SD2022-06-F

Reduce Fatal & Serious Injury Crashes

Study SD2022-06

Final Report

Prepared by

Ulteig Engineers, Inc.

3350 38th Ave. S.

Fargo, ND 58104

Sep 2024

DISCLAIMER

The South Dakota Department of Transportation gives public notice of its policy to uphold and assure full compliance with the non-discrimination requirements of Title VI of the Civil Rights Act of 1964 and related Nondiscrimination authorities. Title VI and related Nondiscrimination authorities stipulate that no person in the United States of America shall on the grounds of race, color, national origin, religion, sex, age, disability, income level or Limited English Proficiency be excluded from the participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity receiving Federal financial assistance.

Any person who has questions concerning this policy or wishes to file a discrimination complaint should contact the Department's Civil Rights Office at 605-773-3540.

ACKNOWLEDGEMENTS

This work was performed under the direction of the SD2022-06 Technical Panel:

Andy Vandel ..... Research

Thad Bauer ..... Research

Mike Behm ..... Planning and Engineering

Brace Prouty ..... Project Development

Dustin Witt ..... Project Development

Cliff Reuer ..... LTAP

Gina Espinosa-Salcedo ..... NHTSA Region 8

Kelly VanDeWiele ..... FHWA

Amanda Kurth ..... DPS/Highway Safety

Rick Miller ..... DPS/Highway Patrol

Capt. Adam Zishka ..... Minnehaha Co. Sheriff's Office

Marty Link ..... Dept. of Health/EMS

Shannon Malone ..... Dept. of Education

Terry Fluit ..... Lincoln Co. Hwy

Kip Harrington ..... Rapid City MPO

Capt. Kevin Rascher ..... Oglala Sioux Tribe

LaJuanda Stands and Looks Back ..... Rosebud Sioux Tribe

Christina Bennett ..... Operation Support

Scott Rabern ..... Road Design

Neil Schochenmaier ..... Road Design

Rob Weinmeister ..... DPS / Highway Patrol

TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
SD2022-06-F		

4. Title and Subtitle	5. Report Date
Reduce Fatal & Serious Injury Crashes	Sep 4, 2024
	6. Performing Organization Code

7. Author(s)	8. Performing Organization Report No.
Abdullah Kurkcu, PhD; Paul Deutsch; Kimberly Vachal, PhD; Myron Hora; Sababa Islam, PhD	

9. Performing Organization Name and Address	10. Work Unit No.
Ulteig Engineers, Inc. 3350 38th Ave S Fargo, ND 58104	HRY409 11. Contract or Grant No. 311576

12. Sponsoring Agency Name and Address	13. Type of Report and Period Covered
South Dakota Department of Transportation Office of Research 700 East Broadway Avenue Pierre, SD 57501-2586	Final Report March 2023 – Sep 2024 14. Sponsoring Agency Code

15. Supplementary Notes

16. Abstract

There is an urgency to initiate innovative approaches to transportation safety to reduce traffic fatalities and serious injuries in South Dakota. Therefore, the South Dakota Department of Transportation is exploring the implementation of a zero fatality transportation safety initiative. A literature review of national strategies and relevant policies from neighboring states was conducted for the purpose of developing an initiative implementation plan aligned with South Dakota's safety goals, unique landscape, demographics, and challenges. Interviews were conducted with South Dakota's peer states to further enrich the findings, allowing stakeholders to take advantage of lessons learned and avoid potential pitfalls. A review of South Dakota state standards and policies as well as interviews with state and local agencies identified gaps to further derive recommendations for a comprehensive implementation plan that features agency-specific recommendations and impact evaluation indicators. The resulting implementation plan will serve as a guiding document for a zero fatality transportation safety initiative to drive a future of vital safety projects, increase awareness and education, coordinate and inspire stakeholders, and build a transportation safety movement that will save lives, prevent injury, and reduce costs.

17. Keywords	18. Distribution Statement
safety; crashes; initiative; TZD	No restrictions. This document is available to the public from the sponsoring agency.

19. Security Classification (of this report)	20. Security Classification (of this page)	21. No. of Pages	22. Price
Unclassified	Unclassified	135	

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

TABLE OF ACRONYMS

Acronym	Definition
AASHTO	American Association of State Highway and Transportation Officials
ADAS	Advanced Driver Assistance Systems
ADOT	Arizona Department of Transportation
ADS	Automated Driving Systems
AFAD	Automated Flagger Assistance Devices
ATIS	Arizona Transportation Information System
BTS	Bureau of Transportation Statistics
CDC	Centers for Disease Control and Prevention
CDPHE	Colorado Department of Health and Environment
CDOR	Colorado Department of Revenue
CDOT	Colorado Department of Transportation
CEA	Critical Emphasis Areas
CHSC	Center for Health and Safety Culture
CHSP	Comprehensive Highway Safety Plan
CMF	Crash Modification Factors
CSP	Colorado State Patrol
CTS	Center for Transportation Studies
CTT	Council for Tribal Transportation
CUTR	Center for Urban Transportation Research
CV	Connected Vehicle
CVSP	Commercial Vehicle Safety Plan
DMV	Department of Motor Vehicles
DOTI	Department of Transportation & Infrastructure
DPS	Department of Public Safety
EA	Environmental Assessment
EMS	Emergency Medical Services
FARS	Fatality Analysis Reporting System
FCCLA	Family, Career and Community Leaders of America

Acronym	Definition
FHWA	Federal Highway Administration
FRL	Free and Reduced-Price Lunch
GHSA	Governors Highway Safety Association
GTSAC	Governors Traffic Safety Advisory Committee
HSIP	Highway Safety Improvement Program
HVE	High-visibility Enforcement
IACP	International Association of Chiefs of Police
IASC	Nebraska Interagency Safety committee
ITE	Institute of Transportation Engineers
ITS	Intelligent Transportation Systems
KPI	Key Performance Indicator
LTAP	Local Transportation Assistance Program
MASH	Manual for Assessing Safety Hardware
MDH	Minnesota Department of Health
MDOT	Michigan Department of Transportation
MnDOT	Minnesota Department of Transportation
MPO	Metropolitan Planning Organizations
MSC	Minnesota Safety Council
MSP	Michigan State Police
MUTCD	Manual on Uniform Traffic Control Devices
NASEMSO	National Association of State EMS Officials
NDOT	Nebraska Department of Transportation
NDDOT	North Dakota Department of Transportation
NDSU	North Dakota State University
NETS	Network of Employers for Traffic Safety
NHTSA	National Highway Safety Traffic Administration
NSC	National Safety Council
OHS	Office of Highway Safety
OSWS	Office of Student Wellness and Supports

Acronym	Definition
PBPD	Performance-based Practical Design
PEA	Priority Emphasis Area
RTZ	Road to Zero
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SDARS	South Dakota Accident Records System
SDDOT	South Dakota Department of Transportation
SDOHS	South Dakota Office of Highway Safety
SDSC	South Dakota Safety Council
SEDC	State Electronic Data Collection
SHSO	State Highway Safety Office
SHSP	Strategic Highway Safety Plan
SOAR	Safe On All Roads
SPF	Safety Performance Function
SRTS	Safe Routes to School
SSA	Safe System Approach
STSP	Strategic Transportation Safety Plan
TAP	Transportation Alternatives Projects
TCRS	Traffic Crash Reporting System
TMVIPP	Tribal Motor Vehicle Injury Prevention Program
TSC	Traffic Safety Culture
TSRP	Traffic Safety Resource Prosecutor
TTAP	Tribal Technical Assistance Program
TZD	Toward Zero Deaths
USDOT	U.S. Department of Transportation
VRU	Vulnerable Road User
VZ	Vision Zero
WTI	Western Transportation Institute

1.0 EXECUTIVE SUMMARY

Traffic and road fatalities have long captivated the interest of officials around the world. One of the most thought-provoking approaches to traffic safety includes aspirational initiatives attempting to reduce traffic fatalities and serious injuries to zero. Communities and agencies across the nation are increasingly adopting safety initiatives like Toward Zero Deaths (TZD), Vision Zero (VZ), and Road to Zero (RTZ) with the goal of eliminating all traffic-related fatalities and severe injuries. For example, the figure below shows the communities that are part of the Vision Zero Network throughout the nation. (Vision Zero Network, December 2022). This report was prepared to gain a comprehensive understanding of the viability for a Zero Fatality Transportation Safety Initiative in the state of South Dakota.

Figure 1: U.S. Communities Committed to Vision Zero

1.1 Project Kickoff and Literature Review

The research stage of this study kicked off by meeting with the project's technical panel to formalize the scope of the study and identify the scope of the literature review, the final list of surrounding states' interviewees, and topics of interview discussion.

A literature review was conducted to examine existing plans and regulations related to South Dakota's multimodal travel network. It was also beneficial to identify and analyze relevant policies from neighboring states – Minnesota, Michigan, Iowa, Nebraska, Wyoming, Montana, North Dakota, and Colorado. The information gathered was compiled and compared to offer the technical panel a variety of existing zero fatality initiatives, implementation plans, and current safety countermeasures from which to develop its own zero fatality initiative.

The results of the literature review findings were documented in Technical Memorandum #1. The findings from the review revealed that each state has a unique way of defining and documenting its

own initiatives. Generally, South Dakota's neighboring states have implemented zero fatality initiatives, but the scale of the efforts to formalize a comprehensive campaign to reduce traffic deaths to zero varies state to state. While some states have created a trail of elaborate websites, detailed documentation, and easy-to-find public outreach efforts, other states confine the formal documentation mostly within the framework of state Strategic Highway Safety Plans (SHSPs), meeting minimum Federal Highway Administration (FHWA) guidelines to reducing highway fatalities. All the states have acknowledged that fatal and serious injuries are unacceptable outcomes for vehicle crashes. Challenges to zero fatality initiatives were documented, however it was challenging to uncover the primary forces that drive or limit initiative implementation via literature review alone. It became essential to utilize the interview process to identify and understand the primary limiting forces for each state (funding, culture, etc.) to help the panel clearly understand which approach has the greatest potential to meet zero fatality initiative goals.

1.2 Establishing a Vision

The zero fatalities concept is described differently by various states, either as a goal or as a vision, which offers a compelling, unified visualization for all audiences and unites safety partners together. Three main national initiatives aim to reduce traffic fatalities to zero in the US: Toward Zero Deaths (TZD), Vision Zero (VZ), and Road to Zero (RTZ). There are elements of psychology with the branding of safety initiatives. Upon hearing the phrase "Vision Zero", skeptical reactions may follow, doubting the feasibility of a road transport system with zero fatalities. Objections to the concept are amplified if fatalities trends are stable or worsening. In this context, "Towards Zero Deaths" (TZD), emerges as a more acceptable phrase.

The ethical stance of zero deaths suggests that no number of fatalities, other than zero, can warrant reallocating resources away from roadway safety. This perspective, diverging from standard safety policy viewpoints, might pose discomfort for those in the safety sector. This was observed in Sweden during the early phases of the Safe System application (Belin et al. 2012). Nevertheless, the TZD approach has been successful in addressing these concerns among US safety experts, securing widespread agreement on a goal rooted in achieving zero roadway casualties.

1.3 Safe System Approach

Adopting the Safe System Approach (SSA) represents the most efficient and impactful method for assessing and addressing the risks of fatal and severe injury crashes within a transportation network and becomes the strategic implementation framework to achieve the zero fatality goal. The foundation of the SSA recognizes that human errors occur and that the human body has limitations withstanding crash impacts. Within a safe system, the objective is to prevent fatalities resulting from these errors. This user-centric approach should be adopted by all safety stakeholders, with their specific roles within this system explained in the implementation plan.

The six key principles of the SSA are:

- Death/serious injury is unacceptable.
- Humans make mistakes.
- Humans are vulnerable.
- Responsibility is shared.

- Safety is proactive.
- Redundancy is crucial.

1.4 Transportation Safety Plans

The planning of road safety in the United States is centered around SHSPs, introduced by the American Association of State Highway and Transportation Officials (AASHTO) in 1997. By 2005, all states were required to establish SHSPs in accordance with the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). Today, each state actively implements a completed SHSP.

The literature review indicates that the implementation of SHSPs is a means to uphold the principle of zero fatalities, a prevailing principle that predates modern zero fatality initiatives. SHSPs offer an effective method for putting this philosophy into action by providing a data-driven framework that enables better integration of safety and planning documents. SHSPs also provide the necessary leadership, advocates, partners, stakeholders, action plans, and resources for the agency. As SHSPs tend to become more refined and strategic with time, incorporating the SSA into the existing structure becomes easier. Because SHSPs are already actively implemented by every state, it is the instrument that most easily integrates the SSA rather than starting from nothing.

1.5 Interviews with Zero Fatality Initiative Coordinators of Surrounding States

Further enriching the study are interviews conducted with South Dakota's peer states – North Dakota, Minnesota, Nebraska, Wyoming, and Montana – revealing their successes and challenges in implementing their own safety initiatives. These interviews unveiled perspectives allowing stakeholders to take advantage of lessons learned and avoid potential pitfalls. Drawing from this intelligence, the report features a tailored recommendation, advocating for a safety initiative that aligns with South Dakota's safety goals, unique landscape, demographics, and challenges.

The primary objective was to discern the framework, challenges, and effectiveness of the safety initiatives deployed by various neighboring states. Major findings of the interview process reaffirm that strong data-driven approaches strengthen the implementation of zero fatality safety initiatives, and that collaboration across various local and regional entities is paramount. Furthermore, it becomes evident that communication serves as a linchpin, its absence in the early phases of zero fatality initiatives hindered optimal execution of the program. While the literature review provided foundational insights into the structure and strategies of safety initiatives, the depth of political challenges uncovered through candid interviews was a significant revelation. The discussions around politics, organizational structure, and the nuances of local campaigns unveiled layers of intricacies. Political dynamics, as indicated especially by Nebraska's insights, emerged as a paramount concern that could potentially be seen in South Dakota.

1.6 Interviews with State and Local Agencies

The research team conducted 15 semi-structured interviews with state and local agencies in South Dakota to gain insights into their roles, responsibilities, and the resources necessary to implement the initiative. These discussions ranged from 30 minutes to an hour, varying with the group's size and the depth of conversation. The interviews were designed to gather preliminary information, dive deeper into the challenges these agencies faced in past safety initiatives, and to outline each agency's potential role in the implementation phase of a new zero fatality initiative. These interviews were

instrumental in uncovering the practicalities of implementing safety initiatives, the varied challenges agencies face, and the collaborative efforts needed to foster a statewide culture of safety. These discussions featured a strong commitment to utilizing education, public awareness, and data-driven insights as foundational pillars for road safety improvement. However, challenges such as budgetary constraints and the need for organizational cultural shifts toward prioritizing safety were also identified.

The recommendations derived from the interviews highlight the necessity of a cohesive and unified strategy to integrate safety measures across all levels of operation and planning, advocating for heightened collaboration among state departments, law enforcement, community organizations, and tribal agencies. Furthermore, the interviews revealed a significant gap in awareness among agencies regarding their roles within the Strategic Highway Safety Plan (SHSP) and the TZD initiative, underlining the importance of clear communication and defined roles to help ensure active and effective participation of all stakeholders in achieving the shared goals of the TZD initiative.

1.7 Review of State Standards and Policies

In aligning with South Dakota's commitment to the TZD and SSA, a thorough review of ten relevant South Dakota transportation and safety manuals and plans was conducted. This review encompassed a wide range of documents critical to road safety. The objective was to evaluate these documents for their current alignment with the SSA, identifying areas where updates or modifications are needed to reflect a safety-first approach.

Through the review process, it became evident that while safety is clearly a priority, there is not a unified approach towards achieving zero fatalities across all documents. This collaborative gap reinforcing organizational silos presents a significant opportunity to update and refine South Dakota's transportation policies to embed SSA more deeply, helping to ensure a coherent and holistic approach.

The findings of the review highlight the importance of continuous updates and the integration of modern safety strategies across all planning and operational documentation. By adopting a more pronounced focus on safety from the initial stages of project planning through project execution, South Dakota can improve road safety outcomes, aligning with the ultimate goal of zero fatalities.

1.8 Agency-Specific Processes and Impact Evaluation

To address the complex landscape of road safety, safe systems, and the TZD initiative's goals, this section proposes a structured approach to enhance agency-specific processes and assess the impact of recommended strategies. This approach integrates leading and lagging indicators to evaluate the efficacy of recommended strategies, which are informed by the semi-structured interviews conducted with various agencies. The recommendations documented in Technical Memorandum #2 are tailored to each agency's unique context and are intended to improve their understanding and involvement in SHSP and TZD initiatives. All recommendations and evaluative measures are summarized in a table laying the groundwork for the next major stage of the study – the Implementation Plan.

1.9 Implementation Plan

The Implementation Plan represents the culmination of recommendations developed in this report. The Implementation Plan builds on the previously summarized agency-specific processes by developing a refined implementation plan for state and local agencies to adopt and evaluate the Zero

Fatality Transportation Safety Initiative. The Implementation Plan provides detailed steps for each recommendation listed under each interviewed agency and impact evaluation indicators. Where applicable, examples are included from other states and national noteworthy practices to illustrate how similar strategies have been successfully implemented elsewhere and to offer insights that South Dakota can leverage. This Implementation Plan represents a critical step in South Dakota's efforts toward achieving the goals of the TZD initiative.

1.10 Recommendations

The following recommendations highlight a unified strategy to integrate and implement safety measures across all levels of operation and planning, advocating for heightened collaboration among state departments, law enforcement, community organizations, and tribal agencies.

1.10.1 Appoint or hire a TZD Coordinator role within the SDDOT, preferably within the Division of Planning & Engineering

The SDDOT Division of Planning & Engineering is recommended to establish a TZD Coordinator Role because of its focused effort on infrastructure and roadway safety improvements, integrating safety in project scopes and policy development. As this recommendation supports many other steps of the implementation plan, the SDDOT should attempt to appoint a TZD Coordinator quickly (e.g., within three months of beginning the implementation of the Initiative). The TZD Coordinator will oversee the integration of the TZD Initiative across various departments and agencies. The coordinator will be the central liaison of all TZD efforts statewide and play the key role of inter-agency collaboration.

Utilize the TZD Coordinator to initialize implementation by identifying liaisons within each organization and holding meetings to discuss initial implementation steps with the goal of eventual full implementation.

1.10.2 Implement initial agency-specific processes and impact evaluations.

The implementation recommendations are designed to be scalable, allowing initial efforts to be adjusted based on the resources available. For instance, the steps following the hiring of a TZD Coordinator would be to start with manageable initiatives such as hosting an annual conference and quarterly meetings. Identifying TZD champions throughout state and local agencies and educating them on the principles of TZD can also be an effective initial strategy. After an internal review of existing safe system applications, some transportation departments have chosen to implement a portion of the TZD recommendations provided or extend the timelines required to achieve them. A TZD task force can be created to work with stakeholders and community partners to prioritize recommendations provided in the implementation plan (11.0), identify and propose (or redefine) timelines, designate departments and agencies to lead the efforts, and establish specific indicators to measure success over time.

The research team developed recommendations aimed at enhancing agency-specific processes and conducted an impact evaluation. This evaluation focused on establishing measurable performance indicators linked to safety and crash data, which are crucial for assessing the effectiveness of each safety initiative recommendation. Additionally, adjustments are suggested to related agency processes identified during the research phase as potential areas for improvement.

In all, 46 different recommendations have been identified and assigned to specific or multiple agencies, each with a leading indicator for initial impact evaluations, though not repeated here for

brevity. The organizations with assigned implementation tasks, steps, descriptions, and impact evaluation criteria, as summarized in 10.0 (Table 3) and detailed in 11.0 of this report, are listed below (next page):

- South Dakota Department of Transportation – Communications
- South Dakota Department of Transportation – Division of Operations
- South Dakota Department of Transportation – Division of Planning & Engineering
- South Dakota Department of Public Safety
- Federal Highway Administration
- South Dakota Local Transportation Assistance Program
- South Dakota Police Chiefs' Association
- South Dakota Department of Health
- South Dakota Department of Education
- South Dakota Safety Council
- Tribal Transportation Partners
- South Dakota Unified Judicial System

1.10.3 Implement remaining agency-specific processes and impact evaluations.

In addition to leading indicators for impact evaluations, each of the 46 recommendations also contains a lagging indicator, which represents ensuing or recurring goals from which to build upon the leading indicator. Measuring initiative performance is key to understanding which recommendations are working and which recommendations need adjustments.

The recommendations provided are designed to catalyze action, enhancing the state's capability to implement the SSA and achieve TZD outcomes effectively. These suggestions are not merely standalone solutions but are intended to integrate into and inform organizational strategies and future budget planning, helping to ensure that all initiatives are aligned with the overarching SSA and TZD objectives.

Similar to the previous recommendation for initial implementation, organizations with assigned implementation tasks, steps, descriptions, and impact evaluation criteria are summarized in 10.0 (Table 3) and detailed in 11.0 of this report.

1.10.4 Update and modify all relevant South Dakota transportation and safety manuals, plans, policies, and standards.

The team examined state agency manuals, plans, standards, and policies to identify necessary amendments for integrating the SSA into transportation safety. The review findings and recommendations are primarily designed to guide future work, helping to ensure that funding, policies, procedures, and activities are strategically aligned within the SSA to support the TZD

initiative. The documents that were reviewed in this study and featured with specific recommendations (9.0) are listed below:

- Road Design Manual
- Traffic Operations Manual
- Work Zone Safety and Mobility Plan
- Flagger Manual
- South Dakota Triennial Highway Safety Plan
- Permanent Signing Manual
- Traffic Signals on State Highways Policy
- Roadway Delineators, Guardrail Delineation, and Object Markers on State Highways Policy
- South Dakota Office of Highway Safety Grant Application and Management Handbook
- Local Roads Plan

Although not an all-encompassing list of related documents and policies in South Dakota, it is intended that this list serves as an adequate sample to provide a sense of necessary revisions. Other documents and policies will need to be reviewed and updated as TZD implementation continues.

2.0 PROBLEM DESCRIPTION

Communities and agencies across the nation are increasingly adopting safety initiatives utilizing the Safe System Approach with the goal of eliminating all traffic-related fatalities and severe injuries. There is an urgency to initiate innovative approaches to transportation safety to reduce traffic fatalities and serious injuries in South Dakota. However, merely setting ambitious targets is not enough to make a meaningful difference. It is crucial to recognize the need for a significant paradigm shift in perspective and methods towards traffic safety. Crafting this plan is as pivotal as the strategies and actions themselves. This study aims to unite relevant parties—from agency staff and safety experts to community leaders—to play an active role and assume responsibility in the formation and commitments of the implementation strategy.

Challenge #1 - Zero fatality transportation safety initiatives need to communicate across many forms of government agencies, to non-government stakeholders, and with the public.

State and local agencies must effectively collaborate to apply national safety strategies to enhance roadway safety across the state, and the initiative needs an implementation plan to define roles and responsibilities of multiple state and local government agencies. This research study used available resources to coordinate with these agencies to develop an initiative implementation plan specific to South Dakota. Those involved in traffic safety initiatives at the local, regional, state, and federal levels are aware that it can be difficult to coordinate efforts across several agencies and departments. Policies, methods, and communications amongst agencies may not always align, even if they have the same general safety purpose. This study proposes to address this challenge by improving communication and understanding of zero fatality initiatives. It provides an opportunity to elevate diverse voices to highlight individual perspectives. This study is an initial step in facilitating that communication and listening to feedback.

Challenge #2 - The zero fatality transportation safety initiative literature is broad and, in some cases, not applicable to South Dakota.

Though there is vast literature to consider on transportation safety, literature reviews set standards for policy and practice, provide evidence, and serve as a foundation for knowledge development. This task includes methodically searching for studies to create a collection of previous studies, consolidating pertinent research. The research team identified relevant literature, coordinated with the technical panel, and focused on successful zero fatality initiatives in similar regions.

Challenge #3 - Creation of tangible implementation measures will need to be vetted through the technical panel.

The development of an implementation plan for various state and local agencies is a large undertaking, but it represents a critical step in South Dakota's efforts toward achieving the goals of a zero fatality initiative. With the technical panel's guidance, the research team advanced forward with 12 agencies and divisions with which to define implementation plan recommendations, implementation steps, examples, and impact evaluation. An iterative approach was required between the research team and the technical panel to address gaps in agency processes, drawing on insights garnered throughout the research phase. The iterative process exercised in this study effectively sets an example for future efforts, as implementation continues to evolve, addressing emerging challenges and incorporating best practices to reduce fatal and serious injury crashes in South Dakota.

3.0 RESEARCH OBJECTIVES

3.1 Technical Objective 1: Evaluate relevant initiatives adopted by federal, state, and local agencies to reduce fatal and serious injury crashes.

Include a comprehensive literature review and interviews with representatives from neighboring states in the technical memorandum. The literature review delves into the SSA and its implementation principles, differentiating it from zero fatality initiatives. The interviews with neighboring state initiative representatives provide additional insights and context to refine questions and gain a better understanding to develop a statewide Initiative.

3.2 Technical Objective 2: Develop the Initiative for South Dakota.

To achieve this, the objective involves synthesizing the insights gathered from the comprehensive literature review and interviews with neighboring state representatives. It seeks to address the complex nature of road traffic collisions and the unique challenges South Dakota faces in implementing such initiatives. This objective is dedicated to formulating a practical and effective approach to significantly reduce traffic fatalities and serious injuries in the state.

3.3 Technical Objective 3: Develop a plan that identifies enhancements for South Dakota state and local agencies to implement the Initiative.

The plan will include obtaining commitments toward the safety initiative and implementing and monitoring the Initiative with details outlined in this final report.

4.0 TASK DESCRIPTIONS

The study process followed a predetermined scope, a set of tasks described below.

4.1 Task 1: The research team met with the Technical Panel.

The research team organized a kickoff meeting with the technical panel to discuss aspects of the project management plan, communication strategy, project scope, timeline, and expected outputs. Two weeks prior to this kickoff meeting, the research team shared draft versions of the aforementioned documents with the technical panel.

4.2 Task 2: The research team reviewed and summarized relevant literature.

The research team initially identified relevant literature, compiling a list of publications, reports, and independent studies spanning local, state, and federal levels. The literature review presented the technical panel with an array of current zero fatality initiatives, implementation models, and ongoing safety improvement interventions. Insights were gained from the approaches adopted by existing strategies along with the findings of current established best practices.

4.3 Task 3: The research team interviewed zero fatality initiative coordinators.

To understand the less tangible factors influencing zero fatality programs, the research team collaborated with the technical panel to interview surrounding states' coordinators of zero fatality initiatives. Discussions during the interviews focused on the unique traits of zero fatality programs, merits and drawbacks of safety interventions, availability of funding sources, avenues for community involvement and education, and any possible impediments to rolling out zero fatality transportation safety initiatives.

4.4 Task 4: The research team summarized the findings of tasks 2 and 3 and proposed a zero fatality transportation safety initiative.

The research team drafted Technical Memorandum #1 to summarize the findings from the comprehensive literature review and interviews and proposed a zero fatality transportation safety initiative tailored for South Dakota.

4.5 Task 5: Upon approval of the project's technical panel, the research team interviewed state and local agencies and identified the roles and responsibilities, key personnel, safety programs, and additional resources needed for the implementation of the selected Initiative.

The team crafted an initial Technical Memorandum #2 Summary using information gathered in interviews guided by the technical panel. This summary outlined safety program recommendations, necessary resources, roles and responsibilities, key personnel involved, and preliminary implementation suggestions.

4.6 Task 6: The research team reviewed state agency standards and policies and recommended changes needed to incorporate the Safe System Approach to transportation safety.

The team examined state agency standards and policies to identify necessary amendments for integrating the SSA into transportation safety. The team utilized a consistent policy review template during the examination of standards and policies, focused on developing recommendations for policy changes that facilitate the adoption of the SSA.

4.7 Task 7: The research team developed recommendations for agency-specific processes and provided an impact evaluation for the selected initiative.

The team developed recommendations aimed at enhancing agency-specific processes and conducted an impact evaluation for the selected Initiative. The evaluation focused on establishing measurable performance indicators linked to safety and crash data, which are crucial for assessing the effectiveness of each safety initiative recommendation. Additionally, the task suggested adjustments to related agency processes identified during the research phase as potential areas for improvement.

4.8 Task 8: The research team prepared and presented for approval by the project's technical panel a technical memorandum that summarized the findings of tasks 5 to 7.

The team compiled and presented a comprehensive Technical Memorandum #2 summarizing the outcomes of tasks 5 through 7 for the project's technical panel's approval. Following panel review and approval, these summarized findings were incorporated into the overarching safety study document.

4.9 Task 9: The research team prepared and presented for approval by the project's technical panel an implementation plan for South Dakota state and local agencies to implement and evaluate the selected zero fatality transportation safety initiative and the Safe System Approach to transportation safety.

The team developed an implementation plan that presents agency-specific recommendations, detailed steps, and impact evaluation indicators for various state and local entities that may be involved the proposed initiative, emphasizing the SSA to transportation safety.

4.10 Task 10: In conformance with *Guidelines for Performing Research for the South Dakota Department of Transportation*, the research team prepares this final report summarizing the research methodology, findings, conclusions, and recommendations.

The team prepared this final report documenting the methodology, key model inputs, interview summary, study findings, recommendations, and implementation plan. Additionally, the team prepared a concise executive summary highlighting study findings, results, recommendations, and conclusions.

4.11 Task 11: The research team will make an executive presentation to the South Dakota Department of Transportation Research Review Board at the conclusion of this project.

The team will prepare and present research methodology, study findings, and recommendations to the South Dakota Department of Transportation Research Review Board.

5.0 RESULTS OF LITERATURE REVIEW

The multidimensional nature of road traffic collisions has long captivated the interest of officials around the world. One of the most comprehensive approaches to traffic safety includes initiatives attempting to reduce traffic fatalities and serious injuries to zero. Identifying the challenges to effectively implementing such initiatives in South Dakota in advance will be very valuable. The objective of this section is to investigate previous implementation strategies to guide implementation of a zero fatality initiative in South Dakota.

In the United States in 2020, there were 35,766 fatal motor vehicle collisions, resulting in 38,824 fatalities. This represents 1.34 fatalities per 100 million vehicle miles traveled and 11.7 fatalities per 100,000 people. In South Dakota, there were 15.9 fatalities for every 100,000 residents. Table 1 below summarizes the 2020 fatal crash totals in and around South Dakota and the nationwide numbers reported by the U.S. Department of Transportation (USDOT) (NHTSA, 2020).

Table 1 Traffic Safety Performance (Core Outcome) Measures in 2020

Core Outcome Measures		South Dakota	Iowa	Minnesota	Montana	North Dakota	Nebraska	Wyoming	USA
Traffic Fatalities	Total	**141**	337	394	213	100	233	127	38,824
	Rural	**109 (77%)**	239 (71%)	240 (61%)	190 (89%)	76 (76%)	165 (71%)	102 (80%)	21,650 (56%)
	Urban	**32 (23%)**	98 (29%)	153 (39%)	22 (10%)	24 (24%)	68 (29%)	25 (20%)	16,665 (43%)
	Unknown	**0**	0	1	1	0	0	0	509 (<1%)
Fatalities per 100 million Vehicle Miles Driven	Total	**1.45**	1.13	0.76	1.76	1.14	1.20	1.30	1.34
	Rural	**1.59**	1.34	1.08	2.26	1.29	1.52	1.43	1.84
	Urban	**1.10**	0.83	0.52	0.60	0.83	0.79	0.94	1.08

** Blue represents fatalities and fatality rates in South Dakota. Green denotes fatality rates lower than those in South Dakota, while red highlights rates that exceed South Dakota's.*

A literature review was conducted to examine existing plans and regulations related to South Dakota's multimodal travel network. It was also beneficial to identify and analyze relevant policies from neighboring states. The information gathered was compiled and compared to offer the technical panel a variety of existing zero fatality initiatives, implementation plans, and current safety countermeasures from which to develop its safety program.

The results of the literature review findings were documented in this report, and full literature review details are described in Appendix A. Zero fatality initiatives were reviewed for states near South Dakota: Minnesota, Michigan, Iowa, Nebraska, Wyoming, Montana, North Dakota, and Colorado.

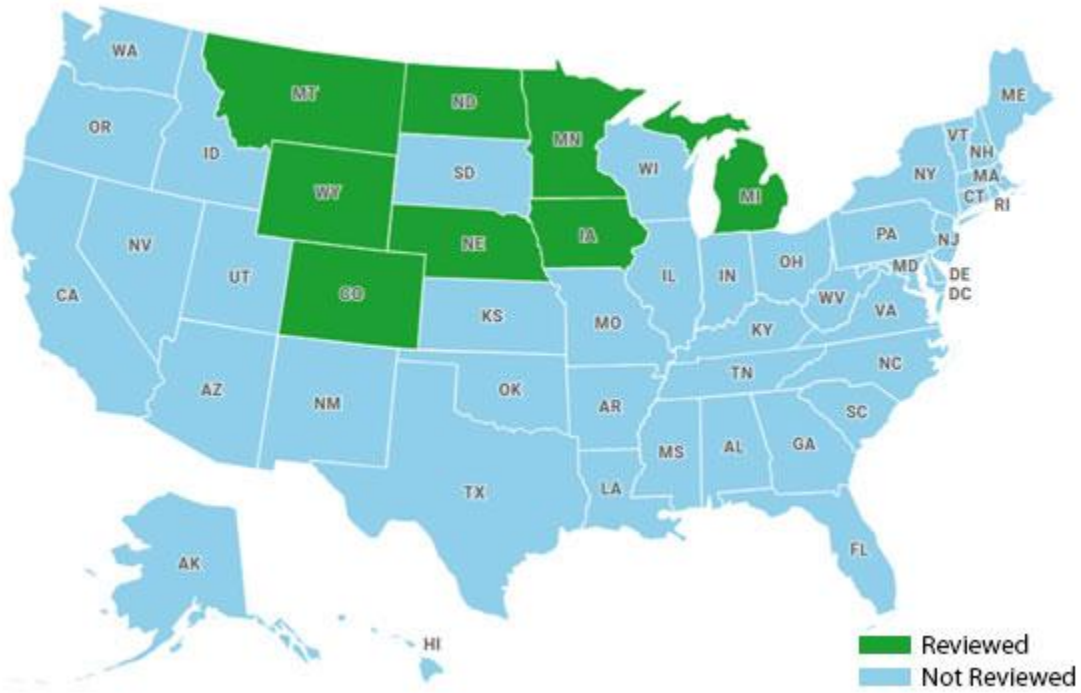


Figure 2: States whose Zero Fatality Initiatives were Reviewed

Regional and State documents

- Zero Fatality Initiatives
- Strategic Highway Safety Plans (SHSPs)

Federal documents

- FHWA Transportation Safety Planning and the Zero Deaths Vision: A Guide for Metropolitan Planning Organizations and Local Communities
- FHWA Strategies to Coordinate Zero Deaths Efforts for State and Local Agencies
- NHTSA Countermeasures that Work

5.1 Literature Review Findings

The literature review began by emphasizing the importance of a clear vision in transportation safety, delving into the Safe System Approach which features implementation principles to save lives on America's roadways. This approach views all components of transportation as interconnected elements of a comprehensive system, aiming to mitigate serious crashes and eliminate road fatalities. The zero fatality initiatives were examined based on the premise that no life lost on the roads is acceptable, which builds on the SSA.

These two concepts are not used interchangeably in the literature review. Zero fatality initiatives are perceived as a moral principle and performance target, while the SSA is seen as a strategic implementation framework to achieve that goal.

Further review of states' SHSPs revealed unique challenges, from accurate evaluation to comprehensive coverage of essential safety aspects. Guidance from the USDOT provided insights into effective safety planning and emphasized collaborative efforts. This theme of collaboration extended into the recommendations from the Federal Highway Administration (FHWA), which emphasized the significance of continuous communication between state and local safety entities.

In summary, the literature review underscores the multifaceted nature of road safety and the collective commitment required to aspire for a future without road fatalities.

5.1.1 Establishing a Vision

The zero fatalities concept is described differently by various states, either as a goal or as a vision, which offers a compelling, unified vision for all audiences and unites safety partners together. Safety partners unite behind the notion that each life matters and that achieving zero casualties is the only ethically acceptable objective. It offers a mentality that energizes safety initiatives, improves the execution of the SHSPs, and assigns responsibility to everyone using the transportation system to achieve safer roads.

5.1.1.1 Comparing Towards Zero Deaths (TZD) with Vision Zero (VZ)

Three main national initiatives aim to reduce traffic fatalities to zero in the US: Toward Zero Deaths, Vision Zero, and Road to Zero. This section compares Vision Zero and Toward Zero Deaths initiatives. The selection of these two strategies stems from their prevalent adoption in nearby states. Despite different terminologies, the goal of safe travel remains the same. It's important to note that the Road to Zero initiative is not included in this comparison. The Road to Zero initiative is not included in this comparison because it has not been adopted by any of the nearby states, making it less pertinent to our immediate regional context.

There are elements of psychology with the branding of safety initiatives. Upon hearing the phrase "Vision Zero", skeptical reactions may follow, doubting the feasibility of a road transport system with zero fatalities. Objections to the concept are amplified if fatalities trends are stable or worsening. In this context, "Towards Zero Deaths" (TZD), emerges as a more acceptable phrase.

TZD, which echoes Sweden's Vision Zero in concept, differentiates itself in several ways (The American Trafffic Safety Services Association, 2008):

- The inclusion of the word "toward" underscores a progressive movement to counter the staggering number of annual fatalities on U.S. roads.
- TZD recognizes the aspirational nature of zero fatalities, with the anticipated objection that one could never actually achieve zero deaths, emphasizing the value of every life and the universal expectation of safety.
- By integrating TZD strategies across all governmental tiers, there's potential to reduce fatalities at federal, state, and local levels.

However, if TZD is dissected for its literal meaning, even a small fraction of the current fatalities may seem like too many. For instance, seeing 40,000 deaths in a year in the US, even if it is a reduction, may not be deemed close enough to zero (Hauer, 2010).

These approaches, TZD and VZ, underscore the significance of a combined effort to push the number of road fatalities closer to zero. Setting a target of zero traffic fatalities challenges traditional policy-making processes, which typically depend on cost-benefit evaluations to distribute resources for societal demands. The ethical stance of zero deaths suggests that no number of fatalities, other than zero, can warrant reallocating resources away from roadway safety. This perspective, diverging from standard safety policy viewpoints, might pose discomfort for those in the safety sector. This was observed in Sweden during the early phases of the safe system application (Belin et al. 2012). Nevertheless, the TZD approach has been successful in addressing these concerns among US safety experts, securing widespread agreement on a goal rooted in achieving zero roadway casualties.

5.1.2 The Safe System Approach

Adopting the Safe System Approach represents the most efficient and impactful method for assessing and addressing the risks of fatal and severe injury crashes within a transportation network and becomes the strategic implementation framework to achieve the zero fatality goal.

The foundation of the SSA recognizes that human errors occur and that the human body has limitations withstanding crash impacts. Within a safe system, the objective is to prevent fatalities resulting from these errors. Implementing the SSA entails proactively addressing human errors by designing and maintaining road infrastructure to minimize the likelihood of mistakes resulting in severe injury or death. Encouraging safe speeds, manipulating crash angles, and employing effective road design and management practices help reduce the severity of injuries (FHWA, 2023). These methods reduce kinetic energy transfer at impact. The six key principles of the SSA are:

- Death/serious injury is unacceptable.
- Humans make mistakes.
- Humans are vulnerable.
- Responsibility is shared.
- Safety is proactive.
- Redundancy is crucial.

These six principles combine to create an approach with five key objectives:

- Safer people: Encouraging the adoption of safe and responsible driving behaviors and raising awareness about the risks associated with speeding, impaired driving, distracted driving, and failure to use seat belts. Safer behaviors protect the drivers and all other individuals sharing the road.
- Safer roads: Incorporating design measures that address human error, including the implementation of physical barriers to separate vehicles, bicycles, and pedestrians.

- Safer vehicles: Expanding the availability of advanced safety technologies to a wider range of new and upgraded vehicles to prevent crashes and reduce injuries in the event of a crash.
- Safer Speeds: Encouraging the adoption of safer speeds on all roadways by employing a comprehensive approach that includes road design enhancements, suitable speed limit establishment, targeted education initiatives, outreach campaigns, and effective enforcement measures.
- Post-Crash Care: Improving crash survivability by helping to ensure expedited access to emergency medical care while simultaneously prioritizing the safety of first responders and minimizing the risk of secondary crashes through the implementation of robust traffic incident management practices (GHSA, 2023).

The successful implementation of the SSA relies on fostering a safety culture that prioritizes safety in road system investment decisions. To realize the vision of zero deaths, everyone must acknowledge the inherent unacceptability and preventability of fatalities and serious injuries.

The SSA signifies a shift towards a more comprehensive and integrative strategy to enhance road safety. Rather than addressing isolated issues, it urges us to view road safety as an interconnected web of factors. Although this method often unfolds gradually, every step, no matter how small, should be seen in the context of the broader objective: the elimination of road fatalities and severe injuries.

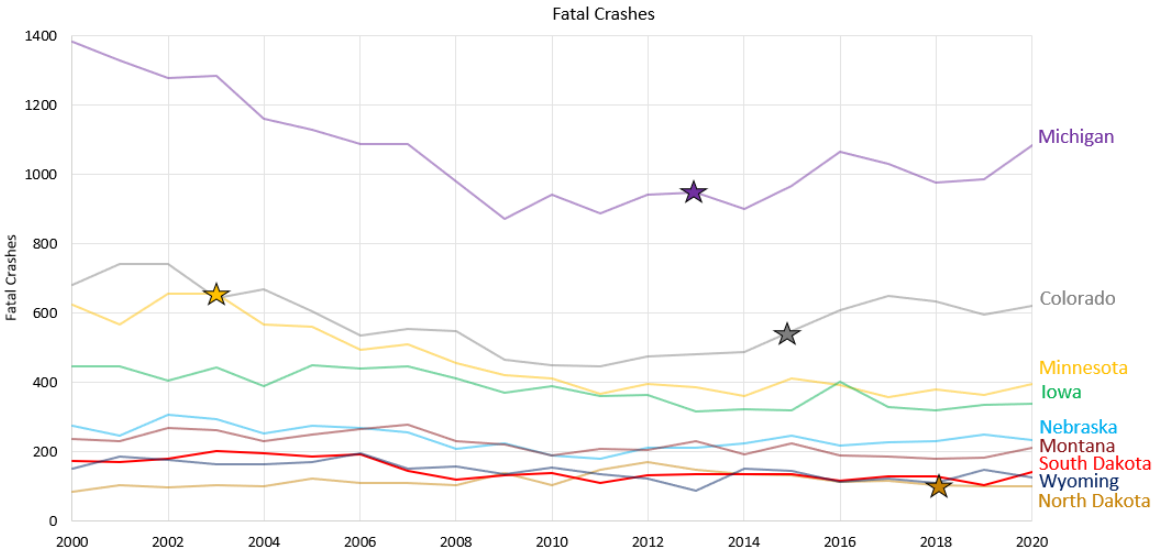
5.1.3 Zero Fatality Initiatives

Across the United States, traffic-related fatalities and severe injuries continue to be a pressing concern, prompting various states and municipalities to take proactive measures to address this issue. Several initiatives, such as the TZD and VZ initiatives, have been implemented in different regions with the aim of reducing and ultimately eradicating traffic-related fatalities and severe injuries. These initiatives represent a commitment from various governmental departments and organizations to prevent the tragic and preventable loss of lives on the roads. This section provides a brief summary of the literature review findings of the zero fatality initiative efforts made by different states near South Dakota: Minnesota, Michigan, Iowa, Nebraska, Wyoming, Montana, North Dakota, and Colorado. More details can be found in Appendix A, describing the strategies employed, and the progress made in the journey towards achieving zero deaths and injuries on the roads in these states.

Figure 3 presents the initiation of zero fatality initiatives alongside total fatalities for some states that implemented it. While some states, like Montana and North Dakota, have statewide initiatives, others, like Iowa and Nebraska, have localized efforts in individual cities. Organizations and government bodies are employing comprehensive approaches that include education, environment, enforcement, engineering, and emergency medical services. Although progress has been made, with some regions recording significant decreases in vehicle-related fatalities, other trends indicate a concerning reversal in some areas, highlighting the urgent need for re-evaluation, adaptation, and continuous efforts to achieve the goal of zero deaths on roads.

To address the varied effectiveness of TZD initiatives across different states, it's crucial to recognize the influence of multiple factors beyond the strategies themselves. Variations in traffic volume, demographic changes, urbanization, and advances in technology can significantly impact fatality rates. The success of TZD initiatives largely depends on customization to each state's unique context,

including community engagement, resource allocation, and enforcement approaches. Additionally, the time lag between implementing safety measures and observing tangible outcomes is an important consideration, as some strategies may require a longer period to demonstrate their effects. Therefore, a comprehensive and nuanced evaluation of TZD initiatives, considering these diverse factors, is essential for a more accurate understanding of their impact on traffic safety.



** Stars represent the initiation dates of statewide zero fatality programs as derived from the literature review*

Figure 3: Zero Fatality Initiatives and Fatal Crashes

5.1.3.1 Challenges Encountered in Zero Fatality Initiatives

The zero fatality Initiatives aim to reduce traffic-related fatalities by addressing various factors contributing to crashes. However, several challenges hinder the progress and effectiveness of these initiatives. This section outlines the documented major challenges encountered by zero fatality initiatives, elaborating on each to provide a comprehensive understanding of the obstacles faced in the journey towards zero traffic-related fatalities. The challenges delineated in this section have been sourced from a thorough review of official reports, studies, and publications from key traffic safety organizations and agencies. These challenges range from individual, political, public, and organizational factors that impede effectiveness. Addressing these challenges is critical for the success of the Initiative.

- **Changing Cultural and Individual Behavior:** It is challenging to modify the existing culture and individual behaviors related to traffic safety. A focus on building a culture of traffic safety is essential to make significant progress towards zero fatalities, but this has not been a historical focus for these initiatives.

- **Public Awareness and Understanding:** There is a significant lack of awareness and understanding among the public, including many potential traffic safety partners, about what the Initiative is and how traffic safety impacts their lives or work. Too often, the “human error” aspect of severe crashes is deemed as an uncontrollable factor.

- **Agency Influence Imbalance:** Stakeholders do not see the Initiative as a true partnership among the partner agencies, with differing perspectives on who is leading. This confusion limits the scope of the Initiative and hinders the involvement of potential partners, as many believe it is primarily managed by a single agency.
- **Unclear Decision-Making:** There is a lack of clarity regarding who is responsible for making decisions within the Initiative. The absence of clear direction and accountability lines causes decision-making delays and creates tension among partners regarding ownership of decisions.
- **Inadequate Staff and Skillsets:** There is a shortage of staff to support the work of the Initiative, and the existing staff does not have the appropriate skillsets required to effectively support the program.
- **Insufficient Political Support:** There is a lack of political support at both the state and local levels for the Initiative and traffic safety activities in general.
- **Lack of Participation and Buy-In:** Not all relevant traffic safety partners currently participate in the Initiative, and there is a lack of buy-in to the program among current and potential partners.
- **Ineffective Messaging and Communication Strategies:** The Initiative requires better messaging and communication strategies, specifically focused on creating a culture of traffic safety.
- **Lack of Diversity and Cultural Sensitivity:** There is a lack of diversity and cultural sensitivity within the Initiative and within traffic safety work in general.
- **Negative Public Perception of Law Enforcement:** A fracturing or shortage of public support towards law enforcement make it difficult for the Initiative to implement enforcement strategies to improve traffic safety.
- **Inadequate Reliance on Data:** There is not enough reliance on data in decision-making, or it is not clear to stakeholders how data is used in decision-making.
- **Impractical Traffic Safety Funding:** Although traffic safety funding is available, it is difficult to use because it mostly comes from federal sources with many restrictions on what it can fund and reporting requirements, making it impractical or unappealing for many partners.
- **Lack of Public Support:** Public support for efforts which are developed through a zero fatality initiative can create controversy and lack of public support.

5.1.4 Transportation Safety Plans

The planning of road safety in the United States is centered around SHSPs, introduced by the American Association of State Highway and Transportation Officials (AASHTO) in 1997. AASHTO encouraged states to develop SHSPs based on data and evidence that addressed important areas outlined in the AASHTO plan (AASHTO, 1997). While some states had already created their SHSPs before the AASHTO Strategic Highway Safety Plan was released, others began afterward. However, by 2005, all states were required to establish SHSPs in accordance with the Safe, Accountable, Flexible,

Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), and today, each state has completed an SHSP and is actively implementing it.

The literature review indicates that the implementation of SHSPs is a means to uphold the principle of zero fatalities, a prevailing principle that predates modern zero fatality initiatives. SHSPs offer an effective method for putting this philosophy into action by providing a data-driven framework that enables better integration of safety and planning documents. SHSPs also provide the necessary leadership, advocates, partners, stakeholders, action plans, and resources for the agency. As SHSPs tend to become more refined and strategic with time, incorporating the SSA into the existing structure becomes easier. Because SHSPs are already actively implemented by every state, it is the instrument that most easily integrates the SSA rather than starting from nothing.

Table 2 summarizes the state initiatives and how they relate to SHSPs. More details on states' transportation safety plans are described in Appendix A.

Table 2: Summary of Literature from State Initiatives

State	State initiatives	Primary Stakeholders	Safety Partners	SHSP Update Process	Priority Safety Areas
Minnesota	Towards Zero Death Program, SHSP, HSP, HSIP	The Minnesota TZD Leadership Team (Minnesota Department of Transportation, Department of Public Safety, and Department of Health), Federal, State, County, and Local Government Agencies, Private Organizations, Community Groups, Advocates, and Academia	Minnesota Department of Transportation, Department of Public Safety, and Department of Health	• Analyze crash data • Consult traffic safety professionals and advocates • Prioritize focus areas • Identify action-oriented strategies • Identify potential local champions • Develop a user-friendly updated plan	Inattentive drivers, impaired roadway users, intersections, speed, lane departure, unbelted vehicle occupants
Michigan	SHSP, HSIP, Commercial Vehicle Safety Plan, HSP, Local, Tribal or Regional Traffic Safety Plans	Governor's Traffic Safety Advisory Commission: Michigan Department of Transportation, Office of Highway Safety Planning, Governor's Office, Michigan Department of Education, Michigan Department of State, Michigan Department of State Police, Aging and Adult Services Agency and Local Government Representatives.	Governor's Traffic Safety Advisory Commission, Michigan Department of Transportation, and Michigan State Police	• Analyze crash data to understand crash context • Significant stakeholder engagement and identify/modify emphasis areas • Identify strategies • Implementation • Evaluation	Distracted driving, impaired driving, safety roadway improvements, pedestrian and bicycle safety, inexperienced drivers
Iowa	Zero Fatalities, SHSP, HSIP	Iowa Department of Transportation, Iowa Department of Public Safety, Iowa Department of Human Rights, Iowa Department of Public Health, US DOT, Iowa Association of Councils of Governments, Iowa County Engineers	Iowa Department of Transportation, Iowa Department of Public Safety, Iowa Department of Public Health	• Review of previous update and strategies • Data collection and analysis • Gather stakeholder input	Lane departures and roadside collisions, speed related, unprotected persons, young drivers, intersections, impairment involved, older drivers,

State	State initiatives	Primary Stakeholders	Safety Partners	SHSP Update Process	Priority Safety Areas
		Association, Iowa Local Technical Assistance Program, Iowa State University's Institute for Transportation, The University of Iowa's Injury Prevention Research Center		• Identification of strategies • Define strategies and goals • Publish update • Implementation • Evaluation	distracted or inattentive drivers
Nebraska	SHSP, toward zero deaths, HSIP	Nebraska Interagency Safety Committee (IASC) (Nebraska Department of Transportation, Nebraska State Patrol, Nebraska Department of Motor Vehicles, Nebraska Department of Health & Human Services, Nebraska Local Technical Assistance Program, League of Nebraska Municipalities, and the Nebraska Association of County Officials)	Nebraska Department of Transportation, Nebraska State Patrol, Nebraska Department of Motor Vehicles, Nebraska Department of Health & Human Services, Nebraska Local Technical Assistance Program, League of Nebraska Municipalities, and the Nebraska Association of County Officials, EMS/Trauma, Nebraska Local Technical Assistance Program, Federal Highway Administration (federal advisor), National Highway Traffic Safety Administration (federal advisor), Federal Motor Carrier Safety Administration (federal advisor)	• Review data • Summary of crash data • Safety Stakeholder Survey • Update CEAs in accordance with data and survey findings	Increasing seat belt usage, reducing roadway/lane departure crashes, reducing impaired driving crashes, reducing intersection crashes, reducing young driver crashes, reducing older driver crashes, reducing non-motorist crashes
Wyoming	SHSP, Towards Zero Deaths, HSIP, HSP	Wyoming Department of Transportation, Wyoming Highway Patrol, Wyoming Department of Health, Wyoming Pathways, National Highway Traffic Safety Administration Representatives, Federal Motor Carrier Safety Administration Representative,	Wyoming Department of Transportation, Local, state, Federal and private partnerships	• Coordination • Implementation • Evaluation • Revision	Lane or road departure crashes, use of safety restraints, impaired driving, speeding or driving too fast for conditions, curve crashes, young drivers

State	State initiatives	Primary Stakeholders	Safety Partners	SHSP Update Process	Priority Safety Areas
		FHWA Representatives, Wyoming Pathways and University of Wyoming			
Montana	Vision Zero, HSP, CHSP, HSIP	Montana Department of Transportation, Montana Division Federal Highway Administration, Montana Association of Counties (MACo), Montana Highway Patrol, Montana Tribal Planners and Representatives, Department of Public Health and Human Services, Motor Vehicle Division from Department of Justice	Montana Highway Patrol, State and Local DUI Courts, Local Law Enforcement, Family, Career and Community Leaders of America (FCCLA), Northern Tribes DUI Task Force	• Analyze data to define problem/priority areas and identify stakeholders • Develop priorities and goals • Develop emphasis area teams to meet throughout the year • Evaluate outcomes and projects for the next cycle	Roadway departure and intersection-related crashes, impaired driving, unrestrained vehicle occupant, and emergency response – after-crash care
North Dakota	Vision Zero, SHSP	Governor's office, North Dakota Department of Transportation, ND Department of Health, ND Highway Patrol, North Dakota League of Cities, North Dakota Indian Affairs Commission, North Dakota Bureau of Criminal Investigation, Office of Attorney General, North Dakota Highway Patrol, North Dakota Association of counties, North Dakota Department of Health, North Dakota Supreme Court	North Dakota Department of Transportation, North Dakota Motor Carriers Association, North Dakota EMS Association, North Dakota Safety Council, North Dakota Department of Human Services, North Dakota Highway Patrol, North Dakota Department of Health, Academia	• Crash analysis • Select safety emphasis areas • Program assessment and Propose safety strategies • Identify priority safety strategies • Update North Dakota's SHSP • Implementation and evaluation	Lane departure, unbelted vehicle occupants, alcohol and/or drug related, speeding/aggressive driving, young drivers, intersections
Colorado	Toward Zero deaths, STSP, HSP, Whole system Whole Safety	Colorado Department of Transportation, Colorado Department of Public Health and Environment, Colorado Department of Revenue, Colorado Transportation Commission, Colorado State Patrol, Denver Regional	Colorado Department of Transportation, Colorado State Patrol, Colorado Department of Revenue, Colorado Department of Public Health and Environment	• Project inception, strategy refinement, and prioritization • Finalize tier 1 strategies and overall plan modifications	Aggressive driving, distracted driving, occupant protection, and impaired driving

State	State initiatives	Primary Stakeholders	Safety Partners	SHSP Update Process	Priority Safety Areas
		Council of Governments, FHWA-Colorado Division, Grand Valley Bikes, National Highway Traffic Safety Administration, North Front Range Metropolitan Planning Organization. Pikes Peak Area Council of Governments and Pueblo Area Council of Governments		• Implementation	

5.1.4.1 Challenges in Developing SHSPs

As integral tools for promoting roadway safety, SHSPs have been widely adopted to devise and implement strategies at the federal and state levels. While these plans are undoubtedly pivotal in shaping a safer transportation environment, it is equally essential to understand their inherent challenges. This section delves into the limitations of SHSPs, offering insights to refine future iterations and strategies. As can be expected, these are similar to the challenges encountered in zero fatality initiatives.

- **Multiagency Complexity:** The intertwining roles of various agencies can sometimes create a labyrinth of responsibilities, leading to potential miscommunications or even misalignment of primary objectives.
- **Varied Application of Guidance:** Not all states adhere to or implement the guidance material consistently. This divergence might result in plans that fall short of their potential efficacy.
- **Evaluation Concerns:** The absence of a clear evaluative framework or evidence of past effectiveness makes it challenging to fine-tune or enhance the SHSPs in their subsequent versions.
- **Assessment Subjectivity:** The lens through which an SHSP is viewed can differ from one assessor to another, leading to potential discrepancies in their evaluations.
- **Lack of Robust Implementation:** A plan is only as good as its execution. Not all states implement the SHSPs consistently.
- **Shortage of Substance:** Many SHSPs currently miss some essential components crucial for their successful realization on the ground. A holistic understanding of SHSPs might be elusive if one solely relies on the published plans, as they might not include all the complementary strategies or action plans.
- **Varying Styles and Purposes:** The intended audience dictates the style and content of an SHSP. However, this variance might water down the core message or purpose of the plan.
- **Personnel Challenges:** A shortage of dedicated personnel for SHSP development and continuity.
- **Funding Concerns:** Many agencies face budgetary constraints for safety improvements.
- **Limited Data Access:** A lack of comprehensive, accurate, or accessible data can be a hindrance.

While SHSPs play a key role in charting the course for roadway safety, acknowledging their limitations can provide a clearer roadmap for their refinement and more effective implementation. Addressing these challenges head-on will be pivotal in harnessing the full potential of SHSPs in the future (Brett P. Hughes, 2019).

5.2 Other Literature

This literature review also covered national strategies for zero fatality initiatives for Metropolitan Planning Organizations, state agencies, local agencies, and local communities. The review of those resources is documented in Appendix A.

5.3 Summary

In this section, the research team reviewed zero fatality transportation safety initiatives and implementation. The findings from the review revealed that each state has a unique way of defining and documenting its own initiatives. Generally, South Dakota's neighboring states have implemented zero fatality initiatives, but the scale of the efforts to formalize a comprehensive campaign to reduce traffic deaths to zero varies state to state. While some states have created a trail of elaborate websites, detailed documentation, and easy-to-find public outreach efforts, other states confine the formal documentation mostly within the framework of state SHSPs, meeting minimum FHWA guidelines to reducing highway fatalities. All the states have acknowledged that fatal and serious injuries are unacceptable outcomes for vehicle crashes. Challenges to zero fatality initiatives have been documented, however it is challenging to uncover the primary forces that drive or limit initiative implementation via literature review alone. It becomes essential to utilize the interview process to identify and understand the primary limiting forces for each state (funding, culture, etc.) to help the panel clearly understand which approach has the greatest potential to meet zero fatality initiative goals.

6.0 INTERVIEW METHODOLOGY AND SCOPE

6.1 Interview Data Collection

A semi-structured interview process was designed to understand the build-up and implementation of zero fatality initiatives, based on the Strategic Highway Safety Plan (SHSP) action framework. Initially, the Governor's Highway Safety Representative and/or SHSP lead were contacted to confirm the appropriate principal contact for understanding SHSP implementation. It is anticipated that most of the information will be collected in this primary interview. Ancillary interviews to address specific features and/or questions may be considered as snowball-type additions to the interview pool.

The interview framework was drawn largely from questions posed by the technical panel in conjunction with a safe system environmental scan. States' safety initiatives were also reviewed prior to interviews. Together, this information provided the context to refine questions aimed at gaining insight for a future statewide zero fatalities initiative. The FHWA SHSP Implementation Process Model (FHWA, 2010) was specifically considered in zero fatality initiatives interviews.

6.2 Surrounding State Peer Agencies

Five neighboring states were selected from peers based on resources available to conduct and analyze interviews in a timely manner. Technical panel preferences for neighboring states and similar traffic environments were considered in presenting a draft peer state interviewee list. The SDDOT approved zero fatality initiative implementation state interview candidates:

- North Dakota
- Minnesota
- Nebraska
- Wyoming
- Montana

6.3 Interview Focus Areas

Interview Focus Areas (per the FHWA SHSP Implementation Process Model):

- SHSP leadership
- Implementation framework
- Zero fatality Initiative insight
- Define safe system lens/any current activity
- Media/public engagement
- Implementation progress monitoring/collaborations, metric(s), etc.
- Continuous improvement processes
- Special Interest: Tribal Nations, local roads

The technical panel provided an initial set of questions of interest. Draft questions were designed to incorporate these questions in an interview framework to address the FHWA model. The draft interview focus areas and questions were developed and shared with the study team. The team discussed and modified the questions to best generate discussion of topic areas of most interest to the technical panel. The questions were revised based on the technical panel feedback and finalized for the interview exercise with 15 questions and assorted follow-up questions.

6.4 Interview Synopses

The research team arranged and conducted five peer-state interviews between July 20, 2023, and September 6, 2023. Each interview was approximately one hour. Research team interview notes were transcribed into a spreadsheet file organized around themes in the eight FHWA implementation process model areas. The interviews provided invaluable insights that extend beyond the quantitative realm of traffic safety statistics and data. These interviews not only helped solidify foundational understanding but also introduced nuanced challenges and effective strategies employed across different states.

The major findings are summarized below. More details on states' interviews are described in Appendix B.

6.5 Major Findings

- Implementation is strengthened by data-driven priorities, strategies, and progress assessment.
- Include many local and regional players within government, along with local transportation safety advocacy groups, private businesses, and leading industry sector representatives rather than a top-down approach.
- Lack of communication hindered early Vision Zero implementations.
- Media role is important; make sure to send them relevant information.
- Social media campaigns are important to help engage teenagers and younger drivers.
- Tribal Nation relationships can be strengthened with DOT project and procurement support.
- Vision Zero initiatives have been useful in starting safety awareness campaigns.
- The state department of transportation is commonly the lead agency, but most states included the safe system (or 4E) partner agencies in planning and implementation.
- Minimize politics in road safety decision-making by being primarily data-driven.

The primary objective was to discern the framework, challenges, and effectiveness of the safety initiatives deployed by various neighboring states. Major findings of the interview process reaffirm that strong data-driven approaches strengthen the implementation of zero fatality safety initiatives, and that collaboration across various local and regional entities is paramount. Furthermore, it

becomes evident that communication serves as a linchpin, its absence in the early phases of zero fatality initiatives hindered the optimal execution of the program.

While the literature review points toward the significance of communication, the extent of its importance is revealed through the interviews. The emphasis on social media campaigns, especially targeting younger demographics, introduces a fresh perspective, highlighting the evolving landscape of safety awareness campaigns.

Another interesting takeaway is tribal relationships. While literature sheds light on the importance of equitable community outreach, practical challenges faced by states like Nebraska and North Dakota in integrating tribal feedback and facilitating their projects expand the understanding of this domain.

While the literature review provided foundational insights into the structure and strategies of safety initiatives, the depth of political challenges uncovered through candid interviews was a significant revelation. The discussions around politics, organizational structure, and the nuances of local campaigns unveiled layers of intricacies. Political dynamics, as indicated especially by Nebraska's insights, emerged as a paramount concern that could potentially be seen in South Dakota.

The emphasis on a data-driven approach, proposed by Nebraska, to sidestep political complications showcases a pragmatic strategy. The prioritization of data-driven projects suggests a conscious attempt to mitigate the potential impediments politics might introduce, reaffirming the significance of empirical evidence in avoiding potential bureaucratic entanglements.

In summary, the literature review was enriched by the interviews, not only corroborating initial assumptions but also introducing new dimensions of the safety initiative landscape. This holistic and enriched understanding paves the way for more informed, effective, and adaptive safety programs in South Dakota.

7.0 SAFETY INITIATIVE

The proposed zero fatality initiative for South Dakota emphasizes a holistic approach to road safety. This recommended initiative not only suggests a focus on the infrastructural aspects of South Dakota roadways, but also urges a thorough consideration of the behavior of road users, their vehicles, and post-crash responses. Recognizing the potential of tested methods, it is recommended that the implementation plan bolster those strategies while also pushing to incorporate advanced technologies that can significantly enhance safety. The objective of prioritizing safety above all cultivates a resilient transportation environment in which every South Dakotan can traverse safely, irrespective of their chosen mode of transportation. The envisioned end result is a state where each piece of the transportation system works together, drastically diminishing, and in time, eliminating traffic-related fatalities.

From the detailed interviews conducted with various state departments and agencies, the technical panel has garnered valuable insights into the intricate dynamics of deploying a successful safety initiative using the SSA. A recurring theme throughout these discussions was the paramount importance of robust, clear, and continuous communication channels between all stakeholders. It is recommended that the implementation plan establish a digital platform, accessible to all parties, that facilitates real-time updates, centralizes crucial documentation, and fosters feedback. Furthermore, to mitigate the historically observed lack of communication, the scheduling of regular stakeholder meetings is vital. Through these, consistent dialogue is maintained, and a shared vision is reinforced.

Equally critical is acknowledging the diverse preferences and needs of stakeholders, urging the necessity of varied communication mediums—from emails to newsletters, from webinars to social media. A dedicated team, specializing in communication, can function as the cornerstone of this strategy, helping to ensure the timely and accurate relay of information, while also providing necessary training sessions or workshops.

The interviews also illuminated the significance of data-driven decision-making. Adopting a data-centric methodology not only elevates the Initiative's credibility but also offers a strategic shield against potential political challenges. By underpinning project selections and implementations with concrete data, the implementation plan can deter detractors and provide a strong foundation against any political turbulence. Furthermore, to protect the Initiative's longevity and effectiveness, transparent reporting, swift response to feedback, and the inclusion of local community champions are crucial.

The literature underscores the necessity of cultural change, enhanced public awareness, collaborative partnerships, skilled personnel, and data-driven strategies. Marrying this with the feedback from the interviews, a recurring theme emerges: the indispensable role of continuous and clear communication channels among stakeholders.

7.1 Problem

The alarming rise in traffic fatalities over the last decade underscores the urgency of adopting comprehensive safety measures. Even though 2019 experienced a 27% reduction in fatalities compared to 2010, there was a 37% increase in fatalities from 2019 to 2020, with fatalities climbing from 102 to 140. The increase in fatalities necessitates a rigorous, holistic approach to traffic safety,

such as the South Dakota zero fatality initiative, which addresses the multi-faceted nature of this problem to provide safer journeys for all residents.

7.2 Goal & Vision

Comprehensive transportation safety measures will enhance the safety of South Dakota's transportation system by effectively reducing both the frequency and impact of crashes and by creating safer conditions for commuters across all modes of transportation.

The "Toward Zero Deaths" approach is deemed suitable for South Dakota's commitment to eliminating fatalities on roads. Through the zero fatality initiative, South Dakota can take a significant stride to help this vision materialize, helping to ensure that every individual—be it a driver, pedestrian, cyclist, or passenger—reaches their destination without harm.

7.2.1 Metrics

Primary Metric – Target Reduction: Establish an annual target for reducing fatalities and injuries, collaboratively set by stakeholders to create a realistic state-specific goal. This method prioritizes a feasible yearly decrease in crashes over an absolute zero target, with the exact reduction percentage to be determined at the Initiative's launch, reflecting the state's distinct needs and resources.

7.3 Program Elements

The SDDOT is already emphasizing safety awareness programs aimed at underscoring SDDOT's commitment to the zero fatality initiative and setting a strong foundation for continued strides in helping to ensure South Dakota's roads are safe for all. These programs, including integrated approach recommendations for a new zero fatality initiative strategy, are described in detail in Appendix C.

7.4 The Safe System Approach for South Dakota Zero Fatality Initiative

The Safe System Approach, inspired by Sweden and adopted by FHWA, represents a revolutionary change in road safety thinking. Instead of solely blaming drivers for errors like speeding or inattention, this approach views the transportation system as a holistic entity. It acknowledges that humans can and will make mistakes, often unintentionally. In response, the onus is placed on the system—both the design of roads and the vehicles—to mitigate these mistakes and reduce the consequences. Roads are crafted to intuitively guide appropriate speeds and behaviors and are integrated with features to limit the severity of crashes when they occur. Vehicles, too, are designed to be more forgiving, with technologies that either prevent errors or reduce their impact. Additionally, the approach prioritizes post-crash care, ensuring rapid response to incidents. This method, reminiscent of the Swiss cheese model of crash causation, looks at layers of protection, understanding that while one layer might fail, subsequent layers can prevent a catastrophe (Oregon Department of Transportation, 2022). Continuous system evaluation and improvement remain central, ensuring that potential flaws are swiftly addressed. The five key objectives of the SSA include:

- Safer people
- Safer roads
- Safer vehicles

- Safer speeds
- Post-crash care

Together, these five key objectives form the backbone of the zero fatality initiative. Through their implementation, we envision a South Dakota where every journey is a safe one. These objectives, strategies, and near-term emphasis areas for implementation in South Dakota are described in detail in Appendix C.

7.5 Near-Term Emphasis Areas

- **Risky Behaviors:** Addressing behaviors that significantly contribute to crashes, such as distracted driving, speeding, and impaired driving. Initiatives may include awareness campaigns, stricter legislation, and enforcement measures.
- **Infrastructure:** Prioritizing enhancements in road design, maintenance, and signage to help ensure they align with safety standards. This encompasses regular inspections, upgrading aging infrastructure, and integrating smart technologies.
- **Vulnerable Users:** Special focus on the safety of pedestrians, bicyclists, motorcyclists, and public transport users. Strategies might involve dedicated pathways, improved crossings, and awareness programs tailored for both drivers and these user groups.
- **Improved Systems:** Implementing state-of-the-art systems that aid in monitoring traffic, predicting potential crash hotspots, and responding swiftly to incidents. This could involve leveraging technology like real-time traffic monitoring and predictive analytics.
- **Moving Forward:** Establishing a roadmap for the future which incorporates evolving technologies, ongoing research, and feedback from road users to help ensure a continually adaptive and progressive approach to road safety.
- **Equity:** Safe system investments, when applied equitably, proactively prevent serious crashes and improve overall community well-being. Overcoming equity barriers involves better engaging these communities in decision-making processes and developing sensitive measurement methods for transportation's health-related impacts.

7.6 How the Implementation Plan Links to Other Plans

The South Dakota zero fatality initiative implementation plan would be the cornerstone for transportation safety endeavors in South Dakota. Within the state, there are other frameworks, policies, and mechanisms that possess safety elements, and these could be catered to through other programs and funds. The implementation plan casts a wide net, encompassing safety across all transportation types and leans heavily on empirical evidence to chalk out its goals, strategies, and actionable steps. It's imperative to factor in the stipulations from other state-specific, thematic, regional, and local blueprints. Synchronicity across these plans bolsters the safety narrative and optimizes resource utilization. Figure 4 provides a visual representation of how the implementation plan correlates with other planning documents in South Dakota.

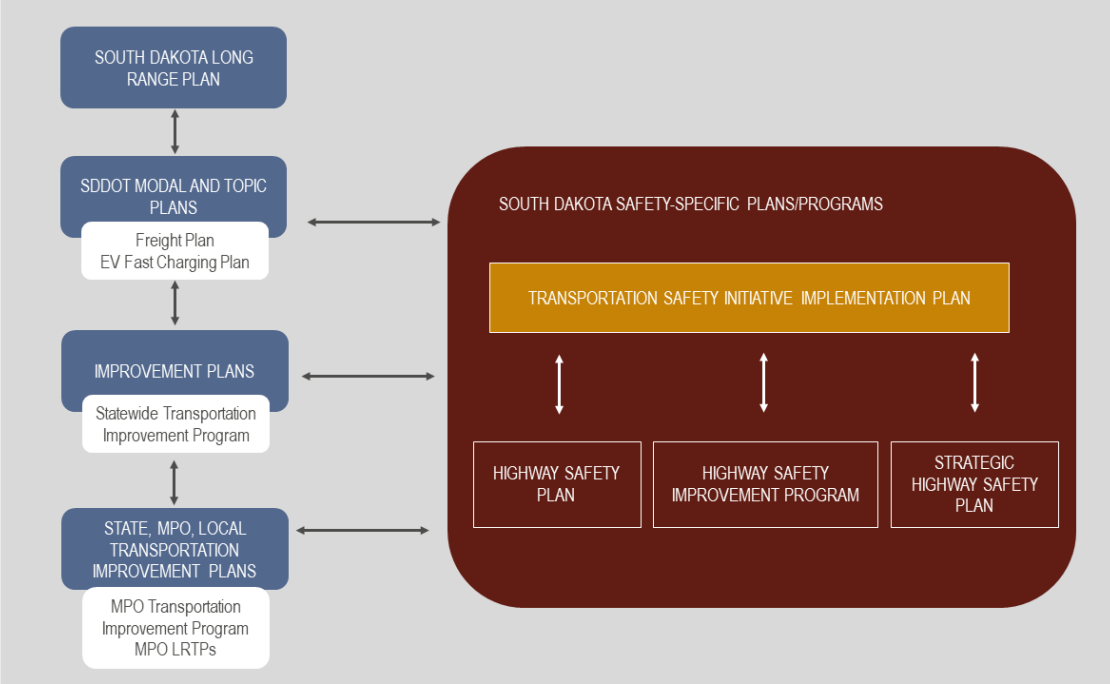


Figure 4: How the Implementation Plan Links to Other Plans

8.0 LOCAL AND STATE AGENCY INTERVIEWS

Task 5 of the research project involved conducting comprehensive interviews with state and local agencies to gain insights into their roles, responsibilities, and the resources necessary for implementing the Initiative. Under the direction of the project's technical panel, the research team conducted 15 semi-structured interviews. These discussions ranged from 30 minutes to one hour, varying with the group's size and the depth of conversation. The interviews were designed to gather preliminary information, dive deeper into the challenges these agencies faced in past safety initiatives, and to outline each agency's potential role in the implementation phase of a new zero fatality initiative.

Prior to each meeting, the research team shared a set of 11 questions with the interviewees to guide the conversation, while also allowing for the flexibility to explore additional topics as discussions unfolded. This preparatory step helped facilitate a structured yet flexible dialogue, inviting additional questions based on the flow of conversation. The summary of these interviews, along with the questions, are included in Appendix D.

8.1 Interviewed Agencies Overview

Throughout the process of gathering insights for the development of the Initiative, a comprehensive series of interviews was conducted with key state and local agencies. Each agency provided unique perspectives, reflecting their specific roles, challenges, and contributions toward enhancing road safety.

These interviews included a diverse range of stakeholders:

- Federal Highway Administration – 1 Interview
- South Dakota Department of Transportation – 4 Interviews
- South Dakota Department of Public Safety – 1 Interview
- South Dakota Department of Education – 1 Interview
- South Dakota Department of Health – 2 Interviews
- Local Transportation Assistance Program – 1 Interview
- South Dakota Police Chiefs' Association – 1 Interview
- South Dakota Unified Judicial System – 1 Interview
- Rosebud Sioux Tribe & Sisseton-Wahpeton Oyate Department of Transportation – 1 Interview
- South Dakota Safety Council – 1 Interview

8.2 Interview Focus Areas

The interview questions for South Dakota state and local agencies were designed to gauge their roles, experiences, and willingness to participate in the TZD initiative. Key focus areas included:

- Understanding agency functions and existing roles in the SHSP.
- Assessing past collaborations with the Safety and Planning Units and other multi-agency programs.
- Evaluating agency capability and interest in leading or participating in TZD outreach, education, enforcement, and engineering efforts.
- Discussing challenges and strategies related to funding, public education, and engineering projects necessary for TZD initiative success.
- Identifying potential for agency contribution to TZD through existing programs, education, outreach, and engineering efforts.
- Considering leadership support within agencies for TZD initiatives and strategies to enhance multi-agency collaboration for road safety.

8.3 Interview Synopses

The scheduling of interviews presented logistical challenges, yet these hurdles provided lessons in the importance of inter-agency collaboration and effective communication. Overcoming these obstacles required flexibility, persistence, and innovative scheduling strategies, reinforcing the need for a cohesive approach to stakeholder engagement. This experience highlighted the value of inter-agency workshops as a platform for fostering dialogue, aligning objectives, and helping to ensure that all entities are effectively contributing to the shared goal of enhancing road safety across South Dakota.

The synthesis of the South Dakota Department of Transportation (SDDOT) and other key stakeholders' interviews regarding the TZD initiative reveals a comprehensive approach to enhancing road safety across the state. Through strategic communication efforts, such as the SDDOT Communications team's use of various platforms to raise public awareness of the integration of safety in project planning and execution, there is a clear commitment across departments to shift towards a safety-centric operational model. Challenges such as funding, resource constraints, and the need for cultural and structural shifts within organizations are acknowledged, yet there is a strong willingness to overcome these through enhanced collaboration among state departments, law enforcement, community organizations, and tribal agencies. The interviews also revealed a significant gap in agencies' understanding of their roles within the SHSP, indicating a need for clearer communication and defined roles to align agency efforts with broader safety objectives.

The emphasis on education and public awareness as foundational elements of the TZD initiative, coupled with the utilization of data-driven safety initiatives, underscores the importance of a proactive and informed approach to road safety. Agencies like the South Dakota Police Chiefs' Association and the Sisseton Wahpeton Oyate Department of Transportation highlight the critical role of local engagement and the need for tailored strategies to address unique community and tribal needs. Moreover, the potential for leading public safety coalitions and adapting policies to better integrate safety measures into road design and maintenance practices demonstrates a commitment to integrate evolving safety standards and practices.

The efforts to improve road safety in South Dakota, aligning with the TZD initiative, are highlighted by a strong commitment across various entities to enhance safety measures and public awareness. This commitment, however, faces significant challenges, including budgetary constraints that impact the ability to fully implement desired safety initiatives. Additionally, there is a pressing need for cultural and structural shifts within organizations to prioritize safety more effectively. (The following sections provide more details on these challenges and opportunities.) Despite these financial and organizational hurdles, the dedication to reducing road fatalities and injuries remains unwavering, illustrating a promising step forward in road safety efforts.

Interview summaries by agency and/or organization are included in Appendix D.

8.4 Major Findings

This section synthesizes insights gathered from interviews, highlighting key strategies and challenges in implementing a TZD initiative. The major findings are listed below.

- **Enhanced Public Safety Communication** involves strategic use of various platforms for raising awareness about road safety, leveraging press releases, social media, and community events for effective outreach. For instance, the SDDOT Communications team's efforts collaborating with other agencies to lead and support safety messaging illustrates a proactive approach to utilizing available resources for public outreach and education.

- **Cultural and Structural Shifts Towards Safety** are essential, requiring organizations to shift priorities towards safety and overcome internal resistance. This is evident in the discussion by the SDDOT Highway Safety and Transportation Alternatives Projects (TAP) team on integrating safety in project scopes and policy development, highlighting the need for more aggressive policy implementation.

- **Clarifying Roles in the SHSP Process** is needed to overcome the ambiguity some departments experience regarding their roles in the SHSP process and its implementation. Clearer communication and defined responsibilities can help all involved parties effectively contribute to the collective goal of enhancing road safety.

- **The Key Role of Inter-Agency Collaboration** in the success of TZD initiatives outlines the importance of a unified approach to road safety involving state departments, law enforcement, and community organizations. The collaboration potential highlighted by the South Dakota Safety Council (SDSC) and Minnesota Safety Council (MSC), aiming to lead a public safety coalition, exemplifies this unified approach.

- **Challenges with Funding and Resources** impact agencies' capabilities to engage fully in TZD initiatives, with many facing limitations that hinder their leadership roles. The interview with South Dakota Local Transportation Assistance Program (LTAP) highlighted funding constraints that reflect the widespread challenge of securing adequate resources for safety initiatives.

- **Utilizing Data-Driven Safety Initiatives** is crucial for identifying problem areas and measuring the effectiveness of safety measures and agencies are advocating for a data-informed approach. The Federal Highway Administration’s (FHWA) support for adopting zero fatality

initiatives through data analysis and technical assistance further shows the importance of applying evidence-based strategies.

- **Education and Awareness as Foundational Elements** of TZD initiatives emphasize the role of changing public behavior through information dissemination. The approach by the South Dakota Police Chiefs' Association, focusing on education over enforcement, highlights the critical role of public awareness in achieving safety goals.
- **The Need for Enhanced Local Engagement** reflects the challenges faced by local and tribal agencies in aligning with statewide safety initiatives, necessitating tailored approaches. The Sisseton Wahpeton Oyate DOT's and Rosebud Sioux Tribe's experience with varying tribal and state safety priorities underscores the importance of considering local contexts in safety efforts.
- **Adapting to Safety-Centric Policies** involves agencies evolving their policies and practices to better integrate safety, despite potential resistance. The SDDOT Roadway Design team's openness to incorporating advanced safety measures in future projects reflects their proactive approach to enhancing road safety. This initiative shows their dedication to improving safety through thoughtful design and planning, acknowledging the importance of evolving practices to meet safety goals.

9.0 POLICY AND STANDARDS REVIEW & RECOMMENDATIONS

In aligning with South Dakota's commitment to the TZD and SSA, a thorough review of relevant South Dakota transportation and safety manuals and plans was conducted. This review encompassed a wide range of documents critical to road safety. The objective was to evaluate these documents for their current alignment with the SSA, identifying areas where updates or modifications are needed to reflect a safety-first approach.

The targeted document review approach helps to ensure that all aspects of road design, traffic operations, work zone safety, signage, and highway safety grant management are considered through the lens of aiming for zero fatalities on South Dakota roadways. This systematic process identifies gaps and opportunities within existing policies and sets the stage for integrating safety enhancements across all levels of road infrastructure planning and management.

By revising existing documents to explicitly include SSA, South Dakota can help to ensure a unified approach to road safety, promoting an environment that protects every road user. Efforts to enhance the state's road safety documentation should focus on incorporating explicit references to TZD goals, outlining specific safety performance metrics, and providing detailed guidance on implementing SSA.

Through the review process, it became evident that while safety is clearly a priority, there is not a unified approach towards achieving zero fatalities across all documents. This collaborative gap reinforcing organizational silos presents a significant opportunity to update and refine South Dakota's transportation policies to embed SSA more deeply, helping to ensure a coherent and holistic approach.

The findings of the review highlight the importance of continuous updates and the integration of modern safety strategies across all planning and operational documentation. By adopting a more pronounced focus on safety from the initial stages of project planning through project execution, South Dakota can improve road safety outcomes, aligning with the ultimate goal of zero fatalities.

Lastly, this review acknowledges the limitations in fully assessing the financial and staffing implications of the proposed safety strategies and tactics for South Dakota. The review findings and recommendations are primarily designed to guide future work, helping to ensure that funding, policies, procedures, and activities are strategically aligned within the SSA to support the TZD initiative.

Task 6 of the research project entailed a comprehensive review and analysis of the state’s policies and standards. The objective was to evaluate these documents for alignment with the SSA and the goals of the TZD initiative, and to propose modifications to enhance existing state policies and standards. During this examination, the research team sought to identify references to or incorporations of the SSA, assess how well the documents align with TZD objectives, and provide concise summaries of the findings. The documents reviewed by the team included:

- Road Design Manual
- Traffic Operation Manual

- Work Zone Safety and Mobility Plan
- Flagger Manual
- South Dakota Triennial Highway Safety Plan
- Permanent Signing Manual
- Traffic Signals on State Highways Policy
- Roadway Delineators, Guardrail Delineation, and Object Markers on State Highways Policy
- South Dakota Office of Highway Safety Grant Application and Management Handbook
- Local Roads Plan

Although not an all-encompassing list of related documents and policies in South Dakota, it is intended that this list serves as an adequate sample to provide a sense of necessary revisions. Other documents and policies will need to be reviewed and updated as TZD implementation continues.

9.1 Road Design Manual

The SDDOT Road Design Manual serves as a comprehensive reference. As with all states, South Dakota has a process that identifies how each project is planned, selected, scoped, developed, programmed, funded, managed, and executed to meet all federal regulations and requirements. SDDOT's description of the Road Design Manual summarizes its contents: "The Road Design Manual consolidates road design policies, standards, and procedures in a convenient reference for designers and plan recipients. Designers and other users will follow the policies, standards, and procedures described in this manual."

The manual's preface summarizes its purpose: "This manual provides criteria and coordination guidance for road design operations in compliance with the Department's Strategic Plan, federal requirements, pertinent directives, studies, and technological advances."

Available on the SDDOT website, the manual spans 19 chapters covering various aspects of road construction project management and design, adhering to AASHTO's widely recognized standards. The online format facilitates convenient ongoing updates to reflect new technologies and practices.

Elements of road design safety are intertwined throughout the manual and noted in the SDDOT's most current mission statement: "We provide a safe and efficient public transportation system." Safety is also part of the SDDOT's five core values: 1) Safety, 2) Service 3) Stewardship, 4) Trust, and 5) Innovation.

SDDOT's Road Design Manual, alongside the Traffic Operations Manual, incorporates traffic engineering elements, illustrating the intertwined nature of these disciplines. The Traffic Operations Manual clarifies its role in providing mainly operational guidance on traffic signals and roadway lighting, which more directly supports SDDOT's Division of Operations. The Road Design and Traffic Operations Manuals together provide a robust framework for establishing speed limits, signage, temporary traffic controls, and general traffic engineering practices. However, both documents could benefit from a more pronounced integration of SSA, particularly in the areas of traffic impact studies and pedestrian safety. Enhancing these sections to include safety assessments that minimize future fatalities and serious injuries would emphasize the prioritization of safety in project planning and execution.

To enhance the safety and effectiveness of the SDDOT Road Design Manual, the recommendations listed below target chapters within the Road Design Manual that may benefit from updates to embody SSA.

Chapter 2 – Scope Process and Project Management

- Incorporate SSA:
    - Add a section to compare the traditional vs. SSA, raising awareness among designers.
    - Insert a disclaimer about the implications of choosing the SSA, emphasizing safety and system reliability over vehicle throughput and user behavioral choices, in line with SDDOT values.
- Adjustments Reflecting Safety in Design Speed:
    - Update language to consider safety in the determination of design speed, ensuring it reflects the importance of safety alongside community, environmental, right of way, and cost impacts, while also addressing the distinction between target speed and design speed based on land usage.
    - Document considerations and analyses crucial for choosing the most appropriate design speed, balancing safety with access, land use, mobility, design consistency, and efficiency.
- Behavioral Aspects – Safer People:
    - Account for driver expectations in selecting design speeds, aligning speeds with the functional classification and the character of the highway to safely match the travel desires and habits of the majority.
- Guidance on Design Speeds – Safer Roads:
    - Provide a table of allowable design speed ranges for different conditions, including highway type, setting, functional classification, terrain, and Average Daily Traffic (ADT).
    - Specify when speed studies should be conducted to promote safer speed management.

Chapter 5 – Horizontal Alignment

- Evaluation Section Enhancement:
    - Introduce a comprehensive section focusing on evaluation criteria for proposed road improvements, covering operational criteria, level of service, cost-effectiveness, benefit-cost analysis, and safety methods. Emphasize the importance of considering severe crash reduction, operational improvements, and cost-benefit analysis in the decision-making process.
- Operational and Safety Criteria:

- Suggest methods to evaluate operational improvements such as travel time reduction and platooning, alongside safety improvements, to identify high crash locations and estimate crash reduction from proposed improvements.

- Human Factors and Safety:
    - Recommend defining safe sight distances and safe passing sections, with explicit examples of human factor considerations. This aims to reduce reliance on cross-referencing and enhance the clarity of safety measures within the chapter.

- ADA Compliance:
    - Stress the inclusion of ADA requirements to help ensure that roadway designs accommodate all users, particularly where pedestrian access routes intersect roadways. Highlight the specific technical standards, such as the maximum permissible superelevation rate, to comply with ADA guidelines.

Chapter 6 – Vertical Alignment

- Grade Impact Disclaimer:
    - Introduce a disclaimer regarding the impact of grades on traffic safety to help ensure that designers are aware of the potential safety implications. This disclaimer should emphasize that while grades are an essential aspect of road design, their impact on sight distance, vehicle operation, and overall traffic safety must be carefully considered.

- Comprehensive Grade Design Considerations:
    - Suggest a more holistic approach to grade design by noting that maximum grade alone is not sufficient for safe and efficient road design. Highlight the importance of considering the length of grade in relation to truck speed reduction on ascending grades and the consequent effects on highway safety, operating speeds, and capacity. This recommendation advocates for an approach that balances grade design with safety and operational considerations to minimize adverse impacts on highway safety and efficiency.

Chapter 7 – Cross Sections

- Research and Evidence on Lane Widths:
    - Encourage the inclusion of research studies or findings that quantify the safety effects of lane widths on urban highways, particularly the impacts of narrowing lanes to 11 feet versus standard 12-foot lanes. This could be similar to existing discussions on rumble strips, providing a data-driven basis for design decisions. The manual should cite specific research studies to offer practitioners a quantified understanding of crash reduction or increase associated with various lane widths, acknowledging the role of traffic control in these outcomes.

Chapter 10 – Roadside Safety

- Inclusion of Roadside Safety Statistics:
    - Highlighting the importance of roadside safety with relevant statistics, such as the average number of severe crashes involving lane departure in South Dakota, can underscore the critical need for effective roadside design practices. This data demonstrates the significant impact of lane departure on road safety and can justify investments in roadside safety improvements.
    - *Between 2013 and 2017, South Dakota averaged 411 severe (fatal + serious injury) crashes involving lane departure annually, resulting in a total of 2,056 total severe lane departure crashes. 59% of all severe crashes were related to lane departure.*
- Guidance on Inslope Rates:
    - Incorporating crash modification factors for various inslope rates, as provided in Section 13.5.2.1 of the AASHTO Highway Safety Manual (AASHTO, 2010), can offer valuable insights into the benefits and costs of alternate design approaches in rural and natural settings. This guidance can help designers make informed decisions that balance safety with environmental and contextual considerations.
- Adoption of Performance Criteria for Roadside Safety Features:
    - Recommend the adoption of performance criteria for roadside safety features, drawing from established sources such as the Manual for Assessing Safety Hardware (MASH), NCHRP Report 350 (Ross, Sicking, Zimmer, & Michie, 1993), and NCHRP Report 230 (Michie, 1981). These criteria can help ensure that roadside safety features meet current standards for effectiveness and durability, particularly in response to evolving vehicle designs and technologies.

Chapter 12 – Intersections

- Intersection Crash Statistics
    - Incorporate data from the most recent State Highway Safety Plan (SHSP) on intersection crashes, including the ratio of intersection crashes to total crashes.
    - *For instance, 2019 SHSP shows that between 2013 and 2017, South Dakota averaged 190 severe (serious + fatal injury) intersection crashes per year resulting in a total of 948 severe intersection crashes. 27% of all severe crashes in South Dakota were intersection-related* (South Dakota Department of Transportation, 2019).
- Definition of Intersection:
    - Use the AASHTO definition of an intersection, emphasizing the inclusion of all modes of travel (automobile, bicycle, pedestrian, truck, and transit) and highlighting the comprehensive approach to intersection design.

- Functional Area of Intersections:
    - Define the functional area for all users, including bicyclists, pedestrians, and drivers, to help ensure a holistic approach to safety and accessibility.
- Intersection Physical Areas and Design Elements:
    - Provide figures and detailed descriptions of intersection physical areas, including conflict points, crosswalks, and safety features.
- Intersection Safety and Modal Imbalance Discussion:
    - Discuss intersection safety data, emphasizing fatal and serious crashes, and engage in a conversation about the modal imbalance in intersection safety responsibilities.
- Design Approach and Performance-Based Design:
    - Advocate for a practical and performance-based design approach, emphasizing restraint in intersection design to avoid oversizing and the negative impacts of prioritizing motor-vehicle operations over other modes.
- Roundabouts:
    - Highlight the importance of detailed intersection analysis for the use of roundabouts and promote their use based on proven safety and operational benefits.
    - *Since 1997, Carmel, Indiana, U.S., has taken the SSA to intersection design by installing roundabouts at intersections wherever possible. The city of Carmel took a systemic approach by converting over 125 intersections to roundabouts to improve safety citywide, regardless of crash history. Roundabouts move people through intersections more efficiently and more safely than stop signs or signalized intersections. With roundabouts now at so many of the city's intersections, Carmel has seen serious injury crashes reduced by about 80 percent, and the number of crashes were reduced by about 40 percent* (Abdel, Lindley, & Paniati, 2021).
- All-way Stops:
    - Emphasize the importance of analyzing intersection types to determine the most suitable safety measures, promoting the use of all-way stops where appropriate based on proven safety benefits and operational efficiency.
    - *The North Carolina Department of Transportation (NCDOT) has been recognized with a Road Safety Award for its successful implementation of all-way stops as a low-cost safety improvement measure. These all-way stops have significantly reduced crash severity and frequency, enhancing traffic flow and reducing conflict points. This approach demonstrates a commitment to improving road safety and can serve as a model for similar safety initiatives in other regions.*

- Planning and Scoping Considerations:
    - Outline key considerations for initial planning and scoping of intersection improvements, including land use context, safety for all users, transit considerations, traffic operations, and functional classification/jurisdiction.
    - Consider adding thresholds and guidelines for performing intersection control evaluations (ICE) for intersection design alternatives, deciding whether to include this in the Road Design Manual or the Traffic Operations Manual.
- Intersection Design Objectives:
    - List detailed objectives aimed at improving safety and accessibility for all users, aligning with the SSA and performance-based practical design principles.
- Design Objectives Matrix:
    - Create a matrix to illustrate the relationship between design objectives and how they interplay in achieving a safer and more efficient intersection design.
- Sight Distances and Performance Measures:
    - Emphasize the importance of providing adequate sight distances for all users and discuss performance measures related to pedestrian and bicyclist safety and mobility, including the challenges in quantification.
- Safety Performance and Crash Modification Factors:
    - Recommend utilizing safety performance functions (SPF) and crash modification factors (CMF) to evaluate the effectiveness of intersection designs and modifications in improving safety.
- Operational and Geometric Features of Roundabouts:
    - Detail the operational and geometric features of roundabouts that contribute to their effectiveness in controlling vehicle speeds, facilitating traffic flow, and reducing crash severity.
- Access Management:
    - Suggest adding a section on access management to address strategies for controlling access to highways and streets, improving traffic flow, and enhancing safety.

Chapter 15 – Traffic

- Traffic Engineering Manual:
    - Consider the development of a dedicated Traffic Engineering Manual to segregate traffic control details from broader design principles. SDDOT's Road Design Manual Chapter 15 and the Traffic Operations Manual both incorporate traffic engineering

elements but are currently separated due to the SDDOT Divisions each document primarily supports (Road Design vs. Operations).

- Traffic Control Warrants:
    - Discuss the criteria and process for warranting and justifying traffic signal installations and/or other types of intersection control alternatives, focusing on safety, traffic volume, and efficiency. Currently, guidance for traffic signal justification process is found within the Traffic Signals on State Highway Policy document (Policy No. DOT-OS-OT-15.0).
- Consider Adding Flashing Beacons Section:
    - Specifications: Include specifications for both solar-powered and traditional flashing beacons, as well as rectangular rapid-flashing beacons (RRFB), deciding whether to include this in the current chapter or the Traffic Operations Manual.
    - Warrants for Installation: Define clear warrants based on visibility, crash rates, school crossings, and rural junctions.
- Advanced Warning Flashers:
    - Offer guidelines on the application and design of advance warning flashers, considering their impact on safety and traffic flow, deciding whether to include this in the current chapter or the Traffic Operations Manual.
- Pedestrian Hybrid Beacons (HAWK):
    - Summarize guidelines for the installation of Pedestrian Hybrid Beacons, deciding whether to include them in the current chapter or the Traffic Operations Manual.

Chapter 19 - Surfacing/Resurfacing

- Non-Motorized Facility Design:
    - Advocate for a dedicated section or chapter on non-motorized facility design, emphasizing the unique needs and safety considerations for pedestrians and bicyclists, who are the most vulnerable road users.
- Pedestrian and Bicyclist Characteristics:
    - Highlight the importance of understanding the distinct characteristics of pedestrians and bicyclists compared to motor vehicle drivers, underlining the need for specialized design considerations to enhance safety for these groups.
- Safety Evaluations:
    - Recommend incorporating evaluations of pedestrian-involved crashes as part of the project scoping process to identify and address safety issues. Emphasize that

pedestrian-involved crashes, while less frequent than motor vehicle crashes, are a critical indicator of safety problems.

- Data Sources for Safety Indicators:
    - Suggest the use of additional data sources, such as intersection risk assessments from district safety plans, to identify potential safety enhancements for walking trips beyond just crash data analysis.

9.2 Traffic Operations Manual

SDDOT's description of the Traffic Operations Manual summarizes its contents: "This manual is intended to provide instruction and guidance to department personnel who conduct traffic operations and design activities. This manual identifies state and federal laws and department directives, policies, and publications that are used to aid in decision making for traffic operations and design issues. It also provides standards to assure uniform application of operational methods and traffic control devices statewide."

Our recommendations for the Traffic Operations Manual are summarized in the list below:

- Passing Sight Distances:
    - Update no-passing zone markings with minimum passing sight distances according to the latest MUTCD, helping to ensure clarity on warrants for drivers.
- Crash Data Usage:
    - Integrate crash data into Traffic Safety sections to inform and guide traffic operations and safety improvements.
- SSA, TZD, and SHSP:
    - Incorporate discussions on SSA, TZD, and SHSP to align traffic operations with broader safety goals.
- Crash Data Tools and Outlets:
    - Detail the tools and outlets for obtaining crash data, enhancing traffic operation analyses and safety measures planning.
- Safe Systems in Safety/Misc Section:
    - Mention SSA in the Safety/Miscellaneous section to emphasize their importance in traffic safety.
- Standalone Safety Document:
    - Consider developing a standalone safety document or a dedicated section within the Road Design Manual or the Traffic Operations Manual to centralize safety information and guidance. Safety topics are very broad, tend to be frequently altered with improvements in knowledge and technology, and it is challenging to gather appropriate guidance from multiple resources, some of which are updated more frequently than others.
- Safety Analysis for Treatment Selection:
    - Highlight the importance of safety analyses in project selection, emphasizing the role of data-driven decisions in enhancing road safety.

9.3 Work Zone Safety and Mobility Plan

The Work Zone Safety and Mobility Plan established by SDDOT aims to provide a structured methodology for evaluating and mitigating the impacts of work zones across projects, especially those receiving federal highway aid, in accordance with specific regulatory standards. This plan underscores the importance of developing a Transportation Management Plan (TMP) to address potential challenges throughout all stages of project development, from initial planning to execution, helping to ensure safety and efficiency.

The Work Zone Safety and Mobility Plan, while emphasizing operational safety measures, presents prime opportunities for incorporating these safety philosophies to a greater extent.

Our recommendations for the plan are below:

- FHWA Guidance Documents:
    - Highlight the importance of the following FHWA guidance documents:
        - Implementing the Rule on Work Zone Safety and Mobility
        - Work Zone Impacts Assessment: An Approach to Assess and Manage Work Zone Safety and Mobility Impacts of Road Projects
        - Developing and Implementing Transportation Management Plans for Work Zones
        - Work Zone Public Information and Outreach Strategies
- Statewide Work Zone Safety Committee:
    - Consider establishing a statewide work zone safety committee tasked with:
        - Identifying work zone safety problems and priority areas.
        - Serving as a sounding board for new ideas.
        - Brainstorming and recommending directions to relevant offices (Construction, Maintenance, Safety, Traffic).
- Work Zone Fatalities:
    - Mention the increase in nationwide work zone fatalities from 845 in 2019 to 857 in 2020 and provide the work zone crash statistics in South Dakota. Emphasize the need for heightened awareness and safety practices.
- Work Zone Awareness Practices:
    - Include a statement on the critical role of work zones in preserving and enhancing the nation's roadways, emphasizing their importance for the safety of all road users and workers.

- Work Zone Management Strategies:
    - To enhance work zone management, we propose the following strategies, categorized into various domains of traffic control, transportation operations, corridor/network strategies, work zone safety management, and incident management. These strategies align with the FHWA recommendations and aim to improve the safety, efficiency, and coordination within work zones. For detailed guidelines, please refer to the FHWA Work Zone Management Program (FHWA, 2024).
        - Temporary Traffic Control (TTC)
            - Flashing Arrow Signs to assist motorists in navigating and merging through and around work zones.
            - Fines Double Signs alert motorists to slow down in work zones or face double traffic fines for speeding, enhancing compliance with speed limits and ensuring the safety of both workers and motorists. While implementing "Fines Double" signs is required by law and currently in practice, it highlights the importance of accessible and clear guidelines. A cross-reference should be added to all relevant manuals to streamline access to this information. This update aims to ensure pertinent staff are aware of the guidance and to integrate relevant information across various manuals, minimizing the risk of overlooked safety measures.
        - Transportation Operations
            - Demand Management Strategies:
                - Promote Park and Ride: Encourage the use of park and ride facilities where applicable to reduce congestion in work zones.
                - Late Merge: Place signs throughout the work zone to encourage motorists to use all available lanes up to the physical merge point, facilitating smoother traffic flow.
            - Corridor/Network Strategies:
                - Dynamic Lane Closure System: Consider implementing dynamic lane closure systems to manage lane availability based on real-time traffic conditions.
                - Railroad Crossing Controls: Enhance safety and coordination at railroad crossings within work zones.

- Work Zone Safety Management
    - Construction Safety Inspectors: Consider employing one or more construction safety inspectors on-site to oversee and enforce safety protocols.
    - Intrusion Alarms: Utilize technology to detect vehicles entering the area between motorists and construction workers, alerting workers with a loud siren upon intrusion.
    - Radar Speed Monitoring/Display Units: Deploy portable radar systems to measure vehicle speed and inform motorists of their speed, encouraging adherence to speed limits.
- Incident Management
    - Crash Staging/Investigation Areas: Designate areas off the roadway where enforcement officials can complete crash reports without obstructing traffic.
    - Distance/Milepost Markers: Consider installing additional distance/milepost markers in the median or shoulder, listing location information (milepost, route, county, etc.). Placing markers, no further than 1/10 mile apart, aids in quick and accurate incident reporting.
    - Fender Bender Signing: Consider placing static signs along the road instructing motorists involved in minor crashes to move their vehicles out of the roadway and onto the shoulders until enforcement officials arrive, minimizing traffic lane obstruction.

9.4 Flagger Manual

The SDDOT Flagger Manual is a critical resource for helping to ensure the safety of work zones across the state's roadways, offering a detailed guide for flaggers who play a pivotal role in controlling traffic around complex construction and maintenance areas. This comprehensive manual delineates flaggers' duties, responsibilities, and best practices, including the use of specific equipment and attire for visibility, effective positioning and signaling to communicate with drivers, and the importance of maintaining clear communication with other work zone personnel. Our recommendations for updating the Flagger Manual to align with SSA are outlined below:

- Enhance Flagger Safety:
    - Recommend increasing the use of rumble strips at flagger station approaches to alert drivers, advocating for the illumination of flagger stations, and suggesting the use of

traffic lights in work zones with lane closures instead of solely relying on priority signs or flaggers.

- Automated Flagger Assistance Devices (AFADs):
    - Encourage the adoption of AFADs and portable temporary signals as acceptable automated technologies in the MUTCD for improved safety, recognizing their benefits in moving flaggers further from travel lanes.
- Audible Warning Devices for Flaggers:
    - Advise flaggers to have audible warning devices (such as horns, whistles etc.) at flagger stations to alert work crews of potentially out-of-control vehicles.
- Expand Flagger Training:
    - Recommend broadening flagger training to emphasize safety measures, including strategies for avoiding errant vehicles, and providing information on potential crash scenarios and avoidance techniques.

9.5 Triennial Highway Safety Plan

The South Dakota Triennial Highway Safety Plan for Fiscal Years 2024-2026 presents a strategic framework aimed at reducing traffic-related fatalities and serious injuries across the state. This document delineates a data-driven approach, leveraging information from both the Fatality Analysis Reporting System (FARS) and the South Dakota Accident Records System (SDARS) to establish targeted performance goals. It highlights the significance of public involvement in enhancing road safety and outlines specific countermeasures to be funded, addressing the most pressing safety concerns and mobility disparities. Recommendations for updating the Triennial Highway Safety Plan are summarized below:

- Consider Planning a Public Meeting:
    - Plan each public meeting for a time and place that is accessible and convenient for all community members, taking into account factors such as parking, public transportation, and language barriers.
- Effective Utilization of Feedback:
    - Develop a structured process to incorporate community feedback into the decision-making process, informing leadership across all areas of traffic safety to help them be responsive to community needs.
- Equity Considerations:
    - Consider including equity scores by county (if available) to highlight areas that may require additional focus or resources to promote equitable traffic safety improvements across the state.

- Comprehensive Data Analysis:
    - Provide detailed survey results and list affected communities identified through data analysis to guide targeted interventions and resource allocation.
- Driver Knowledge Assessment:
    - Consider utilizing driver exam results as a measure of driver knowledge and awareness, helping to identify gaps and areas for improvement in driver education and training.

9.6 Permanent Signing Manual

The SDDOT Permanent Signing Manual serves as an essential guideline for the design, placement, and maintenance of permanent signs along state roadways. This document is structured to align with the Manual on Uniform Traffic Control Devices (MUTCD) and the Standard Highway Signs and Markings (SHSM) standards, helping to ensure that all signage within South Dakota's jurisdiction adheres to national best practices for consistency, visibility, and safety. Our summarized recommendations for the Permanent Signing Manual are outlined below:

- MUTCD Current Version:
    - Recommend highlighting the importance of using the most current version of MUTCD to ensure compliance with the latest safety standards.
- Bicyclist Safety and Regulatory Signs:
    - Emphasize the need for specific regulatory signs for two-stage bicycle turn boxes to enhance bicyclist safety.
    - The FHWA proposed adding a new section in Chapter 9B to the 11th edition of the MUTCD on regulatory signing for Two-Stage Bicycle Turn Boxes, with Support, Standard, and Options. After receiving comments, FHWA changed the Standard defining specific conditions to a Support statement and provided clarifying modifications to the description of those situations.
    - The FHWA retained the Standards requiring specific regulatory signs and their mounting locations to help ensure bicyclists have necessary regulatory information, enhancing safety and reducing conflicts between bicyclists and other traffic.
- Brief and Clear Word Messages:
    - Stress the need for brief and clear word messages in signs, with a specific ratio for letter height per legibility distance.
- Higher Fines Zone Signs:
    - Detail the use of signs and plaques to inform of higher fines zones, especially in school areas, to enhance safety.

9.7 Traffic Signals on State Highway Policy

This policy sets forth guidelines for the installation, management, maintenance, and operation of traffic signals on state highways, ensuring practices adhere to the Manual on Uniform Traffic Control Devices (MUTCD) standards. It outlines the procedure for requesting traffic signals, which can be initiated by local authorities, officials, or citizens, requiring a justification based on MUTCD warrants and an SDDOT-approved study for safety or operational enhancement. Post-installation, the local government takes on the responsibility for signal inspection, maintenance, and record-keeping under a specific Maintenance Agreement, although the SDDOT retains signal ownership and oversees non-agreement-covered signal maintenance. Our recommendations based on the 11th edition of the MUTCD include:

- Adopt Interim Approval Traffic Control Devices:
    - Incorporate pedestrian-actuated rapid-flashing beacons, green-colored pavement for bicycle lanes, red-colored pavement for transit lanes, and new traffic signal warrants based on crash experience to enhance safety for all road users.
- Pedestrian Safety and Accessibility Improvements:
    - Improve safety and accessibility for pedestrians by optimizing the location of pushbuttons at signalized crosswalks, enhancing crosswalk marking patterns, and ensuring pedestrian accommodations in work zones.
- Bicyclist Safety and Operation Enhancements:
    - Expand traffic control devices to include intersection bicycle boxes, two-stage turn boxes, bicycle traffic signal faces, and a new design for the U.S. Bicycle Route sign to improve bicyclist safety and operation.
- Flexible Application of Traffic Signal Warrants:
    - Change the application of traffic signal warrant criteria from standard to guidance in engineering studies, providing agencies with flexibility to consider factors beyond numerical warrants for installing new traffic control signals.
    - The FHWA proposed changing the traffic signal warrant criterion from “Standard” to “Guidance” to give agencies more flexibility in performing signal warrant analyses (FHWA, 2023). There were mixed reactions to this proposal. Supporters appreciated the flexibility to consider factors beyond numerical analysis, while opponents were concerned about the potential costs and pressure to install unnecessary signals. Some commenters also suggested that all traffic signal warrants need reevaluation as they are outdated. The FHWA decided to adopt the proposed change, emphasizing that agencies should consider multiple factors, not just numerical warrants, in engineering studies for signal installation. Some of these changes are listed below for reference.

        - FHWA revised signal warrant criteria 7, crash experience, to include updated criteria for 1-year and 3-year periods, crash type and severity, and spatial context (Section 4C.08).
        - FHWA added a new guidance statement recommending pedestrian signal heads at each marked crosswalk controlled by a traffic signal (Section 4D.02).
        - FHWA included a bicycle signals chapter, Chapter 4H, in the 11th edition of the MUTCD.
        - In Section 4J.01, FHWA added a new option to allow the reduction of the signal warrant criteria for pedestrian volumes crossing the major street as much as 50 percent if the 15th-percentile crossing speed of pedestrians is less than 3.5 fps.

- Consider Automated Vehicle Technologies:
    - Prepare roadways for automated vehicle technologies and support the safe deployment of automated driving systems to help ensure compatibility with future transportation advancements.
- Updated Signal Warrant Criteria:
    - Revise signal warrant criteria to include updated thresholds for crash experience, taking into account crash type, severity, major street speed, and urban vs. rural context.
- Pedestrian Hybrid Beacon Guidance:
    - Address the pedestrian crash risk with pedestrian hybrid beacons as an intermediate option between flashing beacons and full pedestrian signals, promoting positive stop control and reducing vehicle delay.

9.8 South Dakota Office of Highway Safety Grant Application and Management Handbook

The Grant Application and Management Handbook by the South Dakota Office of Highway Safety (SDOHS) outlines the process and requirements for local and state agencies to apply for highway safety grant funding. It emphasizes the need for applications to clearly identify traffic safety issues, set realistic objectives, and propose activities based on proven countermeasures. The handbook details the online application process through the SAFESD.GOV portal and stresses the importance of compliance with state and federal regulations in the post-award grant management process. Our recommendations include:

- Establish a Safety Specific Grant Program:
    - Consider establishing a TZD specific grant program to implement SSA and fund initiatives aimed at eliminating traffic fatalities and serious injuries. This aligns with international best practices in traffic safety management.

- Refine Grant Application Guidelines:
    - Adjust existing grant application guidelines to align more closely with SSA. Prioritize projects that demonstrate clear alignment with safe system goals and incorporate key emphasis areas of the SSA, including safe roads, speeds, vehicles, and post-crash care.
- Incorporate Equity Considerations:
    - Ensure the grant application process addresses disparities in mobility safety and access, recognizing and mitigating the disproportionate impact of traffic fatalities and injuries on certain communities to maximize road safety outcomes.

9.9 Local Roads Plan

The Local Roads Plan document from the SDDOT outlines strategies for the development and maintenance of local roadways and bridges. It emphasizes the importance of adaptable design standards that cater to specific local needs while helping to ensure safety and cost-effectiveness. The plan advocates for the use of standardized forms and procedures to streamline project implementation and ensure compliance with federal and state regulations. Our recommendations include:

- Enhance Focus on All Road Users:
    - Prioritize safety and integration of multimodal features to support a comprehensive transportation network.
- Shift Language from “Accidents” to “Crashes”:
    - Emphasize the preventable nature of incidents to align with the safe system goal of eliminating traffic fatalities and serious injuries.
- Reflect Commitment to Safety Objectives:
    - Update the plan's introduction to clearly express adherence to the SSA and equitable safety practices.
- Promote Safer Speeds:
    - Encourage safer speed practices in all roadway environments to support the Initiative.
- Comprehensive Overhaul Option:
    - Consider a thorough update or overhaul of the Local Roads Plan to integrate performance-based practical design (PBPD) practices, aligning with updates to the Road Design Manual for consistency.

9.10 Document Review Synopses

The document review process revealed vital insights into the current state of road safety initiatives and emphasized the necessity for updating and aligning these documents with SSAs. It highlighted areas where existing policies could be enhanced to better reflect a comprehensive approach to road safety, emphasizing the integration of multimodal transport considerations and prioritizing the safety of vulnerable road users. This process was instrumental in identifying gaps and opportunities for reinforcing the safety culture within the SDDOT and its partner agencies, setting a foundation for the recommendations.

Addressing these challenges and implementing the recommendations requires not only strategic planning and resource allocation but also a fundamental embrace of the SSA and TZD principles at all organizational levels. This effort should align with the evolving landscape of road safety, where technological advancements, policy developments, and community expectations converge towards the common goal of eliminating fatalities and serious injuries on South Dakota's roadways.

As SDDOT and its partners move forward, the insights and recommendations outlined above aim to serve as a catalyst for renewed focus and action. The goal is to align existing safety programs, policies, and practices more closely with TZD outcomes, helping to ensure that safety becomes an intrinsic part of the DNA of road infrastructure development and management in South Dakota. This endeavor calls for continuous evaluation, adaptation, and commitment to a road safety culture that values every life to achieve a future where road travel is safe for all.

10.0 RECOMMENDATIONS FOR AGENCY-SPECIFIC PROCESSES & IMPACT EVALUATION

To address the complex landscape of road safety, safe systems, and the TZD initiative's goals, this section proposes a structured approach to enhance agency-specific processes and assess the impact of recommended strategies. This approach integrates leading and lagging indicators to evaluate the efficacy of recommended strategies, which are informed by the semi-structured interviews conducted with various agencies. Recommendations are tailored to each agency's unique context and are intended to improve their understanding and involvement in SHSP and TZD initiatives. The section also highlights the necessity of a systematic application of SSA, advocating for every stakeholder's active role in fostering a safer transportation environment.

The table, mainly enriched by the insights from local agency interviews, neighboring state interviews and literature review, suggests a nuanced evaluation methodology that acknowledges both quantitative outcomes and the qualitative dynamics underpinning successful interventions. By leveraging methodologies akin to those recommended by prominent public health frameworks, the section advocates for a comprehensive assessment strategy. This encompasses not only the direct effects of safety programs but also the subtler shifts in community engagement, perceptions, and the cultivation of safety-conscious behaviors across different road use scenarios. The structure of the table first lists recommendations applicable to all or multiple agencies, followed by recommendations tailored to specific agencies.

The recommendations encapsulated in the table are designed to address gaps in agency processes, drawing on insights garnered throughout the research phase. These recommendations aim to reinforce local agencies' roles within the SSA framework and to illuminate pathways for substantive improvements in road safety practices. The detailed structure of the recommendations, alongside the evaluative indicators provided, serves as a blueprint for refining safety initiatives in alignment with the overarching goals of TZD.

Importantly, the recommendations emphasize the critical need for continuous engagement with stakeholders, clear articulation of program objectives, and rigorous focus on evidence-based decision-making. By mapping out these recommendations and evaluative measures, this study lays the groundwork for a concerted and informed push towards realizing the vision of zero fatalities on South Dakota's roadways.

The recommendations, their descriptions, and the impact evaluation methodology, including both leading and lagging indicators, are concisely summarized in the following table.

Table 3: Agency-Specific Recommendations

Organization	*Recommendation*	*Description*	*Impact Evaluation*	
			Leading Indicator	Lagging Indicator
General Recommendations for All or Multiple Agencies within South Dakota	Safety Culture	Advancing the TZD and SSA requires a visible commitment from state leaders. Emphasize the human aspect to highlight the personal impact of traffic safety and engage with various transportation sectors to address safety comprehensively.	Launch of a safety-first campaign and training programs for staff and contractors within the next six months	Survey results showing improved safety culture among staff and stakeholders, assessed annually
	Facilitation of Workshops	Overseen by the TZD coordinator, workshops are an effective way to engage stakeholders, build capacity, and promote the TZD initiative. Each agency can develop workshops tailored to its specific needs, focusing on topics such as safety culture, safety countermeasures, SSA, and safety language.	Schedule and conduct the first series of workshops within six months, focusing on identifying key concerns and opportunities	Number of workshops after 2 years
	Development of Formal Agreements	Formal agreements provide a clear framework for joint efforts in traffic safety initiatives between state and local agencies, fostering collaboration and communication.	Quantified need for formal agreements	Number of executed agreements after 2 years
	Identification of Liaisons in Each Agency	Designating a liaison in each agency facilitates coordination and maintains relationships between agencies. Liaisons are responsible for organizing peer exchanges, training sessions and ensuring the implementation of data-sharing agreements.	Number of liaisons	Number of meetings for leadership liaison group
	Cultivate TZD Champions	Identify and empower TZD champions across different levels within local and state agencies to advocate for and drive the TZD initiative.	Number of champions	Number of safety programs and strategies created/managed by champions

South Dakota Department of Transportation	Communications	Enhance Digital Engagement	Expand and optimize the use of social media and the SDDOT website to increase public awareness about road safety.	Increase in social media followers and engagement rates (likes, comment, shares) within six months	Survey feedback indicating higher public awareness and knowledge about road safety measures after one year
		Implement Targeted Safety Campaigns	Launch effective and targeted safety campaigns, focusing on high-rated countermeasures while considering opportunities to test unproven approaches.	Launch of new campaigns and the reach of campaign messages (measured by views and shares) within six months	Reduction in incidents related to the campaign topics reported after one year.
		Use feedback mechanisms for improvement	Incorporate surveys, comment sections on social media and the website, and other feedback tools to gather public opinions and suggestions on safety campaigns. Create an online suggestion box accessible to all SDDOT employees.	Number of feedback mechanisms implemented, and volume of feedback received within the first six months.	Adjustments made to campaigns based on feedback and subsequent improvement in public engagement and satisfaction metrics over the next year.
		Champion the TZD Initiative	Collaborate with TZD Coordinator. Take a proactive role in leading the TZD initiative, emphasizing SDDOT's commitment to reducing traffic fatalities and serious injuries to zero.	Number of TZD-specific campaigns and initiatives launched within the first six months.	Measurable decrease in traffic fatalities and serious injuries in South Dakota over the following years, demonstrating progress towards the TZD goal.
	Division of Operations	Increase Safety Initiative Awareness & Education	Improve safety initiative awareness of various teams, emphasizing the importance of their roles in implementing the TZD initiative. Develop comprehensive training programs for all levels of staff and utilize self-assessment tools developed by NCHRP.	Number of safety initiative training sessions conducted for maintenance and construction teams within the next six months.	Improvement in safety compliance and staff competency of maintenance and construction teams over the next year. Number of crashes within work zones.

South Dakota Department of Transportation	Division of Planning & Engineering	Establish a TZD Coordinator Role	Create a dedicated TZD coordinator role to oversee and integrate TZD initiatives across various departments and agencies.	Appointment of a TZD coordinator within the next three months.	Number of activities to increase coordination and implementation of TZD initiatives, evaluated through annual reports.
		Implement Aggressive Safety Policies	Implement specific safety policies, ensuring equitable distribution of safety benefits, and update design manuals to integrate new safety policies and latest practices in roadway design.	Number of revisions of the road design manual to include new safety policies within the next six months.	Reduction in the number of fatal and serious injury crashes in areas where new policies have been applied, tracked annually.
		Facilitate SHSP Stakeholder Engagement Workshops	Organize meetings and targeted workshops with all potential SHSP partners to discuss specific areas of the SHSP and brainstorm collaborative solutions for crash trends, emphasis areas, and best practices. Aspire to an annual SHSP/TZD conference.	Schedule and conduct the first series of workshops within six months, focusing on identifying key concerns and opportunities.	Number of collaborative SHSP projects initiated with stakeholders, number of workshops and documents after 2 years.
		Strengthen Inter-Departmental Coordination	Enhance division's coordination with other departments and local agencies to ensure a more cohesive approach to addressing traffic safety challenges.	Establishment of regular coordination meeting schedule and communication channel within six months.	Increased efficiency in safety improvement deployment and response to safety issues measured after one year.
		Cultivate a Safety-First Culture and Facilitate Unified Messaging for TZD Initiatives	Promote a cultural shift within SDDOT and among stakeholders to prioritize safety in all transportation-related decisions and projects, embracing innovative practices, supporting policy reforms, and recruiting nontraditional partners.	Launch of a safety-first campaign and training programs for SDDOT staff and contractors within the next six months.	Survey results showing improved safety culture among SDDOT staff and stakeholders, assessed annually.

South Dakota Department of Public Safety	Strengthen Public Education Campaigns	Expand public education efforts to increase awareness about road safety by incorporating TZD logos and slogans, emphasizing the human aspects of traffic safety.	Number and types of public education campaigns launched within the next six months, as well as types of media.	Reduction in the number of impaired driving incidents and reported unsafe travel behaviors over the next year.
	Enhance Grant Programs for Local Initiatives	Increase funding and support for local agencies to develop and implement community-specific safety initiatives.	Increase in the number of grants awarded to local agencies within the next fiscal year.	Decrease in injury and fatal crashes in communities that implemented grant-funded programs, measured annually.
	Improve Data Collection and Analysis	Refine crash data collection and analysis to better understand causation factors and target interventions more effectively.	Implementation of an enhanced data collection system within the next 12 months.	Increased accuracy in identifying high-risk areas and behaviors, leading to targeted safety improvements, assessed after two years.
	Foster Multi-Agency Collaboration	Strengthen partnerships with SDDOT and other stakeholders to unify safety efforts across the state.	Number of collaborative safety projects initiated within the next year.	Demonstrated improvements in road safety metrics statewide, evaluated after two years.
	Disseminate Unified Messaging for TZD Initiatives	Disseminate a unified safety message developed by DPS across all member departments for consistent public communication.	Creation and distribution of a standardized safety message toolkit to member departments within the next six months.	Adoption and utilization of the unified safety message by a significant majority of member departments, with evaluation after a year.

Federal Highway Administration	Facilitate Knowledge Sharing	Share best practices and success stories from other states like North Dakota's vision zero initiative to inspire and guide local efforts.	Creation of a repository or series of workshops showcasing best practices within the next year.	Adoption of successful strategies from other states in South Dakota's safety initiatives, with impact assessment after two years.
	Support Zero Fatalities Initiatives	Actively support and assist in the development and implementation of zero fatalities initiatives in South Dakota, leveraging FHWA's resources and expertise.	Number of technical assistance sessions provided to local agencies within the next six months.	Implementation of new safety projects under the zero fatalities initiatives, with an evaluation of impact after one year.
	Expand FHWA Collaboration for Systemic Safety Improvement	Develop collaborative projects with local and state agencies that focus on systemic safety improvements and integrate SSA with HSIPs. This strategy aims to deepen the engagement in zero fatalities initiatives by incorporating FHWA's comprehensive safety analysis tools and support services.	Number of collaborative projects initiated with FHWA focusing on systemic safety improvements within the next year.	Measurable reduction in traffic fatalities and serious injuries on identified systemic risk roadways, evaluated two years after the implementation of safety improvements advised by FHWA.
South Dakota Local Transportation Assistance Program	Enhance Training and Outreach	Increase LTAP's capacity to disseminate safety-focused messaging and feedback collection through existing networks and conferences to ensure that local agencies are well-prepared with tools and techniques for local implementation of TZD strategies.	Number of safety-focused sessions or topics integrated into LTAP conferences and training programs within the next year.	Feedback from local governments on the usefulness of safety-focused content in LTAP programs, measured annually.
	Promote Local Safety Prioritization	Develop strategies to enhance local community focus on safety, addressing economic concerns by demonstrating the long-term benefits of safety investments.	Launch of a pilot program demonstrating low-cost, high-return safety improvements in select rural communities within the next year.	Increased local community investment in safety projects, evidenced by budget allocations and project implementations, reviewed annually.
	Explore Funding and Staff Expansion	Develop a comprehensive spending plan and investigate opportunities for additional funding and staffing to enable LTAP to incorporate a safety focus into its activities without compromising current duties.	Identification of potential funding sources and submission of grant applications within the next year.	Hiring of additional staff or reallocation of resources to support safety initiatives, assessed after two years.

South Dakota Police Chiefs' Association	Leverage Public Education and Awareness	Utilize the association's network for widespread public education and awareness campaigns focusing on road safety.	Number of safety education campaigns initiated through the association's network within the next 6 months.	Measurable increase in public awareness and understanding of road safety issues, assessed through surveys or feedback mechanisms within a year.
	Expand Collaboration for Enforcement and Education	Expand collaboration by establishing joint task forces that include law enforcement, public health officials, and transportation agencies and conduct joint training sessions for law enforcement officers and other stakeholders, covering topics such as the SSA, data analysis, and community engagement strategies.	Number of joint enforcement and education operations with other agencies planned and executed within the next year.	Reduction in traffic violations and incidents in areas targeted by these collaborative efforts, measured annually.
South Dakota Department of Health	Strengthen Data Collaboration and Sharing	Facilitate the sharing of motor vehicle crash data from the Office of Highway Safety and health outcomes to support TZD initiative planning and evaluation.	Establishment of a formal data-sharing agreement with SDDOT, the Office of Highway Safety and other relevant agencies within the next six months.	Increased use of health and crash data in the development and assessment of safety initiatives, measured annually. Improvement in the comprehensiveness and accuracy of traffic incident data.
	Expand Collaboration for Comprehensive Safety Efforts	Expand collaboration with various stakeholders, including schools, community organizations, and local government, helping to reach diverse populations to implement community-specific safety interventions.	Participation in SHSP or TZD planning meetings or committees within the next six months.	Documented contributions to multi-agency safety initiatives and strategies, evaluated bi-annually.
	Expand EMS Educational and Training Programs	Develop comprehensive training programs, conduct regular drills and simulations, and promote continuing education.	Number of educational materials and training programs for EMS providers, focusing on post-crash care and response.	Improved data accuracy and availability on traffic incidents involving EMS responses, leading to targeted interventions and reduced response times.

South Dakota Department of Education	Integrate Transportation Safety into Educational Programs	Incorporate transportation safety topics into existing academic content standards and promote a culture shift in how we prioritize transportation safety.	Development, incorporation and dissemination of transportation safety materials to school districts within the next six months.	Implementation of transportation safety topics in school curricula, with feedback from educators and measurable improvements in student awareness assessed annually.
	Support Communication and Outreach Efforts	Utilize the Department's communication channels to disseminate information on transportation safety initiatives to educators.	Number of transportation safety communications issued to educational stakeholders within the next year.	Increased engagement and participation in safety initiatives by schools, evidenced by participation metrics and feedback collected over the next two years.
	Facilitate Multi-Agency Collaboration	Engage in multi-agency efforts focusing on transportation safety and understand the Department's role in SHSP to leverage its extensive network and expertise in education.	Participation in multi-agency meetings or task forces related to transportation safety within the next six months.	Documented contributions to the development and execution of collaborative safety projects, with outcomes reviewed annually.
South Dakota Safety Council	Leverage Networks for Safety Education	Use the Safety Council's strong connections with the public to disseminate roadway and traffic safety information to a wide audience.	Number of people engaged in distributing safety materials within the next six months.	Reports of reduced incidents and increased safety awareness among the public, measured annually through surveys or feedback.
	Improve Interagency Communication and Collaboration	Establish clearer communication channels and collaboration frameworks between the Safety Council and other safety agencies.	Formal agreements or partnerships established with SHSP-related agencies within the next year.	Increased number of joint safety initiatives & programs, evaluated after two years.
	Champion the TZD Initiative	Assume a leading or supporting role in the TZD initiative, drawing on the Council's experience and mission focus on safety.	Development of a strategic plan for TZD initiative participation within the next six months.	Implementation of TZD-related programs and activities, with impact on traffic safety metrics reviewed annually.
	Use Data to Inform and Prioritize Safety Messaging	Capitalize on data-driven insights to create targeted safety campaigns that address specific risks and behaviors.	Launch of targeted safety campaigns based on recent data trends within the next six months.	Reduction in the targeted risky behaviors and incidents, assessed through comparative data analysis after each campaign.

Tribal Transportation Partners	Improve State-Tribal Safety Collaboration	Refine the strategy to focus specifically on bolstering tribal involvement in the SHSP implementation process. Contribute insights, priorities, and cultural considerations.	Number of collaborative meetings held with tribal authorities within the next six months.	Implementation of joint safety projects, with effectiveness evaluated after one year.
	Address Data Sharing Challenges	Develop agreements that respect tribal sovereignty while facilitating the sharing of crash data critical to identifying and addressing safety issues.	Agreement on data-sharing protocols with at least one tribal council within the next year.	Increased availability of tribal crash data for planning purposes, reviewed annually.
	Secure Funding and Resources for Tribal Safety Initiatives	Identify and pursue funding opportunities specifically for improving road safety within tribal areas, including staffing and policing.	Number of submissions of safety grant applications within tribal areas within the next year.	Increased funding secured for tribal road safety projects, with progress on project implementations reviewed annually.
	Cultivate Cultural Sensitivity in Safety Initiatives	Ensure that all safety initiatives within tribal areas are developed and implemented with respect for tribal culture and sovereignty.	Number of cultural sensitivity trainings when working with tribal nations, evaluated after one year.	Feedback from tribal authorities on the respectfulness and effectiveness of safety initiatives, collected bi-annually.
South Dakota Unified Judicial System	Enhance Data Sharing and Analysis	Utilize the Judicial Court's data on traffic violations and criminal charges to inform TZD strategies.	Establishment of a data-sharing agreement with relevant state safety agencies within six months.	Integration of judicial data into safety planning and evaluation, with the impact assessed annually.
	Educate Judges on Transportation Safety Culture Shift	Develop a strategy to educate judges on the evolving culture of transportation safety towards a safer road-use culture.	Number of judicial training sessions on transportation safety culture conducted within one year.	Changes in penalty awarding patterns related to traffic violations, assessed two years after the initiation of the educational strategy, to gauge its impact on promoting a safety-first mindset.
	Explore Legislative and Policy Support	Investigate opportunities to align penalties and educational requirements with TZD goals through legislative support.	Number of reviews of current penalties and educational programs related to traffic violations within the next year.	Implementation of revised penalties or new educational requirements, with effectiveness measured for targeted safety programs evaluated bi-annually.
	Develop Traffic Offender Education Programs	Create or expand education programs for traffic offenders to include TZD principles, similar to the first offense DUI course.	Development of a TZD-focused educational program for traffic offenders within 18 months.	Reduction in recidivism rates among traffic offenders who complete the program, measured after two years.

11.0 IMPLEMENTATION PLAN

The State of South Dakota is dedicated to achieving zero traffic fatalities through comprehensive strategies and collaborative partnerships. This Implementation Plan presents agency-specific recommendations, detailed steps, and impact evaluation indicators for various state and local entities that may be involved in the proposed Toward Zero Deaths (TZD) initiative, emphasizing the Safe System Approach (SSA) to transportation safety. The structure of this Implementation Plan first lists recommendations applicable to all or multiple agencies, followed by sections with recommendations tailored to specific agencies.

In Task 8, the research team summarized agency-specific recommendations based on interviews conducted in Task 5. Task 9 builds on this by developing a refined implementation plan for South Dakota and local agencies to adopt and evaluate the Zero Fatality Transportation Safety Initiative. This Implementation Plan provides detailed steps for each recommendation listed under each interviewed agency and impact evaluation indicators. Where applicable, we include examples from other states and national noteworthy practices to illustrate how similar strategies have been successfully implemented elsewhere and to offer insights that South Dakota can leverage.

This Implementation Plan represents a critical step in South Dakota's efforts toward achieving the goals of the TZD initiative. It is important to recognize that this document is neither the starting point nor the conclusion of TZD efforts. The recommendations provided herein are designed to catalyze action, enhancing the state's capability to implement the SSA and achieve TZD outcomes effectively. These suggestions are not merely standalone solutions but are intended to integrate into and inform organizational strategies and future budget planning, helping to ensure that all initiatives are aligned with the overarching SSA and TZD objectives.

The implementation recommendations are designed to be scalable, allowing initial efforts to be adjusted based on the resources available. For instance, the first step could involve hiring a TZD coordinator and starting with manageable initiatives such as hosting an annual conference and quarterly meetings. Identifying TZD champions throughout state and local agencies and educating them on the principles of TZD can also be an effective initial strategy. After an internal review of existing safe system applications, some transportation departments have chosen to implement a portion of the TZD recommendations provided or extend the timelines required to achieve them. A TZD task force can be created to work with stakeholders and community partners to prioritize implementation recommendations, identify and propose (or redefine) timelines, designate departments and agencies to lead the efforts, and establish specific indicators to measure success over time.

Insights gained from the technical panel's input played an important role in shaping this Implementation Plan. This iterative process will help ensure that South Dakota's TZD implementation plan continues to evolve, tackling emerging challenges and incorporating best practices to reduce fatal and serious injury crashes in South Dakota.

11.1 General Recommendations and Implementation Steps

This section presents general recommendations that apply to multiple agencies within the state. Instead of detailing these steps in specific agency sections, this summary consolidates them for each recommendation.

11.1.1 Safety Culture

Advancing the TZD and SSA requires a visible commitment from state leaders to emphasize the human aspects of traffic safety efforts. Collaboration across diverse transportation needs, not just highways, and facilitating local safety meetings are essential steps.

Implementation Steps:

- **Visible Leadership:** State leaders should publicly commit to TZD and SSA, advocating for these principles in all forums.
- **Emphasize Human Aspects:** Campaigns and initiatives should highlight the personal impact of traffic safety.
- **Collaborate Broadly:** Engage with various transportation sectors to address safety comprehensively.
- **Facilitate Local Safety Meetings:** Organize regular meetings to discuss and promote safety initiatives at the local level.

Examples:

- The Montana Department of Transportation is initiating a multi-year pooled-fund program in partnership with the Center for Health and Safety Culture (CHSC) within the Western Transportation Institute (WTI) at Montana State University. This program is a cooperative effort of participating state DOTs and other organizations vested in traffic safety. The purpose of this effort is to accelerate the development and delivery of tools and services to transform traffic safety culture.

  https://mdt.mt.gov/research/projects/trafficsafety.aspx

- The Transportation Safety Culture Pooled-Fund Research Program is a collaborative effort involving multiple state DOTs and other organizations to enhance traffic safety culture. The research aims to identify effective methods for changing behaviors and attitudes towards road safety, supporting the TZD initiative.

  https://transportation.libguides.com/TSC/pooledfund

Impact Evaluation:

- Leading Indicator: Launch of a safety-first campaign and training programs for staff and contractors within the next six months.
- Lagging Indicator: Survey results showing improved safety culture among staff and stakeholders, assessed annually.

11.1.2 Facilitation of Workshops

Workshops are an effective way to engage stakeholders, build capacity, and promote the TZD initiative. The TZD coordinator's role, as defined later in this document, will be critical in overseeing the development of these workshops. Each agency can develop workshops tailored to its specific needs, focusing on topics such as safety culture, safety countermeasures, SSA, and safety language.

Implementation Steps:

- **Develop and Conduct Workshops:** Agencies should develop workshops in coordination with the TZD coordinator that address their specific safety challenges and needs. Topics can include safe driving, protecting vulnerable users, and safer infrastructure.
- **Engage Stakeholders:** Invite relevant stakeholders to participate in workshops to help ensure broad-based support and collaboration.
- **Monitor and Evaluate:** Regularly evaluate the effectiveness of the workshops and make necessary adjustments to improve outcomes.

Examples:

- Highway safety stakeholders across the United States and from several other countries participated in a workshop to provide input to the development of TZD: A National Strategy on Highway Safety. The workshop, held on August 25th and 26th, 2010, brought together a multidisciplinary group of highway safety experts to further identify and understand challenges and opportunities in reducing highway fatalities. Experts with backgrounds in highway infrastructure, law enforcement, driver education, emergency medical services (EMS), public health, research, safety culture, and other areas participated in plenary presentations and discussions as well as smaller, topic-based breakout sessions. The workshop was held both in-person and online.

  https://www.towardzerodeaths.org/wp-content/uploads/2020/01/TZD-Workshop-Summary.pdf

- The Northeast Minnesota Towards Zero Deaths Workshop is an example of an annual workshop that helps facilitate Minnesota TZD's goal of creating a collaborative, comprehensive, and regional approach in one of Minnesota's regions. It is sponsored by the regional TZD program, Minnesota State Patrol, and State Departments of Public Safety, Transportation, and Health.

  https://www.minnesotatzd.org/events/workshop/northeast/2024

- The Michigan Local Technical Assistance Program (LTAP) offers a half-day workshop to help elected officials learn what they need to know—and what their constituents expect them to know—about traffic safety. The intent is to not only give elected officials a better appreciation of commonly misunderstood traffic safety concepts, but also to encourage them to consult with safety professionals to make informed decisions about safety programs.

  https://highways.dot.gov/safety/other/promoting-importance-road-safety-local-elected-officials

Impact Evaluation:

- Leading Indicator: Schedule and conduct the first series of workshops within six months, focusing on identifying key concerns and opportunities.
- Lagging Indicator: Number of workshops after 2 years.

11.1.3 Development of Formal Agreements

Creating formal agreements between state and local agencies, roles, responsibilities, and anticipated outcomes, fostering collaboration and communication. These agreements provide a clear framework for joint efforts in traffic safety initiatives.

Implementation Steps:

- **Develop formal agreements:** Establish formal agreements between state and local agencies to document roles, responsibilities, and shared goals.
- **Foster collaboration:** Ensure that the agreements promote collaboration and communication among all stakeholders.
- **Monitor and Evaluate:** Regularly review the agreements to ensure they are achieving the desired outcomes and adjust as necessary.

Examples:

- According to the ITS Deployment Survey, at least 47 major metropolitan areas in the United States have state laws or formal agreements that clearly define who is in charge at the scene of a traffic incident. Such agreements ensure efficient coordination and response during traffic incidents.

  https://npstc.org/documents/tim_best_practices2.pdf

- The value of agency and university partnerships in improving roadway safety is well recognized. Joint activities such as safety research projects and workshops are common, with 88 percent of universities and 74 percent of state DOTs having formal agreements for research and technology transfer. These agreements enhance the development and implementation of effective safety solutions. Other agencies should adopt similar formal agreements to foster collaboration and improve traffic safety initiatives.

  https://onlinepubs.trb.org/onlinepubs/conf/cpw8.pdf

Impact Evaluation:

- Leading Indicator: Quantified need for formal agreements.
- Lagging Indicator: Number of executed agreements after 2 years.

11.1.4 Identification of Liaisons in Each Agency

Designating a liaison in each agency facilitates coordination and maintains relationships between agencies. Liaisons are responsible for organizing peer exchanges, training sessions, and ensuring the implementation of data-sharing agreements.

Implementation Steps:

- **Identify and designate liaisons:** Select liaisons in each agency to serve as the main point of contact for TZD initiatives.
- **Organize peer exchanges:** Facilitate regular peer exchanges and training sessions to share best practices and improve coordination.
- **Ensure data sharing:** Oversee the implementation of data-sharing agreements to promote transparency and collaboration.

Examples:

- Colorado designated safety liaisons in local agencies to ensure effective communication and coordination in implementing safety measures.

  https://www.codot.gov/safety/traffic-safety/assets/stsp/strategictransportationsafetyplan.pdf

Impact Evaluation:

- Leading Indicator: Number of liaisons.
- Lagging Indicator: Number of meetings for leadership liaison group.

11.1.5 Cultivate TZD Champions

It is important for leaders and local champions to sustain traffic safety efforts. Leaders recruit and convene stakeholders, communicate goals, and maintain the group's function. Champions across different levels within local and state agencies, passionate about traffic safety, mobilize community support and bridge gaps during leadership changes, funding setbacks, and engagement challenges. Champions can also serve as points of contact for community leaders and the public. Both leaders and champions play crucial roles in the success and sustainability of traffic safety initiatives.

Implementation Steps:

- **Identify Champions:** Coordinate with the TZD Coordinator to find and empower individuals passionate about traffic safety within state and local agencies.
- **Promote Engagement**: Encourage local champions within each agency to actively engage with the community and stakeholders to drive the TZD initiative forward.
- **Monitor Progress:** Track the activities and initiatives led by these champions to assess their impact and make necessary adjustments.

Examples:

- North Dakota Vision Zero: In addition to a Vision Zero Outreach Program Director, NDDOT employs coordinators in four regions and demonstrates an effective model of local engagement and interdepartmental cooperation.

  https://visionzero.nd.gov/partners/regionalcoordinators/

Impact Evaluation:

- Leading Indicator: Number of champions.
- Lagging Indicator: Number of safety programs and strategies created/managed by champions.

11.1.6 Additional Resources

To support the development and implementation of effective traffic safety initiatives, the following resources provide valuable insights, best practices, and data-driven strategies:

- The Federal Highway Administration (FHWA) provides a comprehensive resource highlighting noteworthy practices in safety through this website. The site features case studies and examples of successful strategies implemented by various states to improve traffic safety. These practices address key areas such as safety planning, stakeholder engagement, data-driven decision-making, and the implementation of innovative safety measures. By exploring these examples, agencies can gain insights into effective approaches for developing and enhancing their own safety initiatives.

  https://safety.fhwa.dot.gov/shsp/noteworthy_practices/

- This resource from the Vision Zero Network emphasizes the importance of cross-departmental collaboration in achieving Vision Zero goals. The website provides strategies and best practices for fostering cooperation among different municipal departments, such as transportation, public health, and law enforcement. By leveraging these collaborative approaches, cities and communities can more effectively work towards eliminating traffic fatalities and serious injuries. The resource includes case studies and practical tips for building and maintaining successful partnerships.

  https://visionzeronetwork.org/resource/collaborating-across-departments-for-vision-zero/

- The FHWA Speed Management Noteworthy Practices Booklet is a detailed guide that showcases effective speed management strategies implemented across the United States. This booklet provides a collection of case studies highlighting how different states and localities have successfully reduced speeding-related crashes. It covers a range of topics, including engineering solutions, enforcement techniques, public awareness campaigns, and policy initiatives. This resource is valuable for agencies seeking to implement or enhance their speed management programs to improve road safety.

https://safety.fhwa.dot.gov/speedmgt/ref_mats/fhwasa20076/FHWA-SA-20-076_Noteworthy_Practice_Booklet.pdf

- The Center for Urban Transportation Research (CUTR) report offers an in-depth analysis of various traffic safety programs and practices. The document provides a comprehensive overview of successful traffic safety initiatives and their outcomes, based on empirical research and case studies. It covers a broad spectrum of topics, including pedestrian and bicycle safety, impaired driving prevention, and the use of technology in traffic enforcement. This resource is particularly useful for agencies looking to develop evidence-based traffic safety programs and policies.

  https://digitalcommons.usf.edu/cgi/viewcontent.cgi?article=1047&context=cutr_tpppfr

11.2 SDDOT - Communications

The SDDOT Communications team plays a crucial role in strategic external communications, focusing on road safety messaging through various platforms to enhance public awareness and education on safety resources.

11.2.1 Enhance Digital Engagement

SDDOT can increase its social media followers and engagement by adopting an approach with a webpage and TZD-specific campaign toolkits, capturing more attention while relaying TZD campaign messages. SDDOT should create downloadable campaign materials and develop specific themes for different times of the year. By monitoring and analyzing social media metrics, SDDOT can track increases in followers, likes, comments, and shares over six months.

Implementation Steps:

- **Develop Campaign Toolkits:** Create downloadable materials for specific events (e.g., Valentine's Day, National Stop on Red Week, during Tourism Season).
- **Increase Social Media Engagement:** Develop targeted social media campaigns to capture more followers and relay TZD messages.
- **Monitor Metrics:** Track increases in followers, likes, comments, and shares over six months. Surveys can also be used (e.g., through text-in lists) to ascertain if the public sees the public campaign efforts and if efforts made them rethink any driving decisions, etc.

Examples:

- Minnesota TZD: Minnesota developed campaign toolkits specifically for TZD and has a webpage that external parties can use for any online materials. These materials are tailored for specific days, such as Valentine's Day, with clear, impactful messages. https://www.minnesotatzd.org/resources/education/campaigns

Impact Evaluation:

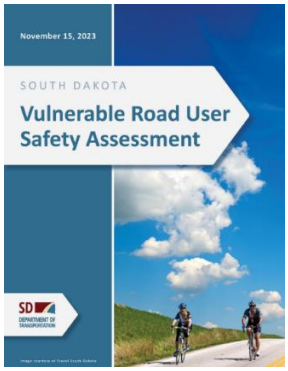
- Leading Indicator: Increase in social media followers and engagement rates (likes, comments, shares) within six months.
- Lagging Indicator: Survey feedback indicating higher public awareness and knowledge about road safety measures after one year.

11.2.2 Implement Targeted Safety Campaigns

The National Highway Traffic Safety Administration (NHTSA) publishes a highway safety countermeasure guide for state highway safety offices, which provides an overview of behavioral strategies and countermeasures aimed at changing driver behavior. This guide includes a five-star rating system to evaluate the effectiveness of various countermeasures, helping to identify which strategies are most effective. Additionally, the guide highlights some countermeasures that are untested or require further evaluation under the heading "Approaches That Are Unproven or Need Further Evaluation."

https://www.nhtsa.gov/book/countermeasures/countermeasures-that-work

SDDOT can leverage these resources to implement targeted safety campaigns. By focusing on strategies with proven effectiveness, such as those with higher star ratings, SDDOT can maximize the impact of their campaigns. For example, the "Don't Thump Your Melon" campaign, which promotes bicycle helmet use and safety through helmet giveaways, has been successful in increasing helmet usage.



Furthermore, SDDOT recently finalized its vulnerable road user safety assessment, which identified the need for additional education to spread awareness about safe passing, pedestrian crosswalks, work zone safety laws, and bicycle regulations. Campaigns targeting these areas can help protect vulnerable road users, especially in high-risk areas.

SDDOT also has the opportunity to innovate by developing new campaigns to test some of the untested safety strategies. By measuring the effectiveness of these new campaigns, SDDOT can contribute to the body of knowledge on traffic safety and potentially identify new best practices.

https://dot.sd.gov/media/documents/South%20Dakota%20Vulnerable%20Road%20User%20Safety%20Assessment%20-%20Final.pdf

Implementation Steps:

- **Leverage NHTSA Guide:** Use the NHTSA highway safety countermeasure guide to select and implement effective safety campaigns. Focus on high-rated countermeasures while considering opportunities to test unproven approaches.
- **Monitor and Evaluate:** Measure the effectiveness of both proven and new safety campaigns through surveys, traffic incident reports, and other relevant metrics. Use this data to refine and improve future campaigns.

Impact Evaluation:

- Leading Indicator: Launch of new campaigns and the reach of campaign messages (measured by views and shares) within six months.

- Lagging Indicator: Reduction in incidents related to the campaign topics reported after one year.

11.2.3 Use Feedback Mechanisms for Improvement

Incorporating surveys, comment sections on social media and websites, and other feedback tools to gather public opinions and suggestions on safety campaigns can significantly enhance the effectiveness of the TZD initiative. By regularly reviewing and evaluating feedback, SDDOT can adjust campaigns based on public input, ensuring that the messages resonate with the audience and address their concerns. This iterative process allows for continuous improvement and increased public engagement and satisfaction.

Suggestion Box: SDDOT should create a venue for any staff member to provide their ideas to improve the effectiveness of TZD efforts. This will provide an opportunity for SDDOT employees not directly involved in TZD, but actively involved in building, maintaining, and operating South Dakota's transportation system, to weigh in. Setting up an online suggestion box that is accessible to all SDDOT employees can facilitate this. Regular reviews and evaluations of suggestions will help identify feasible ideas, and providing feedback to contributors will encourage ongoing engagement and participation.

Implementation Steps:

- **Implement Feedback Tools:** Add surveys and comment sections to social media posts and the SDDOT website.
- **Set Up Suggestion Box:** Create an online suggestion box accessible to all SDDOT employees.
- **Review and Evaluate:** Regularly review and evaluate feedback and suggestions.
- **Report Adjustments:** Document changes made based on feedback and assess improvements in public engagement and satisfaction metrics over the next year.
- **Implement Feasible Ideas:** Act on viable suggestions and provide feedback to contributors.

Impact Evaluation:

- Leading Indicator: Number of feedback mechanisms implemented and volume of feedback received within the first six months.
- Lagging Indicator: Adjustments made to campaigns based on feedback and subsequent improvement in public engagement and satisfaction metrics over the next year.

11.2.4 Champion the TZD Initiative

The TZD National Strategy published a strategic communication plan that defines champions as critical to the success of a TZD program. Champions from each state will include policymakers or influencers who will ensure the integration of all safety partners. It is critical for the communications division to become a champion or provide a platform for spokespeople to promote public acceptance and adoption of the TZD program.

The communications division should take the lead in relaying key messages to maintain consistency in the TZD program. Creating a brief mnemonic sound, such as “Intel Inside,” combined with an animation to identify TZD, can help establish strong branding for the initiative. Emphasizing that traffic fatalities are a public health crisis can illustrate the extent of the crisis, using statistics to support this epidemic. Promoting the mindset that creating a culture of safety is a professional responsibility is also crucial.

Implementation Steps:

- **Identify Champions:** Collaborate with TZD Coordinator(s) (SDDOT Division of Planning & Engineering) to identify and select policymakers or influencers within the state to act as TZD champions.
- **Develop Branding:** Create a logo, slogan, and mnemonic sound and an animation for TZD branding.
- **Promote Public Health Message:** Use compelling statistics to highlight traffic fatalities as a public health crisis.
- **Cultivate a Safety Culture:** Promote the mindset that creating a culture of safety is everyone's professional responsibility.

Impact Evaluation:

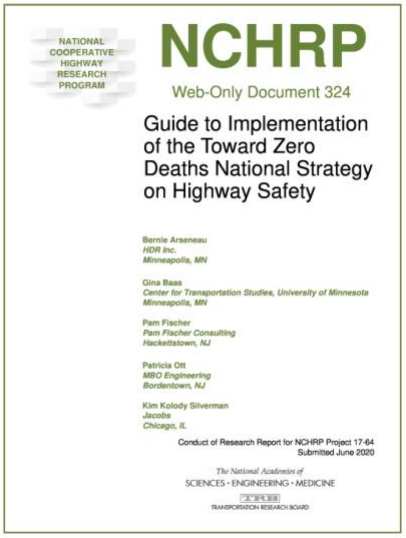
- Leading Indicator: Number of TZD-specific campaigns and initiatives launched within the first six months.
- Lagging Indicator: Measurable decrease in traffic fatalities and serious injuries in South Dakota over the following years, demonstrating progress towards the TZD goal.

11.3 SDDOT – Division of Operations

The Division of Operations emphasizes a comprehensive and inclusive strategy towards roadway safety, addressing the critical need for safety awareness among maintenance and construction teams for the success of the TZD initiative.

11.3.1 Increase Safety Initiative Awareness & Education

To emphasize the importance of the TZD initiative, SDDOT can utilize the self-assessment tools developed by NCHRP. These tools help agencies evaluate their current practices supporting TZD efforts and identify areas for improvement. The questions asked in these self-assessment tools also provide insights into the current level of awareness about the TZD program within an entity. By assessing these responses, SDDOT can gauge awareness levels and identify areas needing further education and engagement.



https://nap.nationalacademies.org/catalog/26627/guide-to-implementation-of-the-toward-zero-deaths-national-strategy-on-highway-safety

Implementation Steps:

- **Deploy Assessment Tool:** Use the NCHRP 17-64 program assessment tool to gain a deeper understanding of the program's current state and identify areas for improvement.
- **Analyze Results:** Review the results from the self-assessment tools and focus groups to identify key areas of improvement.
- **Develop Action Plan:** Create an action plan based on the assessment results, focusing on enhancing awareness and education.

Examples:

- NDDOT Vision Zero: NDDOT's example is significant because it demonstrates the effectiveness of using self-assessment tools to enhance awareness and program development. In 2018, NDDOT's Vision Zero team facilitated six workshops and used the NCHRP 17-64 assessment tool to understand their program's state and identify areas for improvement. This approach helped them build capacity and strengthen their Vision Zero efforts, moving closer to their goal of zero fatalities.

Impact Evaluation:

- Leading Indicator: Number of safety initiative training sessions conducted for maintenance and construction teams within the next six months.
- Lagging Indicator: Improvement in safety compliance and staff competency of maintenance and construction teams over the next year. Number of crashes within work zones.

11.4 SDDOT – Division of Planning & Engineering

The Division of Planning and Engineering focuses effort on infrastructure and roadway safety improvements, highlighting the integration of safety in project scopes and policy development, illustrating this commitment through examples such as implementing intersection improvements and revising road design manuals to include newer safety standards.

11.4.1 Establish a TZD Coordinator Role

SDDOT should aim to quickly establish a TZD Coordinator role to oversee and integrate TZD initiatives across various departments and agencies. The coordinator will be the central liaison of all TZD efforts statewide and play the key role of inter-agency collaboration.

Implementation Steps:

- **Define Role:** Create a job description and responsibilities for the TZD coordinator.
- **Appoint Coordinator(s):** Hire or appoint TZD coordinators in each region or the whole state based on the responsibilities of the coordinator role.
- **Identify Champions:** Collaborate with SDDOT Communications Staff to identify and select policymakers or influencers within the state to act as TZD champions.
- **Train Champions:** Provide training to equip these champions with the necessary knowledge and skills to advocate for the TZD initiative.
- **Establish Support Networks:** Create networks of champions to ensure continuous support and collaboration.
- **Facilitate Regular Meetings:** Determine the most beneficial meeting frequency to track progress and identify needs, at least 4 times per year. Schedule regular inter-departmental meetings to discuss crash trends, emphasis areas, and best practices. The state could aspire to an annual SHSP/TZD conference.
- **Engage Stakeholders:** SDDOT can enhance stakeholder involvement by partnering with regional representatives and universities.
- **Provide Assistance:** Equip coordinators to offer data and technical assistance to local communities for refining safety plans.
- **Track Performance:** Gathers key performance indicators and metrics as well as conducts performance evaluations on all TZD programs.

Examples:

- Minnesota TZD: MnDOT funds full-time regional TZD coordinator positions at the county level throughout the state. These coordinators engage local stakeholders to refine the state's SHSP to include zero-based goals and initiatives. They also provide data and technical assistance to local communities to help refine their local safety plans, incorporating the zero-based philosophy.
  https://www.minnesotatzd.org/about/contact
  https://www.minnesotago.org/application/files/9914/4546/8275/2012SMTPAssessment.pdf

Impact Evaluation:

- Leading Indicator: Appointment of a TZD coordinator within the next three months.
- Lagging Indicator: Number of activities to increase coordination and implementation of TZD initiatives, evaluated through annual reports.

11.4.2 Implement Aggressive Safety Policies

Many states face challenges in balancing aggressive safety targets with achievable goals. Setting ambitious targets demonstrates a commitment to saving lives but can risk demoralizing stakeholders if not met. Aggressive safety targets are intended to motivate action and go beyond reflecting current trends. To support these targets, the implementation of specific safety policies is essential. A new mentality has taken hold in public decision-making called the "safety in all policies" approach, modeled after the widely used "health in all policies" approach. This approach considers the health and safety impacts of all policy decisions, even those not directly related to transportation, to create a safer overall environment.

Several states have implemented effective, aggressive safety policies that South Dakota can consider. For instance, the current seat belt law only requires the driver and front seat passengers to wear seat belts. Legislation should be passed to require all occupants to use a seat belt, regardless of their position in the vehicle, and the penalty for failing to do so should be increased. Adopting Complete Streets policies ensures roads are designed and operated with the safety, mobility, and accessibility needs of users of all ages and abilities in mind. This includes incorporating features that promote walking and bicycling while reducing traffic speeds.

Additionally, it is crucial to ensure that all safety policies and road designs consider the impacts on different communities, particularly those historically underserved. Engaging with local communities to understand their needs ensures equitable distribution of safety benefits. Implementing policies to manage traffic speeds to safe levels, such as using traffic calming measures, setting appropriate speed limits, and enforcing speed regulations, can significantly reduce the likelihood and severity of crashes.

Further details on these policies can be accessed through the following links:

- https://www.nsc.org/getmedia/93e58896-2cfd-4f39-b760-9d9d91ae207b/rtz-report.pdf
- https://www.saferoutesnj.org/wp-content/uploads/2021/07/SafeRoutesVisionZero.pdf

Implementation Steps:

- **Review and Update Manuals:** Update design manuals to integrate new safety policies, ensuring that they reflect the latest practices and standards in roadway design and traffic management.
- **Engage Stakeholders:** Communicate the importance of aggressive safety targets and share responsibility across agencies. Engage with community members, local governments, and other stakeholders to ensure broad-based support and understanding of the new policies.

- **Monitor Impact:** Track the reduction in the number of fatal and serious injury crashes in areas where new policies have been applied. Use data to assess the policies' effectiveness and adjust as necessary.

Impact Evaluation:

- Leading Indicator: Number of revisions of the road design manual to include new safety policies within the next six months.
- Lagging Indicator: Reduction in the number of fatal and serious injury crashes in areas where new policies have been applied, tracked annually.

11.4.3 Facilitate SHSP Stakeholder Engagement Workshops

Strengthening coordination between various organizations can be easily implemented by inviting existing and potential SHSP partners to meetings scheduled for SHSP updates. The SHSP calls for extensive coordination among multiple existing and future partners to understand current crash trends, reconsider emphasis areas, and identify best practice strategies to address crash conditions over the next five years.

Implementation Steps:

- **Invite SHSP Partners:** Ensure that all potential SHSP partners are invited to meetings where SHSP updates are discussed.
- **Facilitate Regular Meetings:** Determine the most beneficial meeting frequency. Schedule regular inter-departmental meetings to discuss crash trends, emphasis areas, and best practices. The state could aspire to an annual SHSP/TZD conference.
- **Share Information:** Promote the sharing of information and resources among departments to improve overall coordination and effectiveness.
- **Track Progress:** Monitor the progress of coordinated efforts and adjust strategies as needed based on outcomes and feedback.

Impact Evaluation:

- Leading Indicator: Schedule and conduct the first series of workshops within six months, focusing on identifying key concerns and opportunities.
- Lagging Indicator: Number of collaborative SHSP projects initiated with stakeholders, number of workshops and documents after 2 years.

11.4.4 Strengthen Inter-Departmental Coordination

It would be beneficial for the division to enhance its coordination with other departments and local agencies. Strengthening inter-departmental coordination ensures a more cohesive approach to addressing traffic safety challenges.

Implementation Steps:

- **Establish Entity-to-Entity Relationships:** Foster respectful lines of communication and agreed-upon approaches between local and state agencies. This facilitates effective discussion on roadway safety issues and promotes collaboration.
- **Dedicate Specific Engineers to TZD Efforts:** Consider assigning specific engineers within the Division to expand responsibilities to include TZD initiatives. This ensures dedicated attention and expertise to these efforts.
- **Convene Regional Working Groups:** Organize or participate in regional TZD working groups to convene regular meetings of safety stakeholders. Use these working groups as platforms to share and expand on TZD issues and activities.

Impact Evaluation:

- Leading Indicator: Establishment of a regular coordination meeting schedule and communication channel within six months.
- Lagging Indicator: Increased efficiency in safety improvement deployment and response to safety issues measured after one year.

11.4.5 Cultivate a Safety-First Culture and Facilitate Unified Messaging for TZD Initiatives

Safety culture transformation strategies increase awareness of personal responsibility for road user behaviors. Drivers, pedestrians, bicyclists, motorcyclists, and other road users should accept responsibility for their own safety and the safety of others. Changing the traffic safety culture also means embracing innovative practices, supporting policy reforms, and recruiting nontraditional partners (e.g., private industries, individuals, trained volunteers, etc.)

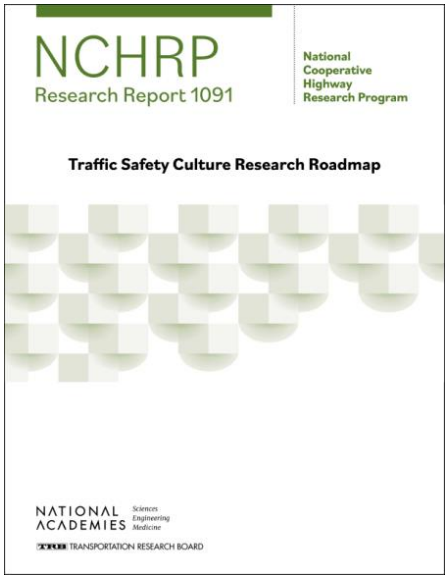
Implementation Steps:

- **Assess Agency's Organizational TSC:** Examine SDDOT's published mission and values to identify the need for traffic safety culture (TSC) assessment.
- **Develop Statewide TSC Goals:** Adopt a TZD goal and plan for South Dakota.
- **Align TSC Goals:** Survey the public and build support for TZD, ensuring alignment with community and agency goals.
- **Develop Measurement Tools:** Create an annual community survey and set goals for safety performance toward TZD.
- **Identify Performance Measures:** Set target reductions in focus crash types and qualitative measures of community support for safety countermeasures.

- **Evaluate Progress:** Measure the number of safety and multimodal projects funded as a percentage of total projects to assess progress toward TSC goals.
- **Build Partnerships:** Strengthen coalitions and partnerships, such as developing data linkage with public health agencies to better understand road user safety.
- **Review Practices for Alignment:** Assess existing practices for alignment and equitable implementation, revising planning, land use, zoning, and engineering codes as necessary.
- **Revise Efforts as Culture Shifts:** Establish long-term data collection practices and revise agency TSC goals as necessary to adapt to cultural shifts.

Examples:

- WSDOT ROI Evaluation: Washington State Department of Transportation (WSDOT) and partner agencies implemented an evaluation program for their traffic safety efforts, including calculating the return on investment (ROI) for safety spending. For example, a high-visibility impaired-driving enforcement program in urban counties resulted in a 115:1 ROI, reducing fatalities by 109.
- Idaho Transportation Department Initiative: Idaho launched a community-engagement project to reduce impaired driving, starting with pilots in three communities. This project engaged the entire community rather than just focusing on drivers, emphasizing collective responsibility.
- TSC Research Roadmap (NCHRP 1091) and Supplement (NCHRP Web-Only Document 382): This roadmap provides a framework for transportation safety practitioners to understand, measure, develop, and evaluate traffic safety culture. It includes research projects on attitudes and beliefs about transportation safety, community engagement, and road user behaviors.
  https://nap.nationalacademies.org/catalog/27488/traffic-safety-culture-research-roadmap
  https://nap.nationalacademies.org/catalog/27489/traffic-safety-culture-conduct-of-research-report



Impact Evaluation:

- Leading Indicator: Launch of a safety-first campaign and training programs for SDDOT staff and contractors within the next six months.
- Lagging Indicator: Survey results showing improved safety culture among SDDOT staff and stakeholders, assessed annually.

11.5 South Dakota Department of Public Safety

South Dakota DPS has a dual focus on roadway safety: Highway Patrol efforts to remove impaired drivers and educate the public, and Office of Highway Safety efforts to reduce injury and fatal crashes through data analysis, grants, and community initiatives.

11.5.1 Strengthen Public Education Campaigns

Through collaboration with stakeholders, the Department of Public Safety (DPS) can enhance public education campaigns.

Enhanced coordination between DPS and the DOT is crucial. The Office of Highway Safety (OHS) collaborates with media companies to conduct educational campaigns on various roadway safety topics.

This strategy is particularly effective for supporting media and public outreach during seat belt enforcement waves. Incorporating seat belt enforcement messaging and involving local law enforcement officers in honoring traffic crash survivors who were buckled up, such as the current Highway Patrol awards 'Saved by the Belt' and 'Saved by the Helmet,' fosters a positive relationship between law enforcement and the community. Additionally, partnering with local businesses to offer gift certificates for young drivers and passengers who buckle up can further promote safety.

Implementation Steps:

- **Incorporate TZD into Public Education Campaigns:** Incorporate TZD logos and slogans, reinforcing the commitment to reducing traffic fatalities and serious injuries.
- **Emphasize the Human Aspects of Traffic Safety Efforts and Results:** Emphasize the human aspects of traffic safety campaigns, ensuring that the life-saving impact of their efforts remains at the forefront of internal and public communications.
- **Continue to Develop and Lead Distracted Driver Education Campaigns with Periodic Program Evaluation:** Implement impact evaluation.
- **Weather Related Campaigns:** 21% of crashes occurred during wet, snowy and icy conditions in the last 5 years.
- **Influence the Influencers:** Consider implementing an influencer-led approach to improve traffic safety awareness for younger drivers.
  https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10928193/

Impact Evaluation:

- Leading Indicator: Number and types of public education campaigns launched within the next six months, as well as the types of media.
- Lagging Indicator: Reduction in the number of impaired driving incidents and reported unsafe travel behaviors over the next year.

11.5.2 Enhance Grant Programs for Local Initiatives

Many states have implemented safe roads grant programs for their TZD initiatives. These grants support traffic safety programs that promote safer traffic cultures among employees, students, and families, and conduct outreach supporting law enforcement traffic safety campaigns. The OHS can build upon its current system that utilizes regional workshops and law enforcement liaisons to support the grant applications process.

Implementation Steps:

- **Develop and Enhance Grant Programs:** Enhance existing grant programs in South Dakota, encouraging local initiatives that promote traffic safety. OHS offers grants to qualified non-profits, public schools, or government entities (local, county, tribal, and state). https://dps.sd.gov/safety-enforcement/highway-safety/grants
- **Facilitate Workshops:** Continue to enhance existing regional workshops to promote and bring awareness to the TZD initiative and grant programs.
- **Collaborate with Stakeholders:** Partner with local employers, schools, and law enforcement to enhance the impact of the programs.
- **Create Online Resources:** Develop an online FAQ page and instructional videos to simplify the grant application process.
- **Update Webpages:** Provide clear eligibility requirements and post any changes to grant applications on the dedicated webpages to keep applicants informed.

Examples:

- Highway Safety Office's mini-grants for short-term mobilizations target high traffic holiday periods or special events. https://tzdarkansas.org/step-grants/#:~:text=A%20Mini%20STEP%20Grant%20is,Overtime%20Enforcement

Impact Evaluation:

- Leading Indicator: Increase in the number of grants awarded to local agencies within the next fiscal year.
- Lagging Indicator: Decrease in injury and fatal crashes in communities that implemented grant-funded programs, measured annually.

11.5.3 Improve Data Collection and Analysis

The SSA to road safety emphasizes comprehensive data collection and analysis to prioritize programs and projects effectively. For detailed strategies on updating state crash data systems, refer to the Guide to Updating State Crash Data Systems. https://lindseyresearch.com/wp-content/uploads/2022/05/Guide-to-Updating-State-Crash-Data-Systems.pdf

DPS/OHS will consider applying for the State Electronic Data Collection (SEDC) Grant opportunity to improve data collection in the future.

Implementation Steps:

- **Demographic Data Integration:** Collect detailed demographic data of crash victims to understand the impact on different communities and address social and racial inequities.
- **Medical Data Collaboration:** Partner with medical institutions to obtain comprehensive injury data, which provides insights into the severity and outcomes of crashes.
- **Transportation Attitudes Survey:** Conduct regular surveys to understand the attitudes and behaviors of different road users, identifying which modes of transportation are more vulnerable.
- **Near Miss Data:** Innovations in collecting near miss data are continually improving. Explore ways to collaborate with other agencies or partners on collecting near miss data such as traffic cameras and sensors, providing a fuller picture of road safety conditions.
- **High-Risk Route Identification:** Develop a system for identifying high-risk routes within the state, allowing for targeted safety improvements and monitoring of high-impact areas.

Coordination with Tribes:

- Review tribal road safety issues and challenges.
- Improve crash data collection, analysis, and sharing with tribal authorities. Explore solutions for challenges with data sharing (due to sovereign status).
- Share experiences and develop tribal safety initiatives.
- Identify available safety resources and provide necessary technical assistance and training.

Impact Evaluation:

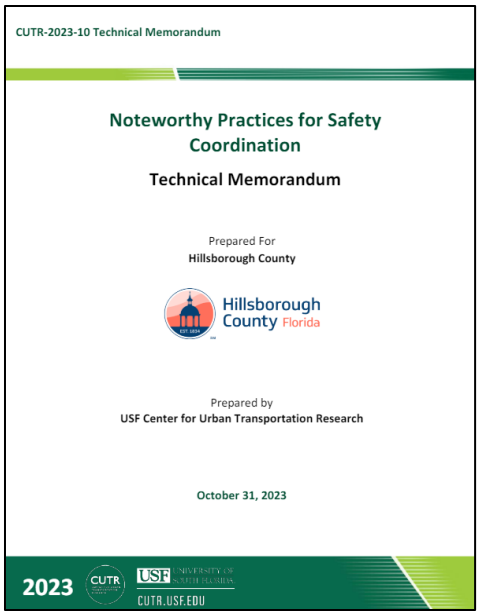
- Leading Indicator: Implementation of an enhanced data collection system within the next 12 months.
- Lagging Indicator: Increased accuracy in identifying high-risk areas and behaviors, leading to targeted safety improvements, assessed after two years.

11.5.4 Foster Multi-Agency Collaboration

DPS can strengthen partnerships with SDDOT and other stakeholder agencies to unify safety efforts across the state. States seeking to build a core group of trained ambassadors for transportation safety culture should start by establishing a comprehensive training program. This program should provide coordinators and champions (or candidates) with critical data about crash contributing factors and proven strategies to address them, as well as offering guidance on public speaking, time management, and the importance of being positive role models.

Implementation Steps:

- **Identify Multi-Agency Collaboration Strategy:** Seek out interested personnel from various state and local agencies and develop multi-agency collaboration strategies.
- **Encourage Open Discussions and Storytelling:** Foster open discussions between state staff and stakeholders. Use storytelling to demonstrate how safety data are applied and how transportation safety strategies (e.g., countermeasures) improve safety.
- **Identify Opportunities for Mutual Learning:** Create opportunities for state staff and stakeholders to observe and learn from each other through shadowing programs. This approach can bridge perceived divisions and provide unique insights into possible solutions.
- **Provide Transportation Safety and Data Training:** Implement training programs for state staff, covering topics such as bias awareness, analytical research, and technology. Regularly scheduled training sessions can build agency capacity and enhance coordination.
- **Continue Partnering with Universities and Local Agencies:** Collaborate with universities and local agencies to support transportation safety activities. Attend community meetings to gather information about local safety concerns and resources needed for a robust approach to transportation safety.
- **Create a State-Focused Action Plan:** Develop enforcement countermeasures, monitor trends, and communicate findings. An action team should execute the plan and effectively communicate trends and patterns.
- **Evaluate Available Budget and Resources:** Assess costs, evaluate time budgets, and identify funding sources to ensure adequate resources for transportation safety and coordination with stakeholders.



Examples:

- For detailed examples and strategies, refer to the FHWA Noteworthy Practice Booklet, Roadway Safety Noteworthy Practices Webpage, and the Vision Zero Network website.

  https://highways.dot.gov/safety/learn-safety/noteworthy-practices

Impact Evaluation:

- Leading Indicator: Number of collaborative safety projects initiated within the next year.
- Lagging Indicator: Demonstrated improvements in road safety metrics statewide, evaluated after two years.

11.5.5 Disseminate Unified Messaging for TZD Initiatives

To ensure clear and consistent communication for the TZD initiatives, DPS should streamline its messaging across all campaigns to avoid confusion and improve public understanding.

Well-intended promotions outside of the TZD network may inadvertently dilute messaging. Therefore, all coordination activities should seek to include public or private stakeholders with the same safety objectives, unifying them under the same TZD umbrella.

Implementation Steps:

- **Standardize Campaign Names:** Consolidate all seat belt enforcement campaigns under a single, recognizable name. This unified approach ensures the public receives a clear and consistent message.
- **Make PSAs Simple and Relatable:** PSAs should not be complicated. PSAs should be repeated frequently on multiple platforms and convey information using both audio and visual methods. Design PSAs to appeal to individuals' emotions – empathy, humor, or sad (shocking). Use a peer or local person(ality) in the PSA, not a national celebrity. Use templates that can be tailored by each agency or organization. Provide in many file formats – infographics, tag lines, DMV/VMS/CMS content, short format video (>30 seconds) that can be easily posted on many platforms (e.g., social media).
- **Double Down on What Works:** Utilize the existing successful campaigns and strengthen their impact. For example, if "Make it Click" has been effective, it should be the primary focus, integrating elements from other campaigns.
- **Create a Centralized Resource Hub:** Leverage the existing DPS campaign library as a centralized hub where all TZD initiatives are listed with standardized names and detailed information. Ensure this hub is user-friendly and accessible. Implement TZD branding across all campaigns to maintain consistency.
- **Consistent Branding:** Use the same logos, slogans, and visual elements across all materials related to a specific campaign. Consistent branding helps reinforce the message and makes it more memorable.
- **Unified Messaging Strategy:** Develop a unified messaging strategy that outlines the key messages for each campaign. Ensure all communications, whether digital, print, or broadcast, adhere to this strategy.
- **Internal Coordination**: Establish a coordination team within DPS responsible for overseeing all TZD communications. This team ensures that all messages are aligned and disseminated uniformly.
- **Public Feedback:** Conduct surveys and focus groups to gather public feedback on the clarity and effectiveness of the current campaigns. Use this feedback to refine messaging and improve public outreach.

- **Regular Updates:** Regularly update the campaign materials and messaging strategy to reflect new data, trends, and feedback. Ensure that all stakeholders are informed about these updates.

Impact Evaluation:

- Leading Indicator: Creation and distribution of a standardized safety message toolkit to member departments within the next six months.
- Lagging Indicator: Adoption and utilization of the unified safety message by a significant majority of member departments, with evaluation after a year.

11.6 Federal Highway Administration

The FHWA has strong support for adopting the Initiative in South Dakota, with a role in providing federal aid, ensuring compliance with federal requirements, and offering technical assistance with the overarching goal of reducing serious injuries and fatal crashes.

11.6.1 Facilitate Knowledge Sharing

Enhance the development and implementation of TZD initiatives by facilitating knowledge sharing and utilizing best practices from various states.

Implementation Steps:

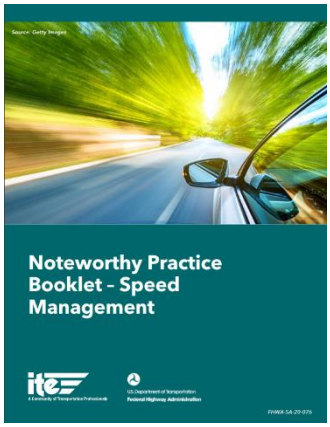
- **Promote FHWA Reports:** FHWA has various reports showcasing noteworthy practices from states such as Washington, Massachusetts, California, and New Jersey. These practice categories such as equity, safe systems, and data collection, provide valuable insights for other states and guide efficient development of zero-death initiative implementation plans.

  https://safety.fhwa.dot.gov/speedmgt/ref_mats/fhwasa20076/FHWA-SA-20-076_Noteworthy_Practice_Booklet.pdf

- **Promote FHWA Zero Deaths and Safe System Approach Resources:** FHWA has developed materials to educate transportation safety stakeholders on the SSA and its six principles and five elements. https://highways.dot.gov/safety/zero-deaths

- **Promote the use of Noteworthy Practices Repository:** FHWA has an online repository on its website that lists noteworthy practices from various states, categorized by topics such as safe systems, safety culture, speed management, and intersection safety. This repository can be expanded with TZD plans, or a new repository can be created.

  https://highways.dot.gov/safety/learn-safety/noteworthy-practices



- **Regular Updates:** Ensure the repository is regularly updated with new practices and success stories.

- **Create a TZD Plans Page:** The Vision Zero Community of Practice offers technical resources to assist local communities to reach their goal of zero traffic fatalities. Creating a similar page for TZD plans, especially for states, will foster knowledge sharing and provide actionable insights.

  https://highways.dot.gov/safety/zero-deaths/vision-zero-cop/vision-zero-community-practice#:~:text=The%20Vision%20Zero%20Community%20of,and%20implementation%20of%20Vision%20Zero.

Impact Evaluation:

- Leading Indicator: Creation of a repository or series of workshops showcasing best practices within the next year.

- Lagging Indicator: Adoption of successful strategies from other states in South Dakota's safety initiatives, with impact assessment after two years.

11.6.2 Support Zero Fatalities Initiatives

FHWA offers webinars and materials to support zero fatality initiatives. Tracking the technical assistance sessions taken by local agencies can help improve the implementation of new safety projects influenced by these sessions.

Implementation Steps:

- **Track Assistance Sessions:** Keep records of the technical assistance sessions attended by local agencies.
- **Evaluate Implementation:** Assess the impact of these sessions on the implementation of new safety projects.

Impact Evaluation:

- Leading Indicator: Number of technical assistance sessions provided to local agencies within the next six months.
- Lagging Indicator: Implementation of new safety projects under the zero fatalities initiatives, with an evaluation of impact after one year.

11.6.3 Expand FHWA Collaboration for Systemic Safety Improvement

Local and state agencies should prepare collaborative projects focusing on systemic safety improvements. Integrating the SSA with their Highway Safety Improvement Programs (HSIPs) and sharing these practices with FHWA for feedback can lead to further improvements.

Implementation Steps:

- **Develop Collaborative Projects:** Encourage local and state agencies to create projects that focus on systemic safety improvements.
- **Integration of SSA with HSIPs:** Share successful integration practices with states to receive feedback and improve implementation.

  https://safety.fhwa.dot.gov/hsip/docs/fhwasa2018.pdf

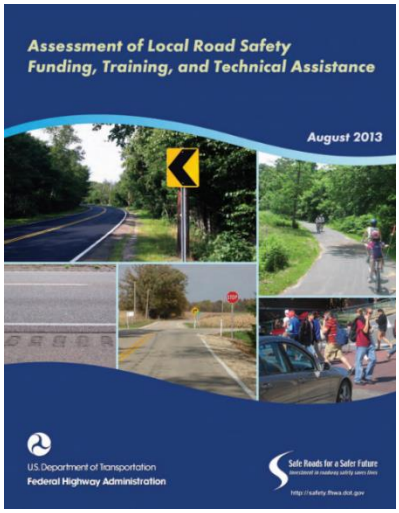
Impact Evaluation:

- Leading Indicator: Number of collaborative projects initiated with FHWA focusing on systemic safety improvements within the next year.
- Lagging Indicator: Measurable reduction in traffic fatalities and serious injuries on identified systemic risk roadways, evaluated two years after the implementation of safety improvements advised by FHWA.

11.7 South Dakota Local Transportation Assistance Program

South Dakota LTAP has a vital role in supporting local and tribal agencies with road maintenance and safety training, yet it faces challenges in adopting a safety-centric focus due to its current structure, funding, and objectives.

11.7.1 Enhance Training and Outreach



It is important to enhance training and outreach efforts to ensure that local agencies are well-prepared to adopt and implement the TZD national strategy. South Dakota LTAP should consider conducting train-the-trainer workshops for LTAP and Tribal Technical Assistance Program (TTAP) staff, focusing on implementing the TZD national strategy at a local level. These workshops will equip participants with tools and techniques for local implementation and help integrate TZD tools into local training schedules.

For resources and guidance on enhancing training and outreach, local agencies can refer to the FHWA materials available on its website. This section highlights noteworthy practices identified during their assessment and documents them as case studies. These case studies address challenges such as limited access to local road data, limited agency resources, and a lack of understanding of the Federal-aid process.

https://safety.fhwa.dot.gov/local_rural/training/fhwasa13029/chap4.cfm#d

Implementation Steps:

- **Develop Comprehensive Training Programs:** Create detailed training programs covering various aspects of the TZD national strategy.
- **Conduct Train-the-Trainer Workshops:** Organize workshops to train LTAP and TTAP staff, providing them with the necessary tools and techniques for local implementation.
- **Integrate Training into Local Schedules:** Ensure that the TZD tools and techniques are incorporated into local training schedules and courses.
- **Use Local Examples and Case Studies:** Encourage the use of local examples and case studies to make the training more relevant and effective. Similar to the workshops outlined in the National Academies' guide on TZD implementation.

  https://nap.nationalacademies.org/catalog/26627/guide-to-implementation-of-the-toward-zero-deaths-national-strategy-on-highway-safety

Impact Evaluation:

- Leading Indicator: Number of safety-focused sessions or topics integrated into LTAP conferences and training programs within the next year.
- Lagging Indicator: Feedback from local governments on the usefulness of safety-focused content in LTAP programs, measured annually.

11.7.2 Promote Local Safety Prioritization

South Dakota LTAP can participate in discussions on establishing collaborative safety programs involving local agencies and state DOTs to provide funding and technical assistance for local safety improvements.

Implementation Steps:

- **Identify High-Priority Areas:** Consider identifying high-risk local areas and prioritize them for safety improvements.
- **Provide Technical Assistance:** Offer technical assistance to local agencies in developing and implementing safety projects. Develop collaborative safety programs with local agencies and state DOTs.
- **Monitor and Evaluate Projects:** Regularly monitor and evaluate the effectiveness of local safety projects and adjust as needed.

Examples:

- Ohio Local Road Safety Program: Ohio's Local Road Safety Program involves collaboration among Ohio DOT, Ohio LTAP, and the County Engineers Association of Ohio. It provides funding for local road safety improvements, offers training and technical assistance, and assists with administering local safety projects. Funding comes from Ohio DOT's HSIP funds.

  https://highways.dot.gov/safety/learn-safety/noteworthy-practices/ohio-local-road-safety-programs-state-and-local#:~:text=The%20Ohio%20Local%20Road%20Safety,Association%20of%20Ohio%20(CEAO)

- Louisiana Local Roads Safety Program: Louisiana's LTAP and DOTD collaborate to administer safety project funds and assist regional transportation safety coalitions. The program helps local agencies solve road safety issues using local resources or by accessing funds through the SHSP process.

  https://highways.dot.gov/media/10541

- Florida District 7 Local Safety Program: Florida DOT District 7 has a comprehensive district-level local road safety program that includes technical assistance, training, and support for local agencies. The program is funded through HSIP funds and includes an annual local agency safety summit.

  https://floridaltap.org/recorded-webinar-fdot-d7-local-agency-safety/.

- Nebraska County Sign Installation Program: Nebraska LTAP's program collaborates with local agencies to install signs at high-risk locations. The program helps counties enhance road safety through a systemic sign installation program, ensuring proper installation and maintenance.

  https://safety.fhwa.dot.gov/local_rural/training/fhwasa13029/chap4.cfm

- Tennessee Local Roads Safety Initiative: Tennessee's initiative involves a partnership between TDOT, LTAP, and local agencies to conduct Road Safety Audit Reviews and implement safety

improvements. The program provides basic signing, striping upgrades, and guardrail installations.

https://safety.fhwa.dot.gov/local_rural/training/fhwasa13029/chap4.cfm

Impact Evaluation:

- Leading Indicator: Launch of a pilot program demonstrating low-cost, high-return safety improvements in select rural communities within the next year.
- Lagging Indicator: Increased local community investment in safety projects, evidenced by budget allocations and project implementations, reviewed annually.

11.7.3 Explore Funding and Staff Expansion

Develop a comprehensive spending plan and secure funding to support the expansion of LTAP initiatives, including establishing a Safety Circuit Rider position.

Implementation Steps:

- **Develop a Five-Year Spending Projection:** Outline the financial needs for the next five years to support TZD initiatives.
- **Pursue Grant Funding Opportunities:** Seek grant funding from the DOT and other sources to support local safety activities.
- **Collaborate with Other Agencies:** Partner with state and local agencies to identify funding streams and support for safety projects.
- **Create a Safety Circuit Rider Position:** Partner with SDDOT and FHWA to establish a Safety Circuit Rider position to provide technical assistance and support for local safety initiatives.

Examples:

- Colorado Safety Circuit Rider Program: Colorado LTAP partners with local agencies to support project identification and funding streams, including federal funds from the Bipartisan Infrastructure Law. This program focuses on reducing crashes on local roadways through low-cost countermeasures.

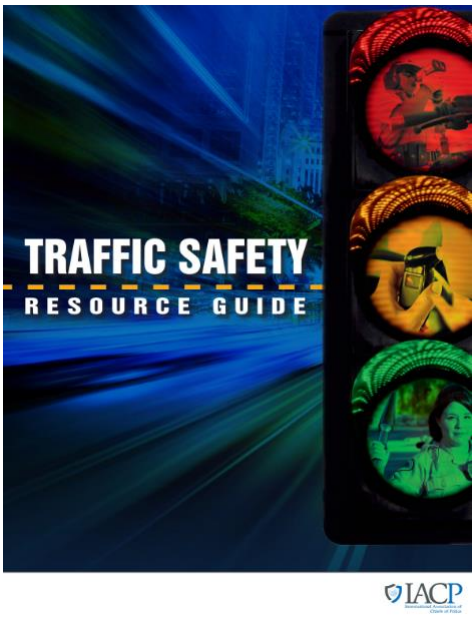
  https://safety.fhwa.dot.gov/local_rural/training/docs/fhwasa22059.pdf

Impact Evaluation:

- Leading Indicator: Identification of potential funding sources and submission of grant applications within the next year.
- Lagging Indicator: Hiring of additional staff or reallocation of resources to support safety initiatives, assessed after two years.

11.8 South Dakota Police Chiefs' Association

The South Dakota Police Chiefs' Association emphasizes education over enforcement for roadway safety, utilizing public media and community events to disseminate safety messages.



The Traffic Safety Resource Guide by the International Association of Chiefs of Police (IACP) is a valuable resource for helping law enforcement officers address traffic safety from education to enforcement, sharing research, and best practices. Written by police officers, researchers, and practitioners, it provides promising strategies and the latest research to support leaders in responding to traffic safety issues. Police officers often carry the Guide in their patrol vehicles, while police chiefs use it in planning meetings with city managers, elected officials, and community groups. https://www.theiacp.org/resources/document/traffic-safety-resource-guide

11.8.1 Leverage Public Education and Awareness

Enhancing public education and awareness initiatives can significantly contribute to improving traffic safety by informing the community about safe driving practices and the consequences of traffic violations. This effort can also be supported by the South Dakota Safety Council's outreach activities.

Implementation Steps:

- **Community Engagement Activities:** Organize community events such as safety fairs, school visits, and interactive workshops to educate the public about traffic safety. These events can involve demonstrations, educational materials, and opportunities for community members to engage with law enforcement officers.
- **Collaborate with Local Organizations:** Partner with local businesses, schools, and community organizations to amplify safety messages and promote safe driving behaviors within the community.

Impact Evaluation:

- Leading Indicator: Number of safety education campaigns initiated through the association's network within the next 6 months.
- Lagging Indicator: Measurable increase in public awareness and understanding of road safety issues, assessed through surveys or feedback mechanisms within a year.

11.8.2 Expand Collaboration for Enforcement and Education

Expanding collaboration between law enforcement agencies and other stakeholders can enhance both enforcement and educational efforts, leading to more effective traffic safety initiatives. This aligns with the goals of the South Dakota Safety Council and the Department of Health in improving interagency communication and collaboration.

Implementation Steps:

- **Establish Joint Task Forces:** Create task forces that include law enforcement, public health officials, and transportation agencies to coordinate efforts in traffic safety enforcement and education. These task forces can focus on specific issues such as impaired driving and speeding.
- **Conduct Joint Training Sessions:** Organize joint training sessions for law enforcement officers and other stakeholders to ensure a unified approach to traffic safety. These sessions can cover topics such as the SSA, data analysis, and community engagement strategies.
- **Share Data and Best Practices:** Implement systems for sharing data and best practices between agencies to support informed decision-making and improve the effectiveness of traffic safety initiatives. Regular meetings and workshops can facilitate this exchange of information.

Impact Evaluation:

- Leading Indicator: Number of joint enforcement and education operations with other agencies planned and executed within the next year.
- Lagging Indicator: Reduction in traffic violations and incidents in areas targeted by these collaborative efforts, measured annually.

11.9 South Dakota Department of Health

The South Dakota Department of Health can play an active role in public safety outreach related to the Initiative, leveraging its media resources to enhance public awareness and education on road safety. The EMS Director group, with its extensive experience, data access, and established communication channels, is positioned to play a key role in enhancing post-crash care and leveraging technology for better emergency responses.

11.9.1 Strengthen Data Collaboration and Sharing

Enhancing data collaboration and sharing can significantly improve the understanding and prevention of traffic-related injuries by linking various data sources and disseminating findings to relevant stakeholders.

Implementation Steps:

- **Prioritize Data-Sharing Agreements:** Establish data-sharing agreements with trauma centers, particularly those in neighborhoods with the highest rates of injuries or fatalities. This will ensure comprehensive data collection and help identify high-risk areas.
- **Link Traffic Crash and Hospitalization Data:** Integrate traffic crash event data with hospitalization data to identify patterns and risk factors for traffic-related injuries. This helps in understanding the broader health impacts of traffic incidents and can inform targeted interventions.
- **Analyze and Disseminate Data:** Regularly analyze data on traffic-related injuries and driving behaviors. Share these findings with healthcare providers, policymakers, and the public to support evidence-based decision-making.
- **Develop Research Priorities:** Identify key topics for research and evaluation of TZD efforts, focusing on high-risk areas and vulnerable populations. This can help in prioritizing resource allocation and developing targeted safety programs.

Examples:

- New York City: The Department of Health and Mental Hygiene (DOHMH) integrates traffic safety into its work with communities, healthcare providers, and other public health partners. They promote traffic safety messages through health fairs, educational activities, and outreach to primary care providers.

  https://www.nyc.gov/assets/visionzero/downloads/pdf/vision-zero-1-year-report.pdf

- San Francisco: The San Francisco Department of Public Health (SFDPH) conducts comprehensive traffic injury surveillance and links crash data with hospitalization records to better understand injury patterns and inform safety strategies.

  https://www.sfdph.org/dph/files/EHSdocs/PHES/VisionZero/Transportation_Injury_Surveillance.pdf

Impact Evaluation:

- Leading Indicator: Establishment of a formal data-sharing agreement with SDDOT, the Office of Highway Safety and other relevant agencies within the next six months.
- Lagging Indicator: Increased use of health and crash data in the development and assessment of safety initiatives, measured annually. Improvement in the comprehensiveness and accuracy of traffic incident data.

11.9.2 Expand Collaboration for Comprehensive Safety Efforts

Expanding collaboration with various stakeholders, including schools, community organizations, and local government, can enhance the effectiveness of traffic safety initiatives.

Implementation Steps:

- **Create New Partnerships:** Develop partnerships with schools and community organizations in priority neighborhoods to promote TZD, healthy communities, and active living. These collaborations can help in reaching diverse populations and implementing community-specific safety interventions.
- **Issue Traffic Safety Guidance:** Provide guidance on traffic safety messaging tailored for different demographics, such as older adults, based on formative research. This ensures that safety messages are relevant and impactful.
- **Engage in Community Outreach:** Conduct educational activities and outreach programs to raise awareness about traffic safety and encourage safe behaviors among residents.

Impact Evaluation:

- Leading Indicator: Participation in SHSP or TZD planning meetings or committees within the next six months.
- Lagging Indicator: Documented contributions to multi-agency safety initiatives and strategies, evaluated bi-annually.

11.9.3 Expand EMS Educational and Training Programs

Expanding educational and training programs for EMS personnel ensures they are well-prepared to respond to traffic incidents and support traffic safety initiatives.

Implementation Steps:

- **Develop Comprehensive Training Programs:** Create training programs that cover traffic incident management, advanced life support, and injury prevention. This helps EMS personnel respond effectively to traffic incidents and provide high-quality care.

- **Conduct Regular Drills and Simulations:** Organize drills and simulations to keep EMS personnel prepared for a variety of traffic-related emergencies. These exercises should focus on improving response times and coordination with other emergency responders.
- **Promote Continuing Education:** Encourage ongoing education and professional development for EMS personnel to stay updated on the latest practices in traffic incident response and injury prevention.

Examples:

- The National Association of State EMS Officials (NASEMSO) is a national organization for state EMS professionals that works to improve EMS policy with a comprehensive concern for and commitment to the development of effective, integrated, community-based, universal, and consistent EMS systems. NASEMSO resources include reference documents, best practices, links of interest, and a network of subject matter experts to assist state EMS directors and administrators. NASEMSO has a Highway Incident & Transportation Systems committee and a webpage containing various presentations, reports, documents, and resources for the training of EMS professionals.

  https://nasemso.org/committees/highway-incident-transportation-systems/

Impact Evaluation:

- Leading Indicator: Number of educational materials and training programs for EMS providers, focusing on post-crash care and response.
- Lagging Indicator: Improved data accuracy and availability on traffic incidents involving EMS responses, leading to targeted interventions and reduced response times.

11.10 South Dakota Department of Education

The South Dakota Department of Education can leverage its extensive network for disseminating safety information, suggesting a supportive, though indirect, role in enhancing road safety awareness through its educational channels and partnerships. This nuanced position highlights the department's commitment to student and community welfare, while also reflecting on the practical challenges of extending its involvement beyond its traditional educational area of responsibility.

11.10.1 Integrate Transportation Safety into Educational Programs

Incorporating transportation safety into the educational curriculum can help students understand and practice safe behaviors from an early age.

Implementation Steps:

- **Develop Comprehensive Safety Curriculum:** Help create a curriculum with stakeholders that integrates transportation safety lessons with core curricular goals for students from kindergarten through 12th Grade.
    - Emphasize the responsibility that comes with driving and how one's actions can affect family, friends, and the community in the event of a serious crash. This approach aims to instill a cultural shift towards transportation safety, fostering a sense of accountability and awareness among students about the broader impact of their behavior on the road.
- **Interactive Learning:** Implement interactive programs, such as assembly programs with musical theater and on-stage demonstrations, to make learning about transportation safety engaging and memorable for students.
- **Parent and Caregiver Involvement:** Conduct pre-K classes for parents and caregivers to educate them about traffic safety and how they can reinforce these lessons at home.

Examples:

- New York City: DOT and DOE work together to provide educational services at 620 schools, promoting comprehensive safety education and involving students in traffic safety discussions with their parents.

  https://www.nyc.gov/html/dot/html/about/safety-education.shtml

  https://www.nyc.gov/html/dot/downloads/pdf/traffsafetystudy.pdf

Impact Evaluation:

- Leading Indicator: Development, incorporation and dissemination of transportation safety materials to school districts within the next six months.
- Lagging Indicator: Implementation of transportation safety topics in school curricula, with feedback from educators and measurable improvements in student awareness assessed annually.

11.10.2 Support Communication and Outreach Efforts

Effective communication and outreach efforts can raise awareness about transportation safety among students, parents, and the community. Utilize the DOE's communications channels to disseminate information on transportation safety initiatives to educators.

Implementation Steps:

- **Safety Education Programs:** Consider developing a framework for schools to conduct comprehensive safety education programs, promoting safety on foot, in cars, and on bikes. These programs should be integrated with core curricular goals to ensure they are educational and engaging.
- **Student Engagement:** Equip children and youth with the tools to engage their parents on traffic safety, fostering a community-wide culture of safety.
- **Use the Office of Student Wellness and Supports to Relay Traffic Safety Messages:** The Office of Student Wellness and Supports (OSWS) within the South Dakota Department of Education provides vital assistance and resources to ensure that all students can learn, thrive, and grow. By leveraging this office, it is possible to effectively disseminate traffic safety messages to educators across the state, who in turn pass the messaging to parents and students. OSWS already supports mandatory reporting, mental health campaigns, school counseling, and more. Integrating traffic safety education into these existing services will help build awareness and promote safer behaviors among students.

Examples:

- In 2005, the Mississippi Department of Education established the Office of Healthy Schools (OHS). OHS has spearheaded three main Safe Routes to School (SRTS) initiatives: developing lesson plans, creating a crossing guard train-the-trainer program, and launching the "Ed Said" project.
    - The first OHS SRTS initiative involved creating a K-8 curriculum, part of the MDE's online database Health In Action, consisting of 40 lesson plans for teachers. As many schools lack formal physical education classes, teachers use these lesson plans to incorporate SRTS objectives into their classrooms, linking them to subjects like math and geography.
    - The second initiative is a crossing guard training program, where OHS representatives received training in Colorado and Florida to develop a curriculum. These trained representatives then train other guards in their districts.
    - The third initiative is a partnership with Mississippi Public Broadcasting to provide Ed Said Walking and Cycling educational programming and materials statewide. The popular Ed Said character promotes healthy eating and staying active.

      https://www.mdek12.org/OHS

- Los Angeles: The Los Angeles Department of Transportation (LADOT) engages with local communities and schools to promote transportation safety through educational outreach programs.

  https://ladot.lacity.gov/crossingguard

Impact Evaluation:

- Leading Indicator: Number of transportation safety communications issued to educational stakeholders within the next year.
- Lagging Indicator: Increased engagement and participation in safety initiatives by schools, evidenced by participation metrics and feedback collected over the next two years.

11.10.3 Facilitate Multi-Agency Collaboration

Collaboration between various agencies can enhance the effectiveness of transportation safety initiatives and ensure comprehensive safety efforts.

Implementation Steps:

- **Partnership with Law Enforcement:** Collaborate with local law enforcement agencies to conduct safety education and enforcement activities around schools. This helps in creating a safe environment for students.
- **Coordination with Transportation Agencies:** Collaborate with SDDOT and the South Dakota Safety Council to adopt a standardized, nationally recognized driver education curriculum and implement rigorous instructor certification requirements to enhance the effectiveness of driver education programs in the state.

  https://dps.sd.gov/application/files/8515/0246/1219/Evaluation-of-Driver-Education-in-South-Dakota-Study-SD-2009-03-Executive-Summary.pdf

- **Health and Safety Integration:** Partner with public health departments to integrate transportation safety with broader health and wellness programs in schools. This holistic approach can address multiple aspects of student safety and well-being.

Examples:

- The Denver Department of Transportation and Infrastructure (DOTI) utilized its equity index to identify areas requiring attention by incorporating variables essential for equitably locating transportation projects. Alongside the Equity Index, DOTI evaluated the Free and Reduced-Price Lunch (FRL) percentages for Denver Public Schools. Each school year, the Colorado Department of Education establishes the FRL policy. The percentage of FRL students at public schools was combined with the Equity Index to form an Area of Need overlay for the School Typology. Denver will prioritize these areas to enhance access to the physical and mental health benefits of safe walking, biking, and rolling to and from school, as outlined in their SRTS action plan.

https://denvergov.org/files/assets/public/v/3/doti/documents/programsservices/srts/srts-final-action-plan.pdf

https://dps.sd.gov/application/files/8515/0246/1219/Evaluation-of-Driver-Education-in-South-Dakota-Study-SD-2009-03-Executive-Summary.pdf

Impact Evaluation:

- Leading Indicator: Participation in multi-agency meetings or task forces related to transportation safety within the next six months.
- Lagging Indicator: Documented contributions to the development and execution of collaborative safety projects, with outcomes reviewed annually.

11.11 South Dakota Safety Council

The SDSC is an organization focused on improving safety across various sectors within the state, including road safety, workplace safety, and community health. Through educational programs, training, and advocacy, the SDSC works to reduce crashes and injuries, promoting a safer environment for all South Dakotans.

11.11.1 Leverage Networks for Safety Education

Utilizing established networks can enhance the reach and effectiveness of safety education initiatives by engaging various community stakeholders.

Implementation Steps:

- **Develop Community Programs**: Establish local education and outreach programs that engage community members in promoting traffic safety. These programs can raise awareness about the risks and costs associated with traffic crashes and encourage proactive safety measures.
- **Engage Employers and Schools:** Partner with local businesses and educational institutions to integrate traffic safety education into workplace policies and school curricula. This can help in disseminating safety messages to a broader audience.
- **Utilize Existing Resources:** Leverage materials and resources from organizations like the National Safety Council (NSC) to support educational efforts and ensure consistency in messaging.

  https://www.nsc.org/

Impact Evaluation:

- Leading Indicator: Number of people engaged in distributing safety materials within the next six months.
- Lagging Indicator: Reports of reduced incidents and increased safety awareness among the public, measured annually through surveys or feedback.

11.11.2 Improve Interagency Communication and Collaboration

Effective interagency communication and collaboration are crucial for coordinating safety efforts and ensuring comprehensive traffic safety initiatives.

Implementation Steps:

- **Establish Regular Communication Channels:** Create formal communication channels between various agencies, including law enforcement, public health, and transportation departments, to facilitate the sharing of information and coordination of safety efforts.
- **Conduct Joint Training and Workshops:** Organize joint training sessions and workshops to bring together different agencies and stakeholders. This can enhance mutual understanding and foster collaborative problem-solving.

- **Share Data and Resources:** Implement systems for sharing data and resources between agencies to support informed decision-making and coordinated safety strategies.

Impact Evaluation:

- Leading Indicator: Formal agreements or partnerships established with SHSP-related agencies within the next year.
- Lagging Indicator: Increased number of joint safety initiatives & programs, evaluated after two years.

11.11.3 Champion the TZD Initiative

Championing the TZD initiative involves advocating for the vision of zero traffic fatalities and serious injuries and promoting a culture of safety.

Implementation Steps:

- **Promote TZD Messaging:** Actively promote the TZD initiative through public campaigns, educational programs, and community outreach. Emphasize the importance of safety and the goal of zero traffic deaths.
- **Identify and Empower Champions:** Identify key individuals and organizations that can act as champions for the TZD initiative. Provide them with the resources and support needed to advocate for traffic safety.
- **Highlight Success Stories:** Share success stories and case studies from other regions that have made significant progress toward zero traffic deaths. This can inspire and motivate local efforts.

Impact Evaluation:

- Leading Indicator: Development of a strategic plan for TZD initiative participation within the next six months.
- Lagging Indicator: Implementation of TZD-related programs and activities, with impact on traffic safety metrics reviewed annually.

11.11.4 Use Data to Inform and Prioritize Safety Messaging

Using data to inform and prioritize safety messaging ensures that efforts are targeted and effective.

Implementation Steps:

- **Analyze Crash Data:** Regularly analyze traffic crash data to identify trends, high-risk areas, and vulnerable populations. Use this information to tailor safety messages and interventions.
- **Disseminate Findings:** Share data findings with the public, policymakers, and other stakeholders to raise awareness and support for traffic safety initiatives.

- **Evaluate Program Effectiveness:** Continuously evaluate the impact of safety programs and adjust strategies based on data-driven insights.

Impact Evaluation:

- Leading Indicator: Launch of targeted safety campaigns based on recent data trends within the next six months.
- Lagging Indicator: Reduction in the targeted risky behaviors and incidents, assessed through comparative data analysis after each campaign.

11.12 Tribal Transportation Partners

Tribal transportation partners emphasize the importance of cultural sensitivity and the potential for enhanced collaboration by addressing obstacles related to resources, data sharing, and inter-agency communication.

11.12.1 Improve State-Tribal Safety Collaboration

Enhancing collaboration between state agencies and tribal partners is essential for effective safety initiatives. Evaluation should consider all partners' different values and interests to ensure that their unique perspectives are understood and integrated into the process.

Implementation Steps:

- **Continue the Tribal Motor Vehicle Injury Prevention Program (TMVIPP):** Use available state TZD resources for activities that increase seat belt use, enforcement, and community outreach.
- **Update Tribal Traffic Code:** Tribal partners should revise their Traffic Code to align with TZD strategies outlined in this plan. Updating the Traffic Code will ensure it reflects current best practices for traffic enforcement and safety, facilitating more effective law enforcement on the reservation.
- **Engage Tribal Partners in Cross-Jurisdictional Agreements:** Tribal partners should initiate discussions on cross-jurisdictional agreements for law enforcement. Such agreements could enhance traffic enforcement during key events and address staffing challenges on the reservation.
- **Establish Regular Communication Channels:** Create formal communication channels between state agencies and tribal partners to facilitate regular updates and feedback on safety initiatives.
- **Engage with State Partners while Developing Tribal Transportation Safety Plan Updates:** Actively collaborate with state partners during the development and updating of the Tribal Transportation Safety Plan. This partnership will ensure that the plan incorporates comprehensive safety strategies and leverages state TZD resources effectively.
- **Joint Task Forces and Committees:** Form joint task forces and committees that include representatives from tribal governments, state agencies, and other stakeholders to coordinate safety efforts and share resources.

Examples:

- White Earth Nation Safety Planning Study: Minnesota DOT collaborates with White Earth Tribal Nation to develop and implement tribal safety plans that address specific needs and priorities of the tribal communities.

  https://www.dot.state.mn.us/d4/projects/wensafetyplan/

Impact Evaluation:

- Leading Indicator: Number of collaborative meetings held with tribal authorities within the next six months.
- Lagging Indicator: Implementation of joint safety projects, with effectiveness evaluated after one year.

11.12.2 Address Data Sharing Challenges

Effective data sharing between state agencies and tribal partners can significantly enhance the understanding of traffic safety issues and inform targeted interventions.

Implementation Steps:

- **Have Traffic Crash Investigators on Staff:** Some Tribal Partners may not have Traffic Crash Investigators on staff, meaning that crash fatalities on the Reservation must be investigated by an outside agency. Hiring a dedicated Crash Investigator will enable timely and thorough investigations of crash fatalities and safety data reporting, improving the overall traffic safety response on the reservation.
- **Develop Data Sharing Agreements:** Establish formal agreements to facilitate the sharing of traffic crash and injury data.
- **Provide Training on Data Management:** Offer training to staff on data collection, management, and analysis to ensure data quality and usability.
- **Implement Secure Data Systems:** Develop secure data systems that protect the privacy of individuals and the confidentiality of the data while enabling effective sharing and analysis.

Examples:

- *The Arizona Department of Transportation (ADOT) and FHWA conducted a pilot project to integrate roadway data from local and Tribal agencies into the Arizona Transportation Information System (ATIS). They developed a process to import, merge, and load data into AASHTOWare Safety Analyst. This project established procedures for data submissions, integration, and quality control, enhancing the analyses of crashes, roadway, and traffic volume data.*

  https://highways.dot.gov/sites/fhwa.dot.gov/files/migrate/noteworthy/fhwasa16061.pdf

Impact Evaluation:

- Leading Indicator: Agreement on data-sharing protocols with at least one tribal council within the next year.
- Lagging Indicator: Increased availability of tribal crash data for planning purposes, reviewed annually.

11.12.3 Secure Funding and Resources for Tribal Safety Initiatives

Ensuring adequate funding and resources for tribal safety initiatives is crucial for their success and sustainability.

Implementation Steps:

- **Pursue Federal and State Grants:** Identify and apply for federal and state grants that support tribal safety initiatives. Partner with state agencies to enhance grant applications and increase funding opportunities.
- **Leverage Partnerships for Resource Sharing:** Collaborate with state agencies, non-profits, and private organizations to share resources such as training, technical assistance, and funding.
- **Create a Dedicated Funding Stream:** Advocate for the establishment of a dedicated funding stream within state budgets specifically for tribal safety initiatives.

Impact Evaluation:

- Leading Indicator: Number of submissions of safety grant applications within tribal areas within the next year.
- Lagging Indicator: Increased funding secured for tribal road safety projects, with progress on project implementations reviewed annually.

11.12.4 Cultivate Cultural Sensitivity in Safety Initiatives

Incorporating cultural sensitivity into safety initiatives ensures that they are respectful and relevant to the tribal communities they aim to serve.

Implementation Steps:

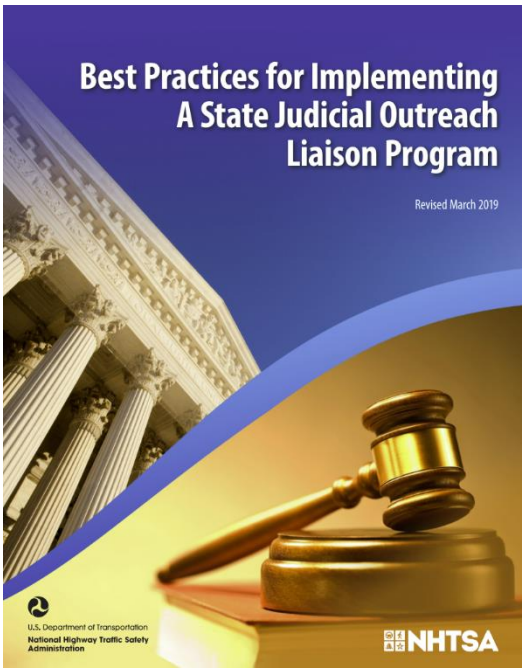
- **Develop Culturally Relevant Campaigns:** Create traffic safety campaigns that incorporate native languages and cultural symbols to resonate with tribal communities. Engage native language speakers to translate and develop safety messages.
- **Conduct Cultural Sensitivity Training:** Provide training for state and local agency staff on cultural sensitivity and the specific needs of tribal communities to ensure respectful and effective interactions.
- **Engage Tribal Elders and Leaders:** Involve tribal elders and leaders in the development and implementation of safety initiatives to ensure they reflect the values and traditions.

Impact Evaluation:

- Leading Indicator: Number of cultural sensitivity trainings when working with tribal nations, evaluated after one year.
- Lagging Indicator: Feedback from tribal authorities on the respectfulness and effectiveness of safety initiatives, collected bi-annually.

11.13 South Dakota Unified Judicial System

The South Dakota Unified Judicial System can contribute to the Initiative in areas such as data provision on criminal charges and traffic violations, penalty adjustments, and educational components for offenders.



NHTSA report, "Best Practices for State Judicial Outreach Liaisons," highlights the critical role of the criminal justice system in deterring unsafe driving behaviors and imposing consequences for traffic offenses, such as impaired driving. The report emphasizes the importance of awareness among all criminal justice stakeholders about efforts to reduce traffic fatalities. It promotes peer-to-peer training, education, and outreach to share proven practices. NHTSA supports a network of criminal justice professionals who utilize peer-to-peer education to enhance traffic safety initiatives.

https://www.nhtsa.gov/sites/nhtsa.gov/files/documents/14161-bestpractices forsjols_032519_v10-withblanks-tag.pdf

Building on these best practices, the South Dakota Unified Judicial System aims to enhance its approach to traffic safety through improved data sharing and analysis, judicial education, legislative support, and offender education programs.

11.13.1 Enhance Data Sharing and Analysis

Improving data sharing and analysis can provide valuable insights into traffic-related offenses and trends, aiding effective decision-making and policy development. According to NHTSA best practices, data sharing and analysis are critical for identifying problem areas and evaluating the effectiveness of safety initiatives.

Implementation Steps:

- **Establish Data Sharing Agreements:** Work with stakeholders to develop agreements with law enforcement, health departments, and other relevant organizations to facilitate data sharing on traffic crashes and injuries.
- **Integrate Data Systems:** Work with stakeholders to allow for seamless sharing and analysis of traffic-related data across different agencies.
- **Regular Data Analysis:** Conduct regular analysis of traffic-related data to monitor trends, evaluate safety initiatives, and share findings with stakeholders to inform decisions.

Impact Evaluation:

- Leading Indicator: Establishment of a data-sharing agreement with relevant state safety agencies within six months.
- Lagging Indicator: Integration of judicial data into safety planning and evaluation, with the impact assessed annually.

11.13.2 Educate Judges on Transportation Safety Culture Shift

Educating judges about the transportation safety culture shift is crucial for handling traffic-related cases with an understanding of modern safety principles, as highlighted in NHTSA best practices.

Implementation Steps:

- **Conduct Educational Workshops:** Organize workshops to educate judges on the SSA and TZD principles.
- **Provide Ongoing Education:** Offer continuous education opportunities on traffic safety developments and related laws.
- **Engage Experts:** Involve traffic safety experts in educational programs to provide comprehensive knowledge and insights.

Impact Evaluation:

- Leading Indicator: Number of judicial training sessions on transportation safety culture conducted within one year.
- Lagging Indicator: Changes in penalty awarding patterns related to traffic violations, assessed two years after the initiation of the educational strategy, to gauge its impact on promoting a safety-first mindset.

11.13.3 Explore Legislative and Policy Support

Exploring legislative and policy support helps enact laws and policies that promote traffic safety and reduce traffic-related fatalities, in line with recommendations from NHTSA best practices.

Implementation Steps:

- **Review Existing Legislation:** Conduct a review of current traffic safety laws to identify gaps and areas for improvement.
- **Advocate for Policy Changes:** Advocate for policy changes that align with TZD goals and the SSA to ensure traffic safety remains a legislative priority.

Impact Evaluation:

- Leading Indicator: Number of reviews of current penalties and educational programs related to traffic violations within the next year.

- Lagging Indicator: Implementation of revised penalties or new educational requirements, with effectiveness measured for targeted safety programs evaluated bi-annually.

11.13.4 Develop Traffic Offender Education Programs

Creating education programs for traffic offenders can change behaviors and reduce recidivism, contributing to improved traffic safety, as suggested by NHTSA best practices.

Implementation Steps:

- **Design Educational Curriculum:** Work with stakeholders to develop a curriculum covering traffic safety, the consequences of violations, and the principles of the SSA.
- **Implement Mandatory Programs:** Require traffic offenders to complete educational programs as part of their penalties.
- **Evaluate Program Effectiveness:** Regularly evaluate the effectiveness of traffic offender education programs and adjust as needed to ensure they achieve the desired outcomes.

Impact Evaluation:

- Leading Indicator: Development of a TZD-focused educational program for traffic offenders within 18 months.
- Lagging Indicator: Reduction in recidivism rates among traffic offenders who complete the program, measured after two years.

12.0 FINDINGS AND CONCLUSIONS

The conclusion of this research study centers on the urgent need for South Dakota to adopt a holistic and data-driven approach to reduce fatal and serious injury crashes on its roadways. It is evident based on an analysis of nationwide trends that traffic casualty rates have been increasing after a long period of decline, signaling that traditional safety strategies are no longer sufficient in reducing casualties. The heart-wrenching loss of life on America's roadways continues each day, affecting not only the victims, but also surviving friends, family, and colleagues.

The State of South Dakota recognizes national and regional movements towards initiatives such as TZD that take the next step in reducing the loss of life on South Dakota roads. Therefore, this implementation plan first sought out the successes and setbacks of similar initiatives in nearby states via literature review and interviews so that South Dakota could use lessons learned to put forward the best effort possible in a similar initiative.

The Toward Zero Deaths (TZD) initiative, coupled with the Safe System Approach (SSA), provides a comprehensive framework for addressing these challenges. The SSA emphasizes that no death or serious injury is acceptable, and it integrates principles from public health and injury prevention to create a robust strategy for traffic safety. This approach calls for systemic changes, focusing on safer people, safer roads, safer vehicles, safer speeds, and effective post-crash care.

Available research, such as the study "Toward Zero Road Death Vision Assessment the Role Auto-Dependency, Public Health, and Active Transportation Modes," highlights that total vehicle travel is a significant risk factor. Reducing total vehicle travel can, therefore, be a method that significantly lowers traffic risks. However, as total vehicle travel increases, so does the challenge of reducing the number of deaths and severe injuries. Thus, it is important to approach safety improvements with a different approach than has been historically attempted in South Dakota. This study highlights the need for a paradigm shift in traffic safety strategies, moving from conventional methods that often focus on specific high-risk groups, such as young, elderly, impaired, distracted drivers, and reactive countermeasures, to a broader perspective that recognizes the inherent risks for all modes as it relates to vehicle travel.

An often-debated point is whether increased safety inherently compromises mobility. Literature findings show that while it's true that, in some instances, enhanced safety measures can impact mobility, this tradeoff is not always a necessary consequence. Stakeholders often raise concerns that safety improvements may lead to reduced efficiency and increased travel times, potentially blocking essential changes. However, it is possible to achieve a balance between safety and mobility. For example, the implementation of roundabouts globally has proven to be an effective solution. Roundabouts and diverging diamond interchanges significantly reduce the likelihood of severe side-impact crashes at intersections while also improving traffic flow and handling greater traffic volumes. This example demonstrates that innovative safety measures can enhance both safety and mobility, countering the perception that they are mutually exclusive goals.

Key to the success of TZD and SSA in South Dakota will be the implementation of cost-effective, low-cost countermeasures. While not all interventions may be feasible at the local level due to cost constraints, prioritizing quick-build projects can foster community support and demonstrate the potential for meaningful change. Examples include measures such as reducing vehicle speeds,

crosswalk restriping, stop bar alignments, and enhanced signage. These measures can be categorized by short (<5 years), medium (5–10 years), and long-term (>10 years) timelines, allowing for flexibility based on future needs and funding availability. These types of safety improvements will remain a key part of the TZD initiative. Past engineering efforts in the name of safety have no doubt saved numerous lives, but overall safety as noted in the nationwide data is no longer showing steady improvements and may begin to reverse past gains without a change in overall safety strategies.

The study “Countermeasures That Work” identified several effective interventions that states have implemented to varying degrees of success. It revealed that states with a higher number of implemented countermeasures typically exhibit lower population and VMT traffic fatality rates. For instance, non-engineering measures such as administrative license revocation laws, primary enforcement of texting bans, sobriety checkpoints, and child restraint system laws have been widely adopted and have proven to save lives. In contrast, less prevalent measures like universal motorcycle helmet laws, automated speed enforcement, and comprehensive primary seat belt laws represent areas for potential growth.

Furthermore, the role of a dedicated TZD Coordinator will be crucial in orchestrating these efforts. Drawing from examples in other states, such as Minnesota, regional TZD coordinators with diverse backgrounds in communication, engineering, and public health can lead and manage the development and implementation of regional programs aimed at reducing fatalities and serious injuries. These coordinators will be responsible for supervising project teams, administering traffic safety programs, and fostering collaboration among key stakeholders, including health departments, public safety agencies, and traffic safety advocates. As the culture shift in roadway safety takes hold with help from committed leadership and champions, the initiative forms a life of its own, showing that it is organized and has purpose.

After a review of current policies and strategies of various organizations and agencies in South Dakota, the Implementation Plan proposed next steps for a TZD initiative for major stakeholders such as SD Department of Transportation, SD Department of Public Safety, SD Department of Education, SD Department of Health, and others. The recommendations highlight the necessity of a cohesive and unified strategy to integrate safety measures across all levels of operation and planning, advocating for heightened collaboration among state departments, law enforcement, community organizations, and tribal agencies.

Engaging communities and collecting relevant data are fundamental to the TZD, which commits the initiative to accountability. A coordinated effort involving a task force and advisory groups can help ensure that safety measures are equitable and inclusive, addressing the needs of all road users. This collaborative approach prioritizes safety over mobility and promotes equity for all road users, emphasizing that traffic safety is a shared responsibility.

In summary, achieving the ambitious goal of zero deaths and serious injuries on South Dakota's roadways requires a multifaceted strategy that integrates equity, community engagement, data-driven decisions, and cross-sector collaboration. By adopting the TZD initiative and the SSA, implementing proven countermeasures, and fostering a culture of safety, South Dakota can make significant strides toward creating a safer and more equitable transportation network, to realize the vision of zero traffic-related fatalities and serious injuries.

13.0 RECOMMENDATIONS

Reflecting on the major findings of local and state agency interviews, the research team summarized information gathered in interviews guided by the technical panel. The summary outlined safety program recommendations, necessary resources, roles and responsibilities, key personnel involved, and preliminary implementation suggestions. The major finding categories are listed below:

- Enhanced public safety communication
- Cultural and structural shifts towards safety
- Clarifying roles in the SHSP process
- The key role of inter-agency collaboration
- Challenges with funding and resources
- Utilizing data-driven safety initiatives
- Education and awareness as foundational elements
- The need for enhanced local engagement
- Adapting for safety-centric policies

The findings of this study emphasize the importance of clear communication and defined roles to help ensure active and effective participation of all stakeholders in achieving the shared goals of the TZD initiative, closing existing gaps in awareness among agencies regarding their roles within the SHSP and the TZD initiative.

The following recommendations highlight a unified strategy to integrate and implement safety measures across all levels of operation and planning, advocating for heightened collaboration among state departments, law enforcement, community organizations, and tribal agencies.

13.1 Appoint or hire a TZD Coordinator role within the SDDOT, preferably within the Division of Planning & Engineering.

The SDDOT Division of Planning & Engineering is recommended to establish a TZD Coordinator Role because of its focused effort on infrastructure and roadway safety improvements, integrating safety in project scopes and policy development. As this recommendation supports many other steps of the implementation plan, the SDDOT should attempt to appoint a TZD Coordinator quickly (e.g., within three months of beginning the implementation of the Initiative). The TZD Coordinator will oversee the integration of the TZD Initiative across various departments and agencies. The coordinator will be the central liaison of all TZD efforts statewide and play the key role of inter-agency collaboration.

Utilize the TZD Coordinator to initialize implementation by identifying liaisons within each organization and holding meetings to discuss initial implementation steps with the goal of eventual full implementation.

13.2 Implement initial agency-specific process and impact evaluations.

The implementation recommendations are designed to be scalable, allowing initial efforts to be adjusted based on the resources available. For instance, the steps following the hiring of a TZD Coordinator would be to start with manageable initiatives such as hosting an annual conference and quarterly meetings. Identifying TZD champions throughout state and local agencies and educating them on the principles of TZD can also be an effective initial strategy. After an internal review of existing safe system applications, some transportation departments have chosen to implement a portion of the TZD recommendations provided or extend the timelines required to achieve them. A TZD task force can be created to work with stakeholders and community partners to prioritize recommendations provided in the implementation plan (11.0), identify and propose (or redefine) timelines, designate departments and agencies to lead the efforts, and establish specific indicators to measure success over time.

The research team developed recommendations aimed at enhancing agency-specific processes and conducted an impact evaluation. This evaluation focused on establishing measurable performance indicators linked to safety and crash data, which are crucial for assessing the effectiveness of each safety initiative recommendation. Additionally, adjustments are suggested to related agency processes identified during the research phase as potential areas for improvement.

In all, 46 different recommendations have been identified and assigned to specific or multiple agencies, each with a leading indicator for initial impact evaluations, though not repeated here for brevity. The organizations with assigned implementation tasks, steps, descriptions, and impact evaluation criteria, as summarized in 10.0 (Table 3) and detailed in 11.0 of this report, are listed below:

- South Dakota Department of Transportation – Communications
- South Dakota Department of Transportation – Division of Operations
- South Dakota Department of Transportation – Division of Planning & Engineering
- South Dakota Department of Public Safety
- Federal Highway Administration
- South Dakota Local Transportation Assistance Program
- South Dakota Police Chiefs' Association
- South Dakota Department of Health
- South Dakota Department of Education
- South Dakota Safety Council
- Tribal Transportation Partners
- South Dakota Unified Judicial System

13.3 Implement remaining agency-specific processes and impact evaluations.

In addition to leading indicators for impact evaluations, each of the 46 recommendations also contains a lagging indicator, which represents ensuing or recurring goals from which to build upon the leading indicator. Measuring initiative performance is key to understanding which recommendations are working and which recommendations need adjustments.

The recommendations provided are designed to catalyze action, enhancing the state's capability to implement the SSA and achieve TZD outcomes effectively. These suggestions are not merely standalone solutions but are intended to integrate into and inform organizational strategies and future budget planning, helping to ensure that all initiatives are aligned with the overarching SSA and TZD objectives.

Similar to the previous recommendation for initial implementation, organizations with assigned implementation tasks, steps, descriptions, and impact evaluation criteria are summarized in 10.0 (Table 3) and detailed in 11.0 of this report.

13.4 Update and modify all relevant South Dakota transportation and safety manuals, plans, policies, and standards.

The team examined state agency manuals, plans, standards, and policies to identify necessary amendments for integrating the SSA into transportation safety. The review findings and recommendations are primarily designed to guide future work, helping to ensure that funding, policies, procedures, and activities are strategically aligned within the SSA to support the TZD initiative. The documents that were reviewed in this study and featured specific recommendations (9.0) are listed below:

- Road Design Manual
- Traffic Operation Manual
- Work Zone Safety and Mobility Plan
- Flagger Manual
- South Dakota Triennial Highway Safety Plan
- Permanent Signing Manual
- Traffic Signals on State Highways Policy
- Roadway Delineators, Guardrail Delineation, and Object Markers on State Highways Policy
- South Dakota Office of Highway Safety Grant Application and Management Handbook
- Local Roads Plan

Although not an all-encompassing list of related documents and policies in South Dakota, it is intended that this list serves as an adequate sample to provide a sense of necessary revisions. Other documents and policies will need to be reviewed and updated as TZD implementation continues.

14.0 RESEARCH BENEFITS

Performing safety research and creating an implementation plan unites safety stakeholders behind a shared objective and provides a powerful vision, structure, roles and responsibilities, goals, and activities to realize the measurable reduction of fatal and serious injury crashes.

Through utilization of the Implementation Plan, departments, organizations, and stakeholders will have guidance and build collaboration on the best ways to implement change-making projects, programs, and policies throughout South Dakota.

The Implementation Plan will guide activities promoting a safer transportation system, such as safer built environments for pedestrians and bicycles. Recommendations include complete streets, quick build projects, education programs, and Safe Routes to School mapping, identification, and school access plan creation. It also outlines roles and responsibilities including who will be accountable for carrying out safety actions and providing metrics for future progress and evaluation techniques. This will promote responsibility, ownership, and accountability.

The Implementation Plan will function as a record of challenges, best practices, recommendations, and opportunities for South Dakota. It will act as a guiding document for vital safety projects, increasing awareness and education, coordinate and inspire stakeholders, and build a transportation safety movement that will save lives, prevent injury, and reduce costs.

DIRECT COST SAVINGS

A TZD plan uses data-driven decisions to focus limited resources on the most problematic locations and issues. Eliminating severe injuries and fatalities over an established period has direct cost savings to statewide programs as well as local municipalities. Each crash requires state and local agencies to react to a crash, requiring a response from emergency services (police and fire). DPS/Highway Patrol crews carry out initial crash investigation and reporting, and incident management to keep traffic safely moving during the traffic incident, arrange vehicle removal, and return traffic operation to normal as quickly as possible. Each responsibility has a significant cost impact on both state and local budgets which can be greatly reduced by eliminating severe injury and fatal crashes. This cost savings can be estimated by establishing an average total “response cost” for each fatal traffic crash by each responding agency, tracking the total annual cost as the Initiative is implemented.

From a statistical point of view, severe injury crashes and traffic fatalities have associated average economic costs. The average cost for each traffic fatality in 2022 was around $1.869 million compared with a “property damage only” crash at $6,100 for each vehicle occurrence (National Safety Council, 2022). SDDOT uses $10.4 million for fatal crashes and $19,000 for PDO crashes as of 2024. Cost savings are realized by implementing an effective TZD initiative aimed at eliminating fatalities for all transportation users. Direct economic cost savings can be quantified and tracked using statistical costs for crash types and severity occurring on transportation facilities over time and comparing before and after cost savings as the Initiative is implemented.

INCREASED REVENUE

From a programmatic point of view, reducing both the need and duration of traffic incident management required for highway crashes and subsequent investigations maintains a higher level of

service on the transportation facility. Greater mobility results in a positive economic benefit (moving goods and services), improving travel time reliability.

Federal funding grants are available for both State DOTs as well as local municipalities to implement TZD safety initiatives. These funding sources can be applied for and used for a multitude of purposes from education initiatives to safety project funding.

Using safety program budgets to effectively eliminate severe and fatal crashes allows other funding sources to address identified statewide transportation priorities. State DOTs must be reactionary at times when having to identify funding sources within existing budgets to address severe and fatal crashes that spark concerns from local constituencies. These “emergency” funding reallocations typically have adverse effects to the project delivery schedule of other projects identified in the state’s transportation improvement plan.

INCREASED SAFETY

TZD initiatives typically identify statewide severe and fatal crash locations, the types of crashes, and crash patterns. TZD initiatives provide a toolbox of potential solutions to eliminate these problem locations, allowing the limited available safety funding to target and address these issues to produce a higher benefit-cost ratio. Safety improvement costs centered around the traditional E’s (education, enforcement, engineering, and emergency medical services) can be used to establish documented “crash modification factors” and their overall safety improvement can be measured and tracked in a before and after safety study for each specific section of roadway.

EXTENDED FACILITY LIFE

Safety and mobility are directly related. Eliminating severe and fatal crashes on highway facilities allows SDDOT to maintain the facility and avoid the urgency to reconstruct or modify existing facilities through a capital construction effort to address safety and capacity issues. This allows the existing highway facility to reach its expected life cycle before requiring reconstruction or other major capital improvements.

Highway facilities with fewer severe crashes generally have less associated costs for repair and/or replacement of roadway assets such as guardrails, Intelligent Transportation System (ITS) devices, traffic signal equipment, light poles traffic signs, etc.

IMPROVED SERVICE OR EFFECTIVENESS

This initiative identifies strategies that will impact roadway design standards and SDDOT policies that may mandate specific safety initiatives to be included in every design project to identify and address safety issues resulting in severe or fatal crashes. This reduces the need for future subsequent projects to address these items.

Using available crash data to identify crash patterns, severity, and specific safety improvements allows SDDOT traffic and safety experts to target and develop project specific safety assessments and provide project improvement recommendations to the design project manager for inclusion in the project scoping process. This process helps ensure that every project is addressing known safety concerns within the project limits.

Improved safety benefits can be tracked by comparing the crash history before the project improvements to the crash history after the construction project has been completed (This typically involves averaging the data over five-year periods).

15.0 REFERENCES

AASHTO. (1997). *AASHTO Strategic Highway Safety Plan.* Washington, DC.

AASHTO. (2010). *Highway Safety Manual, 1st Edition, with 2014 Suplement.* Washington, DC: American Association of State Highway and Transportation Officials.

Abdel, S., Lindley, J., & Paniati, J. (2021). *Safe System Strategic Plan (No. FHWA-SA-21-088.* Washington, DC: Department of Transportation. Federal Highway Administration.

Albuquerque Area Southwest Tribal Epidemiology Center & Albuquerque Area Indian Health Board Inc. (2022). *Tribal Motor Vehicle Injury Prevention Program Evaluation Guide.* National Center for Injury Prevention and Control Centers for Disease Control and Prevention.

Brett P. Hughes, T. F. (2019). The relevance of U.S. Strategic Highway Safety Plans in a future context. *PLoS one*, 14(10), e0223646.

Centers for Disease Control and Prevention. (1999). *Framework for program evaluation in public health. MMWR 1999;48 (No. RR-11).* CDC.

FHWA. (2010). The Essential Eight – Fundamental Elements and Effective Steps for SHSP Implementation. Washington, DC: US Department of Transportation.

FHWA. (2023, 12 19). *Federal Register*. Retrieved from National Standards for Traffic Control Devices; the Manual on Uniform Traffic Control Devices for Streets and Highways; Revision: https://www.federalregister.gov/documents/2023/12/19/2023-27178/national-standards-for-traffic-control-devices-the-manual-on-uniform-traffic-control-devices-for

FHWA. (2023). *Zero Deaths and Safe System*. Retrieved from FHWA Highway Safety Programs: https://highways.dot.gov/safety/zero-deaths

FHWA. (2024). *Work Zone Management Program - Home*. Retrieved from FHWA Office of Operations: https://ops.fhwa.dot.gov/wz/index.asp

GHSA. (2023). *Safe System Approach.* Retrieved from Governors Highway Safety Association: https://www.ghsa.org/issues/safe-system-approach

Hauer, E. (2010). *White Papers for: "Toward Zero Deaths: A National Strategy on Highway Safety" - White Paper No. 9.* Federal Highway Administration Office of Safety.

Karin Edvardsson Björnberg, S. O.-A. (2019). The Vision Zero Handbook. *Springer International Publishing*.

Michie, J. D. (1981). *Recommended Procedures for the Safety Performance Evaluation of Highway Appurtenances.* Washington, DC: Transportation Research Board, National Research Council, NCHRP.

National Safety Council (NSC). (2022). *Guide to Calculating Costs - Data Details*. Retrieved from NSC Injury Facts: https://injuryfacts.nsc.org/all-injuries/costs/guide-to-calculating-costs/data-details/

NHTSA. (2020). 2020 Traffic Fatalities by STAT.

Oregon Department of Transportation. (2022). Safety Investigation Manual. Oregon Department of Transportation.

Pullen-Seufert, N. C., & Hall, L. W. (2008). *The Art of Appropriate Evaluation: A Guide for Highway Safety Program Managers.* (Report No. DOT HS 811 061): National Highway Traffic Safety Administration.

Ross, H. E., Sicking, D. L., Zimmer, R. A., & Michie, J. D. (1993). *NCHRP Report 350 Recommended Procedures for the Safety Performance Evaluation of Highway Features.* Washington, DC: Transportation Research Board National Research Council, NCHRP, National Academy Press.

SDDOT. (2019). *SOUTH DAKOTA Strategic Highway Safety Plan.*

South Dakota Department of Transportation. (2019). *South Dakota Strategic Highway Safety Plan.*

The American Trafffic Safety Services Association. (2008). *A Vision for Safer Roads in america.* Fredericksburg, VA. Retrieved from https://rosap.ntl.bts.gov/view/dot/6030

Vision Zero Network. (2022). *https://visionzeronetwork.org/resources/vision-zero-communities/.* Vision Zero Network.

Whitehouse.gov. (2022). *FACT SHEET: Biden-Harris Administration Announces New Actions to Support Indian Country and Native Communities Ahead of the Administration's Second Tribal Nations Summit.* Retrieved from https://www.whitehouse.gov/briefing-room/statements-releases/2022/11/30/fact-sheet-biden-harris-administration-announces-new-actions-to-support-indian-country-and-native-communities-ahead-of-the-administrations-second-tribal-nations-summit/#:~:text=In%202