

# Local Road Safety Action Plan

Submitted to:  
Capital District Transportation Committee

Submitted by:  
VHB  
River Street Planning

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CDTC Staff –Michael Franchini, Sandy Misiewicz, Chris O'Neill and Jacob Beeman

### Safety Forum Panelists:

Jim Mearkle (Albany County)  
Lt. Ken Pero (Town of Colonie)  
Regina Doyle (NYSDOT)  
Frank Gross (VHB)  
Chris Wallin (City of Schenectady)

### Focus Group Participants:

Stakeholder participants in Saratoga Springs and Albany  
Transportation Consultants  
New York State Police

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Department of Transportation. The views and opinions of the authors expressed herein do not necessarily state or reflect those of the U. S. Department of Transportation and do not commit Cities, Towns, Villages, Counties, CDTC or other safety partners to funding programs or projects. The recommendations are conceptual in nature and are presented to characterize the types of improvements that are desirable, and that may be implemented as part of future transportation improvement projects. All transportation concepts will require further engineering evaluation and review. Undertaking additional engineering or other follow up work will be based upon funding availability.

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# Executive Summary



## Executive Summary

The Centers for Disease Control and Prevention identifies motor vehicle crashes as a leading cause of death in the United States with over 100 people dying every day. In an effort to combat motor vehicle deaths, the Highway Safety Improvement Program (HSIP) was established as a core Federal-aid program with “the purpose to achieve a significant reduction in traffic fatalities and serious injuries on all public roads, including non-State-owned roads and roads on tribal land.” Following the requirements set forth in the HSIP, each state develops a Strategic Highway Safety Plan (SHSP), sets annual safety performance targets, and implements a data-driven approach to identify and implement safety investments.

The SHSPs are statewide-coordinated plans that identify a state’s safety needs and guides investment decisions that have the greatest potential to save lives and prevent injuries. The New York State Strategic Highway Safety Plan (NY SHSP) Mission Statement states:

*“New York’s safety partners will advocate for those who travel by any mode, and deliver data driven safety programs to decrease the number of injuries and fatalities that occur on public roads in New York State. Together we will work to ensure safety is a top priority in all engineering, education, enforcement and emergency medical service activities.”*

Each state sets targets and monitors performance for at least the following safety performance measures:

- Number of fatalities
- Rate of fatalities per 100 million vehicle miles traveled (VMT)
- Number of serious injuries
- Rate of serious injuries per 100 million VMT
- Number of non-motorized fatalities and number of non-motorized serious injuries

The NY SHSP defines the following specific goals for the reduction of fatal and serious injury crashes and crash rates by 2022.

- Reduce roadway fatalities from the 5-year moving average<sup>1</sup> of 1,143 in 2015 to 992 by 2022.

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<sup>1</sup> A succession of averages derived from successive segments (typically constant size and overlapping) of a series of values. Oxford Dictionary.



- Reduce the rate of roadway fatalities per 100 million VMT from the 5-year moving average of 0.89 in 2015 to 0.78 by 2022.
- Reduce serious injuries from the 5-year moving average of 11,547 in 2015 to 10,024 in 2022.
- Reduce the rate of serious injuries from the 5-year moving average of 8.99 in 2015 to 7.81 in 2022.
- Reduce non-motorized fatalities and serious injuries from the 5-year moving average of 2,872 in 2015 to 2,493 in 2022.

The statewide crash reductions will be achieved by providing engineering, education, and enforcement strategies for six emphasis areas that are associated with more than 90 percent of fatal and serious injury crashes in New York State.

Regionally, there were 30,405 crashes reported in the Capital Region from 2011 through 2016 on all public roads. Of these crashes, more than half (15,996) occurred on local roads with 11.3% (1,810) resulting in death or serious injury. Information published by the New York State Department of Transportation (NYSDOT) shows the average cost of a fatal crash is \$3.2 to \$4.9 million and the average cost for an injury crash is \$85,000 to \$102,000. Due to the physical, emotional, societal, and financial costs of these fatal and serious injury crashes, reduction of higher severity crashes is emphasized in the state and local plans.

Local Road Safety Plans (LRSP) have been identified by the Federal Highway Administration (FHWA) as a Proven Safety Countermeasure. Information published by the FHWA about LRSPs shows that local roads experience a higher rate of fatal and serious injury crashes and developing an LRSP is an effective way to improve safety for all users while supporting the goals of the SHSP. The LRSP process results in a prioritized list of countermeasures, actions, and recommendations to reduce fatalities and serious injuries on local roads. The image to the right illustrates the steps included in the LRSP process.



Source: FHWA-SA-17-069

The Capital District Transportation Committee has prepared this Local Road Safety Action Plan to provide local context and recommendations in support of the NY SHSP. The Local Road Safety Action Plan follows the LRSP development process and will provide crash reductions through engineering, education, and enforcement strategies targeting the following six region-specific emphasis areas:

- Intersections
- Lane Departure
- Vulnerable Users
- Age-Related
- Road User Behavior
- Speed

The overall emphasis area categories are consistent with the statewide plan, with more detailed engineering, education, and enforcement strategies for the Local Road Safety Action Plan. Due to the varying nature of the roadway and land use characteristics in the region, some strategies are more applicable to specific counties or municipalities. Additionally, motorcyclists, as a vulnerable user group have been identified as a specific area of emphasis for the Capital Region.

The detailed data analysis contained in this document focuses on the city, village, town, and county owned and maintained roadways since New York State Department of Transportation (NYSDOT) manages the safety performance of state-owned roadways. Six years of crash data for local roads was summarized and reviewed for each emphasis area to identify crash contributing factors and trends. In general, the local road crash data for fatal and serious injury crashes primarily showed a pattern of scattered crashes throughout the Capital District with areas of crash concentrations in the more densely populated urban areas where traffic volumes and the potential for conflict is higher. Based on the crash patterns identified, the analysis primarily focused on opportunities for systemic and systematic (i.e., policy-based) improvements. A systemic approach focuses on the application of lower cost countermeasures throughout a roadway network or at intersections with identified high-risk features resulting in targeted system wide improvements to reduce the occurrence of crashes. Using the crash contributing factors and trends, strategies were recommended to achieve a reduction in fatal and serious injury crashes through engineering, education, and enforcement. The following table presents potential short-term, low-cost engineering countermeasures that should be considered for implementation as resources allow. Short-term measures are considered those that could be implemented with little or no design and within a 0 to 6-month time frame. The table identifies what emphasis area each countermeasure targets and provides information on relative costs and crash modification factors.

## Potential Short-term Countermeasures

Countermeasure	Emphasis Area							Relative Cost <sup>1</sup>	Crash Modification Factor <sup>2</sup>
	Intersection	Road User Behavior	Age-Related	Vulnerable User Pedestrian/Bicyclist	Vulnerable User Motorcyclist	Lane Departure	Speed Related		
Install backplates at traffic signals (B)	✓		✓					Moderate	0.85
Install intersection warning signs (B)	✓		✓					Low	0.65
Signal timing and phasing adjustments (B)	✓							Low	multiple
Install intersection signing (B)	✓							Low	multiple
Provide clearing to improve sight lines (R)	✓							Low	equation
Restrict parking near intersections (U)	✓							Low	0.51
Install dynamic messaging board (B)		✓		✓	✓		✓	Low	multiple
Install signs with larger typeface (B)			✓					Low	NA
Install signs with improved retro-reflectivity <sup>3</sup> (B)			✓		✓	✓		Low	NA
Use latest age-related guidance in design and implementation (B)			✓					Low	NA
Install pedestrian warning signs (B)				✓				Low	0.789
Install curve warning signs (R)					✓	✓	✓	Low	0.70
Provide retro-reflective shoulder striping (B)					✓	✓	✓	Low	0.888
Install high friction surface treatments (R)					✓	✓	✓	Moderate	0.207
Use motorcycle friendly design practices (B)					✓			Low	NA
Install dynamic messaging board for speed feedback (B)							✓	Low	0.95

<sup>1</sup> For purposes of this study the relative costs are defined as: Low = less than \$5,000, Moderate = \$5,000 to 50,000, and High = more than \$50,000.

<sup>2</sup> Crash Modification Factor obtained from the US Department of Transportation Federal Highway Administration Crash Modification Factors Clearinghouse. Crash modification factors identify the expected change in crashes after countermeasure implementation.

<sup>3</sup> Retro-reflective material enhances visibility by bouncing light back to the original source where in comparison reflective material bounces light back at the approach angle.

U, R, B = Countermeasure more suited for an Urban setting (U), Rural setting (R), or Both (B)

NA = Not Available

There are also a number of countermeasures that should be considered for implementation when resources allow that are more appropriate for medium and long-

term implementation as identified in the table of Potential Medium/Long-term Countermeasures. Medium-term measures are considered those that require some level of design and could be implemented within an approximate 6 month to 1-year timeframe. Long-term measures are considered those that require more extensive design and require a longer implementation period of more than 1 year. The implementation costs vary; however, generally increase between Short-term and Long-term. Similar to the Short-term countermeasures, the Medium/Long-term table identifies what emphasis area each countermeasure targets and provides information on relative costs and crash modification factors.

### Potential Medium/Long-term Countermeasures

Countermeasure	Emphasis Area							Relative Cost	Crash Modification Factor
	Intersection	Road User Behavior	Age-Related	Vulnerable User Pedestrian/Bicyclist	Vulnerable User Motorcyclist	Lane Departure	Speed Related		
Lane geometry adjustments (B)	✓							Moderate	multiple
Install intersection lighting (B)	✓			✓				Moderate/High	0.881
Install flashing beacons at stop-controlled intersections (B)		✓						Low	0.84
Install RRFBs at unsignalized intersections (B)		✓		✓				Moderate	0.526
Install edge-line rumble strips (R)		✓			✓	✓	✓	Low	0.84
Install roadway lighting (U)			✓		✓	✓		Moderate/High	0.63
Install pedestrian accommodations at signalized intersections (B)				✓				Low/Moderate	multiple
Construct bicycle infrastructure (bike lane, shoulder, path) (B)				✓				Varies	0.65
Construct pedestrian infrastructure (sidewalk, path, shoulder) (B)				✓				Moderate/High	0.41
Install Safety Edge (R)					✓	✓	✓	Low	0.892
Improve roadside clear zones (R)					✓	✓	✓	Moderate	0.78
Implement traffic calming measures (B)							✓	Varies	0.68

<sup>1</sup> For purposes of this study the relative costs are defined as: Low = less than \$5,000, Moderate = \$5,000 to 50,000, and High = more than \$50,000.

<sup>2</sup> Crash Modification Factor obtained from the US Department of Transportation Federal Highway Administration Crash Modification Factors Clearinghouse. Crash modification factors identify the expected change in crashes after countermeasure implementation.

U, R, B = Countermeasure more suited for an Urban setting (U), Rural setting (R), or Both (B)

NA = Not Available

Many of the short-term countermeasures can be implemented as part of routine maintenance programs. For example, replace a set number of roadway signs each year with new retro-reflective signs and larger typeface and include tree trimming on municipal-maintained roadways as part of a routine maintenance program.

Some medium to longer term countermeasures can also be included in routine maintenance programs like improving roadside clear zones. Installing edge-line rumble strips on roadway shoulders could become a standard design practice in the short-term; but, would take longer to implement as roadways are resurfaced or reconstructed. Construction of sidewalks can also require more time to implement due to potential right-of-way needs and maintenance agreements.

As noted, not all countermeasures are appropriate for each county or municipality. Therefore, each county and municipality should consider creating a plan for implementation of the short-term low cost countermeasures as resources allow. These countermeasures have been identified through the analysis as having the greatest potential to reduce crashes. The following tasks can be initiated by the local municipalities in the short-term.



## Roadway Maintenance

- Review municipal maintenance plan
- Update plan to include safety countermeasures
  - Vegetation clearing in right-of-way
- Replace old/damaged signing with retro-reflective signs and larger print



## Roadway Design Standards

- Review roadway design standards
- Include basic safety elements in design
  - Require Safety Edge on all roadways without curbing
  - Provide retro-reflective shoulder striping and/or edge-line rumble strips
- Incorporate traffic calming measures



## Intersection Design

- Use latest age-related design guidance
- Provide intersection control
- Restrict parking near intersections
- Adjust lane geometry



The CDTC also has an important role to play in reducing the potential for fatal and serious injury crashes and is in a unique position to provide technical support to local communities. Consistent with the CDTC history of prioritizing transportation safety, the New Visions 2040 Regional Transportation Plan (the long-range planning document for the region) recognizes the importance of transportation safety and identifies transportation safety as a highlight of the plan. In New Visions, CDTC commits to the following:

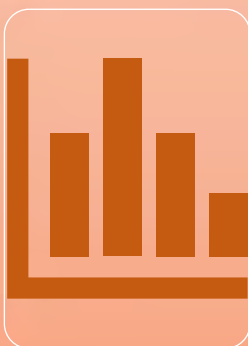
- Examine traffic safety data
- Identify high crash locations
- Identify characteristics common to locations with a crash history
- Analyze potential mitigation measures and solutions
- Develop a competitive funding process
- Where data is unavailable, educate all users to “coexist” and develop strategies to improve safety

The CDTC will consider undertaking the following tasks to support the local municipalities and counties and continue the important commitment to transportation safety as resources allow over the next five years.



### Safety Analysis

- Review available crash data
- Identify crash trends
- Define common risk factors
- Document crash analysis
- Explore best practices of including safety in the development review process



### Prioritize Countermeasures

- Identify countermeasures
- List effectiveness of each countermeasure for the specific risk factors
- Provide general cost and benefit for each countermeasure



## Facilitate or Arrange for Training

- Why and how to document crash data
- Safety funding sources and how to harness them
- How to perform a road safety audit
- How to use the NYSDOT Crash Location and Engineering Analysis Repository (CLEAR)

# Chapter 1: Introduction





# Chapter 1: Introduction

Safety planning is featured heavily in all Capital District Transportation Committee (CDTC) programs and products including the New Visions 2040 Regional Transportation Plan, sponsored educational programs, supporting state and local government efforts, Linkage Program reports, among others. CDTC has prepared this Local Road Safety Action Plan (Action Plan) to develop strategies to reduce the number of fatal and serious injury crashes on public roads in the four-county CDTC planning area (Albany, Schenectady, Rensselaer, and Saratoga). The detailed data analysis contained in this document focuses on the city, village, town, and county owned and maintained roadways since New York State Department of Transportation (NYSDOT) manages the safety performance of state-owned roadways. However, the crash reduction strategies identified in Chapter 4 are applicable to local and state roadways. The Action Plan is based on data-driven analysis to identify safety needs and appropriate actions to address these needs. This will support the New York State safety targets and complement the New York State Strategic Highway Safety Plan (NY SHSP) and CDTC's New Visions 2040 Plan.

The NY SHSP is a requirement of the Highway Safety Improvement Program (HSIP) which is a core Federal-aid program intended to reduce traffic fatalities and serious injuries on all public roads. The HSIP also requires states to set safety targets for reductions in fatalities and serious injuries resulting from motor vehicle crashes. The NYSDOT most current statewide safety targets are for the year 2019 and include the following:

- Number of Fatalities- 4% reduction
- Fatality Rate- 2% reduction
- Number of Serious Injuries- 4% reduction
- Serious Injury Rate- 4% reduction
- Non-Motorized Fatalities and Serious Injuries- 4% reduction

## CAPITAL DISTRICT CRASHES

A total of **30,405** crashes occurred in the **Capital District** from 2011 through 2016 on all public roads

More than half of the crashes (**15,996**) occurred on **local roads**

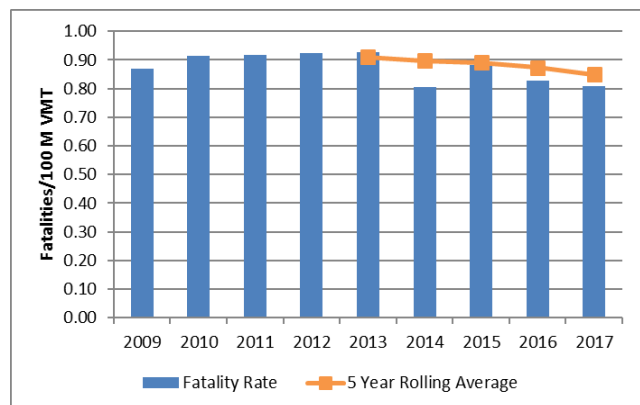
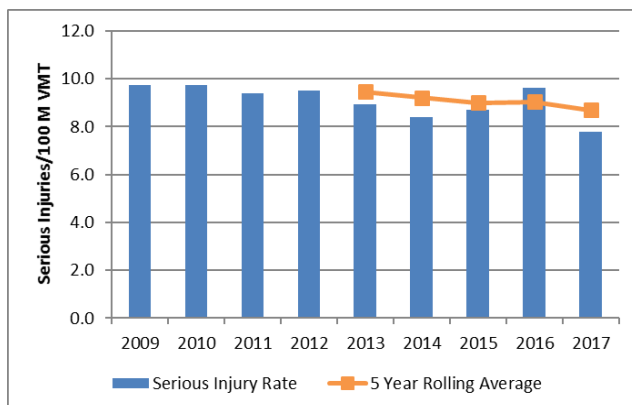
11.3% (**1,810**) of all local road crashes are **fatal or serious injury** crashes

\*Data from the NYSDOT Accident Location Information System (ALIS)

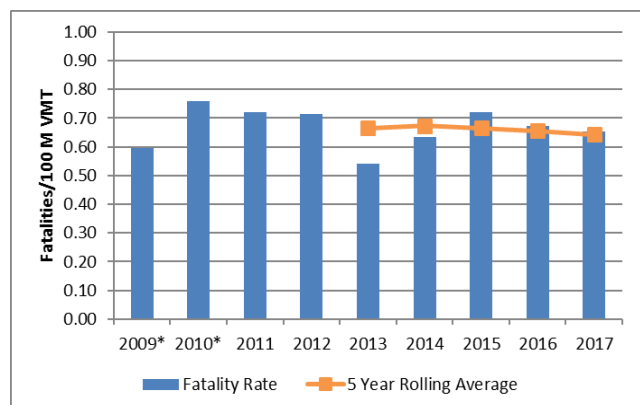
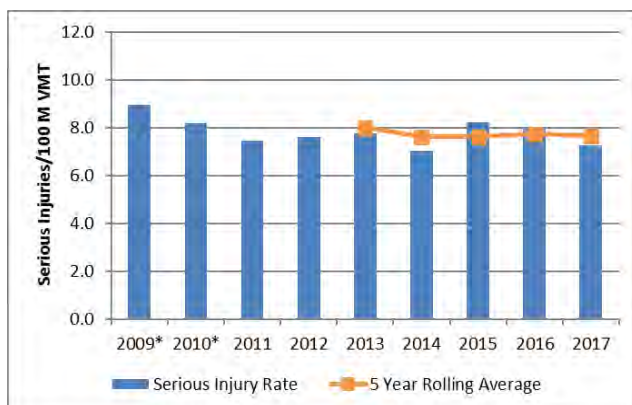
One tool that has been completed as part of the NY SHSP is the Pedestrian Safety Action Plan (PSAP). The New York State PSAP focuses on the 3E's approach and is being implemented cooperatively with the NYSDOT focusing on engineering, State Department of Health focusing on education, and the Governor's Traffic Safety Committee (GTSC) focusing on enforcement. While the PSAP does identify specific focus communities, all of the best practices, tools, and resources identified in the document are recommended countermeasures to improve pedestrian safety in all communities. Implementation of the recommended countermeasures found in the PSAP will help the state meet the identified safety goals.

The CDTC is committed to supporting the state in meeting these safety goals. The Action Plan focuses on fatal and serious injury crashes because these crashes result in the most physical, emotional, social, and financial implications. Further, this is consistent with the NY SHSP and HSIP. The statewide and Capital District fatal and serious injury crash rates have been generally trending down, as shown in the following charts.

### New York State – All Roads



### Capital District – All Roads



Source: Fatality data from Fatality Analysis Reporting System (FARS) and Serious Injury data from the Institute for Traffic Safety Management and Research (ITSMR)

The Action Plan is intended to continue these recent trends and is modeled after the NY SHSP which was approved by NYSDOT and the Federal Highway Administration (FHWA) in August 2017. The NY SHSP was developed in collaboration with safety stakeholders and based on a data-driven approach to identify safety needs, develop targeted countermeasures, and set goals for reducing severe injury and fatal crashes by focusing on the 3E's; Engineering, Education, and Enforcement, as well as Emergency Medical Services. The NY SHSP also defines a framework for implementation activities to be carried out through strategic safety coalitions and specific activities by NYSDOT, metropolitan planning organizations, local governments, and other partners.

The Action Plan focuses on local roads and takes a more in-depth look at location-based crash data, contributing factors, and complete streets principles to identify strategies that consider local context. The Action Plan will build on the work completed in the NY SHSP by confirming the emphasis areas for the region and identifying systemic strategies to reduce the fatal and serious injury crashes on a more local context. The identified strategies are those with the greatest potential to reduce fatal and serious injury crashes and reduce crash rates on all public roads.

The Action Plan was developed based on a mix of detailed data evaluation, stakeholder input, and general public involvement. The data evaluation is important to document sites with potential for safety improvement, which is integral to obtaining project and/or program funding. Federal Highway Safety Improvement Program funds can be used to finance low cost safety engineering improvements identified through a data driven process on all local roads.

The Action Plan defined a framework of strategies to be considered for implementation by CDTC, local governments, and other safety partners. It should be noted that there is currently no commitment to implementing the identified strategies but effort will be undertaken in the next five years to develop programs or approaches to move toward their implementation as resources allow.



# Chapter 2: Stakeholder and Public Involvement



## Chapter 2: Stakeholder and Public Involvement

Overall project guidance was provided by CDTC's Regional Operations and Safety Advisory Committee (ROSAC) which brings together operations and planning professionals from transportation and transit agencies, local municipalities, and law enforcement to coordinate traffic management and safety activities in the Capital District. Stakeholder involvement was solicited early and throughout the Action Plan development process with two Focus Group meetings in May 2018, a Summit in June 2018, a meeting with state law enforcement in September 2018, and a consultant group focus meeting in November 2018. In addition, an online survey for municipal leaders and two public surveys were conducted during the process. In the beginning of the process, an initial online survey was developed to gain input from the partners that were identified during the Focus Group and Summit meetings; however, the survey was also available to the public. The second was a three-question online and paper survey that was distributed at events in Albany, Rensselaer, Saratoga, and Schenectady counties.

The CDTC and ROSAC are committed to support the Action Plan through effective engagement with partners, stakeholders, and the public. Without this strong connection to the community, the plan will not have the support to implement the recommended strategies and projects. Due to this desire for connection, several levels of outreach were implemented throughout the Action Plan development process. The common transportation safety concerns identified by all groups include distracted driving (specifically cell phone use) and speeding. A summary of the outreach meetings and methods are summarized below.

### Focus Groups

Specific Focus Group meetings were held on May 24, 2018 in Albany and on May 25, 2018 in Saratoga to solicit input regarding participants' knowledge, understanding, questions, and experiences with roadway safety in a small group setting. Attendees included housing corporation representatives, municipal board and committee members, law enforcement, road user groups, and neighborhood representatives. The diverse background of the meeting attendees resulted in a discussion with multiple perspectives and areas of expertise. Topics included:

- Distracted drivers (especially cell phone use)
- Enforcement and penalties
- Speeding
- Increasing education programs
- How to reach and adequately serve all user groups



- Accuracy and importance of data
- Social toll associated with fatal and serious injury crashes

The meeting notes for the two focus group meetings are included in Appendix A.

## Safety Summit

A Safety Summit was held on June 13, 2018 to encourage an open discussion regarding local road transportation safety in the Capital District. Attendees included:

- Elected officials and staff from area municipalities and counties
- Representatives from under-served populations
- NYS Department of Health
- Governor's Traffic Safety Committee
- Bicycle and pedestrian advocates
- NYS Motorcyclist Safety Program
- Local traffic safety boards
- NYS Department of Transportation
- Law enforcement
- Transit providers

The summit included a brief welcome and discussion of initial data findings, a panel discussion, and break-out session to review transportation safety concerns on representative roads in the region.

The panel discussion noted that systemic efforts are generally a more cost-effective way to address roadway conditions that can have a positive impact on roadway safety. For example, providing shoulder striping is an inexpensive way to reduce the potential for lane departure crashes by increasing roadway visibility. This type of system-wide improvement could be included in a county or municipal highway maintenance plan. While roadway maintenance and



*Source: Photo from Safety Summit*

systemic engineering measures are important, the panel also noted that education, enforcement, and emergency response strategies are critical to reducing fatal and

serious injury crashes. For example, New York State's "Click It or Ticket" program has been around for many years resulting in increased seatbelt use and a reduction in fatal crashes due to lack of seatbelt use. Operation "See! Be Seen!" is an education and enforcement program for pedestrians and drivers to reduce the potential for pedestrian fatality and serious injury crashes. The program is relatively new, but like the "Click It or Ticket" initiative, can have a large positive impact on roadway safety for some of the most vulnerable users of the transportation system. These education and enforcement strategies must be included in an overall safety plan.

During the panel session several questions and concerns were raised, many of which were consistent with questions raised during the Focus Group meetings. Some specifics include:

- The accuracy of the crash data, specifically regarding cell phone use
- Vehicles are smoother and quieter than previous decades so it's easier to drive faster without recognizing it
- Vehicles are more distracting than previous decades with more screens, buttons, cameras, etc.
- Is there a certain time of day, weather condition or age group that has the most fatal and serious injury crashes?
- Motorcyclist crashes trend higher in the region than in other parts of New York state
- How are new services like Uber and Lyft affecting the crash data?
- More transportation safety education and enforcement in schools would be beneficial by targeting youth and young drivers

These questions and concerns are addressed, as able, throughout the development of the Action Plan.

The break-out session focused on two representative roads in the region:

- A low-speed, urban, multi-lane roadway with on-street parking, sidewalks, commercial and residential uses, and both traffic signal-controlled and stop-controlled intersections
- A higher speed, two-lane rural collector road with narrow shoulders, horizontal and vertical curves, and low-density residential development and undeveloped land

The group noted the varying safety concerns associated with different types of roads in the region and the many trade-offs that result with any engineering design decision. For example, by providing a pedestrian only phase at a traffic signal-controlled intersection, the potential for pedestrian-vehicle conflicts is reduced; however, the amount of time that a pedestrian may wait for the pedestrian walk phase may increase.



*Source: Photo from Safety Summit*

The CDTC Safety Summit Meeting Summary is included in Appendix A.

## NY State Police Meeting

A meeting was held with the NYS Police Troop G traffic safety group on September 20, 2018. Troop G is responsible for patrolling ten counties including the four-county Capital District (Albany, Schenectady, Rensselaer, Saratoga). While this duty is shared with municipal and county departments, it's a large area for relatively few patrol vehicles. NYS police enforcement priorities are largely established by the Governor's Traffic Safety Committee's Highway Safety Plan for New York State which is based on data trends. For example, seat belt use has been a priority for many years; however, compliance is very high right now, so the priority is shifting to distracted driving.

The law enforcement officers are primarily responsible for providing warnings, writing citations, and writing crash reports at the scene of a collision, primarily on the state highway system. As data becomes more important in identifying priorities and setting goals, the accuracy and ease to complete a report are critical. Consistent with previous stakeholder outreach, the NYS police are concerned about distracted driving, cell phone use, speeding, etc. However, their experiences with data collection and report writing and the inability to punish offenders has shown that simply writing another report or ticket is not the full answer.

The NYS Police Troop G meeting summary is included in Appendix A.

## Professional Engineering Consultants

On November 27, 2018 a meeting was held with local transportation engineering consultants to identify and discuss best practices in transportation safety engineering and implementation. Consultants have broad exposure to multiple municipalities, counties, and other public agencies and are exposed to a range of engineering and implementation strategies.

Funding was a primary topic of discussion with the transportation consultants. At all levels of government, the cost for goods and services has increased in conjunction with the competition for public funding of these goods and services; transportation services and infrastructure are no exception. Data driven selection processes are used to evaluate projects and programs for public funding. Municipalities, counties, and agencies with specific plans, and the supporting data, are generally more likely to receive funding; however, not all municipalities and agencies have the time or expertise to evaluate the data.

It was noted that in addition to using public safety funds, many municipalities, counties, and other agencies are implementing safety treatments with typical maintenance activities. For example, when repaving a county road, the county highway department can add shoulder stripes which is a low cost, high impact safety measure.

Consistent with the other focus groups, the consultant group noted that distracted driving, in particular cell phone use, is a primary concern; however, the data does not show this as a rising trend. Travel speeds are also a concern when designing, signing, and striping a roadway or intersection. While industry professionals and enforcement officials know the meaning and purpose of particular signs and pavement markings, the general public may not. This traveler confusion can be compounded by inconsistency in signing and markings, which can result from several factors, such as changes in policies and practices over time and piecemeal upgrades and improvements to the system. For example, having the same type of pedestrian accommodations at all intersections in a corridor helps to improve road user expectancy and reinforce the proper use of the system. However, since intersection changes are implemented over time, inconsistent features are common at adjacent intersections. Similarly, new traffic signals may have a flashing yellow left-turn arrow and, since this is a relatively new device in the Capital District, drivers may be unaccustomed to the purpose of this feature.

The consultant focus group meeting summary is included in Appendix A.

## Municipal Survey

A survey was developed and distributed to all municipalities within CDTC's jurisdiction. The survey focused on obtaining data on a municipal level regarding how safety issues

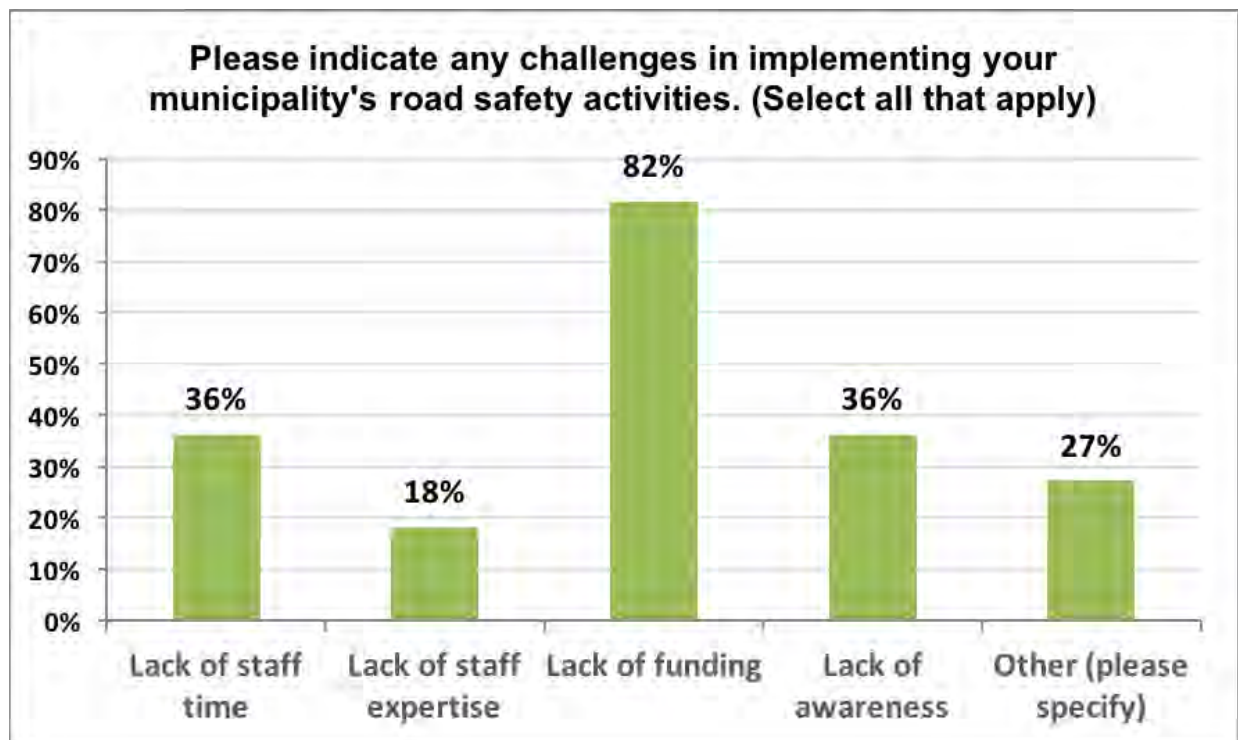
are prioritized, identified, and addressed; what challenges are encountered regarding safety issues; what level of enforcement and education is currently undertaken; and how safety improvements are funded as well as their understanding of funding sources. Municipal survey responses were limited with only 11 respondents representing eight communities or counties.

One goal of the CDTC Plan is to increase awareness of roadway safety analysis methodologies, mitigation measures and strategies, and available funding opportunities to the municipalities and counties in the Capital District. The majority of respondents (72%) noted that road safety is a high or very high priority when the community chooses to fund improvement projects with local dollars. However, based on the respondent's input, the local knowledge about available programs and funding appears to be low. Increasing awareness of all aspects of roadway safety is a critical goal for the Plan.

All respondents indicated that road safety issues are most commonly identified in their communities via community complaints (100%). Other common ways that safety issues are identified include safety data such as speeding tickets (82%), crash/collision data analysis (73%), observations from law enforcement (73%) and observations by maintenance staff (64%). Safety issues are being addressed most commonly via partnerships with law enforcement (73%) and routine road maintenance (73%). In other instances, these issues are addressed as part of larger capital transportation and/or complete streets improvement projects (36%) or through a regular safety program (36%).

As shown in the following chart, challenges faced by municipalities in implementing road safety activities can largely be attributed to lack of funding (82%). Other challenges include lack of staff time (36%), lack of awareness (36%) and lack of staff expertise (18%). The CDTC has the ability to help the local municipalities and counties implement many road safety activities through existing programs that many communities appear unaware of.

A copy of the municipal survey and a summary of the responses are included in Appendix A.



*Source: Municipal Survey Summary*

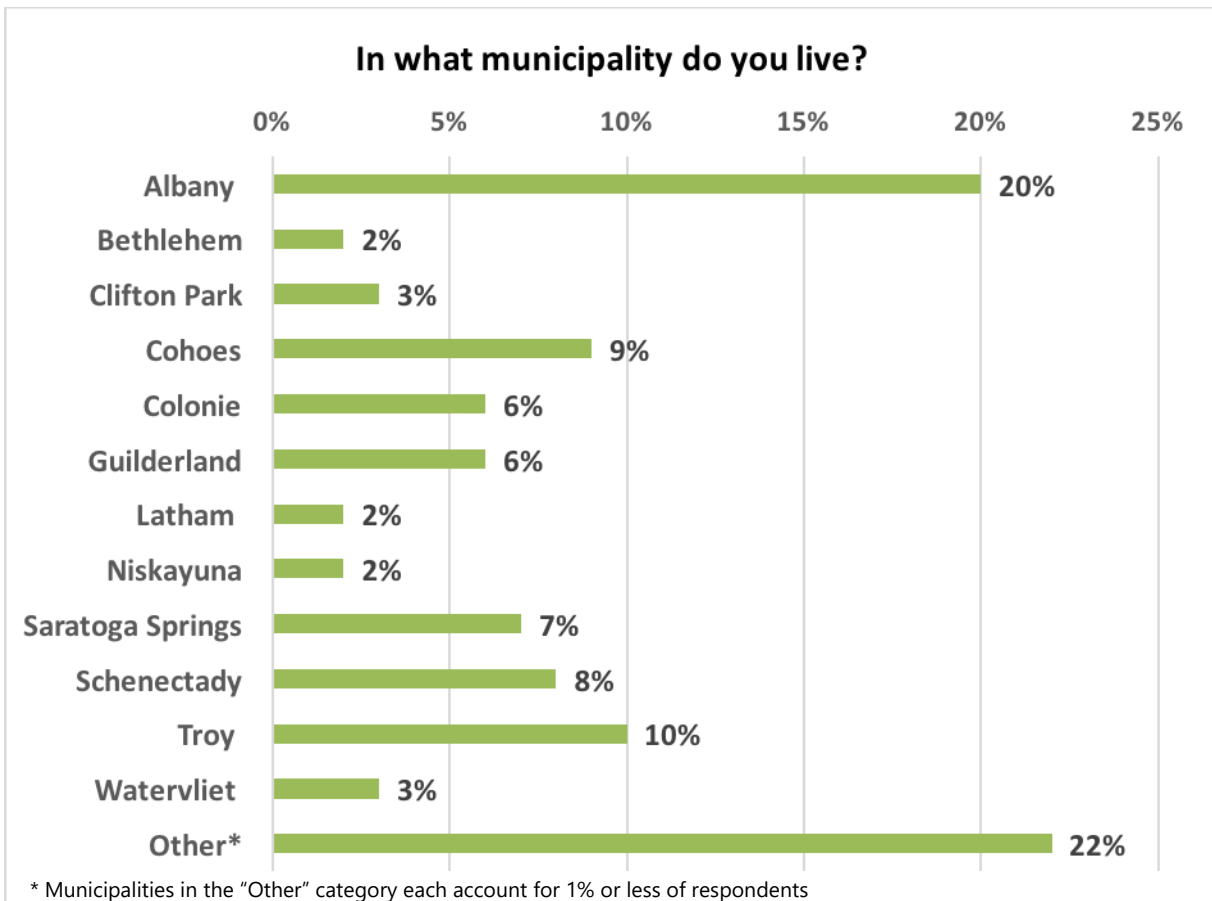
## Public Survey

A three-question survey was developed to identify public safety concerns and how much the public knows about general roadway safety programs in local municipalities. The three questions were:

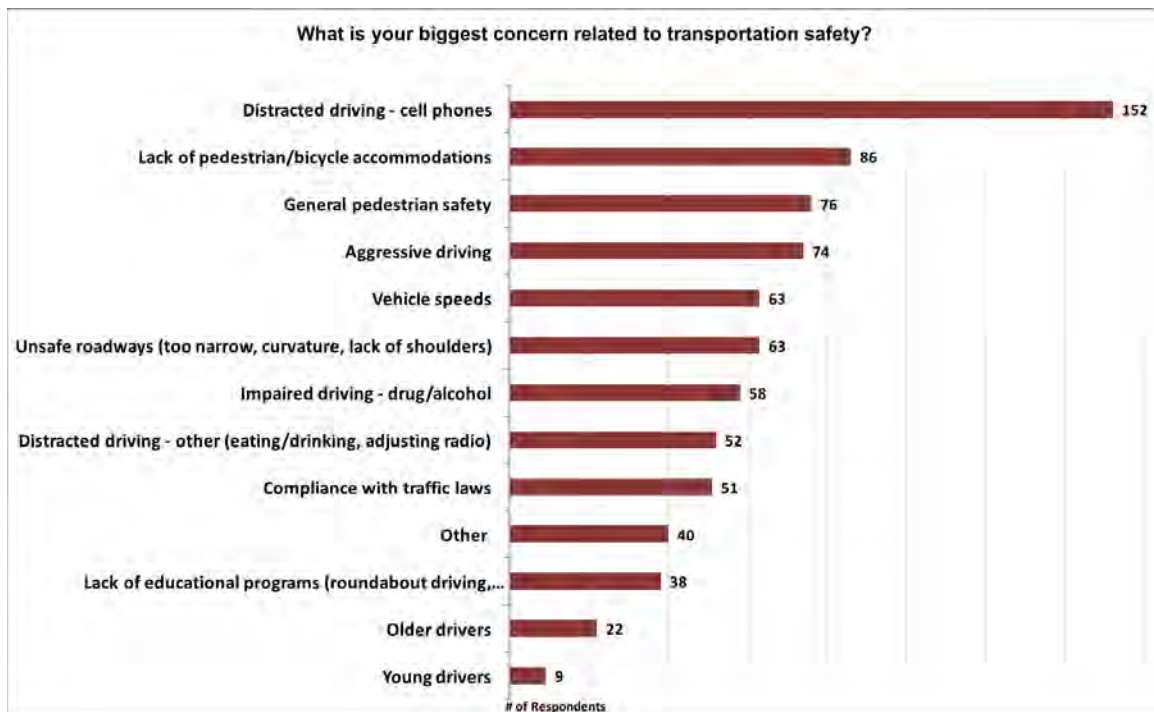
1. In what municipality do you live?
2. What is your biggest concern related to transportation safety?
3. Are you aware of how transportation safety issues are currently being addressed in your community?

The questions were distributed by CDTC via paper at five local events including the Albany County Traffic Safety Awareness Weekend at Crossgates Mall, Watervliet Arsenal Run/Intersection Enhancement Project Event, Collar City Ramble at the Troy Farmers Market, the Schenectady Bike Fest at Wallingford Park, and the Saratoga Farmers' Market at the Lincoln Baths building in Saratoga Springs. A total of 381 survey responses were provided with representation from 57 different municipalities. It is noted that question 2 of the survey was restricted to one response when the survey was completed online; however, in person, many people checked numerous boxes in response to the question. The charts below summarize the results of the public survey.

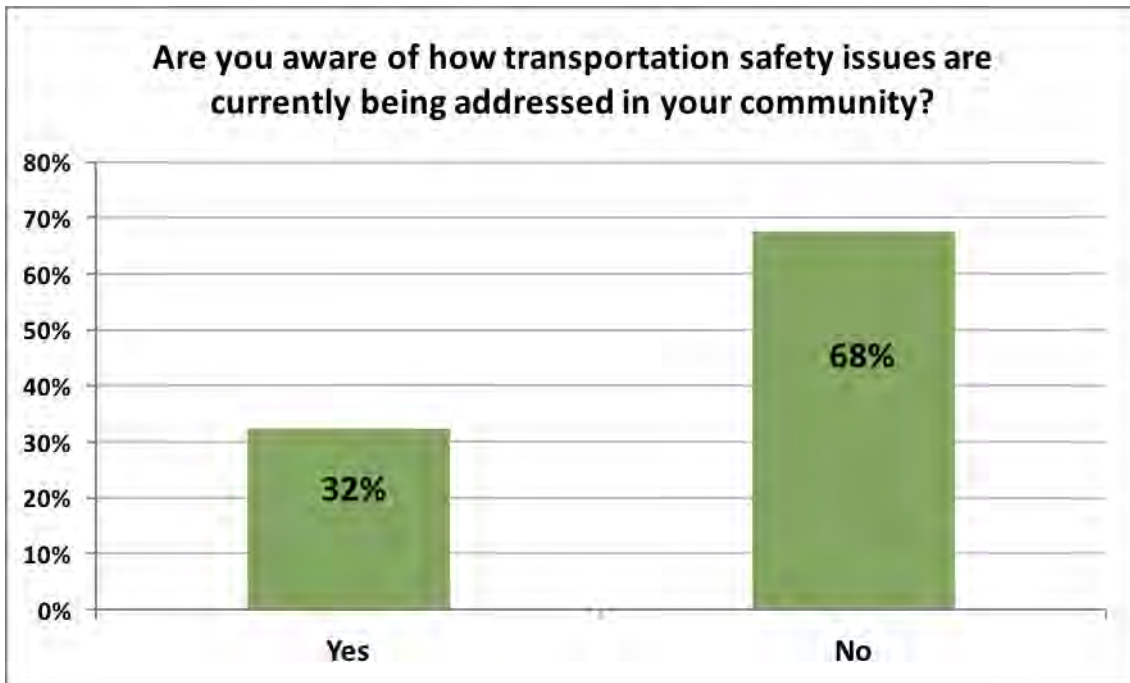




Source: Public Survey Summary



Source: Public Survey Summary



*Source: Public Survey Summary*

As seen in the survey summary, the two biggest concerns related to transportation safety were identified as "Distracted driving – cell phones" and "Lack of pedestrian/ bicycle accommodations". Approximately 2/3 of respondents do not know how transportation safety is addressed in their communities.

A copy of the public survey is included in Appendix A.



# Chapter 3:

## Data Analysis and Summary



## Chapter 3: Data Analysis and Summary

The CDTC uses a data-driven approach to understand transportation safety priorities. This includes the use of crash, roadway, and traffic data to help partners across the region develop strategic plans, identify sites with potential for safety improvement, diagnose crash contributing factors, develop targeted strategies, select and prioritize projects, and evaluate the effectiveness of projects and programs. This chapter provides a summary of the data and presents the results of the analysis.

The first step was to obtain the crash data to determine crash trends in the Capital District. Location-based crash data was obtained from the NYSDOT Accident Location Information System (ALIS) and Safety Information Management System (SIMS) databases for the six-year period from 2011 through 2016. The data was filtered to locations that are not owned and maintained by the NYSDOT and further filtered to represent only serious injury and fatal crashes. By focusing on the fatal and serious injury crashes, the Local Road Safety Action Plan is consistent with the goals of the NY SHSP to reduce fatalities and serious injuries on the roadway system. Due to the physical, emotional, societal, and financial costs of these fatal and serious injury crashes, reduction of higher severity crashes is emphasized in the state and local plans.

Figure 1 shows the local road fatal and serious injury crashes in the Capital District during the six-year study period from 2011 to 2016. These crashes are scattered throughout the four-county region. The data shows that while occasionally a fatal or serious injury crash will occur at the same location, it is unusual. For example, of the 690 intersections that had a fatal or serious injury crash, 3.0% had three or more fatal or serious injury crashes. (These locations will be investigated further to identify potential patterns and mitigation as a second phase to this Local Road Safety Action Plan.) It is appropriate to take a proactive approach, which is to use a systemic analysis to identify potential crash sites based on existing geometric and operational characteristics associated with fatal and serious injury crashes.

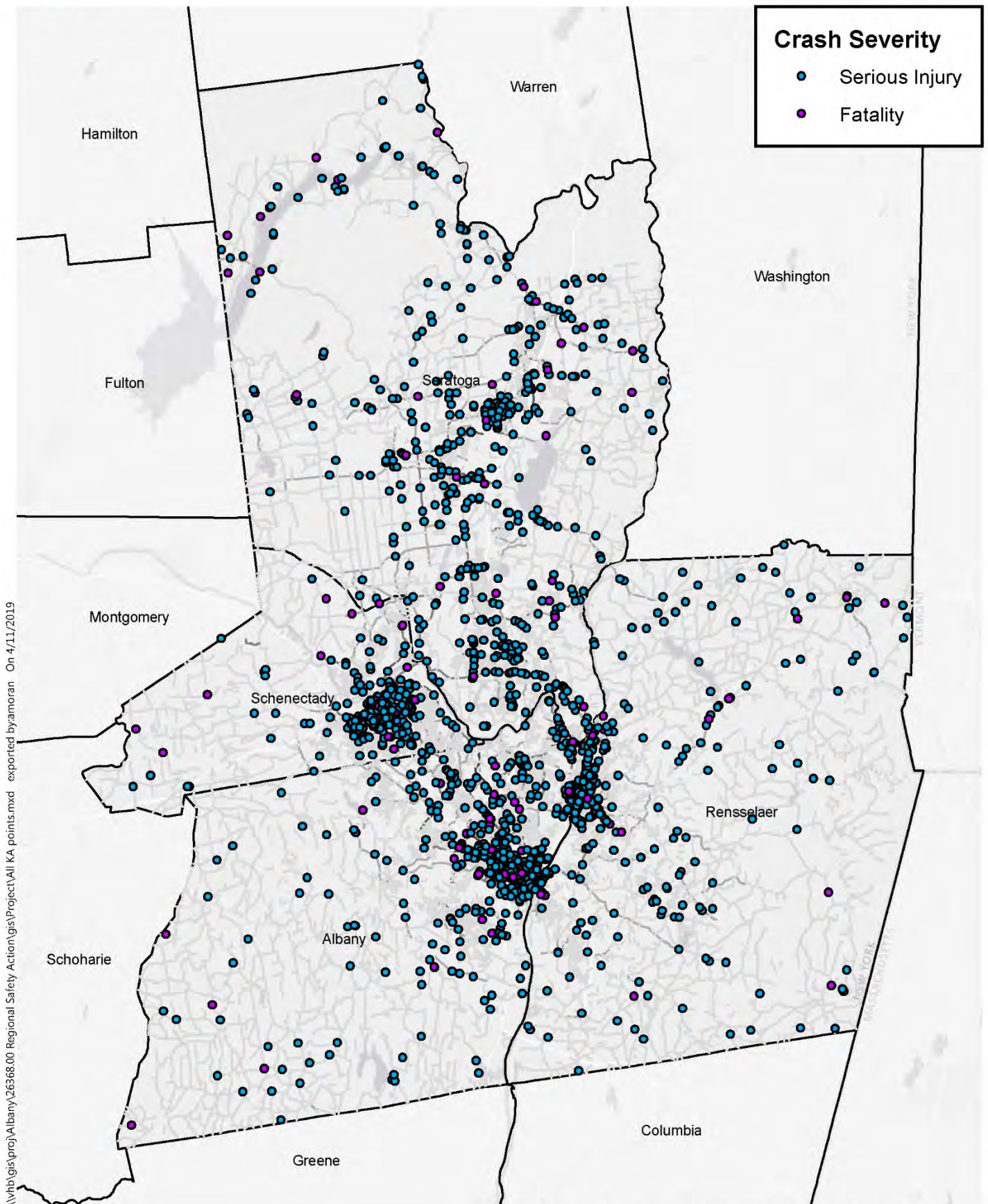
The data includes an evaluation of approximately 1,200 miles of county owned, 3,500 miles of town owned, and 1,000 miles of city or village owned roads for a total of 5,700 miles of local roads with approximately 2,900 miles in urban areas and 2,800 miles in rural areas of the four-county area. The roadway character varies from higher speed two-lane rural roads with horizontal and vertical curves to four-lane city streets with on-street parking and a mix of roadway users.

Whether a crash occurs in an urban or rural area is determined by whether it is within the bounds of the 2010 census adjusted urban area boundary. The data shows that of the 1,810 fatal and serious injury crashes, 375 (approximately 20%) occurred in rural

areas. While there is clustering of crashes in the dense, urban portions of the region, this is to be expected as the frequency of crashes is a function of traffic volume, which is highest in the more urban areas.



**Figure 1: Local Road Crashes**



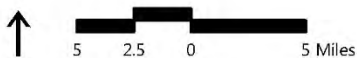
Albany, Rensselaer, Saratoga, and Schenectady Counties

New York

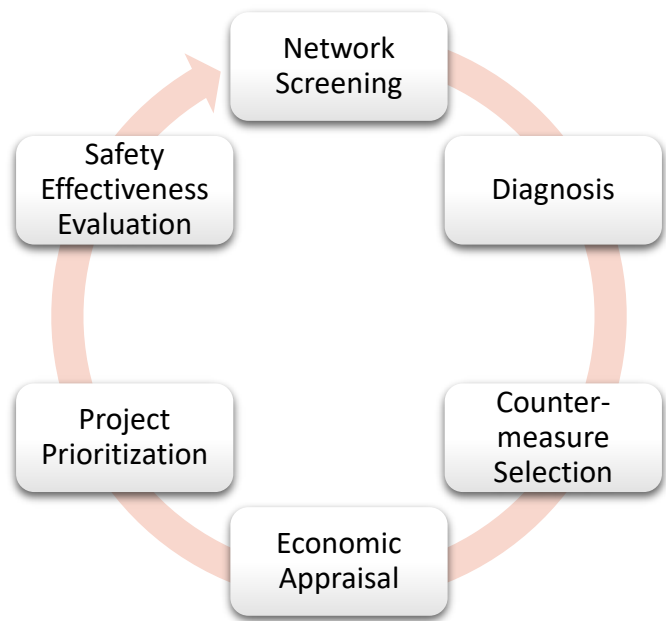
Source: ALIS

April 11, 2019

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The Highway Safety Manual (HSM) published by the American Association of State Highway and Transportation Officials, provides a quantitative approach to safety management based on a repeatable, data-driven process. It defines the six-step roadway safety management process as shown in the figure to the right, starting with network screening. The purpose of network screening is to identify sites for additional investigation and potential treatment. The selected sites should represent opportunities for targeted, cost-effective treatment to address or mitigate the factors contributing to fatal and serious injury crashes. The two ways to identify sites with potential for safety improvement are:



*Source: Highway Safety Manual Six-Step Roadway Safety Management Process*

1. **LOCATION-BASED (HOT SPOT)** - identify sites based on a review of location-specific crash history
2. **SYSTEMIC** - identify sites based on existing geometric or operational characteristics

These two approaches are intended to work together to identify sites with the greatest potential for safety improvement and maximize the effectiveness of the treatment. Given the nature of the fatal and serious injury crashes in the Capital District (i.e., few fatal and serious injury crashes at single locations), the systemic approach is generally more applicable to identify opportunities for impactful safety improvement in the region. The following is a brief overview of the systemic approach applied to develop the Action Plan. It is noted that this approach is a subset of the Six Step Roadway Safety Management Process illustrated above. This plan completed the network screening, diagnosis, countermeasure selection and has provided tools and strategies to complete the remaining tasks.

1. **Establish focus:** determine the focus of the analysis, including the focus crash type(s) and facility type(s). The focus crash type typically corresponds with emphasis areas in the State or local SHSP. The focus facility type is typically one or more facility types where the focus crash type is most prevalent. For example,

the focus crash type could be fatal and serious injury run-off-road crashes and the focus facility type could be 2-lane, rural, undivided roads.

2. **Identify risk factors:** determine the risk factors for selecting sites with promise. Risk factors are the roadway, roadside, and traffic operations characteristics that are common among the crash locations (specific to the focus crash and facility types).
3. **Identify candidate sites for safety improvement:** apply the list of risk factors for the focus crash and facility type to identify candidate locations for potential treatment.
4. **Select targeted strategies:** identify appropriate systemic improvements for the candidate locations. This does not require the same treatment at all locations. Instead, the strategies should target the underlying risk factor(s) and should be appropriate for the specific location. For example, rumble strips target run-off-road crashes, but may not be appropriate in heavily-developed areas. In this example, a more context-appropriate countermeasure may be wider edge lines.
5. **Perform economic analysis:** estimate the costs and expected benefits of each countermeasure. The results can help to select among potential strategies for a given location and to prioritize among projects at different locations.

The remainder of this chapter presents the results of the data analysis to establish focus crash types (i.e., emphasis areas) and facility types. It also presents the detailed data analysis to identify risk factors. Later chapters identify appropriate strategies and present relative cost and implementation timeframe to help determine when it is most appropriate to implement specific strategies.

## Defining Emphasis Areas

The Local Road Safety Action Plan mirrors the NY SHSP with the adoption of six emphasis areas. Table 1 shows the six emphasis areas and the percentage of all fatal and serious injury crashes each area accounts for in the Capital District based on the crash data contained in the NYSDOT ALIS database from 2011 through 2016. Emphasis areas were confirmed by comparing the total number of crashes (fatal, serious injury, property damage, etc.) for a particular crash type, user, or behavior to the fatal and serious injury crashes of the same type, user, or behavior. The crash types that have a comparable or higher percentage of fatal and serious injury crashes than total crashes were identified as emphasis area crash types. The review of the emphasis areas confirmed the consistency with the emphasis areas identified in the NY SHSP. Many crashes can be classified in more than one emphasis area resulting in overall total percentages greater than 100 percent; an intersection crash may involve a vulnerable user so the crash is documented in both emphasis areas.

Table 1 – Local Road Emphasis Areas

Emphasis Area	Percentage of all Fatal and Serious Injury Crashes in the Capital District
Intersections (I)	45%
Road User Behavior (RU)	44%
Age Related (AR)	40%
Vulnerable Users (VU)	35%
Lane Departure (LD)	33%
Speed (S)	20%

Note: some crashes are included under more than one Emphasis Area

Data Source: ALIS

Table 2 illustrates the number of crashes for each emphasis area (and sub-areas) by year.

Table 2 – Emphasis Area Local Road Crashes by Year

Emphasis Area	Year												Total	Avg.
	2011		2012		2013		2014		2015		2016			
Intersections	115	20%	127	20%	131	21%	139	25%	147	22%	159	24%	818	136
Road User Behavior														
Impaired	40	7%	48	7%	44	7%	31	6%	39	6%	43	7%	245	41
Distracted	46	8%	54	8%	61	10%	58	10%	49	7%	51	8%	319	53
Drowsy	7	1%	8	1%	5	1%	9	2%	4	1%	7	1%	40	7
Aggressive	31	5%	24	4%	31	5%	26	5%	36	5%	38	6%	186	31
Total	124		134		141		124		128		139			
Age Related														
20 and Younger	50	9%	61	9%	32	5%	37	7%	46	7%	41	6%	267	44.5
65 and Older	34	6%	42	6%	44	7%	48	9%	45	7%	55	8%	268	45
Total	84		103		76		85		91		96			
Vulnerable Users														
Pedestrian	52	9%	43	7%	42	7%	42	7%	45	7%	45	7%	269	45
Bicyclist	16	3%	17	3%	18	3%	20	4%	16	2%	16	2%	103	17
Motorcyclist	39	7%	52	8%	40	6%	31	6%	55	8%	41	6%	258	43
Total	107		112		100		93		116		102			
Lane Departure	98	17%	105	16%	113	18%	79	14%	108	16%	97	15%	600	100
Speed	58	10%	69	11%	67	11%	41	7%	65	10%	62	9%	362	60

Avg. = Average

Note: some crashes are included under more than one Emphasis Area

Data Source: ALIS

Review of Table 2 shows that the number of intersection crashes and the number of older driver crashes are shown to be increasing while the other emphasis areas are remaining relatively static or varying up and down by year. While the increase in older driver crashes can generally be attributed to the increase in the older driver population,



the increase in intersection crashes is more ambiguous. Each emphasis area is evaluated in more detail in Chapter 4.

Table 3 shows that each county will have different areas of emphasis. For example, Albany County may require additional effort for distracted driving (37%) while Saratoga County may require additional effort to address motorcycle crashes (34%). Review of the table shows that the lowest percentage of fatal and serious injury crashes occurred in Rensselaer County with 8% of Drowsy Driving crashes. In contrast, the highest percentage of crashes was pedestrians in Albany County with 46%.

**Table 3 – Emphasis Areas Local Road Crashes by County**

Emphasis Area	County								Total	Avg.
	Albany		Rensselaer		Saratoga		Schenectady			
Intersections	294	36%	157	19%	168	21%	199	24%	818	204.5
Road User Behavior										
Impaired	83	34%	43	18%	80	33%	39	16%	245	61
Distracted	119	37%	32	10%	73	23%	95	30%	319	80
Drowsy	12	30%	3	8%	16	40%	9	23%	40	10
Aggressive	63	34%	45	24%	56	30%	24	13%	186	46.5
Total	277		123		225		167			
Age Related										
20 and Younger	82	31%	69	26%	80	30%	36	13%	267	67
65 and Older	75	28%	33	12%	102	38%	58	22%	268	67
Total	157		102		182		94			
Vulnerable Users										
Pedestrian	123	46%	38	14%	32	13%	73	27%	269	67
Bicyclist	39	38%	17	17%	22	21%	25	24%	103	26
Motorcyclist	83	32%	46	18%	89	34%	40	16%	258	64.5
Total	245		101		143		138			
Lane Departure	156	26%	111	19%	254	42%	79	13%	600	150
Speed	99	27%	73	20%	134	37%	56	15%	362	90.5

Avg. = Average

Note: some crashes are included under more than one Emphasis Area

Data Source: ALIS

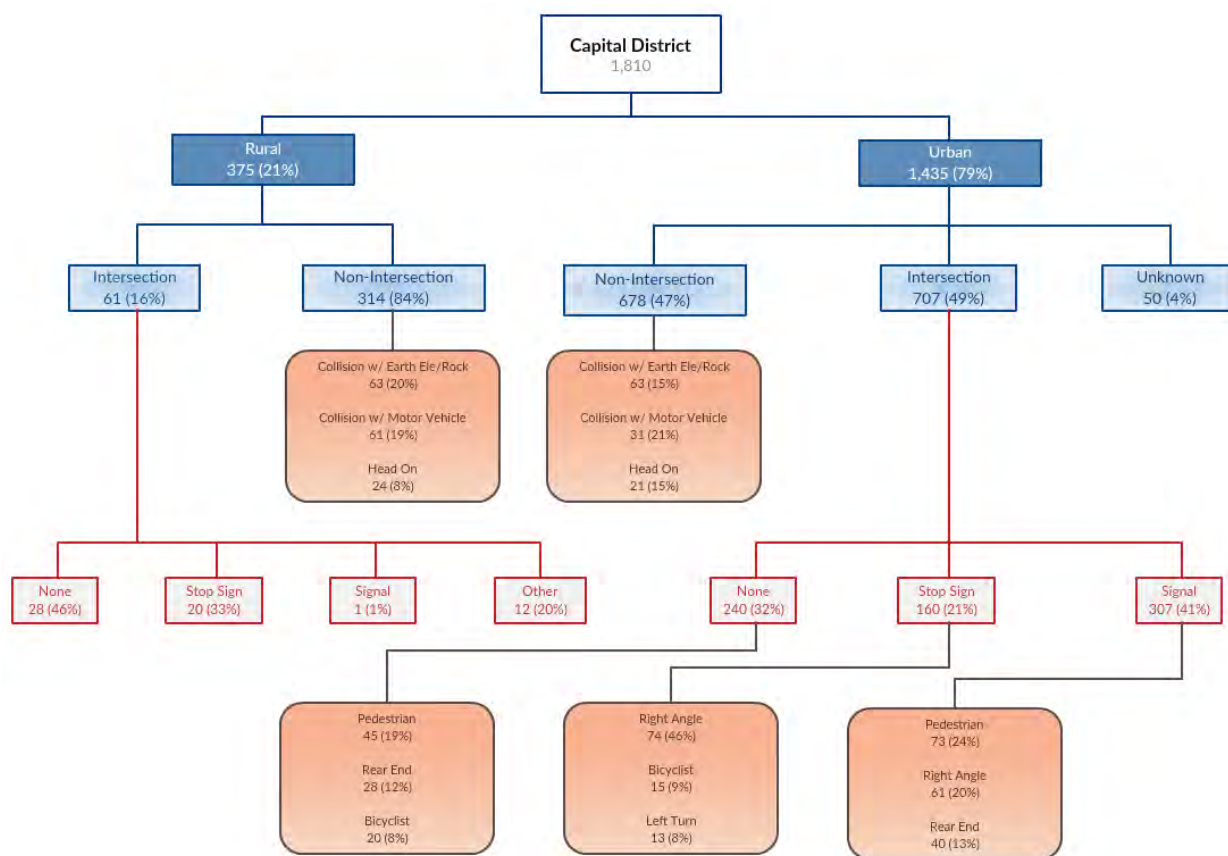
Figure 2 shows a crash tree that is used to help identify focus facility types. In this example, we see the 1,810 fatal and serious injury crashes in the Capital District filtered by a series of potential roadway, environmental, and behavioral factors to determine what combination of these factors result in the highest number of crashes. Of the 1,810 crashes, almost 80% occur in urban areas, which is shown on the right half of the crash tree. This immediately suggests safety investments are likely geared for urban areas in the Capital District. Within the set of urban crashes, over half are at intersections, and within this set of urban intersections, the most prevalent locations are signal-controlled intersections. Digging even deeper, it is shown that right-angle crashes are the



predominant crash type at 74 urban stop-controlled and 61 urban signalized intersection crashes, or 7.5 percent of the 1,810 crashes in the Capital District.

Other important areas of note from the crash tree are that pedestrian crashes are the most prevalent type of crash at urban intersections operating with no control and traffic signal control. Bicyclist crashes are also one of the top three crash types at urban intersections with no control or stop control. The crash tree also shows that rural non-intersection crashes represent 84% of all rural crashes.

**Figure 2 – Capital District Fatal and Serious Injury Local Road Crash Tree**



Source: ALIS

This crash tree procedure can be replicated for any combination of factors such as driver impairment and time of day, if data are available. These crash trees, along with additional charts and tables, were developed for each county to help determine the combination of roadway, environmental, and behavioral factors that contribute to crashes in each county in the Capital District. This will help identify where investments could address the greatest number of potential crashes. The Capital District Fatal and

Serious Injury Crash Tree and several crash trees for each county are included in Appendix B.

## Risk Factors

As noted, risk factors are the characteristics common to a specific crash or facility type. Through the evaluation of the crash data associated with the 1,810 fatal and serious injury crashes, several high-level risk factors or crash similarities were identified. Table 4 identifies some potential risk factors associated with various facility types. Based on Figure 2, Urban Intersections and Rural Roadways may be more applicable to the identified emphasis areas in the Capital District.

**Table 4 – Potential Risk Factors**

<b>Facility Type</b>	<b>Potential Risk Factor</b>
Urban Intersections	<ul style="list-style-type: none"> <li>Approach geometry</li> <li>Mix of users</li> <li>On-street parking</li> <li>Speed</li> <li>Traffic control</li> <li>Traffic volume</li> <li>Visibility</li> </ul>
Urban Roadways	<ul style="list-style-type: none"> <li>Access density</li> <li>Adjacent land uses</li> <li>Mix of users</li> <li>On-street parking</li> <li>Roadway striping</li> <li>Speed</li> <li>Traffic volume</li> </ul>
Rural Intersections	<ul style="list-style-type: none"> <li>Approach geometry</li> <li>Speed</li> <li>Traffic control</li> <li>Traffic volume</li> <li>Visibility</li> </ul>
Rural Roadways	<ul style="list-style-type: none"> <li>Access density</li> <li>Curve density</li> <li>Roadside features</li> <li>Roadway striping</li> <li>Roadway surface condition</li> <li>Shoulder availability and condition</li> <li>Speed</li> <li>Traffic volume</li> </ul>

While the available data allows us to identify some high-level risk factors like the type of intersection control or the presence of a roadway curve, more detailed information like the presence of roadway striping or signing cannot be determined with the data available. Therefore, the recommended safety countermeasures will be based on available documentation for common risk factors and treatments with the greatest potential to improve conditions and address the identified emphasis areas.

# Chapter 4:

## Emphasis Areas



## Chapter 4: Emphasis Areas

New York State uses the KABCO scale to identify vehicle crash severity. The Institute for Traffic Safety Management and Research (ITSMR) defines the scale as follows:

- K: Fatal injuries include deaths which occur within thirty days following injury in a motor vehicle crash
- A: Severe injuries include skull fractures, internal injuries, broken or distorted limbs, unconsciousness, severe lacerations, severe burns, and unable to leave the scene without assistance
- B: Moderate injuries include visible injuries such as a “lump” on the head, abrasions, and minor lacerations
- C: Minor injuries include hysteria, nausea, momentary unconsciousness, and complaint of pain without visible signs of injury
- Unknown Severity: Severity of injury unknown
- O: No fatality or injury; property damage only

Fatal and serious injury crashes have the highest associated physical, social, emotional, and financial costs; therefore, efforts to reduce these types of crashes have been prioritized. The evaluations below include the fatal (K) and serious injury (A) crashes. The source data for the evaluations is from the Accident Location Information System (ALIS) which is populated from the law enforcement reports completed at each crash scene and then compiled and entered into the database by the New York State Department of Motor Vehicles.

The six years of data was evaluated to identify specific areas of emphasis for local roads in the region. Consistent with the NY SHSP, the emphasis areas for the Capital District were identified as the following:

- Intersections
- Road User Behavior (impaired, distracted, drowsy, or aggressive driving)
- Age-Related (younger drivers and older drivers)
- Vulnerable Users (pedestrians, motorcyclists, and bicyclists)
- Lane Departures
- Speed

It is important to note that the detailed evaluation methodology of each emphasis area attempted to identify specific locations for immediate corrective measures; however, the data did not identify any specific locations. Based on the analysis, the countermeasures identified for each emphasis area are recommended for systemic implementation.



## Existing Programs and Resources

As noted, there are many existing documents and programs that can be used as resources to identify appropriate strategies to reduce the potential for fatal and serious injury crashes. Some of these resources are identified below.

### Highway Safety Improvement Program (HSIP)

A core federal-aid program that provides funding for safety projects and programs on any publicly owned roadway to reduce fatal and serious injury crashes. The FHWA has developed a variety of resources to help states plan, implement, and evaluate the effectiveness of the efforts. HSIP funding can be used for either location-based or systemic projects or programs, but obtaining funding requires detailed data evaluation to ensure the best use of funds.

### The Pedestrian Safety Action Plan (PSAP)

A systemic approach to proactively address widespread safety issues and minimize the potential for crashes by implementing low-cost countermeasures throughout the roadway network. The document includes recommendations for engineering, education, and enforcement strategies and also provides specific signing and striping layouts for pedestrian crossings in standard situations.

### New York State Strategic Highway Safety Plan (NY SHSP)

Information published on the NYSDOT website states that the purpose of the SHSP is to promote best practices and strategies that could have a substantial impact on reducing fatal and serious injury crashes. The SHSP is a major component of the Highway Safety Improvement Program and was developed through a collaborative effort with public and private sector partners. The SHSP complements other strategic planning processes in the state to meet federal eligibility requirements for funding in specific program areas.

### New York State Governor's Traffic Safety Committee (GTSC)

The GTSC coordinates statewide traffic safety activities and supports the state's highway safety program. Staff of the GTSC manage the state highway safety program by reviewing and monitoring grant programs, coordinating special programs such as the Child Passenger Safety or the Drug Recognition Effort officer programs, and by providing guidance and oversight to state and local agencies. The Committee is comprised of the heads of the twelve state agencies with missions related to transportation and safety and is chaired by the Commissioner of the Department of Motor Vehicles (DMV). The GTSC also acts as the state's official liaison with the National Highway Traffic Safety Administration.

### New York State Department of Health (DOH)

The NYSDOH website states that “Motor vehicle traffic injuries are a major public health problem. They are the leading cause of injury related death, second leading cause of injury related hospitalizations, and third leading cause for injury related emergency department visits in New York State. On average, three New Yorkers die every day due to a traffic-related crash.” The NYSDOH is addressing this problem in cooperation with NYSDOT and the GTSC by providing educational materials for all roadway users and coordinating education efforts associated with the SHSP.

### FHWA Proven Safety Countermeasures

A list of 20 total treatments and strategies that have been proven over time to successfully address several crash types on local and state-maintained roadways. Fact sheets for each of the 20 countermeasures are included on the FHWA Proven Safety Countermeasures website with links to the detailed data analysis.

### Cornell Local Road Program

The Cornell Local Roads Program is the designated Local Technical Assistance Program (LTAP) Center for New York State. It provides training, technical assistance, and information to municipal officials and employees responsible for the maintenance, construction, and management of local highways and bridges. Local road safety is a major emphasis area of their work.

### New York State Association of Metropolitan Planning Organizations (NYSAMPO)

The Safety Assessment Guidelines are a product of Metropolitan Planning Organizations and outline a process to improve safety on all types of local transportation facilities. A Safety Assessment is a formal safety performance examination of an existing or planned transportation facility (e.g. road, intersection, sidewalk, multi-use path, or land use development) by a multi-disciplinary team. The team considers the safety of all users, analyzes and reports on safety issues and suggests opportunities for safety improvement.

The NYSAMPO Safety Working Group developed educational fact sheets to provide information to local governments and other safety partners on a wide variety of safety topics including: Statewide Safety Plans, Designing Intersections to Accommodate All Users, Timing Traffic Signals to Accommodate Pedestrians, Complete Streets, and Complete Streets 2.0. The fact sheets provide information on best practices and resources and are available on the NYSAMPO Safety Working Group webpage at [www.nysmpo.org](http://www.nysmpo.org).

## CDTC Programs

### *Capital Coexist*

A local education campaign, sponsored by CDTC, geared toward pedestrians, bicyclists, and motorists safely coexisting when using the region's roadways. The website has safety tips for system users and information about current projects, events, and educational materials. The program also offers several mini-grant opportunities to assist public, private, and non-profit organizations in the Capital District provide bicycle and pedestrian safety education and training.

### *Safety Partner Collaboration*

In addition to the Regional Operations and Safety Advisory Committee (ROSAC) locally hosted by CDTC, the CDTC currently partners with several organizations specifically to explore ways to improve safety. These partnerships include the New York State Association of Metropolitan Planning Organizations (NYSAMPO), NYSDOT, GTSC and New York State Police, and the New York State Association of Traffic Safety Boards (NYSATSB).

### *Complete Streets White Paper*

As part of the New Visions 2040 plan development process, several working groups were formed to assess specific topics. The CDTC New Visions Complete Streets Advisory Committee White Paper examined the what, why and how of Complete Streets in the Capital District. The paper identified best practices for implementation, barriers to implementation, training and education materials, and several health and safety benefits associated with Complete Streets. The white paper is an excellent resource for communities.

### *Technical Assistance*

CDTC provides technical assistance to local communities for small-scale planning initiatives through their Community Planning Technical Assistance Program and for larger projects through the Linkage Program. The CDTC also started a Smart Communities Task Force to help communities understand and harness the upcoming changes in the transportation network associated with the use of data, applications and technology to help move people and goods more efficiently. CDTC also provides assistance to local governments to provide crash data through the New York State Accident Location Information System upon request.

## Intersections

Intersections are planned locations where one roadway converges with another roadway. This presents opportunities for conflict as various users—motorized vehicles, pedestrians, and bicyclists—must travel through the intersection to continue on their existing travel path or turn onto another route. Intersections can vary widely in characteristics such as classification, control, geometry, and volume. With such diversity in intersection features, along with increased risk of conflict, improving intersection safety is a major component in addressing overall road safety. Numerous factors can contribute to an intersection crash, as shown in Table 5.

**Table 5 – Intersection Crash Types**

<b>Contributing Factor</b>	<b>Examples</b>
Roadway Condition	Horizontal or vertical curvature On-street parking Pavement condition (potholes, cracking, etc.) Traffic control
Environmental Condition	Landscaping/vegetation reducing visibility Weather changing the road surface condition Weather reducing visibility
Driver Behaviors	Distracted driving Impaired driving Speeding User confusion

Countermeasures that can reduce the potential for intersection crashes include improving approach visibility, reducing the potential for conflicts, and clarifying intersection control and right-of-way.

Many of the nation’s intersections were designed and built solely for motor vehicles. Today, more pedestrians and bicyclists are sharing the road with motor vehicles and have become vulnerable users of the roadway. This is especially true at intersections, which is where the majority of pedestrian and bicyclist fatalities and serious injuries occur. In the Capital District, fatal and serious injury pedestrian and bicycle crashes account for almost 25 percent of the total intersection fatal and serious injury crashes. One aspect of this issue can be addressed by designing for all users (i.e., Complete Streets design), which considers safe access for users of all modes, ages, and abilities.

The Action Plan will take a multifaceted approach to solving intersection-related issues; one that considers the intersection design, users from all modes, and implements systemic improvements. A second phase to the Action Plan will include identification of

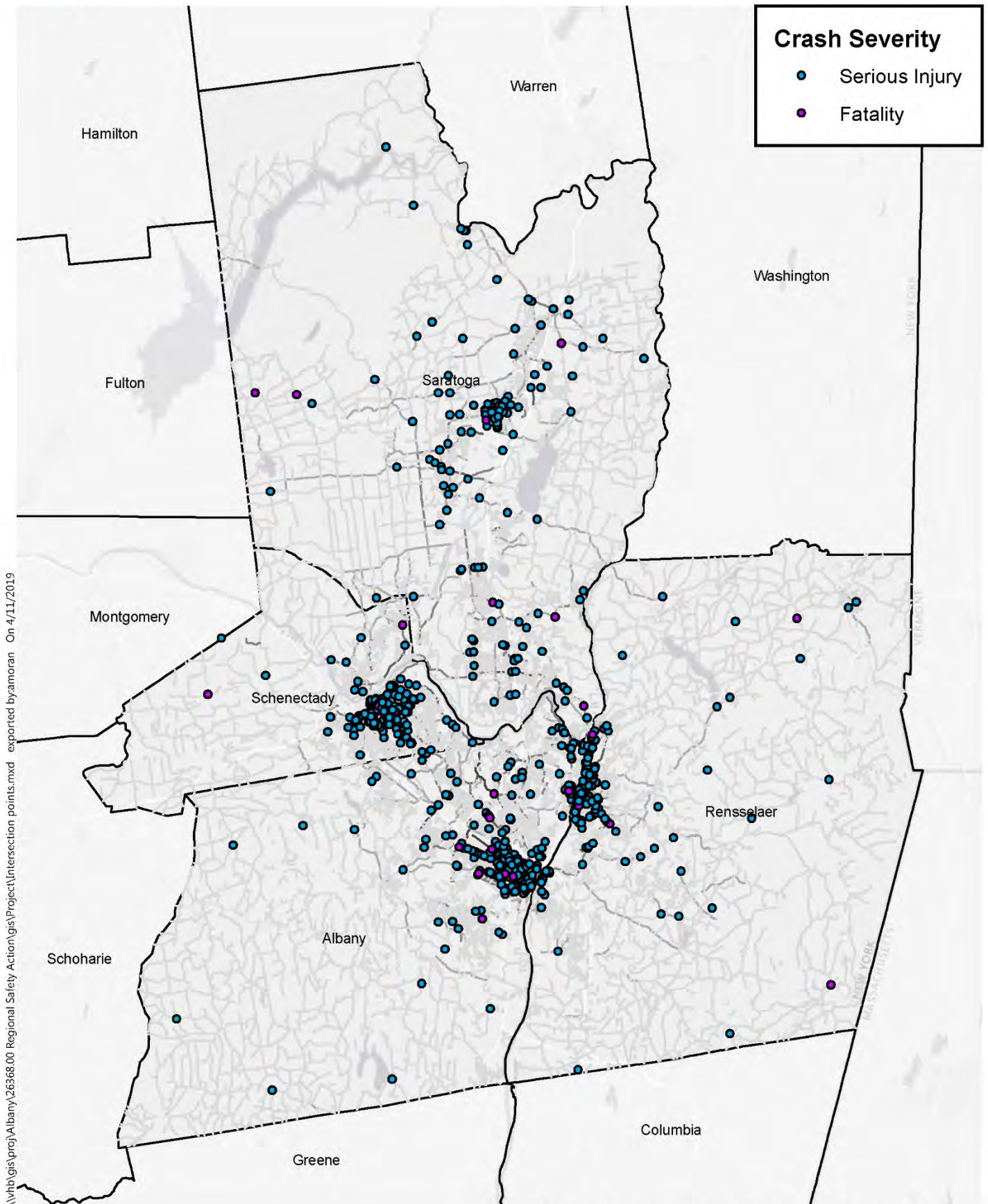
specific locations in the Capital Region with high risk factors and suggested countermeasure strategies.

### Defining the Problem

Intersection crashes occur within 30-feet of two or more intersecting roadways. As defined in the police reports, intersection crashes account for 818 of the 1,810 fatal and serious injury crashes that occurred from 2011 through 2016 on local roads. Figure 3 illustrates the locations of the local road intersection crashes in the Capital District.



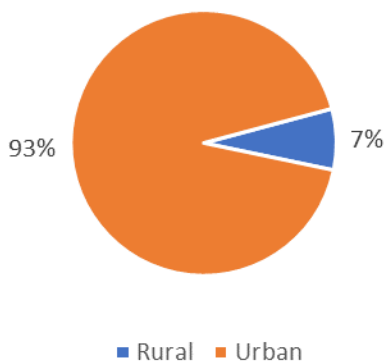
**Figure 3: Local Road Intersection Crashes**



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Almost all (93%) of the fatal and serious injury intersection-related crashes occurred in an urban setting.

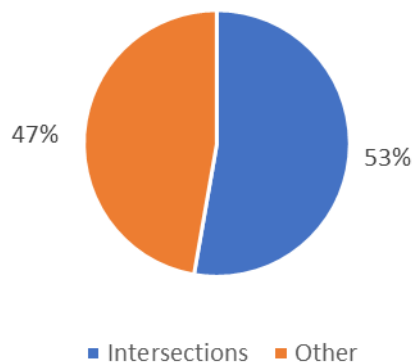
Local Road Intersections  
Fatal & Serious Injury Crashes  
(2011-2016) Urban/Rural



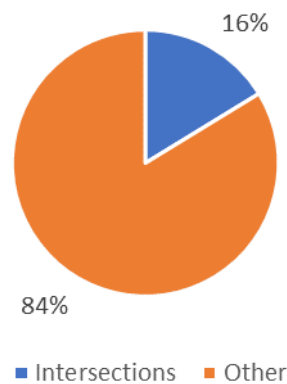
Source: ALIS

As shown in the charts below, the crashes occur in both urban and rural areas, although the intersection crashes account for a much higher percentage of urban fatal and serious injury crashes.

Local Road Intersections  
Fatal & Serious Injury Crashes  
(2011-2016) Urban

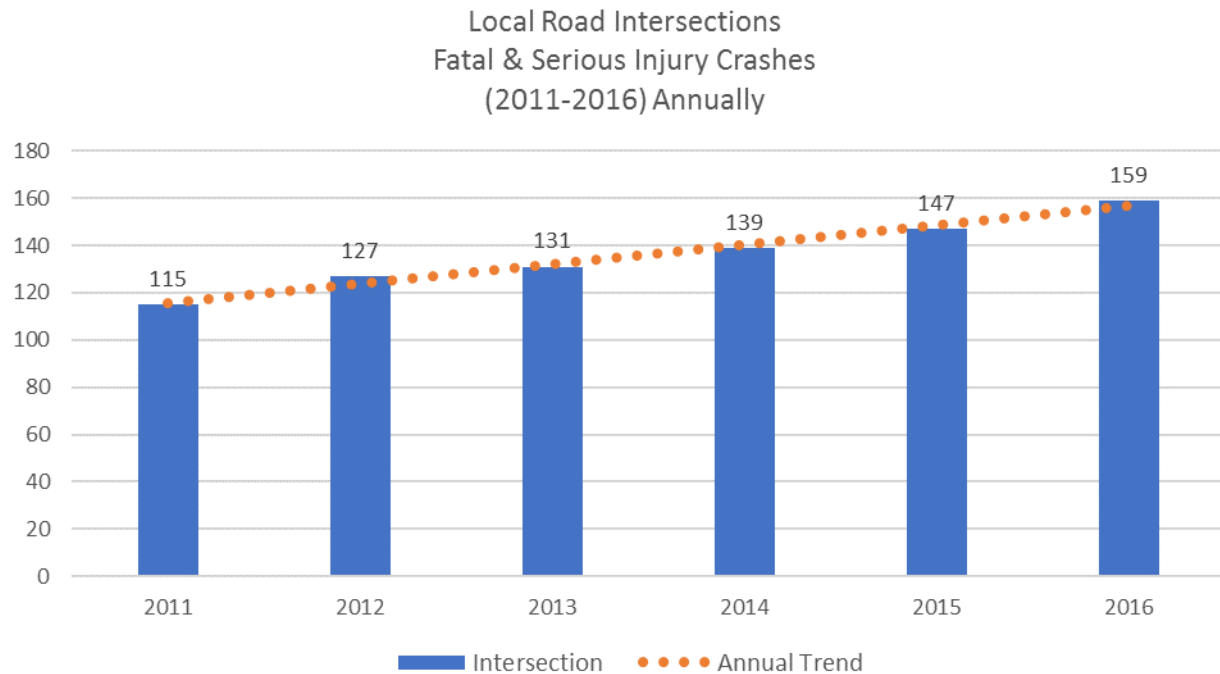


Local Road Intersections  
Fatal & Serious Injury Crashes  
(2011-2016) Rural



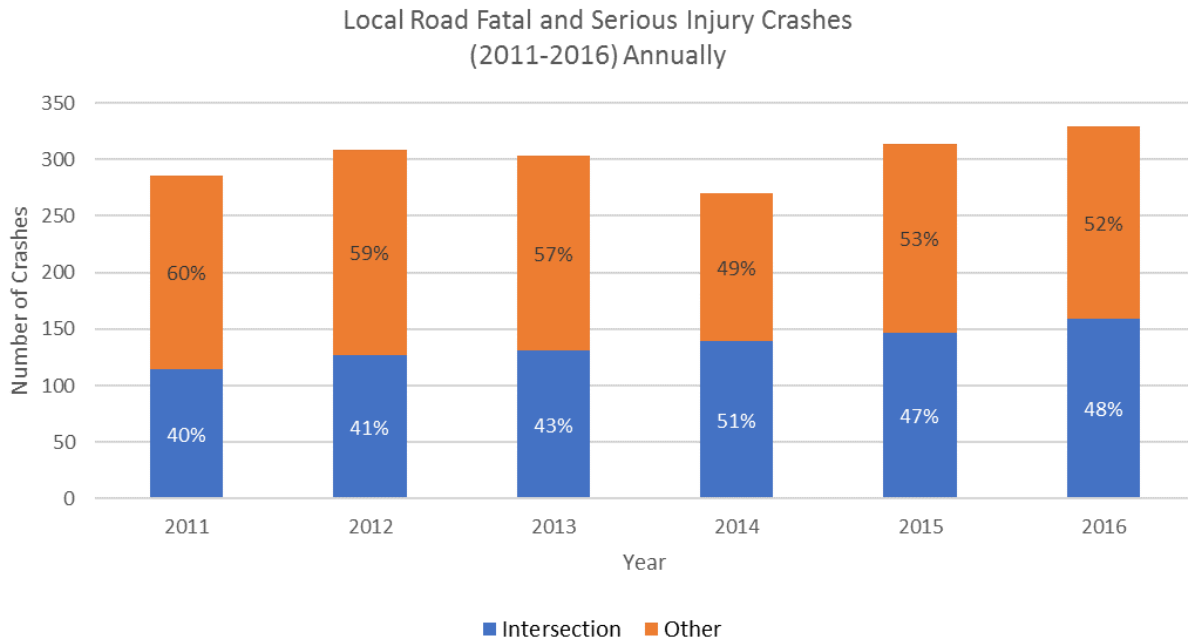
Source: ALIS

An annual comparison of the fatal and serious injury intersection crashes from 2011 to 2016 in the Capital District illustrates an increasing trend of approximately six percent per year for the past six years.



Source: ALIS

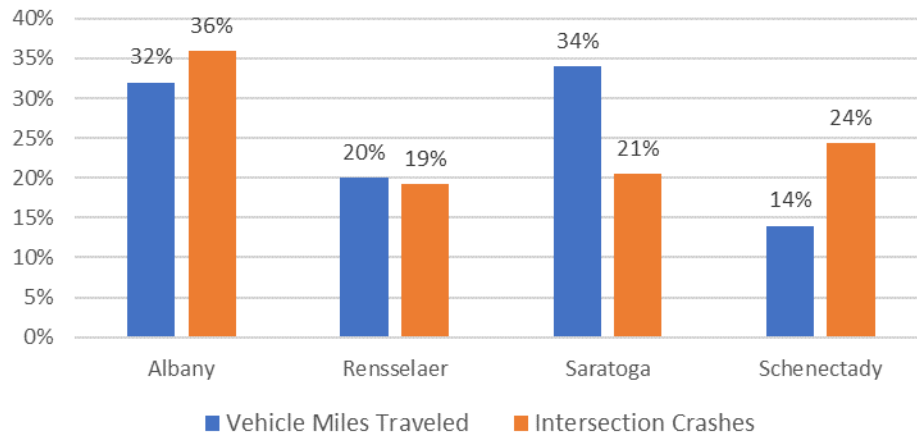
The following chart shows the number of fatal and serious injury intersection crashes and total crashes by year. It is noted that the percent of fatal and serious injury crashes occurring at intersections has ranged from 40 percent at its lowest in 2011 to over 51 percent in 2014. On average, intersection crashes account for approximately 45 percent of all fatal and serious injury crashes.



Source: ALIS

The following chart shows that Albany County accounts for the largest percentage of fatal and serious injury crashes, representing over 1/3 of the total intersection crashes in the Capital District. These crashes are also over-represented when compared to vehicle-miles traveled (VMT) (i.e., Albany County represents 36 percent of fatal and serious injury intersection crashes but only 32 percent of VMT in the Capital District). Schenectady County represents the next highest proportion in the Capital District, accounting for 24 percent of the fatal and serious injury intersection crashes. Schenectady County is also over-represented when compared to VMT (i.e., 24 percent of fatal and serious injury intersection crashes but only 14 percent of VMT in the District).

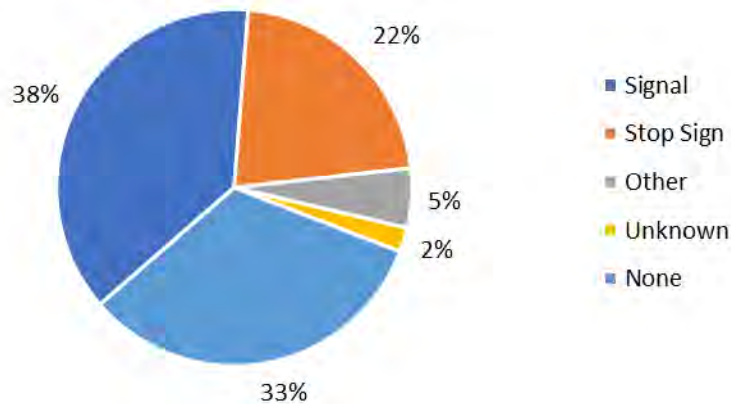
Local Road Intersection Fatal & Serious Injury Crashes  
(2011-2016) Compared to VMT



Source: ALIS and NYSDOT

When looking at fatal and serious injury intersection-related crashes by traffic control type, 38 percent occurred at signalized intersections, 33 percent occurred at intersections with no traffic control, 22 percent occurred at stop-controlled intersections, and the remaining 7 percent were coded as either unknown or classified as "other".

Local Road Intersections Fatal & Serious Injury Crashes  
(2011-2016) Traffic Control

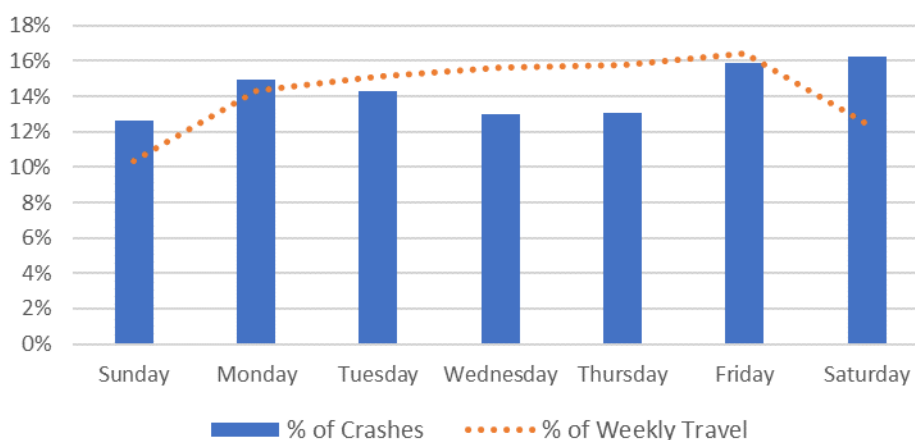


Source: ALIS



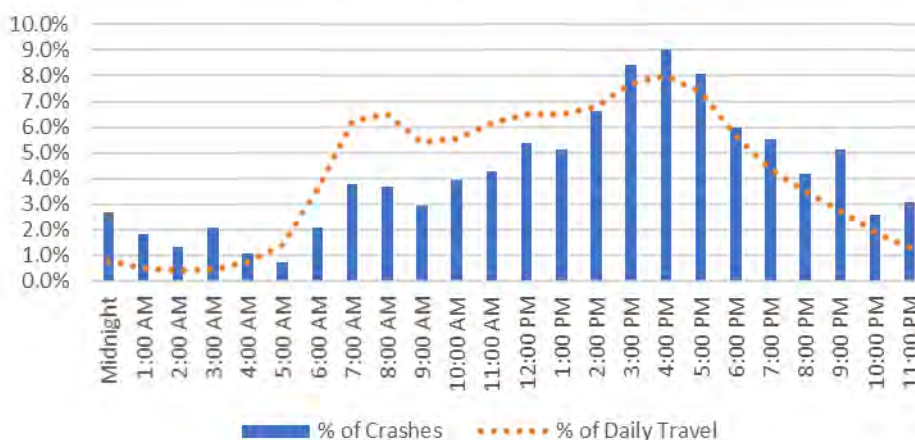
The charts below illustrate the number of intersection crashes by day of week and time of day. The first chart shows that fatal and serious injury intersection crashes occur most frequently on Monday, Friday and Saturday; as these days have slightly more fatal and serious injury crashes when compared to the average day over the analysis period. However, the fatal and serious injury crashes are overrepresented on Saturday and Sunday when compared to average traffic volume by day of week. The second chart shows that fatal and serious injury intersection crashes occur most frequently between 3:00 to 6:00 PM, accounting for 25 percent of the fatal and serious injury intersection crashes. When compared to the percent of daily traffic by time of day, the crashes are slightly over-represented from 2:00 PM to 5:00 PM and even more over-represented from approximately 7:00 PM to 4:00 AM.

Local Road Intersections Fatal & Serious Injury Crashes  
(2011-2016) Day of Week



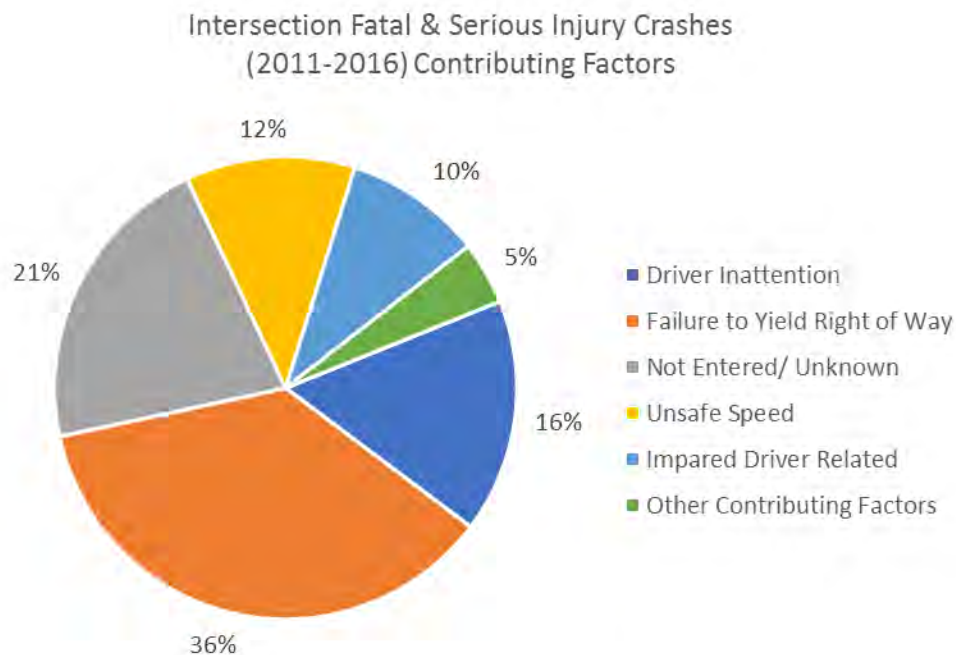
Source: ALIS and NYSDOT

Local Road Intersections, Fatal & Serious Injury Crashes  
(2011-2016) Time of Day



Source: ALIS and NYSDOT

The crash data includes information provided in the police report to help determine what caused a crash. There are 46 identified “contributing factors” included in the crash reports. Of the 46 contributing factors, 74 percent of the recorded crashes were attributed to four factors, failure to yield to the right-of-way, driver inattention, impaired driver, and unsafe speed. The chart below summarizes the contributing factor data for the intersection crashes. Approximately 21 percent of the contributing factors for the crashes are Unknown or Not Entered while the remaining 4 percent can be attributed to the other 40 contributing factors.



Source: ALIS

### Municipal Emphasis

To provide a more local emphasis, the number of fatal and serious injury crashes in each municipality was compared to the population. Table 6 illustrates the number of intersection crashes and identifies communities that are over-represented when compared to population by at least 1%. The table shows that the urban centers of Albany, Troy, Saratoga Springs, and Schenectady are well over-represented for fatal and serious injury crashes when compared to city population.

Table 6 – Intersection Fatal and Serious Injury Local Road Crash Over-Representation by Municipality

Municipality	% of County Population	Intersection Crashes	
		Number	% County
<b>Albany County</b>		<b>294</b>	
<u>Cities:</u> Albany	29.9%	192	65.3%
Watervliet	3.1%	16	5.4%
<b>Rensselaer County</b>		<b>157</b>	
<u>Cities:</u> Troy	29.6%	116	73.9%
<u>Villages:</u> Hoosick Falls	0.3%	2	1.3%
<b>Saratoga County</b>		<b>168</b>	
<u>Cities:</u> Saratoga Springs	12.3%	60	35.7%
<u>Towns:</u> Greenfield	3.4%	8	4.8%
Wilton	7.4%	17	10.1%
<b>Schenectady County</b>		<b>199</b>	
<u>Cities:</u> Schenectady	39.9%	163	81.9%

### Emphasis Area Goal

Reduce intersection fatal and serious injury crashes through implementation of engineering, education, and enforcement strategies.

### Conclusions

Review of the data reveals the following about fatal and serious injury intersection crashes:

- Intersection crashes account for approximately 45 percent of all fatal and serious injury crashes
- Albany County has the highest percentage of fatal and serious injury intersection crashes and is slightly over-represented when compared to VMT
- Schenectady County has the second highest percentage of fatal and serious injury intersection crashes and is the most over-represented when compared to VMT
- Approximately 93 percent of all fatal and serious injury intersection crashes occurred in urban areas
- Saturdays and Sundays are overrepresented when compared to VMT
- By time of day, fatal and serious injury intersection crashes are overrepresented from 3:00 PM to 3:00 AM
- Approximately 36 percent of fatal and serious injury intersection crashes involve vehicles failing to yield the right of way
- Approximately 38 percent of fatal and serious injury intersection crashes involve driver inattention, unsafe speed, and impaired driver behaviors

Based on the data evaluation and above findings, crash reduction strategies have been identified for potential implementation. To reach the emphasis area goal, the strategies that have the potential to provide the greatest value should be prioritized.

### Strategies and Actions

There are 20 actions in support of this emphasis area. Four strategies (Program, Engineering, Education, Enforcement) identify supporting actions, the appropriate agencies needed to complete the actions, and which of the contributing factors (environmental, roadway, behavior) are targeted. The following actions should be considered for implementation as resources allow.

**Program:** *Create a program and develop policies to identify **intersection** crash contributing factors, higher risk locations, and address safety issues on the local roadway system.*

<b>Program Action</b>	<b>Lead Agency / Partners</b>	<b>Focus</b>
Identify locations with high-risk intersection features	<b>County, Municipal / CDTC</b>	Roadway
Develop a systemic intersection safety program	<b>County, Municipal / CDTC, NYSDOT</b>	Roadway
Conduct annual systemic intersection safety analysis.	<b>County, Municipal / CDTC</b>	Roadway
Develop an intersection inventory that improves the ability to identify locations with risk factors.	<b>County, Municipal / CDTC</b>	Roadway
Continue to support programs that support the use of Intelligent Transportation Systems (ITS) and Traffic Incident Management (TIM).	<b>County, Municipal / CDTC</b>	Roadway
Support the use of emerging technologies such as connected vehicles.	<b>County, Municipal / CDTC</b>	Roadway, Behavioral, Environmental
Consider expanding red light enforcement in the Capital District	<b>County, Municipal</b>	Roadway
Develop access management plans to reduce the number of intersections	<b>County, Municipal</b>	Roadway

**Engineering:** *Implement safety countermeasures at intersections based on crash experience.*

Engineering Action	Lead Agency / Partners	Focus
Improve visibility of traffic control at signalized intersections with backplates, warning signs, etc.	County, Municipal	Roadway
Install turn restriction signing at locations with poor sight lines	County, Municipal	Roadway
Reduce turn conflicts at intersections through signal timing modifications and lane geometry adjustments	County, Municipal	Roadway
Enhance intersection signing at unsignalized intersections	County, Municipal	Roadway
Improve sight lines at unsignalized intersections	County, Municipal	Roadway
Improve visibility at unsignalized intersections with vegetation clearing, parking restrictions, warning signs, etc.	County, Municipal	Roadway
Develop access management plans to reduce the number of intersections	County, Municipal	Roadway
Install intersection lighting	County, Municipal	Roadway

**Education:** *Develop education and training materials related to intersection crashes.*

Education Action	Lead Agency / Partners	Focus
Disseminate outreach materials, and training, to educate the public and enforcement personnel on new traffic control devices.	Department of Health / Municipal	Behavioral
Conduct outreach to the public	GTSC / CDTC, Municipal	Behavioral

**Enforcement:** *Continue enforcement of traffic laws that reduce intersection crashes.*

Enforcement Action	Lead Agency / Partners	Focus
Conduct enforcement detail at top ten annual priority intersections	Law enforcement	Behavioral
Conduct focused intersection enforcement patrols in conjunction with high-visibility behavioral campaigns (e.g. impaired driving, restraint use, distracted driving).	Law enforcement	Behavior



## Road User Behavior

Transportation systems need to safely support a growing network of multi-modal users. As advancements in vehicle and roadway design continue to improve safety, human behavior continues to be the biggest variable in crash risk. Creating a culture of responsible road users is essential to making a significant impact in the reduction of fatal and serious injury crashes in the Capital District.

The National Highway Traffic Safety Administration (NHTSA) conducted the National Motor Vehicle Crash Causation Survey to collect on-scene crash data pertaining to events and associated factors that possibly contributed to crash occurrence, with a focus on the driver's role. The results of the survey indicate that the pre-crash action of the driver causes the crash 94 percent of the time. Driver-related critical reasons, defined as the last failure in pre-crash events, were categorized as recognition error (41%), decision error (33%), performance error (11%), non-performance error (7%), and other (8%).

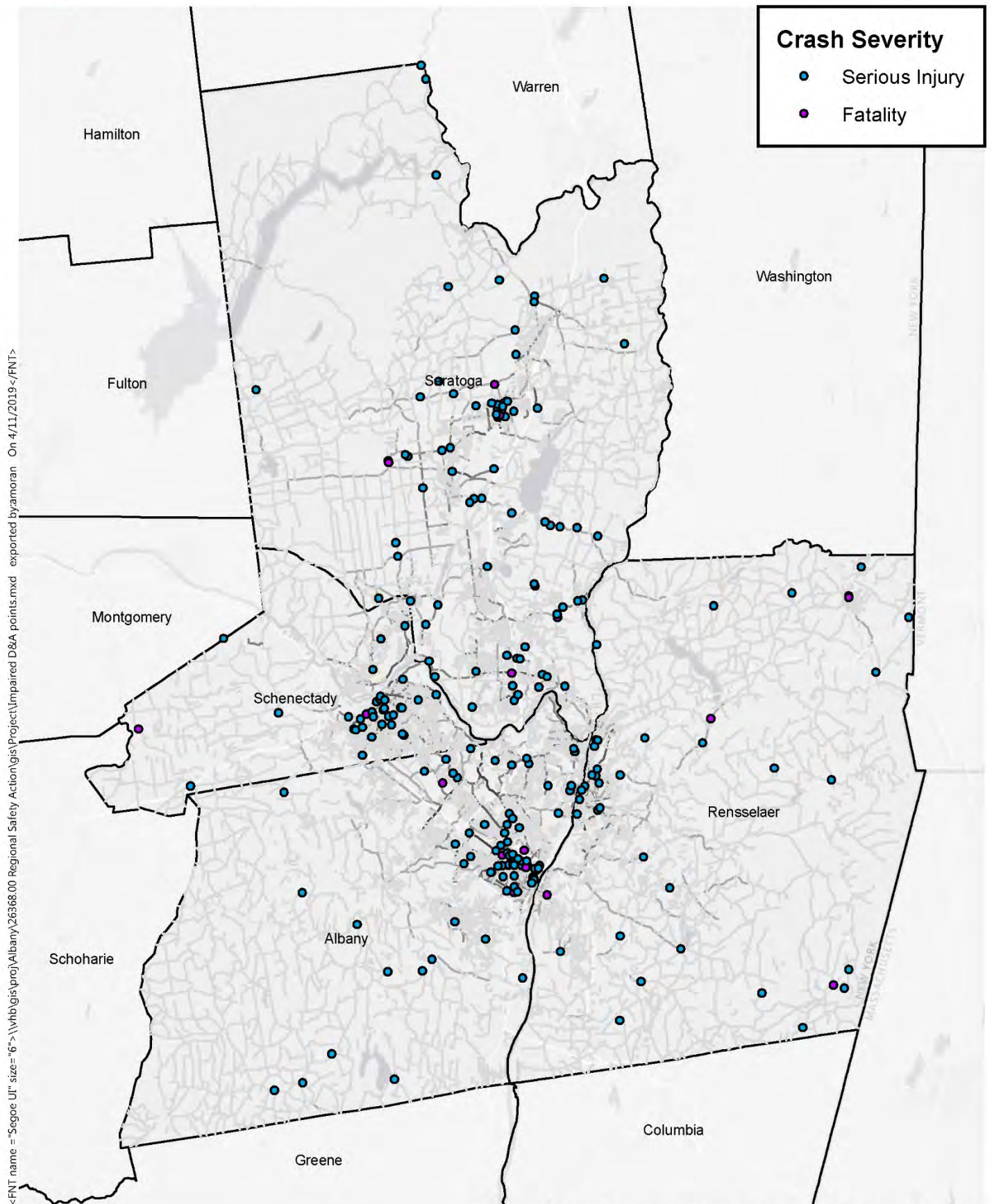
From 2011 to 2016, 33 percent of fatal and serious injury crashes in the Capital District reported at least one human contributing circumstance. The road user behavior emphasis area includes behaviors associated with impaired driving, distracted driving, drowsy driving, and cell phone use. During this six-year period, there were 589 crashes in which road user behaviors were recorded as contributing factors in motor vehicle fatalities and serious injuries in the Capital District.

Aggressive driving is also a factor in driver behavior and is defined by dangerous driving or driving that disregards road safety laws. This type of driver behavior can be classified by unsafe lane changes, following too closely, and aggressive driving/road rage. From 2011 to 2016 10 percent of fatal and serious injury crashes in the Capital District reported aggressive driving as a contributing factor.

### Defining the Problem

A detailed look at the data on fatal and serious injury crashes in the Capital District can assist with the identification and implementation of strategies and actions to mitigate road user behaviors that are overrepresented. The maps shown on Figures 4 through 7 illustrate the location of the different types of road user behavior crashes; Alcohol & Drugs, Distracted, Drowsy, and Aggressive.

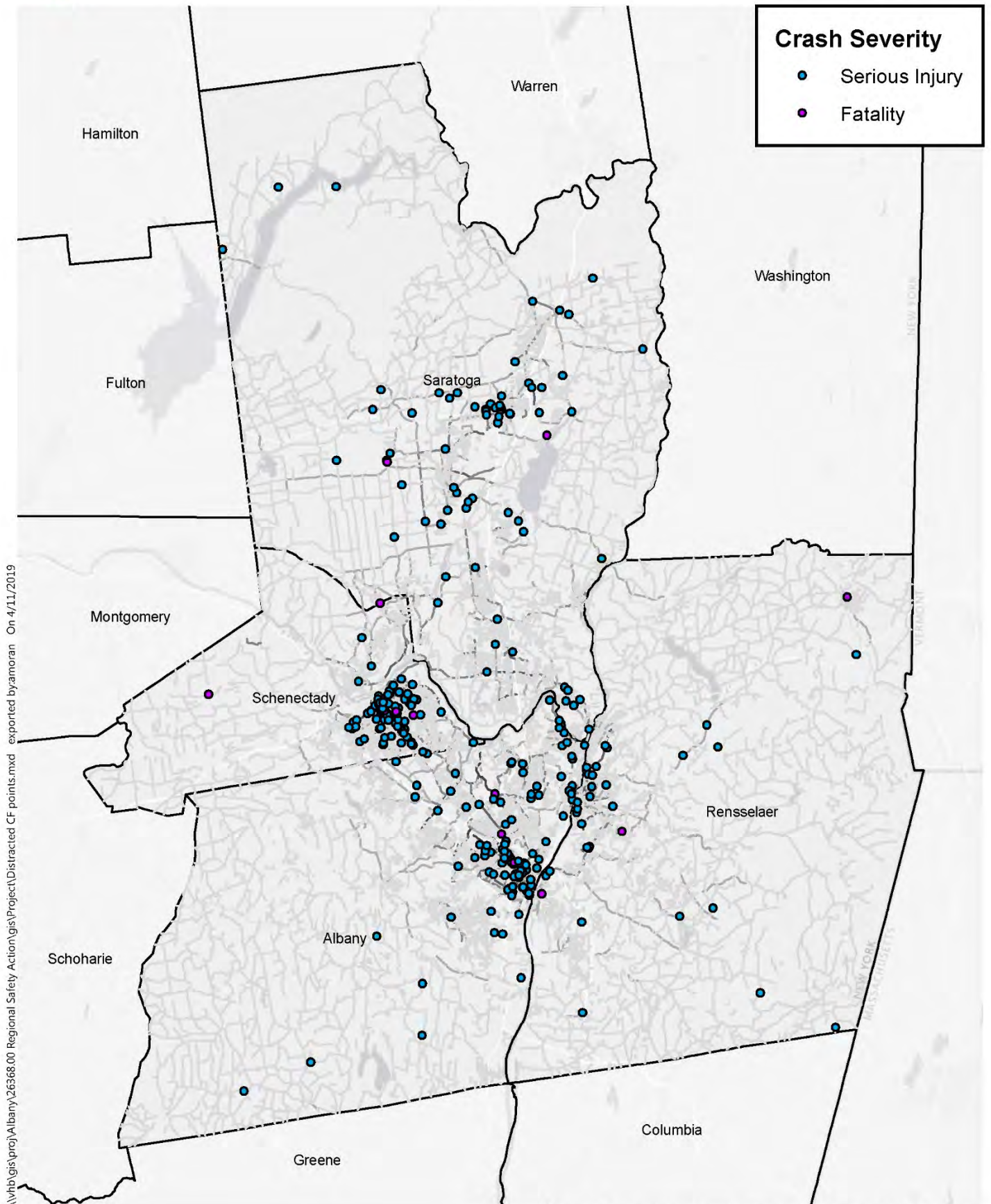
**Figure 4: Local Road Impaired Driving (Alcohol or Drugs) Crashes**



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**Figure 5: Local Road Distracted Driving Crashes**



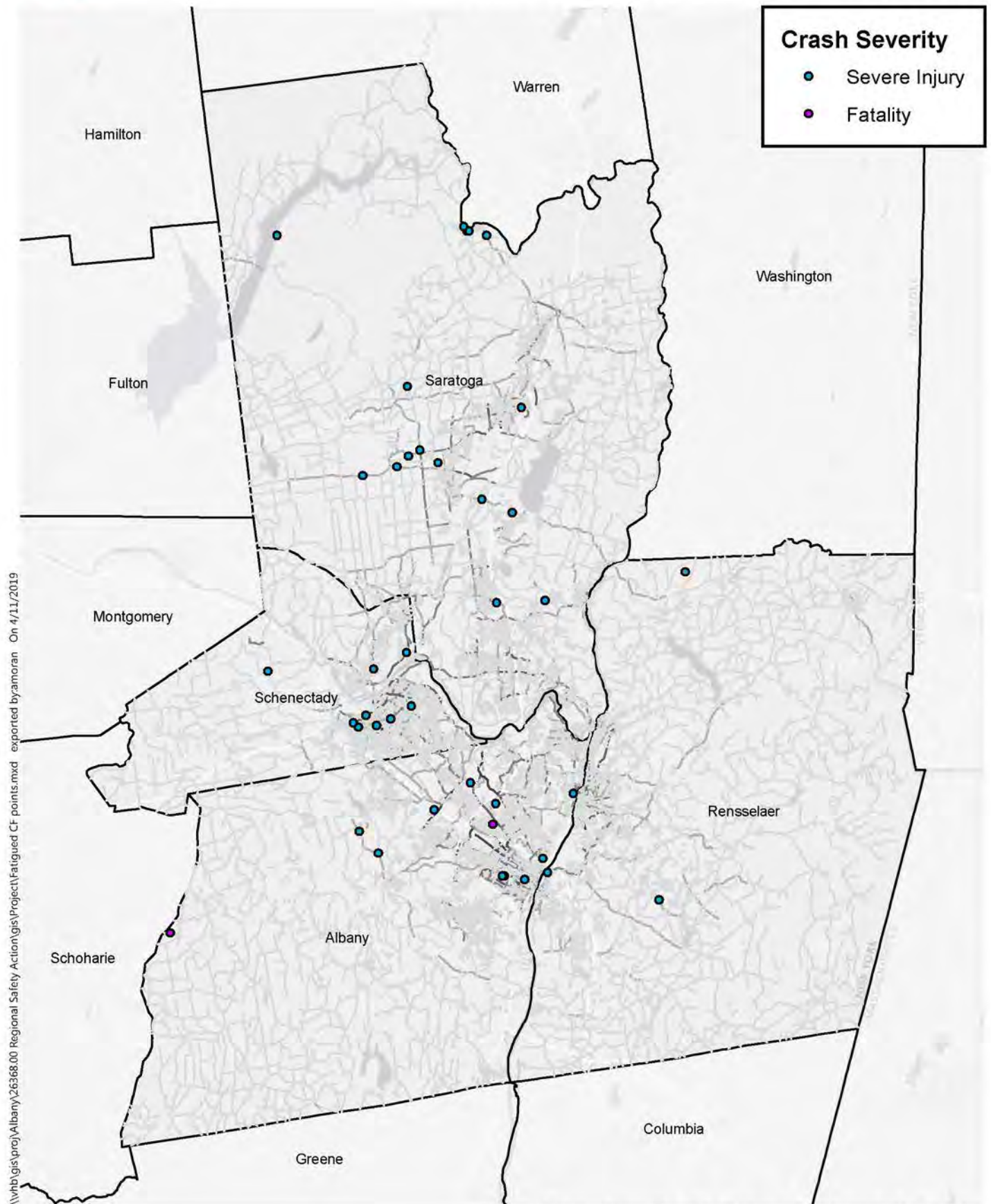
Albany, Rensselaer, Saratoga, and Schenectady Counties  
New York

Source: ALIS

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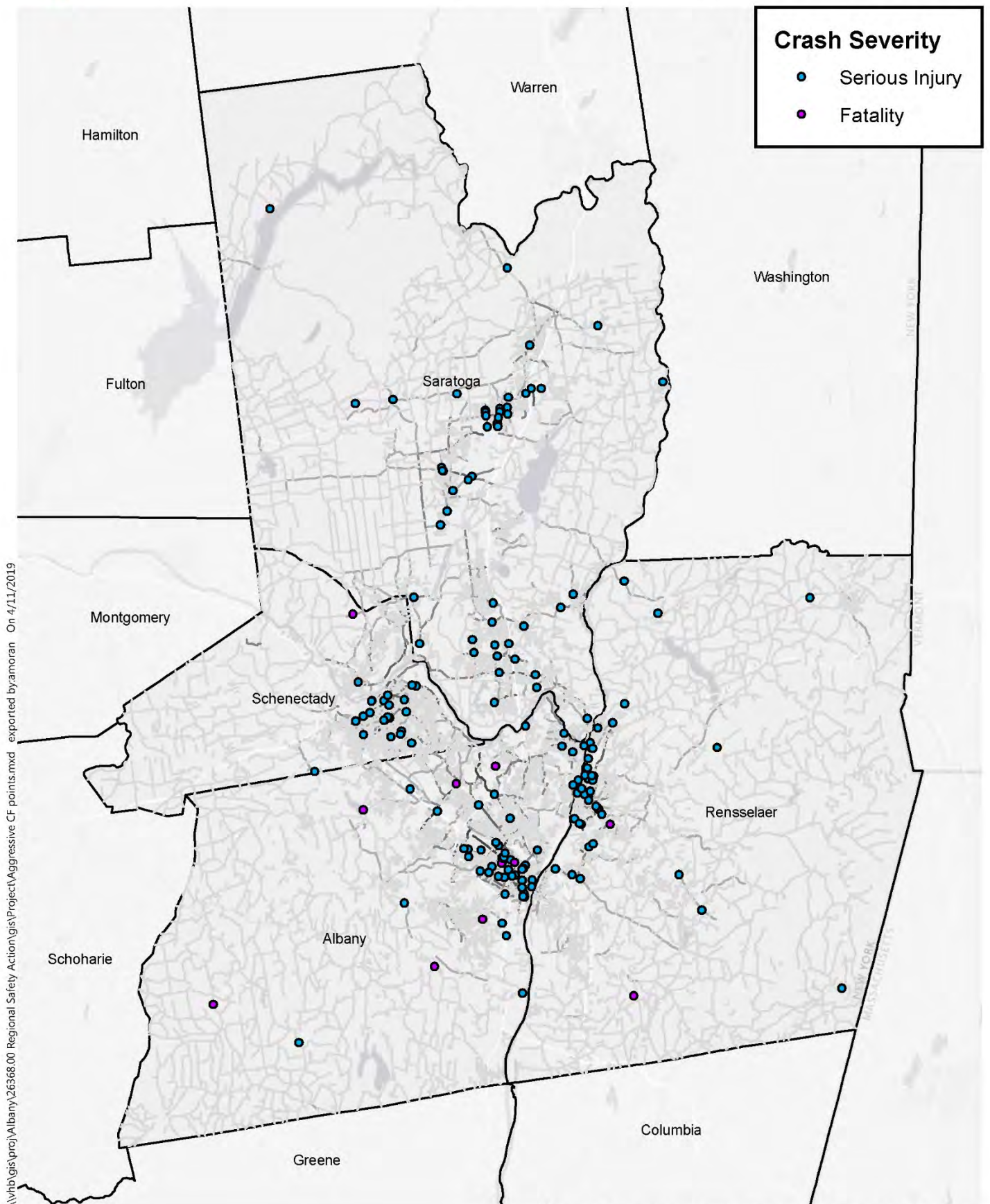
**Figure 6: Local Road Drowsy Driving Crashes**



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**Figure 7: Local Road Aggressive Driving Crashes**



Albany, Rensselaer, Saratoga, and Schenectady Counties  
New York

Source: ALIS

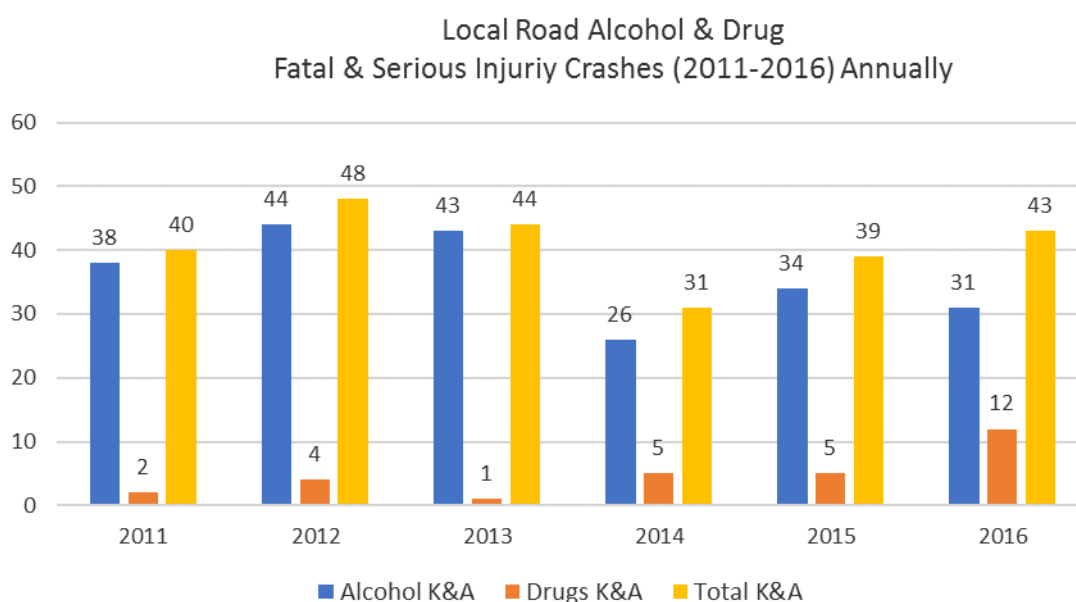
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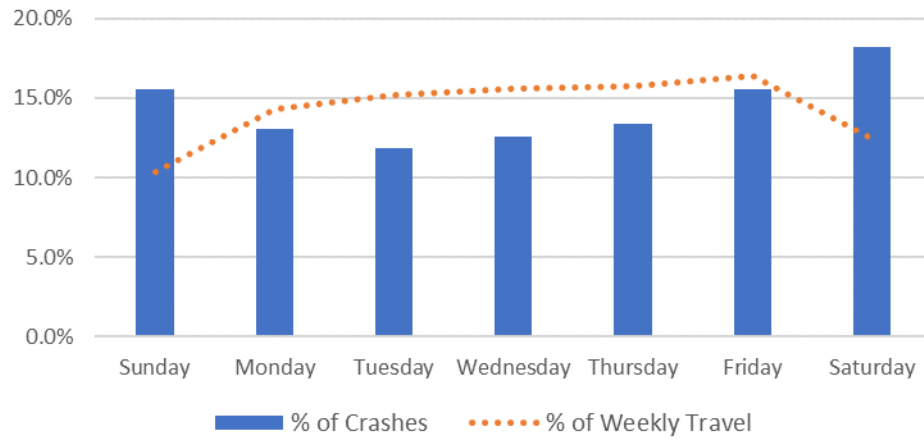
## Impaired Driving

Controlling a vehicle safely requires skills that are developed over time. Any impairment that hinders a drivers' ability to control their vehicle presents a safety risk to themselves and other roadway users. In 2016, 28 percent of fatalities across the United States were in alcohol-impaired-driving crashes. In the Capital District, from 2011 to 2016, there were 216 fatal and serious injury crashes that were alcohol-related and an additional 29 fatal and serious injury crashes related to drug-impairment. These fatal (K) and serious injury (A) crashes consistently occur, and are overrepresented, during evening and overnight hours, as well as over the weekend, between Friday and Sunday. Younger drivers are also over-represented in these crashes and are involved in 10 percent of the fatal and serious injury crashes in the Capital District.



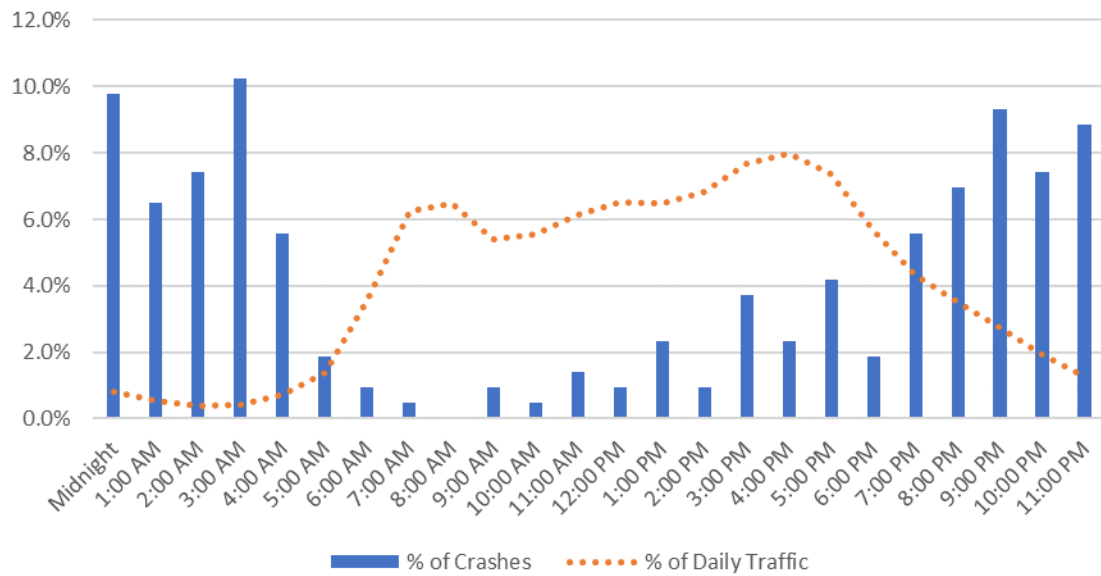
Source: ALIS

Local Road Alcohol & Drugs Fatal & Serious Injury Crashes  
(2011-2016) Day of Week



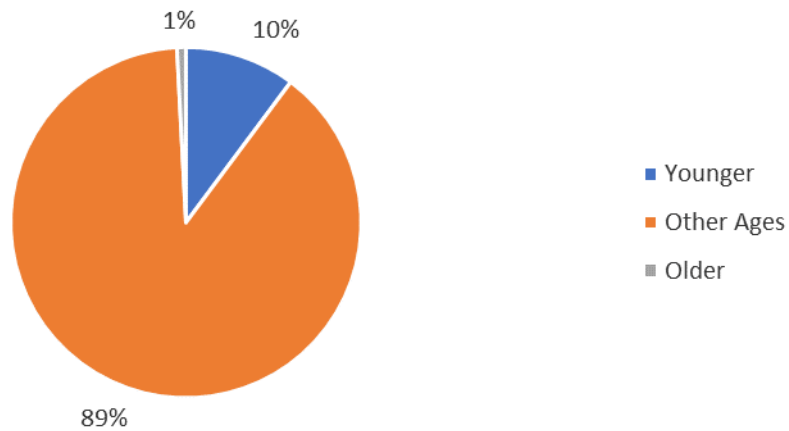
Source: ALIS and NYSDOT

Local Road Alcohol & Drugs Fatal & Serious Injury Crashes  
(2011-2016) Time of Day



Source: ALIS and NYSDOT

Local Road Alcohol & Drug Fatal & Serious Injury Crashes  
(2011-2016) Driver Age

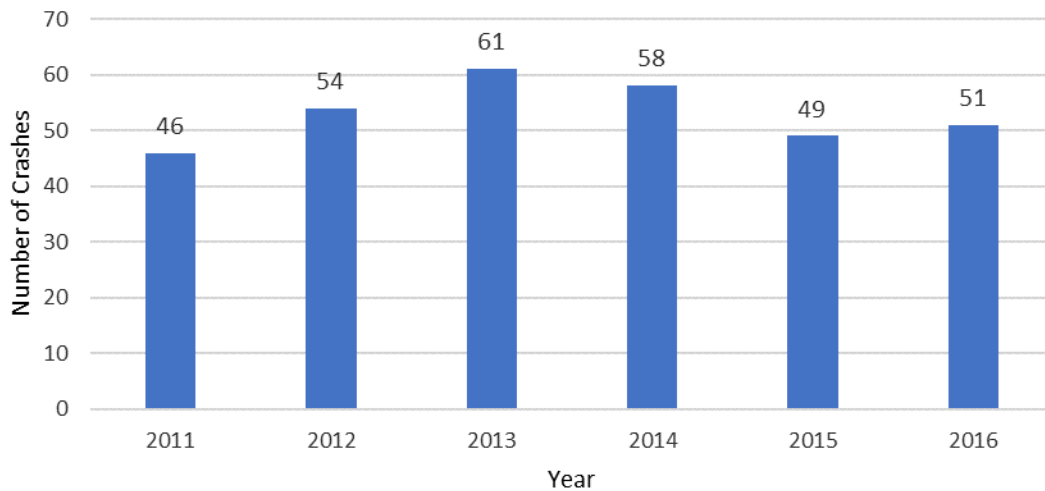


Source: ALIS

#### *Distracted Driving, Drowsy Driving, and Cell Phone Use/Texting*

A focused driver can assess circumstances and perceive certain risks associated with their surroundings. When a driver's focus is diminished, the chance of a crash increases. In the Capital District from 2011-2016, 319 fatal and serious injury crashes involved driver distraction. Over one-third, or 119 fatal and serious injury crashes, occurred in Albany County, while 32 were in Rensselaer County, 73 in Saratoga County, and 95 in Schenectady County. Nine out of ten of these fatal and serious injury crashes occurred in urban areas.

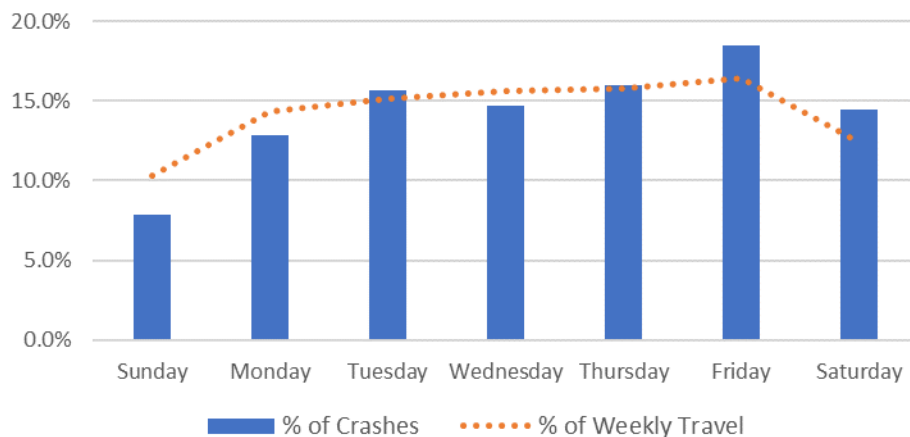
Local Road Distracted Fatal & Serious Injury Crashes  
(2011-2016) Annually



Source: ALIS

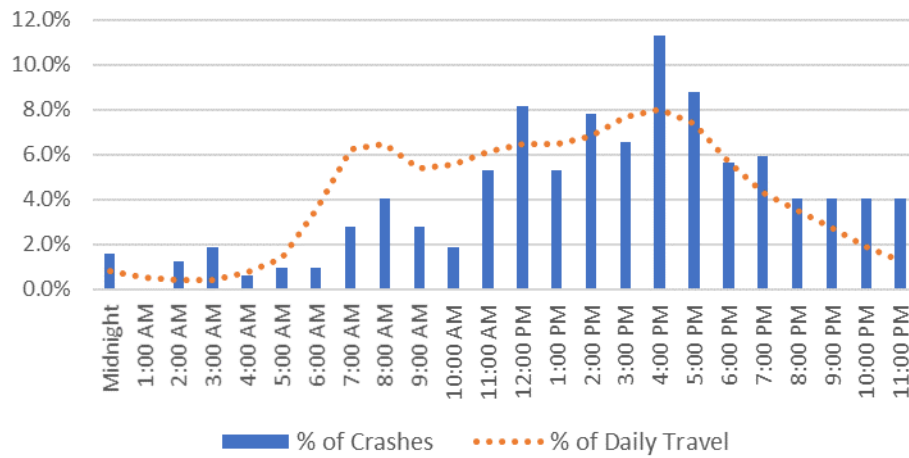
Review of the day of week and time of day of the fatal and serious injury crashes shows that distracted driving crashes occur more frequently on Fridays and are over-represented on Fridays and Saturdays. Review of the time of day data shows that the crashes peak from 4:00 to 5:00 PM and are over-represented for 12 hours of the 16 hours from 11:00 AM to 3:00 AM.

Local Road Distracted Driving Fatal & Serious Injury  
Crashes (2011-2016) Day of Week



Source: ALIS and NYSDOT

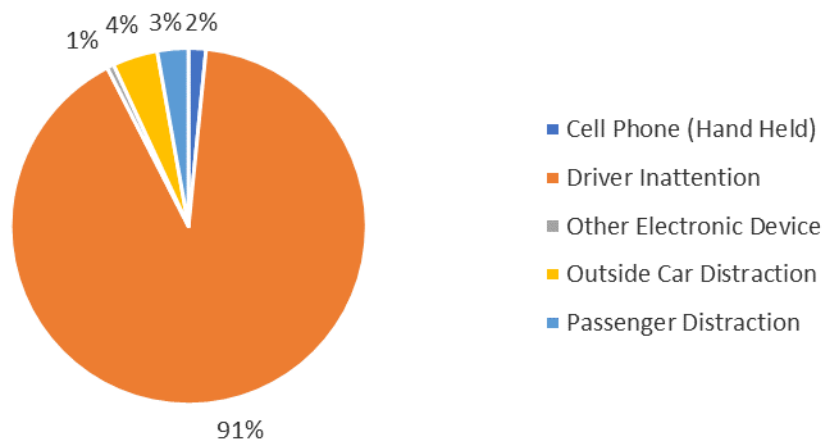
Local Road Distracted Driving Fatal & Serious Injury Crashes (2011-2016) Time of Day



Source: ALIS and NYSDOT

Most of the distracted driver crashes involved driver inattention. However, it is a challenge for law enforcement to determine the specific distraction of the driver.

Local Road Distracted Driver Fatal & Serious Injury Crashes (2011-2016) Type of Distraction



Source: ALIS

While distracted driving data is limited, recent Statewide studies conducted by the Institute for Traffic Safety Management and Research (ITSMR) help to show that distracted driving is an ongoing issue.



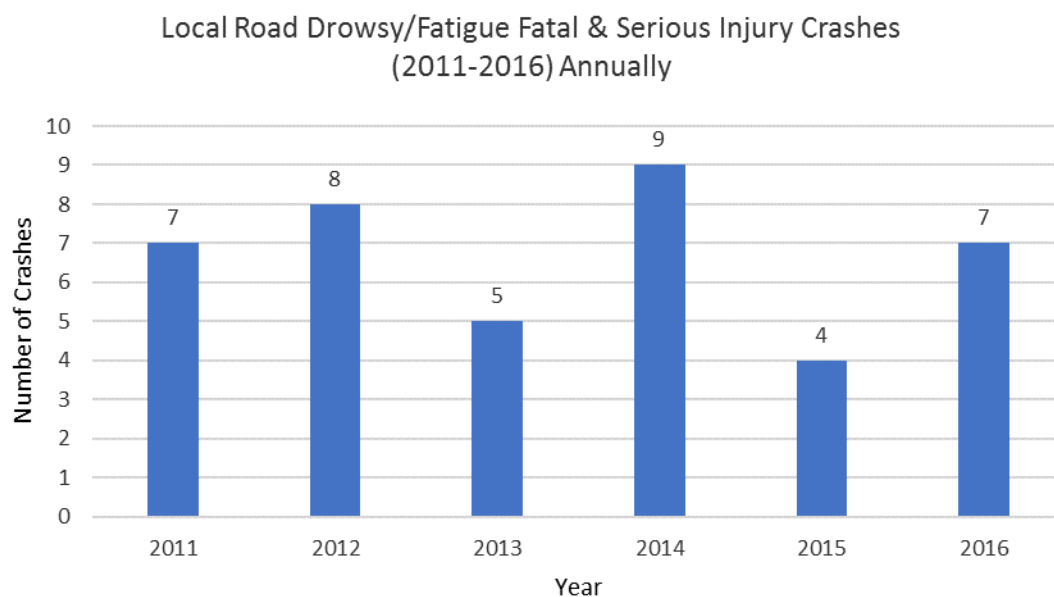
In a 2012, a study titled Cell Phone Use and Other Driver Distractions: A Status Report, it was found that:

- 15 percent of drivers observed were involved in some type of distracted driving behavior.
- 4 percent of drivers observed were using a cell phone while driving.

A study titled Crashes Involving Cell Phone Use and Distracted Driving was conducted in 2016 as an update to the 2012 study. The report included crash and ticket analyses summaries for 2011-2015:

- 22 percent of fatal and injury crashes had "driver inattention/distraction" reported as a contributing factor.
- 1.2 million tickets were issued for cell phone use or texting violations.
  - 67 percent of tickets were issued to males.
  - 51 percent of tickets were issued to drivers ages 21-39.

Drowsy driving statistics are also limited; only 40 fatal and serious injury crashes were documented in 2011-2016 as involving a drowsy driver. Two-thirds of these occurred in urban areas and there were a slightly greater number during the afternoon peak-hour period.

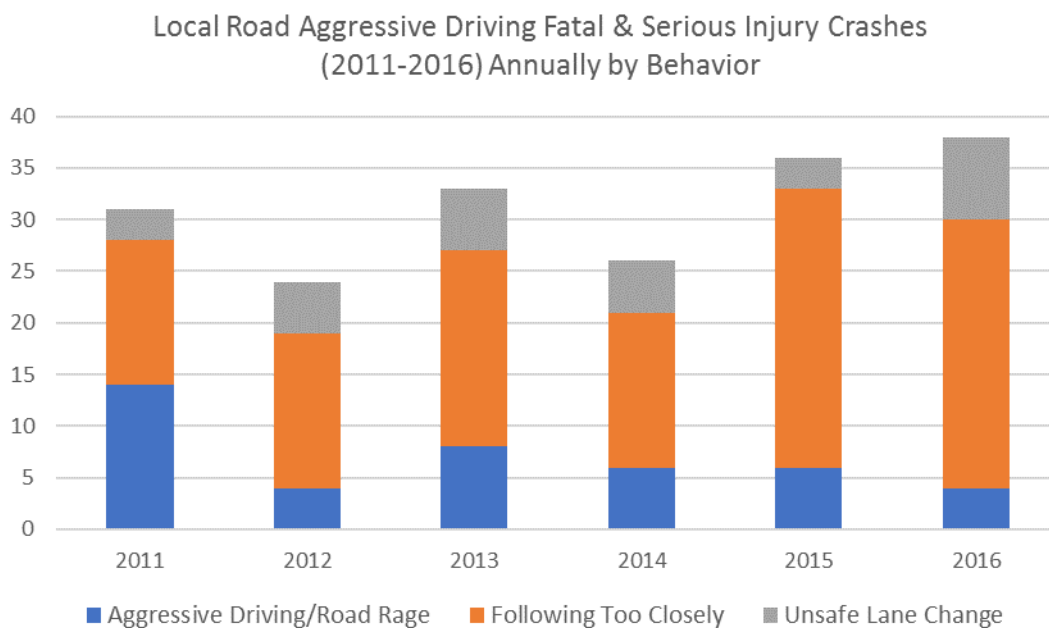


Source: ALIS

### *Aggressive Driving*

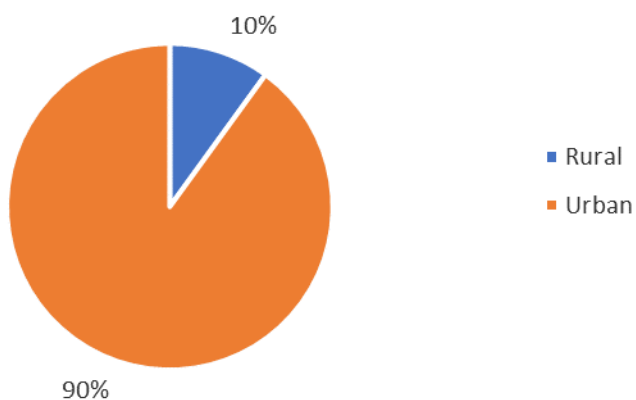
In the Capital District, from 2011 to 2016, there were 177 fatal and serious injury crashes that were related to aggressive driving. The following charts show that aggressive

driving fatal and serious injury crashes are trending upward; especially crashes associated with following too closely. The aggressive driving crashes primarily occur in urban areas.



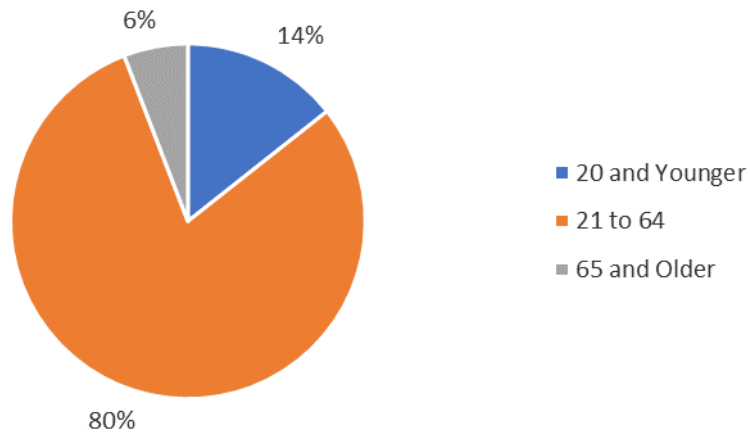
Source: ALIS

**Local Road Aggressive Driving Fatal & Serious Injury Crashes (2011-2016) Urban/Rural**



Source: ALIS

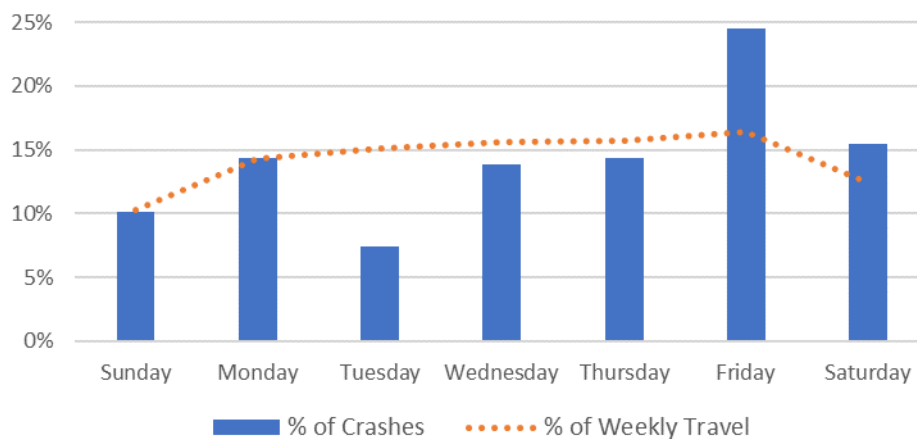
Local Road Aggressive Driving Fatal & Serious Injury Crashes (2011-2016) Driver Age



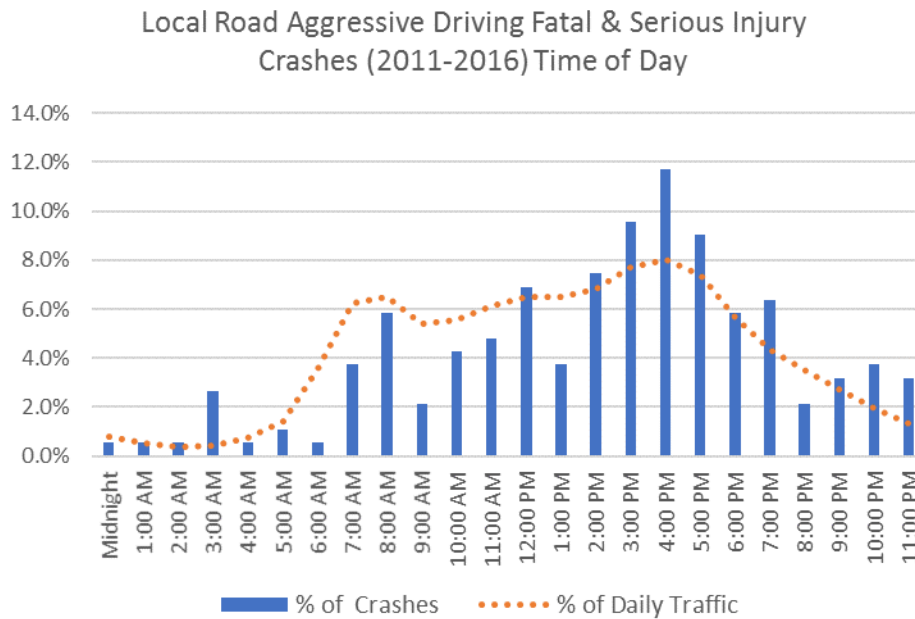
Source: ALIS

The following charts show that aggressive driving fatal and serious injury crashes peak on Fridays and are over-represented when compared to typical travel on Friday and Saturday. In addition, the crashes peak during the afternoon from 3:00 to 6:00 PM and are generally over-represented from 3:00 to 11:00 PM and again at 3:00 AM.

Local Road Aggressive Driving Fatal & Serious Injury Crashes (2011-2016) Day of Week



Source: ALIS and NYSDOT



*Source: ALIS and NYSDOT*

### Municipal Emphasis

To provide a more local emphasis, the number of fatal and serious injury crashes for the four road user behaviors are summarized by county. Table 7 shows the road user behavior by county.

**Table 7 – Impaired, Distracted, Drowsy, and Aggressive Local Road Crashes by County**

County	Road User Behavior			
	Impaired	Distracted	Drowsy	Aggressive
Albany	83	119	12	63
Rensselaer	43	32	3	45
Saratoga	80	73	16	56
Schenectady	39	95	9	24
Total	245	319	40	188

Based on the county breakdown, the number of impaired, distracted, and aggressive driver behavior crashes were further broken down by municipality. Table 8 illustrates the number of crashes and identifies communities that are over-represented when compared to municipal population by at least 1% in **bold**. The table shows that the cities of Albany, Troy, Saratoga Springs, and Schenectady are over-represented for all three of the impaired, distracted, and aggressive driving crashes. Other communities in

the Capital District shown in Table 8 are over-represented for at least one of these driver behaviors.

**Table 8 – Road User Behavior Fatal and Serious Injury Local Road Crash Over-Representation by Municipality**

<b>Municipality</b>	<b>% of County Population</b>	<b>Impaired Driver</b>		<b>Distracted Driver</b>		<b>Aggressive Driver</b>	
		<b>Number</b>	<b>%</b>	<b>Number</b>	<b>%</b>	<b>Number</b>	<b>%</b>
<b>Albany County</b>		<b>83</b>		<b>119</b>		<b>63</b>	
<u>Cities:</u> Albany	29.9%	42	<b>50.6%</b>	60	<b>50.4%</b>	36	<b>57.1%</b>
Cohoes	5.1%	2	2.4%	7	5.9%	4	<b>6.3%</b>
Watervliet	3.1%	2	2.4%	8	<b>6.7%</b>	0	0.0%
<u>Towns:</u> New Scotland	2.7%	4	<b>4.8%</b>	2	1.7%	1	1.6%
Rensselaerville	0.6%	0	0.0%	1	0.8%	1	<b>1.6%</b>
Westerlo	1.0%	4	<b>4.8%</b>	1	0.8%	1	1.6%
<b>Rensselaer County</b>		<b>43</b>		<b>32</b>		<b>45</b>	
<u>Cities:</u> Rensselaer	5.6%	1	2.3%	3	<b>9.4%</b>	1	2.2%
Troy	29.6%	14	<b>32.6%</b>	11	<b>34.4%</b>	28	<b>62.2%</b>
<u>Towns:</u> Brunswick	7.6%	4	<b>9.3%</b>	5	<b>15.6%</b>	0	0.0%
Grafton	1.3%	1	<b>2.3%</b>	1	<b>3.1%</b>	1	2.2%
Hoosick	4.1%	5	<b>11.6%</b>	1	3.1%	1	2.2%
North Greenbush	7.3%	0	0.0%	4	<b>12.5%</b>	4	<b>8.9%</b>
Petersburgh	0.9%	1	2.3%	0	0.0%	0	0.0%
Sand Lake	5.1%	1	2.3%	2	<b>6.3%</b>	1	2.2%
Schaghticoke	4.6%	1	2.3%	0	0.0%	3	<b>6.7%</b>
Schodack	7.8%	2	4.7%	1	3.1%	1	2.2%
Stephentown	1.7%	5	<b>11.6%</b>	2	<b>6.3%</b>	1	2.2%
<u>Villages:</u> Hoosick Falls	0.3%	3	<b>7.0%</b>	1	<b>3.1%</b>	0	0.0%
Schaghticoke	0.4%	0	0.0%	0	0.0%	1	<b>2.2%</b>
<b>Saratoga County</b>		<b>80</b>		<b>73</b>		<b>56</b>	
<u>Cities:</u> Mechanicville	2.3%	3	<b>3.8%</b>	0	0.0%	1	1.8%
Saratoga Springs	12.3%	15	<b>18.8%</b>	19	<b>26.0%</b>	18	<b>32.1%</b>
<u>Towns:</u> Ballston	4.7%	3	3.8%	5	<b>6.8%</b>	3	5.4%
Clifton Park	16.2%	10	12.5%	6	8.2%	11	<b>19.6%</b>
Day	0.4%	0	0.0%	2	<b>2.7%</b>	0	0.0%
Greenfield	3.4%	4	<b>5.0%</b>	5	<b>6.8%</b>	2	3.6%
Hadley	0.9%	3	<b>3.8%</b>	0	0.0%	0	0.0%
Halfmoon	10.6%	12	<b>15.0%</b>	0	0.0%	6	10.7%
Malta	7.0%	6	7.5%	7	<b>9.6%</b>	2	3.6%
Milton	8.5%	8	<b>10.0%</b>	7	<b>9.6%</b>	3	5.4%
Stillwater	3.8%	6	<b>7.5%</b>	1	1.4%	0	0.0%
Waterford	3.8%	0	0.0%	6	<b>8.2%</b>	1	1.8%
Wilton	7.4%	4	5.0%	8	<b>11.0%</b>	3	5.4%
<b>Schenectady County</b>		<b>39</b>		<b>95</b>		<b>24</b>	
<u>Cities:</u> Schenectady	39.9%	26	<b>66.7%</b>	67	<b>70.5%</b>	17	<b>70.8%</b>
<u>Towns:</u> Duanesburg	3.8%	3	<b>7.7%</b>	1	1.1%	0	0.0%
Niskayuna	13.8%	2	5.1%	15	<b>15.8%</b>	2	8.3%
Princeton	1.3%	0	0.0%	0	0.0%	1	<b>4.2%</b>



### Emphasis Area Goal

Reduce driver behavior fatal and serious injury crashes through implementation of engineering, education, and enforcement strategies.

### Conclusions

Review of the data reveals the following about fatal and serious injury road user behavior crashes:

- Approximately 14 percent of all fatal and serious injury crashes are associated with impaired driving, 18 percent involve distracted driving, and 10 percent involve aggressive driving
- Aggressive driving fatal and serious injury crashes are trending upward; especially Following too Closely
- Impaired, distracted, and aggressive driver crashes occur primarily in urban areas
- Road User Behavior crashes involve drivers of all ages

Based on the data evaluation and above findings, crash reduction strategies have been identified for potential implementation. In an effort to reach the emphasis area goal, the strategies that have the potential to provide the greatest crash reduction should be prioritized.

### Strategies and Actions

There are 13 actions in support of this emphasis area. Four strategies (Program, Engineering, Education, Enforcement) identify supporting actions, the appropriate agencies needed to complete the actions, and which of the contributing factors (environmental, roadway, behavior) are targeted.

Many of the engineering actions for high risk driver behavior crashes are applicable to multiple emphasis areas. Refer to the engineering strategies for Intersection, Lane Departure, Speed Related, and Age-Related crashes for additional recommendations.

The following actions should be considered for implementation as resources allow.

**Program:** Create a program to identify **high risk driver behavior** contributing factors.

Program Action	Lead Agency / Partners	Focus
Encourage the use of coordinated high-visibility enforcement activities addressing high-risk driving behavior, particularly on weekends and evenings for alcohol and drugged-related crashes	Law Enforcement	Behavioral
Continue to support the STOP-DWI program	Law Enforcement	Behavioral
Continue to support the "See! Be Seen!" campaign	GTSC	Behavioral
Develop a Distracted Driver program using available information	GTSC	Behavioral
Continue to support programs and social media messaging to educate all drivers on safe driving habits, particularly with younger drivers	CDTC	Behavioral
Develop improved documentation techniques for identifying and reporting drivers exhibiting risky behaviors	GTSC, Law Enforcement	Enforcement

**Engineering:** Implement engineering improvements to mitigate high risk driver behavior

Engineering Action	Lead Agency / Partners	Focus
Implement roadway improvements to reduce distracted/drowsy crashes (flashing beacons at stop-controlled intersections, rectangular rapid flashing beacons for pedestrians, edge-line rumble strips, etc.)	County, Municipal	Roadway
Strategically use dynamic messaging boards to discourage unsafe driving habits	County, Municipal	Roadway, Behavioral

**Education:** Develop education and training materials related to risky driver behaviors.

Education Action	Lead Agency / Partners	Focus
Conduct impaired driving training for law enforcement personnel, including the Drug Recognition Expert (DRE) and Advanced Roadside Impaired Driving Enforcement (ARIDE) training programs	Law enforcement / GTSC	Behavioral
Continue to collaborate with partners in order to increase awareness of alcohol and drug impairment	CDTC / GTSC	Behavioral

**Enforcement:** Continue enforcement of traffic laws that reduce risky driver behavior

Enforcement Action	Lead Agency / Partners	Focus
Identify annually high priority locations and efficiently deploy resources to affect driver behavior	GTSC / Law Enforcement	Behavioral
Utilize GTSC Law Enforcement Liaisons (LELs) to improve participation from law enforcement entities in traffic enforcement activities	GTSC / Law Enforcement	Behavioral
Enforce the use of Alcohol Ignition Interlocks	Law Enforcement	Behavioral

## Age-Related

The Capital District identifies younger drivers as those that are 20 and younger. Drivers that are 65 and older represent the older driver group. Nationally, older and younger drivers have higher crash rates per mile traveled. Age is not the only variable when exploring why a person is involved in a crash, but a benchmark used for identification. Numerous factors can contribute to the propensity for younger or older drivers to be involved in a fatal or serious injury crash, as shown in Table 9. When describing age-related factors, person-level factors are also included.

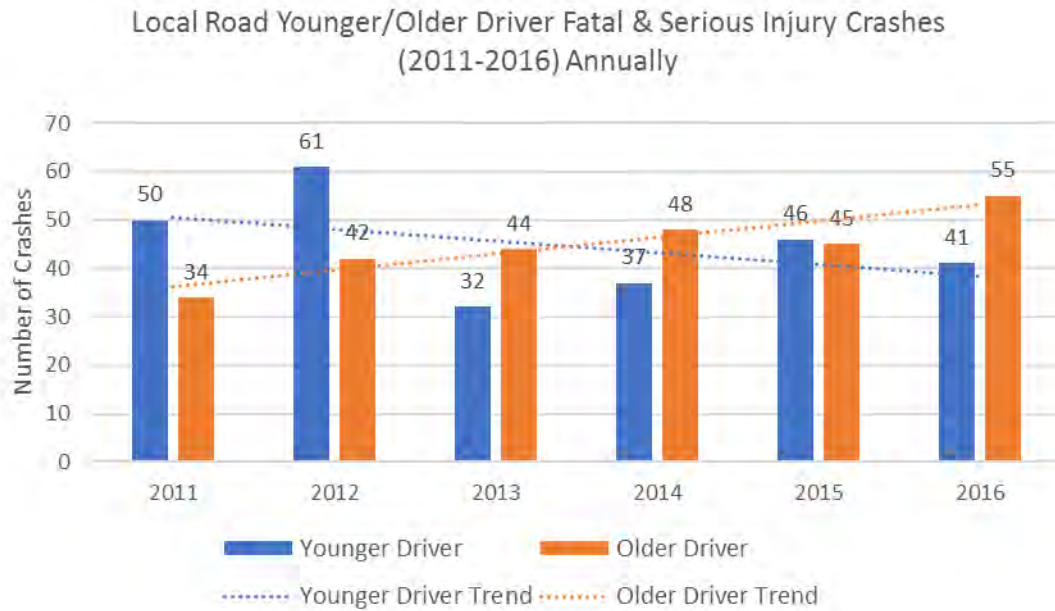
**Table 9 – Age-Related Crash Contributing Factors**

<b>Contributing Factor</b>	<b>Examples</b>
Roadway Condition	Lighting Roadway/intersection clutter
Environmental Condition	Landscaping/vegetation reducing visibility Weather reducing visibility
Driver Behaviors	Distracted driving Impaired driving Speeding
Person-Level Factors	Frailty Inexperience Medical conditions Mobility Reaction Time Vision

Countermeasures that can address age-related contributing factors include reducing the potential for confusion, providing proper signing, and targeted education and outreach.

For younger drivers, their higher rates of involvement often are attributed to inexperience and/or an increased propensity for risk taking. For older drivers, diminishing abilities and crash survivability are key factors to consider. The Capital District will focus on assisting both new or maturing drivers to be as safe as possible by providing education, resources, and programs to guide them on their mobility journey.

From 2011-2016, 535 of the total 1,810 fatal or serious injury crashes involved drivers in both age groups equating to approximately 30 percent of all fatal and serious injury crashes. Review of the chart shows that older driver crashes appear to be increasing as younger driver crashes are decreasing.

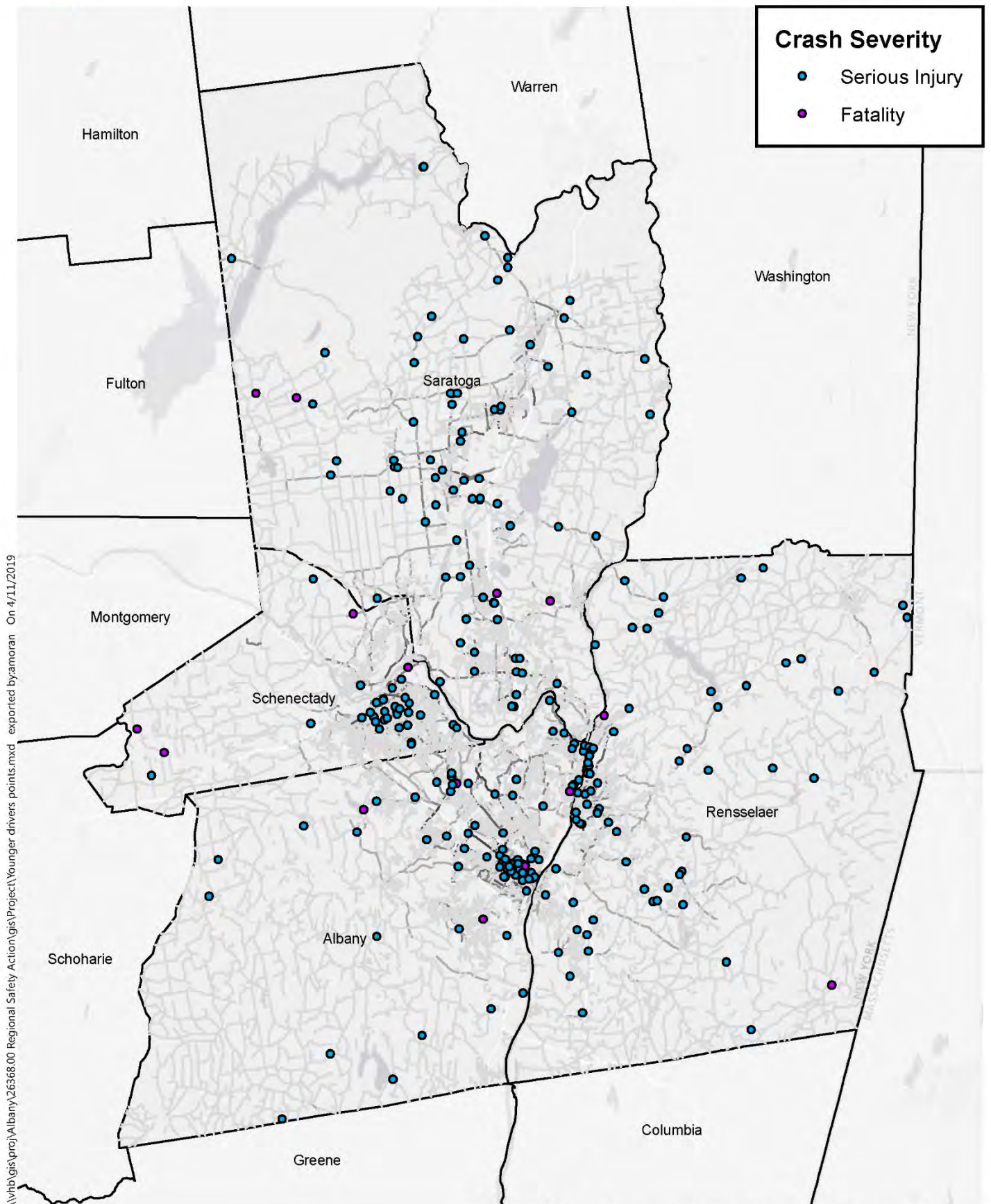


*Source: ALIS*

### Defining the Problem

A detailed look at the data on age-related fatal and serious injury crashes on local roads in the Capital District can assist with the identification and implementation of strategies and actions to mitigate younger and older driver crashes that are overrepresented. Figures 8 and 9 illustrate the locations of younger and older driving crashes in the Capital District.

**Figure 8: Local Road Younger Driver Crashes**



Albany, Rensselaer, Saratoga, and Schenectady Counties

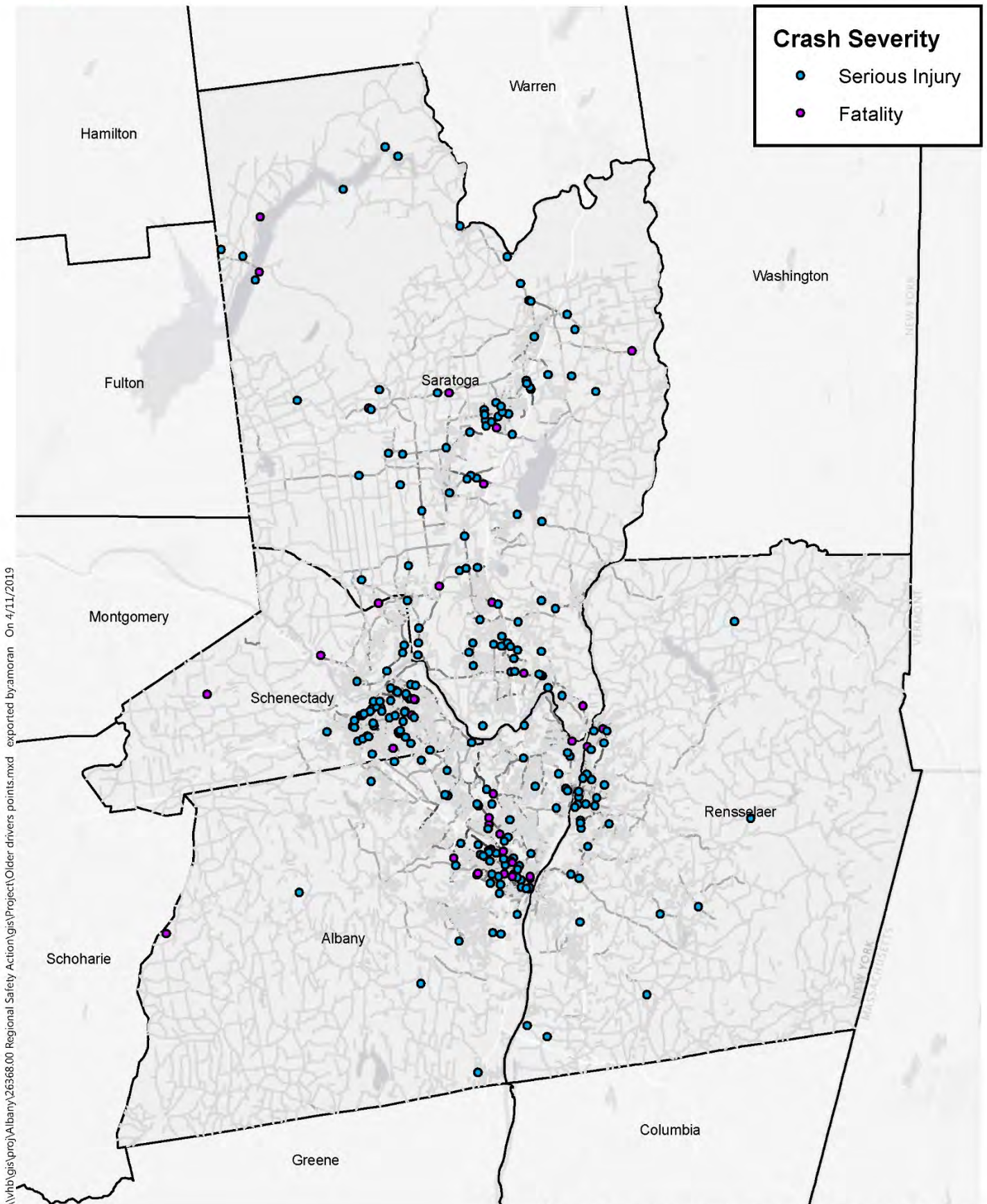
New York

Source: ALIS

April 11, 2019



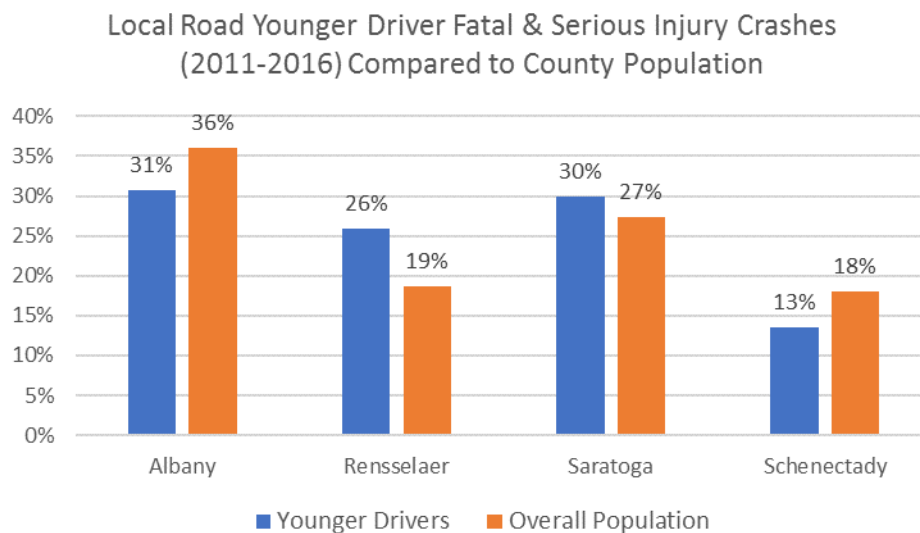
**Figure 9: Local Road Older Driver Crashes**



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### Younger Drivers

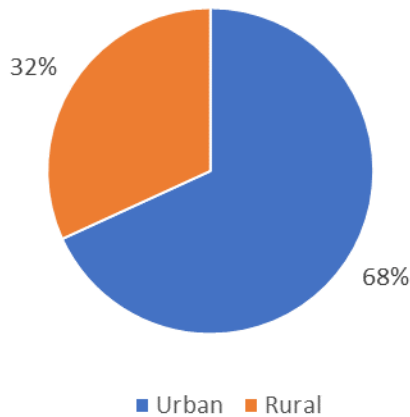
Younger drivers are over-represented in fatal and serious injury crashes relative to the number of licensed drivers in the age group. From 2011-2016, 267 younger drivers were involved in fatal and serious injury motor vehicle crashes. Many of these crashes were associated with distracted driving and speeding. Drivers in all age groups are not immune to risky behavior while navigating our roadways. However, risk-taking for younger drivers or inexperienced drivers is compounded by the fact that they are still in the 'learning' stages concerning the 'rules of the road' and physical factors related to their vehicle and environment. Fatalities and serious injuries from crashes involving younger drivers are often a result of contributing circumstances that correspond to either risk-taking behavior or inexperience. The distribution of the fatal and serious injury crashes within the four counties in the Capital District are as follows: 82 in Albany County, 69 in Rensselaer County, 80 in Saratoga County, and 36 in Schenectady County. The following chart shows that fatal and serious injury crashes involving younger drivers are over-represented in Rensselaer and Saratoga Counties when compared to overall population in each County. For example, younger drivers represent 19 percent of the population in Rensselaer County, but represent 26 percent of the fatal and serious injury crashes.



Source: ALIS

The following chart illustrates that a high percent (68%) of the younger driver fatal and serious injury crashes occurred within urban areas of the four counties.

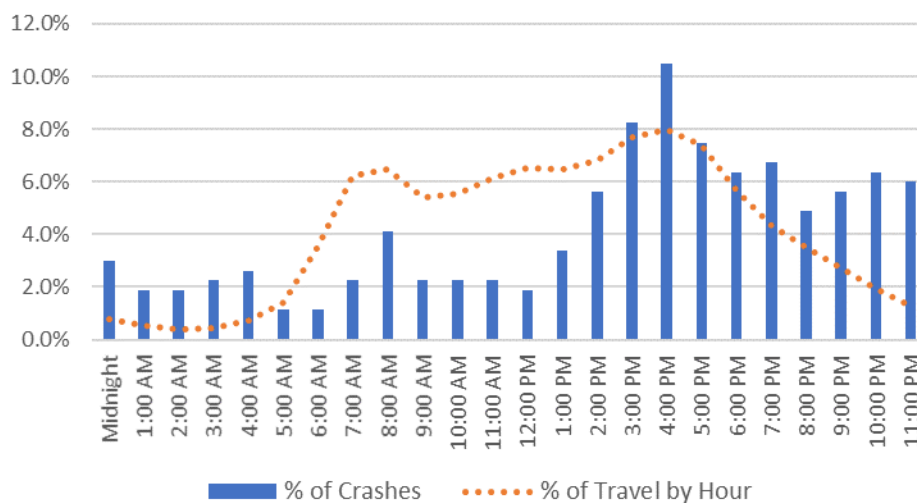
Local Road Younger Driver Fatal & Serious Injury Crashes  
(2011-2016) Urban/Rural



Source: ALIS

The chart below shows that younger driver crashes generally occur between 3:00 PM and 11:00 PM and are over-represented from 7:00 PM to 4:00 AM. It is noted that the % of "Travel by Hour" is based on drivers of all ages, not just younger drivers. The crash trend for younger drivers is consistent with travel patterns of younger drivers with a spike in crashes in the afternoon/evenings when young drivers are more likely to be on the roadway network (i.e., not in school).

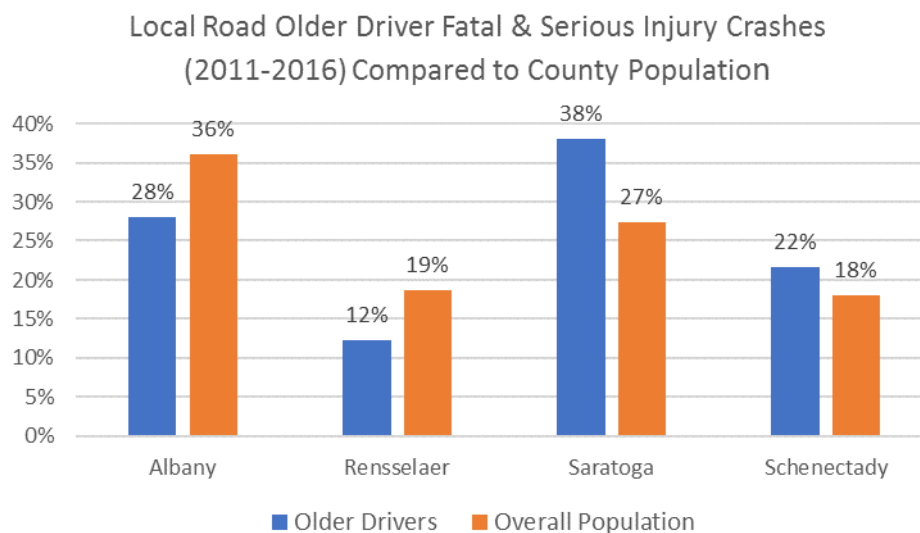
Local Road Younger Driver Fatal & Serious Injury Crashes  
(2011-2016) Time of Day



Source: ALIS and NYSDOT

### Older Drivers

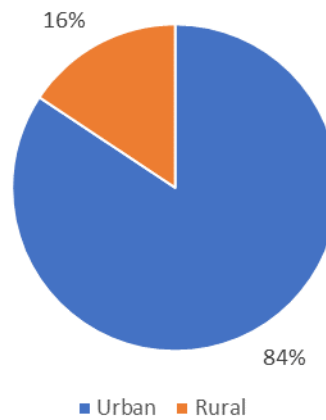
Crash survivability and the possibility of diminishing abilities of older drivers are factors to consider in fatal and serious injury crashes involving older drivers. During the six-year period, 268 older drivers were involved in fatal or serious injury crashes. The distribution of the fatal and serious injury crashes by county were: 75 in Albany County, 33 in Rensselaer County, 102 in Saratoga County, and 58 in Schenectady County. The following chart shows that fatal and serious injury crashes involving older drivers are over-represented in Saratoga and Schenectady Counties when compared to overall population in each County, with Saratoga County showing the most over-representation of older driver crashes.



Source: ALIS and CDTC

The following chart illustrates that a high percent (84%) of the older driver fatal and serious injury crashes occurred within urban areas of the four counties.

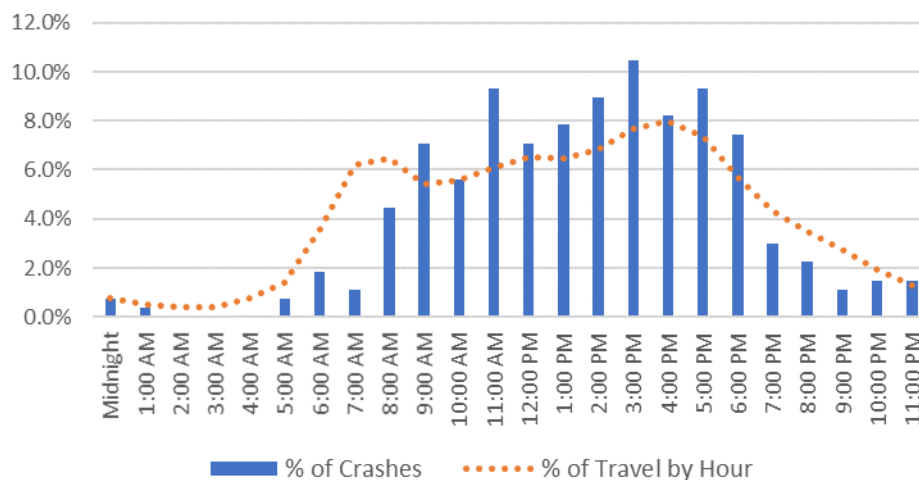
Local Road Older Driver Fatal & Serious Injury Crashes  
(2011-2016) Urban/Rural



Source: ALIS

Review of the time of day data shows that older driver crashes generally occur between the hours of 8:00 AM and 6:00 PM, which typically correspond to daylight hours rather than dark conditions. The chart shows that older driver crashes are over-represented from 9:00 AM to 6:00 PM. This is consistent with the hours of the day that older drivers tend to travel since they generally self-regulate to travel during daytime off-peak hours.

Local Road Older Driver Fatal & Serious Injury Crashes  
(2011-2016) Time of Day



Source: ALIS and NYSDOT

### Municipal Emphasis

To provide a more local emphasis, the number of fatal and serious injury crashes in each municipality was compared to the population. Table 10 illustrates the number of older and younger driver crashes and identifies communities that were over-represented when compared to municipal population by at least 1% in **bold**. The table shows that the City of Albany, the Town of Sand Lake, Town of Ballston, Town of Hadley, City of Schenectady, and Town of Niskayuna are all over-represented for both older and younger driver fatal and serious injury crashes.



**Table 10 – Age-Related Fatal and Serious Injury Local Road Crash Over-Representation by Municipality**

Municipality	% of County Population	Older Driver		Younger Driver	
		Number	% County	Number	% County
<b>Albany County</b>		<b>75</b>		<b>82</b>	
<u>Cities:</u> Albany	29.9%	36	<b>48.0%</b>	34	<b>41.5%</b>
Cohoes	5.1%	3	4.0%	6	<b>7.3%</b>
<u>Towns:</u> Berne	0.9%	2	<b>2.7%</b>	0	0.0%
Colonie	25.3%	20	<b>26.7%</b>	15	18.3%
Knox	0.8%	0	0.0%	2	<b>2.4%</b>
Westerlo	1.0%	0	0.0%	2	<b>2.4%</b>
<b>Rensselaer County</b>		<b>33</b>		<b>69</b>	
<u>Cities:</u> Troy	29.6%	21	<b>63.6%</b>	21	30.4%
<u>Towns:</u> Grafton	1.3%	0	0.0%	2	<b>2.9%</b>
Hoosick	4.1%	0	0.0%	4	<b>5.8%</b>
North Greenbush	7.3%	3	<b>9.1%</b>	2	2.9%
Pittstown	3.4%	1	3.0%	5	<b>7.2%</b>
Poestenkill	2.7%	1	3.0%	3	<b>4.3%</b>
Sand Lake	5.1%	2	<b>6.1%</b>	5	<b>7.2%</b>
Schaghticoke	4.6%	0	0.0%	7	<b>10.1%</b>
Schodack	7.8%	3	<b>9.1%</b>	3	4.3%
Stephentown	1.7%	0	0.0%	2	<b>2.9%</b>
<u>Villages:</u> Schaghticoke	0.4%	0	0.0%	1	1.4%
<b>Saratoga County</b>		<b>102</b>		<b>80</b>	
<u>Cities:</u> Saratoga Springs	12.3%	17	<b>16.7%</b>	7	8.8%
<u>Towns:</u> Ballston	4.7%	6	<b>5.9%</b>	6	<b>7.5%</b>
Clifton Park	16.2%	19	<b>18.6%</b>	12	15.0%
Corinth	2.8%	1	1.0%	4	<b>5.0%</b>
Edinburg	0.5%	5	<b>4.9%</b>	1	1.3%
Galway	1.6%	1	1.0%	2	<b>2.5%</b>
Greenfield	3.4%	4	3.9%	7	<b>8.8%</b>
Hadley	0.9%	2	<b>2.0%</b>	2	<b>2.5%</b>
Halfmoon	10.6%	12	<b>11.8%</b>	7	8.8%
Malta	7.0%	7	6.9%	7	<b>8.8%</b>
Milton	8.5%	5	4.9%	9	<b>11.3%</b>
Providence	0.9%	1	1.0%	4	<b>5.0%</b>
Wilton	7.4%	13	<b>12.7%</b>	6	7.5%
<b>Schenectady County</b>		<b>58</b>		<b>36</b>	
<u>Cities:</u> Schenectady	39.9%	31	<b>53.4%</b>	23	<b>63.9%</b>
<u>Towns:</u> Duanesburg	3.8%	1	1.7%	3	<b>8.3%</b>
Niskayuna	13.8%	11	<b>19.0%</b>	6	<b>16.7%</b>

### Emphasis Area Goal

Reduce age-related fatal and serious injury crashes through implementation of engineering, education, and enforcement strategies.

## Conclusions

Review of the data reveals the following about fatal and serious injury younger and older driver crashes:

- Approximately 30 percent of all fatal and serious injury crashes
- Approximately 68 percent of younger driver crashes and 84 percent of older driver crashes occurred on urban roads
- Younger driver crashes are over-represented in Rensselaer and Saratoga Counties when compared to overall population
- Younger driver crashes are over-represented during night time conditions from 7:00 PM to 4:00 AM.
- Older driver crashes are over-represented in Saratoga and Schenectady Counties when compared to overall population.
- Older driver crashes primarily occur during daytime and are over-represented from 9:00 AM to 6:00 PM.

## Strategies and Actions

There are 12 actions in support of this emphasis area. Four strategies (Program, Engineering, Education, Enforcement) identify supporting actions, the appropriate agencies needed to complete the actions, and which of the contributing factors (environmental, roadway, behavior) are targeted.

Many of the engineering actions for age-related crashes are applicable to multiple emphasis areas. Refer to the engineering strategies for Intersection and Lane Departure crashes for additional recommendations.

The following actions should be considered for implementation as resources allow.

**Program:** Create a program to reduce **age-related** crashes.

Program Action	Lead Agency / Partners	Focus
Support programs and social media messaging to educate younger drivers and their parents	DOH / School Districts	Behavioral
Support programs and social media messaging to educate drivers as they age and their families	DOH / GTSC, New York State Office for the Aging (NYSOFA)	Behavioral
Support the at-risk driver improvement referral program	CDTC / DMV	Behavioral
Promote use of the GTSC Young Driver Tool-kit	GTSC, DOH / School Districts	Behavioral

**Engineering:** Implement engineering designs to accommodate users of all ages.

Engineering Action	Lead Agency / Partners	Focus
Consider latest research and guidance including FHWA's Handbook for Designing Roadways for the Aging Population	County, Municipal	Roadway
Install signage with larger typeface and/or with improved retro-reflectivity <sup>1</sup>	County, Municipal	Roadway
Install roadway lighting	County, Municipal	Roadway

**Education:** Develop safe-driving education initiatives for at-risk age groups.

Education Action	Lead Agency / Partners	Focus
Educate users about new traffic control devices and technology	Department of Health (DOH)	Behavioral
Conduct safe driving awareness campaigns for night time driving, speeding, and distracted driving by younger drivers	DOH / School Districts	Behavioral
Conduct older driver awareness initiatives	DOH / GTSC, New York State Office for the Aging (NYSOFA)	Behavioral

**Enforcement:** Improve enforcement efforts to address age-appropriate driving issues.

Enforcement Action	Lead Agency / Partners	Focus
Encourage the enforcement of graduated driving licensing laws	Law Enforcement	Behavioral
Educate law enforcement to recognize drivers with declining abilities and/or at-risk medical conditions	Law Enforcement	Behavioral

<sup>1</sup> Retro-reflective material enhances visibility by bouncing light back to the original source where in comparison reflective material bounces light back at the approach angle.

## Vulnerable Users – Pedestrians and Bicyclists

Roads can differ vastly in characteristics such as traffic volumes, number of lanes, functional classification, and with regards to the types of users that share it on a daily basis. The users of the road change continuously, with varying trip purposes and vehicle types; yet, some users have a greater risk of injury than others. These vulnerable users include pedestrians, bicyclists, motorcyclists, and those in work zones. Table 11 shows the total number of vulnerable user fatal and serious injury crashes in the Capital District from 2011 to 2016.

**Table 11 – Local Road Vulnerable Users Local Road Crashes by Severity**

Vulnerable User Group	Year						Total
	2011	2012	2013	2014	2015	2016	
<b>Pedestrian</b>							
Fatality	5	5	7	3	6	5	31
Serious Injury	47	38	35	39	39	40	238
<b>Bicyclist</b>							
Fatality	1	1	0	2	0	1	5
Serious Injury	15	16	18	18	16	15	98
<b>Motorcyclist*</b>							
Fatality	6	7	0	4	8	6	31
Serious Injury	33	45	40	27	47	35	227
<b>Total</b>	107	112	100	93	116	102	630

\*Motorcyclist summary is included in a separate section

Driving conditions in work zones are unlike normal driving conditions and can change depending on the work zone. Contributing factors to work zone crashes and intrusions may include a lack of knowledge of appropriate work zone driving actions, failure to obey traffic laws, and unawareness of the work zone and its workers. Of the 1,810 fatal and serious injury crashes, 6 occurred at a highway work area, maintenance work area, or police/fire emergency. While work zone crashes are not considered an emphasis area for the Capital District, they are included as a subset of the vulnerable road users and many of the actions apply to work zone crashes as well.

### Pedestrians and Bicyclists

With health and environmental benefits, walking and bicycling can be great alternatives to driving; however, with a smaller footprint and greater speed differential, they are also more susceptible to serious injuries and fatalities when involved in a collision with a motor vehicle. All drivers are required to pass a driving exam to obtain a license (although most took the test as teenagers and there are no educational requirements for maintaining a license over time); however, no such education or licensure is mandatory to walk or bike along the roadway. This knowledge gap can lead to confusion between drivers and pedestrians/bicyclists and can contribute to pedestrians

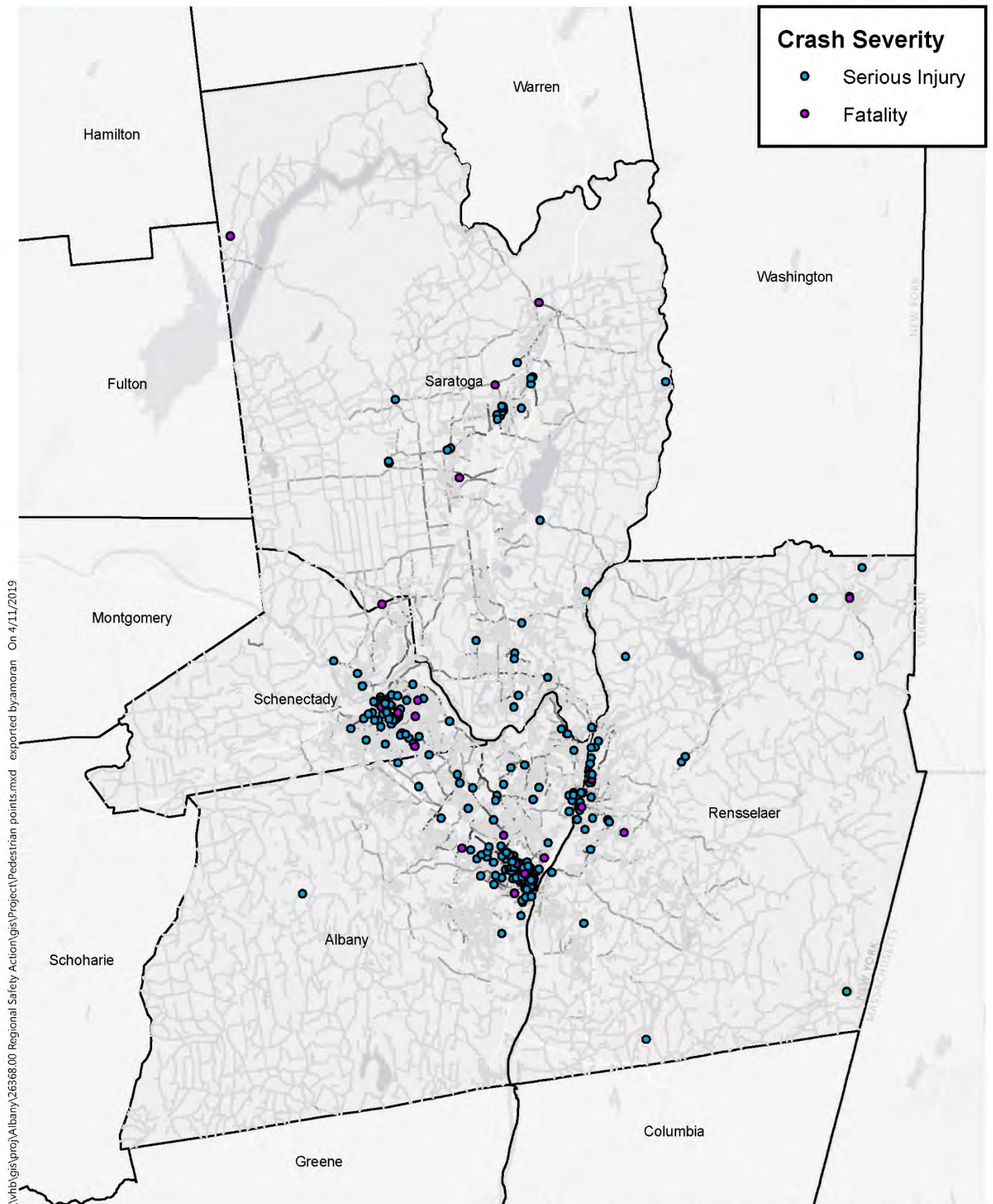
and bicyclists to behave in an unsafe or illegal manner. Numerous factors can contribute to a crash involving a pedestrian or bicyclist, as shown in Table 12.

**Table 12 – Contributing Factors Involving Pedestrian and Bicyclist Crashes**

<b>Contributing Factor</b>	<b>Examples</b>
Roadway Condition	Lighting
Environmental Condition	Landscaping/vegetation reducing visibility Weather reducing visibility
Driver Behaviors	Distracted driving Impaired driving Speeding
Pedestrian/Bicyclist Behaviors	Disregarding traffic control devices Pedestrian Error and/or Confusion

To address the wide array of contributing factors to pedestrian and bicycle involved crashes, the Action Plan will take an approach that considers both site-specific and systemic countermeasures, as well as opportunities for education and enforcement. Figures 10 and 11 show the locations of the pedestrian and bicyclist fatal and serious injury crashes.

**Figure 10: Local Road Pedestrian Crashes**



Albany, Rensselaer, Saratoga, and Schenectady Counties

New York

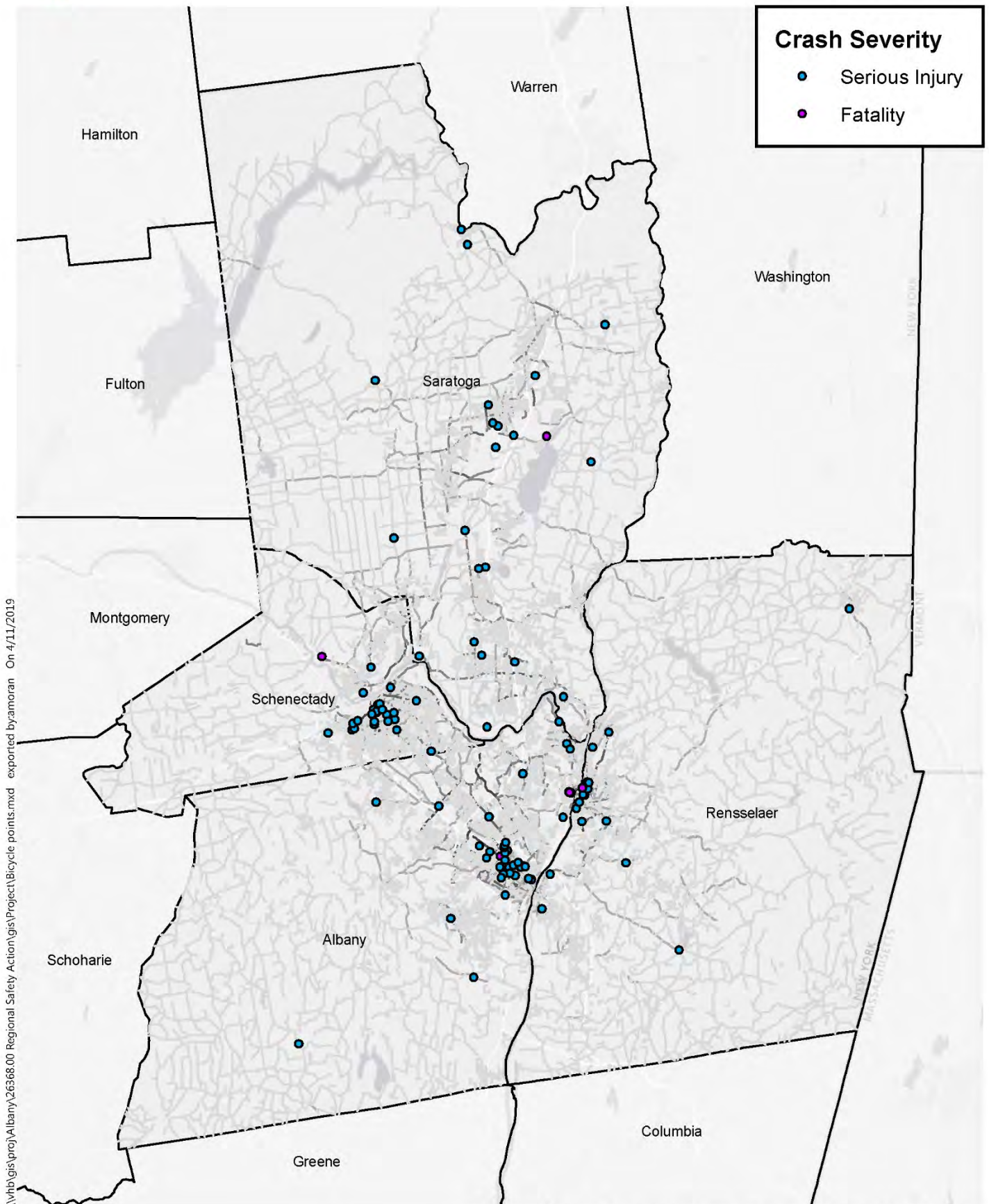
Source: ALIS

April 11, 2019

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**Figure 11: Local Road Bicyclist Crashes**



Albany, Rensselaer, Saratoga, and Schenectady Counties

New York

Source: ALIS

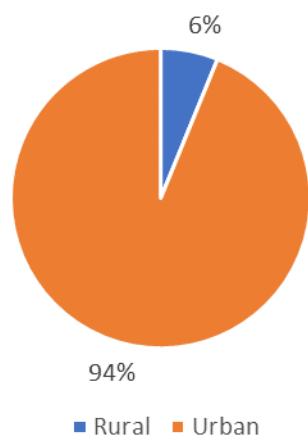
April 11, 2019

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## Defining the Problem

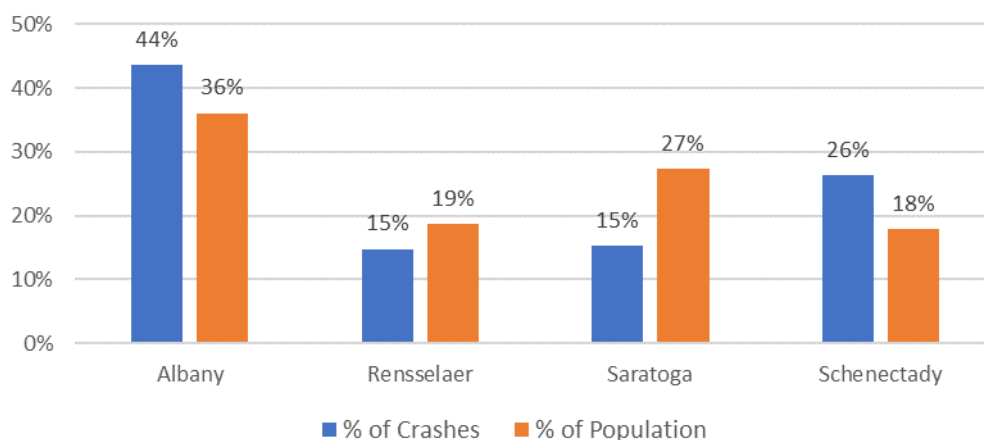
Crashes that involve pedestrians and bicyclists account for 372 of the total 1,810 fatal and serious injury crashes on the local and county road system from 2011 through 2016, equating to approximately 20% of the crashes. As shown in the following charts, the crashes occur primarily in urban areas. The vulnerable user crashes are over-represented in Albany and Schenectady Counties with a total of 70 percent of all pedestrian and bicyclist crashes and 54 percent of the population.

Local Road Pedestrian & Bicyclist Fatal & Serious Injury Crashes  
(2011-2016) Urban/Rural



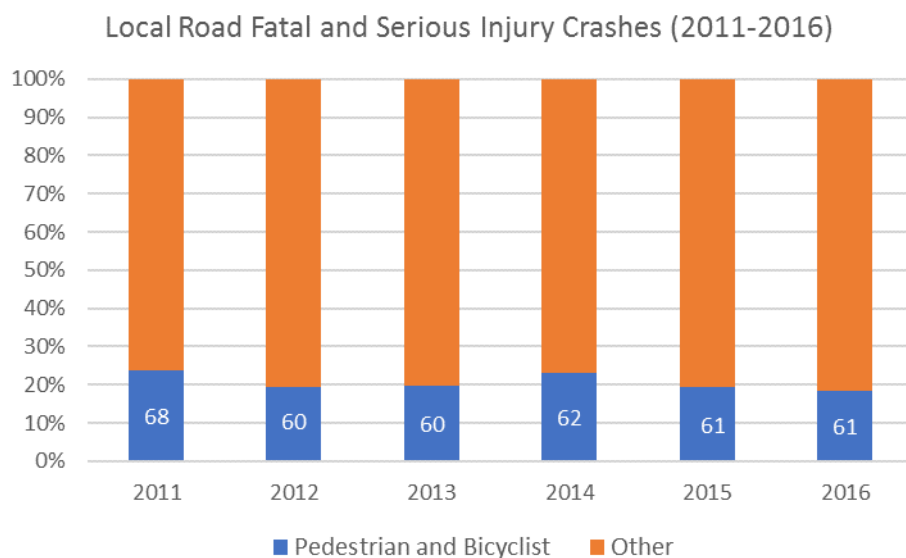
Source: ALIS

Local Road Pedestrian & Bicyclist Fatal & Serious Injury  
Crashes (2011-2016) By County



Source: ALIS

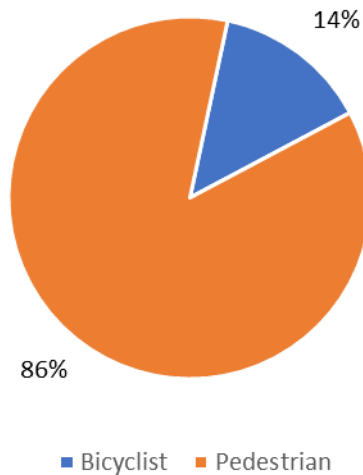
Pedestrian and bicyclist involved crashes accounted for 28 percent of all fatal crashes (36 of 127 crashes) in the region. The following charts show the number of fatal and serious injury pedestrian and bicyclist involved crashes and total crashes by year. The charts show that on average, pedestrian and bicyclist crashes account for approximately 20 percent of all fatal and serious injury crashes each year.



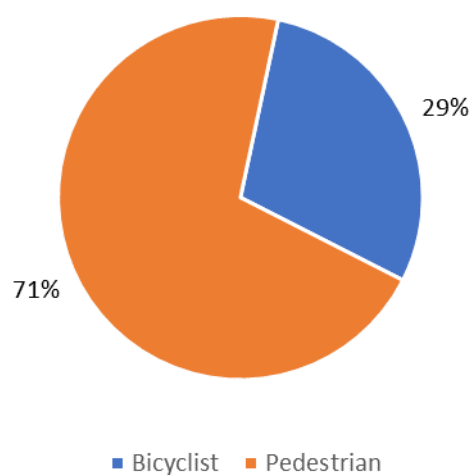
Source: ALIS

Of the 20 percent pedestrian and bicyclist fatal and serious injury crashes, the data was broken down further to differentiate between pedestrians and bicyclists. The charts below show that pedestrians accounted for 86 percent of fatal pedestrian and bicyclist crashes and 71 percent of serious injury crashes.

Local Road Fatal Crashes  
(2011-2016)



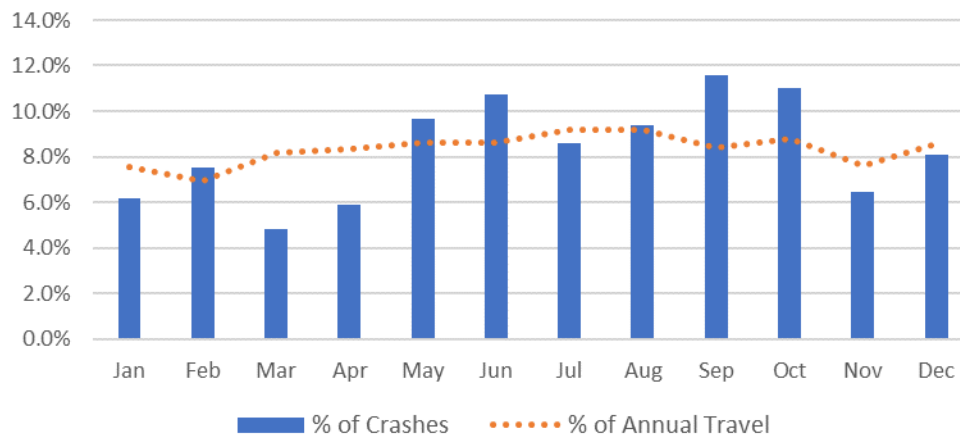
Local Road Serious Injury  
Crashes (2011-2016)



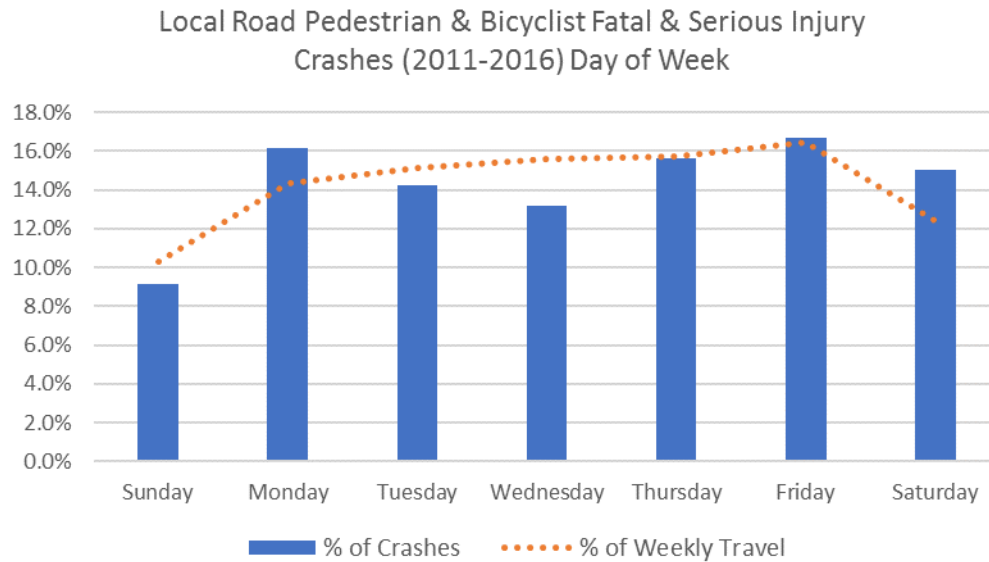
Source: ALIS

The charts below illustrate the number of pedestrian and bicyclist related crashes by month, day of week, and time of day. The charts show that fatal and serious injury crashes occur most frequently during May, June, September, and October, which are also over-represented compared to the percent of annual travel by pedestrians and bicyclists. These crashes are also most prevalent on Mondays and Fridays, but over-represented on Mondays and Saturdays. The time of day peaked between 5:00 to 8:00 PM and the crashes were over-represented from 5:00 PM to 4:00 AM.

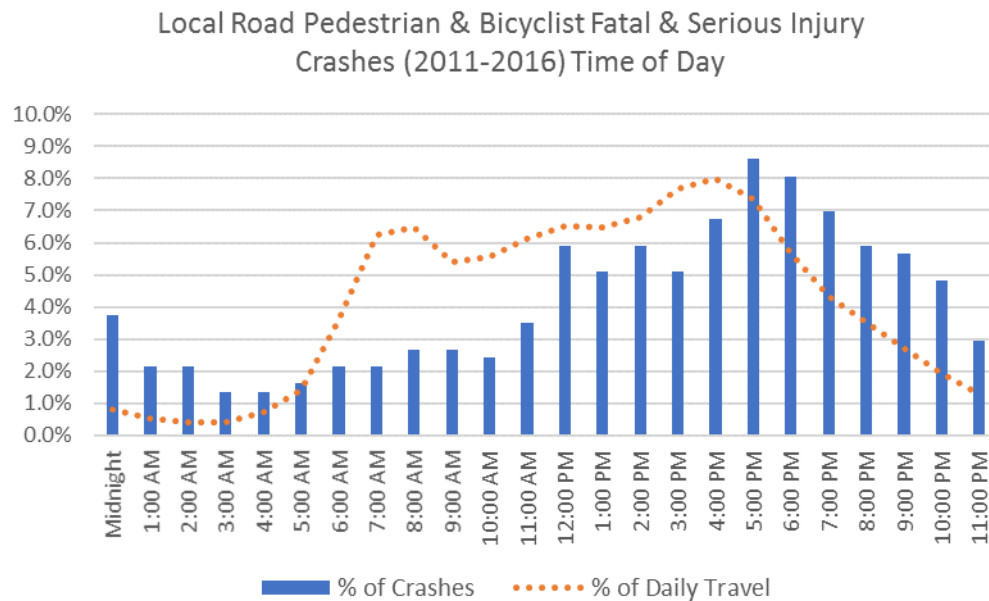
Local Road Pedestrian & Bicyclist Fatal & Serious Injury  
Crashes (2011-2016) Month



Source: ALIS and NYSDOT



*Source: ALIS and NYSDOT*

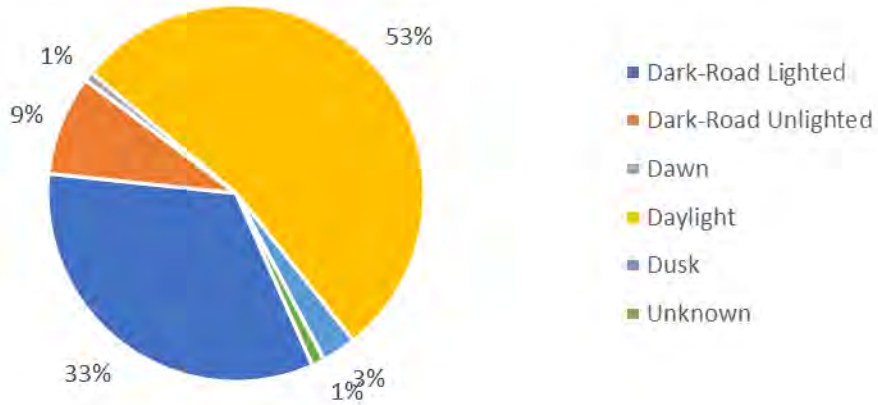


*Source: ALIS and NYSDOT*

As noted in Table 12, roadway condition, environmental condition, and driver behaviors can all contribute to pedestrian and bicycle crashes. The following chart illustrates that lighting conditions are not a major cause that contributed to pedestrian and bicyclist crashes as less than 10 percent of crashes occurred on dark, unlit roadways.



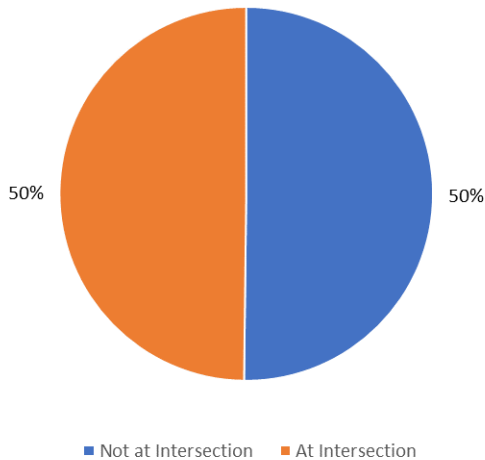
Local Road Pedestrian and Bicyclist Fatal & Serious Injury Crashes (2011-2016) Lighting



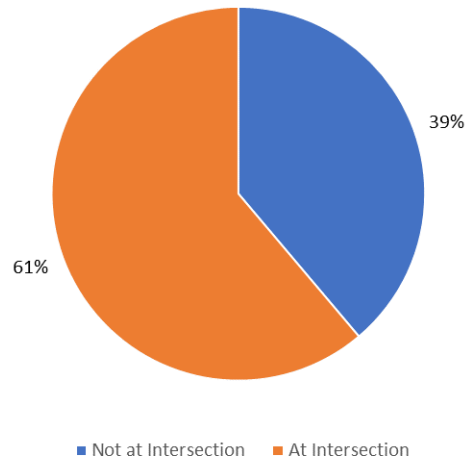
Source: ALIS

The following charts summarize the location of the pedestrians and bicyclists when the crash occurred. As shown below, approximately half of the fatal and serious injury pedestrian related crashes occurred at an intersection whereas approximately 60 percent of the bicycle related crashes occurred at an intersection.

Local Road Pedestrian Fatal & Serious Injury Crashes (2011-2016) Location

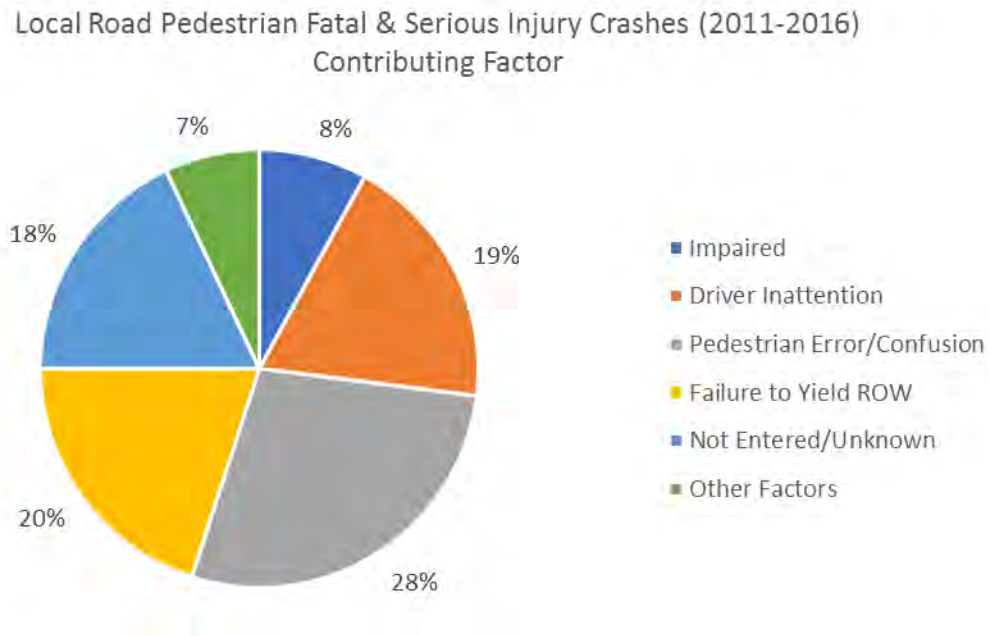


Local Road Bicyclist Fatal & Serious Injury Crashes (2011-2016) Location



Source: ALIS

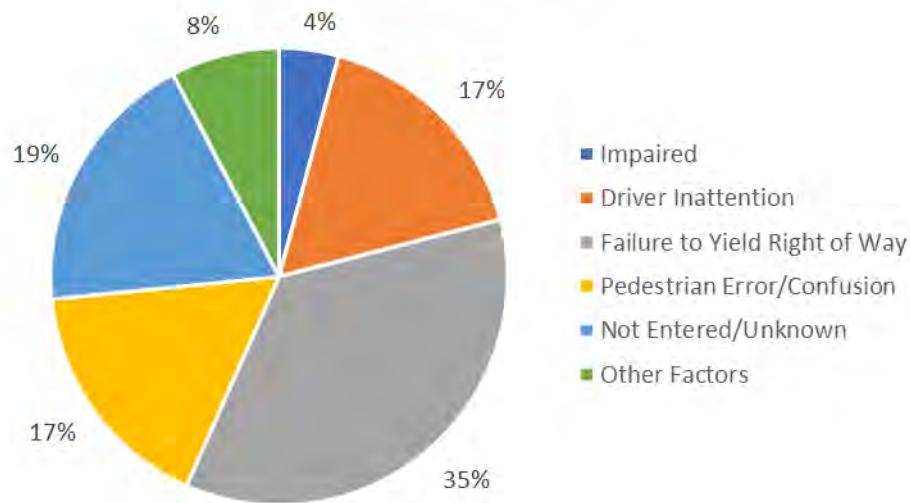
The crash data includes information provided in the police report to help determine what caused a crash. There are 46 identified “contributing factors” included in the crash reports. Of these 46 potential contributing factors, a large percentage of pedestrian related crashes are attributed to three contributing factors, driver inattention, pedestrian error/confusion, and failure to yield the right of way. Approximately 8 percent are related to an impaired driver or pedestrian, 18 percent are Unknown or Not Entered while the remaining 7 percent can be attributed to the other 40 contributing factors.



Source: ALIS

As shown in the chart below, the larger percentage of bicycle related crashes are attributed to the same three contributing factors as pedestrians; driver inattention, pedestrian error/confusion, and failure to yield the right of way. The chart below summarizes the contributing factor data for bicycle related crashes. Approximately 20 percent of the contributing factors are Unknown or Not Entered, four percent involve an impaired driver or bicyclist, while the remaining (approximately 20 percent) can be attributed to the other 40 contributing factors.

Local Road Bicyclist Fatal & Serious Injury Crashes  
(2011-2016) Contributing Factors



Source: ALIS

As noted in the above charts, pedestrian error/confusion and not entered/unknown account for a large percentage of the pedestrian and bicycle crashes. Table 13 shows that when these categories are removed from the data set driver inattention and failure to yield right of way stand out as the primary contributing factors.

Table 13 – Contributing Factors

Contributing Factor	Pedestrian		Bicyclist	
	Number	%	Number	%
Impaired	30	14%	6	7%
Driver Inattention	75	36%	24	26%
Failure to Yield ROW	80	38%	51	55%
Other Factors	26	12%	11	12%

### Municipal Emphasis

To provide a more local emphasis, the number of fatal and serious injury crashes in each municipality were compared to the population. Table 14 illustrates the number of pedestrian and bicycle crashes and identifies communities that were over-represented when compared to population by at least 1% in **bold**. The table shows that the urban centers of Albany, Troy, Saratoga Springs, and Schenectady are well over-represented for fatal and serious injury crashes when compared to city population. In addition, the City of Watervliet, the Village of Hoosick Falls, and the Town of Greenfield are over-represented for pedestrian and bicyclist crashes.

Table 14 – Pedestrian and Bicycle Fatal and Serious Injury Local Road Crash Over-Representation by Municipality

Municipality	% of County Population	Pedestrian Crashes		Bicyclist Crashes	
		Number	%	Number	%
<b>Albany County</b>		<b>123</b>		<b>39</b>	
<u>Cities:</u> Albany	29.9%	92	<b>74.8%</b>	25	<b>64.1%</b>
Watervliet	3.1%	5	<b>4.1%</b>	4	<b>10.3%</b>
<u>Towns:</u> Berne	0.9%	1	0.8%	0	0.0%
Westerlo	1.0%	0	0.0%	1	<b>2.6%</b>
<b>Rensselaer County</b>		<b>38</b>		<b>17</b>	
<u>Cities:</u> Troy	29.6%	24	<b>63.2%</b>	12	<b>70.6%</b>
<u>Towns:</u> Nassau	2.9%	1	2.6%	1	<b>5.9%</b>
<u>Villages:</u> Hoosick Falls	0.3%	2	<b>5.3%</b>	1	<b>5.9%</b>
<b>Saratoga County</b>		<b>35</b>		<b>22</b>	
<u>Cities:</u> Saratoga Springs	12.3%	11	<b>31.4%</b>	6	<b>27.3%</b>
<u>Towns:</u> Clifton Park	16.2%	4	11.4%	4	<b>18.2%</b>
Corinth	2.8%	0	0.0%	1	<b>4.5%</b>
Edinburg	0.5%	1	<b>2.9%</b>	0	0.0%
Greenfield	3.4%	2	<b>5.7%</b>	1	<b>4.5%</b>
Malta	7.0%	0	0.0%	3	<b>13.6%</b>
Milton	8.5%	5	<b>14.3%</b>	0	0.0%
Northumberland	2.3%	0	0.0%	1	<b>4.5%</b>
Saratoga	2.5%	0	0.0%	1	<b>4.5%</b>
Stillwater	3.8%	2	<b>5.7%</b>	0	0.0%
Wilton	7.4%	5	<b>14.3%</b>	1	4.5%
<u>Villages:</u> Corinth	1.1%	0	0.0%	1	<b>4.5%</b>
Schuylerville	0.6%	1	<b>2.9%</b>	0	0.0%
Waterford	1.0%	1	<b>2.9%</b>	0	0.0%
<b>Schenectady County</b>		<b>73</b>		<b>25</b>	
<u>Cities:</u> Schenectady	39.9%	60	<b>82.2%</b>	17	<b>68.0%</b>

### Emphasis Area Goal

Reduce pedestrian and bicyclist fatal and serious injury crashes through implementation of engineering, education, and enforcement strategies.

### Conclusions

Review of the data reveals the following about fatal and serious injury pedestrian and bicyclist crashes:

- Approximately 20 percent of all fatal and serious injury crashes
- Albany County has the highest percentage of crashes
- Approximately 94 percent of fatal and serious injury crashes occur in an urban setting

- Higher number of crashes occur during the summer months on Mondays and Fridays between the hours of 5:00 to 8:00 PM
- Approximately half of pedestrian crashes occur at an intersection whereas approximately 60 percent of bicyclist crashes occur at an intersection
- Driver inattention, pedestrian error/confusion, and failure to yield the right of way are the primary contributing factors for pedestrian and bicycle crashes
- Dark road unlighted conditions do not represent a significant portion of crashes

Based on the data evaluation and above findings, crash reduction strategies have been identified for potential implementation. In an effort to reach the emphasis area goal, the strategies that have the potential to provide the greatest crash reduction should be prioritized.

### Strategies and Actions

There are 15 actions in support of this emphasis area. Four strategies (Program, Engineering, Education, Enforcement) identify supporting actions, the appropriate agencies needed to complete the actions, and which of the contributing factors (environmental, roadway, behavior) are targeted.

The following actions should be considered for implementation as resources allow.

**Program:** Support program initiatives to increase **vulnerable user** safety.

Program Action	Lead Agency / Partners	Focus
Develop local Complete Streets policies and use the NYSDOT Capital Projects Complete Street Checklist when planning for a local capital project.	Municipal	Behavioral
Revise local laws to enhance the safety of vulnerable road users	Municipal	Behavioral
Develop region wide vulnerable-user specific action plans.	CDTC	Behavioral, Environmental, Roadway
Develop list of priority locations/corridors	County, Municipal	Roadway
Enhance Complete Streets roadway designs	County, Municipal	Roadway



**Engineering:** *Implement infrastructure projects to enhance vulnerable user safety.*

Engineering Action	Lead Agency / Partners	Focus
Expand the use of pedestrian accommodations like marked crossings, signal timing changes, adaptive signal technology, lead pedestrian intervals, and exclusive pedestrian phases	County, Municipal	Roadway
Implement pedestrian safety improvements like signs (such as no turn on red or yield to pedestrian), beacons, and roadway shoulders in rural locations	County, Municipal	Roadway
Implement bicycle infrastructure (e.g. separated bike lanes, multi-use paths, signage) in dense, urban portions of the four counties	County, Municipal	Roadway
Improve pedestrian infrastructure (e.g. new sidewalks, multi-use paths, signage, lighting, new crossings) in dense, urban portions of the four counties	County, Municipal	Roadway

**Education:** *Continue educational programs related to vulnerable user safety.*

Education Action	Lead Agency / Partners	Focus
Continue to promote public awareness of vulnerable user safety issues and provide education and training for pedestrians, bicyclists, and motorists of all ages on ways to avoid crashes	CDTC / DOH, GTSC	Behavioral
Strategically use dynamic messaging boards to promote vulnerable user safety	County, Municipal	Behavioral
Engage vulnerable user advocates and working groups	CDTC	Behavioral
Coordinate vulnerable user safety and enforcement training to police officers	GTSC	Behavioral
Train judiciary and district attorneys on the importance of enforcement consequences to change behavior	GTSC, Judiciary System	Behavioral

**Enforcement:** *Continue enforcement of traffic laws that reduce vulnerable user crashes.*

Enforcement Action	Lead Agency / Partners	Focus
Conduct semi-annual high-visibility enforcement campaigns to promote safe use of the transportation system by each user group	GTSC / Law Enforcement	Behavioral

## Vulnerable Users – Motorcyclists

Roads can differ vastly in characteristics such as traffic volumes, number of lanes, functional classification, and with regards to the types of users that share it on a daily basis. The users of the road change continuously, with varying trip purposes and vehicle types; yet, some users have a greater risk of injury than others. These vulnerable users include pedestrians, bicyclists, motorcyclists, and those in work zones. Table 15 shows the total number of vulnerable user fatal and serious injury crashes in the Capital District from 2011 to 2016.

**Table 15 – Local Road Vulnerable Users Crashes by Severity**

Vulnerable User Group	Year						Total
	2011	2012	2013	2014	2015	2016	
<b>Pedestrian*</b>							
Fatality	5	5	7	3	6	5	31
Serious Injury	47	38	35	39	39	40	238
<b>Bicyclist*</b>							
Fatality	1	1	0	2	0	1	5
Serious Injury	15	16	18	18	16	15	98
<b>Motorcyclist</b>							
Fatality	6	7	0	4	8	6	31
Serious Injury	33	45	40	27	47	35	227
<b>Total</b>	107	112	100	93	116	102	630

\*Pedestrians and Bicyclists summaries are included in a separate section

### Define the Problem

Motorcyclists are considered vulnerable users as they operate at the same speeds and in the same lanes as other motorized vehicles, but without the same degree of protection. This risk is increased by unsafe behaviors performed by both motorcyclists and vehicle drivers. Some of the top contributing factors to motorcycle crashes in the Capital District include speed, driver inexperience, driver inattention, and alcohol involvement.

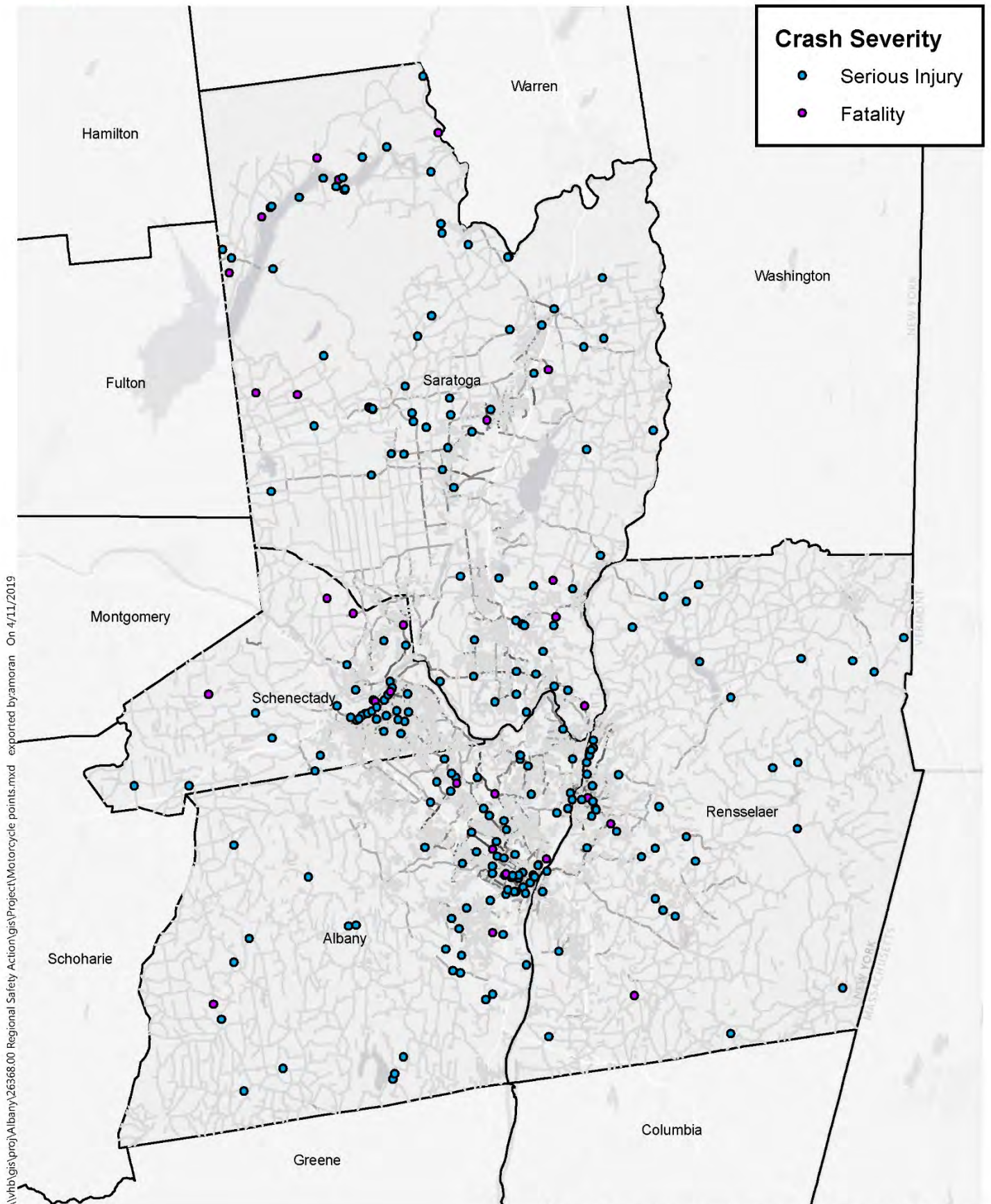
Numerous factors can contribute to a crash involving a motorcycle, as shown below in Table 16.

Table 16 – Contributing Factors for Motorcycle Crashes

Contributing Factor	Examples
Roadway Condition	Curvature of the road Lighting Pavement condition (potholes, cracking, etc.) Roadway surface condition (friction)
Environmental Condition	Landscaping/vegetation reducing visibility Weather changing the road surface condition Weather reducing visibility
Driver Behaviors	Distracted driving Impaired driving Speeding

Motorcycle crashes account for 258 of the 1,810 total fatal and serious injury crashes that occurred on the local and county road system from 2011 through 2016. The location of the motorcycle crashes are shown on Figure 12.

**Figure 12: Local Road Motorcyclist Crashes**



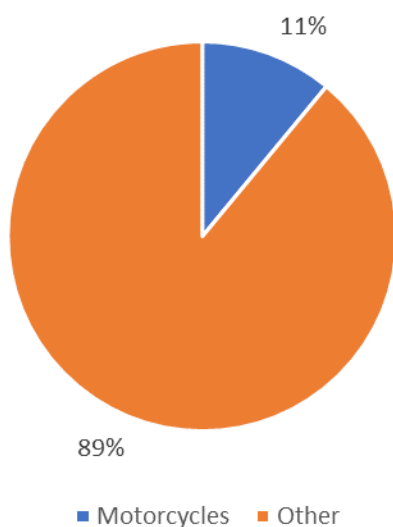
Albany, Rensselaer, Saratoga, and Schenectady Counties  
New York

Source: ALIS

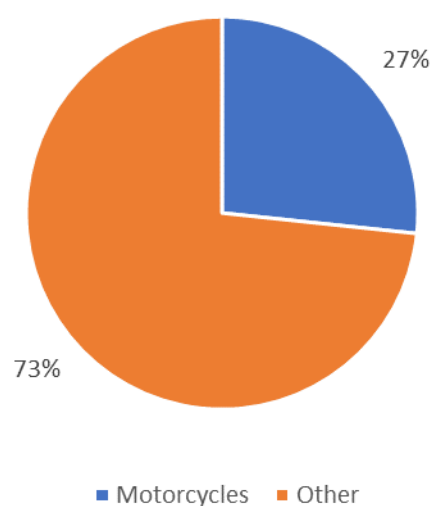
April 11, 2019

As shown in the following charts, the crashes occur in both urban and rural areas although the motorcycle crashes account for a higher percentage of rural fatal and serious injury crashes.

Local Road Fatal & Serious Injury Crashes  
(2011-2016) Urban

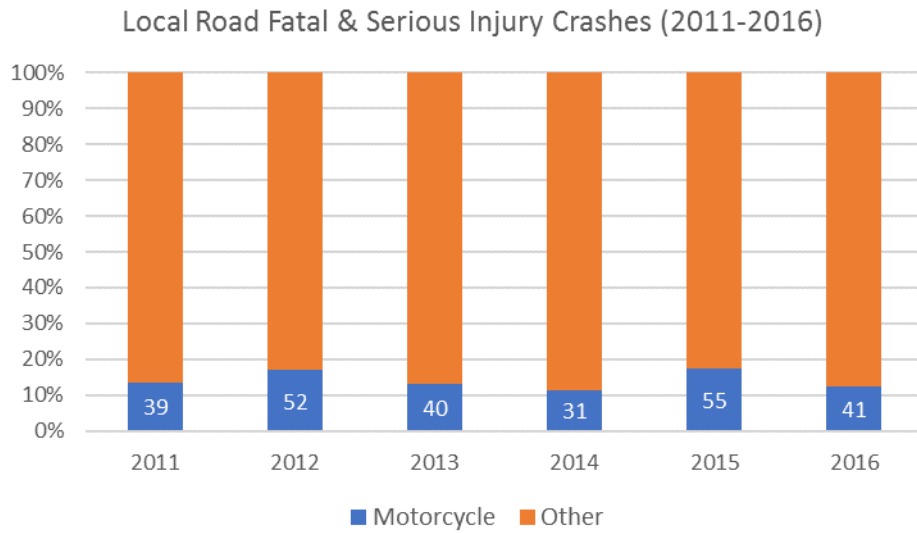


Local Road Fatal & Serious Injury Crashes (2011-2016) Rural

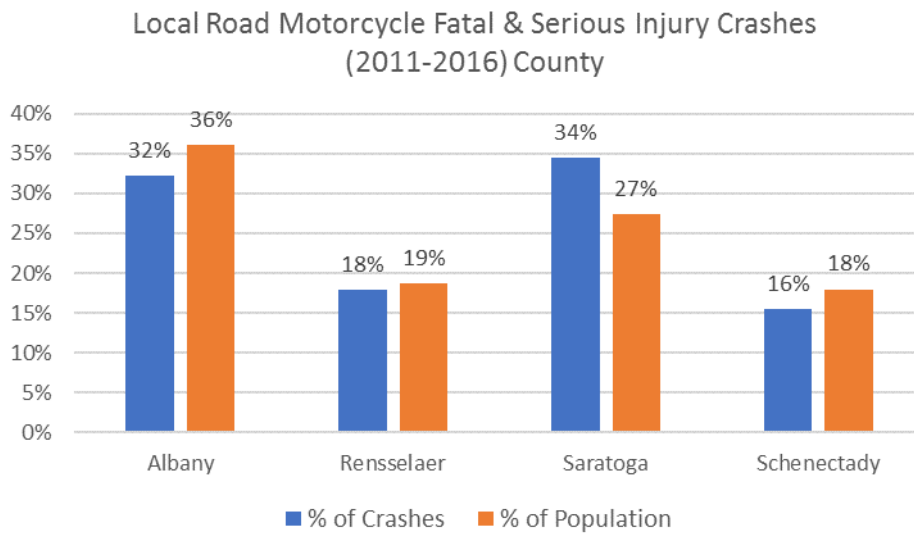


Source: ALIS

Motorcycle involved crashes accounted for approximately 24 percent of all fatal crashes (31 of 127 crashes) in the region. The following charts show the number of fatal and serious injury motorcyclist involved crashes and total crashes by year. The following charts show that on average, motorcycle crashes account for approximately 14 percent of all fatal and serious injury crashes. Saratoga County has the highest percentage of motorcycle fatal and serious injury crashes and is over-represented when compared to county population. A review of Figure 12 shows clusters of motorcycle crashes in the cities of Albany, Troy, and Schenectady. There also appears to be a concentration of crashes around Great Sacandaga Lake in northern Saratoga County.



Source: ALIS

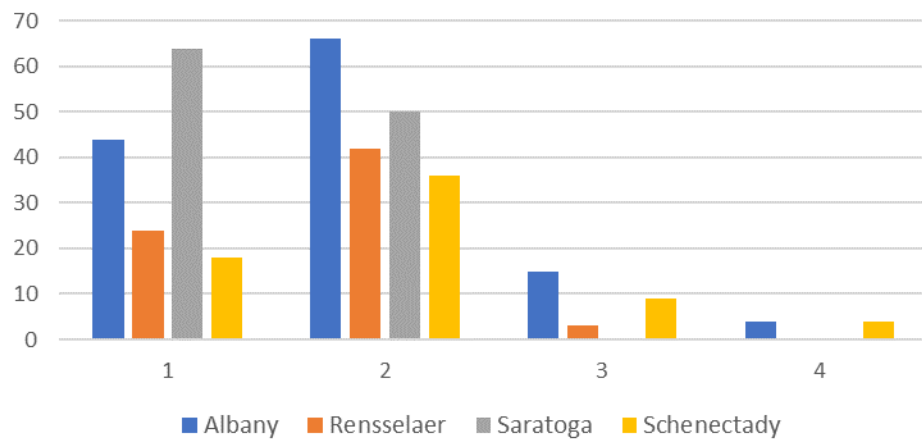


Source: ALIS and CDTC

The data also shows that motorcycle crashes primarily involve one or two vehicles. The chart below shows that approximately 40 percent of motorcycle involved crashes involve one vehicle and approximately 50 percent involve two vehicles.



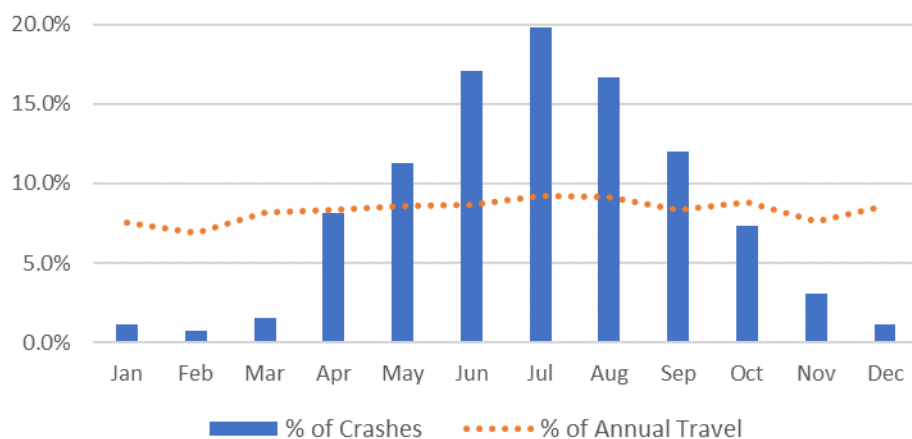
Local Road Motorcycle Fatal & Serious Injury Crashes  
(2011-2016) Number of Vehicles



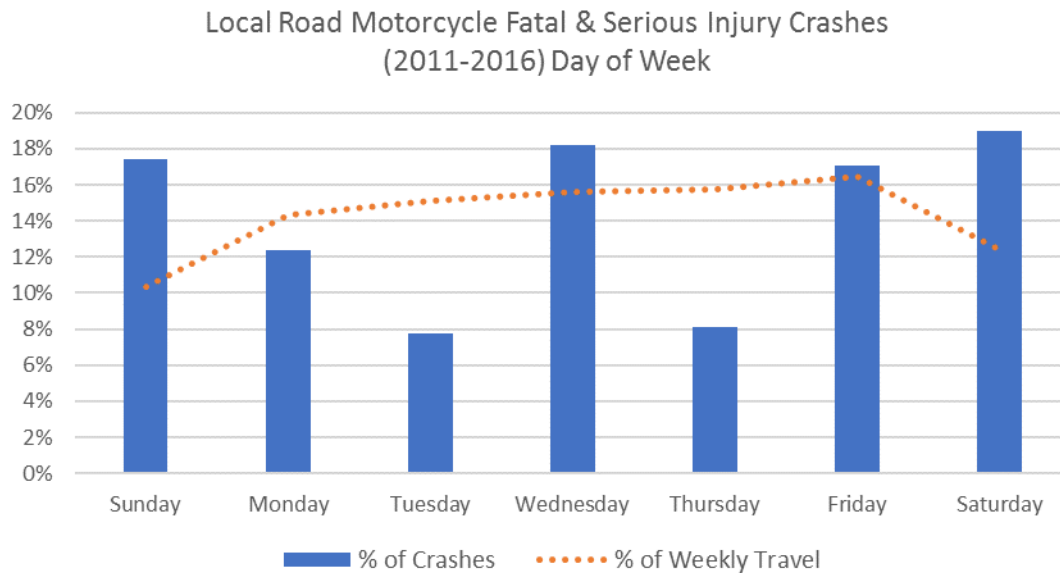
Source: ALIS

The charts below illustrate the number of motorcyclist crashes by month, day of week, and time of day. Crashes involving motorcycles occur most frequently during the summer months and are over-represented from May through September. The charts also show that motorcycle fatal and serious injury crashes peak on Sunday, Wednesday, Friday, and Saturday and are over-represented on those same days. The number of crashes peaked between 3:00 to 6:00 PM but were over-represented from 3:00 PM to midnight. It is noted that the percent of "Annual Travel", "Weekly Travel", and "Daily Travel" shown in the charts represents all vehicle types, not just motorcycles.

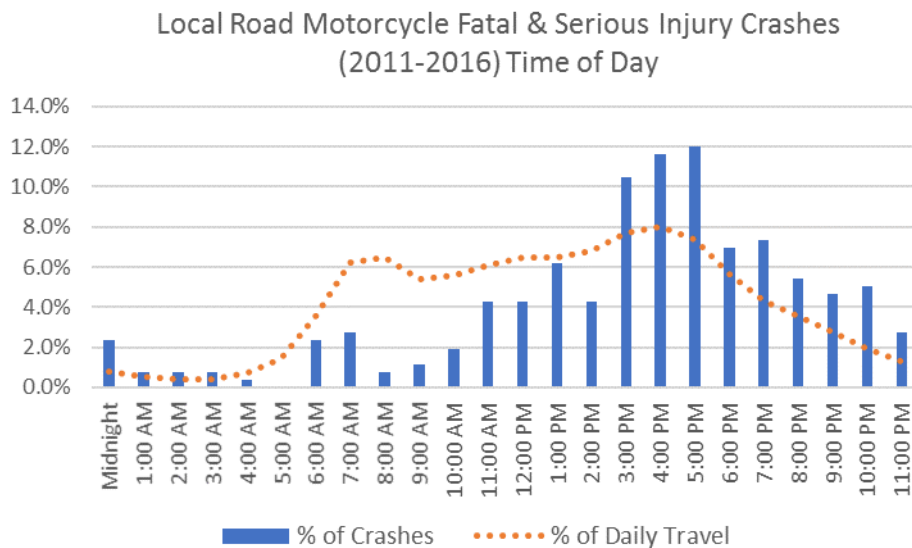
Local Road Motorcycle Fatal & Serious Injury Crashes  
(2011-2016) Month



Source: ALIS and NYSDOT



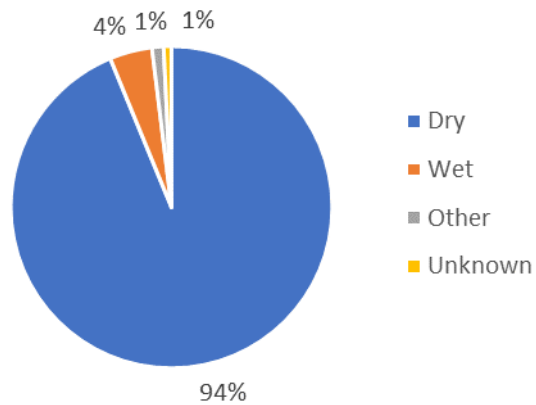
*Source: ALIS and NYSDOT*



*Source: ALIS and NYSDOT*

As noted in Table 16, roadway condition, environmental condition, and driver behaviors can all contribute to motorcycle crashes. The following chart summarizes roadway surface condition. The chart shows that fatal and serious injury crashes primarily occur on dry roadways (approximately 93 percent) while wet and other conditions account for the remaining 7 percent of the fatal and serious injury crashes.

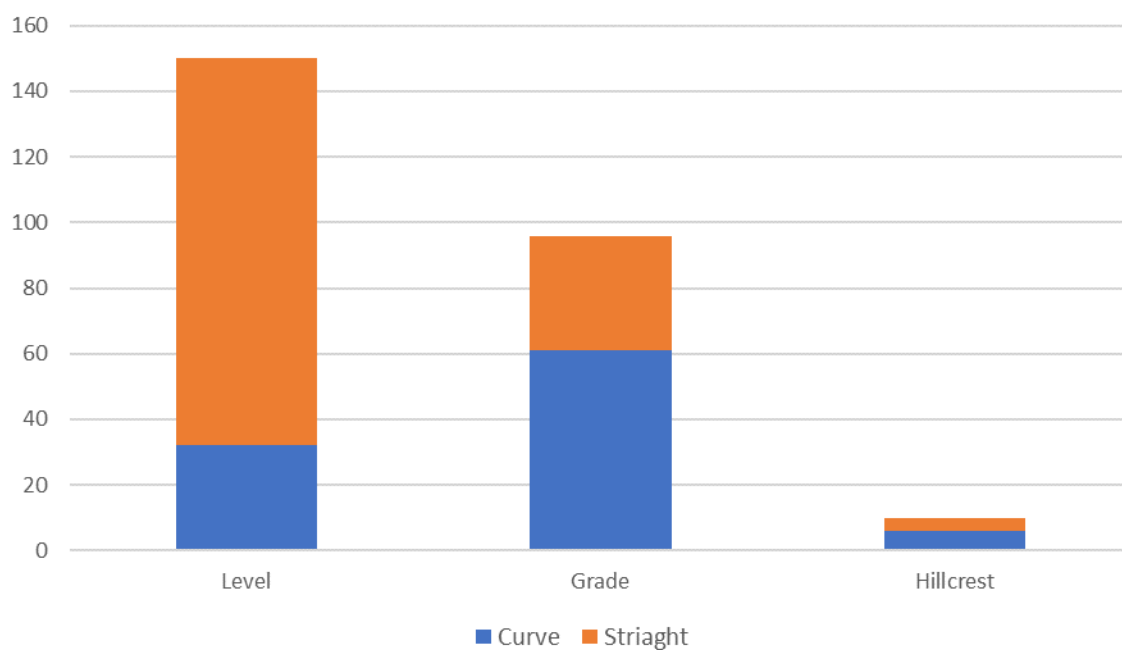
Motorcycle Fatal & Serious Injury Crashes  
(2011-2016) Road Surface Condition



Source: ALIS

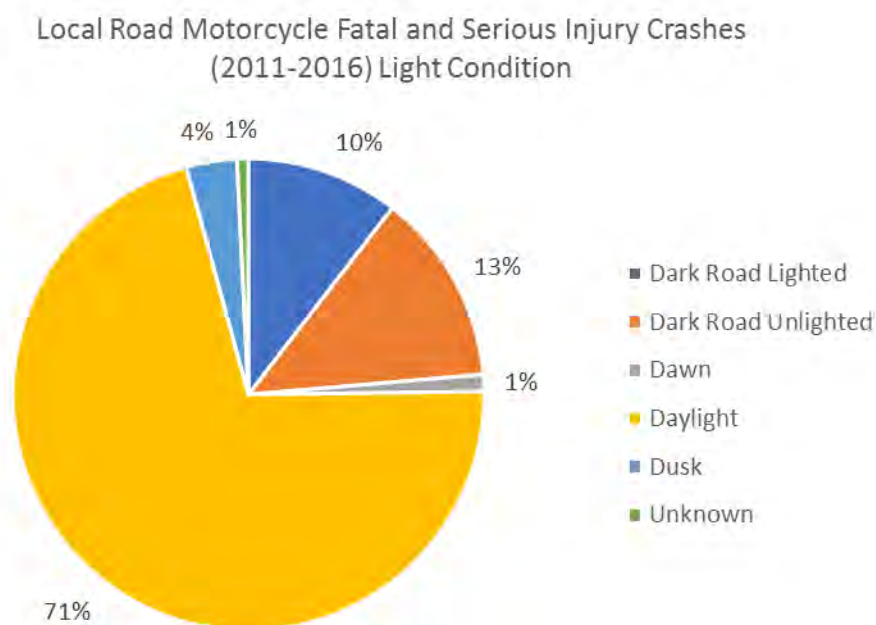
In addition to surface condition, roadway character and lighting can affect crash potential. The following charts summarize roadway conditions like curvature, grade, and lighting that may be contributing to the potential for fatal and serious injury crashes. The below chart shows that the combination of a straight and level roadway account for approximately 120 (45%) of the fatal and serious injury motorcycle crashes.

Local Road Motorcycle Fatal & Serious Injury Crashes  
(2011-2016) Road Character



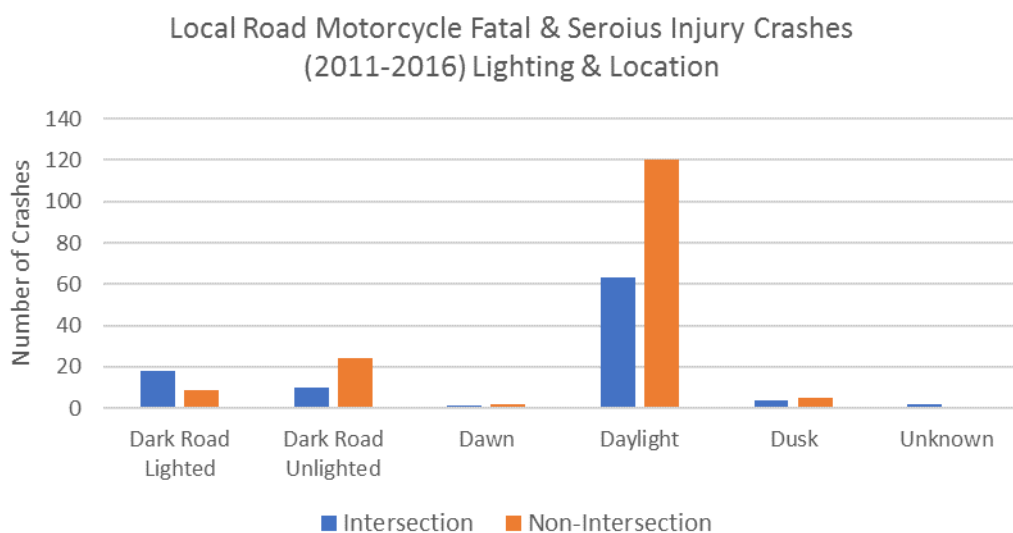
Source: ALIS

Roadway lighting condition can also contribute to crashes. Dark road unlighted conditions account for 34 of the 258-motorcycle fatal and serious injury crashes.



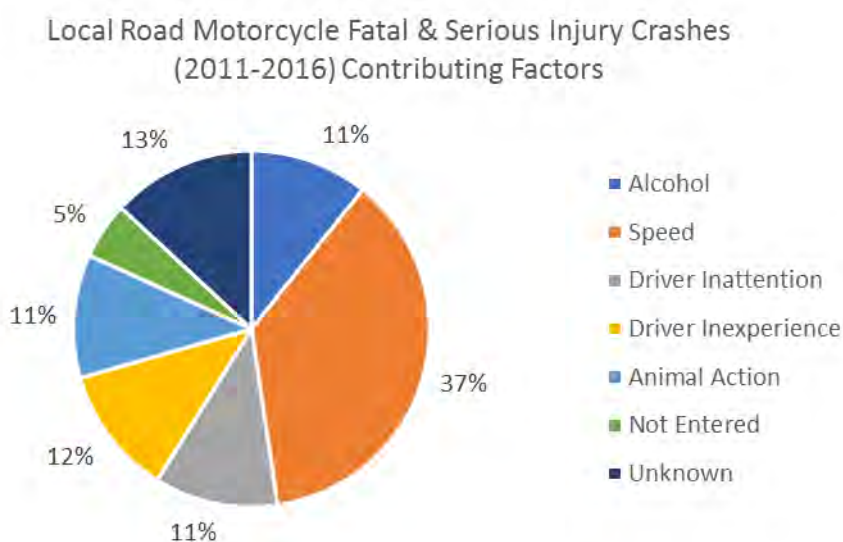
Source: ALIS

The chart below shows that of the 34 crashes that occur on dark road unlighted conditions, approximately 25 did not occur at an intersection. The majority of crashes that occur during daylight conditions also did not occur at an intersection.



Source: ALIS

The crash data includes information provided in the police report to help determine what caused a crash. There are 46 identified “contributing factors” included in the crash reports. Of these 46 potential contributing factors, approximately 70 percent are attributed to four factors, all controlled by driver behavior; vehicle speed, impaired driving (alcohol or drugs), driver inattention, and driver inexperience. The chart below summarizes the contributing factor data for the motorcycle crashes. Approximately 11 percent of the contributing factors for the crashes were due to an animal, 5 percent were Not Entered or Unknown, and the remaining 13 percent can be attributed to the other 40 contributing factors.



Source: ALIS

### Municipal Emphasis

To provide a more local emphasis, the number of fatal and serious injury crashes in each municipality were compared to the population. Table 17 illustrates the number of motorcycle crashes and identifies communities that are over-represented when compared to population by at least 1%. Consistent with the map of the motorcycle crash locations, the table shows that fatal and serious injury crashes for motorcycles are spread throughout the Capital District with many municipalities with over-representation when compared to population.

Table 17 – Motorcycle Fatal and Serious Injury Local Road Crash Over-Representation by Municipality

Municipality	% of County Population	Motorcycle Crashes Number	%
<b>Albany County</b>		<b>83</b>	
<u>Cities:</u> Albany	29.9%	29	34.9%
<u>Towns:</u> Berne	0.9%	2	2.4%
Bethlehem	10.8%	14	16.9%
Coeymans	2.2%	3	3.6%
Knox	0.8%	2	2.4%
Rensselaerville	0.6%	3	3.6%
<b>Rensselaer County</b>		<b>46</b>	
<u>Cities:</u> Troy	29.6%	15	32.6%
<u>Towns:</u> Berlin	1.1%	1	2.2%
Grafton	1.3%	2	4.3%
Hoosick	4.1%	4	8.7%
Pittstown	3.4%	3	6.5%
Poestenkill	2.7%	4	8.7%
Sand Lake	5.1%	3	6.5%
Schaghticoke	4.6%	3	6.5%
<u>Villages:</u> East Nassau	0.9%	1	2.2%
<b>Saratoga County</b>		<b>89</b>	
<u>Towns:</u> Corinth	2.8%	5	5.6%
Day	0.4%	11	12.4%
Edinburg	0.5%	7	7.9%
Greenfield	3.4%	7	7.9%
Hadley	0.9%	4	4.5%
Halfmoon	10.6%	13	14.6%
Milton	8.5%	12	13.5%
Providence	0.9%	3	3.4%
<b>Schenectady County</b>		<b>40</b>	
<u>Cities:</u> Schenectady	39.9%	24	60.0%
<u>Towns:</u> Duanesburg	3.8%	3	7.5%
Princetown	1.3%	4	10.0%

### Emphasis Area Goal

Reduce motorcycle fatal and serious injury crashes through implementation of engineering, education, and enforcement strategies.

### Conclusions

Review of the data reveals the following about fatal and serious injury motorcycle crashes:

- Approximately 24 percent of all fatal and serious injury crashes
- Albany and Saratoga Counties have the highest percentage of crashes



- Approximately 40 percent of crashes involved one vehicle and 50 percent of crashes involve two vehicles
- Higher number of crashes occur during the summer months on Sundays, Wednesdays, and Saturdays between the hours of 3:00 to 6:00 PM
- Approximately 93 percent of crashes occurred on a dry road
- Most of the crashes occurred on straight, level roadways in daylight condition
- Approximately 38 percent of crashes occurred at an intersection
- Approximately 70 percent of crashes involve speed, impaired (alcohol or drugs), driver inattention, and driver inexperience

Based on the data evaluation and above findings, crash reduction strategies have been identified for potential implementation. In an effort to reach the emphasis area goal, the strategies that have the potential to provide the greatest crash reduction should be prioritized.

### Strategies and Actions

There are 14 actions in support of this emphasis area. Four strategies (Program, Engineering, Education, Enforcement) identify supporting actions, the appropriate agencies needed to complete the actions, and which of the contributing factors (environmental, roadway, behavior) are targeted.

Many of the engineering strategies for motorcycle crashes are applicable to multiple emphasis areas. Refer to the engineering strategies for Intersection, Lane Departure, and Speed Related crashes for additional recommendations.

The following actions should be considered for implementation as resources allow.

**Program:** *Create a program to identify **motorcycle** crash contributing factors and higher risk locations on the local roadway system.*

Program Action	Lead Agency / Partners	Focus
Identify locations with high-risk roadway features that are correlated with motorcycle crashes	County, Municipal / CDTC	Roadway

**Engineering:** Implement safety countermeasures at locations based on motorcycle crash experience.

Engineering Action	Lead Agency / Partners	Focus
Install/maintain retro-reflective shoulder striping	County, Municipal	Roadway
Install high friction surface treatments on horizontal curves	County, Municipal	Roadway
Install curve warning signs	County, Municipal	Roadway
Install Safety Edge	County, Municipal	Roadway
Construct shoulder rumble strips (audible delineators)	County, Municipal	Roadway
Improve roadside clear zones	County, Municipal	Roadway
Install roadway lighting	County, Municipal	Roadway

**Education:** Continue existing and promote new educational programs related to motorcycle safety.

Education Action	Lead Agency / Partners	Focus
Continue to promote public awareness of motorcyclist safety issues and ways to avoid crashes	CDTC / DOH, GTSC	Behavioral
Strategically use dynamic messaging boards to promote motorcyclist user safety	County, Municipal	Behavioral
Engage motorcycle advocates and working groups	CDTC	Behavioral
Promote safe riding classes for motorcyclists	CDTC	Behavioral

**Enforcement:** Continue enforcement of traffic laws that relate to motorcycle crashes.

Enforcement Action	Lead Agency / Partners	Focus
Encourage law enforcement to use independent funds to conduct motorcycle enforcement on all public roads	Law Enforcement	Behavioral
Help facilitate obtaining funds for motorcycle targeted enforcement training	GTSC	Behavioral

## Lane Departure

A lane departure crash is defined as a crash which occurs after a vehicle crosses an edge line or a center line, or otherwise leaves the traveled way. Numerous factors can contribute to a lane departure crash, as shown in Table 18.

**Table 18 – Lane Departure Crash Contributing Factors**

<b>Contributing Factor</b>	<b>Examples</b>
Roadway Condition	Horizontal curvature Lighting Pavement condition (potholes, cracking, etc.) Roadway surface condition (friction)
Environmental Condition	Landscaping/vegetation reducing visibility Weather changing the road surface condition Weather reducing visibility
Driver Behaviors	Distracted driving Impaired driving Speeding

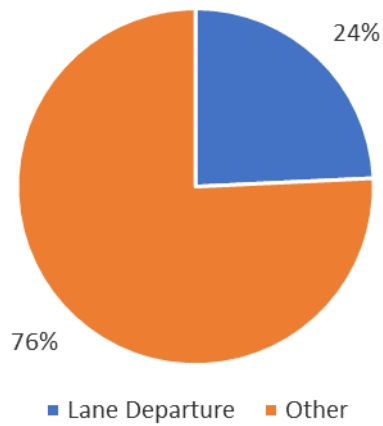
Countermeasures that address keeping vehicles in the travel lane, provide for a safe recovery, and reduce crash severity are important aspects of improving lane departure safety.

To address the wide array of contributing factors to lane departure crashes, CDTC will take an approach that considers systemic countermeasures, as well as opportunities for education and enforcement.

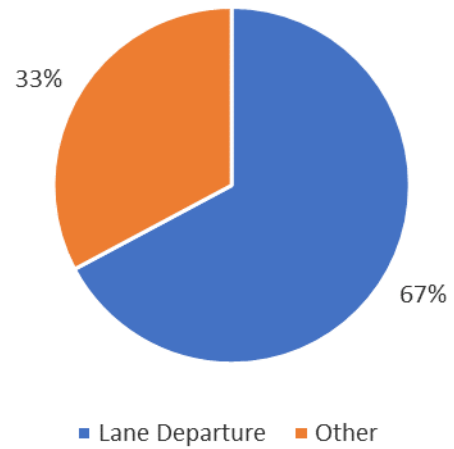
### Defining the Problem

Lane departure crashes account for 600 of the 1,810 fatal and serious injury crashes that occurred on the local and county road system from 2011 through 2016. As shown in the following charts, the crashes occur in both urban and rural areas although the lane departure crashes account for a much higher percentage of rural fatal and serious injury crashes. Rural roads account for half of the road miles in the Capital District; therefore, the rural lane departure crashes are over-represented when comparing the urban/rural road condition.

Local Road Fatal & Serious Injury Crashes  
(2011-2016) Urban



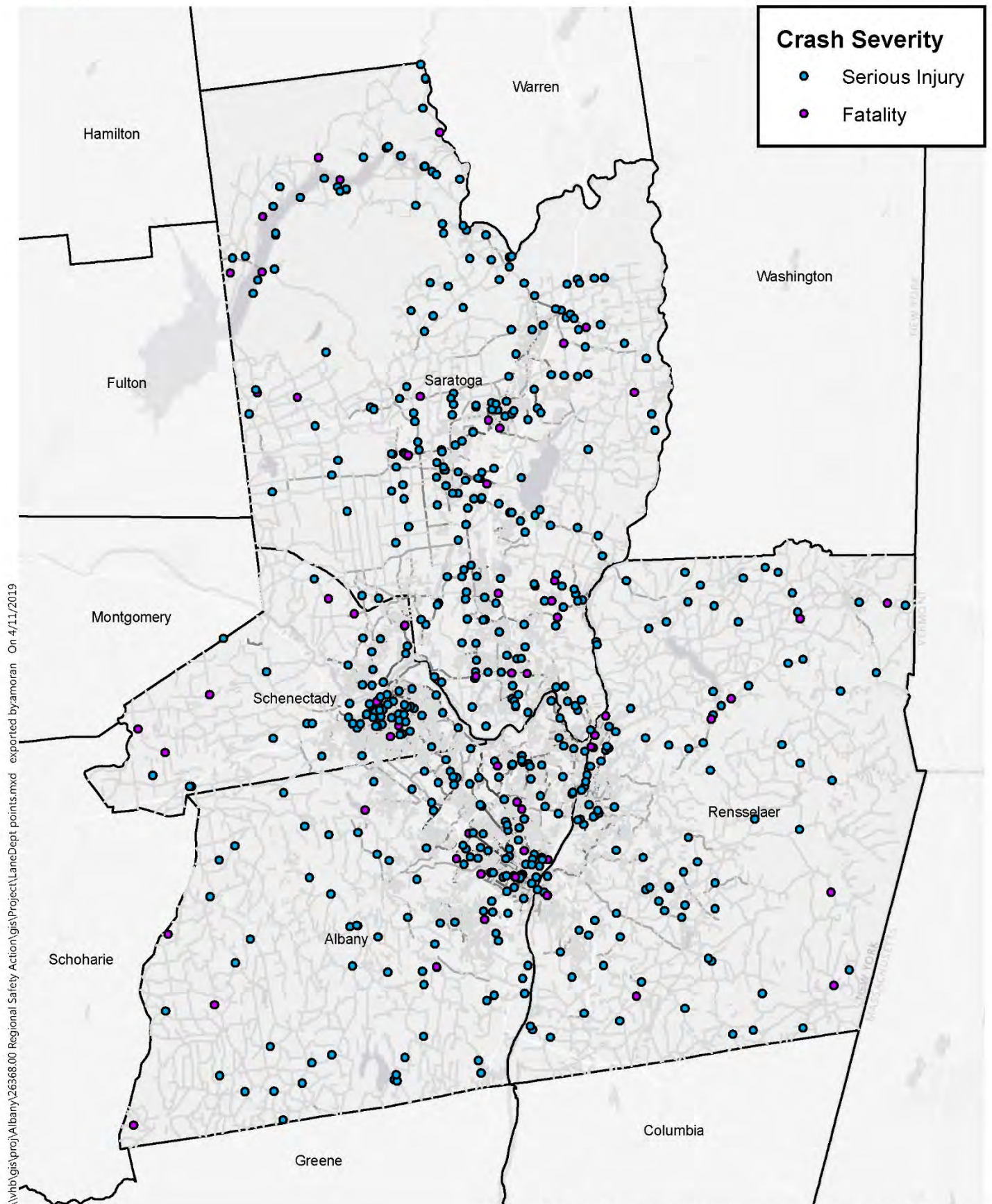
Local Road Fatal & Serious Injury Crashes  
(2011-2016) Rural



Source: ALIS

Figure 13 shows the four-county study area and the location of the 600 fatal and serious injury lane departure crashes. As can be seen on the figure, the crashes occur throughout the entire study area. The concentration of fatal crashes (purple) shows that some areas of fatal crashes are in the most rural sections of the four-county area, rather than the population centers.

**Figure 13: Local Road Lane Departure Crashes**



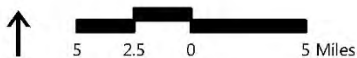
Albany, Rensselaer, Saratoga, and Schenectady Counties

New York

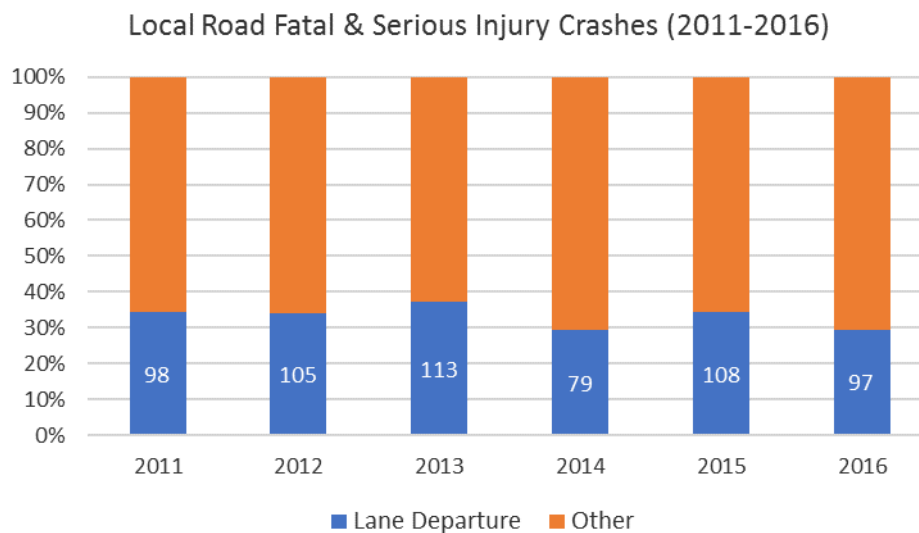
Source: ALIS

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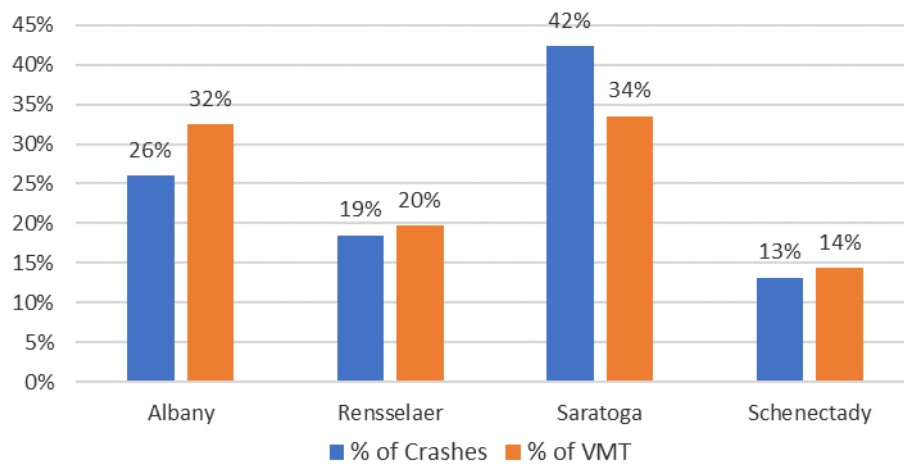
The last six years of available crash data (2011-2016) was used in the following data analysis. Lane departure crashes accounted for 46 percent of all fatal crashes (59 of 127 crashes) in the region. In the same period, lane departure fatal and serious injury crashes made up approximately 33 percent of the total fatal and serious injury crashes in the region. The following charts show the number of fatal and serious injury lane departure crashes and total crashes by year and then by county. The charts show that on average, lane departure crashes account for approximately 1/3 of all fatal and serious injury crashes and that Saratoga County accounts for a significant percentage of the crashes and is over-represented when compared to vehicles miles traveled (VMT) in each county.



*Source: ALIS*



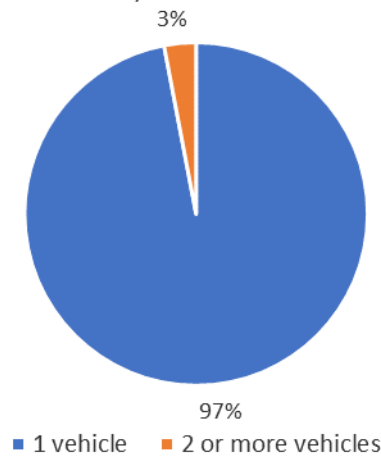
Local Road Lane Departure Fatal & Serious Injury Crashes  
(2011-2016) by County and VMT



Source: ALIS and NYSDOT

The data also shows that lane departure crashes primarily involve only a single vehicle. The chart below shows that of the 600 fatal and serious injury lane departure crashes, 581 (97%) involve a single vehicle.

Local Road Lane Departure Fatal & Serious Injury Crashes  
(2011-2016) Number of Vehicles

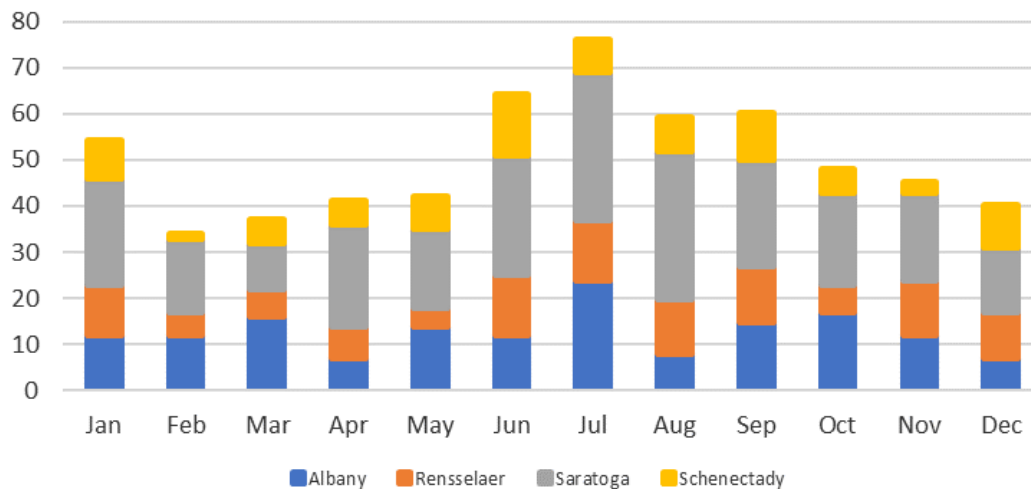


Source: ALIS

The charts below illustrate the number of fatal and serious injury lane departure crashes by month, day of week, and time of day. The charts show that fatal and serious injury lane departure crashes occur most frequently during the summer months and on Saturdays and Sundays. The time of day peaked between 3:00 to 6:00 PM with another

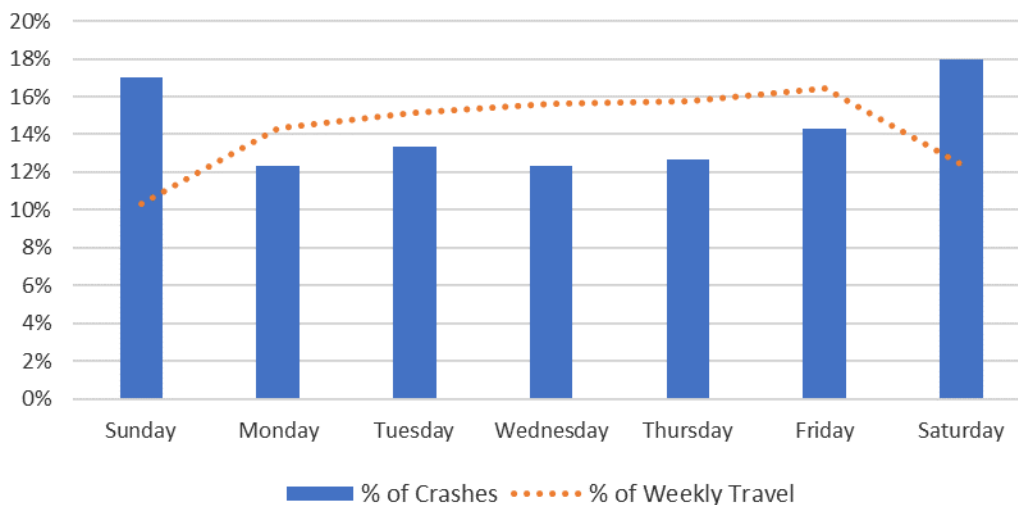
noticeable peak from 11:00 PM to 1:00 AM. The charts also show that when compared to weekly and hourly travel trends, lane departure crashes are over-represented on weekends and at night (7:00 PM to 4:00 AM).

Local Road Lane Departure Fatal & Serious Injury Crashes  
(2011-2016) by Month



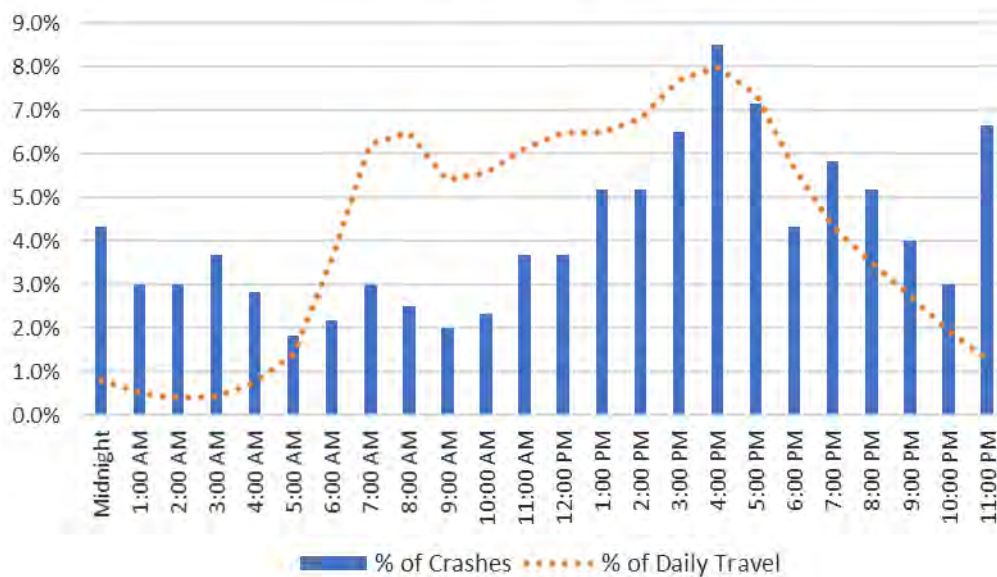
Source: ALIS

Local Road Lane Departure Fatal & Serious Injury Crashes  
(2011-2016) Day of Week



Source: ALIS and NYSDOT

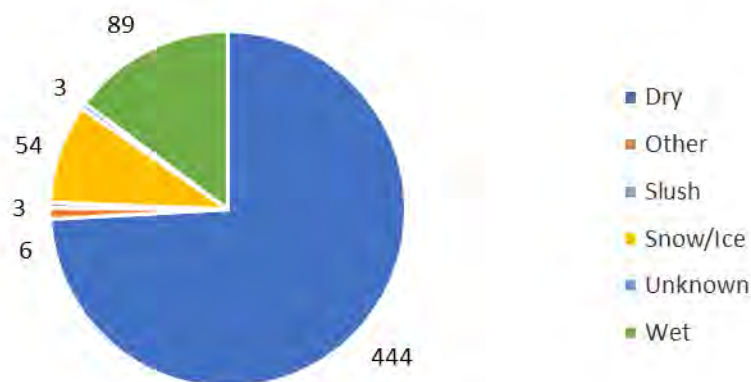
Local Road Lane Departure Fatal & Serious Injury Crashes  
(2011-2016) Time of Day



Source: ALIS

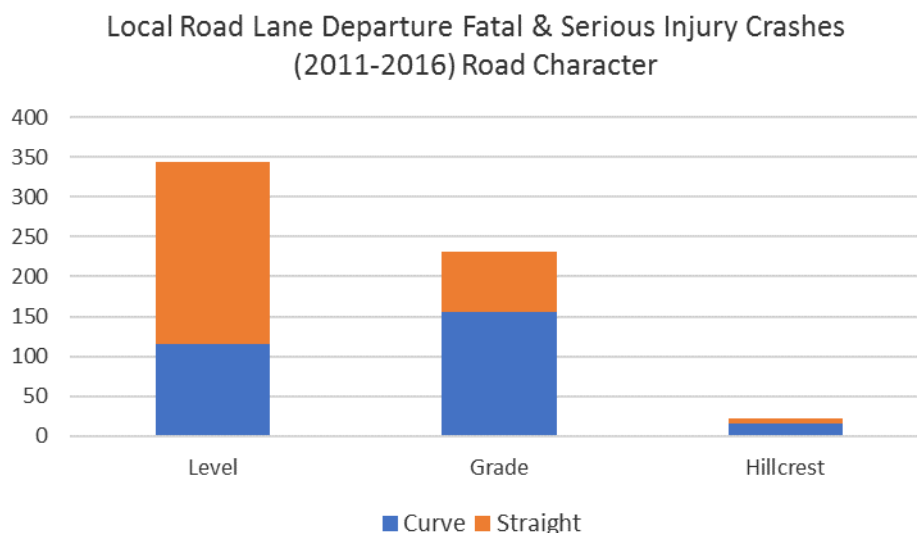
As noted in Table 18, roadway condition, environmental condition, and driver behaviors can all contribute to vehicle crashes. The following chart summarizes roadway surface condition. The chart shows that fatal and serious injury lane departure crashes primarily occur on dry roadways (74%) while wet and icy conditions account for a total of approximately 24 percent of the fatal and serious injury crashes.

Local Road Lane Departure Fatal & Serious Injury Crashes  
(2011-2016) Road Surface



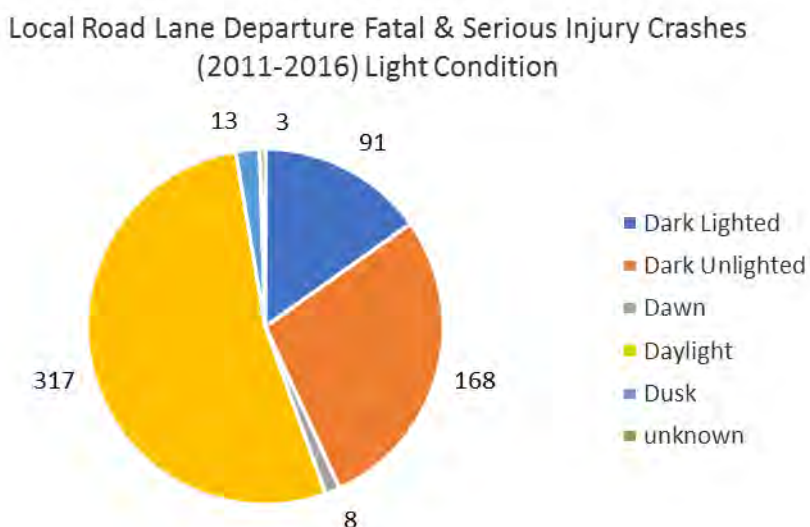
Source: ALIS

In addition to surface condition, roadway character and lighting can affect crash potential. The following charts summarize roadway conditions like curvature, grade, and lighting that may be contributing to the potential for fatal and serious injury crashes. The chart below shows that the combination of roadway curve and grade account for approximately 150 (25%) of the fatal and serious injury lane departure crashes.



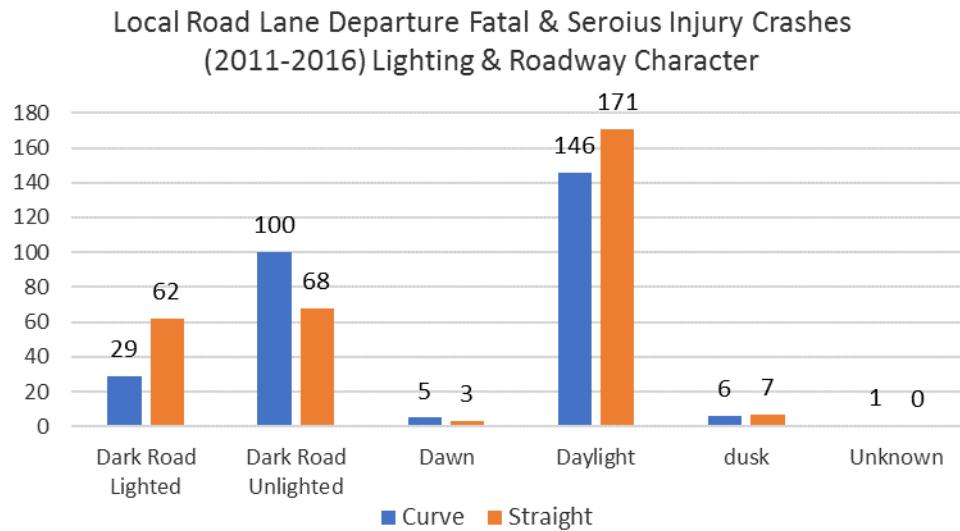
Source: ALIS

Roadway lighting condition can also contribute to crashes. Dark road unlighted conditions account for 168 of the 600 fatal and serious injury lane departure crashes.



Source: ALIS

The following chart shows the combination of roadway curvature and lighting condition. The chart shows that of the 168 crashes that occur on dark road unlighted conditions, approximately 100 occur on a roadway curve.



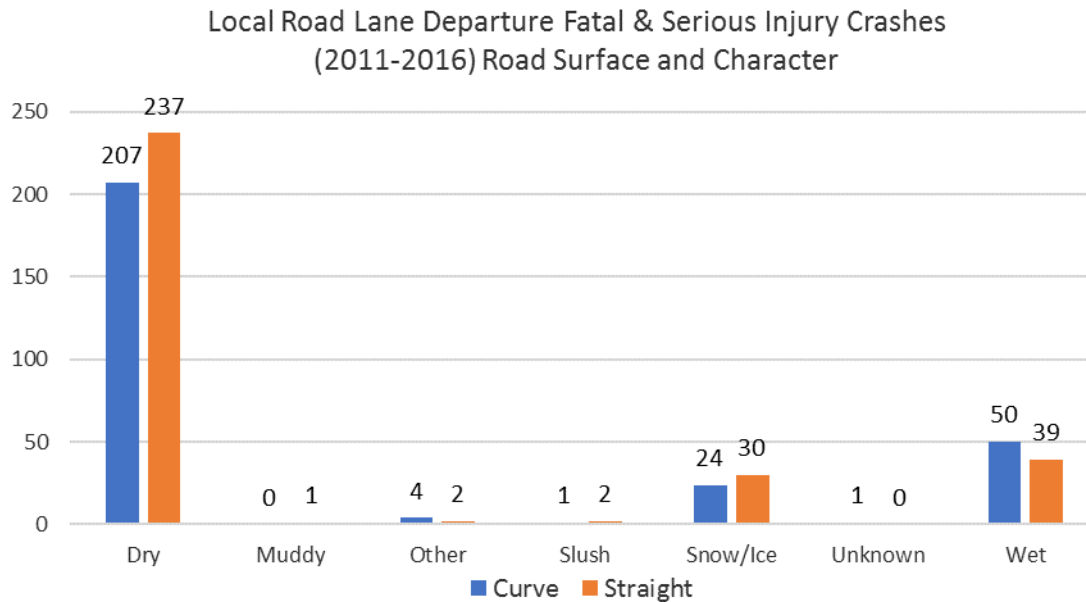
*Source: ALIS*

Table 19 illustrates the number of crashes that occur on curved and straight roadway segments on dark road unlighted conditions by county.

**Table 19 – Local Road Dark Road Unlighted Crashes by Road Character**

Road Character	County			
	Albany	Rensselaer	Saratoga	Schenectady
Total Crashes	34	34	87	13
Curved Segment	18	25	49	8
% Curved Segment	26%	42%	37%	30%
Straight Segment	16	9	38	5
% Straight Segment	18%	18%	31%	10%

The chart below similarly shows that the majority of crashes that occur under dry road conditions happen on straight roadway segments while the majority of crashes that occur under wet road conditions happen on curves.



*Source: ALIS*

The majority of the lane departure crashes involve hitting an earth element, rock or ditch, utility or light pole, or a tree. The table below shows the comparison between counties hitting the three most common road features.

**Table 20 – Local Road Lane Departure Local Road Crashes by County and Road Feature**

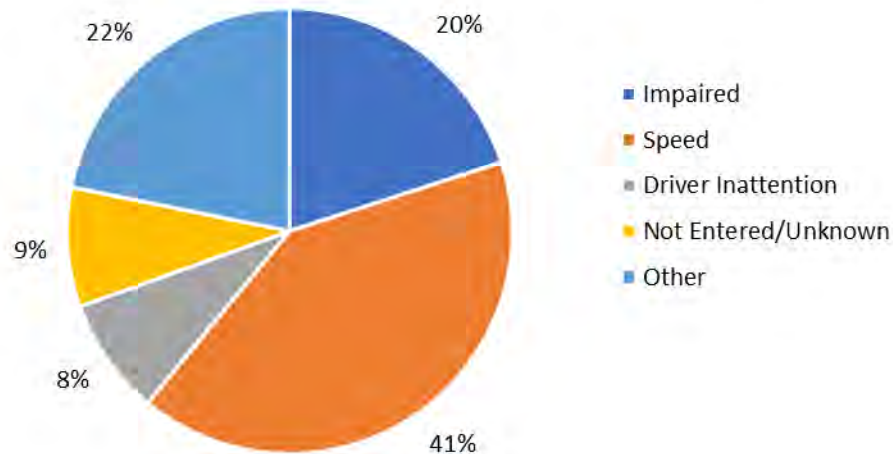
Road Feature	County			
	Albany	Rensselaer	Saratoga	Schenectady
Total Crashes	156	111	254	79
Earth Element, Rock Cut, Ditch	13	26	56	10
Light Support, Utility Pole	25	21	34	16
Tree	36	34	65	19
Number of Crashes	74	81	155	45
% of Total Crashes	47%	73%	61%	57%

The chart below summarizes the contributing factor data for the fatal and serious injury lane departure crashes. The crash data includes information provided in the police report to help determine what caused a crash. There are 46 identified “contributing factors” included in the crash reports. Of these 46 potential contributing factors, approximately 70 percent are attributed to 3 factors, all related to the driver (driver



behavior); vehicle speed, impaired driving (alcohol or drugs), and driver inattention. Almost 9 percent of the contributing factors for the crashes are Unknown or Not Entered while the remaining 21 percent can be attributed to the other 41 contributing factors.

Local Road Lane Departure Fatal & Serious Injury Crashes  
(2011-2016) Contributing Factor



Source: ALIS

### Municipal Emphasis

To provide a more local emphasis, the number of fatal and serious injury crashes in each municipality were compared to the population. Table 21 illustrates the number of lane departure crashes and identifies communities that were over-represented when compared to municipal population by at least 1%. The table shows that the areas of over-representation are located in the towns in the Capital District with the City of Schenectady as the only city or village that is over-represented for lane departure crashes when compared to population.

Table 21 – Lane Departure Fatal and Serious Injury Local Road Crash Over-Representation by Municipality

Municipality	% of County Population	Intersection Crashes	
		Number	% County
<b>Albany County</b>		<b>156</b>	
<u>Towns:</u> Berne	0.9%	3	1.9%
Bethlehem	10.8%	19	12.2%
Coeymans	2.2%	6	3.8%
Knox	0.8%	4	2.6%
New Scotland	2.7%	11	7.1%
Rensselaerville	0.6%	5	3.2%
Westerlo	1.0%	6	3.8%
<b>Rensselaer County</b>		<b>111</b>	
<u>Towns:</u> Brunswick	7.6%	13	11.7%
Hoosick	4.1%	7	6.3%
Petersburgh	0.9%	2	1.8%
Pittstown	3.4%	10	9.0%
Poestenkill	2.7%	5	4.5%
Sand Lake	5.1%	10	9.0%
Schaghticoke	4.6%	9	8.1%
Stephentown	1.7%	5	4.5%
<b>Saratoga County</b>		<b>253</b>	
<u>Towns:</u> Corinth	2.8%	14	5.5%
Day	0.4%	12	4.7%
Edinburg	0.5%	11	4.3%
Greenfield	3.4%	13	5.1%
Hadley	0.9%	14	5.5%
Milton	8.5%	27	10.7%
Providence	0.9%	5	2.0%
Saratoga	2.5%	4	1.6%
Wilton	7.4%	22	8.7%
<b>Schenectady County</b>		<b>79</b>	
<u>Cities:</u> Schenectady	39.9%	38	48.1%
<u>Towns:</u> Duanesburg	3.8%	7	8.9%
Princetown	1.3%	3	3.8%

### Emphasis Area Goal

Reduce lane departure fatal and serious injury crashes through implementation of engineering, education, and enforcement strategies.

### Conclusions

Review of the data reveals the following about fatal and serious injury lane departure crashes:

- Approximately 1/3 of all fatal and serious injury crashes

- Approximately 2/3 of all fatal and serious injury crashes in rural areas and over-represented on rural roads
- Approximately 97 percent of crashes involve a single vehicle
- Saratoga County has the highest percentage of crashes and is over-represented when compared to VMT
- Higher number of crashes occur on weekends and time of day peaked between 3:00 to 6:00 PM with another noticeable peak from 11:00 PM to 1:00 AM
- Over-represented on weekends and at night (7:00 PM to 4:00 AM) when compared to weekly and hourly travel trends
- Approximately 70 percent of crashes involve unsafe travel speed, impaired (alcohol or drug), and driver inattention
- Dark road unlighted conditions represent a significant portion of crashes, especially on horizontal curves
- Approximately 25 percent involve a roadway curve and grade condition

Based on the data evaluation and above findings, crash reduction strategies have been identified for potential implementation. In an effort to reach the emphasis area goal, the strategies that have the potential to provide the greatest crash reduction should be prioritized.

### Strategies and Actions

There are 13 actions in support of this emphasis area. Four strategies (Program, Engineering, Education, Enforcement) identify supporting actions, the appropriate agencies needed to complete the actions, and which of the contributing factors (environmental, roadway, behavior) are targeted.

The following actions should be considered for implementation as resources allow.

***Program:*** Create a program to identify **lane departure** crash contributing factors and higher risk locations on the local roadway system.

Program Action	Lead Agency / Partners	Focus
Identify locations with high-risk roadway features that are correlated with lane departure crashes	County, Municipal / CDTC	Roadway
Develop a systemic lane departure safety program	County, Municipal / CDTC, NYSDOT	Roadway
Develop a methodology to review horizontal curves	CDTC	Roadway

**Engineering:** Implement safety countermeasures at locations based on lane departure crash experience.

Engineering Action	Lead Agency / Partners	Focus
Install/maintain retro-reflective shoulder striping	County, Municipal	Roadway
Install high friction surface treatments on horizontal curves	County, Municipal	Roadway
Install or upgrade curve warning and alignment signs to current MUTCD requirements	County, Municipal	Roadway
Install Safety Edge	County, Municipal	Roadway
Construct shoulder rumble strips (audible delineators)	County, Municipal	Roadway
Improve roadside clear zones	County, Municipal	Roadway
Install roadway lighting	County, Municipal	Roadway

**Education:** Develop education and training materials related to lane departure crashes.

Education Action	Lead Agency / Partners	Focus
Disseminate outreach materials, and training to educate the public on the major causes of lane departure crashes	Department of Health / Municipal	Behavioral
Conduct outreach to the public	GTSC / CDTC, Municipal	Behavioral

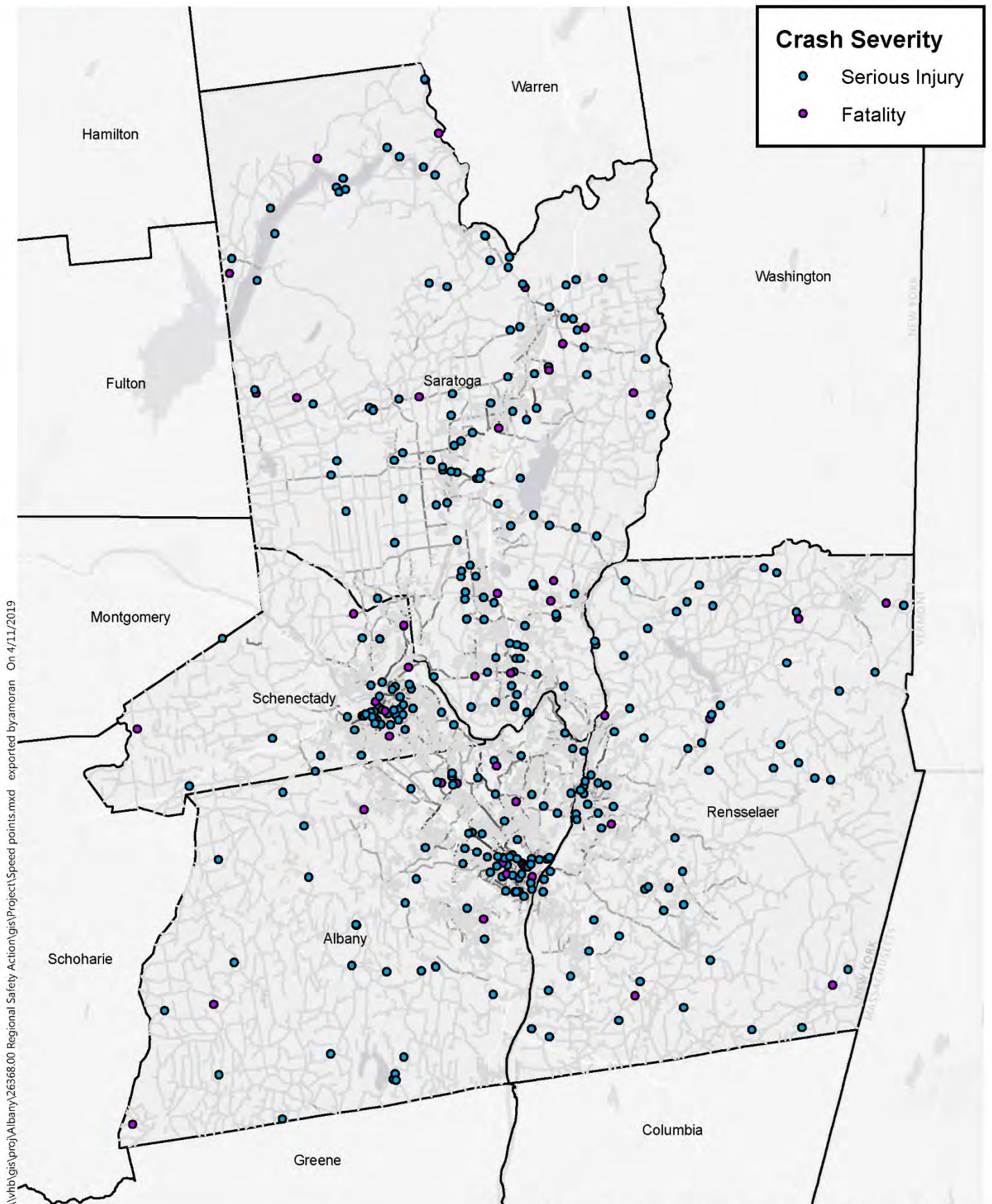
**Enforcement:** Continue enforcement of traffic laws that reduce lane departure crashes.

Enforcement Action	Lead Agency / Partners	Focus
Increase speed enforcement	Local, County, State law enforcement	Behavioral

## Speed

Speed related fatalities and serious injuries result from crashes where a driver was either driving over the posted speed limit, or at an unsafe speed for conditions. Higher speeds increase the probability of death or serious injury resulting from the crash. Between 2011 and 2016, approximately 20 percent of fatal and serious injury crashes in the Capital District were speed related. Figure 14 illustrates the locations of the speed related crashes.

**Figure 14: Local Road Speed Related Crashes**



Albany, Rensselaer, Saratoga, and Schenectady Counties

New York

Source: ALIS

April 11, 2019

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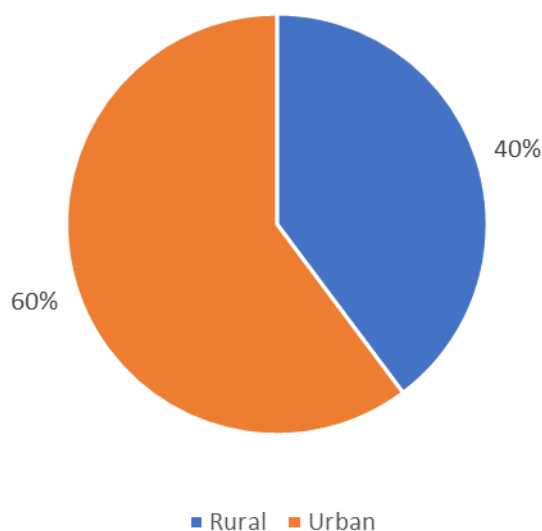


### Define the Problem

Unsafe Speed is identified as a contributing factor for 357 of the 1,810 total fatal and serious injury crashes that occurred on the local and county road system in the Capital District from 2011 through 2016. As shown in the chart below, the crashes occur in both urban and rural areas, although the speed related crashes account for a higher percentage of urban fatal and serious injury crashes. It is noted that Saratoga County accounts for the highest percentage of speed related crashes at 37 percent.

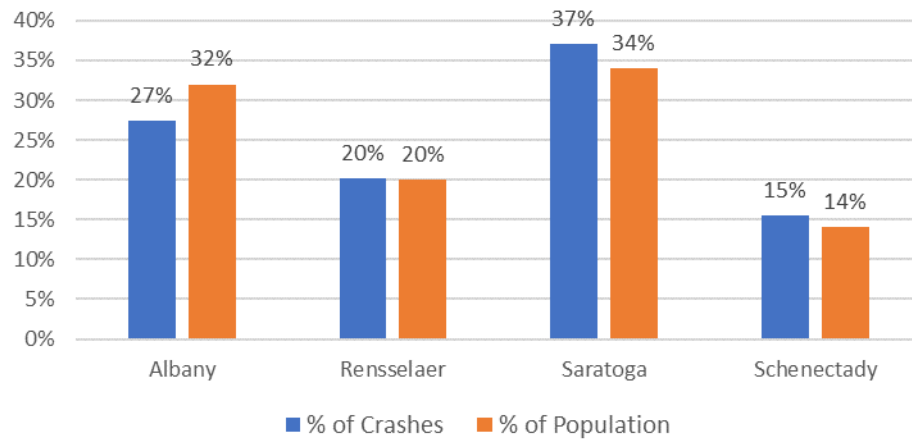
Speed related fatal crashes accounted for approximately 38 percent of all fatalities (48 of the 127 crashes) in the Capital District. The following charts show the number of fatal and serious injury crashes by year, weekday, and time of day. The yearly graph shows that the trend of speed related crashes has remained consistent over the last six years averaging approximately 60 crashes per year.

Local Road Speed Related Fatal & Serious Injury  
Crashes (2011-2016)



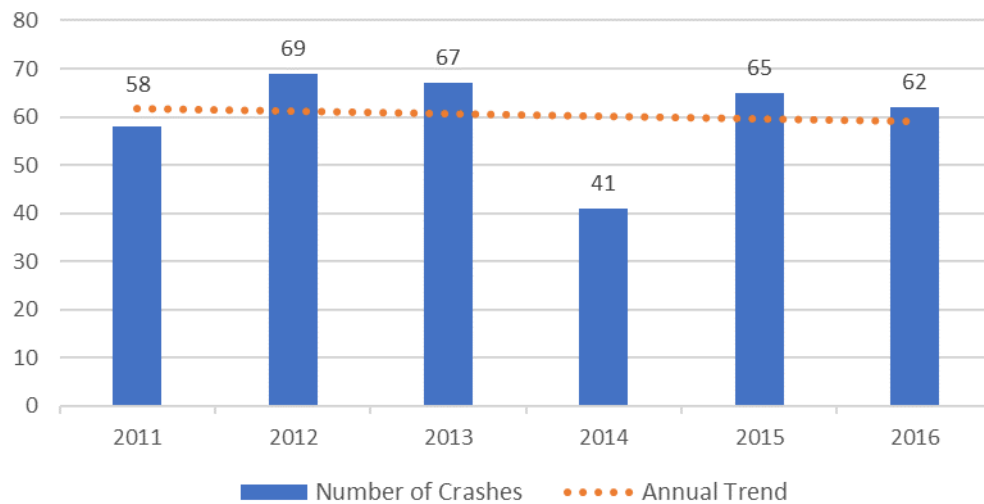
Source: ALIS

Local Road Speed Related Fatal & Serious Injury Crashes  
(2011-2016) County and Population



Source: ALIS and CDTC

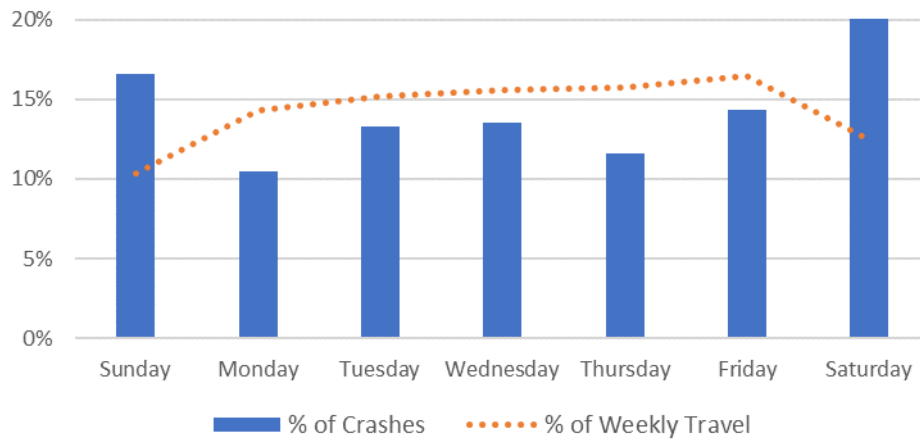
Local Road Speed Related Fatal & Serious Injury Crashes by  
Year (2011-2016)



Source: ALIS

The below chart shows the fatal and serious injury crashes occur most frequently on Saturday and Sunday. The chart also shows that crashes on Saturdays and Sundays are over-represented when compared to the percent of weekly travel by day. Approximately 51 percent of crashes occur from Friday to Sunday.

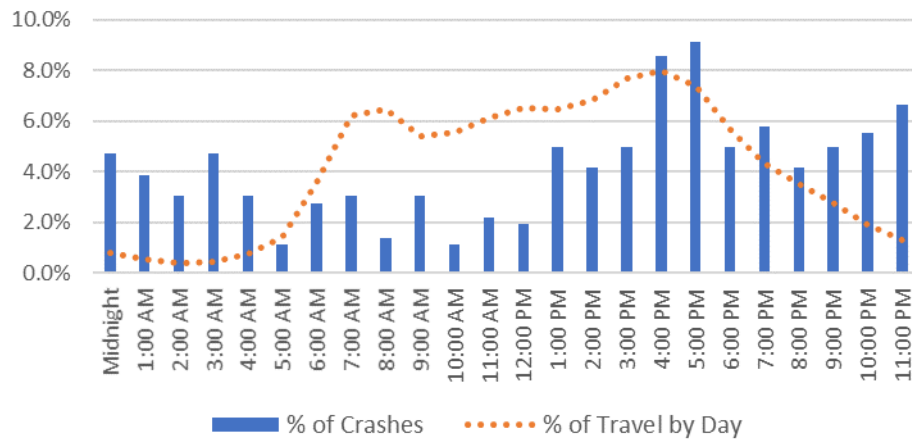
Local Road Speed Related Fatal & Serious Injury Crashes  
(2011-2016) Day of Week



Source: ALIS and NYSDOT

The time of day speed related crashes peak between 4:00 to 6:00 PM with a third highest hour occurring at 11:00 PM to midnight. It is noted that speed related crashes are over-represented from 4:00 PM to 4:00 AM.

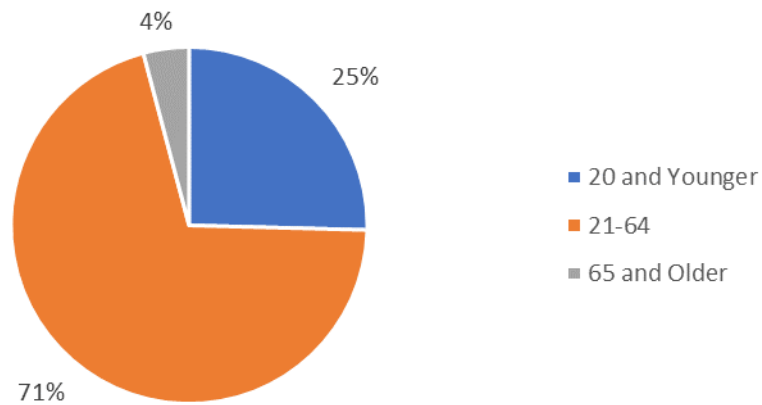
Local Road Speed Related Fatal & Serious Injury Crashes  
(2011-2016) Time of Day



Source: ALIS and NYSDOT

The following chart shows that young drivers (under 20 years old) contribute to 25 percent of the overall speed related fatal and serious injury crashes.

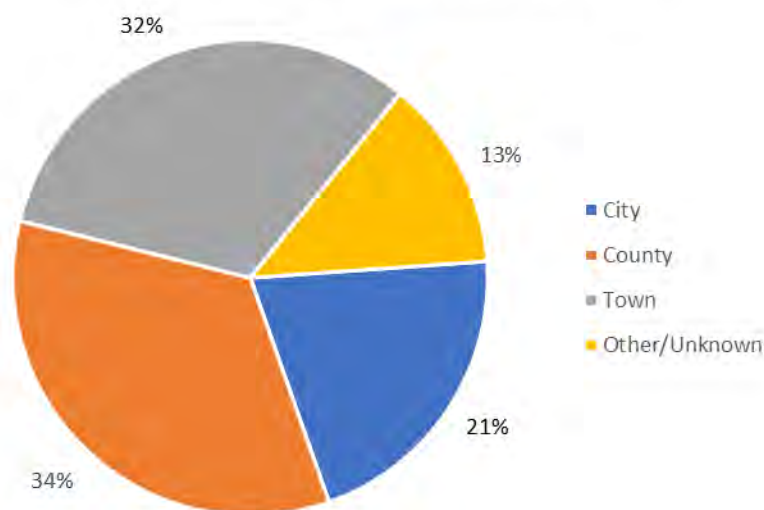
Local Road Speed Related Fatal & Serious Injury Crashes  
(2011-2016) Age



Source: ALIS

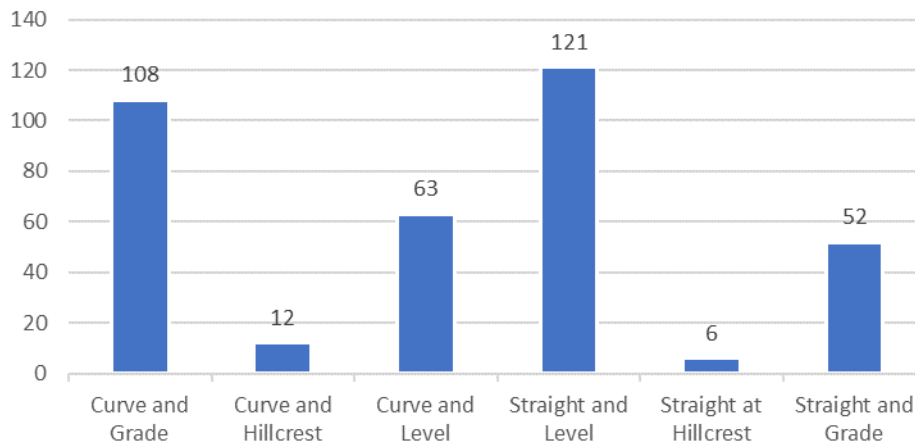
The following charts show a fairly even distribution of speed related crashes based on the roadway type. It is noted that there is an even distribution of crashes that occur on a straight section of road versus a curved section.

Local Road Speed Related Fatal & Serious Injury  
Crashes (2011-2016) Jurisdictional Roads



Source: ALIS

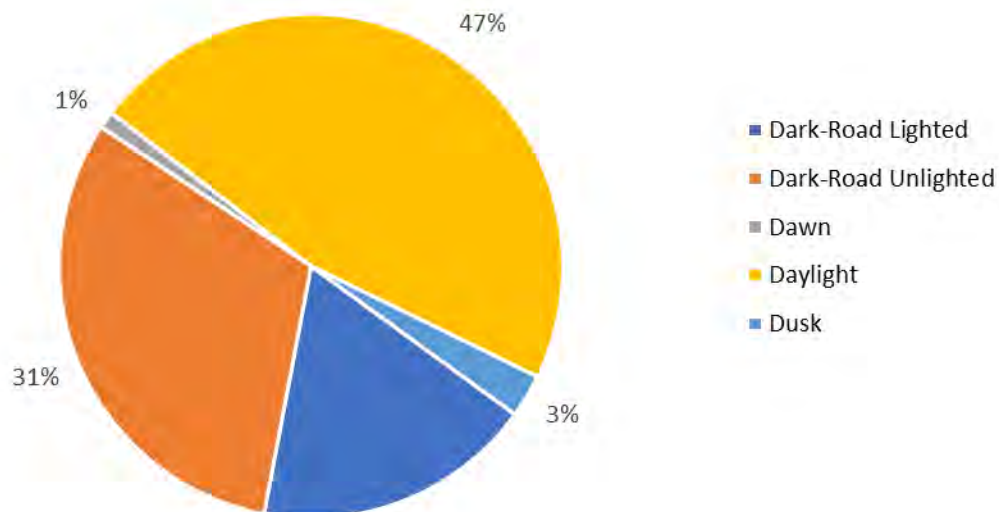
Local Road Speed Related Fatal & Serious Injury Crashes  
(2011-2016) Roadway Character



Source: ALIS

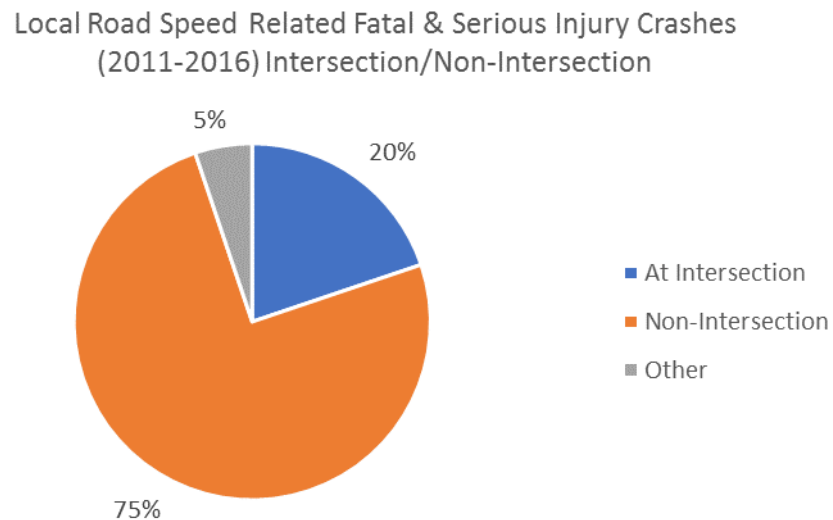
Approximately half of the collisions occurred in the daylight and half occurred at nighttime. However, traffic volumes on area roadways are higher during the day than at night indicating that crashes at night could be over-represented. It is noted that during the night, approximately 31 percent of the crashes occurred on an unlit section of roadway.

Local Road Speed Related Fatal and Serious Injury Crash (2011-2016)  
Lighting Condition



Source: ALIS

The following chart shows that 75 percent of speed related crashes occurred at non-intersection locations whereas 20 percent occurred at an intersection.



Source: ALIS

### Municipal Emphasis

To provide a more local emphasis, the number of fatal and serious injury crashes in each municipality were compared to the population. Table 22 illustrates the number of speed related crashes and identifies communities that were over-represented when compared to population by at least 1%. The table shows that towns are the primary locations with over-representation of speed related crashes.



Table 22 – Speed Related Fatal and Serious Injury Local Road Crash Over-Representation by Municipality

Municipality	% of County Population	Speed Related Crashes	
		Number	%
<b>Albany County</b>		<b>99</b>	
<u>Cities:</u> Albany	29.9%	41	41.4%
Cohoes	5.1%	6	6.1%
<u>Towns:</u> Coeymans	2.2%	4	4.0%
Knox	0.8%	2	2.0%
New Scotland	2.7%	7	7.1%
Rensselaerville	0.6%	4	4.0%
Westerlo	1.0%	2	2.0%
<b>Rensselaer County</b>		<b>73</b>	
<u>Towns:</u> Brunswick	7.6%	9	12.3%
Grafton	1.3%	4	5.5%
Hoosick	4.1%	5	6.8%
Petersburgh	0.9%	2	2.7%
Pittstown	3.4%	6	8.2%
Sand Lake	5.1%	5	6.8%
Schaghticoke	4.6%	8	11.0%
Schodack	7.8%	8	11.0%
Stephentown	1.7%	4	5.5%
<b>Saratoga County</b>		<b>134</b>	
<u>Towns:</u> Ballston	4.7%	8	6.0%
Corinth	2.8%	7	5.2%
Day	0.4%	5	3.7%
Edinburg	0.5%	5	3.7%
Greenfield	3.4%	7	5.2%
Hadley	0.9%	7	5.2%
Providence	0.9%	4	3.0%
Wilton	7.4%	17	12.7%
<b>Schenectady County</b>		<b>56</b>	
<u>Cities:</u> Schenectady	39.9%	33	58.9%
<u>Towns:</u> Duanesburg	3.8%	3	5.4%
Princetown	1.3%	3	5.4%

### Emphasis Area Goals

Reduce speed related fatal and serious injury crashes through implementation of engineering, education, and enforcement strategies.

### Conclusions

Review of the data reveals the following about fatal and serious injury crashes related to speed:

- Approximately 20 percent of fatal and serious injury crashes

- Speed related crashes occurred more often in urban areas than rural
- Saratoga County has the highest percentage of speed related crashes and is slightly over-represented when compared to population
- The trend of crashes has been relatively flat in the Capital District for the past six years
- Crashes are over-represented from 4:00 PM to 4:00 AM
- Drivers under 20 years of age account for 25 percent of speed related crashes
- An even distribution of crashes occurred on a straight versus curved section of road
- Dark road unlighted conditions accounted for approximately 31 percent of crashes
- Approximately 72 percent of speed related crashes did not occur at an intersection

Based on the data evaluation and above findings, crash reduction strategies have been identified for potential implementation. In an effort to reach the emphasis area goal, the strategies that have the potential to provide the greatest crash reduction should be prioritized.

### Strategies and Actions

There are 17 actions in support of this emphasis area. Four strategies (Program, Engineering, Education, Enforcement) identify supporting actions, the appropriate agencies needed to complete the actions, and which of the contributing factors (environmental, roadway, behavior) are targeted.

Many of the engineering actions for speed related crashes are applicable to multiple emphasis areas. Refer to the engineering strategies for Intersection and Lane Departure crashes for additional recommendations.

The following actions should be considered for implementation as resources allow.

**Program:** *Create a program to identify **speed** related crash contributing factors and higher risk locations on the local roadway system.*

Program Action	Lead Agency / Partners	Focus
Review jurisdictional policies and responsibilities related to setting speed limits	County, Municipal / NYSDOT	Roadway
Adopt Complete Streets policies with focus on traffic calming	Municipal	Roadway
Arrange for or facilitate the NHTSA Speed Management Program Plan training to safety partners	CDTC	Behavioral
Consider expanding red-light camera enforcement in Capital District	Municipal	Behavioral

**Engineering:** Implement safety countermeasures at locations based on speed related crash experience.

Engineering Action	Lead Agency / Partners	Focus
Apply speed feedback devices	County, Municipal	Roadway
Implement proven traffic-calming and other design factors (e.g., driver feedback signs, roundabouts, road diets, signs, pavement markings, Complete Streets, etc.) to influence driver speed.	County, Municipal	Roadway
Install/maintain retro-reflective shoulder striping	County, Municipal	Roadway
Install high friction surface treatments on horizontal curves	County, Municipal	Roadway
Install curve warning signs	County, Municipal	Roadway
Install Safety Edge	County, Municipal	Roadway
Construct shoulder rumble strips (audible delineators)	County, Municipal	Roadway
Improve roadside clear zones	County, Municipal	Roadway
Install roadway lighting	County, Municipal	Roadway

**Education:** Continue educational programs related to safe speeds and promote culture change.

Education Action	Lead Agency / Partners	Focus
Continue to support programs and social media messaging to educate younger drivers and their parents on general safe driving practices	Department of Health (DOH) / GTSC	Behavioral
Continue to support programs and social media messaging to educate all drivers on avoiding high-risk driving behavior and encourage general safe driving practices	Department of Health (DOH) / GTSC	Behavioral
Train judiciary and district attorneys on speeding issues	GTSC	Behavioral

**Enforcement:** Continue enforcement of traffic laws that reduce speed related crashes.

Enforcement Action	Lead Agency / Partners	Focus
Encourage strict enforcement of all laws related to speed related crashes with a focus on the afternoon and evening peak travel times	Law Enforcement	Behavioral

# Chapter 5: Implementation





## Chapter 5: Implementation

As noted throughout the report, there is a need for a multidisciplinary approach to safety management, including Engineering, Education, and Enforcement. This will help to address the multiple underlying crash contributing factors and to ensure the greatest reduction in fatal and serious injury crashes. Local transportation agencies have more direct control over the implementation of the Engineering Actions and some Program Actions through annual planning and budgeting. Education and Enforcement strategies will require the cooperation and coordination of several agencies like the New York State Department of Health, state and local law enforcement, and the Governor's Traffic Safety Committee. The remainder of this chapter describes opportunities and considerations for implementing engineering, education, and enforcement strategies. It also describes opportunities to develop policies and improve data to support the implementation of the general engineering, education, and enforcement strategies.

### CDTC Opportunities

While not evaluated in detail in this Local Road Safety Action Plan, the difficulty in linking the data sources and the inconsistencies in data reporting created complications in the data evaluation. These complications were also noted in the NY SHSP which identified 14 strategies intended to improve the data that safety funding relies so heavily on. Some critical statewide data improvement strategies include:

- Integrate the NYSDOT Roadway Information System (RIS) with the Safety Information Management System (SIMS) and ALIS to provide the ability to analyze the local highway system using the similar methods currently used on the state system.
- Create a statewide intersection inventory to help build stronger relationships between crash data and roadway data.
- Improve the integration of NYSDOT data including safety related maintenance work, capital project data, and asset and inventory data.

The NYSDOT is currently working on a project to update the existing crash analysis system expected to be completed in late 2020. The new system will include a custom suite of applications that will be referred to as the Crash Location and Engineering Analysis Repository (CLEAR) system. The CLEAR system will consist of a series of spatially-enabled web applications with mapping and geospatial functionality. The system will include a crash geocoding engine, automated crash geocoder, interactive crash editor, data viewer, intersection inventory manager, mobile safety viewer, and CLEAR Safety. CLEAR Safety will be the cornerstone of the application, supporting the planning, implementation, and evaluation of safety projects on the state and local

system. While local agencies will not be required to use CLEAR Safety, this will serve as a tool to support local planning, implementation, and evaluation efforts. It is noted that the CLEAR analysis tool will only be as good as the data contained within the system including the roadway characteristics, detailed crash reports and accurate location coding which will require multiple partners to build over time.

CDTC has an opportunity to create tools to assist the local municipalities and counties in improving safety on the local road system. It is noted that these recommendations are for CDTC consideration and will be pursued as resources allow. These include the following:

### Roadway and Intersection Data



- Develop roadway character and intersection characteristics inventory checklist and samples
- Document a sample database structure for monitoring, maintaining, and reporting roadway and intersection inventories

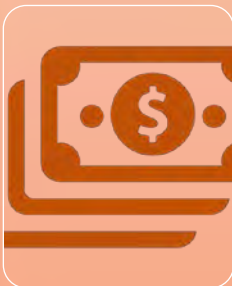
### Crash Data and Evaluation



- Arrange for CLEAR system training when available
- Create templates for the CLEAR system to share with the local municipalities for a consistent data evaluation methodology
- Complete data analysis when needed
- Support post-implementation evaluation by helping to track and report project information



## Project Funding



- Provide a central source for all safety funding options and resources
- Continue to assist with completion of funding applications including crash evaluations
- Continue to monitor new safety funding sources and partnering opportunities
- Create a competitive funding program for safety evaluations and capital projects

## Engineering Actions/Countermeasures

Figure 1 showed that fatal and serious injury crashes are located throughout the Capital District. As expected, there are areas of crash concentration in the cities where traffic volumes and the potential for conflict are higher, but there are also many crashes scattered throughout the Capital District.

Based on the concentration of crashes at select locations and the scattering of fatal and serious injury crashes throughout the study area, a holistic safety management approach that heavily emphasizes systemic strategies and seeks to make improvements to higher crash locations when patterns can be identified is appropriate. The second phase of the Local Road Safety Action Plan will identify and evaluate locations for specific countermeasure treatments.

The detailed evaluation of each emphasis area showed that some countermeasures are appropriate for all counties within the Capital District, while some are more applicable to a particular county based on the prevalent crash contributing factors. The following is a summary of the priority emphasis areas by county:

- Albany County: intersections, vulnerable user – pedestrian/bicyclist, and vulnerable users – motorcyclist crashes
- Rensselaer County: younger driver crashes
- Schenectady County: intersection and older driver crashes
- Saratoga County: lane departure, younger driver, older driver, vulnerable user – motorcyclist, and speed related crashes.

This indicates that communities in these counties may choose to initially concentrate efforts on those emphasis areas that are over represented and have the greatest potential to reduce fatal and serious injury crashes. Table 23 summarizes potential countermeasures, that should be considered when resources allow, with an indication of the applicable emphasis area, relative cost, crash modification factor (CMF), and implementation timeframe. As described previously, a crash modification factor illustrates the expected change in crashes at a location after implementation of the countermeasure. Note that several countermeasures are applicable to multiple emphasis areas, which presents an opportunity to address multiple crash contributing factors and related crashes.

Table 23 – Potential Countermeasures

Countermeasure	Emphasis Area <sup>1</sup>							Relative Cost <sup>2</sup>	Timeframe	CMF <sup>3</sup>
	I	RU	AR	VU-P/B	VU-M	LD	S			
1 Install backplates at traffic signals	✓		✓					Low	Short	0.85
2 Install intersection warning signs	✓		✓					Low	Short	0.65
3 Signal timing and phasing adjustments	✓							Low	Short	multiple
4 Lane geometry adjustments	✓							Moderate	Short	multiple
5 Install intersection signing	✓							Low	Short	multiple
6 Provide clearing to improve sight lines	✓							Low	Short	equation
7 Restrict parking near intersections	✓							Low	Short	0.51
8 Install intersection lighting	✓			✓				Moderate/High	Medium/Long	0.881
9 Install flashing beacons at stop-controlled intersections		✓						Low	Short	0.84
10 Install RRFBs at unsignalized intersections		✓		✓				Moderate	Medium	0.526
11 Install edge-line rumble strips		✓			✓	✓	✓	Low	Range	0.84
12 Install dynamic messaging board		✓		✓	✓		✓	Low	Short	multiple
13 Install signs with larger typeface			✓					Low	Short	NA
14 Install signs with improved retro-reflectivity			✓		✓	✓		Low	Short	NA

Countermeasure	Emphasis Area <sup>1</sup>							Relative Cost <sup>2</sup>	Timeframe	CMF <sup>3</sup>
	I	RU	AR	VU-P/B	VU-M	LD	S			
15 Install roadway lighting			✓		✓	✓		Moderate/High	Medium/Long	0.63
16 Use latest age-related guidance in design and implementation			✓					Low	Short	NA
17 Install pedestrian accommodations at signalized intersections				✓				Low/Moderate	Range	multiple
18 Install pedestrian warning signs				✓				Low	Short	0.789
19 Construct bicycle infrastructure (bike lane, shoulder, path)				✓				Varies	Medium/Long	0.65
20 Construct pedestrian infrastructure (sidewalk, path, shoulder)				✓				Moderate/High	Medium/Long	0.41
21 Provide retro-reflective shoulder striping					✓	✓	✓	Low	Range	0.888
22 Install high friction surface treatments					✓	✓	✓	Moderate	Range	0.207
23 Install curve warning signs					✓	✓	✓	Low	Short	0.70
24 Install Safety Edge					✓	✓	✓	Low	Range	0.892
25 Improve roadside clear zones					✓	✓	✓	Moderate	Range	0.78
26 Use motorcycle friendly design practices					✓			Low	Short	NA
27 Implement traffic calming measures							✓	Varies	Range	0.68
28 Install dynamic messaging board for speed feedback							✓	Low	Short	0.95

<sup>1</sup> Emphasis Areas

<sup>2</sup> Relative Costs depend on perspective, but for purposes of this study the relative costs are defined as: Low = less than \$5,000, Moderate = \$5,000 to 50,000, and High = more than \$50,000

<sup>3</sup> CMF = Crash Modification Factor obtained from the US Department of Transportation Federal Highway Administration Crash Modification Factors Clearinghouse. Crash modification factors identify the expected change in crashes after countermeasure implementation.

I = Intersection

RU = Road User Behavior

AR = Age Related

VU-P/B = Vulnerable User-Pedestrians/Bicyclists

VU-M = Vulnerable User-Motorcyclists

LD = Lane Departure

S = Speed Related

NA = Not Available

The decision to implement a specific countermeasure will be determined by the local agency based on the targeted crash contributing factor and project-specific benefit-cost analysis. In general, agencies should prioritize countermeasures that provide the best chance of maximizing the return on investment. This is achieved by conducting an economic analysis and prioritizing those projects with highest benefit-cost ratio. To help with project prioritization decisions, Appendix C provides an overview of several countermeasures, indicating the targeted emphasis area, relative cost, implementation timeframe, and implementation considerations. It is noted that some countermeasures should be installed as a standard practice during routine maintenance and/or roadway resurfacing projects. The tasks below (blue) could be completed by the local municipalities and counties and supported by the CDTC (orange). The tasks include both engineering and policy recommendations as many engineering countermeasures are benefited by implementation of supporting policies. In addition to the items listed below, it is recommended that local municipal and agency representatives participate in Cornell Local Roads training programs and utilize their many resources for roadway safety and design.

As noted, the recommendations are conceptual in nature and are presented to characterize the types of countermeasures that are desirable, and that may be implemented as part of future plans, policies, and projects as resources allow.



### Adopt a Road Safety Audit (RSA) Program

- Identify RSA team
  - Commit to conducting a set number of audits per year
- Share the NYSAMPO Safety Assessment process, based on FHWA Road Safety Audits, and assist with coordination.
  - Continue to educate partners about available funding opportunities



## Identify Intersections with High Risk Factors

- Conduct intersection inventory
- Commit to conducting a set number of inventories per year
- Create a system for organizing, conducting, and reporting each intersection inventory

- Develop a list of intersection inventory features
  - Highlight the high risk factors
- Create a checklist to conduct an intersection inventory
- Continue to educate partners about available funding opportunities



## Implement an Intersection Safety Plan

- Prioritize intersections for safety countermeasures
- Implement safety countermeasures at a set number of locations per year

- Create a simple tutorial illustrating how to develop an intersection safety program
- Continue to educate partners about available funding opportunities



## Implement a Lane Departure Safety Plan

- Prioritize roadways for safety countermeasures
- Implement safety countermeasures at a set number of locations per year

- Create a simple tutorial illustrating how to develop a lane departure safety program
- Continue to educate partners about available funding opportunities



## Adopt Policies that Promote Safe Roadways and Intersections

- Create an access management plan
- Adopt a Complete Streets policy
- Update Codes to create consistency with safety policies

- Develop a methodology to review horizontal curves
- Identify locations with high risk roadway features associated with lane departure crashes
- Encourage the use of CDTC programs
  - Educational workshops series
  - New Visions Complete Streets White Paper
  - Expand technical assistance program to include safety
  - ADA compliance checklist





## Prioritize Vulnerable Users

- Conduct pedestrian and bicyclist inventory
- Identify locations with pedestrian and bicyclist risk factors
- Prioritize locations for implementation of vulnerable user countermeasures

- Develop a list of roadway and intersection characteristics that are high risk factors for pedestrians and bicyclists
- Create a checklist to conduct a pedestrian/bicyclist safety review



## Update Maintenance Program

- Review and update maintenance program for basic safety features
- Implement lane departure countermeasures during routine maintenance

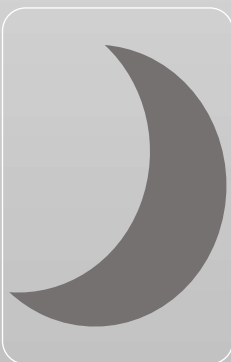
- Create a list of safety items that should be included in all routine maintenance activities
- Provide relative cost and benefit for each item
- Encourage the use of CDTC programs
  - Educational workshops series
  - New Visions Complete Streets White Paper
  - ADA compliance checklist
- Continue to educate partners about available funding opportunities

## Education and Enforcement Actions/Countermeasures

There are typically multiple contributing factors associated with any given crash, including human behaviors such as poor decision making, confusion, or unsafe actions. While the Engineering Actions described above can help to reduce the potential for human error and minimize the severity of crashes, Education and Enforcement are critical components of an overall Safety Action Plan. The primary responsibility for the Education strategies is the DOH. The primary responsible parties for Enforcement strategies are the GTSC and local and state law enforcement.

Education and Enforcement grants are awarded based on an overall identified need in a corridor, town, city, village, or county. Local municipalities and agencies can work with the CDTC to provide the appropriate crash documentation to complete grant and other funding option applications. Based on the emphasis area analyses, some areas to solicit GTSC grant funding are younger and older driver education, motorcycle education and enforcement, speed enforcement, pedestrian compliance with intersection safety rules, and continued emphasis on impaired and distracted driving.

Generally, Action Plan recommendations include taking advantage of existing resources and materials and then making those resources more readily available to various user groups. For example, the Department of Health has a number of materials including brochures, videos, and tip sheets for pedestrian safety at [https://www.health.ny.gov/prevention/injury\\_prevention/pedestrians](https://www.health.ny.gov/prevention/injury_prevention/pedestrians). The Action Plan recommends disseminating these and other available materials to the public, conducting targeted enforcement and outreach campaigns, and continuing to promote available programs. The tasks below identify specific areas of focus for Education (gray) and Enforcement (green). CDTC has limited capacity to implement these recommendations but can assist with the distribution of education materials and continue to provide a forum for discussion and creation of partnerships through the ROSAC and other committees.



### Awareness Initiatives

- Younger Drivers
  - Night time driving
  - Distracted driving
  - Impaired driving
- Older Drivers
  - New traffic control devices



## Vulnerable User Education

- Provide materials and resources like "See! Be Seen!"
- Identify and foster local partnerships
- Encourage participation in available grants



## Education and Training

- Impaired driver training
  - Drug Recognition Expert (DRE)
  - Advanced Roadside Impaired Driving Enforcement (ARIDE)
- Pedestrian and bicyclist safety training
- Motorcycle targeted training
- Drivers with declining ability and/or at risk medical conditions
- Provide consistent and continual training for crash reporting



## Enforcement Campaigns

- Focused patrols in conjunction educational campaigns
  - Road user behavior (impaired, drowsy, distracted driving)
  - Vulnerable users (pedestrians, bicyclists, motorcyclists)



## Targeted Patrols

- Conduct enforcement details at top ten safety deficient priority locations annually
- Increase speed enforcement

## Programs and Policies

In addition to the specific Engineering, Education, and Enforcement action items, each emphasis area identified overall programs and policies that will help to reduce the potential for fatal and serious injury crashes. For example, one item identified in the Intersection emphasis area program action is to develop an intersection inventory. The purpose of an intersection inventory would be to identify locations with specific risk factors. Based on the available data, 33% of fatal and serious injury crashes occur at intersections with no traffic control. An intersection inventory that identifies all the intersections with no traffic control would be the first step in providing the appropriate intersection control and potentially reducing the incidence of fatal and serious injury crashes at intersections. The number of crashes occurring at intersections with no traffic control could also be due to unreliable information contained in the crash report. Providing a reliable inventory of roadway and intersection characteristics would reduce the potential for misinformation in the crash data.

The recommended programs generally involve four steps:

1. Compile available data and information
2. Review the data to identify trends
3. Create a plan to address the need
4. Publicize the plan

To complete steps one and two, a good data source is needed. There are currently some challenges in evaluating crash data on the local road system including a lack of data about the local roadway system and a lack of correlation between the crash data and the roadway system data. Better correlation of the data will result in faster analysis and improved quality of the analysis results. Since data-driven problem identification and countermeasure selection are part of the project identification and funding process, quality data and analysis results are important. As noted, the NYSDOT is currently working on the CLEAR application which will improve the situation.

Each of the Program Actions involves at least one lead agency and one partner agency. These programs will require time and cooperation to produce and to maintain but will provide a valuable framework to prioritize safety in the local municipalities and the Capital District as a whole. These plans should be reviewed with county and municipal leaders and those individuals responsible for funding and infrastructure management to ensure the Local Road Safety Action Plan fits the needs of all those involved.

## Future Explorations

There are many proven engineering, education, and enforcement countermeasures that improve safety for road users. However, as safety issues change, and new issues emerge, there is a need to adapt existing countermeasures and develop new approaches to address these issues. The following are areas to continue to monitor in support of the goals to continually reduce the potential for fatal and serious injury crashes.

### Local Road Safety Action Plan Priority Investigations

As a next step in the Local Road Safety Action Plan process, the crash data will be further evaluated at locations with a higher frequency of crashes. These locations will be evaluated to determine if there is a prevalent crash type that can be mitigated with implementation of the previously discussed countermeasures.

### NYSDOT Action Plans

The NYSDOT will be developing state action plans for lane departure and intersection crashes over the next few years. CDTC should coordinate with the NYSDOT efforts to assist local governments regarding the availability of those plans and the useful information they will contain.

### Safe Systems

The US Department of Transportation University Transportation Centers (UCT) Program defines safe systems as “an outcome, a roadway system (including the built environment and policies that guide and support it) that sends predictable feedback to the road users about safe and appropriate behaviors, and within which people cannot die despite human errors.” The Collaborative Sciences Center for Road Safety (CSCRS) is currently completing research to defining a clear model of what a safe system is and exploring what that would look like in the United States.

### Vision Zero

Vision Zero is defined as a strategy to eliminate all traffic fatalities and serious injuries while increasing safe, healthy, equitable mobility for all. More than 30 cities in the United States have committed to Vision Zero, including New York City. Safe Systems is closely tied to Vision Zero since one of the 9 components of a strong commitment to Vision Zero is prioritizing a systems-based approach. The systems-based approach focuses on the built environment and policies that influence the built environment and

behavior. One or more of the cities in the Capital Region may want to implement Vision Zero.

### Connected and Autonomous Vehicles

The NY SHSP recognizes that the connected and autonomous vehicle technology has the potential to reduce the number of fatal and serious injury crashes by minimizing the potential for human error by drivers of passenger and commercial vehicles. The CDTC should continue to monitor the policies and technology that will be needed as part of the expanded use of connected and autonomous vehicles and what infrastructure changes may be needed to accommodate more widespread use of these types of vehicles which may occur more quickly for commercial vehicles than for passenger vehicles. CDTC should consider potential changes to factors such as mode share and travel patterns that may change as a result of connected and autonomous vehicle technology in long-range decisions. If long-range planning and prioritization assumes future conditions will reflect current conditions in terms of these factors, then benefit-cost analyses may be inaccurate and related decisions may be misguided.

### Marijuana Legalization

New York State continues to evaluate the potential impacts of legalizing recreational marijuana. CDTC should continue to monitor the status of this issue as it pertains to impaired driving. In addition, CDTC should monitor the efforts of GTSC in working with law enforcement on this issue with respect to crash reporting and future development of a roadside test.

### E-Scooters and E-Bikes

New York State continues to discuss legalizing the use of e-bikes and e-scooters. A recent proposal would require that the local municipalities would authorize their use by local law. The CDTC should continue to monitor the crash data based on the use of these types of vehicles as they represent a new subset to the vulnerable user group.

### Coordinate with Other LRSP Sponsors

Local Road Safety Plans are being implemented throughout the United States. The CDTC should continue to coordinate with and monitor the implementation and effectiveness of the other LRSPs. This continued coordination and review will ensure that the Local Road Safety Action Plan remains current with future best practices and implementation measures. One way to stay current with best practices is to monitor the FHWA Office of Safety Local Road website and Noteworthy Practices database.

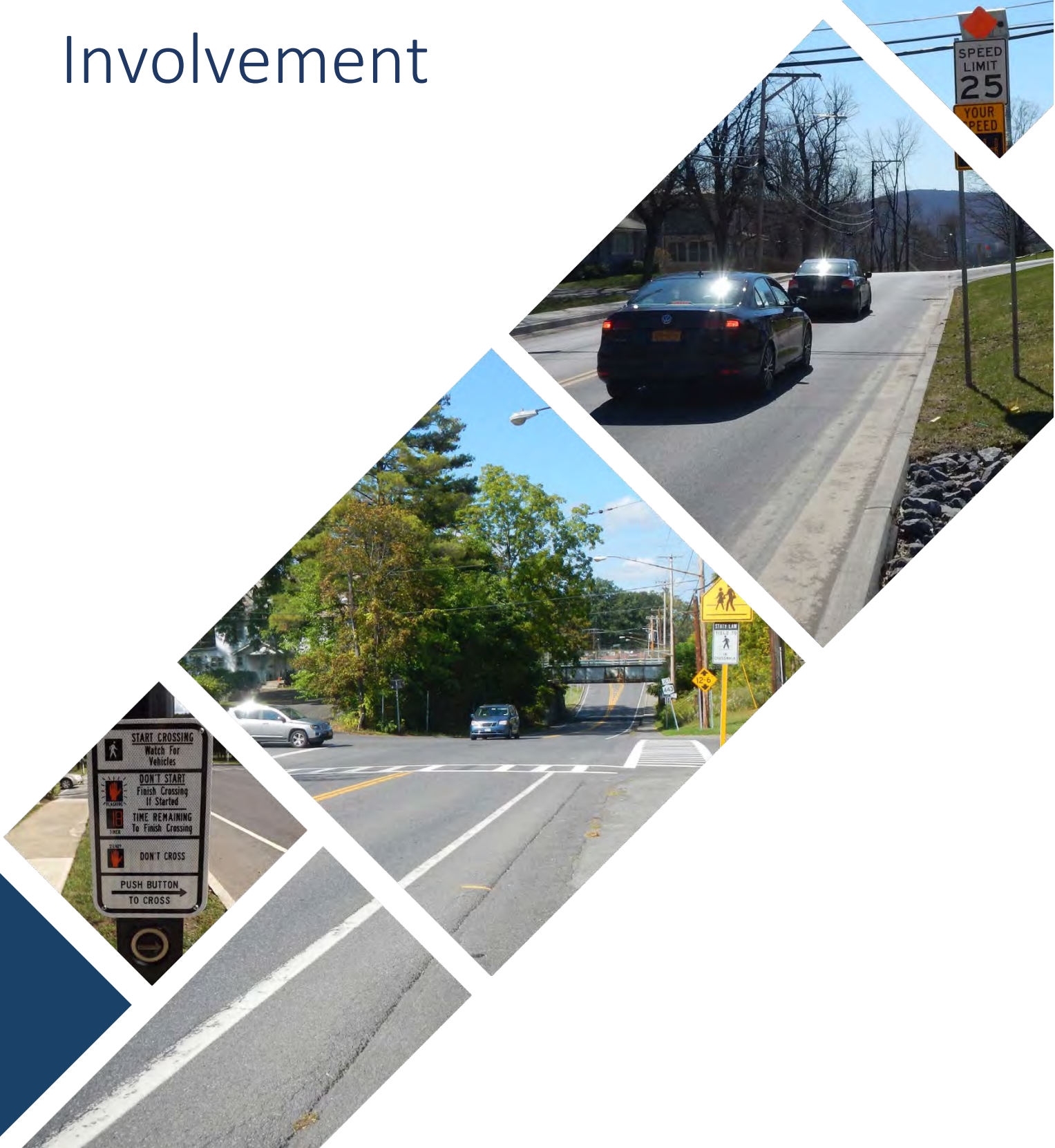
Through continual emphasis of best safety practices, continued monitoring of best practices, evaluation of current data, and by monitoring the effectiveness of implemented countermeasures, the Local Road Safety Action Plan will reduce the



potential for fatal and serious injury crashes and result in quantifiable reduction in fatal and serious injury crashes.

# Appendix A

## Stakeholder and Public Involvement





# Regional Safety Action Plan Focus Group Meetings

May 24, 2018 - Discussion Notes

## FOCUS GROUP ONE – CDTC CONFERENCE ROOM

### CDTC Representatives:

- Sandy Misiewicz
- Chris O'Neill

### Consultants:

- Wendy Holsberger, VHB
- Alanna Moran, VHB
- Margaret Irwin, River Street Planning & Development

### Participants:

- Bill Chapman, Complete Streets Committee, Niskayuna
- Ken Crandall, New York Bicycling Coalition
- Ray Engel, Albany Traffic Safety
- Aubrey Feldman, Governors Traffic Safety Committee
- Paul Kirwan, Albany Police Department
- Nika Lanier, Alliance for Positive Health
- Ifeachor Potts, Alliance for Positive Health
- Merton Simpson, Albany County Legislature, District 2
- Arlene Way, Arbor Hill Development Corporation

Sandy presented a brief introduction of CDTC and the Regional Safety Plan project. VHB presented a brief power point presentation outlining some of the state and local crash trends and areas of focus for the Regional Safety Plan. The meeting was then opened up for general discussion on the participants' knowledge, understanding, questions, and experiences with safety.

The meeting notes have been divided by topic. Some comments are repeated because they fit under more than one topic.

### Distracted drivers – Cell phone use

- There is a lack of data about cell phone use as contributor to crashes. People who get into a crash may not admit to having been using their cellphone.
- First responders and crash reports may be reporting these infractions under general category of "driver inattention."
- Traffic ticket data is difficult to differentiate between who was responsible, who was distracted and what distracted them. This data can be extracted from the cell phone and from the car if investigation/prosecution warrants that.
- District attorneys are not prosecuting tickets for cell phone use, so fewer are written. There is an enforcement disconnect. One cell phone violation is five points on your license. Two citations and you are one point away from suspension.
- Buckle Up NY is the only mandated campaign. 60% of people admit to talking on the phone while driving. Long Island has a diversion program that includes giving out sleeves you can put your phone into that prevent phones from working.



# Regional Safety Action Plan Focus Group Meetings

May 24, 2018 - Discussion Notes

## **Data needs (more specificity)**

- Crash report forms list many factors for crashes and are not specific about behaviors that drivers and pedestrians are actually doing. Old forms were in place in 2010 and 2011. New data should be more accurate.
- First responders and crash reports may be reporting these infractions under general category of “driver inattention.” (re: cell phone use)
- Traffic ticket data is difficult to differentiate between who was responsible and who was distracted and what distracted them. This data can be extracted from the cell phone and from the car if investigation/prosecution warrants that.
- More data is available in pedestrian Safety Action Plan and (downstate) through Vision Zero.

## **Vulnerable road users (cyclists, pedestrians, motorcyclists)**

### *Pedestrians*

- Pedestrians crossing outside of the crosswalk are vulnerable. In the City of Albany fatalities have been due to distracted pedestrians – on cell phone or listening to music, including people getting off buses talking on the phone and walking into traffic.

### *Cyclists*

- Ken Crandall – *NY Bicycling Coalition/Troy Bike Rescue* - Sandy asked about data on vulnerable users. Ken feels that the “Capital Region is a decade behind in bike infrastructure vs bigger cities upstate. Lots of work to do regarding bus stop design - bus needs to stop and get pedestrians to the curb without forcing bicyclists into the lane.”
- Defensive biking - bike share education program being done with CDTA.

### *Bus riders*

- People exiting busses are vulnerable. Cars are aggressive in trying to get around public busses. Most crashes are a result of the person walking around the bus – not the driver of the vehicle. The pedestrian should not be walking into the roadway. Traffic signals provide better control of both vehicle driver and pedestrian behavior. Albany has been more aggressive than other communities in using campaigns and concentrated enforcement. People need to be educated to use crosswalks correctly and push buttons.

## **Underserved populations**

- Sandy asked the representatives from Alliance who provide transportation to consumers what they are experiencing. They provide transportation to underserved populations to help people access services. Concern that transport did not show up on time (Star bus), inappropriately parked cars affect boarding, and there are other obstacles for people with mobility challenges when accessing transit.

## **Safety campaigns/education and outreach**

- See! Be Seen! Campaign - Central Ave. Corridor Study – used campaign extensively. Pedestrian crashes were frequent especially in locations with increasing volume.
- Buckle Up NY is the only mandated campaign. 60% of people admit to talking on the phone while driving. Long Island has a diversion program that includes giving out sleeves you can put your phone into that prevent phones from working.
- People exiting busses are vulnerable. Cars are aggressive in trying to get around public busses.



## Regional Safety Action Plan Focus Group Meetings

May 24, 2018 - Discussion Notes

- Most crashes are a result of the person walking around the bus – not the driver of the vehicle. The pedestrian should not be walking into the roadway. Traffic signals provide better control of both vehicle driver and pedestrian behavior. Albany has been more aggressive than other communities in using campaigns and concentrated enforcement. People need to be educated to use crosswalks correctly and push buttons.
- Traffic circles – Young people are being educated about how to navigate. Older population is unfamiliar. They are here to stay and there will be more as the State grows. How and where does education occur? Navigation systems will help. Need to spearhead education campaign – Sandy commented that this is something that the plan should explore and can make recommendations about. How do you reach people? Maybe presentation at churches? With renewal of licenses – could we offer a package of information? Sandy took a defensive driving course and the instructor could not explain how a roundabout functioned.
- Driver education is not focused enough on vulnerable users. Needs to be better integrated into driver education, driver training, and professional driver training. Uber/Lyft drivers are not trained about pedestrian, bike or motorcycle conflicts.
- Driver licensing exam - half of the questions are about impaired driving. Maybe time to increase the number of questions about distracted driving and vulnerable users.
- Defensive biking - bike share education program being done with CDTA.
- Sandy asked how the project team can reach other people, other groups? Monthly email blasts? Suggestion included to go to Public Housing Authority and meet with existing groups like CANA in Albany (Council of Neighborhood Associations) which meets the first Wednesday of every month.
- Anecdotally, instructors for defensive driving courses can't always explain the correct function of roundabouts

### *For/within schools*

- Programs in elementary schools are very successful – kids will scold parents for doing the wrong thing.
- It's getting harder to get into schools with education data – they don't have time. How do we get schools interested in offering that education? Maybe it could be part of physical education training?
- Niskayuna is working on safe routes planning to schools and parks. Busy roads like Troy Schenectady Road create an island in town because people can't easily or safely cross the road. The town is working to identify high risk areas that need crosswalks and signalization. Also, streets are designed for higher speeds than the posted speed limits.

### **Speeding**

- Alanna - Commented on the power that a peripheral vision demonstration in 5-mile increments was and how narrow your vision becomes the faster you go.
- Sandy noted that it is expected in this area that people drive above the speed limit. Other areas around the country are not like that.

### **Interchanges and toll booths**

- Ray Engel - *Albany County Traffic Safety Board* - Concern that volume of thruway traffic going through interchanges is extremely high – holiday weekends experience 200,000 vehicles through exit 24. If the Thruway goes "toll booth free" by 2022 what will the impact be? The toll booths slow and control traffic. Will all toll booths and interchanges be treated the same way? Will the toll booth infrastructure remain? What will this mean for behavior through the big curve at exit 24? Tractor trailers?



# Regional Safety Action Plan Focus Group Meetings

May 24, 2018 - Discussion Notes

## **Traffic redirection during crashes/weather**

- Traffic Safety Board started to share information and resources as a way of communicating about crashes or bad weather and how to handle traffic. Moving traffic off the interstate creates other conflicts on local roads like how to deal with tandem trailers. For example, proactive highway closings (especially with snow) lets trucking companies plan ahead and keep their trucks moving, but can move the trucks to local roads.

## **Enforcement and penalties**

- Penalties need to be higher in work zones and school zones. There needs to be better enforcement – beyond doubling fines.
- District attorneys are not prosecuting tickets for cell phone use, so fewer are written. There is an enforcement disconnect. One cell phone violation is five points on your license. Two citations and you are one point away from suspension.
- Sandy – Would it work for some enforcement penalties to be local laws? Group felt they need to be State law. Perhaps we could let law enforcement automatically suspend license for 15 or 30 days. These are “larger than regional issues” and will be listed in the report. Are there examples of counties taking responsibility for enforcement?
- Albany County initiated an Aggressive driving campaign but the judiciary does not take the tickets seriously. Albany wrote thousands of tickets that are getting adjourned in contemplation of dismissal. Police can’t intervene with the judges. The County Attorneys must approach judges. Their biggest issues are people speeding and running red lights.
- Comment that people would not dream of driving without a seatbelt or on the phone in New York City and enforcement is aggressive. It was noted that NYC has its own vehicle and safety code which influences why they can be more proactive.

## **Traffic calming measures**

- Madison Avenue traffic calming is really having a significant impact on safety – keeps speeds manageable.

## **Social toll of crashes**

- Merton - Described his family experience with serious crashes. Sandy remarked that safety is an issue that affects everyone.





# Regional Safety Action Plan Focus Group Meetings

May 25, 2018 - Discussion Notes

## FOCUS GROUP TWO – SARATOGA LIBRARY

### CDTC Representatives:

- Sandy Misiewicz
- Jacob Beeman

### Consultants:

- Wendy Holsberger, VHB
- Alanna Moran, VHB
- Margaret Irwin, River Street Planning & Development

### Participants:

- Kelley Baker, AAA Northway
- John DePaola, Harley Owners Group
- Todd Fabozzi, CDRPC
- Woody Sloat, Town of Malta Highway Safety Committee
- Natalie Schubel, Schenectady County Public Health
- Tom Werner, CDTC Policy Board

Sandy presented a brief introduction of CDTC and the Regional Safety Plan project. VHB presented a brief power point presentation outlining some of the state and local crash trends and areas of focus for the Regional Safety Plan. The meeting was then opened up for general discussion on the participants' knowledge, understanding, questions, and experiences with safety.

The meeting notes have been divided by topic. Some comments are repeated because they fit under more than one topic.

### Distracted drivers – Cell phone use

- Distracted driver data is not complete. Police officers can subpoena cell phone data in serious crashes, but otherwise don't. Gathering cell phone data at crashes is a "larger than regional issue."
- Kelley Baker - AAA – distraction comes in many forms for drivers and is the cause of many crashes.

### Data needs (more specificity)

- Distracted driver data is not complete. Police officers can subpoena cell phone data in serious crashes, but otherwise don't. Gathering cell phone data at crashes is a "larger than regional issue."

### Vulnerable road users (cyclists, pedestrians, motorcyclists)

#### *Pedestrians*

- Pedestrian distraction is a big issue and can result in people walking into traffic.
- People who don't walk or bicycle regularly are not as aware of pedestrians when they are drivers.
- Pedestrian safety for kids – teach them that you can't expect automobile drivers to pay attention.
- Safest thing is to stop movement in all directions to make pedestrians completely safe.

#### *Cyclists*

- People who don't walk or bicycle regularly are not as aware of bicyclists when they are drivers.



## Regional Safety Action Plan Focus Group Meetings

May 25, 2018 - Discussion Notes

- Parents don't take helmet safety for teenagers seriously.
- Challenge is that making streets pedestrian-oriented by adding sidewalks reduces the roadway width and puts cyclist in traffic. Communities are making choices as sidewalks make the road narrower for the cyclist. There are tradeoffs in the design of complete streets.

### *Bus riders*

- Many people pass stopped school busses.

### *Motorcycle safety*

- John DePaola – *Harley Owners Group* - John is a motorcycle rider and is actively involved in many motorcycle training/safety events.
- Motorcycle use increases in better weather and many people are using motorcycles more as a primary form of transportation; the more miles on the road, the more exposure to crash threats.
- Drivers "just don't see motorcycles" because there is not enough awareness. Anecdotally, John has been cut off more frequently this year. People are cutting over, not checking mirrors, etc.
- Burden is on motorcyclist to be very careful. It would be great if other people could be on a bike to see the vulnerability.

### **Street and road design/Complete Streets**

- Questions about how we are designing streets. CDTC can influence this. Promote complete streets. Are you maintaining shoulders for cyclists?
- Land use has to be considered in roadway design
- Challenge is that making streets pedestrian-oriented by adding sidewalks puts cyclist in traffic. Communities are making choices as sidewalks make the road narrower for the cyclist. There are tradeoffs in the design of complete streets.
- Safest thing is to stop movement in all directions to make pedestrians completely safe.
- Same roadway changes character throughout different parts of the community.
- Consider the future context of the roadway and put the pedestrian first.
- Need to stack snow somewhere to keep pedestrian paths open. In Albany the policy is 24 hours post storm to get snow off of the sidewalk.
- Roadway design - traffic calming, roundabouts, complete streets
- Approval for a student housing facility required training/education (as part of the SEQR development review process) for residents
- Roundabouts are designed to eliminate severe t-bone crashes, but may increase fender benders.
- Roundabouts don't always have flashing beacons for pedestrian crossings.
- Pedestrians are afraid of roundabouts.
- There are communities implementing hawk signals. DOT Region one is conservative and prefers a typical 3-color signal where warranted.
- Discussion of the proposed roundabout at 146/146A which is an access point to a major multi-use path so the roundabout will have a mix of travel modes.

### **Safety campaigns/education and outreach**

- How long does it take to change the culture? Took a long time to get high compliance for seat belt use, but now NYS has very high compliance.



# Regional Safety Action Plan Focus Group Meetings

May 25, 2018 - Discussion Notes

- DOT – When federal aid funds were included there are opportunities to educate. Cornell local roads has municipal education and training programs. Towns send highway staff to Cornell conferences. DOT has had local government support unit in the past – but no longer an active group.
- Education of children and older adults is important. Elementary school children and parents both need to be engaged.
- What should diversion programs include? Discussion regarding appropriate punishment and follow through on tickets that are given as well as educational programs to change behavior.
- Challenge is that the data says one thing but the public feels otherwise. Sometimes improvements don't get initiated until something bad happens. Hopefully this plan can identify strategies that can be deployed through maintenance and education.
- Ideas to engage people? Safety is a topic that can touch any of us at any time. There are human beings behind these numbers. Neighborhood associations, homeowners associations, schools (consider using Phys Ed component as entry point into the schools), libraries, cycling clubs, NYS Share the Road, NYS Bike Coalition.
- Invitations to the summit should include notices to superintendent, traffic committees, town board members and council members, parks and rec departments, highways superintendents, etc.
- Motorcycle Safety Foundation located on Route 50 in Scotia does traffic safety trainings. Also, the American Motorcycle Association is a national policy group.

## **Advanced/emerging technology**

- Car technology – road avoidance warnings... is it making us pay less attention?
- When technology works it's great.
- Cars that can park and stop take "skills out of consideration". Driver skills are needed and we lose something if technology takes over.
- Is the auto industry talking to enforcement about the impacts of their technologies?
- Automated vehicles in NYS "going to take a conservative approach."
- Who is in control of the vehicle? Who is liable? How do officers know what was actually "driving."

## **Rural Crashes**

- Sandy – data shows that there are many rural crashes...more to come.



**CDTC Safety Summit – Meeting Summary**  
**June 13, 2018**

**Summit Participants:**

- Kelley Baker, AAA Northway
- Audrey Burnson, NYSDOT
- Kathy Casey, ACB
- Don Csaposs, Town of Guilderland
- Peter Barber, Guilderland
- Tricia Bulatao, Albany City DOH
- Regina Doyle, NYSDOT
- Aubrey Feldman, GTSC
- John Gillivan, Village of Colonie Bike/Ped Advocate
- Gina Gillooley, NYS DOH
- Brent Irving, CDTA
- Paul Kirwan, Albany Police Department
- Maureen Kozakiewicz, NYS GTSC
- Tracy Mance, Albany County Sheriff's Department
- Kate Maynard, City of Saratoga Springs
- Emmett McDevitt, FHWD
- Monica Ryan, Town of Sand Lake
- Elwood Sloat, Town of Malta Traffic Safety Committee
- Yasmine Syed, Town of Niskayuna
- Monique Wahba, Town of Colonie
- Chris Wallin, City of Schenectady
- Tom Werner, CDTC Policy Board
- Ben Zadrozny, NYSMSP/MSF
- Jim Mearkle, Albany County
- Lt. Ken Pero, Colonie Police Department

The Safety Summit started with a brief welcome and project introduction from Mike Franchini and Sandy Misiewicz from CDTC. Representatives from VHB then relayed some preliminary findings from the initial data evaluation and discussed the goals for the summit and the study. After the introduction and presentation, a panel discussion occurred. Each panelist provided a summary of their work with traffic safety and identified what they considered important trends, problems, and opportunities regarding traffic safety as briefly outlined below.



## PANEL SESSION

### Panelists

- **Frank Gross, VHB**
  - Discussed case studies from around the country where communities adopted a system of systemic countermeasures (striping, signage) that reduce risk across the entire system using lower cost improvements.
  - The systemic approach is a newer way of thinking about traffic safety, but the data shows that smaller amounts of money invested in many locations is more effective at reducing the overall number of fatal and serious injury crashes than the same amount of money spent at one location.
  - The implementation plan for the systemic countermeasures must be consistent with the findings of the data analysis.
- **Jim Mearkle, Traffic Engineer, Albany County**
  - Albany County roads are mostly low volume with a high percentage in rural areas. Many crashes are single vehicle crashes with vehicles leaving the road.
  - Low cost safety improvements are key. For example, signing multiple sharp curves to keep motorists on the road.
  - There is a Cornell Local Roads program workshop coming up in Greene County related to low cost safety improvements.
  - Albany County paves about 20% of their roads each year. Keeping the roads in good condition helps to reduce some types of crashes.
  - Weathering is more of a problem on rural roads.
  - Need to work with local planning boards on how they scope traffic impact studies – they mostly look at delay not safety and safety should be a part of the process. The Highway Safety Manual has been around for quite some time but hasn't been used the way the Highway Capacity Manual has. Look at the "Interactive Highway Safety Design Model" as a resource for evaluating the safety of various road designs.
- **Lt. Ken Pero, Traffic Safety Lieutenant, Colonie Police Department**
  - The Town of Colonie has a 250,000 business day population and 80,000 residents.
  - Aggressive driving is worse since there is so much traffic volume and people get frustrated by delays.
  - Pedestrian fatalities along Central Ave have been a problem but working with DOT has reduced serious crashes and improved safety.
  - Land use matters. People would walk across Central Avenue between hotels and businesses. When the hotels were closed the pedestrian crashes on that segment of Central Avenue stopped.
  - The installation of "yield to pedestrians" signage has helped to call attention to pedestrians at intersections.
  - Click It or Ticket has been around a long time and seatbelt compliance in New York is now between 93 and 94%.
  - See! Be Seen! campaign is getting more exposure. Pedestrians are ticketed as well as automobile drivers.
  - Need campaign to protect motorcyclists.



- **Regina Doyle, NYSDOT**

- NYSDOT and the Governor's Traffic Safety Committee (GTSC) have a lot of good data and analysis regarding safety.
- State Strategic Highway Safety Plan – The vision statement "Roads in NY will be safer to use for all users" indicates the need to bring all partners together to develop data driven plans to guide the spending of limited safety funds in the most effective way to reduce serious and fatal crashes.
- Highway Safety Improvement Program - Looks at hot spots across the state and asks regions to study 20% of the hot spots every year – these can result in systemic as well as individual location improvements.
- Pedestrian Safety Action Plan – Focuses on education, engineering and enforcement initiatives. Through the plan, low cost systemic changes, such as signing, back plates, refuge islands, curb extensions, and striping, have been implemented at 3,800 locations on state roads. The state just announced \$40 million in funding to incorporate systemic pedestrian project at the local level.
- Pedestrian enforcement week is coming up and is a good example of partnerships. GTSC is releasing its third public service announcement on intersection safety, pedestrians, and distracted driving.

- **Chris Wallin, City Engineer, City of Schenectady**

- The City has some flexibility in how they do things.
- New development has seen a lot of momentum. 10 to 15 years ago the City didn't ask a lot of the developers. Now the City is more active and more selective about projects and requires pedestrian improvements from developers.
- A current focus is on a balance between safe pedestrian access vs. construction in the downtown where space and right-of-way are limited.
- At construction sites on Erie Blvd and South Ferry Street the City is allowing the contractors to close the sidewalk-as long as the closures make sense together and do not require pedestrians to travel back and forth across State Street several times.
- Today people expect different things, like covered walkways in construction zones.
- In a recent capital project, the City put in a mid-block pedestrian island to allow pedestrians to more easily cross between land uses on opposite sides of the street. The developer wants to remove the island to accommodate occasional tractor trailer access into their site.
- Creativity with lighting, especially at the rail road crossings, have made a huge difference in pedestrian safety and comfort.
- The City has invested in many pedestrian amenities like crosswalks, flashing control, full ADA compliant crossings, but people still cross at the wrong place. A full barrier was installed on Washington Avenue adjacent to SCCC to force pedestrians to the traffic signal to cross the street. Barriers can be made more attractive with decorative fencing and landscaping.
- The City uses speed signs on utility posts to track data. There's not a lot of speeding in the City. Schenectady has citywide Wi-Fi with cameras for license plate tracking and traffic volume data resulting in more available data for transportation and safety evaluations.
- Consistency between traffic control devices is an issue – pedestrian crossings are not all the same and people are confused by the technology. Noted that people don't realize the pedestrian crossing at Jay Street gives pedestrians an immediate walk signal.





- State Street downtown has no bike lanes, but that wasn't the priority 15 years ago. The City has now come full circle and talks about removing parking in some areas for bike lanes.

After the panelist discussions on traffic safety trends, problems, and solutions, a question and answer period was opened. The questions and answers are summarized below. The questions are summarized by topic and are not necessarily in chronological order.

## Questions and Answers

### **Moderator: Is reporting by enforcement accurate?**

*The police crash report forms ask for a lot of data but is it enough? Is it the right data? What data sets are missing (when 'other' box is checked)?*

- Lt Pero said the biggest challenge is getting someone to admit they were on the phone. Police cannot check 'phones' unless it's a serious accident and then it needs a court order. In Colonie, if they check "other" they're supposed to write a description of why they chose "other."
- Jim Mearkle noted that within the contributing factor identified as "human error", some crashes are driver distraction, but an engineering issue may have increased the risk of a crash in other cases.
- When human error is found to be the cause, what caused the human error?
- Texting while driving and phone use in crash data is under-represented.
- Pedestrian error not broken down by what the error is or what caused the pedestrian error.
- Horse drawn carriage crashes are an issue in some parts of the state.
- Parking lot crashes are not well documented.
- Wrong way crashes are difficult to document without a picture.
- Cell use goes unreported a lot of the time.
- Regina noted that the state is revising the crash report form to include parking lot crashes and provide more clarity.

### **Audience question: Why are there so few weather-related crashes?**

- People tend to drive slower during bad weather, therefore there aren't many fatal or serious injury crashes. Total crashes may increase but they tend to be less intense and severe. People may still not be driving safely for the conditions, but conditions are still generally slow enough to reduce crash severity.

### **Moderator: Lane departure crashes (driving off road) for the four-county area are trending higher, why?**

- There are a lot of things to look at on the car screen that distract people. They are promoted as safety and convenience features but may be distracting.
- Cars are designed to go faster, move more smoothly, and be quieter – people are probably driving faster without realizing it.



- In planning we rely on reported data on lane departures to identify whether the crash is on a curve or a straight segment on the road and often the data does not give us a full picture. Summaries of data sets are relied upon because there is so much data out there. Now police report data online and future reporting systems might offer more and better data.
- 25% of all lane departure crashes are on roadway curves.
- Cell phone use and texting may not be the primary factor, but are a contributing factor for most crashes.
- Regina – some systemic improvements are rumble strips (center and shoulder) and curve warning signs with an MUTCD compliance date of 2019.
- Audience Comment – Motorcyclists sit up higher and see everything. They see that everyone is texting – cell phone usage seems to be a component in most accidents.

**Audience Question: Is there a certain time of day for the most serious fatal accidents? Age groups that have the most serious crashes?**

- Project team is still in the process of breaking down the data to show some of these trends.
- Glare at night becomes an issue, especially for older drivers. We can look closer at older drivers and younger drivers for education. GTSC sees the most prevalent victims of crashes are young males in late afternoon and early evening. There are also more crashes between November and February compared to other times of the year.
- Baby boomers staying active and living in communities without sidewalks can be an issue as the group ages.
- Audience Comment – See [www.safeny.ny.gov](http://www.safeny.ny.gov), which offers a variety of data.

**Moderator: Motorcycle crashes trend higher in the four-county area compared to the rest of the State. 26% of crashes are motorcycle crashes, but when looking at serious injuries/fatalities the trend changes to 40% involving motorcycles. Why?**

- Audience Comment – (Ben) Speed and alcohol account for 30% of motorcycle crashes (ranked 1 and 2 in contributing factors). These are decisions that riders make and are hard to change. Motorcycle Safety Federation has full support for enforcement activities.
- Motorcyclists often buy a bike that is too large or more powerful than they can handle. “Ride your own ride” and don’t ride above your skill level. Motorcyclists need consistent training to relearn the basic rider skills and get rid of bad habits. This education is truly lifesaving.
- Looked at a lot of crash reports and it seems like 50% of crashes are the fault of the motorcyclists and 50% are the fault of the passenger vehicle driver. Many motorcycle crashes are single-vehicle lane departure crashes.

**Moderator: What are the impacts of Uber, Lyft, and other rideshare services?**

*Do you see anything trending differently? Any statistics yet about how this is going so far?*

- There’s no good public data yet, at this point the data would be from the private companies. If data was available who would monitor and analyze it?



- City of Albany has designated areas for ride sharing. It will take time for the data to become available because it's all still quite new and the current data sets are only through 2016.
- Schenectady has noticed an increase in parking issues and more pedestrians because of the casino, but so far no trends in ride sharing.
- Lyft does their own data evaluation. Their data has indicated reduced DWI tickets.
- There is a lag in data sets (looking at 2016 data now).
- CDTA may be a model for data evaluation because they do track data. What are the changes ridership with the introduction of Uber and Lyft?

**Moderator: For Schenectady, with the addition of the casino are there any transportation issues related to the increase in the number of visitors to the area?**

- Some problems associated with people parking on Erie Boulevard.
- The data needs to be detailed and accurate because we want to make sure that we're addressing the real issue. Design solutions aren't always the answer when the problem is really education. Much of our information is anecdotal and there is concern that the ability to address safety concerns is getting more difficult. A systemic approach to safety improvements could provide a way for implementation to move forward step by step.
- Education is important. Do we need to find "sister areas" that we are really similar to in order to compare trends? Can FHWA help us with this type of comparison?
- Vehicle miles traveled is down for younger people, do they have sufficient driving skills?
- Regina – Our fatal crashes in New York are going down statewide vs nationally.
- Lt. Pero – Central Avenue is the main area of concern in Colonie. The police force tickets pedestrians heavily on Central Avenue though some officers do not write as many tickets and are more likely to instruct the pedestrians on what to do rather than write the ticket.
- Pedestrians crossing at the wrong place (not at intersections or crosswalks) is a concern. Making the corridor very brightly lit can help.

**Audience Question: Are education programs helping and/or working?**

- Regina – It's hard to know if the education programs are working. For example, the four county area fatality trends, compared to the rest of state are going down, but we're not sure why.
- A very large number of tickets were given out during the first year of the "See! Be Seen!" campaign. The campaign is only two years old; during the second year, tickets were less. It's hard to know if the reduction is due to fewer violations, fewer officers available to participate in the campaign, or the officers being less willing to write tickets.
- Audience Comment – Would like to see more enforcement and education in the schools. Safety was once part of the curriculum but isn't anymore. Drivers Ed was a school program but isn't anymore. Schools are packed with things they need to do and teachers are too busy to fit this in the curriculum. "See! Be Seen!" is new campaign. Would like to see more education on Accessible Pedestrian Signals (APS). Many people don't like it because it makes noise, but APS is



now a federal mandate. There is not a lot of awareness among people about needs of disabled people and the design of intersection technology to accommodate those needs.

**Audience Question: Is photo enforcement a tool that can be used for red light running?**

- Red light cameras are only allowed in certain cities across the state. Drivers don't like them because the ticket is valid every time it is issued. Albany has red light cameras at 22 intersections and these cameras have reduced the number and severity of crashes at these intersections. It is not a revenue generator for the City of Albany. NYC is the only place that it is legal to use speed cameras.
- Lt Pero. – Studies show photo enforcement to be highly effective but it is a political decision. The locations where photo enforcement is allowed are focused on cities of larger size and population density.
- Photo enforcement does have a spillover effect and behaviors improve at intersections without cameras too. For speed enforcement, the data needs to identify how fast vehicles move between destinations on a corridor rather than just a single location.
- Audience Comment – We need to look at pedestrian crossings and see if they still make sense. As land use changes we need to make sure that pedestrian accommodations are still satisfactory. Roundabouts move cars but don't provide for safe pedestrian and bike crossings. We need "traffic timing" to reduce speeding. Careful use of sharrows is also important, use them only where are they safe.

**SMALL GROUP DISCUSSION**

After the panel question and answer period, the summit attendees were broken into two groups to discuss two typical roadways within the region. A rural road in Rensselaer County and an urban street in Schenectady County were selected. The two roads were chosen because they are representative of roadway character and crash trends throughout the region. The groups discussed the existing conditions of the roadway and then identified potential countermeasures that could improve the safety of the roadway for each type of user (pedestrian, bicyclists, motorist) while identifying potential trade-offs associated with the safety countermeasures.

**Rural – Tamarac Road**

The group discussed physical conditions on rural Tamarac Road in Brunswick, Rensselaer County which serves approximately 2,500 vehicles per day which is a relatively high volume rural road.

**Traffic levels and speed/passing zones**

- Tamarac Road is used as a local bypass route to avoid Route 7
- Three different speed zones on a relatively low volume road seem unnecessary.
- The number of passing zones on this roadway seems unnecessary.

**Cyclists (What would benefit cyclists?)**

- Shoulders (minimum for cyclist is 4 feet, 5 feet or more is more comfortable).



- Rumble strips are not recommended on this road and would not be a good idea because there is no/narrow shoulder right now so bicyclists need all the shoulder they can get.
- This is a locally popular cycling route and there is a bike shop on Route 7 near Tamarac Road. There are many group rides on the road.
- CDTC bike priority network could advocate for more rural roads to be a priority for enhancements.

#### **Pedestrians (What would benefit pedestrians?)**

- No pedestrian accommodation on this road even at the southern end which is where the public school campus is and where there are fairly densely settled homes. There is no school campus access from Tamarac Road, only to the bus garage.
- Shoulders would benefit pedestrians by providing a space separate from vehicles.
- Sidewalks and crosswalks near the school and soccer complex would be helpful.
- Cut vegetation back on side of roads.
- Have DPW check that proper signage is in place for the school zone and recreational area.
- Reflective post strips can be placed on the sign posts to make the signs stand out better.
- Perhaps a traffic study should be done at the end of the road where the speed limit increased and the crashes were more prevalent.

#### **Passenger vehicles (What would benefit them?)**

- Street lights around school area, recreational fields, and intersections in rural areas to notify drivers that the roadway or land uses character has changed so slow down.
- Provide a roadway safety edge so that if drivers leave the road it can be easily corrected without losing control in the dirt or gravel on the side of the road.
- Make the clear zone on the side of the road wider, but not too wide because the wider the clear zone, the more comfortable it is to drive faster.

#### **Road conditions**

- The roadway was resurfaced last year and was previously in really poor condition prior to the resurfacing with an entirely disintegrated shoulder
- County highway department should be involved in the discussions about improvements early, before resurfacing or maintenance projects are completed, so that safety improvements can be made concurrently with maintenance for a more efficient use of funds and planning efforts.

#### **Safety issues**

- Passing zones near hills is inappropriate for visibility and is potentially unsafe.
- Close trees and telephone poles near the road are likely impacting crashes.
- Close utility poles and trees also create cost prohibitive issues for widening the shoulder on either side.

#### **Signage and reflectors**

- Curves could have more reflectors and signs.



- What about putting reflectors in the roadway? In our climate, plows tear them up so the better option is to have reflective paint-like reflectors recessed in the road, although they are more expensive.
- Have DPW check that proper signage is there for the school zone and recreation area.
  - Reflective post strips can be placed on sign posts to make the sign stand out.

### **Urban – McClellan Street**

The group discussed urban McClellan Street in Schenectady, characterized by a mix of land uses including high density residential, hospital and medical office buildings, high school two blocks away, a few drug stores, the only grocery store in the city limits, and a bar. There are several crossroads and driveways throughout the corridor creating conflict points for all users. On street parking is available and used on both sides of the roadway generally throughout the corridor.

### **General road conditions/design**

- One of the most challenging streets in Schenectady – “very tough.”
- The trees and cars parked on both sides of street calm vehicles, pedestrian conflicts not an issue.
- What about left turn signals on such a wide road? Would that help? Has that been analyzed?

### **Pedestrians/design**

- The addition of curb extensions/bulb outs at the major intersections would slow turning traffic and reduce the crossing distance for pedestrians.
- Add or replace crosswalks at intersections for greater visibility.
- Parking right up to the corner and at driveways reduces sight visibility at intersections so drivers and pedestrians may edge out and into the travel way and get hit.
- Sidewalks exist on both sides of the street so pedestrians do have accommodations.
- Pedestrian crossing signals can give you a false sense of security.
- Pedestrian behavior is a big part of the problem, especially when pedestrians cross diagonally mid-block instead of at intersections and crosswalks.
- Could provide striping for shoulders and the center line. Striping is sometimes kept out of the city environment due to the swerving that goes on around parked cars, cyclists, etc.
- Increase the awareness of drivers to pedestrians through additional signage.
- Street tree canopy in the right place and sized correctly.

### **Cyclists**

- The City of Schenectady considers this road a street of significance for bicyclists.
- Look at implementation of a bike lane which might fit in the existing roadway width.

### **Speeding and traffic calming**

- People drive faster than the average speed despite traffic – probably because it’s wide so if you feel safe to drive faster and can – drivers do.
- More street trees might help calm traffic as a vertical element in the areas where the street trees do not presently exist. There are trees in certain sections of the roadway and you can feel the difference.





- Trees and cars parked on both sides of street calm vehicles.
- Lack of delineation of road lanes can be hazardous and one of the crashes was a head-on collision. The street is wide enough to warrant lane striping.
- Roadway striping is sometimes not implemented due to maintenance considerations.
- Rumble strips in residential areas can cause noise issues and lead to complaints.
- Parking right up to the corner and at driveways is reducing sight visibility at intersections so drivers and pedestrians may edge out into the travel way and get hit.

The summit concluded with Sandy Misiewicz explaining the next steps of the study and an opportunity for attendees to stay involved through an email blast and the project website ([www.cdtcmpo.org/safetyplan](http://www.cdtcmpo.org/safetyplan)).

# CDTC Regional Safety Action Plan

## State Police Focus Group Meeting

### DRAFT Meeting Summary

**Location:** Troop G, NY Route 7, Latham  
**Date:** September 20, 2018  
**Time:** 11:00 AM

#### **Attendees:**

Sergeant Leonard Fornabia, State Police Troop G  
Trooper Donald Fougere, State Police Troop G  
Trooper Andrew, Neff, State Police Troop G  
Sandy Misiewicz, CDTC  
Wendy Holsberger, VHB  
Alanna Moran, VHB  
Monica Ryan, River Street Planning

#### **Notes:**

- **Opening discussion of trends, data and data collection based on summary data provided by consultants.**
  - Sergeant Fornabia explained that Troop G covers a 10 County region and develops two- end of the year reports using two sources of data: DMV and their own collected data. Utilizing only the DMV data can be inaccurate for a number of reasons including who the first responding agency is (sheriff, trooper, local) because the agencies may report their data differently and not as consistently.
  - The larger cities (Albany, Schenectady and Troy) are covered by the City Patrols so the DMV statistics are the only data sets covering these areas. State Police have done away with formal local government contracts to provide specific services.
  - If there is a local department to respond to an incident, Troop G does not get involved unless they happen to be there or are called in. Troop G is called in to investigate fatalities.
  - It was noted later in the discussion that corridor incident and crash data can be skewed by parking lot crashes having an on-street “address” for its location rather than the physical location of an accident which is often a parking lot and not roadway.
  - New York State police priorities are largely established by the state through the Governor’s Traffic Safety Committee’s Highway Safety Plan for New York State.
- **Discussion of distracted driving as a rising trend in driver behavior contributing to crashes.**
  - The Traffic Safety Plan Annual Review showed an increase in tickets for cell/texting from 2016 to 2017.

- There has been an overall increase in distracted driving reportable crashes over the last few years.
- Documentation of cell phone use is a big issue. It's hard to quantify the distraction itself in data reporting because unless the driver is witnessed using their cell phone, it can't be reported as such. A general code for "distracted driver" as the cause is used in the reporting system in that case.
- Distracted driving has become a priority of education and enforcement rather than seatbelt enforcement. Seatbelt wearing has become the norm reducing the need to focus on it.
- There is data to support that locations with poor cell service have fewer crashes for which cell phone use was a contributing factor.
- Barriers to reducing cell phone crashes:
  - The 5 Point Violation attributed to cell phone use is viewed by some in enforcement as excessive and some officers are reluctant to issue such tickets. In a plea the least amount of points is usually 2 which is still significant. (Whereas, a speeding ticket can plea down to a non-moving violation.)
  - Cell phones are used by everyone so there is a forgiving cultural mindset of officers about their use (ex: the soccer mom who is on her phone just trying to find out where she should pick up her kid).
  - As a result of the above, tickets for actual cell phone use aren't issued as much as they could be (more warnings etc.)
  - Education is more difficult because unlike something straightforward like seatbelts where there is a clear safety benefit and no downside, people lose a major convenience when they can't use their phone for communicating, navigation, listening to music etc.
- **Discussion of the Court System as a contributing factor to a lack of changing driver behavior.**
  - Officers no longer attend court dates. Without the officers, district attorneys are detached from the cases and just move them through with automatic plea deals.
  - A new NYS Law retains a record (abstract) of all violations, including plea downs to non-moving violations which can be obtained by DAs to check the driver's history. This may help to reduce plea deals and address chronic offenders.
  - Ticket floating is also an issue because defense attorneys can tie up cases in courts for long lengths of time while more violations mount. This is particularly concerning when dealing with chronic high-speed violations and DWI.
  - Education of judges and district attorneys may help improve the above trends.

- **Discussion of high speed limits and road character as a contributing factor to safety and crashes.**
  - Consultant team said municipalities are reporting that they often seek speed reductions or changes to traffic control devices to improve safety and they are frustrated with the lack of response or denial of requests.
  - Troop G works with some DOT Regions' engineers to evaluate road character, land use etc. when requested by a municipality. There was acknowledgement that there are often many factors that should be considered when evaluating requests for speed reductions and traffic control devices instead of relying solely on engineer's analysis and data.
  - To help inform DOT, Troop G issues traffic reports after a crash if they believe there is something related to the character of the road/intersection that could have prevented a crash. Reconstruction reports are retained by the New York State Police.
  - Troop G believes DOT is backlogged with municipal requests which may be contributing to the response or lack of response. Perhaps there is not enough staff time to field investigate and thoroughly consider these requests.
- **Have you seen any changes in crash trends as a result of Uber/Lyft?**
  - CDTC reported that CDTA ridership is down 3% and there is speculation that it may be in part due to Uber/Lyft usage.
  - Sergeant Fornabia stated that use of Uber/Lyft seems to be more work related than for social engagement transportation. For example, if it's raining or an individual is running late, it's easy to call Uber rather than wait in the rain for the next bus.
- **Are there other trends in driver behavior contributing to issues?**
  - There is general disregard for rules of the road, traffic control devices etc. in the younger generations of drivers. The laws are not regarded as laws.
  - There is more aggressive driving which may be a factor of more "transplants" to the region from areas where aggressive driving is more the norm.
- **Motorcycle crashes are proportionally higher in this region over others, any idea why?**
  - One reason may be because Troop G no longer receives motorcycle safety funding which funded enforcement. When there was training, education and enforcement around safety (helmet law) crashes were down but they are on the rise again.
  - The number of tickets is down but that is likely due to lack of funding for enforcement (citations) not a reduction in violations.
  - Motorcycle safety and enforcement is a separate training component that, without funding, can't be a priority.
  - Another contributing factor to crashes is inexperienced riders getting first bikes that are too big and powerful for their abilities. No longer do people get a first, smaller bike and graduate to larger bikes. People are getting a first bike that should be a second or third bike.

- More dangerous motorcycle groups (The 518) had been shut down for many years, but there is a growing number of young people in group rides intended to unofficially shut down roadways to be used for racing and stunts.
- There are a growing number of ride events in the Capital Region (20-30 requests for police escorts each year) which are growing in size and culminating in gatherings which often involve drinking resulting in crashes and tickets.
- **What are other major factors for crashes besides distracted driving and speeding?**
  - Impaired driving still an issue
    - Floating tickets practice keeps chronic impaired drivers on the road for months or years while their cases are put off.
    - It's very hard to get a DUI/DWI conviction because there is always jury sympathy.
    - The prospect of legalized marijuana will be a huge problem because it's much harder to confirm detection. There's nothing comparable to a breathalyzer so drivers have to fail the physical test to be brought in.
- **Discussion of Work Zone safety trends.**
  - Work zone safety issues are on the rise.
  - Work zone violations can be issued even if an officer doesn't witness the violation. However, workers need to file the complaints and often attend court on their own time instead of having some sort of agency support or representation. The workers can get discouraged when cases are drawn out.
- **With the closing of many highway pull-offs, we know that there is a growing issue with commercial trucks parked in unsafe locations. What are you seeing?**
  - With the electronic logs, the commercial trucking industry has changed considerably as truckers must end their daily travel once they reach the 11-hour limit.
  - Truckers can no longer doctor their logs to get in more hours or keep driving until they reach their destination no matter what. While these are good things, there are not enough truck depots and highway pull-offs to accommodate this industry change. Some trucks go into shut down mode automatically and if not anticipated in advance, drivers are forced to pull over in unsafe, random locations until they can drive again.
  - Until the industry catches up to the new system and ramifications, this will continue to be an issue.
  - There is an uptick in utilizing local travel routes to avoid enforcement stops. The local routes are often through communities not intended for truck traffic. CB systems are still used to alert other truckers about enforcement.
- **Are there other reporting issues?**

- Computers are actually making everything take longer. Investigative reporting and ticket writing is taking longer. Conflicting information in the systems causes reporting to get bogged down.
- On the positive side, the length of time for lane closures for collision investigations may improve using drones as sites can be marked and drones can collect data later.
- Lane closure time would also be improved with better “quick clearance training” for all agencies.
- **What is the biggest challenge you face?**
  - Lack of manpower due to fewer officers and increased required training hours.
  - There is a stigma in our culture to becoming a police officer, so the pool is shrinking.
  - Younger officers are also performing bare minimum engagement because they don’t want to confront people. This tendency to avoid engaging is growing with the prevalence of body cameras and cell phone videos.
- **If you could do one thing to improve safety what would it be?**
  - More enforcement because it’s the only thing that works. People respond to enforcement. Data supports this since after 9-11 officers stopped writing tickets and were on full-time security. During this time traffic fatalities increased as ticket writing decreased.
  - Approximately 75% of officers are on patrol
  - Approximately 35-40 cars are on patrol at a time. These 35-40 cars cover the 10-county area.
  - Follow up data sent by Sergeant Fornabia indicated the following patrol information for Tuesday and Wednesday 9/18 and 9/19:
    - 9/18 to 9/19- 7 PM to 7AM- 37 on patrol
    - 9/19 7 AM to 7 PM- 59 on patrol
    - 9/19 11 AM to 11 PM- 11 on patrol
- **What do you think of automated enforcement?**
  - We like it but not welcomed politically in many places.
  - It’s limited in use because there is no “witness” so it’s just a fine (no points) in New York State.
  - Consultant team observed that there is misinformation out there that municipalities are making money through automated enforcement but places like the City of Albany are not profiting, it is a zero-balance situation.

The meeting concluded at approximately 12:15 PM



# **CDTC Regional Safety Action Plan Consultant Focus Group Meeting DRAFT Meeting Summary**

**Location:** CDTC  
**Date:** November 27, 2018  
**Time:** 9:00 AM

## **Attendees:**

Gregg Ursprung, Bergmann Associates  
Michael Croce, Bergmann Associates  
Mark Sargent, CME  
John Tozzi, CME  
Lindsay Zefting, Alta Planning & Design  
Tom Baird, Barton & Loguidice  
Brian Cooper, MJ Engineering  
Lisa Wallin, MJ Engineering  
Steve Boisvert, McFarland-Johnson  
Michael Franchini, CDTC  
Sandy Misiewicz, CDTC  
Wendy Holsberger, VHB  
Alanna Moran, VHB  
Monica Ryan, River Street Planning

## **Notes:**

- The meeting began with an overview presentation of the project by VHB. This included presentation of project introduction/objectives, initial findings/facts, and public survey results.
- Sandy Misiewicz, project administrator for CDTC, noted that a separate survey for municipal input was distributed. To date the response has been low. The project team is open to new ideas from the consultants on how to get input from municipalities.
- The question was asked – what are you experiencing as consultants?
  - Bergmann –
    - Albany office mainly works on private development projects
    - Rochester Office works on safety projects in both urban and rural environments. Rochester office experience is that some MPO's (GTC) are using the NYSMPO Safety Assessment Guidelines
    - VHB inquired about the source of safety projects- were they solicited specifically as safety projects or supplemental improvements as part of a bigger project (such as paving)? Combination- of both—it was noted that some communities are aware of and seek funding for HSIP projects.
    - The new AASHTO provides for flexible speeds
    - Standards take for granted that people understand signs and striping

- CME –
  - Noted they are trying a more systemic approach that includes more projects to improve safety.
  - Van Rensselaer Boulevard in Menands improvement project is a good example of a pedestrian improvement project. Road diet that includes a paved pedestrian shoulder, bike lane, and speed limit reduction from 55 mph to 45 mph. There is an increase in pedestrian usage but not really bicycles because it's a "road to nowhere" as the road just connects to SR 378 which is not bike friendly.
  - In general, there is a need for more regional connectivity.
  - Municipalities often want to reduce speeds, an opposite experience was noted in New Hampshire where speed limits were increased so proper curve warnings could be implemented
- Barton and Loguidice –
  - A lot of municipal experience, rail trail projects, rural areas
  - Identified several conditions that contribute to safety issues:
    - On rural roads - curves and lack of proper signage warning of curves, shoulder drop-offs from either lack of shoulder or shoulder erosion
    - In urban areas the issues are more related to lack of driver adherence to rules of the road like running red lights, rolling stop signs, use of directional too late, etc.
  - Noted lack of lighting and inadequate or non-standard signing
  - There needs to be more enforcement and more education about safety.
  - Discussed shoulder edge drop off and need for vehicles to overcorrect. Use of safety edge (shoe paver) can mitigate condition- some push back with contractors to construct the safety edge
- McFarland Johnson –
  - More focused on the developer side but pedestrian safety always comes up – particularly sidewalks.
- Alta –
  - Focus is on bicycle and pedestrian planning and projects.
  - One issue they find is that "safety" funding may not be used by communities because they don't want to admit they have a safety issue for liability purposes.
    - CDTC noted that it is ok to identify issues as long as there is a plan to address
  - Motor vehicle speeding is a large issue and getting posted speed reductions on roads is not easy.
  - There are inexpensive mitigations that can be part of larger projects such as striping during a resurfacing. Need to be brought forward during process.
  - Design speeds are not always the 85<sup>th</sup> percentile speeds on roadways
  - New York is about 10 years behind with newer designs to address safety and changing technology
  - Some cities are more proactive and planning for VisionZero
  - Experience in Troy where they were asked how the City could make proactive changes within a striping project
  - Educating from a different approach has been helpful. For example, "You can sue if you're in the wrong."

- MJ Engineering –
  - Work on private and public projects
  - Noted an RFP in 2019 by the state to analyze all curves on state roadways
  - General thoughts:
    - people don't understand the classification of roadways
    - not having adequate right-of-way can limit opportunities to mitigate
    - general geometry of roadway/intersections,
    - implementation of traffic calming often warranted
    - reflectivity of signs issue
  - We need to be more proactive instead of reactive when it comes to safety
  - The Pedestrian Safety Action Plan (PSAP) had hundreds of applications submitted and only a few projects chosen- how do we find funding for remaining projects
- Broad discussion of distracted driving as a major cause of accidents – particularly cell phone usage. CDTC and VHB summarized data and conversation with Troop G State Police regarding the magnitude of the issue.
  - Municipalities are being educated on the issue of distracted driving as part of the new mandatory workforce safety training.
- Discussion of ideas for rural road safety improvements
  - In 2019 there will be a state program to look at all types of road signage - including for curves.
  - Comment was made that drivers don't know what signs mean in terms of symbols, colors etc.
  - Addressing speed is critical to safety. There is beginning to be a more proactive approach to designing roads for the speed you want, rather than assigning a speed to the road that was built.
  - Communities continue to ask for speed reductions – we are starting to see a change in approach with NYSDOT dropping speeds – basing decisions on a variety of criteria rather than old methodologies.
  - Opportunities for improvements at the systemic project level by adding shoulder width, striping etc. for larger road segments during paving projects.
  - One impediment to certain improvements is that local DPWs often don't want pedestrian-related streetscape improvements (sidewalks and buffer strips) and other treatments such as roundabouts because it adds to work load or slows maintenance efforts (snow plowing).
  - Education- younger drivers are educated on driving roundabouts, older drivers are not
  - Look at standards and guidelines—but also use judgment
  - Small engineering efforts like ensuring proper vehicle clearances at signals can dramatically improve safety (rural and urban)
- Discussed PSAPs (Pedestrian Safety Action Plan)
  - An example of a good source of funding for pedestrian safety projects but since it was a one-time allocation, communities can't identify projects and anticipate future project funding because it's not a consistent funding source.
  - Some concern at the local level that if a safety issue is raised and a project doesn't get funded – is there local liability if the issue doesn't get address.
  - This program should have an after study on effectiveness of the funded projects.

- Should be a goal to identify funding sources so municipalities can count on it and schedule improvements
- Consultants were asked if they use the DOT “Red” and “Yellow” safety manual booklets circa 1985 and many were unaware that the books existed. The consensus was that safety is evaluated from multiple angles, not just the manuals, but the ability to point to a manual or source is helpful. So is exploring ideas that have worked elsewhere, especially those that are most cost effective.
- Consultants were asked if they use State Crash Data. The state data, and many other sources, are used.
- The ADA transition plan was cited as an example for community safety plans. There is no timeline for completion, but a plan is in place. Similar type plans could be developed by municipalities to address liability concerns associated with pointing out safety issues.
- Finding success stories and providing examples to other municipalities to show how things can work is a helpful practice. New Rochelle was cited as a good example of a community taking on pedestrian safety projects.



## CDTC Regional Safety Action Plan Municipality Survey

### 1. Please identify your organization. (Select one)

- ☐ Local government (Village) ☐ Local government (City)
- ☐ Local government (Town) ☐ County government
- ☐ Other (please specify)

### 2. How are road safety issues in your community currently being identified? (Select all that apply)

- ☐ Crash/Collision data analysis ☐ Observations from law enforcement
- ☐ Other safety data (e.g., speeds, tickets, conflicts) ☐ Observations by maintenance staff
- ☐ Community complaints
- ☐ Other (please specify)

### 3. Is data used to systematically screen roads in your community for high crash or high-risk locations? (Select one)

- ☐ Yes, we do this in house ☐ Yes, we hire consultants or others to do this
- ☐ Yes, Capital District Transportation Committee, our MPO, does this for us ☐ No, we don't do this
- ☐ Other (please specify)

4. How are safety issues currently being addressed in your community? (Select all that apply)

- |  |  |
|--|--|
| <input type="checkbox"/> Through partnerships with law enforcement | <input type="checkbox"/> As part of larger capital transportation and/or complete streets improvement projects |
| <input type="checkbox"/> Routine road maintenance                  | <input type="checkbox"/> Through a regular safety program  |
| <input type="checkbox"/> Other (please specify)                    |  |

5. Please indicate any challenges in implementing your municipality's road safety activities. (Select all that apply)

- |  |  |
|--|--|
| <input type="checkbox"/> Lack of staff time      | <input type="checkbox"/> Lack of funding   |
| <input type="checkbox"/> Lack of staff expertise | <input type="checkbox"/> Lack of awareness |
| <input type="checkbox"/> Other (please specify)  |  |

6. In your opinion, how much of a priority is road safety when your community chooses to fund improvement projects with local dollars ? (Select one)

- |                                 |                                      |
|---------------------------------|--------------------------------------|
| <input type="radio"/> Very High | <input type="radio"/> Low            |
| <input type="radio"/> High      | <input type="radio"/> Not a priority |
| <input type="radio"/> Moderate  | <input type="radio"/> Don't know     |

7. How are safety related projects funded in your community? (Select all that apply)

- |  |  |
|--|--|
| <input type="checkbox"/> Community capital budgets | <input type="checkbox"/> State funds   |
| <input type="checkbox"/> Maintenance funds         | <input type="checkbox"/> Federal funds |
| <input type="checkbox"/> Other (please specify)    |  |

8. Are you aware of the Highway Safety Improvement Program (HSIP)? (Select one)

- ☐ Yes, have used
- ☐ Yes, have not used
- ☐ No
- ☐ Don't know



9. Has your community applied for safety funds through the State or CDTC? (Select one)

☐ Yes

☐ Don't know

☐ No

If yes, please describe the project and indicate the funding source:

10. Are there specific safety targeted enforcement programs in your community? (Select one)

☐ Yes

☐ No

☐ Don't know

11. If you answered yes to question 10, have your enforcement efforts focused on any specific problems or users? (Select all that apply)

☐ Speeding

☐ Older drivers

☐ Aggressive driving

☐ Teen drivers

☐ General distracted driving (eating, cell phone use, etc.)

☐ Pedestrian or bicyclists not complying with traffic laws

☐ Impaired drivers (drugs, alcohol, drowsy driving)

☐ Motorcyclists not complying with traffic laws

☐ Other (please specify)

12. Are you aware of defined safety education programs in your community? (Select one)

☐ Yes

☐ No

☐ Don't know

13. If you answered yes to question 12, what kind of road safety education efforts have been undertaken in your community? (Select all that apply)

☐ School programs

☐ Safe cycling training

☐ Community safety events

☐ See! Be Seen! Pedestrian safety material distribution

☐ Other (please specify)

14. Please provide the following information:

**Your Community's Name**

**Your Name**

**Your Title**

**Your Email**

**Your Phone Number**

15. We are building a database of individuals interested in road safety. Please provide us with the name, title or organization, and email address for key people in your community that CDTC can remain in contact with as the Regional Safety Action Plan is implemented.

Name, Title/Org., Email  
address:

Name, Title/Org., Email  
address:

Name, Title/Org., Email  
address:

Name, Title/Org., Email  
address:

Name, Title/Org., Email  
address:



**THANK YOU!**  
for sharing your input  
through this survey

## CDTC REGIONAL SAFETY ACTION PLAN PUBLIC SURVEY

1. In what municipality do you live? \_\_\_\_\_

2. What is your **biggest** concern related to transportation safety?

- |  |  |   |
|--|--|---|
| <input type="radio"/> General pedestrian safety                                    | <input type="radio"/> Vehicle speeds   | <input type="radio"/> Compliance with traffic laws  |
| <input type="radio"/> Lack of pedestrian/bicycle accommodations                    | <input type="radio"/> Unsafe roadways (too narrow, curvature, lack of shoulders) | <input type="radio"/> Lack of educational programs (round-about driving, vehicle/pedestrian laws) |
| <input type="radio"/> Distracted driving- cell phones                              | <input type="radio"/> Aggressive driving   |   |
| <input type="radio"/> Distracted driving- other (eating/drinking, adjusting radio) | <input type="radio"/> Older drivers  |   |
| <input type="radio"/> Impaired driving- drug/alcohol                               | <input type="radio"/> Young drivers  |   |
| <input type="radio"/> Other -please specify: _____                                 |  |   |

3. Are you aware of how transportation safety issues are currently being addressed in your community?

☐ No ☐ Yes - please specify: \_\_\_\_\_



If you prefer to take this survey online, please scan the QR code to the left or go to:  
<https://www.surveymonkey.com/r/CDTCpublicsurvey>



**THANK YOU!**  
for sharing your input  
through this survey

## CDTC REGIONAL SAFETY ACTION PLAN PUBLIC SURVEY

1. In what municipality do you live? \_\_\_\_\_

2. What is your **biggest** concern related to transportation safety?

- |  |  |   |
|--|--|---|
| <input type="radio"/> General pedestrian safety                                    | <input type="radio"/> Vehicle speeds   | <input type="radio"/> Compliance with traffic laws  |
| <input type="radio"/> Lack of pedestrian/bicycle accommodations                    | <input type="radio"/> Unsafe roadways (too narrow, curvature, lack of shoulders) | <input type="radio"/> Lack of educational programs (round-about driving, vehicle/pedestrian laws) |
| <input type="radio"/> Distracted driving- cell phones                              | <input type="radio"/> Aggressive driving   |   |
| <input type="radio"/> Distracted driving- other (eating/drinking, adjusting radio) | <input type="radio"/> Older drivers  |   |
| <input type="radio"/> Impaired driving- drug/alcohol                               | <input type="radio"/> Young drivers  |   |
| <input type="radio"/> Other -please specify: _____                                 |  |   |

3. Are you aware of how transportation safety issues are currently being addressed in your community?

☐ No ☐ Yes - please specify: \_\_\_\_\_



If you prefer to take this survey online, please scan the QR code to the left or go to:  
<https://www.surveymonkey.com/r/CDTCpublicsurvey>

# Appendix B

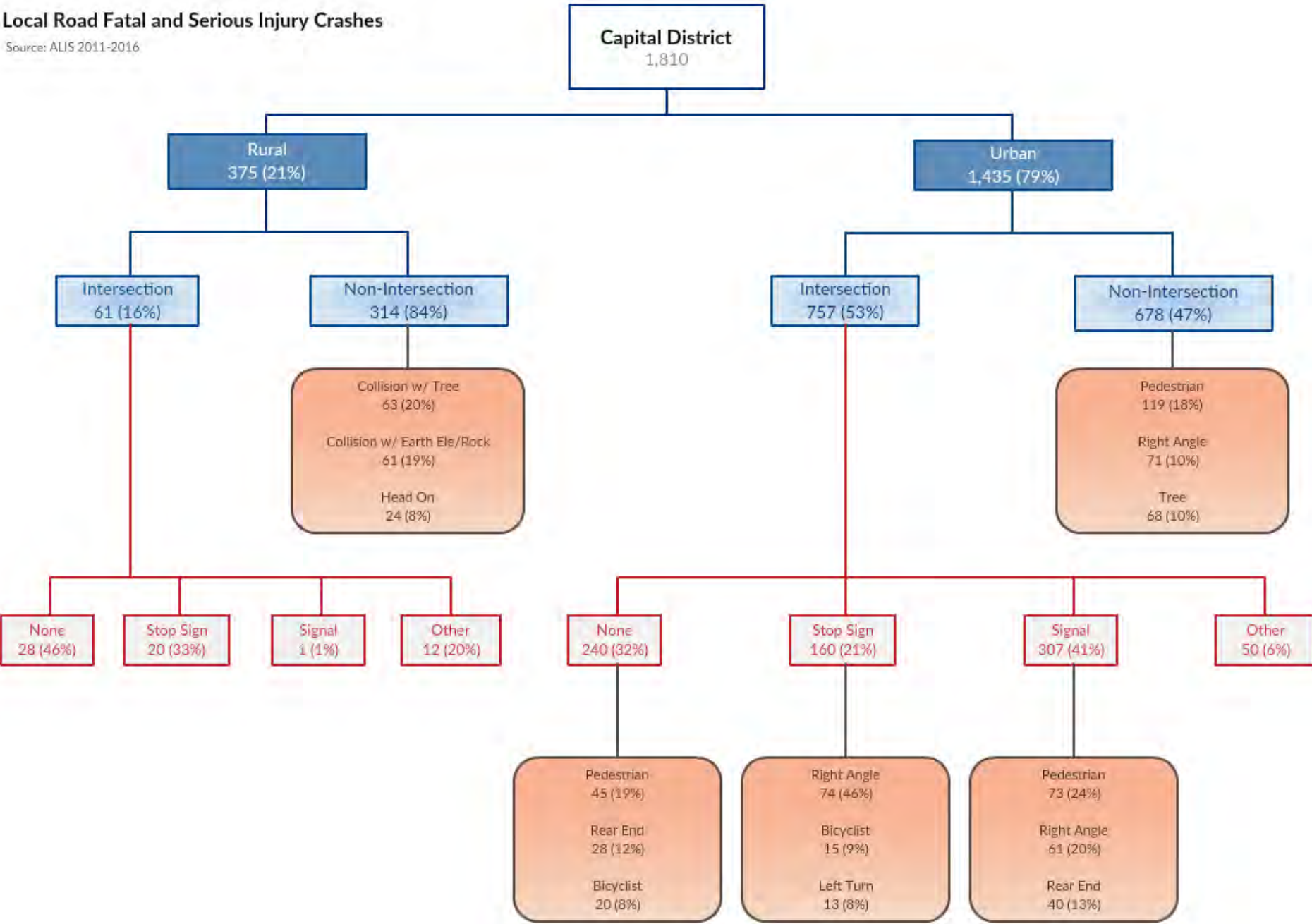
## Crash Trees






Local Road Fatal and Serious Injury Crashes

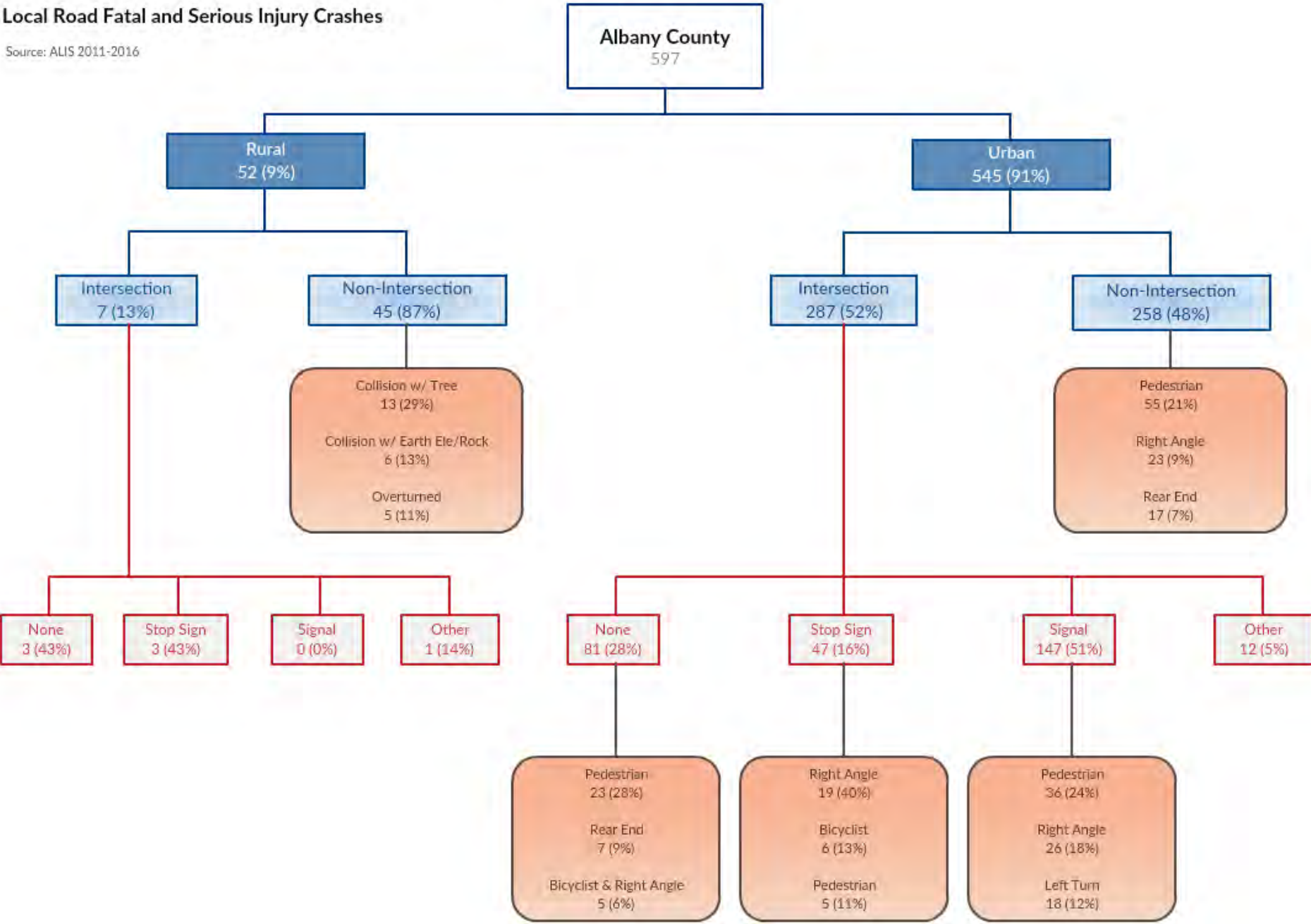
Source: ALIS 2011-2016




 Represents the top three crash types

Local Road Fatal and Serious Injury Crashes

Source: ALIS 2011-2016

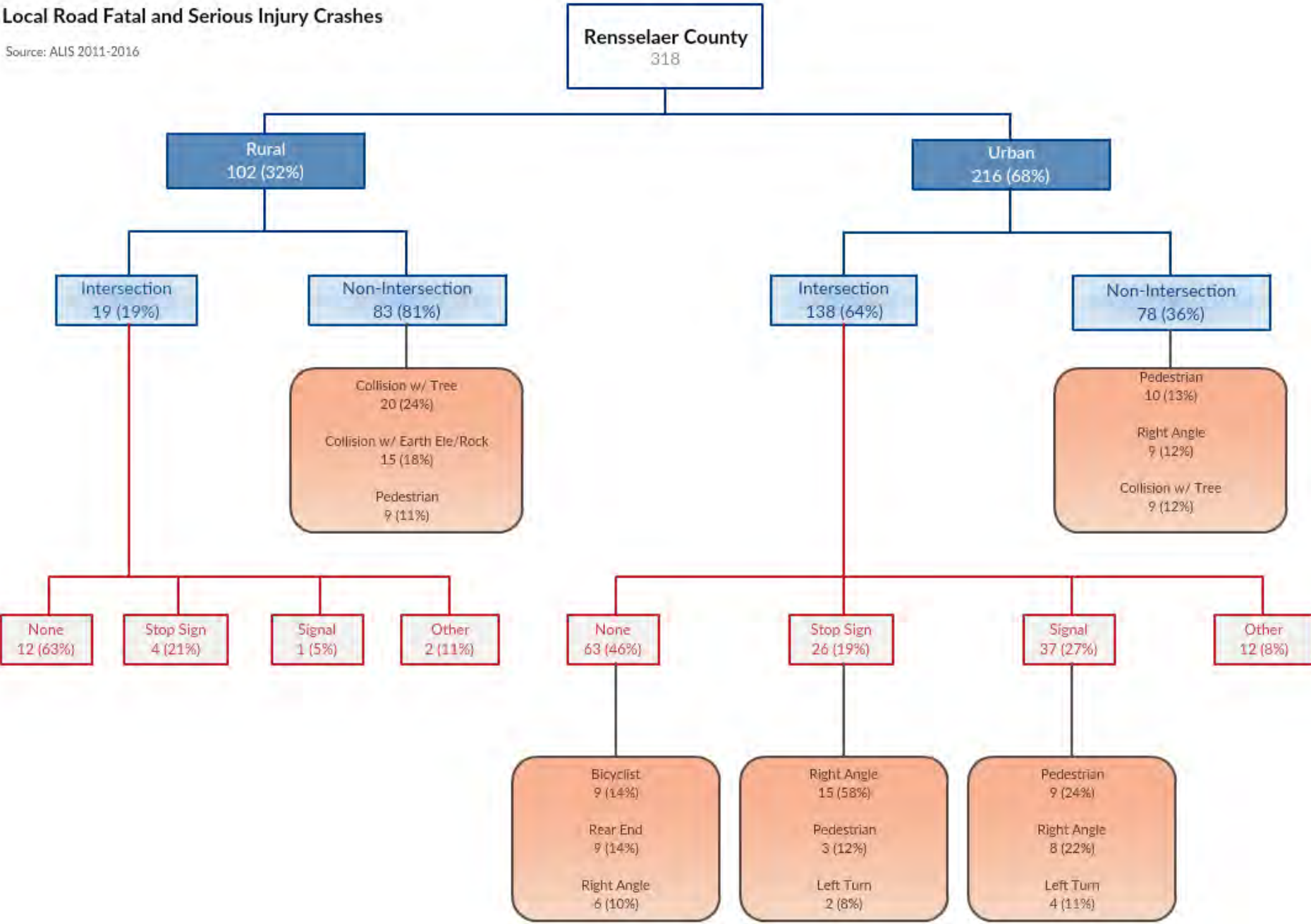



 Represents the top three crash types



Local Road Fatal and Serious Injury Crashes

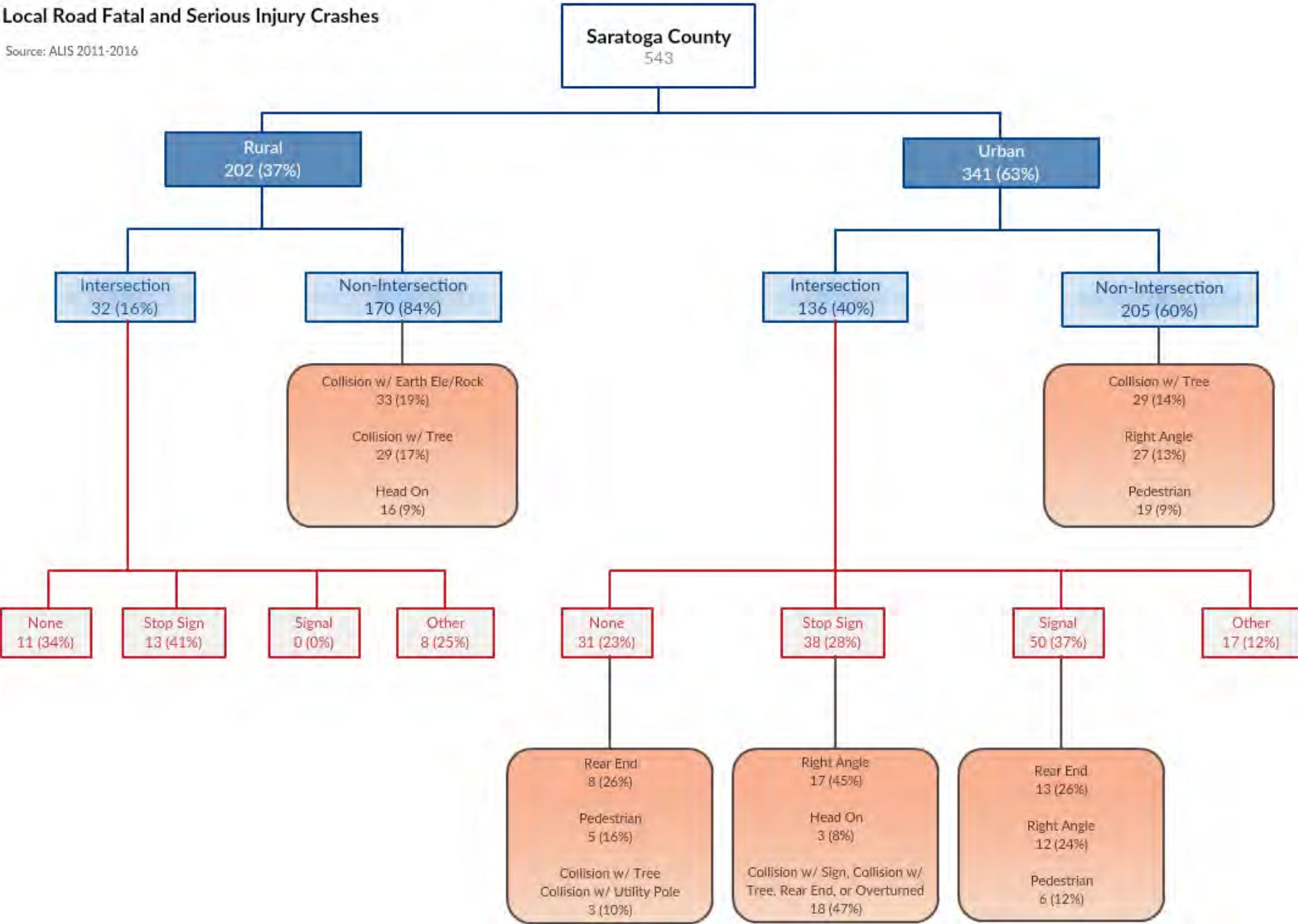
Source: ALIS 2011-2016



 Represents the top three crash types

Local Road Fatal and Serious Injury Crashes

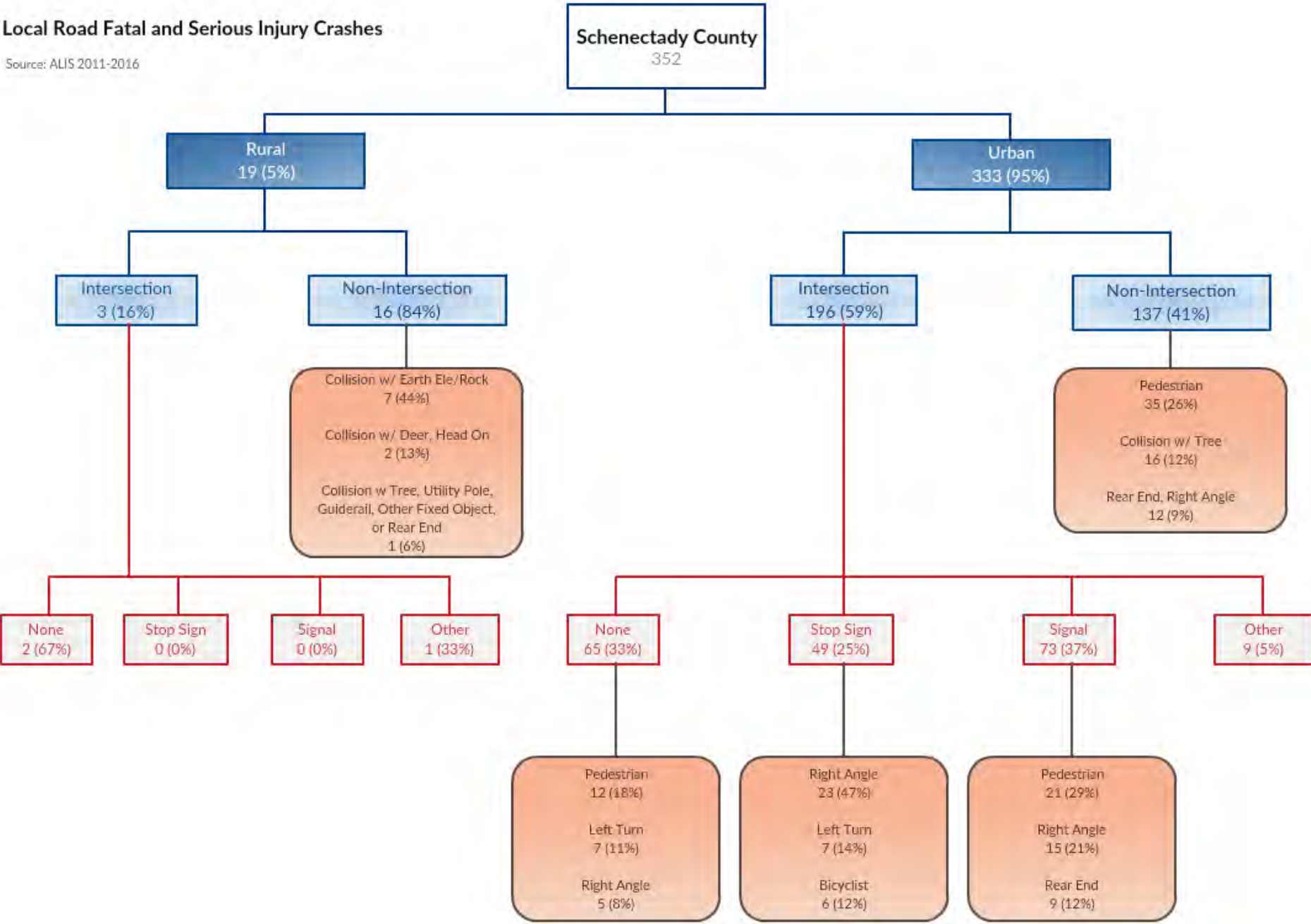
Source: ALIS 2011-2016



Represents the top three crash types

Local Road Fatal and Serious Injury Crashes

Source: ALIS 2011-2016



Represents the top three crash types



# Appendix C

## Countermeasure

### Fact Sheets



# Backplates with Retroreflective Borders

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## Emphasis Area

Intersections

## Description

A retroreflective border surrounding a traffic signal head to provide better visibility of the traffic signal during day and night conditions.

## Relative Cost

Low

Installation of backplates with retroreflective borders enhances traffic signal visibility, conspicuity, and orientation and is beneficial in power outages when a signal would be dark.

## Implementation Timeframe

Short

Backplates are required for traffic signal faces on roadway approaches with posted speed limits or 85<sup>th</sup> percentile travel speeds of 45-mph or higher. They are recommended on approaches with posted speed or 85<sup>th</sup> percentile travel speeds of less than 45-mph.

## CMF

0.85<sup>A</sup>

## Implementation Considerations

In a retrofit situation, the additional weight and wind loading should be calculated to determine whether the existing span wire or mast arm traffic signal can accommodate the additional load.

## Benefit Cost Ratio

10<sup>B</sup>

## Resources

- A. US Department of Transportation Federal Highway Administration Proven Safety Countermeasures “Backplates with Retroreflective Borders”
  - B. NYSDOT Traffic Safety & Mobility Instruction 14-02
-

# Enhance Signing at Unsignalized Intersections

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Emphasis Area	Description
Intersections	Install a range of low cost signing improvements at stop controlled intersections to improve visibility and conspicuity.
Relative Cost	Options for installation include:
Low	<ul style="list-style-type: none"><li>• Left and right oversized advance “Stop Ahead” intersection warning signs</li><li>• Left and right oversized Stop signs</li><li>• Retroreflective sheeting on sign posts</li><li>• Installation of a properly placed stop bar</li><li>• Double arrow warning sign at T-intersections</li></ul>
Implementation Timeframe	
Short	
Safety Benefit	Any vegetation, parking, signing or other obstruction blocking the visibility of the signing should be removed.
10% reduction in injury and fatal crashes	
15% reduction in nighttime crashes <sup>A</sup>	<b>Implementation Considerations</b> Placement of warning and regulatory signs to maximize visibility.
Benefit Cost Ratio	<b>Resources</b>
12 <sup>A</sup>	A. US Department of Transportation Federal Highway Administration Proven Safety Countermeasures “Systemic Application of Multiple Low-Cost Countermeasures at Stop-Controlled Intersections”

---



# SafetyEdge<sup>SM</sup>

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## Emphasis Area

Vulnerable Users –  
Motorcyclist

Lane Departure

Speed-Related

## Description

A technology that shapes the edge of the pavement at approximately 30 degrees from the pavement cross slope during the paving process.

In contrast to the vertical pavement edge, SafetyEdge<sup>SM</sup> allows vehicles that leave the roadway to recover and return the vehicle to the roadway while keeping control of the vehicle.

## Relative Cost

Low

The SafetyEdge<sup>SM</sup> shoulder treatment should be included in all roadway resurfacing and as part of a standard implementation.

## Implementation Timeframe

Ranges

## Implementation Considerations

The US Department of Transportation Federal Highway Administration recommends using SafetyEdge<sup>SM</sup> because the technology compacts the asphalt while creating the 30 degree angle which makes the pavement more durable.

## CMF

0.892<sup>B</sup>

## Resources

## Benefit Cost Ratio

590 to 1,180<sup>C</sup>

- A. US Department of Transportation Federal Highway Administration Proven Safety Countermeasures "SafetyEdge<sup>SM</sup>"
  - B. Crash Modification Factors Clearinghouse CMF ID: 9205
  - C. Safety Effects of the SafetyEdge<sup>SM</sup> Technical Summary of Crash Modification Factors
  - D. US Department of Transportation Federal Highway Administration Every Day Counts (EDC-1)
-

# Rectangular Rapid Flashing Beacons (RRFB)

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## Emphasis Area

Vulnerable Users –  
Pedestrian/Bicyclist

## Description

Flashing actuated amber lights supplementing pedestrian crossing signs at midblock and unsignalized crossings.

## Relative Cost

Moderate

RRFBs are a low cost alternative to traffic signals and pedestrian hybrid beacons. The RRFB can be passively engaged with a sensor or actively engaged with a pushbutton. Studies have shown that the presence of RRFBs increases driver yielding behavior significantly.

## Implementation Timeframe

Medium

RRFBs should be used in conjunction with high visibility crosswalks, pedestrian warning signs with a fluorescent yellow-green background, and retroreflective sign posts.

## CMF

0.526<sup>A</sup>

## Implementation Considerations

The RRFBs need a power source which can often be completed using a solar panel connected directly to the sign.

## Resources

- A. Crash Modification Factors Clearinghouse CMF ID: 9024
- B. US Department of Transportation Federal Highway Administration “Rectangular Rapid Flash Beacon” FHWA-SA-09-009

# Longitudinal Rumble Strips and Stripes

---

## Emphasis Area

Road User Behavior  
Vulnerable Users –  
Motorcyclist  
Lane Departure  
Speed-Related

## Description

Milled or raised elements on the pavement intended to alert drivers that they've left the travel lane through sound and vibration.

When the pavement marking (edge line or shoulder line) is placed over the rumble strip, the pavement marking is more visible during wet, nighttime conditions.

## Relative Cost

Low

## Implementation Considerations

Edge line rumble strips can be difficult for bicyclists to navigate so the mix of users and available shoulder width should be considered prior to implementation.

## Implementation Timeframe

Ranges

## Resources

- A. US Department of Transportation Federal Highway Administration Proven Safety Countermeasures “Longitudinal Rumble Strips and Stripes”
- B. Crash Modification Factors Clearinghouse CMF ID: 3442
- C. New York State Department of Transportation “Shoulder Rumble Strips”

## CMF

0.84<sup>B</sup>

## Benefit Cost Ratio

36<sup>C</sup>

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# Curve Warning Signs

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## Emphasis Area

Vulnerable Users –  
Motorcyclist

Lane Departure

Speed-Related

## Description

Installation of a static sign warning drivers of the roadway curve.

Signs should be installed in accordance with the Manual on Uniform Traffic Control Devices. Providing a retroreflective sheeting on the sign post Increases sign conspicuity.

## Relative Cost

Low

## Implementation Considerations

The warning signs should be installed to maximize visibility.

## Implementation Timeframe

Short

## Resources

A. US Department of Transportation Federal Highway Administration Proven Safety Countermeasures “Manual for Selecting Safety Improvements on High Risk Rural Roads”

B. Crash Modification Factors Clearinghouse CMF ID: 71

## CMF

0.70<sup>B</sup>

## Benefit Cost Ratio

34 to 428<sup>A</sup>

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