



MINNESOTA

2020-2024 STRATEGIC HIGHWAY SAFETY PLAN

JULY 2020

MINNESOTA SHSP TECHNICAL REPORT



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Introduction

The 2020-2024 Minnesota Strategic Highway Safety Plan (SHSP) establishes Minnesota’s vision and priorities on how the state will reduce traffic-related deaths and serious injuries. The SHSP development followed the Federal Highway Administration (FHWA) process and met the criteria in FHWA’s SHSP process approval checklist. As a companion to the SHSP, this technical report provides additional information that describes the development process and supported the decisions made throughout.

This technical report provides information regarding:

- Membership of the SHSP Steering Committee,
- Details about crash data used in the update process,
- Description of stakeholder engagement process and a summary of feedback,
- Overview of the focus area prioritization process
- Development of SHSP strategies
- Overview of the process to set the 2025 SHSP goals
- Guidance on implementing the SHSP strategies and tactics
- Additional background on the older driver and older pedestrian special rule

SHSP Steering Committee

Minnesota Toward Zero Deaths (TZD) is the cornerstone program aimed to reduce traffic related crashes in the state. The goal of both the SHSP and the TZD program is to reduce death and serious injury crashes. Since the TZD Leadership Team is a multi-disciplinary and multi-agency body that meets regularly, the TZD Leadership Team was a logical choice to steer the SHSP development. As the steering committee, the TZD Leadership Team guided key decisions, reviewed interim deliverables, and established priorities within the SHSP. Agencies and organizations represented on the TZD Leadership Team include:

- Minnesota Department of Health (MDH) – Injury and Violence Prevention Unit
- Minnesota Department of Public Safety (DPS) – Office of Traffic Safety
- DPS – Minnesota State Patrol
- DPS – Office of Communications
- Minnesota Department of Transportation (MnDOT) – Office of Traffic Engineering
- MnDOT – Office of Communications
- TZD Coordinators
- TZD Law Enforcement Liaisons
- Dakota County – Traffic Engineering (representing Minnesota County Engineers Association)
- Emergency Medical Services Regulatory Board
- Washington County Sheriff’s Department (representing Minnesota Sheriff’s Association)
- Shakopee Police Department (representing Minnesota Chiefs of Police Association)
- Minnesota Safety Council

- United States Department of Transportation's Federal Highway Administration (FHWA) – Minnesota Division Office
- National Highway Traffic Safety Administration (NHTSA) – Region 5
- University of Minnesota – Center for Transportation Studies

The TZD Leadership Team is co-chaired by a representative from the lead state departments, including Health, Public Safety and Transportation.

Crash Data

Focus Area Crash Definitions

Crash records from the calendar years 2014 through 2018 supported the SHSP update process. In 2016, Minnesota implemented MnCRASH (Minnesota’s traffic safety management system for crash reporting and analysis) which included updating Minnesota’s crash report to the fourth edition of the Model Minimum Uniform Crash Criteria. The change in the crash report included changes in available fields as well as the codes in the fields; impacting how crashes are assigned to focus areas. Crash data specialists from DPS and MnDOT collaborated to develop criteria for the pre (2014-2015) and post (2016-2018) MnCRASH years. The crash criteria are documented in Table 1.

Table 1: Focus Area Crash Criteria

Focus Area	Pre-MnCRASH (2014-2015)	Post-MnCRASH (2016-2018)
Unbelted Vehicle Occupants	VEHTYPE = 01,02,03,04,05,06,31,32,33,34,35,36,37,38 AGE ≥ 0 AGE ≤ 3 SAFEQP = 01,02,03,04,05,06,08,09,10,11,12,13,14,15,16 or VEHTYPE = 01,02,03,04,05,06,31,32,33,34,35,36,37,38 AGE ≥ 4 AGE ≤ 7 SAFEQP = 01,02,03,04,05,06,08,09,11,12,13,14,15,16 or VEHTYPE = 01,02,03,04,05,06,31,32,33,34,35,36,37,38 AGE ≥ 8 SAFEQP = 01,02,03,05,06,08,09	dataUnitVehicle.VehicleTypeCde = 2,3,4,5,6,20,48,49 dataPerson.AgeNbr ≥ 0 dataPerson.AgeNbr ≤ 3 dataPerson.SafetyEquipmentUseCde = 5,6,7,8,9,10,11,14,15 or dataUnitVehicle.VehicleTypeCde = 2,3,4,5,6,20,48,49 dataPerson.AgeNbr ≥ 0 dataPerson.AgeNbr ≤ 3 dataPerson.SafetyEquipmentUse2Cde = 5,6,7,8,9,10,11,14,15 or dataUnitVehicle.VehicleTypeCde = 2,3,4,5,6,20,48,49 dataPerson.AgeNbr ≥ 4 dataPerson.AgeNbr ≤ 7 dataPerson.SafetyEquipmentUseCde = 5,6,7,8,9,10,11,15 or dataUnitVehicle.VehicleTypeCde = 2,3,4,5,6,20,48,49 dataPerson.AgeNbr ≥ 4 dataPerson.AgeNbr ≤ 7 dataPerson.SafetyEquipmentUse2Cde = 5,6,7,8,9,10,11,15 or dataUnitVehicle.VehicleTypeCde = 2,3,4,5,6,20,48,49 dataPerson.AgeNbr ≥ 8 dataPerson.SafetyEquipmentUseCde = 5,7,8,10,11,18 or dataUnitVehicle.VehicleTypeCde = 2,3,4,5,6,20,48,49 dataPerson.AgeNbr ≥ 8

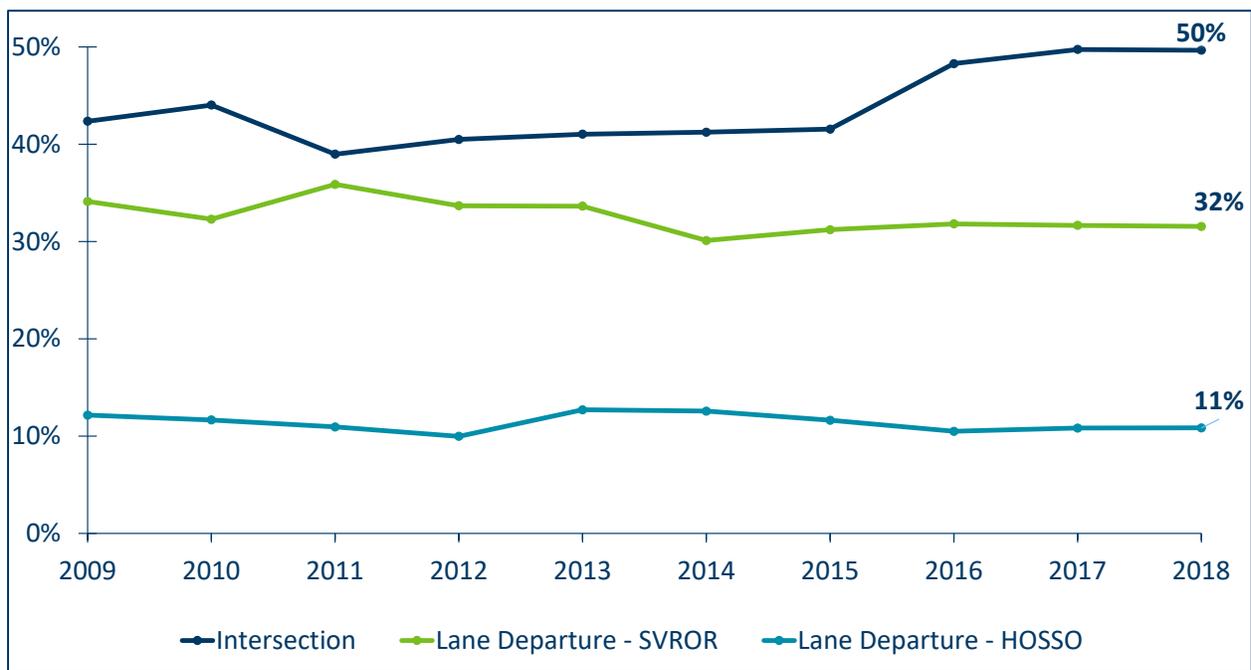
Focus Area	Pre-MnCRASH (2014-2015)	Post-MnCRASH (2016-2018)
		dataPerson.SafetyEquipmentUse2Cde = 5,7,8,10,11,18
Young Drivers	POSITN = 01 VEHTYPE ≠ 51,52,53,54 AGE ≥ 14 AGE ≤ 20	dataPerson.PersonTypeEnum = 1 dataPerson.AgeNbr ≥ 14 dataPerson.AgeNbr ≤ 20
Unlicensed Drivers	POSITN = 01 VEHTYPE ≠ 51,52,53,54 DLSTAT = 02,03,04,05,06,07,08,90	dataPerson.PersonTypeEnum = 1 dataPerson.DLStatusCde ≠ 1,98,99
Older Drivers	POSITN = 01 VEHTYPE ≠ 51,52,53,54 AGE ≥ 65 AGE ≤ 120	dataPerson.PersonTypeEnum = 1 dataPerson.AgeNbr ≥ 65 dataPerson.AgeNbr ≤ 120
Speed	VEHTYPE ≠ 51,52,53,54 CFCT1 = 03 or VEHTYPE ≠ 51,52,53,54 CFCT2 = 03	dataUnitFactor.FactorCde = 75 or dataPerson.ExceedingSpeedLimitInd = 3,4,5
Impaired Roadway Users	POSITN = 01,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36 PHYSCND = 02,03,04,05 or POSITN = 01,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36 CFCT1 = 18 or POSITN = 01,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36 CFCT2 = 18	dataPerson.PersonTypeEnum = 1,5 dataPerson.PhysicalConditionCde = 10,11,12 or dataPerson.PersonTypeEnum = 1,5 dataPerson.PhysicalCondition2Cde = 10,11,12 or dataPerson.PersonTypeEnum = 1,5 dataPerson.AlcoholSuspectedCde = 1 or dataPerson.PersonTypeEnum = 1,5 dataPerson.DrugSuspectedCde = 1
Inattentive Drivers	VEHTYPE ≠ 51,52,53,54 CFCT1 = 15,20 or VEHTYPE ≠ 51,52,53,54 CFCT2 = 15,20	dataUnitFactor.FactorCde = 74 or dataPerson.DistractedDrivingCde = 2,3,4,5,6,7,8
Pedestrians	VEHTYPE = 51,52,54	dataUnit.ControllerTypeCde = 5,8
Bicyclists	VEHTYPE = 53	dataUnit.ControllerTypeCde = 6
Motorcyclists	VEHTYPE = 11,12	dataUnitVehicle.VehicleTypeCde = 31
Commercial Vehicles	VEHTYPE = 07,08,31,32,33,34,35,36, 37,38	dataUnitCommercial.VehicleConfigCde = 1,2,3,4,5,6,7,8,9,10,11,21,22,23
Trains	ACCTYPE = 05	dataCollision.CrashTypeCde = 13,14,15
Lane Departure – Single Vehicle Road Departure	NUMMV = 1 ACCTYPE = 21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40, 41,42,51,52	dataCollision.UnitsNbr = 1 dataCollision.CrashTypeCde = 28,30,31,32,35,36,41,42,43,46,47,48,49,50,55,56,57,60,61,62,67,68,69,70,71,75,83,84
Lane Departure – Head-on/Sideswipe Opposing	NUMMV ≥ 2 DIAGRAM = 08,09	dataCollision.UnitsNbr ≥ 2 dataCollision.MannerOfCollisionCde = 11,13
Intersections	INTREL = 02,03,04,05,06,07,20,21,22	dataCollision.IntersectionRelatedInd = 1 or dataCollision.RelativeLocIntersectCde ≠ 2,99
Work Zones	RDWORK = 01,02,03,04,05,90	dataCollision.WorkZoneInd = 1

Crash Trends

Using the focus area definitions, a series of figures were created to show statewide crash trends back to 2009 (Figures 1-5). The charts show the 15 focus areas that can be quantified using Minnesota’s crash database. Each chart shows focus areas grouped together that are similar. Since a crash may involve more than one focus area, the percentages for a calendar year do not add up to 100 percent. Because the number of serious injury crashes dramatically increased in 2016 with the deployment of MnCRASH and the new crash report, the trends are shown as percentages relative to the total number of death and serious injury crashes statewide. The statewide trends were shared with participants at the TZD Regional Workshops.

The 2020-2024 Minnesota SHSP identified if each focus area was trending up, trending down, or stable. Appendix A summarizes calculations that determined the trend of each focus area.

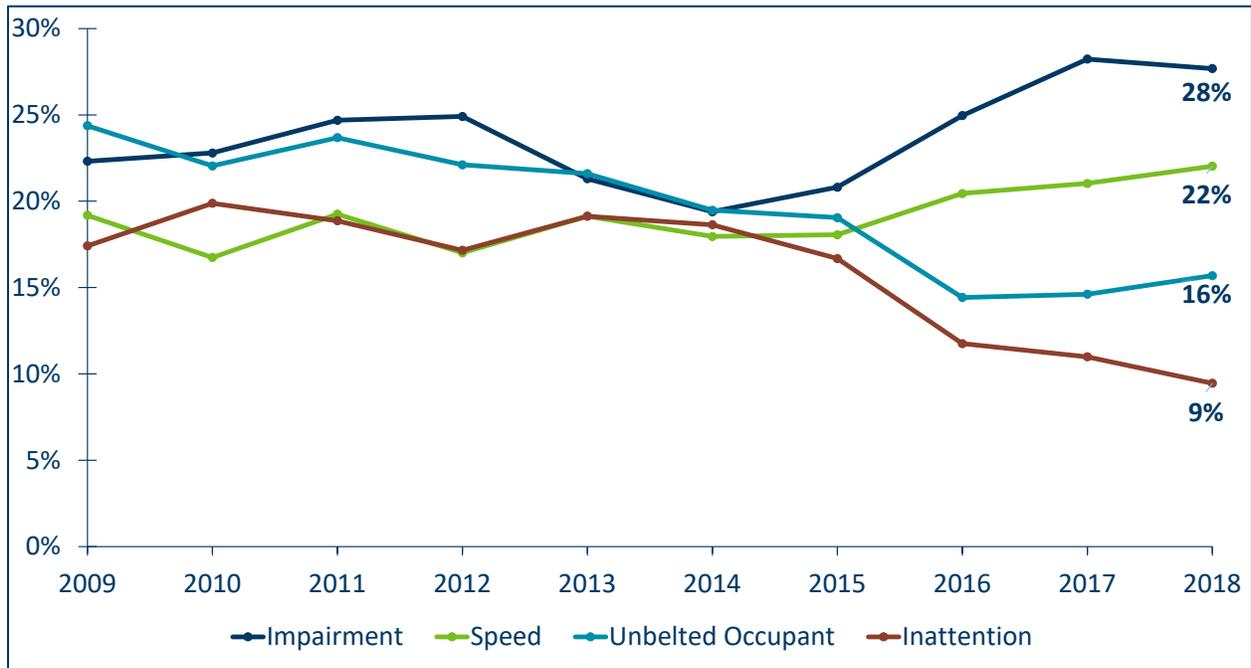
Figure 1: Engineering Focus Areas, Percent of Statewide Death and Serious Injury Crashes (2009-2018)



Note:

- SVROR = single vehicle run off the road
- HOSSO = head-on and sideswipe opposing

Figure 2: Behavior Focus Areas, Percent of Statewide Death and Serious Injury Crashes (2009-2018)



NOTE: Inattentive driving is difficult to accurately identify as a crash factor and cite on the crash report.

Figure 3: Driver Focus Areas, Percent of Statewide Death and Serious Injury Crashes (2009-2018)

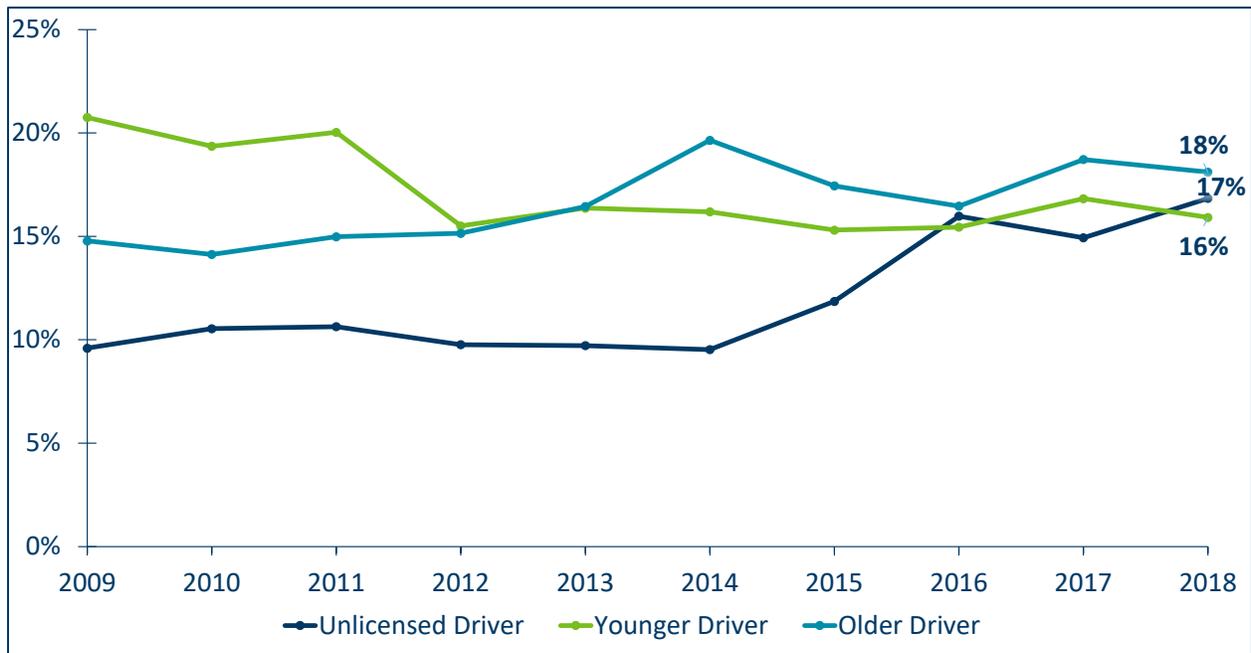


Figure 4: Modal Focus Areas, Percent of Statewide Death and Serious Injury Crashes (2009-2018)

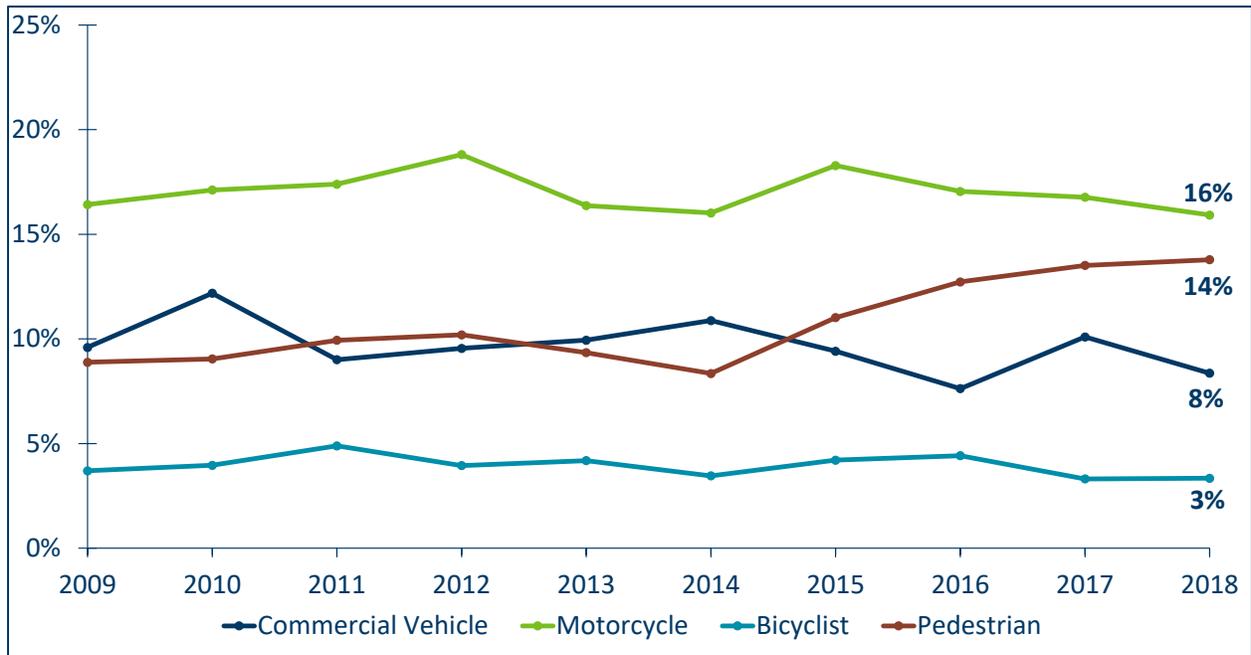
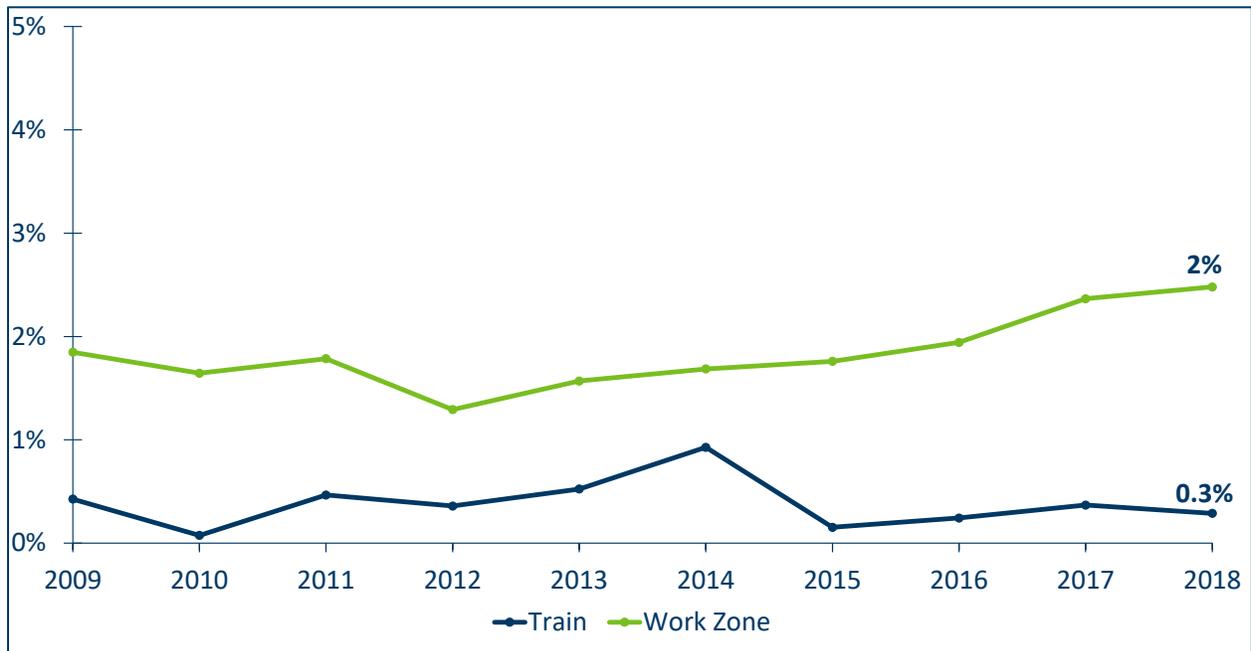


Figure 5: Complex Environment Focus Areas, Percent of Statewide Death and Serious Injury Crashes (2009-2018)



Stakeholder Engagement

The project team performed outreach to multiple groups throughout the development process. While many outreach efforts were conducted, the notable stakeholder engagement activities included:

- Public survey
- Stakeholder engagement at the TZD Regional Workshops
- Stakeholder engagement at the TZD Annual Conference

Public Survey

MnDOT distributed a public survey to gauge the general public's viewpoint on traffic safety issues, awareness of the TZD program, and perception of the top issues locally. The project team shared key findings with the TZD Regional Workshop participants prior to their activities.

Survey Questions

The survey included the following questions:

1. What county do you live in? [Note: Respondent selected from a drop down list.]
2. I am concerned about safety on Minnesota's roads and highways.
 - a. Strongly disagree
 - b. Mostly disagree
 - c. Somewhat disagree
 - d. Neither agree nor disagree
 - e. Somewhat agree
 - f. Mostly agree
 - g. Strongly agree
3. I believe most of my friends are concerned about safety on Minnesota's roads and highways.
 - a. Strongly disagree
 - b. Mostly disagree
 - c. Somewhat disagree
 - d. Neither agree nor disagree
 - e. Somewhat agree
 - f. Mostly agree
 - g. Strongly agree
4. How familiar are you with Minnesota's Towards Zero Deaths program?
 - a. Very familiar
 - b. Somewhat familiar
 - c. Not at all familiar

5. Below are Minnesota's traffic safety focus areas. Which do you feel are the most important to reduce fatalities and serious injuries on Minnesota roadways [select up to five]? [Note: Survey was designed to randomly change order for each respondent.]
- a. Intersections
 - b. Lane departures (head-on and run-off-the-road)
 - c. Unbelted vehicle occupants
 - d. Impaired roadway users (alcohol and drugs)
 - e. Distracted drivers (texting, eating, adjusting the radio, etc.)
 - f. Speed
 - g. Older drivers (age 65 and older)
 - h. Younger drivers (under age 21)
 - i. Motorcyclists
 - j. Motor vehicle crashes involving pedestrians
 - k. Emergency response
 - l. Motor vehicle crashes involving bicyclists
 - m. Commercial vehicles
 - n. Motor vehicle crashes involving trains
 - o. Work zones
 - p. Unlicensed drivers
6. Is there anything else you'd like to tell us related to traffic safety in Minnesota? [respondent provided text box to type response]

Number of Survey Responses

MnDOT distributed the public survey through three outlets, with a total of 2,636 responses. The three methods to distribute the survey and the number of completed surveys are:

- MnDOT email distribution list = 1,504 responses collected
- MnDOT social media posts = 921 responses collected
- TZD stakeholders email distribution list = 211 responses collected

Of the 2,636 responses, every county had at least one response while 12 participants did not identify a county. Table 2 summarizes the number of survey responses by TZD region.

Table 2: Public Survey Responses by TZD Region

TZD Region	Survey Responses
East Central	298
West Central	115
South Central	175
Southwest	142
Southeast	384
Metro	1276
Northeast	160
Northwest	74
No response	12

Findings from Survey Responses

MnDOT’s past efforts conducting surveys to the general public found that targeted questions about the level of concern regarding traffic safety are indicators of the culture within the state. People generally have a favorable viewpoint of themselves while the view they hold of their friends is possibly a better reflection of the actual traffic safety culture. Table 3 summarizes the survey responses.

Table 3: Survey Responses on Level of Concern about Traffic Safety

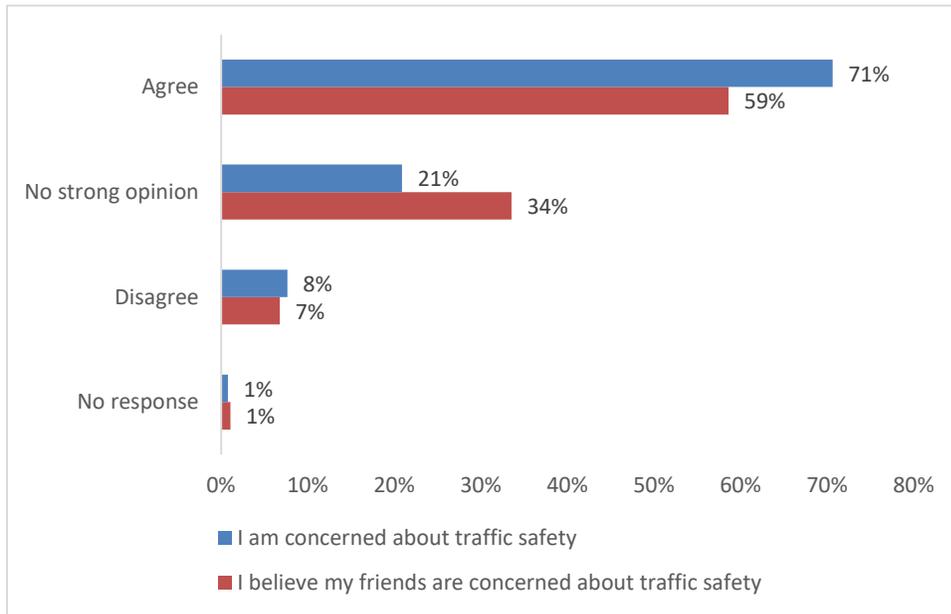
Response	I am concerned about safety on Minnesota’s roads and highways.		I believe most of my friends are concerned about safety on Minnesota’s roads and highways.	
		Percent		Percent
Strongly agree	1182	45%	620	24%
Mostly agree	680	26%	925	35%
Somewhat agree	371	14%	549	21%
Neither agree nor disagree	128	5%	279	11%
Somewhat disagree	52	2%	56	2%
Mostly disagree	91	3%	117	4%
Strongly disagree	111	4%	62	2%
No response	21	1%	28	1%

From the survey, a majority (71 percent) indicated they are concerned about traffic safety (Figure 6). While a majority agreed their friends are concerned about traffic safety (59 percent), results reveal that respondents are not certain their friends’ concerns is as strong as their own. In Figure 6, note that responses were aggregated using:

- Agree = Strongly agree + Mostly agree
- No strong opinion = Somewhat agree + Neither agree nor disagree + Somewhat disagree

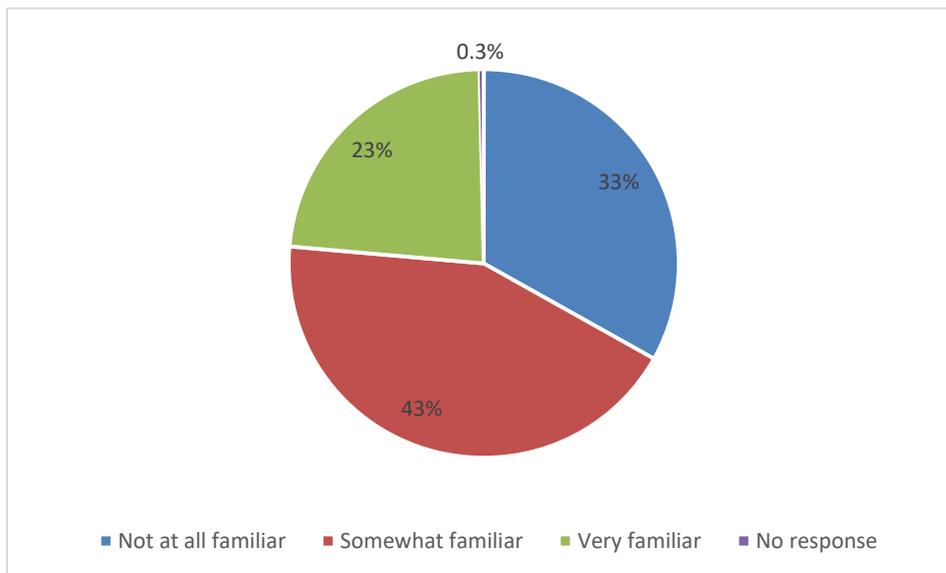
- Disagree = Strongly disagree + Mostly disagree
- No response = No response

Figure 6: General Level of Concern about Traffic Safety



The question asking if the respondents were familiar with Minnesota’s TZD program found that a majority of respondents have some knowledge of TZD; however, a third of survey responses indicated they had no familiarity with TZD (Figure 7).

Figure 7: Familiarity with Minnesota TZD Program



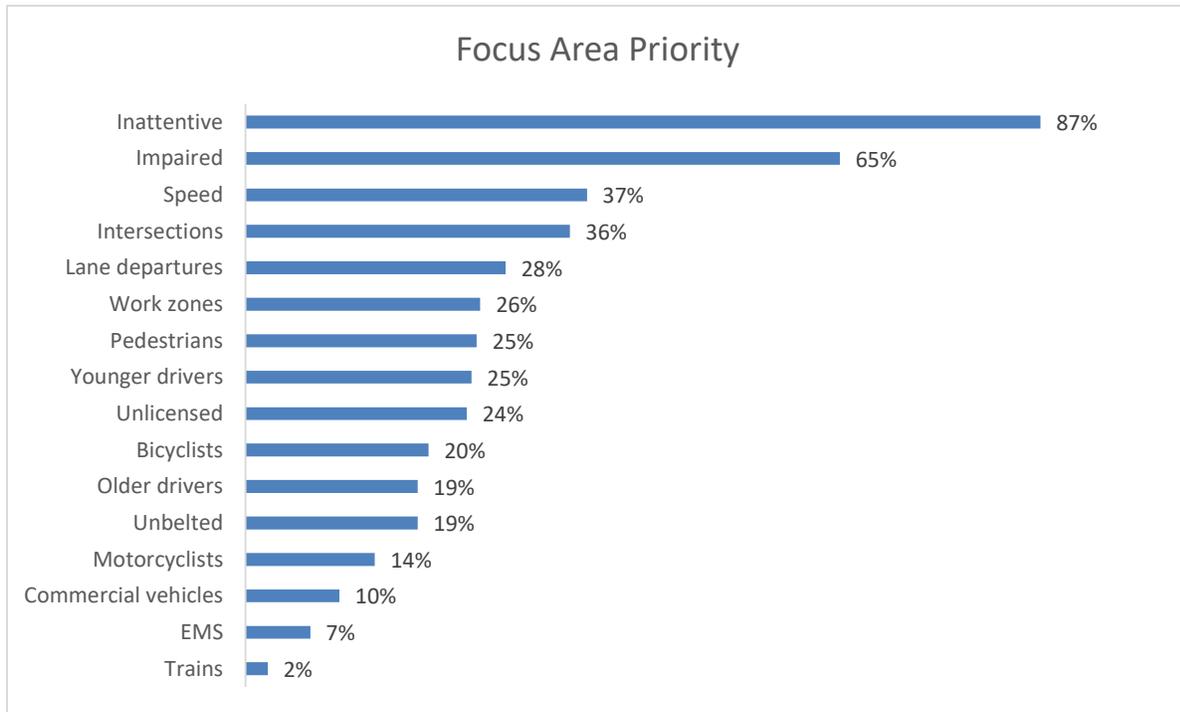
The final question asked each person to select up to five focus areas that are the most important to reducing deaths and serious injuries. Figure 8 displays statewide what percentage of survey respondents

selected each focus area as a top 5 issue. Because more than one focus area could be selected, the percentages do not add up to 100 percent.

Over half of all respondents selected inattentive driving and impaired driving. Across all TZD regions, these were the two most frequently selected focus area indicating strong agreement across the state. Commercial vehicles, emergency medical services (EMS), and trains, while all indicated as lower priorities, also displayed strong agreement across the regions. While most focus areas had a high level of consistency across regions, notable exceptions include:

- Pedestrians and bicyclists ranked higher in the Minneapolis-St. Paul Metro area
- Intersections ranked lower in West Central
- Wide-spread rankings for unlicensed, unbelted and work zones.

Figure 8: Percent of Survey Participants Selecting the Focus Area in the Top 5



TZD Regional Workshops

The project team gathered stakeholder input regarding the prioritization of the focus areas and recommendations for strategies at the 2019 TZD regional workshops. Live polling was used to collect information for the focus area prioritization, and the project team used small group exercises to gather ideas for strategies. Due to inclement weather, the West Central regional workshop was cancelled and stakeholders from the area were encouraged to participate in neighboring regional workshops. See Appendix B for the regional workshop handout materials that were used to provide contextual information and facilitate input from participants at the workshops.

Workshop Participation

Except for the Southeast regional workshop, the project team used live polling to document the breakdown of workshop participants by discipline (Table 4) and employer type (Table 5). The Southeast regional workshop accounts for 133 of the non-responses to each question.

Table 4: Workshop Participants by Discipline

Discipline	Number of Workshop Participants
Education	85
Emergency Medical & Trauma Services	30
Enforcement	114
Engineering	110
Everyone Else	48
No response	209
Grand Total	592

Table 5: Workshop Participants by Employer Type

Employer Type	Number of Workshop Participants
Advocacy group	10
Consulting company	8
Educational institution	20
Federal or state government	179
General public	3
Healthcare	26
Other	8
Private vendor	1
Regional or local government	132
Tribal government	5
No response	200
Grand Total	592

Focus Area Prioritization Activity

The focus area priorities in the most recent (2014) Minnesota SHSP was used as a benchmark to engage workshop participants to assess current focus area priorities and propose potential changes for this SHSP update. The 2014 Minnesota SHSP presented the focus areas in three levels using a target or bullseye symbol. Therefore, the project team created an activity for workshop participants assuming focus areas would remain in one of three levels, as a starting point for gathering input. If stakeholders

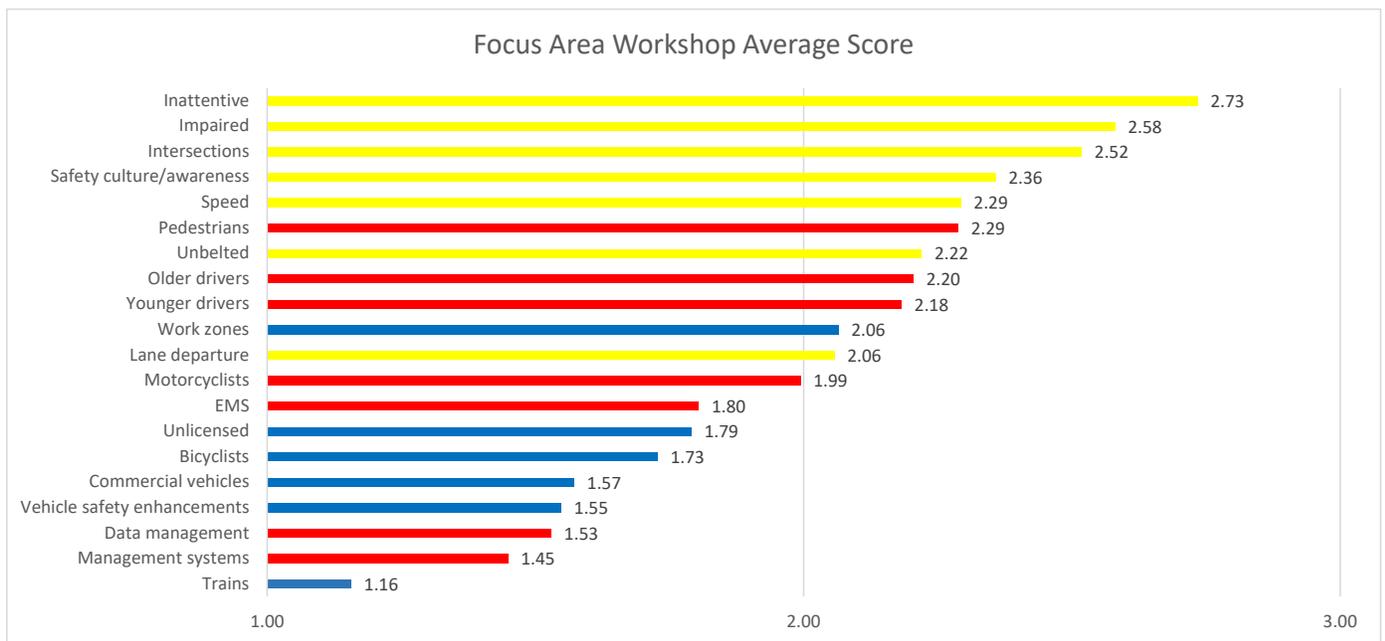
assigned a 3 to a focus area, that indicated highest priority, equivalent to the center of the target. Assigning a 2 to a focus area was equivalent to the middle ring of the target, and assigning a 1 indicated lowest priority, equivalent to the outer ring of the target image.

Figure 9 summarizes all ratings provided by workshop participants. Focus areas at the top are viewed as more important by participants. The color also indicates the placement of the focus area in the 2014 Minnesota SHSP; with yellow indicating the center of the target, followed by red and then blue.

Assuming that three levels are maintained with similar number of focus areas in each level, the activity showed that stakeholders had the following recommendations:

- Pedestrians increase in priority, moving from the middle level to the top level.
- Work zones and unlicensed drivers increase in priority, moving from the lowest level to the middle level.
- Lane departure decreases in priority, moving from the top level to the middle level.
- Data management and management systems decrease in priority, moving from the middle level to the lowest level.

Figure 9: Average Focus Area's Score from Workshop Exercise



Color Key

- Yellow = Top level/priority
- Red = Middle level/priority
- Blue = Lowest level/priority

In terms of regional scores, rankings were highly consistent for:

- Inattentive
- Impaired
- Intersections
- EMS
- Vehicle safety enhancements
- Data management
- Trains

Focus areas with regional scores that showed a wide spread in terms of consistency of rankings include:

- Speed
- Pedestrians
- Unbelted
- Younger drivers
- Work zones
- Lane departure
- Bicyclists

Strategy Identification Activity

The final workshop activity was to identify and prioritize strategies. Participants selected a focus area of their choice, to discuss strategies within a small group. The activity included time to identify an initial list of ideas and then select the top 3 to 5 strategies. Each small group determined their own criteria and method to select the top priority strategies. Results from each small group were recorded individually and also aggregated to create a master list of priority strategies. This included combining identical or similar strategies recommended by multiple small groups. The project team also recorded the number of small groups that placed each strategy in their top list.

2019 TZD Conference

The 2019 TZD Conference was an opportunity to collect a wide spectrum of input for the 2025 interim death and serious injury goals. A basic presentation on the SHSP update was given during the opening plenary session and was immediately followed by live polling where each attendee could suggest a goal. Most responses to the poll occurred during the opening session, but votes could be added throughout the first day at a booth for the SHSP. The booth also included two boards where participants answered questions by voting with dot stickers (Appendix C).

Voting Activity for Death and Serious Injury Goal

A brief presentation provided background information about the SHSP and as well as the number of deaths (Figure 10) and serious injuries (Figure 11) each year from 2005 through 2018. Conference attendees then voted on what they thought was an appropriate goal for 2025. Each question used a slider bar that had a maximum range of 1000. The range allowed for the deaths goal was zero up to 400 while the serious injury goal ranged from 750 up to 1,750.

A total of 581 votes were cast. The most frequent vote was 0 for deaths and 750 for serious injuries. Figure 12 is a histogram of all votes for the deaths goal. The average of all votes is approximately 170 by 2025. Without the zero votes, the average increases to 225. The histogram for the serious injury voting

results is Figure 13. The average of all votes is 970 while the average is 1,070 if votes for 750 are removed.

Figure 10: Minnesota Traffic Deaths since 2005, Trend Lines, and the 2020 Goal for Traffic Deaths

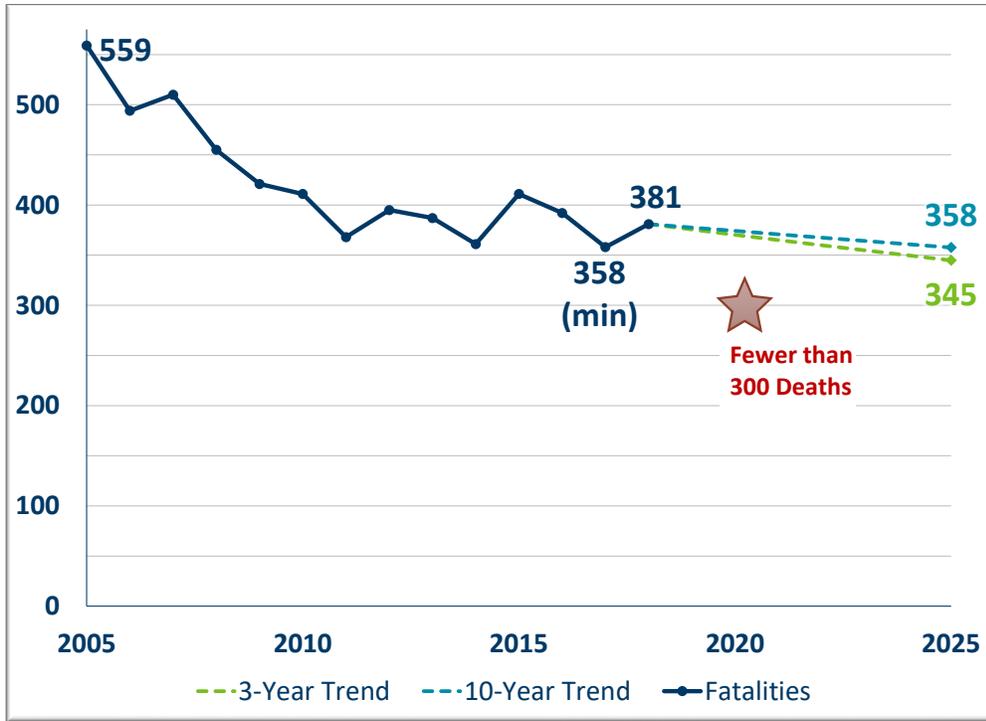


Figure 11: Minnesota Traffic Serious Injuries since 2005, Trend Lines, and the 2020 goal for Serious Injuries

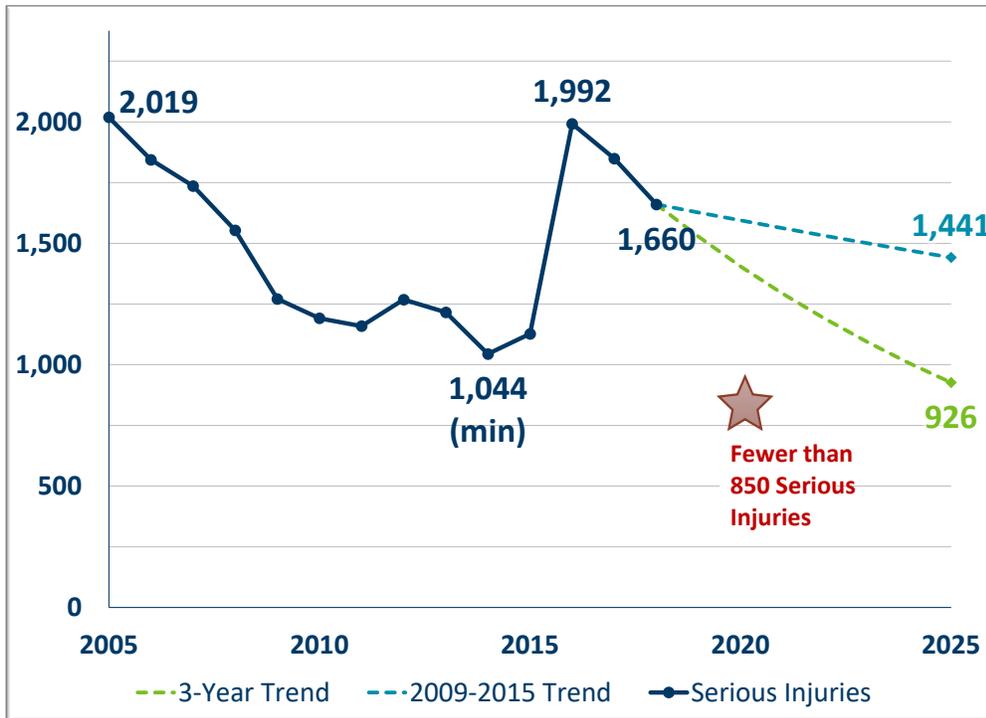


Figure 12: Traffic Deaths Goal Voting Results

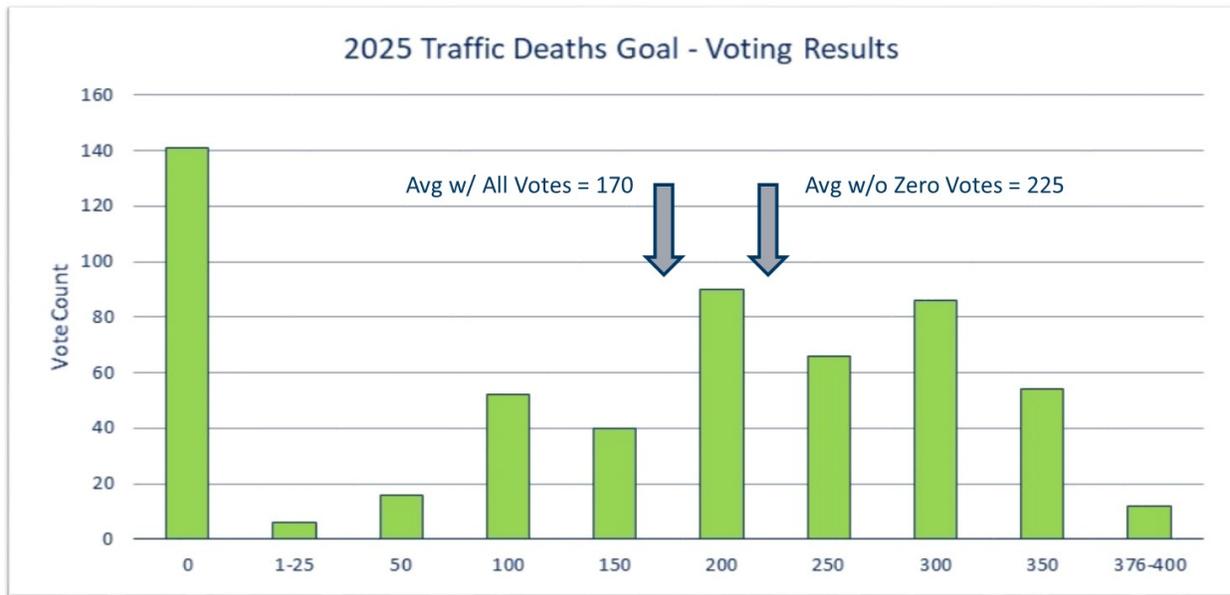
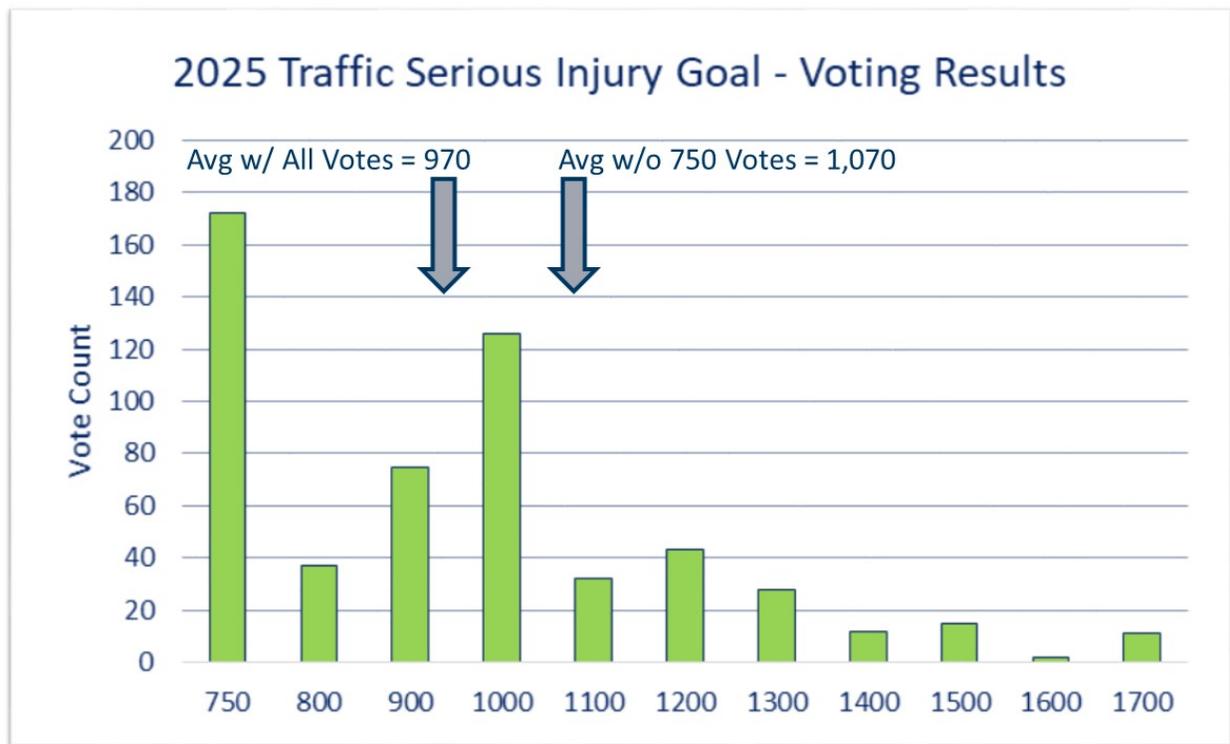


Figure 13: Serious Injury Goal Voting Results



Voting Activities at the SHSP Booth

This activity was designed to gather qualitative input from conference attendees, to supplement data gathered through the voting activity for death and serious injury goals. Approximately 110 conference attendees took part in the voting activity at the SHSP booth. Each person had four dots to answer the following questions:

- BOARD #1: When setting the 2025 goals for fatalities and serious injuries, we should:
 - Set a **conservative** goal OR Set an **aggressive** goal
 - Focus on **recent** trends OR Focus on **long-term** trends
 - Focus on tool and technologies available **today** OR Focus on the potential impact of **future** tools and technologies

- BOARD #2: If you could only allocate resources to one focus area, which do you think represents the greatest potential for lives saved and serious injuries prevented? [Note: Participants could select from one of 16 focus areas.]

The voting results for the first board indicate most supported an aggressive goal based on long-term crash trends and with a focus on the tools and technologies available today (Figure 14). The top five focus area voted based on the greatest potential to save lives and prevent serious injuries is summarized in Figure 15.

Figure 14: Voting Results on Considerations to Set SHSP Goals (Q1-3)

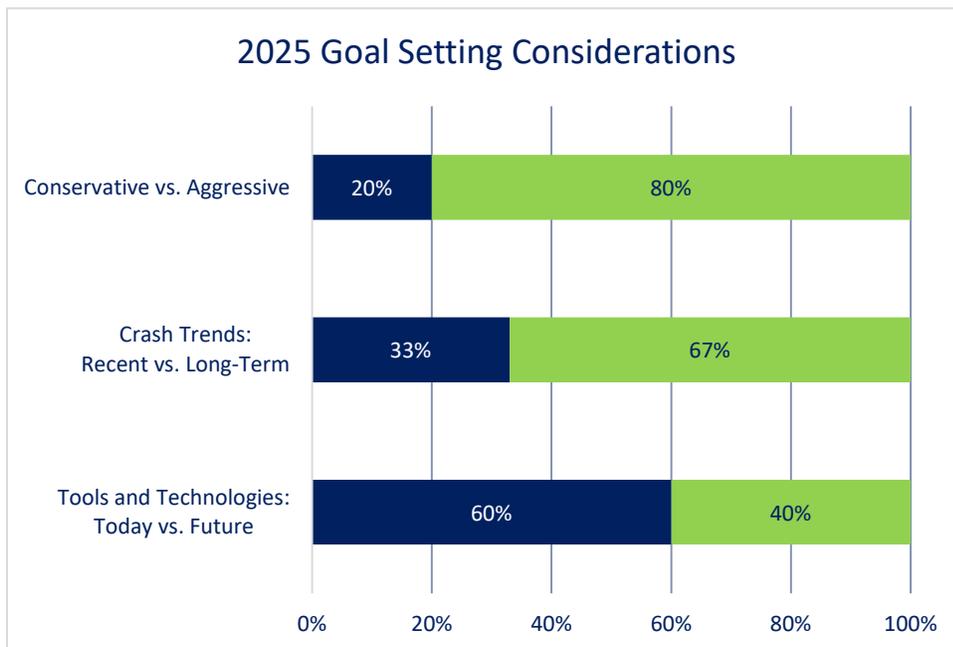
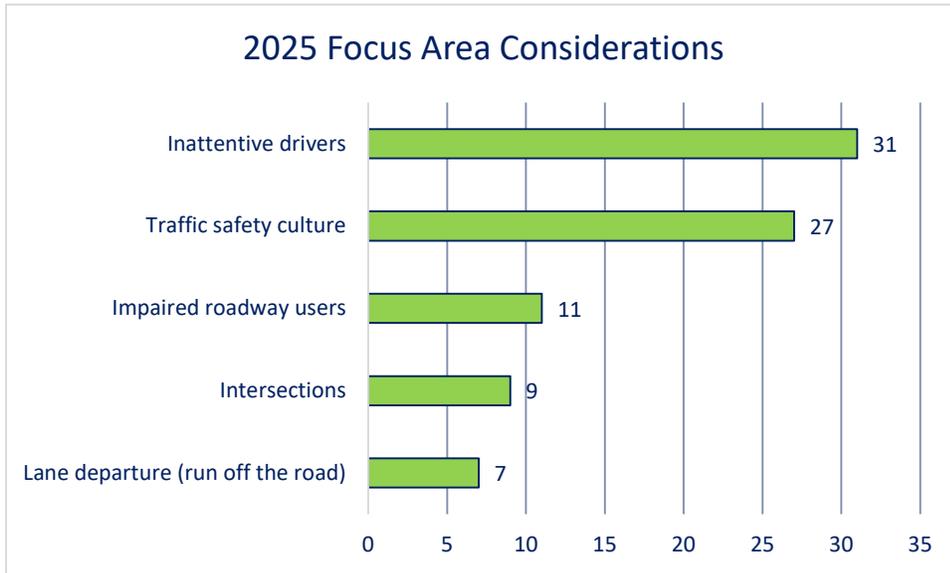


Figure 15: Top 5 Focus Areas Selected (Q4)



Other Stakeholder Engagement

Numerous other engagement activities occurred throughout the SHSP development process. These meetings included a wide range of audiences and purposes. Some engagements were primarily to inform key groups of progress, but at the same time providing an opportunity to give the project team feedback (Table 6). Other engagements were focused on developing and refining the strategies in the SHSP (Table 7).

Table 6: SHSP Outreach Primarily to Inform and Update Stakeholders

Event or Group	Date	Number Stakeholders	Organizations/ Disciplines
MnDOT Planners Management Group (PMG)	10/14/18	11	MnDOT E's: Engineering, Education
2018 MN TZD Conference: TZD Listening Session	10/23/18	58	MN State Patrol, local law enforcement, MnDOT, counties, academia, consultants, MN Dept of Health, MN DPS, traffic safety advocacy, driver education. E's: All (Education, Engineering, Enforcement, Emergency and Trauma Services)
2018 TZD Conference: SHSP Update Session	10/23/18	56	
2019 Minnesota County Engineers Association (MCEA) Conference	1/23/19	200	Counties (county engineers), consultants E's: Engineering
MPO Planning Directors	Feb 5, 2019	26	MnDOT, FHWA, MN Pollution Control Agency, and MPOs (Twin Cities Met Council, Duluth-Superior MIC, St. Cloud APO Rochester-Olmsted COG, La Crosse Planning Committee) E's: Engineering, Education
Metropolitan Council Transportation Advisory Board (TAB)	May 15, 2019	29	Metropolitan Council, Anoka County, Dakota County, Ramsey County, Scott County, Washington County, City of Cottage Grove, City of Minneapolis, City of Chaska, City of Apple Valley, City of Blaine, City of Eagan, MnDOT, MN Pollution Control Agency, Metropolitan Airport Commission, Citizen Members, Transportation Mode Members (Transit, Freight, and Non-motorized.) E's: Engineering, Education

Event or Group	Date	Number Stake-holders	Organizations/ Disciplines
Advocacy Council for Tribal Transportation (ACTT)	May 16, 2019	16 ACTT members and guests	<p>ACTT Members:</p> <ul style="list-style-type: none"> - Fond Du Lac - Mille Lacs Band - Grand Portage - Leech Lake - Red Lake (2) - Cass County - MN Indian Affairs Council (MIAC) - MnDOT - Bureau of Indian Affairs (BIA) - USFS <p>Members' guests:</p> <ul style="list-style-type: none"> - Red Lake Engineering Tribal Roads (4) - Red Lake Community Action Program (1) <p><i>E's: Education, Engineering</i></p>
Metropolitan Council	Fall 2019	TBD	<p>9/26 – Brad Utecht meeting with Met Council staff with review of draft strategies and tactics</p> <p>11/6: Met Council Technical Advisory Committee (TAC)</p> <p>11/14: Met Council TAC Planning Committee</p> <p>11/20: Met Council Transportation Advisory Board (TAB)</p> <p><i>E's: Engineering, Education</i></p>

Table 7: SHSP Outreach Primarily to Gather Input on Strategies

Event or Group	Date	Number Stakeholders	Organizations/ Disciplines
TZD Program Team	July 10, 2019	31	TZD program team composition: All 4 Es represented
TZD Law Enforcement Liaisons (LEL) and Regional Coordinators Meeting	July 10, 2019	13	Org's represented on TZD LEL/Regional Coordinators Group: MnDOT, MN Dept of Health, MN Dept of Public Safety, University of MN Es: Enforcement, Education, Engineering
Meeting with Col. Langer, MN State Patrol	August 8, 2019	2	MN State Patrol Es: Enforcement
Agency outreach to gather priority strategies: MnDOT, DPS, MDH	July/Aug 2019	Varied	MnDOT, MN Dept of Public Safety, MN Dept of Health Es: Enforcement, Education, Engineering
Advocacy Council for Tribal Transportation (ACTT)	October 25, 2019	15-20 estimated	ACTT Members: <ul style="list-style-type: none"> – Fond Du Lac – Mille Lacs Band – Grand Portage – Leech Lake – Red Lake (2) – Cass County – MN Indian Affairs Council (MIAC) – MnDOT – Bureau of Indian Affairs (BIA) – USFS Members' guests: <ul style="list-style-type: none"> – Red Lake Engineering Tribal Roads (4) – Red Lake Community Action Program (1) E's: Education, Engineering

Engagement with the TZD Leadership Team

Acting as the SHSP Steering Committee, the TZD Leadership Team performed three important functions during the formation of the SHSP. These include grouping and defining the focus areas, guiding the development of strategies in the SHSP, and setting the 2025 traffic deaths and serious injury goals. In all three cases, the TZD Leadership Team considered the historic crash data in combination with feedback provided during the public and stakeholder engagement. A description of the process and key considerations is summarized in the following sections.

Focus Area Prioritization

Key Input and Information: Crash trends by focus area (Figures 1-5), public survey responses for top 5 focus areas (Figure 8), workshop activity results (Figure 9).

The TZD Leadership Team considered the organization of the focus areas in the 2014 Minnesota SHSP. They determined the 2020-2024 Minnesota SHSP would not present the focus areas in levels that created a ranking. Instead, the focus areas were grouped based on various criteria. The Core group reflects focus areas that have historically been central to Minnesota's efforts to reduce traffic deaths and serious injuries. It was considered important to acknowledge and retain the core to Minnesota's TZD program. A second group was as Strategic in their growing importance. The emerging importance might be due to rising numbers of deaths and serious injuries, desire of stakeholders to see a greater emphasis placed on the focus area, or a need to identify new strategies for focus areas that have proven difficult to reduce. Several focus areas tend not to fit into the core and strategic groups; however, there is tendency for the related crashes to involve other focus areas. Therefore, several focus areas were placed into a Connected group given the correlation these crashes have with other focus areas. The process also recognized several focus areas are solutions instead of a type of crash and were placed into a Support Solutions category. Above and surrounding all of the focus areas is the state's traffic safety culture. The leadership team recognized that how Minnesota residents view traffic safety influences all other focus areas. So the traffic safety culture is not placed into a group, but spans across all groups.

The process to form the groups began with a presentation to the full TZD Leadership Team. There was extensive conversation but no final decision was reached before the end of the meeting. The TZD Leadership Team agreed the project team would meet with the co-chairs. The co-chair meeting identified the groups and which focus area falls in each group. The co-chairs and project team presented the focus area groups to the full TZD Leadership Team at their following meeting. The discussion with the TZD Leadership Team resulted in approval of the organization.

Strategy Development

Key Input and Information: Regional workshop strategies

Even after the project team combined similar strategies from different workshop small groups, there were still hundreds of strategy recommendations to consider. To prioritize strategies, the TZD project team performed an activity with the TZD Leadership Team. In the activity, each member of the TZD

Leadership Team used a green highlighter to mark the ideas they thought were essential to include in the SHSP. The project team used the votes to select the strategies that remained. The project team then organized and grouped the strategies, with associated tactics, for further review and consideration. The list of strategies and tactics went through several rounds of review, including the TZD Leadership Team, subject experts within state agencies, and state agency leaders.

The TZD Leadership Team then prioritized and selected the final strategies and tactics for the 2020-2024 Minnesota SHSP. Additionally, they designated priority strategies that would be a high focus over the life of the plan. Finally, the TZD Leadership Team selected year one priority tactics that will begin during the first year of implementation.

2025 SHSP Goals

Key Input and Information: Historic crash trends for traffic deaths and serious injuries, voting at TZD conference booth (Figure 14), live polling for 2025 deaths (Figure 12) and serious injury (Figure 13) goals at TZD conference

The TZD Leadership Team reviewed the voting results from the annual conference stakeholders. The previous years' death totals (2005-2018) and the projected values for 2025 based on 3-year and 10-year trend lines were also reviewed. The discussion initially focused on the traffic death goal voting results. While zero was the top vote, the TZD Leadership Team felt that the TZD vision covers this. The conversation then turned to what is an aggressive, yet reasonable interim goal for 2025. Based on the most recent year, the selected interim goal was no more than 225 by 2025. It was agreed this goal reflects the stakeholder input to be aggressive, considers long-term trends in data, and focuses on the tools and technology available today. To select the serious injury goal, the decision was to have the same percent reduction as the traffic deaths goal. Based on 2018 data, no more than 980 serious injuries by 2025 was chosen.

Implementation Guidance

Framework for Action Plan Updates

Implementing the SHSP is critical to reducing the number of people killed and injured on Minnesota roadways. The year one action plans are department commitments to champion new initiatives in 2020 as part of the state's drive to save lives and prevent injuries. For future years of the plan, the TZD Leadership Team committed to supporting SHSP implementation by monitoring progress, tracking successes, helping to identify resources as needed, fostering collaboration among implementers, and identifying priority actions for years 2-5 of the plan. This will include aligning the TZD program priorities with the SHSP implementation priorities throughout the life of the plan. Furthermore, the TZD Leadership Team will identify if action plans or action teams are needed for each commitment. This will include finding individuals that can champion tactics and actions. This may involving writing new action plans or chairing an action team as well as providing updates to the TZD Leadership Team.

Year One Action Plans

Action plans for the year one priority tactics are included in the Minnesota SHSP Action Plan Report. Table 8 is the action plan template filled out for each year one priority tactic.

Table 8: Action Plan Template

TOPIC	DETAILS
Lead Agency	
Primary Partners	
Primary E	
Funding Source	
Outcome Performance Measures	
Deployment Goal	
Key Steps or Action Items	
Secondary Focus Areas	

Strategy Matrix

In the 2020-2024 Minnesota SHSP, each strategy and tactics is listed under a single focus area. However, some strategies and tactics may reduce crashes in other focus areas because crashes often involve more than one focus area. Crash data was reviewed to understand which focus areas are commonly reported in the same crashes resulting in a death or serious injury. With this information, a matrix was developed to summarize how tactics may also reduce crashes in other focus area. The strategy matrix is available in Appendix D.

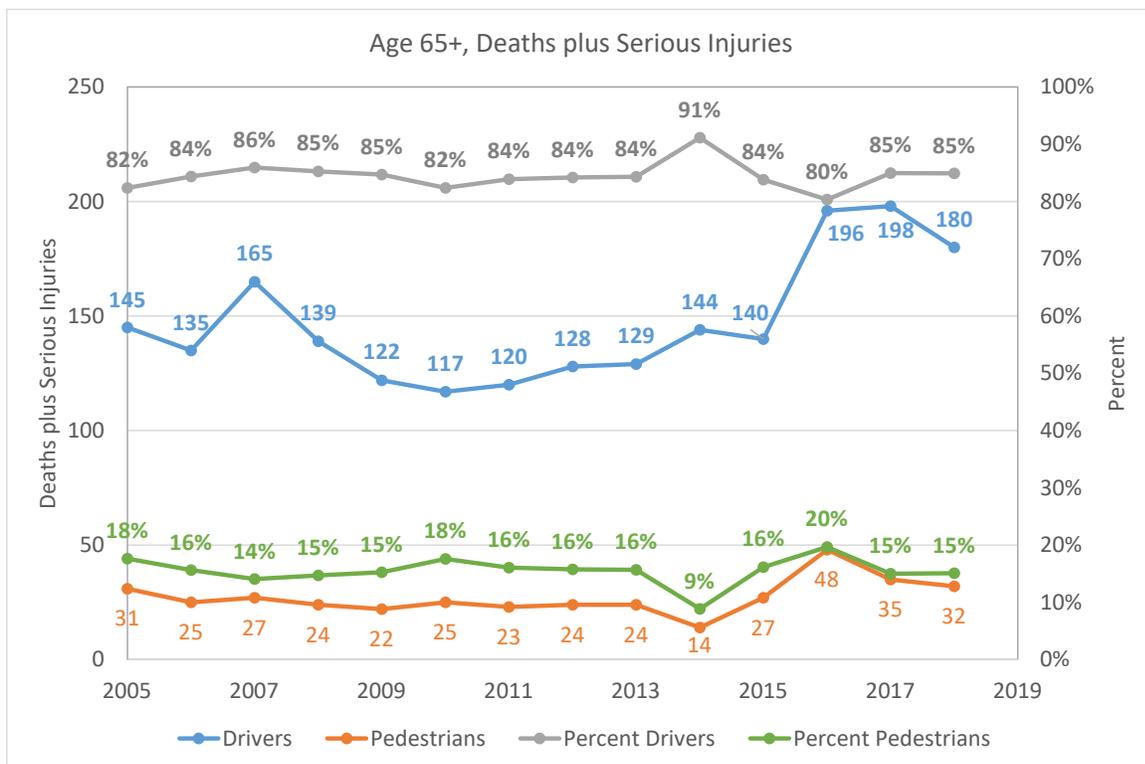
Older Driver and Older Pedestrian Supporting Data

When performing the annual calculation for the MAP-21 Special Rule for Older Drivers and Pedestrians, FHWA’s evaluation found that this special rule applies to Minnesota for FY2019. The calculation is a 5-year rolling average of older driver and older pedestrian death and serious injury rates over a 2-year spread. The rates are calculated per capita (i.e., population based rate). FHWA obtains population figures for persons 65 years of age and older per 1,000 total population from the U.S. Census. FHWA obtains the number of deaths from the FARS database while serious injuries are reported by states in the HSIP Annual report. FHWA’s calculation was based on crash data through 2017. Therefore, the

comparison was the 2017 5-year rolling average (crash and population data from 2013-2017) compared to the 2015 5-year rolling average (crash and population data from 2011-2015).

As recommended by FHWA, MnDOT reviewed state data (Figure 16) to determine whether the increase in the rate is attributable to driver deaths and injuries, pedestrian deaths and injuries, or a combination of the two. The increase in rate that triggered the special rule was a proportional increase in drivers and pedestrians. Going back as far as 2005, older drivers consistently account for 85 percent (range is 80 to 91 percent) while older pedestrians account for 15 percent (range is 9 to 20 percent) of older driver/pedestrian deaths and serious injuries. In fulfillment of the special rule requirements, 2020-2024 Minnesota SHSP includes a set of strategies and tactics to reduce crashes involving pedestrians and older drivers.

Figure 16: Older Driver and Older Pedestrian Deaths and Serious Injuries



Appendix A

Focus Area Trend Analysis

Analysis of Minnesota SHSP Focus Area Trends
2009-2018 Fatal and Serious Injury Crashes

I. GENERAL DESCRIPTION

Looking over the past 10 years of fatal and serious injury crashes in Minnesota, we are looking at whether trends in prevalence are rising or falling. This is conducted via a linear regression followed by a T-test on whether the coefficient for slope is equal to zero.

II. RAW INPUTS

YEAR	KA	N01_ YOUNG	N02_ UNLIC	N03_ OLDER	N04_ SPEED	N05_ IMPAR	N06_ UBELT	N07_ INATT	N08_ PEDNM	N09_ BIKES	N10_ MCYCL	N11_ TRUCK	N12_ TRAIN	N13_ SVROR	N14_ HOSSO	N15_ INTER	N16_ WRKZN
2009	1,407	292	135	208	270	314	343	245	125	52	231	135	6	480	171	596	26
2010	1,338	259	141	189	224	305	295	266	121	53	229	163	1	432	156	589	22
2011	1,288	258	137	193	248	318	305	243	128	63	224	116	6	462	141	502	23
2012	1,393	216	136	211	237	347	308	239	142	55	262	133	5	469	139	564	18
2013	1,338	219	130	220	256	285	289	256	125	56	219	133	7	450	170	549	21
2014	1,186	192	113	233	213	230	231	221	99	41	190	129	11	357	149	489	20
2015	1,307	200	155	228	236	272	249	218	144	55	239	123	2	408	152	543	23
2016	2,059	318	329	339	421	514	297	242	262	91	351	157	5	655	216	994	40
2017	1,902	320	284	356	400	537	278	209	257	63	319	192	7	602	206	946	45
2018	1,734	276	292	314	382	480	272	164	239	58	276	145	5	547	188	861	43

III. PREVALENCES

YEAR	KA	N01_ YOUNG	N02_ UNLIC	N03_ OLDER	N04_ SPEED	N05_ IMPAR	N06_ UBELT	N07_ INATT	N08_ PEDNM	N09_ BIKES	N10_ MCYCL	N11_ TRUCK	N12_ TRAIN	N13_ SVROR	N14_ HOSSO	N15_ INTER	N16_ WRKZN
2009	100%	21%	10%	15%	19%	22%	24%	17%	9%	4%	16%	10%	0%	34%	12%	42%	2%
2010	100%	19%	11%	14%	17%	23%	22%	20%	9%	4%	17%	12%	0%	32%	12%	44%	2%
2011	100%	20%	11%	15%	19%	25%	24%	19%	10%	5%	17%	9%	0%	36%	11%	39%	2%
2012	100%	16%	10%	15%	17%	25%	22%	17%	10%	4%	19%	10%	0%	34%	10%	40%	1%
2013	100%	16%	10%	16%	19%	21%	22%	19%	9%	4%	16%	10%	1%	34%	13%	41%	2%
2014	100%	16%	10%	20%	18%	19%	19%	19%	8%	3%	16%	11%	1%	30%	13%	41%	2%
2015	100%	15%	12%	17%	18%	21%	19%	17%	11%	4%	18%	9%	0%	31%	12%	42%	2%
2016	100%	15%	16%	16%	20%	25%	14%	12%	13%	4%	17%	8%	0%	32%	10%	48%	2%
2017	100%	17%	15%	19%	21%	28%	15%	11%	14%	3%	17%	10%	0%	32%	11%	50%	2%
2018	100%	16%	17%	18%	22%	28%	16%	9%	14%	3%	16%	8%	0%	32%	11%	50%	2%

IV. REGRESSION ANALYSIS

Using a linear model with alpha = 5%

/ALPHA .05	N01_ YOUNG	N02_ UNLIC	N03_ OLDER	N04_ SPEED	N05_ IMPAR	N06_ UBELT	N07_ INATT	N08_ PEDNM	N09_ BIKES	N10_ MCYCL	N11_ TRUCK	N12_ TRAIN	N13_ SVROR	N14_ HOSSO	N15_ INTER	N16_ WRKZN
slope (est)	-0.0052	0.0078	0.0048	0.0038	0.0045	-0.0114	-0.0104	0.0055	-0.0006	-0.0006	-0.0019	0.0000	-0.0036	-0.0009	0.0094	0.0008
s.e. (est)	0.00158	0.0019	0.0013	0.0015	0.003	0.0016	0.0025	0.0013	0.0006	0.0011	0.0013	0.0003	0.0015	0.001	0.0033	0.0003
r-squared	0.57078	0.6795	0.6201	0.4618	0.216	0.8698	0.6855	0.6963	0.1315	0.0421	0.216	0.0016	0.4011	0.0927	0.5048	0.4518
df	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
T	1.85955	1.8595	1.8595	1.8595	1.8595	1.8595	1.8595	1.8595	1.8595	1.8595	1.8595	1.8595	1.8595	1.8595	1.8595	1.8595
T*	-3.2617	4.1188	3.6137	2.6199	1.4845	-7.3093	-4.1757	4.2829	-1.1004	-0.5926	-1.4848	-0.1139	-2.3147	-0.904	2.8557	2.5677
Hyp. Alt.	T* < - t(a,n-2)	T* > t(a,n-2)	T* > t(a,n-2)	T* > t(a,n-2)	T* > t(a,n-2)	T* < - t(a,n-2)	T* < - t(a,n-2)	T* > t(a,n-2)	T* < - t(a,n-2)	T* > t(a,n-2)	T* > t(a,n-2)					
Results	< 0	> 0	> 0	> 0	= 0	< 0	< 0	> 0	= 0	= 0	= 0	= 0	< 0	= 0	> 0	> 0

V. RESULTS

Focus Area	Result	Interpretation
N02_UNLIC	> 0	Trending Up
N03_OLDER	> 0	Trending Up
N04_SPEED	> 0	Trending Up
N08_PEDNM	> 0	Trending Up
N15_INTER	> 0	Trending Up
N16_WRKZN	> 0	Trending Up
N05_IMPAR	= 0	Steady
N09_BIKES	= 0	Steady
N10_MCYCL	= 0	Steady
N11_TRUCK	= 0	Steady
N12_TRAIN	= 0	Steady
N14_HOSSO	= 0	Steady
N01_YOUNG	< 0	Trending Down
N06_UBELT	< 0	Trending Down
N07_INATT	< 0	Trending Down
N13_SVROR	< 0	Trending Down

Appendix B

Regional Workshop Handout Materials

Definition of SHSP Focus Areas

Regional Fact Sheets

Large Group Activity: Priority Focus Area Verification Worksheet

Small Group Activity: Instructions and Worksheets for Strategy and Champion Brainstorming

Comment Form



Focus Area Priorities

The current Strategic Highway Safety Plan (SHSP) identifies 20 focus areas, representing the key factors that contribute to motor vehicle crashes and provide context for setting future traffic safety priorities.



Statewide Crash Data Trends



No data



Trending Up



Steady



Trending Down



Bicyclists

All persons riding a bicycle on a street, trail, bike lane or sidewalk who are struck by a motor vehicle.



Impaired roadway users

Persons using the road who are under the influence of alcohol, illicit drugs or prescription drugs.



Commercial vehicles

Vehicles weighing over 10,000 pounds, including any commercial vehicle or bus.



Inattentive drivers

Drivers who are not focusing on the task of driving because of distractions, such as talking on the phone or texting.



Data management

Fundamental data and systems used to evaluate traffic safety. Crash, vehicle, driver, roadway, citation/adjudication, and injury surveillance are fundamental data elements identified for use in highway safety performance measurement. Data management also includes metadata, data quality parameters and effective application of data in decision making.



Intersections

Crashes that occur where two or more roadways intersect.



EMS & trauma systems

All response and emergency treatment systems involved in caring for victims of traffic crashes.

Lane Departures

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

Head on:



Run off the road:





Management systems

Traffic safety governance is divided among multiple agencies including transportation, public safety and health. Management systems encompass the policies, processes and management approaches that integrate engineering, education, enforcement, emergency services and other disciplines.



Motorcyclists

Drivers and passengers on motorcycles.



Older Drivers

Drivers who are over 64 years of age. The number of older drivers will continue to increase as the “baby boomer” generation ages and continues to drive.



Pedestrians

All persons walking, exiting from vehicles or operating a mobility assistance device (e.g. wheel chair) on public roadways who are struck by a motor vehicle.



Speed

Drivers who are driving aggressively, over the posted speed limit or too fast for conditions. The probability of death or serious injury grows with higher speed at impact.



Traffic safety culture & awareness

Traffic safety culture can be defined as the values, beliefs, frames, norms and attitudes shared by a group of people that influence individual decisions regarding driving behaviors and safety interventions.



Trains

Motor vehicle crashes involving trains.



Unbelted occupants

Drivers or passengers who are not restrained in the appropriate fashion based on age or weight.



Unlicensed drivers

Drivers who are without a license or with a license that has been suspended, revoked, expired or canceled.



Vehicle safety enhancements

Select features in vehicles that can be added or optimized to provide increased safety for vehicle occupants. Such features may include airbags, stability control or lane departure alert. This also includes emerging connected and automated vehicle technology.



Work zones

Crashes occurring in, or related to, a roadway work zone.



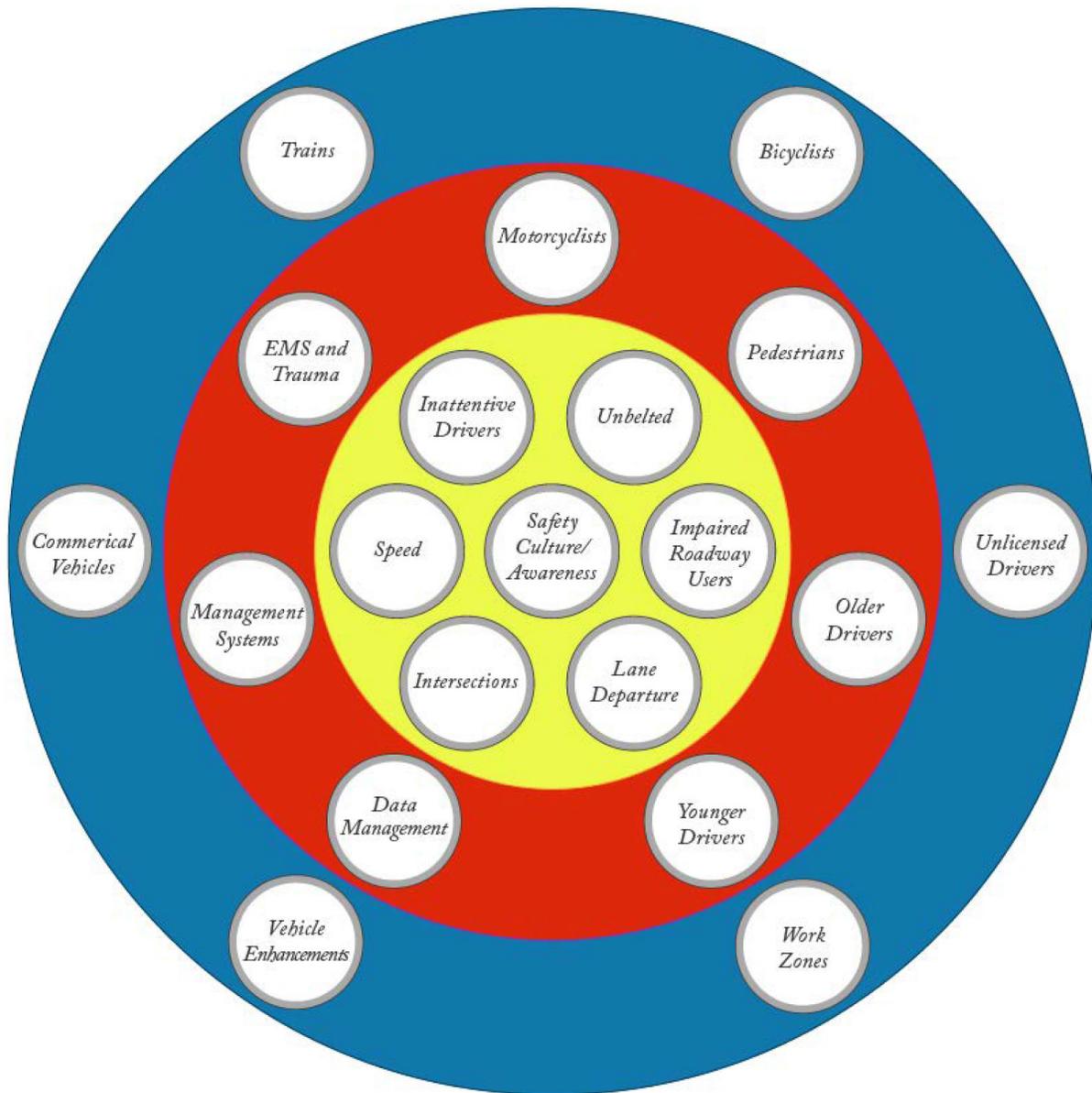
Younger drivers

Drivers who are under 21 years of age. Newly licensed drivers with less than a year’s experience are particularly vulnerable to crashes. A lack of driving experience and a tendency toward risk taking also contribute to crashes involving younger drivers.



Focus Area Priorities

The SHSP uses the image of a target to emphasize the importance of considering all focus areas while also acknowledging that some focus areas will naturally require higher priority than others. Higher priority focus areas, for example, are given some preference when it comes to resources. More emphasis is also placed on tracking the performance of higher priority areas.





Regional Summary: East Central Region

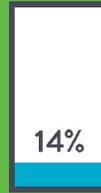


335 fatal and 851 severe injury crashes

occurred in the East Central Region

Most East Central Region fatal and serious injury crashes occurred in Stearns County (18%), followed by Wright (16%) and Sherburne (16%) Counties

Regional Crash Data from 2014 - 2018.



Approximately 14 percent

(1186 out of 8188) of all fatal and serious injury crashes occurred in the East Central Region



Focus Areas

These 5 focus areas account for the most **fatal and serious injury crashes** regionally:

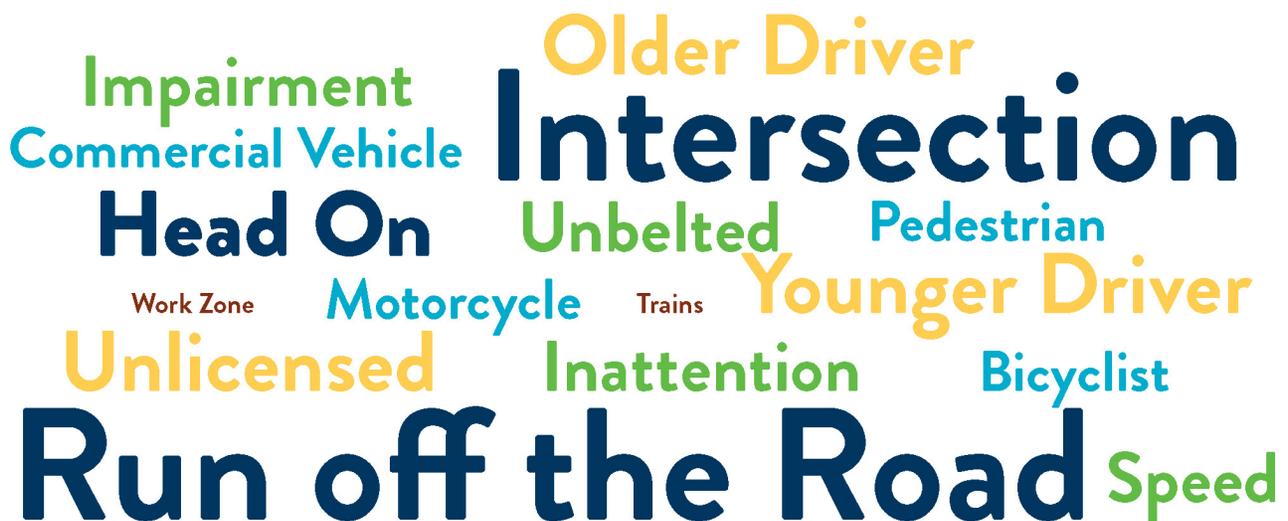
- Intersections (42%)
- Run off the Road (35%)
- Impairment (26%)
- Speed (20%)
- Older drivers (20%)

All are also statewide top focus areas.



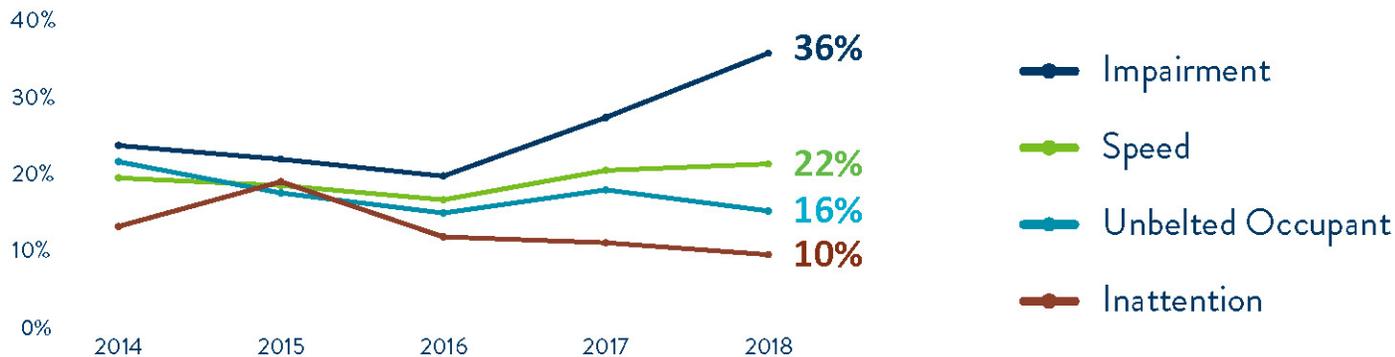
Regional Focus Area Summary

The size of the words or phrases represent the number of fatal or serious crashes in the region.





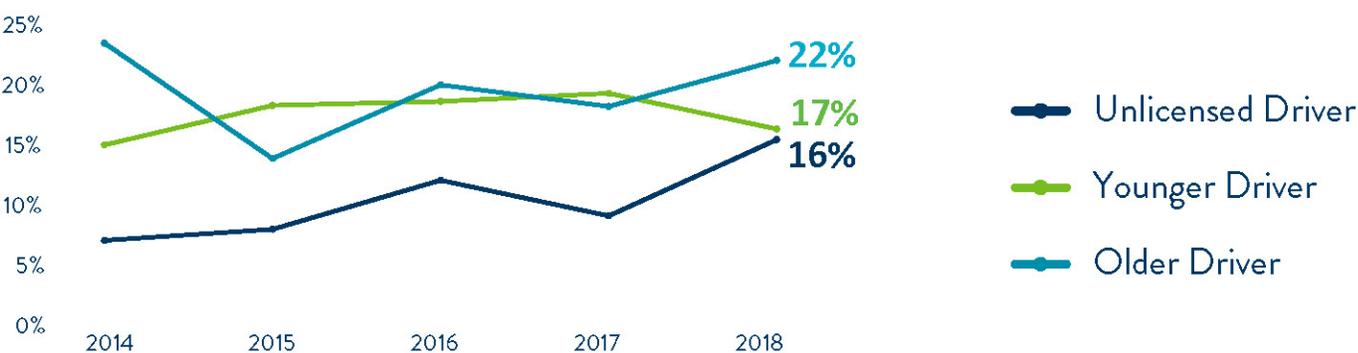
BEHAVIORS



MODES



DRIVERS



ENGINEERING



COMPLEX ENVIRONMENTS





Regional Summary: Metro Region

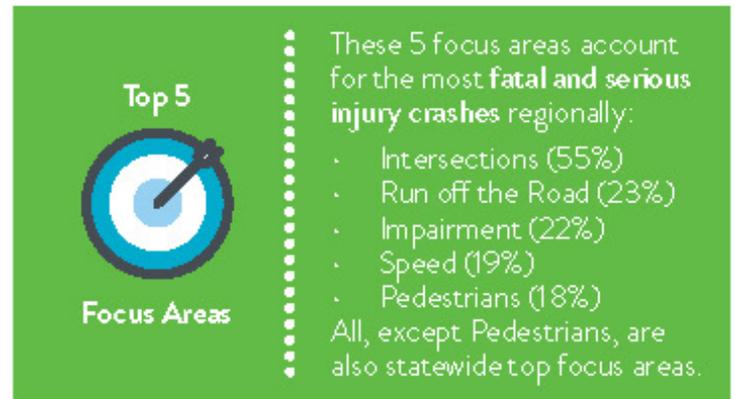


562 fatal and 3,183 severe injury crashes

occurred in the Metro Region

Most Metro Region fatal and serious injury crashes occurred in Hennepin County (43%), followed by Ramsey (15%) and Anoka (13%) Counties

Regional Crash Data from 2014 - 2018.



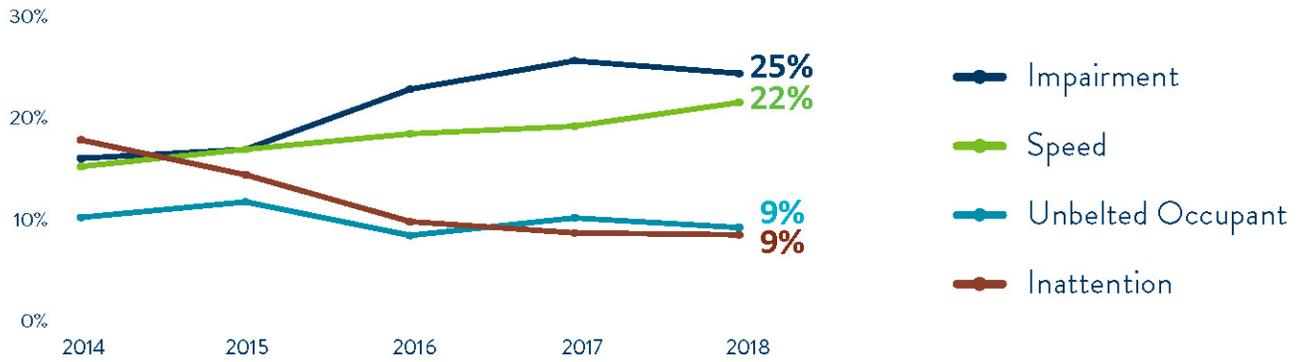
Regional Focus Area Summary

The size of the words or phrases represent the number of fatal or serious crashes in the region.

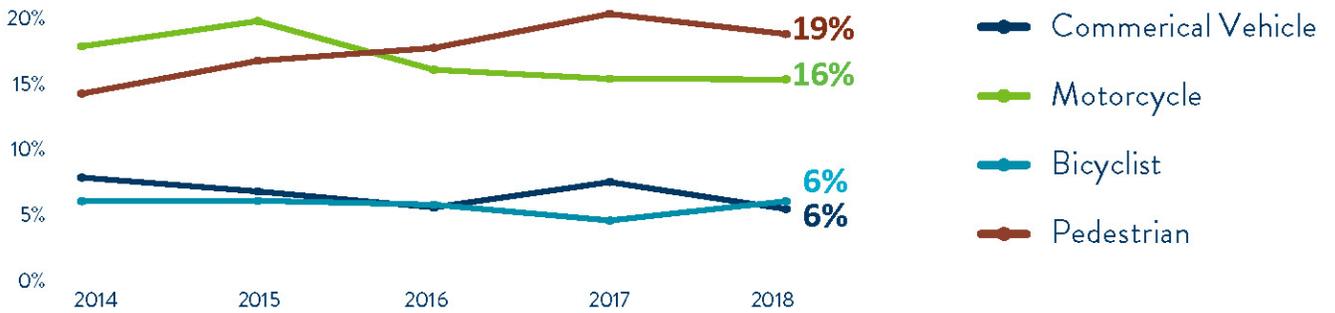




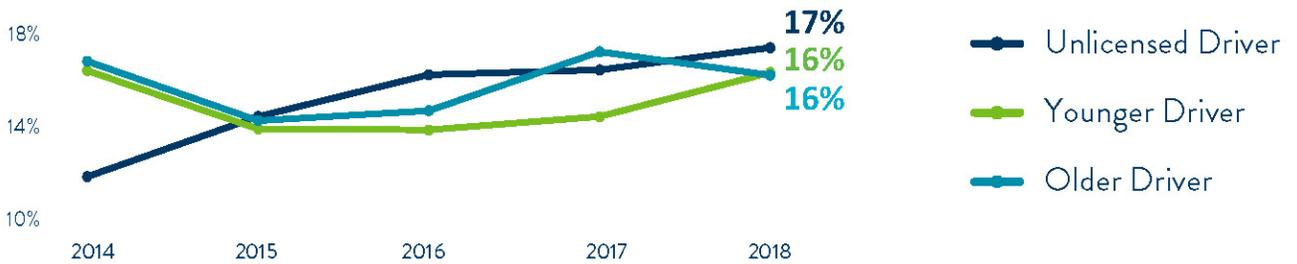
BEHAVIORS



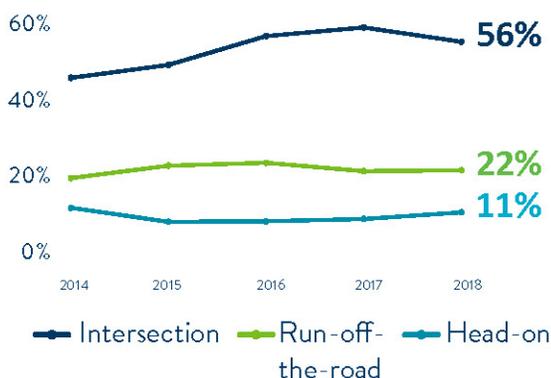
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DRIVERS



ENGINEERING



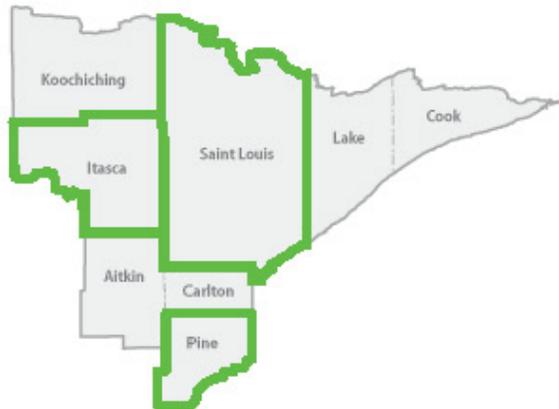
COMPLEX ENVIRONMENTS





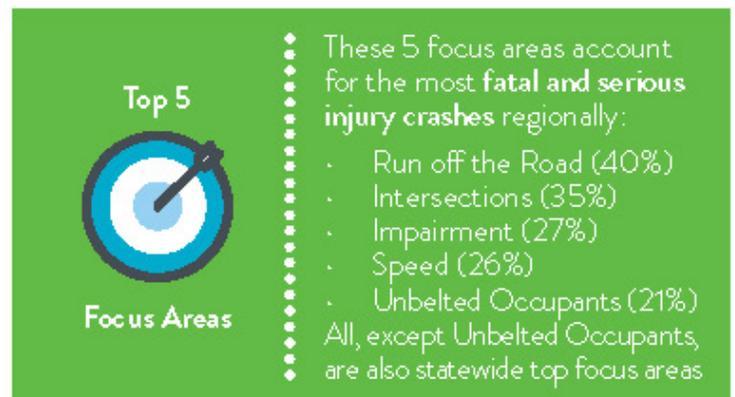
Regional Summary: Northeast Region

182 fatal and 485 severe injury crashes occurred in the Northeast Region



Most Northeast Region fatal and serious injury crashes occurred in St. Louis County (43%), followed by Pine (15%) and Itasca (14%) Counties.

Regional Crash Data from 2014 - 2018.



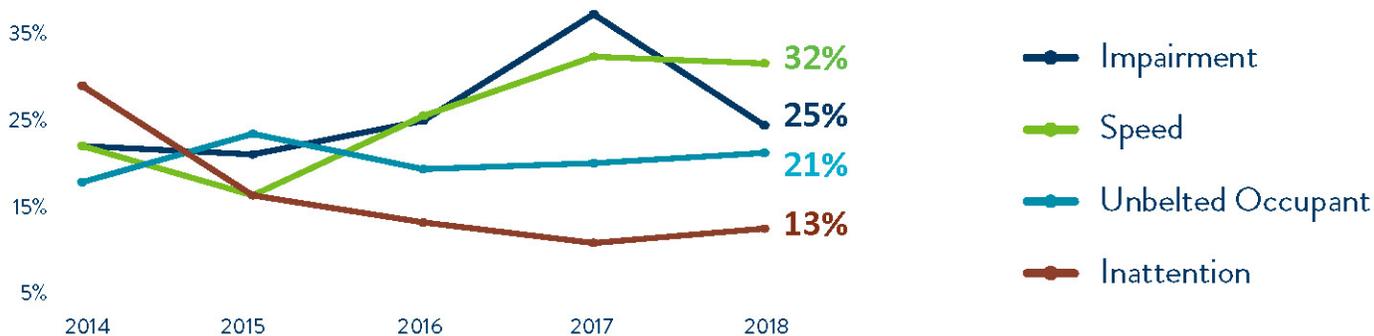
Regional Focus Area Summary

The size of the words or phrases represent the number of fatal or serious crashes in the region.





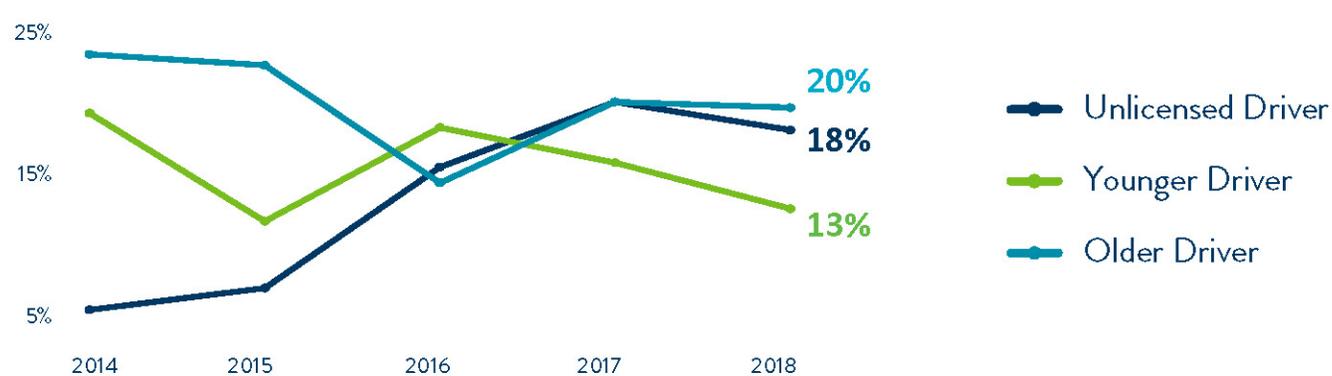
BEHAVIORS



MODES



DRIVERS



ENGINEERING



COMPLEX ENVIRONMENTS

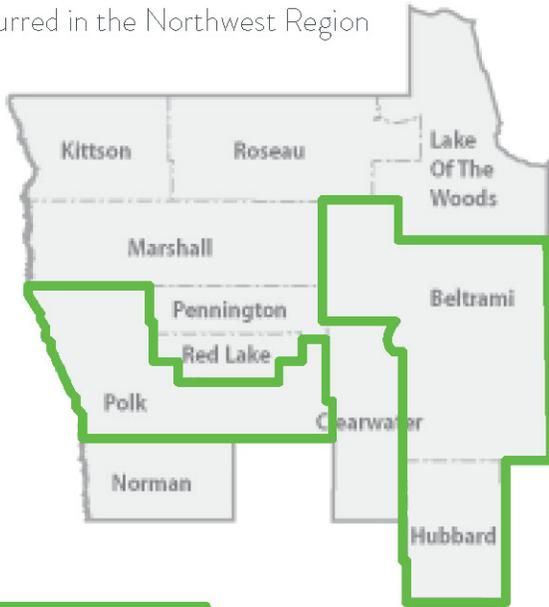




Regional Summary: Northwest Region

99 fatal and 215 serious injury crashes

occurred in the Northwest Region



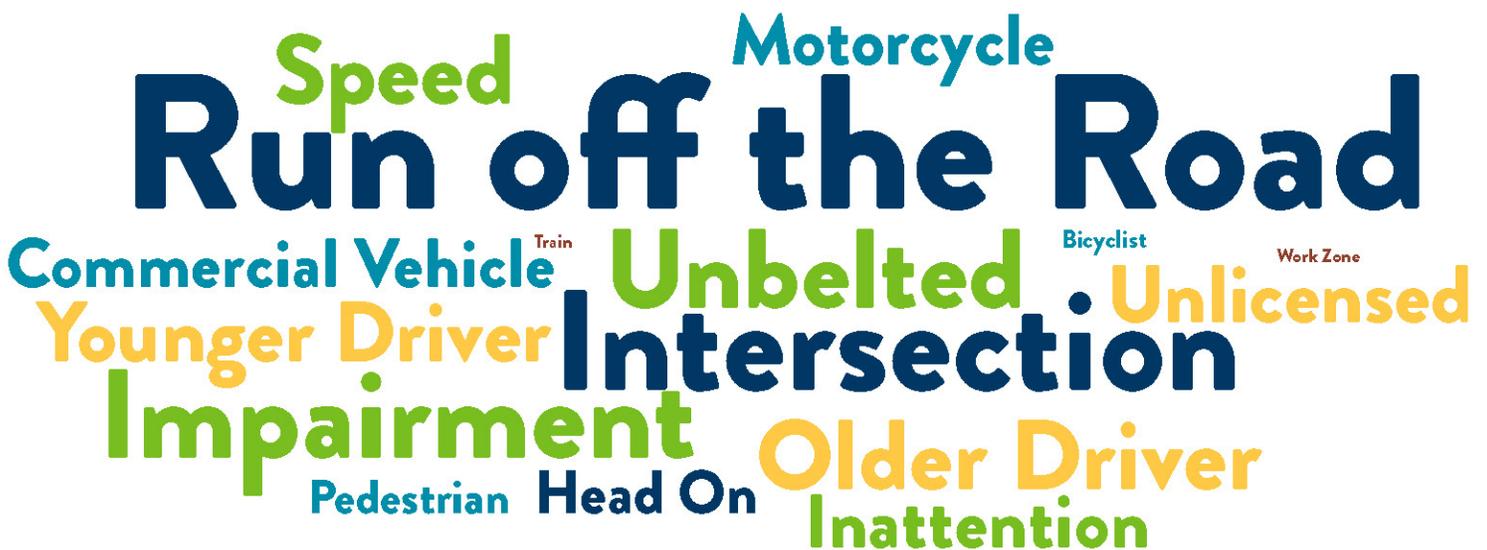
Most Northwest Region fatal and serious injury crashes occurred in Beltrami (28%), Polk (20%), and Hubbard (16%) Counties.

Regional Crash Data from 2014 - 2018.



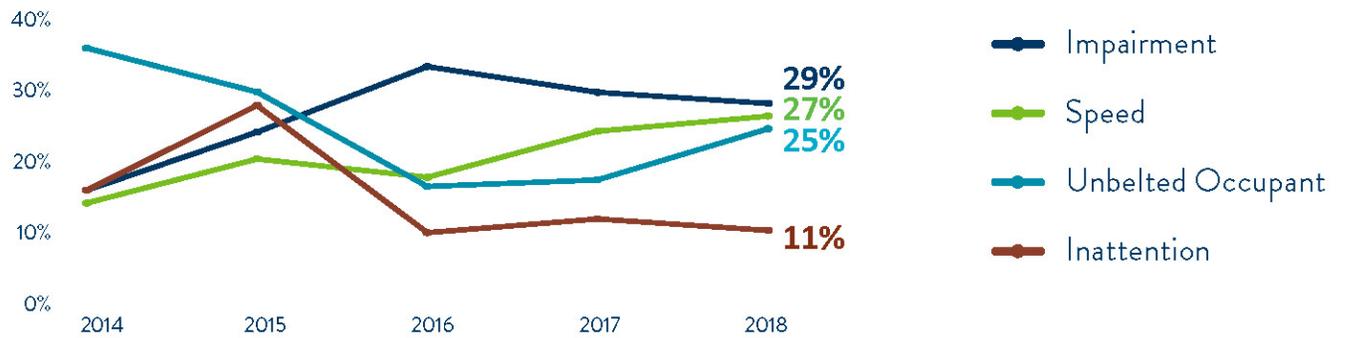
Regional Focus Area Summary

The size of the words or phrases represent the number of fatal or serious crashes in the region.

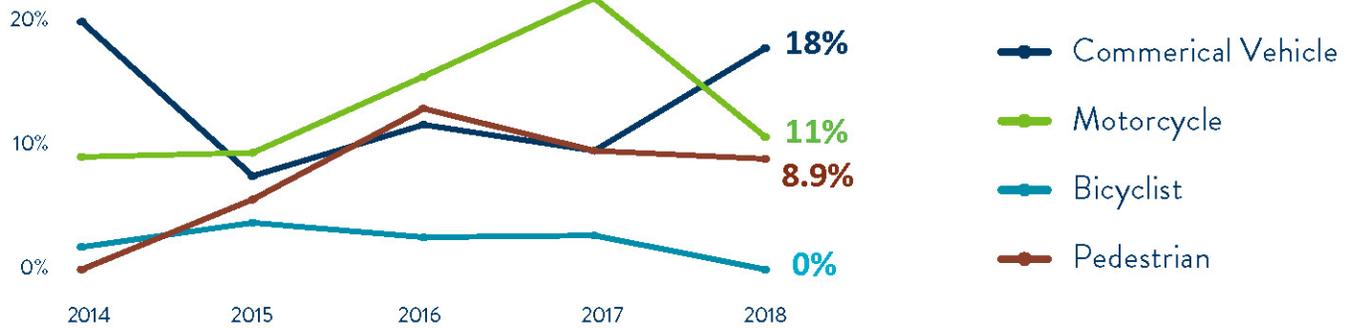




BEHAVIORS



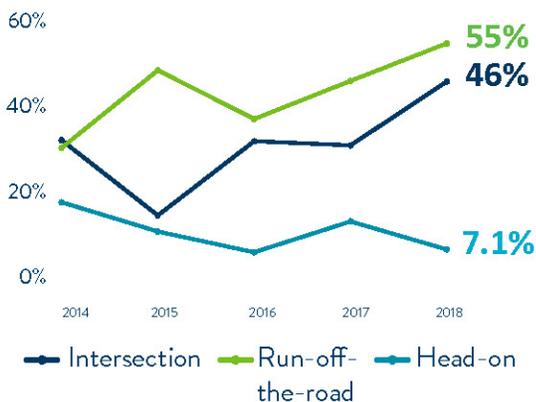
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ENGINEERING



COMPLEX ENVIRONMENTS

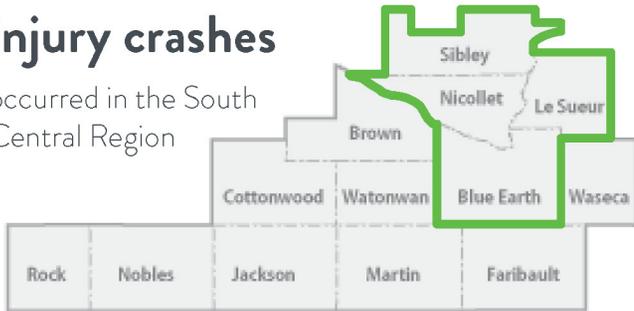




Regional Summary: South Central Region

139 fatal and 406 serious injury crashes

occurred in the South Central Region



Most South Central Region fatal and serious injury crashes occurred in Blue Earth (21%), Sibley (9%), Nicollet (9%), and Le Sueur (9%) Counties.

Regional Crash Data from 2014 - 2018.



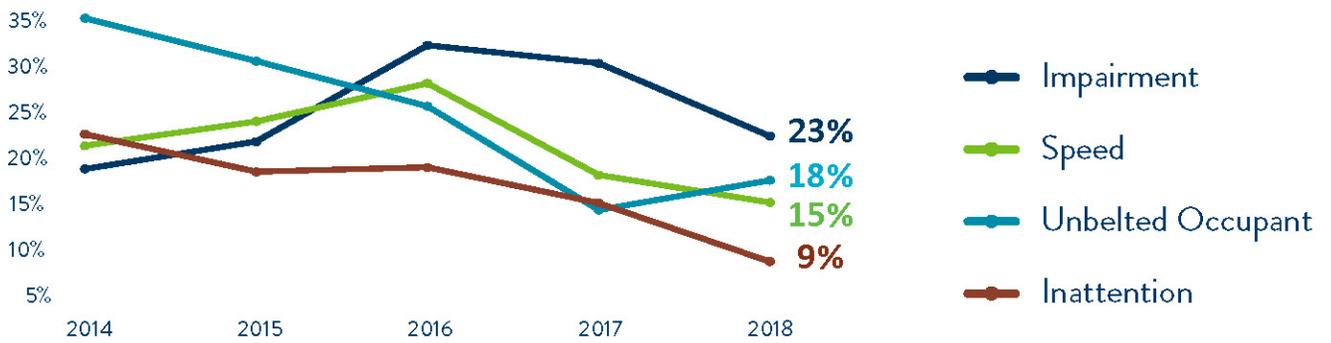
Regional Focus Area Summary

The size of the words or phrases represent the number of fatal or serious crashes in the region.

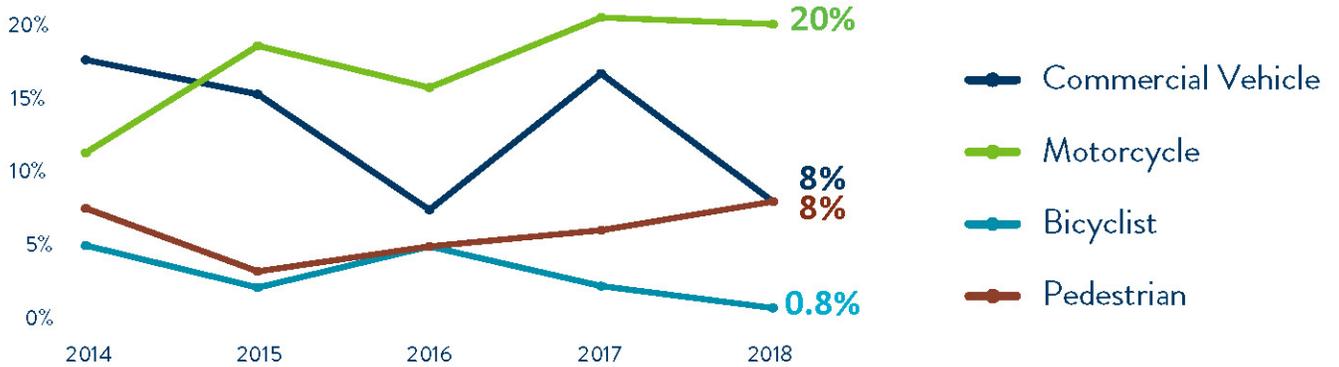




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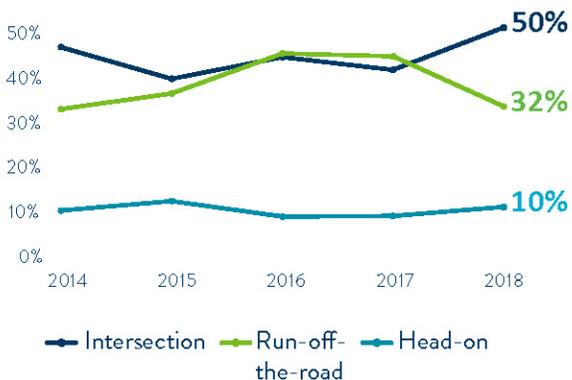
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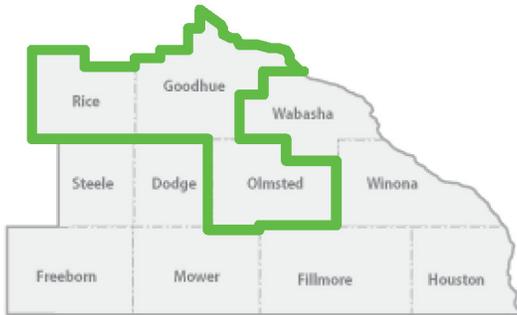




Regional Summary: Southeast Region

198 fatal and 633 severe injury crashes

occurred in the Southeast Region



Most Southeast Region fatal and serious injury crashes occurred in Olmsted County (26%), followed by Rice (13%) and Goodhue (12%) Counties.

Regional Crash Data from 2014 - 2018.



Approximately **10 percent**

(831 out of 8188) of all fatal and serious injury crashes occurred in the Southeast Region



Focus Areas

These 5 focus areas account for the most **fatal and serious injury crashes** regionally:

- Intersection (41%)
- Run off the Road (36%)
- Impairment (24%)
- Motorcycle (19%)
- Older driver (19%)

All, except motorcycle, are also statewide top focus areas.



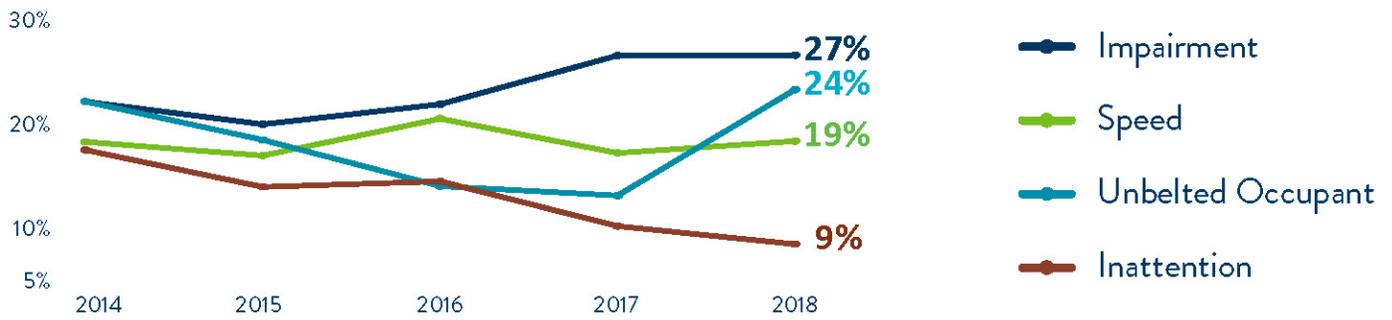
Regional Focus Area Summary

The size of the words or phrases represent the number of fatal or serious crashes in the region.

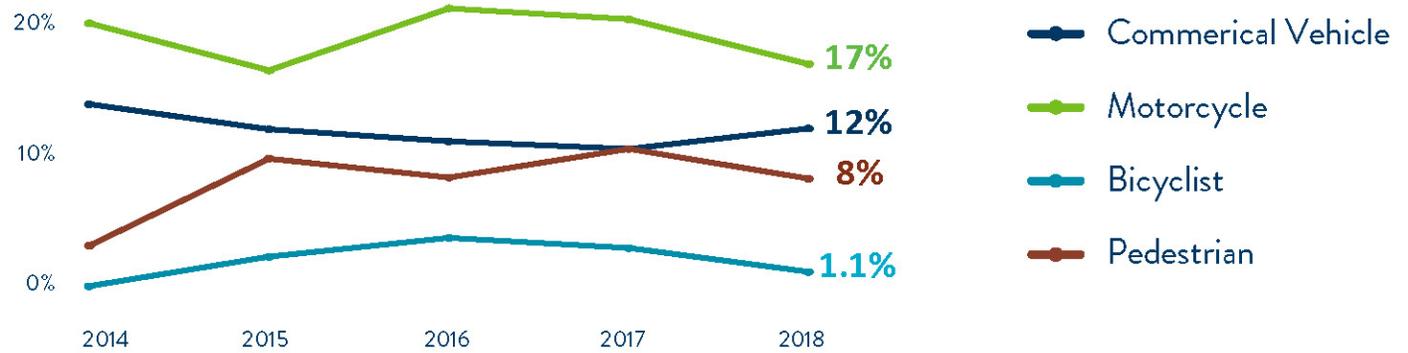




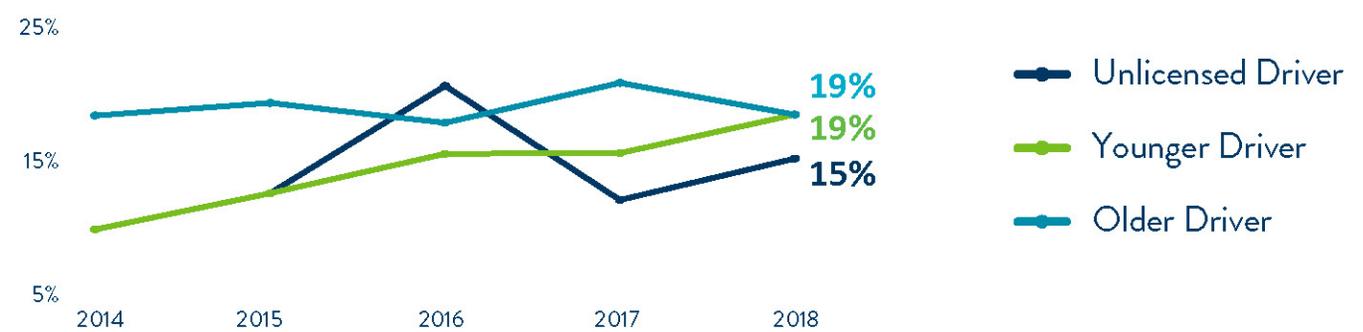
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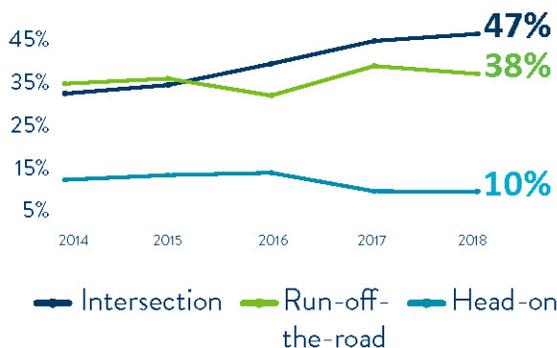
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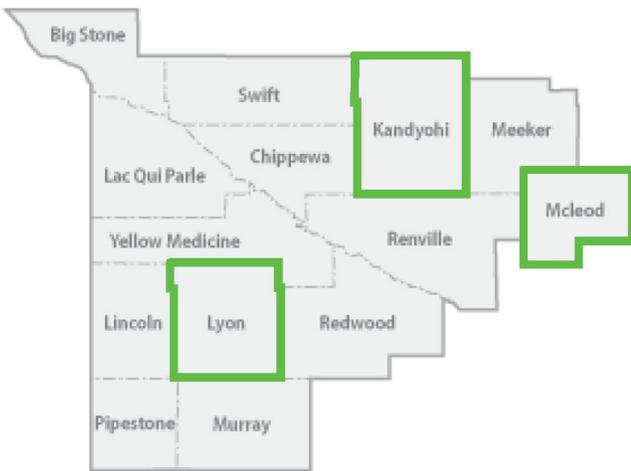




Regional Summary: Southwest Region

134 fatal and 338 serious injury crashes

occurred in the Southwest Region



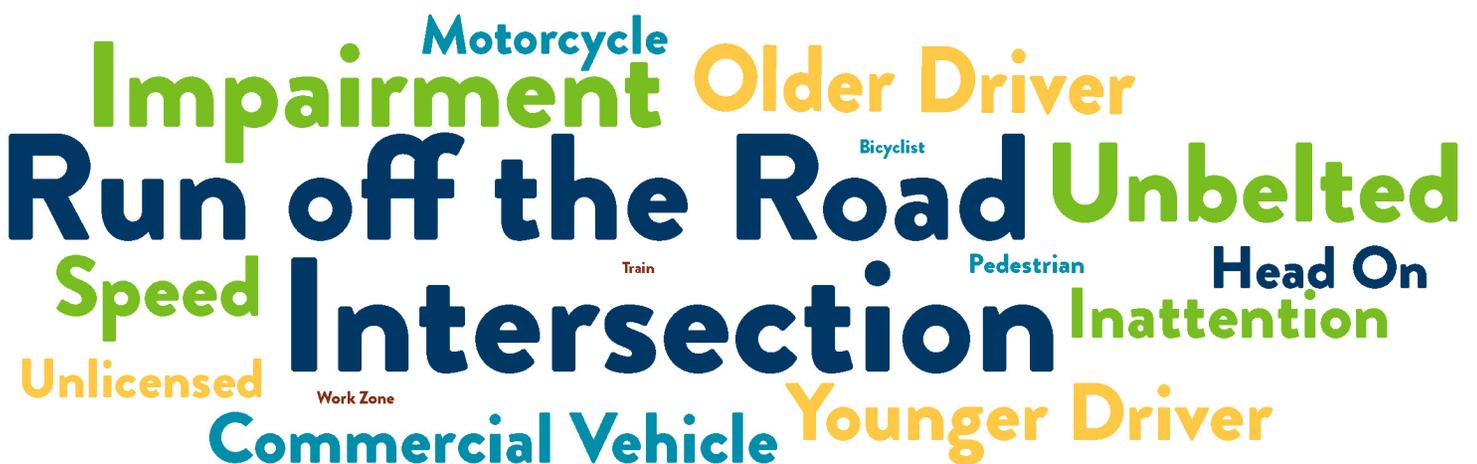
Most Southwest Region fatal and serious injury crashes occurred in Kandiyohi (19%), McLeod (14%), and Lyon (11%) Counties.

Regional Crash Data from 2014 - 2018.



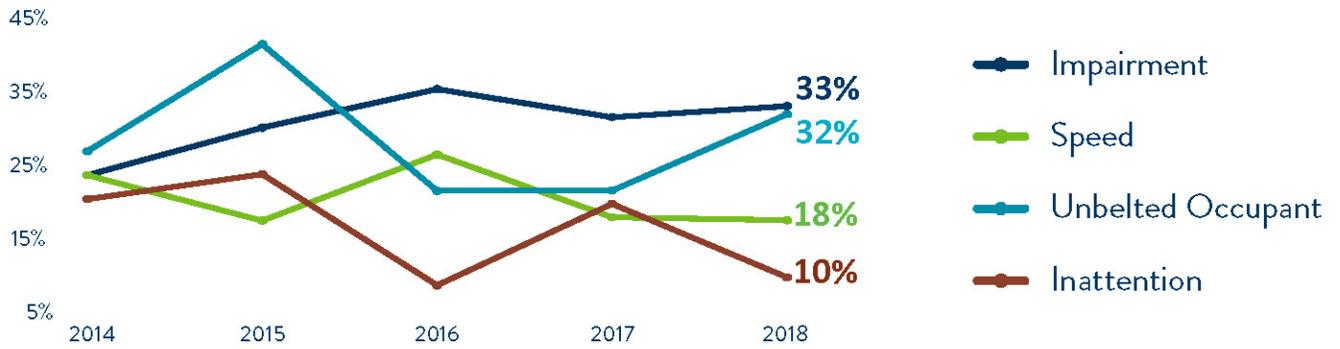
Regional Focus Area Summary

The size of the words or phrases represent the number of fatal or serious crashes in the region.

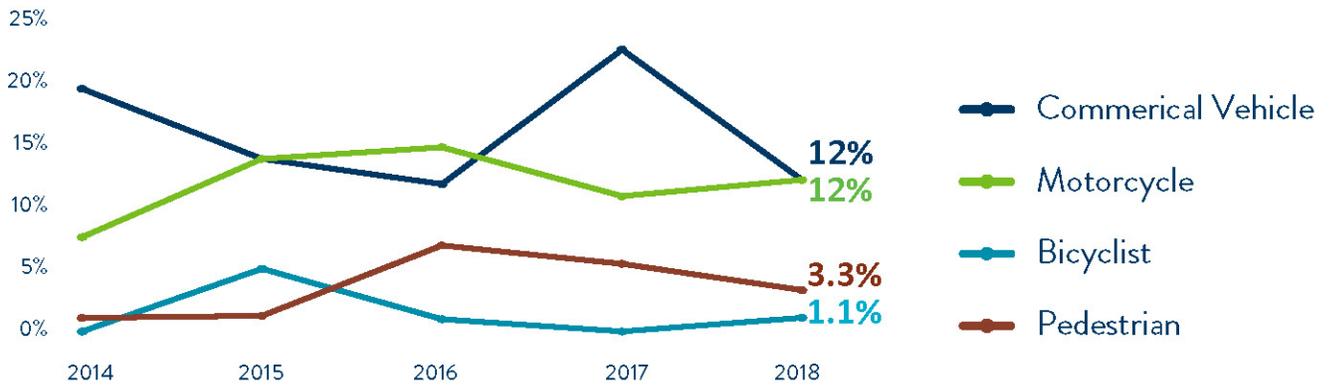




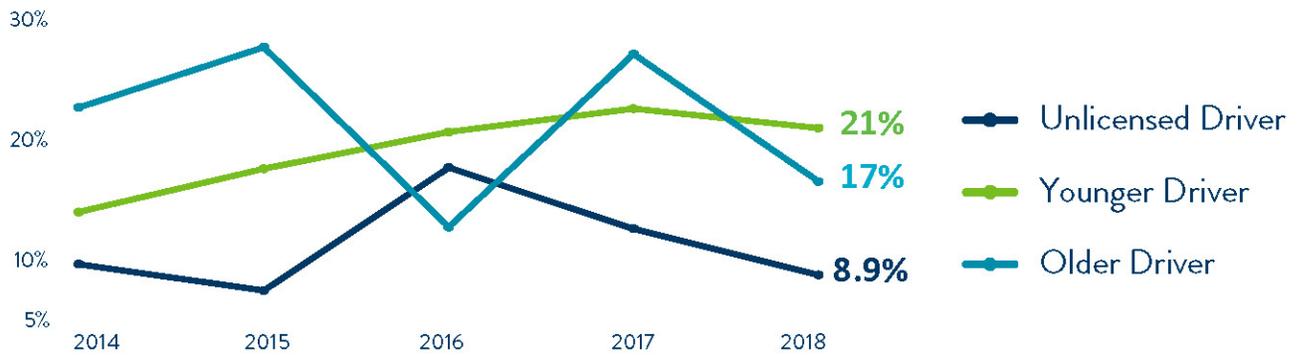
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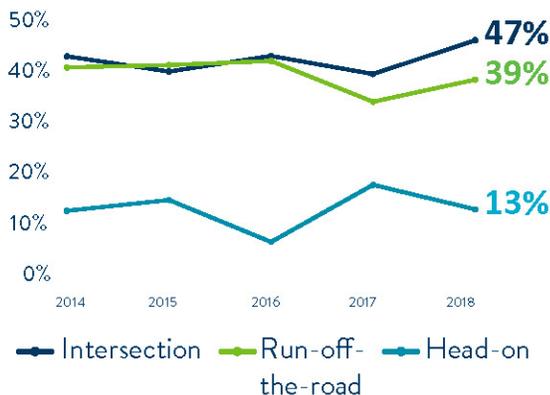
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Regional Summary: West Central Region

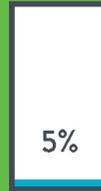


96 fatal and 332 serious injury crashes

occurred in the West Central Region

Most West Central Region fatal and serious injury crashes occurred in Otter Tail County (27%), followed by Becker (19%) and Douglas (19%) Counties

Regional Crash Data from 2014 - 2018.



Approximately 5 percent

(428 out of 8188) of all fatal and serious injury crashes occurred in the West Central Region



Focus Areas

These 5 focus areas account for the most **fatal and serious injury crashes** regionally:

- Run of the Road (47%)
- Intersections (35%)
- Impairment (32%)
- Unbelted (27%)
- Speed (27%)

All are also statewide top focus areas.



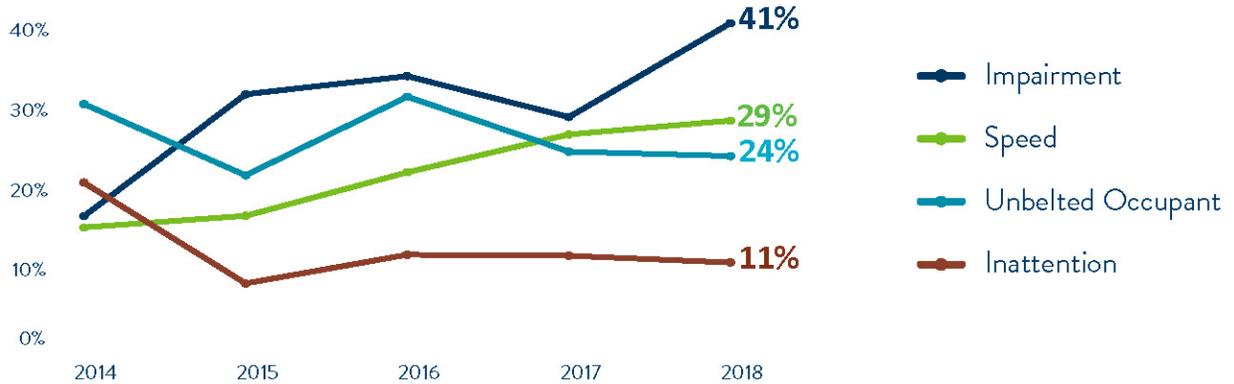
Regional Focus Area Summary

The size of the words or phrases represent the number of fatal or serious crashes in the region.

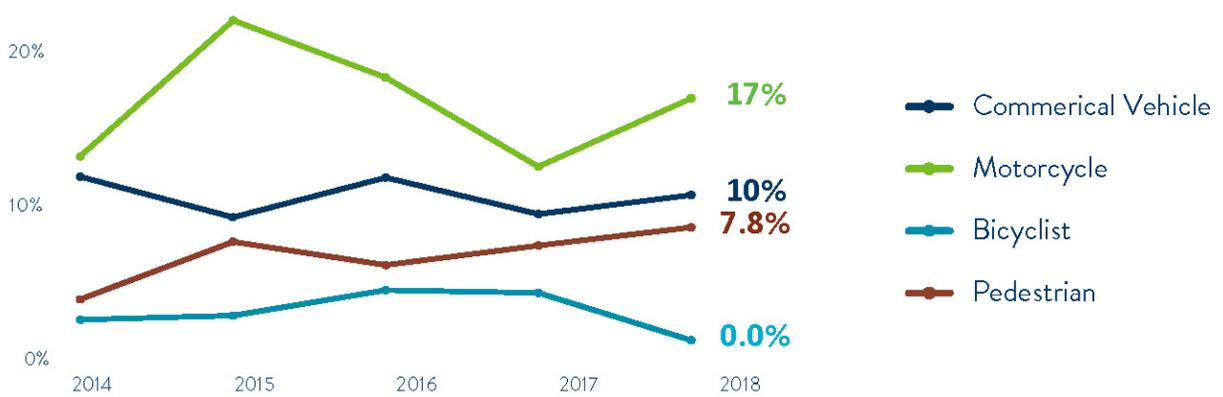




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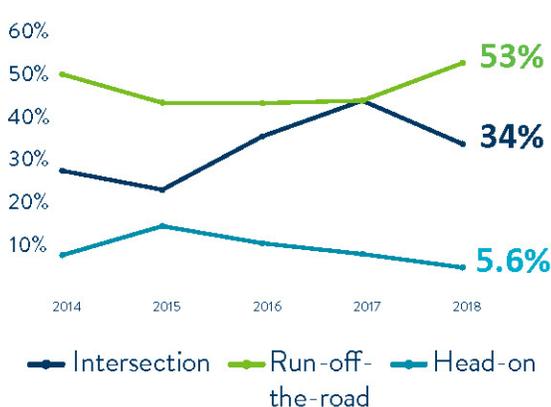
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Priority Focus Area Verification

Date:

Rate these top-tier priorities

The following focus areas are top-tier priorities in the existing SHSP. Select what level of priority you think they should be in the updated SHSP by checking the appropriate box.

Focus Area	Remain a top-tier priority	Move to a mid-tier priority	Move to a lower-tier priority
Traffic safety culture and awareness			
Inattentive drivers			
Unbelted occupants			
Impaired roadway users			
Lane Departure			
Intersections			
Speed			

Rate these mid-tier priorities

The following focus areas are mid-tier priorities in the existing SHSP. Select what level of priority you think they should be in the updated SHSP by checking the appropriate box.

Focus Area	Move to a top-tier priority	Remain a mid-tier priority	Move to a lower-tier priority
Motorcyclists			
Pedestrians			
Older drivers			
Younger drivers			
Data management			
Management systems			
EMS & trauma systems			

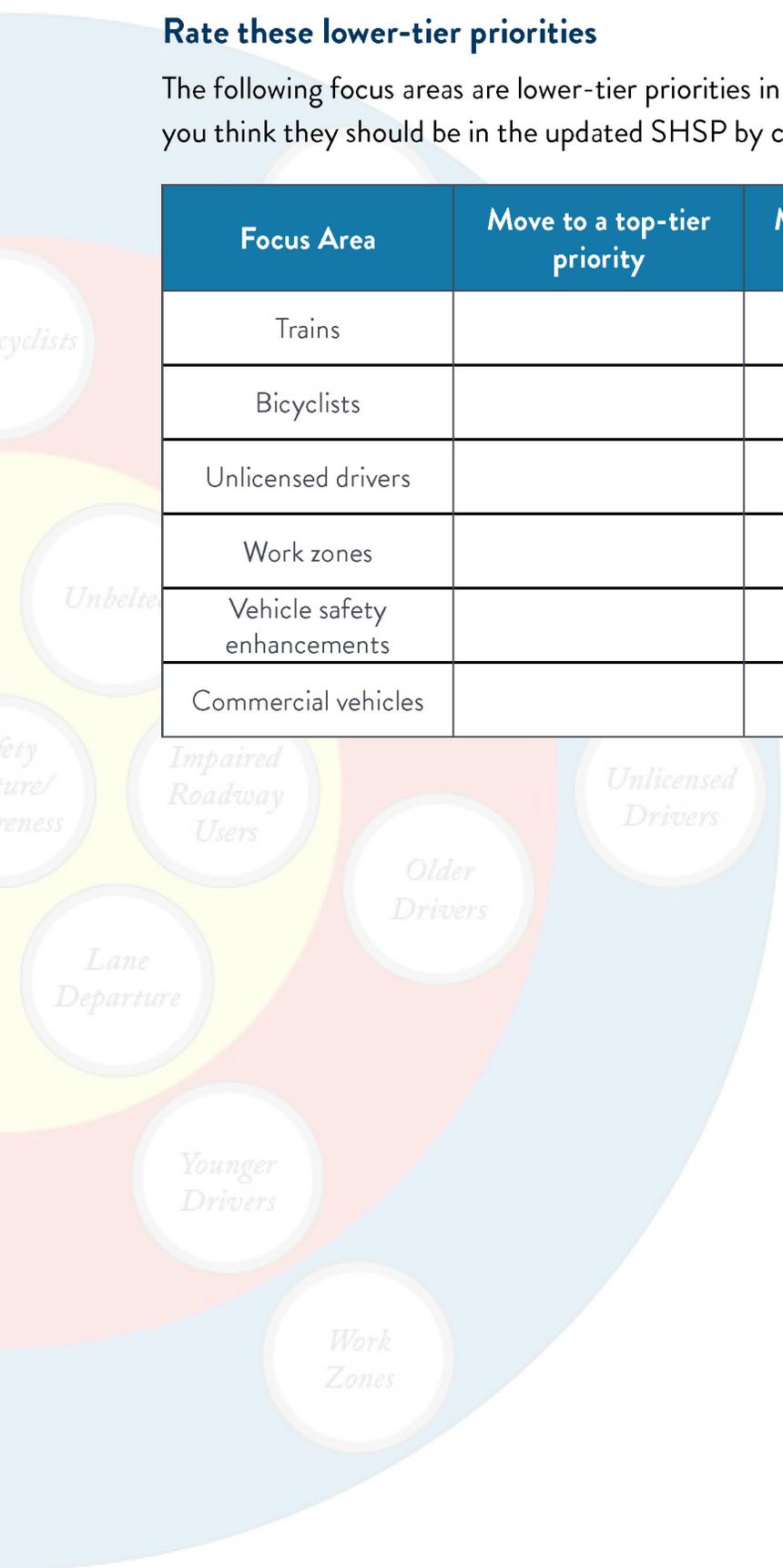


Priority Focus Area Verification

Rate these lower-tier priorities

The following focus areas are lower-tier priorities in the existing SHSP. Select what level of priority you think they should be in the updated SHSP by checking the appropriate box.

Focus Area	Move to a top-tier priority	Move to a mid-tier priority	Remain a lower-tier priority
Trains			
Bicyclists			
Unlicensed drivers			
Work zones			
Vehicle safety enhancements			
Commercial vehicles			





Small Group Discussion Instructions

The purpose of the small group discussions is to talk about the selected focus area in more depth, specifically focusing on identifying action-oriented strategies to include in the SHSP update and potential local champions.



Step 1: Familiarize yourself with the materials 1 min

Individually, review the [Small Group Discussion Instructions](#) and related worksheets.



Step 2: Select a group facilitator and note taker 1 min

As a group, select a group facilitator and note taker for your table. The facilitator will be responsible for moving the discussion along. The note taker will be responsible for filling out the [Group Summary Worksheet](#).



Step 3: Individual brainstorm on strategies 3 min

Brainstorm strategies you think are important for the focus area your table is discussing. Use the [Individual Brainstorm Worksheet](#) to record your thoughts.



Step 4: Group discussion on strategies 20 min

As a group, do a quick round-robin to discuss everyone's individual brainstorming. For larger groups (10 participants or more), individuals should highlight their top two to three strategies for group discussion. The group note taker should record the strategies identified on the [Group Summary Worksheet](#). Collectively, identify your group's top three to five strategies based on the discussion.



Step 5: Individual brainstorm on champions 2 min

Individually, brainstorm potential local champions for your focus area. Use the [Individual Brainstorm Worksheet](#) to record your thoughts.



Step 6: Group discussion on champions 3 min

As a group, do a quick round-robin to discuss everyone's individual brainstorming. The group note taker is responsible for filling out the [Group Summary Worksheet](#).

Strategic Highway Safety Plan Update

Date:



Individual Brainstorm Worksheet

Focus Area:

Discussion Round:



Brainstorm 1 - Strategies

Individually, brainstorm strategies you think are important for the focus area your table is discussing. When thinking about strategies, consider:

- What are we already doing that we should keep doing?
- What should we be doing less or should do differently? What can we be doing better?
- **What new ideas do you have? What have you seen others do that we should share with everyone?**



Brainstorm 2 - Champions

Individually, brainstorm potential local champions for your focus area. Champions can be individuals or organizations. As you think about champions, consider:

- Who is already working on these strategies in the region (in addition to MnDOT or DPS)?
- Who is doing something that could be expanded?



Continue with following section after the group discussion.

Date:



Group Summary Worksheet

Focus Area:

Discussion Round:



Discussion 1 - Strategies

List the strategies identified by group members and discussed as a group. Consolidate similar strategies when appropriate.



Strategy Ranking

As a group, identify the top three to five strategies for your focus area and record below.

1.

2.

3.

4.

5.

Notes:



Pause for individual brainstorm.



Discussion 2 - Champions

List the potential local champions identified by group members and discussed as a group. Connect to a specific strategy when appropriate.

Appendix C

2019 TZD Conference Boards

Minnesota Strategic Highway Safety Plan **Update**

When setting the 2025 goals for **fatalities and serious injuries**, we should:

Place a sticker in the box you most agree with.

Set a conservative goal	OR	Set an aggressive goal
Focus on recent trends	OR	Focus on long-term trends
Focus on tools and technologies available today	OR	Focus on the potential impact of future tools and technologies

Minnesota Strategic Highway Safety Plan Update

If you could only allocate resources to **one focus area**, which do you think represents the greatest potential for lives saved and serious injuries prevented?

Place a sticker in the box you most agree with.

Traffic safety culture	Inattentive drivers	Impaired roadway users	Intersections	Speed
Lane departure (run off the road)	Lane departure (head on)	Unbelted vehicle occupants	Older drivers	Pedestrians
Younger drivers	Work zones	Commercial vehicles	Motorcyclists	Other

Appendix D

Strategy Matrix

Focus Area	Strategy / Tactic	Time Frame	Five-Year Priority Strategy	Year One Priority Tactic	Impaired Roadway Users						Unintended Victims								
					Inattentive Drivers	Impaired Roadway Users	Intersections	Speeding	Lane Departure	Unbelted Occupants	Older Drivers	Pedestrians	Young Drivers	Work Zones	Commercial Vehicles	Motorcyclists	Unlicensed Drivers	Bicyclists	Trains
Inattentive Drivers	Strategy 1: Improve education and awareness about inattentive driving																		
	T1.1 Increase education about inattentive driving and provide background data and statistics that highlight the dangers of inattentive driving. Educate on other distractions in addition to cell-phone use related to inattentive driving. Provide education to people of all ages (not just teen drivers).	On-going		✓	✓			✓			✓		✓						
	T1.2 Increase education on drowsy driving and provide background data and statistics on the dangers of drowsy driving. Describe in education materials the warning signs of drowsy driving and offer prevention tactics to avoid drowsy driving.	On-going				✓					✓		✓						
	T1.3 Increase funding to create and distribute messaging and resources for education on inattentive driving.	Years 1-2				✓		✓			✓		✓						
	Strategy 2: Provide more enforcement and legislative actions to lower inattentive driving rates		✓																
	T2.1 Increase the use of enhanced high-visibility law enforcement presence to target distracted drivers. Evaluate funding levels and provide more funding for enforcement efforts if appropriate.	Years 1-2			✓	✓	✓	✓	✓	✓			✓						
	T2.2 Encourage judges to reduce leniency in sentencing distracted driving offenders.	Years 1-2			✓	✓	✓	✓	✓	✓			✓						
	T2.3 Support legislation that would update distracted driving penalties for crashes involving serious injury or death.	Years 1-2			✓	✓	✓	✓	✓	✓			✓						
	Strategy 3: Support the advancement of technology improvements and road design to reduce the impact of inattentive driving																		
	T3.1 Encourage use of cell phone settings and apps that limit incoming distractions while driving. Encourage insurance companies to offer incentives for drivers to use these settings or apps.	On-going				✓			✓		✓		✓						
	T3.2 Encourage the use of existing motor vehicle technology designed to reduce distracted driving crashes, such as lane departure warning alerts, forward collision warning alerts, and automatic braking.	On-going				✓			✓		✓		✓						
	T3.3 Incorporate shoulder, edge line, and centerline rumble strips in road designs to alert drivers of lane-departing vehicles. Incorporate physical barriers into road designs to prevent collisions.	Years 1-2				✓	✓		✓		✓		✓						
T3.3 Support the transition to autonomous vehicles and other emerging motor vehicle technology to reduce human error, including interactions with people walking, rolling, and bicycling.	Years 3-5				✓			✓		✓		✓							
Impaired Roadway Users	Strategy 1: Increase public awareness to reduce impaired driving																		
	T1.1 Increase public awareness of the dangers of impaired driving through media campaigns targeting issues and high-risk driver groups. Use crash data analysis and market research to identify high-risk driver groups. Use full range of print, digital, broadcast and electronic material distribution methods for public awareness purposes.	On-going					✓	✓		✓									
	T1.2 Tailor messaging to emphasize personal responsibility so all drivers know that even a little impairment can be dangerous.	On-going					✓	✓		✓									
	T1.3 Include evidence-based information about the effects of drugs other than alcohol on driver impairment. Improve data collection and analysis for impaired driving offenses related to drugs other than alcohol.	On-going					✓	✓		✓									
	T1.4 Develop a uniform public complaint reporting form for use in a "See Something, Say Something" initiative to identify suspected habitually impaired drivers and to identify alcohol retailers that serve underage persons.	Years 1-2					✓												
	Strategy 2: Support community-based initiatives to keep impaired drivers off the road																		
	T2.1 Promote expansion and use of safe ride home options.	On-going					✓	✓	✓	✓	✓							✓	
	T2.2 Implement best practice models of privately-sponsored public transit safe ride programs.	Years 1-2					✓	✓	✓	✓	✓							✓	
	T2.3 Develop a template for community-based Place of Last Drink data collection and analysis.	Years 1-2			✓		✓												
	T2.4 Identify and implement successful approaches to partnering with alcohol retailers and servers to prevent over-serving and to reduce alcohol sales to underage persons. Increase community-based efforts to prevent alcohol consumption by underage persons.	Years 1-2			✓		✓	✓	✓	✓	✓								
	T2.5 Expand availability of Responsible Beverage Server Training to all counties.	Years 1-2			✓		✓	✓	✓	✓	✓								
	T2.6 Identify and pilot test best practice models of effective, cost efficient alcohol retailer-based safe ride home programs.	Years 3-5					✓	✓	✓	✓	✓								✓
	Strategy 3: Provide funding, training and technology for impaired driving law enforcement		✓																
	T3.1 Conduct enhanced high-visibility, coordinated statewide impaired driving enforcement events linked with paid and earned media. Identify areas with high rates of impaired driving to prioritize enforcement efforts.	On-going					✓	✓	✓	✓	✓								✓
	T3.2 Conduct locally coordinated Driving While Impaired (DWI) saturation patrols. Use the Office of Traffic Safety (OTS) DWI Dashboard to identify high risk locations and time periods for impaired driving crashes.	On-going					✓	✓	✓	✓	✓								✓
	T3.3 Identify and pilot test promising technology for roadside detection of suspected use of drugs other than alcohol.	On-going					✓												
	T3.4 Increase Advanced Roadside Impaired Driving Enforcement and Drug Recognition Expert training opportunities for law enforcement personnel.	On-going					✓												✓
	T3.5 Encourage more law enforcement agencies to establish zero tolerance guidance for officers when encountering suspected impaired drivers.	Years 1-2					✓	✓	✓	✓	✓								✓
T3.6 Compile baseline county-specific data on drug-related crashes, DWI-Drug citations, and chemical test results for tetrahydrocannabinol and other drugs.	Years 1-2			✓		✓													
Strategy 4: Improve DWI law, adjudication process, and post-conviction sanctions to deter impaired driving																			
T4.1 Identify and support legislative solutions that strengthen the DWI law and make it more effective at deterring impaired driving and reducing repeat offenses.	On-going					✓	✓	✓	✓	✓								✓	
T4.2 Convene a NHTSA Safety Program Assessment of the OTS Impaired Driving Program to identify strengths, weaknesses and opportunities for improvement.	Years 1-2			✓		✓													
T4.3 Study the effectiveness of screening and brief intervention techniques for DWI offenders.	Years 1-2					✓													
T4.4 Identify alternative sources of funding for counties interested in establishing DWI post-conviction Victim Impact Panels.	Years 3-5					✓													
T4.5 Identify alternative sources of funding to establish more DWI Courts.	Years 3-5					✓													

Focus Area	Strategy / Tactic	Time Frame	Five-Year Priority Strategy	Year One Priority Tactic	Roadway Users						Other Roadway Users							
					Inattentive Drivers	Impaired Roadway Users	Intersections	Speeding	Lane Departure	Unbelted Occupants	Older Drivers	Pedestrians	Young Drivers	Work Zones	Commercial Vehicles	Motorcyclists	Unlicensed Drivers	Bicyclists
Intersections	Strategy 1: Improve safety through intersection roadway design changes and alternative intersections		✓															
	T1.1 Increase education and public outreach about alternative intersection designs and how to use them. Support data-driven solutions, and explore ways to communicate the safety benefits of alternative intersections.	On-going										✓		✓				
	T1.2 Incorporate transit, bicyclists, and pedestrians in intersection design. Provide facilities to accommodate people walking, rolling, and bicycling to limit conflicts with vehicles.	On-going											✓					✓
	T1.3 Design intersections to lower crossing conflict points, manage access points, and reduce the number of severe crashes at intersections. Apply alternative design to intersections with a high frequency of severe crashes or systemic risk factors.	Years 1-2			✓								✓		✓			
	T1.4 Apply alternative intersection designs on a corridor level approach.	Years 1-2																
	Strategy 2: Improve corridor and signalized intersection safety through intersection traffic design and signal timing																	
	T2.1 Prioritize transit, bicyclists, and pedestrians in intersection design. Provide facilities to accommodate people walking, rolling, and bicycling to limit conflicts with vehicles.	Years 1-2											✓		✓			
	T2.2 Improve the visibility of vehicles and pedestrians at intersections with lighting and unobstructed sightlines.	Years 1-2					✓						✓	✓	✓			✓
	T2.3 Improve signing and pavement markings. Incorporate technologies and proven countermeasures as appropriate.	Years 1-2											✓	✓	✓			
	T2.4 Provide leading pedestrian intervals to improve pedestrian safety where appropriate. Consider installing blank out signs to restrict turns where appropriate during pedestrian intervals.	Years 1-2											✓	✓	✓			
	Strategy 3: Update planning policy			✓														
	T3.1 Reduce over-building the roadway and apply performance-based practical design based on existing demand and safety risks.	On-going											✓	✓	✓			✓
	T3.2 Facilitate coordination between state, regional, and local agencies for intersection projects. Participate with all user groups so the project fits the community.	On-going																
	T3.3 Support improvements with a data-driven approach by linking high-crash intersections and corridors with design-related issues.	On-going											✓		✓			
	T3.4 Research enhanced analytics and data collection for intersection-based crashes to be used for future safety decisions.	Years 3-5																
	Strategy 4: Increase education and enforcement of red light running																	
T4.1 Increase red-light running enforcement. Use technology to assist with enforcement such as blue light alert systems and enhanced red-light cameras (i.e., camera-assisted enforcement).	On-going											✓		✓				
T4.2 Increase public awareness of risks associated with red light running. Crashes caused by red light running at signalized intersections can involve pedestrians and bicyclists, in addition to other vehicles.	On-going											✓	✓	✓			✓	
T4.3 Identify locations with high rates of red light running to target enforcement.	Years 1-2											✓		✓				
T4.4 Explore the potential for automated red-light enforcement in Minnesota by researching its effectiveness in states that have implemented it and any technical, legal, privacy, and equity barriers.	Years 1-2											✓		✓				
Speeding	Strategy 1: Increase education and awareness about safe speeds and aggressive driving																	
	T1.1 Expand education efforts about the dangers of speeding and aggressive driving, especially among younger drivers. Utilize data and statistics along with a story narrative to deliver the point effectively.	On-going													✓			✓
	T1.2 Use innovative media messaging to spread awareness that unsafe speed kills.	On-going													✓			✓
	T1.3 Use education and messaging to change culture of normalized speeding.	On-going													✓			✓
	Strategy 2: Utilize enforcement to reduce speeding			✓														
	T2.1 Encourage enhanced high-visibility enforcement to reduce speeding. Where possible, provide more funding to law enforcement to support additional speed reduction efforts.	On-going													✓			✓
	T2.2 Explore the potential for automated speed enforcement cameras in Minnesota by researching its effectiveness in states that have implemented it and any technical, legal, privacy, and equity barriers.	Years 1-2													✓			✓
	T2.3 Encourage legislative changes to allow for a pilot project to test automated speed enforcement in school speed zones.	Years 1-2													✓			✓
	T2.4 Improve the data management of speed-related crashes. Educate law enforcement to update MnCrash once crash reconstruction is complete.	Years 3-5																
	Strategy 3: Improve road design and speed limit signing																	
	T3.1 Use Performance Based Practical Design geometric elements and traffic calming techniques to design roads for appropriate speeds based on land use. Utilize road diets where appropriate.	Years 1-2													✓			✓
	T3.2 Use appropriate speed limits that account for roadway design, traffic, land use, and context.	Years 1-2																
T3.3 Install dynamic speed feedback signs within transition zones, preferably with geometric improvements, to reduce speeds where speeds/crashes are an issue.	Years 1-2																	
T3.4 Implement variable speed limits to account for changing driving conditions. Encourage legislative changes to allow for regulatory variable speed limits.	Years 3-5																	
Lane Departure	Strategy 1: Design roadways to reduce the frequency and severity of lane departure crashes			✓														
	T1.1 Install rumble strips and mumble strips on centerlines and edges of roads, especially along two-lane roadways, to tactically warn drivers if their vehicles leave the desired travel area.	On-going													✓		✓	
	T1.2 Install improved pavement markings, such as wet reflective edge stripes and wider (i.e. 6" instead of 4") markings.	On-going													✓		✓	
	T1.3 Maintain clear zones to reduce obstructions and fill in drop-offs on high speed corridors. Maintain a clear down-slope if within a clear zone. Maintain traversable driveways and embankments to reduce stopping or rolling hazards.	On-going													✓		✓	
	T1.4 Design improved geometry for highway curves to reduce the chance of vehicles exiting the roadway (where low-cost treatments are ineffective).	On-going													✓		✓	
	T1.5 Install median cable barrier along divided highways with narrow medians or center buffers with tubular delineators along two-lane highways.	On-going													✓		✓	
	T1.6 Install delineators along high volume, high risk corridors to assist drivers, especially in inclement weather or nighttime conditions.	Years 3-5													✓		✓	
	Strategy 2: Evaluate new safety features																	
	T2.1 Support the use of existing automated driving assist systems that help drivers maintain their lane.	Years 1-2													✓		✓	
	T2.2 Support long-range planning efforts to prepare for the emergence of highly automated vehicles to leverage the safety benefits to reduce human error.	Years 3-5													✓		✓	
T2.3 Implement ITS dynamic warning signs and other ITS technologies to reduce lane departure at locations with a sustained crash pattern.	Years 3-5													✓		✓		

Focus Area	Strategy / Tactic	Time Frame	Five-Year Priority Strategy	Year One Priority Tactic	Roadway Users						Other Road Users								
					Inattentive Drivers	Impaired	Intersections	Speeding	Lane Departure	Unbelted Occupants	Older Drivers	Pedestrians	Young Drivers	Work Zones	Commercial Vehicles	Motorcyclists	Unlicensed Drivers	Bicyclists	Trains
Unbelted Occupants	Strategy 1: Increase public awareness to improve the use of seat belts and child restraints																		
	T1.1 Use paid and earned media campaigns explaining the high risk associated with failure to wear seat belts and transporting children without proper restraints. Focus campaigns on high-risk driver groups as well as underserved communities.	On-going					✓											✓	
	T1.2 Tailor messaging so all drivers understand their liability for ensuring all passengers are properly restrained.	On-going																✓	
	T1.3 Build strong partnerships with the medical community and insurance providers to increase public understanding of the risk of increased injury severity for failure to wear seat belts or to properly restrain children.	On-going																	
	T1.4 Conduct data-driven analysis of the increased injury severity rate of unbelted occupants in a traffic crash.	Years 1-2			✓														
	T1.5 Identify best practice models of employer-based workplace policies on seat belt use.	Years 1-2																	
	T1.6 Identify best practice models of effective school and community-based outreach methods that target teen drivers. Incorporate results in teen-focused TZD events and materials.	Years 1-2																	
	Strategy 2: Provide funding and training for seat belt law enforcement		✓																
	T2.1 Conduct enhanced high-visibility statewide seat belt enforcement events linked with paid and earned media.	On-going					✓	✓	✓	✓	✓								✓
	T2.2 Evaluate crash data to identify locations and time periods at greatest risk of unrestrained vehicle occupants.	Years 1-2			✓														✓
	T2.3 Encourage use of discretionary OTS provided traffic safety enforcement funding for localized seat belt saturation enforcement that targets known high risk locations and time periods.	Years 1-2					✓	✓	✓	✓	✓								✓
	T2.4 Encourage law enforcement agencies to establish zero tolerance guidance for officers when encountering suspected unbelted drivers. Conduct outreach to courts to encourage consistent adjudication of seat belt and child passenger seat citations.	Years 1-2					✓	✓	✓	✓	✓								✓
T2.5 Implement updated Occupant Protection Usage and Enforcement curriculum for law enforcement officers.	Years 1-2																		
Strategy 3: Improve seat belt and child passenger safety law and training programs																			
T3.1 Convene a NHTSA Safety Program Assessment of the OTS Occupant Protection Program to identify strengths, weaknesses and opportunities for improvement.	On-going																		
T3.2 Add training on the importance of proper use of child passenger safety seats to driver education curriculum standards.	Years 3-5																		
T3.3 Increase funding support for outreach training to families, caregivers and child care professionals on the proper use of child safety restraints.	Years 3-5																		
Older Drivers	Strategy 1: Increase public awareness of the safety risks faced by older drivers		✓																
	T1.1 Identify best practice examples that promote self-regulation of driving behavior and self-awareness of declining physical and cognitive abilities.	Years 1-2																✓	✓
	T1.2 Develop and distribute updated informational resources on safe driving behaviors and modes of travel like transit, bicycling, and walking for social service organizations, medical professionals, and families of at-risk drivers.	Years 1-2																✓	✓
	T1.3 Develop educational resources focused on alternative intersection and roadway design concepts and practices.	Years 1-2																	
	T1.4 Update informational resources for law enforcement, medical professionals and families of at-risk drivers on assessing a person's fitness to drive.	Years 1-2			✓														
	T1.5 Increase the promotion of DVS-approved crash prevention/defensive driving courses for drivers age 55 or older. Promote the use of CarFit programs to promote self-awareness of safety, comfort and mobility needs.	Years 1-2			✓														
	T1.6 Work with medical professionals to educate patients on base-line cognitive abilities required for driving.	Years 1-2																	✓
	Strategy 2: Evaluate fitness to drive																		
	T2.1 Design and implement a roadside evaluation protocol for law enforcement to determine fitness to drive for drivers of all ages.	Years 1-2			✓														
	T2.2 Identify best practices in age-appropriate vision screening.	Years 1-2																	
	T2.3 Evaluate patterns and trends of crashes involving potential deficiencies in driver fitness.	Years 1-2																	
	T2.4 Explore the potential for legislative changes that would establish tests for base-line cognitive and physical abilities required for driving.	Years 3-5																	
Strategy 3: Improve traffic design to benefit older drivers																			
T3.1 Continue to research and implement best practices for traffic signage and pavement markings to improve legibility and visibility.	On-going																		
Strategy 4: Improve transportation options																			
T4.1 Increase funding to make community-based mobility options more accessible, especially in rural areas.	Years 1-2																	✓	

Focus Area	Strategy / Tactic	Time Frame	Five-Year Priority Strategy	Year One Priority Tactic	Roadway Users						Other Road Users								
					Inattentive Drivers	Impaired Roadway Users	Intersections	Speeding	Lane Departure	Unbelted Occupants	Older Drivers	Pedestrians	Young Drivers	Work Zones	Commercial Vehicles	Motorcyclists	Unlicensed Drivers	Bicyclists	Trains
Pedestrians	Strategy 1: Increase education and awareness for drivers and pedestrians		✓																
	T1.1 Conduct a high profile pedestrian education campaign with increased media coverage targeted at drivers and pedestrians. Include curriculum on Walk! Bike! Fun! and Vision Zero programs in addition to current laws.	On-going						✓					✓						
	T1.2 Promote pedestrian-related laws in an easy-to-understand manner for public outreach.	On-going						✓					✓						
	T1.3 Develop local/community partnerships like advocacy groups and parent-teacher organizations. Create local strategies in partnership with underserved communities and communities with high pedestrian demand.	Years 1-2						✓					✓						
	T1.4 Promote Safe Routes to School guidelines about education, encouragement, engineering, enforcement, evaluation, and equity.	Years 1-2						✓					✓						
	Strategy 2: Improve design and maintenance for pedestrian safety																		
	T2.1 Establish policies with all agencies to maintain pedestrian facilities for all four seasons, including proper snow and ice removal. Expedite maintenance of sidewalks and curb ramps to deter people from walking or rolling in the road.	On-going						✓					✓						
	T2.2 Provide appropriate crossing time at signalized/active crossings. Consider timing strategies to better accommodate pedestrian needs.	On-going						✓					✓						
	T2.3 Based on land use, design roads and facilities for pedestrians, such as sidewalks, mid-block breaks, and bump outs. Identify areas with inadequate pedestrian facilities that could be improved, including in rural areas or on tribal lands. Provide the appropriate number of safe pedestrian crossings to accommodate pedestrian needs.	Years 1-2			✓			✓					✓						
	T2.4 Design for appropriate road capacity to reduce crosswalk length and crosswalk conflicts. Utilize road diets (4-lane to 3-lane conversions) where appropriate.	Years 1-2			✓					✓			✓						
	T2.5 Install proper signing at crosswalks and evaluate current signing standards. Increase the use of dynamic signing options at mid-block crossings where there are high volumes of pedestrian traffic. Promote the use of advance stop bars and/or yield lines at all crosswalks.	Years 1-2			✓				✓				✓						
	T2.6 Improve lighting around pedestrian facilities to increase pedestrian visibility, including near transit stops and in rural areas.	Years 1-2			✓				✓	✓			✓						
	T2.7 Evaluate passive pedestrian detection technology.	Years 3-5							✓	✓			✓						
	Strategy 3: Promote policy changes that impact pedestrian safety																		
T3.1 Increase funding for pedestrian safety campaigns and pedestrian facilities.	On-going							✓	✓			✓							
T3.2 Improve pedestrian volume data collection to identify trends and numbers for health, law, plans, and policies.	Years 1-2								✓			✓							
T3.3 Explore school bus stop arm violation camera enforcement.	Years 1-2						✓		✓	✓		✓							
T3.4 Develop pedestrian plans and Complete Streets plans at regional and local levels.	Years 3-5								✓			✓							
Young Drivers	Strategy 1: Increase public awareness to improve the safety of younger drivers																		
	T1.1 Develop age-appropriate teen and young adult-focused content for the annual Toward Zero Deaths conference. Provide funding to supplement the cost of a cohort of teens and young adults to attend the conference.	Years 1-2			✓		✓	✓	✓	✓	✓			✓					
	T1.2 Evaluate teen driver-involved crash reports to determine if seat belt use varies under different circumstances. Incorporate findings into driver education curriculum and public information initiatives focused on younger drivers.	Years 1-2										✓		✓					
	T1.3 Increase public awareness of provisions in the Graduated Driver Licensing law for younger drivers.	Years 1-2										✓		✓					
	T1.4 Increase outreach programs to teenagers to educate on teen-driver safety. Conduct and heavily promote a teen-focused Toward Zero Deaths summit. Leverage the DPS Teen Driver Safety Task force and the DVS Driver's Education Work Group in developing outreach programs.	Years 1-2			✓		✓	✓	✓	✓	✓		✓						
	T1.5 Translate the Minnesota Driver's Manual into Hmong, Russian, Somali and Vietnamese for use by teens and adults with limited English proficiency to reinforce safe driving habits after earning a driver license.	Years 3-5					✓	✓	✓	✓	✓		✓						
	Strategy 2: Improve driver education and the Graduated Driver License law		✓																
	T2.1 Review the current driver education program and identify ways to strengthen and improve it.	On-going			✓								✓						
	T2.2 Evaluate the suitability of driver education simulations currently in use.	On-going						✓			✓		✓						
	T2.3 Evaluate the long term driving performance of drivers who complete local option driver improvement (traffic school) classes in lieu of paying fines related to traffic offenses.	On-going											✓						
T2.4 Evaluate the first 3-year driving performance of young drivers who were subject to updated Graduated Driver License (GDL) requirements that began in 2015.	On-going											✓							
T2.5 Review current GDL law to identify ways to strengthen and improve it. Encourage legislative changes that reduce the risk of harm to younger drivers, including driver education requirements and parental supervision elements of the GDL law.	On-going			✓								✓							

Focus Area	Strategy / Tactic	Time Frame	Five-Year Priority Strategy	Year One Priority Tactic														
					Inattentive Drivers	Impaired Roadway Users	Intersections	Speeding	Lane Departure	Unbelted Occupants	Older Drivers	Pedestrians	Young Drivers	Work Zones	Commercial Vehicles	Motorcyclists	Unlicensed Drivers	Bicyclists
Work Zones	Strategy 1: Reduce speeding within work zones		✓															
	T1.1 Use appropriate enforcement to reduce speeding and distracted driving in work zones, especially during peak travel periods. Develop and deploy strategies to best enforce speed limits in work zones.	On-going			✓			✓	✓	✓			✓	✓	✓			
	T1.2 Increase visible enforcement presence using innovative techniques. Increase funding for additional law enforcement resources.	On-going				✓		✓	✓	✓	✓		✓	✓	✓			
	T1.3 Encourage legislative changes to allow for a pilot project to test automated camera enforcement in work zones.	Years 1-2			✓	✓		✓	✓	✓			✓	✓	✓			
	T1.4 Install automated/enhanced speed enforcement or camera-assisted enforcement in work zones.	Years 1-2			✓	✓		✓	✓	✓			✓	✓	✓			
	T1.5 Install dynamic speed feedback signs to alert drivers if they are speeding.	Years 1-2				✓		✓	✓	✓	✓		✓	✓	✓			
	T1.6 Evaluate travel speeds within work zones to apply appropriate speed limits. Incorporate "Workers Present" speed limits in work zones during times when workers are present.	Years 1-2				✓		✓	✓	✓	✓		✓	✓	✓			
	T1.7 Apply physical or geometric features to calm traffic in work zones.	Years 3-5						✓	✓	✓	✓		✓	✓	✓			
	Strategy 2: Incorporate work zone notifications and education																	
	T2.1 Increase public education and training for driving in work zones. Create greater public awareness about moving over for disabled vehicles, law enforcement, construction, etc. (Ted Foss Law).	On-going																
	T2.2 Apply consistent and appropriate warning signs in advance of work zones, especially when workers are present.	On-going																
	T2.3 Use advance warning signs and dynamic message signs for changing work zone conditions, travel times, and incidents within work zone.	Years 1-2																
	T2.4 Establish best practices of radar-based audible and visible warning systems to warn workers of speeding vehicles. Consider installing warning systems within work zones.	Years 3-5																
	Strategy 3: Use innovative work zone planning techniques																	
	T3.1 Change traditional work schedules based on traffic trends. Avoid closing lanes when excessive queuing could occur.	Years 1-2																
	T3.2 Use full road closures to avoid traffic conflicts and to accelerate work where appropriate.	Years 1-2																
T3.3 Maintain accessible pedestrian routes with Alternative Pedestrian Routes and Temporary Pedestrian Access Routes and provide clear bicycle detour routes. Protect pedestrian routes if they are detoured into the roadway.	Years 1-2					✓	✓	✓	✓	✓		✓	✓	✓			✓	
T3.4 Work with phone applications or develop an application to distribute work zone alerts when vehicles approach work zones.	Years 3-5					✓		✓	✓	✓		✓	✓	✓				
Strategy 4: Design safer work zones																		
T4.1 Increase separation between workers and vehicles with lane shifts, crossovers, barriers, or other techniques.	Years 1-2																	
T4.2 Install vision screens to limit gawker effect.	Years 1-2					✓												
T4.3 Use automated flagger devices or temporary signals to limit exposure between vehicles and workers.	Years 1-2																	
T4.4 Consider work zone intrusion notification systems, such as (portable) rumble strips.	Years 1-2																	
Commercial Vehicles	Strategy 1: Improve enforcement for commercial vehicles																	
	T1.1 Improve enforcement of unsafe commercial vehicles and their operators, and provide training for local law enforcement focused on commercial vehicles.	On-going																
	T1.2 Encourage more effective communication about motor vehicle enforcement between law enforcement agencies and commercial vehicle enforcement personnel.	Years 1-2																
	T1.3 Provide additional law enforcement at commercial vehicle inspection sites to assist with driver impairment checks.	Years 1-2																
	Strategy 2: Improve the network of commercial vehicle rest areas																	
	T2.1 Provide additional truck parking facilities along highways. Provide additional information systems to inform truck drivers of available spaces.	Years 3-5					✓											
	T2.2 Coordinate with commercial properties along highways to support auxiliary truck parking. Evaluate using an insurance pool to mitigate liability concerns with property owners.	Years 3-5					✓											
	Strategy 3: Increase education on commercial vehicle safety																	
T3.1 Provide more public awareness for blind spot dangers for trucks, such as the No Zone campaign.	Years 1-2																	
T3.2 Support education for truck drivers and mechanics about the federal Whistleblower Protection Act. Encourage reporting of companies that pressure employees to break federal commercial vehicle laws, including hours of service limits.	Years 1-2																	
T3.3 Educate trucking association members on work zone safety.	Years 1-2																	
Strategy 4: Support new vehicle technology																		
T4.1 Study the potential safety implications of truck platooning technology, wherein multiple commercial vehicles travel in close proximity to each other.	Years 3-5																	

Focus Area	Strategy / Tactic	Time Frame	Five-Year Priority Strategy	Year One Priority Tactic	Impaired Roadway Users						Other Roadway Users								
					Inattentive Drivers	Impaired Roadway Users	Intersections	Speeding	Lane Departure	Unbelted Occupants	Older Drivers	Pedestrians	Young Drivers	Work Zones	Commercial Vehicles	Motorcyclists	Unlicensed Drivers	Bicyclists	Trains
Motorcyclists	Strategy 1: Increase public awareness and education to improve motorcycle safety																		
	T1.1 Develop and distribute updated informational resources on safe driving behaviors by motorcycle drivers and passengers, emphasizing both legal requirements and best practices. Coordinate with motorcycle community groups to educate riders on safe riding techniques and self-protection.	On-going																	
	T1.2 Develop and distribute updated informational resources on sharing the road with motorcycles, emphasizing the need for vigilance at intersections.	Years 1-2		✓				✓											
	T1.3 Encourage experienced motorcycle riders to take the OTS Intermediate Rider Course as refresher training.	Years 1-2						✓	✓	✓									
	T1.4 Evaluate motorcycle crash patterns and trends. Incorporate the findings into driver education curriculum and public information initiatives.	Years 1-2																	
	T1.5 Include injury outcome data analysis and other evidence-based information about the risk of increased injury severity for motorcycle riders not wearing head protection when involved in a traffic crash.	Years 1-2																	
	T1.6 Work with motorcycle dealerships to sell right-sized bikes and to encourage rider training to buyers.	Years 1-2							✓	✓	✓								
	T1.7 Identify best practices in rider education content and delivery mechanisms for incorporation into Minnesota rider education programming.	Years 1-2							✓	✓	✓	✓							
	Strategy 2: Improve motorcycle safety-related policies			✓															
	T2.1 Convene a NHTSA Safety Program Assessment of the OTS Motorcycle Safety Program to identify strengths, weaknesses and opportunities for improvement.	Years 1-2																	
	T2.2 Evaluate the first 3-year driving performance of motorcycle drivers who complete the Basic Rider Course to identify Minnesota-specific topics that need greater emphasis in the Motorcycle Safety Foundation curriculum.	Years 1-2																	
	T2.3 Review current legislation to identify opportunities to encourage legislative changes that reduce the risk of harm to motorcycle riders.	Years 1-2			✓				✓	✓	✓	✓							
	T2.4 Initiate a public awareness campaign about the safety benefits of wearing helmets.	Years 3-5											✓						
	T2.5 Identify and remove barriers to obtaining a motorcycle endorsement.	Years 3-5																✓	
	Strategy 3: Improve highway design and maintenance policies																		
T3.1 Improve highway work zone signage policy and practice to increase motorcyclists' awareness of temporary road conditions.	Years 1-2												✓						
T3.2 Update roadway pavement maintenance priorities to emphasize remedying conditions particularly difficult for motorcyclists.	Years 1-2												✓						
T3.3 Design motorcycle forgiving infrastructure along routes with high motorcycle traffic.	Years 3-5																		