



Sault Ste. Marie Tribe of Chippewa Indians

Transportation Safety Plan





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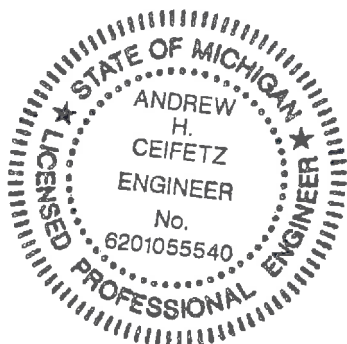
Prepared By Patrick Andridge, E.I.T.

Opus International Consultants Inc.
Detroit Office
Suite 210, 27333 Meadowbrook Road, Novi, MI
48377
USA

Reviewed By Andrew Ceifetz, P.E., CAPM

Telephone: +1 248 539 2222
Facsimile: +1 248 349 6862

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Andrew H. Ceifetz
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Executive Summary

The Sault Ste. Marie Tribe of Chippewa Indians is located on the southern shore of Lake Superior in the Upper Peninsula of Michigan. Our service area includes the seven eastern most counties; Chippewa, Mackinac, Luce Schoolcraft, Alger, Marquette, and Delta and serves our Anishinaabe citizens. Given the wide expanse of the transportation network located within this area, cooperation throughout the Tribal departments and communities is crucial. To assist in the safe maintenance and management of the network, the Tribe initiated the development of several transportation safety studies, including both the usRAP analysis and the current 2015 Transportation Safety Plan (TSP) of the seven county service areas. The overarching goal of the TSP is the reduction of fatal and serious injury crashes within the regional boundary of The Tribal Service Area. The process is generally guided by the Federal Highway Administration (FHWA) document, “**Developing Safety Plans: A Manual for Local Rural Road Owners**”. Our process involves six steps which includes:

1. Establishing Strong Advocates
2. Analyzing the Safety Data
3. Determining Emphasis Areas
4. Identifying Strategies & Countermeasures
5. Prioritizing and Incorporating Strategies
6. Evaluating and Updating the TSP

This report includes the performance of the initial five steps with the sixth step repeating on a regular basis to help ensure that the TSP remains current and relevant to the local communities it is designed to serve. Additionally, while typical reports include countermeasures designed around engineering related treatments, the TSP enlists the support of **the four E’s when addressing** the identified emphasis areas. These include engineering, education, enforcement, and emergency response.

As mentioned, during this process a high level analysis of historic crash data was completed to help assess existing conditions and identify potential emphasis areas. Additional public consultation meetings were conducted across the service area with a wide range of stakeholders including **representatives from the four E’s. Based on the combined review of the crash analysis and stakeholder feedback**, the following six emphasis areas were identified for the region:

- Roadway Departure Crashes
- Vulnerable Road Users
- Intersection Related
- Impaired Driving
- Winter Weather
- Aggressive Driving

The selected emphasis areas and guidance from region stakeholders were used to categorize practical treatment strategies for addressing the identified target crashes. Detailed treatment information, detail from the crash analysis, and stakeholder consultation is available in the report and accompanying appendices.

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1 Introduction

The Sault Ste. Marie Tribe of Chippewa Indians has a historical commitment to Seventh Generation decision making. This type of planning focuses on looking forward to see how future generations will be affected by the decisions made today. In regards to the transportation network the tribe honors that commitment and looks to create a system that ensures safe infrastructure for the generations to come. This in turn extends to the safety and wellbeing of the members of the Tribe as well as that of other residents and visitors to the area.

The Tribe initiated the development of a Transportation Safety Plan (TSP). This document highlights the Vision, Mission, and Goals related to the development and management of the local infrastructure network. The following sections provide background regarding the development of the document, which includes the identification of specific emphasis areas, along with suggested countermeasures to aid in reconciling identified issues and concerns of tribal members. The development of the Transportation Safety Plan was guided by the document, “**Developing Safety Plans: A Manual for Local Road Owners**” which was published by the Federal Highway Administration in 2012.

1.1 Background

The Sault Ste. Marie Tribe of Chippewa Indians, a sovereign tribal nation, serves the Anishinaabe citizens residing within the seven most eastern counties of the Upper Peninsula in the State of Michigan. These counties are highlighted in Figure 1. While the Tribe is headquartered out of Sault Ste. Marie, MI, it encompasses an expansive network serving millions of individuals each year. **The Tribe’s Board of Directors** and members have identified the development, implementation, and maintenance of this **Transportation Safety Plan as a key pillar of the Tribe’s 2015 Tribal Transportation Improvement Plan**. The function of this document is to summarize a series of historic crash analyses and concerns voiced by the Tribe, identify specific Emphasis Areas for improvement, and provide a series of countermeasures and treatments based on Engineering, Education, Enforcement, and Emergency Service (**the 4 E’s**). Information contained in this report will be used to help guide the development of future safety plans and projects. Additionally, the TSP will be updated on a regular basis by the Tribe to ensure that progress is being monitored and measured, emphasis areas and strategies are updated as goals are met, and new issues and concerns are added as they arise.



Figure 1 - Sault Ste. Marie Tribe of Chippewa Indians Service Area by County

1.2 Mission, Vision, & Goals

The mission for the Sault Ste. Marie Tribe of Chippewa Indians' Transportation Safety Plan is guided in part by the State of Michigan's Strategic Highway Safety Plan but is designed to reflect the unique nature of the Tribe and the areas it serves and maintains. The mission is as follows:

Develop and improve a cohesive transportation system spanning our tribal nation to ensure an environment that is safe, efficient, and welcoming for all our tribal citizens.

This mission supports the more general vision commonly adopted by the State of Michigan and at various municipal levels regarding transportation safety. That is, the desire to work towards significant reductions in traffic fatalities, consequently reducing the prevalence of other crash severities as well. This vision is:

A sustained tribal transportation network in balance with our values that provides safety and accessibility for our Tribal Members.

The goals of the TSP take the mission and vision a step further and tie them to specific targets for the plan in terms of real values or measureable targets. The following are potential goals based on the crash history experienced in the service area over the previous five years (2010 – 2014) and concerns raised by the Tribe during public consultations.

- Reduce traffic fatalities by 15% from 12 in 2014 to no more than 10 in 2020
- Reduce serious traffic injuries (incapacitating and non-incapacitating serious injury) by 15% from 267 in 2014 to no more than 227 in 2020
- Reduce the number of Single Motor Vehicle Lane Departure crashes by 20% from 999 in 2014 to no more than 850 in 2020
- Improve non-motorized facilities through the construction, upgrade, or maintenance of at least two miles of sidewalks and multipurpose trails each year.

1.3 Introduction to the Four E's of Safety

While a significant portion of transportation safety studies focus on the potential to employ engineering safety treatments, potential countermeasures considered for the TSP also include strategies related to enforcement, education, and emergency services. This is designed to better leverage the various components, related agencies, and opportunities to reduce the prevalence of traffic crashes in addition to engineering improvements. **Figure 2 provides a summary of each of the 4 E's and examples of treatments related to each.**

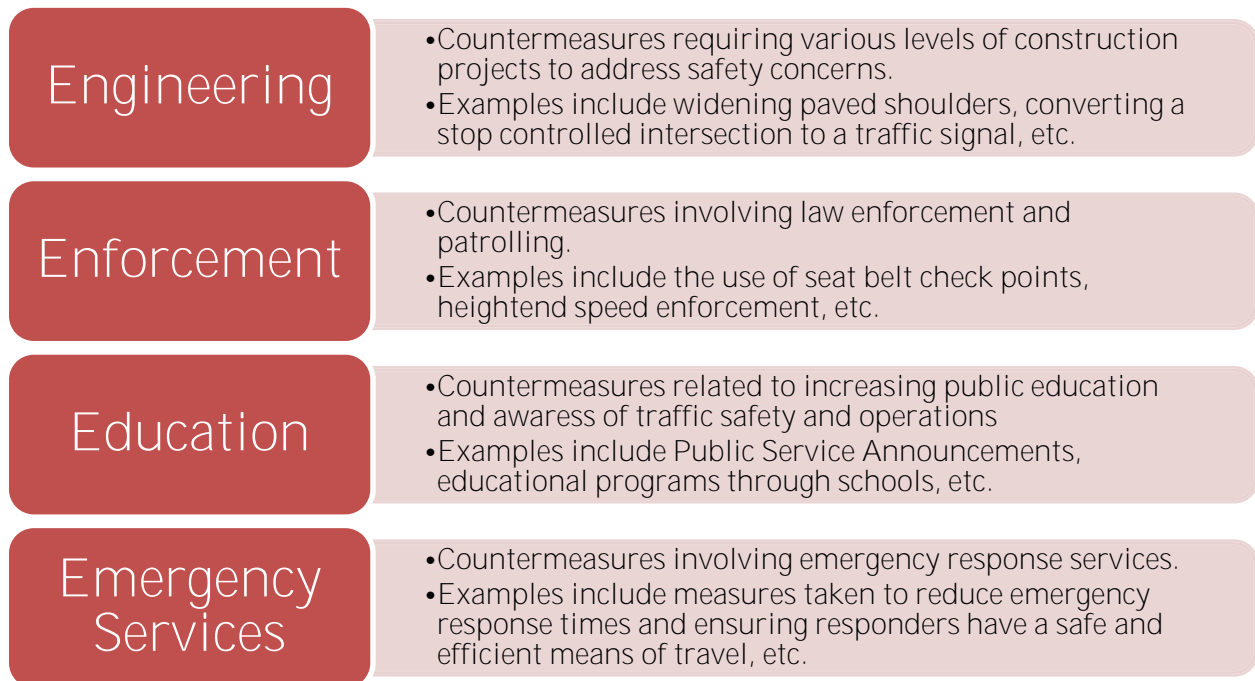


Figure 2 - Four "E's" of a Transportation Safety Plan

2 Transportation Safety Plan Methodology

Several information sources were reviewed to develop the foundation of the TSP. Some of the sources include historic crash data obtained through the Michigan Traffic Crash Facts database from 2010 to 2014, the results of the usRAP analysis of portions of the Tribe's network completed in 2014, and concerns and issues identified by members of the Tribe. This information was used to identify emphasis areas and guide the selection of potential countermeasures designed to address them. The following sections provide additional information regarding the various components.

2.1 Safety Data Analysis

The majority of the TSP is devoted to a review of the traffic safety performance of the Tribe's service area as a whole, i.e. the safety performance of the network across all seven counties. Given the great expanse of the Tribe's service area however, crash data was reviewed at the County level to identify any unique issues or concerns for each County. This section provides information and analyses respective to the service area as a whole with any unique issues associated with the specific counties made available in Appendix B.

2.1.1 Historic Crash Analysis

Over the five year analysis period, over 18,000 crashes occurred on routes located within the Tribe's service area. While the vast majority were Property Damage Only, it is important to note that the service area experienced a higher proportion of fatal and injury crashes than the state as a whole. Figure 3 provides an overview of the distribution of fatal and injury crashes for the service area and the state for comparison. This would suggest that crashes occurring in the Tribe's service area or disproportionately weighted toward the more severity types of injuries.

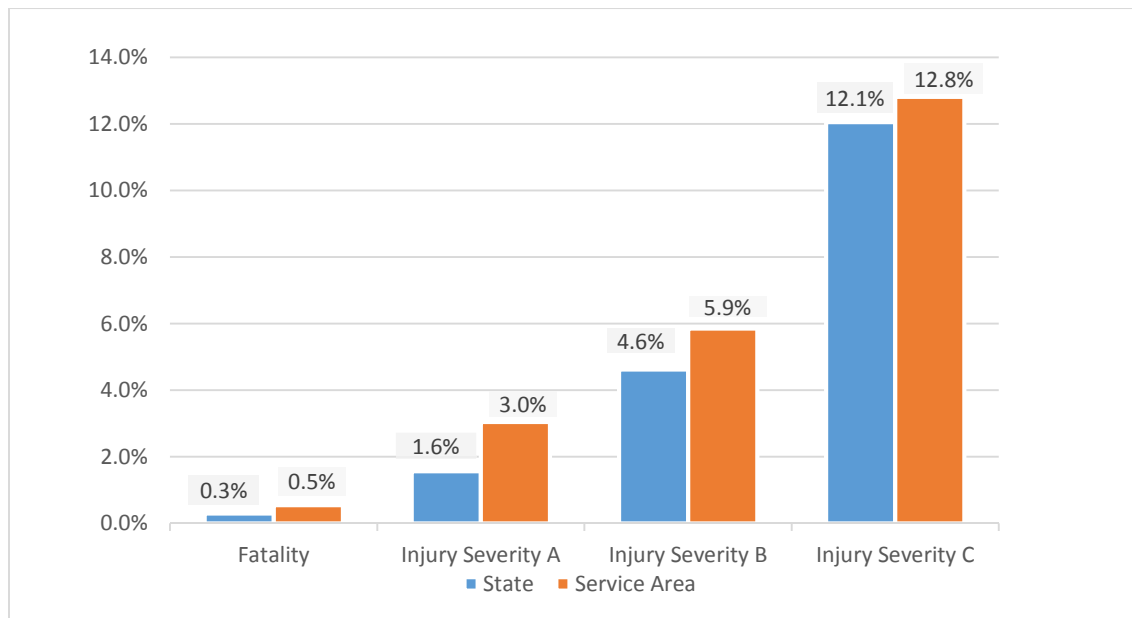


Figure 3 - Service Area Fatal and Injury Crash Distribution

In addition to reviewing crashes by their severity level, specific crash types were reviewed to identify the most prevalent types. This information is important when working to identify specific countermeasures as they are most often tailored towards specific circumstances or crash types. Figure 4 provides a **summary of the service area's crash type distribution, again with the statewide distribution for comparison.**

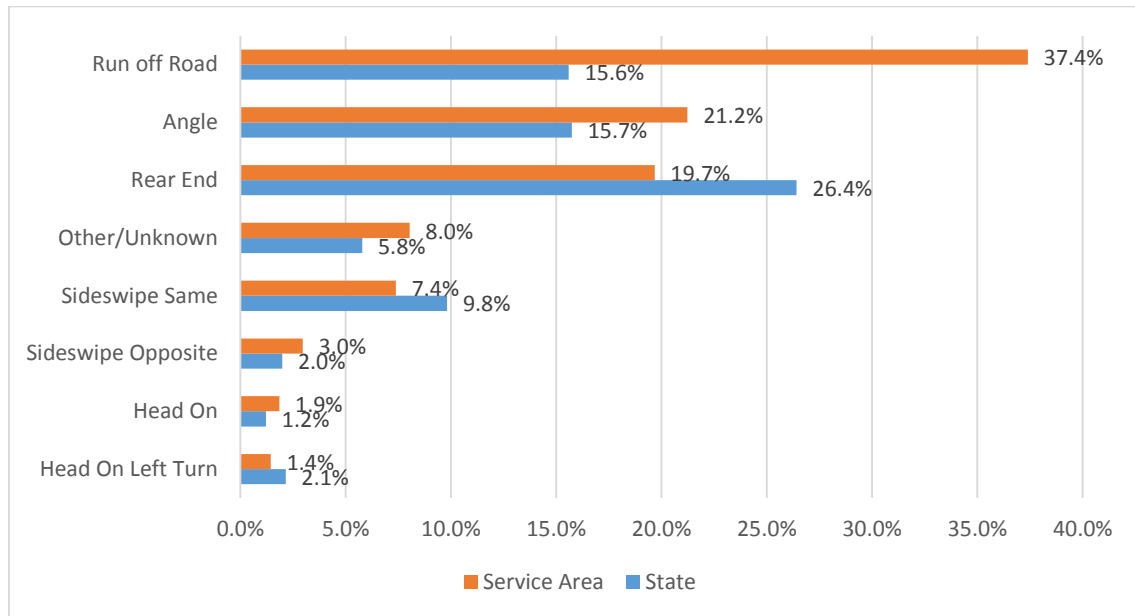


Figure 4 - Service Area Crash Type Distribution

The crash types identified in Figure 4 are ranked in descending order according to the **Service Area's crash type distribution. While the top three crash types in the Tribe's service area are the same as those experienced statewide, the proportion of run off road (single motor vehicle lane departure) crashes is significantly higher in the Tribe's service area as well as angle crashes. The other crash types are generally in line with the statewide distribution or slightly less prevalent.**

In addition to crash type and severity, the month of year in which the crash occurred as well as the road conditions identified at the time of the crash were considered for analysis. Figures 5 and 6 provide a summary and comparison for both distributions.

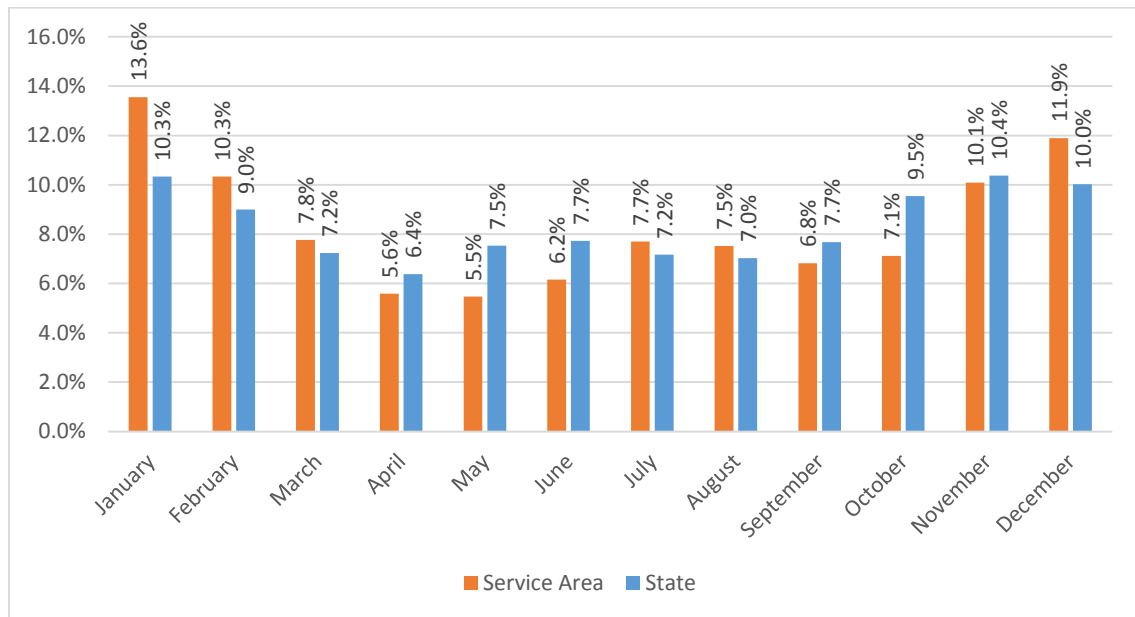


Figure 5 - Service Area Crash Distribution by Month

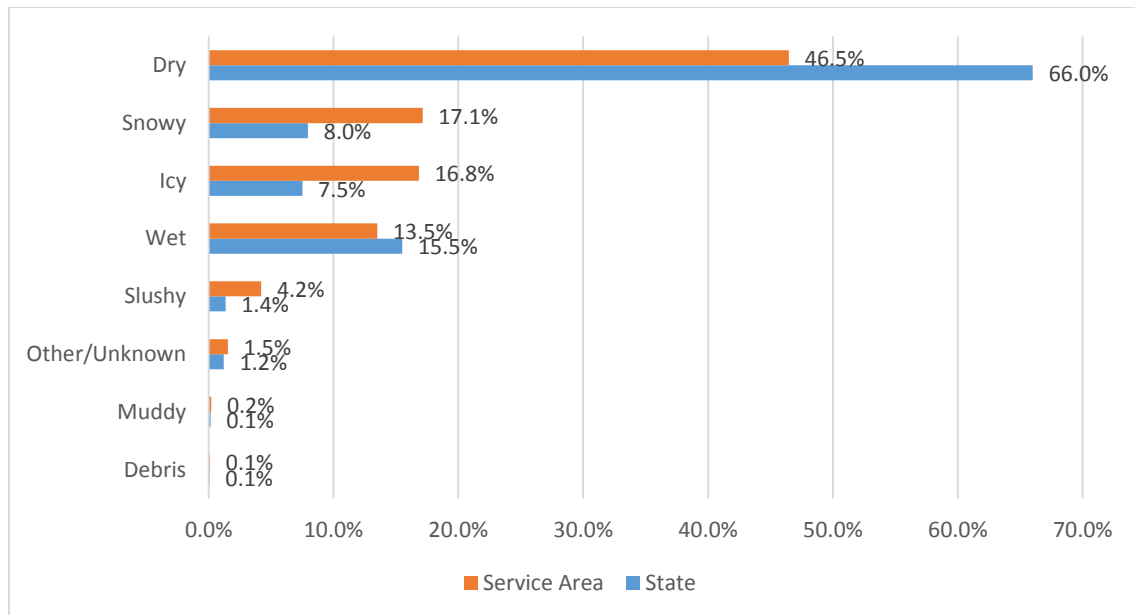


Figure 6 - Service Area Crash Distribution by Road Condition

As shown in Figure 5, there is a peak in crashes during the winter months (November through February) for the service area which is higher than the statewide distribution. This trend is supported by Figure 6 which suggests that the service area experiences an increased proportion of crashes occurring on snowy, icy, or slushy roads. This is likely due to the location of the service area at the north end of the state, compounded by its proximity to the Great Lakes and the lake effect snow storms.

Additional insight can be gained when reviewing the data to identify the hazardous action associated with each crash. Figure 7 provides a summary of the most frequently cited hazardous actions for the

crashes recorded during the study period. Actions attributed to less than 2.0% of all crashes were excluded from this graph. As shown in the graph, speeding, failure to yield, and failure to stop in an assured clear distance were the three most frequently cited hazardous actions, accounting for roughly 44% of the reported crashes.

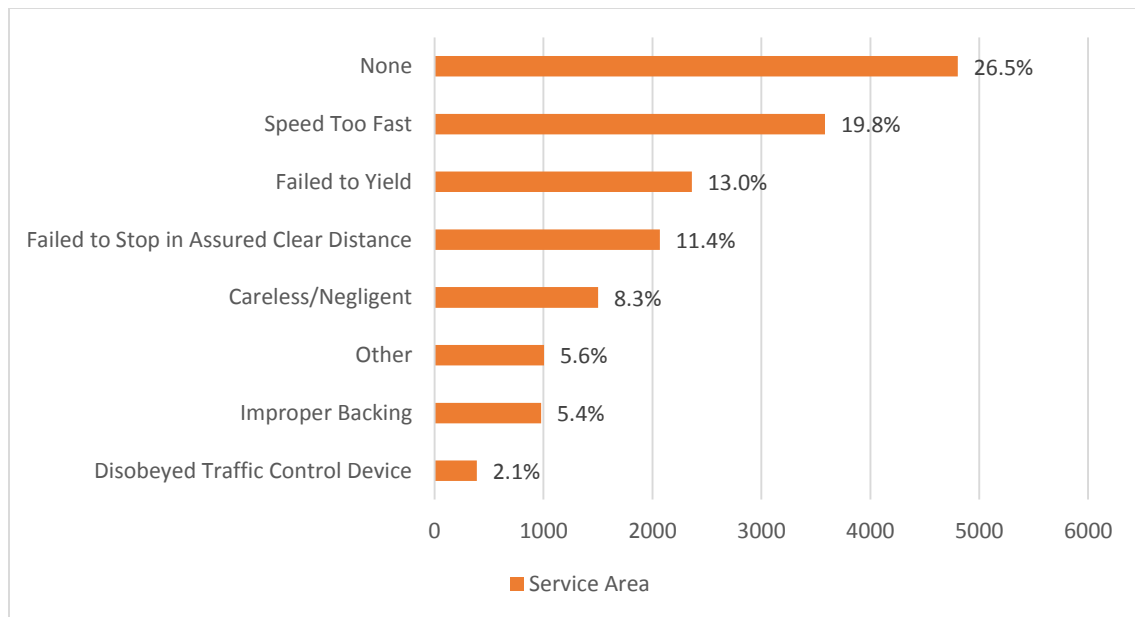


Figure 7 - Service Area Distribution by Hazardous Action

Figure 8 provides a partial breakdown of the crashes occurring in the service area. Additional crash analyses were conducted for the Tribe's service area which can be found in Appendix A. Individual summary information for each of the seven counties can also be found in Appendix B.

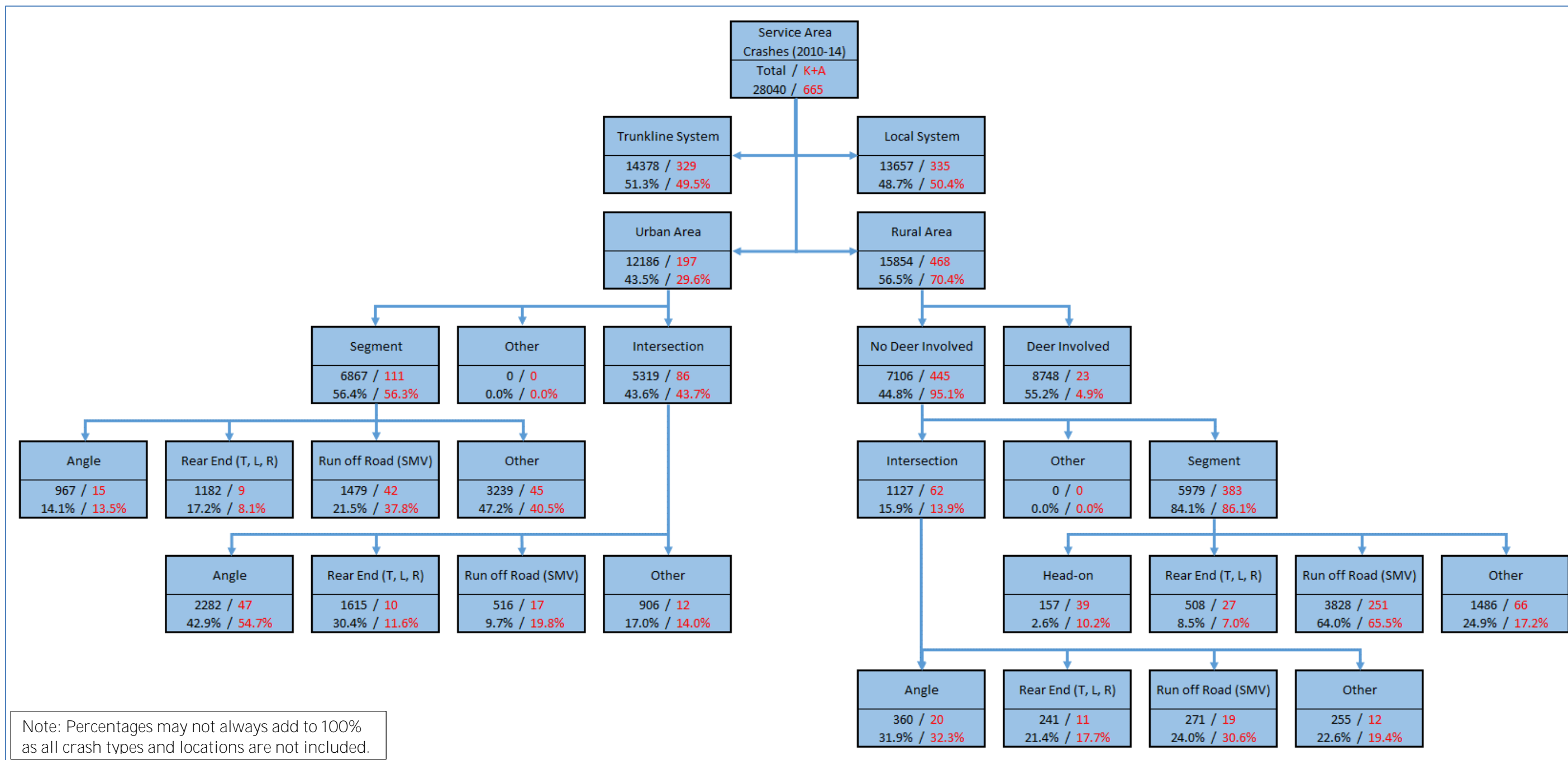


Figure 8 - Breakdown of Crashes by Area & Type

2.1.2 usRAP Risk Analysis

The usRAP risk analysis was conducted in 2014 and employed predictive methods and historic crash data to develop a list of specific high risk locations on portions of the Tribe's network. As the usRAP risk analysis was designed to produce a list of specific locations and generate some potential countermeasures for each, it did not take specific crash characteristics into consideration. Conversely, the general goal of the TSP is to identify broad ranging crash trends and concerns and provide suggestions regarding general countermeasures which might be employed in a widespread manner to help reduce the prevalence of specific crash types and improve overall safety. To overcome this disparity, results from the usRAP risk analysis have been aggregated to help identify common trends across the higher risk roads. Due to the nature of the analysis, this is limited to the geometric characteristics identified throughout the service area as the analysis collected this information to develop risk profiles for the Tribe's network. Figure 9 provides an example of the risk profiles created for several areas within the Tribe's Service Area. Roads highlighted in black, red, and orange were identified as having higher risk potentials.

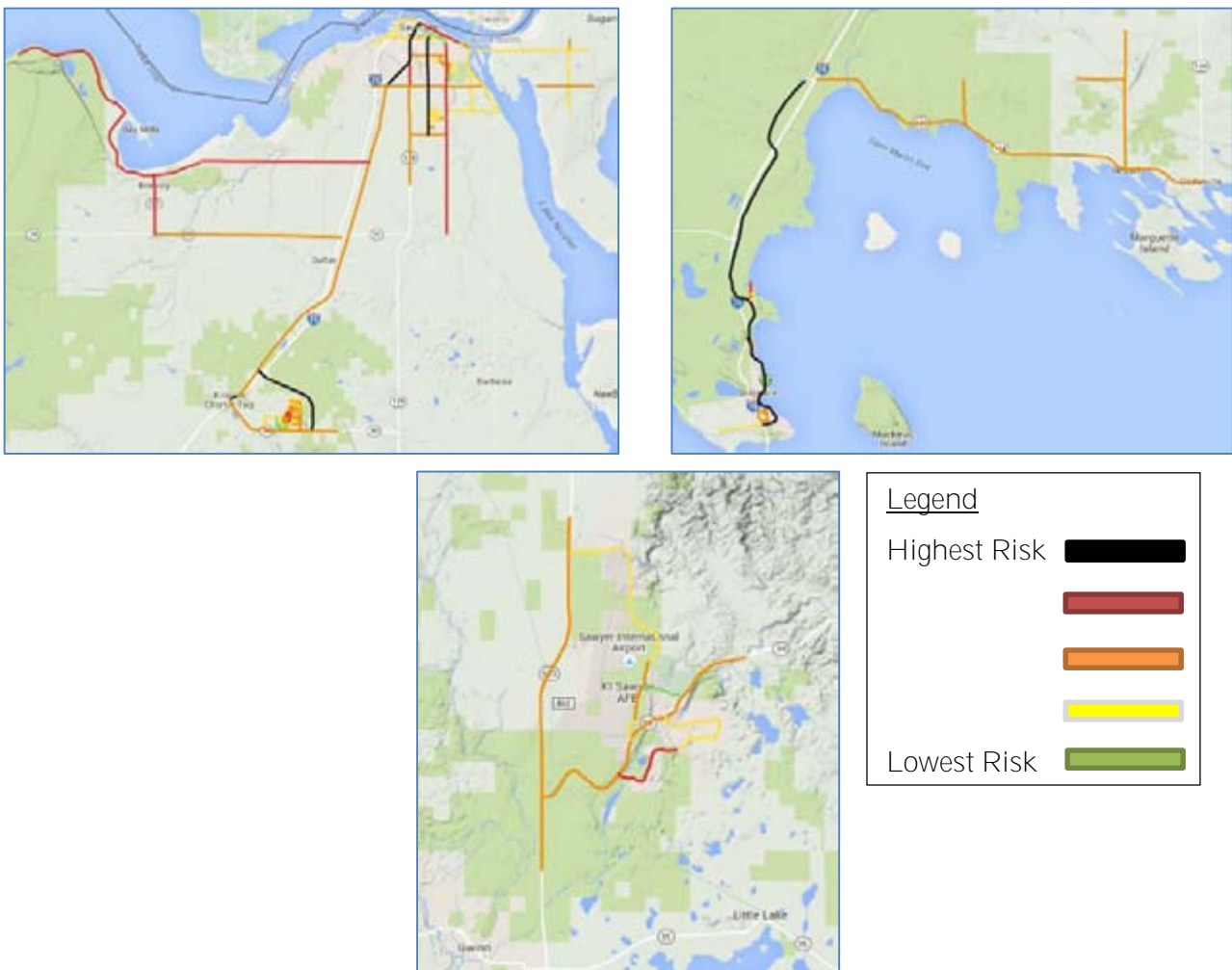


Figure 9 - usRAP Risk Profiles for Sault Ste. Marie (Upper Left), St Ignace (Upper Right), & KI Sawyer (Bottom)

The following points summarize the aggregated information obtained through an analysis and review of the usRAP risk analysis report. It should be noted that this TSP covers a much broader network than the usRAP report. That being said, roads flagged as having a higher risk in the Tribal Service Area tended to have the following characteristics:

- Speed limits greater than 50mph
- Narrow or non-existent paved shoulders
- Narrow or non-existent unpaved shoulders
- No shoulder rumble strips
- No sidewalks present on either side of the road
- Medians consisting of only a painted centerline

This information has been taken into consideration when identifying and developing the selected emphasis areas to be addressed and applicable countermeasures.

2.1.3 Summary of Issues & Concerns Raised by the Tribe

Public Consultation Meeting Results

Over the course of the TSP development process several meetings were held with the Board of Directors, Program Managers, and members of the Tribe at large. These public consultation meetings were conducted to provide the Tribe and the general public with information about the safety plan development process and its goals. Most importantly however, the meetings were used to collect additional information regarding transportation safety and operations in the service area that may not be reflected in the crash data. The meetings were located in Sault Ste. Marie, St Ignace, Newberry, **Munising, and Manistique and include representatives from the four E's for the Tribe.** Figure 10 provide a range of consultation meeting attendance and locations across the Tribe's service area.



St Ignace Health Center Consultation



Manistique Community & Health Center Consultation



Division Directors & Program Managers Consultation

Figure 10 - Public Consultation Meetings

Sign-in sheets from each attended meeting are included in Appendix C. The following bullet points summarize the top five concerns identified by the Tribe, in descending order based on the frequency of their occurrence.

- Winter Weather (Snow removal, winter weather road conditions, whiteouts, etc.)
- Intersection Traffic Control & Geometry
- Non-Motorized Users (Pedestrians, bicyclists, etc.)
- Poor Pavement Conditions & Pavement Markings
- Texting & Distracted Driving

Public Survey Results

In addition to the public consultation meetings held throughout the service area, a survey seeking feedback and concerns from the Tribe was distributed online and in hardcopies. The link for the online survey was distributed through postcards dispersed **across the Tribe's Service Area as well as being advertised in the Tribe's newspaper. Hardcopies of the survey were distributed to several of the Tribe's Health and Community Centers.** Both types of surveys contained the same questions and information with similar formats. A copy of the survey is available in Appendix D.

The feedback and concerns collected through the survey have been summarized here with more detailed results provided in Appendix D. Based on the 249 responses received from across the Tribal Service Area, roughly 93% of the respondents noted that they drove a private vehicle as their primary mode of transportation. Respondents were also asked whether or not they felt safe when traveling through the service area as a driver, motorcyclist, bicyclist, pedestrian, or public transit user. Figure 11 provides a condensed summary of the results.

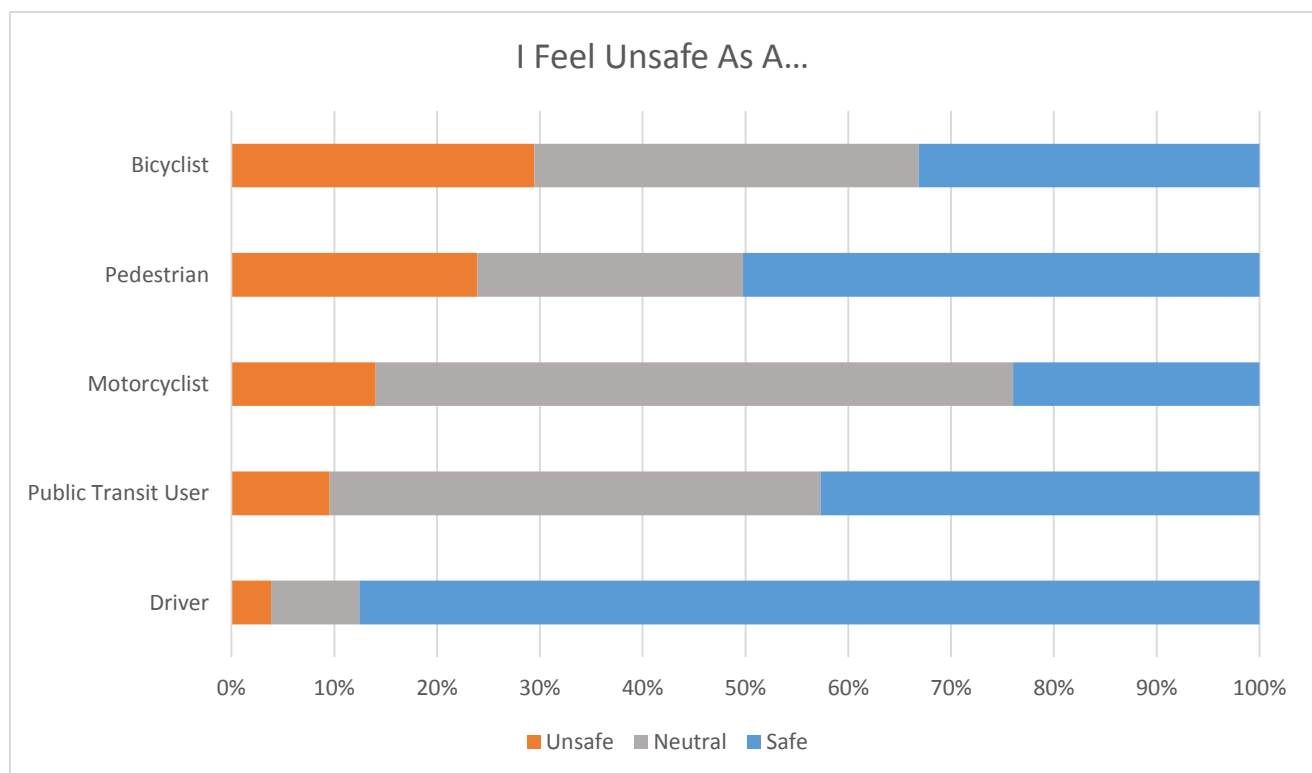


Figure 11 - Public's Perceived Safety by Mode of Transportation

As shown in the preceding figure, while most respondents generally felt safe traveling through the service area, there is a greater perceived risk when traveling as a bicyclist or pedestrian. These feelings were reflected throughout the survey in the open ended responses. Figure 12 provides a summary of the safety areas the public felt the Tribe should be focusing on, with the results generally reflecting the consensus observed in the earlier question (Figure 11). The categories used in Figure 11 are a consolidation of the more specific options presented to the public in the survey itself.

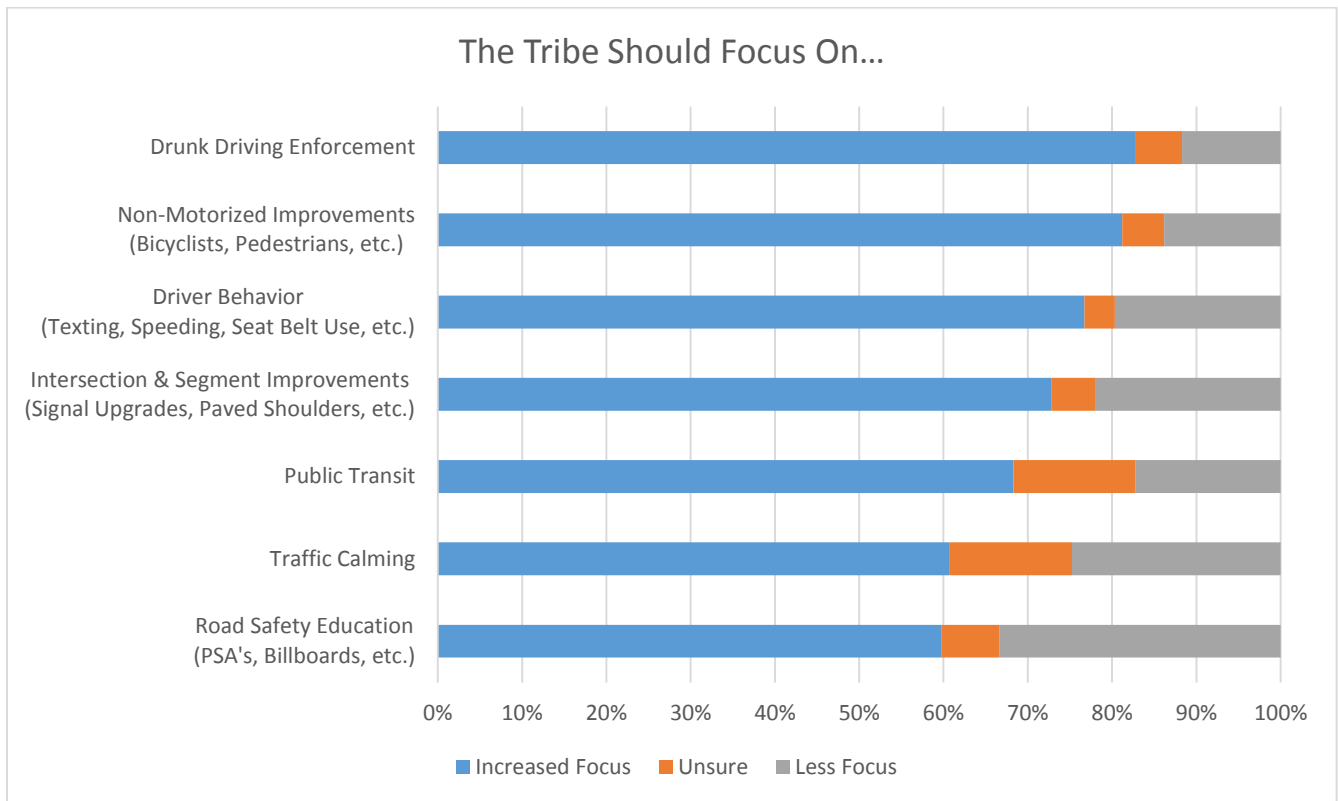


Figure 12 - Public Priorities for Safety Focus Areas

As shown in the preceding figure, while most respondents desired an increased focus in all safety focus areas, there was a greater desire to see increases related to drunk and impaired driving enforcement, non-motorized safety improvements, and issues related to driver behavior. The public generally felt that less focus was required for road safety education and traffic calming measures. The result from the public survey were used to help identify the potential emphasis areas and inform the selection of potential countermeasures.

2.2 Emphasis Areas and Potential Countermeasures

The following emphasis areas were developed based on the crash history review from 2010 to 2014 as well as issues and concerns raised during discussions with stakeholders and members of the Tribe at large. They are presented here in no particular order.

- Roadway Departure Crashes
- Vulnerable Road Users
- Intersection Related
- Impaired Driving
- Winter Weather
- Aggressive Driving

Table 1 provides a basic summary of the portion of crashes covered by the emphasis areas when compared to the service area totals. Deer crashes have been excluded from all crash counts in this section of the TSP.

Table 1 - Proportion of Emphasis Area Crashes

	Emphasis Area Crashes*	All Service Area Crashes	Percent of Service Area Crashes
Total Crashes	14,518	18,102	80.2%
Fatal & Injury Crashes	3,532	4,029	87.7%
Fatal Crashes	90	99	90.9%

*Aggressive Driving crashes are not included in these counts as they are derived from a different data source

Each emphasis area section includes several potential countermeasures to help address and reduce the prevalence of crashes encompassed by each area. It should be noted that the efficacy of each potential countermeasure depends on a number of factors unique to each site and area. Estimated safety benefits are provided for each countermeasure to provide a range of expected crash reductions. The actual impacts will be heavily dependent on the specific characteristics of each treatment site and the degree to which the countermeasure is applied. Additionally, while a countermeasure may be listed under a specific emphasis area, it may not necessarily be restricted to that area. For example, shoulder rumble strips help to lower drowsy run off road crashes but they may also result in a reduction of run off road crashes during white out conditions. For additional information regarding the potential applicability of each countermeasure to crashes related to each Emphasis Area, refer to Appendix A.

2.2.1 Roadway Departure Crashes

“... shoulders are often wide enough but part paved part gravel or no shoulder at all.”

“I love the idea of rumble stripes...”

-Public Survey Comments

Roadway departure crashes, also known as single motor vehicle lane departure crashes, account for roughly 29% of all crash types occurring in the service area with roughly 28% resulting in a fatality or injury. Crashes included under this emphasis area could be due to a wide range of factors including but not limited to drowsy or impaired drivers, sharp and/or poorly delineated curves, poor weather or road conditions, and driver error. Several relatively low cost improvements or programs may be employed to help reduce the prevalence of these types of crashes. Table 2 provides some basic statistical information regarding the crashes included under this emphasis area.

Table 2 - Proportion of Service Area Crashes

	Roadway Departure Crashes	Percent of Service Area Crashes
Total Crashes	5,337	29.5%
Fatal & Injury Crashes	1,504	37.3%
Fatal Crashes	41	41.4%

The following treatments have been identified as offering potential countermeasures to roadway departure crashes.

- **Advanced Curve Warning Signs and/or Chevrons**
- **Install/Expand Paved Shoulders**
- **Install Center & Edgeline Rumble Strips**
- **Install Safety Edge Pavement Treatments**

2.2.2 Vulnerable Road User Crashes

“Our bike path is the highway! Not acceptable!”

-Public Survey Comments

While crashes involving vulnerable road users represent a relatively small portion of overall crashes, they typically result in a disproportionately higher number of fatal and injury crashes. Of the 268 crashes recorded during the five year study period, approximately 87% resulted in a fatality or injury. Crashes included under this designation include those involving cyclists and pedestrians. Table 3 provides the proportion of vulnerable road user crashes compared to the total crash distribution.

Table 3 - Proportion of Vulnerable Road User Crashes

	Vulnerable Road User Crashes	Percent of Service Area Crashes
Total Crashes	268	1.4%
Fatal & Injury Crashes	232	5.8%
Fatal Crashes	10	10.1%

Other road users may be considered under this emphasis area. They could include individuals in the Amish community using horse drawn carriages or other farming equipment. While their involvement in crashes is not readily apparent in the available crash data, it is something that should be considered. The following treatments have been identified as offering potential countermeasures to vulnerable road user involved crashes.

- **Crosswalk Improvements**
- **Improve Sidewalk/Multi-use Trail Interconnectivity & Maintenance**
- **Bike Lanes**

2.2.3 Intersection Related Crashes

“Too many people roll through stop signs and yield signs.”

“Lack of stop lights at busy intersections.”

-Public Survey Comments

Given the complex nature of traffic flow through intersections, road users of all types can face additional challenges navigating them. Roughly a third of crashes occurring in the service area were associated with an intersection. As could be expected intuitively, most intersection crashes in the service area were located in or around the major cities, namely St Ignace, Sault Ste. Marie, Marquette, and Escanaba. It should be noted, however, that intersection crashes are distributed across the entire service area. Potential factors contributing to the prevalence of intersection related crashes could include, but are not limited to the geometry or traffic control employed at the intersection, poor lane use markings or lane designations, drowsy or impaired drivers or driver error in general. Table 4 provides the proportion of intersection related crashes compared to the total crash distribution.

Table 4 - Proportion of Intersection Related Crashes

	Intersection Crashes	Percent of Service Area Crashes
Total Crashes	6,449	35.6%
Fatal & Injury Crashes	1,487	36.9%
Fatal Crashes	20	20.2%

The following treatments have been identified as offering potential countermeasures to intersection related crashes.

- **Review Intersection Traffic Control**
- **Emergency Vehicle Signal Preemption**
- **Advanced Intersection Signage**
- **Installation of Transverse Rumble Strips**

2.2.4 Impaired Driving Related Crashes

“I don’t trust all drivers to be safe and not distracted or under the influence of alcohol, drugs, or other substances.”

“Other substance abuse while driving.”

-Public Survey Comments

Drivers operating under the influence of drugs or alcohol present a significant risk to themselves and other road users. Depending on the specific substance, impaired drivers may experience slower reaction times, narrower fields of vision, and a reduced capacity for making correct judgements regarding their abilities as well as their surroundings. While the presence of impaired drivers on the road is impossible to eliminate in their entirety, several strategies may be employed to help reduce their prevalence on the road and reduce the potential for impaired driver crashes. Table 5 provides the proportion of impaired driver related crashes compared to the total crash distribution.

Table 5 - Proportion Impaired Driving Crashes

	Impaired Driver Involved Crashes	Percent of Service Area Crashes
Total Crashes	1,170	6.5%
Fatal & Injury Crashes	524	13.0%
Fatal Crashes	40	40.4%

The following treatments have been identified as offering potential countermeasures to impaired driver involved crashes.

- **Impaired Driving Enforcement Zones**
- **Impaired Driving Education Campaign**

2.2.5 Winter Weather Related Crashes

“Snow on the sidewalks by all schools. They are covered with snow and ice to where the kids have to walk the roads.”

“Whiteout conditions on the highway.”

-Public Survey Comments

Given the geographic location of the service area, i.e. northerly location surrounded by several great lakes, the winter season generally lasts for a longer period of time than the rest of the state. Additionally, the severity and intensity of winter weather in the area is much greater than that experienced in the lower peninsula of the state. Roughly 46% of the crashes in the service area occurred during the peak winter months (Dec, Jan, or Feb) or on road conditions associated with winter weather (icy, snowy, or slushy). Crashes included under this category are weather related and may be due in part to loss of control or poor braking performance. Table 6 provides the proportion of winter weather related crashes compared to the total crash distribution.

Table 6 - Proportion of Winter Weather Crashes

	Winter Weather Crashes	Percent of Service Area Crashes
Total Crashes	8,449	46.7%
Fatal & Injury Crashes	1,510	37.5%
Fatal Crashes	36	36.4%

The following treatments have been identified as offering potential countermeasures to winter weather related crashes.

- **Whiteout Preparation**
- **Additional Whiteout Behavior Education**
- **Improved Cooperation & Coordination with Municipalities for Snow Plowing & Sidewalk Clearing**

2.2.6 Aggressive Driving Related Crashes

“People don’t realize they have done something stupid until it’s too late! People should slow down and consider other people’s lives and safety as well as their own.”

-Public Survey Comments

According to the National Highway and Traffic Safety Administration (NHTSA), aggressive driving is defined as:

“When individuals commit a combination of moving traffic offenses so as to endanger other persons or property”

For the analysis of this TSP, aggressive driving is defined using the following hazardous actions from the crash reports included in the data supplied by MDOT:

- Driving too fast for conditions
- Improper passing
- Failure to yield
- Improper lane use
- Failed to stop in Assured Clear Distance
- Disobeyed traffic control
- Improper signal
- Improper turn
- Reckless driving

Table 7 provides the proportion of vulnerable road user crashes compared to the total crash distribution.

Table 7 - Proportion of Aggressive Driving Crashes

	Aggressive Driving Crashes	Percent of Service Area Crashes
Total Crashes	9,289	32.9%
Fatal & Injury Crashes	350	53.8%
Fatal Crashes	54	54.5%

The following treatments have been identified as offering potential countermeasures to aggressive driving crashes.

- **Mobile Speed Trailers**
- **Traffic Calming Projects**
- **Road Diets or Other Reconfiguration**
- **Randomized Enforcement Locations**

2.3 Countermeasure Prioritization

Due to the interconnected nature of transportation safety and treatment strategies, countermeasures may have a varying impact for more than one emphasis area. While this can increase the complexity when attempting to quantify their overall effect, it does provide an opportunity to prioritize treatment strategies, at least in part, on the number of emphasis areas they have the potential to impact. Table 8 provides a rudimentary summary of the applicability of each countermeasure within each of the emphasis areas. The countermeasures are prioritized based on the potential number of emphasis areas which could be impacted by their installation, as well as the number of crashes each emphasis area has historically been associated with. The goal is to prioritize the treatments which have the potential to impact the greatest proportion of crashes within the Service Area.

Table 8 - Countermeasure Prioritization

	Countermeasure(s)	Roadway Departure	Vulnerable Road User	Intersection Related	Impaired Driving	Winter Weather	Aggressive Driving
1	Installation of Transverse Rumble Strips		✓	✓		✓	✓
2	Install/Expand Paved Shoulders	✓	✓		✓	✓	
3	Install Center/Edgeline Rumble Strips	✓			✓	✓	
4	Whiteout Preparation	✓				✓	
5	Whiteout Education	✓				✓	
6	Impaired Driving Enforcement Zones				✓		✓
7	Randomized Enforcement Locations				✓		✓
8	Traffic Calming Projects		✓				✓
9	Review Intersection Traffic Control		✓	✓	✓		
10	Mobile Speed Trailers						✓
11	Advanced Curve Warning/Chevrons	✓			✓		
12	Advanced Intersection Signage			✓	✓		
13	Crosswalk Improvements		✓	✓			
14	Improved Snow Removal Coordination with Counties & Cities		✓			✓	
15	Emergency Signal Vehicle Preemption			✓			
16	Safety Edge	✓					
17	Impaired Driving Education Campaign				✓		
18	Improve Sidewalk/Multi-use Trail Interconnectivity & Maintenance		✓				
19	Bike Lanes		✓				

Table 8 provides an initial prioritization of the countermeasures identified in this report. As with the emphasis areas and the countermeasures themselves, the prioritization should be reviewed and updated regularly to reflect the performance of each countermeasure and the priorities and guidance of the Tribe.

3 Next Steps

3.1 Implementation Process

While the Sault Ste. Marie Tribe of Chippewa Indians and its constituent agencies and transportation partners and emergency responders have taken great strides towards improving road safety in the region, fatal and serious traffic crashes remain a priority to be addresses. The emphasis areas and potential countermeasures outlined in this report provide a foundation for the stakeholders and agencies to draw on when implementing new, or maintaining existing, traffic safety projects and programs. The Tribe will continue to work with and foster strong relationships with and between the various stakeholders and agencies, internally and externally, to help promote and coordinate these projects and programs. In this way, the Tribe may better coordinate and plan future transportation projects as well as provide assistance and guidance regarding educational and law enforcement campaigns. A significant portion of this process is the inclusion of the TSP components in the yearly **updates to the Tribe's Transportation Improvement Plan (TIP)**. These projects and programs will be monitored by the Tribal Transportation Planner in preparation for future evaluation tasks.

The Tribal Transportation Planner and associated Transportation Committee will form the core group responsible for the coordination of safety projects and programs, including the development of relationships internally and externally with other stakeholders. Through continued cooperation and relations within the Tribal Government as well as between the Tribe and other external agencies, the TSP provides a high level document to guide the application of various transportation safety countermeasures throughout the region.

3.2 Evaluation Process

Given the rapid nature of change in today's technologically driven world, it is crucial that the Transportation Safety Plan is continuously updated and evaluated. Michigan enjoys one of the country's more robust traffic crash reporting systems which the Tribe contributes to. This information will be used to help evaluate the efficacy of systematic and individual safety treatments and programs. This will require continued cooperation between the various agencies the Tribe works with, as well as the various organizations within the Tribal Government. Accurate records regarding the implementation and extent of each safety related engineering improvement, education or public awareness campaign, law enforcement program, and emergency service changes should be maintained by each responsible party. In most if not all situations this is already occurring, but must be maintained to help ensure enough information is retained to properly evaluate each treatment. This project and process information will be used in conjunction with the crash data as it becomes available to assess the impacts of each treatment on the related fatal and serious injury crashes. This process should occur, at a minimum, every two years but is expected to occur on a yearly basis with the update of the TIP.

In addition to the treatment evaluations conducted on a regular basis, feedback and concerns should be collected from stakeholders, relevant agencies, and the Tribe to ensure that the most pressing concerns are included in the TSP. This could be accomplished through a yearly or bi-annual meeting held with all

involved agencies and surveys distributed to the public as needed. This information, when used in conjunction with a review of the most recent crash data and treatment effectiveness evaluations, should be used to update or refresh the TSP. In this manner, progress may be tracked against the goals identified in the plan, as well as providing an opportunity to add additional concerns and emphasis areas and adjust or update the goals identified in the report. Additionally, as the report is updated and maintained it should remain publicly available. In this way, the TSP may remain a living document, adapting and adjusting according to the needs of the local communities it is designed to serve and support.

3.3 Moving Forward

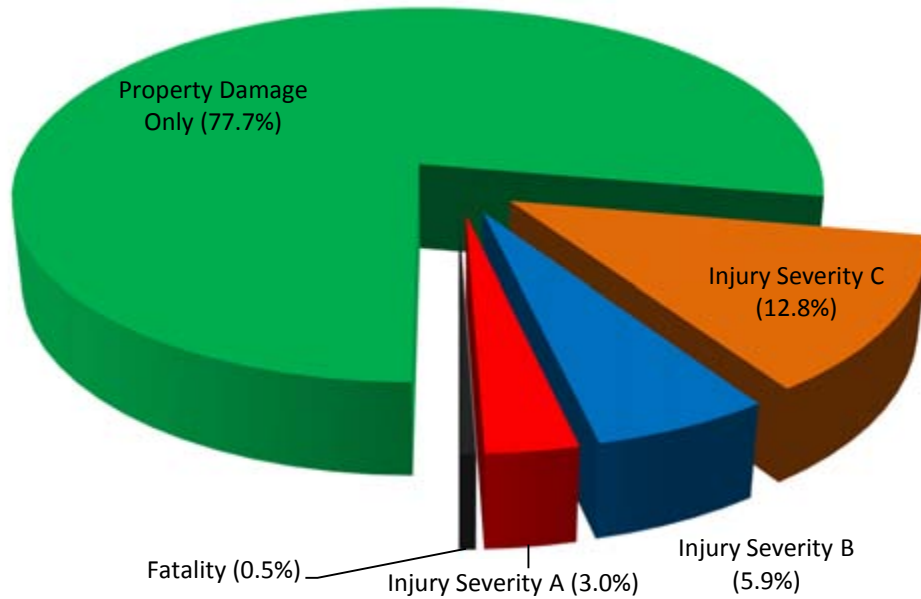
The Transportation Safety Plan has been developed as a high level guide for the Tribe. It provides a region wide analysis of the larger issues and concerns identified in the crash data and through an extensive collection of feedback received from the public as well as tribal leadership. The report provides a series of potential countermeasures which may be applied in a systematic manner to help address these issues and ultimately reduce the number of fatal and serious injuries occurring in the **Tribe's service area. This document will be updated on a regular basis** taking the changing concerns and priorities of the Tribe and its members into consideration and will serve as a guiding document for the other transportation safety and planning reports employed by the Tribe. When paired with other site specific safety and operational analyses such as the usRAP Analysis, the Non-motorized Plan, and the Transit Study, the TSP will be used to help guide and direct the projects and development plans laid out in the annual development of the Transportation Improvement Plan. Effectively, the TSP is designed to work in conjunction with other transportation safety reports to provide high level guidance to the project specific plan developed each year for the TIP. Both documents will be evaluated and updated on a regular basis, helping to ensure that they remain relevant and work to address the changing concerns and needs of the Tribe.

Appendices

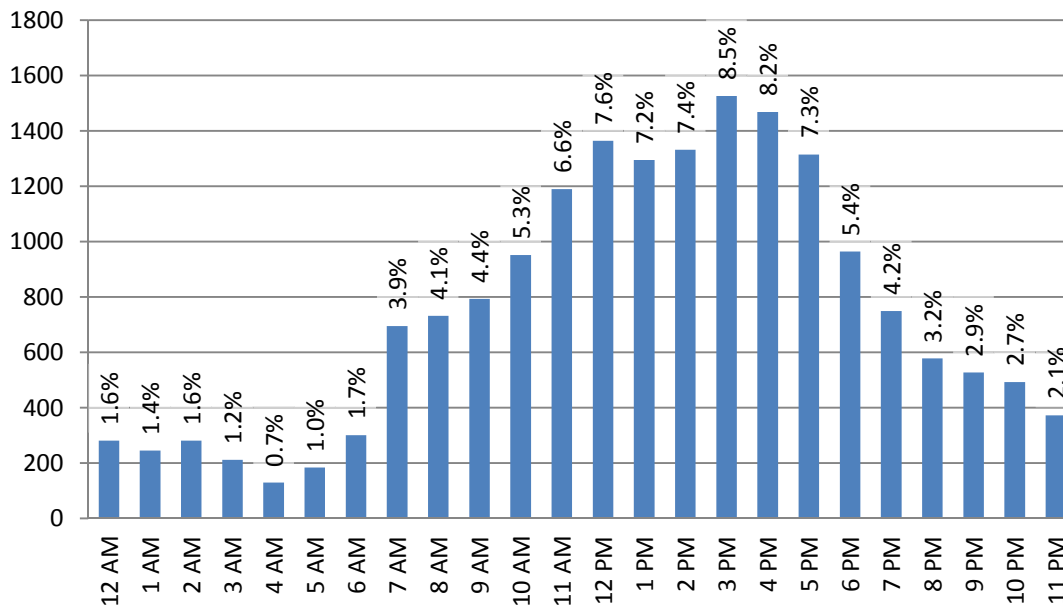
Appendix A – Service Area Data Analysis Summary

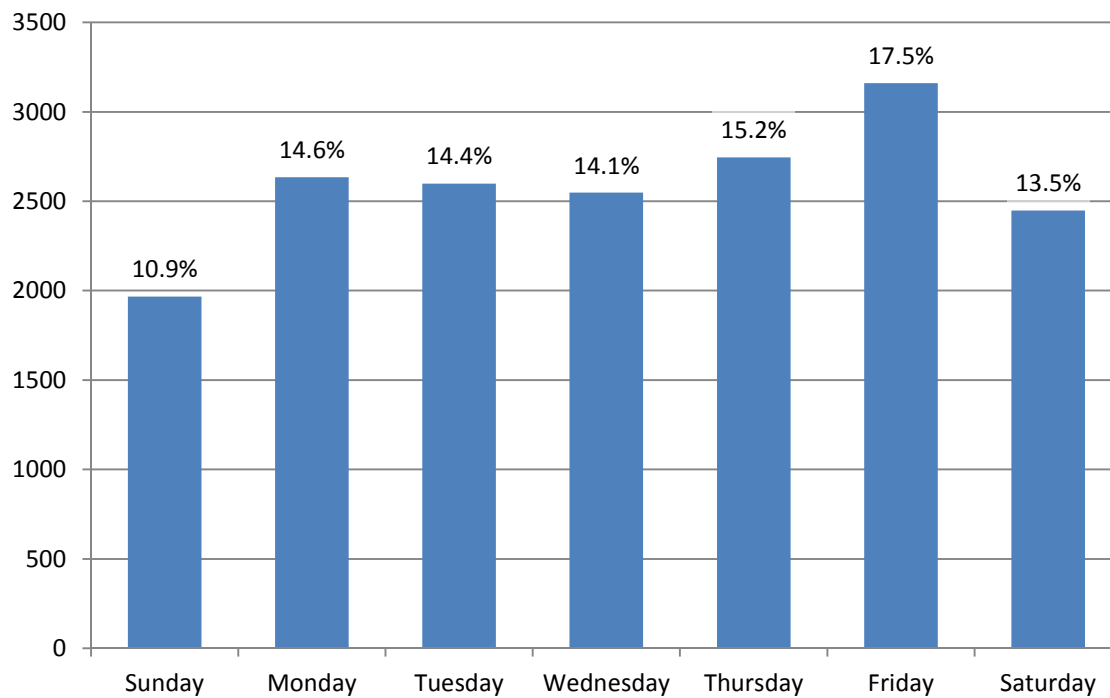
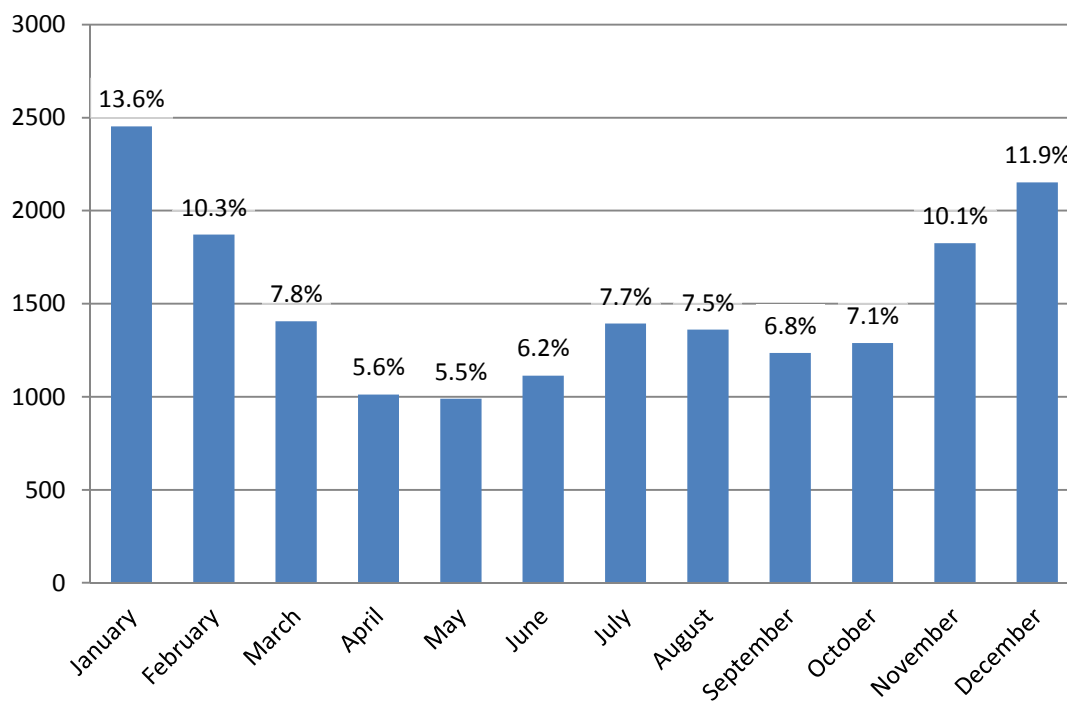
A.1 – Service Area Crash Analysis (2010-14, Source: MTCF)

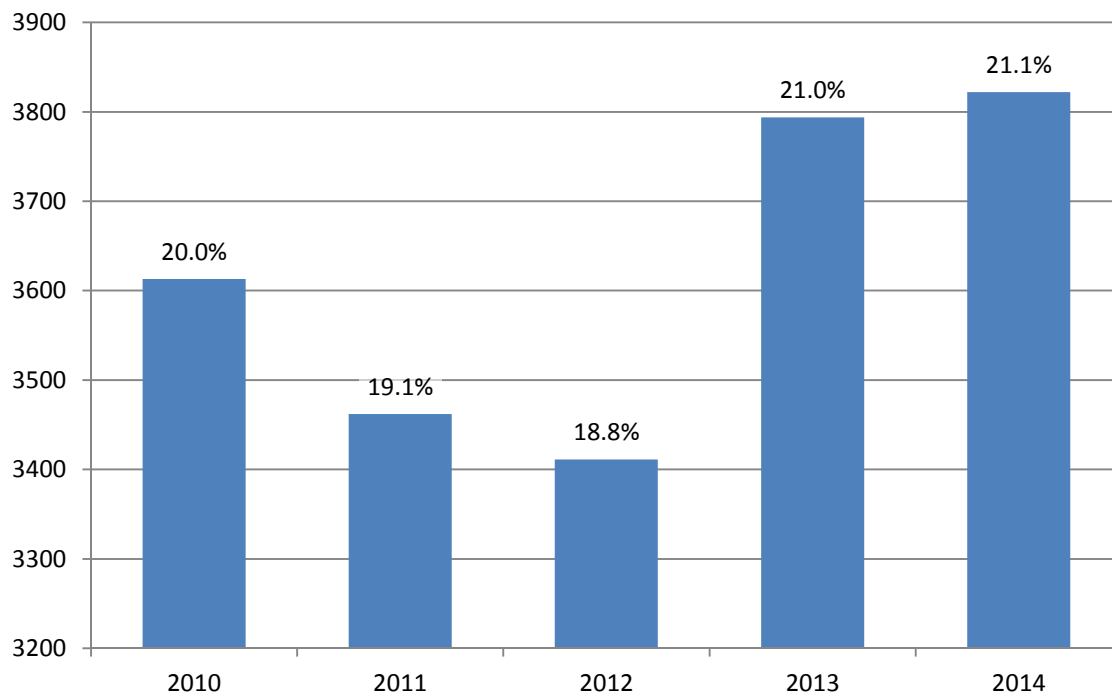
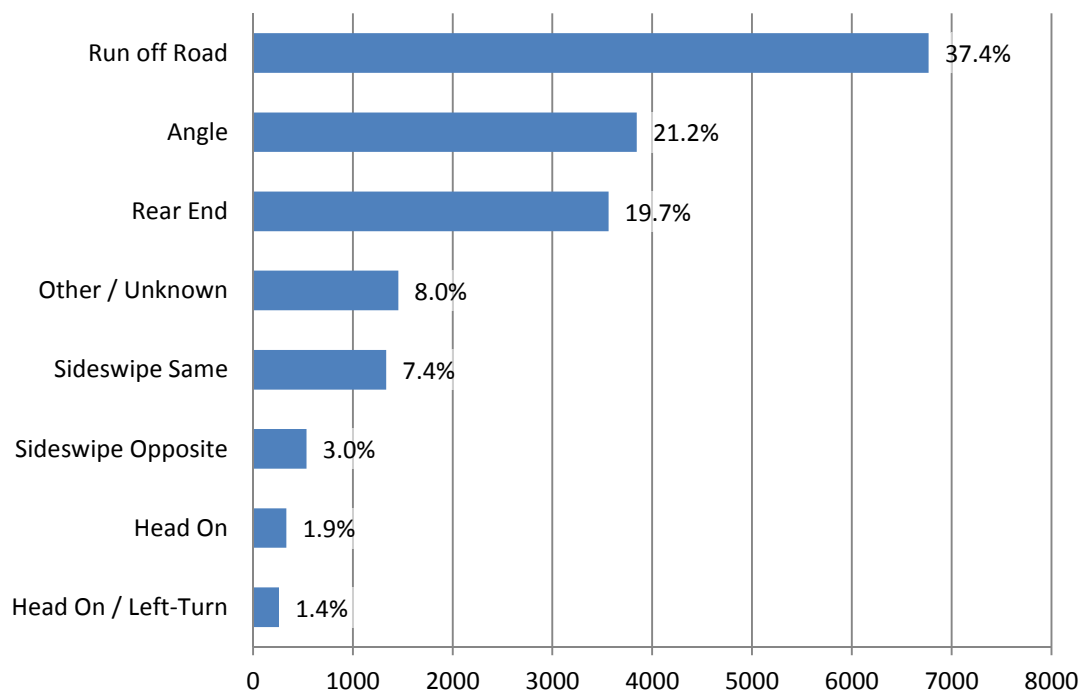
Injury Severity



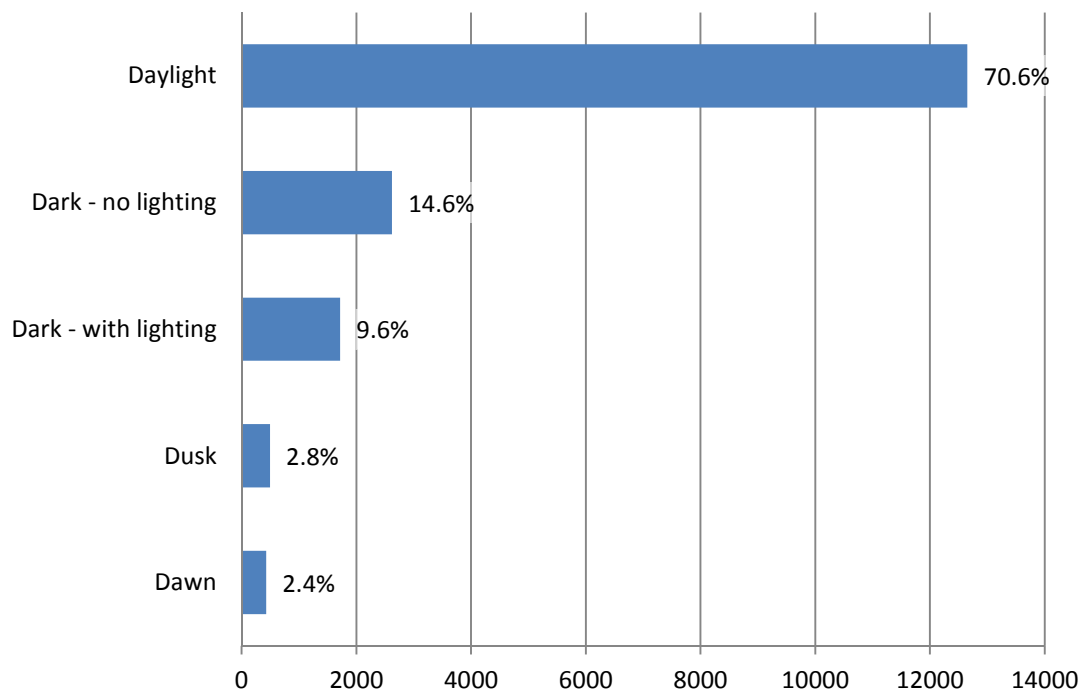
Hour of Day



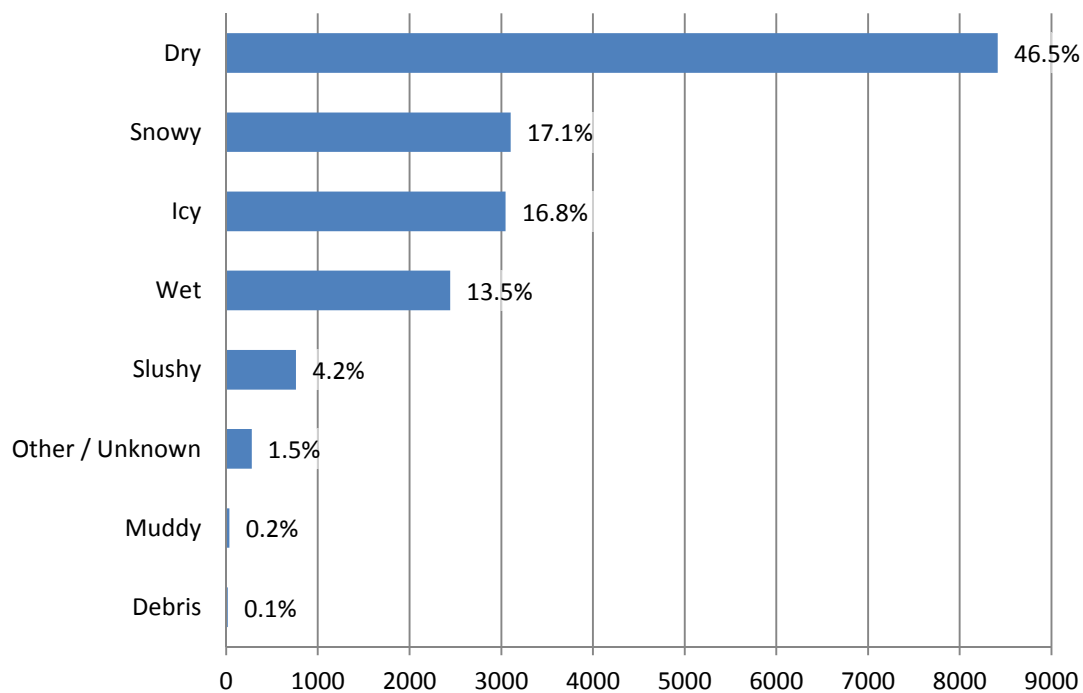
Day of Week**Month of Year**

Year**Collision Type**

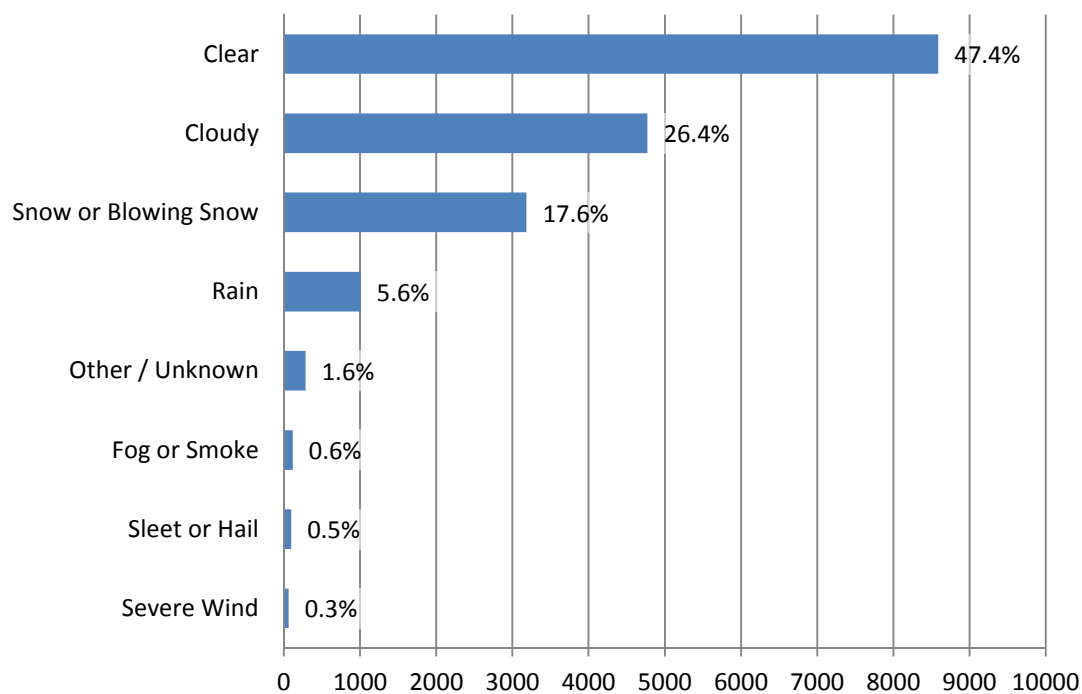
Lighting



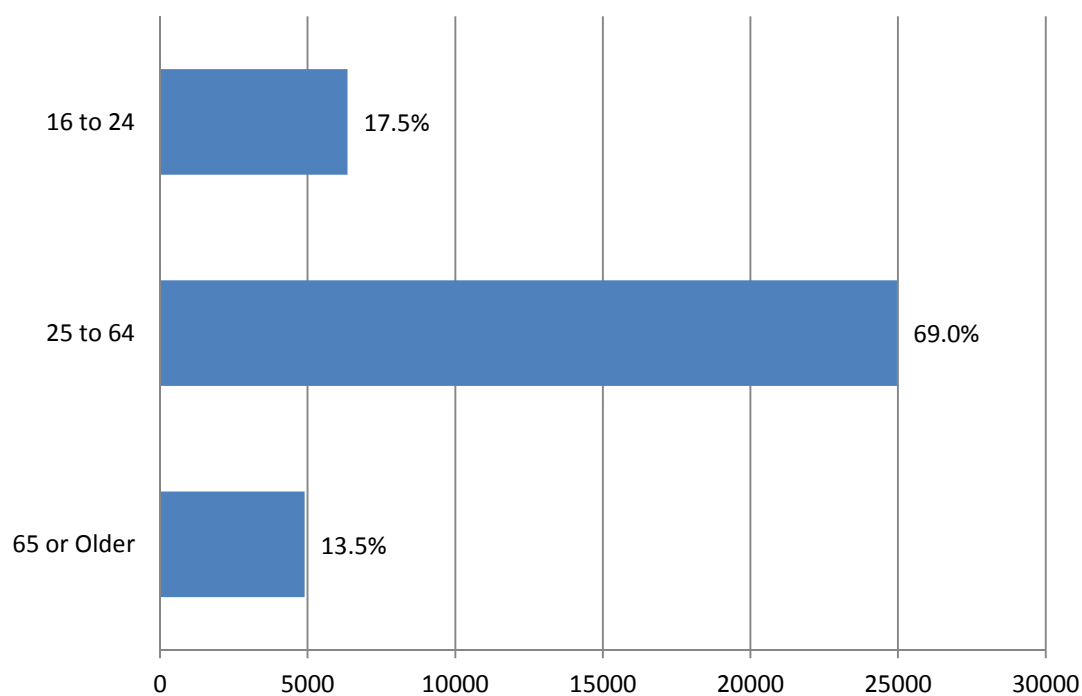
Road Conditions



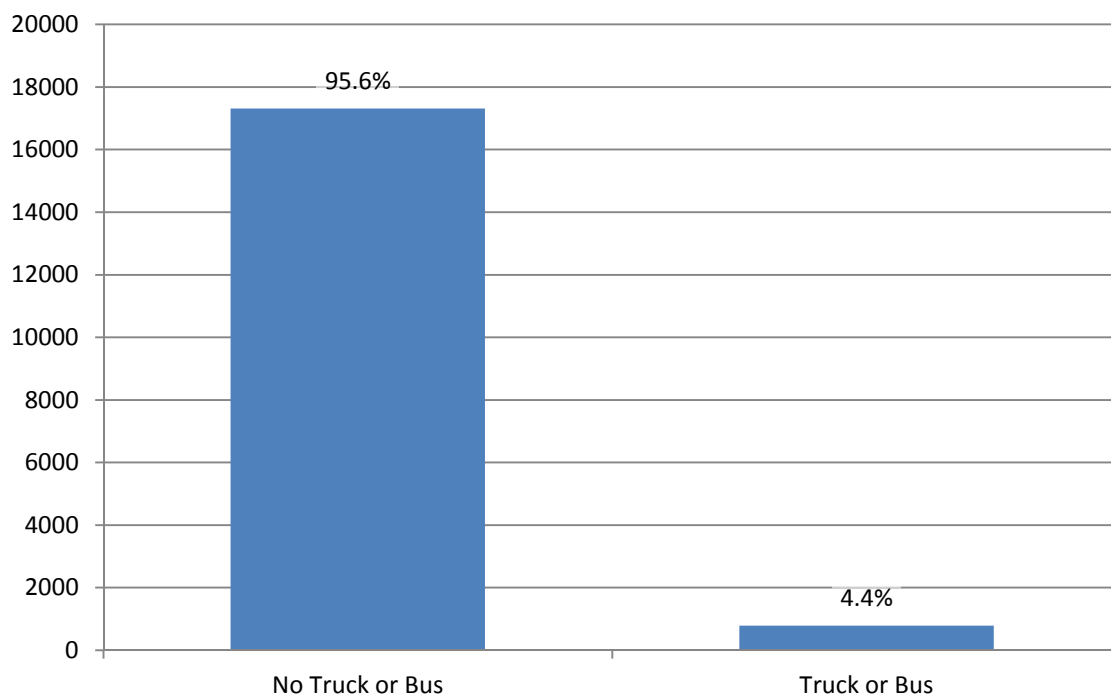
Weather Conditions



Age

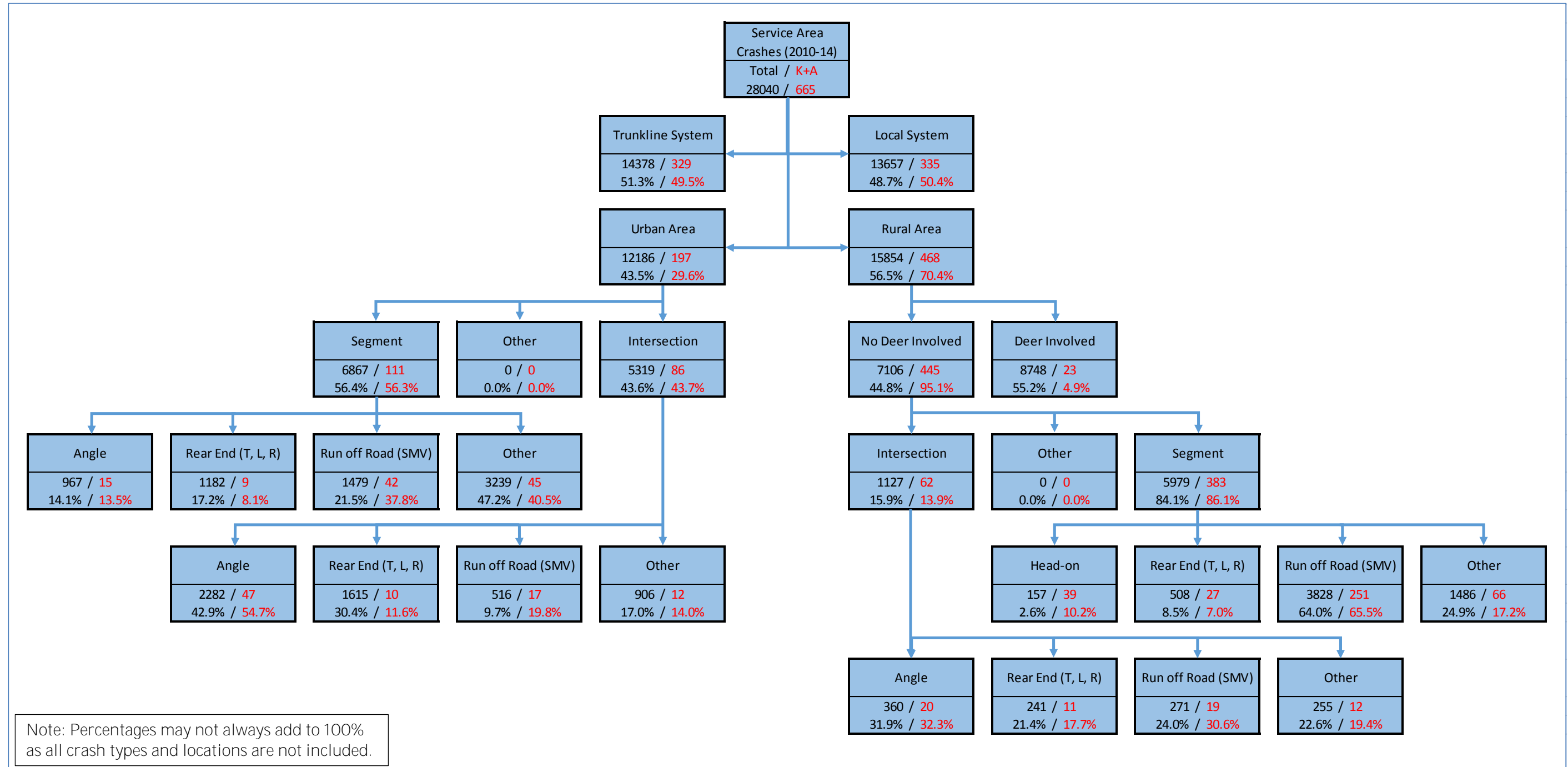


Commercial Vehicles

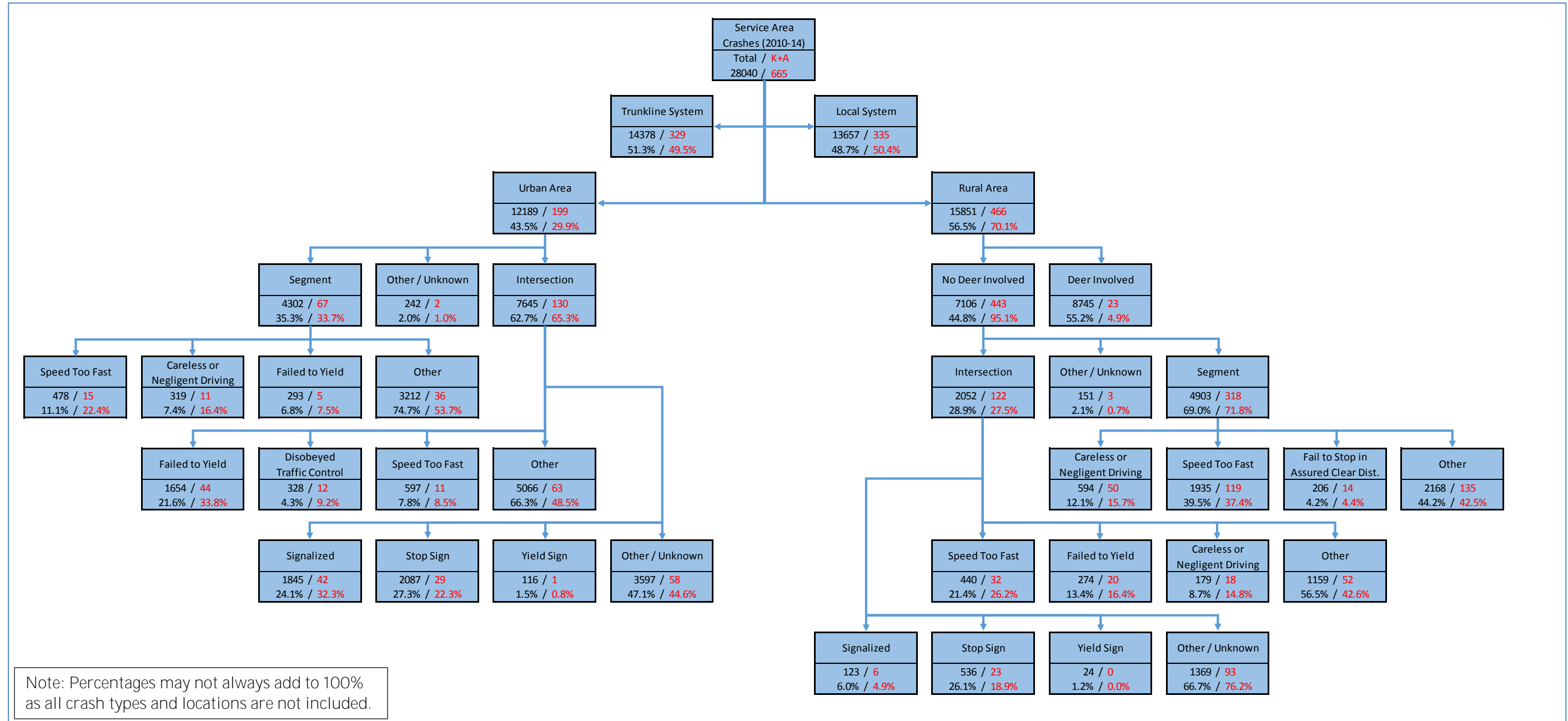


A.2 – Service Area Crash Flowcharts

Crashes by Area & Predominant Type (2010-14 Source: MTCF)



Crashes by Area & Predominant Hazardous Action (2010-14 Source: MDOT)



Note: Percentages may not always add to 100% as all crash types and locations are not included.

A.3 – Service Area Countermeasure Recommendations

Roadway Departure Countermeasures

Advanced Curve Warning Signs and/or Chevrons

4-“E” Area of Focus: Engineering

Countermeasure Definition:

Advanced curve warning signs provide drivers with additional time to adjust their speed to prepare for the upcoming curve. These “Curve Ahead” warning signs may be supplemented with advisory warning speeds where warranted based on the geometry of the curve. Additionally, target arrows and chevron signs help to delineate the path of the curve improving the driver’s ability to stay in their lane and on the road. Flashing beacons may be added to the signs to improve their conspicuity and draw drivers’ attention to the curve.



Source: FHWA

Types of crashes affected: Single Vehicle Lane Departure, Sideswipe Opposite, Head On

Locations for use: In advance of and along unmarked or higher risk curves. An example location could be the curve along the sharper curves of M-94 through the K.I. Sawyer area.



Estimated Safety Benefit: 4 – 52% reduction for crashes of all types and severities
28 – 55.5% reduction in run off road crashes of all severities

Install/Expand Paved Shoulders

4-“E” Area of Focus: Engineering

**Countermeasure
Definition:**

While gravel shoulders provide drivers with additional room for correction and vehicle recovery, paved shoulders are more stable and provide improved traction and control. This extra pavement area **improves the driver’s ability** to correct after leaving their lane but before departing from the road itself.



Source: FHWA

Types of crashes affected: Single Vehicle Lane Departure

Locations for use: Road segments with little to no paved shoulder. Especially areas with high concentrations of run off road crashes or significant non-motorized volumes sharing the road with vehicles. An example location is Seymour Rd.



Estimated Safety Benefit: 16 – 60% reduction in crashes of all types and severities
2 – 18% reduction in serious and minor injury fixed object, head on, run off road, and sideswipe crashes

Install Center & Edgeline Rumble Strips

4-“E” Area of Focus: Engineering

Countermeasure Definition:

Center and edgeline rumble strips provide the driver with an auditory and tactile alert when they begin to move out of their lane. These strips can be pressed into newly laid pavement or milled in after the fact. They are especially effective when drowsy or distracted drivers are concerned.



Source: FHWA

Types of crashes affected: Single Vehicle Lane Departure, Head On, Sideswipe Same Direction

Locations for use: Road segments experiencing high concentrations of run off road or head on crashes. An example location is Gaines Highway in the Kincheloe area where there is a narrow shoulder but no rumble strips along the curve.



Estimated Safety Benefit:

- Centerline: 21% reduction in head on and sideswipe crashes of all severities
- Edgeline: 5 – 18% reduction in fatal and serious injury crashes of all types

Install Safety Edge Treatments

4-“E” Area of Focus: Engineering

**Countermeasure
Definition:**

Installation of safety edges (a 30 degree slope) along the edge of the pavement improves the ability of drivers to safely return to the roadway when correcting for a roadway departure event. While the treatment can be applied to paved shoulders, its effect is most pronounced when applied to paved roads without shoulders.



Source: FHWA

Types of crashes affected: Single Vehicle Lane Departure

Locations for use: Road segments experiencing high concentrations of run off road crashes where a widened paved shoulder may not be feasible.

Estimated Safety Benefit: 7.7 – 15.5% reduction in all crash types of all severities
4.7 – 14% reduction in run off road crashes of all severities

Vulnerable Road User Involved Countermeasures

Crosswalk Improvements

4-“E” Area of Focus: Engineering
Education

Countermeasure Definition:

Installation of a range of crosswalk improvements would improve the conspicuity of the crosswalk, better alerting drivers of the potential for cross traffic. Some examples include marked & signed crosswalks, improved lighting, pedestrian countdown timers and push buttons, flashing beacons, etc.

Additional and supplemental education information could be distributed to help improve pedestrian and other non-motorized use of crosswalks and associated features.



Source: FHWA

Types of crashes affected: Vulnerable/Non-motorized Crashes

Locations for use: Intersections and midblock crossings or other areas experiencing pedestrian and non-motorized traffic. An example would be M-28 through Munising where the crosswalk is signed by unmarked.



Estimated Safety Benefit: 29% reduction in crashes of all types and severities in urban or suburban areas
37 – 69% reduction in pedestrian involved crashes in urban or suburban areas

Improve Sidewalk/Multi-use Trail Interconnectivity & Maintenance

4-“E” Area of Focus: Engineering
Education

Countermeasure Definition:

Building on the existing sidewalk and multi-use trails would provide pedestrians and bicyclists with a safer area to travel and help to separate them from motor vehicle traffic. Implementing or improving on existing maintenance programs would help to ensure that the sidewalks and trails remain a viable route for pedestrians and bicyclists.



Source: FHWA

Types of crashes affected: Vulnerable/Non-Motorized Crashes

Locations for use: Gaps in sidewalk and trail connectivity as well as higher pedestrian and bicyclist volumes areas or where increased demand is expected. An example could be the seasonal trails in and around Kincheloe.



Estimated Safety Benefit: N/A

Installation & Maintenance of Bicycle Lanes

4-“E” Area of Focus: Engineering
Education

**Countermeasure
Definition:**

Installation and maintenance of existing and future bike lanes which provide a defined area for bicyclist traffic in the roadway.

Education and public awareness campaigns regarding the lanes and appropriate use and interaction between vehicles and bicycles and other slower moving traffic should be implemented. This crucial as the installation of bicycle lanes may increase the number of users in the road, which could result in an increase in bicyclist related crashes if the knowledge regarding appropriate use is not distributed.



Source: FHWA

Types of crashes affected: Bicycle Involved Crashes

Locations for use: Could be applied to any roadway with the appropriate cross-section. Generally should be focused on areas with high bicycle traffic demand or areas where an increase in demand is expected.



Estimated Safety Benefit: 13% reduction in fatal and injury bicyclist involved crashes in urban areas

Intersection Related Countermeasures

Review Intersection Traffic Control

4-“E” Area of Focus: Engineering
Education

Countermeasure Definition:

Intersection traffic control type should be reviewed to determine whether or not it is warranted and whether a more appropriate option could be employed.

Additional steps could be taken to help educate the public regarding any new traffic control methods or provide information regarding appropriate navigation and right of way issues associated with existing traffic control.



Source: FHWA

Types of crashes affected: Angle, Rear End, Head On Left Turn

Locations for use: High risk/crash intersections or those with a higher proportions of traffic control violations or where the existing traffic control does not appear to be meeting the public's needs.

Estimated Safety Benefit: N/A – Benefit depends heavily on specific existing conditions and proposed reconfiguration

Emergency Vehicle Signal Preemption

4-“E” Area of Focus: Emergency Response

**Countermeasure
Definition:**

Upgrades to traffic signal systems allow for communication between the traffic signal control box and any approaching emergency vehicles equipped with the corresponding hardware. **In this way, traffic signals can “react” to the oncoming emergency response vehicle**, stopping either the flow of conflicting traffic or all traffic entering the intersection. This improves both the safety of the emergency vehicle passing through the intersection as well as the response time as first responders, while still requiring some level of caution, are not required to slow or stop as frequently.



Source: FHWA

Types of crashes affected: Angle, Head-on Left Turn, Sideswipe

Locations for use: Intersections, specifically along more rural routes, where preemption signals have a clearer distance, increasing the **amount of time the signal is “aware” of the approaching emergency vehicle.**

Estimated Safety Benefit: Unavailable

Advanced Intersection Signage

4-“E” Area of Focus: Engineering

**Countermeasure
Definition:**

The installation of new or supplemental intersection warning and/or lane use signs provide additional warning to the driver that they are approaching an intersection. This provides them with additional time to take appropriate actions to adjust speed, change lanes, scan for traffic or pedestrians, etc.



Source: FHWA

Types of crashes affected: Angle, Rear End, Head On Left Turn

Locations for use: High risk/crash intersections or those with a higher proportions of improper lane use, turn, and signal violations.

Estimated Safety Benefit: Advanced Street Name Sign: 1.6% reduction in all crash types of all severities
Stop Ahead Pavement Markings: 31% reduction in all crash types of all severities

Installation of Transverse Rumble Strips

4-“E” Area of Focus: Engineering

Countermeasure Definition: Installation of rumble strips across the travel lanes on approaches to stop controlled intersections.



Source: FHWA

Types of crashes affected: Angle, Rear End, Head-on Left Turn

Locations for use: Stop controlled intersections with higher risk/crash history and/or higher traffic control violation rates.

Estimated Safety Benefit: 20% reduction in all crash types of all severities in rural areas

Impaired Driver Involved Countermeasures

Impaired Driving Enforcement Zones

4-“E” Area of Focus:	Enforcement Emergency Response
Countermeasure Definition:	Enforcement zones can serve as a visible deterrent to individuals considering driving after drinking or taking other substances. They also serve as an active measure used to remove impaired drivers from the road, helping to reduce crashes involving impaired drivers.
Types of crashes affected:	Drinking and/or Drug Involved crashes
Locations for use:	Known problem areas or during large events
Estimated Safety Benefit:	Unavailable

Impaired Driving Education Campaign

4-“E” Area of Focus:	Education
Countermeasure Definition:	Continuing and expanding on existing education programs regarding the dangers of drinking or substance abuse and driving. Some examples of additional educational steps could include the use of video and commercial campaigns as well as displays and assemblies to discuss the issue and show damaged vehicles recovered from impaired driver crashes.
Types of crashes affected:	Drinking and/or Drug Involved crashes
Locations for use:	N/A
Estimated Safety Benefit:	Unavailable

Winter Weather Related Countermeasures

Whiteout Preparation

4-“E” Area of Focus:

Engineering
Emergency Response

Countermeasure Definition:

Rumble strips and additional high reflectivity delineation could be employed to help drivers maintain their lane. Additionally, if specific whiteout prone areas are known, additional steps could be taken to widen and improve shoulders and the clear zone along the roadside to provide drivers with a safe place to pull off until conditions improve.

It is also important to continue to work with emergency responders to close affected roads, produce alerts to the public, and ensure that responders have a safe means to reach affected motorists.

Types of crashes affected:

Run off Road, Rear End, Head On, Sideswipe

Locations for use:

Areas prone to experience whiteout conditions
Locations lacking or with insufficient rumble strips and high reflectivity delineation.

Estimated Safety Benefit:

Unavailable

Additional Whiteout Behavior Education

4-“E” Area of Focus:

Education
Emergency Response

Countermeasure Definition:

Provide additional education and training during Drivers Education classes and standalone sessions reviewing appropriate and dangerous behaviors to take during whiteout conditions.

This could include, if possible, the identification of whiteout prone areas paired with alerts to the public.

Types of crashes affected:

Run off Road, Rear End, Head On, Sideswipe

Locations for use:

N/A

Estimated Safety Benefit:

Unavailable

Improved Cooperation & Coordination with Municipalities for Snow Plowing & Sidewalk Clearing

4-“E” Area of Focus: Emergency Response

Countermeasure Definition:

While the counties and cities currently handle the majority of snow plowing and clearing responsibility, there is the opportunity for the Tribe to partner with them to improve coverage and help prioritize corridors, sidewalks, and areas important to the Tribe.

Snow plows could be equipped with GPS tracking devices allowing administrators and/or the public to follow progress and avoid areas that have not yet been cleared.

Types of crashes affected: Run off Road, Rear End, Head On, Sideswipe

Locations for use: N/A

Estimated Safety Benefit: Unavailable

Aggressive Driver Related Countermeasures

Mobile Speed Trailers

4-“E” Area of Focus: Enforcement
Education

Countermeasure Definition:

Mobile Speed Trailers may be placed at locations experiencing higher rates of speed violations. These trailers detect and display the speed of the oncoming vehicle and are often paired with supplemental speed limit signs. This provides the driver with real-time feedback and reinforces the speed limit. While this particular treatment has limited staying power after the trailer has been removed, it can be cycled through problem areas to help at multiple locations.



Source: FHWA

Types of crashes affected: N/A

Locations for use: Areas with higher proportions of speed violations or areas with increased non-motorized traffic. For example, the school zone at the bottom of the hill along Marquette Ave could serve as a candidate location.



Estimated Safety Benefit: Unavailable

Traffic Calming Projects

4-“E” Area of Focus: Engineering
Education

**Countermeasure
Definition:**

Several methods exist to help lower traffic speeds in lower volume areas. As drivers tend to travel at speeds they feel comfortable at rather than posted speed limits, steps can be taken to safely lower the speed drivers feel comfortable driving at. Some examples include narrowing lane widths, installing/allowing on-street parking, installing curb bump-outs, etc.



Source: FHWA

Types of crashes affected: N/A

Locations for use: Lower volume and speed areas experiencing higher rates of speed violations or areas with higher non-motorized traffic.

Estimated Safety Benefit: N/A

Road Diet or Other Reconfiguration

4-“E” Area of Focus: Engineering

**Countermeasure
Definition:**

Road diets generally reduce the number of through lanes along a segment of road. The surface area could be used to install a center left turn lane, on street parking, bicycle lanes, etc. This type of treatment generally helps to lower traffic speeds and calm traffic.



Source: FHWA

Types of crashes affected: Affected crash types depend on specific reconfiguration

Locations for use: Road segments with four or more lanes of traffic which are not justified by traffic volumes.



Estimated Safety Benefit: Convert 4-lane to 3-lane with Center Left Turn Lane: 18.8 – 47% reduction in all crash types of all severities in urban and suburban areas

Randomized Enforcement Locations**4-“E” Area of Focus:**

Enforcement
Emergency Response

**Countermeasure
Definition:**

The presence of law enforcement tends to provide a calming presence for traffic flow and encourages drivers to obey the speed limits and other traffic laws. While increasing the number of officers can be beneficial, randomizing the patrols and locations can also help. By changing staging and monitoring points for law enforcement, drivers have a more difficult time avoiding known enforcement areas, effectively increasing the influence of law enforcement in the area.

Types of crashes affected:

N/A

Locations for use:

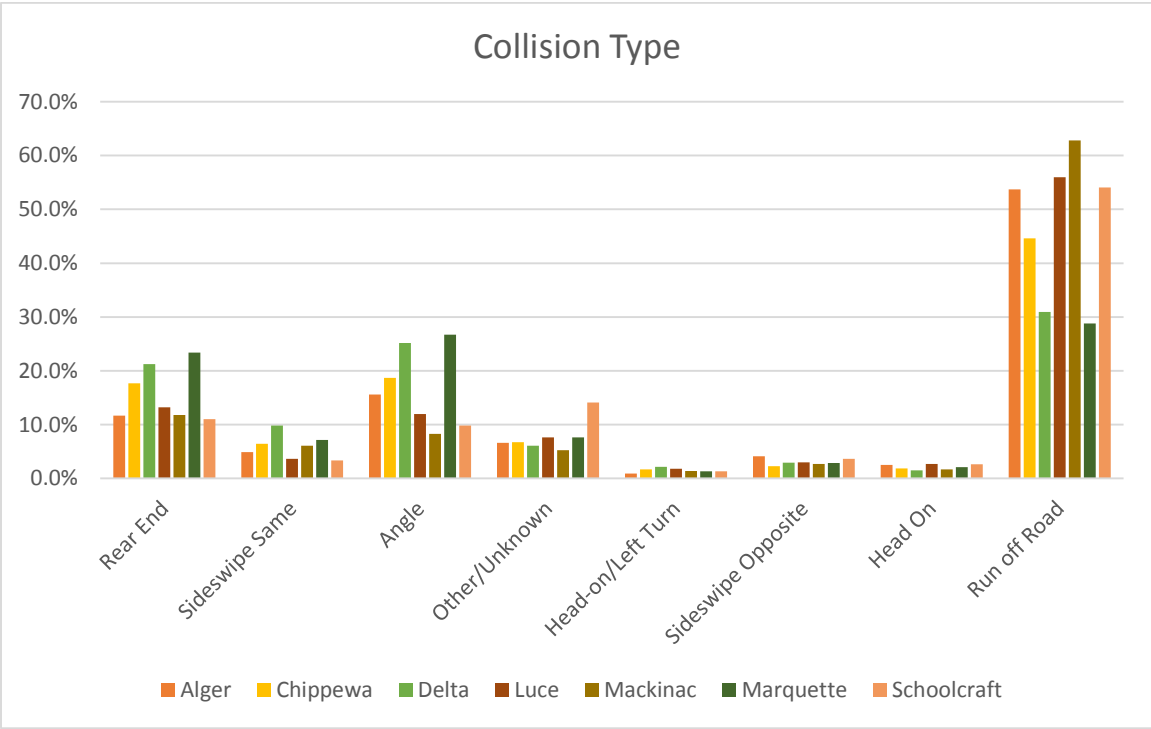
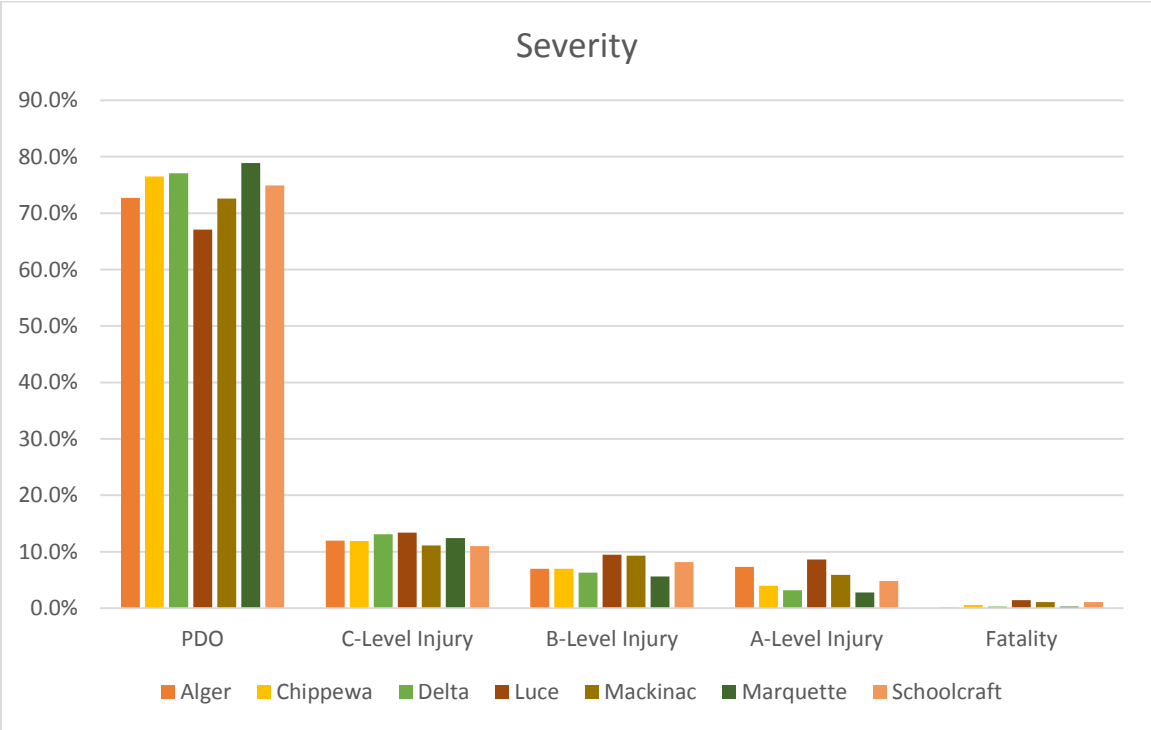
Known problem locations experiencing higher violation rates in general.

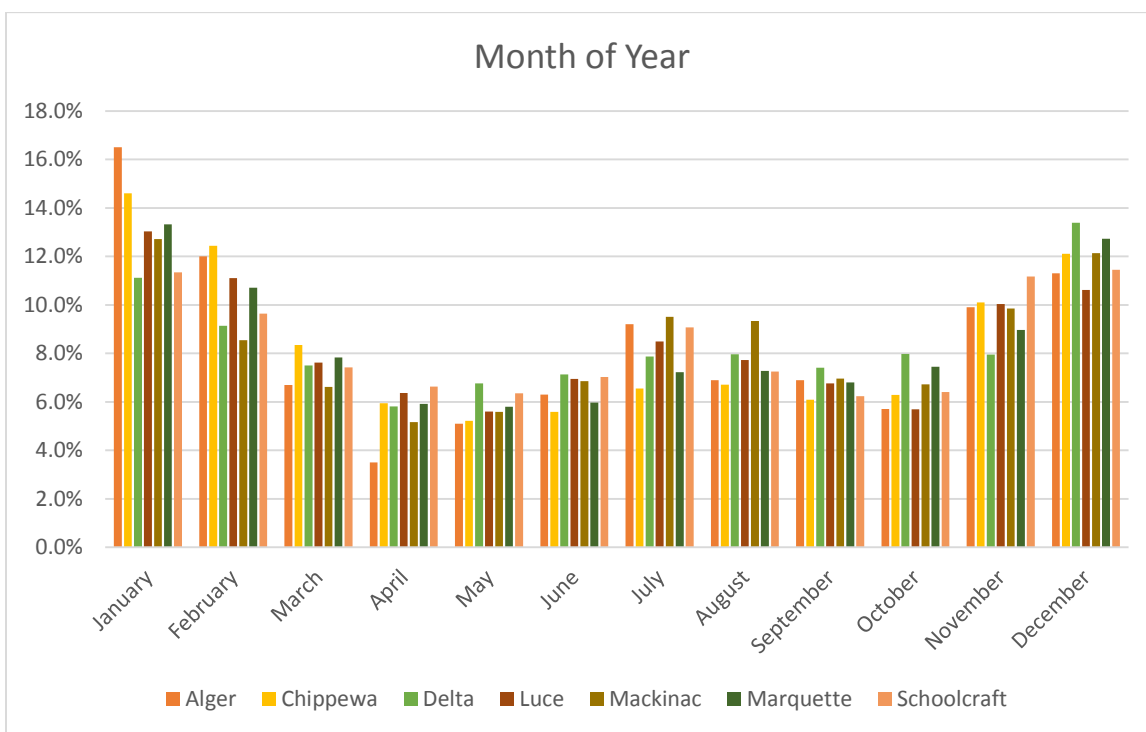
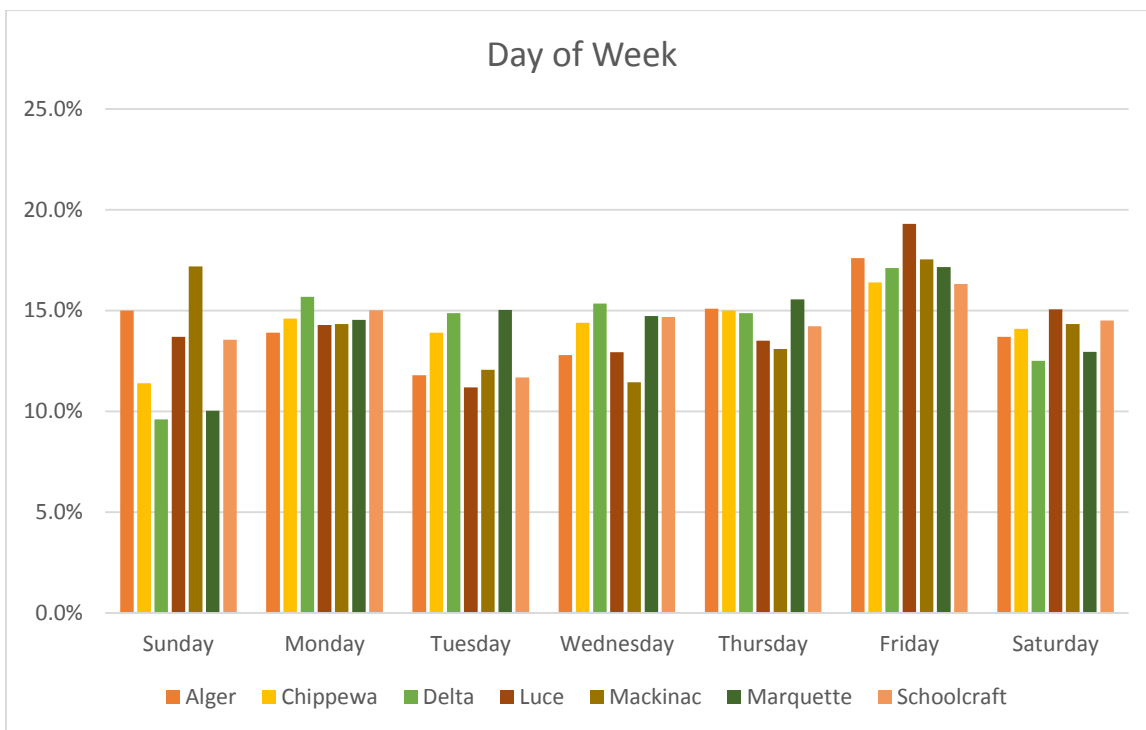
Estimated Safety Benefit:

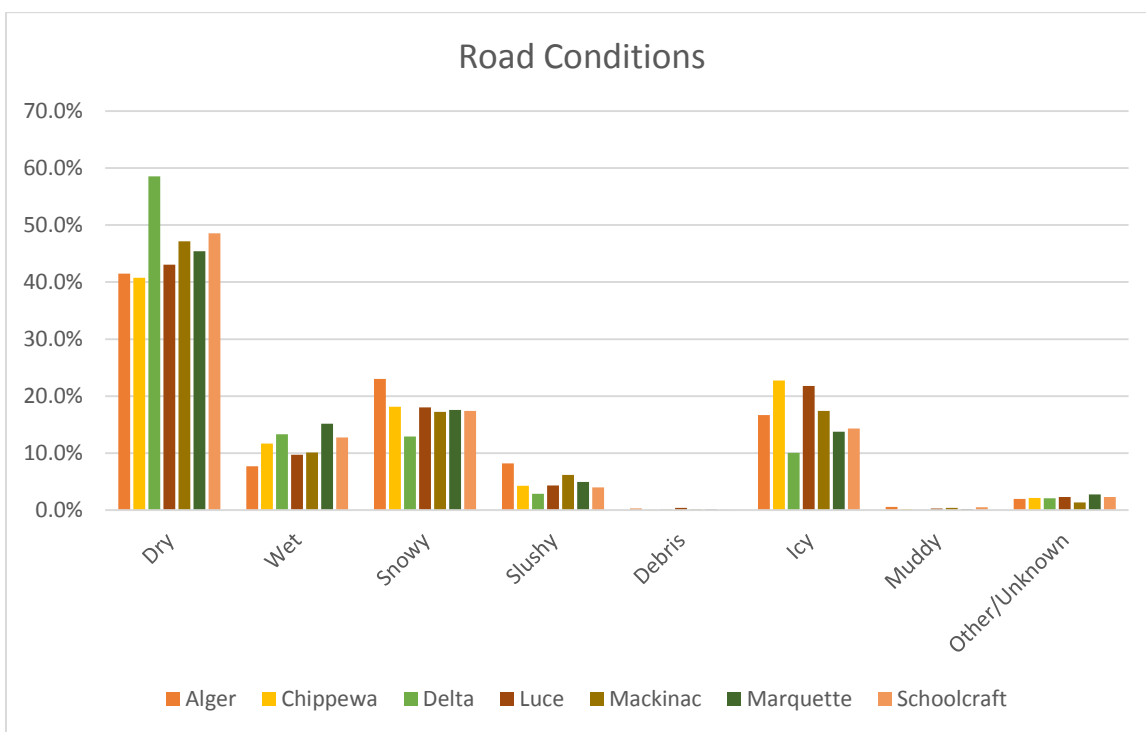
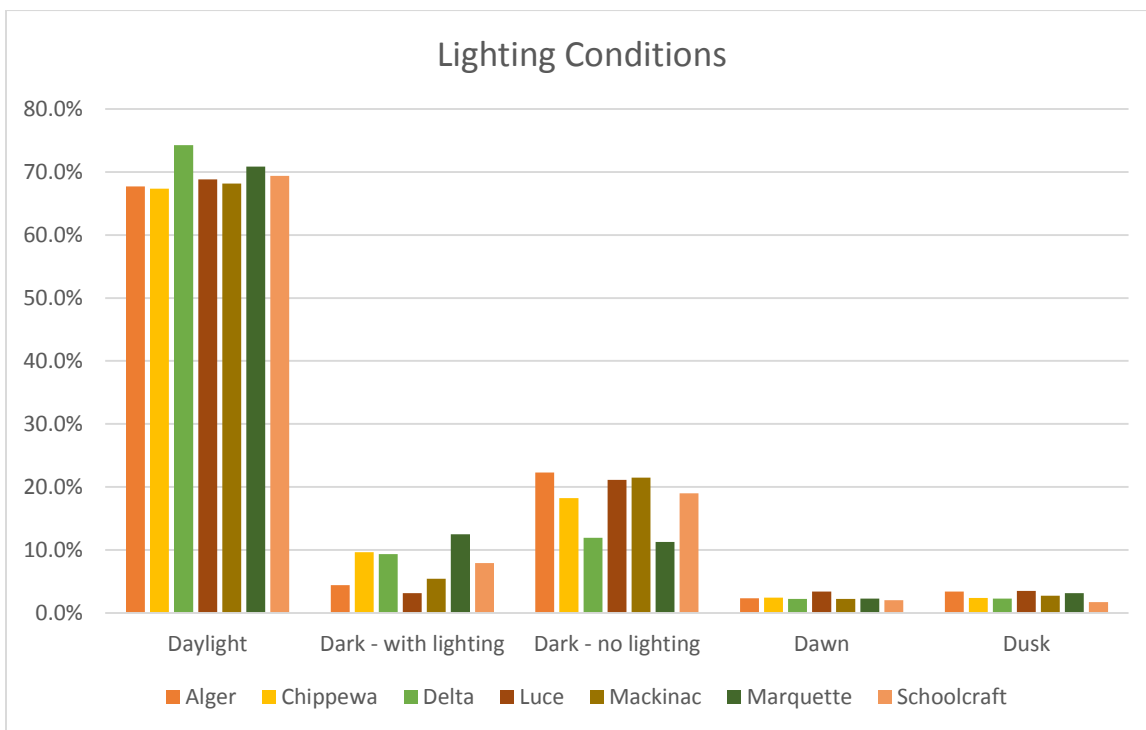
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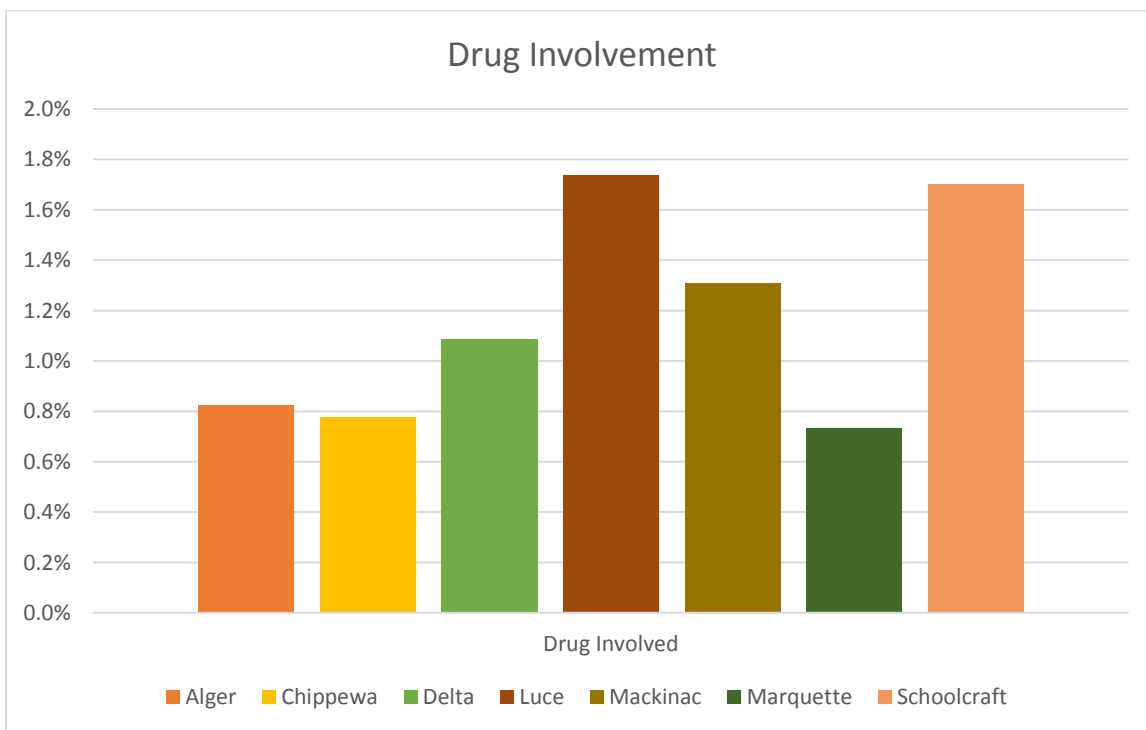
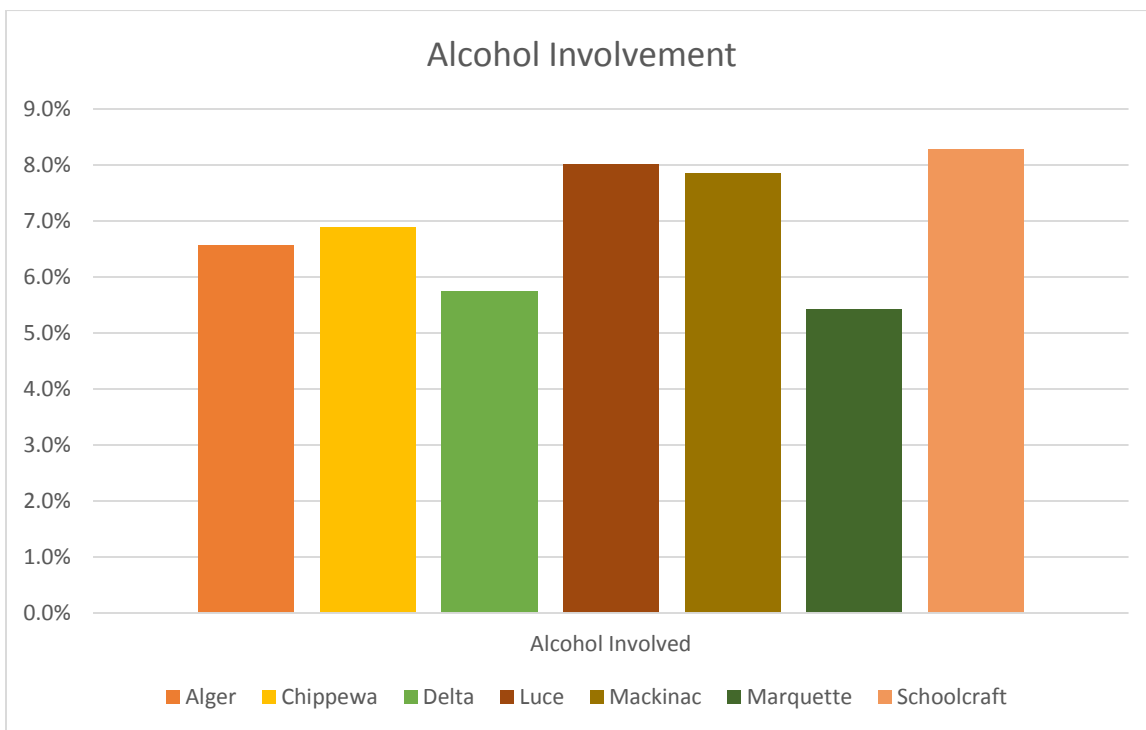
Appendix B – County Comparison & Summaries

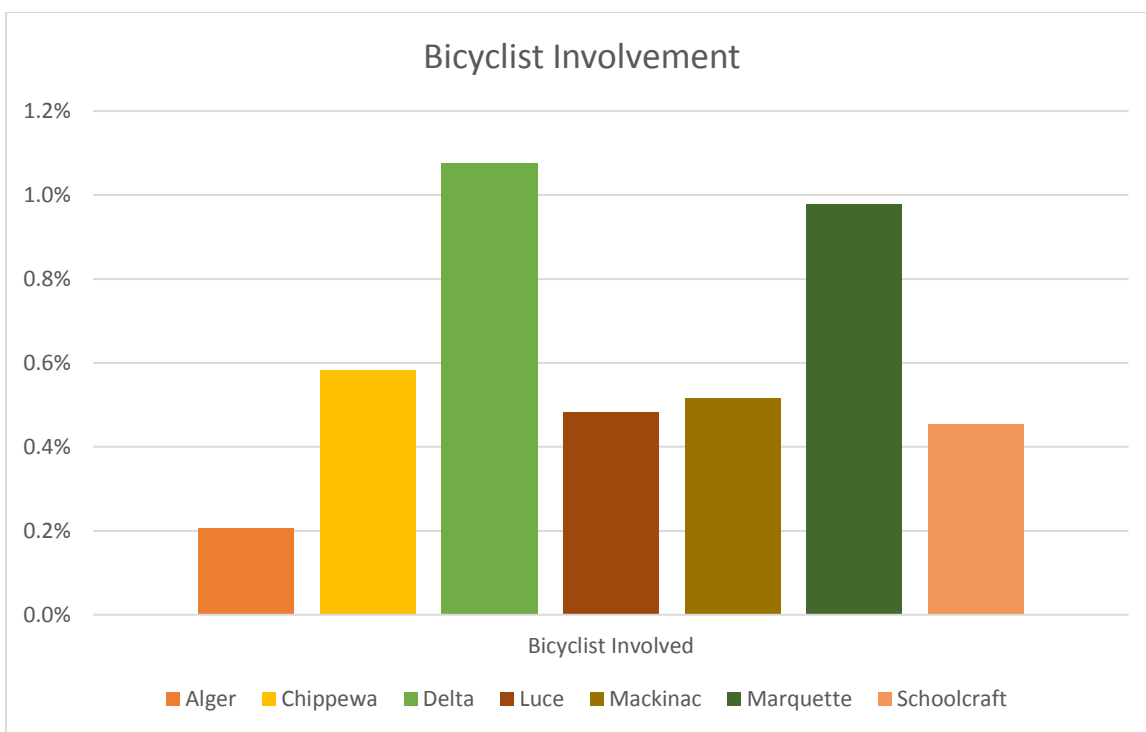
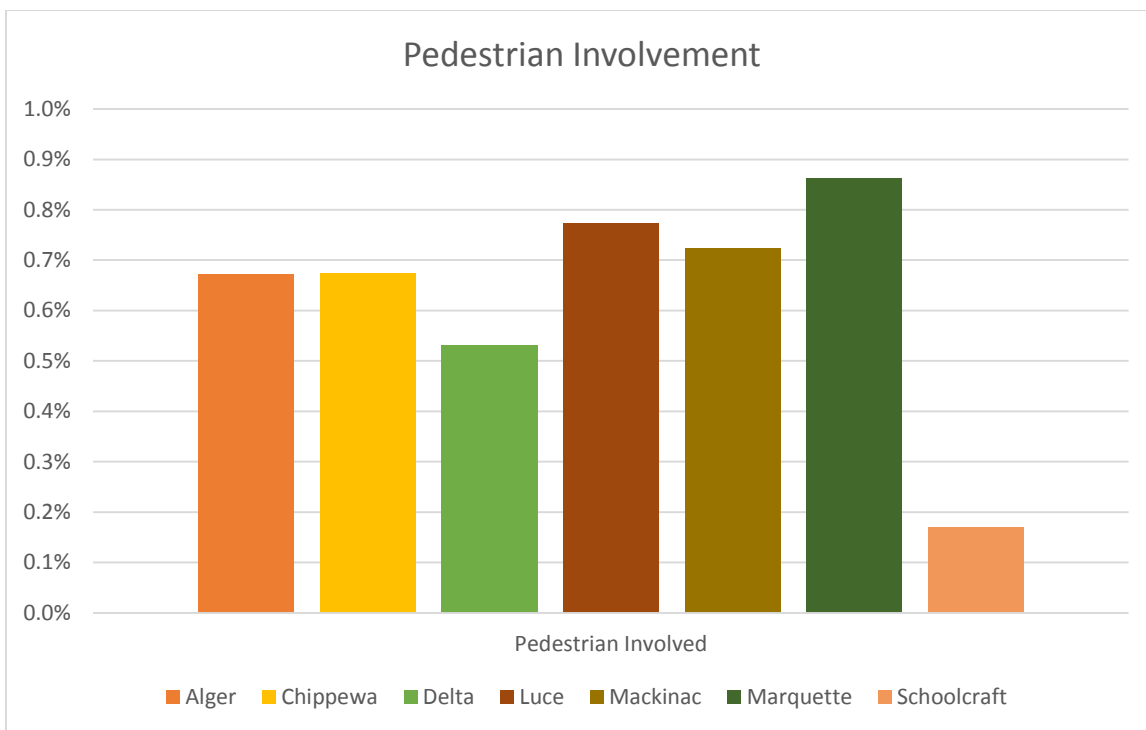
B.1 – County Comparison (2004 – 13, Source: MTCF)

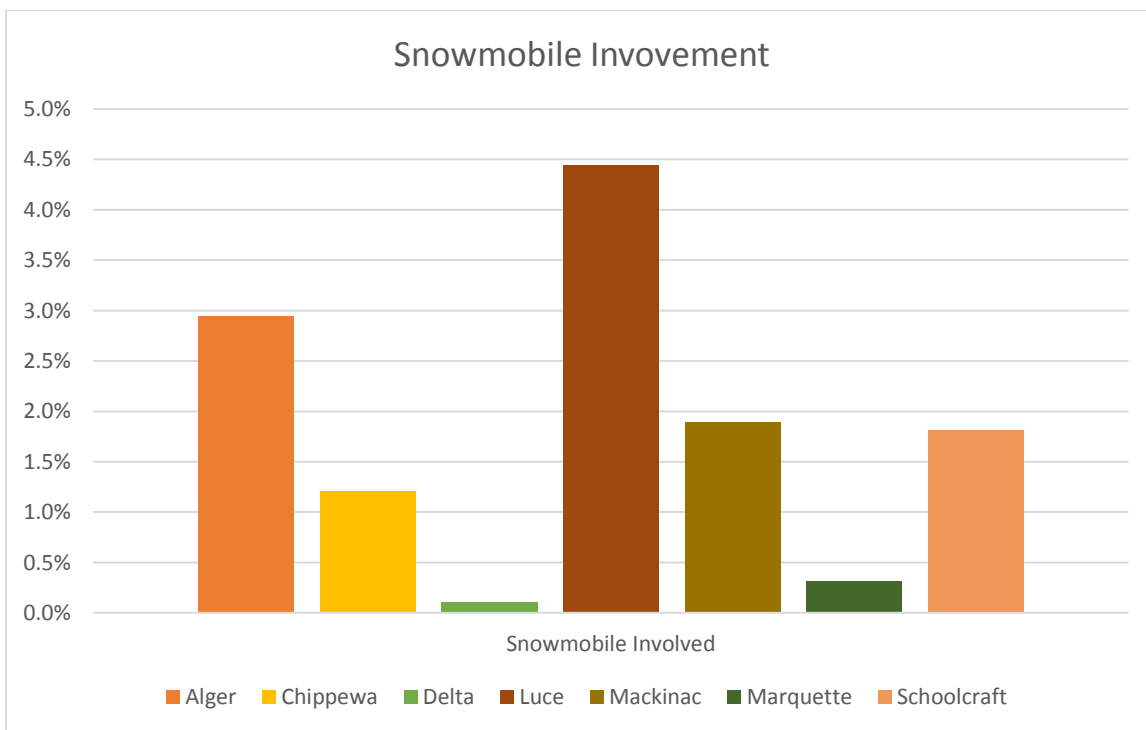
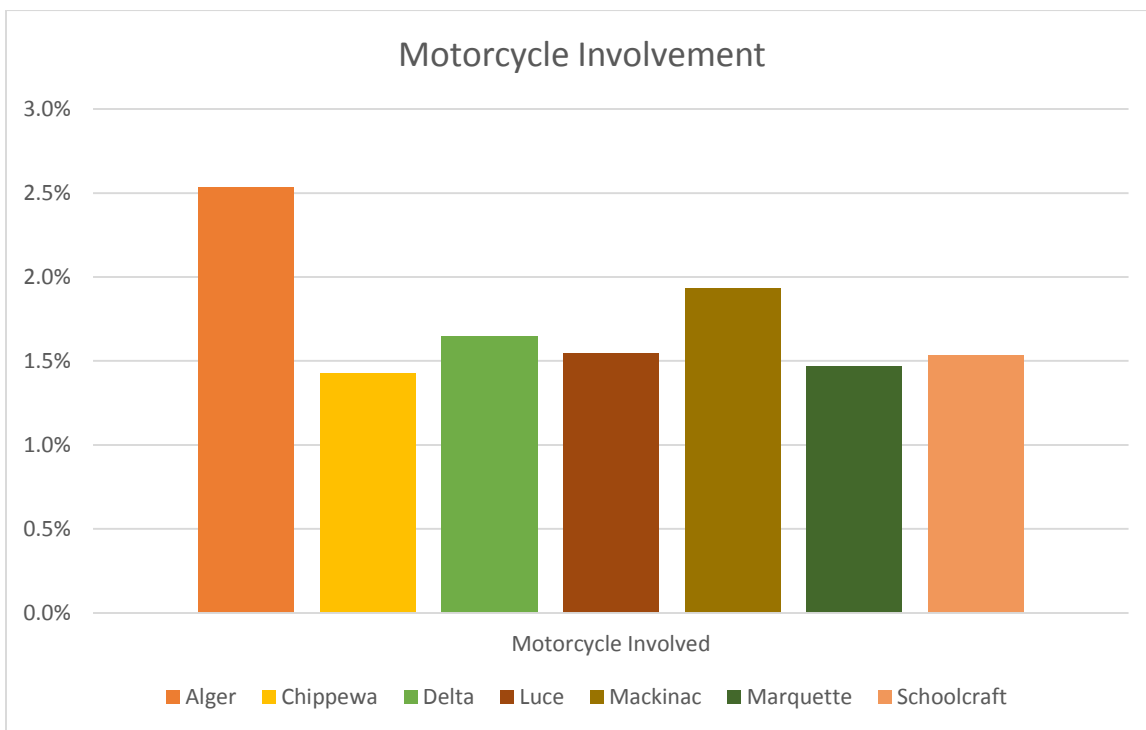


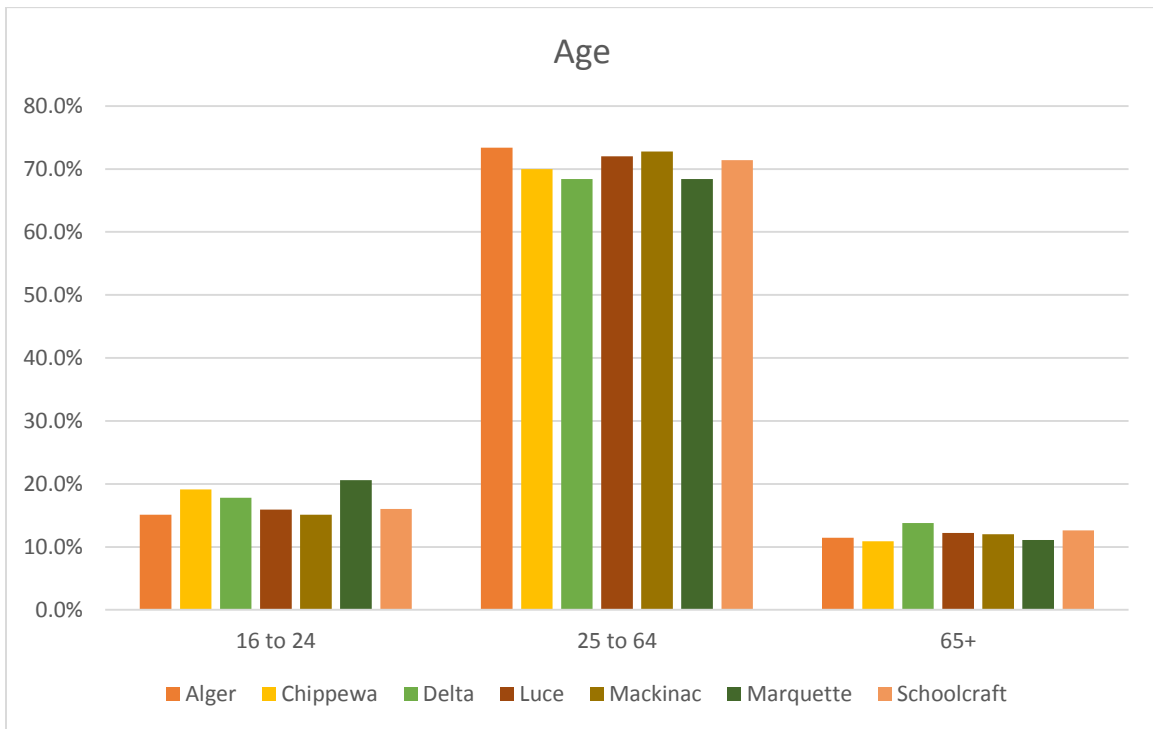
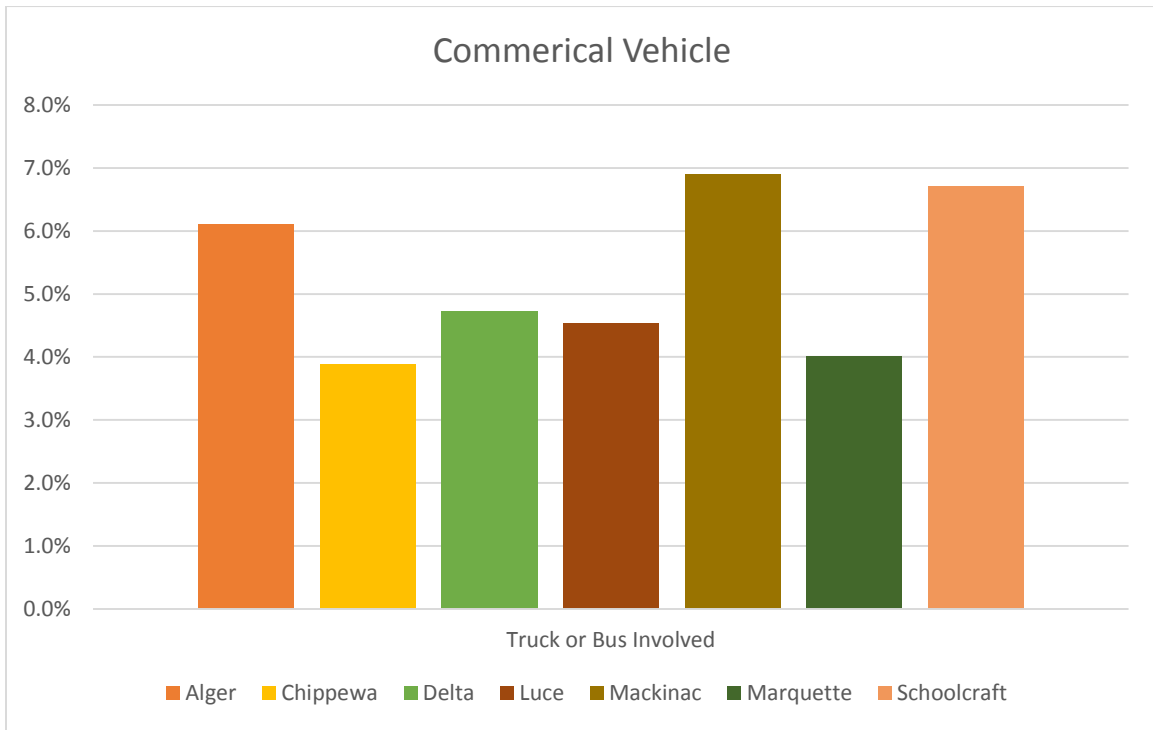


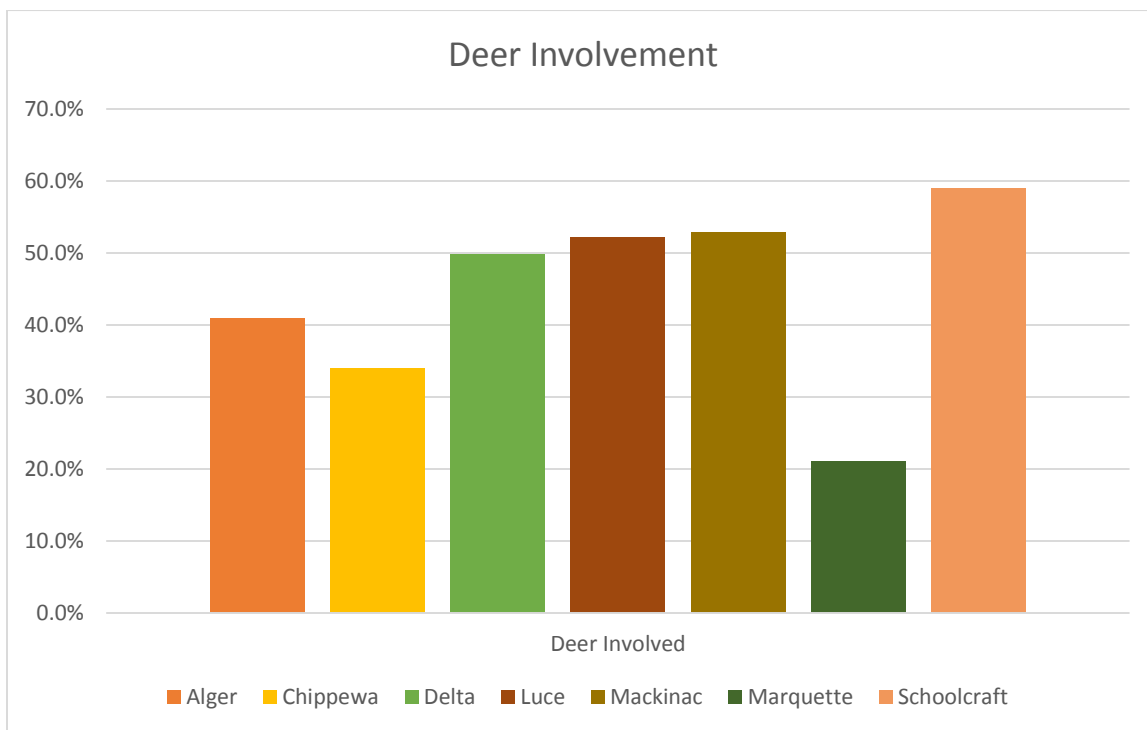












B.2 – County Summaries

Alger County

1. Roughly 29% of crashes are fatal or injury vs 17% for the region and 18% for the state
2. More pronounced January spike than either the region or state
3. Generally in line with region and state for yearly crashes
4. Greater portion of snowy, icy, or wet road crashes than the region, but more pronounced difference when compared to the state
5. Significantly greater percent of run off road crashes when compared to both the region and the state

Chippewa County

1. Roughly 23% of crashes were fatal or injury which is in line with the region but a higher proportion than the state
2. Distribution by month of year is in line with region but has a slightly more pronounced peak during the winter months than the state
3. County saw a greater spike in 2012 and 2013 and a drop in 2014 while the region and state saw a steady increase through 2014
4. Greater portion of snowy, icy, or wet road crashes than the region, but more pronounced difference when compared to the state
5. Significantly greater percent of run off road crashes when compared to both the state

Delta County

1. Roughly 23% of crashes were fatal or injury which is in line with the region but a higher proportion than the state
2. Distribution by month of year is in line with region but has a slightly more pronounced peak during the winter months than the state
3. Generally in line with region and state for yearly crashes
4. County was generally in line with region for road condition crashes, slightly more snowy or icy road crashes than the state
5. County had greater proportion of angle and rear end crashes than either the state or region. Had a greater proportion of run off road crashes than the state but less than the region

Luce County

1. Roughly 34% of crashes resulted in fatal or injury crashes which is significantly higher than the state or region
2. Distribution by month of year is in line with region but has a slightly more pronounced peak during the winter months than the state
3. Generally in line with region and state for yearly crashes
4. Greater portion of snowy, icy, or wet road crashes than the region, but more pronounced difference when compared to the state
5. Significantly greater percent of run off road crashes when compared to both the region and the state

Mackinac County

1. Roughly 24% of crashes were fatal or injury which is in line with the region but a higher proportion than the state
2. Distribution by month of year is in line with region but has a slightly more pronounced peak during the winter months than the state
3. Generally in line with region and state for yearly crashes
4. Portion of snowy, icy, or wet road crashes generally falls in line with the region, but more pronounced difference when compared to the state
5. Significantly greater percent of run off road crashes when compared to both the region and the state

Marquette County

1. Roughly 21% of crashes were fatal or injury which is in line with the region and state
2. Distribution by month of year is in line with region but has a slightly more pronounced peak during the winter months than the state
3. County saw a significant decline from 2010 to 2012 and a large spike in 2013 than held steady in 2014
4. County was generally in line with region for road condition crashes, slightly more snowy or icy road crashes than the state
5. County had greater proportion of angle and rear end crashes than either the state or region. Had a greater proportion of run off road crashes than the state but less than the region

Schoolcraft County

1. Roughly 23% of crashes were fatal or injury which is in line with the region but a higher proportion than the state
2. Monthly crash distribution generally follows state trends except for a spike in July and a smaller one in August. Winter month trends tend to follow state more closely than the region
3. Generally in line with region and state for yearly crashes
4. County was generally in line with region for road condition crashes, slightly more snowy or icy road crashes than the state
5. Significantly greater percent of run off road crashes when compared to both the region and the state

Appendix C – Public Consultation Summary

C.1 – Public Consultation Attendance

Sault Ste. Marie, MI

Transportation Safety Plan Development Community Meeting	
Name	County/Community
Robin Sutton	Chippewa
Ann Payment	Sault Tribe
Larry Jorgens	Sault Tribe
Deanna McKelver	Sault Tribe
Arden Johnson	Sault Tribe
Cathy Abrahamson	Sault Tribe
Don & Chase	Sault Tribe
DJ Hoffman	Sault Tribe
Darcy Morrow	Sault Tribe
Rita Glyptis	"
Catherine Mierciak	Chippewa
Rita Kelvie	Chippewa

St Ignace, MI

Transportation Safety Plan Development Community Meeting	
Name	County/Community
Patricia P. Burgess	St. Ignace
Doris M. Dickertch	St. Ignace
Cheryl Proffant	St. Ignace
Theresa Woodard	St. Ignace
Loni LaJoyce	St. Ignace

Division Directors/Program Managers – Sault Ste. Marie, MI

Transportation Safety Plan Development Community Meeting

Name	County/Community
Larry Jacques	Chippewa
Nichole Caustey	Chippewa
Jennifer Dale-Burton	Chippewa
Mike McCoy	Chippewa
JEFF HOLT	CHIPPEWA
Jessica Dumback	Chippewa
Bonnie L. Cutha ^{PA}	Mackinac
Susan Soltyz	Chippewa
Tina Fox	Chippewa
Julie Sato	Chippewa
Melissa VanLoven	Chippewa
Kenneth J. Thompson	MACKINAC
BILL CONNOLLY	CHIPPEWA
Kathleen Brasher	Chippewa
Holly Kasala	Chippewa
Jackie McLean	Chippewa

Name	County/Community	E-mail	Phone
John Zapp	Chippewa		
Del Egert	Chippewa		
Jackie Minton	Chippewa		
Chippewa	Chippewa		
Heidi Hummer	Chippewa		
Cheryl Baflaurt	Chippewa / Mackinac		
Tim Elvum	Chippewa		
Jane Silentine	Chippewa		
Jami Moran	Chippewa		
Colleen Medicine	" "		
Joel Lumsden	Chippewa		
Karen L. Johnson	Chippewa		
Angeline Boultay	Chippewa		
Christine McPherson	Chippewa		
Robert Marchand	Chippewa		
Nick VanAstin	Chippewa		

Manistique, MI

Transportation Safety Plan Development Community Meeting	
Name	County/Community
Sharon Finken	Schoolcraft
Ciff Taylor	
Jill Finken	
Tom Mart	"
Jake Johnson	Schoolcraft
Leslie Weimer	Schoolcraft
Barbara Winters	Schoolcraft
Stella Gould	Schoolcraft
Gerald Gould	Schoolcraft
Susan Snyder	Schoolcraft
Bill Erickson	Schoolcraft
Viola Meadow	Schoolcraft
Mary Jeveron	Schoolcraft
Denise Chase	Schoolcraft

C.2 – Public Concerns Ranked by Frequency

Public Concerns	# of Times Raised	Engineering	Education	Enforcement	EMS
Winter Weather (Snow Removal, Icy Roads, Whiteouts, etc.)	6	X			X
Review Intersection Geometry/Traffic Control	5	X	X	X	
Cyclists/Pedestrians/Other Non-Motorized Road Users	5	X	X		
Poor Pavement Marking/Pavement/Signage Conditions	5	X			
Texting/Distracted Driving	4		X	X	
Speed Assessments/Appropriate Speed Limits	4	X		X	
Sidewalk/Trail Interconnectivity & Maintenance	4	X	X		
Drinking & Driving	3		X	X	
Crosswalks	3	X	X	X	
Public Transit	2	X	X		
Congestion (esp. during school let out)	2		X		
Lack of Lighting	2	X			
Bike Lanes	2	X	X		
Passing on the Right/Review of Passing Lanes	2	X	X	X	
Ice buildup in the Great Lakes nautical passages	2			X	X
Deer		X	X		
ATV/Off Road vehicles riding shoulders/speeding		X		X	
Sharp/High Speed Curves		X			
Narrow Shoulders		X			
Sight Distance		X			
Driving without a license				X	
Child Car Seats			X	X	
Lack of education regarding emergency vehicles			X		X
Lack of coordination for construction projects		X			

C.3 – Potential Strategies Identified by the Public

The following strategies were identified by the public over the course of the consultation meetings. The information presented here serves as a summary of the feedback received during the meetings as some strategies were cited multiple times. They are presented here in no particular order.

1. Engineering
 - a. Continue to advance Transit Study & work with local communities to fill in gaps
 - i. Expand or review existing shuttle services (Already exist in St Ignace area, look at expanding to other communities)
 - b. Explore potential road diets/reconfiguration potential
 - c. Implement/Improve sidewalk monitoring, maintenance, and improvement programs
 - i. Preferably physically separated from roadway
 - ii. Potentially add mile markers as convenience to users but also may serve as location system if emergency service is required along the trail
 - d. Install cell phone blockers in Tribal areas
 - e. General crosswalk improvements (signage, lighting, pavement markings, etc.)
 - f. Improve pavement markings
 - g. Add/improve bike lanes
 - h. Expand paved shoulders
 - i. Add/improve curve warning/speed signage & review curve geometry
 - j. Review turning/passing/no passing lanes
 - k. Install transverse rumble strips
 - l. Energy efficient lighting
 - m. Additional delineation/lighting for whiteout prone areas
 - n. Mirrors for sight distance issues around corners, specifically around snow mounds
2. Education
 - a. Voucher program instead of free car seats
 - b. Tribal Bike Rental Program
 - c. Texting & Driving Information Campaign
 - d. Improve awareness of transit services through advertising/information campaign
 - e. Safe Driving Program (volunteers serve as shuttles for inebriated individuals)
 - f. **Add/improve pedestrian/bicyclist education to Driver's Ed programs**
 - g. Promote existing trail network and those to be developed in the future
3. Enforcement
 - a. Improve enforcement coverage (not necessarily an increase in the number of officers, **randomize their locations so they can't be avoided as easily while also looking like** there are more)
 - b. Cycle automated speed trailers through high speed areas
 - c. Speed Ticket Lottery (Drivers flagged as obeying the speed limit are entered into a lottery and win 50% of speed ticket fines from that month)
 - d. Install cameras at high crash/risk locations (**real or fake to discourage "bad behavior"**)
4. EMS
 - a. Snow Tire Assistance (Vehicle recovery/assistance for purchasing snow tires)
 - b. Improved cooperation with counties/cities for snow plowing, especially sidewalk clearing
 - i. GPS tracking on snow plows

Appendix D – Public Survey Results

Public Survey



Transportation Safety Plan Development Survey

The Sault Ste. Marie Tribe of Chippewa Indians in collaboration with Opus International Consultants Inc. is conducting a study to develop a Transportation Safety Plan. The purpose of this study is to develop a guiding plan for transportation within our service area. An important part of this effort is to gather input from community members to help us assess current safety concerns and issues, and identify ways of improving transportation safety. The survey is arranged in three parts: "General Opinion Questions," "Safety Focus Questions," and an "Optional Demographics Comment" section. The survey should take no more than 10 minutes to complete. Your answers are anonymous; they cannot be linked to your identity. Your identity will not be asked for, nor will anyone contact you for additional information.

Disclaimer: The information collected from this survey will be used to inform and guide a traffic safety plan for the Tribal Service Area. The Tribe will not be responsible for implementing all recommendations from the public.

Thank you for your help in providing this important information for the development of the Tribe's Transportation Safety Plan. Please return your responses to the Tribal Transportation Planner at the following address:

Wendy Hoffman
RE: TSP Survey
523 Ashmun St
Sault Ste. Marie, MI 49783

General Opinion

1. In what county do you live? (Please Circle One):

- | | |
|-------------|-------------------------------|
| Alger | Chippewa |
| Delta | Luce |
| Mackinac | Marquette |
| Schoolcraft | Other (please specify): _____ |

2. Please indicate your most frequent mode of transportation (Please Circle One):

- | | |
|-------------|-------------------------------|
| Private Car | Public Transit |
| Motorcycle | Bicyclist |
| Pedestrian | Other (please specify): _____ |

3. What do you think is the most important road safety issue in the Tribal Service Area?

4. Please answer for all that apply. Most of the time I feel safe as a (Please Check One Box for Each Mode of Transportation):

Transportation	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Driver					
Cyclist					
Motorcyclist					
Pedestrian					
Public Transit User					

5. If you felt unsafe for any of the previous situations, could you indicate why?

Safety Focus

6. In the Tribal Service Area, do you think more attention should be directed to the following (Please Check One Box for Each Mode of Transportation):

Transportation	Definitely	Probably	Probably Not	Definitely Not	Not Sure
Drinking & Driving Enforcement					
Distracted Drivers (Texting, eating, etc.)					
Speed Enforcement					
Road Safety Education (PSA's, Billboard campaigns, etc.)					
Pedestrian Crossing Safety Improvements					
Intersection Safety Improvements					
Bicycle Facility Safety Improvements					
Seatbelt Enforcement					
Public Transit Safety Improvements					
Enforcement against Aggressive Driving (Speeding, tailgating, etc.)					
Red Light Running Enforcement					
Neighborhood Traffic Calming					

7. Are there any other safety concerns in the Service Area that you are concerned about?

Demographics

8. Please indicate your sex (Please Circle):

Male

Female

Prefer not to Answer

9. Please select your age category (Please Circle):

Under 25

25 to 44

45 to 65

Over 65

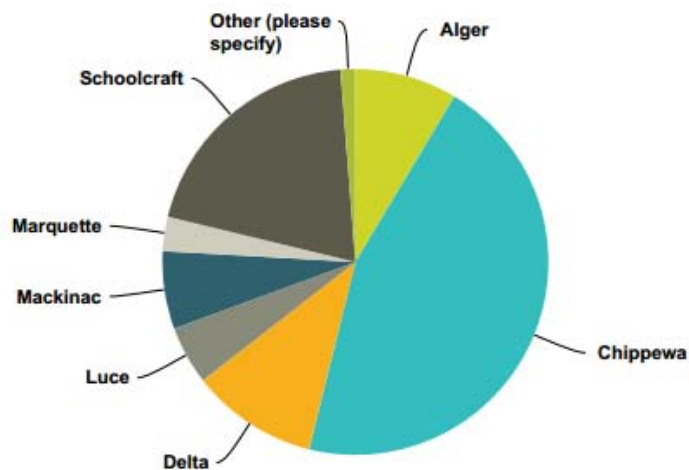
10. Please indicate your residential postal code: _____

Public Survey Results

The results from the public survey are included below. Given the volume of responses received, responses to the open ended questions have been omitted.

Q1 In what county do you live?

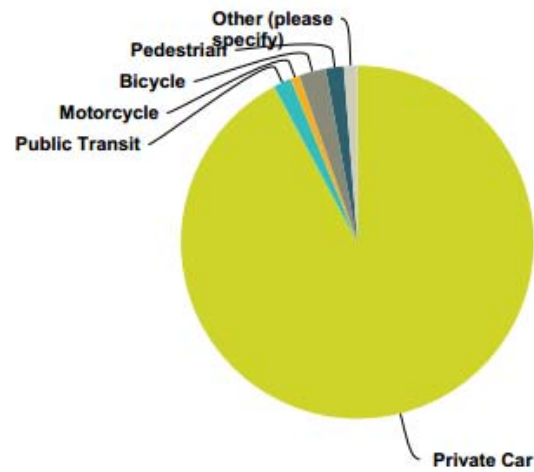
Answered: 245 Skipped: 3



Answer Choices	Responses	
Alger	8.57%	21
Chippewa	45.31%	111
Delta	10.61%	26
Luce	4.90%	12
Mackinac	6.53%	16
Marquette	2.86%	7
Schoolcraft	20.00%	49
Other (please specify)	1.22%	3
Total		245

Q2 Please indicate your most frequently used mode of transportation.

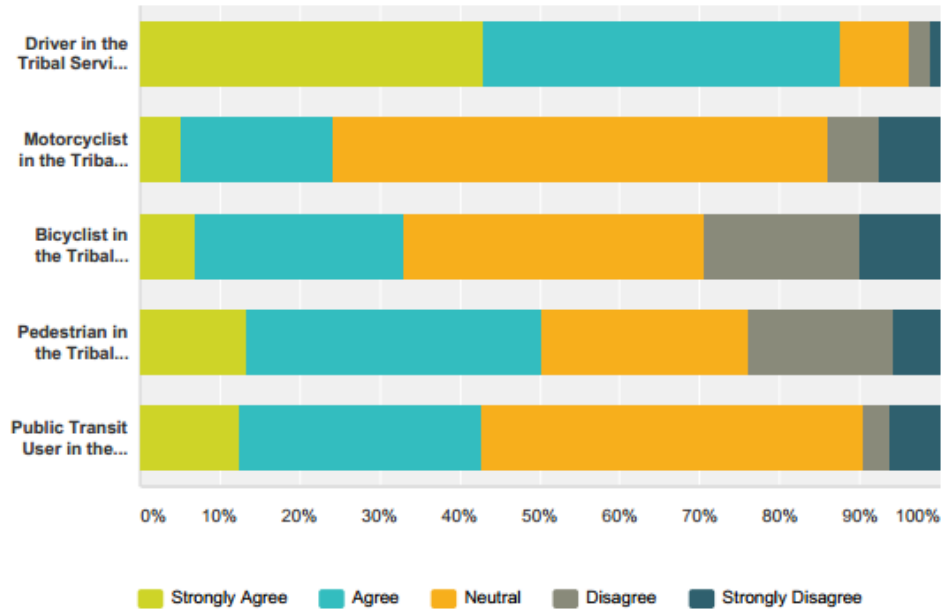
Answered: 243 Skipped: 5



Answer Choices	Responses	
Private Car	92.18%	224
Public Transit	1.65%	4
Motorcycle	0.82%	2
Bicycle	2.47%	6
Pedestrian	1.65%	4
Other (please specify)	1.23%	3
Total		243

Q4 Please answer for all that apply. Most of the time I feel safe as a:

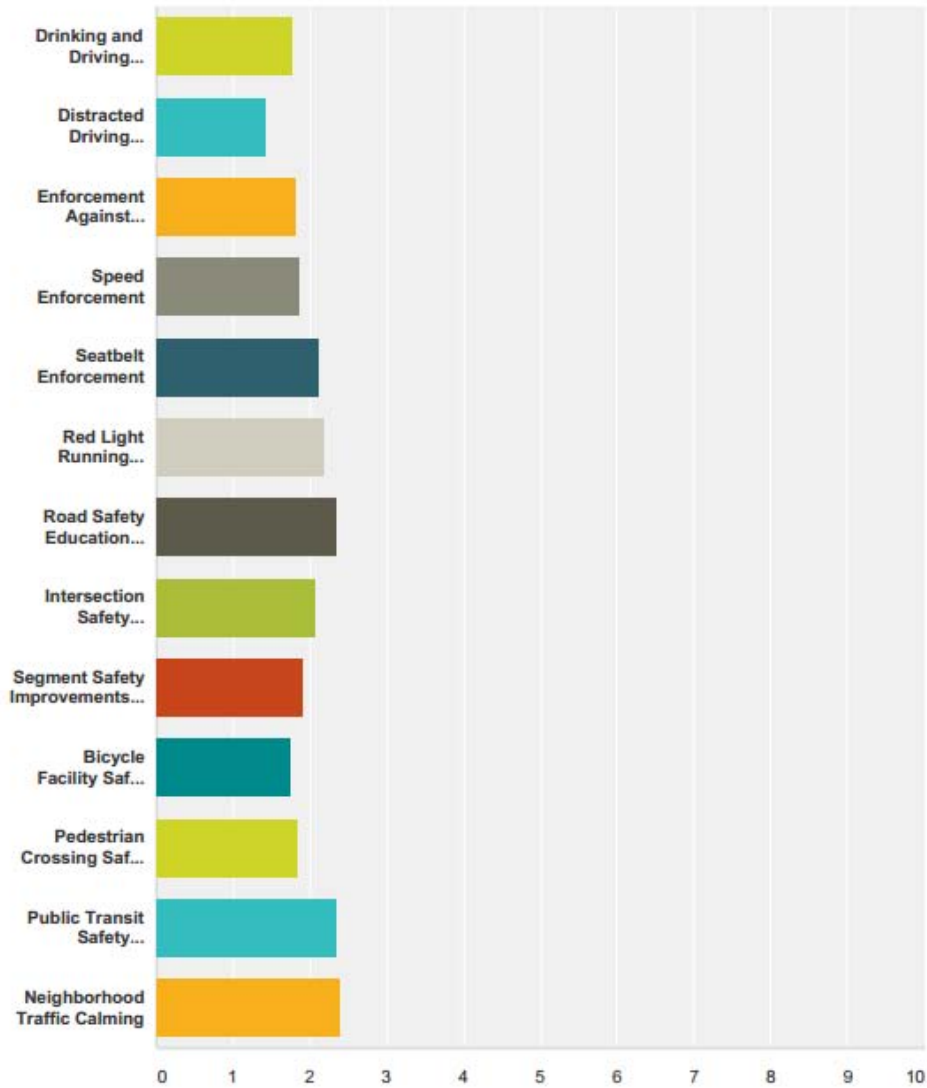
Answered: 240 Skipped: 8



	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total
Driver in the Tribal Service Area	42.92% 100	44.64% 104	8.58% 20	2.58% 6	1.29% 3	233
Motorcyclist in the Tribal Service Area	5.26% 9	18.71% 32	61.99% 106	6.43% 11	7.60% 13	171
Bicyclist in the Tribal Service Area	6.84% 13	26.32% 50	37.37% 71	19.47% 37	10.00% 19	190
Pedestrian in the Tribal Service Area	13.40% 28	36.84% 77	25.84% 54	18.18% 38	5.74% 12	209
Public Transit User in the Tribal Service Area	12.36% 22	30.34% 54	47.75% 85	3.37% 6	6.18% 11	178

Q6 In the Tribal Service Area, do you think more attention should be directed toward:

Answered: 226 Skipped: 22

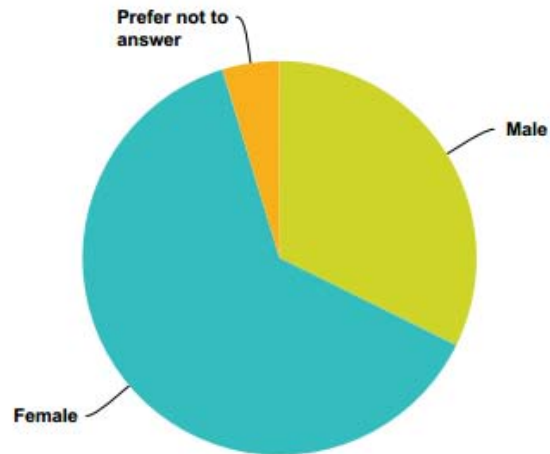


	Definitely	Probably	Probably Not	Definitely Not	Not Sure	Total	Weighted Average
Drinking and Driving Enforcement	52.80% 113	29.91% 64	10.75% 23	0.93% 2	5.61% 12	214	1.77
Distracted Driving Enforcement (Texting, Eating, etc.)	66.67% 146	27.85% 61	4.11% 9	0.91% 2	0.46% 1	219	1.41
Enforcement Against Aggressive Driving (Speeding, Tailgating, etc.)	50.95% 107	29.05% 61	12.38% 26	1.90% 4	5.71% 12	210	1.82

Speed Enforcement	42.92% 94	36.07% 79	14.61% 32	4.57% 10	1.83% 4	219	1.86
Seatbelt Enforcement	37.50% 78	28.85% 60	23.56% 49	6.25% 13	3.85% 8	208	2.10
Red Light Running Enforcement	34.83% 70	27.36% 55	26.87% 54	4.48% 9	6.47% 13	201	2.20
Road Safety Education (PSA's, Billboard Campaigns, etc.)	23.04% 47	36.76% 75	28.43% 58	4.90% 10	6.86% 14	204	2.36
Intersection Safety Improvements (Signal Upgrades, Sign Upgrades, etc.)	36.45% 74	33.99% 69	20.69% 42	3.45% 7	5.42% 11	203	2.07
Segment Safety Improvements (Wider shoulders, Rumble Strips, etc.)	44.35% 55	32.26% 40	16.13% 20	2.42% 3	4.84% 6	124	1.91
Bicycle Facility Safety Improvements	50.72% 106	32.06% 67	11.48% 24	1.91% 4	3.83% 8	209	1.76
Pedestrian Crossing Safety Improvements	50.24% 106	29.38% 62	12.80% 27	1.42% 3	6.16% 13	211	1.84
Public Transit Safety Improvements	31.34% 63	31.84% 64	20.90% 42	2.49% 5	13.43% 27	201	2.35
Neighborhood Traffic Calming	31.07% 64	29.61% 61	22.33% 46	2.43% 5	14.56% 30	206	2.40

Q8 Please indicate your sex.

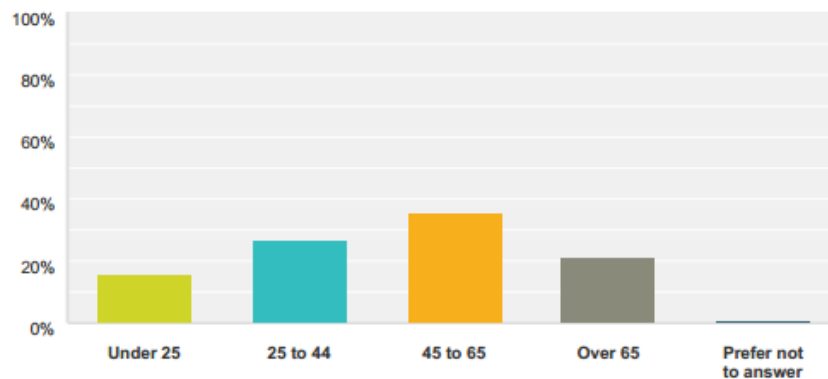
Answered: 192 Skipped: 56



Answer Choices	Responses	
Male	32.29%	62
Female	63.02%	121
Prefer not to answer	4.69%	9
Total		192

Q9 Please select your age range.

Answered: 194 Skipped: 54



Answer Choices	Responses	
Under 25	15.46%	30
25 to 44	26.29%	51
45 to 65	35.57%	69
Over 65	21.65%	42
Prefer not to answer	1.03%	2
Total		194



Opus International Consultants Inc.
Suite 210, 27333 Meadowbrook Road, Novi,
MI
48377
USA

t: +1 248 539 2222
f: +1 248 349 6862
w: www.opusinternational.com