

SPRING 2025

# Town of Jackson and Teton County **Comprehensive Safety Action Plan**





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# Contents

|                   |   |
|-------------------|---|
| Executive Summary | 5 |
|-------------------|---|

|                           |    |
|---------------------------|----|
| CHAPTER 1                 |    |
| Why a Safety Action Plan? | 11 |

- ▶ Call to Action
- ▶ Vision Zero & Safe Systems
- ▶ A Shared Vision
- ▶ Leadership Commitment & Support

|                            |    |
|----------------------------|----|
| CHAPTER 2                  |    |
| Identifying Crash Patterns | 19 |

- ▶ High Injury Network
- ▶ Crash Profiles
- ▶ Equity Scan

|                       |    |
|-----------------------|----|
| CHAPTER 3             |    |
| Community Discussions | 27 |

- ▶ Overview
- ▶ Stakeholder Outreach
- ▶ What We Heard

|                  |    |
|------------------|----|
| CHAPTER 4        |    |
| Tools for Change | 35 |

- ▶ Safety Countermeasures
- ▶ Policy & Process Recommendations
- ▶ Implementation

|                 |    |
|-----------------|----|
| CHAPTER 5       |    |
| Creating Change | 51 |

- ▶ Safety Project Selection
- ▶ Progress & Transparency

|            |    |
|------------|----|
| Appendices | 58 |
|------------|----|

- ▶ Appendix A: Safety Project Selections
- ▶ Appendix B: SS4A Eligibility
- ▶ Appendix C: Community Engagement
- ▶ Appendix D: Data Analysis
- ▶ Appendix E: Safety Countermeasure Recommendations





# Executive Summary





# EXECUTIVE SUMMARY

## VISION STATEMENT

*The Town of Jackson and Teton County transportation system ensures safe and equitable mobility for all modes with the goal of a healthy environment, community, and economy for current and future generations. Travel by walking, biking, shared mobility, and transit will be safer and more convenient than travel by single-occupancy vehicle.*

## CORE VALUES



Safety



Equity



Health and Wellness



Convenience (for all Modes)



Adaptability



Integration with Nature

## Why a Safety Action Plan?

Despite efforts to improve safety over the years, deaths on our nation's roadways have steadily increased. Far too many lives are still being lost to roadway crashes. In Teton County, between 2013 and 2022, 24 people lost their lives and an additional 92 were seriously injured in traffic crashes.

This Comprehensive Safety Action Plan is a concerted effort between Teton County and the Town of Jackson to make our streets safe for people of all ages, abilities, and modes. Now is the time to act on road safety.

The County and Town adopted a Vision Zero policy in May 2024 with the goal of eliminating traffic deaths and serious injuries by 2040. Vision Zero is a transformational shift in our approach to traffic safety. It is rooted in the belief that traffic deaths are preventable, and it is our responsibility to continuously strive for zero traffic deaths.

## Identifying Crash Patterns

### HIGH INJURY NETWORK

The high injury network (HIN) refers to a small proportion of roadways that constitute a disproportionate number of life-altering crashes. It was developed using crash data from all vehicle-, bicycle-, and pedestrian-involved crashes from 2012 through 2022. The project team identified the network by analyzing roads with high densities of injury crashes per mile, with severe and fatal crashes weighted highest.

The analysis shows that most HIN segments are located in Jackson's downtown historic district or immediately adjacent to Highway 89, which sees higher traffic volumes than outlying residential areas. Pearl and Broadway Avenues were the highest-injury corridors in downtown Jackson. Snow King Avenue was a notable corridor outside of the Town Square district with high crash rates.

### EQUITY SCAN

The transportation network may not equally serve all populations, and its impacts may be unevenly distributed. For example, historically underserved groups may rely on walking, biking, or public transit to meet their day-to-day needs or they may be forced to deal with long commutes due to housing costs.

An equity scan was conducted across Teton County to understand where safety and mobility priorities could most effectively serve disadvantaged communities. The scan identified areas where several socioeconomic and climate-related variables are most concentrated across Teton County.

### CRASH PROFILES

"Crash profiles" highlight groups of crashes with similar characteristics to help identify contributing factors that can influence recommendations. Five crash profiles were developed for town and county roads, and four crash profiles were identified for WYDOT roads.

| TOWN AND COUNTY ROADS                                | WYDOT ROADS   |
|--|---|
| 1. Angle Crashes at Intersections                    | 1. Mid-block Angle Crash with a Speed Limit of 45 MPH or Greater                        |
| 2. Mid-block Single-vehicle Crash                    | 2. Rear-end Crash at Intersection   |
| 3. Bicycle/pedestrian crash at Intersection          | 3. Single-vehicle rollover/ overturned vehicle, Mid-block on Dark and Unlighted Roadway |
| 4. Rear-end Crash                                    | 4. Bicycle/pedestrian Crash at Business Entrance or Driveway                            |
| 5. Single-vehicle Crash Involving an Impaired Driver |   |

## Community Discussions

The community engagement process integrated important community feedback at critical phases of the planning process and helped validate crash trends, confirmed problematic corridors and intersections, and identified recommendations that are context-appropriate. A variety of outreach activities were used to engage with key stakeholders. Additionally, outreach and engagement

to historically marginalized and hard-to-reach groups were conducted through community partners. Whenever possible, the project team identified opportunities to meet people where they are instead of relying solely on a traditional public meeting format. This involved tabling at grocery stores and public events combined with virtual engagement through interactive Story Maps.

### ENGAGEMENT HIGHLIGHTS

4 Project Steering Committee Meetings

103 Open House Participants

445 Online Survey Responses

1,617 StoryMap Visits

22 Spanish Language Focus Group Participants

5 In-Person Interviews with Eastern European Immigrants

350 Flyers Distributed at Tabling Events

#### PHASE I

##### Listen & Learn VISIONING

Promote and introduce the project and targeted outcomes

#### PHASE II

##### Reflect & Dive In ACTION PLAN DEVELOPMENT

Share how public input from Phase I will impact recommendations

#### PHASE III

##### Refine ACTION PLAN ADOPTION

Share how public input affected project outcomes and final recommendations





## WHAT WE HEARD

- People want to walk and bike more, but improvements are needed to make people feel safer.
- Safety improvements are especially needed at crossings and intersections.
- People want more transit and shared transportation options.
- Wildlife safety should be considered in projects.
- More investments need to go toward maintenance to address safety concerns.
- People support the enforcement of stricter penalties to address road user behavior.



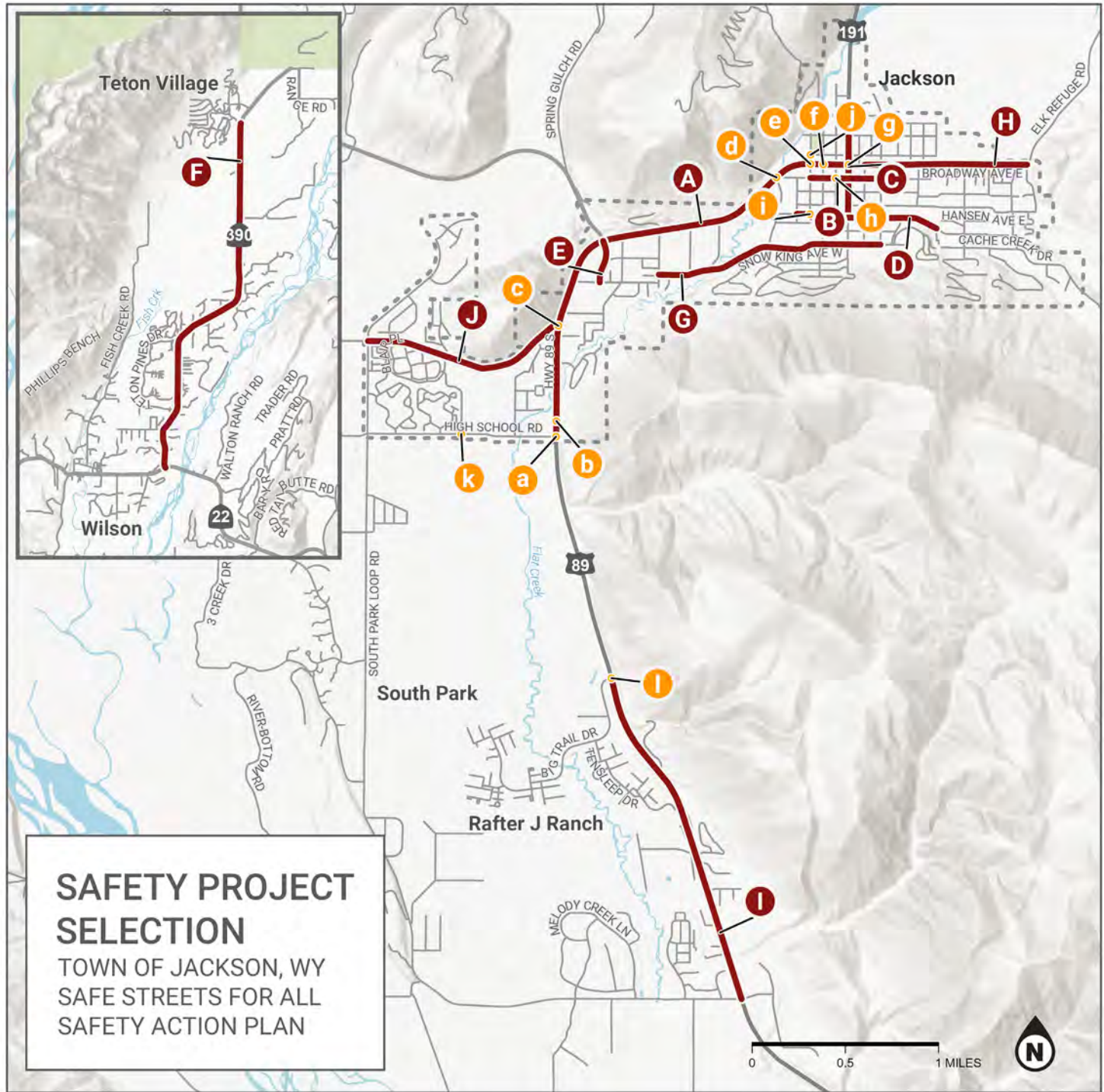
## Tools for Change

The plan recommends a number of strategies to address safety through process, policy, and program changes. The following are high impact recommendations:

- Implement safety improvements on the High Injury Network (HIN).
- Implement safety improvements identified in the Corridors & Intersections Safety Analysis.
- Address bicycle and pedestrian safety at intersections and driveways on town/county and WYDOT roads.
- Update the Town and County Land Development Regulations (LDRs) to reflect best practices identified in the Transportation Engineering Design (TED) Manual and to specifically address bicycle and pedestrian issues and needs.
- Create a traffic calming program to identify and distribute funding toward safety improvements.
- Hire a dedicated staff person that can focus on safety improvement implementation, tracking, and coordination.
- Lower speed limits on commercial arterials.
- Prioritize vulnerable road user facility maintenance.
- Establish regional Safety Evaluation Working Group to monitor performance measures.

## Creating Change

A major outcome of this plan is the list of selected safety projects which will implement safety countermeasures and other design considerations on high priority corridors and intersections. Based on crash data analysis, feedback from the Project Steering Committee, stakeholders, and the public, 10 corridors and 12 intersections were selected for safety improvement projects as shown on the map to the right.



### PRIORITY CORRIDORS

- A W. Broadway Ave. / Hwy 89
- B Pearl Ave.
- C Cache St.
- D Kelly Ave.
- E Buffalo Way
- F Hwy 390 / Moose Wilson Rd.
- G Snow King Ave.
- H E. Broadway Ave.
- I South 89 (Rafter J to Melody Ranch)
- J S. Park Loop Rd.

### PRIORITY INTERSECTIONS

- a Hwy 89 & High School Rd.
- b Hwy 89 at Smith's Access
- c Hwy 89 & S. Park Loop Rd.
- d W. Broadway Ave. & Pearl Ave.
- e W. Broadway Ave. & Jackson St.
- f W. Broadway Ave. & Millward St.
- g Broadway Ave. & Cache St.
- h W. Pearl Ave. & S. Glenwood St.
- i W. Kelly Ave. & S. Jackson St.
- j W. Deloney Ave. & N. Jackson St.
- k High School Rd. & Middle School Rd.
- l Hwy 89 & W. Big Trail Dr.





## CHAPTER 1

# Why a Safety Action Plan?





# Call to Action

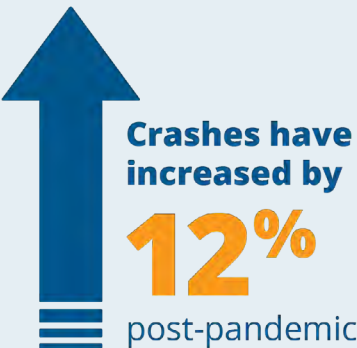
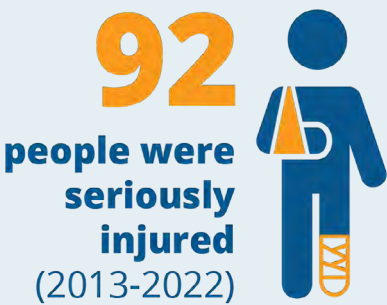
The country is experiencing a roadway safety crisis. Despite efforts to improve safety over the years, deaths on our nation's roadways have steadily increased. While the most recent numbers show a downward trend, far too many lives are still being lost to roadway crashes.

Unfortunately, Teton County and the Town of Jackson have not been immune to this trend. Between 2013 and 2022, 24 people lost their lives and an additional 92 were seriously injured in Teton County. Everyone deserves to arrive at their destination safely, regardless of the mode they take.

This Comprehensive Safety Action Plan is a concerted effort between Teton County and the Town of Jackson to make our streets safe for people of all ages and abilities. We have the tools and knowledge to end traffic-related deaths. Now is the time to act on road safety.

In 2023, an estimated **40,990 people** were killed as a result of crashes on America's roads.

*In Teton County...*



# Vision Zero & Safe Systems

## WHAT IS VISION ZERO?

Vision Zero is a transformational shift in how we approach street design and traffic safety. It is rooted in the belief that traffic deaths are preventable, and it is our responsibility to continuously strive for zero traffic deaths.

Vision Zero means shifting our focus from prioritizing moving vehicles to prioritizing moving people safely. Many communities across the nation have adopted the Vision Zero approach and have seen fewer deaths and injuries on their roadways, demonstrating the transformative potential of Vision Zero.



*Teton County and the Town of Jackson will join the increasing number of jurisdictions across the nation and around the world in their commitment to eliminate traffic deaths and serious injuries.*







# A Shared Vision

## VISIONING WORKSHOP

Engagement kicked off in early 2024 when the project team first set out to gather the community's vision and goals for safety in Teton County. Forty people from all parts of the community attended our workshop. This visioning workshop set the stage for both this Comprehensive Safety Action Plan and the Updated Community Streets Plan.

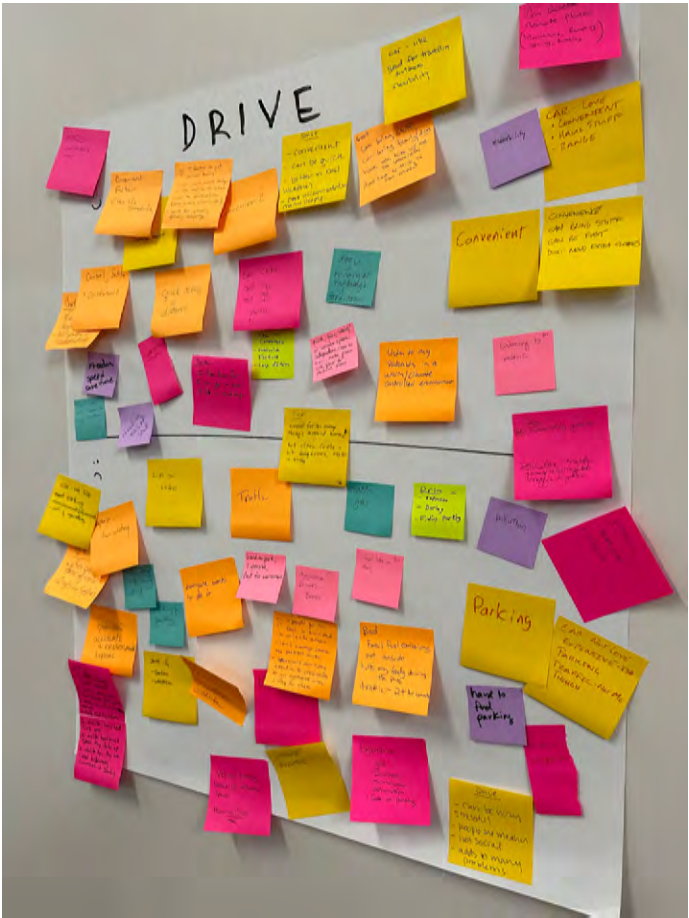
During the workshop, participants were guided through values-based exercises and discussions to develop and articulate a long-term vision for their community.

*To develop the vision, we asked business owners, municipal staff, advocacy organizations, law enforcement, and independent citizens, "Wouldn't it be amazing if..."*

*"... everyone could navigate the region quickly and safely via their choice of mode without adverse effects on land, water, and wildlife?"*

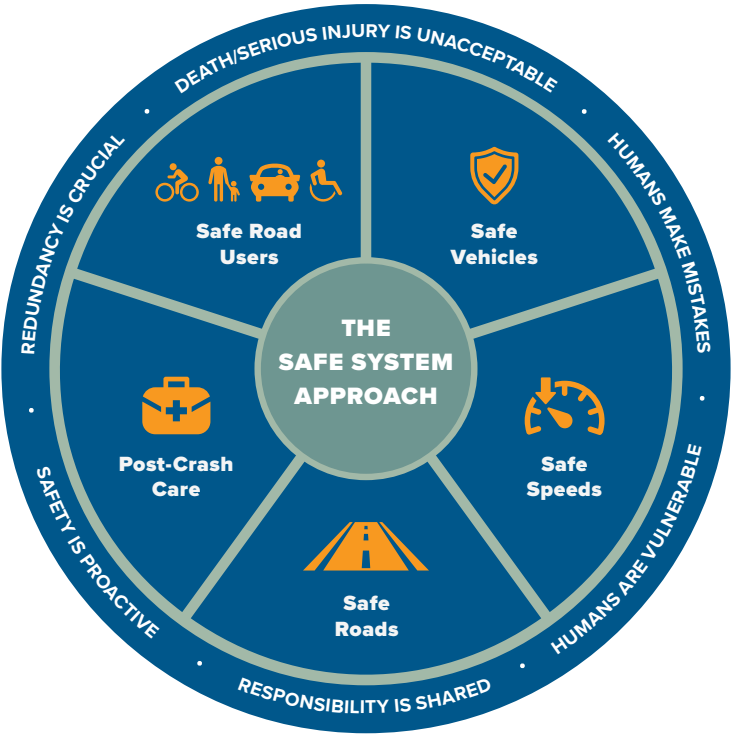
*"...[we had a] transportation system that forms the foundation for a thriving community, economy, and environmental health."*

*"...we could use whatever mode of transportation we want/need while reducing conflict with each other and the environment?"*



## FHWA SAFE SYSTEM APPROACH

Influenced by the Vision Zero movement, the Safe System Approach is a framework developed by the Federal Highway Administration (FHWA) to prevent crashes from happening and to minimize harm when crashes do occur. Applying this approach means building and reinforcing layers of protection, recognizing that people make mistakes and that no one's life should be forever changed because of such mistakes. Decisions around how we build our community, how we design our streets, and our own driving behaviors all have significant impacts on making our roads safer. This framework is structured around five areas: Safe Road Users, Safe Vehicles, Safe Speeds, Safe Roads, and Post-Crash Care.



### SAFE ROAD USERS

Everyone in Teton County should be able to travel safely, regardless of mode.



### SAFE VEHICLES

Promote vehicle designs and regulations that minimize crashes, reduce severity, and incorporate the latest technology.



### SAFE SPEEDS

Slower travel speeds save lives and reduce the risk of death or life-altering injuries.



### SAFE ROADS

Design roads so that human error does not result in the loss of human life.



### POST-CRASH CARE

In the event of a crash, there is rapid access to emergency medical care and data is analyzed to support system improvements.





## VISION STATEMENT

The plan's vision and guiding principles, rooted in language from the Comprehensive Plan and broader community values, were crafted during the workshop and refined through open houses and public meetings. Ultimately, the vision statement and guiding principles were included in a resolution passed in a joint session between Teton County and the Town of Jackson.



### VISION STATEMENT

*The Town of Jackson and Teton County transportation system ensures safe and equitable mobility for all modes with the goal of a healthy environment, community, and economy for current and future generations.*

*Travel by walking, biking, shared mobility, and transit will be safer and more convenient than travel by single-occupancy vehicle.*

## GUIDING PRINCIPLES



**SAFETY:** Safety is paramount. We prioritize eliminating transportation fatalities and serious injuries, reducing crashes, and ensuring all streets, sidewalks, and pathways are safe, comfortable, and accessible for all.



**EQUITY:** Equity is fundamental. We prioritize accessible and affordable transportation options that connect all neighborhoods to our pathway and street networks and ensure mobility options for users of all ages and abilities.



**HEALTH AND WELLNESS:** Health and wellness are central to the quality of life of our community. We promote active transportation, reducing emissions, and prioritizing initiatives that contribute to the well-being of our residents and visitors.



**CONVENIENCE FOR ALL MODES:** Convenience for all travel modes is key. We prioritize efficient walking, biking, shared mobility, and public transportation options over drive-alone trips, ensuring accessibility and ease of use for everyone.



**ADAPTABILITY TO CHANGE:** We embrace adaptability. We remain flexible through updated design and streamlined regulations while following established goals to meet evolving needs from increased demands on our transportation system.



**INTEGRATION WITH NATURE:** We prioritize harmony between nature and the built environment. We protect wildlife, reduce emissions, and create infrastructure that preserves environmental health.

## Leadership Commitment & Support

Tackling this issue will require commitment from all levels, including County and Town leadership. In 2024, Teton County and the Town of Jackson passed a resolution in support of the Teton County Safe Streets for All Action Plan. The resolution establishes a Vision Zero policy with the goal of eliminating traffic deaths and serious injuries by the year 2040. The resolution also recognizes that the Safe Streets for All Plan is a part of a larger effort to address safety and mobility that includes:

1. Comprehensive Safety Plan
2. Updated Community Streets Plan
3. Transportation Engineering Design (TED) Manual

Together, these components work together to improve the overall safety of the transportation network while enhancing comfort for active transportation users.

**NOW, THEREFORE IT IS RESOLVED** that the Teton County Board of County Commissioners:

1. Endorse this Vision Zero policy that aims to eliminate traffic deaths and serious injuries by 2040.
2. Support the Teton County/Town of Jackson Safe Streets for All Safety Action Plan as an initiative that is integral in advancing this Vision Zero policy.
3. Recognize that the Teton County/Town of Jackson Safe Streets for All Safety Action Plan consists of several components that will work together to improve safety for all modes and enhance active transportation safety and comfort. These components include:
  - a. Comprehensive Safety Action Plan
  - b. Updated Community Streets Plan
  - c. Transportation Engineering Design Standards (TEDS) Manual
4. Commit to and support the stated vision and goals of the Teton County/Town of Jackson Safe Streets for All Safety Action Plan identified in Attachment A.

Adopted on the 10<sup>th</sup> day of December, 2024.

**TETON COUNTY BOARD OF  
COUNTY COMMISSIONERS**

Attest:

Mark Newcomb, Chair  
Teton County Board of County Commissioners

  
Maureen E. Murphy, County Clerk

*Teton County and the Town of Jackson are committed to eliminating traffic deaths and serious injuries on their roadways by 2040.*





## CHAPTER 2

# Identifying Crash Patterns





# Crash Analysis

Improving safety on our roadways requires us to take a step back and understand where and why these crashes are happening. Only then can we take the appropriate steps to save lives and reduce injuries. This chapter provides an overview of crash trends and patterns from Teton County data collected from 2012 through 2022.

## WHERE ARE CRASHES HAPPENING?

Some streets are more dangerous than others in Teton County. To prioritize safety improvements, it is essential to first know where the most severe crashes occur. Using historical crash data, we are able to pinpoint the most dangerous intersections and corridors that make up the High-Injury Network (HIN).

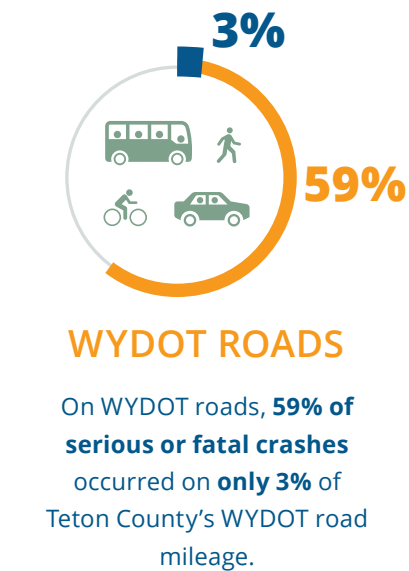
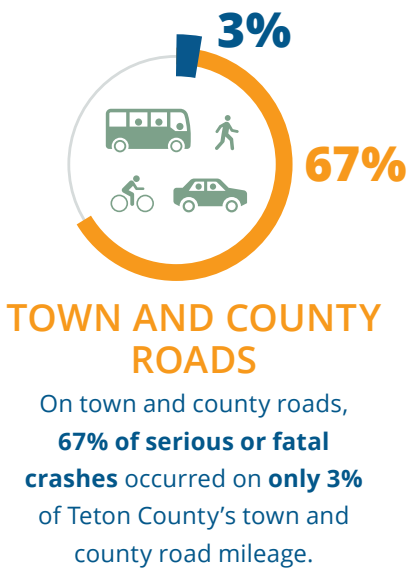
The HIN (see Map 1) was developed using crash data from all vehicle-, bicycle-, and pedestrian-involved crashes from 2012 through 2022. The project team identified the network by analyzing roads with high densities of injury crashes per mile, with severe and fatal crashes weighted highest.

A number of roads owned and operated by the Wyoming Department of Transportation (WYDOT) run through Teton County and are the most heavily traveled in Teton County. The analysis considered these separately, resulting in one HIN for town and county roads and one HIN for WYDOT roads. The

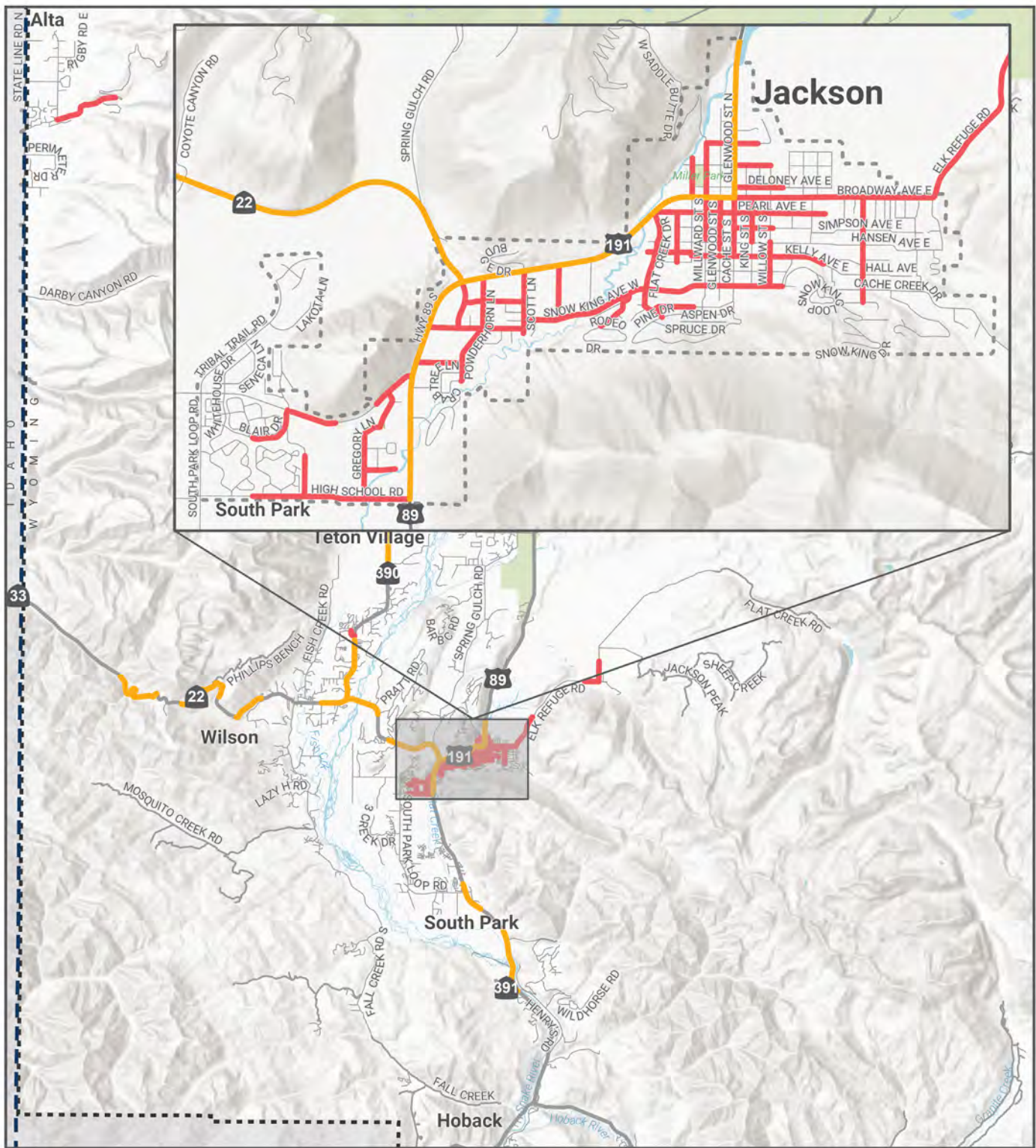
### High Injury Network (HIN)

The HIN consists of a small proportion of roadways that constitute a disproportionate number of life-altering crashes in Teton County. The HIN represents opportunities where investments can have a greater impact on safety.

analysis shows that most HIN segments are located in Jackson’s downtown historic district or immediately adjacent to Highway 89, which sees higher traffic volumes than outlying residential areas. W. Pearl and W. Broadway Avenues were the highest-injury corridors in downtown Jackson. W. Snow King Avenue was a notable corridor outside of the Town Square area with high crash rates.



Map 1. High Injury Network



### HIGH INJURY NETWORK

TETON COUNTY, WY  
SAFE STREETS FOR ALL  
SAFETY ACTION PLAN

Town of Jackson

County Line

Parks

Water

Town and County Roads HIN

WYDOT Roads HIN





MOST DANGEROUS CORRIDORS

As part of the analysis, each road segment was assigned a score to prioritize the most dangerous corridors. Below are the top 10 most dangerous corridors for town and county roads and WYDOT roads in Teton County.

TOWN AND COUNTY ROADS

1

W. Pearl Ave.  
S. Cache St. - S. Jackson St

2

Buffalo Way  
Maple Way - Highway 89

3

High School Rd.  
Highway 89 - Gregory Ln.

4

E. Broadway Ave.  
Cache St. - Jean St.

5

S. Park Loop Rd.  
Highway 89 - Gregory Ln.

6

Powderhorn Ln.  
Highway 89 - Maple Way

7

Powderhorn Ln.  
Maple Way - Crabtree Ln.

8

W. Kelly Ave.  
S. Jackson St. - West of Flat Creek Dr.

9

Meadowlark Ln.  
Highway 89 - Powderhorn Ln.

10

Maple Way  
Highway 89 - Powderhorn Ln.

WYDOT ROADS

1

W. Broadway Ave.  
Buffalo Way - Karns Meadow Dr.

2

Highway 89  
Maple Way - Buffalo Way

3

Highway 89  
Meadowlark Ln. - Maple Way

4

Highway 89  
High School Rd. - Flat Creek Crossing

5

W. Broadway Ave.  
Karns Meadow Dr. - S. Cache St.

6

Highway 89  
Flat Creek Crossing - Stellaria Ln.

7

Highway 89  
Meadowlark Ln. - Stellaria Ln.

8

Highway 22  
Mile Post 12.5 - Mile Post 13.5

9

Highway 22  
Pratt Rd - Highway 390

10

Highway 22  
Wenzel Ln. - Highway 390



CRASH PROFILES

Knowing the circumstances surrounding crashes is just as important as knowing where they occurred. While there are many factors that contribute to crashes, some crash types are more common than others.

“Crash profiles” highlight groups of crashes with similar characteristics to help identify contributing factors that can influence recommendations for safety countermeasures. An analysis was conducted to identify the most common crash profiles. Five crash profiles were developed for town and county roads, and four crash profiles were identified for WYDOT roads. For more information on these crash profiles, see Appendix D.

TOWN AND COUNTY ROADS

Crash Profile 1

Angle crashes at intersections

VEHICLES

Crash Profile 2

Mid-block single-vehicle crash

VEHICLES

Crash Profile 3

Bicycle/pedestrian crash at intersection

BIKE/PED

Crash Profile 4

Rear end crash

VEHICLES

Crash Profile 5

Single-vehicle crash involving an impaired driver

VEHICLES

WYDOT ROADS

Crash Profile 1

Mid-block angle crash with a speed limit of 45mph or greater

VEHICLES

Crash Profile 2

Rear-end crash at intersection

VEHICLES

Crash Profile 3

Single-vehicle rollover/overturned vehicle, mid-block on dark and unlighted roadway

VEHICLES

Crash Profile 4

Bicycle/pedestrian crash at business entrance or driveway

BIKE/PED





EQUITY SCAN

The transportation network may not equally serve all populations and its impacts may be unevenly distributed. For example, historically underserved groups may rely on walking, biking, or public transit to meet their day-to-day needs or may be forced to deal with long commutes due to housing costs.

An equity scan was conducted across Teton County to understand where safety and mobility priorities could

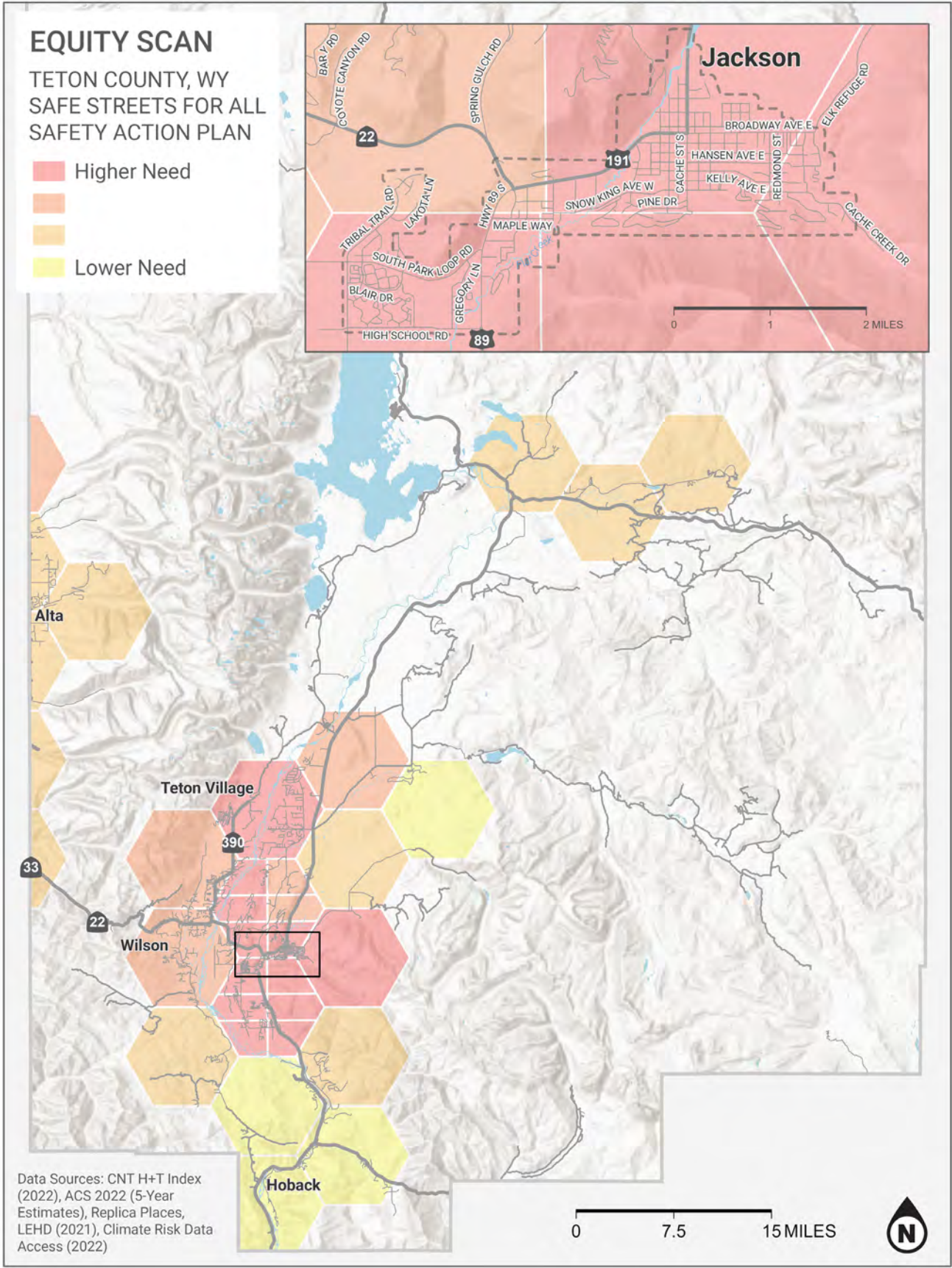
most effectively serve disadvantaged communities and commuters. The scan identified areas where several socioeconomic and climate-related variables are most concentrated across Teton County. These different mobility needs translate to additional impacts on selected users and populations. Figure 1 below shows the six variables used in the equity scan. Combining this analysis with the crash analysis

can help prioritize safety projects by identifying where high-risk crash areas may overlap with high-need communities and travelers. Map 2 shows the results of the equity scan. For more details on the equity scan methodology and results, see Appendix D.

Figure 1. Equity Scan Variables



Map 2. Equity Scan







## KEY FINDINGS

The crash analysis and the equity scan provided important findings that informed project selection and recommendations.

- The HIN is an important tool that leverages funding resources toward areas where maximum safety impact can be made. The HINs for town, county, and WYDOT roads confirm that most crashes in Teton County are concentrated on a small percentage of roadway miles.
- Most HIN road segments are located in Jackson's Town Square area or immediately adjacent to Highway 89 including Pearl and Broadway Avenues. Snow King Avenue was a notable corridor outside of the historic district with high crash rates.
- Crash profiles help identify countermeasures that are aligned with crash observations and behaviors. They will help Teton County more directly address crashes that are occurring. The analysis provided five crash profiles for town and county roads and four crash profiles for WYDOT roads to assist the respective agencies in making improvements.



## CHAPTER 3

# Community Discussions





# Overview

The crash analysis in the previous section is a data-centered approach to understanding crash patterns in Teton County. It is essential to supplement the data analysis with public input to understand public perceptions and experiences around safety that help confirm what the data appears to be showing. Extensive outreach and engagement also identifies trends that may not be obvious in reviewing crash data alone and provides real-life experiences people face when traveling around the County.

The community engagement process integrated important community feedback at critical phases of the planning process and validated crash trends, confirm problematic corridors and intersections, and identify recommendations that are context-appropriate. A variety of outreach activities described in this section were used to engage residents, business owners, advocacy groups, commuters, jurisdictional staff, and law enforcement, among others. Additionally, outreach and engagement to historically marginalized and hard-to-reach groups was conducted through community partners.

Whenever possible, the project team identified opportunities to “meet people where they are” instead of relying solely on a traditional public meeting format. This involved tabling at grocery stores and public events combined with virtual engagement through interactive Story Maps.

# Phase I: Listen & Learn

The first phase of community engagement was focused on introducing the project to the public and gathering feedback on mobility needs and transportation safety. The project team collected feedback primarily through an online input map and survey that was open from March 14 through May 14, 2024. The survey was available in English and Spanish. Survey participants were asked about their current travel behaviors, how they would like to get around, their safety concerns, and their preference on potential safety improvements. The survey also directed respondents to an interactive map where they could specify the location of their safety concerns (**Figure 2**). The Town and County hosted an open house in May 2024 to offer the public a chance to ask questions and learn more about the project. A total of 281 survey responses were collected, and 53 community members attended the open house.

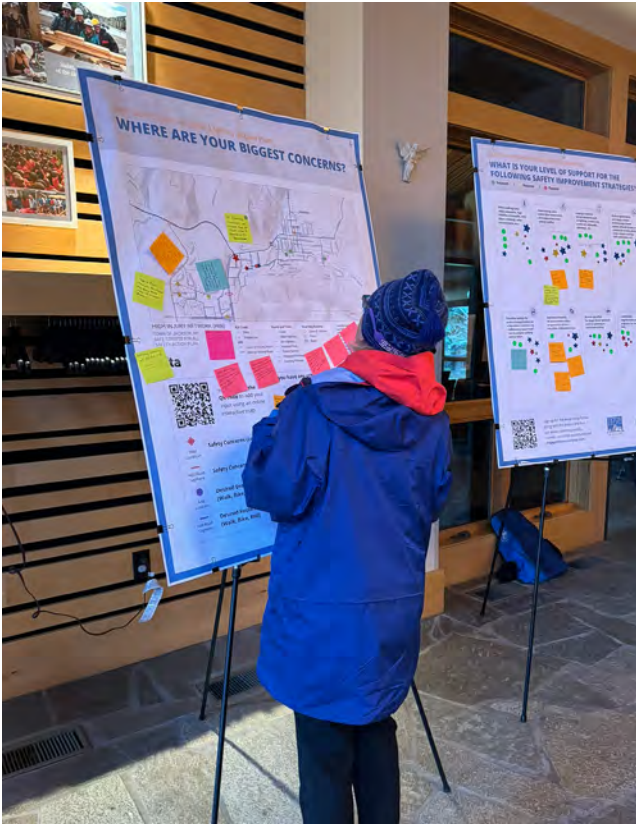
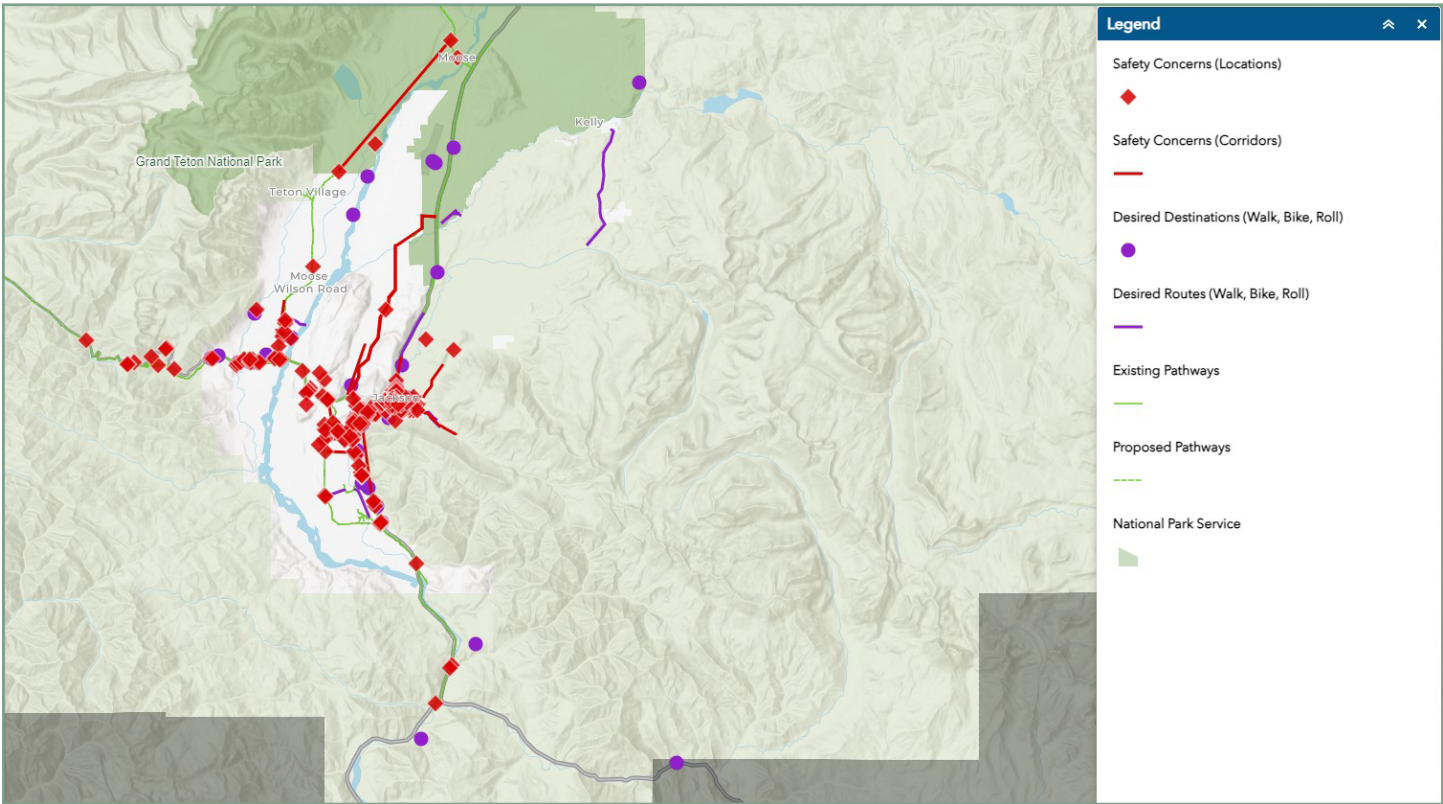


Figure 2. Phase I Engagement Community Input Map







# Phase II: Reflect & Dive In

The second phase of engagement kicked off in fall 2024. During this round, the project team shared themes from the first engagement phase and presented the findings from the safety analysis. This information was shared via an online StoryMap. The StoryMap (see **Figure 3**) also included a second, smaller set of survey questions asking respondents to rank safety project locations and provide feedback on the parallel Updated Community Streets Plan process. This survey was open from October 14 through November 21, 2024. The project locations were corridors and intersections that the project team identified through the safety analysis, Project Steering Committee input, and community feedback. The StoryMap webpage was visited 817 times and 111 survey responses were recorded.

Figure 3. Online StoryMap

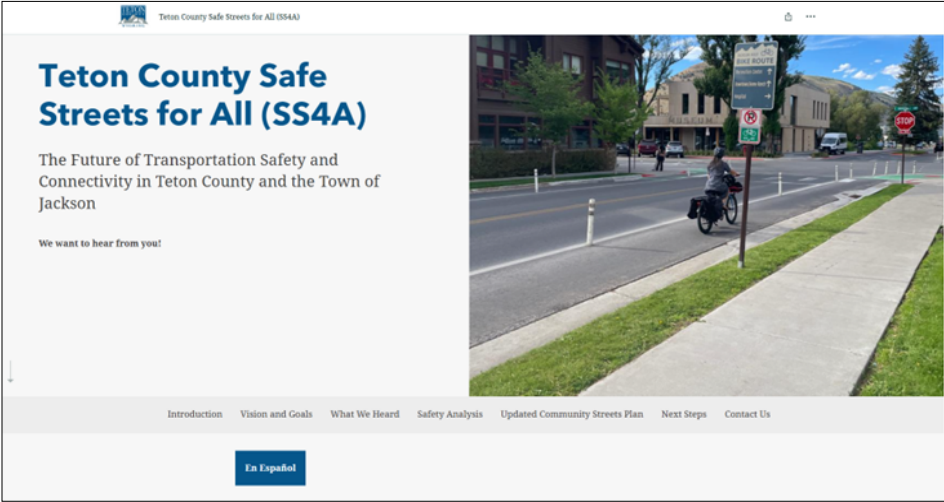


Figure 4. Example of Social Media Post



# Phase III: Refine

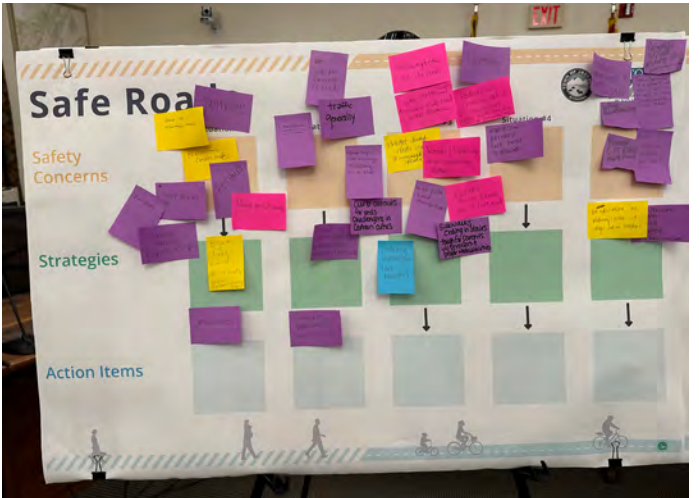
The final phase of engagement for this plan occurred in May 2025. A draft of the Comprehensive Safety Action Plan was shared with the public to showcase how public input shaped project outcomes and final recommendations. Outreach efforts included tabling events at grocery stores and other public events including the Bicycle Film Festival. The County hosted an open house and met with the steering committee one more time. The online StoryMap was updated with highlights from the draft plan and offered an opportunity for the community to indicate which plan recommendations were most important to them. The StoryMap garnered over 800 views and 52 survey responses were recorded.



# Stakeholder Outreach

## PROJECT STEERING COMMITTEE

A 15-member Project Steering Committee (PSC) was assembled to guide the development of the plan from vision setting to implementation and to help chart the next 10 years of mobility and safety improvements in Teton County. PSC members included local community members and agency staff who represent a variety of interests and backgrounds including older adults, persons with disabilities, active transportation advocates, business owners, and conservation advocates. Throughout the plan's development, the committee convened several times to understand concepts such as the Safe Systems Approach, discuss vision and goals, review document drafts, and prioritize projects.



## VOICES JH

Voices Jackson Hole (Voices JH) is a community-based organization with a mission of engaging and uplifting the immigrant communities of the Teton region. Voices JH conducted a Spanish language focus group and five individual interviews with Eastern European community members to engage and incorporate the needs of the immigrant communities in the planning process. The interviews and the focus group were facilitated in the families' first language or in English as appropriate. Discussions were tailored to understand travel concerns, perceived barriers to safety, and recommendations of priority areas within the county.





# Engagement Highlights

(March - November 2024)

4 Project Steering Committee Meetings

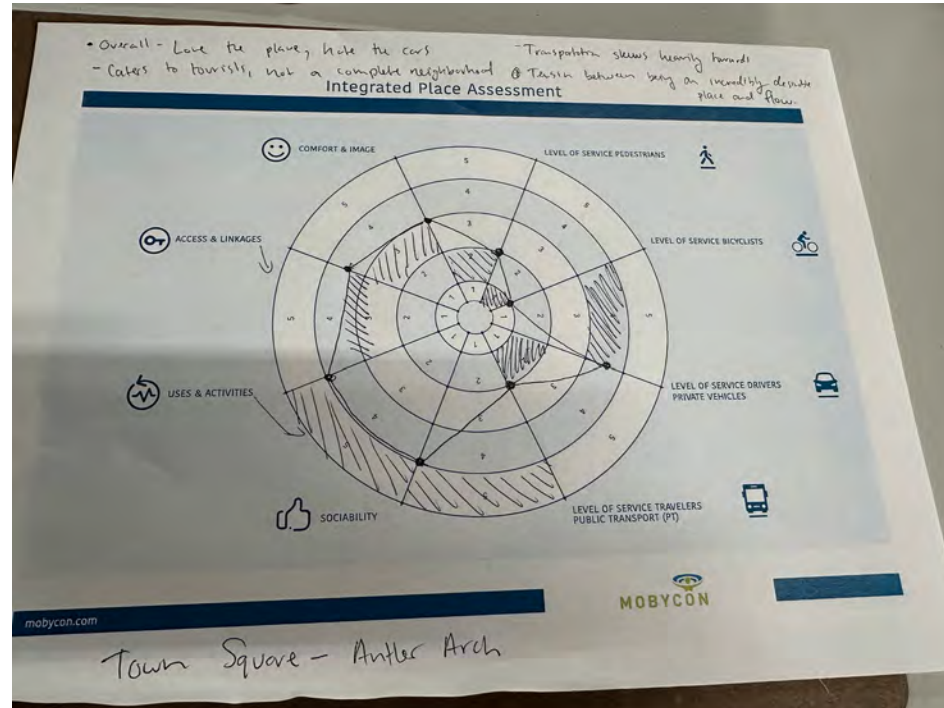
53 Open House Participants

392 Online Survey Responses

817 StoryMap Visits

22 Spanish Language Focus Group Participants

5 In-Person Interviews with Eastern European Immigrants

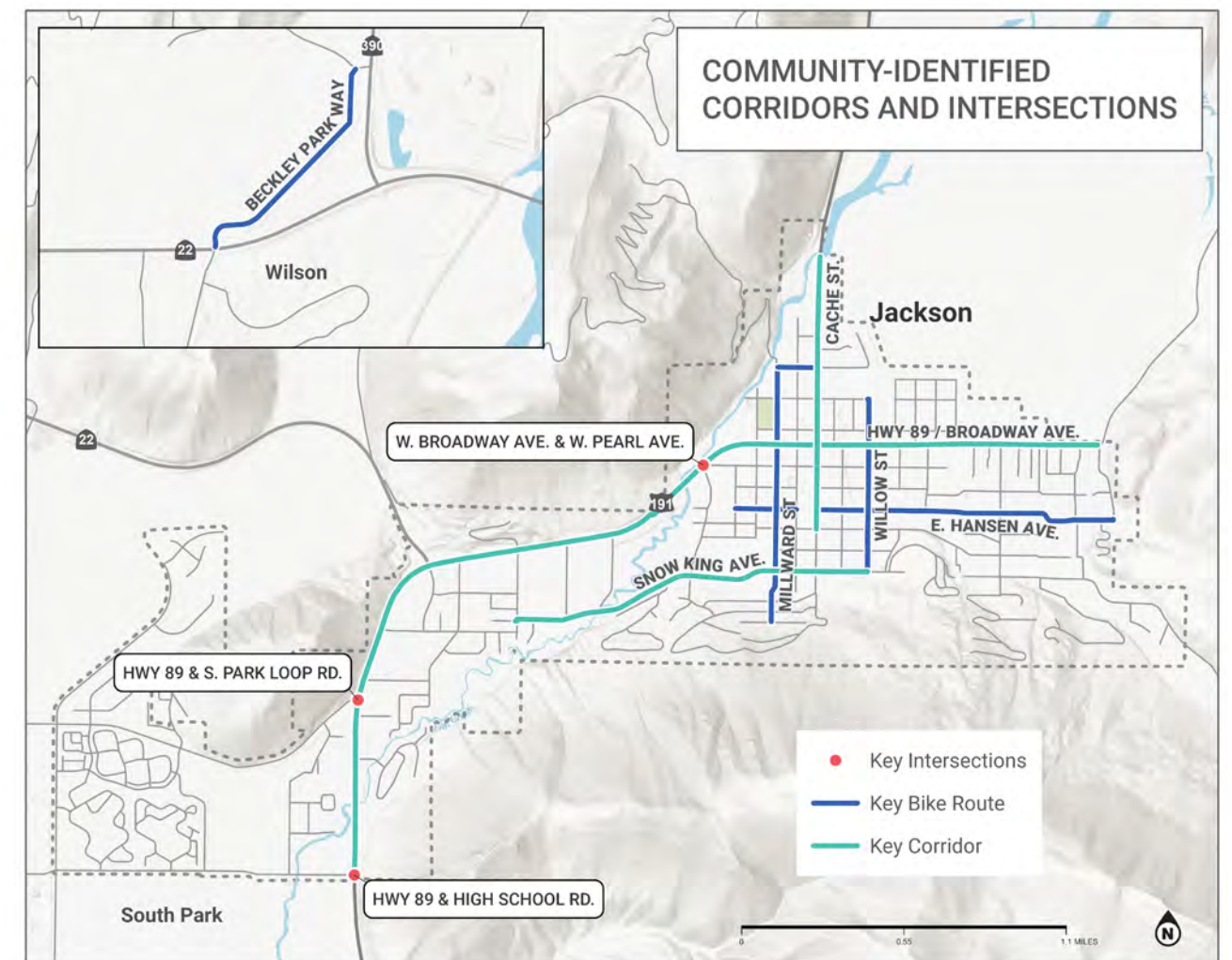


## What We Heard

- **People want to walk and bike more:** The public expressed a need for better walking and biking facilities including pathway connectivity, continuous sidewalks (particularly in the Town of Jackson core), transit hubs, and pedestrian safety improvements around Town Square.
- **Safety improvements at crossings and intersections:** Difficult intersections and pathway crossings without proper infrastructure make it difficult for people to use the road safely and predictably. A high density of safety concerns was generally clustered along highways and arterial roadways, such as Highway 89 in Jackson. This corresponds to the crash profile findings in Chapter 2.
- **Transit and shared transportation options:** The community wants more transportation options, such as

public transit, employer shuttles, and park-and-rides, to connect Jackson residents and visitors to key destinations including the airport.

- **Wildlife safety:** Considering wildlife interactions and safety in designing and implementing transportation improvements was important for community members.
- **Maintenance investments:** Poorly maintained roads, sidewalks, pathways, or bike lanes (including snow and ice removal) was the top infrastructure-related safety concern.
- **Enforce stricter penalties and address road user behavior:** There is public support for stricter penalties, safety education programs, and enforcement strategies to address unsafe driving behavior.







## CHAPTER 4

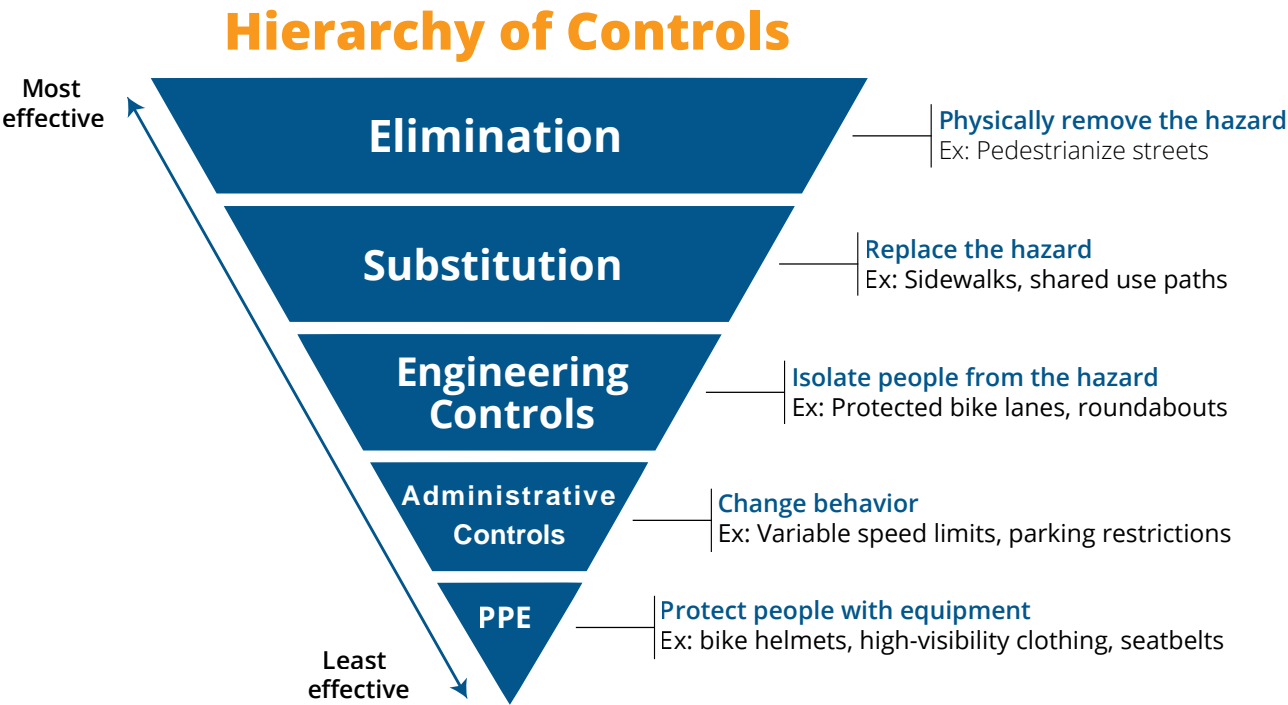
# Tools for Change





# Hierarchy of Controls

When it comes to traffic safety, the Town and County have various tools at their disposal, though their effectiveness differs. The Hierarchy of Controls (shown below) is a framework that ranks strategies by their effectiveness. Adapted for traffic safety, it helps assess how well different approaches reduce fatal and serious crashes. This plan emphasizes physical infrastructure changes, as they tend to be more effective than efforts aimed at changing human behavior. Directing the Town and County's resources toward engineering solutions will likely yield the greatest impact.



# What Are Safety Countermeasures?

The analysis of historical crash data and the resulting crash profiles show where crashes are happening and under what conditions. Next, we can start to identify ways to prevent common crashes by implementing safety countermeasures. "Countermeasures" are safety improvements that can be made to a roadway to reduce the likelihood of a crash and reduce the severity of crashes when they do occur. **Figure 5** shows a sample of common countermeasures used to improve safety for all users.

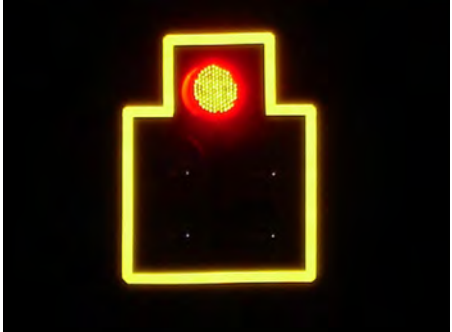
The countermeasures were derived from national best practices, including the following safety references:

- [Crash Modification Factors Clearinghouse](#)
- [FHWA Proven Safety Countermeasures](#)
- [FHWA Roadway Departure Safety: A Manual for Local Rural Road Owners](#)

Figure 5. Sample of Safety Countermeasures



Roundabouts and Neighborhood Traffic Circles



Traffic Signal Backplates with Retroreflective Borders



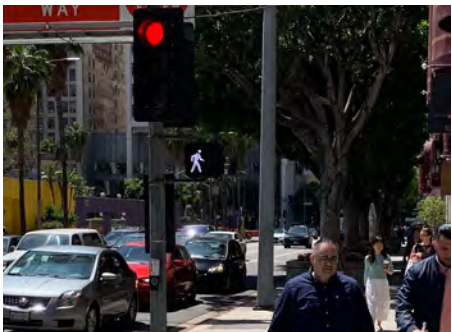
Separated Bike Lanes



Dedicated Left- and Right-Turn Lanes



Centerline and Rumble Strips



Leading Pedestrian Interval





# Applying Safety Countermeasures

**Tables 1 and 2** list the specific countermeasures that can be applied to address each crash profile. The table also includes a description of how each countermeasure responds to the crash profile and the level of complexity of implementation. **Table 1** lists the top three crash profiles for town and county roads, and **Table 2** lists the top three crash profiles for WYDOT roads. For more information on the safety countermeasures recommended below, see Appendix E.



## TOWN AND COUNTY ROADS

**Table 1.** Top Three Town and County Road Crash Profiles

| CRASH PROFILE   | COUNTERMEASURE  | HOW IT RESPONDS TO CRASH PROFILE   | COMPLEXITY | CONTROLS                |
|---|---|--|------------|-------------------------|
| #1<br>ANGLE<br>CRASH AT<br>INTERSECTIONS<br>(ALL MODES) | All-Way Stop  | Increase driver awareness  | Low        | Engineering Controls    |
|   | Intersection Visibility (Daylighting)                 | Increased visibility   | Medium     | Administrative Controls |
|   | Backplates with Retroreflective Borders               | Enhances traffic signal visibility                                       | Low        | Engineering Controls    |
|   | Dedicated Left- and Right-Turn Lanes at Intersections | Separates turning traffic from through traffic, reducing conflict points | Medium     | Engineering Controls    |
|   | Yellow Change Intervals                               | Reduces red-light running  | Low        | Administrative Controls |
|   | Roundabouts   | Lowens vehicle speeds and reduces conflicts                              | High       | Engineering Controls    |



| CRASH PROFILE   | COUNTERMEASURE                    | HOW IT RESPONDS TO CRASH PROFILE   | COMPLEXITY | CONTROLS                |
|---|-----------------------------------|--|------------|-------------------------|
| #2<br>SINGLE-VEHICLE<br>CRASH<br>(ALL MODES)            | SafetyEdge <sup>SM</sup>          | Enables vehicles that have left the roadway to safely regain control                   | Medium     | Engineering Controls    |
|   | Wider Edge Lines                  | Reduces roadway departures   | Low        | Engineering Controls    |
|   | Shoulder Rumble Strips            | Alerts drivers that they have left the travel lane                                     | Low        | Engineering Controls    |
|   | Variable Speed Limits (VSL)       | Adjusts speed limits when visibility or pavement conditions are less than ideal        | Medium     | Administrative Controls |
| #3<br>BIKE OR<br>PEDESTRIAN<br>CRASH AT<br>INTERSECTION | Separated Bike Lanes              | Provides barrier to protect cyclists from motor vehicle traffic                        | Medium     | Substitution            |
|   | Leading Pedestrian Interval (LPI) | Allows pedestrians to enter crosswalk first for better visibility for turning vehicles | Low        | Engineering Controls    |
|   | Sidewalks                         | Provides vertical separation for pedestrians from motor vehicle traffic                | Medium     | Substitution            |
|   | Curb Extensions                   | Reduces pedestrian exposure by shortening crossing length                              | Medium     | Engineering Controls    |
|   | Parking Restrictions              | Enhances visibility of pedestrians for turning vehicles                                | Low        | Administrative Controls |
|   | Pedestrian Refuge Islands         | Allows pedestrians to cross one direction of traffic at a time                         | Medium     | Engineering Controls    |
|   | No Right-Turn-on-Red              | Reduces vehicle and pedestrian or cyclist conflicts                                    | Low        | Administrative Controls |





| CRASH PROFILE  | COUNTERMEASURE  | HOW IT RESPONDS TO CRASH PROFILE  | COMPLEXITY                                 | CONTROLS                |
|--|---|---|--|-------------------------|
| #3<br>BIKE OR PEDESTRIAN CRASH AT INTERSECTION (CONTINUED) | High-Visibility Crosswalk Markings  | Enhances visibility of crosswalks from far distances or under low visibility conditions | Low  | Substitution            |
|  | Lighting  | Allows drivers to identify pedestrians or cyclists crossing the roadway                 | Medium                                     | Engineering Controls    |
|  | Rectangular Rapid Flashing Beacons (RRFB)                                 | Increases driver awareness at uncontrolled, marked crosswalks                           | Low  | Substitution            |
|  | Continuous Raised Medians or Hardened Centerlines                         | Slows down left-turning vehicles  | High (Raised Median) Low (Hardened Median) | Substitution            |
|  | Protected Intersections (Bikes)   | Provides continuous protection for cyclists when navigating intersections               | High                                       | Engineering Controls    |
|  | Bicycle Treatments (Bike Boxes, Bike Signals/ Phasing, Pavement Markings) | Increases visibility of cyclists at intersections                                       | Low (Treatments) Medium (Signals)          | Engineering Controls    |
|  | Crossbike Markings at Intersections                                       | Increases visibility of cyclists at intersections                                       | Medium                                     | Engineering Controls    |
|  | Corridor Access Management  | Reduces conflict points   | Medium - High                              | Administrative Controls |

WYDOT ROADS

Table 2. Top Three WYDOT Road Crash Profiles

| CRASH PROFILE                        | COUNTERMEASURE           | HOW IT RESPONDS TO CRASH PROFILE   | COMPLEXITY | CONTROLS             |
|--------------------------------------|--------------------------|--|------------|----------------------|
| #1<br>MID-BLOCK ANGLE CRASH, 45+ MPH | Centerline Rumble Strips | Alerts drivers when drifting into oncoming traffic                           | Low        | Engineering Controls |
|                                      | Median Barriers          | Prevents vehicles from crossing into oncoming traffic on high speed roadways | Low        | Engineering Controls |

| CRASH PROFILE  | COUNTERMEASURE  | HOW IT RESPONDS TO CRASH PROFILE   | COMPLEXITY | CONTROLS                |
|--|---|--|------------|-------------------------|
| #2<br>REAR END CRASH AT INTERSECTION   | Variable Speed Limits (VSL)                           | Adjusts speed limits when visibility or pavement conditions are less than ideal            | Low        | Administrative Controls |
|  | Lighting  | Allows drivers to identify pedestrians or cyclists crossing the roadway                    | Medium     | Engineering Controls    |
|  | Backplate with Reflective Borders                     | Enhances traffic signal visibility   | Low        | Engineering Controls    |
|  | Yellow Change Intervals                               | Reduces abrupt stops by vehicles approaching signalized intersections                      | Low        | Administrative Controls |
|  | Dedicated Left- and Right-Turn Lanes at Intersections | Separates turning traffic from through traffic, reducing conflict points                   | Low        | Engineering Controls    |
|  | Enhanced Signing and Delineation                      | Increases awareness for drivers approaching an intersection                                | Low        | Engineering Controls    |
|  | Supplementary Stop Signs Mounted Over the Roadway     | Increases awareness for drivers approaching a stop controlled intersection                 | Low        | Engineering Control     |
| #3<br>SINGLE-VEHICLE CRASH, ROLLOVER/ OVERTURNED MID-BLOCK, DARK AND UNLIGHTED ROADWAY | Variable Speed Limits (VSL)                           | Adjusts speed limits when visibility or pavement conditions are less than ideal            | Low        | Administrative Controls |
|  | Lighting  | Allows drivers more time to stop when they identify a hazard or change in the road ahead   | Medium     | Engineering Controls    |
|  | Wider Edge Lines                                      | Reduces roadway departures   | Low        | Engineering Controls    |
|  | Shoulder Rumble Strips                                | Alerts drivers that they have left the travel lane   | Low        | Engineering Controls    |
|  | Fluorescent Curve Signs                               | Alerts drivers to upcoming turns and communicates the direction and sharpness of the curve | Low        | Administrative Controls |





# Policy and Process Recommendations

Change is possible when we take a look at the entire system and how we interact with it. In addition to implementing countermeasures, various policy and process changes can support physical infrastructure improvements and improve safety on our roadways. This section provides recommended strategies for Teton County and the Town of Jackson.

## DESIGN

| RECOMMENDATION   | SAFE SYSTEM CATEGORIES        | TIMELINE              | FUNDING  | ORGANIZATIONAL CAPACITY NEEDS | HIERARCHY OF CONTROLS |
|--|-------------------------------|-----------------------|----------|-------------------------------|-----------------------|
| <b>D.1 Implement safety improvements on the High Injury Network (HIN).</b><br>Improving safety on the HIN should be a top priority as crash data shows those corridors as being the highest-risk crash areas for all road users. Quick build improvements should be considered for locations that need safety enhancements to be implemented rapidly and where traditional construction timelines would be lengthy. Refer to the top HIN corridors identified for town, county, and WYDOT roads in Chapter 2 of this Safety Action Plan and incorporate specific vulnerable road user improvements as discussed in Strategy D.7. | Safe Roads<br>Safe Speeds     | Long<br>(5+ years)    | High     | Moderate                      | Engineering Controls  |
| <b>D.2 Implement safety improvements on locations identified in the Corridors &amp; Intersections Safety Analysis.</b><br>Address safety issues identified in the Corridors and Intersections Safety Analysis, using those recommendations as a starting point for improvements and prioritizing corridors and intersections that scored highest on the HIN. The Corridors and Intersections Safety Analysis location selection matrix provides more information on how they were selected and may be used to prioritize improvements.   | Safe Roads<br>Safe Speeds     | Medium<br>(2-5 years) | High     | Low                           | Engineering Controls  |
| <b>D.3 Collaborate with WYDOT on countywide intersection safety improvements.</b><br>Improvements should be focused on corridors on the High Injury Network (HIN), especially corridors in the 50th percentile of HIN scores noted in the Corridors and Intersections Safety Analysis.   | Safe Roads                    | Long<br>(5+ years)    | High     | Moderate                      | Engineering Controls  |
| <b>D.4 Address bicycle and pedestrian safety at intersections and driveways on town, county, and WYDOT roads.</b><br>Enhance the safety and visibility of bicyclists and pedestrians at intersections at these locations in accordance with the Updated Community Streets Plan and using tools from the TED Manual. <i>Coordinate with Strategy D.2.</i>   | Safe Roads<br>Safe Speeds     | Medium<br>(2-5 years) | Moderate | Moderate                      | Engineering Controls  |
| <b>D.5 Mitigate risks for single-vehicle crashes involving wildlife conflicts.</b><br>Provide enhanced, high-visibility wildlife safety warnings along county roads and in locations with high wildlife crash propensities, especially in areas that intersect with the HIN. Refer to the Wildlife Crossing Master Plan and single-vehicle, mid-block crashes for locations that may specifically benefit.   | Safe Roads                    | Medium<br>(2-5 years) | Moderate | Low                           | Engineering Controls  |
| <b>D.6 Improve roadway lighting in accordance with dark sky standards, focusing first on the HIN.</b><br>Lack of adequate lighting was repeatedly discussed in community outreach and was found to be a common factor in the high occurrences of rollover/overturned vehicle crashes on WYDOT roads. Lighting and visibility is especially important for vulnerable road users as well. <i>Coordinate with Strategies D.2 and D.3.</i>   | Safe Road Users<br>Safe Roads | Medium<br>(2-5 years) | High     | Low                           | Engineering Controls  |
| <b>D.7 Improve pedestrian and bicycle infrastructure and connect gaps.</b><br>Enhance pedestrian and bicycle safety and fill network gaps by implementing the Updated Community Streets Plan and contextually implementing countermeasures where necessary (including county roads) and constructing improvements identified in the updated Pathways Master Plan. These could include ADA retrofits and treatments such as new and/or improved midblock crossings, roundabouts, sidewalks, bicycle infrastructure, and curb extensions. <i>Coordinate with Strategy D.3.</i>   | Safe Roads<br>Safe Speeds     | Long<br>(5+ years)    | High     | High                          | Engineering Controls  |
| <b>D.8 Develop a process to identify and implement safety improvements in areas with known safety risks, even if there is not an extensive recorded crash history.</b><br>A proactive approach is an important strategy to improve road safety. Developing a process to identify areas with significant potential for conflicts but have not yet experienced serious or fatal crashes is an essential first step. The identification process could include methods for travelers to self-report unsafe conditions or “near misses”.  | Safe Roads                    | Medium<br>(2-5 years) | Low      | Moderate                      | Engineering Controls  |





DEVELOPMENT REGULATIONS

| RECOMMENDATION   | SAFE SYSTEM CATEGORIES | TIMELINE              | FUNDING | ORGANIZATIONAL CAPACITY NEEDS | HIERARCHY OF CONTROLS                |
|--|------------------------|-----------------------|---------|-------------------------------|--------------------------------------|
| <b>L.1 Revise or redesign on-street parking near intersections with higher pedestrian crash propensities to improve visibility and be compliant with Wyoming state law.</b><br><br>Remove on-street parking and use quick build techniques identified in the Countermeasures section of this Safety Action Plan, such as curb extensions, to improve pedestrian visibility and reduce crashes.   | Safe Roads             | Short<br>(1-2 years)  | Low     | Moderate                      | Administrative Controls              |
| <b>L.2 Require new developments to provide bicycle and pedestrian infrastructure connections by assessing connections internal to their development along with accessibility to the broader bicycle and pedestrian network.</b><br><br>A thorough analysis of the effect of new developments on bicycle and pedestrian travel, coupled with effective and appropriate mitigations, can improve roadway safety by ensuring that the needs of vulnerable road users are emphasized as a municipality grows. This is consistent with Policy 7.3.e in the Teton County Comprehensive Plan. | Safe Roads             | Short<br>(1-2 years)  | Low     | Moderate                      | Substitution<br>Engineering Controls |
| <b>L.3 Analyze existing policy or process barriers to compact development.</b><br><br>Reducing barriers to compact development can help facilitate denser development patterns where they are already intended to occur, which makes pedestrian travel easier and safer by reducing distances between destinations in high-activity areas.   | Safe Roads             | Short<br>(1-2 years)  | Low     | Moderate                      | Administrative Controls              |
| <b>L.4 Update the Town and County Land Development Regulations (LDRs) to reflect best practices identified in the TED Manual and to specifically address bicycle and pedestrian issues and needs.</b><br><br>The TED Manual contains some standards that differ from the LDRs. While the LDRs are intended to be minimums and may be exceeded to match TED Manual standards, the two should match as closely as possible to promote clear solutions for both public and private projects.  | Safe Roads             | Medium<br>(2-5 years) | Low     | Moderate                      | Engineering Controls                 |

PLANS

| RECOMMENDATION   | SAFE SYSTEM CATEGORIES | TIMELINE              | FUNDING  | ORGANIZATIONAL CAPACITY NEEDS | HIERARCHY OF CONTROLS |
|--|------------------------|-----------------------|----------|-------------------------------|-----------------------|
| <b>PL.1 Ensure that the HIN is included in future land use and transportation planning efforts so that HIN improvements are able to be made from a variety of implementation sources, including Capital Improvements, new development, and other jurisdictional investments</b><br><br>Ensuring that HIN is referenced in future plans and plan updates will carry recommendations forward for future implementation where needed, and potentially improve future funding applications.  | Safe Roads             | Ongoing               | Low      | Low                           | Engineering Controls  |
| <b>PL.2 Update the TED Manual periodically to reflect best practices.</b><br><br>Although the TED Manual was developed in reference to the latest local standards and national guidance, such as AASHTO and NACTO, it will need to be updated at regular intervals to account for new and possibly more effective standards that may arise over time.  | Safe Roads             | Ongoing               | Low      | Low                           | Engineering Controls  |
| <b>PL.3 Audit bus stops along the HIN to identify both quick-build strategies and long-term improvements needed, including ADA compliance.</b><br><br>Safe access to transit is essential, and safety issues can arise for vulnerable users when transit stops lack sidewalks, pathways, or other connections for pedestrian or bicycle travel. Bus stops on the HIN should be targeted for improvements to improve safety for riders on corridors with relatively higher risk. Transit stop improvements could include a variety of interventions such as relocations to enhance safety, ADA improvements, or the addition of rider amenities to improve comfort and accessibility. | Safe Road Users        | Short<br>(1-2 years)  | Low      | Moderate                      | Engineering Controls  |
| <b>PL.4 Develop a County Road and Village Active Transportation Plan.</b><br><br>A County Road and Village Active Transportation Plan could improve transportation safety in Teton County by connecting the Jackson-focused Community Street Plan recommendations with improvements to pathways and other bicycle and pedestrian facilities throughout the region.   | Safe Roads             | Medium<br>(2-5 years) | Moderate | Moderate                      | Engineering Controls  |





POLICIES

| RECOMMENDATION   | SAFE SYSTEM CATEGORIES                      | TIMELINE                            | FUNDING     | ORGANIZATIONAL CAPACITY NEEDS | HIERARCHY OF CONTROLS          |
|--|---|-------------------------------------|-------------|-------------------------------|--------------------------------|
| <b>PO.1 Include safety implementation progress updates and address how proposed capital projects will improve safety when located on HIN.</b><br><br>Identify a committee to provide accountability on addressing safety issues and progress, or add this coordination responsibility to the duties of the safety staff person noted in PO.3.  | <i>Safe Roads</i><br><i>Safe Speeds</i>     | <i>Ongoing</i>                      | <i>Low</i>  | <i>Low</i>                    | <i>Engineering Controls</i>    |
| <b>PO.2 Identify partnership opportunities to address neighborhood traffic calming.</b><br><br>The Western Transportation Institute (WTI) and Montana State can offer models and examples for this. The TED Manual and this Action Plan also provide details on specific traffic calming countermeasures. In addition, investigating reliable grant funding or new dedicated funding sources, can help improve safety more quickly by making a larger, more consistent pool of funding available.  | <i>Safe Roads</i><br><i>Safe Speeds</i>     | <i>Short</i><br><i>(1-2 years)</i>  | <i>Low</i>  | <i>Low</i>                    | <i>Engineering Controls</i>    |
| <b>PO.3 Hire a dedicated staff person that can focus on safety improvement implementation, tracking, and coordination.</b><br><br>Safety improvements are easier and more efficiently coordinated between multiple departments and agencies when a staff person can dedicate much of their time to pursuing safety improvements and tracking, implementing, and following up on recommendations in this Safety Action Plan. They can also ensure best practices in design are followed for new and rehabilitated roadway, bike, pedestrian facilities in accordance with the TED Manual and its updates. | <i>Safe Road Users</i><br><i>Safe Roads</i> | <i>Short</i><br><i>(1-2 years)</i>  | <i>High</i> | <i>Low</i>                    | <i>Administrative Controls</i> |
| <b>PO.4 Develop or update Town/County access management policies to reduce driveway conflicts, and work with WYDOT to transition legacy accesses into compliance with new access management standards</b><br><br>Access management policies can help address this by reducing conflicts, especially along busy commercial corridors, making the roadway environment safer for all users.   | <i>Safe Roads</i>                           | <i>Medium</i><br><i>(2-5 years)</i> | <i>Low</i>  | <i>High</i>                   | <i>Administrative Controls</i> |
| <b>PO.5 Lower speed limits in conjunction with other roadway safety improvements.</b><br><br>Lowering speed limits in areas with a lot of conflicts between users, especially in conjunction with design improvements, can lower the likelihood of serious or fatal crashes and greatly improve safety for all users. This strategy may also help address the Crash Profile Analysis finding of high proportions of driver, bicyclist, and pedestrian injury crashes at intersections.   | <i>Safe Roads</i><br><i>Safe Speeds</i>     | <i>Ongoing</i>                      | <i>Low</i>  | <i>Low</i>                    | <i>Administrative Controls</i> |
| <b>PO.6 Accommodate pedestrians and bicyclists in existing or new maintenance of traffic (MOT) policies.</b><br><br>Vulnerable road users should be provided with safe routes when events, construction projects, or road work temporarily disrupt connections.  | <i>Safe Road Users</i><br><i>Safe Roads</i> | <i>Medium</i><br><i>(2-5 years)</i> | <i>Low</i>  | <i>Low</i>                    | <i>Administrative Controls</i> |





PROGRAMS

| RECOMMENDATION   | SAFE SYSTEM CATEGORIES  | TIMELINE              | FUNDING  | ORGANIZATIONAL CAPACITY NEEDS | HIERARCHY OF CONTROLS   |
|--|---|-----------------------|----------|-------------------------------|-------------------------|
| <p><b>PR.1 Enhance existing and develop new targeted roadway safety education and enforcement programs.</b></p> <p>Education and enforcement programs are most effective when paired together and/or with other safety improvements such as design changes. There should be clear and consistent messaging that includes high-quality materials that community stakeholders can distribute. Specific behaviors and groups can be targeted, which should be coordinated with findings in the Crash Profile analysis.</p> <p><b>Initial topics may include:</b></p> <ul style="list-style-type: none"><li>- Slowing down at intersections.</li><li>- E-bike safety on roads and pathways.</li><li>- Awareness of ADA needs</li><li>- Visitor safety materials distributed at rental car locations.</li></ul> | Safe Road Users   | Medium<br>(2-5 years) | Moderate | Moderate                      | Administrative Controls |
| <p><b>PR.2 Prioritize vulnerable road user facility maintenance systemwide, especially on streets where the Updated Community Streets Plan typologies identify bicycle and pedestrian priority.</b></p> <p>Improper facility maintenance can create safety hazards and additional conflict points with vehicles. For example, debris in bicycle lanes can cause cyclists to take evasive action into vehicle lanes, and barriers on sidewalks can make a sidewalk unusable for pedestrians.</p>  | Safe Roads  | Medium<br>(2-5 years) | Moderate | High                          | Engineering Controls    |
| <p><b>PR.3 Transportation demand management (TDM) program.</b></p> <p>Update the Transportation Demand Management (TDM) program and incorporate new requirements into Land Development Regulations to address traffic from new developments. These measures will enhance road safety for all users by reducing conflicts while promoting multimodal transport options and improved infrastructure.</p>   | Safe Road Users   |                       |          |                               | Administrative Controls |
| <p><b>PR.4 Investigate the feasibility of automated enforcement programs.</b></p> <p>Automated speed and/or red light enforcement programs have received very high effectiveness ratings. Teton County and the Town of Jackson can expand existing programs and pair these programs with Strategy PR.1.</p>  | Safe Road Users<br>Safe Speeds                                  | Long<br>(5+ years)    | Moderate | High                          | Administrative Controls |
| <p><b>PR.5 Develop a transparent process for tracking crashes on WYDOT and local roads and responding to evolving crash patterns.</b></p> <p>Reliable crash data is essential to understanding and responding to evolving crash patterns in Teton County and the Town of Jackson. This includes incorporating data from emergency room visits resulting from crashes into reports to provide a more comprehensive understanding of crashes. Crash data should be shared publicly to promote transparency and should coordinate with existing WYDOT crash analysis processes.</p>   | Safe Road Users<br>Post-Crash Care                              | Short<br>(1-2 years)  | Low      | Moderate                      | N/A                     |
| <p><b>PR.6 Reduce EMS response crash times below 9 minutes.</b></p> <p>The Crash Profiles Analysis notes that the median EMS response time for any KSI crash where EMS was called was nine minutes throughout the county, which is similar to the national average. Research shows that compared to a baseline response time of under 9 minutes, a response time of 9 to 18 minutes is associated with 34% increased odds of a death at the crash scene.</p>   | Safe Road Users<br>Post-Crash Care                              | Medium<br>(2-5 years) | High     | Moderate                      | N/A                     |
| <p><b>PR.7 Establish regional Safety Evaluation Working Group to monitor performance measures, or assign this responsibility to an existing working group.</b></p> <p>A regional working group focused on monitoring performance measures would ensure that regional progress on addressing these strategies is tracked and documented over time</p>   | Safe Road Users<br>Safe Roads<br>Safe Speeds<br>Post-Crash Care | Short<br>(1-2 years)  | Low      | Low                           | N/A                     |
| <p><b>PR.8 Invest in and expand the pathways network, focusing on the HIN and Updated Community Streets Plan typologies.</b></p> <p>Expanding the pathways network will provide safe, separated facilities for cyclists and pedestrians. Improve pathway crossings at intersections, in particular, and connect into a high-comfort on-street bicycle network within Jackson.</p>  | Safe Roads  | Long<br>(5+ years)    | High     | High                          | Engineering Controls    |





# Implementation

The Comprehensive Safety Action Plan is a holistic approach to safety. Not only does it look back to address problematic areas, it also gives the Town and County the tools they need to proactively attempt to improve safety on their roads. This plan offers an analysis of data and key safety recommendations that work to prevent crashes from happening in the future. The Updated Community Streets Plan recommends modal recommendations for corridors in Jackson and recommends different design treatments based on modal priority. Over time, this will enhance safety for all users and help guide important design trade-offs on roadways. The Transportation Engineering Design (TED) Manual will guide multimodal design best practices as Safety Action Plan and Community Streets Plan recommendations are implemented.

## Comprehensive Safety Action Plan (2025)

Recommends specific safety improvements and identifies the most important locations for those improvements.

## Updated Community Streets Plan

Identifies where each transportation mode (e.g., vehicles, bikes, and pedestrians) should be prioritized when street space is limited.

## Transportation Engineering Design (TED) Manual

Contains roadway design guidelines that Teton County and the Town of Jackson can reference when implementing safety and mobility improvements.



## CHAPTER 5

# Creating Change





# Safety Project Selection

After careful consideration of the safety analysis results and community feedback, 22 projects were selected for implementation recommendations. **Table 3** lists the 10 corridor projects and **Table 4** lists the 12 intersection projects. Each table also includes the rationale for each project’s selection. Strategic flow corridor refers to areas with a high level of multimodal overlap which need to be managed to facilitate safe mobility for all users. For detailed project cut sheets, see Appendix A.



## CORRIDORS

Table 3. List of Selected Project Corridors

|   | LOCATION   | TOP 50% OF HIN | STRATEGIC FLOW CORRIDOR | PROJECT STEERING COMMITTEE | TOWN/COUNTY STAFF | FOCUS GROUPS | ONE-ON-ONE INTERVIEWS | OPEN-ENDED SURVEY RESPONSES | % OF SURVEY PARTICIPANT VOTES <sup>1</sup> | ADDITIONAL RATIONALE                                      |
|---|--|----------------|-------------------------|----------------------------|-------------------|--------------|-----------------------|-----------------------------|--|---|
| A | W. Broadway Ave./ Highway 89 from Cache St. to High School Rd. | X              | X                       | X                          |                   | X            | X                     | X                           | 51%  |   |
| B | Pearl Ave. from S. Jackson St. to S. Jean St.                  | X              | X                       | X                          |                   | X            | X                     |                             | 31%  |   |
| C | Cache St. from Kelly Ave. to Mercill Ave.                      | X              | X                       | X                          |                   |              |                       | X                           | 38%  | • High Pedestrian Traffic Area and Near School            |
| D | Kelly Ave. from Clissold St. to Clark St.                      | X              |                         | X                          |                   | X            | X                     |                             | 14%  | • Auto Network Intersects with Truck/Transit/Bike Network |
| E | Buffalo Way from Highway 89 to Maple Way                       | X              |                         |                            |                   | X            | X                     |                             | 21%  | • High Truck and Transit Traffic                          |
| F | Moose Wilson Rd. from Highway 22 to Teton Village Rd.          |                |                         | X                          |                   |              |                       |                             | 28%  | • Adjacent to Pathway System                              |
| G | Snow King Ave. from Scott Ln. to S. Willow St.                 |                | X                       |                            | X                 | X            | X                     |                             | 47%  |   |
| H | Broadway Ave. from King St. to Nelson Dr.                      |                | X                       |                            | X                 | X            | X                     | X                           | 17%  |   |
| I | Highway 89 from Big Trail Dr. to S. Park Loop Rd.              |                |                         |                            | X                 |              |                       |                             | 21%  |   |
| J | S. Park Loop Rd. from Tribal Trail Rd. to Highway 89           |                | X                       | X                          |                   |              |                       |                             | 28%  |   |

1. Phase II Survey (Fall 2024)



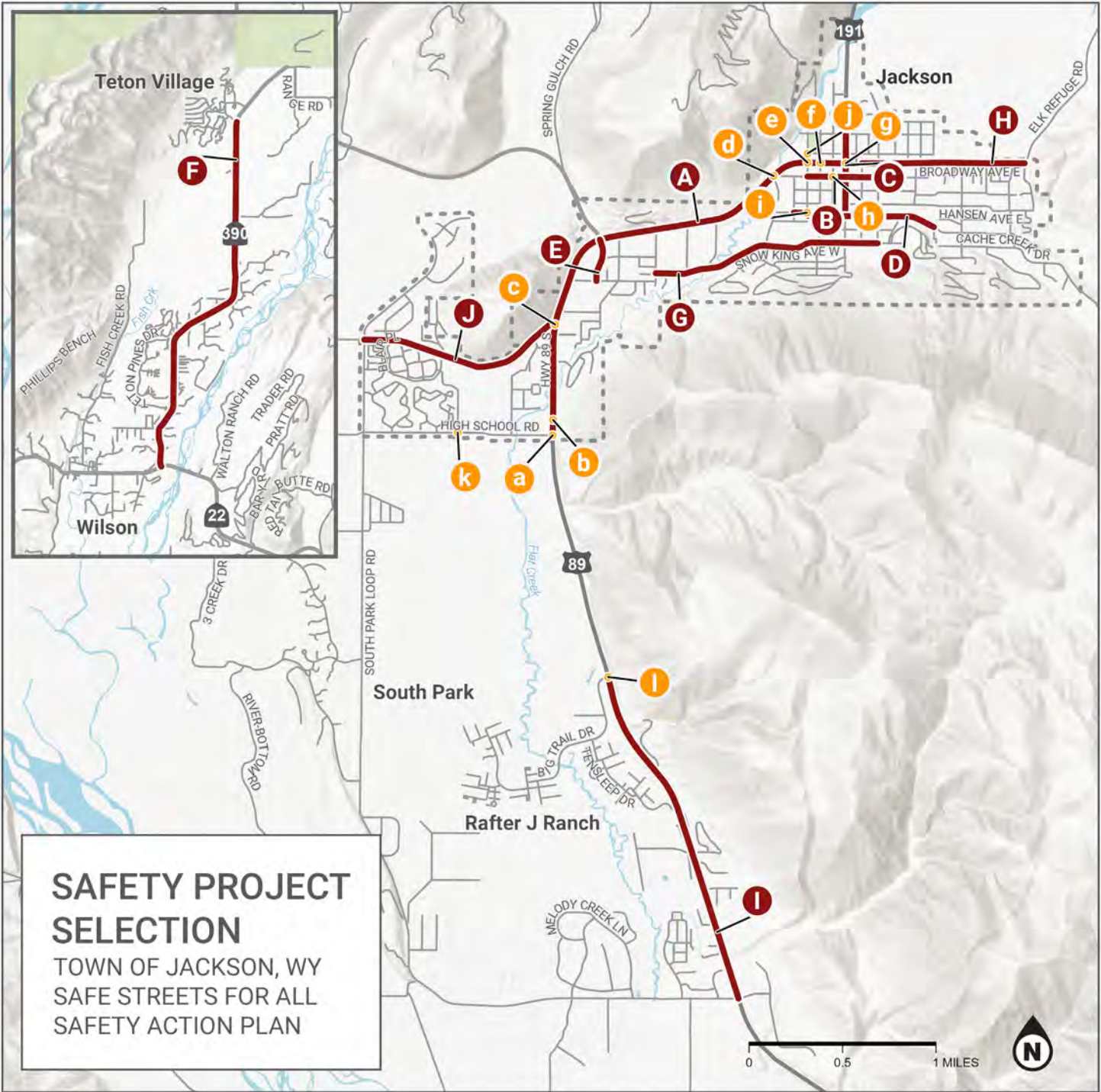


INTERSECTIONS

Table 4. List of Selected Project Intersections

|   | LOCATION   | TOP 50% OF HIN | STRATEGIC FLOW CORRIDOR | STEERING COMMITTEE | TOWN/COUNTY STAFF | % OF SURVEY PARTICIPANT VOTES | ADDITIONAL RATIONALE   |
|---|--|----------------|-------------------------|--------------------|-------------------|-------------------------------|--|
| a | Highway 89 & High School Rd.                       | X              | X                       |                    |                   | 42%                           | <ul style="list-style-type: none"><li>Cluster of Rear End Crashes</li><li>Near School and Trail Access Point</li></ul>   |
| b | Highway 89 & Smith's Access (near High School Rd.) |                |                         |                    | X                 | 33%                           |  |
| c | Highway 89 & S. Park Loop Rd.                      | X              | X                       |                    |                   | 53%                           | <ul style="list-style-type: none"><li>Crash Cluster</li></ul>  |
| d | W. Broadway Ave. & W. Pearl Ave.                   | X              | X                       |                    |                   | 45%                           | <ul style="list-style-type: none"><li>Cluster of Rear End Crashes</li></ul>  |
| e | W. Broadway Ave. & Jackson St.                     | X              | X                       | X                  |                   | 17%                           | <ul style="list-style-type: none"><li>Crash Cluster</li><li>Near Miller Park</li></ul>   |
| f | W. Broadway Ave. & Millward St.                    |                | X                       |                    | X                 | 29%                           |  |
| g | Broadway Ave. & Cache St.                          | X              | X                       |                    |                   | 29%                           | <ul style="list-style-type: none"><li>Crash Cluster</li><li>High Pedestrian Traffic Area</li><li>High Rate of Severe Pedestrian-Involved Crashes</li><li>Near Town Square</li></ul>  |
| h | W. Pearl Ave. & S. Glenwood St.                    | X              | X                       |                    |                   | 21%                           | <ul style="list-style-type: none"><li>Cluster of Angle Crashes</li><li>High Pedestrian Traffic Area</li><li>High Rate of Severe Pedestrian-Involved Crashes</li><li>Pedestrian Network Intersects with Auto/ Transit/Truck Network</li></ul> |
| i | W. Kelly Ave. & S. Jackson St.                     |                |                         |                    | X                 | 12%                           |  |
| j | W. Deloney Ave. & N. Jackson St.                   | X              |                         |                    |                   | 12%                           | <ul style="list-style-type: none"><li>Near Park</li></ul>  |
| k | High School Rd. & Middle School Rd.                | X              |                         |                    |                   | 21%                           | <ul style="list-style-type: none"><li>Near Schools</li></ul>   |
| l | Highway 89 & Big Trail Dr.                         |                |                         | X                  |                   | 23%                           |  |

Map 3. Safety Project Selection



PRIORITY CORRIDORS

- A W. Broadway Ave. / Hwy 89
- B Pearl Ave.
- C Cache St.
- D Kelly Ave.
- E Buffalo Way
- F Hwy 390 / Moose Wilson Rd.
- G Snow King Ave.
- H E. Broadway Ave.
- I South 89 (Rafter J to Melody Ranch)
- J S. Park Loop Rd.

PRIORITY INTERSECTIONS

- a Hwy 89 & High School Rd.
- b Hwy 89 at Smith's Access
- c Hwy 89 & S. Park Loop Rd.
- d W. Broadway Ave. & Pearl Ave.
- e W. Broadway Ave. & Jackson St.
- f W. Broadway Ave. & Millward St.
- g Broadway Ave. & Cache St.
- h W. Pearl Ave. & S. Glenwood St.
- i W. Kelly Ave. & S. Jackson St.
- j W. Deloney Ave. & N. Jackson St.
- k High School Rd. & Middle School Rd.
- l Hwy 89 & W. Big Trail Dr.





## Progress & Transparency

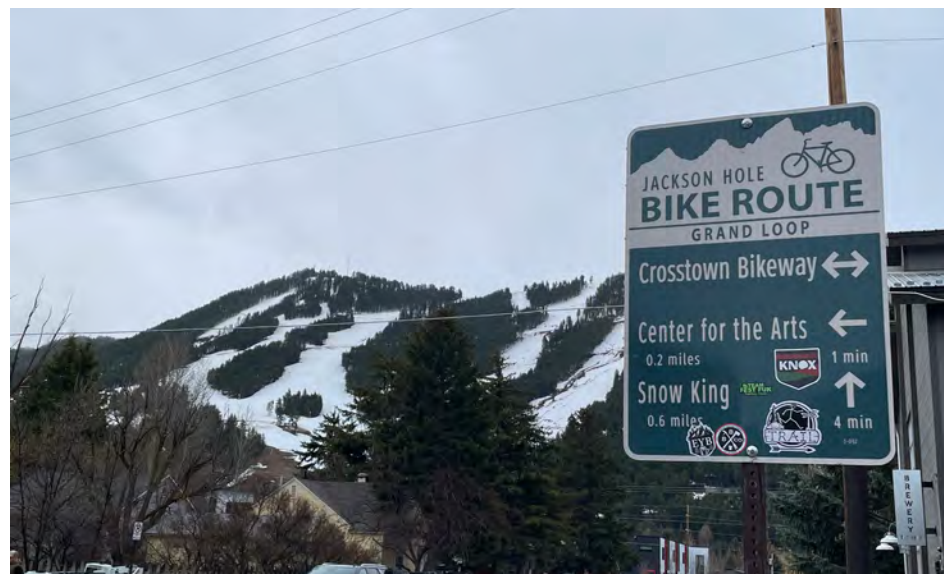
We are committed to implementing this plan to make our roads safer. We are also committed to keeping the community informed on the progress of implementation in a transparent way to promote trust.

### TRACK OUR PROGRESS

Committing to safer streets means staying accountable and maintaining transparency. We will release an annual report that details the progress we have made. We will also share crash data to stay attuned to evolving crash patterns in Teton County and the Town of Jackson. The StoryMap will remain posted on the County's website to keep track of progress over time.

### SAFETY EVALUATION WORKING GROUP

We will establish a regional working group focused on monitoring performance measures to ensure that the recommended strategies are employed.





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# Appendices

## APPENDIX A

### Safety Project Selections

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## APPENDIX B

### SS4A Eligibility

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## APPENDIX C

### Community Engagement

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## APPENDIX D

### Data Analysis

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- ▶ Equity Scan
- ▶ High Injury Network
- ▶ Crash Profiles

## APPENDIX E

### Safety Countermeasure Recommendations

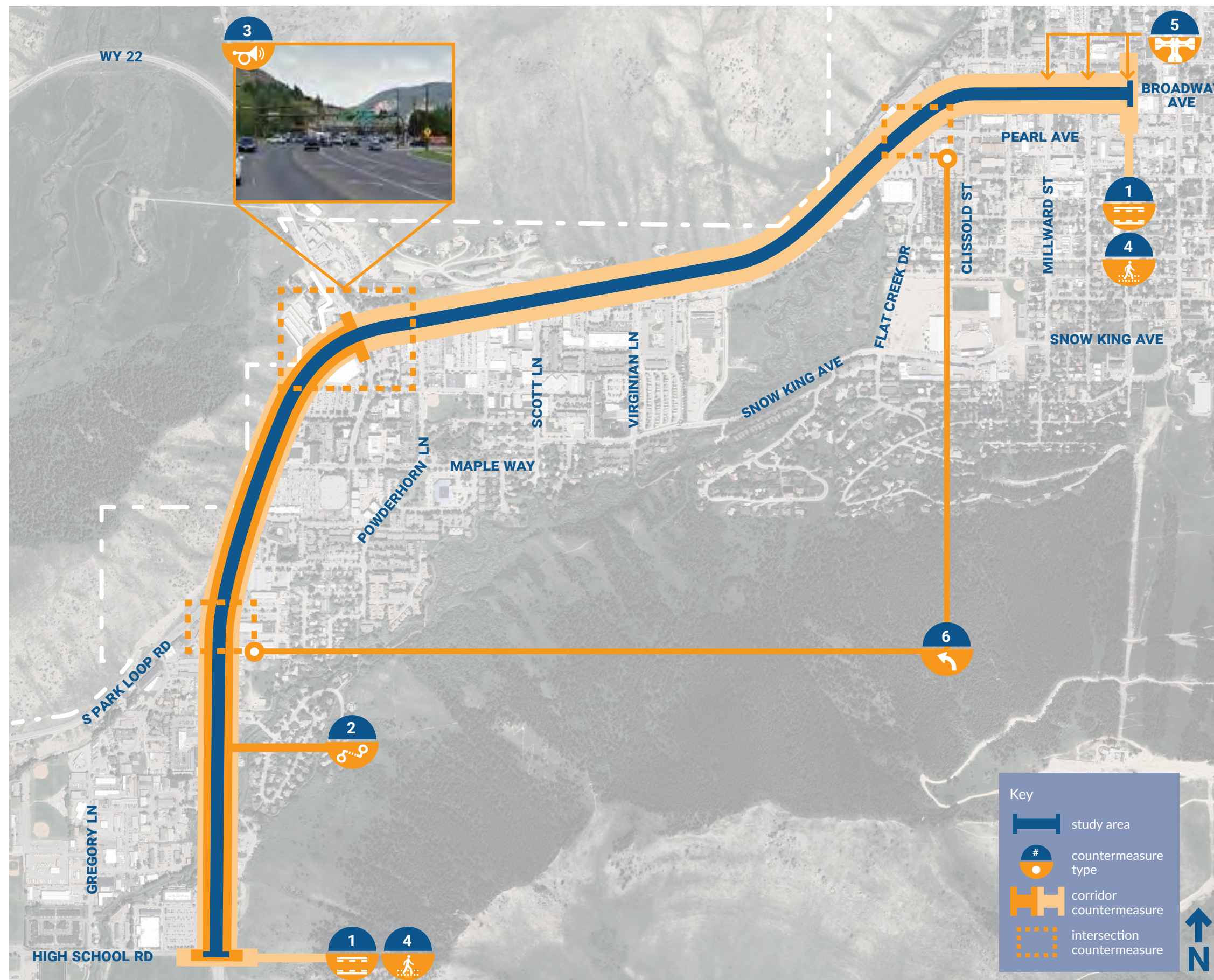
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## APPENDIX A

# Safety Project Selections





**Broadway Avenue / Highway 89** Corridor Length- 2.6 mile | HIN

Crash Profile



- » Rear End
- » Angle
- » Midblock Single Vehicle
- » Pedestrian / Bicycle


Safety Concern

A safety concern is an observed roadway feature that may lead to safety problems for motorized & nonmotorized users

Safety Countermeasure

Countermeasures are safety improvements designed to reduce injury and improve safety & comfort for users

- 1



Faded striping & narrow edge lines make the lanes difficult to see


Stripe wider edge lines & refresh striping on a regular basis
- 2



Gaps in sidewalks & bicycle lanes pose challenges for users


Fill in sidewalk & bicycle lane gaps to improve pedestrian safety & comfort.

Extend the existing cycle track south of WY 22 to High School Road to expand the cycle track of pathway.
- 3



Roadway curves can create blind spots near intersections

Install advanced warning signs to warn drivers about approaching intersections
- 4



Wide roadway with few pedestrian and bike crossings can increase conflicts


Install RRFBs or PHBs as appropriate to offer safe crossing opportunities

Install continuous and raised side street crossings for bikeway and sidewalk on all uncontrolled side streets and driveways.
- 5



Wide intersections with on-street parking pose challenges for crossing pedestrians

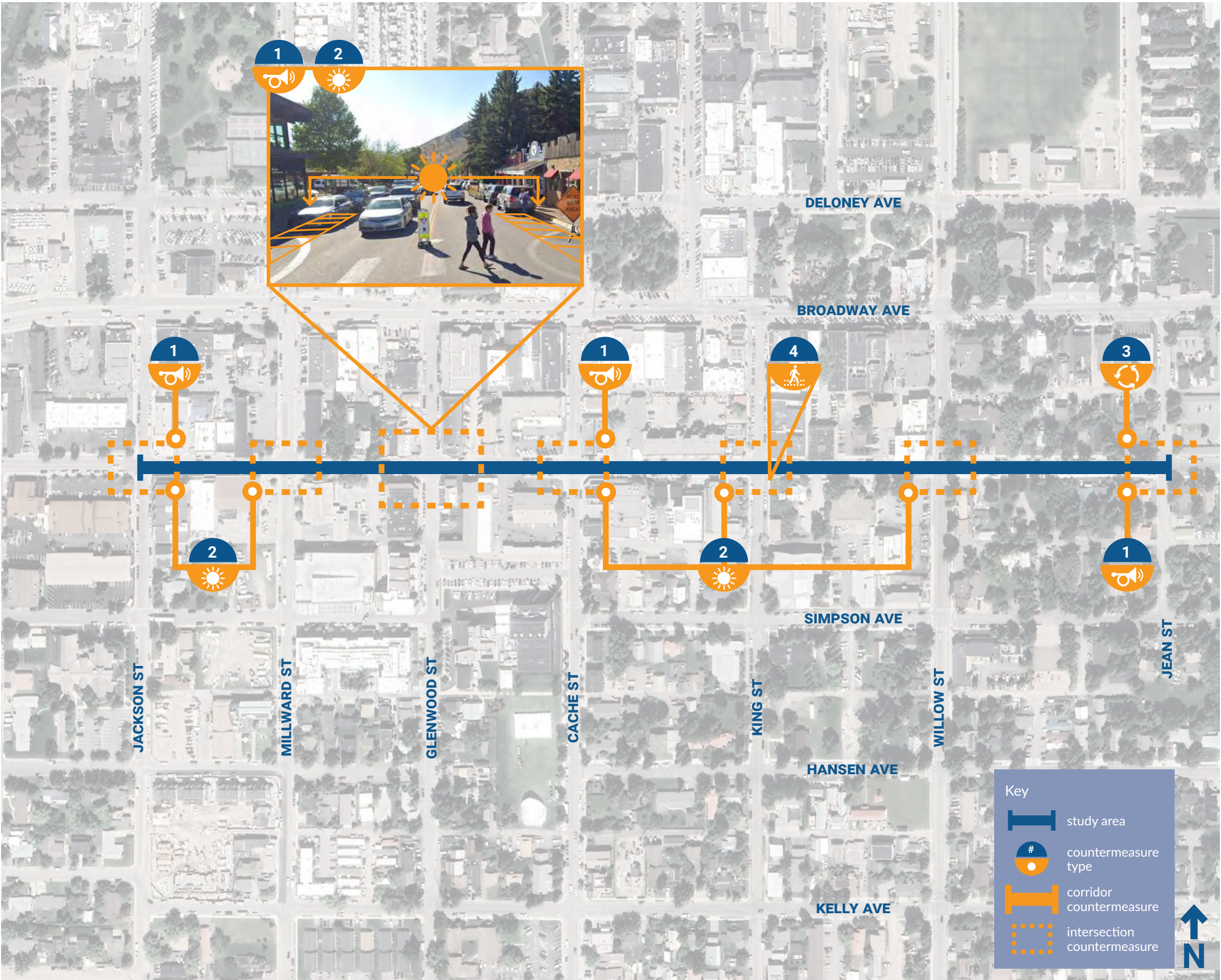
Add curb extensions to increase pedestrian visibility and shorten crossing distances
- 6



History of angle crashes along this corridor, paired with permissive left turn signals

Add a protected-only left turn signal or flashing yellow arrow with permissive phase to reduce turning conflicts





**Pearl Ave from Jackson to Jean Street** Corridor Length- 0.5 mile | HIN

Crash Profile

» Angle

» Bicycle

» Pedestrian

Safety Concern

A safety concern is an observed roadway feature that may lead to safety problems for motorized & nonmotorized users

Safety Countermeasure

Countermeasures are safety improvements designed to reduce injury and improve safety & comfort for users

1

No signals & alternating stop control increase risk for angle crashes  
Convert two-way stops to all-way-stops or add new crosswalk / intersection warnings to slow turning vehicles

2

Faded crosswalks and on-street parking reduce visibility of pedestrians crossing the intersection  
Daylight intersections for better pedestrian visibility by removing parking and adding curb extensions and lighting.

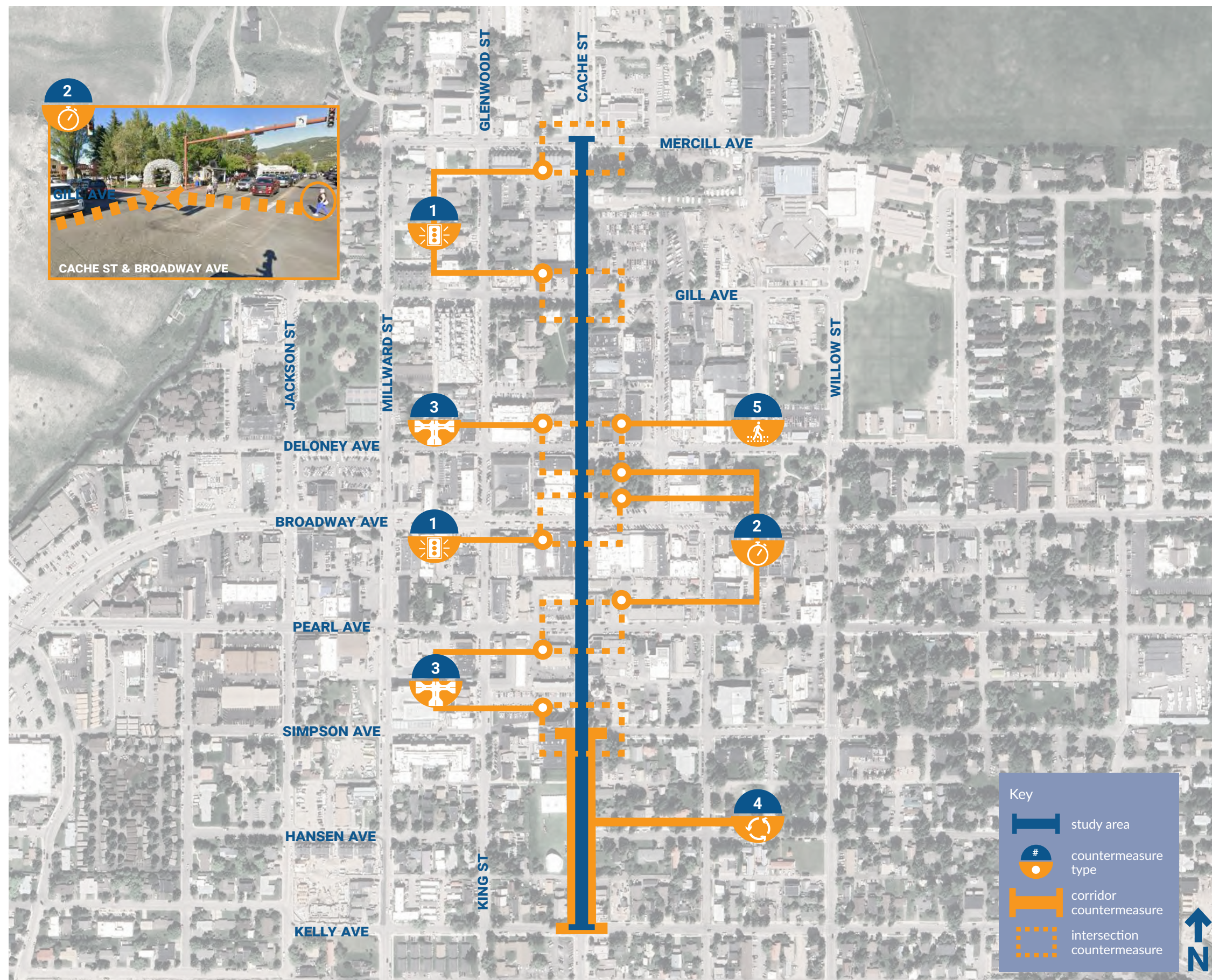
3

Corridor transitions from downtown core to slower, more residential area  
Add traffic circles & curb extensions on residential streets to calm traffic & reinforce the residential context

4

Staircases along Pearl Ave are not accessible sidewalks and push mobility aid users into the roadway  
Replace or supplement existing sidewalk staircases with accessible sidewalks





**Cache Street from Kelly to Mercill Ave** Corridor Length- 0.5 mile | HIN

Crash Profile

» Rear End    » Bicycle  
 » Pedestrian

**Safety Concern**

A safety concern is an observed roadway feature that may lead to safety problems for motorized & nonmotorized users

**Safety Countermeasure**

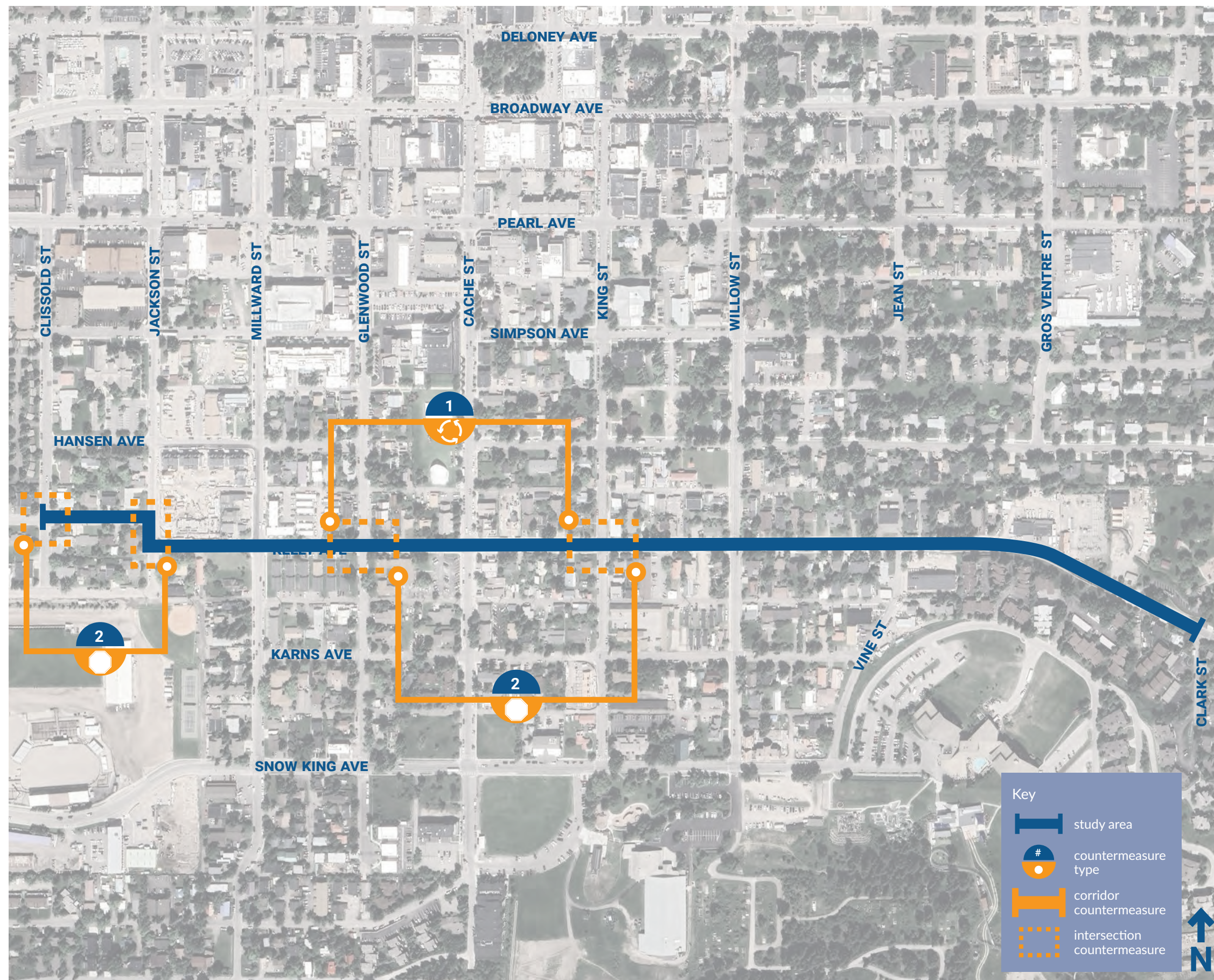
Countermeasures are safety improvements designed to reduce injury and improve safety & comfort for users

- History of rear end collisions highlights a need for more awareness of approaching intersections  
 Install a retroreflective backplate on the traffic signals to improve visibility of signal head
- Popular pedestrian area with vehicular turning movements have greater conflict potential  
 Add a leading pedestrian interval to the traffic signal to give pedestrians more time to cross the street
- On-street parking reduces the visibility of pedestrians crossing the intersection  
 Install curb extensions to shorten crossing distance & increase visibility of pedestrians
- A mix of commercial and residential creates risk of vehicular / pedestrian conflict  
 Add traffic circles, curb extensions & speed humps on residential streets to calm traffic & reinforce the residential context
- High volume pedestrian crossing may increase risk of conflict  
 Provide a raised pedestrian crossing on non-highway legs with pavement markings to improve visibility and yielding behavior

**Retroreflective Back Plate**

A retroreflective backplate is a 1 to 3 inch reflective yellow frame that improves visibility of the signal head, especially with lower light levels





**Kelly Ave from Clissold to Clark Street** Corridor Length- 0.78 mile | HIN

Crash Profile

- » Angle
- » Pedestrian
- » Rear End
- » Bicycle

Safety Concern

A safety concern is an observed roadway feature that may lead to safety problems for motorized & nonmotorized users

Safety Countermeasure

Countermeasures are safety improvements designed to reduce injury and improve safety & comfort for users

- 1

A mix of residential & light industrial creates potential for vehicular / pedestrian conflict

Add traffic circles & curb extensions in residential areas to calm traffic
- 2

Wide neighborhood roadway with on-street parking reduces intersection visibility

Convert two-way stops to all-way stops to slow turning vehicles and reduce angle crashes

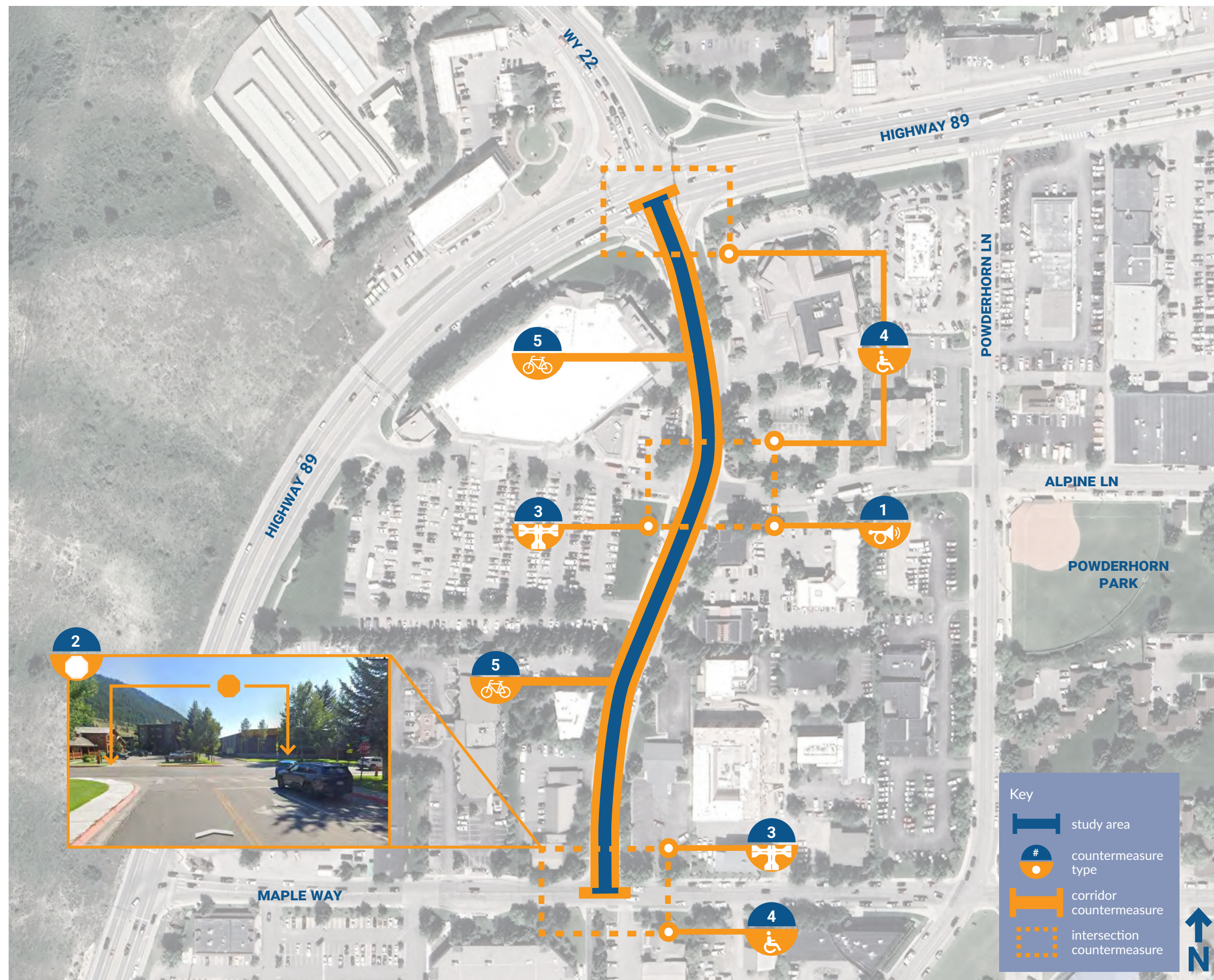
Traffic Circle

A traffic circle is a circular structure placed at the center of an intersection to lower speeds and calm traffic.

Curb Extension

A curb extension extends the curb into the street to narrow the roadway, shorten crossing distance, increase pedestrian visibility and slow vehicular traffic.





# Buffalo Way from Highway 89 to Maple Way

Corridor Length- 0.2 mile | HIN

**Crash Profile**

» Pedestrian » Bicycle

**Safety Concern**

A safety concern is an observed roadway feature that may lead to safety problems for motorized & nonmotorized users

**Safety Countermeasure**

Countermeasures are safety improvements designed to reduce injury and improve safety & comfort for users

- Wide neighborhood roadway with on-street parking reduces visibility of crossing pedestrians

Enhance mid-corridor pedestrian crossing with an advanced warning sign or RRFB to increase pedestrian visibility
- Two-way stop with continuous cross traffic at Maple Way increases potential for conflict

Evaluate an all-way stop to control cross traffic and increase intersection safety
- On-street parking reduces the visibility of pedestrians crossing the intersection

Install curb extensions and reduce corner radii to slow turning vehicles. Curb extension design should consider planned bike corridors to ensure compatibility.
- ADA ramps do not meet ADA design standards

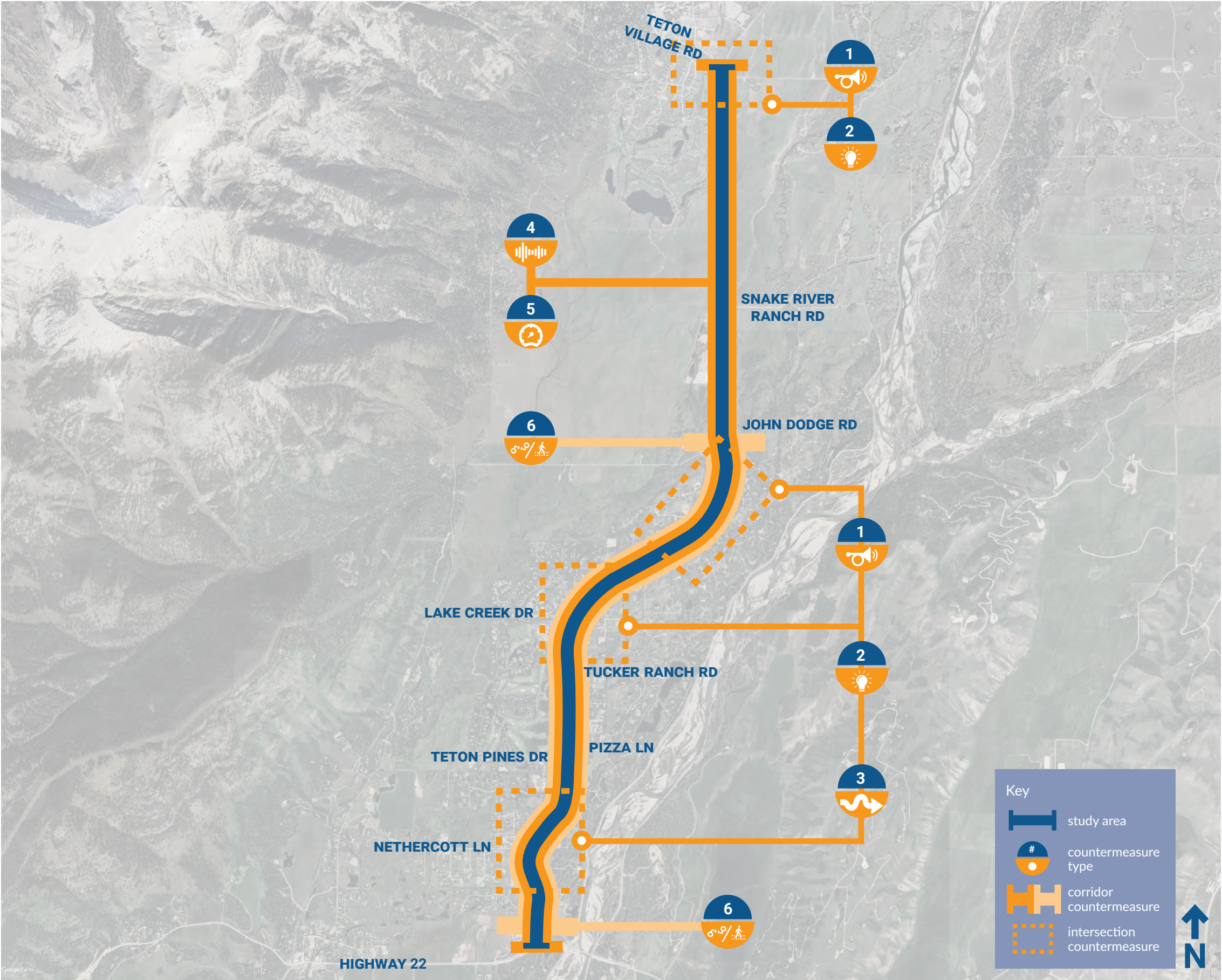
Upgrade ramps to current ADA standards
- Buffalo Way is on the Updated Community Streets Plan bikeway network. Bikeways provide access to local destinations and connect to major bikeway corridors.

Add protected bike lanes along corridor to enhance bicycle network. Remove redundant travel lanes if on-street parking is desired.

**Rapid Rectangular Flashing Beacon (RRFB)**

A RRFB is a flashing light bar that is activated by pedestrians crossing at a midblock crosswalk or uncontrolled intersection. RRFBs increase awareness of pedestrians and can reduce pedestrian crashes up to 47%





**Moose Wilson Rd from Hwy 22 to Teton Village Rd** Corridor Length- 6.3 mile | HIN

Crash Profile



- » Rear End
- » Angle
- » High EMS Response Time

- Safety Concern**

A safety concern is an observed roadway feature that may lead to safety problems for motorized & nonmotorized users

**Safety Countermeasure**

Countermeasures are safety improvements designed to reduce injury and improve safety & comfort for users
- 1



Uncontrolled and minimally signed minor road intersections increase risk for angle crashes

Install advanced warning signs at intersections to increase visibility and awareness
- 2



Uncontrolled road intersections with poor lighting increase risk for angle crashes

Evaluate and implement lighting at key roadway ingress/egress, with consideration for Dark Sky compatibility
- 3



Horizontal roadway curves without a median or lane barrier increase potential for roadway departures and collisions

Add fluorescent curve warning signs to increase awareness and reduce single roadway vehicle departures
- 4



Lack of rumble strips increase potential for roadway departures and collisions

Install rumble strips at centerline and edge line to reduce single vehicle roadway departures and head on collisions
- 5



Poor weather conditions create challenging roadway conditions

Implement variable speed limit during poor weather conditions to reduce potential for collisions
- 6



Lack of pedestrian & bicycle facilities on both sides of the road poses challenges & increases potential for crossing conflicts


Extend the pathway trail system on the east side of the corridor to fill in gaps. Provide crossing facility at each end to connect to the west side.










**Snow King Ave from Scott Ln to Willow St** Corridor Length- 1.2 mile | HIN

**Crash Profile**

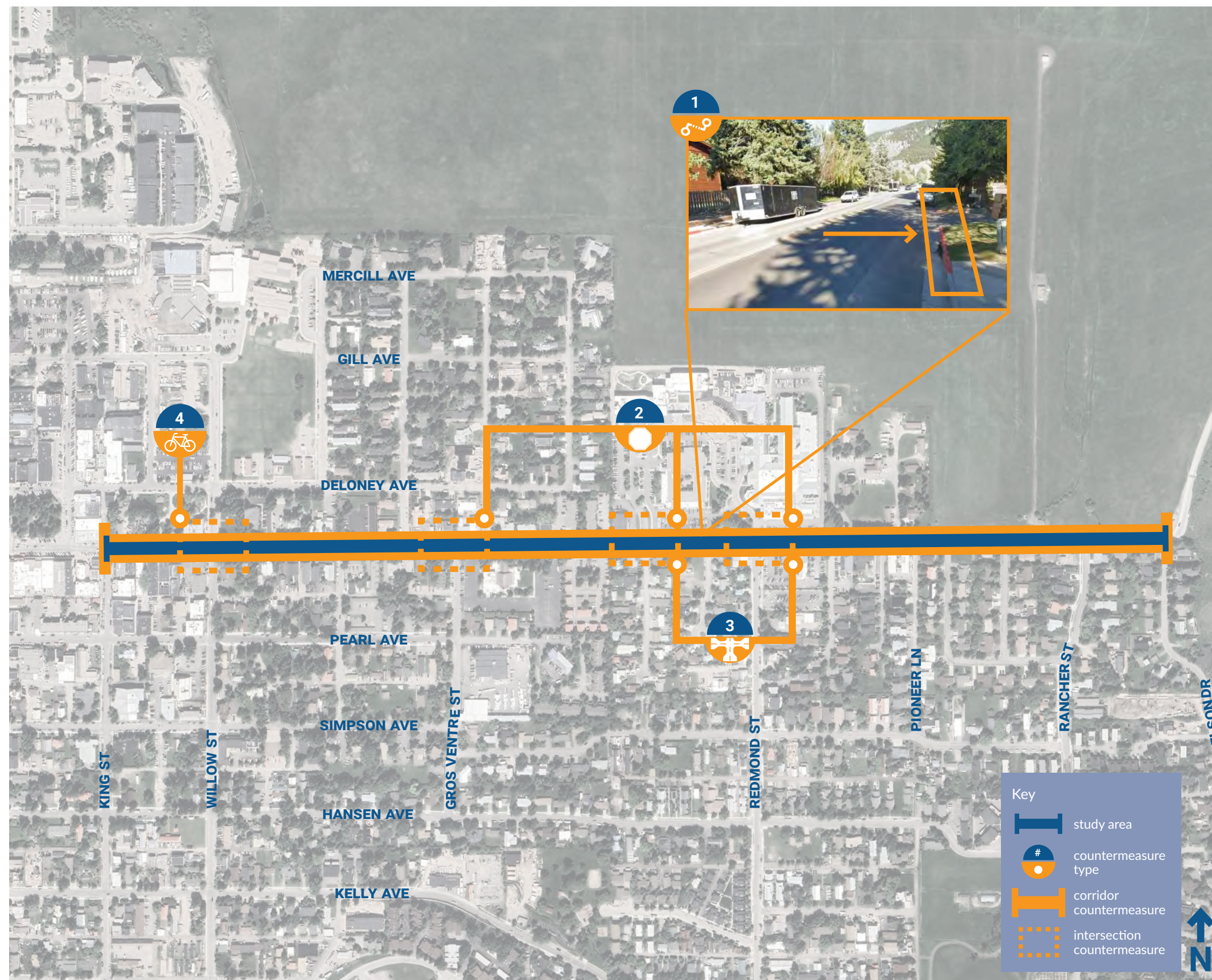
 » Single Vehicle » Pedestrian  
» Angle » Bicycle

**Safety Concern**  
A safety concern is an observed roadway feature that may lead to safety problems for motorized & nonmotorized users

**Safety Countermeasure**  
Countermeasures are safety improvements designed to reduce injury and improve safety & comfort for users

- 1**  Gaps in bicycle route create discontinuity & challenges for bicyclists  
Complete bicycle infrastructure to reduce modal conflicts and improve bicyclist experience
- 2**  Intersections are the primary conflict point between bicyclists and vehicles.  
Consider protected intersection/elements where bike routes meet to enhance bicycle protection and safety
- 3**  Few marked crosswalks increase potential for pedestrian/vehicular conflict  
Provide additional marked crosswalks & consider RRFBs to enhance pedestrian safety
- 4**  Under lit roadways increase risk for vehicular crashes  
Provide more lighting along corridor to increase visibility at night with consideration for Dark Sky compatibility
- 5**  Lack of striping makes the area between the vehicular lane and flex posts difficult to see  
Stripe the space along the flex posts to provide a visual buffer between vehicles and flex posts. Consider thermo reflective pavement markings for maintenance and longevity.





**Broadway Ave from King St to Nelson Dr** Corridor Length- 0.9 mile | HIN

Crash Profile



» Angle  
 » Pedestrian

» Bicycle

Safety Concern

A safety concern is an observed roadway feature that may lead to safety problems for motorized & nonmotorized users

Safety Countermeasure

Countermeasures are safety improvements designed to reduce injury and improve safety & comfort for users

- 1

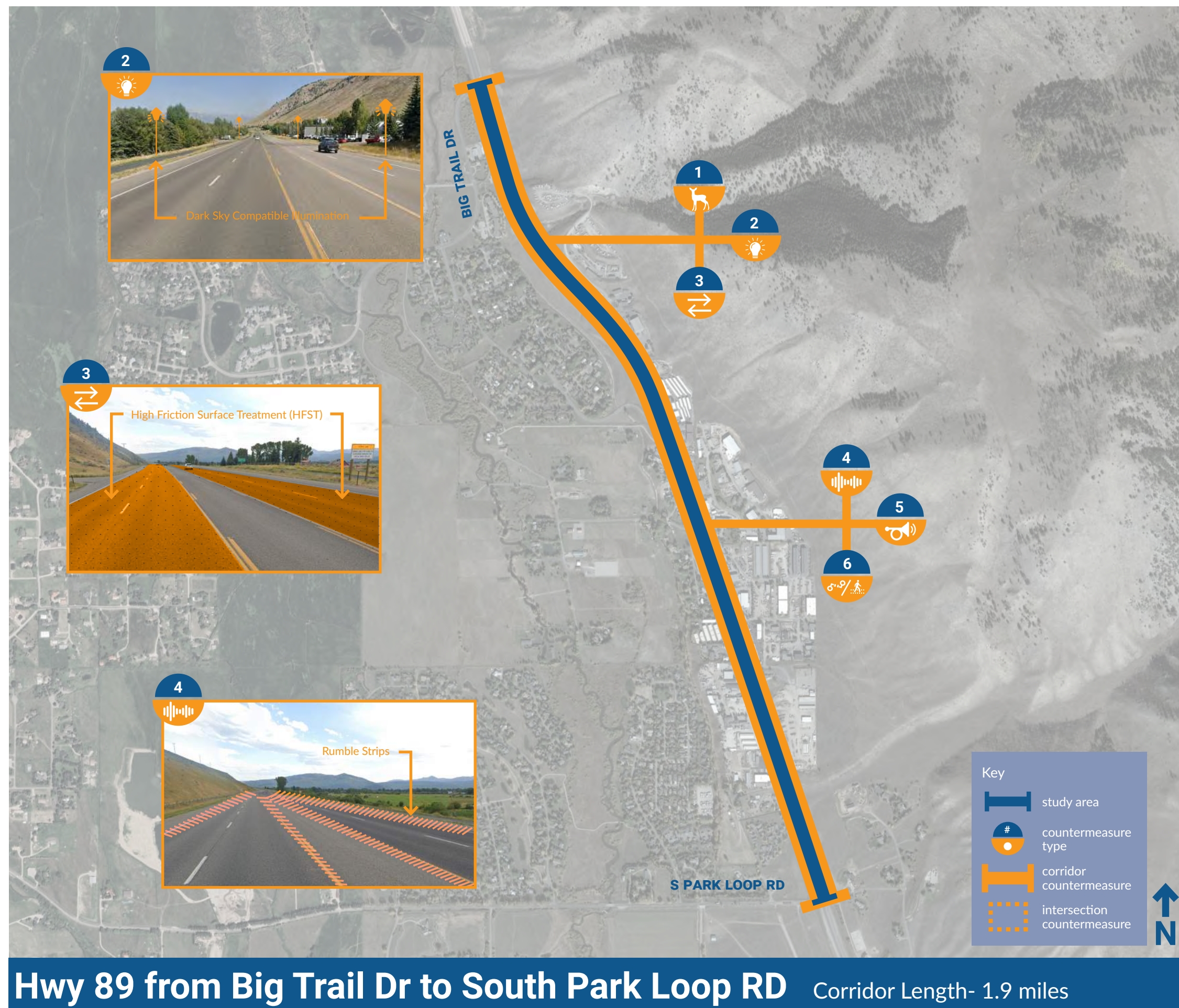
Gaps in sidewalks & bicycle lanes pose challenges for users  
 Complete the pedestrian infrastructure to reduce modal conflicts and improve the pedestrian experience.  
 Add protected bike lanes from Willow to Redmond Street.
- 2

Wide roadway with on-street parking reduces intersection visibility  
 Convert two-way stops to all-way stops to slow turning vehicles and reduce angle crashes
- 3

On-street, angled parking reduces the visibility of pedestrians crossing the intersection  
 Harden existing curb extensions and install new ones to shorten crossing distance & increase visibility of pedestrians.  
 If a bicycle facility is added on Broadway, protected intersections in lieu of curb extensions are recommended where feasible.
- 4

Intersections are the primary conflict point between bicyclists and vehicles.  
 Consider protected intersection to enhance bicycle protection and safety





**Hwy 89 from Big Trail Dr to South Park Loop RD** Corridor Length- 1.9 miles

**Crash Profile**



- » Single Vehicle Overturned
- » Angle
- » High EMS Response time

**Safety Concern**

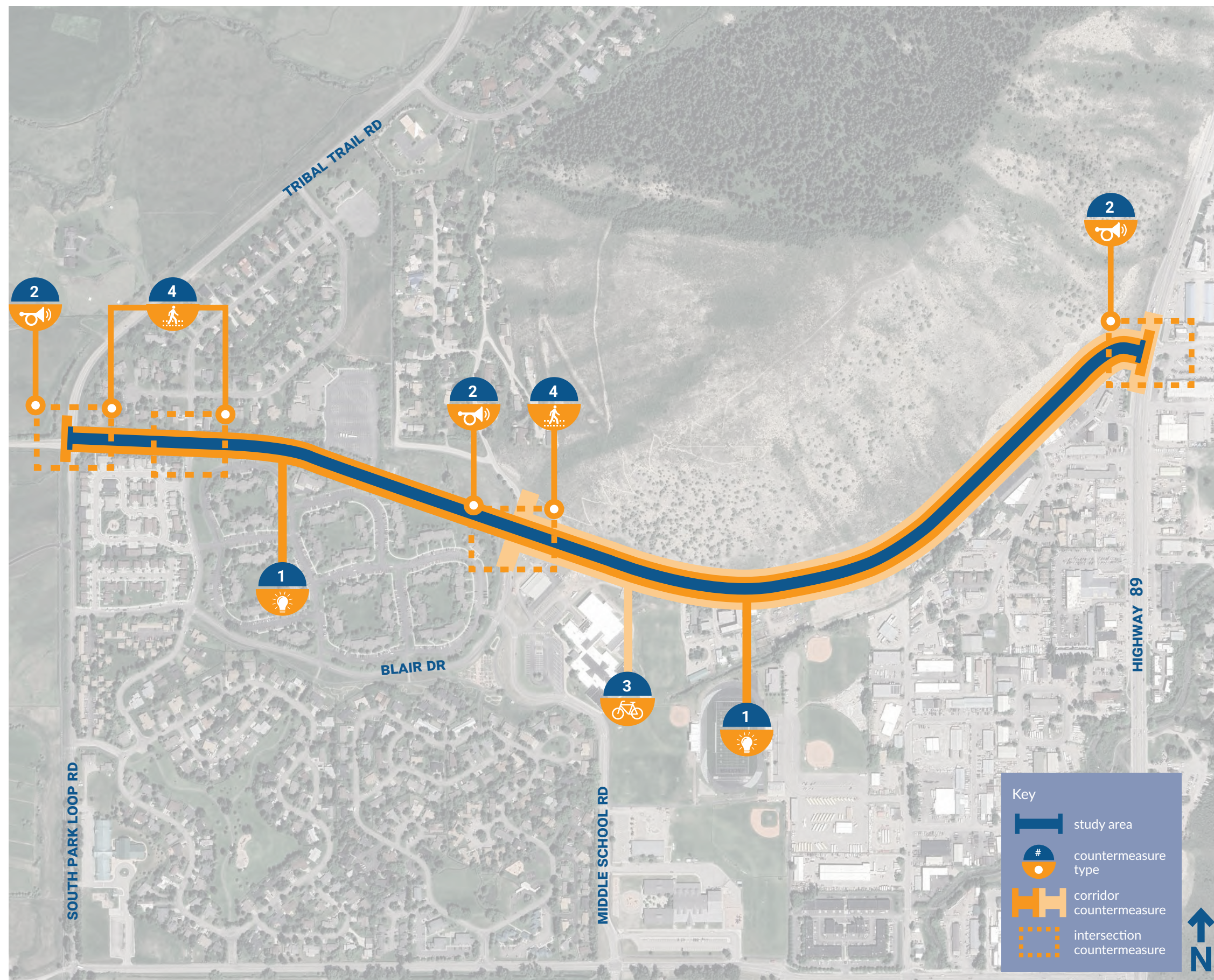
A safety concern is an observed roadway feature that may lead to safety problems for motorized & nonmotorized users

**Safety Countermeasure**

Countermeasures are safety improvements designed to reduce injury and improve safety & comfort for users


- 1** Frequent wildlife crossings pose safety issue for motorists  
Provide a wildlife crossing to allow animals safe passage and reduce collisions
- 2** Under lit roadways increase risk for vehicular crashes  
Provide appropriate illumination that enhances safety while preserving dark sky
- 3** Rural highway with two lanes in each direction creates potential for lane departures  
Increase roadway friction to reduce single vehicle roadway departures
- 4** Lack of rumble strips increase potential for roadway departures and collisions  
Install rumble strips at centerline and edge line to reduce single vehicle roadway departures
- 5** Uncontrolled and minimally signed minor road intersections increase risk for angle crashes  
Install advanced warning signs at intersections to increase visibility and awareness
- 6** Lack of pedestrian & bicycle facilities on both sides of the road poses challenges & increases potential for crossing conflicts  
Extend the pathway trail system to both sides of the corridor to fill in gaps. Provide crossing facility at each end to connect the trail facilities.





**South Park Loop Rd from Tribal Trail Rd to Hwy 89** Corridor Length- 1.1 mile | HIN

Crash Profile



» Rear End

» Pedestrian

» Single Vehicle

» Bicycle

**Safety Concern**  
A safety concern is an observed roadway feature that may lead to safety problems for motorized & nonmotorized users

**Safety Countermeasure**  
Countermeasures are safety improvements designed to reduce injury and improve safety & comfort for users

- 1



**Under lit roadway increases risk for vehicular crashes**  
Provide more lighting along corridor to increase visibility at night with consideration for Dark Sky compatibility
- 2




**Roadway curves can create blind spots near intersections**  
Install advance intersection warning to increase awareness of upcoming intersections
- 3



**Striped, sometimes narrow bike lanes create conflict between bicyclists and motorists**  
Install a two-way cycle track with a pedestrian walkway on the south side of South Park Loop Road from Middle School Road to Highway 89. Refer to the Town of Jackson for the proposed alignment.
- 4

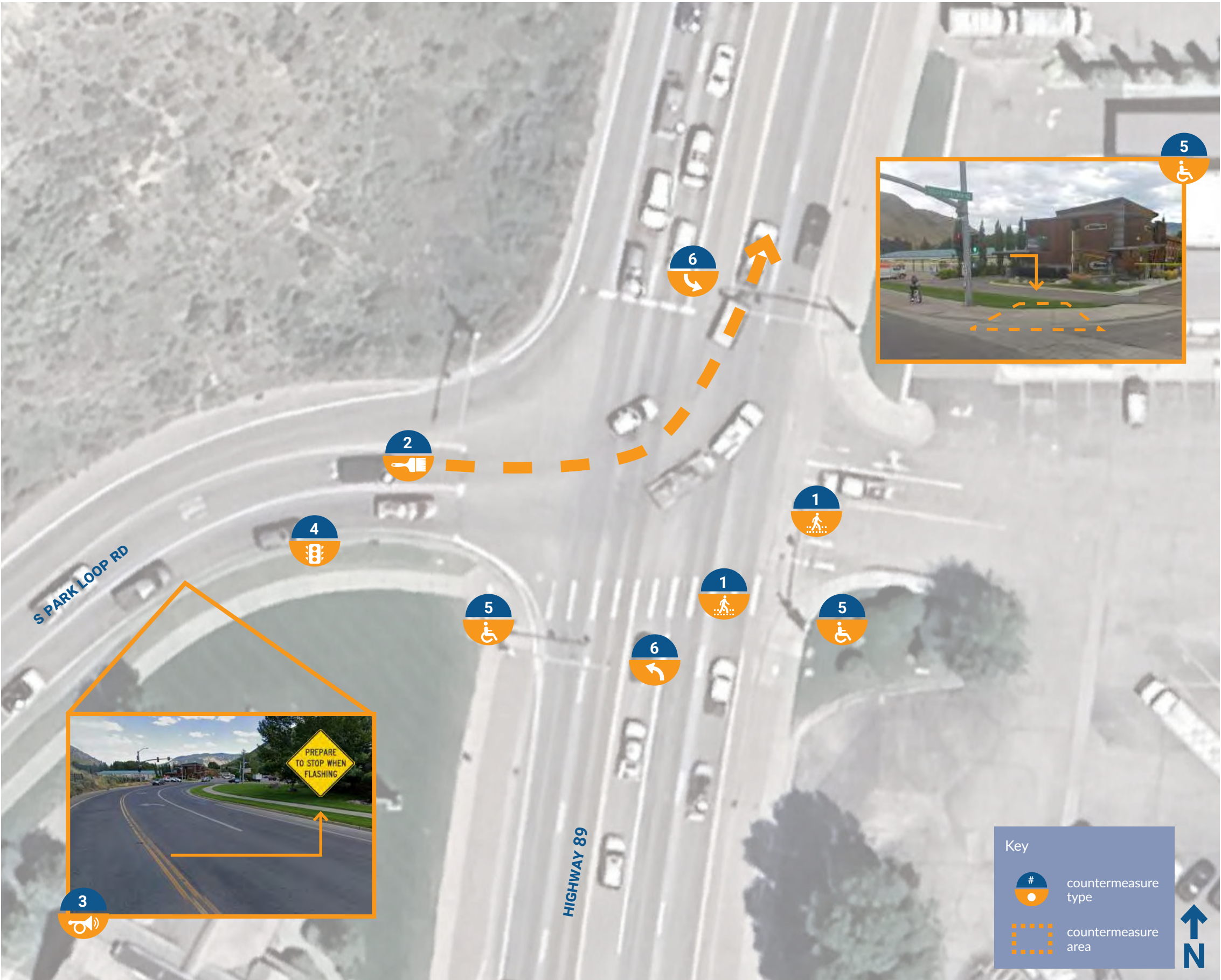


**Unlit, rural roads with sidewalk gaps create unsafe conditions for pedestrians**  
Enhance crossing with an RRFB



**Rapid Rectangular Flashing Beacon (RRFB)**  
A RRFB is a flashing light bar that is activated by pedestrians crossing at a midblock crosswalk or uncontrolled intersection. RRFBs increase awareness of pedestrians and can reduce pedestrian crashes up to 47%





Highway 89 / South Park Loop Road Intersection HIN

Crash Profile



- » Rear End
- » Angle
- » Pedestrian

**Safety Concern**

A safety concern is an observed roadway feature that may lead to safety problems for motorized & nonmotorized users

**Safety Countermeasure**

Countermeasures are safety improvements designed to reduce injury and improve safety & comfort for users

- 1



Crosswalk & stop bar striping are faded, reducing their visibility

Refresh crosswalk striping & add new stop bars to increase yielding behavior
- 2



Dual left turn lanes through the multi-lane intersection can be a challenge to navigate

Add dotted line extensions to help guide vehicles through the intersection
- 3



Roadway curves can create blind spots near intersections

Install advanced warning signs to warn drivers about approaching intersections
- 4



Roadway curve limits sight distance to intersection and signal head

Install near-side signal head for eastbound motorists on South Park Loop Road
- 5



Curb ramps do not meet ADA design standards

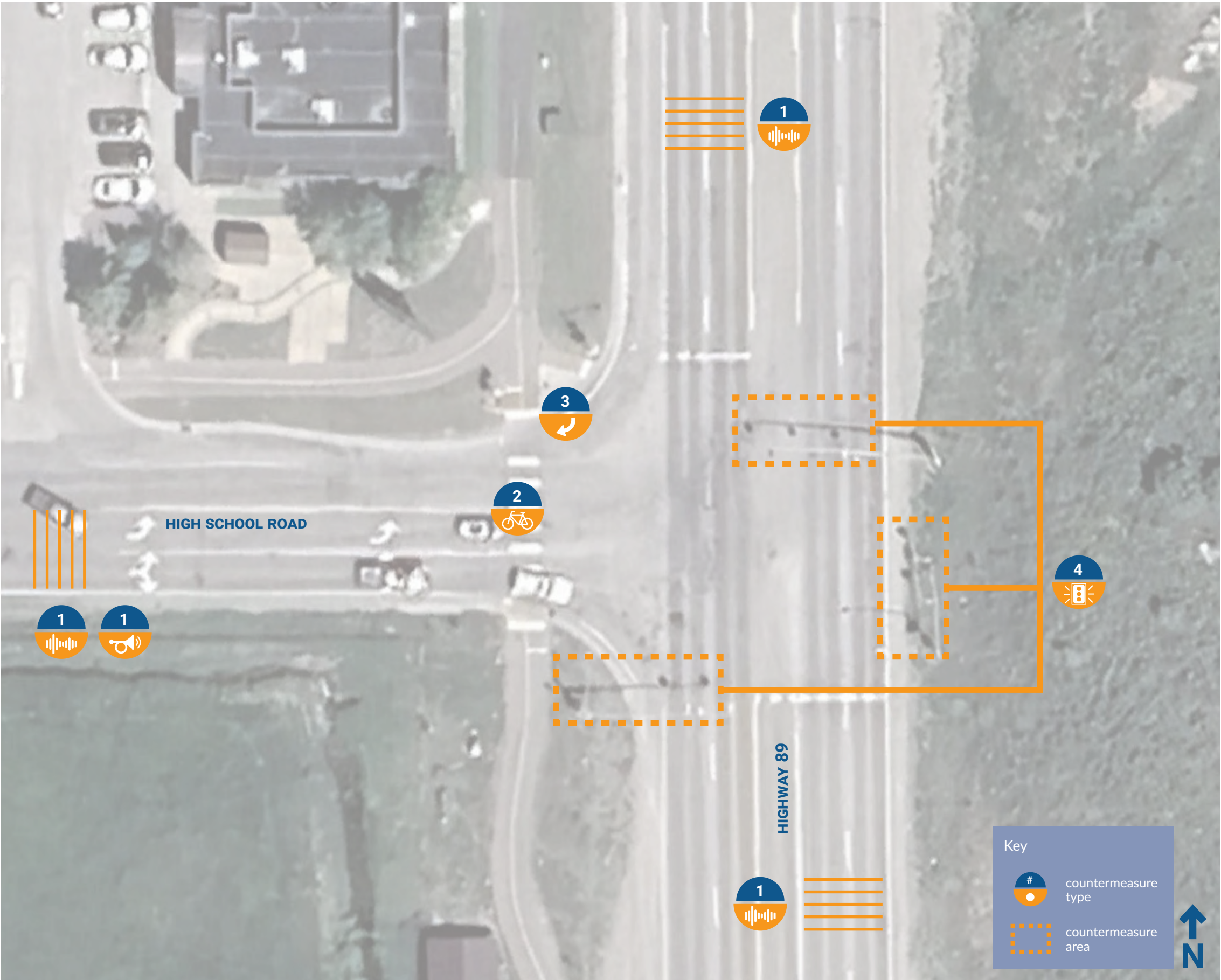
Upgrade ADA ramps to include tactile warning pavers
- 6



Left turn signal has permissive phase only, increasing potential for turning conflicts

Implement a protected-only left turn phase and a flashing yellow turning permissive phase to reduce conflicts





Highway 89 / High School Road Intersection HIN

Crash Profile

- » Rear End
- » Bicycle
- » Pedestrian

Safety Concern

A safety concern is an observed roadway feature that may lead to safety problems for motorized & nonmotorized users

Safety Countermeasure

Countermeasures are safety improvements designed to reduce injury and improve safety & comfort for users

- 1

Install advanced warning sign on High School Road to warn drivers about approaching intersection
- or
- 1

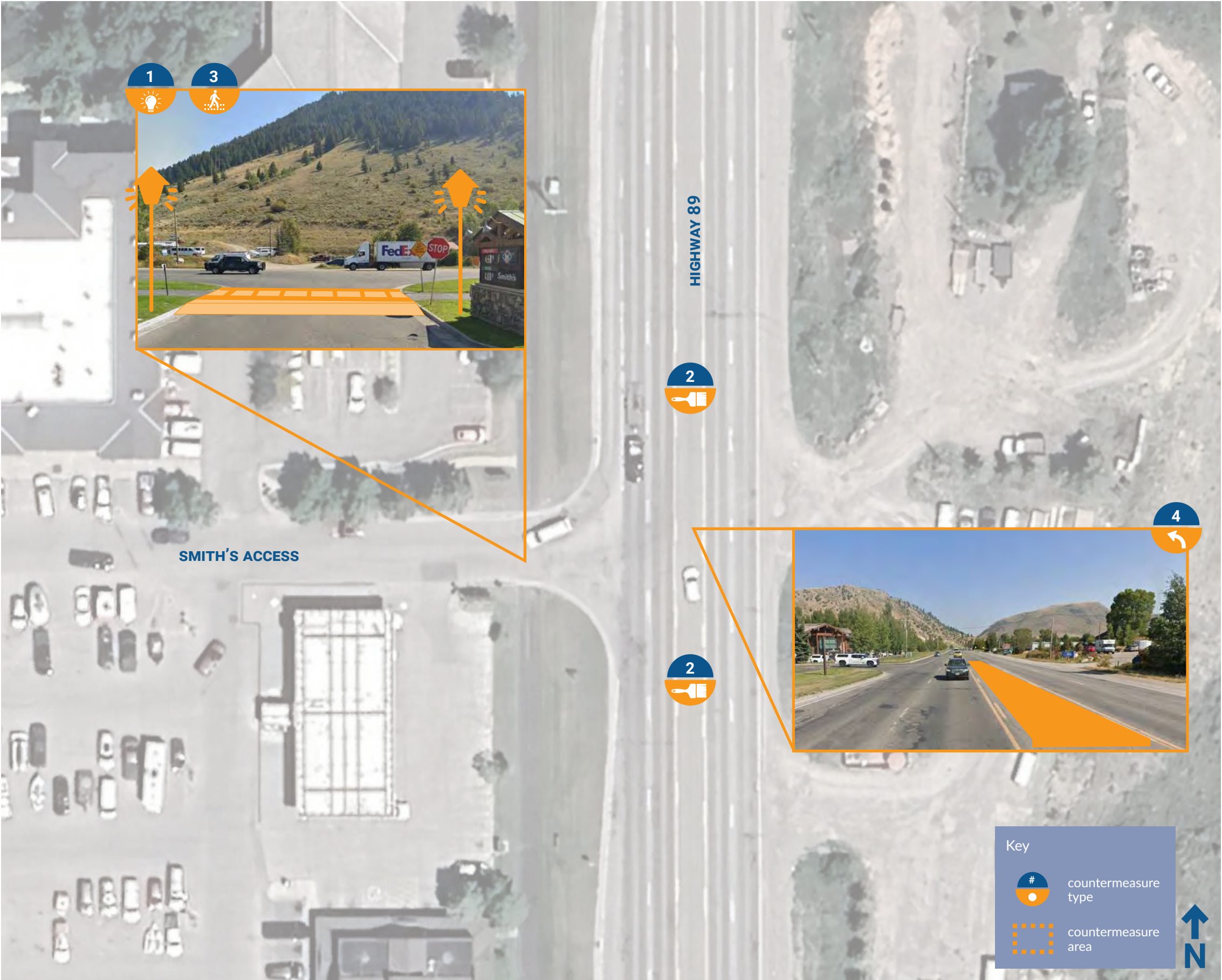
Install transverse rumble strips to warn drivers about approaching intersection
- 2

The pathway crossing at this intersection introduces vulnerability for crossing pedestrians and bicyclists.  
Evaluate ROW for feasibility of extending path on south side of road to connect to the High School.
- 3

Faded striping and large curb radii accommodate high turning speeds and reduce visibility of nonmotorized users  
Reduce curb radii on west leg to slow vehicles and increase visibility of pedestrians and bicyclists on the corner and restripe crosswalks
- 4


Nonreflective backplates on signal heads reduce their visibility and create potential for rear end crashes  
Install a retroreflective backplate on the traffic signals to improve visibility of signal head & reduce rear end crashes, especially on High School Road





# Highway 89 / Smith's Access Intersection HIN

Crash Profile

 » Angle

Safety Concern

A safety concern is an observed roadway feature that may lead to safety problems for motorized & nonmotorized users

Safety Countermeasure

Countermeasures are safety improvements designed to reduce injury and improve safety & comfort for users

1

Driveway access without lighting reduces visibility for turning vehicles

Install lighting at the driveway to increase visibility

2

The left turn from the driveway access point crosses three lanes of traffic, increasing the risk of angle crashes

Add signage & striping on Highway 89 to signal that vehicles may be approaching from a high-volume access point

3

Limited signage and pavement markings at pedestrian crossing can lead to conflict

Provide a raised pedestrian crossing with pavement markings or a splitter island to improve visibility and yielding behavior.


4

The left turn from the driveway access point crosses three lanes of traffic, increasing the risk of angle crashes

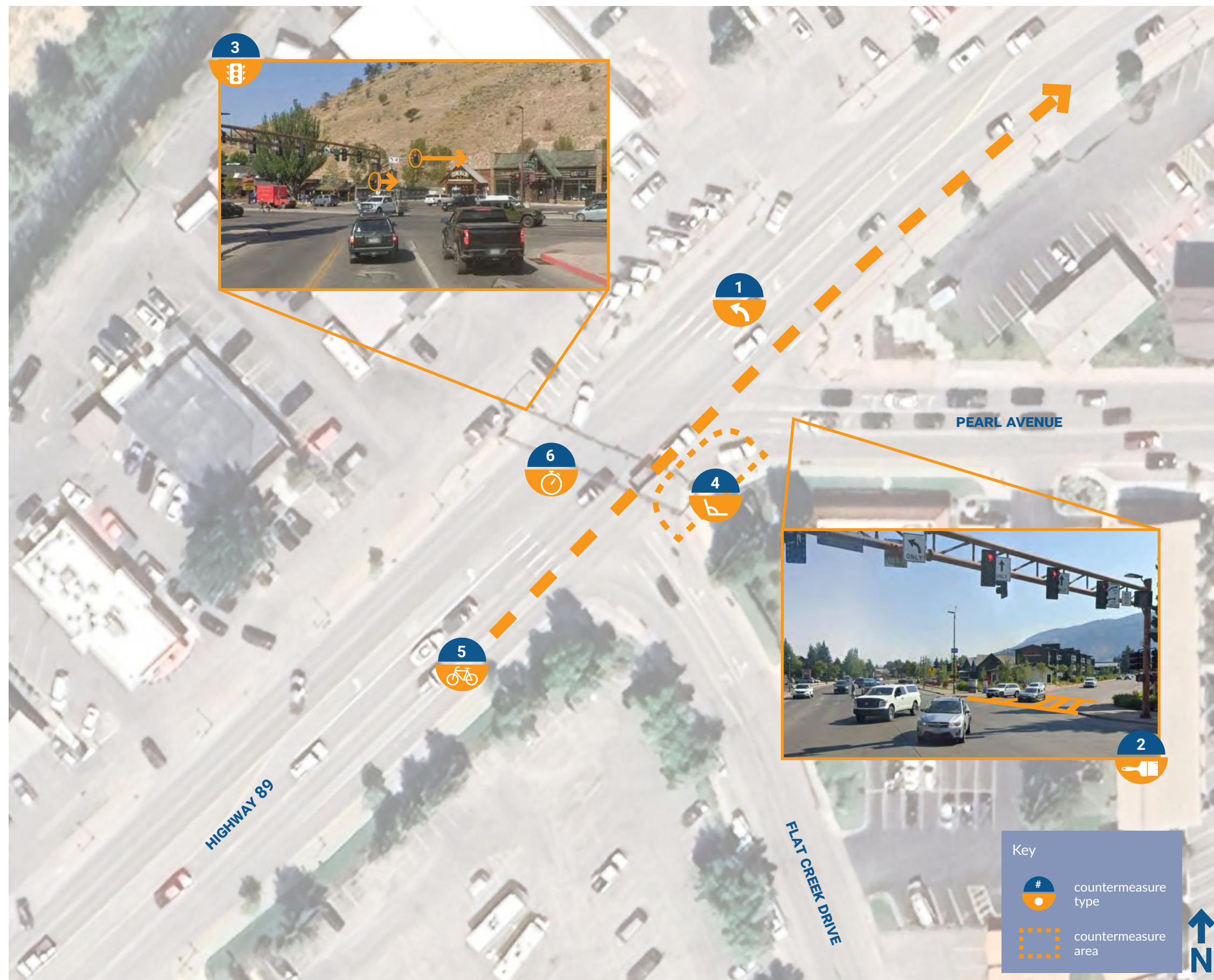
Install a traffic median to restrict left turns and reduce risk of angle crashes

Raised Crosswalk

A raised crosswalk is a traffic calming device that elevates the crosswalk to sidewalk level. This centers the pedestrian and slows traffic. Raised crosswalks can reduce pedestrian crashes by 45%.







**Highway 89 / Pearl Avenue Intersection** HIN

Crash Profile

» Rear End » Angle

**Safety Concern**

A safety concern is an observed roadway feature that may lead to safety problems for motorized & nonmotorized users

**Safety Countermeasure**

Countermeasures are safety improvements designed to reduce injury and improve safety & comfort for users

1

Left turn signal has permissive phase only, increasing potential for turning conflicts

Implement a protected-only left turn phase and a flashing yellow turning permissive phase to reduce conflicts

2

Faded crosswalk markings and line extensions reduce visibility of crosswalk

Refresh crosswalk striping to increase yielding behavior

3

Flat Creek Road's curved geometry limits sight distance and view of the signal heads

Align signal heads with the traffic lanes to improve signal head visibility

4

Intersection geometry creates wide area of open space that can be problematic for turning vehicles

Utilize pavement markings to visually tighten intersection radii while allowing for all turning-movements.

5

Lack of bicycle markings through the intersection limits awareness of bicycle users

Consider crossbikes and other markings through the intersection to increase awareness and identify potential conflict areas.

6

Difficult intersection for pedestrians to navigate

Implement a leading pedestrian interval to the traffic signal to give pedestrians more time to enter the crosswalk and reduce turning movement conflicts





**Highway 89 / Jackson Street Intersection** HIN

Crash Profile

Rear End

Angle

**Safety Concern**

A safety concern is an observed roadway feature that may lead to safety problems for motorized & nonmotorized users

**Safety Countermeasure**

Countermeasures are safety improvements designed to reduce injury and improve safety & comfort for users

1

Faded crosswalks reduce visibility

Refresh crosswalk striping to increase visibility and reduce sudden braking & rear ends

2

Existing pedestrian warnings signs and flags may not provide enough advanced warning and are less visible at night

Upgrade to a PHB to increase pedestrian visibility and reduce sudden braking & rear end crashes

3

Lack of bicycle markings through the intersection limits awareness of bicycle users

Consider crossbikes and other markings through the intersection to increase awareness and identify potential conflict areas

4

Wide roadway width can be challenge for pedestrians crossing the intersection

Install a median refuge island to shorten the crossing distance and protect pedestrians

**Crossbike**

A crossbike functions like a pedestrian crosswalk. It consists of green and white roadway markings that delineate where bicyclists should cross the street. Crossbikes also help raise awareness of the bicycle facility.





- » Rear End
- » Bicycle
- » Pedestrian

A safety concern is an observed roadway feature that may lead to safety problems for motorized & nonmotorized users


Countermeasures are safety improvements designed to reduce injury and improve safety & comfort for users

- 

History of heavy pedestrian and traffic use increases conflict potential

Add curb extensions to shorten crossing distance and increase pedestrian visibility. For the NW corner, consider painted curb extensions or dual radii corners to accommodate freight traffic.
  - 

Faded crosswalk markings and line extensions reduce visibility of crosswalk

Refresh crosswalk striping to increase yielding behavior
  - 

Wide streets with multiple traffic lanes create challenges for crossing pedestrians

Add a leading pedestrian interval to the traffic signal to give pedestrians more time to enter crosswalk and reduce turning movement conflicts
  - 

Curb ramps do not meet ADA design standards

Upgrade ramps to current ADA standards
  - 

Multiple access points near intersection increase conflict potential

Consolidate driveways on northwest corner to reduce conflict points
  - 

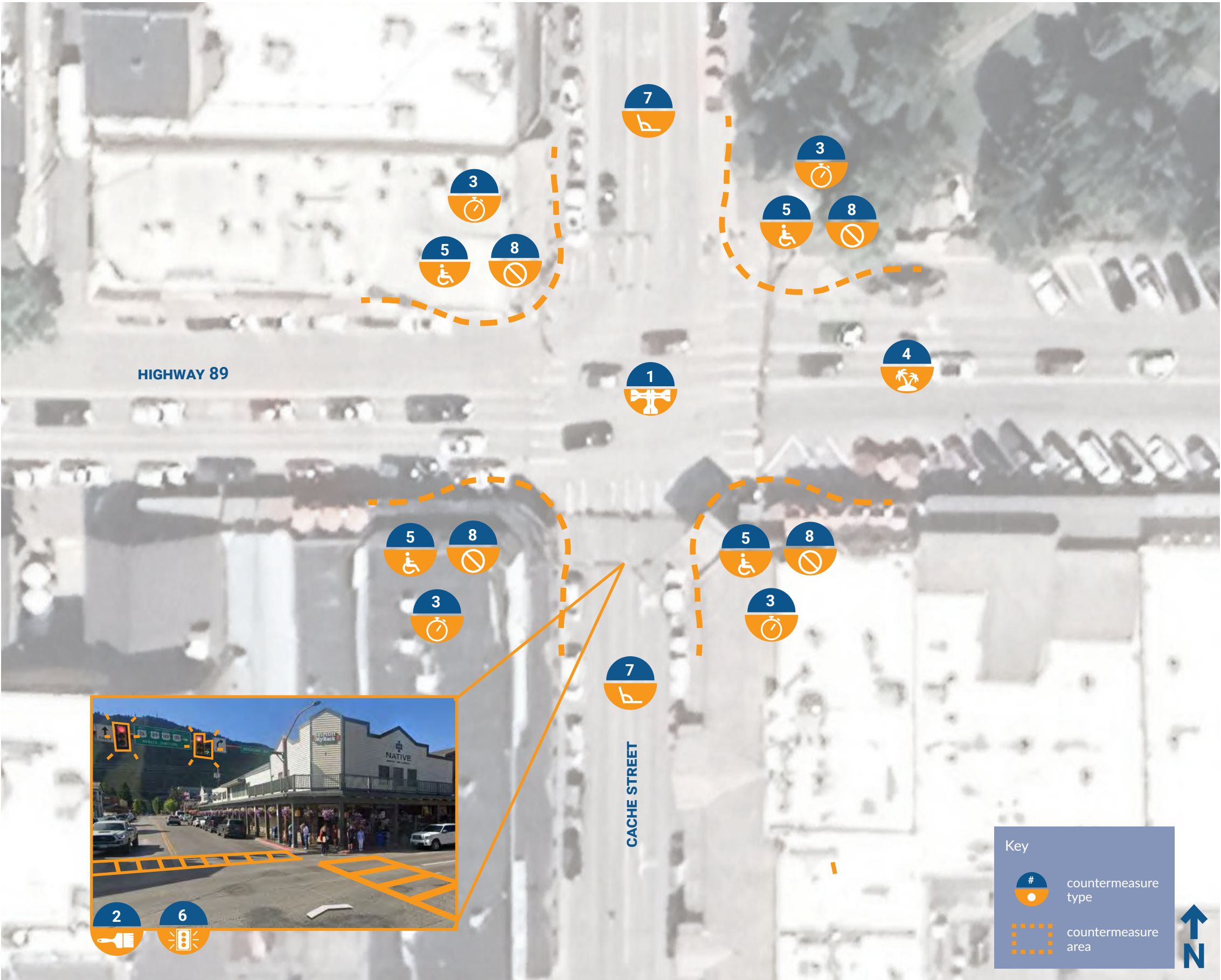
High pedestrian and vehicular traffic create potential for conflict

Prohibit right on red to reduce right turning conflicts with crossing pedestrians
  - 

High traffic speeds and unguided turns can increase conflict for crossing pedestrians


Harden the centerline to encourage slow left turning speeds and wider turning angles





Highway 89 / Cache Street Intersection

Crash Profile



» Bicycle  
» Pedestrian

» Rear End


Safety Concern

A safety concern is an observed roadway feature that may lead to safety problems for motorized & nonmotorized users

Safety Countermeasure


Countermeasures are safety improvements designed to reduce injury and improve safety & comfort for users

1




History of heavy pedestrian and traffic use increases conflict potential  
Add curb extensions to shorten crossing distance and increase pedestrian visibility

2




Faded crosswalk striping reduces awareness of crosswalk  
Refresh crosswalk striping and add stop bars to increase pedestrian visibility and improve yielding behavior

3




Wide streets with multiple traffic lanes create challenges for crossing pedestrians  
Add a leading pedestrian interval to the traffic signal to give pedestrians more time to enter the crosswalk and reduce turning movement conflicts

4




Wide streets with multiple traffic lanes create challenges for crossing pedestrians  
Remove a vehicle lane and install a pedestrian refuge island to slow vehicle and protect crossing pedestrians

5




Curb ramps do not meet ADA design standards  
Upgrade ramps to current ADA standards

6




Skewed intersection can reduce visibility for motorists  
Install a retroreflective backplate on the traffic signals to improve visibility of signal head

7



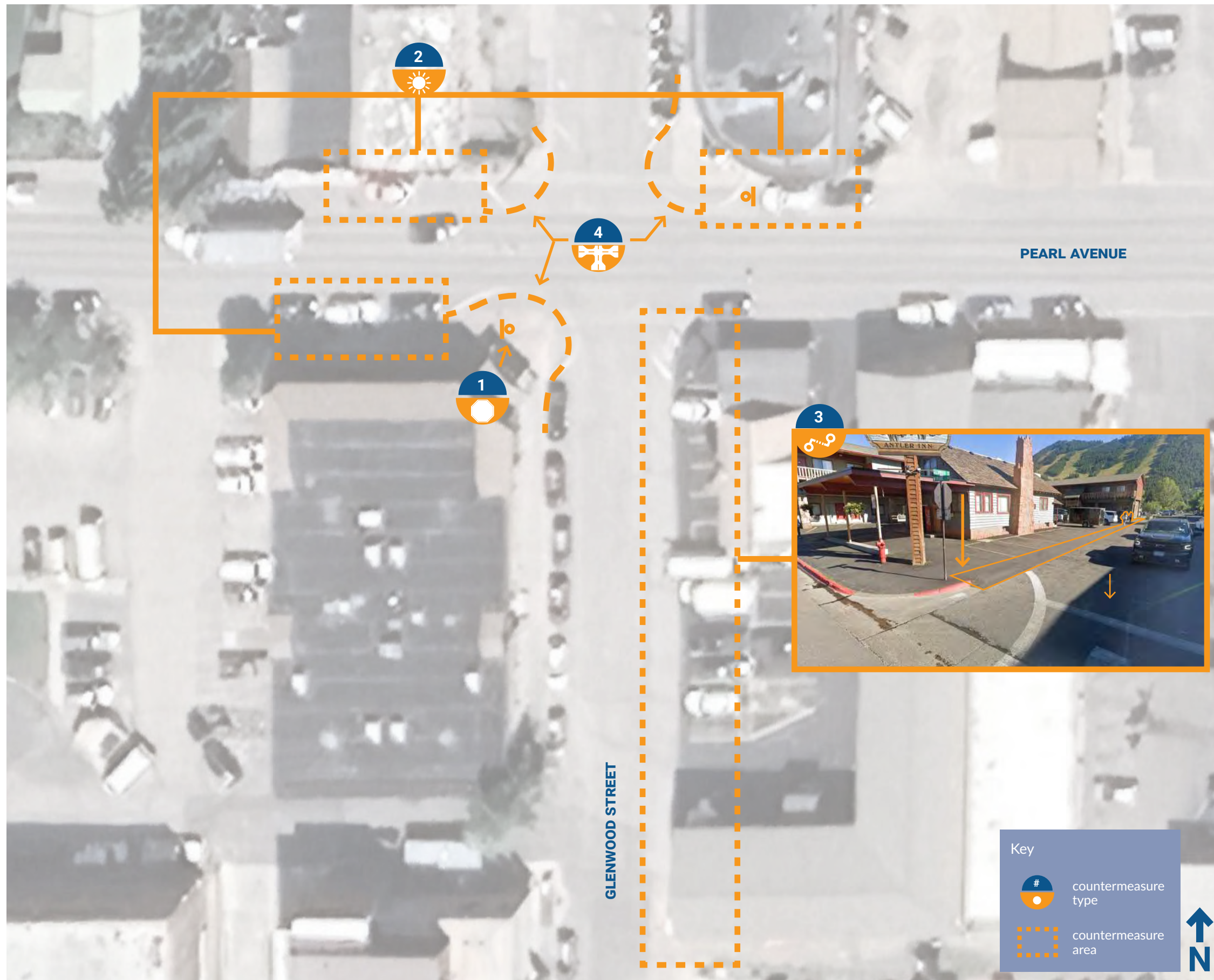
High traffic speeds and unguided turns increase conflict for crossing pedestrians  
Harden centerline to encourage slow left turn speeds and tighter turning movements

8



Heavy pedestrian and vehicular traffic create potential for conflict  
Prohibit right on red to reduce right turning conflicts with crossing pedestrians





**Pearl Avenue / Glenwood Street Intersection**

Crash Profile

» Angle  
 » Bicycle  
 » Pedestrian

Safety Concern

A safety concern is an observed roadway feature that may lead to safety problems for motorized & nonmotorized users

Safety Countermeasure

Countermeasures are safety improvements designed to reduce injury and improve safety & comfort for users

1

Wide roadway and on-street parking reduce intersection visibility

Convert two-way stops to all-way stops to slow vehicles as they enter the intersection.

Yield markings placed before the crosswalks on the non-stop controlled legs is an alternative to an all-way stop.

2

On-street parking reduces the visibility of pedestrians crossing the intersection

Daylight intersections for better pedestrian visibility by removing on-street parking near intersections

3

A sidewalk gap on the east side of the south leg creates discontinuity for pedestrians

Extend the sidewalk along the existing road-bed to reduce modal conflicts and improve the pedestrian experience.

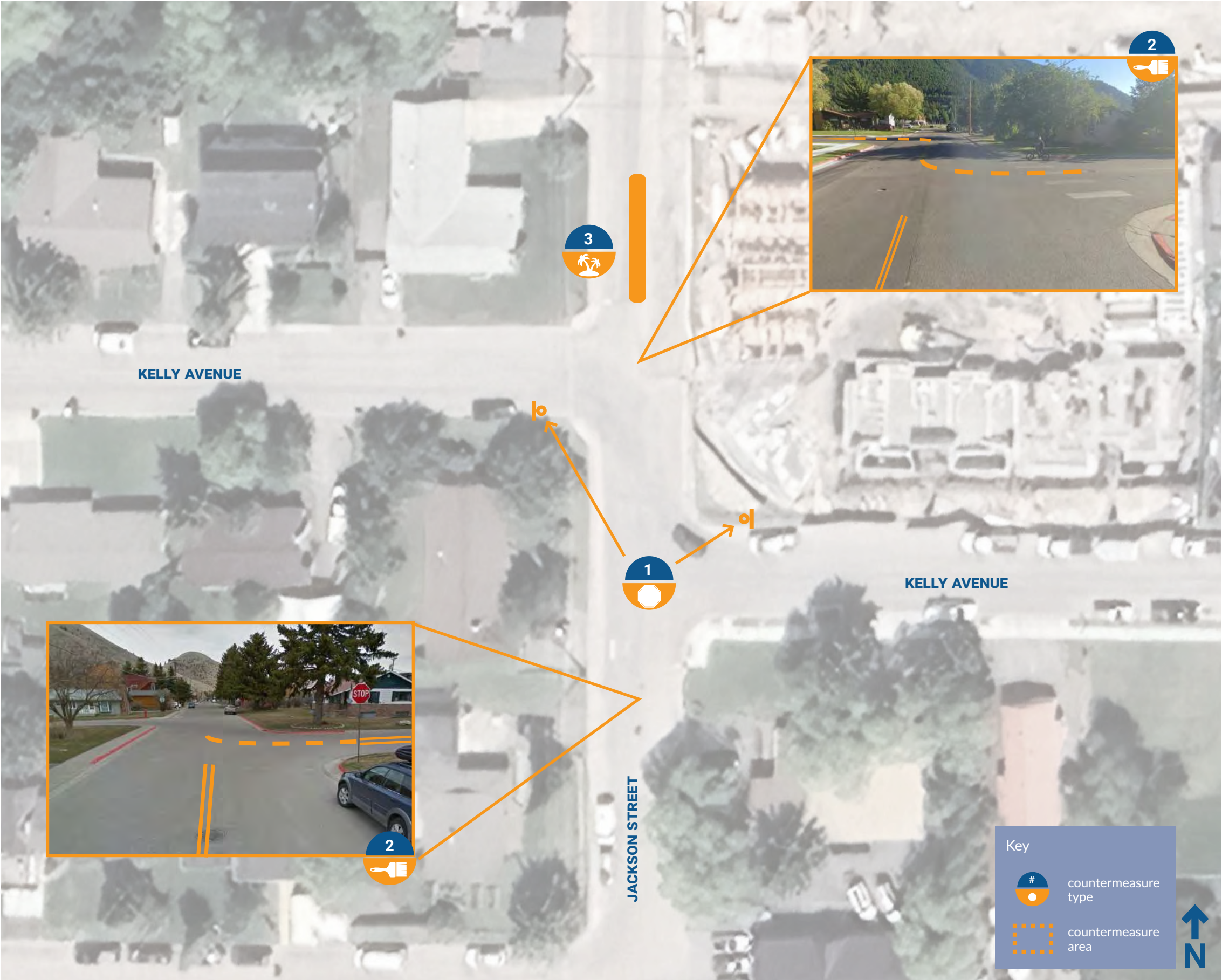
If there is an existing legacy right for the head in parking, the sidewalk could function as a single curb cut for the short to medium term.

4

History of heavy pedestrian and traffic use increases conflict potential

Install permanent curb extensions to shorten crossing distance, increase pedestrian visibility and serve as a transit stop for a high quality transit experience





Kelly Avenue / Jackson Street Intersection

Crash Profile

» There were no Common Crash Profiles identified for this intersection

**Safety Concern**  
A safety concern is an observed roadway feature that may lead to safety problems for motorized & nonmotorized users

**Safety Countermeasure**  
Countermeasures are safety improvements designed to reduce injury and improve safety & comfort for users

1

Wide roadway and on-street parking reduce intersection visibility  
Convert two-way stops to all-way stops to slow vehicles as they enter the intersection.

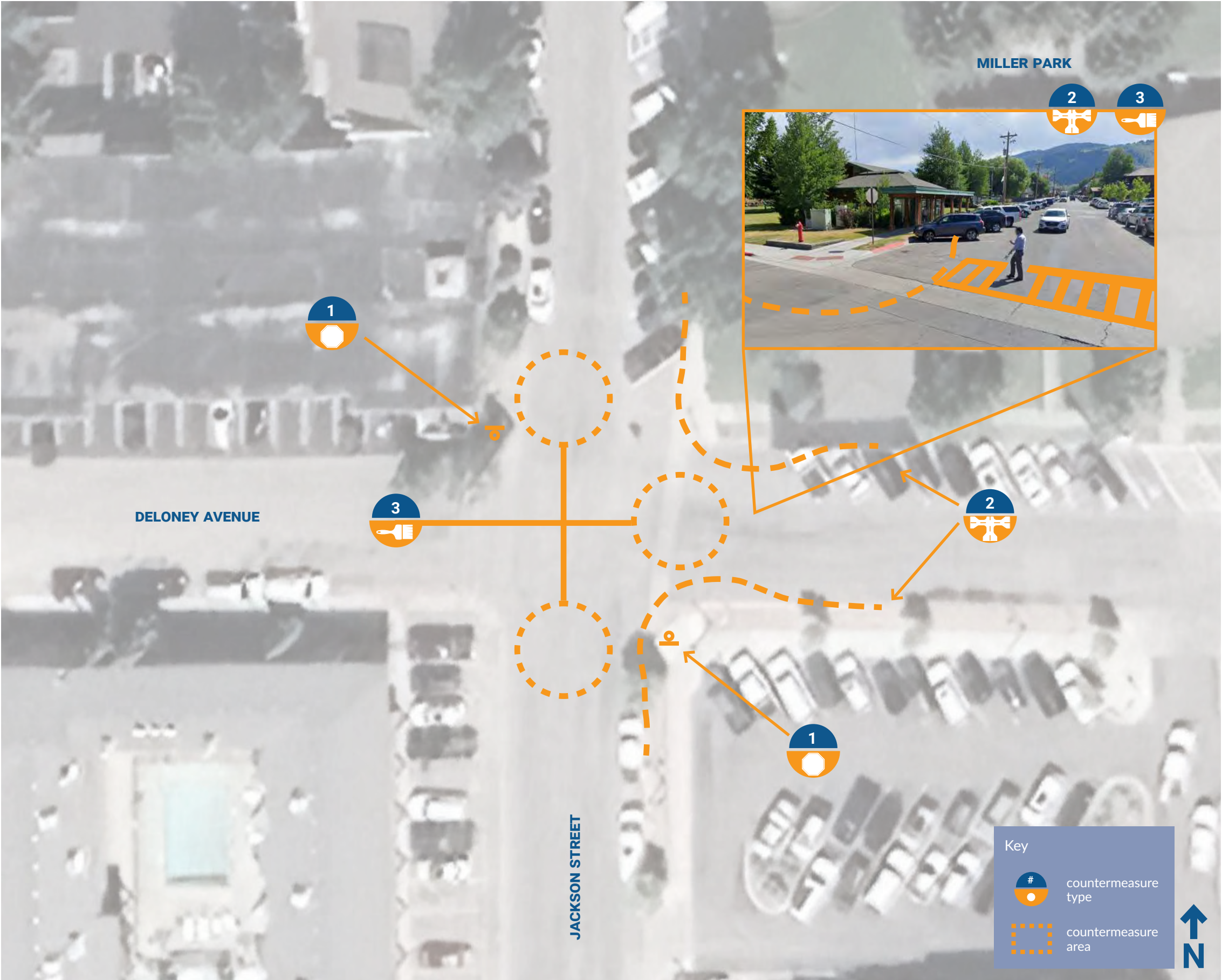
2

Kelly Avenue jogs at this location, leaving a 4-way skewed intersection  
Install additional signage and striping to provide guidance through the intersection

3

Wide intersection with excess space may confuse motorists navigating the intersection  
A narrow median island along Jackson Street will delineate and separate the intersection and clarify where turning movements should occur





Deloney Avenue / Jackson Street Intersection HIN

Crash Profile



» There were no Common Crash Profiles identified for this intersection


Safety Concern

A safety concern is an observed roadway feature that may lead to safety problems for motorized & nonmotorized users

Safety Countermeasure


Countermeasures are safety improvements designed to reduce injury and improve safety & comfort for users

- 1




Wide intersection with large radiused corners encourages high driving and turning speeds

Convert two-way stop to all-way stop to slow vehicles at intersection
- 2



History of heavy pedestrian and traffic use increases conflict potential

Add curb extensions to shorten crossing distance and increase pedestrian visibility
- 3

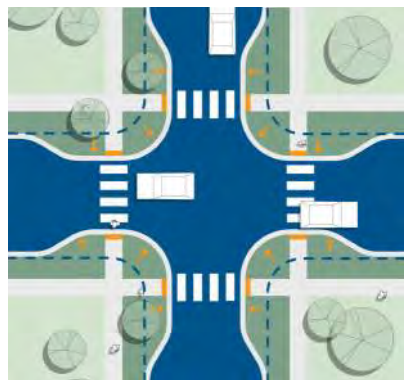


Lack of striped crosswalks at intersection reduces awareness of crossing pedestrians

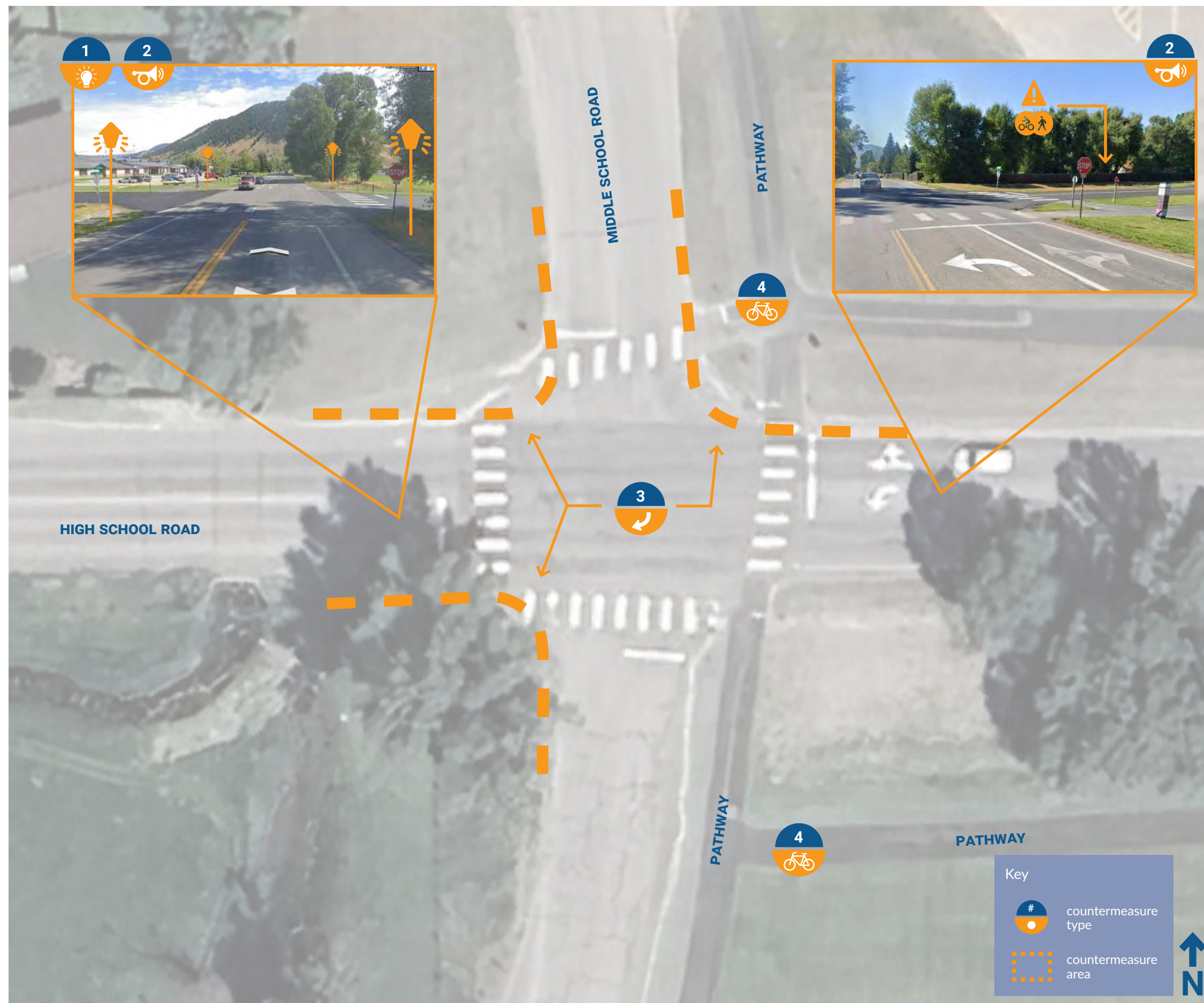
Provide high visibility crosswalk striping to increase yielding behavior and awareness of crossing pedestrians

Curb Extension

A curb extension extends the curb into the street to narrow the roadway, shorten crossing distance, increase pedestrian visibility and slow vehicular traffic.







# High School Road / Middle School Road Intersection

Crash Profile

- » Angle
- » Bicycle
- » Pedestrian

Safety Concern

A safety concern is an observed roadway feature that may lead to safety problems for motorized & nonmotorized users

Safety Countermeasure

Countermeasures are safety improvements designed to reduce injury and improve safety & comfort for users

1

Limited lighting reduces visibility for road and pathway users

Install lighting at the intersection to increase visibility for motorists and nonmotorists

2

Lack of signage limits motorists' awareness of the pathway at the intersection

Provide warning sign of pathway crossing at intersection to increase awareness of crossing pedestrians and bicyclists

3

Large corner radii accommodate high turning speeds, which can be problematic for pathway users crossing the intersection

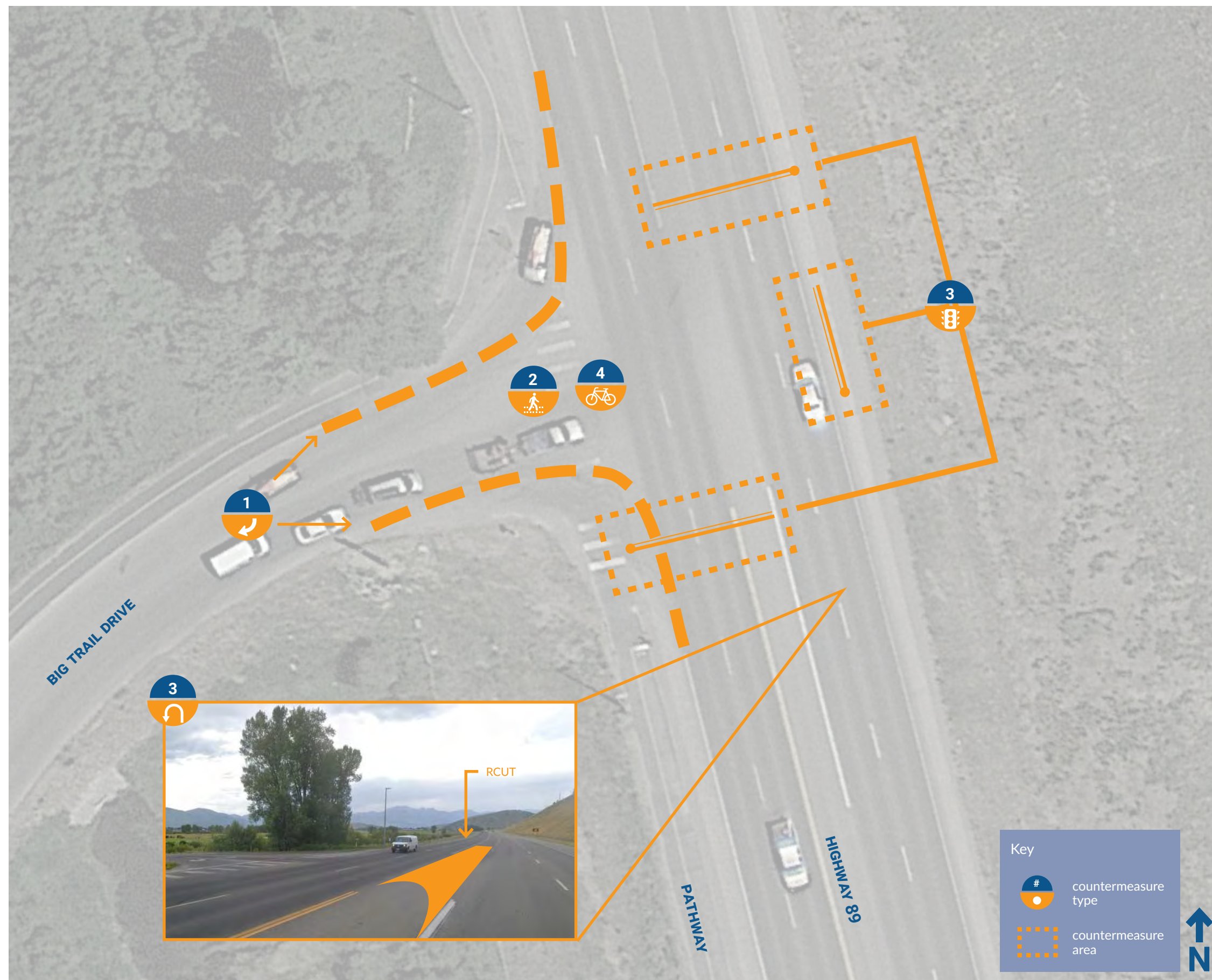
Reduce corner radii to slow turning vehicles, especially right turning vehicles.

4

The proximity to schools and other local destinations makes the existing pathway and important connector for users

Extend the pathway further west along High School Road to increase access





Highway 89 / Big Trail Drive Intersection

Crash Profile

» Angle

Safety Concern

A safety concern is an observed roadway feature that may lead to safety problems for motorized & nonmotorized users

Safety Countermeasure

Countermeasures are safety improvements designed to reduce injury and improve safety & comfort for users

1

Large corner radii and no right turn pocket increase speeds at which turns are taken and decreases likelihood of vehicles yielding to pathway users

Reduce corner radii to slow vehicles as they turn and cross the shared use path in addition construct a south-bound right turn lane.

2

Wide roadway width can be challenge for pathway users crossing the intersection

Install a median refuge island to shorten the crossing distance and protect users

3

An uncontrolled intersection with turning traffic introduces conflicts

Install a traffic signal if warranted to reduce angle crashes; a signal would require sufficient advanced warning to slow approaching traffic

or

Consider a restricted crossing u-turn (RCUT) to reduce angle crashes

4

Pathway crossing poses conflicts with vehicles

Add trail crossing warning signs and turning vehicles yield to pedestrians signs

RCUT

An RCUT reroutes left turn and through vehicles from the side road at a four-lane divided highway. Motorists are required to turn right and then make a U-turn at a designated median opening. An FHWA study shows that RCUT intersections can reduce right angle crashes by up to 75%.





## APPENDIX B

# SS4A Eligibility



| ACTION PLAN COMPONENT                            | SS4A REQUIREMENTS   | HOW DID THIS PLAN MEET THESE REQUIREMENTS?   | COMPLETED? |
|--|---|--|------------|
| <b>1) Leadership Commitment and Goal Setting</b> | A high-ranking official and/or governing body in the jurisdiction has publicly committed to an eventual goal of zero roadway fatalities and serious injuries.<br><br>That commitment also included either setting a target date to reach zero OR setting one or more targets to achieve significant declines in roadway fatalities and serious injuries by a specific date.   | Goals were developed during the visioning workshop in March 2024 and documented in a letter/resolution adopted by the Town Council in May 2024.                          | <b>Yes</b> |
| <b>2) Planning Structure</b>                     | To develop the Action Plan, there was a committee, task force, implementation group, or similar body established and charged with the plan's development, implementation, and monitoring.   | A Project Steering Committee was established to inform the Action Plan and involved the existing Teton County TAC in ongoing plan support and implementation activities. | <b>Yes</b> |
| <b>3) Safety Analysis</b>                        | The Action Plan development included all of the following: <ul style="list-style-type: none"> <li>Analysis of existing conditions and historical trends to baseline the level of crashes involving fatalities and serious injuries across a jurisdiction, locality, Tribe, or region.</li> <li>Analysis of the location where there are crashes, the severity, as well as contributing factors and crash types.</li> <li>Analysis of systemic and specific safety needs is also performed, as needed (e.g., high risk road features, specific safety needs of relevant road users.</li> <li>A geospatial identification (geographic or locational data using maps) of higher risk locations.</li> </ul> | The Action Plan analyzed relevant safety and mobility metrics.   | <b>Yes</b> |

| ACTION PLAN COMPONENT                     | SS4A REQUIREMENTS   | HOW DID THIS PLAN MEET THESE REQUIREMENTS?  | COMPLETED? |
|---|---|---|------------|
| <b>4) Engagement and Collaboration</b>    | The Action Plan development included all of the following activities: <ul style="list-style-type: none"> <li>Engagement with the public and relevant stakeholders, including the private sector and community groups.</li> <li>Incorporation of information received from the engagement and collaboration into the plan.</li> <li>Coordination that included inter- and intra-governmental cooperation and collaboration, as appropriate.</li> </ul>           | The project team engaged with the community and a variety of stakeholders to incorporate their feedback.  | <b>Yes</b> |
| <b>5) Equity Considerations</b>           | The Action Plan development included all of the following activities: <ul style="list-style-type: none"> <li>Considerations of equity using inclusive and representative processes.</li> <li>The identification of underserved communities through data.</li> <li>Equity analysis, in collaboration with appropriate partners, focused on initial equity impact assessments of the proposed projects and strategies, and population characteristics.</li> </ul> | In addition to engaging high-need communities, equity factors were analyzed and determined through an equity scan.  | <b>Yes</b> |
| <b>6) Policy and Process Changes</b>      | The plan development included an assessment of current policies, plans, guidelines, and/or standards to identify opportunities to improve how processes prioritize safety; and<br><br>The plan also discusses implementation through the adoption of revised or new policies, guidelines, and/or standards.   | The Action Plan assessed past planning and existing regulations, referencing these and building off of them throughout the planning process.  | <b>Yes</b> |
| <b>7) Strategy and Project Selections</b> | The plan identifies a comprehensive set of projects and strategies to address the safety problems in the Action Plan, time ranges when projects and strategies will be deployed, and explain project prioritization criteria.   | The Action Plan identified projects and strategies and developed priorities by creating network recommendations and cross sections, developed design standards, formulated policy and process recommendations, and provided specific project recommendations. | <b>Yes</b> |



| ACTION PLAN COMPONENT        | SS4A REQUIREMENTS  | HOW DID THIS PLAN MEET THESE REQUIREMENTS?   | COMPLETED? |
|------------------------------|--|--|------------|
| 8) Progress and Transparency | Does the Action Plan meet both of the following? <ul style="list-style-type: none"><li>A description of how progress will be measured over time that includes, at a minimum, outcome data.</li><li>The plan is posted publicly online.</li></ul> | The Action Plan will be evaluated against the performance measures in this document and will be made publicly available online.                                  | Yes        |
| 9) Timing                    | The Action Plan is finalized within the time frame required for the SS4A Implementation Grant program.   | The project team will develop the plan in accordance with a schedule that allows for its recommendations to be considered for SS4A Implementation Grant funding. | Yes        |



APPENDIX C

Community Engagement



# Introduction

Teton County and the Town of Jackson collaborated to create the Teton County Comprehensive Safety Action Plan. The purpose of the project was to identify what transportation investments and projects are needed to make it safer and more comfortable to get around the region and prepare the Town and County for federal implementation funding. The project included various strategies and activities to meaningfully engage with community members that align with technical work of the project. The engagement process also included targeted efforts to engage historically harder to reach community members with varied backgrounds as well as communication strategies for the public. The engagement efforts were based around three distinct phases:

- Phase 1: Listen & Learn – Introduced the project, gained an understanding of mobility needs and transportation safety experiences to inform the project vision and goals, established a leadership commitment, and identified connectivity and accessibility needs.
- Phase 2: Reflect & Dive in – Shared opportunities for public input on safety analysis, discussed performance measures, right-of-way uses and limitations, refined proposed mobility network and cross-sections, and identified and prioritized projects for implementation.
- Phase 3: Refine – Shared how public input affected project outcomes and final recommendations, received input on complete draft plan and recommendation summaries, and presented at elected and appointed body meetings.

# Phase 1: Listen & Learn

The report outlines the engagement activities and communication methods used in Phase 1: Listen & Learn and summarizes key takeaways. The following table summarizes the events that took place during Phase 1

|  | LOCATION                                  | TIME FRAME                  | PARTICIPANTS     |
|--|---|-----------------------------|------------------|
| Survey                                   | Online                                    | Feb 26, 2024 – May 15, 2024 | 281              |
| Project Steering Committee Meeting       | BCC Chambers, Town of Jackson             | March 18, 2024              | 15               |
| Vision, Goals, and Placemaking Workshops | Teton County Fairgrounds                  | March 19-20, 2024           | Approximately 40 |
| Open House                               | Presbyterian Church of Jackson Hole Lobby | May 7th, 2024<br>3pm – 8pm  | 53               |

## PROJECT SURVEY FEEDBACK

The project survey was available in Spanish and English and was conducted through an online portal and was open to the public between March 14, 2024, and May 14, 2024. Community members were made aware of survey through custom fliers for different audiences posted around town, in utility bills, in print and website advertising, Town of Jackson and Teton County newsletters and websites, and during open house conversations (see communication materials section). Emails were sent to members on the project listserv, community-based organizations, schools, and neighborhood associations, directing them to the project website and to the ongoing survey.

Community members shared information about their destinations around the community, frequency of the transportation modes they use, perceptions of safety, and their transportation needs and priorities. The survey also included an interactive map where respondents could add comments about their transportation concerns and the destinations they would like to be able to reach more easily within the Town of Jackson and Teton County.

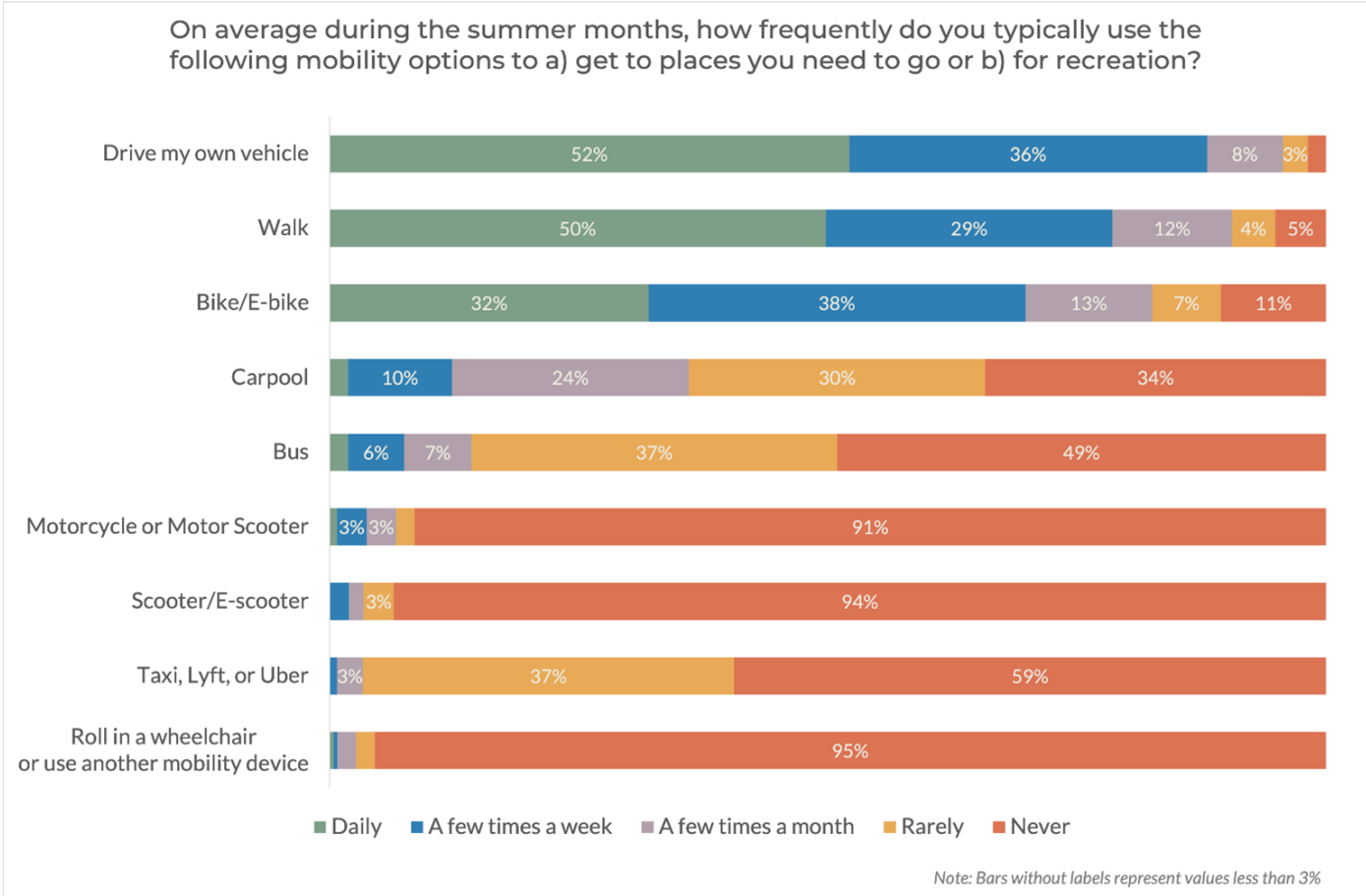


SURVEY QUESTIONS

Your Travel Habits

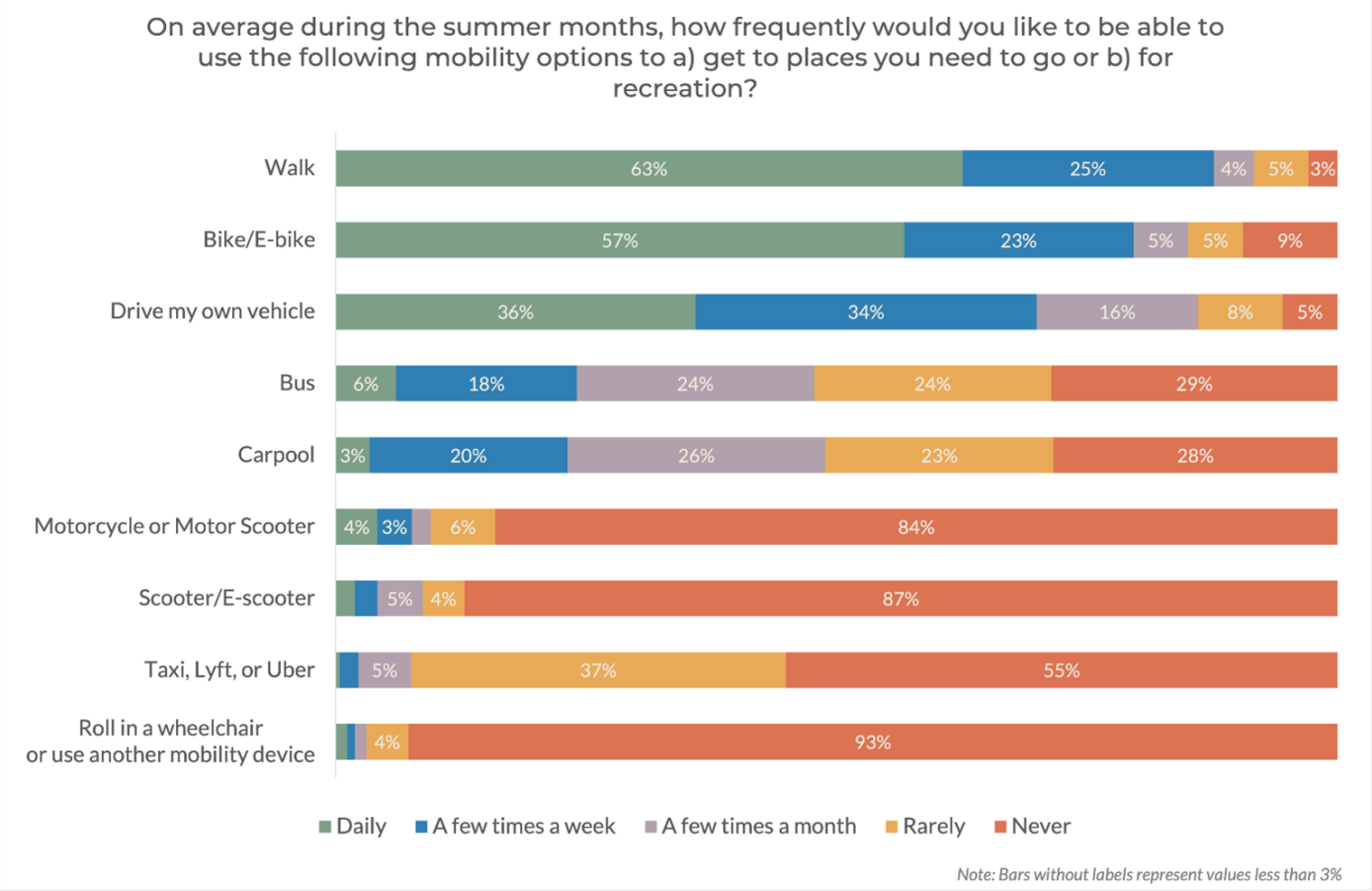
Q1: On average during the summer months, how frequently do you typically use the following mobility options to a) get places you need to go or b) for recreation?

Over 50% of survey respondents drove their own vehicle or walked every day to get places they needed to go or for recreation. Bike/E-bikes are used daily by 32% of the respondents. Only a small percentage (<3%) of respondents used carpool daily but 34% of respondents used them a few times a week or few times a month. Buses were not a frequently used transportation mode with 86% of respondents rarely or never using them. Transportation modes like motorcycle/ motor scooter, scooter/e-scooter and mobility devices were never used by over 90% of the survey respondents.



Q2: On average during the summer months, how frequently would you like to be able to use the following mobility options to a) get places you need to go or b) for recreation?

With 63% of respondents, walking was the top transportation mode that survey respondents would like to use every day which is 13% higher than how frequently respondents typically walk. Biking was another top transportation choice for 57% of respondents who would like to use it every day which is 25% higher than respondents who typically use bike/e-bikes. A significantly higher number of respondents (25%) would like to use buses everyday compared to <9% who typically use buses. About 90% of survey respondents rarely or never wanted to use motorcycle/motor-scooter or scooter/e-scooter and this is relatively similar to how people typically use these modes.



Q3: What special places would you like to reach, or routes would you like to travel on, by walking, biking, or rolling, but cannot or do not feel comfortable doing so today? (Open-ended)

Some places respondents would like to walk/bike/roll to include Whole Foods, Vine street, Town Square, biking in Targhee - Ski Hill Road, South Park Loop on the east side of the road, Spring Gulch, Snake River Bridge/Dikes, pathway north of town, school zones, Moose Wilson Road, Cache Creek Drive to the Cache trailhead, Snow King Ave., Millward Avenue sidewalks, intersection of Millward and Pearl, intersection of Millward and Broadway, portions of Simpson and Hansen streets, Nelson Drive, Rancher Drive from Hansen and Cache Creek.

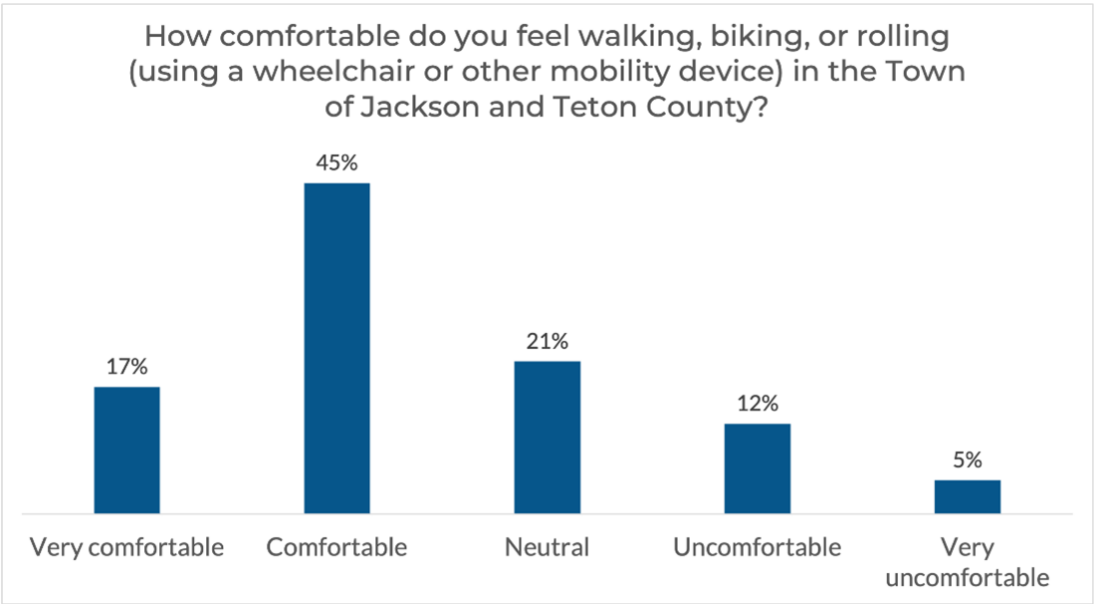
Respondents expressed a need for continuous sidewalks throughout the region, particularly in Town of Jackson, bike transit hubs, and better patrolled streets. Many respondents noted their appreciation and satisfaction with the current walking and biking infrastructure.



Comfort and Concerns

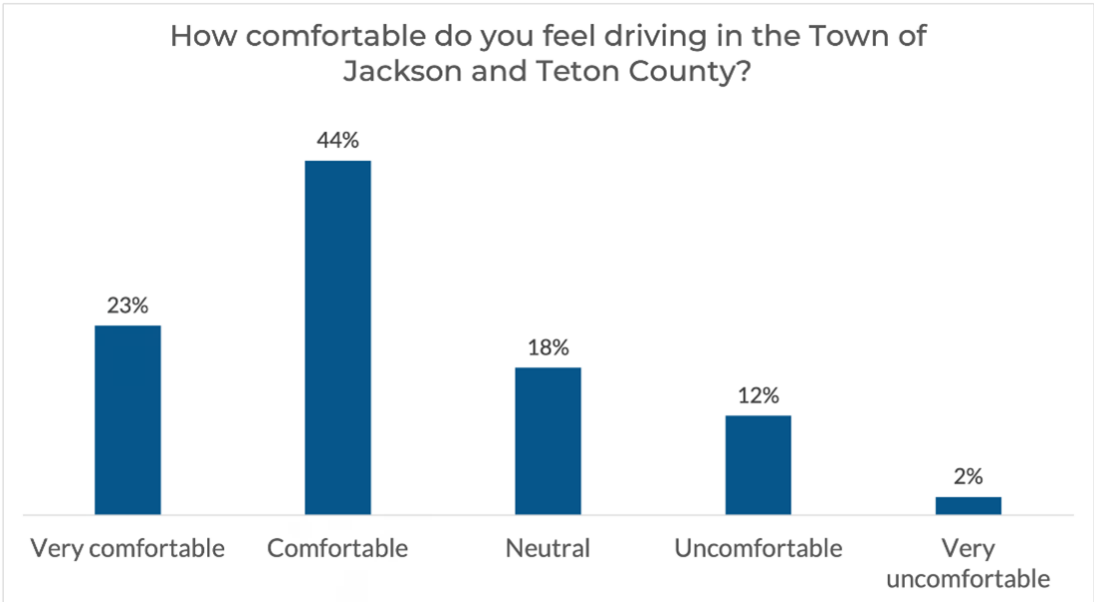
Q4: How comfortable do you feel walking, biking, or rolling (using a wheelchair or other mobility device) in the Town of Jackson and Teton County?

62% of survey respondents felt very comfortable or comfortable walking, biking, or using mobility devices in Teton County and the Town of Jackson. On the other hand, 17% felt uncomfortable or very uncomfortable using these modes.



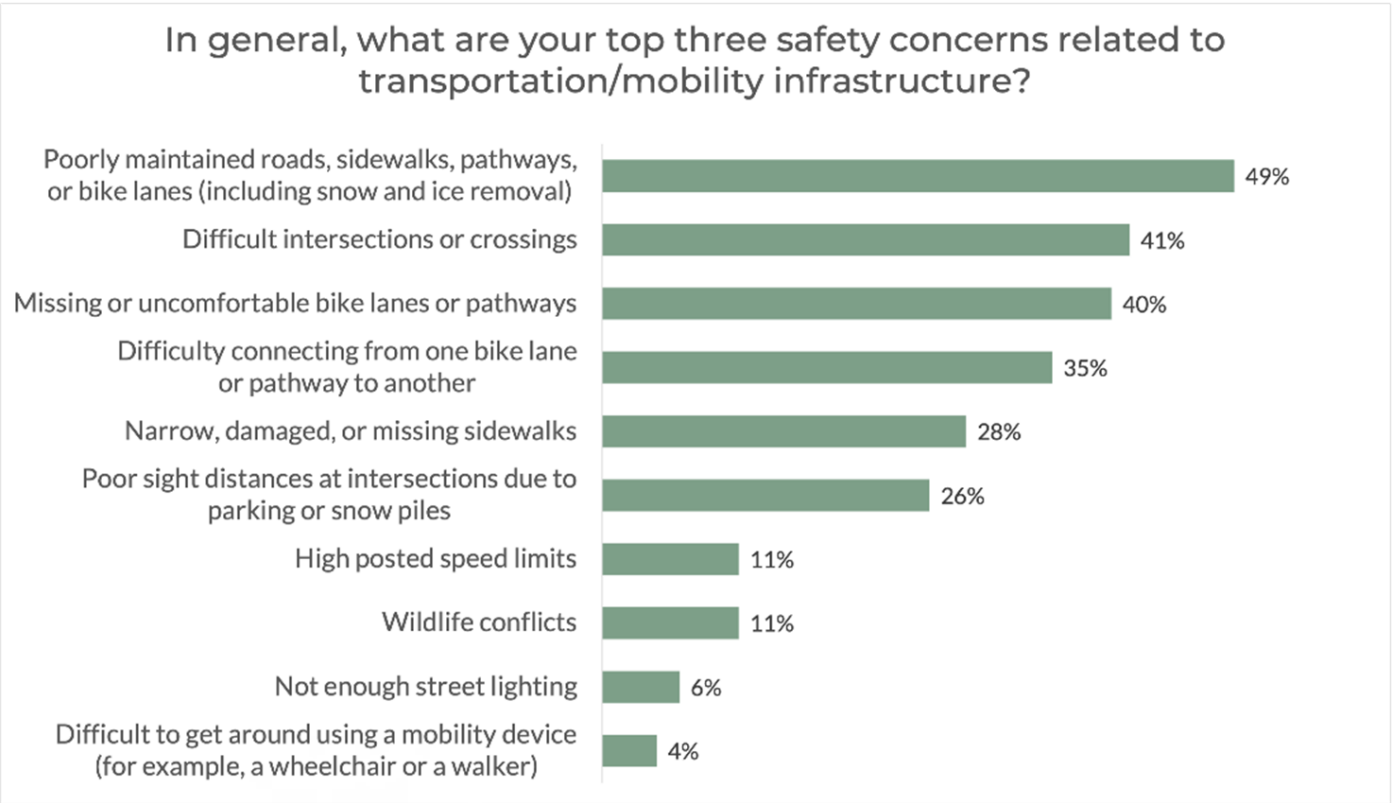
Q5: How comfortable do you feel driving in the Town of Jackson and Teton County?

67% of survey respondents felt very comfortable or comfortable driving in Teton County and the Town of Jackson. A smaller proportion of respondents (12%) felt uncomfortable and 2% felt very uncomfortable while driving. 18% of respondents were neutral about comfort in driving.



Q6: In general, what are your top three safety concerns related to transportation/mobility infrastructure?

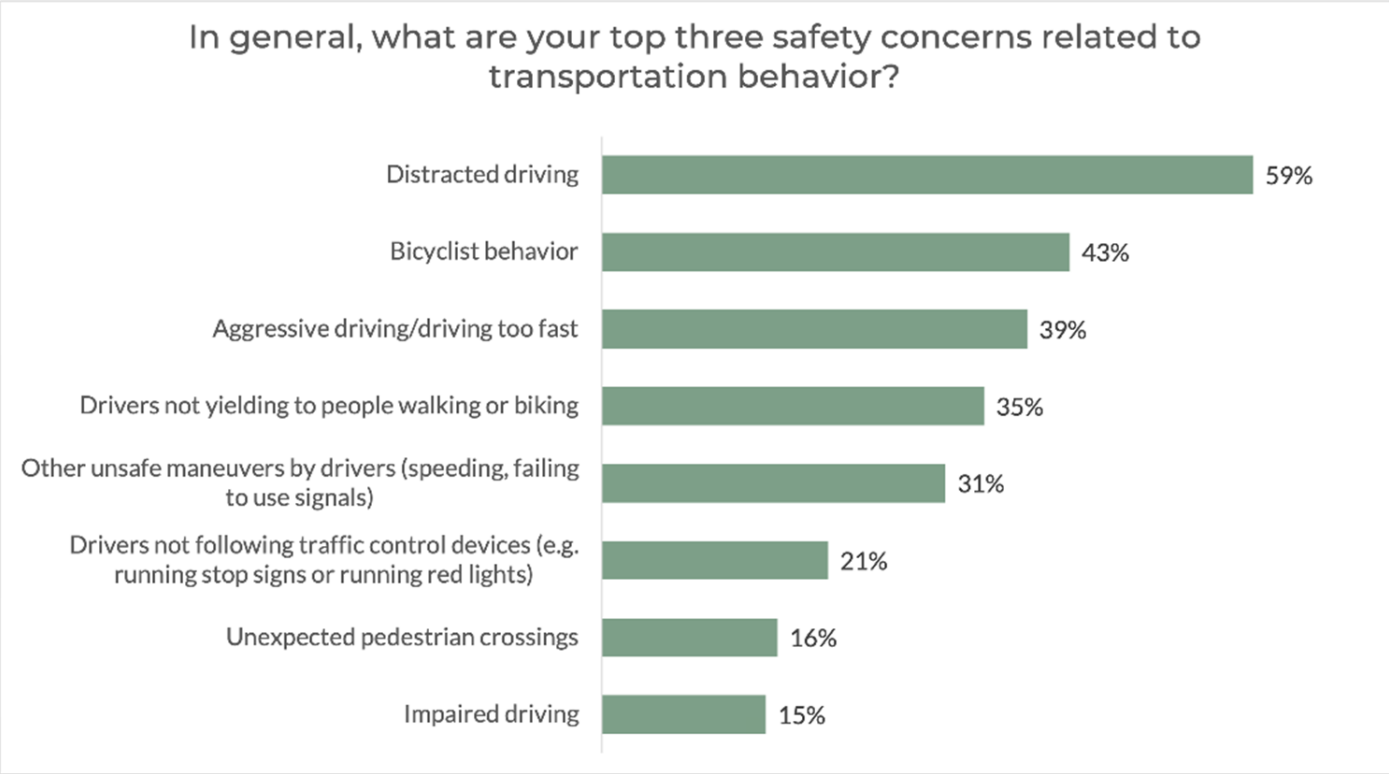
The top safety concern related to transportation/mobility infrastructure for survey respondents was poorly maintained roads, sidewalks, pathways, or bike lanes (including snow and ice removal). Difficult intersections or crossings and missing or uncomfortable bike lanes or pathways were each identified by about 40% of the respondents as a Top-3 safety concern. Street lighting or difficulties in using mobility devices were of relatively low infrastructure safety concern for respondents.



Q7: In general, what are your top three safety concerns related to transportation behavior?

In terms of transportation behavior, distracted driving rose to the top of the safety concerns for 59% of respondents followed by bicyclist behavior (43%) and aggressive driving/driving too fast (39%). With less than 15% each, unexpected pedestrian crossing or impaired driving were relatively a low priority for the survey respondents.

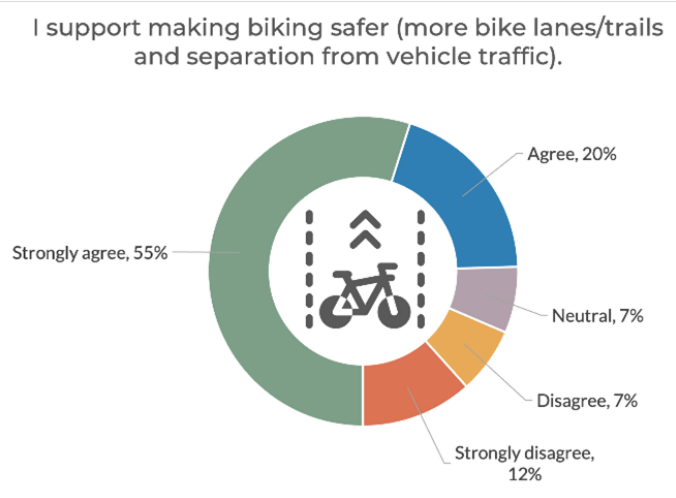
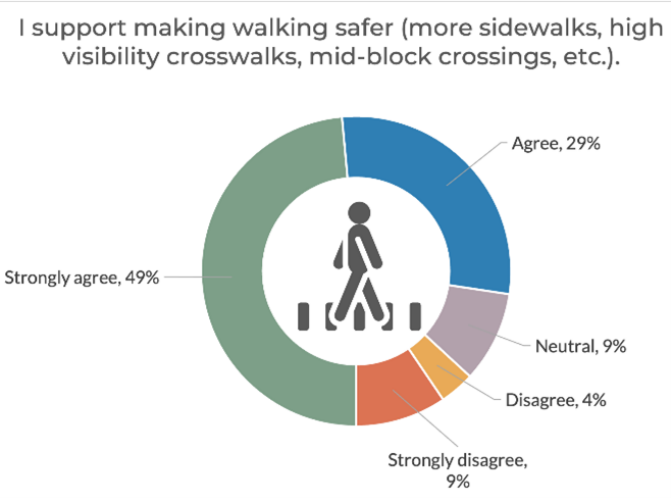




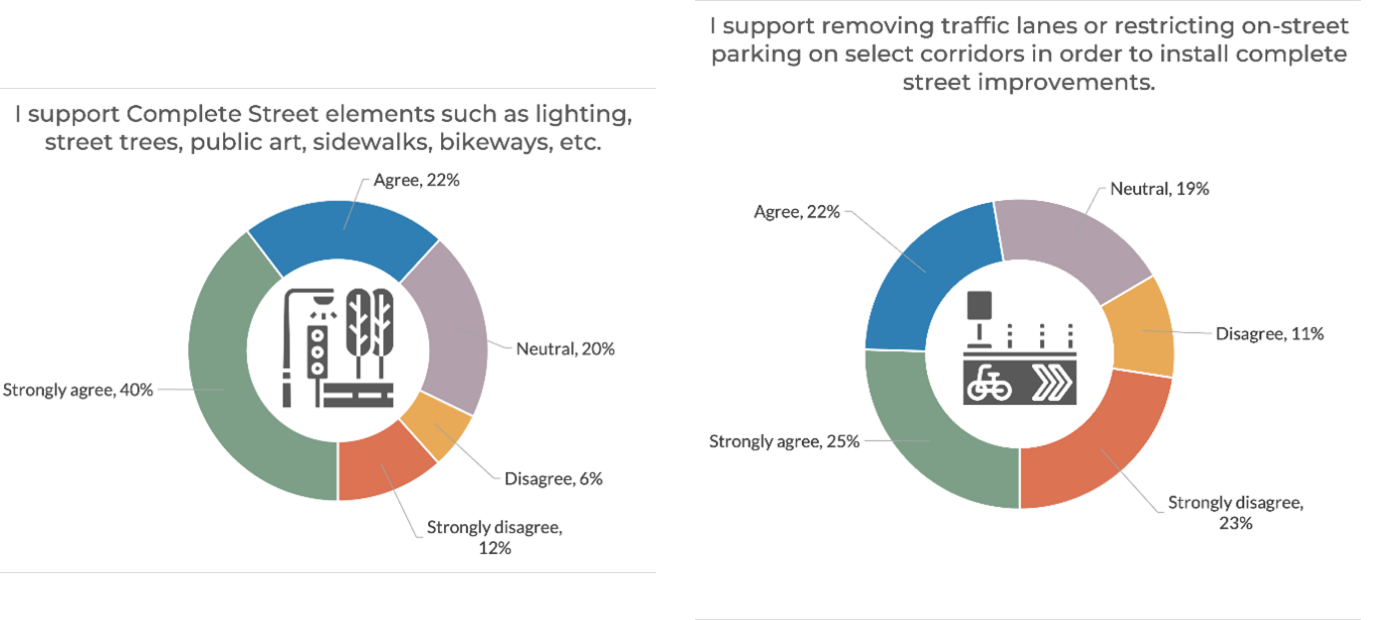
**Safety Improvement Strategies**

Q8: Share your level of support for the following safety strategies.

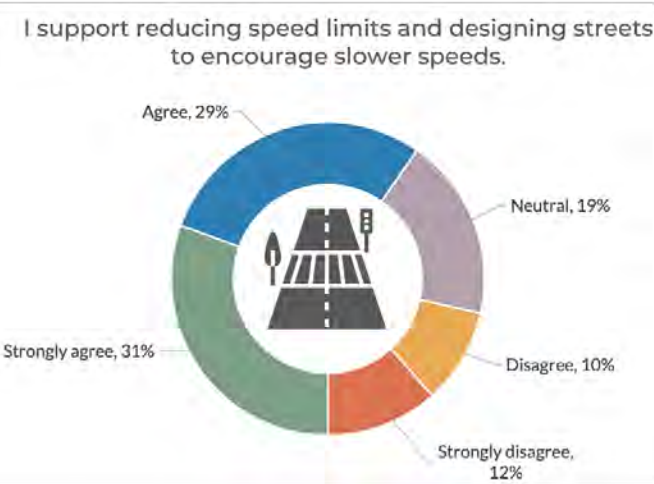
Over 75% of the respondents strongly agreed or agreed to making walking and biking safer through improved infrastructure. 9% of respondents strongly disagreed to making walking safer and 12% disagreed to making biking safer. Smaller percentage of respondents were neutral to making to walking (9%) and biking safer (7%).



40% of respondents supported Complete Street elements such as lighting, street trees, public art, sidewalks, bikeways, etc., but only 25% supported removing traffic lanes or restricting on-street parking in order to install complete street improvements. 22% of respondents were in support of complete street improvements and also supported removing traffic lanes or restricting parking for the same. 34% of survey respondents disagreed or strongly disagreed with removing traffic lanes and restricting parking to support complete street improvements.

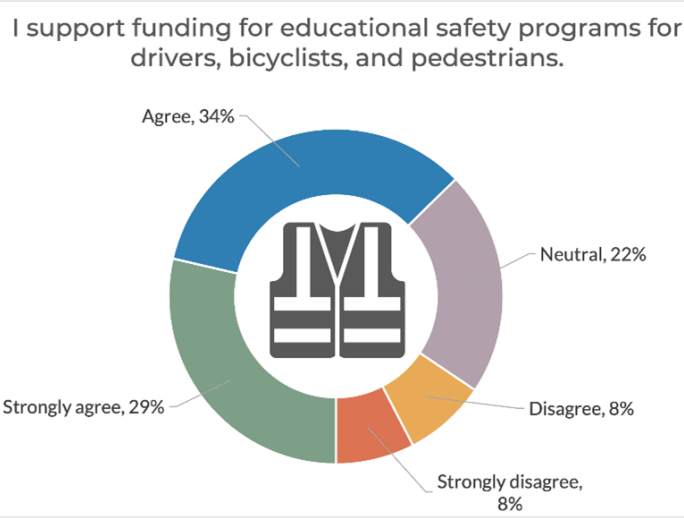


With 60%, a majority of survey respondents strongly agreed or agreed with reducing speed limits and designing streets to encourage slower speeds. On the other hand, 22% of respondents disagreed or strongly disagreed, and 19% were neutral about this safety strategy.

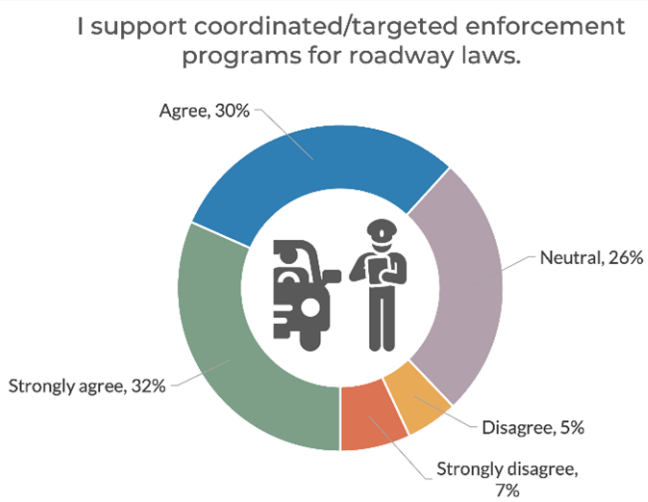
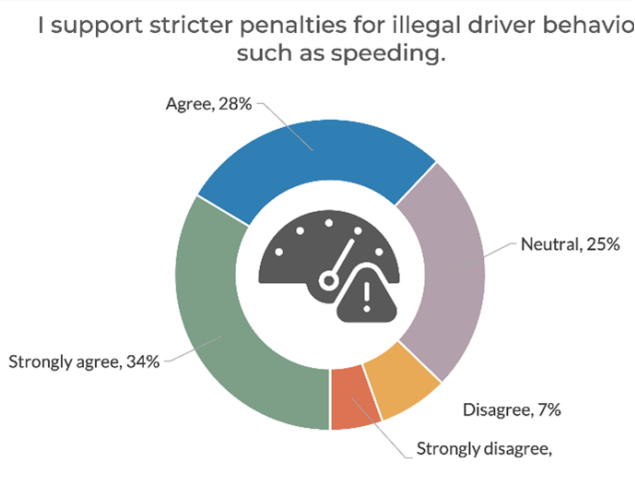




Over 70% of respondents supported or strongly supported funding for educational safety programs for drivers, bicyclists, and pedestrians. A relatively smaller percentage of respondents (16%) disagreed or strongly disagreed and 22% were neutral about this safety strategy.



For the two enforcement related safety strategies listed, support from survey respondents (“strongly agree” or “agree”) was the same for stricter penalties for illegal driving behavior and for coordinated/targeted roadway law enforcement programs. 62% of respondents strongly agreed or agreed to support the two strategies and almost a quarter of respondents were neutral to both. Similarly, 12% of respondents disagreed or strongly disagreed with the two enforcement related safety strategies.

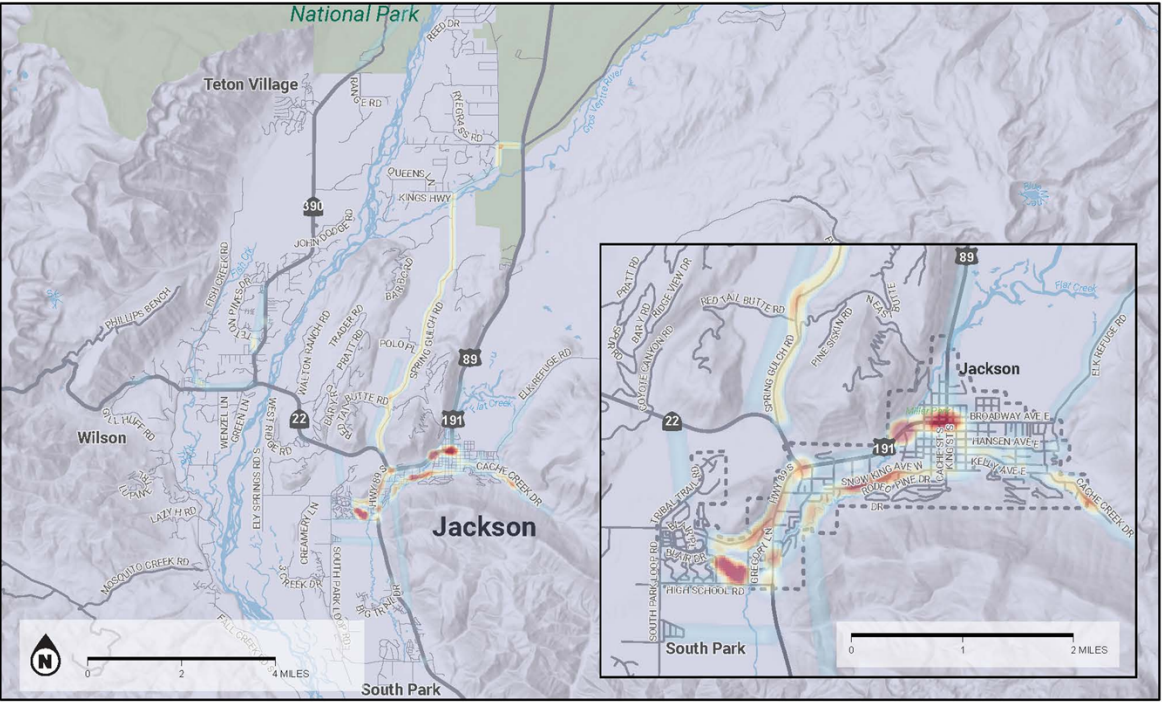


Mapping Safety & Mobility

Q9 Part 1- SAFETY: What parts of Teton County and the Town of Jackson do you think are most in need of safety improvements? (Figure 1) (Map Link: <https://apd.maps.arcgis.com/apps/webappviewer/index.html?id=e0d8d49f4abb4f76b666f27f1b0f08ff>)

Respondents indicated a high density of safety concerns at the following locations, generally clustered along highways and arterial roadways in the Town of Jackson and Wilson:

- Hwy 191/ W Broadway Ave through downtown and near the Town Square**
  - Crosswalk Glenwood St feels dangerous
  - Issues with boardwalks for mobility devices
  - Lighting
  - Curb ramps
  - Slow and dangerous for vehicles
- Hwy 89**
  - Dangerous for people biking and no alternate route
  - Tricky connection to bike path on S Park Loop Rd
  - Speeding
  - Feel unsafe even on sidewalks
  - Stellaria Lane Crossing is an issue
- Spring Gulch Rd**
  - Pathway for bicycling and walking.
- Gregory Lane/ High School Rd Area**
  - Path to the middle school
  - Access to schools
  - Access from Rangeview neighborhoods
- W Snow King Ave**
  - Issues with people biking and large horse trailers
  - Concern about effectiveness of bollards
  - Compliance of bicyclists at stop signs
- Cache Creek Dr**
  - Access to Cache Creek trailhead for people walking and biking
  - Sidewalk missing
  - Drainage, large puddles of water



**COMMUNITY SAFETY CONCERNS**  
TETON COUNTY, WY  
SAFE STREETS FOR ALL  
SAFETY ACTION PLAN

**Public Input**

- High Density of Comments
- Low Density of Comments

**Roads and Trails**

- Local
- State Highway
- US Highway

**Base Map Features**

- State Line
- County Line
- Town of Jackson
- Parks

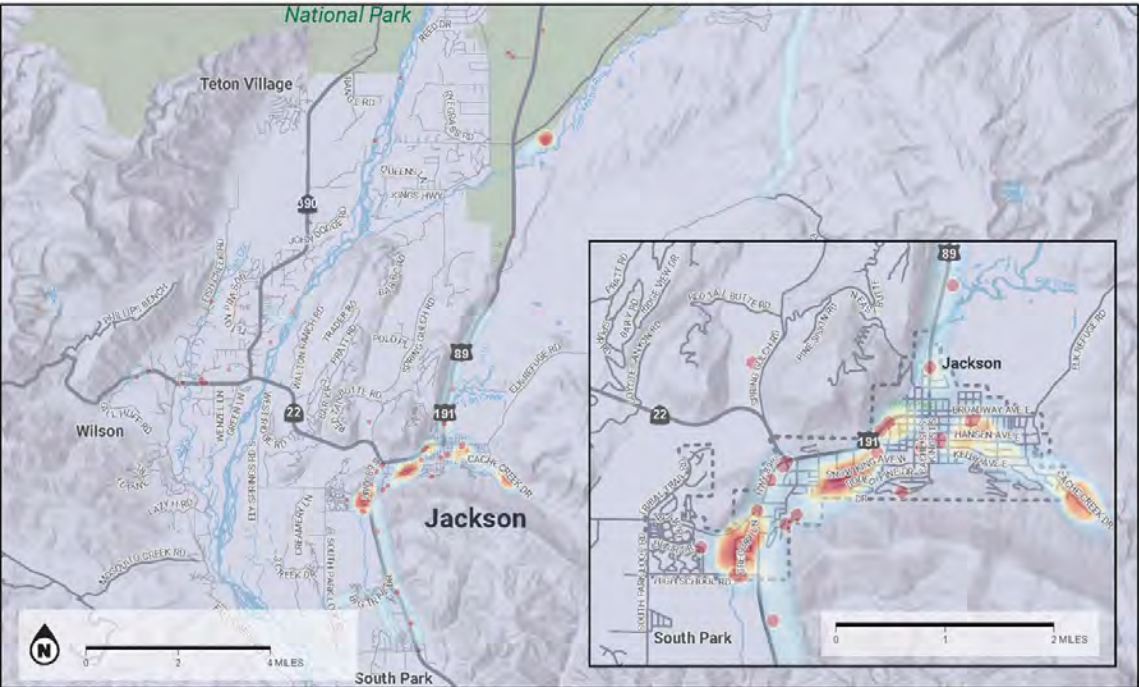
Source: Teton County Safe Streets for All Safety Action Plan Survey held between March 14th, 2024 and May 14th, 2024



Q9 Part 2- MOBILITY: In an ideal world, where (routes and destinations) would you like to walk, bike, or roll that you can't today? (Figure 2)

Respondents indicated a high density of desired routes and destinations at or along the following locations:

- W Snow King Ave and Karns Park
- Gregory Lane
- Hansen Ave
- Cache Creek Dr
- Grocery Stores, including Albertsons
- Across Hwy 89 and Hwy 22 intersection
- Along W Broadway Ave into town
- E Broadway Ave- missing sidewalks
- Connection from Willow St Bikeway to the N Hwy 89 pathway.
- Schools and restaurants in Wilson
- Connection between Teton Village and Wilson
- Hwy 22 over the pass
- GV Junction to Kelly



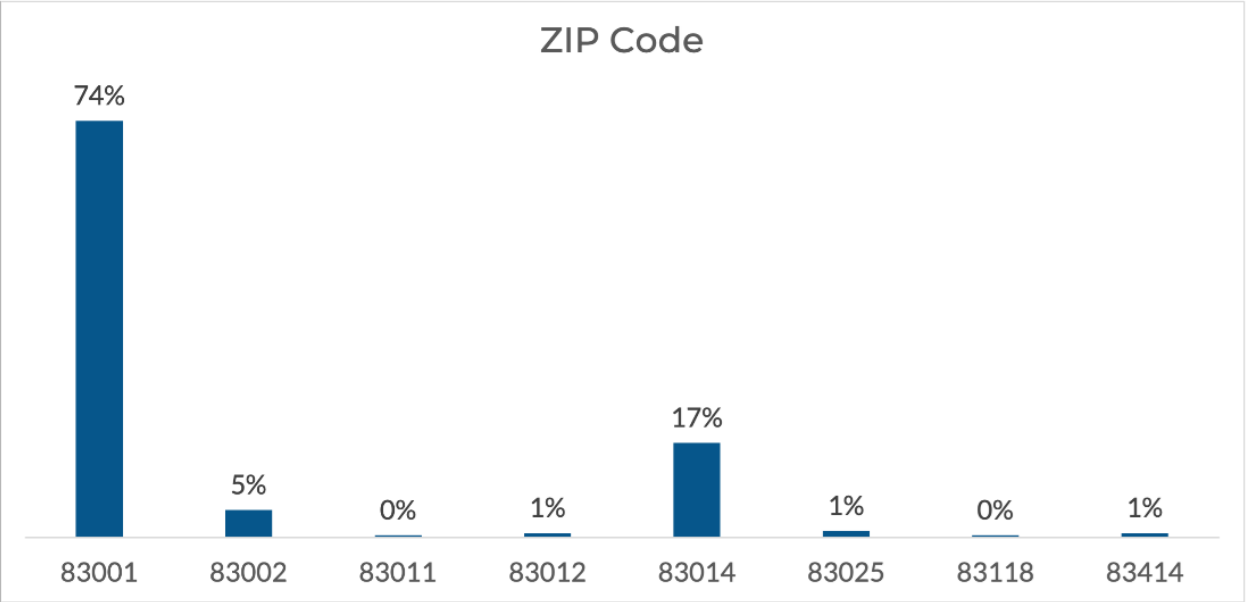
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## About You

### Zip Code

Q10: What is your ZIP code?

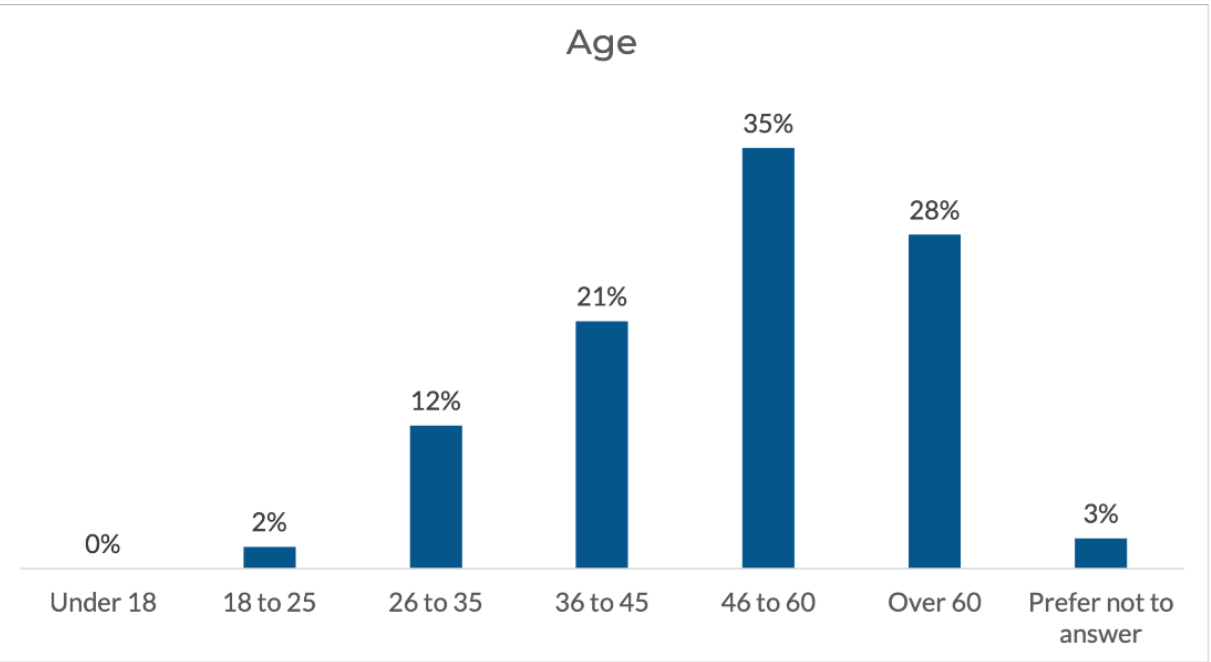
Most survey respondents (74%) were from ZIP Code 83001 or Town of Jackson. 17% of respondents were from Wilson and surrounding areas.



### Age

Q11: What is your age?

Respondents of the survey came from a variety of age categories. The highest number of survey respondents, with 35%, were people between 40-60 years of age. People aged over 60 years of age represented the second highest proportion (28%) of survey respondents. None of the respondents were under 18 years of age.

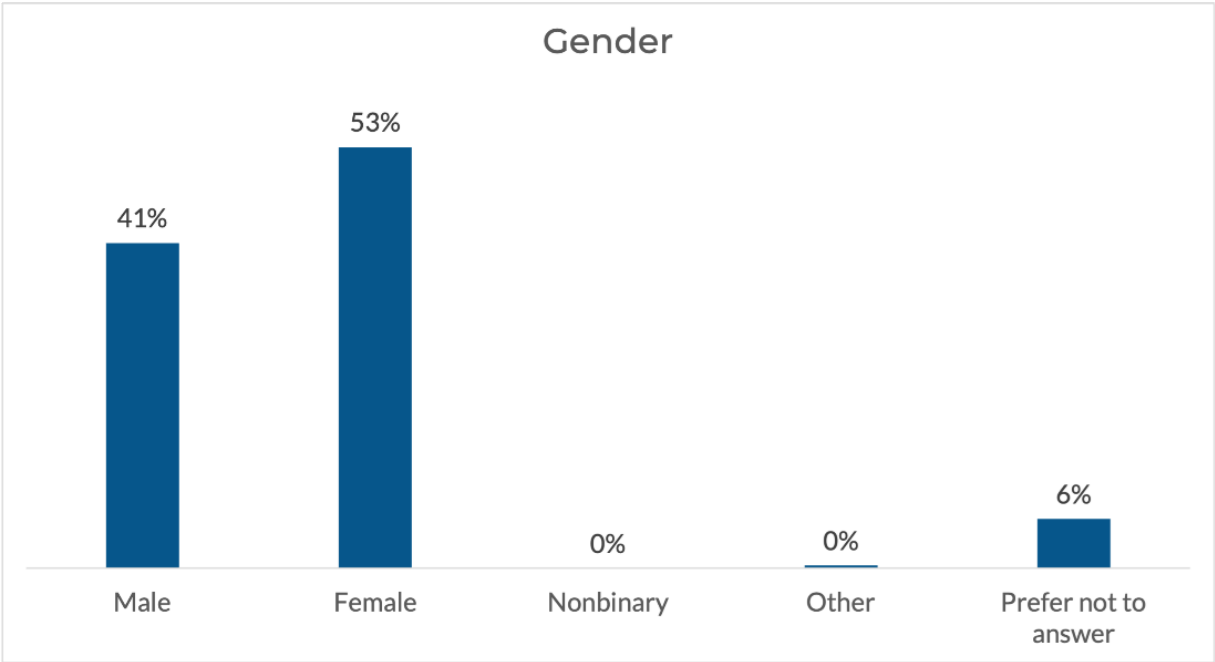




Gender

Q12: What gender do you identify with?

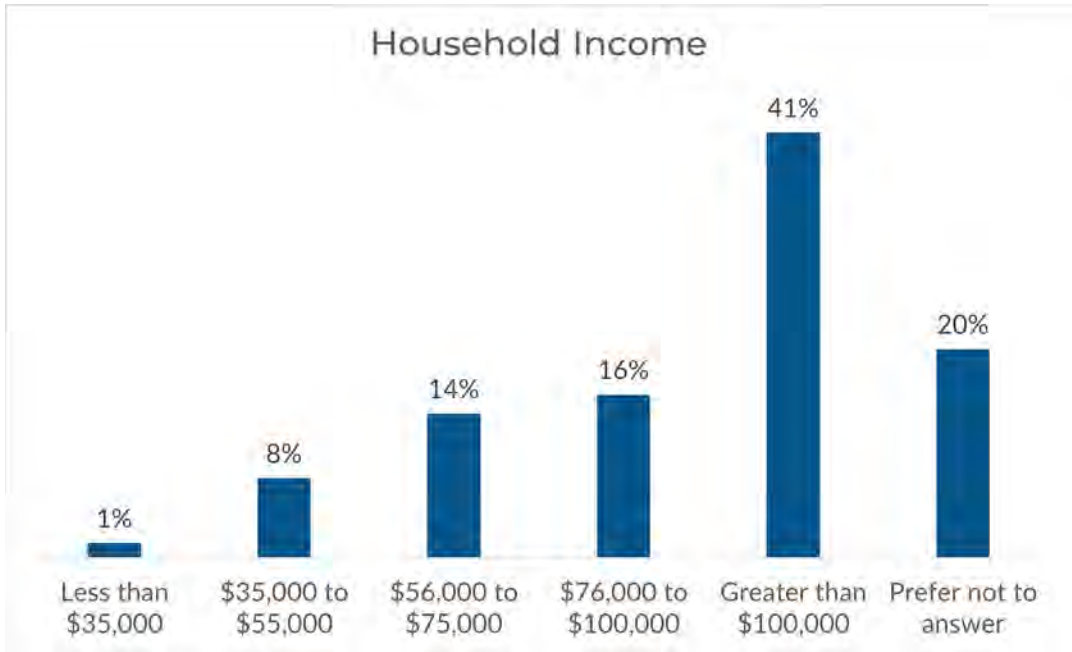
A higher percentage of respondents (53%) identified as female while 41% identified as male. 6% of respondents preferred not to respond to the question.



Income

Q13: What is your household income?

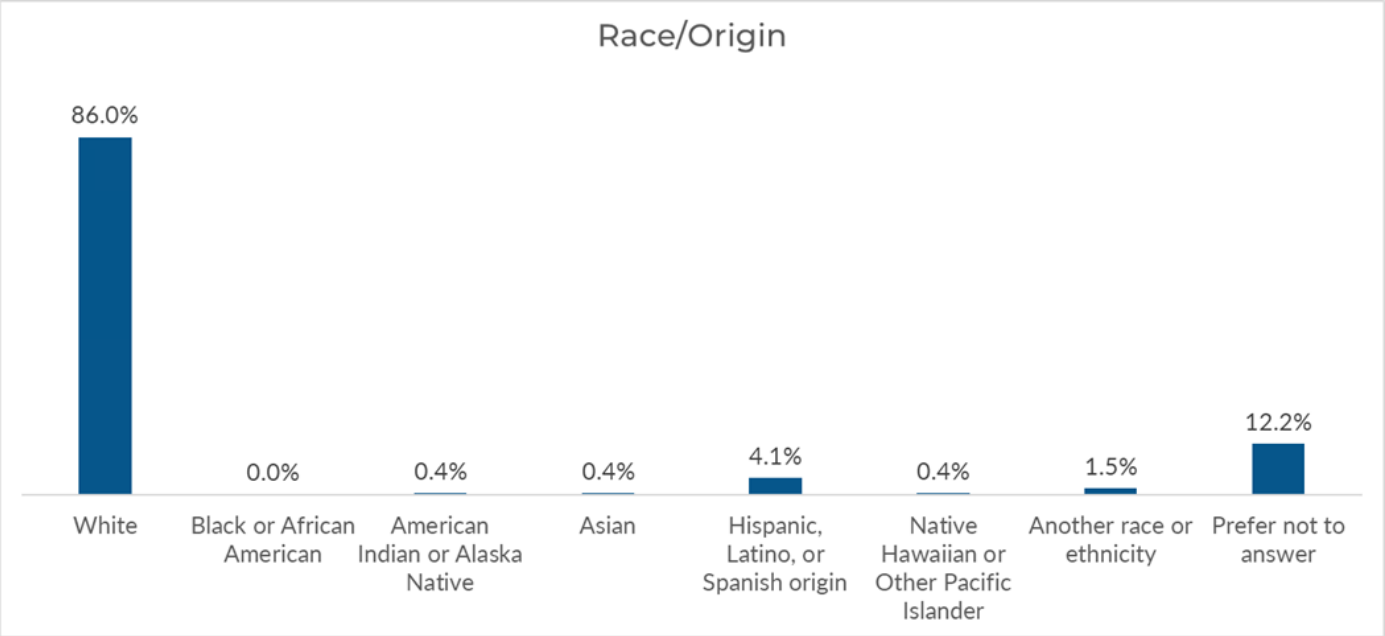
Respondents of the survey came from a range of income groups, but some categories were more represented than the others. The highest number of survey respondents, with 41%, were people whose households earned more than \$100,000. 9% of survey respondents' household income was less than \$55,000.



Race/Origin

Q11: What is your race/origin?

Among the options listed, a majority of survey respondents, about 86%, indicated that they identify as White. 12% of the respondents stated they would prefer not to answer. A smaller percent of respondents identified as Hispanic/Latino (4%).





PROJECT STEERING COMMITTEE MEETING #1 ENGAGEMENT

Date: March 18, 2024

Location: BCC Chambers, Town of Jackson.

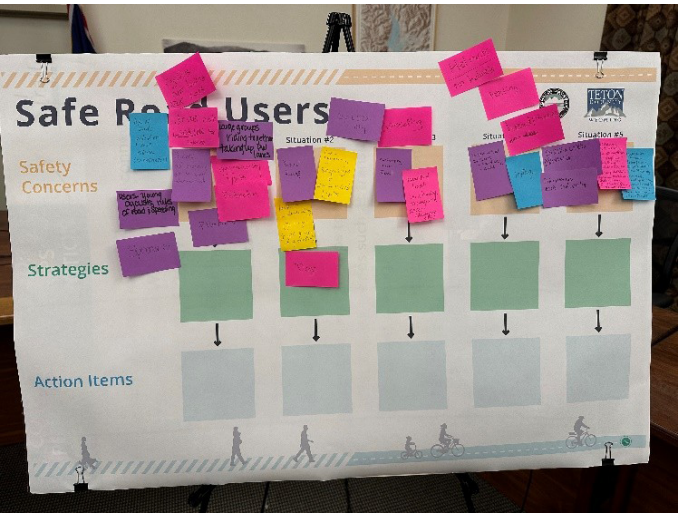
The Project Steering Committee is a group of 16 community members who represent a variety of interests and local stakeholders. The PSC will (a) help guide the development of the Safety Action Plan from vision to implementation and (b) chart the next ten years of mobility and safety improvements in Jackson Hole. The first PSC meeting was held in March 2024. Meeting agenda included Planning for Transportation Safety 101, project overview including project schedule, equity approach, steering committee overview & expectations, and safety issue identification activity.

After the presentation on transportation safety including Safe Systems practices and success stories across the country, the committee members were asked about what resonated with them about the Safe Systems approach. Some of their responses include:

- The built environment matters and the Safe Systems approach factors in road design
- Roads must be physically designed and structured to reduce speeds.
- The Safe Systems approach factors in human mistakes, which are inevitable, and it changes behavior and structure to reduce speeds.
- The approach is realistic; zero deaths is a reasonable goal for our community.
- Safety for all, including vehicles.
- Be proactive in identifying risky areas where crashes may not have happened yet.
- School zones should be a priority area for implementation.
- Universal design should factor in people who are aged 8-80. Not everyone drives.



Left Image: Brandon Gonzalez from Alta presenting to the Project Steering Committee members.



Right Image: Committee members notes on the activity board.

Committee members provided input on safety concerns, strategies, and action items for three categories: Safe Road Users, Safe Speeds, and Safe Roads. The below themes emerged from the activity.

Safe Road Users Themes

- Speeding is a top concern, particularly on larger, busier streets.
- Concerns about how youth use roads and streets, particularly while biking and e-biking.
- Dangers of distraction from using phones, headphones, or when traveling with kids.
- Driver failure to follow traffic laws, such as stopping at stop signs or drinking and driving.
- Cyclist failure to follow traffic laws, such as not stopping at stop signs or looking for cars.
- Lack of sidewalks and crossings make it difficult for people to use the road safely and predictably.
- Conflict between people using different modes and drivers’ attitudes and behaviors toward people walking and biking.
- Issues with education on pathway rules – e.g., dogs not on leashes

Safe Roads Themes

- Wildlife interactions.
- Roads designed for high speeds in lower speed areas.
- Construction related safety concerns, potholes, and road maintenance particularly related to ice and snow
- Concern about safety of roadway intersections with bike paths or pathways. Pathways that look like roads- confusing for drivers and create high speeds for cyclists.
- Accessibility concerns, like challenging curb cuts and sidewalks ending in stairs- tough for parents w/strollers and people w/disabilities.
- Inconsistencies between Town and County – Municipal Code
- Safety strategies suggested including pedestrian scale lighting, bollards, complete pathway separation, and Complete Streets policies.
- Challenging locations are Broadway heading east to town square, Town Square, Wilson pedestrian crossing and Ace Hardware intersection.

MAY JOINT INFORMATION MEETING

Date: May 6, 2024, 2:00 PM

Location: Teton County Commissioners Chambers

Staff and the project consultant presented an update on the SS4A Safety Action Plan process to the Jackson Town Council and Teton County Commissioners on May 6th. The meeting agenda was publicly noticed per local and state legal notice laws and distributed to the Town and County e-mail notification lists. The presentation included descriptions of the Safe Systems approach, the project’s public engagement strategy, the high injury network and crash analysis, the equity scan, makeup of the Project Steering Committee, and a summary of the Stakeholder Workshops from March 2024. The elected boards reviewed and discussed the recommended Vision and Goals statement and the Leadership Commitment. Members of the public were allowed to provide public comments. The Vision and Goals statement was unanimously approved by both boards.



MAY OPEN HOUSE

Date: May 7, 2024, 3pm – 8pm

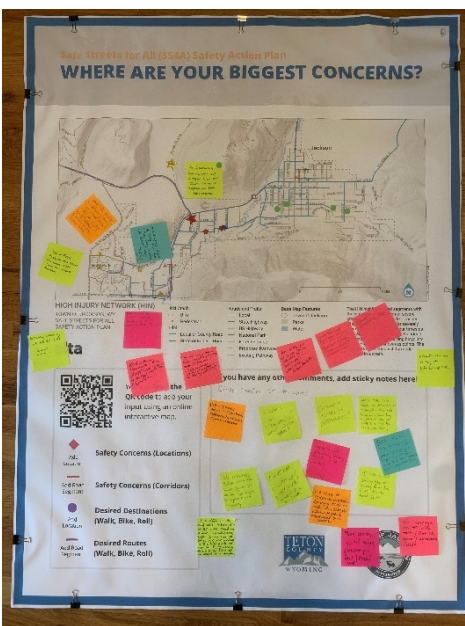
Location: Presbyterian Church of Jackson Hole Lobby

The open house included discussion on two topics: the SS4A Safety Action Plan and Modernizing Mobility for West Jackson. This engagement was in an open house format with five project boards that attendees could view. Staff members were stationed at the boards to answer questions. The board topics included project overview, vision and goals, safety strategies, and maps of Teton County and the Town of Jackson. Some boards had interactive activities for participants to share their active transportation needs and perspectives. The boards were translated in Spanish.

A variety of outreach strategies was used for the project including custom fliers, mailers sent to households in Teton County, a flier added to the May utility billing cycle through Town, ads in the daily and the weekly papers, and targeted and generic posts on Facebook and Instagram.



Left Image: The project team in conversation with the open house participants.



Right Image: The participants' notes on one of the activity boards.

The goals and big ideas shared by participants include:

- *Public Transit:* Frequent and free public transit system, transit service to and through Grand Teton National Park, light rail from Jackson to airport and possibly over to Teton Village and shuttles to recreational destinations.
- *Shared transportation:* Employers should offer shuttles to work.
- *Wildlife:* Always considering wildlife crossings – keep wildlife and people safe.
- *Non-motorized transportation:* Any improvements that facilitate non-motorized improvement.

The following priority goals emerged from the engagement:

1. Convenience for all modes: to ensure accessibility and use for everyone.

2. Health and Wellness: to improve well-being of residents and visitors.
3. Integration with nature: to create infrastructure that preserves environmental health.

The following safety concerns were raised by participants.

Town of Jackson:

- *Pathways:* Need for better pathway connectivity in different parts of Town of Jackson and safety improvements on pathway crossings.
- *Sidewalks:* Lack of sidewalk continuity.
- *Equity:* Need better bike access.
- *Micromobility:* E-bikes on sidewalks and need to educate bike rental companies on safety.
- *Other:* Youth riding way too fast, more lighting, enforcement of regulations and retractable bollards around Town Square to create pedestrian zones or shared space zones.

Teton County:

- *Highway 89:* Better and safer wildlife measures, crossing on Hwy 89 south of town, roundabouts for highway intersections.
- *Highway 22:* Concerns about future expansion--Hwy 22 is the epicenter of High Injury Network
- *Highway 390:* Safer crossings to get from housing on the east side of WY390 to pathways on the west side.
- *Wilson:* Confusion near Wilson/school underpass, pedestrian, and cyclist connection to Wilson Elementary from Main Street.
- *Transit:* Better bus options for all and consider park and ride options.

Participants were in support of a range of safety improvement strategies. They include making walking and biking safer, adding complete street elements (e.g., lighting, street trees, and public art), reducing speed and encouraging slower speeds, prioritizing active transportation safety on select corridors, and strict penalties for illegal driving behavior.

WORKSHOPS

VISION AND GOALS WORKSHOP

The Vision and Goals Workshop was hosted by Mobycon on March 19, 2024, at the Teton County Fairgrounds in Jackson Hole. It was attended by 40 local stakeholders ranging from business owners, municipal staff, advocacy organizations, the County Sheriff’s Office, and independent citizens. The intention of the workshop was to guide participants through inspirational values-based exercises and discussions to help them develop and articulate their long-term vision for their community, as well as begin to sketch out goals and objectives to achieve this ultimate vision. A list of six mobility values were identified: (1) Safety, (2) Equity, (3) Health & Wellness, (4) Convenience for All Modes, (5) Change and Adaptability, and (6) Integration with Nature.

The workshop process and findings are detailed in the “Vision and Goals Workshop Summary Memo”.



PLACE ASSESSMENT

After the Vision and Goals Workshop, Mobycon hosted a Place Assessment workshop on March 20, 2024, that was attended by 30-35 people. Participants were educated on the value of place when thinking about mobility and transportation – that is, the locations that draw people in and get them to stay, as opposed to simply passing through. The interactive aspects of the workshop challenged attendees to work together to rethink Jackson’s transportation network on the principles of “place” and “flow”. Through the process, “places”, “flows” and “conflicts” were identified.

The workshop process and findings are detailed in the “Place Assessment Workshop Summary Memo”.

COMMUNICATION MATERIALS

A range of communication materials and strategies were used to share information about the project and direct community members to the surveys and open house. The project website was a one-stop location to allow visitor to learn about the project, be informed about upcoming engagement activities, and participate in the survey. Communication materials included fliers, postcards, emails, sidewalk decals and yard signs. Social media platforms were also used to communicate about the project with the broader community. Most of the communication materials were translated into Spanish. Some samples of the communication materials used are included below.

Figure 3: Project Overview Flier

### TETON SAFE STREETS FOR ALL

We need your help to make the streets of Teton County and the Town of Jackson safer for people walking, rolling, biking, taking transit, and driving.

Where do you have transportation safety concerns? Do you have a transportation story to tell? Your ideas are essential to making this project a success.

### TETON CALLES SEGURAS PARA TODOS

Necesitamos su ayuda para hacer que las calles del condado de Teton y la ciudad de Jackson sean más seguras para las personas que caminan, ruedan, andan en bicicleta, toman el transporte público y conducen.

¿Dónde tiene preocupaciones sobre la seguridad del transporte? ¿Tiene una historia de transporte que contar? Tus ideas son esenciales para que este proyecto sea un éxito.

Visit our website to learn more and sign up for project updates:

Visite nuestro sitio web para obtener más información y registrarse para recibir actualizaciones del proyecto:

[engagetetoncountywy.com](https://engagetetoncountywy.com)



ENGLISHSPANISH






Figure 4: Postcard Front and Back

### SAFE STREETS FOR ALL SAFETY ACTION PLAN

Our community deserves safe streets and pathways so everyone has the freedom to get around safely and comfortably. **We need your help to make it happen.**


### PLAN DE ACCIÓN DE SEGURIDAD DE CALLES SEGURAS PARA TODOS

Nuestra comunidad merece calles seguras, para que todos puedan desplazarse de forma segura y cómoda. **Necesitamos tu ayuda para hacerlo realidad.**




**GET INVOLVED!**

Please take the community survey.



**¡INVOLUCRARSE!**

Por favor toma la encuesta comunitaria.



Sign up for the email list to follow along with the project/ Regístrate en la lista de correo electrónico para seguir el proyecto: [engagetetoncountywy.com](https://engagetetoncountywy.com)

Open House/Cosa abierta: **Tuesday, May 7/Martes 7 de mayo 3-8pm Teton County Presbyterian Church of Jackson Hole at 1251 S Park Loop Rd, Jackson/Iglesia Presbiteriana de Jackson Hole en 1251 S Park Loop Rd, Jackson**

Figure 5: Social Media Posts

### SS4A SAFETY ACTION PLAN

#### TAKE THE TRANSPORTATION SAFETY SURVEY!

Open House: **Tuesday, May 7 3:00pm – 8:00pm** | Presbyterian Church of Jackson Hole, 1251 S Park Loop Rd, Jackson

### ¡TOME LA ENCUESTA DE SEGURIDAD DEL TRANSPORTE!

Casa abierta: **Martes 7 de mayo 3:00pm – 8:00pm** | Iglesia Presbiteriana de Jackson Hole, 1251 S Park Loop Rd, Jackson

#### PLAN DE ACCIÓN DE SEGURIDAD SS4A







### SS4A SAFETY ACTION PLAN

#### LET'S TALK TRANSPORTATION SAFETY

Open House: **Tuesday, May 7 3:00pm – 8:00pm** | Presbyterian Church of Jackson Hole, 1251 S Park Loop Rd, Jackson

### HABLEMOS DE SEGURIDAD DEL TRANSPORTE

Casa abierta: **Martes 7 de mayo 3:00pm – 8:00pm** | Iglesia Presbiteriana de Jackson Hole, 1251 S Park Loop Rd, Jackson

#### PLAN DE ACCIÓN DE SEGURIDAD SS4A





RELATED PAST ENGAGEMENT EFFORTS

TETON MOBILITY PROJECT / PATHWAYS MASTER PLAN ADDENDUM

Year Updated: 2020

Lead: Teton County, Town of Jackson, and Friends of Pathways

Plan Description: The Pathways Master Plan was initially adopted in 2007 and the 2020 addendum aims to address the changing infrastructure needs of the region. Establishes policy and focus areas for development and maintenance of facilities.

Public Engagement (Addendum): Due to COVID-19 limitations, public engagement was done only using an interactive web map where residents and visitors could provide feedback on the existing pathway network and propose routes for future development. Key themes are very similar to recent findings from the SS4A project.

- The top three themes of comments included new safe connections to neighborhoods, upgrade existing pathways and bike lanes for safety, comfort, or to reduce user conflict, and new recreational routes, including pathways, county roads, and recreational trails.
- Frequently mentioned public desires: A pathway along Spring Gulch Road, pathway maintenance on South Park Loop, appreciation for bollards on Snow King Avenue bike lanes, and improvements to the transition between the Town of Jackson and the North 89 Pathway.
- Frequently mentioned public concerns: Y-Intersection (US 89/191 and WY 22), use/capacity on the existing sections of the Garaman Pathway, and concerns related to speed of electric assist bicycles.

Final Report: The findings from the Teton Mobility Project are presented in the “Teton County Mobility Project - Final Report” available at <https://www.tetoncountywy.gov/DocumentCenter/View/30739/Teton-County-Mobility-Project-2020--Final-Report>.

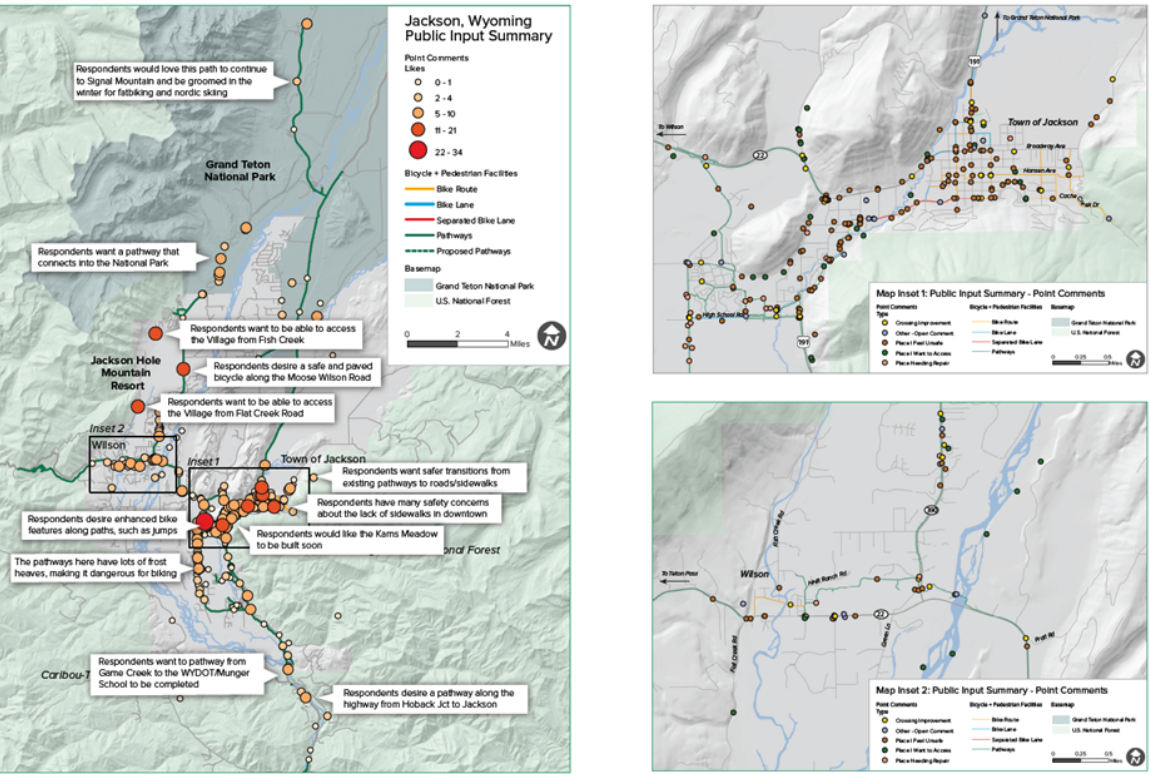
Webmap Results

What do Jackson Area Residents Want?



WEBMAP RESULTS

JACKSON, WYOMING PATHWAYS | FRIENDS OF PATHWAYS | JACKSON HOLE COMMUNITY PATHWAYS

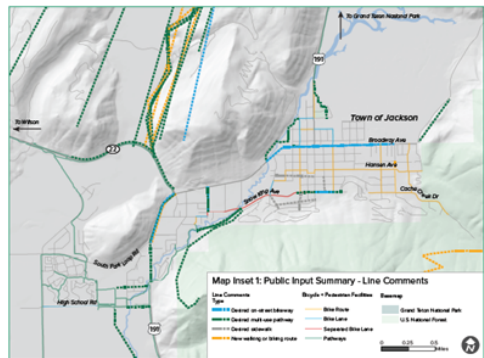
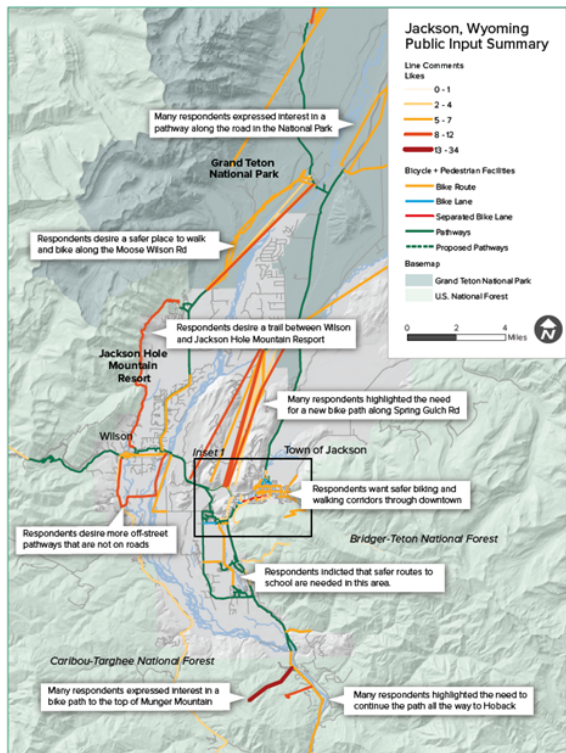


WEBMAP RESULTS

JACKSON, WYOMING PATHWAYS | FRIENDS OF PATHWAYS | JACKSON HOLE COMMUNITY PATHWAYS







## WEBMAP RESULTS

JACKSON, WYOMING PATHWAYS | FRIENDS OF PATHWAYS | JACKSON HOLE COMMUNITY PATHWAYS



## Phase 2: Reflect & Dive In

|   | LOCATION                                      | TIME FRAME                         | PARTICIPANTS   |
|---|---|------------------------------------|--|
| StoryMap +Survey                            | Online  | October 14th - November 21st, 2024 | StoryMap Visits: 776 (English version)<br>41 (Spanish version)<br>Surveys:<br>Safety: 83 responses<br>Mobility: 28 responses |
| Spanish Language Focus Groups               | Cloudveil Room, Rec Center, 220 N King Street | October 18th, 2024                 | 22 participants  |
| Interviews with Eastern European Immigrants | In-person                                     | October - November 2024            | 5 participants   |
| Project Steering Committee Meeting          | Jackson/Teton County Recreation Center        | August 21st, 2024                  | 15 participants  |

## STORYMAP + SURVEY FEEDBACK

The project team created a StoryMap to showcase the project to community members and gather public feedback on key transportation issues. A StoryMap is a web-application that showcases an interactive narrative using a combination of text, images, and maps for the project. The StoryMap introduced the project, shared what we heard from the community in the first phase of engagement, presented the safety analysis and the updated Community Streets Plan, and the expected project timeline. The StoryMap included a few survey questions asking community members about their location specific transportation concerns and priorities.

The project team publicized the survey through fliers posted around town, in utility bills, in print and website advertising, Town of Jackson and Teton County newsletters and websites, and at existing events (see communication materials section). Emails were sent to members on the project listserv, community-based organizations, schools, and neighborhood associations, directing them to the project website and to the ongoing StoryMap survey.



Figure 1: Screenshot of the StoryMap

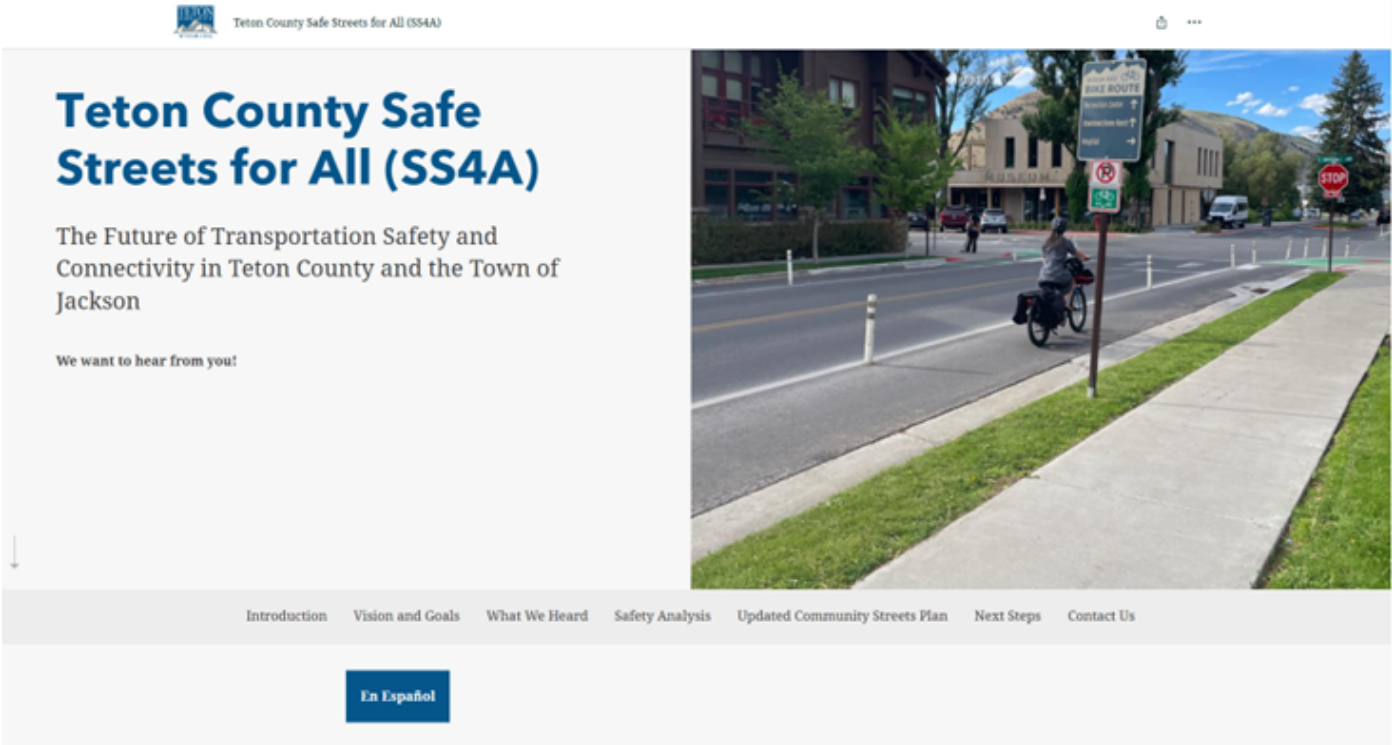


Figure 2: Screenshot of the StoryMap showing the safety analysis accompanied by an interactive map

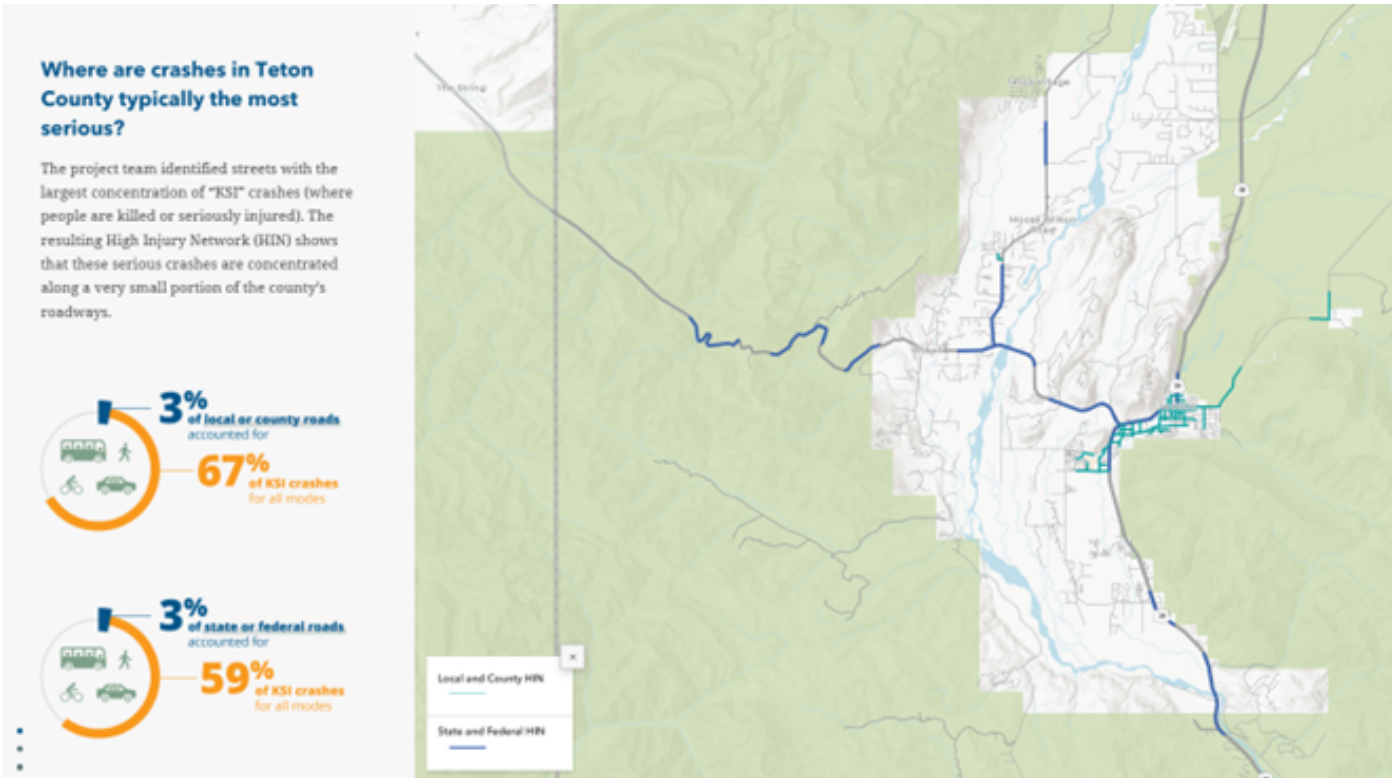


Figure 3: Screenshot of the StoryMap showing equity need areas through an interactive map

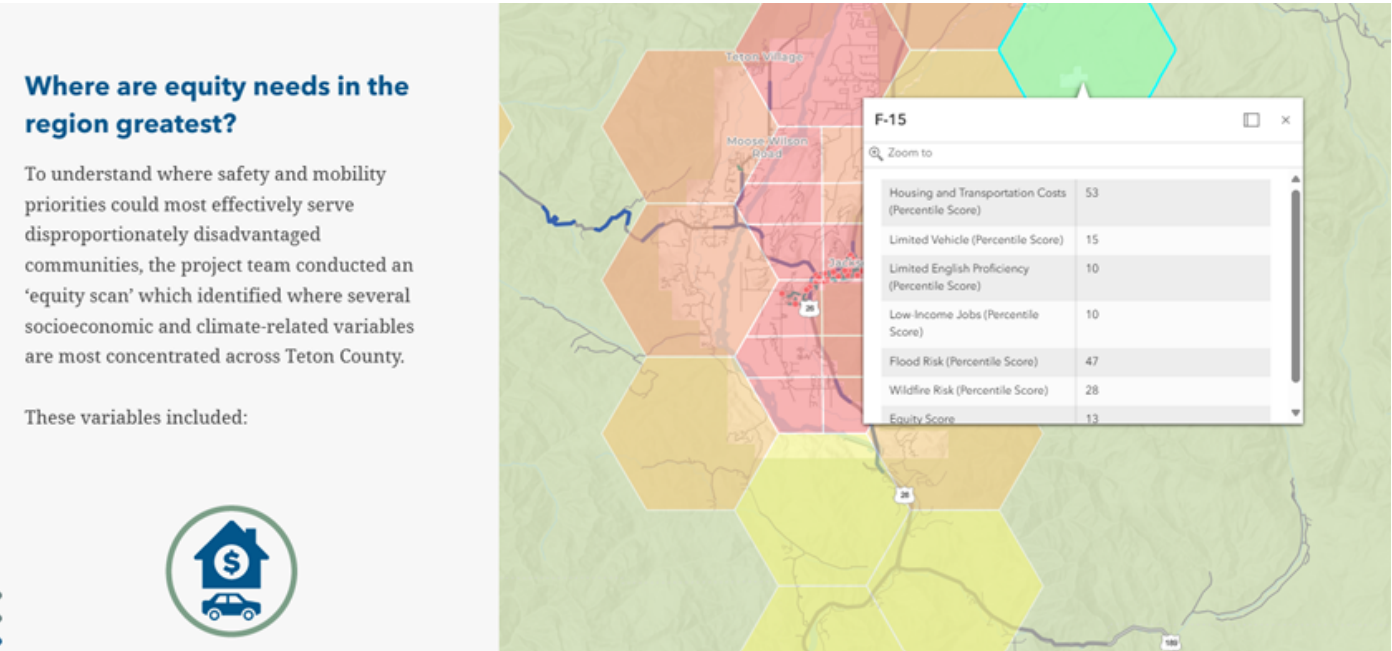
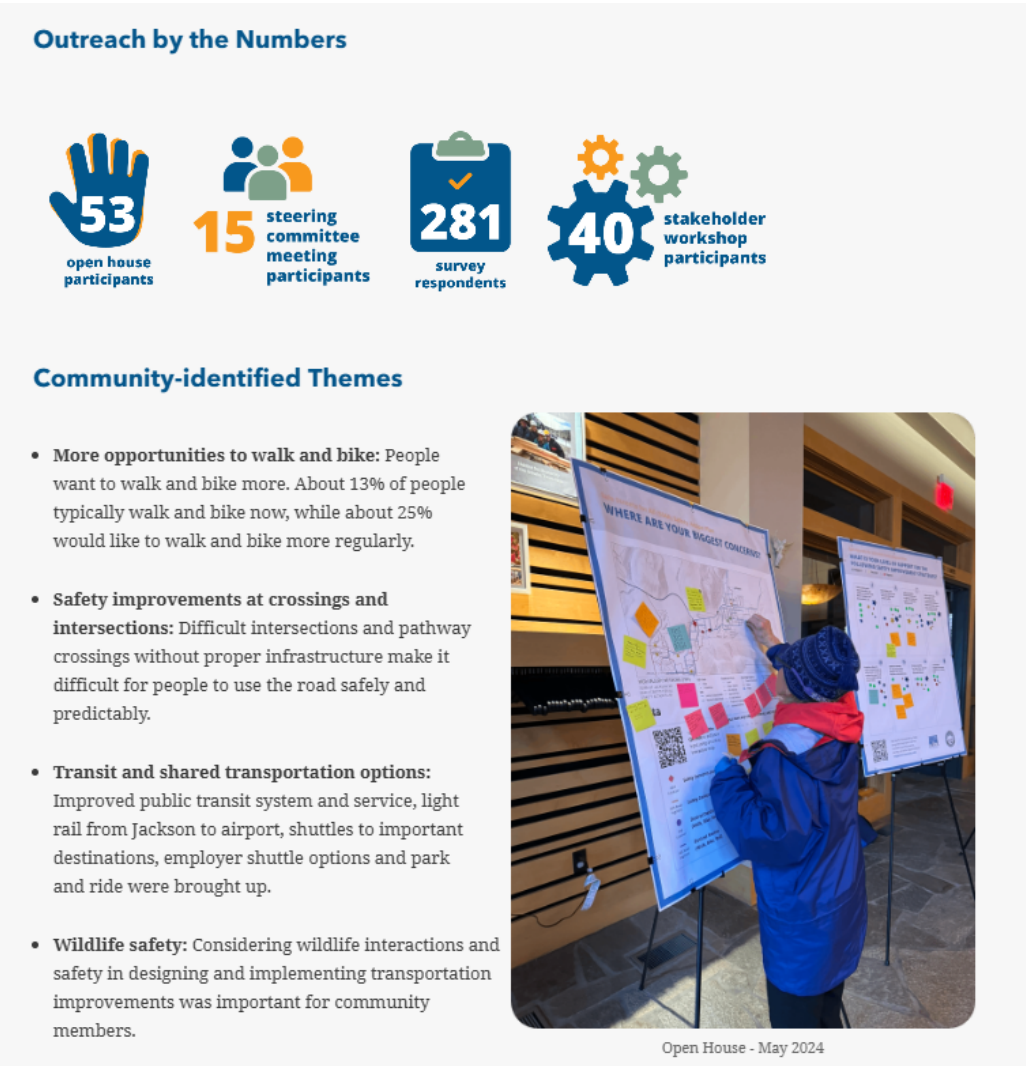


Figure 4: Screenshot of the StoryMap showing the progress on community engagement

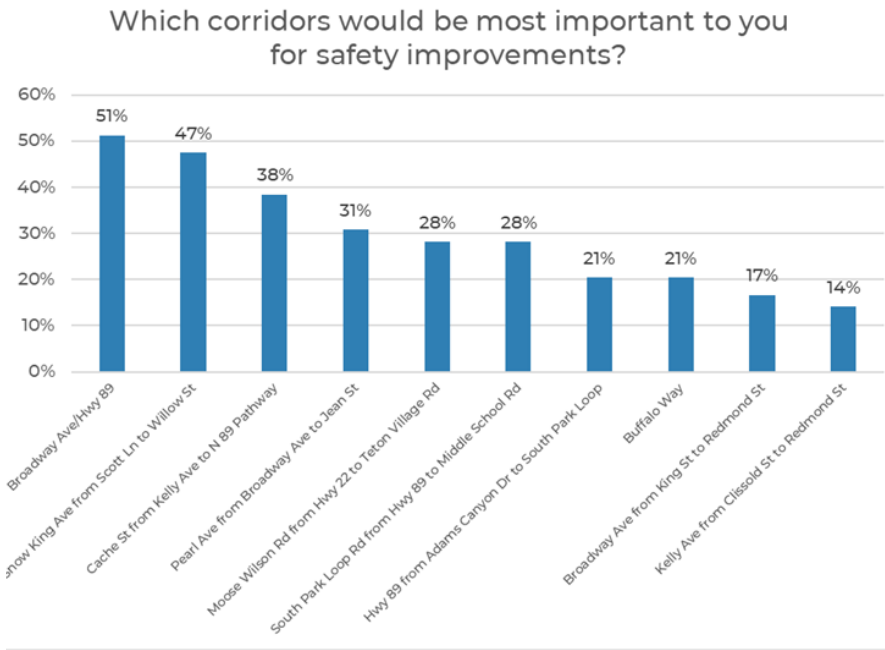




SURVEY QUESTIONS

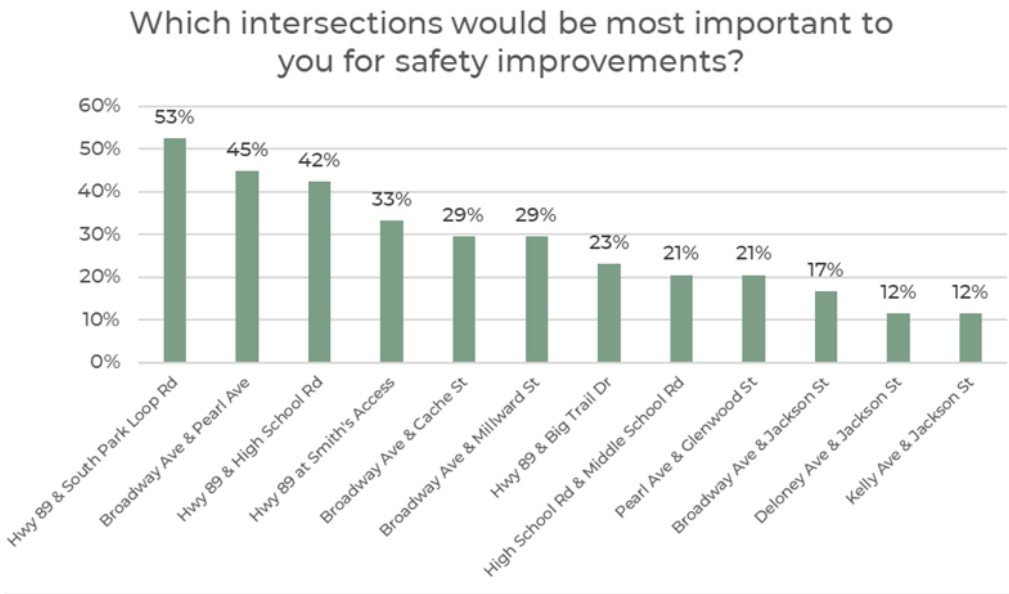
Q1: Which corridors would be most important to you for safety improvements?

About half of survey participants selected Broadway Avenue/Hwy 89 as the top corridor in need of safety improvements. Snow King Avenue and Cache Street were also high on the community’s priority list for safety improvements. Broadway Avenue from King Street to Redmond Street and Kelly Avenue from Clissold Street to Redmond were lower ranking among the public.



Q2: Which intersections would be most important to you for safety improvements?

Hwy 89 at South Park Loop Rd was ranked the highest by the public for intersection safety improvements. Intersections with Hwy 89, overall, were ranked higher, than the rest of the intersection options. Out of the top four selections, three intersections were on Hwy 89. Broadway Avenue intersections, particularly on the busy corridor though the central part of town, were also highly voted by the public. Jackson Street intersections were among the lowest ranked intersections.



Q3: Is there anything more you’d like to tell us about the corridors or intersections that you selected? (Open – ended responses)

Participants left 46 responses providing more details about the corridors and intersections they selected. There was an emphasis on safety improvements along Broadway Avenue, especially at Pearl Avenue and Jackson Street. The intersection of Broadway Avenue and Scott Lane was not an option in the survey, but multiple respondents highlighted it as a dangerous intersection for vehicles and pedestrians. While this question asked about the corridors or intersections selected, participants took the opportunity to point out safety concerns in other areas. For example, people voiced the need for safer crossings over Highway 390 in the Moose Wilson Road area to access the pathway system, particularly for children needing to get to school. There were a few comments concerning low visibility at intersections due to lighting and the presence of on-street parking blocking the view of pedestrians.

Q4: Are there any streets critical to any of these transportation modes that are missing from the maps? (Open – ended responses)

Participants left 11 responses providing more feedback on other critical streets not shown in the provided mobility maps. A majority of comments were about bike safety. Respondents listed Hansen Avenue, Millward Street, Mercill Avenue, Beckley Park Way, Willow Street, Maple Way, and Buffalo Way as corridors in need of better bike infrastructure. There was one comment requesting on-demand bus services in East Jackson and the Rafter J area.

Q5: Is there anything else you would like to tell us about these mobility overlays? (Open – ended responses)

Participants left 12 responses providing more feedback on the mobility overlays in the survey. Some respondents noted the lack of sidewalks in some areas, especially in the central parts of Jackson where new higher density development has occurred, but sidewalk connectivity is still lacking. Another repeated theme was the need for pedestrian safety improvements around the Town Square. The presence of the main highway and lack of crosswalks makes for an unsafe environment for pedestrians. In general, there seems to be a conflict between which mode belongs on which road. Some expressed the need to focus on vehicle throughput while others want roads to be designed for all users.

FOCUS GROUPS AND INTERVIEWS

Teton County and Town of Jackson collaborated with Voices Jackson Hole (Voices), a non-profit organization, to conduct Spanish language focus groups and interviews with Eastern European community members to engage and incorporate the needs of the immigrant communities in the planning process. Voices recruited community members for interviews and focus groups and facilitated in the families’ first language or in English as appropriate. During the focus group, childcare, gift cards, raffle prizes, and a meal were provided to create a supportive and welcoming experience. The interview and focus group participants were introduced to the project including the goals, timeline, and the project approach. The participants were then asked to respond to questions on their transportation experiences primarily on three concerns:

- Safety concerns when navigating around the Town of Jackson and Teton County
- Barriers to safety
- Recommendations for improvement



FINDINGS

Findings combine perspectives from the Spanish language focus group and interviews with Eastern European community members. For a comprehensive summary of findings, see Appendix A Voices JH Involvement Report: Safe Streets for All.

Travel Concerns

The participants identified the following as the most frequently visited areas in no particular order: Gregory Lane, Broadway Avenue, Kelly Avenue, Pearl Avenue, Simpson Avenue, and Airport Road. In terms of transportation experiences, participants identified the following concerns:

**Heavy Traffic:** Participants agreed that Jackson has a relatively small population, but there is high seasonal traffic and overcrowding, especially during summer and winter months that raises concerns for safety of pedestrians, and cyclists. One participant noted, “I enjoy walking because it gives me a chance to appreciate the beauty of the town, and I need it for my body, but the lack of sidewalks in some areas makes it difficult and sometimes unsafe.”

**Drivers Not Respecting Speed Limits and/or Signs:** Participants stressed that drivers do not adhere to speed limits or follow traffic signs due to a lack of understanding of road signs. This issue creates confusion and increases the risk of accidents, particularly at critical intersections. Participants emphasized the need for clearer signage at signalized intersections for understanding right-of-way rules and passing restrictions.

**E-Bikes Users Not Following Signs and Being Unsafe:** Many Latine and Eastern European immigrant participants mentioned the rising popularity of e-bikes and noted that young riders often disregard traffic rules, speed past vehicles, and wear headphones, making them unaware of their surroundings. This behavior not only endangers the riders themselves but also creates hazards for pedestrians and drivers. One participated noted:

“This (e-bikes) had been a real struggle in the past years in Jackson.”

**Infrastructure:** Infrastructure was discussed less frequently than more behavioral challenges, however it was also a concern. Two main infrastructure issues were highlighted by participants.

**Bus Shelter and Bus Frequency:** Some participants wanted to have bus shelters at every bus stop and a higher frequency of buses to reduce wait times, both of which would be particularly helpful during winter months. Gregory Lane and the stop light next to Maverick gas station were identified as locations needing these infrastructure improvements.

**Street Lighting:** Participants noted that the absence of proper lighting increases the risk of crashes for pedestrians and drivers and contributes to feelings of insecurity at night. Lack of lighting also makes it difficult to spot animals. Streets that participants identified as needing more lighting are, Gregory Lane, 340 Pearl Avenue, the streets around St. John’s Hospital, around the Elk Refuge, and Snow King Avenue. Participants emphasized that these areas are frequented by both locals and visitors, and the current lack of adequate lighting presents is dangerous. For example, one attendee shared that Gregory Lane is a zone that is very dark, and people drive very fast during the night and do not see people walking next to the road,” Another shared that animals are harmed due to not there being enough light to spot them. One participant expressed the following:

“When walking, especially when it’s dark, it’s hard to feel safe because some streets don’t have enough lighting.”

Another area concerned was 340 Pearl Avenue. The lack of sufficient lighting in this location not only increases the risk of accidents but also creates a sense of insecurity for pedestrians, cyclists, and drivers alike, many immigrant participants expressed.

Other participants also shared that they could benefit from better pedestrian paths.

Barriers

**Drivers Not Respecting Signs:** Participants voiced significant concerns about the increasing number of crashes caused by reckless driving and the prevalent use of phones while behind the wheel, particularly in busy areas with high pedestrian

traffic. Many stressed that distracted driving led to failure to stop or speeding at intersections and is a leading cause of crashes in Teton County.

**More Sidewalks for Pedestrians:** The issue of poorly maintained or absent sidewalks in high-traffic pedestrian areas was identified by participants, particularly near schools. This poses a serious risk to children walking to and from school, as they are often forced to navigate roadsides without proper pedestrian infrastructure near fast-moving traffic. One parent described the anxiety they feel as their child walks along Gregory Lane, a road with no sidewalks, forcing them to walk in the street. One participant noted the following:

“I enjoy walking because it gives me a chance to appreciate the beauty of the town, and I need it for my body, but the lack of sidewalks in some areas makes it difficult and sometimes unsafe.”

**Winter Maintenance:** Participants emphasized that buildup of snow and ice in the winter when not properly cleared creates hazardous conditions for walking and commuting. Roads such as Gregory Lane, Pearl Avenue, the exit around McDonald’s on Broadway, and the route to the airport were frequently mentioned as areas of concern. Participants expressed frustrations about homeowners being responsible for clearing sidewalks and roads in front of their apartments or houses, despite paying HOA fees.

Other barriers brought up were bad planning for construction, lack of proper street lighting, high speed limits in some places, and desire for more wildlife signs and speed bumps.

Recommendations

Participants presented a few recommendations based on their day-to-day experiences while living in Teton County.

**Pedestrian and Cycling Infrastructure:** To increase safety for pedestrians and bicyclists, attendees recommended expanding and improving safe sidewalks, bike lanes, and crosswalks, particularly in high-traffic areas such as schools, parks, and popular tourist destinations.

**Winter maintenance:** Participants emphasized the importance of timely and thorough snow and ice removal, and proper street drainage from sidewalks, bike paths, and streets.

**Improved Lighting:** Street lighting was identified as a major concern for the safety of pedestrians, drivers, and even wildlife. Streets that participants identified as needing more lighting are, Gregory Lane, 340 Pearl Avenue, the streets around St. John’s Hospital, around the Elk Refuge, and Snow King Avenue.

**Traffic-Calming Measures:** Many participants advocated for the implementation of traffic-calming measures such as speed bumps, roundabouts, and curb extensions to slow down vehicles and reduce frequency of crashes.

**Public Awareness:** Participants suggested increasing education and awareness around traffic safety, pedestrian rights, and the need to be mindful of non-motorized road users. Initiatives could target both residents and tourists and introducing traffic safety education in schools.

PROMOTIONAL ACTIVITIES AND COMMUNICATION MATERIALS

The project employed a range of strategies and communication materials to share information and updates about the project and direct community members to the StoryMap. Communication materials included tabling events, fliers, postcards, and emails. Social media platforms were also used to communicate about the project with the broader community. Most of the communication materials were translated into Spanish. Samples of the communication materials used are included below.



Table 1: Communication Methods for Phase 2 Engagement

| COMMUNICATION METHODS                    | LOCATION   | TIME FRAME          | DESCRIPTION   |
|--|--|---------------------|---|
| Pumpkin Sale Tabling                     |  | October 14th, 2024  | Tabled and discussed project updates  |
| Health Living Festival, Free Health Fair |  | October 14th, 2024  | Passed out fliers   |
| Email                                    |  | October 24th, 2024  | Sent an email with Subject “Safe Streets for All - Interactive StoryMap” to all stakeholders via BCC with StoryMap link |
| Newspaper Ads                            |  |                     |   |
| Instagram Posts                          | Online   |                     |   |
| Press Release                            |  | October 25th, 2024  |   |
| Listserv                                 |  | November 21st, 2024 | Sent a reminder to the Town of Jackson listserv   |
| Flyers                                   | Around Town of Jackson (Library bulletin board, Admin Building, Rec Center)  | October 16th, 2024  | Fliers with StoryMap link were posted around Town of Jackson  |
| Postcards                                | Around the Downtown Core (along Deloney and Broadway - Miller Park, Cowboy Coffee, Deloney parking, TGR, DOG, Snake River Roasters.) |                     | Postcards were distributed within the Downtown core   |

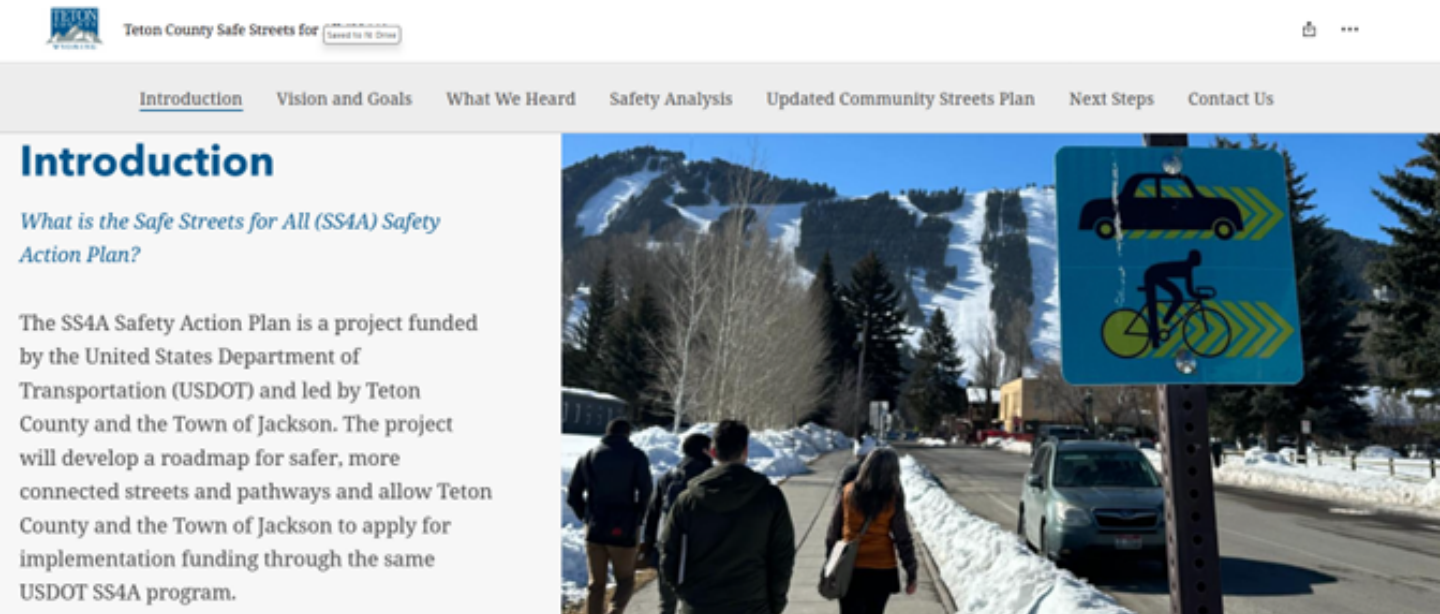
Phase 3: Refine

|                            | LOCATION                               | TIME FRAME            | PARTICIPANTS                                  |
|----------------------------|--|-----------------------|---|
| StoryMap + Survey          | Online                                 | May 12th - 29th, 2024 | ~ 800 StoryMap Visits<br>52 Online Surveys    |
| Steering Committee Meeting | Community Recreation Center            | May 14th, 2025        | 10 participants                               |
| Open House                 | Jackson/Teton County Recreation Center | May 15th, 2025        | ~50 attendees                                 |
| Tabling Event              | Smith’s Grocery Store                  | May 15th, 2025        | Distributed ~ 150 flyers                      |
| Tabling Event              | Albertson’s Grocery Store              | May 16th, 2025        | Distributed ~ 150 flyers                      |
| Bike Film Fest Event       | Center for the Arts                    | May 1st, 2025         | Distributed ~50 flyers, 2 dozen conversations |

STORYMAP + SURVEY

The project team updated the StoryMap that was created during the Phase 2 engagement to communicate the project updates to the public and key partners, as well as gather public feedback on the project recommendations and the final plan. A StoryMap is a web-application that showcases an interactive narrative using a combination of text, images, and maps for the project. The StoryMap provided an overview of the project, the vision and goals, prior engagement efforts, safety analysis, project and program recommendations as well as the updated community streets plan. A pulse survey included as part of the StoryMap to gather feedback about the plan and help prioritize recommendations. The StoryMap was available in English and Spanish. About 800 people visited the StoryMap.

Figure 1: Screenshot of the StoryMap





The project team publicized the StoryMap and survey through fliers posted around town, in print and website advertising, Town of Jackson and Teton County newsletters and websites, and several mobile outreach event. Emails were sent to members on the project listserv directing them to the project website and to the ongoing StoryMap survey.

Figure 2: StoryMap Safety Analysis Page

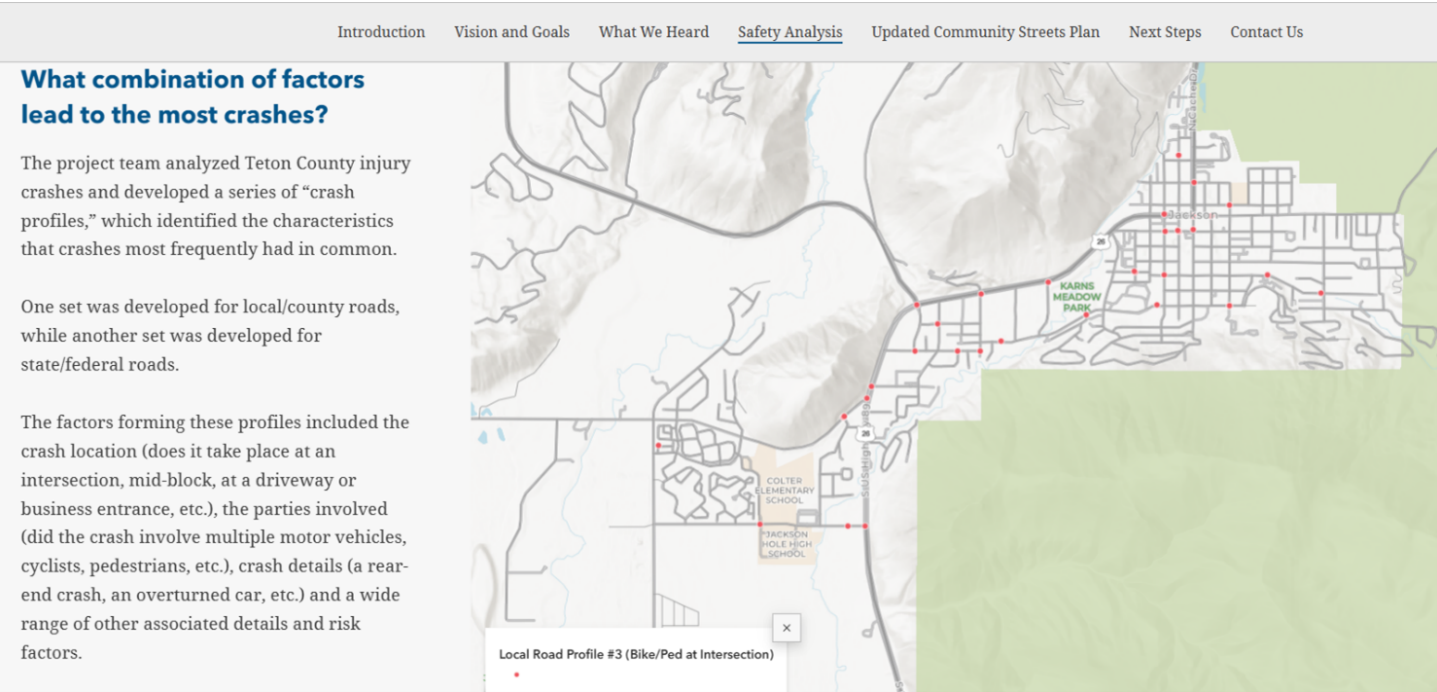
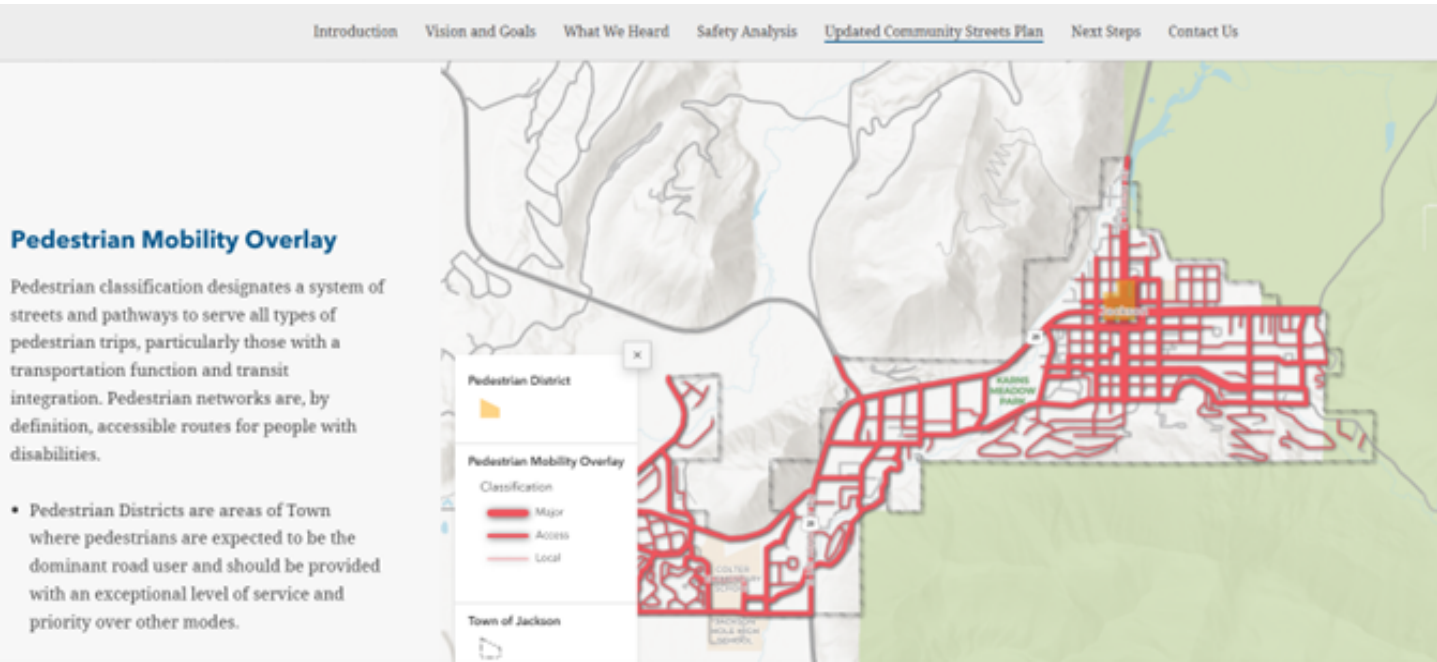


Figure 3: StoryMap Pedestrian Mobility Overlay Page



STORYMAP PULSE SURVEY RESULTS

TOP RECOMMENDATIONS

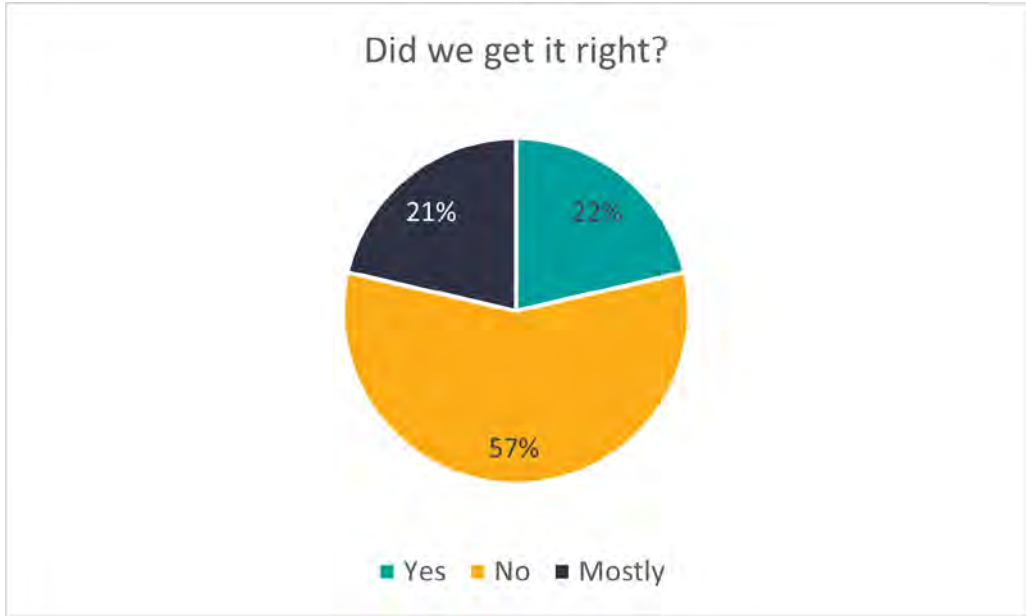
The Teton County SS4A StoryMap included 28 plan recommendations across five categories: design, land use (development regulations), plans, policy, and programs. Community members were asked to select the three most important recommendations to them. Twenty-three responses were collected. Table 1 shows the top 10 recommendations.

| RECOMMENDATION   | % OF RESPONDENTS |
|--|------------------|
| D.4 Address bicycle and pedestrian safety at intersections and driveways on town, county, and WYDOT roads.   | 48%              |
| D.7 Improve pedestrian and bicycle infrastructure and connect gaps.  | 48%              |
| D.5 Mitigate risks for single-vehicle crashes involving wildlife conflicts.  | 22%              |
| D.6 Improve roadway lighting in accordance with dark sky standards, focusing first on the HIN.   | 22%              |
| L.1 Revise or redesign on-street parking near intersections with higher pedestrian crash propensities to improve visibility and be compliant with Wyoming state law.   | 17%              |
| L.4 Update the Town and County Land Development Regulations (LDRs) to reflect best practices identified in the Transportation Engineering Design (TED) Manual and to specifically address bicycle and pedestrian issues and needs. | 17%              |
| PR.8 Invest in and expand the pathways network, focusing on the HIN and Updated Community Streets Plan typologies.   | 17%              |
| D.1 Implement safety improvements on the High Injury Network (HIN).  | 13%              |
| L.2 Require new developments to provide bicycle and pedestrian infrastructure connections by assessing connections internal to their development along with accessibility to the broader bicycle and pedestrian network.           | 13%              |
| PR.6 Reduce EMS response crash times below 9 minutes.  | 13%              |



PLAN FEEDBACK ON THE DRAFT PLAN

At the end of the StoryMap, community members were asked to provide feedback on the plan. 28 people participated.



Next, survey participants who answered “No” or “Mostly” to the first question were asked to elaborate on what was missing from the plan. From the 23 comments collected, the following themes arose:

- The top concern was about the impact of the recommended safety improvements on congestion in the Town of Jackson, especially with increased development in the region.
- There was also concern about the ability of large vehicles to travel through the Town of Jackson with the recommended safety improvements.
- Some participants were concerned about additional four-way stop intersections and how it would impact driver and cyclist behavior.

Lastly, participants were asked “What would you be most excited to see happen in the next 12-24 months?” From the 15 responses collected, the following themes arose:

- Many participants that responded are excited to see improvements that will make biking and walking safer, especially the added protection for bike lanes and improvements that make pedestrians more visible near crosswalks.
- Participants are also looking forward to improvements that further connect the pathways in the region

STEERING COMMITTEE MEETING

The fourth Steering Committee meeting for this project was held on May 14, 2025, to present project updates and get feedback on various identified projects, policies and processes recommendations in the Safety Action Plan. The TEDS Manual and Community Streets Plan updates were also shared. The committee members provided valuable general feedback as well as specific edits to the plan including:

- Recommending that Council and Commission adopt the Plan to proceed with the SS4A Implementation Grant application.
- Identify areas on Pearl Street and other spots where more people are coming onto the street and flag this in the cutsheets.
- Include a campaign about neighborly behavior and giving way for people with accessibility needs.
- Recommendation for County and Village mobility plan as follow up to community streets plan.
- Update transportation demand management recommendation to acknowledge existing programs.

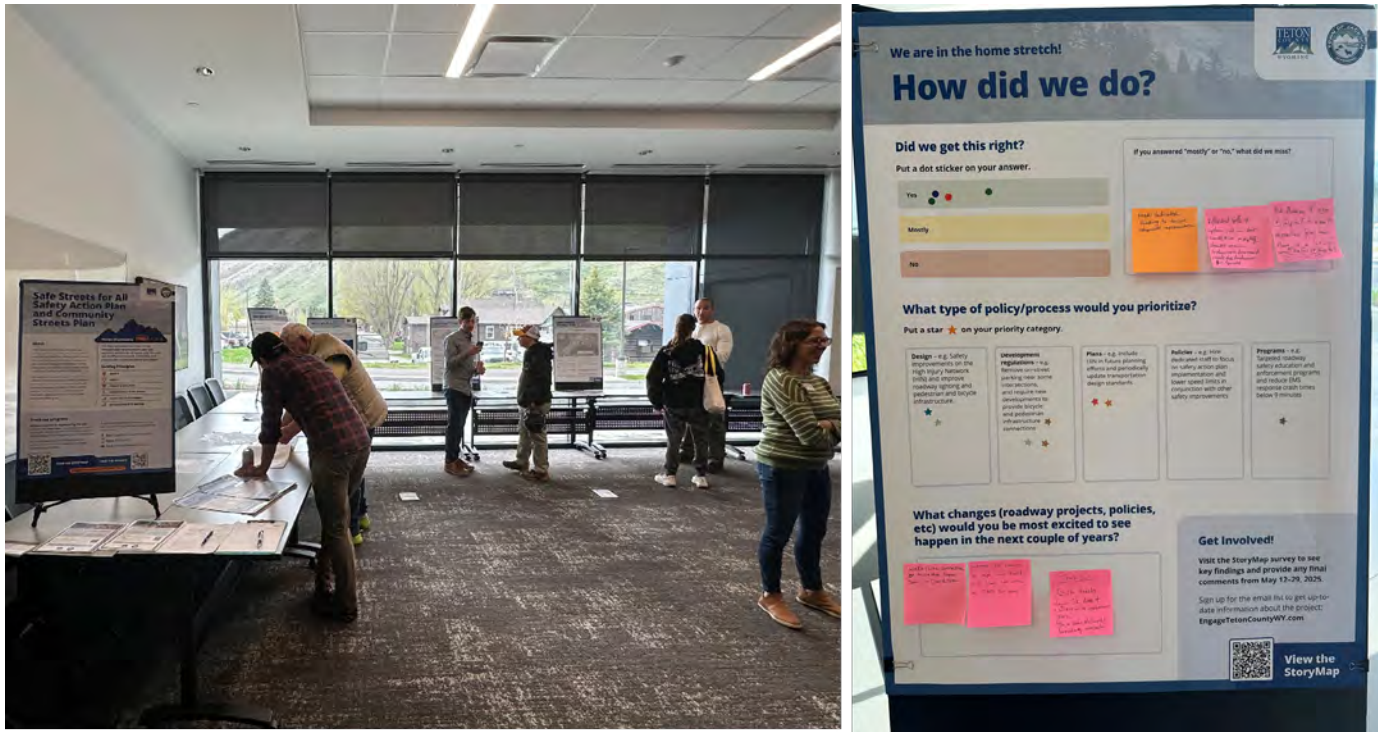
OPEN HOUSE

Date: May 15th, 2025, 4pm – 7pm

Location: Community Recreation Center

The open house engagement event included updates on the project and sought feedback to help prioritize policy and process recommendations. Staff members were stationed at the boards to answer questions. Spanish handouts were provided for each of the boards and an interpreter was present to help with communicating with Spanish-speakers. A variety of outreach strategies was used for the project including custom fliers, ads in the newspapers, and social media posts on Facebook and Instagram. The open house location at the Rec Center was useful for recruiting people who were visiting the Rec Center for other reasons to stop by the Open House.

Figure 4. Open House Participants (Left) and Participant Feedback (Right)





Participant feedback:

- Participants generally felt positive about the plan outcomes.
- Participants shared some issues and ideas: dedicated funding to ensure implementation of the plan; different treatments like rumble strips, elevated bikeways to improve safety for bicyclists; and improving pedestrian safety near the hospital.~
- Some changes that community members are excited to see happening in the next few years include walking and biking connection on N. Cache, improved pedestrian crossing on High School Road and High School entrance, and a safer Millward Street and Broadway Avenue intersection.
- Among the different types of policies and processes, development regulations related elements were prioritized.

PROMOTIONAL ACTIVITIES AND COMMUNICATION MATERIALS

The project employed a range of strategies and communication materials to share information and updates about the project and direct community members to the StoryMap. This included fliers, tabling events and emails and social media updates to communicate about the project with the broader community. Most of the communication materials were translated into Spanish. Samples of the communication materials used are included below.

| COMMUNICATION METHODS | LOCATION                       | TIME FRAME                         | DESCRIPTION  |
|-----------------------|--------------------------------|------------------------------------|--|
| Tabling               | Smith's Grocery Store          | May 15th, 2025<br>10am - 12pm      | Tabled and discussed project                                   |
| Tabling               | Albertson's Grocery Store      | May 16th, 2025<br>9:30am - 11:30am | Passed out flyers  |
| E-mail                |                                | April/May 2025                     |  |
| Newspaper Ads         | JH Daily and JH News and Guide | May 4th - 15th, 2025               | Daily and weekly newspaper ad                                  |
| Social Media Posts    | Online                         | May 2025                           | Media, county, and non-profit partner posts                    |
| Press Release         | Media Outlets and E-mail Lists | May 5th, 2025                      | Summary of SS4A process, invitation to Open House and StoryMap |
| Listserv              |                                |                                    |  |
| Flyers                | Around Town of Jackson         | May 2025                           | Flyers with StoryMap link were posted around Town of Jackson   |

Promotional Materials

Figure 5. Newspaper Ad (left), community open house Invite (top right), and social media post





Figure 6. Fliers with StoryMap Survey QR Code – English and Spanish



**TABLING EVENTS**

Date: May 15th and 16th, 2025, 4pm – 7pm

Location: Smith’s grocery store and Albertson’s grocery store

The project team tabled at two grocery stores to share information about the project and invite community members to visit the StoryMap and take the survey. At each event, about 150 flyers in English and Spanish were distributed. County staff tabled at the Bicycle Film Fest event to promote the project.

Figure 7. Project team tabling at a local Smith’s Grocery Store on a Snowy Day







## APPENDIX D

# Data Analysis

- » Equity Scan
- » High Injury Network
- » Crash Profiles



# Equity Scan

## PURPOSE

The purpose of this equity scan was to determine areas across Teton County, Wyoming where individuals are disproportionately disadvantaged. This data helped inform public engagement priorities and assist in prioritizing investments to improve safety conditions and mobility choice for underserved communities and populations.



## VARIABLE SELECTION

The equity scan was conducted using a variety of socioeconomic and climate-related data. The following variables (also detailed in Table 1) were identified for inclusion in this analysis with a proposed weighting according to their importance:

- **Housing and transportation affordability index** was weighted the highest because housing and transportation costs affect many facets of a household’s well-being in Teton County. This is especially given that the County has a House Price Index of 474.0, well above the national average of 312.1,<sup>1</sup> and 40% of the County’s workforce commutes from neighboring counties.
- Teton County is primarily rural, therefore **having one or zero vehicles per household** has wide-ranging impacts on individual mobility.
- Historically, people of color have been disadvantaged in many ways, so it was vital that **race and ethnicity** be included in the equity scan.
- The location of **low-income jobs** was also considered because workers need safe transportation options not only near their homes, but also near places of employment. This metric also accounted for low-income workers who can no longer afford to live in Teton County and would not be captured by other metrics.
- Lastly, climate change is anticipated to have adverse effects on communities in various ways. Teton County falls in the 85th percentile nationally for **flood risk** and 80th percentile for **wildfire risk**.

1 S&P CoreLogic Case-Shiller US National Home Price Index, November 2023. FRED. Available at <https://fred.stlouisfed.org/series/CSUSHPINSA>.

Table 1. Selected Variables and Weights

| VARIABLE                                       | WEIGHT | SOURCE   | DEFINITION  |
|--|--------|--|---|
| Housing and Transportation Affordability Index | 25%    | Housing and Transportation Affordability Index, 2022             | Average share of household income spent on housing and transportation costs together.   |
| Limited Vehicle Access                         | 25%    | American Community Survey (ACS) 2022, Replica Places             | Percentage of total households with zero or one vehicle.  |
| Limited English Proficiency                    | 15%    | ACS 2022   | Count of people that speak English less than “very well”, divided by the area of the hexagon in square miles.   |
| Low-Income Jobs                                | 15%    | US Census, Longitudinal Employer-Household Dynamics (LEHD), 2021 | Count of jobs in the area that pay less than \$1250 per month (regardless of hours worked), divided by the area of the hexagon in square miles.   |
| Projected Flood Risk                           | 10%    | Climate Risk Data Access (First Street Foundation, 2022)         | Share of properties in a census tract at risk of floods occurring in the next thirty years from tides, rain, riverine and storm surges, or a 26% risk total over the 30-year time horizon. The risk is defined as an annualized 1% chance . The census tract value is applied to the hexagons within the tract. |
| Projected Wildfire Risk                        | 10%    | Climate Risk Data Access (First Street Foundation, 2022)         | Share of properties in a census tract at risk of wildfire associated with fire fuels, weather, human influence, and fire movement. The census tract share is applied to the hexagons within the tract.  |

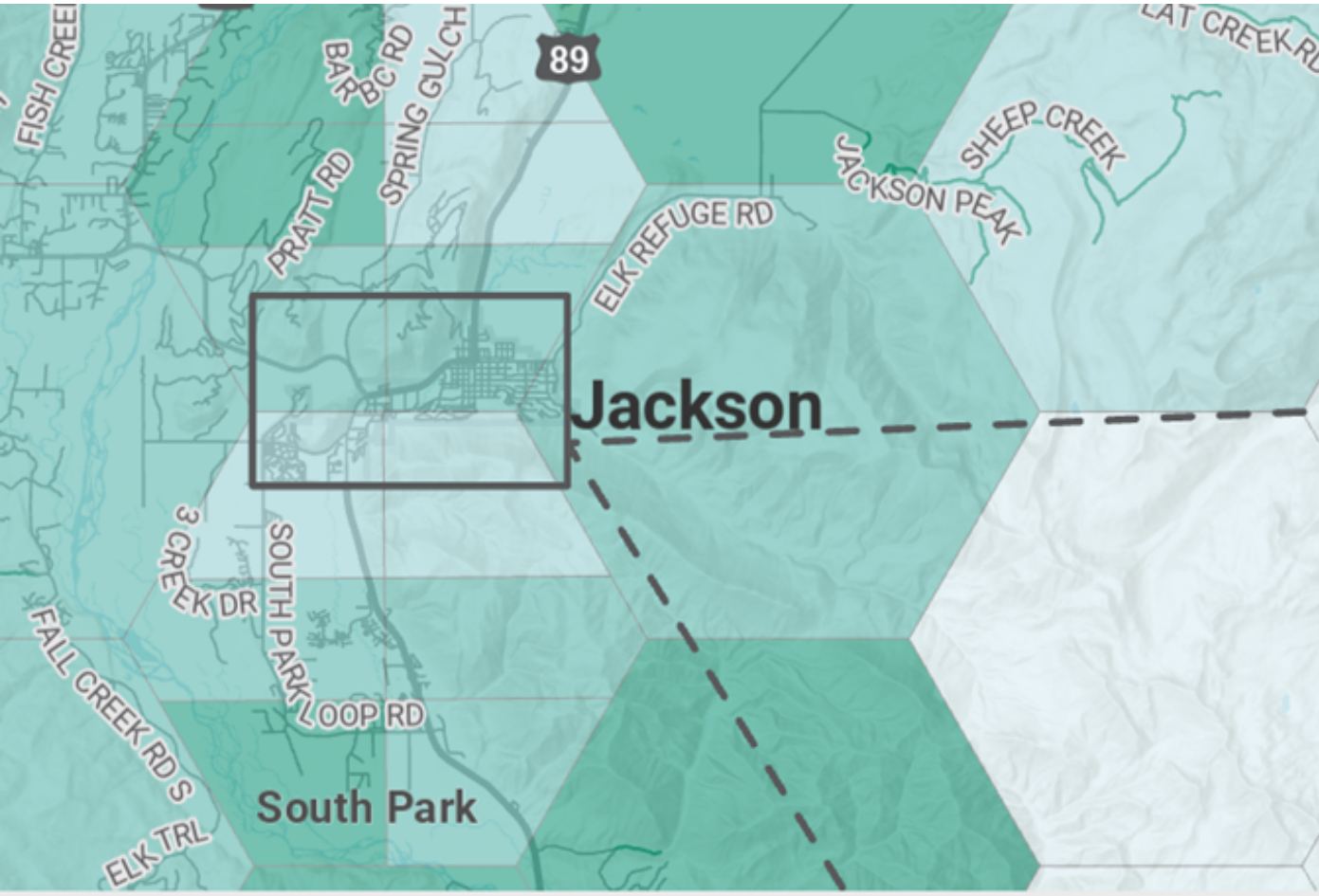


METHODOLOGY

The data collected for this equity scan originate from a number of sources with varying geographic levels. Census datasets are typically provided at the census tract or block group level. One challenge is that Teton County is sparsely populated and only consists of four census tracts, some of which are very large. Equity scan results at this geographic level would not be actionable or easy to interpret.

To get more fine-grained and actionable data, Alta aggregated parcel-level demographic data from Replica Places to a 12-sq km hexagonal grid (see Figure 1 below) to pinpoint areas where people live. The hexagonal grid was further divided in the central Jackson area to account for greater density there. Hexagonal areas with zero population were excluded from the equity analysis.

Figure 1. Example of Hexagonal Grid - Median Household Income



The remaining data was converted to a hexagonal grid geography in order to have a standard unit of analysis. LEHD job location data will be accessed as points, which can be spatially joined to the hexagonal grid. Climate data was obtained at the census tract level and was spatially joined to the hexagonal grid. For example, if a hexagon falls within a census tract that has a high wildfire risk, that hexagon was assigned a high wildfire risk. In situations where an individual hexagon was split between multiple census tracts, the data was assigned a weighted average proportional to how much of the hexagon falls into each tract. For example, if most of a hexagon fell within a tract with a flood risk of 20 but one fifth of it fell within a tract with a flood risk of 90, it would be incorrect to assign that hexagon an average of the two numbers (55). Instead, the average was weighted proportional to area toward the polygon with the flood risk of 20 (see Figure 2).

Figure 2. Illustration of Weighted Averages Calculation for Hexagons

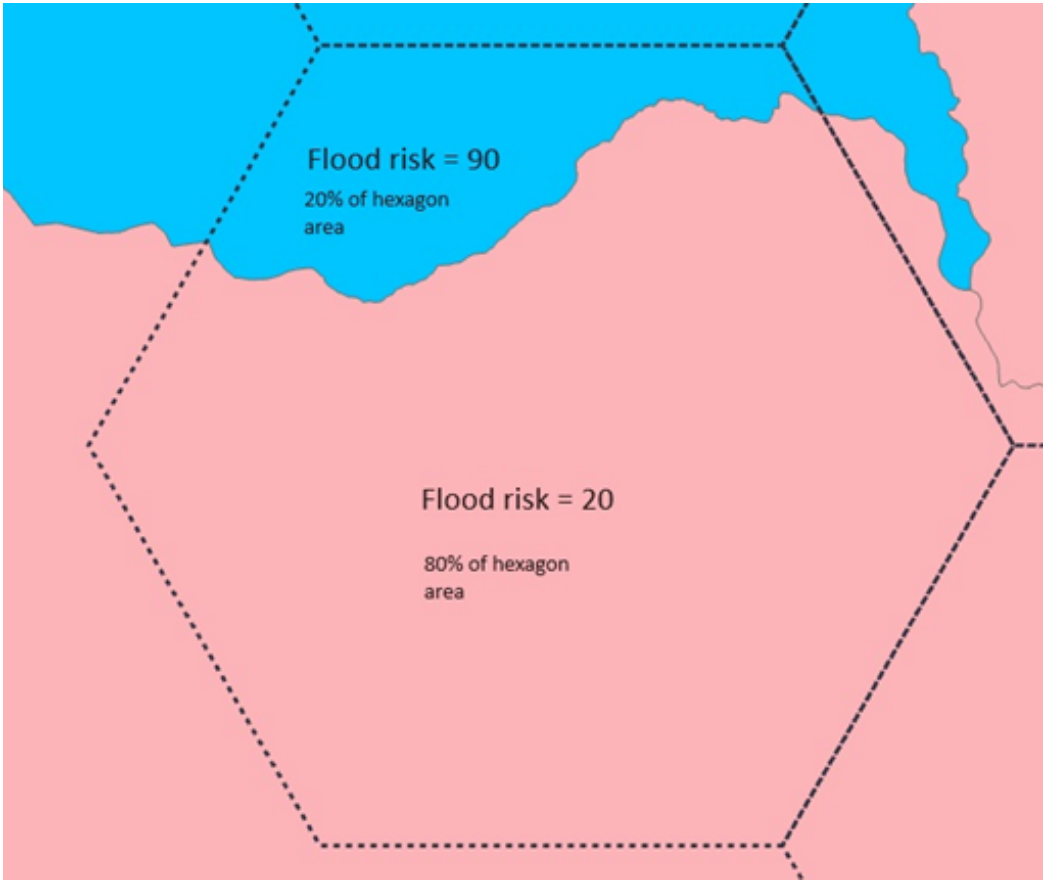


Figure 2 illustrates this concept. In this example, the hexagon shown would be assigned a flood risk of:

$$\text{Flood risk} = (90 * 20\%) + (20 * 80\%) = 34$$



Once the equity scan data was converted to the hexagon level, the analysis consisted of the following steps:

- Each variable was converted into a percentile ranking based on how the hexagonal area compares to all hexagons across the county for that variable. This puts all variables on a common scale between 0 and 1.
- The percentile-ranked score for each hexagon was then multiplied by the selected weight to generate a weighted score. For example, if income is weighted 25% of the overall score, then a hexagon that was in the 80th percentile for low-income population would get a weighted income score of  $(.80 * .250) = 0.20$ . Table 2 illustrates how the overall equity score would be calculated for one hypothetical hexagon.

Table 2. Example Equity Score Calculation for Hypothetical Hexagon

|   | A     | B                          | C                  | D                         |
|---|-------|----------------------------|--------------------|---------------------------|
| VARIABLE  | VALUE | PERCENTILE-<br>RAKED VALUE | VARIABLE<br>WEIGHT | WEIGHTED<br>SCORE (B X C) |
| Housing and Transportation Affordability Index    | 45%   | 60%                        | 25%                | 0.15                      |
| Percent of Households With Zero or One Vehicle    | 10%   | 50%                        | 25%                | 0.125                     |
| Density of Limited English Proficient Individuals | 3,000 | 10%                        | 15%                | 0.015                     |
| Density of Low-Income Jobs                        | 1,000 | 80%                        | 15%                | 0.12                      |
| Projected Flood Risk                              | 40%   | 30%                        | 10%                | 0.03                      |
| Projected Wildfire Risk                           | 20%   | 50%                        | 10%                | 0.05                      |
| TOTAL EQUITY SCORE FOR HEXAGON (SUM OF COLUMN D)  |       |                            |                    | 0.49                      |

- All weighted scores will be added together to arrive at a composite equity score between 0 and 1 for each hexagon. Higher scores will indicate hexagonal areas with higher equity need based on the factors analyzed in Table 1.

## High Injury Network

This section discusses Alta’s proposed approach for two safety analysis tasks: The High Injury Network (HIN) and crash profiles. These two analyses work in tandem to identify locations of the most severe crashes as well as their contributing factors and shared characteristics. The results informed countermeasure development in a later stage.

### INCLUSIONS

In order to help the County focus resources on the most needed safety improvements, this analysis prioritized crashes that resulted in someone being killed or seriously injured (KSI). While the High Injury Network will take into account minor injury crashes, road segments with more severe crashes will be given higher priority.

This analysis considered only crashes within Teton County.

### CRASH DATA OVERVIEW AND FINDINGS

These analyses use crash data from 2013 through 2022, as provided by the County. The dataset included 6,200 total crashes, of which 1,032 were confirmed injury-causing crashes and 178 had unknown severity, often because of a hit-and-run.

### OVERVIEW AND PURPOSE

A High Injury Networks (HIN) illustrates that improving a small number of roadways can often address the majority of injury-causing crashes. This approach moves beyond typical crash history and allows for a better understanding of the types of roadways in Teton County where users are most at risk.

Alta developed such a HIN for the County, focusing on local Teton County roadways. This memo explains Alta’s proposed approach to analyzing crash data and developing the HIN.

The HIN used data from all vehicle-, bicycle-, and pedestrian-involved crashes. It is not mode-specific due to low numbers of crashes involving bicyclists or pedestrians. However, active modes were considered in the crash profiles task.

The HIN focused on local Teton County-owned roadways and led to the identification of safety countermeasures for the highest priority roads. This informed the Action Plan’s recommendations.



DATA INPUTS

HIN development requires two data sets:

CRASHES

Ten-year crash data (2013 through 2022) of all crashes within the region, provided by WYDOT.

- Inclusive of all modes of travel.
- Filter crashes to remove property damage only crashes.

PREPARED ROADWAY NETWORK

Street centerline network for Teton County.

- Filter to roadways within a quarter-mile buffer of the county boundary.
- All roadways are included.

METHODOLOGY

1. PREPARE STREET NETWORK:

- a. Consolidate dual-carriage (divided) roadways so that split roads are represented as one line. We will try an automated routine with tools similar to ArcGIS Pro’s Merge Divided Roadways, and then attempt a manual clean of those remaining. Key attributes related to Name and Functional Classification will be preserved in the study network, but other centerline attributes on collapsed roadways might not be retained. These can be associated back to the network later if required.
- b. Use the “unsplit lines” tool to dissolve road segments based on road name and functional class. This eliminates arbitrary splits in the spatial data so that roads can be split into even-length segments.
- c. Divide centerlines into ¼ mile segments on city of Jackson-owned roads and 1 mile segments elsewhere. Shorter segments are appropriate in urban areas where crashes happen more frequently, and allow for more granularity in pinpointing high-injury corridors. Longer segments in are more appropriate in rural areas where crashes are sparser. Segment-level crash data will be normalized for segment length, but not by traffic volumes. Crash counts will also be reported per segment.
- d. Create a unique ID for each roadway segment.
- e. Create a “Rolling Window / Sliding Window” feature class where the lines are extended over each road segment. This is a temporary feature class for analysis purposes. Roadways will be extended 25% in each direction for a total rolling length of either 1-1/2 miles or 3/8 miles depending on the original segment length. Alta will use custom splitting tools that have an overlap percentage (Wasserman, 2023). Lines will overlap with their neighbors by some set percentage. This process allows rolling window statistics to be calculated on each road segment. The benefits of rolling window analysis are that they reduce the impact that dead-end streets, network segmentation artifacts, or anomalous crashes have on the final HIN. Fundamentally, it better captures the linear corridor crash patterns where they exist (Fitzpatrick, 2018)<sup>1</sup>. This methodology is illustrated in Figure 3.

1 These patterns would consider crashes sometimes not directly on a particular segment in other to smooth out analysis results. Examples of this type of analysis are provided by FHWA in their Guide Book on High Pedestrian Crash Locations.

2. PREPARE CRASH DATA:

- a. Weight each crash based on the most serious injury sustained by any individual involved in the crash. This effectively prioritizes areas where more serious crashes are occurring in order to identify areas where the most serious injuries can be reduced. These proportions are based on the ratio of the average cost to society from fatal and serious crashes compared to minor injury crashes. While some analyses may weight serious crashes higher in proportion to minor crashes, that can lead to every segment with a fatal crash being represented on the HIN. Using this ratio avoids overweighting fatal crashes that occur as isolated events so that the HIN can represent roadways with patterns of severe crashes. <sup>2</sup>
  - Fatal or Serious injury: 4
  - Minor injury: 1
- b. Snap all crashes within 150 feet of the street centerline network to a prepared network segment. This distance accounts for a margin of error in crash coordinates. It also captures crashes on dual carriage roadways that occur far from the now-consolidated centerline (such as wide highways) but is not large enough to capture crashes that occurred in parking lots adjacent to roadways.

3. APPLY ROLLING WINDOW ANALYSIS:

- a. Spatially join the crash layer to the rolling window road network.
- a. Calculate the summed rolling crash weight for each rolling road segment. This sums the weight of crashes on each rolling segment to reflect total crash severity on each segment.
- a. Join the rolling crash weight from the rolling window layer back to the original centerline network using the unique ID to show rolling crash weight per road mile on each original ½ mile or 1 mile segment. This normalizes the crash weight for the road length. However, for the purpose of calculating crash weight per road mile, count any rolled segments of less than 0.15 miles as 0.15 miles to avoid overrepresenting crashes on small road segments, as dividing by very small numbers yields very large numbers. See Figure 1 for an explanation of the process.
- a. Split roadway into two sets: local roadways (city/county owned), and non-local (state/federally owned). This will create two HINs that can be combined at the end, to ensure representation of both local and state roads on the final HIN.

4. ACCUMULATE CRASHES:

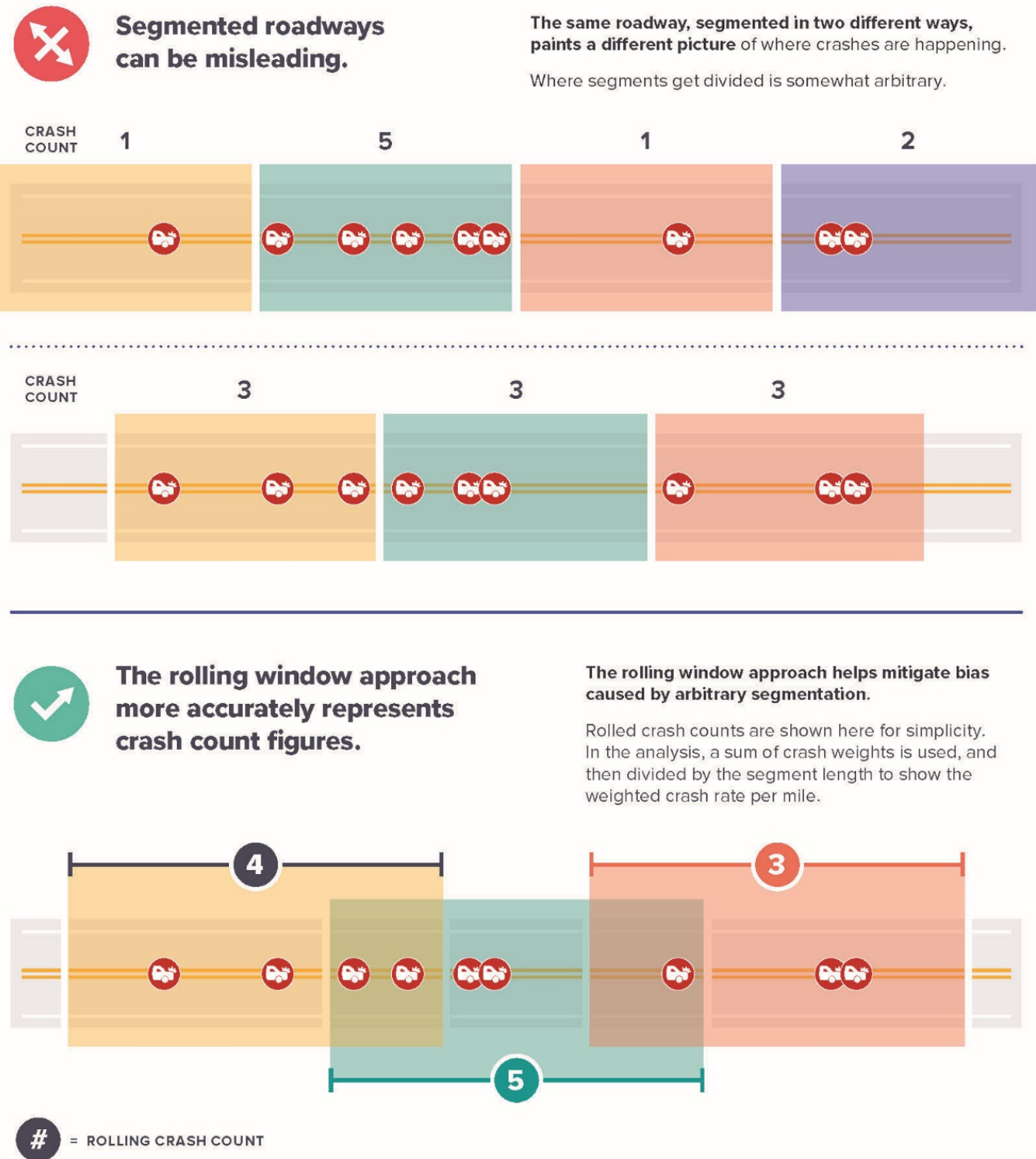
- a. Beginning with segments with the highest crash weight per mile, use Alta’s custom-build HIN Generation tool to progressively add segments to the HIN. This tool calculates the length in miles for each segment as it is added and keeps track of the cumulative miles in the HIN and the number of crashes occurring on those segments. It stops when the designated threshold of crashes has been accumulated. A threshold of 60% is used as a starting point, and is adjusted after examining initial outputs as described in 4b. The tool also generates a table that shows the number of crashes and the number of roadway miles accounted for with each HIN segment.

2 There are many calculations of average cost of severe and fatal crashes. The ratio shown here is based off of the FHWA’s Crash Costs for Safety Analysis (Harmon et al., 2018), table 17. The weights shown here are proportional to the average of the square root of costs to society of serious crashes (fatal and serious injury) compared to the baseline of minor-injury crashes. Source: <https://safety.fhwa.dot.gov/hsip/docs/fhwasa17071.pdf>.



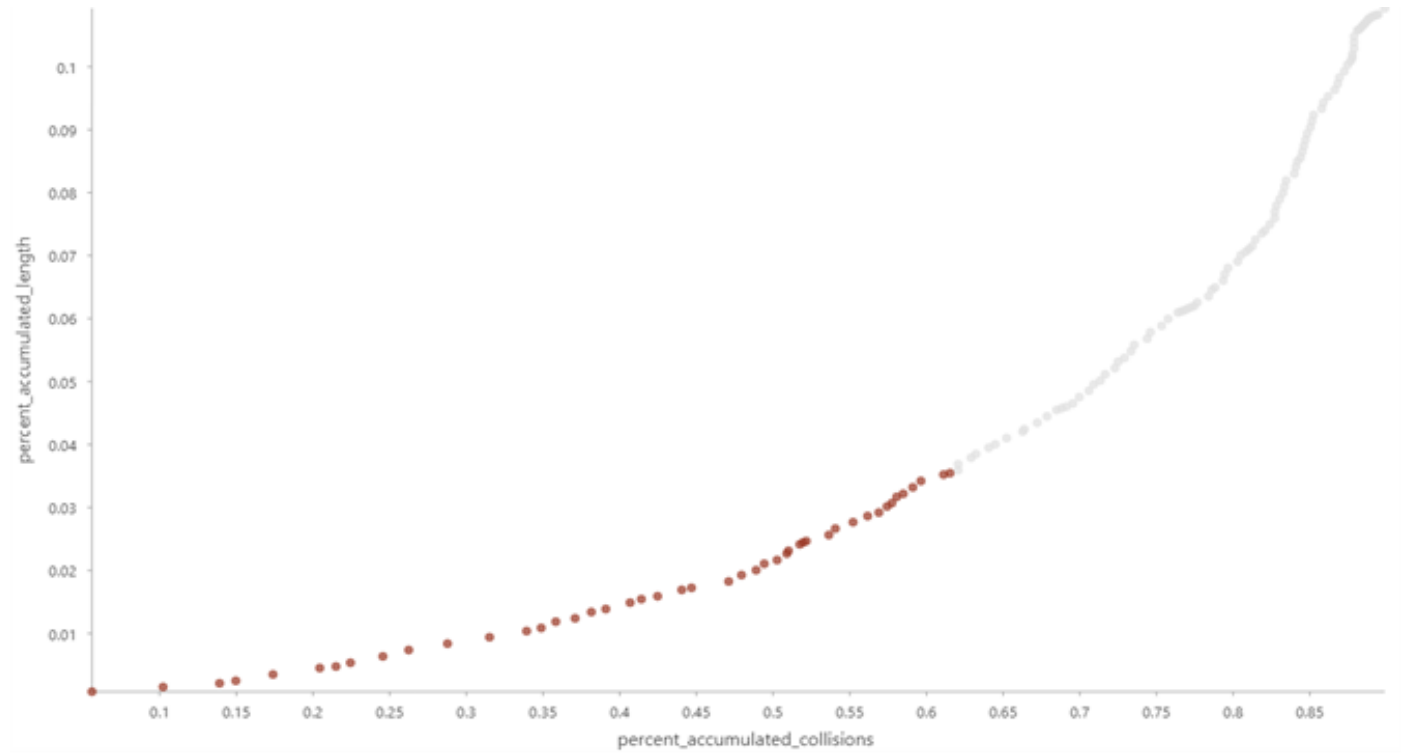
Figure 1. The Rolling Window Approach

# Rolling Window Approach



- b. Examine initial output to decide the threshold for the percentage of crashes included in the HIN based on the natural inflection point or plateau in the data. This represents the point at which adding more roadways to the HIN has diminishing returns in terms of identifying more crashes. Since the segments with the most severe crashes get selected for the HIN first, adding additional crashes to the HIN requires progressively more and more roadway segments. Thus, the threshold helps to strike a balance between accounting for as many crashes as possible while limiting the number of segments selected for the HIN. The goal is to find the smallest share of the roadway network that accounts for the largest number of severe crashes. A small crash percentage may indicate that the selected HIN will not address enough crashes, while a large share of the roadway network is likely too large of an area in which to focus safety improvements.

Figure 2. Example of a graph of accumulated collisions and accumulated length. Collisions selected for the HIN are represented in brown.



## 5. FINAL REFINEMENT:

- a. Examine the map of qualifying HIN segments and perform manual cleaning output from the tool. This step eliminates segments that the tool may have selected that are adjacent to high-crash corridors but where no crashes have occurred. It also fills small gaps in otherwise contiguous networks on major roadways.
- b. Calculate the percent of roadway miles and the percent of crashes accounted for in the final HIN. These percentages show decision makers that safety investments in a small share of the road network can help to prevent the majority of crashes in the region. Chart the two percentages as a line chart such as the one depicted in Figure 2. These charts function like Lorenz curves that enable us to understand how crashes are unevenly distributed on the road network and how cumulative collision counts change as more centerline length is added to the high injury network. It provides a visual justification for the threshold of crashes chosen in step 4.b. Where the line slope changes sharply, this often indicates a point at which continuing to add segments to the network has diminishing returns in terms of capturing more crashes.



FINDINGS

Alta performed two High-Injury Network (HIN) analyses to identify high-injury corridors in Teton County. One HIN analyzed local and county roads, while the other analyzed state and federal roads. For each roadway in the County, Alta calculated a crash severity index that represents the weighted sum of crashes per mile of roadway on that segment and selected the roads with the highest indices for the HIN.

OVERALL RESULTS

The HIN can be viewed on the web map:

https://apd.maps.arcgis.com/apps/instant/basic/index.html?appid=b8267f7a8e7d4ab0a41172191043187a.

The local/county road HIN accounted for two-thirds of the injury-causing crashes on local or county-owned roads, but only 3% of county or local roadway miles. The state/federal road HIN accounted for 59% of crashes, and 3% of state or federal-owned roadway miles. This indicates that most injury-causing crashes on either road type are concentrated on a small number of roadway miles. Table 1 summarizes the statistics of both HINs.

Table 1. High Injury Network Share of Crashes and Roadway Miles

| CATEGORY           | TOTAL MILEAGE ON HIN | TOTAL ROAD MILEAGE IN THIS CATEGORY | TOTAL INJURY-CAUSING CRASHES ON HIN | HIN SHARE OF TOTAL INJURY CRASHES IN THIS CATEGORY |
|--------------------|----------------------|-------------------------------------|-------------------------------------|--|
| Local/County Roads | 14                   | 465.9                               | 176                                 | 66.7%  |
| WYDOT              | 19.8                 | 651.4                               | 298                                 | 59.1%  |

The first row of the table is interpreted as follows: The local/county road HIN accounted for 14 miles of roads, out of 465.9 total miles of local/county-owned roads in Teton County. There were 176 injury-causing crashes on the HIN road segments, which accounted for 66.7% of all the injury-causing crashes on local/county-owned roads in Teton County.

LOCAL/COUNTY ROADS HIN  
Geographic Extent

The local and county road HIN analysis included any roads indicated in roadway data as under control of the Town of Jackson or Teton County. (type = 'JA', 'CO', or 'CM'). It excludes any part of Highway 89 S.

Findings

The local and county road HIN contains 59 unique segments, most of which are one quarter-mile long. Table 2 displays the top 10 highest-injury corridors.

Table 2. Top 10 injury corridors for Local/County HIN

| RANK | CORRIDOR           | TO/FROM (APPROXIMATELY)      | CRASH SEVERITY INDEX |
|------|--------------------|------------------------------|----------------------|
| 1    | Pearl Ave W        | Cache St S & Jackson St S    | 54.0                 |
| 2    | Buffalo Way        | Maple Way & Highway 89 S     | 34.8                 |
| 3    | High School Road   | Highway 89 S & Gregory Ln    | 34.7                 |
| 4    | Broadway Ave E     | Cache St S & Jean St S       | 33.4                 |
| 5    | South Park Loop Rd | Highway 89 S & Gregory Ln    | 32.1                 |
| 6    | Powderhorn Ln      | Highway 191 & Maple Way      | 26.9                 |
| 7    | Powderhorn Ln      | Maple Way & Crabtree Ln      | 23.9                 |
| 8    | Kelly Ave W        | Jackson St S & Dead End      | 23.7                 |
| 9    | Meadowlark Ln      | Highway 89 S & Powderhorn Ln | 22.4                 |
| 10   | Maple Way          | Highway 89 S & Powderhorn Ln | 20.8                 |

Most of the HIN segments are located in Jackson’s downtown historic district or immediately adjacent to Highway 89 S, which see higher traffic volumes than outlying residential areas. Pearl Ave and Broadway Ave were the highest-injury corridors in downtown Jackson. However, Elk Refuge Road and Snow King Ave W were notable corridors outside of the historic district.

WYDOT ROADS HIN  
Geographic Extent

The WYDOT road HIN analysis included any roadway segment under control of the state, National Park System, Forest Service, or other federal agency (type = 'WY', 'US', 'FS', 'NP'). It also included the entirety of Highway 89 S in the analysis.

Findings

The WYDOT roads HIN contains 23 unique segments, most of which are one mile long. The highest-injury segments of the WYDOT HIN are found on Highway 89 as well as Highway 22. Highway 22 is of particular importance from an equity standpoint because it is the main commuting route for Jackson workers who live in Teton County, ID, many of whom are service workers seeking affordable housing. Moose Wilson Road/Highway 390 also comprises two miles of the HIN. Table 3 lists the top 10 segments on the WYDOT road HIN, ranked by crash severity index. Milepost (MP) references are used on roads without cross-streets.



Table 3. Top 10 injury corridors for WYDOT HIN

| RANK | CORRIDOR     | TO/FROM (APPROXIMATELY)              | CRASH SEVERITY INDEX |
|------|--------------|--------------------------------------|----------------------|
| 1    | Highway 89 S | Buffalo Way & Karns Meadow Dr        | 73.8                 |
| 2    | Highway 89 S | Maple Way & Buffalo Way              | 63.8                 |
| 3    | Highway 89 S | Meadowlark Ln & Maple Way            | 59.0                 |
| 4    | Highway 89 S | High School Rd & Flat Creek Crossing | 56.7                 |
| 5    | Highway 89 S | Karns Meadow Dr & Cache St S         | 53.7                 |
| 6    | Highway 89 S | Flat Creek Crossing & Stellaria Ln   | 41.3                 |
| 7    | Highway 89 S | Meadowlark Ln & Stellaria Ln         | 41.3                 |
| 8    | Highway 22   | MP 12.5 – MP 13.5                    | 39.7                 |
| 9    | Highway 22   | Pratt Rd & Highway 390               | 29.4                 |
| 10   | Highway 22   | Wenzel Ln & Highway 390              | 26.7                 |

CONCLUSIONS

The High Injury Networks for both state/federal roads and local/county roads confirm that most crashes in Teton County are concentrated on a small percentage of roadway miles. By focusing improvements on these roadways, the largest share of injuries can potentially be avoided.

REFERENCES

Harmon, T., G. Bahar, and F. Gross (2018). Crash Costs for Highway Safety Analysis. Federal Highway Administration (FHWA). Available at <https://safety.fhwa.dot.gov/hsip/docs/fhwasa17071.pdf>.

Fitzpatrick, K. A. (2018). Guidebook on Identification of High Pedestrian Crash Locations. FHWA-HRT-17-106. Supplemental Material. McLean, VA: Federal Highway Administration Office of Safety Research and Development.

Wasserman, D. (2023, March 30). Study-Line-Editor. Portland, OR, USA. Retrieved from <https://github.com/d-wasserman/study-line-editor/tree/dev>



# Crash Profiles

## INTRODUCTION

Crash profiles highlight groups of crashes with similar characteristics to help identify contributing factors that can influence countermeasure recommendations. The crash profiles presented in this memo highlight key statistics based on an analysis of crash data and related environmental factors with the goal of identifying a few trends that account for the majority of injury crashes. This process builds on the HIN analysis.

## DATA INPUTS AND PREPARATION

### DATA PREPARATION

Alta began this analysis with a dataset of 6,200 crash points provided by the Wyoming Electronic Crash Reporting System, representing crashes from 2013 – 2022.

The following data cleaning was applied:

- Clipped crash points to Teton County in GIS.
- Removed duplicate crashes that had the same unique ID and location.
- Removed property damage-only crashes where no injury occurred.
- Joined data on road ownership, speed limit, number of lanes, AADT, and functional class to crash points in GIS.

The resulting dataset included 787 crashes. Of these, 93 were killed or severely injured (KSI) crashes and the remaining were minor injury crashes.

### DATA CONSIDERATIONS

Several unique aspects of this dataset influenced the development of crash profiles. Alta divided the crash data into local/county road crashes (261) and federal/state road crashes (526) in order to develop a different set of crash profiles and countermeasures for each road type. Due to the relatively low number of KSIs, Alta incorporated all injury crashes into most crash profiles but retained two profiles to focus only on KSI crashes. Both KSI profiles were for state and federal roads, because only 19 KSI crashes occurred on local or county roads. These crashes did not have enough characteristics in common to generate a meaningful crash profile.

The crash data, which was sourced from WYDOT, also lacked information about driver actions or behavior, and this limited the conclusions that could be drawn about crash factors. Driver actions such as turning movements, speeding, or failing to yield are useful data points when developing countermeasures. Without this data, Alta leaned more heavily on roadway attributes and crash types.

## METHODOLOGY

Alta performed an exploratory crash pattern analysis of the factors using a divisive clustering algorithm in R Studio. This analysis identified six clusters of crashes that had certain characteristics in common. Alta used this as a starting point to further develop profiles and identify characteristics that would inform countermeasure development while keeping profiles distinct from each other and retaining significant numbers of crashes in each profile. Alta also utilized crash trees to explore the relationship between different variables. Using a mixture of qualitative and quantitative methods, final profiles were determined.

## FINDINGS

An online map of crash profiles is available [here](#). Layers showing crashes belonging to each profile can be turned on and off. Findings from each crash profile category are summarized below. A more detailed table is provided as an attachment in Excel form. Percentages do not add up to 100% because crash profiles are not mutually exclusive nor comprehensive. Some crashes may be described by more than one profile, while others are not described by any. This allows profiles to be responsive to the data and report the most important trends.

### LOCAL AND COUNTY ROAD PROFILES – ALL INJURY CRASHES

Table 1 summarizes key features of the crash profiles for injury crashes on local or county roads. There were 261 total crashes in this category. Trends of note are discussed below.

Table 1. Local and County Road Profiles - All Injury Crashes (261 Total Crashes)

| # | MODE                | CRASH FACTOR                          | CONTEXTUAL FACTOR           | NUMBER OF CRASHES | SHARE OF ALL CRASHES FOR THIS MODE |
|---|---------------------|---------------------------------------|-----------------------------|-------------------|------------------------------------|
| 1 | All modes           | Angle Crash                           | At intersection             | 46                | 18%                                |
| 2 | All modes           | Single-vehicle Crash                  | Mid-block                   | 44                | 17%                                |
| 3 | Bike/<br>Pedestrian | N/A                                   | At intersection or junction | 38                | 15%                                |
| 4 | All modes           | Rear-end Crash                        | Arterial road               | 30                | 11%                                |
| 5 | All modes           | Impaired Driver, Single-vehicle Crash | N/A                         | 19                | 7%                                 |

### Discussion

Profile 1 shows that many crashes are occurring between two vehicles at intersections when their paths cross. It is unclear if these are signalized or unsignalized intersections, but this could speak to a need for greater traffic control at these spots.

The high number of single-vehicle crashes depicted in Profile 2 suggest that excessive speed may be a factor. These crashes occurred either with a fixed object or when a vehicle overturned.

It is also noteworthy that Profile 3, despite including only bike and pedestrian crashes at intersections, accounts for 15% of all injury crashes on local and county roads. This suggests that people biking and walking are more likely than people driving to be involved in a crash and/or to get injured when involved.



WYDOT-OWNED ROAD PROFILES – ALL INJURY CRASHES

Table 2 summarizes key features of the crash profiles for injury crashes on WYDOT-owned roads. There were 526 total crashes in this category.

Table 2. WYDOT-Owned Road Profiles - All Injury Crashes (526 Total Crashes)

| # | MODE             | CRASH FACTOR                                       | CONTEXTUAL FACTOR                     | NUMBER OF CRASHES | SHARE OF ALL CRASHES FOR THIS MODE |
|---|------------------|--|---------------------------------------|-------------------|------------------------------------|
| 1 | All modes        | Angle Crash  | Mid-block, speed limit 45+ MPH        | 46                | 9%                                 |
| 2 | All modes        | Rear-end Crash                                     | At intersection                       | 39                | 7%                                 |
| 3 | All modes        | Single-vehicle Crash, Rollover/ overturned Vehicle | Mid-block, dark and unlighted roadway | 24                | 5%                                 |
| 4 | Bike/ Pedestrian | N/A  | At a business entrance or driveway    | 9                 | 2%                                 |

Discussion

Profile 1 illustrates a curious trend of angle crashes occurring away from intersections. While some of these occurred at junctions with driveways or business, most were on open road. More information on driver actions during these crashes could help to explain how these crashes occurred.

Profile 3 describes a significant number of overturned vehicle crashes on dark and unlit roadways. This suggests that poor visibility or possibly excessive speed may be contributing factors.

STATE AND FEDERAL ROAD PROFILES – KSI CRASHES

Table 3 summarizes key features of the crash profiles for KSI crashes on WYDOT-owned roads. There were 74 total crashes in this category.

Table 3. WYDOT-Owned Road Profiles - KSI Crashes (74 Total Crashes)

| # | MODE      | CRASH FACTOR         | CONTEXTUAL FACTOR                        | NUMBER OF CRASHES | SHARE OF ALL CRASHES FOR THIS MODE |
|---|-----------|----------------------|--|-------------------|------------------------------------|
| 1 | All modes | N/A                  | EMS response time nine minutes or longer | 32                | 43%                                |
| 2 | All modes | Single-vehicle crash | Speed limit 50+ MPH                      | 20                | 27%                                |

Discussion

Profile 1 depicts crashes in which someone who was ultimately killed or seriously injured waited nine minutes or longer for an EMS response. The median EMS response time for any KSI crash where EMS was called was nine minutes throughout the county, which is consistent with the national average. Research shows that compared to a baseline response time of under nine minutes, a response time of nine to 18 minutes is associated with 34% increased odds of a death at the crash scene (Adeyemi et al., 2022). These types of crashes, then, may be able to achieve improved outcomes if EMS response time can be reduced.

Next Steps

The profiles identified above will be used to recommend countermeasures throughout Teton County. Specifically, they will be referenced in the Countermeasures & Comfort task along with results of the network development steps of Phase 2.

CRASH TREES

To aid in developing crash profiles and identifying trends, Alta also produced crash trees. Following are crash trees that correspond to each of the final crash profiles. Trees show the breakdown of crash counts by different variables. In some cases, these trees highlighted trends that were not apparent in the crash profiles themselves. Key findings for injury crashes by roadway ownership are summarized below.

KEY FINDINGS

Injury Crashes on Local/County-Owned Roadways

- Half of crashes occurred at an intersection.
- Crashes involving a bicyclist or pedestrian were more likely than motor vehicle-only crashes to occur at a junction or driveway.
- Drivers impaired by drugs or alcohol were much more likely to be involved in single-vehicle crashes compared to sober drivers.
- The most common crash type on local functional class roads was single-vehicle (45%)

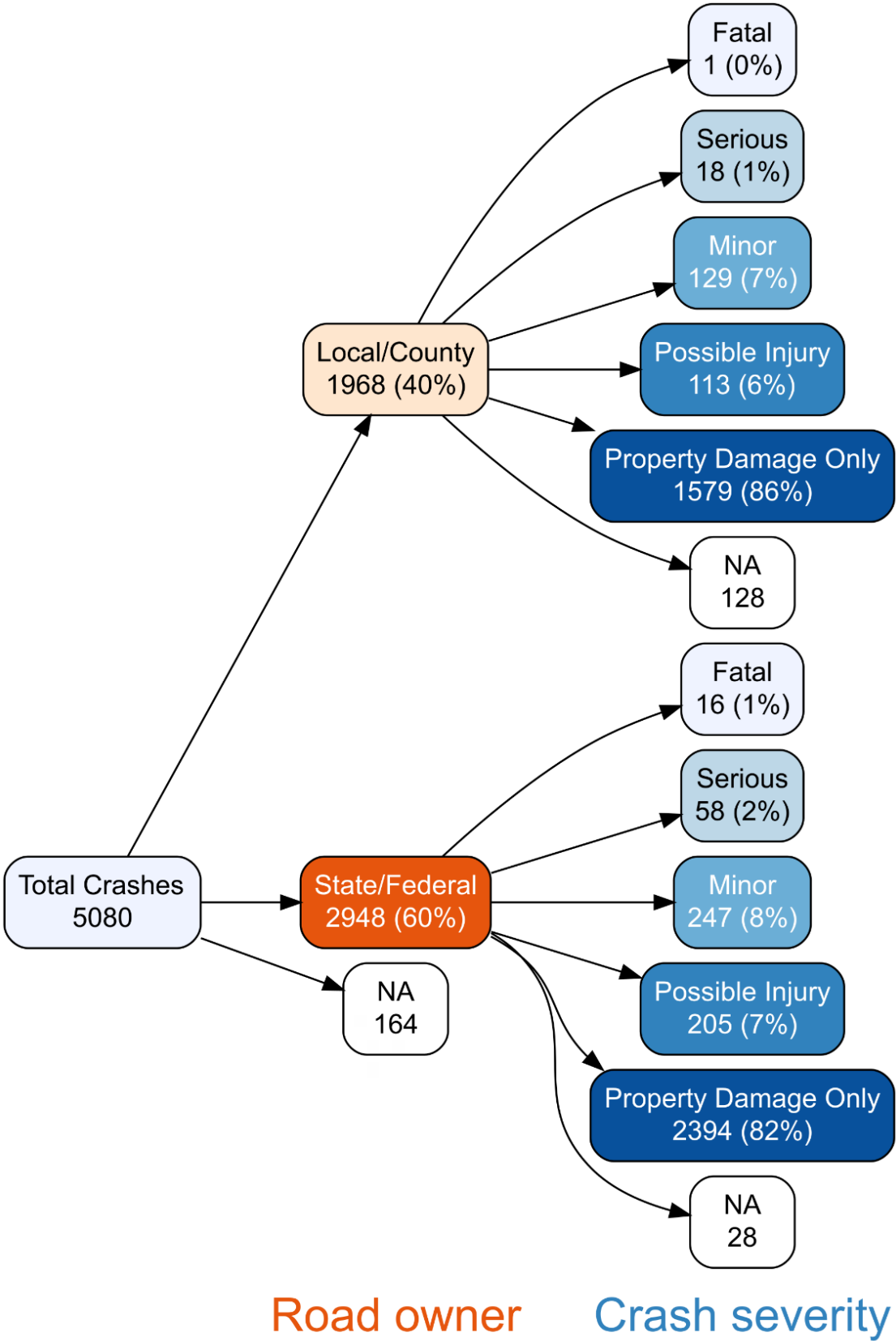
Injury Crashes on State/Federally Owned Roadways

- A total of 19 crashes involved hitting an animal. The vast majority (84%) of them occurred at night on unlit roads.
- Rollovers were 12% of crashes and were more likely than other types of crashes to occur at night on unlit roads.
- 21% of crashes with an EMS response time of 9 or more minutes resulted in a KSI, compared to 11% of crashes with a shorter response time.
- Single-vehicle crashes were more likely on roads with higher speed limits than on lower-speed roads.



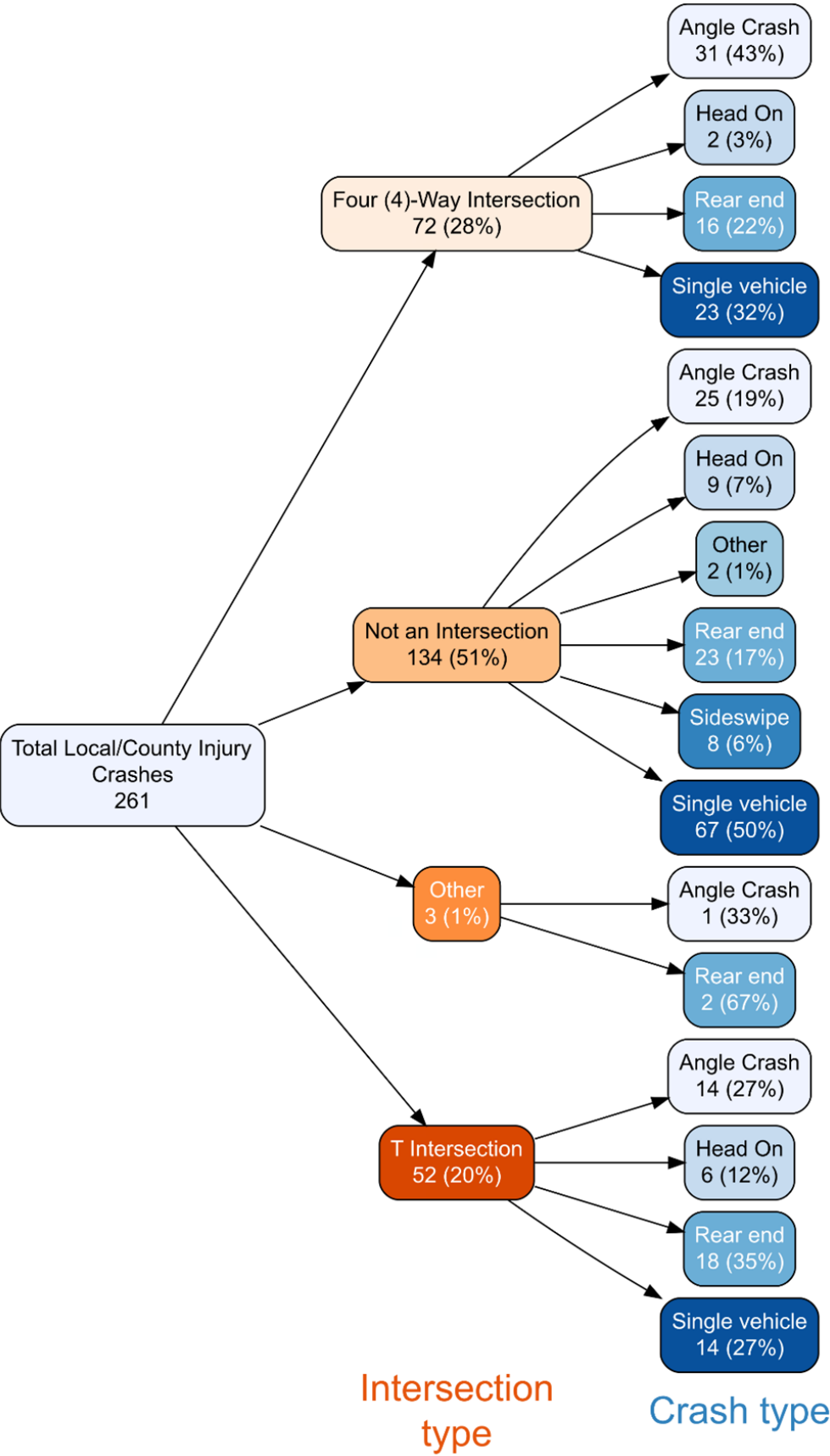
OVERVIEW OF ALL CRASHES

ROAD SEVERITY AND OWNERSHIP



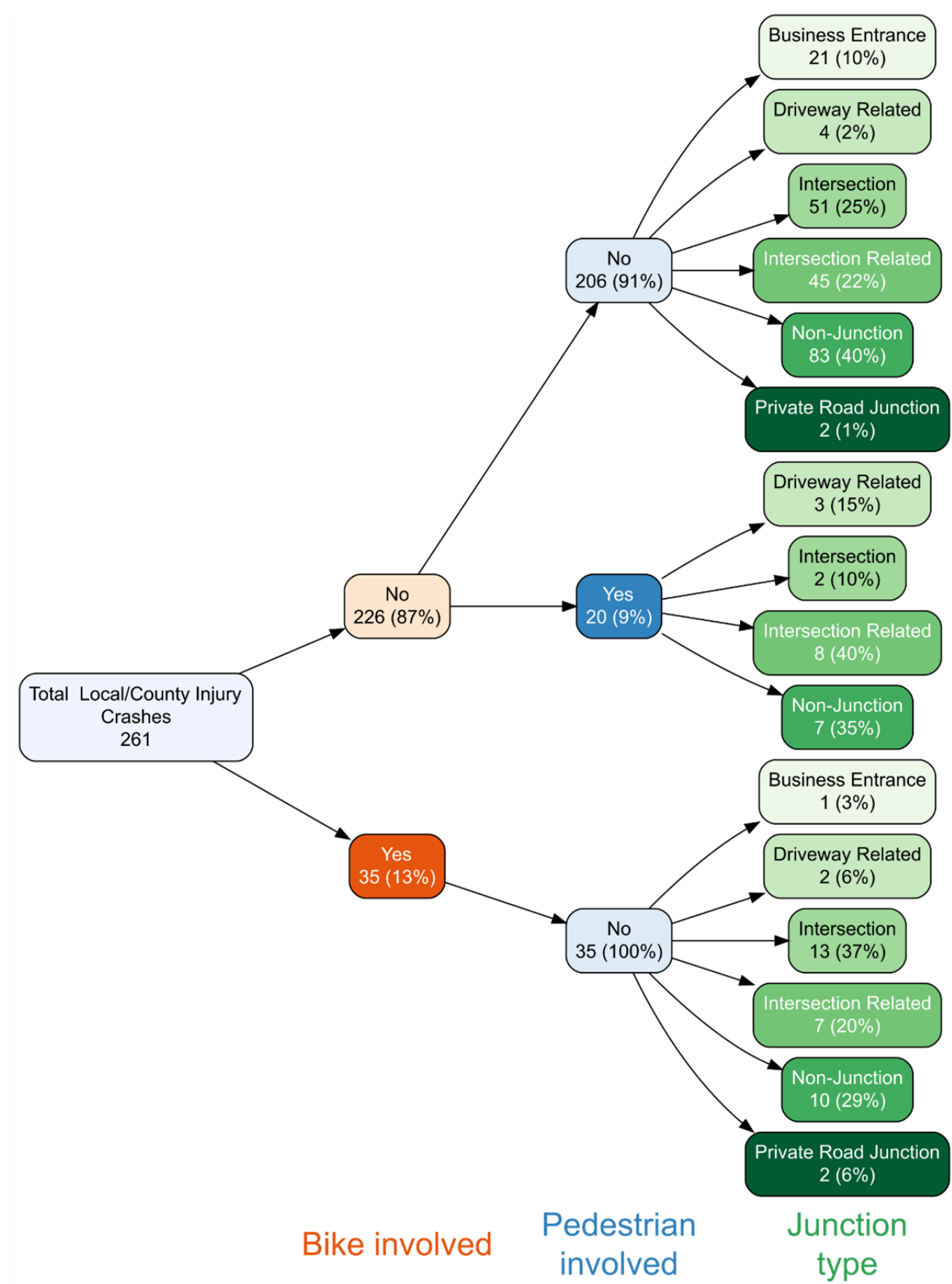
LOCAL AND COUNTY ROAD INJURY CRASHES

INTERSECTION AND CRASH TYPE

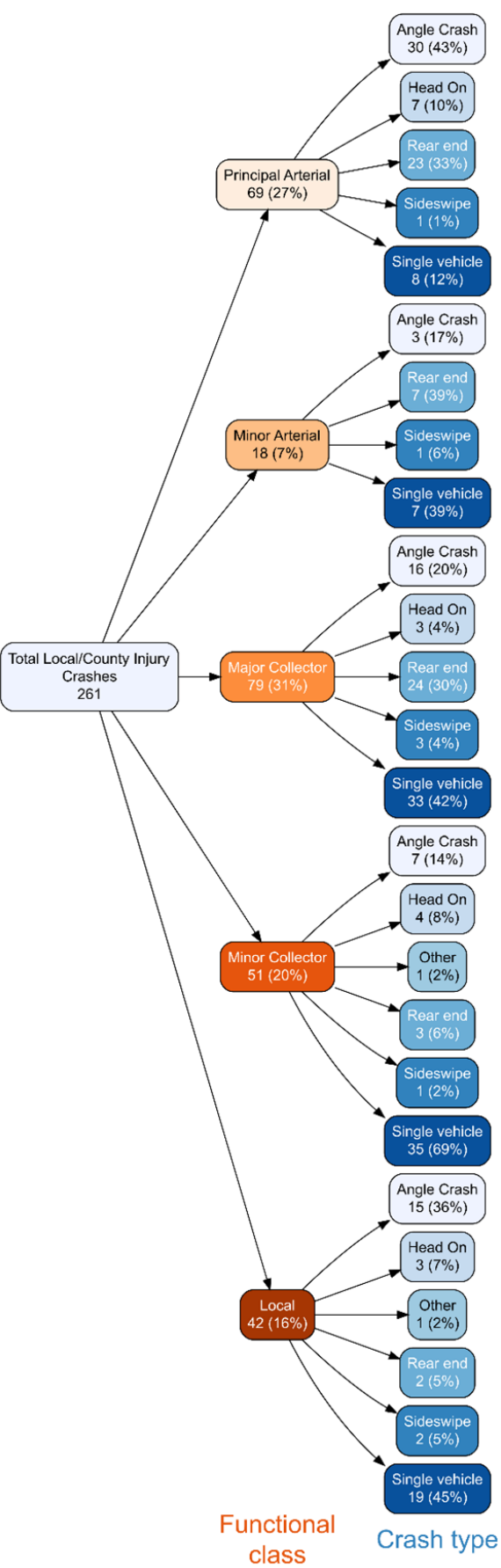




VULNERABLE ROAD USERS AND JUNCTION TYPE

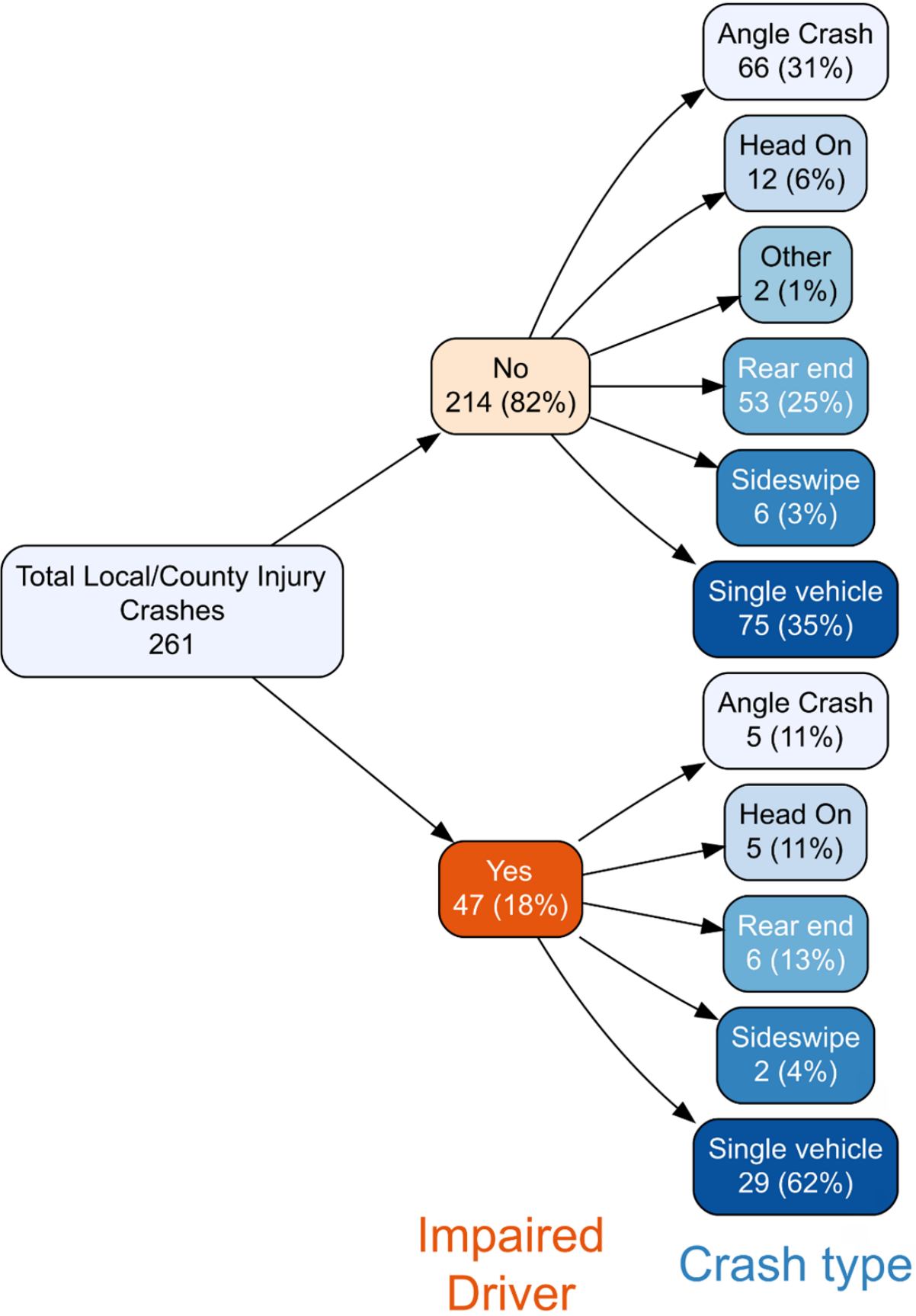


FUNCTIONAL CLASS AND CRASH TYPE



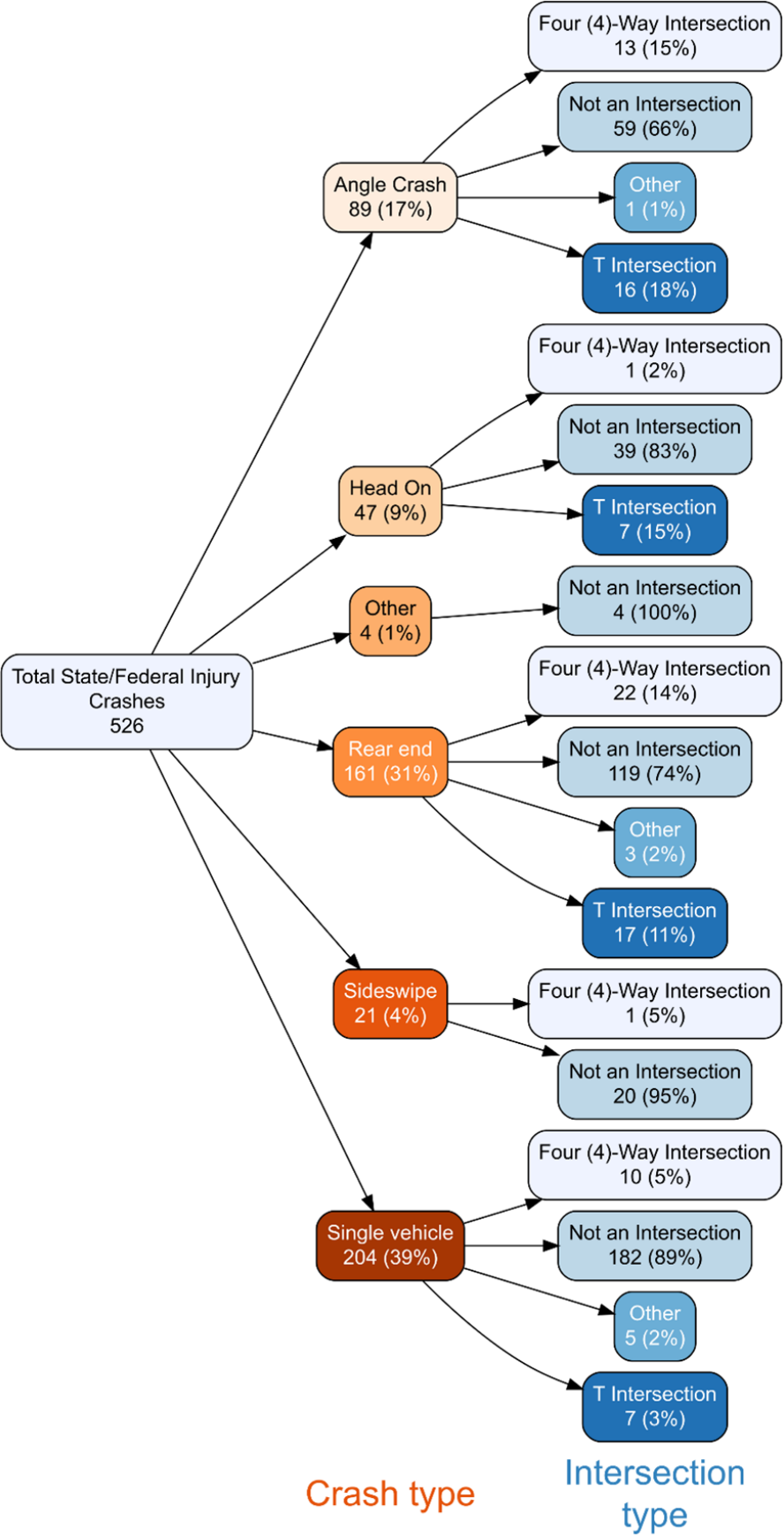


DRIVER IMPAIRMENT AND CRASH TYPE



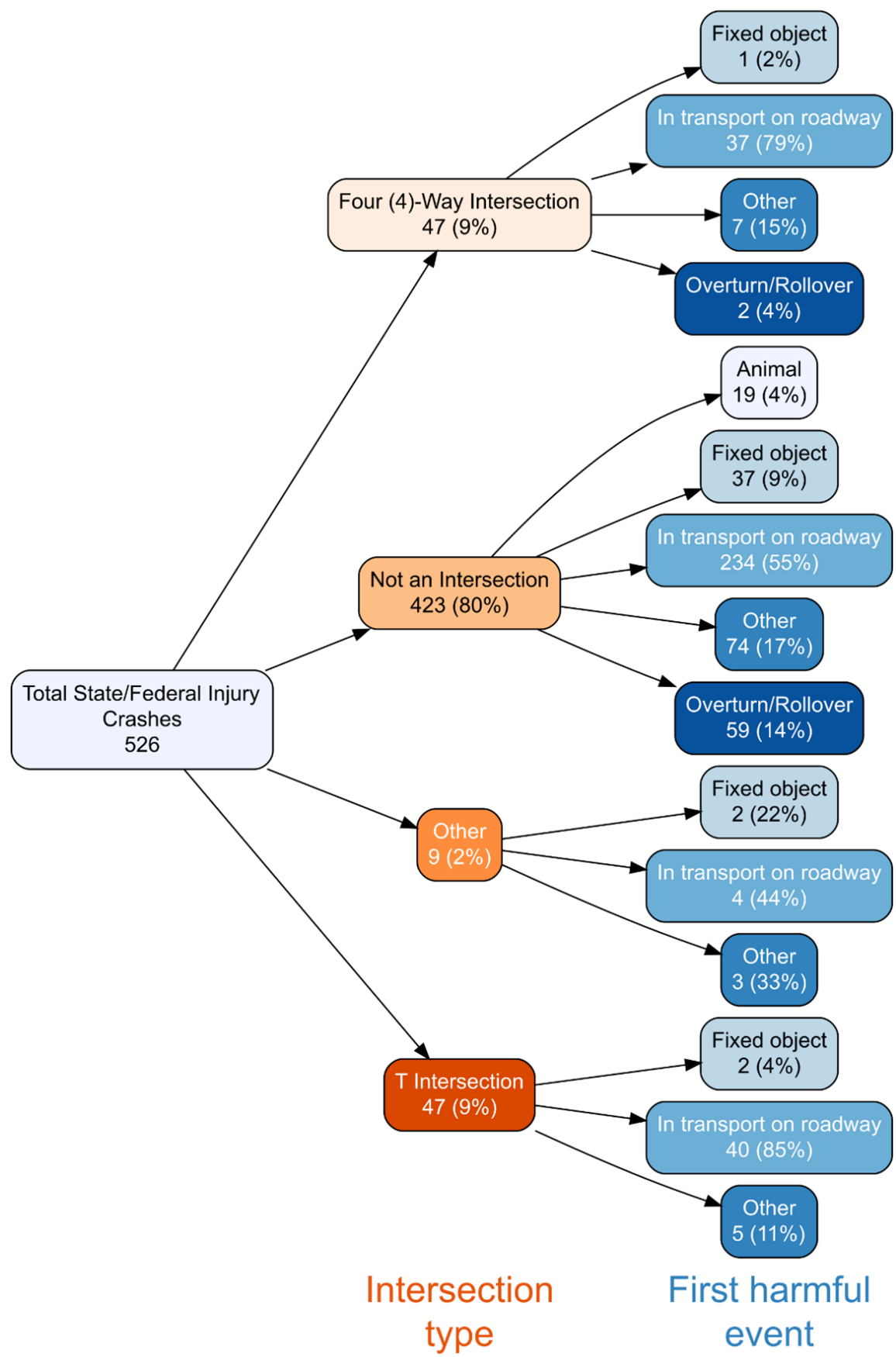
WYDOT-OWNED ROAD INJURY CRASHES

INTERSECTION AND CRASH TYPE

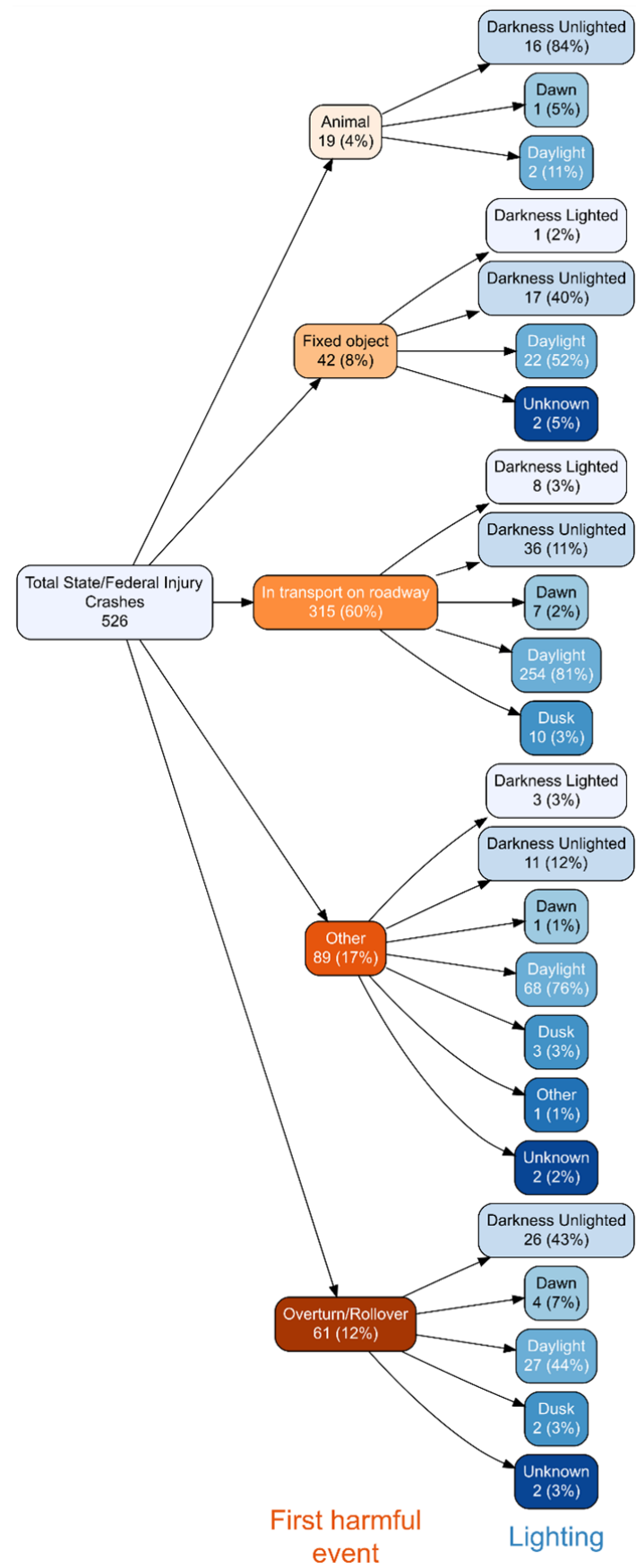




INTERSECTION TYPE AND FIRST HARMFUL EVENT

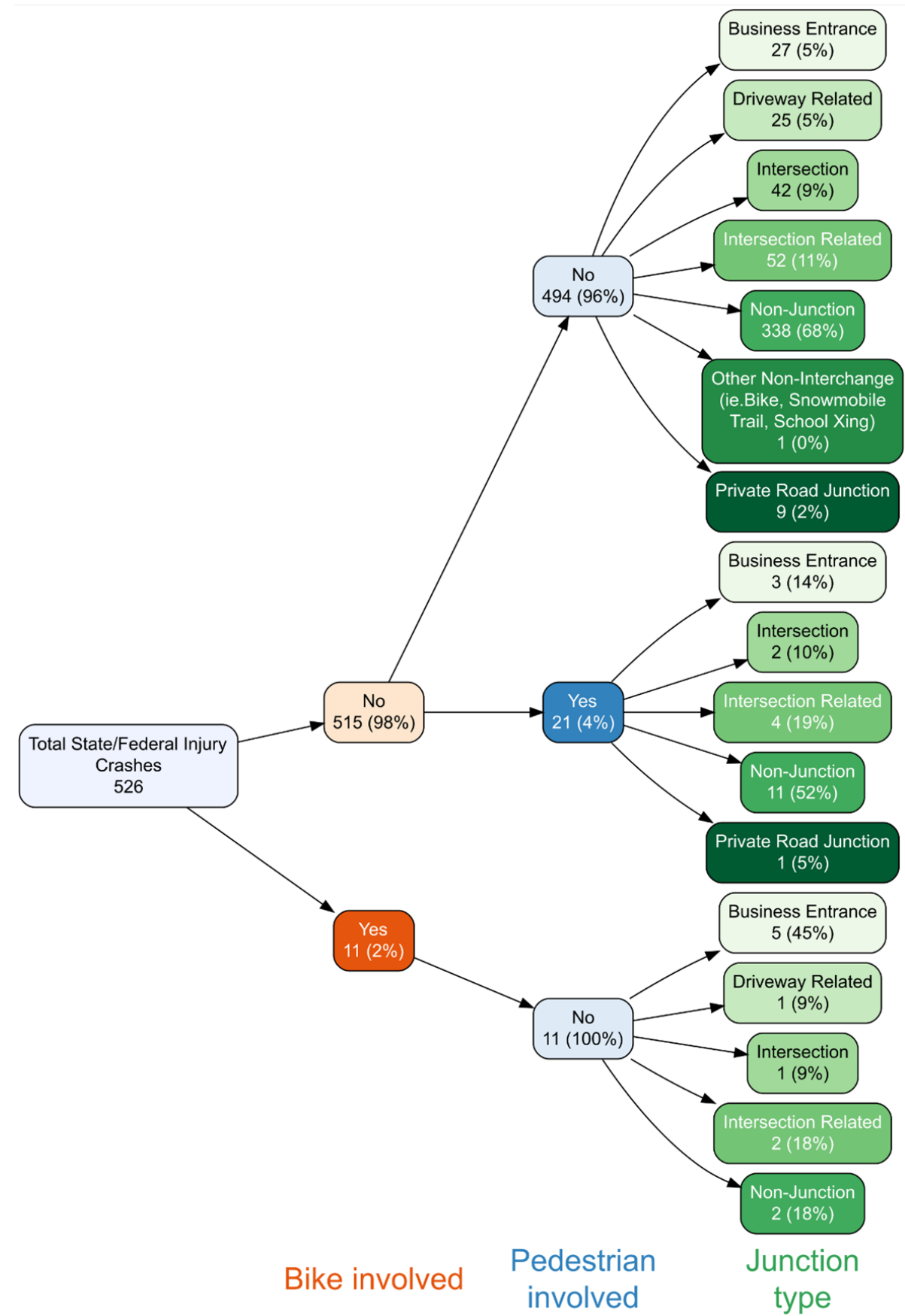


FIRST HARMFUL EVENT AND LIGHTING

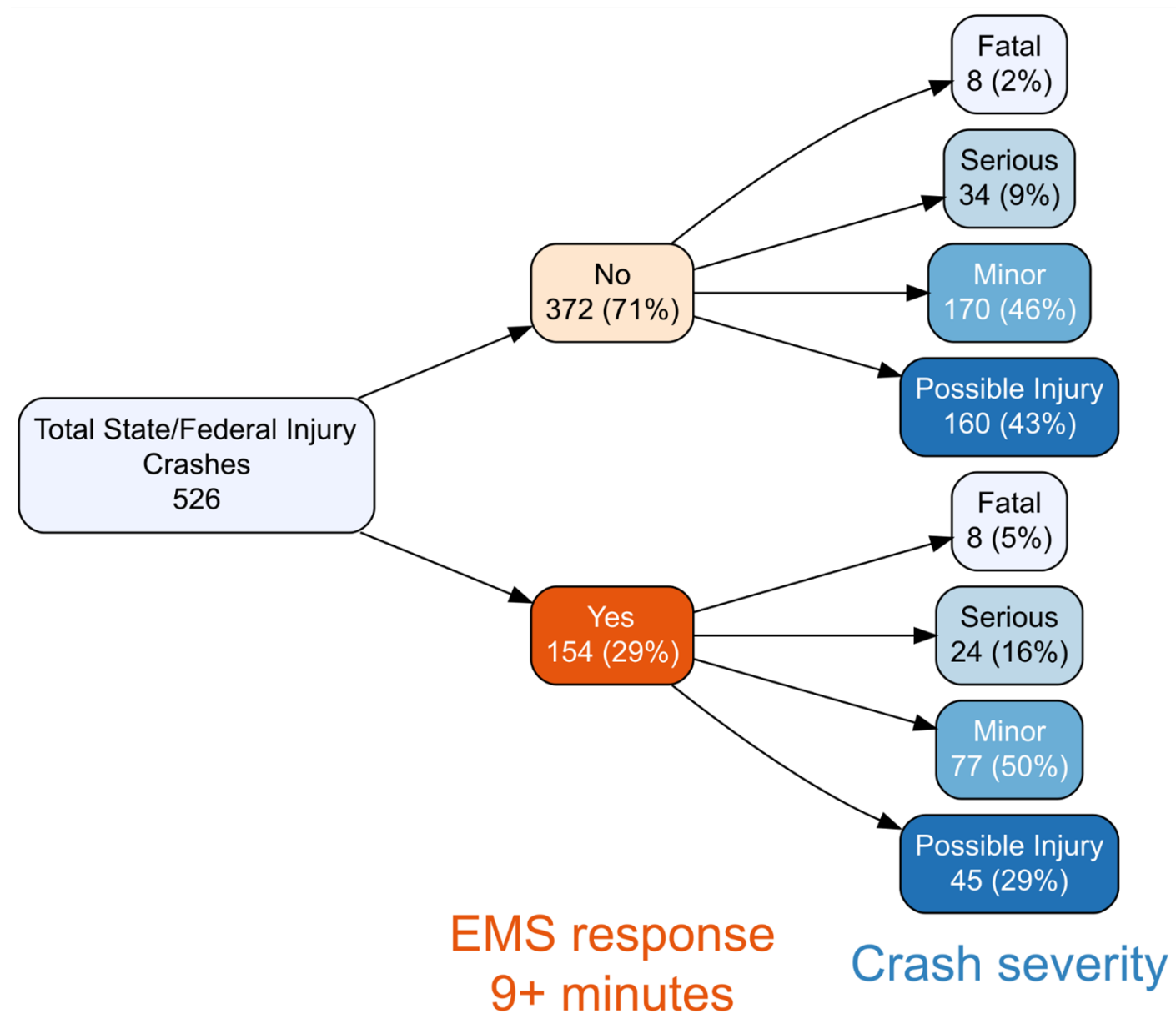




VULNERABLE ROAD USER AND JUNCTION TYPE

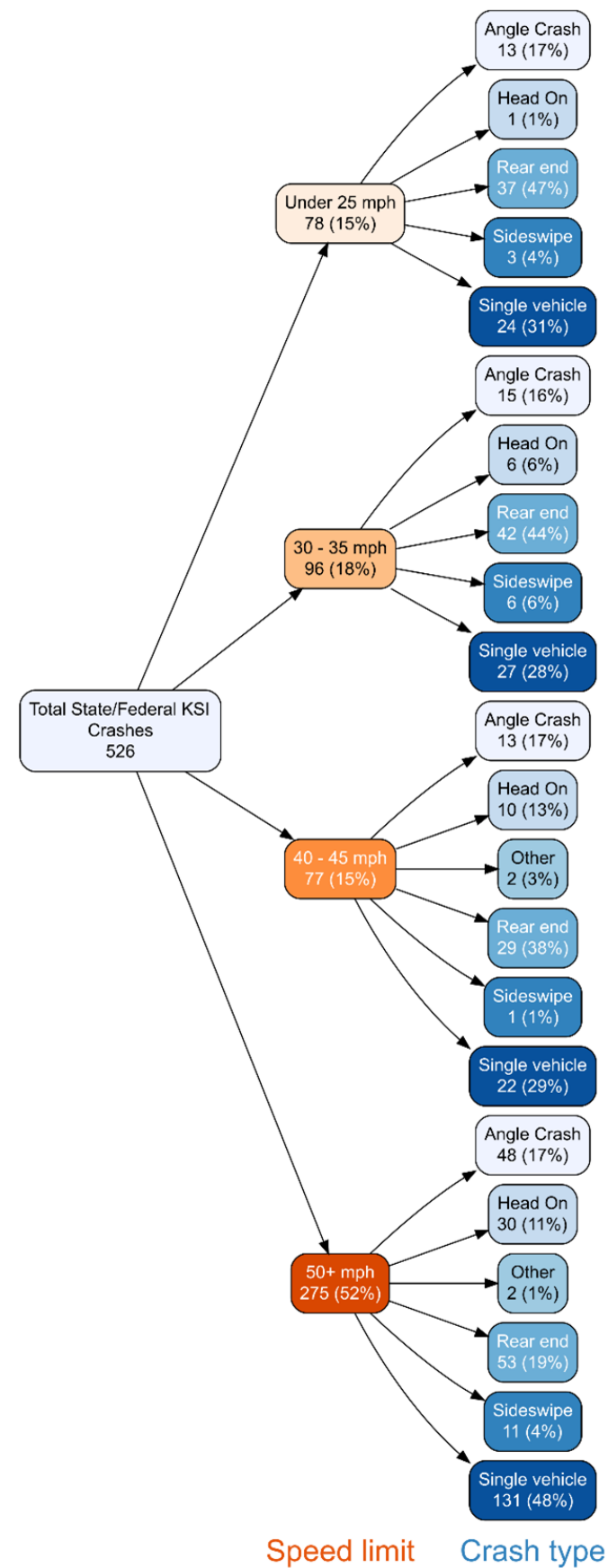


EMS RESPONSE TIME AND CRASH SEVERITY





SPEED LIMIT AND CRASH TYPE



REFERENCES

Adeyemi OJ, Paul R, DiMaggio C, Delmelle E, Arif A. The association of crash response times and deaths at the crash scene: A cross-sectional analysis using the 2019 National Emergency Medical Service Information System. J Rural Health. 2022 Sep; 38(4):1011-1024. doi: 10.1111/jrh.12666. Epub 2022 Apr 22. PMID: 35452139; PMCID: PMC9790462.

Barrowman N, Gatscha S (2022). \_vtree: Display Information About Nested Subsets of a Data Frame\_. R package version 5.6.5, <<https://CRAN.R-project.org/package=vtree>>.

R Core Team (2022). R: A Language and Environment for Statistical Computing. R Foundation for Statistical Computing, Vienna, Austria. <https://www.R-project.org/>.





## APPENDIX E

# Safety Countermeasure Recommendations



# Introduction

This memo outlines recommended countermeasures to increase safety and comfort for all roadway users in Teton County. The countermeasures are generic and based on the various crash profiles discovered during the HIN and crash data analysis in Task 3.2. Countermeasures for specific locations will be assessed in the Segment & Intersection Safety Analysis, as well as in cross sections and the SS4A project recommendations.

Crash profiles were assessed and grouped based on roadway jurisdiction (Local and County, or State and Federal). The Teton County Crash Profile Findings Memo explains the analysis and resulting crash profiles in full detail. Table 1 below summarizes the key crash profiles found for each jurisdictional grouping.

Table 1: Key crash profiles based on roadway jurisdiction

|   | # | MODE            | CRASH FACTOR                                      | CONTEXTUAL FACTOR(S)                  | SHARE OF ALL CRASHES FOR THE CATEGORY |
|---|---|-----------------|---|---------------------------------------|---------------------------------------|
| <b>Local/County Road Profiles</b><br><br>All Injury Crashes (261 total crashes) | 1 | All modes       | Angle crash                                       | At intersection                       | 18%                                   |
|   | 2 | All modes       | Single-vehicle crash                              | Mid-block                             | 17%                                   |
|   | 3 | Bike/Pedestrian | N/A   | At intersection or junction           | 15%                                   |
|   | 4 | All modes       | Rear end crash                                    | Arterial road                         | 11%                                   |
|   | 5 | All modes       | Impaired driver, single-vehicle crash             | N/A                                   | 7%                                    |
| <b>WYDOT-Owned Road Profiles</b><br><br>All Injury crashes (526 total crashes)  | 1 | All modes       | Angle crash                                       | Mid-block, speed limit 45+ MPH        | 9%                                    |
|   | 2 | All modes       | Rear end crash                                    | At intersection                       | 7%                                    |
|   | 3 | All modes       | Single-vehicle crash, rollover/overturned vehicle | Mid-block, dark and unlighted roadway | 5%                                    |
|   | 4 | Bike/Pedestrian | N/A   | At a business entrance or driveway    | 2%                                    |

As noted in the Crash Profile Findings Memo, the WYDOT-sourced crash data used in the analysis lacked information related to driver actions or behavior and included limited information about the environmental conditions or factors that may have contributed to the crashes. Additionally, the roadway jurisdiction grouping and crash profile type alone do not point to a toolbox of countermeasure recommendations, especially because driver behavior and action information was initially unavailable. Therefore, countermeasures were instead recommended based on various roadway contexts that fit within the various crash profiles.

The application of these countermeasures can be refined in the upcoming cross sections and Segment & Intersection Safety Analysis tasks, which will be more location-specific and take advantage of newly-available driver behavior information. The benefit of selecting countermeasures in this way is they can be applied to many locations within Teton County to address a number of crash types at once.

## Countermeasure Recommendations by Crash Profiles

The following tables list the countermeasures recommended for the top three profiles with the highest share of all crashes for local/county roads and state/federal roads. Some countermeasures that may be less common or self-explanatory are detailed out in the Selected Countermeasure Descriptions section.

### LOCAL/COUNTY ROADS

Table 2: Local/County Road Crash Profile 1 (angle crash at intersections) Countermeasures

| COUNTERMEASURES                                       | CRASH REDUCTION FACTOR  | COMPLEXITY TO IMPLEMENT | USEFUL RESOURCES  |
|---|---|-------------------------|---|
| All-Way Stop (AWS)                                    | 14.5% (Convert minor-road stop control to all-way stop control – for angle crashes)                     | Low                     | CMF Clearinghouse   |
| Intersection Visibility (Daylighting)                 | Unknown   | Medium                  | Visibility/Sight Distance   National Association of City Transportation Officials (nacto.org) |
| Backplates with Retroreflective Borders               | 15.0% (reduction in total crashes)  | Low                     | Left- and Right-Turn Lanes_508.pdf (dot.gov)  |
| Dedicated Left- and Right-Turn Lanes at Intersections | 14% -26% (Right-Turn Lanes)<br>28%-48% (Left-Turn Lanes)<br>(reduction in total crashes)                | Medium                  | Backplates with Retroreflective Borders_508.pdf (dot.gov)                                     |
| Yellow Change Intervals                               | 8-14% (reduction in total crashes)  | Low                     | Yellow Change Intervals_508_0.pdf (dot.gov)   |
| Roundabouts   | 78% (reduction in fatal and injury crashes when converted from signalized intersection to a Roundabout) | High                    | Roundabouts   FHWA (dot.gov)  |



Table 3: Local/County Road Crash Profile 2 (mid-block single-vehicle crash) Countermeasure

| COUNTERMEASURES             | CRASH REDUCTION FACTOR  | COMPLEXITY TO IMPLEMENT | USEFUL RESOURCES                             |
|-----------------------------|---|-------------------------|--|
| SafetyEdge <sup>SM</sup>    | 21% (reduction in run-off-road crashes)   | Medium                  | SafetyEdge_508.pdf (dot.gov)                 |
| Wider Edge Lines            | 37% (reduction in non-intersection, fatal and injury crashes on rural, two-lane roads)              | Low                     | Wider Edge Lines_508_0.pdf (dot.gov)         |
| Shoulder Rumble Strips      | 13-51% (reduction in single vehicle, run-off-road fatal and injury crashes on two-lane rural roads) | Low                     | Longitudinal Rumble Strips_508.pdf (dot.gov) |
| Variable Speed Limits (VSL) | 34% (for total crashes)   | Medium                  | Variable Speed Limits_508.pdf (dot.gov)      |

Table 4: Local/County Road Crash Profile 3 (bike or pedestrian at intersection or junction) Countermeasures

| COUNTERMEASURES                   | CRASH REDUCTION FACTOR                             | COMPLEXITY TO IMPLEMENT | USEFUL RESOURCES  |
|-----------------------------------|--|-------------------------|---|
| Separated Bike Lanes              | 50% (decrease in fatal and serious injury crashes) | Medium                  | Safe_System_Roadway_Design_Hierarchy.pdf (dot.gov) (page 13)<br>STEP Tech Sheet |
| Leading Pedestrian Interval (LPI) | 59.0% (reduction in vehicle-pedestrian crashes)    | Low                     | NCHRP Report 926 (page 149) Tech Sheet  |
| Sidewalks                         | 40.2%  | Medium                  |   |
| Curb Extensions                   | Unknown  | Medium                  | Tech Sheet  |
| Parking Restrictions              | 30% (reduction in pedestrian crashes)              | Low                     | Tech Sheet  |
| Pedestrian Refuge Island          | 56% (reduction in pedestrian crashes)              | Medium                  | Tech Sheet  |
| No Right-Turn-on-Red              | 3.0% (reduction for all crashes)                   | Low                     | NCHRP Report 926 (page 157)   |

Table 4: Local/County Road Crash Profile 3 (bike or pedestrian at intersection or junction) Countermeasures (cont.)

| COUNTERMEASURES  | CRASH REDUCTION FACTOR  | COMPLEXITY TO IMPLEMENT                           | USEFUL RESOURCES  |
|--|---|---|---|
| High-Visibility Crosswalk Markings                                       | 40% (reduction in pedestrian injury crashes)                            | Low   | Crosswalk Visibility Enhancements   FHWA (dot.gov)  |
| Lighting   | 42% (reduction in nighttime injury pedestrian crashes at intersections) | Medium  | Lighting_508_0.pdf (dot.gov)<br>Crosswalk Visibility Enhancements   FHWA (dot.gov)          |
| Rectangular Rapid Flashing Beacons (RRFB)                                | 47% (reduction in pedestrian crashes)                                   | Low   | Tech Sheet  |
| Continuous Raised Medians or Hardened Centerlines                        | 46.0% (reduction for all crashes)                                       | High for raised median<br>Low for hardened median | NCHRP Report 926 (page 129)   |
| Protected Intersections (Bikes)  | Not yet determined but initial evidence is promising                    | High  | NCHRP Report 926 (page 167)   |
| Bicycle Treatments (bike boxes, signals/phasing, pavement markings)      | Not yet determined but initial evidence shows safety improvements       | Low (Treatments)<br>Medium (Signals)              | NCHRP Report 926 (page 127)<br>Safe_System_Roadway_Design_Hierarchy.pdf (dot.gov) (page 29) |
| Crossbike Markings (bike crossing markings at intersections)             |   | Medium  | Bikeway Design Guide (page 11)  |
| Corridor Access Management (intersection with other roads and driveways) | 5-23% (Reduction in total crashes along 2-lane rural roads)             | Medium - High                                     | FHWA Proven Safety Countermeasures  |



WYDOT-Owned Roads

Table 5: WYDOT-Owned Road Crash Profile 1 (angle crash at mid-block, speed limit 45+ MPH) Countermeasures

| COUNTERMEASURES             | CRASH REDUCTION FACTOR   | COMPLEXITY TO IMPLEMENT | USEFUL RESOURCES                             |
|-----------------------------|--|-------------------------|--|
| Centerline Rumble Strips    | 44-64% (reduction in head-on fatal and injury crashes on two-lane rural roads) | Low                     | Longitudinal Rumble Strips_508.pdf (dot.gov) |
| Median Barriers             | 97% (reduction in cross-median crashes on Rural Four-Lane Freeways)            | Low                     | Median Barriers_508.pdf (dot.gov)            |
| Variable Speed Limits (VSL) | 34% (for total crashes)  | Low                     | Variable Speed Limits_508.pdf (dot.gov)      |
| Lighting                    | 28% (for nighttime injury crashes on rural and urban highways)                 | Medium                  | Lighting_508_0.pdf (dot.gov)                 |

Table 6: WYDOT-Owned Road Crash Profile 2 (Rear end crash at intersection) Countermeasures

| COUNTERMEASURES                                       | CRASH REDUCTION FACTOR              | COMPLEXITY TO IMPLEMENT | USEFUL RESOURCES  |
|---|-------------------------------------|-------------------------|---|
| Backplate with Reflective Borders                     | 15.0% (reduction in total crashes)  | Low                     | Backplates with Retroreflective Borders_508.pdf (dot.gov) |
| Yellow Change Intervals                               | 8-14% (reduction in total crashes)  | Low                     | Yellow Change Intervals_508_0.pdf (dot.gov)               |
| Dedicated Left- and Right-Turn Lanes at Intersections | 28-48% (reduction in total crashes) | Low                     | Left- and Right-Turn Lanes_508.pdf (dot.gov)              |
| Enhanced Signing and Delineation                      | 40%                                 | Low                     | FHWA Local and Rural Safety                               |
| Supplementary Stop Signs Mounted Over the Roadway     | 19%                                 | Low                     | FHWA Local and Rural Safety                               |

Table 7: WYDOT-Owned Road Crash Profile 3 (Single-vehicle crash, rollover/overturned vehicle in mid-block, dark and unlighted roadway) Countermeasures

| COUNTERMEASURES            | CRASH REDUCTION FACTOR  | COMPLEXITY TO IMPLEMENT | USEFUL RESOURCES                                  |
|----------------------------|---|-------------------------|---|
| Variable Speed Light (VSL) | 34% (reduction in total crashes)  | Low                     | Variable Speed Limits_508.pdf (dot.gov)           |
| Lighting                   | 28% (for nighttime injury crashes on rural and urban highways)                                      | Medium                  | Lighting_508_0.pdf (dot.gov)                      |
| Wider Edge Lines           | 37% (reduction in non-intersection, fatal and injury crashes on rural, two-lane roads)              | Low                     | Wider Edge Lines_508_0.pdf (dot.gov)              |
| Shoulder Rumble Strips     | 13-51% (reduction in single vehicle, run-off-road fatal and injury crashes on two-lane rural roads) | Low                     | Longitudinal Rumble Strips_508.pdf (dot.gov)      |
| Fluorescent Curve Signs    | 18% (reduction in non-intersection, head-on, run-off-road, and sideswipe in rural areas.)           | Low                     | Enhanced Delineation for Curves_508.pdf (dot.gov) |



# Selected Countermeasure Descriptions

## ALL-WAY STOP (AWS)

**Cost of Implementation:** Median cost is roughly \$20,000.

**Application:** AWS in intersections require all vehicles to stop before crossing the intersection. Most effective at the intersection of low-speed, 2-lane roadways not exceeding 1,400 vehicles during the peak hour. Not applicable on multilane highways. Advanced signage may be necessary depending on speed and other roadway characteristics. This can be used when the context is appropriate and other countermeasures like curb extensions, intersection visibility and parking restrictions are deemed insufficient.

**Benefits:** AWS intersections can encourage mutual visibility among pedestrians, bicyclists, and drivers. AWS increase safety and reduce the need for drivers to wait until there is a safe gap in opposing traffic.

**Case Study:** North Carolina Department of Transportation (NCDOT) reduced the number of fatal and serious injury crashes at rural intersections, particularly using all-way stops. NCDOT added all-way stops to more than 350 rural intersections, largely since 2020 and the intersections saw a 55 percent reduction in total crashes and a 92 percent drop in crashes with fatalities and severe injuries. NCDOT conducted an analysis of the traffic volumes, crash history, sight distance and a field investigation and follows guidelines in the federal Manual of Uniform Traffic Control Devices to determine suitability of AWS in intersections. Benefit-cost ratio was found to be 83:1.

**Sources:**

<https://safety.fhwa.dot.gov/intersection/about/fhwas22041.pdf>  
<https://www.ncdot.gov/initiatives-policies/Transportation/safety-mobility/all-way-stops/Pages/default.aspx>  
<https://www.fdot.gov/docs/default-source/roadway/fdm/current/2018FDM212Intersections.pdf>  
<https://connect.ncdot.gov/resources/safety/TrafficSafetyResources/All%20Way%20Stop%20Summary%20Brief.pdf>

## CROSSBIKE MARKINGS (BIKE CROSSING MARKINGS AT INTERSECTIONS)

**Cost of Implementation:** Costs will vary due to the type of paint used and the size of the symbol, as well as whether the symbol is added at the same time as other road treatments. Based on Bicycle Safety Guide and Countermeasure Selection System (2014), Shared Lane/Bicycle Marking can range from \$22 - \$600 each.

Crossbike markings refer to bike crossing markings at intersections and are often paired with bicycle lane and shared lane markings indicating a clear path for bicyclists.

**Application:** At intersections or other junctions such as driveways/pathways/sidestreets where there is a potential for conflict between bicyclists and motorists. Crossbike markings are particularly useful in wide/complex intersections and vehicle movements frequently encroach into bicycle space, such as across ramp-style exits and entries. When there are bike lanes approaching the intersection, it should continue into the receiving bike lane. They may not be applicable if the bicycle route has Stop or Yield control at an intersection.

**Benefits:** Crossbike markings increases the visibility of bicyclists and reduces conflicts with other modes. It highlights bicyclists’ priority overturning vehicles or vehicles entering from driveways or cross streets.

**Sources:**

[https://pedbikesafe.org/BIKESAFE/countermeasures\\_detail.cfm?CM\\_NUM=18](https://pedbikesafe.org/BIKESAFE/countermeasures_detail.cfm?CM_NUM=18)  
<https://nacto.org/publication/urban-bikeway-design-guide/intersection-treatments/intersection-crossing-markings/BikewayDesignGuide.pdf> (civiclive.com)

## CURB EXTENSIONS

**Cost of Implementation:** \$13,000 average cost (each) for curb extensions.

Curb extension is a broad term used that includes different applications and treatments including midblock curb extensions, gateways to minor streets, chicanes, bus bulbs and conventional curb extensions where there is on-street parking. Generally, curb extensions are extension of the curb line or sidewalk into the roadway, often into parking lanes, in a corner or midblock.

**Application:** Applicable in intersections where parked vehicles block sightlines, have high volumes of pedestrians, and high frequencies of pedestrian–vehicle conflicts

**Benefits:** Curb extensions decrease the overall width of the roadway and reduce turning radii signaling drivers to slow down. Curb extensions can improve pedestrian safety by increasing visibility, reducing crossing distances, and emphasizes the right of way of crossing pedestrians. Curb extensions are often combined with other measures like refuge islands that improve safety. Curb extensions at intersections often create parking restriction which is known to reduce pedestrian crashes by 30 percent.

**Sources:**

<https://nacto.org/publication/urban-street-design-guide/street-design-elements/curb-extensions/> <https://www.nyc.gov/html/dot/html/pedestrians/traffic-calming.shtml#curbextensions>  
[https://safety.fhwa.dot.gov/ped\\_bike/step/resources/docs/step\\_studio.pdf](https://safety.fhwa.dot.gov/ped_bike/step/resources/docs/step_studio.pdf)

## HIGH-VISIBILITY CROSSWALK MARKINGS

High-Visibility Crosswalk Markings use high-visibility material, such as thermoplastic tape, instead of paint and continental or ladder-style crosswalk markings to increase the visibility of marked crosswalks and improve safety.

**Cost of Implementation:** The costs could range from \$600 - \$5,710 for each high-visibility crosswalk marking

**Application:** Applicable on all roadway facilities at all signalized intersections and in uncontrolled locations that meet the requirements listed in MUTCD Section 3B.18 (2012). They identify a preferred crossing location for pedestrians in uncontrolled locations and clarify motorists are expected to yield to pedestrians. Not for use in crossings with motor vehicle speeds above 30 mph, more than one lane in one direction, or an AADT above 9,000.

**Benefits:** Supports motorists yielding and has a positive benefit on the operations, user comfort and safety of pedestrians and bicyclists. For motorists, it has a positive benefit on user comfort and neutral impact on operations and safety.

**Sources:**

NCHRP Report 926  
<https://wyoleg.gov/InterimCommittee/2022/01-2022091209-42022WyomingCrosswalksOptionsandCostsReport1.pdf>

## INTERSECTION VISIBILITY (DAYLIGHTING)

**Cost of Implementation:** The costs can vary depending on the design strategy used.

Intersection visibility improvements can include a variety of strategies:

1. Low-speed intersection approaches so that drivers can focus on less activity and better react to potential conflicts.
2. Removing parking within 20–25 feet of the intersection (30% reduction in pedestrian crashes)
3. Removing trees or amenities that negatively impact sight distances, intersection design, and street markings.
4. Pedestrian scaled lighting at intersections and pedestrian safety islands (12% reduction in crashes)
5. High visibility crosswalk markings and curb extensions
6. Provided designated mobility hubs for transit stops, bike and small mobility parking, etc.



**Application:** The standards for sight line standards for intersections should be determined using target speeds. Selection of daylighting locations can be based on proximity to schools, high crash intersections or located in a high injury network. While this primarily focused on intersections, similar strategies can be used in other conflict points like driveways.

**Benefits:** Intersection visibility improvements allows pedestrians, cyclists, and drivers to see each other and give more time for people to respond to conflicts that helps reduce collisions.

**Sources:**

*Visibility/Sight Distance | National Association of City Transportation Officials (nacto.org)*  
[https://safety.fhwa.dot.gov/ped\\_bike/tools\\_solve/fhwasa18041/fhwasa18041.pdf](https://safety.fhwa.dot.gov/ped_bike/tools_solve/fhwasa18041/fhwasa18041.pdf)

LEADING PEDESTRIAN INTERVAL (LPI)

**Cost of Implementation:** Altering existing countdown timer does not require additional equipment and hence costs are very relatively low ranging from \$0 - \$3,500. A new signal may be significantly more expensive with costs ranging from \$40,000-\$100,000.

**Application:** LPI’s are adjustments to signal timing to increase pedestrian safety at signalized intersections. LPI’s give 3- to 7-second head start before vehicles in the parallel direction are given the green signal indication. This gives pedestrians and vulnerable road users like school-aged children and older adults additional time to establish their presence in the intersection. LPI’s are applicable in signalized intersections and medium to high turning-vehicle volumes and pedestrian volumes.

**Benefits:** The head start can minimize conflicts between pedestrians crossing a roadway and turning vehicles. The countermeasure is known to increase safety, user comfort and operations of pedestrians and result in reduction in pedestrian crashes. LPI’s can also be designed to accommodate bicyclists. A leading pedestrian interval is recognized by FHWA as a Proven Safety Countermeasure.

**Sources:**

*NCHRP Report 926*  
[https://safety.fhwa.dot.gov/ped\\_bike/step/resources/docs/step\\_studio.pdf](https://safety.fhwa.dot.gov/ped_bike/step/resources/docs/step_studio.pdf)  
<https://wyoleg.gov/InterimCommittee/2022/01-2022091209-42022WyomingCrosswalksOptionsandCostsReport1.pdf>

LIGHTING

**Cost of Implementation:** Varies based on fixture type and utility service agreement. Average cost of in-pavement lighting can be \$17,620 and average streetlight cost can be \$4,880.

**Application:** Can be added in controlled and uncontrolled intersections and in roadway segments.

**Benefits:** Improving lighting can reduce pedestrian and bicyclist crashes and compliance with traffic regulations. Smart lighting options use movement sensitive detectors to turn on when needed. For pedestrian focused lighting, overhead LED lighting with a temperature of 4700o kelvin is preferred.

**Sources:**

[https://safety.fhwa.dot.gov/ped\\_bike/step/resources/docs/step\\_studio.pdf](https://safety.fhwa.dot.gov/ped_bike/step/resources/docs/step_studio.pdf)  
*NCHRP Report 926*  
<https://wyoleg.gov/InterimCommittee/2022/01-2022091209-42022WyomingCrosswalksOptionsandCostsReport1.pdf>

NO RIGHT-TURN-ON-RED

**Cost of Implementation:** The cost of a sign is approximately \$200. Electronic signs are approximately \$3,000 to install.

**Application:** No Right-Turn-on-Red can be used in locations with high pedestrian volumes and where obstructions can reduce motorist visibility of oncoming traffic.

**Benefits:** The countermeasure has a safety benefit for vulnerable road users, particularly pedestrians, without physical design changes. Right-Turn-on-Red is default practice in most areas and while law requires motorists to stop and yield to pedestrians in such locations, oftentimes motorists do not comply with the regulation. Motorists are not alert to pedestrians on their right and may pull up into the crosswalks impeding pedestrian crossing movements. No Right-Turn-on-Red can eliminate conflicts between turning vehicles and pedestrians and/or bicyclists. A quick build version of this counter measure could be implemented. It has very positive benefits on operations, user comfort and safety of pedestrians and bicyclists.

**Sources:**

*NCHRP Report 926*  
<https://safety.fhwa.dot.gov/saferjourney1/library/countermeasures/44.htm>  
<https://nacto.org/publication/transit-street-design-guide/intersections/signals-operations/turn-restrictions/>

PEDESTRIAN REFUGE ISLAND

Pedestrian Refuge Island or Crossing Islands are raised islands at intersection or mid-block crossings intended to provide refuge for pedestrians crossing the roadways by allowing them to deal with one direction of traffic at a time and to stop midway if needed before continuing to cross safely.

**Cost of Implementation:** The costs could range from \$2.28 - \$26 per square foot with a median cost of \$9.80. The costs could vary significantly based on the type of median, materials used, and the scope of the project.

**Application:** Applicable in signalized and non-signalized intersections with long crossing distance and multiple lanes of oncoming traffic. This countermeasure is particularly useful in intersections with a significant mix of pedestrian and vehicle traffic, traffic volumes over 9,000 vehicles per day, and travel speeds 35 mph or greater.

**Benefits:** Pedestrian Refuge Islands are known to reduce pedestrian crashes by up to 56%.

**Source:**

<https://wyoleg.gov/InterimCommittee/2022/01-2022091209-42022WyomingCrosswalksOptionsandCostsReport1.pdf>  
<https://highways.dot.gov/safety/proven-safety-countermeasures/medians-and-pedestrian-refuge-islands-urban-and-suburban-areas>

RECTANGULAR RAPID FLASHING BEACONS (RRFB)

**Cost of Implementation:** The cost associated with RRFB installation ranges from \$4,500 to \$52,000 each, with the average cost estimated at \$22,250. These costs include the complete system installation with labor and materials. RRFBs are pedestrian-actuated flashing lights that are used to alert motorists of pedestrian crossings.

**Application:** Applicable in roadways with low-to-medium vehicle volumes and with posted speeds less than 40 mph. RRFBs are used in combination with pedestrian, school, or trail crossing warning sign to improve safety at uncontrolled, marked crosswalks. RRFBs are placed at on both sides of an uncontrolled crosswalk and often used with pedestrian refuge island, advanced STOP/YIELD markings, and crosswalk visibility.

**Benefits:** Improves safety by increasing the visibility of marked crosswalks and provides motorists a cue to slow down and yield to pedestrians. Motorist yield rates where RRFBs are provided have motorist yield rates ranging from 34 percent to over 90 percent.



**Case Study:** Arlington County, Virginia has employed widespread implementation of RRFBs to improve pedestrian safety and increase driver yielding and behavior at crosswalks in the county. The county installed 10 RRFBs at active pedestrian crossings through the end of 2017. Evaluation of the 10 locations showed that after installing the RRFBs, driver speeds reduced by 15 percent, pedestrian volumes increased, and crossings experienced an overall increase of 110 percent in driver yielding. The evaluation results also supported screening out of high-speed (>40mph) locations from potential RRFB locations or employing speed mitigation alongside RRFBs.

**Sources:**

NCHRP Report 926  
[https://safety.fhwa.dot.gov/ped\\_bike/step/docs/techSheet\\_RRFB\\_2018.pdf](https://safety.fhwa.dot.gov/ped_bike/step/docs/techSheet_RRFB_2018.pdf)  
[https://highways.dot.gov/sites/fhwa.dot.gov/files/2022-06/step\\_casestudies\\_Arlington073120.pdf](https://highways.dot.gov/sites/fhwa.dot.gov/files/2022-06/step_casestudies_Arlington073120.pdf)

**SAFETYEDGE<sup>SM</sup>**

SafetyEdge is a technology where the edge of the roadway is shaped at approximately 30 degrees from the pavement cross slope.

**Cost of Implementation:** Costs of safety edge resurfacing were typically slightly lower than non-safety edge resurfacing.

**Application:** Applicable to all roadways but particularly useful in rural roads where edge drop-offs are 2-4 times more likely to include a fatality than other crashes on similar roads.

**Benefits:** This is FHWA approved safety countermeasure that prevents roadway departure and allows drivers to safely return to the roadway when the vehicle runs over the edge. Eliminated tire scrubbing that could lead to losing vehicle control. Benefit cost ratio ranges from 700:1 to 1,500:1. The safety benefits include 11% reduction in fatal and injury crashes, 21% reduction in run-off-road crashes, and 19% reduction in head-on crashes.

**Case Study:** In Iowa, safety in two-lane rural highways were improved using SafetyEdge technology. Between 2010 and 2012, SafetyEdge was implemented in 473 miles of construction or rehabilitation projects in Iowa. As a result, it was estimated that there was 13% reduction was found for all crashes (non-intersection) and 16% reduction was reported for injury crashes. Based on this information, it is estimated that installing SafetyEdge in 473 miles of roadways resulted in annual reduction of 41 crashes that have an estimated reduction in societal costs of \$3.5 million.

**Sources:**

[https://highways.dot.gov/sites/fhwa.dot.gov/files/SafetyEdge\\_508.pdf](https://highways.dot.gov/sites/fhwa.dot.gov/files/SafetyEdge_508.pdf)  
<https://intrans.iastate.edu/research-impact/research-outreach-have-led-to-more-use-of-safety-edge-to-reduce-drop-off-crashes/>  
<https://www.fhwa.dot.gov/publications/research/safety/11024/005.cfm#:~:text=Costs%20per%20mile%20of%20safety,to%20be%20%24110%2C000%20versus%20%24140%2C000.>

**VARIABLE SPEED LIMITS (VSL)**

**Cost of Implementation:** Varies depending on existing infrastructure and selection and spacing of signage. The traffic systems should have good connections to the local traffic center and supporting infrastructure, and costs of setting up can vary from less than \$50,000 to more than \$5 million.

**Application:** Most applicable for freeways or other roads prone to bad weather conditions or with frequent congestion. VSLs are particularly effective in roadways with posted speed limits greater than 40 mph and can be used to an entire road segment or to individual lanes.

**Benefits:** Speed management strategies like VSLs are integral to the Safe System Approach. VSLs have a benefit-cost ratio between 9:1-40:1. They can reduce crashes on freeways up to 34% for total crashes, 65% for rear-end crashes, and 52% for fatal and injury crashes. Environmental benefits include decreased emissions, decreased noise, and decreased fuel consumption.

**Sources:**

[https://highways.dot.gov/sites/fhwa.dot.gov/files/Variable%20Speed%20Limits\\_508.pdf](https://highways.dot.gov/sites/fhwa.dot.gov/files/Variable%20Speed%20Limits_508.pdf)  
<https://mobility.tamu.edu/mip/strategies-pdfs/active-traffic/technical-summary/Variable-Speed-Limit-4-Pg.pdf>  
<https://www.nhtsa.gov/book/countermeasures-that-work/speeding-and-speed-management/countermeasures/legislation-and-licensing/variable-speed-limits#:~:text=Sensors%20in%20the%20road%20detect,reduce%20crashes%2C%20including%20secondary%20crashes.>

**YELLOW CHANGE INTERVALS**

**Application:** Yellow clearance or yellow change interval is the length of time yellow signal indication is displayed following a green signal indication. Yellow Change Intervals are applicable at signalized intersections to provide sufficient clearance time between conflicting directions of traffic.

**Benefits:** Adjustments yellow change characters can reduce red light running and crashes. Well-timed yellow change intervals can reduce red light running by 36-50%, reduce total crashes by 8-14%, and reduce injury crashes by 12%. When the change intervals are too short or too long, it can cause drivers to run red lights international or unintentionally and may cause crashes. To calculate timings that reduce crashes and red light running, planners should consider intersection geometry, vehicle length, vehicle speeds, driver perception-reaction time, and other parameters. Periodic evaluation and update to the yellow change interval times can help improve safety at intersections.

**Sources:**

[https://highways.dot.gov/sites/fhwa.dot.gov/files/Yellow%20Change%20Intervals\\_508\\_0.pdf](https://highways.dot.gov/sites/fhwa.dot.gov/files/Yellow%20Change%20Intervals_508_0.pdf)  
<https://ctt2.center/2020/08/13/signal-spotlight-optimizing-yellow-clearance-intervals-a-proven-safety-countermeasure/#:~:text=Clearance%20intervals%20are%20a%20function,unintentionally%20run%20the%20red%20light.>