CITY OF SPEARFISH

SAFETY ACTION PLAN

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Acronyms

ADT	Average Daily Traffic
CRF	Crash Reduction Factor
FHWA	Federal Highway Administration
GIS	Geographic Information Systems
HSIP	Highway Safety Improvement Program
LED	Light Emitting Diode
NACTO	National Association of City Transportation Officials
SDDOT	South Dakota Department of Transportation
NHTSA	National Highway Traffic Safety Administration
SHSP	Strategic Highway Safety Plan
SRTS	Safe Routes to School
SS4A	Safe Streets and Roads for All
TA	Transportation Alternatives Program
USDOT	United States Department of Transportation

1. WHAT IS A SAFETY ACTION PLAN?

Jackson Boulevard and 7th Street

NATIONAL CONTEXT

The Bipartisan Infrastructure Law (BIL) enacted by the U.S. Congress in 2021 established the Safe Streets and Roads for All (SS4A) Grant Program. The SS4A program provides discretionary grants to local, regional, and Tribal governments focused on the prevention of deaths and serious injuries on our local and regional roadway system. The SS4A program helps to implement the U.S. Department of Transportation's (USDOT) National Roadway Safety Strategy, which focuses on eliminating deaths and serious injuries across the nation's roadway system.

The **Safety Action Plan is the basic building block** to guiding local and regional approaches through projects and strategies to address safety risks on the roadway system. The Plan uses analysis of historic crash information combined with roadway system user and community input to identify projects and strategies. The U.S. Department of Transportation has adopted a Safe System Approach, which is a guiding paradigm in the development of the Plan.

Traditional Approach	Safety Systems Approach
• Traffic deaths are inevitable • Aims to fix humans • Expects perfect human behavior • Prevents crashes • Exclusively addresses traffic engineering	• Traffic deaths are preventable • Aims to fix systems • Humans make mistakes • Prevents fatal and serious crashes • Considers the roadway system as a whole

PLAN PURPOSE & OBJECTIVES

The City of Spearfish Safety Action Plan (the Plan) is a comprehensive strategy designed to identify and address, through project recommendations, safety issues on the City's roadway system. Further, the Plan intends to:

- Reduce fatalities and serious injuries on the transportation system. Throughout the document these are referred to as "severe crashes." Also to reduce less severe crashes with nonmotorized transportation (such as pedestrian and bicyclists) as they are most vulnerable or at risk compared to other modes of transportation.
- Prioritize safety improvements that have been identified through rigorous analysis of crash data, input from important local stakeholders, and input from the traveling public in general.
- Guide the City's decision-making process about how infrastructure is installed and improved, policy changes that have a positive impact of traveler safety, and other initiatives dealing with transportation safety.

CITY OVERVIEW AND CONTEXT

The City of Spearfish, the largest city in Lawrence County, is in western South Dakota approximately 13 miles from the Wyoming border. It is situated at the northern edge of the Black Hills National Forest and at the mouth of Spearfish Canyon. **Figure 1** shows the City boundary along with the designated collection area that was used for this project.

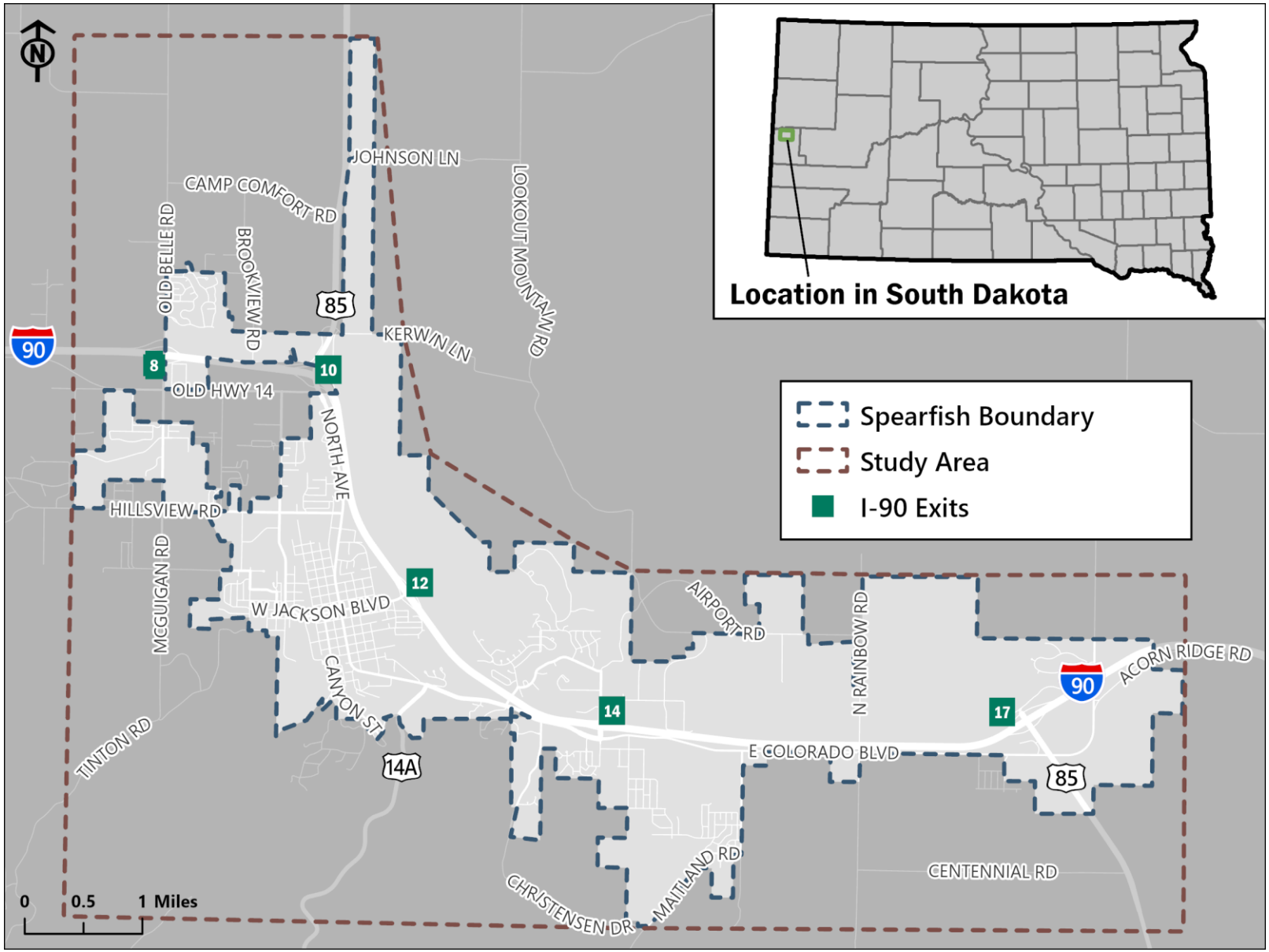


Figure 1. Spearfish Study Area

Important Routes

Arterials

An arterial is generally defined as a major thoroughfare that carries high volumes of traffic between important centers, acting as a backbone for the transportation network. Important arterials in Spearfish include:

City Jurisdiction

- Evans Ln*
- Colorado Blvd
- Hillsview Dr*
- Jackson Blvd
- Main St
- Maitland Rd*
- McGuigan Rd*
- North Ave
- Old Highway 14*
- St. Onge Rd*
- 27th St

*Routes with portions of County jurisdiction

State Jurisdiction

- Interstate 90 (I-90)
- US Highway 14A (US 14A) from Spearfish Canyon Rd to Exit 14 at I-90
- US Highway 85 (US 85)

Recreational Paths

The City's recreational path system provides a 10' wide off-street path for those who walk, bike, and roll. The path system is described in greater detail in the City's Parks and Recreation Master Plan, as well proposed path expansion areas. Existing path locations are described below.

- From South Canyon St and Winterville Dr north along Spearfish Creek to Evans Park
- From Winterville Dr and US 14A northeast to Colorado Blvd
- From US 14A (Spearfish Canyon Rd) and Colorado Blvd east to 27th St
- From Colorado Blvd north along Sandstone Hills Dr to Branding Iron Dr

Multi-Jurisdictional Transportation System

While this is a City plan, different jurisdictions maintain the overall transportation system within the study area. Much of the study area includes City streets, sidewalks, and paths; however, both Lawrence County and SDDOT maintain important connections. Lawrence County maintains portions of important routes such as Old Highway 14, McGuigan Rd, and Rainbow Rd on the fringes of the City. SDDOT maintains I-90, US 85 (on east and west ends of the City), US 14A from Spearfish Canyon Rd to Exit 14 and I-90. All of these jurisdictions have roles to play in improving safety within the study area.

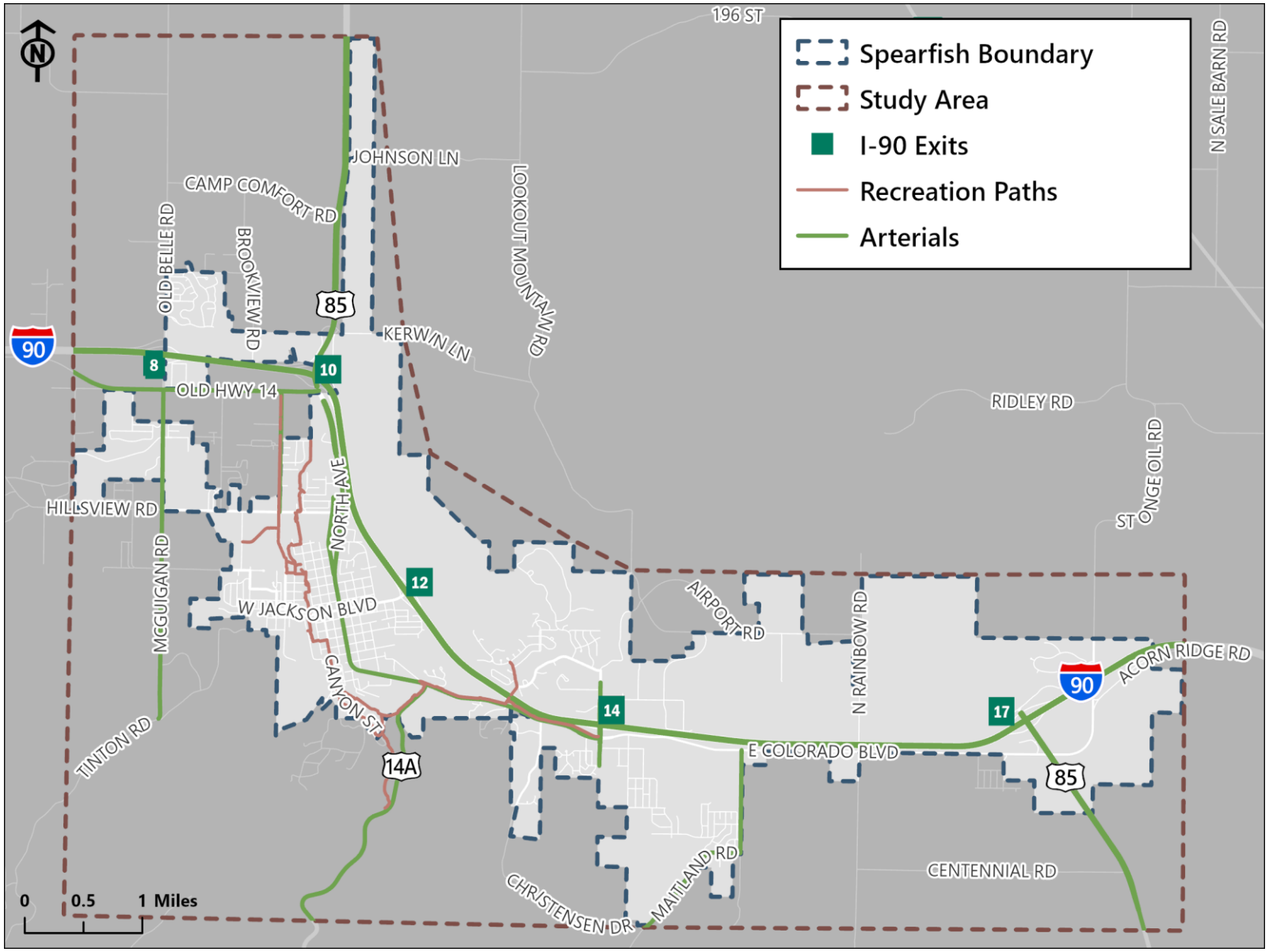
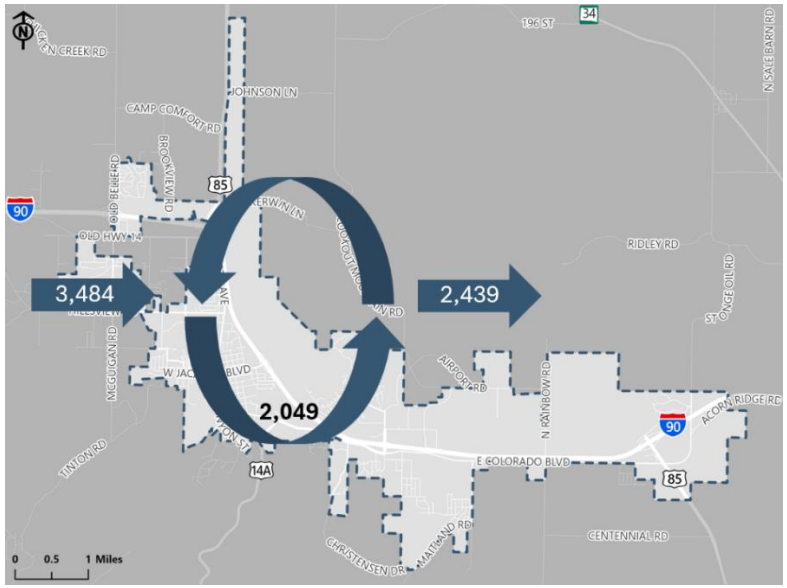


Figure 2. Important Routes and Recreational Paths

Commuting Trends

Census OnTheMap[1] provides an understanding of general commuting patterns in Spearfish. As of 2022, a total of 5,533 people were employed in the City, with 63% of those living outside of the City and commuting into the City for work. 37% of those employed in the City also lived in the City. 2,439 people were estimated to commute outside of the City for work. Understanding that majority of the City's workforce commutes into the City is important, as it stresses the importance of arterial routes that provide connections into the City, such as US 85, I-90, North Ave, and Colorado Blvd. Anecdotally, comments from a focus group of high school students noted that many students also commute into the City to attend K-12 schools.



[1] OnTheMap uses data from the Census Bureau's Longitudinal Employer-Household Dynamics program

Traffic Volumes and Trends

Arterial traffic volume counts were collected in 2024 by SDDOT. Counts are recorded as average daily traffic, or ADT. **Table 1** includes counts for select arterials in the study area.

Table 1. Traffic Counts

Route	Range of 2024 Traffic Volumes	
	Low	High
Colorado Blvd	2,865 ADT (west of US 85)	10,475 ADT (between Spearfish Canyon Rd and Hillcrest St)
I-90	5,322 ADT (between Exit 8 and Exit 10)	10,406 ADT (between Exit 12 and Exit 14)
Jackson Blvd	2,965 ADT (east of Jonas St)	10,030 ADT (west of I-90)
Main St	11,380 ADT (count provided for whole route)	
North Ave	3,985 ADT (south of I-90)	12,215 ADT (north of Nevada St)
US 85	3,477 ADT south of I-90	

Growth in traffic is expected to occur across the study area, but **the pace of traffic growth will vary greatly depending on alternative connections (system redundancy) and proximity to new development areas.** Without detailed study, forecasted traffic growth is difficult to predict. The 2023 Colorado Blvd Study forecasted an approximate 11% annual growth in traffic for portions of the corridor east of 27th St. This growth can be assumed to be higher than for other areas of the City given the amount of growth projected in the area and other assumptions in the Study, such as limited alternative connections. The study assumed a 0.5% annual growth in traffic growth to account for pass-through traffic and increases from existing development areas.

Future Priorities: Adventure Ahead – Spearfish Comprehensive Plan

The Comprehensive Plan's vision includes moving the needle by shifting away from a car-centric layout and promoting the expansion of multimodal options. The plan, adopted in 2024, identifies transportation safety-related issues, such as outdated roadways and the need to enhance connectivity and meet the strong demand for pedestrian and cyclist infrastructure. These pedestrian and cyclist enhancements include implementing more and safer bike lanes along with wider and safer sidewalks. Maintenance is highlighted to ensure these pedestrian and cyclist facilities remain in appropriate condition for all users. The following goals relate to transportation safety:

- Consistent Implementation of Road Design Standards
- Smart Development of Capital Improvements Plan
- Incorporate Multi-Modal Needs in Road Updates
- Downtown Traffic Calming
- Increase Connectivity and Access

CRASH DATA USED FOR THIS PLAN

Historical crash datasets were obtained from the State Department of Transportation for the individual years of 2020 through 2024. Use of the most recent and available full five years of crash data is the industry standard. In South Dakota, crashes are reported if they result in an injury or property damage of more than $1,000—these are the crashes that have been evaluated for the Safety Action Plan.

STATE EMPHASIS AREAS

As part of the SS4A program, it is important to provide transportation planning safety context within the State of South Dakota. The South Dakota Department of Transportation (SDDOT) is also a key partner with FHWA and the City in providing transportation funding and helping to improve transportation safety within much of the study area. SDDOT's 2024 Strategic Highway Safety Plan (SHSP) adopts the Safe System Approach (SSA) to improve roadway safety. Based on data reviewed from 2018-2022, a list of 16 possible focus areas were considered and the eight highest frequency categories were recommended as Emphasis Areas. Each Emphasis Area in the SHSP includes key strategies aligned with specific elements of the Safe System framework. Below is a list of the top five fatal and severe crash focus areas in Spearfish. **Table 2** illustrates how these focus areas connect to the corresponding SDDOT Emphasis Areas.

Table 2: Crash Focus Areas: State vs Local

SDDOT Top 5 Emphasis Areas	Spearfish Top 5 Fatal Severe Crash Focus Areas
• Lane Departures • Unbelted Vehicle Occupants • Drug & Alcohol-Related Driving • Intersections • Aggressive & Speed Related Driving	• Intersections • Lane Departures • Older Drivers (65 and older) • Unbelted Vehicle Occupant • Motorcyclist

Pedestrian Crashes

The emphasis area most associated with a high likelihood of severe crashes was pedestrian-related crashes (44% of all severe crashes).

Spearfish had four pedestrian fatalities or serious injuries from 2020-2024. During the same time period, Spearfish had five pedestrian minor injuries and six bicycle minor injuries. **It is important to note all reportable nonmotorized crashes. Any nonmotorized crash risks serious injury or a fatality because these modes are more vulnerable than others; therefore, all should be eliminated.**

Between 2018-2022, in South Dakota 71% of fatal and serious injury vulnerable road users (term includes pedestrians, bicyclists, other cyclists, person on personal conveyance, or an injured person equivalent to a pedestrian or bicylist) crashes occured on urban roadways.

Intersection Related

61% of fatal and serious injury crashes

In the Plan's study area, 19 (61%) fatal and serious crashes occured at intersections from 2020-2024. Thirteen (87%) of all nonmotorized crashes in the study area occurred at an intersection, with three intersection crashes (16%) resulting in fatalities or serious inuries to nonmotorized users. In South Dakota, 22% of fatal intersection crashes occurred on City streets, with 8% involving nonmotorized users.

Lane Departures

26% of fatal and serious injury crashes

In Spearfish from 2020-2024, eight fatal and serious injury crashes (26%) were the result of lane departure. In South Dakota, lane departure crashes are the top contributing factor in traffic fatalites. Statewide, 58% of all severe crashes were related to lane departure and 10% occurred on City streets.

Older Driver (65+)

14% of fatal and serious injury crashes

In Spearfish from 2020-2024, there were eight fatal and serious injury crashes involving drivers 65 and older. In South Dakota, fatal and serious injury crashes involving older drivers contribute to 21% of all fatal and serious injuries.

Unbelted Occupants

23% of fatal and serious injury crashes

In Spearfish, 23% of all fatal and severe injury crashes involved an unbelted vehicle occupant. In South Dakota, 30% of all fatal and serious injury crashes were unbelted vehicle occupant crashes with 11% occuring in urban, City streets.

Motorcyclist

8% fatal or serious injury crashes

In Spearfish, ten fatal or serious injury crashes from 2020-2024 involved a motorcyclist. Motorcyclists lack the protections that motor vehicle drivers and passengers have access to, such as seat belts and airbags. In South Dakota, from 2018-2022 there were 786 fatal and serious injury crashes involving motorcycles.

2. ROADWAY SAFETY IN SPEARFISH

McGuigan Rd and Old Hwy 14

CHAPTER FOCUS

This chapter identifies key findings of the historical crash evaluation. A key step in developing the Safety Action Plan is analyzing the crashes that occurred in the study area to gain a better understanding of where, when, and how those crashes occur. This chapter lays out this evaluation in two parts:

- **Crash Trend Summary** – a review of historical (2020-2024) crash characteristics.
- **High-Injury Network Analysis** – identifies a subset of a road network that has been identified as having high concentrations of crashes that result in fatality or serious injury (referred to as "severe crashes").

Important note on data used for this Plan and the data analysis: Historical crash datasets were obtained from the State Department of Transportation for the individual years of 2020 through 2024. Use of the most recent and available full five years of crash data is the industry standard. In South Dakota, crashes are reported if they result in an injury or property damage of more than $1,000 – these are the crashes that have been evaluated for the Safety Action Plan.

KEY FINDINGS

From 2020 to 2024 in the study area, there were 1,439 reportable crashes, including 31 which involved fatal or serious injuries. The evaluation provides insights into historical crash data and contributing factors and will guide targeted strategies to reduce future crashes in Spearfish. Below are key findings of the evaluation:

Key Finding	Connection to Implementation
Crashes at intersections, rather than segments between intersections, were more likely to result in fatal or serious injuries. Common crash report comments included "did not see" the unit (vehicle, pedestrian, etc.) struck. Sight lines may be a significant factor in these crashes, especially where one of the streets includes multiple lanes.	Efforts to address sights lines at intersections should be considered.
Crashes that resulted in fatal or serious injuries were most likely to occur between 2 PM and 6 PM. This timing corresponds to when schools are let out and the weekday evening peak period of traffic, typically the highest period of traffic in any 24 hour period.	Law enforcement should prioritize enforcement within this time period, if it is not occurring already.

Key Finding	Connection to Implementation
The roads with the highest concentrations of severe crashes are also the roads with some of the highest traffic volumes. Most of these roads also include four and five lane configurations. The number of lanes on a road is a significant factor in the severity level of nonmotorized crashes in particular[2]. Evidence shows that crash rates tend to increase with traffic volumes[3].	High traffic, four and five lane corridors should be prioritized for safety improvements for all modes of travel, especially those on the High-Injury Network as explained in this chapter. Efforts to relieve congestion emphasizing alternative, parallel routes should also be considered in the transportation planning efforts.
Crashes involving motorcyclists or nonmotorized modes (walking and biking) were far more likely than average to result in fatal or serious injuries. Motorcyclists are unique road user in that they lack the protections that motor vehicle drivers and passengers have access to, such as seat belts and airbags	Education and enforcement should be a priority to improve motorcyclist safety.
Given the low amount and dispersed nature of nonmotorized crashes, site or area-specific analysis of each nonmotorized crash is necessary in conjunction with public and stakeholder input.	In addition to prioritizing nonmotorized safety on high traffic four and five lane corridors, identify feasible improvements in other areas identified as problematic from reported crashes and community input. The corridor including North Ave, Main St, and Colorado Blvd ending at US 14A (Spearfish Canyon Rd) is identified on the High-Injury Network and includes most of the severe and minor injury nonmotorized crashes. Improvements and enforcement should be focused on this corridor, especially for nonmotorized users.

[2] Federal Highway Administration, "Chapter 5. Risk Factors Other than Exposure," *Synthesis of Methods for Estimating Pedestrian and Bicyclist Exposure to Risk at Areawide Levels and on Specific Transportation Facilities*, January 2017, https://highways.dot.gov/safety/pedestrian-bicyclist/safety-tools/synthesis-methods-estimating-pedestrian-and-bicyclist-8#:~:text=The%20number%20of%20lanes%20on,of%20exposure%20time%20while%20crossing

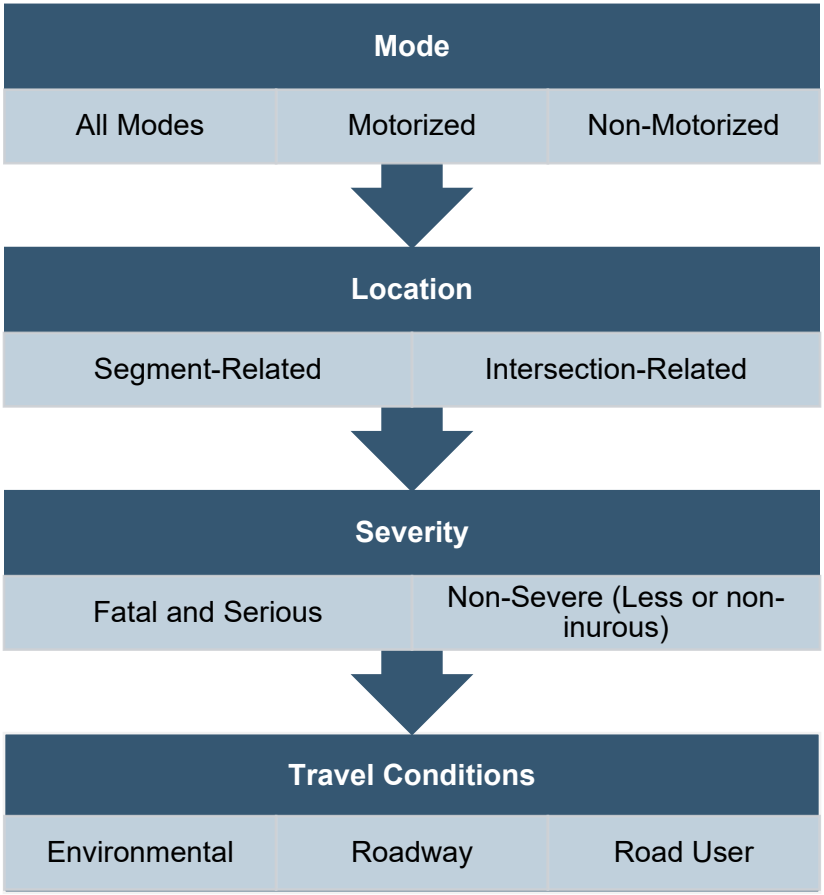
[3] Retallack, Angus Eugene and Ostendorf, Bertram, "Current Understanding of the Effects of Congestion on Traffic Accidents," *National Library of Medicine*, September 13, 2019, https://pmc.ncbi.nlm.nih.gov/articles/PMC6766193/#:~:text=Congestion%20can%20also%20affect%20the,influences%20of%20congestion%20on%20accidents

HISTORICAL CRASH EVALUATION

Crashes were assigned to the roadway network across the study area. The crash information was filtered by roadway jurisdiction, then by mode, location, and severity, and other conditional factors including time, weather, and roadway characteristics. **Figure 3** illustrates the process for grouping and analyzing the data. After crashes were categorized, further analysis was conducted to identify trends, contributing behaviors, and systemic weaknesses that may be addressed through engineering, education, enforcement, or policy. The Historical Crash Evaluation, along with other elements of the Safety Action Plan, may be used by the City of Spearfish to prioritize future roadway safety investments.

The full Historical Crash Evaluation can be found in **Appendix C**.

Figure 3. Historical Crash Evaluation Framework



Crash Severity Focus

The Safety Action Plan is focused on reducing the occurrence of fatal and serious injury (severe) crashes. Severe crashes are a primary focus of the Safe Streets and Roads for All (SS4A) grant program. As such, crash severity is a critical variable for analysis. Crash severity is defined using the national standard injury scale, as shown in **Table 3**.

All severe crashes are life changing. For example, incapacitating injuries may include severe lacerations, broken extremities, internal injuries, significant burns, and instances of unconsciousness or paralysis. These injuries require careful documentation to accurately categorize crash severity. A fatal crash is a crash that results in the death of one or more persons because of injuries sustained in the crash.

The evaluation of motorized and nonmotorized crashes was done differently. **For nonmotorized and motorcycle crashes, minor-injury crashes were considered along with severe crashes.** This is because of the vulnerability of nonmotorized users and motorcyclists – they lack the protections (such as air bags and seatbelts) that passenger vehicle and heavy vehicle users have available. For nonmotorized modes and motorcyclists, a minor injury crash may be much closer to becoming a severe crash than other modes. **Figure 4** shows the locations of fatal, serious, and minor injury crashes.

Table 3. Crash Severity

Severe (More Injurious)	Non-Severe (Less Injurious)
• Fatal Injury • Serious Injury	• Minor Injury • Possible Injury • No Apparent Injury

Crash Location

As seen in **Figure 4**, severe crashes were concentrated on some of the streets and intersections with the highest Average Daily Traffic (ADT) the study area. U.S. Highway 85 and Interstate 90 (I-90), I-90 Business Route or Colorado Blvd., North Ave., N. Main St., and Jackson Blvd. stand out as corridors with higher crash severities compared to the rest of the system. In addition to carrying higher traffic volumes, some of these roads are also designed for higher travel speeds, which increases the risk of a severe crash.

Areas With a High Density of Less-Severe Crashes

Figure 4 shows that crashes of all severities are concentrated on high ADT streets, but some areas with a high density of less-severe crashes stand out. 27th St at Exit 14 on I-90, 1st Ave near 27th St, and Jackson Blvd west of Exit 12 on I-90 all stand out as unique locations with a high crash density of less-severe crashes. Various behavioral issues were noted as contributing factors for crashes in the below areas; however, no consistent behavioral issue or theme stood out in the data.

27th St at Exit 14 on I-90

60 crashes were documented on this corridor between Colorado Blvd and 1st Ave, including these intersections. All crashes were motorized crashes. 42% of crashes were angle crashes—further analysis of these crashes did not identify a common theme. This is likely due to the variety of access points along the corridor including the Exit 14 interchange ramps, private access drives and City street intersections. Another 42% of the crashes were rear-ends. "Stopped in traffic" was the most common note for the vehicle maneuver or location. Based on this information, assumptions for contributing crash factors include driver confusion due to close intersections and access points, as well as traffic congestion. **The City and SDDOT should continue to work together in continuing to restrict additional access points along this corridor. If additional capacity improvements are not feasible, other considerations may include signal timing improvements or improving other north-south connections across I-90 to reduce through traffic.**

1st Ave East of 27th St

32 crashes were documented between the intersection with 27th St and Seaton Circle or the eastern access drive to Walmart. All crashes in this corridor were motorized crashes. 75% of the crashes were angle crashes—most of these were characterized as driveway access related, with the most common note for contributing factor as "failed to yield". 22% of the crashes were rear-ends characterized as intersection related, with the most common note for contributing factor as "followed too closely". Based on this information, a likely contributing crash factor includes traffic congestion. Specifically, turning movements into and out of Walmart should be further evaluated. **The 2012 US Highway 14A Study noted the need for a second eastbound lane on 1st Ave to accommodate this traffic. This information supports the Study's recommendation.**

Jackson Blvd West of Exit 12 on I-90

36 crashes were documented between the intersection with 8th St and through the ramps at Exit 12 on I-90. 70% of crashes were angle crashes, all except one of these were at four-way intersections. "Failed to yield" was the most common contributing factor. 20 of all corridor crashes occurred at the intersection of 10th St, with left turning movements the most common vehicle maneuver. Based on this information, sight lines for turning movements is a likely contributing factor. This may include sight line challenges from a number of factors, such as: multiple through lanes on Jackson Blvd, median design on Jackson Blvd, and the visible area between the side street stop bar and oncoming traffic on Jackson Blvd (referred to as the "sight triangle"). **All of these sight line-related challenges should be explored for solutions.**

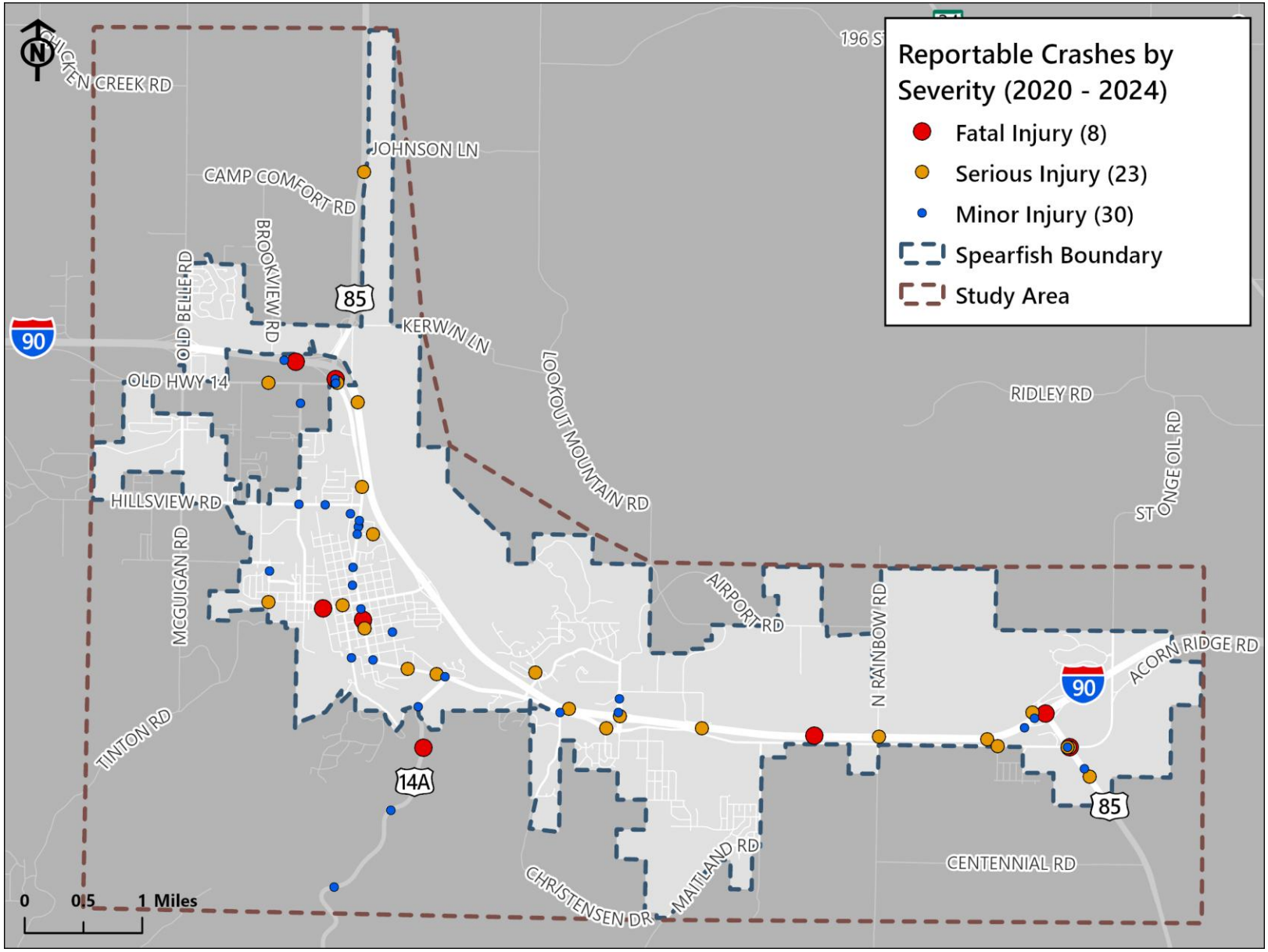


Figure 4. All mode-Crash Severity

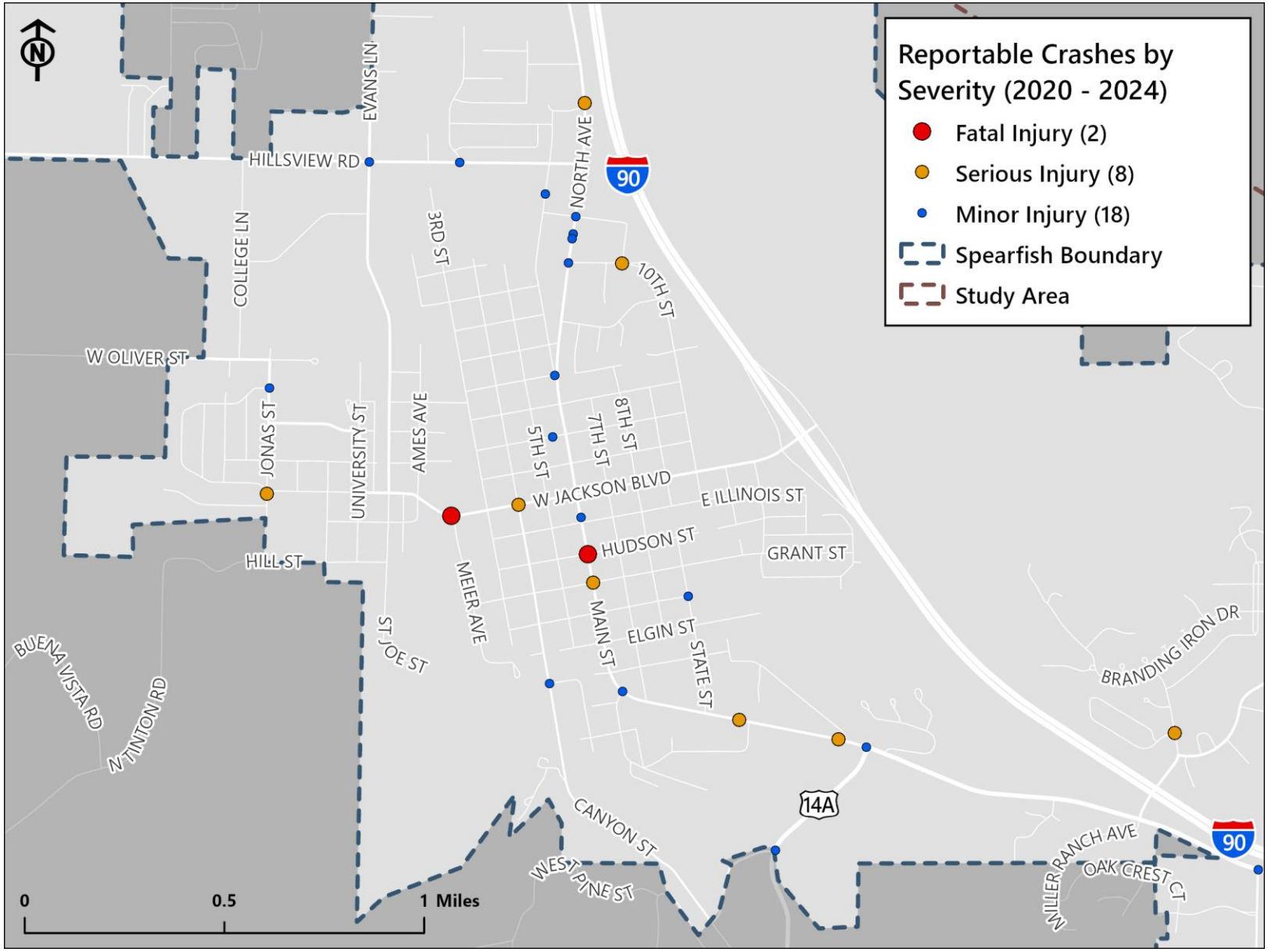


Figure 5. All Mode Crash Severity-Downtown

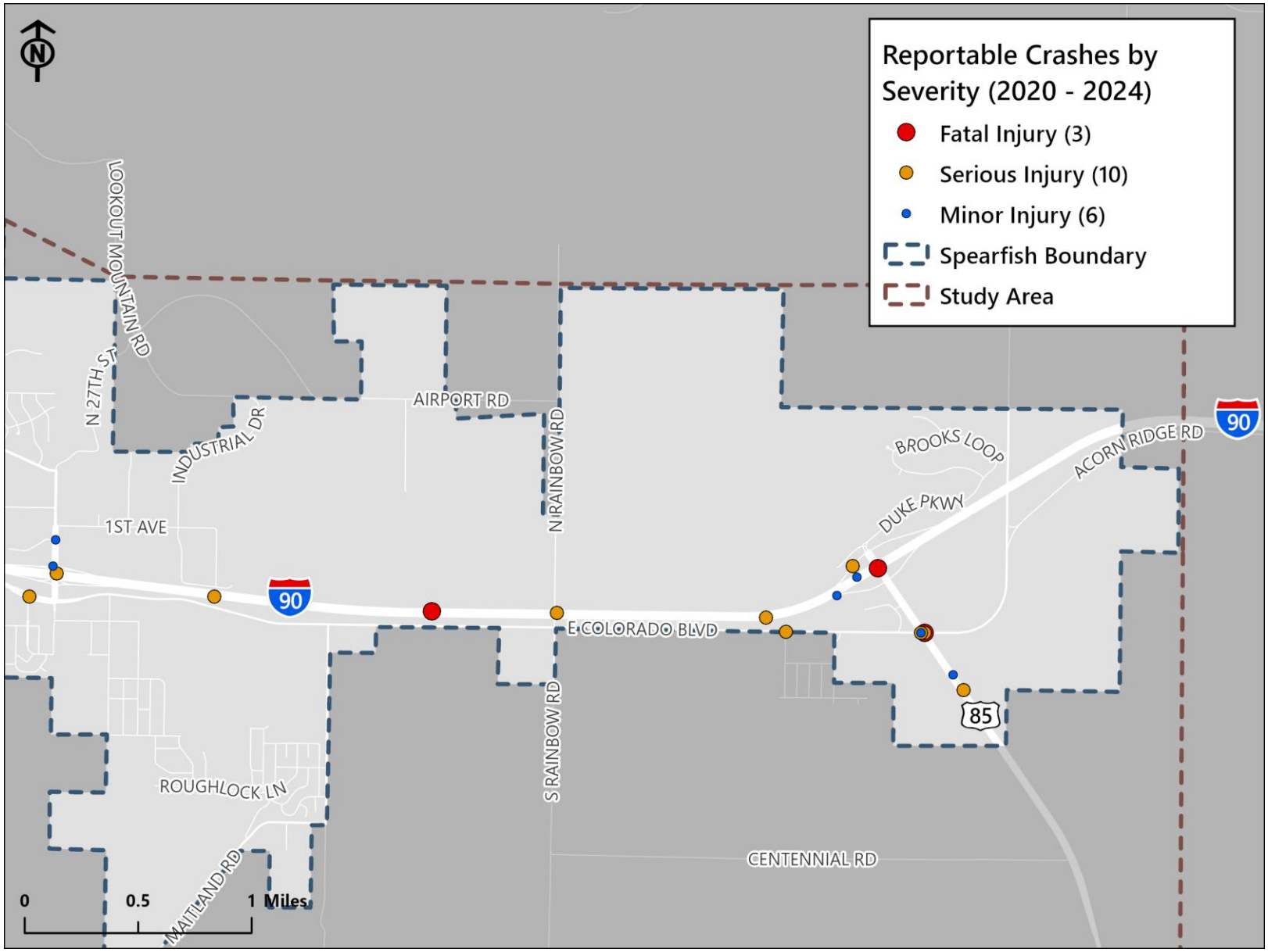


Figure 6. All Mode Crash Severity-Colorado Blvd.

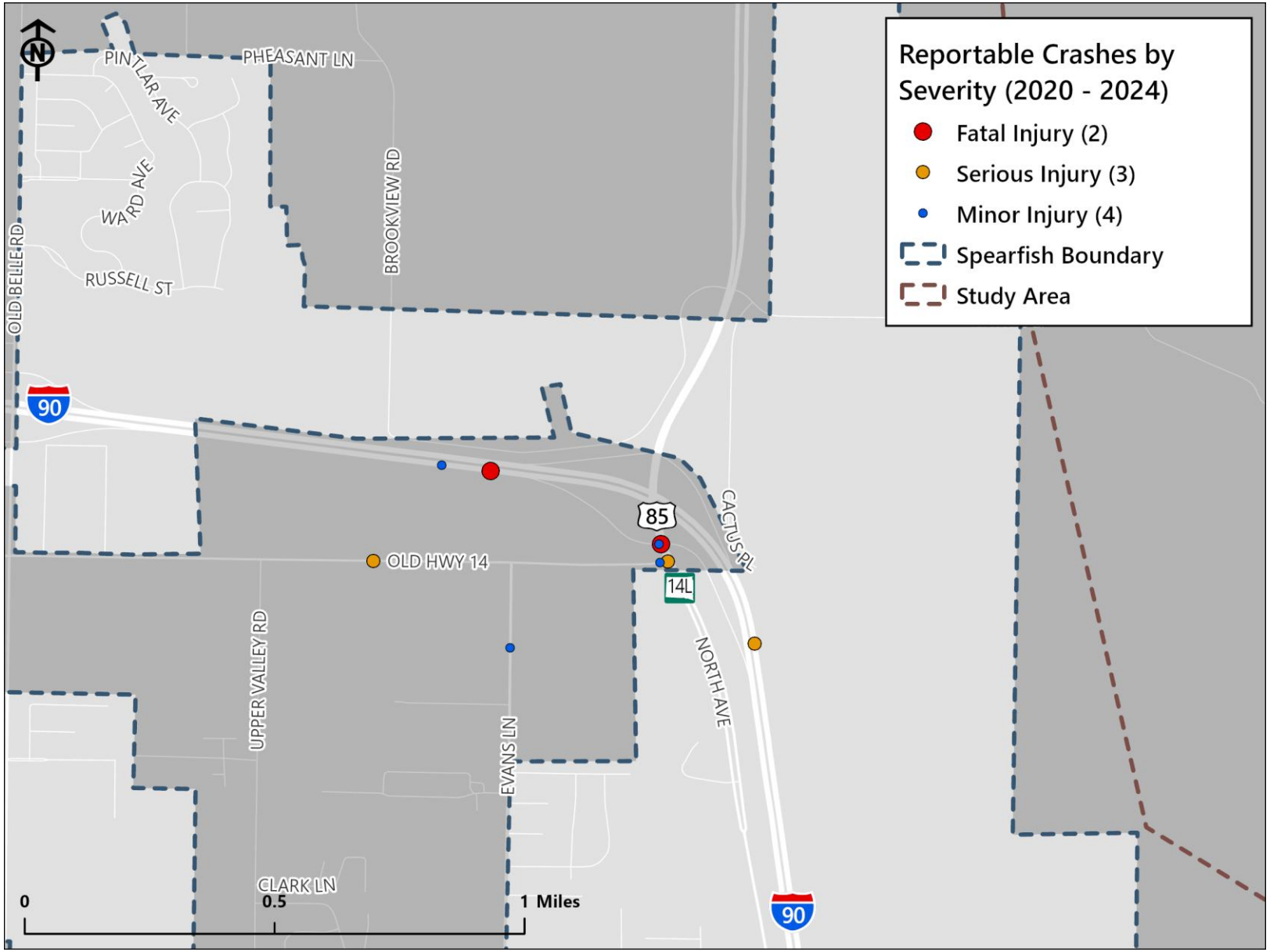


Figure 7. All Mode Crash Severity-Exit 10

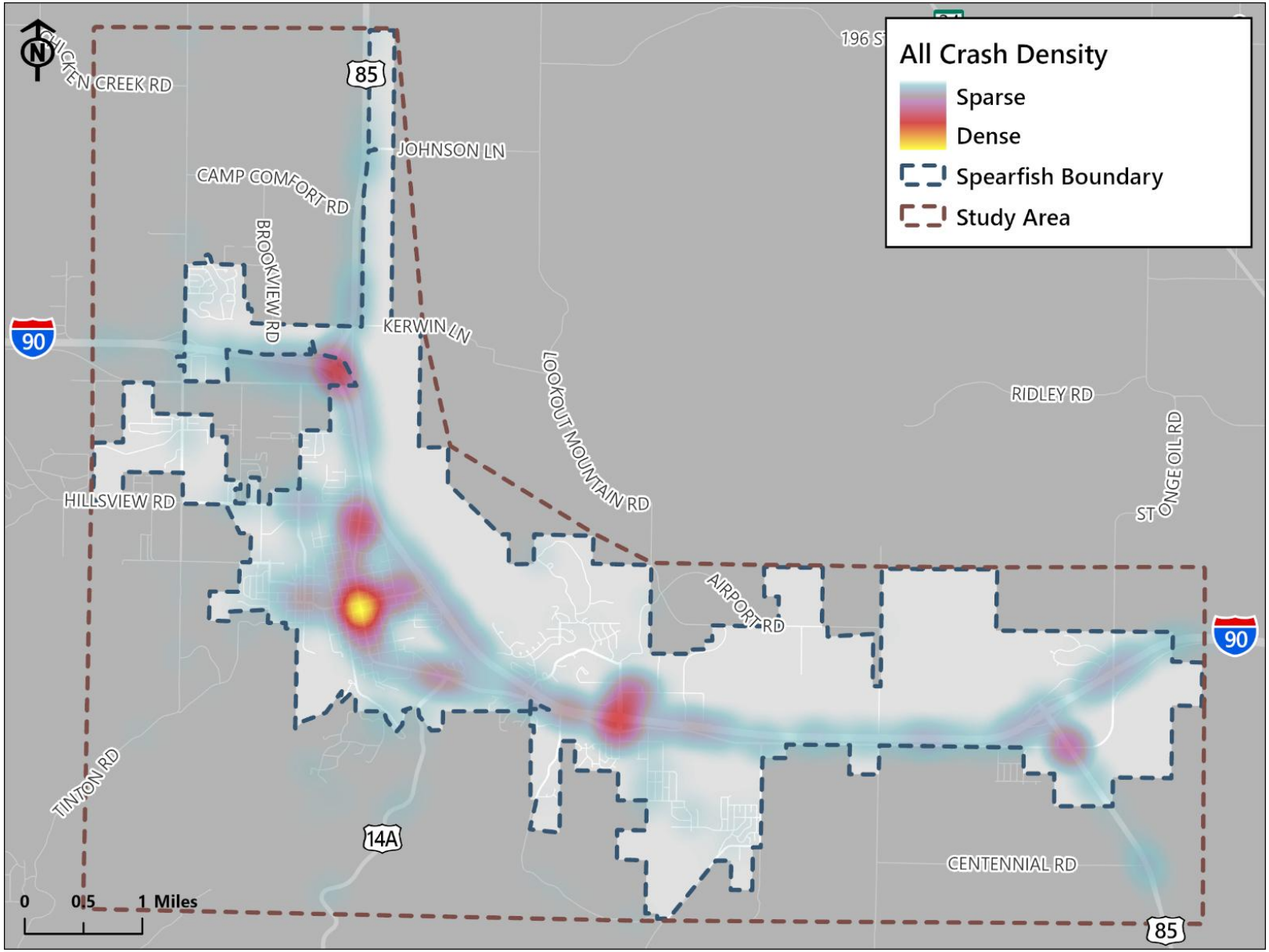


Figure 8. All Mode Crash Heatmap

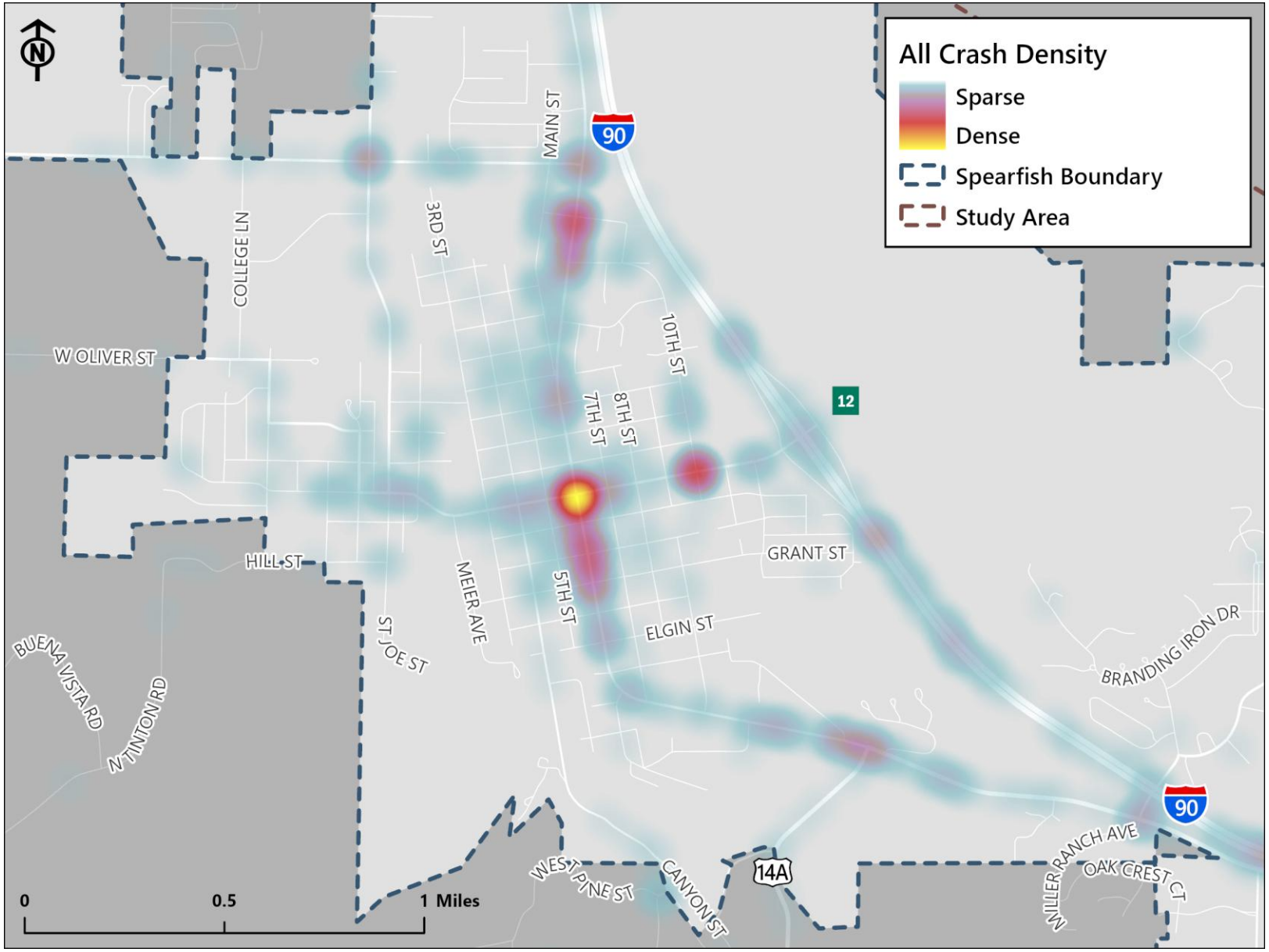


Figure 9. All Mode Crash Heatmap – Downtown

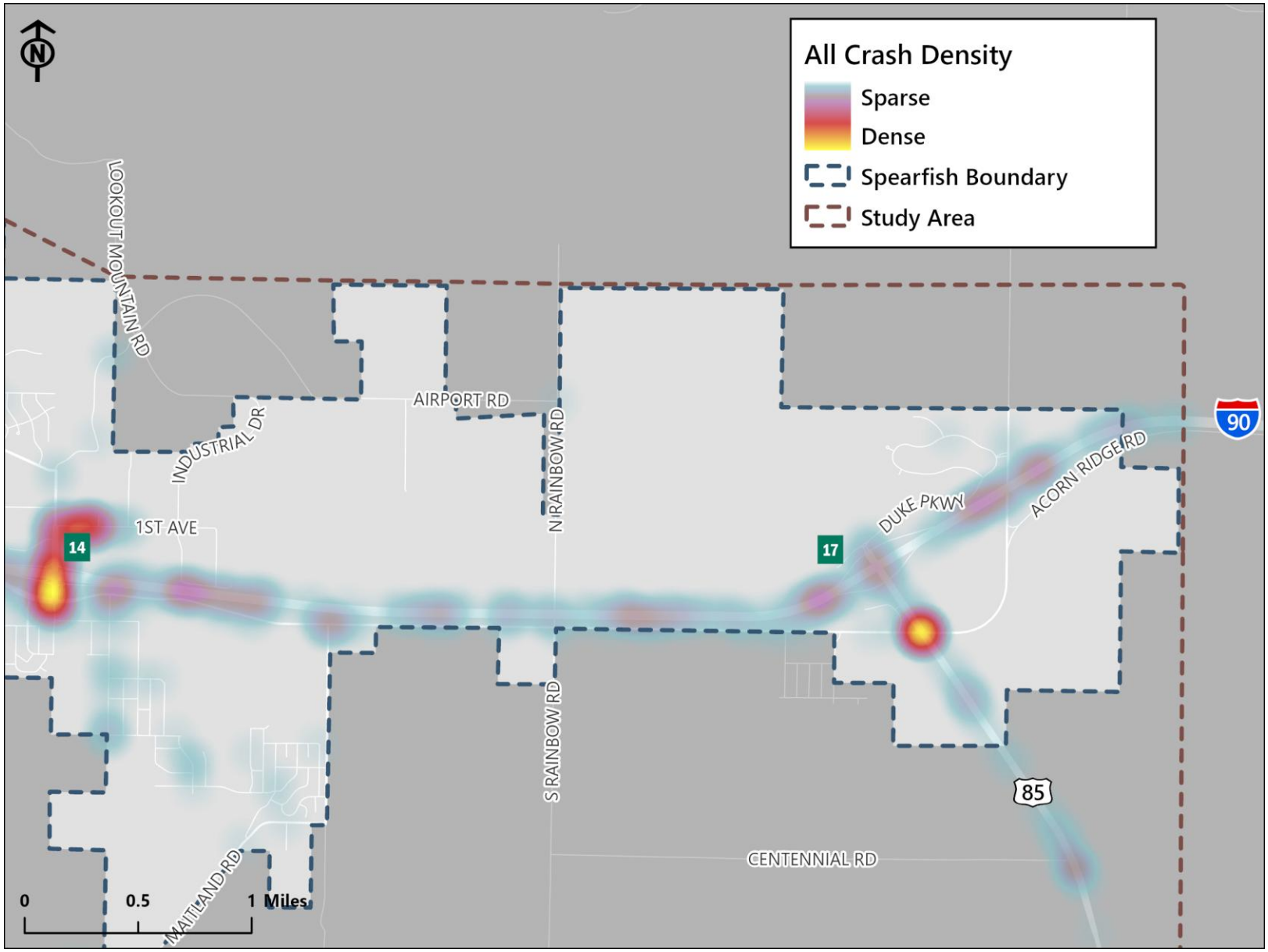


Figure 10. All Mode Crash Heatmap-Colorado Blvd.

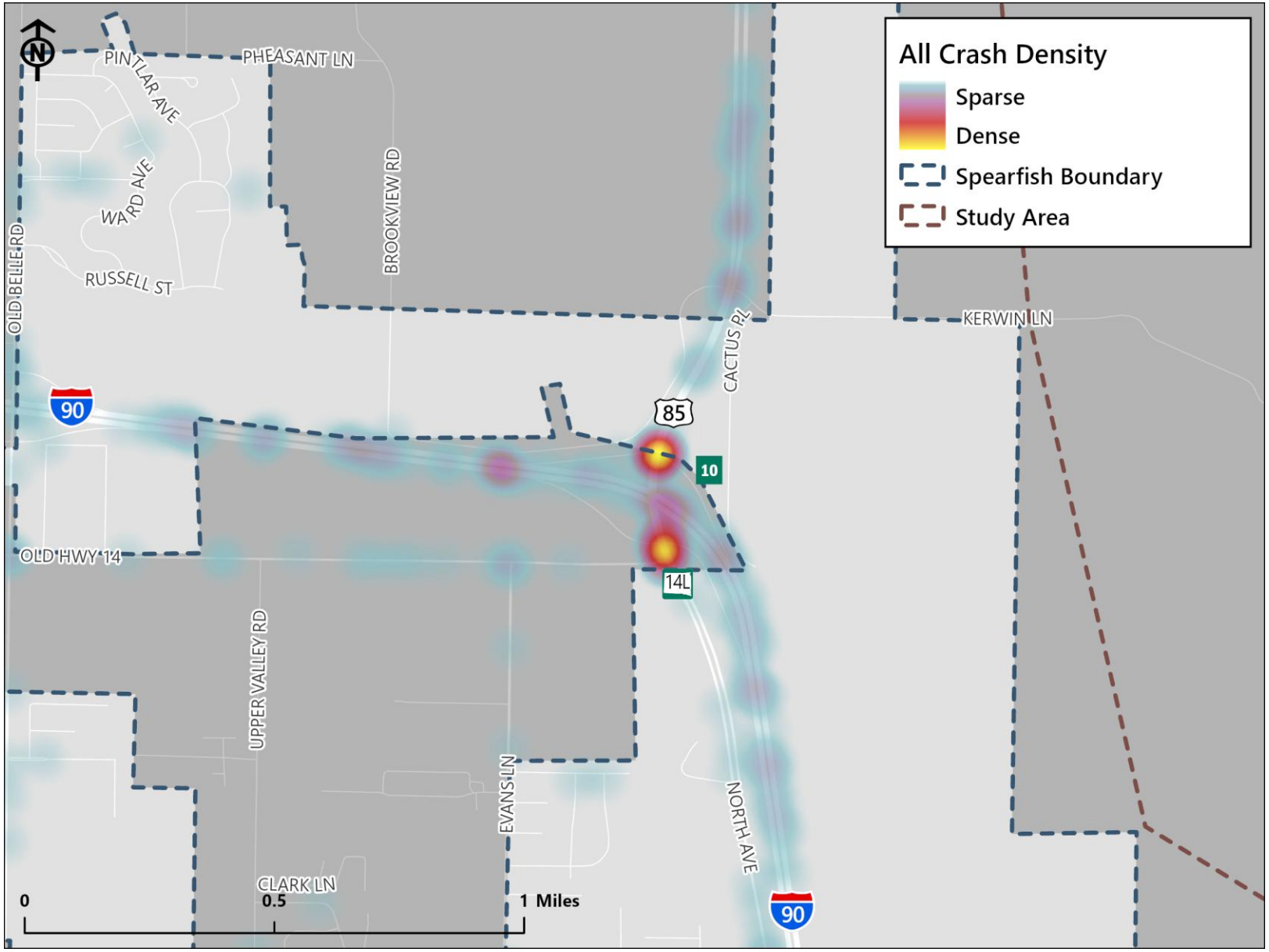


Figure 11. All Mode Crash Heatmap-Exit 10

Crash Severity and Modes Involved

As seen in **Figure 12**, the majority of the 1,439 crashes were less-severe, including no apparent injury, possible injury, or a minor injury. However, 31 of crashes were severe (2.2% of all crashes) resulting in at least one person involved receiving a fatal or serious injury.

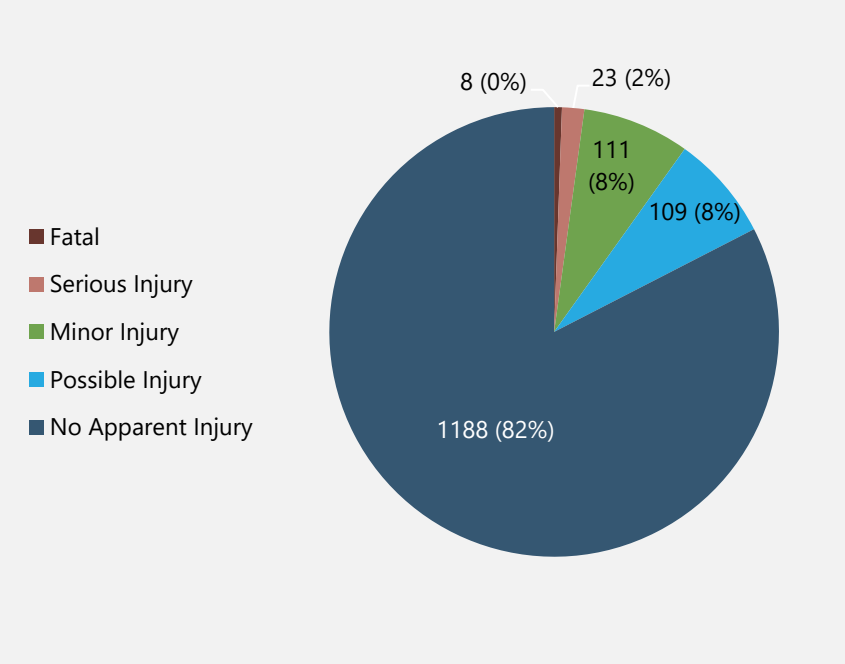


Figure 12. Breakdown of Crash Severity

As shown in **Table 4**, severe crashes most frequently involved automobiles (17 crashes), followed by motorcycles (10 crashes), and pedestrians (4 crashes). Non-severe crashes most frequently involved automobiles (1,366 crashes). However, comparing the percentage of severe crashes by each mode's total crashes is revealing. For example, 23% of motorcycle crashes were severe and 44% of pedestrian crashes were severe.

Table 4. Crash Severity by Mode

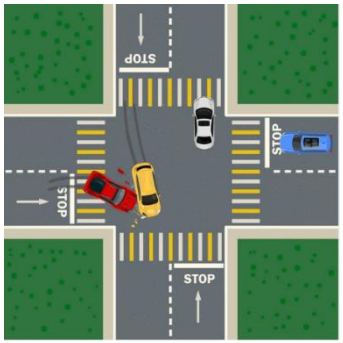
Mode	Severe Crashes	Non-Severe Crashes	Subtotal Crashes*	% of Severe Crashes by each Mode's Total Crashes
Passenger Automobile	17	1,366	**1,383**	1%
Heavy Vehicle	0	60	**60**	0%
Motorcycle	10	33	**43**	23%
All Motorized	***27***	***1,411***	***1,438***	***2%***
Bicycle	0	6	**6**	0%
Pedestrian	4	5	**9**	44%
All Nonmotorized	***4***	***11***	***15***	***27%***

*Total reportable crashes is 1,439; however, some crashes involved multiple modes

Manner of Crash

As seen in **Figure 13**, aside from the 'other' category, severe crashes were most frequent at an angle (9 crashes). Angle crashes involve vehicle turning movements, often at intersections or access points along a street where the possibility of crashing at an angle is the greatest. Poor sight lines are noted in other sections of this Plan as a common contributing factor in these crashes. Recommended solutions are provided in Chapter 5, Implementation.

The majority of crashes in the "other" category includes wild animal hits (1 severe crash and 416 less-severe crashes) and single vehicle run-off road (12 severe crashes and 243 less-severe crashes). The less-severe crashes involving wild animal hits are most common on I-90. In City limits, one area with a higher frequency than others of less-severe wild animal hits are along Colorado Blvd adjacent to Spearfish Canyon Country Club (18 crashes from 2020 – 2024). Recommendations to reduce crashes along this corridor are provided in Chapter 5, Implementation. The majority of single vehicle run-off road crashes occurred on arterials that are higher speed and higher volume. I-90 includes most of these crashes. Most crashes are dispersed on segments, not at or near intersections and 67% involved motorcycles. No other themes were clear in the review of single vehicle run-off road crashes.



Example diagram of an angle crash at an intersection

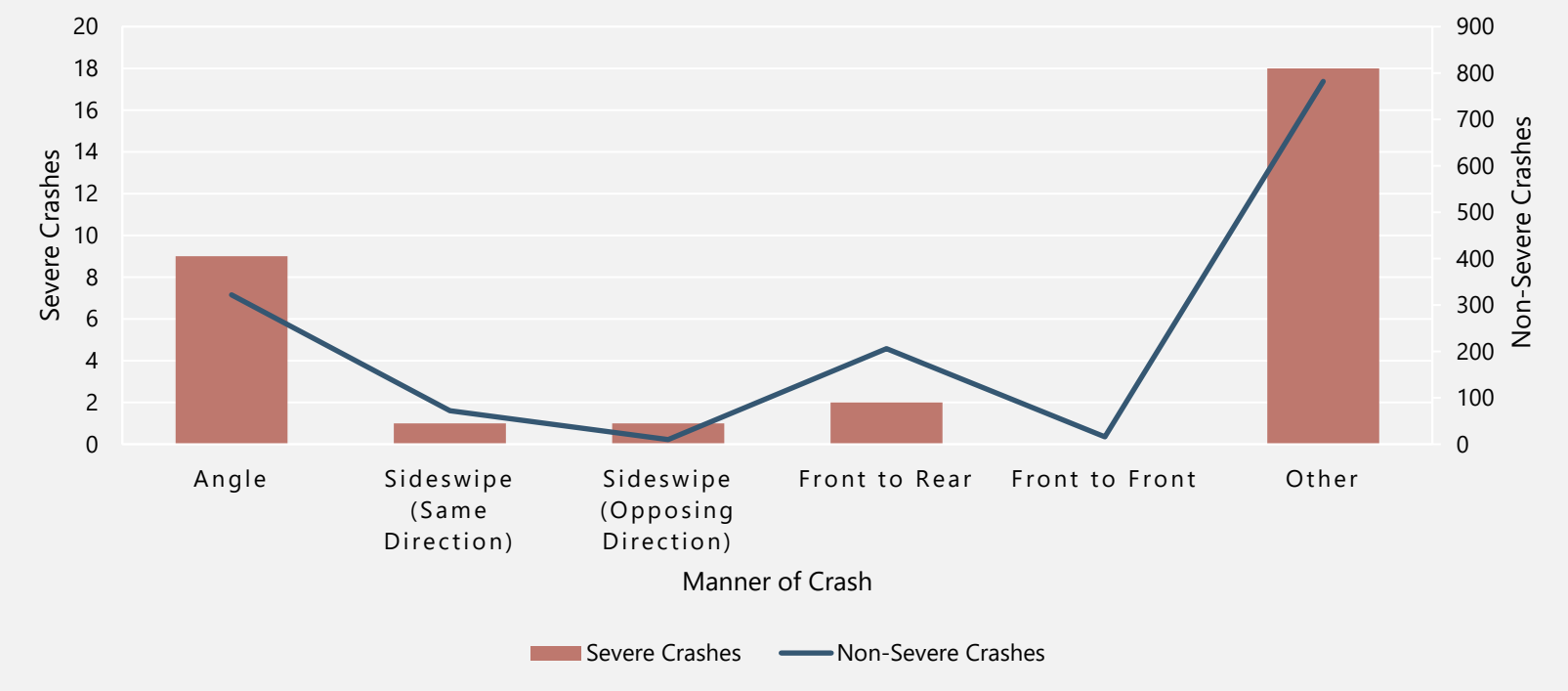


Figure 13. Crash Severity by Manner of Collision

Seasonal and Temporal Patterns

As seen in **Figure 14,** severe crashes were most frequent during the summer (notably June and August). Non-severe crashes were most frequent during fall and winter months. Higher traffic volumes in the summer months due to tourism may contribute to this finding.

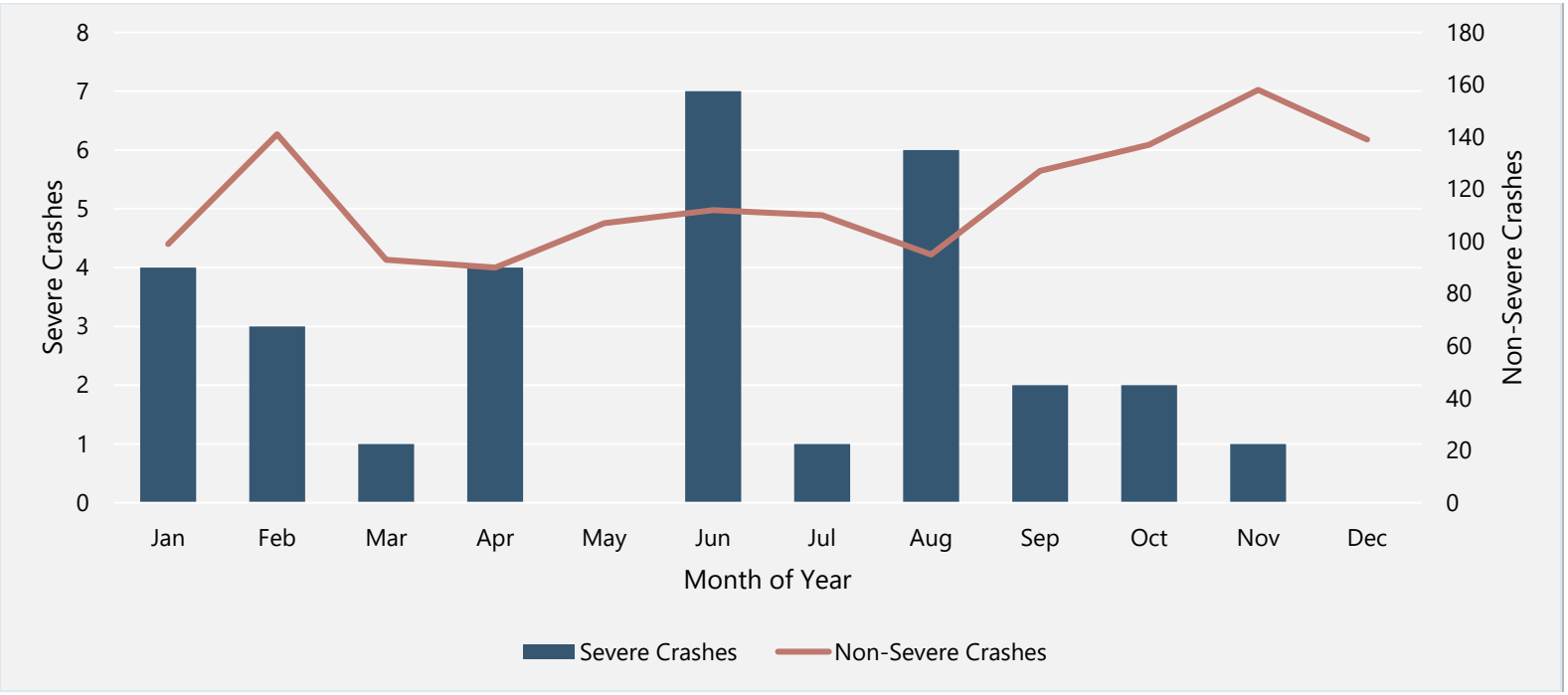


Figure 14. Crash Severity by Month

As seen in **Figure 15,** severe crashes were most frequent between 2 PM and 6 PM. Non-severe crashes were most frequent between 4 PM and 6 PM. These time bands generally correspond to the usual timing for afternoon and evening peak hour traffic and are within the time that K-12 schools typically end for the day.

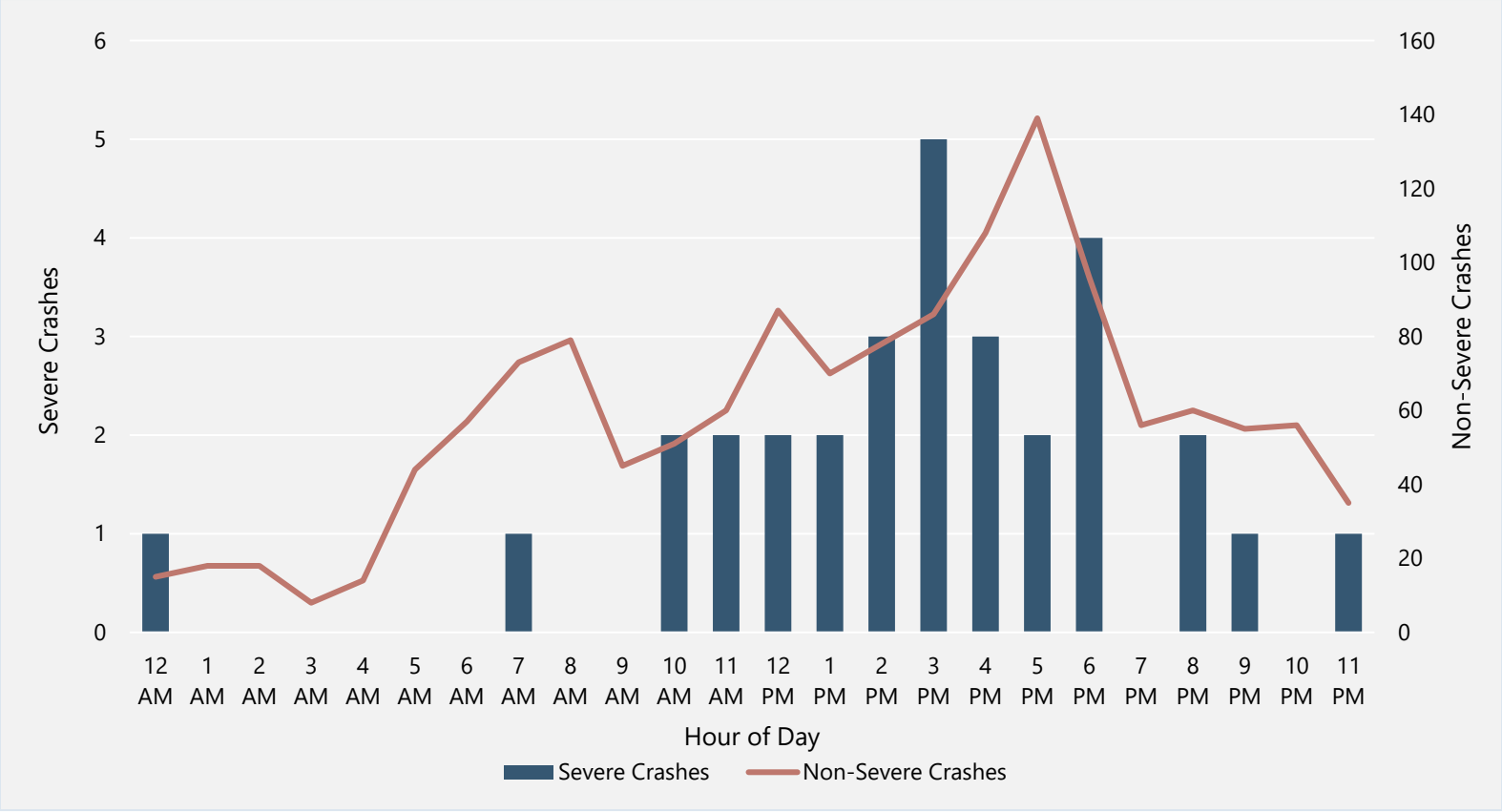


Figure 15. Crash Severity by Hour of Day

Roadway Characteristics

Lighting Conditions

As seen in **Figure 16** severe crashes were most frequent during daylight conditions (25 crashes or 83% of all severe crashes). Non-severe crashes were also most frequent during daylight conditions (840 crashes or 64% of all less-severe crashes). Two likely factors that contribute to these results include low nighttime traffic volumes and well-lit roadways, especially in areas with higher traffic speeds and higher traffic volumes at night.

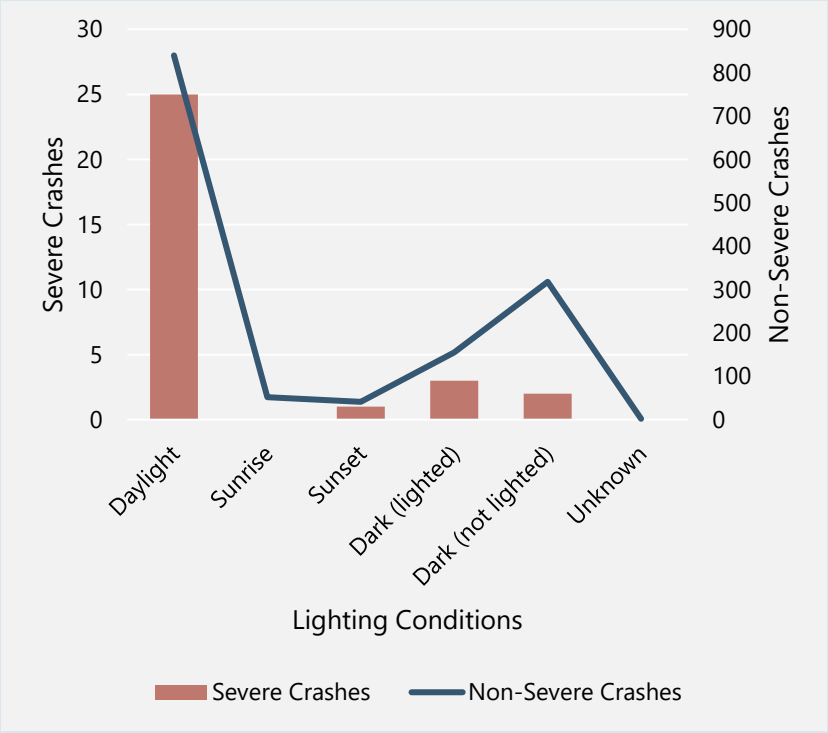


Figure 16. Crash Severity by Lighting Conditions

Daylight Crashes

Most severe crashes in Spearfish occurred in daylight conditions.

Roadway Segment and Intersection Crashes

Crashes were evaluated on roadway segments and at intersections separately. Crashes located within 164 feet of an intersection are classified as intersection crashes. Crashes outside of these parameters are considered roadway segment crashes. 39% of all severe crashes were located on a roadway segment and 61% of all severe crashes were located at an intersection. Segment severe crashes mostly occurred on I-90 (67% of severe segment crashes).

Intersection Crash Characteristics

Intersection Control Type

As shown in **Figure 17**, severe crashes were most frequent at or adjacent to two-way stop controlled intersections (74% of severe intersection crashes). Four percent of all two-way stop-controlled and uncontrolled intersection crashes resulted in a severe crash. Both two-way yield and roundabout intersections did not experience any severe crashes, and very few less-severe crashes.

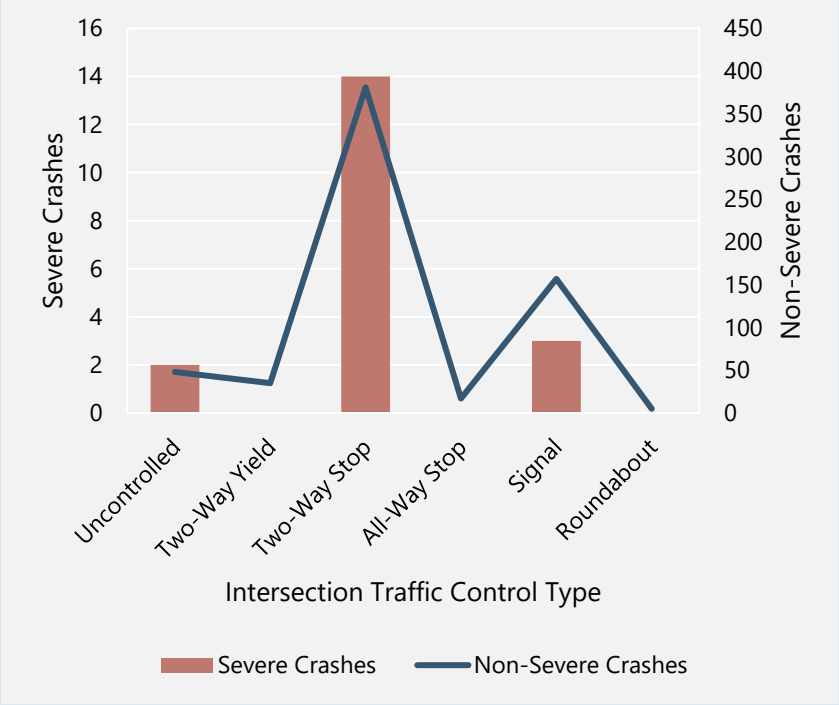


Figure 17. Crash Severity by Intersection Traffic Control Device

**Intersection crashes only.*

Intersection Street Type Combination

As described in **Table 5**, the functional classifications of the legs[4] of each intersection were simplified to be "high" or "low". The lower and higher functional class legs were used to categorize the intersections. This provides greater insight into the types of intersections that crashes are occurring at – whether the legs of the intersection are more evenly balanced ("High vs High" or "Low vs Low") or imbalanced ("Low vs High") in terms of the functional class of the intersecting roadways. Imbalanced intersections tend to be low-volume, lower speed limit streets crossing high-volume, higher speed limit streets, often with a simple two-way stop. **Figure 18** shows an example in Downtown Spearfish of a "Low vs High" classification intersection – Main St and Grant St, where Main St is a four lane, high volume arterial intersecting with Grant St, a lower-volume two lane local road. As seen in **Figure 19**, severe crashes were most frequent at low vs. high intersections (12 crashes or 63%) and less frequent at low vs. low intersections and high vs. high intersections.

Table 5. Intersection functional class combination criteria

Minimum Leg Functional Class	Maximum Leg Functional Class	Intersection Functional Class Combination Label
Arterial	Arterial	High vs High
Local Road or Collector	Arterial	Low vs High
Local Road or Collector	Local Road or Collector	Low vs Low

[4] An intersection leg is simply one of the roadways or road segments that connects to and forms part of an intersection.

Figure 18. Example of Low vs High intersection

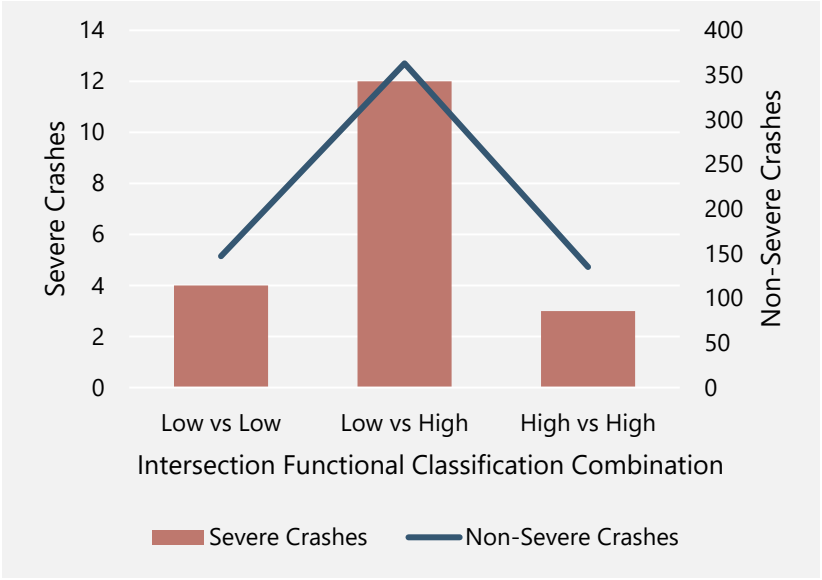


Figure 19. Crash severity by intersection functional class combination

Many of the severe intersection crashes occurred where at least one of the intersecting streets was a four- or five-lane street. **Table 6** provides insight into these crashes. From review of the crash narratives of each crash, a commonality between many of the crashes was the comment "did not see" the unit (vehicle, pedestrian, etc.) struck. Sight lines at these types of intersections can be complicated by issues such as the vertical and horizontal curvature of the road, because there are multiple lanes of vehicles on the higher-classification street, or that the vision of drivers at the stop sign have impaired visibility from fixed obstructions in the field of vision[5].

[5] This is referred to as the "sight triangle".

Table 6. Intersection crashes at 4 or 5 lanes streets and 2 lane streets resulting in a severe crash or minor injury

Location	Modes Involved	Greatest Severity
Colorado Blvd./US 85/St. Onge Rd.	Auto	Serious injury
Platinum Dr./N 27th St.	Auto, Motorcycle	*Minor injury
S 26th St./Colorado Blvd.	Auto	Serious injury
Colorado Blvd./Spearfish Canyon	Auto, Bicycle	*Minor injury
Colorado Blvd./Hillcrest Dr.	Auto, Motorcycle	*Minor injury
Main St./Grant St.	Auto, Motorcycle	Serious injury
Main St./Hudson St.	Auto, Pedestrian	Fatality
Main St./Nevada St.	Auto, Motorcycle	*Minor injury
North Ave./Rushmore St.	Auto, Pedestrian	*Minor injury
North Ave./Ryan Rd.	Auto, Bicycle	*Minor injury
North Ave./Old Highway 14	Auto	Serious injury
Jackson Blvd./Canyon St.	Auto	Serious injury

*Minor injury crashes only shown where vulnerable users or more at risk modes are involved—both nonmotorized and motorcycles.

Nonmotorized Crashes

In **Figure 20**, there were a total of 15 crashes involving a nonmotorized mode of travel. Four crashes were severe and 11 were less severe. Nine of these crashes involved pedestrians and six involved cyclists.

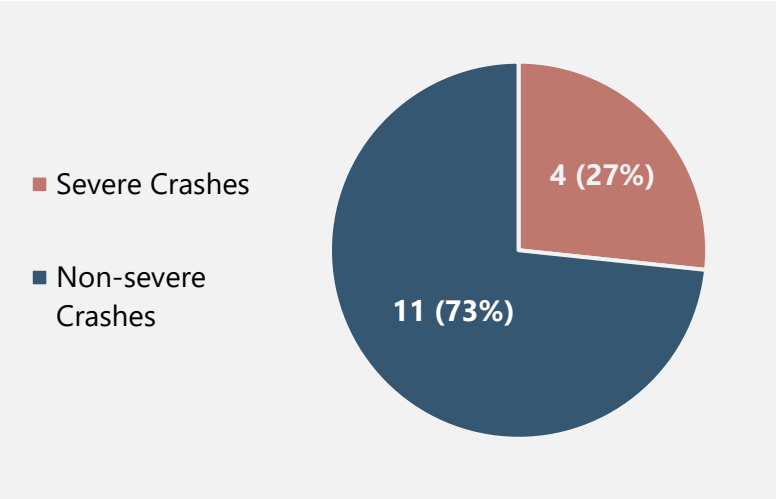


Figure 20. Crash severity by nonmotorized severe and less-severe crashes

Due to the limited number of total nonmotorized crashes (15), detailed analysis of these crashes yields limited insight into contextual issues. Instead, a map of specific crash locations (segments and intersections) is shown in **Figure 22** on the following page**.** Minor injury crashes are shown for nonmotorized modes of travel due to the greater vulnerability of pedestrians and bicyclists versus many other modes.

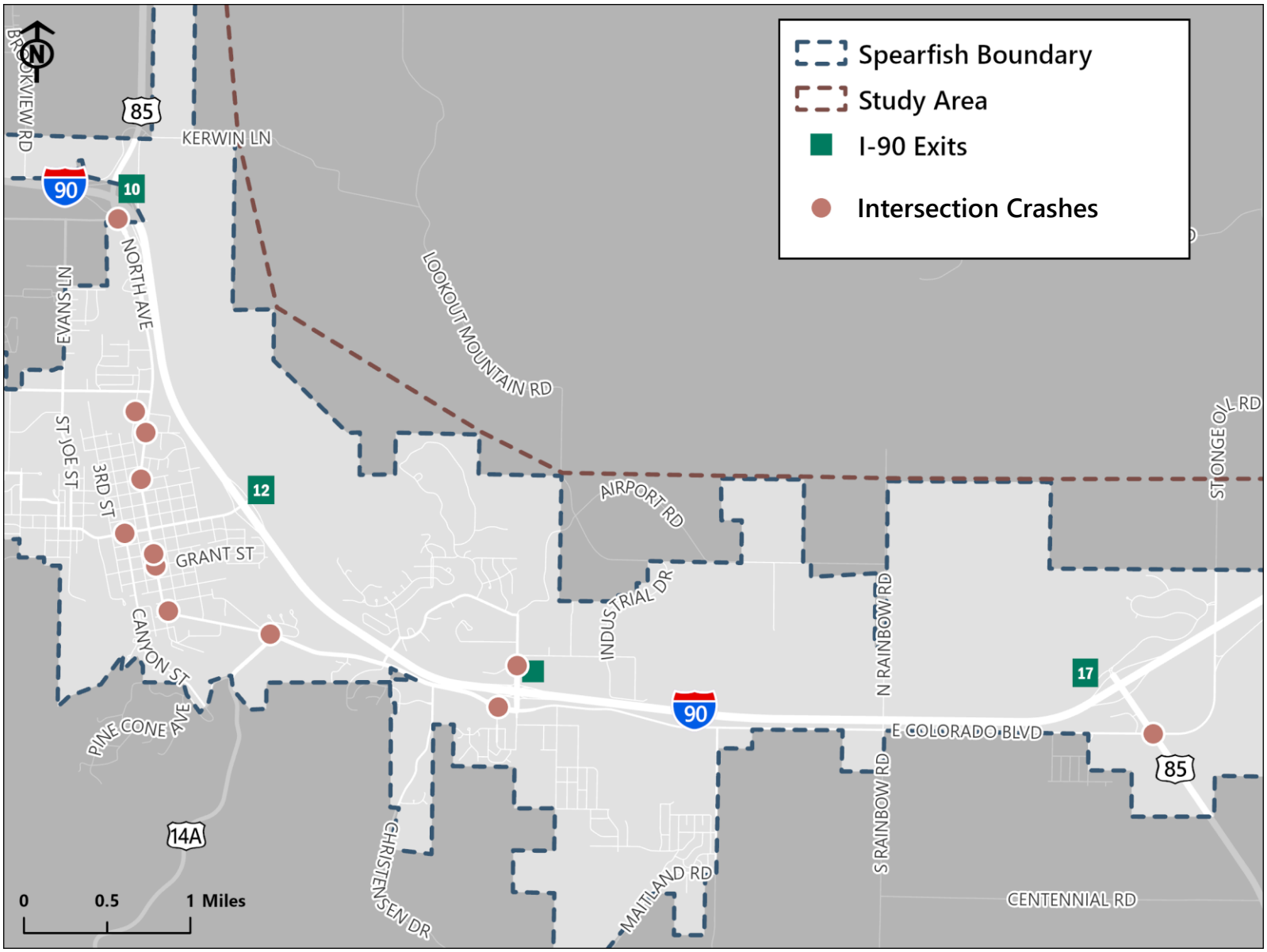


Figure 21. Location of intersection crashes at 4 or 5 lanes streets and 2 lane streets resulting in a severe crash or minor injury

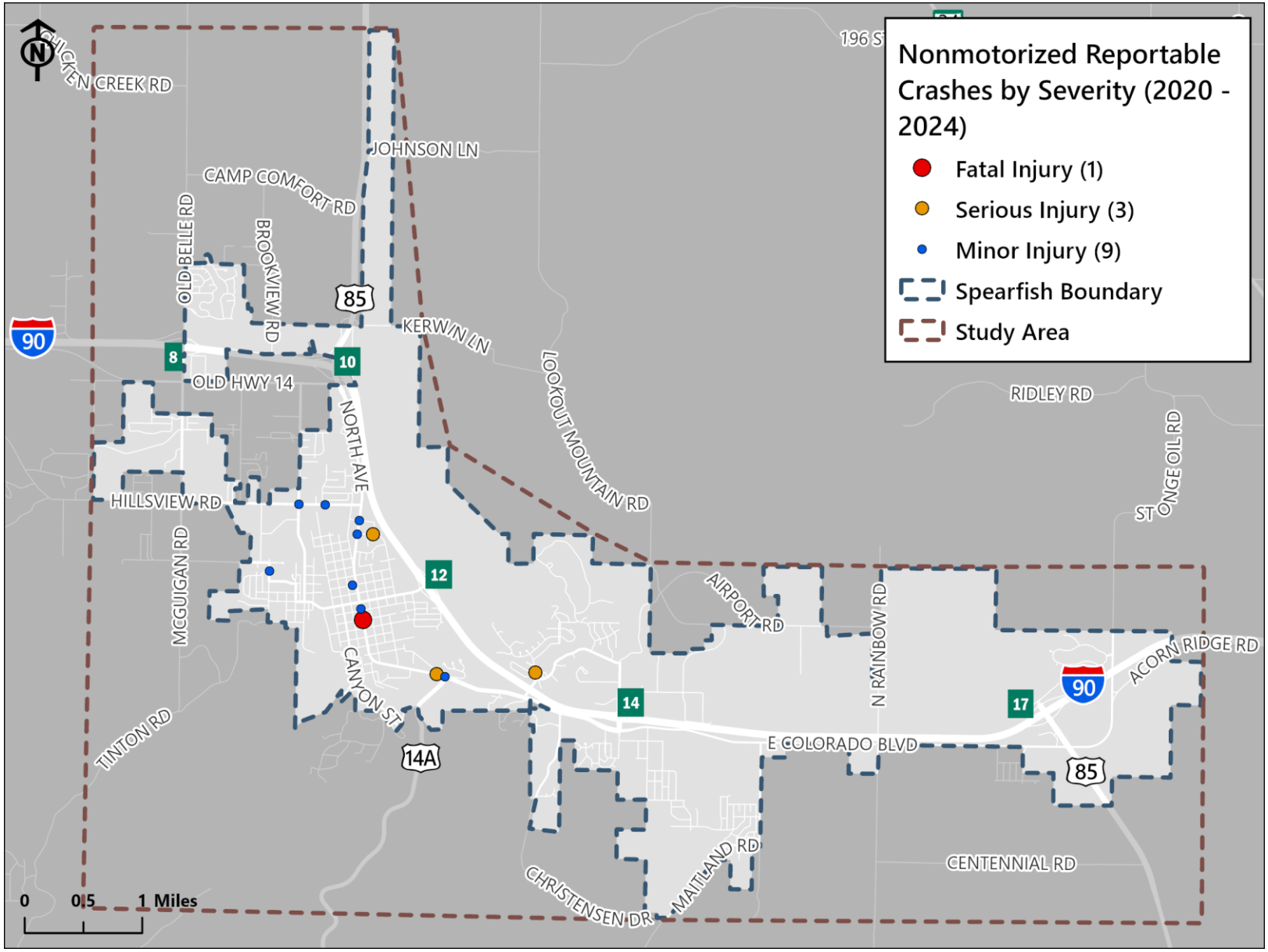


Figure 22. Nonmotorized Crash Map

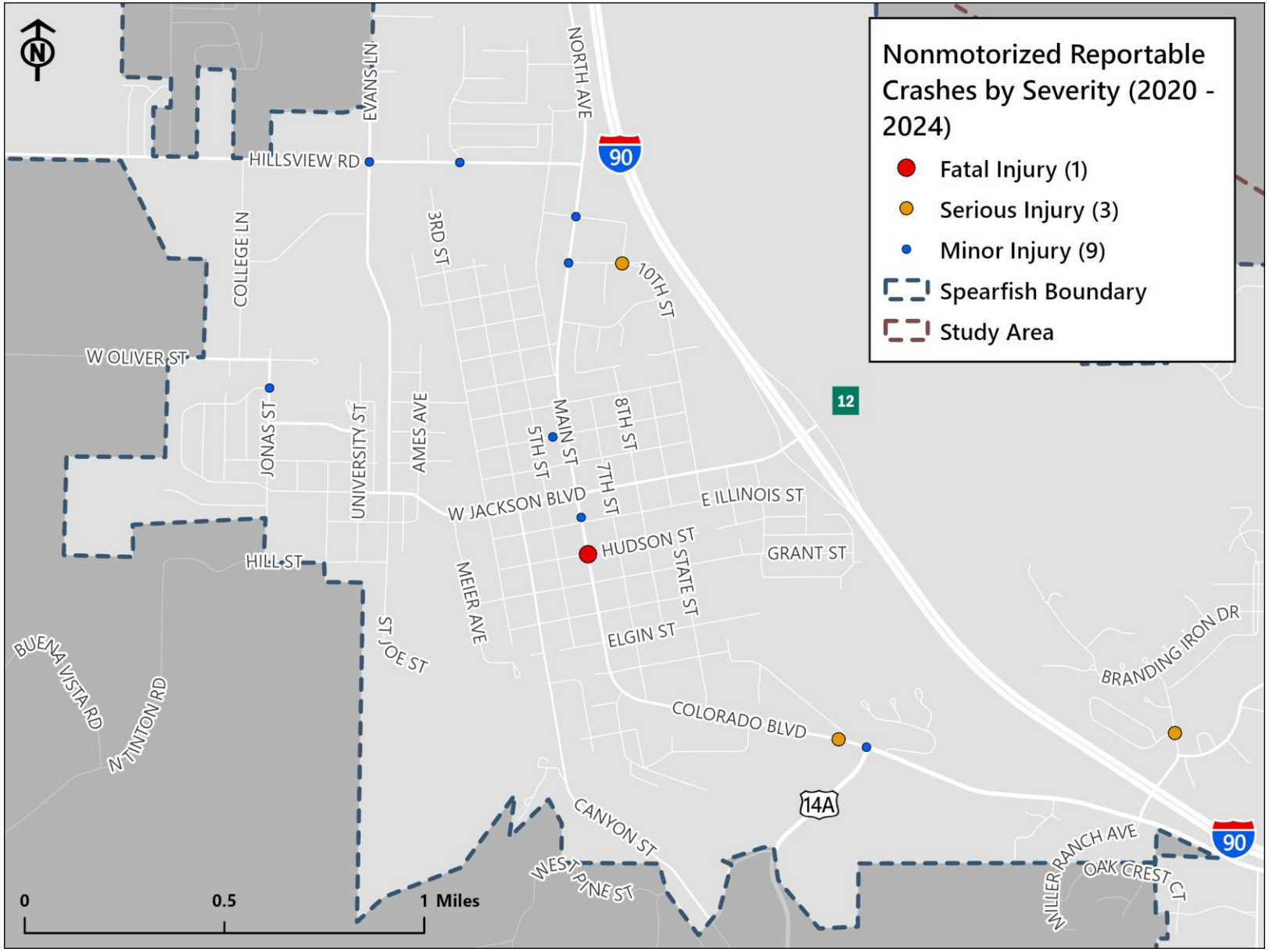


Figure 23. Nonmotorized Crashes-Downtown

High-Injury Network

A High-Injury Network was developed as part of the Historical Crash Evaluation. For this Plan the High-Injury Network analysis focuses on severe crashes for automobiles and also included minor injury crashes for nonmotorized modes and motorcyclists, all from the analysis years of 2020-2024.

What is the High-Injury Network?

The High-Injury Network helps to elevate projects in grant applications through the Safe Streets and Roads for All program as its primary focus is on severe crashes. The High-Injury Network represents a prioritized subset of Spearfish's overall roadway network, focusing on roads with the highest prevalence of severe crashes, showing where to focus limited funding for the biggest impact. It can be likened to finding the "hot spots" on a map to fix them first, using data to target improvements like better crosswalks, signals, or road design to save lives.

Think of it like a doctor diagnosing an illness: *Instead of treating the whole body vaguely, the High-Injury Network is like the doctor finding the specific organ that's most affected. Focus the medicine (safety funding) there first for the best results.*

Methodology

The High Injury Network was created through the following steps:

1. Close review of each corridor (including intersections) to understand the density of severe crashes.

2. Fatal injury and serious crashes for all modes were given the highest priority, with minor injury nonmotorized and motorcyle crashes given secondary priority. Minor injury crashes were included for these modes given their vulnerability compared to passenger automobiles and heavy vehicles.

3. High Injury Network corridors were then drawn based on the types of crashes (as noted in part two above) and their proximity.

Appendix C describes the High Injury Network methodology and creation in more detail. A summary of severe crashes for different modes represented on the High Injury Network is provided in **Table 7** and **Table 8**. The tables also show the amount of total study area severe crashes shown on the High Injury Network.

Table 7. High Injury Network Statistics - Motorized

Mode	Total Severe* Crashes	Severe Crashes on High Injury Network
Passenger Automobile	17	7 (41.2%)
Heavy Vehicle	0	0 (0.0%)
Motorcycle	30	11 (36.7%)
All Motorized	***47***	***18 (38.3%)***

* Crash counts include all fatal, serious, and minor injury crashes except for minor injury automobile crashes.

Table 8. High Injury Network Statistics - Nonmotorized

Mode	Total Severe* Crashes	Severe* Crashes on High Injury Network
Bicycle	5	2 (40%)
Pedestrian	8	4 (50%)
All Nonmotorized	***13***	***6 (46.2%)***

* Crash counts include all fatal, serious, and minor injury crashes except for minor injury automobile crashes. There are two less-severe "possible injury" nonmotorized crashes that are not included.

As seen in **Figure 24** through **Figure 27**, the all-mode High Injury Network includes five corridors:

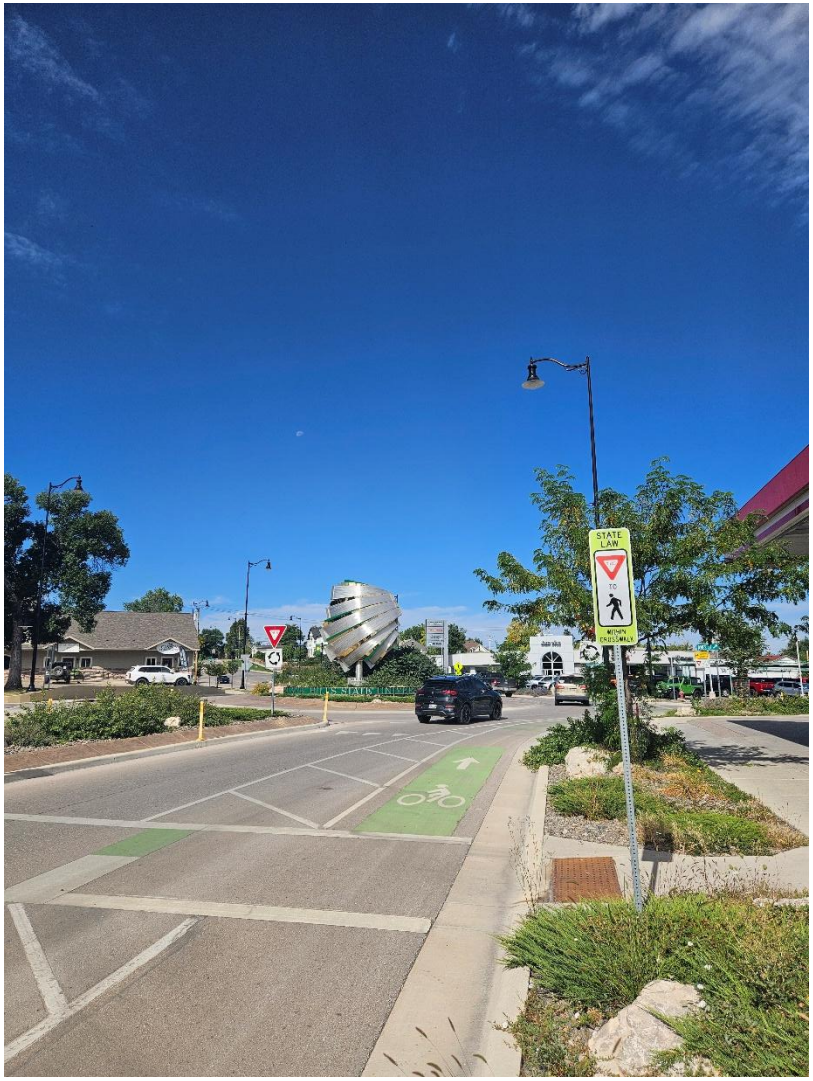
- US 85 and Exit 10 area at I-90
- US 85/North Ave/Main St/Colorado Blvd from Spearfish Canyon Pkwy to Brookview Rd and Kerwin Ln
- Jackson Blvd from Harvard Ave to 7th St
- US Hwy 85 from the City limits to Duke Pkwy
- Colorado Blvd from Sky Ridge Ave to approximately half a mile NE of US Hwy 85

The majority of the High Injury Network (North Ave, Main St, US 85, and part of Jackson Blvd) consists of four- or five-lane roadways. The exception is a portion of Jackson Blvd that is a three-lane configuration and Colorado Blvd which is a two-lane configuration. The longest High Injury Network segment, including North Ave/Main St/Colorado Blvd from Yankee St to east of Spearfish Canyon Hwy is a five-lane and four-lane undivided corridor. This corridor also includes more fatal, serious, and minor injury nonmotorized and motorcycle crashes than the other High Injury Network corridors (14 of these crashes).

Jackson Blvd stands out in that it was significantly improved in 2021, including median improvements, streetscaping, and intersection improvements. The portion of Jackson Blvd within the High Injury Network consists of both four-lane and three-lane configuration. The crashes that contribute to this portion of Jackson Blvd being on the High Injury Network were located at intersections between N 7th St and N Meier Ave. A closer look at safety along Jackson Blvd before and after improvements is provided below.

Jackson Blvd Conversion to Three Lanes and Roundabout: Safety Before and After

A significant change made to Jackson Blvd as part of the 2021 improvements included a reduction of lanes from four to three lanes from 3rd St to University Dr. The intersection at Ames St was also converted into a roundabout. Before the changes, between 2016 and 2020, this stretch of Jackson Blvd experienced an average of 4.4 crashes per year. After 2021, there have been 3.0 crashes per year. The number of severe and minor injury crashes went from 0.4 to 0.3 crashes per year. At the roundabout alone, severe and minor injury crashes went from 0.4 per year before 2021 to zero after.



Jackson Blvd roundabout

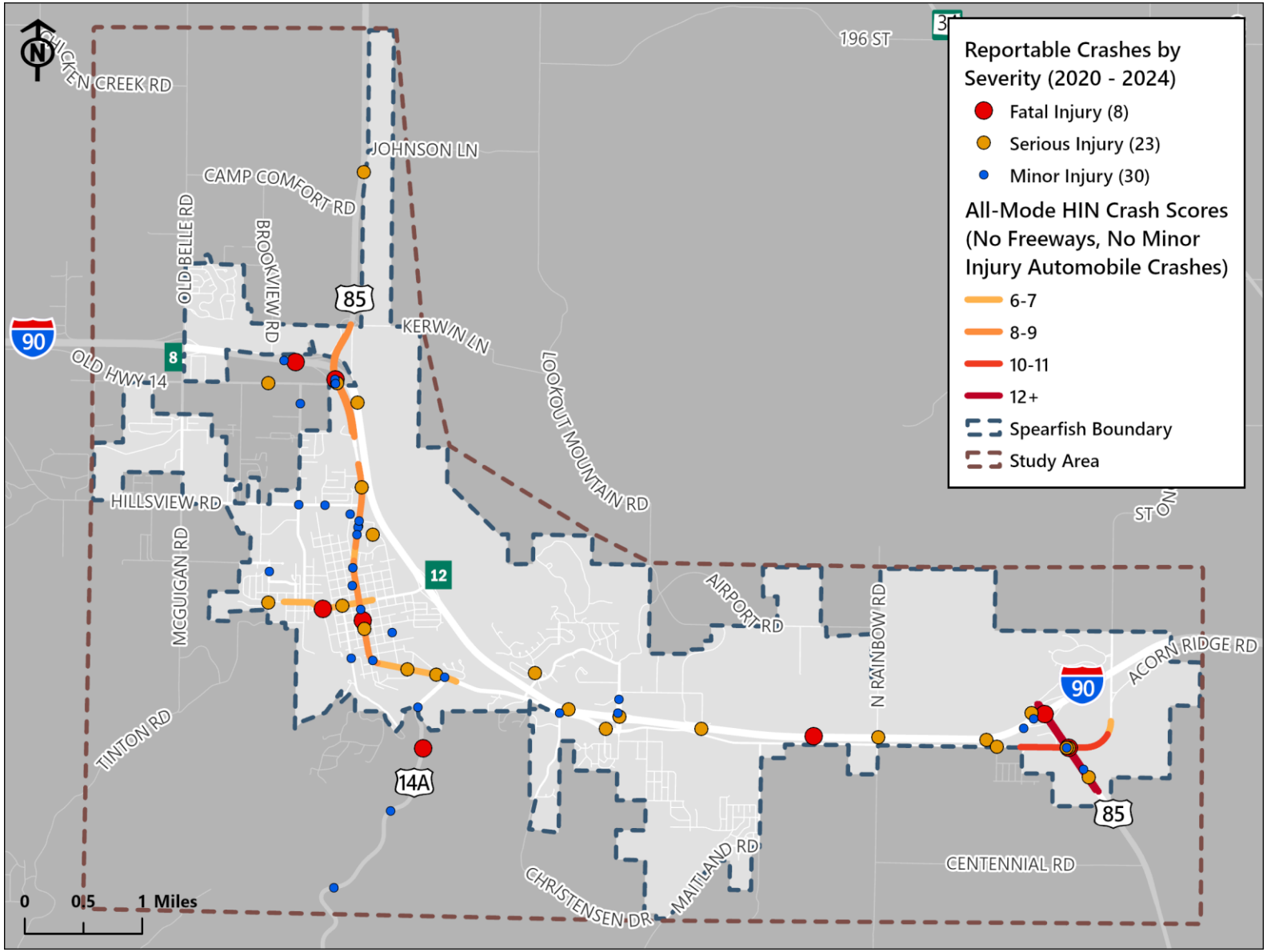


Figure 24. All-mode High Injury Network and Severe Crashes

*Excludes freeways, does not include minor injury automobile crashes in crash scores.

Figure 25. All-mode High Injury Network and Severe Crashes-Downtown

*Excludes freeways, does not include minor injury automobile crashes in crash scores.

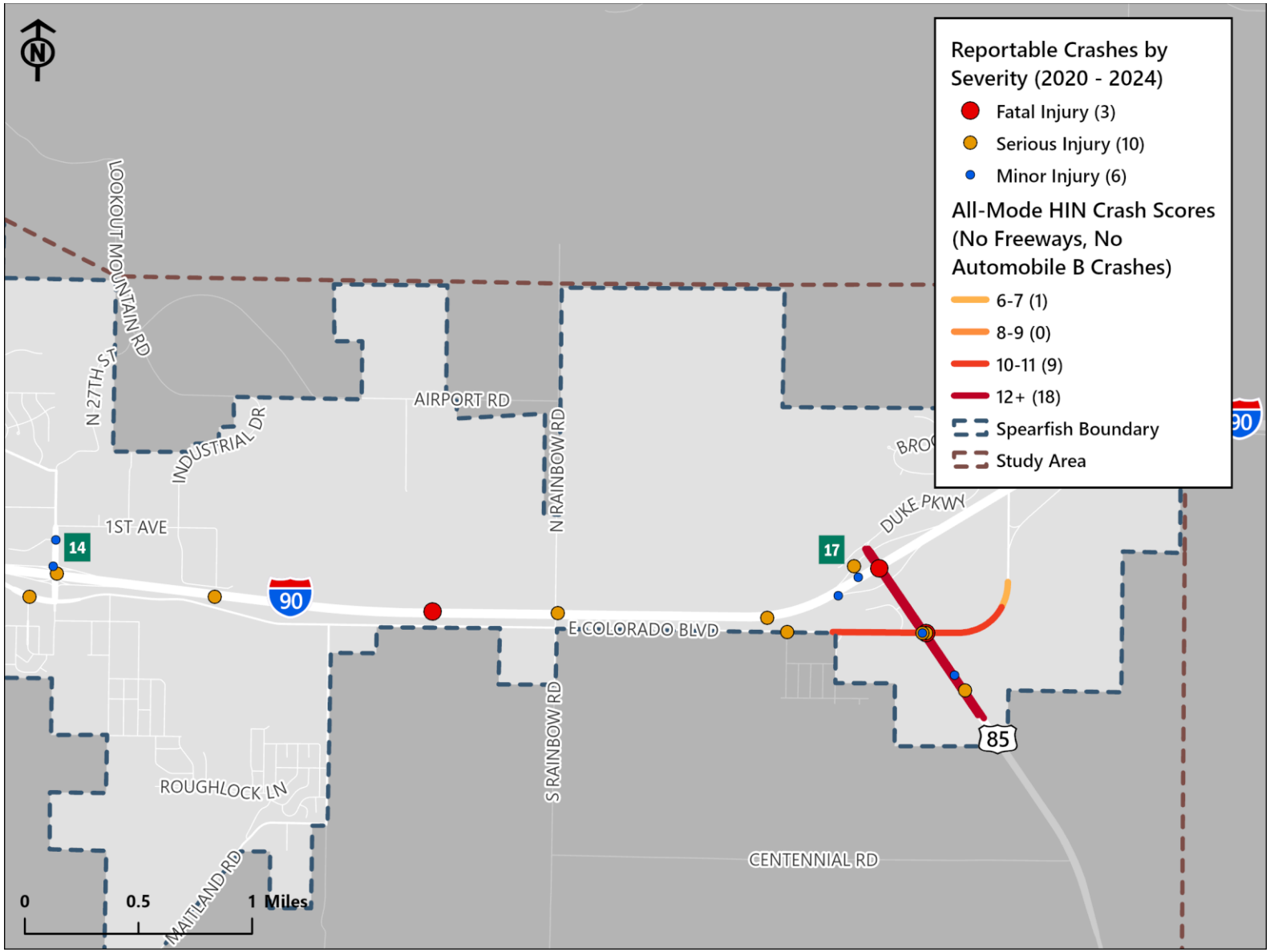


Figure 26. All-mode High Injury Network and Severe Crashes-Colorado Blvd

*Excludes freeways, does not include minor injury automobile crashes in crash scores.

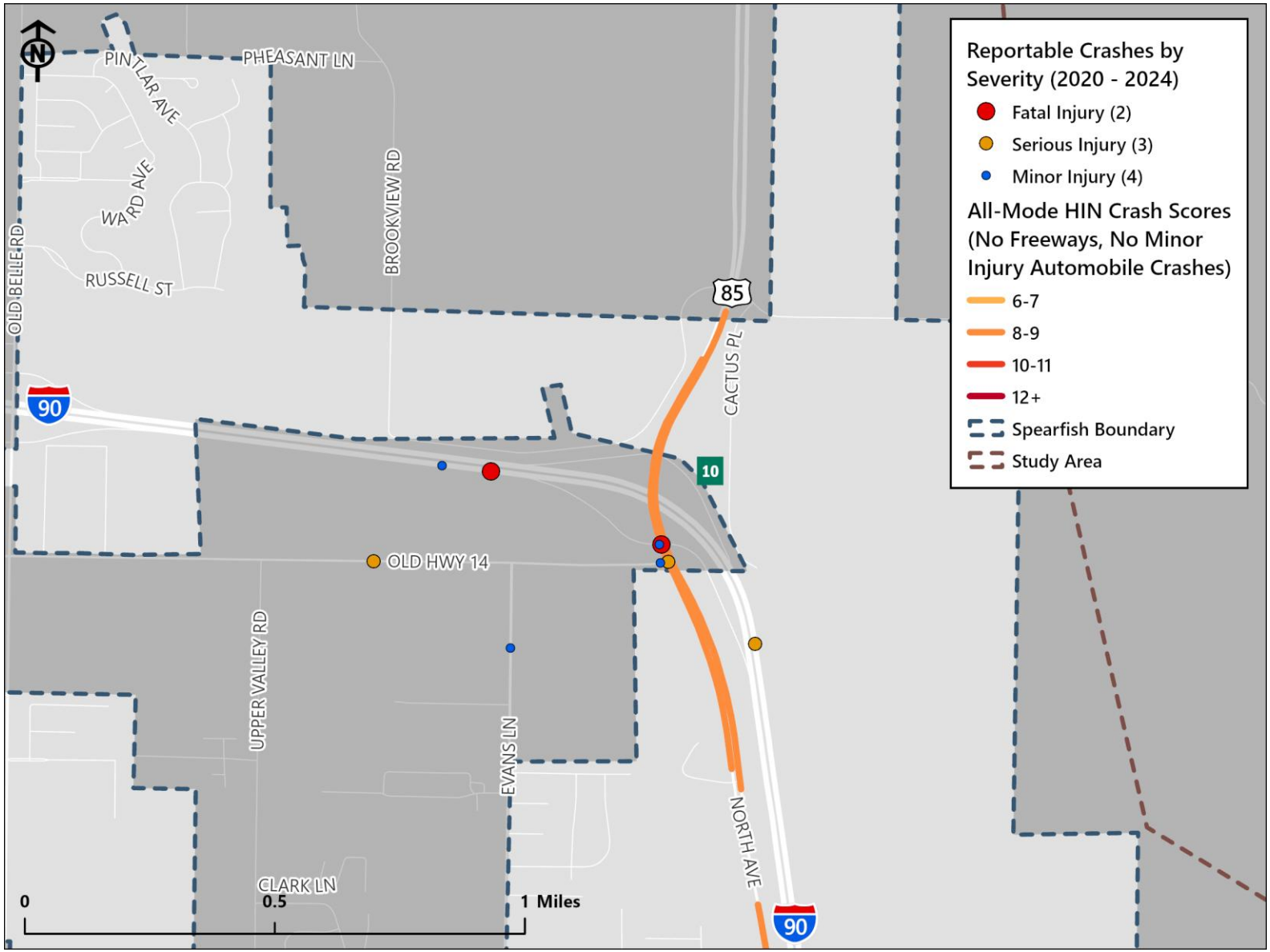


Figure 27. All-mode High Injury Network and Severe Crashes-Exit 10

*Excludes freeways, does not include minor injury automobile crashes in crash scores.

3. COMMUNITY OUTREACH AND FEEDBACK

Autumn Fest Pop-Up Event

INTRODUCTION

The goal of public engagement was to document areas of concern across the entire study area's transportation system. The results provide insight beyond the analysis of crash data in Chapter 2, by:

- Adding context to areas documented in Chapter 2,
- Helping to understand areas of less-severe crashes or areas with "near misses" that may deserve attention, and
- To help prioritize locations for improvement.

By prioritizing direct public input, and engaging a diverse range of transportation users, local knowledge has informed each phase of the Plan's development.

445 Touchpoints!

Pop-up events – 270

Online comment map – 130

Focus groups – 45

ADVISORY COMMITTEE

An Advisory Committee was established to serve as the leadership group to provide strong oversight of Plan development and to later monitor the progress of the Plan and evaluate adjustments in the future, as needed. The Advisory Committee has provided insight into each step of the Plan, such as providing recommendations for effective engagement strategies with the community and context and insight around the crash data.

The following City departments and organizations are represented on the committee:

Table 9. Advisory Committee Members

City of Spearfish SAFETY ACTION PLAN Advisory Committee Membership	
City of Spearfish Police Department	Federal Highway Administration
City of Spearfish Parks Department	South Dakota Department of Transportation
City of Spearfish Engineering Department	Northern Hills Training Center
City of Spearfish Public Works Department	Spearfish Ambulance
City of Spearfish Planning Department	Black Hills State University
City of Spearfish Fire Department	Biking Community
City of Spearfish Planning Commission	K-12 Public School District
Spearfish City Council	Prairie Hills Transit

POP-UP ENGAGEMENT

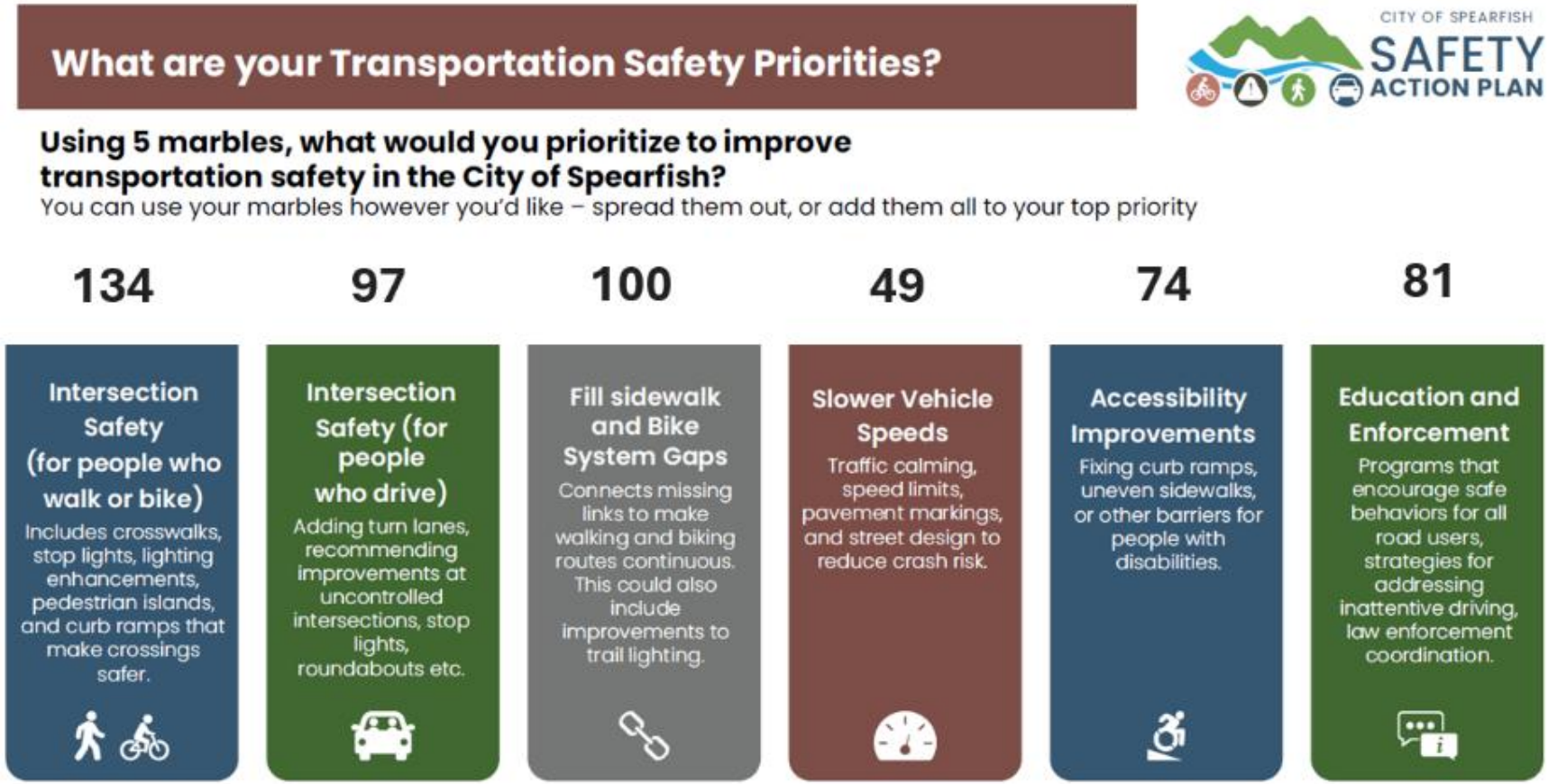
Streets throughout the Spearfish community should be safe, welcoming places for all travelers, including people who walk, bike, drive, take transit, or roll. In-person public engagement efforts helped to identify issues and perceived transportation safety concerns from a wide range of residents. The early fall provided several ideal opportunities to engage community members at local events. These engagement events were designed to connect with residents of all ages to discuss transportation safety concerns, and pinpoint areas across the City of Spearfish with perceived safety risks.

City staff and Plan consultants attended Spearfish's annual Autumn Festival for an all-day pop-up engagement event. Additionally, a pop-up was hosted at Black Hills State University to hear directly from students and young adults. Pop-up engagement connected with more than 270 respondents to understand and document local road safety challenges and transportation priorities.

Youth and families were actively engaged via tactile activities, with prizes and giveaways for all youth who answered a bicycle safety trivia question. In addition to mapping areas of concern, respondents were asked to identify their top transportation safety priorities within the City of Spearfish. The combined results of the activity from Autumn Fest (Saturday, September 13, 2025) and the Black Hills State University (Monday, September 29, 2025) pop-up events are summarized below.

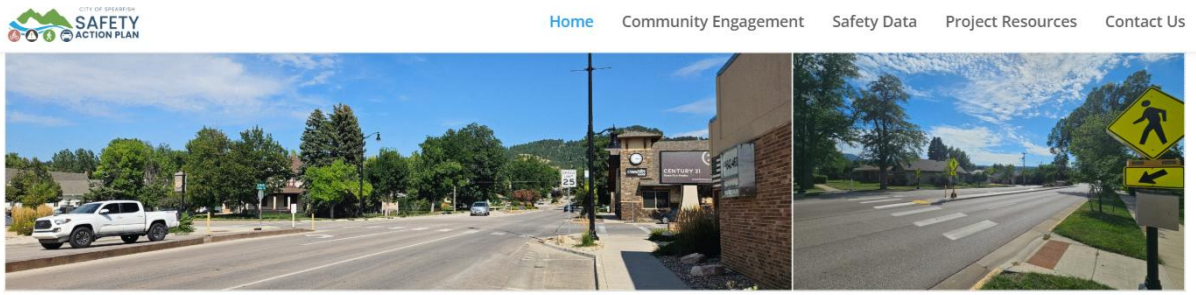
Pop-up event at Autumn Fest on September 13, 2025.

The image below shows the activity board used to identify transportation safety priorities along with the final tally of results from the marble activity:



DIGITAL ENGAGEMENT

The Safety Action Plan developed a standalone project website to share information about the plan development process and gather feedback from the community. The website provided an overview of the Plan, the schedule to develop the Plan, contact information, an interactive safety data map as well as the online comment map. The online comment map asked residents to share local knowledge and identify locations where they feel unsafe walking, biking, or driving. The website and online comment map were actively promoted through social media posts, local media, and via the City website.



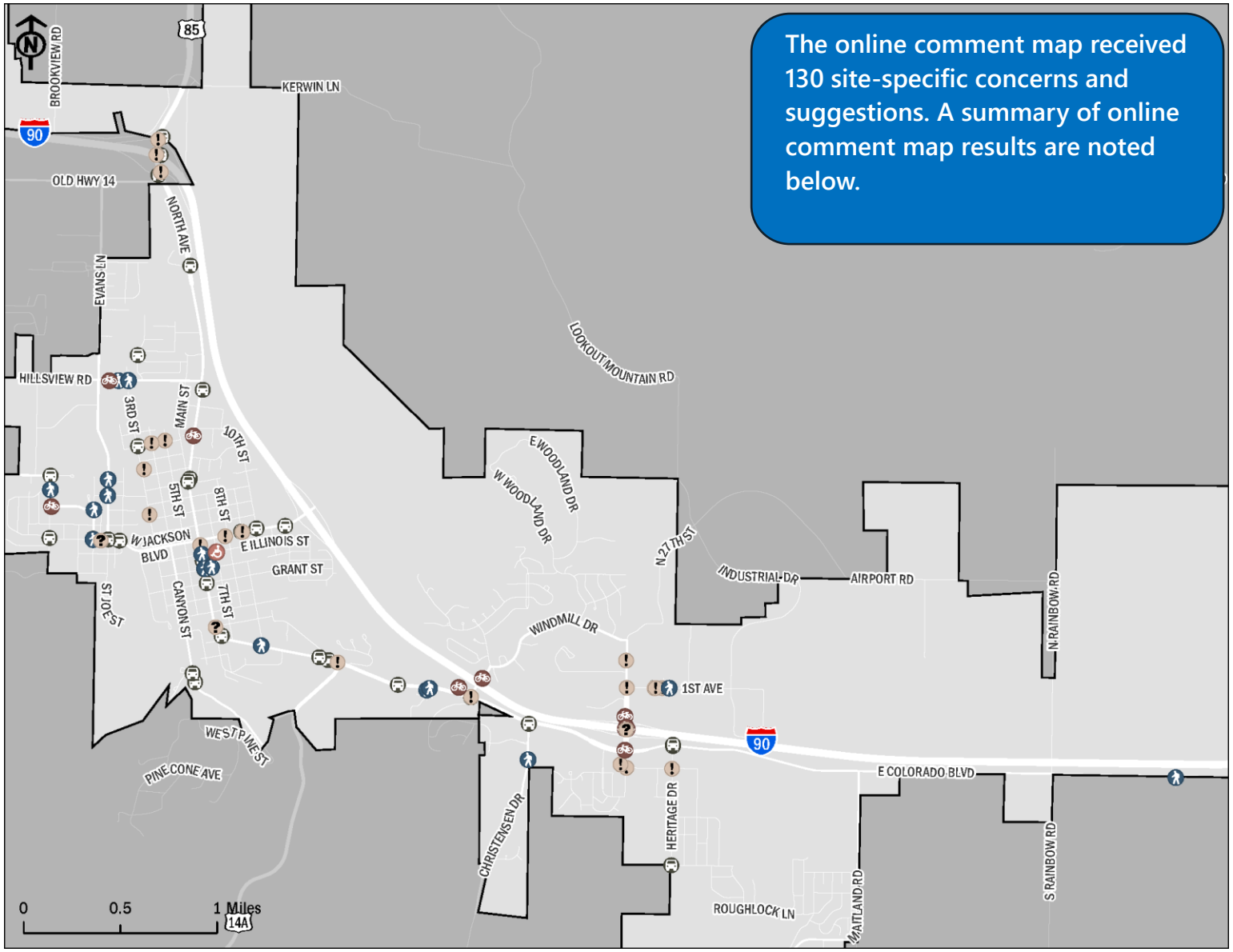


Figure 28. Online Comment Map Results

This view shows all comments. There are no comments beyond the area displayed.

Online Comment Map: As shown in **Figure 28**, the interactive online map provided an easy opportunity for residents to share their transportation issues and ideas. The comment map asked for public feedback using the following categories:

- Driving Concerns (44 comments)
- Safety Concerns (29 comments)
- Pedestrian Concerns (24 comments)
- Bicycle Concerns (20 comments)
- Other Comments (9 comments)
- Accessibility Concerns (4 comments)

Key Takeaways from the Online Comment Map

A summary of key takeaways from online comment map results is provided below. To learn more about these safety concerns and where they are happening, see the public comment tables included in **Appendix A.**

Vehicle Safety

- Visibility, obstructions and intersection safety concerns
- Intersection design or sight distance concerns (e.g. Jackson Blvd and 10th St)
- Excessive vehicle speeds are dangerous for all road users
- Confusing or faded road markings or signage
- Congestion and peak-time traffic concerns

Bicycle and Pedestrian Safety

- Lack of sidewalks and safe pedestrian intersection crossings
- Vehicle speeds hinder multi-modal safety
- Drivers fail to yield to pedestrians
- Sidewalk and trail connectivity concerns
- Facilities are inadequate or blocked by vehicles

FOCUS GROUP MEETINGS

In addition to gathering feedback broadly from the community via in-person and virtual input opportunities, the City of Spearfish hosted targeted focus group discussions to understand preferences and priorities for safety solution strategies. **Table 10** provides a summary of focus group feedback. A more detailed summary of each focus group meeting is included in **Appendix A**.

Table 10. Focus Group Feedback Summary

Focus Group	Feedback Summary
Spearfish Senior Center	• Emphasis on educating both young and older drivers to improve safety for pedestrians. • Consider increasing police presence where feasible to reduce vehicle speeds and distracted driving. • Review and improve sight lines at intersections.
Northern Hills Training Center	• Winter driving hazards; sanding priority on Harvard, Hill St, Jackson Blvd • Pedestrian safety concerns with drivers not slowing at crosswalks; enforcement concerns. • Emphasized the importance of roadway and sidewalk connections, as well as ADA ramp and sidewalk compliance.
Bicycle Advocacy Group	• Interest in demonstration projects (e.g., striping, temporary crossings). • Main St in downtown is not bike friendly. • Improve safety and reduce conflict points at 10th St & Jackson Blvd • Consider Safe Routes to School projects, especially for Transportation Alternative program funding. Example: sidewalk gap on north side of Hillview across from schools. • Interest in bicycle-specific master plan.
Emergency Responders	• Line of sight improvements: most cited issue in accident reports. • Peak transportation safety concerns during summer tourism, motorcycle rally week, summer weekends. • Jackson Blvd: Tall vegetation within medians can obstruct visibility. • Social media was noted as the most successful outreach method.
Black Hills State University (BHSU) Students	• Concerns with the absence of lighting or signage at key pedestrian crossings. • Pedestrian safety concerns at the roundabout on Jackson Blvd: Drivers fail to yield; frequent near misses. • Students noted limited public safety messaging from the university.
Mothers With Young Children	• West Elementary area: Unsafe pedestrian crossings partly due to traffic between college and school. • Creekside School: One-way in and out causes congestion; limited options for traffic flow. • Parents are hesitant to allow biking due to traffic and lack of safe routes. • Lack of sidewalks & crosswalks, especially in residential areas and near daycares. • Desire to add crosswalks, signage, and flashing lights at key intersections.

KEY THEMES OF COMMUNITY ENGAGEMENT

The following themes regarding transportation safety in the City of Spearfish have been identified through the community engagement process.

Table 11. Public Engagement Themes

Theme	Notes
PEDESTRIAN & BICYCLE SAFETY	
Address Sidewalk and ADA Gaps/Deficiencies	Many residents noted a lack of sidewalks (e.g., along 27th St, First Ave., Christensen Dr.*) and poor ADA ramp transitions.
Expand and Enhance Pedestrian Crossings	Many community members are in favor of pedestrian crossings with flashing beacons throughout the City.
Mitigate Hazards on Shared Paths and Bike Routes	Received suggestions to establish and enforce regulations for high-speed electric devices (e-bikes and scooters) on sidewalks and shared paths.
Improve Bike Route Connectivity and Safety	Community requested creating safer bicycle facilities on major corridors like Colorado Blvd and Old Hwy 14* and address bicycle safety along Jackson Blvd. Biking downtown is unsafe and is avoided by many.
INTERSECTION SAFETY AND TRAFFIC BEHAVIOR	
Improve Sight Lines at Intersections	Address community concerns regarding numerous visibility issues caused by vegetation and the impact of roadway beautification medians. (e.g., Jackson Blvd and 10th St, St Joe St and Jackson Blvd)
Control Uncontrolled and Confusing Intersections	Consider stop signs or four-way stops at uncontrolled high-risk intersections (e.g., Jonas St and Jackson Blvd) and review inconsistent right-of-way signage on secondary streets.
Mitigate Safety Issues on High-Volume Corridors	Evaluate high-crash, high-traffic corridors like Jackson Blvd and Colorado Blvd for major safety improvements (e.g., roundabouts, pedestrian crossings, reduced conflict intersections) to manage high speeds and turning movements.
Address Confusing or Dangerous Merging/Turning	Evaluate complex or high-crash interchanges, particularly near Exit 10, Exit 12, and the Walmart area on 1st Ave, where poor visibility and difficult left turns lead to frequent near-misses and crashes.

Theme	Notes
SCHOOL SAFETY	
Prioritize Safe Routes to School (SRTS) Projects	Focus on paving, filling sidewalk gaps, and improving crossings along key routes, such as N Canyon St to Creekside Elementary (Rad Route to School) and the Hillsview Rd sidewalk gap.
Manage School Zone Congestion and Access	Review and improve traffic flow and safety at congested school drop-off and pick-up points, particularly the one-way in and out system at Creekside School, and ensure safe crossings for students (e.g., West Elementary area).
Enhance Crossings Near Schools and Campus	Consider installation of flashing beacons or safer crossings at high-pedestrian-volume areas near the BHSU campus (e.g., across South Dakota Way by Young Sports & Fitness Center) and ensure crosswalks are not placed in locations that obstruct sight lines or encourage drivers to stop in the crosswalk.
MISCELLANEOUS AREAS OF CONCERN	
Implement Comprehensive Public Awareness and Education	Prioritize education, utilizing social media and focused programs for young and older drivers, to improve understanding of new infrastructure (roundabouts) and traffic laws (pedestrian right-of-way) as well as bicycle safety and helmet campaigns.
Establish a Policy for Infrastructure Improvements with Paving	Define a clear policy on the level of bike and pedestrian infrastructure required when existing roadways undergo pavement improvements or rehabilitation.
Widespread Speeding and Aggressive Driving	Speeding is a persistent problem across many areas, including Jackson Blvd, Colorado Blvd, 3rd St, and secondary cut-through streets off Main Street. This is a safety concern for all transportation modes.
Police Staffing and Enforcement Limitations	Limited police presence and staffing is an impediment to speed enforcement and ensuring compliance at crosswalks; some suggested considering a dedicated speed team or utilizing automated enforcement.
Growth and Tourist Traffic Impacts	Congestion and safety risks are tied to new development and high-risk periods during summer tourism and motorcycle rally weeks, which bring an influx of out-of-state drivers.
Visibility of Markings and Signage	The durability and visibility of pavement markings are recognized as important issues, with requests for more reflective, longer-lasting materials and the removal of confusing, faded, or incorrect striping.

**Community members' comments include areas and roads under county jurisdiction.*

4. VISION AND GOALS

Main Street and Grant Street

VISION & GOALS

The City of Spearfish seeks proven strategies to achieve a vision for a safer regional transportation system for all users. The Safety Action Plan **establishes a vision of zero traffic-related fatalities and serious injuries** on streets within the City limits, with specific goals as shown:

Achieving this vision and both goals requires the City's leadership, staff, and even residents, to prioritize safety, and to collaborate with regional partners to do the same. Achieving the vision requires priority and focus on physical engineering efforts and non-engineering efforts such as educational campaigns, high-visibility enforcement, agency collaboration, and policy refinement. **The City of Spearfish's vision will be measured on an annual basis starting in 2026, by the percent change in fatal and serious injury crashes for all modes of travel and change in all crashes for nonmotorized modes.**

Vision

Zero traffic-related fatalities and serious injuries in Spearfish regardless of how you travel—by foot, bike, assisted device, or vehicle.

Goals

1. A 50% or more reduction in crashes of **all** modes of travel from 2020-2024 historic crash data to three (3) or fewer annual fatalities and serious injuries by 2040.
2. A 50% reduction in crashes of **all** nonmotorized crashes from 2020-2024 historic crash data to one (1) or less by 2040.

Evaluation & Tracking

The City of Spearfish will develop an annual report to evaluate progress toward this plan's vision and goals. The yearly reporting will be posted on the City's website and will include the status of project implementation and the most recent crash statistics. The City will convene a meeting of the Plan Advisory Committee annually to review the report.

Specific performance measures will include:

- **Five-year rolling average of all fatal and serious injury crashes, by mode and location AND the five-year rolling average and severity of nonmotorized crashes, by location.**
- **Number of safety engineering projects (proven safety countermeasures) implemented by strategy, location, and investment amount.**
- **Number of non-engineering countermeasures implemented by type of strategy, location (if applicable), and investment amount.**

See **Appendix E** for an annual reporting template that supports the City's efforts in evaluating progress in achieving its vision for transportation safety.

5. IMPLEMENTATION

Roundabout at Jackson Boulevard and Ames Street

INTRODUCTION

This chapter documents engineering countermeasures, funding opportunities, non-engineering countermeasures, and cultural actions the City will strive to undertake to carry the results of the Plan's safety assessment (Chapter 2) and community feedback (Chapter 3) into the future.

The first two sections identify City and SDDOT engineering countermeasures, or project concepts that should be undertaken in the study area. Each countermeasure is presented as follows:

- Countermeasure description
- Research support or data for selected countermeasure
- Safety assessment support for countermeasure
- Community support for countermeasure as identified through feedback provided during Plan development

Note that some countermeasures were derived solely from the safety assessment or through community feedback; not all countermeasures were derived from both factors.

With the exception of the recommended improvements to Colorado Blvd between 27th St and Colorado Loop, all City recommended countermeasures are newly developed and originate solely from the development of this Plan. The SDDOT recommended countermeasures were previously developed through SDDOT studies, though they are also supported by development of this Plan.

AREAS OF FOCUS FOR NONMOTORIZED MOBILITY AND CONNECTIONS

Sidewalks and multiuse trails separated from the roadway are the preferred accommodation for nonmotorized modes of travel. Sidewalks and multiuse trails provide many benefits beyond safety, including mobility and healthier communities. In addition to reducing walking (or rolling) along roadway crashes, sidewalks and multiuse trails reduce other nonmotorized-related crashes. According to FHWA, roadways without sidewalks are more than twice as likely to have pedestrian crashes as sites with sidewalks on both sides of the street[6]. Establishing and enhancing street crossings at intersections and other locations to strengthen sidewalk and trail connections is key to supporting the nonmotorized network in Spearfish. Strengthening the nonmotorized network is also strongly supported by the City's Adventure Ahead Comprehensive Plan, especially the following goals:

- Incorporate Multi-Modal Needs in Road Updates
- Downtown Traffic Calming
- Increase Connectivity and Access

[6] FHWA, "Safety Benefits of Walkways, Sidewalks, and Paved Shoulders", https://highways.dot.gov/sites/fhwa.dot.gov/files/2022-06/walkways_brochure.pdf#:~:text=In%20addition%20to%20reducing%20walking%20along%20roadway,numerous%20midblock%20crossing%20crashes%20can%20be%20eliminated

Several City and SDDOT engineering countermeasures are described in this Chapter and include provisions intended to improve safety, mobility and connections for nonmotorized modes. The following areas were identified through the safety assessment or community input as areas with challenges for nonmotorized transportation. Under the description of each area, context about support for improvements to nonmotorized mobility and connections is noted, whether from the safety assessment or community input.

- **Colorado Blvd from 27th St to US 85**

  The far western edge of this corridor is on the High Injury Network mainly due to the high density of severe crashes at Colorado Blvd and US 85. Comments were received from the community about the lack of any nonmotorized accommodations along this entire corridor. Improvements to this corridor are further detailed in this Chapter.

- **Connections around Schools**

  Hillsview Dr adjacent to Spearfish High School and North Ave

  While not on the High Injury Network, two minor injury nonmotorized crashes have occurred within this corridor between 2020 and 2024. The corridor is also adjacent to a portion of the High Injury Network along North Ave. Community input was received about concerns with traffic speeds and the need to safely accommodate a high frequency of pedestrian and bicycle traffic. The most documented nonmotorized users from community input include students and recreational bicyclists. Crossing improvements within this corridor are described in this Chapter.

  Crossings at West Elementary

  The mothers with young children focus group specifically mentioned concern about the safety of crossings between West Elementary and surrounding development, this concern was supported by follow-up discussion with school administration. Crossing and related improvements are described in this Chapter.

  Improving the "Rad Route to School" at Creekside Elementary

  Input from the bicycle advocate focus group and further discussion with school district leadership noted the importance of improving the currently unpaved "Rad Route to School" on the west side of Creekside Elementary. A description of this project is included in this Chapter.

- **North Ave between Hillsview Dr and Rushmore St**

  This area is adjacent to the previous corridor, to the southeast. This corridor is on the High Injury Network. It also includes a five-lane roadway that the safety assessment has shown to have sight line issues due to multiple travel lanes and high ADT, especially at intersections with stop signs. Community input, especially from high school students, noted concerns with navigating this area on foot, bike, and in a vehicle. Specific project improvements are identified in the chapter, including a sidewalk extension on the east side

of North Ave, a crossing at the Hillsview Dr and North Ave intersection, a median on North Ave, and speed signage improvements.

- **Rushmore St and N 10th St corridor from North Ave to Jackson Blvd**

  Extensive community input noted the importance of this corridor for both nonmotorized and motorized travel. The corridor is used as an important route between North Ave and Jackson Blvd near Exit 12. Specific groups commenting on the importance of this route for nonmotorized travel included members of the Senior Center and the bicycle advocacy group. General community comments from the online map and from Autumn fest also mentioned the importance of this connection. Specific needs expressed from the community included upgraded sidewalks on both sides of the street, improved sidewalk ramps and crossings and the need for bicycle accommodations.

  The City currently has improvements programmed for this corridor in 2026. Improvements include the following:

  - Replacement and improvement of sidewalks on both sides of the corridor, with the potential for one side to be widened to six feet
  - Improved sidewalk ramps and pedestrian crossings to meet Americans with Disabilities Act (ADA) requirements
  - Retention of on-street parking due to high parking demand
  - City utility improvements (water, sanitary sewer, and storm sewer)
  - Realignment of 10th St and Michigan St

  These improvements will help to further pedestrian mobility and access throughout the corridor. While the improvements do not include specific bicycle accommodations, roadway width limitations and on-street parking can help to reduce vehicular speeds. These roadway width limitations may also encourage through-traffic between North Ave and Jackson Blvd near I-90 Exit 12 to use Main St and Jackson Blvd instead of Rushmore St and 10th St.

- **Traffic Calming in Downtown**

  While traffic calming was a general theme from community input, much of it was centered on Main St in Downtown. This theme was heard from most of the focus groups and was prevalent throughout the online comment map and input at Autumn Fest. This chapter includes a description of a three-lane demonstration project for the entirely of Main St., including Downtown. This goal of this project as later detailed is to improve safety for all modes by calming traffic and improving sight lines from all perspectives. The corridor is on the High Injury Network and includes both motorized and nonmotorized severe crashes.

  Additional public input from Autumn Fest and the bicycle advocacy focus group noted concerns for nonmotorized users at large intersections within the Downtown and in adjacent neighborhoods, as it can be harder for vehicles to see nonmotorized users and

comments noted higher traffic speeds entering the intersections. Input was also provided about speeding

CITY OF SPEARFISH ENGINEERING COUNTERMEASURES

The following countermeasures were developed to address key safety needs with the City of Spearfish's transportation system, including streets, sidewalks, crossings, and trails. All City recommended countermeasures are documented in further detail in **Appendix D,** including the project description, graphic layout, and cost estimate detail. Concept-level graphics are included in the appendix based on readily available information. Further planning and detailed design are required for each countermeasure.

North Ave Improvements

Several recommended improvements are detailed in this section to improve safety along North Ave beginning at Yukon Pl in the north and extending south to Main St. Some recommended improvements also extend to Colorado Blvd southeast of Downtown.

Safety Assessment and Community Support

North Ave is included on the High Injury Network and includes characteristics supported by the safety assessment noted to increase the likelihood of severe crashes, including a high traffic volume, five lane roadway with many stop-sign controlled intersections. Feedback from the mothers with young children, high school students, and bicycle advocacy focus groups consistently highlighted concerns about speeding along this corridor and safety for nonmotorized users.

North Ave and Colorado Blvd Speed Signage Improvements

This project is recommended along North Ave and Colorado Blvd at the following locations:

- North of Yukon Pl (transition to 35 mph)
- North of Hillsview Rd (transition to 25 mph)
- East of Lariat Dr (transition to 25 mph)
- East of Spearfish Canyon Rd (US 14A) (transition to 35 mph)

Enhanced speed limit signage is needed to improve driver awareness and compliance with posted speed limits. The project improvements would include enlarged "Reduced Speed Ahead" and "Speed Limit" signs along this corridor to help

increase attentiveness and promote safer travel conditions for all users. Signage is recommended on both sides of the southbound lanes for North Ave and on both sides of the westbound lanes for Colorado Blvd. As part of the improvements, the City is also considering the installation of dynamic speed signs to provide real-time feedback to drivers and encourage speed reduction.

While no crash reduction factor (CRF) has been established for these specific treatments, research and best practices indicate that enhanced signage and speed feedback systems are effective tools for promoting driver awareness and reducing vehicle speeds. This project reflects Spearfish's ongoing commitment to proactive roadway safety and responsible traffic management.

North Ave Median Improvements

Median improvements are recommended along North Ave and Main St from Yankee Street to Kansas St to improve safety and traffic operations. The project would include a raised concrete median while maintaining 11-foot travel lanes, preserving efficient vehicle movement through this important corridor. Where appropriate, a six-inch recessed edge strip is recommended to provide additional delineation and help guide drivers more effectively. A key component of the project is limiting left-turn access at locations where alternate access routes exist. Reducing conflict points in this way is a proven strategy for improving roadway safety and minimizing crash risk. With an estimated crash reduction factor of 39%, these improvements are expected to significantly enhance the predictability and safety of travel along North Avenue.

North Ave Sidewalk Connection

This safety project is located along North Ave between Hillsview Rd and Rushmore St. The project would include a five-foot sidewalk on the east side of North Ave to create a continuous pedestrian route in an area that currently lacks complete facilities. This improvement would enhance walkability for nearby neighborhoods, strengthen connections to key destinations, and provide a safer, more comfortable option for pedestrians traveling along the corridor. In addition to the new sidewalk, the Project recommends the addition of a new crosswalk on the south side of the intersection with pedestrian actuation buttons. These enhancements would make it easier for users to activate crossing phases and improve the overall visibility and safety of pedestrians at these intersections. With an estimated crash reduction factor of 40%, the project represents a meaningful investment in reducing pedestrian risk while simultaneously expanding multimodal access within the community.

North Ave Gateway Signage

Gateway signage is recommended along North Ave north of Yukon Pl to enhance driver awareness and establish a clearer sense of arrival into Spearfish. The project would include a City-branded gateway feature that serves both as a visual identifier and as a reminder for motorists to remain attentive as they enter a more developed area of the corridor. While no crash reduction factor is assigned to this type of improvement, gateway signage is widely recognized as an effective measure for increasing attentiveness and reinforcing safe driving behavior. By creating a more defined transition zone, the project supports the City's ongoing efforts to strengthen corridor identity and promote a safer travel environment for all users.

Main St and Colorado Blvd Striping Demonstration

The Main St and Colorado Blvd striping improvements Project is recommended along Main St and Colorado Blvd from Jackson Blvd to US 14A (Spearfish Canyon Rd) to improve safety and mobility for all users. This is a demonstration project recommendation, not a permanent project recommendation.

What is a Demonstration Project?

Demonstration projects are intended to demonstrate and promote innovate solutions that lead to a safer transportation. As opposed to a permanent project, they are intended to be tested to gauge the level of improvements to safety over a certain time period. The design and construction of demonstration projects are intended to be temporary or relatively easy to remove in case the demonstration project does not achieve its intent for safety improvements.

The project includes two build options that both involve restriping the existing roadway into a three-lane configuration with a center two-way left turn lane. This "road diet" design is aimed at reducing crash rates, improving traffic flow, and creating a safer environment for vehicles, pedestrians, and bicyclists. Both options would utilize 11-foot lanes, 6-inch painted (non-recessed) striping, and are expected to achieve a Federal Highway Administration (FHWA) CRF of 47% due to the three-lane conversion. Both alternatives are designed to enhance corridor operations, improve user safety, and support the City's long-term transportation goals for Main St and Colorado Blvd to US 14A (Spearfish Canyon Rd). The provision of a center two-way left turn lane provides traffic with a space to make a left turn without impeding traffic on a through-lane, as is the case with the current four lane configuration.

The first build option focuses on restriping Main St and Colorado Blvd without a designated bike lane, maintaining vehicle travel lanes and the two-way left turn lane to enhance safety and reduce turning conflicts. The second build option incorporates dedicated 6-foot bike lanes on both sides of the corridor, except from Jackson Blvd to Grant St (where Downtown angled parking exists), promoting multimodal connectivity and supporting active transportation. This option is associated with a higher potential safety benefit, with an FHWA CRF of up to 57% when factoring in the inclusion of bike lanes. Refer to **Appendix D** for detail on the full street section, including travel lanes, parking, etc.

A key reason the project is proposed as a demonstration project is to field-trial the viability of reducing the number of through lanes and adding a center two-way left turn lane. The Federal Highway Administration advises that roadways with 20,000 vehicles per day or less may be good candidates for a road diet[7]. In 2024, Main St had a recorded average daily traffic of 11,380 vehicles and Colorado Blvd had 10,475 vehicles between Hillcrest St and US 14A (Spearfish Canyon Rd). This indicates the current potential of available traffic

[7] Federal Highway Administration, "Road Diet Feasibility Determination," *Road Diet Informational Guide*, November 2014, https://highways.dot.gov/safety/other/road-diets/road-diet-informational-guide/3-road-diet-feasibility-determination#:~:text=Knapp%2C%20Giese%2C%20and%20Lee%20have,from%208%2C500%20to%2024%2C000%20vpd.&text=The%20FHWA%20advises%20that%20roadways,larger%20cities%20with%20satisfactory%20results

capacity. The last document that evaluated forecasted traffic on Main St. was the Spearfish Area Master Transportation Plan in 2011 that forecasted Main St reaching 20,000 vehicles per day by 2035. The City will need to closely monitor crash statistics and roadway capacity as the project is field-tested. Additional capacity analysis outside the scope of this Plan may be warranted to update traffic forecasts and understand the viability of traffic to use parallel routes, such as N 7th St or even I-90.

Main St looking north near Grant St

Safety Assessment and Community Support

Main St and the subject segment of Colorado Blvd are included on the High Injury Network, and like North Ave, includes characteristics supported by the safety assessment noted to increase the likelihood of severe crashes, including high traffic volumes and a four-lane roadway with many stop-sign controlled intersections. Community feedback from the Autumn Fest event, online comments, and several focus groups emphasized the need for a safer downtown experience.

Case Study: Three-Lane Demonstration on Main Ave in Bismarck, ND

Main Ave in Downtown Bismarck, ND was re-striped from four to three lanes as a demonstration project with the goal of increasing walkability and creating a safer environment for on-street parking. Traffic volumes ranged from 8,700 to 14,870 ADT along the corridor before implementation. After the lane conversion, traffic reductions in the corridor were marginal. Parallel roadways were evaluated, with one gaining 22% during the demonstration period (a higher speed arterial). Crash data showed that during the demonstration period rear-end crashes increased and angle crashes decreased. The increase in rear-end crashes was attributed to signal timing between signalized intersections. The decrease in angle crashes was attributed to improved sight distance at intersections with the addition of the center two-way left turn lane. The demonstration period lasted from 2016 to 2019, when the three-lane conversion was made permanent.

North Dakota Department of Commerce

Takeaways

- Closely monitor traffic volumes and crash statistics on the subject corridor and parallel corridors during the demonstration period.
- Review parallel corridors to understand if changes need to take place to improve traffic flow or safety.

Jackson Blvd Dynamic Speed Signs

This safety improvement project is recommended along Jackson Blvd just west of 3rd St and between St Joe St and Ames St and would focus on reducing vehicle speeds and increasing driver awareness. The project would incorporate the installation of dynamic speed signs on both sides of the roadway. These electronic signs display real-time vehicle speeds to alert drivers when they exceed the posted limit, encouraging voluntary compliance and promoting safer driving behavior.

While there is no established FHWA CRF for this type of improvement, dynamic speed signs have been shown through numerous studies to be effective in reducing average vehicle speeds and improving attentiveness among drivers. This project represents a proactive approach by the City to enhance neighborhood safety and create a calmer, more predictable traffic environment for residents, pedestrians, and other roadway users.

Safety Assessment and Community Support

Much of Jackson Blvd west of Main St is identified on the High Injury Network, with the exception of about two blocks to the east of Main St. Community feedback, gathered online and during the Autumn Fest pop-up, emphasized speeding as a major concern along this segment.

Jackson Blvd & Jonas St Signage

These improvements are recommended at Jackson Blvd and Jonas St through the installation of all-way stop control. The project would convert the existing intersection into a 4-way stop, requiring all approaching traffic to come to a complete stop before proceeding. This change is designed to improve safety by reducing the potential for right-angle and turning collisions, as well as enhancing predictability for both motorists and pedestrians. According to FHWA guidance, implementing an all-way stop at intersections has an estimated CRF of 68%, indicating a significant potential decrease in overall crashes. By improving traffic control and ensuring more consistent driver behavior, this project supports the City's ongoing commitment to creating safer intersections and reducing crash risk in residential areas.

Community Support

Focus group comments from mothers with young children as well as online comments show safety concerns at this intersection. Two severe crashes also occurred at this intersection between 2020 and 2024; however, both were related to behavioral issues, such as the driver's health.

Hillsview Rd Crossing Improvements

Multiple pedestrian safety improvements are recommended along Hillsview Rd between Main St and St. Joe St:

- At the midblock crossing between Spirit Ln and Main St on Hillsview Rd, a recommended project would remove and replace the existing pedestrian bridge and introduce a redesigned crossing that meets ADA requirements and includes clearer visibility for both nonmotorized and motorized users. A central pedestrian refuge island is advised to allow users to cross the roadway in two stages, and the posted speed limit at the crossing would be reduced to 15 mph to create a safer, slower-speed environment.

- At the current recreational path crossing on the east side of the Hillsview Rd and Stagebarn Circle intersection a central pedestrian refuge island is also recommended to allow users to cross the roadway in two stages.

The improvements carry substantial documented safety benefits. The pedestrian refuge island is associated with a nine percent reduction in all crash types and an 86% reduction in fatal vehicle-to-bike and vehicle-to-pedestrian crashes. Combined, these treatments would significantly enhance nonmotorized user protection adjacent to Spearfish High School and Middle School and advance Spearfish's commitment to creating safer multimodal corridors.

Community Support

Community input was received about concerns with traffic speeds and the need to safely accommodate a high frequency of pedestrian and bicycle traffic. The most documented nonmotorized users from community input include students and recreational bicyclists.

South Dakota Way Pedestrian Crossing Improvements

Pedestrian safety improvements are recommended along South Dakota Way at the crossing to Black Hills State University. The project would realign the existing pedestrian crosswalk to the west to eliminate its current skewed configuration, which can limit visibility and increase crossing distances for pedestrians. By straightening the crosswalk, the Project would create a more direct and predictable path for students and other pedestrians traveling between the university and nearby destinations.

In addition to the realignment, the project includes the relocation of existing flashing beacon pedestrian crossing signs to the altered crossing location. According to the FHWA, this type of improvement has a CRF of 69%, indicating a significant potential decrease in pedestrian-related crashes. These enhancements make the crossing safer and more efficient, supporting the community's commitment to improving walkability and multimodal safety throughout Spearfish.

Community Support

Comments from BHSU students support this crossing improvement.

West Elementary School Pedestrian Crossing Improvements

A series of recommended improvements to support safe crossings at West Elementary School have been identified to enhance safety for students and families. The project focuses on several key locations adjacent to the school, including proposed flashing sign additions along King St and the relocation of a crossing on Mason St approximately 200 feet to the west of its current location near the northeast corner of the school. New flashing signs along King St will help to increase driver awareness of an important student crossing that the school staffs with crossing guards. The current crossing on Mason St (located on the northeast corner of the school) is at an unsafe location adjacent to an alley with traffic turning and visibility conflicts. Relocating the crossing to the west would improve visibility for both drivers and those using the sidewalk. School zone signage is also proposed to be extended around all four corners of the area around the school.

Community Support

The mothers with young children focus group noted that this area is not safe for pedestrian crossing. This was support by additional discussion with school administration.

Rad Route to School Shared Use Path

A new shared use path is recommended along the north termini of Canyon St, following Spearfish Creek to Creekside Elementary School. This project would create a continuous off-street connection that enhances safety and accessibility for students, families, and other users traveling to and from the school. By separating pedestrians and bicyclists from vehicle traffic, the path provides a safer and more comfortable route that supports active transportation and encourages walking and biking as viable travel options. Although no FHWA CRF is available for off-street trail facilities, shared use paths are widely recognized for improving nonmotorized safety and connectivity. This project has the potential to strengthen links within the community's trail network and support the Safe Routes to School initiative by promoting healthy, sustainable, and safe travel to Creekside Elementary. Note that the nearest path connection to the south is where the city recreational path terminates at Canyon St near Wyoming Ct. Between Wyoming Ct and the southern terminus of the Rad Route to School, pedestrians and bikes would need to travel on the street. Canyon St in this area is only wide enough for two lanes of traffic and no additional room exists for off-street walking or biking facilities.

Community Support

The bicycle advocacy focus group noted that this is a path students often use to get to Creekside Elementary. Further discussion with school district leadership supported the need for improvements.

Unpaved 'Rad Route to School' with view of Creekside Elementary

Colorado Boulevard Improvements (27th St to Colorado Loop)

The City of Spearfish in conjunction with the SDDOT conducted a corridor study of Colorado Blvd in 2023. The Study Advisory Team (SAT) ultimately preferred intersection and roadway segment alternatives that include traditional signals, roundabouts, 3 lane and 5 lane sections along with bicycle and pedestrian facilities. The preferred recreation path alternative was to locate the path on the north side of the roadway with pedestrian underpasses located at False Bottom Creek, Tetro Creek, and Miller Creek.

Prior Study and Community Support

The Colorado Blvd Corridor Study completed in 2023 indicates the need for improvements along much of Colorado Blvd. Many comments provided by the community via the online comment map show that this is an area of great concern to the public noting issues at intersections and the lack of pedestrian and bicycle facilities.

Colorado Blvd/Heritage Dr Eastbound

Mini-Roundabouts: Alternative Approach to Intersection Traffic Calming

A mini-roundabout is a type of intersection that can be used in place of stop-controlled or signalized intersections to help improve safety problems and reduce excessive delays. Mini-roundabouts generally have an inscribed circle that is small enough to stay within the existing right-of-way, or even within the existing curb lines if adequate space is available. Mini-roundabouts operate in the same manner as larger roundabouts, with yield control on all entries and counterclockwise circulation around a center island that can be mounted by vehicles, especially larger vehicles that have a larger turning radius.

Mini-roundabout in Bismarck, ND

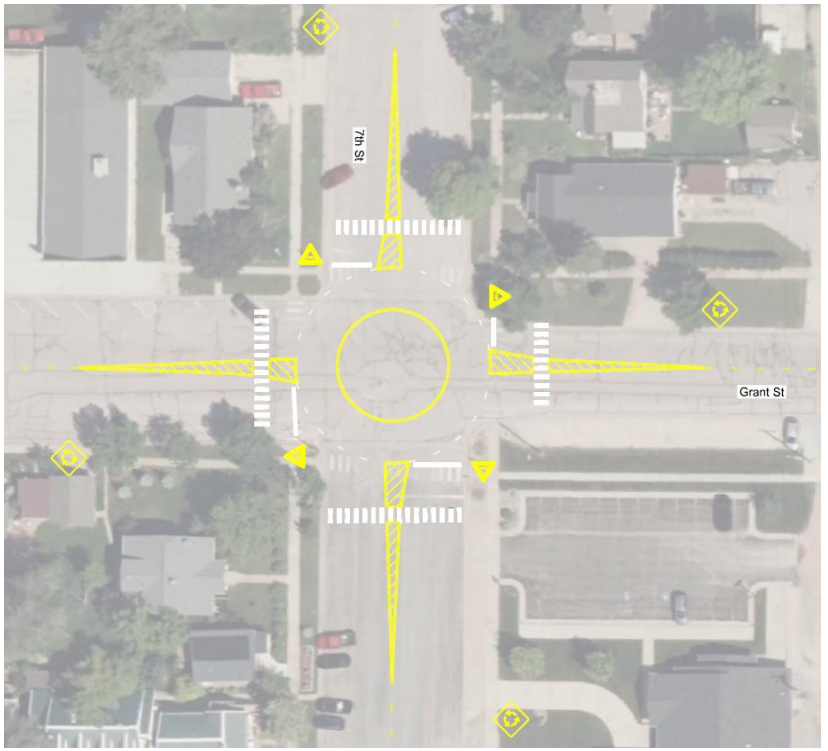
Location Criteria for Mini-Roundabouts

The following conditions are appropriate for the installation of mini-roundabouts:

- Lower speed streets, less than 30 mph. In Spearfish this includes most residential streets and some streets in commercial or mixed land use areas, such as Downtown and adjacent blocks.
- Residential environments where lower speeds and low-noise levels are desired.
- Areas with limited large truck traffic. Mini-roundabout diameter may be too small to accommodate U-turn maneuvers for large trucks.
- Where any of the approaching streets have less than 15,000 ADT. As of 2024 all streets in the study area had less than 15,000 ADT, especially residential areas. Forecasted increases in traffic volumes should be considered, especially if any of the approaching streets are arterials or collectors (major through routes).
- Any locations where existing stop-controlled or signalized intersections are experiencing issues with delay. Mini-roundabouts can reduce intersection vehicle delay.

Safety Benefits of Mini-Roundabouts

According to FHWA, mini-roundabouts have a crash reduction factor of 61%, reflecting the strong safety performance of roundabout treatments in reducing severe crashes. In the United Kingdom, overall crash rate reductions of approximately 30% have been reported as compared to signalized intersections. Mini-roundabouts slow down traffic approaching the intersection and going through the intersection—this creates a safer environment for nonmotorized users.



Grant St and 7th St is an example location where the application of a mini-roundabout fits the location criteria noted in this section and responds to community concerns about speeding and the safety of nonmotorized users.

Community Support for Intersection Traffic Calming

Public input from Autumn Fest and the bicycle advocacy focus group noted concerns for nonmotorized users at intersections within and adjacent to Downtown, as it can be harder for vehicles to see nonmotorized users and comments noted higher traffic speeds entering the intersections. For example, bicyclists have noted a strong preference to use the Grant St and N 5th St and Grant St and N 7th St intersections as an alternative to Main St. Grant St has been noted as a popular east-west connection alternative to Jackson Blvd. Public input also noted the use of Canyon St as an alternative north-south route to Main St, along with concerns about intersection safety and speeding along Canyon St.

North toward Grant St and 7th St Intersection

Approaches to Reduce Wildlife-Vehicle Collisions

SDDOT has been working to address wild animal hits along I-90 with the provision of exclusion fencing that guides wildlife to designated crossing points, like under bridges. For areas in City limits in a more urban context, exclusion fencing is not practical due to considerations like sidewalks and access to adjacent development. A recommended location in the City limits for wildlife-vehicle collision countermeasures is along Colorado Blvd between Dahl Rd and Sandstone Hills Dr. Potential projects could include:

- Animal detection systems: Involves radar, laser sensors, or tripwires detect animal presence, triggering flashing lights or signs to warn drivers.
- Reflectors and lighting: Roadside reflectors or strategically placed lights can reflect headlights, startling animals away from the road.

Note that some of these projects could be field tested for effectiveness as demonstration projects. Potential demonstration projects include the addition of strategically placed reflectors, temporary lights, or temporary animal detections systems that are trailer-mounted, for example.

This wildlife detection system uses radar to sense large animals, which sets off the warning light. Photo courtesy Colorado Public Radio.

Safety Assessment Support

The noted segment of Colorado Blvd showed a higher density than other areas in City limits of less-severe crashes involving wild animal hits.

Table 12. List of City Engineering Countermeasures

Project Name	Description	Cost Estimate (2025) Inflation adjustment of 6% annually	Crash Reduction Factor (CRF)*
A – North Ave Median Improvements	• Location: North Ave and Main St from Yankee St to Kansas St • Maintain current lane widths • Utilize 6" recessed edge stripe as applicable • Limit left turn access from locations with alternate access	$1,237,982	39%
B – North Ave Sidewalk Connection	• Location: North Ave from Hillsview Rd to Rushmore St • 5' sidewalk long east side of North Ave • Pedestrian actuation button improvements to south and west crossings	$248,431	40%
C1 – North Ave and Colorado Blvd Speed Signage Improvements	• Location: North Ave north of Yukon Pl (35 mph), North Ave north of Hillsview Rd (25 mph), Colorado Blvd (US 14A) east of Spearfish Canyon Rd (US 14A) (35 mph), and Colorado Blvd west of Lariat Dr (25 mph) • Enlarged 'Reduced Speed Ahead' and 'Speed Limit' signage • Signs on both sides of southbound lanes (Median signage can be mounted to light poles) • Speed limit sign could be a Dynamic Speed Sign	$43,859	No CRF, but helps increase attentiveness and awareness
C2 – North Ave Gateway Signage	• Location: North Ave north of Yukon Pl • Install City Gateway Signage	$143,000	No CRF, but helps increase attentiveness and awareness

Project Name	Description	Cost Estimate (2025) Inflation adjustment of 6% annually	Crash Reduction Factor (CRF)*

D1 – Main St and Colorado Blvd Striping Improvements (No Bike Lane)	• Location: Main St and Colorado Blvd from Jackson Blvd to US 14A (Spearfish Canyon Rd)
	• Restripe to 3 lane road with Two-Way Left Turn Lane
	  ○ Utilize 11 ft lanes
	  ○ Utilize 6" striping (painted – not recessed)
	• Includes crosswalks at Elgin St, Dakota St, N 7th St, State St, Lariat Dr, and at Spearfish Ambulance Service access
		$210,802	47%

D2 – Main Street and Colorado Blvd Striping Improvements (With Bike Lane)	• Location: Main St and Colorado Blvd from Jackson Blvd to US 14A (Spearfish Canyon Rd)
	• Restripe to 3 lane road with Two-Way Left Turn Lane with Bike Lane
	  ○ Utilize 11 ft lanes
	  ○ Utilize 6" striping (painted – not recessed)
	  ○ On-street parking updated to parallel
	• Includes crosswalks at Elgin St, Dakota St, N 7th St, State St, Lariat Dr, and at Spearfish Ambulance Service access
		$310,089	47% (Road Diet)
			57% (Bike Lane)

E – Jackson Blvd Dynamic Speed Signs	• Location: Jackson Blvd - between 3rd St and Meier Ave and between St. Joe St and Ames St • Dynamic Speed Sign on both sides of road	$76,272	No CRF, but helps increase attentiveness and awareness
F – W Jackson Blvd & Jonas Blvd Signage	• Location: intersection of Jackson St and Jonas Blvd • Revise to 4-way stop control	$7,938	68%

Project Name	Description	Cost Estimate (2025) Inflation adjustment of 6% annually	Crash Reduction Factor (CRF)*
G – Hillsview Rd Crossings	• Location: Hillsview Rd midblock crossing between Main St and Spirit Ln and recreational path crossing at Stagebarn Circle • Revise pedestrian crossings • Remove and replace existing pedestrian bridge at midblock crossing • Addition of pedestrian refuge islands at both crossings • Change speed limit to 15 mph	$153,214	Reduces all crash types by 9%; Fatal vehicle/bike and vehicle/pedestrian crashes by 86%
H – South Dakota Way Pedestrian Crossing Improvements	• Location: Pedestrian Crossing to Black Hills State University • Realign pedestrian crosswalk to the west to eliminate skew • Addition of flashing beacon pedestrian crossing signage	$182,573	69%
I – Rad Route to School Shared Use Path	• Location: North termini of Canyon St along Spearfish Creek to Creekside Elementary School • New Shared Use Path connection	$491,755	N/A (off-street)
J – West Elementary School Pedestrian Crossing Improvements	• Location: Various Crossings adjacent to West Elementary School • King St and Harvard St (Crossing King St) • King St and Harvard St (Crossing Harvard St) • King St and University St (Crossing University St) • Mason St and alley between school and businesses (Crossing Mason St)	$88,702	69%

Project Name	Description	Cost Estimate (2025) Inflation adjustment of 6% annually	Crash Reduction Factor (CRF)*
K – Colorado Blvd between 27th St and Colorado Lp	• Location: Colorado Blvd from 27th St to Colorado Loop • 2023 Corridor Study preferred improvements • Traditional signals at 27th St and Heritage Dr • Roundabouts at Maitland Rd and Rainbow Rd • 3 lane and 5 lane sections • Bicycle and pedestrian facilities on the north side of road with pedestrian underpasses at False Bottom Creek, Tetro Creek, and Miller Creek	$41,000,000	50% (Access Management) 69% (Roundabout) 44% (Turn lanes)

*A crash reduction factor is used to compute the expected number of crashes after implementing a given countermeasure at a specific site. FHWA maintains a clearinghouse of crash reduction factors and additional information: https://highways.dot.gov/safety/other/crash-modification-factors-cmfs.

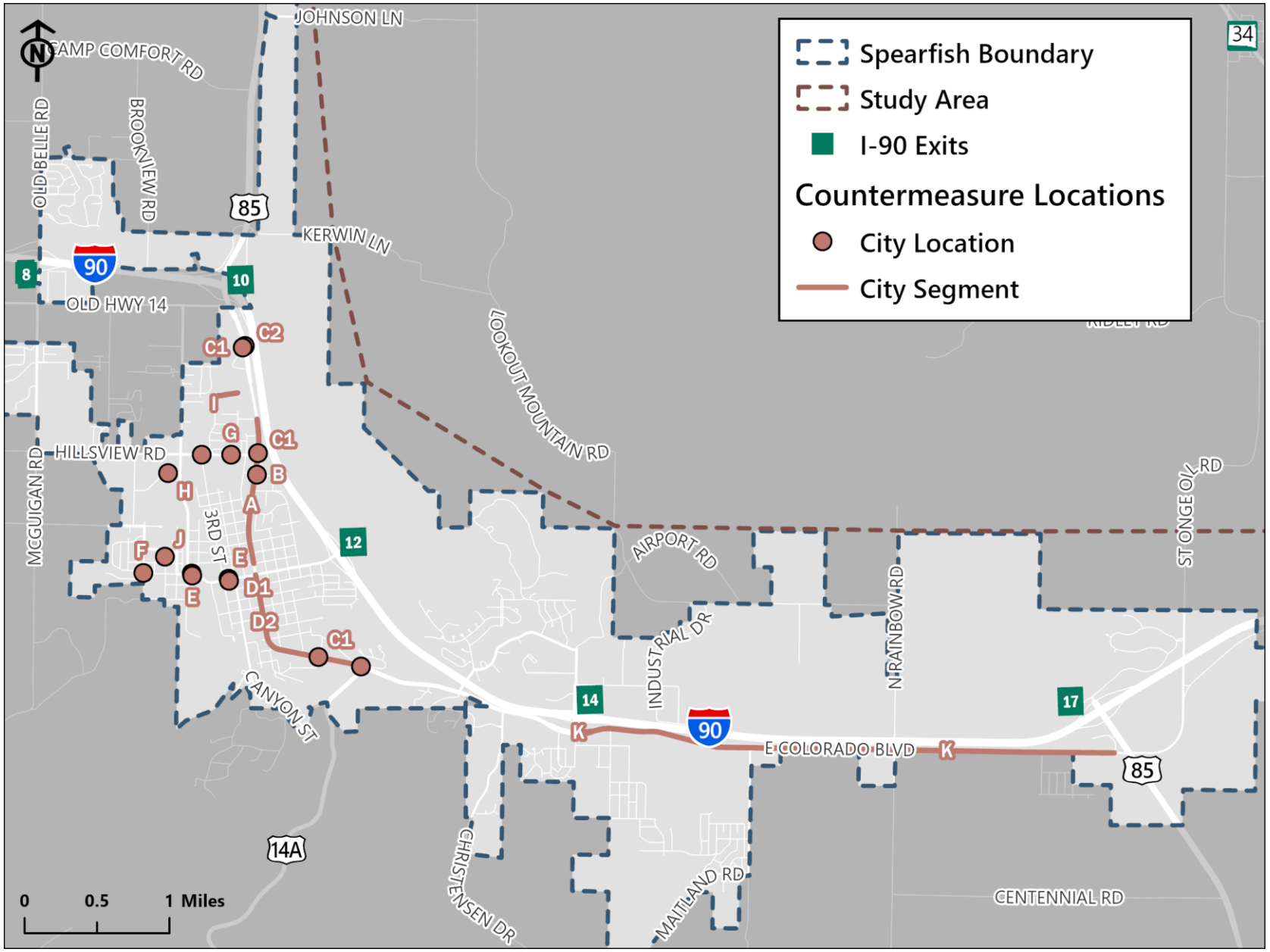


Figure 29. City Engineering Countermeasure Project Locations

SDDOT ENGINEERING COUNTERMEASURES

The South Dakota Department of Transportation has several projects either under construction or planned in the Spearfish area that are primarily intended to improve safety. The projects detailed below, as planned, will help to alleviate severe crashes in and around Spearfish. Most of these projects were identified in the Department's 2024 *US 85 Corridor Study: Spearfish to Deadwood*. Key projects include:

- E. Colorado Boulevard and St. Onge Road Intersection Modification Project
- Elkhorn Ridge RV Resort Driveway Intersection Project
- Duke Parkway Intersection Project
- Exit 10 on I-90 Project

Awareness of these projects is important for stakeholders to effectively plan and make informed decisions regarding Spearfish's transportation infrastructure.

Colorado Boulevard and St. Onge Road Intersection Modification Project

The E. Colorado Boulevard and St. Onge Road Intersection is an unsignalized, all-way stop-controlled intersection which includes a left-turn lane on the northbound approach and channelized right-rune lanes on the northbound and southbound approaches. From 2017 to 2021 there were 34 crashes at the intersection, one of which resulted in a fatality. The reported crash rate for the intersection is 1.94, which is above the statewide weighted crash rate for similar intersections. One of the major safety concerns for the intersection is its existing 55-degree skew angle which results in limited visibility, longer crossing distances, and difficult turning movements for large vehicles like trucks and buses. Additional deficiencies include a lack of pedestrian facilities and the absence of intersection lighting.

As part of the 2024 US 85 Corridor Study, the following alternatives were evaluated for the intersection:

- **No Build:** The intersection would remain as an unsignalized intersection with stop control on all four approaches.
- **Signalization:** The all-way stop control under no-build conditions would be replaced by traffic signal control and auxiliary lane approaches would be provided on all approaches. All approaches would be realigned to mitigate the existing skew.
- **Reduced Conflict Intersection (RCI):** Left-turn movements would be allowed from US85 to E. Colorado Boulevard and St. Onge Road, however, movements from the east and west legs of the intersection would be restricted to right-turn movements only. To accommodate future year traffic volumes, auxiliary left-turn and right-turn lanes would be required on US85 and dual right-turn lanes would be required on the approaches of both E. Colorado

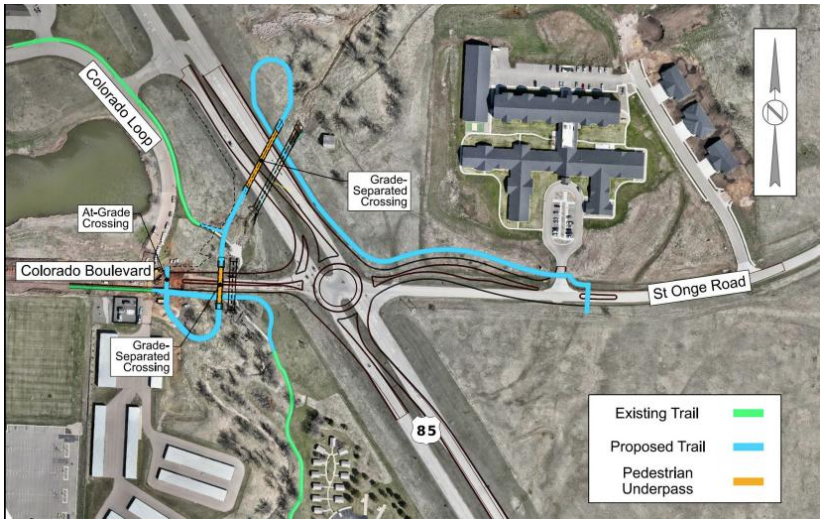
Boulevard and St. Onge Road. The primary intersection and the south median U-turn would require signalization for all horizon years while the north median U-turn location would be yield controlled in 2027 but signalized for the other two horizon years.

- **Roundabout (chosen alternative):** The intersection would be reconstructed as a roundabout. Enhanced LED lighting will be included with the intersection as well as a shared-use path that will align with a nearby existing trail.

In October 2025, the SDDOT held a public input meeting for the Project where staff presented on the crash history and needs of the intersection, as well as on the characteristics and benefits of roundabouts. Right-of-Way needs and utility coordination needs were also discussed, as well as environmental, social, and economic concerns. The project will occur inside the boundaries of the Frawley Ranch Historic Landmark. As such, SDDOT is coordinating with the National Park Service and the State Historic Preservation Office to ensure minimal impacts. Endangered species such as the Northern Long-Eared Bat have also been known to occur in Lawrence County, necessitating coordination with the U.S. Fish and Wildlife Service.

Project Highlights

Final design for the estimated $8.5 million **East Colorado Blvd/St. Onge Rd** intersection modification project is expected to be completed in Summer 2026 with ROW acquisition slated for 2026-2027. Construction of the project will occur during the 2028 and 2029 construction seasons.



Proposed roundabout with separated sidewalk (SDDOT)

Elkhorn Ridge RV Resort Driveway Intersection Project

The Elkhorn Ridge RV Resort Driveway Intersection is formed by the driveway that serves the Elkhorn Ridge RV Resort. The driveway approach is stop controlled and a left-turn lane is provided on the northbound approach. Existing traffic volumes satisfy criteria for a southbound right-turn lane while future traffic volumes on US 85 may make it difficult and unsafe for long vehicles (i.e., those pulling trailers) to turn left from the RV resort driveway onto northbound US 85.

As part of the 2024 US 85 Corridor Study, the following alternatives were evaluated for the intersection:

- **No Build:** The no build alternative would retain the existing lane configurations without a southbound right-turn lane.
- **Southbound Right-Turn Lane:** A southbound offset right-turn lane would be implemented. All other features of the existing intersection would be retained.
- **Reduced Conflict Intersection (RCI):** This alternative would incorporate a reduced conflict intersection concept where left-turn movements would be allowed from US 85 into Elkhorn Ridge RC Resort. Movements from the west leg of the intersection, however, would be restricted to a right-turn movement only. Thus, left-turn movements from the driveway would be accomplished by making a right-turn, travelling 600-1,000 feet to a median U-turn location before proceeding back to the primary intersection and continuing straight. The primary intersection would be stop controlled and the median U-turn intersection would be yield controlled.

According to traffic forecasting, Level of Service (LOS) for the intersection is projected to drop without the construction of an alternative to a LOS C/C (AM/PM) by 2027 and an LOS D/C in 2050. If the southbound right-turn lane alternative would be implemented, the LOS would be C/B in 2027 with an LOS of C/C in 2050. The Reduced Conflict Intersection alternative would produce the best LOS with an LOS of B/B in 2027 and 2050 for the main intersection and an LOS of B/B for both 2027 and 2050 for the U-turn.

Project Highlights

The construction cost for the **Elkhorn Ridge** southbound right-turn lane alternative is estimated to cost $720,000 (year 2027 implementation cost) with costs for improvements related to the RCI pegged at $1.65 million.

US 85, Duke Parkway to Crook City Road/Pendo Road Project

This segment of US 85 is a depressed, median-divided, four-lane highway which will eventually need improvements as the US 85 corridor becomes more urbanized. As part of the 2024 US 85 Corridor Study, the following alternatives were evaluated for the segment:

- **No Build:** The segment would remain a four-lane, undivided highway.
- **Extend Existing Typical Section to Crook City Road and Pendo Road:** Under this alternative, the existing median-divided cross section of which the majority of the corridor is presently characterized would be extended south through the intersection of Crook City Road/Pendo Road. Median widths at all intersections within the segment would be widened to allow for two-stage turning or crossing maneuvers from minor road approaches.
- **Urbanized, 4-Lane Divided with Turn Lanes:** The typical section would be converted to better fit the anticipated future urbanized character of the corridor. This would consist of a raised median separating northbound and southbound vehicles, warranted turn lanes at intersections, a 5-foot sidewalk on one side of the highway and a 10-foot shared use path on the other side. Roadway lighting would also be installed.

According to traffic forecasting, Level of Service (LOS) designations for major intersections along the segment with the No Build option would be D/C (Elkhorn Ridge RV Resort Driveway), C/C (Centennial Road) and F/F (Crook City Road / Pendo Road) in 2050. For the Extend option, the worst-case scenario LOS for Crook City Road / Pendo Road intersection would be E/E in 2050. For the urbanized option, LOS designations for these same intersections in 2050 would be F/F, C/E, and F/F.

Project Highlights

The cost for the **US 85 and Duke Parkway** project is estimated to be between $17.36 million (extend option) and $34 million (urbanized option).

I-90 Exit 10 Intersection Modification Project

This Project will take place at the intersection of North Avenue and the I-90 Eastbound ramps at Exit 10 in Spearfish. This project is currently scheduled for 2026 construction. The Project's primary objective is to reduce existing and potential crash risks by converting the current stop-controlled intersection into a signalized intersection, providing clearly defined vehicle right-of-way and improving traffic operations. A fatal crash took place in this location in 2024, and additional serious injury crashes have also occurred within the past five years. Benefit-cost analysis provided by SDDOT indicates a strong economic case for the project, with a present value of benefits of $8.158 million compared to a present value of costs of $1.94 million, yielding a benefit-cost ratio of 4.21.

In addition to signalization, the Project includes a reconfiguration of the nearby intersection of North Avenue and Old US14 into a Reduced Conflict Intersection (RCI), or J-Turn. This design eliminates the left turn from Old US14 and introduces a Left-In/Right-Out (LIRO) configuration, with a single-lane, yield-controlled median U-turn approximately 780 feet south of the intersection. Further improvements include the addition of a northbound right-turn lane on North Avenue to facilitate the eastbound movement onto the I-90 eastbound on-ramp. These coordinated improvements, derived from the 2020 Decennial Interstate Corridor Study and updated with the 2024 Traffic Study by JEO Consulting Group, are expected to significantly enhance safety, reduce conflict points, and improve traffic operations along this critical corridor.

Proposed Exit 10 improvements (SDDOT)

US Highway 14A Corridor Improvements

In 2012, the SDDOT completed a study of this corridor, which recommended reconstructing I-90 Exit 14. That project has since been completed with the construction of a single-point interchange. The study also advised maintaining the US Hwy 14A corridor as a mix of two-, three-, and four-lane segments and installing roundabouts at major intersections—either individually as signal warrants are met or collectively when pavement conditions require reconstruction. Additionally, the study emphasized the importance of access management and included a draft Memorandum of Understanding (MOU) between the City of Spearfish and the State of South Dakota to support this effort. Advancing this project would align well with the Main Street road diet, which reduces the corridor to three lanes.

In 2021, a traffic impact study was completed for the Miller Ranch Residential Development. This study evaluated the proposed development's impacts upon US Hwy 14A and recommendations related to these impacts. Two intersections, including US Hwy 14A at Sandstone Hills Dr and US Hwy 14A at Christensen Dr were both identified as needing significant improvements within the Study's forecast period of 2040. Either a traffic signal control or a roundabout was recommended at Sandstone Hills Dr. Additional right turn lanes were recommended at Christensen Dr.

Engineering design countermeasures were assembled for future project considerations to address locations identified within the Plan. The countermeasures include data-driven and proven safety strategies from FHWA, including crash reduction factors (CRF). These are values used to estimate the expected percentage of crashes reduced after implementing a safety countermeasure.

POTENTIAL FUNDING OPPORTUNITIES

The City of Spearfish has a variety of funding sources that can be used to address safety concerns. These funding sources can be used to reconstruct roadways, install pedestrian and bicycle facilities, implement education and enforcement strategies, and complete other transportation-related projects that improve safety. Below is an overview of potential state and federal grant funding opportunities anticipated to be available in 2026 and beyond.

Highway Safety Improvement Program (HSIP)

The Federal Highway Administration (FHWA) administers the Highway Safety Improvement Program (HSIP), which provides funding to projects designed to improve travel safety. Per FHWA guidance, HSIP funding "requires a data- driven, strategic approach to improving highway safety on all public roads with a focus on performance." The HSIP program provides funding for roadway construction or reconstruction projects designed to decrease the frequency and/or severity of all types of crashes including vehicles, pedestrians, bicycles, and other nonmotorized vehicles. Funding can only be used for construction costs. The program runs on a biennial basis. Federal funds provide 90% with a 10% match from the local agency or the State of South Dakota in 2026 and beyond.

Safe Streets for All (SS4A)

USDOT's Safe Streets and Roads for All (SS4A) is intended to fund more than $1 billion each year through FY 2026 for regional, local, and tribal initiatives which significantly reduce or eliminate roadway fatalities and serious injuries. With the completion of this Plan, the City of Spearfish is eligible to apply for implementation and supplemental or demonstration activity funding.

Transportation Alternatives (TA)

Transportation Alternatives (TA) is a program that uses federal transportation funds, designated by Congress, for specific activities that enhance the inter-modal transportation system and provide safe alternative transportation options. TA encompasses a variety of smaller-scale nonmotorized transportation projects such as pedestrian and bicycle facilities, recreational trails, safe routes to school projects, community improvements such as historic preservation and vegetation management, and environmental mitigation related to storm water and habitat connectivity. Approximately $8 million is available through a competitive project selection process administered by the South Department of Transportation (SDDOT) Office of Project Development. Projects may be limited to $600,000 depending on the annual funding allowance. The minimum for infrastructure projects will be $50,000. There is no minimum for non-infrastructure projects. The minimum local match required is 18.05%.

Other Funding Programs

Several other funding programs are available through the Federal and State government that support transportation

improvements generally. Specific programs are listed below that may be helpful for certain project recommendations.

BUILD

The U.S. Department of Transportation's Better Utilizing Investments to Leverage Development (BUILD) provides grants for surface transportation infrastructure projects with significant local or regional impact. A large project with both a local and regional impact in improving mobility for multiple modes includes the recommended Colorado Blvd improvements between 27th St and Colorado Lp. If pursuing this program, the City should consider a partnership with the SDDOT to assist with the grant application or matching funds.

Recreational Trails Program (RTP)

A grant through the South Dakota Fish and Parks Department, this grant is available for trail improvements throughout the study area. Recreational path improvements in Spearfish could benefit from this program – a potential project could be the "Rad Route to School".

Surface Transportation Program

These funds are distributed to Spearfish from SDDOT based on population. These funds are available for arterial and collector route improvements in the City limits. Several projects recommended in this Plan would be eligible for this funding.

NON-ENGINEERING COUNTERMEASURES

Safety across the transportation system cannot be improved through engineering projects alone. Countermeasures that influence driver or user behavior are critical. The following countermeasures were developed through review of crash data and community input received through the Plan.

High Injury Network Corridor Enhanced Enforcement and Monitoring

The High Injury Network developed through this Plan's in-depth analysis of crash data provides an opportunity to focus not only engineering countermeasures, but also non-engineering countermeasures, such as focused law enforcement and traffic monitoring efforts on the High Injury Network corridors specifically.

Pavement Marking Maintenance and Installation

Public and focus group input gathered through this Plan identified faded/worn pavement markings as an issue that contributes to driver confusion, resulting in roadway safety concerns. It is important to maintain pavement markings on a regular schedule, following installation best practices and minimum reflectivity as provided by FHWA. A consideration for new projects on collectors and arterials is to consider recessed pavement markings with material that has a high retro-reflectivity, such as paint with glass beads or high-performance tapes.

Recessed centerline pavement marking (Arizona DOT)

Support for Expanded Transit Service

As part of the development of this Plan, the consultant team engaged with Prairie Hills Transit. The transit agency is the sole transit provider in the Spearfish area. Public comments also noted the lack of taxi and ride share opportunities in the area. Transit plays an important role especially in keeping vulnerable roads users who walk and use mobility devices from navigating dangerous areas in the public right of way. It is recommended that the Plan is followed by a transit-focused study that lays out the case for transit in the area and options to best serve the area.

K-12 Transportation Safety Education

Education about transportation safety was a topic of interest noted by community members at Autumn Fest and in all focus groups. The good news is that the Spearfish School District (K-12) has actively been promoting safety at all District schools. A specific countermeasure promoted by mothers with young children was to ensure that materials regarding safe travel to school (all forms of travel) are regularly distributed to children to take home from school. Mothers noted that this is often the most effective way to get information from school to the parents.

E-Bikes

Community input documented the current and expanding use of electric bikes (e-bikes) and electric assisted vehicles. Some comments noted excessive speeds of these vehicles and unsafe conditions on City recreational paths. Recreational paths are intended to be shared between various modes, such as pedestrians, and both conventional bicyclists and e-bikes. This shared space can create unsafe conditions when vehicles travel at speeds that can cause serious injuries or even fatalities. The potential for excessive speeds can be increased with e-bike and electric assisted vehicles, with average speeds of these bike alternatives averaging almost twice that of

conventional bikes[8]. The National Association of City Transportation Officials (NACTO) recommends a typical design speed on recreational paths of 10-15 mph, with the potential to design for up to 20 mph in areas with low pedestrian use. Recommendations for Spearfish's recreational path system:

- **Sign recreational paths with a maximum speed limit of 15 mph**, with the consideration of lower limits in certain areas to account for horizontal and vertical curves and other factors, such as high pedestrian use or restricted clear zones.

- **Restrict recreational path use to Class 1 and Class 2 e-bikes.** Class 3 e-bikes should only be allowed on roads and bike lanes. Class 1 e-bikes include pedal-assist only and have a speed cut-off at 20 mph. Class 2 e-bikes have both pedal-assist and a throttle for non-pedaling power; Class 2 e-bikes also have a speed cut-off at 20 mph. Class 3 includes pedal-assist only with a speedometer required. The speed cut-off is at 28 mph. Electric assisted vehicles should be prohibited from recreational paths. These are lightweight, electric-powered vehicles, often resembling large e-bikes or quadricycles.

CULTURAL ACTIONS

Table 13. City Cultural Actions notes cultural actions the City of Spearfish needs to take to carry the Safety Action Plan into successful implementation.

Table 13. City Cultural Actions

City Cultural Action	Timeline
The City of Spearfish adopts Safety Action Plan and commits to the Plan's Vision and Goals.	Q1 2026
Apply for funding to address roadway safety priorities including an Implementation Grant application for the next round of the Safe Street and Roads for All (SS4A) Program.	Q2 2026
Continue to engage local partners to monitor progress of the Safety Action Plan.	Ongoing
Continue to update datasets and evaluate crash data.	Ongoing
Monitor progress on an annual basis toward safety goals, convening an annual meeting with local partners (Advisory Committee) to review crash statistics and project implementation. Include review of engineering and non-engineering countermeasures. Refer to **Appendix E**, Action Plan Report Card.	Annually (Q4 of each year)
Incorporate priority project recommendations into long-range transportation planning. Use Plan data to inform other planning projects.	Continuous/with update to Master Transportation Plan

[8] Average conventional bike speed of 8.5 mph vs. average electric bike speed of 14 mph. NACTO references Dozza, Werneke & Mackenzie, 2013 - https://nacto.org/publication/urban-bikeway-design-guide/designing-bikeways-for-all-ages-and-abilities/design-controls-for-bicycle-facilities/