

*Montana Highway Traffic Safety FFY 2020*

# *Problem Identification*

## *2018 Data*



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## 1. Vision Zero

The Montana Department of Transportation and our partners are united in the mission to save lives on Montana roads. The information presented in the *Montana Highway Traffic Safety Problem Identification* document supports efforts toward Montana's Vision Zero Initiative: zero deaths and zero serious injuries on Montana's Highways. This multipronged initiative has the ultimate goal of eliminating death and serious injuries on Montana's highways because one life lost is one to many.

## 2. Introduction

The *Montana Highway Traffic Safety Problem Identification*, produced by the Montana Department of Transportation's Highway Traffic Safety Section (SHTSS), provides a description of motor vehicle crash characteristics for crashes that have occurred on Montana's public roadways. The crash data is used to identify problem areas and trends related to highway traffic safety in Montana and serves to heighten awareness about traffic safety and assist highway traffic safety specialists and partners in designing targeted counter measures to reduce traffic-related fatalities and injuries.

This document is used in the development of Montana's Highway Safety Plan (HSP) to support the request for funds from the National Highway Transportation Safety Administration (NHTSA) for the upcoming fiscal year. These funds will be used to address problem areas which are identified in the research and analysis of information contained herein. The data may also be used for general information on highway safety.

The report will present data on crash numbers, general exposure and demographics. Included will be Montana geographic and population statistics, driver license information, vehicle miles travelled and breakdowns of driver demographics within crashes. Information is presented in the latter part of this document on specific traffic safety areas and other areas of possible interest. Many of the tables represent ten years of data.

## 3. Explanation of Data

Much of the data for this problem identification is derived from Montana reportable crash reports which are compiled by the law enforcement officers throughout the state who collect data from crash scenes on Montana roadways. Some crashes such as minor single vehicle run-off-the-road crashes, wild-animal crashes and other minor crashes are not always reported to law enforcement.

Reportable crashes are defined as those with a fatality, an injury, or in the case of property damage only crashes, those with at least \$1,000.00 of damage. Based on the information provided in the crash reports, trends and contributing factors of the resultant injuries and

fatalities along with the demographics for the drivers and vehicles involved are presented. Rates are calculated using vehicle miles, licensed drivers or population when possible. Data will be presented on Montana's roadway crashes for the year of 2018 as well as for the ten-year period of 2009-2018. The severity of the crash, in particular, the fatalities and serious injuries associated with crashes, is the benchmark by which Montana's crash data is evaluated.

Various aspects of the crash report are then used to investigate the driver and roadway characteristics associated with Montana roadway crashes. Driver's age and level of chemical impairment, the time of day, the time of the year, and the type and location of the roadway are used separately and in combination to provide a perspective on roadway crashes in Montana.

Summary tables, graphs, and bulleted highlights will be presented for each of several different crash characteristics investigated in the report.

It is important to note that this information is based on data from crash reports submitted to the Montana Highway Patrol (MHP) from their patrol officers and from local city/county/Tribal law enforcement agencies. This crash database is then shared with the Montana Department of Transportation (MDT).

### ***Data Sources***

The MDT crash database is the source of crash data in this document and in the Montana 2018 Problem Identification data tables available online. The MDT crash database is a dynamic system. Crash data is periodically updated with new, revised, or additional information. Data values may vary from previous publications. In addition, other information related to highway traffic safety such as observed seat belt use comes from other sources and is included when available.

Fatal Crashes – Additional information is used for fatal crashes from the Fatality Analysis Reporting System (FARS). This data base is maintained by the National Highway Traffic Safety Administration. Due to differences in definitions of "traffic fatalities" between the FARS data base and MDT's data base, final FARS numbers and MDT's may vary slightly.

## ***4. Montana Summary of 2018 Crashes***

The Montana Department of Transportation, State Highway Traffic Safety Section presents the most recent available data surrounding traffic safety. A summary of findings for 2018 are listed below:

### **FATALITIES AND INJURIES**

- Montana experienced nearly 23,000 traffic crashes in 2018; 168 of these crashes were fatal accounting for 182 people who died. Additionally, 769 people were seriously injured in crashes in 2018.

- Montana's roadway fatalities were down by 4 in 2018 compared to 2017 (182/186). The ten year (2009-2018) average number of Montana roadway fatalities is 203.
- Montana's 2018 fatality rate (number of fatalities per 100 million vehicle miles traveled) is 1.43. Montana's fatality rate continues to be higher than the national rate of approximately 1.13 deaths per 100 million miles traveled. <sup>1</sup>

### OCCUPANT PROTECTION

- Montana state law allows for secondary enforcement only.
- The 2018 observed use of restraints was 87% on all Montana roads.
- 85 deaths in 2018 are attributed to not wearing a seat belt, which is 63% of fatalities in vehicles with restraints (not counting pedestrians, bicyclists and motorcyclists). 37% of vehicle occupants killed in collisions were wearing seat belts.
- 53 of the unrestrained people who died were ejected from the vehicle (38%)
- 81 unrestrained vehicle occupant deaths occurred in rural roadway crashes.
- Nearly eight of ten unrestrained vehicle occupant deaths occurred in impaired driver involved crashes.

### ALCOHOL AND/OR DRUG RELATED DRIVING

- 117 deaths and 259 serious injuries in 2018 are attributed to impaired driver involvement, which is 64% of all roadway deaths. The number of driver alcohol BAC greater than 0.079 fatalities and serious injuries increased to 184. This is below the five-year average of 194.
- Impaired drivers in 2018 were involved in 65% of fatal crashes and 34% of serious injury crashes.
- 90% of 2018 impaired driver involved crashes were rural area crashes.
- 39% of 2018 impaired driver involved crashes occurred between Friday noon and Sunday noon
- 65% of all impaired driver involved roadway crashes occurred in single vehicle crashes.

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<sup>1</sup> Insurance Institute for Highway Safety Highway Loss Data Institute 2019.

## ROADWAY DEPARTURE CRASHES

- Roadway departure crashes accounted for 70% of all fatal crashes and 47% of all serious injury crashes.
- Over 90% of all roadway departure fatal and serious injury crashes occur in rural environments.
- Dry road conditions were reported in 84% of the road departure fatalities.
- 48% of roadway departure fatalities occurred in the months of June through September.
- 37% of roadway departure fatalities occurred between Friday noon and Sunday noon.
- 39% of roadway departure fatalities occurred at night.
- Single vehicle crashes account for more than three quarters of fatalities in roadway departure crashes.

## INTERSECTION RELATED CRASHES

- 12% of all fatalities in 2018 occurred in an intersection crash.
- 47% of intersection fatalities and serious injuries occur on rural intersections versus 53% that occur in the urban areas.

## OTHER AREAS OF INTEREST

- In 2018, nearly 17% of all roadway fatalities were Native Americans. In 2018 there were 34 Native American Fatalities, which is a decrease of 10 from 2017. Native Americans make up approximately 7% of Montana's population, and are overrepresented by comprising 15% to 22% of all traffic fatalities in the last 10 years.
- In 2018 there were 21 motorcyclist fatalities. Nine fatalities involved a motorcyclist not wearing a helmet. In 2018 motorcyclists comprised 12% of the total fatalities on Montana roadways. 1 of 4 motorcyclist fatalities were motorcycle drivers age 55-64.
- Non-Motorized-Pedestrian: In 2018, there were 15 pedestrian fatalities and 42 serious injuries.
- Non-Motorized-Bicyclist: In 2018, there were 2 bicyclist fatalities and 17 serious injuries.

- There were 68 fatalities and serious injuries involving large vehicles in 2018. Large vehicles are those trucks or buses requiring a commercial vehicle license.
- Young drivers 20 years and younger involved fatalities increased to 26 from 25 in 2017. This age group, 6.7% of the population, accounted for 17% of fatalities and serious injuries in 2018.
- Older drivers age 65 and older (23% of registered Montana drivers) accounted for 166, or 17% of fatalities and serious injuries in 2018.
- There were 3496 reported crashes involving animals in 2018. There were three fatalities and 29 serious injuries in animal involved crashes in 2018.
- Crashes that occur in summer (June, July, August, and September) account for 45% of all fatal crashes and 46% serious injury crashes in 2018.
- 73% of all fatal and serious injury crashes occur in rural environments.

## 5. *Montana Demographics*

Montana's geographic attributes and population demographics are useful in discussing the impact of fatal and serious injury crashes on Montana's population.

### 5.1 *Montana Border to Border*

- Montana's geographic area is larger than the combined area of 10 North Atlantic states, yet it has only 2% of the combined population of those states.
- Montana's public road miles consist of 75,008 miles, while only 12,927 miles are on the state highway system. Billings has the most public road mileage of any incorporated city in Montana with 599 miles; Rexford has the least with 1.5 miles.
- The busiest spot on Montana's roadways is Main Street in Billings between Airport Road and Hilltop Road, where annual average daily traffic was 44,205 vehicles per day.
- Of Montana's 56 counties, Yellowstone County had the most on system daily vehicle miles traveled totaling 2,712,116; Petroleum County had the least with 32,760.
- In 2018, 72% of Montana's highway vehicle miles traveled occurred outside of the state's 19 urban areas.
- According to the Montana Office of Tourism 12.2 million non-residents visited Montana in 2018 and contributed \$3.7 Billion in spending to Montana's economy.



## *5.2 Montana People*

- The July 1, 2019 United State Census Annual Estimates of Population; Montana's population is estimated to be 1,068,778, which is an increase of 8% from the 2010 Census count.
- Montana land area in square miles is 145,545.80, and the population per square mile is 6.8.
- The median household income (2019) is \$52,559, and there are an estimated 423,240 households with 2.39 persons per household.
- The median age for Montanans is 39.8 and 39% of the population is over the age of 18.
- Montana is about evenly split between male (50.3%) and female (49.7%) residents.
- Montana's licensed drivers are also evenly split: male (51%), female (49%)
- The mean travel time to work (minutes) for Montana workers age 16 years + is 18 minutes.

## *6. Traffic Crashes and Exposure Statistics*

Due to the size and the population density of Montana, very few of Montana's vehicle miles travelled (VMT) occur in an urban environment. Seventy three percent of all Montana's 2018 fatal and serious injury crashes occurred on rural roadways. In 2018, 92% of vehicle miles travelled occurred on rural roadways. Compared to states with greater urban centered populations, a high percentage of the miles travelled in Montana are in rural areas at higher speeds (>55 MPH), thus increasing the likelihood of fatal and serious injury crashes.

On a national level, according to the Insurance Institute for Highway Safety (IIHS)<sup>2</sup>, 2018 had a 2% decrease in deaths compared to 2017. In Montana in 2018, rural road crashes accounted for 93% of all roadway fatalities. Montana continues to rank high in fatality rate compared to other states and it can be concluded that one of the factors contributing to this is the high percentage of rural vehicle miles travelled in Montana in comparison to other states.

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<sup>2</sup> Insurance Institute for Highway Safety – Highway Loss Data Institute:  
<http://www.iihs.org/iihs/topics/t/general-statistics/fatalityfacts/overview-of-fatality-facts>.

IIHS reports that in 2018 there were 33,654 fatal motor vehicle crashes in the United States, in which 36,560 deaths occurred. This is a fatality rate of 11.2 per 100,000 people, and 1.13 deaths per 100 million vehicle miles traveled. The fatality rate per 100,000 people ranged from 4.4 in the District of Columbia to 222.2 in Mississippi. The death rate per 100 million miles traveled ranged from .54 in Massachusetts to 1.83 in South Carolina. By comparison, Montana experienced 168 fatal crashes with 182 total fatalities. Deaths per 100,000 population fatality rate is 17.1 and the deaths per 100 million miles traveled fatality rate is 1.43.

Nationally, motor vehicle crash deaths per 100,000 people by age group shows that persons ages 20- 34 years represent the highest death rate of 15.8. The month of February in 2018 had the fewest crashes, and October had the most and nearly half of crash deaths occur Friday, Saturday or Sunday. In the five years between 2014 and 2018, the 4<sup>th</sup> of July had the highest number of traffic fatalities with an average of 132.

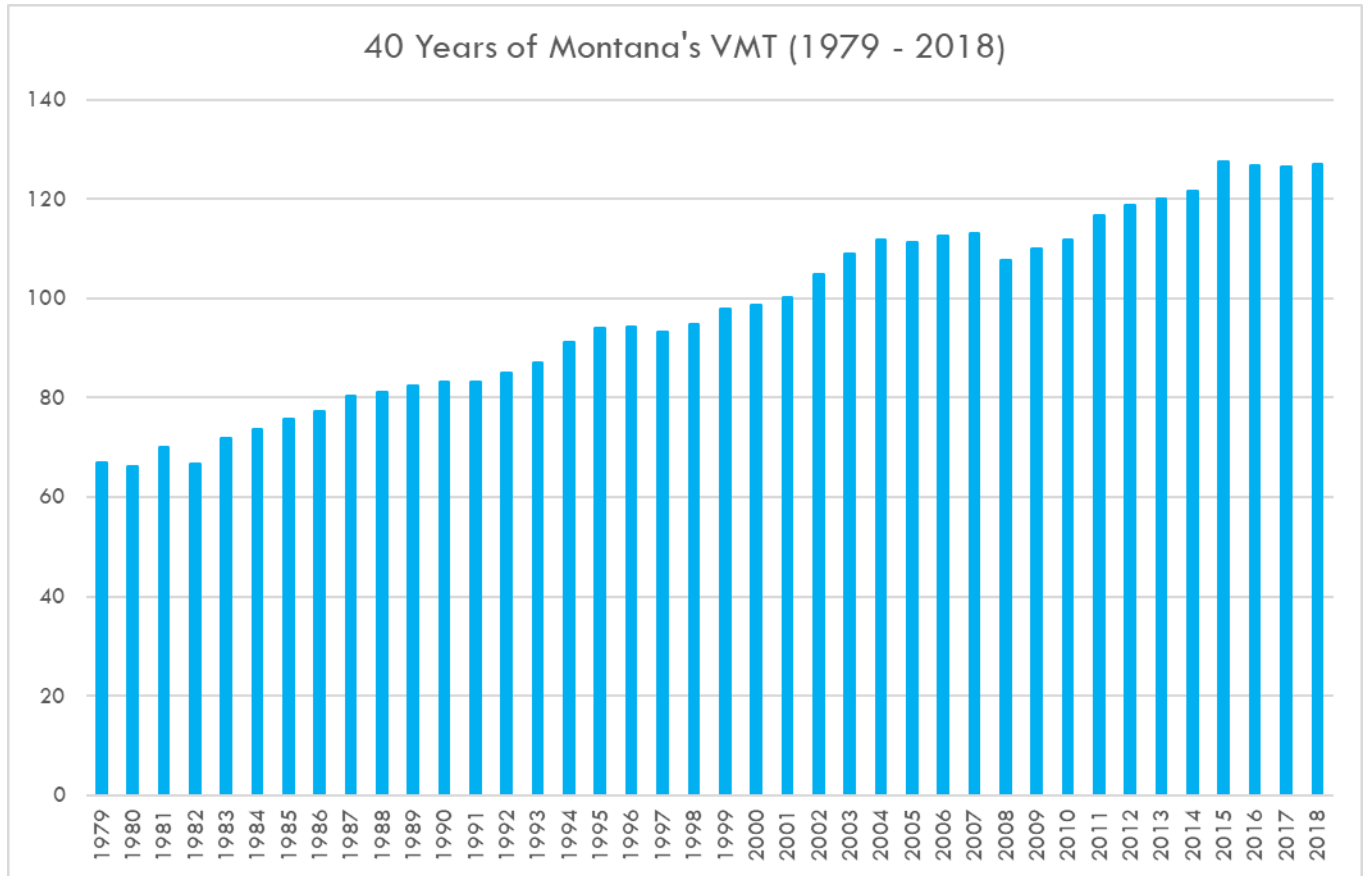
### Exposure Statistics

Driving exposure is a frequently used term in the highway safety research community. An agreed upon definition is “driving exposure is the frequency of traffic events which create a risk of accidents.” One of the most commonly used measures of exposure is driving distances expressed in vehicle miles of travel. Other common measures include driving time, traffic volume, number of registered vehicles and, number of licensed drivers. Among all of the exposure measures used to evaluate risk, driving distance (vehicle miles) is the one that relates most directly to the processes of highway travel, and hence, to the risk of accident (IIHS). Vehicle Miles Traveled (VMT) is an exposure factor that appears to be a continuing influence on the amount of traffic crashes that occur in Montana.

## ***6.1 Vehicle Miles Traveled***

Vehicle Miles Traveled (VMT) is the estimated number of total miles driven by all vehicles on Montana public roads. The total miles per year are expressed as per 100 million miles traveled. The annual VMT's are shown below. Montana has seen a doubling of the VMT in the last 40 years. In 1977 the VMT for Montana was 6.5 million and in 2018 the VMT is 12.7 million with 182 fatalities.

## Montana Vehicle Miles Traveled



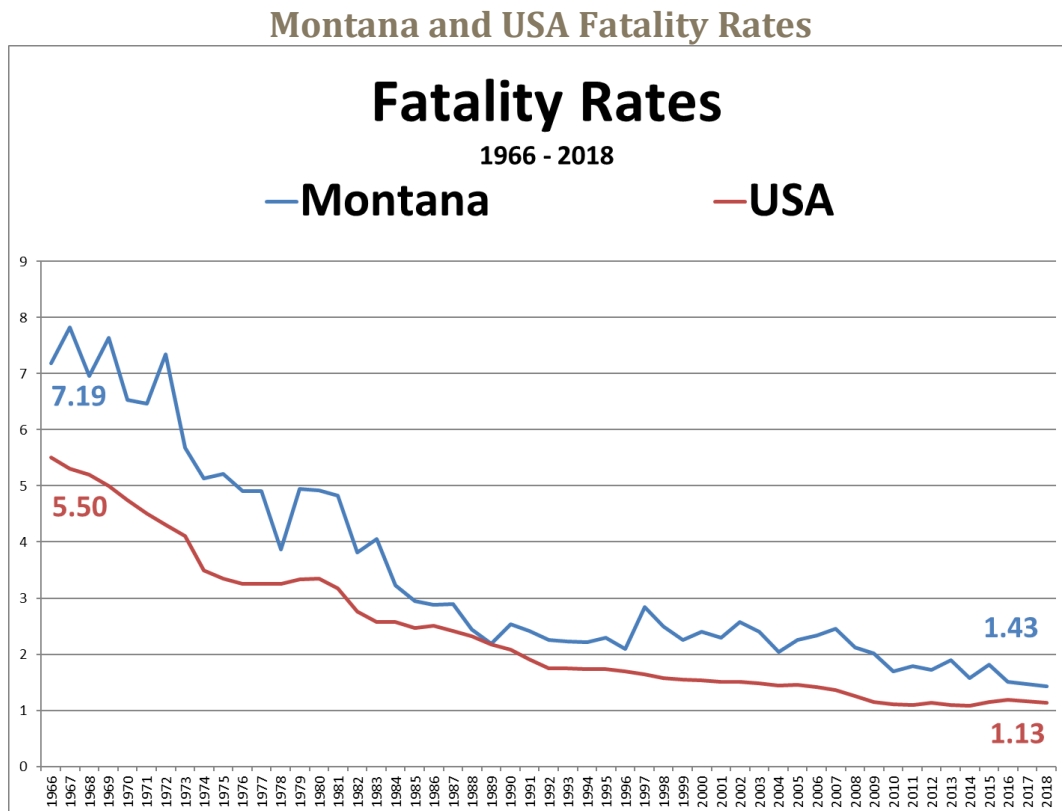
A state's population has an obvious effect on the number of motor vehicle deaths. Fatality rates per capita and per vehicle miles traveled provide a way of examining motor vehicle deaths relative to the population and amount of driving. Many factors influence these rates including types of vehicles driven, travel speeds, rates of licensure, state traffic laws, emergency care capabilities, weather and topography. When compared to the rest of the nation and other states with similar VMT and population bases, Montana continues to be one of the states with a higher death rate per 100 million VMT's traveled per year, coming in at 1.43 in 2018 compared to the national average rate of 1.13.<sup>3</sup>

### 6.2 Fatality Rates

On a national level, NHTSA reports that there were 36,560 fatalities in 2018, which is a decrease of 913 fatalities in 2018 compared to 2017. The fatality rate for 2018 is estimated to have decreased to 1.13 fatalities per 100 million VMT, down from 1.17 fatalities per 100 million VMT in 2017.

<sup>3</sup> Source: Insurance Institute of Highway Safety – 2018 Data  
<https://www.iihs.org/topics/fatality-statistics/detail/state-by-state>

The fatality rate for Montana is 1.43 per hundred million vehicle miles travelled during 2018. To compare this to historical data the rate was 4.92 in 1980 and had decreased by almost half to 2.54 by 1990. Between 1990 and 2009 the rate remained relatively consistent between 2.0 and 3.0. The rates have since decreased and for the last three years (2016-2018) the rate has varied between 1.43 to 1.81 (IIHS). Montana shows a downward trend for the last 10 years in fatality rate. The chart below shows the historical fatality trend of Montana and the nation dating from 1966 to 2018.



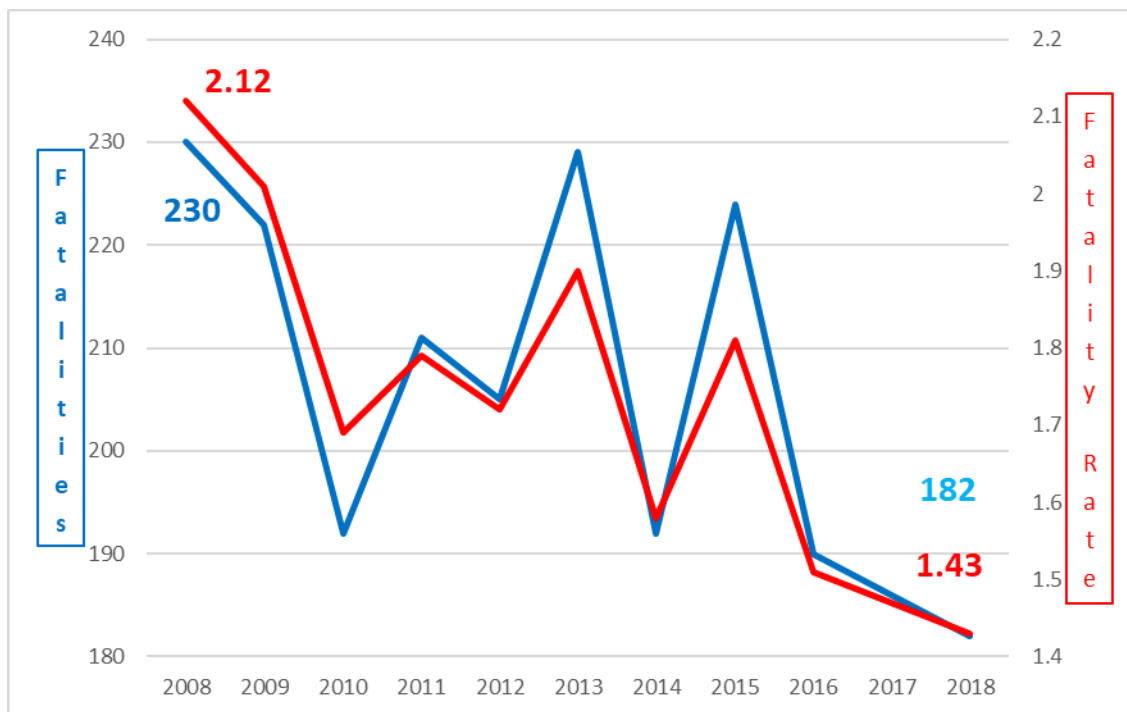
Historically, western rural states have tended to have fatality rates above the national average and when compared to states with more urban based population. One of the reasons is the greater percentage of rural miles travelled which translates to higher average speeds. In 2018, nationally 45% of motor vehicle deaths occurred in rural areas, while in Montana, rural crashes accounted for 85% of fatalities. Two states that share Montana's rural nature, Wyoming and North Dakota, 2018 fatality rates are 1.06 and 1.07 respectively. (NHTSA, IIHS)

### 6.3 Fatalities and Injury Crashes

Fatalities in Montana reached an all-time high of 395 during 1972. The lowest number of fatalities since 1950 was 181, which occurred during 1989, the second year of Montana's

secondary seat belt law. Montana is currently seeing a downward 10-year (2009-2018) roadway fatality trend of 5 people per year.

### Montana Fatalities/Fatality Rate



The number of injuries in Montana crashes has declined on average in the last 10 years. Ten years of reportable crash and injury data appear in the table below. The average number of fatalities is 9% lower in 2013-2018 than in the previous 5 years. Serious injuries in roadway crashes have fallen by 20% in the last five years compared to the previous 5 years.

This downward trend in serious injuries would appear to be a significant change in crash data within Montana. Occupant restraints, airbags and child restraints have accounted for at least part of this decrease, as well other improvements to vehicle safety. Traffic safety engineering to address roadway facility improvements has also contributed to this downward trend. 2018's total of 770 serious injuries is also well below the 2009-2018 average of 959.

## Roadway Crash Summary 2009-2018

Year	All Crashes	Fatal Crashes	Serious Injury Crashes	No Injury Crashes	Fatalities	Serious Injuries
2009	20641	199	856	14836	222	1100
2010	20056	164	781	14607	192	995
2011	20380	187	749	14120	211	967
2012	19754	192	850	13954	205	1129
2013	20379	203	852	14648	229	1102
2014	21681	176	790	15796	192	965
2015	22377	204	786	16283	224	1000
2016	22077	172	678	16225	190	835
2017	23834	169	599	18173	186	731
2018	22949	168	623	17386	182	770

Severe injuries are displayed in the table below for several important crash criteria characteristics. Severe Injuries are the sum of the fatalities and serious injuries.

### MT Severe Injuries - 2016-2018

Severe Injuries (Fatalities and Serious Injuries)			
	2016	2017	2018
All Crash	1025	917	952
Male Driver Involved	756	687	716
Roadway Departure	584	516	500
Female Driver Involved	416	389	398
Impaired Driver Involved	425	384	384
Unrestrained Vehicle Occupant	362	305	312
Intersection	204	162	234
Older Driver Involved (65 and Older)	190	175	166
Young Driver Involved (Age 14-20)	177	147	166
Motorcyclists	137	122	139
Nonmotorists	77	65	76

## 7. Crash Demographics

### 7.1 Gender of Drivers

Driver involvement in crashes by known gender is shown in the table below. As can be seen, the split between male drivers and female drivers involved in crashes has remained very consistent for the last 10 years in Montana.

**Montana Drivers in Crashes by Gender 2009-2018**

Montana Drivers in Crashes by Gender					
	Driver Gender			% of Total	
YEAR	Male	Female	Total	Male	Female
2009	16771	12464	29235	57%	43%
2010	16199	12550	28749	56%	44%
2011	16833	12305	29138	58%	42%
2012	15849	11784	27633	57%	43%
2013	16450	11902	28352	58%	42%
2014	17682	12408	30090	59%	41%
2015	17598	12439	30037	59%	41%
2016	18329	12934	31263	59%	41%
2017	19566	12934	32500	60%	40%
2018	19014	13270	32284	59%	41%

Men have a disproportionate involvement in fatal crashes, and this is true nationwide. Past studies have shown that men have higher involvement in overturns, other non-collision crashes, crashes into fixed objects and the striking of animals. The involvement by men in these types of crashes may be linked to male over-representation in alcohol and or drug related crashes. Lack of restraint use also plays a role in fatalities and serious injuries disproportionately for males.

Over a ten-year period, men account for 58% of Montana's registered drivers, but their involvement is overrepresented in fatal crashes at 71%. The chart below follows with information on the gender involvement in fatal crashes.

## Montana Driver Gender – Fatal Crashes 2009-2018

Montana Drivers in Fatal Crashes by Gender (2009-2018)					
	Driver Gender			% of Total	
YEAR	Male	Female	Total	Male	Female
2009	173	68	241	72%	28%
2010	125	62	187	67%	33%
2011	161	72	233	69%	31%
2012	148	62	210	70%	30%
2013	164	63	227	72%	28%
2014	132	57	189	70%	30%
2015	165	64	229	72%	28%
2016	166	49	215	77%	23%
2017	156	74	230	68%	32%
2018	145	70	215	67%	33%

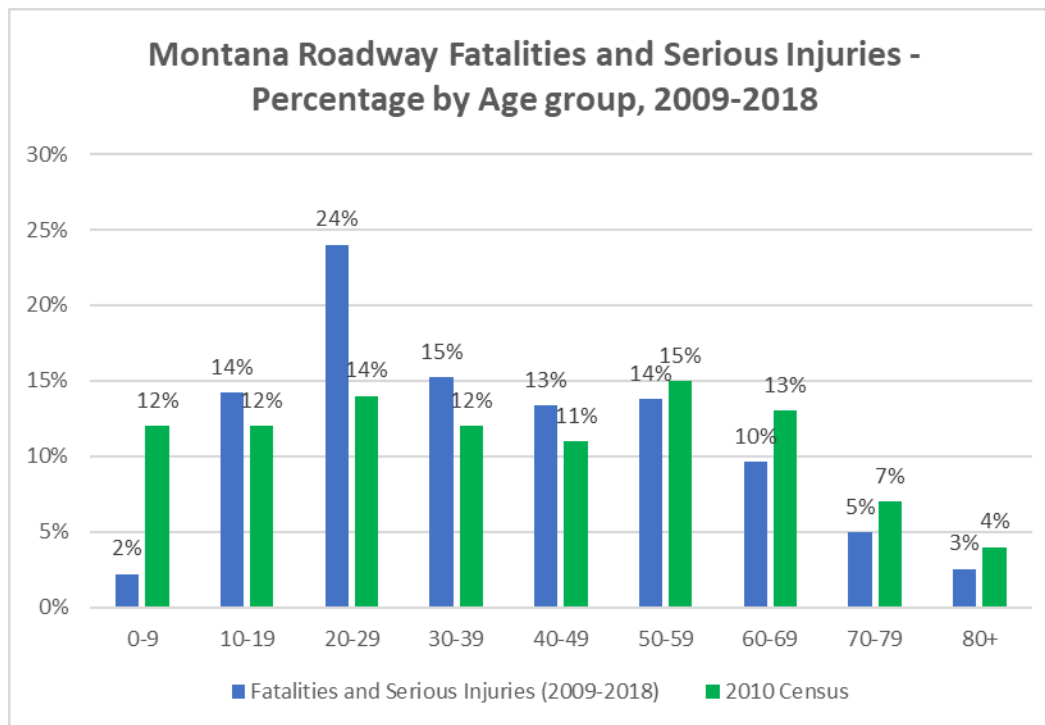
### 7.2 Montana - Age in Crashes

The percentage of drivers in Montana age 55-74 has increased from 25% in the last 10 years to 32%. The percentage of drivers in Montana age 35-54 has dropped from 38% in the last ten years to 32%. Drivers 29 years old and younger (22% of registered drivers) are involved in 35% of Montana's fatal and serious injury roadway crashes.

The chart below reflects the fatalities and serious injuries by age groups and the percentage of the total population that age group represents. It should be noted that the younger age groups <30 years of age, specifically those from 10-29 make up 26% of the population and experience the highest percentage of fatalities and serious injuries at over 40%. Ages 30-49 are over-represented in fatal and serious injuries compared to their percentage of the population, and we can see that the numbers start to decline at age 50.



## Fatalities and Serious Injuries by Age



## 8. Montana Traffic Safety Emphasis Areas

### 8.1 Unrestrained Occupant

Montana secondary seat belt law was passed in 1987 with a penalty going into effect beginning January 1, 1988. The secondary seat belt law is for all seating positions in a vehicle. A secondary seat belt law means that law enforcement may not stop the vehicle for seat belt use alone, they must have another reason to stop the vehicle and then may cite for non-seat belt use.

Montana has tracked the seat belt use across Montana through annual observational seat belt counts through methodology approved by NHTSA. The count is of front seat occupants only. As can be seen in the table below, for the last three years (2016-2018) on average, 80% of the travelling public is observed to be wearing restraints. Montana's annual 2019 count indicated 88.9% of front seat occupants were restrained, looking at the three-year (2017-2019) average of 85%, is a positive indicator of increased seat belt use. By comparison, on a national level the average is 89.7%.

## MT Annual Observational Seat Belt Count

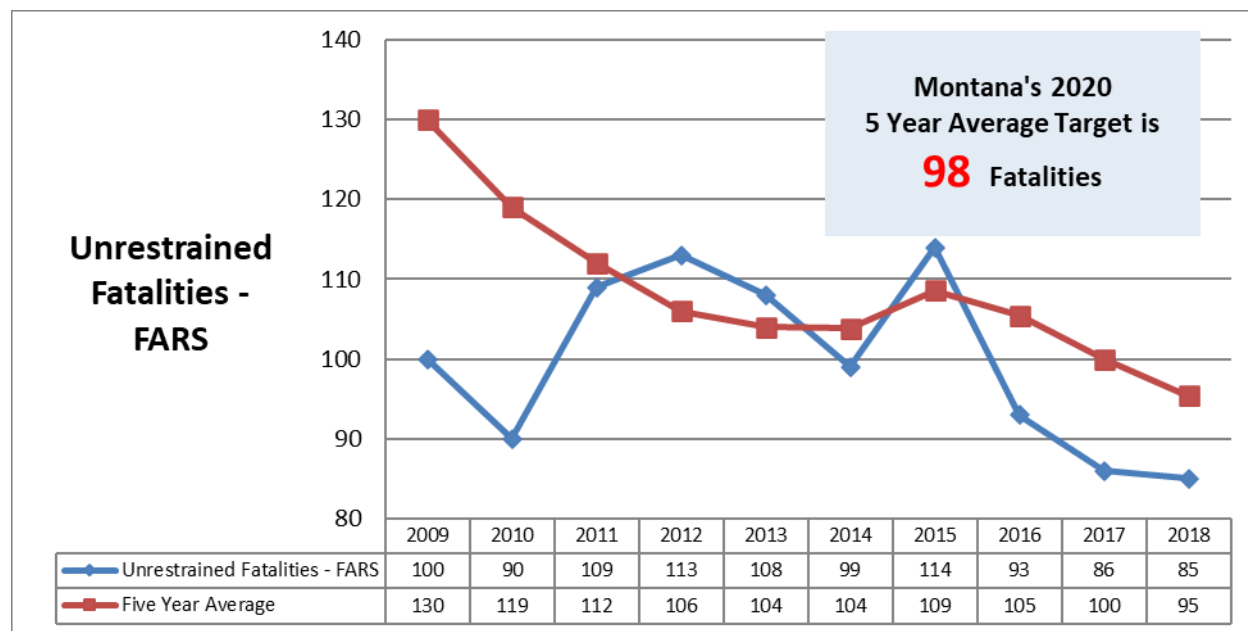
Year	Interstate	Primary	Secondary	Other	Urban	All Roads (NHTSA weighted)
2013	82.0%	67.8%	78.0%	61.3%	67.6%	74.0%
2014	84.0%	62.0%	71.0%	74.0%	68.0%	74.0%
2015	86.5%	65.9%	74.3%	71.1%	70.6%	76.8%
2016	80.0%	67.6%	72.0%	76.8%	82.4%	76.2%
2017	81.6%	73.6%	75.0%	78.9%	75.0%	78.2%
2018*	90.6%	84.9%	85.2%	89.8%	87.0%	86.6%
2019	92.2%	87.7%	87.2%	88.3%	91.2%	88.9%
Chg 1 Yr	1.6%	2.8%	2.0%	-1.5%	4.2%	2.3%
Source: Montana Department of Transportation Observational Studies						
* First year of Montana's NHTSA mandated new seatbelt survey sites						

Restraint usage is much lower for people in a fatal crash than for the overall population, historically; only about 30-40% of occupants killed in crashes were properly wearing an occupant restraint. Young people, ages 14-29, accounted for 30% of all unrestrained vehicle occupant fatalities between 2009 and 2018.

Vehicle occupants not using their seat belts or improperly using seat belts are a contributing factor to Montana's crash fatalities. 63% of vehicle occupant fatalities on Montana's roadways in 2018 were not wearing a seat belt. The challenge is that this percentage in fatal crashes has remained consistent over the last ten years (64%).

Montana's ten-year trend for unrestrained fatalities is going down by 2 people per year. As shown in the chart below, unrestrained fatalities in 2018 increased to 85 from 84 in 2017. The ten-year average is 101 unrestrained roadway fatalities.

## Unrestrained Fatalities - 2009-2018



Over the last three years (2016-2018) other crash factors contributing to the unrestrained occupant fatalities and serious injuries:

- roadway departure of the vehicle (75%)
- impaired driver involved (65%).
- Rural crash (92%)
- Noon Friday through noon Sunday crashes (36%) and
- crashes occurring at nighttime (45%)

The combination of these factors is contributing to Montana's fatalities; the vehicle occupants choosing to use proper occupant protection could perhaps mitigate some of the other behavior choices in fatal crashes.

### 8.2 Impaired Driver Involved

Drivers involved in crashes while impaired by alcohol and/or drugs continue to be a challenge for Montana. Impaired drivers (alcohol and/or drugs) were involved in 65% of all fatal crashes and in three out of every ten serious injury crashes. There were 376 fatalities and serious injuries involving an impaired driver in 2018. Over the last three years (2016-2018) impaired drivers were involved in 359 fatalities.

Over the last three years (2016-2018) other crash factors contributing to the impaired driver involved crash fatalities and serious injuries:

- roadway departure fatal crashes (71%).
- Impaired male driver involved (72%)
- unrestrained occupants (54%)
- rural crash (88%)
- Noon Friday through noon Sunday (40%)
- nighttime (46%)
- The summer months, June through September (44%)

<b>Impaired Driver Involved Fatalities and Serious Injuries</b>			
<b>Crash Description</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>
Impaired Driver Involved	425	384	376
Rural Roadway	377	333	331
Dry Roadway	365	294	313
Impaired Male Driver Involved	303	272	278
Roadway Departure	293	280	273
Single Vehicle	300	257	268
Speed Limit >55 MPH	233	228	215
Unrestrained Vehicle Occupant	242	191	205
Summer (Jun, Jul, Aug, Sep)	171	163	189
Nighttime	193	170	186
Driver (BAC > 0.079) Involved	195	170	184
Friday Noon to Sunday Noon	168	148	153
Impaired Female Driver Involved	125	118	107
Winter (Nov, Dec, Jan, Feb)	106	67	84
Intersection	66	35	61

### ***8.3 Roadway Departure Crash***

Roadway departure crashes tend to be severe due to high speeds and rural locations. They account for about 20% of all people involved in crashes in 2018, but 70% of fatalities and nearly half of serious injuries. The vast majority (91%) of roadway departure fatalities and serious injuries occur in rural areas. Nine out of ten fatal roadway departure crashes occur on rural roads within the state.

Over the last three years (2016-2018) other crash factors contributing to roadway departure fatal crashes involved:

- impaired driving involved (70%)
- unrestrained occupant (64%)
- male drivers are overrepresented (75%).

- 35% of roadway departure fatal crashes occur between noon Friday and noon Sunday,
- 35% are at nighttime.
- the months of June through September account for 47% of roadway departure fatal crashes.
- One factor to note that almost half (42%) of the incidents of road departure fatal crashes are occurring on roadways with shoulder widths less than 4 feet.

### ***8.4 Intersection Related Crash***

Intersection crashes are defined as a crash occurring in or related to an intersection. In Montana, in 2018, 22% of all intersection crashes occurred in rural areas, but 58% of fatal intersection crashes. Intersection crashes are one of the most common types of crashes because they occur in locations where two or more roads cross each other and drivers passing through the intersection may make maneuvers that could cause a crash occurrence with other vehicles. According to NHTSA, some of the most common crash occurrences may be attributed to: illegal maneuver; inattention while crossing intersections controlled by traffic signals or stop signs; turning with obstructed view; and misjudgment of gap or other's speed while turning left at intersections controlled by traffic signals or stop signs.<sup>4</sup>

Over the last three years (2016-2018) crash factors contributing to intersection crash fatalities and serious injuries:

- 27% involved an impaired driver
- 20% involved unrestrained occupants
- 26% involved older drivers 65+ years of age, who are overrepresented as they are 19% of registered drivers
- 24% involved young drivers 20 years of age and younger, who are overrepresented as they are 7% of all drivers.
- 78% involved a male driver

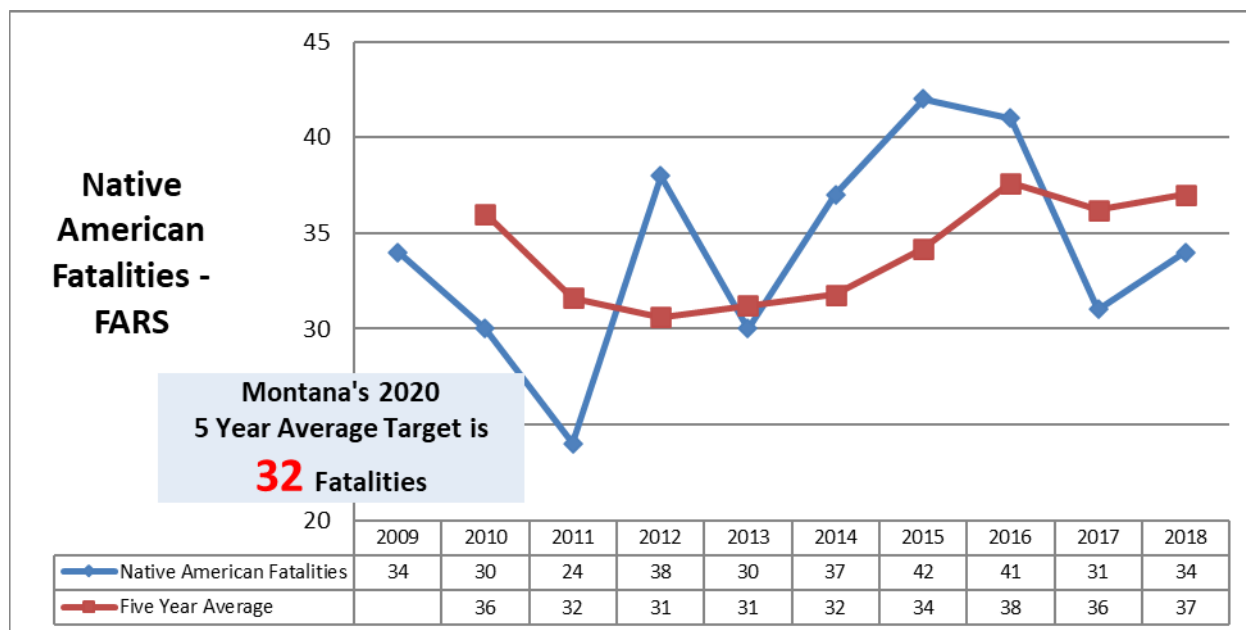
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<sup>4</sup> NHTSA Report DOT HS 811 366

## 8.4 At-Risk-Groups

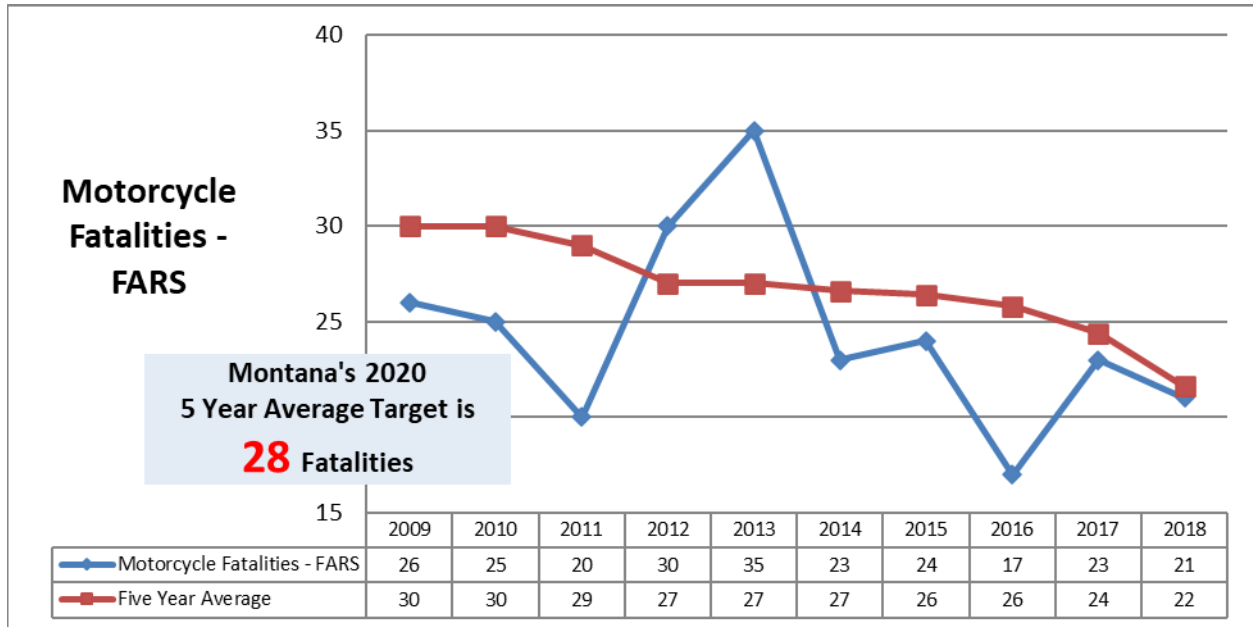
*Native Americans* account for approximately 6.6% of Montana's population, but are overrepresented at 17% of roadway fatalities between 2009-2018. During 2018, there were 34 (FARS) Native American fatalities representing 19% of the state's total fatalities. 65% of Native American vehicle occupant fatalities were unbelted.

### Native American Fatalities - 2009-2018



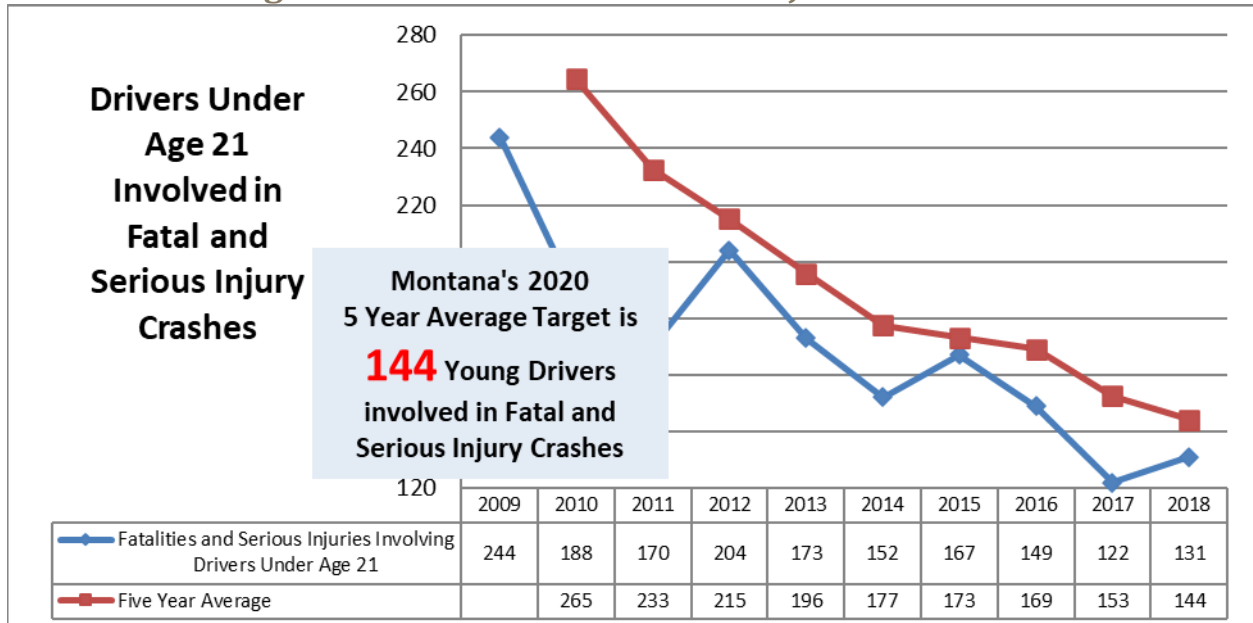
*Motorcycle* – Motorcycle use tends to be seasonal and motorcycles represent a minority of roadway users in Montana; however, 13% of all fatal crashes in Montana involved a motorcycle in 2018. This is a high percentage of the over-all fatalities. During 2018, Montana had 21 motorcycle fatalities, or 12% of all roadway fatalities. 11 motorcyclist fatalities were un-helmeted.

## Motorcycle Fatalities 2009-2018



*Young Driver* - Montana has experienced a decrease in young drivers 20 years and younger involved in fatalities and serious injuries over the last ten years; however, in 2018 young driver were involved in 16% of all fatalities and 18% of serious injuries on Montana's roadways. They account for approximately 6.7% of the population. During 2018, there were 26 fatalities involving drivers age 20 or less. This is an increase from 24 in 2017. The chart below depicts the combined fatalities and serious injuries of this age group.

## Young Driver Fatalities & Serious Injuries 2009-2018



## *9. Roadway Crashes*

For a comprehensive look at contributing factors that result in crashes on Montana roadways it is also important to examine all reportable crashes in Montana. The total number of crashes in Montana has stayed fairly consistent over the last five years. 22,949 reported crashes during 2018 bringing the five-year annual average to 22,576. The summary of 2018 crash details include 623 serious injury crashes and 168 fatal crashes or 3% of all crashes reported.

Seat belts were not used or improperly used in 1376 crashes in 2018, or 6% of all crashes. However, in crashes involving a fatality in 2018, not using or improperly using a seat belt played a role in approximately 55% of those crashes. Impaired drivers (alcohol and/or drugs) were involved in 1940 crashes in 2018, or 9% of all crashes. However, in crashes involving a fatality in 2018, 65% involved an impaired driver.

Rural crashes continue to be an area of concern with regard to traffic safety. During 2018 there were 12,299 crashes that occurred in rural areas. This represents over 54% of all statewide crashes. This percentage increases significantly when only serious injury and fatal crashes are considered. Fatal crashes are more likely to occur in rural areas, with 152 of the 182 fatalities in 2018 happening in rural areas.

Other areas that were over-represented in all crash data in 2018 were:

- Young adult drivers, ages 21-40, were involved in 11,337 crashes or 49%, yet represent only 37% of the licensed drivers in Montana
- Roads with higher speed limits (>35) represented 50% of all crashes
- Males drivers were involved in 15,631 crashes or 68% of all crashes

## *10. Fatal and Serious Injury Crashes*

During 2018, there were 791 fatal (168) and serious injury crashes (623). These crashes resulted in 182 fatalities and 770 serious injuries. 939 is the average number of annual fatal and serious injury crashes.

Male drivers were involved in 75% of all the fatal and serious injury crashes in Montana during 2018. 80% of fatal crashes and 63% of serious injury crashes occurred on roads with speed limits greater than 35 mph. Roadway departures accounted for 70% of Montana's fatal and 47% of serious injury crashes.

The following chart presents the types of crashes resulting in a fatality or serious injury. This includes some data with regard to who is involved, and when and where these crashes are occurring.



## Montana Crash Data - Multiple Factors

Crash Description	2018 Fatal Crashes	Average Number of Fatal Crashes (2009-2018)	2018 Fatal and Serious Injury Crashes	2018 All Crashes
All Crashes	168	183	791	22949
Rural Crashes	138	162	575	12299
Dry Roadway Crash	137	148	628	14465
Roadway Speed Limit > 35 MPH	134	146	526	11452
Male Driver Involved	124	143	599	15631
Single Vehicle Crash	119	127	485	10922
Roadway Departure Crashes	117	125	411	6346
Impaired Driver Involved	109	109	302	1940
Summer Months (Jun, Jul, Aug, Sep) Crash	75	85	364	7194
Nighttime Crash	71	77	262	6873
Female Driver Involved	66	62	303	11051
Noon Friday to noon Sunday Crashes	65	66	286	6557
Winter Months (Nov, Dec, Jan, Feb) Crash	51	43	198	8962
Speed as a Factor Involved Crash	51	49	150	4185
Careless/Inattentive/Distracted Driver Involved	50	47	280	7237
Urban Crashes	30	22	216	10650
Driver Age 65 and Older Involved Crashes	27	33	132	4020
Driver (Age 14-20) Involved Crashes	24	26	124	4346
Motorcycle Involved Crashes	21	24	128	368
Intersection Crashes	19	21	188	6912
Non-motorists in Crashes	16	14	74	324
Large Vehicle Involved Crashes	15	17	60	1408

## 11. Conclusion

The Problem Identification for 2018 crash data explores many traffic safety issues in Montana. It is a compilation of many varied data elements available for review. There are multiple variables that may contribute to crashes including but not limited to driver behavior, vehicles, road characteristics, weather conditions, road conditions, and laws governing driver behavior.

Several behavioral based factors which contribute to fatal and serious injury crashes are highlighted in this report, i.e. choosing to not use or improperly using occupant restraints and the use of alcohol and/or drugs while operating a motor vehicle. The ten-year trend for the level of contribution from these behaviors to fatalities and serious injuries has held fairly consistent and continues to be a concern for those addressing highway traffic safety issues.

This document should be used as a guide when looking at the traffic safety problem or when attempting to find solutions for Montana traffic safety. Often the data is of more value when looking at long-term trends rather than the variations between a year-to-year

increase or decrease which may be attributed to a statistical variation and unidentifiable causes.

The SHTSS works collaboratively with other MDT staff and stakeholders to coordinate statewide efforts to reduce fatalities and serious injuries on Montana's roads through the Comprehensive Highway Traffic Safety Plan (CHSP). The CHSP is a data-drive, multi-year plan that takes an in-depth look at Montana's crash data – with 10-year crash data trend analysis to determine emphasis areas with the greatest opportunity to reduce crashes. For more information see the MDT website:

<http://www.mdt.mt.gov/visionzero/plans/chsp.shtml>

Montana crash data at the state, county and city level is available. The MDT Crash Database is a dynamic system. Crash data is periodically updated with new, revised, or additional information. Data values may vary from previous publications. Montana crash data that can be viewed and queried is available on the MDT website:

<http://www.mdt.mt.gov/publications/datastats/crashdata.shtml>

Questions or comments on this study should be directed to the State Highway Traffic Safety Section at the Montana Department of Transportation. For additional information, contact Mark Keeffe at (406) 444-3430 or [mkeeffe@mt.gov](mailto:mkeeffe@mt.gov).

## *12. Glossary*

### **ALCOHOL-IMPAIRED**

Crashes or fatalities that involve at least one driver or motorcycle operator with a BAC of 0.08 grams per deciliter (g/dL) or higher.

### **ALCOHOL-RELATED**

A crash, fatality or injury is alcohol-related if at least one driver or non-occupant (such as a pedestrian or pedalcyclist) involved in the crash is determined to have had a BAC of 0.01 g/dL or higher OR if police indicate on the police accident report that there is evidence of alcohol present. This does not necessarily mean that a driver or non-occupant was tested for alcohol.

The term alcohol-related does not indicate that a crash, fatality or injury was caused by the presence of alcohol.

### **BLOOD ALCOHOL CONCENTRATION (BAC)**

The BAC is measured as a %age by weight of alcohol in the blood (g/dL). A positive BAC level (0.01 g/dL and higher) indicates that alcohol was consumed by the

person tested; a BAC level of 0.08 g/dL or more indicates that the person was alcohol-impaired.

### **CONTRIBUTING CIRCUMSTANCES**

The law enforcement investigator's professional judgment as to the apparent reason(s) for the crash. Each vehicle in a crash can have up to five contributing circumstances listed (including none listed), falling under one of the six major headings: driver, environment, other person, passenger, road and vehicle.

### **CRASH**

An event that produces injury and/or property damage, involves a motor vehicle in transport and occurs on a traffic way, or while the vehicle is still in motion after running off the traffic way.

### **DRIVER**

An occupant of a vehicle who is in physical control of a motor vehicle in transport, or for an out-of-control vehicle, an occupant who was in control until control was lost.

### **FATAL CRASH**

A law enforcement-reported crash involving a motor vehicle in transport on a traffic-way in which at least one person dies within 30 days of the crash.

### **FATAL INJURY**

A injury that results in the person dying within 30 days of the crash.

### **FATALITY ANALYSIS REPORTING SYSTEM (FARS)**

A national database that contains data on fatal crashes.

### **IMPAIRED**

Person identified as influenced by alcohol, drugs, or both alcohol and drugs.

### **INJURY CRASH**

A law enforcement-reported crash involving a motor vehicle in transport on a traffic way in which no one died but at least one person was reported to have an injury.

### **INTERSECTION**

Intersection or Intersection related

### **MOTORCYCLE**

A two- or three-wheeled motor vehicle designed to transport one or two people, including motor-scooters, minibikes and mopeds. This excludes ATVs and snowmobiles.

### **NHTSA**

National Highway Traffic Safety Administration

**NIGHTTIME**

Dark or Dark lighted

**OCCUPANT**

Any person who is in or upon a motor vehicle in transport. This includes the driver, passengers, and persons riding on the exterior of a motor vehicle.

**OLDER DRIVER**

A driver over the age of 64 years.

**PROPERTY DAMAGE ONLY**

A law enforcement-reported crash involving a motor vehicle in transport on a traffic way in which no one in the crash suffered any injuries.

**ROADWAY DEPARTURE CRASH**

A crash in which a vehicle crosses an edge line, a center line, or leaves the traveled way. Types of crashes fitting the definition include fatal crashes in which the first event for a least one of the involved vehicles ran-off-road (right or left), crossed the centerline or media, went airborne or hit a fixed object. (FHWA)

**RURAL**

Any crash location not specifically marked as urban by the reporting law enforcement agency.

**SERIOUS INJURY (incapacitating)**

Any injury, other than a fatal injury, which prevents the injured person from walking, driving or normally continuing the activities the person, was capable of performing.

**SEVERE INJURY**

Severe Injuries are the sum of the fatalities and serious injuries

**SPRING/FALL**

March, April/September, October

**SUMMER**

May, June, July, August

**TRUCK**

Vehicle with a truck body-type and over 10,000 pounds gross vehicle weight rating, including single unit trucks and truck tractors. Not limited to commercial vehicles, but all trucks.

**URBAN**

Any location either identified as a city or identified as a urban trafficway by the Department of Transportation.

**VEHICLE MILES TRAVELLED (VMT)**

The estimated number of total miles driven by all vehicles on public roads.

**WINTER**

January, February, November, December

**YOUNG DRIVER**

A driver 20 years of age and younger and not of legal drinking age.