June 19, 2019

MISSOULA

Community Transportation Safety Plan

ENGINEERING • ENFORCEMENT • EDUCATION • EMERGENCY SERVICES

Prepared for:

Missoula County ~ City of Missoula
MPO
METROPOLITAN PLANNING ORGANIZATION

MISSOULA METROPOLITAN PLANNING ORGANIZATION

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Abbreviations and Acronyms

AARP	American Association of Retired Persons
AASHTO	American Association of State Highway Transportation Officials
CHSP	Comprehensive Highway Safety Plan
CMAQ	Congestion Mitigation and Air Quality
CPS	Child Passenger Safety
CTSP	Community Transportation Safety Plan
DOT	Department of Transportation
DUI	Driving Under the Influence
EMS	Emergency Medical Services
FAST Act	Fixing America's Surface Transportation Act
FHWA	Federal Highway Administration
GDL	Graduated Drivers Licensing
HSIP	Highway Safety Improvement Program
LRTP	Long Range Transportation Plan
MAP-21	Moving Ahead for Progress in the 21st Century Act
MDT	Montana Department of Transportation
MPA	Metropolitan Planning Area
MPO	Metropolitan Planning Organization
MUTCD	Manual on Uniform Traffic Control Devices
NACTO	National Association of City Transportation Officials
NCHRP	National Cooperative Highway Research Program
NHPP	National Highway Performance Program
NHTSA	National Highway Traffic Safety Administration
OPI	Office of Public Instruction
PDO	Property Damage Only
PSA	Public Service Announcement
ROAD Court	Responsibility, Opportunities and Accountability for Drivers Court
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SETT	Safety Enforcement Traffic Team
STEP	Selective Traffic Enforcement Program
TPCC	Transportation Policy Coordinating Committee
TSAC	Transportation Safety Advisory Committee
TTAC	Transportation Technical Advisory Committee
USDOT	United States Department of Transportation
V2I	Vehicle-to-Infrastructure
V2P	Vehicle-to-Pedestrian
V2V	Vehicle-to-Vehicle
V2X	Vehicle-to-Everything
VFW	Veterans of Foreign Wars
VMT	Vehicle Miles Traveled
WATCh	Warm Springs Addiction Treatment and Change

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Executive Summary

The Missoula Metropolitan Planning Organization (MPO) has updated the Missoula Community Transportation Safety Plan (CTSP). The updated CTSP addresses changes in safety concerns, crash trends, mitigation strategies, innovative technologies, and changes to federal requirements that have occurred since the previous CTSP was completed in 2013. An examination of transportation safety issues within the Missoula Metropolitan Planning Area (MPA) has been completed.

The CTSP was developed by the Transportation Safety Advisory Committee (TSAC), a team of City, County, State, and non-government representatives with an acute interest in safety in the Missoula area. After a thorough review of crash data and past crash trends, the TSAC identified the following three emphasis areas for the community to focus on over the next five years:

Intersection Crashes

Non-Motorized Users

High Risk Behavior

The CTSP is organized into five sections which walk the reader through the process used to develop the CTSP, giving insight into the safety concerns identified in the Missoula area as well as recommended strategies to address these concerns.

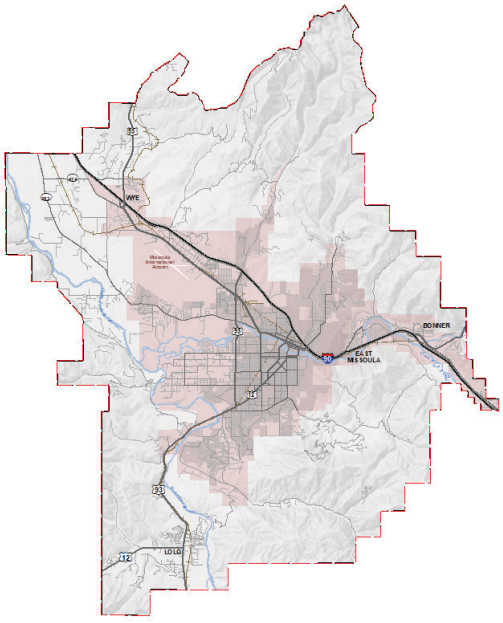
1. ***Introduction***
2. ***Public and Stakeholder Engagement***
3. ***Crash Data Analysis***
4. ***Safety Strategies***
5. ***Implementation***

Introduction

The CTSP study area includes the entire planning area for the Missoula MPO. The CTSP addresses all modes of transportation in a balanced attempt to meet the current and future transportation needs of the MPO while remaining in alignment with other Missoula planning documents and being fully compatible with state and federal documents and codes. The performance measures by which federal, state, and local authorities are required to track progress in meeting established safety targets include:

- Number of fatalities;
- Rate of fatalities per vehicle miles traveled (VMT);
- Number of serious injuries;
- Rate of serious injuries per VMT; and
- Number of combined non-motorized fatalities and non-motorized serious injuries.

The Missoula MPO supports the State targets for applicable safety performance measures. The MPO has also opted to develop localized goals and objectives. The TSAC has adopted "Vision Zero" and a goal to reduce the 5-year average of fatal and serious injuries by 25 percent by 2023. This means reducing the 5-year rolling average to less than or equal to 67 fatalities and serious injuries by 2023.



The CTSP study area includes the entire Missoula MPO planning area.

Public and Stakeholder Engagement

While development of the CTSP was overseen by the TSAC, input from local stakeholders and the public helped guide the planning process. Feedback from partners with expertise in the Four E's of Safety (Engineering, Enforcement, Education, and Emergency Services) was especially important in defining multidisciplinary strategies that can be successfully implemented by the community.

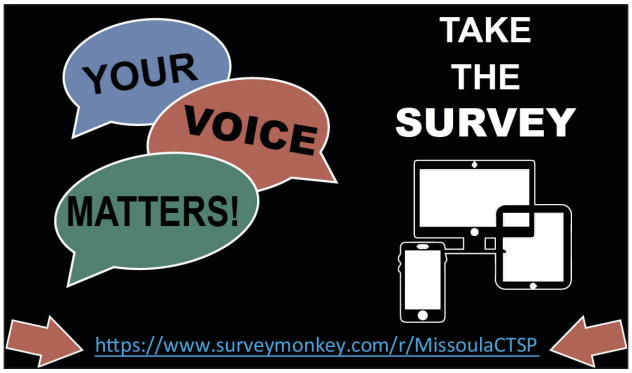
Active participation and input was encouraged throughout the planning process. A number of continuing engagement methods were utilized to reach a variety of stakeholders and elicit meaningful participation from Missoula residents. Engagement strategies included a project website, social media campaigns, electronic outreach, and consideration of public comments.

An online survey was developed to help the project team better understand safety issues and concerns within the Missoula area. A total of 161 responses were received. The intent of the survey was to understand perceptions of safety and driver behavior, see what Missoula residents believe are the most important emphasis areas, and gain an understanding of how residents view the effectiveness of various safety strategies.

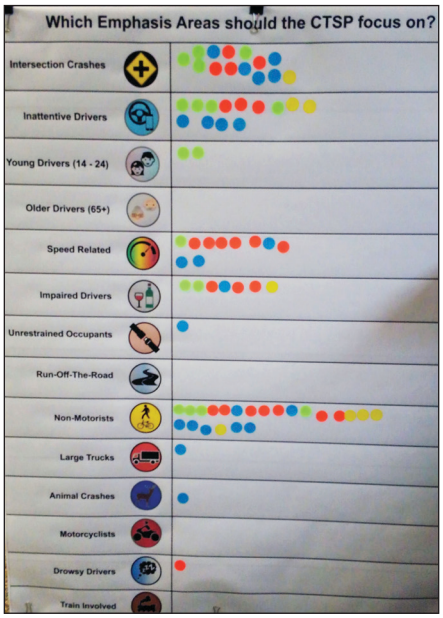
A public open house was held early in the planning process. The public was invited to attend and share their views on safety issues in the Missoula area through multiple interactive activities. The planning team also used this open house as an opportunity to share a high-level overview of the crash data analysis.

Through both the online survey and the public open house, the planning team found that Missoula residents believe the most important areas of focus to decrease the number of fatal and severe crashes in the Missoula area are inattentive drivers, intersection crashes, bicycles, impaired drivers, speed-related crashes, and pedestrians.

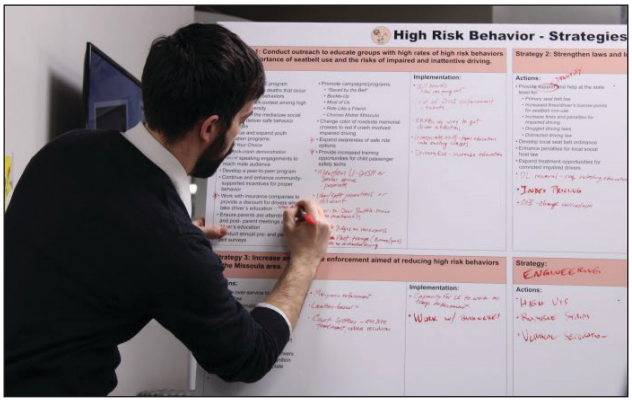
Near the end of the planning process, a Community Safety Summit was held. The Summit was an opportunity for members of the TSAC, stakeholders, and members of the community at-large to work with the planning team to identify strategies to address the community's identified emphasis areas, develop action steps for completing the strategies, and define implementation resources.



A social media campaign was used to advertise the survey and public meetings.



Both the online survey and the public open house showed that residents believe the most important emphasis areas are inattentive drivers, intersection crashes, bicycles, impaired drivers, speed-related crashes, and pedestrians.



Aaron Wilson, Missoula MPO, takes notes of the conversations at the Community Safety Summit.

Crash Data Analysis

The previous CTSP, completed in 2013, focused on intersection crashes, occupant protection, and impaired driving to decrease fatal and serious crashes in the Missoula area. The efforts employed by the TSAC over the past five years have helped decrease severe injuries, although the total number of crashes has increased overall. The TSAC's goal in 2013 was to reduce the 5-year rolling average of fatal and serious injuries by 25 percent. As of 2017, the 5-year rolling average of severe injuries was 89, a 48 percent decrease from the 2007 to 2011 average of 171.

Between 2013 and 2017, there were 11,277 crashes reported within the study area. To understand trends and contributing factors, a detailed review of the crash data was performed through analysis of 14 emphasis areas. This review identified three emphasis areas to focus on over the next five years: intersection crashes, non-motorized users, and high risk behavior (inattentive drivers, impaired drivers, and unrestrained occupants). A summary of the observed trends for each of the emphasis areas is as follows:

Intersection Crashes

- Intersection crashes accounted for 46% of all crashes and 47% of all severe crashes in the study area.
- Crashes were more common on weekdays during the peak travel times.
- Rear end (38%) and right-angle crashes (27%) were the most common crash types at intersections. They were also the most common in severe intersection crashes, at 17% and 40%, respectively.
- Inclement road (28 percent) and weather conditions (15%) were not a common factor in the crashes.

Almost half of all crashes in the study area occurred at or were related to an intersection.

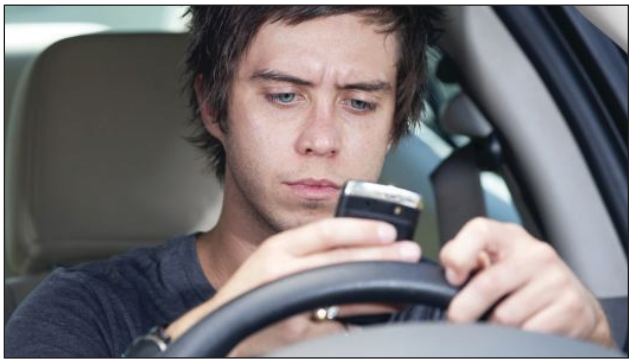
Non-Motorized Users

- Non-motorist crashes accounted for 4% of all crashes and 21% of all severe crashes within the study area.
- Approximately 93% of non-motorist crashes occurred within city limits.
- The majority of non-motorist crashes occurred at an intersection or were intersection related (66%).

Bicyclists were less likely than pedestrians to be involved in crashes under inclement weather or road conditions.

High Risk Behaviors

- Impaired drivers were primarily ages 25 to 40 (42%) and also tended to be male (66%).
- The majority of impaired drivers crashed later at night and on the weekends.
- Where driver distraction was listed, the most common distraction was a passenger (48%).
- Inattentive driving crashes most often resulted in a rear end crash (51%).
- Unrestrained occupants tended to be younger with 27% being under age 18 and 20% between ages 19 and 24.



High risk behaviors are commonly interconnected, almost 30% of impaired drivers in crashes were also improperly restrained and were reported as driving inattentively.

Safety Strategies

Over the past five years, Missoula has continued many of the same safety strategies in place before development of the 2013 CTSP. The TSAC has also implemented several other programs, educational campaigns, policies, and infrastructure improvements to address the 2013 emphasis areas. A review of those strategies, a review of best practices, and input from Community Safety Summit participants helped identify new strategies and action steps to address the new emphasis areas. Implementation stakeholders/partners and resources were also defined for each of the strategies. TSAC members were also assigned to chair each of the emphasis areas.

Implementation

Completion of the CTSP is only the first step towards improving safety and decreasing severe injuries due to crashes on Missoula's roadways. For substantial change to occur, the plan must be implemented. The emphasis area teams, in coordination with various stakeholders and partners, will be responsible for implementation of the plan.

No single entity can successfully carry out all of the recommended actions and strategies, nor will a single source of funding be sufficient to fulfill the CTSP strategies. A cooperative and collaborative approach will be needed to decrease the number of fatal and serious injuries on Missoula's roadways.

Emphasis Area 1: Intersection Crashes

Chair: David Gray, Missoula MPO

Strategy 1: *Improve safety at intersections with a high rate of crashes and/or severe injuries through appropriate infrastructure improvements based on best practices.*

Strategy 2: *Conduct education campaigns on safe driving practices with a focus on intersection safety.*

Strategy 3: *Update, develop, and enforce policies, laws, and guidance regarding intersection safety.*

Emphasis Area 2: Non-Motorized Users

Chairs: Ben Weiss, Missoula Bicycle and Pedestrian Coordinator

Strategy 1: *Improve non-motorist safety through design best practices and new technologies.*

Strategy 2: *Provide education opportunities for pedestrians, bicyclists, and motorists about safe and lawful behavior and interactions.*

Strategy 3: *Support enforcement of pedestrian and bicycle traffic laws and policies.*

Emphasis Area 3: High Risk Behavior

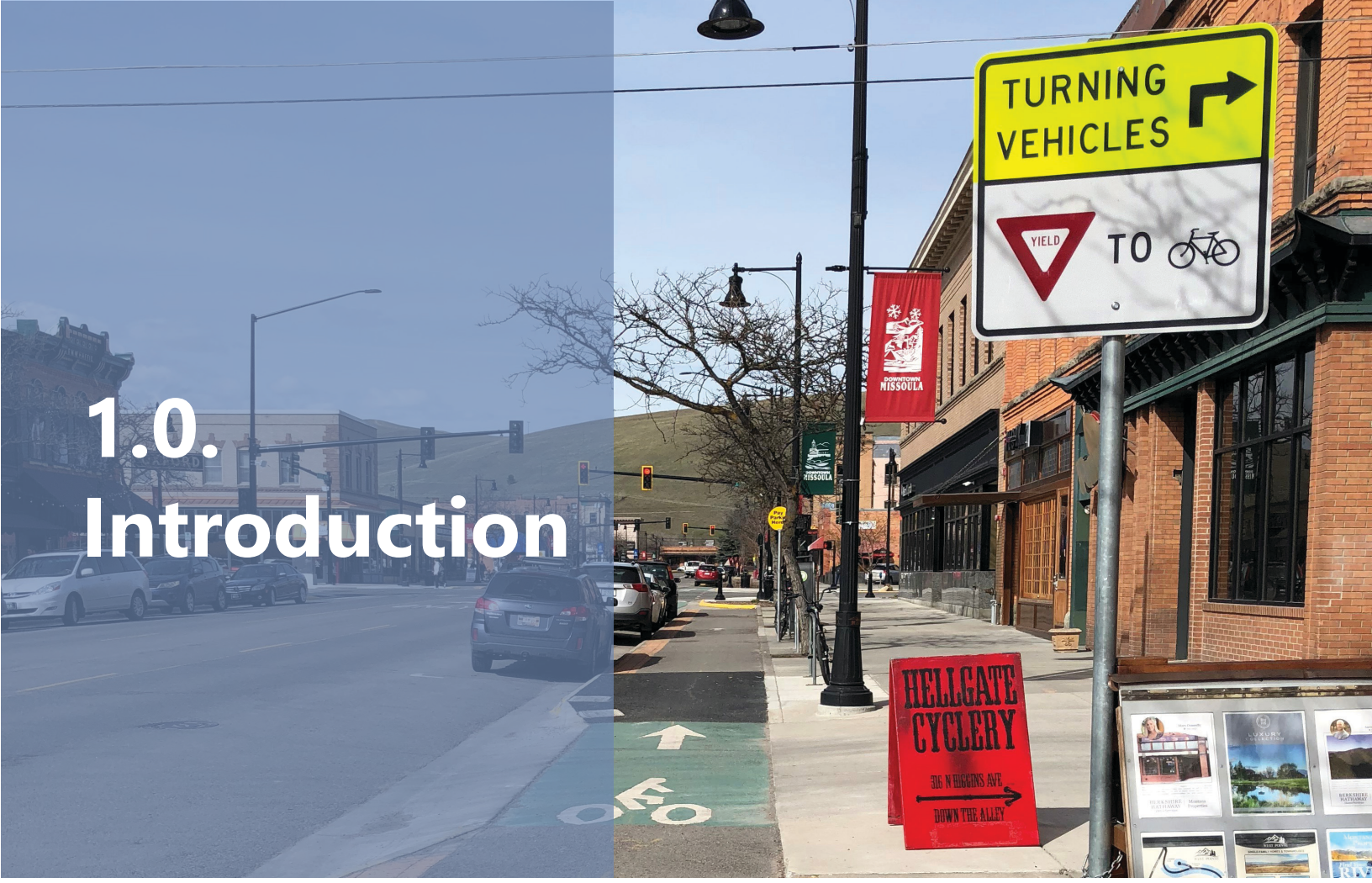
Chairs: Buckle Up Montana/DUI Task Force Coordinator; Charmell Owens, City of Missoula

Strategy 1: *Conduct outreach to groups with high rates of high risk behaviors on the importance of seatbelt use and the risks of impaired and inattentive driving.*

Strategy 2: *Strengthen and enforce laws and local ordinances related to high risk behaviors in the Missoula area.*

Strategy 3: *Pursue engineering solutions to decrease high risk behaviors.*

1.0. Introduction



The *Missoula Community Transportation Safety Plan* (CTSP) serves as a guide for addressing Missoula's regional transportation issues, overall travel, and most importantly, traffic safety for all modes of transportation. Current safety concerns are addressed through innovative and practical strategies which incorporate the Four E's of Safety (engineering, enforcement, education, and emergency services). The CTSP was developed by the Transportation Safety Advisory Committee (TSAC) which is comprised of City, County, State, and non-government representatives with an acute interest in safety in the Missoula area.

The CTSP includes a detailed analysis of past safety trends, considers effectiveness of previously employed safety strategies, incorporates meaningful input from citizens, stakeholders, and local officials, and provides a comprehensive implementation framework for achieving Missoula's safety goals. Included in the CTSP are recommendations for short-, mid-, and long-term strategies for addressing transportation safety concerns in the Missoula area. These recommendations also consider sustainability, resource availability, and funding constraints.

The CTSP was developed through a collaborative process between the TSAC, partners with expertise in the Four E's of Safety, and the public.

1.1. Background

This CTSP is intended to facilitate the community safety goals and identify ways to improve the transportation infrastructure and services within the Missoula Metropolitan Planning Area (MPA). All modes of transportation are addressed in the CTSP in a balanced attempt to meet the current and future transportation needs of the Missoula Metropolitan Planning Organization (MPO) while remaining in alignment with other Missoula planning documents and being fully compatible with state and federal codes.

1.1.1. Alignment with Existing Planning Documents

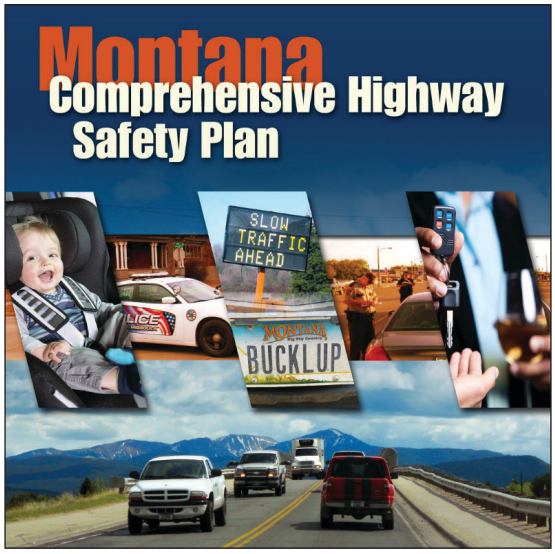
Transportation goals, objectives and strategies for the Missoula MPO are set out in a number of transportation planning documents. These documents implement the "focus inward" concept of developing Missoula in a way that promotes the efficient use of resources while maintaining a high quality of life for residents and continued economic development. The four primary existing transportation documents are the *Long Range Transportation Plan*[1] (LRTP), the *Missoula Active Transportation Plan*[2], the *Long Range Transit Plan*[3], and the *Community Transportation Safety Plan*[4]. The City of Missoula and the County of Missoula are also in the processes of updating their individual Growth Policies. The CTSP embodies a consistent approach by supporting safety of all transportation modes while maintaining a high quality of life for residents as the area grows and changes.

In addition to existing planning documents, the City of Missoula adopted a *Complete Streets Resolution*[5] in 2009 to ensure all new or updated roadways are providing room to safely accommodate all modes of transportation. The City is actively pursuing improvements that promote and encourage non-motorized transportation and decrease the dependence on motor vehicles. Despite this, the MPO still has a very large percentage of vehicle users. Identifying safety strategies that balance the needs of all transportation users is imperative in the safety planning process.

1.1.2. Compatibility with State and Federal Codes

Starting with the introduction of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), and continuing with the Moving Ahead for Progress in the 21st Century Act (MAP-21) and Fixing America's Surface Transportation (FAST) Act, there has been an increased emphasis on highway safety. The law has made it mandatory for states to develop a Strategic Highway Safety Plan to address key safety issues. Although the Montana Department of Transportation (MDT) has developed a *Comprehensive Highway Safety Plan*[6] (CHSP) for addressing safety concerns at the statewide level, many Montana communities have developed their own local level plans. The CHSP in conjunction with the local Safety Plans are intended to help Montana reach Vision Zero – *zero deaths and zero serious injuries on Montana's roadways*.

The Missoula MPO completed the region's first CTSP in 2013. Given the five-year timeframe of the previous CTSP as well as changes in safety concerns, crash trends, mitigation strategies, innovative technologies, and federal requirements, a new examination of transportation safety issues within the Missoula MPA is needed. The 2013 CTSP identified three Emphasis Areas for reducing severe crashes on Missoula roadways; Intersection Crashes, Seatbelts/Occupant Protection, and Impaired Driving. While the TSAC and the community as a whole have made significant strides towards reducing fatal and serious crashes within the Missoula MPA, there are still many opportunities to improve roadway safety.



The Montana CHSP is the statewide safety plan. Roadway Departure, Intersection Crashes, Impaired Driving, and Occupant Protection are the emphasis areas of focus for the state.

1.1.3. Performance Measures and Targets

The FAST Act continues requirements set forth in preceding legislation to increase the accountability and transparency of the program and to support improved investment decisions through a focus on performance outcomes for national transportation goals. In accordance with Federal law, the US Department of Transportation (USDOT) is responsible for identifying performance measures related to national highway and transit performance goals that States and MPOs must establish performance targets for. With these national goals as a baseline, State departments of transportation (DOTs) and MPOs may identify additional performance measures and targets that address local community visions and goals.

The USDOT is responsible for establishing the performance measures that will be used to assess progress in three apportioned Federal-aid programs including: the National Highway Performance Program (NHPP); the Highway Safety Improvement Program (HSIP); and the Congestion Management and Air Quality (CMAQ) program. Of particular importance to the CTSP is the HSIP and associated safety performance measures.

Under the *Highway Safety Improvement Program and Safety Performance Management Measures Final Rules*[7], which became effective on April 16, 2014, the Federal Highway Administration (FHWA) established five performance measures to carry out the HSIP and to assess serious injuries and fatalities on all public roads. In addition, the rule establishes the process for State DOTs and MPOs to establish and report their safety targets and progress made in meeting these safety targets. This is the process FHWA will use to assess whether State DOTs have met or made significant progress toward meeting safety targets. The five performance measures to assess performance and carry out the HSIP established in the rule include:

- Number of fatalities;
- Rate of fatalities per vehicle miles traveled (VMT);
- Number of serious injuries;
- Rate of serious injuries per VMT; and
- Number of combined non-motorized fatalities and non-motorized serious injuries.

State Performance Measures and Targets

In 2014, Montana committed to Vision Zero – a vision of zero fatalities and zero serious injuries on Montana's roadways – to measure progress in statewide efforts to improve safety. To comply with MAP-21, MDT recently updated the CHSP which maintains an interim goal of halving fatalities and serious injuries from 1,705 in 2007 to 852 in 2030. The CHSP identified four overarching safety targets for the national performance measures:

- No more than 172 annual fatalities by 2020, which is an annual reduction of 2.7 percent (5 fewer fatalities per year);
- Fatality rate of no more than 1.28 fatalities per 100 million VMT by 2020, a reduction of 4.3 percent per year;
- No more than 796 serious injuries by 2020, a 3.6 percent annual reduction; and
- Serious injury rate of 5.9 serious injuries per 100 million VMT, a reduction of 5.1 percent per year.

In 2018, consistent with FAST Act federal rules, MDT established the additional required performance target to Montana's already established safety performance measures. Safety performance targets are statewide totals or rates for 2019 and are based on a rolling five-year average and are determined annually. The adopted Montana state safety performance measures and targets are as follows:

- Number of Fatalities - 187.4
- Fatality Rate - 1.462
- Number of Serious Injuries - 892.8
- Serious Injury Rate - 6.968
- Number of Combined Non-Motorized Fatalities and Serious Injuries - 73.2

VISION ZERO
zero deaths · zero serious injuries
MONTANA DEPARTMENT OF TRANSPORTATION

Montana has committed to Vision Zero - a vision of zero fatalities and zero serious injuries on Montana's roadways.

Missoula MPO Performance Measures and Targets

The Missoula MPO supports the State targets for applicable safety performance measures. The MPO has also opted to develop localized goals and objectives. In the MPO's LRTP, *Activate Missoula 2045*, the following safety goal and objectives have been adopted:

Goal 5: Provide safe and secure transportation.

- **Objective 1:** Support transportation programs and design improvements which reduce crashes and improve safety of all modes.
- **Objective 2:** Facilitate the rapid movement of first responders and support incident management during times of emergency.

In the 2013 CTSP, the TSAC identified a vision of "Target Zero" and a goal to reduce the 5-year average of fatal and serious injuries by 25 percent by 2018. This meant reducing the 5-year rolling average to less than or equal to 113 fatalities and serious injuries by 2018.

For the current CTSP, the TSAC has chosen to adopt "Vision Zero" to align with MDT's initiative to eliminate deaths and injuries on Montana's roadways. The TSAC will also carry forward the previous goal, to reduce the 5-year average of fatal and serious injuries by 25 percent by 2023. This means reducing the 5-year rolling average to less than or equal to 67 fatalities and serious injuries by 2023.

1.2. Study Area

In 2013, the CTSP study area boundary was equal to the 2010 Missoula urban boundary. In this 2018 update of the CTSP, the study area is slightly larger and encompasses the entire Missoula MPA **(Figure 1.1)** which includes the City of Missoula and surrounding urbanized portions of Missoula County in Montana. According to the 2016 5-Year American Community Survey data, the current population estimate of the City of Missoula is 70,117 and the MPA is estimated to contain 83% of Missoula County's 113,101 people.

The VMT across the MPA have steadily increased between 2013 and 2017, with estimated average annual daily traffic for the MPA increasing from 1,905,593 in 2013 to 2,012,162 in 2017. Facilities in the MPO planning area include nearly 1,000 miles of roadways including: 24 miles of interstate, 40 miles of principal arterials, 24 miles of minor arterials, 120 miles of collector roadways, and 772 miles of local roads.

The pedestrian and bicycle network is also vast with more than 400 miles of sidewalks, 33 miles of bicycle lanes, 11 miles of bicycle routes, and 50 miles of trails.

Unless otherwise stated, crash data throughout the CTSP is presented at the MPA level. The following describes other boundaries used to analyze data throughout this report:

Metropolitan Planning Area: The MPA boundary is a federal requirement for the metropolitan planning process. The boundary is established by the governor and individual MPOs within the state, in accordance with federal metropolitan planning regulations. The MPA boundary must encompass the existing urbanized area and the contiguous areas expected to be urbanized within a 20-year forecast period. The MPA boundary establishes the area in which the MPO conducts federally mandated transportation planning work, including: an LRTP, the Metropolitan Transportation Improvement Program for capital improvements identified for a four-year construction period, a Unified Planning Work Program, a congestion management process, and conformity to the state implementation plan for air quality for transportation related emissions.

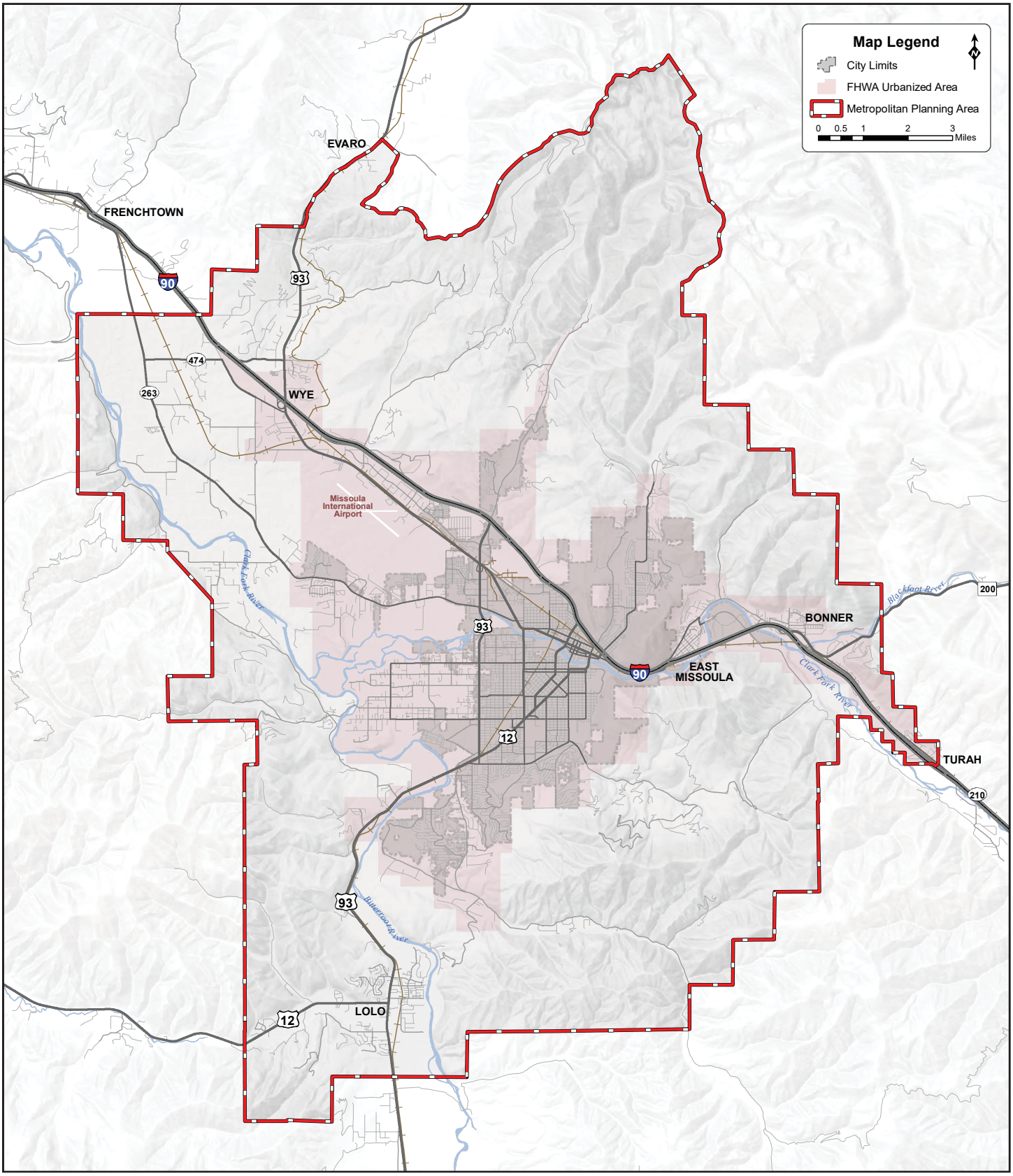
FHWA Urbanized Area: These boundaries play an important role in most FHWA related funding programs by designating urban and rural areas. They are based on, but distinctly different from the U.S. Census Bureau's Urban Areas.

Missoula City Limits: The area that has been formally incorporated into the City of Missoula.

Rural Area: Any area outside the UZA and within the MPA.

As the population of the Missoula MPA grows and the amount of vehicle miles traveled increases, the likelihood of crashes also increases. The MPO and the TSAC strive to reduce both the severity and likelihood of crashes through implementation of the CTSP.

Figure 1.1: Missoula MPA Study Area



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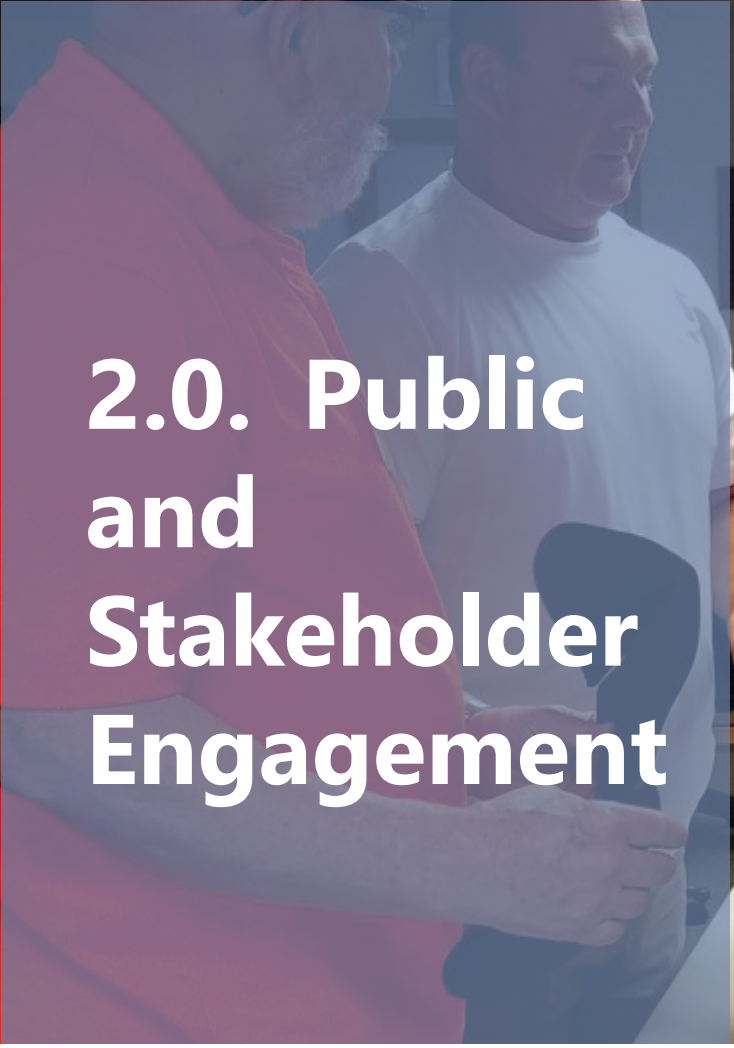


2.0. Public and Stakeholder Engagement

Active participation and input on the development of the CTSP was encouraged throughout the planning process. Stakeholders involved in the process included: law enforcement; emergency service providers; schools; healthcare providers; low-income, minority, and disabled communities; neighborhood representatives; business interests; special transportation groups; safety interest groups; local officials; federal and state transportation agencies; and the general public. Feedback from partners with expertise in the Four E's of Safety was especially important in defining multidisciplinary strategies for improvement that can be successfully implemented by the community.

Active participation and input was encouraged at key points throughout the planning process.

2.1. Transportation Safety Advisory Committee

Development of the CTSP was overseen by the TSAC. The TSAC guided work, reviewed deliverables, and provided general oversight capacity on all matters related to the CTSP. Four TSAC meetings were held over the course of the plan, see **Table 2.1**.

The TSAC was made up of members from the community who are knowledgeable about the safety issues in Missoula and have a vested interest in working towards reducing crashes in the study area. Individuals were selected to be part of the TSAC based on knowledge of and involvement in the Four E's of Safety. By having representation from a variety of stakeholders on the TSAC, safety strategies that efficiently use personnel and financial resources were able to be developed or identified. Refer to the **Acknowledgments** for a list of TSAC members.

Members of the TSAC are responsible for leading implementation of the CTSP over the next five years. It is expected that the selected TSAC members, in cooperation with other local safety partners, will employ the resources necessary to achieve the goals identified for each emphasis area. Members are also urged to attend quarterly meetings with the MPO to track progress and achievements in implementation of the CTSP.

Table 2.1: TSAC Meeting Schedule

MEETING	KEY OBJECTIVES
TSAC Meeting #1 *September 10, 2018*	• Review scope of work • Discuss plan development • Confirm TSAC members • Define TSAC mission and CTSP goals
TSAC Meeting #2 *October 29, 2018*	• Review crash data • Discuss key safety issues in Missoula • Discuss public meeting preparation
TSAC Meeting #3 *January 31, 2019*	• Share findings of first public meeting • Establish Emphasis Areas for CTSP • Inventory current and planned safety activities • Identify potential safety strategies • Prepare for Community Safety Summit
TSAC Meeting #4 *May 14, 2019*	• Review recommended safety strategies • Review the draft CTSP • Identify emphasis area chairs

2.2. Outreach and Engagement Opportunities

Several strategies were employed to disseminate information and elicit meaningful participation for the CTSP. The following sections discuss the public and stakeholder engagement methods used in the planning process.

A proactive approach was taken to provide an opportunity for stakeholders and the public to be engaged at key points throughout the planning process. For the CTSP, a number of public engagement strategies were utilized to reach a variety of stakeholders and elicit meaningful participation from Missoula residents. The following public engagement methods were used throughout development of the CTSP:

Project Website

A project website was hosted by the Missoula MPO (www.missoulampo.com/community-transportation-safety-pla). Draft memoranda, meeting announcements, frequently asked questions, and contact information were provided on the website.

A project website was maintained throughout the planning process (www.missoulampo.com/community-transportation-safety-pla).

Social Media

Periodic updates were posted to the MPO's social media platforms. The updates announced meetings, the survey, and encouraged participation in the planning process. The content was shareable so stakeholders could promote the public meetings and survey on their websites, blogs, and social media outlets.

Public Comments

Public comments and concerns received at meetings and through individual discussions were considered by the TSAC throughout the planning process. An official comment period was provided after the release of the draft CTSP (May 17, 2019 through June 16, 2019). See **Appendix E** to review the responses to comments received.

Special Agency and Stakeholder Involvement

A stakeholder contact list was developed and included individuals, businesses, or groups identified by the MPO or TSAC. Identified stakeholders were encouraged to participate in the planning process either through public comment or participation in the public meeting and Community Safety Summit. Stakeholders included the Missoula Chamber of Commerce, Missoula School District, neighborhood groups, human services organizations, non-motorized groups, civic groups, elected officials, and others. The intent of engaging these partners was to obtain meaningful public input about the major transportation issues and concerns but also to encourage collaboration from these groups in implementation of the CTSP. Gaining support from these groups and leveraging their resources is important to ensure implementation strategies reach a larger percentage of the population.

Online Survey

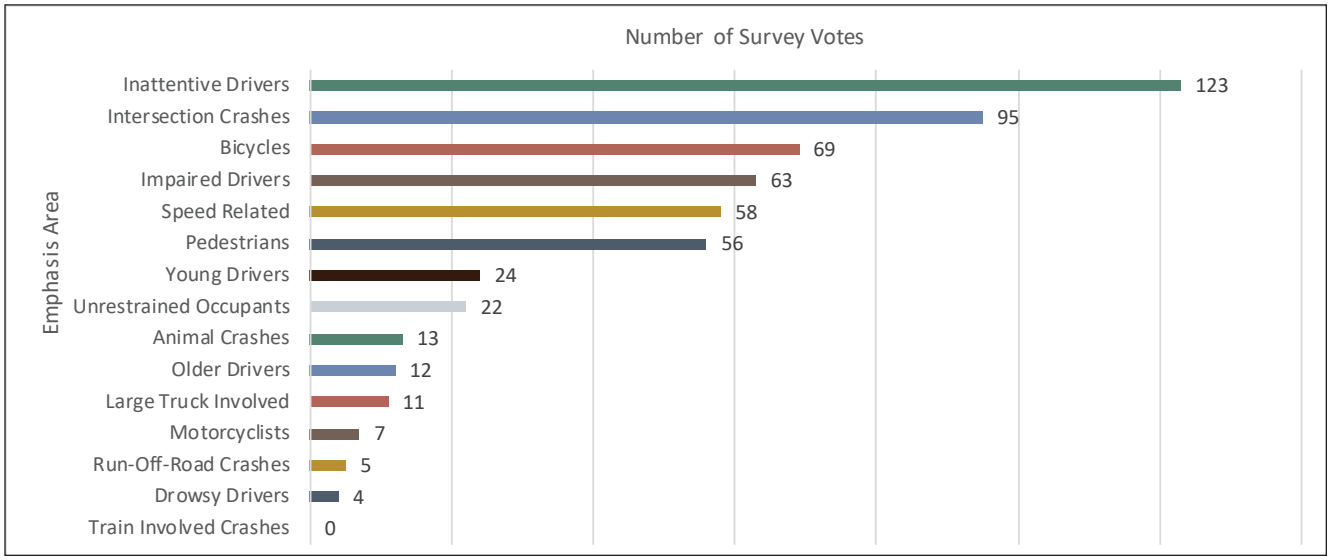
An online survey was developed to help the project team better understand safety issues and concerns within the Missoula area. The survey was open between November 7 and December 16, 2018. A total of 161 responses were received.

The survey contained 11 questions in which respondents were asked to provide demographic information, indicate mode choice, share perceptions of safety and driver behavior, rank top emphasis areas for the plan's focus, and indicate effectiveness of safety strategies. The following summarizes the results of the survey. See **Appendix B** for more detail.

Approximately 70 percent of the respondents indicated that they live within Missoula city limits while 23 percent indicated that they live within the Missoula MPA boundary but outside of city limits. Most respondents selected personal vehicle as their primary mode of transportation (68 percent) with biking (18 percent) being the second most selected answer. Walking (29 percent), biking (21 percent), and public transportation (13 percent) were common answers for the secondary mode of transportation.

Respondents felt that Missoula area streets are safest for public transportation users. They also believe that the streets are most unsafe for persons with disabilities, seniors, and youths. When asked to describe the behavior of drivers in the Missoula area, the top responses indicated that respondents felt Missoula drivers are distracted (47 percent), inattentive (33 percent), impatient (32 percent), hurried (31 percent), courteous (24 percent), and aggressive (20 percent). When indicating perceptions of primary causes of crashes, respondents noted distracted driving (64 percent), impatient driving (28 percent), roadway design (24 percent), aggressive driving (20 percent), and impaired driving (18 percent) as the main causes.

Figure 2.1: Top Emphasis Areas (Survey)



Respondents were then asked to rank the plan's emphasis areas based upon which areas they felt could reduce fatal and serious injury crashes in Missoula. The data was analyzed using both a weighting system and based on strict votes (independent of how they ranked). Regardless of which method was used to analyze the results, the top responses (as seen in **Figure 2.1**) were inattentive drivers (84 percent), intersection crashes (65 percent), bicycles (47 percent), impaired drivers (43 percent), speed-related crashes (39 percent), and pedestrians (38 percent). This was consistent with the top emphasis areas as indicated during the public meeting.

In the final question, respondents were asked to rank safety strategies based on their effectiveness in reducing severe injury crashes in Missoula. Infrastructure improvements and roadside enhancements were considered the most effective strategies followed by increased enforcement. Education, traffic calming, and improved emergency services were all rank similarly in effectiveness while safety management was ranked the lowest in effectiveness.

Public Open House

The first public meeting was held on November 27, 2018 at the Missoula City Council Chambers. The meeting was held in the evening between 5:30 PM and 7:30 PM. The public was invited to attend the meeting at their convenience as it was formatted as an open house. Missoula MPO staff and the staff from the consulting team were in attendance to discuss the plan with the public, to listen to public perception of safety issues, and to share a high-level overview of the crash data analysis.

There were 22 participants in attendance. There were five stations set up for meeting participants to actively engage in the planning process. The stations included a "graffiti wall" where participants could write how they believe safety can be improved; a voting exercise for participants to vote for the top emphasis areas; an interactive word web regarding participants' opinions of the primary cause of crashes; and an opportunity to complete the survey. Refer to **Appendix D** for more information about the open house.

Community Safety Summit

A Community Safety Summit was held on March 12, 2019 at Franklin Elementary School. There were 22 participants in attendance including members of the TSAC, stakeholders, and members of the community at-large. The Summit consisted of three stations where participants could sit and work with the planning team and other Summit participants to identify strategies to address the community's identified emphasis areas, develop action steps for completing the strategies, and define implementation resources.

Community Safety Summit participants discuss strategies to improve safety for non-motorists in the Missoula area.

The interactive word web from the public open house showed what participants felt are the primary causes of crashes in Missoula.

3.0. Crash Data Analysis

The MDT Traffic and Safety Bureau provided crash data for the ten-year period from January 1st, 2008 to December 31st, 2017. This information includes data from crash reports submitted to the Montana Highway Patrol from their patrol officers and from local city and county law enforcement. The crash reports are a summation of information from the scene of the crash provided by the responding officer. As such, some of the information contained in the crash reports may be subjective.

Crash data within the study area was analyzed to determine problem areas, "hot-spot" crash locations and behavioral characteristics. Note that user behavior (such as seatbelt usage, impaired driving, distracted driving, etc.) is analyzed only when a crash occurs. There are likely many other instances in which these unsafe behaviors are occurring without resulting in a crash. The purpose of this analysis is only to analyze the results of the crashes within the Missoula MPA and to identify trends and contributing factors in these crashes so that Missoula MPO can address these issues and improve safety on its roadways.

A detailed analysis of crash data helped the TSAC identify three emphasis areas to be of focus through 2023: intersection crashes, non-motorized users, and high risk behavior.

3.1. Limitations of Data

Although the crash data can help identify trends in behavioral and circumstantial contributors to crashes within the Missoula MPA, there are some limitations to the data. The primary limitation is unreported and unknown data. There are many crash records for which various fields are left blank. Occasionally, a report will have "unknown" listed, rather than a blank field. Without this information, it may be difficult to capture the complete picture of what happened in crashes. Similarly, many crashes, especially those where individuals and vehicles are unharmed, do not get reported to the police. Underreporting can limit the ability to properly and effectively manage road safety, since the analyses in this report are based only on reported crash data. Another limitation may be inconsistencies with reporting. Although protocol has been established and training for filling out crash reports is provided to law enforcement, there may still be inconsistencies or errors in the reporting.

Often times the available crash data does not provide the full story. Without reading the full crash reports by the investigating officer which contain narratives of the crash occurrence, statements from the individuals involved and witnesses, crash diagrams, citations, and officer opinions as to cause of the collision, a clear picture of the crash may be unattainable. Since it would be time prohibitive to review the full crash reports for the more than 11,000 crashes that occurred within the Missoula MPA over the past five years, the data analysis contained in the following sections is limited to data contained in the crash records. The records are evaluated as reported, there have been no efforts to correct mistakes or fill in blanks.

3.2. Assumptions Made

Due to limitations and complexities of the available data, various assumptions were made during data analysis. The following assumptions and calculation processes were kept consistent throughout each data analysis for the emphasis areas, unless otherwise noted.

"Severe injuries" refers to the combined total of fatal and serious injuries. A serious injury is one, which prevents the injured person from walking, driving or normally continuing the activities the person was capable of performing before the injury occurred.

In order to calculate the percent change in the total number of crashes or severe injuries over the past five years, a trend line was fit to the data. The method of least squares is used to find a line that best fits the data points.

When reporting the percent of crash records that fit within a defined category (i.e. percent of crashes that were a rear end crash, the percent of drivers age 65 and older, etc.), the percentage was calculated where the "whole" is the number of *reported* records for each data field, including unknown, not applicable, etc.

Up to four driver contributing actions can be reported for each driver involved in a crash. When the driver had no contributing action, the fields are left blank or "no contributing action" is listed in all four. When calculating the top contributing factors in each crash, the sum of the occurrences of each contributing action in all four fields was divided by the total number of reported records in the first field. When reporting the number of unreported contributing actions, the number of blank records was divided by the total number of driver records.

Crash reports are sometimes limited to the amount of information the individual involved in a crash is willing to report. It can sometimes be difficult to determine what occurred prior to the crash such as cell phone usage or failure to yield.

3.3. Status Since Last CTSP

As stated previously, the 2013 CTSP identified a vision of "Target Zero" and a goal to reduce the 5-year average of fatal and serious injuries by 25 percent by 2018. This meant reducing the 5-year rolling average in the Missoula urban area from 151 fatalities and serious injuries to less than or equal to 113 by 2018. Factoring in the larger study area for the 2018 CTSP, the goal is to reduce the 5-year rolling average in the Missoula MPA from 171 severe injuries to 128.

In order to achieve this goal, the TSAC chose to focus on three emphasis areas which they believed had the most potential to decrease crashes and severe injuries: intersection crashes, occupant protection, and impaired driving. A description of these three emphasis areas and some key crash statistics for the 2007 to 2011 time period, as identified in the 2013 CTSP, are as follows:

Intersection Related Crashes

Intersections commonly are locations with a large number of crashes as these are the locations where vehicles traveling in different directions have the most potential for conflict. Nearly half of injury crashes (47 percent) occurred at a signalized intersection and more than one-third (35 percent) of injury intersection crashes occurred where there was no intersection control. Nearly a third (30 percent) of intersection injury crashes involved drivers age 15-24.

The largest proportion (33 percent) of injury crashes occurring at intersections occurred on urban routes, with 29 and 25 percent occurring on local and non-interstate national highway system roads, respectively. Nearly a third (31 percent) of severe injury intersection crashes were on non-interstate national highway system roads.

Occupant Protection

The National Highway Traffic Safety Administration (NHTSA) estimates that lap/shoulder seat belts, when used correctly, reduce the risk of fatal injury to front-seat passenger car occupants by 45 percent and the risk of moderate-to-critical injury by 50 percent.

In approximately 15 percent of severe injuries in the study area, the injured person was not wearing a seat belt. Occupants in the 15-18 years and 19-24 years age groups each accounted for 19 percent of unrestrained severe injuries. Injuries that were sustained by occupants not wearing seatbelts occurred most often on Fridays. Injuries also peaked between 3:00 PM and 7:00 PM.

Impaired Driving

Fatalities in crashes involving an alcohol-impaired driver represent almost one-third (31 percent) of the total motor vehicle fatalities in the United States. Montana has one of the highest alcohol related fatality rates in the nation per vehicle mile traveled. From 2007 to 2011, there were 359 injury crashes in the Missoula urban area involving an impaired driver. Of those, 114 crashes resulted in a fatality or serious injury.

The largest proportion of all injury crashes (36 percent) and severe crashes (31 percent) involving impaired drivers occurred on local streets. The second largest concentration of injury crashes (29 percent) occurred on state urban roads. The majority of impaired drivers (79 percent) involved in severe crashes were male. Most impaired drivers (66 percent) involved in injury crashes were between the ages of 21 and 44. More than a quarter (27 percent) of total injury crashes involved impaired drivers age 25-34.

The previous CTSP was developed in 2013 and addressed the intersection crashes, occupant protection, and impaired driving emphasis areas.

3.3.3.1. Progress Since Last CTSP

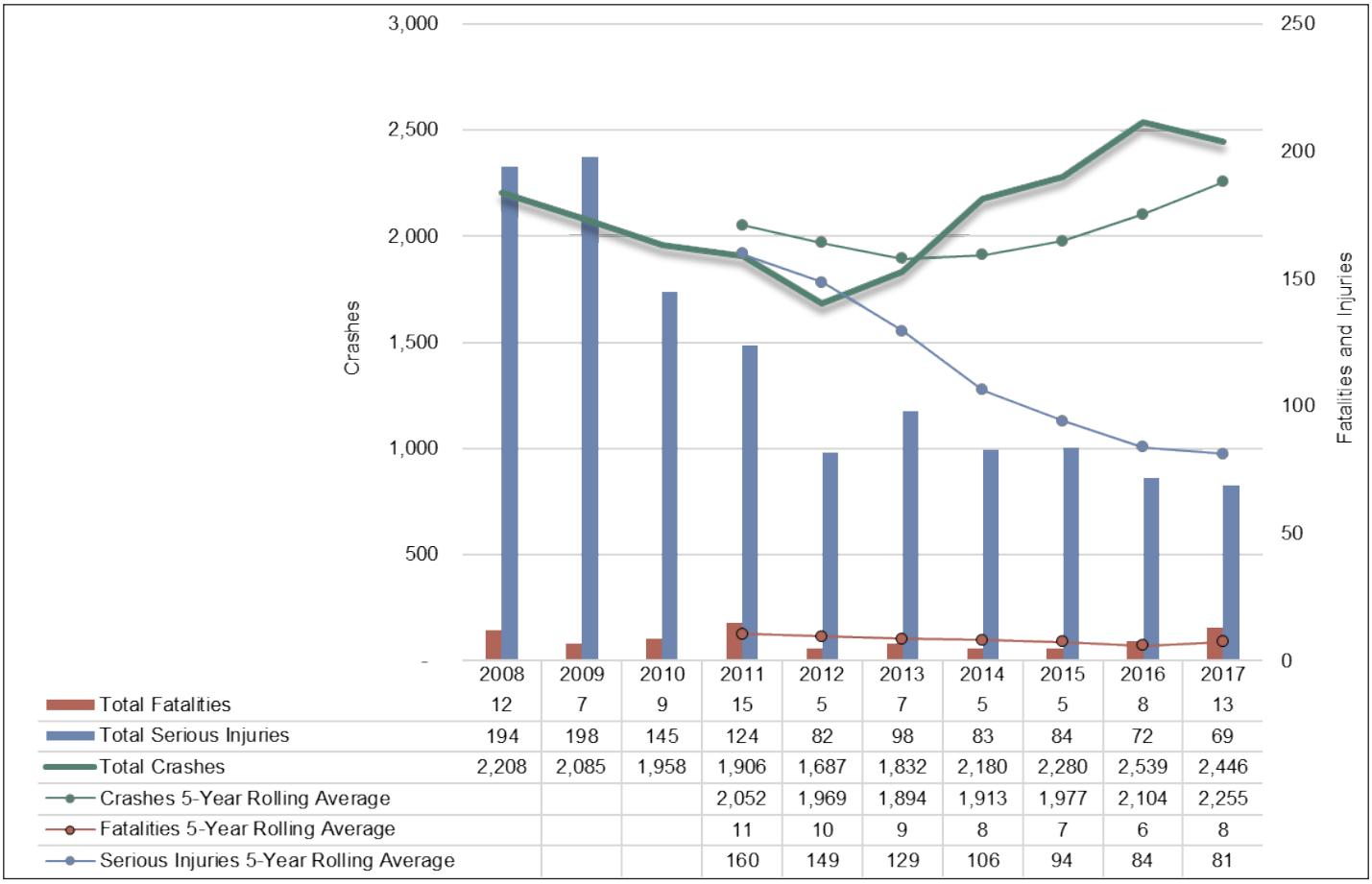
According to the MDT crash database, there were 21,121 crashes reported within the study area over the past 10 years and 11,277 crashes over the past 5 years (2013-2017). The number of crashes per year decreased from 2,208 in 2008 to 1,687 in 2012 and then increased to 2,539 in 2016 with a small decline to 2,446 crashes in 2017. At the same time, the number of severe (fatalities and serious injuries) saw a steady decline from 206 in 2008 to 82 in 2017. These trends, seen in **Figure 3.1**, suggest that while a greater number of crashes are occurring in the Missoula MPA, they are occurring with less severity. Although it is desirable to have fewer crashes, it is more important that crashes don't result in loss of life or serious injuries that prevents the person who sustained the injury from normally continuing the activities the person was capable of performing before the injury occurred.

More so than totals, it is also important to review rolling averages of crashes. Sometimes a spike in fatalities or serious injuries may occur due to a multi-vehicle crash with multiple severe injuries, for example. Although totals are important to consider, a five-year rolling average is much more indicative of crash trends over the study time period as it levels out extreme circumstances.

Performance Measures

As stated previously, the TSAC's goal was to reduce the 5-year rolling average of fatal and serious injuries by 25 percent. This meant decreasing the average severe injuries in the Missoula MPA from 171 between 2007 and 2011 to 128 or less. As of 2017, the 5-year rolling average of fatal and serious injuries was 89, a 48 percent decrease from the 2007 to 2011 average.

Figure 3.1: Missoula MPA Crash and Injury Trends



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total Fatalities	12	7	9	15	5	7	5	5	8	13
Total Serious Injuries	194	198	145	124	82	98	83	84	72	69
Total Crashes	2,208	2,085	1,958	1,906	1,687	1,832	2,180	2,280	2,539	2,446
Crashes 5-Year Rolling Average				2,052	1,969	1,894	1,913	1,977	2,104	2,255
Fatalities 5-Year Rolling Average				11	10	9	8	7	6	8
Serious Injuries 5-Year Rolling Average				160	149	129	106	94	84	81

As part of Montana's performance measure requirements, fatal and serious injury rates are also tracked. Injury rates are calculated based upon the number of injuries that occurred per 100 million VMT within the study area. In 2013, the five-year rolling average fatality rate was 1.26 and the average serious injury rate was 19.07. As of 2017, the 5-year rolling average fatality rate is 1.08 (decrease of 14 percent) and the serious injury rate is 11.55 (decrease of 39 percent). **Table 3.1** presents the total number of fatalities and serious injuries as well as the injury rates.

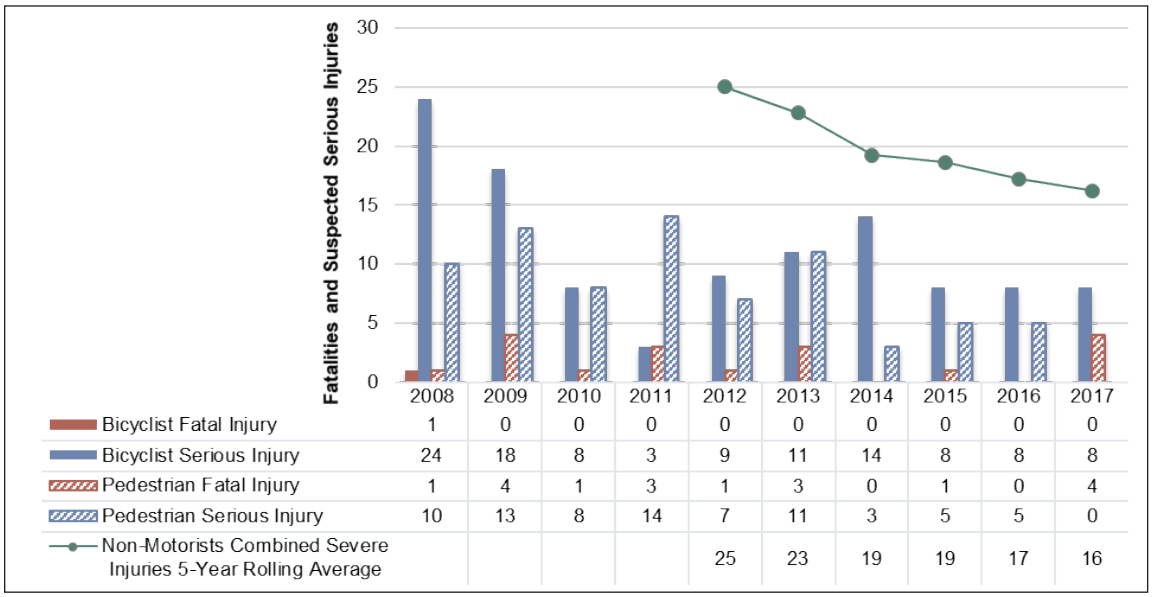
In the 2013 CTSP, pedestrian and bicycle involved crashes were not explicitly studied. However, Montana is now required to report on the combined number of pedestrian and bicycle fatal and serious injuries. Although Montana reports these injuries as a combined number, Missoula has chosen to track these injuries separately. As seen in **Figure 3.2**, there have been significant decreases in severe non-motorist injuries over the past five years although fatalities saw a large increase in 2017.

Table 3.1: Missoula MPA Fatal and Serious Injuries

Year	Total Crashes	Fatalities	Fatality Rate*	Serious Injuries	Serious Injury Rate*	5 – Year Severe** Injury Rolling Average
2007	2,104	10	1.53	138	21.10	--
2008	2,208	12	1.82	194	29.48	--
2009	2,085	7	1.06	198	29.91	--
2010	1,958	9	1.35	145	21.77	--
2011	1,906	15	2.16	124	17.87	170.4
2012	1,687	5	0.72	82	11.73	158.2
2013	1,832	7	1.01	98	14.09	138.0
2014	2,180	5	0.73	83	12.04	114.6
2015	2,280	5	0.70	84	11.75	101.6
2016	2,539	8	1.10	72	9.91	89.8
2017	2,446	13	1.87	69	9.94	88.8
5 - Year Average (2013 – 2017)	2,255.4	7.6	1.08	81.2	11.55	-48%***

**Per 100 million VMT*
***Combined fatal and serious injuries*
****Decrease in 5-year rolling average of severe injuries from 2007-2011 to 2013-2017*

Figure 3.2: Missoula MPA Non-Motorized Severe Injuries



3.4. Crash Costs

The National Safety Council (NSC) makes estimates of the average costs of fatal and non-fatal injuries to illustrate their impact on the nation's economy[8]. The costs are a measure of the dollars spent and income not received due to crashes, injuries, and fatalities. Cost estimation is not exact, it can only be approximated because the estimates depend on many factors. As such, the cost estimates provided in this section are only approximations, not exact figures.

The cost of crashes can be measured two ways, by economic cost and by comprehensive cost. The economic cost accounts for wage and productivity losses, medical expenses, administrative expenses, motor vehicle damage, and employers' uninsured costs. In addition to economic costs, the comprehensive cost takes into account the value of lost quality of life which was obtained by NSC through empirical studies of what people actually pay to reduce their safety and health risks.

Comprehensive cost estimates should be used for cost-benefit analyses. Both of these cost estimates are measured on a person basis, not a crash basis. The cost figures are appropriate for measuring the economic loss to a community from past crashes. However, they should not be used to compute a dollar value of future benefits due to traffic safety measures. They do not include what people are willing to pay for improved safety.

The cost estimates provided by NSC are listed in **Table 3.2**. The estimates have been adjusted to account for inflation based on a three percent per year increase is costs. The cost estimates are listed in 2018 dollars.

Table 3.2: Cost of Crash Related Injuries (2018)

Injury Type	Average Economic Cost	Average Comprehensive Cost
Fatality	$1,542,000	$10,082,000
Serious Injury	$90,000	$1,103,000
Minor Injury	$26,000	$304,000
Possible Injury	$21,400	$141,000
Non-Injury	$11,400	$46,600

Source: National Safety Council "Estimating the Costs of Unintentional Injuries"

3.4.1. Crash Costs by Year

The cost estimates can be used to measure the importance of crash prevention work and investment in the Four E's of safety. **Table 3.3** compares the average costs of crashes within the Missoula MPA that occurred between 2007 and 2011 (those crashes that were analyzed in the 2013 CTSP) to those crashes that occurred between 2013 and 2017. The estimates for the past five years of crashes are also given. All crash costs are given in 2018 dollars.

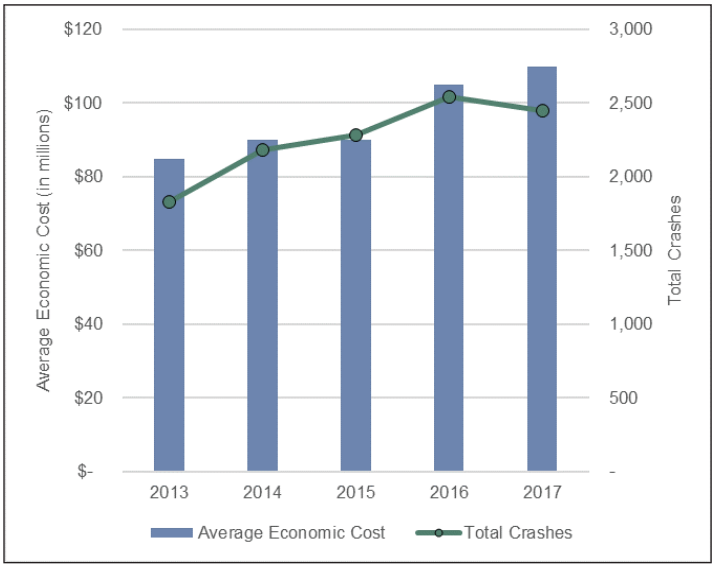
Table 3.3: Crash Costs by Year

Year	Average Economic Cost*	Average Comprehensive Cost*
2007 - 2011	$605,000,000	$4,020,000,000
2013 - 2017	$475,000,000	$2,760,000,000
2013	$85,000,000	$510,000,000
2014	$90,000,000	$510,000,000
2015	$90,000,000	$525,000,000
2016	$105,000,000	$590,000,000
2017	$110,000,000	$620,000,000

**Estimates have been rounded to the nearest $5,000,000.*

Figure 3.3 compares the total number of crashes per year for the years 2013 through 2017 to the average economic cost of the crashes. This figure provides an illustration of severity of crashes. For example, although the total number of crashes increased between 2014 and 2015, the average economic cost remained relatively the same. This alludes to the fact that although there were more crashes, they resulted in fewer severe injuries.

Figure 3.3: Number of Crashes vs. Economic Costs



3.5. Emphasis Area Crash Statistics

To understand how to most effectively focus resources, it is important to identify what types of crashes predominantly contribute to the community safety problem. The American Association of State Highway Transportation Officials (AASHTO) *Strategic Highway Safety Plan: A Comprehensive Plan to Substantially Reduce Vehicle-Related Fatalities and Injuries on the Nation's Highways*[9], published in 2005, identified 22 safety emphasis areas on a national level. The development of emphasis areas represents a new approach to roadway safety by including high risk populations, crash types, infrastructure/hazards, behavior, and transportation modes. MDT has further refined the list of 22 emphasis areas to include 16 emphasis areas that are relevant to Montana. Those emphasis areas are as follows:

- Animal Crashes
- Bicycle Involved
- Drowsy Drivers
- Impaired Drivers
- Inattentive Drivers
- Intersection Crashes
- Large Truck Involved
- Motorcycle Involved
- Native Americans
- Older Driver Involved
- Pedestrian Involved
- Run-off-the-Road
- Speed Related
- Train Involved
- Unrestrained Occupants
- Young Driver Involved

3.5.1. Comparison of All Emphasis Areas

In order to determine which of the emphasis areas are the most prevalent in the Missoula MPA, the number of crashes and injuries occurring within each emphasis area over the past five years, 2013 to 2017, were totaled. For ease of analysis and comparison purposes, the "Pedestrian Involved" and "Bicycle Involved" emphasis areas were combined to be the "Non-Motorists" emphasis area and the "Native Americans" emphasis area was excluded in analysis due to lack of reliable data. Keep in mind that one crash can fit within multiple emphasis areas. For example, a crash involving a distracted large truck driver that runs off the road would be counted in three emphasis areas.

By comparing the total crashes, it is easy to pick out the emphasis areas which are most commonly represented in the Missoula MPA. However, it is also important to consider the number of fatal and serious injuries within each emphasis area as well. For example, although few crashes occurred within the motorcyclist emphasis area, a high number of severe injuries also occurred, causing a high severity rate for the emphasis area. Although it is desirable to reduce the number of total crashes, the performance measures highlight the importance of decreasing the number of severe crashes as well. **Figure 3.4** compares the total number of crashes as well as the number of fatal and serious injuries in each emphasis area over the past five years (2013 – 2017).

Figure 3.4: Crashes and Injury Totals by Emphasis Areas (2013-2017)

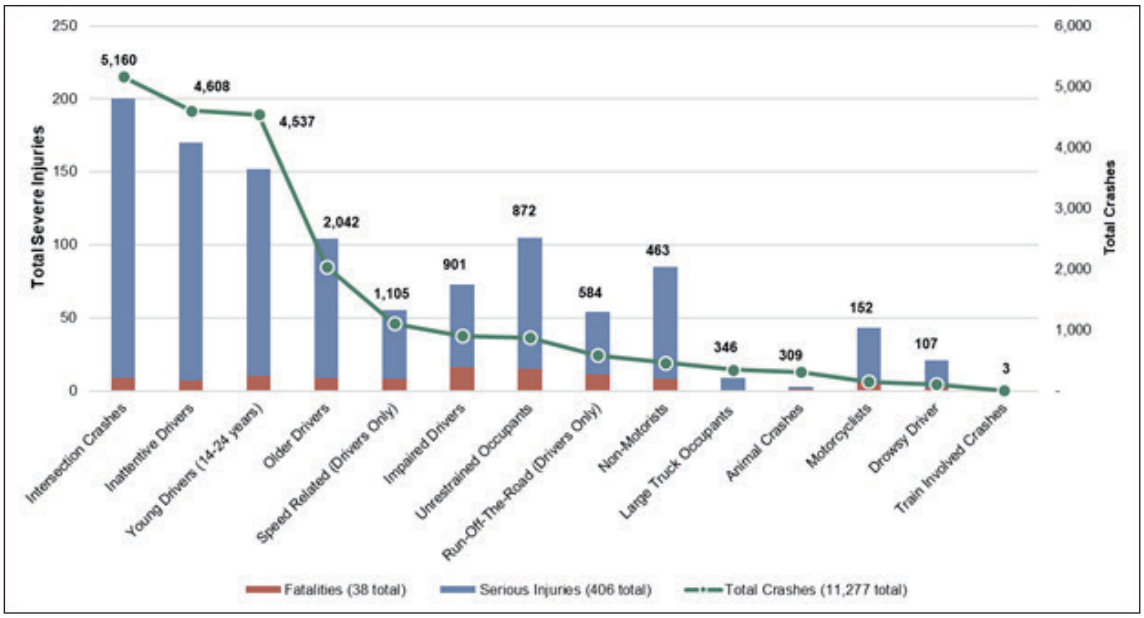


Table 3.4 tabulates the total crashes, percent of all crashes, fatalities, serious injuries, total people involved, severity index, and average economic cost for each emphasis area. Keep in mind that a single crash could have multiple contributing factors and thus a single fatality or serious injury could appear within multiple emphasis areas.

The severity index was calculated by applying multipliers to injuries based on severity. For the severity index, injuries resulting from crashes were broken into three categories of severity: property damage only (PDO), minor injury, and fatal or serious injury. Unknown injuries were categorized as PDO crashes. Each of these three types was given a different multiplier: 1.0 for PDO, 3.0 for injury, and 8.0 for fatal or serious injury. The sum was then divided by the total number of people involved in the crashes within each emphasis area.

3.5.2. Selection of 2018 Emphasis Areas

In order to decrease crashes and severe injuries within the Missoula MPO, the TSAC must focus their efforts and resources on a select few of the 14 emphasis areas. There are a number of ways to choose which emphasis areas should be of focus for the CTSP; by total crashes occurring in the Missoula area, by severity, or by public interest.

Ultimately, these three methods all revealed a common five emphasis areas: intersection crashes, unrestrained occupants, impaired drivers, non-motorized users, and inattentive drivers. From this list, the TSAC identified three emphasis areas which they felt the committee, and the Missoula community as a whole, could effectively address over the next five years given constrained resources. The emphasis areas which have been chosen to be of focus for the Missoula area through 2023 are: intersection crashes, non-motorized users, and "high risk behavior" which includes three emphasis areas (inattentive drivers, impaired drivers, and unrestrained occupants).

To address the safety concerns in the Missoula area, safety stakeholders will focus on these emphasis areas through 2023:

Intersection Crashes

Non-Motorized Users

High Risk Behavior

Table 3.4: Severity Indices by Emphasis Area

Emphasis Area	Total Crashes	% of All Crashes	Fatality	Serious Injury	Injury	PDO	Total People Involved	Severity Index	Average Economic Cost**
Intersection Crashes	5,160	46%	9	191	1,727	11,820	13,747	1.35	$224,000,000
Inattentive Drivers	4,608	41%	7	163	1,432	9,886	11,488	1.35	$186,000,000
Young Drivers (14-24)	4,537	40%	10	142	1,430	10,177	11,759	1.33	$193,000,000
Older Drivers (65+)	2,042	18%	9	95	668	4,629	5,401	1.38	$98,000,000
Speed Related	1,105	10%	8	47	336	1,790	2,181	1.48	$49,000,000
Impaired Drivers	901	8%	16	57	384	1,250	1,707	1.75	$58,000,000
Unrestrained Occupants*	872	8%	15	90	275	933	1,282	2.03	$48,000,000
Run-Off-The-Road	584	5%	11	43	163	692	909	1.77	$36,000,000
Non-Motorists*	463	4%	8	77	259	133	474	3.35	$29,000,000
Large Trucks	346	3%	0	9	71	682	762	1.27	$11,000,000
Animal Crashes	309	3%	1	2	21	462	486	1.13	$8,000,000
Motorcyclists	152	1%	6	37	91	180	314	2.54	$17,000,000
Drowsy Drivers	107	1%	2	19	41	112	174	2.32	$8,000,000
Train Involved Crashes	3	0%	0	0	2	5	7	1.57	$100,000***

**Totals for vulnerable users only (not all persons involved in crashes)*
***Estimates have been rounded to the nearest $1,000,000*
****Estimates have been rounded to the nearest $100,000*

3.6. Evaluation of Crash Data

In order to understand the problems facing the Missoula MPO within each emphasis area, and to develop future strategies to address these problems, it is important to take a closer look at the crash data. The following sections give an overview of how the crash data was analyzed, a summary of the crash statistics, a spatial analysis of the data points, and a discussion of noted crash trends within each emphasis area. Analysis of available crash data is provided for the three emphasis areas that the TSAC identified: intersection crashes, non-motorized users, and high risk behavior. Refer to **Appendix D** for an in-depth data analysis for all 14 emphasis areas.

3.6.1. Intersection Crashes

Intersection crashes were defined on a crash basis. Each crash was categorized by junction relation. Those crashes that were categorized as at an intersection or intersection related were included in the analysis for the intersection crashes emphasis area. There was a total of 5,160 intersection crashes involving 13,747 people which resulted in 9 fatalities, 191 serious injuries, and 1,239 minor or possible injuries. Intersection crashes accounted for 46 percent of all crashes and 47 percent of all severe crashes within the study area over the past 5 years.

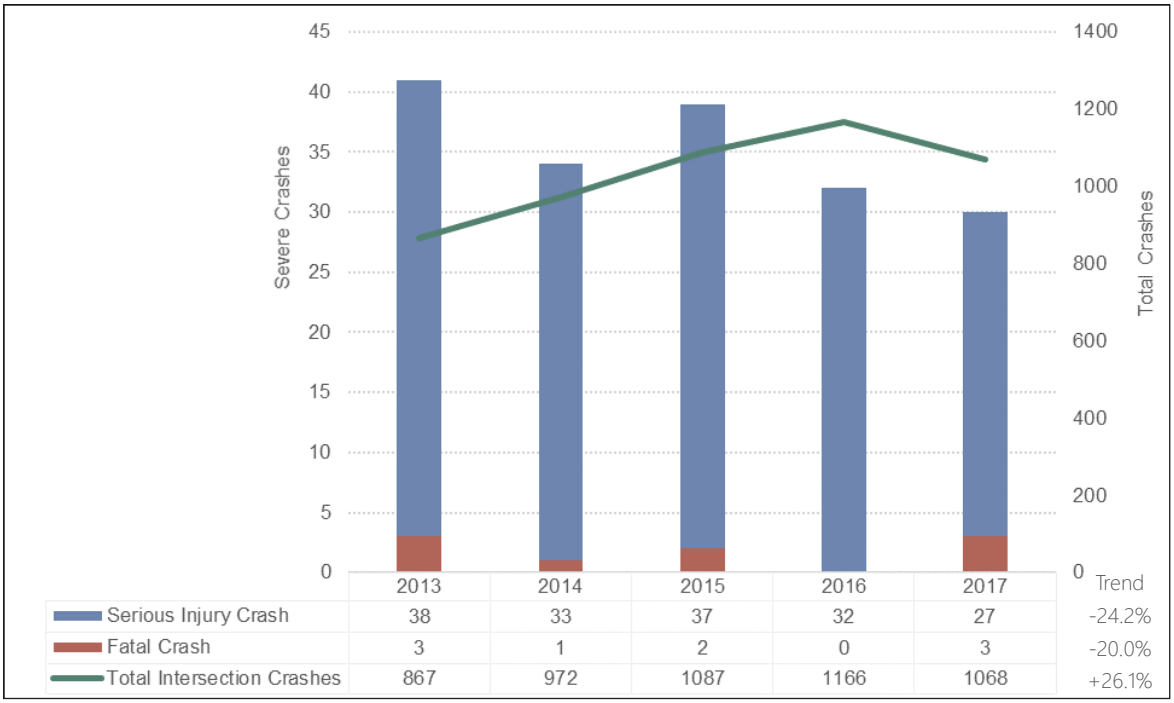
Data Review

The combined number of fatalities and serious injuries resulting from intersection crashes generally decreased between 2013 and 2017 from 41 to 30. Between 2013 and 2016, the total number of intersection crashes increased from 867 to 1,166 before decreasing slightly to 1,068 intersection crashes in 2017. Over the past 5 years, there were 9 fatal crashes and 167 serious injury crashes which resulted in 9 fatalities and 191 serious injuries. **Figure 3.5** shows how the total number of intersection crashes and the number of severe intersection crashes have changed over the past five years.

The majority of intersection crashes involved only 2 vehicles (86 percent). Crashes involving only one vehicle or three or more vehicles each accounted for seven percent of crashes. There was a total of 9,880 drivers, 3,510 passengers, 313 non-motorists, and 44 unknown person types involved in intersection crashes.

The age of the driver in the intersection crash was distributed as follows: under 18 (8 percent); 19-24 (18 percent); 25-40 (29 percent); 41-64 (30 percent); and over 65 (12 percent). The split of male and female drivers was 50 and 47 percent, respectively, with 3 percent unknown.

Figure 3.5: Intersection Crashes



	2013	2014	2015	2016	2017	Trend
Serious Injury Crash	38	33	37	32	27	-24.2%
Fatal Crash	3	1	2	0	3	-20.0%
Total Intersection Crashes	867	972	1087	1166	1068	+26.1%

Intersection crashes were most common during the peak travel hours, 7:00 to 10:00 AM (14 percent), 11:00 AM to 2:00 PM (24 percent), and 4:00 to 7:00 PM (26 percent). Crashes were equally as common during the week days with an average of 17 percent of intersection crashes occurring each day Monday through Friday. A combined 17 percent of intersection crashes occurred on the weekend with 10 percent occurring on Saturday and 7 percent on Sunday.

The majority of intersection crashes occurred on principal arterials (39 percent), local streets (36 percent), or major collectors (15 percent). Similarly, the severe injury intersection crashes were on principal arterials (43 percent), local streets (35 percent), and major collectors (15 percent). Approximately 3 percent of intersection crashes occurred in a rural setting, while 90 percent occurred within Missoula city limits. Of the roadways where the crashes occurred, 58 percent were city owned, 41 percent were state owned, and 1 percent were county or forest service owned. The intersection crashes were plotted spatially based on the coordinates recorded for each crash. **Figure 3.6** shows the density of intersection crashes within the study area based on the spatial data.

Intersection control type was only listed in 34 percent of crashes. Missoula police officers advise that most of the time, when the intersection control field is left blank, the intersection is uncontrolled. Of the crashes where intersection control type was explicitly defined, uncontrolled intersections made up 24 percent of all crashes and 1 percent of severe crashes. Signalized and stop controlled intersection crashes made up 23 and 10 percent of all crashes, and 15 percent and 4 percent of severe crashes, respectively. The remaining crashes were "other" intersection types including railway crossings, yield controlled, person (flagger) controlled, and intersections with pavement markings only.

Intersection crashes resulted in the following top 5 crash types: rear end (38 percent); right angle (27 percent); sideswipe (10 percent); left turn (8 percent); and fixed object (5 percent). Severe intersection crashes resulted in the following top 5 crash types; right angle (40 percent), rear end (17 percent), left turn (11 percent), bicycle (11 percent), and pedestrian (8 percent). Approximately five percent of intersection crashes involved driver alcohol or drug impairment.

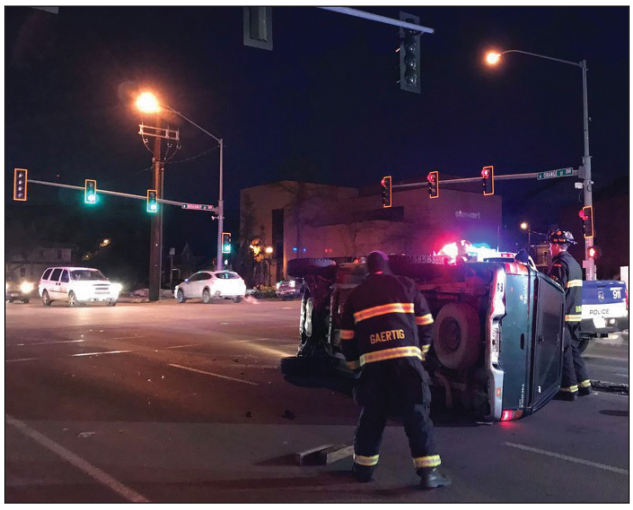
The top 5 contributing factors in intersection crashes were driving in a distracted/inattentive manner (48 percent), failed to yield right-of-way (30 percent), drove in an erratic/reckless manner (9 percent), followed too closely (9 percent), and disregarded traffic signs (7 percent).

Approximately 15 percent of intersection crashes occurred during inclement weather conditions (rain, severe wind, fog, or snow) and 28 percent occurred on inclement road conditions (wet, ice, slush, mud, or snow). The majority of crashes occurred during the daylight (80 percent) with 12 percent and 4 percent occurring under dark unlit and dark lit conditions, respectively.

Crash Trends

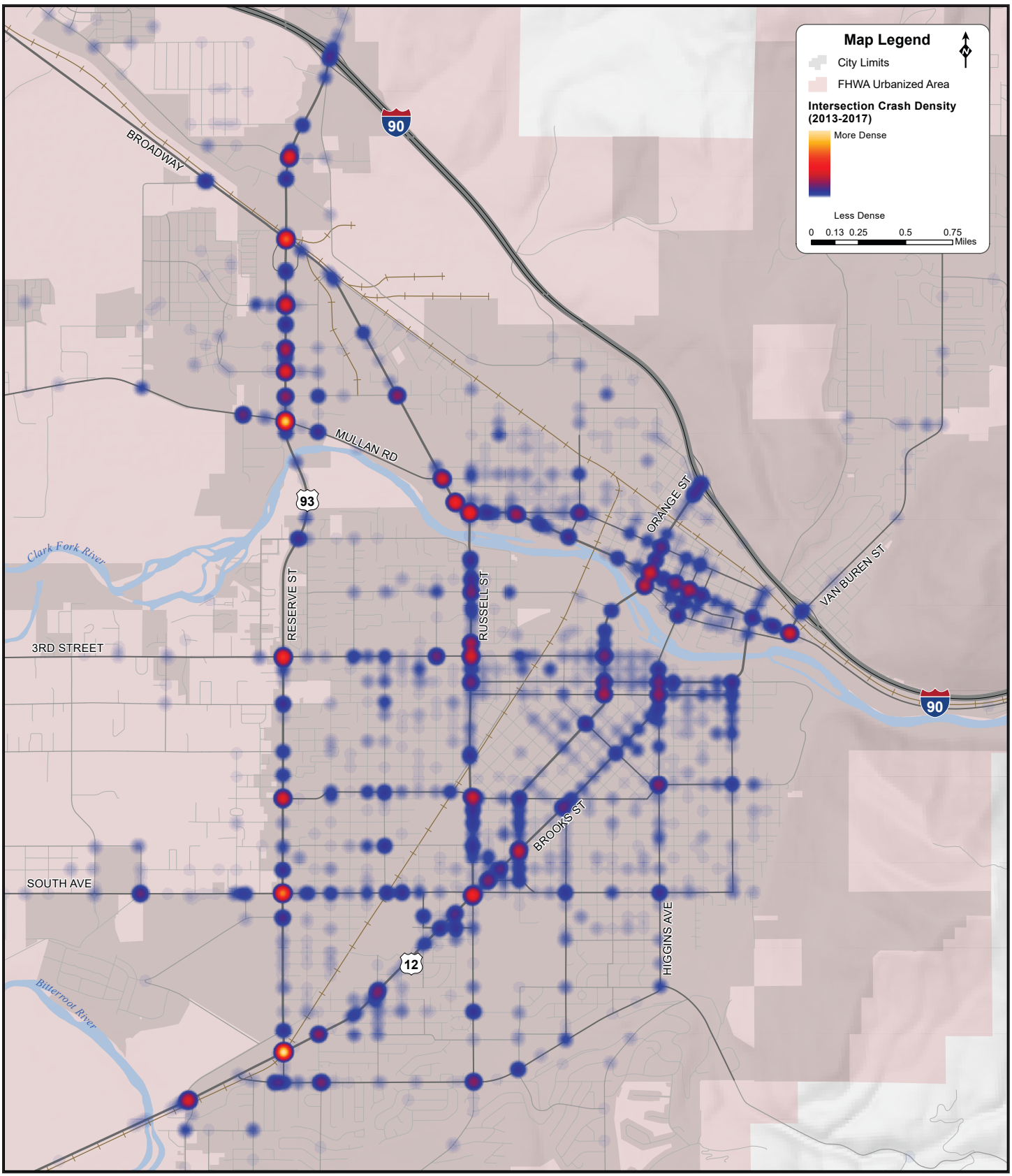
The following intersection crash trends were noted:

- The majority of crashes involved 2 vehicles (86 percent).
- Nearly 60 percent of drivers were age 25-64.
- Crashes were more common on weekdays during the peak travel times (AM, Noon, PM).
- The majority of crashes occurred in an urban setting (97 percent).
- Rear end (38 percent) and right-angle crashes (27 percent) were the most common crash types at intersections. They were also the most common in severe intersection crashes, at 17 and 40 percent, respectively.
- Inclement road (28 percent) and weather conditions (15 percent) were not a common factor in the crashes.
- Inattentive driving (48 percent) and failing to yield (30 percent) were the top driver contributing factors in the crashes.



Over the past 5 years, there were 9 fatalities and 191 serious injuries resulting from intersection crashes.

Figure 3.6: Intersection Crash Density



3.6.2. Non-Motorized Users

Non-motorists in crashes were defined on a person basis. The person data was queried by all "non-motorists" involved crashes between 2013 and 2017. There was a total of 463 non-motorist crashes involving 317 bicyclists and 145 pedestrians. These crashes resulted in 8 fatalities, 77 serious injuries, and 269 minor or possible injuries. Non-motorist crashes accounted for 4 percent of all crashes and 21 percent of all severe crashes within the study area over the past 5 years.

Data Review

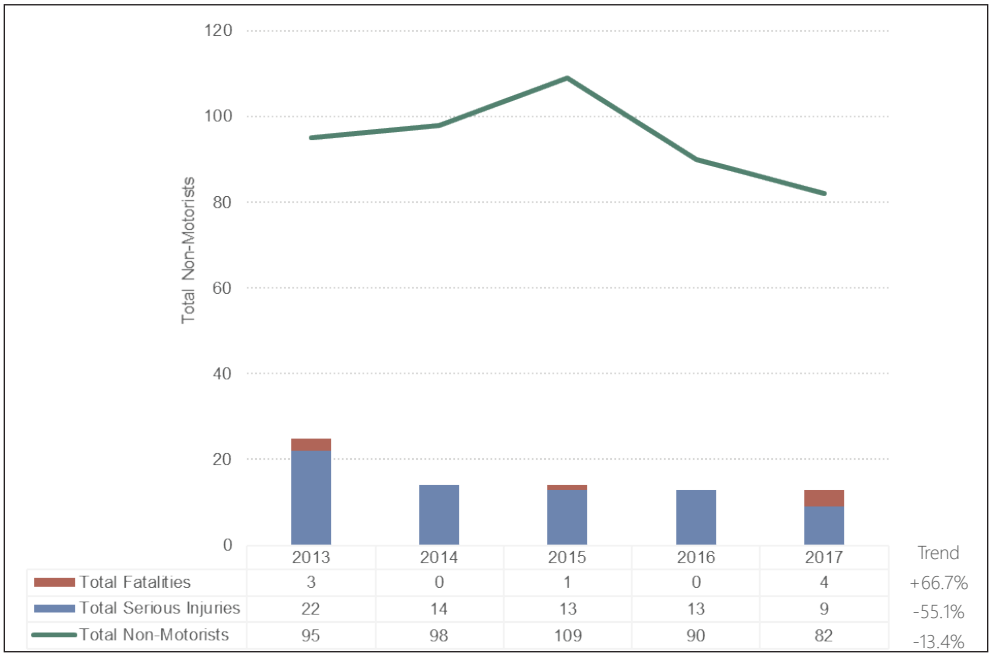
The combined number of non-motorized fatalities and serious injuries resulting from crashes has noticeably decreased between 2013 and 2017, from 25 to 13. Overall, the number of non-motorists involved in crashes increased slightly between 2013 and 2015 and then decreased slightly between 2015 and 2017. Overall the total number of non-motorists involved in crashes decreased from 95 to 82 between 2013 and 2017. Over the past five years, all eight non-motorized fatalities were pedestrians. Of the serious injuries, 25 were pedestrians and 49 were bicyclists. **Figure 3.7** shows how the total number of non-motorists involved in crashes and the number of non-motorist severe injuries have changed over the past five years.

Over the past 5 years, there were 8 pedestrian fatalities, 25 pedestrian serious injuries, and 49 bicyclist serious injuries.

Almost all non-motorist involved crashes involved a single non-motorist (98 percent). About 67 percent of non-motorist involved crashes involved 2 vehicles (in addition to non-motorists) while 30 percent involved only 1 vehicle, and 2 percent involved 3 or more vehicles.

There were more bicyclists (34 percent) in the 25-40 age group than there were pedestrians (23 percent). However, there were more pedestrians in the under 18 and over 65 ages groups (19 and 10 percent, respectively) than there were bicyclists (16 and 2 percent, respectively). There were 19 percent of both bicyclists and pedestrians in the 19-24 age group and 28 and 29 percent of bicyclists and pedestrians, respectively, in the 41-64 age group. There were more male non-motorists in crashes than females, 71 percent of bicyclists and 61 percent of pedestrians were male.

Figure 3.7: Non-Motorists in Crashes



	2013	2014	2015	2016	2017	Trend
Total Fatalities	3	0	1	0	4	+66.7%
Total Serious Injuries	22	14	13	13	9	-55.1%
Total Non-Motorists	95	98	109	90	82	-13.4%

The majority of non-motorist involved crashes occurred on principal arterials (35 percent), local streets (31 percent), or major collectors (21 percent). Similarly, the non-motorists that suffered severe injuries were in crashes on local streets (37 percent), principal arterials (30 percent), and major collectors (18 percent). Only 1 percent of non-motorists were in crashes that occurred in a rural setting while 93 percent occurred within Missoula city limits. Of the roadways where the crashes occurred, 62 percent were city owned, 37 percent were state owned, and 1 percent were county owned. The majority of non-motorist involved crashes occurred at an intersection (50 percent) or were intersection related (16 percent). **Figure 3.8** shows the locations of the non-motorist involved crashes.

In 32 percent of bicyclist involved crashes, a contributing factor was not listed in the crash report. In those crashes where contributing factors were listed, 38 percent had "no contributing action" listed. The other top factors were disregarded traffic signs (nine percent), failed to yield right-of-way (eight percent), wrong side/ wrong way (eight percent), and inattentive/ reckless driving (seven percent). Pedestrian contributing actions are listed in a different field categorized as "non-motorist" contributing action. Up to two contributing actions can be listed in the field. In 61 percent of pedestrian involved crashes, a contributing factor was not listed. In those crashes where contributing factors were listed, 23 percent had "no improper action" listed. The other top factors were dart/dash (12 percent), failed to yield right-of-way (3 percent), in roadway improperly (3 percent), and not visible (1 percent).

Of the vehicles involved in non-motorist crashes, 26 percent did not have a contributing factor listed and 37 percent had "no contributing factor" listed. In those crashes where driver contributing factors were listed, the top factors were failed to yield right-of-way (41 percent), drove in an inattentive/reckless manner (29 percent), improper turn (2 percent), failed to keep in proper lane (2 percent), and disregarded traffic sign (1 percent).

Non-motorist crashes can be coded as "bicycle" or "pedestrian" crash types, or they can be coded as the typical crash types such as rear end, sideswipe, and right angle. The majority are coded as "bicycle" or "pedestrian" crashes, although about one third list another crash type. When a person on a bicycle is on a sidewalk or marked crosswalk, they are considered pedestrians and the crash type is coded as such. Bicyclist involved crashes resulted in the following top 5 crash types: bicycle (58 percent); right angle (25 percent); sideswipe (4 percent); other (4 percent); and left-turn (3 percent). Pedestrian involved crashes resulted in the following top 5 crash types: pedestrian (89 percent); right angle (6 percent); other (2 percent); rear end (1 percent); and left-turn (1 percent).

The majority of non-motorist crashes occurred during the daylight (79 percent) with 13 percent and 5 percent occurring under dark unlit and dark lit conditions, respectively. Approximately 16 percent of non-motorist crashes occurred under inclement weather conditions and approximately 20 percent of non-motorist crashes occurred with inclement road conditions. Bicyclists were less likely than pedestrians to be involved in crashes under inclement weather or road conditions.

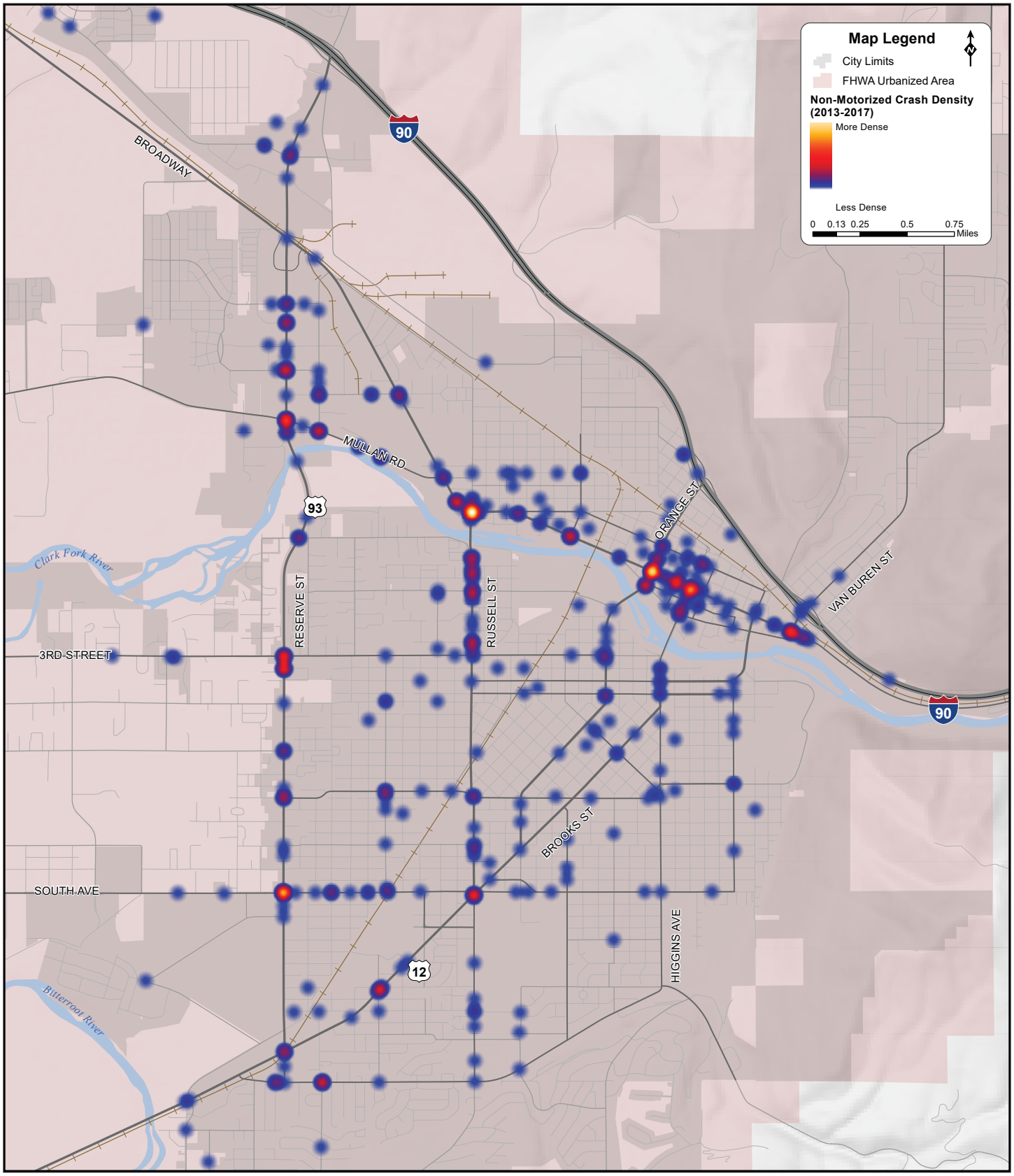
Of the 317 bicyclists involved in crashes 14 (4 percent) were impaired at the time of the crash. Of the 145 pedestrians, 8 (6 percent) were impaired, and of the 60 motorists involved in a non-motorist crash, 35 (3 percent) were impaired.

Crash Trends

The following non-motorist involved crash trends were noted:

- Non-motorist crashes accounted for 4 percent of all crashes and 21 percent of all severe crashes within the study area.
- Almost all non-motorist involved crashes involved 1 non-motorist (98 percent).
- There were more bicyclists (34 percent) in the 25-40 age group than there were pedestrians (23 percent). However, there were more pedestrians in the under 18 and over 65 ages groups (19 and 10 percent, respectively) than there were bicyclists (16 and 2 percent, respectively).
- Approximately 93 percent of non-motorist crashes occurred within city limits.
- The majority of non-motorist crashes occurred at an intersection (50 percent) or were intersection related (16 percent).
- The majority of non-motorist crashes occurred during the daylight (79 percent).
- Bicyclists were less likely than pedestrians to be involved in crashes under inclement weather or road conditions.
- Overall, four percent of bicyclists, six percent of pedestrians, and three percent of motorists were impaired at the time of the crash.
- The non-motorists that suffered severe injuries were in crashes primarily on local streets (37 percent) and principal arterials (30 percent).

Figure 3.8: Non-Motorized Crash Density



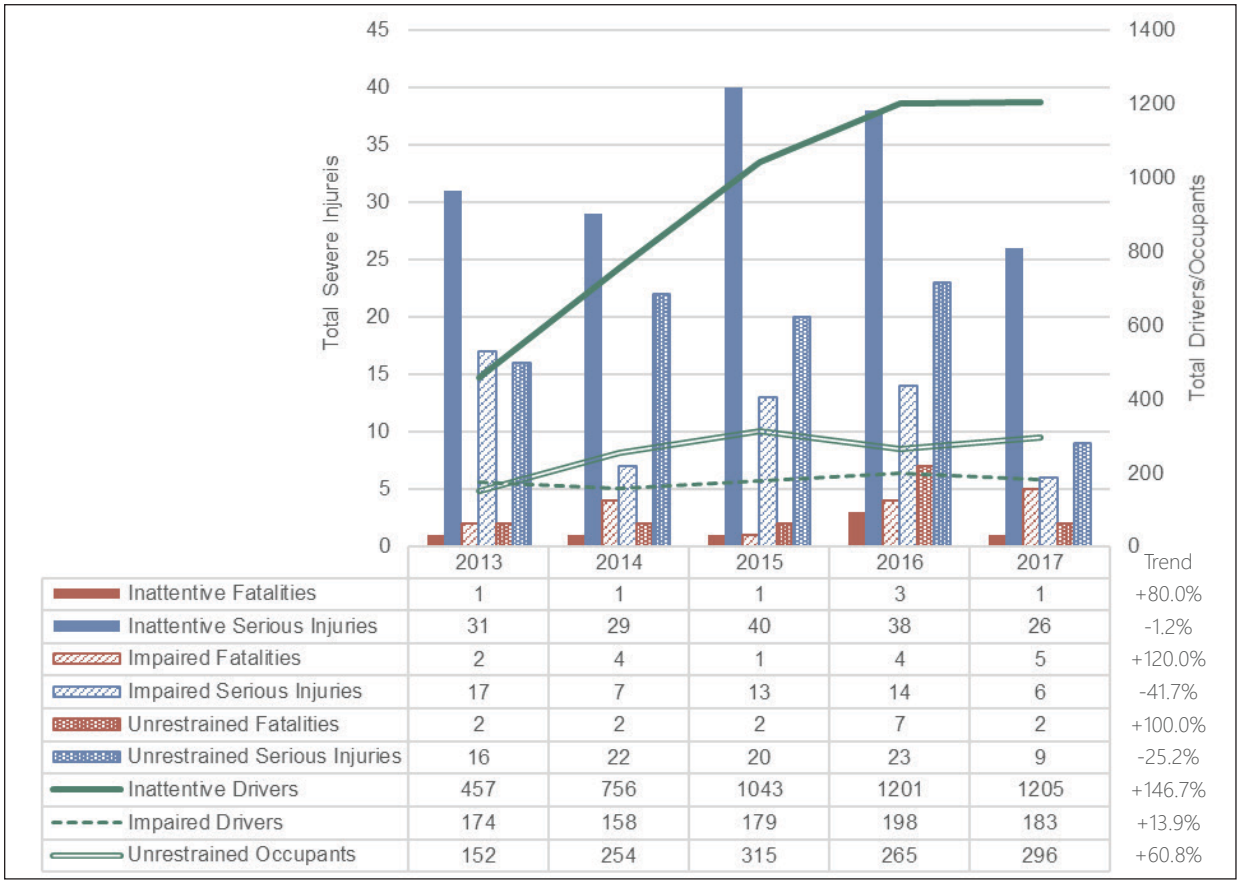
3.6.3. High Risk Behavior

The total number of inattentive drivers involved in crashes has increased substantially between 2013 and 2017. The number of resulting severe injuries has remained more steady, however. The total number of impaired drivers has remained fairly consistent between 2013 and 2017 with a slight overall increase. Overall, the number of combined fatalities and serious injuries have decreased although the number of fatalities has increased. The total number of unrestrained occupants in crashes nearly doubled between 2013 and 2017. The combined number of fatalities and serious injuries remained somewhat consistent between 2013 and 2017 with a slight decrease overall. **Figure 3.9** shows how the total number of inattentive driver, impaired driver, and unrestrained occupant crashes and severe injuries have changed over the past five years.

3.6.3.1. Impaired Drivers

Impaired driver crashes were defined on a person basis. The data reports whether MDT determined if the crash involved an impaired driver as well as the reported impairment of the occupant or non-motorist. State of impairment for passengers and non-motorists is not always reported by the responding officer. The person data was queried by all persons involved in an impaired driver crash between 2013 and 2017. To determine which of the people involved were impaired the field that lists the impairment description was filtered to include only those records where "impaired-alcohol", "impaired-drugs", "impaired-alcohol/drugs", and "impaired" were listed. There was a total of 901 impaired driver crashes involving 892 impaired drivers, 13 impaired non-motorists, and 1,707 people overall. These crashes resulted in 16 fatalities, 57 serious injuries, and 384 minor or possible injuries. Impaired driver crashes accounted for 8 percent of all crashes and 16 percent of all severe crashes within the study area over the past 5 years.

Figure 3.9: High Risk Behavior Crashes



	2013	2014	2015	2016	2017	Trend
Inattentive Fatalities	1	1	1	3	1	+80.0%
Inattentive Serious Injuries	31	29	40	38	26	-1.2%
Impaired Fatalities	2	4	1	4	5	+120.0%
Impaired Serious Injuries	17	7	13	14	6	-41.7%
Unrestrained Fatalities	2	2	2	7	2	+100.0%
Unrestrained Serious Injuries	16	22	20	23	9	-25.2%
Inattentive Drivers	457	756	1043	1201	1205	+146.7%
Impaired Drivers	174	158	179	198	183	+13.9%
Unrestrained Occupants	152	254	315	265	296	+60.8%

Nearly half of all impaired driver crashes involved a single vehicle (47 percent), with 44 percent involving 2 vehicles, and 9 percent involving 3 or more vehicles.

Impaired drivers were primarily between the ages of 25 and 40 (42 percent). Older (65 and over) drivers accounted for 4 percent of impaired drivers. Young drivers (age 14-24) accounted for 30 percent of impaired drivers. Drivers under the legal age limit for alcohol consumption who can lawfully drive (age 14-20) accounted for 13 percent of all impaired drivers and 31 percent of impaired young drivers. Drivers ages 41-64 accounted for 24 percent of impaired drivers. Impaired drivers were primarily male (66 percent) while 33 percent were female.

Slightly more impaired driver crashes occurred on the weekend (Friday, Saturday, and Sunday) than during the week. The most crashes occurred on Saturdays (19 percent), Fridays (18 percent), and Sundays (16 percent). An average of 12 percent of crashes occurred on each of the other days of the week Monday through Thursday. Approximately 38 percent of the crashes occurred between the hours of 10:00 PM and 3:00 AM, 28 percent of crashes occurred between 5:00 PM and 10:00 PM, and 34 percent occurred between 3:00 AM and 5:00 PM.

The majority of impaired driver crashes occurred on local streets (37 percent), principal arterials (26 percent), or major collectors (22 percent). The severe injuries caused by impaired drivers were in crashes on principal arterials (30 percent), local streets (22 percent), and major collectors (19 percent). Approximately 19 percent of impaired driver crashes occurred in a rural setting while 62 percent occurred within Missoula city limits (20 percent of crashes occurred in the urban area but outside of the city limits). Of the roadways where the impaired driver crashes occurred, 37 percent were city owned, 53 percent were state owned, 8 percent were county owned, and 3 percent were forest service owned. The majority of impaired driver crashes occurred at a non-junction (63 percent) while 32 percent occurred at an intersection or were intersection related.

Impaired driver crashes resulted in the following top 5 crash types: fixed object (31 percent); rear end (20 percent); sideswipe (12 percent); roll over (10 percent); and right angle (9 percent). Severe impaired driver crashes resulted in the following top 5 crash types: roll over (28 percent); right angle (15 percent); head on (15 percent); fixed object (13 percent); and rear end (8 percent).

The person-based data reports driver behavior, or contributing actions, at the time of the crash. Up to four behaviors can be listed for each driver. The contributing actions were analyzed to understand impaired driver behavior in crashes. The top 5 contributing factors for impaired drivers were driving in a distracted/inattentive manner (56 percent), drove in an erratic/reckless manner (29 percent), ran off roadway (27 percent), drove too fast for conditions (15 percent), and failed to keep in proper lane (10 percent).

Seatbelt use was reported for 73 percent of impaired drivers with 52 percent reported as unknown. Of those records where seatbelt use was reported, nine percent of impaired drivers were not properly restrained (lap or shoulder belt only, none used, restraint used improperly). In 50 percent of impaired driver fatalities the driver was not wearing a seatbelt.

Crash Trends

The following impaired driver crash trends were noted:

- Impaired drivers were primarily between the ages of 25 and 40 (42 percent) and also tended to be male (66 percent).
- The majority of impaired drivers crashed later at night and on the weekends.
- Compared to all crashes, a larger percentage of impaired drivers crashed in a rural setting (18 percent).
- The most common impaired driver crash types were fixed object (31 percent) and rear end (20 percent) crashes.
- The top contributing factors in impaired driver crashes were inattentive driving (56 percent) and erratic/reckless driving (29 percent).
- Of those where seatbelt use was reported, nine percent were not properly restrained at the time of the crash.
- Impaired driver crashes accounted for 8 percent of all crashes and 16 percent of all severe crashes within the study area.

The Missoula County DUI Task Force promotes a healthier and safer environment for residents by reducing the number of alcohol-related crashes through enforcement and education.

3.6.3.2. Inattentive Drivers

Inattentive driver crashes were defined on a person basis. A query was performed for each driver and non-motorist involved in a crash between 2013 and 2017, identifying all drivers and non-motorists who had "drove in a distracted, inattentive or careless manner" listed as one of the four driver actions at the time of the crash. There was a total of 4,608 inattentive driver crashes involving 4,644 inattentive drivers, 18 inattentive non-motorists and 11,488 people overall. The crashes resulted in 7 fatalities, 163 serious injuries, and 1,432 minor or possible injuries. Inattentive driver crashes accounted for 41 percent of all crashes and 38 percent of all severe crashes within the study area over the past 5 years.

Approximately 75 percent of all inattentive driver crashes involved 2 vehicles, while 16 percent involved a single vehicle, and 9 percent involved 3 or more vehicles.

The age of the inattentive driver was similarly distributed to the age distribution of all drivers involved in crashes: under 18 (13 percent); 19-24 (23 percent); 25-40 (30 percent); 41-64 (24 percent); and over 65 (10 percent). Males made up 52 percent of inattentive drivers while females made up 42 percent (6 percent were unknown). In 82 percent of inattentive driver crash records, a source of distraction was not listed (in 14 percent of crash records, the driver was inattentive or careless). The inattentive drivers were distracted by a number of things and driver distraction is typically self-reported. Where source of driver distraction was reported, drivers were distracted by a passenger (48 percent), electronic communication device (23 percent), external distraction (20 percent), and another electronic device, i.e. GPS, DVD player, etc. (10 percent).

The majority of inattentive driver crashes occurred on principal arterials (40 percent), local streets (32 percent), or major collectors (14 percent). Similarly, the severe injuries caused by inattentive drivers were on principal arterials (33 percent), local streets (25 percent), and major collectors (17 percent). Only 7 percent of inattentive drivers crashed in a rural setting, while 81 percent crashed within Missoula city limits. Of the roadways where the inattentive driver crashes occurred, 50 percent were city owned, 46 percent were state owned and 4 percent were county or forest service owned. Half of the inattentive driver involved crashes occurred at a non-junction (50 percent) while 45 percent occurred at an intersection or were intersection related.

Inattentive driver involved crashes resulted in the following top 5 crash types: rear end (51 percent); sideswipe (12 percent); fixed object (11 percent); right angle (9 percent); and roll over (3 percent). Severe intersection crashes resulted in the following top 5 crash types: rear end (34 percent); right angle (16 percent); roll over (12 percent); bicycle (9 percent); and head on (8 percent).

Approximately nine percent of inattentive drivers were impaired. Seatbelt use was somewhat underreported, with only 61 percent of inattentive drivers having seat belt use reported. Of those records where seatbelt use was reported, four percent of drivers were not properly restrained (lap or shoulder belt only, none used, restraint used improperly). In 2 fatalities and 16 serious injuries, the inattentive driver was not wearing a seatbelt.

Crash Trends

The following inattentive driver crash trends were noted:

- Where driver distraction was listed, the most common distraction was a passenger (48 percent).
- The majority of inattentive driver crashes occurred on roadways functionally classified as principal arterials (40 percent) and local streets (32 percent) and were within the Missoula city limits (81 percent).
- Inattentive driving crashes most often resulted in a rear end crash (51 percent).
- The majority of crashes occurred on city (50 percent) or state-owned (46 percent) roadways.
- Approximately nine percent of inattentive drivers were impaired.
- Of those where seatbelt use was reported, 97 percent were properly restrained at the time of the crash.

On May 25, 2016 Missoula strengthened city laws regarding handheld phone use while driving.

3.6.3.3. Unrestrained Occupants

Unrestrained occupants in crashes were also defined on a person basis. The person data was queried by all persons involved crash between 2013 and 2017 who were unrestrained. "Unrestrained" included use of a shoulder or lap belt only, improperly used restraint, or no restrained used. There was a total of 872 unrestrained occupant crashes involving 780 unrestrained drivers and 487 unrestrained passengers. These crashes resulted in 15 fatalities, 90 serious injuries, and 446 minor or possible injuries to the unrestrained occupants. Unrestrained occupant crashes accounted for 8 percent of all crashes and 21 percent of all severe crashes within the study area over the past 5 years.

Unrestrained occupants tended to be younger. The occupants age was listed as under 18 (26 percent), age 19-24 (20 percent), age 25-40 (25 percent), age 41-64 (20 percent), and age 65 and older (9 percent). The gender of unrestrained occupants was more evenly split between male (53 percent) and female (46 percent), 1 percent were unknown.

In the majority of crashes there was only 1 unrestrained occupant (74 percent). In 19 percent of crashes there were 2 unrestrained occupants with the remaining 6 percent having 3 or more unrestrained occupants. One crash involved a bus which had 38 unrestrained children on it.

The majority of unrestrained occupants were involved in crashes on principal arterials (39 percent), local streets (31 percent), or major collectors (15 percent). Similarly, the unrestrained occupants who suffered severe injuries were involved in crashes that occurred on principal arterials (41 percent), local streets (27 percent), and interstates (14 percent). Approximately 13 percent of unrestrained occupants were involved in crashes that occurred in a rural setting while 74 percent occurred within Missoula city limits. Of the roadways where the crashes occurred, 47 percent were state owned, 45 percent were city owned, 5 percent were county owned, and 2 percent were forest service or Indian/tribal owned.

Approximately 11 percent of unrestrained occupants in crashes were impaired, 74 percent of impaired occupants were drivers and 25 percent were passengers (1 percent were unknown).

Of those crash records where airbag deployment was reported, the airbag was not deployed in 75 percent of crashes. In 17 percent of crashes where the airbags were deployed, the unrestrained occupant suffered severe injuries. Of all crashes where the airbags were deployed, seven percent of occupants suffered severe injuries.

In five percent of unrestrained occupant crashes, ejection from the vehicle was reported (totally or partially. Of those who were totally or partially ejected, 36 percent suffered severe injuries.

Crash Trends

The following unrestrained occupant crash trends were noted:

- Unrestrained occupants tended to be younger with 27 percent being under the age of 18 and 20 percent between the ages of 19 and 24.
- The majority of crashes involved only one unrestrained occupant (74 percent).
- Approximately 11 percent of unrestrained occupants in crashes were impaired at the time of the crash (74 percent were drivers and 25 percent were passengers).
- The majority of severe unrestrained occupant crashes occurred on roadways functionally classified as principal arterials (41 percent) and local streets (27 percent).
- In 17 percent of crashes where the airbags deployed, the unrestrained occupant suffered severe injuries.
- Of those unrestrained occupants who were totally or partially ejected, 36 percent suffered severe injuries.
- Unrestrained occupant crashes accounted for 8 percent of all crashes and 21 percent of all severe crashes within the study area.

MISSOULA/GRANITE COUNTY COALITION
BUCKLE UP MONTANA

The Missoula/Granite County Coalition of BuckleUp Montana is one of four coalitions in the state. The coalition aims to increase occupant protection rates and decrease severe injuries as a result of not wearing a seatbelt.

4.0. Safety Strategies

This chapter includes an inventory of the current safety activities within the Missoula area. These are a combination of existing activities as well as activities that were an outcome of the completed 2013 safety strategies. This chapter also includes recommended safety strategies identified by the TSAC and Community Safety Summit participants to be carried out over the next five years. Final strategies and activities are considered practical and implementable in the Missoula area to decrease serious and fatal crashes.

Recognizing identified crash trends and safety concerns, a series of strategies were developed to help address the CTSP's emphasis areas.

4.1. Current Safety Activities

Tables 4.1 through **4.3** detail the current safety activities used by Missoula and the TSAC partners as they work to decrease severe injuries in the three identified emphasis areas. These activities include established and ongoing programs, organizations, campaigns, policies, and methods. Other countermeasures, such as infrastructure improvements, roadside enhancements, traffic calming, increased or focused enforcement, training, improved emergency services, and safety management tasks which may be in use in Missoula but are not specifically established programs have not been included.

After a review of the crash data, public comments, and current safety activities, various gaps in safety strategies were revealed. These gaps present opportunities to expand upon current strategies or devise new approaches to address the contributing factors in crashes. Refer to **Appendix E** for more information regarding the gap analysis.

Intersection Crashes

A review of the crash data indicates that right angle and rear end crashes are the most common intersection crash types. These crashes may be caused by a variety of driver behaviors. Crash trends and public input indicate that failure to yield right of way, running red lights, and inexperienced young drivers have contributed to intersection crashes in the Missoula area. There are a variety of engineering, education, and enforcement strategies that can be employed to help address these safety issues. Potential activities include providing dedicated turn lanes, enforcing speed limits near intersections, or educational campaigns (Yield to Non-Motorists, Use Your Turn Signal, Slow Down, etc.).

Non-Motorized Users

Some of the factors contributing to crashes involving non-motorized users include poor visibility, improper behavior by motorists and non-motorists, absence of dedicated pedestrian or bicycle facilities, and inadequate accommodations at intersections. To help address these issues, Missoula might consider engineering improvements including traffic calming, pedestrian signals, lighting at intersections, or access management. Educational campaigns, in addition to those already in use, can also prove helpful. The gap analysis revealed that more education on how to safely interact with motorists/non-motorists is needed. Enforcement of proper behavior could also be helpful.

High Risk Behavior

Buckle Up Montana and the DUI Task Force have many programs in place to address impaired driver and unrestrained occupant crashes. Efforts to decrease inattentive driver crashes could be increased. Short term, high visibility enforcement of high risk behaviors especially in urban areas during peak travel times and on nights and weekends can help discourage these behaviors. In general, laws and consequences regarding high risk behavior related offenses could also be strengthened.

Table 4.1: Intersection Crashes - Current Safety Activities

Activity	Description	4 E's of Safety
Traffic Signals	Manual on Uniform Traffic Control Devices (MUTCD) compliant signals	Engineering
Complete Streets	2009 Resolution/2016 Update	Engineering
Road Safety Audits	Comprehensive review of high risk locations	Engineering
NACTO Design Guide	National Association of City Transportation Officials (NACTO) design guide used in Missoula	Engineering
AARP Defensive Driving Training	Driver's education (online and classroom)	Education
Journeys from Home	K-8 traffic safety, used in PE at elementary and middle schools	Education
Missoula in Motion	Transportation options program which emphasizes alternatives modes to decrease congestion/traffic	Education
City Traffic Calming Program	Implements traffic calming techniques in response to neighborhood requests	Engineering
Traffic Services	Responsible for application and maintenance of street and traffic signs, roadway striping, crosswalks, road messages, and curb markings; sidewalk concrete grinding program; traffic and pedestrian studies; and snow removal	Engineering

Table 4.2: Non-Motorized Users - Current Safety Activities

Activity	Description	4 E's of Safety
Complete Streets	2009 Resolution/2016 Update	Engineering
Walking Audits	Assessment of the walkability or pedestrian access of a roadway	Engineering/ Education
NACTO Design Guide	Design guide used in Missoula	Engineering
Bike Well	Class for bicyclists	Education
Pedal Missoula	Promotes riding bikes for transportation and casual recreation	Education
Free Cycles	Community bike shop with classes	Education
Youth Cycles	Educational program for school and community groups	Education
Montana & Missoula Bike/Ped Coordinators	Responsible for addressing non-motorized transportation considerations at state and local levels. Conducts education and outreach	Education
Bicycling Ambassadors	Educate, conduct camps, promote bicycling in Missoula (2 ambassadors mid June- early October)	Education
U of M Bicycle Ambassadors	2 funded student positions, educate on bike issues and host events	Education
Missoula in Motion	Transportation options program which emphasizes alternatives modes to decrease congestion/traffic	Education
Local Planning Documents	Missoula Pedestrian & Bicycle Facilities Master Plans, Missoula Active Transportation Plan	Other
Bicycle and Pedestrian Count Program	Performs bicycle and pedestrian counts at various locations throughout Missoula on a regular basis	Other
Associated Students of the University of Montana (ASUM)	Provides education about bike-ped safety to students	Education
Missoula Business Improvement District	Downtown Ambassadors who provide outreach and education about safety for cyclists and pedestrians	Education
City of Missoula Bicycle and Pedestrian Office	Provides outreach, education, and promotion of safe bicycle-pedestrian transportation in the City	Education
Bicycle Benefits Program	Rewards individuals and businesses for their commitment to cleaner air and personal health through cycling. Membership bike helmet stickers entitle the holders to discounts currently available at 16 Missoula businesses	Education
Bike Walk Alliance of Missoula (BWAM)	Promotes cycling and walking for everyday transportation and recreation	Education
City of Missoula Bicycle and Pedestrian Advisory Board	Provides guidance on bike-ped issues for the City of Missoula	Education/ Other
City of Missoula Office of Neighborhoods	Provides safety education and outreach on active living at neighborhood level in Missoula	Education
Missoula Institute for Sustainable Transportation (MIST)	Advocates for safe, equitable, and environmentally sound transportation for all modes in Missoula	Education
Missoula Public Schools - Bike and Ped Safety Program	Bike & pedestrian safety curriculum taught by physical education teachers in all Missoula County elementary schools, to grades K – 5	Education
Missoula Safe Routes to School Program	Provides & advocates for facilities that improve safety for school-bound students	Education
St. Patrick Hospital Bike Helmet Program	Provides bike helmets at low cost through the hospital's injury prevention/ trauma program	Education

Table 4.3: High Risk Behavior - Current Activities

Activity	Description	4 E's of Safety
Buckle Up Montana Coalition	Develop and implement local public information and education strategies, conduct seat belt use surveys, car seat checkup events, provide car seats to those who can't afford them, instructs CPS certification courses, "Respect the Cage", saved by the belt ceremonies, buckle up campaigns for at risk populations, promote seat belt use on campus, provide "We Care – Buckle Up" signs, support "It's Your Choice" mock crash program, support Alive @ 25, support legislation for primary seat belt law	Education
Saved by the Belt Awards	Law enforcement officers nominate crash survivors who were "saved" by wearing their seatbelt	Education/ Enforcement
Car Seat Trainings	Child Passenger Safety (CPS) certification course	Education
Seatbelt Use Policy Promotion	Encourage local businesses to adopt seat belt use policies (seatbelt use by employees)	Education
Fines	Non-use of a seatbelt = $20 fine	Enforcement
Home Safe Missoula	Non-profit safe ride service via Yellow Cab and Green Taxi	Other
U-Dash Transit	University of Montana student-run transit service, fare free and open to the public. Includes a weekend late night downtown route. Only operates during the academic year	Other
Mountain Line Transit	Public transportation service, fare free	Other
Uber/Lyft	On demand ride services	Other
Tipsy Tow	Program during New Years to transport impaired drivers and tow car	Other
Responsible Sales and Service Training / Montana Tavern Association	Required training for people who serve alcohol	Education
Missoula Underage Substance Abuse Prevention	Conducts education on safe practices. Has a parent guide distributed to school parents	Education
It's Your Choice Mock DUI	Annual mock Driving Under the Influence (DUI) crash event attended by all high school juniors	Education
Missoula City-County Special Traffic Enforcement Program (STEP) / Missoula County DUI Task Force	Annual $5,000 contracts to police departments to support DUI patrols, bar checks, key party patrol, alcohol compliance check, and purchase equipment for DUI enforcement	Enforcement
Drug Recognition Expert	Trained officers conduct enforcement	Education/ Enforcement
First Night Missoula	NYE alcohol free community celebration	Other
"Focus Inward" growth scenario	Long term strategy to reduce long-distance driving required to entertainment venues	Other
Curry Health Center	University of Montana Curry Health Center conducts national Collegiate Survey annual which evaluates DUI trends among college students	Education
Cell phones while driving law	In 2016, the Missoula City Council passed a law that banned all cell phone use while driving (also applies to bicyclists). There was already a law (2013) that banned texting and talking while driving. The law that was recently passed now forbid all cell phone use. However, you can still use hands-free devices while you are driving.	Enforcement
Choices Matter Missoula	Distracted driving campaign for teens through Missoula Underage Substance Abuse Program	Education
Montana One Text or Call Could Wreck It All	Educational campaign conducted at the statewide level to reduce cell phone usage by drivers	Education
Montana Ride Like a Friend	Educational campaign conducted at the statewide level to reduce driver distraction by passengers	Education
Safe Kids Missoula	Implements evidence-based programs such as car seat checkups, safety workshops, and more	Education
Missoula Responsibility, Opportunities, Accountability for Drivers (ROAD) Court	Missoula DUI court designed to facilitate the rehabilitation of adults accused or convicted of alcohol and drug-related traffic offenses	Education/ Enforcement

4.2. Recommended Safety Strategies

A thorough data review was performed for each of the 2018 emphasis areas. That information, combined with feedback from the public, stakeholders, and research, helped identify gaps in Missoula's approach to addressing each emphasis area. This information also helped highlight potential means to improve safety and decrease severe crashes on Missoula's roadways. Taking into account crash trends and gaps in the current safety approach, members of the TSAC and participants of the Community Safety Summit identified strategies which support the vision and goals established for the CTSP and address the safety concerns within each emphasis area. The following details the identified strategies and action steps. The action plan matrices can also be viewed in **Appendix F**. The strategies are intended to be implementable in the Missoula area to decrease serious and fatal crashes over the next five years.

For each of the recommended strategies the following elements are discussed: the purpose of the strategy as it relates to the emphasis area; actions for completing the strategy; funding needs and various resources to support completion; and implementation partners to assist in carrying out the strategy. Each of these elements are further defined as follows.

Strategy

A strategy is an approach to improving safety within a given emphasis area. Implementation of the strategies will involve a series of more specific activities along with coordination from a variety of partners. Strategies consider the observed crash trends to target the most significant issues or most vulnerable user groups associated with the emphasis area. The strategies are intended to be implementable over the five-year planning horizon of this plan but will require cooperative effort between implementation partners and a commitment of resources by various agencies. The following are defined for each strategy, as appropriate:

Purpose

The purpose provides context as to why a strategy is needed or is beneficial in Missoula to address the specific emphasis area. The purpose also provides insight into how the strategy will improve safety in the community.

Actions

Actions are specific steps for implementing the strategy over time. These actions are smaller steps that will help emphasis area teams and partnering agencies implement the strategies over time. Actions other than those listed in the following sections may also be implemented as emphasis area teams see fit.

Implementation Stakeholders/Partners

A variety of agencies and stakeholders may have the resources, jurisdiction, or special expertise necessary to accomplish the recommended strategies. As such, successful implementation of the strategies may require cooperation and effort from multiple entities. Depending on the strategies, roles and responsibilities for carrying out the actions may fall to a variety of entities, including various state or federal agencies, local jurisdictions, stakeholders, and the public.

Resources

This information defines resources that may be of use when implementing a recommended strategy. Resources to support implementation include: national programs providing technical support; educational and promotional campaigns; and published guidebooks, manuals, policies that may aid infrastructure design to improve safety.

Captain Jim Kitchin, Montana Highway Patrol officer, honors a family whose lives were saved by their seatbelts by presenting them with a Saved By the Belt Award.

4.2.1. Intersection Crashes

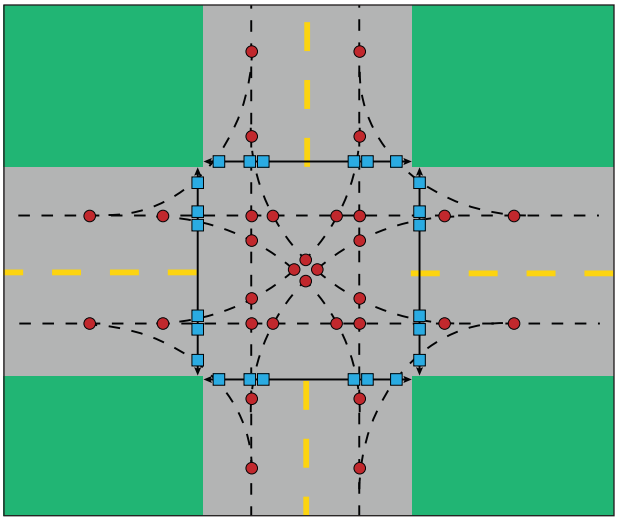
Intersections are points where two or more roads intersect. People – in cars, on bikes, or on foot – cross paths as they travel through or turn from one road to another. The points where different paths cross, separate, or join are known as conflict points, and these are always present at intersections. It is not surprising that the majority of crashes within the Missoula MPA occurred at intersections.

There are many types of intersections in Missoula including signalized, stop-controlled, roundabouts, and uncontrolled intersections. Intersection crashes can be caused by a variety of driver behaviors such as obeying traffic signals and signs, properly judging gaps when executing turns, traveling at appropriate speeds, and making proper driving maneuvers around other drivers. Education and outreach activities can help change driver behavior and reduce crashes. Although proper driver behavior is an important factor in reducing crashes, a variety of engineering treatments can also help to improve safety for roadway users. Engineering strategies to address intersection safety include ensuring visibility and adequate sight distance, clear signing and pavement markings, appropriate signal timing, intersection lighting, dedicated turn lanes, and protected turning movements. Law enforcement can also prove effective in ensuring drivers obey traffic signals, signs and other laws.

Intersection safety can be improved by a variety of low-cost improvements such as signing, pavement markings, and signal retiming. Other improvements, such as infrastructure upgrades or full reconstruction, may be more expensive and require a longer implementation time frame.

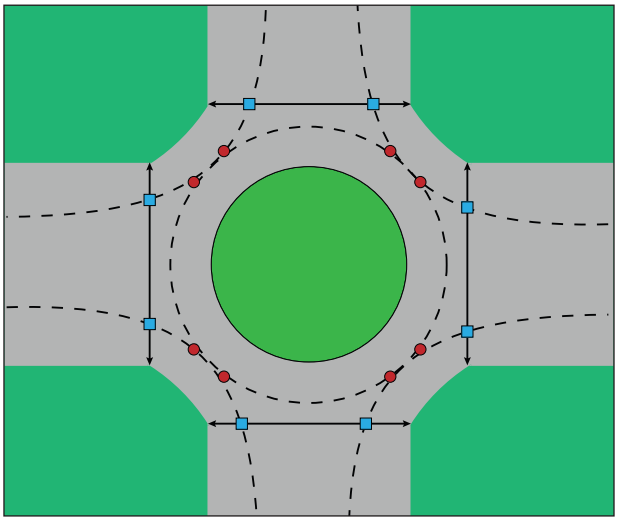
Missoula has already made great progress in addressing intersection safety through implementation of the previous CTSP. This is seen by the overall decrease in severe injuries caused by intersection crashes. However, the total number of crashes has increased over the past five years. The following recommended strategies aim to reverse this trend.

Standard Intersection



24 Pedestrian Conflict Points
32 Vehicle Conflict Points

Roundabout



8 Pedestrian Conflict Points
8 Vehicle Conflict Points

Roundabouts reduce the likelihood and severity of intersection crashes by reducing the number of conflict points and slowing travel speeds. Missoula is working on a Roundabout Policy.

Strategy 1: *Improve safety at intersections with a high rate of crashes and/or severe injuries through appropriate infrastructure improvements based on best practices.*

Implementation Stakeholders/ Partners:

- City of Missoula and Missoula County Public Works Departments
- Missoula City Council
- Missoula Board of County Commissioners
- Transportation Technical Advisory Committee (TTAC)
- Transportation Policy Coordinating Committee (TPCC)
- MDT
- City of Missoula Development Services
- Missoula Police Department, Missoula County Sheriff's Department, Montana Highway Patrol (Law Enforcement)

Resources:

- MUTCD
- Missoula LRTP
- National Cooperative Highway Research Program (NCHRP) Guide for Reducing Collisions at Signalized Intersections
- NHTSA Countermeasures That Work
- FHWA Proven Safety Countermeasures
- NACTO Design Guide
- AASHTO Policy on Geometric Design of Highways and Streets

Purpose: Nearly half of all crashes and all severe crashes in the Missoula area occurred at intersections. Conflict is inherent at intersections because the paths of users (motorists and non-motorists) often cross. There are many engineering solutions that can be implemented to aid in navigation of the intersection so drivers can make safe decisions such as looking for non-motorists, selecting the appropriate lane, and executing controlled turning movements. Infrastructure improvements may include clear signing and pavement markings, appropriate signal timing, intersection lighting, dedicated turn lanes, and protected turning movements.

Actions:

1. Conduct local training on Road Safety Audits (RSA) and develop a program to conduct annual audits.
2. Evaluate and implement improvements, where appropriate, at locations where there is a history of wrong-way driving.
3. Evaluate intersections with safety concerns identified in the Missoula's LRTP.
4. Update intersection signing as necessary to include advanced warning, signing to improve visibility, way finding, and advanced street name signs.
5. Support the complete construction of curb and sidewalk system, which enables designation of no-parking zones near intersections.
6. Pursue traffic calming strategies at intersections where appropriate.
7. Consider use of "No Right on Red" prohibitions at signalized intersections where high volumes of pedestrians and bicyclists are present.
8. Consider leading pedestrian intervals, automatic pedestrian phases, and/or non-motorized radar detection as appropriate.
9. Identify intersections with a high frequency of nighttime crashes and poor lighting and evaluate the need for new or upgraded intersection lighting.
10. Consider use of dedicated right- and left- turn lanes and/or protected turn phasing at intersections with a history of turn-related crashes.
11. Update signal timing as necessary to include properly timed yellow intervals, protected turn phasing, all-red clearance intervals, etc.

Strategy 2: *Conduct education campaigns on safe driving practices with a focus on intersection safety.*

Implementation Stakeholders/ Partners:

- Missoula County Public Schools & Driver Education Instructors
- University of Montana
- Law Enforcement
- EMS
- Missoula Bicycle and Pedestrian Program Manager
- Montana Statewide Bicycle and Pedestrian Coordinator
- Chamber of Commerce/Local Businesses

Resources:

- AARP Defensive Driving Course
- MDT Share the Road Campaign
- Pedestrian and Bicycle Information Center
- Montana Code Annotated
- Missoula Municipal Code

Purpose: Although engineering treatments can help improve safety at intersections, proper driver behavior is an important factor in reducing crashes. Intersection crashes can be caused by a variety of driver behaviors such as disregarding traffic signals and signs, improperly judging gaps when executing turns, traveling at high speeds, and making hurried and unpredictable driving maneuvers around other drivers. Education and outreach activities can help change driver behavior and reduce crashes.

Actions:

1. Develop and distribute public information and education materials on safe driving practices, particularly focusing on intersections, including parking rules near intersections, how to use roundabouts, and yellow change intervals.
2. Increase the focus on intersection safety in driver's education; invite law enforcement, emergency medical services (EMS) and bicycle and pedestrian representatives to speak specifically to intersection issues.
3. Address intersection safety at college freshman orientation and at other college group activities.
4. Implement a teen peer-to-peer program with a focus on intersection safety.
5. Pursue adult driving continuing education opportunities and promote existing programs such as the American Association of Retired Persons (AARP) defensive driving course.
6. Educate bicycle/pedestrian/motorcycle roadway users on intersection safety, including proper crossing behavior at a pedestrian countdown signal.
7. Distribute materials about vehicles, pedestrians, bicycles and motorists sharing the road safely.

Strategy 3: *Update, develop, and enforce policies, laws, and guidance regarding intersection safety.*

Implementation Stakeholders/ Partners:

- Law Enforcement
- City of Missoula and Missoula County Public Works Departments
- Missoula City Council
- Missoula Board of County Commissioners
- MDT
- City of Missoula Development Services
- TPCC
- TTAC
- Missoula Bicycle and Pedestrian Coordinator

Resources:

- Selective Traffic Enforcement Program
- Montana Code Annotated
- Missoula Municipal Code
- AASHTO Policy on Geometric Design of Highways and Streets
- AASHTO Highway Safety Manual
- NACTO Urban Street Design Guide

Purpose: There are a number of policies, laws, and guidelines in place in the Missoula MPA. These resources cover many topics ranging from design and development of intersections or intersection features to traffic laws. National guidance is constantly changing and it is important to remain up to date with current standards and best practices. It is recommended that the existing policies, laws, and guidance be updated regularly, and new ones be developed as necessary. In order for these policies and laws to be effective, enforcement is needed.

Actions:

1. Evaluate policy changes for problem intersections where speed is an issue. Identify and implement improvements to reduce intersection approach speeds such as advance warning signs, reduced lane widths, adaptive signal control, or other methods.
2. Pursue a local policy for the consideration of roundabouts at local intersections, where appropriate, based on review of respective jurisdictional authority. Policy must include consideration of the needs of all modes and users.
3. Update intersection design guidance periodically to incorporate the latest technologies and treatments and ensure consistency in implementation. Enforce speed limits near intersections where patterns of crashes related to speed violations have been observed. Portable speed trailers may be useful when patrols are not available.
4. Increase enforcement of, and encourage compliance with, clear-zone policy (tree/shrub trimming, parking, signage, etc.).
5. Work with law enforcement to increase capacity for officers to make traffic enforcement a priority especially during peak travel hours (AM, noon, PM). Post patrols at intersections known to have problems with red light running, speeding, failure to stop, and failure to yield right of way.
6. Provide targeted enforcement to reduce stop sign violations and red light violations.

4.2.2. Non-Motorized Users

The term "non-motorist" is typically used to describe pedestrians and bicyclists. Non-motorized road users face challenges and safety concerns when using the same roadway as motorized vehicles. When a crash occurs, the non-motorized user is especially vulnerable without the protection of a car to reduce impact. When crashes involving non-motorized users occur, they are likely to result in an injury. Although non-motorist crashes account for a very small percentage of crashes within the Missoula MPA (4 percent), they make up a large percentage of severe crashes (21 percent) in the study area.

There are a number of factors impacting the safety of non-motorized roadway users. Sometimes it can be difficult to see or notice non-motorized users. Ways to improve visibility include: increased lighting especially at conflict points with vehicles; increased signage at crossings including flashing lights to get drivers' attention; and wearing reflective clothing at night. Many non-motorists also feel safer when there is a physical barrier between them and the passing traffic. Separated and well-defined facilities can significantly improve non-motorist safety. Education, for both motorists and non-motorists, can also be helpful. There is a need for education on proper use of non-motorized facilities, the rights and responsibilities of non-motorists, and proper interactions between motorists and non-motorists.

Although non-motorized users were not addressed in the 2013 CTSP as an emphasis area, there was an acute focus on non-motorist safety at intersections. Non-motorist crashes are currently declining but there is still significant work to be done to improve safety for non-motorized users in the Missoula MPA. The following recommended strategies are intended to improve safety for non-motorized users by decreasing the occurrence and severity of crashes involving these users.

Participation in local events such as bike rodeos can help educate and encourage children to bike safely and more frequently.

High visibility crossings and pedestrian refuges can help improve the safety of non-motorists.

Strategy 1: *Improve non-motorist safety through design best practices and new technologies.*

Implementation Stakeholders/ Partners:

- City of Missoula and Missoula County Public Works Departments
- Missoula Bicycle and Pedestrian Coordinator
- Missoula City Council
- Missoula Board of County Commissioners
- TTAC
- TPCC
- MDT
- City of Missoula Development Services
- Bicycle and Pedestrian Advisory Board

Resources:

- NHTSA Countermeasures That Work
- NACTO Urban Bikeway Design Guide
- AASHTO Guide for Planning, Design, and Operation of Pedestrian Facilities
- FHWA Design Guidance Accommodating Bicycle and Pedestrian Travel: A Recommended Approach
- Pedestrian and Bicycle Information Center

Purpose: Safety for non-motorists can be increased by a variety of infrastructure improvements. Various treatments that slow down motorists and alert them that non-motorists are present may improve safety for non-motorists. Ensuring that non-motorized facilities are well maintained and accessible by all users can also help improve safety. When non-motorists use dedicated facilities, their movements are more predictable and conflicts with motorists can be more easily avoided.

Actions:

1. Consider the needs of non-motorists in all infrastructure improvements.
2. Implement traffic calming strategies, where appropriate, to slow traffic at problem locations and high non-motorized use areas.
3. Evaluate and consider intersection signal retiming where appropriate to increase non-motorist safety such as all pedestrian phases, lead pedestrian intervals, automatic pedestrian phases, and radar detection.
4. Consider use of "No Right on Red" prohibitions at signalized intersections where high volumes of pedestrians and bicyclists are present.
5. Evaluate connectivity of non-motorized facilities. Improve connectivity by requiring construction of appropriate infrastructure as part of new development and providing facilities in newly annexed areas.
6. Increase visibility of non-motorists at intersections and along major roadways using the latest design guidance and technologies. Treatments may include intersection/roadway lighting, continuous bike lanes through intersections, curb bulb outs, use of pedestrian signals, high visibility crosswalks, and flashing lights (RRFB, HAWK, etc.).
7. Prioritize preservation and maintenance of pedestrian and bicycle facilities including snow removal.
8. Coordinate with streets and other construction projects for the construction and retrofit of accessible curb ramps and ensure all projects meet accessibility requirements when built.
9. Consider "road diets" as a way to dedicate more space to non-motorized users and improve safety, as appropriate.

Strategy 2: *Provide education opportunities for pedestrians, bicyclists, and motorists about safe and lawful behavior and interactions.*

Implementation Stakeholders/ Partners:

- Missoula Public Schools
- Montana Statewide Bicycle and Pedestrian Coordinator
- Missoula Bicycle and Pedestrian Program Manager
- Missoula Bicycling Ambassadors
- Pedal Missoula
- Freecycles
- Missoula in Motion

Resources:

- Pedestrian and Bicycle Information Center
- USDOT – Encourage and Promote Safe Bicycling and Walking
- FHWA Pedestrian and Bicycle Education and Outreach
- NHTSA Countermeasures That Work
- MDT Bicycles and Pedestrians in Montana
- Montana Code Annotated
- Missoula Municipal Code

Purpose: Failure to yield right of way, inattentiveness, and impairment were all common factors in non-motorized user crashes. Both motorists and non-motorists are responsible for obeying traffic laws. However, pedestrian and bicycle traffic laws are not as widely known. Increasing familiarity with the rights and responsibilities of non-motorists can help improve safety for all users. Educating motorists about pedestrian and bicycle laws can also help improve the predictability of non-motorists. There are many education programs and initiatives aimed at informing and reinforcing the skills needed to safely walk and bike. Implementation of these programs helps ensure safe and lawful interactions between motorists and non-motorists.

Actions:

1. Support promotion of children's non-motorized education and safety training as part of elementary school curriculum or school bus training.
2. Support existing education opportunities and pursue new opportunities such as cycling skill clinics, bike fairs, bike rodeos, etc.
3. Include pedestrian and bicycle education in driver's education curriculum.
4. Spread awareness of non-motorized user traffic laws.
5. Focus safety education on crash contributing factors including non-motorist impairment, visibility at night, and yielding at crossings.
6. Improve and increase education and encouragement efforts to increase safety and participation of people walking and biking.
7. Include pedestrian and bicycle safety in other roadway education campaigns.

Strategy 3: *Support enforcement of pedestrian and bicycle laws and policies.*

Implementation Stakeholders/ Partners:

- Law Enforcement
- City of Missoula and Missoula County Public Works Departments
- Missoula Neighborhood Councils
- Chamber of Commerce/Businesses
- Missoula City Council
- Missoula Board of County Commissioners

Resources:

- Selective Traffic Enforcement Program
- Pedestrian and Bicycle Information Center – Enforcing Laws
- Montana Code Annotated
- Missoula Municipal Code
- NHTSA Countermeasures That Work
- NACTO Urban Bikeway Design Guide
- AASHTO Guide for Planning, Design, and Operation of Pedestrian Facilities
- FHWA Design Guidance Accommodating Bicycle and Pedestrian Travel: A Recommended Approach

Purpose: In addition to educating roadway users or pedestrian and bicycle traffic laws, enforcing proper behavior is an important component of improving safety for non-motorists. Enforcing speeds in school zones or areas where high volumes of non-motorists are present or issuing citations for failure to yield at crosswalks can be effective ways to increase safety. Enforcement is not restricted to motorists, however. For example, enforcing the use of bicycle lights at night or issuing citations for failure to obey pedestrian signals are ways to help increase compliance with bicycle and pedestrian laws.

Actions:

1. Periodically review and update design guidance and policies for pedestrian and bicycle facilities.
2. Increase enforcement of, and encourage compliance with, clear-zone policy (tree/shrub trimming, parking, signage, etc.) to improve sight lines for motorists and non-motorists.
3. Increase enforcement of, and encourage compliance with, sidewalk snow removal law including removal of snow from handicap parking spaces.
4. Support increased enforcement of non-motorized user traffic laws to all roadway users to help ensure safe and lawful interactions between motorists and non-motorists.
5. Reinforce lawful non-motorized activity and proper use by establishing and enforcing consequences for unlawful behavior and improper use.

4.2.3. High Risk Behavior

Inattentive drivers, impaired drivers, and unrestrained occupants were some of the top emphasis areas based on overall number of crashes, severity index, and public opinion. The past CTSP identified impaired drivers and unrestrained occupants as individual emphasis areas and over the past five years, Missoula has invested a lot of effort in addressing these emphasis areas. It is expected that the activities and strategies that have resulted from previous efforts will continue and evolve as appropriate for the impaired driver and unrestrained occupant emphasis areas. It is also expected that those strategies can also be applied in a similar manner to address the inattentive driver emphasis area.

The choice to engage in high risk behaviors can have severe consequences not only for the driver but also for passengers and other roadway users. These three high risk behaviors are frequently associated; impaired drivers often fail to use seat belts, divert their attention from the roadway, and may also engage in speeding. Crashes that involve these behaviors are typically very severe. Despite the choices to drive distracted or impaired, the choice to use a seat belt or child safety seat is one of the most effective measures that one can take to prevent injury and death in a crash. By addressing these three emphasis areas together, Missoula can effectively change driver behavior and improve safety for all roadway users.

To drive impaired or distracted or to drive/ ride in a vehicle without buckling up is a conscience decision made by transportation users every day. Discouraging high risk behavior typically involves a combination of education and enforcement strategies. The intent is to make people aware of the consequences of these choices and to ensure there are repercussions for people who make these choices in hopes that the high risk behaviors will be avoided in the future.

Missoula has already made great progress in addressing impaired driver and unrestrained occupant safety through implementation of the previous CTSP. This is seen by the overall decrease in severe injuries caused by these behaviors. However, the total number of crashes has increased over the past five years, a trend that can be improved. The increasing number of crashes caused by inattentive drivers are also on the rise. By focusing education and enforcement efforts on these high risk behaviors through the following recommended strategies, Missoula can discourage these behaviors and improve safety.

The annual Mock DUI Crash demonstration teaches kids about the dangers of impaired driving.

There are many inattentive driving educational campaigns in use across the US. Implementation of a local campaign could help reduce inattentive driving in the Missoula area.

Buckle Up Montana sponsors the Respect the Cage Exhibit that demonstrates how seatbelts, and the vehicle's roll cage, save lives in crashes. The Buckle Up Battle is used at events to encourage and promote seatbelt use.

Strategy 1: *Conduct outreach to groups with high rates of high risk behaviors on the importance of seatbelt use and the risks of impaired and inattentive driving.*

Implementation Stakeholders/ Partners:

- Law Enforcement
- Chamber of Commerce/Businesses
- MDT
- Insurance Companies
- Missoula High Schools
- University of Montana
- Office of Public Instruction (OPI)
- Civic Organizations (VFW, American Legion, etc.)
- Media- Missoulian, Independent, Kaiman, KECI, KTMF, KUFM-Missoulian
- Missoula County Buckle Up Montana Coalition
- EMS/Fire Departments
- Missoula City/County Health Departments
- Missoula Driver's Education
- Mountain Line, U-Dash, Lyft, Uber, and other safe ride providers
- Montana Tavern Association

Resources:

- Alive @ 25
- It's Your Choice Program
- Most of Us Campaign
- Ride Like a Friend Campaign
- Choices Matter Missoula
- National Inattentive Driving Campaigns
- National Impaired Driving Campaigns
- National Occupant Protection Campaigns
- NHTSA Countermeasures That Work

Purpose: The choice to drive distracted, drive impaired, or to drive/ride in a vehicle without buckling up can have severe consequences not only for the driver but also for passengers and other roadway users. Despite the choices to not drive distracted or impaired, the choice to use a seat belt or child safety seat is one of the most effective measures that one can take to prevent injury and death in a crash. Discouraging high risk behavior typically involves a combination of education and enforcement strategies. The intent of educational campaigns and programs is to make people aware of the consequences of these choices and to encourage safe behavior.

Actions:

1. Work to expand participation in the Alive @ 25 program, a defensive driving course instructed by Montana Highway Patrol trainers on driver safety for drivers age 15 to 25. Work to incorporate Alive @ 25 program into driver's education curriculum. Work with insurers to pursue a discount for participants in the course as an incentive.
2. Use innovative communications methods such as variable message signs to publicize the number of deaths that occur in Montana as a result of high risk behaviors as well as trends (increases/decreases in crashes and injuries). Partner with businesses to have them publicize this data as well.
3. Develop a local public service announcement (PSA) contest among the three high schools in Missoula/and or at the University of Montana; recommend the PSAs include messages from victims with a "tough love" approach.
4. Partner with the media to deliver safe behavior messages, such as on the "What's Up Missoula" and "Missoula Live" TV shows.
5. Utilize social media to deliver safe behavior messages. Consider videos that simulate crashes as a result of impairment, inattentive driving, as well as the consequences of improper restraint.
6. Continue and expand safety talks on the importance of safe driving behavior targeting youth, such as in- school presentations, "It's Your Choice" events, and through the annual mock-crash demonstration.
7. Pursue speaking engagements to reach adult target audiences via Civic organizations, large fleet trainings (business/ government), and other employers.
8. Develop a peer-to-peer program where youth talk to other youth about the dangers of engaging in high risk behaviors.
9. Continue and enhance community-supported incentives for safe and proper behavior.
10. Work with insurance companies to provide a discount or other incentive for novice drivers who take driver's education and also for adults who take continuing education courses.

Strategy 1 (Continued): *Conduct outreach to groups with high rates of high risk behaviors on the importance of seatbelt use and the risks of impaired and inattentive driving.*

Implementation Stakeholders/ Partners:

- Law Enforcement
- Chamber of Commerce/Businesses
- MDT
- Insurance Companies
- Missoula High Schools
- University of Montana
- OPI
- Civic Organizations (VFW, American Legion, etc.)
- Media- Missoulian, Independent, Kaiman, KECI, KTMF, KUFM-Missoulian
- Missoula County Buckle Up Montana Coalition
- EMS/Fire Departments
- Missoula City/County Health Departments
- Missoula Driver's Education
- Mountain Line, U-Dash, Lyft, Uber, and other safe ride providers
- Montana Tavern Association

Resources:

- Alive @ 25
- It's Your Choice Program
- Most of Us Campaign
- Ride Like a Friend Campaign
- Choices Matter Missoula
- National Inattentive Driving Campaigns
- National Impaired Driving Campaigns
- NHTSA Countermeasures That Work

Actions (Continued):

11. Ensure parents are attending pre-/post- parent meetings, a mandatory part of the driver's education program. Provide OPI's Graduated Drivers Licensing (GDL) handout to parents that includes monetary and license suspension consequences for not following GDL requirements.
12. Promote social norming campaigns and programs like Most of Us, Ride Like a Friend, Choices Matter Missoula, Buckle Up, and Saved by the Belt awards. Encourage area youth to establish local social norming groups in community by expanding positive community norms campaigns to all schools in the Missoula area.
13. Consider implementation and promotion of national education campaigns for inattentive driving such as Red Thumb Reminder; Texting While Driving: It Can Wait; Stop the Texts. Stop the Wrecks; U Drive. U Text. U Pay.; Put It Down; Faces of Distracted Driving; No Phone Zone; On the Road, Off the Phone; Decide to Drive; or Phone in one hand, ticket in the other.
14. Consider implementation of and promotion of impaired driving educational campaigns and events such as Plan2Live, Plan Your Ride, and Prime for Life.
15. Educate the public on societal, personal, and economic costs of crashes resulting from high risk behavior (i.e. insurance premiums, health costs, emergency services costs, etc.).
16. Continue and increase installation of Buckle-Up signs at business parking lot exits and work with employers to pursue establishing policies requiring seatbelt use by employees
17. Continue to provide increased training opportunities for child passenger safety technicians.
18. Continue to conduct annual pre- and post- seat belt surveys in coordination with awareness programs to determine impact of high school Buckle Up sign project and seat belt awareness.
19. Work with the Veterans of Foreign Wars (VFW) and the America Legion to change the color of the roadside memorial crosses in Montana to red if the crash involved impaired driving.
20. Expand awareness and promotion of safe ride options (i.e. Lyft and Uber). Pursue opportunities to partner with bars and ways to provide promotions or discounts on rides. Continue to maintain and promote U-Dash service and event shuttles. Explore other safe ride options that are not university specific and options that service rural residents.
21. Educate the general public on overserving laws and reporting. Educate and encourage citizens to call 911 to report potential over service or drunk drivers.
22. Provide information on criminal liability to servers who over serve to obviously intoxicated patrons. Expand information to include potential liability to city and event organizers that sell/ provide alcohol at public events.

Strategy 2: *Strengthen and enforce laws and local ordinances related to high risk behaviors in the Missoula Area.*

Implementation Stakeholders/ Partners:

- MDT
- Montana Department of Justice
- Montana Department of Health and Human Services
- Missoula County DUI Task Force
- Missoula County Buckle Up Montana Coalition
- Montana State Legislation
- Missoula City Council
- Missoula Board of County Commissioners
- Law Enforcement
- Missoula County Attorney's Office
- Missoula City Attorney's Office
- Fourth Judicial District Court
- Department of Revenue
- Montana Tavern Association
- Chamber of Commerce/Businesses

Resources:

- NHTSA Countermeasures That Work
- Montana DUI Penalties Information
- MDT Vision Zero
- Montana Code Annotated
- Missoula Municipal Code
- Selective Traffic Enforcement Programs and Montana Selective Enforcement Traffic Team (SETT)
- Drug Recognition Expert Training
- Montana 24/7 Sobriety Program
- Missoula Sobriety, Accountability Program
- Responsibility, Opportunities and Accountability for Drivers (ROAD) Court
- Montana Warm Springs Addiction Treatment and Change (WATCh) Program

Purpose: Many laws in Montana regarding high risk behaviors are less stringent than other states. The safety belt law is a secondary law, consequences for impaired driving are minimal (in comparison), and distracted driving laws do not exist at the state level, although there is a texting and driving prohibition in Missoula. Making regulations and penalties stronger for seatbelt non-use, impaired driving, and inattentive driving may help increase the importance and impact of these behaviors and reduce their occurrence. Additionally, enforcement of the laws and ordinances is a critical component to the public believing there is a consequence for engaging in high risk behaviors. SETT is a team that moves around the state to provide short term, high visibility saturation patrols focused on enforcing impaired driving, inattentive driving, and seatbelt use, among other traffic violations. Locally implemented saturation patrols, checkpoints, and enforcement zones can also be effective at deterring high risk behaviors in the Missoula area.

Actions:

1. Work to support legislative efforts to enact more stringent laws and ordinances aimed at high risk behavior such as: a primary safety belt law; increased fines for non-use of a seatbelt; a law that includes failure to wear a belt as a driver's license point violation; increased fines and penalties for impaired driving (i.e. vehicle confiscation, license plate forfeiture, mandatory ignition interlock devices, etc. for convicted offenders); drugged driving laws; and distracted driving laws including cell phone usage.
2. Provide information and educate local legislators and elected officials on the seriousness of crashes resulting from high risk behaviors, the benefits of various treatments and penalties for high risk driving behavior, and the economic impacts of crashes to society.
3. Continue to expand opportunities for convicted offenders of impaired driving to get appropriate treatment.
4. Work to enhance the penalties for the local social host law.
5. Support requirements to retest drivers for license renewals at regular intervals to stay up to date on current laws and regulations.
6. Consider adoption of a county-wide ordinance regarding the use of cell phones while driving.
7. Conduct short term, high visibility enforcement for high risk behaviors including checkpoints, saturation patrols, police stings, enforcement zones, or highly publicized periods of enforcement.
8. Enforce laws that penalize over-service to obviously intoxicated patrons and conduct alcohol vendor compliance checks. Provide information on criminal liability to servers who over serve to obviously intoxicated patrons.

Strategy 2 (Continued): *Strengthen and enforce laws and local ordinances related to high risk behaviors in the Missoula Area.*

Implementation Stakeholders/ Partners:

- MDT
- Montana Department of Justice
- Montana Department of Health and Human Services
- Missoula County DUI Task Force
- Missoula County Buckle Up Montana Coalition
- Montana State Legislation
- Missoula City Council
- Missoula Board of County Commissioners
- Law Enforcement
- Missoula County Attorney's Office
- Missoula City Attorney's Office
- Fourth Judicial District Court
- Department of Revenue
- Montana Tavern Association
- Chamber of Commerce/Businesses

Resources:

- NHTSA Countermeasures That Work
- Montana DUI Penalties Information
- MDT Vision Zero
- Montana Code Annotated
- Missoula Municipal Code
- STEP and SETT
- Drug Recognition Expert Training
- Montana 24/7 Sobriety Program
- Missoula Sobriety, Accountability Program
- ROAD Court
- WATCh Program

Actions (Continued):

9. Continue to collect information from the police report form on the establishment where the last drink was served to the intoxicated driver and provide that information to the Department of Revenue for follow up.
10. Conduct additional Drug Recognition Expert training for law enforcement officers and provide information to officers on how to recognize drug impaired driving.
11. Provide traffic diversion programs for people cited for high risk behavior related traffic violations as opportunities for education.
12. Encourage STEP officers to write citations instead of warnings for high risk behavior related traffic violations. Also encourage STEP officers to check for GDL violations during traffic stops.

Strategy 3: *Pursue engineering solutions to decrease high risk behaviors.*

Implementation Stakeholders/ Partners:

- Law Enforcement
- City of Missoula and Missoula County Public Works Departments
- TPCC
- TTAC
- MDT

Resources:

- MDT Crash Data
- AASHTO Policy on Geometric Design of Highways and Streets
- AASHTO Highway Safety Manual
- NACTO Urban Street Design Guide

Purpose: Although education and enforcement strategies are typically used to discourage high risk behavior, there are some engineering solutions that can help improve the safety of users who engage in these behaviors. Rumble strips, for example, can help alert inattentive drivers that veer out of their lane and can prevent run off the road crashes. Traffic calming strategies can help slow down drivers and help reduce the impact of a crash on occupants who are unbelted. High visibility signage to alert drivers of the laws or increased patrols can also help deter drivers from engaging in high risk behaviors as they will likely expect consequences to result.

Actions:

1. Evaluate and implement, where appropriate, high visibility infrastructure features to reduce high risk behaviors. Potential improvements may include flashing lights at non-motorized crossings, separated non-motorized facilities, rumble strips, curb extensions, median islands, etc.
2. Evaluate and implement, where appropriate, high visibility signage in areas known to have problems with high risk behaviors. Potential improvements may include "Use of Hand Held Phones Prohibited While Driving" signage, "Buckle Up" signage, or "Increased DUI Patrols" variable messaging signs during holidays.
3. Continue to improve crash data accuracy and usability. Improved crash data can help better identify contributing circumstances in crashes so specific behavioral issues can be addressed.
4. Improve and increase protection for non-motorized users (i.e. physical separation) to prevent severe crashes due to driver's engaging in high risk behavior.

4.3. Summary of Safety Strategies

The CTSP and its strategies will be implemented by a committed group of safety partners. Select members of the TSAC have chosen to chair each of the emphasis areas. The chairs, along with other members of the TSAC, make up the emphasis area teams. These teams will provide knowledge, expertise, resources, and commitment to implementation of the CTSP. State, MPO, county, city, and other government agencies, as well as stakeholders and special interest groups will also play an important role in implementing these strategies. Cooperation and coordination between all agencies are crucial to successful implementation. The following is a summary of each emphasis area including the chairs and the recommended strategies.

Emphasis Area 1: Intersection Crashes

Chair: David Gray, Missoula MPO

Strategy 1: *Improve safety at intersections with a high rate of crashes and/or severe injuries through appropriate infrastructure improvements based on best practices.*

Strategy 2: *Conduct education campaigns on safe driving practices with a focus on intersection safety.*

Strategy 3: *Update, develop, and enforce policies, laws, and guidance regarding intersection safety.*

Emphasis Area 2: Non-Motorized Users

Chairs: Ben Weiss, Missoula Bicycle and Pedestrian Coordinator

Strategy 1: *Improve non-motorist safety through design best practices and new technologies.*

Strategy 2: *Provide education opportunities for pedestrians, bicyclists, and motorists about safe and lawful behavior and interactions.*

Strategy 3: *Support enforcement of pedestrian and bicycle traffic laws and policies.*

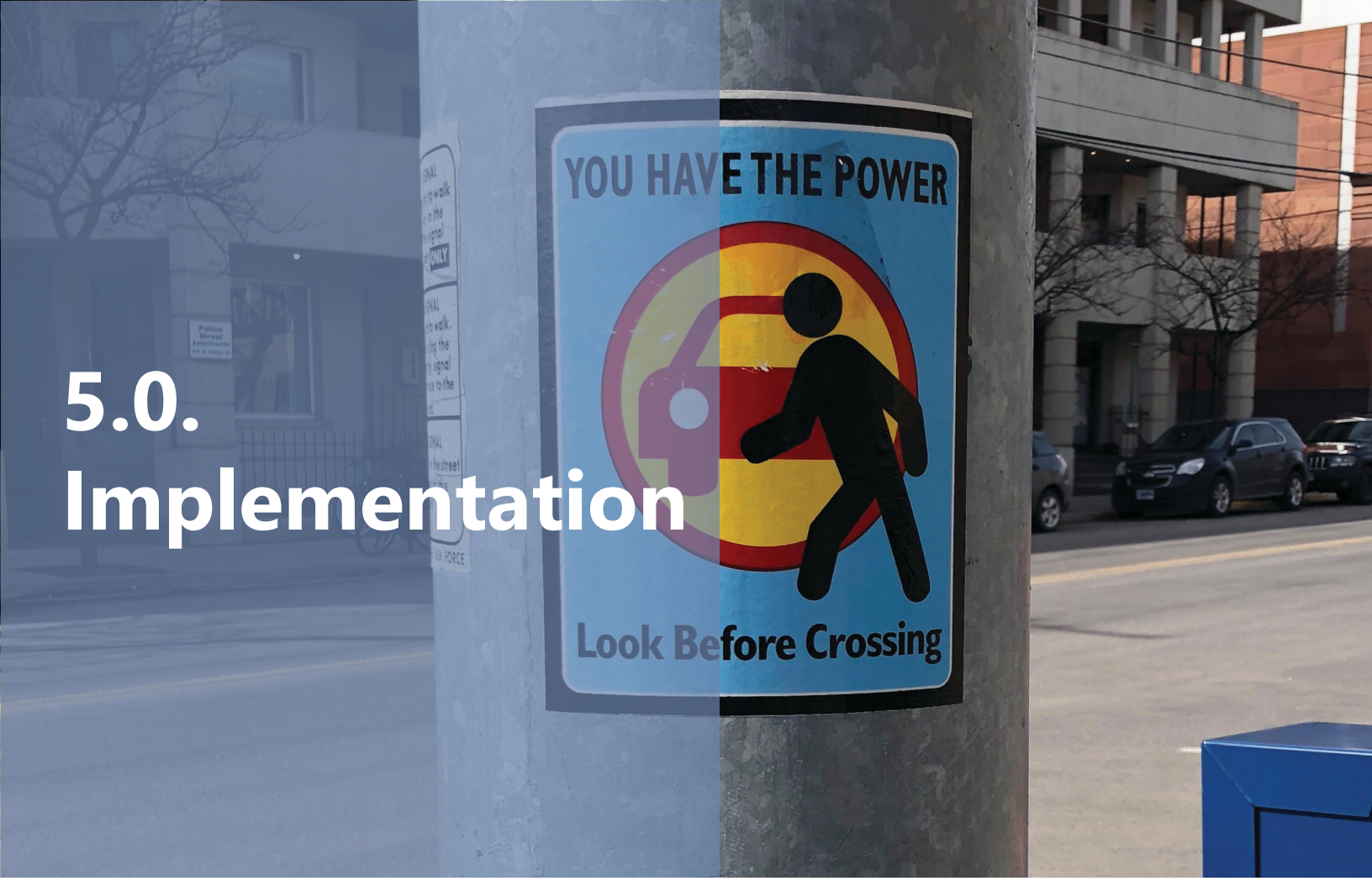
Emphasis Area 3: High Risk Behavior

Chairs: Buckle Up Montana/DUI Task Force Coordinator; Charmell Owens, City of Missoula

Strategy 1: *Conduct outreach to groups with high rates of high risk behaviors on the importance of seatbelt use and the risks of impaired and inattentive driving.*

Strategy 2: *Strengthen and enforce laws and local ordinances related to high risk behaviors in the Missoula area.*

Strategy 3: *Pursue engineering solutions to decrease high risk behaviors.*



5.0. Implementation

Completion of the CTSP is only the first step towards improving safety and decreasing severe injuries due to crashes on Missoula's roadways. For substantial change to occur, the plan must be implemented. The emphasis area teams, made up of members of the TSAC, will be responsible for implementation of the plan. Throughout implementation, these partners will need to continue to provide knowledge, expertise, resources, and commitment to the safety plan.

It will take time, commitment, and coordination from all parties to implement the identified strategies. Investment in new or improved infrastructure, increased enforcement and emergency services, and development of programs that educate and encourage residents to safely travel are necessary to improve safety in the Missoula area. No single entity can successfully carry out all of the recommended actions and strategies, nor will a single source of funding be sufficient to fulfill the CTSP strategies. A cooperative and collaborative approach will be needed to decrease the number of fatal and serious injuries on Missoula's roadways.

A cooperative and collaborative approach will be needed to achieve a safer Missoula.

5.1. Interagency Coordination

State, MPO, county, city, and other government agencies, as well as stakeholders and special interest groups each play an important role in achieving a safer Missoula. The different agencies may be involved in any number of actions for a given strategy or emphasis area. Depending on the action being pursued, funding assistance, design support, or general guidance may be needed from state and local agencies. Conversely, projects and programs at the governmental level may require assistance from stakeholders and special interest groups to gain traction within the community. Cooperation and coordination between all agencies is crucial to successful implementation.

5.2. Funding and Resources

Given constrained funding resources, it can be challenging to implement programs, campaigns, and infrastructure improvements that can help reduce crashes in the Missoula area. Cooperating with other agencies to leverage funding resources can prove effective for finding the means to implement the actions for each strategy. Working with local governments to secure funding from state and federal sources or applying for grants offered by various entities and organizations can also prove useful. Successful implementation of the strategies will require a diversified funding plan using a variety of funding resources and creative funding methods.

5.3. Progress Reporting

Regular progress tracking and reporting is essential to the CTSP's success. Monitoring progress allows the emphasis area teams to assess and modify strategies as necessary to achieve the CTSP's overarching goal. Emphasis area teams should meet quarterly to inventory actions and strategies that are accomplished, underway, or in planning. A review of current crash data, if available, should be performed to track progress in meeting the CTSP goal and to track the performance measures as described in the following section. Quarterly meetings also provide the opportunity for teams to evaluate whether strategies are working, and if they aren't, discuss alternative actions or challenges that may require additional community support.

Each emphasis area team should provide a yearly status report update to the MPO who will ensure implementation of the CTSP. The MPO will also provide a progress update to the Missoula TPCC and the MDT CTSP Coordinator. The purpose of the TPCC is to develop and keep current transportation planning as an integral part of comprehensive regional planning for the Missoula area. Monitoring progress allows the emphasis area teams, the TSAC, MPO, TPCC, and MDT to assess and modify strategies as needed to achieve the CTSP's goal of reducing fatal and serious injuries in the Missoula area.

5.3.1. Performance Measures

In order to track progress in addressing the emphasis areas, a measurable metric must be established. Keeping with the state established performance measures and the MPO's support for the state's targets, the CTSP will also report on the five national performance measures: number of fatalities; fatality rate; number of serious injuries; serious injury rate; and number of combined non-motorized fatalities and serious injuries. However, the MPO has historically tracked pedestrian and bicycle fatalities and serious injuries separately and will continue to do so. For each emphasis area, the following performance measures will be tracked yearly, or more frequently as data becomes available:

- Number of Fatalities
- Fatality Rate
- Number of Serious Injuries
- Serious Injury Rate
- Number of Pedestrian Fatalities and Serious Injuries
- Number of Bicyclist Fatalities and Serious Injuries

5.4. Emerging Technologies

Technological advancements have important impacts on safety. Of particular consideration are emerging technologies in the field of autonomous and connected vehicles. The continuing evolution of automated technology aims to deliver systems that will, eventually, be fully capable of performing all driving functions without a human driver. In the coming years, autonomous vehicles will integrate onto roadways by progressing through various levels of driver assistance technologies. These technologies range from no automation (where a fully engaged driver is required at all times), to full autonomy (where an automated vehicle operates independently, without a human driver).[10]

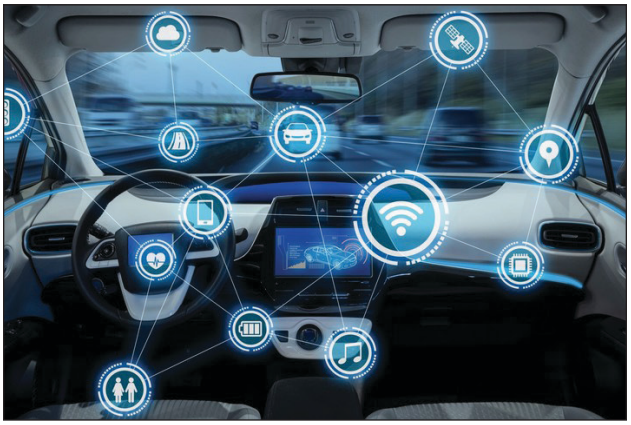
The safety benefits of autonomous vehicles are paramount. According to NHTSA, 94 percent of serious crashes are due to human error. Autonomous vehicles have the potential to remove human error from the crash equation. In addition to safety benefits, experts predict that the technology will also deliver economic, societal, mobility, and efficiency benefits. However, before autonomous vehicles can become available to the public, there are many important questions policymakers must address including cybersecurity, insurance, and the applicability of existing laws and regulations. State DOTs and localities are urged to work to remove barriers, such as incompatible regulations, to automated vehicle technologies and to support interoperability.[11]

Another emerging technology, called V2X (vehicle-to-everything), allows vehicles to communicate with moving parts of the traffic system. V2X has several components including: V2V (vehicle-to-vehicle); V2I (vehicle-to-infrastructure); and V2P (vehicle-to-pedestrian). V2V allows vehicles to communicate with one another while V2I and V2P allow vehicles to communicate with transportation infrastructure including traffic lights, buildings, guardrail, and even pedestrians and bicyclists. V2X technology uses short-range wireless signals to communicate with compatible systems. Advancement of V2X technology has important implications on safety. The systems can be programmed to be aware of all of the vehicle's surroundings, helping avoid collisions. Important information that may be conveyed include inclement weather, nearby accidents and road conditions, and the dangerous activities of nearby vehicles.[12]

These emerging technologies are only as good as the infrastructure they operate on, however. The current sensors used by autonomous and connected vehicles are unable to recognize faded lane markers, damaged signs or lights, and other inconsistencies found on US roadways.[13] In order to fully integrate these technologies into our transportation system, investment in upgraded infrastructure will be necessary.

Another emerging technology that lawmakers and city staff must consider are electric scooters. The scooters are dockless, battery powered, and can be rented by the minute. Several companies make the scooters and have begun introducing the scooters to major US cities and university campuses. For scooters to be a viable transportation solution, they need to be integrated into the city's transportation infrastructure, regulated by the city, and managed through effective partnerships. Thoughtfully constructed partnerships for scooters can ensure that scooters can co-exist alongside pedestrians, bikes, and cars.[14]

Electric bikes, or "e-bikes", should also be given consideration in that although they resemble traditional bicycles in appearance and operation, they are different in function than mopeds, scooters, and other motorized vehicles. The nation's rapidly expanding bike share systems have increased the popularity of e-bikes. Law makers are tasked with defining e-bikes, differentiating them from other motorized vehicles, and regulating their operation on roadways and non-motorized infrastructure.[15]



Consideration should be given to connected and autonomous vehicle technology as well as electric scooters and other emerging technologies. As the technology progresses and as Missoula sees more of these vehicles on the roadway, safety planners will have to be prepared for gradual integration.

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APPENDIX A: PUBLIC COMMENTS

Public Comments During Review

May 17, 2019 – June 16, 2019

ID	Date/Name	Comment	Response
01	05/17/2019 **Bob Giordano**	Here are some MIST comments for the Community Safety Plan: • There is a typo on p.29 'that were.' • MAST no longer exists (under resources) • MIST works to create 'safe, equitable and environmental sound transportation' for all modes, not just walk and bike. • No rickshaws exist at this time, that we're aware of • It seems as if the plan needs to identify more design features that are proven safety measures, such as modern roundabouts, lane width reductions and lane conversions (such as 4 to 3). We mention this because several signal safety features are mentioned throughout the document. In fact, modern roundabouts are one of the absolute best ways to reduce- even eliminate- severe injuries and fatalities at intersections, for all modes.	**CHANGE RECOMMENDED** *Change: Remove 'that were.'* *Change: Remove MAST on page 31.* *Change (pg 31): "Advocates for safe, equitable, and environmentally sound transportation for all modes in Missoula"* *Change: Remove rickshaws on page 32.* *Pursuing a roundabout policy and incorporating the latest treatments in intersection design are included as action items in Strategy 3 under the Intersection Crashes emphasis area.* *Add to Non-Motorized Users Strategy 1: Consider "road diets" as a way to dedicate more space to non-motorized users and improve safety, as appropriate.*
02	06/04/19 **Vicki Crnich** *MDT*	Attached are some comments I have on the draft document. I'm assuming that Pam's previous comments were incorporated. The comments are mostly editorial; however MIM's description needs to be revised. Page 4, FHWA Urbanized Area-Suggest combining 1st and 2nd sentences to avoid repetition. Page 10; Community Safety Summit-Aren't all stakeholders "important". Suggest deleting "important". Page 12; Limitations of Data; 2nd paragraph-"Since it is not possible to review…" why is that? Suggest including a qualifying statement. Page 30, 31-Please revise MIM's description to read "Transportation Options program…" Page 32-Should description of U-Dash be "Late night…"? Page 39; Purpose; 2nd sentence-Is something missing after "…that non-motorists are…" Page 39; No. 8-Please correct the spelling of construction. Page 44; No. 11-Is "Graduation" correct? Page 47; Stakeholders-Is it important to call out MDT's traffic safety section and also a second MDT bullet? Page 51; last paragraph-Should e-bikes be included in this discussion?	**CHANGE RECOMMENDED** *Change: "These boundaries play an important role in most FHWA related funding programs by designating urban and rural areas."* *Change: Remove "important"* *Change: "Since it would be time prohibitive to review the full crash reports for the more than 11,000 crashes that…"* *Change: "Transportation Options program which emphasizes alternative modes to decrease congestion/traffic" on pages 30 and 31* *Change: "University of Montana student-run transit service, fare free and open to the public. Includes a weekend late night downtown route. Only operates during the academic year"* *Change: "…that non-motorists are present…"* *Change as requested.* *Change: "Graduated Driver Licensing"* *Change: Remove 'MDT Traffic Safety Section'* *Add: Electric bikes, or "e-bikes", should also be given consideration in that although they resemble traditional bicycles in appearance and operation, they are different in function than mopeds, scooters, and other motorized vehicles. The nation's rapidly expanding bike share systems have increased the popularity of e-bikes. Law makers are tasked with defining e-bikes, differentiating them from other motorized vehicles, and regulating their operation on roadways and non-motorized infrastructure.*

MISSOULA
Community Transportation Safety Plan
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COMMENT FORM

Public Informational Meeting #1 – November 27, 2018

Please Submit Your Comments:

On behalf of the Missoula Family YMCA, I am here to express concern about the stretch of South Russell Street that runs from Malfunction Junction (Brooks & Russell intersection) to 39th Street. In particular, the YMCA is concerned about the unlit crosswalk in front of its building. This crosswalk is in close proximity to two bus stops (one on the east side of the road, one on the west side), as well as a number of highly-trafficked organizations including the YMCA & Opportunity Resources. After Joe MacDonald was struck by a car on October 25, we believe steps must be taken to make this area safer for <u>all</u> commuters – pedestrians, cyclists, those who ride the bus, & drivers. Potential solutions include lowering the speed limit, installing flashing lights, improving overhead street lighting, and/or installing a stoplight. Attached is a map of the area of concern, as well as letters of support from various organizations. This information has also been sent to Scott Randall. Thank you for the opportunity to share our concerns.

To stay informed and involved in the development of the Community Transportation Safety Plan, visit the project website: www.missouampo.com/community-transportation-safety-pla.

A survey is also available at https://www.surveymonkey.com/r/MissoulaCTSP. Please give us your thoughts and feedback!

Please mail or email your comments to:

Scott Randall, RPA Project Manager

To receive further study information, please provide your name and address:

Name: Kat Franchino / Missoula YMCA


Washburn St
Opportunity Resources
S Russell St
Bel Air Pl
Agnes Ave
Sunrise Promenade
Washburn St
Har Shalom
S Russell St
Misso
Playfair
Desperado Sports Tavern
S Russell St
Sunrise Promenade
Boyd Park
Sunrise Promenade
Washburn St
Ernest Ave
Ernest Ave
Ernest Ave
S Russell St
Veritas Property Management
Russell Elementary

FOR YOUTH DEVELOPMENT®
FOR HEALTHY LIVING
FOR SOCIAL RESPONSIBILITY

November 6, 2018

Dear Mayor Engen and Missoula City Council members,

On behalf of the Missoula Family YMCA, I am writing in support of a safer Russell Street corridor. Russell Street is a well-travelled road for cars, buses, cyclists, and pedestrians, and it must remain safe for all commuters. The Missoula Family YMCA is particularly focused on the crosswalk along the 3000 block of Russell Street.

This crosswalk is located near two bus stops (one on the east side of the road; the other going west), as well as Opportunity Resources, Inc., Garden City Montessori, and the YMCA. Bus commuters, adults with disabilities, and young Montessori students are among the many people who use this crosswalk daily. This area has concerned us for many years and, after Joe MacDonald was struck by a car on October 25, we believe changes must be made.

Potential solutions include reducing the speed limit from 35 mph to 25 mph from Malfunction Junction to 39th Street, installing hawk (flashing) lights at the crosswalk at the 3000 block of Russell Street, improving overhead street lighting, and/or installing a stoplight. Since traffic is heavy in and out of the YMCA and ORI, the 3000 block may also benefit from a traffic study.

The Greater Missoula Family YMCA serves thousands of adults and children and is committed to offering healthy, affordable programs and services to all in the greater Missoula area. As one of Missoula's largest nonprofits, we believe it is imperative and our responsibility to advocate for a safer Russell Street for our neighbors, YMCA members, and guests.

Thank you for taking this letter into consideration. Please feel free to contact me with absolutely questions.

Sincerely,

Heather Foster
CEO

MISSOULA FAMILY YMCA
3000 South Russell Street, Missoula MT 59801
P 406 721 9622 F 406 721 9226 www.ymcamissoula.org

October 31, 2018

To Whom It May Concern,

Opportunity Resources, Inc. (ORI) is a private non-profit biased in Missoula Montana at 2821 South Russell Street. ORI serves over 750 adults with disabilities in the Missoula area and employees over 350 full time staff. This letter is to encourage the review of the safety of the street cross walk on the 3000 block of Russell Street. ORI has hundreds on consumers and staff that use this cross walk weekly. We would like to be a part of the solution to what we see as a very dangerous crosswalk and ask for a review of what could be some solutions.

We would like to suggest some options such as:

- Pedestrian activated signal
- Stop light
- Improved lighting
- Improved signage

Thank you for your time in looking into what we feel is a very dangerous crossing that affects many, and we look forward to working as quickly as possible on solutions.

Please feel free to contact me with any question.

Joshua M. Kendrick
CEO

OPPORTUNITY
RESOURCES, INC
Supporting Individuals with Disabilities Since 1955
2821 South Russell St | Missoula, MT 59801
P: 406.329.1754 | **F:** 406.721.8744| **TDD:** 1.800.253.4091

MISSOULA MIDTOWN ASSOCIATION

P.O. Box 2376 | Missoula, MT 59806
midtown@missoulamidtown.com | www.missoulamidtown.com

November 6, 2018

Kevin Slovarp P.E., Missoula City Engineer
435 Ryman Street
Missoula, MT 59802
&
Shane Stack P.E., MDT Missoula Project Engineer
2100 W Broadway Street
Missoula, MT

Dear Gentlemen,

The Board of the Missoula MidTown Association shares concerns raised recently by the YMCA and Opportunity Resources, Inc., regarding the safety of pedestrian and cycling traffic on Russell Street, specifically in the stretches between Brooks and 39th Streets.

Once again -- on October 25th -- this stretch was visited by near-disaster when a car struck a man walking across Russell Street on his way to Opportunity Resources. He survived, but his recovery will be a long process. In the past, others in this stretch of Russell have not been as lucky.

The Board recognizes that as a state highway, planning and implementation of any safety upgrades demand a longer and more involved process. Our Board also recognizes that as traffic increases in this stretch, paralleling heavier use at the YMCA, Opportunity Resources, and especially with massive development at the Fairgrounds, issues of safety will accelerate exponentially.

Previously, discussions about cycle and pedestrian safety in this area included suggestions for controlled intersections, flashing "hawk" lights, reduced speeds and even a round-about at Fairview.

This is not the first time this issue has been raised. Without action and further delay, the next time it becomes a discussion could well follow another serious accident. Let's look ahead and do our civic best to prevent that from happening.

The Board of the Missoula MidTown Association respectfully requests re-initiation of serious planning around safety upgrades to this stretch of Russell Street, in support of current concerns of the YMCA and Opportunity Resources.

Thank you for your consideration,

Mark Bellon,
President

Cc: Mayor Engen
Missoula City Council

Har Shalom

November 13, 2018

Dear Mayor Engen and Missoula City Council members,

It has come to our attention that Missoula needs a safer Russell Street, for cars, bikes, and pedestrians. We are writing in support of that safety.

So many commuters use Russell Street, and the area of deep concern that we bring to your attention is the crosswalk along the 3000 block of Russell Street. A pedestrian was struck by a car right there just last October.

It isn't the first time this has happened, and our hope is it will be the last.

If you are not familiar with this stretch of road, it's the crosswalk located near two bus stops (one on the east side of the road; the other going west), as well as Opportunity Resources, Inc., Garden City Montessori, Has Shalom, and the YMCA. Among the folks who use this corridor and crosswalk on a daily basis are bus commuters; adults with disabilities; young, pre-school through elementary-grades Montessori students; and folks who attend services at Har Shalom.

Some solutions that have been discussed by businesses in the area are:

- Reducing the speed limit from 35 mph to 25 mph from Malfunction Junction to 39th Street
- Installing hawk (flashing) lights at the crosswalk at the 3000 block of Russell Street
- Improving overhead street lighting, and/or installing a stoplight
- The 3000 block may also benefit from a traffic study because its use is so heavy

All of the businesses in this corridor serve thousands of adults and children. For this reason, we are committed to being responsible to the folks we serve. It's not enough to be here; it's our purpose to advocate for a safe place to worship.

Thank you for your time and attention to this important matter.
Do not hesitate to contact any member of the board at Har Shalom with questions.

email: info@Har-Shalom.org • phone: 406/549-9595 • mailing address: P.O. Box 3715, Missoula, Montana 59806
street address: 3035 S. Russell Street, Missoula

October 26, 2018

City of Missoula
435 Ryman Street
Missoula, MT 59801

Re: Speed Limit on Russell

To Whom It May Concern:

I am a YMCA member and am writing regarding the speed limit between the Fairgrounds and 39th. For many years I have been astonished that the 25 mile an hour speed limit applies only to a very short section in front of Russell grade school.

First, drivers often fail to slow down for the short section in front of the school. A person doesn't need to be lost in thought for very long before realizing that one is now smack in front of Russell, and should have slowed down a block prior.

Second, directly across the street from the YMCA is Opportunity Resources. We have a lot of members who rely on the crosswalk to pass from one side of Russell to the other. People traveling at a rapid speed don't notice people waiting to cross, or assume they don't *have* to stop.

Third, we have multiple churches, a major grocery store, vet clinic, fairgrounds, schools, parks and many other locations that cater to young people and families.

This should be a walker friendly and walker safe neighborhood for everyone living in and using this area of town.

I am writing this letter at the request of the Missoula YMCA and Opportunity Resources Inc. , but I have been aware of this poor situation for years. I live on Bancroft St. We have a 25 mph speed limit and I am glad for it. For all the same reasons we have 25 mph on Bancroft, it should be 25 mph on Russell between 39th and the Western Montana Fairgrounds. I hope you will seriously consider making this change effective immediately.

Sincerely,
Jennifer Straughan
2600 Bancroft St.
Missoula, MT 59801
406-214-7140

Beverly Morse
to gasvodak, KellyJ, Beverly, Anne, me

Mon, Nov 12, 3:33 PM

To Mayor Jon Engen, Missoula City Council members, City Engineering Department:

Garden City Montessori would like the city to address the busy corridor on Russell Street between Opportunity Resources, Garden City Montessori and the YMCA. We have 60 children attending our school facility daily and walk along Russell street to Boyd park each day. We also cross the street to attend various activities at the YMCA. Often, cars are not stopping for our children as we are trying to cross the street or driving over the designated speed limit as we are walking along Russell Street. Our teachers are extremely vigilant however, we feel that something needs to change.

We support the need for a safer Russell corridor for our neighborhood with the use of lower speed limits, flashing lights, a better lit crosswalk, street lights, etc.

Please do not hesitate to contact me for further information about how the increasingly congested and speedy vehicles on Russell street are impacting our school.

Thank you,
Beverly Morse
Director
406-240-0290

MISSOULA
Community Transportation Safety Plan
ENGINEERING • ENFORCEMENT • EDUCATION • EMERGENCY SERVICES

COMMENT FORM

Public Informational Meeting #1 – November 27, 2018

Please Submit Your Comments:

MISSOULA ROADS ARE INADAQUATE FOR VOLUME OF TRAFFIC.
THERE HAS BEEN NO REAL PLANNING FOR MOVING TRAFFIC THROUGH THIS VALLEY.
CONSIDERATION OF WHAT IS "HUB OF FIVE VALLEYS"
THERE IS A NEED TO MOVE THROUGH THIS AREA EFFICIENTLY.
BUILDUP OF HIGHER DENSITY IN MISSOULA HAS GIVEN LITTLE CONSIDERATION TO NEED FOR MORE PARKING + ROADS. OUTLYING AREAS ARE ALSO BUILDING UP, BUT NO ADDITIONAL ROADS HAVE BEEN CONSTRUCTED

I FARM ON RESERVE STREET. IT IS VERY DANGEROUS. IT IS NECESSARY TO MOVE FARM MACHINERY ON STREETS BETWEEN FIELDS, WHICH IS VERY HARD TO DO WITH FAST MOVING TRAFFIC. I ALSO WALK TO ANOTHER FIELD + FEEL THREATENED THAT A VIECHLE WILL JUMP CURB.

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A survey is also available at https://www.surveymonkey.com/r/MissoulaCTSP. Please give us your thoughts and feedback!

Please mail or email your comments to:
Scott Randall, RPA Project Manager

To receive further study information, please provide your name and address:
Name: BRUCE BENSON

MISSOULA
Community Transportation Safety Plan
ENGINEERING • ENFORCEMENT • EDUCATION • EMERGENCY SERVICES

COMMENT FORM

Public Informational Meeting #1 – November 27, 2018

Please Submit Your Comments:

The ~~intro~~ crossing at Burton & Broadway Needs a crossing light similar to the other trail crossings @ 3rd, 5th, 6th streets. The crossing at Wyoming at the new development in the Sawmill District is poorly designed. Pedestrians cannot see cars coming because the parked cars block the view.

Particularly the Burton crossing is very dangerous. I work right by it. I have seen multiple accidents. I have seen pedestrians hit by cars. This Broadway Stretch is long & straight. I constantly see cars speeding and even more often people are on their phones, usually texting or reading text in guessing.

I saw 2 person on 2 bike get pinned under a car and another person in an electric chair get hit within 2 weeks of each other.

To stay informed and involved in the development of the Community Transportation Safety Plan, visit the project website: www.missouampo.com/community-transportation-safety-pla.

A survey is also available at https://www.surveymonkey.com/r/MissoulaCTSP. Please give us your thoughts and feedback!

Please mail or email your comments to:
Scott Randall, RPA Project Manager

To receive further study information, please provide your name and address:
Name: Brandon Wasser

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COMMENT FORM

Public Informational Meeting #1 – November 27, 2018

Please Submit Your Comments:

Look at crash trends relative to lighting conditions, esp. non-motorized. Are there hot spots? Missoula street lights are very dated and don't do the job during the winter.

Is there a relationship between road width and crashes? Can we identify spot safety improvements?

Consider trucks – design for large vehicles drives intersection width and crossing distances. Can we establish truck routes that let other streets be smaller?

To stay informed and involved in the development of the Community Transportation Safety Plan, visit the project website: www.missouampo.com/community-transportation-safety-pla.

A survey is also available at https://www.surveymonkey.com/r/MissoulaCTSP. Please give us your thoughts and feedback!

Please mail or email your comments to:
Scott Randall, RPA Project Manager

To receive further study information, please provide your name and address:
Name: Jeremy Keene

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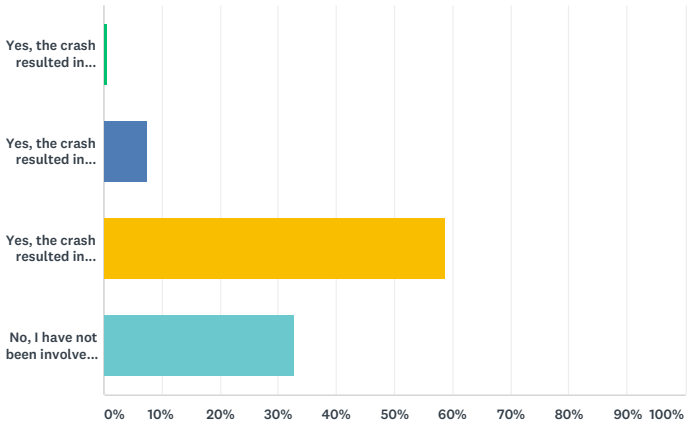
APPENDIX B: ONLINE SURVEY RESULTS

Q1 Have you ever been involved in a crash? (If you have been involved in more than one crash, select the most severe result)

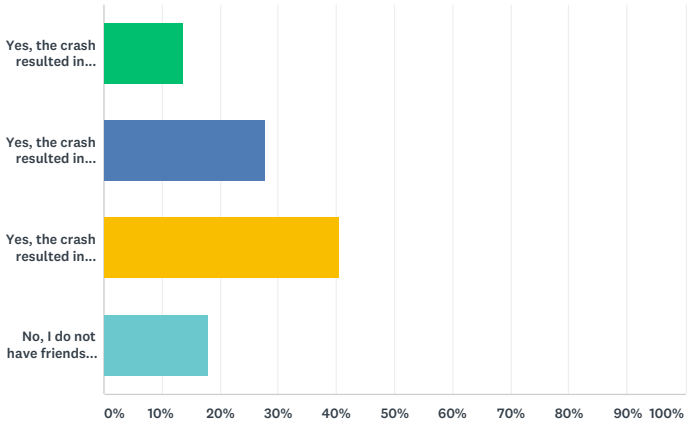
Answered: 158 Skipped: 3



ANSWER CHOICES	RESPONSES	
Yes, the crash resulted in fatality(ies).	0.63%	1
Yes, the crash resulted in severe injury(ies).	7.59%	12
Yes, the crash resulted in minor/no injury(ies).	58.86%	93
No, I have not been involved in a crash.	32.91%	52
TOTAL		158

Q2 Have one or your friends or a family member ever been involved in a crash? (If there has been more than one crash, select the most severe result)

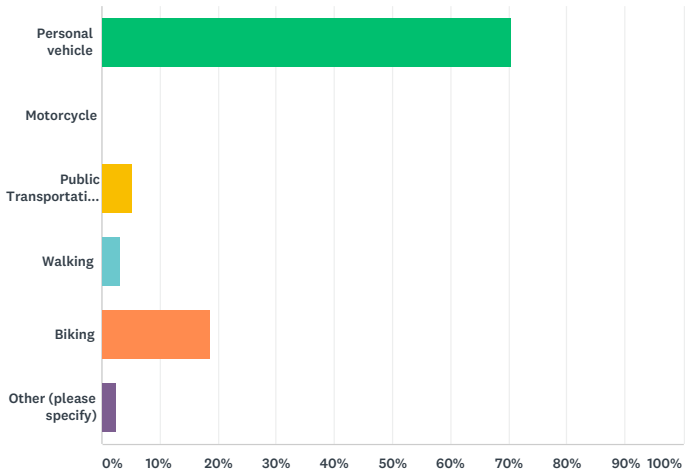
Answered: 155 Skipped: 6



ANSWER CHOICES	RESPONSES	
Yes, the crash resulted in fatality(ies).	13.55%	21
Yes, the crash resulted in severe injury(ies).	27.74%	43
Yes, the crash resulted in minor/no injury(ies).	40.65%	63
No, I do not have friends or family members who have been involved in a crash.	18.06%	28
TOTAL		155

Q3 What is your primary mode of transportation?

Answered: 156 Skipped: 5

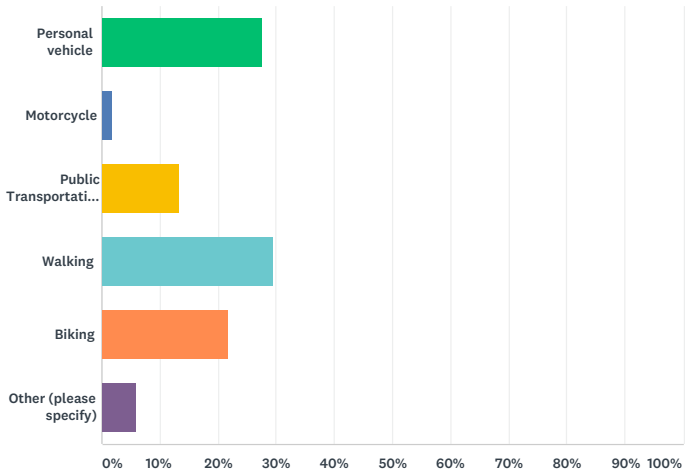


ANSWER CHOICES	RESPONSES	
Personal vehicle	70.51%	110
Motorcycle	0.00%	0
Public Transportation (Mountain Line, Paratransit, etc.)	5.13%	8
Walking	3.21%	5
Biking	18.59%	29
Other (please specify)	2.56%	4
TOTAL		156

#	OTHER (PLEASE SPECIFY)	DATE
1	50/50 driving and walking	11/27/2018 1:46 PM
2	Other	11/27/2018 8:00 AM
3	eboard	11/25/2018 1:21 PM
4	STATE VEHICLE	11/14/2018 8:38 AM

Q4 What is your secondary mode of transportation?

Answered: 156 Skipped: 5

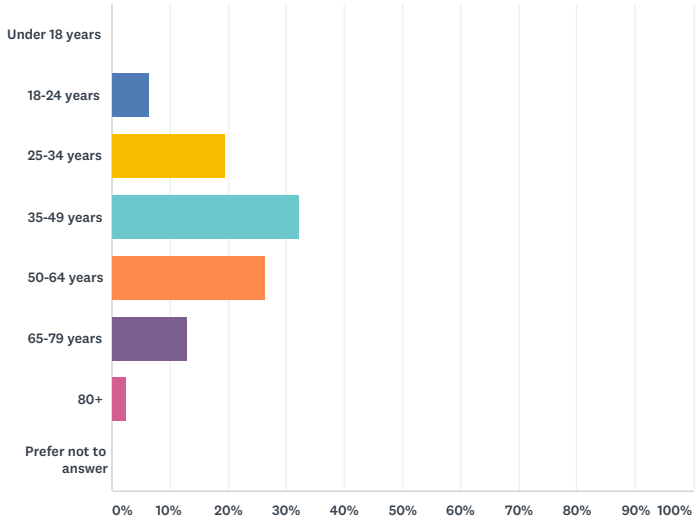


ANSWER CHOICES	RESPONSES	
Personal vehicle	27.56%	43
Motorcycle	1.92%	3
Public Transportation (Mountain Line, Paratransit, etc.)	13.46%	21
Walking	29.49%	46
Biking	21.79%	34
Other (please specify)	5.77%	9
TOTAL		156

#	OTHER (PLEASE SPECIFY)	DATE
1	Uber	12/3/2018 11:09 PM
2	None	11/27/2018 9:56 PM
3	Do not have one.	11/27/2018 9:21 PM
4	Do not have one.	11/27/2018 9:19 PM
5	Uber	11/27/2018 8:53 PM
6	Uber	11/27/2018 8:51 PM
7	I LIVE OUT OF TOWN AND COMMUTE IN	11/27/2018 10:45 AM
8	Other	11/27/2018 8:00 AM
9	friends---car	11/23/2018 10:33 AM

Q5 What is your age?

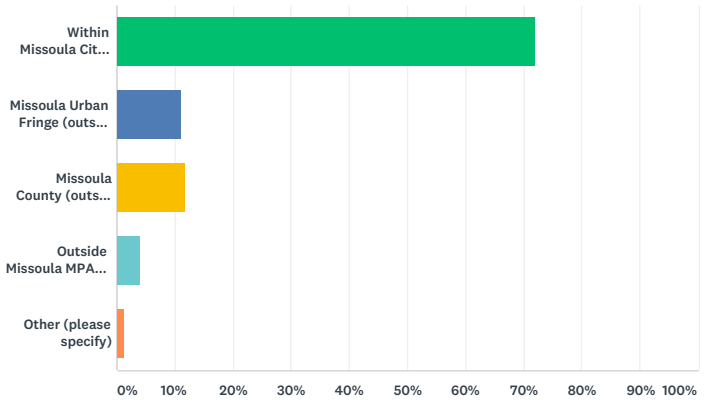
Answered: 155 Skipped: 6



ANSWER CHOICES	RESPONSES	
Under 18 years	0.00%	0
18-24 years	6.45%	10
25-34 years	19.35%	30
35-49 years	32.26%	50
50-64 years	26.45%	41
65-79 years	12.90%	20
80+	2.58%	4
Prefer not to answer	0.00%	0
TOTAL		155

Q6 Where do you live within the Missoula Metropolitan Planning Area (MPA)? (Click here to view a map.)

Answered: 153 Skipped: 8

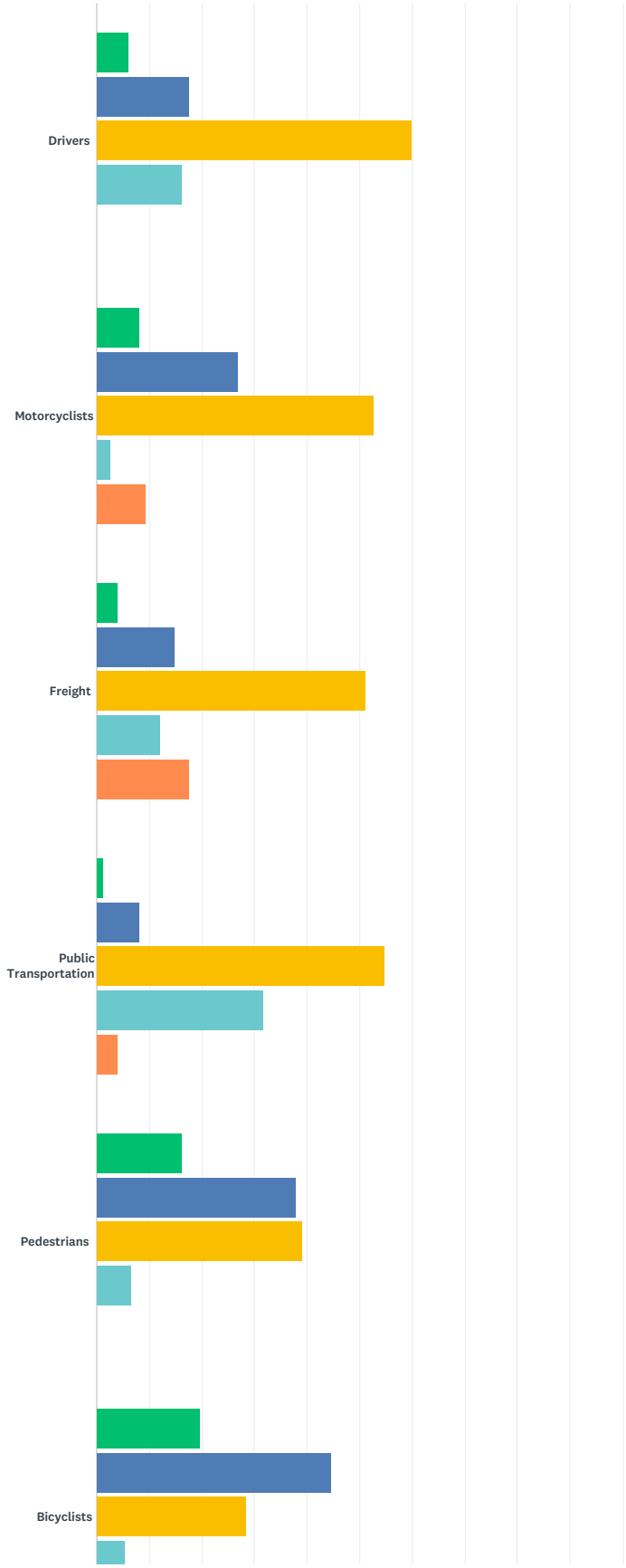


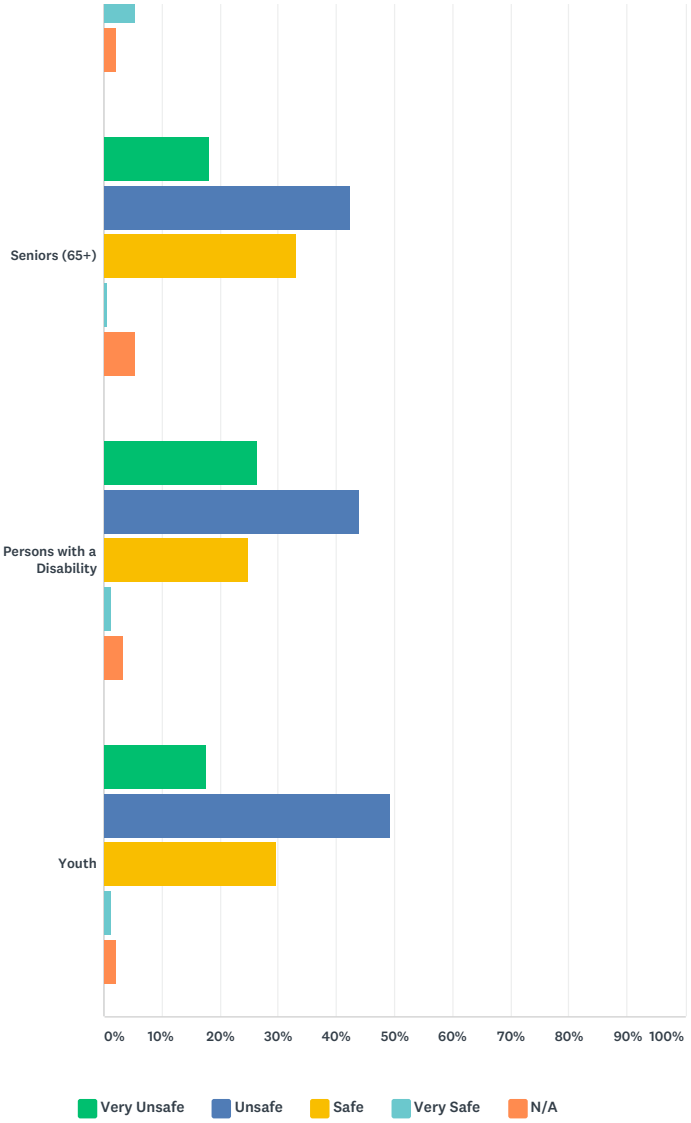
ANSWER CHOICES	RESPONSES	
Within Missoula City Limits	71.90%	110
Missoula Urban Fringe (outside city limits, within urbanized area)	11.11%	17
Missoula County (outside urbanized area, within Missoula MPA boundary)	11.76%	18
Outside Missoula MPA Boundary	3.92%	6
Other (please specify)	1.31%	2
TOTAL		153

#	OTHER (PLEASE SPECIFY)	DATE
1	live in ravalli county but work in missoula	11/27/2018 11:58 AM
2	I LIVE IN ARLEE, WORK IN MISSOULA	11/27/2018 10:45 AM

Q7 How safe do you feel Missoula area streets are for the following user groups?

Answered: 148 Skipped: 13

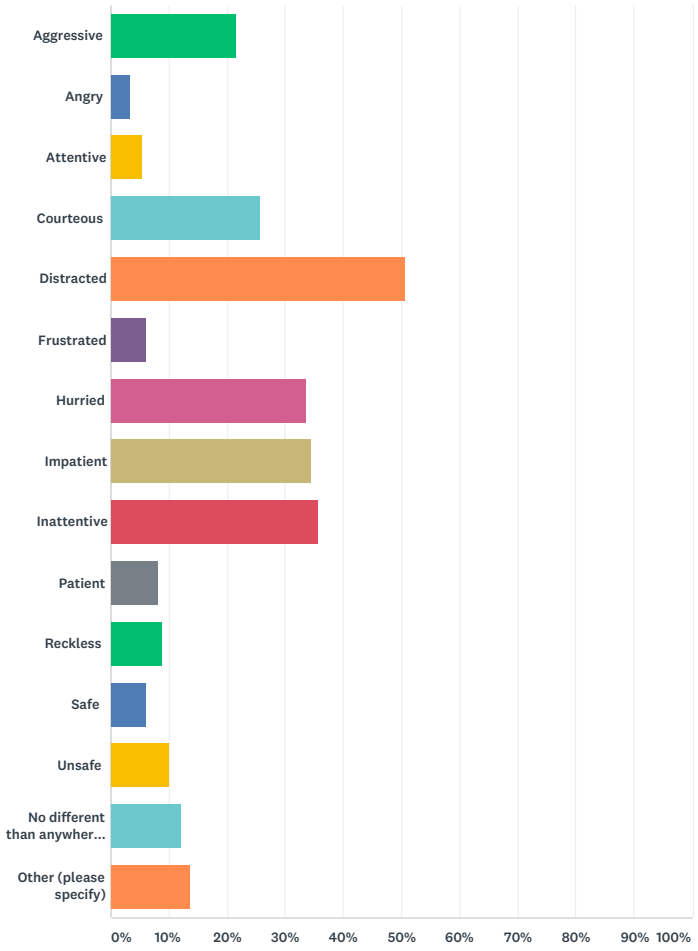




	VERY UNSAFE	UNSAFE	SAFE	VERY SAFE	N/A	TOTAL
Drivers	6.08% 9	17.57% 26	60.14% 89	16.22% 24	0.00% 0	148
Motorcyclists	8.11% 12	27.03% 40	52.70% 78	2.70% 4	9.46% 14	148
Freight	4.05% 6	14.86% 22	51.35% 76	12.16% 18	17.57% 26	148
Public Transportation	1.35% 2	8.11% 12	54.73% 81	31.76% 47	4.05% 6	148
Pedestrians	16.22% 24	37.84% 56	39.19% 58	6.76% 10	0.00% 0	148
Bicyclists	19.59% 29	44.59% 66	28.38% 42	5.41% 8	2.03% 3	148
Seniors (65+)	18.24% 27	42.57% 63	33.11% 49	0.68% 1	5.41% 8	148
Persons with a Disability	26.35% 39	43.92% 65	25.00% 37	1.35% 2	3.38% 5	148
Youth	17.57% 26	49.32% 73	29.73% 44	1.35% 2	2.03% 3	148

Q8 What words do you feel best describe the behavior of drivers in the Missoula area? (Select up to three)

Answered: 148 Skipped: 13



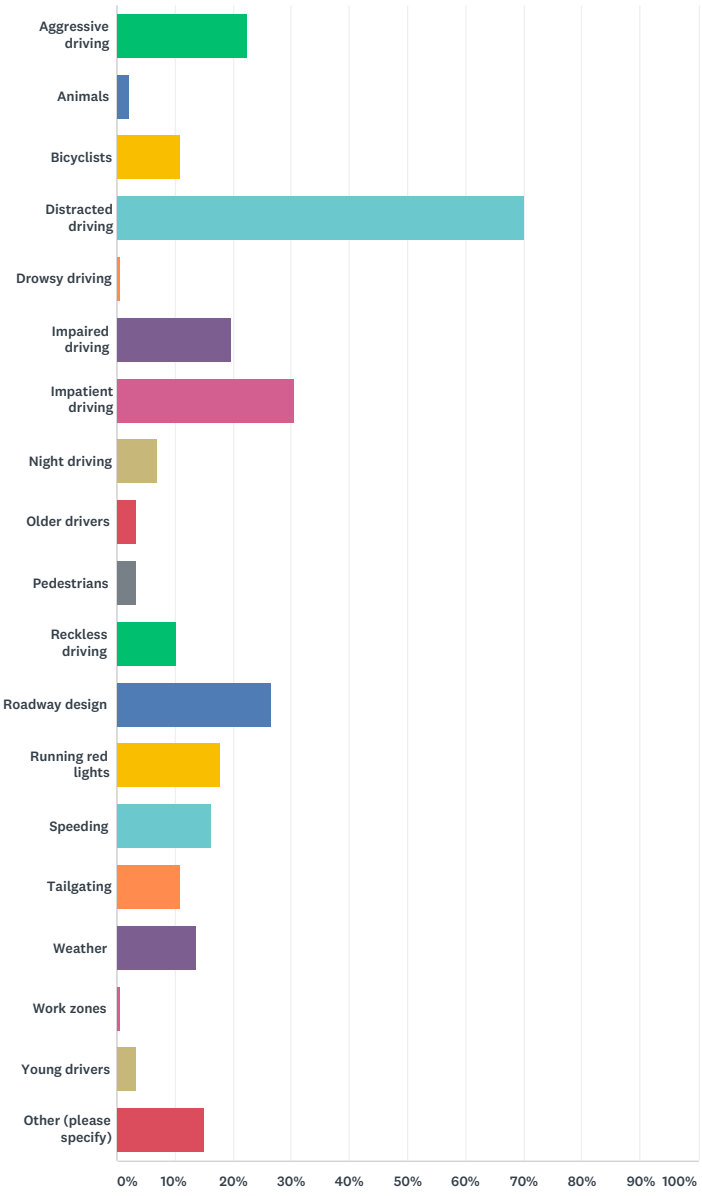
ANSWER CHOICES	RESPONSES	
Aggressive	21.62%	32
Angry	3.38%	5
Attentive	5.41%	8
Courteous	25.68%	38
Distracted	50.68%	75
Frustrated	6.08%	9
Hurried	33.78%	50
Impatient	34.46%	51
Inattentive	35.81%	53
Patient	8.11%	12
Reckless	8.78%	13
Safe	6.08%	9
Unsafe	10.14%	15
No different than anywhere else	12.16%	18
Other (please specify)	13.51%	20
Total Respondents: 148		

#	OTHER (PLEASE SPECIFY)	DATE
1	Missoula hands out licenses	12/5/2018 9:58 AM
2	Slow (drive below speed limit)	11/30/2018 11:27 AM
3	mostly safe	11/30/2018 9:20 AM

4	On the phone while driving	11/30/2018 7:27 AM
5	Weary of bicycles	11/28/2018 3:05 PM
6	Frustrated with the lack of adequate infrastructure. Too few lanes of traffic for vehicle volume.	11/28/2018 1:51 PM
7	Most are safe and courteous; some are unsafe for various reasons.	11/27/2018 10:57 PM
8	They don't look out for people, especially when turning.	11/27/2018 9:48 PM
9	selfish/unaware of others	11/27/2018 5:47 PM
10	Too many people on cell phones and not just talking but actually texting.	11/27/2018 12:53 PM
11	entitled...cars have the power, and pedestrians are insignificant	11/27/2018 11:43 AM
12	The agression, impatient folks stand out as they make the roads more dangerous, but I do see folks being courteous as well. I wanted to mark inattentive and courteous as well.	11/27/2018 10:29 AM
13	oblivious	11/27/2018 6:50 AM
14	Amazed at the number of folks who go through red lights on a daily basis. Impressed that a number of cars do stop for pedestrians/bikers, although sometimes it concerns me (as a biker/walker) to have a car slam on its brakes when there's traffic behind it.	11/26/2018 12:21 PM
15	Drivers do their best but insufficient bike lanes are a problem. Most drivers, public transport or POV, do not know how to shares those spaces and it’s scary for bicycles.	11/23/2018 1:12 PM
16	the only time they choose to use their turn signal when approaching a crosswalk or slowing down for a pedestrian is at their driving test...everyone takes that for granted here in Msla. I have lived all over the country and these are are most reckless, irresponsible, shameless group of selfish, entitled people that display absence of conscience about safety. They all drive and believe in global warming, yet will they let someone cross the street? No.	11/16/2018 8:18 PM
17	Unaware of traffic laws (roundabouts, turn signals, right of way)	11/16/2018 11:02 AM
18	Slow, ignorant	11/16/2018 10:58 AM
19	Running yellow/just-red lights constantly, like if they saw the light be green, they think they're entitled to get through the intersection.	11/16/2018 8:55 AM
20	Drivers can't be described in one or two simple words as they are all a little different. Some are aggressive while others are very patient.	11/8/2018 11:38 AM

Q9 What do you think are the primary causes of crashes in the Missoula area? (Select up to three)

Answered: 147 Skipped: 14



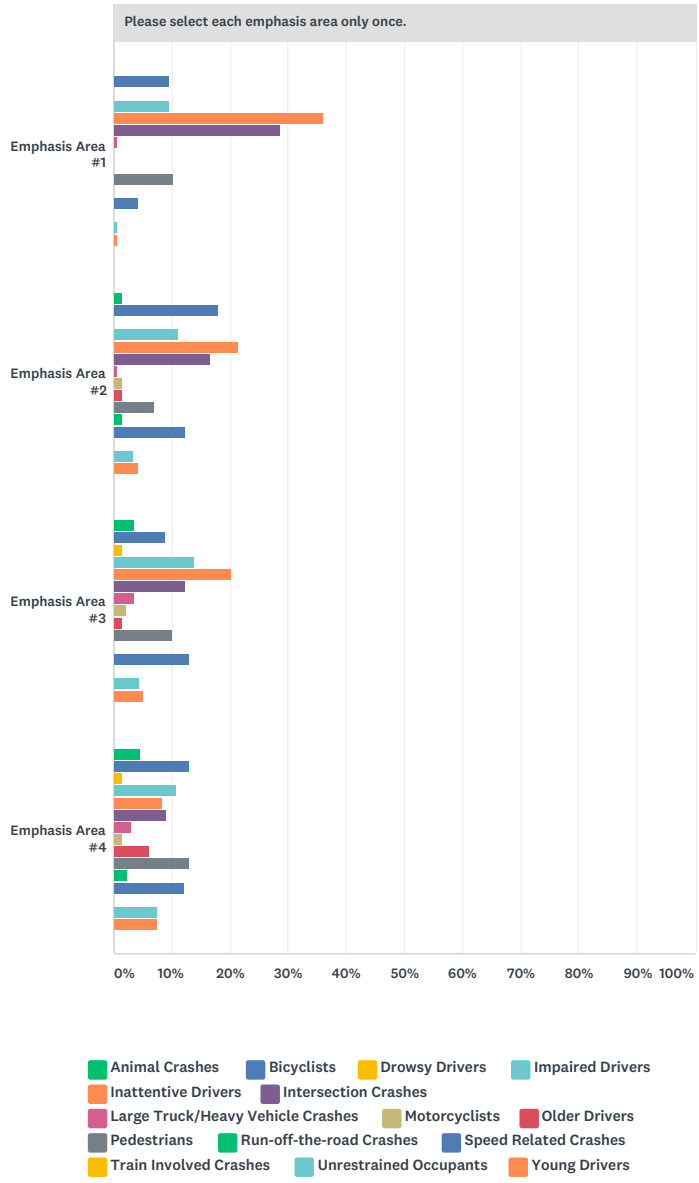
ANSWER CHOICES	RESPONSES	
Aggressive driving	22.45%	33
Animals	2.04%	3
Bicyclists	10.88%	16
Distracted driving	70.07%	103
Drowsy driving	0.68%	1
Impaired driving	19.73%	29
Impatient driving	30.61%	45
Night driving	6.80%	10
Older drivers	3.40%	5
Pedestrians	3.40%	5
Reckless driving	10.20%	15
Roadway design	26.53%	39
Running red lights	17.69%	26

Speeding	16.33%	24
Tailgating	10.88%	16
Weather	13.61%	20
Work zones	0.68%	1
Young drivers	3.40%	5
Other (please specify)	14.97%	22
Total Respondents: 147		

#	OTHER (PLEASE SPECIFY)	DATE
1	Street size (too narrow) marking on both sides makes for near one-way funnels	12/3/2018 11:12 PM
2	Drivers driving under speed limit	11/30/2018 11:27 AM
3	Lack of enforcement of traffic laws	11/30/2018 7:27 AM
4	Sidewalks that are paved out into the roadway. Especially at the apex of many corners. Roads are designed very poorly here, they are trying to get people to wreck on purpose to force more walking/biking.	11/28/2018 3:24 PM
5	Frustrated drivers because of the lack of adequate roadway infrastructure. Too small of roads for the volume of vehicles. Too much concern for bicycles and not enough concern for motor vehicles.	11/28/2018 1:54 PM
6	Bicyclists not sure whether they want to write on the street or on the sidewalk/not obeying traffic laws/writing the wrong way on street. Poorly designed pedestrian crossings on busy streets and at roundabouts	11/28/2018 1:33 PM
7	Running red lights is a very big issue. I see it constantly and have never seen a driver stopped for this infraction.	11/28/2018 1:11 PM
8	Poor road design ie: The Broadway Road Diet	11/28/2018 6:24 AM
9	inadaquate road capacity	11/27/2018 6:55 PM
10	many cars & bicycles don't stop at the stop sign. Bikers don't activate the blinking signals where the Bitterroot Trail intersects streets.	11/27/2018 3:46 PM
11	Once again too many people still using cell phones and texting. Msla Police Dept needs to do a sting operation like they did back in 2004 when they set up at crosswalks for people not stopping for pedistrians at crosswalks. They could go on school buses and then take photos and radio in to other officers.	11/27/2018 12:56 PM
12	Driving too fast for road conditions (and perhaps running red lights)	11/27/2018 10:31 AM
13	Running red lights	11/27/2018 10:26 AM
14	your focus on bikes has made the roads worse	11/27/2018 8:55 AM
15	The mixed traffic of tractor trailer freight, construction/haul trucks, bicycles, and pedestrians.	11/27/2018 8:09 AM
16	Lack of enforcement of red light running	11/27/2018 8:05 AM
17	out dated infrastructure-eg: 1) there is NO reason why (in 2018), drivers don't get a left arrow at intersections vs needing to fight for a left turn. or 2) all crosswalks aren't better painted or 3) lefts are allowed on Reserve w/o a stop light.	11/27/2018 7:52 AM
18	Lack of lighting	11/26/2018 12:22 PM
19	High speeds	11/24/2018 6:03 PM
20	Providing more resources for driver so they know the rules of the bike lanes. It's also helpful to have flags at busy intersections where pedestrians need to cross.	11/23/2018 1:14 PM
21	Lack of knowledge: no stop/yields in neighborhoods, people that don't know how to use roundabouts	11/23/2018 6:57 AM
22	The transportation system is developed with safety in mind, and distracted or unfocused drivers would seem to be the primary issue. If we all are attentive and focused, we would likely see a significant reduction in crashes.	11/8/2018 11:40 AM

Q10 Please rank the top four safety emphasis areas that you believe should be focused on to have the greatest potential to reduce fatal and serious injury crashes in the Missoula area.

Answered: 147 Skipped: 14

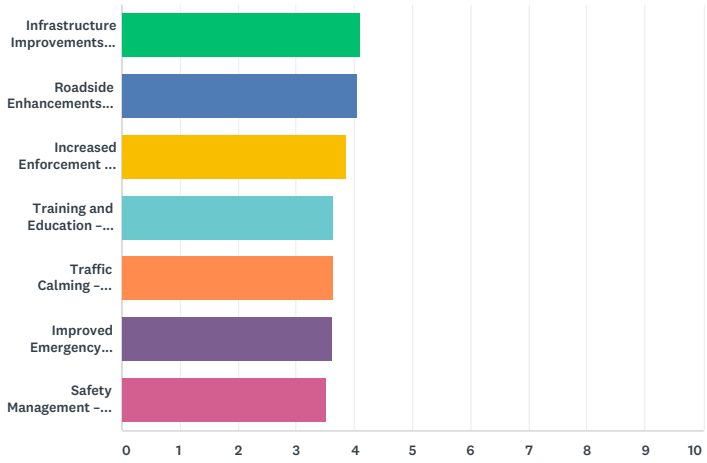


Please select each emphasis area only once.

	ANIMAL CRASHES	BICYCLISTS	DROWSY DRIVERS	IMPAIRED DRIVERS	INATTENTIVE DRIVERS	INTERSECTION CRASHES	LARGE TRUCK/HEAVY VEHICLE CRASHES	MOTORCYCLISTS	OLDER DRIVERS	PEDESTRI
Emphasis Area #1	0.00% 0	9.52% 14	0.00% 0	9.52% 14	36.05% 53	28.57% 42	0.68% 1	0.00% 0	0.00% 0	10.
Emphasis Area #2	1.38% 2	17.93% 26	0.00% 0	11.03% 16	21.38% 31	16.55% 24	0.69% 1	1.38% 2	1.38% 2	6.
Emphasis Area #3	3.62% 5	8.70% 12	1.45% 2	13.77% 19	20.29% 28	12.32% 17	3.62% 5	2.17% 3	1.45% 2	10.
Emphasis Area #4	4.55% 6	12.88% 17	1.52% 2	10.61% 14	8.33% 11	9.09% 12	3.03% 4	1.52% 2	6.06% 8	12.

Q11 Please indicate how effective you believe the following safety strategies are at reducing fatalities and serious injuries in the Missoula area.

Answered: 145 Skipped: 16



	VERY INEFFECTIVE	SOMEWHAT INEFFECTIVE	NEUTRAL	SOMEWHAT EFFECTIVE	VERY EFFECTIVE	N/A	TOTAL	WEIGHTED AVERAGE
Infrastructure Improvements – Implement infrastructure improvements to reduce crashes, where appropriate (traffic control, access control, rumble strips, clear zones, intersection improvements, etc.).	6.21% 9	5.52% 8	11.72% 17	23.45% 34	52.41% 76	0.69% 1	145	4.11
Roadside Enhancements/ Amenities – Addition of enhanced roadway features (i.e. signage, crosswalks, lighting, dedicated non-motorized facilities, etc.).	5.52% 8	9.66% 14	4.14% 6	35.86% 52	44.83% 65	0.00% 0	145	4.05
Increased Enforcement – Increase enforcement and citations of illegal and unsafe maneuvers and practices by road users.	8.28% 12	7.59% 11	8.28% 12	38.62% 56	35.86% 52	1.38% 2	145	3.87
Training and Education – Implement public awareness campaigns and educational programs to target key safety areas.	7.59% 11	15.17% 22	14.48% 21	29.66% 43	32.41% 47	0.69% 1	145	3.65
Traffic Calming – Consider reduced design speeds, reduced speed limits, and the implementation of traffic calming measures.	12.41% 18	12.41% 18	9.66% 14	29.66% 43	35.86% 52	0.00% 0	145	3.64
Improved Emergency Services – Decrease emergency response times, improve on-scene medical care and transport to hospitals.	4.14% 6	4.14% 6	35.86% 52	31.03% 45	20.00% 29	4.83% 7	145	3.62

Safety Management – Improve coordination between safety stakeholders, strengthen safety planning and implementation activities.	6.90% 10	8.97% 13	26.21% 38	36.55% 53	18.62% 27	2.76% 4	145	3.52

#	OTHER (PLEASE SPECIFY)	DATE
1	Missoula needs to be more strict about who gets there licenses, as in, if you can't parallel park or you are overall scaring the instructor you should be haven your license. Also driver tests should be taken around round about a and also on the highway.	12/5/2018 10:03 AM
2	Educate drivers to know that a yellow light does not mean "if you hurry, 3 or 4 more cars can go through!"	11/29/2018 3:17 PM
3	Reducing speed limits is not "traffic calming". That aggravates drivers. You're completely backwards on everything you do. This city is being deliberately destroyed.	11/28/2018 3:29 PM
4	Quit taking lanes away from motor vehicles. The plan to reduce 5th and 6th streets to one traffic lane is utterly STUPID, just like the reduction of vehicle lanes on West Broadway.	11/28/2018 1:58 PM
5	Improve Investigations on hit and runs.	11/28/2018 1:32 PM
6	I believe that enforcement of the traffic laws and signals is very lax . I am a professional driver and I spend many hours each week navigating Missoula streets. I almost never see a driver pulled over for traffic violations, The one exception is speeding past C S Porter school on Reserve.	11/28/2018 1:19 PM
7	Plow the roads better so people can actually drive after it snows. All of the turn lanes are filled with berms making lanes narrow and adding to unsafe conditions.	11/28/2018 6:49 AM
8	The Broadway Road Diet is a huge problem. It causes horrible delays which lead to frustration and then to aggressive dangerous driving.	11/28/2018 6:29 AM
9	Put GREEN Pavement on the Street where foot and bicycle paths cross busy streets. Its equally effective as flashing lights	11/27/2018 9:32 PM
10	High crash areas need to be looked at. For example Mullan road and Flynn lane and south avenue intersection in front of big sky high school. Both of these areas need traffic lights.	11/27/2018 9:19 PM
11	Experiment effectiveness of putting rumble strips on Interstate 90 exits to alert drivers they are going the wrong way.	11/27/2018 7:56 PM
12	roundabouts slow us down & get us there faster	11/27/2018 7:24 PM
13	infrastructure: more room for pedestrians & cyclists, more pedestrian-centered public areas.	11/27/2018 5:02 PM
14	Set up more sting operations so that people are more aware and would be fined. Besides it could generate some money for local police thru fees or fines. Plus it makes people think twice about getting on their cell phones.	11/27/2018 12:59 PM
15	There is a great need for a roundabout where Pattee Canyon meets 39th/Higgins!!	11/27/2018 10:05 AM
16	About time you start to give tickets to bikes!!!	11/27/2018 8:58 AM
17	Try to convince local law enforcement to enforce the laws.	11/27/2018 8:23 AM
18	Not enough traffic control. Not enough protected turns at busy intersections.	11/27/2018 6:37 AM
19	As a biker, walker, and driver, I think increased enforcement (especially around drivers running red lights) and improved lighting would be incredible.	11/26/2018 12:24 PM
20	Stop speedingcars	11/24/2018 6:04 PM
21	Continous bike lanes and bright paint staying they share the road where applicable.	11/23/2018 7:01 AM
22	Calming circles need to accommodate where a bicylist rides.bike lanes should NEVER dead end on a street	11/19/2018 5:05 PM
23	have respected role models represent sharing the roads with people crossing the street or other drivers...have the guy from Peal Jam or Hughey Louis or other high profile folks that will penetrate the digital distraction and inspire the nervous system of all the zombie automatons with lead feet plaguing the roads here	11/16/2018 8:23 PM
24	Educate all citizens on traffic laws. Do not exclude pedestrians or bicyclists. Focus areas: roundabouts, bike lanes vs "sharrows", bikes passing vehicles on the left side on one-way streets, pedestrians insisting that all lanes of traffic come to a full stop before stepping off of the curb, pedestrians waiting to cross while standing next to a bus stop sign, etc. Inform all road users, including bikes and pedestrians, of how to properly and legally work together to promote traffic flow.	11/16/2018 11:09 AM
25	Survey ignores too many important factors to be useful.	11/16/2018 11:04 AM

MISSOULA
Community Transportation Safety Plan
Engineering • Enforcement • Education • Emergency Services

APPENDIX C: PARTICIPATION PLAN

MISSOULA
Community Transportation Safety Plan
ENGINEERING • ENFORCEMENT • EDUCATION • EMERGENCY SERVICES

Public and Stakeholder Participation Plan

Technical Memorandum

September 24, 2018

Prepared by:
Robert Peccia and Associates
www.rpa-hln.com

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Public and Stakeholder Participation Plan

1.0. INTRODUCTION

The Missoula Metropolitan Planning Organization (MPO) has initiated a community transportation planning process to update the *Missoula Community Transportation Safety Plan* (CTSP). The initial CTSP was completed in 2013. Changes in safety concerns, crash trends, mitigation strategies, innovative technologies, and recent changes to federal requirements have necessitated a new examination of transportation safety issues within the Missoula MPO planning area. The CTSP will incorporate the 4 E's of Safety (engineering, enforcement, education, and emergency services) to identify practical and innovative strategies to decrease transportation related crashes while meeting current and future transportation needs of the Missoula MPO.

An initial step in the transportation planning process is to develop a *Public and Stakeholder Participation Plan* (PSPP). The PSPP will guide public input opportunities throughout the CTSP planning process. This PSPP builds on historical processes that the planning partners have used on past planning efforts and utilizes several traditional and non-traditional public participation strategies. It is the intent of this PSPP to identify the appropriate strategies to be used, define the sequencing within which the various strategies will be implemented, and chart out a course of action to be followed as the planning process commences. The process is expected to take approximately 10 months to develop the CTSP.

1.1. Purpose of the PSPP

The CTSP planning process involves early communication with interested parties to help identify needs, constraints, and opportunities to determine reasonable safety improvement strategies given available resources and local support. Community, stakeholder, agency, and other interested party involvement are important components in any successful project. Education and public outreach are essential parts of fulfilling the responsibility to inform the public about the transportation planning process. The Missoula MPO seeks to empower the public to voice their ideas and values regarding transportation issues.

Several strategies are proposed to disseminate information and elicit meaningful participation for the CTSP. The purpose of this PSPP is to guide the implementation of strategies to provide opportunities for public and stakeholder review and comment at key decision points in the planning process. The methods described herein are not intended to restrict consideration or use of other methods to include the public and stakeholders. Conditions vary, so good judgment must be exercised to identify possible limitations and opportunities for involvement. Early and continuous public involvement in all major actions and decisions is paramount to the success of the planning process.

1.2. Study Area Boundary

The study area for the CTSP is defined by the Missoula Metropolitan Planning Area (MPA) which includes the Missoula city limits, the extents of the Missoula Urban Area, and other areas that are impacted by and may impact planning decisions for the MPO. The study area boundary is shown in **Figure 1** and defines the limit of the area of focus for the CTSP.

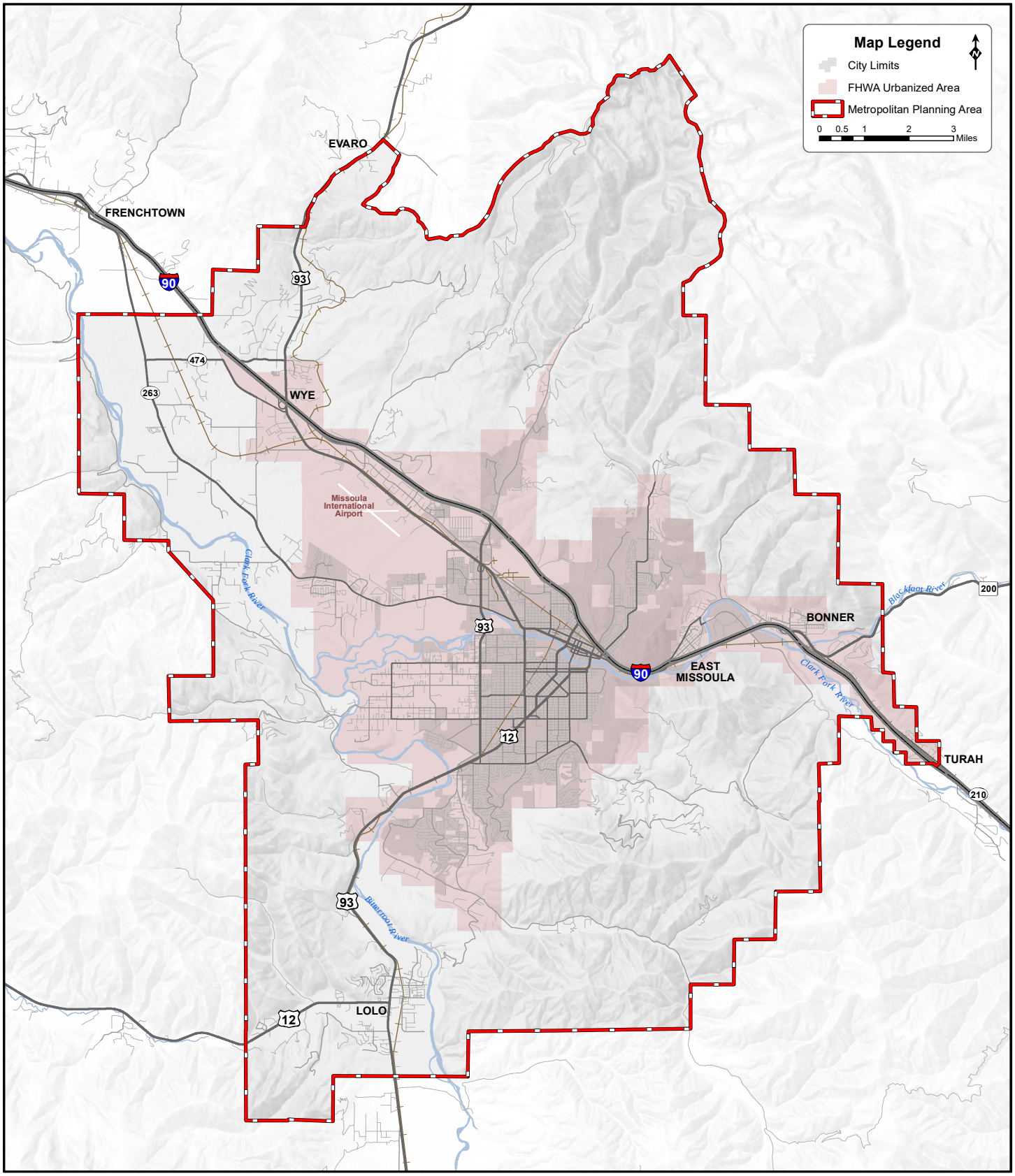

Figure 1: Study Area Boundary

2.0. PARTICIPATION PROCEDURES

Active participation and input on the development of the CTSP will be encouraged at every stage of the planning process. Key audiences that will be involved include both internal and external stakeholders. Internal stakeholders are directly involved in the planning process, are tasked with making decisions through the development of the CTSP, and will be charged with its implementation. External stakeholders include those with interest or expertise in transportation safety within the study area.

Efforts to secure participation will target stakeholders, who are individuals or entities that could be significantly affected by the CTSP recommendations, or who could significantly influence implementation. Identified stakeholders include: law enforcement; emergency service providers; schools; healthcare providers; low-income, minority, and disabled communities; neighborhood representatives; business interests; special transportation groups; safety interest groups; local officials; and federal and state transportation agencies. This list is not all-inclusive and additional stakeholders may be identified as the process evolves and as needs for specific input are recognized.

Integration of partners with expertise in the 4 E's of Safety is especially important in defining multidisciplinary strategies for improvement. Implementation of identified strategies will be more successful if feedback is solicited throughout the entire planning process.

Active participation in identifying and commenting on project issues will be encouraged at every stage of the project development process. The following sections discuss the study contacts and anticipated key stakeholders and interested parties to be included in the planning process.

2.1. Plan Contacts

Contact information for the Missoula MPO and RPA will be provided in all information that is published. This information is provided below:

Aaron Wilson
Missoula MPO
Transportation Planning Manager
435 Ryman Street
Missoula, MT 59802
406.522.6668
wilsona@ci.missoula.mt.us

Scott Randall
Robert Peccia and Associates (RPA)
Traffic and Transportation Manager
3147 Saddle Drive
Helena, MT 59601
406.447.5000
srandall@rpa-hln.com

2.2. Transportation Safety Advisory Committee (TSAC)

The development of the CTSP will be overseen by a Transportation Safety Advisory Committee (TSAC). The TSAC will guide work, review deliverables, and provide general oversight capacity on all matters related to the CTSP. Following development of the CTSP, the TSAC will be responsible for carrying out the strategies provided in the plan.

Four TSAC meetings, a public meeting, and a Community Safety Summit will be held to discuss the progress of the CTSP, present findings, and obtain guidance as appropriate. These meetings will allow for the exchange of information and ideas during the development of the CTSP. The meetings will provide the TSAC with an opportunity to provide essential feedback and guidance on the development of the CTSP. The anticipated timeline and objectives for the meetings are shown in **Table 1**.

Table 1: Meetings and Key Objectives

MEETING	KEY OBJECTIVES
TSAC Meeting #1 *September 10, 2018*	• Review scope of work • Discuss plan development • Confirm TSAC members • Define TSAC mission and CTSP goals
TSAC Meeting #2 *Mid-late October 2018*	• Review crash data • Discuss key safety issues in Missoula • Discuss public meeting preparation
Public Meeting *Late October/Early November 2018*	• Present purpose of the CTSP • Listen to public perception of safety issues • Review findings from crash data • Gain an understanding of public perception versus reality
TSAC Meeting #3 *Early-mid January 2019*	• Share findings of first public meeting • Establish Emphasis Areas for CTSP • Inventory current and planned safety activities • Identify potential safety strategies • Prepare for Community Safety Summit
Community Safety Summit *Late January/Early February 2019*	• Identify strategies for addressing the Emphasis Areas • Prioritize strategies • Identify resources necessary for implementation • Identify performance measures and targets
TSAC Meeting #4 *Early-mid April 2019*	• Review the draft CTSP • Review public comments and input received

2.2.1. Members of the TSAC

Safety strategies are most effective if safety partners and stakeholders are involved in the process of developing the strategies. It is beneficial for all these partners to collaborate and combine efforts to improve safety. With this in mind, the TSAC will be made up of members from the community who are knowledgeable about the safety issues in Missoula and have a vested interest in working towards reducing crashes in the study area. Individuals were selected to be part of the TSAC based on knowledge of and involvement in the 4 E's of Safety. The TSAC will be comprised of partners and stakeholders from groups and agencies listed below. By having representation from these stakeholders on the TSAC, safety strategies that efficiently use personnel and financial resources can be developed or identified.

- Missoula MPO
- MDT Missoula District
- MDT Planning Division
- Missoula City Bicycle/Pedestrian Office
- Missoula City Public Works
- Missoula City Development Services
- Missoula City Emergency Services
- Missoula Fire Department
- Missoula Rural Fire Department
- Missoula Police Department
- Missoula County Office of Emergency Management
- Missoula County Sheriff's Office
- Missoula County Public Schools
- Missoula County Public Works
- Missoula County DUI Task Force
- Missoula/Granite County Buckle Up Montana
- Missoula International Airport
- Missoula Underage Substance Abuse Prevention
- Montana Highway Patrol
- Montana Department of Health and Human Services
- Montana Rail Link
- Mountain Line
- University of Montana - Curry Health Center
- University of Montana - Office of Public Safety
- University of Montana - Office of Transportation
- Community Medical Center
- St. Patrick Hospital

2.2.2. Roles and Responsibilities of TSAC Members

A mission statement for the TSAC was developed as part of the 2013 CTSP. The mission statement for the TSAC was to, "*provide guidance on the development of the Community Transportation Safety Plan and provide direction on plan implementation*." With this mission statement in mind, TSAC members were chosen based upon their dedication to improving transportation safety in Missoula.

Members of the TSAC will be responsible for leading implementation of the final CTSP. It is expected that the selected TSAC members will employ the resources necessary to achieve the goals identified for each emphasis area. Members will also be asked to attend quarterly meetings with the MPO to track progress and achievements after the CTSP is complete. For this reason, it is important that the TSAC members have ample time to dedicate to implementation of the safety strategies identified in the CTSP. This will ensure the greatest success in implementing the CTSP and achieving the goals set within it.

To kick off the plan, TSAC members will be tasked with reviewing the mission of the TSAC and identifying a vision and goal(s) for the CTSP. To complete this task, a "best practices summary" review will be discussed for how other states and MPOs have organized and engaged their advisory committees. The project team will also use this meeting as an opportunity to clarify the roles and responsibilities of the TSAC and outline the structure and schedule of the CTSP.

During the second TSAC meeting, a review of crash data will be discussed with the group. Analysis of this data will help the TSAC identify contributing factors to these crashes and determine the most serious safety issues facing the community. This meeting will also be used to inform and discuss the purpose of the first public meeting.

The third TSAC meeting will be used to share the findings of the first public meeting. This information will help the TSAC establish the emphasis areas to be used in the CTSP. At the third meeting, the TSAC will also help inventory current or planned safety activities within the community, particularly those related to the defined emphasis areas. The project team will guide the TSAC in a discussion about potential strategies to address these emphasis areas. This meeting will also be used to discuss the Community Safety Summit and prepare TSAC members to facilitate the Summit.

The fourth and final meeting of the TSAC will be facilitated to review the draft CTSP. The project team will ensure the TSAC has the necessary resources to successfully carry out the Plan.

2.3. Stakeholders

Everyone's opinions and experiences are important to the planning process. Stakeholders, the public, local officials, and other interested parties will be engaged throughout the planning process. A stakeholder contact list will be developed and will include individuals, businesses, or groups identified by the MPO or TSAC. The intent of developing the stakeholder list is to identify individuals and groups who likely have interest in the planning process to actively seek out and engage them. Input from a diverse range of stakeholders is important to the planning process.

Identified stakeholders will be encouraged to participate in the planning process either through public comment or participation in the public meeting and Community Safety Summit. Examples of these stakeholders may include the Missoula Chamber of Commerce, Missoula School District, neighborhood groups, human services organizations, non-motorized groups, civic groups, elected officials, and others. The intent of engaging these partners is to obtain meaningful public input about the major transportation issues and concerns but also to encourage collaboration from these groups in implementation of the CTSP. It is also important to gain support from these groups and leverage their resources to ensure implementation strategies reach a larger percentage of the population.

3.0. OUTREACH AND ENGAGEMENT OPPORTUNITIES

Information regarding all aspects of the CTSP will be provided to the public and interested parties. Public and stakeholder input will be solicited and encouraged at every stage of the planning process. Several public engagement strategies are proposed to work together to reach the most people possible and elicit meaningful participation. This section provides an overview of each type of public outreach that will be used to gather input from the various stakeholders.

3.1. Electronic Media

The project team recognizes that people lead increasingly busy lives. Allowing the public to provide input on their own schedules has proven to increase the quantity, quality, and diversity of input. Electronic media allows for focused and expansive outreach while allowing the public to participate at their convenience to encourage meaningful feedback. Multiple electronic public engagement tools will be used to solicit input and provide information. These include developing and maintaining a project webpage, providing social media updates, developing an online survey, and publishing informational materials. The following sections discuss these tools in more detail.

Project Website

A project website will be hosted by the Missoula MPO. Informational materials will be made available on the project website. The website will be updated as needed throughout the planning process. The website will contain various information including contact information, meeting announcements, frequently asked questions (FAQs) about the planning process, a description of the CTSP, finalized documents, and interim memorandums. The website will be the main tool for developing and maintaining an online presence and will be updated frequently.

Electronic Survey

An online survey will be developed which will lead users through a series of questions to collect their opinions, interests, and feedback regarding transportation safety in the Missoula area. The content of the survey will be developed in coordination with the MPO.

Social Media

Periodic updates will be provided to the MPOs social media platforms. The updates will announce meetings and will give notice when updates are made to the website.

Electronic Outreach

A contact list of stakeholders and interested parties will be maintained throughout the planning process. The contact list will consist of email addresses for those wishing to receive periodic updates on the CTSP. Email addresses for identified stakeholders, individuals who make public comments, and those wishing to stay informed about the CTSP. Outreach to the contact list will include periodic updates as needed, distribution of newsletters/flyers, and other important news regarding the planning process. The outreach will describe work in progress, results achieved, and other related information.

3.2. Targeted Outreach and Meetings

Coordination and focused outreach to local agencies and identified stakeholders will occur throughout the planning process. A stakeholder contact list of individuals, businesses, special interest groups, and local governments who may be affected by, or have an interest in, the project will be developed and refined throughout the process.

Special meetings, presentations, phone calls, and discussions with select stakeholders may occur throughout the project. The targeted stakeholder outreach is intended to obtain meaningful input and dialogue about the project and to share information and identify barriers and constraints to the project.

Public Meetings

A public meeting will be held following the second meeting with the TSAC in late October or early November 2018. The purpose of the public meeting is to clear up the intentions of the plan and educate the public on what this plan is, and what it is not. It is also desirable to gain an understanding of public perception with regards to transportation safety. There will be discussion on what the public views as the most important safety issues, then the analyzed crash data will be presented. This will provide a comparison of the public perception of safety issues in Missoula to the safety issues identified with the crash data.

A Community Safety Summit will be held in late January or early February 2019 following the third TSAC meeting. The Summit will consist of a series of working sessions with the TSAC and members of the community at-large. The purpose of the Community Safety Summit is to identify strategies to address the community's identified emphasis areas, prioritize strategies, and to identify performance measures and targets.

3.3. Easy Access and Visibility

All information published regarding the CTSP will have contact information for the project managers. Comments can be submitted throughout the planning process via the website or by contacting the contacts listed previously. The following describes considerations to be made throughout the planning process.

Information

Technical and planning level information related to the data or content used in the development of the CTSP will be available in memorandums, project updates, graphics, and other miscellaneous materials. The materials will be made available on the project website.

Consideration of Public Input

Input and comments from stakeholders and the public will be considered by the TSAC throughout the planning process. Public comments received on the draft CTSP will be documented and included as an appendix to the final plan.

Considerations for Traditionally Underserved Populations

Additional efforts are necessary to involve traditionally underserved segments of the population, including disabled, minority, and low-income residents. The following steps will help with these efforts:

- Plan meeting locations carefully: We will hold workshops in locations that are accessible and compliant with the Americans with Disabilities Act (ADA).
- Seek help from community leaders and organizations: To facilitate involvement of traditionally underserved populations, we will consult with community leaders and organizations representing these groups about the most effective ways to reach their constituents.
- Be sensitive to diverse audiences: At public meetings, the project team will attempt to communicate as effectively as possible. Presenters will avoid using technical jargon, and staff will wear appropriate dress and adhere to professional conduct.

4.0. OVERALL STUDY COMMUNICATION

This PSPP establishes guidelines and procedures for encouraging public participation. The following communication strategies and techniques will be used to share information and to seek public and stakeholder input.

- A project website will be developed to include information about the planning process.
- Technical memorandums and study information will be available on the CTSP website page.
- An online survey will be developed to gather input from the public.
- Electronic updates will be provided to interested parties when milestones are met.
- Meeting announcements will be posted on the project website and social media pages.
- Press releases announcing public meetings will be sent to area media outlets.
- Public comments and input will be collected and considered throughout the planning process.

5.0. PLAN SCHEDULE

Adherence to the schedule is important to stay on track and to keep all participating parties engaged. The anticipated schedule follows a 10-month time frame. It is anticipated that the draft CTSP by the end of March 2019. A 30-day public review and comment process will commence following the release of the draft CTSP. All work is expected to be complete by the end of April 2019. **Figure 2** contains the anticipated schedule.

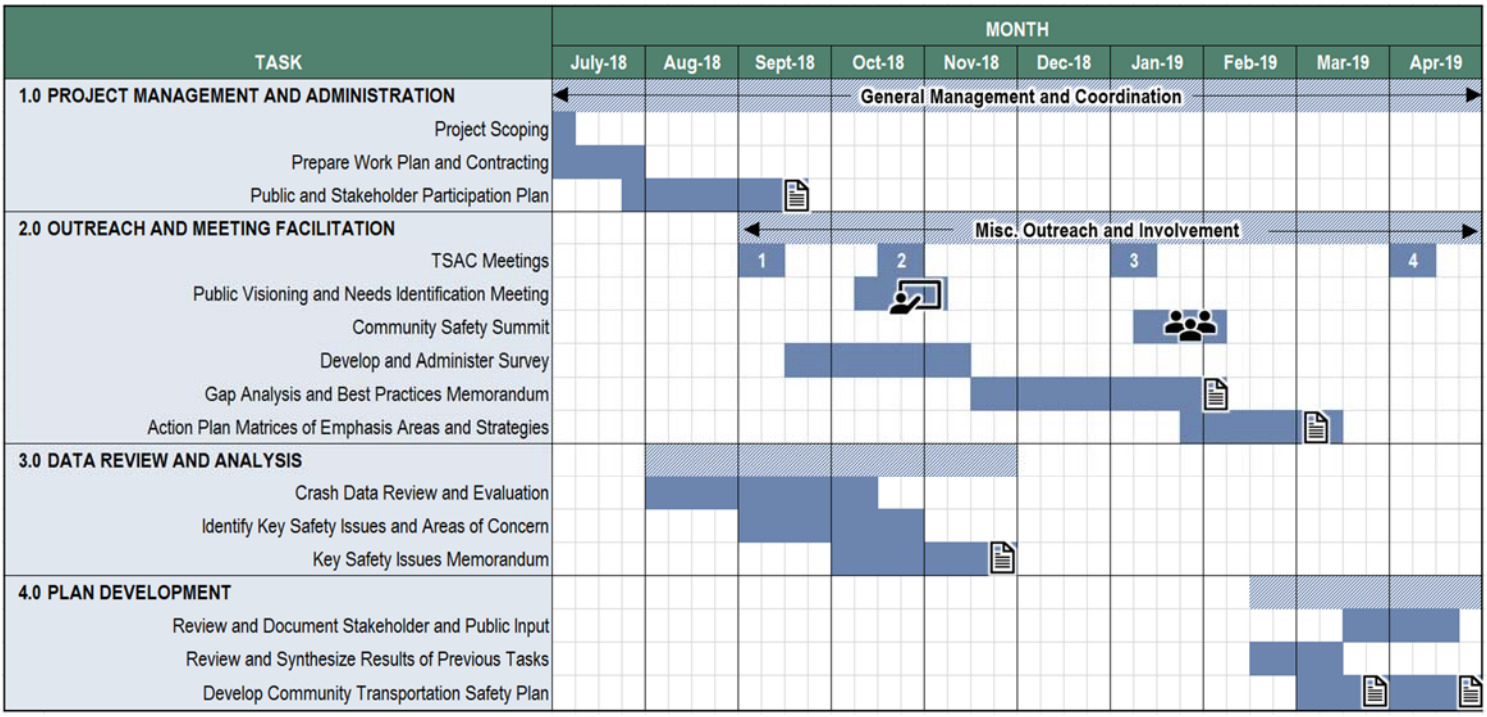

Figure 2: Plan Schedule

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APPENDIX D: KEY SAFETY ISSUES

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Key Safety Issues

Technical Memorandum

March 29, 2019

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Key Safety Issues

1.0. INTRODUCTION

The Missoula Metropolitan Planning Organization (MPO) has initiated a community transportation planning process to update the *Missoula Community Transportation Safety Plan*[1] (CTSP). The initial CTSP was adopted in September 2013. Changes in safety concerns, crash trends, mitigation strategies, innovative technologies, and recent changes to federal requirements have necessitated a new examination of transportation safety issues within the Missoula Metropolitan Planning Area (MPA).

In this memorandum, updated crash data were analyzed to identify key safety issues within the community. This analysis will inform the identification of emphasis areas for the CTSP. This memorandum also reviews the current emphasis areas (intersection crashes, occupant protection, and impaired driving) for consistency with current crash data. The results of this analysis will help identify practical and innovative strategies to address the key safety issues and decrease transportation related crashes in the Missoula area.

2.0. PERFORMANCE MEASURES AND TARGETS

Performance management is a strategic, structured approach intended to improve project and program delivery, inform investment decision-making, and increase transparency and accountability to the public. Moving Ahead for Progress in the 21st Century Act (MAP-21) built upon the framework of previous federal transportation planning processes by requiring state departments of transportation (DOTs), MPOs, and operators of public transportation to link investment priorities to the achievement of performance targets for key areas, including safety, infrastructure condition, congestion, system reliability, emissions, and freight movement.

The Fixing America's Surface Transportation (FAST) Act continues these requirements to increase the accountability and transparency of this plan and to support improved investment decisions through a focus on performance outcomes for national transportation goals. In accordance with Federal law, the US Department of Transportation (USDOT) is responsible for identifying performance measures related to national highway and transit performance goals. States and MPOs must establish performance measure targets. With these national performance measures as a baseline, State DOTs and MPOs may identify additional performance measures and targets that address local community visions and goals as desired.

The USDOT is responsible for establishing the performance measures that will be used to assess progress in three apportioned Federal-aid programs: the National Highway Performance Program (NHPP); the Highway Safety Improvement Program (HSIP); and the Congestion Management and Air Quality (CMAQ) program. Of particular importance to the CTSP is the HSIP and the associated identical safety performance measure targets.

Under the *Highway Safety Improvement Program and Safety Performance Management Measures Final Rules*[2], which became effective on April 16, 2014, the Federal Highway Administration (FHWA)

[1] Missoula Area Community Transportation Safety Plan, Cambridge Systematics, Inc., September 2013.
[2] Highway Safety Improvement Program and Safety Performance Management Measures Final Rules, FHWA-SA-16-023, US Department of Transportation, Federal Highway Administration, March 15, 2016.

established five performance measures to carry out the HSIP and to assess serious injuries and fatalities on all public roads. In addition, the rule establishes the process for State DOTs and MPOs to establish and report their safety targets and progress made in meeting these safety targets. This is the process FHWA will use to assess whether State DOTs have met or made significant progress toward meeting safety targets. The five performance measures to assess performance and carry out the HSIP established in the rule include:

- Number of fatalities;
- Rate of fatalities per vehicle miles travelled (VMT);
- Number of serious injuries;
- Rate of serious injuries per VMT; and
- Number of combined non-motorized fatalities and non-motorized serious injuries.

2.1. State Performance Measures and Targets

In 2014, Montana committed to Vision Zero – a vision of zero fatalities and zero serious injuries on Montana's roadways – to measure progress in statewide efforts to improve safety. To comply with MAP-21, MDT updated the *Montana Comprehensive Highway Safety Plan*[3] (CHSP). The CHSP update maintains an interim goal of halving fatalities and serious injuries from 1,705 in 2007 to 852 in 2030. The CHSP identified four overarching safety targets for the national performance measures:

- No more than 172 annual fatalities by 2020, an annual reduction of 2.7 percent (5 fewer fatalities per year);
- Fatality rate of no more than 1.28 fatalities per 100 million VMT by 2020, a reduction of 4.3 percent per year;
- No more than 796 serious injuries by 2020, a 3.6 percent annual reduction; and
- Serious injury rate of 5.9 serious injuries per 100 million VMT, a reduction of 5.1 percent per year.

In 2018, consistent with FAST Act federal rules, MDT established the additional required performance target to Montana's already established safety performance measures. Safety performance targets are statewide totals or rates for 2019 and are based on a rolling five-year average and are determined annually. The adopted Montana state safety performance measures and targets are as follows:

- Number of Fatalities - 187.4
- Fatality Rate - 1.462
- Number of Serious Injuries - 892.8
- Serious Injury Rate - 6.968
- Number of Combined Non-Motorized Fatalities and Serious Injuries - 73.2

2.2. Missoula MPO Performance Measures and Targets

The Missoula MPO supports the state targets for applicable safety performance measures. The MPO has also opted to develop localized goals and objectives. In the MPO's Long Range Transportation Plan (LRTP), *Activate Missoula 2045*[4], the following safety goal and objectives have been adopted:

[3] Montana Comprehensive Highway Safety Plan, Montana Department of Transportation, May 2015.
[4] Activate Missoula 2045, Missoula Long Range Transportation Plan, LSA Associates, Inc., Alta Planning + Design, March 2017.

Goal 5: Provide safe and secure transportation.

- **Objective 1:** Support transportation programs and design improvements which reduce crashes and improve safety of all modes.
- **Objective 2:** Facilitate the rapid movement of first responders and support incident management during times of emergency.

In the 2013 CTSP, the Transportation Safety Advisory Committee (TSAC) identified a vision of "Target Zero" and a goal to reduce the 5-year average of fatal and serious injuries by 25 percent by 2018. This meant reducing the 5-year rolling average to less than or equal to 113 fatalities and serious injuries by 2018.

3.0. CRASH DATA EVALUATION

The MDT Traffic and Safety Bureau provided crash data for the ten-year period from January 1st, 2008 to December 31st, 2017. This information includes data from crash reports submitted to the Montana Highway Patrol from their patrol officers and from local city/county law enforcement. The crash reports are a summation of information from the scene of the crash provided by the responding officer. As such, some of the information contained in the crash reports may be subjective.

Crash data within the study area was analyzed to determine problem areas, "hot-spot" crash locations and behavioral characteristics. Note that user behavior (such as seatbelt usage, impaired driving, distracted driving, etc.) is analyzed only when a crash occurs. There are likely many other instances in which these unsafe behaviors are occurring without resulting in a crash. The purpose of this analysis is only to analyze the results of the crashes within the Missoula Metropolitan Planning Area (MPA) and to identify trends and contributing factors in these crashes so that Missoula MPO can address these issues and improve safety on its roadways. **Figure 3.1** in **Section 3.3** shows a map of the MPA boundary.

The following sections provide an analysis of available crash data to help identify crash trends and contributing factors. The outcomes of this analysis will point to the most prevalent safety issues in the Missoula area which will further help define the emphasis areas for the CTSP.

3.1. Limitations of Data

Although the crash data can help identify trends in behavioral and circumstantial contributors to crashes within the Missoula MPA, there are some limitations to the data. The primary limitation is unreported and unknown data. There are many crash records for which various fields are left blank. Occasionally, a report will have "unknown" listed, rather than a blank field. Without this information, it may be difficult to capture the complete picture of what happened in crashes. Similarly, many crashes, especially those where individuals and vehicles are unharmed, do not get reported to the police. Underreporting can limit the ability to properly and effectively manage road safety, since the analyses in this report are based only on reported crash data. Another limitation may be inconsistencies with reporting. Although protocol has been established and training for filling out crash reports is provided to law enforcement, there may still be inconsistencies or errors in the reporting.

Often times the available crash data does not provide the full story. Without reading the full crash reports by the investigating officer which contain narratives of the crash occurrence, statements from the individuals involved and witnesses, crash diagrams, citations, and officer opinions as to cause of the collision, a clear picture of the crash may be unattainable. Since it is not possible to review the full crash reports for all of the crashes that occurred within the Missoula MPA over the past five years, the

data analysis contained in the following sections is limited to data contained in the crash records. The records are evaluated as reported, there have been no efforts to correct mistakes or fill in blanks.

3.2. Assumptions Made

Due to limitations and complexities of the available data, various assumptions were made during data analysis. The following assumptions and calculation processes were kept consistent throughout each data analysis for the emphasis areas, unless otherwise noted.

In order to calculate the percent change in the total number of crashes or severe injuries over the past five years, a trend line was fit to the data. The method of least squares is used to find a line that best fits the data points.

When reporting the percent of crash records that fit within a defined category (i.e. percent of crashes that were a rear end crash, the percent of drivers age 65 and older, etc.), the percentage was calculated where the "whole" is the number of *reported* records for each data field, including unknown, not applicable, etc. This means that, all crash records were included in the total, unless it was left blank. For example, if there were 500 inattentive driver records, with 50 blanks and 50 "unknowns" reported seatbelt usage, the percent of unrestrained occupants would be calculated out of 450. With regards to driver age, those reported as "0" were considered unknown.

Up to four driver contributing actions can be reported for each driver involved in a crash. Most often, a single contributing action is not repeated in multiple fields, but there are some instances where this does occur. When the driver had no contributing action, "no contributing action" is often listed in all four fields. Similarly, there was not a contributing action reported, all four fields are left blank. When a driver had three contributing actions, the fourth field was either left blank or was filled with "no contributing action". When calculating the top contributing factors in each crash, the sum of the occurrences of each contributing action in all four fields was divided by the total number of reported records in the first field (i.e. all driver records excluding those where there were blanks for all four contributing actions). When reporting the number of unreported contributing actions, the number of blank records was divided by the total number of driver records. Note that the sum of the percentages of occurrences of each contributing factor will add up to over 100 percent, since more than one contributing factor can be reported for each driver.

When evaluating the unrestrained occupants, the definition of "unrestrained" included four categories; "none used – motor vehicle occupant", "shoulder belt only used", "lap belt only used", and "restraint used improperly". The four categories, rather than just the "none used" category, were used because improperly restrained occupants are at just as high of a risk for sustaining life-threatening injuries as those who are not restrained at all. A 2001 study[5], found that the odds of ejection were higher for shoulder only belted occupants compared to both lap-shoulder and lap only belted occupants. There was no difference in the odds of ejection for an occupant using a shoulder belt only and an occupant using no seatbelt. Occupants using a shoulder belt only were more likely to sustain a severe injury than lap-shoulder belted and lap only belted occupants. Occupants using only a shoulder belt had the same odds of a severe injury as unbelted occupants.

[5] Intermountain Injury Control Research Center, Accident Analysis & Prevention, Volume 33, Issue 1, Shoulder belts in motor vehicle crashes: a statewide analysis of restraint efficacy, January 2001, https://www.sciencedirect.com/science/article/abs/pii/S0001457500000166

3.3. Study Area

In 2013, the CTSP study area boundary matched the 2010 Missoula urbanized area (UZA) boundary. In this 2018 update of the CTSP, the study area is slightly larger and encompasses the entire Missoula MPA (**Figure 3.1**). For this reason, the evaluation does not provide a direct comparison. Unless otherwise stated, crash data is presented at the MPA level. The following describes other boundaries used to analyze data throughout this report:

Metropolitan Planning Area: The MPA boundary is a federal requirement for the metropolitan planning process. The boundary is established by the governor and individual MPOs within the state, in accordance with federal metropolitan planning regulations. The MPA boundary must encompass the existing urbanized area and the contiguous areas expected to be urbanized within a 20-year forecast period. The MPA boundary establishes the area in which the MPO conducts federally mandated transportation planning work, including: an LRTP, the Metropolitan Transportation Improvement Program for capital improvements identified for a four-year construction period, a Unified Planning Work Program, a congestion management process, and conformity to the state implementation plan for air quality for transportation related emissions.

FHWA Urbanized Area: These boundaries are used by FHWA to designate urban and rural areas. They play an important role in most FHWA related funding programs by designating urban and rural areas. They are based on, but distinctly different from the U.S. Census Bureau's Urban Areas.

Missoula City Limits: The area that has been formally incorporated into the City of Missoula.

Rural Area: Any area outside the UZA and within the MPA.

According to the MDT crash database, there were 21,121 crashes reported within the study area over the past 10 years and 11,277 crashes over the past 5 years (2013-2017). The study area accounts for approximately 10 percent of all crashes in Montana in the same time period. The study area is approximately 0.2 percent of Montana's land area and is home to approximately 9 percent of the state's population.

The number of crashes per year has varied greatly over the past 10 years. There was a general decrease between 2008 and 2012. Since 2012, the number of crashes has remained fairly steady. At the same time, the number of severe (fatalities and serious injuries) saw a steady decline from 206 in 2008 to 82 in 2017. These trends, seen in **Figure 3.2,** suggest that while the overall number of crashes has been fairly steady over the past five years, they are occurring with less severity. Although it is desirable to have fewer crashes, it is more important that crashes don't result in loss of life or serious injuries that prevents the person who sustained the injury from normally continuing the activities the person was capable of performing before the injury occurred.

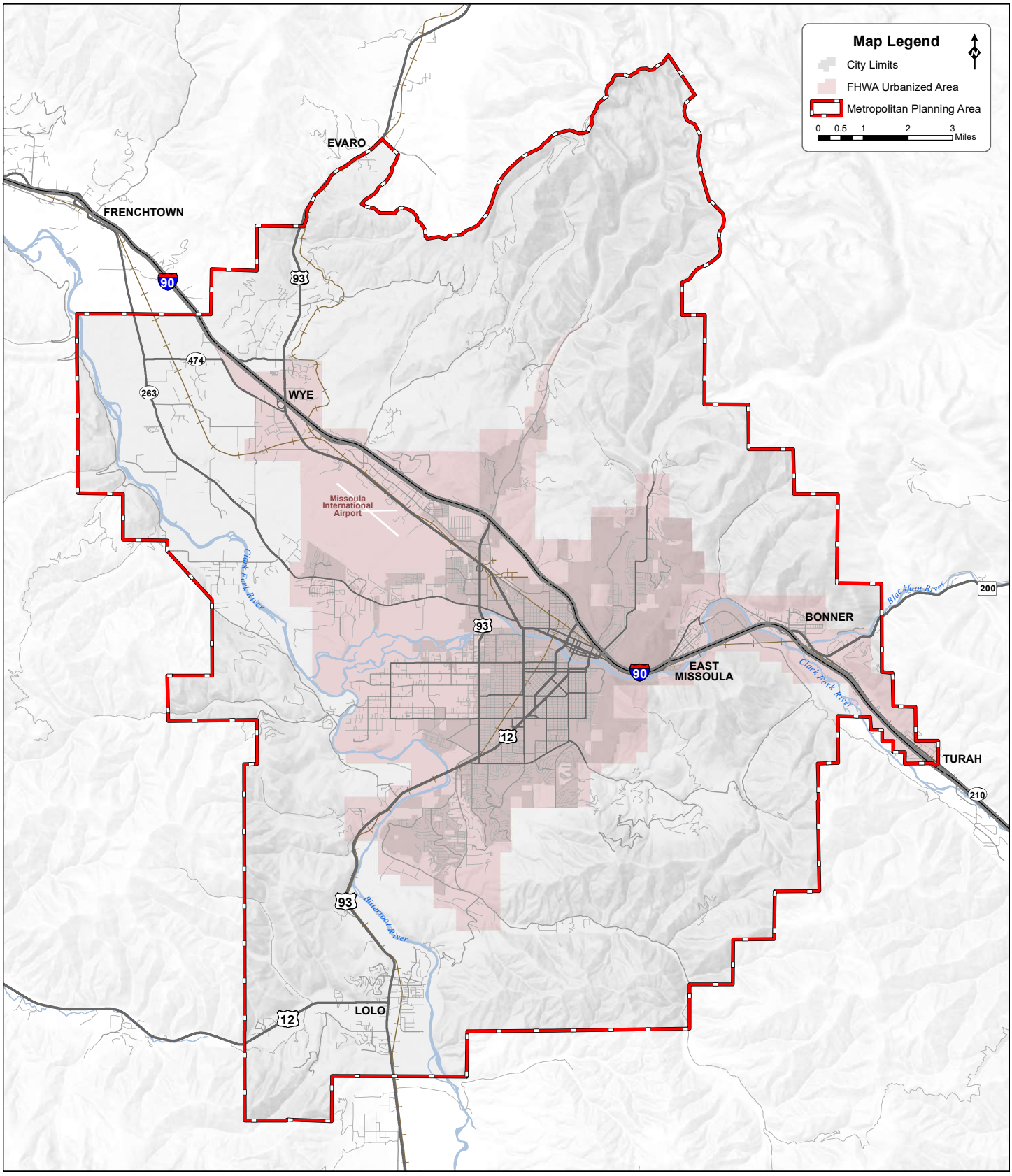
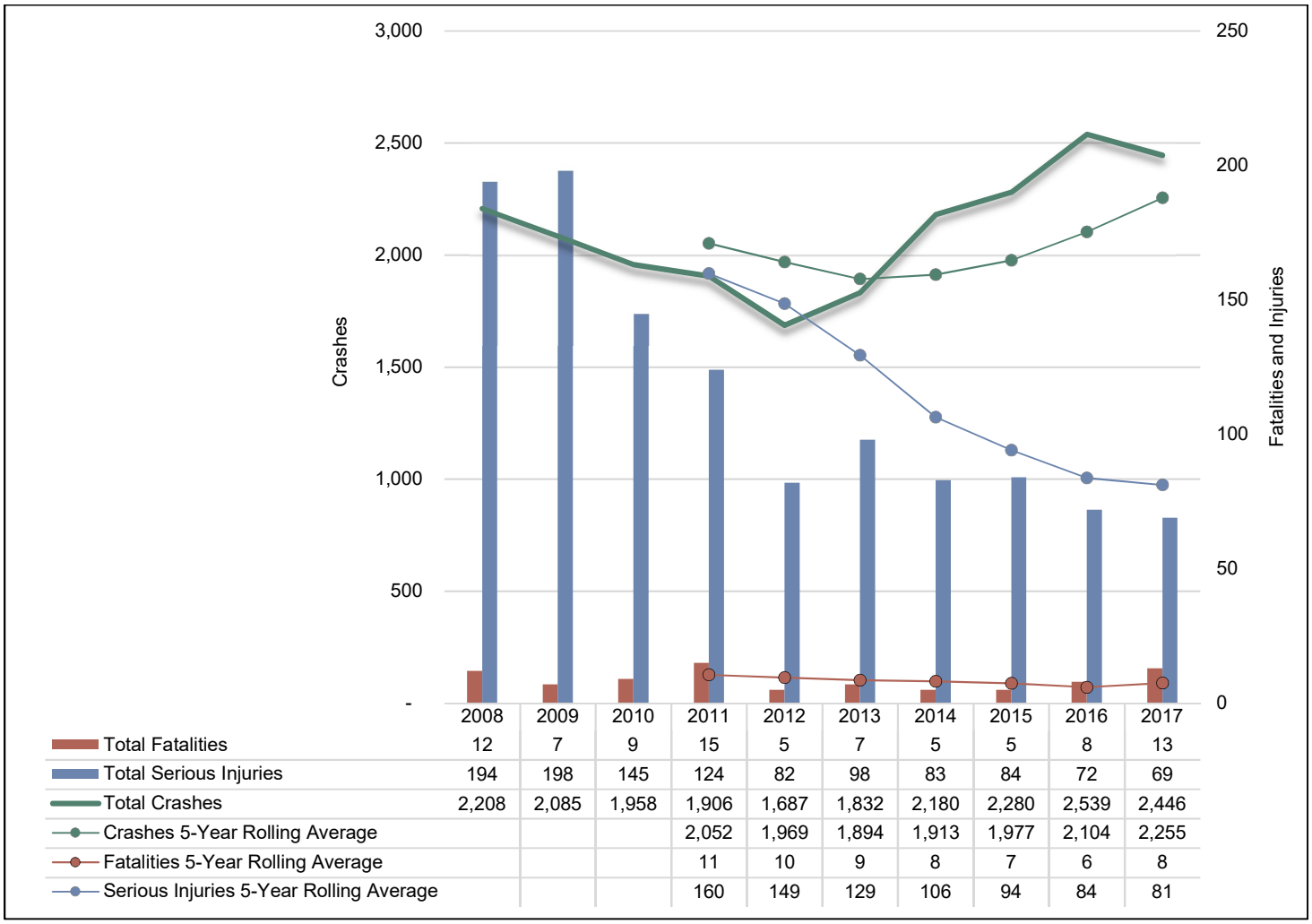


Figure 3.1: Study Area



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total Fatalities	12	7	9	15	5	7	5	5	8	13
Total Serious Injuries	194	198	145	124	82	98	83	84	72	69
Total Crashes	2,208	2,085	1,958	1,906	1,687	1,832	2,180	2,280	2,539	2,446
Crashes 5-Year Rolling Average				2,052	1,969	1,894	1,913	1,977	2,104	2,255
Fatalities 5-Year Rolling Average				11	10	9	8	7	6	8
Serious Injuries 5-Year Rolling Average				160	149	129	106	94	84	81

Figure 3.2: Missoula MPA Crash and Injury Trends

3.4. Performance Measures

As stated in the 2013 CTSP, during the 5-year period from 2007 to 2011, the Missoula urban area experienced an average of 8 fatalities and 143 serious injuries per year. In the same time period, the Missoula MPA experienced an average of 11 fatalities and 160 serious injuries. The 2013 TSAC identified the goal of reducing the rolling 5-year average of fatal and serious injuries by 25 percent by 2018 which would equal 113 fatal and serious injuries within the Missoula urban area. Factoring in the larger study area, the 5-year rolling average of fatal and serious injuries from 2013 to 2017 is 88.8, which is a decrease of 48 percent from the 2007 to 2011 average.

As part of Montana's performance measure requirements, fatal and serious injury rates are tracked. Injury rates are calculated based upon the number of injuries that occurred per 100 million vehicle miles traveled within the study area. In 2013, the 5-year rolling average fatality rate was 1.26 and the average serious injury rate was 19.07. As of 2017, the 5-year rolling average fatality rate is 1.08 (decrease of 14 percent) and the serious injury rate is 11.55 (decrease of 39 percent). **Table 3.1** presents the total number of fatalities and serious injuries as well as the injury rates.

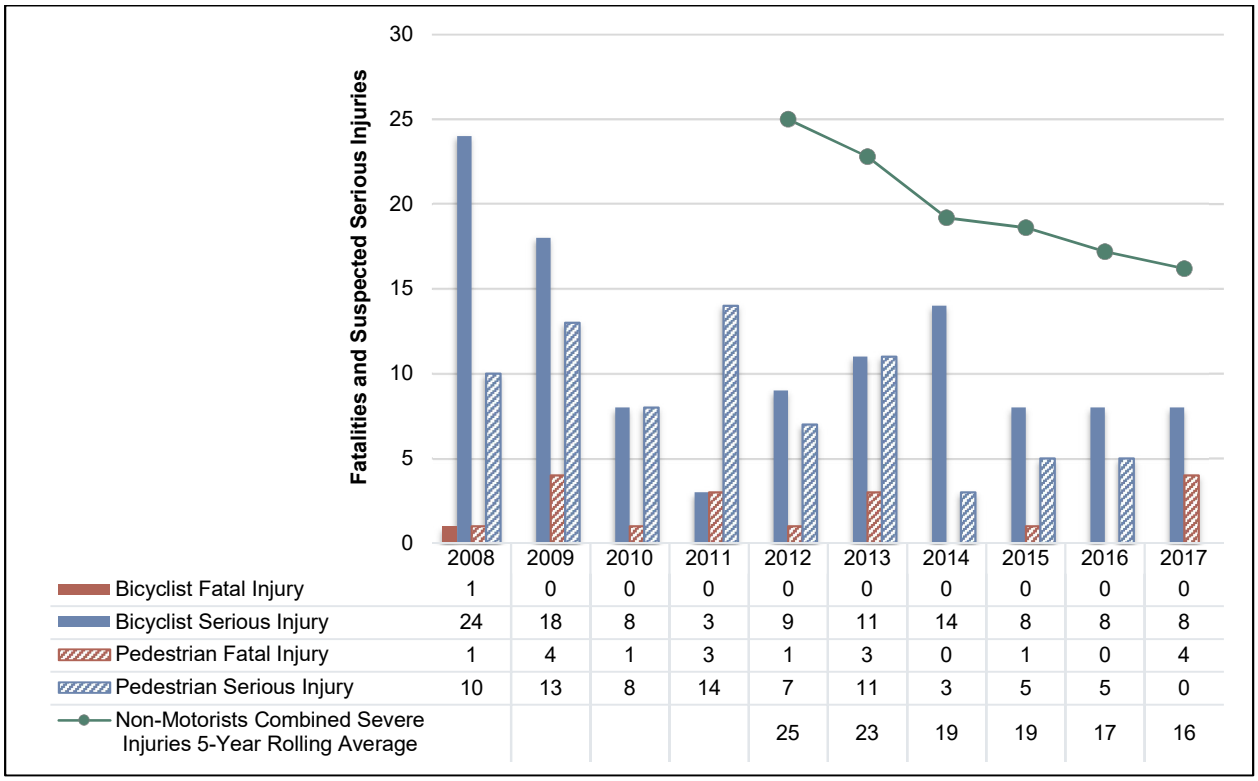
Table 3.1: Missoula MPA Fatal and Serious Injuries

Year	Total Crashes	Fatalities	Fatal Injury Rate*	Serious Injuries	Serious Injury Rate*	5 – Year Severe** Injury Rolling Average
2007	2,104	10	1.53	138	21.10	--
2008	2,208	12	1.82	194	29.48	--
2009	2,085	7	1.06	198	29.91	--
2010	1,958	9	1.35	145	21.77	--
2011	1,906	15	2.16	124	17.87	170.4
2012	1,687	5	0.72	82	11.73	158.2
2013	1,832	7	1.01	98	14.09	138.0
2014	2,180	5	0.73	83	12.04	114.6
2015	2,280	5	0.70	84	11.75	101.6
2016	2,539	8	1.10	72	9.91	89.8
2017	2,446	13	1.87	69	9.94	88.8
5 - Year Average (2013 – 2017)	**2,255.4**	**7.6**	**1.08**	**81.2**	**11.55**	**-48%*** **

**Per 100 million VMT*
***Combined fatal and serious injuries*
****Decrease in 5-year rolling average of severe injuries from 2007-2011 to 2013-2017*

In the 2013 CTSP, pedestrian and bicycle involved crashes were not explicitly studied, for a variety of reasons. However, the FAST Act now includes an additional safety performance measure of reducing non-motorized fatalities and serious injuries. Although federal requirement combines bicyclist and pedestrian fatalities and serious injuries in reporting, Missoula has chosen to track these injuries separately.

There have been significant decreases in severe non-motorist injuries over the past 10 years as shown in **Figure 3.3**. The 5-year rolling average shows the combined pedestrian and bicyclist severe injuries decreasing from 25 in 2012 to 16 in 2017. There have not been any bicyclist fatalities since 2008. Every year, there have been less than five pedestrian fatalities per year with zero occurring in 2014 and 2016. Bicyclist serious injuries have seen a dramatic decline from 24 in 2008 to 8 in 2017. Pedestrian serious injuries have also experienced a decline. Between 2008 and 2013, there were about 10 to 15 pedestrian serious injuries per year. Between 2014 and 2017 serious injuries have declined to five or less per year.



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Bicyclist Fatal Injury	1	0	0	0	0	0	0	0	0	0
Bicyclist Serious Injury	24	18	8	3	9	11	14	8	8	8
Pedestrian Fatal Injury	1	4	1	3	1	3	0	1	0	4
Pedestrian Serious Injury	10	13	8	14	7	11	3	5	5	0
Non-Motorists Combined Severe Injuries 5-Year Rolling Average					25	23	19	19	17	16

Figure 3.3: Missoula MPA Non-Motorized Severe Injuries

4.0. EMPHASIS AREAS

To understand how to most effectively focus resources, it is important to identify what types of crashes predominantly contribute to the community safety problem. The American Association of State Highway Transportation Officials (AASHTO) *Strategic Highway Safety Plan: A Comprehensive Plan to Substantially Reduce Vehicle-Related Fatalities and Injuries on the Nation's Highways*[6] identified 22 safety emphasis areas on a national level. The development of emphasis areas represents a new approach to roadway safety by including high risk populations, crash types, infrastructure/hazards, behavior, and transportation modes. MDT has further refined the list of 22 emphasis areas to include 16 emphasis areas that are relevant to Montana:

- Animal Crashes
- Bicycle Involved
- Drowsy Drivers
- Impaired Drivers
- Inattentive Drivers
- Intersection Crashes
- Large Truck Involved
- Motorcycle Involved
- Native Americans
- Older Driver Involved
- Pedestrian Involved
- Run-off-the-Road
- Speed Related
- Train Involved
- Unrestrained Occupants
- Young Driver Involved

[6] Strategic Highway Safety Plan: A Comprehensive Plan to Substantially Reduce Vehicle-Related Fatalities and Injuries on the Nation's Highways, American Association of State Highway and Transportation Officials, February 2005.

4.1. 2013 Emphasis Areas

After review of the crash data used in the development of the 2013 CTSP, the TSAC chose three emphasis areas which would have the greatest impact upon the community. The emphasis areas were intersection crashes, occupant protection, and impaired driving. A description of these three emphasis areas and some key crash statistics for the 2007 to 2011-time period, as identified in the 2013 CTSP, are as follows:

Intersection Related Crashes

Intersections commonly are locations with a large number of crashes as these are the locations where vehicles traveling in different directions have the most potential for conflict. Nearly half of injury crashes (47 percent) occurred at a signalized intersection and more than one-third (35 percent) of injury intersection crashes occurred where there was no intersection control. Nearly a third (30 percent) of intersection injury crashes involved drivers age 15-24.

The largest proportion (33 percent) of injury crashes occurring at intersections occurred on urban routes, with 29 and 25 percent occurring on local and non-interstate national highway system roads, respectively. Nearly a third (31 percent) of severe injury intersection crashes were on non-interstate national highway system roads.

Occupant Protection

The National Highway Traffic Safety Administration estimates that lap/shoulder seat belts, when used correctly, reduce the risk of fatal injury to front-seat passenger car occupants by 45 percent and the risk of moderate-to-critical injury by 50 percent.

In approximately 15 percent of severe injuries in the study area, the injured person was not wearing a seat belt. Occupants in the 15-18 years and 19-24 years age groups each accounted for 19 percent of unrestrained severe injuries. Injuries that were sustained by occupants not wearing seatbelts occurred most often on Fridays. Injuries also peaked between 3:00 PM and 7:00 PM.

Impaired Driving

Fatalities in crashes involving an alcohol-impaired driver represent almost one-third (31 percent) of the total motor vehicle fatalities in the United States. Montana has one of the highest alcohol related fatality rates in the nation per vehicle mile traveled. From 2007 to 2011, there were 359 injury crashes in the Missoula urban area involving an impaired driver. Of those, 114 crashes resulted in a fatality or serious injury.

The largest proportion of all injury crashes (36 percent) and severe crashes (31 percent) involving impaired drivers occurred on local streets. The second largest concentration of injury crashes (29 percent) occurred on state urban roads. The majority of impaired drivers (79 percent) involved in severe crashes were male. Most impaired drivers (66 percent) involved in injury crashes were between the ages of 21 and 44. More than a quarter (27 percent) of total injury crashes involved impaired drivers age 25-34.

4.2. Emphasis Area Crash Analysis

In order to determine which emphasis areas are the most important in the Missoula MPA, the number of crashes and injuries occurring within each emphasis area over the past five years, 2013 to 2017, were totaled. For ease of analysis and comparison purposes, the “Pedestrian Involved” and “Bicycle Involved” emphasis areas were combined to be the “Non-Motorists” emphasis area and the “Native Americans” emphasis area was excluded in analysis due to lack of data. Keep in mind that one crash can fit within multiple emphasis areas. For example, a crash involving a distracted large truck driver that runs off the road would be counted in three emphasis areas.

By comparing the total crashes, it can be seen which emphasis areas are most commonly represented in the Missoula MPA. However, it is also important to consider the number of fatal and serious injuries within each emphasis area as well. For example, although few crashes occurred within the motorcyclist emphasis area, a high number of severe injuries also occurred, causing a high severity rate for the emphasis area. Although it is desirable to reduce the number of total crashes, the performance measures highlight the importance of decreasing the number of severe crashes as well. **Figure 4.1** compares the total number of crashes as well as the number of fatal and serious injuries in each emphasis area over the past five years (2013 – 2017).

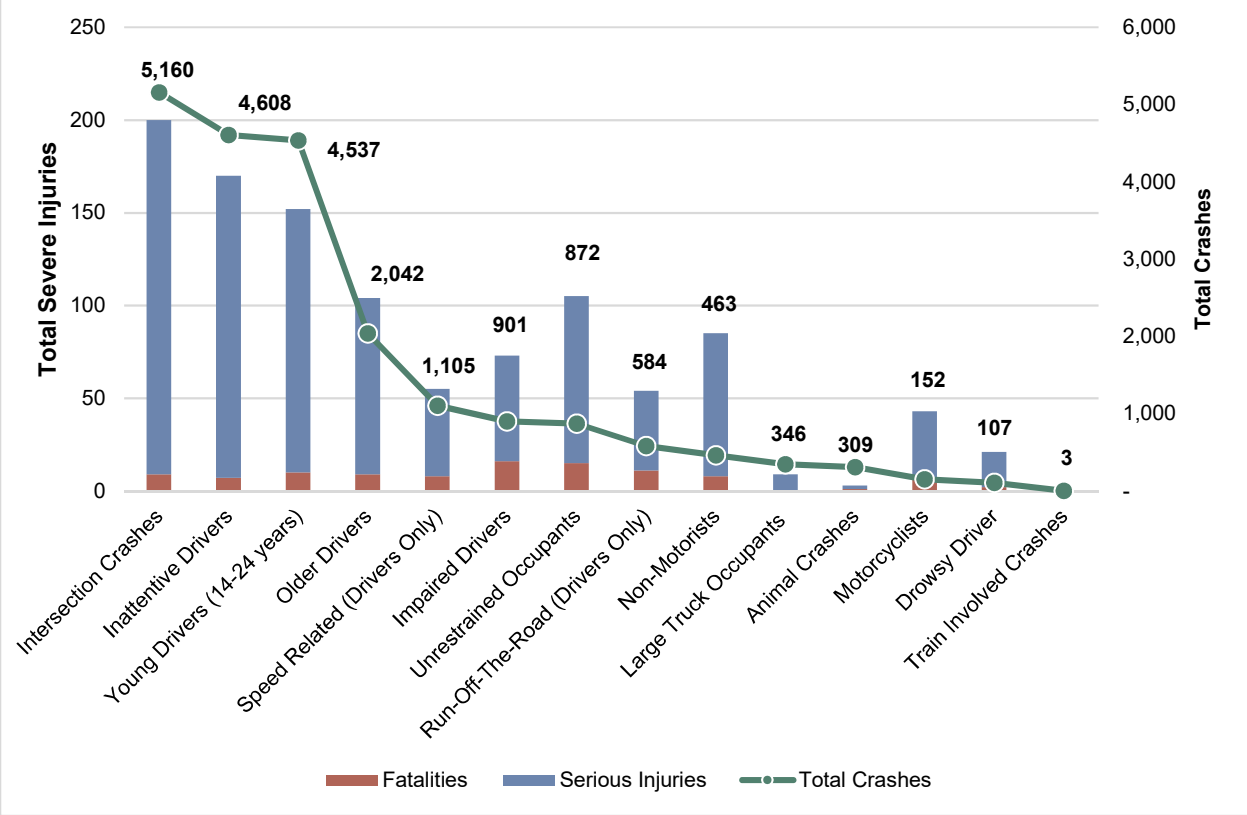


Figure 4.1: Crashes and Injury Totals by Emphasis Areas

Table 4.1 tabulates the total crashes, percent of all crashes, fatalities, serious injuries, total people involved, and severity index for each emphasis area. Keep in mind that a single crash could have multiple contributing factors and thus a single fatality or serious injury could appear within multiple emphasis areas.

The severity index was calculated by applying multipliers to injuries based on severity. For the severity index, injuries resulting from crashes were broken into three categories of severity: property damage only (PDO), minor injury, and fatal or serious injury. Unknown injuries were categorized as PDO crashes. Each of these three types was given a different multiplier: 1.0 for PDO, 3.0 for injury, and 8.0 for fatal or serious injury. The sum was then divided by the total number of people involved in the crashes within each emphasis area.

Table 4.1: Severity Indices by Emphasis Area

Emphasis Area	Total Crashes	% of All Crashes	Fatality	Serious Injury	Injury	PDO	Total People Involved	Severity Index
Intersection Crashes	5,160	46%	9	191	1,727	11,820	13,747	1.35
Inattentive Drivers	4,608	41%	7	163	1,432	9,886	11,488	1.35
Young Drivers (14-24)	4,537	40%	10	142	1,430	10,177	11,759	1.33
Older Drivers (65+)	2,042	18%	9	95	668	4,629	5,401	1.38
Speed Related	1,105	10%	8	47	336	1,790	2,181	1.48
Impaired Drivers	901	8%	16	57	384	1,250	1,707	1.75
Unrestrained Occupants*	872	8%	15	90	275	933	1,282	2.03
Run-Off-The-Road	584	5%	11	43	163	692	909	1.77
Non-Motorists*	463	4%	8	77	259	133	474	3.35
Large Trucks	346	3%	0	9	71	682	762	1.27
Animal Crashes	309	3%	1	2	21	462	486	1.13
Motorcyclists	152	1%	6	37	91	180	314	2.54
Drowsy Drivers	107	1%	2	19	41	112	174	2.32
Train Involved Crashes	3	0%	0	0	2	5	7	1.57

*Totals for vulnerable users only (not all persons involved in crashes)

In order to understand the problems facing the Missoula MPO within each emphasis area, and to develop future strategies to address these problems, it is important to take a closer look at the crash data. The following sections give an overview of how the crash data was analyzed, a summary of the crash statistics, a spatial analysis of the data points, and a discussion of noted crash trends within each emphasis area.

4.2.1. Intersection Crashes

Data Analysis

Intersection crashes were defined on a crash basis. Each crash was categorized by junction relation including intersection, intersection related, non-junction, entrance/exit ramp, through roadway, and railroad grade crossing, among others. Those crashes that were categorized as at an intersection or intersection related were included in the analysis for the intersection crashes emphasis area. There was a total of 5,160 intersection crashes involving 13,747 people which resulted in 9 fatalities, 191 serious injuries, and 1,239 minor or possible injuries. Intersection crashes accounted for 46 percent of all crashes and 47 percent of all severe crashes within the study area over the past 5 years.

Crash Statistics

The combined number of fatalities and serious injuries resulting from intersection crashes generally decreased between 2013 and 2017 from 41 to 30. Between 2013 and 2016, the total number of intersection crashes increased from 867 to 1,166 before decreasing slightly to 1,068 intersection crashes in 2017. Over the past 5 years, there were 9 fatal crashes and 167 serious injury crashes which resulted in 9 fatalities and 191 serious injuries. **Figure 4.2** shows how the total number of intersection crashes and the number of severe intersection crashes have changed over the past five years.

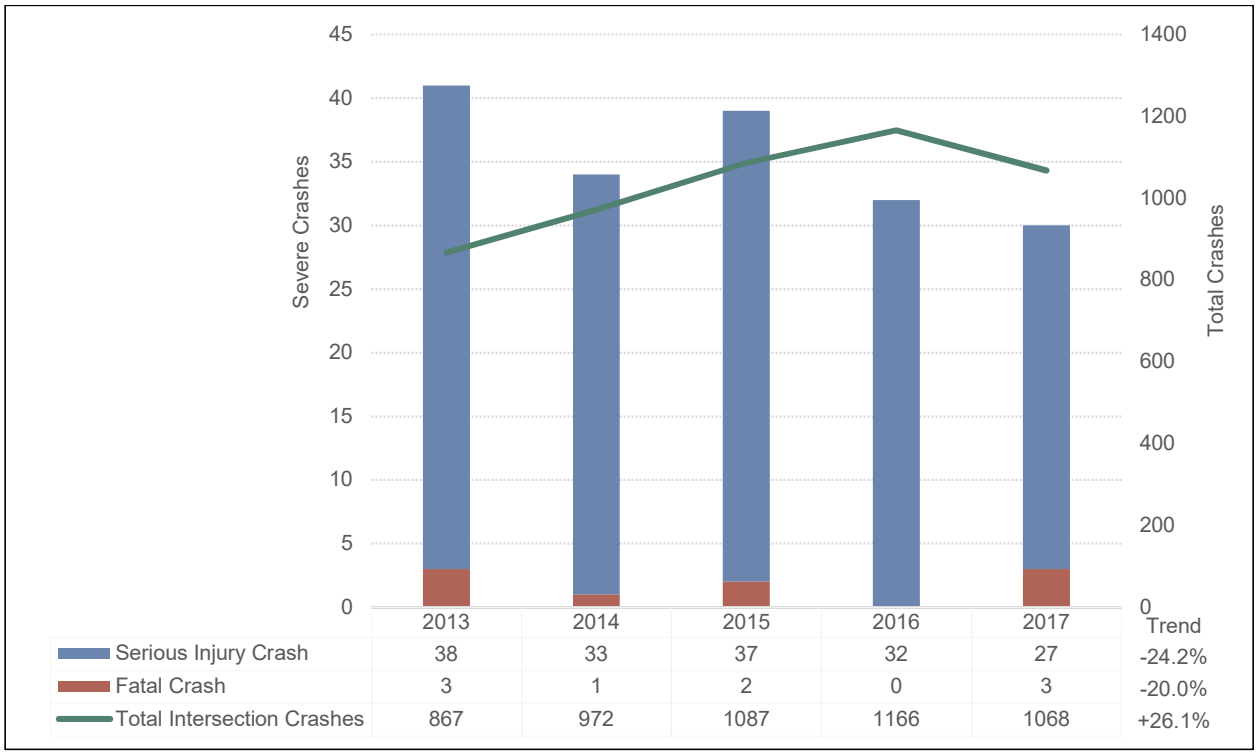


Figure 4.2: Intersection Crashes

The majority of intersection crashes involved only 2 vehicles (86 percent). Crashes involving only one vehicle or three or more vehicles each accounted for seven percent of crashes. There was a total of 9,880 drivers, 3,510 passengers, 313 non-motorists, and 44 unknown person types involved in intersection crashes.

The age of the driver in the intersection crash was distributed as follows: under 18 (8 percent); 19-24 (18 percent); 25-40 (29 percent); 41-64 (30 percent); and over 65 (12 percent). The split of male and female drivers was 50 and 47 percent, respectively, with 3 percent unknown.

Intersection crashes were most common during the peak travel hours, 7:00 to 10:00 AM (14 percent), 11:00 AM to 2:00 PM (24 percent), and 4:00 to 7:00 PM (26 percent). Crashes were equally as common during the week days with an average of 17 percent of intersection crashes occurring each day Monday through Friday. A combined 17 percent of intersection crashes occurred on the weekend with 10 percent occurring on Saturday and 7 percent on Sunday.

The majority of intersection crashes occurred on principal arterials (39 percent), local streets (36 percent), or major collectors (15 percent). Similarly, the severe injury intersection crashes were on principal arterials (43 percent), local streets (35 percent), and major collectors (15 percent). Approximately 3 percent of intersection crashes occurred in a rural setting, while 90 percent occurred within Missoula city limits. Of the roadways where the crashes occurred, 58 percent were city owned, 41 percent were state owned, and 1 percent were county or forest service owned. The intersection crashes were plotted spatially based on the coordinates recorded for each crash. **Figure 4.3** shows the density of intersection crashes within the study area based on the spatial data.

Intersection control type was only listed in 34 percent of crashes. Missoula police officers advise that most of the time, when the intersection control field is left blank, the intersection is uncontrolled. Of the crashes where intersection control type was explicitly defined, uncontrolled intersections made up 24 percent of all crashes and 1 percent of severe crashes. Signalized and stop controlled intersection

crashes made up 23 and 10 percent of all crashes, and 15 percent and 4 percent of severe crashes, respectively. The remaining crashes were "other" intersection types including railway crossings, yield controlled, person (flagger) controlled, and intersections with pavement markings only.

Intersection crashes resulted in the following top 5 crash types: rear end (38 percent); right angle (27 percent); sideswipe (10 percent); left turn (8 percent); and fixed object (5 percent). Severe intersection crashes resulted in the following top 5 crash types; right angle (40 percent), rear end (17 percent), left turn (11 percent), bicycle (11 percent), and pedestrian (8 percent). Approximately five percent of intersection crashes involved driver alcohol or drug impairment.

The person-based data reports driver behavior, or contributing actions, at the time of the crash. Up to four behaviors can be listed for each driver. The person data was joined to the crash-based data to understand driver behavior in the intersection crashes. The top 5 contributing factors in intersection crashes were driving in a distracted/inattentive manner (48 percent), failed to yield right-of-way (30 percent), drove in an erratic/reckless manner (9 percent), followed too closely (9 percent), and disregarded traffic signs (7 percent).

Approximately 15 percent of intersection crashes occurred during inclement weather conditions (rain, severe wind, fog, or snow) and 28 percent occurred on inclement road conditions (wet, ice, slush, mud, or snow). The majority of crashes occurred during the daylight (80 percent) with 12 percent and 4 percent occurring under dark unlit and dark lit conditions, respectively.

Crash Trends

The following intersection crash trends were noted:

- The majority of crashes involved 2 vehicles (86 percent).
- Nearly 60 percent of drivers were age 25-64 years old.
- Crashes were more common on weekdays during the peak travel times (AM, Noon, and PM).
- The majority of crashes occurred in an urban setting (97 percent).
- Rear end (38 percent) and right-angle crashes (27 percent) were the most common crash types at intersections. They were also the most common in severe intersection crashes, at 17 and 40 percent, respectively.
- Inclement road (28 percent) and weather conditions (15 percent) were not a common factor in the crashes.
- Inattentive driving (48 percent) and failing to yield (30 percent) were the top driver contributing factors in the crashes.

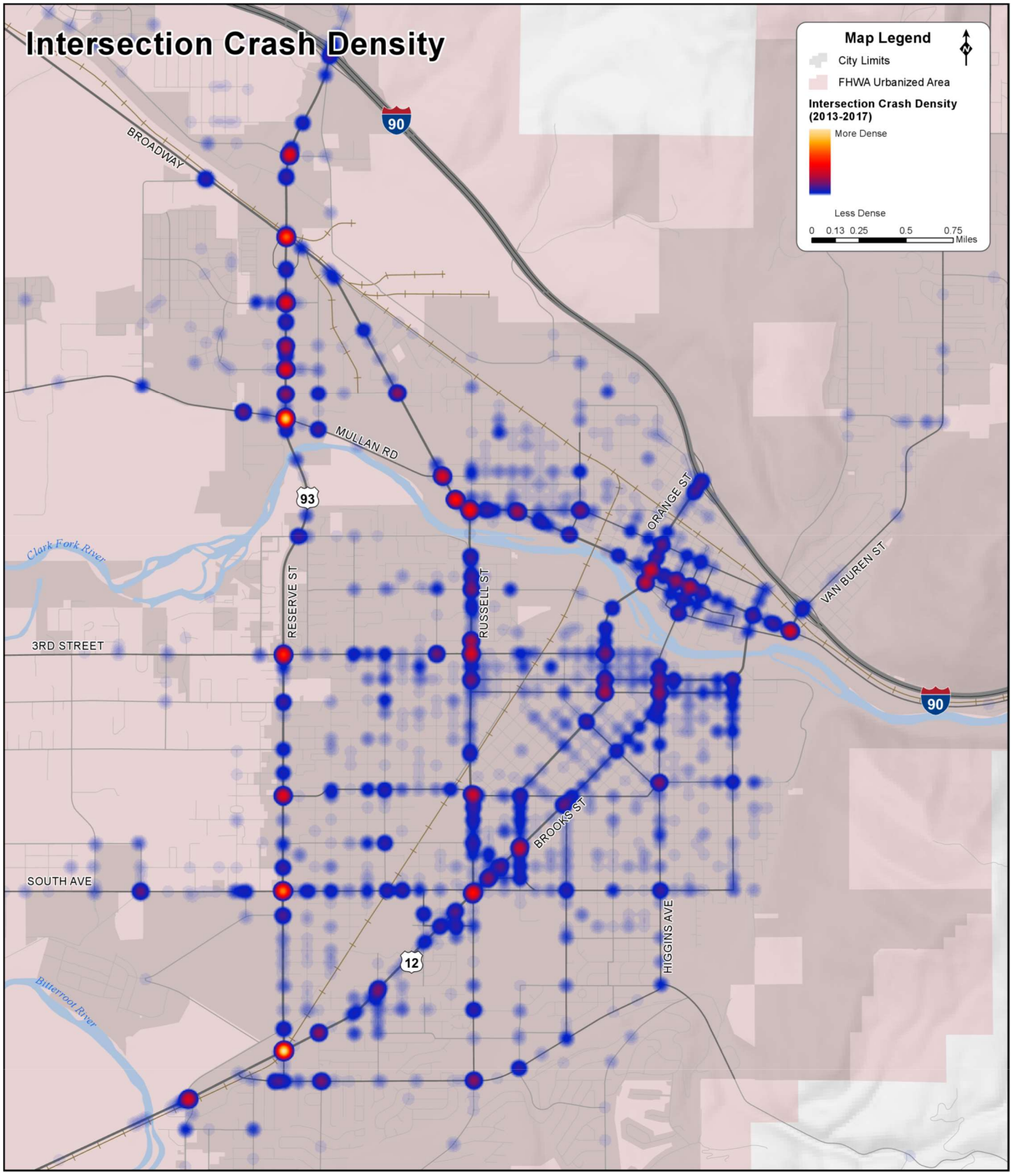


Figure 4.3: Intersection Crash Density

4.2.2. Inattentive Drivers

Data Analysis

Inattentive driver crashes were defined on a person basis. The responding officer reports on each person involved in a crash and notes whether the person is a driver, passenger, or non-motorist along with various identifying characteristics. In addition to person characteristics, the data includes driver behavior, or contributing actions, at the time of the crash. Up to four behaviors can be listed for each driver. The person data was queried by drivers and non-motorists only and then sorted based upon driver behavior at the time of the crash. Many driver records do not report a contributing action.

A query was performed for each driver and non-motorist involved in a crash between 2013 and 2017 identifying all drivers and non-motorists who had "drove in a distracted, inattentive or careless manner" listed as one of the four driver actions at the time of the crash. The crash record numbers were also analyzed, and duplicates removed when totaling the number of crashes, as two inattentive drivers could be involved in the same crash. There was a total of 4,608 inattentive driver crashes involving 4,644 inattentive drivers, 18 inattentive non-motorists and 11,488 people overall. The crashes resulted in 7 fatalities, 163 serious injuries, and 1,432 minor or possible injuries. Inattentive driver crashes accounted for 41 percent of all crashes and 38 percent of all severe crashes within the study area over the past 5 years.

Crash Statistics

The total number of inattentive drivers involved in crashes has increased substantially between 2013 and 2017 from 457 to 1,205. The number of resulting severe injuries has remained more steady, however. Overall, the number of combined fatalities and serious injuries have decreased from 32 to 27, over the past 5 years. In total, 3 inattentive drivers and 4 other people involved in an inattentive driver crash were fatally injured, and 64 inattentive drivers and 99 others were seriously injured. **Figure 4.4** shows how the total number of inattentive driver crashes and the number of resulting severe injuries have changed over the past five years.

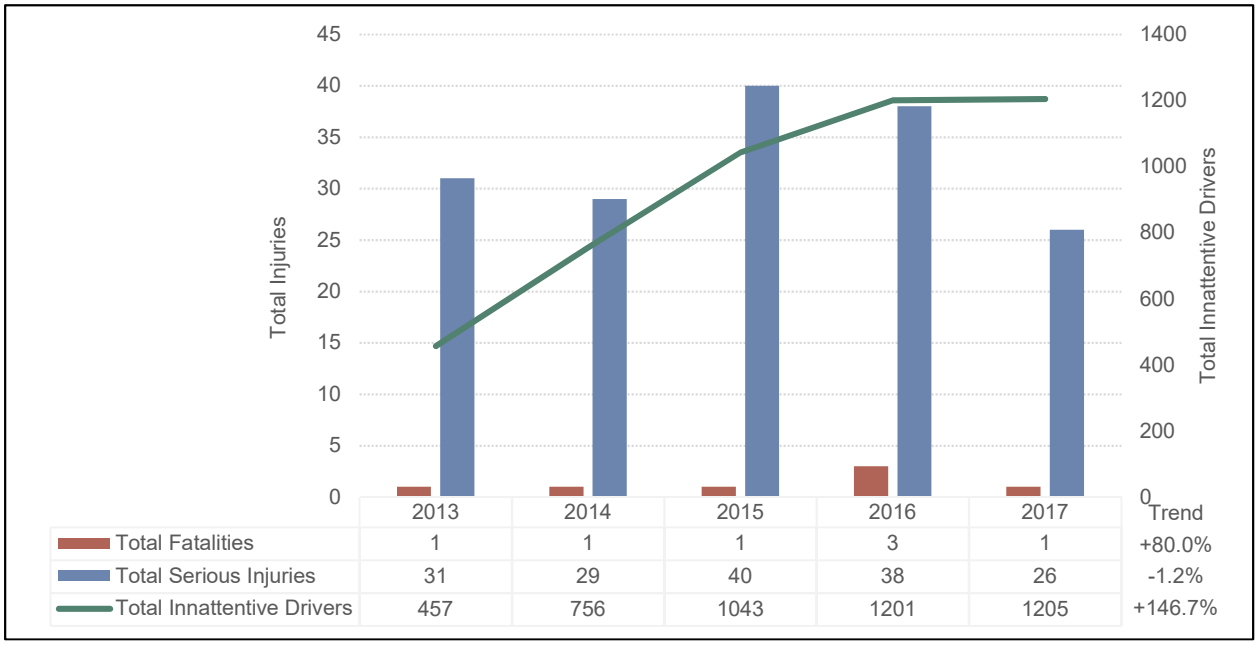


Figure 4.4: Inattentive Driver Crashes and Severe Injuries Caused

Approximately 75 percent of all inattentive driver crashes involved 2 vehicles, while 16 percent involved a single vehicle, and 9 percent involved 3 or more vehicles.

The age of the inattentive driver was similarly distributed to the age distribution of all drivers involved in crashes: under 18 (13 percent); 19-24 (23 percent); 25-40 (30 percent); 41-64 (24 percent); and over 65 (10 percent). Males made up 52 percent of inattentive drivers while females made up 42 percent (6 percent were unknown). In 82 percent of inattentive driver crash records, a source of distraction was not listed (in 14 percent of crash records, the driver was inattentive or careless). The inattentive drivers were distracted by a number of things and driver distraction is typically self-reported. Where source of driver distraction was reported, drivers were distracted by someone inside the vehicle (48 percent), electronic communication device (23 percent), external distraction (20 percent), and another electronic device, i.e. GPS, DVD player, etc. (10 percent).

The majority of inattentive driver crashes occurred on principal arterials (40 percent), local streets (32 percent), or major collectors (14 percent). Similarly, the severe injuries caused by inattentive drivers were on principal arterials (33 percent), local streets (25 percent), and major collectors (17 percent). Only 7 percent of inattentive drivers crashed in a rural setting, while 81 percent crashed within Missoula city limits. Of the roadways where the inattentive driver crashes occurred, 50 percent were city owned, 46 percent were state owned and 4 percent were county or forest service owned. Half of the inattentive driver involved crashes occurred at a non-junction (50 percent) while 45 percent occurred at an intersection or were intersection related.

Inattentive driver involved crashes resulted in the following top 5 crash types: rear end (51 percent); sideswipe (12 percent); fixed object (11 percent); right angle (9 percent); and roll over (3 percent). Severe intersection crashes resulted in the following top 5 crash types: rear end (34 percent); right angle (16 percent); roll over (12 percent); bicycle (9 percent); and head on (8 percent).

Approximately nine percent of inattentive drivers were impaired. Seatbelt use was somewhat underreported, with only 61 percent of inattentive drivers having seat belt use reported. Of those records where seatbelt use was reported, four percent of drivers were not properly restrained (lap or shoulder belt only, none used, restraint used improperly). In 2 fatalities and 16 serious injuries, the inattentive driver was not wearing a seatbelt.

Crash Trends

The following inattentive driver crash trends were noted:

- Where driver distraction was listed, the most common distraction was a passenger (48 percent).
- The majority of inattentive driver crashes occurred on roadways functionally classified as principal arterials (40 percent) and local streets (32 percent) and were within the Missoula city limits (81 percent).
- Inattentive driving crashes most often resulted in a rear end crash (51 percent).
- The majority of crashes occurred on city (50 percent) or state-owned (46 percent) roadways.
- Approximately nine percent of inattentive drivers were impaired.
- Of those where seatbelt use was reported, 97 percent were properly restrained at the time of the crash.

4.2.3. Young Drivers (14-24)

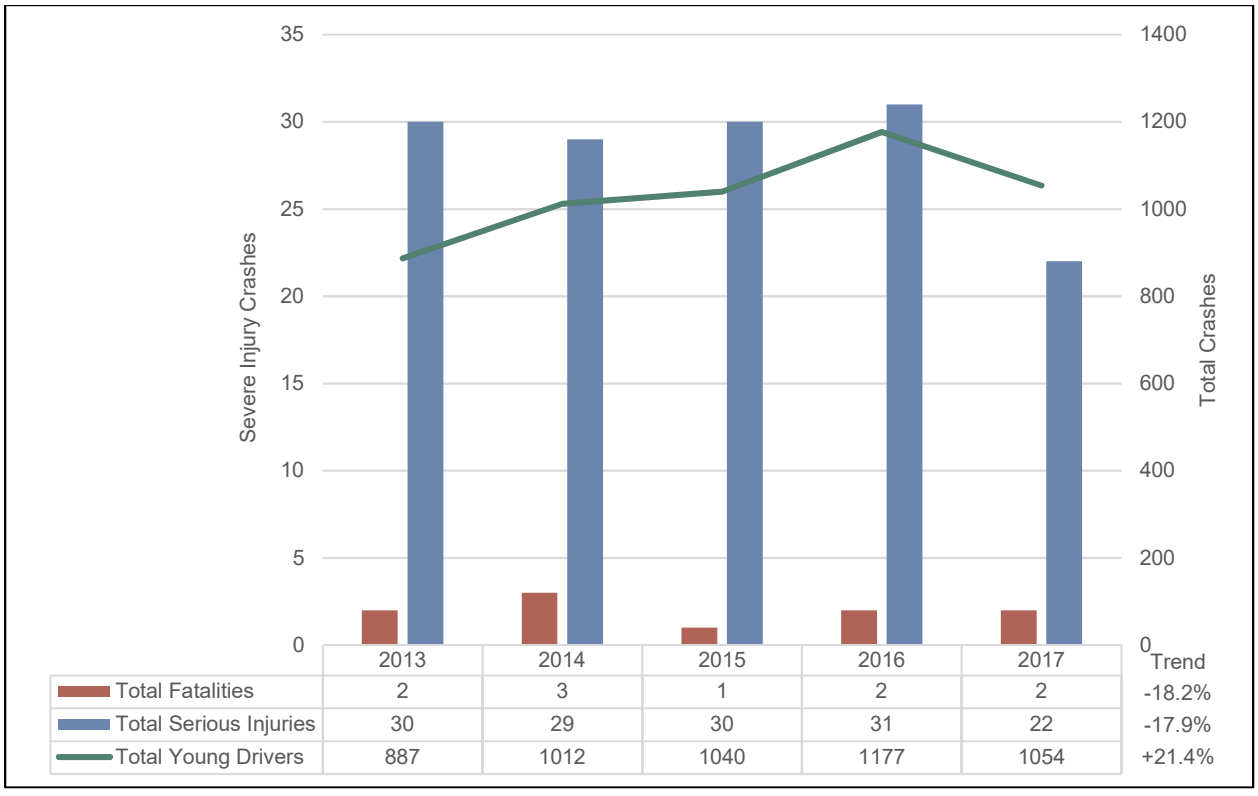
Data Analysis

Young driver crashes were defined on a person basis. The responding officer reports on each person involved in a crash and notes whether the person is a driver, passenger, or non-motorist along with various identifying characteristics. In addition to person characteristics, the data reports driver behavior, or contributing actions, at the time of the crash. Up to four behaviors can be listed for each driver. The person data was queried by drivers between the ages of 14 and 24. Many driver records do not report a contributing action.

The crash record numbers were also analyzed, and duplicates removed when totaling the number of crashes, as two young drivers could be involved in the same crash. There was a total of 4,537 young driver crashes involving 5,170 young drivers and 11,759 people overall. These crashes resulted in 10 fatalities, 142 serious injuries, and 1,430 minor or possible injuries. Young driver crashes accounted for 40 percent of all crashes and 35 percent of all severe crashes within the study area over the past 5 years.

Crash Statistics

The combined number of fatalities and serious injuries resulting from young driver crashes has been somewhat consistent between 2013 and 2017, decreasing only slightly from 32 to 24 combined fatalities and serious injuries. Between 2013 and 2017, the total number of young drivers involved in crashes increased from 887 to 1,054. Over the past 5 years, 1 young driver and 9 other people involved in the crashes were fatally injured, and 56 young drivers and 86 others were seriously injured. **Figure 4.5** shows how the total number of young driver crashes and the number of resulting severe injuries have changed over the past five years.



	2013	2014	2015	2016	2017	Trend
Total Fatalities	2	3	1	2	2	-18.2%
Total Serious Injuries	30	29	30	31	22	-17.9%
Total Young Drivers	887	1012	1040	1177	1054	+21.4%

Figure 4.5: Young Driver Involved Crashes and Severe Injuries Caused

The majority of young driver crashes involved 2 vehicles (75 percent). Single vehicle crashes were the second most common, accounting for 16 percent of crashes. Only nine percent of young driver crashes involved three or more vehicles.

The age of the young driver was distributed as follows: ages 14 and 15 accounted for a combined 4 percent; 16-year olds (8 percent); and drivers age 17 through 24 each accounted for approximately 11 percent of young drivers. Young driver gender was almost equally split between male (51 percent) and female (49 percent).

The majority of young drivers were involved in crashes on principal arterials (38 percent), local streets (32 percent), or major collectors (16 percent). Similarly, the severe young driver involved crashes occurred on principal arterials (46 percent), local streets (24 percent), major collectors (13 percent), or minor arterials (13 percent). Approximately 8 percent of young driver crashes occurred in a rural setting while 82 percent occurred within Missoula city limits. Of the roadways where the crashes occurred, 52 percent were city owned, 44 percent were state owned and 4 percent were county or forest service owned. Over half of the young driver crashes occurred at an intersection (27 percent) or were intersection related (24 percent).

In 38 percent of young driver crash records there was not a contributing factor listed for the young driver. Of all crashes (including those with no contributing action), the top factors were inattentive/reckless driving (44 percent), failure to yield right-of-way (12 percent), speeding (10 percent), following too closely (6 percent), and ran off the road (5 percent). Young driver crashes resulted in the following top 5 crash types: rear end (42 percent); right angle (21 percent); sideswipe (11 percent); fixed object (9 percent); and left turn (5 percent).

Approximately 17 percent of young driver crashes occurred during inclement weather conditions (rain, severe wind, fog, or snow) while 31 percent occurred on inclement road conditions (wet, ice, or frost). The majority of crashes occurred during the daylight (75 percent) with 11 percent occurring under each dark unlit or dark lit conditions.

Approximately five percent of young drivers in crashes were impaired. Of those records where seatbelt use was known (83 percent of young driver records), 5 percent of young drivers were not properly restrained. In 25 percent of young driver serious injuries, the young driver was not properly restrained.

Crash Trends

The following young driver crash trends were noted:

- The majority of young driver crashes involved 2 vehicles (75 percent).
- The top contributing factor in crashes was inattentive/reckless driving (44 percent).
- The most common crash type was a rear end crash (42 percent).
- Inclement road (31 percent) and weather conditions (17 percent) were a factor in the crash.
- Most severe crashes occurred on roadways functionally classified as principal arterials (46 percent) or major collectors (16 percent).
- Approximately five percent of young drivers were impaired at the time of the crash.
- Of those where seatbelt use was reported, five percent of young drivers were not properly restrained at the time of the crash.

4.2.4. Older Drivers (65+)

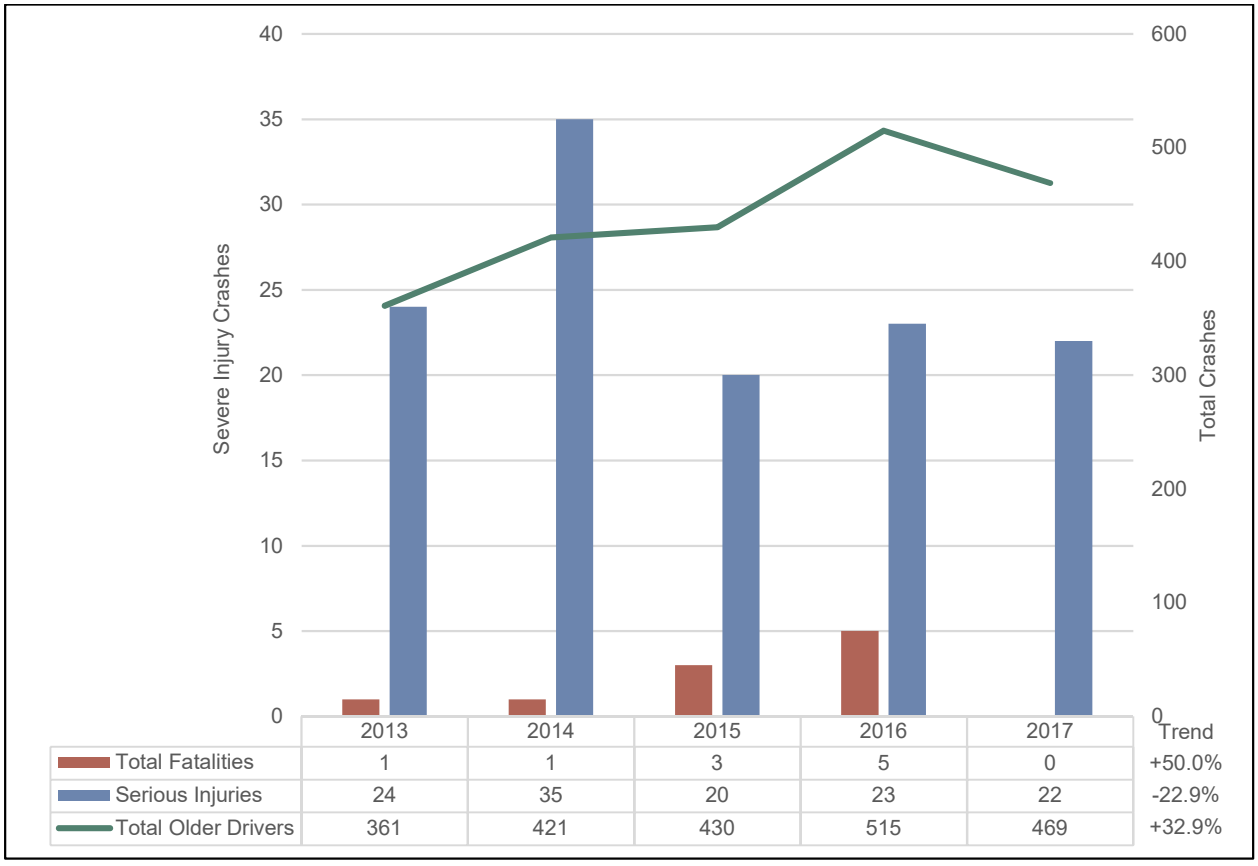
Data Analysis

Older driver crashes were defined on a person basis. The responding officer reports on each person involved in a crash and notes whether the person is a driver, passenger, or non-motorist along with various identifying characteristics. In addition to person characteristics, the data reports driver behavior, or contributing actions, at the time of the crash. Up to four behaviors can be listed for each driver. The person data was queried by drivers 65 years and older. Many driver records do not report a contributing action.

The crash record numbers were also analyzed, and duplicates removed when totaling the number of crashes, as two older drivers could be involved in the same crash. There was a total of 2,042 older driver crashes involving 2,196 older drivers and 5,401 people overall which resulted in 9 fatal injuries, 95 serious injuries, and 668 minor or possible injuries. Older driver crashes accounted for 18 percent of all crashes and 21 percent of all severe crashes within the study area over the past 5 years.

Crash Statistics

The number of fatalities resulting from older driver involved crashes increased between 2013 and 2016 from one to five, with no fatalities reported in 2017. The number of serious injuries has remained somewhat consistent (between 20 and 24) with the exception of a spike (35) in 2014. Between 2013 and 2017 the total number of older drivers involved in crashes increased from 361 to 469. Over the past 5 years, 4 older drivers and 6 other people were fatally injuries, and 38 older drivers and 86 others were seriously injured. **Figure 4.6** shows how the total number of older driver involved crashes and the number of resulting severe injuries have changed over the past five years.



	2013	2014	2015	2016	2017	Trend
Total Fatalities	1	1	3	5	0	+50.0%
Serious Injuries	24	35	20	23	22	-22.9%
Total Older Drivers	361	421	430	515	469	+32.9%

Figure 4.6: Older Driver Involved Crashes and Severe Injuries Caused

The majority of older driver involved crashes involved 2 vehicles (83 percent). Single vehicle crashes or crashes involving three or more vehicles made up seven and nine percent of crashes, respectively.

The percentage of older drivers in crashes decreased as the age of the older driver increased: 35 percent were age 65-79; 24 percent age 70-74; 19 percent age 75-79; 13 percent age 80-84; 7 percent 85-89; and 3 percent 90 and older. There were slightly more older-male drivers (57 percent) than older-female drivers (43 percent).

The majority of older drivers were involved in crashes on principal arterials (47 percent), local streets (28 percent), or major collectors (13 percent). Similarly, the severe older driver involved crashes occurred on principal arterials (50 percent), major collectors (19 percent), or local streets (12 percent). Approximately 5 percent of older driver involved crashes occurred in a rural setting while 84 percent occurred within Missoula city limits. Of the roadways where the crashes occurred, 52 percent were state owned, 47 percent were city owned and 1 percent were county or forest service owned. Over half of the older driver involved crashes occurred at an intersection (30 percent) or were intersection related (24 percent).

In 49 percent of older driver crashes, a contributing factor was not listed for the older driver. Of all older driver crashes (including those with no contributing action), the top factors were inattentive/reckless driving (28 percent), failure to yield right-of-way (15 percent), failure to keep in proper lane (4 percent), improper backing (4 percent), and followed too closely (3 percent). Older driver crashes resulted in the following top 5 crash types: rear end (38 percent); right angle (24 percent); sideswipe (4 percent); left turn (3 percent); and fixed object (3 percent).

Approximately 14 percent of older driver crashes occurred during inclement weather conditions (rain, severe wind, fog, or snow) and 23 percent occurred on inclement road conditions (wet, ice, or frost). The majority of crashes occurred during the daylight (89 percent) with 4 and 5 percent occurring under dark unlit and dark lit conditions, respectively.

Approximately one percent of older drivers in crashes were impaired at the time of the crash. Of those records where seatbelt use was known (85 percent of older driver records), 4 percent of older drivers were not properly restrained. In 12 percent of older driver serious injuries, the older driver was not wearing a seatbelt.

Crash Trends

The following older driver crash trends were noted:

- The majority of older driver involved crashes involved 2 vehicles (83 percent).
- The top contributing factor in crashes was inattentive/reckless driving (28 percent).
- The most common crash types of other driver crashes were rear end (38 percent) and right-angle crashes (24 percent).
- Inclement road (23 percent) and weather conditions (14 percent) were a factor in the crash.
- Most severe crashes occurred on roadways functionally classified as principal arterials (50 percent) or major collectors (19 percent).
- Approximately one percent of older drivers were impaired at the time of the crash.
- Of those where seatbelt use was reported, four percent of older drivers were not properly restrained at the time of the crash.

4.2.5. Speed Related

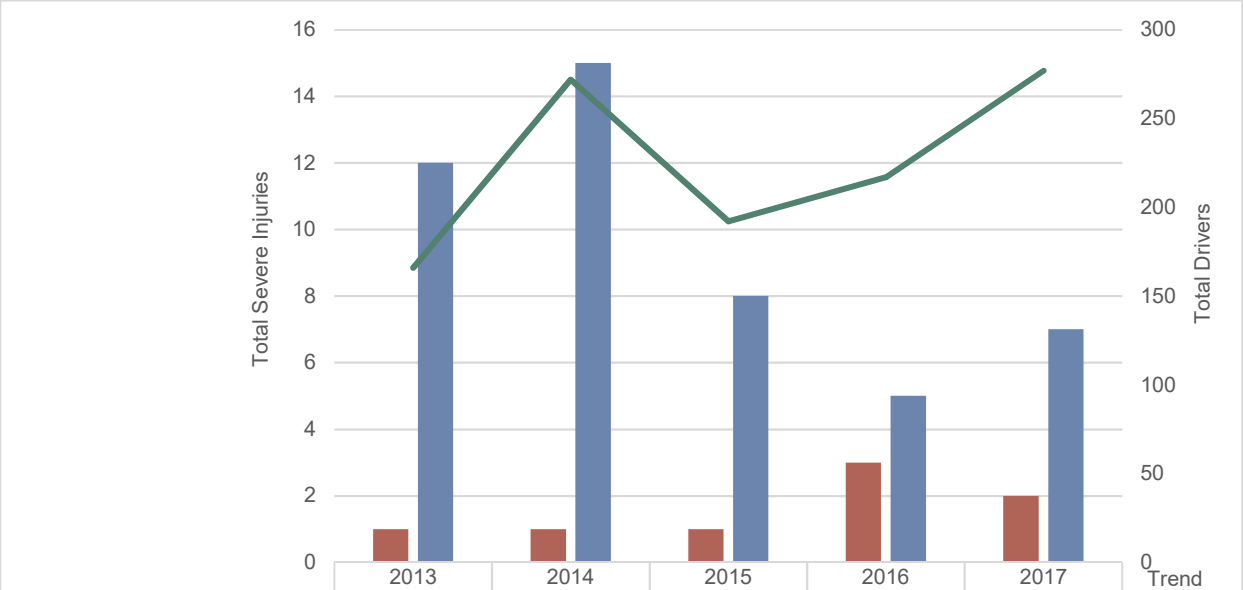
Data Analysis

Speed related crashes were defined on a person basis. The responding officer reports on each person involved in a crash and notes whether the person is a driver, passenger, or non-motorist along with various identifying characteristics. In addition to person characteristics, the data reports driver behavior, or contributing actions, at the time of the crash. Up to four behaviors can be listed for each driver. The person data was queried by drivers and non-motorists and then sorted based upon whether the officer reported on driver behavior at the time of the crash. Many driver records do not report a contributing action.

A query was performed for each driver and non-motorist involved in a crash between 2013 and 2017 identifying those who had "exceed the posted speed limit" or "drove too fast for conditions" listed as one of the driver actions at the time of the crash. The crash record numbers were also analyzed, and duplicates removed when totaling the number of crashes, as two speeding drivers could be involved in the same crash. There was a total of 1,105 speed related crashes involving 1,124 drivers and 2,181 people overall. These crashes resulted in 8 fatalities, 47 serious injuries, and 336 minor or possible injuries. Speed related crashes accounted for 10 percent of all crashes and 11 percent of all severe crashes within the study area over the past 5 years.

Crash Statistics

The total number speed related crashes increased overall between 2013 and 2017 from 166 to 277 drivers involved in a crash reported as speed related. These crashes have resulted in a varying number of severe injuries. Overall, the number of combined fatalities and serious injuries have decreased from 13 to 9. Over the past 5 years, 3 speeding drivers and 5 other people involved in a speeding driver crash were fatally injured, and 27 speeding drivers and 20 others were seriously injured. **Figure 4.7** shows how the total number of speed related crashes and the number of resulting severe injuries have changed over the past five years.



	2013	2014	2015	2016	2017	Trend
Total Fatalities	1	1	1	3	2	+200.0%
Total Serious Injuries	12	15	8	5	7	-59.7%
Total Speeding Drivers	166	272	192	217	277	+34.9%

Figure 4.7: Speed Related Crashes and Severe Injuries Caused

Approximately 56 percent of all speeding driver crashes involved only 1 vehicle with 40 percent involving 2 vehicles, and 4 percent involving 3 or more vehicles.

Speeding drivers tended to be younger. Driver age was listed as under 18 (18 percent), age 19-24 (27 percent), age 25-40 (32 percent), age 41-64 (18 percent), and over 65 (5 percent). Approximately 59 percent of speeding drivers were male while 37 percent were female (4 percent were unknown).

The crash records include the speed limit of the roadway where the crash occurred. In general, as speed limits increase, crash rates are also showing increase. The risk of collision is also higher for an individual vehicle that drives at a higher speed than the other traffic on the road. As speeds get higher the risk of a more severe crash also increases. The speed limit was reported as "0" in 22 percent of speeding driver incidents. This is taken to mean that the speed limit is unknown. Removing these records from the analysis, 30 percent of crashes occurred on roadways with a speed limit of 25 miles per hour (mph) and under, 45 percent at 30 – 60 mph, and 25 percent at 65 – 80 mph.

The majority of speeding drivers crashed on local streets (37 percent), principal arterials (24 percent), or major collectors (18 percent). The severe injury crashes caused by speeding drivers were in crashes on principal arterials (36 percent), major collectors (19 percent), or the interstate (14 percent). and Approximately 25 percent of speeding drivers crashed in a rural setting while 49 percent crashed within Missoula city limits (26 percent crashed within the urbanized area but outside of city limits). Of the roadways where the speeding driver crashes occurred, 43 percent were city owned, 41 percent were state owned, 12 percent were county owned, and 5 percent were forest service owned. The majority of the speeding driver involved crashes occurred at a non-junction (63 percent) with 33 percent occurring at an intersection or being intersection related.

Speeding driver involved crashes resulted in the following top 5 crash types: fixed object (40 percent); rear end (18 percent); roll over (13 percent); right angle (10 percent); and sideswipe (7 percent). Severe speed related crashes resulted in the following top 5 crash types: roll over (27 percent); fixed object (22 percent); right angle (12 percent); head on (10 percent); and rear end (7 percent).

Approximately 43 percent of speeding driver crashes occurred during inclement weather conditions (rain, severe wind, fog, or snow) and 81 percent occurred on inclement road conditions (wet, snow, ice, or frost). Over half of the crashes occurred during the daylight (56 percent) with 25 and 14 percent occurring under dark unlit and dark lit conditions, respectively.

Approximately 14 percent of speeding drivers were impaired. Seatbelt use was reported for 75 percent of speeding drivers. Of those records, six percent of drivers were not properly restrained (lap or shoulder belt only, none used, restraint used improperly). In 27 percent of severe crashes, the speeding driver was not wearing a seatbelt.

Crash Trends

The following speeding driver crash trends were noted:

- Speeding drivers tended to be younger and also tended to be male.
- 70 percent of crashes occurred on roadways with a speed limit greater than 25 mph.
- Compared to all crashes, a larger percentage of speeding drivers crashed in a rural setting (26 percent).
- Speed related crashes most often resulted in a fixed object crash (40 percent).
- The majority of speed related crashes occurred on local streets (37 percent), followed by principal arterials (24 percent). Severe crashes primarily occurred on principal arterials (36 percent) and major collectors (19 percent).

- Compared to all crashes, a larger percentage of speed related crashes occurred on county roads (12 percent).
- The majority of speed related crashes occurred on implement road (81 percent) and weather (43 percent) conditions.
- Impairment was only reported in 14 percent of speeding drivers.
- Of those where seatbelt use was reported, 6 percent were not properly restrained at the time of the crash.

4.2.6. Impaired Drivers

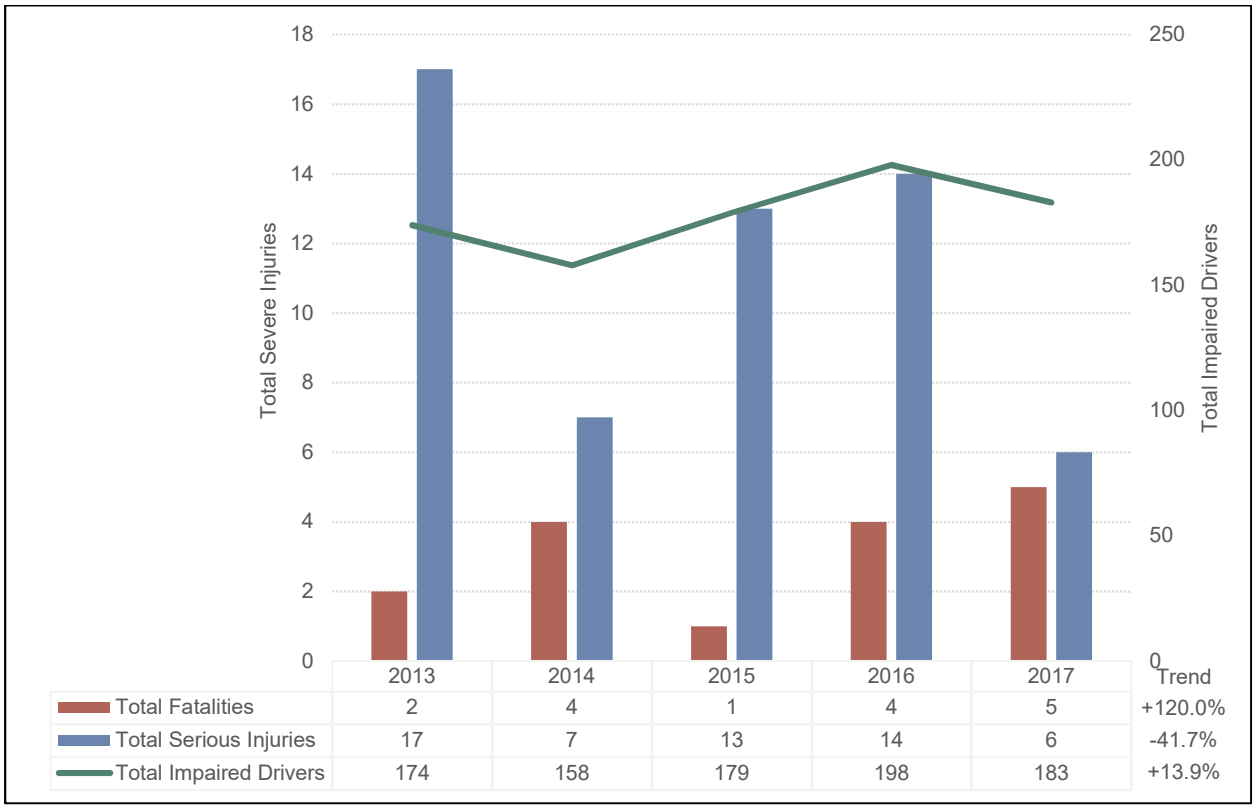
Data Analysis

Impaired driver crashes were defined on a person basis. The responding officer reports on each person involved in a crash and notes whether the person is a driver, passenger, or non-motorist along with various identifying characteristics. In addition to person characteristics, the data reports whether MDT determined if the crash involved an impaired driver as well as the reported impairment of the occupant or non-motorist. State of impairment for passengers and non-motorists is not always reported by the responding officer. The person data was queried by all persons involved in an impaired driver crash between 2013 and 2017.

To determine which of the people involved were impaired, and more specifically the drivers, the field that lists the impairment description was filtered to include only those records where “impaired-alcohol”, “impaired-drugs”, “impaired-alcohol/drugs”, and “impaired” were listed. The crash record numbers were also analyzed, and duplicates removed when totaling the number of crashes, as two impaired drivers could be involved in the same crash. There was a total of 901 impaired driver crashes involving 892 impaired drivers, 13 impaired non-motorists, and 1,707 people overall. These crashes resulted in 16 fatalities, 57 serious injuries, and 384 minor or possible injuries. Impaired driver crashes accounted for 8 percent of all crashes and 16 percent of all severe crashes within the study area over the past 5 years.

Crash Statistics

The total number of impaired drivers has remained fairly consistent between 2013 and 2017 with a slight overall increase from 174 to 183 impaired drivers. These drivers have caused a varying number of severe injuries. Overall, the number of combined fatalities and serious injuries have decreased from 19 to 11 although the number of fatalities increased from 2 to 5. Over the past 5 years, 8 impaired drivers and 8 other people involved in an impaired driver crash were fatally injured while 33 impaired drivers, 4 impaired non-motorists, and 20 others were seriously injured in a crash. **Figure 4.8** shows how the total number of impaired driver involved crashes and the number of resulting severe injuries have changed over the past five years.



	2013	2014	2015	2016	2017	Trend
Total Fatalities	2	4	1	4	5	+120.0%
Total Serious Injuries	17	7	13	14	6	-41.7%
Total Impaired Drivers	174	158	179	198	183	+13.9%

Figure 4.8: Impaired Driver Involved Crashes and Severe Injuries Caused

Nearly half of all impaired driver crashes involved a single vehicle (47 percent), with 44 percent involving 2 vehicles, and 9 percent involving 3 or more vehicles.

Impaired drivers were primarily between the ages of 25 and 40 (42 percent). Older (65 and over) drivers accounted for four percent of impaired drivers. Young drivers (age 14-24) accounted for 30 percent of impaired drivers. Drivers under the legal age limit for consumption of alcohol who can lawfully drive (age 14-20) accounted for 13 percent of all impaired drivers and 31 percent of impaired young drivers. Drivers ages 41-64 accounted for 24 percent of impaired drivers. Impaired drivers were primarily male (66 percent) while 33 percent were female (1 percent were unknown).

Slightly more impaired driver crashes occurred on the weekend (Friday, Saturday, and Sunday) than during the week. The most crashes occurred on Saturdays (19 percent), Fridays (18 percent), and Sundays (16 percent). An average of 12 percent of crashes occurred on each of the other days of the week Monday through Thursday. Approximately 38 percent of the crashes occurred between the hours of 10:00 PM and 3:00 AM, 28 percent of crashes occurred between 5:00 PM and 10:00 PM, and 34 percent occurred between 3:00 AM and 5:00 PM.

The majority of impaired driver crashes occurred on local streets (37 percent), principal arterials (26 percent), or major collectors (22 percent). Similarly, the severe injuries caused by impaired drivers were in crashes on principal arterials (30 percent), local streets (22 percent), and major collectors (19 percent). Approximately 19 percent of impaired driver crashes occurred in a rural setting while 62 percent occurred within Missoula city limits (the remaining 20 percent of crashes occurred in the urban area but outside of the city limits). Of the roadways where the impaired driver crashes occurred, 37 percent were city owned, 53 percent were state owned, 8 percent were county owned, and 3 percent were forest service owned. The majority of impaired driver crashes occurred at a non-junction (63 percent) while 32 percent occurred at an intersection or were intersection related.

Impaired driver involved crashes resulted in the following top 5 crash types: fixed object (31 percent); rear end (20 percent); sideswipe (12 percent); roll over (10 percent); and right angle (9 percent). Severe impaired driver crashes resulted in the following top 5 crash types: roll over (28 percent); right angle (15 percent); head on (15 percent); fixed object (13 percent); and rear end (8 percent).

The person-based data reports driver behavior, or contributing actions, at the time of the crash. Up to four behaviors can be listed for each driver. The contributing actions were analyzed to understand impaired driver behavior in crashes. The top 5 contributing factors for impaired drivers were driving in a distracted/inattentive manner (56 percent), drove in an erratic/reckless manner (29 percent), ran off roadway (27 percent), drove too fast for conditions (15 percent), and failed to keep in proper lane (10 percent).

Seatbelt use was reported for 73 percent of impaired drivers with 52 percent reported as unknown. Of those records where seatbelt use was reported, nine percent of impaired drivers were not properly restrained (lap or shoulder belt only, none used, restraint used improperly). In 50 percent of impaired driver fatalities the driver was not wearing a seatbelt.

Crash Trends

The following impaired driver crash trends were noted:

- Impaired drivers were primarily between the ages of 25 and 40 (42 percent) and also tended to be male (66 percent).
- The majority of impaired drivers crashed later at night and on the weekends.
- Compared to all crashes, a larger percentage of impaired drivers crashed in a rural setting (18 percent).
- The most common impaired driver crash types were fixed object (31 percent) and rear end (20 percent) crashes.
- The majority of crashes occurred at a non-junction (63 percent).
- The top contributing factors in impaired driver crashes were inattentive driving (56 percent) and erratic/reckless driving (29 percent).
- Of those where seatbelt use was reported, nine percent were not properly restrained at the time of the crash.
- Impaired driver crashes accounted for 8 percent of all crashes and 16 percent of all severe crashes within the study area.

4.2.7. Unrestrained Occupants

Data Analysis

Unrestrained occupants in crashes were defined on a person basis. The responding officer reports on each person involved in a crash and notes whether the person is a driver, passenger, or non-motorist along with various identifying characteristics. In addition to person characteristics, most data records report whether the occupant was wearing a seatbelt or using a child restraint, seatbelt nonuse and improper use are also reported.

The person data was queried by all persons involved crash between 2013 and 2017 who were unrestrained. "Unrestrained" included use of a shoulder or lap belt only, improperly used restraint, or no restrained used. The crash record numbers were also analyzed, and duplicates removed when totaling the number of crashes, as multiple unrestrained occupants could be involved in the same crash. There was a total of 872 unrestrained occupant crashes involving 780 unrestrained drivers and 487 unrestrained passengers. These crashes resulted in 15 fatalities, 90 serious injuries, and 446 minor or possible injuries to the unrestrained occupants. Unrestrained occupant crashes accounted for 8 percent of all crashes and 21 percent of all severe crashes within the study area over the past 5 years.

Crash Statistics

The combined number of unrestrained occupant fatalities and serious injuries increased from 18 to 30 between 2013 and 2016. In 2017 there were 11 combined fatalities and serious injuries. Between 2013 and 2017 the total number of unrestrained occupants increased from 152 to 296. **Figure 4.9** shows how the total number of unrestrained occupant crashes and the number of unrestrained occupant severe injuries have changed over the past five years.

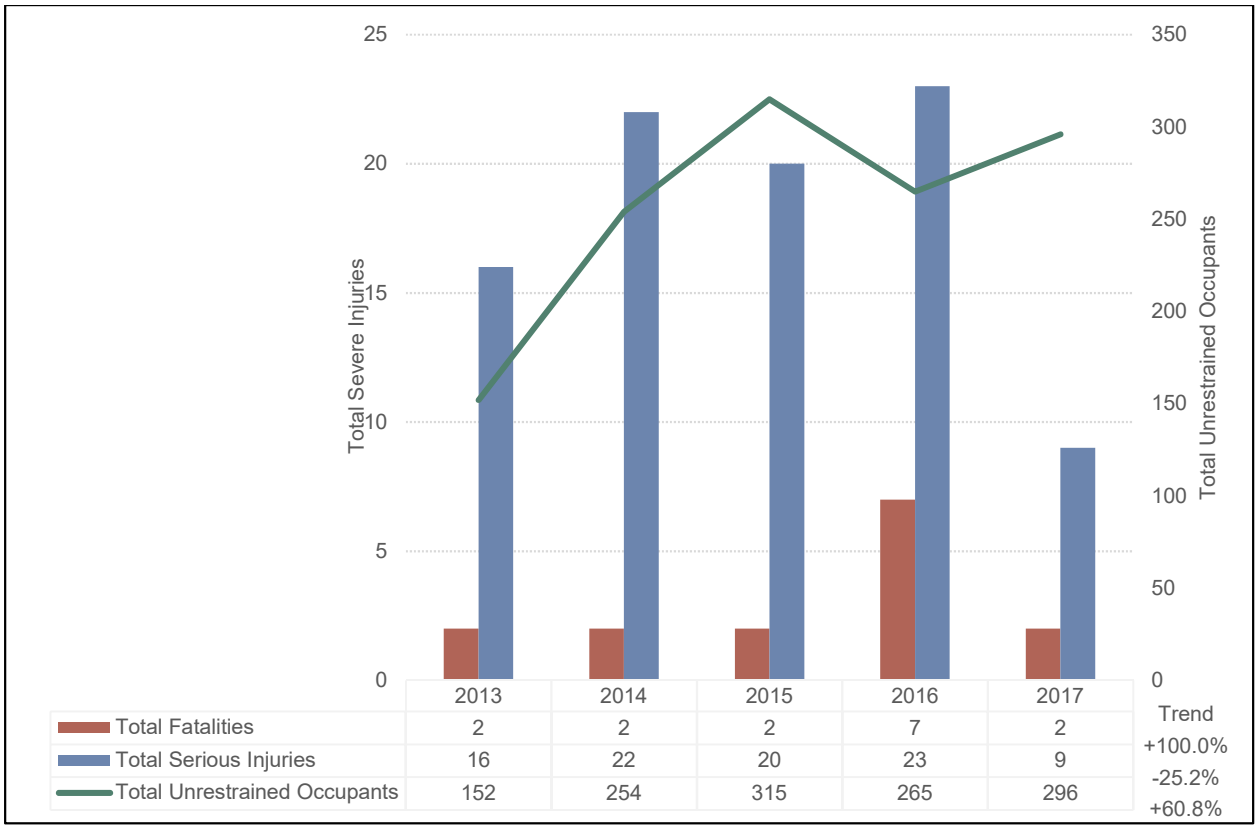


Figure 4.9: Unrestrained Occupants and Severe Injuries

Unrestrained occupants tended to be younger. The occupants age was listed as under 18 (26 percent), age 19-24 (20 percent), age 25-40 (25 percent), age 41-64 (20 percent), and age 65 and older (9 percent). The gender of unrestrained occupants was more evenly split between male (53 percent) and female (46 percent), 1 percent were unknown.

In the majority of crashes there was only 1 unrestrained occupant (74 percent). In 19 percent of crashes there were 2 unrestrained occupants with the remaining 6 percent having 3 or more unrestrained occupants. One crash involved a bus which had 38 unrestrained children on it.

The majority of unrestrained occupants were involved in crashes on principal arterials (39 percent), local streets (31 percent), or major collectors (15 percent). Similarly, the unrestrained occupants who suffered severe injuries were involved in crashes that occurred on principal arterials (41 percent), local streets (27 percent), and interstates (14 percent). Approximately 13 percent of unrestrained occupants were involved in crashes that occurred in a rural setting while 74 percent occurred within Missoula city limits. Of the roadways where the crashes occurred, 47 percent were state owned, 45 percent were city owned, 5 percent were county owned, and 2 percent were forest service or Indian/tribal owned.

Approximately 11 percent of unrestrained occupants in crashes were impaired, 74 percent of impaired occupants were drivers and 25 percent were passengers (1 percent were unknown).

Of those crash records where airbag deployment was reported, the airbag was not deployed in 75 percent of crashes. In 17 percent of crashes where the airbags were deployed, the unrestrained occupant suffered severe injuries. Of all crashes where the airbags were deployed, seven percent of occupants suffered severe injuries.

In five percent of unrestrained occupant crashes, ejection from the vehicle was reported (totally or partially. Of those who were totally or partially ejected, 36 percent suffered severe injuries.

Crash Trends

The following unrestrained occupant crash trends were noted:

- Unrestrained occupants tended to be younger with 27 percent being under the age of 18 and 20 percent between the ages of 19 and 24.
- The majority of crashes involved only one unrestrained occupant (74 percent).
- Approximately 11 percent of unrestrained occupants in crashes were impaired at the time of the crash (74 percent were drivers and 25 percent were passengers).
- The majority of severe unrestrained occupant crashes occurred on roadways functionally classified as principal arterials (41 percent) and local streets (27 percent).
- In 17 percent of crashes where the airbags deployed, the unrestrained occupant suffered severe injuries.
- Of those unrestrained occupants who were totally or partially ejected, 36 percent suffered severe injuries.
- Unrestrained occupant crashes accounted for 8 percent of all crashes and 21 percent of all severe crashes within the study area.

4.2.8. Run-Off-Road

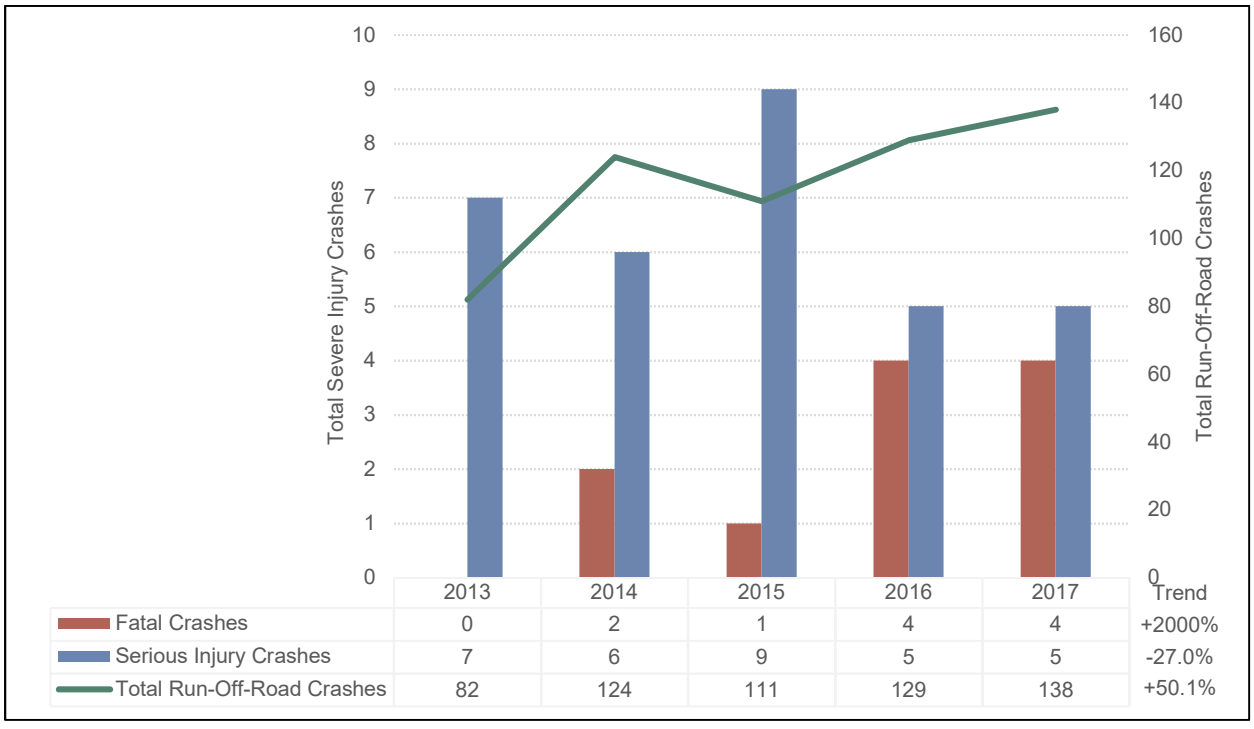
Data Analysis

Run-off-road crashes were defined on a person basis. The responding officer reports on each person involved in a crash and notes whether the person is a driver, passenger, or non-motorist along with various identifying characteristics. In addition to person characteristics, the data reports driver behavior, or contributing actions, at the time of the crash. Up to four behaviors can be listed for each driver. The person data was queried by drivers and non-motorists only and then sorted based upon whether the officer reported on driver behavior at the time of the crash. Many driver records do not report a contributing action.

A query was performed for each driver and non-motorist involved in a crash between 2013 and 2017 identifying all drivers and non-motorists who had "ran off roadway" listed as a driver actions at the time of the crash. The crash record numbers were also analyzed, and duplicates removed when totaling the number of crashes, as two cars that ran off the roadway could be involved in the same crash. There was a total of 584 run-off-road crashes involving 585 drivers and 911 people overall. These crashes resulted in 11 fatalities, 43 serious injuries, and 163 minor or possible injuries. Run-off-road crashes accounted for 5 percent of all crashes and 11 percent of all severe crashes within the study area over the past five years.

Crash Statistics

The total number run-off-road crashes steadily increased between 2013 and 2017 from 82 to 138. Run-off-road crashes have resulted in 7 to 10 severe crashes per year. Over the past 5 years, 8 drivers who ran off the road and 3 other people involved in a run-off-road crash were fatally injured. An additional 26 drivers and 17 others were seriously injured in a run-off-road crash. **Figure 4.10** shows how the total number of run-off-road crashes and the number of resulting severe injuries have changed over the past five years.



	2013	2014	2015	2016	2017	Trend
Fatal Crashes	0	2	1	4	4	+2000%
Serious Injury Crashes	7	6	9	5	5	-27.0%
Total Run-Off-Road Crashes	82	124	111	129	138	+50.1%

Figure 4.10: Run-off-Road Crashes

Run-off-road crashes typically involve a single vehicle. Approximately 92 percent of all run-off-road crashes involved only 1 vehicle, with 7 percent involving 2 vehicles, and 1 percent involving 3 vehicles. Almost half (47 percent) occurred on inclement road conditions (wet, ice, slush, mud, or snow) and 22 percent of run-off-road crashes occurred during inclement weather conditions (rain, hail, fog, or snow). Note that a crash can occur during inclement weather conditions and on an inclement roadway. About half of crashes occurred during the daylight (45 percent) with 41 percent and 7 percent occurring under dark unlit and dark lit conditions, respectively.

The crash records indicate the speed limit of the roadway where the crash occurred. The speed limit was reported as “0” in 25 percent of run-off-road crashes. This is taken to mean that the speed limit is unknown. Removing these records from the analysis, 13 percent of crashes occurred on roadways with a speed limit of 25 mph and under, 52 percent at 30 – 60 mph, and 36 percent at 65 – 80 mph.

The majority of drivers who ran off the road crashed on major collectors (30 percent), local streets (28 percent), or principal arterials (17 percent). The severe injury crashes caused by run-off-road incidents were in crashes on the interstate (32 percent), principal arterials (22 percent), and major collectors (16 percent). Approximately half of run-off-road drivers crashed in a rural setting (51 percent) while 9 percent crashed within Missoula city limits. Of the roadways where the run-off-road crashes occurred, 24 percent were city owned, 43 percent were state owned, 23 percent were county owned, and 10 percent were forest service owned. The majority of the run-off-road crashes occurred at a non-junction (83 percent), with 10 percent occurring at an intersection or being intersection related.

Run-off-road crashes resulted in the following top 5 crash types: fixed object (64 percent); roll over (27 percent); right angle (4 percent); not fixed object (2 percent); and rear end (1 percent). Severe run-off-road crashes resulted in the following top 5 crash types: roll over (62 percent); fixed object (26 percent); right angle (5 percent); head on (2 percent); and rear end (2 percent).

The person-based data reports driver behavior, or contributing actions, at the time of the crash. Note that “ran off the roadway” was listed in all of the crashes as a contributing factor. The other top 5 contributing factors for drivers who ran off the road were driving in a distracted/inattentive manner (51 percent), drove too fast for conditions (37 percent), over-correcting/over-steering (31 percent), failed to keep in proper lane (18 percent) and drove in an erratic/reckless manner (17 percent). Approximately 34 percent of run-off-road crashes involved driver alcohol or drug impairment.

Seatbelt use was reported for 91 percent of run-off-road drivers. Of those records, 10 percent of drivers were not properly restrained (lap or shoulder belt only, none used, restraint used improperly). In 32 percent of the run-off-road driver severe injuries, the driver was not properly restrained. In five serious injuries, the driver was a motorcyclist.

The run-off-road crashes were plotted spatially based on the coordinates recorded for each crash. **Figure 4.11** shows the density of run-off-road crashes within the study area based on the spatial data.

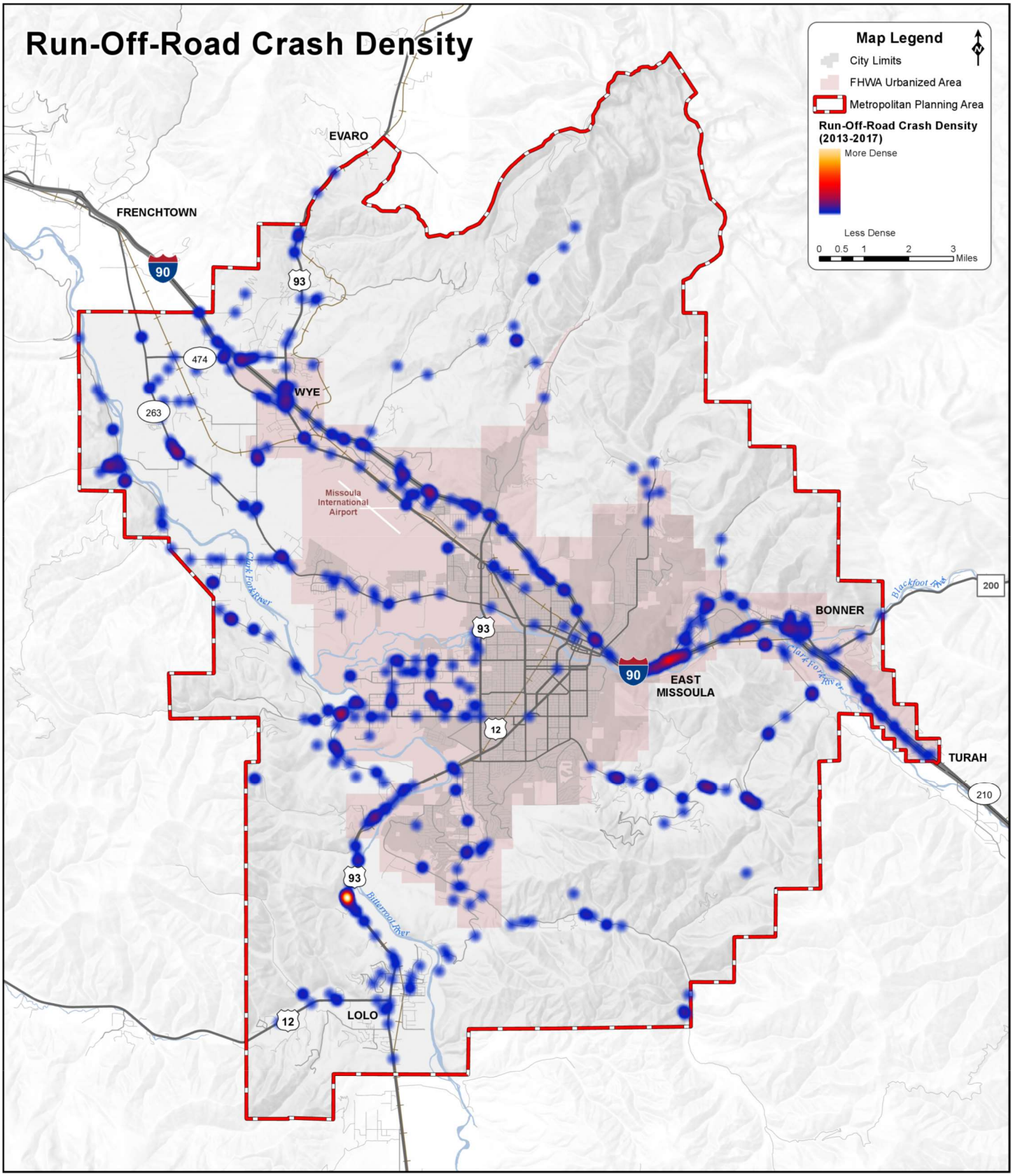


Figure 4.11: Run-off-Road Crash Density

Crash Trends

The following run-off-road crash trends were noted:

- Run-off-road crashes most often involved a single vehicle (92 percent).
- Nearly half of the crashes occurred under inclement road conditions (47 percent).
- 36 percent of crashes occurred on roadways with a speed limit 65 mph or greater.
- Over half of run-off-road crashes occurred in a rural setting (51 percent) while 9 percent occurred within city limits. The majority of crashes occurred on state owned roadways (43 percent). 32 percent of severe crashes occurred on the interstate.
- There is a cluster of run-off-road crashes on I-90 through East Missoula and about midway between Missoula and Lolo on US 93.
- Roll over crashes accounted for 27 percent of all run-off-road crashes and 62 percent of severe run-off-road crashes.
- Distracted driving (51 percent) and driving too fast for conditions (37 percent) were the top contributing factors in run-off-road crashes.
- Approximately 34 percent of run-off-road crashes involved driver alcohol or drug impairment.
- Driver seatbelt non-use was reported in 32 percent of severe run-off-road crashes.
- Run-off-road crashes accounted for 5 percent of all crashes and 11 percent of all severe crashes in the study area.

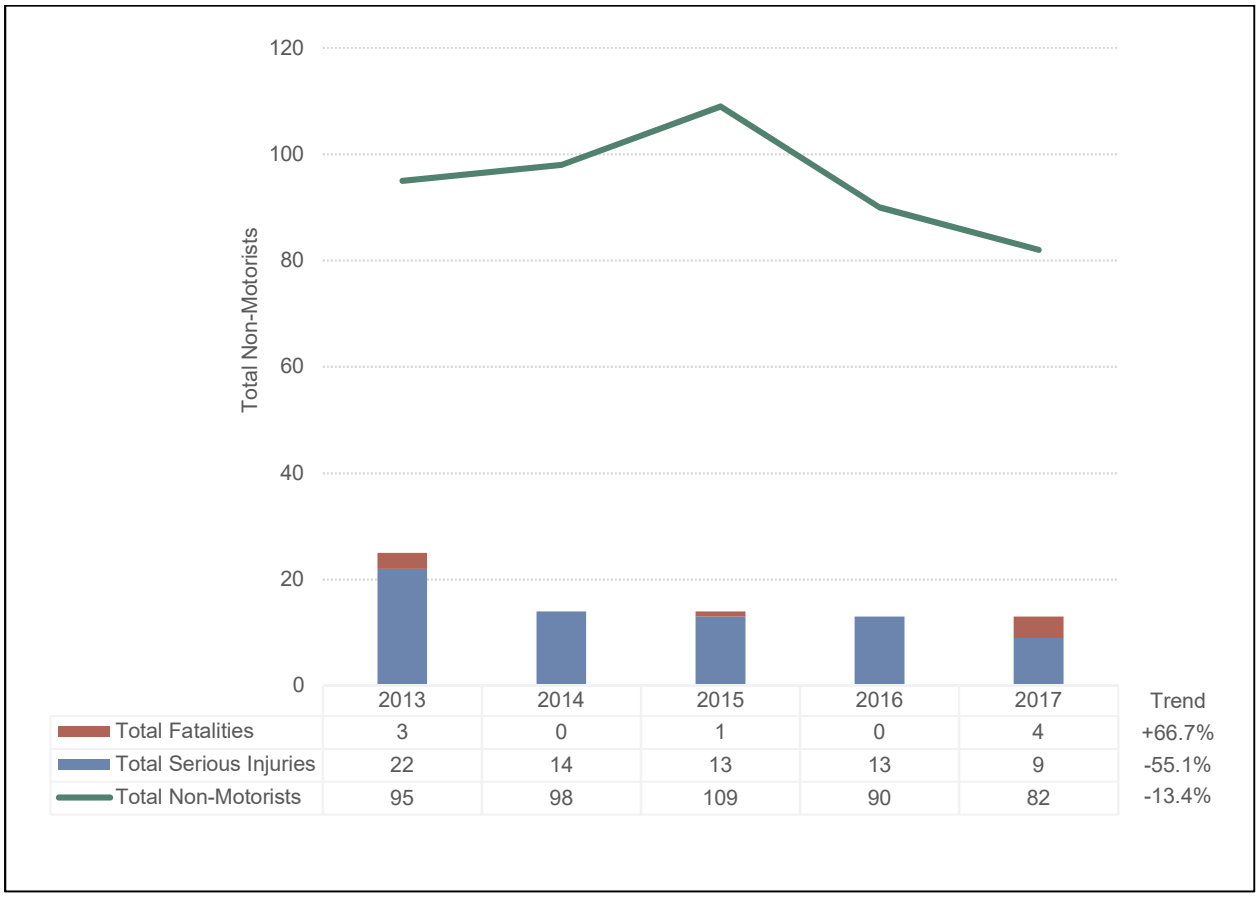
4.2.9. Non-Motorists

Data Analysis

Non-motorists in crashes were defined on a person basis. The responding officer reports on each person involved in a crash and notes whether the person is a driver, passenger, or non-motorist along with various identifying characteristics. The person data was queried by all "non-motorists" involved crashes between 2013 and 2017. The crash record numbers were also analyzed, and duplicates removed when totaling the number of crashes, as multiple non-motorists could be involved in the same crash. There was a total of 463 non-motorist crashes involving 317 bicyclists and 145 pedestrians. These crashes resulted in 8 fatalities, 77 serious injuries, and 269 minor or possible injuries. Non-motorist crashes accounted for 4 percent of all crashes and 21 percent of all severe crashes within the study area over the past 5 years.

Crash Statistics

The combined number of non-motorized fatalities and serious injuries resulting from crashes has noticeably decreased between 2013 and 2017, from 25 to 13. Overall, the number of non-motorists involved in crashes increased slightly between 2013 and 2015 and then decreased slightly between 2015 and 2017. Overall the total number of non-motorists involved in crashes decreased from 95 to 82 between 2013 and 2017. Over the past five years, all eight non-motorized fatalities were pedestrians. Of the serious injuries, 25 were pedestrians and 49 were bicyclists. **Figure 4.12** shows how the total number of non-motorists involved in crashes and the number of non-motorist severe injuries have changed over the past five years.



	2013	2014	2015	2016	2017	Trend
Total Fatalities	3	0	1	0	4	+66.7%
Total Serious Injuries	22	14	13	13	9	-55.1%
Total Non-Motorists	95	98	109	90	82	-13.4%

Figure 4.12: Non-Motorists in Crashes

Almost all non-motorist involved crashes involved a single non-motorist (98 percent). About 67 percent of non-motorist involved crashes involved 2 vehicles (in addition to non-motorists) while 30 percent involved only 1 vehicle, and 2 percent involved 3 or more vehicles.

There were more bicyclists (34 percent) in the 25-40 age group than there were pedestrians (23 percent). However, there were more pedestrians in the under 18 and over 65 ages groups (19 and 10 percent, respectively) than there were bicyclists (16 and 2 percent, respectively). There were 19 percent of both bicyclists and pedestrians in the 19-24 age group and 28 and 29 percent of bicyclists and pedestrians, respectively, in the 41-64 age group. There were more male non-motorists in crashes than females, 71 percent of bicyclists and 61 percent of pedestrians were male.

The majority of non-motorist involved crashes occurred on principal arterials (35 percent), local streets (31 percent), or major collectors (21 percent). Similarly, the non-motorists that suffered severe injuries were in crashes on local streets (37 percent), principal arterials (30 percent), and major collectors (18 percent). Only 1 percent of non-motorists were in crashes that occurred in a rural setting while 93 percent occurred within Missoula city limits. Of the roadways where the crashes occurred, 62 percent were city owned, 37 percent were state owned, and 1 percent were county owned. The majority of non-motorist involved crashes occurred at an intersection (50 percent) or were intersection related (16 percent). **Figure 4.13** shows the locations of the non-motorist involved crashes.

In 32 percent of bicyclist involved crashes, a contributing factor was not listed in the crash report. In those crashes where contributing factors were listed, 38 percent had “no contributing action” listed. The other top factors were disregarded traffic signs (nine percent), failed to yield right-of-way (eight percent), wrong side/wrong way (eight percent), and inattentive/reckless driving (seven percent). Pedestrian contributing actions are listed in a different field categorized as “non-motorist” contributing action. Up to two contributing actions can be listed in the field. In 61 percent of pedestrian involved crashes, a contributing factor was not listed. In those crashes where contributing factors were listed, 23 percent had “no improper action” listed. The other top factors were dart/dash (12 percent), failed to yield right-of-way (3 percent), in roadway improperly (3 percent), and not visible (1 percent).

Of the vehicles involved in non-motorist crashes, 26 percent did not have a contributing factor listed and 37 percent had “no contributing factor” listed. In those crashes where driver contributing factors were listed, the top factors were failed to yield right-of-way (41 percent), drove in an inattentive/reckless manner (29 percent), improper turn (2 percent), failed to keep in proper lane (2 percent), and disregarded traffic sign (1 percent).

Non-motorist crashes can be coded as “bicycle” or “pedestrian” crash types, or they can be coded as the typical crash types such as rear end, sideswipe, and right angle. The majority are coded as “bicycle” or “pedestrian” crashes, although about one third list another crash type. When a person on a bicycle is on a sidewalk or marked crosswalk, they are considered pedestrians and the crash type is coded as such. Bicyclist involved crashes resulted in the following top 5 crash types: bicycle (58 percent); right angle (25 percent); sideswipe (4 percent); other (4 percent); and left-turn (3 percent). Pedestrian involved crashes resulted in the following top 5 crash types: pedestrian (89 percent); right angle (6 percent); other (2 percent); rear end (1 percent); and left-turn (1 percent).

The majority of non-motorist crashes occurred during the daylight (79 percent) with 13 percent and 5 percent occurring under dark unlit and dark lit conditions, respectively. Approximately 16 percent of non-motorist crashes occurred under inclement weather conditions and approximately 20 percent of non-motorist crashes occurred with inclement road conditions. Bicyclists were less likely than pedestrians to be involved in crashes under inclement weather or road conditions.

Of the 317 bicyclists involved in crashes 14 (4 percent) were impaired at the time of the crash. Of the 145 pedestrians, 8 (6 percent) were impaired, and of the 60 motorists involved in a non-motorist crash, 35 (3 percent) were impaired.

Crash Trends

The following non-motorist involved crash trends were noted:

- Non-motorist crashes accounted for 4 percent of all crashes and 21 percent of all severe crashes within the study area.
- Almost all non-motorist involved crashes involved 1 non-motorist (98 percent).
- There were more bicyclists (34 percent) in the 25-40 age group than there were pedestrians (23 percent). However, there were more pedestrians in the under 18 and over 65 ages groups (19 and 10 percent, respectively) than there were bicyclists (16 and 2 percent, respectively).
- Approximately 93 percent of non-motorist crashes occurred within city limits.
- The majority of non-motorist crashes occurred at an intersection (50 percent) or were intersection related (16 percent).
- The majority of non-motorist crashes occurred during the daylight (79 percent).
- Bicyclists were less likely than pedestrians to be involved in crashes under inclement weather or road conditions.
- Overall, four percent of bicyclists, six percent of pedestrians, and three percent of motorists were impaired at the time of the crash.
- The non-motorists that suffered severe injuries were in crashes primarily on local streets (37 percent) and principal arterials (30 percent).

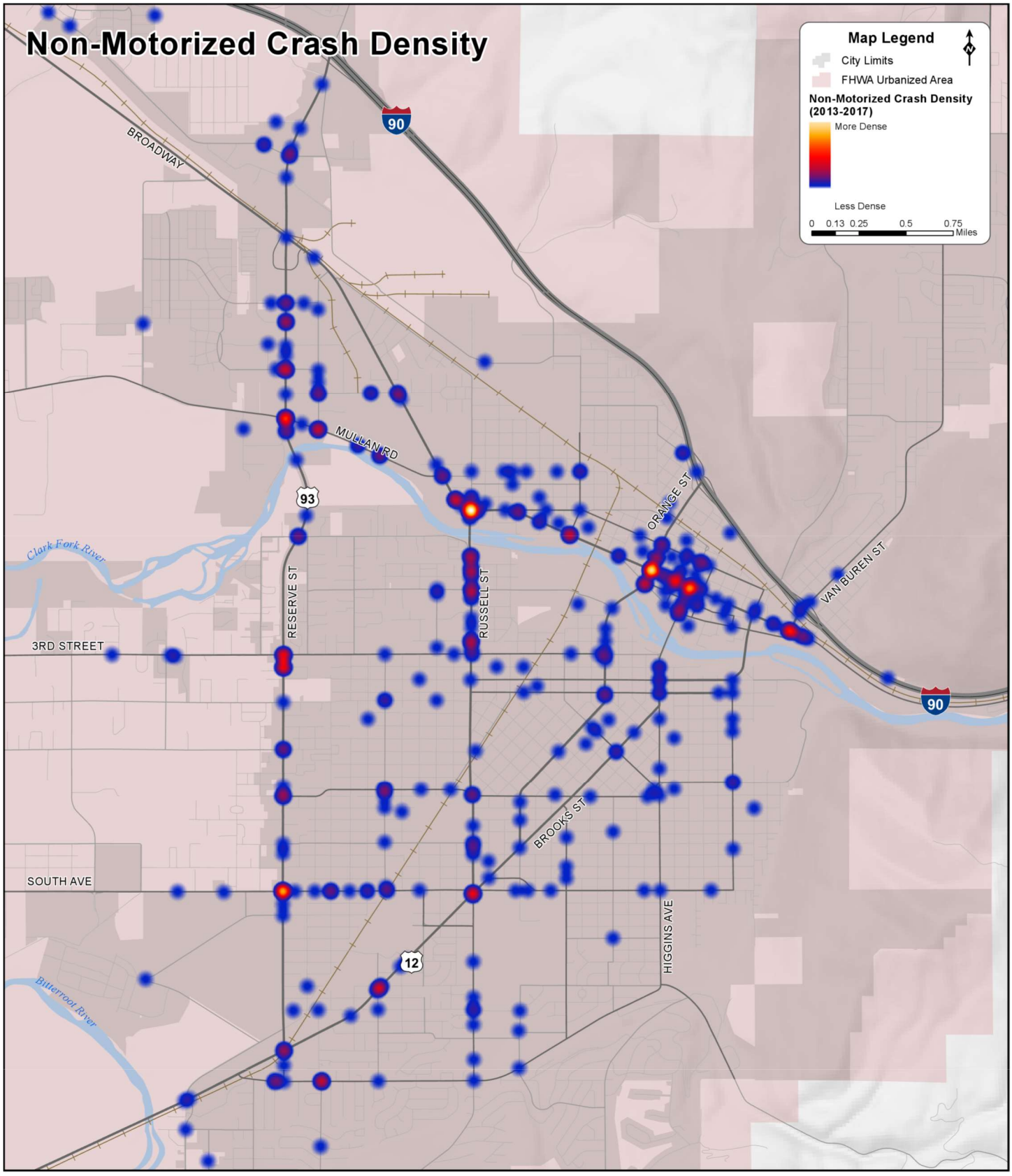


Figure 4.13: Non-Motorized Crash Locations

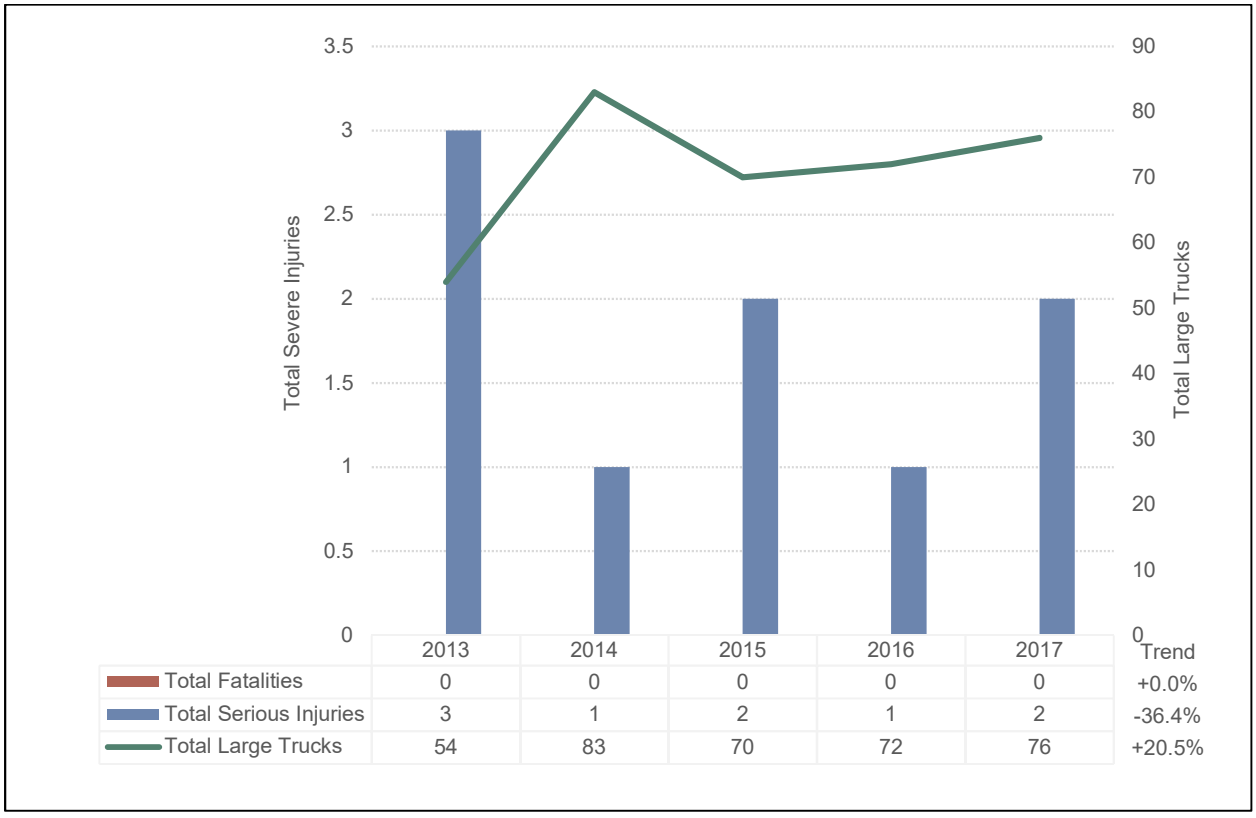
4.2.10. Large Trucks

Data Analysis

Large trucks in crashes were defined on a person basis. The responding officer reports on each person involved in a crash and notes whether the person is a driver, passenger, or non-motorist along with various identifying characteristics. In addition to person characteristics, data records report the type of vehicle the person was riding in. The person data was queried by all drivers and passengers involved in crashes between 2013 and 2017 who were riding on in a "medium/heavy truck (more than 10,000 lbs)" or "other light truck (10,000 lbs or less)". The crash record numbers were also analyzed, and duplicates removed when totaling the number of crashes, as multiple large trucks or occupants of large trucks could be involved in the same crash. There was a total of 346 large truck involved crashes involving 355 large truck drivers, 55 large truck passengers, and 762 people overall. These crashes resulted in no fatalities, 9 serious injuries, and 71 minor or possible injuries. Large truck Involved crashes accounted for three percent of all crashes and less than two percent of all severe crashes within the study area over the past five years.

Crash Statistics

The combined number of fatalities and serious injuries resulting from large truck crashes has been minimal between 2013 and 2017. Each year there were zero fatalities and between one and three serious injuries. Between 2013 and 2014 the total number of large trucks involved in crashes increased from 54 to 83 but the number of large trucks in crashes level off to an average of 73 trucks each year between 2014 and 2017. Over the past five years, two drivers of large trucks and seven others were seriously injured in a large truck involved crash. **Figure 4.14** shows how the total number of large trucks involved in crashes and the number of resulting severe injuries have changed over the past five years.



	2013	2014	2015	2016	2017	Trend
Total Fatalities	0	0	0	0	0	+0.0%
Total Serious Injuries	3	1	2	1	2	-36.4%
Total Large Trucks	54	83	70	72	76	+20.5%

Figure 4.14: Large Trucks in Crashes

The majority of large truck involved crashes involved 2 vehicles (73 percent) while 20 percent involved only the large truck and 6 percent involved 3 or more vehicles.

The majority of truck drivers were in the 25-40 age group accounted for 30 percent of drivers and the 41-64 age group accounted for 55 percent of drivers. The remaining drivers were in the following age groups: 18 and under (1 percent); 19-24 (7 percent); and 65 and over (7 percent). The majority of drivers (92 percent) were male.

The majority of large truck crashes occurred on principal arterials (41 percent), local streets (26 percent), or the interstate (15 percent). Similarly, the severe large truck involved crashes occurred on principal arterials (57 percent), the interstate (29 percent), and local streets (14 percent). Only 5 percent of large truck involved crashes occurred in a rural setting while 65 percent occurred within Missoula city limits (the remaining 30 percent occurred in the urban area, outside of city limits). Of the roadways where the crashes occurred, 58 percent were state owned, 40 percent were city owned, and 2 percent were county owned. Over half of the large truck involved crashes occurred at a non-junction (51 percent), 18 percent occurred at an intersection, and 21 percent were intersection related.

In eight percent of large truck involved crashes, a contributing factor was not listed in the crash report. In those crashes where contributing factors were listed, the top factors were inattentive/reckless driving (28 percent), improper turn (7 percent), failed to yield right-of-way (7 percent), improper backing (6 percent), and speeding/drove too fast for conditions (5 percent). Large truck involved crashes resulted in the following top 5 crash types: sideswipe (31 percent); rear end (22 percent); right angle (12 percent); fixed object (11 percent); and not fixed object (2 percent).

Approximately 17 percent of large truck involved crashes occurred during inclement weather conditions (rain, severe wind, fog, or snow) and 26 percent occurred on inclement road conditions (wet, ice, snow, slush, or frost). The majority of crashes occurred during the daylight (81 percent) with 6 percent and 9 percent occurring under dark unlit and dark lit conditions, respectively.

Approximately three percent of large truck involved crashes involved driver alcohol or drug impairment. Alcohol or drug impairment of the large truck driver was reported in only four cases (one percent of large truck drivers). Seatbelt use was reported for 79 percent of large truck occupants involved in crashes. Of those records where seatbelt use was reported, four percent of large truck occupants were not properly restrained (lap or shoulder belt only, none used, restraint used improperly).

Crash Trends

The following large truck involved crash trends were noted:

- Approximately 92 percent of drivers were male.
- Nearly 85 percent of drivers were age 25-64 years old.
- Inclement road (26 percent) and weather conditions (17 percent) were sometimes a factor in the crash.
- Inattentive/reckless driving was the top driver contributing factor in the crashes (28 percent).
- The majority of crashes occurred on state-owned roadways (58 percent).
- Over half of the large truck involved crashes resulted in a sideswipe (31 percent) or rear end (22 percent) crash type.

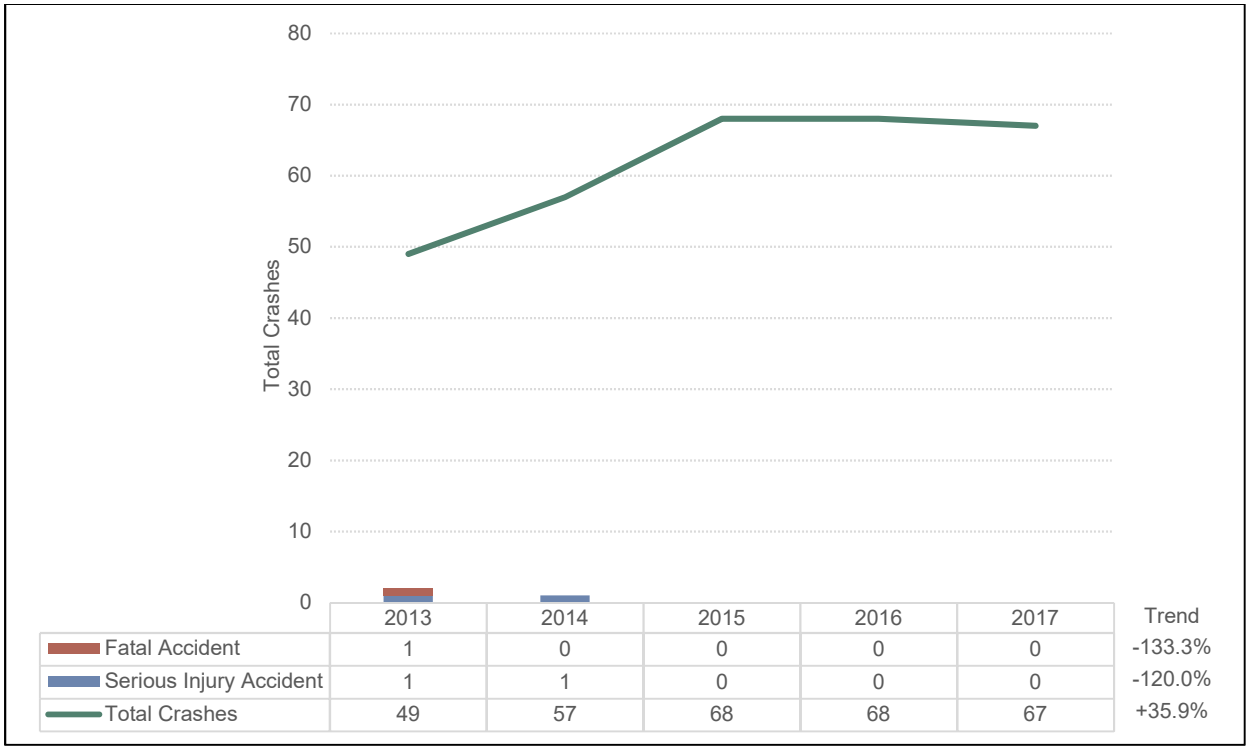
4.2.11. Animal Crashes

Data Analysis

Animal crashes were defined on a crash basis. Each crash is categorized by crash type including rear end, roll over, sideswipe, right angle, fixed object, wild animal, and domestic animal, among others. The crashes that occurred between 2013 and 2017 that were reported as "wild animal" or "domestic animal" crash types were included in the analysis for animal crashes emphasis area. There was a total of 309 animal crashes involving 486 people which resulted in 1 fatality, 2 serious injuries, and 21 minor or possible injuries. Animal crashes accounted for three percent of all crashes and less than one percent of all severe crashes within the study area over the past five years.

Crash Statistics

The majority of animal related crashes resulted in a non-injury/property damage only (92 percent). There was one fatal crash in 2013 and one serious injury crash in both 2013 and 2014. There were no severe crashes after 2014. **Figure 4.15** shows how the total number of animal crashes and the number of severe animal crashes have changed over the past five years.



	2013	2014	2015	2016	2017	Trend
Fatal Accident	1	0	0	0	0	-133.3%
Serious Injury Accident	1	1	0	0	0	-120.0%
Total Crashes	49	57	68	68	67	+35.9%

Figure 4.15: Animal Crashes

October and November were the most common months for animal crashes to occur (15 percent each), followed by September and June (11 percent each). All of the fatal and serious injury crashes occurred between August and October. Almost half of the crashes occurred between the hours of 5:00 PM and 12:00 AM (48 percent) another 29 percent of crashes occurred between 4:00 and 9:00 AM.

Most of the animal crashes occurred under dark unlit conditions (57 percent), while 28 percent occurred during daylight, 6 percent at dawn, 5 percent under dark lit conditions, and 4 percent at dusk. Over half of the crashes occurred on a clear day (55 percent), 35 percent on a cloudy day, and 10 percent on a day with inclement weather conditions (fog, rain, snow). Most crashes occurred on dry roads (84 percent), the other 16 percent of crashes occurred on wet, snowy, or icy roads.

Over half of the animal crashes occurred on a principal arterial (51 percent), while 24 percent occurred on the interstate, and 11 percent occurred on major collectors. About 56 percent of crashes occurred in an urban setting and 44 percent occurred in a rural setting.

Crash Trends

- Animal crashes commonly occurred in the fall and winter months. During these months deer are more present on the roadways dues to hunting and mating seasons. It is also dark for more hours of the day and wild animals are harder to see during these times.
- The majority of crashes occurred on major roadways and rural highways where speeds are higher, and it may be harder to stop when an animal unexpectedly crosses the street. Animal movements can be unpredictable, and the low number of animal crashes and severe animal crashes make this emphasis area a low priority.

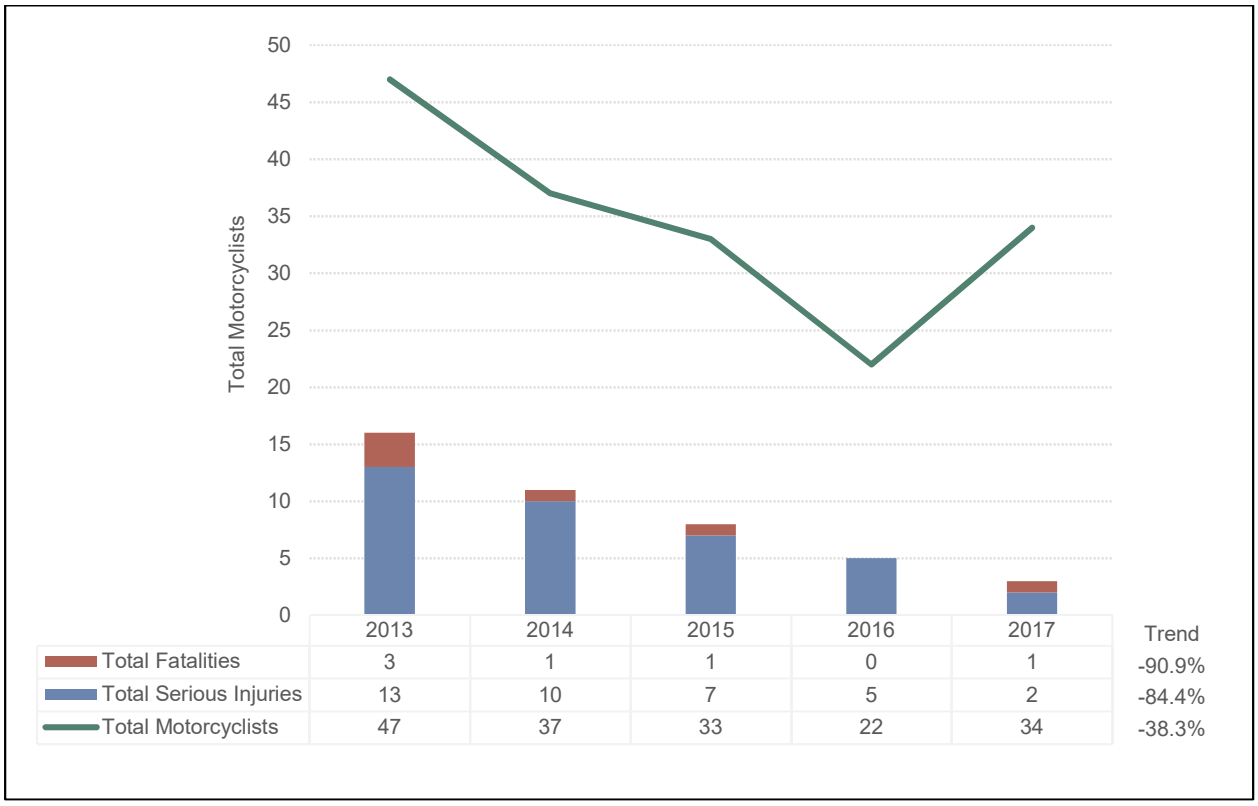
4.2.12. Motorcyclists

Data Analysis

Motorcyclists in crashes were defined on a person basis. The responding officer reports on each person involved in a crash and notes whether the person is a driver, passenger, or non-motorist along with various identifying characteristics. In addition to person characteristics, data records report the type of vehicle the person was riding in. The person data was queried by all drivers and passengers involved in crashes between 2013 and 2017 who were riding on a motorcycle. The crash record numbers were also analyzed, and duplicates removed when totaling the number of crashes, as multiple motorcyclists could be involved in the same crash. A “motorcyclist” may be categorized as either a driver or a passenger on the motorcycle. There was a total of 152 motorcycle involved crashes involving 173 motorcyclists (154 drivers and 18 passengers). These crashes resulted in 6 fatalities, 37 serious injuries, and 85 minor or possible injuries to motorcyclists. Motorcycle crashes accounted for 1 percent of all crashes and 11 percent of all severe crashes within the study area over the past 5 years.

Crash Statistics

The combined number of fatalities and serious injuries resulting from motorcycle crashes has been in decline between 2013 and 2017 decreasing from 16 to 3 over that time period. Between 2013 and 2016 the total number of motorcyclists involved in crashes decreased from 47 to 22 before increasing to 34 motorcyclists in 2017. Over the past 5 years, 5 motorcycle drivers and 1 passenger were fatally injured while 32 drivers and 5 passengers were seriously injured in a crash. **Figure 4.16** shows how the total number of motorcyclists involved in crashes and the number of motorcyclist severe injuries have changed over the past five years.



	2013	2014	2015	2016	2017	Trend
Total Fatalities	3	1	1	0	1	-90.9%
Total Serious Injuries	13	10	7	5	2	-84.4%
Total Motorcyclists	47	37	33	22	34	-38.3%

Figure 4.16: Total Motorcyclists in Crashes

Almost all motorcycle crashes involved a single motorcycle (98 percent). Similarly, 88 percent of motorcycle crashes involved 1 motorcyclist while 12 percent involved 2 motorcyclists. There was 1 crash that involved 4 motorcyclists on 2 motorcycles.

The age of the motorcycle driver was distributed as follows: under 18 (4 percent); 19-24 (20 percent); 25-40 (32 percent); 41-64 (37 percent); and over 65 (6 percent). The majority of motorcycle drivers were male (90 percent).

The majority of motorcyclist crashes occurred on principal arterials (35 percent), local streets (25 percent), or major collectors (21 percent). Similarly, the motorcyclists that suffered severe injuries were in crashes on principal arterials (38 percent), major collectors (24 percent), and local streets (19 percent). About 12 percent of motorcycle crashes occurred in a rural setting while 67 percent occurred within Missoula city limits and 21 percent occurred in the urban area but outside of city limits. Of the roadways where the crashes occurred, 52 percent were city owned, 45 percent were state owned, and 3 percent were county or forest service owned. Nearly half of the motorcycle crashes occurred at an intersection (32 percent) or were intersection related (16 percent).

In 44 percent of motorcycle crashes there was no contributing factor listed in the crash report. In those crashes where contributing factors were listed, the top factors were inattentive/reckless driving (32 percent), speeding (12 percent), run-off-road (8 percent), following too closely (7 percent), and over-correcting/over-steering (6 percent). Motorcycle crashes resulted in the following top 5 crash types: rear end (26 percent); roll over (22 percent); right angle (16 percent); sideswipe (9 percent); and fixed object (8 percent).

Approximately nine percent of motorcycle involved crashes occurred during inclement weather conditions (rain, severe wind, fog, or snow) and four percent occurred on inclement road conditions

(wet, ice, or frost). The majority of crashes occurred during the daylight (76 percent) with 13 percent and 6 percent occurring under dark unlit and dark lit conditions, respectively.

Approximately 18 percent of motorcycle crashes involved driver alcohol or drug impairment. Alcohol or drug impairment was reported in 15 percent of motorcycle drivers. Helmet use was reported for 57 percent of motorcyclists involved in crashes. Of those records where helmet use was reported, 18 percent of drivers and 22 percent of passengers were not wearing a helmet. In one fatality and four serious injuries, the motorcyclists were not wearing a helmet.

Crash Trends

The following motorcycle crash trends were noted:

- Motorcycle crashes accounted for 1 percent of all crashes and 11 percent of all severe crashes within the study area.
- 90 percent of drivers were male.
- Young drivers (14-24) and older drivers (65 and over) accounted for 24 and 6 percent of motorcycle drivers, respectively.
- Inattentive driving (32 percent) and speeding (12 percent) were the top driver contributing factors in the crashes.
- The majority of crashes occurred on city (52 percent) or state-owned roadways (45 percent).
- Most severe crashes occurred on roadways functionally classified as principal arterials (35 percent) and major collectors (21 percent).
- Driver impairment was reported for 16 percent of motorcycle drivers.
- Of those where helmet use was reported, 18 percent of drivers and 22 percent of passengers were not wearing helmets at the time of the crash.

4.2.13. Drowsy Driver

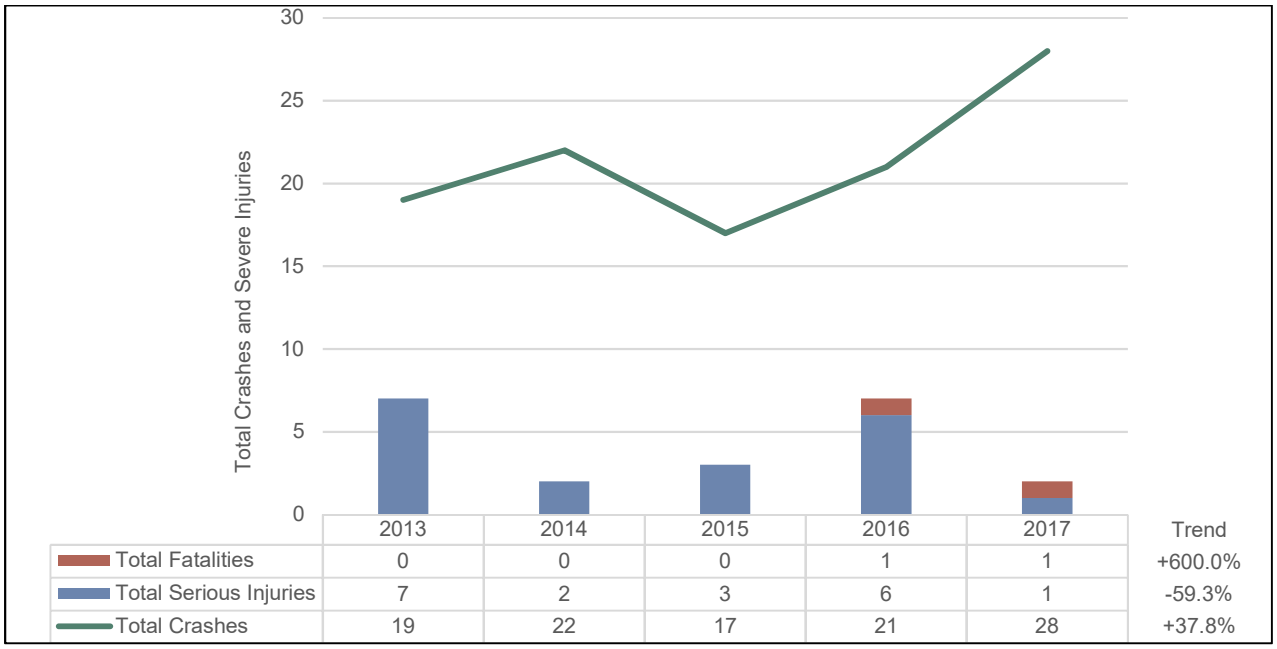
Data Analysis

Drowsy driver crashes were defined on a person basis. The responding officer reports on each person involved in a crash and notes whether the person is a driver, passenger, or non-motorist along with various identifying characteristics. In addition to person characteristics, the data reports the persons' condition at the time of the crash. The person data was queried by drivers and non-motorists only and then sorted based upon whether the officer reported on driver condition at the time of the crash. Many records do not report condition at the time of the crash. Often times this means the driver was apparently normal at the time of the crash, but this cannot be assumed as crash reports can be unreliable and lack complete information.

A query was performed for each driver involved in a crash between 2013 and 2017 identifying all drivers who had "asleep or fatigued" or "ill (sick) or fainted" listed as the persons' condition at the time of the crash. The crash record numbers were also analyzed, and duplicates removed when totaling the number of crashes, as two drowsy drivers could be involved in the same crash. There was a total of 107 drowsy driver crashes involving 107 drowsy drivers and 174 total people. These crashes resulted in 2 fatalities, 19 serious injuries, and 41 minor or possible injuries. Drowsy driver crashes accounted for one percent of all crashes and four percent of all severe crashes within the study area over the past five years.

Crash Statistics

There were an average of 21 drowsy driver crashes per year within the Missoula MPA over the past 5 years. **Figure 4.17** shows how the total number of drowsy driver crashes and the number of resulting severe injuries have changed over the past five years.



	2013	2014	2015	2016	2017	Trend
Total Fatalities	0	0	0	1	1	+600.0%
Total Serious Injuries	7	2	3	6	1	-59.3%
Total Crashes	19	22	17	21	28	+37.8%

Figure 4.17: Drowsy Driver Crashes and Severe Injuries Caused

About half of the drowsy driver crashes occurred on Monday through Thursday (58 percent) the other crashes occurred on Friday through Sunday (42 percent). Most of the drowsy driver crashes occurred during the day with 25 percent occurring between 6:00 and 9:00 AM and 40 percent occurring between 1:00 and 7:00 PM, and 11 percent occurring between 12:00 and 3:00 AM.

The majority of drowsy driver crashes occurred on local streets (35 percent) and principal arterials (32 percent), with 9 percent of crashes occurring on the interstate. About 14 percent of crashes occurred in a rural setting, 55 percent occurred within Missoula city limits, and 31 percent occurred within the urban area but outside of city limits.

The majority of drowsy drivers were in the 25- to 40-year-old age group, accounting for 36 percent. Young drivers (14 to 24) and older drivers (65+) accounted for 26 and 21 percent of drowsy drivers, respectively. Driver impairment was reported in 12 percent of the crashes. In 31 percent of crashes the drowsy driver ran off the roadway.

Crash Trends

Although drowsy driver crashes accounted for less than one percent of all crashes, this emphasis area accounted for nearly five percent of severe crashes and had the third highest severity index. This indicates that although these crashes are rare, they can be very dangerous and have, in the past, typically resulted in some form of injury. The small number of drowsy driver occurrences and the crash statistics discussed above suggest that drowsy driving may be best addressed through other emphasis areas including young drivers, older drivers, and run-off-road crashes.

4.2.14. Train Involved Crashes

Data Analysis

Train involved crashes were defined on a crash basis. Each crash is categorized by crash type including rear end, roll over, sideswipe, right angle, fixed object, and railway vehicle, among others. The crashes that occurred between 2013 and 2017 that were reported as the “railway vehicle” crash type were included in the analysis for train involved crashes emphasis area. There was a total of three

train involved crashes involving seven people which resulted in no fatalities, no serious injuries, and two minor or possible injuries. This does not account for the railway vehicle operators, the condition of those who were inside the train at the time of the crash are unknown. Train involved crashes accounted for less than one percent of all crashes and there were no severe train involved crashes within the study area over the past five years.

Crash Statistics

There were only three train involved crashes within the Missoula MPA over the past five years. The first occurred in 2014 and involved an ATV with two riders. The crash occurred on dry roads under clear weather conditions at dusk. The driver of the ATV was determined to be impaired. The two riders experienced minor or possible injuries. The second crash occurred in 2015 and involved a passenger car carrying four people. The crash occurred under snowy road and weather conditions during daylight lighting conditions. Nobody was injured in the crash. The third crash occurred in 2017 and involved a large truck carrying one person. The roads were dry, and the crash happened during daylight on a clear day. The driver was not injured in the crash.

Crash Trends

In all three crashes, one of the driver contributing actions was listed as “failed to yield right-of-way” in two of crashes, one of the driver contributing actions was “drove in a distracted, inattentive manner”. The low number of train involved crash occurrences suggests that train involved crashes are not prevalent in the Missoula MPA. Conclusions cannot be drawn from the small amount of available data, but it is assumed that the cause of these crashes could be addressed through other emphasis areas including inattentive drivers, impaired drivers, or large truck crashes.

5.0. CRASH COSTS

The National Safety Council (NSC) makes estimates of the average costs of fatal and nonfatal injuries to illustrate their impact on the nation's economy[7]. The costs are a measure of the dollars spent and income not received due to crashes, injuries, and fatalities. Cost estimation is not exact, it can only be approximated because the estimates depend on many factors. As such, the cost estimates provided in this section are only approximations, not exact figures.

The cost of crashes can be measured two ways, by economic cost and by comprehensive cost. The economic cost accounts for wage and productivity losses, medical expenses, administrative expenses, motor vehicle damage, and employers’ uninsured costs. In addition to economic costs, the comprehensive cost takes into account the value of lost quality of life which was obtained by NSC through empirical studies of what people actually pay to reduce their safety and health risks. Comprehensive cost estimates should be used for cost-benefit analyses. Both of these cost estimates are measured on a person basis, not a crash basis.

The cost figures are appropriate for measuring the economic loss to a community from past crashes. However, they should not be used to compute a dollar value of future benefits due to traffic safety measures. They do not include what people are willing to pay for improved safety.

The cost estimates provided by NSC are listed in **Table 5.1**. The estimates have been adjusted to account for inflation based on a three percent per year increase is costs. The cost estimates are listed in 2018 dollars.

[7] Estimating the Costs of Unintentional Injuries, 2015, National Safety Council, March 2017.

Table 5.1: Cost of Crash Related Injuries (2018)

Injury Type	Average Economic Cost	Average Comprehensive Cost
Fatality	$1,542,000	$10,082,000
Serious Injury	$90,000	$1,103,000
Minor Injury	$26,000	$304,000
Possible Injury	$21,400	$141,000
Non-Injury	$11,400	$46,600

Source: National Safety Council "Estimating the Costs of Unintentional Injuries"

5.1. Crash Costs by Year

The cost estimates can be used to measure the importance of crash prevention work and investment in the Four E's of safety. **Table 5.2** compares the average costs of crashes within the Missoula MPA that occurred between 2007 and 2011 (those crashes that were analyzed in the 2013 CTSP) to those crashes that occurred between 2013 and 2017. The estimates for the past five years of crashes are also given.

Table 5.2: Crash Costs by Year

Year	Average Economic Cost*	Average Comprehensive Cost*
2007 - 2011	$605,000,000	$4,020,000,000
2013 - 2017	$475,000,000	$2,760,000,000
2013	$85,000,000	$510,000,000
2014	$90,000,000	$510,000,000
2015	$90,000,000	$525,000,000
2016	$105,000,000	$590,000,000
2017	$110,000,000	$620,000,000

**Estimates have been rounded to the nearest $5,000,000.*

Figure 5.1 compares the total number of crashes per year for the years 2013 through 2017 to the average economic cost of the crashes. This figure provides an illustration of severity of crashes. For example, although the total number of crashes increased between 2014 and 2015, the average economic cost remained relatively the same. This alludes to the fact that although there were more crashes, they resulted in fewer severe injuries.

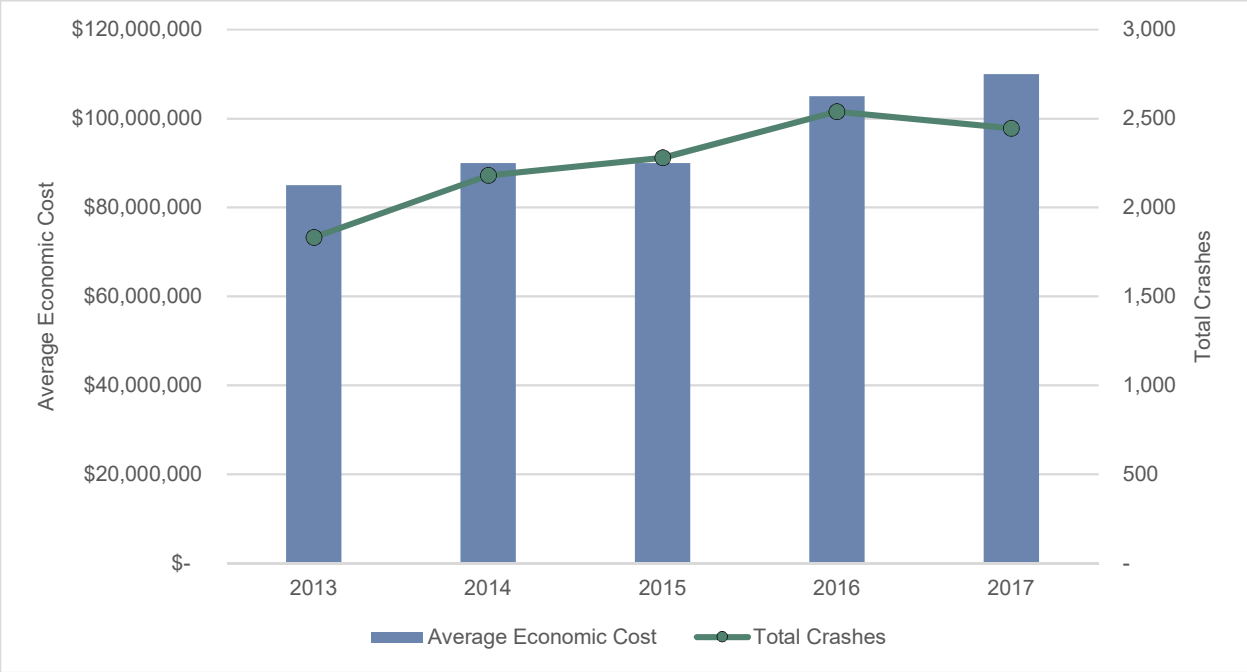


Figure 5.1: Number of Crashes vs. Economic Cost

5.2. Crash Costs by Emphasis Area

Table 5.3 presents the average economic and comprehensive costs of the crashes for each of the 14 emphasis areas. For reference, the total number of crashes for each emphasis area between 2013 and 2017 is also provided. This can be a good illustration of crash severity. For example, although motorcyclists were involved in the third fewest number of crashes, the cost of those crashes was the fifth lowest and the costs were as much as animal, drowsy driver, and train involved crashes combined.

Table 5.3: Crash Costs by Year

Emphasis Area	Total Crashes	Average Economic Cost*	Average Comprehensive Cost*
Intersection Crashes	5,160	$224,000,000	$1,267,000,000
Inattentive Drivers	4,608	$186,000,000	$1,053,000,000
Young Drivers (14-24 years)	4,537	$193,000,000	$1,084,000,000
Older Drivers	2,042	$98,000,000	$577,000,000
Speed Related	1,105	$49,000,000	$308,000,000
Impaired Drivers	901	$58,000,000	$394,000,000
Unrestrained Occupants***	872	$48,000,000	$336,000,000
Run-Off-The-Road	584	$36,000,000	$251,000,000
Non-Motorists***	463	$29,000,000	$247,000,000
Large Truck Occupants	346	$11,000,000	$61,000,000
Animal Crashes	309	$8,000,000	$42,000,000
Motorcyclists***	152	$17,000,000	$136,000,000
Drowsy Driver	107	$8,000,000	$59,000,000
Train Involved Crashes	3	$100,000**	$700,000**

**Estimates have been rounded to the nearest $1,000,000*

***Estimates have been rounded to the nearest $100,000*

****Estimates include fatalities and serious injuries of vulnerable users only (not all persons involved).*

6.0. PUBLIC INVOLVEMENT SUMMARY

Various public involvement activities were used to gauge public perceptions of safety within the Missoula area including a public open house and an online survey. The feedback received from these public engagement activities allowed the project team to determine what the most serious safety concerns facing Missoula are, analyze how the public's safety concerns align with the crash data, choose the most important emphasis areas, and begin developing ways to address these concerns that resonate with the public. Summaries of what was heard through these public involvement platforms are discussed in the following sections.

6.1. Public Open House

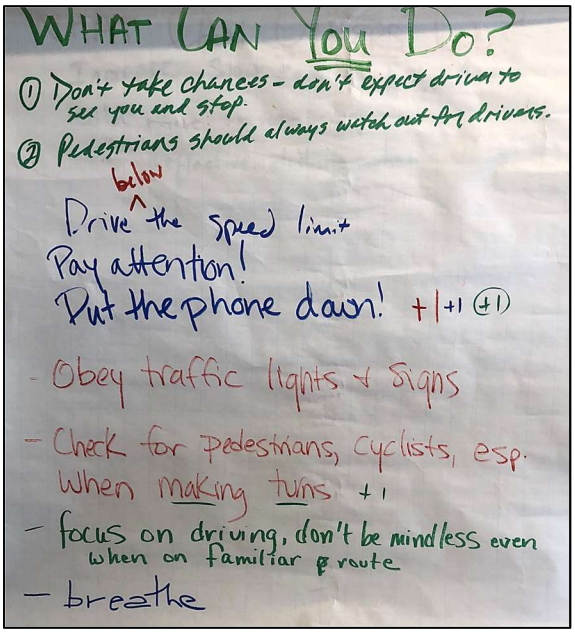
A public open house was held on November 27, 2018 at the Missoula City Council Chambers. The open house was held in the evening between 5:30 PM and 7:30 PM. The public was invited to attend at their convenience as it was formatted as an open house. A Facebook campaign was utilized in the days leading up to the event to gain interest in the meeting and increase attendance. Missoula MPO staff and the consulting team were in attendance to discuss the plan with the public, to listen to public perception of safety issues, and to share a high-level overview of the crash data analysis discussed in this report.

There were 22 participants in attendance. There were five stations set up for meeting participants. The first was an introductory station at which a staff member introduced the plan and its purpose, discussed the progress since the last plan, and provided some overall crash statistics.

The second station had a display board with key crash statistics such as top crash types, top contributing factors, vehicles types involved, driver age, and driver gender, among others. A "graffiti wall" was also set up at this station where participants could digest the information on the display board and take into consideration their own opinions and perceptions of safety in Missoula and answer the questions "What can *you* do?" and "What can *others* do?". The comments included:

What can you do?

- Don't take chances – don't expect driver to see you stop
- Pedestrians should always watch out for drivers
- Drive (below) the speed limit
- Pay attention!
- Put the phone down!
- Obey traffic lights and signs
- Check for pedestrians, cyclists, especially when making turns
- Focus on driving, don't be mindless even when on familiar route
- Breathe



What can others do?

- Clear snow berms from intersections to make it easier for pedestrians to cross
- Put flashing lights at roundabouts to alert drivers that pedestrians are present
- Educational campaigns

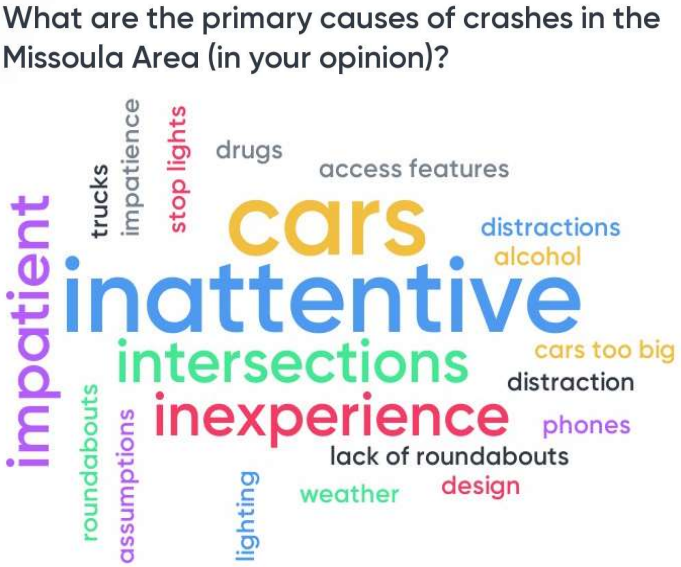
- Increase fines (especially for repeat offenses)
- Increase patrols in dangerous areas
- Some means of improving driver's education
- Programs to reduce young driver incidents
- Incentivizing not being on your phone while driving – but how?
- Increased street lighting, especially at crosswalks
- Better plowing of city streets; this will benefit pedestrians crossing the street as well as make safer roadways for vehicles in inclement weather
- Bicycle safety – move the bicycle lane to the right side of parked cars on the street
- Use flashing speed signs/monitors, red light cameras
- Bicycle ordinances could be clarified to identify bikes as either vehicles or pedestrians. The lack of clarity causes confusion for cyclists, pedestrians, and drivers
- Increase snow removal budget
- Build more roundabouts
- Wear reflective clothing when walking at night

The third station had a display board with the total number of crashes, fatalities, and serious injuries per emphasis area as well as some key statistics including time period, lighting conditions, weather and road conditions, and location (urban versus rural). This station also included a voting exercise where participants were asked to vote for the top four emphasis areas that should be focused on for this plan. The results of the votes are as follows:

1.	**Non-Motorists**	22
2.	**Intersection Crashes**	14
3.	**Inattentive Drivers**	13
4.	**Speed Related**	10
5.	**Impaired Drivers**	7
6.	**Young Drivers**	2
7.	**Unrestrained Occupants**	1

8.	**Large Trucks**	1
9.	**Animal Crashes**	1
10.	**Drowsy Drivers**	1
11.	**Older Drivers**	0
12.	**Run-Off-The-Road**	0
13.	**Motorcyclists**	0
14.	**Train Involved**	0

The fourth station was an interactive exercise in which participants were asked "What are the primary causes of crashes in the Missoula Area (in your opinion)?". Using *Mentimeter*, participants were able to use their phones or the supplied tablet to submit their answers on an online platform and their answers would appear in real-time on screen in a word cloud. The most common answers were displayed in larger text to emphasize the most prominent safety concerns.



The fifth station had computers set up for participants to take the online survey if they had not yet had a chance to complete one.

6.2. Online Survey

An online survey was developed to help the project team better understand safety issues and concerns within the Missoula area. The survey was open between November 7 and December 16, 2018. A total of 161 responses were received. The survey contained 11 questions in which respondents were asked to provide demographic information, indicate mode choice, share perceptions of safety and driver behavior, rank top emphasis areas for the plan's focus, and indicate effectiveness of safety strategies. The following summarizes the results of the survey. See **Appendix A** for more detail.

Approximately 70 percent of the respondents indicated that they live within Missoula city limits while 23 percent indicated that they live within the Missoula MPA boundary but outside of city limits. Most respondents selected personal vehicle as their primary mode of transportation (68 percent) with biking (18 percent) being the second most selected answer. Walking (29 percent), biking (21 percent), and public transportation (13 percent) were common answers for the secondary mode of transportation.

Respondents felt that Missoula area streets are safest for public transportation users. They also believe that the streets are most unsafe for persons with disabilities, seniors, and youths. When asked to describe the behavior of drivers in the Missoula area, the top responses indicated that respondents felt Missoula drivers are distracted (47 percent), inattentive (33 percent), impatient (32 percent), hurried (31 percent), courteous (24 percent), and aggressive (20 percent). When indicating perceptions of primary causes of crashes, respondents noted distracted driving (64 percent), impatient driving (28 percent), roadway design (24 percent), aggressive driving (20 percent), and impaired driving (18 percent) as the main causes.

Respondents were then asked to rank the plan's emphasis areas based upon which areas they felt could reduce fatal and serious injury crashes in Missoula. The data was analyzed using both a weighting system and based on strict votes (independent of how they ranked). Regardless of which method was used to analyze the results, the top responses (as seen in **Figure 6.1**) were inattentive drivers (84 percent), intersection crashes (65 percent), bicycles (47 percent), impaired drivers (43 percent), speed-related crashes (39 percent), and pedestrians (38 percent). This was consistent with the top emphasis areas as indicated during the public meeting.

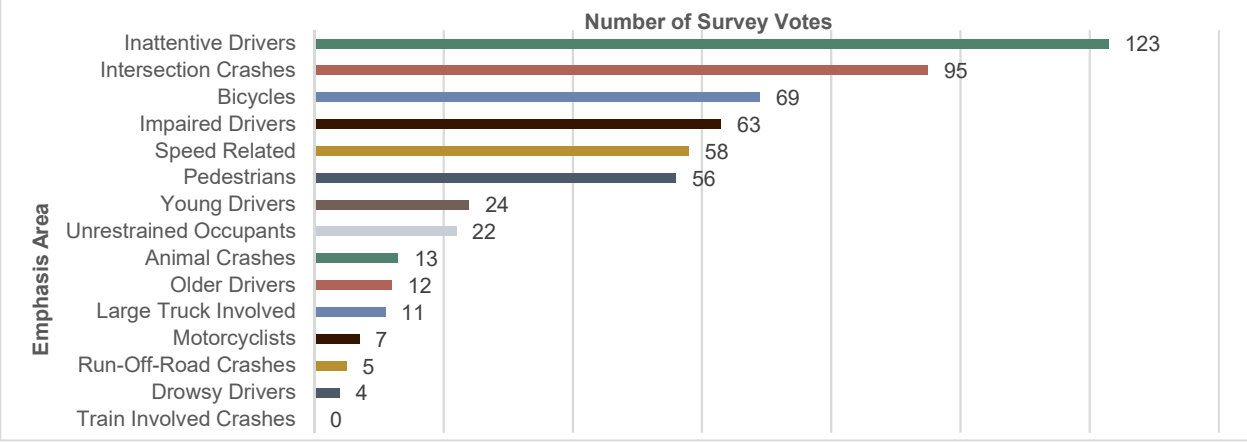


Figure 6.1: Top Emphasis Areas (Survey)

In the final question, respondents were asked to rank safety strategies based on their effectiveness in reducing severe injury crashes in Missoula. Infrastructure improvements and roadside enhancements were considered the most effective strategies followed by increased enforcement. Education, traffic calming, and improved emergency services were all rank similarly in effectiveness while safety management was ranked the lowest in effectiveness.

7.0. RECOMMENDED EMPHASIS AREAS

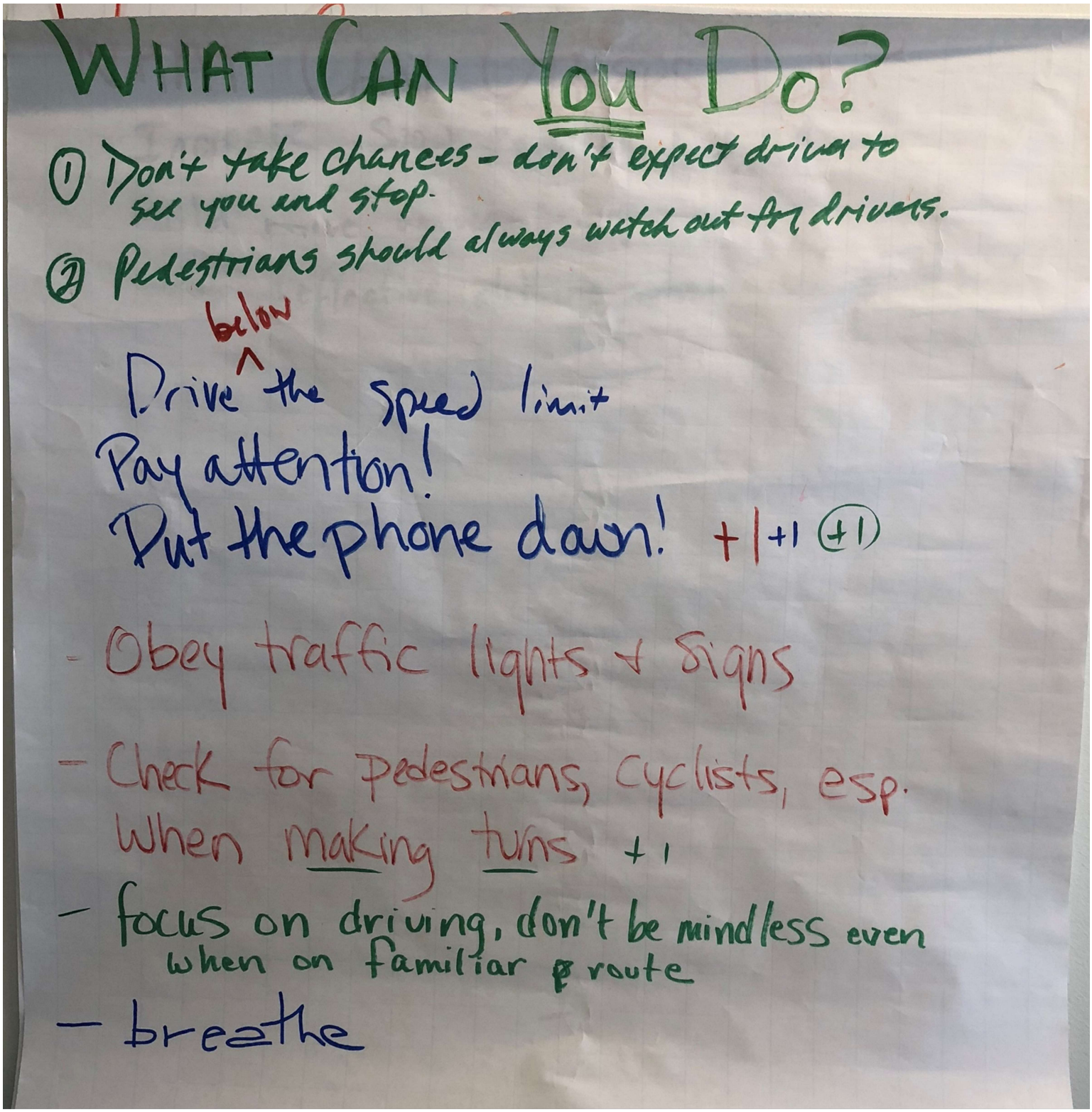
A thorough review of crash data was conducted based on emphasis areas relevant to the Missoula area. In order to understand how to most effectively improve safety, it is important to identify what crash trends and contributing factors exist. A thorough analysis of crash data was conducted for each emphasis area to help determine where focus should be placed over the next five years. In addition to the crash analysis, which included an evaluation of the total number of crashes and crash severity, public input was considered. Each of these evaluations revealed five common emphasis areas: intersection crashes, unrestrained occupants, impaired drivers, non-motorized users, and inattentive drivers. The results were presented to the TSAC to help identify which areas should be focused on in the CTSP.

Between 2013 and 2018 the TSAC worked to address four of these top five emphasis areas: intersection crashes (with an emphasis in non-motorized crashes), impaired drivers, and unrestrained occupants. The TSAC agreed that all of the top five emphasis areas are still important to the Missoula community and efforts to address these should continue in the future. It was decided that the top five emphasis areas be combined into three manageable emphasis areas to be addressed over the next five years. The emphasis areas chosen for the CTSP are:

- Intersection Crashes
- Non-Motorized Users, and
- High Risk Behavior.

Note that the high risk behavior emphasis area includes inattentive drivers, impaired drivers, and unrestrained occupants. It was decided to combine these emphasis areas into one as the strategies employed to change these behaviors may be similar. By combining efforts from the previous impaired driver and unrestrained occupant emphasis area teams, the high risk behaviors can be more effectively addressed.

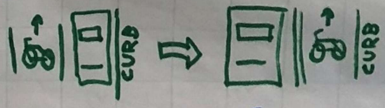
APPENDIX A: PUBLIC MEETING AND SURVEY RESULTS


WHAT CAN You DO?
① Don't take chances - don't expect drivers to see you and stop.
② Pedestrians should always watch out for drivers.
below
Drive the speed limit
Pay attention!
Put the phone down! +1 +1 (+1)
- Obey traffic lights & signs
- Check for pedestrians, cyclists, esp. when making turns +1
- focus on driving, don't be mindless even when on familiar route
- breathe

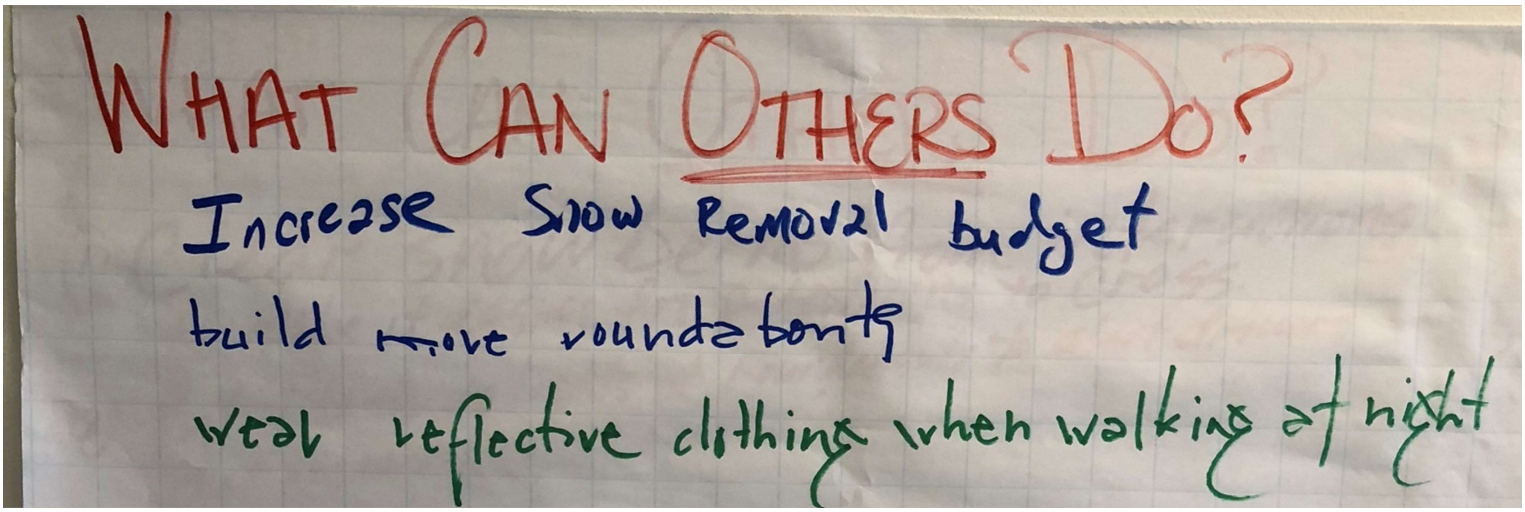
What Can Others Do?

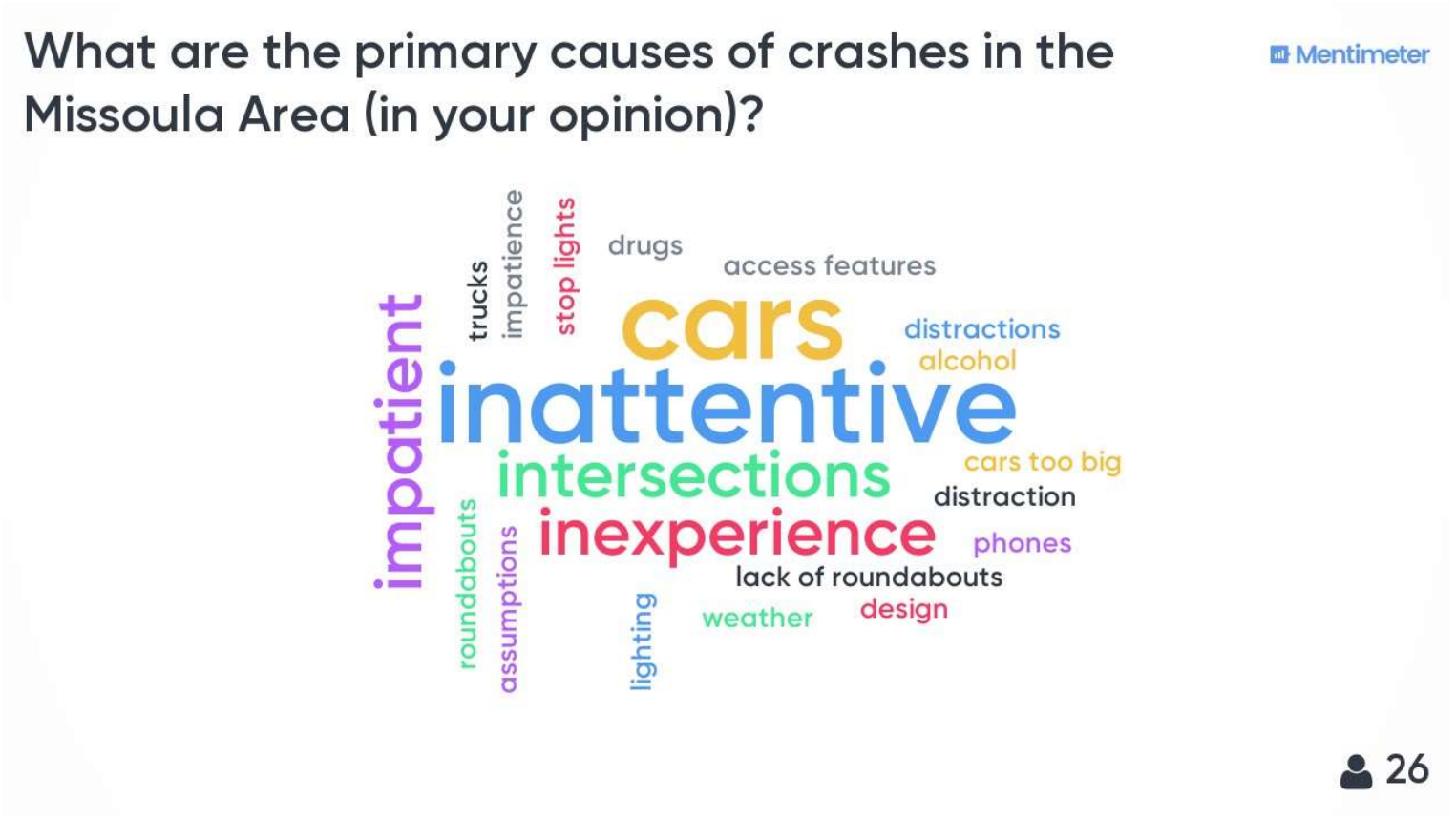
1. Clear snow berms from intersections to make it easier for pedestrians to cross.
2. Put flashing lights at roundabouts to alert drivers that pedestrians are present.

- Educational campaigns +1
- Increase fines (repeat offenses especially) +1
- Increase patrols in dangerous areas
- Some means of improving Driver's ed. programs to reduce young driver incidents?
- Incentivizing not being on your phone while driving - not sure how though...
- Increased Street lighting, esp. at crosswalks +1
- Better plowing of city streets; This will benefit pedestrians crossing the streets as well as make safer roadways for vehicles in inclement weather
- Bicycle safety - Move the bicycle lane to the right side of parked cars on the street



- Use flashing speed signs/monitors, red light cameras
- Bicycle ordinance could be clarified to identify bikes as either vehicles or pedestrians. The lack of clarity causes confusion for cyclists, peds & drivers

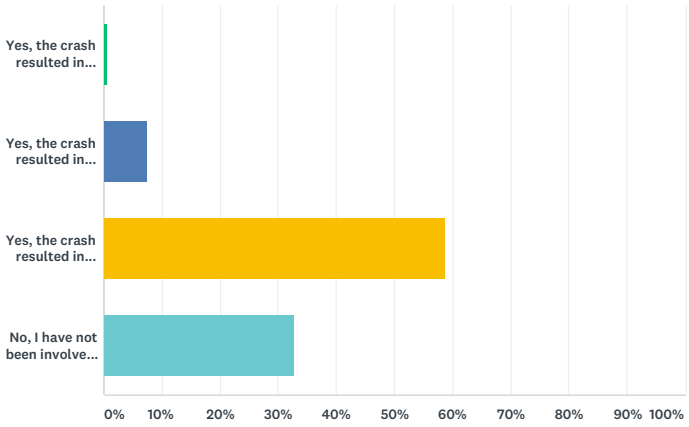

WHAT CAN OTHERS DO?
Increase Snow Removal budget
build more roundabouts
wear reflective clothing when walking at night


What are the primary causes of crashes in the Missoula Area (in your opinion)?
Mentimeter
impatient
trucks
impatience
stop lights
drugs
access features
cars
distractions
alcohol
inattentive
intersections
cars too big
distraction
roundabouts
assumptions
inexperience
phones
lack of roundabouts
lighting
weather
design
26


Which Emphasis Areas should the CTSP focus on?
Intersection Crashes
Inattentive Drivers
Young Drivers (14 - 24)
Older Drivers (65+)
Speed Related
Impaired Drivers
Unrestrained Occupants
Run-Off-The-Road
Non-Motorists
Large Trucks
Animal Crashes
Motorcyclists
Drowsy Drivers
Train Involved

Q1 Have you ever been involved in a crash? (If you have been involved in more than one crash, select the most severe result)

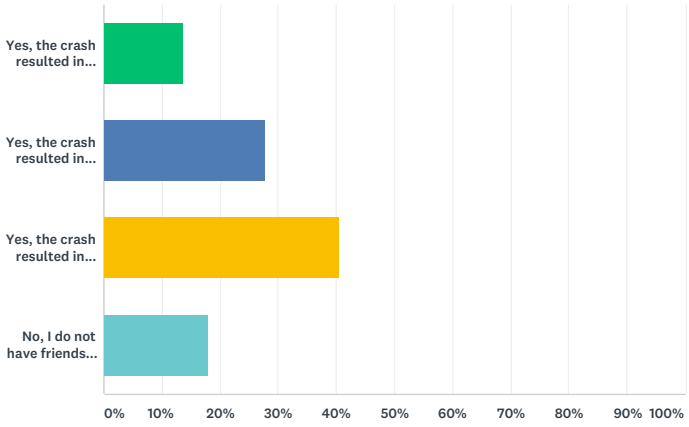
Answered: 158 Skipped: 3



ANSWER CHOICES	RESPONSES	
Yes, the crash resulted in fatality(ies).	0.63%	1
Yes, the crash resulted in severe injury(ies).	7.59%	12
Yes, the crash resulted in minor/no injury(ies).	58.86%	93
No, I have not been involved in a crash.	32.91%	52
TOTAL		158

Q2 Have one or your friends or a family member ever been involved in a crash? (If there has been more than one crash, select the most severe result)

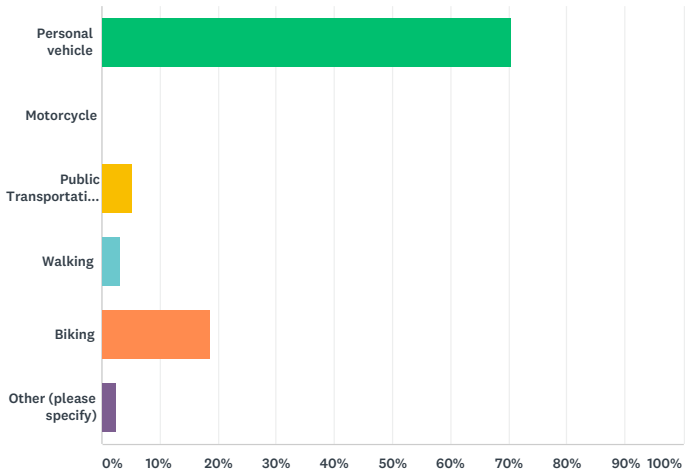
Answered: 155 Skipped: 6



ANSWER CHOICES	RESPONSES	
Yes, the crash resulted in fatality(ies).	13.55%	21
Yes, the crash resulted in severe injury(ies).	27.74%	43
Yes, the crash resulted in minor/no injury(ies).	40.65%	63
No, I do not have friends or family members who have been involved in a crash.	18.06%	28
TOTAL		155

Q3 What is your primary mode of transportation?

Answered: 156 Skipped: 5

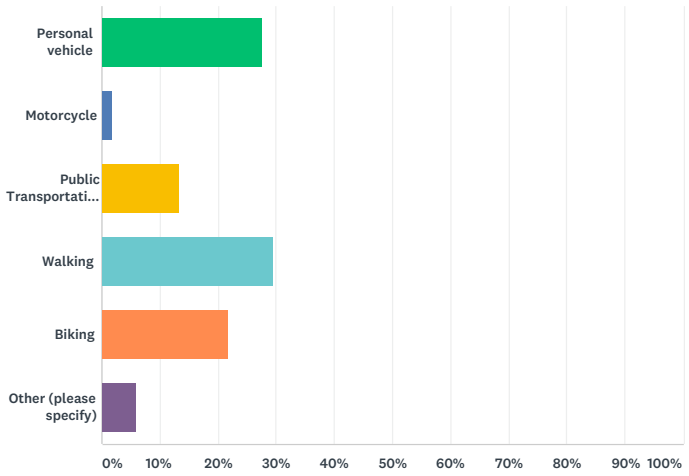


ANSWER CHOICES	RESPONSES	
Personal vehicle	70.51%	110
Motorcycle	0.00%	0
Public Transportation (Mountain Line, Paratransit, etc.)	5.13%	8
Walking	3.21%	5
Biking	18.59%	29
Other (please specify)	2.56%	4
TOTAL		156

#	OTHER (PLEASE SPECIFY)	DATE
1	50/50 driving and walking	11/27/2018 1:46 PM
2	Other	11/27/2018 8:00 AM
3	eboard	11/25/2018 1:21 PM
4	STATE VEHICLE	11/14/2018 8:38 AM

Q4 What is your secondary mode of transportation?

Answered: 156 Skipped: 5

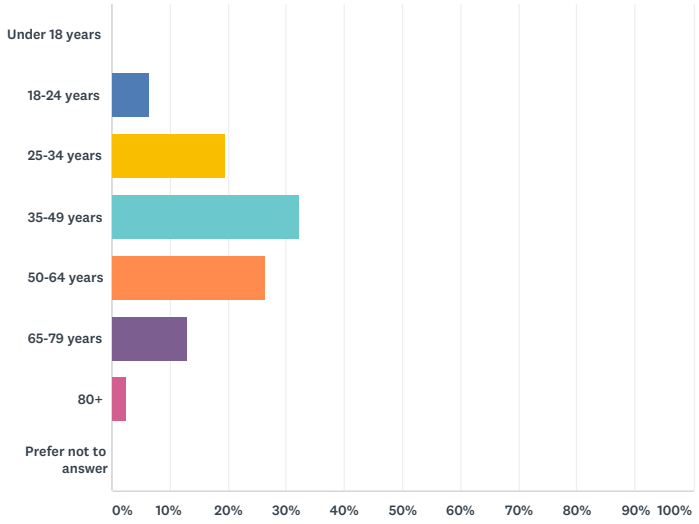


ANSWER CHOICES	RESPONSES	
Personal vehicle	27.56%	43
Motorcycle	1.92%	3
Public Transportation (Mountain Line, Paratransit, etc.)	13.46%	21
Walking	29.49%	46
Biking	21.79%	34
Other (please specify)	5.77%	9
TOTAL		156

#	OTHER (PLEASE SPECIFY)	DATE
1	Uber	12/3/2018 11:09 PM
2	None	11/27/2018 9:56 PM
3	Do not have one.	11/27/2018 9:21 PM
4	Do not have one.	11/27/2018 9:19 PM
5	Uber	11/27/2018 8:53 PM
6	Uber	11/27/2018 8:51 PM
7	I LIVE OUT OF TOWN AND COMMUTE IN	11/27/2018 10:45 AM
8	Other	11/27/2018 8:00 AM
9	friends---car	11/23/2018 10:33 AM

Q5 What is your age?

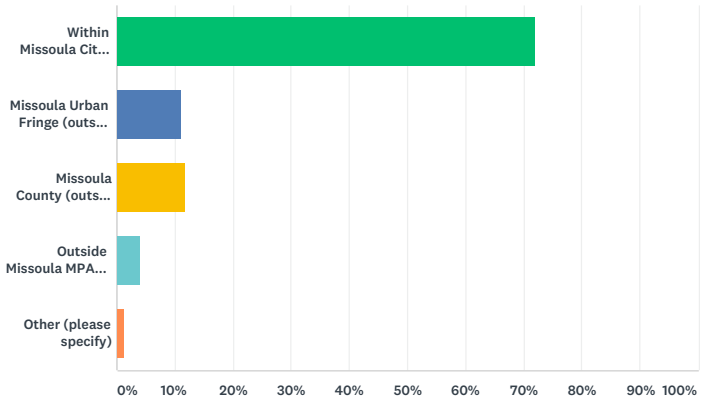
Answered: 155 Skipped: 6



ANSWER CHOICES	RESPONSES	
Under 18 years	0.00%	0
18-24 years	6.45%	10
25-34 years	19.35%	30
35-49 years	32.26%	50
50-64 years	26.45%	41
65-79 years	12.90%	20
80+	2.58%	4
Prefer not to answer	0.00%	0
TOTAL		155

Q6 Where do you live within the Missoula Metropolitan Planning Area (MPA)? (Click here to view a map.)

Answered: 153 Skipped: 8

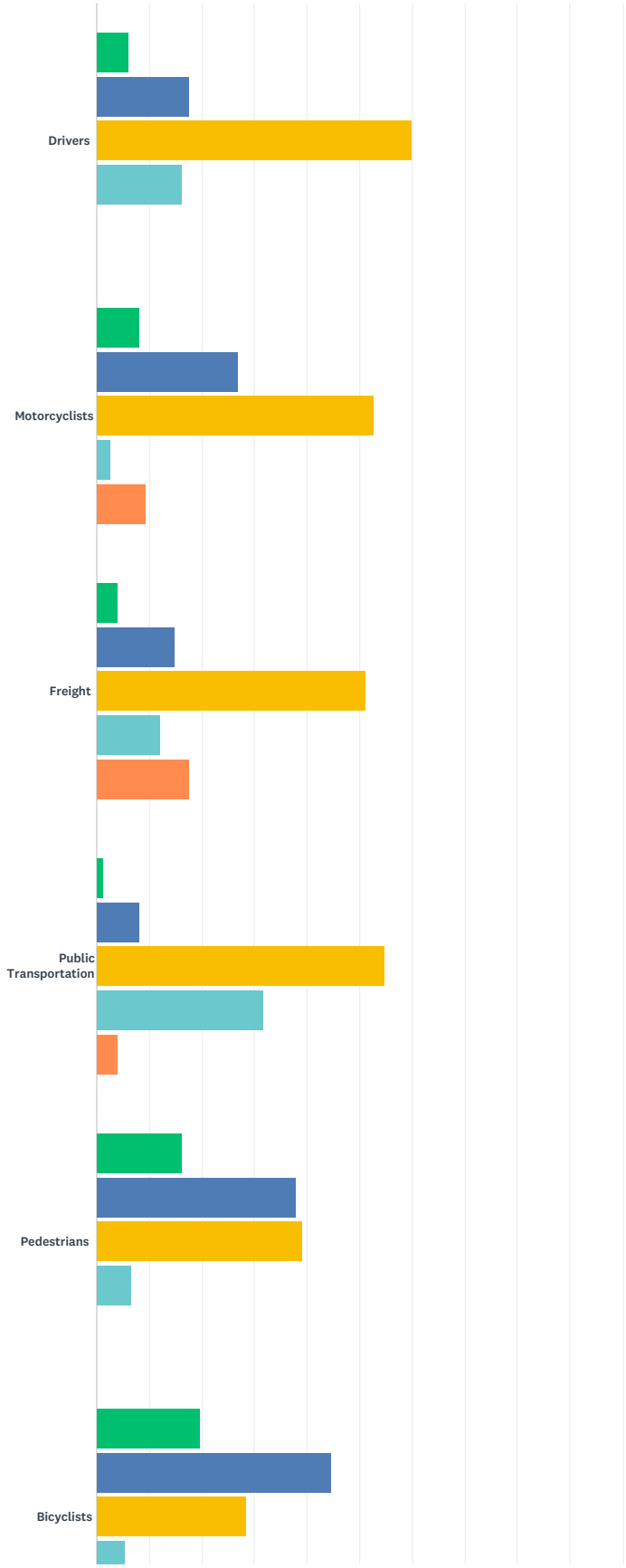


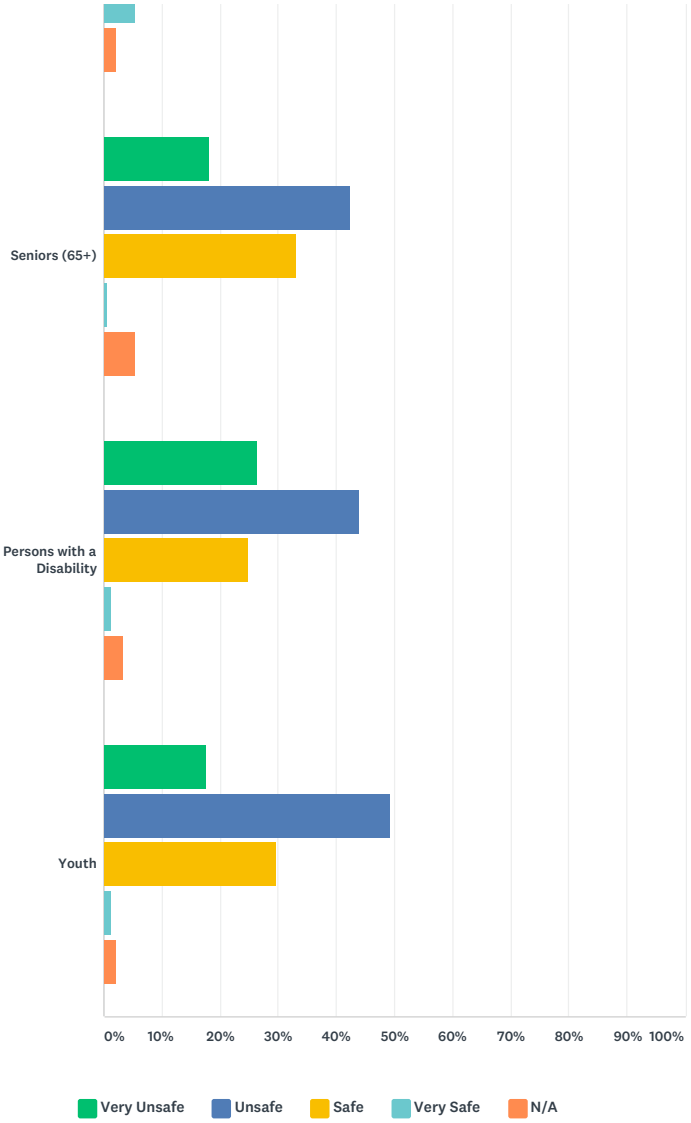
ANSWER CHOICES	RESPONSES	
Within Missoula City Limits	71.90%	110
Missoula Urban Fringe (outside city limits, within urbanized area)	11.11%	17
Missoula County (outside urbanized area, within Missoula MPA boundary)	11.76%	18
Outside Missoula MPA Boundary	3.92%	6
Other (please specify)	1.31%	2
TOTAL		153

#	OTHER (PLEASE SPECIFY)	DATE
1	live in ravalli county but work in missoula	11/27/2018 11:58 AM
2	I LIVE IN ARLEE, WORK IN MISSOULA	11/27/2018 10:45 AM

Q7 How safe do you feel Missoula area streets are for the following user groups?

Answered: 148 Skipped: 13

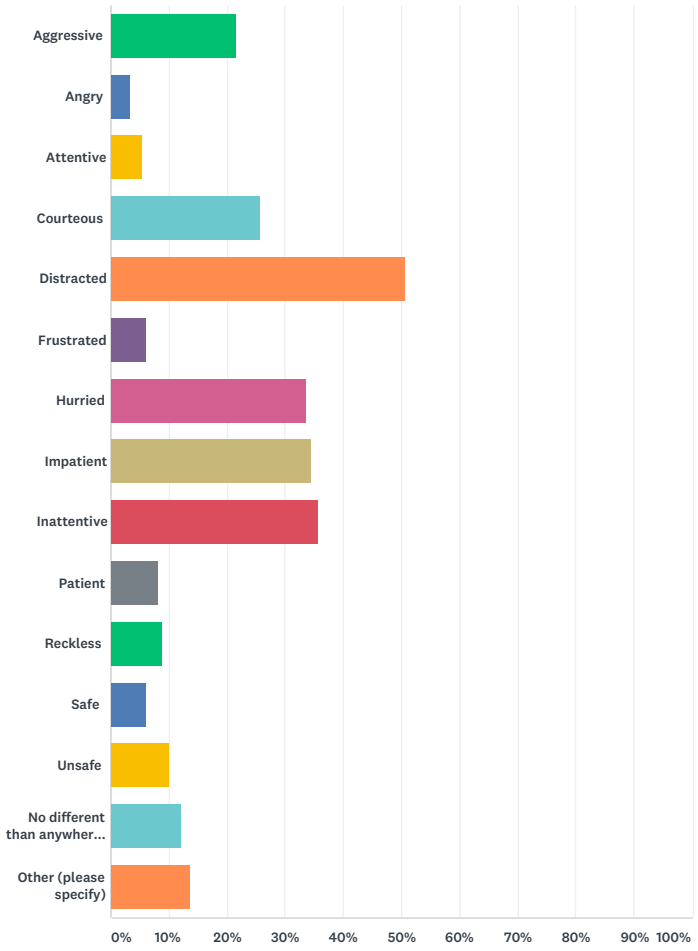




	VERY UNSAFE	UNSAFE	SAFE	VERY SAFE	N/A	TOTAL
Drivers	6.08% 9	17.57% 26	60.14% 89	16.22% 24	0.00% 0	148
Motorcyclists	8.11% 12	27.03% 40	52.70% 78	2.70% 4	9.46% 14	148
Freight	4.05% 6	14.86% 22	51.35% 76	12.16% 18	17.57% 26	148
Public Transportation	1.35% 2	8.11% 12	54.73% 81	31.76% 47	4.05% 6	148
Pedestrians	16.22% 24	37.84% 56	39.19% 58	6.76% 10	0.00% 0	148
Bicyclists	19.59% 29	44.59% 66	28.38% 42	5.41% 8	2.03% 3	148
Seniors (65+)	18.24% 27	42.57% 63	33.11% 49	0.68% 1	5.41% 8	148
Persons with a Disability	26.35% 39	43.92% 65	25.00% 37	1.35% 2	3.38% 5	148
Youth	17.57% 26	49.32% 73	29.73% 44	1.35% 2	2.03% 3	148

Q8 What words do you feel best describe the behavior of drivers in the Missoula area? (Select up to three)

Answered: 148 Skipped: 13



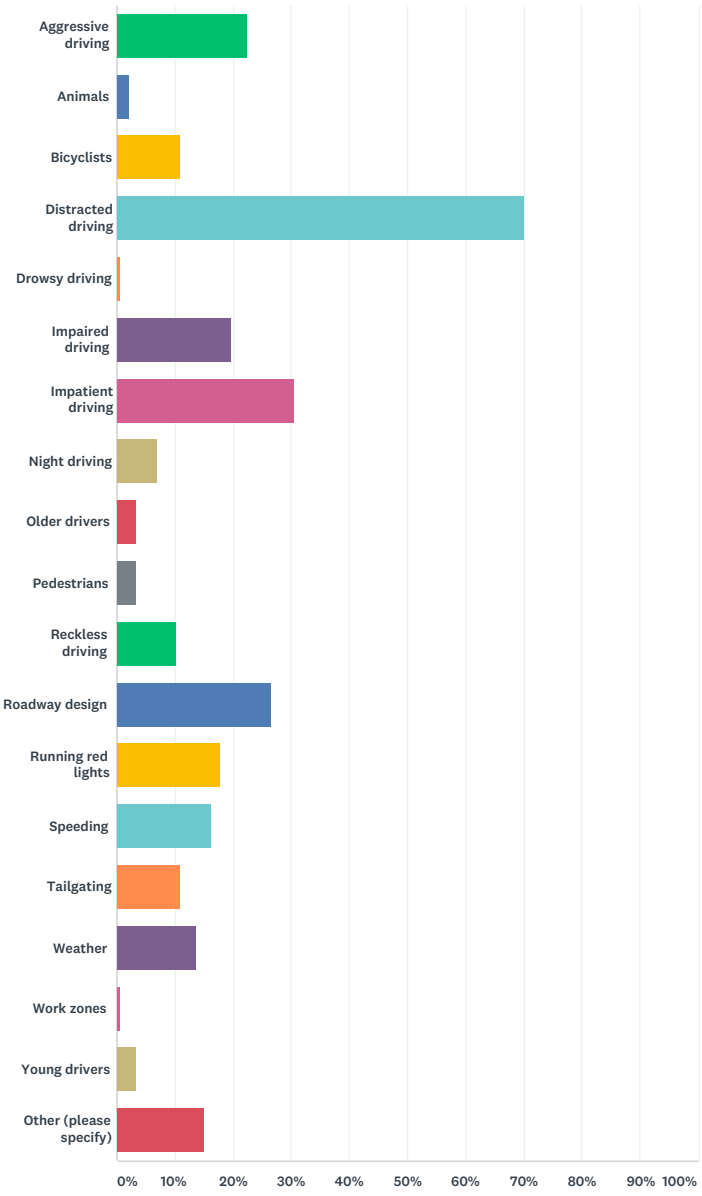
ANSWER CHOICES	RESPONSES	
Aggressive	21.62%	32
Angry	3.38%	5
Attentive	5.41%	8
Courteous	25.68%	38
Distracted	50.68%	75
Frustrated	6.08%	9
Hurried	33.78%	50
Impatient	34.46%	51
Inattentive	35.81%	53
Patient	8.11%	12
Reckless	8.78%	13
Safe	6.08%	9
Unsafe	10.14%	15
No different than anywhere else	12.16%	18
Other (please specify)	13.51%	20
Total Respondents: 148		

#	OTHER (PLEASE SPECIFY)	DATE
1	Missoula hands out licenses	12/5/2018 9:58 AM
2	Slow (drive below speed limit)	11/30/2018 11:27 AM
3	mostly safe	11/30/2018 9:20 AM

4	On the phone while driving	11/30/2018 7:27 AM
5	Weary of bicycles	11/28/2018 3:05 PM
6	Frustrated with the lack of adequate infrastructure. Too few lanes of traffic for vehicle volume.	11/28/2018 1:51 PM
7	Most are safe and courteous; some are unsafe for various reasons.	11/27/2018 10:57 PM
8	They don't look out for people, especially when turning.	11/27/2018 9:48 PM
9	selfish/unaware of others	11/27/2018 5:47 PM
10	Too many people on cell phones and not just talking but actually texting.	11/27/2018 12:53 PM
11	entitled...cars have the power, and pedestrians are insignificant	11/27/2018 11:43 AM
12	The agression, impatient folks stand out as they make the roads more dangerous, but I do see folks being courteous as well. I wanted to mark inattentive and courteous as well.	11/27/2018 10:29 AM
13	oblivious	11/27/2018 6:50 AM
14	Amazed at the number of folks who go through red lights on a daily basis. Impressed that a number of cars do stop for pedestrians/bikers, although sometimes it concerns me (as a biker/walker) to have a car slam on its brakes when there's traffic behind it.	11/26/2018 12:21 PM
15	Drivers do their best but insufficient bike lanes are a problem. Most drivers, public transport or POV, do not know how to shares those spaces and it’s scary for bicycles.	11/23/2018 1:12 PM
16	the only time they choose to use their turn signal when approaching a crosswalk or slowing down for a pedestrian is at their driving test...everyone takes that for granted here in Msla. I have lived all over the country and these are are most reckless, irresponsible, shameless group of selfish, entitled people that display absence of conscience about safety. They all drive and believe in global warming, yet will they let someone cross the street? No.	11/16/2018 8:18 PM
17	Unaware of traffic laws (roundabouts, turn signals, right of way)	11/16/2018 11:02 AM
18	Slow, ignorant	11/16/2018 10:58 AM
19	Running yellow/just-red lights constantly, like if they saw the light be green, they think they're entitled to get through the intersection.	11/16/2018 8:55 AM
20	Drivers can't be described in one or two simple words as they are all a little different. Some are aggressive while others are very patient.	11/8/2018 11:38 AM

Q9 What do you think are the primary causes of crashes in the Missoula area? (Select up to three)

Answered: 147 Skipped: 14



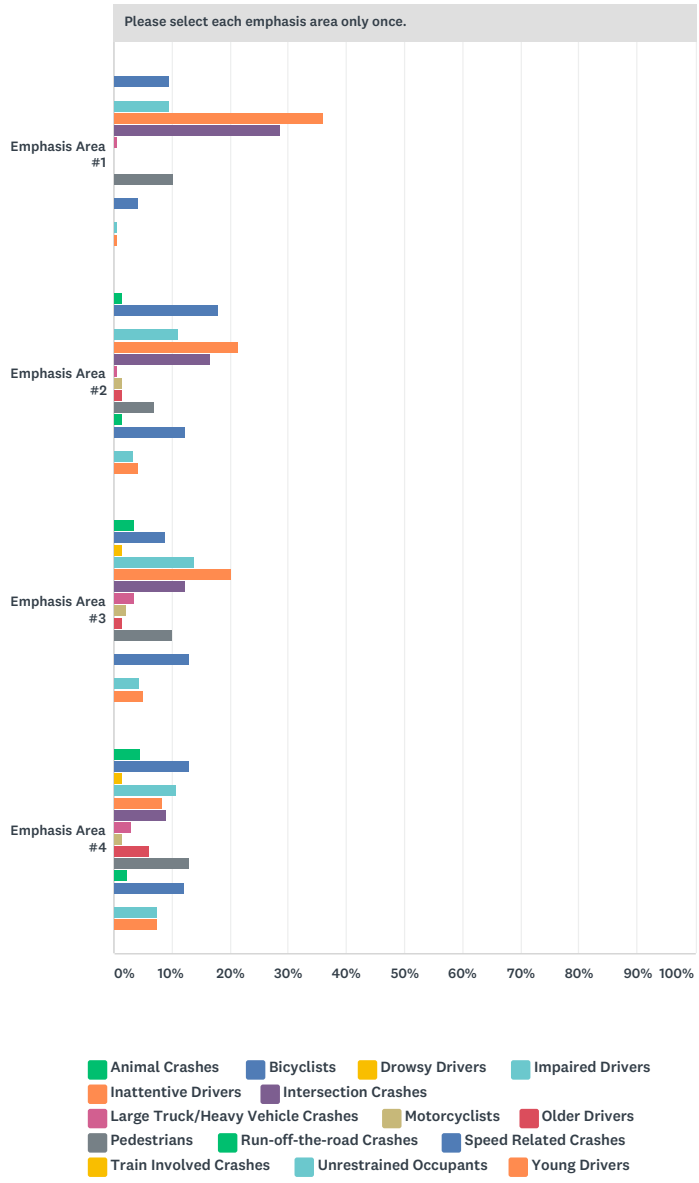
ANSWER CHOICES	RESPONSES	
Aggressive driving	22.45%	33
Animals	2.04%	3
Bicyclists	10.88%	16
Distracted driving	70.07%	103
Drowsy driving	0.68%	1
Impaired driving	19.73%	29
Impatient driving	30.61%	45
Night driving	6.80%	10
Older drivers	3.40%	5
Pedestrians	3.40%	5
Reckless driving	10.20%	15
Roadway design	26.53%	39
Running red lights	17.69%	26

Speeding	16.33%	24
Tailgating	10.88%	16
Weather	13.61%	20
Work zones	0.68%	1
Young drivers	3.40%	5
Other (please specify)	14.97%	22
Total Respondents: 147		

#	OTHER (PLEASE SPECIFY)	DATE
1	Street size (too narrow) marking on both sides makes for near one-way funnels	12/3/2018 11:12 PM
2	Drivers driving under speed limit	11/30/2018 11:27 AM
3	Lack of enforcement of traffic laws	11/30/2018 7:27 AM
4	Sidewalks that are paved out into the roadway. Especially at the apex of many corners. Roads are designed very poorly here, they are trying to get people to wreck on purpose to force more walking/biking.	11/28/2018 3:24 PM
5	Frustrated drivers because of the lack of adequate roadway infrastructure. Too small of roads for the volume of vehicles. Too much concern for bicycles and not enough concern for motor vehicles.	11/28/2018 1:54 PM
6	Bicyclists not sure whether they want to write on the street or on the sidewalk/not obeying traffic laws/writing the wrong way on street. Poorly designed pedestrian crossings on busy streets and at roundabouts	11/28/2018 1:33 PM
7	Running red lights is a very big issue. I see it constantly and have never seen a driver stopped for this infraction.	11/28/2018 1:11 PM
8	Poor road design ie: The Broadway Road Diet	11/28/2018 6:24 AM
9	inadaquate road capacity	11/27/2018 6:55 PM
10	many cars & bicycles don't stop at the stop sign. Bikers don't activate the blinking signals where the Bitterroot Trail intersects streets.	11/27/2018 3:46 PM
11	Once again too many people still using cell phones and texting. Msla Police Dept needs to do a sting operation like they did back in 2004 when they set up at crosswalks for people not stopping for pedistrians at crosswalks. They could go on school buses and then take photos and radio in to other officers.	11/27/2018 12:56 PM
12	Driving too fast for road conditions (and perhaps running red lights)	11/27/2018 10:31 AM
13	Running red lights	11/27/2018 10:26 AM
14	your focus on bikes has made the roads worse	11/27/2018 8:55 AM
15	The mixed traffic of tractor trailer freight, construction/haul trucks, bicycles, and pedestrians.	11/27/2018 8:09 AM
16	Lack of enforcement of red light running	11/27/2018 8:05 AM
17	out dated infrastructure-eg: 1) there is NO reason why (in 2018), drivers don't get a left arrow at intersections vs needing to fight for a left turn. or 2) all crosswalks aren't better painted or 3) lefts are allowed on Reserve w/o a stop light.	11/27/2018 7:52 AM
18	Lack of lighting	11/26/2018 12:22 PM
19	High speeds	11/24/2018 6:03 PM
20	Providing more resources for driver so they know the rules of the bike lanes. It's also helpful to have flags at busy intersections where pedestrians need to cross.	11/23/2018 1:14 PM
21	Lack of knowledge: no stop/yields in neighborhoods, people that don't know how to use roundabouts	11/23/2018 6:57 AM
22	The transportation system is developed with safety in mind, and distracted or unfocused drivers would seem to be the primary issue. If we all are attentive and focused, we would likely see a significant reduction in crashes.	11/8/2018 11:40 AM

Q10 Please rank the top four safety emphasis areas that you believe should be focused on to have the greatest potential to reduce fatal and serious injury crashes in the Missoula area.

Answered: 147 Skipped: 14

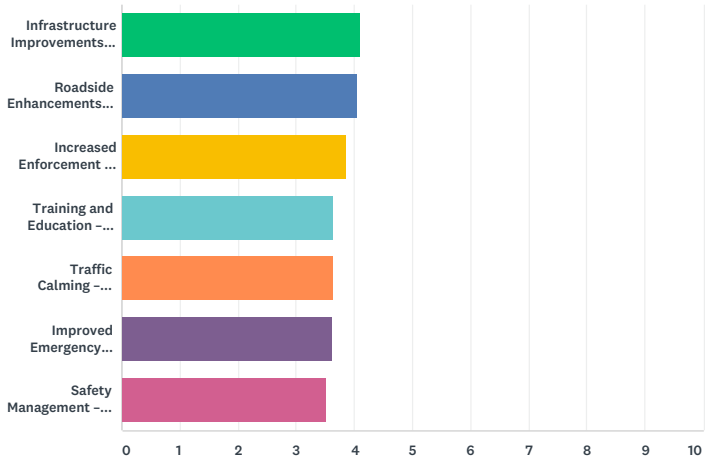


Please select each emphasis area only once.

	ANIMAL CRASHES	BICYCLISTS	DROWSY DRIVERS	IMPAIRED DRIVERS	INATTENTIVE DRIVERS	INTERSECTION CRASHES	LARGE TRUCK/HEAVY VEHICLE CRASHES	MOTORCYCLISTS	OLDER DRIVERS	PEDESTRI
Emphasis Area #1	0.00% 0	9.52% 14	0.00% 0	9.52% 14	36.05% 53	28.57% 42	0.68% 1	0.00% 0	0.00% 0	10.
Emphasis Area #2	1.38% 2	17.93% 26	0.00% 0	11.03% 16	21.38% 31	16.55% 24	0.69% 1	1.38% 2	1.38% 2	6.
Emphasis Area #3	3.62% 5	8.70% 12	1.45% 2	13.77% 19	20.29% 28	12.32% 17	3.62% 5	2.17% 3	1.45% 2	10.
Emphasis Area #4	4.55% 6	12.88% 17	1.52% 2	10.61% 14	8.33% 11	9.09% 12	3.03% 4	1.52% 2	6.06% 8	12.

Q11 Please indicate how effective you believe the following safety strategies are at reducing fatalities and serious injuries in the Missoula area.

Answered: 145 Skipped: 16



	VERY INEFFECTIVE	SOMEWHAT INEFFECTIVE	NEUTRAL	SOMEWHAT EFFECTIVE	VERY EFFECTIVE	N/A	TOTAL	WEIGHTED AVERAGE
Infrastructure Improvements – Implement infrastructure improvements to reduce crashes, where appropriate (traffic control, access control, rumble strips, clear zones, intersection improvements, etc.).	6.21% 9	5.52% 8	11.72% 17	23.45% 34	52.41% 76	0.69% 1	145	4.11
Roadside Enhancements/ Amenities – Addition of enhanced roadway features (i.e. signage, crosswalks, lighting, dedicated non-motorized facilities, etc.).	5.52% 8	9.66% 14	4.14% 6	35.86% 52	44.83% 65	0.00% 0	145	4.05
Increased Enforcement – Increase enforcement and citations of illegal and unsafe maneuvers and practices by road users.	8.28% 12	7.59% 11	8.28% 12	38.62% 56	35.86% 52	1.38% 2	145	3.87
Training and Education – Implement public awareness campaigns and educational programs to target key safety areas.	7.59% 11	15.17% 22	14.48% 21	29.66% 43	32.41% 47	0.69% 1	145	3.65
Traffic Calming – Consider reduced design speeds, reduced speed limits, and the implementation of traffic calming measures.	12.41% 18	12.41% 18	9.66% 14	29.66% 43	35.86% 52	0.00% 0	145	3.64
Improved Emergency Services – Decrease emergency response times, improve on-scene medical care and transport to hospitals.	4.14% 6	4.14% 6	35.86% 52	31.03% 45	20.00% 29	4.83% 7	145	3.62

Safety Management – Improve coordination between safety stakeholders, strengthen safety planning and implementation activities.	6.90% 10	8.97% 13	26.21% 38	36.55% 53	18.62% 27	2.76% 4	145	3.52

#	OTHER (PLEASE SPECIFY)	DATE
1	Missoula needs to be more strict about who gets there licenses, as in, if you can't parallel park or you are overall scaring the instructor you should be haven your license. Also driver tests should be taken around round about a and also on the highway.	12/5/2018 10:03 AM
2	Educate drivers to know that a yellow light does not mean "if you hurry, 3 or 4 more cars can go through!"	11/29/2018 3:17 PM
3	Reducing speed limits is not "traffic calming". That aggravates drivers. You're completely backwards on everything you do. This city is being deliberately destroyed.	11/28/2018 3:29 PM
4	Quit taking lanes away from motor vehicles. The plan to reduce 5th and 6th streets to one traffic lane is utterly STUPID, just like the reduction of vehicle lanes on West Broadway.	11/28/2018 1:58 PM
5	Improve Investigations on hit and runs.	11/28/2018 1:32 PM
6	I believe that enforcement of the traffic laws and signals is very lax . I am a professional driver and I spend many hours each week navigating Missoula streets. I almost never see a driver pulled over for traffic violations, The one exception is speeding past C S Porter school on Reserve.	11/28/2018 1:19 PM
7	Plow the roads better so people can actually drive after it snows. All of the turn lanes are filled with berms making lanes narrow and adding to unsafe conditions.	11/28/2018 6:49 AM
8	The Broadway Road Diet is a huge problem. It causes horrible delays which lead to frustration and then to aggressive dangerous driving.	11/28/2018 6:29 AM
9	Put GREEN Pavement on the Street where foot and bicycle paths cross busy streets. Its equally effective as flashing lights	11/27/2018 9:32 PM
10	High crash areas need to be looked at. For example Mullan road and Flynn lane and south avenue intersection in front of big sky high school. Both of these areas need traffic lights.	11/27/2018 9:19 PM
11	Experiment effectiveness of putting rumble strips on Interstate 90 exits to alert drivers they are going the wrong way.	11/27/2018 7:56 PM
12	roundabouts slow us down & get us there faster	11/27/2018 7:24 PM
13	infrastructure: more room for pedestrians & cyclists, more pedestrian-centered public areas.	11/27/2018 5:02 PM
14	Set up more sting operations so that people are more aware and would be fined. Besides it could generate some money for local police thru fees or fines. Plus it makes people think twice about getting on their cell phones.	11/27/2018 12:59 PM
15	There is a great need for a roundabout where Pattee Canyon meets 39th/Higgins!!	11/27/2018 10:05 AM
16	About time you start to give tickets to bikes!!!	11/27/2018 8:58 AM
17	Try to convince local law enforcement to enforce the laws.	11/27/2018 8:23 AM
18	Not enough traffic control. Not enough protected turns at busy intersections.	11/27/2018 6:37 AM
19	As a biker, walker, and driver, I think increased enforcement (especially around drivers running red lights) and improved lighting would be incredible.	11/26/2018 12:24 PM
20	Stop speedingcars	11/24/2018 6:04 PM
21	Continous bike lanes and bright paint staying they share the road where applicable.	11/23/2018 7:01 AM
22	Calming circles need to accommodate where a bicylist rides.bike lanes should NEVER dead end on a street	11/19/2018 5:05 PM
23	have respected role models represent sharing the roads with people crossing the street or other drivers...have the guy from Peal Jam or Hughey Louis or other high profile folks that will penetrate the digital distraction and inspire the nervous system of all the zombie automatons with lead feet plaguing the roads here	11/16/2018 8:23 PM
24	Educate all citizens on traffic laws. Do not exclude pedestrians or bicyclists. Focus areas: roundabouts, bike lanes vs "sharrows", bikes passing vehicles on the left side on one-way streets, pedestrians insisting that all lanes of traffic come to a full stop before stepping off of the curb, pedestrians waiting to cross while standing next to a bus stop sign, etc. Inform all road users, including bikes and pedestrians, of how to properly and legally work together to promote traffic flow.	11/16/2018 11:09 AM
25	Survey ignores too many important factors to be useful.	11/16/2018 11:04 AM

MISSOULA
Community Transportation Safety Plan
ENGINEERING • ENFORCEMENT • EDUCATION • EMERGENCY SERVICES

APPENDIX E: GAP ANALYSIS AND BEST PRACTICES

MISSOULA
Community Transportation Safety Plan
ENGINEERING • ENFORCEMENT • EDUCATION • EMERGENCY SERVICES

Gap Analysis and Best Practices

Technical Memorandum

April 2, 2019

Prepared by:
Robert Peccia and Associates
www.rpa-hln.com

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Gap Analysis and Best Practices

1.0. INTRODUCTION

The 2013 *Missoula Community Transportation Safety Plan* (CTSP) identified safety activities and strategies aimed at reducing serious injuries and fatalities. The 2013 CTSP identified three emphasis areas to focus on: intersections, unrestrained occupants, and impaired drivers. Strategies and action steps were identified for each emphasis area by the Transportation Safety Advisory Committee (TSAC). This memorandum provides an inventory of current safety activities and strategies since implementation of the previous CTSP in 2013.

Changes in safety concerns, crash trends, mitigation strategies, innovative technologies, and recent changes to federal requirements have necessitated a new examination of transportation safety issues within the Missoula Metropolitan Planning Area (MPA). In addition to a review of current activities, this memorandum includes a summary of additional programs and mitigation efforts that the Missoula area may consider based upon the results of the crash data analysis included in the *Key Safety Issues Technical Memorandum*[1]. These potential safety activities were identified through research efforts regarding industry best practices and are intended to serve as a starting point for defining strategies to be implemented over the next five years.

1.1. Study Area

In 2013, the CTSP study area boundary was equal to the 2010 Missoula urban boundary. In this 2018 update of the CTSP, the study area is slightly larger and encompasses the entire Missoula MPA which includes the City of Missoula and surrounding urbanized portions of Missoula County in Montana. The study area boundary is shown on the next page in **Figure 1.1** and defines the limit of the area of focus for the CTSP.

2.0. SAFETY ACTIVITIES AND STRATEGIES

The 2013 CTSP identified a series of strategies and action steps to support identified emphasis areas. A review of existing strategies and actions was conducted to determine the current status and progress made. This review was conducted through reports developed by the Missoula Metropolitan Planning Organization (MPO) and in coordination with the TSAC.

Updated crash data, public input, and current safety activities were reviewed to identify where gaps in safety strategies and activities may exist. Potential new strategies and activities were identified to fill those gaps and to support the identified emphasis areas. The following sections provide an overview of the status of each emphasis area along with identification of gaps and new strategies to implement in the future.

[1] *Key Safety Issues Technical Memorandum*, Robert Peccia and Associates, March 29, 2019

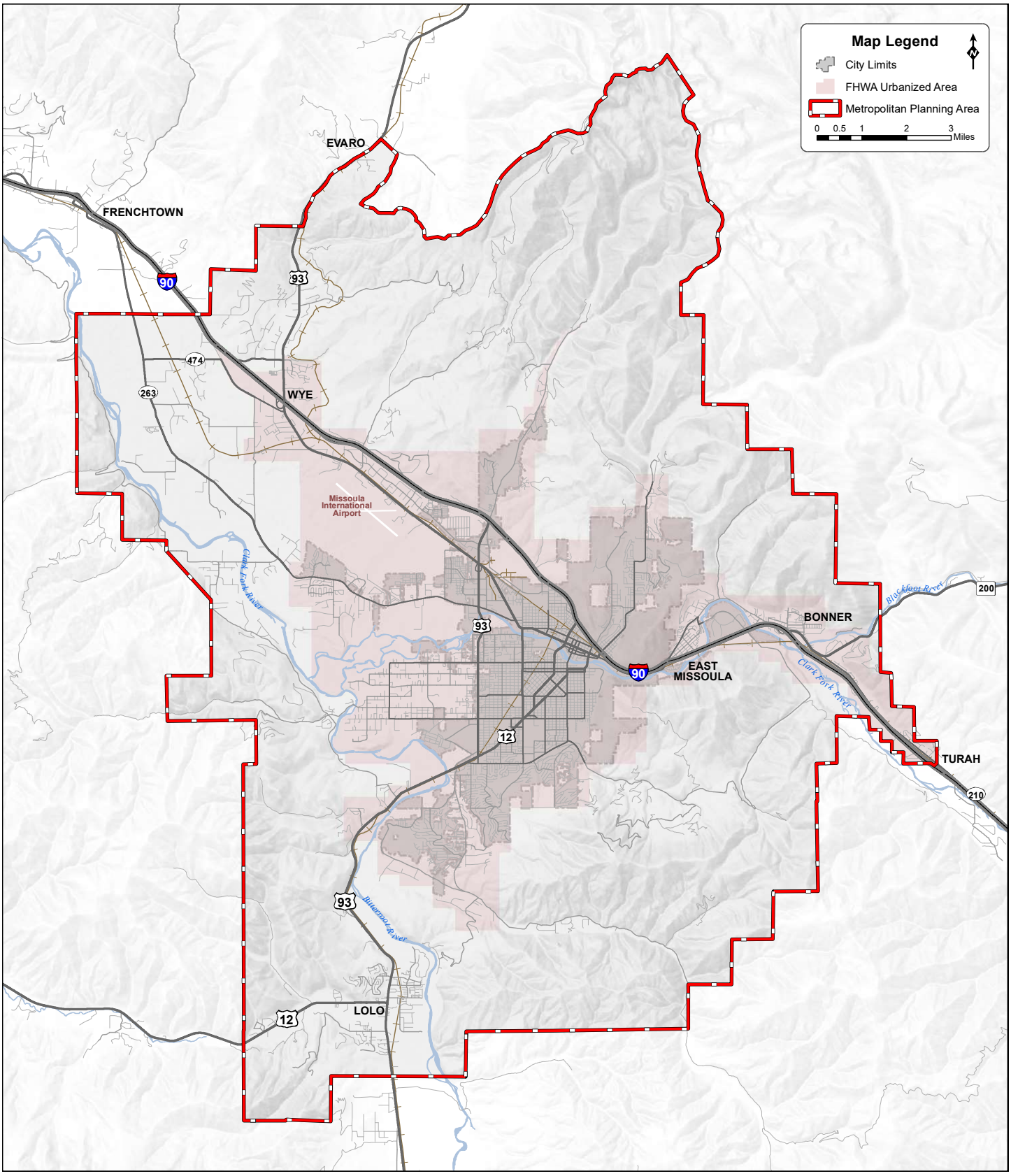


Figure 1.1: Missoula MPA Study Area

2.1. Intersection Crashes

There are many intersection types, including signalized, stop-controlled, roundabouts, and uncontrolled intersections. People – in cars, on bikes, or on foot – cross paths as they travel through or turn from one road to another. The points where different paths cross, separate, or join are known as conflict points. These points represent areas where crashes between two or more vehicles may occur.

Within the Missoula MPA, 46 percent of all crashes and 47 percent of all severe crashes were coded as occurring in, or related to, an intersection. Over the past five years, there were a total of 5,160 intersection crashes involving 13,747 people which resulted in 9 fatalities, 191 serious injuries, and 1,239 minor or possible injuries. Total intersection crashes steadily increased between 2013 and 2016, then decreased slightly in 2017. Overall, the trend of intersection crashes has shown an increase of 26 percent over the past 5 years. While the total number of intersection crashes has trended upwards, the severe injuries at intersections have trended downward. **Figure 2.1** shows how the total number of intersection crashes and the number of severe intersection crashes have changed over the past five years.

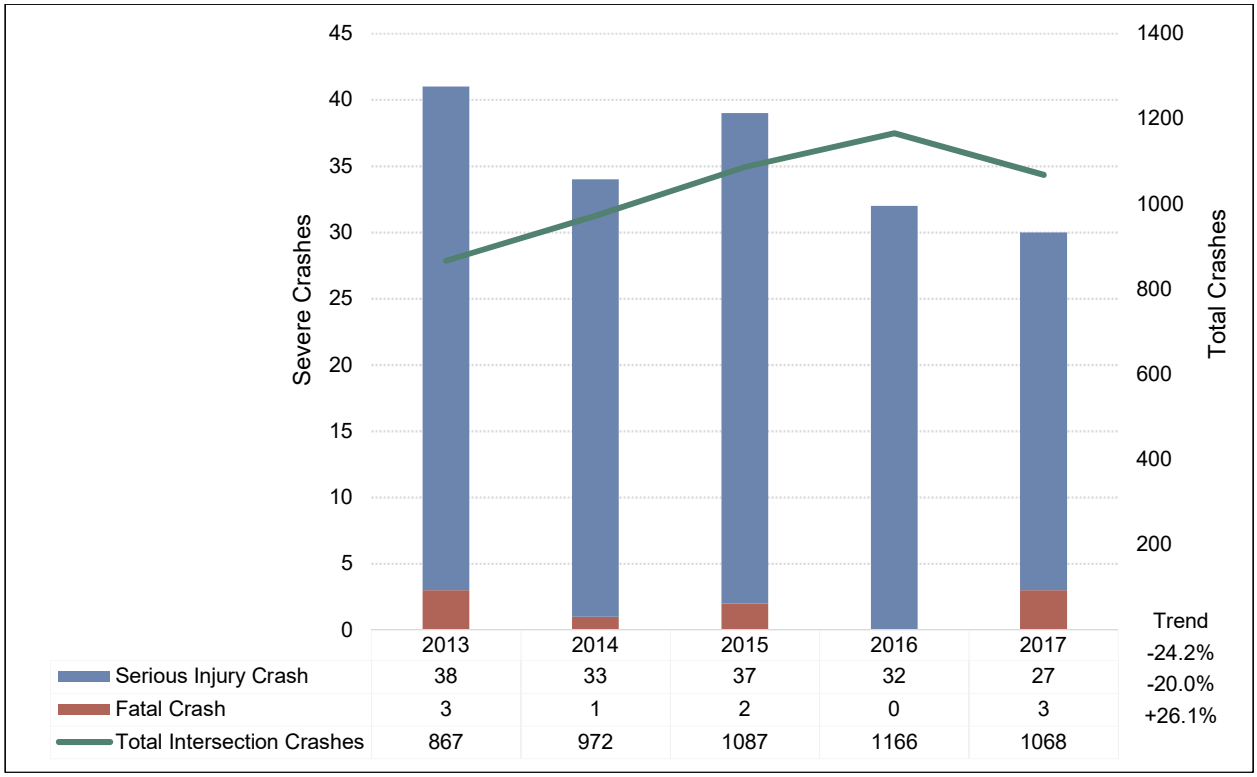


Figure 2.2: Intersection Crashes

Missoula has already made great progress in addressing intersection safety through implementation of the 2013 CTSP. This is seen by the overall decreasing trend of severe injury intersection crashes. However, the total number of intersection crashes has trended upwards over the past five years. The following sections inventory the current safety activities in the Missoula area related to intersection safety, identify the gaps in current strategies, and present potential safety activities that can be used to address intersection safety over the next five years.

2.1.1. Current Safety Activities

Table 2.1 includes an inventory of the current intersection safety activities that are being implemented in the Missoula area. The list of activities includes established and ongoing programs, policies, and methods. The list may not be complete as various activities such as enforcement and emergency services that are not explicitly established as programs are not included.

Table 2.1: Intersection Crashes - Current Safety Activities

Activity	Description	4 E's of Safety
Traffic Signals	MUTCD compliant signals	Engineering
Complete Streets	2009 Resolution	Other
Road Safety Audits	Comprehensive review of high risk locations	Engineering
National Association of City Transportation Officials (NACTO) Design Guide	Design guide used in Missoula	Engineering
AARP Defensive Driving Training	Driver's education (online and classroom)	Education
Journeys from Home	K-8 traffic safety, used in PE at elementary and middle schools	Education
Missoula in Motion	TDM program emphasizes alternative modes to decrease congestion/traffic	Education

2.1.2. Gap Analysis

After a review of the crash data, public comments, and current safety activities, various gaps in intersection safety strategies were revealed. These gaps present opportunities to expand upon current strategies or devise new approaches to address the contributing factors in intersection crashes. The following sections provide a review of crash data and public input received to identify potential gaps that may be addressed through safety activities.

Data Trends

In regard to driver behavior, some of the most common factors in intersection crashes include: failure to yield right of way (a factor in 30 percent of intersection crashes); inattentive driving (48 percent); following too closely (9 percent); speeding or driving too fast for conditions (8 percent); and disregarding traffic signs, stop signs, or running red lights (8 percent). Rear end (38 percent) and right-angle crashes (27 percent) were the most common crash types at intersections. They were also the most common in severe intersection crashes, at 17 and 40 percent, respectively.

The data also revealed that 90 percent of intersection crashes occurred within the Missoula city limits and 97 percent within the urban area. Of the crashes where intersection control type was explicitly defined, uncontrolled intersections made up 24 percent of all crashes and 1 percent of severe crashes. Signalized and stop controlled intersection crashes accounted for 23 and 10 percent of all crashes, and 15 percent and 4 percent of severe crashes, respectively. The remaining crashes were "other" intersection types including railway crossings, yield controlled, person (flagger) controlled, and intersections with pavement markings only.

Crashes were also more common on weekdays during the peak travel times (AM, Noon, and PM). Approximately 12 percent of intersection crashes occurred under dark unlit lighting conditions. Young drivers (under 25) were involved in 26 percent of the intersection crashes. Non-motorized users were involved in 6 percent of all intersection crashes and 29 percent of severe intersection crashes.

Public Input

The public noted a large concern for intersection safety. When asked through the online survey which emphasis area they felt could reduce fatal and serious injury crashes in Missoula, respondents ranked intersection crashes as the second highest, behind inattentive drivers. During the public meeting, intersection crashes also ranked as the second highest priority emphasis area, behind non-motorists.

Some of the comments that were prominent or recurring throughout the public meeting and online survey revealed concerns that may not be easily identified via crash data. Multiple community members noted concerns with drivers running red lights, drivers not yielding to pedestrians in crosswalks, and drivers speeding through intersections. Comments also noted a need for more protected left turns at intersections, more intersection lighting, better snow plowing for crosswalks and turn lanes, more effective driver's education and testing for driver's licenses, and increased enforcement.

2.1.3. Potential Safety Activities

Intersection crashes may be influenced by a variety of driver behaviors such as disregarding traffic signals and signs, improperly judging gaps when executing turns, traveling at high speeds, and making hurried and unpredictable driving maneuvers around other drivers. Education and outreach activities can help change driver behavior and reduce crashes. Although proper driver behavior is an important factor in reducing crashes, a variety of engineering treatments can also help to improve safety for roadway users. Engineering strategies to address intersection safety include ensuring visibility and adequate sight distance, clear signing and pavement markings, appropriate signal timing, intersection lighting, dedicated turn lanes, and protected turning movements. Law enforcement can also prove effective in ensuring drivers obey traffic signals, signs, and other laws.

Many of the activities and strategies that the TSAC has implemented over the past five years to address intersection crashes have proven effective. Most of the activities are ongoing and the progress on these activities should continue throughout the next five years. In addition to those activities, a list of potential activities was developed based upon the gaps in current practices as identified in the previous section. The activities are based upon industry best practices and programs that are in use by other communities. Some of the suggested activities are specific campaigns or laws, while others are thoughts which are meant to provoke ideas that are specific, practical, and implementable in Missoula. **Table 2.2** presents the gaps identified in the previous section, potential activities to address these gaps, and resources or references which provide more information about the suggested activities.

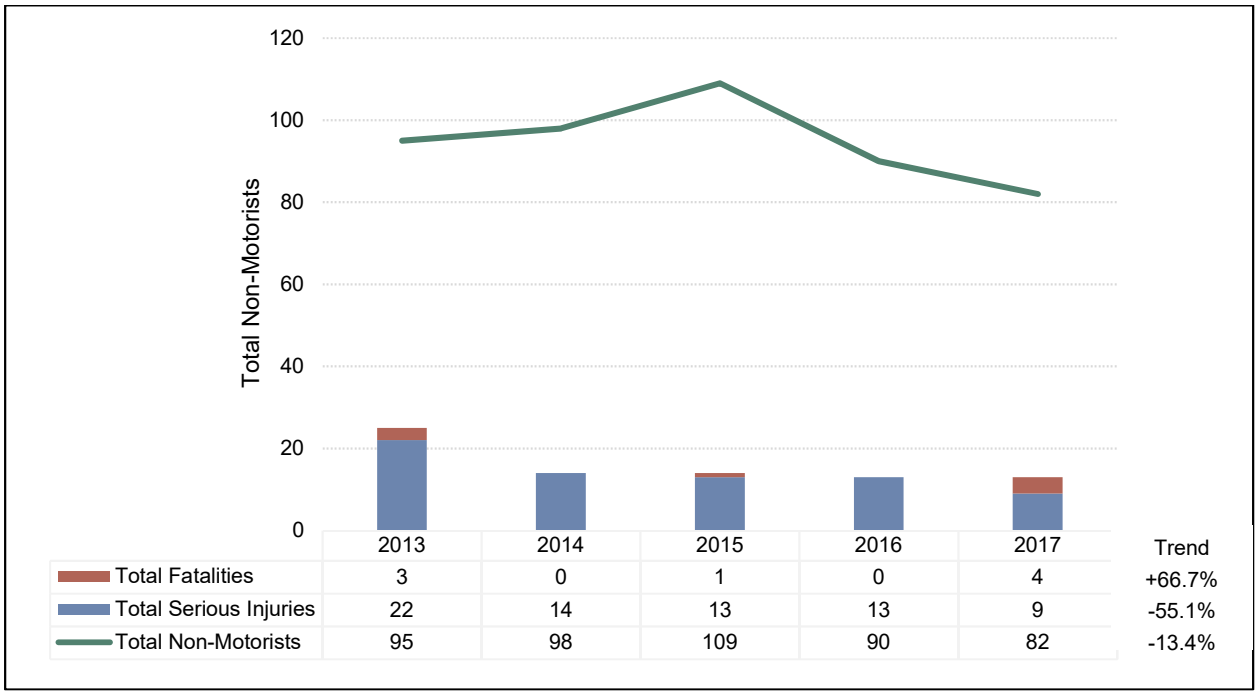
Table 2.2: Intersection Crashes - Gaps and Potential Activities

Gap	Potential Activities	Resources/Reference
Running Red Lights	• Dedicated turn lanes • Backplates with retroreflective borders • Protected left-turn phasing • Modify yellow change intervals • Enforce speed limits near intersections	1, 2, 3, 4, 5, 6, 7, 26
Non-Motorized Crashes at Intersections	• Prohibit right-on-red in areas with high non-motorized crashes • Leading pedestrian intervals • Continuous bike lanes through intersections • Pedestrian crossing treatments (high visibility, raised crosswalks, islands, curb bulb outs, etc.) • Intersection lighting • "Yield to non-motorists" signage/education • Coordinate with non-motorist emphasis area	1, 2, 4, 5, 6, 7, 20
Right Angle Crashes	• Dedicated turn lanes • Roundabouts • Reduced left-turn conflict intersections	1, 2, 3, 4, 5, 6, 7
Rear End Crashes	• Improve pavement friction (skid treatment with overlay) • Education campaigns (slow down, following too closely, use your turn signal) • Coordinate with high risk behavior emphasis area	3, 4, 5, 6
Yield Right of Way	• Education campaigns • No right-on-red prohibitions • Protected turn phasing • Encourage turn signal usage	1, 2, 4, 5, 6, 7
Young Drivers	• Education campaigns targeted at younger drivers • increased education in driver's ed	3, 4, 20

2.2. Non-Motorized Users

The term "non-motorist" is typically used to describe pedestrians and bicyclists. Non-motorized road users face challenges and safety concerns when using the same roadway as motorized vehicles. When a crash occurs, the non-motorized user is especially vulnerable without the protection of a car. When crashes involving non-motorized users occur, they are more likely to result in an injury. Although non-motorist crashes account for a very small percentage of total crashes within the Missoula area (4 percent), they represent a large percentage of severe crashes (21 percent).

Over the past five years, there were a total of 463 non-motorist crashes involving 317 bicyclists and 145 pedestrians. These crashes resulted in 8 fatalities, 77 serious injuries, and 269 minor or possible injuries. Total crashes involving non-motorists increased slightly between 2013 and 2015, then decreased between 2015 in 2017. Overall, the trend of non-motorist crashes has shown a decrease of 13 percent over the past 5 years. Crashes resulting in serious injuries or fatalities have also been trending downward with a combined trend reduction of 48 percent over the past 5 years. **Figure 2.2** shows how the total number of non-motorist crashes and the number of severe non-motorist crashes have changed over the past five years.



	2013	2014	2015	2016	2017	Trend
Total Fatalities	3	0	1	0	4	+66.7%
Total Serious Injuries	22	14	13	13	9	-55.1%
Total Non-Motorists	95	98	109	90	82	-13.4%

Figure 2.3: Non-Motorized Users Crashes

Although non-motorized users were not addressed in the 2013 CTSP as a specific emphasis area, there was a focus on non-motorist safety as part of the intersection emphasis area. The following sections inventory the current safety activities in Missoula that address non-motorist safety, find the gaps in current strategies, and present potential safety activities that can be used to address non-motorist safety over the next five years.

2.2.1. Current Safety Activities

Table 2.3 includes an inventory of the current safety activities that are in effect in the Missoula area which address non-motorist safety. The list of activities includes established and ongoing programs, policies, and methods. The list may not be complete as various activities such as enforcement and emergency services that are not explicitly established as programs have not been included.

Table 2.3: Non-Motorized Users - Current Safety Activities

Activity	Description	4 E's of Safety
Bike Well	Class for bicyclists	Education
Free Cycles	Community bike shop with classes	Education
Youth Cycles	Educational program for school and community groups	Education
Montana & Missoula Bike/Ped Coordinators	Responsible for addressing non-motorized transportation considerations at state and local levels. Conducts education and outreach	Education
Bicycling Ambassadors	Educate, conduct camps, promote bicycling in Missoula (2 ambassadors mid-June to early October)	Education
U of M Bicycle Ambassadors	2 funded student positions, educate on bike issues and host events	Education
Missoula in Motion	TDM program emphasizes alternative modes to decrease congestion/traffic	Education
Local Planning Documents	Missoula Pedestrian & Bicycle Facilities Master Plans, Missoula Active Transportation Plan	Other
Bicycle and Pedestrian Count Program	Performs bicycle and pedestrian counts at various locations throughout Missoula on a regular basis	Other

Activity	Description	4 E's of Safety
Associated Students of the University of Montana (ASUM)	Provides education about bike-ped safety to students.	Education
Missoula Business Improvement District	Downtown Ambassadors who provide outreach and education about safety for cyclists and pedestrians	Education
City of Missoula Bicycle/Pedestrian Program	Provides outreach, education, and promotion of safe bicycle-pedestrian transportation in the City.	Education
Bicycle Benefits Program	Rewards individuals and businesses for their commitment to cleaner air and personal health through cycling. Membership bike helmet stickers entitle the holders to discounts currently available at 16 Missoula businesses.	Education
Bike Walk Alliance of Missoula (BWAM)	Promotes cycling and walking for everyday transportation and recreation	Education
City of Missoula Bicycle and Pedestrian Advisory Board	Provides guidance on bike-ped issues for the City of Missoula	Education/ Other
City of Missoula Office of Neighborhoods	Provides safety education and outreach on active living at neighborhood level in Missoula	Education
Missoula Advocates for Sustainable Transportation (MAST)	MAST advocates for transportation projects that emphasize walking, biking and transit through letters, public testimony and encouraging government support for a multimodal transportation system.	Education
Missoula Institute for Sustainable Transportation (MIST)	Advocates for sustainable transportation practices and improving safety for bicyclists and pedestrians in Missoula	Education
Missoula Public Schools-Bike and Ped Safety Program	Bike & pedestrian safety curriculum taught by physical education teachers in all MCPS elementary schools, to grades K – 5.	Education
Missoula Safe Routes to School Program	Provides & advocates for facilities that improve safety for school-bound students.	Education
St. Patrick Hospital Bike Helmet Program	Provides bike helmets at low cost through the hospital's injury prevention/trauma program.	Education

2.2.2. Gap Analysis

After a review of the crash data, public comments, and current safety activities, various gaps were revealed. These gaps present opportunities to expand upon current strategies or devise new strategies to address the contributing factors in non-motorist crashes. The following sections review the data and public comments received and potential gaps that can be addressed through safety activities.

Data Trends

Over the past five years all eight of the fatalities were pedestrians. However, there were double the serious injuries for bicyclists (49) as compared to pedestrians (25). Of the people involved in crashes, there were more pedestrians in the under 18 and over 65 ages groups (19 and 10 percent, respectively) than there were bicyclists (16 and 2 percent, respectively). There were also more males involved in crashes than females. Males accounted for 71 percent of bicyclists and 61 percent of pedestrians in crashes.

The majority of crashes occurred in an urban setting, 93 percent occurred within Missoula city limits, and were intersection related, 66 percent. Lighting was a contributing factor in some of the crashes, approximately 13 percent occurred under dark unlit lighting conditions. Inclement weather was sometimes a factor in the crash, but bicyclists were more likely to be involved in crashes under inclement road and weather conditions than pedestrians.

In regard to user behavior, some of the most common factors in intersection crashes include: failure to yield (8 percent of bicyclists, 3 percent of pedestrians, 41 percent of drivers); inattentive or reckless driving (7 percent of bicyclists, 29 percent of drivers); and impairment (4 percent of bicyclists, 6 percent

of pedestrians, 3 percent of drivers). Right angle crashes were the most common crash type, besides "bicycle" or "pedestrian" coded crash types. Right angle crashes accounted for 25 percent of bicycle involved crashes and 6 percent of pedestrian involved crashes.

Public Input

Non-motorist safety was a common point of discussion at the public meeting and through the online survey. Non-motorist was the highest ranked emphasis area at the public meeting. On the online survey, bicyclists ranked third and pedestrians ranked sixth as emphasis areas for focus. Comments received from the public revealed many concerns that may not be easily identified via crash data, as they may be a result of witnessing near misses or may be generalized opinions. Multiple community members also noted concerns with education and traffic laws. Comments indicated a need for the following: education on right and responsibilities of non-motorists; education on how to use non-motorized facilities and how to deal with them as a motorist; increased compliance with right-of-way laws by both motorists and non-motorists; and enforcement of bicycle and pedestrian laws. Comments also noted a need for street lighting and increased visibility at crossings, traffic calming, continuous facilities through intersections, and facilities cleared of snow.

2.2.3. Potential Safety Activities

There are a number of factors impacting the safety of non-motorized roadway users. Sometimes it can be difficult for motorists to see or notice non-motorized users. Ways to improve visibility may include: increased lighting, especially at conflict points with vehicles; increased signage at crossings including flashing lights to get drivers' attention; and wearing reflective clothing at night. Many non-motorists also feel safer when there is a physical barrier between them and the passing traffic. Separated and well-defined facilities can help to improve non-motorist safety. Education, for both motorists and non-motorists, can also be helpful. Education on proper use of non-motorized facilities, the rights and responsibilities of non-motorists, and proper interactions between motorists and non-motorists may be beneficial.

Over the years Missoula has focused heavily on becoming walking and bicycling friendly. Educational campaigns, promotional activities, and infrastructure improvements have encouraged many Missoula residents to forgo a vehicle for transportation. While these efforts have made great strides in making it easier to get around without a vehicle, the safety of non-motorists is still a concern.

The current activities and strategies should continue to be utilized and expanded upon over the next five years. In addition to those activities, a list of potential activities was developed based upon the gaps in current practices as identified in the previous section. The activities are based upon industry best practices and programs that are in use by other communities. Some of the suggested activities are specific campaigns or laws, while others are thoughts which are meant to provoke ideas that are specific, practical, and implementable in Missoula. **Table 2.4** presents the gaps identified in the previous section, potential activities to address these gaps, and resources or references which provide more information about the suggested activities.

Table 2.4: Non-Motorized Users - Gaps and Potential Activities

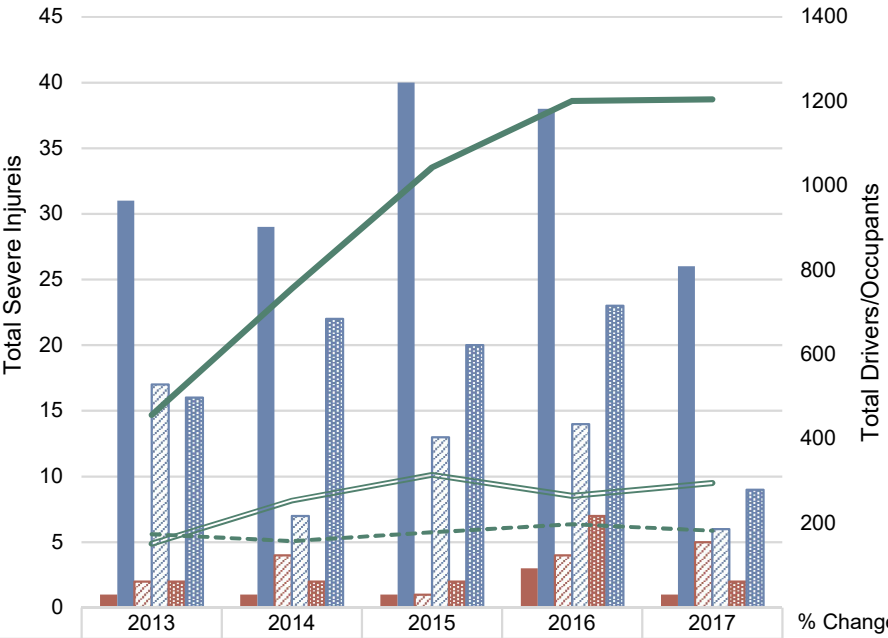
Gap	Potential Activities	Resources/Reference
Intersection Related Crashes	• Access management, intersection lighting • Pedestrian refuge islands • Curb bulb outs • Continuous bike lanes through intersections • High visibility crosswalks • Pedestrian signals • Leading pedestrian intervals • Coordinate with intersection emphasis area	1, 2, 4, 5, 6, 7, 11, 17, 18
Increased Visibility	• Pedestrian signals • Stop/yield to pedestrian signage • Encourage use of reflective clothing at night • Lighting at intersections and major crossings • Flashing lights (RRFB, HAWK, etc.)	1, 2, 4, 5, 6, 11, 17, 18, 20
Enforce Proper Behavior	• "Sweeper" patrols of impaired non-motorists • Establish bike helmet laws • Reinforce proper non-motorized use and establish/enforce consequences of improper use • Coordinate with high risk behavior emphasis area	8, 9, 11, 20
Outreach to "At Risk" Groups (Young, Older, Male Users)	• Cycling skills clinics • Bike fairs • Bike rodeos • Children school bus training/training in schools	8, 9, 11, 13, 15, 16, 20
Education for Motorists Interacting with Non-Motorists	• Pedestrian gap acceptance • Yielding responsibilities • Driver's ed • Traffic calming to slow motorists down in high non-motorized use areas	2, 8, 9, 11, 20, 26
Ease Pedestrian/Bicycle Travel	• Facilitate connectivity of facilities • Add transit service where pedestrian travel is dangerous and where there are long distances between destinations • Wayfinding • Snow removal from non-motorized facilities	11, 17, 18
Safety Planning	• ADA Transition Plans • Neighborhood Safety Plans • Pedestrian and Bicycle Safety Action Plans	10, 12, 14, 19

2.3. High Risk Behavior

Inattentive drivers, impaired drivers, and unrestrained occupants were some of the top emphasis areas based on overall number of crashes, severity index, and public opinion. The past CTSP identified impaired drivers and unrestrained occupants as emphasis areas and, over the past five years, Missoula has invested a lot of effort into addressing these emphasis areas. It is expected that the activities and strategies that have resulted from previous efforts will continue and evolve as appropriate for the impaired driver and unrestrained occupant emphasis areas. Since additional efforts to address these emphasis areas are expected to be minimal, and the strategies employed to address these emphasis areas can also be applied to address the inattentive driver emphasis area, the three emphasis areas have been joined together to make the "high risk behavior" emphasis area.

The choice to drive distracted, drive impaired, or to drive or ride in a vehicle without buckling up can have severe consequences not only for the driver but also for passengers and other roadway users. These three high risk behaviors are frequently associated. Crashes that involve these behaviors are typically very severe. Despite the choices to drive distracted or impaired, the choice to use a seat belt or child safety seat is one of the most effective measures that one can take to prevent injury and death in a crash. By addressing these three emphasis areas together, Missoula can effectively change driver behavior and improve safety for all roadway users.

The total number of inattentive drivers involved in crashes has increased substantially since 2013 while the number of resulting severe injuries has remained fairly steady. The number of impaired drivers involved in crashes has also remained fairly consistent over the past five years, while the combined number of serious injuries and fatalities in impaired driver crashes has decreased. While the total number of unrestrained occupants in crashes nearly doubled between 2013 and 2017, the combined number of fatalities and serious injuries of unrestrained occupants experienced a slight decrease overall. Figure 2.3 shows how the total number of inattentive driver, impaired driver, and unrestrained occupant crashes and severe injuries have changed over the past five years.



	2013	2014	2015	2016	2017	% Change
Inattentive Fatalities	1	1	1	3	1	+80.0%
Inattentive Serious Injuries	31	29	40	38	26	-1.2%
Impaired Fatalities	2	4	1	4	5	+120.0%
Impaired Serious Injuries	17	7	13	14	6	-41.7%
Unrestrained Fatalities	2	2	2	7	2	+100.0%
Unrestrained Serious Injuries	16	22	20	23	9	-25.2%
Inattentive Drivers	457	756	1043	1201	1205	+146.7%
Impaired Drivers	174	158	179	198	183	+13.9%
Unrestrained Occupants	152	254	315	265	296	+60.8%

Figure 2.4: High Risk Behavior Crashes

Missoula has focused on addressing impaired driver and unrestrained occupant safety through implementation of the previous CTSP. These areas have experienced an overall decrease in severe injuries caused by these behaviors. However, the total number of crashes has increased over the past five years. The number of inattentive driver caused crashes are also on the rise. The following sections

inventory the current safety activities in Missoula that address inattentive driver, impaired driver, and unrestrained occupant safety, find the gaps in current activities, and present potential safety activities that can be used to address driver choices over the next five years.

2.3.1. Current Safety Activities

Table 2.5 includes an inventory of the current safety activities that are in effect in the Missoula area which aim to reduce high risk behaviors. The list of activities includes established and ongoing programs, policies, and methods. The list may not be complete as various activities such as enforcement and emergency services that are not explicitly established as programs have not been included.

Table 2.5: High Risk Behavior - Current Safety Activities

Activity	Description	4 E's of Safety
Buckle Up Montana Coalition	Develop and implement local public information and education strategies, conduct seat belt use surveys, car seat checkup events, provide car seats to those who can't afford them, instructs CPS certification courses, "Respect the Cage", saved by the belt ceremonies, buckle up campaigns for high risk populations, promote seat belt use on campus, provide "We Care – Buckle Up" signs, support "It's Your Choice" mock crash program, support Alive @ 25, support legislation for primary seat belt law	Education
Saved by the Belt Awards	Law enforcement officers nominate crash survivors who were "saved" by wearing their seatbelt	Education/ Enforcement
Car Seat Trainings	CPS certification course	Education
Seatbelt Use Policy Promotion	Encourage local businesses to adopt seat belt use policies (seatbelt use by employees)	Education
Fines	Non-use of a seatbelt = $20 fine	Enforcement
Home Safe Missoula	Non-profit safe ride service via Yellow Cab and Green Taxi	Other
U-Dash Transit	Late night fixed route transit from downtown to campus/student housing	Other
Mountain Line Transit	Public transportation service, fare free	Other
Uber/Lyft	On demand ride services	Other
Rickshaws	Operate during warmer months for special events, paid by donation	Other
Tipsy Tow	Program during New Years to transport impaired drivers and tow car	Other
Responsible Sales and Service Training / Montana Tavern Association	Required training for people who serve alcohol	Education
Missoula Underage Substance Abuse Prevention	Conducts education on safe practices. Has a parent guide distributed to school parents	Education
It's Your Choice Mock DUI	Annual mock DUI crash event attended by all high school juniors	Education
Missoula City-County Special Traffic Enforcement Program (STEP) / Missoula County DUI Task Force	Annual $5,000 contracts to policy departments to support DUI patrols, bar checks, key party patrol, alcohol compliance check, and purchase equipment for DUI enforcement	Enforcement
Drug Recognition Expert	Trained officers conduct enforcement	Education/ Enforcement
First Night Missoula	NYE alcohol free community celebration	Other
"Focus Inward" growth scenario	Long term strategy to reduce long-distance driving required to entertainment venues	Other
Curry Health Center	UM conducts national Collegiate Survey annual which evaluates DUI trends among college students	Education

Activity	Description	4 E's of Safety
Cell phones while driving law	In 2016, the Missoula City Council passed a law that banned all cell phone use while driving (also applies to bicyclists). There was already a law that banned texting and talking while driving. The law that was recently passed now forbids all cell phone use. However, you can still use hands-free devices while you are driving.	Enforcement
Choices Matter Missoula	Distracted driving campaign for teens through Missoula Underage Substance Abuse Program	Education
Montana One Text or Call Could Wreck It All	Educational campaign conducted at the statewide level to reduce cell phone usage by drivers	Education
Montana Ride Like a Friend	Educational campaign conducted at the statewide level to reduce driver distraction by passengers	Education
Safe Kids Missoula	Implements evidence-based programs such as car seat checkups, safety workshops, and more	Education
Missoula Responsibility, Opportunities, Accountability for Drivers (ROAD) Court	Missoula DUI court designed to facilitate the rehabilitation of adults accused or convicted of alcohol and drug-related traffic offenses	Education/ Enforcement

2.3.2. Gap Analysis

After a review of the crash data, public comments, and current safety activities, various gaps were revealed. These gaps present opportunities to expand upon current strategies or devise new strategies to address the contributing factors in driver choices crashes. The following sections review the data and public comments received and potential gaps that can be addressed through safety activities.

Data Trends

The choice to drive impaired, unrestrained, or inattentively are high risk behaviors that are commonly seen in crashes, many of which have severe consequences. Impaired drivers were involved in 8 percent of all crashes and 16 percent of severe crashes; unrestrained occupants were involved 8 percent of all crashes and 21 percent of severe crashes; inattentive driving was noted in 41 percent of all crashes and 38 percent of severe crashes. These high risk behaviors are also commonly interconnected. In fact, 29 percent of impaired drivers in crashes were also improperly restrained and were reported as driving inattentively. Speeding is also a factor for drivers who make these choices. Approximately 6 percent of unrestrained drivers, 10 percent of impaired drivers, and 5 percent of inattentive drivers were also speeding at the time of the crash.

Young drivers were most often involved in crashes resulting from these driver choices. Drivers under the age of 24 accounted for 36 percent of inattentive drivers and 30 percent of impaired drivers. Occupants under the age of 24 accounted for 46 percent of unrestrained occupants in crashes. Males were also more likely to make these driver choices with 66 percent of impaired drivers, 52 percent of inattentive drivers, and 53 percent of unrestrained occupants being male.

For inattentive driver crashes, 48 percent were caused by a passenger distraction. Approximately 45 percent of inattentive drivers crashed at an intersection and the most common crash types were rear end (51 percent of all crashes and 34 percent of severe crashes) and sideswipe (12 percent of all crashes).

Impaired driver crashes were more likely to occur on the weekend and at night than during the week. Alcohol was the primary impairment substance, being present in 42 percent of impaired drivers. Approximately 41 percent of impaired drivers were impaired by both alcohol and drugs, and 8 percent were impaired by drugs only (the substance was unknown for the remaining impaired drivers).

Unrestrained occupants were most often in passenger cars or vans (42 percent), but approximately 22 percent of occupants were in a pickup, 15 percent in an SUV, and 2 percent in a large truck. In 17 percent of crashes where the airbags deployed, the unrestrained occupant suffered severe injuries. Approximately 36 percent of unrestrained and ejected occupants suffered severe injuries.

Public Input

At the public meeting and in the online survey responses, inattentive driving was a commonly noted concern. Many attendees at the public meeting noted that one of the things they can do better to improve safety in Missoula is put their phone down and stay focused. Some participants suggested that education for inattentive driving be increased in driver's education courses, incentives for not using your phone while driving, and police stings be used to decrease poor driver choices.

Results of the survey revealed that residents believe that some of the primary causes of crashes in Missoula are inattentive driving (70 percent of votes, ranked 1st), and impaired driving (20 percent of votes, ranked 5th). They noted that the emphasis areas with the greatest potential to reduce severe injury crashes are inattentive driving (84 percent of votes, ranked 1st), impaired driving (43 percent of votes, ranked 4th), and unrestrained occupants (15 percent of votes, ranked 8th). Similarly, at the public meeting, the top emphasis areas were inattentive driving (18 percent of votes, ranked 3rd), impaired driving (10 percent of votes, ranked 5th), and unrestrained occupants (1 percent of votes, tied for 7th).

2.3.3. Potential Safety Activities

To drive impaired or distracted or to drive/ ride in a vehicle without buckling up is a conscience decision made by transportation users every day. Discouraging high risk behavior typically involves a combination of education and enforcement strategies. The intent is to make people aware of the consequences of these choices and to ensure there are repercussions for people who make these choices in hopes that the high risk behaviors will be avoided in the future.

Based upon the gaps identified in the previous section, a list of potential activities to address those gaps were developed. The activities are based upon industry best practices and programs that are in use by other communities. Some of the suggested activities are specific campaigns or laws, while others are thoughts which are meant to provoke ideas that may be practical and implementable in Missoula. **Table 2.6** presents the gaps identified in the previous section, potential activities to address these gaps, and resources or references which provide more information about the suggested activities.

Table 2.6: High Risk Behavior - Gaps and Potential Activities

Gap	Potential Activities	Resources/Reference
Inattentive Driving Education	• Red Thumb Reminder • AT&T Texting While Driving: It Can Wait; Stop the Texts. Stop the Wrecks • NHTSA U Drive. U Text. U Pay • USDOT Put It Down • USDOT Faces of Distracted Driving • Oprah Winfrey No Phone Zone • NSC On the Road, Off the Phone • American Academy of Orthopedic Surgeons & Alliance of Automobile Manufacturers Decide to Drive • Phone in one hand, ticket in the other	26, 28
Young Driver/Occupant Behavior	• School programs • Inspection stations for child restraints	20, 21, 22, 23, 31

Gap	Potential Activities	Resources/Reference
	• Preliminary breath test devices (use at events i.e. football games) • Hand out at college events (i.e. BEAR Fair [get a sponsor/donation]) • Strengthen child/youth occupant restraint laws • Increased education through driver's ed courses • Plan2Live	
Male Drivers / Occupants	• Increased education through driver's ed courses • Peer to peer programs • Plan Your Ride events	22
Urban Area Crashes	• "Every Time" education campaigns • Focus patrols in urban areas, at night, near bars, on the weekends • Plan2Live • Plan Your Ride events	20, 21, 31
Drug Impairment	• Drugged driving laws • Drug testing for DUI suspects • Education regarding medications and driving • Education on drugs and effect on capabilities of driving • Prime for Life	24, 26, 30
Incentive Programs	• Encourage local employers to implement incentive programs especially if they have professional drivers • Safety education courses prior to use of company vehicles	20, 25, 27
Short Term, High Visibility Enforcement for High Risk Behaviors	• Checkpoints, saturation patrols, police stings, enforcement zones • Highly publicized period of enforcement (2 weeks is the "sweet spot")	20
Improved Data	• Improve consistency, accuracy, and training	29
Discourage Repeat Offenses	• Increased penalties – fines and driver's license points • Limits on diversion and plea agreements (impaired) • Court monitoring (impaired) • administrative license suspension/revocation laws (ALS/ALR) (impaired)	20, 23
Alcohol Vendor Responsibility	• Alcohol vendor compliance checks	20
Coordination with Other Emphasis Areas	• Intersection crashes • Non-motorized users engaging in high risk behavior and speeding tendencies	1, 2, 4, 5, 11, 20

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APPENDIX F: ACTION PLAN MATRICES

2018 SAFETY STRATEGIES – ACTION PLAN MATRICES

A thorough data review was performed for each of the 2018 emphasis areas: intersection crashes, non-motorized users, inattentive drivers, impaired drivers, and unrestrained occupants. That data and information, combined with feedback from the public, stakeholders, and research, helped identify gaps in Missoula's approach to addressing each emphasis area. This information also helped highlight potential means to improve safety and decrease severe crashes on Missoula's roadways. Taking into account the crash trends and gaps in the current safety approach, the Transportation Safety Advisory Committee (TSAC) and participants of the Community Safety Summit identified strategies which support the vision and goals established for the CTSP and address the safety concerns within each emphasis area. The following details the identified strategies and action steps. These strategies are intended to be implementable in the Missoula area to decrease serious and fatal crashes over the next five years.

For each of the recommended strategies the following elements are discussed: the purpose of the strategy as it relates to the emphasis area; actions for completing the strategy; funding needs and various resources to support completion; and implementation partners to assist in carrying out the strategy. Each of these elements are further defined as follows.

Strategy

A strategy is an approach to improving safety within a given emphasis area. Implementation of the strategies will involve a series of more specific activities along with coordination from a variety of partners. Strategies consider the observed crash trends to target the most significant issues or most vulnerable user groups associated with the emphasis area. The strategies are intended to be implementable over the five-year planning horizon of this plan but will require cooperative effort between implementation partners and a commitment of resources by various agencies. The following are defined for each strategy, as appropriate:

- **Purpose**: The purpose provides context as to why a strategy is needed or is beneficial in Missoula to address the specific emphasis area. The purpose also provides insight into how the strategy will improve safety in the community.
- **Actions:** Actions are specific steps for implementing the strategy over time. These actions are smaller steps that will help emphasis area teams and partnering agencies implement the strategies over time. Actions other than those listed in the following sections may also be implemented as emphasis area teams see fit.
- **Implementation Stakeholders/Partners**: A variety of agencies and stakeholders may have the resources, jurisdiction, or special expertise necessary to accomplish the recommended strategies. As such, successful implementation of the strategies may require cooperation and effort from multiple entities. Depending on the strategies, roles and responsibilities for carrying out the actions may fall to a variety of entities, including various state or federal agencies, local jurisdictions, stakeholders, and the public.
- **Resources**: This information defines resources that may be of use when implementing a recommended strategy. Resources to support implementation include: national programs providing technical support; educational and promotional campaigns; and published guidebooks, manuals, policies that may aid infrastructure design to improve safety.

The CTSP and its strategies will be implemented by a committed group of safety partners. Select members of the TSAC have chosen to chair each of the emphasis areas. The chairs, along with other members of the TSAC, make up the emphasis area teams. These teams will provide knowledge, expertise, resources, and commitment to implementation of the CTSP. State, MPO, county, city, and other government agencies, as well as stakeholders and special interest groups will also play an important role in implementing these strategies. Cooperation and coordination between all agencies are crucial to successful implementation. The following is a summary of each emphasis area including the chairs and the recommended strategies.

Emphasis Area 1: Intersection Crashes

***Chairs**: David Gray, Missoula MPO*

Strategy 1: Improve safety at intersections with a high rate of crashes and/or severe injuries through appropriate infrastructure improvements based on best practices.

Strategy 2: Conduct education campaigns on safe driving practices with a focus on intersection safety.

Strategy 3: Update, develop, and enforce policies, laws, and guidance regarding intersection safety.

Emphasis Area 2: Non-Motorized Users

***Chairs**: Ben Weiss, Missoula Bicycle and Pedestrian Coordinator*

Strategy 1: Improve non-motorist safety through design best practices and new technologies.

Strategy 2: Provide education opportunities for pedestrians, bicyclists, and motorists about safe and lawful behavior and interactions.

Strategy 3: Support enforcement of pedestrian and bicycle traffic laws and policies.

Emphasis Area 3: High Risk Behavior

***Chairs**: Buckle Up Montana/DUI Task Force Coordinator; Charmell Owens, City of Missoula*

Strategy 1: Conduct outreach to groups with high rates of high risk behaviors on the importance of seatbelt use and the risks of impaired and inattentive driving.

Strategy 2: Strengthen and enforce laws and local ordinances related to high risk behaviors in the Missoula area.

Strategy 3: Pursue engineering solutions to decrease high risk behaviors.

INTERSECTION CRASHES

Implementation Stakeholders/Partners:

- City of Missoula and Missoula County Public Works Departments
- Missoula City Council
- Missoula Board of County Commissioners
- Transportation Technical Advisory Committee (TTAC)
- Transportation Policy Coordinating Committee (TPCC)
- Montana Department of Transportation (MDT)
- City of Missoula Development Services
- Missoula Police Department, Missoula County Sheriff's Department, Montana Highway Patrol (Law Enforcement)

Resources:

- Manual on Uniform Traffic Control Devices (MUTCD)
- Missoula LRTP
- National Cooperative Highway Research Program (NCHRP) Guide for Reducing Collisions at Signalized Intersections
- National Highway Traffic Safety Administration (NHTSA) Countermeasures That Work
- Federal Highway Administration (FHWA) Proven Safety Countermeasures

Strategy 1: Improve safety at intersections with a high rate of crashes and/or severe injuries through appropriate infrastructure improvements based on best practices.

Purpose: Nearly half of all crashes and all severe crashes in the Missoula area occurred at intersections. Conflict is inherent at intersections because the paths of users (motorists and non-motorists) often cross. There are many engineering solutions that can be implemented to aid in navigation of the intersection so drivers can make safe decisions such as looking for non-motorists, selecting the appropriate lane, and executing controlled turning movements. Infrastructure improvements may include clear signing and pavement markings, appropriate signal timing, intersection lighting, dedicated turn lanes, and protected turning movements.

Actions:

1. Conduct local training on Road Safety Audits (RSA) and develop a program to conduct annual audits.
2. Evaluate and implement improvements, where appropriate, at locations where there is a history of wrong-way driving.
3. Evaluate intersections with safety concerns identified in the Missoula's Long Range Transportation Plan (LRTP).
4. Update intersection signing as necessary to include advanced warning, signing to improve visibility, way finding, and advanced street name signs.
5. Support the complete construction of curb and sidewalk system, which enables designation of no-parking zones near intersections.
6. Pursue traffic calming strategies at intersections where appropriate.
7. Consider use of "No Right on Red" prohibitions at signalized intersections where high volumes of pedestrians and bicyclists are present.
8. Consider leading pedestrian intervals, automatic pedestrian phases, and/or non-motorized radar detection as appropriate.
9. Identify intersections with a high frequency of nighttime crashes and poor lighting and evaluate the need for new or upgraded intersection lighting.
10. Consider use of dedicated right- and left- turn lanes and/or protected turn phasing at intersections with a history of turn-related crashes.
11. Update signal timing as necessary to include properly timed yellow intervals, protected turn phasing, all-red clearance intervals, etc.

INTERSECTION CRASHES

Implementation Stakeholders/Partners:

- Missoula County Public Schools & Driver Education Instructors
- University of Montana
- Law Enforcement
- EMS
- Missoula Bicycle and Pedestrian Program Manager
- Montana Statewide Bicycle and Pedestrian Coordinator
- Chamber of Commerce/Local Businesses

Resources:

- AARP Defensive Driving Course
- MDT Share the Road Campaign
- Pedestrian and Bicycle Information Center
- Montana Code Annotated
- Missoula Municipal Code

Strategy 2: Conduct education campaigns on safe driving practices with a focus on intersection safety.

Purpose: Although engineering treatments can help improve safety at intersections, proper driver behavior is an important factor in reducing crashes. Intersection crashes can be caused by a variety of driver behaviors such as disregarding traffic signals and signs, improperly judging gaps when executing turns, traveling at high speeds, and making hurried and unpredictable driving maneuvers around other drivers. Education and outreach activities can help change driver behavior and reduce crashes.

Actions:

1. Develop and distribute public information and education materials on safe driving practices, particularly focusing on intersections, including parking rules near intersections, how to use roundabouts, and yellow change intervals.
2. Increase the focus on intersection safety in driver's education; invite law enforcement, emergency medical services (EMS) and bicycle and pedestrian representatives to speak specifically to intersection issues.
3. Address intersection safety at college freshman orientation and at other college group activities.
4. Implement a teen peer-to-peer program with a focus on intersection safety.
5. Pursue adult driving continuing education opportunities and promote existing programs such as the AARP defensive driving course.
6. Educate bicycle/pedestrian/motorcycle roadway users on intersection safety, including proper crossing behavior at a pedestrian countdown signal.
7. Distribute materials about vehicles, pedestrians, bicycles and motorists sharing the road safely.

INTERSECTION CRASHES

Implementation Stakeholders/Partners:

- Law Enforcement
- City of Missoula and Missoula County Public Works Departments
- Missoula City Council
- Missoula Board of County Commissioners
- MDT
- City of Missoula Development Services
- TPCC
- TTAC
- Missoula Bicycle and Pedestrian Coordinator

Resources:

- Selective Traffic Enforcement Program
- Montana Code Annotated
- Missoula Municipal Code
- American Association of State Highway Transportation Officials (AASHTO) Policy on Geometric Design of Highways and Streets
- AASHTO Highway Safety Manual
- National Association of City Transportation Officials (NACTO) Urban Street Design Guide

Strategy 3: Update, develop, and enforce policies, laws, and guidance regarding intersection safety.

Purpose: There are a number of policies, laws, and guidelines in place in the Missoula MPA. These resources cover many topics ranging from design and development of intersections or intersection features to traffic laws. National guidance is constantly changing and it is important to remain up to date with current standards and best practices. It is recommended that the existing policies, laws, and guidance be updated regularly, and new ones be developed as necessary. In order for these policies and laws to be effective, enforcement is needed.

Actions:

1. Evaluate policy changes for problem intersections where speed is an issue. Identify and implement improvements to reduce intersection approach speeds such as advance warning signs, reduced lane widths, adaptive signal control, or other methods.
2. Pursue a local policy for the consideration of roundabouts at local intersections, where appropriate, based on review of respective jurisdictional authority. Policy must include consideration of the needs of all modes and users.
3. Update intersection design guidance periodically to incorporate the latest technologies and treatments and ensure consistency in implementation. Enforce speed limits near intersections where patterns of crashes related to speed violations have been observed. Portable speed trailers may be useful when patrols are not available.
4. Increase enforcement of, and encourage compliance with, clear-zone policy (tree/shrub trimming, parking, signage, etc.).
5. Work with law enforcement to increase capacity for officers to make traffic enforcement a priority especially during peak travel hours (AM, noon, PM). Post patrols at intersections known to have problems with red light running, speeding, failure to stop, and failure to yield right of way.
6. Provide targeted enforcement to reduce stop sign violations and red light violations.

NON-MOTORIZED USERS

Implementation Stakeholders/Partners:

- City of Missoula and Missoula County Public Works Departments
- Missoula City Council
- Missoula Board of County Commissioners
- TTAC
- TPCC
- MDT
- City of Missoula Development Services
- Bicycle and Pedestrian Advisory Board

Resources:

- NHTSA Countermeasures That Work
- NACTO Urban Bikeway Design Guide
- AASHTO Guide for Planning, Design, and Operation of Pedestrian Facilities
- FHWA Design Guidance Accommodating Bicycle and Pedestrian Travel: A Recommended Approach
- Pedestrian and Bicycle Information Center

Strategy 1: Improve non-motorist safety through design best practices and new technologies.

Purpose: Safety for non-motorists can be increased by a variety of infrastructure improvements. Various treatments that slow down motorists and alert them that non-motorists are may improve safety for non-motorists. Ensuring that non-motorized facilities are well maintained and accessible by all users can also help improve safety. When non-motorists use dedicated facilities, their movements are more predictable and conflicts with motorists can be more easily avoided.

Actions:

1. Consider the needs of non-motorists in all infrastructure improvements.
2. Implement traffic calming strategies, where appropriate, to slow traffic at problem locations and high non-motorized use areas.
3. Evaluate and consider intersection signal retiming where appropriate to increase non-motorist safety such as all pedestrian phases, lead pedestrian intervals, automatic pedestrian phases, and radar detection.
4. Consider use of “No Right on Red” prohibitions at signalized intersections where high volumes of pedestrians and bicyclists are present.
5. Evaluate connectivity of non-motorized facilities. Improve connectivity by requiring construction of appropriate infrastructure as part of new development and providing facilities in newly annexed areas.
6. Increase visibility of non-motorists at intersections and along major roadways using the latest design guidance and technologies. Treatments may include intersection/roadway lighting, continuous bike lanes through intersections, curb bulb outs, use of pedestrian signals, high visibility crosswalks, and flashing lights (RRFB, HAWK, etc.).
7. Prioritize preservation and maintenance of pedestrian and bicycle facilities including snow removal.
8. Coordinate with streets and other construction projects for the construction and retrofit of accessible curb ramps and ensure all projects meet accessibility requirements when built.

NON-MOTORIZED USERS

Implementation Stakeholders/Partners:

- Missoula Public Schools
- Montana Statewide Bicycle and Pedestrian Coordinator
- Missoula Bicycle and Pedestrian Program Manager
- Missoula Bicycling Ambassadors
- Pedal Missoula
- Freecycles
- Missoula in Motion

Resources:

- Pedestrian and Bicycle Information Center
- United State Department of Transportation (USDOT) – Encourage and Promote Safe Bicycling and Walking
- FHWA Pedestrian and Bicycle Education and Outreach
- NHTSA Countermeasures That Work
- MDT Bicycles and Pedestrians in Montana
- Montana Code Annotated
- Missoula Municipal Code

Strategy 2: Provide education opportunities for pedestrians, bicyclists, and motorists about safe and lawful behavior and interactions.

Purpose: Failure to yield right of way, inattentiveness, and impairment were all common factors in non-motorized user crashes. Both motorists and non-motorists are responsible for obeying traffic laws. However, pedestrian and bicycle traffic laws are not as widely known. Increasing familiarity with the rights and responsibilities of non-motorists can help improve safety for all users. Educating motorists about pedestrian and bicycle laws can also help improve the predictability of non-motorists. There are many education programs and initiatives aimed at informing and reinforcing the skills needed to safely walk and bike. Implementation of these programs helps ensure safe and lawful interactions between motorists and non-motorists.

Actions:

1. Support promotion of children's non-motorized education and safety training as part of elementary school curriculum or school bus training.
2. Support existing education opportunities and pursue new opportunities such as cycling skill clinics, bike fairs, bike rodeos, etc.
3. Include pedestrian and bicycle education in driver's education curriculum.
4. Spread awareness of non-motorized user traffic laws.
5. Focus safety education on crash contributing factors including non-motorist impairment, visibility at night, and yielding at crossings.
6. Improve and increase education and encouragement efforts to increase safety and participation of people walking and biking.
7. Include pedestrian and bicycle safety in other roadway education campaigns.

NON-MOTORIZED USERS

Implementation Stakeholders/Partners:

- Law Enforcement
- City of Missoula and Missoula County Public Works Departments
- Missoula Neighborhood Councils
- Chamber of Commerce/Businesses
- Missoula City Council
- Missoula Board of County Commissioners

Resources:

- Selective Traffic Enforcement Program
- Pedestrian and Bicycle Information Center – Enforcing Laws
- Montana Code Annotated
- Missoula Municipal Code
- NHTSA Countermeasures That Work
- NACTO Urban Bikeway Design Guide
- AASHTO Guide for Planning, Design, and Operation of Pedestrian Facilities
- FHWA Design Guidance Accommodating Bicycle and Pedestrian Travel: A Recommended Approach

Strategy 3: Support enforcement of pedestrian and bicycle laws and policies.

Purpose: In addition to educating roadway users or pedestrian and bicycle traffic laws, enforcing proper behavior is an important component of improving safety for non-motorists. Enforcing speeds in school zones or areas where high volumes of non-motorists are present or issuing citations for failure to yield at crosswalks can be effective ways to increase safety. Enforcement is not restricted to motorists, however. For example, enforcing the use of bicycle lights at night or issuing citations for failure to obey pedestrian signals are ways to help increase compliance with bicycle and pedestrian laws.

Actions:

1. Periodically review and update design guidance and policies for pedestrian and bicycle facilities.
2. Increase enforcement of, and encourage compliance with, clear-zone policy (tree/shrub trimming, parking, signage, etc.) to improve sight lines for motorists and non-motorists.
3. Increase enforcement of, and encourage compliance with, sidewalk snow removal law including removal of snow from handicap parking spaces.
4. Support increased enforcement of non-motorized user traffic laws to all roadway users to help ensure safe and lawful interactions between motorists and non-motorists.
5. Reinforce lawful non-motorized activity and proper use by establishing and enforcing consequences for unlawful behavior and improper use.

HIGH RISK BEHAVIOR

Implementation Stakeholders/Partners:

- Law Enforcement
- Chamber of Commerce/Businesses
- MDT
- Insurance Companies
- Missoula High Schools
- University of Montana
- Civic Organizations
- Media- Missoulian, Independent, Kaiman, KECI, KTMF, KUFM-Missoulian
- Missoula County Buckle Up Montana Coalition
- EMS/Fire Departments
- Missoula City/County Health Departments
- Missoula Driver's Education
- Mountain Line, U-Dash, Lyft, Uber, and other safe ride providers
- Montana Tavern Association

Resources:

- Alive @ 25
- It's Your Choice Program
- Most of Us Campaign
- Ride Like a Friend Campaign
- Choices Matter Missoula
- National Inattentive Driving Campaigns
- National Impaired Driving Campaigns
- NHTSA Countermeasures That Work

Strategy 1: Conduct outreach to groups with high rates of high risk behaviors on the importance of seatbelt use and the risks of impaired and inattentive driving.

Purpose: The choice to drive distracted, drive impaired, or to drive or ride in a vehicle without buckling up can have severe consequences not only for the driver but also for passengers and other roadway users. Despite the choices to not drive distracted or impaired, the choice to use a seat belt or child safety seat is one of the most effective measures that one can take to prevent injury and death in a crash. Discouraging high risk behavior typically involves a combination of education and enforcement strategies. The intent of educational campaigns and programs is to make people aware of the consequences of these choices and to encourage safe behaviors.

Actions:

1. Work to expand participation in the Alive @ 25 program, a defensive driving course instructed by Montana Highway Patrol (MHP) trainers on driver safety for drivers age 15 to 25. Work to incorporate Alive @ 25 program into driver's education curriculum. Work with insurers to pursue a discount for participants in the course as an incentive.
2. Use innovative communications methods such as variable message signs to publicize the number of deaths that occur in Montana as a result of high risk behaviors as well as trends (increases/decreases in crashes and injuries). Partner with businesses to have them publicize this data as well.
3. Develop a local public service announcement (PSA) contest among the three high schools in Missoula/and or at the University of Montana; recommend the PSAs include messages from victims with a "tough love" approach.
4. Partner with the media to deliver safe behavior messages, such as on the "What's Up Missoula" and "Missoula Live" TV shows.
5. Utilize social media to deliver safe behavior messages. Consider videos that simulate crashes as a result of impairment, inattentive driving, as well as the consequences of improper restraint.
6. Continue and expand safety talks on the importance of safe driving behavior targeting youth, such as in- school presentations, "It's Your Choice" events, and through the annual mock-crash demonstration.
7. Pursue speaking engagements to reach adult target audiences via Civic organizations, large fleet trainings (business/government), and other employers.
8. Develop a peer-to-peer program where youth talk to other youth about the dangers of engaging in high risk behaviors.
9. Continue and enhance community-supported incentives for safe and proper behavior.
10. Work with insurance companies to provide a discount or other incentive for novice drivers who take driver's education and also for adults who take continuing education courses.

	11. Ensure parents are attending pre- and post- parent meetings, which is a mandatory part of the driver's education program. Provide OPI's GDL handout to parents that includes monetary and license suspension consequences for not following GDL requirements. 12. Promote social norming campaigns and programs like Most of Us, Ride Like a Friend, Choices Matter Missoula, Buckle Up, and Saved by the Belt awards. Encourage area youth to establish local social norming groups in community by expanding positive community norms campaigns to all schools in the Missoula area. 13. Consider implementation and promotion of national education campaigns for inattentive driving such as Red Thumb Reminder; Texting While Driving: It Can Wait; Stop the Texts. Stop the Wrecks; U Drive. U Text. U Pay.; Put It Down; Faces of Distracted Driving; No Phone Zone; On the Road, Off the Phone; Decide to Drive; or Phone in one hand, ticket in the other. 14. Consider implementation of and promotion of impaired driving educational campaigns and events such as Plan2Live, Plan Your Ride, and Prime for Life. 15. Educate the public on societal, personal, and economic costs of crashes resulting from high risk behavior (i.e. insurance premiums, health costs, emergency services costs, etc.). 16. Continue and increase installation of Buckle-Up signs at business parking lot exits and work with employers to pursue establishing policies requiring seatbelt use by employees 17. Continue to provide increased training opportunities for child passenger safety technicians. 18. Continue to conduct annual pre- and post- seat belt surveys in coordination with awareness programs to determine impact of high school Buckle Up sign project and seat belt awareness. 19. Work with the VFW and the America Legion to change the color of the roadside memorial crosses in Montana to red if the crash involved impaired driving. 20. Expand awareness and promotion of safe ride options (i.e. Lyft and Uber). Pursue opportunities to partner with bars and ways to provide promotions or discounts on rides. Continue to maintain and promote U-Dash service and event shuttles. Explore other safe ride options that are not university specific and options that service rural residents. 21. Educate the general public on overserving laws and reporting. Educate and encourage citizens to call 911 to report potential over service or drunk drivers. 22. Provide information on criminal liability to servers who over serve to obviously intoxicated patrons. Expand information to include potential liability to city and event organizers that sell/provide alcohol at public events.

HIGH RISK BEHAVIOR

Implementation Stakeholders/Partners:

- MDT
- Montana Department of Justice
- Montana Department of Health and Human Services
- Missoula County DUI Task Force
- Missoula County Buckle Up Montana Coalition
- Montana State Legislation
- Missoula City Council
- Missoula Board of County Commissioners
- Law Enforcement
- Missoula County Attorney's Office
- Missoula City Attorney's Office
- Fourth Judicial District Court
- Department of Revenue
- Montana Tavern Association
- Chamber of Commerce/Businesses

Resources:

- NHTSA Countermeasures That Work
- Montana DUI Penalties Information
- MDT Vision Zero
- Montana Code Annotated
- Missoula Municipal Code
- STEP and SETT
- Drug Recognition Expert Training
- Montana 24/7 Sobriety Program
- Missoula Sobriety, Accountability Program

Strategy 2: Strengthen and enforce laws and local ordinances related to high risk behaviors in the Missoula Area.

Purpose: Many laws in Montana regarding high risk behaviors are less stringent than other states. The safety belt law is a secondary law, consequences for impaired driving are minimal (in comparison), and distracted driving laws do not exist at the state level, although there is a texting and driving prohibition in Missoula. Making regulations and penalties stronger for seatbelt non-use, impaired driving, and inattentive driving may help increase the importance and impact of these behaviors and reduce their occurrence. Additionally, enforcement of the laws and ordinances is a critical component to the public believing there is a consequence for engaging in high risk behaviors. The Montana Selective Enforcement Traffic Team (SETT) is a team that moves around the state to provide short term, high visibility saturation patrols focused on enforcing impaired driving, inattentive driving, and seatbelt use, among other traffic violations. Locally implemented saturation patrols, checkpoints, and enforcement zones can also be effective at deterring high risk behaviors in the Missoula area.

Actions:

1. Work to support legislative efforts to enact more stringent laws and ordinances aimed at high risk behavior such as: a primary safety belt law; increased fines for nonuse of a seatbelt; a law that includes failure to wear a belt as a driver's license point violation; increased fines and penalties for impaired driving (i.e. vehicle confiscation, license plate forfeiture, mandatory ignition interlock devices, etc. for convicted offenders); drugged driving laws; and distracted driving laws including cell phone usage.
2. Provide information and educate local legislators and elected officials on the seriousness of crashes resulting from high risk behaviors, the benefits of various treatments and penalties for high risk driving behavior, and the economic impacts of crashes to society.
3. Continue to expand opportunities for convicted offenders of impaired driving to get appropriate treatment.
4. Work to enhance the penalties for the local social host law.
5. Support requirements to retest drivers for license renewals at regular intervals to stay up to date on current laws and regulations.
6. Consider adoption of a countywide ordinance regarding the use of cell phones while driving.
7. Conduct short term, high visibility enforcement for high risk behaviors including checkpoints, saturation patrols, police stings, enforcement zones, or highly publicized periods of enforcement.
8. Enforce laws that penalize over-service to obviously intoxicated patrons and conduct alcohol vendor compliance checks. Provide information on criminal liability to servers who over serve to obviously intoxicated patrons.
9. Continue to collect information from the police report form on the establishment where the last drink was served to the intoxicated driver and provide that information to the Department of Revenue for follow up.

• Responsibility, Opportunities and Accountability for Drivers (ROAD) Court • Montana Warm Springs Addiction Treatment and Change (WATCh) Program	10. Conduct additional Drug Recognition Expert (DRE) training for law enforcement officers and provide information to officers on how to recognize drug impaired driving. 11. Provide traffic diversion programs for people cited for high risk behavior related traffic violations as opportunities for education. 12. Encourage Selective Traffic Enforcement Programs (STEP) officers to write citations instead of warnings for high risk behavior related traffic violations. Also encourage STEP officers to check for GDL violations during traffic stops.

HIGH RISK BEHAVIOR

Implementation Stakeholders/Partners:

- Law Enforcement
- MDT Traffic Safety Section
- City of Missoula and Missoula County Public Works Departments
- TPCC
- TTAC
- MDT

Resources:

- MDT Crash Data
- AASHTO Policy on Geometric Design of Highways and Streets
- AASHTO Highway Safety Manual
- NACTO Urban Street Design Guide

Strategy 3: Pursue engineering solutions to decrease high risk behaviors.

Purpose: Although education and enforcement strategies are typically used to discourage high risk behavior, there are some engineering solutions that can help improve the safety of users who engage in these behaviors. Rumble strips, for example, can help alert inattentive drivers that veer out of their lane and can prevent run off the road crashes. Traffic calming strategies can help slow down drivers and help reduce the impact of a crash on occupants who are unbelted. High visibility signage to alert drivers of the laws or increased patrols can also help deter drivers from engaging in high risk behaviors as they will likely expect consequences to result.

Actions:

1. Evaluate and implement, where appropriate, high visibility infrastructure features to reduce high risk behaviors. Potential improvements may include flashing lights at non-motorized crossings, separated non-motorized facilities, rumble strips, curb extensions, median islands, etc.
2. Evaluate and implement, where appropriate, high visibility signage in areas known to have problems with high risk behaviors. Potential improvements may include “Use of Hand Held Phones Prohibited While Driving” signage, “Buckle Up” signage, or “Increased DUI Patrols” variable messaging signs during holidays.
3. Continue to improve crash data accuracy and usability. Improved crash data can help better identify contributing circumstances in crashes so specific behavioral issues can be addressed.
4. Improve and increase protection for non-motorized users (i.e. physical separation) to prevent severe crashes due to driver’s engaging in high risk behavior.