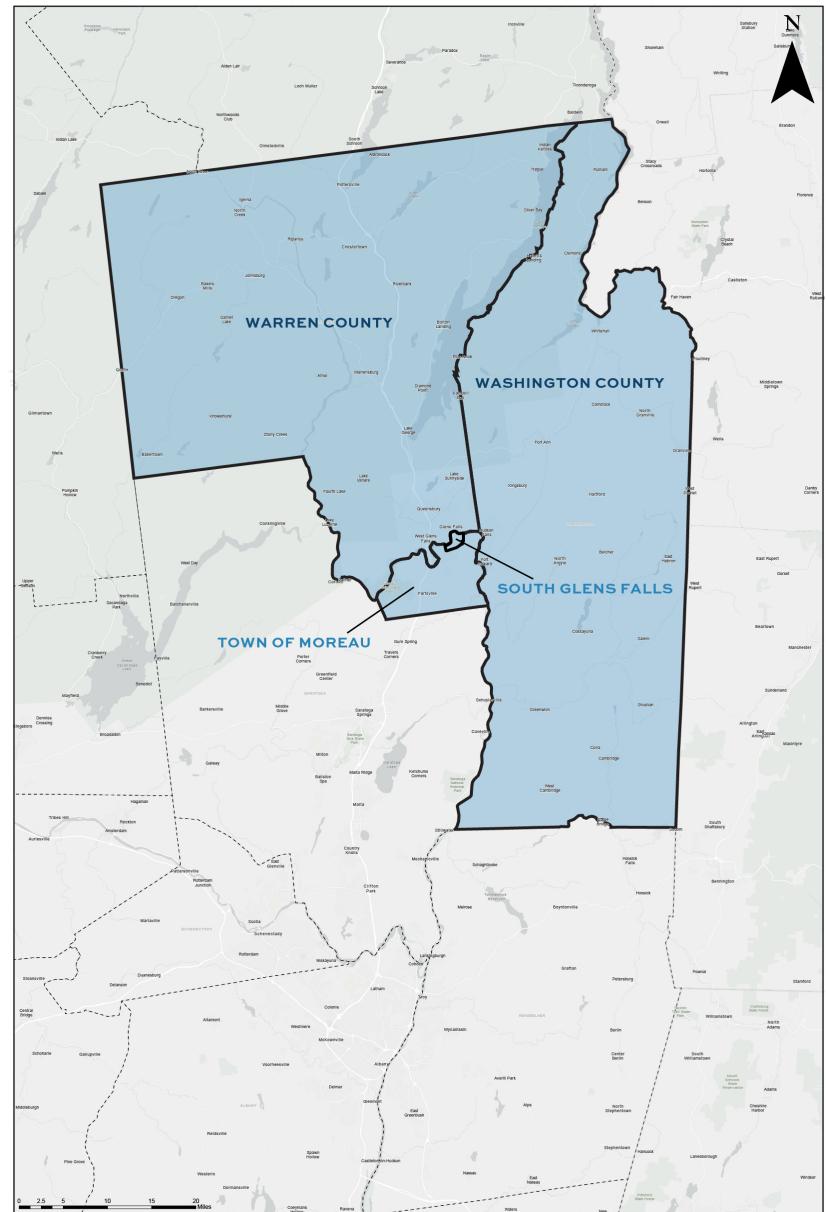


Figure 4: Adirondack Gateway Study Area

<sup>1</sup> Adirondack/Glens Falls Transportation Council, <https://agftc.org/about-us/>

<sup>2</sup> Federal Transit Administration, <https://www.transit.dot.gov/regulations-and-guidance/transportation-planning/metropolitan-planning-organization-mpo>

## B. SS4A Program

LCLGRPB was awarded funding from the Federal Highway Administration (FHWA) Safe Streets for All (SS4A) grant program in fiscal year 2023 to develop a SAP for the Adirondack Gateway Region to identify strategies and projects intended to reduce fatal and serious injury crashes. The purpose of SS4A grants is to improve roadway safety by significantly reducing or eliminating roadway fatalities and serious injuries through the development of the SAP focused on all users including pedestrians, bicyclists, public transportation users, motorists, personal conveyance and micromobility users, and commercial vehicle operators.



Figure 5: SS4A Logo



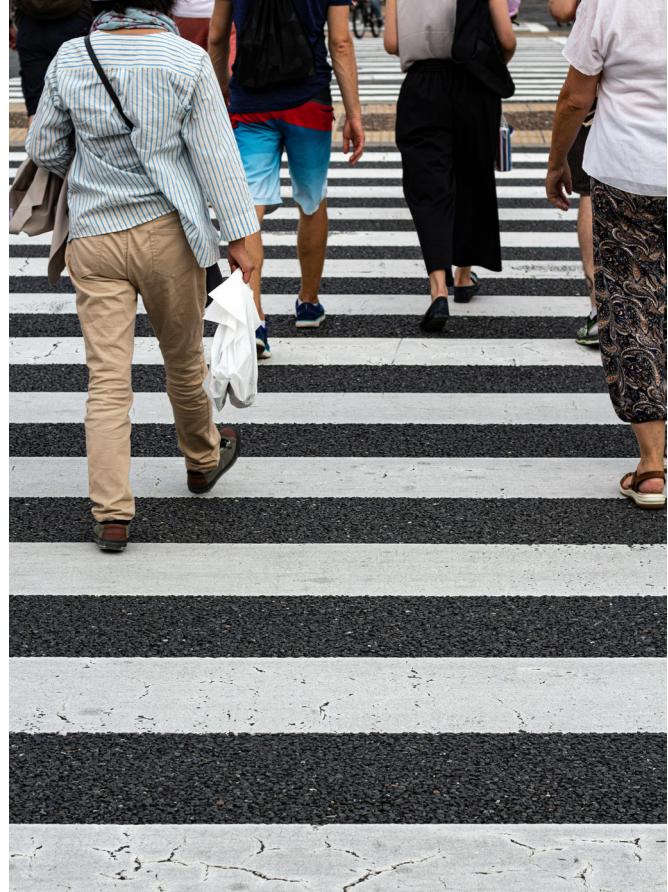
## C. Program Goals

The goal of a SAP is to develop a holistic, well-defined strategy to prevent roadway fatalities and serious injuries in a locality, Tribal area, or region.

### THE PROGRAM REQUIRES A SUCCESSFUL SAP TO INCLUDE THE FOLLOWING COMPONENTS<sup>1</sup>:

- An official public commitment by a high-ranking public official and/or governing body (e.g., Mayor, City Council, Village Board of Trustees, etc.) to eliminate or reduce fatal and serious injury crashes within a specific period of time
- A committee, task force, or group responsible for oversight of SAP development, implementation, and monitoring
- Analysis of existing conditions and trends that provide baseline crash data and inform development of projects and strategies to reduce fatal and serious injury crashes
- Robust engagement and collaboration with the public and stakeholders that allows for community representation and feedback
- Equity considerations which ensure an inclusive and representative process that identifies underserved populations through demographic information
- An assessment of current policies, plans, guidelines, etc. to identify ways to further prioritize transportation safety
- A comprehensive set of projects and strategies that will address safety problems, as well as time ranges for implementation
- A method to measure progress over time with regular, publicly accessible updates on progress toward safety goals

In 2025, Warren County, Washington County, and Saratoga County adopted a resolution committing to the goal of eliminating traffic deaths and serious injuries on all surface streets by 2050. All entities understand that there is a significant staff and financial need required to meet the goal over a sustained period, and that prioritizing safety investments must be elevated in the planning of future projects and policies.



<sup>1</sup> USDOT, <https://www.transportation.gov/grants/ss4a/comprehensive-safety-action-plans>

## D. Safe System Approach

This plan utilizes the “Safe System Approach” to traffic safety, a multi-faceted method of improving transportation safety. The Safe System Approach, which has been officially endorsed by the United States Department of Transportation and NYSDOT’s Strategic Highway Safety Plan, includes a major focus on speed management, improving safety for all roadway users, and designing roadways to prioritize safety. This plan will focus on these elements, influencing safety through roadway design, engineering, and education strategies. The project team remains committed to working with partners at the State and federal levels to improve vehicle safety both inside and outside of motorized vehicles.

**The Safe System Approach considers five elements of a safe transportation system:**

- Safe Road Users—The safety of all road users is equitably addressed, including those who walk, bike, drive, ride transit, or travel by other modes.
- Safe Vehicles—Vehicles are designed and regulated to minimize the frequency and severity of collisions using safety measures that incorporate the latest technology.
- Safe Speeds—Humans are less likely to survive high-speed crashes. Reducing speeds can accommodate human-injury tolerances in three ways: reducing impact forces, providing additional time for drivers to stop, and improving visibility.
- Safe Roads—Designing transportation infrastructure to accommodate human mistakes and injury tolerances can greatly reduce the severity of crashes that do occur. Examples include physically separating people traveling at different speeds, providing dedicated times for different users to move through space, and alerting users to hazards and other road users.
- Post-Crash Care—People who are injured in collisions rely on emergency first responders to quickly locate and stabilize their injuries and transport them to medical facilities. Post-crash care also includes forensic analysis at the crash site, traffic incident management, and other activities.



## E. Emphasis Areas

Every five years, the New York State Department of Transportation releases a comprehensive document called the Strategic Highway Safety Plan.

This plan identifies seven categories of crash types referred to as “emphasis areas”<sup>1</sup>, which this SAP will also use to understand the most impactful types of roadway crashes:

- Intersections (crashes occurring at roadway intersections)
- Vulnerable Road Users (crashes involving cyclists, pedestrians, motorized wheelchairs, or construction workers on foot)
- Road User Behaviors (crashes involving alcohol, drugs, cellphones, distracted driving, or falling asleep while driving)
- Roadway Departures (crashes involving roadway departures, head-on collisions, or sideswipes)
- Alternate Road Vehicles and Commercial Vehicles (crashes involving motorcycles, trucks, or buses)
- Age Related (crashes involving older drivers or younger drivers)
- Aggressive Driving (crashes involving speeding, aggressive driving, or road rage)

These categories help extract project and policy takeaways from crash data by showing patterns in both geography and severity.

Historically, roadway design has prioritized the needs of drivers to reach their destination quickly over the safety needs of other road users. This plan places specific attention on improving safety for vulnerable road users, defined as anyone who is not protected by being inside a vehicle, including pedestrians, cyclists, people using wheelchairs or scooters, and people walking to and from transit.



1 New York SHSP: <https://www.dot.ny.gov/divisions/operating/oss/ highway-repository/SHSP2023.pdf>

# Crash Trends

## II. Crash Trends

To understand where and why crashes happen, this report uses the CLEAR Safety application, developed by the NYSDOT. This tool brings together important information about crashes, like where they occurred, the types of roads involved, and details about the people and vehicles. By looking at this data in one place, it becomes easier to spot patterns, identify high-risk areas, and understand what factors may contribute to crashes. CLEAR also helps highlight which roads and intersections have more crashes than expected, so communities can focus safety improvements where they're needed most.

The following crash analysis including crash rates, heat maps, and crash trees, informed selection of the plan's Priority Locations. These road segments and intersections will be listed as prime candidates for developing specific mitigation strategies to reduce fatal and serious injury crashes.

This plan evaluates national and statewide crash trends, five-year crash trends in the study area, a High Injury Network for all modes, and a High Crash Network for vulnerable roadway users. This analysis is based on all crashes within the study area from January 1, 2018, through December 31, 2022, as shown in Figure 6 below.

Adirondack Gateway Fatal and Serious Injuries

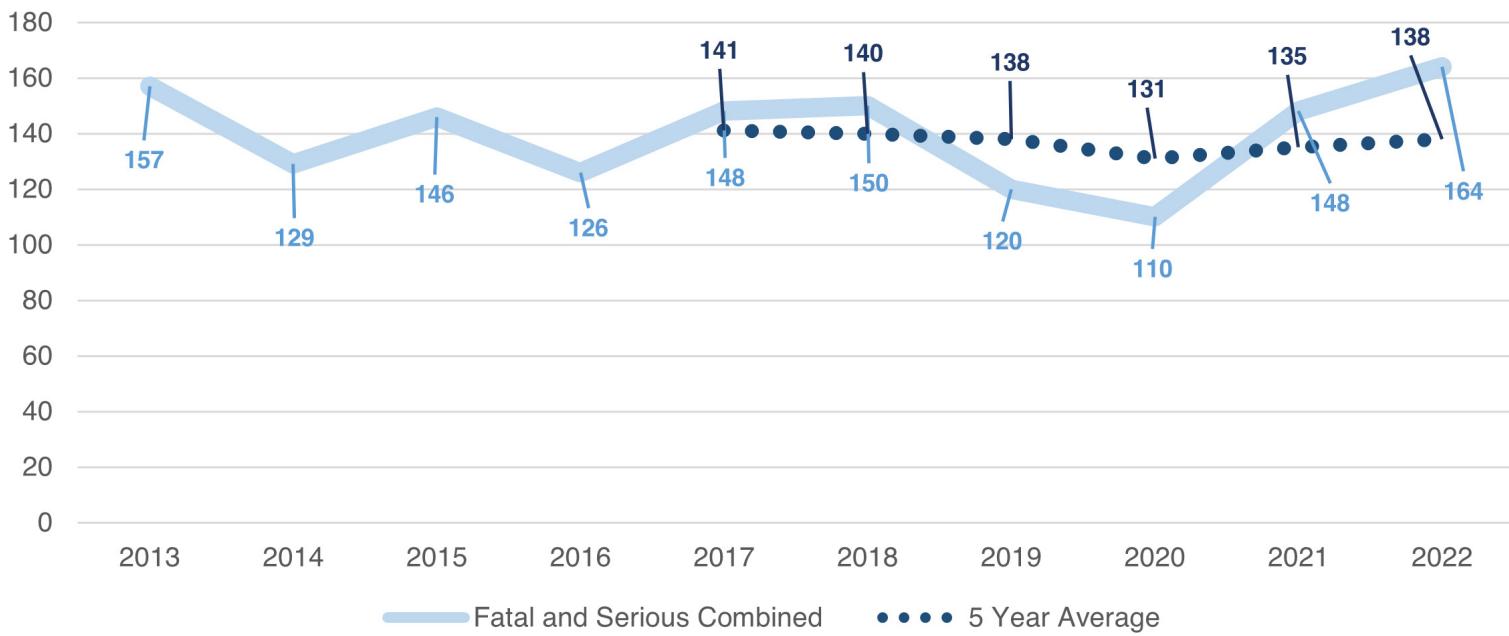


Figure 6: Fatal & Serious Injury Trends

## A. Regional Crash Rates

From 2018 to 2022, the region experienced 639 fatal and serious injury crashes (see figure 6), including 578 vehicle crashes, 42 pedestrian crashes, and 19 bicycle crashes. Among fatal crashes, there were 61 vehicle, 9 pedestrian, and 2 bicyclist incidents. The most common crash types were collisions with objects (36%), right-angle collisions (13%), rear-end collisions (9%), and head-on collisions (7%). For fatal crashes, the most common types were collisions with objects (42%), right-angle collisions (14%), head-on collisions (15%), and pedestrian crashes (13%). Collision with object crashes are more frequent under low light conditions, while right-angle crashes typically occur at stop signs rather than traffic signals. Rear-end and head-on crashes are more prevalent at higher speed limits.

Two major crash types emerged:

- (1) high-speed collisions with objects or head-on/right-angle vehicle crashes, which occurred mostly on state roads with variable lighting in rural areas, and
- (2) right-angle or turning collisions at lower speeds, common on village or county roads with speed limits of 30 or 35 mph, often involving pedestrians or cyclists. Notably, 21% of pedestrian crashes were fatal compared to 11% of motor vehicle crashes, and 67% of pedestrian crashes occurred at locations without traffic control. Figure 7 shows fatal and serious injury crash trends for five years (2018-2022).

**Fatal and Serious Injury Crashes**

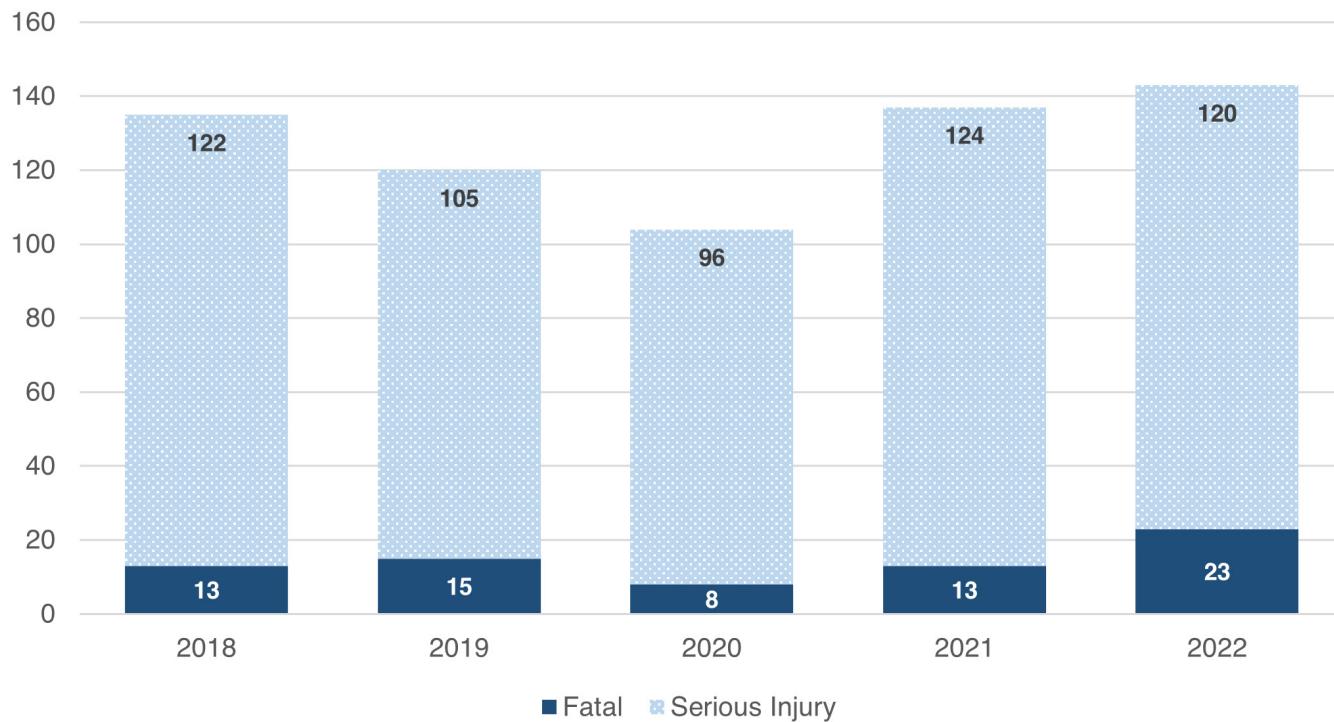


Figure 7: Fatal and Serious Injury Crashes

## B. Crash Density

The Crash Heat Map (Figure 8) revealed a concentration of fatal and serious injury crashes. The crashes were located primarily in and around urbanized areas. Additionally, there was a high frequency of crashes on major state roadways that connect population centers. Glens Falls exhibited high concentrations of crashes, with secondary concentrations along higher volume roadways radiating from the urban core (Figure 9).

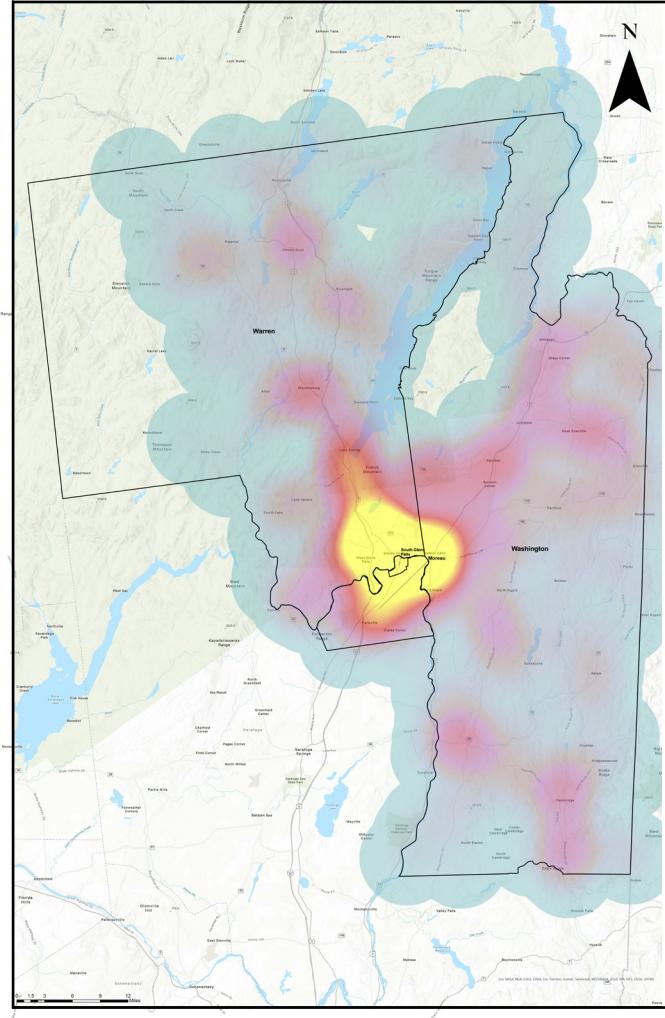


Figure 8: Crash Heat Map of Fatal and Serious Injury Crashes in the Three County Region

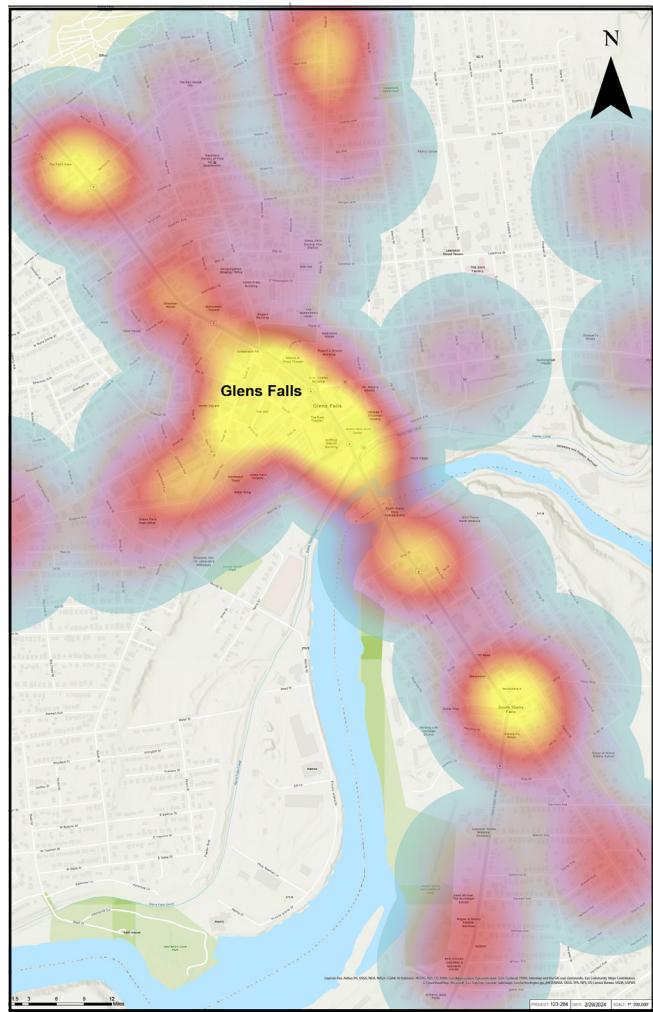


Figure 9: Crash Heat Map of Fatal and Serious Injury Crashes in Glens Falls

## C. Crash Mode Analysis

Although most people killed or seriously injured in the region were drivers or passengers in motor vehicles, there were many incidents with pedestrians and bicyclists. Figure 10 shows a breakdown by mode.

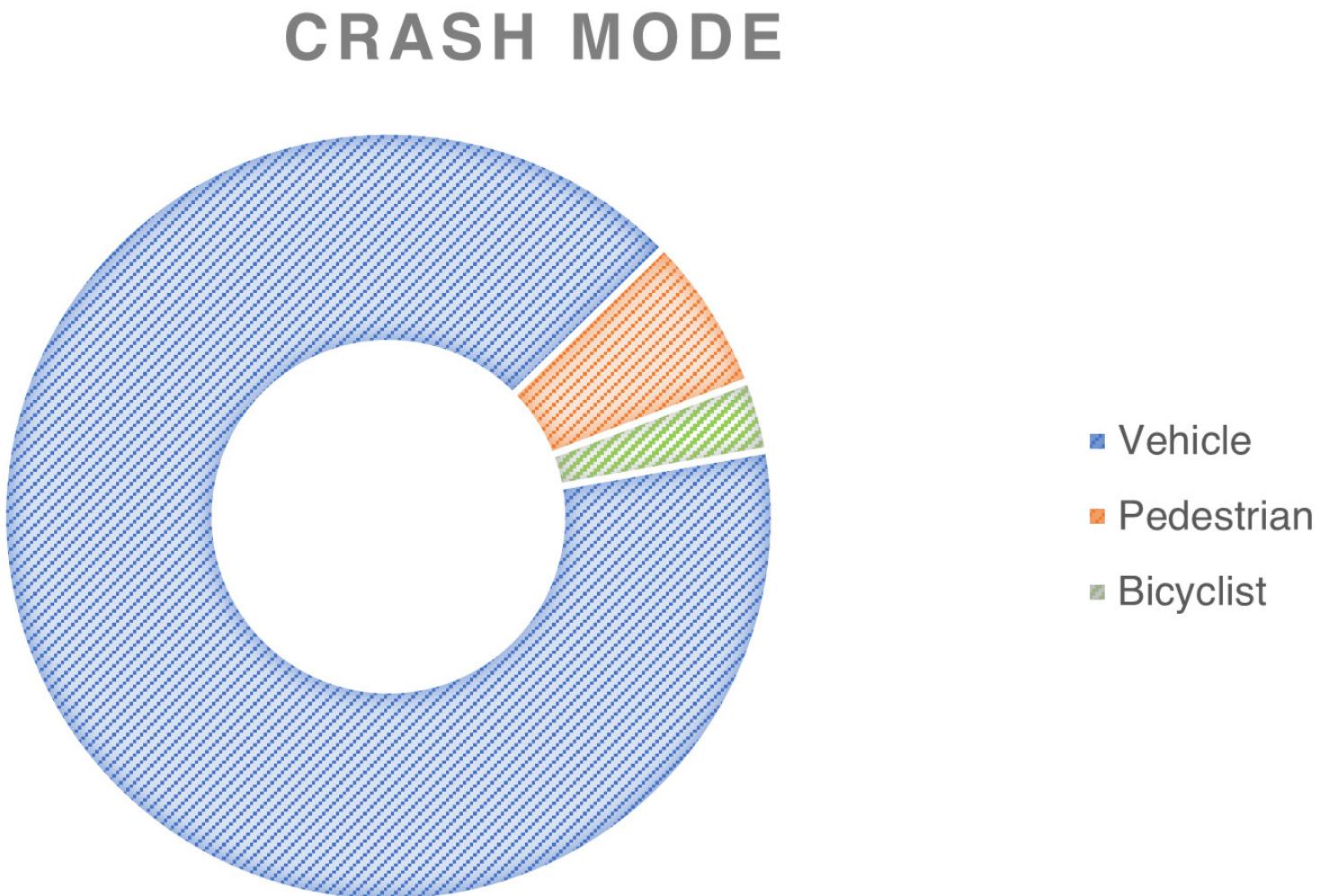


Figure 10: Fatal and Serious Injury Crashes by Mode

## D. Collision Type Analysis

The comparative crash analysis in Figure 11 shows that overall, collisions with objects account for 36% of crashes, right-angle collisions 13%, rear-end collisions 9%, and head-on collisions 7%. In Glens Falls collisions with objects are 24%, right-angle collisions 22%, rear-end collisions 16%, and head-on collisions 10%.

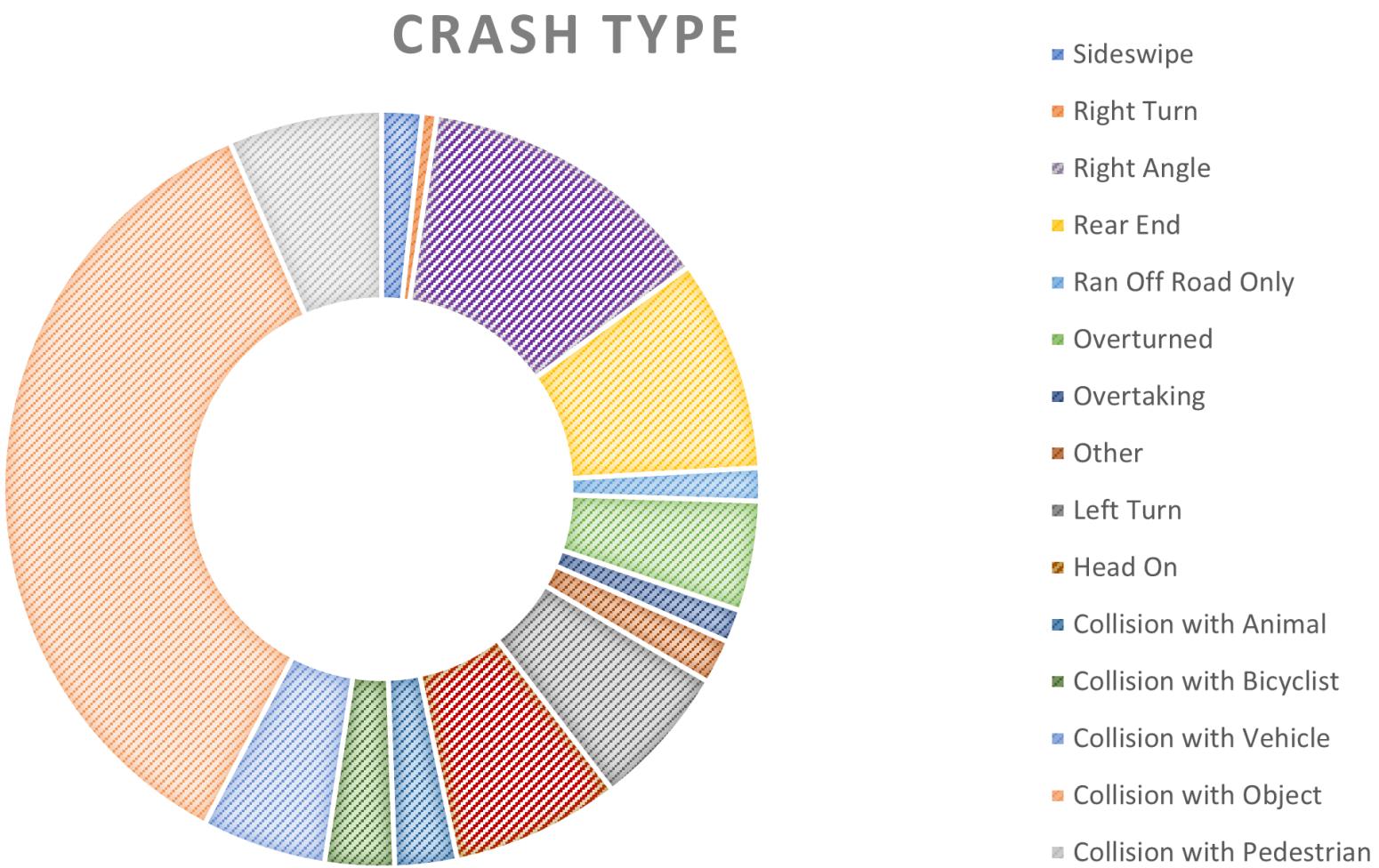


Figure 11: Crashes by Collision Type

## E. Crash Tree Summary

A crash tree is a hierarchical analysis that organizes crash data, typically used in traffic safety and transportation planning. It breaks down crash data into progressively detailed levels, starting from broad categories and narrowing down to specific contributing risk factors (e.g., speed, alcohol involvement), environmental conditions (e.g., light conditions, weather), or other characteristics associated with crashes. This process also used data from Crash tree analysis was used in conjunction with CLEAR data system for the years 2018 through 2022, including several characteristics such as location, roadway characteristics and crash severity.

All emphasis areas were analyzed, showing statistics on the most common factors that contribute to crashes. With this information, counties or municipalities within the jurisdiction will be able to make informed decisions about which crash types their streets are most vulnerable to, guiding their efforts to adopt safety improvements that reduce them. For each emphasis area below, this plan identifies an important finding that can guide mitigating projects and strategies. The full crash tree analysis can be found in Appendix C.

This analysis highlights the prevalence of issues related to road user behavior as a contributing factor in serious injury and fatal crashes, particularly in roadway departure incidents and among younger drivers. Unsafe speed and alcohol consumption play significant roles in these types of crashes, emphasizing the importance of responsible driving behavior across all age groups.

Additionally, this crash tree analysis will be useful for targeting projects and strategies toward the areas they're most likely to happen in. Intersection-related improvements appear to be most necessary in more urban areas. Improvements protecting vulnerable road users appear to be most necessary on minor arterials.



Figure 12: Kenneth C. Zirkel, CC BY-SA 3.0

## INTERSECTION

- **72%** of serious injury and fatal intersection-related crashes occur in urban areas.
- Among serious injury and fatal city or village intersection crashes, **38%** involve drivers aged 65 and older.
- **35%** of intersection-related crashes occur at signalized intersections, compared to **5%** of non-signalized intersection-related crashes.

## AGE RELATED

- **39%** of serious injury and fatal crashes involving 16 to 20 year olds are due to roadway departure, which is higher than any other age group.
- **26%** of serious injury and fatal crashes involving drivers aged 65 and older are due to a failure to yield the right of way, the highest proportion among all age groups.
- Drivers aged 65 and older account for **40%** of serious injury and fatal crashes involving making a left turn.

## ROADWAY DEPARTURE

- **32%** of serious injury and fatal crashes occur on county roads with speed limit of 55 MPH.
- **29%** of road departure serious injury and fatal crashes occur on dark unlit roads.
- **33%** of road departure serious injury and fatal crashes involve alcohol.

## ALTERNATIVE ROAD VEHICLE

- **67%** of serious injury and fatal crashes occurred in rural areas.
- **38%** of alternative road vehicles serious injury and fatal crashes occurred along a curved road.

## AGGRESSIVE DRIVING

- **42%** of local serious injury and fatal aggressive driving crashes involve fixed objects.
- Of aggressive driving crashes on rural roads, **37%** occur on county roads and **29%** occurred on town roads.

## VULNERABLE ROAD USER

- **70%** of vulnerable road user fatal, seriously injured, and injured crashes occur in urban areas.
- In urban areas, **31%** of vulnerable road user fatal, seriously injured, and injured crashes occur due to right or left turn movements.
- Insufficient lighting issues along segments disproportionately affect vulnerable road users. Predominantly, pedestrians bear the brunt of these lighting deficiencies compared to bicyclists.
- **28%** of vulnerable road user serious injury and fatal crashes occur along Minor Arterials, with **77%** of these due to vehicles going straight ahead. In comparison, only **60%** of non-vulnerable road user serious injury and fatal crashes on minor arterials are due to vehicles going straight ahead.

## ROAD USER BEHAVIOR

- **46%** of fatal and serious injury crashes are related to road user behavior.
- **71%** of road user behavior serious injury and fatal crashes occur when a vehicle is traveling straight ahead. Among these crashes, **40%** involve unsafe speed and **21%** involve alcohol.
- A higher percentage of drivers aged 16-to-24 years old were involved in road user behavior serious injury and fatal crashes compared to non-road user behaviors serious injury and fatal crashes.

# Community Engagement

## III. Community Engagement

### A. Public Outreach Plan

A comprehensive engagement strategy was implemented to involve residents and stakeholders including municipal officials, transportation, and emergency agencies, planning departments and others. Flyers, email blasts, and press releases were widely distributed to ensure broad accessibility. The website also hosted a public input survey with a detailed questionnaire and options for geolocated comments, enabling residents to identify specific areas of concern on an interactive map. Feedback from these surveys guided project development and strategies.

To enhance public understanding and engagement, a Story Map<sup>1</sup> was made publicly viewable, providing background information, crash data, and interactive maps serving as a clear project introduction.



Figure 13: "Bridge Street in Fort Edward, New York" by Tyler A. McNeil is licensed under CC BY-SA 4.0.



Figure 14: Project Website

<sup>1</sup> ARC GIS Story Map, <https://arcg.is/0DyvPr>

## B. Project Core Team

Throughout the development of the SAP, the core project team was made up of a wide variety of State and local officials who helped steer the course through each phase, as listed in Table 1: Adirondack Gateway SAP Core Team.

Core Team Member	Organization	Title
Beth Gilles	LCLGRPB	Executive Director
Allison Gaddy, AICP	LCLGRPB	Principal Planner
Jessica Leerkes	LCLGRPB	Economic Development Coordinator
Aaron Frankenfeld	AGFTC	Executive Director
Jack Mance, AICP	AGFTC	Senior Transportation Planner
Greg Wichser	NYS DOT - R1	Capital Program Manager
Audrey Burneson	NYSDOT - R1	Region 1 Representative
Mike Fenley	NYSDOT - R1	Region 1 Traffic Engineering
Dan Reynolds	NYSDOT - R1	Region 1 Traffic Engineering
Ethan Gaddy, AICP	Warren County Planning Department	County Planner
Laura Oswald	Washington County Planning Department	Director of Economic Development and Planning
Kim Lambert	Saratoga County Planning Dept	Senior Planner
Pamela Landi	Washington County Planning Dept	Planner

Table 1: Adirondack Gateway SAP Core Team

## C. Safety Partners Meeting

The project team hosted two Safety Partners meetings. As key components of the outreach process, both meetings were held virtually to maximize participation from a diverse group of stakeholders, including representatives from local highway and engineering departments, law enforcement, emergency response agencies, active transportation organizations, and advocacy groups. The first meeting served as a kickoff event, with about 100 people invited. It began with a large-group presentation introducing the SAP's goals, study process, and emphasis areas, followed by breakout sessions to facilitate targeted discussions. Participants provided input on the adequacy of public and stakeholder engagement plans, effective methods for promoting surveys and events, and concerns regarding the proposed location prioritization process. Additional breakout sessions focused on emphasis areas such as roadway departure, intersection safety, vulnerable road users, and age-related factors, as well as identifying high-priority locations and specific safety issues within their communities.

The second Safety Partners meeting focused on discussing the proposed strategies and projects designed to achieve target crash reductions. The agenda included a review of the project background, a summary of public engagement efforts, and a detailed presentation of initial recommendations. Breakout sessions allowed participants to provide feedback on the adequacy and applicability of the proposed strategies, raise questions about the project list, and discuss how these strategies could be implemented within their municipalities. The meeting concluded with a discussion of next steps, including a two-week comment period, the development of priority location examples, and drafting resolutions aimed at achieving zero fatalities and serious injuries. Together, these meetings provided a collaborative platform for stakeholders to shape the plan and prioritize safety improvements effectively.



### Adirondack Gateway Safety Action Plan

Warren County Traffic Safety Board– November 19, 2024

Figure 15: Safety Partners Meeting



## D. Online Survey

An online survey with an associated map to geolocate specific locations was provided through the project website: <https://lclgrpb-safetyactionplans.com/home-north-country>. The input received was compiled and overlayed as pins in a GIS fatal and serious injury crash map to compare with the data analyzed. Generally, the input received corresponded to areas shown on the heat map (Figure 16) as having higher fatal and serious injury crashes, but there were a few outliers beyond those locations.

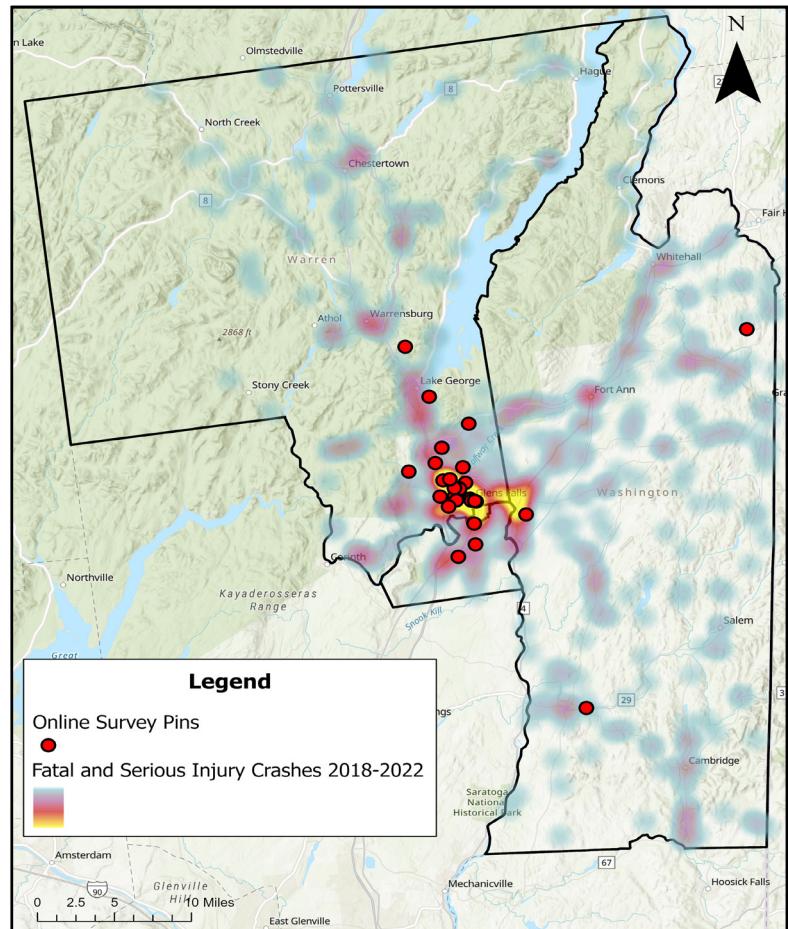


Figure 16: Online Survey Heatmap

## E. Public Engagement and Tabling Events

Outreach through tabling and talking with residents was done in two locations:

- Whitehall Farmers Market on July 20, 2024
- Greenwich Library on August 22, 2024

Outreach tables consisted of printed materials and a large mapping activity that replicated the online survey. Community members were able to stop by and provide input that was later integrated into the outreach maps.



Figure 17: Adirondack Gateway Tabling Event

## F. Stakeholder Outreach

A total of 109 stakeholders were directly contacted by email. This included all Town Supervisors and Village Mayors, as well as public safety/emergency management staff and local & regional organizations. The emails offered an opportunity to speak with consultant team staff about roadway safety concerns, included a summary of the SAP effort, and a link to the project website to obtain more information.

Potential issues and concerns based on preliminary project work were identified in advance and stakeholders were asked to provide input on the top three for their municipality or coverage area. From the interviews conducted, the top three issues were speeding, poor or missing pedestrian crossings or sidewalks, and poor or missing bike facilities (Trails or bike lanes/infrastructure). Other issues identified as concerns included distracted driving, red light or stop sign running, unsafe turning or land changing, drunk or impaired driving, and visibility problems. Stakeholders were asked to rank the following issues in order of concern.

### ISSUES AND CONCERNS

- Distracted Driving
- Speeding
- Red light or stop sign running
- Unsafe turning or lane changing
- Drunk or impaired driving
- Poor or missing bike facilities (trails or bike lanes/infrastructure)
- Poor or missing pedestrian crossings or sidewalk
- Drivers not yielding to pedestrians
- Visibility problems
- Illegal & Unsafe ATV & Dirt Bike Use



Figure 18: "Glens Falls, New York" by Dougstone is licensed under CC BY-SA 2.0.

## G. Overall Findings/Themes

**Based on the input received from the entire outreach process including the public and stakeholders, top issues across the study area included the following:**

### KEY ISSUES IN THE STUDY AREA

- Distracted driving
- Speeding
- Drivers not yielding to pedestrians
- Aggressive driving
- There is a need for better bicycle & pedestrian infrastructure, especially for those individuals that do not have access to a car to get to work/shopping
- Increases in traffic from development is a concern. People do not believe that the roads are equipped to handle the increased traffic
- More funding is needed to address safety issues and concerns
- Driver responsibility needs to be reinforced through educational efforts
- There is a need to harden the infrastructure from storm damage. Road washouts and damage result in safety issues for vehicles and anyone using the shoulder. Damage limits accessibility for residents and emergency management
- Maintenance of signage and brush/trees along road corridors is a visibility issue

It is important to note that communities and transportation focused agencies are regularly working to address transportation concerns and issues. These efforts seemed to be well known to municipal officials, but not as much by the public or other stakeholders. Agencies should consider developing a public information program that spread information more clearly and widely to interested stakeholders.



Figure 19: Tyler A. McNeil, CC0, via Wikimedia Commons



Figure 20: Main Street in South Glens Falls, New York 2021 Tyler A. McNeil

# Plan, Policy, and Best Practice Review

# IV. Plan, Policy, and Best Practice Review

## A. Review of Existing Policy Documents

To assess the degree to which regional safety partners are currently integrating the Safe System approach, the project team used a FHWA resource, Integrating the Safe System Approach with the Highway Safety Improvement Program (Finkle et al., 2020). The tool helps agencies investigate ways to incorporate the Safe System approach into their business practices. This tool is not all-encompassing but serves as a starting point that incorporates ideas and resources derived in part from FHWA recommendations. For each item, the project team reviewed agency policy documents to determine whether Safe System-oriented activities are current practice. Over time, the contents of the tool can be revised as agencies update the status of their road safety practices and identify new opportunities to incorporate the Safe System approach.



Figure 21: FHWA Integrating the Safe System Approach with the Highway Safety Improvement Program: An Informational Report (Finkle et al., 2020)



Core Element	Category	Benchmark	Assessed Level Of Commitment/Implementation			Source/Notes
			Not a Current Practice	Occasional Practice	Institutionalized Practice	
Safe Users	Education	Perform outreach through educational programs on rules of the road and the use of protective equipment, with a focus on those behaviors and target audiences most linked to death and serious injuries.			●	Washington County Public Health Bike safety and Helmet Program, and Car Seat Program
		Install advisory signs for curves and speed zones, as well as speed feedback signs and variable message signs, to provide warnings and encourage safe behavior.		●		Advisory and speed feedback signs exist along multiple local roadways.
		Use demonstration projects to raise awareness of new designs and encourage support for controversial safety projects among stakeholders.		●		Creating Healthy Schools and Communities Program has staged two Complete Street demonstration days in Washington County.
	Enforcement	Investigate and document the impacts of traffic safety enforcement and traffic safety surveillance on minority communities.	●			
		Reallocate enforcement activities to target those behaviors and locations most linked to death and serious injury.	●			
	Research	Develop and implement strategies for robust demographic data collection in crash reporting.	●			
Safe Roadways	Collision avoidance	Systemically install proven countermeasures to separate users in space, separate users in time, and increase attentiveness and awareness, such as: protected signal phases, clear zones, and vertical and horizontal separation for pedestrians and bicyclists.		●		Part of the Safety Action Plan.
		Complete infrastructure connectivity for pedestrians and bicyclists and make progress toward providing separation where needed based on crash exposure, crash history, and characteristics of the roadway and adjacent land use associated with higher levels of use.		●		Part of the Safety Action Plan.
	Kinetic energy reduction	Systemically install proven countermeasures to manage motor vehicle speed and collision angles, such as roadside appurtenances, roundabouts, refuge islands, hardened center lines, and road diets.		●		Part of the Safety Action Plan.
		Evaluate intersection design and control decisions in the planning or scoping stage for opportunities to reduce kinetic energy transfer, following new FHWA guidance.	●			
	Policies and tradeoffs	Designate functional class and modal priority for roadways to pinpoint the most effective safety countermeasures and streamline tradeoff decisions.		●		Has a functional classification system for roadways that is designated in a Master Plan and a Complete Streets modal network, however this network is not used to identify/prioritize safety improvements.
		Ensure safety for all users is prioritized, and accessibility maintained, during construction and road maintenance projects.		●		Projects have specific TTCPs but there is no standard documented on website; it is a project-specific practice.

Core Element	Category	Benchmark	Assessed Level Of Commitment/Implementation			Source/Notes
			Not a Current Practice	Occasional Practice	Institutionalized Practice	
Safe Roadways	Innovation	Provide infrastructure for smarter roadways and intelligent transportation systems (ITS) in support of data collection and analysis, as well as proactive system management.	●			
		Use pilot projects to measure safety effects, and encourage innovation and design flexibility.	●			
		Form design innovation working groups to initiate and research new interventions to safety challenges.	●			
Safe Vehicles	Supportive Infrastructure	Enable infrastructure-to-vehicle communication to provide warnings to drivers that support safe behavior.	●			
		Provide supportive infrastructure for autonomous vehicles to enable active safety technology.	●			
	Vehicle design	If applicable, collaborate with or lobby the automobile industry to prioritize safety technology including active and passive strategies, such as: 1) active: autonomous emergency braking, lane departure warning, blind spot monitoring, speed alerts, bicyclist and pedestrian detection, vehicle size and design, and 2) passive: seatbelts and airbags, crumple zones, emergency braking, electronic stability control, and pedestrian airbags.	●			
	Data	Collect data about the involvement of AVs in crashes for future data analysis, and to inform design and policies.	●			
	Safe Speeds	Adopt roadway design standards that are focused on speed management, such as target speed-based design. Adjust roadway geometries for context-appropriate speeds.	●			
		Use speed harmonization strategies to achieve safe speeds in congested areas.	●			
	Enforcement	Deploy automated speed enforcement, with a focus on equitable fee structures.	●			
	Follow speed limit setting methodologies that determine appropriate speeds based on roadway context and modal priority, rather than the historic behavior of road users. Set speed limits based on the ability of the human body to tolerate crash forces.	●				
Post Crash Care	Policy and training	Provide speed management training to staff focused on injury minimization.	●			
	Traffic incident management	Provide infrastructure to support emergency services equipment at crash sites for quick response and proper triage (this is especially important in rural communities).	●			
	Crash investigation	Enhance reporting practices to ensure complete and accurate data collection and documentation of road user behavior and infrastructure.	●			
		Create a feedback loop such that key insights from crash investigations are shared with roadway designers and/or influence outreach and education.	●			

Core Element	Category	Benchmark	Assessed Level Of Commitment/Implementation			Source/Notes
			Not a Current Practice	Occasional Practice	Institutionalized Practice	
Post Crash Care	Partnerships	Share data across agencies and organizations, including first responders and hospitals, to develop a holistic understanding of the safety landscape and improve accuracy.	●			
		Connect with victims' families and the advocacy community to offer support and resources, and encourage partnerships with outreach and education.	●			
Safety Planning and Culture	Redundancy	When deploying safety interventions, define primary and secondary countermeasures as packages across the Safe System elements to provide redundancy.		●		Part of the Safety Action Plan.
		Apply a proactive and transparent approach to data-driven safety analysis, including the use of systemic profiles, roadway and roadside condition, and modal specific condition assessments (e.g., bicycle network stress or distance between marked crossings).		●		Part of the Safety Action Plan.
		Focus network screening and benefit/cost calculations on fatal and serious injuries, instead of all collisions, to identify the core safety issues for human vulnerability.		●		Part of the Safety Action Plan.
	Data and analysis	Connect each emphasis area in a Safety Plan to roadway or contextual safety contributing factors, such as the disproportionate number of fatalities and serious injuries among pedestrians in communities of color, and recognize this specific factor for pedestrian crashes—higher rates of crashes in minority communities—where transportation system gaps (e.g., sidewalks/bike lanes/crossing opportunities) can help proactively inform recommendations.		●		Part of the Safety Action Plan.
		Use innovative data collection and analysis approaches, such as crowdsourcing or video detection data, to identify emphasis areas related to near misses or crashes previously unreported by vulnerable communities.	●			
	Leadership and commitment	Organize a Safety Plan around the Safe System Core Principles and Elements OR perform a Safe System assessment to determine how well each Safety Plan emphasis area aligns with the Safe System elements and principles, and make adjustments as necessary.		●		Part of the Safety Action Plan.
		Commit to a "Zero" Goal and establish performance management strategies.			●	Goal of SAP is zero fatalities and serious injuries by 2050.
		Backcast to establish the rate of decrease in fatalities and serious injuries needed to achieve zero by the target year. This approach will show the level of investments necessary to reach long-term goals.	●			
		Implement a monitoring process to measure against the backcasting trend and force intervention changes the agency is not on track.	●			

Core Element	Category	Benchmark	Assessed Level Of Commitment/Implementation			Source/Notes
			Not a Current Practice	Occasional Practice	Institutionalized Practice	
Safety Planning and Culture	Leadership and commitment	Establish key performance indicators (KPIs). These key performance indicators could be tied to each of the five Safe System elements or a particular strategy.	●			
	Public relations	Safety leaders show buy-in for the Safe System approach through media, public events, and support for related policies and programs.	●			
	Funding	Change project evaluation methods for funding to primarily focus on fatal and serious injury crash reduction opportunities.	●			
		Use equity considerations in project prioritization, with a change to benefit-cost analysis or through a set-aside program.		●		Part of the Safety Action Plan.
	Development review	Institutionalize safety considerations in all project types to systematically fund projects through operations and maintenance efforts (such as repaving projects).		●		Part of the Safety Action Plan.
		Conduct safety impact assessments of new developments to identify mitigation and cost sharing opportunities.	●			
	Equity first	Clearly define equity in Safety Plans and include equity considerations throughout the emphasis areas and strategies.		●		Part of the Safety Action Plan.
		Incorporate equity considerations in implementation and assessment plans, such as goals related to safety improvements for populations that are traditionally underserved.	●			
	Stakeholder engagement	Meaningfully engage populations that are traditionally underserved in shared decisionmaking for the safety planning efforts and subsequent safety programs, policies, or infrastructure projects.	●			

# Project Identification and Prioritization

# V. Project Identification and Prioritization

To identify priority locations in the Adirondack Gateway region, the SAP combines three layers of crash analysis: where crashes occur most frequently, where crashes may have the greater impact due to factors like past divestment, poverty, or other socioeconomic challenge, and where the risk of future crashes is highest.

## A. Crash Hotspot Analysis

The NYSDOT CLEAR system uses a tool to perform a network safety screening for any selected area. This network screening acts as an analysis of crash hotspots by identifying sites with potential for safety improvements. This is the primary performance measure for network screening, based on a comparison of the site-specific safety performance to the statewide average (i.e., Excess Expected Crash Frequency)<sup>1</sup>. By using this measurement instead of simply raw crash numbers, the SAP will make sure that smaller roads with high crash numbers relative to their vehicle volumes get the attention that they need. Figure 22 shows a map of these hotspots.

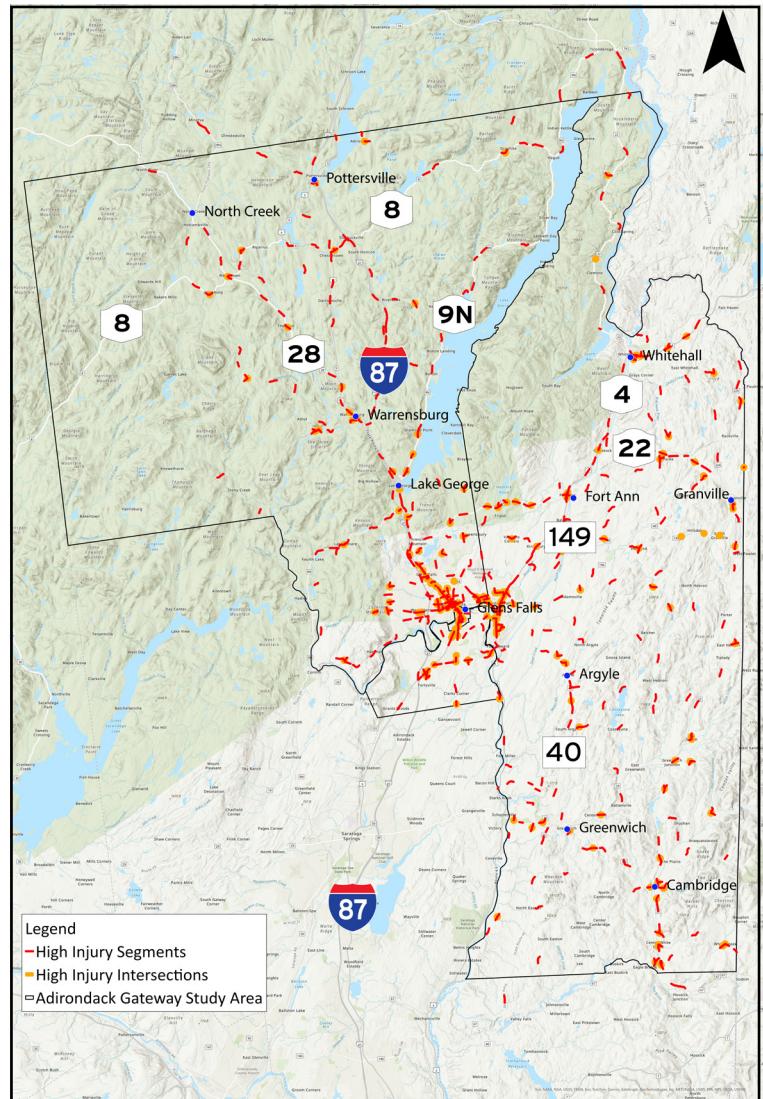


Figure 22: Crash Hotspot Analysis

<sup>1</sup> NYSDOT, <http://www.dot.ny.gov/divisions/operating/oss/highway-repository/RedBook.pdf>

## B. Equity Analysis

The SAP process requires analysis to be equity driven. Both the Federal Government and New York State have developed publicly accessible equity geographies which they ask grant recipients to employ in analyses used to direct resources.

### 1. JUSTICE 40

Section 223 of Federal Executive Order 14008 established the Justice40 Initiative, which directs 40% of the overall benefits of certain Federal funding to flow to disadvantaged communities (DACS)<sup>1</sup>.

### 2. NEW YORK STATE DACS

New York State has undertaken a similar effort headed by their Climate Justice Working Group to help underserved communities benefit from all efforts to improve conditions, including roadway safety<sup>2</sup>.

### 3. REPLICA DATA

The project team used software called Replica<sup>3</sup> to identify road segments with high volumes of trips made by disadvantaged populations. Replica uses dozens of data sources to show demographics of road users by area or street network.

Though built on many important factors, federal and state disadvantaged communities are based only on statistics of those that live in the area. The nature of transportation means that many people use roads outside of where they live, particularly those with burdensome commutes or responsibilities far from home. To identify areas relied heavily upon by disadvantaged populations, this SAP isolates census tracts with high trip volumes of three groups: nonwhite trip takers, trip takers with income below the federal poverty line, and trip takers over 65 years old. Places with the highest representation were added to this project's priority geographies.

### 4. EQUITY AREAS MAP

Figure 23 shows each of these three equity area types by census tract. Slight weight is given to these geographies in determining priority locations.

<sup>1</sup> Justice40 Initiative, <https://www.whitehouse.gov/environmentaljustice/justice40/>

<sup>2</sup> NYSERDA, <https://www.nyserda.ny.gov/ny/Disadvantaged-Communities>

<sup>3</sup> Replica HQ, <https://www.replicahq.com/applications>

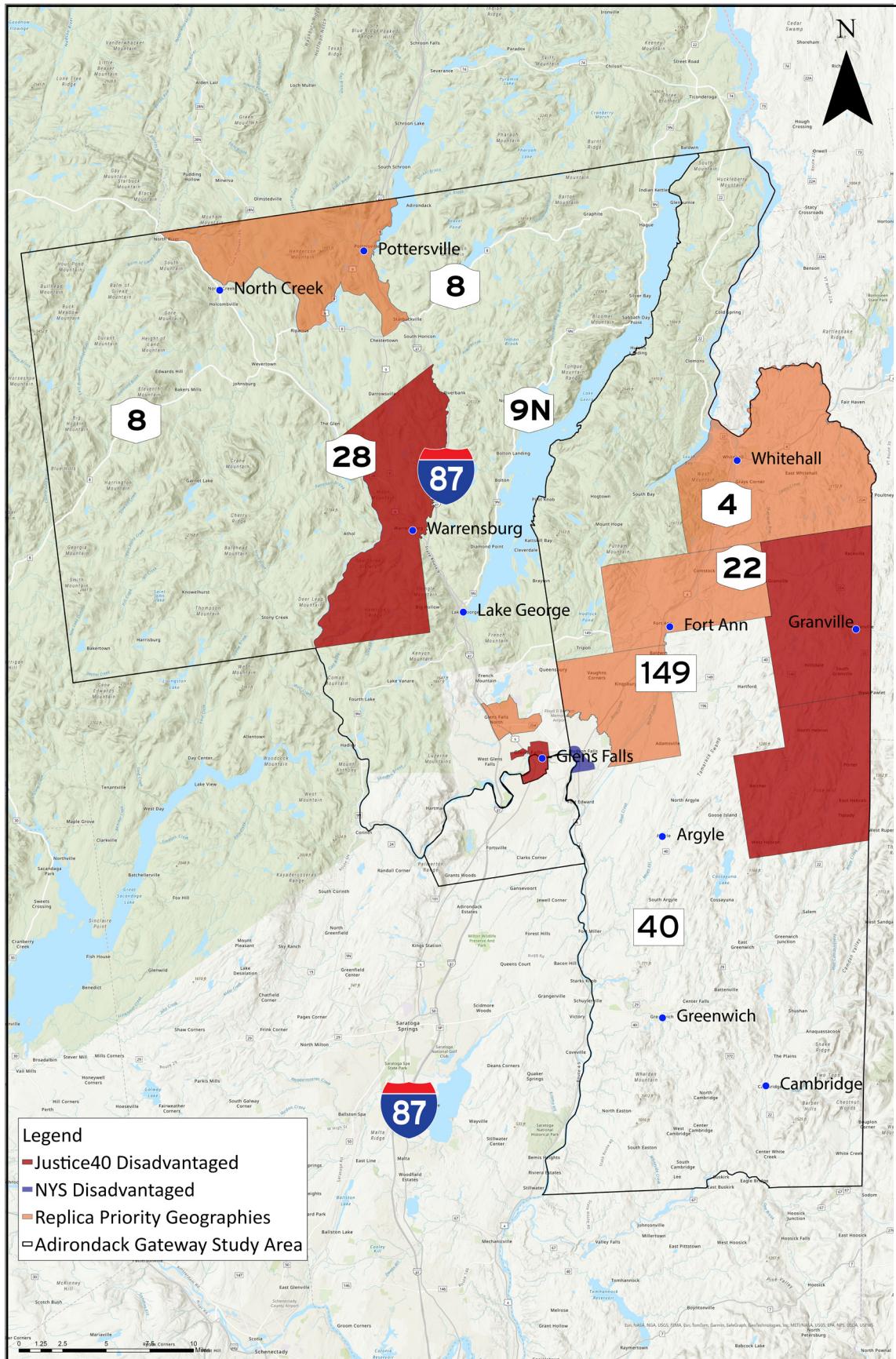


Figure 23: Equity Areas Map

## C. Systemic Risk Factor Analysis

Finally, crash locations were selected according to groups of the biggest risk factors in each of the project's emphasis areas, selected through CLEAR as "focus groups".

### FOCUS GROUPS

- Lane departure
- Alcohol
- Driver Age
- Aggressive driving
- Speed
- Fixed object
- Bike/ped

### INTERSECTION FACTORS

- Local road
- Low Lighting
- Arterials
- Approaches

### SEGMENT FACTORS

- Local road
- Low shoulder width
- Arterial

These high-risk locations are included as priorities, regardless of their potential for safety improvements as referenced in the Crash Hotspot Analysis.

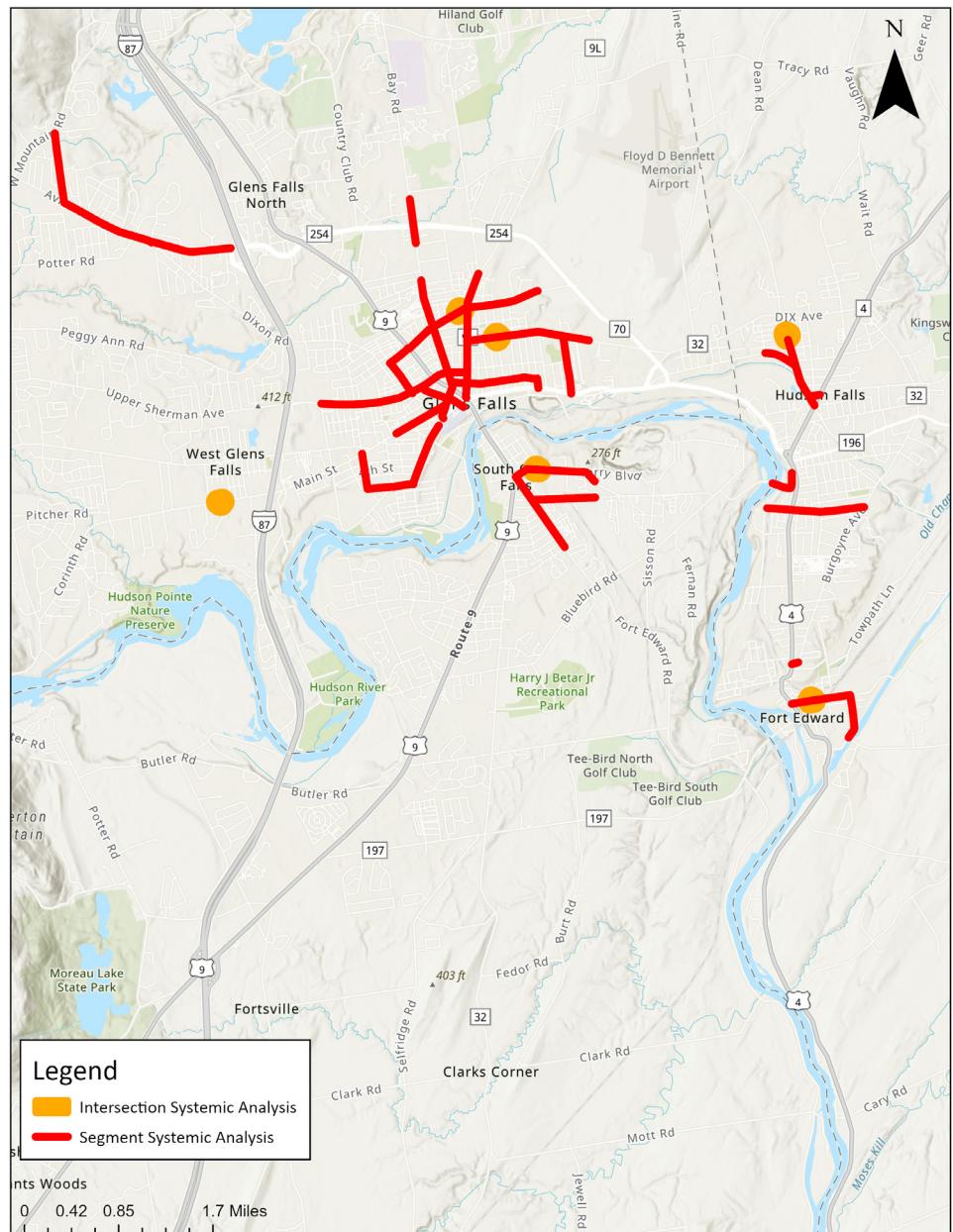


Figure 24: Systemic Risk Factor Analysis

## D. Multi-Layer Analysis

A combination of all three analyses creates this SAP's list of preliminary priority locations mapped in Figure 25. These locations will be included in list form as Appendix A of this report.

### PRIORITY SEGMENTS

- Top 85th percentile of hotspot analysis segments not in equity areas
- Top 60th percentile of hotspot analysis segments in equity areas
- All systemic analysis segments

### PRIORITY INTERSECTIONS

- Top 60th percentile of hotspot analysis intersections not in equity areas
- Top 50th percentile of hotspot analysis intersections in equity areas
- All systemic analysis intersections

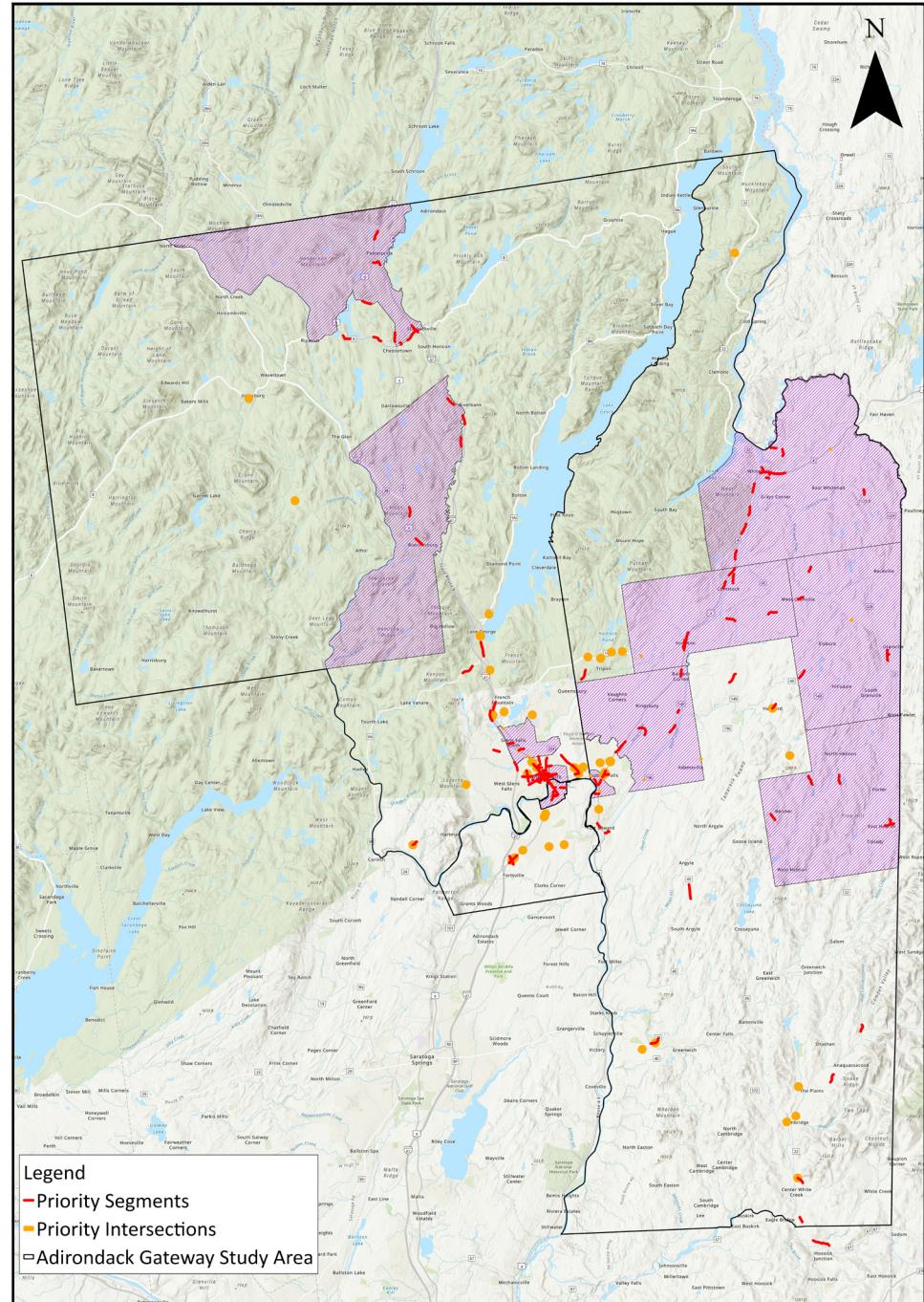


Figure 25: Preliminary Priority Locations

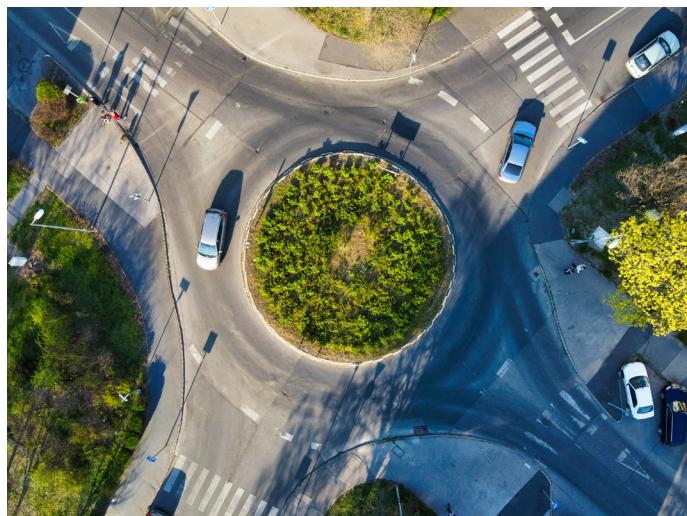
# Crash Mitigation Strategies

# VI. Crash Mitigation Strategies

This SAP includes a comprehensive list of behavioral and infrastructure countermeasures that are effective in reducing fatalities and serious injuries and have the potential of being used in the region. The identified countermeasures are drawn from federal state resources including the National Highway Traffic Safety Administration (NHTSA) Countermeasures That Work (CTW), 11th Edition, the Federal Highway Administration (FHWA) Proven Safety Countermeasures (PSC) reference, the NYSDOT's Strategic Highway Safety Plan, and the Highway Safety Plan developed by the Governor's Traffic Safety Committee. In addition, there has been national research on crash modification factors (CMFs) that indicate a potential crash reduction based on the implementation of treatments. FHWA maintains the FHWA CMF Clearinghouse that documents published studies, and this SAP draws on that research to indicate potential benefits of treatments. CMFs are generally associated with infrastructure or engineering-oriented types of projects. For those treatments that are within the areas of education and enforcement, NHTSA's CTW resource provides a star rating system to show the effectiveness of an activity. A greater number of stars indicates increased effectiveness in changing the behavior of the roadway user.

The list provided in Section VI. A. shows behavioral and infrastructure strategies for consideration by stakeholders within the region and are organized by crash emphasis areas. Each emphasis area has strategies and associated statements related to engineering, education, enforcement, and data improvements, and underneath each strategy are actions that address the statement.

For each action, there is a listed lead agency and associated partners that can help with implementation, and there are also proposed performance metrics, funding sources, and timelines. The resources from NHTSA, FHWA, GTSC, and NYSDOT 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 or are part of the SHSP.



## A. Data-Driven and Proven Strategies

### Emphasis Area 1 – Roadway Departure

#### Emphasis Area Objective: Significantly Reduce Roadway Departure Crashes

**Emphasis Area Success Metric:** Reduce the number of roadway departure related crashes by 50 percent by 2030.

**Strategy 1.1: Implement engineering countermeasures to reduce roadway departure crashes.**

Number	Action	Proposed Lead Agency (and partners)	Activity Performance Metric	Application	Potential Funding Source(s)	Implementation Time Frame	Potential Crash Reduction or Effectiveness Rating
1.1.1	Pre-treat road surface and improve road clearance during snow events.	Public Works Departments	Locations treated	Major collectors and rural minor arterials	NYSDOT	Ongoing	8% <sup>1</sup>
1.1.2	Install centerline, shoulder, or edge line rumble strips.	Public Works Departments, NYSDOT	Miles of rumble strip constructed	Major collectors and rural minor arterials	Counties NYSDOT, FHWA	Start within two years	14% <sup>2</sup>
1.1.3	Widen and/or pave shoulders to provide drivers with a recovery area.	Public Works Departments, NYSDOT	Miles of shoulder added	Major collectors and rural minor arterials	Counties NYSDOT, FHWA	Start within two years	23% <sup>3</sup>
1.1.4	Provide enhanced curve delineation, such as chevrons and pavement markings in accordance with MUTCD criteria.	Public Works Departments, NYSDOT	Locations treated	Curves on Major collectors and rural minor arterials	Counties, NYSDOT, FHWA	Start within two years	9% <sup>4</sup>

<sup>1</sup> <https://cmfclearinghouse.fhwa.dot.gov/detail.php?facid=190>

<sup>2</sup> <https://cmfclearinghouse.fhwa.dot.gov/detail.php?facid=11675>

<sup>3</sup> <https://cmfclearinghouse.fhwa.dot.gov/detail.php?facid=6657>

<sup>4</sup> <https://cmfclearinghouse.fhwa.dot.gov/detail.php?facid=10609>

## Strategy 1.1: *Continued*

Number	Action	Proposed Lead Agency (and partners)	Activity Performance Metric	Application	Potential Funding Source(s)	Implementation Time Frame	Potential Crash Reduction or Effectiveness Rating
1.1.5	Use High Friction Surface Treatment (HFST) to increase traction through sharp curves prioritizing according to crash rate.	Public Works Departments, NYSDOT	Locations treated	Major collectors and rural minor arterials	Counties, NYSDOT, FHWA	Start within two years	33% <sup>1</sup>
1.1.6	Improve lighting along roadways	Public Works Departments, NYSDOT	Locations treated	Major collectors and rural minor arterials	Counties, NYSDOT, FHWA	Start within two years	37% <sup>2</sup>
1.1.7	Install Safety EdgeSM when resurfacing roadways.	Public Works Departments, NYSDOT	Miles of Safety EdgeSM added	Major collectors and rural minor arterials	Counties, NYSDOT, FHWA	Start within five years	14% <sup>3</sup>
1.1.8	Install or widen retroreflective pavement markings on center lines and edge lines.	Public Works Departments, NYSDOT	Miles of roadway treated	Major collectors and rural minor arterials	Counties, NYSDOT, FHWA	Complete within five years, with routine maintenance	15% <sup>4</sup>

<sup>1</sup> <https://cmfclearinghouse.fhwa.dot.gov/detail.php?facid=11313>

<sup>2</sup> <https://cmfclearinghouse.fhwa.dot.gov/detail.php?facid=7774>

<sup>3</sup> <https://cmfclearinghouse.fhwa.dot.gov/detail.php?facid=4338>

<sup>4</sup> <https://cmfclearinghouse.fhwa.dot.gov/detail.php?facid=6842>

**Strategy 1.2: *Implement educational efforts to address roadway departure safety.***

Number	Action	Proposed Lead Agency (and partners)	Activity Performance Metric	Application	Potential Funding Source(s)	Implementation Time Frame	Potential Crash Reduction or Effectiveness Rating
1.2.1	Pursue safety grants from the Highway Safety Grant Program.	Police Departments; Public Works Departments; LCLGRPB; AGFTC	Number of grants	N/A	GTSC	Ongoing	N/A
1.2.2	Use traffic simulator at education events.	Police Departments; Youth Bureaus; School Districts; Traffic Safety Board	Number of events	All areas	GTSC	Ongoing	N/A
1.2.3	Connect local efforts with Statewide Roadway Departure Plan initiatives	Public Works Departments	Connect with State plan	N/A	NYSDOT; GTSC	Immediately	N/A
1.2.4	Education involving driving responsibly during winter weather on website/PSAs.	Public Works Departments, GTSC	Number of clicks	All areas	GTSC; NYSDOT	Launch within two years	N/A
1.2.5	Driver education classes for the area.	Youth Bureaus, School Districts, GTSC	Number of classes	All areas	GTSC	Launch within two years	N/A
1.2.6	Conduct training on roadway departure crash engineering mitigation approaches.	Local Technical Assistance Program	Number of trainings	N/A		Start within two years	N/A

**Strategy 1.3:Enhance enforcement activity to address roadway departure safety.**

Number	Action	Proposed Lead Agency (and partners)	Activity Performance Metric	Application	Potential Funding Source(s)	Implementation Time Frame	Potential Crash Reduction or Effectiveness Rating
1.3.1	Continue impaired driving enforcement.	Police Departments	Hours logged	All areas	GTSC	Ongoing	★★★ <sup>1</sup>
1.3.2	Continue enforcement of excessive driving speed with an emphasis on winter weather driving.	Police Departments	Hours logged	All areas	GTSC	Ongoing	★★★★ <sup>1</sup>

<sup>1</sup> <https://www.nhtsa.gov/sites/nhtsa.gov/files/2023-12/countermeasures-that-work-11th-2023-tag.pdf>

**Strategy 1.4: *Improve data collection and analysis practices that relate to roadway departure safety.***

Number	Action	Proposed Lead Agency (and partners)	Activity Performance Metric	Application	Potential Funding Source(s)	Implementation Time Frame	Potential Crash Reduction or Effectiveness Rating
1.4.1	Continue to share data with safety partners to gain knowledge of prevailing issues, including UTVs/ ATVs.	Police Departments; Planning Departments; AGFTC	Percentage of records shared	N/A	GTSC	Ongoing	N/A
1.4.2	Perform roadway safety audits on priority corridors to further identify those roadway features and user behaviors that contribute to severe crashes and select the appropriate	Public Works Departments, Police Departments, Local Technical Assistance Program	Locations analyzed	All roads	GTSC, FHWA, NYSDOT	Immediately	N/A

### Strategy 1.4: *continued*

Number	Action	Proposed Lead Agency (and partners)	Activity Performance Metric	Application	Potential Funding Source(s)	Implementation Time Frame	Potential Crash Reduction or Effectiveness Rating
1.4.4	Work with EMS providers to identify opportunities to enhance response times and advance new life-saving techniques.	EMS Departments; Police Departments; Public Health Departments	Reduction in response times	All areas	NYSDOH	Within five years	N/A

## Emphasis Area 2 – Speed

**Emphasis Area Objective:** *Reduce speed-related crashes.*

**Emphasis Area Success Metric:** *Reduce the number of speed-related crashes by 50 percent by 2030.*

**Strategy 2.1: Implement engineering countermeasures to reduce speeding and speed-related crashes.**

Number	Action	Proposed Lead Agency (and partners)	Activity Performance Metric	Application	Potential Funding Source(s)	Implementation Time Frame	Potential Crash Reduction or Effectiveness Rating
2.1.1	Set appropriate speed limits based on the use of appropriate engineering practices.	Public Works Departments, NYSDOT	Number of roads	Major collectors and rural minor arterials	Counties, NYSDOT, FHWA	Within two years	★★★★★
2.1.2	Expand the use of advisory speed signs to advise motorists where traveling at the posted speed is ill-advised.	Public Works Departments, NYSDOT	Number of locations	Major collectors and rural minor arterials	Counties, NYSDOT, FHWA	Within two years	★★★★★ <sup>1</sup>
2.1.3	Introduce variable speed limits for high temporal speeding events.	Public Works Departments, NYSDOT	Number of sites	During morning and evening commutes on major collectors and rural minor arterials	Counties, NYSDOT, FHWA	Within two years	★★ <sup>1</sup>
2.1.4	Increase the use of Radar Speed Feedback Signs to notify drivers of their speeds.	Public Works Departments, NYSDOT	Number of sites	Major collectors and rural minor arterials	Counties, NYSDOT, FHWA	Within two years	★★★★★ <sup>1</sup>

<sup>1</sup> <https://www.nhtsa.gov/sites/nhtsa.gov/files/2023-12/countermeasures-that-work-11th-2023-tag.pdf>

## Strategy 2.1: *Continued*

Number	Action	Proposed Lead Agency (and partners)	Activity Performance Metric	Application	Potential Funding Source(s)	Implementation Time Frame	Potential Crash Reduction or Effectiveness Rating
2.1.5	Reduce lane widths through re-striping to encourage slower speeds.	Public Works Departments, NYSDOT	Number of sites	Major collectors and rural minor arterials	Counties, NYSDOT, FHWA	Within two years	31% <sup>1</sup>
2.1.6	Install transverse rumble strips to encourage lower speeds.	Public Works Departments, NYSDOT	Number of sites	All roads	Counties, NYSDOT, FHWA	Within two years	24% <sup>2</sup>

<sup>1</sup> <https://cmfclearinghouse.fhwa.dot.gov/detail.php?facid=8479>

<sup>2</sup> <https://cmfclearinghouse.fhwa.dot.gov/detail.php?facid=3070>

**Strategy 2.2: *Implement educational efforts to address speed-related safety.***

Number	Action	Proposed Lead Agency (and partners)	Activity Performance Metric	Application	Potential Funding Source(s)	Implementation Time Frame	Potential Crash Reduction or Effectiveness Rating
2.2.1	Effective, high-visibility communications and outreach campaigns that support speed and aggressive driving enforcement programs.	Public Works Departments, Police Departments, GTSC	Number of distributions	All areas	GTSC	Launch within five years	N/A
2.2.2	Engage Law Enforcement Liaison in coordinating initiatives that address speeding.	Police Departments, GTSC; State Police Liaison; multi-jurisdiction effort	Number of hours	All areas	GTSC	Launch within five years	N/A

**Strategy 2.3: *Enhance enforcement activity to address speed-related safety.***

Number	Action	Proposed Lead Agency (and partners)	Activity Performance Metric	Application	Potential Funding Source(s)	Implementation Time Frame	Potential Crash Reduction or Effectiveness Rating
2.3.1	Use Radar Speed Feedback Signs to notify drivers of reduced speed limits.	Police Departments	Conducted or not	All areas	NYSDOT	Within two years	★★★★★ <sup>1</sup>
2.3.2	Enforce locations with a history of speed-related crashes.	Police Departments	Number of hours	All areas	GTSC	Launch within five years	★★★★ <sup>1</sup>
2.3.3	Define enforcement actions that are fair, consistent, and in the interest of preventing crashes.	Police Departments	Conducted or not	All areas	Police Departments	Within five years	N/A
2.3.4	Consider installation of automated safety cameras to address speed.	Police Departments	Number of locations	All areas	GTSC	Launch within five years	6% <sup>2</sup>

<sup>1</sup> <https://www.saferoads.org/sites/nhtsa.gov/files/2023-12/countermeasures-that-work-11th-2023-tag.pdf>

<sup>2</sup> <https://cmfclearinghouse.fhwa.dot.gov/detail.php?facid=7266>

**Strategy 2.4: *Improve data collection and analysis practices that relate to speed-related safety.***

Number	Action	Proposed Lead Agency (and partners)	Activity Performance Metric	Application	Potential Funding Source(s)	Implementation Time Frame	Potential Crash Reduction or Effectiveness Rating
2.4.1	Keep records of location of all speeding related tickets and crashes to find speeding corridors.	Police Departments	Conducted or not	All areas	GTSC	Within five years	N/A
2.4.2	Compile data related to driver speed.	Police Departments	Conducted or not	All areas	GTSC	Within five years	N/A

### Emphasis Area 3 – *Age Related*

**Emphasis Area Objective:** *Reduce older and younger road user crashes.*

**Emphasis Area Success Metric:** *Reduce the number of older and younger road user crashes by 50 percent by 2030.*

**Strategy 3.1: *Implement engineering countermeasures to reduce older road user crashes.***

Number	Action	Proposed Lead Agency (and partners)	Activity Performance Metric	Application	Potential Funding Source(s)	Implementation Time Frame	Potential Crash Reduction or Effectiveness Rating
3.1.1	Implement countermeasures from the FHWA Older Driver Highway Design Manual: Increase size and letter height of roadway signs, width of striping, and use retro-reflective signal back-plates; improved signage and acuity, clarity; senior center signage; advance signage.	Public Works Departments, NYSDOT	Number of installation sites	All areas	NYSDOT, FHWA	Within two years	N/A
3.1.2	Train staff on the use of the Older Driver Highway Design Manual reference.	Public Works Departments, Local Technical Assistance Program	Number of participants	N/A	NYSDOT, FHWA	Within five years	N/A

**Strategy 3.2: *Implement educational efforts to address older road user safety.***

Number	Action	Proposed Lead Agency (and partners)	Activity Performance Metric	Application	Potential Funding Source(s)	Implementation Time Frame	Potential Crash Reduction or Effectiveness Rating
3.2.1	Encourage older drivers to re-evaluate their driving skills to identify areas for improvement.	GTSC, Office for the Aging, Adult Protective Program	Number of participants	All areas	GTSC	Within five years	N/A
3.2.2	Create a license renewal policy and a referral system to identify older drivers who should not be driving.	GTSC, Office for the Aging	Number of participants	All areas	GTSC	Within five years	★★ <sup>1</sup>
3.2.3	Conduct AARP Smart Driver program to help drivers over 55 refresh their driving skills.	GTSC, Office for the Aging	Number of participants	All areas	GTSC	Within five years	N/A
3.2.4	Implement the CarFit program and specialized training from GTSC to promote continued safe driving and mobility among older drivers by focusing attention on safety, comfort, and fit.	GTSC, Office for the Aging, Adult Protective Program	Number of participants	All areas	GTSC	Ongoing	N/A

<sup>1</sup> <https://www.nhtsa.gov/sites/nhtsa.gov/files/2023-12/countermeasures-that-work-11th-2023-tag.pdf>

**Strategy 3.3: *Implement engineering countermeasures to reduce crashes involving young drivers.***

Number	Action	Proposed Lead Agency (and partners)	Activity Performance Metric	Application	Potential Funding Source(s)	Implementation Time Frame	Potential Crash Reduction or Effectiveness Rating
3.3.1	Improve lighting and visibility of signage.	Public Works Departments, NYSDOT	Number of locations	All areas	NYSDOT, FHWA	Within two years	18% <sup>1</sup>
3.3.2	Upgrade appropriate existing signs and pavement markings (e.g., retroreflective signs, reflective strips on signposts, add flashing lights to existing signs).	Public Works Departments, NYSDOT	Number of locations	All areas	NYSDOT, FHWA	Within two years	15% <sup>2</sup>

<sup>1</sup> <https://cmfclearinghouse.fhwa.dot.gov/detail.php?facid=2431>

<sup>2</sup> <https://cmfclearinghouse.fhwa.dot.gov/detail.php?facid=6842>

**Strategy 3.4: *Implement educational efforts to address younger road user safety.***

Number	Action	Proposed Lead Agency (and partners)	Activity Performance Metric	Application	Potential Funding Source(s)	Implementation Time Frame	Potential Crash Reduction or Effectiveness Rating
3.4.1	Implement awareness campaign to promote safe driving habits by young drivers, including staying alert, using a seat belt, driving at appropriate speeds, not driving distracted.	GTSC, Youth Bureaus, School Districts	Number of clicks	All areas	GTSC	Ongoing	N/A

**Strategy 3.5: *Enhance enforcement activity to address younger road user safety.***

Number	Action	Proposed Lead Agency (and partners)	Activity Performance Metric	Application	Potential Funding Source(s)	Implementation Time Frame	Potential Crash Reduction or Effectiveness Rating
3.5.1	Increase enforcement of driving laws.	GTSC, Police Departments	Number of hours	All areas	GTSC	Within five years	★★★★ <sup>1</sup>
3.5.2	Enforce graduated licensing laws.	GTSC, Police Departments	Number of hours	All areas	GTSC	Within five years	★★ <sup>1</sup>

<sup>1</sup> <https://www.nhtsa.gov/sites/nhtsa.gov/files/2023-12/countermeasures-that-work-11th-2023-tag.pdf>

**Strategy 3.6: *Implement educational efforts to address younger road user safety.***

Number	Action	Proposed Lead Agency (and partners)	Activity Performance Metric	Application	Potential Funding Source(s)	Implementation Time Frame	Potential Crash Reduction or Effectiveness Rating
3.6.1	Evaluate age-related crashes to determine contributing factors in crashes involving young drivers.	GTSC, Public Works Departments; Youth Bureaus	Conducted or not	All areas	GTSC, NYSDOT	Within five years	N/A

## Emphasis Area 4 – *Intersections*

**Emphasis Area Objective:** *Reduce intersection crashes.*

**Emphasis Area Success Metric:** *Reduce the number of intersection crashes by 50 percent by 2030.*

**Strategy 4.1: *Implement engineering countermeasures to reduce intersection crashes.***

Number	Action	Proposed Lead Agency (and partners)	Activity Performance Metric	Application	Potential Funding Source(s)	Implementation Time Frame	Potential Crash Reduction or Effectiveness Rating
4.1.1	Reduce left-turn conflicts by reconfiguring intersections with roundabouts, restricted crossing U-turns (RCUT), or median U-turns (MUT).	Public Works Departments; NYSDOT	Number of sites	All areas	FHWA, NYSDOT	Within five years	20% <sup>1</sup>
4.1.2	Improve intersection signage and lighting to improve intersection visibility.	Public Works Departments; NYSDOT	Number of sites	All areas	FHWA, NYSDOT	Within five years	15% <sup>2</sup>
4.1.3	Add left-turn, right-turn, or center turn lanes.	Public Works Departments; NYSDOT	Number of sites	All areas	FHWA, NYSDOT	Within five years	15% <sup>3</sup>
4.1.4	Convert intersections at town gateways to roundabouts to slow speeds.	Public Works Departments; NYSDOT	Number of sites	Town gateways	FHWA, NYSDOT	Within five years	2% <sup>4</sup>

<sup>1</sup> <https://cmfclearinghouse.fhwa.dot.gov/detail.php?facid=10383>

<sup>2</sup> <https://cmfclearinghouse.fhwa.dot.gov/detail.php?facid=8962>

<sup>3</sup> <https://cmfclearinghouse.fhwa.dot.gov/detail.php?facid=4643>

<sup>4</sup> <https://cmfclearinghouse.fhwa.dot.gov/detail.php?facid=2429>

## Strategy 4.1: *Continued*

Number	Action	Proposed Lead Agency (and partners)	Activity Performance Metric	Application	Potential Funding Source(s)	Implementation Time Frame	Potential Crash Reduction or Effectiveness Rating
4.1.5	Separate left turn lanes and protected left turn signal phases.	Public Works Departments; NYSDOT	Number of sites	All areas	FHWA, NYSDOT	Within five years	6% <sup>1</sup>
4.1.6	Use Radar Speed Feedback Signs to reduce driver speeds through intersections on high-speed roadways.	Public Works Departments; NYSDOT	Number of sites	All areas	FHWA, NYSDOT	Within five years	5% <sup>2</sup>
4.1.7	Implement systemic application of multiple low-cost countermeasures at stop-controlled intersections.	Public Works Departments; NYSDOT	Number of sites	All areas	FHWA, NYSDOT	Within five years	8% <sup>3</sup>
4.1.8	Install transverse rumble strips in advance of intersections.	Public Works Departments; NYSDOT	Number of sites	All areas	FHWA, NYSDOT	Within five years	20% <sup>4</sup>

<sup>1</sup> <https://cmfclearinghouse.fhwa.dot.gov/detail.php?facid=4577>

<sup>2</sup> <https://cmfclearinghouse.fhwa.dot.gov/detail.php?facid=6885>

<sup>3</sup> <https://cmfclearinghouse.fhwa.dot.gov/detail.php?facid=8866>

<sup>4</sup> <https://cmfclearinghouse.fhwa.dot.gov/detail.php?facid=2710>

**Strategy 4.2: *Implement educational efforts to address intersection safety.***

Number	Action	Proposed Lead Agency (and partners)	Activity Performance Metric	Application	Potential Funding Source(s)	Implementation Time Frame	Potential Crash Reduction or Effectiveness Rating
4.2.1	Safe driving tips/videos on county, city, and State websites.	Public Works Departments, GTSC	Number of clicks	All areas	GTSC	Within two years	N/A
4.2.2	Conduct training with road designers and planners on best practices to address intersection safety.	Local Technical Assistance Program	Number of trainings	N/A	NYSDOT, FHWA	Within two years	N/A

**Strategy 4.3: *Enhance enforcement activity to address intersection safety.***

Number	Action	Proposed Lead Agency (and partners)	Activity Performance Metric	Application	Potential Funding Source(s)	Implementation Time Frame	Potential Crash Reduction or Effectiveness Rating
4.3.1	Conduct highly publicized and visible enforcement of priority intersections.	Police Departments	Number of hours	All areas	GTSC	Launch within five years	★★★★★ <sup>1</sup>
4.3.2	Consider installation of automated safety cameras to address red-light running crashes.	Police Departments	Number of locations	All areas	GTSC	Launch within five years	17% <sup>2</sup>

<sup>1</sup> <https://www.nhtsa.gov/sites/nhtsa.gov/files/2023-12/countermeasures-that-work-11th-2023-tag.pdf>

<sup>2</sup> <https://cmfclearinghouse.fhwa.dot.gov/detail.php?facid=11108>

**Strategy 4.4: *Improve data collection and analysis practices that relate to intersection safety.***

Number	Action	Proposed Lead Agency (and partners)	Activity Performance Metric	Application	Potential Funding Source(s)	Implementation Time Frame	Potential Crash Reduction or Effectiveness Rating
4.4.1	Perform roadway safety audits on priority intersections or corridors to further identify those roadway features and user behaviors that contribute to severe crashes and select the appropriate	Public Works Departments, Police Departments, NYSDOT	Locations analyzed	All areas	GTSC, FHWA, NYSDOT	Immediately	N/A
4.4.2	Develop a process to inventory intersection data including traffic volumes, roadway attributes, and traffic asset data for use in traffic safety evaluations.	Local Technical Assistance Program	Number of trainings	N/A	NYSDOT, FHWA	Within two years	N/A

## Emphasis Area 5 – Vulnerable Road Users

**Emphasis Area Objective:** *Reduce pedestrian and bicyclist crashes.*

**Emphasis Area Success Metric:** *Reduce the number of pedestrian- and bicyclist-related crashes by 50 percent by 2030.*

**Strategy 5.1: Implement engineering countermeasures to reduce vulnerable user crashes.**

Number	Action	Proposed Lead Agency (and partners)	Activity Performance Metric	Application	Potential Funding Source(s)	Implementation Time Frame	Potential Crash Reduction or Effectiveness Rating
5.1.1	Prioritize pedestrian and trail crossing improvement and installation projects.	Public Works Departments, NYSDOT	Number of crossings	Locations with high pedestrian volumes	NYSDOT, FHWA	Within five years	N/A
5.1.2	Improve signs, signals, and pavement markings at pedestrian and trail crossing locations.	Public Works Departments, NYSDOT	Number of crossings	Pedestrian crossings	NYSDOT, FHWA	Within five years	11% <sup>1</sup>
5.1.3	Improve road geometry (narrow lanes, reduce curb radii, provide refuge islands, bike lanes) to improve pedestrian and bicyclist safety.	Public Works Departments, NYSDOT	Number of improvements implemented	All areas	NYSDOT, FHWA	Within five years	26% <sup>2</sup>
5.1.4	Implement sidewalks, trails, and lighting infrastructure improvements.	Public Works Departments, NYSDOT	Number of improvements implemented	All areas	NYSDOT, FHWA	Within five years	40% <sup>3</sup>
5.1.5	Install pedestrian hybrid beacons.	Public Works Departments, NYSDOT	Number of improvements implemented	Pedestrian crossings	NYSDOT, FHWA	Within five years	12% <sup>4</sup>

<sup>1</sup> <https://cmfclearinghouse.fhwa.dot.gov/detail.php?facid=9018>

<sup>2</sup> <https://cmfclearinghouse.fhwa.dot.gov/detail.php?facid=8800>

<sup>3</sup> <https://cmfclearinghouse.fhwa.dot.gov/detail.php?facid=11246>

<sup>4</sup> <https://cmfclearinghouse.fhwa.dot.gov/detail.php?facid=10585>

**Strategy 5.2: *Implement educational efforts to address vulnerable user safety.***

Number	Action	Proposed Lead Agency (and partners)	Activity Performance Metric	Application	Potential Funding Source(s)	Implementation Time Frame	Potential Crash Reduction or Effectiveness Rating
5.2.1	Develop consistent pedestrian and bicyclist safety outreach materials such as print materials and messaging for social and other media types as well as schools.	Public Works Departments; Youth Bureaus; School Districts; Police Departments; GTSC; Public Health Departments	Number of campaigns	All areas	GTSC	Within two years	N/A

**Strategy 5.3: *Improve data collection and analysis practices that relate to vulnerable user safety.***

Number	Action	Proposed Lead Agency (and partners)	Activity Performance Metric	Application	Potential Funding Source(s)	Implementation Time Frame	Potential Crash Reduction or Effectiveness Rating
5.3.1	Perform roadway safety audits on priority corridors to further identify those roadway features and user behaviors that contribute to severe crashes and select the appropriate	Public Works Departments; Police Departments; NYSDOT; Local Technical Assistance Program	Locations analyzed	All areas	GTSC, FHWA, NYSDOT	Immediately	N/A
5.3.2	Develop a process to inventory pedestrian and bicyclist data including traffic volumes, roadway attributes, and traffic asset data for use in traffic safety evaluations.	Public Works Departments; Police Departments		N/A	GTSC, FHWA, NYSDOT	Immediately	N/A

## Emphasis Area 6 – *Road User Behavior*

**Emphasis Area Objective:** *Reduce impaired driving and distracted driving crashes.*

**Emphasis Area Success Metric:** *Reduce the number of impaired driving and distracted driving crashes by 50 percent by 2030.*

**Strategy 6.1: Implement educational efforts to address road user behavior.**

Number	Action	Proposed Lead Agency (and partners)	Activity Performance Metric	Application	Potential Funding Source(s)	Implementation Time Frame	Potential Crash Reduction or Effectiveness Rating
6.1.1	Effective, high-visibility communication and outreach campaigns supporting enforcement efforts.	Police Departments, GTSC	Number of campaigns and clicks	All areas	GTSC	Within two years	N/A
6.1.2	Conduct Advanced Roadside Impaired Driving Enforcement (ARIDE) training to train law enforcement officers to observe, identify, and articulate the signs of impairment.	Police Departments	Number of officers trained	All areas	GTSC	Ongoing	N/A
6.1.3	Consult with Drug Recognition Experts on best practices to address impaired driving.	Police Departments	Number of engagements	All areas	GTSC	Ongoing	N/A
6.1.4	Conduct STOP DWI Program to coordinate local efforts that address impaired driving.	Police Departments	Number of engagements	All areas	GTSC	Ongoing	N/A

**Strategy 6.2: *Enhance enforcement activity to address road user behavior.***

Number	Action	Proposed Lead Agency (and partners)	Activity Performance Metric	Application	Potential Funding Source(s)	Implementation Time Frame	Potential Crash Reduction or Effectiveness Rating
6.2.1	Conduct Publicized sobriety checkpoints.	Police Departments	Number of hours	All areas	GTSC	Launch within five years	★★★★★
6.2.2	Conduct High visibility saturation patrols.	Police Departments	Number of hours	All areas	GTSC	Launch within five years	★★★★ <sup>1</sup>
6.2.3	Use Preliminary Breath Test Devices (PBT).	Police Departments	Number of hours	All areas	GTSC	Launch within five years	★★★★ <sup>1</sup>
6.2.4	Engage Law Enforcement Liaison in coordinating enforcement activities and initiatives that address driving while under the influence of drugs and alcohol.	Police Departments	Number of hours	All areas	GTSC	Launch within five years	N/A
6.2.5	Conduct distracted driving enforcement.	Police Departments	Number of hours	All areas	GTSC	Launch within five years	★★★★ <sup>1</sup>

<sup>1</sup> <https://www.nhtsa.gov/sites/nhtsa.gov/files/2023-12/countermeasures-that-work-11th-2023-tag.pdf>

**Strategy 6.3: *Improve data collection and analysis practices that relate to road user behavior.***

Number	Action	Proposed Lead Agency (and partners)	Activity Performance Metric	Application	Potential Funding Source(s)	Implementation Time Frame	Potential Crash Reduction or Effectiveness Rating
6.3.1	Perform roadway safety audits on priority corridors to further identify roadway features as well as drinking establishment locations that combined with impaired driving that contribute to severe crashes and select the appropriate countermeasures.	Planning Departments; Police Departments	Perform audits	All areas	GTSC, NYSDOT	Immediately	N/A
6.3.2	Conduct additional data analyses to determine types of drugs and impairment, and level of distraction involved in crashes.	Planning Departments; Police Departments		All areas	GTSC	Immediately	N/A

## B. Project Examples

As a starting point to evaluate priority locations for potential countermeasures, this section will identify three sites and propose preliminary countermeasures that could be assessed for feasibility in crash reduction goals. These sites represent, in each county, the priority intersection with the highest potential for safety improvements as calculated by NYSDOT.

**UPPER GLEN ST &  
AVIATION RD QUEENSBURY  
WARREN COUNTY**  
**Five serious injury crashes  
(2018-2022)**

- Review signal timings
- High visibility signal with backplates
- Shorten pedestrian crossing distances
- Median islands
- Expand connections to existing bike infrastructure



Figure 26: Upper Glen St & Aviation Rd

**QUAKER ST & RAWSON  
AVE, GRANVILLE  
WASHINGTON COUNTY**  
**Two serious injury crashes  
(2018-2022)**

- Adjacent to Granville High School, Village Court, Stewarts
- Signal, RRFB
- Pedestrian crossing infrastructure



Figure 27: Quaker St & Rawson Ave

**SPIER FALLS RD &  
SARATOGA RD, MOREAU  
SARATOGA COUNTY**  
**One fatal, two serious injury  
crashes (2018-2022)**

- Signal timing modifications
- Roundabout
- Turning restrictions
- Expand bike infrastructure
- Evaluate before/after data of safety improvement project



Figure 28: Spier Falls Rd & Saratoga Rd

# Implementation and Reporting

# VII. Implementation and Reporting

## A. Progress and Transparency

The SAP reflects on past and ongoing efforts and identifies opportunities to strengthen partnerships. These partnerships leverage limited funds and resources to advance the plan from planning to implementation. Below is an overview of a process to guide implementation of the plan and evaluate success.

## B. Data Collection and Evaluation

Partners across the region should evaluate the SAP based on both process and outcomes. Process evaluation involves reviewing each action in the plan and determining if progress has been made against an agreed upon timeline.

Outcome evaluation looks at the impact of activities. For example, the impact of site-specific projects can be measured based on pre-construction and post-construction crash statistics. For other projects, progress may be measured based on a combination of several activities that lead to a change in crash frequency. Such an example would be a change in the frequency of unbelted occupant crashes after the implementation of a combination of educational and enforcement initiatives. The interrelationship between different safety activities at the local, regional, and State level means that fatalities and injuries will be used as the metric for annual progress for different program areas.

Agencies will use crash

data collected by law enforcement agencies as well as data compiled and managed by NYSDOT and the Governor's Traffic Safety Committee as part of the outcome evaluations. Changes in traffic volumes, crash severity, and characteristics of crashes also provide meaningful insight into the effect of safety countermeasures.

The agencies involved in this SAP should build on the underlying analysis conducted for the original plan and regularly augment the analysis with new data. To inform process outcomes, the action plan partners should collect information on metrics such as activities conducted, projects completed, people engaged, etc. A report can then be developed that summarizes the process and outcomes of the various strategies and actions. An annual frequency for the report is preferred as that is consistent with how crash data is compiled.

## *C. Public Reporting*

The SAP Partners provided leadership in the development of the Roadway SAP. This group will continue to serve as the body to monitor the implementation of the plan and should dedicate portions of its meeting agendas to review plan progress. This includes reviewing crash statistics and the implementation status of actions, recommending re-prioritization of safety priorities, and identifying potential funding opportunities that support the implementation of strategies and actions. The group should also coordinate with NYSDOT and GTSC to ensure the safety activities of the region align with State and regional safety priorities. Feedback will also be reflected in the annual progress report.

## *E. Integration with the Plan*

The partner agencies recognize that some strategies may take several years to fully implement. Additionally, it may take several years to realize the benefit of the strategies through a reduction of fatal and serious injury crashes. The plan is a living document and will be reviewed on an on-going basis. Similar to the New York State SHSP, a full update of the plan is anticipated to be completed every five years, or as deemed necessary by the partner agencies. However, more frequent updates to the individual strategies and actions may take place to reflect the plan's progress and any new policies that affect implementation. The partner agencies will integrate the feedback from public reporting and its engagement activities into the plan's update.

## *D. Public Education and Awareness*

The partner agencies should inform the public about the implementation of the plan through public meetings as well as through periodic updates on the website. Social media channels should be used to notify the public about roadway safety or to inform them of notable upcoming events or projects. Partner agencies may also conduct periodic surveys to gauge public awareness of plan implementation and to gather feedback on emerging roadway safety issues.

## *F. Action Plan Adoption*

As of May 2025, the AGFTC has adopted the SAP.

# Appendix A: Priority Locations

## VIII. Appendix A: Priority Intersections

Table 2 lists **priority intersections** identified by the crash analysis.

Street 1	Street 2	Municipality	County	Total Crashes	Fatalities	Serious Injuries	Injuries
Upper Glen Street	Aviation Road	Town of Queensbury	Warren County	5	0	5	0
US Highway 4	County Road 9	Town of Whitehall	Washington County	2	1	1	0
Halls Pond Road	Washburn Hill Road	Town of Hartford	Washington County	1	0	1	0
Sheldon Road	Oakhill Road	Town of Hebron	Washington County	1	0	1	0
Dix Avenue	Quaker Road	Town of Queensbury	Warren County	3	1	2	0
Jerome Drive	Vickers Avenue	Village of Cambridge	Washington County	1	0	1	0
Wilbur Avenue	General Fellows Road	Town of Easton	Washington County	1	0	1	0
Gull Bay Road	Liddle Harris Road	Town of Putnam	Washington County	1	0	1	0
Garnet Lake Road	Valley Road	Town of Thurman	Warren County	1	1	0	0
Little Birch Hill Road	Darfler Road	Town of Hebron	Washington County	1	0	1	0
Oakland Avenue	Glen Street	City of Glens Falls	Warren County	4	0	4	0
State Highway 29	State Highway 40	Town of Greenwich	Washington County	3	0	3	0
River Street	Quaker Road	Town of Queensbury	Warren County	3	0	3	0
Ash Drive	Glen Lake Road	Town of Queensbury	Warren County	1	0	1	0
Spier Falls Road	Saratoga Road	Town of Greenfield	Saratoga County	3	1	2	0
West Mountain Road	Luzerne Road	Town of Queensbury	Warren County	3	1	2	0
State Highway 40	Rowe Hill Road	Town of Hartford	Washington County	2	0	2	0
Haviland Road	Bay Road	Town of Queensbury	Warren County	3	0	3	0
Ann Street	Catherine Street	Village of Fort Ann	Washington County	2	0	2	0
State Highway 196	County Road 43	Town of Hartford/ Town of Kingsbury	Washington County	2	0	2	0
Dix Avenue	Queensbury Avenue	Town of Queensbury	Warren County	3	0	3	0
Notre Dame Street	Main Street	Village of Hudson Falls	Washington County	2	0	2	0
East La Barge Street	Main Street	Village of Hudson Falls	Washington County	2	0	2	0
Tripoli Road	State Highway 149	Town of Fort Ann	Washington County	2	0	2	0
Elm Street	South Street	City of Glens Falls	Warren County	3	0	3	0
Washington Street	Glen Street	City of Glens Falls	Warren County	2	0	2	0
Sherman Avenue	South Western Avenue	City of Glens Falls	Warren County	2	0	2	0
County Road 17	State Highway 40	Town of Granville	Washington County	2	0	2	0
Reynolds Road	Saratoga Road	Town of Moreau	Saratoga County	1	0	1	0
Reynolds Road	Gansevoort Road	Town of Moreau	Saratoga County	2	0	2	0

Table 2: Priority Intersections

Street 1	Street 2	Municipality	County	Total Crashes	Fatalities	Serious Injuries	Injuries
US Highway 9	Weeks Road	Town of Queensbury	Warren County	2	0	2	0
Putnam Avenue	Broadway	Town of Fort Edward	Washington County	2	0	2	0
Hicks Terrace	Quaker Street	Village of Granville	Washington County	1	0	1	0
Saratoga Road	Fawn Road	Town of Moreau	Saratoga County	1	0	1	0
Western Avenue	Grant Avenue	City of Glens Falls/Town of Queensbury	Warren County	2	0	2	0
Broad Street	Luzerne Road	City of Glens Falls	Warren County	1	1	0	0
US Highway 9	Rocky Ridge Road	Town of Warrensburg	Warren County	1	0	1	0
Rawson Avenue	Quaker Street	Village of Granville	Washington County	2	0	2	0
Patten Mills Road	Buttermilk Falls Road	Town of Fort Ann	Washington County	1	0	1	0
Reynolds Road	Burt Road	Town of Moreau	Saratoga County	1	1	0	0
US Highway 9	Bloody Pond Road	Town of Lake George	Warren County	2	0	2	0
US Highway 4	Burgoyne Avenue	Village of Fort Edward	Washington County	1	0	1	0
Hudson Avenue	School Street	City of Glens Falls	Warren County	1	0	1	0
River Street	Warren Street	Town of Queensbury	Warren County	1	0	1	0
State Highway 196	County Road 42	Town of Kingsbury	Washington County	1	0	1	0
Stewart Avenue	Saratoga Avenue	Village of South Glens Falls	Saratoga County	1	0	1	0
Saratoga Avenue	Catherine Street	Village of South Glens Falls	Saratoga County	1	0	1	0
Warren Street	Oakland Avenue	City of Glens Falls	Warren County	1	0	1	0
Sanford Street	Glen Street	City of Glens Falls	Warren County	1	0	1	0
George Street	County Road 16	Village of Fort Ann	Washington County	1	0	1	0
State Highway 22	County Road 64	Town of Salem	Washington County	1	0	1	0
Upper Glen Street	Glenwood Avenue	Town of Queensbury	Warren County	1	0	1	0
Round Pond Road	US Highway 9	Town of Queensbury	Warren County	1	1	0	0
West Main Street	North Union Street	Village of Cambridge	Washington County	1	1	0	0
Morris Lane	Lakeshore Drive	Town of Lake George	Warren County	1	0	1	0
Merritt Road	Saratoga Road	Town of Moreau	Saratoga County	1	0	1	0
Saratoga Road	Jacobie Road	Town of Moreau	Saratoga County	1	0	1	0
State Highway 22	Waites Hill Road	Town of White Creek	Washington County	1	0	1	0
US Highway 9	Gurney Lane	Town of Queensbury	Warren County	1	0	1	0
Hudson Street	2nd Street	Village of South Glens Falls	Saratoga County	1	1	0	0
Canada Street	Beach Road	Village of Lake George	Warren County	1	0	1	0
Maple Street	Bay Street	City of Glens Falls	Warren County	1	0	1	0
Daniels Road	Call Street	Town of Lake Luzerne	Warren County	2	0	2	0
Pine Hill Lane	State Highway 149	Town of Fort Ann	Washington County	1	0	1	0
Cartier Lane	State Highway 149	Town of Fort Ann	Washington County	1	0	1	0
Glen Street	Monument Avenue	City of Glens Falls	Warren County	1	0	1	0
Greenway Road	Saratoga Road	Town of Moreau	Saratoga County	1	1	0	0

Street 1	Street 2	Municipality	County	Total Crashes	Fatalities	Serious Injuries	Injuries
County Road 23	Woodell Road	Town of Granville	Washington County	1	1	0	0
Willow Street	Main Street	Village of Hudson Falls	Washington County	1	1	0	0
Dix Avenue	Myrtle Avenue	Town of Kingsbury	Washington County	1	0	1	0
State Highway 149	State Highway 149	Town of Granville	Washington County	1	0	1	0
Delaware	Hudson Avenue	City of Glens Falls	Warren County	1	0	1	0
County Road 9A	US Highway 4	Town of Whitehall	Washington County	1	0	1	0
State Highway 8	Goodman Road	Town of Johnsburg	Warren County	1	0	1	0

**Table 3 lists priority segments**  
identified by the crash analysis.

On Street	From Street	To Street	Municipality	County	Total Crashes	Fatalities	Serious Injuries
US9 NB	Bowman Ave	Washington St	Warrensburg	Warren	6	0	6
US9 SB	Bowman Ave	Washington St	Warrensburg	Warren	6	0	6
US9 NB	Bowman Ave	Sherman Ave	Warrensburg	Warren	6	0	6
US9 SB	Sherman Ave	Bowman Ave	Warrensburg	Warren	6	0	6
Quaker Road	E Quaker Service Rd	E Sanford St	Town of Queensbury	Warren	5	1	4
South Western Avenue	Coolidge Ave	Paul St	Glens Falls	Warren	5	0	5
South Western Avenue	Columbia Ave	Coolidge Ave	Glens Falls	Warren	5	0	5
US9 SB	Saratoga Rd	US9 SB	Queensbury	Saratoga	4	1	3
US9 NB	US9 SB	Saratoga Rd	Warrensburg	Saratoga	4	1	3
US9 NB	5th St	Cooper's Cave	South Glens Falls	Saratoga	4	0	4
US9 SB	River St	5th St	South Glens Falls	Saratoga	4	0	4
NY32 NB	Glen St	Cooper's Cave	South Glens Falls	Warren	4	0	4
US9 SB	Mohican St	Cooper's Cave	South Glens Falls	Warren	4	0	4
US9 NB	Cooper's Cave	Mohican St	South Glens Falls	Warren	4	0	4
US4 NB	Grove Ave	La Cross St	Hudson Falls	Washington	4	0	4
US4 NB	Riverside Dr	Buckley Rd	Whitehall	Washington	4	0	4
US9 NB	River St	5th St	South Glens Falls	Saratoga	4	0	4
US9 SB	5th St	River St	South Glens Falls	Saratoga	4	0	4
NY9N NB	Old Military Rd	Sewell St	Glens Falls	Warren	3	1	2
NY9L NB	Morgan Ave	Lexington Ave	Glens Falls	Warren	3	0	3
Sherman Avenue	Darwin Ave	Washington St	Glens Falls	Warren	3	0	3
Main Street	Stewart Ave	5th St	South Glens Falls	Saratoga	3	0	3
South Street	South St	US9 EB	Glens Falls	Warren	3	0	3
NY32 SB	Beach Rd	New St	South Glens Falls	Saratoga	3	0	3
NY32 NB	New St	Beach Rd	South Glens Falls	Saratoga	3	0	3
Quaker Road	Glen St	Upper Glen St	Glens Falls	Warren	3	0	3
US9 SB	Rodney Ln	Adirondack Ave	Warrensburg	Warren	3	0	3
US9 NB	Adirondack Ave	Rodney Ln	Warrensburg	Warren	3	0	3
NY29 EB	NY40 NB	Windy Hill Rd	Easton	Washington	3	0	3
US4 NB	Park Pl	Sarver St	Fort Edward	Washington	3	0	3
US4 NB	Ann St	Flat Rock Rd	Fort Edward	Washington	3	0	3
Pattens Mills Road	Burquist Rd	Flat Rock Rd	Fort Ann	Washington	3	1	2
US9 NB	Baker Ave	Adirondack Park	South Glens Falls	Saratoga	3	0	3
US9 SB	Catherine St	Catherine St	South Glens Falls	Saratoga	3	0	3
Sherman Avenue	Veterans Rd	Quade St	Glens Falls	Warren	3	0	3

Table 3: Priority Segments

On Street	From Street	To Street	Municipality	County	Total Crashes	Fatalities	Serious Injuries
Main Street	Lewis St	5th Ave	South Glens Falls	Saratoga	3	0	3
Oakland Avenue	US9 SB	Oakland Ave	Glens Falls	Warren	3	0	3
Mohican Street	Basin St	US9 SB	Glens Falls	Warren	3	0	3
NY8 NB	I-87 SB	Theriot Ave	Horicon	Warren	3	0	3
NY8 SB	Theriot Ave	I-87 SB	Horicon	Warren	3	0	3
South Street	School St	US 9	Glens Falls	Warren	3	0	3
NY149 EB	Victoria St	Ann St	Granville	Washington	2	0	2
Quaker Road	E Quaker Service Rd	E Sanford St	Queensbury	Warren	2	0	2
NY149 EB	Westview St	Quaker St	Granville	Washington	2	0	2
NY9N NB	Oak St	Mohawk Mountain Rd	Town of Lake George	Warren	2	0	2
Daniels Road	Call St	Daniels Rd	Lake Luzerne	Warren	2	0	2
NY149 WB	Victoria St	Ann St	Granville	Washington	2	0	2
Fawn Road	Spier Falls Rd	Fortsdale Rd	Moreau	Saratoga	2	0	2
NY911E EB	Highland Ave	River St	Queensbury	Warren	2	0	2
I-87 SB	I-87 SB	Gurney Ln	Lake George	Warren	2	1	1
I-87 SB	I-87 SB	Gurney Ln	Lake George	Warren	2	0	2
NY149 WB	Westview St	Quaker St	Granville	Washington	2	0	2
NY22 NB	Dolph Pond Rd	Old State Rd	Granville	Washington	2	1	1
NY22 NB	NY22NB	4WD Rd	Granville	Washington	2	0	2
Stewart Avenue	US9 NB	Main St	South Glens Falls	Saratoga	2	0	2
Broad Street	S Western Ave	Fielding St	Glens Falls	Warren	2	1	1
Hudson Avenue	South St	Glen St	Glens Falls	Warren	2	0	2
Sherman Avenue	Veterans Rd	Morton St	Glens Falls	Warren	2	0	2
Elm Street	Clinton Ave	Sherman Ave	Glens Falls	Warren	2	0	2
Fifth Street	Ferry Blvd	US9	South Glens Falls	Saratoga	2	0	2
NY254 WB	Ferry St	Park Pl	Hudson Falls	Washington	2	0	2
US4 NB	School St	Liberty St	Fort Edward	Washington	2	0	2
US4 NB	Wait Rd	Geer Rd	Fort Edward	Washington	2	2	0
Stewart Avenue	US9 NB	Main St	South Glens Falls	Saratoga	2	0	2
NY40 NB	Country Farm Rd	Sweet Rd	Hartford	Washington	2	0	2
County Route 17	Hall Rd	Warren Rd	Granville	Washington	2	1	1
County Route 17	George St	Catherine St	Granville	Washington	2	0	2
Notre Dame Street	US4 NB	6th St	Kingsbury	Washington	2	0	2
Camden Valley Road	CR 61	Hickory Hill Rd	Salem	Washington	2	1	1
Waites Hill Road	NY22 NB	Bodenstab Ln	White Creek	Washington	2	0	2
Rawson Avenue	NY149 NB	Maple St	Granville	Washington	2	0	2
John Street	Allen St	US 4 NB	Hudson Falls	Washington	2	0	2
Broad Street	Thomas St	Hudson Ave	Glens Falls	Warren	2	1	1
Hudson Avenue	South St	Centennial Cir	Glens Falls	Warren	2	0	2
NY149 EB	Rowe Hill Rd	East St	Granville	Washington	1	0	1

On Street	From Street	To Street	Municipality	County	Total Crashes	Fatalities	Serious Injuries
NY149 EB	US4 NB	Baldwin Corners Rd	Fort Ann	Washington	1	0	3
NY149 WB	Rowe Hill Rd	East St	Hartford	Washington	1	0	3
NY149 EB	US9 SB	NY 149	Queensbury	Warren	1	0	3
NY149 WB	US4 NB	Baldwin Corners Rd	Fort Ann	Washington	1	0	3
NY8 NB	Friends Lake Rd	Hill Clyde Acres	Horicon	Warren	1	0	3
NY8 NB	Blue Bay Rd	Chester Shores Rd	Horicon	Warren	1	1	3
NY197 EB	US4 NB	Fredrick Dr	Argyle	Washington	1	0	2
NY8 SB	Pine Notch Rd	Blue Bay Rd	Horicon	Warren	1	0	2
NY8 SB	Friends Lake Rd	Hill Clyde Acres	Horicon	Warren	1	1	2
Glen Street	Pine St	Mohican St	Glens Falls	Warren	1	0	2
S Delaware Ave	Broad St	Hudson Ave	Glens Falls	Warren	1	0	2
May Street	Bay St	NY9L	Glens Falls	Warren	1	0	2
NY22 NB	4WD Rd	Van Tassel Rd	Granville	Washington	1	0	2
NY22 NB	Ryder Rd	Dolph Pond Rd	Granville	Washington	1	0	2
Hudson Avenue	Broad St	South St	Glens Falls	Warren	1	0	1
US9 NB	Bacon St	Glen St	Glens Falls	Warren	1	0	2
US9 SB	Glen St	Bacon St	Glens Falls	Warren	1	0	2
NY22 NB	Old State Rd	US4 NB	Granville	Washington	1	0	1
Bay Street	Hope Ave	Fort Amherst Rd	Glens Falls	Warren	1	0	2
Aviation Road	Potter Rd	Midnight Dr S	Queensbury	Warren	1	0	2
Broad Street	Mission St	South St	Glens Falls	Warren	1	0	1
Dix Avenue	NY9L	Cooper St	Glens Falls	Warren	1	0	2
Sanford Street	US9 NB	Bay St	Glens Falls	Warren	1	0	2
NY22 NB	US4 NB	7th Avenue	Granville	Washington	1	1	2
Ferry Boulevard	Simione Ct	Van Buren St	South Glens Falls	Saratoga	1	0	2
Maple Street	Center St	Bay St	Glens Falls	Warren	1	0	2
Bay Street	Glen St	Maple St	Glens Falls	Warren	1	0	2
Murray Street	Hudson Ave	South St	Glens Falls	Warren	1	0	0
Chester Street	Glen St	Bay St	Glens Falls	Warren	1	0	2
NY313 EB	Eagleville Rd	Fish Hatchery Rd	Jackson	Washington	1	1	2
Fielding Street	Broad St	Montcalm Ave	Glens Falls	Warren	1	0	1
NY40 NB	NY29 NB	County Route 53	Hartford	Washington	1	0	2
NY67 EB	Grandma Moses Rd	Crescent Rd	Hoosick	Washington	1	0	2
County Route 10	E Bay Rd	Stalker Rd	Whitehall	Washington	1	0	1
Charles Street	George St	Catherine St	Fort Ann	Washington	1	0	2
Glen Street	Pine St	Mohican St	Glens Falls	Warren	1	0	2
Warren Street	Church St	Prospect St	Glens Falls	Warren	1	0	2
Deweys Bridge Road	S Quarry Rd	Brayton Rd	Fort Ann	Washington	1	0	1

On Street	From Street	To Street	Municipality	County	Total Crashes	Fatalities	Serious Injuries
I-87 EB	State Route 9	Adirondack Park Preserve	Warrensburg	Warren	1	1	0
Deweys Bridge Road	Brayton Rd	CR 17	Fort Ann	Washington	1	0	1
Lock 11 Lane	NY22 EB	Old Route 4	Fort Ann	Washington	1	0	1
Guilder Hollow Rd	NY40 NB	Conety Rd	Granville	Washington	1	0	1
Hatch Hill Road	CR 12	Welch Rd	Granville	Washington	1	0	1
Hickey Road	CR 18	Quiet Way	Hampton	Washington	1	0	1
Callaway Road	Warnick Rd	Gilchrist Rd	Hebron	Washington	1	0	1
Darfler Road	Old Castle Green Ln	Darfler Ln	Hebron	Washington	1	0	1
Higgins Road	Sheldon Rd	Ryowski Ln	Hebron	Washington	1	0	1
Dynamite Hill Road	US8 EB	Dynamite Hill Rd	Chester	Warren	1	0	1
Middle Road	Pine Hill Rd	Davis Ln	Hebron	Washington	1	0	1
Sheldon Road	NY22 NB	Oak Hill Rd	Hebron	Washington	1	0	1
Hartman Road	Hendee Rd	CR 41	Kingsbury	Washington	1	0	1
Landon Hill Road	US8 EB	Stage Coach Rd	Chester	Warren	1	0	1
Stone Schoolhouse Road	US4 NB	Hendee Rd	Kingsbury	Washington	1	0	1
Ben Culver Road	White Schoolhouse Rd	Landon Hill Rd	Chester	Warren	1	0	1
Towpath Road	Company Bridge Rd	CR 41	Kingsbury	Washington	1	0	1
Schroon River Road	Schroon River Road	Adirondack Park Preserve	Warrensburg	Warren	1	0	1
US9 NB	Morehouse Rd	Rocky Ridge Rd	Warrensburg	Warren	1	0	1
Stalker Road	CR 9	CR 10	Whitehall	Washington	1	0	1
Catherine Street	CR 16	Victoria St	South Glens Falls	Washington	1	0	1
US9 SB	Rocky Ridge Rd	Morehouse Rd	Warrensburg	Warren	1	0	1
Weeks Road	US9 NB	Needle Park Cir	Queensbury	Warren	1	0	1
School Street	Park St	Hudson Ave	Glens Falls	Warren	1	0	1
S Delaware Ave	Broad St	Hudson Ave	Glens Falls	Warren	1	0	1
River Street	US9 SB	1st St	South Glens Falls	Saratoga	1	0	1
Catherine Street	Saratoga Ave	Dorrer Ave	South Glens Falls	Saratoga	1	0	1
Hudson Avenue	Exchange St	Centennial Cir	Glens Falls	Warren	1	0	1
I-87 SB	I-87 SB	I-87 SB	Lake George	Warren	1	0	1
I-87 SB	I-87 SB	I-87 SB	Lake George	Warren	1	0	1
I-87 SB	I-87 SB	US8 EB	Lake George	Warren	1	0	1

# Appendix B: Crash Tree Analysis

# IX. Appendix B: Crash Tree Analysis

## 1. Intersection

Key takeaways for three crash trees are highlighted below.

Emphasis Area	Crash Tree No.	Level One	Level Two
Intersections	1	Urban/Rural	Driver 65+
	2	Owning Jurisdiction	Drivers 65+
	3	Traffic Control	Owning Jurisdiction

Table 4: Intersection-Related Crash Trees

### a) Urban Areas/Driver Age

- 72% of serious injury and fatal intersection crashes occur in urban areas.
- 30% of serious injury and fatal non-intersection crashes occur in urban areas.
- Among serious injury and fatal urban intersection crashes, 37% involve drivers aged 65 and older.
- Among serious injury and fatal urban non-intersection crashes, 19% involve drivers aged 65 and older.

### c) Traffic Control/Owning Jurisdiction

- 35% of intersection-related crashes occur at signalized intersections, compared to 5% of non-intersection-related crashes.
- Among signalized intersection crashes, 30% of intersection-related crashes occur on county roads, whereas 8% of non-intersection-related crashes occur on county roads.

### b) Owning Jurisdiction/Driver Age

- 24% of serious injury and fatal intersection crashes occur on city or village roads.
- 5% of serious injury and fatal non-intersection crashes occur on city or village roads, with a suggestion to also consider town roads.
- Among serious injury and fatal city or village intersection crashes, 38% involve drivers aged 65 and older.
- Among serious injury and fatal city or village non-intersection crashes, 18% involve drivers aged 65 and older.

## 2. Age-Related

Key takeaways for three crash trees are highlighted below.

Emphasis Area	Crash Tree No.	Level One	Level Two	Level Three
Age-Related	1	Age Group	Roadway Departure	Road Characteristic
	2	Age Group	Primary Contributing Factor	
	3	Most Common Pre-Crash Condition	Age Group	

Table 5: Age-Related Crash Trees

### a) Age Group/Roadway Departure/Road Characteristic

- 39% of serious injury and fatal crashes involving 16 to 20 year olds are due to roadway departure, which is higher than any other age group.

### c) Pre-Crash Condition/Age Group

- Drivers aged 65 and older account for 40% of serious injury and fatal crashes involving making a left turn.
- Drivers aged 65 and older account for 34% of all crashes involving making a left turn.

### b) Age Group/Primary Contributing Factor

- 26% of serious injury and fatal crashes involving drivers aged 65 and older are due to a failure to yield the right of way, the highest proportion among all age groups.
- Drivers aged 65 and older make up 21% of all crashes and 24% of serious injury and fatal crashes.

### 3. Roadway Departure

Key takeaways for three crash trees are highlighted below.

Emphasis Area	Crash Tree No.	Level One	Level Two
Roadway Departure	1	Posted Speed	Owning Jurisdiction
	2	Light Conditions	Alcohol

Table 6: Roadway Departure Crash Trees

#### a) Posted Speed/Owning Jurisdiction

- 32% of serious injury and fatal crashes occur on county roads with speed limit of 55 MPH.
- 19% of non-road departure crashes occur on county roads with speed limit of 55 MPH.

#### b) Light Conditions/Alcohol

- 14% of non-road departure serious injury and fatal crashes occur on dark unlit roads.
- 29% of road departure serious injury and fatal crashes occur on dark unlit roads.
- 33% of road departure serious injury and fatal crashes involve alcohol.
- 23% of non-road departure serious injury and fatal crashes involve alcohol.

## 4. Alternative Road Vehicle Crash Trees

Key takeaways for three crash trees are highlighted below.

Emphasis Area	Crash Tree No.	Level One	Level Two	Level Three
Alternative Road Vehicle	1	Speeding	Alternate Road Vehicles	Urban/Rural
	2	Alternate Road Vehicles	Road Characteristic	Aggressive Driving

Table 7: Alternative Road Vehicle Crash Trees

### a) Speeding/Urban Areas

- 29% of speeding-related serious injury and fatal crashes involve alternative road vehicles.
- 8% of all speeding-related crashes involve alternative road vehicles.
- 67% of these serious injury and fatal crashes occurred in rural areas.
- 59% of these crashes occurred in rural areas.

### b) Road Characteristics/Aggressive Driving

- 38% of alternative road vehicles serious injury and fatal crashes occurred along a curved road.
- 18% of all alternative road vehicles crashes occurred along a curved road.
- 54% of serious injury and fatal alternative road vehicles crashes along a curved road was related to aggressive driving.
- 29% of all alternative road vehicles crashes along a curved road were related to aggressive driving.

## 5. Aggressive Driving

Key takeaways for three crash trees are highlighted below.

Emphasis Area	Crash Tree No.	Level One	Level Two
Aggressive Driving	1	Functional Class	Collision Type
	2	Urban/Rural	Owning Jurisdiction

*Table 8: Aggressive Driving Crash Trees*

### a) Functional Class/Collision Type

- 23% of serious injury and fatal aggressive driving crashes occur on local roads.
- 12% of serious injury and fatal non-aggressive driving crashes occur on local roads.
- 42% of local serious injury and fatal aggressive driving crashes involve fixed objects.
- 22% of local non-aggressive driving crashes involve fixed objects.

### b) Urban Areas/Owning Jurisdiction

- Of non-aggressive driving crashes on rural roads, 18% occur on county roads and 13% are in towns.
- Of aggressive driving crashes on rural roads, 37% occur on county roads and 29% are in towns.

## 6. Vulnerable Road User Crash Trees

Key takeaways for three crash trees are highlighted below.

Emphasis Area	Crash Tree No.	Level One	Level Two	Level Three
VRU	1	VRU	Urban/Rural	Most Common Pre-Crash Condition
	2	Intersection Related	Light Conditions	Collision Type
	3	Functional Class	Most Common Pre-Crash Condition	Collision Type

Table 9: VRU Crash Trees

### a) Urban Areas/Pre-Crash Condition

- 70% of vulnerable road user KAB (Fatal, Seriously Injured, Injured) crashes occur in urban areas.
- In urban areas, 31% of vulnerable Road User KAB crashes occur due to right or left turn movements.

### c) Functional Class/Pre-Crash Condition/ Collision Type

- 28% of vulnerable road user serious injury and fatal crashes occur along Minor Arterials, with 77% of these due to vehicles going straight ahead.
- In comparison, only 60% of non-vulnerable road user serious injury and fatal crashes on minor arterials are due to vehicles going straight ahead.

### b) Intersection/Light Condition/Collision Type

- Vulnerable road user serious injury and fatal crashes at non-intersections have a higher combined percentage of dark road unlit conditions than vulnerable road user intersection crashes and non-vulnerable road user segment crashes.
- This indicates that lighting issues along segments disproportionately affect vulnerable road users. Predominantly, pedestrians bear the brunt of these lighting deficiencies compared to bicyclists.

The analysis of VRU crashes reveals significant patterns and challenges. Firstly, most of these crashes, accounting for 70%, occur in urban areas, emphasizing the need for targeted urban safety measures. Pre-crash conditions indicate that a significant proportion of VRU KAB crashes in urban settings result from right or left turn movements, suggesting potential areas for focused interventions to improve intersection safety.

Intersection-related data underscores the impact of lighting conditions on VRU crashes, particularly at non-intersections where dark road conditions prevail. This highlights the vulnerability of pedestrians, who are disproportionately affected by inadequate lighting along road segments. Moreover, the analysis of crash locations by functional class simplified identifies Minor Arterials as hotspots for VRU KA crashes, with a notable percentage attributable to vehicles going straight ahead. This underscores the need for enhanced safety measures, such as improved road design and traffic management strategies, to mitigate risks for vulnerable road users, particularly in urban environments and along arterial roadways.

## 7. Drive Responsibly Crash Trees

focuses on drive responsibly crashes. Key takeaways for three crash trees are highlighted below.

Emphasis Area	Crash Tree No.	Level One	Level Two	Level Three
Drive Responsibly	1	Drive Responsibly	Roadway Departure	Road Characteristic
	2	Drive Responsibly	Most Common Pre-Crash Condition	Primary Contributing Factor
	3	Drive Responsibly	Primary Driver Age Group	

Table 10: Drive Responsibly Crash Trees

### a) Roadway Departure/Road Characteristic

- 46% of fatal and serious injury crashes are related to drive responsibly.
- 31% of drive responsibly serious injury and fatal crashes are due to roadway departure.
- 49% of these roadway departure crashes occur along curved roads.

### c) Primary Driver Age Group

- A higher percentage of drivers aged 16-to-24 years old were involved in drive responsibly serious injury and fatal crashes compared to non-drive responsibly serious injury and fatal crashes.
- Drivers aged 65 and older are involved in 28% of non-drive responsibly crashes, but only 18% of drive responsibly crashes.

### b) Drive Responsibly/Pre-Crash Condition/Contributing Factor

- 71% of drive responsibly serious injury and fatal crashes occur when a vehicle is traveling straight ahead. Among these crashes, 40% involve unsafe speed and 21% involve alcohol.
- In contrast, 50% of all drive responsibly crashes occur when a vehicle is traveling straight ahead. Among these crashes, 36% involve unsafe speed and 13% involve alcohol.

This analysis highlights the prevalence of Drive Responsibly as a contributing factor in serious injury and fatal crashes, particularly in roadway departure incidents and among younger drivers. Unsafe speed and alcohol consumption play significant roles in Drive Responsibly crashes, emphasizing the importance of responsible driving behavior across all age groups.