2019

SOUTH DAKOTA

Strategic Highway Safety Plan

PREPARED BY:

The South Dakota Department
of Transportation (SDDOT)

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South Dakota
DOT
Connecting South Dakota and the Nation

August 19, 2019

2019 South Dakota Strategic Highway Safety Plan Vision:

Eliminate ALL deaths and life-changing injuries on South Dakota roads so everyone arrives home safely.

The Vision from the 2019 South Dakota Strategic Highway Safety Plan (SHSP) challenges all of us to think and go beyond anything ever accomplished in South Dakota's transportation history. While the Vision seems unattainable today, we firmly believe that through partnership on the four E's of engineering, education, enforcement, and emergency services we can make strides towards every traveler returning home safely to their friends and family.

This partnership was demonstrated through an extensive stakeholder engagement process which identified eight emphasis areas as our greatest opportunity to reduce fatalities and serious injuries. This plan contains crash data summaries and strategies to reduce fatal and serious injury crashes in each Emphasis Area. I ask each partner agency and organization to join with us in implementing this plan and to help us save lives and prevent injuries.

To emphasize the importance of the Vision, several families were willing to share how they were impacted, often tragically, by traffic crashes. Their stories help all of us better understand the importance of the plan and I want to thank each family that was willing to share their story.

Please join me in making our Vision a reality!

Safe Travels,

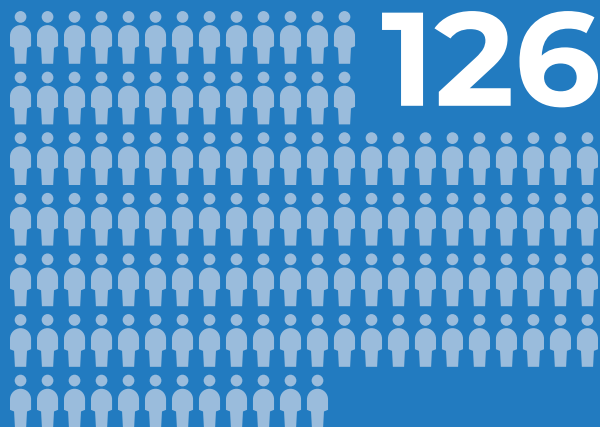Darin P. Bergquist
Secretary

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Introduction

*The ultimate goal of the 2019 South Dakota Strategic Highway Safety Plan (SHSP) update is to **save lives and reduce serious injuries**. Through thoughtful and strategic implementation of this plan, we envision that statewide safety efforts can be better coordinated to reduce the number of traffic crashes in South Dakota. Traffic safety issues across our state are diverse and complex with a wide variety of contributing factors. Therefore, reaching our goal of 100 or fewer traffic fatalities and 400 or fewer serious injuries by 2024 requires coordinated action across all agencies and the aid of all traffic safety stakeholders.*

Overview

The South Dakota SHSP represents a multi-disciplinary effort to reduce fatalities and serious injuries across all public roads in South Dakota, including state highways, county and township roads, city streets, and roads on tribal lands. The development of the SHSP update incorporated ideas from many stakeholders through different sources, including representatives of key safety groups who served on the Study Advisory Team (SAT) and numerous agencies through a series of regional workshops, as well as feedback from the general public gained through a web-based survey. In addition to community input, the SHSP development process took a data-driven approach and included a comprehensive review and analysis of South Dakota crash data, paying particular attention to the contributing circumstances of fatal and serious injury crashes.

Fatal Crash	Motor vehicle crash resulting in at least one death
Serious Injury Crash	Motor vehicle crash resulting in at least one incapacitating injury (e.g., severe lacerations, broken limbs, unconsciousness)

After careful consideration of crash data and stakeholder and public feedback, eight areas of concern were chosen as South Dakota's Emphasis Areas in which to concentrate efforts to reduce fatalities and serious injuries. The same process helped identify key safety strategies for implementation within each Emphasis Area. As a result, the SHSP provides guidance for the 4Es of Traffic Safety: Education, Enforcement, Engineering, and Emergency Medical Services. The SHSP will guide South Dakota's infrastructure safety investments through the Highway Safety Improvement Program (administered by the Department of Transportation) and behavioral safety programming through the Highway Safety Plan (administered by the Department of Public Safety). In addition to these key efforts, the SHSP also provides guidance for safety-related activities in a multitude of other plans, including long-range transportation plans, tribal safety plans, and modal plans.

Traffic Fatalities in South Dakota

An average of 126 lives are lost on South Dakota public roadways each year. We must work to reduce that number and make South Dakota safer for everyone.

126

→ **LEARN MORE**

Visit these websites for more resources, including PSAs and crash data summaries.

» Drive Safe SD
» Department of Public Safety - Crash Analysis

Vision and Safety Goals

The South Dakota SHSP vision expresses the intention that all travelers reach their destination without harm. That is accomplished when all traffic-related deaths and life-changing injuries are eliminated. To achieve this, the SHSP establishes interim goals to measure progress toward the vision. The specific goals for the SHSP are to reduce traffic fatalities to 100 or fewer deaths by 2024 and to reduce serious traffic-related injuries to 400 or fewer by the same year.

Exhibit 1 shows fatal and serious injury trends from 2008 to 2018. Since 2008, serious injuries have decreased considerably from 924 in 2008 to 567 in 2018, a 38 percent decrease. With this iteration of the SHSP, the serious injury goal is to continue the same decreasing trend by reducing serious injuries to 400 or fewer by 2024. In contrast, the trend for traffic fatalities has been relatively stable with 121 traffic-related deaths in 2008, a peak of 140 deaths in 2010, and 130 fatalities in 2018. This iteration of the SHSP has an aggressive fatality goal to reduce all traffic-related deaths to 100 or fewer by 2024.

The SHSP goals are targets for reducing the number of persons killed or seriously injured by 2024. Person-based goals were selected to recognize that individuals are impacted by traffic crashes. Because a single crash can result in more than one fatality or serious injury, the remainder of the SHSP focuses on reducing the number of crashes. Based on trends from recent crash data, 100 or fewer fatalities translates into approximately 88 or fewer fatal crashes; 400 or fewer serious injuries represents approximately 315 or fewer serious injury crashes.

VISION

Eliminate *ALL* deaths and life-changing injuries on South Dakota roads so everyone arrives home safely.

GOALS

100
or fewer traffic fatalities by 2024

400
or fewer serious injuries by 2024

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The South Dakota Departments of Transportation and Public Safety, along with local Metropolitan Planning Organizations, coordinate to set statewide targets for five safety performance measures, as required by the Federal Highway Administration. The annual targets are a prediction of all traffic-related fatalities and serious injuries based on trends in statewide travel and demographics.

Setting of the SHSP vision and goals reflects a separate process, by which the State's safety aspirations for 2024 are expressed, rather than the prediction of safety performance as reflected in the targets. While not directly connected, the focused implementation of SHSP strategies to achieve goals will ultimately impact the safety performance measure targets.

Exhibit 1. Fatality and Serious Injury Trends (2008-2018) and Goals
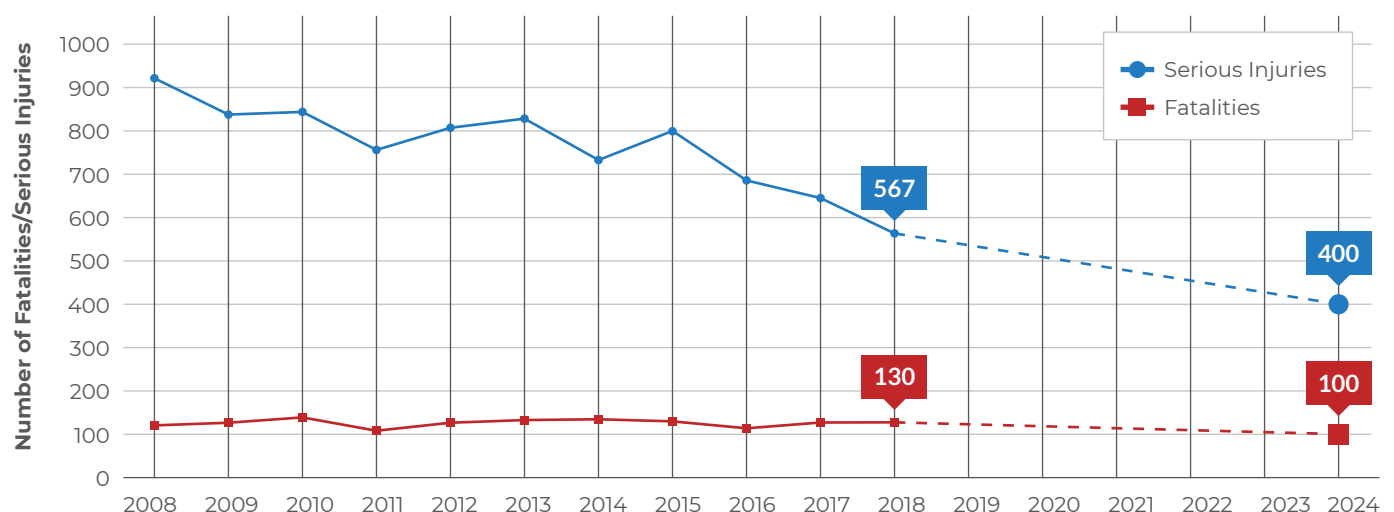
Development Process

The SHSP update process combined crash data analysis with feedback and suggestions from stakeholders representing the 4Es of Traffic Safety: Education, Enforcement, Engineering, and Emergency Medical Services. Contributions from federal, state, regional, local, and tribal agencies, as well as non-governmental safety advocacy organizations, allows us to align and leverage our efforts.

The development of the 2019 SHSP is the five-year update required by the Fixing America's Surface Transportation Act (FAST Act). The update process relied upon a multi-faceted approach to gathering data and feedback that guided the update process. The SHSP update process included:

Crash Data: South Dakota's 2013-2017 crash records were reviewed to understand key patterns and trends in fatal and serious injury crashes.

Review of Plans: Thirty-five statewide, regional, tribal, and location studies were reviewed to identify strategies and programs that agencies currently use throughout South Dakota.

Stakeholder Input: Three regional workshops and targeted outreach to select agencies and organizations allowed a broad range of stakeholders to share information on existing safety programs, challenges faced in each Emphasis Area, and opportunities to reduce fatal and serious injury crashes in the state.

Public Input: A survey on the South Dakota SHSP website allowed the public to provide feedback about Emphasis Area priorities and the type of tools needed to prevent fatal and serious injury crashes.

Study Advisory Team Coordination: Representatives from key groups were asked to review and comment on significant decisions made during the SHSP update process.

2019 SHSP Study Advisory Team

- » Federal Highway Administration
- » South Dakota Association of County Commissioners
- » South Dakota Association of Towns and Townships
- » South Dakota Department of Health
- » South Dakota Department of Public Safety
- » South Dakota Department of Transportation
- » South Dakota Highway Patrol
- » South Dakota Municipal League
- » Sisseton Wahpeton Oyate

Plan Update Process

This approach led to a fuller understanding of the state's priorities and needs.

ANALYZE
State crash data

UNDERSTAND
Issues and trends

IDENTIFY
Plan emphasis areas with input from steering committee

GATHER
Input on emphasis areas, issues, needs, and strategies

SUMMARIZE
Data and input to finalize emphasis areas, strategies and implementation plan

FINALIZE
South Dakota SHSP
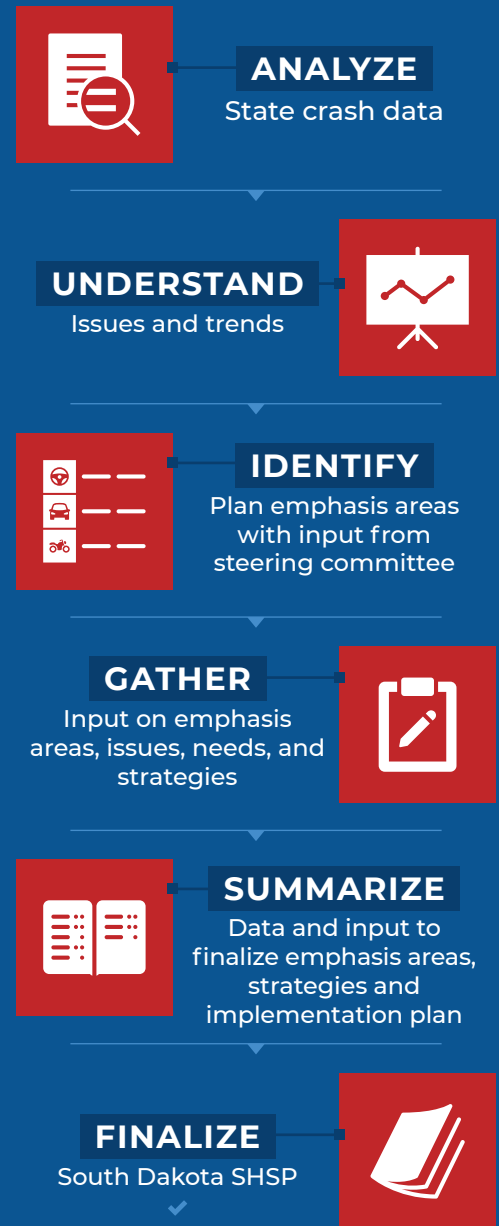
Stakeholder Engagement

Stakeholder engagement was instrumental to the development of the SHSP. In total, 69 individuals representing 28 organizations participated in three regional workshops.

Each workshop began with a short presentation of background information about the SHSP, the update process, and a summary of severe crash trends. Afterwards, participants provided input at stations focusing on each Emphasis Area, rail-grade crossing safety, and emergency medical services. At the stations, stakeholders shared knowledge about existing safety programs, challenges faced in each Emphasis Area, and opportunities and ideas to reduce fatal and serious injury crashes in the state.

In addition to the regional workshops, 50 stakeholders and members of the general public participated in an online survey. The responses demonstrated agreement that the Emphasis Areas selected reflect the greatest needs in South Dakota. The survey also reinforced the importance that enforcement, engineering, and education have on reducing the number of severe crashes.

TAKE A CLOSER LOOK

For a full description of the engagement process, as well as the feedback provided at the regional workshops and through the survey, please reference **Supplemental Data 10: Stakeholder Engagement** >
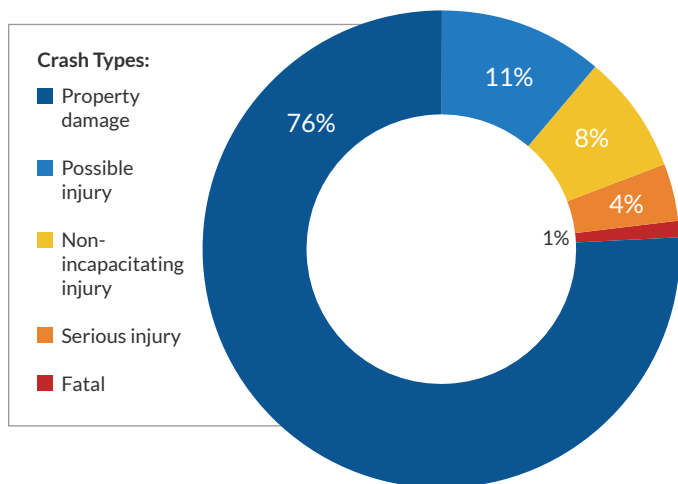

A stakeholder engagement meeting that took place as part of this plan development.

Data Trends

Across South Dakota, there were 87,649 reported crashes on public roads from January 1, 2013 through December 31, 2017. A majority of the crashes (76 percent) resulted in no injury (Exhibit 2). However, there were 575 crashes where at least one individual was killed and 2,904 crashes where at least one person sustained a serious injury. In total, there were nearly 3,500 severe crashes—about 700 crashes per year—where at least one person was killed or seriously injured. Across the five-year span, the estimated economic cost of all crashes in South Dakota was nearly $9 billion.

Exhibit 2. Crashes by Severity

Crash Types:
- Property damage
- Possible injury
- Non-incapacitating injury
- Serious injury
- Fatal

11%
8%
4%
1%
76%

A Growing State

Between 2010 and 2018, the South Dakota population grew from 816,000 residents to more than 882,000 residents—an 8 percent growth in population.

8% ▲

South Dakota had a higher fatality rate per VMT than the national average for each of these years, but over time the South Dakota fatality rate dropped faster than the national rate. As a result, the South Dakota and national fatality rates are similar today.

Between 2008 and 2017, the number of licensed drivers increased 7 percent, and the number of registered motor vehicles increased 23 percent. Between 2010 and 2018, South Dakota's population increased 8 percent. These steady increases resulted in a 14 percent increase of vehicle miles traveled in South Dakota between 2008 and 2017 (Exhibit 3).

Exhibit 4. Fatality Rate per 100M VMT

Traffic Fatality Rate per 100M VMT

- National
- South Dakota

(years 2000–2017)

Exhibit 3. Total Vehicle Miles Traveled

VMT (millions)

(years 2008–2017; range 8,400–9,800)
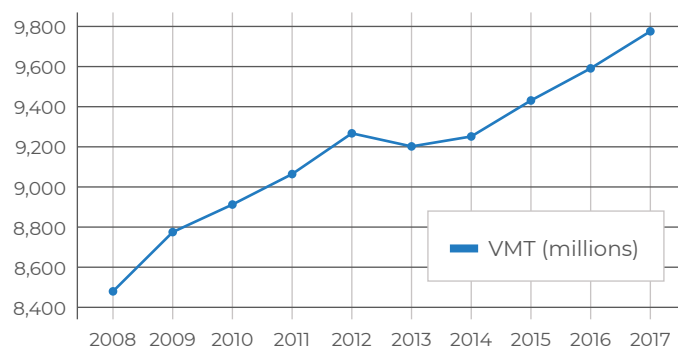
Exhibit 4 shows the national and South Dakota fatality rates per 100 million vehicle miles traveled from 2000 to 2017. Annual fatalities changed slightly while vehicle miles traveled (VMT) grew steadily.
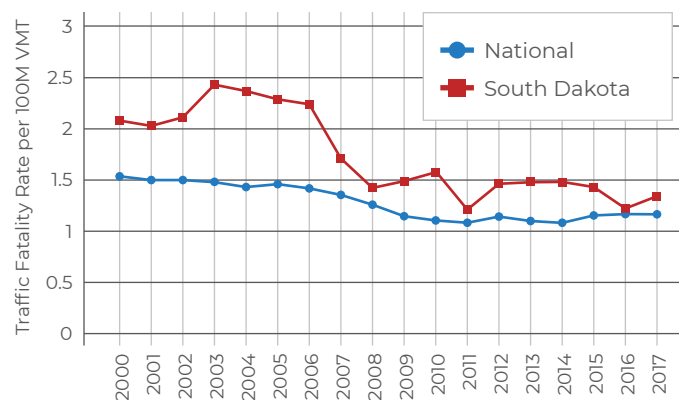
Severe Crash Locations

In South Dakota, 96 percent of roadway miles are classified as rural, and 70 percent of VMT occurred on rural roads. Statistics show that nearly two-thirds of severe crashes occur on rural roads (Exhibit 5). While horizontal curves account for only 6 percent of rural road miles, 25 percent of severe rural road crashes occurred on horizontal curves (Exhibit 6).

South Dakota Roads

82,000
Miles of road in SD

9%
Of those roads owned by SDDOT

52%
Of all severe crashes happen on state-owned roads

48%
Of all severe crashes happen on non-state owned roads

Of the more than 82,000 miles of road in South Dakota, approximately 7,800, or 9 percent are owned by the South Dakota Department of Transportation (SDDOT). Ninety-one percent are operated by a non-state agency—43 percent by counties, 38 percent by townships, 5 percent by cities, and 5 percent by other agencies.

While the SDDOT operates 9 percent of road miles, 52 percent of severe crashes occurred on these roads. Therefore, the number of severe crashes per mile is 10 times higher on state roads than non-state roads.

When considering total miles traveled, 68 percent of VMT are on state highways and 32 percent on non-state roads and streets. Consequently, the severe crash rate for non-state roads is twice the rate for state highways.

By road type, 64 percent of severe crashes occurred on a two-lane roadway with the remaining 36 percent on a multi-lane roadway. In comparison, 97 percent of roadway miles are two-lane and 3 percent are more than two lanes.

Exhibit 5. Severe Crashes: Rural vs. Urban

Severe Crash Types:
- Rural
- Urban

33%
67%
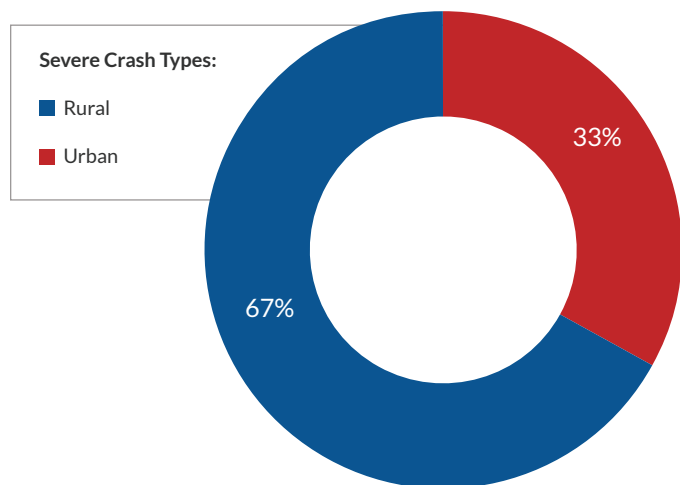
Exhibit 6. Severe Crashes: Alignment

Severe Crash Alignments:
- Straight
- Curve

25%
75%
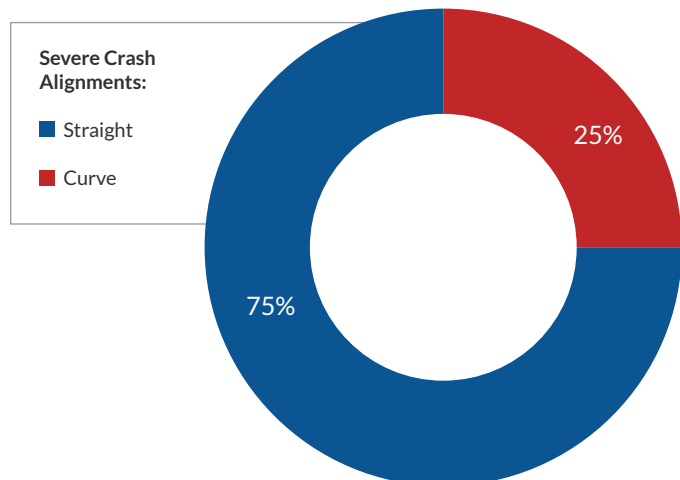
State Roads
The number of severe crashes per mile is 10 times higher on state roads than non-state roads.

10×

Non-State Roads
The severe crash rate is 2 times higher on non-state roads than state roads.

2×

When Crashes Occurred

When looking at the time of year, severe crashes most often occurred from June to September. August alone represented nearly 20 perce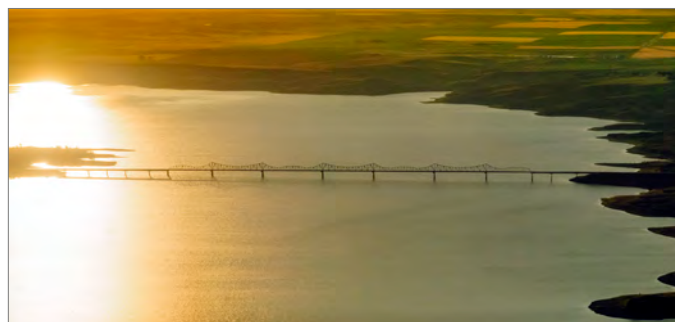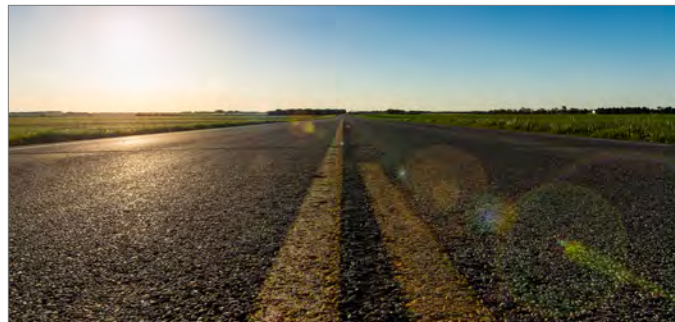nt of annual severe crashes. By time-of-day, severe crashes were most prevalent from 9:00 a.m. to 9:00 p.m., with almost 25 percent of severe crashes happening after 3:00 p.m. and before 6:00 p.m. See Exhibit 7 below for a more detailed breakdown.

Exhibit 7. Severe Crashes: Time of Occurrence

Frequency: ■ High ■ Medium ■ Low

Time of Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	
Mid - 3 AM	8	16	20	12	18	14	19	34	21	28	23	13	226	6%
3 AM - 6 AM	7	7	17	11	16	16	13	21	12	14	11	5	150	4%
6 AM - 9 AM	40	21	41	24	33	28	32	33	35	25	35	30	377	11%
9 AM - Noon	40	25	24	21	33	47	69	108	41	24	31	33	496	14%
Noon - 3 PM	32	25	35	31	45	70	76	148	44	40	33	33	612	18%
3 PM - 6 PM	42	37	36	49	66	78	98	168	83	54	51	43	805	23%
6 PM - 9 PM	23	24	28	38	35	61	54	76	59	51	32	31	512	15%
9 PM - Mid	24	11	22	31	19	26	34	39	29	32	20	14	301	9%
Total	216	166	223	217	265	340	395	627	324	268	236	202	3479	
	6%	5%	6%	6%	8%	10%	11%	18%	9%	8%	7%	6%		

Changing Driver Demographics

Changes are occurring in the driving population of South Dakota (Exhibit 8). The number of drivers aged 65 and older increased from 18 percent in 2008 to 21 percent by 2017. The number of drivers aged 20 and younger decreased slightly and was around 9 percent of licensed drivers during the same period.

Combined, younger and older drivers represent a growing percentage of South Dakota's licensed drivers. Both groups pose unique challenges that must be met by adapting safety programs to meet their specific needs.

Exhibit 8. Age of Licensed South Dakota Drivers
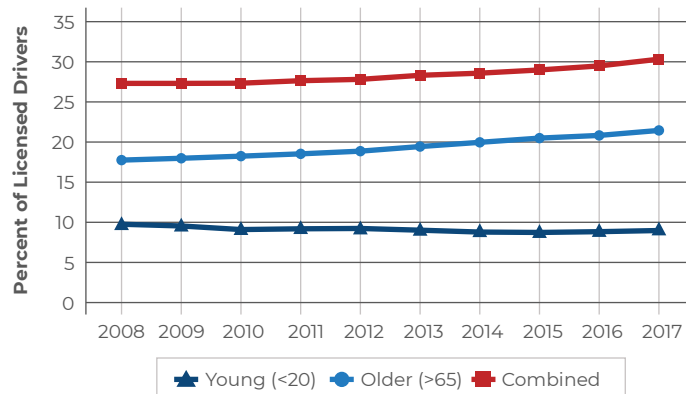
➤ LEARN MORE

As a testament to the growing popularity of motorcycling in South Dakota, over the course of the 10 days of the 2018 Sturgis Motorcycle Rally, SDDOT counted more than 505,000 vehicles entering Sturgis. During the 75th Anniversary Rally (2015), nearly 750,000 vehicles were counted entering Sturgis.

Photo by J.T (Jason) Thorne

Once the severe crash trends were identified, the statewide severe crash statistics were then analyzed in further detail via the following crash tree diagrams. The crash tree diagrams are helpful in organizing the data based on statewide or local roadway systems, as well as categorizing which crashes relate to identified emphasis areas.

🔍 **TAKE A CLOSER LOOK**

Supplemental 1: Crash Analysis State Roadway Network Overview ›
Supplemental 2: Crash Analysis Data Sources and Methods ›
Supplemental 3: Crash Analysis Results – High Risk Locations ›

South Dakota Highway Patrol: A Crash Reduction Success Story

Between the three-month-period of May to July 2019, South Dakota (SD) Highway Patrol implemented an increased enforcement strategy on SD Highway 79 (SD 79) in Butte and Harding Counties in an effort to reduce crashes and improve public safety. The increased enforcement took place between Mile Marker (MM) 125 and 232 of SD 79 and was supplemented with a mobile message board provided by SD Department of Transportation which read, "2018: 43 crashes next 99 MI". The message was displayed for the first two weeks of the plan.

The need for increased enforcement was identified when 2018 crash statistics showed that the 99-mile stretch of roadway exhibited an increased number of commercial motor vehicle crashes (CMV) from previous years, totaling 43 crashes, nine of which were CMV-related, and one fatality. Speed was not considered to be the leading cause of crashes along this segment, but instead failing to maintain lane position which is also referred to as lane departure.

Troopers involved with the implementation of the plan explained that the lane departures were likely due to a multitude of contributing factors such as fatigue, texting, distractions, failing to navigate or speeding on curves, drivers unfamiliar with the area, and unforgiving roadside recovery areas if a vehicle happens to leave the roadway.

The increased enforcement strategy proved to be successful with the following results recorded by the Northern Plain Squad Enforcement:

» CMV crashes were reduced from two crashes in May-July 2018 to zero between the same time periods of May-July 2019.

» Total crashes were reduced from nine crashes in May-July 2018 to two crashes in the similar May-July 2019 time period.

» 2019 Goals related to Heavy Motor Vehicle (HMV), Vehicle Examination Reports (VER), and seatbelt citations were met and exceeded.

Exhibit 9. State System Severe Crashes (2013–2017)

Total Severe Crashes 3,473

State System		Other/Unknown		Local System	
1,811	52%	21	1%	1,641	47%

State System

Urban		Rural	
409	23%	1,402	77%

Urban

Intersection-Related		Segment	
163	40%	246	60%

Intersection-Related (Urban)

Signalized		Unsignalized	
72	44%	91	56%

Segment (Urban)

On Curve		Off Curve	
48	20%	198	80%

Rural

Intersection-Related		Segment	
214	15%	1,188	85%

Intersection-Related (Rural)

Unsignalized		Signalized	
210	98%	4	2%

Segment (Rural)

Animal		Non-Animal	
49	4%	1,139	96%

Non-Animal (Rural)

On Curve		Off Curve	
311	27%	827	73%

Crash Type[1] — Urban Intersection Signalized

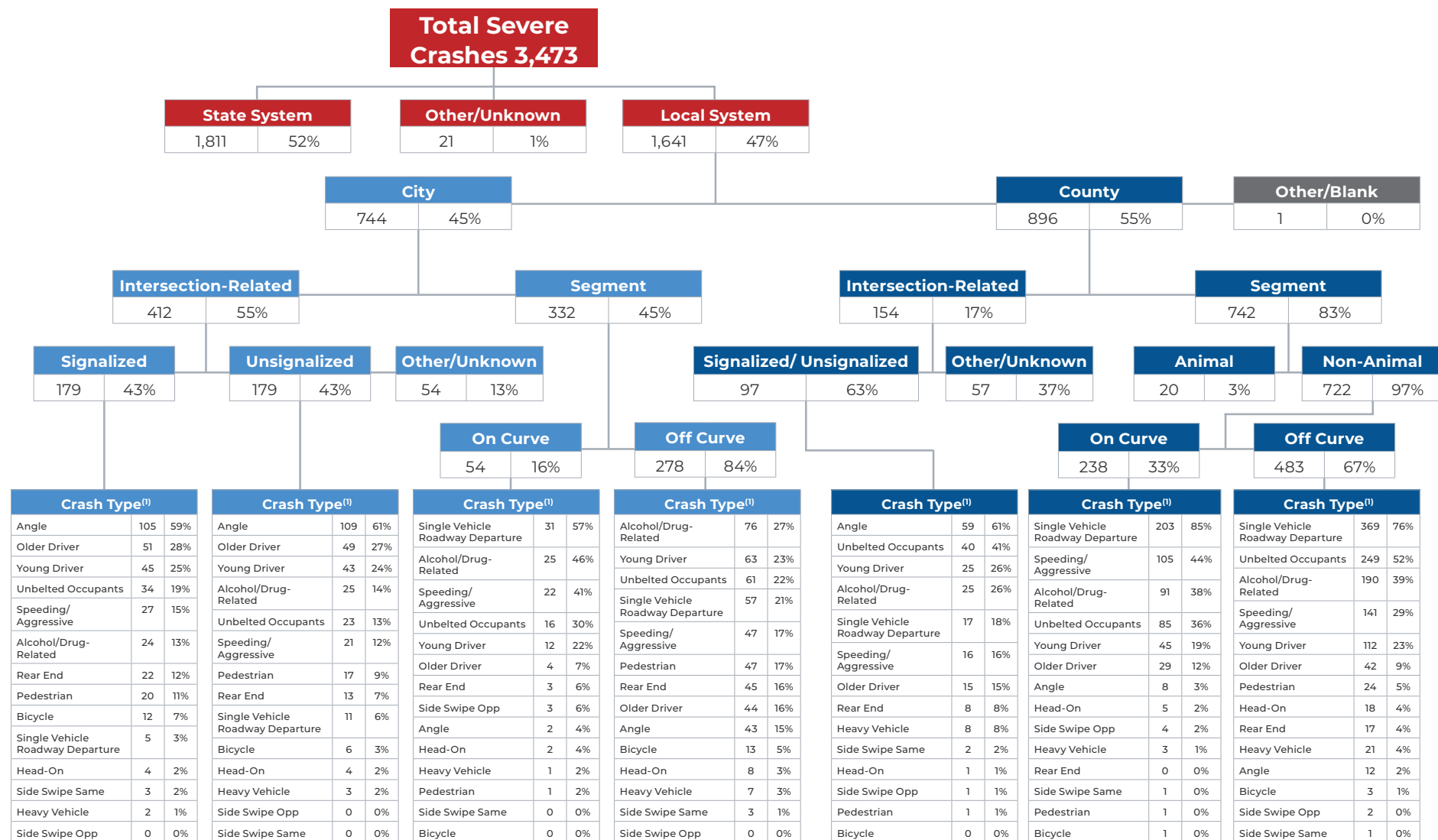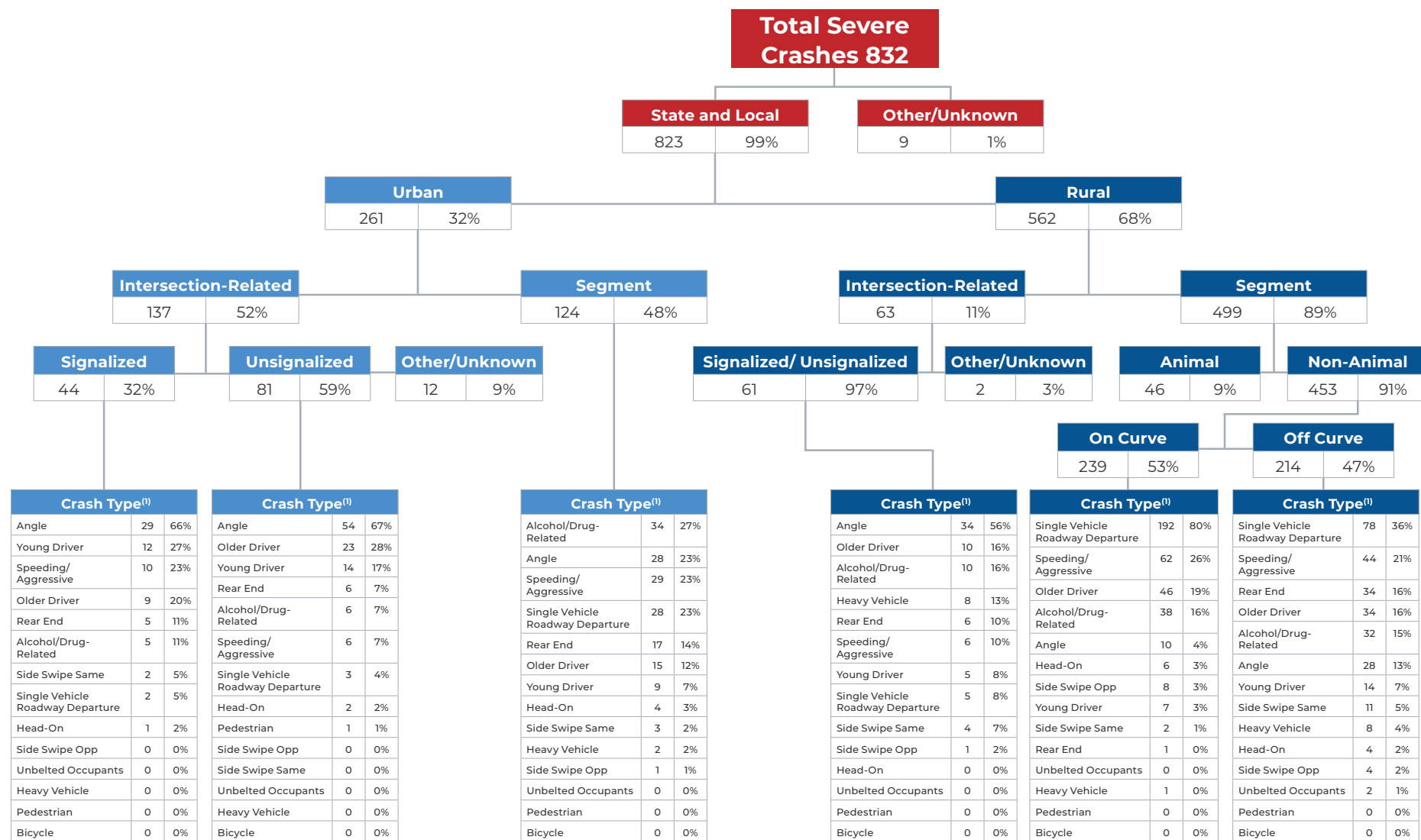| Crash Type		
Angle	43	60%
Young Driver	24	33%
Older Driver	23	32%
Unbelted Occupants	16	22%
Rear End	12	17%
Pedestrian	11	15%
Alcohol/Drug-Related	9	13%
Speeding/Aggressive	8	11%
Head-On	2	3%
Single Vehicle Roadway Departure	2	3%
Heavy Vehicle	2	3%
Side Swipe Opp	0	0%
Side Swipe Same	0	0%
Bicycle	0	0%

Crash Type[1] — Urban Intersection Unsignalized

Crash Type		
Angle	62	68%
Older Driver	26	29%
Young Driver	22	24%
Unbelted Occupants	22	24%
Alcohol/Drug-Related	11	12%
Heavy Vehicle	9	10%
Rear End	7	8%
Speeding/Aggressive	7	8%
Pedestrian	7	8%
Single Vehicle Roadway Departure	3	3%
Head-On	2	2%
Bicycle	1	1%
Side Swipe Opp	0	0%
Side Swipe Same	0	0%

Crash Type[1] — Urban Segment On Curve

Crash Type		
Single Vehicle Roadway Departure	28	58%
Unbelted Occupants	16	33%
Alcohol/Drug-Related	15	31%
Speeding/Aggressive	15	31%
Older Driver	10	21%
Young Driver	8	17%
Angle	7	15%
Heavy Vehicle	4	8%
Head-On	3	6%
Rear End	3	6%
Pedestrian	2	4%
Side Swipe Opp	1	2%
Side Swipe Same	0	0%
Bicycle	0	0%

Crash Type[1] — Urban Segment Off Curve

Crash Type		
Single Vehicle Roadway Departure	55	28%
Speeding/Aggressive	53	27%
Angle	50	25%
Older Driver	43	22%
Alcohol/Drug-Related	44	22%
Rear End	39	20%
Unbelted Occupants	40	20%
Young Driver	30	15%
Heavy Vehicle	19	10%
Pedestrian	19	10%
Head-On	7	4%
Side Swipe Same	6	3%
Bicycle	3	2%
Side Swipe Opp	1	1%

Crash Type[1] — Rural Intersection Unsignalized

Crash Type		
Angle	155	74%
Older Driver	64	30%
Unbelted Occupants	63	30%
Heavy Vehicle	48	23%
Young Driver	42	20%
Alcohol/Drug-Related	37	18%
Speeding/Aggressive	29	14%
Rear End	24	11%
Single Vehicle Roadway Departure	12	6%
Head-On	4	2%
Side Swipe Same	3	1%
Side Swipe Opp	0	0%
Pedestrian	0	0%
Bicycle	0	0%

Crash Type[1] — Rural Segment On Curve

Crash Type		
Single Vehicle Roadway Departure	240	77%
Speeding/Aggressive	83	27%
Alcohol/Drug-Related	79	25%
Unbelted Occupants	70	23%
Older Driver	54	17%
Head-On	22	7%
Heavy Vehicle	21	7%
Angle	18	6%
Young Driver	17	5%
Side Swipe Opp	10	3%
Rear End	2	1%
Side Swipe Same	2	1%
Pedestrian	0	0%
Bicycle	0	0%

Crash Type[1] — Rural Segment Off Curve

Crash Type		
Single Vehicle Roadway Departure	427	52%
Unbelted Occupants	278	34%
Speeding/Aggressive	225	27%
Older Driver	164	20%
Alcohol/Drug-Related	154	19%
Heavy Vehicle	134	16%
Young Driver	124	15%
Angle	104	13%
Rear End	104	13%
Head-On	60	7%
Side Swipe Opp	31	4%
Side Swipe Same	25	3%
Pedestrian	17	2%
Bicycle	4	0%

[1] Emphasis areas and crash types are not mutually exclusive, so percentages may not add up to 100%

Exhibit 10. Local System Severe Crashes (2013–2017)

Total Severe Crashes 3,473

	Count	%
State System	1,811	52%
Other/Unknown	21	1%
Local System	1,641	47%

Local System:

	Count	%
City	744	45%
County	896	55%
Other/Blank	1	0%

City:

	Count	%
Intersection-Related	412	55%
Segment	332	45%

County:

	Count	%
Intersection-Related	154	17%
Segment	742	83%

City – Intersection-Related:

	Count	%
Signalized	179	43%
Unsignalized	179	43%
Other/Unknown	54	13%

City – Segment:

	Count	%
On Curve	54	16%
Off Curve	278	84%

County – Intersection-Related:

	Count	%
Signalized/ Unsignalized	97	63%
Other/Unknown	57	37%

County – Segment:

	Count	%
Animal	20	3%
Non-Animal	722	97%

County – Segment – Non-Animal:

	Count	%
On Curve	238	33%
Off Curve	483	67%

Crash Type[1] — City Signalized

Angle	105	59%
Older Driver	51	28%
Young Driver	45	25%
Unbelted Occupants	34	19%
Speeding/Aggressive	27	15%
Alcohol/Drug-Related	24	13%
Rear End	22	12%
Pedestrian	20	11%
Bicycle	12	7%
Single Vehicle Roadway Departure	5	3%
Head-On	4	2%
Side Swipe Same	3	2%
Heavy Vehicle	2	1%
Side Swipe Opp	0	0%

Crash Type[1] — City Unsignalized

Angle	109	61%
Older Driver	49	27%
Young Driver	43	24%
Alcohol/Drug-Related	25	14%
Unbelted Occupants	23	13%
Speeding/Aggressive	21	12%
Pedestrian	17	9%
Rear End	13	7%
Single Vehicle Roadway Departure	11	6%
Bicycle	6	3%
Head-On	4	2%
Heavy Vehicle	3	2%
Side Swipe Opp	0	0%
Side Swipe Same	0	0%

Crash Type[1] — City On Curve

Single Vehicle Roadway Departure	31	57%
Alcohol/Drug-Related	25	46%
Speeding/Aggressive	22	41%
Unbelted Occupants	16	30%
Young Driver	12	22%
Older Driver	4	7%
Rear End	3	6%
Side Swipe Opp	3	6%
Angle	2	4%
Head-On	2	4%
Pedestrian	1	2%
Heavy Vehicle	1	2%
Side Swipe Same	0	0%
Bicycle	0	0%

Crash Type[1] — City Off Curve

Alcohol/Drug-Related	76	27%
Young Driver	63	23%
Unbelted Occupants	61	22%
Single Vehicle Roadway Departure	57	21%
Speeding/Aggressive	47	17%
Pedestrian	47	17%
Rear End	45	16%
Older Driver	44	16%
Angle	43	15%
Bicycle	13	5%
Head-On	8	3%
Heavy Vehicle	7	3%
Side Swipe Same	3	1%
Side Swipe Opp	0	0%

Crash Type[1] — County Signalized/Unsignalized

Angle	59	61%
Unbelted Occupants	40	41%
Young Driver	25	26%
Alcohol/Drug-Related	25	26%
Single Vehicle Roadway Departure	17	18%
Speeding/Aggressive	16	16%
Older Driver	15	15%
Rear End	8	8%
Heavy Vehicle	8	8%
Side Swipe Same	2	2%
Head-On	1	1%
Side Swipe Opp	1	1%
Pedestrian	1	1%
Bicycle	0	0%

Crash Type[1] — County On Curve

Single Vehicle Roadway Departure	203	85%
Speeding/Aggressive	105	44%
Alcohol/Drug-Related	91	38%
Unbelted Occupants	85	36%
Young Driver	45	19%
Older Driver	29	12%
Angle	8	3%
Head-On	5	2%
Side Swipe Opp	4	2%
Heavy Vehicle	3	1%
Rear End	0	0%
Side Swipe Same	1	0%
Pedestrian	1	0%
Bicycle	1	0%

Crash Type[1] — County Off Curve

Single Vehicle Roadway Departure	369	76%
Unbelted Occupants	249	52%
Alcohol/Drug-Related	190	39%
Speeding/Aggressive	141	29%
Young Driver	112	23%
Older Driver	42	9%
Pedestrian	24	5%
Head-On	18	4%
Rear End	17	4%
Heavy Vehicle	21	4%
Angle	12	2%
Bicycle	3	1%
Side Swipe Opp	2	0%
Side Swipe Same	1	0%

[1] Emphasis areas and crash types are not mutually exclusive, so percentages may not add up to 100%

Exhibit 11. Motorcycle System Severe Crashes (2013–2017)

Total Severe Crashes 832

State and Local 823 99%		**Other/Unknown** 9 1%

Under State and Local:
- **Urban** 261 32%
- **Rural** 562 68%

Urban:
- **Intersection-Related** 137 52%
- **Segment** 124 48%

Urban Intersection-Related:
- **Signalized** 44 32%
- **Unsignalized** 81 59%
- **Other/Unknown** 12 9%

Rural:
- **Intersection-Related** 63 11%
- **Segment** 499 89%

Rural Intersection-Related:
- **Signalized/ Unsignalized** 61 97%
- **Other/Unknown** 2 3%

Rural Segment:
- **Animal** 46 9%
- **Non-Animal** 453 91%

Non-Animal:
- **On Curve** 239 53%
- **Off Curve** 214 47%

Crash Type[1] (Urban Signalized)

Crash Type	Count	%
Angle	29	66%
Young Driver	12	27%
Speeding/Aggressive	10	23%
Older Driver	9	20%
Rear End	5	11%
Alcohol/Drug-Related	5	11%
Side Swipe Same	2	5%
Single Vehicle Roadway Departure	2	5%
Head-On	1	2%
Side Swipe Opp	0	0%
Unbelted Occupants	0	0%
Heavy Vehicle	0	0%
Pedestrian	0	0%
Bicycle	0	0%

Crash Type[1] (Urban Unsignalized)

Crash Type	Count	%
Angle	54	67%
Older Driver	23	28%
Young Driver	14	17%
Rear End	6	7%
Alcohol/Drug-Related	6	7%
Speeding/Aggressive	6	7%
Single Vehicle Roadway Departure	3	4%
Head-On	2	2%
Pedestrian	1	1%
Side Swipe Opp	0	0%
Side Swipe Same	0	0%
Unbelted Occupants	0	0%
Heavy Vehicle	0	0%
Bicycle	0	0%

Crash Type[1] (Urban Segment)

Crash Type	Count	%
Alcohol/Drug-Related	34	27%
Angle	28	23%
Speeding/Aggressive	29	23%
Single Vehicle Roadway Departure	28	23%
Rear End	17	14%
Older Driver	15	12%
Young Driver	9	7%
Head-On	4	3%
Side Swipe Same	3	2%
Heavy Vehicle	2	2%
Side Swipe Opp	1	1%
Unbelted Occupants	0	0%
Pedestrian	0	0%
Bicycle	0	0%

Crash Type[1] (Rural Intersection Signalized/Unsignalized)

Crash Type	Count	%
Angle	34	56%
Older Driver	10	16%
Alcohol/Drug-Related	10	16%
Heavy Vehicle	8	13%
Rear End	6	10%
Speeding/Aggressive	6	10%
Young Driver	5	8%
Single Vehicle Roadway Departure	5	8%
Side Swipe Same	4	7%
Side Swipe Opp	1	2%
Head-On	0	0%
Unbelted Occupants	0	0%
Pedestrian	0	0%
Bicycle	0	0%

Crash Type[1] (On Curve)

Crash Type	Count	%
Single Vehicle Roadway Departure	192	80%
Speeding/Aggressive	62	26%
Older Driver	46	19%
Alcohol/Drug-Related	38	16%
Angle	10	4%
Head-On	6	3%
Side Swipe Opp	8	3%
Young Driver	7	3%
Side Swipe Same	2	1%
Rear End	1	0%
Unbelted Occupants	0	0%
Heavy Vehicle	1	0%
Pedestrian	0	0%
Bicycle	0	0%

Crash Type[1] (Off Curve)

Crash Type	Count	%
Single Vehicle Roadway Departure	78	36%
Speeding/Aggressive	44	21%
Rear End	34	16%
Older Driver	34	16%
Alcohol/Drug-Related	32	15%
Angle	28	13%
Young Driver	14	7%
Side Swipe Same	11	5%
Heavy Vehicle	8	4%
Head-On	4	2%
Side Swipe Opp	4	2%
Unbelted Occupants	2	1%
Pedestrian	0	0%
Bicycle	0	0%

[1] **Emphasis areas and crash types are not mutually exclusive, so percentages may not add up to 100%**

Emphasis Area Selection

The 2019 SHSP applied a data-driven process to identify eight Emphasis Areas designated for future safety investments.

Sixteen different types of crashes were evaluated using 2013-2017 severe crash records. Exhibit 12 shows the total fatal and serious injury crashes by each crash type. Although crash data was the driving factor for the selection of the Emphasis Areas, other considerations included:

- Priorities in the 2014 South Dakota SHSP and the current HSP
- Discussion with the SAT members
- Stakeholder feedback from three regional workshops
- Responses from a survey open to the general public

| SAT Input | + | Crash Data | + | Stakeholder/ Public Feedback | ▶ | Emphasis Area Priorities |

2019 SHSP Emphasis Areas

- Drugs and Alcohol
- Intersections
- Lane Departures
- Motorcycles
- Older Drivers
- Speeding and Aggressive Drivers
- Unbelted Vehicle Occupants
- Young Drivers

Exhibit 12. South Dakota Fatal and Serious Injury Crashes (2013–2017)*
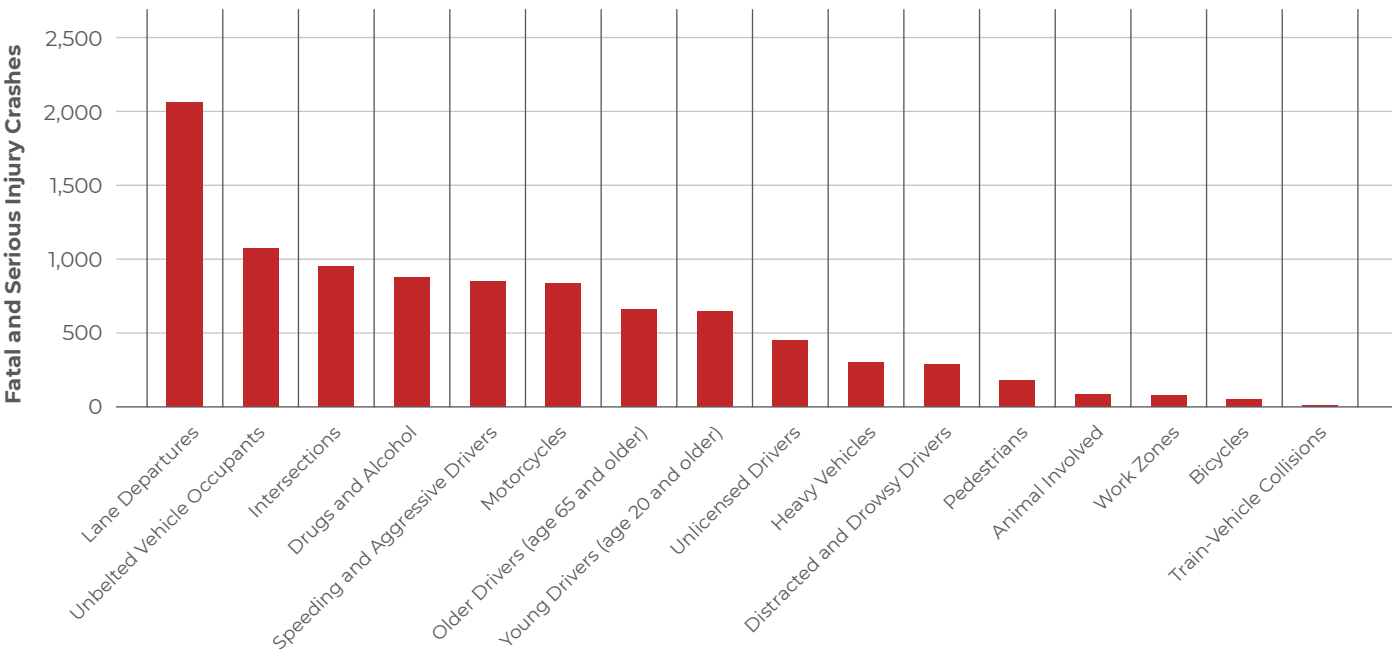
*Please note, the number of severe crashes in Exhibit 12 may not add up to the statewide crash numbers show in Exhibits 9-14. This is because one crash may involve multiple emphasis areas. For example, a lane departure crash could involve a driver that is unlicensed and using drugs and/or alcohol.

Since the 2014 SHSP, the statewide total for severe crashes decreased from 3,858 (2007-2011) to 3,479 (2013-2017) (Exhibit 13). This means there were 379 fewer severe crashes, or about 75 fewer severe crashes each year. Looking at year-by-year totals for fatal and serious injury crashes, the number of serious injury crashes decreased and the number of fatal crashes held steady (Exhibit 13).

While the number of severe crashes decreased in nearly every Emphasis Area from 2013-2017, some Emphasis Areas saw a higher rate of decrease. The number of severe crashes decreased significantly in five Emphasis Areas:

- **Unbelted Vehicle Occupants:** 367 fewer severe crashes
- **Young Drivers:** 253 fewer severe crashes
- **Speeding and Aggressive Drivers:** 233 fewer severe crashes
- **Distracted and Drowsy Drivers:** 221 fewer severe crashes
- **Lane Departures:** 155 fewer severe crashes

With the exception of lane departures, the proportion decreased in each of these Emphasis Areas by 4 to 8 percentage points when compared to the 2014 South Dakota SHSP.

These Emphasis Areas, which were a focus of the 2014 SHSP and HSP, now represent a smaller proportion of severe crashes when compared to the 2014 South Dakota SHSP.

From 2013-2017, only two Emphasis Areas experienced a net increase in severe crashes:

- **Older Drivers:** 63 more severe crashes
- **Motorcycles:** 9 more severe crashes

With one exception, the seven Emphasis Areas included in the 2014 SHSP represented the most frequent severe crash types. The exception was the increase in number of severe crashes involving older drivers, which exceeded the number of severe crashes involving young drivers.

In consultation with the SAT, the 2014 SHSP Emphasis Areas were carried forward to the 2019 SHSP, and an Emphasis Area for older drivers was added. Stakeholder discussions at the regional workshops and public feedback through the online survey confirmed the selection of these eight Emphasis Areas.

TAKE A CLOSER LOOK

Supplemental 4: Crash Analysis Results – Emphasis Areas ›
Supplemental 5: Crash Analysis Results – Significant Findings ›

Exhibit 13. Fatal and Serious Injury Crash Comparison

Safety Emphasis Area	SHSP Update Analysis (2013-2017)		2014 SD SHSP (2007-2011)		Change in Frequency		Change in Proportion	
	Percent	Number	Percent	Number				
Statewide Totals (Fatal and Serious Injury Crashes)	3,479		3,858		-379	⌄		
Drivers								
Unbelted Vehicle Occupants	31%	1,073	37%	1,440	-367	⌄	-6%	⌄
Speeding and Aggressive Drivers	24%	847	28%	1,080	-233	⌄	-4%	⌄
Drugs and Alcohol	25%	875	24%	926	-51	⌄	1%	⌃
Young Drivers (age 20 and younger)	19%	646	23%	899	-253	⌄	-4%	⌄
Unlicensed Drivers	13%	447	12%	470	-23	⌄	1%	⌃
Older Drivers (age 65 and older)	19%	655	15%	592	63	⌃	4%	⌃
Distracted and Drowsy Drivers	8%	287	13%	508	-221	⌄	-5%	⌄
Other Users								
Pedestrians	5%	178	5%	188	-10	⌄	0%	
Bicycles	1%	46	1%	57	-11	⌄	0%	
Vehicles								
Motorcycles	24%	834	21%	825	9	⌃	3%	⌃
Heavy Vehicles	9%	297	8%	312	-15	⌄	1%	⌃
Highways								
Lane Departures	59%	2,056	57%	2,211	-155	⌄	2%	⌃
Intersections	27%	948	27%	1,041	-93	⌄	0%	
Train-Vehicle Collisions	0%	6	0%	18	-12	⌄	0%	
Work Zones	2%	75	2%	93	-18	⌄	0%	
Animal Involved	2%	77	NA	NA	NA		NA	

The relationship between the 2019 SHSP Emphasis Areas is documented in the Emphasis Area Relationship Matrix (Exhibit 14) on the following page.

To understand how to read the matrix, consider the first row, which represents severe crashes involving drugs and alcohol. Of those severe crashes, 18 percent were at an intersection, 75 percent were a lane departure, 15 percent involved a motorcycle, etc. The intersections cell is green because 18 percent of drug and alcohol crashes were at an intersection but 27 percent of all severe crashes were at an intersection – a difference of 9 percentage points.

Severe Crashes Within the Emphasis Areas

Of all severe crashes that occurred on South Dakota public roads, 3,390 crashes out of 3,479 crashes involved one of the eight Emphasis Areas. 97 percent of all severe crashes are addressed by the selected Emphasis Areas.

97%

As a rule for the matrix, if the percentage is more than 5 percentage points below the statewide average, the cell is green. If the percentage is more than 5 percentage points above the statewide average, the cell is red. If the percentage is within 5 percentage points of the statewide average, the cell is yellow.

Frequency:

🟩	More than 5 percentage points <u>below</u> the statewide average
🟥	More than 5 percentage points <u>above</u> the statewide average
🟨	<u>Within</u> 5 percentage points of the statewide average

Figure 14. Emphasis Area Relationship Matrix

	Drugs and Alcohol	Intersections	Lane Departures	Motorcycles	Older Drivers	Speeding and Aggressive Drivers	Unbelted Vehicle Occupants	Young Drivers
Drugs and Alcohol	-	18%	75%	15%	8%	27%	50%	13%
Intersections	17%	-	12%	21%	26%	15%	26%	25%
Lane Departures	32%	5%	-	22%	14%	30%	39%	16%
Motorcycles	16%	24%	54%	-	18%	20%	0%	8%
Older Drivers	11%	38%	44%	23%	-	16%	23%	8%
Speeding and Aggressive Drivers	28%	17%	73%	20%	13%	-	38%	25%
Unbelted Vehicle Occupants	41%	23%	75%	0%	14%	30%	-	21%
Young Drivers	17%	36%	52%	10%	8%	33%	35%	-
Statewide for All Severe Crashes	**25%**	**27%**	**59%**	**24%**	**19%**	**24%**	**31%**	**19%**

SEVERE CRASHES
Other Contributing Factors

Many factors contribute to severe crashes in South Dakota, including the following categories that were not selected as emphasis areas.

13% Unlicensed Drivers

9% Heavy Vehicles

8% Distracted and Drowsy Drivers

5% Pedestrians

2% Work Zones

2% Wild Animal Hits

1% Bicyclists

<1% Trains

Emphasis Areas

Drugs and Alcohol

Intersections

Lane Departures

Motorcycles

Older Drivers

Speeding and Aggressive Drivers
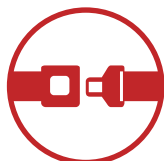
Unbelted Vehicle Occupants

Young Drivers

Recommended strategies for each emphasis area are discussed in the following sections. The effectiveness of a strategy is either measured by a star rating or an actual crash reduction or crash modification factor (CMF). Strategies specifically related to driver behavior and their effectiveness is designated by a star rating.[1] This star rating effectiveness criteria is determined as follows:

★★★★★ Demonstrated to be effective by several high-quality evaluations with consistent results

★★★★ Demonstrated to be effective in certain situations

★★★ Likely to be effective based on a balance of evidence from high-quality evaluations or other sources

★★ Effectiveness still undetermined; different methods of implementation available

★ Limited or no high-quality evaluation evidence

Effectiveness is measured by reductions in crashes or injuries unless noted otherwise. See individual countermeasure descriptions for information on effectiveness size and how effectiveness is measured.

Effectiveness for engineering-related strategies is generally measured using CMFs. The CMFs were acquired from two sources: the 2014 SDDOT SHSP and Federal Highway Administration's (FHWA) CMF Clearinghouse database.

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1   Richard, C. M., Magee, K., Bacon-Abdelmoteleb, P., & Brown, J. L. (2018, April). Countermeasures that work: A highway safety counter-measure guide for State Highway Safety Offices, Ninth edition (Report No. DOT HS 812 478). Washington, DC: National Highway Traffic Safety Administration.

Drugs and Alcohol

Definition: *Crashes involving roadway users who are under the influence of alcohol, illicit drugs, and/or prescription drugs. Under the influence of alcohol is defined as a BAC of 0.08 or higher. Under the influence of drugs is determined by law enforcement.*

Between 2013 and 2017, South Dakota averaged 175 severe (fatal + serious injury) crashes involving drugs and/or alcohol per year resulting in a total of 875 severe crashes.

- 25% of all severe crashes in South Dakota involved one or more drivers using drugs and/or alcohol.
- 71% of severe drug and/or alcohol-related crashes occurred on rural roadways.
- 26% of severe drug and alcohol-related crashes occurred on horizontal curves.
- 54% of drug and alcohol-related crashes occurred between 6pm and 3am.
- 76% of drug and alcohol-related crashes involved a single vehicle that ran off the road.
- 72% of drivers involved in severe drug and/or alcohol-related crashes were male.
- 52% of drivers were also under the age of 36, and 50% were unbelted occupant.

Statistics (2013–2017)

BAC in Fatal Crashes

South Dakota
- No Alcohol: 53%
- BAC = 0.15+ g/dL: 25%
- BAC = 0.08-0.15 g/dL: 15%
- BAC = 0.01-0.08 g/dL: 7%

Nation
- No Alcohol: 66%
- BAC = 0.15+ g/dL: 19%
- BAC = 0.08-0.15 g/dL: 9%
- BAC = 0.01-0.08 g/dL: 5%

Legend:
- No Alcohol
- BAC = 0.01-0.08 g/dL
- BAC = 0.08-0.15 g/dL
- BAC = 0.15+ g/dL

Severe Crashes Involving Drugs and Alcohol

Line chart showing # of Crashes from 2013 to 2017 for Serious Injury and Fatal crashes.

Key Strategies

The following strategies are considered best practices to reduce Drug and Alcohol-related crashes. Strategies specifically related to driver behavior and their effectiveness are designated by a star rating.

- Publicized sobriety checkpoints for impaired drivers create general and specific deterrence of DWI laws. (★★★★ - ★★★★★)
- High-visibility saturation patrols where several law enforcement officers patrol a specific area looking for impaired drivers. (★★★★ - ★★★★★)
- Effective, high-visibility communication and outreach campaigns supporting aggressive alcohol and drugged driving enforcement efforts. (★★ - ★★★)
- Alternative transportation programs allow people to travel to and from places they drink without having to drive. (★★)

🔍 **TAKE A CLOSER LOOK**
Supplemental 6: Fact Sheet ›
Supplemental 7: Implementation ›
Supplemental 9: Strategies ›
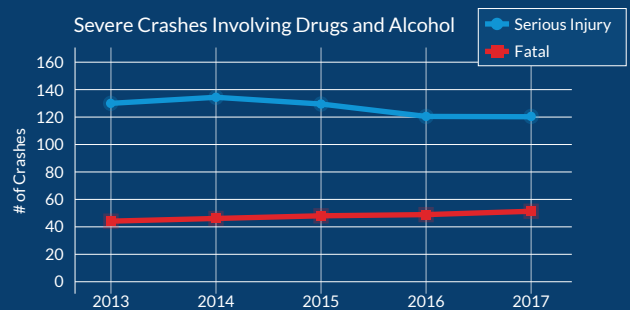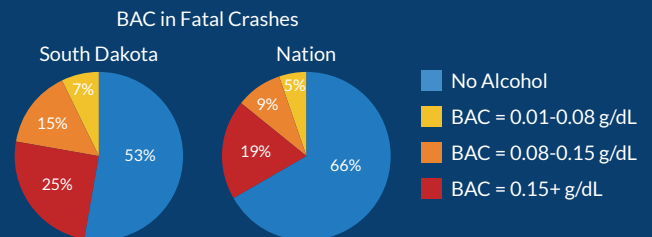
Research Shows...

"Laws requiring all impaired-driving offenders to install alcohol interlocks reduce the number of impaired drivers in fatal crashes by 16 percent."
(Status Report: Locking out impaired driving. Vol. 53 No. 2. March 29, 2018)

"Criminalizing BAC test refusal may reduce refusal rates and increase the likelihood of convictions for DWI. It also ensures the drivers will be identified as repeat offenders upon subsequent arrests."
(NHTSA. Countermeasures That Work: A Highway Safety Countermeasure Guide for State Highway Safety Offices, Ninth Edition, 2017. p. 36. April 2018)

"A study examining the long-term effects of license suspension policies across the United States concluded that Administrative License Revocation (ALR) laws reduce alcohol-related fatal crash involvement by 5%, saving an estimated 800 lives each year."
(NHTSA. Countermeasures That Work: A Highway Safety Countermeasure Guide for State Highway Safety Offices, Ninth Edition, 2017. p. 31. April 2018)

"Although no studies have examined the effectiveness of law reviews in reducing alcohol-impaired crashes, the effect of a law review will depend on the extent of inconsistencies and inefficiencies in a State's current laws. A law review can be an important action a State takes to address its alcohol-impaired-driving problem, because a thorough law review will examine the function of the entire DWI control system and will identify problem areas. The immediate effect of a law review should be a more efficient and effective DWI control system."
(NHTSA. Countermeasures That Work: A Highway Safety Countermeasure Guide for State Highway Safety Offices, Ninth Edition, 2017. p.38. April 2018)

Janice and Ricky

Around midnight on the Friday after Thanksgiving in 1980, Janice Morehouse received a call that her son, Ricky Anderson, had been severely injured in a crash in Rapid City. Out celebrating his recent engagement to his high school sweetheart, Ricky was crossing the road to his car when he was struck by a drunk driver. Janice spent the next several months helping to care for him in the hospital, despite having two young children at home. After coming out of his coma, Ricky lived in nursing homes for the next 26 years with both a traumatic brain injury and complete paralysis of his right side.

The last seven years of Ricky's life was lived in an assisted living home where he was the happiest he had been since the crash. Though the brain injury affected his memory, he couldn't be beat in trivia games and would sing songs from memory. As the unofficial greeter for the assisted living facility, Ricky would answer "BETTER THAN ALL" to all who asked how he was doing.

Janice acknowledged that Ricky, too, had been drinking the night he was struck by the drunk driver. She said that she could accept the accident and the effect it had on Ricky and her family. She could not have lived with the guilt if Ricky had made it to his car, drove drunk and caused an accident that would have hurt or killed someone else.

Cindy and Andrew

As part of his early morning routine, Andrew Crocker went jogging on Tuesday, September 6th, 2005. When he hadn't returned home to take his seven year old to school, his wife Cindy loaded her two young children into the car and went looking for him. She came upon a road block and police asked her to pull over: Andrew had been a victim of a hit-and-run driver and was pronounced dead at the scene. Police found out soon after that the driver who killed Andrew was highly intoxicated. Andrew's family and the community where he was a teacher were greatly impacted and will never be the same.

"This is 100% preventable – if the driver hadn't gotten into that car while she was drunk, Andrew would still be alive. This was not a freak accident that no one could prevent, this wasn't an illness that couldn't be treated—this was someone's choice to get into a car when they were drunk. Don't drink and drive! There are so many other options for people who are drinking (Uber, taxi, Lyft) instead of taking a human life. Have a plan in place, even before you start drinking—so you're not putting someone else's life in danger. Any time someone gets in a car after drinking, it's a game of Russian roulette. You can do it 100 times but that one time it can change someone's life."
— Cindy Crocker

Intersections

Definition: *Crashes occurring where two or more roadways intersect.*

Between 2013 and 2017, South Dakota averaged 190 severe (fatal + serious injury) intersection crashes per year resulting in a total of 948 severe intersection crashes. Following are additional statistics related to intersection crashes:

- 27% of all severe crashes in South Dakota were intersection-related.
- 59% of severe crashes occurred on urban roadways.
- 62% of severe intersection crashes were characterized as angle collisions.
- 59% of drivers involved in severe intersection crashes were male.
- 26% were under the age of 26, while 14% were above the age of 65.
- There were 2.3% of bicycle and 7% pedestrian involvement in severe intersection crashes, higher than other emphasis areas.
- At urban intersections, 43% of severe crashes occurred at signalized intersections and 44% occurred at partial stop-controlled intersections.

Key Strategies

The following key strategies are best practices for reducing severe intersection crashes.

- Improve intersection signing, markings or street lighting at rural intersections to increase intersection conspicuity. **(CMF=0.62 to 0.92)**
- Verify sight triangles and eliminate obstructions.
- Provide careful consideration for pedestrian facilities, including Leading Pedestrian Interval, Rectangular Rapid Flashing Beacon. **(CMF=0.31 to 0.87)**
- Use Radar Speed Feedback Signs to reduce driver speeds through high speed intersections. **(CMF=0.95)**
- Use protected left-turn at signalized intersections. **(CMF=0.45)**
- Reduce delay and stops in signalized corridors with signal coordination or adaptive traffic signals. **(CMF=0.79 to 0.87)**
- Provide left- or right-turn lanes. **(CMF=0.67 to 0.92)**
- Select innovative designs for intersections and interchanges **(CMF=0.42 to 0.8)**
- Improve access management in corridors with high levels of access, including closing or restricting of access locations or implementing a road diet. **(CMF=0.53 to 0.56 (suburban) or 0.75 to 0.81 (urban))**

Statistics (2013–2017)

Fatal Intersection Crash Locations

Location	Percentage
State Highways	44%
County/Township Roads	40%
City Streets	16%
Other	

Severe Crashes Related to Intersections
Serious Injury / Fatal
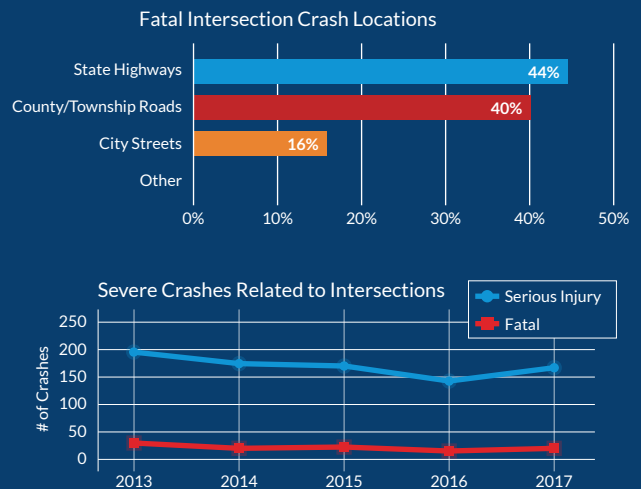
Research Shows…

Traffic signal confirmation lights are blue lights that can be located on the back of traffic signal mast arms or poles used by law enforcement agencies to identify 'red-light runners'.

A Florida Department of Transportation study showed installation of Red-Signal Enforcement Lights, coupled with aggressive enforcement, reduced the annual number of red-light violations by 25 percent ('A Study of the Effectiveness of White Enforcement Lights,' Florida Department of Transportation, 2008). The lights are installed at more than 500 intersections across Florida.

Federal Highway Administration estimates a 15 percent reduction in crashes.

(MnDOT Traffic Signal Confirmation Lights, 2011)

TAKE A CLOSER LOOK

Supplemental 6: Fact Sheet ›
Supplemental 7: Implementation ›
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Lane Departures

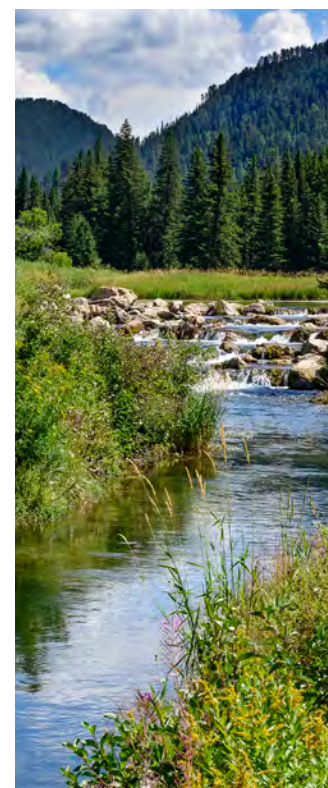**Definition:** *Crashes involving vehicles leaving their original lane of travel. This includes run-off-road and head-on crashes.*

Between 2013 and 2017, South Dakota averaged 411 severe (fatal + serious injury) crashes involving lane departure annually, resulting in a total of 2,056 total severe lane departure crashes.

- 59% of all severe crashes were related to lane departure.
- 82% of severe lane departure crashes occurred on rural roadways. Of these crashes, 49% occurred on state roadways, 1% on city roads, and 32% on county roads.
- 31% occurred on horizontal curves.
- 60% of severe lane departure crashes were single vehicle crashes and consisted of overturn/rollovers or collisions with fixed objects.
- 64% of drivers involved in severe lane departure crashes were male, 36% were under 26 years of age, 32% were under the influence of alcohol and/or drugs, and 39% were unbelted occupants.
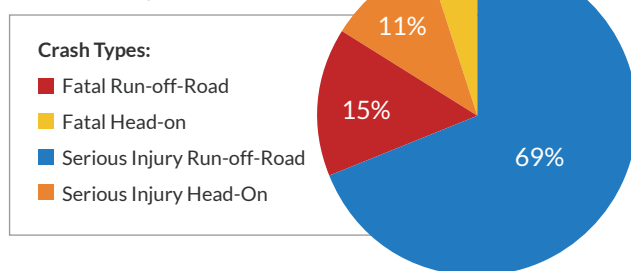
Statistics (2013–2017)

Fatal Lane Departure Crash Locations

Severe Crashes Related to Lane Departure

Severe Lane Departure Crashes

Crash Types:
- Fatal Run-off-Road
- Fatal Head-on
- Serious Injury Run-off-Road
- Serious Injury Head-On
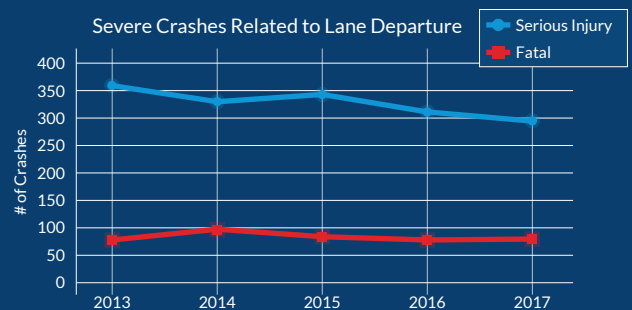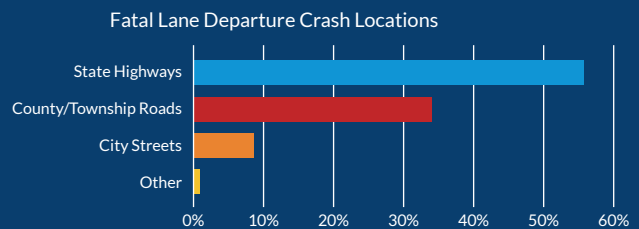
Key Strategies

The following strategies are considered best practices to reduce Lane Departure crashes.

- Install centerline, shoulder, or edge line rumble strips on rural roads, including county roads. **(CMF=0.6)**
- Widen and/or pave shoulders to provide drivers a recovery area. **(CMF=0.8 to 0.81)**
- Install Median Barriers for locations with crash history identified as high-risk for centerline crossing. **(CMF=0.45)**
- Provide local agencies with funding assistance to install, enhance, or maintain centerline and edge line markings. **(CMF=0.6)**
- Provide enhanced curve delineation, such as chevrons and pavement markings, for sharp curves. **(CMF=0.78 to 0.94)**
- Utilize High Friction Surface Treatment to increase traction through sharp curves. **(CMF=0.6)**
- Remove or relocate fixed objects in the roadside. **(CMF=0.99)**
- Deploy enhanced pavement markings (wider or wet-reflective material). **(CMF=0.7 to 0.89)**

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Supplemental 6: Fact Sheet ›
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Marilyn

On Saturday, May 27, 2017, Marilyn Charging Crow and her husband Neil Red Elk lost five family members, including a pregnant relative, in a head-on collision with a semi-truck on Hwy 44 in Wanblee near the Pine Ridge Reservation in southwestern South Dakota. Only one person survived this high-speed crash: a one year old boy strapped into his child safety seat. Marilyn lost 21-year-old Ashton Standing Bear; 7-year-old Jaceya Cummings; 5-year-old Micah Cummings; 26-year-old Devin Conquering Bear; and 30-year-old Tawni Wilcox, who was six months pregnant.

Less than six months later, on November 4, 2017, Marilyn's brother-in-law, his seven months pregnant wife, and one-year old son were killed by a drunk driver near Porcupine, SD at 7pm that Saturday evening.

Marilyn, a first responder on the dry Pine Ridge Indian Reservation, is an advocate for enforcing the tribal zero tolerance for alcohol law and for changing laws to allow for rehabilitation centers for alcohol addiction. Marilyn also wants to bring awareness to MADD and to support the efforts of families against drunk driving.

"Buckle up! You can't stress that enough, especially with the little ones in your vehicle. Don't drink and drive, especially on the reservation where we can't have alcohol."
— Marilyn Charging Crow

Maynard and Darlene

On September 10, 1991 after celebrating his son's 7th birthday at the Corn Palace in Mitchell, Maynard Konechne was on his way home with his wife Darlene, son Edward, and daughter Helen. They were driving on I-90 on a very dark night with no moon, and it had just started to rain.

After passing the White Lake Rest Area, they came upon a stalled farm truck with a sixteen-foot box in the driving lane without any lights. Unable to see the truck until the last second, Maynard swerved and the passenger side of his vehicle struck the rear corner of the stalled truck. The Konechne's vehicle was propelled through the ditch, a fence, and eventually came to rest 300 yards from the roadway in a field.

Because of the passenger-side impact with the stalled semi, Darlene was killed in the crash despite using her seatbelt. Maynard believes the only reason he and his children survived the crash is because they were wearing their seatbelts. He has since been a strong advocate for seatbelts and encourages everyone to use them.

Motorcycles

Definition: *Crashes involving drivers and passengers on motorcycles.*

Between 2013 and 2017, South Dakota averaged 167 severe (fatal + serious injury) motorcycle crashes annually resulting in a total of 834 severe motorcycle crashes.

- 24% of all severe crashes in South Dakota involved motorcycles.
- 69% of severe motorcycle crashes occurred on rural roadways, and 34% occurred on horizontal curves.
- 73% of severe motorcycle crashes occurred between June and August, and 85% took place during daylight conditions.
- 69% of motorcyclists involved in severe crashes were male.
- 52% were between 46 and 55 years of age.
- 54% of severe motorcycle crashes were related to lane departures, 25% were related to intersections, and 18% were related to older drivers.

Key Strategies

The following key strategies are best practices for reducing severe crashes related to Motorcycles.

- Aggressive impaired driving enforcement for all motorists reduces motorcycle fatalities and serious injuries due to a higher rate of involvement of motorcycle riders in impaired driving crashes. (★★★)
- High-visibility enforcement of aggressive driving and speed laws to reinforce established speed limits. (★★★)
- Rider education and training courses may be beneficial in reducing motorcycle rider crashes. (★★)
- Prepare roadways before major motorcycle events (sweep roadways, clean/replace pavement markings, update high-visibility signing) and install Dynamic Messaging Boards at high-risk locations.
- Provide paved shoulders for recovery and breakdowns. **(CMF=0.32)**
- Continue to promote SouthDakotaRides.com and actively maintain and update the information on the website. (★ - ★★)

Statistics (2013–2017)

Helmet Use in Fatal Crashes

Helmeted / Unhelmeted / Unknown

Severe Crashes Involving Motorcycles

Serious Injury / Fatal
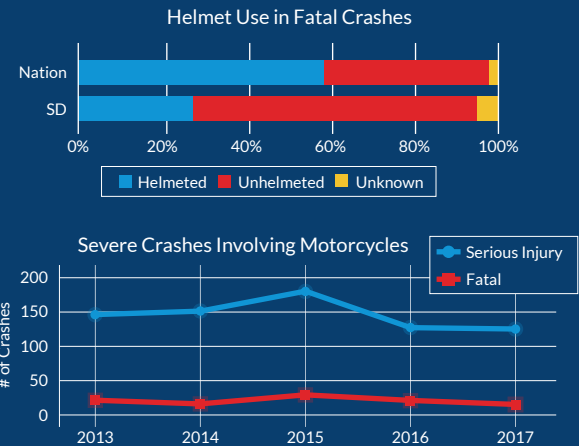
Research Shows...

"Helmets are estimated to be 37-percent effective in preventing fatal injuries to motorcycle riders, and 41 percent for motorcycle passengers."
(NHTSA Traffic Safety Facts. Motorcycles. February 2018)

"A systematic review of U.S. motorcycle helmet laws found that States with universal coverage laws: had motorcycle helmet use rates 53 percentage points higher than States with partial coverage or no law; had 29% fewer deaths; and had lower fatality rates per registered motorcycle and per vehicle mile traveled. "
(Guide to Community Preventive Services, 2013)

TAKE A CLOSER LOOK

Supplemental 6: Fact Sheet ›
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Greg and Stephanie

It was a beautiful day on August 7, 2018. Greg Boyer, his wife, Stephanie, and friend, Joe Doner, were riding their motorcycles through Spearfish Canyon and had just finished a loop through Wyoming. They stopped at the Trailhead Lodge on SD85 for fuel and decided to make the short trip to Rochford for lunch. They all usually wear full safety gear, but since it was a short drive Stephanie had decided not to wear her helmet.

They were riding as a group east on US14A. Stephanie was the second bike in line with Greg behind her, driving in the left of two travel lanes. As the right travel lane began to merge an unidentified car made a sudden lane change to the left lane, cutting right in front of them. Joe made a sudden maneuver to the left to avoid a crash, Stephanie made a sudden maneuver to the right and locked up her brakes and was thrown when the bike started sliding, landing hard on her right shoulder. She broke her cranium, scapula, clavicle, and several ribs. Stephanie was airlifted to Rapid City Regional Hospital, the car never stopped to see what carnage they had caused.

Instantly her and Greg's life were changed. To this day, Greg still doesn't understand how this crash happened, how the other vehicle so carelessly chose to merge so abruptly in front of them.

Stephanie has endured multiple surgeries since the crash and is continuing to rehabilitate. Her goal is to get back to 100% so she can return to Sturgis and complete her vacation. Greg now wears all his safety gear, including his helmet, on every ride with no exceptions.

Older Drivers

Definition: *Crashes involving drivers age 65 and older.*

Between 2013 and 2017, there were a total of 655 severe (fatal + serious injury) crashes involving older drivers.

- Severe crashes involving older drivers contribute to 19% of all severe crashes.
- 62% of older drivers involved in severe crashes occurred on rural roadways, and 38% at intersections.
- Of the severe crashes that occurred on rural roadways, 76% occurred on state roads, 2% on city roads, and 22% on county roads.
- 72% of these crashes occurred during daylight conditions between 9am and 6pm.
- 62% of older drivers involved in these types of crashes were male.
- 40% of severe crashes involving older drivers were single-vehicle crashes.
- 44% of these types of crashes were associated with lane departure.

Key Strategies

The following strategies are considered best practices to reduce crashes relating to Older Drivers:

- Education of physicians, families, and law enforcement regarding driver license screening and referral processes, such as the South Dakota form DL25, for struggling older drivers. **(★★★★)**
- Consider opportunities for courses for older drivers involving classroom training in basic safe driving practices and in adjusting driving to accommodate age-related cognitive and physical changes. **(★★)**
- Increase driver visibility and awareness through intersection lighting or oversized signing. **(CMF=0.65 to 0.92)**
- Improve transit opportunities through door-to-door services.

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Supplemental 6: Fact Sheet ›
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Statistics (2013–2017)

Older Drivers in Fatal Crashes

South Dakota
- 17%
- 83%

Nation
- 14%
- 86%

■ Drivers <65
■ Drivers 65+

Severe Crashes Involving Older Drivers (65+)

— Serious Injury
— Fatal

# of Crashes (y-axis: 0, 20, 40, 60, 80, 100, 120, 140)
(x-axis: 2013, 2014, 2015, 2016, 2017)
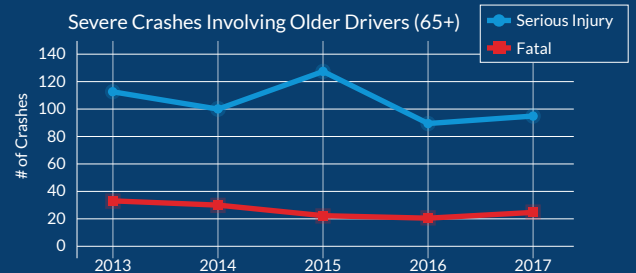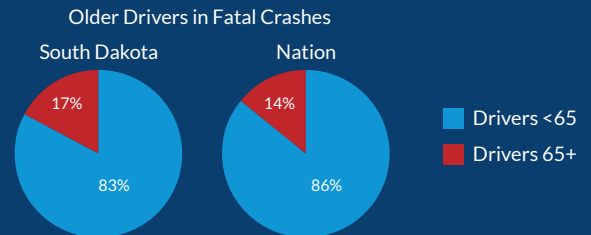
Research Shows...

"There is strong evidence that State screening and assessment programs identify some drivers who should not be driving at all or whose driving should be limited." NHTSA recommends the following countermeasures for Older Drivers as:

- License Screening and Testing – *Most effective*
- Referring Older Drivers to Licensing Agencies – *Most effective*
- License Restrictions – *Most effective*
- Law Enforcement Roles – *Likely to be effective*
- Formal Courses for Older Drivers – *Effectiveness undetermined*
- General Communications and Education – *Effectiveness undermined*
- Medical Advisory Boards – *Effectiveness undetermined*
- License Renewal Policies: In-Person Renewal, Vision Test – *Effectiveness undetermined*

(NHTSA. Countermeasures That Work: A Highway Safety Countermeasure Guide for State Highway Safety Offices. 9th Edition. 2017)

Speeding and Aggressive Drivers

Definition: *Crashes involving drivers who are driving aggressively, over the posted speed limit, or too fast for conditions.*

Between 2013 and 2017, South Dakota averaged 169 severe (fatal + serious injury) crashes involving speeding and aggressive driving per year resulting in 847 severe crashes.

- 24% of all severe crashes in South Dakota involved speeding and aggressive drivers.
- 73% of speeding and aggressive driving crashes occurred on rural roadways and 29% occurred on horizontal curves.
- 52% of these crashes occurred between afternoon and evening, 67% resulted in a single vehicle that ran off the road and 17% resulted in rear end collisions.
- 63% of drivers involved in severe speeding and aggressive driving crashes were male.
- 23% of drivers were also under the age of 21.
- 38% involved unbelted occupants.
- Severe crashes relating to speeding and aggressive drivers consisted of: 39% involved exceeding the posted speed limit, 15% following too close, and 48% driving too fast for conditions. Some crashes fell under multiple speeding and aggressive driving categories.

Key Strategies

The following strategies are considered best practices to reduce crashes relating to Speeding and Aggressive Drivers:

- Set well-established speed limits based on the use of appropriate engineering practices.
- Enhanced, high-visibility enforcement of aggressive driving and speed laws and supportive adjudication of these efforts reinforce established speed laws. (★★★)
- Effective, high-visibility communications and outreach campaigns that support speed and aggressive driving enforcement programs. (★★★)
- Expand the use of advisory speed signs to advise motorists of geometric conditions where traveling at the posted speed is ill-advised. **(CMF=0.34 to 0.68)**
- Increase the use of Radar Speed Feedback Signs to notify drivers of reduced speed limits. **(CMF=0.95)**

Statistics (2013–2017)

2016 Fatal Crashes Involved Speed or Aggressive Driving

Credit: NHTSA
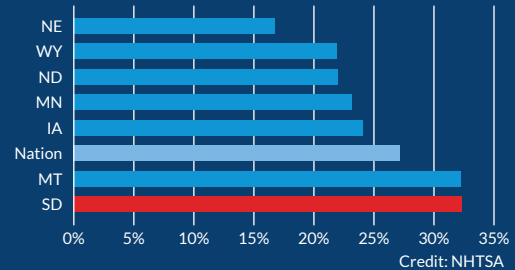
Severe Crashes Involving Speeding and Aggressive Driving
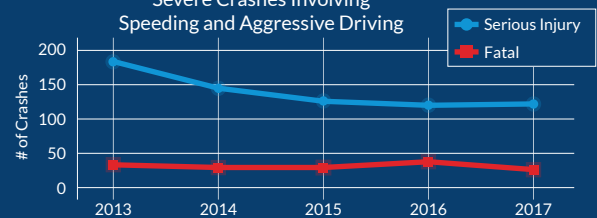
Research Shows...

"The installation of variable speed limit signs has a crash modification factor (CMF) ranging from 0.71 to 0.75 for all crash types. *(cmfclearinghouse.org, Pu et al. 2017)*

A 2014 study published in the Journal of Policy Analysis and Management, "Do Traffic Tickets Reduce Motor Vehicle Accidents? Evidence from a Natural Experiment," explores data from a program in Massachusetts. The study's finding is that Massachusetts enforcement campaign decreased motor-vehicle crashes by roughly 11%; a 1% increase in tickets issued leads to a 0.28% decline in motor vehicle crashes. The campaign also reduced the number of nonfatal injuries from motor vehicle crashes.

A 2016 study found that fine increases of:
- Less than 50% did not influence speeding violations
- Between 50 and 100% were associated with a 15% decrease in speeding violations.

(Elvik, R. "Association between increase in fixed penalties and road safety outcomes: A meta-analysis". 2016.)

TAKE A CLOSER LOOK

Roxanne and Trevor

17-year-old Trevor was killed by a drunk driver on August 29, 2015 at 9:30 AM on his way to work. Traveling uphill in opposing directions, the impaired driver failed to navigate the curve and crossed the centerline, hitting Trevor's vehicle head-on, traveling at an estimated 90 mph. The impaired driver was wearing his seatbelt, but Trevor was not. Both were killed in the crash. To honor Trevor's memory and share his passion for helping others, his mom Roxanne created the Trevor's Legacy Foundation to raise awareness of the dangers of drinking and driving and to help local kids financially who have experienced illness or accidents.

Roxanne urges others not to drink and drive. "Think about what it really means; think about the consequences because they might not just affect you and your family, but other families too. Ask yourself what kind of legacy do you want to leave this world?"
— Roxanne Vogelgesang

Lucille and Kathi

Lucille Rose's daughter, Kathi, was killed after riding in a vehicle driven by her fiancé, a repeat DUI offender who was under the influence of alcohol. Her brother was also riding in the backseat. Neither the driver nor Kathi were wearing a seatbelt. The car struck a semi-trailer, overturned in the ditch, and burst into flames upon impact.

Kathi died of a torn aorta from the impact of the crash, but her fiancé and brother survived. She left behind three young children between the ages of four and ten. Lucille Rose stresses the importance of sober driving as well as using seatbelts; she feels that her daughter would be alive if her fiancé had not chosen to drink and drive that night and if Kathi had been wearing her seatbelt.
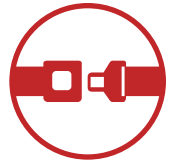
Unbelted Vehicle Occupants

Definition: *Crashes involving drivers or passengers who are not appropriately restrained based on age or weight. This includes adults and children.*

Between 2013 and 2017, South Dakota averaged 215 severe (fatal + serious injury) crashes annually involving unbelted occupants resulting in 1,073 severe crashes.

- 31% of all severe crashes in South Dakota involved unbelted occupants.
- 80% of severe crashes involving unbelted occupants occurred on straight roadways and 76% occurred on rural roadways.
- 57% of these crashes occurred during daylight and 78% under dry road conditions.
- 65% of unbelted occupants in severe crashes were male.
- 38% were also under the age of 26.
- 41% of unbelted occupants in severe crashes were under the influence of drugs and/or alcohol and 21% involved younger drivers.

Key Strategies

The following strategies are considered best practices to reduce crashes involving Unbelted Occupants:

- Effective, high-visibility communications and outreach campaigns that support the use of seatbelt and child safety seats. (★★★ - ★★★★)
- Aggressive enforcement efforts for non-use of seatbelt and child safety seats, in accordance with current South Dakota law.

Statistics (2013–2017)
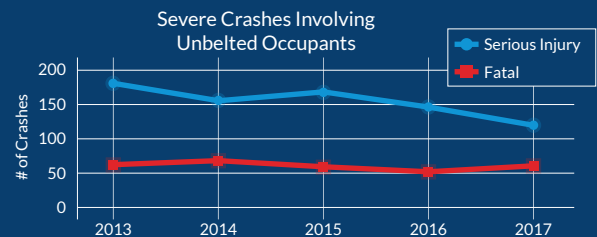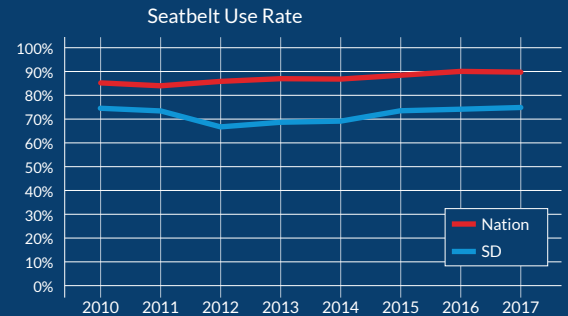
Seatbelt Use Rate

Severe Crashes Involving Unbelted Occupants

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Supplemental 6: Fact Sheet ›
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Research Shows...

"On average, states that pass primary seat belt laws can expect to increase seat belt use by eight percentage points. Depending on the level of high-visibility enforcement that they employ, however, far greater results are possible."
(UNC Highway Safety Research Center, 2011, p. 20-13)

"Restraining children in rear seats instead of front seats reduces fatal injury risk by about three-quarters for children up to age 3, and almost half for children ages 4 to 8 years old."
(Durbin et al., 2015).

"Harness-based child restraints reduce fatal injuries by 58-71 percent for infants (younger than 1) and by 54-59 percent for 1-4 year olds compared with no restraint."
(NHTSA, 2009).

"The Centers for Disease Control and Prevention's systematic review of 12 high-quality studies found that primary laws increase belt use by about 14 percentage points and reduce occupant fatalities by about 8 percent compared to secondary laws.
Shults et al., 2004 and Farmer and Williams (2005)

"Children 2-6 years old in child safety seats (including child restraints and belt-positioning booster seats) are about 28 percent less likely to be fatally injured than those using seat belts alone (Elliot et al., 2006). Children ages 4 to 8 using belt-positioning boosters are 45 percent less likely to be injured than children using belts alone."
(IIHS. Child Safety. May 2019)

Young Drivers

Definition: *Crashes involving drivers age 20 and younger.*

Between 2013 and 2017, there was a total of 646 severe (fatal + serious injury) crashes involving young drivers. This equates to 130 severe crashes annually.

- 19% of all severe crashes in South Dakota involved young drivers.
- 59% of young driver-involved severe crashes occurred on rural roadways and 36% were at intersections.
- 57% of these crashes occurred between afternoon and evening and 43% occurred between the months of June and September.
- 60% were single-vehicle crashes.
- 53% of young drivers involved in severe crashes were male.
- 35% were unbelted occupants and 52% were related to lane departure.

Key Strategies

The following strategies are considered best practices to reduce crashes involving Young Drivers:

- Involvement of parents in teaching and managing young drivers.
- Targeted education to schools on driving safety.

🔍 **TAKE A CLOSER LOOK**
Supplemental 6: Fact Sheet ›
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Statistics (2013–2017)

Licensed Drivers

Severe Crashes Involving Young Drivers
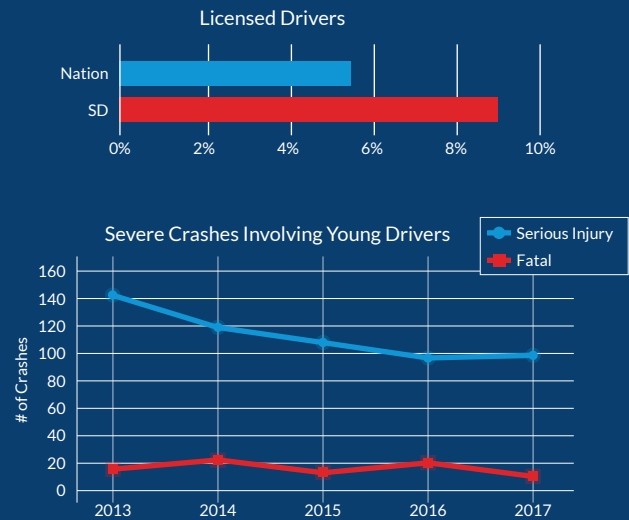
Research Shows…

"Graduated licensing laws were adopted by all 50 states and the District of Columbia between 1996 and 2011. The NIH-supported research effort shows that such programs reduced the rate of fatal crashes among 16-17-year-olds by 8 to 14 percent."

(Graduated drivers licensing programs reduce fatal crashes. National Institutes of Health. November 4, 2011)

"Findings from a 2015 study conducted by researchers at the University of Nebraska – Lincoln support that relative to a supervised driving certification log approach, teens taking driver education are less likely to be involved in crashes or to receive a traffic violation during their first two years of driving in an intermediate stage in a graduated driver licensing system. Because teen crash and fatality rates are highest at ages 16-18, these reductions are especially meaningful."

(Shell, Duane. Newman, Ian. University of Nebraska-Lincoln & Nebraska Prevention Center for Alcohol and Drug Abuse. Driver education and teen crashes and traffic violations in the first two years of driving in a graduated licensing system. Accident Analysis & Prevention Journal, Volume 82. September 2015)

Adam

On Wednesday, October 26, 2016 Adam Forman was heading to school on a road he drives every day, barely a mile from home. It had rained the night before and the road was still wet. He doesn't remember anything leading up to the crash – just remembers being across the median, over-correcting, and then over-correcting again. The car rolled over four times and then Adam lost consciousness. Even though he suffered a partially collapsed lung, a sprained ankle, as well as some scarring, Adam survived the crash, and he attributes that survival to wearing his seatbelt.

"Wear your seatbelt at all times. It take a split second to put your seatbelt on. There is no reason not to do it. Take the 1/2 second to not end up 6 feet under. There is no good excuse not to wear your seatbelt. It doesn't matter if you don't think you look cool. It's better to be prepared than have regret you can't fix."
—Adam Forman
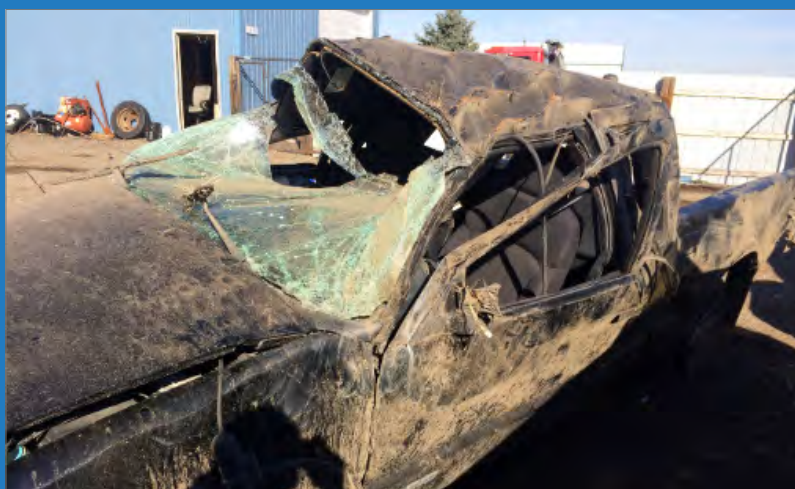
Cross-Cutting Strategies

Through the 2019 SHSP update process, collaboration with stakeholders and partners identified strategies to address severe crashes across all Emphasis Areas. These strategies can prevent a severe crash from occurring or reduce the severity of a crash, regardless of the contributing factors. Strategies were identified in three areas— Emergency Medical Services (EMS), Intelligent Transportation Systems (ITS), and Data Management Systems.

EMS

Traffic Incident Management Planning: Encourage traffic incident management (TIM) planning for incident response, including collaboration among partners (police, DOT, EMS, fire). Establish regional groups for handling emergency response during winter weather and/or during construction activity.

Assist Rural Volunteer Programs: Increase the ability of rural volunteer medical services to recruit volunteers by providing incentives, such as access to free medical training and free certification renewals.

Reduce Secondary Crashes: Train responders on how to establish working areas and traffic control that reduces the number and severity of secondary crashes. Introduce Quick Clearance policies to reduce the number of secondary crashes.

Increase Use of Digital Radio Systems: Provide rural area medical service providers financial assistance to upgrade to digital radio systems to facilitate inter-agency communication.

ITS

Upgrade Traveler Information: Upgrade SDDOT's 511 website and mobile phone app to enhance the sharing of weather conditions and construction zone information. This will allow drivers to select a route that avoids construction and delays or to potentially forgo trips during severe weather. Further enhance the system by linking the State Patrol dispatch system to the traveler information system for improved incident reporting. This can inform drivers when emergency responders are working a crash scene, if roads are closed, or where there is slowing traffic.

Provide Strong Wind Warnings: Provide a wind warning system (such as on-site signing and warning devices) at locations where winds have turned over trucks.

Enhance Commercial Vehicle Operation and Safety: Employ electronic screening sites to identify trucks and then weigh and measure tire pressure and brake temperature. Also, adopt automated permitting and routing to reduce oversized loads from striking overhead structures due to improper routing.

Data Management Systems

Improve Crash Records: Build relationships with tribal representatives to increase frequency of crash reporting. Also, encourage all local and tribal agencies to adopt the electronic crash reporting system to create a consistent and uniform crash data collection process.

Improve Crash Records: Promote full adoption of Model Uniform Crash Criteria Fifth Edition, as encouraged by the National Highway Traffic Safety Administration. Work with law enforcement agencies to develop and implement approaches to improve reporting and better understand the influence of distraction in severe crashes.

Encourage Data-Driven Safety Analysis: Establish methodology for selecting Crash Modification Factors and using them to justify or determine effectiveness of proposed safety mitigation efforts. Encourage the inclusion of predictive safety analysis in local projects where appropriate.

Adopt Predictive Safety: Adopt safety analysis methods that predict crash frequency to aid in the selecting sites for improvement (i.e., network screening).
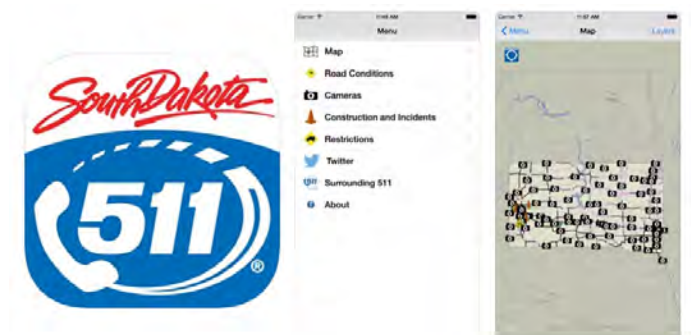
Implementation

The 2019 SHSP represents South Dakota's strategic approach to reducing fatalities and serious injuries across the state. It was developed using crash data and information from a variety of state, regional, local, and tribal transportation safety plans, as well as direction from many stakeholders and individuals. The SHSP was developed to guide and influence all South Dakota safety partners.

HSP and HSIP are both integral parts of a successful South Dakota SHSP.

HSP
Driver behavior-focused (enforcement and education) delivery of NHTSA safety funding and administered by SDDPS

HSIP
Infrastructure-focused (engineering) delivery of FHWA safety funding and administered by SDDOT

In order to achieve the goal of 100 or fewer traffic fatalities by 2024, implementation by many agencies is necessary. The 2019 SHSP represents a five-year vision for traffic safety strategy implementation across all public roads in South Dakota. As part of the federal requirements, the SHSP directly influences the work of South Dakota's behavior-focused Highway Safety Plan and its infrastructure-related Highway Safety Improvement Program. Over the next five years, the adopted programs, countermeasures, and strategies will influence the dedicated work of both safety efforts.

The 2019 SHSP goal will be achieved through widespread implementation of 2019 SHSP priorities and recommendations as regional and local stakeholders adopt them into their own MPO long-range transportation, tribal safety, county safety, and modal plans.

Federal Guidance

The Federal Highway Administration developed the *SHSP Implementation Process Model (IPM)* with the assistance of a broad range of partners, including case studies from model states, experience of pilot states, and subject matter experts. The IPM includes the guidance document *The Essential Eight – Fundamental Elements and Effective Steps for SHSP Implementation*. The Essential Eight refers to four fundamental elements and four steps identified as keys to successful SHSP implementation.
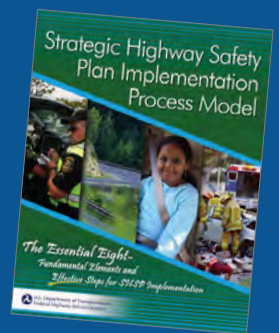
FUNDAMENTAL ELEMENTS:
- Leadership
- Collaboration
- Communication
- Data Collection and Analysis

STEPS FOR IMPLEMENTATION:
- Emphasis Area Action Plans
- Linkage to Other Plans
- Marketing
- Monitoring, Evaluation, and Feedback

Implementation plans are included in the 2019 SHSP supplemental material for the key strategies in each Emphasis Area. Each implementation plan has detail about the following areas:

- Responsible Lead Agency
- Potential Partners
- Facilities with Higher Percentage of Severe Crashes
- Objective
- Goals for Deployment
- Four E's of Safety

Implementation plans for each Emphasis Area are available by clicking on the following links:

- Drugs and Alcohol
- Intersections
- Lane Departures
- Motorcycles
- Older Drivers
- Speeding and Aggressive Drivers
- Unbelted Vehicle Occupants
- Young Drivers

Resources To Assist Local Agencies and Tribal Nations

Safety programs and improvements on state highways are crucial to reducing the number of severe crashes; however, with nearly half (48 percent) of severe crashes on non-state roads, it is only possible to achieve the vision – Everyone Arrives Home Safely – with a comprehensive perspective that includes all public roadways in the state.

Local agencies and tribal nations face unique challenges related to funding and technical resources. To support these important South Dakota partners, the SDDOT and the Department of Public Safety operate several assistance programs that could benefit the mission and further the goals of the SHSP. For a complete listing, please reference the Resources to Assist Non-State Agencies Appendix to the 2019 SHSP.

🔍 **TAKE A CLOSER LOOK**

For more information, reference **Supplemental 11: Engineering Resources** ❯ and **Supplemental 12: Behavioral Resources** ❯

➜ LEARN MORE

Local Leadership in the Engineering Community

The Minnehaha County government and SDDOT partnered to implement safety improvements and reduce crashes. Initially, SDDOT provided resources and education to the county. In turn, the county embraced the recommended countermeasures and now is implementing them on their own. Minnehaha County has replaced all signs to meet reflectivity requirements and began installing shoulder rumble strips on area roads. These improvements will be monitored to see how they reduce crashes in the area.

Recently, the Minnehaha County Highway Superintendent joined the national Drive to Zero task force and is actively seeking ways to continue improving their program. Discussions around sight lines and intersections are already taking place.

Both groups are committed to positively impacting the lives of people that live and commute in the county. This successful partnership is a lasting way to do so.

Photo by Alexius Horatius

Special Rules

Older Drivers and Pedestrians

According to the FAST Act, if fatalities and serious injuries per capita for drivers and pedestrians who are 65 years of age or older increase during the most recent two-year period for which data is available, older driver strategies must be identified and included in the SHSP. A review of the most recent crash data for South Dakota shows no increase in the fatality and serious injury rate (per capita) for older drivers and pedestrians. Therefore, at the time of this update, the Older Driver and Pedestrian Special Rule does not apply.

An Older Driver Emphasis Area was added to the 2019 SHSP and includes a list of potential strategies to reduce crashes involving older drivers.

High Risk Rural Roads

A high-risk rural road (HRRR) is classified as a local or major/minor collector that has a history or the potential for fatal or serious injury crashes, as determined by field reviews, safety assessments, road safety audits, or local knowledge. High-risk rural roads also include local or major/minor collector roads where anticipated changes (such as development that significantly increase traffic volumes) could increase the frequency of fatal and serious injury crashes such that the severe rate that exceeds the statewide average for similar roadways.

Under the FAST Act, if fatality rates on rural major or minor collectors or on rural local roads with significant safety risks (as identified in a state's updated SHSP) increase over a two-year period, the State must obligate at least 200 percent of its fiscal year 2009 HRRR set-aside for projects on the HRRR system.

A review of the most recent crash data for South Dakota shows an increase in the fatality rates for the HRRR system.

While improvements for individual corridors and locations will be selected on actual site and crash conditions, the countermeasure tables in the 2019 SHSP identify strategies that are well suited for systemic deployment. Given the typical nature of the HRRR system—low volume, severe crashes widely spread over a large area—the widespread use of systemic compatible strategies is anticipated to have the greatest impact on the number of severe crashes.

Implementation Plan

This implementation plan serves as a strategic guide to help all South Dakota safety partners stay focused and collaborate effectively on key safety strategies along roadway systems and facilities determined to be at-risk.

Goals

An average of 126 lives are lost on South Dakota public roadways each year. Implementation is the foundation for the 2019 SHSP and is critical to reach the goal of reducing fatalities to 100 or fewer and serious injuries to 400 or fewer by 2024.

Leadership, Collaboration, and Communication

Strong leadership across South Dakota state departments is vital to the success of the Strategic Highway Safety Plan (SHSP). South Dakota has committed the following department staff to lead the implementation of the SHSP:

- Department of Transportation – Highway Safety Engineer
- Department of Public Safety – Director of the Office of Highway Safety

South Dakota SHSP leadership intends to collaborate with various agencies, as needed, as they work through the implementation of the SHSP. Potential partners include:

- Department of Health
- South Dakota Municipal League
- South Dakota Association of County Commissioners
- South Dakota Association of Towns and Townships
- South Dakota Highway Patrol
- Federal Highway Administration
- South Dakota Department of Tribal Relation
- Emergency Medical Services
- Department of Education

🔍 **TAKE A CLOSER LOOK**
Supplemental 8: Data Sources ›

Data Collection and Analysis

The South Dakota DOT plans to collect and review crash data on an annual basis to identify crash trends, types, and contributing factors and compare them to the data trends documented in the SHSP. This data will be used to:

- Select and implement appropriate systemic improvements to the transportation network and identify projects to improve safety at high-crash locations.
- Monitor and evaluate the outcomes and results of safety projects and programs.
- Justify the need for resources to support implementation of safety projects and programs.
- Establish data sharing protocols to ensure all stakeholders are working from the same data sets and have access to the data they need.

Linkage to Other Plans

In order to achieve the goals of the SHSP, implementation by many agencies is necessary. Therefore, the 2019 SHSP represents a five-year vision for traffic safety strategy implementation across all public roads in South Dakota. As part of the federal requirements, the SHSP directly influences the work of South Dakota's behavior-focused Highway Safety Plan and its infrastructure-related Highway Safety Improvement Program. Over the next five years, the programs, countermeasures, and strategies adopted will influence the dedicated work of both safety efforts.

As part of the 2019 update to the South Dakota Strategic Highway Safety Plan (SHSP), a review was completed of all relevant existing transportation related safety programs. The purpose of this research was to identify and catalog current strategies being deployed by the SHSP safety partners in relation to the four E's of safety (Engineering, Enforcement, Education, and Emergency Response) with respect to the SHSP update's emphasis areas. The effort also assessed the coverage of each emphasis area with respect to current strategies and was used to develop recommendations of additional strategies to be considered for inclusion in the SHSP.

Click on the links to the left to view the full list of transportation and safety plans reviewed and a full list of safety strategies that were documented across all transportation and safety plans along with the effectiveness of each. The list of strategies is organized by emphasis area and then further broken down by the various E's (Engineering, Enforcement, Education, and Emergency Response).

Marketing

Information related to the SHSP and implementation progress can and should be shared with multiple audiences – general public, elected officials and safety partners. Marketing of the SD SHSP and the implementation plan will include news events, communicating with various local agencies and giving presentations at transportation related meetings and conferences.

Monitoring, Evaluation, and Feedback

Performance Evaluation is an important component of the SHSP because it provides the opportunity to assess whether the SHSP is meeting South Dakota's established traffic safety goals and is imperative for the success of South Dakota's SHSP.

A performance measure tracking spreadsheet, previously developed by the SDDOT, will continue to serve to organize and standardize monitoring across all Emphasis Areas. The spreadsheet includes fields to document safety strategies to be implemented, collect data, and record monitoring activities. To simplify the monitoring spreadsheet, the SDDOT will lead gathering and entering data relative to the performance measures annually to assist with reporting findings to leadership and assessing progress towards SHSP goals.

The findings from the annual monitoring and evaluation will be used to determine the implementation focus for the next year.

Emphasis Area Performance Measures

The SHSP update process included the development of performance measures for each emphasis area by determining the current percentage of crashes that each emphasis area was involved in over the five year period from 2013-2017 and then applying that percentage to the overall statewide goal of reducing fatalities to 100 or fewer and serious injuries to 400 or fewer by 2024.

Exhibit 15. Performance Measures for South Dakota's Safety Emphasis Areas

SAFETY EMPHASIS AREA	PERFORMANCE MEASURES
Drug and Alcohol	Reduce Drug and Alcohol traffic fatal crashes to 36 or fewer and serious injury crashes to 69 or fewer by 2024
Intersection	Reduce Intersection traffic fatal crashes to 15 or fewer and serious injury crashes to 92 or fewer by 2024
Lane Departure	Reduce Lane Departure traffic fatal crashes to 64 or fewer and serious injury crashes to 178 or fewer by 2024
Motorcycle	Reduce Motorcycle traffic fatal crashes to 16 or fewer and serious injury crashes to 79 or fewer by 2024
Old Drivers	Reduce Older Driver traffic fatal crashes to 20 or fewer and serious injury crashes to 57 or fewer by 2024
Speeding and Aggressive Driving	Reduce Speeding and Aggressive Driving traffic fatal crashes to 23 or fewer and serious injury crashes to 75 or fewer by 2024
Young Drivers	Reduce Young Driver traffic fatal crashes to 12 or fewer and serious injury crashes to 61 or fewer by 2024
Unbelted Vehicle Occupants	Reduce Unbelted Vehicle Occupant traffic fatal crashes to 46 or fewer and serious injury crashes to 84 or fewer by 2024

Supplemental Information
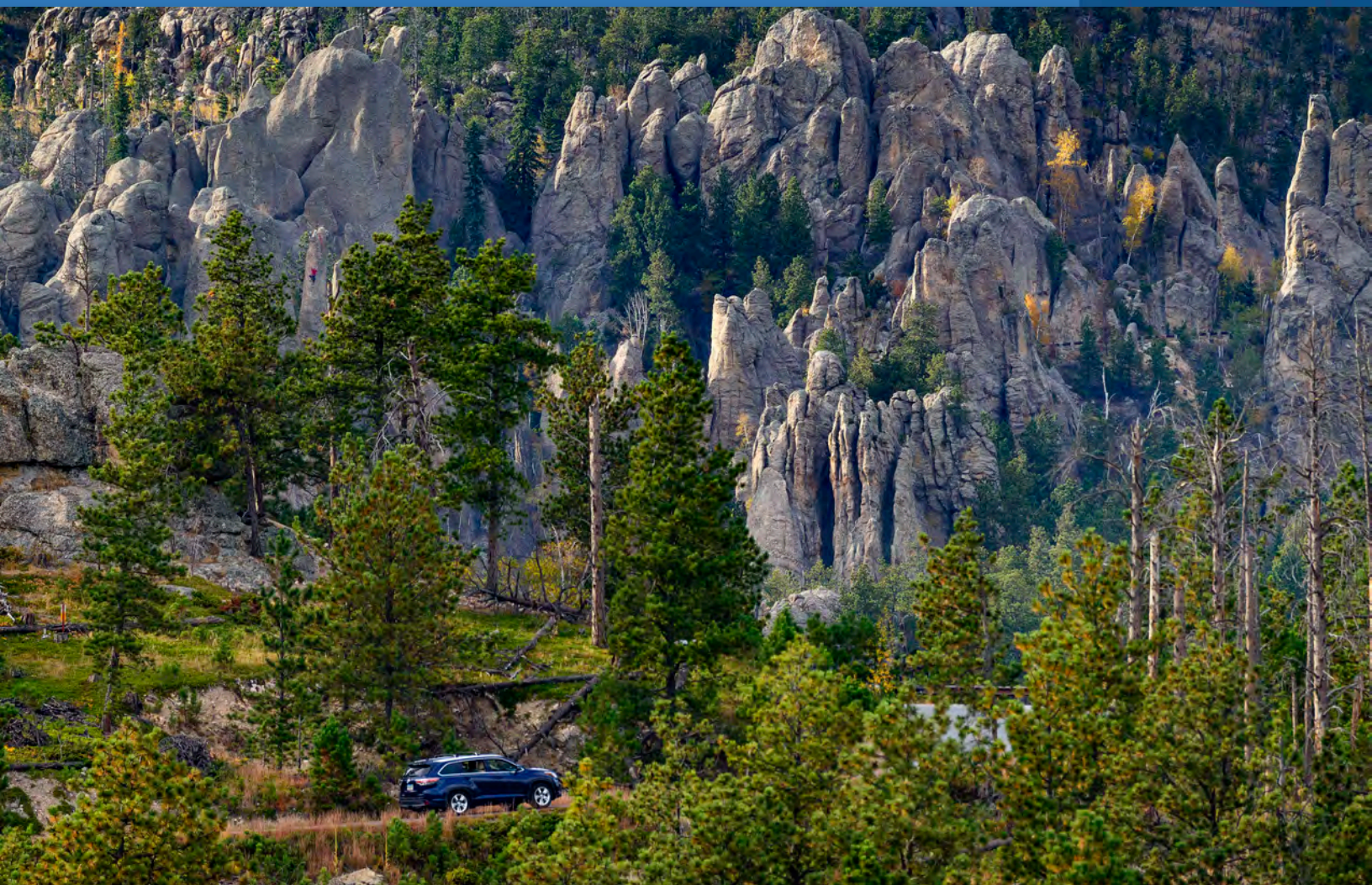
Supplemental Information: Contents

- Supplemental Data 1: Crash Analysis State Roadway Network Overview

- Supplemental Data 2: Crash Analysis Data Sources and Methods

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- Supplemental Data 4: Crash Analysis Results – Emphasis Areas

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- Supplemental Data 9: Existing Strategies for Emphasis Areas

- Supplemental Data 10: Stakeholder Engagement

- Supplemental Data 11: Engineering Resources

- Supplemental Data 12: Behavioral Resources

For alternate versions of the following materials please contact Kristi Sandal at kristi.sandal@state.sd.us
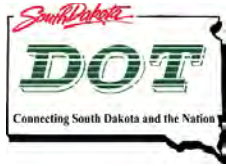
Supplemental Data 1: Crash Analysis State Roadway Network Overview

Roadway Miles

Across South Dakota there are 82,584 miles of public roads under the jurisdiction of numerous agencies that are responsible for their maintenance and operation (**Table 1**). The South Dakota Department of Transportation (SDDOT) has nearly 7,800 miles of road, including the Interstate system, US Highways and State Highways. While the SDDOT is responsible for less than 10 percent of the total miles, their website reports that 67 percent of the state's vehicle miles traveled (VMT) occurs on the state highway system.[1]

The rest of the roads are described as local (such as county, city or township) and "other" (such as federal, state park, tribal) agencies. Counties and townships each operate over 30,000 miles of roads, the two largest systems (by miles) in the state. Nearly all township roads are not paved, which are typically a low volume facility. While most county roads are not paved (over 27,000 miles), the county paved road system is nearly the same size as the paved state roads. Cities and other agencies each own and operate just over 4,000 miles of roadways.

Table 1 – Roadway Miles by Roadway Description and Surface Type

Roadway Description	Paved	Gravel	Other[1]	Total
State Highways	7,731	66	<1	**7,798**
County Roads	7,708	22,330	5,055	**35,093**
City Streets	3,656	684	33	**4,373**
Township Roads	215	23,898	6,953	**31,066**
Other Agencies	1,172	2,278	804	**4,254**
Statewide Total	**20,482**	**49,256**	**12,846**	**82,584**

[1] *Includes primitive, unimproved, graded, and brick. Source: 2017 Mileage Reports; Rural Road and City Street Mileage by Surface Type. South Dakota Department of Transportation.*

Crashes

Across South Dakota, there were 87,649 reported crashes that occurred on public roads from January 1, 2013 through December 31, 2017 (**Table 2**). A majority of the crashes (77 percent) resulted in no injury. However, there were 575 crashes where at least one individual was killed and 2,904 crashes where at least one person sustained an incapacitating injury. In total, there were nearly 3,500 severe crashes—about 700 crashes per year where at least one person was killed or seriously injured.

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[1] http://www.sddot.com/transportation/highways/Default.aspx

Table 2 – Crashes (2013-2017) by Roadway Description and Severity

Roadway Description	Fatal	Incapacitating Injury	Non-incapacitating Injury	Possible Injury	Property Damage	Total
State Highways	327	1,487	2,702	3,064	31,171	**38,751**
County/ Township Roads	193	703	1,314	1,169	10,222	**13,601**
City Streets	54	691	3,103	5,070	25,422	**34,340**
Other Agencies	1	23	60	113	759	**956**
Statewide Total	**575**	**2,904**	**7,179**	**9,416**	**67,574**	**87,649**

Source: South Dakota Department of Public Safety.

As already noted, the state highway system accounts for less than 10 percent of all roadways in South Dakota but a majority of travel across the state (67 percent of VMT). The amount of travel is known to be one of the best indicators for the potential of a crash, including severe crashes. So, it is not unexpected that a majority of severe crashes (57 percent of fatal, 51 percent of incapacitating injury) were reported on state highways. However, even though more than half of severe crashes occurred on state highways, because nearly half of these crashes occurred on other roadways underscores the importance of addressing all public roads.

Of these crashes on other roadways, most of the remaining fatal crashes were on county roads (34 percent), and 9 percent occurred on city streets. However, incapacitating injury crashes were split nearly equally between county roads and city streets—each with 24 percent of incapacitating injury crashes.

Comparison to National Trends

Traffic fatality comparisons were made between South Dakota and the Nation for several key metrics to assess South Dakota's experience relative to the rest of the country. South Dakota traffic fatalities have generally mirrored National trends. South Dakota however has been slower to see traffic fatalities rise in recent years.

A more telling trend with regard to how South Dakota compares to nationwide traffic fatalities may be traffic fatality rates. Both national and South Dakota fatality rates per hundred million vehicle miles traveled (HMVMT) for the year 2000 through the year 2017 are shown in **Figure 1**. South Dakota had a higher fatality rate than the national average for each of these years, although overall it is very similar to the national average.

Figure 1: Traffic Fatality Rates
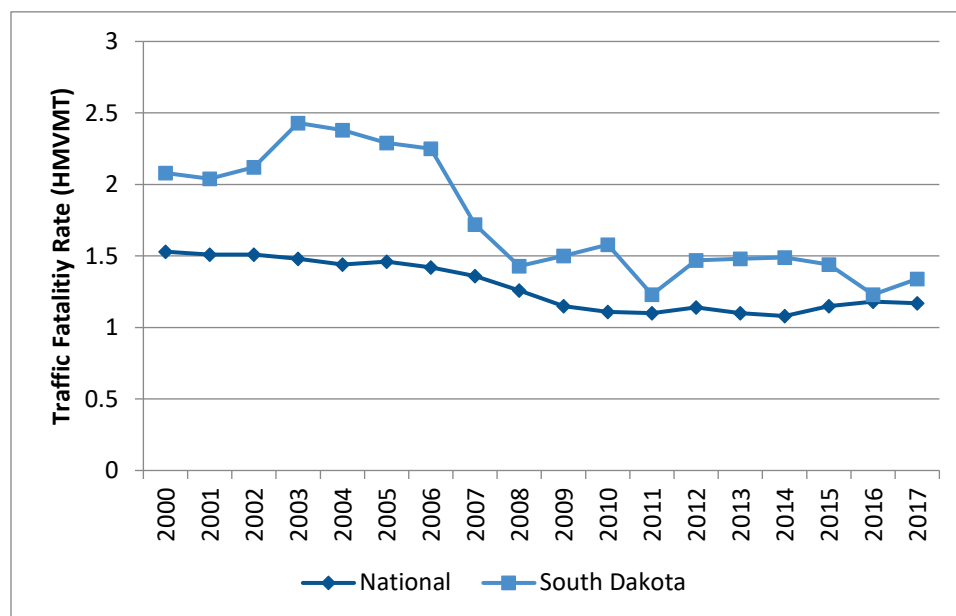
Motor vehicle fatalities by highest driver blood alcohol content (BAC) show an interesting trend when comparing South Dakota to nationwide data (**Figure 2**). Only 53% of fatal crashes in South Dakota involved no alcohol, compared to 66% nationwide. Also, of note, 25% of fatal crashes in South Dakota had a driver with BAC over 0.15 g/dL compared to 19% nationwide.

Figure 2: Motor Vehicle Fatalities by Highest Driver BAC, 2016
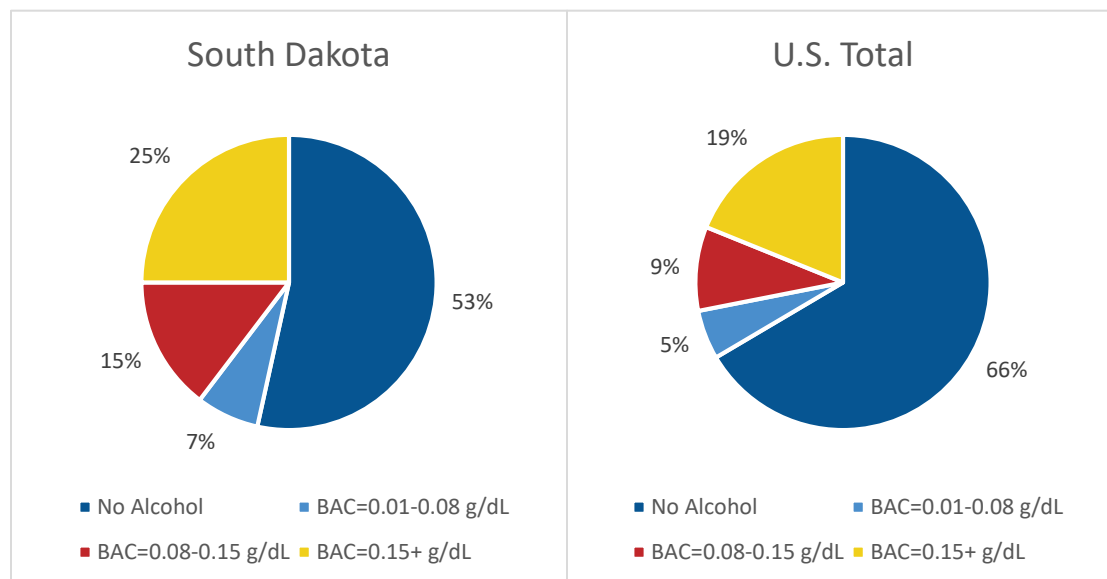
Source for motor vehicle fatalities by highest driver BAC, 2016:
https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812450

Supplemental Data 1: Crash Analysis State Roadway Network Overview

Seat belt use rates for South Dakota were also compared to average national seat belt use rates (**Figure 3**). In 2017, South Dakota had the third lowest seat belt use rate (74.8%) of all U.S. states. A summary of South Dakota's seat belt use rate compared to national average use rates from 2010 to 2017 is shown in

Figure 3. While seat belt use rate in South Dakota has increased in each of the past 5 years, it is still well below the 2017 average national seat belt use rate of 89.7%.

Figure 3: Seat Belt Use Rates
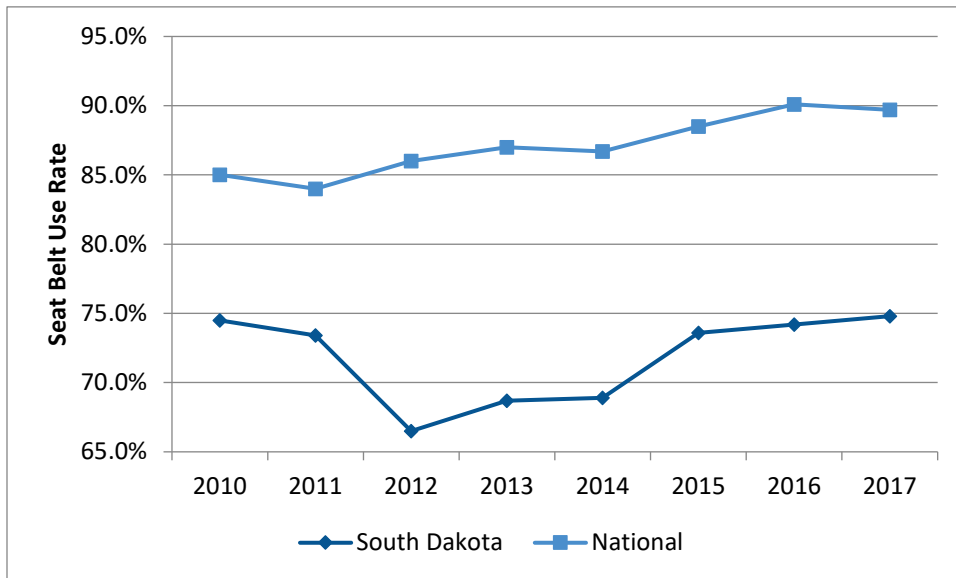
Source for seat belt use rates: https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812546

A rural/urban comparison of traffic fatalities was also conducted for the year 2016. For fatal crashes occurring in South Dakota, a total of 103 (89%) occurred on rural roadways. 13 (11%) total crashes for the year were classified as urban. In contrast, on average 50% of fatal crashes occurring at the national level occurred on rural classified roadways, while 47% of total fatal crashes took place on urban roadways and 3% were designated as unknown. **Figure 4** provides a visual comparison between rural/urban fatal crashes in South Dakota and nationwide.
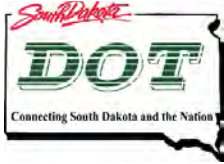
Figure 4: Rural/Urban Traffic Fatalities, 2016
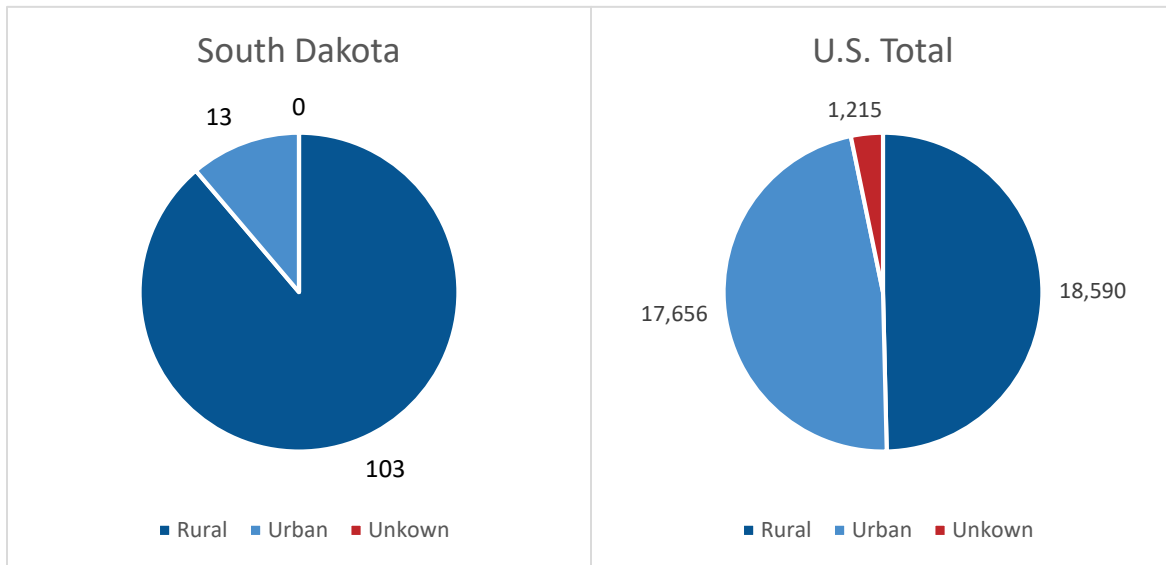
Source for rural/urban fatalities: https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812521

Lastly, according to the U.S. Census Bureau's 2017 National Population Projections, by 2030 all baby boomers will be older than age 65. As older drivers make up an increased proportion of the driving population, it is important to understand what impacts that may have on crashes and traffic fatality rates. The percentage of fatal crashes involving older drivers, defined as being age 65 or older, were compared for the state of South Dakota and the nation. The results were very similar, as shown in **Figure5**. Nearly 17% of South Dakota's fatal crashes were attributed to older drivers compared to approximately 14% of the U.S. fatal crashes were attributed to older drivers.

Figure 5: Older Drivers Involved in Fatal Crashes, 2016
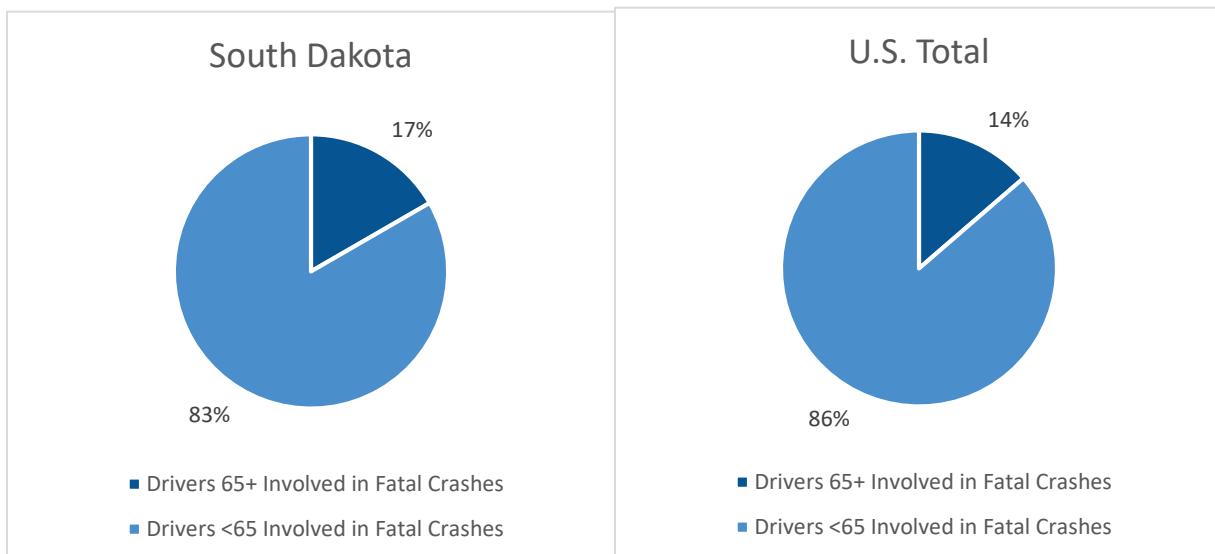
Source for older driver involved crashes, 2016: https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812500

Supplemental Data 2: Crash Analysis Data Sources and Methods

Data Sources

Statewide crash records from 2013 through 2017 were obtained from two sources: the South Dakota Department of Public Safety (SD DPS) and the South Dakota Department of Transportation (SDDOT). The SDDOT data set included crash information related to highway descriptions in terms of State, City or County, junction vs. non-junction classification, and lane departures. The DPS data set included additional detailed crash information relating to driver and vehicle characteristics, injury status classification, manner of collision, contributing factors that led to the crash, citation details, and other items deemed relevant and useful in categorizing the crashes into various emphasis areas. Fatal and incapacitating injury crash totals were compared between the two data sets, and it was determined that the data from both sources coordinated appropriately and could therefore be used interchangeably based on what criteria was needed for creating the emphasis area queries.

Common identifying factors shared between both data sets were identified. These common fields included:

- Accident Sequence ID numbers

- Accident Numbers

- Unit Numbers in relation to vehicles involved, and

- Person Sequence ID numbers in relation to the individuals reportedly involved in the crashes.

Within the crash database, table relationships were developed using the common fields.

Emphasis Areas

A SHSP update process typically begins with classifying crashes by a crash type, crash location and/or a contributing factor, such as a lane departure, work zone, or impaired driving crash. The standard process is to start with the emphasis areas identified by AASHTO, and also those documented in the current SD SHSP. For this update, the only change made to the full list of emphasis areas was to add a category for animal-involved crashes.

To determine which crashes correspond with which emphasis areas, data queries were developed for each emphasis area based on an established set of criteria. For example, to categorize all crashes involving unbelted drivers, the query was set to flag all crashes from the DPS database that matched the following criteria:

- Fatal or Incapacitating Injury

- "None Used" as designated for Safety Equipment Description

- Excluded Motorcycle, moped, pedestrian, farm/heavy machinery, and all-terrain vehicle crashes

Yearly data query totals for selected emphasis were compared with DPS's published *South Dakota Motor Vehicle Traffic Crash Summaries* areas for years 2015, 2016, and 2017. These comparisons served as a method of control to determine if the correct criteria were being used in the queries. A crash could be counted in multiple emphasis areas if it matches criteria for them. For example, a crash at an intersection involving a young driver would be included in both emphasis areas. For this reason, summing the crashes from all emphasis areas will result in a total greater than the actual number of crashes.

High-Risk Locations

Once all severe crashes were classified based on emphasis area, high-risk locations were identified through a GIS spatial analysis. High-risk intersections were determined by combining the crash data with an intersection inventory

provided by SDDOT, and then conducting a spatial assignment using a 250-foot radius buffer. Based on the frequency of intersection–related crashes occurring within that 250-foot buffer, the highest-risk intersections could be identified. A similar approach was used to assign motorcycle and lane departure crashes to segment crashes.

Each high-risk crash location includes information regarding roadway characteristics such as intersection control, paved vs. non-paved, roadway classification, ADT, and speed. Using characteristics from the crash data and roadway inventory, frequently occurring characteristics can be identified as high-risk factors.

Heat maps were developed as well to supplement the high-risk crash location analysis. The heat maps provide a visual representation of crash locations that experience a high frequency of severe crashes, as denoted by the red shading or "hot spots."

Supplemental Data 3: Crash Analysis Results – High Risk Locations

Statewide crash records from 2013 through 2017 obtained from the DPS and SDDOT were reviewed to identify characteristics of locations that are at high risk. Special attention was given to severe crashes at intersections, severe crashes on segments, and severe crashes on segments involving motorcycles.

High-Risk Intersections

A detailed intersection crash analysis was conducted to identify characteristics of intersections that are at high risk. The crash tree diagram illustrated in **Figure 1** breaks down the severe crashes by roadway characteristics for all severe crashes that occurred at urban intersections in South Dakota from 2013-2017. Some of the highlights include:

- 41% of the intersections are in urban areas. However, 62% of the severe intersection crashes occurred at urban intersections.

- 24% of the urban intersections are partial stop controlled and 44% of the urban severe intersection crashes occurred at these partial stop-controlled intersections. 65% of these accidents were right-angle crashes.

- 2% of the urban intersections are signalized and 43% of the urban severe intersection crashes occurred at signalized intersections. 59% of these accidents were right-angle crashes.

A review of severe pedestrian crashes at urban intersections indicates that 78% occurred at either partial stop controlled or signalized intersections.

Figure 1: Urban Intersection Severe Crash Data Overview
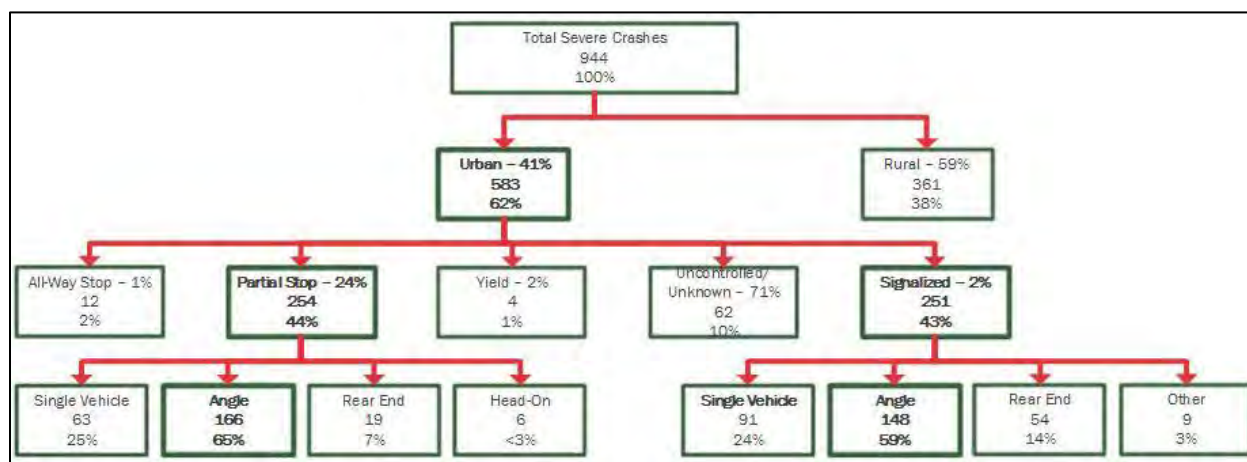
The crash tree diagram in **Figure 2** breaks down the severe crashes by roadway characteristics for all severe crashes that occurred at rural intersections in South Dakota from 2013-2017. Some of the highlights include:

- 59% of intersections are in rural areas. 38% of severe intersection crashes occurred at these intersections.

- 25% of rural intersections are partial stop controlled and 76% of rural severe intersection crashes occurred at these intersections. 70% were right-angle crashes

Figure 2: Rural Intersection Severe Crash Data Overview
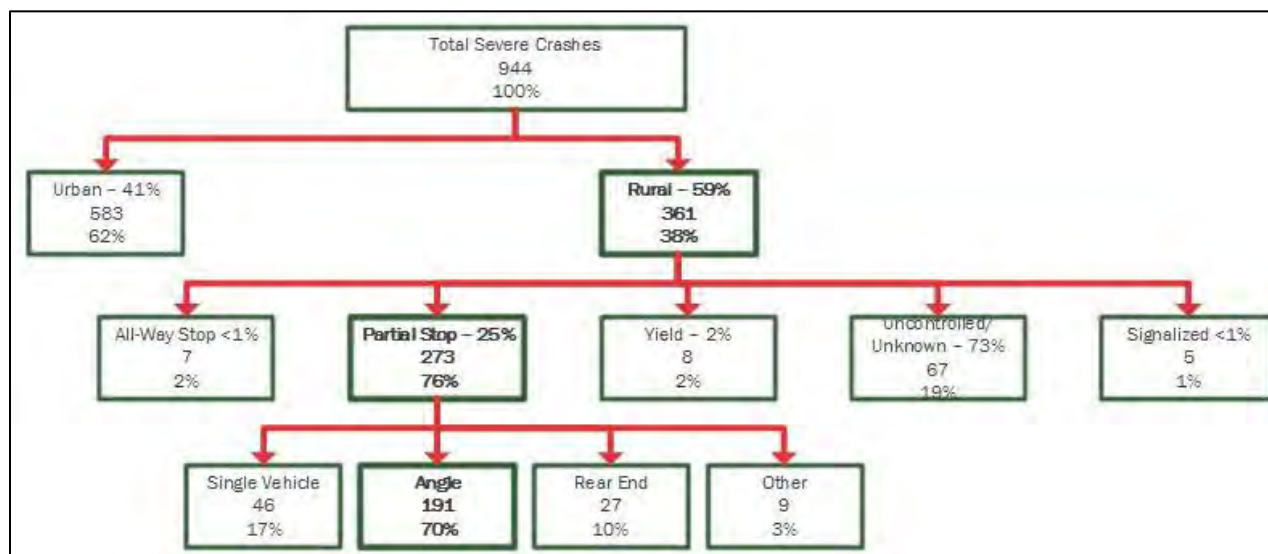
In addition to traffic control device and manner of collision, other roadway characteristics such as roadway condition, junction description, alignment description, shoulder description, median type, and speed limit were reviewed. However, no conclusions were made with regards to these intersection characteristics.

Results of the intersection crash analysis indicate that urban signalized, urban partial stop controlled, and rural partial stop-controlled intersections are at the highest risk for severe crashes, with right angle crashes being the predominant type of severe crashes.

Other intersection characteristics that were not readily available but could be used to further identify high-risk intersections include: ADT cross product, alignment skew, proximity to a curve, adjacent trip generators, presence of a railroad crossing, and distance from the last location a vehicle stopped.

High-Risk Segments

A detailed segment crash analysis was conducted to identify characteristics of segments that are at high risk. The crash tree diagram illustrated in **Figure 3** breaks down the severe crashes by roadway characteristics for all severe crashes that occurred on urban segments in South Dakota from 2013-2017. Some of the highlights include:

- 23% of the severe segment crashes occurred in urban areas which accounts for 16% of the lane miles statewide.
  - o 42% of the urban severe crashes occurred on state roadways.
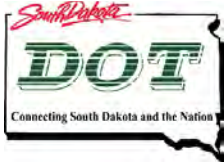   - ▪ 48% of the urban severe crashes on state roadways were on divided roadways.
      - 60% of the urban severe crashes on divided state roadways involved a lane departure, of which 94% were run-off-road crashes.
      - 40% of the urban severe crashes on divided state roadways were non-lane departure crashes, of which 17% were right-angle crashes, 39% were rear-end crashes, and 38% were single-vehicle crashes (crashes involving a pedestrian, bicycle, animal, etc.).
    - ▪ 46% of the urban severe crashes on state roadways were on undivided roadways.

- 43% of the urban severe crashes on undivided state roadways involved a lane departure, of which 84% were run-off-road crashes.

- 57% of the urban severe crashes on undivided state roadways were non-lane departure crashes, of which 45% were right-angle crashes, 25% were rear-end crashes, and 21% were single-vehicle crashes (crashes involving a pedestrian, bicycle, animal, etc.).

  o 56% of the urban severe crashes occurred on city roadways.

    ▪ 85% of the urban severe crashes on local roadways were on undivided roadways.

      - 49% of the urban severe crashes on undivided local roadways involved a lane departure, of which 92% were run-off-road crashes.

      - 51% of the urban severe crashes on undivided local roadways were non-lane departure crashes, of which 21% were right-angle crashes, 28% were rear-end crashes, and 51% were single-vehicle crashes (crashes involving a pedestrian, bicycle, animal, etc.).

Figure 3: Urban Segment Severe Crash Data Overview
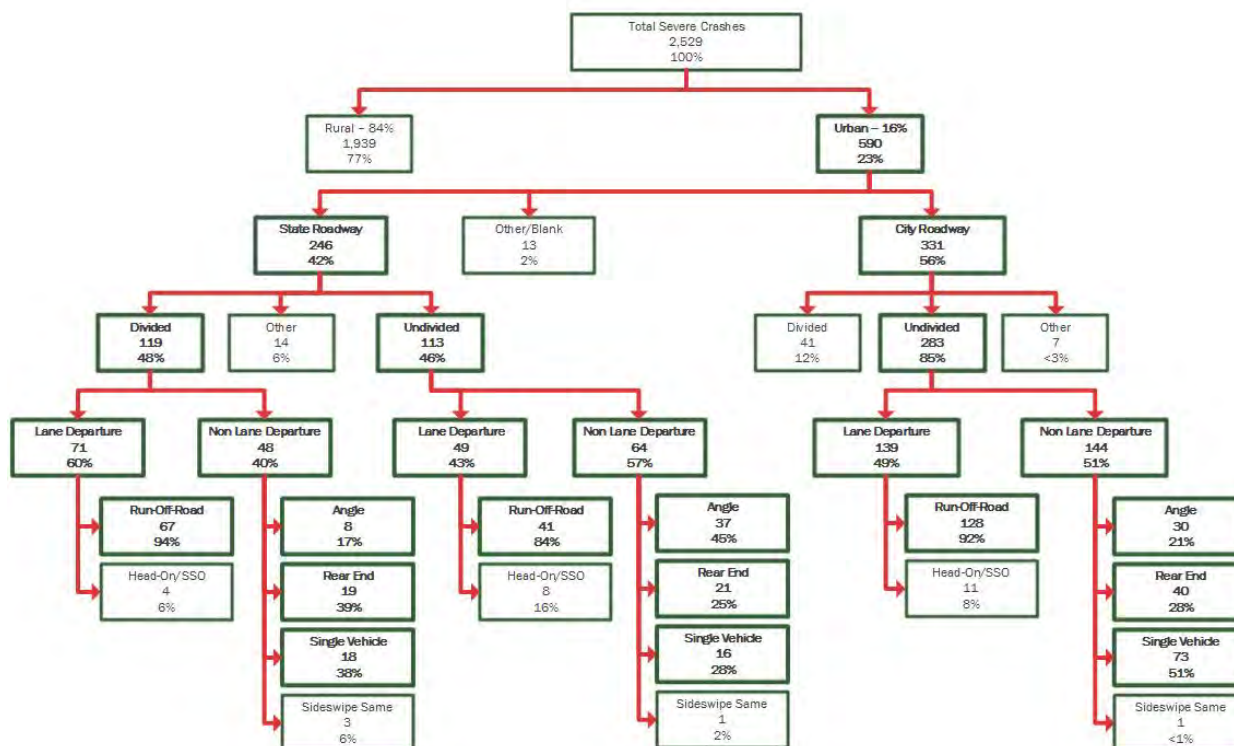
The crash tree diagram illustrated in **Figure 4** breaks down the severe crashes by roadway characteristics for all severe crashes that occurred on rural segments in South Dakota from 2013-2017. Some of the highlights include:

- 77% of the severe segment crashes occurred in rural areas which accounts for 84% of the lane miles statewide.

  o 61% of the rural severe crashes occurred on state roadways.

  o 91% of the rural severe crashes on state roadways were on 2-lane roadways.

- o 85% of the rural 2-lane state roadway crashes involved a lane departure.
  - ▪ 87% of the 2-lane state roadway lane departure crashes were run-off-road crashes, of which 29% occurred on a curve.
  - ▪ 13% of the 2-lane state roadway lane departure crashes were head-on or side swipe opposing direction crashes, of which 24% occurred on a curve.
- o 38% of the rural severe crashes occurred on county roadways.
- o 96% of the rural severe crashes on county roadways were on 2-lane roadways.
- o 88% of the rural 2-lane county roadway crashes involved a lane departure.
  - ▪ 95% of the 2-lane county roadway lane departure crashes were run-off-road crashes, of which 34% occurred on a curve.
  - ▪ 5% of the 2-lane county roadway lane departure crashes were head-on or side swipe opposing direction crashes, of which 31% occurred on a curve.

Figure 4: Rural Segment Severe Crash Data Overview
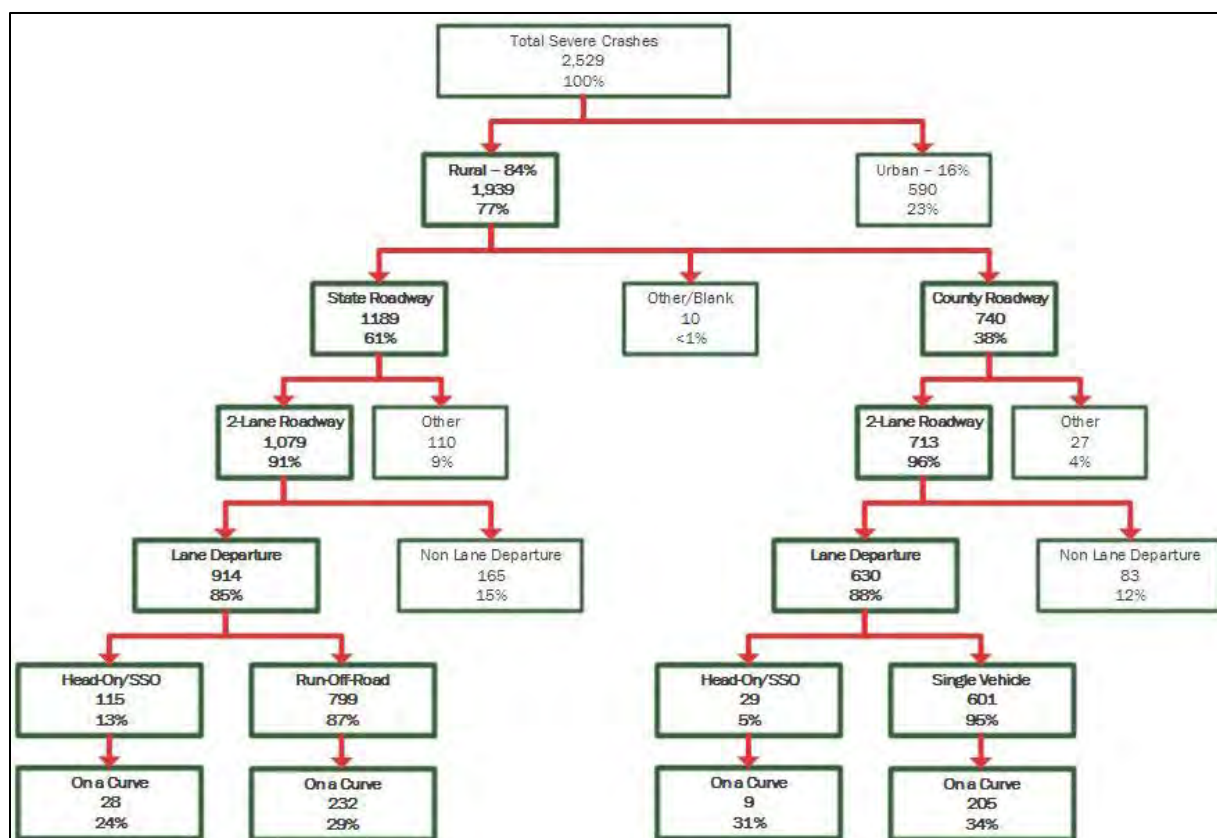
In addition to highway description, number of lanes, manner of collision, and alignment description, other roadway characteristics such as roadway condition, surface type, cross direction, shoulder type, median type, and speed limit were reviewed. However, no conclusions were made with regards to these segment characteristics. A systematic analysis was unable to be completed because the information was included in the crash reports, but not in the intersection database.

Results of the segment crash analysis indicate that urban severe crashes occur primarily on the state and local system. Severe crashes on the urban state roadways occur evenly on divided and undivided roadways, while

severe crashes on urban local roadways occur primarily on undivided roadways. A disproportionately high number of severe crashes occurred on rural curves.

Other roadway characteristics that were not readily available could be used to further identify high-risk segments. These characteristics include ADT, access density, edge risk, and curve density.

High Risk Segments - Motorcycles

Approximately 25 percent of the severe segment crashes in South Dakota involved a motorcycle. Therefore, a detailed segment crash analysis was conducted to identify characteristics of segments that are at high risk for severe motorcycle crashes. The crash tree diagram illustrated in **Figure 5** breaks down the severe crashes by roadway characteristics for all severe motorcycle crashes that occurred on urban segments in South Dakota from 2013-2017. Some of the highlights include:

- 20% of the severe segment crashes occurred in urban areas.
    - 45% of the urban severe crashes occurred on state roadways.
        - 45% of the urban severe crashes on state roadways were on divided roadways.
            - 46% of the urban severe crashes on divided state roadways involved a lane departure, of which 92% were run-off-road crashes and 8% were head-on/SSO crashes.
            - 54% of the urban severe crashes on divided state roadways were non-lane departure crashes, of which 29% were rear-end crashes and 57% were single vehicle crashes (overturn/rollover, animal, and other traffic barrier crashes).
        - 48% of the urban severe crashes on state roadways were on undivided roadways.
            - 36% of the urban severe crashes on undivided state roadways involved a lane departure, of which 70% were run-off-road crashes and 30% were head-on/ SSO crashes.
            - 70% of the urban severe crashes on undivided state roadways were non-lane departure crashes, of which 50% were right-angle crashes, 22% were rear-end crashes, and 28% were single-vehicle crashes (overturn/rollover and animal crashes).
    - 51% of the urban severe crashes occurred on local roadways.
        - 87% of the urban severe crashes on local roadways were on undivided roadways.
            - 45% of the urban severe crashes on undivided local roadways involved a lane departure, of which 100% were run-off-road crashes.
            - 55% of the urban severe crashes on undivided local roadways were non-lane departure crashes, of which 31% were right-angle crashes and 44% were single vehicle crashes (overturn/rollover and animal crashes).

Figure 5: Urban Segment Severe Motorcycle Crash Data Overview
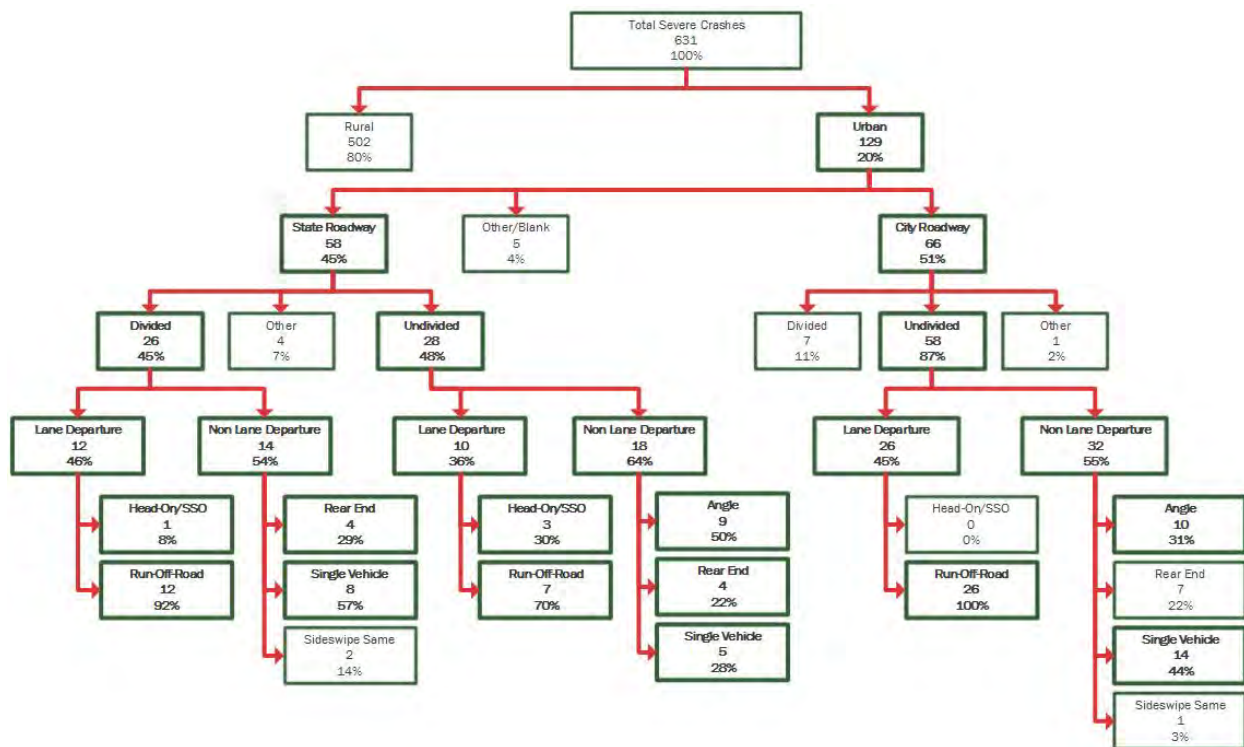
The crash tree diagram illustrated in **Figure 6** breaks down the severe crashes by roadway characteristics for all severe motorcycle crashes that occurred on rural segments in South Dakota from 2013-2017. Some of the highlights include:

- 80% of the severe segment motorcycle crashes occurred in rural areas.
  - 69% of the rural severe motorcycle crashes occurred on state roadways.
  - 88% of the rural severe motorcycle crashes on state roadways were on 2-lane roadways.
  - 73% of the rural 2-lane state roadway motorcycle crashes involved a lane departure crash.
    - 93% of the 2-lane state roadway lane departure motorcycle crashes were run-off-road crashes, of which 51% occurred on a curve.
    - 7% of the 2-lane state roadway lane departure motorcycle crashes were head-on or side swipe opposing direction crashes, of which 53% occurred on a curve.
  - 31% of the rural severe motorcycle crashes occurred on county roadways.
  - Greater than 99% of the rural severe motorcycle crashes on county roadways were on 2-lane roadways.
  - 79% of the rural 2-lane county roadway motorcycle crashes involved a lane departure crash.
    - 97% of the 2-lane county roadway lane departure motorcycle crashes were single vehicle crashes, of which 74% occurred on a curve.
    - 3% of the 2-lane county roadway lane departure motorcycle crashes were head-on or side swipe opposing direction crashes, of which 75% occurred on a curve.

Figure 6: Rural Segment Severe Motorcycle Crash Data Overview
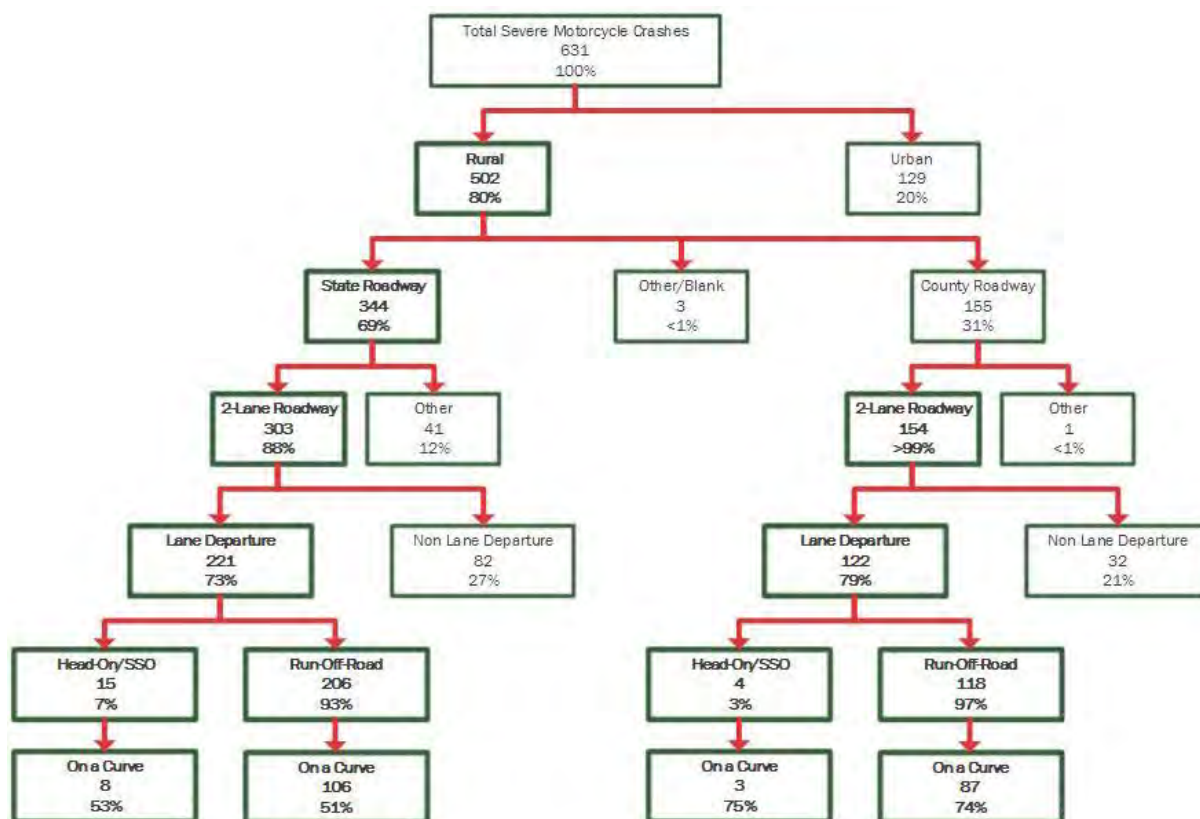
In addition to highway description, number of lanes, manner of collision, and alignment description, other roadway characteristics such as roadway condition, surface type, cross direction, shoulder type, median type, and speed limit were reviewed. However, no conclusions were made with regards to these segment characteristics. A systematic analysis was unable to be completed because the information was included in the crash reports but not in the intersection database.

Results of the segment motorcycle crash analysis indicate that the roadway characteristics of severe motorcycle crashes are consistent with the roadway characteristics of all severe crashes. Urban severe motorcycle crashes occur primarily on the state and local system. Severe crashes on the urban state roadways occur fairly evenly on divided and undivided roadways, while all severe crashes on urban local roadways occur on undivided roadways.

Other roadway characteristics that were not readily available could be used to further identify high-risk segments. These characteristics include ADT, access density, edge risk, and curve density.

Supplemental Data 4: Crash Analysis Results – Emphasis Areas

Crashes by Emphasis Area

Table 1 presents information about the severe crashes (2013-2017) that occurred in each emphasis area. Crashes are summarized statewide and by highway description (state highways, county/township roads, city streets and other) in **Table 1**. A checkmark (✔) indicates that the emphasis area was included in the 2014 South Dakota SHSP while the star (★) identifies areas of focus included in the FY2019 South Dakota Highway Safety Plan (HSP). **Figure 1** presents the statewide crash totals as a chart.

Table 2 summarizes the changes that occurred in the number of severe crashes since the 2014 South Dakota SHSP analysis[1]. Comparing the most recent available crash totals (2013-2017) to the 2014 South Dakota SHSP, the number of severe crashes in the 5-year analysis timeframe dropped by 379, or 10 percent. Furthermore, all emphasis areas have fewer severe crashes since the 2014 SD SHSP except for crashes involving older drivers (increased by 63 severe crashes) and motorcycles (increased by 9 severe crashes).

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[1] *The analysis for the 2014 South Dakota SHSP used crash records from January 1, 2007 through December 31, 2011.*
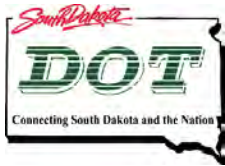
Table 1 –Statewide Fatal and Incapacitating Crashes (2013-2017)

SAFETY EMPHASIS AREA	HSP EMPHASIS AREAS	STATEWIDE		STATE HIGHWAYS		COUNTY/TOWNSHIP ROADS		CITY STREETS		OTHER	
		PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER
Statewide Totals (Fatal and Serious Injury Crashes)		3,479		1,814		896		745		24	
✓ Unbelted Vehicle Occupants	★	31%	1,073	28%	513	45%	407	20%	148	21%	5
✓ Drugs and Alcohol		25%	875	21%	380	36%	322	22%	161	50%	12
Drug Related	★	4%	137	4%	74	3%	30	4%	30	13%	3
Alcohol Related		22%	781	18%	324	34%	304	19%	144	38%	9
Unlicensed Drivers	☐	13%	447	11%	194	17%	150	13%	99	17%	4
Distracted and Drowsy Drivers		8%	287	10%	186	6%	51	7%	50	0%	0
Distracted	★	4%	140	4%	73	3%	24	6%	43	0%	0
Distracted by Electronic Device		1%	42	2%	30	1%	8	1%	4	0%	0
Drowsy		3%	108	5%	85	2%	19	1%	4	0%	0
Bicycles	★	1%	46	0%	8	1%	5	4%	33	0%	0

SAFETY EMPHASIS AREA	HSP EMPHASIS AREAS	STATEWIDE		STATE HIGHWAYS		COUNTY/TOWNSHIP ROADS		CITY STREETS		OTHER	
		PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER
Statewide Totals (Fatal and Serious Injury Crashes)		3,479		1,814		896		745		24	
Heavy Vehicles	☐	9%	297	13%	240	4%	40	2%	15	8%	2
✔ Intersections		27%	948	21%	380	17%	154	55%	413	4%	1
Work Zones		2%	75	3%	55	1%	7	2%	12	4%	1

Note: A checkmark (✔) indicates that the emphasis area was included in the 2014 South Dakota SHSP. A star (★) identifies areas of focus included in the FY2019 South Dakota HSP.

Figure 1: Statewide Fatal and Incapacitating Crashes (2013-2017)
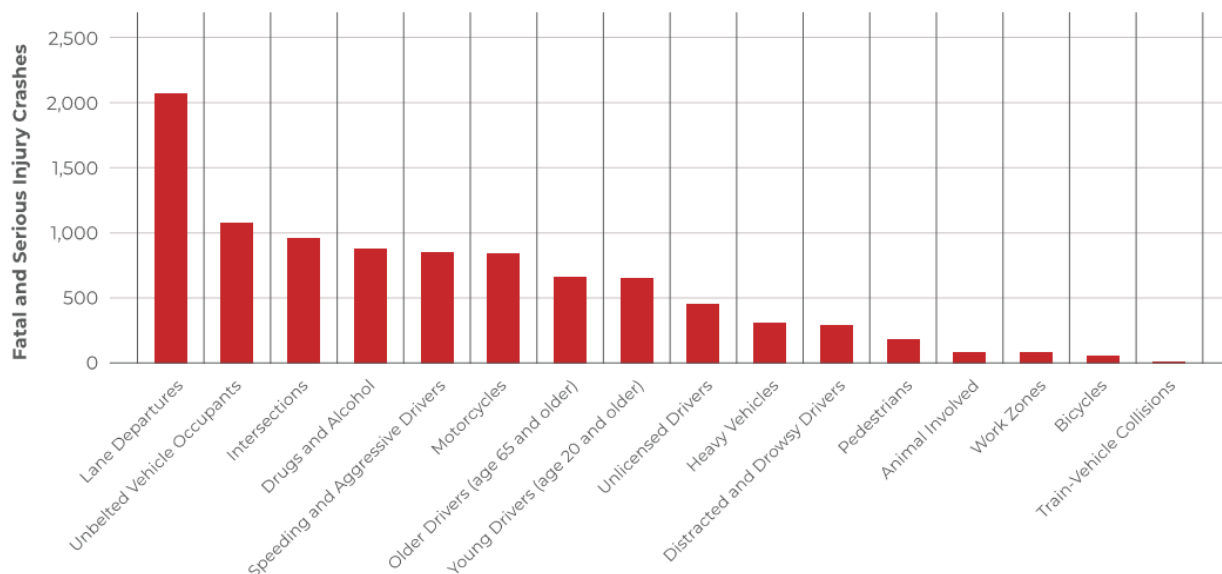
While the number of severe crashes decreased in nearly every emphasis area, several emphasis areas decreased at a rate faster than total severe crashes. Severe Crashes involving unbelted vehicle occupants, speeding and aggressive drivers, young drivers, distracted and drowsy drivers, and lane departure events each decreased by 4 to 8 percentage points when compared to the 2014 South Dakota SHSP. That means these emphasis areas represent a smaller proportion of severe crashes than in the 2014 South Dakota SHSP. All of these emphasis areas were a focus of the 2014 South Dakota SHSP and/or of the South Dakota HSP.

With the exception of crashes involving older drivers and motorcycles, all other emphasis areas accounted for the same proportion of crashes or saw nominal changes in the proportion of total severe crashes. Crashes involving older drivers increased by 4 percentage points when compared to the 2014 South Dakota SHSP. With the increase of crashes involving older drivers while crashes involving young drivers decreased, the older driver emphasis area moved up one spot and passed the young driver emphasis area. Motorcycle crashes increased by 3 percentage points when compared to the 2014 South Dakota SHSP (that is, accounts for a greater proportion of all severe crashes). Because of the increasing trend in motorcycle crashes, this emphasis area has nearly the same number of crashes in the speeding and aggressive drivers and drugs and alcohol emphasis areas.

Table 2 – Fatal and Incapacitating Crash Comparison between 2014 SD SHSP

SAFETY EMPHASIS AREA	SHSP UPDATE ANALYSIS (2013-2017)		2014 SD SHSP (2007-2011)		CHANGE IN FREQUENCY		CHANGE IN PROPORTION	
	PERCENT	NUMBER	PERCENT	NUMBER				
Statewide Totals (Fatal and Serious Injury Crashes)	3,479		3,858		-379	˅		
DRIVERS								
Unbelted Vehicle Occupants	31%	1,073	37%	1,440	-367	˅	-6%	˅
Speeding and Aggressive Drivers	24%	847	28%	1,080	-233	˅	-4%	˅
Drugs and Alcohol	25%	875	24%	926	-51	˅	1%	˄
Young Drivers (age 20 and younger)	19%	646	23%	899	-253	˅	-4%	˅
Unlicensed Drivers	13%	447	12%	470	-23	˅	1%	˄
Older Drivers (age 65 and older)	19%	655	15%	592	63	˄	4%	˄
Distracted and Drowsy Drivers	8%	287	13%	508	-221	˅	-5%	˅
OTHER USERS								
Pedestrians	5%	178	5%	188	-10	˅	0%	
Bicycles	1%	46	1%	57	-11	˅	0%	
VEHICLES								
Motorcycles	24%	834	21%	825	9	˄	3%	˄
Heavy Vehicles	9%	297	8%	312	-15	˅	1%	˄
HIGHWAYS								
Lane Departures	59%	2,056	57%	2,211	-155	˅	2%	˄
Intersections	27%	948	27%	1,041	-93	˅	0%	
Train-Vehicle Collisions	0%	6	0%	18	-12	˅	0%	
Work Zones	2%	75	2%	93	-18	˅	0%	
Animal Involved	2%	77	NA	NA	NA		NA	

Review of Emphasis Areas by Study Advisory Team

Table 1 and **Figure 1** were presented to the Study Advisory Team (SAT). The emphasis areas were discussed by the SAT, including both the distribution of severe crashes, as well as current goals and needs of the state and stakeholders. Considering the focus emphasis areas included the 2014 South Dakota SHSP and the results of the 2013-2017 crash analysis, eight emphasis areas were identified as a potential focus emphasis area for the updated South Dakota SHSP:

- Lane departure
- Unbelted vehicle occupants
- Intersection
- Drugs and Alcohol
- Speeding and Aggressive Drivers

- Motorcycle

- Older drivers (age 65 and older)

- Young drivers (age 20 and younger)

Reviewing the crash results by highway description (**Table 1**), these eight emphasis areas represent the top crash types statewide and by highway description with one exception. For county/township roads, the number of severe crashes involving an unlicensed driver exceeded the number of severe crashes involving an older driver. With this one exception, these eight emphasis areas represent the top opportunities to reduce the number of severe crashes across all roads in South Dakota.

In addition to the eight emphasis areas listed above, the SAT discussed how crashes involving distracted driving appear to be underreported. Also, for some federal processes, pedestrian and bicycle crashes are included given the vulnerable nature of these travelers. Therefore, based on the SAT input and federal processes, emphasis areas that may be included in the future South Dakota SHSP are:

- Distracted and drowsy (categorized as "asleep" in crash reports) drivers

- Pedestrians

- Bicyclists

In total, 11 emphasis areas were selected for a further review of the crashes.

Review of Key Emphasis Areas

The detailed crash review is intended to reveal patterns to help the SDDOT and SAT members determine if the emphasis area will be a focus emphasis area in the updated SHSP. The SAT will assess the potential for successfully reducing the total number of severe crashes in each of the 11 emphasis areas as well as considering the potential effectiveness of countermeasures or program implementation that could be employed in each emphasis area.

The initial crash data fact sheets for each of the 11 emphasis areas are presented in **Supplemental 5**. At this stage of the review process, a standard fact sheet format was developed and applied to each of emphasis areas. For the emphasis areas that are adopted for the SHSP, additional data analysis will be conducted as needed to support the development and evaluation of countermeasures and programs. Key trends identified include:

Annual Statistics

- Like the statewide total of severe crashes, most emphasis areas experienced a general decline each year in the number of severe crashes.

- Intersections, pedestrian and bicycle crashes were all on a downward trend but experienced increases in 2017.

- The number of impaired driving crashes was consistent from year-to-year.

- Distracted/drowsy driver crashes overall has an upward trend due to increasing crashes of this type on state highways.

Highway description and Area Type:

- State highways accounted for the greatest number of crashes (42% - 60%) except for intersection, pedestrian and bicycle crashes. For those three categories, city streets were the most common highway description for crashes.

- For the emphasis areas where state highways had the most crashes, county and township roads were second.

- Most severe crashes occurred on rural roads (59% - 82%), with the exception of intersection, pedestrian, and bicycle crashes. For those three categories, crashes ranged from 59% to 85% on urban roads.

Manner of Collision:

- Non-collisions between two vehicles in transport were the most frequent crash type for most emphasis areas. The only exception was intersection crashes where angle crashes were 62% of all severe crashes at an intersection.

- For speeding crashes, rear-end was 17% of severe crashes (8 percentage points above average for all severe crashes).

- For distracted and drowsy driver crashes, rear-end was 32% of severe crashes (23 percentage points above the average for all severe crashes).

Roadway Alignment:

- Most crashes occurred on straight segments of roads. However, crashes in curves were above the statewide average in lane departure, drugs and alcohol, speeding and aggressive driving, and motorcycle crashes.

Environmental Factors:

- With the exception of impaired driving crashes, the most common light condition was daylight for all other emphasis areas. For impaired driving crashes, 54% of crashes were in dark driving conditions.

- While dark driving conditions do not account for the majority of crashes in most emphasis areas, the percentage was above the statewide average for lane departure, unbelted, and pedestrian crashes.

- A majority of severe crashes were reported on dry road conditions in all emphasis areas.

- The number of speeding crashes in winter weather conditions was 27 percentage points above the statewide average.

Time of Year:

- Crashes were typically highest from June through October, with August having the most crashes. Motorcycle crashes, however, were overrepresented in the summer months, with 44% of the crashes in August alone.

Time of Day:

- Most emphasis areas had a majority of crashes occurring in the afternoon into early evening hours (noon-6 PM).

- Crashes involving impaired drivers, however, had the most crashes occurring from evening into early morning hours (midnight-3am).
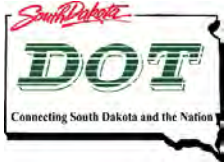
Driver Demographics:

- In all emphasis areas, over half of all drivers involved in the severe crashes were male. Males in these crashes accounted for as few as 53% of drivers (young driver involved) to as high as 72% of drivers (impaired driving).

- Driver ages were generally distributed across all age ranges, but drivers under the age of 26 accounted for one-third of all drivers in these severe crashes. The exception was in motorcycle crashes where 52% of involved drivers were 46 to 55 years old.

Interaction with Other Emphasis Areas:
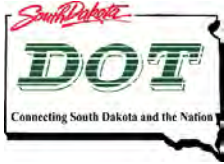
- Lane departure, unbelted vehicle occupant, and drugs and alcohol crashes were found to be linked together.

- Pedestrian and bicycle crashes were typically linked with intersection crashes. Young driver and older driver crashes were also found to be linked with intersection crashes.

- Unbelted vehicle occupant, speeding and aggressive driving, and young driver crashes were found to be linked together.

Supplemental Data 5: Crash Analysis Results - Significant Findings

Several key trends were identified subsequent to the review of South Dakota crash records and comparison to the 2014 South Dakota SHSP and to national data. The trends will be useful to SAT and South Dakota stakeholders when selecting goals, evaluating focus emphasis areas, and considering prioritization of desired countermeasures.

In comparison to national traffic safety data, the following trends were identified:

- Since 2000, the South Dakota fatality rate has been above the national average and continues to be above the national average. However, since 2008, the rate is slowly approaching the national average. This comparison is provided in Figure 1.

Figure 1: Traffic Fatality Rates
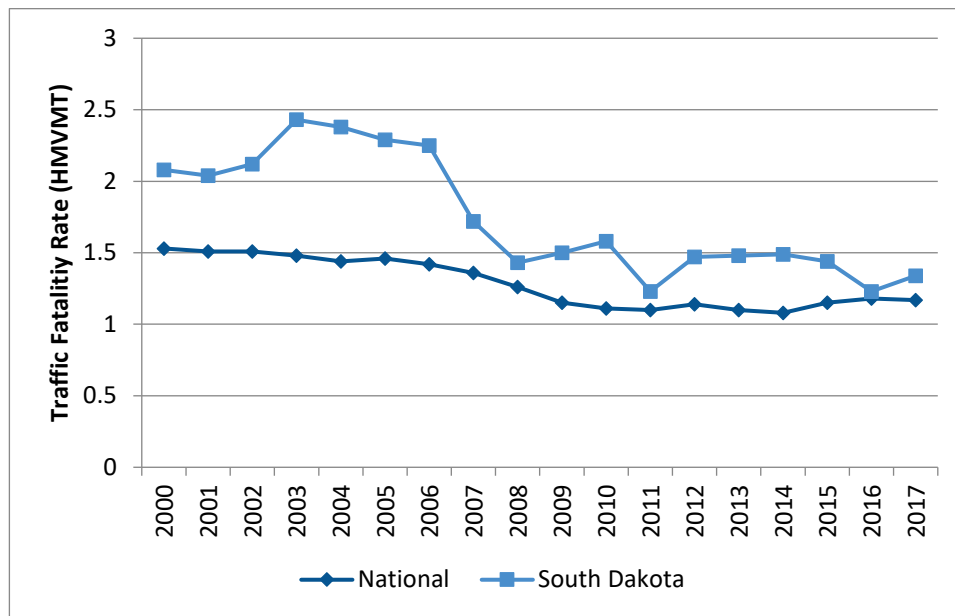
- Driver behavior continues to play an important role in fatal crashes. In comparison to national data, South Dakota has a higher rate of alcohol involvement in fatal crashes. Furthermore, South Dakota's seat belt use rate is noticeably below the national average.

- Fatal crashes in South Dakota trend toward occurring on rural roads more than the national average.

Through the review of statewide crash data, including the crash data fact sheets for each Emphasis Area (**Supplemental 5**) and the identification of high-risk locations, the following trends were identified:

- While South Dakota trends towards severe crashes in rural areas, implementation in cities will be important for intersection, pedestrian and bicycle crashes.

- Intersection crashes within urban areas were split between partial stop-controlled and signalized intersections. In rural areas, intersection crashes were predominately at partial stop-controlled intersections.
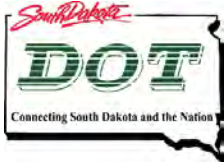
- Rural segment crashes were predominately on 2-lane highways, showing equal frequency between state highways and county roads. For lane departure and motorcycle crashes, but especially motorcycle crashes, horizontal curves contribute to severe segment crashes.

- In urban areas, segment crashes on state highways are split between undivided and divided roadways while crashes on city streets are predominately on undivided streets.

- Alcohol- and drug-related crashes trends to nighttime and dark driving conditions. This emphasis area showed a trend to early morning (midnight to 3:00 AM) crashes more so than any other emphasis area.

- Pedestrian crashes show an increased risk during dark driving conditions. Efforts to increase nighttime visibility or recognition of pedestrians may prove beneficial to reduce severe crashes involving pedestrians.

- Summer time driving is when most crashes are concentrated with motorcycles having the strongest peak in August (nearly 45%). Motorcycle crashes are also concentrated around Sturgis and Rapid City.

- For most emphasis areas, severe crashes have a strong afternoon and early evening pattern. This may indicate peak times for targeted enforcement or educational messages (such as radio ads).

- Male drivers (often 26 or younger) are most frequently involved in severe crashes. Therefore, this may be a target population for education and enforcement programs.

- When selecting countermeasures or programs that reduce lane departure, alcohol-/drug-related, or unbelted vehicle occupant crashes, it is important to consider that the crash often has two or more of these factors combined.

- When selecting countermeasures or programs with the intent of reducing intersection, young driver, older driver, pedestrian or bicycle crashes, it is important to consider that the crash often has two or more of these factors combined.

Supplemental Data 6: Crash Fact Sheets

Crash fact sheets are organized by emphasis area on the following pages.

DOT
Connecting South Dakota and the Nation

Drugs and Alcohol

Fatal and Serious Injury Crashes (2013-2017)

DEFINITION: Crashes involving roadway users who are under the influence of alcohol, illicit drugs, and/or prescription drugs. Under the influence is defined as a BAC of 0.08 or higher. Under the Influence of drugs is determined by law enforcement.

Note: "Severe crashes" noted in this fact sheet include Fatal (K) and Serious Injury (A-Injury) crashes.

Roadway Jurisdiction -
Severe Drugs and Alcohol Crashes

Statewide Crash Statistics

875
Total severe drugs and alcohol crashes (2013-2017)

175
Severe drugs and alcohol crashes per year (average)

25%
of all severe crashes in South Dakota involved drugs and alcohol

72% on Rural Roads

44% on State Roads

37% on County Roads

	Rural		Urban		Statewide	
State Roads	310	36%	70	8%	380	44%
County Roads	295	34%	27	3%	322	37%
City Roads	15	2%	146	17%	161	19%
All Jurisdictions	**620**	**72%**	**243**	**28%**	**863**	**100%**

Roadway Jurisdiction -
Severe Drugs and Alcohol Crashes Annually

Legend: City Roads, County Roads, State Roads, Statewide
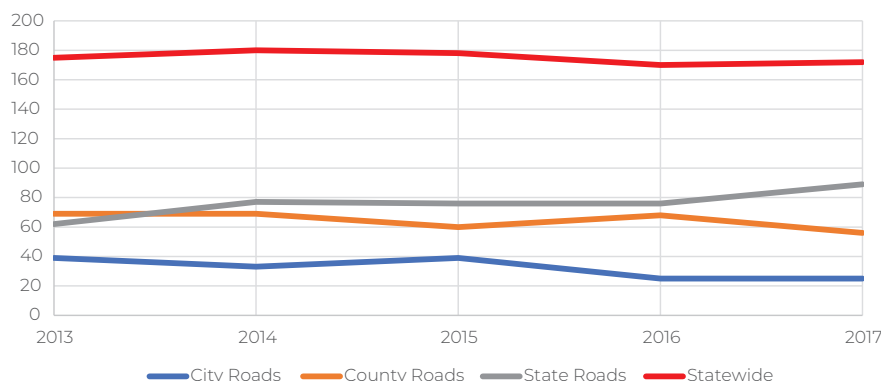
Drugs and Alcohol

Fatal and Serious Injury Crashes (2013-2017)

Method of Collision -
Severe Drugs and Alcohol Crashes
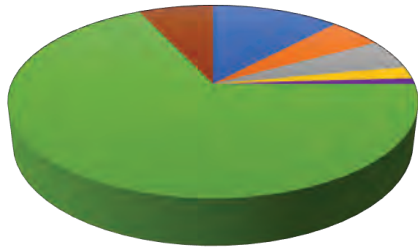
	Fatal	Serious Injury	Percentage of Severe Drugs and Alcohol Crashes	Percentage of All Severe Crashes
Angle	23	81	12%	24%
Head-on (front to front)	27	18	5%	4%
Rear-end (front to rear)	6	34	5%	9%
Sideswipe, opposite direction	2	13	2%	2%
Sideswipe, same direction	1	7	1%	1%
No collision between 2 MV in transport	157	440	68%	60%
Animal - Wild or Domestic	1	3	0%	2%
Ditch or Embankment	18	51	8%	5%
Fixed Object	35	174	24%	15%
Other (Jackknife, Fire/Explosion, etc.)	2	8	1%	2%
Overturn/Rollover	101	204	35%	30%
Bicycle	0	3	0%	1%
Pedestrian	22	41	7%	5%

Roadway Alignment -
Severe Drugs and Alcohol Crashes

	RURAL			URBAN			Percentage of Severe Drugs and Alcohol Crashes	Percentage of All Severe Crashes
	City Roads	County Roads	State Roads	City Roads	County Roads	State Roads		
Curve	2	88	86	26	10	13	26%	21%
Straight	12	206	224	119	17	57	74%	79%

Roadway Type -
Severe Drugs and Alcohol Crashes

| Functional Class	RURAL						URBAN				
	Interstate	Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local Roads	Interstate	Principal Arterial	Minor Arterial	Major Collector	Local Roads
Severe Crashes	44	162	82	191	28	117	33	48	80	33	57
% Crashes	5.0%	18.5%	9.4%	21.8%	3.2%	13.4%	3.8%	5.5%	9.1%	3.8%	6.5%
% Total Roadway	**1.6%**	**3.2%**	**3.6%**	**15.0%**	**7.5%**	**64.8%**	**0.3%**	**0.2%**	**0.6%**	**0.4%**	**2.8%**

Drugs and Alcohol
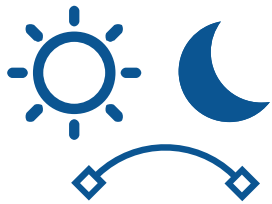
Fatal and Serious Injury Crashes (2013-2017)

Light Condition -
Severe Drugs and Alcohol Crashes
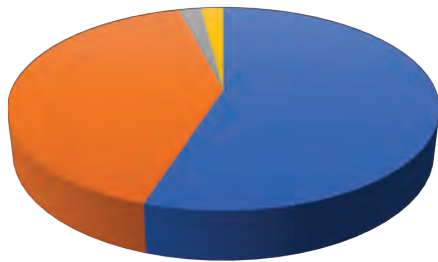
	Fatal	Serious Injury	Percentage of Severe Drugs and Alcohol Crashes	Percentage of All Severe Crashes
■ Dark - any roadway lighting	133	343	55%	28%
Dark - lit roadway	15	101	13%	7%
Dark - roadway not lit	117	240	41%	21%
Dark - unknown roadway lighting	1	2	0%	0%
■ Daylight	89	266	41%	68%
■ Dawn	7	13	2%	2%
■ Dusk	6	14	2%	2%

Road Surface Condition -
Severe Drugs and Alcohol Crashes
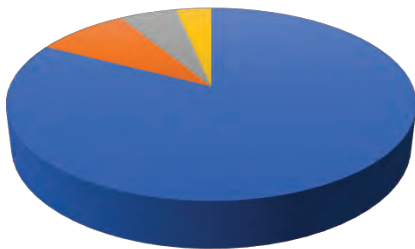
	Fatal	Serious Injury	Percentage of Severe Drugs and Alcohol Crashes	Percentage of All Severe Crashes
■ Dry	209	513	83%	79%
■ Wet, Water (standing, moving)	16	60	9%	8%
■ Frost / Ice / Snow / Slush	8	39	5%	11%
■ Oil / Sand, mud, dirt, gravel	5	24	3%	2%

Time of Day and Month -
Severe Drugs and Alcohol Crashes

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	% of Crashes
Midnight - 3:00 AM	7	15	17	7	13	9	12	18	17	20	17	8	160	18.3%
3:00 AM - 6:00 AM	3	6	9	6	12	7	9	9	5	5	5	2	78	8.9%
6:00 AM - 9:00 AM	5	4	7	5	7	4	4	4	8	4	8	6	66	7.5%
9:00 AM - Noon	3	2	1	2	7	7	7	9	4	4	5	4	55	6.3%
Noon - 3:00 PM	4	3	5	3	8	20	15	15	8	8	5	4	84	9.6%
3:00 PM - 6:00 PM	4	5	6	10	10	20	15	20	13	7	8	6	124	14.2%
6:00 PM - 9:00 PM	7	8	7	8	17	20	20	24	18	17	12	9	167	19.1%
9:00 PM - Midnight	6	6	10	19	10	9	16	12	18	16	10	9	141	16.1%
Total	39	49	62	60	84	82	98	111	91	81	70	48	875	
% of Crashes	4.5%	5.6%	7.1%	6.9%	9.6%	9.4%	11.2%	12.7%	10.4%	9.3%	8.0%	5.5%		

Drugs and Alcohol

Fatal and Serious Injury Crashes (2013-2017)
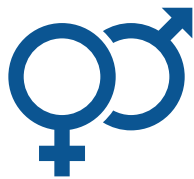
Age and Gender -
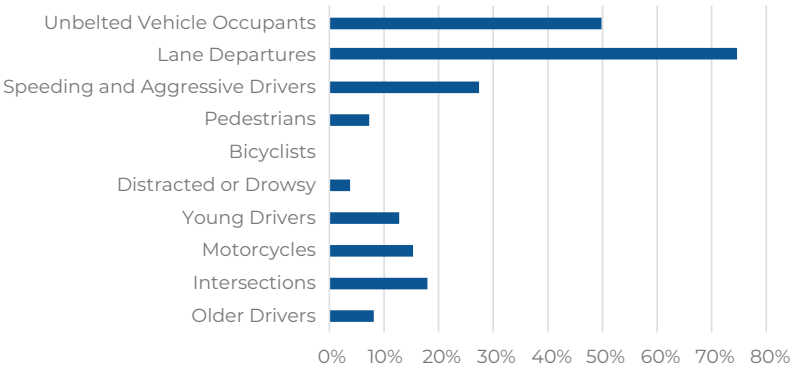### Severe Drugs and Alcohol Crashes

Age	Male		Female		Statewide Crashes	
<16	32	4%	14	2%	46	6%
17 to 20	41	5%	23	3%	64	8%
21 to 25	108	13%	46	5%	154	18%
26 to 35	140	16%	43	5%	183	21%
36 to 45	115	13%	25	3%	140	16%
46 to 55	106	12%	35	4%	141	16%
56 to 65	65	7%	22	3%	87	10%
>65	22	3%	15	2%	37	5%
Total	**629**	**73%**	**223**	**27%**	**853**	**100%**

Emphasis Area -
Severe Drugs and Alcohol Crashes

	Severe Drugs and Alcohol Crashes		Percentage of Severe Drugs and Alcohol Crashes	Percentage of All Severe Crashes	Percentage Point Difference	
	Fatal	Serious Injury				
Unbelted Vehicle Occupants	160	276	50%	31%	19%	↑
Lane Departures	188	465	75%	59%	16%	↑
Speeding and Aggressive Drivers	64	176	27%	24%	3%	−
Pedestrians	22	42	7%	5%	2%	−
Bicyclists	0	0	0%	1%	-1%	−
Distracted or Drowsy	9	24	4%	8%	-4%	−
Young Drivers	26	86	13%	19%	-6%	↓
Motorcycles	30	104	15%	24%	-9%	↓
Intersections	33	124	18%	27%	-9%	↓
Older Drivers	25	46	8%	19%	-11%	↓

Emphasis Area -
Percentage of Severe Drugs and Alcohol Crashes

Intersections

Fatal and Serious Injury Crashes (2013-2017)

DEFINITION: Crashes occurring where two or more roadways intersect or coded in the crash report as intersection-related.

Note: "Severe crashes" noted in this fact sheet include Fatal (K) and Serious Injury (A-Injury) crashes.

Statewide Crash Statistics

948
Total severe intersection crashes (2013-2017)

190
Severe intersection crashes per year (average)

27%
of all severe crashes in South Dakota occur at intersections

Roadway Jurisdiction -
Severe Intersection Crashes

59%
on Urban Roads

44%
on City Roads

40%
on State Roads

	Rural		Urban		Statewide	
State Roads	241	25%	139	15%	380	40%
County Roads	134	15%	21	2%	154	16%
City Roads	16	1%	397	42%	413	44%
All Jurisdictions	**391**	**41%**	**557**	**59%**	**948**	**100%**

Roadway Jurisdiction -
Severe Intersection Crashes Annually
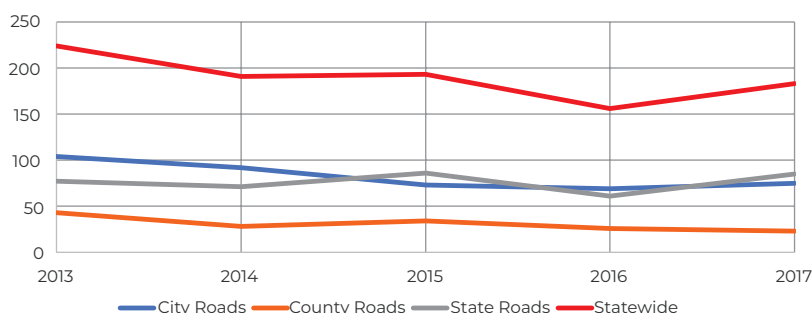
Intersections

Fatal and Serious Injury Crashes (2013-2017)

Method of Collision -
Severe Intersection Crashes
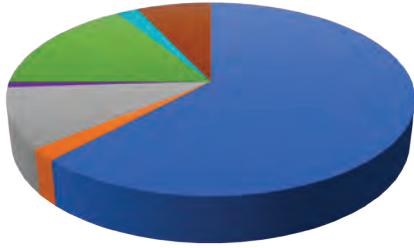
	Fatal	Serious Injury	Percentage of Severe Intersection Crashes	Percentage of All Severe Crashes
■ Angle	73	517	62	24%
■ Head-on (front to front)	0	19	2%	4%
■ Rear-end (front to rear)	6	87	10%	9%
■ Sideswipe, opposite direction	0	1	0%	2%
■ Sideswipe, same direction	0	8	1%	1%
■ No collision between 2 MV in transport	14	134	16%	60%
Animal - Wild or Domestic	0	3	0%	2%
Ditch or Embankment	2	16	2%	5%
Fixed Object	5	45	5%	15%
Other (Jackknife, Fire/Explosion, etc.)	1	10	1%	2%
Overturn/Rollover	7	60	7%	30%
■ Bicycle	0	22	2%	1%
■ Pedestrian	7	59	7%	5%

Roadway Alignment -
Severe Intersection Crashes

	RURAL			URBAN				
	City Roads	County Roads	State Roads	City Roads	County Roads	State Roads	Percentage of Severe Intersection Crashes	Percentage of All Severe Crashes
Curve	2	14	22	16	0	8	7%	21%
Straight	14	119	219	380	21	131	93%	79%

Roadway Type -
Severe Intersection Crashes

| Roadway Type	RURAL STATE ROADS			RURAL LOCAL ROADS			URBAN STATE ROADS			URBAN LOCAL ROADS		
	Severe Crashes	% Severe Crashes	% Total Intersection Crashes	Severe Crashes	% Severe Crashes	% Total Intersection Crashes	Severe Crashes	% Severe Crashes	% Total Intersection Crashes	Severe Crashes	% Severe Crashes	% Total Intersection Crashes
2 Lane	134	14.0%	8.1%	151	15.7%	49.5%	27	2.8%	2.0%	156	16.3%	33.9%
Multi-lane Undivided	15	1.6%	0.2%	3	0.3%	0.1%	91	9.5%	1.2%	198	20.6%	1.4%
Multi-lane Divided	50	5.2%	1.1%	7	0.7%	0.1%	61	6.4%	0.6%	66	6.9%	1.0%
* Totals	199	20.8%	9.4%	161	16.8%	49.7%	179	18.7%	3.8%	420	43.8%	36.3%

Intersections
Fatal and Serious Injury Crashes (2013-2017)
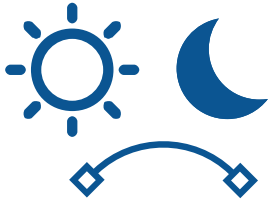
Light Condition -
Severe Intersection Crashes
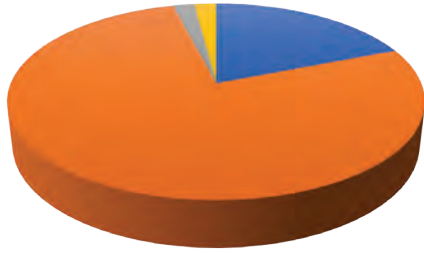
	Fatal	Serious Injury	Percentage of Severe Intersection Crashes	Percentage of All Severe Crashes
■ Dark - any roadway lighting	28	154	19%	28%
Dark - lit roadway	14	89	11%	7%
Dark - roadway not lit	14	63	8%	21%
Dark - unknown roadway lighting	0	2	0%	0%
■ Daylight	66	664	77%	68%
■ Dawn	4	12	2%	2%
■ Dusk	3	17	2%	2%

Road Surface Condition -
Severe Intersection Crashes
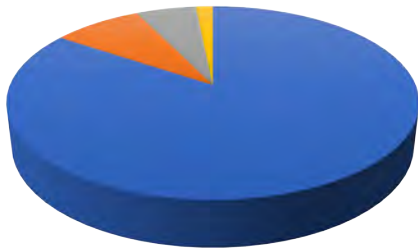
	Fatal	Serious Injury	Percentage of Severe Intersection Crashes	Percentage of All Severe Crashes
■ Dry	90	711	84%	79%
■ Wet, Water (standing, moving)	6	73	8%	8%
■ Frost / Ice / Snow / Slush	3	50	6%	11%
■ Oil / Sand, mud, dirt, gravel	2	13	2%	2%

Time of Day and Month -
Severe Intersection Crashes

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	% of Crashes
Midnight - 3:00 AM	3	1	1	1	0	0	4	5	5	2	4	2	28	3.0%
3:00 AM - 6:00 AM	1	0	1	2	0	4	1	4	2	2	2	0	19	2.0%
6:00 AM - 9:00 AM	8	6	11	7	9	11	9	8	12	9	5	7	102	10.8%
9:00 AM - Noon	12	6	7	8	12	13	18	34	17	9	18	8	162	17.1%
Noon - 3:00 PM	13	8	11	11	14	22	21	26	17	13	12	13	181	19.1%
3:00 PM - 6:00 PM	11	12	16	16	21	30	27	41	25	22	18	16	255	26.9%
6:00 PM - 9:00 PM	2	6	12	3	11	15	18	16	14	17	7	9	130	13.7%
9:00 PM - Midnight	7	2	3	8	5	4	5	10	11	9	7	0	71	7.5%
Total	57	41	62	56	72	99	103	144	103	83	73	55	948	
% of Crashes	6.0%	4.3%	6.5%	5.9%	7.6%	10.4%	10.9%	15.2%	10.9%	8.8%	7.7%	5.8%		

Intersections
Fatal and Serious Injury Crashes (2013-2017)
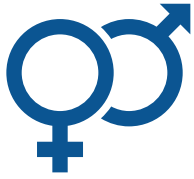
Age and Gender -
Severe Intersection Crashes

Age	Male		Female		Statewide Crashes	
<21	79	8%	65	7%	144	15%
21 to 25	59	6%	42	4%	101	11%
26 to 35	97	10%	54	6%	151	16%
36 to 45	78	8%	48	5%	126	13%
46 to 55	94	10%	62	7%	156	16%
56 to 65	90	9%	51	5%	141	15%
>65	61	6%	61	6%	129	14%
Total	**558**	**59%**	**383**	**40%**	**948**	**100%**

Emphasis Area -
Severe Intersection Crashes

	Severe Intersections Crashes		Percentage of Severe Intersection Crashes	Percentage of All Severe Crashes	Percentage Point Difference	
	Fatal	Serious Injury				
Older Drivers	35	212	26%	19%	7%	↑
Young Drivers	20	213	25%	19	6%	↑
Pedestrians	7	59	7%	5%	2%	▬
Bicyclists	0	22	2%	1%	1%	▬
Motorcycles	25	178	21%	24%	-3%	▬
Distracted or Drowsy	3	42	5%	8%	-3%	▬
Unbelted Vehicle Occupants	44	200	26%	31%	-5%	↓
Drugs and Alcohol	33	124	17%	25%	-8%	↓
Speeding and Aggressive Drivers	16	126	15%	24%	-9%	↓
Lane Departures	11	99	12%	59%	-47%	↓

Emphasis Area -
Percentage of Severe Intersection Crashes
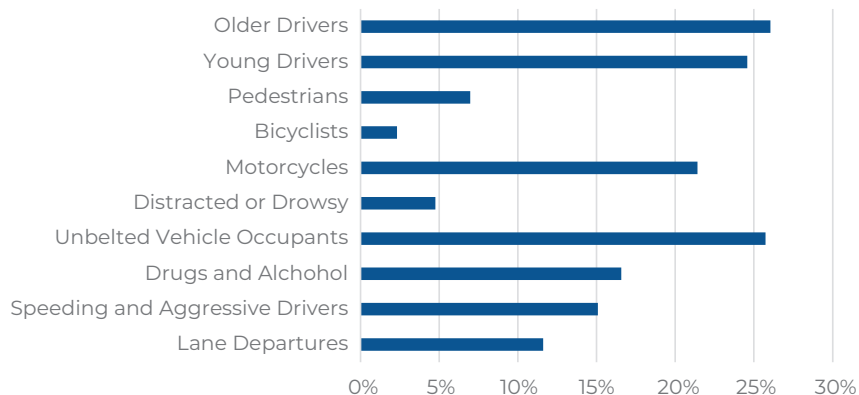
DOT
South Dakota
Connecting South Dakota and the Nation

Lane Departures

Fatal and Serious Injury Crashes (2013-2017)

DEFINITION: Crashes involving vehicles leaving their original lane of travel. This includes run-off-the-road and head-on crashes.

Note: "Severe crashes" noted in this fact sheet include Fatal (K) and Serious Injury (A-Injury) crashes.

Roadway Jurisdiction -
Severe Lane Departure Crashes

83% on Rural Roads	**57%** on State Roads	**34%** on County Roads

	Rural		Urban		Statewide	
State Roads	1,011	50%	141	7%	1,152	57%
County Roads	658	32%	41	2%	699	34%
City Roads	22	1%	167	8%	189	9%
All Jurisdictions	**1,691**	**83%**	**349**	**17%**	**2,040**	**100%**

Roadway Jurisdiction -
Severe Lane Departure Crashes Annually

Legend: City Roads — County Roads — State Roads — Statewide
X-axis: 2013, 2014, 2015, 2016, 2017
Y-axis: 0 to 500

Statewide Crash Statistics

2,056
Total severe lane departure crashes (2013-2017)

411
Severe lane departure crashes per year (average)

59%
of all severe crashes in South Dakota were lane departure crashes
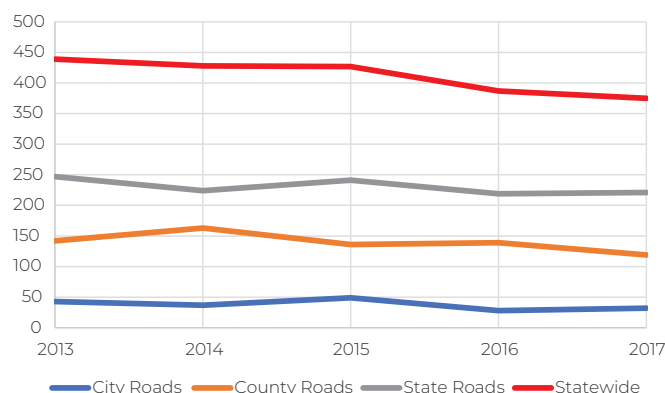
Lane Departures

Fatal and Serious Injury Crashes (2013-2017)
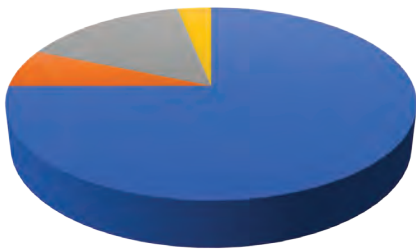
Method of Collision -
Severe Lane Departure Crashes
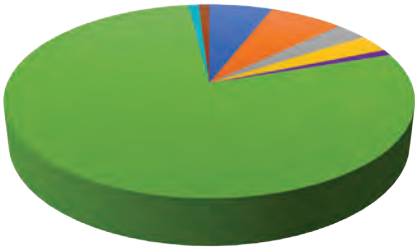
	Fatal	Serious Injury	Percentage of Severe Lane Departure Crashes	Percentage of All Severe Crashes
■ Angle	24	106	6%	24%
■ Head-on (front to front)	67	78	7%	4%
■ Rear-end (front to rear)	8	53	3%	9%
■ Sideswipe, opposite direction	9	44	3%	2%
■ Sideswipe, same direction	4	19	1%	1%
■ No collision between 2 MV in transport	299	1,320	79%	60%
Animal - Wild or Domestic	5	20	1%	2%
Ditch or Embankment	24	153	9%	5%
Fixed Object	72	409	23%	15%
Other (Jackknife, Fire/Explosion, etc.)	5	34	2%	2%
Overturn/Rollover	193	704	44%	30%
■ Bicycle	1	11	1%	1%
■ Pedestrian	6	7	1%	5%

Roadway Alignment -
Severe Lane Departure Crashes

	RURAL			URBAN			Percentage of Severe Lane Departure Crashes	Percentage of All Severe Crashes
	City Roads	County Roads	State Roads	City Roads	County Roads	State Roads		
Curve	4	220	309	46	18	37	31%	21%
Straight	18	437	701	120	23	104	69%	79%

Roadway Type -
Severe Lane Departure Crashes

Functional Class	RURAL						URBAN				
	Interstate	Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local Roads	Interstate	Principal Arterial	Minor Arterial	Major Collector	Local Roads
Severe Crashes	243	418	268	409	77	275	96	54	102	40	74
% Crashes	12.1%	20.8%	13.3%	20.3%	3.8%	13.7%	4.8%	2.7%	5.1%	2.0%	3.7%
% Total Roadway	**1.6%**	**3.2%**	**3.6%**	**15.0%**	**7.5%**	**64.8%**	**0.3%**	**0.2%**	**0.6%**	**0.4%**	**2.8%**

Lane Departures
Fatal and Serious Injury Crashes (2013-2017)
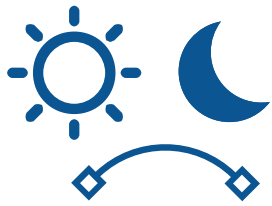
South Dakota DOT — Connecting South Dakota and the Nation

Light Condition -
Severe Lane Departure Crashes
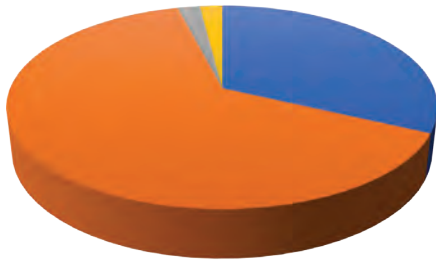
	Fatal	Serious Injury	Percentage of Severe Lane Departure Crashes	Percentage of All Severe Crashes
■ Dark - any roadway lighting	156	501	32%	28%
Dark - lit roadway	10	80	4%	7%
Dark - roadway not lit	145	417	27%	21%
Dark - unknown roadway lighting	1	4	0%	0%
■ Daylight	238	1,073	64%	68%
■ Dawn	7	27	2%	2%
■ Dusk	12	36	2%	2%

Road Surface Condition -
Severe Lane Departure Crashes

	Fatal	Serious Injury	Percentage of Severe Lane Departure Crashes	Percentage of All Severe Crashes
■ Dry	335	1,202	75%	79%
■ Wet, Water (standing, moving)	25	108	7%	8%
■ Frost / Ice / Snow / Slush	45	271	15%	11%
■ Oil / Sand, mud, dirt, gravel	12	53	3%	2%
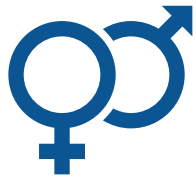
Time of Day and Month -
Severe Lane Departure Crashes

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	% of Crashes
Midnight - 3:00 AM	6	14	17	12	16	13	13	24	17	22	18	10	182	8.9%
3:00 AM - 6:00 AM	6	7	16	8	14	13	10	15	9	11	11	3	123	6.0%
6:00 AM - 9:00 AM	30	12	23	16	21	11	18	13	19	13	23	14	213	10.4%
9:00 AM - Noon	25	21	17	10	13	31	34	56	17	15	13	23	275	13.4%
Noon - 3:00 PM	18	16	20	13	22	34	44	96	24	26	16	16	345	16.8%
3:00 PM - 6:00 PM	26	22	16	26	33	42	56	95	41	26	31	24	438	21.3%
6:00 PM - 9:00 PM	18	16	15	30	23	32	33	40	31	23	22	14	297	14.4%
9:00 PM - Midnight	13	8	18	20	14	14	20	19	11	20	15	11	183	8.9%
Total	142	116	142	135	156	190	228	358	169	156	149	115	2,056	
% of Crashes	6.9%	5.6%	6.9%	6.6%	7.6%	9.2%	11.1%	17.4%	8.2%	7.6%	7.2%	5.6%		

Lane Departures

Fatal and Serious Injury Crashes (2013-2017)

Age and Gender -
Severe Lane Departure Crashes

Age	Male		Female		Statewide Crashes	
<16	87	4%	91	4%	178	9%
17 to 20	105	5%	86	4%	191	9%
21 to 25	177	9%	79	4%	256	13%
26 to 35	231	12%	110	5%	341	17%
36 to 45	179	9%	65	3%	244	12%
46 to 55	232	12%	117	6%	349	18%
56 to 65	182	9%	83	4%	265	13%
>65	122	6%	66	3%	188	9%
Total	**1,315**	**66%**	**697**	**34%**	**2,012**	**100%**

Emphasis Area -
Severe Lane Departure Crashes

	Severe Lane Departures Crashes		Percentage of Severe Lane Departure Crashes	Percentage of All Severe Crashes	Percentage Point Difference	
	Fatal	Serious Injury				
Unbelted Vehicle Occupants	250	559	39%	31%	8%	↑
Drugs and Alcohol	188	465	32%	25%	7%	↑
Speeding and Aggressive Drivers	130	489	30%	24%	6%	—
Distracted or Drowsy	23	169	9%	8%	1%	—
Bicyclists	1	11	1%	1%	0%	—
Motorcycles	64	386	22%	24%	-2%	—
Young Drivers	52	282	16%	19%	-3%	—
Pedestrians	6	11	1%	5%	-4%	↓
Older Drivers	79	210	14%	19%	-5%	↓
Intersections	11	99	5%	27%	-22%	↓

Emphasis Area -
Percentage of Severe Lane Departure Crashes
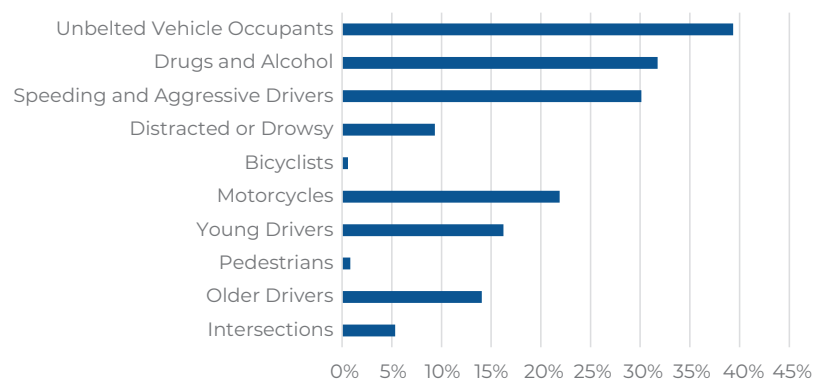
Motorcycles

Fatal and Serious Injury Crashes (2013-2017)

DEFINITION: Crashes involving drivers and passengers on motorcycles.

Note: "Severe crashes" noted in this fact sheet include Fatal (K) and Serious Injury (A-Injury) crashes.

Statewide Crash Statistics

834
Total severe motorcycle crashes (2013-2017)

167
Severe motorcycle crashes per year (average)

24%
of all severe crashes in South Dakota involved motorcycles

Roadway Jurisdiction -
Severe Motorcycle Crashes

69% on Rural Roads

58% on State Roads

21% Each on County Roads and City Roads

	Rural		Urban		Statewide	
State Roads	404	49%	78	10%	482	58%
County Roads	159	19%	15	2%	174	21%
City Roads	11	1%	158	20%	169	21%
All Jurisdictions	**574**	**69%**	**251**	**31%**	**825**	**100%**

Roadway Jurisdiction -
Severe Motorcycle Crashes Annually

Line chart legend: City Roads, County Roads, State Roads, Statewide
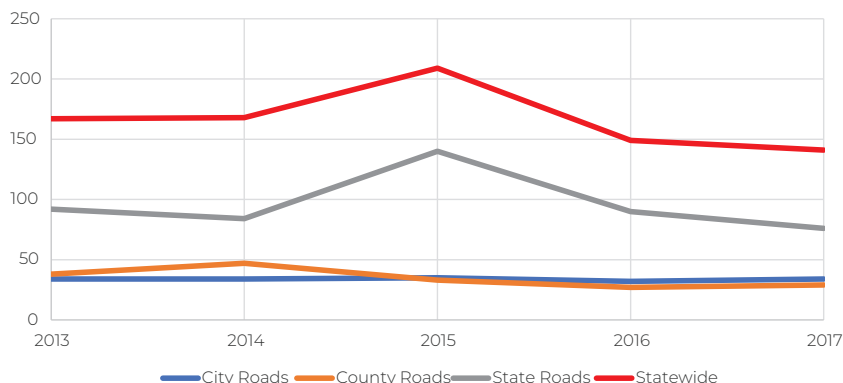
Motorcycles
Fatal and Serious Injury Crashes (2013-2017)

Method of Collision -
Severe Motorcycle Crashes
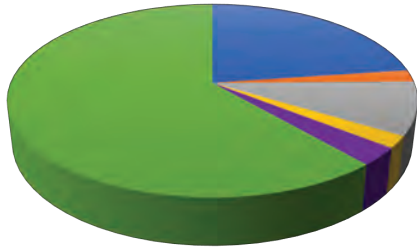
	Fatal	Serious Injury	Percentage of Severe Motorcycle Crashes	Percentage of All Severe Crashes
■ Angle	26	166	23%	24%
■ Head-on (front to front)	7	10	2%	4%
■ Rear-end (front to rear)	11	61	9%	9%
■ Sideswipe, opposite direction	4	18	3%	1%
■ Sideswipe, same direction	2	1	1%	1%
■ No collision between 2 MV in transport	55	461	62%	60%
Animal - Wild or Domestic	6	46	6%	2%
Ditch or Embankment	2	16	2%	5%
Fixed Object	14	70	10%	15%
Other (Jackknife, Fire/Explosion, etc.)	1	9	1%	2%
Overturn/Rollover	32	320	42%	30%
■ Pedestrian	0	1	0%	5%

Roadway Alignment -
Severe Motorcycle Crashes

	RURAL			URBAN			Percentage of Severe Motorcycle Crashes	Percentage of All Severe Crashes
	City Roads	County Roads	State Roads	City Roads	County Roads	State Roads		
Curve	3	90	158	13	7	6	34%	21%
Straight	8	69	246	145	8	72	66%	79%

Roadway Type -
Severe Motorcycle Crashes

| Functional Class	RURAL						URBAN				
	Interstate	Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local Roads	Interstate	Principal Arterial	Minor Arterial	Major Collector	Local Roads
Severe Crashes	74	191	124	120	27	40	32	55	81	35	55
% Crashes	8.5%	21.8%	14.2%	13.7%	3.1%	4.6%	3.7%	6.3%	9.3%	4.0%	6.3%
% Total Roadway	**1.6%**	**3.2%**	**3.6%**	**15.0%**	**7.5%**	**64.8%**	**0.3%**	**0.2%**	**0.6%**	**0.4%**	**2.8%**

Motorcycles

Fatal and Serious Injury Crashes (2013-2017)
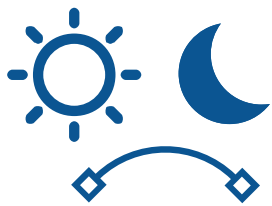
Light Condition -
Severe Motorcycle Crashes
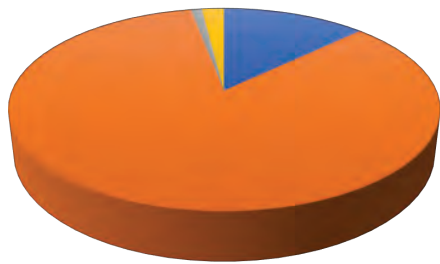
	Fatal	Serious Injury	Percentage of Severe Motorcycle Crashes	Percentage of All Severe Crashes
■ Dark - any roadway lighting	19	86	13%	28%
Dark - lit roadway	3	32	4%	7%
Dark - roadway not lit	16	54	8%	21%
Dark - unknown roadway lighting	0	0	0%	0%
■ Daylight	80	628	85%	68%
■ Dawn	0	6	1%	2%
■ Dusk	6	8	2%	2%

Road Surface Condition -
Severe Motorcycle Crashes
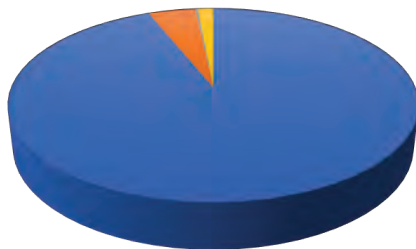
	Fatal	Serious Injury	Percentage of Severe Motorcycle Crashes	Percentage of All Severe Crashes
■ Dry	100	682	94%	79%
■ Wet, Water (standing, moving)	4	33	4%	8%
■ Frost / Ice / Snow / Slush	0	2	0%	11%
■ Oil / Sand, mud, dirt, gravel	1	11	1%	2%
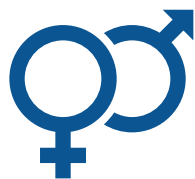
Time of Day and Month -
Severe Motorcycle Crashes

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	% of Crashes
Midnight - 3:00 AM	0	0	0	1	1	4	6	7	1	1	1	0	22	2.6%
3:00 AM - 6:00 AM	0	0	0	0	1	4	0	3	2	2	0	0	12	1.4%
6:00 AM - 9:00 AM	0	0	0	2	3	6	11	16	3	2	1	0	44	5.3%
9:00 AM - Noon	0	0	1	2	7	14	25	71	10	3	2	0	135	16.2%
Noon - 3:00 PM	2	1	3	4	17	13	37	93	11	6	5	1	193	23.1%
3:00 PM - 6:00 PM	0	3	8	11	22	27	36	115	20	5	3	0	250	30.0%
6:00 PM - 9:00 PM	0	0	5	8	9	22	19	51	8	9	2	1	134	16.1%
9:00 PM - Midnight	0	0	0	3	3	6	13	14	4	1	0	0	44	5.3%
Total	2	4	17	31	63	96	147	370	59	29	14	2	834	
% of Crashes	0.2%	0.5%	2.0%	3.7%	7.6%	11.5%	17.6%	44.4%	7.1%	3.5%	1.7%	0.2%		

Motorcycles
Fatal and Serious Injury Crashes (2013-2017)

Age and Gender -
Severe Motorcycle Crashes

Age	Male		Female		Statewide Crashes	
<16	7	1%	7	1%	14	2%
17 to 20	18	2%	9	1%	27	3%
21 to 25	48	5%	14	2%	62	7%
26 to 35	54	7%	36	4%	90	11%
36 to 45	80	10%	31	4%	111	14%
46 to 55	139	17%	82	10%	221	27%
56 to 65	168	20%	52	6%	220	26%
>65	65	8%	16	2%	81	10%
Total	**579**	**70%**	**247**	**30%**	**826**	**100%**

Emphasis Area -
Severe Motorcycles Crashes

	Severe Motorcycle Crashes		Percentage of Severe Motorcycle Crashes	Percentage of All Severe Crashes	Percentage Point Difference	
	Fatal	Serious Injury				
Bicyclists	0	0	0%	1%	-1%	−
Older Drivers	24	126	18%	19%	-1%	−
Intersections	25	178	24%	27%	-3%	−
Distracted or Drowsy	10	27	4%	8%	-4%	−
Speeding and Aggressive Drivers	21	146	20%	24%	-4%	−
Lane Departures	64	386	54%	59%	-5%	↓
Pedestrians	0	1	0%	5%	-5%	↓
Drugs and Alcohol	30	104	16%	25%	-9%	↓
Young Drivers	13	52	8%	19%	-11%	↓

Emphasis Area -
Percentage of Severe Motorcycle Crashes
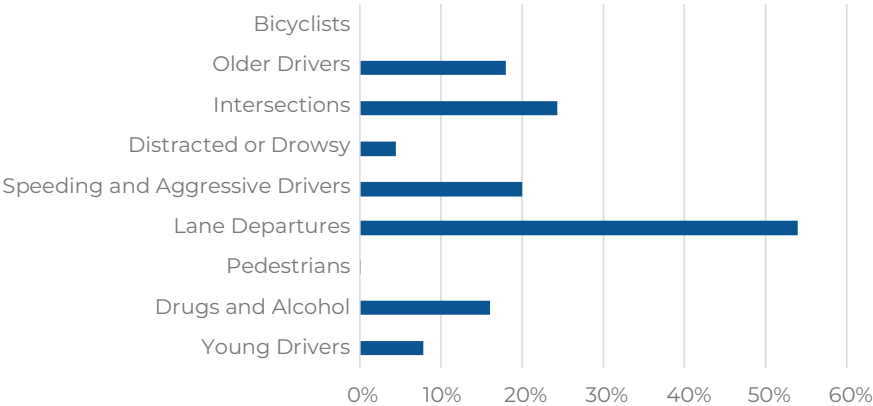
Older Drivers

Fatal and Serious Injury Crashes (2013-2017)

DEFINITION: Crashes involving drivers age 65 and older.

Note: "Severe crashes" noted in this fact sheet include Fatal (K) and Serious Injury (A-Injury) crashes.

Statewide Crash Statistics

655
Total severe older driver crashes (2013-2017)

131
Severe older driver crashes per year (average)

19%
of all severe crashes in South Dakota involved older drivers

Roadway Jurisdiction -
Severe Older Driver Crashes

63% on Rural Roads

61% on State Roads

24% on City Roads

	Rural		Urban		Statewide	
State Roads	309	48%	87	13%	396	61%
County Roads	90	14%	8	1%	98	15%
City Roads	7	1%	148	23%	155	24%
All Jurisdictions	**406**	**63%**	**243**	**37%**	**649**	**100%**

Roadway Jurisdiction -
Severe Older Driver Crashes Annually

City Roads — County Roads — State Roads — Statewide
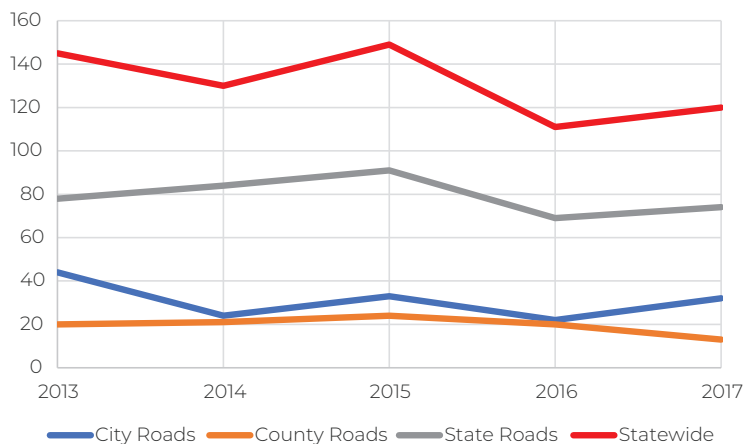
Method of Collision -
Severe Older Driver Crashes
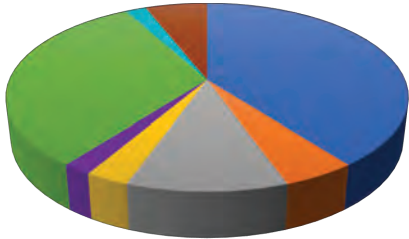
	Fatal	Serious Injury	Percentage of Severe Older Driver Crashes	Percentage of All Severe Crashes
■ Angle	43	218	40%	24%
■ Head-on (front to front)	16	14	5%	4%
■ Rear-end (front to rear)	11	61	11%	9%
■ Sideswipe, opposite direction	2	15	3%	2%
■ Sideswipe, same direction	4	7	2%	1%
■ No collision between 2 MV in transport	47	161	32%	60%
Animal - Wild or Domestic	2	9	2%	2%
Ditch or Embankment	4	19	4%	5%
Fixed Object	18	52	11%	15%
Other (Jackknife, Fire/Explosion, etc.)	0	9	1%	2%
Overturn/Rollover	23	72	15%	30%
■ Bicycle	1	13	2%	1%
■ Pedestrian	7	35	6%	5%

Roadway Alignment -
Severe Older Driver Crashes

	RURAL			URBAN			Percentage of Severe Older Driver Crashes	Percentage of All Severe Crashes
	City Roads	County Roads	State Roads	City Roads	County Roads	State Roads		
Curve	1	28	59	7	3	12	17%	21%
Straight	6	62	249	141	5	75	83%	79%
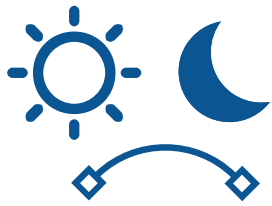
Roadway Type -
Severe Older Driver Crashes

| Functional Class	RURAL						URBAN				
	Interstate	Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local Roads	Interstate	Principal Arterial	Minor Arterial	Major Collector	Local Roads
Severe Crashes	66	169	60	66	7	40	26	81	79	27	34
% Crashes	10.1%	25.8%	9.2%	10.1%	1.1%	6.1%	4.0%	12.4%	12.1%	4.1%	5.2%
% Total Roadway	**1.6%**	**3.2%**	**3.6%**	**15.0%**	**7.5%**	**64.8%**	**0.3%**	**0.2%**	**0.6%**	**0.4%**	**2.8%**

Light Condition -
Severe Older Driver Crashes
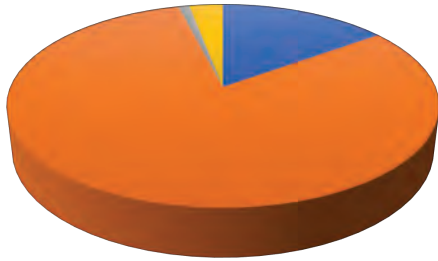
	Fatal	Serious Injury	Percentage of Severe Older Driver Crashes	Percentage of All Severe Crashes
Dark - any roadway lighting	30	69	15%	28%
Dark - lit roadway	5	34	6%	7%
Dark - roadway not lit	24	34	9%	21%
Dark - unknown roadway lighting	1	1	0%	0%
Daylight	96	436	81%	68%
Dawn	0	5	1%	2%
Dusk	5	14	3%	2%

Road Surface Condition -
Severe Older Driver Crashes
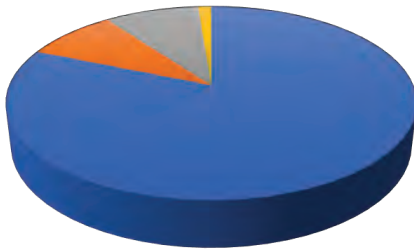
	Fatal	Serious Injury	Percentage of Severe Older Driver Crashes	Percentage of All Severe Crashes
Dry	105	425	81%	79%
Wet, Water (standing, moving)	9	47	9%	8%
Frost / Ice / Snow / Slush	13	45	9%	11%
Oil / Sand, mud, dirt, gravel	3	5	1%	2%

Time of Day and Month -
Severe Older Driver Crashes

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	% of Crashes
Midnight - 3:00 AM	0	1	1	1	1	0	1	4	0	1	0	0	10	1.5%
3:00 AM - 6:00 AM	0	0	0	1	0	0	1	0	1	3	0	0	6	0.9%
6:00 AM - 9:00 AM	4	2	5	2	8	7	4	4	4	2	5	4	51	7.8%
9:00 AM - Noon	12	4	4	9	14	12	21	30	15	6	9	8	144	22.0%
Noon - 3:00 PM	7	4	10	4	16	14	15	33	13	8	11	10	145	22.1%
3:00 PM - 6:00 PM	6	7	6	10	12	20	22	43	21	13	13	8	181	27.6%
6:00 PM - 9:00 PM	2	2	6	2	7	7	9	11	11	16	6	4	83	12.7%
9:00 PM - Midnight	3	1	1	7	1	5	2	4	5	3	3	0	35	5.3%
Total	34	21	33	36	59	65	75	129	70	52	47	34	655	
% of Crashes	5.2%	3.2%	5.0%	5.5%	9.0%	9.9%	11.5%	19.7%	10.7%	7.9%	7.2%	5.2%		

Older Drivers

Fatal and Serious Injury Crashes (2013-2017)
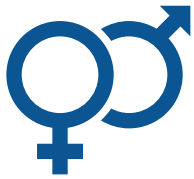
Age and Gender -
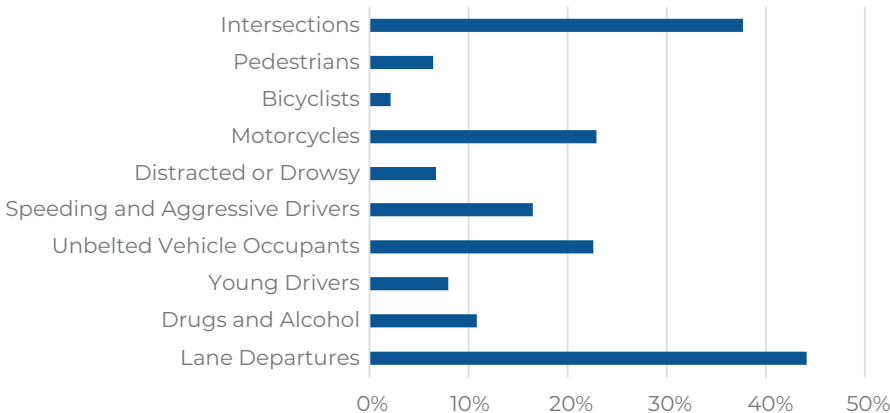### Severe Older Driver Crashes

Age	Male		Female		Statewide Crashes	
<65	198	31%	118	18%	316	49%
66 to 70	91	14%	41	7%	132	21%
71 to 80	76	12%	52	8%	128	20%
81 to 90	34	5%	23	4%	57	9%
>90	5	1%	1	0%	6	1%
Total	**404**	**63%**	**235**	**37%**	**639**	**100%**

Emphasis Area -
Severe Older Driver Crashes

	Severe Older Driver Crashes		Percentage of Severe Older Driver Crashes	Percentage of All Severe Crashes	Percentage Point Difference	
	Fatal	Serious Injury				
Intersections	35	212	38%	27%	11%	↑
Pedestrians	7	35	6%	5%	1%	—
Bicyclists	1	13	2%	1%	1%	—
Motorcycles	24	126	23%	24%	-1%	—
Distracted or Drowsy	8	36	7%	8%	-1%	—
Speeding and Aggressive Drivers	26	82	16%	24%	-8%	↓
Unbelted Vehicle Occupants	56	92	23%	31%	-8%	↓
Young Drivers	5	47	8%	19%	-11%	↓
Drugs and Alcohol	25	46	11%	25%	-14%	↓
Lane Departures	79	210	44%	59%	-15%	↓

Emphasis Area -
Severe Older Driver Crashes

Speeding and Aggressive Drivers

Fatal and Serious Injury Crashes (2013-2017)

DEFINITION: Crashes involving drivers who are driving aggressively, over the posted speed limit, or too fast for conditions.

Note: "Severe crashes" noted in this fact sheet include Fatal (K) and Serious Injury (A-Injury) crashes.

Roadway Jurisdiction -
Severe Speeding and Aggressive Driver Crashes
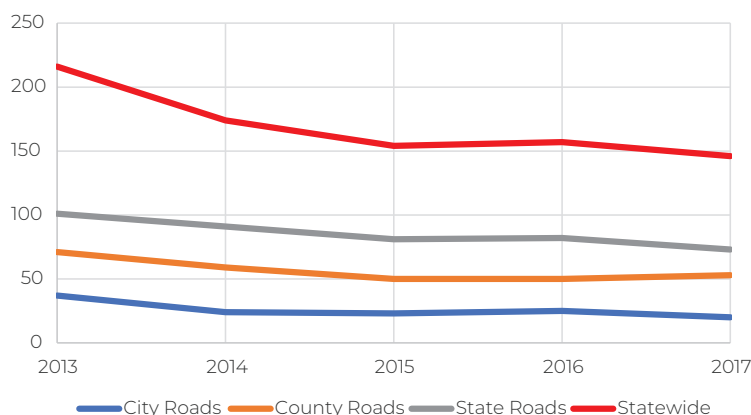
74% on Rural Roads	**51%** on State Roads	**34%** on County Roads

	Rural		Urban		Statewide	
State Roads	345	41%	83	10%	428	51%
County Roads	265	32%	18	2%	283	34%
City Roads	10	1%	119	14%	129	15%
All Jurisdictions	**620**	**74%**	**220**	**26%**	**840**	**100%**

Roadway Jurisdiction -
Severe Speeding and Aggressive Driver Crashes Annually

Line chart (2013–2017) with series: City Roads, County Roads, State Roads, Statewide.

Statewide Crash Statistics

847
Total severe speeding and aggressive driver crashes (2013-2017)

169
Severe speeding and aggressive driver crashes per year (average)

24%
of all severe crashes in South Dakota involved speeding and aggressive drivers

Speeding and Aggressive Drivers

Fatal and Serious Injury Crashes (2013-2017)

Method of Collision -
Severe Speeding and Aggressive Driver Crashes
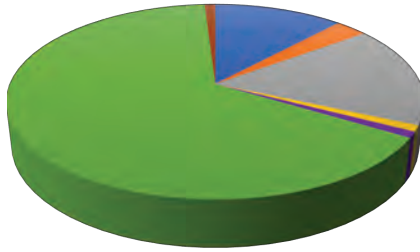
	Fatal	Serious Injury	Percentage of Severe Speeding and Aggressive Driver Crashes	Percentage of All Severe Crashes
■ Angle	20	84	12%	24%
■ Head-on (front to front)	9	15	3%	4%
■ Rear-end (front to rear)	10	134	17%	9%
■ Sideswipe, opposite direction	2	3	1%	2%
■ Sideswipe, same direction	1	5	1%	1%
■ No collision between 2 MV in transport	109	448	66%	60%
Animal - Wild or Domestic	1	4	1%	2%
Ditch or Embankment	5	38	5%	5%
Fixed Object	19	123	17%	15%
Other (Jackknife, Fire/Explosion, etc.)	2	13	2%	2%
Overturn/Rollover	82	270	42%	30%
■ Bicycle	0	1	0%	1%
■ Pedestrian	1	5	1%	5%

Roadway Alignment -
Severe Speeding and Aggressive Driver Crashes

	RURAL			URBAN			Percentage of Severe Speeding and Aggressive Driver Crashes	Percentage of All Severe Crashes
	City Roads	County Roads	State Roads	City Roads	County Roads	State Roads		
Curve	3	103	89	27	9	11	29%	21%
Straight	7	161	256	92	9	72	71%	79%

Roadway Type -
Severe Speeding and Aggressive Driver Crashes

| Functional Class	RURAL						URBAN				
	Interstate	Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local Roads	Interstate	Principal Arterial	Minor Arterial	Major Collector	Local Roads
Severe Crashes	95	150	84	152	31	110	45	54	52	29	45
% Crashes	11.2%	17.7%	9.9%	17.9%	3.7%	13.0%	5.3%	6.4%	6.1%	3.4%	5.3%
% Total Roadway	**1.6%**	**3.2%**	**3.6%**	**15.0%**	**7.5%**	**64.8%**	**0.3%**	**0.2%**	**0.6%**	**0.4%**	**2.8%**

Speeding and Aggressive Drivers
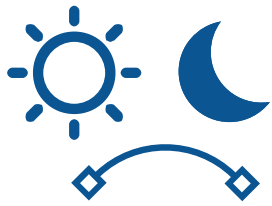
Fatal and Serious Injury Crashes (2013-2017)

Light Condition -
Severe Speeding and Aggressive Driver Crashes
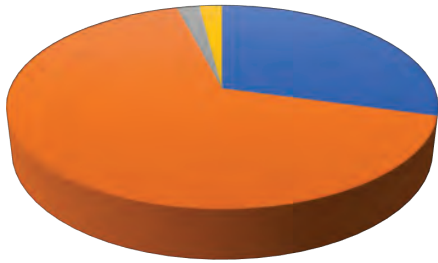
	Fatal	Serious Injury	Percentage of Severe Speeding and Aggressive Driver Crashes	Percentage of All Severe Crashes
■ Dark - any roadway lighting	60	189	29%	28%
Dark - lit roadway	7	37	5%	7%
Dark - roadway not lit	53	152	24%	21%
Dark - unknown roadway lighting	0	0	0%	0%
■ Daylight	86	477	66%	68%
■ Dawn	2	14	2%	2%
■ Dusk	2	13	2%	2%

Road Surface Condition -
Severe Speeding and Aggressive Driver Crashes
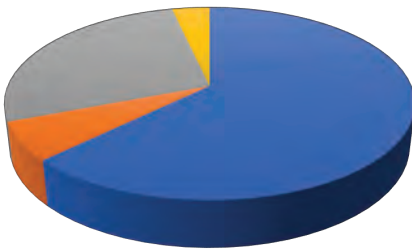
	Fatal	Serious Injury	Percentage of Severe Speeding and Aggressive Driver Crashes	Percentage of All Severe Crashes
■ Dry	114	417	63%	79%
■ Wet, Water (standing, moving)	4	50	6%	8%
■ Frost / Ice / Snow / Slush	29	202	27%	11%
■ Oil / Sand, mud, dirt, gravel	5	25	4%	2%

Time of Day and Month -
Severe Speeding and Aggressive Driver Crashes

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	% of Crashes
Midnight - 3:00 AM	3	6	7	1	6	3	6	8	5	11	5	4	65	7.7%
3:00 AM - 6:00 AM	2	6	3	1	4	2	4	3	4	1	1	1	32	3.8%
6:00 AM - 9:00 AM	17	7	14	5	7	10	5	9	10	10	13	9	116	13.7%
9:00 AM - Noon	18	11	6	4	4	9	7	24	10	5	5	14	117	13.8%
Noon - 3:00 PM	13	7	9	5	6	7	13	31	7	9	8	11	126	14.9%
3:00 PM - 6:00 PM	17	12	12	13	17	19	18	33	16	17	12	13	199	23.5%
6:00 PM - 9:00 PM	4	8	8	16	7	14	6	16	15	9	10	6	119	14.0%
9:00 PM - Midnight	5	3	9	7	4	3	6	10	5	8	10	3	73	8.6%
Total	79	60	68	52	55	67	65	134	72	70	64	61	847	
% of Crashes	9.3%	7.1%	8.0%	6.1%	6.5%	7.9%	7.7%	15.8%	8.5%	8.3%	7.6%	7.2%		

Speeding and Aggressive Drivers

Fatal and Serious Injury Crashes (2013-2017)
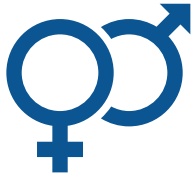
Age and Gender -
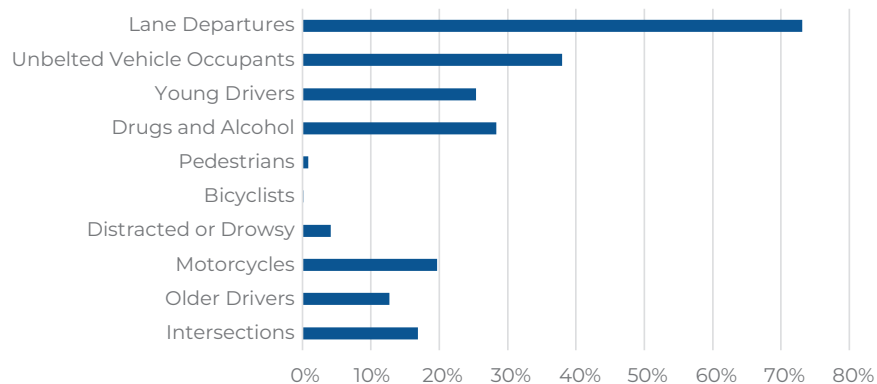### Severe Speeding and Aggressive Driver Crashes

Age	Male		Female		Statewide Crashes	
<16	38	5%	49	6%	87	11%
17 to 20	57	7%	50	6%	107	13%
21 to 25	83	10%	32	4%	115	14%
26 to 35	95	12%	45	5%	140	17%
36 to 45	59	7%	24	3%	83	10%
46 to 55	82	10%	47	5%	129	15%
56 to 65	75	9%	32	4%	107	13%
>65	42	5%	20	2%	62	7%
Total	**531**	**65%**	**299**	**35%**	**830**	**100%**

Emphasis Area -
Severe Speeding and Aggressive Driver Crashes

	Severe Speeding and Aggressive Drivers Crashes		Percentage of Severe Speeding and Aggressive Driver Crashes	Percentage of All Severe Crashes	Percentage Point Difference
	Fatal	Serious Injury			
Lane Departures	130	489	73%	59%	14% ↑
Unbelted Vehicle Occupants	101	221	38%	31%	7% ↑
Young Drivers	32	183	25%	19%	6% ↑
Drugs and Alcohol	64	176	28%	25%	3% —
Pedestrians	1	6	1%	1%	0% —
Bicyclists	0	1	0%	1%	-1% —
Distracted or Drowsy	7	28	4%	8%	-4% —
Motorcycles	21	146	20%	24%	-4% —
Older Drivers	26	82	13%	19%	-6% ↓
Intersections	16	127	17%	27%	-10% ↓

Emphasis Area -
Severe Speeding and Aggressive Driver Crashes

Unbelted Vehicle Occupants

Fatal and Serious Injury Crashes (2013-2017)

DEFINITION: Crashes involving drivers or passengers who are not appropriately restrained based on age or weight. This includes adults and children.

Note: "Severe crashes" noted in this fact sheet include Fatal (K) and Serious Injury (A-Injury) crashes.

Roadway Jurisdiction -
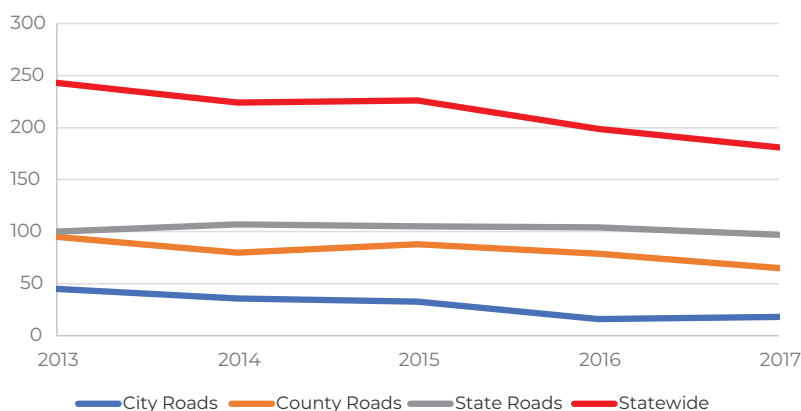### Severe Unbelted Vehicle Occupant Crashes

76%	**48%**	**38%**
on Rural Roads	on State Roads	on County Roads

	Rural		Urban		Statewide	
State Roads	417	39%	96	9%	513	48%
County Roads	390	36%	17	2%	407	38%
City Roads	13	1%	135	13%	148	14%
All Jurisdictions	**820**	**76%**	**248**	**24%**	**1,068**	**100%**

Roadway Jurisdiction -
Severe Unbelted Vehicle Occupant Crashes Annually

Statewide Crash Statistics

1,073
Total severe unbelted vehicle occupant crashes (2013-2017)

215
Severe unbelted vehicle occupant crashes per year (average)

31%
of all severe crashes in South Dakota involved unbelted vehicle occupants

Unbelted Vehicle Occupants

Fatal and Serious Injury Crashes (2013-2017)

Method of Collision -
Severe Unbelted Vehicle Occupant Crashes
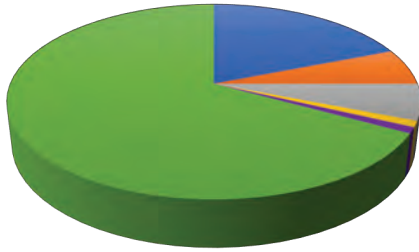
	Fatal	Serious Injury	Percentage of Severe Unbelted Vehicle Occupant Crashes	Percentage of All Severe Crashes
■ Angle	49	153	19%	24%
■ Head-on (front to front)	36	31	6%	4%
■ Rear-end (front to rear)	5	56	6%	5%
■ Sideswipe, opposite direction	2	13	1%	9%
■ Sideswipe, same direction	2	6	1%	2%
■ No collision between 2 MV in transport	207	512	67%	60%
Animal - Wild or Domestic	3	6	1%	2%
Ditch or Embankment	20	34	8%	5%
Fixed Object	44	188	22%	15%
Other (Jackknife, Fire/Explosion, etc.)	4	21	2%	2%
Overturn/Rollover	136	233	32%	30%
■ Pedestrian	1	0	0%	1%

Roadway Alignment -
Severe Unbelted Vehicle Occupant Crashes

	RURAL			URBAN			Percentage of Severe Unbelted Vehicle Occupant Crashes	Percentage of All Severe Crashes
	City Roads	County Roads	State Roads	City Roads	County Roads	State Roads		
Curve	0	87	78	18	6	20	20%	21%
Straight	12	302	339	116	11	76	80%	79%

Roadway Type -
Severe Unbelted Vehicle Occupant Crashes

| Functional Class	RURAL						URBAN				
	Interstate	Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local Roads	Interstate	Principal Arterial	Minor Arterial	Major Collector	Local Roads
Severe Crashes	86	196	107	219	32	181	47	64	64	30	47
% Crashes	8.0%	18.3%	10.0%	20.4%	3.0%	16.9%	4.4%	6.0%	6.0%	2.8%	4.4%
% Total Roadway	**1.6%**	**3.2%**	**3.6%**	**15.0%**	**7.5%**	**64.8%**	**0.3%**	**0.2%**	**0.6%**	**0.4%**	**2.8%**

Unbelted Vehicle Occupants
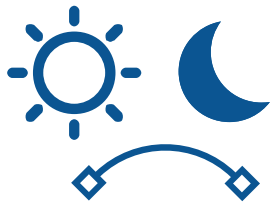
Fatal and Serious Injury Crashes (2013-2017)

Light Condition -
Severe Unbelted Vehicle Occupant Crashes
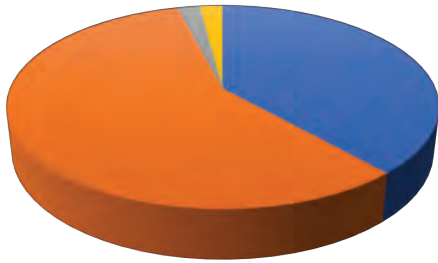
	Fatal	Serious Injury	Percentage of Severe Unbelted Vehicle Occupant Crashes	Percentage of All Severe Crashes
■ Dark - any roadway lighting	117	295	38%	28%
Dark - lit roadway	12	53	6%	7%
Dark - roadway not lit	104	237	32%	21%
Dark - unknown roadway lighting	1	5	1%	0%
■ Daylight	165	451	57%	68%
■ Dawn	8	14	2%	2%
■ Dusk	9	9	2%	2%

Road Surface Condition -
Severe Unbelted Vehicle Occupant Crashes
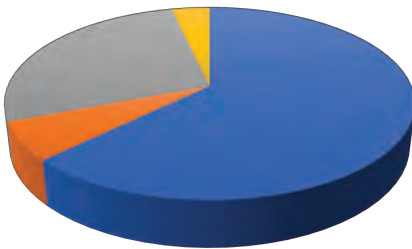
	Fatal	Serious Injury	Percentage of Severe Unbelted Vehicle Occupant Crashes	Percentage of All Severe Crashes
■ Dry	247	586	78%	79%
■ Wet, Water (standing, moving)	16	51	6%	8%
■ Frost / Ice / Snow / Slush	29	98	12%	11%
■ Oil / Sand, mud, dirt, gravel	10	34	4%	2%

Time of Day and Month -
Severe Unbelted Vehicle Occupant Crashes

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	% of Crashes
Midnight - 3:00 AM	3	12	9	3	6	7	9	18	15	20	14	10	**126**	**11.7%**
3:00 AM - 6:00 AM	3	5	10	6	10	8	11	10	3	9	6	2	**83**	**7.7%**
6:00 AM - 9:00 AM	11	6	19	9	9	6	7	7	11	10	10	8	**113**	**10.5%**
9:00 AM - Noon	17	9	9	7	12	11	13	13	19	10	12	11	**143**	**13.3%**
Noon - 3:00 PM	5	12	13	13	13	16	16	20	15	12	9	6	**150**	**14.0%**
3:00 PM - 6:00 PM	12	14	13	16	21	17	17	22	21	18	23	15	**209**	**19.5%**
6:00 PM - 9:00 PM	7	6	11	12	11	12	11	11	18	14	13	12	**138**	**12.9%**
9:00 PM - Midnight	8	6	12	9	7	7	11	8	13	12	12	6	**111**	**10.3%**
Total	**66**	**70**	**96**	**75**	**89**	**84**	**95**	**109**	**115**	**105**	**99**	**70**	**1,073**	
% of Crashes	6.2%	6.5%	8.9%	7.0%	8.3%	7.8%	8.9%	10.2%	10.7%	9.8%	9.2%	6.5%		

Unbelted Vehicle Occupants

Fatal and Serious Injury Crashes (2013-2017)
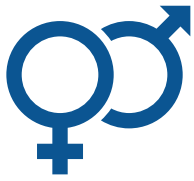
Age and Gender -
Severe Unbelted Vehicle Occupant Crashes
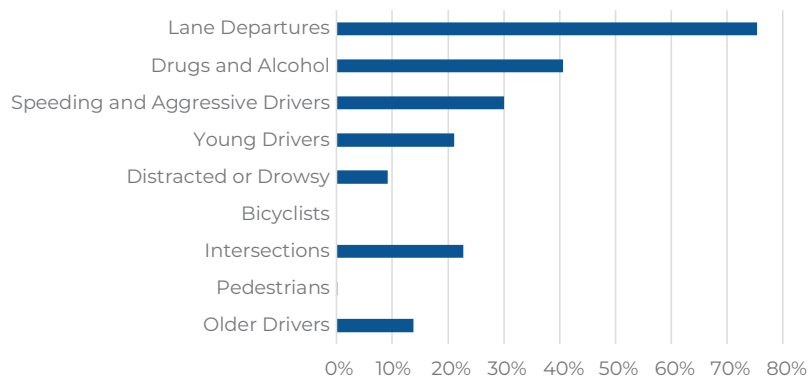
Age	Male		Female		Statewide Crashes	
<16	60	6%	55	5%	115	11%
17 to 20	65	6%	52	5%	117	11%
21 to 25	116	11%	61	6%	177	17%
26 to 35	141	14%	63	6%	204	20%
36 to 45	100	10%	23	2%	123	12%
46 to 55	93	9%	37	3%	130	12%
56 to 65	68	7%	26	2%	94	9%
>65	58	5%	29	3%	87	8%
Total	**701**	**68%**	**346**	**32%**	**1,047**	**100%**

Emphasis Area -
Severe Unbelted Vehicle Occupant Crashes

	Severe Unbelted Occupants Departure Crashes		Percentage of Severe Unbelted Vehicle Occupant Crashes	Percentage of All Severe Crashes	Percentage Point Difference	
	Fatal	Serious Injury				
Lane Departures	250	559	75%	59%	16%	↑
Drugs and Alcohol	160	276	41%	25%	16%	↑
Speeding and Aggressive Drivers	101	221	30%	24%	6%	↑
Young Drivers	41	185	21%	19%	2%	−
Distracted or Drowsy	13	86	9%	8%	1%	−
Bicyclists	0	0	0%	1%	-1%	−
Intersections	44	200	23%	27%	-4%	−
Pedestrians	1	1	0%	5%	-5%	↓
Older Drivers	56	92	14%	19%	-5%	↓

Emphasis Area -
Severe Unbelted Vehicle Occupants Crashes

South Dakota
DOT
Connecting South Dakota and the Nation

Young Drivers
Fatal and Serious Injury Crashes (2013-2017)

DEFINITION: Crashes involving drivers age 20 and younger.

Note: "Severe crashes" noted in this fact sheet include Fatal (K) and Serious Injury (A-Injury) crashes.

Statewide Crash Statistics

646
Total severe young driver crashes (2013-2017)

130
Severe young driver crashes per year (average)

19%
of all severe crashes in South Dakota involved young drivers

Roadway Jurisdiction -
Severe Young Driver Crashes

59% on Rural Roads	42% on State Roads	31% on County Roads

	Rural		Urban		Statewide	
State Roads	181	28%	88	14%	269	42%
County Roads	189	29%	10	2%	199	31%
City Roads	8	1%	168	26%	176	27%
All Jurisdictions	**378**	**59%**	**266**	**41%**	**644**	**100%**

Roadway Jurisdiction -
Severe Young Driver Crashes Annually

Legend: City Roads — County Roads — State Roads — Statewide
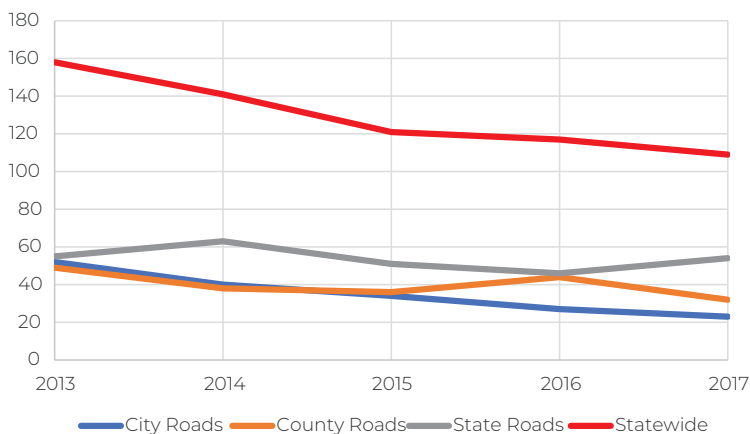
Young Drivers
Fatal and Serious Injury Crashes (2013-2017)

Method of Collision -
Severe Young Driver Crashes
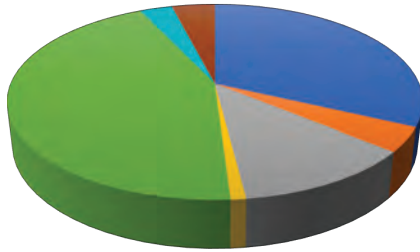
	Fatal	Serious Injury	Percentage of Severe Young Driver Crashes	Percentage of All Severe Crashes
■ Angle	23	186	32%	24%
■ Head-on (front to front)	10	17	4%	4%
■ Rear-end (front to rear)	5	72	12%	9%
■ Sideswipe, opposite direction	0	7	1%	2%
■ Sideswipe, same direction	0	3	0%	1%
■ No collision between 2 MV in transport	44	239	44%	60%
Ditch or Embankment	2	23	4%	5%
Fixed Object	5	66	11%	15%
Other (Jackknife, Fire/Explosion, etc.)	0	9	1%	2%
Overturn/Rollover	29	141	26%	30%
■ Bicycle	0	19	3%	1%
■ Pedestrian	6	23	4%	5%

Roadway Alignment -
Severe Young Driver Crashes

	RURAL			URBAN			Percentage of Severe Young Driver Crashes	Percentage of All Severe Crashes
	City Roads	County Roads	State Roads	City Roads	County Roads	State Roads		
Curve	3	50	20	14	1	12	16%	21%
Straight	5	139	161	154	9	76	84%	79%

Roadway Type -
Severe Young Driver Crashes

Functional Class	RURAL						URBAN				
	Interstate	Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local Roads	Interstate	Principal Arterial	Minor Arterial	Major Collector	Local Roads
Severe Crashes	33	82	56	91	15	102	32	69	74	37	55
% Crashes	5.1%	12.7%	8.7%	14.1%	2.3%	15.8%	5.0%	10.7%	11.5%	5.7%	8.5%
% Total Roadway	**1.6%**	**3.2%**	**3.6%**	**15.0%**	**7.5%**	**64.8%**	**0.3%**	**0.2%**	**0.6%**	**0.4%**	**2.8%**

Young Drivers

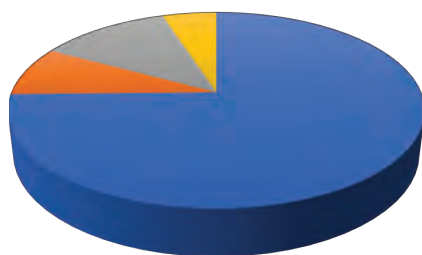**Fatal and Serious Injury Crashes (2013-2017)**
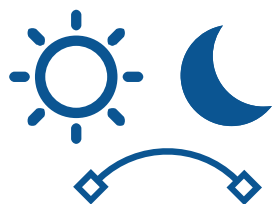
Light Condition - Severe Young Driver Crashes
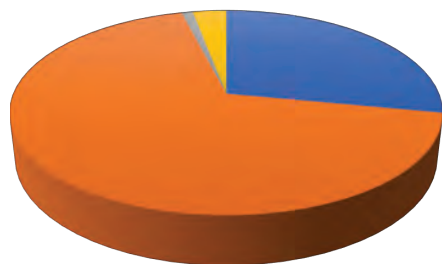
	Fatal	Serious Injury	Percentage of Severe Young Driver Crashes	Percentage of All Severe Crashes
■ Dark - any roadway lighting	32	150	28%	28%
Dark - lit roadway	9	43	8%	7%
Dark - roadway not lit	23	107	20%	21%
Dark - unknown roadway lighting	0	0	0%	0%
■ Daylight	41	396	68%	68%
■ Dawn	1	8	1%	2%
■ Dusk	6	12	3%	2%

Road Surface Condition - Severe Young Driver Crashes

	Fatal	Serious Injury	Percentage of Severe Young Driver Crashes	Percentage of All Severe Crashes
■ Dry	65	417	75%	79%
■ Wet, Water (standing, moving)	4	49	8%	8%
■ Frost / Ice / Snow / Slush	7	71	12%	11%
■ Oil / Sand, mud, dirt, gravel	4	25	5%	2%

Time of Day and Month - Severe Young Driver Crashes

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	% of Crashes
Midnight - 3:00 AM	3	3	0	3	4	0	1	8	3	5	5	3	38	5.9%
3:00 AM - 6:00 AM	1	3	3	1	5	3	1	7	2	2	1	0	29	4.5%
6:00 AM - 9:00 AM	9	7	11	3	8	12	5	3	11	9	4	3	85	13.2%
9:00 AM - Noon	3	7	2	7	4	5	9	6	6	3	7	4	63	9.8%
Noon - 3:00 PM	12	5	5	4	9	19	10	20	8	6	6	7	111	17.2%
3:00 PM - 6:00 PM	11	10	11	12	9	10	22	19	21	11	17	7	160	24.8%
6:00 PM - 9:00 PM	5	5	7	13	8	15	7	8	13	7	2	6	96	14.9%
9:00 PM - Midnight	5	7	6	6	3	4	11	6	5	8	2	1	64	9.9%
Total	**49**	**47**	**45**	**49**	**50**	**68**	**66**	**77**	**69**	**51**	**44**	**31**	**646**	
% of Crashes	**7.6%**	**7.3%**	**7.0%**	**7.6%**	**7.7%**	**10.5%**	**10.2%**	**11.9%**	**10.7%**	**7.9%**	**6.8%**	**4.8%**		

Young Drivers
Fatal and Serious Injury Crashes (2013-2017)

Age and Gender -
Severe Young Driver Crashes

Age	Male		Female		Statewide Crashes	
<14	35	5%	32	5%	67	10%
15	14	2%	24	4%	38	6%
16	26	4%	25	4%	51	8%
17	31	5%	26	4%	57	9%
18	31	5%	34	5%	65	10%
19	29	5%	19	3%	48	8%
20	37	6%	28	4%	65	10%
>21	139	22%	108	17%	247	39%
Total	**342**	**54%**	**296**	**46%**	**638**	**100%**

Emphasis Area -
Severe Young Driver Crashes

	Severe Young Driver Crashes		Percentage of Severe Young Driver Crashes	Percentage of All Severe Crashes	Percentage Point Difference	
	Fatal	Serious Injury				
Speeding and Aggressive Drivers	32	183	33%	24%	9%	↑
Intersections	20	213	36%	27%	9%	↑
Unbelted Vehicle Occupants	41	185	35%	31%	4%	−
Bicyclists	0	19	3%	1%	2%	−
Distracted or Drowsy	6	53	9%	8%	1%	−
Pedestrians	6	24	5%	5%	0%	−
Lane Departures	52	282	52%	59%	-7%	↓
Drugs and Alcohol	26	86	17%	25%	-8%	↓
Older Drivers	5	47	8%	19%	-11%	↓
Motorcycles	13	52	10%	24%	-14%	↓

Emphasis Area -
Severe Young Driver Crashes
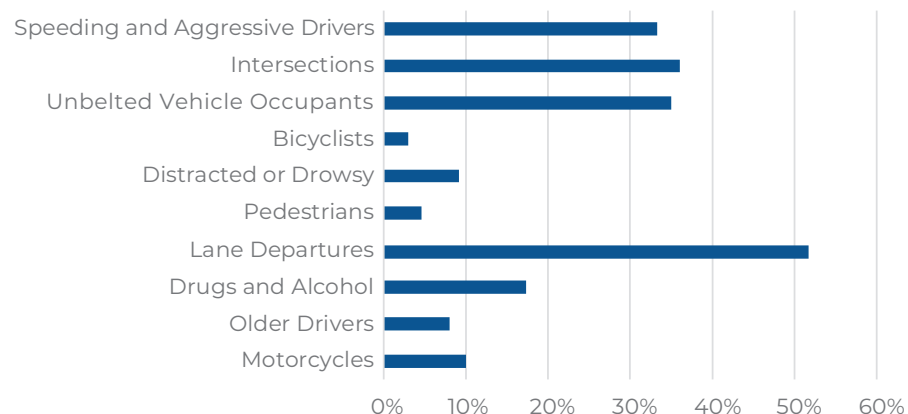
Pedestrians

Fatal and Serious Injury Crashes (2013-2017)

DEFINITION: Crash where a pedestrian sustained a fatal or serious injury.

Note: "Severe crashes" noted in this fact sheet include Fatal (K) and Serious Injury (A-Injury) crashes

Statewide Crash Statistics

178
Total severe pedestrian crashes (2013-2017)

36
Severe pedestrian crashes per year (average)

5%
of all severe crashes in South Dakota involved pedestrians

Roadway Jurisdiction -
Severe Pedestrian Crashes

71%	**54%**	**32%**
on Urban Roads	on City Roads	on State Roads

	Rural		Urban		Statewide	
State Roads	25	14%	31	18%	56	32%
County Roads	20	11%	5	3%	25	14%
City Roads	7	4%	87	50%	94	54%
All Jurisdictions	**52**	**29%**	**124**	**71%**	**175**	**100%**

Roadway Jurisdiction -
Severe Pedestrian Crashes Annually
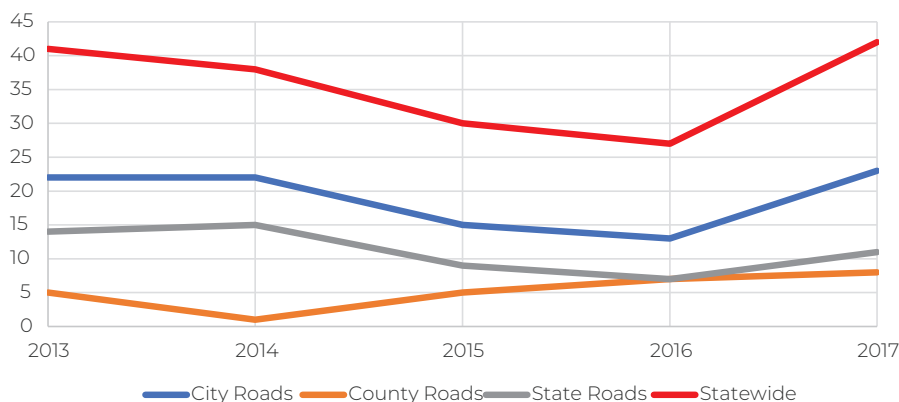
Pedestrians
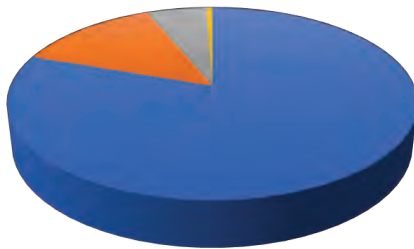**Fatal and Serious Injury Crashes (2013-2017)**
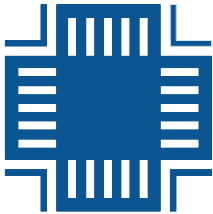
Intersection Type -
Severe Pedestrian Crashes
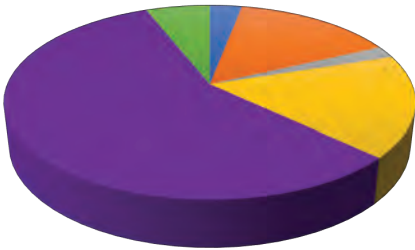
	Fatal	Serious Injury	Percentage of Severe Pedestrian Crashes	Percentage of All Severe Crashes
Driveway access	3	3	3%	4%
Four-way intersection	1	25	15%	16%
Interchange area	4	0	2%	4%
Intersection-related	3	27	17%	5%
Non-junction	24	78	57%	64%
T-intersection	3	7	6%	6%

Roadway Alignment -
Severe Pedestrian Crashes

	RURAL			URBAN			Percentage of Severe Pedestrian Crashes	Percentage of All Severe Crashes
	City Roads	County Roads	State Roads	City Roads	County Roads	State Roads		
Curve	1	1	0	1	0	3	3%	21%
Straight	6	19	25	86	5	28	97%	79%

Roadway Type -
Severe Pedestrian Crashes

Functional Class	RURAL						URBAN				
	Interstate	Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local Roads	Interstate	Principal Arterial	Minor Arterial	Major Collector	Local Roads
Severe Crashes	4	17	5	11	2	15	4	42	35	14	29
% Crashes	2.2%	9.6%	2.8%	6.2%	1.1%	8.4%	2.2%	23.6%	19.7%	7.9%	16.3%
% Total Roadway	**1.6%**	**3.2%**	**3.6%**	**15.0%**	**7.5%**	**64.8%**	**0.3%**	**0.2%**	**0.6%**	**0.4%**	**2.8%**
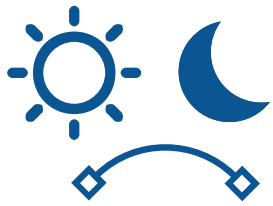
Light Condition -
Severe Pedestrian Crashes
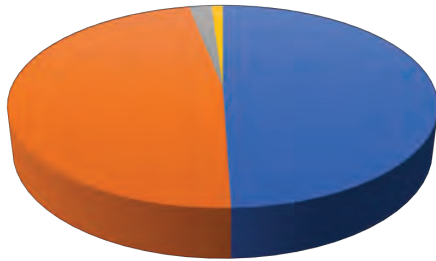
	Fatal	Serious Injury	Percentage of Severe Pedestrian Crashes	Percentage of All Severe Crashes
■ Dark - any roadway lighting	27	61	49%	28%
Dark - lit roadway	9	41	28%	7%
Dark - roadway not lit	17	20	21%	21%
Dark - unknown roadway lighting	1	0	1%	0%
■ Daylight	10	74	47%	68%
■ Dawn	1	3	2%	2%
■ Dusk	0	2	1%	2%

Road Surface Condition -
Severe Pedestrian Crashes

	Fatal	Serious Injury	Percentage of Severe Pedestrian Crashes	Percentage of All Severe Crashes
■ Dry	30	113	80%	79%
■ Wet, Water (standing, moving)	5	19	13%	8%
■ Frost / Ice / Snow / Slush	3	7	6%	11%
■ Oil / Sand, mud, dirt, gravel	0	1	1%	2%

Time of Day and Month -
Severe Pedestrian Crashes

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	% of Crashes
Midnight - 3:00 AM	0	2	3	1	2	1	1	3	0	1	1	1	16	9.0%
3:00 AM - 6:00 AM	0	0	0	2	1	0	1	0	1	0	0	1	6	3.4%
6:00 AM - 9:00 AM	2	0	3	0	1	1	1	0	3	0	3	2	16	9.0%
9:00 AM - Noon	1	0	0	1	2	2	10	2	0	2	3	2	25	14.0%
Noon - 3:00 PM	1	2	0	2	0	2	1	2	1	1	0	2	14	7.9%
3:00 PM - 6:00 PM	2	1	2	1	2	1	2	5	5	4	2	5	32	18.0%
6:00 PM - 9:00 PM	4	3	1	0	3	2	2	2	8	4	2	5	36	20.2%
9:00 PM - Midnight	2	0	1	7	0	4	3	4	5	4	1	2	33	18.5%
Total	12	8	10	14	11	13	21	18	23	16	12	20	178	
% of Crashes	6.7%	4.5%	5.6%	7.9%	6.2%	7.3%	11.8%	10.1%	12.9%	9.0%	6.7%	11.2%		

Pedestrians

Fatal and Serious Injury Crashes (2013-2017)

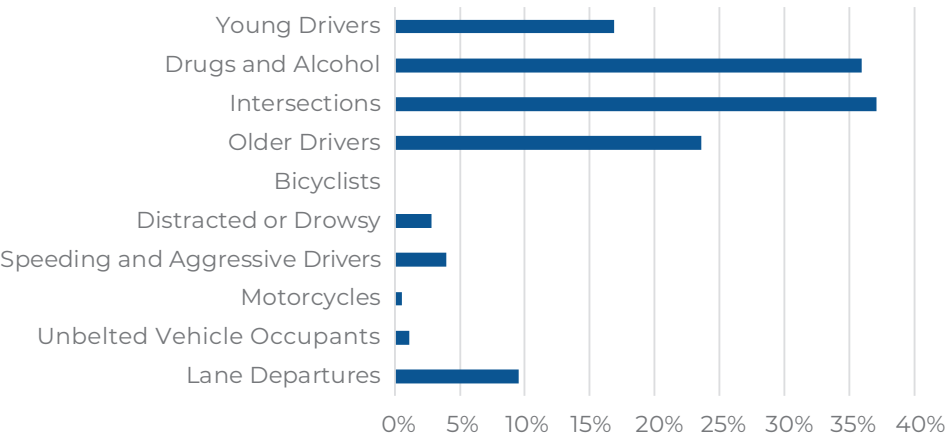## Age and Gender -
Severe Pedestrian Crashes

Age	Male		Female		Statewide Crashes	
<16	14	8%	10	6%	24	14%
17 to 20	9	5%	3	2%	12	7%
21 to 25	10	6%	7	4%	17	10%
26 to 35	18	10%	9	5%	27	15%
36 to 45	16	9%	4	2%	20	11%
46 to 55	14	8%	12	7%	26	15%
56 to 65	15	9%	11	6%	26	15%
>65	14	8%	8	5%	22	13%
Total	**110**	**63%**	**64**	**37%**	**174**	**100%**

Emphasis Area -
Severe Pedestrian Crashes

	Severe Pedestrian Crashes		Percentage of Severe Pedestrian Crashes	Percentage of All Severe Crashes	Percentage Point Difference	
	Fatal	Serious Injury				
Young Drivers	6	24	17%	5%	12%	↑
Drugs and Alcohol	22	42	36%	25%	11%	↑
Intersections	7	59	37%	27%	10%	↑
Older Drivers	7	35	24%	19%	5%	↑
Bicyclists	0	0	0%	1%	-1%	—
Distracted or Drowsy	2	3	3%	8%	-5%	↓
Speeding and Aggressive Drivers	1	6	4%	24%	-20%	↓
Motorcycles	0	1	1%	24%	-23%	↓
Unbelted Vehicle Occupants	1	1	1%	31%	-30%	↓
Lane Departures	6	11	10%	59%	-49%	↓

Emphasis Area -
Percentage of Severe Pedestrian Crashes

Bicyclists

Fatal and Serious Injury Crashes (2013-2017)

DEFINITION: Crash where a bicyclist sustained a fatal or serious injury.

Note: "Severe crashes" noted in this fact sheet include Fatal (K) and Serious Injury (A-Injury) crashes.

Statewide Crash Statistics

46
Total severe bicyclist crashes (2013-2017)

10
Severe bicyclist crashes per year (average)

1%
of all severe crashes in South Dakota involved bicyclists

Roadway Jurisdiction -
Severe Bicyclist Crashes

85%	**72%**	**17%**
on Urban Roads	on City Roads	on State Roads

	Rural		Urban		Statewide	
State Roads	5	11%	3	6%	8	17%
County Roads	2	4%	3	7%	5	11%
City Roads	0	0%	33	72%	33	72%
All Jurisdictions	**7**	**15%**	**39**	**85%**	**46**	**100%**

Roadway Jurisdiction -
Severe Bicyclist Crashes Annually

City Roads — County Roads — State Roads — Statewide
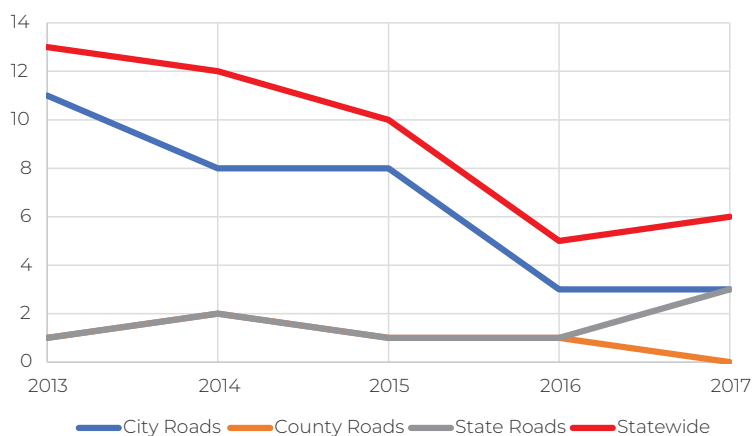
Bicyclists
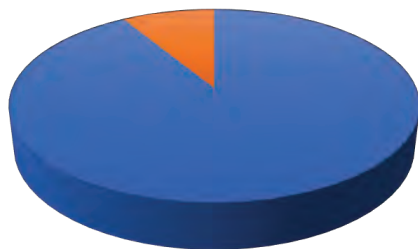**Fatal and Serious Injury Crashes (2013-2017)**
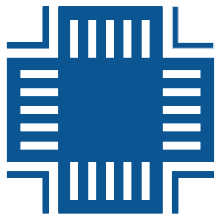
Intersection Type -
Severe Bicyclist Crashes

	Fatal	Serious Injury	Percentage of Severe Bicyclist Crashes	Percentage of All Severe Crashes
Alley intersection	0	3	7%	0.1%
Bike path or trail-related	0	1	2%	0.0%
Driveway access	2	6	17%	0.2%
Four-way intersection	0	9	20%	0.3%
Intersection-related	0	10	22%	0.3%
Non-junction	1	11	26%	0.3%
T-intersection	0	3	7%	0.1%

Roadway Alignment -
Severe Bicyclist Crashes

	RURAL			URBAN			Percentage of Severe Bicyclist Crashes	Percentage of All Severe Crashes
	City Roads	County Roads	State Roads	City Roads	County Roads	State Roads		
Curve	0	1	0	0	0	0	2%	21%
Straight	0	1	5	33	3	3	98%	79%

Roadway Type -
Severe Bicyclist Crashes

Functional Class	RURAL						URBAN				
	Interstate	Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local Roads	Interstate	Principal Arterial	Minor Arterial	Major Collector	Local Roads
Severe Crashes	1	3	1	1	0	1	0	4	14	7	14
% Crashes	2.2%	6.5%	2.2%	2.2%	0.0%	2.2%	0.0%	8.7%	30.4%	15.2%	30.4%
% Total Roadway	**1.6%**	**3.2%**	**3.6%**	**15.0%**	**7.5%**	**64.8%**	**0.3%**	**0.2%**	**0.6%**	**0.4%**	**2.8%**

Bicyclists
Fatal and Serious Injury Crashes (2013-2017)

Light Condition -
Severe Bicyclist Crashes
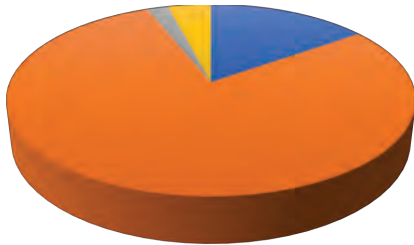
	Fatal	Serious Injury	Percentage of Severe Bicyclist Crashes	Percentage of All Severe Crashes
■ Dark - any roadway lighting	0	7	15%	28%
Dark - lit roadway	0	3	7%	7%
Dark - roadway not lit	0	4	9%	21%
Dark - unknown roadway lighting	0	0	0%	0%
■ Daylight	3	33	78%	68%
■ Dawn	0	1	2%	2%
■ Dusk	0	2	4%	2%

Road Surface Condition -
Severe Bicyclist Crashes

	Fatal	Serious Injury	Percentage of Severe Bicyclist Crashes	Percentage of All Severe Crashes
■ Dry	2	39	91%	79%
■ Wet, Water (standing, moving)	1	3	9%	8%
■ Frost / Ice / Snow / Slush	0	0	0%	11%
■ Oil / Sand, mud, dirt, gravel	0	0	0%	2%

Time of Day and Month -
Severe Bicyclist Crashes

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	% of Crashes
Midnight - 3:00 AM	0	0	0	0	1	0	0	0	0	0	0	0	1	2.2%
3:00 AM - 6:00 AM	0	0	0	0	0	1	0	0	1	0	0	0	2	4.3%
6:00 AM - 9:00 AM	0	0	1	0	1	0	0	0	3	0	0	0	5	10.9%
9:00 AM - Noon	0	0	1	1	0	3	2	3	0	0	0	0	10	21.7%
Noon - 3:00 PM	0	0	1	0	1	1	0	1	1	0	0	0	5	10.9%
3:00 PM - 6:00 PM	1	0	0	1	1	2	2	0	0	2	1	1	11	23.9%
6:00 PM - 9:00 PM	0	0	2	0	0	1	3	2	1	0	0	0	9	19.6%
9:00 PM - Midnight	0	0	0	0	0	1	1	0	0	1	0	0	3	6.5%
Total	1	0	5	2	4	9	8	6	6	3	1	1	46	
% of Crashes	2.2%	0.0%	10.9%	4.3%	8.7%	19.6%	17.4%	13.0%	13.0%	6.5%	2.2%	2.2%		

Bicyclists
Fatal and Serious Injury Crashes (2013-2017)
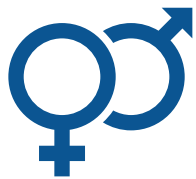
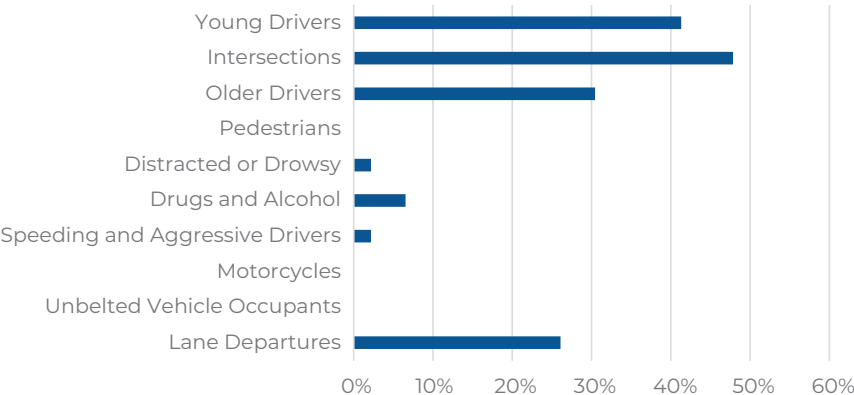## Age and Gender -
Severe Bicyclist Crashes

Age	Male		Female		Statewide Crashes	
<16	8	17%	2	4%	10	22%
17 to 20	3	7%	0	0%	3	7%
21 to 25	0	0%	1	2%	1	2%
26 to 35	7	15%	4	9%	11	24%
36 to 45	2	4%	0	0%	2	4%
46 to 55	4	9%	2	4%	6	13%
56 to 65	6	13%	2	4%	8	17%
>65	4	9%	1	2%	5	11%
Total	**34**	**74%**	**12**	**26%**	**46**	**100%**

Emphasis Area -
Severe Bicyclist Crashes

	Severe Bicyclist Crashes		Percentage of Severe Bicyclist Crashes	Percentage of All Severe Crashes	Percentage Point Difference
	Fatal	Serious Injury			
Young Drivers	0	19	41%	19%	22% ↑
Intersections	0	22	48%	27%	21% ↑
Older Drivers	1	13	30%	19%	11% ↑
Pedestrians	0	0	0%	5%	-5% ↓
Distracted or Drowsy	0	1	2%	8%	-6% ↓
Drugs and Alcohol	0	3	7%	25%	-18% ↓
Speeding and Aggressive Drivers	0	1	2%	24%	-22% ↓
Motorcycles	0	0	0%	24%	-24% ↓
Unbelted Vehicle Occupants	0	0	0%	31%	-31% ↓
Lane Departures	1	11	26%	59%	-33% ↓

Emphasis Area -
Percentage of Severe Bicyclist Crashes

Distracted or Drowsy

Fatal and Serious Injury Crashes (2013-2017)

DEFINITION: Severe crashes that were described with the following contributing factors: driver inattentiveness, distracted driving, distracted driving due to electronic/mobile device, or driving while the driver was drowsy or fell asleep.

Note: "Severe crashes" noted in this fact sheet include Fatal (K) and Serious Injury (A-Injury) crashes.

Roadway Jurisdiction -
Severe Distracted or Drowsy Crashes

| **69%** on Rural Roads | **65%** on State Roads | **18%** on County Roads |

	Rural		Urban		Statewide	
State Roads	150	52%	36	13%	186	65%
County Roads	48	17%	3	1%	51	18%
City Roads	0	0%	50	17%	50	17%
All Jurisdictions	**198**	**69%**	**89**	**31%**	**287**	**100%**

Roadway Jurisdiction -
Severe Distracted or Drowsy Crashes Annually
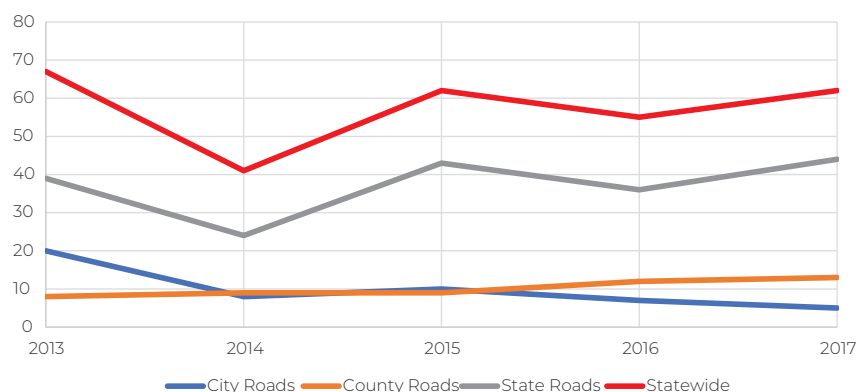
Legend: City Roads — County Roads — State Roads — Statewide

Statewide Crash Statistics

287
Total severe distracted or drowsy crashes (2013-2017)

58
Severe distracted or drowsy crashes per year (average)

8%
of all severe crashes in South Dakota involved distracted or drowsy driving

Distracted or Drowsy

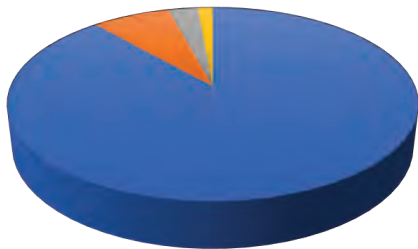**Fatal and Serious Injury Crashes (2013-2017)**

Method of Collision -
Severe Distracted or Drowsy Crashes

	Fatal	Serious Injury	Percentage of Severe Distracted or Drowsy Crashes	Percentage of All Severe Crashes
■ Angle	1	17	6%	24%
■ Head-on (front to front)	4	11	5%	4%
■ Rear-end (front to rear)	9	84	32%	9%
■ Sideswipe, opposite direction	1	8	3%	2%
■ Sideswipe, same direction	2	1	1%	1%
■ No collision between 2 MV in transport	16	127	50%	60%
Ditch or Embankment	2	25	9%	5%
Fixed Object	4	48	18%	15%
Other (Jackknife, Fire/Explosion, etc.)	0	2	1%	2%
Overturn/Rollover	10	52	22%	30%
■ Bicycle	0	1	0%	1%
■ Pedestrian	2	3	2%	5%

Roadway Alignment -
Severe Distracted or Drowsy Crashes

	RURAL			URBAN			Percentage of Severe Distracted or Drowsy Crashes	Percentage of All Severe Crashes
	City Roads	County Roads	State Roads	City Roads	County Roads	State Roads		
Curve	0	7	23	4	0	5	14%	21%
Straight	0	41	127	46	3	31	86%	79%

Roadway Type -
Severe Distracted or Drowsy Crashes

Functional Class	RURAL						URBAN				
	Interstate	Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local Roads	Interstate	Principal Arterial	Minor Arterial	Major Collector	Local Roads
Severe Crashes	55	62	25	36	5	15	13	29	30	5	12
% Crashes	19.2%	21.6%	8.7%	12.5%	1.7%	5.2%	4.5%	10.1%	10.5%	1.7%	4.2%
% Total Roadway	**1.6%**	**3.2%**	**3.6%**	**15.0%**	**7.5%**	**64.8%**	**0.3%**	**0.2%**	**0.6%**	**0.4%**	**2.8%**

Distracted or Drowsy
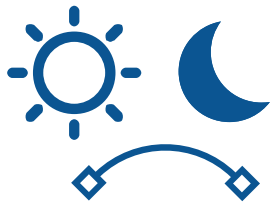
Fatal and Serious Injury Crashes (2013-2017)

Light Condition -
Severe Distracted or Drowsy Crashes
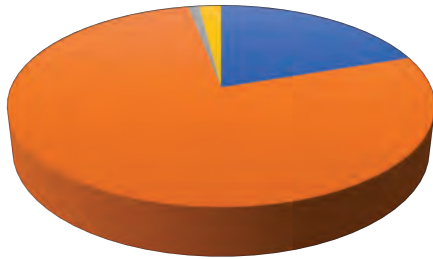
	Fatal	Serious Injury	Percentage of Severe Distracted or Drowsy Crashes	Percentage of All Severe Crashes
■ Dark - any roadway lighting	4	53	20%	28%
Dark - lit roadway	1	4	2%	7%
Dark - roadway not lit	3	49	18%	21%
Dark - unknown roadway lighting	0	0	0%	0%
■ Daylight	30	193	78%	68%
■ Dawn	0	2	1%	2%
■ Dusk	1	4	2%	2%

Road Surface Condition -
Severe Distracted or Drowsy Crashes

	Fatal	Serious Injury	Percentage of Severe Distracted or Drowsy Crashes	Percentage of All Severe Crashes
■ Dry	33	221	89%	79%
■ Wet, Water (standing, moving)	1	20	7%	8%
■ Frost / Ice / Snow / Slush	0	8	3%	11%
■ Oil / Sand, mud, dirt, gravel	1	3	1%	2%

Time of Day and Month -
Severe Distracted or Drowsy Crashes

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	% of Crashes
Midnight - 3:00 AM	0	1	0	0	0	1	2	5	2	2	1	2	16	5.6%
3:00 AM - 6:00 AM	0	0	4	3	2	2	1	2	1	1	1	1	18	6.3%
6:00 AM - 9:00 AM	4	3	5	0	4	2	6	5	4	4	4	2	43	15.0%
9:00 AM - Noon	0	1	3	5	4	3	4	6	3	2	1	3	35	12.2%
Noon - 3:00 PM	5	2	0	0	5	12	6	20	2	2	7	7	68	23.7%
3:00 PM - 6:00 PM	3	2	2	7	3	7	12	17	8	4	3	4	72	25.1%
6:00 PM - 9:00 PM	1	2	1	4	3	4	4	1	3	0	0	1	24	8.4%
9:00 PM - Midnight	1	0	3	1	0	0	1	1	0	3	1	0	11	3.8%
Total	**14**	**11**	**18**	**20**	**21**	**31**	**36**	**57**	**23**	**18**	**18**	**20**	**287**	
% of Crashes	4.9%	3.8%	6.3%	7.0%	7.3%	10.8%	12.5%	19.9%	8.0%	6.3%	6.3%	7.0%		

Distracted or Drowsy

Fatal and Serious Injury Crashes (2013-2017)
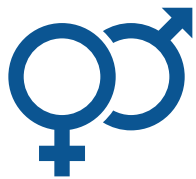
Age and Gender -
### Severe Distracted or Drowsy Crashes

Age	Male		Female		Statewide Crashes	
<16	13	5%	16	6%	29	11%
17 to 20	14	5%	15	5%	29	10%
21 to 25	17	6%	9	3%	26	9%
26 to 35	28	10%	12	4%	40	14%
36 to 45	27	9%	13	5%	40	14%
46 to 55	28	10%	18	6%	46	16%
56 to 65	17	6%	22	8%	39	14%
>65	16	6%	17	6%	33	12%
Total	**160**	**57%**	**122**	**43%**	**282**	**100%**

Emphasis Area -
Severe Distracted or Drowsy Crashes

	Severe Distracted or Drowsy Crashes		Percentage of Severe Distracted or Drowsy Crashes	Percentage of All Severe Crashes	Percentage Point Difference	
	Fatal	**Serious Injury**				
Lane Departures	23	169	67%	59%	8%	↑
Unbelted Vehicle Occupants	13	86	34%	31%	3%	—
Young Drivers	6	53	21%	19%	2%	—
Bicyclists	0	1	0%	1%	-1%	—
Pedestrians	2	3	2%	5%	-3%	—
Older Drivers	8	36	15%	19%	-4%	—
Motorcycles	10	27	13%	24%	-11%	↓
Intersections	3	42	16%	27%	-11%	↓
Speeding and Aggressive Drivers	7	28	12%	24%	-12%	↓
Drugs and Alcohol	9	24	11%	25%	-14%	↓

Emphasis Area -
Severe Distracted or Drowsy Crashes
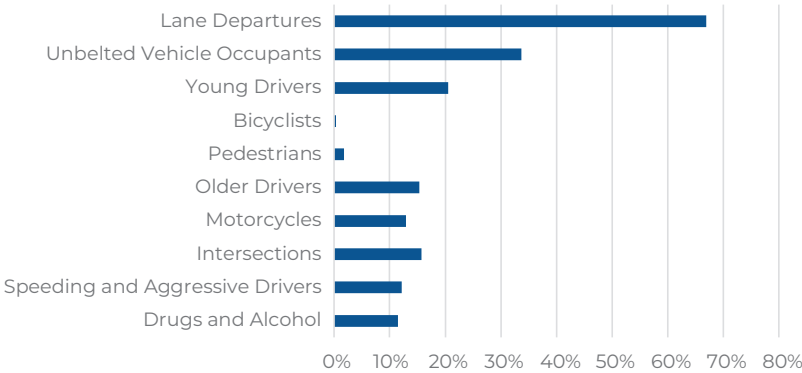
Supplemental Data 7: Implementation Plan - Emphasis Area

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Implementation Plan - Drugs and Alcohol

DEFINITION: *Crashes involving roadway users who are under the influence of alcohol, illicit drugs and/or prescription drugs. Under the influence is defined as a BAC of 0.08 or higher. Under the Influence of drugs is determined by law enforcement.*

Overview

Based on the crash facts for severe crashes involving drugs and alcohol, the majority (68%) of these types of crashes occurred during early morning conditions, specifically between the hours of Midnight and 3am. Drug and alcohol-related crashes were also frequent during the evening hours of 6pm to 9pm. In terms of driver demographics, 72% of drivers involved in severe drug and alcohol- related crashes were male.

Reviews of existing safety plans in South Dakota show that most of the current drugs and alcohol mitigation efforts involve Enforcement or Education. While many SD law enforcement agencies currently participate in impaired driving mobilizations sponsored by the SD Office of Highway Safety, there are opportunities to increase the participation of sheriffs' offices and many tribal law enforcement departments. Increased use of sobriety checkpoints can be very effective and serve to both enforce DUI laws and educate the driving public.

Media campaigns with messages regarding DUIs and *Don't Drink and Drive* should be continued and enhanced where possible. There is a continued need for programs that provide alternative transportation options for impaired individuals in highly populated areas and universities. These alternative transportation programs can provide support to remove impaired drivers from the roads by offering safe transportation during peak times, such as weekend nights, special events, or holidays. Ongoing awareness and education about binge drinking, drinking and driving, and the abuse of other drugs should be coordinated with on- and off-campus entities throughout the year.

Tribal communities also have needs for increased education and enforcement relating to drugs and alcohol-related crashes. With most tribes experiencing limited law enforcement staffing and demands on their time that criminal activities require, traffic enforcement and education often becomes a lower priority. To elevate the level of highway safety enforcement, Tribal law enforcement should pursue funding for additional safety enforcement officers and explore cross jurisdictional agreements where appropriate. In addition, the current SD SHSP noted interest in creating a Tribal Law Enforcement or Traffic Liaison position within South Dakota Department of Public Safety (SDDPS) to address tribal drinking and driving and other traffic safety issues, and to serve as a resource to all tribal nations.

The South Dakota Impaired Driving Task Force is required to review state impaired driving data, as well as identify priorities, monitor project implementation, and review progress in conjunction with the Office of Highway Safety and other stakeholders across the state. The Impaired Driving Task Force develops the South Dakota Impaired Driving Plan, which presents a synopsis of indicators and statistics, outlines areas of concerns, identifies priority areas for future programming, and outlines a process through which the South Dakota Impaired Driving Task Force can assist the Office of Highway Safety in implementing and prioritizing funding for evidence-based programming to reduce impaired driving in South Dakota.

Key Strategies

The following are key drugs and alcohol safety strategies for implementation:

1. Publicized sobriety checkpoints for impaired drivers create general and specific deterrence of DUI laws	
Responsible Lead Agency	South Dakota Department of Public Safety
Potential Partners	South Dakota Department of Transportation, local law enforcement
Targeted Facilities	Rural State/County Roads
Objective	Reduce the number of impaired drivers through enforcement and by bringing public awareness to high visibility enforcement
Goals for Deployment	Reduce Drug and Alcohol traffic fatal crashes to 36 or fewer and serious injury crashes to 69 or fewer by 2024
Four E's of Safety	Enforcement, Education

2. High-visibility saturation patrols where several law enforcement officers patrol a specific area looking for impaired drivers	
Responsible Lead Agency	South Dakota Department of Public Safety
Potential Partners	South Dakota Department of Transportation, local law enforcement
Targeted Facilities	Rural State/County Roads
Objective	Reduce the number of impaired drivers by coordinating periods of enhanced enforcement at a specific location (i.e., corridor or area)
Goals for Deployment	Reduce Drug and Alcohol fatal crashes to 36 or fewer and serious injury crashes to 69 or fewer by 2024
Four E's of Safety	Enforcement

3. Effective, high-visibility communication and outreach campaigns supporting aggressive alcohol and drugged driving enforcement efforts	
Responsible Lead Agency	South Dakota Department of Public Safety
Potential Partners	South Dakota Department of Transportation, local law enforcement, South Dakota Impaired Driving Task Force, Drug Abuse Resistance Education, Mothers Against Drunk Driving
Targeted Facilities	Rural State/County Roads
Objective	Enhance public awareness of high visibility patrols and periods of enhanced enforcement of aggressive alcohol and drugged driving laws
Goals for Deployment	Reduce Drug and Alcohol fatal crashes to 36 or fewer and serious injury crashes to 69 or fewer by 2024
Four E's of Safety	Enforcement, Education

4. Alternative transportation programs allow people travel to places where they drink without having to drive	
Responsible Lead Agency	South Dakota Department of Public Safety
Potential Partners	South Dakota Department of Transportation, local law enforcement, and South Dakota Impaired Driving Task Force
Targeted Facilities	Rural State/County Roads
Objective	Reduce the number of impaired drivers by supporting rideshare opportunities
Goals for Deployment	Reduce Drug and Alcohol fatal crashes to 36 or fewer and serious injury crashes to 69 or fewer by 2024
Four E's of Safety	Education

Implementation Plan - Intersections

DEFINITION: *Crashes occurring where two or more roadways intersect.*

Overview

The crash data showed that the majority (59%) of intersection crashes occur on urban roadways, with the greatest number of intersection crashes occurring on either state highways or city streets depending on the year. The highest correlation between intersection crashes and other emphasis areas were with Older and Younger Drivers, as well as Unbelted Occupant crashes.

Existing safety plans in South Dakota are heavily weighted towards engineering countermeasures in regards to severe intersection crash strategies. To reduce the likelihood and severity of intersection-related crashes, current strategies mostly include improvements to intersection geometry, traffic control, and visibility. Examples include: signal coordination along corridors, protected left turns, intersection realignment or geometry modifications to address sight triangle issues, improved lane configuration, and installation of improved signing and pavement markings.

Various MPO's also have developed Bicycle and Pedestrian plans and outreach to assess growing needs and concerns of vulnerable roadway users. Planned activities include engaging geographic locations identified as priority areas to collaborate and develop sustainable partnerships.

Key Strategies

The following are key intersection safety strategies for implementation:

1. Improve intersection signing, markings or street lighting at rural intersections to increase intersection conspicuity.	
Responsible Lead Agency	South Dakota Department of Transportation
Potential Partners	Counties, Townships, and Tribal Nations
Targeted Facilities	Rural State Roads
Objective	Improve intersection visibility for drivers
Goals for Deployment	Reduce Intersection fatal crashes to 15 or fewer and serious injury crashes to 92 or fewer by 2024
Four E's of Safety	Engineering
2. Verify sight triangles and eliminate obstructions as needed.	
Responsible Lead Agency	South Dakota Department of Transportation
Potential Partners	Cities, Counties, Tribal Nations, South Dakota State Patrol, local law enforcement
Targeted Facilities	State Roads and Urban City Roads
Objective	Reduce frequency and severity of crashes by improving visibility
Goals for Deployment	Reduce Intersection fatal crashes to 15 or fewer and serious injury crashes to 92 or fewer by 2024
For E's of Safety	Engineering, Enforcement
3. Provide careful consideration for pedestrian facilities, including Leading Pedestrian Interval and Rectangular Rapid Flashing Beacon.	
Responsible Lead Agency	South Dakota Department of Transportation
Potential Partners	South Dakota Department of Public Safety, Counties, Cities, and Tribal Nations
Targeted Facilities	State Roads and Urban City Roads
Objective	Provide pedestrians with safe facilities

Goals for Deployment	Reduce Intersection fatal crashes to 15 or fewer and serious injury crashes to 92 or fewer by 2024
For E's of Safety	Engineering

4. Use Radar Speed Feedback Signs to reduce driver speeds through high speed intersections.

Responsible Lead Agency	South Dakota Department of Transportation
Potential Partners	South Dakota Department of Public Safety, Counties, Cities, and Tribal Nations
Targeted Facilities	Rural State Roads and Urban City Roads
Objective	Provide drivers with feedback about their speed and warning them to adjust their speed appropriately
Goals for Deployment	Reduce Intersection fatal crashes to 15 or fewer and serious injury crashes to 92 or fewer by 2024
For E's of Safety	Engineering, Enforcement, Education

5. Use protected left-turn at signalized intersections.

Responsible Lead Agency	South Dakota Department of Transportation
Potential Partners	Counties, Cities, and Tribal Nations
Targeted Facilities	State Roads and Urban City Roads
Objective	Reduce frequency and severity of angle crashes
Goals for Deployment	Reduce Intersection fatal crashes to 15 or fewer and serious injury crashes to 92 or fewer by 2024
Four E's of Safety	Engineering

6. Reduce delay and stops in signalized corridors with signal coordination or adaptive traffic signals.

Responsible Lead Agency	South Dakota Department of Transportation
Potential Partners	Counties, Cities, and Tribal Nations
Targeted Facilities	Urban State Roads and Urban City Roads
Objective	Reduce frequency and severity of signalized intersection crashes through traffic control and operational improvements
Goals for Deployment	Reduce Intersection fatal crashes to 15 or fewer and serious injury crashes to 92 or fewer by 2024
Four E's of Safety	Engineering

7. Provide left- or right-turn lanes.

Responsible Lead Agency	South Dakota Department of Transportation
Potential Partners	Counties, Cities, and Tribal Nations
Targeted Facilities	State Roads and Urban City Roads
Objective	Reduce frequency and severity of angle and rear-end crashes
Goals for Deployment	Reduce Intersection fatal crashes to 15 or fewer and serious injury crashes to 92 or fewer by 2024
Four E's of Safety	Engineering

8. Select innovative designs for intersections and interchanges.

Responsible Lead Agency	South Dakota Department of Transportation
Potential Partners	Counties, Cities, and Tribal Nations
Targeted Facilities	State Roads and Urban City Roads
Objective	Reduce frequency and severity of intersection conflicts through geometric improvements
Goals for Deployment	Reduce Intersection fatal crashes to 15 or fewer and serious injury crashes to 92 or fewer by 2024

Four E's of Safety	Engineering

9. Improve access management in corridors with high levels of access, including closing or restricting of access locations or implementing a road diet.	
Responsible Lead Agency	South Dakota Department of Transportation
Potential Partners	Counties, Cities, and Tribal Nations
Targeted Facilities	State Roads and Urban City Roads
Objective	Reduce frequency and severity of crashes along a corridor by reducing the number of conflict points
Goals for Deployment	Reduce Intersection fatal crashes to 15 or fewer and serious injury crashes to 92 or fewer by 2024
Four E's of Safety	Engineering

10. Realign intersection approaches to reduce or eliminate intersection skew.	
Responsible Lead Agency	South Dakota Department of Transportation
Potential Partners	Counties, Cities, Townships, and Tribal Nations
Targeted Facilities	Rural State Roads and Urban City Roads
Objective	Improve intersection sight lines and distance at side-street stop-controlled intersections by realigning the roads to intersect at 90 degrees
Goals for Deployment	Reduce Intersection fatal crashes to 15 or fewer and serious injury crashes to 92 or fewer by 2024
Four E's of Safety	Engineering

Implementation Plan – Lane Departures

DEFINITION: *Crashes involving vehicles leaving their original lane of travel. This includes run-off-road and head-on crashes.*

Overview

The majority of action strategies for lane departure crashes currently fall within the Engineering category. Countermeasures currently deployed at the state and tribal levels, include adding or replacing transverse rumble strips, centerline or edge line rumble trips. Additional countermeasures include: shoulder widening, curve delineation, high friction surface treatments, installation of snow fences to prevent snow drifting, and enforcing adequate clear zones along rural corridors.

According to the crash data, 82% of severe lane departure crashes occurred on rural roadways. Additionally, 60% of these crashes were single vehicle crashes and resulted from overturn/rollovers or collisions with stationary objects. This supports justification for further efforts in mitigating shoulder safety treatments, enforcing clear zones per design standards for rural roadways, and enhancing pavement markings or signing.

The crash data for lane departure crashes resulting in severe injuries shows the highest correlation between lane departures and unbelted crashes, followed by drug and alcohol-related crashes. Regarding public education and outreach, it may be beneficial to further emphasize the relationship between the lack of seatbelt use and serious injury resulting from rollover/overturn crashes in the communication messaging from safety advocates.

Key Strategies

The following are key lane departure safety strategies for implementation:

1. Install centerline, shoulder or edge line rumble strips on rural roads, including county roads	
Responsible Lead Agency	South Dakota Department of Transportation
Potential Partners	Counties and Tribal Nations
Targeted Facilities	Rural State/County Roads
Objective	Reduce the frequency and severity of head-on and run-off-road crashes and alert distracted drivers to be aware of the roadway lanes
Goals for Deployment	Reduce Lane Departure fatal crashes to 64 or fewer and serious injury crashes to 178 or fewer by 2024
Four E's of Safety	Engineering

2. Widen and/or pave shoulders to provide drivers a recovery area	
Responsible Lead Agency	South Dakota Department of Transportation
Potential Partners	Counties, Cities, and Tribal Nations
Targeted Facilities	Rural State/County Roads
Objective	Provide recovery area for vehicles that leave the travel lanes and provide drivers with paved surface away from traffic to accommodate emergencies and other uses
Goals for Deployment	Reduce Lane Departure fatal crashes to 64 or fewer and serious injury crashes to 178 or fewer by 2024
Four E's of Safety	Engineering

3. Install Median Barriers for locations with crash history identified as high-risk for centerline crossing	
Responsible Lead Agency	South Dakota Department of Transportation
Potential Partners	Counties and Cities
Targeted Facilities	Rural State Roads

Objective	Reduce the frequency and severity of head-on collisions by separating opposing traffic
Goals for Deployment	Reduce Lane Departure fatal crashes to 64 or fewer and serious injury crashes to 178 or fewer by 2024
Four E's of Safety	Engineering

4. Provide local agencies with funding assistance to install, enhance, or maintain centerline and edge line markings

Responsible Lead Agency	South Dakota Department of Transportation
Potential Partners	Counties, Cities, Townships, and Tribal Nations
Targeted Facilities	County Roads
Objective	Support local agencies to reduce the frequency and severity of head-on and run-off-road crashes
Goals for Deployment	Reduce Lane Departure fatal crashes to 64 or fewer and serious injury crashes to 178 or fewer by 2024
Four E's of Safety	Engineering

5. Provide enhanced curve delineation, such as chevrons and pavement markings, for sharp curves

Responsible Lead Agency	South Dakota Department of Transportation
Potential Partners	Counties, Cities, Townships, and Tribal Nations
Targeted Facilities	Rural State/County Roads
Objective	Provide drivers with information about changes to the roadway geometrics
Goals for Deployment	Reduce Lane Departure fatal crashes to 64 or fewer and serious injury crashes to 178 or fewer by 2024
Four E's of Safety	Engineering

6. Utilize High Friction Surface Treatment to increase traction through sharp curves

Responsible Lead Agency	South Dakota Department of Transportation
Potential Partners	Counties, Cities, and Tribal Nations
Targeted Facilities	Rural State/County Roads
Objective	Reduce the frequency and severity of head-on and run-off-road crashes due to wet/winter road conditions, vehicle speed, and/or roadway geometrics on sharp curves
Goals for Deployment	Reduce Lane Departure fatal crashes to 64 or fewer and serious injury crashes to 178 or fewer by 2024
Four E's of Safety	Engineering

7. Remove or relocate fixed objects in the roadside

Responsible Lead Agency	South Dakota Department of Transportation
Potential Partners	Counties, Cities, Townships, and Tribal Nations
Targeted Facilities	Rural State/County Roads
Objective	Reduce the frequency and severity of head-on crashes with objects in the right-of-way
Goals for Deployment	Reduce Lane Departure fatal crashes to 64 or fewer and serious injury crashes to 178 or fewer by 2024
Four E's of Safety	Engineering

8. Deploy enhanced pavement markings (wider or wet-reflective material)

Responsible Lead Agency	South Dakota Department of Transportation
Potential Partners	Counties, Cities, and Tribal Nations
Targeted Facilities	Rural State/County Roads
Objective	Improve pavement marking visibility for drivers

Goals for Deployment	Reduce Lane Departure fatal crashes to 64 or fewer and serious injury crashes to 178 or fewer by 2024
For E's of Safety	Engineering

Implementation Plan – Motorcycles

DEFINITION: *Crashes involving drivers and passengers on motorcycles.*

Overview

The crash data showed that 69% of severe motorcycle crashes occur on rural roadways. As expected, the summer season months of June to September experience the highest number of severe motorcycle crashes, with August having the highest incidence of crashes. Most motorcycle crashes occur between the hours of 9am and 9pm; 52% of severe motorcycle crashes involve drivers between 46 and 65 years of age.

The most current South Dakota strategic highway safety plan (SD SHSP 2014) documentation includes strategies related to engineering countermeasures, media campaigns promoting motorcycle safety, and increased law enforcement during seasonal tourist peaks (e.g., the Sturgis Motorcycle Rally).

Much effort has gone into communicating with the public about sharing the roads with motorcycles. Messaging focused on motorcycle riders can also improve safety outcomes through reminders about driver behavior (e.g., don't drink and ride) and adequate safety equipment. For example, strategies regarding proper motorcycle helmet usage, attire, or safe riding practices are additional messages that can be incorporated into South Dakota's motorcycle safety efforts.

Aggressive enforcement efforts with participation from all South Dakota law enforcement agencies that target excessive speed and impaired driving of all motor vehicles should be strongly encouraged, since crashes resulting from these risky driving behaviors take an even greater toll on vulnerable motorcycle riders.

Countermeasure efforts outlined in the SD SHSP such as preparation for major motorcycle events, which includes sweeping roadways, cleaning pavement markings, and providing high visibility and oversized advanced warning signs should be continued. These efforts can be expanded further by applying them to additional high-risk motorcycle crash locations as determined by the crash data analysis as part of the 2019 SD SHSP Update.

Programs that provide useful rider information such as roadway or lane closures, chip seal projects, and real-time pavement conditions that affect rideability should be continued and enhanced when possible through media outlets, especially during popular motorcycle rides and events.

Key Strategies

The following are key motorcycle safety strategies for implementation:

1. Aggressive impaired driving enforcement for all motorists reduces motorcycle fatalities and serious injuries due to a higher rate of involvement of motorcycle riders in impaired driving crashes	
Responsible Lead Agency	South Dakota Department of Public Safety
Potential Partners	South Dakota Department of Transportation, local law enforcement, South Dakota Impaired Driving Task Force, Mothers Against Drunk Driving
Targeted Facilities	Rural State/County Roads and Urban City Roads
Objective	Reduce the number of impaired motorcyclists through enforcement and by bringing public awareness to high visibility patrol
Goals for Deployment	Reduce Motorcycle fatal crashes to 16 or fewer and serious injury crashes to 79 or fewer by 2024
Four E's of Safety	Enforcement
2. High-visibility enforcement of aggressive driving and speed laws to reinforce established speed limits	
Responsible Lead Agency	South Dakota Department of Public Safety
Potential Partners	South Dakota Department of Transportation, local law enforcement, South Dakota Office of Highway Safety - Judicial Outreach Liaison
Targeted Facilities	Rural State/County Roads and Urban City Roads
Objective	Reduce the number of speeding/aggressive motorcyclists through enforcement and by bringing public awareness to high visibility patrol
Goals for Deployment	Reduce Motorcycle fatal crashes to 16 or fewer and serious injury crashes to 79 or fewer by 2024
Four E's of Safety	Enforcement
3. Rider education and training courses may be beneficial in reducing motorcycle rider crashes	
Responsible Lead Agency	South Dakota Department of Public Safety
Potential Partners	South Dakota Department of Transportation, South Dakota Driver Licensing Program, Counties, Cities
Targeted Facilities	Rural State/County Roads and Urban City Roads
Objective	Improve rider education and training course on motorcycle safety to reduce motorcycle- related crashes
Goals for Deployment	Reduce Motorcycle fatal crashes to 16 or fewer and serious injury crashes to 79 or fewer by 2024
Four E's of Safety	Education
4. Prepare roadways before major motorcycle events (sweep roadways, clean/replace pavement markings, update high-visibility signing) and install Dynamic Messaging Boards at high-risk locations	
Responsible Lead Agency	South Dakota Department of Transportation
Potential Partners	South Dakota Department of Public Safety, Counties, Cities, and Tribal Nations
Targeted Facilities	Rural State/County Roads and Urban City Roads
Objective	Reduce the number of motorcycle incidents at motorcycle events by implementing safety strategies prior to motorcycle specific events
Goals for Deployment	Reduce Motorcycle fatal crashes to 16 or fewer and serious injury crashes to 79 or fewer by 2024
Four E's of Safety	Engineering

5. Provide paved shoulders for recovery and breakdowns	
Responsible Lead Agency	South Dakota Department of Transportation
Potential Partners	South Dakota Department of Public Safety, Counties, Cities, and Tribal Nations
Targeted Facilities	Rural State/County Roads and Urban City Roads
Objective	Provide motorcyclists with a safe paved surface away from oncoming traffic to accommodate recovery emergencies and other uses
Goals for Deployment	Reduce Motorcycle fatal crashes to 16 or fewer and serious injury crashes to 79 or fewer by 2024
Four E's of Safety	Engineering

6. Continue to promote SouthDakotaRides.com and actively maintain and update the information on the website	
Responsible Lead Agency	South Dakota Department of Public Safety
Potential Partners	South Dakota Department of Transportation, motorcycle dealers, Counties, Cities
Targeted Facilities	Rural State/County Roads and Urban City Roads
Objective	To support motorcyclists with updated travel information and raise awareness around motorcycle safety
Goals for Deployment	Reduce Motorcycle fatal crashes to 16 or fewer and serious injury crashes to 79 or fewer by 2024
Four E's of Safety	Education

Implementation Plan – Older Drivers

DEFINITION: *Crashes involving drivers age 65 and older.*

Overview

Sixty-two percent of severe crashes involving older drivers in South Dakota occurred on rural roadways. Forty percent of these crashes were also categorized as angle crashes, which generally occur during intersection collisions. Based on the severe crash data, the majority of older drivers (40%) were between the ages of 66 and 80, and the number of severe crashes involving older drivers spiked during the month of August.

Existing safety plan documentation does not currently contain many initiatives directed toward older driver demographics. The 2010 SD Long-Range Transportation Plan (LRTP) cited the Transportation for Elderly Person and Persons with Disabilities as a program that provides formula funding to states for the purpose of assisting private non-profit groups in meeting transportation needs of elderly and persons with disabilities.

Opportunities exist to provide additional information and education to law enforcement officers, physicians, and to the general public about the ability and processes already in place to refer older drivers to SD Driver Licensing for driver screening. Driver screening and, if appropriate, license restrictions for struggling older drivers can serve to gradually restrict driving privileges to locations and situations that are better aligned with driver abilities. Enforcement officers responding to crashes involving older drivers must be encouraged to refer at-fault drivers for additional driver license screening.

Additional Engineering solutions are also needed to address older driver needs and vulnerable roadway users. These include improvements in signing, illumination, and pedestrian accommodations for disabled persons.

Key Strategies

The following are key older driver safety strategies for implementation:

1. Education of physicians, families, and law enforcement regarding driver license screening and referral processes, such as the DL25 form, for struggling older drivers	
Responsible Lead Agency	South Dakota Department of Public Safety
Potential Partners	South Dakota Department of Transportation, South Dakota Department of Health, South Dakota Highway Patrol, local law enforcement, driver licensing p rogram, Sanford School of Medicine (University of South Dakota), South Dakota Department of Human Services (Division of Long-Term Services and Supports), AAA, SD Safety Council
Targeted Facilities	Rural State Roads and Urban City Roads
Objective	Increase awareness and empower physicians, families, and law enforcement of driver license screening and referral processes if they are concerned about a person's ability to safely operate a motor vehicle
Goals for Deployment	Reduce Older Driver fatal crashes to 20 or fewer and serious injury crashes to 57 or fewer by 2024
Four E's of Safety	Education, Enforcement
2. Consider opportunities for courses for older drivers involving classroom training in basic safe driving practices and in adjusting driving to accommodate age-related cognitive and physical changes	
Responsible Lead Agency	South Dakota Department of Public Safety
Potential Partners	South Dakota Department of Transportation, South Dakota Department of Health, Drivers Licensing Program, Cities

Targeted Facilities	Rural State Roads and Urban City Roads
Objective	Increase awareness of how aging can affect driving, what older drivers can do to improve performance / safe driving, and adapting a vehicle to meet specific needs
Goals for Deployment	Reduce Older Driver fatal crashes to 20 or fewer and serious injury crashes to 57 or fewer by 2024
Four E's of Safety	Education

3. Increase driver visibility and awareness through intersection lighting or oversized signing

Responsible Lead Agency	South Dakota Department of Transportation
Potential Partners	Counties, Cities, and Tribal Nations.
Targeted Facilities	Rural State Roads and Urban City Roads
Objective	Improve intersection visibility for older drivers
Goals for Deployment	Reduce Older Driver fatal crashes to 20 or fewer and serious injury crashes to 57 or fewer by 2024
Four E's of Safety	Engineering

4. Improve transit opportunities through door-to-door services

Responsible Lead Agency	South Dakota Department of Transportation
Potential Partners	South Dakota Department of Public Safety, South Dakota Department of Human Services (Division of Long Term Services and Supports), Cities
Targeted Facilities	Rural State Roads and Urban City Roads
Objective	Provide additional transportation services to support the safety of older drivers and others on the roadway
Goals for Deployment	Reduce Older Driver fatal crashes to 20 or fewer and serious injury crashes to 57 or fewer by 2024
Four E's of Safety	Engineering

Implementation Plan – Speeding and Aggressive Drivers

DEFINITION: *Crashes involving drivers who are driving aggressively, over the posted speed limit, or too fast for conditions.*

Overview

Crash data for severe speeding and aggressive driver crashes showed the highest percentage of these types of crashes occurred in drivers under 21 (23%), followed by drivers ages 26 to 35 (17%). Additionally, these types of crashes were most likely to occur during August and had the most interaction with Lane Departure and Unbelted Emphasis Area crashes.

Existing safety plan strategies generally consist of educational media campaigns and enforcement efforts related to speed limit enforcement in selected zones. Engineering also comes into play through efforts to optimize the placement of posted speed limit signs as well as to design roadway elements for appropriate speeds. Enhancing high visibility speed and aggressive driving enforcement campaigns that includes participation from all South Dakota law enforcement agencies will be critical to reducing death and injury on South Dakota's roads.

Key Strategies

The following are key speeding and aggressive driving safety strategies for implementation:

1. Set well-established speed limits based on the use of appropriate engineering practices	
Responsible Lead Agency	South Dakota Department of Transportation
Potential Partners	Counties, Cities, and Tribal Nations
Targeted Facilities	Rural State/County Roads
Objective	Evaluate speed limits by conducting speed studies to promote safe driving
Goals for Deployment	Reduce Speeding and Aggressive Driving fatal crashes to 23 or fewer and serious injury crashes to 75 or fewer by 2024
Four E's of Safety	Engineering
2. Enhanced, high-visibility enforcement of aggressive driving and speed laws and supportive adjudication of these efforts reinforce established speed laws	
Responsible Lead Agency	South Dakota Department of Public Safety
Potential Partners	South Dakota Department of Transportation, local law enforcement, South Dakota Office of Highway Safety - Judicial Outreach Liaison
Targeted Facilities	Rural State and County Roads
Objective	Reduce the number of speeding/aggressive drivers through enforcement and by bringing public awareness to high visibility patrol
Goals for Deployment	Reduce Speeding and Aggressive Driving fatal crashes to 23 or fewer and serious injury crashes to 75 or fewer by 2024
Four E's of Safety	Enforcement, Education
3. Effective, high-visibility communications and outreach campaigns that support speed and aggressive driving enforcement programs	
Responsible Lead Agency	South Dakota Department of Public Safety
Potential Partners	South Dakota Department of Transportation, local law enforcement
Targeted Facilities	Rural State/County Roads
Objective	Enhance public awareness of high visibility patrols and periods of enhanced enforcement of speed and aggressive driving laws

Goals for Deployment	Reduce Speeding and Aggressive Driving fatal crashes to 23 or fewer and serious injury crashes to 75 or fewer by 2024
Four E's of Safety	Education, Enforcement

4. Expand the use of advisory speed signs to advise motorists of geometric conditions where traveling at the posted speed is ill-advised

Responsible Lead Agency	South Dakota Department of Transportation
Potential Partners	Counties, Cities, Townships, and Tribal Nations
Targeted Facilities	Rural State/County Roads
Objective	Provide the public with recommended/appropriate advisory speed limits signs to promote safe driving when roadway geometrics change abruptly, such as at horizontal curves and intersections
Goals for Deployment	Reduce Speeding and Aggressive Driving fatal crashes to 23 or fewer and serious injury crashes to 75 or fewer by 2024
Four E's of Safety	Engineering, Education

5. Increase the use of Radar Speed Feedback Signs to notify drivers of reduced speed limits

Responsible Lead Agency	South Dakota Department of Transportation
Potential Partners	Counties, Cities, and Tribal Nations
Targeted Facilities	State/County Roads
Objective	Provide drivers with feedback of the speed they are driving to warn them to adjust their speed appropriately
Goals for Deployment	Reduce Speeding and Aggressive Driving fatal crashes to 23 or fewer and serious injury crashes to 75 or fewer by 2024
Four E's of Safety	Engineering, Enforcement, Education

Implementation Plan – Unbelted Vehicle Occupants

DEFINITION: *Crashes involving drivers or passengers who are not appropriately restrained based on age or weight. This includes adults and children.*

Overview

Based on the crash data analyzed, severe crashes involving unbelted vehicle occupants made up 31% of all severe crashes in South Dakota between the years of 2013 and 2017. Seventy-five percent of severe unbelted crashes occurred on rural roadways. The crash data also showed that demographically, 65% of severe unbelted vehicle crashes involved males. Crashes involving unbelted occupants primarily involved drivers under the age of 26 (38%), with the largest age group (22%) being under 21.

Most of the strategies cited in existing safety plans that involve crashes with unbelted vehicle occupants are related to Enforcement programs that are supported by Education campaigns. Enforcement mobilizations that focus on daytime, nighttime, or integrated occupant protection enforcement campaigns that couple occupant restraint enforcement with speeding or impaired driving offer the most effective means to change motorist behavior. Continuing strong enforcement campaigns with participation from all South Dakota law enforcement agencies focused on increasing occupant restraint use for all ages is critical to reducing death and injury on South Dakota's roads.

Education efforts that support normative use of seat belts and child safety seats and support enforcement mobilizations occur through paid and earned media efforts for communication and public outreach. One example is the Sisseton-Wahpeton Oyate Injury Prevention Program through which media campaigns are designed to correlate with both national and tribe-specific enforcement campaigns covering three major topics each year: *Click It or Ticket*, *Drive Sober or Get Pulled Over*, and *Don't Shatter the Dream*. Flyers for each campaign are printed and distributed as well as PSAs on radio and online. Print articles also spread safety messaging through the tribal newspaper.

Key Strategies

The following are key unbelted vehicle occupants safety strategies for implementation:

1. Effective, high-visibility communications and outreach campaigns that support the use of seatbelts and child safety seats	
Responsible Lead Agency	South Dakota Department of Public Safety
Potential Partners	South Dakota Department of Transportation, South Dakota Highway Patrol, local law enforcement, South Dakota Department of Education, South Dakota Department of Health, AAA, South Dakota Safety Council
Targeted Facilities	Rural State/County Roads
Objective	Enhance public awareness of effectiveness of seatbelts and child safety seats
Goals for Deployment	Reduce Unbelted Vehicle Occupant fatal crashes to 46 or fewer and serious injury crashes to 84 or fewer by 2024
Four E's of Safety	Education
2. Aggressive enforcement efforts for non-use of seatbelts and child safety seats, in accordance with current South Dakota law.	
Responsible Lead Agency	South Dakota Department of Public Safety
Potential Partners	South Dakota Department of Transportation, South Dakota Highway Patrol, local law enforcement
Targeted Facilities	Rural State/County Roads

Objective	Reduce the number of non-use seatbelt and child safety seats through high visibility patrol
Goals for Deployment	Reduce Unbelted Vehicle Occupant fatal crashes to 46 or fewer and serious injury crashes to 84 or fewer by 2024
Four E's of Safety	Enforcement

Implementation Plan – Young Drivers

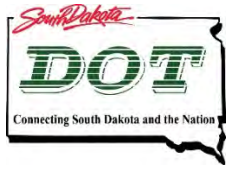**DEFINITION:** *Crashes involving drivers age 20 and younger.*

Overview

Severe crashes involving drivers age 20 and younger make up 19% of all severe crashes in South Dakota. Of those severe Young Driver crashes, a majority (53%) involved male drivers. Approximately 25% of severe Young Driver crashes occurred between the hours of 3pm and 6pm. The greatest interaction between severe Young Driver crashes and other emphasis areas include Lane Departure crashes, crashes involving Unbelted Occupants, and Intersection Crashes.

Existing safety plans for addressing young driver crashes mostly rely upon Education efforts to change the behavior of young drivers. These include driver education programs, driver education coordination, developing and maintaining a website with safe driving information and driver education videos, driving simulators at schools, and public education campaigns that educate drivers on how to address different driving conditions.

Key Strategies

The following are key young driver safety strategies for implementation:

| 1. Involvement of parents in teaching and managing young drivers	
Responsible Lead Agency	South Dakota Department of Public Safety
Potential Partners	South Dakota Department of Transportation, South Dakota Department of Education, School Administrators of South Dakota, Driver Education Private Companies, AAA, Counties, Cities, and Tribal Nations
Targeted Facilities	Rural State/County Roads and Urban City Roads
Objective	Increase the knowledge and participation of parents in the education and training of young drivers as well as increasing the participation of young drivers in driver's education courses and the number qualified instructors to meet the increased demand.
Goals for Deployment	Reduce Young Driver fatal crashes to 12 or fewer and serious injury crashes to 61 or fewer by 2024
Four E's of Safety	Education
2. Targeted education to schools on driving safety	
Responsible Lead Agency	South Dakota Department of Public Safety
Potential Partners	South Dakota Department of Transportation, South Dakota Department of Education, School Administrators of South Dakota, Counties, Cities, and Tribal Nations
Targeted Facilities	Rural State/County Roads and Urban City Roads
Objective	Increase awareness of safe driving for novice drivers. Educating on resources such as https://www.lessonlearnedsd.com/student/
Goals for Deployment	Reduce Young Driver fatal crashes to 12 or fewer and serious injury crashes to 61 or fewer by 2024
Four E's of Safety	Education

Supplemental Data 8: Emphasis Area Strategies - Data Sources

Data Sources

The following list includes all existing state-specific documents and/or plans identified by the South Dakota Department of Transportation (SDDOT) that were reviewed:

- South Dakota 2014 Strategic Highway Safety Plan
- South Dakota FY 2019 Highway Safety Plan
- South Dakota 2010 Statewide Long Range Transportation Plan
- South Dakota FY 2017 MCSAP Commercial Vehicle Safety Plan (CVSP)
- Sioux Falls MPO 2040 Long Range Transportation Plan
- RAPID TRIP 2040 Long Range Transportation Plan
- Sioux City SRTPA 2040 Long Range Transportation Plan
- 2015 Cheyenne River Sioux Tribe Tribal Safety Plan
- 2017 Crow Creek Sioux Tribe Transportation Safety Plan
- 2015 Flandreau Santee Sioux Tribe Tribal Transportation Safety Management Plan
- 2017 Lower Brule Sioux Tribe Transportation Safety Management Plan
- 2017 Oglala Sioux Tribe Tribal Transportation Safety Plan
- 2014 Rosebud Sioux Tribe Tribal Transportation Safety Plan
- 2014 Sisseton-Wahpeton Oyate Transportation Safety Plan
- 2015 Standing Rock Sioux Tribe Tribal Transportation Safety Plan
- 2016 Yankton Sioux Tribe Tribal Transportation Safety Plan
- 2015 Intersection of Brown Co 12W & Brown Co 6 Roadway Safety Audit Report
- 2014 Intersection of US14/Caspian Ave Roadway Safety Audit Report
- 2012 Spink County US 281 & ND 20 Roadway Safety Audit
- 2015 SD37 from SD42 to Divide Section Roadway Safety Audit Report
- 2016 SD34 & SD37 Junction Roadway Safety Audit Report
- 2014 Intersection of SD46/SD11 Roadway Safety Audit Report
- 2015 SD37 Mitchell Bypass and N Minnesota Street Intersection Roadway Safety Audit Report
- 2014 Intersection of SD46/Greenfield Road Roadway Safety Audit Report
- 2014 Intersection of SD50 & SD19 Roadway Safety Audit
- 2014 US81 Poverty Valley Roadway Safety Audit
- 2017 SD20 & Airport Drive Roadway Safety Audit Report
- 2016 SD34 & SD37 Junction Roadway Safety Audit Report
- 2014 SD50 through Tyndall Roadway Safety Audit
- 2015 SD50 Vermillion Bypass Roadway Safety Audit Report
- 2015 Intersection of US12 and 136th Street Roadway Safety Audit Report
- 2015 Intersection of US12 and SD27 Roadway Safety Audit Report
- 2016 Ipswich to Aberdeen Roadway Safety Audit Report
- 2015 US281 in Redfield, between US212 and 11th Ave Roadway Safety Audit Report
- 2017 US385 Strawberry Hill Roadway Safety Audit Report
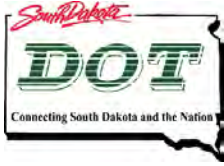
Supplemental Data 9: Existing Strategies for Emphasis Areas

Existing strategies for each emphasis area are included on the following pages.

EMPHASIS AREA: DRUGS AND ALCOHOL			
Safety Strategies	**Plan(s)**	**Action Type**	**Effectiveness or Star Rating**
Final 2019 SHSP Key Strategies			
Publicized sobriety checkpoints for impaired drivers create general and specific deterrence of DUI laws.	2019 SD SHSP	Program	**** to *****
High-visibility saturation patrols where several law enforcement officers patrol a specific area looking for impaired drivers.	2019 SD SHSP	Countermeasure	**** to *****
Effective, high-visibility communication and outreach campaigns supporting aggressive alcohol and drugged driving enforcement efforts.	2019 SD SHSP	Countermeasure	****
Alternative transportation programs allow people to travel to places where they drink without having to drive.	2019 SD SHSP	Program	**
Education - Campaigns and Media			
Paid and Earned Media - Media Alcohol	2014 SD SHSP	Countermeasure	***
Cooperatively fund statewide and local DUI Don't Drink and Drive campaigns (enforcement and media) with SDDPS	2014 SD SHSP	Program	****
Education - Judicial			
Judicial Related Education or Activity - Judicial Assistance	2014 SD SHSP	Program	***
Judicial Related Education or Activity - DUI Courts	2014 SD SHSP, SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.5	Program	****
Education - Safe Ride			
Provide access to transit options focused on providing safe rides home to individuals that have been drinking - Example: Safe Rides Program	2014 SD SHSP, SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.5	Program	**
Community Training, Enforcement and Communication - Alternative Transportation	2014 SD SHSP	Program	**
Education - DUI Prevention and Programs			
Work with Lakota Circles of Hope (and others) to teach middle and high school students about the importance of safe driving and resisting destructive decisions	2014 SD SHSP	Program	***
Existing promotion of activities in support of national program elements including: activities aimed at removing impaired CMV drivers, provide basic training for roadside officers and inspectors to detect drivers impaired by alcohol or controlled substance	SD Commercial Vehicle Safety Plan	Program	****
Support targeted normative impaired driving messaging during non-mobilization time periods	2019 SD SHSP Phase 2 Tech Memo 2 Section 4.1.3	Program	**

EMPHASIS AREA: DRUGS AND ALCOHOL			
Safety Strategies	**Plan(s)**	**Action Type**	**Effectiveness or Star Rating**
Community Training, Enforcement and Communication - Prevention and Interdiction	2014 SD SHSP	Program	** to ***
Support alcohol- and drug-related enforcement efforts with strong multiple channel messaging	2019 SD SHSP Phase 2 Tech Memo 2 Section 4.1.3	Program	***
Highway Safety Office Program Management - Impaired Driving Task Force	2014 SD SHSP	Program	Unknown
Enforcement - DUI Court			
SDDPS to collaborate with SDUJS to expand DUI courts	2014 SD SHSP	Program	****
Cooperatively fund with NDDPS a mobile courtroom and blood testing facility - for example: a "BAT Mobile" especially used during the Sturgis Rally in August. This would keep the court system from being bogged down with extra DUI cases	2014 SD SHSP	Program	****
Consider the possibility of the use of safety funds to support additional prosecutors for DUI cases	2014 SD SHSP	Program	****
Enforcement - DUI Detection and Support			
Engage all SD law enforcement agencies, including tribal and sheriffs' departments, in enhanced drug- and alcohol-related driving and speed enforcement.	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.3	Program	****
Increase the use of sobriety checkpoints, high visibility enforcement techniques, and integrated enforcement	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.3, SD SHSP, SD SHSP Phase 2 Tech Memo 2 Section 6.0	Countermeasure	**** to *****
Personnel Support - Law Enforcement Liaisons and Community Outreach	2014 SD SHSP	Program	***
Enhanced canine program by utilizing canine troopers in the motor carrier services sections. Provides increased opportunity to detect and apprehend drug-or-alcohol impaired drivers, in addition to performing an increased numbered of interdiction activities.	SD Commercial Vehicle Safety Plan	Program	****
Cooperatively fund with SDDPS, a chemist to test DUI blood samples at the state health lab	2014 SD SHSP	Program	****
Where appropriate, improve crash data collection with tribal cross jurisdictional agreements	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.3	Program	Unknown
Enforcement - Tribal Staff			
Review options to create Tribal Law Enforcement or Traffic Liaison position with SDDPS to address tribal drinking and driving issues	2014 SD SHSP	Program	****

EMPHASIS AREA: DRUGS AND ALCOHOL			
Safety Strategies	**Plan(s)**	**Action Type**	**Effectiveness or Star Rating**
Currently, the tribe has one officer dedicated to highway safety enforcement and drug and safety training. With the limited staffing and the demands on time that criminal activities require, highway safety enforcement and education by necessity becomes a lower priority. To elevate the level of highway safety enforcement, tribal law enforcement should pursue obtaining funding for one additional safety enforcement officer.	Cheyenne River Sioux TTSP	Program	****

Effectiveness:

*****   Demonstrated to be effective by several high-quality evaluations with consistent results

****   Demonstrated to be effective in certain situations

***   Likely to be effective based on balance of evidence from high-quality evaluations or other sources

**   Effectiveness still undetermined; different methods of implementing this countermeasure produce different results

*   Limited or no high-quality evaluation evidence

Effectiveness is measured by reductions in crashes or injuries unless noted otherwise. See individual countermeasure descriptions for information on effectiveness size and how effectiveness is measured.

Citation

Richard, C. M., Magee, K., Bacon-Abdelmoteleb, P., & Brown, J. L. (2018, April). Countermeasures that work: A highway safety countermeasure guide for State Highway Safety Offices, Ninth edition (Report No. DOT HS 812 478). Washington, DC: National Highway Traffic Safety Administration.

EMPHASIS AREA: INTERSECTIONS

Safety Strategies	Plan(s)	Action Type	Effectiveness or Star Rating	Systemic Strategy
Final 2019 SHSP Key Strategies				
Improve intersection signing, markings or street lighting at rural intersections to increase intersection conspicuity.	2019 SD SHSP	Countermeasure	CMF = 0.62 to 0.92	✔
Verify sight triangles and eliminate obstructions as needed.	2019 SD SHSP	Countermeasure	CMF = 0.53 and 0.89	✔
Provide careful consideration for pedestrian facilities, including Leading Pedestrian Interval, and Rectangular Rapid Flashing Beacon	2019 SD SHSP	Countermeasure	CMF = 0.31 to 0.87	✔
Use Radar Speed Feedback Signs to reduce driver speeds through high speed intersections.	2019 SD SHSP	Countermeasure	CMF = 0.95	
Use protected left-turn at signalized intersections.	2019 SD SHSP	Countermeasure	CMF = 0.45	
Reduce delay and stops in signalized corridors with signal coordination or adaptive traffic signals.	2019 SD SHSP	Countermeasure	CMF = 0.79 to 0.87	✔
Provide left- or right-turn lanes.	2019 SD SHSP	Countermeasure	CMF = 0.76 to 0.92	
Select innovative designs for intersections and interchanges.	2019 SD SHSP	Countermeasure	CMF - 0.42 to 0.8	
Improve access management in corridors with high levels of access, including closing or restricting of access locations or implementing a road diet.	2014 SD SHSP, SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.5	Countermeasure	CMF = 0.53 to 0.56 (suburban) or 0.75 to 0.81 (urban)	
Realign intersection approaches to reduce or eliminate intersection skew.	2019 SD SHSP	Countermeasure	CMF = 0.52 to 0.89, depends on intersection characteristics	
Education - Outreach and Training				
Community Training, Enforcement and Communication - Pedestrians and Bicyclists Communication and Outreach	SD HSP	Countermeasure	**	
Public Education for non-CMVs - Sharing the Road - Presentations on "Share the Road" concepts to driver education classes by officers and through safety booths at SD State Fair and farm and home shows.	SD Commercial Vehicle Safety Plan	Program	**	
Conduct safety education and outreach activities with the general public	RapidTRIP 2040	Countermeasure	Unknown	
Safe Travel USA & 511 - SDDOT cameras and detection equipment located at various locations on Interstate and State Highways so the public can view the cameras from their computer, which allows them to see actual conditions and improve safety.	SD_LRTP_2010	Program	Unknown	
Provide left- or right-turn lanes.	2019 SD SHSP	Countermeasure	CMF = 0.76 to 0.92	
EMS				
Select innovative designs for intersections and interchanges.	2019 SD SHSP	Countermeasure	CMF - 0.42 to 0.8	
Improve access management in corridors with high levels of access, including closing or restricting of access locations or implementing a road diet.	2014 SD SHSP, SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.5	Countermeasure	CMF = 0.53 to 0.56 (suburban) or 0.75 to 0.81 (urban)	

EMPHASIS AREA: INTERSECTIONS					
Safety Strategies	Plan(s)	Action Type	Effectiveness or Star Rating		Systemic Strategy
Engineering - Bike and Pedestrian Related					
Improved data collection and include bicycle and pedestrian organizations in planning process and participation of STIP and Statewide LRTP	SD_LRTP_2010	Program	Unknown		
Establish bicycle and pedestrians needs that are community-specific and determine standard design for incorporating those facilities	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.6	Countermeasure	CMF = 0.31 to 0.52 (SHSP)		
Develop comprehensive bicycle and pedestrian plans for paths to encourage connectivity	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.6	Countermeasure	**		
Bike Needs Plan - Bike Lanes	RapidTRIP 2040	Countermeasure	CMF = 1.05		
Bike Needs Plan - Improved Crossing of roadways/barriers	RapidTRIP 2040	Countermeasure	CMF = 0.86 and 1.12		
Bike Needs Plan - Off-Street Path	RapidTRIP 2040	Countermeasure	CMF = 0.75		
Bike Needs Plan - Shared Lanes	RapidTRIP 2040	Countermeasure	Unknown		
Bike Needs Plan - Signed Shoulder Bikeway	RapidTRIP 2040	Countermeasure	Unknown		
Bicycle Plan - identify key bicycle routes to add "share the road" signage	Sioux Falls MPO 2040 LRTP	Countermeasure	Unknown		✔
Sioux Falls Bike Plan: Improve state of bicycling and safety - bicycle education campaign to "share the road", develop bike network, incorporate bike routes and trails as a part of all major street corridor projects, bike commuter routes, new trail implementation	Sioux Falls MPO 2040 LRTP	Countermeasure	**		
Implement Safety Strategies - Minimize motor vehicle, rail, bicycle and pedestrian conflicts	RapidTRIP 2040	Countermeasure	Unknown		
Install pedestrian refuge islands in urban and growing areas with divided highways	2014 SD SHSP	Countermeasure	CMF = 0.54		
Leading pedestrian interval at signalized intersections (Systemic)	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.6	Countermeasure	CMF = 0.87		✔
Install pedestrian crossing, beacon or signal for high volume pedestrian crosswalks	2014 SD SHSP	Countermeasure	CMF = 0.31		
Pedestrian Needs - Sidewalk additions	RapidTRIP 2040	Countermeasure	CMF = 1.78, 1.87 and 1.99		
Sioux Falls Pedestrian Plan: develop good pedestrian facilities and increase safety -Educate about pedestrian rules, create good conditions for all types of pedestrians, sidewalk boulevards, crosswalks and curb ramps, curb extensions, accessible street crossing connections through medians, islands, and free right-turn lanes, tactile warning devices, trails	Sioux Falls MPO 2040 LRTP	Countermeasure	*-***		
Engineering - Crash Related					

EMPHASIS AREA: INTERSECTIONS				
Safety Strategies	**Plan(s)**	**Action Type**	**Effectiveness or Star Rating**	**Systemic Strategy**
Implement electronic crash record system and data sharing among agencies (county and tribal) to encourage uniform and consistent data collection. - Currently, Dewey County, Ziebach County and the Cheyenne River Sioux Tribe collect crash data differently. Placing all three agencies on the same system will allow for better information sharing and develop a complete set of crash data for the Reservation. Funding should be pursued to provide hardware, software and officer training at the CRST Law Enforcement and Ziebach County to implement the TraCS program. A more complete set of data could assist in developing and funding safety programs and projects.	Cheyenne River Sioux TTSP, SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.6	Program	Unknown	
Engineering - Design and Reconstruction				
Develop urban vs rural intersection alternative design guidelines as part of design toolkit	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.6	Countermeasure	Unknown	
Annually review rural intersections using the Intersection and Roadway Module	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.6	Countermeasure	Unknown	
Implement intersection safety improvement strategies determined by the SDDOT Intersection Module	SDSHSP	Countermeasure	Unknown	
Establish standard drawings or design standards for intersection configurations between varying roadway classifications	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.6	Countermeasure	Unknown	
Development of a standard toolkit for SDDOT that local level can coordinate with and utilize to treat and improve intersections consistently.	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.6	Countermeasure	Unknown	
Incorporate intersection analysis process in design toolkit to evaluate innovative intersection design consideration to improve safety	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.6	Countermeasure	CMF = 0.42	
Innovative intersection designs	SD SHSP, SD SHSP 2019 Phase 2 Tech Memo 2 Section 6.0	Countermeasure	Unknown	
Along four-lane divided roadways, deploy innovative designs and mitigation options (such as RCUTs, median narrowing etc.) to minimize conflicts	2014 SD SHSP	Countermeasure	CMF = 0.652	
Revise geometry of complex intersections	2014 SD SHSP	Countermeasure	Unknown	
Realign intersection approaches to reduce or eliminate intersection skew	2014 SD SHSP, SD SHSP 2019 Phase 2 Tech Memo 2 Section 6.0	Countermeasure	CMF = 0.52 to 0.89, depends on intersection characteristics	
Consistent with the design speed of roadways and context, modify horizontal and/or vertical alignment of approaches to provide appropriate sight distance	2014 SD SHSP	Countermeasure	Unknown	
Redesign intersection approaches to improve sight distance	2014 SD SHSP	Countermeasure	CMF = 0.52 to 0.63	
Engineering - Enhanced Marking, Lighting, and Signs				
Improve intersection signing, markings or street lighting at rural intersections to increase intersection conspicuity.	2014 SD SHSP, SD SHSP 2019 Phase 2 Tech Memo 2 Section 6.0	Countermeasure	CMF = 0.62 to 0.92	✔
Add or Increase Size Intersection Warning Signs	2014 Intersection of US14/Caspian Ave RSAR 2014 Intersection of SD46/SD11 RSAR 2014 Intersection of SD50 & SD19 RSA 2014 Intersection of SD46/Greenfield Rd RSAR 2014 US81 Poverty Valley RSA 2017 SD20 & Airport Dr RSAR 2015 SD50 Vermillion Bypass RSAR	Countermeasure	Unknown	✔

EMPHASIS AREA: INTERSECTIONS				
Safety Strategies	**Plan(s)**	**Action Type**	**Effectiveness or Star Rating**	**Systemic Strategy**
The goal of the RSAs is to identify safety issues and then develop transportation safety improvements that may include signing, lighting, striping, etc. To continue to build on these safety improvements and the use of RSAs the Tribe will pursue funding to accomplish similar efforts on BIA, Tribal and county roadways within the CRST reservation.	Cheyenne River Sioux TTSP	Countermeasure	Unknown	
Illuminate high-risk intersection crash locations (Systemic)	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.6	Countermeasure	CMF = 0.881	✔
Engineering - Pavement Related				
Replace Pavement Markings and Messages	2012 Spink County US 281 & SD 20 RSA 2016 SD34 & SD37 Junction RSAR 2014 Intersection of SD50 & SD19 RSA 2017 SD20 & Airport Dr RSAR 2015 US281 in Redfield, between US212 and 11th Ave RSAR	Countermeasure	CMF = 0.917 CMF = 0.955	✔
Provide New/updated traffic control device outreach/education to local groups - Outreach to Local Groups	2014 SD SHSP	Program	N/A	
Engineering - Sight Distance and Access Management				
Improve Sight Distance/Sight Triangles (horizontal)	2012 Spink County US 281 & SD 20 RSA 2016 SD34 & SD37 Junction RSAR 2014 Intersection of SD46/SD11 RSAR 2014 Intersection of SD50 & SD19 RSA 2014 US81 Poverty Valley RSA 2017 SD20 & Airport Dr RSAR 2014 SD50 through Tyndall RSA 2015 SD50 Vermillion Bypass RSAR 2015 Intersection of US12 and SD27 RSAR	Countermeasure	CMF = 0.53 and 0.89	✔
Develop an Access Management Plan to be utilized in design toolkit	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.6	Countermeasure	CMF = 0.56	
Improve access management in a corridor, including closing or restricting of access location or implementing a "road diet" on roadways with high levels of access	2014 SD SHSP, SD SHSP 2019 Phase 2 Tech Memo 2 Section 6.0	Countermeasure	CMF = 0.53 to 0.56 (suburban) or 0.75 to 0.81 (urban)	
Clear sight triangles in the medians of divided highways near intersections	2014 SD SHSP	Countermeasure	Unknown	✔
Eliminate sight distance restrictions	2014 SD SHSP	Countermeasure	Unknown	✔
Optimize clearance intervals	2014 SD SHSP	Countermeasure	CMF = 0.6 to 0.8	
Engineering - Signal Related				
Employ signal coordination along a corridor	2014 SD SHSP	Countermeasure	CMF = 0.79	
Employ multiphase signal operation - change from permissive to protected phasing or permissive to protected/permissive phasing	2014 SD SHSP	Countermeasure	CMF = 0.45 (protected only) and CMF = 1.03 (protected/permissive)	✔
Traffic signal modifications at urban intersections - such as multi-phase operation, optimize clearance intervals, coordination	2014 SD SHSP	Countermeasure	Unknown	
Use adaptive traffic signals	2014 SD SHSP	Countermeasure	CMF = 0.79 to 0.83 (2015) and CMF = 0.86 to 0.87 (2018)	
Remove unwarranted signals	2014 SD SHSP	Countermeasure	CMF = 0.76	
Install back plates with reflective borders	2014 SD SHSP	Countermeasure	CMF = 0.85 to 0.90	✔
Engineering - Turning Maneuvers and Restrictions				

EMPHASIS AREA: INTERSECTIONS				
Safety Strategies	**Plan(s)**	**Action Type**	**Effectiveness or Star Rating**	**Systemic Strategy**
Provide left-turn lane/improve channelization	2014 SD SHSP	Countermeasure	CMF = 0.8 CMF = 0.67 (painted) and 0.87 (raised/curb)	
Provide right-turn lane/improve channelization	2014 SD SHSP	Countermeasure	CMF = 0.92	
Provide for positive offset left-turn lane	2014 SD SHSP	Countermeasure	CMF = 0.2	
Restrict or eliminate turning maneuvers	2014 SD SHSP	Countermeasure	CMF = 0.23, 0.28 (left-turns and U-Turns) 0.36, 0.32 (left-turns)	✓
Restrict right turns on red	2014 SD SHSP	Countermeasure	CMF = 0.98	

Effectiveness:

*****   Demonstrated to be effective by several high-quality evaluations with consistent results

****   Demonstrated to be effective in certain situations

***   Likely to be effective based on balance of evidence from high-quality evaluations or other sources

**   Effectiveness still undetermined; different methods of implementing this countermeasure produce different results

*   Limited or no high-quality evaluation evidence

Effectiveness is measured by reductions in crashes or injuries unless noted otherwise. See individual countermeasure descriptions for information on effectiveness size and how effectiveness is measured.

Citation

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EMPHASIS AREA: LANE DEPARTURES

Current Strategy in Place	Plan(s)	Action Type	Effectiveness or Star Rating	Systemic Strategy
Final 2019 SHSP Key Strategies				
Install centerline, shoulder or edge line rumble strips on rural roads, including county roads.	2019 SD SHSP	Countermeasure	CMF = 0.6	✔
Widen and/or pave shoulders to provide drivers a recovery area.	2019 SD SHSP	Countermeasure	CMF = 0.8 to 0.81	✔
Install Median Barriers for locations with crash history identified as high-risk for centerline crossing.	2019 SD SHSP	Countermeasure	CMF = .45	
Provide local agencies with funding assistance to install, enhance, or maintain centerline and edge line markings.	2019 SD SHSP	Countermeasure	CMF = 0.6 (SHSP)	
Provide enhanced curve delineation, such as chevrons and pavement markings, for sharp curves.	2019 SD SHSP	Countermeasure	CMF = 0.78 to 0.94	✔
Utilize High Friction Surface Treatment to increase traction through sharp curves.	2019 SD SHSP	Countermeasure	CMF = 0.6	
Remove or relocate fixed objects in the roadside.	2019 SD SHSP	Countermeasure	CMF = 0.99 for all crashes	✔
Deploy enhanced pavement markings (wider or wet-reflective material).	2019 SD SHSP	Countermeasure	CMF 0.7 to 0.89 for all rural crashes	✔
Education - Campaign and Media				
Implement new and continue Public safety campaign - PSA: *Stay in Your Lane, Don't Crowd the Plow, and DUI Campaigns*	2014 SD SHSP, SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.5	Program	**-***	
Support the Annual Tribal Safety Summit, including the 4E's of Safety to reduce fatalities and injuries; promote and increase seat belt use and the use of child safety seats; enforce Tribal Traffic Codes; and improve safety education through schools, PSAs, sharing of safety strategies and coordinate roadway improvements	2014 SD SHSP, SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.5	Program	**-***	
Promote outreach and coordination between state, local and tribal agencies for safety education regarding vehicle rollover crashes	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.5	Program	**_***	
Education - Resources and Tools				
Identify Top three problem area with driver education and create web and PSA videos to address those areas by using the Traffic Safety Website as a possible Educational Tool	2014 SD SHSP	Program	**	
Promote DPS use of it's rollover simulation to show the impact on belted and unbelted vehicle occupants in a vehicle rollover	2014 SD SHSP	Program	**-***	
Emergency Response				
Develop list of high-risk crash locations based on crash data and coordinate between DPS and EMS personnel to identify/analyze needs of health services in rural communities.	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.5	Program	Unknown	
Enforcement				
Speed limit enforcement in rural areas	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.5	Countermeasure	**	
Where appropriate, improve crash data collection with tribal cross jurisdictional agreements (Data)	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.5	Program	Unknown	

EMPHASIS AREA: LANE DEPARTURES				
Current Strategy in Place	**Plan(s)**	**Action Type**	**Effectiveness or Star Rating**	**Systemic Strategy**
Engineering - Clear Zone				
Heighten awareness of objects within clear zone through delineators as part of a Safety Tool Kit (Systemic)	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.5	Countermeasure	CMF = 0.99 (SHSP)	✔
Remove/relocate objects along the side of the road in high-risk locations	SD SHSP, SD SHSP 2019 Phase 2 Tech Memo 2 Section 6.0	Countermeasure	CMF = 0.99 for all crashes (SHSP)	✔
Engineering - Enhanced Pavement Marking, Lighting, Signage				
Replace and Enhance Pavement Markings and Messages by embedding wet-reflective markings. Make sure these are incorporate into state specifications or SDDOT special provisions if desired (Systemic)	2014 SD SHSP 2012 Spink County US 281 & SD 20 RSA 2016 SD34 & SD37 Junction RSAR 2014 Intersection of SD50 & SD19 RSA 2017 SD20 & Airport Dr RSAR 2015 US281 in Redfield, between US212 and 11th Ave RSAR; SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.5	Countermeasure	CMF = 0.7 to 0.89 for all rural crashes (SHSP)	✔
Provide enhanced shoulder or delineation such as chevrons and pavement markings for sharp curves	2014 SD SHSP	Countermeasure	CMF = 0.78 to 0.94 for rural curve crashes (SHSP)	✔
Provide illumination on curves	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.5	Countermeasure	CMF = 0.72	
Implement intelligent transportation system (ITS), such as dynamic message board to advise drivers of traffic, operational, regulatory, warning or guidance information on roads ahead and to proceed with caution	2014 SD SHSP	Countermeasure, Program	CMF = 0.71 to 0.81	
Install advanced warning signs to warn drivers at areas where traveling at the posted speed is ill advised. Heighten awareness of objects within clear zone with delineators.	SD SHSP 2019 Phase 2 Tech Memo 2 Section 5.0	Countermeasure	CMF = 0.54	
Engineering: Shoulder/Centerline Safety Improvements				
Provide local agencies with funding assistance to install, enhance or maintain centerline and edge line markings (Systemic)	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.5, SD SHAP Phase 2 Tech Memo 2 Section 6.0	Countermeasure	CMF = 0.6 (SHSP)	
Apply shoulder treatments	2014 SD SHSP	Countermeasure	CMF = 0.81 for all rural crashes with shoulders (SHSP)	✔
Widen and/or pave shoulders to provide drivers a recovery area.	SD SHSP 2019 Phase 2 Tech Memo 2 Section 6.0	Countermeasure	CMF = 0.94	
Install centerline and rumble strips for two-lane roads in identified locations	2014 SD SHSP	Countermeasure	CMF = 0.6 for head-on/sideswipe-opposing crashes (SHSP)	✔
Add or Replace Transverse, Centerline or Edge Line Rumble Strips Install edge lines "profile marking," edge line rumble strips/stripes, or modified shoulder rumble strips on sections with narrow or no paved shoulders, especially local roads	2014 SD SHSP 2015 Intersection of Brown Co 12W & Brown Co 6 RSAR 2012 Spink County US 281 & SD 20 RSA 2016 SD34 & SD37 Junction RSAR 2014 US81 Poverty Valley RSA 2014 SD50 through Tyndall RSA 2016 Ipswich to Aberdeen RSAR 2017 US385 Strawberry Hill RSAR	Countermeasure	CMF = 0.6 (SHSP)	✔

EMPHASIS AREA: LANE DEPARTURES				
Current Strategy in Place	**Plan(s)**	**Action Type**	**Effectiveness or Star Rating**	**Systemic Strategy**
Rumble strips and enhanced striping reservation wide. Roadways are mostly striped with water-based pant resulting in markings that are worn away quickly. Providing pavement marking materials such as epoxy or tape and adding rumble strips would assist in keeping vehicles in their designated lanes, which would in turn help to reduce the risk of crashes.	Crow Creek Sioux Tribe TSMP	Countermeasure	CMF = 0.7 to 0.89 for all rural crashes (SHSP)	✔
Identify top locations of head-on collisions and centerline crossover crashes to install climbing/passing lanes on high-risk locations	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.5	Countermeasure	CMF = 0.66 to 0.75	
Engineering - Lane Design and Reconstruction				
Develop Design Process toolkit that incorporates standard process for design/implementation of rumble strips, curve delineation, rural roadway lighting, and pavement design	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.5	Countermeasure	CMF = 0.6 to 0.81	
Design/Construct slopes and ditches to help prevent rollovers	2014 SD SHSP	Countermeasure	CMF = 0.8 for all crashes (SHSP)	
Establish Roadway Safety Audit manual or guideline to encourage consistency between state level and tribal RSAs	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.5	Countermeasure	Unknown	
Install climbing/passing lane where needed to prevent head-on and passing-related collisions	2014 SD SHSP	Countermeasure	CMF = 0.66 to 0.75	
Enhanced Curve Delineation	2014 SD SHSP	Countermeasure	CMF = 0.78 to 0.94 for rural curve crashes (SHSP)	✔
Provide improved highway geometry and elements for horizontal curves	2014 SD SHSP	Countermeasure	CMF = 0.3 for all crashes (SHSP)	
Engineering - Pavement Related				
Provide skid-resistant pavement surfaces on identified locations, especially sharp curves. Also need to address rutting and water ponding since hydroplaning is a major cause of wet roadway crashes in SD.	2014 SD SHSP,SD SHSP 2019 Phase 2 Tech Memo 2 Section 6. 0	Countermeasure	CMF = 0.6 for wet road crashes (SHSP)	
Engineering - Miscellaneous				
Confirm No Passing Zones locations after reconstruction projects	2014 SD SHSP	Countermeasure	CMF = 0.75	
Consider snow fences and other practices to reduce drifting on roadways, where sheltered areas remain slippery and contribute to crashes, and specialized and localized plow operator training.	2014 SD SHSP	Countermeasure	CMF = 0.89 to 0.92	

Effectiveness:
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****   Demonstrated to be effective in certain situations
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EMPHASIS AREA: MOTORCYCLES			
Safety Strategies	**Plan(s)**	**Action Type**	**Effectiveness or Star Rating**
Final 2019 SHSP Key Strategies			
Aggressive impaired driving enforcement for all motorists reduces motorcycle fatalities and serious injuries due to a higher rate of involvement of motorcycle riders in impaired driving crashes.	2019 SD SHSP	Countermeasure	***
High-visibility enforcement of aggressive driving and speed laws to reinforce established speed limits.	2019 SD SHSP	Countermeasure	***
Rider education and training courses may be beneficial in reducing motorcycle rider crashes.	2019 SD SHSP	Program	**
Prepare roadways before major motorcycle events (sweep roadways, clean/replace pavement markings, update high-visibility signing) and install Dynamic Messaging Boards at high-risk locations.	2019 SD SHSP	Countermeasure	Unknown
Provide paved shoulders for recovery and breakdowns.	2019 SD SHSP	Countermeasure	CMF = 0.32
Continue to promote SouthDakotaRides.com and actively maintain and update the information on the website.	2019 SD SHSP	Program	*_***
Education - Campaigns & Media			
Provide rider information (such as road closures, chip seals, lane closures, etc.) that affect rideability to media outlets. Use a public information campaign to promote the use of this information by motorcycles rides and related events	SD SHSP	Program	Unknown
Paid and Earned Media - Motorcycle Safety	SD SHSP	Program	*
Provide Media Education Campaign	2014 SD SHSP, SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.5	Program	Unknown
Cooperatively fund statewide and local speeding campaigns (enforcement and media) with SDDPS	2014 SD SHSP	Program	CMF = 0.97
Support speed and impaired riding enforcement efforts with strong multiple channel messaging	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.4	Program	***
Support safer riding through normative safe riding messaging during nonpeak riding periods to include Public Service Announcements and media campaigns focused on helmets, attire, conspicuity, and safe riding practices.	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.4	Program	*
Education - Training			
Encourage attendance and improve access to motorcycle training courses to teach safe riding habits	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.4, SD SHSP 2019 Phase 2 Tech Memo 2 Section 6.0	Program	**
Training for highway engineers and maintenance personnel relating to motorcycle issues and incorporate motorcycle safety considerations into routine roadway inspections, design, and construction projects	SD SHSP	Countermeasure	Unknown
Enforcement			
Engage all SD law enforcement agencies, including tribal and sheriffs' departments, in enhanced speed and impaired driving enforcement, especially during motorcycle rallies or events	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.4	Program	***
Where appropriate, improve crash data collection with tribal cross jurisdictional agreements	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.4	Program	Unknown

EMPHASIS AREA: MOTORCYCLES			
Safety Strategies	**Plan(s)**	**Action Type**	**Effectiveness or Star Rating**
Motorcycle Safety High Visibility Enforcement	2014 SD SHSP	Countermeasure	***
Engineering - Crash Analysis			
Review locations that experience higher than the statewide average of motorcycle crashes on rural major or minor collectors or rural local roads, and address identified safety improvements.	2014 SD SHSP	Countermeasure	Unknown
Engineering - Design Considerations			
Incorporate user friendly roadway design, traffic control, construction and maintenance policies and practice	2014 SD SHSP	Program	CMF = 0.4 to 3.57
Update design toolkit to address decision process for mitigating intersection safety concerns regarding motorcycles in rural areas (short term treatments until roadway geometrics can be addressed)	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.4	Countermeasure	Varies
Design safe speed transitions through design elements and on approaches to lower speed areas such as raised medians and lane narrowing	2014 SD SHSP	Countermeasure	CMF = 0.8
Provide appropriate intersection design for speed of roadway	2014 SD SHSP	Countermeasure	Varies
Provide adequate sight distance for expected speeds	2014 SD SHSP	Countermeasure	CMF = 0.44 to 1.32
Engineering - Infrastructure Improvements			
Provide full paved shoulders to accommodate roadside motorcycle recovery and breakdowns	SD SHSP, SD SHSP 2019 Phase 2 Tech Memo 2 Section 6.0	Countermeasure	CMF = 0.32
Incorporate innovative intersection design consideration into toolkit process as possible intersection safety mitigation strategy in specific communities or intersections where high-speed motorcycle crashes are most prevalent	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.4	Countermeasure	CMF = 0.5
Use combinations of geometric elements to manage speeds consistent with the context of the roadway function, anticipated design speed, and immediate environment (horizontal and vertical curves, cross section) including providing design consistency along an alignment	2014 SD SHSP	Countermeasure	CMF = 0.315 to 1 (varies)
Use in-pavement measures to communicate the need to reduce speeds	2014 SD SHSP	Countermeasure	CMF = 0.68
Engineering - Lighting and Signage			
Install lighting at high-speed intersections (high speed only)	2014 SD SHSP	Countermeasure	CMF = 0.62
Provide illumination at intersections where dark not lit conditions are overrepresented in severe crashes at intersections (Systemic)	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.4	Countermeasure	CMF = 0.881
Improve speed limits signage	2014 SD SHSP	Countermeasure	Unknown
Implement variable message signs (high speed only)	2014 SD SHSP	Countermeasure	CMF = 0.34
Determine best locations for application of oversized or high visibility advanced warning signs through motorcycle crash data (for example curve warning signs, intersection ahead signs, loose material on road signs, etc.) (Systemic)	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.4	Countermeasure	Unknown

EMPHASIS AREA: MOTORCYCLES			
Safety Strategies	**Plan(s)**	**Action Type**	**Effectiveness or Star Rating**
Purchase active speed warning signs/speed trailers; also can be used for speed limit change requests from the public, providing real-time information and the opportunity to educate the public about speed studies	2014 SD SHSP	Countermeasure	CMF = 0.95
Provide warning signs for locations without adequate sight distances as an interim solution until road geometrics are addressed	2014 SD SHSP	Countermeasure	CMF = 1.1
Major motorcycle events preparation - Sweeping roadways, cleaning pavement markings, and providing advance warning signs and oversize signs where needed	SD SHSP, SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.4, SD SHSP 2019 Phase 2 Tech Memo 2 Section 6.0	Countermeasure	Unknown

Effectiveness:
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****   Demonstrated to be effective in certain situations
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EMPHASIS AREA: OLDER DRIVERS (AGE 65 AND OLDER)			
Safety Strategies	**Plan(s)**	**Action Type**	**Effectiveness or Star Rating**
Final 2019 SHSP Key Strategies			
Education of physicians, families, and law enforcement regarding driver license screening and referral processes, such as the DL25 form, for struggling older drivers.	2019 SD SHSP	Program	****
Consider opportunities for courses for older drivers involving classroom training in basic safe driving practices and in adjusting driving to accommodate age-related cognitive and physical changes.	2019 SD SHSP	Program	**
Increase driver visibility and awareness through intersection lighting or oversized signing.	2019 SD SHSP	Countermeasure	CMF = 0.65 to 0.92
Improve transit opportunities through door-to-door services.	2019 SD SHSP	Countermeasure	Unknown
Education - Licensing			
Educate law enforcement, physicians and the general public about the ability and processes to refer older drivers to SD Driver Licensing for driver screening	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.3, SD SHSP 2019 Phase 2 Tech Memo 2 Section 6.0	Countermeasure	****
Education - Alternative Transportation			
Continue and enhance alternative transportation programs for elderly and disabled persons	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.3	Program	Unknown
Improve transit opportunities through door-to-door services or neighborhood services	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.3, SD SHSP 2019 Phase 2 Tech Memo 2 Section 6.0	Program	Unknown
Transportation for Elderly Person and Persons with Disabilities - provides formula funding to states for purpose of assisting private nonprofit groups in meeting transportation needs of elderly and persons with disabilities	SD LRTP 2010	Program	Unknown
Enforcement			
Engage all SD law enforcement agencies, including tribal and sheriffs' departments, so that in the course of traffic enforcement involving older drivers, referrals of struggling drivers to SD Driver Licensing for driver screening can occur	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.3	Program	***
Engineering - Designs and Plans			
Implement design strategies consistent with the Handbook for Designing Roadways for the Aging Population for new roadway projects (follow bullets list strategies)	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.3	Program	Unknown
Highway Safety Improvement Plan - Focus on strategies to improve safety on high risk rural roads and for older drivers, and streamline safety reporting	Sioux Falls MPO 2040 LRTP	Countermeasure	Unknown
Review transportation needs and new development plans for senior living communities. Improve connectivity and accessibility where possible	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.3	Program	Unknown
Engineering - Safety Improvements			
Include low cost improvement elements (oversized signing or supplemental signing) to increase senior drivers' ability to be aware of roadway configuration and conditions (Systemic)	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.3	Countermeasure	CMF = 0.654 to 0.92
Illumination for high risk intersections where poor visibility related crashes are overrepresented (Systemic)	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.3 , SD SHSP 2019 Phase 2 Tech Memo 2 Section 6.0	Countermeasure	CMF = 0.881
Update all pedestrian facilities so they meet ADA compliance requirements (for example APS at signals and minimal grade changes on sidewalk and ramps)	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.3	Countermeasure	Unknown

Effectiveness:

*****   Demonstrated to be effective by several high-quality evaluations with consistent results

EMPHASIS AREA: OLDER DRIVERS (AGE 65 AND OLDER)			
Safety Strategies	Plan(s)	Action Type	Effectiveness or Star Rating

****   Demonstrated to be effective in certain situations

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           Effectiveness still undetermined; different methods of implementing this countermeasure produce different results

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EMPHASIS AREA: SPEEDING AND AGGRESSIVE DRIVERS			
Safety Strategies	**Plan(s)**	**Action Type**	**Effectiveness or Star Rating**
Final 2019 SHSP Key Strategies			
Set well-established speed limits based on the use of appropriate engineering practices.	2019 SD SHSP	Countermeasure	Unknown
Enhanced, high-visibility enforcement of aggressive driving and speed laws and supportive adjudication of these efforts reinforce established speed laws.	2019 SD SHSP	Countermeasure	***
Effective, high-visibility communications and outreach campaigns that support speed and aggressive driving enforcement programs.	2019 SD SHSP	Program	***
Expand the use of advisory speed signs to advise motorists of geometric conditions where traveling at the posted speed is ill-advised.	2019 SD SHSP	Countermeasure	CMF = 0.34 to 0.68
Increase the use of Radar Speed Feedback Signs to notify drivers of reduced speed limits.	2019 SD SHSP	Countermeasure	CMF = 0.95
Education - Campaigns and Media			
Paid and Earned Media - Speed	SD HSP	Countermeasure	***
Fund Don't Crowd the Plow, Give 'em a Brake, Move Over Campaigns - as a majority of these crashes are due to impatient drivers; motorists overdriving road conditions; impatience through construction zones and around vehicles using flashing amber lights following too closely; and misjudging speed of the maintenance or other emergency vehicles in front of them	2014 SD SHSP	Program	***
Cooperatively fund statewide and local speeding campaigns - (enforcement and media with SDDPS)	2014 SD SHSP	Program	***
Support aggressive driving and speed enforcement efforts with strong multiple channel messaging	2014 SD SHSP, SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.5	Program	***
Support targeted normative speed messaging during non-mobilization time periods	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.2	Program	***
Enforcement - Visibility and Support			
Employ high visibility enforcement techniques to enhance awareness of enforcement efforts	2014 SD SHSP , SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.2., SD SHSP 2019 Phase 2 Tech Memo 2 Section 6.0	Countermeasure	***
Where appropriate, improve crash data collection with tribal cross jurisdictional agreements	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.2	Program	Unknown
Engineering - Signs and Design			
Improve Size and Placement of Speed Limit Signs	2014 Intersection of US14/Caspian Ave RSAR 2012 Spink County US 281 & SD 20 RSA 2015 SD37 Mitchell Bypass and N Minnesota Street	Countermeasure	Unknown
Communicate appropriate speed through use of traffic control devices	2014 SD SHSP	Countermeasure	CMF = 0.95

EMPHASIS AREA: SPEEDING AND AGGRESSIVE DRIVERS			
Safety Strategies	**Plan(s)**	**Action Type**	**Effectiveness or Star Rating**
Provide roadway design and traffic control elements that support appropriate speeds	2014 SD SHSP	Countermeasure	CMF = 0.13 to 2.94
Incorporate speed calming design techniques and strategies into safety tool kit (for example narrowing streets, speed humps, rumble strips, raised medians, etc.)	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.2	Countermeasure	CMF = 0.13 to 2.94

Effectiveness:

*****   Demonstrated to be effective by several high-quality evaluations with consistent results

         Demonstrated to be effective in certain situations

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EMPHASIS AREA: UNBELTED VEHICLE OCCUPANTS			
Safety Strategies	**Plan(s)**	**Action Type**	**Effectiveness or Star Rating**
Final 2019 SHSP Key Strategies			
Effective, high-visibility communications and outreach campaigns that support the use of seatbelt and child safety seats	2019 SD SHSP	Program	***
Aggressive enforcement efforts for non-use of seatbelts and child safety seats, in accordance with current South Dakota law.	2019 SD SHSP	Program	****
Education - Campaigns and Media			
Paid and Earned Media - Media Occupant Protection	SD SHSP	Program	*****
Encourage all SD law enforcement agencies, including tribal and sheriffs' departments, when enforcing alcohol and drugged driving violations during nighttime patrol, and a driver or occupant is observed to be unrestrained, to cite the driver additionally for lack of restraint use according to SD law.	SD SHSP 2019 Phase 2 Tech Memo 2 6.1	Countermeasure	****
Fund seat belt public awareness campaigns - simulator demo, grass root schools, poster campaigns, state police school	2014 SD SHSP	Program	****
The SWO Injury Prevention Program will design media campaigns for each enforcement campaign. - *Each year there are three major enforcement campaigns: Click It or Ticket, Driver Sober or Get Pulled Over, and Don't Shatter the Dream. THE SWO Injury Prevention Program will print and distribute flyers/posters, record Public Service Announcements for the radio/internet, messages on electronic signs, social media, and document all enforcement efforts through articles in the tribal newspaper. Enforcement efforts will be documented through pictures. Injury Prevention staff will report the outcomes through articles in the tribunal newspaper. *These campaigns are aimed at raising seat belt usage and deterring drunk driving.	Sisseton-Wahpeton Oyate TSP	Program	*****
Implement targeted campaigns that address low-use groups	2014 SD SHSP, SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.5	Program	****
Support occupant protection usage with strong multiple channel messaging to encourage greater restraint use.	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.1, SD SHSP 2019 Phase 2 Tech Memo 2 Section 6.1	Program	***
Education - Research			
Conduct research and data to identify common attributes of crash casual factors related to crashes and their severity - Examples include interrelationships with alcohol crashes	2014 SD SHSP	Program	Unknown
Conduct research to identify regions and populations that have low seat belt usage	2014 SD SHSP	Program	Unknown
Highway Safety Office Program Management - Seatbelt Survey	SD SHSP	Program	Unknown
Education - Unbelted Prevention and Programs			
Provide seatbelt safety education to all children Kindergarten to eighth grader	Sisseton-Wahpeton Oyate TSP	Program	***

EMPHASIS AREA: UNBELTED VEHICLE OCCUPANTS			
Safety Strategies	**Plan(s)**	**Action Type**	**Effectiveness or Star Rating**
Community Training, Enforcement and Communication - Communication and Outreach Campaigns	2014 SD SHSP	Program	****
Promote the use of safety restraint systems - Public education forums and during roadside interactions between inspectors and drivers. Maintain compliance rate at or above 90% for FY2017.	SD Commercial Vehicle Safety Plan	Program	****
Provide car seat training programs, coordinators, and incentives for local and tribal agencies	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.1, Sisseton-Wahpeton Oyate TSP	Program	***
Maximize use of occupancy restraints by all vehicle occupant	2014 SD SHSP	Program	***
Education - Tribal			
Support Tribal efforts to use rollover simulator to show the impact on belted and unbelted vehicle occupants in the event of a vehicle rollover	2014 SD SHSP	Program	****
Support the Annual Tribal Safety Summit - including the 4 E's of safety to reduce fatalities and injuries, promote and increase seat belt use and the use of child safety seats; enforce Tribal Traffic Codes, and improve education through school, PSAs and information sharing and coordinated roadway improvements	2014 SD SHSP	Program	****
Continue the Tribal Motor Vehicle Injury Prevention Program - With the lack of seat belt use being cited in over 90% of the fatalities and a low seat belt use rate compared to the statewide average, the continuation of this program is the cornerstone to reducing fatalities and serious injuries on the reservation. While CDC funding may no longer be available, the data shown in this plan should be utilized and funding from other sources should be sought to continue this important program.	Rosebud Sioux Tribe TTSP	Program	***
Enforcement - Unbelted Courts and Law Changes			
Provide Legislature's transportation committee info about seat belt use and related fatalities	2014 SD SHSP	Program	****
Child Seat Ordinance - As part of a thorough reservation-wide primary seat belt ordinance, strong language on enforcement of car seats should be included. This effort should be combined with education and outreach within the tribal community on providing of car seats, the need for them and proper installation.	Flandreau Santee Sioux Tribe TTSP	Legislation	*****
The SWO Injury Prevention Program will present the draft law changes to the Judicial Committee and make presentation as needed to the seven Districts. - *Sisseton-Wahpeton Law Enforcement and Injury Prevention draft several law changes in 2013. The draft law changes included raising the fines for seat belt and child restraint citations, creating an Aggravated DUI law, and a law requiring mandatory breath test for all DUI suspects. *Sisseton-Wahpeton Law Enforcement and Injury Prevention staff presented the draft law changes to the Sisseton-Wahpeton Oyate Health & Human Services Board and Sisseton-Wahpeton Oyate Judicial Committee. The proposed law changes have remained without moving any further in the process.	Sisseton-Wahpeton Oyate TSP	Legislation	*****

EMPHASIS AREA: UNBELTED VEHICLE OCCUPANTS			
Safety Strategies	**Plan(s)**	**Action Type**	**Effectiveness or Star Rating**
Participate in efforts to pass a primary seat belt law - CRST and FSST should work with State Reps and the SD legislature to implement a Primary Seat Belt Law where drivers could be pulled over for this infraction alone. If a primary seat belt law is not passed through the State Legislature, the tribal council should adopt a reservation-wide primary seat belt ordinance. If implemented, the transportation and enforcement programs could provide education and outreach within the tribal community on the change in law.	Cheyenne River Sioux TTSP, Flandreau Santee Sioux Tribe TTSP	Legislation	*****
Enforcement - Unbelted Detection and Support			
Sisseton-Wahpeton Law Enforcement will purchase incentives for the checkpoints and also community education materials for use in interactions with the general public - conducts a minimum of twenty-four checkpoints per year. A properly executed checkpoint includes signage announcing the presence of a checkpoint up ahead. The checkpoints that take place on the Lake Traverse Reservation also typically include an incentive item relating to the type of checkpoint it is. For example, at a seat belt checkpoint that took place in 2014, people passing through the check point received an air freshener for their cars that had the words, "Buck Up" printed on it.	Sisseton-Wahpeton Oyate TSP	Program	*****
Where appropriate, improve crash data collection with tribal cross jurisdictional agreements	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.1	Program	Unknown
EMS - Response			
Improve reporting, access, and response of first responders	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.1	Program	Unknown
Engineering - Miscellaneous			
Continued efforts by vehicle manufacturers for implementation of sensors and warning alarm systems notifying of unbelted occupants.	Phase 2 Tech Memo	Countermeasure	Unknown

Effectiveness:

*****   Demonstrated to be effective by several high-quality evaluations with consistent results

****   Demonstrated to be effective in certain situations

***   Likely to be effective based on balance of evidence from high-quality evaluations or other sources

**   Effectiveness still undetermined; different methods of implementing this countermeasure produce different results

*   Limited or no high-quality evaluation evidence

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EMPHASIS AREA: YOUNG DRIVERS (AGE 20 AND YOUNGER)			
Safety Strategies	**Plan(s)**	**Action Type**	**Effectiveness or Star Rating**
Final 2019 SHSP Key Strategies			
Involvement of parents in teaching and managing young drivers.	2019 SD SHSP	Program	**
Targeted education to schools on driving safety.	2019 SD SHSP	Program	Unknown
Education - Campaigns and Media			
Develop public safety campaigns that educate drivers on how to address different driving conditions	2014 SD SHSP	Program	Unknown
Bring campaigns to school	2014 SD SHSP	Program	Unknown
Education - Coordinator and Program Curriculum/Logistics			
Driver Education - Coordinator	2014 SD SHSP	Program	**
Establish driver education coordinator, standardize driver education curriculum and facilitate the re-certification of instructors and testing/passing of students.	2014 SD SHSP	Program	Unknown
Train additional driver education instructors	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.3	Program	**
Require and improve access to novice driver training	2014 SD SHSP, SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.5	Program	**
Encourage greater parental involvement in young driver training and supervision	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.3, SD SHSP 2019 Phase 2 Tech Memo 2 Section 6.0	Program	**
One area that was particularly emphasized in the data analysis was developing programs to educate younger drivers on a range of behavioral issues, such as seatbelt use, texting and driving, impaired driving and child restraint. There is need for transportation safety education programs, funding for PSAs, Arrive Alive programs, billboards using local artistry, banners, videos, Tribal safety posters and other proactive materials.	Crow Creek Sioux Tribe TSMP Oglala Sioux Tribe TTSP	Program	** -***
Develop a reservation-wide transportation safety education program - efforts intended to provide education on transportation safety, particularly to younger drivers on behavioral issues such as seat belt use, texting and driving, impaired driving and child restraint. This project would use and build on national safety campaign themes on impaired driving, seat belt use, texting and driving, and other transportation safety issues, by using local leaders, or the easily recognizable individuals from the Tribal community to promote these safety themes. The funding would allow for the development and deployment of larger items such as billboards using local artistry, banners, videos, Tribal safety posters and other safety education materials. programs targeting the school system, during Pow Wows, fairs and at other community events.	Cheyenne River Sioux TTSP	Program	** -***
Establish a youth drivers education scholarship - A driver's education program could be established through the Dakota Culture Club for Adolescents. This program could follow the state-sponsored program, but would need to reduce or eliminate the cost for Tribal students. Coordination will need to occur with the SDDPS and the Flandreau Schools to ensure any program is coordinated with current efforts, and funding will need to be secured to offset the cost of the program or to provide scholarships for participation in the program.	Flandreau Santee Sioux Tribe TTSP Yankton Sioux Tribe TTSP	Program	** -***

EMPHASIS AREA: YOUNG DRIVERS (AGE 20 AND YOUNGER)			
Safety Strategies	**Plan(s)**	**Action Type**	**Effectiveness or Star Rating**
Consider an update to South Dakota's drivers license manual	None	Program	Unknown
Education - Resources and Tools			
Provide a driver's education program to include all resources, equipment and supplies for SWO young adults 14-18 years old	Sisseton-Wahpeton Oyate TSP	Program	** -***
Fund Driver Simulators	2014 SD SHSP	Program	Unknown
Develop/maintain a website with safe driving information	2014 SD SHSP	Program	Unknown
Develop driver education videos posted on a traffic safety website	2014 SD SHSP	Program	Unknown
Create a parent-kit for student drivers	2014 SD SHSP	Program	Unknown
Enforcement			
Engage all SD law enforcement agencies, including tribal and sheriffs' departments, in enhanced Graduated Driver Licensing (GDL) enforcement	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.3 , SD SHSP 2019 Phase 2 Tech Memo 2 Section 6.0	Program	***
Aggressive enforcement of all traffic laws for young drivers, including GDL laws and zero-tolerance laws that set a maximum BAC of .02 or less for drivers under 21.	SD SHSP 2019 Phase 2 Tech Memo 2 Section 6. 0	Program	***
Engineering - Planning and Improvements			
Review transportation plans for new/expanding high school sites - Also include a review of elementary and middle school sites	SD SHSP, SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.3	Countermeasure	CMF = 0.724 to 1.05
Provide or update School zone signs	SD SHSP, SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.3	Countermeasure	CMF =0.63
Utilize oversized signs in urban areas surrounding local schools (systemic)	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.3	Countermeasure	Unknown
Incorporate safety enhancements in urban designs such as designated left turn lanes, raised medians to provide physical barriers between opposing lanes of traffic, slower posted speed limits/design speeds.	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.3	Countermeasure	CMF = 0.77 to 0.79

Effectiveness:
*****   Demonstrated to be effective by several high-quality evaluations with consistent results
****   Demonstrated to be effective in certain situations
***   Likely to be effective based on balance of evidence from high-quality evaluations or other sources
**   Effectiveness still undetermined; different methods of implementing this countermeasure produce different results
*   Limited or no high-quality evaluation evidence

Effectiveness is measured by reductions in crashes or injuries unless noted otherwise. See individual countermeasure descriptions for information on effectiveness size and how effectiveness is measured.

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STRATEGIES APPLICABLE TO MULTIPLE EMPHASIS AREAS: DATA COLLECTION			
Safety Strategies	**Plan(s)**	**Action Type**	**Effectiveness or Star Rating**
Improve Crash Records			
Building relationship with tribal representatives to increase crash reporting, where appropriate and improve consistency.	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.2.3	Program	Unknown
Encourage all local and tribal agencies to adopt the electronic crash reporting system to create a consistent and uniform crash data collection process.	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.2.3	Program	Unknown
Full adoption of Model Uniform Crash Criteria 5th Edition as encouraged by the National Highway Traffic Safety Administration (NHTSA)	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.2.3	Program	Unknown
Predictive Safety			
Establishing methodology for Crash Modification Factors and using them to justify or determine effectiveness of proposed safety mitigation efforts.	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.2.3	Program	Unknown
Inclusion of predictive safety analysis in local projects where appropriate.	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.2.3	Program	Unknown
Adopt predictive safety analysis for the network screening process.	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.2.3	Program	Unknown

Effectiveness: 2014 SD SHSP, SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.5
***** Demonstrated to be effective by several high-quality evaluations with consistent results
**** Demonstrated to be effective in certain situations
*** Likely to be effective based on balance of evidence from high-quality evaluations or other sources
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STRATEGIES APPLICABLE TO MULTIPLE EMPHASIS AREAS: INTELLIGENT TRANSPORTATION SYSTEM (ITS)			
Safety Strategies	**Plan(s)**	**Action Type**	**Effectiveness or Star Rating**
Engineering - Use of ITS Devices in Work Zones			
Enhancing safety of road user and worker through use of data collection device (BlueTOAD, Blynsyc, etc.) to monitoring traffic flow	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.2.2	Countermeasure	Unknown
Establish SMART Work Zone (using technology to enhance work zone) by utilizing detection and warning devices to warn workers of vehicle entry into active work zone	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.2.2	Countermeasure	Unknown
Adoption of Automated Flagger Assistance Devices	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.2.2	Countermeasure	Unknown
Engineering - Transportation Systems Management Operations (TSMO)			
Traffic Incident Management	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.2.2	Countermeasure	Unknown
Special Event Management	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.2.2	Countermeasure	Unknown
Statewide Integrated Roadway Weather Management	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.2.2	Countermeasure	Unknown
Engineering - Messaging (DMS) Strategies			
Traveler/Incident Information	2014 SD SHSP, SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.5	Countermeasure	Unknown
Engineering - Automated Vehicle (AV) / Connected Vehicle (CV) Deployment			
Installation of Dedicated Short Range Communications (DSRC)	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.2.2	Countermeasure	Unknown
Engineering - Commercial Vehicle Operation & Safety			
Employ electronic screening sites to identify trucks and then weigh and measure tire pressure and break temperature.	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.2.2	Program	Unknown
Enabling legislation for autonomous vehicle platooning took effect July 1, 2019. Legislation allows State Transportation Commission to develop operating rules.	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.2.2	Legislation	Unknown
Employ automated permitting and routing to reduce structure strikes due to improper routing.	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.2.2	Program	Unknown
Engineering - Camera and Environmental Stations			
Increase stations to detect road surface conditions.	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.2.2	Countermeasure	Unknown
Engineering - Winter Maintenance Decision Support System			
Incorporates weather forecast and models in the pavement surface to help select maintenance strategy.	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.2.2	Countermeasure	Unknown
Allow Highway Patrol to use the system to help with staffing weather events.	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.2.2	Program	Unknown
Engineering - Upgrade Traveler Information			

STRATEGIES APPLICABLE TO MULTIPLE EMPHASIS AREAS: INTELLIGENT TRANSPORTATION SYSTEM (ITS)			
Safety Strategies	**Plan(s)**	**Action Type**	**Effectiveness or Star Rating**
Significant revisions are planned to SDDOT's 511 website and mobile phone app. This will enhance the sharing of weather condition and construction project information so that drivers can either choose better routes to avoid construction and delays or potentially forego trips during severe weather.	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.2.2	Program	Unknown
Link the State Patrol dispatch system to the traveler information system for improved incident reporting. The goal is to inform drivers when emergency responders are working a crash scene, if roads are closed, or slow traffic.	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.2.2	Program	Unknown
Provide wind warning system for trucks that blow over. This will include on sight signing and warning devices.	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.2.2	Countermeasure	Unknown
Engineering - Signalized Intersections			
Research, investigate or test different technologies that can communicate signal timing and coordination information to vehicles.	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.2.2	Countermeasure	Unknown
Adaptive traffic signal systems for arterial corridors.	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.2.2	Countermeasure	CMF = 0.83
Engineering - Replace, Relocate and Expansion of Dynamic Message Signs (DMS)			
Thirty-two current DMS are primarily located in and near Rapid City and Sioux Falls or spaced at larger intervals across the state. The generation of the signs in place are becoming obsolete.	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.2.2	Countermeasure	Unknown
Where applicable, update the DMS in place by keeping the support and box by replacing the electronics.	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.2.2	Countermeasure	Unknown
Expand DMS for expressway or 2-lane highways (e.g., connectors to Interstates, fixed DMS for the Sturgis Rally).	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.2.2	Countermeasure	Unknown
Engineering - Fiber Deployment			
Expand fiber network to create a communication back bone. Begin proactively incorporating fiber into projects with significant construction and grading.	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.2.2	Countermeasure	Unknown
Dedicated Short-Range Communications (DSRC)			
Expand DSRC communications for various applications, such as railroad crossings, snow plows, and school buses.	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.2.2	Countermeasure	Unknown
Engineering - Intersection Conflict Warning System (ICWS)			
Look for opportunities to expand the application of ICWS	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.2.2	Countermeasure	CMF =0.7
Enforcement - Traffic Incident Management			
Begin planning for incident response including collaboration among partners (police, DOT, EMS, fire). Establish regional groups for handling emergency response during winter weather and/or during construction activity.	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.2.2	Program	Unknown
EMS - Traffic Incident Management			

| STRATEGIES APPLICABLE TO MULTIPLE EMPHASIS AREAS: INTELLIGENT TRANSPORTATION SYSTEM (ITS)			
Safety Strategies	**Plan(s)**	**Action Type**	**Effectiveness or Star Rating**
Provide responder training to help reduce secondary crashes	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.2.2	Program	Unknown

Effectiveness:

*****   Demonstrated to be effective by several high-quality evaluations with consistent results

****   Demonstrated to be effective in certain situations

***   Likely to be effective based on balance of evidence from high-quality evaluations or other sources

**   Effectiveness still undetermined; different methods of implementing this countermeasure produce different results

*   Limited or no high-quality evaluation evidence

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STRATEGIES APPLICABLE TO MULTIPLE EMPHASIS AREAS: EMERGENCY RESPONSE			
Safety Strategies	**Plan(s)**	**Action Type**	**Effectiveness or Star Rating**
Education and EMS - Training, Procedures, Communication			
Refinement of responder procedures specific to operating procedure, collaboration, etc.	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.2.1	Program	Unknown
Development of committees and collaboration between state and local responders	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.2.1	Program	Unknown
Improve on increase mile marker designations (e.g. mile markers every tenth of a mile) on state highways and interstate corridors to help citizens report crash locations	SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.2.1	Program	Unknown

Effectiveness:

*****   Demonstrated to be effective by several high-quality evaluations with consistent results

****   Demonstrated to be effective in certain situations

***   Likely to be effective based on balance of evidence from high-quality evaluations or other sources

**   2014 SD SHSP, SD SHSP 2019 Phase 2 Tech Memo 2 Section 4.1.5

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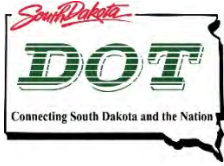
Supplemental Data 10: Stakeholder Engagement

Introduction

This Supplemental identifies and describes the stakeholder coordination and engagement approach employed during the South Dakota Strategic Highway Safety Plan (SHSP), related stakeholder input received to support completion of the SHSP, and general conclusions with regard to the feedback received.

The SHSP stakeholder engagement process included the following activities:

- SHSP Study Advisory Team Meetings

- SHSP Website and Online Public Survey

- SHSP Stakeholder Meetings - Input Stations

Stakeholder Engagement Approach and Inputs

SHSP Study Advisory Team Meetings

The South Dakota DOT formed a Study Advisory Team (SAT) in 2018 to assist in the development of the draft vision statement, identification of the highest-priority emphasis areas / key areas of need, best practices that address the needs and opportunities to improve highway safety, and stakeholder coordination approach for the SHSP during 2018-2019 update process. The SAT also provided similar inputs concurrently for the development of the Highway Rail Safety Plan (HRSP).

SAT members included statewide representatives from cities; counties; state, tribal, and regional agencies; local planning agencies and committees; and others concerned with roadway safety. SAT members are listed below.

- South Dakota Department of Transportation – Andy Vandel, Brace Prouty, Lance Birger, Dustin Witt, Mark Leiferman, Doug Sherman, and Perry Griffith
- South Dakota Department of Public Safety – Lee Axdahl
- South Dakota Department of Health – Andy Klitzke
- South Dakota Municipal League – Lori Martinec
- South Dakota Association of County Commissioners – Bob Wilcox
- South Dakota Association of Towns and Townships – Jim Puffer
- Sisseton Wahpeton Oyate – Cliff Eberhardt
- South Dakota Highway Patrol – John Broers
- Federal Highway Administration – Chris Kwilinski

SAT meetings were held in Pierre, South Dakota, on September 24, 2018 and January 22, 2019.

SHSP Website and Online Public Survey

An SHSP project website was established by South Dakota DOT to serve as an online information center for all potential stakeholders to provide ongoing information about the SHSP and HRSP; updates on different milestones reached throughout the process; and opportunities to participate and provide feedback that can be used to

support development of the SHSP. The main landing page gave general information about the SHSP and the HRSP and directed visitors to subpages related specifically to either plan.

The website also included an online survey platform to serve as an online center for stakeholders to participate and provide feedback to support development of both safety plans. The website for the online survey was located at http://sdtrafficsafetyplans.com/. Visitors were able to take the online survey between March 2019 and May 2019. The website link was provided as part of two workshop-related emails SDDOT sent to the SHSP and HRSP stakeholder list. The first was inviting them to the workshops and informing them about the website and surveys. The second was after the workshops directing those that were not able to attend to the website and surveys and encouraging them to share with others. SDDOT also shared links for the website and surveys with the general public via Facebook.

The online survey was a platform for stakeholders and the public to offer their feedback on:

- The importance each emphasis areas has on the number of severe crashes on public roads in South Dakota

- Potential best practices and strategies for reducing severe crashes statewide

- Whether or not they wish to continue to be involved in helping plan and implement the SHSP

The final number of survey respondents totaled 50.

SHSP Stakeholder Meetings – Input Stations Approach

To capture participant input for development of the SHSP and HRSP, a workshop-style input station was provided for each emphasis area at each of three workshops held in Rapid City, Pierre, and Sioux Falls, South Dakota in March 2019. A brief presentation was provided to the stakeholder group to provide background information on the goal of the plan and data analysis processes for attendees, followed by more detailed comparisons of emphasis area data included in each breakout input session. Each input station included three boards: one that presented key crash statistics for the emphasis area, a second that summarized national best practices to improve safety outcomes specific to that emphasis area (i.e., strategies, countermeasures, and programs), and a third board where participants could identify current activities that address that emphasis area, challenges to reducing the number of severe crashes related to that emphasis area, and opportunities to implement new countermeasures that would reduce the number of severe crashes in that emphasis area.

In total, 69 individuals representing 28 organizations participated in the workshops. The organizations include the following:

AAASD	City of Sioux Falls	Hermosa Board	RST MAP-21
ABATE	Dolton Township	MADD	SDDOT
Agtegra	Ellis and Eastern	Metro 911	SDHP
BIA	FHWA	ORM	SDSU
BNSF	FRA	RC MPO	SECOG
City of Baltic	General Public	RCPD	SFPD
City of Box Elder	GSRI	Rosebud Sioux Tribe	Sisseton Milbank RR

The following sections summarize input and ideas from the workshops attendees and is not necessarily endorsed by the State. Input specific to a workshop is denoted with "RC" for Rapid City, "P" for Pierre, and "SF" for Sioux Falls.

Drugs and Alcohol

What work is already happening in South Dakota in this area? Who is doing it?

- Testing fatally injured drivers [P]
- 24-7 Program for repeat offenders [P, SF]
- ARIDE Detection (Advanced Roadside Impaired Driving Enforcement) training. Troopers are required to do within first three years. [P, SF]
- More personnel and training for DREs (Drug Recognition Experts) in Law Enforcement [P, RC]
- Sobriety checkpoints [P]
- AAA and local towing companies offer to tow vehicle home for free as incentive for people not to try driving home intoxicated – "Tipsy Taxi Service". [RC, SF]
- Law enforcement breaking down DUI statistics by alcohol vs. drugs – same offense, but different tracking [RC]
- Saturation patrols – allows law enforcement to target driving behavior and are more efficient than checkpoints [SF]
- Lyft services [SF]
- Crash demonstrations by Law Enforcement at county fairs [SF]
- Getting repeat offenders into treatment programs instead of punishment [SF]
- Improved DRE Program through coordination and started a new sergeant position [SF]

What is challenging about this area?

- Lack of services and alternatives for people in rural areas to get home safely without driving [P]
- Out of state people from states that allow drugs [P]
- People are not aware of how drugs (e.g., prescription drugs) affect their ability to operate a vehicle [P]
- A lot of law enforcement agencies don't conduct checkpoints because a) the person in charge does not like them or b) there isn't a policy in place or traffic data to support one [RC]
- DUI Court System needs to be improved – needs to catch people before their 5th or 6th DUI [RC]
- National Highway Traffic Safety Administration's (NHTSA) program "Safer Ride" to call a cab – Needs more SD cab numbers in database and too many SD citizens are unaware of the program. [RC]
- There is no enforcement of any of these strategies on various reservations, likely due to decreased reservation police department staffing and officers being spread so thin [RC]
- Lack of pre-requisite laws for grant application and funding (e.g., interlock law) [SF]
- Lack of consistent enforcement by county, as well as level of offense [SF]
- Higher fines don't seem to matter to repeat offenders [SF]
- Lack of communication between reservations and local law enforcement [SF]
- Difficult to make people take responsibility for their own actions [SF]
- Legislatures won't pass interlock requirements for 1st time offenders [SF]

What opportunities do you see?

- Implementing ignition interlock for all offenders (even first time) [P]
- Wrong-way detection [P]
- Stricter fine or impound vehicle after first or second offense [P]
- Revisit penalties (fines and point system) [P]
- Public education – Impaired Riding Program [RC]
- Autonomous vehicles for limited routes or as a backup system [RC]

Supplemental Data 10: Stakeholder Engagement

- Increase safety features (e.g., Breathalyzer) to start vehicles at manufacturing level. [RC]
- Fines/penalties higher for 1st time DUI [RC]
- Too many bars and breweries [RC]
- Increase civil penalties (e.g., seizing cars) [RC]
- First-time DUI offenders should be required to attend a victim impact panel [RC]
- Student ID discounts – free service for taxis/Lyft [RC]
- DOT discounts for Lyft during high-peak times or holidays [RC]
- Public announcements to explain Lyft services: cost, how its service works, etc. so more people understand it. [RC]
- More severe penalties for underage drinking drivers [RC]
- More accessibility for ridesharing/Lyft [SF]
- Increase crash demonstrations for young drivers at schools and college campuses [SF]
- More non-alcoholic beer offerings by microbreweries [SF]
- Enhanced fine or penalty when children are in the vehicle – current statute is difficult to enforce [SF]
- Currently there are no sentence enhancements based on BAC, vehicle is not seized [SF]

Intersections

What work is already happening in South Dakota in this area? Who is doing it?

- Rural Intersection
    - Expanded use of transverse rumble strips [P]
    - Rural intersection conflict warning systems (RICWS) [RC]
    - Flashing red lights on rural stop signs [SF]
- Urban Intersection
    - Reflective back plates on traffic signals [RC, SF]
    - Improved yellow and red time calculations [RC]
    - All red for pedestrians [SF]
- Enforcement
    - Red-light confirmation lights [SF]
- All intersections
    - Improved lighting at intersections [RC]
    - Alternative intersections (roundabouts, SPI, DDI) [RC, SF]
    - Use of existing database allows for analysis of dangerous intersections and prioritizing for improvements [P]

What is challenging about this area?

- Signs are not a fix all – geometrics of roadway are very important, but expensive to resolve [P]
- Older drivers [RC, P, SF]
- Number of intersections makes it cost prohibitive for engineering fixes [P]
    - Also difficult for enforcement because of lower volume. People roll through because they are not expecting traffic. [P]
    - Implementation of strategies on low volume roads. [P]
- Knowledge of new intersection types [RC, SF]
- Signal timing and coordination [RC, SF]
- Rural hidden intersections [SF]
- Consistency of rural county/township signing [SF]

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- Avoid overuse of certain types of signs [SF]
- Enforcement [RC]
- Acceptance of new intersection types [RC, P, SF]

What opportunities do you see?

- Acceptance of unfamiliar intersection configurations. [i.e., roundabouts, displaced left-turns, DDI, continuous flow, restricted crossing U-turn (RCUT)] [RC, P, SF]
  - Post instructional videos both before and after intersection opening to reduce anxiety and educate
  - Follow-up with success of new intersections with success messages. (i.e., reduced accidents)
- Offset rural intersections (state/state and state/county intersections) [P]
- Increased use of advanced intersection warnings [RC, P, SF]
  - LED lights on rural stop signs
  - Advanced rumble bars
  - Intersection conflict warning systems
- Improved signal coordination / adaptive signal controls [P, SF]
- All-Way stops where warranted [SF]
- Enforcement [RC, P, SF]
  - Institute driver points system
  - Carry penalties for under 16 drivers.
- Use of Signal Phase and Timing (SPAT) – Digital Short-Range Communications (DSRC) deployment [SF]
- Adaptive signal systems on urban corridors [SF]
- Improved maintenance [Statewide]
- Radar speed feedback signs [Statewide]
- Public education [Statewide]
- Delayed green for pedestrians [SF]

Lane Departure

What work is already happening in South Dakota in this area? Who is doing it?

- Improved clear zone visibility [P]
- Rural signing projects [P]
- Improved shoulder width [P]
- Testing of wet reflective striping [SF]

What is challenging about this area?

- Expense of engineering improvements [P]
- Enforcement difficulties (distracted driving, low volume rural roads) [P]
- Use of rumble strips and impacts to motorcycles and bikes [RC, P, SF]
- Maintenance [SF]
- County Highway Superintendent education [RC]

What opportunities do you see?

- Advanced technology in vehicles [P]
- Additional training [P, SF]
- Education of local agencies on Best Design Practices (LTAP) [P]

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- Reduce winter driving impacts [P, SF]
  - Drift/blowing snow analysis
  - Winter maintenance
- Use of predictive analysis for development of priorities [P]
- Typical Section considerations (Cost/Benefit of section improvement options) [RC, P, SF]
- Improved curve signing, striping, and lighting [SF]
- Technology that restricts use of phones while driving [P]
- Expanded use of High Friction Surface [SF]
- Improve coordination between tribal and state enforcement and officials [RC]

Motorcycles

What work is already happening in South Dakota in this area? Who is doing it?

- Motorcycle Awareness month supported by governor. [RC]
- SouthDakotaRides.com provides motorcyclists access to information, such as rider skill maps, safety gear, laws, videos of popular rides. [RC, P]
- Several participants shared personal stories about friends whose lives were saved by a helmet. [P]
- Increased enforcement during the Sturgis Rally. [P]
- Increased use of Dynamic Message Signs (DMS) across the state, including at high risk locations during Sturgis Rally. [P]
- Increased maintenance of roadways and traffic control during Sturgis Rally. [P]
- Law enforcement use motorcycles so they can more effectively perform traffic enforcement of motorcycles. [P]
- Motorcycle industry increasing safety enhancements such as ABS braking and traction control. [RC]
- Replacement of signs and markings with high visibility material. [SF]
- Reduced posted speed limits in key corridors. [P]
- South Dakota Safety Council: Motorcycle safety rider course. [RC, SF]

What is challenging about this area?

- Getting riders to choose to wear a helmet. [RC]
- Opposition to passing a helmet law. [SF]
- The influence of Sturgis and tourism lobby. [P, SF]
- Initial licensing does not require taking a motorcycle rider training course. [RC]
- Inexperienced and unlicensed riders, especially riders from outside of South Dakota. [RC, P, SF]
- Educating riders from outside of South Dakota. [P]
- Riders that attend the Sturgis Rally that are not from the area and do not know the roads or are not experienced riding the types of roads in the area. [P]
- Organizations that provide rider training courses having access to suitable locations to hold the training classes. [SF]
- Personal stories where drivers were hurt by the helmet (choked after crash, became paralyzed when emergency responders removed helmet). [SF]
- Motorcycle riders won't stop for law enforcement. [SF]
- The difficulty in seeing a motorcycle because of size. [RC, SF]
- The number of animals and the risk to motorcycle riders. [P]
- Negotiating compound curves (curves with change in radius). [RC]

- Providing a roadway design that is safe, but the corridor is still appealing to the rider. [RC]
- In summer, the joint sealant can become slick when it becomes hot. [RC]

What opportunities do you see?

- Develop a Sturgis Rally app that has information to help with motorcycle safety. [P]
- Improve traffic management (congestion responsive) during Sturgis Rally. [P]
- Provide travel information tailored to motorcycle riders, such as construction information. [P]
- Increase helmet use through rider education. [P]
- Increase the use of oscillating or strobing headlights to increase motorist awareness of motorcycles. [RC, SF]
- Convert compound or broken back horizontal curves to a simple curve (single radius). [P]
- Increase use of high visibility clothing and rider gear, including gear that is cooler to wear or has built-in safety features, such as personal air bags. [RC, P]
- Provide a forgiving roadside, remove guardrail by increasing clear zones and slope flattening. [RC]
- Use High Friction Surface Treatment (HFST) at key locations. [RC]
- Improved joint maintenance (e.g., reduce over banding) for smoother, safer ride. [SF]
- Increase awareness and use of rider skill maps for the Sturgis area. [RC]
- Increase rider training opportunities and courses with qualified instructors. [RC]
- Require a rider training safety course with an on-road skills course. [SF]
- Conduct a motorist awareness campaign to Share the Road. [RC]
- Increase license plate size and visibility to aid law enforcement that are not able to pull over a motorcycle rider. [SF]
- Require mopeds to be registered like motorcycles. [SF]
- Increase impaired riding education programs. [RC]

Older Drivers

What work is already happening in South Dakota in this area? Who is doing it?

- South Dakota has an existing form (DL25) that officers, physicians, or family members can fill out when one believes an older driver should be reassessed. [P]
- Several localities have various ride services for the elderly, including public transit, Meals on Wheels, Custer Senior Services, and the Car Project. [RC, P, SF]
- Rapid Transit provides training on how to use the system, where to buy a pass, etc. [RC]
- AAA offers Road-wise, a course for older drivers. [SF]
- Roadway agencies are using innovative intersections and eliminating intersection skew. [RC, P].

What is challenging about this area?

- Older residents are a strong voting block and the age of legislators makes new legislation difficult to pass. [RC, P]
- Many older drivers are strong willed and losing a driving license is seen as losing their freedom or independence. [RC, P, SF]
- People may suffer psychological/social impacts if they lose their ability to drive. [RC]
- Submitting DL25 does require a burden of proof. Law enforcement are hesitant to recommend drivers for a screening or assessment. [RC, SF]
- Resistance to retesting if they already possess a driver's license. [RC]

- Rural areas have limited/no alternatives to driving. [SF]
- Rural transit requires advance notification times. [P]
- Older drivers have a difficulty understanding the Flashing Yellow Arrow (FYA). [SF]
- Is 65 the right age for mandatory testing or screening? [SF]

What opportunities do you see?

- Provide education (e.g., to families) on the availability of DL25. [RC, P]
- Increase screening of older drivers, including working with the medical community to recommend more screenings. [RC, SF]
- Changes to license renewal
    - Add screening question at license renewal. [P]
    - Require on-road testing of older drivers. [SF]
    - Require testing of drivers before 65 or periodic testing of all drivers. [RC, SF]
- Education and awareness
    - Ensure travel information (511, website, etc.) communicates effectively to older drivers. [P]
    - Targeted education campaign for new laws impacting older drivers. [RC]
    - Use community education or senior organizations (AARP) to share information on available services. [P, SF]
    - Increase awareness of Road-wise since it typically has open seats. [SF]
    - Educate older drivers on risks and better choices. [P]
- Increase mobility options for elderly that may not have a license.
    - Evaluate transit programs to improve community and access for elderly. [P]
    - Increase or improve transit in rural areas where options might be limited. [P]
    - Coordinate with organizations—such as AARP, Volunteers of America, medical clinics, food delivery services, and other volunteer organizations that provide mobility assistance—to expand options for the elderly. [RC, SF]
    - Promote urban living communities that allow walking. [RC]
- Engineering improvements
    - Shoulder widening and slope flattening [P]
    - Reducing conflict points, such as with the Restricted Crossing U-Turn (RCUT) intersection or roundabout [RC, SF]
    - Eliminate high speed intersections [RC]
    - Improve DMS to allow for larger letters [RC]
    - Provide night time speed limits/signage [P]
    - As needed, provide education and information on engineering solutions (innovative intersections, roundabouts, FYA) [P, SF]

Speeding and Aggressive Drivers

What work is already happening in South Dakota in this area? Who is doing it?

- Dynamic Messaging Sign (DMS) speed signs attached to advanced warning signs [P]
- Chevrons that light up when navigating curves [P]
- Enforcement through traditional radar, use of lidar and aircraft [P]
- Road Diets [P]
- Advanced signing in Black Hills area [RC]
- Rumble strips where needed – both centerline and shoulder [RC]

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- Speed reduction marking – distances between markings decreases to give drivers the feeling of faster speed [RC]
- Skill rating map -ABATE group developed skill rating for various roadways in 2005 and updates every year. 30,000 flyers with skill rating map get distributed during the rally. [RC]
- SD rides website [RC]
- 11-ft lanes on Rushmore Rd and 44 west through road diets. Public was not supportive. [RC]
- Construction zones – DOT cop or off-duty police enforcement working construction zone [RC]
- Variable speed boards – proving effective [RC]
- Weather conditions - when there is speed conflict between 85% vs. speeding vehicle. Currently 2 locations: Tillford and Watertown [RC]
- DMS variable speeding signs near Watertown – legislation didn't support due to potential utilization as "speed traps" [RC]
- Video links to BH Roadways on Sturgis Rally page narrated to help riders be more aware of riding techniques [RC]
- Driver improvement course for high school seniors – talk about how emotions affect driving ability (4 classes throughout the year at Active Generations) [SF]
- Portable speed trailers/signs [SF]
- Rumble strips deployment [SF]
- Narrower Lanes [SF]
- Neighborhood speed reduction [SF]
- Law enforcement providing education via social media and pushing real-time information regarding road conditions [SF]
- DMS Speed Limit Boards [SF]
- Saturation Patrols [SF]
- Work Zone – queue detection and variable speed signs – smart work zones [SF]
- Law enforcement utilizes federal overtime for speed enforcement – DOT provide funds for overtime for enforcement in work zones [SF]
- Complaint zone enforcement [SF]

What is challenging about this area?

- Snowplow hits (there have already been 27-32 this year) [P, RC]
- Getting drivers to slow down, especially during adverse weather conditions [P]
- Enforcement cameras must be able to identify drivers [P]
- More demands on law enforcement, taking away from patrol [P]
- Speed reductions ignored in work zones – DMS may help [P]
- DMS being added to maintenance plates [P]
- Use different material for the seam repair – the tar gets slippery when hot, especially for motorcycles [RC]
- Narrow road conditions with sand shoulders (water park) [RC]
- Number of signs for pullouts in national park area – don't want too many signs but also don't want people just stopping wherever they want [RC]
- New developments pave existing county roads without redesigning them to accommodate traffic values or needs [RC]
- Rural/tribal communities are vast with little to no police presence, equates to speeding and aggressive drivers [RC]
- When there is no law enforcement, people are comfortable with speeding [RC]

- People are used to driving high speeds in eastern part of state – don't slowdown in mountains [RC]
- Unprotected work zone for short duration [SF]
- Some areas hard to do enforcement because of location or amount of traffic [SF]
- Automated speed enforcement – illegal in SD currently, deemed unconstitutional [SF]
- Not knowing what speed limit is from urban to rural areas [SF]
- Water gets in seam of road along centerline so deteriorate center rumble strips [SF]

What opportunities do you see?

- Public education – don't use cruise control during inclement weather [P]
- Variable speed limits for adverse weather [P]
- More dynamic message board signs for road/weather issues [P]
- Traffic calming [e.g., reduce lane widths in urban areas, roundabouts, variable speed limits) [P]
- Variable speed limits responsive to weather, events, incidents, work zones, etc. [P]
- More dynamic radar feedback signs and DOT ownership and placement of dynamic feedback signs [P]
- In work zones, higher fines for contractors not covering lowered speed limit signage during non-work times [P]
- 85 near/during rally – variable speeds, lower to reduce speed [RC]
- More pullouts for tourists/sightseeing for wildlife [RC]
- Shoulder treatments – recovery area (similar to 29 Palms area in CA) [RC]
- Implement point system for speeding tickets – more effective. Or escalating fines. [RC, SF]
- Setting speed limits based on design speed [RC]
- Interstate – DMS stating weather conditions and saying to turn off cruise control [RC]
- Public education – winter driving courses [RC]
- Reducing the number of lanes [RC]
- Increase dollar amount of speed tickets [RC]
- Motorcycle education on curve warning signage – PSAs, Breaking and Riding the Curve [RC]
- Speed saturation spots similar to DUI check points [RC]
- Traffic calming such as roundabouts coming into cities [RC]
- Speed enforcement cameras – difficult to calibrate [RC]
- Campaigns – similar to Jack the Ripper (DUI), encourage people to call in and report aggressive drivers [RC]
- Daily variable speed based on time of day [SF]
- Engineering design standards need to be changed for streets widths due to changes in development practices (on-street parking density) [SF]
- Posted speed limit reminder on navigation and Google maps in vehicles [SF]

Unbelted Vehicle Occupants

What work is already happening in South Dakota in this area? Who is doing it?

- State Patrol has zero tolerance rule and always tickets for not wearing a seatbelt [P, RC, SF]
- "Saved by the Belt" awards for people that survived a crash due to wearing a seatbelt [P]
- Project in place to install car seats [P]
- On the Rosebud reservation there is no program to deter drivers from not using a seatbelt [RC]
- Highway patrol has seatbelt saturation patrols and prizes for wearing belts [RC]
- Rollover simulator that throws dummies out windows [RC, SF]

- Child restraint has increased due to free car seats and free classes to install [RC]
- Reminders on changeable message signs to wear belts [RC]
- Speeding ticket includes seatbelt tickets and hazardous moves [SF]

What is challenging about this area?

- Why are crashes higher in the fall? Hunting? [P]
- Drivers that are convinced that seatbelts will not save lives due to a past experience they heard about where a driver survived and didn't have a seatbelt on [P]
- "Seatbelt use or not using will not cause a crash" mentality [P]
- Seatbelt use is a personal freedom/choice [P, RC, SF]
- Hard to change mind/habits of adults [SF]
- Attitude that "if I don't wear my belt it only impacts me" [SF]
- Getting a primary seatbelt law passed through legislation has been and will continue to be a challenge [P, RC]
- Legislators view on primary law is not supportive. They assume law enforcement is just looking for money [SF]
- Young drivers not buckling younger siblings in car [RC]
- Lack of seatbelt use in backseat [SF]
- Child car seats are too expensive [RC]
- Rosebud Reservation has a seatbelt law that is not enforced [RC]
- Seatbelt use non-compliance seems to be more of a rural issue [RC]
- Farm/ranch culture isn't used to wearing seatbelts [RC]
- Nighttime enforcement is challenging [RC]

What opportunities do you see?

- Use "Room to Live" video for education [P]
- Educate younger drivers on the importance of seatbelt use [P]
- Parents need to set good example. Educate them since kids do what parents do. [RC]
- Educate kids about the importance of seatbelts at school and they can help get their parents to wear a seatbelt [RC, SF]
- Educate on the potential harm of not wearing belt, to others in car (i.e., their body shifting and hitting others in the car) [SF]
- Increase fines for not wearing seatbelt (currently $25) [P, RC, SF]
- Adopt a primary seatbelt law [P, RC, SF]
- Adopt a booster seat law [SF]
- Provide booster seats to families for free [P]
- Establish escalating fines for repeat offenses [P]
- A high percentage of seatbelt use in other states is driven by the combination of primary seatbelt laws and high fines [RC]
- Advanced technology changes in vehicles to promote belt use [RC]
- Make vehicles that will not work without seatbelts engaged [SF]
- Vehicles that do not let cars go more than 30 mph when unbuckled [RC]
- Highway patrol does docu-dramas for bigger schools - could be opportunity to bring more rural students to join [SF]

- Offer the "Freshman Impact" program that is currently only at schools on the west side of the state to all schools [SF]

Young Drivers

What work is already happening in South Dakota in this area? Who is doing it?

- Driver education seems to be more available in urban areas, less in rural [P]
- South Dakota DOT Research group completed a study in 2011 titled "Evaluation of Driver Education in South Dakota (SD2009-03-F)" that reviewed existing education programs and recommended changes to the current program. [P]
- Traffic safety safedrivesd.com competition - watch videos and win (program has been in place for the past 4 years) [P, SF]
- Current driver education class fees are high, about $350 [P]
- Law Enforcement "Freshman Impact" program at high schools that is a mock crash that shows kids the impact of a crash afterwards, including the court process and funerals. Currently only in place in western part of the state. [P, RC]
- Rapid City and Custer offers bussing for activities after school, so kids don't have to drive [RC]
- Auto makers have a separate key that can be used in a car to limit max speed and max radio volume when younger drivers are in the car [RC]
- SD has made changes to young driving licensure that have been positive - used to be 14-year old's could get a license without permit [SF]
- SDDOT state coordinator is working to standardize driving training in SD [SF]
- Sioux Falls has a younger driver curfew of 11 pm [SF]
- Young driver protection coalition (AA) research finding show that experience matters. More time behind the wheel when learning is better. [SF]
- April is distracted driving awareness month [SF]
- Dr. Bob Foss, North Carolina has done extensive research of young drivers that highlights that driving is a learned activity and more time learning is better [SF]

What is challenging about this area?

- Parents haven't always been trained how to drive themselves [P]
- Parental support of driver education and graduated driver license is important [P]
- Do 14-year old's need to have a driver license? Instead, could there be a farm equipment permit during harvest season only? Or something more restrictive? [P, RC]
- Do driver training class prices go down if you go through your insurance company? [P]
- The existing culture of farm life and needing help from kids is hard to break [P]
- Could driver education be modeled as face to face behind the wheel education with classes online to reduce the cost? [P]
- If texting is restricted for younger drivers, law enforcement has a hard time enforcing because they can't tell the age of the driver without pulling them over [RC]
- There is a lack of driver education classes available and limited instructors [RC]
- Lack of driver education instructors [RC, SF]
- Currently, if a certified driver education instructor passes a student, they do not need to take the behind the wheel test. The test should still be required [SF]
- Variation in instructors in driver education - some good and some bad [SF]
- Driver education trainers not communicating with parents well - if kids were ready or not [SF]

- Why are trainers passing kids that need more time behind wheel? [SF]
- New car technology (lane assist, etc.) is helpful but possibly impacting young drivers learning to drive [RC]
- Young drivers and phones don't mix [RC]
- When training is not in school, driver education classes interfere with other activities/sports and kids are less likely to take a class [RC]
- Driver education is not required in schools [RC]
- Why is driver education no longer in schools? [SF]
- Parents can't afford classes - can insurance companies help? [RC]
- Young drivers that lack experience puts others at risk [SF]
- Young drivers not wearing seatbelt [RC]
- Young drivers are driving younger siblings and not requiring them to wear their seatbelts. [RC]
- Young drivers are driving younger siblings to school and events [SF]
- Sacrificing well-being of youth (14-year old's) for convenience of parents [SF]

What opportunities do you see?

- Require driver education to obtain a license regardless of age [P, RC, SF]
- Strengthen Graduated Driver License (GDL) law to include more defined restrictions - age-based passenger restrictions, supervised driving, etc. [P, RC, SF]
- Driver education on Indian reservations [P]
- Young drivers - use SDDOT research study on this topic to improve driver education programs [P]
- Increase use of traveler information services by young drivers - outreach through universities, schools, other "young" media [P]
- Online classes for rural areas [P]
- Develop online driver education AP course - mandatory before getting license [P]
- Potential of modeling on parental/home-based driver education from other states (Iowa) [P]
- Create one statewide driver education curriculum that all classes must follow [P]
- Legislation - temporary loss of license for speeding (+20 mph) for age 14-20 [P]
- Need driver training to be required [P]
- Zero tolerance for BAC should be .00 not .02 for younger drivers [RC]
- Cars should disable phones in car when in motion [RC]
- Urban development options - building homes around schools for walking [RC]
- Improve public transit options [RC]
- Change minimum age for licensure to 16 [RC]
- Parents need to be involved - can limit access to texting when car moving - parental control [RC]
- What is impact of 14 and 15-year old on crashes? Are they over represented? [RC]
- Need legislation for belts and distracted driving - primary seatbelt and distracted for all drivers [RC]
- Primary seatbelt and texting for under 18 as a start [RC]
- Some schools have driver education - would like to see in all schools [RC]
- Farm permits for 14-year old should be restricted to radius of farm [RC, SF]
- PSAs need to be delivered correctly, not via TV. Use social media [SF]
- Kids need more time practicing with adult when permitted [SF]
- Parents should be required to log hours their kids are driving each day [SF]
- Adopt a law banning use of cell phones - hands free [SF]

Emergency Medical Services

What work is already happening in South Dakota in this area? Who is doing it?

- A digital radio system does exist for improved emergency responses between fire rescue, police, and medical services. Most cities are using this system however some smaller entities such as township or county fire rescue areas are not using the digital radios [SF]
- A higher use of helicopter and planes is making a large difference in accessing incidents in a quick manner [RC, SF]
- ITS technology for roadways to reduce secondary crashes at events such as the Sturgis Rally [RC, SF]
- Emergency Vehicle Preemption for cities with signalized corridors [RC, P, SF]

What is challenging about this area?

- Rural Nature of South Dakota [RC, P, SF]
- No quick clearance laws, although some state highway patrol officers believe that they are providing clearance in a quick manner when able there is no requirement to do this [SF]
- Cell Phone or internet coverage is not consistent throughout this rural state [RC, P, SF]
- Funding seems to be available for gear or vehicles but lack of funding for communication technology [RC, P]
- Lack of emergency responders due to rural area [RC, P, SF]
- Address verification [RC, P]

What opportunities do you see?

- Improved communication with all registered medical service providers, fire rescue, and police that digital radios are funded and can be provided. If all responders are using this system, it will increase the level of incident management that currently exists [P]
- Some version of free trainings, free update for certifications, or incentives of some nature [RC, P]
- Increase notice of location by reducing distances between Mile Marker signs to 0.1 Miles [RC, P, SF]
- Improve lighting in urban areas [SF]

General Conclusions from the Stakeholder Engagement Process

The following summarizes the key points made by workshop participants through conversation and input stations during the workshops. It is important to note the statements made are not necessarily reflective of national best practices or endorsed by the state, instead they represent themes heard at each of the workshops and are opinions or observations of the workshop participants.

Drugs and Alcohol

The biggest challenge with impaired driving is that it is entirely based on driver behavior. Most people already know that driving while under the influence of drugs and/or alcohol is risky, yet many continue to do it. Opportunities for effective strategies lie mostly within enforcement, followed by public education, an increase in alternative transportation services, and legislation. Increasing civil penalties (for example, seizing an offender's vehicle) or incorporating escalating fines based on BAC or if children are in the car may be helpful in changing driver behavior. Increased alternative transportation services in rural areas is a great need, as well as revised legislation regarding specific ignition interlock laws that need to be in place for South Dakota to apply for National Highway Traffic Safety Administration (NHTSA) grant opportunities relating to impaired driving.

Supplemental Data 10: Stakeholder Engagement
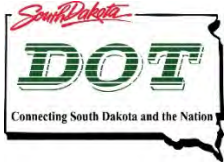
Intersections

There are many thoughts regarding how safety can be improved at intersections both in rural and urban settings. The issue in most cases is the willingness to obey current traffic laws which reduces the chances for conflicts within and adjacent to the intersections. In an urban setting, countermeasures to reduce the frequency of crashes include improved traffic signal coordination along corridors to reduce delays and frustration and using alternative intersection types to reduce the number of conflicts. In a rural setting, advanced warnings that inform drivers of an upcoming intersection and/or expanded use of alternative intersections would help. In the future, advanced technology of the vehicles and roadside ITS may play a bigger role in both advanced warning and adaptive signal control in improving safety. Finally, enforcement must play a big part in reducing intersection crashes through their presence and the issuance of appropriate citations.

Lane Departure

The majority of lane departures in South Dakota occur in a rural setting and are caused by many different factors. A singularly focused approach utilizing Engineering would be too expensive to accomplish the elimination of lane departures, necessitating the need to use all 4E's in addressing this emphasis area. Engineering improvements such as edge line and centerline rumble strips are proven to help, although concerns with motorcycles and bicyclists along bike routes should be taken into consideration in improving their design. Effective yet more expensive engineering improvements including wider shoulders, additional lighting in curves, and expanded use of High Friction Surfacing should be used at high priority locations throughout the state. Enforcement must also play a part and increase their observation and enforcement of vehicles making unsafe lane changes. Distracted driving and overdriving roadway conditions are contributors to lane departure crashes and an expansion of the DMS system in South Dakota may help with communicating road conditions throughout the state system.

Motorcycles

A few individuals acknowledged the importance of South Dakota adopting a helmet law for all riders, but workshop participants universally expressed a belief that South Dakota will never have a mandatory helmet law for all riders due to political reasons. Instead of legislation to increase use of helmets, feedback focused on increasing riders' voluntary use of protective gear (helmets, clothing, etc.) through increased education and awareness. This could be accomplished through improved access to rider training with qualified instructors as well as improved licensing and testing procedures (e.g., mandatory on-road skills course). A second area of focus was improving riders' access to information, especially during the Sturgis Rally. This could include a customized Sturgis Rally app that provides access to rider skills ratings for roads or traveler information (such as construction or congestion). From an engineering perspective, key recommendations included increasing forgivable roadsides (increasing clear zone, slope flattening, removing guardrail); improving joint maintenance and horizontal curve design; and using high friction surface treatment at appropriate locations.

Older Drivers

To address the issues of crashes involving older drivers, the recommendations focused on three areas: increasing the use of assessments for drivers that demonstrate reduced abilities; leveraging the license renewal process to verify driver capabilities; and providing increased mobility through public and private organizations that provide transportation for seniors that no longer have a driver license. There are existing refresher classes for older drivers that are not at capacity. Increasing awareness of classes (or other services) may help meet older driver needs. From an engineering perspective, there are opportunities through safer roadsides and intersections to help older drivers. However, some engineering solutions may require targeted information to help older drivers with new situations, like an RCUT or roundabout.

Supplemental Data 10: Stakeholder Engagement

Speeding and Aggressive Driving

One strategy that was brought up multiple times for each workshop was with regard to Radar Speed Feedback Signs (RSFS). RSFS were viewed as effective ways to incorporate variable speed limit enforcement based on roadway/weather conditions or time of day, as well as to serve a reminder to drivers what their current travel speed is compared to the posted speed limit. Speeding in work zones was described as an ongoing problem, and SDDOT has started to implement smart work zones to help mitigate this issue. Roadway diets and traffic calming measures have been a proven method in South Dakota to help reduce speeding, and many attendees felt that these efforts should continue a strategic basis. Shoulder treatments, matching the posted speed limit to the roadway design speed, and adequately updating the geometric characteristics of the roadway to meet standards when roadways are paved, or their needs change due to increased development were engineering strategies that were mentioned at each workshop as well.

Unbelted Vehicle Occupants

Research has proven that seatbelts save lives, but not everyone is in agreement. The biggest challenge with seatbelt use is the opinion that wearing a seatbelt is a personal choice/freedom issue and the attitude of "if I don't wear my seatbelt it only impacts me." Many attendees would like to see a primary seatbelt law passed and an increase in fines for not wearing a seatbelt, which is currently $25. Additional support for programs and education for car seats and booster seats was suggested to ensure that children are properly restrained. A booster seat law would help protect kids that are transitioning from a car seat to using adult restraints.

Younger Drivers

South Dakota is one of the few states in the U.S. that allows drivers to acquire a license at the age of 14. There is concern that the state is sacrificing the well-being of youth (14-year old's) for the convenience of parents. Most 14-year-old drivers tend to be from rural communities and are helping with driving farm equipment or driving younger siblings to activities for parents. Urban communities have been successful in reducing the number of 14-year-old drivers by offering after school activity busses to get kids home. Increasing the minimum age to acquire a driver's license and/or restricting 14-year old to farm permits would be beneficial. Quality driver education at an affordable price is lacking in South Dakota. Many concerns related to driver education were raised at the workshops: driver education courses are too expensive, they are primarily offered by private companies (not at all schools), there is a lack of qualified instructors, there is no standardization of driver education content, and driver education training should be required for everyone to get a license, regardless of age.

Emergency Medical Services

South Dakota is mostly a rural state, which presents multiple challenges for emergency personnel. Commenters noted that being rural in nature can often result in a lack of emergency responders, an increase in response times due to farther travel distances, difficulty with address verification, as well as inconsistent cell phone and internet coverage throughout the state. Workshop participants also noted that while most cities are utilizing digital radio systems for communicated, smaller entities such as townships or county fire rescue areas do not always have access to these systems. It was felt that while funding seems to be available for gear and vehicles, it is not always readily available for communication technology. Another strategy that was suggested was introducing Quick Clearance Policies and laws to prevent chances for secondary crashes. Other strategies that were suggested included free training and incentives for volunteer medical service providers, continued use of advanced ITS or messaging to reduce secondary crashes on high speed corridors, and improved mile marking designations on state highways and interstate corridors.

Online Survey Results

Survey Responses

A total of 50 online surveys were completed via the SHSP project website. Thirty percent of survey participants represented regional or local government, while 26% were comprised of members of the general public. The remaining participants represented state government, educational institutions, healthcare, advocacy groups, federal and tribal government, and consulting companies. In terms of which of the 4Es they represent, a majority of respondents selected "Everyone Else". Ten respondents identified themselves as representing Engineering, 10 as Education, 2 as EMS, and zero as representing Enforcement.

When asked about the importance of each emphasis areas' contribution to serious crashes on South Dakota's public roads [Scale: 1 (Least Important) to 5 (Most Important)], distracted (texting, talking on the phone, eating, etc.) and drowsy drivers had the highest average score (Score = 4.76). Drugs and alcohol scored the second highest (4.58), followed by speeding and aggressive drivers (4.76). Bicyclists (3.22), pedestrians (2.90), and trains (2.48) had the lowest average scores.

When asked which elements were believed to be most commonly involved in serious crashes in South Dakota [Select top 3], 76% of respondents selected distracted (texting, talking on the phone, eating, etc.) and drowsy drivers, followed again by drugs and alcohol (70%) and speeding and aggressive drivers (60%). Only one person responded that bicyclists were a common element in severe crashes, and no one reported trains or pedestrians as being a common factor in severe crashes.

The participants were also asked to rank in order of importance tools for reducing severe crashes [Scale: 1 (Most Important) to 8 (Least Important)]. The following rankings, with 1 being the most important, were recorded.

1. Enforcement: enforcing traffic safety laws and supporting effective arrest and prosecution of offenses.

2. Engineering: implementing infrastructure safety improvements that are effective at reducing and preventing lane-departure and intersection-related crashes.

3. Education: better educating drivers and promoting safe driving.

4. Project Planning Partnerships: making the most of safety knowledge at the federal, state, local, and tribal government level to develop safety projects.

5. Research and Data: improving the crash data analysis from all entities for a more complete identification of crash issues.

6. Emergency Medical Services: providing timely and professional emergency response and trauma care to crash victims.

7. Technology: embracing emerging technologies that assist drivers.

8. Legislative: enacting new laws or enhancing existing laws.

Summary of Results

According to the survey results for importance of emphasis areas and most commonly involved factors in serious crashes, the perception from survey participants was that distraction is the leading contributing cause for severe crashes. However, this perception is not consistent with the data summarized in the crash reporting, despite the recognition that distracted driving is likely to be underreported in crash statistics. This was discussed with the Study Advisory Team (SAT) and it was decided that the SDDOT should work at improving reporting so there is an understanding of all factors involved, including age, gender, location, and road type. This effort would assist in developing and choosing effective programs to implement. Aside from this discrepancy, the feedback from the

Supplemental Data 10: Stakeholder Engagement

online survey results was consistent with the crash data and emphasis areas selected for the SHSP and reaffirms the decisions made regarding the update thus far.

When ranking which tools survey respondents believed are most effective in preventing severe injury crashes, the survey results showed three primary groups:

- Top Group: Most people believed enforcement, engineering, or education ranked as one of the top three most effective tools. These can be considered as the "pillars" of traffic safety implementation. Throughout the workshops, many participants thought the key opportunities were to increase or improve education programs. Education is an important component to reducing crashes; however, the SDDOT and their partners can improve stakeholder and public understanding that these items are most effective in combination when agencies representing the different pillars work together rather than relying primarily on education campaigns.

- Second Group: There was significant distribution across the scale. Tools included in this group would not be traditionally considered "pillars," but do embody important aspects like coordination, data, technology, and the remaining E – EMS. Implementation of tools in this group do not often directly reduce crashes, but they can lead to better programs or are most important after a crash happens.

- Third Group: Legislative action received the lowest ranking of all the tools listed. SDDOT should consider working with partners to communicate and inform safety stakeholders and legislators that there are key legislative actions that can be taken in South Dakota to significantly improve roadway safety. When supported with adequate education and enforcement, these policies can be quite effective in reducing severe crashes. Public acceptance of key legislation could be a challenge to overcome in certain emphasis areas. Proactive efforts to address these policies could be important to achieving real, measurable change.

Supplemental Data 11: Engineering Resources

South Dakota Department of Transportation

605.773.3265

www.sddot.com

Agri-Business Access Grants

The Agri-Business Access Grants Program provides state funding for the construction of roads that serve as primary access to an agricultural production or service business. A minimum of forty percent (40%) of the construction costs are to be paid by the applicant. Applications are accepted quarterly. Other conditions apply. For a copy of the policy and application forms, call (605)773-6253, or check out our website at www.sddot.com under "Resources/Forms".

Bridge Improvement Grants

Bridge Improvement Grants (BIG) are available to cities and to any county that have both a wheel tax and a County Highway and Bridge 5-year Plan. The grant funds may be used for preliminary engineering studies, bridge rehabilitation, and bridge replacement. State funds will pay for 80% of the design and construction expenses. Grant application information and forms can be found on the SDDOT website at: http://sddot.com/business/local/big/Default.aspx. Grant applications are due January 2 of each year. For information on the BIG program, contact Doug Kinniburgh at 605-773-4284.

Community Access Program

Community Access Grants are state funds for towns with populations of less than 5,000 and are used for the construction or reconstruction of major streets such as Main Street, the road to the elevator, schools, hospitals, etc. This program provides for 60% of the construction costs of the project, not including engineering or utility work. Applications are due July 15 of each year. Grant size is limited to $400,000. For a copy of the policy and application forms, call (605)773-6253, or check out our website at www.sddot.com under "Resources/Forms".

Federal Section 164 Highway Safety Projects

The Federal 402 Safety Program provides funding for traffic engineering services to local governments as well as paying for materials for signage improvements. Many requests are received each year for traffic related assistance from local governments who do not have traffic & safety engineering personnel on their staff.

Grants for Rural Public Transit-Section 5311 Program

The 5311 Program authorizes capital, administrative, operating assistance and training grants to state agencies, local governments, Indian tribes, operators of public transportation services and private nonprofit organizations providing rural public transportation services. Section 5311 provides up to 80% federal share of the costs for administrative expenses, up to 80% for capital costs and up to 50% of the

net operating deficit for rural transit operations. Grant application information, forms and timetables can be obtained by contacting Sallie Doty at sallie.doty@state.sd.us or (605)773-7038.

Grants for Specialist Transit of Seniors and Individuals with Disabilities-Section 5310 Program

The 5310 Program authorizes capital grants to private nonprofit organizations, public organizations/entities approved by SDDOT to coordinate transportation services for seniors and individuals with disabilities, public organization/entities, which certify to the Governor that no nonprofit organizations are readily available to provide transportation services for seniors and individuals with disabilities. The Program funds are available to assist in providing transportation for seniors and/or individuals with disabilities. This program provides funds up to 80% of all costs for equipment, with the 20% match coming from sources other than federal funds. Grant application information, forms and timetables can be obtained by contacting Lisa Donner at lisa.donner@state.sd.us or (605) 773-4169.

Industrial Park Grants Program

Industrial Park Grants are state funds which provide assistance to communities that have a new or expanding industry and need to provide street access. The grant program works in cooperation with the Governor's Office of Economic Development. The program provides sixty percent (60%) of the project construction costs on a reimbursement basis. The community is responsible for all right-of-way acquisitions, utility costs, and design and construction engineering costs. The grant amounts are limited to $400,000 project. This may be waived at the request of GOED if funding is available. For a copy of application forms, call (605)773-6253, or check out our website at www.sddot.com under "Resources/Forms".

Roadway Safety Improvement Projects

The RSI program has $18 million Federal Highway Safety Improvement Program funding allocated for implementing improvements at locations on public roads that will reduce fatal and serious injury crashes. Depending on the size of the improvement, 15 to 20 projects are programmed each year in the RSI program. There is a match ratio of 90/10, where the local entity is required to pay the 10% match.

Scenic Byways Program

The Scenic Byways Program recognizes those roadways which exhibit the State's unique character and beauty. Individuals, organizations, and local governments may identify roadways with truly distinctive qualities and nominate them for State Scenic Byway designation. Routes which display scenic, cultural, geologic, wildlife habitat or other aesthetic features are eligible for consideration. An application requesting the designation must be prepared with the approval of the affected local government(s). Applications are to be submitted to the Scenic Byways Coordinator. Decisions on the applications are made by the South Dakota Transportation Commission. Interested parties may contact Derek Englund at 605.773.4912.

The Rural Technical Assistance Program-Section 5311

The Rural Technical Assistance Program (RTAP), available under Section 5311, provides grants for training based on 100% federal reimbursement. Eligible sub-grantees for RTAP training grants are administrative and operating personnel providing either public or specialized transit services in non-urbanized (fewer than 50,000 population) areas of South Dakota. Grant application information, forms and timetables can be obtained by contacting Sallie Doty at Sallie.doty@state.sd.us or (605)773-7038 or check out our website at www.sddot.com under "Resources/Forms".

Transportation Alternatives

Transportation Alternatives (TA) is a program that uses federal transportation funds, designated by Congress, for specific activities that enhance the intermodal transportation system and provide safe alternative transportation options. For more information on the TA program, please contact Derek Englund at (605) 773-4912.

Supplemental Data 12: Behavioral Resources

Source	Description	URL
South Dakota Department of Public Safety (DPS)	South Dakota Resources	https://dps.sd.gov/resource-library?ccm_paging_fl=1&ccm_order_by=&ccm_order_by_direction
South Dakota Department of Public Safety (DPS)	Plans and Reports	https://dps.sd.gov/safety-enforcement/highway-safety/plans-reports
National Highway Traffic Safety Administration (NHTSA)	General Safety Information	https://www.nhtsa.gov/
National Highway Traffic Safety Administration (NHTSA)	Law Enforcement Resources	https://www.nhtsa.gov/enforcement-justice-services
National Highway Traffic Safety Administration (NHTSA)	Traffic Safety Marketing Materials and Campaigns	https://www.trafficsafetymarketing.gov/?_ga=2.6439156.772185036.1559071398-897550696.1559071398
National Highway Traffic Safety Administration (NHTSA)	Related to Children and Vulnerable Road Users	https://www.nhtsa.gov/parents-and-caregivers
National Highway Traffic Safety Administration (NHTSA)	EMS and First Responders	https://www.ems.gov/
Center for Disease Control (CDC)	Data, Programs and General Traffic Safety Information	https://www.cdc.gov/motorvehiclesafety/index.html

Source	Description	URL
Insurance Institute for Highway Safety (IIHS):	Traffic Safety Laws by State and Topic Information	https://www.iihs.org/iihs/topics
AAA Foundation for Traffic Safety	Traffic Safety Research and Topic Information	https://aaafoundation.org/
Governors Highway Safety Association (GHSA)	Traffic Safety Issues, Laws, and Other Resources	https://www.ghsa.org/
National Safety Council (NSC)	General Road Safety Resources and Programs	https://www.nsc.org/home