COMPASS

Regional Safety Action Plan

Draft

December 2024

DEDICATED TO THE MEMORY OF

Ross Dodge

1958 - 2021

Friend, colleague, mentor, avid cyclist

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Contents

Photo Source: Idaho State Police

“I hope everyone’s o.k.”

“Many of us sat in the backed-up traffic on I-84 that day. I know I did. And all I could think was, ‘I hope everyone’s o.k.’ Deep down we all knew that it would be next to impossible for that to be true.”

-Rick Dunn, listenboise

1 Introduction

Resolution from the COMPASS Board of Directors

RESOLUTION XX-2024

Regional commitment to eliminate fatalities and serious injuries on Ada County and Canyon County roadways through innovation, collaboration, education, and engagement

WHEREAS, the Community Planning Association of Southwest Idaho (COMPASS) has been designated by the Governor of Idaho as the metropolitan planning organization responsible for transportation planning in Ada and Canyon Counties; and

WHEREAS, COMPASS was awarded a federal Safe Streets and Roads for All (SS4A) planning grant to fund a Regional Safety Action Plan (RSAP) to identify measures for reducing fatal and serious crashes for all modes – vehicles, motorcycles, pedestrians, and bicyclists; and

WHEREAS, to comply with the SS4A program requirements, the RSAP must include a public commitment to the eventual goal of zero roadway fatalities and serious injuries from a high ranking official and/or elected body in the jurisdiction, including a timeline/target for achieving that goal; and

WHEREAS, progress toward the national safety goals is monitored as part of the Federal Highway Administration's annual Safety Performance Measurement reporting process; and

WHEREAS, the Vision for the Idaho Transportation Department's Strategic Highway Safety Plan is "Continue to move toward zero deaths on all roadways in Idaho" and its goal is to reduce traffic deaths in Idaho to 230 or fewer by 2025; and

WHEREAS, the likely timeframe from RSAP adoption to project programming, design, funding, and construction will exceed six (6) years in most cases; and

WHEREAS, under the SS4A grant program, establishing multiple target dates to achieve zero fatal and serious injury crashes is allowable; and

NOW, THEREFORE BE IT RESOLVED, that the COMPASS Board of Directors: Commits to elimination of fatalities and serious injuries on its roadways through innovation, collaboration, education, and engagement; and agrees to plan and program projects to achieve the interim target of a 50 percent reduction in fatal and serious-injury crashes by 2055.

Working Together, We Can Save Lives On Our Roadways

Dear Neighbors,

Traffic deaths in Idaho reached a 20-year high in 2023. Across the state, 277 of our friends, neighbors, and family members lost their lives. 63 died on Ada County and Canyon County roads, and the number of people killed while walking or riding bikes nearly doubled from the previous year.[1] Business as usual just isn't working anymore.

The good news is that traffic deaths and life-altering injuries are preventable. We understand it isn't possible to eliminate all crashes, as people make mistakes. But if we work together, we can minimize the consequences.

The COMPASS Regional Safety Action Plan (RSAP) is a collaborative effort to improve safety on roadways in Southwest Idaho. This is the first such plan for the rapidly growing Treasure Valley and is supported by over two dozen agencies, including cities, highway districts, counties, the Idaho Transportation Department, and Valley Regional Transit.

The RSAP organizes COMPASS and our member agencies around a unified transportation safety vision and identifies specific actions we can take to achieve this vision. By improving agency practices and policies and embracing data-driven strategies that address local and system-wide crash risks, we can - and will - save lives.

The urgent need for this work was recognized by the Federal Highway Administration with a Safe Streets and Roads for All (SS4A) grant award in 2023. This enabled COMPASS to reach out on a broad scale to the people who live in our region—citizens, partner agencies, business owners, freight haulers, community organizations, and others. All these voices came together to create a practical, realistic, actionable plan to improve transportation safety and save lives in the Treasure Valley. We thank everyone who took part.

Last but not least, now that we've plotted our course, we have better access to the funds we need to make these changes a reality. The RSAP will broaden access to implementation funds for COMPASS and our member agencies through the federal SS4A program and other funding sources.

So let's get started! There's not a moment to waste.

1 Idaho Department of Transportation data, 2023.

What Challenges Do We Face ?

We know the number of road deaths and serious injuries in the Treasure Valley is unacceptably high. How do we change that? What is the unifying vision for this effort? What specific goals will we strive to meet? The answers to these questions were informed by the hopes, wishes, and challenges COMPASS, our member agencies, our partners, and the public face as we make transportation safety a top priority for our region.

OUR CHALLENGES

Keeping up with rapid growth and the increasing safety challenges

Conflicts are increasing in areas built for lower traffic volumes

Limited safety expertise and capacity within agencies

Agency staff, elected officials, and members of the public don't always understand safety needs and how to effectively address them

Competing priorities

Between agencies with overlapping jurisdiction (e.g., land-use and transportation agencies, transportation agencies where roads intersect or transition)

Within agencies (e.g., roadway capacity projects vs. maintenance vs. safety)

Ability and capacity to identify projects for grant funding and develop grant applications

Lack of dedicated funding for safety projects

Gaps in transit, pedestrian, and bicycle networks

Envisioning the Future, and How to Get There

After considering the challenges and opportunities the Treasure Valley faces, we set out to develop a vision and establish trackable goals for this effort. The RSAP vision and goals are simple, direct, and informed by our region's unique needs, best practices from other agencies, and SS4A requirements. These elements guided the development of the RSAP every step of the way. Our success as a region in fulfilling them will be tracked through the performance measures and targets described in ***Chapter 5***.

VISION

A Treasure Valley unified by a commitment to eliminate fatalities and serious injuries on its roadways through innovation, collaboration, education, and engagement.

GOALS

Design and build a transportation network that is safe for all users

Strengthen safety practices through collaboration, engagement, and education

Use a data-driven approach to plan and implement proactive, innovative, and proven safety countermeasures

Embrace the Safe System Approach and promote a culture of safety

Photo Source: Kittelson & Associates, Inc.

Real-World Example
Fixing a Dangerous Crossing:

State Street/ 11th Street

State St/11th St Intersection in Boise

Photo Source: Kittelson & Associates, Inc

Four people walking were hit by left-turning motorists in the crosswalk near the Downtown Boise YMCA between 2018 and 2022. In each case, a driver making a left turn onto State Street from 11th Street failed to yield. The Ada County Highway District (ACHD) updated the crossing to improve safety for people walking using a combination of proven and innovative countermeasures.

Making Drivers More Aware of Walkers: To improve left-turning drivers' awareness of people crossing State Street, ACHD placed lighted yield to pedestrians signs on the signal mast arms. These signs are activated when a person who wants to cross the street presses the pedestrian signal pushbutton.

Giving Walkers a Head Start: People crossing State Street on foot now get a 3- to 5-second head start before the traffic light turns green. This is known as a leading pedestrian interval. FHWA found that adding a leading pedestrian interval reduces pedestrian-involved crashes by 59% on average.[1]

1 FHWA Toolbox of Pedestrian Countermeasures and Their Potential Effectiveness (2018)

2 Safe System 101

Changing how we think about transportation safety

Too often deaths and serious injuries on our roads are seen as isolated “accidents.” In truth, most of these tragedies have similar causes and could be prevented. Recognizing these factors and addressing them can make our roadways safer for everyone.

This understanding is at the core of the U.S. Department of Transportation's (USDOT) Safe System Approach, which is the guiding ethos of this safety action plan.

THE SAFE SYSTEM APPROACH

The Safe System Approach works by building and reinforcing multiple layers of protection to prevent crashes when possible and minimize harm when crashes can’t be avoided. This approach has been embraced by transportation leaders around the world to address the risks built into our transportation systems over the years.

The Safe System Approach is a shift from the conventional safety approach because it focuses on both human mistakes AND human vulnerability. Transportation systems should have redundant safety measures. If all parts of the transportation system are designed to prevent risk, people are still protected, even when one safety measure fails. Under the Safe System Approach, safety actions are focused on infrastructure, human behavior, responsible oversight of the vehicle manufacturing and transportation industry, and emergency response.

Principles of a Safe System Approach[1]

Death and Serious Injuries are Unacceptable

A Safe System Approach prioritizes eliminating crashes that result in death and serious injuries; not necessarily all crashes.

Humans Make Mistakes

People make mistakes and decisions that can lead to crashes, but the transportation system can be designed to minimize impacts and avoid death and serious injuries when a crash occurs.

1 Source: U.S. Department of Transportation, https://www.transportation.gov/NRSS/SafeSystem

Humans Are Vulnerable

Human bodies don't tolerate crash forces well and death or serious injury is a frequent outcome. Human-centric design and operation is critical to creating a transportation system that accommodates physical human vulnerabilities.

Responsibility is Shared

Everyone has a part to play in preventing fatalities and serious injuries on our roadways, including government agencies, transportation professionals, industry leaders, non-profit/advocacy groups, researchers, and the general public.

Safety is Proactive

Instead of waiting for crashes to happen and reacting afterwards, proactive tools should be used to identify and address risks in the transportation system.

Redundancy is Crucial

All parts of the transportation system need to be strengthened so that if one part fails, the others still protect people.

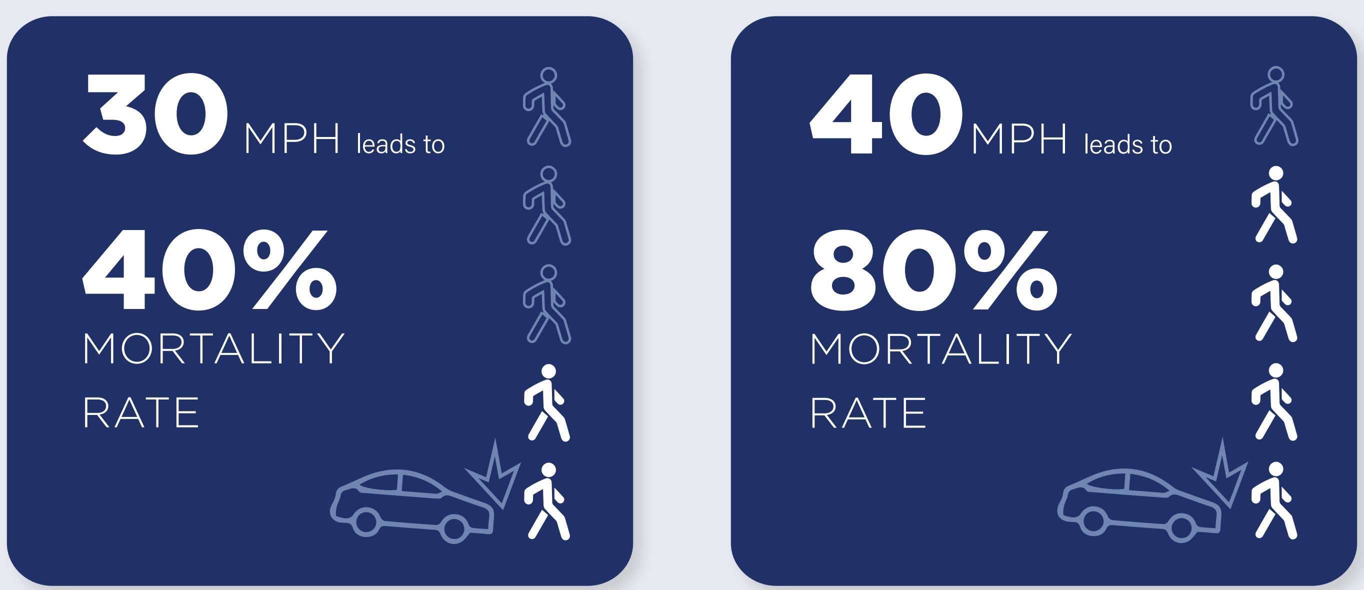
Eliminating fatal and serious-injury crashes does not mean eliminating all crashes

COMPASS recognizes that eliminating all crashes on Treasure Valley's roadways is not a realistic goal. **The RSAP represents a shift in our thinking from preventing crashes to preventing deaths and serious injuries.**

We recognize that ending deaths and serious injuries on Treasure Valley roadways will require significant time and a concerted approach from policymakers, engineers, planners, business owners, community leaders, first responders, and others in the public and private sectors to prioritize safety. Achieving this depends not just on member agency actions, but also the behavior of the traveling public.

Because of this, COMPASS has set an interim target to reduce fatal and serious injuries on the Treasure Valley's transportation system by 50% by 2055.

Slowing Down Saves Lives



Data Source: Pasanen, E. Driving Speeds and Pedestrian Safety; a mathematical model. Technical Report No. REPT-77, and Nordisk Kabel- pg Traadfabriker, Copenhagen, Denmark, 41 pp., 1992. Helsinki University of Technology, Laboratory of Traffic and Transpoartaion Engineering, Espoo, Finland

Figure 1 illustrates the recent five-year trend in fatal and serious injury crashes in the Treasure Valley. It also shows the decrease in crashes that would be necessary to reach the 50% reduction target by the year 2055. Based on these trend lines, interim targets to meet along the way to the 2055 target would include a 19% reduction by 2035 and a 34% reduction by 2045.

The 50% target is meant to be aggressive but achievable. International experience proves that reductions of 33% to nearly 70% are achievable in a 20-year timeframe (***Figure 2***). Individual agencies may choose to adopt a quicker timeframe. The City of Boise has already targeted a 50% reduction by 2032.

Figure 1. Crash Trends to Meet Proposed Targets

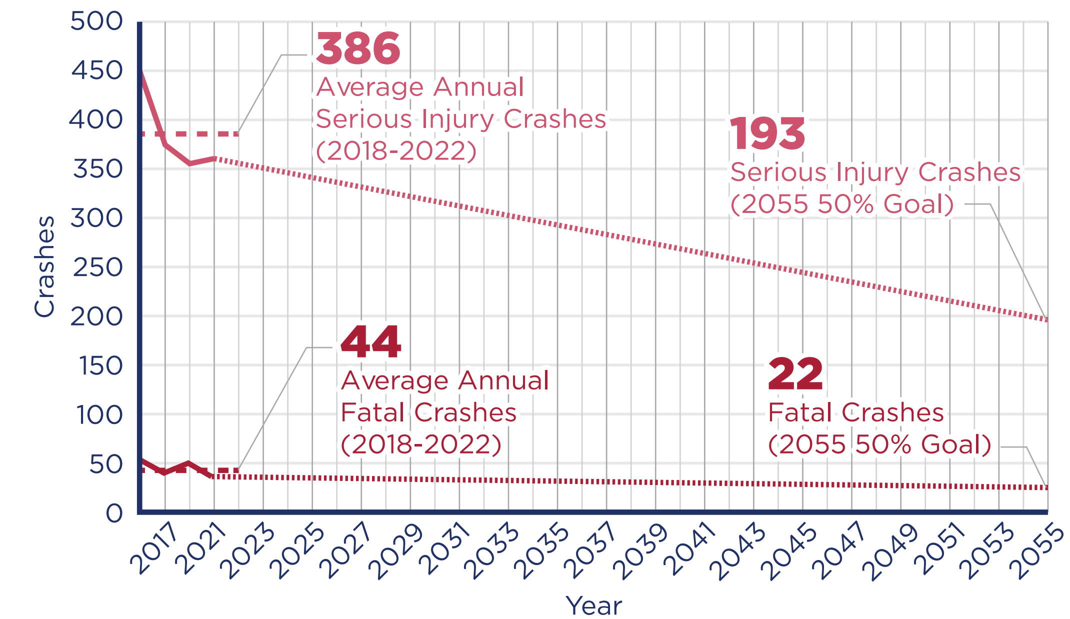
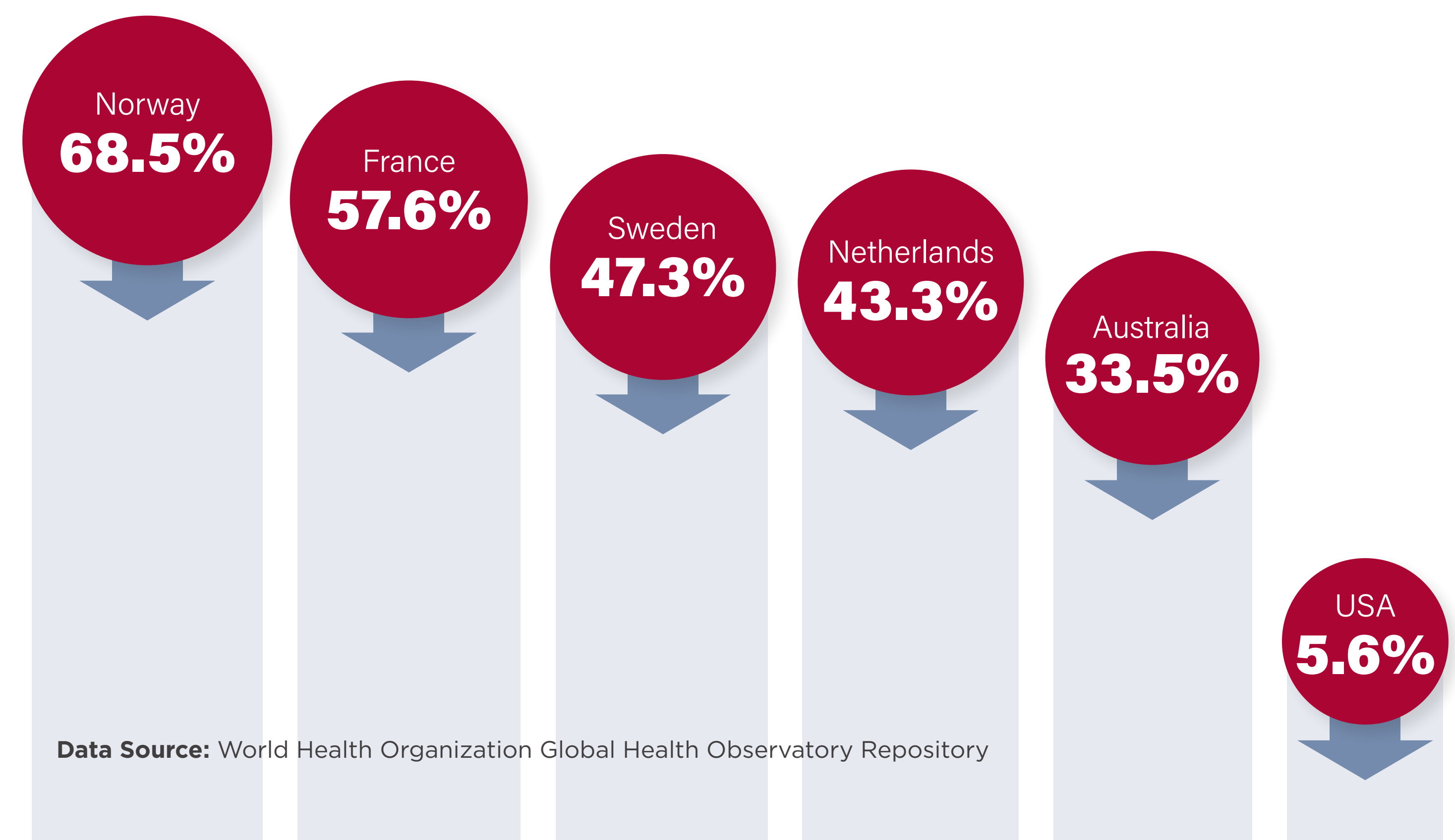


Figure 2. Change in Transportation Fatalities from 2000 to 2019



Data Source: World Health Organization Global Health Observatory Repository

Safe System Roadway Design Hierarchy

To help put the Safe System Approach in practice, FHWA recently published the Safe System Roadway Design Hierarchy. This guide is intended to help practitioners make project-specific decisions on treatments and evaluate how effective treatments are at reducing fatal and serious injury crashes. The hierarchy provides four tiers for types of countermeasures that are general in nature and applicable to any scenario, with Tier 1 being the most effective at reducing fatal and serious injury crashes. The four tiers are illustrated below:

TIER 1

Remove Severe Conflicts: Includes countermeasures that separate people and vehicles moving at different speeds or different directions.

Examples Include:

- Converting traffic signals or stop-controlled intersections to roundabouts (eliminates conflicts from left-turns and other movements)
- Protected bike lanes (reduces conflicts between vehicles and people biking)
- Raised medians (reduces conflicts due to lane departures or left-turns)

TIER 2

Reducing Vehicle Speeds: Includes countermeasures that reduce vehicle speeds, thereby reducing the likelihood of a crash and the severity of a crash should one occur.

Examples Include:

- Roundabouts or other forms of horizontal deflection (such as chicanes) that require drivers to slow down and navigate a roadway feature
- Speed humps, raised crossings, or other forms of vertical deflection that require drivers to reduce speeds
- Narrowing elements, such as curb extensions, narrowed lanes, or presence of on-street parking or protected bike facilities

TIER 3

Manage Conflicts in Time: Includes countermeasures that separate users in time using traffic control devices, to reduce conflicts.

Examples Include:

- Protected left-turn phasing to separate left-turn and through-movements at signalized intersections
- Pedestrian hybrid beacons to separate vehicle traffic and people walking or biking on a crossing

TIER 4

Increase Attentiveness and Awareness: Includes countermeasures that alert people to potential conflicts.

Examples Include:

- Enhanced pavement markings, including wider edge lines, retroreflective pavement markings, or in-lane pavement markings which alerts drivers of upcoming conflicts or roadway context changes
- Dynamic feedback signs which alert drivers when they are speeding and can be used in conjunction with other treatments to reduce vehicle speeds

How does this affect me?

For this safety program to succeed, everyone needs to be involved, and everyone's involvement will look a little different. Here's what to expect, depending on your perspective.

FOR COMPASS

For COMPASS staff, the RSAP offers strategies to help you support member agencies and the people under their jurisdictions. The plan focuses COMPASS' efforts through a safety lens, improving processes and planning efforts, such as the way safety is considered in the Long-Range Transportation Plan.

The RSAP includes initiatives and tools COMPASS should develop and provide to member agencies, like crash data analysis and support in finding suitable grant opportunities. Further, this plan prioritizes these actions into different timeframes, including near-term actions COMPASS and member agencies can take to reduce fatal and serious injury crashes starting today.

For COMPASS staff, this plan:

1. Identifies locations and systemic trends where safety treatments are likely to have the greatest impact on fatal and serious injuries, giving COMPASS direction on how to allocate resources.
2. Provides data, outlines countermeasures, and establishes a vision and goals that can be used to help COMPASS prioritize and program projects in the Transportation Improvement Plan and Long-Range Transportation Plan.
3. Identifies how COMPASS can support its members with tools, data, funding, and education resources.
4. Lays out how safety projects could be funded and notes the types of projects that are most eligible and competitive for grant funding.
5. Recommends near-term actions to achieve the vision and goals outlined in the plan.
6. Offers performance metrics that allow COMPASS to measure progress towards the plan's goals.

FOR A COMPASS MEMBER AGENCY

For COMPASS member agencies, this plan can help answer the following questions:

- **Where should safety improvements happen first?**
  - The High-Injury Network (***see p 28***) shows where fatal and serious-injury crashes have been most concentrated and which roadways may be most at risk for such crashes in the future.
  - The emphasis areas (***see p 34***) describe the systemic challenges that should be prioritized.
- **What strategies should we use to improve safety?**
  - A toolbox of countermeasures (***see Appendix A***) to address crashes or risk factors in a variety of contexts (e.g., urban vs. rural, local vs. arterial road).
  - Planning and policy strategies.
  - Priority projects for each member agency that use the tools in the toolbox to illustrate how agencies can work toward the plan's vision.
- **How can we implement the strategies in this plan?**
  - Pursue funding opportunities, including regional, state, and federal funding sources. (***see p 58)***
  - Test drive permanent improvements with cost-effective quick-build projects. (***see p 59***)
  - Stay abreast of best practices. (***see p 17***)

OTHER ORGANIZATIONS INVOLVED IN TRANSPORTATION SAFETY

Transportation safety is not just about design—behavioral shifts are important too. The RSAP offers strategies for first responders, public health organizations, and advocacy groups to educate the public, coordinate with public agencies, improve emergency response time, and make wise investments to improve safety on our roadways.

MEMBERS OF THE PUBLIC

We hope the effects of this plan will be noticed most by the people who live in the Treasure Valley and who walk, bus, drive, or bike its transportation system. The RSAP harnesses the power of data to target the types of projects that will prevent roadway deaths and serious injuries before they happen, making getting around safer for people of all ages and backgrounds. The plan's education and outreach programs will raise awareness, helping members of the public to do their part in saving lives.

Making it safer to take the bus

People need to walk and bike to reach transit stops or drive to park-and-rides. Many of the strategies in this plan will provide safer first- and last-mile connections to transit stops (e.g., bus or vanpool). Other strategies that reduce conflicts or lower speeds on roadways with transit routes will also benefit transit riders. COMPASS and its member agencies should consider Valley Regional Transit routes and people taking transit when developing and prioritizing safety improvements.

Photo Source: valleyregionaltransit.org

Real-World Example: Whitewater Park Boulevard (Boise)

Whitewater Park Boulevard in Boise is a multi-lane arterial with a posted speed limit of 35 MPH. This type of road is overrepresented on our High-Injury Network. Thanks to the safety strategies in its design, Whitewater Park Boulevard is not on the High-Injury Network and did not experience any fatal or serious injury crashes between 2018 and 2022.

TIER 1

Eliminate Severe Conflicts:
A raised median restricts most accesses to right-in/right-out only, eliminating opportunities for users to conflict with one another. Roundabouts reduce conflict points at intersections. Sidewalks with landscape buffers separate people walking from motor vehicles. Bike lanes provide a separate space for people biking.

TIER 2

Manage Vehicle Speeds:
Roundabouts reduce speeds along the corridor. Flashing lights are used to indicate school zones.

TIER 3

Manage Conflicts in Time:
People walking can activate a stop indication for traffic (a pedestrian hybrid beacon) at key crossings, including a regional park and an elementary school.

TIER 4

Increase Driver Awareness:
Warning signs and high-visibility markings enhance the visibility of crossings.

Photo Sources: Kittelson & Associates, Inc.

Photo Source: Idaho State Police

Working together to combat rising DUIs

Law enforcement officers from across the Treasure Valley are teaming up to stop impaired driving. The Treasure Valley DUI Task Force formed in response to a 26% increase in alcohol-related impaired driving and a 53% rise in impaired driving fatalities in our region.

Through targeted enforcement, public education, and community engagement, the Task Force aims to shift societal norms around impaired driving.

Members of the Task Force include the Garden City Police, Boise Police, Ada County Sheriff's Office, Idaho State Police, Caldwell Police, Nampa Police, Canyon County Sheriff's Office, and Meridian Police.

3 What Causes Crashes in Our Region?

The first step toward a safer transportation system is understanding where crashes happened and are likely to happen. COMPASS High Injury Network (HIN) sources crash data to map these locations on Treasure Valley's roadway network. Other cities' experiences have shown that targeting these locations for improvement can help make the most of limited funds.

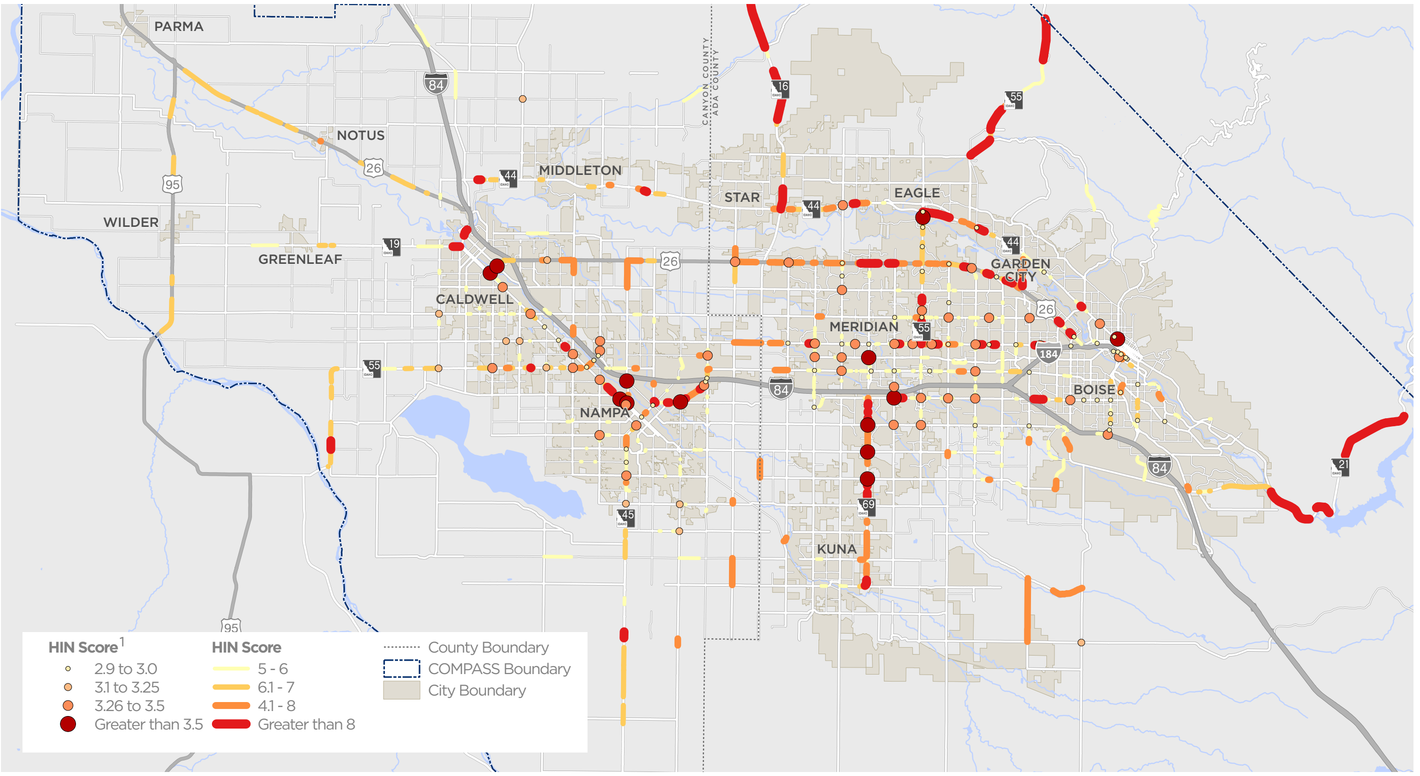
How we spend what we have matters.

Almost 40% of fatal and serious injury crashes in the Treasure Valley occur on roadways with five or more lanes, despite these roadways making up less than 10% of the roadway network.

COMPASS developed its HIN based on analysis of fatal and serious injury crash history on the roadway network, pinpointing what dangerous sites have in common and identifying other sites with similar characteristics. The results are shown in ***Figure 3a*** and ***3b*** and can also be viewed on an interactive online map[1].

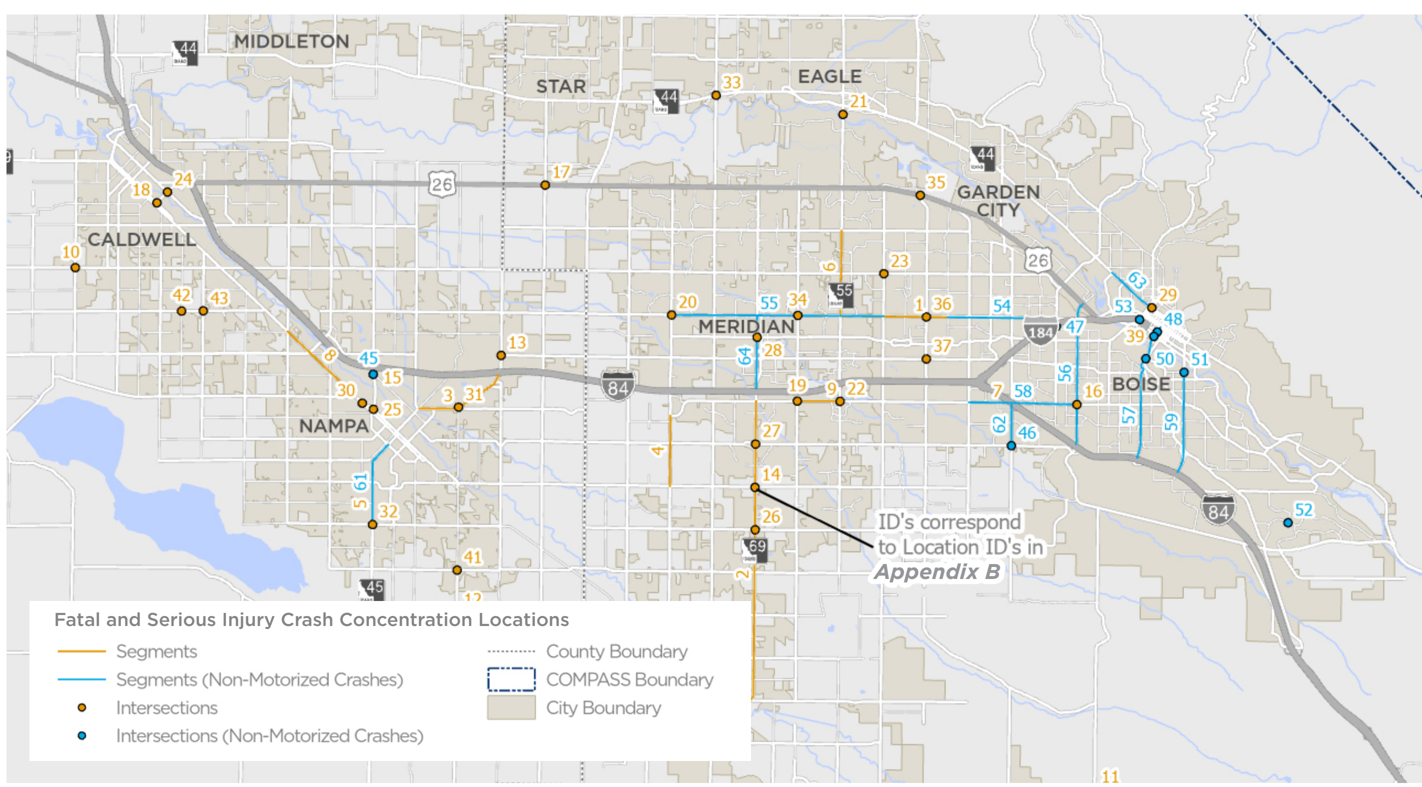
1 https://compassidaho.maps.arcgis.com/apps/dashboards/aa2067339363456a9fcec94b0d9875fd

Figure 3a. Regional High Injury Network



1 The HIN score is based on historical crash activity (i.e., where fatal and serious injury crashes have happened) and roadway characteristics correlated with fatal and serious injury crashes. A higher HIN score correlates with higher crash history and more of these characteristics.

Figure 3b. Locations with the Highest Number of Fatal and Serious Injury Crashes



Why these locations?

The HIN reveals patterns in the region's fatal and serious injury crash history.

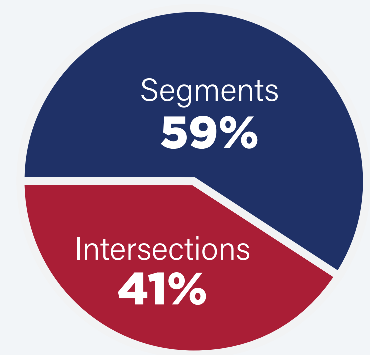
Crash Types and Locations

36%

of fatal and serious injury crashes are angle or turning crash types. Most of these crashes happen at intersections.

24%

of fatal and serious injury crashes happen when a driver leaves their lane and collides with a fixed object or other vehicle. Most of these crashes happen on roadway segments away from intersections.



Most fatal and serious injury crashes happened on roadway segments.

Number of Lanes

A disproportionate amount of crashes occur on roadways with five or more lanes.

48%

of all fatal and serious injury crashes occurred on segments with two lanes.

80%

of roads in the Treasure Valley are two-lane roads. (1,511 roadway miles)

37%

of all fatal and serious injury crashes occurred on segments with five or more lanes.

8%

of roads in the Treasure Valley roads have five or more lanes. (357 roadway miles)

Speed

Average speeds exceed the posted speed limit on 30% of HIN roadways.

23% of the HIN is on roadways with posted speeds of **55** MPH

16% of the HIN is on roadways with posted speeds of **35** MPH

Behavior

20% of fatal and serious injury crashes involved drivers between the ages of 16 and 22.

5% of vehicle occupants in fatal or serious injury crashes did not use seatbelts or car seats.

14% of drivers were under the influence of alcohol.

6% of drivers were under the influence of drugs.

Travel Mode

People **walking, biking, riding motorcycles** or **using mobility devices are more vulnerable to death or serious injury** in a traffic crash than someone in a car or truck.

A disproportionate amount of motorcycle crashes result in a fatality or serious injury.

16% of all fatal and serious injury crashes involved motorcycles.

2% of all crashes involved motorcycles.

This crash type is disproportionately represented in the Treasure Valley.

13% of fatal and serious injury crashes involve people walking or biking.

4% of commuters are walking or biking to work.

For segments
Multilane undivided principal arterials with no bike facilities have the most crashes involving people on foot or riding bikes.

At intersections
Four-leg multilane signalized intersections have the highest number of crashes involving people on foot or riding bikes.

What does the data tell us?

Looking at historical crash patterns shows us that crashes in our region aren't random or inevitable. The data shows us that fatalaties and serious injury crashes are correlated to specific roadway features and human behaviors. By prioritizing improvements that address these broad categories, we can make meaningful progress toward our goal of zero fatal and serious injury crashes.

Fatal and Serious Injury Crashes are More Likely on Regional Multilane Roadways

Roadways with more than one lane in each direction present more opportunities for conflict and have a higher frequency of fatal and serious injury crashes. Higher vehicle speeds also influence crash severity. Regional roadways like arterials or state highways are more likely to have all these characteristics.

Treating the risks associated with multilane regional roadways—including speeding and number of conflict points between roadway users—can help reduce the potential for severe crashes while still providing for vehicle capacity.

Human Behavior Increases Crash Severity

Roadway design contributes to the chance of a crash occurring and how serious its outcome will be, but certain human behaviors can also have an impact.

For instance, using controlled substances and not wearing seatbelts are frequent contributors to fatal and serious injury crashes in our region. There is a critical need for behavioral intervention programs to address these issues.

High-Risk Locations Overlap with Low-Income Neighborhoods

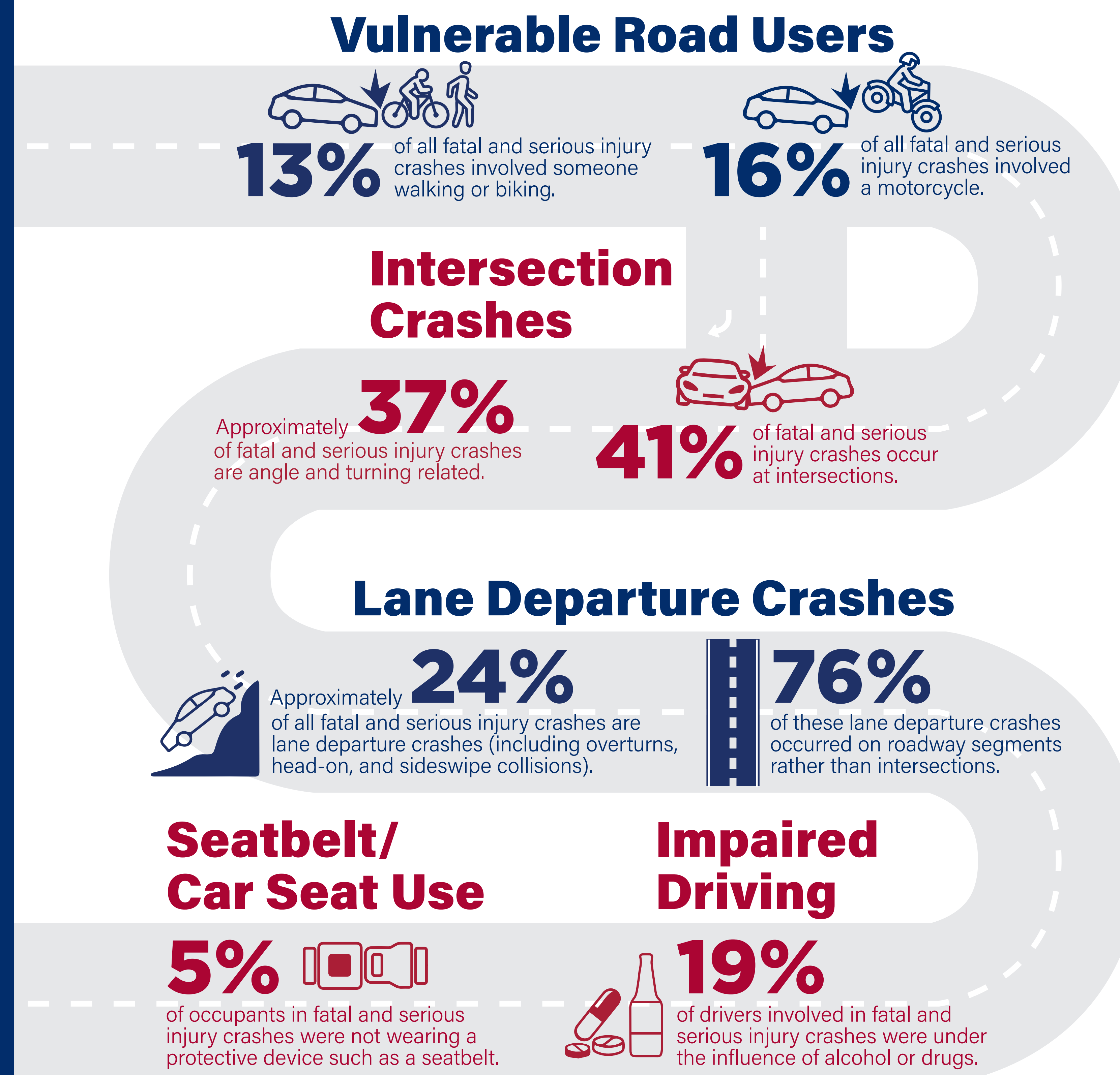
Portions of the HIN, notably in Nampa and Caldwell, overlap with areas that have lower-income households, lower high school graduation rates, and residents who are less likely to have health insurance. These are areas that score high on COMPASS' Equity Index. People living in these areas may have less access to open spaces and fewer walkable destinations.

Portions of the HIN in areas that have been historically underserved should be prioritized for safety improvements and are often more competitive when applying for grant opportunities.

Regional Emphasis Areas

The major trends and insights from HIN analysis were used to develop regional emphasis areas. These emphasis areas focus safety efforts by targeting categories of recommended intervention. The emphasis areas are identified in ***Figure 4***.

Figure 4. Emphasis Areas



Real-World Example: Overland Road

Overland Road from Eagle Road to Meridian Road is a multi-lane, high-speed arterial with many access points and a history of fatal and serious injury crashes. To identify appropriate treatments, the project team evaluated the menu of proven safety treatments following the Safe System Roadway Design Hierarchy. The resulting project sheet can be found in ***Appendix E***.

TIER 1

Remove Severe Conflicts:
Separate people on foot or riding bikes from vehicular traffic by adding protected bicycle lanes, medians, buffered sidewalks, and median barriers. Apply access management along the corridor to reduce conflict points between roadway users.

TIER 2

Manage Vehicle Speeds:
Reduce speeds through installation of vertical streetscape elements (e.g., medians), signalized crossings that require vehicles to stop, and signal progression that encourages lower speeds.

TIER 3

Manage Conflicts in Time:
Provide signalized crossings for people walking and biking, adjust traffic signal timing, convert left-turn movements at intersections from permitted to protected.

TIER 4

Increase Driver Awareness:
Provide crosswalk visibility enhancements, traffic signal backplates with reflective borders.

Photo Source: Google Maps

“It is not safe”

Photo Source: Kittelson & Associates, Inc.

“I am shocked at how fast drivers are going down Chinden. It is not safe and having a crosswalk at 32nd or 33rd will slow down traffic to make it safer for everyone. Personally I would love to be able to cross the street to visit/support the neighborhood businesses without having to get in my car but I can’t!”

–Georgia Stokes, Garden City resident

4 Who Participated in This Effort?

Many voices across the region influenced the creation of this plan. Because the RSAP will affect community members across the region, COMPASS worked closely with the Safety Working Group throughout the planning process.

The Safety Working Group

The Safety Working group comprises COMPASS member agency representatives and representatives of other organizations with an interest in transportation safety in the Treasure Valley. This group helped identify the plan's vision and goals, guided the plan's development, and will coordinate implementation and monitoring activities now that the plan is complete.

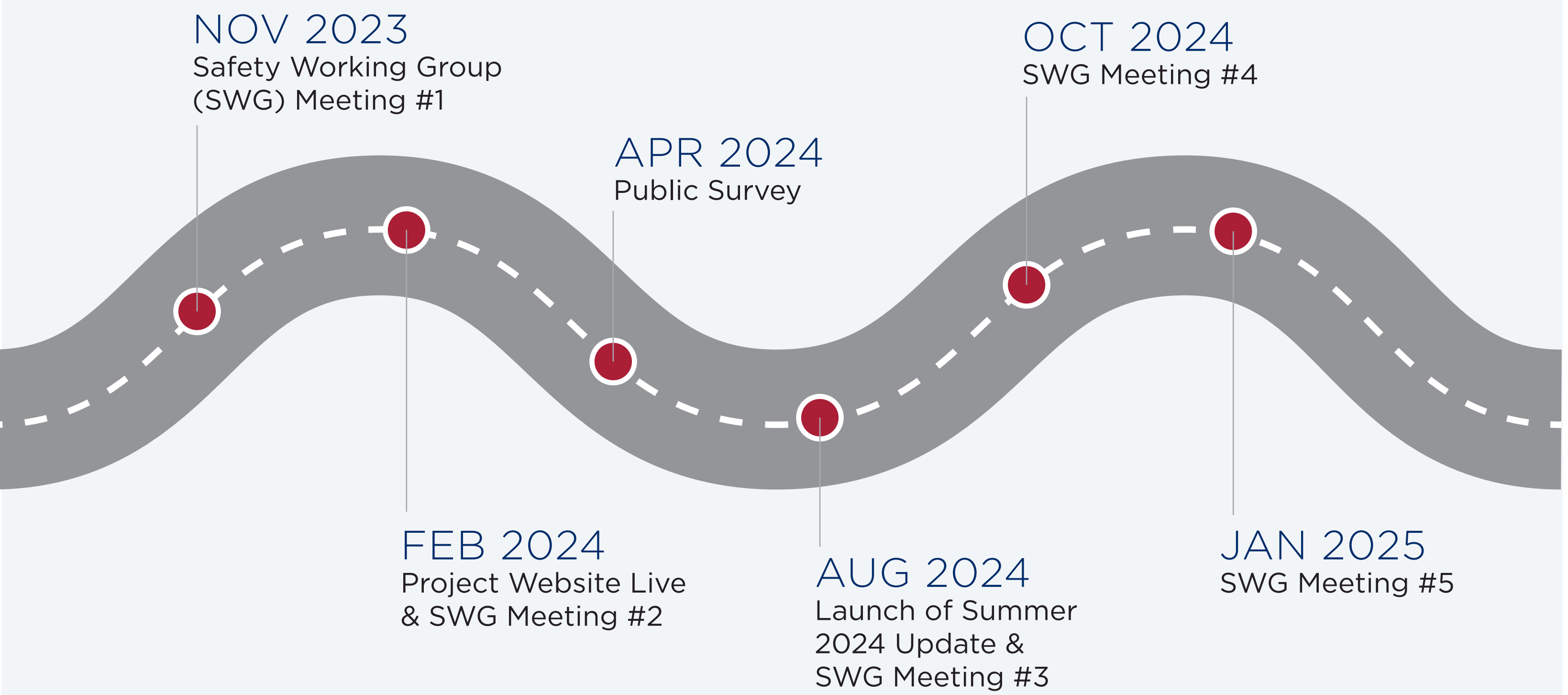
The Safety Working Group met five times during the RSAP's development, in November 2023, February 2024, April 2024, October 2024, and January 2025 to get to know the plan, review data, and provide feedback. Summaries of these meetings and lists of attendees are included in ***Appendix C***. A complete list of Safety Working Group members is included in the Acknowledgments at the beginning of this report.

Community Engagement

Treasure Valley residents played a vital role in the development of this plan. Their feedback helped the project team understand safety priorities across the region and then develop strategies and countermeasures that help address those priorities.

To reach people across the Treasure Valley, we created a project website, an online survey, social media posts, and a project newsletter that helped spread the word about this project's important efforts to improve transportation safety.

Engagement Timeline



Community Feedback Survey

To learn how people feel about the safety of our region's streets and roads, we surveyed Treasure Valley residents and visitors from March to April 2024. The survey asked people questions like how safe they feel traveling by different modes on regional streets and roads and what safety priorities mattered most to them.

423 SURVEY RESPONSES

SURVEY OPEN **March - April 2024**

*Respondents represented nearly every zip code in Treasure Valley

What We Heard

Zero is the only acceptable number of deaths or serious injuries.

84% of respondents agree that zero deaths or serious injuries is the right goal of the RSAP

66% said that zero is the annual acceptable threshold for deaths on Treasure Valley roadways

Safer roads are worth it.

71% of respondents are willing to add a moderate to significant amount of time to their commute for safer roads

Travelers are safest when traveling in motor vehicles.

When ranking how safe they feel when traveling via different modes, respondents reported feeling safest when traveling by public transit, personal vehicle, or carpool

Multimodal improvements should be a top priority.

According to respondents, the region's top three transportation priorities should be intersection safety, walking safety, and biking safety

Our community faces real safety challenges.

Respondents have concerns with:

- Red Light Running
- Speeding & Speed Limit Enforcement
- School Zone Safety
- Distracted & Aggressive Driving

What people had to say

“Making Transportation a priority and directing a variety of funds to address current and future challenges is not just smart; its virtually necessary for life in the valley. “

“I like to ride my bike but riding on a bike lane in traffic scares me. I’d ride a lot more places if I had more separated paths to ride on, like the greenbelt or on Federal Way.”

“Developers need to be paying for roadway upgrades as housing is added in the valley.”

“I disagree with the basic premise of adding this many lanes to our roadways. The immense cost encourages sprawl and moves points of congestion but does not alleviate traffic.”

“Any time and in any way that Boise and the surrounding areas can become safer and more pedestrian friendly is not only a necessity for safety but improves the overall quality of life for all residents. Idaho is known for its outdoors - allowing people to safely be outdoors seems key to future growth and satisfaction.”

“I feel unsafe waiting for the bus at several of the stops on State Street. The development of apartment complexes along State Street has rapidly increased and there is a need for residents to be able to walk and bike safely to services and bus stops on State Street.”

“Roads where I once rode my bike are too busy and dangerous to use now. Drivers are ruder than ever and seem to try to knock riders off the road. The quiet country neighborhood I once called home is gone.”

“Several times a day there is a massive amount of car traffic on 43rd where all the parking has been placed. If I were having to use the facility with children in tow, I would be very nervous on those narrow roads.”

Improving safety at a notoriously dangerous intersection:

Farmway Road/ Ustick Road

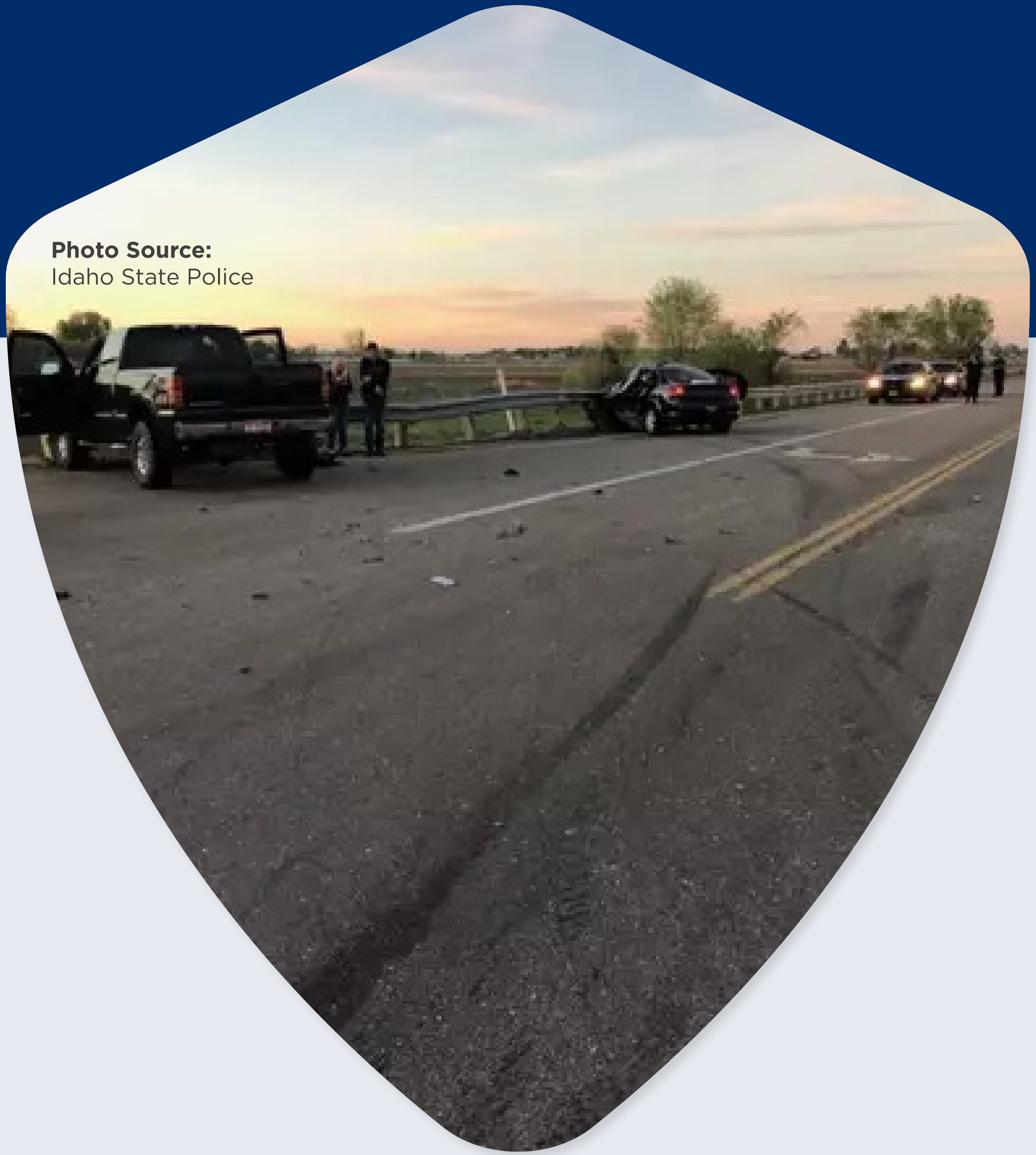


Photo Source:
Idaho State Police

Between 2018 and 2022, the Farmway Rd/ Ustick Rd intersection in Canyon County experienced seven fatal or serious injury crashes, more than any other intersection in the Treasure Valley. This is despite being in a suburban/rural area with less traffic than many other intersections in the area.

Recognizing the Farmway Rd corridor as a vital roadway for the growing community, Highway District No. 4 (HD4) and the City of Caldwell have partnered to develop a multi-lane roundabout, sized for truck traffic, to alleviate the safety issues at this intersection. Construction is planned for 2025.

A roundabout is a proven, highly-effective safety countermeasure and also has a strong track record for accommodating increasing traffic and congestion as an area grows. Both agencies have already had success implementing roundabouts at other stop-controlled intersections in their jurisdiction.

The City of Caldwell has already had success implementing roundabouts to improve safety and traffic operations. This example shows a recently completed roundabout at the Middleton Road/ Skyway Road intersection.

Photo Source:
City of Caldwell

5 Action Plan & Strategies: What's Next?

This plan identifies high priority strategies, both non-infrastructure and infrastructure, to improve safety. Non-infrastructure strategies include recommendations related to policy, education, planning, or changes to agency operations. Infrastructure strategies include implementation of countermeasures like roundabouts, sidewalks, or changes to traffic signals.

Key non-infrastructure strategies for addressing emphasis areas

The project team identified emphasis areas to address with strategies and countermeasures based on an analysis of the study area's historical crash types, locations, behavioral factors, and risk factors associated with fatal and serious injury crashes.

There are several strategies focused on education, enforcement, agency coordination, and internal agency processes that COMPASS, its member agencies, and other partners should implement. This section highlights high priority, non-infrastructure strategies – organized by the Safe System Approach objective addressed.

For each set of strategies presented, the table identifies strategy type, lead agency, near-term action, and performance metrics.

Strategy types include:

- **Agency coordination** engages member agencies to realize the strategy.
- **Education strategies** provide partners and community members with tools and knowledge to build a safer transportation network together.
- **Plans/studies** update and adjust existing transportation planning documents to align with the goals, findings, and recommendations in this RSAP.
- **Agency operations** strategies target the existing paradigms of project planning and implementation to facilitate the safety goals of COMPASS and its member agencies.

Lead Agency indicates the agency that should lead implementation of the strategy. Some strategies may be implemented by more than one agency.

Near-Term Action indicates the next step that should be taken to achieve the strategy. These actions should generally be started 1-2 years after the plan is adopted.

Performance Metric indicates how COMPASS and other agencies can measure the implementation progress of each strategy.

A toolbox with all non-infrastructure strategies, including medium and low priority strategies, is provided in Technical Memorandum #4: Strategies, included in ***Appendix D***.

Table 1. High-Priority Non-Infrastructure Strategies that Address Multiple Safe System Approach Objectives

STRATEGY	TYPE OF STRATEGY	LEAD AGENCY	NEAR-TERM ACTION	PERFORMANCE METRIC(S)
Continue Safety Working Group		COMPASS	Schedule and hold at least two meetings per year with SWG	Number of meetings per year
Provide Grant Funding Support to Member Agencies		COMPASS	Continue to provide grant funding support to member agencies and help agencies identify potential projects for funding	Demonstrated progress beyond current activities
Create Local Task Forces to Review Fatal and Serious Injury Crashes		Member Agencies	Local agencies create task forces. Task forces could meet at SWG meeting or similar forum	Topic presented/ discussed at SWG meeting or similar forum. Task forces created by local agencies.
Create a Publicly Available Tracking Dashboard		COMPASS	Create framework for Dashboard (e.g., what information will it show? How/ when will it be updated?) and present to member agencies for feedback to determine what would be most useful	Topic presented/ discussed at SWG meeting or similar forum
Create a Regional Safety Action Plan Update Checklist		COMPASS	Create checklist for items to consider and revisit in updates to RSAP	Create checklist and identify when next update is needed
Regularly Assess Implementation Successes and Challenges		COMPASS, Member Agencies	COMPASS to obtain successes/challenges information from member agencies, create summary document, and present to member agencies annually at SWG meeting or similar forum	Assessment completed. Topic presented/ discussed at SWG meeting or similar forum

Table 2. High-Priority Non-Infrastructure Strategies focused on Safer Roads

STRATEGY	TYPE OF STRATEGY	LEAD AGENCY	NEAR-TERM ACTION	PERFORMANCE METRIC(S)
Crash Analysis Support		COMPASS	Identify data and analysis needs that would be most helpful to member agencies (e.g., Updated HIN network? Annual screening of crash data?). Coordinate discussion with member agencies at SWG meeting or similar forum	Topic presented/ discussed at SWG meeting or similar forum
Incorporate Vision, Goals, Performance Measures, and Targets into the Next CIM Update		COMPASS	Incorporate Vision, Goals, Performance Measures, and Targets into the Next CIM Update	Incorporated into next CIM update
Update TIP and CIM Prioritization to Better Incorporate Safety and This Plan		COMPASS	Assess TIP and CIM prioritization criteria and scoring processes and identify ways to better incorporate this plan and the Safe System approach (e.g., Is there an opportunity to use the HIN as part of prioritization? Should projects with proven countermeasures be given higher scores?)	Assessment completed. Incorporated into next CIM update and subsequent TIP updates
Update COMPASS' Complete Network Policy to Align with RSAP Outcomes		COMPASS	Assess alignment of Complete Network Policy with this plan and the Safe System approach (e.g., Do safety principles and considerations change based on principles in this plan?)	Assessment completed. Complete Network Policy updated as needed
Improve How Safety is Incorporated into Maintenance Projects		COMPASS, ACHD, ITD, Nampa, Caldwell	Hold a regional forum/peer exchange with maintenance staff, planners, and engineers	Regional forum held

Table 2. High-Priority Non-Infrastructure Strategies focused on Safer Roads (Continued)

STRATEGY	TYPE OF STRATEGY	LEAD AGENCY	NEAR-TERM ACTION	PERFORMANCE METRIC(S)
Improve How Safety is Incorporated into Capital Project Development Processes (e.g., Safe System Assessment)		COMPASS, ACHD, ITD, Nampa, Caldwell	Develop Safe System Assessment (see below strategy)	Safe System Assessment Developed (see below strategy)
Establish Dedicated Funding for Safety Projects		All	Member agencies and COMPASS to consider opportunities to dedicate funds for safety-focused projects	Demonstrated progress beyond current activities
Clearly Define Safety as a Priority in Project Development and Prioritization		All	Member agencies review current processes and identify ways to incorporate safety as priority into project development and prioritization	Demonstrated progress beyond current activities
Coordinate Across Jurisdictions on Smaller Projects to Improve Funding Opportunities and Contractor Bidding		Greenleaf, Parma, Notus, Melba, Wilder, HD4, Middleton & COMPASS	Discuss annually at SWG meeting or similar forum	Topic presented/ discussed at SWG meeting or similar forum
Road Safety Audits		All (COMPASS to Lead Near-Term Action)	Establish annual funding and program in next CIM update. Consider also using the Project Development Program (PD) to fund	Funding policy created and incorporated into CIM update and/ or PDP
Allow Developments to Implement Safety Improvements in Lieu of Capacity Improvements		ACHD, Nampa, Caldwell, Middleton, HD4	Member agencies review current processes and identify ways in incorporate changes in development approval process	Demonstrated progress
Safe System Assessment		COMPASS	Develop Safe System Assessment. COMPASS to provide initial framework, member agencies to tailor based on needs and local context	Develop Safe System Assessment for agency review and implementation

Table 3. High-Priority Non-Infrastructure Strategies Focused on Safer People

STRATEGY	TYPE OF STRATEGY	LEAD AGENCY	NEAR-TERM ACTION	PERFORMANCE METRIC(S)
Public Health Stakeholder Engagement		COMPASS	Hold joint meeting with public health officials at SWG meeting or similar forum	Joint meeting held at SWG meeting or similar forum
High-visibility Safety Education Campaigns Targeted Toward Emphasis Areas		COMPASS, ITD, Member Agencies	Identify and implement education campaign	Campaign launched. Effectiveness evaluated annually
Best Practices in Safety Analysis, Planning, Engineering Training		COMPASS	Provide member agencies with access to at least two lectures or education series per year related to safety best practices	Number of lecture series per year
Encourage Motorcycle Riders to Complete and Pass Idaho STAR Training		COMPASS, ITD, Member Agencies	Implement targeted education campaign	Campaign launched. Effectiveness evaluated annually

Table 4. High-Priority Non-Infrastructure Strategies focused on Post-Crash Care

STRATEGY	TYPE OF STRATEGY	LEAD AGENCY	NEAR-TERM ACTION	PERFORMANCE METRIC(S)
Improve EMS Response Times		COMPASS	Hold meeting with EMS agencies and identify highest priority for improvement (e.g., CAD improvements, education campaigns)	Joint meeting held at SWG meeting or similar forum

Table 5. High-Priority Non-Infrastructure Strategies focused on Safer Speeds

STRATEGY	TYPE OF STRATEGY	LEAD AGENCY	NEAR-TERM ACTION	PERFORMANCE METRIC(S)
Develop or Improve Policy for Speed Management		ACHD, Nampa, Caldwell, Middleton	Identify policy or program components and implement pilot program, if necessary	Demonstrate progress
Evaluating Posted Speed Limits		All	Agencies evaluate agency-wide speed limits on annual basis. Identify locations where speed limits not appropriate based on recent land-use or other changes	Evaluations completed

Key Infrastructure Strategies for Addressing Emphasis Areas

A toolbox of infrastructure strategies was developed to address the plan's emphasis areas. The toolbox is intended to serve as a tool to COMPASS member agencies and provides the ability to identify strategies based on the following components:

- What **emphasis area** does the strategy address?
- What **area type** (i.e., urban or rural) and **road type** (e.g., local road vs. highway) is the strategy applicable to?
- Which **Safe System Approach** objective does the strategy address?
- Which tier of the FHWA **Safe System Roadway Design Hierarchy** does the strategy fall into? This hierarchy provides a high-level indication of the effectiveness of each strategy at reducing fatal and serious injury crashes.
- High-level **cost** to implement the strategy.
- **Priority** tiers based on effectiveness of strategy, exposure within the Treasure Valley, and resources required to implement the strategy.

The toolbox is presented in ***Appendix A*** and was developed as Technical Memorandum #4 (***Appendix D***). The following section shows how strategies in the toolbox should be applied to priority areas in the Treasure Valley.

Priority Project List

The priority projects presented in this section and shown in ***Figure 6*** provide a sample of the types of infrastructure projects COMPASS member agencies need to implement in order to reach the plan's goal of zero fatal and serious injury crashes. Meeting this goal will require continued investment by COMPASS member agencies in projects like these. Member agencies can identify and begin developing other projects using a process similar to the one used for these projects.

Each priority project implements location-specific or systemic strategies to reduce fatal and serious injury crashes. The projects were identified based on historic crash activity, presence of risk factors, previous planning efforts, and coordination with each member agency. Location-specific projects typically focus on high-capacity arterials with historical fatal and serious crashes, and implement multiple strategies, such as speed management, access management, walkways & bikeways, and signalized intersection improvements. They also include roundabouts at high-crash intersections and multimodal main streets. Systemic priority projects include jurisdiction-wide packages to fill gaps in the walking and biking network by constructing sidewalks, protected bike lanes, shared-use paths, roadway crossings, and other treatments.

Appendix E contains a summary report for each member agency and their priority project. These summary reports are meant to serve as a starting point for further development for grant funding and can be used as examples of how additional projects may be developed at other locations.

For specific details, see Technical Memorandum #5: Implementation Plan in ***Appendix D.***

Figure 6. Regional Safety Action Plan Project Locations

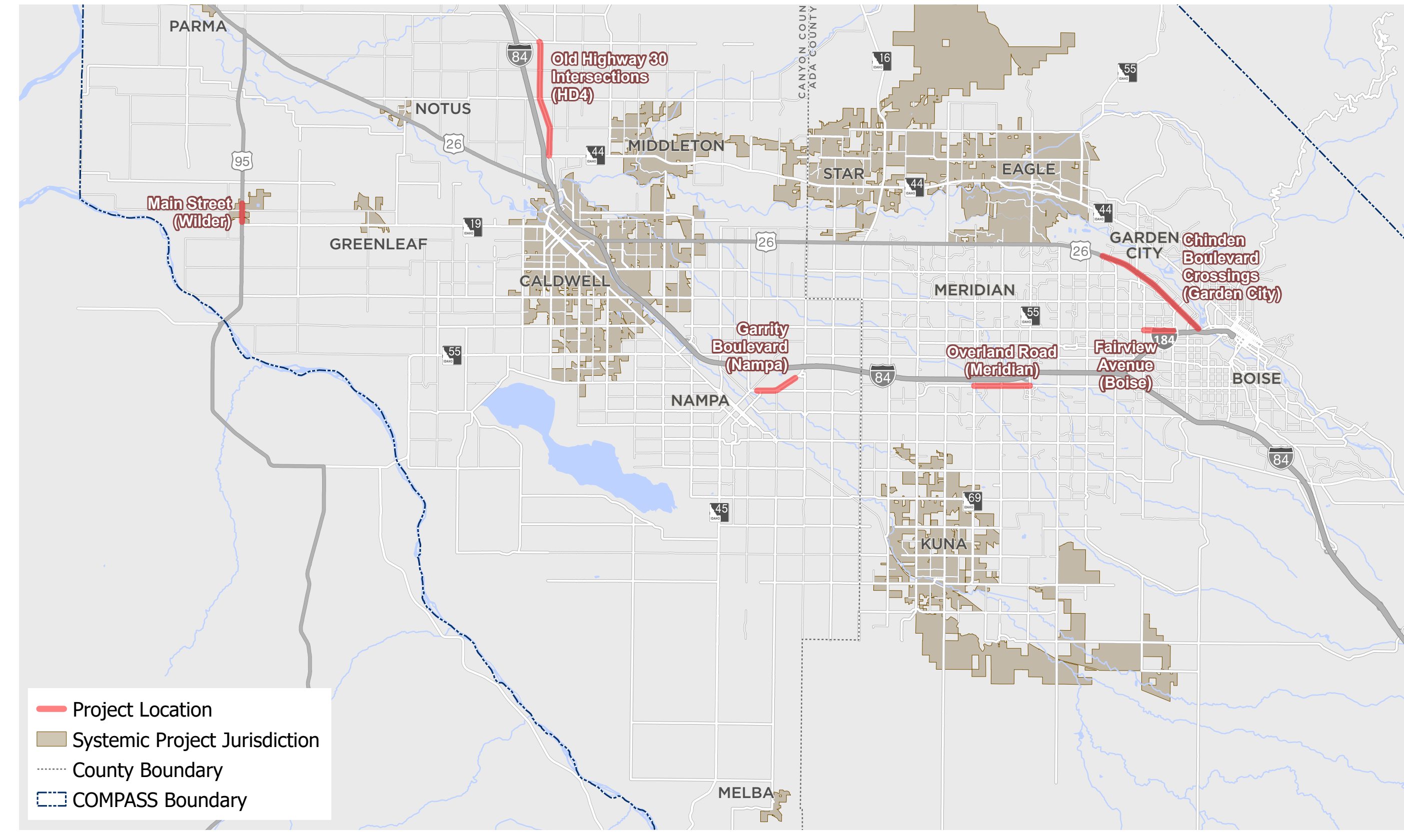


Table 6. Location-Specific Priority Projects

MEMBER AGENCY	ROADWAY AGENCY	PRIORITY PROJECT	COUNTERMEASURE(S)
City of Boise	ACHD	Fairview Ave (Curtis Rd to Cole Rd)	Access Management, Speed Management, Signalized Intersection Treatments, Enhanced Walking/Biking Facilities
Garden City	ACHD/ITD	Chinden Blvd Enhanced Crossings Package	Enhanced Walking/Biking Facilities
City of Greenleaf	ITD	SH 19 (Friends Rd to Top Rd)	Multimodal Main Street, Enhanced Walking/Biking Facilities, Speed Management
Highway District No. 4 (HD4)	HD4	Intersection Improvements on Old Hwy 30	Roundabouts, Traffic Signal, Treatments to Stop-Controlled Intersections
City of Meridian	ACHD	Overland Rd (Meridian Rd to Eagle Rd)	Access Management, Speed Management, Signalized Intersection Treatments, Enhanced Walking/Biking Facilities
City of Nampa	City of Nampa / ITD	Garrity Blvd (I-84B) (Stampede Dr to Sister Catherine Way)	Access Management, Speed Management, Signalized Intersection Treatments, Enhanced Walking/Biking Facilities
City of Wilder	ITD	US 95 (Mercer Dr to D Ave)	Multimodal Main Street, Enhanced Walking/Biking Facilities, Speed Management

Table 7. Systemic Projects

MEMBER AGENCY	ROADWAY AGENCY	PRIORITY PROJECT	COUNTERMEASURE(S)
ACHD	ACHD	Systemic Walk/Bike Focused on School Access	Walking and biking infrastructure construction, improved crossings
Caldwell	Caldwell	Systemic Walk/Bike Focused on School Access	Walking and biking infrastructure construction, improved crossings
Canyon County Rural Communities (Greenleaf, Melba, Notus, and Parma)	Varies	Systemic Walking	Sidewalk construction
Eagle	ACHD	Systemic Walk/Bike Focused on School Access	Walking and biking infrastructure construction, improved crossings
Kuna	ACHD	Systemic Walk/Bike Focused on School Access	Walking and biking infrastructure construction, improved crossings
Middleton	Middleton	Systemic Walking	Sidewalk construction and improved crossings
Star	ACHD	Systemic Walk/Bike Focused on School Access	Walking and biking infrastructure construction, improved crossings

Emerging Technologies

Technological innovation has had enormous impacts on transportation systems worldwide in recent years, affecting everything from safety, mobility and cost of goods to the environment. This trend is only expected to continue.

Change is never easy. New technologies face legal and political hurdles, market-based challenges, human skepticism, and just plain physical difficulties blending into the existing transportation system.

Behind-the-scenes technologies like synchronized signal timing are already helping the Treasure Valley's transportation system work more safely and efficiently. To proactively plan for safety on our roadways, monitoring key trends is important. The following are a few examples.

SHARED MICROMOBILITY

Electric bikes (e-bikes) and electric scooters (e-scooters) have become more popular in recent years, increasing people's ability to use them to complete trips. Locally, Boise adopted shared micromobility in 2018 and now offers e-bikes, e-scooters, and mobility scooters. Between 2019 and 2023, micro-mobility provider Lime logged over 1 million rides in Boise.[1]

Deciding where these devices should go on the roadway is a challenge, as they are often slower than vehicles but faster than pedestrians and some bicyclists. There's also not much reliable data on the crash risks associated with these devices.[2] Consider adding e-scooter and e-bike device codes to police crash data and collecting trip data and rider habits to better predict the risk of injury and death.

1 Lime. Lime Scooters: Sustainable Urban Mobility. January, 2023.

2 National Transportation Safety Board Safety Research Report SRR-22-01, November 2022

ELECTRIC VEHICLES

Electric vehicles (EVs) are a growing presence on our roads. Idaho had 8,500 registered EVs on the road in June 2023, according to data from the U.S. Department of Energy—up 143% from 2022. Electric vehicles often weigh 30% more than gas-powered vehicles due to the size of their batteries. Heavier vehicles can mean increased safety concerns and a greater need to reduce speed on the roadways to reduce the risk of fatal and serious-injury crashes.

AUTOMATED VEHICLES

The National Highway Traffic Safety Administration categorizes automated vehicles (AVs) into five levels, from partial assistance (brake warnings/action, adaptive cruise control, etc.) through full automation (automated steering, acceleration, and braking, with and without a human driver).

While fully automated AVs are not expected to have a sweeping impact on regional commuting behaviors in the near-term, they may eventually offer safe first- and last-mile connections for urban park-and-ride users. Many vehicles on Treasure Valley roads today have driver assistance technologies. There are few studies confirming a reduction in crash frequency, but some studies show these technologies reduce crash severity.

NEAR-MISS VIDEO DATA ANALYTICS

Narrowly-avoided crashes and conflicts are an important piece of the safety picture that, until recently, could not be affordably tracked. Artificial intelligence can now be used to analyze video data to track these incidents, using metrics to describe how many seconds away a crash was from happening, road speed, signal phasing, and direction of travel. This type of analysis allows public agencies to respond proactively to safety issues on their roadways before a fatal or serious-injury crash can happen or to measure the impact of new countermeasures without waiting for years of after data.

Photo Source: City of Boise

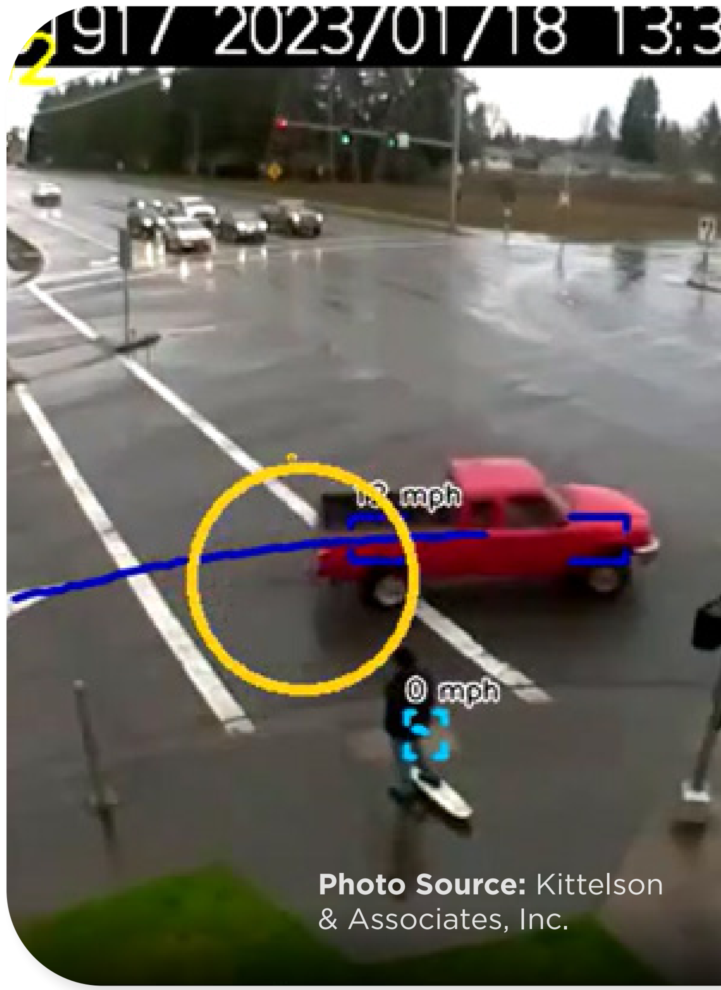


Photo Source: Kittelson & Associates, Inc.

Funding

Public agencies have limited resources that need to stretch across numerous competing transportation priorities—maintenance, congestion reduction, managing growth, and more. Finding the funds to begin safety initiatives or implement safety projects will be challenging, but COMPASS and its member and partner agencies need to prioritize safety to reach this plan's vision and goals. This may require both reallocating existing funds and finding new funding sources.

Relevant federal, state, and local funding sources are listed below. Member agencies should also use COMPASS as a resource for help identifying potential funding sources for safety projects.

FEDERAL FUNDING

Safe Streets and Roads for All (SS4A): Funds initiatives through grants to prevent roadway deaths and serious injuries. Provides two types of grants (described below). Requires a local match of 20%.

- Planning and Demonstration Grants: May be used to develop, complete, or supplement a Safety Action Plan (such as this plan). May also be used for supplementary planning activities (such as road safety audits, safety planning for a corridor or subarea, or community engagement) and demonstration activities, such as quick-build projects.
- Implementation Grants: May be used to implement projects and strategies identified in a Safety Action Plan. Includes infrastructural, behavioral, and operational activities. May also include supplemental planning and demonstration activities.

Other Federal Programs:

- Rebuilding American Infrastructure with Sustainability and Equity (RAISE)
- Active Transportation Infrastructure Investment Program (ATIIP)
- Reconnecting Communities Pilot (RCP)


Photo Source: ACHD

- Local Highway Safety Improvement Program (LHSIP)
- Surface Transportation Block Grant (STBG)
  - Transportation Alternatives Program (smaller-scale project set-aside from the STBG program)
- Carbon Reduction Plan
- Grants for Buses and Bus Facilities Formula Program (FTA 5339)
- Additional Discretionary Grant Programs

STATE FUNDING

- Child Pedestrian Safety Program
- Local Strategic Initiatives Program

REGIONAL FUNDING

- COMPASS Project Development Program
- COMPASS Communities in Motion Implementation Grant Program

In addition to the funding sources listed above, COMPASS and its member agencies are encouraged to set aside dedicated funds to improve safety in their jurisdictions. Additional information about funding sources available to member agencies can be found on COMPASS' funding source fact sheet: https://compassidaho.org/wp-content/uploads/funding_source_fact-sheet_Final.pdf.

Details on the funding programs listed above can be found in Technical Memorandum #5: Implementation Plan, included in ***Appendix D*** to this report.

Quick-Build Projects: Test Driving Your Options

A quick-build project is a temporary installation used to test changes to a roadway's design or operation that improve safety and accessibility.

Quick-build projects generally have the following characteristics:

- Low-cost materials.
- Materials can be installed quickly.
- Materials can be easily changed, adapted, or replaced with more durable materials as needed.

WHY IS QUICK-BUILD USEFUL?

Agencies can use quick-build projects and processes to implement safety projects with limited budgets and on a compressed timeframe, compared to traditional capital projects. This method can be used to try out experimental countermeasures or pilot programs before investing in permanent installation.

WHAT CAN COMPASS AND OTHER AGENCIES DO TO IMPROVE QUICK-BUILD PRACTICES?

Develop or improve internal agency processes that enable effective and efficient quick-build implementation. This may include dedicating agency staff to coordinating quick-build projects, developing a formal process, inventorying available resources, and identifying key partners for implementation (like maintenance staff, emergency service providers, and members of the public).

Involve agency staff, community members, and other partners in conversations in all stages of the process. This can build buy-in before installation, set expectations for roadway users and members of the public, and allow agencies to learn lessons from project implementation.

Maintenance should be a focus in the planning, design, and implementation stages. This includes monitoring of annual maintenance costs post-implementation.

Performance Measures

This section describes performance measures and program outcomes that can be used to help evaluate and understand the changes that implementing this plan has on roadway safety in the Treasure Valley. The performance measures are generally used to evaluate progress made in implementing the strategies recommended in this plan. The program outcomes measure the success of the plan in achieving its goals (e.g., reducing fatalities and serious injuries).

Initial performance measure metrics were presented in Technical Memorandum #1: Vision, Goals, Performance Measures, and Targets, available in ***Appendix D***, and are refined in this section to reflect the results of the crash analysis, identification of emphasis areas, and other components of this plan that have been developed since Technical Memorandum #1 was drafted. ***Figure 7*** identifies performance measures that should be used to measure the level of implementation of the strategies in this plan.

Figure 7. Performance Measures

Performance Measures for Infrastructure Project Implementation

- **Number** of capital projects programmed/ completed in the TIP that are expected to reduce crashes on HIN locations
- **Total** estimated reduction in crashes of all projects in TIP
- **Number** of TIP project applications that score over a certain threshold for safety criteria. *Threshold to be determined by COMPASS after RSAP adoption.*

Performance Measures for Non-Infrastructure Project Implementation

- **Number** of non-infrastructure performance metrics met/completed *(metrics are shown in **Tables 1 through 5**)*
- **Number** of member agencies adopting recommended practices
- **Frequency** and level-of-use of resources provided by COMPASS
- **Frequency** and quality of engagement with regional oversight group (e.g., SWG)

More information on what kind of data can be used to assess performance measures can be found in Technical Memorandum #5 in ***Appendix D.***

PROGRAM OUTCOME MEASURES

Program outcome measures provide quantitative metrics to evaluate the success of the program in eliminating fatalities and serious injuries. The change in crashes should be measured over 5-year rolling averages and broken out by different categories such as emphasis areas, land-use context, or roadway ownership. Breaking out crashes by different agencies can help indicate which strategies are most effective and which areas might require a greater focus in the future.

Table 8 provides an example template for measuring program outcomes in future years. ***Table 9*** provides an example template for measuring the federally required safety performance measures in future years. The total amount of fatal and serious injury crashes should be summarized on an annual basis to see if the number of crashes is trending towards the goal identified in this plan. Alternatively, program outcomes can be measured by the number of crash fatalities and serious injuries per total population instead of crash frequency.

Accountability

To encourage member agencies to continue implementation of the strategies presented in this plan, it is recommended that COMPASS take the following actions:

- **Biennial Safety Reporting:** Present performance measures and program outcomes to the COMPASS Board of Directors every other year. This can inform Policy Board members on progress towards reaching the plan's goals, provide an opportunity to share regional safety practices, and hold member agencies accountable in implementing high-priority strategies.
- **Public Facing Dashboard:** Create and maintain an online, public facing dashboard that displays COMPASS and member agencies' progress on performance measures and program outcomes. Alternatively, provide regularly-updated documents with this information on COMPASS' website.

Table 8. Example Program Outcome Summary Table

CATEGORY		TOTAL FATAL AND SERIOUS INJURY CRASHES			
		2018 – 2022 (BASELINE)		5 YEAR ROLLING AVERAGE	GOAL FOR YEAR 2035 (19% REDUCTION)
		#	%[1]		
Total		1904	N.A.	To be evaluated in the future and compare to year 2035 goal	1542
Emphasis Area	Lane Departures	447	23%		362
	Intersection Crashes	748	39%		606
	Vulnerable Road Users	542	28%		439
	Seatbelt Use	88	5%		71
	Impaired Driving	340	18%		275
Land-Use Context	Urban (Incorporated)	1352	71%		1095
	Rural (Non-Incorporated)	552	29%		447
Roadway Ownership	State	775	41%		628
	Non-State	1129	59%		914

1 Values in this column represent percentage of total fatal and serious injury crashes within study area.

Table 9. Example Program Outcome Summary Table with Federal Performance Measures

CATEGORY	2019-2023 (5-YR AVERAGE, BASELINE)	FUTURE 5-YR ROLLING AVERAGE	GOAL FOR YEAR 2035 (19% REDUCTION)
Total Number of Fatalities (5-Year Average)	48.6	To be evaluated in the future and compare to year 2035 goal	39.4
Total Number of Serious Injuries (5-Year Average)	406.8		330.0
Rate of Fatalities (5-Year Average)[2]	0.94		0.76
Rate of Serious Injuries (5-Year Average)[2]	7.87		6.4
Total Non-Motorized Fatalities and Serious Injuries (5-Year Average)	51.4		41.6

2 The rate is calculated by total fatalities or serious injuries per 100,000,000 vehicle miles traveled in Ada and Canyon Counties.

6 Appendices

Appendix A: Strategies Toolbox

Appendix B: High Fatal and Serious Injury Crash Locations

Appendix C: Safety Working Group Meeting Notes

Appendix D: Technical Memos

Appendix E: Member Agency Executive Summaries & Priority Projects

Appendix A

Strategies Toolbox

Systemic Strategies Toolbox

					Emphasis Area					Area Type												
#	STRATEGY	CATEGORY	COST ($, $$, $$$)	PRIORITY	Vulnerable Road Users	Intersection Crashes	Lane Departure Crashes	Seatbelt Use	Impaired Driving	Urban Local	Urban Collector	Urban Two-Lane Arterial	Urban Multi-Lane Arterial	Rural Local	Rural Collector	Rural Highway / Arterial	Interstate	SSA Objective	Safe System Roadway Design Hierarchy Tier	More Information	Crash Modification Factor (if applicable)[1]	Estimated Reduction in Crashes[2]	Quick Build Option Available?
1	Bicycle Lanes (including Protected and Raised)	Bike	$$	High	X						X	X	X		X	X		Safer Roads	Tier 1	https://highways.dot.gov/safety/proven-safety-countermeasures/bicycle-lanes	0.43 - 0.73	30% - 50%	Yes. Paint and vertical delineation (flex posts, concrete, rubber).
2	Bicycle Intersection Treatments (e.g., Bicycle boxes, Green Pavement Markings)	Bike	$	High	X	X					X	X	X		X	X		Safer Roads	Tier 4	https://highways.dot.gov/sites/fhwa.dot.gov/files/2024-01/Safe_System_Roadway_Design_Hierarchy.pdf	NA	39%	Yes. Impovements are largely striping or flex post.
3	Protected Intersection	Bike	$$	High	X	X					X	X	X					Safer Roads	Tier 1	https://highways.dot.gov/sites/fhwa.dot.gov/files/2024-01/Safe_System_Roadway_Design_Hierarchy.pdf	NA	26% - 56%	No. Most cases will require reconfiguration and drainage configuration.
4	Crosswalk Visibility Enhancements	Crossing	$	High	X	X				X	X	X	X	X	X	X		Safer Roads	Tier 4	https://highways.dot.gov/safety/proven-safety-countermeasures/crosswalk-visibility-enhancements	x	x	Yes. Signage and stirping.
5	Medians and Pedestrian Refuge Islands	Crossing	$$	High	X		X				X	X	X		X	X		Safer Roads	Tier 1, Tier 2	https://highways.dot.gov/safety/proven-safety-countermeasures/medians-and-pedestrian-refuge-islands-urban-and-suburban-areas	0.54	46% - 56%	Partial. Most cases will require reconfiguration. Interim treatment may be provided via vertical delineation and striping.
6	Pedestrian Hybrid Beacons	Crossing	$$	High	X						X	X	X		X	X		Safer Roads	Tier 3	https://highways.dot.gov/safety/proven-safety-countermeasures/pedestrian-hybrid-beacons	0.55 - 0.88	15%-55%	No.
7	Rectangular Rapid Flashing Beacons	Crossing	$$	High	X					X	X	X		X	X	X		Safer Roads	Tier 3	https://highways.dot.gov/safety/proven-safety-countermeasures/rectangular-rapid-flashing-beacons-rrfb	0.3	47%	No. Though may be implemented at lower cost than PHB.
8	Raised Crosswalks	Crossing	$$	High	X					X	X			X	X			Safer Speeds	Tier 2	https://highways.dot.gov/sites/fhwa.dot.gov/files/2024-01/Safe_System_Roadway_Design_Hierarchy.pdf	x	45%	Yes. Low cost quick installation options are available via rubber mat installations.
9	Emergency Vehicle Preemption	EMS	$	High							X	X	X			X		Post-Crash Care	Tier 3	https://highways.dot.gov/sites/fhwa.dot.gov/files/2024-01/Safe_System_Roadway_Design_Hierarchy.pdf	x	x	Yes. Retrofit of existing infrastructre.
10	Speed Safety Cameras (Requires Legislation, See Related Strategy)	Enforcement	$$	Low	X	X	X				X	X	X					Safer Speeds	Tier 2	https://highways.dot.gov/safety/proven-safety-countermeasures/speed-safety-cameras	0.63	37% - 54%	No.
11	Red Light Running Cameras (Requires Legislation, See Related Strategy)	Enforcement	$	Medium	X	X					X	X	X					Safer Roads	Tier 1	https://www.fhwa.dot.gov/resourcecenter/teams/safety/saf_4RLC.pdf	0.52 - 0.87	12% - 48%	No.
12	Backplates with Retroreflective Borders	Intersection	$	High		X					X	X	X		X	X		Safer Roads	Tier 4	https://highways.dot.gov/safety/proven-safety-countermeasures/backplates-retroreflective-borders	0.85	15%	Yes. Retrofit of existing infrastructre.
13	Dedicated Left-Turn Lanes at Intersections	Intersection	$$	High		X						X	X		X	X		Safer Roads	Tier 1	https://highways.dot.gov/safety/proven-safety-countermeasures/dedicated-left-and-right-turn-lanes-intersections	0.52 - 0.72	28% - 48%	No. May require reconfiguration of road and signal.
14	Dedicated Right-Turn Lanes at Intersections	Intersection	$$	Medium		X						X	X		X	X		Safer Roads	Tier 1	https://highways.dot.gov/safety/proven-safety-countermeasures/dedicated-left-and-right-turn-lanes-intersections	0.73 - 0.86	14% - 26%	No. May require reconfiguration of road and signal.

Systemic Strategies Toolbox (Continued)

#	STRATEGY	CATEGORY	COST ($, $$, $$$)	PRIORITY	Emphasis Area: Vulnerable Road Users	Emphasis Area: Intersection Crashes	Emphasis Area: Lane Departure Crashes	Emphasis Area: Seatbelt Use	Emphasis Area: Impaired Driving	Area Type: Urban Local	Area Type: Urban Collector	Area Type: Urban Two-Lane Arterial	Area Type: Urban Multi-Lane Arterial	Area Type: Rural Local	Area Type: Rural Collector	Area Type: Rural Highway / Arterial	Area Type: Interstate	SSA Objective	Safe System Roadway Design Hierarchy Tier	More Information	Crash Modification Factor (if applicable)[1]	Estimated Reduction in Crashes[2]	Quick Build Option Available?
15	Reduced Left-Turn Conflict Intersections	Intersection	$$$	High		X						X	X			X		Safer Roads	Tier 1	https://highways.dot.gov/safety/proven-safety-countermeasures/reduced-left-turn-conflict-intersections	0.7	22% - 63%	No. Will require significant construction.
16	Roundabouts	Intersection	$$$	High		X					X	X	X		X	X		Safer Roads, Safer Speeds	Tier 1, Tier 2	https://highways.dot.gov/safety/proven-safety-countermeasures/roundabouts	0.18 - 0.22	78% - 82%	No. Will require significant construction for most locations. Mini-Roundabouts (e.g., traffic circles) are lower cost solutions for low-volume roads.
17	Intersection Conflict Warning System	Intersection	$$	Low		X									X	X		Safer Roads	Tier 4	https://highways.dot.gov/sites/fhwa.dot.gov/files/2024-01/Safe_System_Roadway_Design_Hierarchy.pdf	0.70 - 0.74	25% - 30%	No.
18	All-way Stop Control	Intersection	$	High	X	X				X	X			X	X			Safer Roads, Safer Speeds	Tier 3	https://www.cmfclearinghouse.org/detail.php?facid=314	0.30	70%	Yes. Primarily signing and striping..
19	Systemic Application of Multiple Low-Cost Countermeasures at Stop-Controlled Intersections	Intersection	$	High	X	X				X	X			X	X			Safer Roads	Tier 4	https://highways.dot.gov/safety/proven-safety-countermeasures/systemic-application-multiple-low-cost-countermeasures-stop	0.73 - 0.89	10% - 27%	Yes. Components can be added incrementally and requires minimal construction.
20	Lighting	Intersection/ Roadway	$$	Medium	X	X	X			X	X	X	X	X	X	X	X	Safer Roads	Tier 4	https://highways.dot.gov/safety/proven-safety-countermeasures/lighting	0.67	28% - 42%	No.
21	Walkways (i.e., Pathways, Sidewalks)	Pedestrian	$$	High	X					X	X	X	X	X	X	X		Safer Roads	Tier 1	https://highways.dot.gov/safety/proven-safety-countermeasures/walkways	0.6	65% - 89%	Yes. Design and construction work are common practice. Vertical delineation and striping may be provided as interim treatment.
22	Pedestrian Scramble	Pedestrian	$	Low	X						X	X						Safer Roads	Tier 3	https://highways.dot.gov/sites/fhwa.dot.gov/files/2024-01/Safe_System_Roadway_Design_Hierarchy.pdf	x	x	Yes if existing signal controller has capabilities. Minor signal timing and paint alterations.
23	Road Reconfiguration	Roadway	$$	Medium	X								X			X		Safer Roads, Safer Speeds	Tier 1, Tier 2	https://highways.dot.gov/safety/proven-safety-countermeasures/road-diets-roadway-reconfiguration	0.53 - 0.81	19% - 47%	No. Requires significant design and construction elements.
24	Speed Management	Roadway	$$	High	X	X	X			X	X	X	X	X	X	X		Safer Speeds	Tier 2	https://highways.dot.gov/safety/proven-safety-countermeasures/appropriate-speed-limits-all-road-users	x	26% (Citywide Speed Management Strategies)	Yes. Especially on collector and local roads, where horizontal or vertical deflection elements can be implemented.
25	Enhanced Delineation for Horizontal Curves (i.e., Signage, Striping)	Roadway	$	High			X								X	X	X	Safer Roads	Tier 4	https://highways.dot.gov/safety/proven-safety-countermeasures/enhanced-delineation-horizontal-curves	0.61 - 0.85	15% - 60%	Yes. Signage and stirping components can be implmented incrementally.
26	Longitudinal Rumble Strips and Stripes on Two-Lane Roads	Roadway	$	Low			X									X		Safer Roads	Tier 4	https://highways.dot.gov/safety/proven-safety-countermeasures/longitudinal-rumble-strips-and-stripes-two-lane-roads	0.36 - 0.56	13% - 64%	Yes. Minor alterations of roadway.
27	Tranverse Rumble Strips	Roadway	$	Low		X									X	X	X	Safer Speeds	Tier 4	https://highways.dot.gov/sites/fhwa.dot.gov/files/2024-01/Safe_System_Roadway_Design_Hierarchy.pdf	x	x	Yes. Minor alterations of roadway.
28	Median Barriers	Roadway	$$	Medium			X					X	X			X	X	Safer Roads	Tier 1	https://highways.dot.gov/safety/proven-safety-countermeasures/median-barriers	x	8%	Yes. Quick installation devices available.
29	Roadside Design Improvements at Curves	Roadway	$$	Low			X							X	X	X	X	Safer Roads	Tier 1	https://highways.dot.gov/safety/proven-safety-countermeasures/roadside-design-improvements-curves	0.56 - 0.92	8% - 44%	No. Requires significant design and construction elements.
30	SafetyEdge	Roadway	$$	Medium			X								X	X	X	Safer Roads	Tier 1	https://highways.dot.gov/safety/proven-safety-countermeasures/safetyedgesm	0.79 - 0.89	11% - 21%	No. Typically completed during initial construction.
31	Wider Edge Lines, Enhanced Pavement Markings	Roadway	$	High			X							X	X	X	X	Safer Roads	Tier 4	https://highways.dot.gov/safety/proven-safety-countermeasures/wider-edge-lines	0.64	22% - 37%	Yes. Minor paint alterations.

Systemic Strategies Toolbox (Continued)

#	STRATEGY	CATEGORY	COST ($, $$, $$$)	PRIORITY	Emphasis Area: Vulnerable Road Users	Emphasis Area: Intersection Crashes	Emphasis Area: Lane Departure Crashes	Emphasis Area: Seatbelt Use	Emphasis Area: Impaired Driving	Area Type: Urban Local	Area Type: Urban Collector	Area Type: Urban Two-Lane Arterial	Area Type: Urban Multi-Lane Arterial	Area Type: Rural Local	Area Type: Rural Collector	Area Type: Rural Highway / Arterial	Area Type: Interstate	SSA Objective	Safe System Roadway Design Hierarchy Tier	More Information	Crash Modification Factor (if applicable)[1]	Estimated Reduction in Crashes[2]	Quick Build Option Available?
32	Corridor Access Management	Roadway	$$$	High	X	X					X	X	X		X	X		Safer Roads	Tier 1	https://highways.dot.gov/safety/proven-safety-countermeasures/corridor-access-management	0.53 - 0.81 (CMF to replace TWLTL with raised median)	19% - 47%	Partial. Vertical delineation elements can restrict left-in/left-out movements.However, may require significant outreach and coordination with property owners and agencies.
33	Pavement Friction Management	Roadway	$$	Low			X								X	X	X	Safer Roads	Tier 1, Tier 2	https://highways.dot.gov/safety/proven-safety-countermeasures/pavement-friction-management	0.37 - 0.80	20% - 63%	Yes if completed and coordinated with typical resurfacing.
34	Centerline Buffer Areas	Roadway	$$	Medium			X								X	X	X	Safer Roads	Tier 1	https://highways.dot.gov/sites/fhwa.dot.gov/files/2024-01/Safe_System_Roadway_Design_Hierarchy.pdf	x	35% - 90%	Partial. May be implemented via striping changes if cross-sectional space available on roadway fore-striping.
35	Gateways (e.g., Advanced Warning Signage/Structure)	Roadway	$$	Medium	X	X						X	X			X		Safer Speeds	Tier 2	https://highways.dot.gov/sites/fhwa.dot.gov/files/2024-01/Safe_System_Roadway_Design_Hierarchy.pdf	x	32%	Yes. Minimal design, and installation time.
36	Variable Speed Limits	Roadway	$	Low			X										X	Safer Speeds	Tier 2	https://highways.dot.gov/safety/proven-safety-countermeasures/variable-speed-limits	x	34% - 65%	No.
37	Dynamic Speed Feedback Signs	Roadway	$$	High			X			X	X	X	X		X	X		Safer Speeds	Tier 2	https://highways.dot.gov/sites/fhwa.dot.gov/files/2024-01/Safe_System_Roadway_Design_Hierarchy.pdf	0.93 - 0.95	5% - 7%	Yes. Trailer/tempory options available.
38	Yellow Change Intervals	Signal Timing/Operations	$	Medium		X					X	X	X	X	X	X		Safer Roads	Tier 3	https://highways.dot.gov/safety/proven-safety-countermeasures/yellow-change-intervals	x	x	Yes. Signal timing adjustment.
39	Leading Pedestrian Interval	Signal Timing/Operations	$	High	X	X					X	X	X					Safer Roads	Tier 3	https://highways.dot.gov/safety/proven-safety-countermeasures/leading-pedestrian-interval	0.87	13%	Yes. Signal timing adjustment. May trigger additional ADA improvements.
40	Left-Turn Phasing (Convert to Protected Phasing)	Signal Timing/Operations	$	High	X	X					X	X	X		X	X		Safer Roads	Tier 3	https://highways.dot.gov/sites/fhwa.dot.gov/files/2024-01/Safe_System_Roadway_Design_Hierarchy.pdf	0.01 - 0.13	87%	Yes. Signal timing adjustment. Requires dedicated left-turn lane and left-turn signal-head.
41	Prohibit Right-Turn on Red	Signal Timing/Operations	$	Medium	X	X					X	X	X					Safer Roads	Tier 3	https://safety.fhwa.dot.gov/older_users/fhwasa15088/ch2.cfm#ss9	x	9%	Yes.
42	Coordinated Signal Timing (Lower Speeds)	Signal Timing/Operations	$$	Medium		X					X	X	X					Safer Speeds	Tier 2	https://highways.dot.gov/sites/fhwa.dot.gov/files/2024-01/Safe_System_Roadway_Design_Hierarchy.pdf	x	7%	Yes. Signal timing adjustment.
43	Rest on Red	Signal Timing/Operations	$	Medium		X					X	X	X		X	X		Safer Roads, Safer Speeds	Tier 3	https://trid.trb.org/View/61088#:~:text=The%20rest%2Din%2Dred%20traffic,and%20departing%20a%20traffic%20signal.	x	x	Yes. Signal timing adjustment.
44	Flashing Yellow Arrow with Time-of-Day and Pedestrian Call Restrictions	Signal Timing/Operations	$	High	X	X					X	X	X			X		Safer Roads	Tier 3	https://www.kivitv.com/news/new-upgrades-for-flashing-yellow-arrows-make-left-turns-safer-for-pedestrians-and-drivers	0.86 - 0.90	10% - 14%	Yes. Signal timing adjustment.
45	Dedicated Bike Signals	Signal Timing/Operations	$	Medium	X	X					X	X	X					Safer Roads	Tier 3	https://nacto.org/publication/urban-bikeway-design-guide/bicycle-signals/bicycle-signal-heads/	x	x	Partial. Signal equipment/timing change. May require changes to intersection geometry.
46	Raised Intersections	Intersection	$$	Medium	X	X					X	X	X					Safer Roads, Safer Speeds	Tier 2	https://safety.fhwa.dot.gov/saferjourney1/library/countermeasures/29-30.htm	x	x	No.

Notes
1: Crash Modification Factors obtained from www.cmfclearinghouse.org. Only reported if rated 4-star quality or above. The applicability of the CMF should be reviewed before they are used to calcute expected change in crashes (i.e., may only be applicbale to certain site conditions or crash types).
2: Represents either the crash reduction factor (inverse of the CMF) or potential reduction in crashes based on case studies or similar evaluation (primarily sourced from FHWA's proven safety countermeasures).

Non-Infrastructure Strategies Toolbox

#	STRATEGY	CATEGORY	PRIORITY	Emphasis Area: Vulnerable Road Users	Emphasis Area: Intersection Crashes	Emphasis Area: Lane Departure Crashes	Emphasis Area: Seatbelt Use	Emphasis Area: Impaired Driving	Agency Responsible	SSA Objective	More Information	Near-Term Action [1]	Performance Metric [1]
1	Continue Safety Working Group	Agency Coordination	High	X	X	X	X	X	COMPASS	Cross Cutting		Schedule and hold at least two meetings per year with SWG	Number of meetings per year
2	Provide Grant Funding Support to Member Agencies	Agency Coordination	High	X	X	X	X	X	COMPASS	Cross Cutting		Continue to provide grant funding support to member agencies and help agencies identify potential projects for funding	Demonstrated progress beyond current activities
3	Crash Analysis Support	Agency Coordination	High	X	X	X	X	X	COMPASS	Safer Roads		Identify data and analysis needs that would be most helpful to member agencies (e.g., Updated HIN network? Annual screening of crash data?). Coordinate discussion with member agencies at SWG meeting or similar forum.	Topic presented/discussed at SWG meeting or similar forum
4	Incorporate Vision, Goals, Performance Measures, and Targets into the Next CIM Update	Agency Coordination	High	X	X	X	X	X	COMPASS	Safer Roads		Incorporate Vision, Goals, Performance Measures, and Targets into the Next CIM Update.	Incorporated into next CIM update
5	Update TIP and CIM Prioritization to Better Incorporate Safety and This Plan	Agency Coordination	High	X	X	X	X	X	COMPASS	Safer Roads		Assess TIP and CIM prioritization criteria and scoring processes and identify ways to better incorporate this plan and the Safe System approach (e.g., Is there an opportunity to use the HIN as part of prioritization? Should projects with proven countermeasures be given higher scores?)	Assessment completed. Incorporated into next CIM update and subsequent TIP updates
6	Update COMPASS' Complete Network Policy to Align with RSAP Outcomes	Agency Coordination	High	X	X	X	X	X	COMPASS	Safer Roads		Assess alignment of Complete Network Policy with this plan and the Safe System approach (e.g., Do safety principles and considerations change based on principles in this plan?)	Assessment completed. Complete Network Policy updated as needed.
7	Improve How Safety is Incorporated into Maintenance Projects	Agency Coordination	High	X	X	X			COMPASS; ACHD; ITD; Nampa; Caldwell	Safer Roads	https://safety.fhwa.dot.gov/local_rural/training/fhwasa14091/	Hold a regional forum/peer exchange with maintenance staff, planners, and engineers.	Regional forum held.
8	Improve How Safety is Incorporated into Capital Project Development Processes (e.g., Safe System Assessment)	Agency Coordination	High	X	X	X			COMPASS; ACHD; ITD; Nampa; Caldwell	Safer Roads	https://austroads.com.au/latest-news/safe-system-assessment-framework	Develop Safe System Assessment (see below strategy)	Safe System Assessment Developed (see below strategy)
9	Create Local Task Forces to Review Fatal and Serious Injury Crashes	Agency Coordination	High	X	X	X			Member Agencies	Cross Cutting		Local agencies create task forces. Task forces could meet at SWG meeting or similar forum	Topic presented/discussed at SWG meeting or similar forum. Task force created by local agencies.
10	Establish Dedicated Funding for Safety Projects	Agency Coordination	High	X	X	X			All	Safer Roads		Member agencies and COMPASS to consider opportunities to dedicate funds for safety-focused projects.	Demonstrated progress beyond current activities
11	Clearly Define Safety as a Priority in Project Development and Prioritization	Agency Coordination	High	X	X	X	X	X	All	Safer Roads		Member agencies review current processes and identify ways to incorporate safety as priority into project development and prioritization	Demonstrated progress beyond current activities
12	Coordinate Across Jurisdictions on Smaller Projects to Improve Funding Opportunities and Contractor Bidding	Agency Coordination	High	X	X	X			Greenleaf; Parma; Notus; Melba; Wilder; HD4; Middleton; COMPASS	Safer Roads		Discuss annually at SWG meeting or other forum.	Topic presented/discussed at SWG meeting or similar forum

Non-Infrastructure Strategies Toolbox (Continued)

#	STRATEGY	CATEGORY	PRIORITY	Emphasis Area					Agency Responsible	SSA Objective	More Information	Near-Term Action [1]	Performance Metric [1]
				Vulnerable Road Users	Intersection Crashes	Lane Departure Crashes	Seatbelt Use	Impaired Driving					
13	Implement the Safe System Approach	Agency Coordination	High	X	X	X	X	X	COMPASS; Member Agencies	Cross Cutting		Implement strategies presented in this plan	Demonstrated progress
14	Public Health Stakeholder Engagement	Agency Coordination	High	X	X	X	X	X	COMPASS	Safer People		Hold joint meeting with public health officials at SWG meeting or other forum.	Joint meeting held at SWG meeting or similar forum
15	Create a Publicly Available Tracking Dashboard	Agency Coordination	High	X	X	X	X	X	COMPASS	Cross Cutting		Create framework for Dashboard (e.g., what information will it show? How/when will it be updated?) and present to member agencies for feedback to determine what would be most useful	Topic presented/discussed at SWG meeting or similar forum
16	Create a Regional Safety Action Plan Update Checklist	Agency Coordination	High	X	X	X	X	X	COMPASS	Cross Cutting		Create checklist for items to consider and revisit in updates to RSAP.	Create checklist and identify when next update is needed.
17	Implement Crash Prediction Analysis	Agency Coordination	Medium		X	X			COMPASS	Safer Roads			
18	Increase Transit Funding to Reduce Driving Trips	Agency Coordination	Medium	X		X		X	Member Agencies	Safer People			
19	Regularly Assess Implementation Successes and Challenges	Agency Coordination	High	X	X	X	X	X	COMPASS	Cross Cutting		COMPASS to obtain successes/challenges information from member agencies, create summary document, and present to member agencies annually at SWG meeting or similar forum	Assessment completed. Topic presented/discussed at SWG meeting or similar forum
20	Regional Safe Routes to School Program	Education	Medium	X					COMPASS; Member Agencies	Safer People			
21	Support ITD in Data Driven Decision Making Surrounding Motorcycle Laws	Education	Low	X					Member Agencies	Safer People			
22	High-visibility Safety Education Campaigns Targeted Toward Emphasis Areas	Education	High	X	X	X	X	X	COMPASS; ITD; Member Agencies	Safer People		Identify and implement education campaign.	Campaign launched. Effectiveness evaluated annually.
23	Best Practices in Safety Analysis, Planning, Engineering Training	Education	High	X	X	X	X	X	COMPASS	Safer People		Provide member agencies with access to at least two lectures or education series per year related to safety best practices	Number of lecture series per year
24	Encourage Motorcycle Riders to Complete and Pass Idaho STAR Training	Education	High	X					COMPASS; ITD; Member Agencies	Safer People	https://www.nhtsa.gov/sites/nhtsa.gov/files/2023-12/countermeasures-that-work-11th-2023-tag_0.pdf	Implement targeted education campaign.	Campaign launched. Effectiveness evaluated annually.
25	Foster Partnerships Between Motorcycle Community and Agency Partners	Education	Medium	X					COMPASS	Safer People			
27	EMS - Bystander Training Courses	EMS	Low	X	X	X	X	X	Partner Agencies	Post-Crash Care			
28	Improve EMS Response Times	EMS	High	X	X	X	X	X	COMPASS; Partner Agencies	Post-Crash Care		Hold meeting with EMS agencies and identify highest priority for improvement (e.g., CAD improvements, education campaigns).	Joint meeting held at SWG meeting or similar forum.

Non-Infrastructure Strategies Toolbox (Continued)

				Emphasis Area									
#	STRATEGY	CATEGORY	PRIORITY	Vulnerable Road Users	Intersection Crashes	Lane Departure Crashes	Seatbelt Use	Impaired Driving	Agency Responsible	SSA Objective	More Information	Near-Term Action [1]	Performance Metric [1]
29	Alcohol-Impaired Motorcyclists: Detection, Enforcement, and Sanctions	Enforcement	Low	X				X	Member Agencies; Law Enforcement	Safer People	https://www.nhtsa.gov/book/countermeasures-that-work/motorcycle-safety/countermeasures/enforcement/alcohol-impaired-motorcyclists-detection		
30	Equitable Enforcement Strategies	Enforcement	Medium	X	X	X	X	X	Member Agencies; Law Enforcement	Safer Speeds			
31	Automated Speed Enforcement Legislation	Enforcement	Medium	X	X				Member Agencies; Law Enforcement	Safer Speeds			
32	Progressive Ticketing	Enforcement	Medium	X	X	X	X	X	Partner Agencies	Safer People			
33	Support Efforts Related to Motorcycle Helmet Use Laws	Legislation	Low	X			X		Member Agencies; Law Enforcement	Safer People	https://www.nhtsa.gov/sites/nhtsa.gov/files/2023-12/countermeasures-that-work-11th-2023-tag_0.pdf		
34	Local Road Safety Plans	Plan/Study	Medium	X	X	X	X	X	Member Agencies	Safer Roads	https://highways.dot.gov/safety/proven-safety-countermeasures/local-road-safety-plans		
35	Road Safety Audits	Plan/Study	High	X	X	X			All (COMPASS to lead Near-Term Action)	Safer Roads	https://highways.dot.gov/safety/proven-safety-countermeasures/road-safety-audit	Establish annual funding and program in next CIM update	Incorporated into CIM update.
36	Allow Developments to Implement Safety Improvements in Lieu of Capacity Improvements	Roadway (Policy)	High	X	X	X			ACHD; Nampa; Caldwell; Middleton; HD4	Safer Roads		Member agencies review current processes and identify ways in incorporate changes in development approval process.	Demonstrated progress
37	Make Safety Features a Priority in Fleet Vehicles	Vehicles	Medium	X	X	X			Member Agencies	Safer Vehicles			
38	Safe System Assessment	Agency Coordination	High	X	X	X	X	X	COMPASS	Safer Roads	https://austroads.com.au/latest-news/safe-system-assessment-framework	Develop Safe System Assessment. COMPASS to provide initial framework, member agencies to tailor based on needs and local context.	Develop Safe System Assessment for agency review and implementation.
39	Use Big Data or Traffic Signal Data to Prioritize Enforcement (e.g., Identify Areas with Speeding or Red Light Running)	Enforcement	Medium	X	X	X		X	COMPASS; Member Agencies; Law Enforcement	Safer People			
40	Adopt Ordinance that Require Motorists to Provide Space (e.g., at least 3 feet) when Passing Bicyclists	Legislation	Medium	X		X			Member Agencies; Law Enforcement	Safer People			

Notes
1: Near-term actions and performance measures only shown for high-priority strategies.

Non-Infrastructure Strategies Toolbox by Jurisdiction

#	STRATEGY	Boise	Eagle	Garden City	Meridian	Kuna	Star	Caldwell	Middleton	Nampa	Greenleaf	Parma	Melba	Wilder	Notus	Ada County	HD4	Canyon County	ACHD	COMPASS
1	Continue Safety Working Group	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2	Provide Grant Funding Support to Member Agencies																			X
3	Crash Analysis Support																			X
4	Incorporate Vision, Goals, Performance Measures, and Targets into the Next CIM Update																			X
5	Update TIP and CIM Prioritization to Better Incorporate Safety and This Plan																			X
6	Update COMPASS' Complete Network Policy to Align with RSAP Outcomes																			X
7	Improve How Safety is Incorporated into Maintenance Projects							X	X	X	X	X	X	X	X		X		X	
8	Improve How Safety is Incorporated into Capital Project Development Processes (e.g., Safe System Assessment)							X	X	X	X	X	X	X	X		X		X	
9	Create Local Task Forces to Review Fatal and Serious Injury Crashes	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
10	Establish Dedicated Funding for Safety Projects	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
11	Clearly Define Safety as a Priority in Project Development and Prioritization	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
12	Coordinate Across Jurisdictions on Smaller Projects to Improve Funding Opportunities and Contractor Bidding								X		X	X	X	X	X		X			X
13	Implement the Safe System Approach	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
14	Public Health Stakeholder Engagement	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
15	Create a Publicly Available Tracking Dashboard																			X
16	Create an RSAP Update Checklist																			X
17	Implement Crash Prediction Analysis																			X
18	Increase Transit Funding to Reduce Driving Trips	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X		
19	Regularly Assess Implementation Successes and Challenges							X	X	X	X	X	X	X	X				X	X
20	Regional Safe Routes to School Program															X	X	X	X	X
21	Support ITD in Data Driven Decision Making Surrounding Motorcycle Laws																			X

Non-Infrastructure Strategies Toolbox by Jurisdiction (Continued)

#	STRATEGY	Boise	Eagle	Garden City	Meridian	Kuna	Star	Caldwell	Middleton	Nampa	Greenleaf	Parma	Melba	Wilder	Notus	Ada County	HD4	Canyon County	ACHD	COMPASS
22	High-visibility Safety Education Campaign (i.e., Seatbelt-Usage, DUI, Motorcycle Safety)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
23	Best Practices in Safety Analysis, Planning, Engineering Training																			X
24	Encourage Motorcycle Riders to Complete and Pass Idaho STAR Training	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
25	Foster Partnerships Between Motorcycle Community and Agency Partners																			X
27	EMS - Bystander Training Courses	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X		
28	Improve EMS Response Times (e.g., improve incorporation of roadway construction projects into CAD software, public education campaign to provide expectations for drivers when EMS is approaching)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
29	Alcohol-Impaired Motorcyclists: Detection, Enforcement, and Sanctions	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X		
30	Equitable Enforcement Strategies	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X		
31	Automated Speed Enforcement Legislation	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	x
32	Progressive Ticketing	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		x		
33	Support Efforts Related to Motorcycle Helmet Use Laws	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		x		x
34	Local Road Safety Plans	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X		X	
35	Road Safety Audits	X	X	X	X	X	X	X	X	X	X	X	X	X	X		x		X	
36	Allow Developments to Implement Safety Improvements in Lieu of Capacity Improvements	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X		X	
37	Make Safety Features a Priority in Fleet Vehicles	X	X	X	X	X	X	X	X	X						X	X	X	X	
38	Safe System Assessment							X	X	X	X	X	X	X	X		X		X	X
39	Use Big Data or Traffic Signal Data to Prioritize Enforcement (e.g., Identify Areas with Speeding or Red Light Running)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	x		x		X
40	Adopt Ordinance that Require Motorists to Provide Space (e.g., at least 3 feet) when Passing Bicyclists		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X		X

Notes
1: Near-term actions and performance measures only shown for high-priority strategies.

Appendix B

High Fatal and Serious Injury Crash Locations

High Fatal and Serious Injury Crash Locations

Correlating to Map on Page 30

High KA Crash Locations - Segments

LOCATION ID	LOCATION	CITY/COUNTY	ROAD OWNERSHIP	TOTAL KA CRASHES	APROX. DISTANCE IN MILES	KA CRASHES/MILE	NOTES
1	Fairview Ave (Locust Grove Rd to Curtis Rd)	Boise/Meridian	ACHD	44	6	7.3	14 crashes between Eagle and Cloverdale; also non-motorized
2	SH 69 (Overland Rd to Kuna Rd)	Kuna/Meridian	ITD	24	7	3.4	12 crashes Overland to Victory
3	Garrity Blvd (11th Ave to I-84)	Nampa	ITD	21	2.2	9.5	
4	Ten Mile Rd (Amity Rd to Overland Rd)	Meridian	ACHD	16	1.6	10	
5	SH 45 (Roosevelt Ave to Greenhurst Rd)	Nampa/Melba	ITD	14	1.5	9.3	Also non-motorized
6	Eagle Rd (Fairview Ave to McMillan Road)	Meridian/Eagle	ITD	13	2	6.5	
7	Overland Rd (Orchard Rd to Maple Grove Rd)	Boise	ACHD	12	2.5	4.8	Also non-motorized
8	Caldwell Blvd (Orchard Ave to Middleton Rd)	Nampa	ITD	11	2.2	5	
9	Overland Rd (Locust Grove to Eagle Rd)	Meridian	ACHD	8	1	8	6 crashes on half-mile block

High KA Crash Locations - Intersections

LOCATION ID	LOCATION	CITY/COUNTY	CONTROL TYPE	MAJOR ROAD OWNERSHIP	KA CRASHES	HIN SCORE	NOTES
10	Farmway Rd / Ustick Rd	Canyon County	2-Way Stop	HD4	7	3.15	
11	Pleasant Valley Rd / Kuna Mora Rd	Ada County	2-Way Stop	ACHD	6	3.15	
12	Southside Blvd / Lewis Lane	Canyon County	All-Way Stop	NHD	6	3.15	
13	Idaho Center Blvd / Franklin Rd	Nampa	Signal	Nampa	6	0.85	0 KA crashes coded in junction, 6 KA crashes associated with short (<0.1 mile segment) directly east of signal, assumed intersection crashes
14	Meridian Rd (SH-69) / Amity Rd	Meridian	Signal	ITD	5	>3.5	
15	Northside Blvd / 6th St	Nampa	Signal	Nampa	5	3.43	Also top non-motorized HIN score
16	Orchard St / Overland Rd	Boise	Signal	ACHD	5	3.42	
17	Star Rd / US 20-26	Ada County	Signal	ITD	5	3.29	
18	Blaine St (I-84 Business) / 21st Ave	Caldwell	Signal	ITD	4	>3.5	
19	Locust Grove Road / Overland Rd	Meridian	Signal	ACHD	4	>3.5	
20	Ten Mile Rd / Cherry Ln	Meridian	Signal	ACHD	4	3.42	
21	Eagle Rd / Riverside Dr	Eagle	Signal	ITD	4	3.43	
22	Eagle Rd / Overland Rd	Meridian	Signal	ITD	4	3.43	
23	Ustick Rd / Cloverdale Rd	Boise	Signal	ACHD	4	3.43	
24	Chicago St / 21st Ave	Caldwell	Signal	Caldwell	3	>3.5	
25	Northside Blvd / 2nd St	Nampa	Signal	ITD	3	>3.5	
26	Meridian Rd (SH-69) / Lake Hazel Rd	Ada County	Signal	ITD	3	>3.5	
27	Meridian Rd (SH-69) / Victory Rd	Meridian	Signal	ITD	3	>3.5	
28	Meridian Rd / Pine Ave	Meridian	Signal	ACHD	3	>3.5	
29	State St / 15th St	Boise	Signal	ACHD	3	>3.5	
30	Caldwell Blvd (I-84 Business) / Canyon St	Nampa	Signal	ITD	3	3.43	
31	Garrity Blvd (I-84 Business) / Kings Rd	Nampa	Signal	ITD	3	3.43	
32	SH-45 / Greenhurst Rd	Nampa	Signal	ITD	3	3.42	
33	SH-44 / Linder Rd	Eagle	Signal	ITD	3	3.42	
34	Fairview Ave / Locust Grove Rd	Meridian	Signal	ACHD	3	3.42	
35	Five Mile Rd / Chinden Blvd	Garden City	Signal	ITD	3	3.43	
36	Five Mile Rd / Fairview Ave	Boise	Signal	ACHD	3	3.43	
37	Five Mile Rd / Franklin Rd	Boise	Signal	ACHD	3	3.43	
38	Curtis Rd / I-84 EB Ramp Terminal	Boise	Signal	ACHD	3	3.42	Also top non-motorized HIN score
39	9th St / Myrtle St	Boise	Signal	ITD	3	3.42	Also top non-motorized HIN score
40	Emmett Rd / Galloway Rd	Canyon County	2-Way Stop	HD4	3	3.15	
41	Galloway Rd / Emmett Rd	Canyon County	2-Way Stop	HD4	3	3.15	
42	Southside Blvd / Locust Ln	Nampa	All-Way Stop	Nampa	3	3.15	
43	Florida Ave / Homedale Rd	Caldwell	All-Way Stop	Caldwell	3	3.15	
44	Lake Ave / Homedale Rd	Caldwell	All-Way Stop	Caldwell	3	3.15	

High Fatal and Serious Injury Crash Locations (Continued)

Correlating to Map on Page 30

High Non-Motorized KA Crash Locations

LOCATION ID	LOCATION	JURISDICTION	CONTROL TYPE/ CORRIDOR	ROAD OWNERSHIP	NON-MOTORIZED KA CRASHES	NOTES
45	Northside Blvd / 6th St	Nampa	Signal	Nampa	2	3 additional non-motorized KA crashes on Northside between railroad and 6th St
46	Cole Rd / Victory Rd	Boise	Signal	ACHD	2	
47	Curtis Rd / I-84 EB Ramp Terminal	Boise	Signal	ACHD	2	
48	9th St / Front St	Boise	Signal	ITD	2	
49	9th St / Myrtle St	Boise	Signal	ITD	3	3 additional non-motorized KA crashes on Myrtle between 8th and 9th
50	Capitol Blvd / University Dr	Boise	Signal	ACHD	2	
51	Broadway Ave / University Dr	Boise	Signal	ITD	3	
52	Lake Forest Dr / Mimosa Way	Boise	Stop control on minor approach	ACHD	2	
53	16th St / Front St	Boise	Stop control / ped crossing	ACHD	3	
54	Fairview Ave (Curtis to Mitchell)	Boise	Corridor	ACHD	5	
55	Fairview Ave (Cloverdale to Ten Mile)	Boise/Meridian	Corridor	ACHD	5	
56	Orchard St (I-84 to Chinden)	Boise/Garden City	Corridor	ACHD	5	
57	South Vista Ave (I-84 to Rose Hill)	Boise	Corridor	ACHD	4	
58	Overland Rd (Orchard to Maple Grove)	Boise	Corridor	ACHD	3	
59	Broadway St (University to I-84)	Boise	Corridor	ITD	7	
60	9th St (Idaho to Rose Hill)	Boise	Corridor	ACHD	8	
61	12th Ave/SH-45 (7th to Greenhurst)	Nampa	Corridor	ITD	8	
62	Cole Rd (Victory to Fairview)	Boise	Corridor	ACHD	7	
63	State St (15th to Whitewater Park)	Boise	Corridor	ACHD	4	
64	Meridian Rd (I-84 to Fairview Ave)	Meridian	Corridor	ACHD	4	

Appendix C

Safety Working Group Meeting Notes

COMPASS
Regional Safety Action Plan

Safety Working Group Meeting #1 AGENDA

Date & Time: Tuesday, November 14, 2023, 1:00 – 2:30 PM
Location: COMPASS (700 E 2nd St. Ste. 200, Meridian, ID 83642)

I. **Welcome & Introductions (10 min.)**

II. **Regional Safety Action Plan Overview (15 min.)**
   a. Purpose
   b. Scope & Schedule

III. **Stakeholder & Community Engagement Overview (10 min.)**
   a. Introduction to Strategy
   b. Role of the Safety Working Group

IV. **Breakout Group Discussion (45 min.)**
   a. Vision & Goals
   b. Safety Concerns

V. **Next Steps & Close (10 min.)**
   a. Action Items
   b. Next SWG Meeting

Safety Working Group Meeting #1 MEETING SUMMARY

Tuesday, November 14

COMPASS Headquarters – Main Floor Conference Room

Attendance

Project Team: COMPASS, Kittelson, Atlas Strategic Communications

SWG Members: ACHD, ITD, City of Boise, Garden City, City of Caldwell, City of Middleton, City of Notus, Idaho State Police, Boise Police Department, Idaho Trucking Association, FHWA, Valley Regional Transit, Boise State University, Ada County

- **Welcome and Introductions**
    - Doug (Atlas) welcomed group, covered agenda and housekeeping.
    - Individual introductions around the room.
    - Doug (Atlas) covered the role of the Safety Working Group.
- **RSAP Overview**
    - Hunter (COMPASS) presented project overview and benefits of a regional approach.
    - Nick (Kittelson) presented SS4A Action Plan components; Safe System Approach; "Swiss cheese" redundancy model; successful safe system approach examples; vision, goals, performance measures, targets; safety performance evaluation plan; systemic vs. location-specific definitions; final plan components.
- **Stakeholder and Community Engagement**
    - Doug (Atlas) presented an overview of the Stakeholder and Community Engagement plan, including goal and objectives, equity lens, and key strategies and tactics.
- **Breakout Groups**
    - Attendees were split into three groups. Facilitated by Amanda, Natalie, and Doug (Atlas), the groups discussed items in three categories: vision & goals, safety concerns, and community engagement. Common responses, key themes, and items of note that were raised by attendees in the discussion groups are below.

Vision & Goals

- Reactions to Vision Zero and RSAP requirement to set a goal of zero fatalities and serious injuries:
    - While lofty, it should be the goal of the safety plan. It should not be reasonable to set a goal where any death or serious injuries are acceptable.

- The goal has merit because a reduction in deaths and serious injuries is achievable.
- While group members agreed this has to be the goal, questions were raised about how to truly achieve it and if it is realistic to do so.
- "Setting the goal is great, but getting there is a different story."
- Doubts were expressed due to limits on behavior change. Infrastructure and policy can help change behavior, but there will always be variables that make this goal difficult to achieve.

- What needs to happen to achieve that vision?
  - Achieving (or working toward) this goal will require buy-in to all five of the items in the Safe System Approach wheel.
  - Mindset shift across the board – planners, leadership, oversight, multi-disciplinary partners – everyone needs to be on the same page.
  - Education on the Safe System Approach will be required to aid in the mindset shift, ideally tailored to each audience to "speak their language."
  - Set various milestones where X% reduction in fatalities and serious injuries should be reached until we hit zero.
  - We need transparency through the process.
  - Identify what is not working now to help inform what the solutions need to be.
  - Public education is critical.
- What are the desired outcomes from your municipality/agency?
  - Develop an actionable plan to pursue SS4A Implementation grant.
  - Identify projects and priorities in my community.
  - Learn how to better incorporate safety into our programs across the organization.
  - Educate the public on the benefit of the approach and improve their understanding.
  - Foster behavior change through thoughtful, repetitive education efforts, especially related to safety for commercial trucking, public transit and bicyclists/pedestrian travel.
  - Set unified vision and goals. Improved partnerships among municipalities/agencies as a result of working on the RSAP together. If we can align behind this vision, we can better work together on projects stemming from the RSAP and other future projects.

  - Better integrate between agencies in comprehensive planning related to city development and transportation impacts.
  - Develop safer travel routes, including multi-use pathways for cyclists.
  - Foster a thoughtful and effective approach that adequately accounts for future growth.
  - Pay equal attention to behavior and infrastructure that contribute to serious crashes.
- What obstacles do you anticipate the RSAP will need to navigate?
  - Constraints by MUTCD guidelines. It is difficult to make design decisions without vision alignment from engineering guidance.
  - Mindset shift and overcoming the "that's the way we've always done it" among those not yet bought in on the Safe System Approach and/or Vision Zero.
  - Funding for public education programming, funding for infrastructure improvements including roundabouts, medians and designated crosswalks.
- What is the political climate the project team should be aware of surrounding specific safety issues, the RSAP, or other safety-related programs?
  - Most in elected leadership positions are on board with Vision Zero and are supportive of safety programs.
  - Those that have or may have pushback should be educated that Vision Zero does not set zero deaths/serious injuries as the only success metric but should be the goal that safety programs work toward.
  - The unique dynamic between the regional highway districts and addressing solutions within those different jurisdictions.
  - General feeling that people do not like to be told what to do, applicable to seat belt laws, speed, etc.
- Are there particularly vocal advocacy groups that the RSAP project team should consider? (e.g. bike/ped, MADD, etc.)
  - ACHD advisory committees
  - Accessibility community
  - Destinations where people congregate (Village at Meridian, fairgrounds, YMCA, etc.)
  - Idaho Walk Bike Alliance
  - MADD
  - FACTS (Foundation for Ada and Canyon County Trail Systems)
  - School districts

- Boise Bike Project
- Traffic control companies/construction companies
- What do you need from the RSAP project team to gain buy in from your leadership/stakeholders? What tools or resources do you need to improve transportation safety? (e.g. funding, analysis support, partnerships, help selecting treatments, etc.)
  - Funding, or recommendations to take to leadership for approval to pursue funding like an SS4A Implementation grant
  - Ready projects
  - Grant writing assistance
  - Resources to assist in educating skeptical elected officials, mindset that safety will never be enough
  - Resources to expand bandwidth, enable smaller municipalities to pursue funding like the SS4A implementation grant

Safety Concerns

- Are there high-level safety concerns that are common issues in your municipality/agency? (e.g. school safety, bike/ped infrastructure, etc.)
  - Distracted driving, DUIs are most common for ISP and City of Boise.
  - Team should consider that speed is not only solution for intersection crashes. Speed contributes to severity of injuries but not necessarily the only problem. If they're speeding, they're doing something else wrong (distraction, inattention, inebriation).
  - Farm vehicles on roads and railroad crossings are problematic in smaller communities like Notus.
  - Rural highways, primarily in Canyon County, need to be paid attention to as well. Farming industry especially can unintentionally strain rural roadways and inhibit travel.
  - Not enough infrastructure for safe bicyclist and pedestrian travel.
  - Left hand turns and vehicle versus pedestrian crashes are common issues.
- More specifically, are there particular areas that are known to your municipality/agency that should be addressed in the RSAP? (e.g. problem intersections, frequent school zone issues, etc.)
  - Rural Canyon County is problematic due to high speeds and four-way stops that get missed.

  - Fairview Ave has so many entry points that lead to more safety issues.
  - Lack of bike lanes on urban streets such as Chinden, Parkcenter and State.
- What are your biggest barriers to addressing known safety issues in your jurisdiction?
  - Resources. There just is not enough manpower to necessarily prioritize safety over other issues.
  - Lack of awareness from constituencies, both related to behavior on the road and not recognizing the need to prioritize safety.
- Are there communities, neighborhoods, or a particular demographic/group that you feel are more impacted by transportation safety issues in your jurisdiction/area than others?
  - Highway Safety is partnering with local health districts and the Department of Health and Welfare to document social vulnerabilities in communities and identify public health issues that lead to transportation safety challenges. Trying to determine who these more vulnerable people are and how to mitigate.
  - Canyon County seems to be at a bigger disadvantage than Ada County considering wealth disparities and demographics.

Community Engagement

- What support may your organization be able to provide the RSAP project team in engaging your community in the RSAP process?
  - Garden City: social media
  - ISP: social media; can contribute to PSAs
  - Boise: inclusion in upcoming behavior change campaigns; insert into utility bills, employee newsletter, public newsletter
  - Notus: email list
  - Valley Regional Transit: social media
- What channels do you have most success with in your community to garner public feedback?
  - Social media
  - Local agency outreach directly to the community
  - Email campaigns

COMPASS
Regional Safety Action Plan

Safety Working Group Meeting #2 AGENDA

Date & Time: Wednesday, February 7, 2024, 1:00 – 2:30 PM
Location: COMPASS (700 E 2nd St. Ste. 200, Meridian, ID 83642)

I. **Welcome & Introductions (10 min.)**

II. **Schedule and Status Update (5 min.)**

III. **Draft Vision & Goals (15 min.)**

IV. **Existing Conditions Key Findings (20 min.)**
   a. Existing Practices
   b. Peer Reviews
   c. Data Analysis

V. **Breakout Group Discussion (35 min.)**
   a. Existing Conditions Findings
   b. Potential strategies

VI. **Next Steps & Close (5 min.)**
   a. Action Items
   b. Next SWG Meeting

Safety Working Group Meeting #2 MEETING SUMMARY

February 7, 2024

COMPASS Headquarters – Main Floor Conference Room

<u>Attendance</u>

Project Team: COMPASS, Kittleson & Associates, Atlas Strategic Communications

SWG: Idaho Transportation Department, Idaho State Police, Idaho Trucking Association, LHTAC, Ada County, City of Caldwell, City of Boise, City of Nampa, Boise Police Department, Meridian Police Department, Ada County Highway District, Highway District No. 4, Nampa Highway District, Boise State University, Valley Regional Transit, Garden City, West Ada School District

I. **Existing Conditions Key Findings**
   a. *Overall Crash Trends: Reactions & Insights*
      i. In Canyon County, fail to yield or stop seem to be the most prevalent causes of crashes at stop-controlled intersections.
      ii. Several folks felt that crash rates would be more informative than total number of crashes. Interstates are considered the safest roadways based on traffic volume. More crashes occur but at a lower rate when accounting for volume.
      iii. There were also comments about the need for consistent measurements to effectively analyze crashes.
      iv. ACHD was surprised to see State and 15th, as they were not expecting that to be a problem intersection. From their point-of-view that intersection is complete, but looking at the data they may need to reevaluate.
      v. The HIN was helpful to identifying areas that may not be flagged internally but that have data to indicate a need to evaluate.
      vi. Questions were raised around the crash rate reflected in the HIN, and High Street clarified that it was crash frequency that is baked into the HIN. The systemic analysis does look at frequency, not rate, but it does consider risk, so there may be segments that don't have much frequency but are still high risk. Bottom line is we want to stop people dying and getting in serious crashes, as opposed to the rate at which they do.

vii. Idaho State Police shared a few problem areas they typically see, including:
    1. In Canyon County where the portion of the interstate narrows from four lanes to three. It bottlenecks at that point daily, and ISP often responds to multiple calls a day of incidents occurring along that portion of the interstate.
    2. State Highway 55 south of Midland/Nampa-Caldwell Blvd. toward Marsing is becoming a common area for crashes.
    3. The interstate stretch between Boise and Mountain Home is a common problem area for excessive speeding and other factors.

viii. The equity issue is concentrated in Canyon County and is reinforced by a lack of evolution within transportation, engineering, agencies, etc., which likely requires more funding to change. Cities lack control over the Interstate, other roadways and the dynamics between the various agencies can make progress a challenge.
    1. Development fees only started being collected by some agencies in Canyon County a few years ago, where Ada County has been collecting for nearly three decades and can afford to invest in their facilities.

b. *Evaluating the Emphasis Areas*

i. There was some surprise among the Canyon County group not to see older drivers included in the Emphasis Areas. Is there data behind this? Folks also acknowledged that all road users are important to consider and expressed some concern whether efforts suffer if the focus is only on these identified user groups.

ii. Some questions in response to the Emphasis Areas discussion included:
    1. If a driver is impaired, what is causing the actual crash?
    2. Do we know why teens have higher fatal crash rates?
    3. In looking at accident rates vs. total accidents, which is higher for younger drivers?
    4. What about users of e-scooters, bikes, etc.? Are there trends to indicate safety of these road uses? What laws are in place to support safer use of these transportation modes?

iii. Meridian Police Department noted that seatbelt data would likely be very underreported. Data comes from officer report which defaults to yes, and people may just buckle up when they get pulled over. Officers can't pull over for seatbelt infraction alone as policy issue is that the ticket is only $10.

1. A question was raised about recommendations including legislative or policy actions, which COMPASS indicated could be considered.
2. High Street asked about seatbelt data to include in the memo, and the Ada County group pointed to an ITD report on seatbelt use at point-in-time.
3. Boise State noted that there are several campaigns around seatbelt use. Meridian PD said they have done seatbelt enforcement in a specific area, but data shows that behavior didn't change. Again, the $10 ticket is not a deterrent.
4. Boise Police Department gave example of loud exhaust in downtown Boise, which was using state code for a $67 ticket. City Council changed fine amount to $356, and the problem is essentially now non-existent.

iv. ACHD has done inattentive driving education recently and was surprised to see that not listed as an emphasis area. Again, difficult to measure as people don't self-report being on their phone post-crash. High Street confirmed that the rate was much lower, likely due to underreporting.

1. Meridian PD noted that the data follows the "first harmful event" and inattentive driving is hardly ever first. It's a factor, but likely not first. The more often first factors include alcohol use, speeding, etc.
2. ITD analysts go through police reports to categorize first harmful event and document items like inattentive driving, alcohol, etc.

v. ISP shared that they typically deal with fatal crashes among drivers 16-35 years old, rather than the 22-year-old cut off indicated in the emphasis areas. There is still room to educate those up to 35 years old, especially as drivers get their licenses later in life than they used to.

c. *Addressing Emphasis Areas*

i. Several countermeasures were raised by Highway District No. 4 and the City of Caldwell when discussing efforts to address emphasis areas, and road safety more broadly. Specifically:

1. Installing four-way stops at major intersections.
2. Building roundabouts where feasible.

3. Reducing travel lanes to 11 ft to help slow traffic.
4. Removing fixed objects that could be hazardous.
5. Access management, primarily for reducing turning conflicts.

ii. ACHD has a campaign called Let's Get There Safely. OHS has substantial funding for these programs.

iii. Boise State has a ticket diversion program; it is an alternative to paying parking tickets on campus. Generally, it is to take a class, like bike commuter class, useful to both driver and cyclists. They also have a squad of security officers on campus who are not law enforcement and rely primarily on educational materials. They interact with Boise PD and run a campaign (e.g., doughnut with a cop) usually around vulnerable road users. The bike shop on campus is also a great resource to distribute information.

d. *Barriers to Accepting & Addressing Emphasis Areas*

i. Lower speeds will be a challenge in further out and more rural areas. We want people to get home safely *and* efficiently.

ii. Roundabouts can be effective countermeasures, but they are more expensive to install and require more right-of-way than instituting four-way stops. If the design and construction are done within the agency, it can be cheaper than going out to bid for the project.

iii. Speed is the biggest one that stands out. Boise PD noted that, typically, when speed limits are reduced, actual speeds don't reduce. Group agreed that lowering speeds alone is not effective enough, the physical environment needs to change.

iv. Lack of transit options is also a hindrance.

v. Unification of all the emphasis areas – not everyone will be happy and it's going to be a long road. This is a major challenge.

vi. There is some disconnect between engineering practices of old and today, primarily around bike/pedestrian travel and how to build for other transit options. It will take time to change perceptions and behaviors around how we use roadways, especially in more rural areas.

vii. Traffic congestion and growth is going to continue to be a pressure point. Do we need to widen roads? If yes, how do we prevent other factors like speeding? Does more congestion work in our favor if drivers must travel at slower paces?

II. Other Strategies

a. COMPASS Support

i. Suggestions included:

1. Provide more clarity in the scoring methods for projects related to priority ranking. For example, how does safety compare to other factors? Could it be higher?
2. Additional resources to support information and data sharing, specifically help with identifying areas of improvement that align with existing grant opportunities (e.g., reaching out to an agency to let them know a certain area would be a good fit for a grant opportunity).
3. Increased opportunities for locals to support improvements, such as a previous bridge program allowed.
4. Advocacy for state funding of local transportation projects.

b. Partnership Opportunities

i. Among folks in Canyon County, there was interest expressed in pursuing partnerships with developers to help mitigate some of the strains on roadways caused by growth.

1. On the development side, how can we prevent developments from being approved until roadway conditions are improved? Or can we ensure developers are responsible for making the road improvements as part of their project?

ii. Better engagement with schools was also raised as potentially valuable partnerships, especially considering issues like crosswalk safety and how crossovers in jurisdiction. One example that was offered was the Safe Routes to School program.

c. Additional Information Needs / Feedback from the Public

i. We need constructive and actionable feedback from the public.

ii. There needs to be acknowledgement of the barriers in implementing safer travel. For example, the safer option on a roadway may inhibit traffic flow, but how do you convey that to the public without causing frustrations elsewhere?

iii. For the public survey, systemic type questions would be valuable to help encourage people to think outside of their own networks and consider the big picture.

iv. Asking the public what they would prioritize (commute times, sidewalks, more bike/ped, etc.) so it is an easier sell to public officials.
v. Countering the priorities, it would be useful to know how much the public are willing to sacrifice to have safer roads. Is two more minutes on your community worth it? Is 10 minutes? 20?

Safety Working Group Meeting #3 AGENDA

Date & Time: Tuesday, April 2, 2024, 1:00 – 3:00 PM
Location: COMPASS (700 E 2nd St. Ste. 200, Meridian, ID 83642)

I. **Welcome (5 min.)**

II. **Schedule and Status Update (5 min.)**

III. **Public Outreach Update (5 min.)**

IV. **Updated Analysis Results (15 min.)**

V. **Draft Strategies (20 min.)**
   a. Systemic Treatments
   b. Policies & Other Strategies
   c. Locations for Further Review

VI. **Breakout Group Discussion (65 min.)**
   a. Strategies
   b. Locations

VII. **Next Steps & Close (5 min.)**
   a. Action Items
   b. Next SWG Meeting

Safety Working Group Meeting #3 DISCUSSION NOTES

60 minutes allotted. 3x breakout groups

Facilitators: Atlas Strategic Communications - Natalie Haskell, Doug Self, Amanda Watson

Floaters: COMPASS, Kittelson

Discussion Group Participants:

- Idaho Transportation Department (ITD), Idaho State Police (ISP), Ada County, Canyon County, COMPASS, Valley Regional Transportation (VRT), Ada County Highway District (ACHD), Highway District No. 4 (HD4), City of Caldwell, City of Boise, City of Nampa, Boise Police Department (BPD)

SYSTEMIC STRATEGIES

I. Do you support implementing the strategies marked as high priority?
    a. There was general support across all three groups for the high priority strategies.
    b. The Canyon County group acknowledged that some of the high priority strategies may need to be more location-specific or may have specific uses not as relevant to rural areas (for example, bike strategies including #3, as well as strategies #17 and #22).

II. Are there medium-priority strategies that should be designated as high-priority or vice-versa?
    a. VRT expressed that road reconfigurations should be high priority.
    b. Speed reduction and things of this nature were also raised as high priorities as speed is often directly related to crash severity.

III. Are you already implementing any of the high-priority strategies?
    a. Do you have any advice or learnings on any of the strategies from successful or unsuccessful attempts to implement?
        i. #26 Rumble Strip – ACHD has implemented them in urban environments and removed them because of noise complaints. They also get filled in with chip sealing efforts. There is no agency equipment to put these in; it must always be contracted.
            1. They could still be used in some cases in southern Ada County.
        ii. #44 Flashing Yellow Arrow – ACHD has new cabinets coming to enable implementing time-of-day and pedestrian call restrictions on the permissive phase. The Ada County group was very positive on this strategy's use.

iii. #34 Centerline Buffer Areas – Wider center line area that is striped out was agreed to be most effective.
   i. BPD would like to see more physical separation between bike lanes and motor vehicle travel lanes to prevent vehicles from drifting into bike lanes.
   ii. Eagle Rd. left turn restrictions were recently implemented and could provide some learnings. Not enough data was available to gauge success at this point, but it is important to note that more vehicles are being pushed through so crashes may increase while severity should be less. Angle crashes also should not occur while rear-end crashes will likely remain problematic.
   iii. HD4 noted they are implementing a roundabout at a high crash location due to its effectiveness.

b. Do you have success stories about any of the strategies that may be highlighted in the plan?
   i. ACHD shared that pedestrian beacons have been very successful. They also noted that LPIs, roundabouts, speed management, pathways, sidewalks, left-turn lanes (or anything that reduces left-turn conflicts), all-way stop control, and protected bike lanes have been effective countermeasures.
   ii. The City of Boise called out protected bike lanes as very successful. They also have scooter data from Lime and can see where people ride the most, which shows the Greenbelt in first place followed by Capitol Blvd because of the protected lanes.
   iii. School bus dashcams help law enforcement find bus passing violators. These are required under state law and in place.

IV. Do you have concerns about any strategies, either in implementation or effectiveness?
   a. Ziclas can be covered when it snows and people have driven over them.
   b. Spacing of chicanes on Kootenai could be further apart.
   c. ACHD has not had success getting the level of vertical deflection they would like to see with raised intersections.
   d. Comments on specific strategies from the toolbox included:
      i. #18 All-way stop control – Noted as a very effective temporary solution at a low cost but considered a stop gap rather than long-term improvement.

   e. #23 Road reconfiguration – Raised as a harder sell to the public, which is something to be aware of when considering implementation.
   f. #37 Dynamic Speed Feedback Signs – There has been mixed results with these. Their effectiveness is generally limited to the immediate area of the signs, and the Ada County group agreed that a series of them may be more effective.
   g. #36 Variable Speed Limits – These can be more high-cost and are higher priority in construction zones.

V. Are there any strategies missing you expected to see on this list or have found success implementing in the past?
   a. Strategy #31 (Wider Edge Lines, Enhanced Pavement Markings) could be split into two, and it should be noted that the quality of paint needs to be higher.
   b. Strategy #5 (Medians and Pedestrian Refuge Islands) could also be split up and coordinated with strategy #28 (Median Barriers). Consider calling #5 just "Pedestrian Refuge Islands."
   c. In addition to strategies #1-3, having completely separated bike/ped paths from any roadway should be a high priority.
   d. Related to strategy #15, consider incorporating no left turns during peak traffic times.
   e. The Canyon County group highlighted that strategies related to rail crossings were not featured in the toolbox, though it was noted these were not found in the crash data on the HIN.
   f. Consider adding striping as its own strategy.
   g. ADA barrier removal affects safety for a specific user type.

VI. If you had to pick one systemic countermeasure (or bundle of related countermeasures) to implement in your agency's boundaries, what would you choose?
   a. ACHD highlighted the following:
      i. Access management, but this is an example of the department wanting more and the public being generally against it.
      ii. Signalized pedestrian crossings, RFPS, BHPs, etc.
      iii. Filling in sidewalk caps.
   b. City of Boise highlighted protected bike lanes.
   c. Ada County called out streamlined light timing.
   d. BPD flagged leading pedestrian interval through the whole city, which can make a huge difference downtown.

   e. City of Caldwell & HD4 noted that they are already prioritizing working towards building roundabouts at several key locations in their jurisdictions.

VII. What information would be useful for you to have in a toolbox? (Note: *RSAP project team plans to provide local examples, where possible, for high-priority strategies)*

   a. More specificity for high-priority treatments, especially speed management, what a crosswalk actually entails, what kind of vertical elements, etc. More details would be helpful.
   b. Add a column to the toolbox that specifies the range of implementation for the various strategies (quick build options vs. long-term effort).
   c. Identify within strategies (for example separated bike lanes) what could be quick build solutions verses permanent efforts.
   d. Would pedestrian refuge islands be two stage or not two stage?

VIII. What strategies does your agency want to use, but have not implemented for any reason? What barriers are preventing you from using them?

   e. ACHD flagged raised crosswalks in intersections as they struggle to provide enough disruption to the vehicle.
   f. City of Boise noted not using paint enough. Bike lanes are not all green for example, though is likely a bandwidth issue. ACHD says it should be two coats per year to be up to standard but are lucky to get to every line once per year.

Note: Recommended to change "Rest on Red" to "All Red Time" plus "Rest on Red"

NON-INFRASTRUCTURE STRATEGIES

IX. Are you already implementing any of these strategies?

   a. Do you have any advice or learnings on any of the strategies from successful or unsuccessful attempts to implement?
      i. General support for the high priority strategies.
      ii. BPD uses progressive tickets for mobile devices and school bus violations (state law).
      iii. Strategy #7 has been a big success for ACHD.
      iv. All Ada County groups are already doing strategy #10.
      v. City of Boise just started implementing strategy #9 and are still figuring out how to use the recommendations. BPD agreed and shared that the data has been enlightening as to how impaired pedestrians often are.
      vi. BPD does a lot with strategy #22 and it is effective.

vii. Office of Highway Safety is working on several strategies, including:
    1. Currently pursuing partnerships with stakeholders in the Magic Valley to understand safety issues and identify opportunities for collaboration to improve.
    2. Looking to incorporate the Safe System Approach in current strategic highway safety plan (update due in 2026).
    3. Crash analysis as part of this too, public-facing data boards that are accessible by communities.

viii. ITD is always examining ways to incorporate safety in capital investment and maintenance projects and regularly coordinates between agencies, cities and counties to identify safety improvements.

ix. ITD working with partners, including AAA, on a distracted driving campaign for the month of April.

x. Impaired driving and distracted driving education tends to inform impactful public information campaigns.

b. Do you have success stories about any of the strategies that may be highlighted in the plan?
    i. Related to strategy #25, BPD hosts a large motorcycle rally at the Capital and Chills N Thrills event at the Harley Davidson dealership.
    ii. Mass education via PSAs has shown to be an effective tool.
    iii. General driver safety efforts incorporating troopers into schools to enhance driver's ed curriculum have also been effective.
    iv. Office of Highway Safety has conducted surveys indicating that transportation safety education programs in schools work; also did research that shows positive enforcement messages are more effective than using fear tactics like featuring a mangled car in a high school parking lot.
    v. Some examples raised as effective education tools included:
        1. Dog bone roundabout video that ACHD produced. Simple and highly visual way to educate on behavior.
        2. "Dangerous by Design" campaign.

X. Do you have concerns about any strategies, either in implementation or effectiveness?
    a. Some concern was expressed around #30 related to effectively managing equitable enforcement and awareness and a need for education efforts around this.

   b. Education efforts should be easily consumable, something that helps the public quickly grasp countermeasures to make an impact.
   c. Safety is a key principle in all agencies' road projects and does not necessarily require an ongoing taskforce.

XI. Are there any strategies missing you expected to see on this list or have found success implementing in the past?
   a. The Ada County group shared the following notes:
      i. They like the idea to continue the Safety Working Group but would encourage more collaboration between city-owned safety working group equivalents too.
      ii. Would like to see more about impaired pedestrians or high-visibility education safety campaigns.
      iii. Favors educational campaigns for existing infrastructure (e.g., green bike boxes, two stage bike boxes, parking too close to a stop sign).
   b. Better education on bicycle behavior both for cyclists and drivers was raised multiple times as a key strategy to improve safety.
      i. Potentially require education by retailers when a bike is purchased.
      ii. Post billboards with key facts/information related to safe cycling practices (for cyclists and drivers) at highly impacted intersections.
   c. Office of Highway Safety is considering ways to tell the stories of various projects and how they've made a difference, comparing data before and after implementation of countermeasures to demonstrate impact.
   d. Need to start talking about transportation safety well before teens start driving.
   e. The City of Nampa may test safety cameras that could be used to notify about driving behaviors in school zones. If effective, it could be a valuable strategy for education in other areas (note: the cameras cannot be used for enforcement).
   f. May be worth considering adding a strategy to establish a process for quick builds. For example, a policy on how to do this, or how to set aside dollars to help prioritize.
   g. Consider enforcement for vehicles yielding for pedestrians.
   h. Offer winter driving courses for younger or new drivers.

XII. COMPASS Strategies
   a. Specific to the strategies that fall under COMPASS purview (e.g. grant funding, crash analysis support, data improvements, etc.) – are these services you would find useful to supplement your processes and decision-making?

i. The dashboard was acknowledged as a useful tool, as well as continuing the Safety Working Group as opportunities for better agency coordination and information/data sharing between agencies and with the public.

LOCATIONS FOR FURTHER REVIEW

XIII. **Locations for Further Review (Potential Locations for Further Review file)**

a. The scope of work includes developing potential projects (or further developing existing project ideas) at up to ten high-crash locations as a start toward grant funding. The attached list presents the top-scoring sites on the High-Injury Network. Looking through this list, what 5-10 sites would you prioritize?

i. Segments:

1. Anything on Fairview.
2. Front and Myrtle
3. SH-69 is a long distance, looking at over 5-year data.
    a. Restricted left out movements at Calderwood (just South of Overland) about 2 years ago after a couple serious injury/fatal crashes – curious how many were at this location.
4. A study on Garrity would be a priority – examiner where crashes are happening specifically.
5. Nampa doing demo study on SH-45 through Safe Streets and Roads for All grant program.

ii. Non-Motorized:

1. 15th and 16th
2. BPD gets a lot of complaints along Lake Forest
3. Orchard and Overland
4. Ustick and Overland
5. 10 Mile and Cherry
6. 13th and Front
7. ACHD surprised to see State and 15th on there, thought they had improved it.
8. 9th and Myrtle (both non-motorized and intersection)
9. Ustick and Cloverdale was done 6-8 years ago, yet three fatalities in the past year within a mile of there.

iii. Intersections:

        1. Access management study going on Caldwell Blvd.

b. Are there sites not on this list that you may want to see prioritized?
    i. Franklin and Milwaukee
    ii. Old Hwy 30 and Galloway
    iii. 11th and Elm
    iv. A lot of countermeasures already implemented at Farmway and Ustick, but crashes are still happening. City of Caldwell and HD4 are working to put in a roundabout.

COMPASS

Regional Safety Action Plan

Safety Working Group Meeting #4 AGENDA

Date & Time: Wednesday, October 30, 2024, 10:00 AM – 12:00 PM
Location: COMPASS (700 E 2nd St. Ste. 200, Meridian, ID 83642)

I. **Welcome (5 min.)**

II. **Schedule and Status Update (5 min.)**

III. **Priority Recommendations Overview (20 min.)**

IV. **Group Photo & Break (20 min.)**

V. **Breakout Group Discussion (55 min.)**
   a. Strategy Recommendations
   b. Accountability
   c. Other Feedback

VI. **Next Steps & Close (15 min.)**
   a. Action Items
   b. Final Plan Process

Safety Working Group Meeting #4 DISCUSSION NOTES

55 minutes allotted

Facilitator: Doug Self, Atlas Strategic Communications

Subject Matter Experts: COMPASS, Kittelson

Date: October 30, 2024

Discussion Group Participants:

- Idaho Transportation Department (ITD), Idaho State Police (ISP), Ada County, Canyon County, Valley Regional Transportation (VRT), Ada County Highway District (ACHD), Highway District No. 4 (HD4), City of Boise, City of Nampa, City of Greenleaf, City of Eagle, Boise State University, West Ada School District, COMPASS, Kittelson

GROUP DISCUSSION

- **High Priority COMPASS Strategies:**
    - General agreement that the high-priority strategies are realistic and feasible, but some had concerns that this feels ambitious for COMPASS considering the staff size
    - Commentary about how COMPASS will be able to fit these into its current, approved strategies. COMPASS response was that many of these strategies fall into its current processes
    - Discussion around streamlining outreach to public health and EMS meetings to better share information – for example, meeting with county safety committees instead of meeting individually with each agency.
    - To a question about road safety audit program and how it would look in practice. The group requested clarification on its inclusion in federal grant opportunities and how it would reference the ITD and federal/state guidelines.

- **Member Agency Strategies**
    - High Priority Strategies
        - A concern was raised about speed limit management strategies and that often speed studies end up justifying higher speeds.
            - The team clarified that speed studies are meant for roadways where posted speeds are too high and that state code/statutory regulations require speed studies to change posted speeds. While they are required, the team acknowledged that criteria need to be thoughtfully planned.

- A concern was raised regarding the effectiveness of allowing implementation of safety improvements in lieu of capacity improvements.
    - ACHD noted that while this is a program they offer by have not seen much engagement with it.
- Regarding the first two strategies on the list (creating a local task force to review fatal and serious crashes, regularly assessing implementation success and challenges) a question was raised about the feasibility for small municipalities with limited resources to participate.
    - A potential solution was discussed that would group the small municipalities together to partner and share the resources burden.
- A question of when these strategies move from planning to implementation was posed and noted that this is crucial to drive buy-in from leadership.
    - The project team recommended prioritizing near-term actions like including safety and crash analysis into all 5-year plans.
- The group questioned why strategies 3 and 4 (incorporating safety projects into capital and maintenance projects) do not include ITD.
    - The project team clarified that the agency listed is meant to be the lead agency, not a complete list of all agencies involved.
    - A follow up question to agencies in the room that maintain roadways as to barriers to making this happen.
        - ITD, ACHD noted that it is difficult to expand scope and cost of projects that are planned several years in advance and the need for elected officials to help with costs to added elements like safety
- On the safety education campaign strategy, a question was posed about audiences for those campaigns.
    - The project team clarified that audiences may include specific groups (school users, bike/ped, etc.) or the public.
    - ISP noted an upcoming campaign and COMPASS committed to sharing current resources from its own safety campaign
- In response to a question to the group about strategies that may be missing from the list, the group noted two:
    - Micromobility strategies (electric scooters, skateboards, kick scooters, and similar wheeled vehicles)
    - Education around leveraging existing capacity

Appendix D

Technical Memos

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COMPASS
Regional Safety Action Plan

TECHNICAL MEMORANDUM #1 - VISION AND GOALS

January 24, 2024 Project #: 29061.0

To: Hunter Mulhall and Austin Miller, COMPASS

From: Matt Steele; Mark Heisinger, PE; Nick Foster, AICP, RSP$_1$; and Sonia Daleiden, PE, PTOE, Kittelson & Associates, Inc.
Yousef Dana, PE; High Street

RE: Regional Safety Action Plan - Vision, Goals, Performance Measures and Targets

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Transportation safety is a priority for COMPASS and its member agencies. COMPASS has obtained funding for and is now developing, a regional safety action plan (RSAP) covering its planning area. The RSAP will organize COMPASS member agencies around a unified transportation safety vision. The plan will identify specific actions that COMPASS and its member agencies can take to achieve this vision. These actions will include recommended improvements to agency practices and policies and data-driven strategies that address localized and systemic crash risks. An implementation plan will be included with performance measures and targets. The plan will provide COMPASS and its member agencies with a road map towards a safer Treasure Valley and will broaden access to implementation funds through the Safe Streets and Roads for All (SS4A) program, as well as other funding sources.

This memorandum presents the draft vision and goals for the COMPASS Regional Safety Action Plan, as well as draft performance measures and targets. The draft vision and goals were developed based on feedback from the first Safety Working Group (SWG[1]) meeting, best practices from other agencies, and grant funding requirements for the Safe Streets and Roads for All (SS4A) program. The draft vision and goals have been refined once based on feedback from the Project Management Team (PMT)[2]. The vision, goals, performance measures, and targets will continue to be refined throughout the plan's development based on feedback from the SWG, Regional Transportation Advisory Committee (RTAC), and COMPASS Board of Directors, data analysis findings, and the final recommended actions.

VISION AND GOALS

This section introduces the COMPASS RSAP draft vision statement and accompanying goals. These elements will help guide the development of the RSAP. Performance measures and targets will be set to track progress toward the ultimate vision described here.

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[1] The SWG is made up of representatives of COMPASS member agencies and other organizations with an interest in transportation safety in the Treasure Valley (e.g., law enforcement, Idaho Transportation Department Office of Highway Safety, Idaho Trucking Association).

[2] The PMT consists of COMPASS, member agencies that volunteered to be part of the PMT (i.e., City of Boise, City of Nampa, ACHD), and the consultant team.

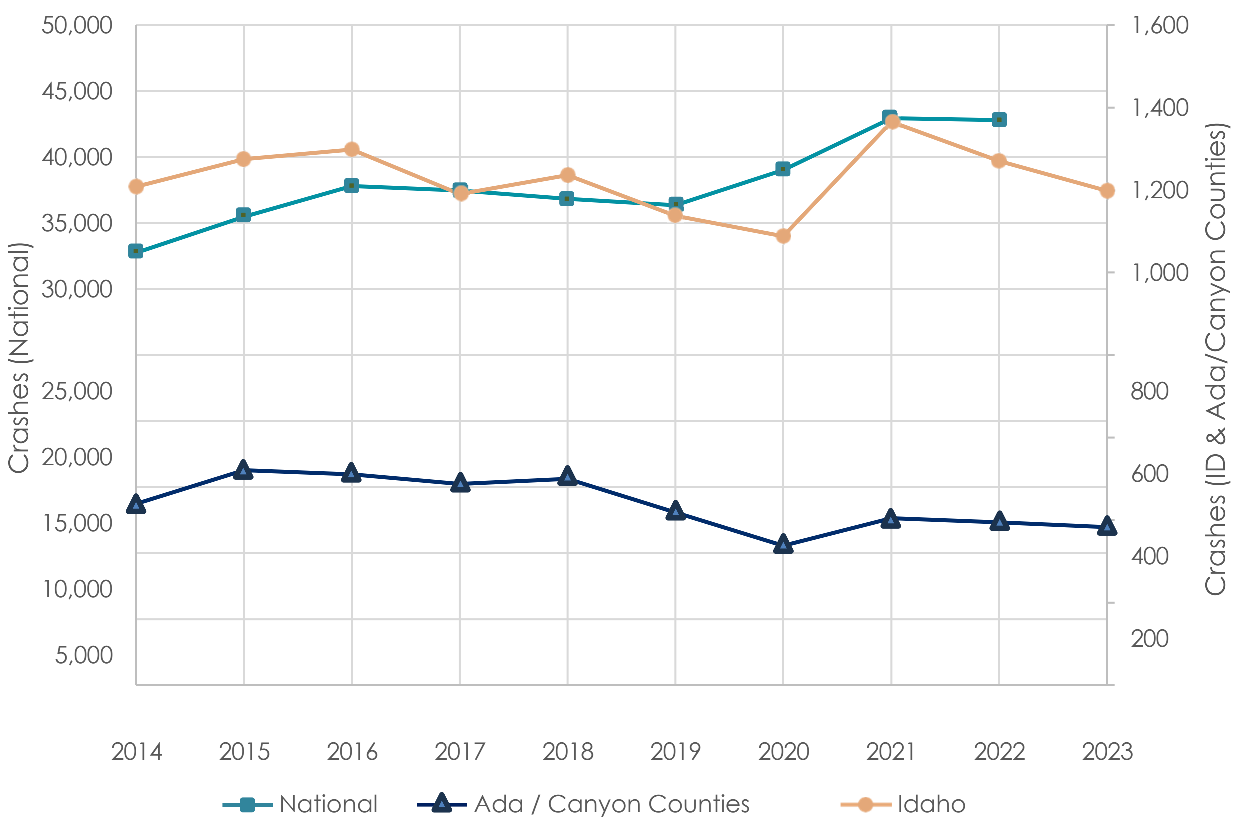
BACKGROUND

480
people lost their lives in Ada and Canyon Counties in crashes during the last 10 years (2014-2023)

Figure 1 shows nationally fatal and serious injury crashes have increased over the last 10 years, from about 33,000 crashes in 2014 to nearly 43,000 crashes in 2022 (the most recent year for which national data is available). Interim years show increases over the 2014-2016 and 2019-2021 periods. Over a similar period, 2014-2023, Idaho experienced over 12,000 fatal and serious injury crashes (i.e., approximately 2,100 fatal and 10,200 serious injury crashes). Interim trends have varied more than in the national data, but the state did see a similar spike in fatal and serious injury crashes in 2021. A decreasing trend in the last two years has brought preliminary 2023 numbers to those seen in 2014 - about 1,200 crashes each year. While the crash numbers are similar, preliminary 2023 data shows that more people were killed in car crashes than in 2014.

During this same period, Ada and Canyon Counties have experienced 4,400 fatal and serious injury crashes (i.e., about 450 fatal and 4,000 serious injury crashes). These crashes declined in 2020, which may have been impacted by COVID-19 related changes in travel patterns. Fatal and serious injury crashes increased from 2020 to 2021 and have been relatively flat since then, with nearly 400 such crashes occurring each year.

Figure 1: National and Regional Fatal and Serious Injury Crash Trends (2014-2023)*



Sources: *https://itd.aashtowaresafety.net/itd-safety-dashboards*, Safety Dashboards; US DOT, *Traffic Safety Facts*, June 2023 *crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813482*
*2023 crash data is preliminary and is not available nationally.

DRAFT VISION AND GOALS

This section presents the draft vision statement, the proposed interim target to meet that vision, and goals to help the region achieve its vision.

VISION

The SS4A program requires a safety action plan with a goal of zero fatalities and serious injuries to be eligible for Implementation Grants. Applying agencies also need to set a specific date for achieving this goal or for achieving a significant reduction in fatalities and serious injuries.

The project team reviewed these requirements with the SWG as part of SWG Meeting #1 (please see Appendix A for meeting notes). Within the SWG, there was agreement that although it might seem ambitious, eliminating fatalities and serious injuries in the Treasure Valley is important and the right goal to pursue. Based on this feedback, and input from the PMT on the initial draft statement, the draft vision statement for the COMPASS RSAP is:

> ***Vision Statement:*** *A Treasure Valley unified by a commitment to eliminate fatalities and serious injuries on its roadways through innovation, collaboration, education, and engagement.*

INTERIM TARGETS

SWG members noted that this is a lofty vision that will require significant time and a concerted approach from policymakers, engineers, planners, business owners, community leaders, first responders, and others in the public and private sectors to prioritize safety. There was concern that some may view the goal as impractical given that it is dependent not just on member agency actions, but also the behavior of the traveling public. Given this, SWG members also supported setting interim targets for the region as we move toward the ultimate goal. In response to this feedback, the project team proposes a target of a *50% reduction in fatal and serious injuries on the transportation system by 2055*.

The 50% target is meant to be aggressive, but achievable. Figure 2 shows that international experience proves that reductions of 33% to nearly 70% are achievable in a 20-year timeframe. The target date of 2055 matches the horizon year of the next iteration of the long-range transportation plan*, Communities in Motion (2055)*. Some individual agencies may choose to adopt a quicker timeframe, such as the City of Boise, which has already set a target of a 50% reduction by 2032.

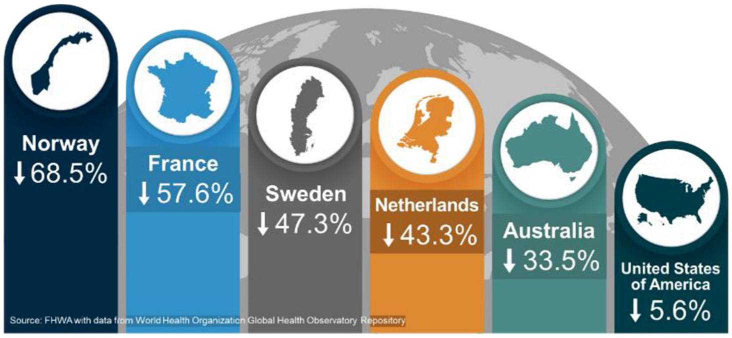
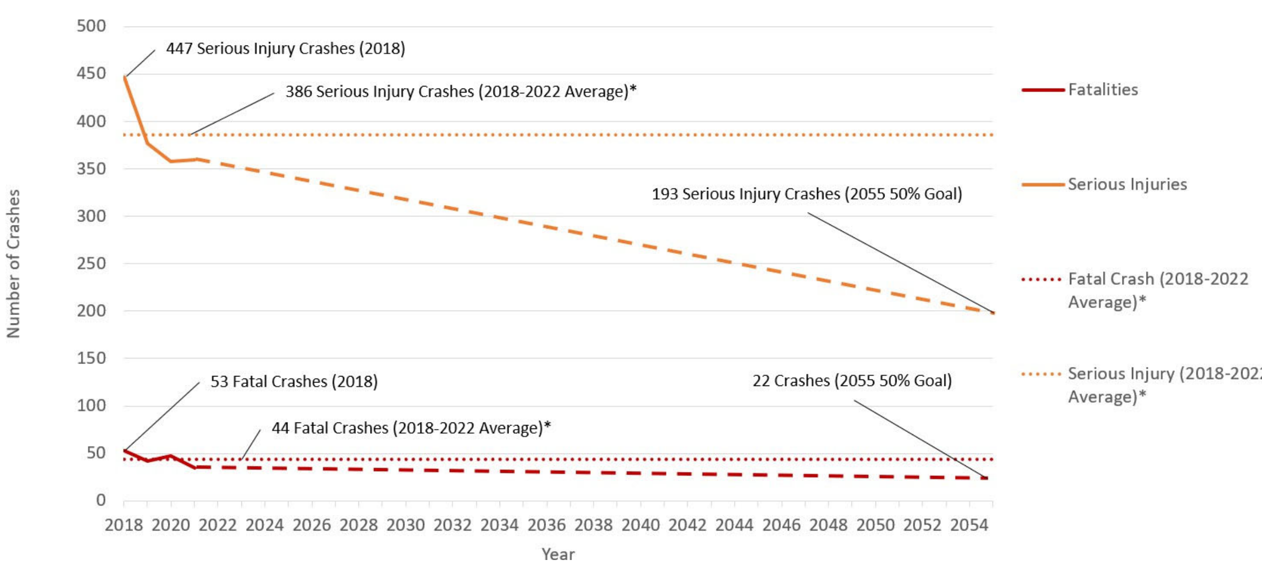


Figure 2 Change in Fatalities from 2000 to 2019[2]

Figure 3 illustrates the recent five-year trend in fatal and serious injury crashes in the Treasure Valley. It also shows the decrease in crashes that would be necessary to reach the 50% reduction target by the year 2055. Based on these trend lines, interim targets to meet along the way to the 2055 target would include a 19% reduction by the year 2035 and a 34% reduction by year 2045.

Figure 3: Crash Trends to Meet Proposed Targets



*Year 2020 data excluded from averages due to COVID-19 related restrictions

[2] Federal Highway Administration. *The Safe System Approach Presentation*. https://highways.dot.gov/safety/zero-deaths/safe-system-approach-presentation-0. Last updated January 6, 2023

GOALS

To achieve this vision, the project team proposes the following goals, which have been developed using feedback from the PMT:

- Design and build a transportation network that is safe for all users.
- Strengthen safety practices through collaboration, engagement, and education.
- Use a data-driven approach to plan and implement proactive, innovative, and proven safety countermeasures.
- Embrace the Safe System Approach and promote a culture of safety.

These goals will be refined based on feedback from the PMT, SWG, and the COMPASS Board of Directors and as plan recommendations develop.

Safe System Approach

Figure 4: Safe System Approach Principles and Objectives (Source: FHWA)

The fourth goal references the Safe System Approach (SSA). The SSA has been in use in countries around the world for decades to help them move towards a goal of zero roadway deaths and serious injuries. It has proven to be effective, with countries adopting the approach in a variety of contexts, generally seeing decreases of 33% to nearly 70% in roadway fatalities from 2000 to 2019, as shown in Figure 2. The SSA is a mindset shift *from crash prevention to injury/fatality prevention*. It puts less emphasis on improving behavior and more emphasis on designing for mistakes that people make.

Figure 4 illustrates the six principles and five objectives of the Safe System Approach. The six SSA principles, shown on the outside ring of the figure, encompass the fundamental beliefs the approach is built on. The five SSA objectives, shown in the middle ring of the figure, are conduits through which the approach is implemented. The SSA is discussed further in Technical Memorandum #2.

PERFORMANCE MEASURES

This section reviews COMPASS' current performance measures and targets and presents additional performance measures for consideration. *These measures and targets will be updated as the plan progresses to reflect the final strategies and emphasis areas in the plan*. Updates will include setting targets and may also include additional performance measures for specific crash types or other objectives.

CURRENT PERFORMANCE MEASURES AND TARGETS

COMPASS is currently required to establish safety performance measures as part of the Highway Safety Improvement Program (HSIP) Final Rule. The Final Rule establishes five performance measures, which are evaluated as five-year rolling averages. COMPASS currently reports these five performance measures in their *Change in Motion Scorecard*[3] – a report of the region's progress towards meeting the *Communities in Motion* goals. Table 1 presents these performance measures, and their respective targets and timeframes, as presented in the most recent *Change in Motion Scorecard*.

Table 1 - COMPASS Safety Performance Measures and Targets

COMPASS Performance Measure	Target	Timeframe	2021 Results
Number of auto fatalities (5-year average)	13.10	2030	51.20
Rate of auto fatalities (per 100 million vehicle miles traveled (VMT), 5-year average)	< 1.41	2022	1.06
Number of auto serious injuries (5-year average)	123.90	2030	467.20
Rate of auto serious injuries (per 100 million VMT, 5-year average)	< 7.30	2022	9.76
Non-motorized fatalities and serious injuries (5-year average)	21.90	2030	59.60
Total injury crashes (5-year average)	1,343	2030	3,890

The scorecard notes that COMPASS has met the rate of auto fatalities, but that for all other performance measures, it is not on track to meet the target within the allotted timeframe, though progress is being made.

POTENTIAL ADDITIONAL PERFORMANCE MEASURES

Performance measurement can serve a range of purposes, including compliance (e.g., the federal measures described above), program evaluation and monitoring, resource allocation, project screening, and project prioritization. Incorporating safety considerations into all these purposes can help achieve desired targets. The performance measures in this memorandum focus on program evaluation and monitoring. Project-related screening and prioritization metrics will be proposed in subsequent tasks addressing enhancements to existing practices and policies.

[3] 2022 Change in Motion Scorecard, COMPASS. https://compassidaho.org/wp-content/uploads/2022_Change_in_Motion_Scorecard.pdf

Generally, program evaluation and monitoring focuses on two categories, program implementation (i.e., Is the program being carried out as envisioned?) and program outcomes (i.e., Is the program's implementation resulting in the desired outcomes?). The lists below present example performance measures that could be considered in each of these categories. Some measures are qualitative and require staff judgment to evaluate, while others are objectively evaluated through data analysis. *The performance measures shown are illustrative of the types of measures that could be included in the final plan. These measures will be refined as the project progresses based on the data analysis, recommended strategies, and feedback from the PMT, SWG, RTAC, and COMPASS Board of Directors.*

- **Program Implementation** – This entails evaluating progress made in implementing the program and could include monitoring and evaluating the following:
    a. Level of funding being allocated to safety programs and projects.
    b. Number of actions from the RSAP implemented.
    c. Number of safety projects completed.
    d. Frequency and quality of engagement with regional oversight group (e.g., SWG).
    e. Frequency and level-of-use of resources provided by COMPASS.
    f. Identifying implementation barriers and lessons learned (e.g., additional data needs, policy/funding challenges, training needs, additional coordination needed).
    g. Number of member agencies adopting recommended practices.
    h. Geographic and/or demographic diversity of the above metrics.
- **Program Outcomes** – This includes evaluating the success of the program in achieving its goals (e.g., reducing fatalities and serious injuries). Performance measures COMPASS may consider using for this purpose include:
    a. Number of crash-related fatalities and serious injuries (or number of fatal and serious injury crashes), including breakouts by:
        i. Emphasis areas (e.g., vulnerable roadway users, intersection crashes) – *Emphasis areas will be defined in the completion of Task 4 of this plan*.
        ii. Urban vs. rural context (or other demographically defined areas)
        iii. Roadway ownership (i.e., State vs. non-State)
    b. Rate of crash-related fatalities and serious injuries (or fatal and serious injury crashes) per 100 million VMT, with similar breakouts as the above.

Table 2 presents an example of how these measures can be tied to the project goals. *Outcome measures are tied to each goal and are not included in the table.*

Table 2 - Example Performance Measures for Each Goal

Plan Goal	Potential Performance Measures
Design and build a transportation network that is safe for all users.	• # of projects completed • # of member agencies that have adopted the Safe System Approach or other recommended practices
Strengthen safety practices through collaboration, engagement, and education.	• Frequency and quality of engagement with regional oversight group • Frequency and level-of-use of resources provided by COMPASS • Identifying implementation barriers and lessons learned
Use a data-driven approach to plan and implement proactive, innovative, and proven safety countermeasures.	• Frequency and level-of-use of resources provided by COMPASS • Identifying implementation barriers and lessons learned • # of fatal and serious injury crashes
Embrace the Safe System Approach and promote a culture of safety.	• Level of funding being allocated to safety programs and projects • Number of actions from the RSAP implemented • Frequency and quality of engagement with regional oversight group • # of member agencies that have adopted the Safe System Approach or other recommended practices

The results of these evaluation and monitoring activities can be used to track progress and outcomes and to refine the process as necessary to increase its effectiveness. Evaluating implementation can be started in the immediate timeframe after the plan is adopted. Evaluating the outcomes of the program may take longer as it may take several years for there to be sufficient data available and for enough actions to be implemented to have an impact at the regional level.

NEXT STEPS

This memorandum will be reviewed by the PMT and then presented to the SWG, RTAC, and COMPASS Board for their review and feedback. It will be updated once more based on this feedback. It will be evaluated again during Task 6 (Implementation Plan) of the RSAP.

APPENDIX A: SWG #1 MEETING NOTES

Safety Working Group Meeting #1 MEETING SUMMARY

Tuesday, November 14

COMPASS Headquarters – Main Floor Conference Room

Attendance

Project Team: COMPASS, Kittelson, Atlas Strategic Communications

SWG Members: ACHD, ITD, City of Boise, Garden City, City of Caldwell, City of Middleton, City of Notus, Idaho State Police, Boise Police Department, Idaho Trucking Association, FHWA, Valley Regional Transit, Boise State University, Ada County

- **Welcome and Introductions**
  - Doug (Atlas) welcomed the group, covered the agenda and housekeeping.
  - Individual introductions around the room.
  - Doug (Atlas) covered the role of the Safety Working Group.
- **RSAP Overview**
  - Hunter (COMPASS) presented project overview and benefits of a regional approach.
  - Nick (Kittelson) presented SS4A Action Plan components; Safe System Approach; "Swiss cheese" redundancy model; successful safe system approach examples; vision, goals, performance measures, targets; safety performance evaluation plan; systemic vs. location-specific definitions; final plan components.
- **Stakeholder and Community Engagement**
  - Doug (Atlas) presented an overview of the Stakeholder and Community Engagement plan, including goal and objectives, equity lens, and key strategies and tactics.
- **Breakout Groups**
  - Attendees were split into three groups. Facilitated by Amanda, Natalie, and Doug (Atlas), the groups discussed items in three categories: vision & goals, safety concerns, and community engagement. Common responses, key themes, and items of note that were raised by attendees in the discussion groups are below.

Vision & Goals

- Reactions to Vision Zero and RSAP requirement to set a goal of zero fatalities and serious injuries:
  - While lofty, it should be the goal of the safety plan. It should not be reasonable to set a goal where any death or serious injuries are acceptable.

    - The goal has merit because a reduction in deaths and serious injuries is achievable.
    - While group members agreed this has to be the goal, questions were raised about how to truly achieve it and if it is realistic to do so.
    - “Setting the goal is great, but getting there is a different story.”
    - Doubts were expressed due to limits on behavior change. Infrastructure and policy can help change behavior, but there will always be variables that make this goal difficult to achieve.
- What needs to happen to achieve that vision?
    - Achieving (or working toward) this goal will require buy-in to all five of the items in the Safe System Approach wheel.
    - Mindset shift across the board – planners, leadership, oversight, multi-disciplinary partners – everyone needs to be on the same page.
    - Education on the Safe System Approach will be required to aid in the mindset shift, ideally tailored to each audience to “speak their language.”
    - Set various milestones where X% reduction in fatalities and serious injuries should be reached until we hit zero.
    - We need transparency through the process.
    - Identify what is not working now to help inform what the solutions need to be.
    - Public education is critical.
- What are the desired outcomes from your municipality/agency?
    - Develop an actionable plan to pursue SS4A Implementation grant.
    - Identify projects and priorities in my community.
    - Learn how to better incorporate safety into our programs across the organization.
    - Educate the public on the benefit of the approach and improve their understanding.
    - Foster behavior change through thoughtful, repetitive education efforts, especially related to safety for commercial trucking, public transit and bicyclists/pedestrian travel.
    - Set unified vision and goals. Improved partnerships among municipalities/agencies as a result of working on the RSAP together. If we can align behind this vision, we can better work together on projects stemming from the RSAP and other future projects.

    - Better integrate between agencies in comprehensive planning related to city development and transportation impacts.
    - Develop safer travel routes, including multi-use pathways for cyclists.
    - Foster a thoughtful and effective approach that adequately accounts for future growth.
    - Pay equal attention to behavior and infrastructure that contribute to serious crashes.
- What obstacles do you anticipate the RSAP will need to navigate?
    - Constraints by MUTCD guidelines. It is difficult to make design decisions without vision alignment from engineering guidance.
    - Mindset shift and overcoming the “that’s the way we’ve always done it” among those not yet bought in on the Safe System Approach and/or Vision Zero.
    - Funding for public education programming, funding for infrastructure improvements including roundabouts, medians and designated crosswalks.
- What is the political climate the project team should be aware of surrounding specific safety issues, the RSAP, or other safety-related programs?
    - Most in elected leadership positions are on board with Vision Zero and are supportive of safety programs.
    - Those that have or may have pushback should be educated that Vision Zero does not set zero deaths/serious injuries as the only success metric but should be the goal that safety programs work toward.
    - The unique dynamic between the regional highway districts and addressing solutions within those different jurisdictions.
    - General feeling that people do not like to be told what to do, applicable to seat belt laws, speed, etc.
- Are there particularly vocal advocacy groups that the RSAP project team should consider? (e.g. bike/ped, MADD, etc.)
    - ACHD advisory committees
    - Accessibility community
    - Destinations where people congregate (Village at Meridian, fairgrounds, YMCA, etc.)
    - Idaho Walk Bike Alliance
    - MADD
    - FACTS (Foundation for Ada and Canyon County Trail Systems)
    - School districts

  - Boise Bike Project
  - Traffic control companies/construction companies
- What do you need from the RSAP project team to gain buy in from your leadership/stakeholders? What tools or resources do you need to improve transportation safety? (e.g. funding, analysis support, partnerships, help selecting treatments, etc.)
  - Funding, or recommendations to take to leadership for approval to pursue funding like an SS4A Implementation grant
  - Ready projects
  - Grant writing assistance
  - Resources to assist in educating skeptical elected officials, mindset that safety will never be enough
  - Resources to expand bandwidth, enable smaller municipalities to pursue funding like the SS4A implementation grant

Safety Concerns

- Are there high-level safety concerns that are common issues in your municipality/agency? (e.g. school safety, bike/ped infrastructure, etc.)
  - Distracted driving, DUIs are most common for ISP and City of Boise.
  - Team should consider that speed is not only solution for intersection crashes. Speed contributes to severity of injuries but not necessarily the only problem. If they're speeding, they're doing something else wrong (distraction, inattention, inebriation).
  - Farm vehicles on roads and railroad crossings are problematic in smaller communities like Notus.
  - Rural highways, primarily in Canyon County, need to be paid attention to as well. Farming industry especially can unintentionally strain rural roadways and inhibit travel.
  - Not enough infrastructure for safe bicyclist and pedestrian travel.
  - Left hand turns and vehicle versus pedestrian crashes are common issues.
- More specifically, are there particular areas that are known to your municipality/agency that should be addressed in the RSAP? (e.g. problem intersections, frequent school zone issues, etc.)
  - Rural Canyon County is problematic due to high speeds and four-way stops that get missed.

- Fairview Ave has so many entry points that lead to more safety issues.
- Lack of bike lanes on urban streets such as Chinden, Parkcenter and State.
- What are your biggest barriers to addressing known safety issues in your jurisdiction?
  - Resources. There just is not enough manpower to necessarily prioritize safety over other issues.
  - Lack of awareness from constituencies, both related to behavior on the road and not recognizing the need to prioritize safety.
- Are there communities, neighborhoods, or a particular demographic/group that you feel are more impacted by transportation safety issues in your jurisdiction/area than others?
  - Highway Safety is partnering with local health districts and the Department of Health and Welfare to document social vulnerabilities in communities and identify public health issues that lead to transportation safety challenges. Trying to determine who these more vulnerable people are and how to mitigate.
  - Canyon County seems to be at a bigger disadvantage than Ada County considering wealth disparities and demographics.

Community Engagement

- What support may your organization be able to provide the RSAP project team in engaging your community in the RSAP process?
  - Garden City: social media
  - ISP: social media; can contribute to PSAs
  - Boise: inclusion in upcoming behavior change campaigns; insert into utility bills, employee newsletter, public newsletter
  - Notus: email list
  - Valley Regional Transit: social media
- What channels do you have most success with in your community to garner public feedback?
  - Social media
  - Local agency outreach directly to the community
  - Email campaigns

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COMPASS
Regional Safety Action Plan

TECHNICAL MEMORANDUM #2

March 11, 2024 Project #: 29061.0

To: Hunter Mulhall and Austin Miller, COMPASS

From: Matt Steele; Mark Heisinger, PE; Nick Foster, AICP, RSP1; and Sonia Daleiden, PE, PTOE

CC: Project Management Team

RE: Existing Safety Plans and Practices and Peer Review Summary

One component of the COMPASS Regional Safety Action Plan (RSAP) will be recommended actions for COMPASS and member agency policies and practices. This memorandum documents existing safety plans and practices implemented by agencies across the COMPASS planning area. It also summarizes findings from national peer plan reviews and interviews, along with best practices from the Federal Highway Administration (FHWA) and other guidance. These findings will be used in conjunction with the data analysis results (documented in Technical Memorandum #3) to inform future policy and strategy recommendations for the Regional Safety Action Plan.

EXECUTIVE SUMMARY

This memorandum summarizes a review of member agency safety plans and practices and those of other agencies around the country, as well as international sources for context and background in completing the COMPASS RSAP. The reviews covered existing practices in the Treasure Valley and identified best practices and lessons learned from national and international sources. Together, the findings from these reviews will inform strategy development as this project progresses. This section summarizes key findings to be considered as this project progresses.

SAFETY PLANS AND PRACTICES

A review was conducted of current safety planning practices at the member agency, regional, and state levels. Key findings are as follows:

- **Regional Planning**: While the RSAP is the first dedicated safety planning effort for the entirety of the Treasure Valley, COMPASS incorporates safety-related goals and criteria in the Communities in Motion 2050 (CIM) document and incorporates safety in the project prioritization and performance measure processes. This plan should develop strategies within the four roles COMPASS has identified that it plays in regional planning: planner, facilitator, expert, and implementor.
- **State Planning**: ITD's vision for transportation safety is set out in its Strategic Highway Safety Plan (SHSP). The SHSP emphasis areas should be considered in this plan to identify an overlap between regional and statewide priority areas. Its Vulnerable Road User Assessment also identifies high pedestrian and bicycle crash locations and general countermeasures to consider.
- **Member Agencies**: The project team conducted interviews with, and reviewed plans and other

documents from, COMPASS member agencies. Findings from this review are shown below:

- **Goals**: All agencies had at least one goal related to transportation safety. The City of Boise's Vision Zero Plan and the Canyon County Local Road Safety Plan are the only adopted plans with a goal of zero fatal crashes. Boise is the only member agency with a goal and target date for reducing fatal and serious injury crashes.
- **Existing Practices**: Most member agencies don't have formal processes for identifying safety-focused projects or integrating safety into projects. However, many agencies have informal processes for identifying safety projects (i.e., annual review of crash data, coordination with partner agencies) and some agencies have begun incorporating safety related improvements into maintenance projects. In addition, most agencies require development to build walking and biking infrastructure or safety related improvements.
- **Successes**: Many agencies cited successful implementation and political support for low-cost improvements, particularly walking and biking projects focused on serving school-aged children. Most agencies also noted that they had ongoing and successful coordination with other partner agencies (i.e., school districts, law enforcement).
- **Challenges**: Member agency challenges generally fall into one of two categories: events that may be directly contributed to crashes (i.e., incomplete bike network, driving over the speed limit, red light running, lack of pedestrian crossings) or challenges that prevent them from doing more to address safety (i.e., lack of funding, limited staff, competing priorities, lack of support for certain countermeasures, coordination with development).

Best Practices

The project team reviewed Federal Highway Administration (FHWA) guidance and reviewed plans from, and interviewed, six other agencies, in addition to reviewing some international practices. Key findings from these reviews include:

- The Safe System Approach (SSA) has been adopted as a core strategy by the United States Department of Transportation in its National Roadway Safety Strategy.
  - The SSA is a mindset shift *from crash prevention to injury/fatality prevention* - putting emphasis on *designing for mistakes that people make so those mistakes don't result in a fatal or serious injury crash.*
  - The SSA is being implemented by leading agencies around the country, including those reviewed for this plan.
  - FHWA has published two documents that that should be used to help develop strategies for this plan: the *Safe System Roadway Design Hierarchy* and *Safe System-Based Framework and Analytical Methodology for Intersections.*
- Common threads pulled from peer agencies included the following approaches for a successful regional transportation safety plan:
  - Conduct a robust and targeted stakeholder outreach effort, with a steering committee to guide the plan implementation and evolution. Continued engagement after the plan encourages member agencies to implement projects and facilitate subsequent updates.
  - Data analysis should identify systemic trends and develop a HIN that focuses on fatal and serious injury crashes.
  - There is some variance in whether regional plans have included specific projects. Most regional plans provide a toolbox of potential solutions to address systemic trends, allowing member agencies to develop projects to address identified trends. Some MPOs have successfully identified projects as part

of their safety plans.

- Successful elements of regional safety plans include:
    - MPO-specific strategies related to education, engagement, coordination, and technical support.
    - Strong political support and a commitment from elected officials and staff to prioritize their safety goals.
    - Other successful strategies for implementation include:
        - Quick-build and low-cost projects for quick-wins.
        - Making incremental progress to build toward the ultimate goal.
        - Providing funding and other support to agencies to simplify the project development process.
        - Coordination across agencies to share resources and prepare joint project applications.
        - Adapting strategies to changing data and sharing success stories.

TREASURE VALLEY SAFETY PLANS AND PRACTICES

This section summarizes the existing plans and practices in place at the regional and state levels, as well as those used by COMPASS member agencies.

COMPASS SAFETY PLANNING

COMPASS' approach to regional safety planning is detailed in the *Communities in Motion 2050* (CIM 2050) plan, which serves as the region's Long Range Transportation Plan (LRTP). CIM 2050 outlines safety goals, COMPASS' role in regional safety planning, a project prioritization process, performance measures, and recommended actions and projects. COMPASS also maintains the transportation improvement program (TIP), which programs regionally significant projects and all federally funded projects in the Treasure Valley. COMPASS also reports how projects in the TIP relate to CIM 2050 performance measures.

COMPASS approaches regional safety planning through the four roles detailed in Table 1 (Reference 1).

Table 1: COMPASS' Roles in Transportation Safety and Security

Role	Responsibilities
Planner	• Research and identify transportation safety and security strategies and countermeasures. • Support the development of regional transportation safety and security policies.
Facilitator	• Identify regional transportation safety and security needs by working with COMPASS stakeholders and workgroups. • Promote transportation safety and security strategies through public outreach and communication campaigns. • Provide opportunities for peer exchange and education regarding transportation safety and security.
Expert	• Perform safety data analyses. • Develop new and additional tools to analyze safety data. • Disseminate safety data to member agencies. • Develop transportation safety and security measures and targets.
Implementor	• Prioritize safety and security projects in CIM 2050 and the transportation improvement program (TIP). • Identify funding sources for safety and security projects.

Source: *Communities in Motion 2050, Transportation Safety and Security.* December 19, 2022. https://cim2050.compassidaho.org/wp-content/uploads/SafetySecurity.pdf.

GOALS, OBJECTIVES, AND PERFORMANCE MEASURES

Alongside economic vitality, convenience, and quality of life, CIM 2050 includes safety as one of its goal categories and sets safety objectives. The CIM 2050 safety category also includes security and resiliency objectives; however, this plan is focused only on safety. CIM 2050's safety goal is to *provide a safe transportation system for all users* (Reference 1).

COMPASS uses the federal Transportation Performance Management (TPM) performance measures, along with one additional measure, total injury crashes, to evaluate progress toward this goal. Technical Memorandum #1 (TM#1) - Vision and Goals, summarizes these measures and their current targets.

PROJECT PRIORITIZATION

COMPASS oversees two significant project prioritization processes. CIM 2050, the LRTP, prioritizes long-term regionally significant projects, while the TIP programs the next seven years of federally funded projects, as well as regionally significant non-federally funded projects.

Communities in Motion 2050

CIM 2050 plans and prioritizes projects that contribute towards the four goals noted in the previous section, one of which is safety. The prioritization process is guided by three policies/strategies:

- CIM 2050 Funding Policy
- Complete Network Policy
- Congestion Management Process

COMPASS analyzes the extent to which each project supports the four CIM 2050 goal areas. The following metrics are used for the safety goal area:

- Bike Level of Traffic Stress
- Bike/Ped Trips
- Crashes
- Pedestrian Level of Service

The analysis allocates 100 points to each of the four goal categories. COMPASS then averages scores across the four categories for the final CIM 2050 Goals score. This score is combined with another score, worth 30 points, related to system performance with respect to vehicle miles traveled (VMT), congested VMT, and hours of delay. This final total score, out of 130 points, is used to rank projects. Safety considerations account for under 20% of the final score (i.e., 25 out of 130 points). Projects are split into separate categories based on whether they are on the state or local roadway system. The Regional Transportation Advisory Committee (RTAC) and the Board of Directors review these rankings and determine the final rankings.

Roadway projects include on-street active transportation infrastructure. Off-street pathways are prioritized separately, as are public transportation projects. There are no explicitly safety-oriented priority measures for these categories (e.g., number of crashes); however, pathways are prioritized based on their proximity to activity generators and connectivity. Equity is also a prioritization consideration for these two project categories (Reference 2).

Transportation Improvement Program

COMPASS programs projects into the TIP based on its Resource Development Plan, which considers regionally planned projects, as well as projects submitted by member agencies (Reference 3). Prioritized needs from CIM 2050 and other regional plans are given priority over other projects (Reference 4). Member agencies applying for projects outside CIM 2050 must identify how their projects affect the CIM 2050 performance measures described in the previous subsection and how they will improve safety. COMPASS staff score the projects submitted by member agencies similarly to how CIM 2050 projects are evaluated. RTAC then recommends final rankings (Reference 5).

PREVIOUSLY RECOMMENDED ACTIONS

To meet their performance measures, COMPASS has identified a list of recommended actions. These actions, shown below in Table 2: COMPASS Recommended Safety Actions were recommended by an RTAC subcommittee to leverage COMPASS' four roles as a regional planning partner, previously described in Table 1. These actions were identified to address the underperforming 2021 results of COMPASS' progress towards its safety targets.

Table 2: COMPASS Recommended Safety Actions

Type of Action	Recommended Actions
Plan	• Develop a Regional Safety Action Plan • Discuss the potential of adopting a Vision Zero goal/policy and adopting the Federal Highway Administration's safe systems approach to transportation safety. • Focus on regional crash and safety trends to support long-range planning.
Implement	• Prioritize safety projects in COMPASS' Project Development Program and CIM Implementation Grant program. • Fund safe routes to school with off-the-top federal funding.
Provide Technical Expertise	• Make crash data, statistics, and analyses more easily accessible to member agencies to use in their planning and decision making. • Work with member agencies and safety experts to further analyze safety data to identify regional trends and solutions. • Acquire useful data and analyses to support member agencies and COMPASS planning efforts.
Facilitate	• Conduct public outreach, such as hosting transportation safety-related speakers and training, sponsoring bicycle safety public service announcements, and raising awareness of safety issues through social media.

Source: *Communities in Motion 2050, Transportation Safety and Security.* December 19, 2022. https://cim2050.compassidaho.org/wp-content/uploads/SafetySecurity.pdf.

The action items in the *Plan* row of Table 2 are expected to be accomplished by this RSAP. The remaining action items will all be considered in developing the plan's recommendations.

COMPLETE NETWORK POLICY

COMPASS' Complete Network Policy, adopted by the COMPASS Board of Directors in December 2021, details a vision of the Treasure Valley with a transportation system that is "designed, constructed, and maintained to be safe, efficient, and viable, and provides an appropriate balance for all users, including pedestrians, cyclists, transit riders, motorists, freight haulers, and emergency responders" (Reference 6). This vision is expanded upon through three goals:

1. Provide policy direction to help implement the vision of the regional long-range transportation plan for local land use agencies, transportation agencies, and other stakeholders.
2. Provide a performance-based planning and programming approach to help identify and prioritize transportation infrastructure investments to promote the goals and objectives of the regional long-range transportation plan.
3. Enable COMPASS to provide appropriate information and best practices to support local land use decision-making, through participation in land use and transportation planning.

The Complete Network Policy is intended to help implement the vision set by CIM 2050 – including its safety-related goals and targets. The accompanying guide describes how the policy is implemented for each mode, including considerations related to the CIM 2050 safety goals. The Complete Network Policy also includes a Complete Network map, which describes the hierarchy of the system for Freight, Transit, Bicycle, and Auto modes. A Development Review Checklist is provided to assist member agencies in assessing how developments align with the Complete Network Policy.

STATE SAFETY PLANNING

Idaho Transportation Department's vision for transportation safety is set out in its Strategic Highway Safety Plan (SHSP), a federally required document as part of the Highway Safety Improvement Program (HSIP). Per the SHSP, ITD's vision is to "continue to move toward zero deaths on all roadways" in Idaho by providing "the safest transportation system possible" (Reference 7).

To achieve this vision, ITD has established the following focus areas:

1. Impaired Driving
2. Occupant Protection
3. Vulnerable Roadway Users
    a. Motorcycles
    b. People who Walk or Bike
    c. Youthful Drivers
    d. Mature Drivers
4. Vulnerable Roadway Behaviors
    a. Aggressive Driving
    b. Distracted Driving
5. Infrastructure
    a. Lane Departure
    b. Intersections

Each focus area is assigned a leader responsible for moving the area forward (Reference 7).

Similar to COMPASS, ITD adopts targets for the five safety performance measures required by the federal TPM:

- Number of fatalities.
- Rate of fatalities.
- Number of serious injuries.
- Rate of serious injuries.
- Number of non-motorized fatalities and serious injuries.

ITD recently completed its federally required vulnerable road user assessment (VRUA, Reference 8). This study analyzed all crashes involving people walking and biking in Idaho from 2012 to 2021. The VRUA looked at common crash types and locations, including locations in Boise, Nampa, and Meridian. It also recommended countermeasures, including adding bike lanes/paths, improving sight distance, adding lighting, tightening curb radii, better enforcing distracted driving laws, and advanced medical training to improve survivability after a crash.

MEMBER AGENCY SAFETY PLANNING

The project team investigated the existing safety plans, policies, and practices of COMPASS General Member agencies. The first step of this process was to compile and review relevant plans and policies for each member agency (e.g. Comprehensive Plans, Transportation Safety Plans). The project team also interviewed staff from most member agencies, as shown in Table 3[1]. These interviews confirmed the relevance of the reviewed safety documents and expanded on other practices, challenges, and successes each member agency has faced. The following sections summarize key findings from these interviews in each of the topical areas discussed. Appendix A contains a more detailed summary.

Table 3: Interviewed COMPASS Member Agencies

COMPASS Member Agencies			
Ada County	Ada County Highway District (ACHD)	City of Boise	City of Eagle
City of Caldwell	City of Garden City	City of Greenleaf	City of Kuna
City of Melba	City of Meridian	City of Middleton	City of Nampa
City of Notus	City of Parma	City of Wilder	Highway District #4 (HD4)

SAFETY RELATED GOALS

All agencies had safety goals outlined in one or more of the following plans:

- Comprehensive plans of land-use agencies. Some agencies are in the process of updating their comprehensive plans to feature more robust transportation sections.
- Transportation plans, including plans focused on specific modes or areas (e.g., pathways plans, Greenbelt access plans, and policies).

[1] As of the writing of this memorandum, only Canyon County and the City of Star had not responded to interview requests

- Safety plans, which include the City of Boise's Vision Zero Plan and the Canyon County Local Road Safety Plan (LRSP). The Canyon County LRSP involved representatives of Canyon County and the Cities of Nampa and Caldwell.

Safety goals varied in detail. Many agencies specifically targeted fatal and serious injuries. Some common themes capture the member agencies' efforts:

- Providing walking and biking infrastructure and connecting gaps in existing biking and walking networks.
- Improving safety along school routes.
- Focusing traffic safety efforts on neighborhood facilities.

EXISTING PRACTICES

The project team interviewed agencies to understand their existing safety-related practices. This included topics related to projects, analysis practices, and resources used. The following subsections summarize the findings from these interviews.

Project Identification

All agencies have some process, whether formal or informal, to regularly identify transportation safety projects. The largest member agencies with roadway authority, ACHD and City of Nampa, have the most formal practices. Those two agencies review crash data annually to identify high crash locations. These reviews consider crash frequency and severity. ACHD can have specific emphasis areas in certain years (e.g., pedestrian crashes). Nampa primarily focuses its reviews on intersections and pedestrian crossings. Both agencies conduct field reviews and other analyses at the selected high crash locations to develop projects. Smaller projects (e.g., traffic design) may be completed in-house, while larger projects are often sent to consultants for concept development, analysis, and/or design.

Other agencies with road authority identify projects through a variety of means, which are also sometimes used by ACHD and the City of Nampa, including:

- Community members' submitted complaints.
- Input shared by police departments, fire departments, and parks departments either through direct staff-to-staff communication or through City Council members delivering information on behalf of a department.
- Walk or drive audits completed by agency staff or police.
    - These audits typically do not follow the formal FHWA road safety audit (RSA) process.

Land-use agencies in Ada County nominate projects to ACHD for its Integrated Five-year Work Plan (IFYWP). These agencies use input from staff, committees, elected officials, and/or the public to identify their requests. They prioritize their requests using various processes. Some cities (e.g., Eagle and Nampa) use formal criteria, of which safety is one criterion. The City of Boise is working on a new methodology for prioritizing its IFYWP requests.

Integrating Safety into Other Projects

Most agencies did not identify a formal process to integrate safety into other maintenance and capital projects occurring in their jurisdiction. ACHD has started doing this as part of its maintenance projects with new initiatives set to come. As a theme, most cities identified a lack of funding and roadway ownership as key impediments to integrating their transportation safety goals into projects.

Among those agencies that have found some success integrating transportation safety into other projects, the following were common approaches:

- Leveraging the development process to implement safety-focused projects.
    - Many agencies require walking and biking infrastructure to be built along the development frontage.
    - ACHD also uses the development process for this purpose by:
        - Conditioning development with safety-focused mitigation measures (e.g., guardrail, traffic calming).
        - When possible, use development to accelerate a safety project.
        - Allowing developments to propose safety-focused improvements as alternatives to capacity increasing measures; however, this process has rarely been used according to staff.
- Contributing funds to ACHD projects to enhance walking and biking infrastructure (this is unique to land-use agencies in Ada County).
- Capitalizing on roadway maintenance projects to restripe roadways for narrower lanes, wider shoulders, and space for walking and/or biking.

Crash Data Analysis

Agencies vary in their approach to crash data analysis. Most agencies rely on ITD, ACHD, consultants, and/or development applications for crash data analysis support. Many also work with law enforcement agencies. As noted previously, the largest agencies conduct data analysis in-house annually and sometimes as notable crashes occur (i.e., the recently formed City of Boise/ACHD Traffic Fatality Review Taskforce). Smaller agencies showed the strongest reliance on police department staff or other external resources for crash data analysis.

Safety-Focused Staff

At the time of these interviews, no agency had dedicated safety staff, though ACHD has recently hired a Safety Engineering Manager and is building out a dedicated safety team in its Development and Technical Services Division. Generally, the responsibility for transportation safety planning and implementation falls on one or two agency staff. In smaller agencies, the staff person may have many other duties, such as a city clerk or public works director, or an elected official, such as the mayor, may be the lead on transportation safety initiatives.

Outside of city staff, agencies utilize transportation safety-oriented task forces, boards, or commissions to help guide their safety practices. City staff are not always represented in these groups, but law enforcement is. Many agencies noted that elected officials also play an important role in guiding practice.

Countermeasure Resources

Countermeasures are employed by each agency. None of the member agencies have a defined set of preferred safety countermeasures to employ. In some cases, the knowledge of proven countermeasures and their efficacy is held by a few members of a transportation commission or by a single staff member.

PARTNER ORGANIZATIONS

During individual interviews, agencies were asked what partner agencies and organizations they work with on transportation safety. Common responses included transportation-focused agencies (i.e., ACHD, ITD, LHTAC, FHWA). All agencies also noted police department collaboration, although to varying degrees and with different relationships. Smaller agencies indicated an increased engagement with local school districts, often in relation to the focus on safe routes to school or child pedestrian safety grant efforts. Fire departments and EMS services were also noted among smaller agencies. All agencies indicated some working relationship with adjacent agencies, although larger agencies often indicated more coordination of projects while smaller agencies coordinated shared resources (police/ fire departments, street maintenance equipment, etc.).

SUCCESSES

The successes shared by member agencies can be divided into two broad categories: projects successfully implemented and intrinsic organizational strengths. Member agencies frequently cited implementing walking and biking safety-related projects as a success, including crossing enhancements, school and youth focused projects, and pathway improvements; the latter item was often cited by land-use agencies that own and operate pathway systems, but not the rest of the transportation network. Agencies also have found success with signing, striping, and maintenance related activities.

Common themes related to organizational strength included:

- Effective internal coordination.
- Support from elected officials and community members for safety improvements, especially for people walking and biking.
    - Smaller agencies noted their councils are involved and enthusiastic.

CHALLENGES

The challenges communicated by member agencies fell into two categories:

1. Challenges that may directly contribute to crashes.
2. Challenges that prevent doing more to address safety.

Challenges that may directly contribute to crashes include:

- Motor vehicle speeds, including people driving over the speed limit, as well as the magnitude of the posted speed limit itself.

- Not having a connected biking network.
- Red light running.
- Distracted driving.
- Lack of pedestrian crossings on large roads.
- Access frequency on higher speed and volume roadways.

Compounding the factors contributing to crashes, a number of shared challenges prevent agencies from doing more to address safety:

- Lack of funding, as well as having difficulty navigating the process of applying for funding.
- Limited staff resources.
- Limited guidance on what to prioritize.
- Competing priorities within agencies, as well as between agencies that own streets in other agency's limits.
- Coordination with land developers to ensure new transportation facilities are adequate. Retroactive improvements to sidewalks and drainage are challenges to smaller agencies integrating new developments.
- Lack of public and/or political support for lowering speed limits and implementing roundabouts.
- Lack of contractors bidding for relatively smaller projects (this was largely expressed by smaller agencies; though it is also sometimes a challenge for larger ones, too).

Political Support

Member agencies generally indicated that there was political support for at least some facets of transportation safety. Some agencies noted that public support for a project or initiative is often important to securing elected officials' support. Smaller agencies indicated strong political support for transportation safety improvements, with many of these interviews being attended by the City's mayor.

BEST PRACTICES AND LESSONS LEARNED

This section summarizes the best practices from Federal guidelines, as well as those learned by reviewing case studies from similar peer agencies' safety action plans.

SAFE SYSTEM APPROACH

The Safe System Approach (SSA) has been in use in countries around the world for decades to help them move towards a goal of zero roadway deaths and serious injuries. It has proven to be effective, with countries adopting the approach in a variety of contexts, generally seeing decreases of 33% to nearly 70% in roadway fatalities from 2000 to 2019 (Reference 9). In January 2022, the United States Department of Transportation released its National Roadway Safety Strategy (Reference 10) that adopted the SSA as its core strategy for achieving this goal. The SSA is a mindset shift *from crash prevention to injury/fatality prevention*. It puts less emphasis on improving behavior and more emphasis on *designing for mistakes that people make so that those mistakes don't result in fatal or severe injury crashes*.

Figure 1 Safe System Approach Principles and Objectives (Source: FHWA)

Figure 1 illustrates the six principles and five objectives of the SSA. The six SSA principles encompass the fundamental beliefs the approach is built on. A successful Safe System Approach weaves together all six principles. The six principles are shown around the outside ring of the graphic.

The five SSA objectives are conduits through which the approach is implemented. They are presented in the middle ring of the graphic. These promote a holistic approach to safety across the entire roadway system and employ the six principles.

Figure 2 contrasts the Safe System Approach with how transportation safety has been more historically addressed.

Figure 2 Historical Approach Compared to SSA (Adapted from FHWA)

SAFE SYSTEM ROADWAY DESIGN HIERARCHY

To help agencies put the SSA into practice, FHWA recently published the *Safe System Roadway Design Hierarchy* (Reference 11). This guide is intended to help practitioners make project-specific decisions on treatments. It places strategies into four tiers with respect to their alignment with the SSA. Figure 3 illustrates this hierarchy. It places removing severe conflicts mostly likely to result in fatal or serious injuries (e.g., separating vulnerable road users from motor vehicles, removing roadside fixed objects) at the top, followed by managing motor vehicle speeds (reducing kinetic energy), using traffic control devices to manage conflicts in time, and, finally, making road users more aware of potential conflicts (e.g., signing, striping).

Practitioners are encouraged to start at the top of the hierarchy when identifying potential treatments. The guide includes several countermeasures in each tier for practitioners to consider when evaluating a site. It is a valuable reference guide for COMPASS and its member agencies when developing projects.

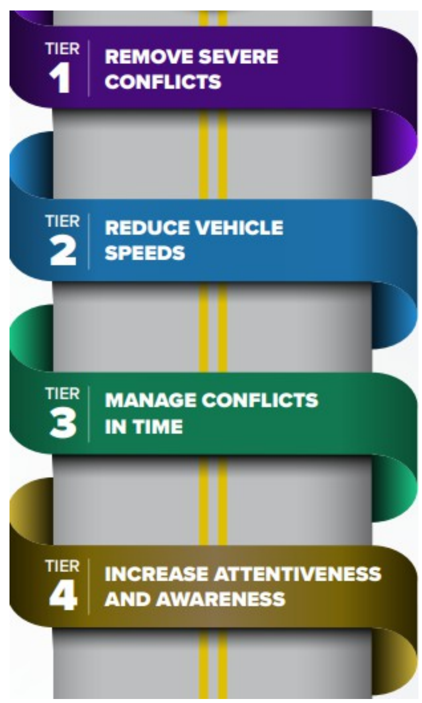

Figure 3 Safe System Roadway Design Hierarchy
Source: FHWA. Safe System Roadway Design Hierarchy. January 2024.

INTERNATIONAL EXAMPLES

The Safe System Approach, as well as the goal of zero fatalities and serious injuries, has been adopted by multiple countries over the last few decades. Figure 4 shows the success these countries have had in reducing fatalities by adopting the Safe System Approach. From 2000-2019, countries that have been leaders in adopting the Safe System Approach have seen fatalities drop from 33% to nearly 70%, while they have only decreased by about 6% in the United States.

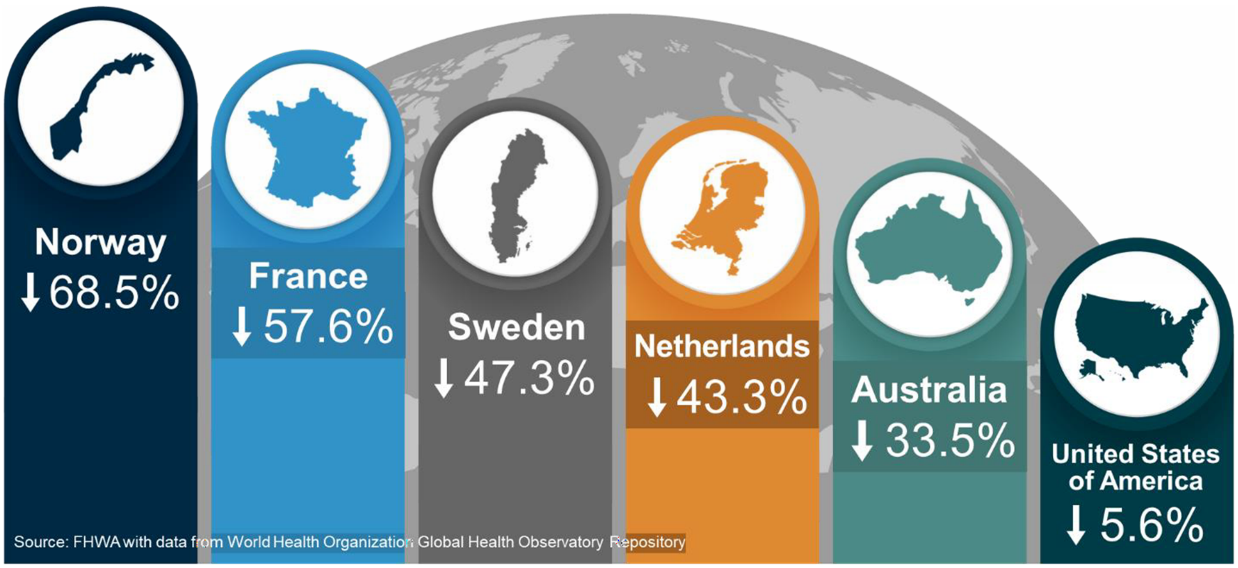

Figure 4 Change in Fatalities from 2000 to 2019
Source: FHWA. The Safe System Approach Presentation. https://highways.dot.gov/safety/zero-deaths/safe-system-approach-presentation-0. Last updated January 6, 2023.

These countries have incorporated the SSA into many facets of how they plan for, design, and operate their transportation system, as well as into traffic laws and enforcement practices. Some examples of common tactics employed in these countries to achieve this level of success include:

- **Speed management** – recognizing that speed plays a significant role in the severity of a crash when it occurs, these countries prioritize speed management, sometimes based on the types of crashes that might be expected to occur (e.g., a maximum speed of 20 miles-per-hour (20 MPH) when people walking and biking are expected to be present [Reference 12]). Roundabouts, raised crossings, and other forms of horizontal or vertical deflection are some of the treatments used.
- **Reducing conflict points and separating modes** – These strategies aim to reduce the likelihood of a crash occurring and include treatments such as separated infrastructure and signal phasing for different modes, roundabouts, and frequent passing lanes on rural high-speed roads (i.e., 2+1 roads).
- **Incorporating the SSA into analysis and design practices** – For example, Australia conducts Safe System Assessments to evaluate how well project designs align with Safe System principles. These assessments focus on major crash types and consider crash severity potential, road user exposure, and crash likelihood (Reference 13).

FHWA INTERSECTION SAFETY ANALYSIS METHODOLOGY

FHWA recently published a *Safe System-Based Framework and Analytical Methodology for Intersections*. This report introduces a method for analyzing intersection design and operations in accordance with the Safe System Approach, referred to as the Safe System for Intersections (SSI) method. The SSI method emphasizes strategies that include the following (Reference 14):

- Minimize and modify conflict points.
- Evaluate exposure for different road user types.
- Reducing complexity.
- Reduce the speed of vehicles.
- Improve visibility at intersections.
- Provide space and protection for pedestrians and bicyclists.

PEER REVIEW FINDINGS

The project team investigated the safety action plans and practices of six other agencies. Table 4: Peer Agencies and Respective Document summarizes the agencies and plans reviewed. It also includes a brief description of why each agency was selected.

Table 4: Peer Agencies and Respective Documents Reviewed

Agency	Document Reviewed	Reason for Selection
City of Fremont[1]	Fremont Vision Zero (May 2021)	City has achieved significant reductions in fatal crashes in a relatively short period.
Fresno Council of Governments (COG)	Regional Safety Plan (Dec 2021)	MPO with a similar mix of member agency sizes and land-use contexts.
Space Coast Transportation Planning Organization	Space Coast TPO Vision Zero Action Plan (July 2020)	MPO with a similar mix of member agency sizes and land-use contexts.
Delaware Valley Regional Planning Commission	Transportation Safety Analysis and Plan (April 2022)	MPO with an advanced safety planning program.
Denver Regional Council of Governments	Regional Vision Zero Plan (2019)	MPO recognized for leading safety planning practices.
Minnesota Department of Transportation	County Roadway Safety Plans Program (Ongoing Program)	Rural road safety focus.

[1]Agency previously interviewed for another project and notes used from that interview.

The purpose of these reviews was to identify best practices and lessons learned from agencies as they have advanced safety planning and implementation in their respective areas. The first step of the peer review process was to identify comparable agencies and review their relevant safety action plans. The second step was to interview involved staff at each peer agency with questions that broadly fall into two criteria:

2. Questions to confirm the context of their safety goals and how they might parallel those of COMPASS.
3. Successes and challenges of implementing their regional safety action plans.

Peer review findings indicated a range of plan contexts, successes, and challenges. These are summarized for each agency in the following sections. For each agency reviewed, this section provides:

- Background of the agency and the plan.
- Plan overviews that detail the common content themes. These details highlight how the peer agency approached each of the foundational areas of their safety plan.
- Key takeaways from the interviews, which were often focused on plan implementation.

Appendix B contains a detailed summary of the interviews conducted.

CITY OF FREMONT

Background

The City of Fremont is a city of just over 200,000 residents located in the Bay Area in California. In 2015, they were one of the first cities in the country to adopt a Vision Zero policy. In 2022, after years of concentrated efforts to improve transportation safety, the City met their goal of zero fatalities. The City's 2021 Vision Zero Plan is an update of their original 2015 Vision Zero Plan. The update was intended to capture changes in hot spots, changes in trends, and exploration of changing dynamics in vulnerable road users. Non-engineering countermeasures were the focus of the Vision Zero plan revision, as many specific project locations are identified in other planning efforts of the City.

Overview of Fremont Vision Zero (May 2021)

- *Stakeholder Engagement:* The city already has active, stakeholder engagement groups focused on transportation safety and relationships with partner agencies prior to plan development.
- *Existing Data Analysis:* Data analysis focused on high-level trends and vulnerable road users and mapped fatal and severe crash locations.
- *Strategy Development:* Focuses on 10 high-level strategies, including policy-related strategies (i.e., lobbying for safe-speed legislation in California) and engineering countermeasures that can be applied to a wide range of locations (e.g., leading pedestrian intervals, protected left-turns at intersections). This plan put more emphasis on non-engineering strategies than the City's previous plan.
- *Implementation:* Fremont has a five-person staff team dedicated to planning and implementing safety projects.

Key Takeaways

- Reaching Vision Zero has been part of a concentrated effort by the City over the past decade to improve safety.
  - Fremont Vision Zero 2021 is one of many planning, implementation, and education efforts that has contributed to the City's Vision Zero goal.
- An updated look at overall crash trends and vulnerable users was a key outcome of the 2021 Plan.
  - The characteristics of vulnerable users had changed since the previous plan (the previous Vision Zero Plan showed school-aged children as a focus area and after years of school-area improvements, senior and displaced individuals were found to be a key safety theme). This provided:
    - A new area for the City to focus future improvements on, and
    - Validation for the City that previous efforts on school-aged children had been successful in reducing fatalities and serious injury crashes for that group of people.
  - Shifted some of their focus toward improving non-engineering strategies, including coordination with health and other departments.
- Achieving their goal is a priority for elected officials and City staff.

- Quick-build projects have been an important tool in achieving their goal.

FRESNO COUNCIL OF GOVERNMENTS (COG)

Background

The Fresno COG is an MPO in the Central Valley of California. The Fresno COG represents 16 member agencies ranging from larger cities with urban-contexts (i.e., City of Fresno) to rural, agriculture-based communities. The Regional Safety Plan, adopted in 2021, was the first safety plan developed and adopted by the Fresno COG. The Regional Safety Plan was developed concurrently with Local Road Safety Plans (LRSPs) for each jurisdiction, which provided local-level assessments of roadway safety as opposed to the more regional focus of the Regional Safety Plan.

Overview of the Regional Safety Plan

- *Stakeholder Engagement:* Consultant and COG staff hosted targeted events with community-based organizations. Due to COVID-19 pandemic concerns, engagement efforts were largely virtual – via an online public survey. The survey was made available in multiple languages.
- *Existing Data Analysis*: Crashes of all severities were analyzed by road user, crash type, location, and collision factor. These filters were used to develop a relative severity index to quantify and compare locations where crashes occur. A social equity index was used in parallel with the severity index to incorporate equity considerations. A web-based tool was also created as part of the plan to allow easy access to the data.
- *Strategy Development:* A countermeasures toolbox was developed and applied to 20 example locations with high crash severity scores. Crash modification factors, cost, eligibility for Federal funding, and application types were outlined for potential projects. Education and promotion strategies and equitable enforcement strategies were identified.
- *Implementation*: Potential projects had specific funding sources and implementation partners identified. A monitoring program was outlined with performance targets, annual updates from the COG, and a continuing Vision Zero steering committee.

Key Takeaways

- The Plan's web-based tool for reviewing and analyzing crash data was made available to local agencies. However, the data in the tool has not been updated since plan completion and is not used by the Fresno COG anymore. In hindsight, the Fresno COG would recommend creating a tool for crash analysis that is simple to update and replicate with updated datasets.
- The plan was useful in helping agencies obtain funding for identified projects.
- The Vision Zero steering committee has not continued to meet. This has hampered the Fresno COG's ability to maintain momentum to meet the safety targets identified in the Plan and continue regional coordination with local agencies.

SPACE COAST TRANSPORTATION PLANNING ORGANIZATION

Background

The Space Coast Transportation Planning Organization (SCTPO) in Florida is comprised of 10 member agencies serving a population of 616,000. The SCTPO serves an urban region with a considerable tourism industry. This plan was the latest in a series of safety focused efforts, including the Countywide Safety Project (2014), Safety Audits on High Crash Corridors (2016), Pedestrian / Bicycle Safety Action Plan (2016), Bicycle and Pedestrian Master Plan (2019), and an Annual State of the System Report. The Space Coast TPO has a Vision Zero goal, as well as the goal of bringing stakeholders together. This Vision Zero plan was developed when Vision Zero was still a relatively new concept. As such, the Vision Zero Plan had a heavy focus on an education campaign to get all jurisdictions bought into the goal of zero fatal and serious injury crashes.

Overview of Space Coast TPO Vision Zero Action Plan

- *Stakeholder Engagement*: A Vision Zero Task Force was used in collaboration with local police departments, schools, and a tourist development council. The goal of stakeholder engagement was focused on building consensus on safety issues through four group workshops. Additionally, workshops were aimed at engaging with a diverse group of nonprofit organizations. The Florida Department of Transportation (FDOT) was a key participant in the process.
- *Existing Data Analysis*: A high injury network (HIN) was developed considering all crash severities, but crashes were weighted based on severity. Speed, daylight, lighting, driver behaviors, and age were also examined. Separate HIN maps were developed for cars, motorcycles, bicycles, and pedestrians. Census demographics in the HIN were reviewed to identify areas of systemic transportation safety inequity. These communities of concern were prioritized for countermeasure implementation.
- *Strategy Development*: Four strategy areas were developed to identify projects: leadership, education, safer roadways, and safer speeds. Safety efforts were focused on addressing safety concerns on certain corridors where most severe crashes were occurring. These corridors were identified by overlaying the HIN with the master plans of individual member agencies. By establishing these targeted safety corridors, the existing data analysis of the MPO included in this plan, paired with relevant systemic safety strategies, could be used by individual member agencies to formulate their own action plans for implementation. The focus of strategy development was to develop new projects that address systemic trends with education campaigns and workshops.
- *Implementation*: The action plan identifies a target number of trainings / workshops per year. It also identifies non-infrastructure improvements with relevant leads for each focus area. Performance metrics are established for every action plan item, with a continuing Vision Zero Steering Committee overseeing progress and development. Interviews with the TPO staff indicated that it has been a challenge to get member agencies to commit to actions after plan adoption. There is a need for member agencies to develop their own implementation action plans.

Key Takeaways

- A key success of the plan was that each of its member agencies adopt the goal of zero deaths and serious injuries. This required collaboration with each agency to work out the specific wording of their resolutions.
    - Flexibility is important when working with a range of agencies.
- The MPO is offering grant application assistance, workshops, and a toolkit to member agencies to help them develop their own plans.
    - They have also adjusted their prioritization criteria to prioritize larger safety projects and projects on the HIN.
- A point person acted as a champion of the plan, coordinating and communicating between member agencies and consultants to ensure everyone had buy-in and the plan reflected the interests and concerns of the community.
    - FDOT's level of engagement as the State authority was critical to the success of the plan.

DELAWARE VALLEY REGIONAL PLANNING COMMISSION

Background

The Delaware Valley Regional Planning Commission (DVRPC) advises a 9-county region in the Philadelphia metropolitan area. The DVRPC has a Vision Zero (VZ) goal of zero fatalities/ serious injuries by 2050. The VZ plan was formally included in the long-range plan, establishing regional safety targets that supersede the state's targets. The current plan is being updated to make the plan implementable on a county level and include branding around the VZ effort (for use by county partners to get community buy-in).

Overview of Transportation Safety Analysis and Plan

- *Stakeholder Engagement*: A Regional Safety Task Force with interdisciplinary membership was established as part of the plan.
- *Existing Data Analysis*: Emphasis areas were identified, focusing on fatal and serious injury crashes - defined by road user age, vehicle type, behavior mode, and location. KSI crashes were analyzed by census tract areas for communities of concern to add an equity filter.
- *Strategy Development*: No specific projects were identified in the plan. Strategies were developed for systemic trends, with a menu of approaches provided. DVRPC is developing a HIN for the region.
- *Implementation*: The Regional Safety Task Force continues to meet and share updates across a wide range of focus areas. The meetings are well attended by agency representatives, consultants, and advocacy groups. The development of regional safety targets separate from the State's has been successful. Some of its member agencies are developing their own local safety plans.

Key Takeaways

- DVRPC's efforts are focused on coordinating efforts and educating its member agencies. In addition to educating about the systemic trends and HIN, it is also tying its safety planning efforts to the Safe System Approach.
  - The continuing steering committee meetings have been integral to the success of the plan.
- The MPO has focused on the high level and is supporting its members as they complete their own plans by providing the regional HIN and trends and other support as needed.

DENVER REGIONAL COUNCIL OF GOVERNMENTS

Background

The Denver Regional Council of Governments (DRCOG) serves 9 counties in the Denver Metropolitan region. The first Vision Zero plan was developed in 2019 and is currently undergoing updates. The plan is being adjusted to emphasize a Safe System Approach, clarifying project impact and implementation, identifying and reevaluating stakeholder priorities – in the short term, mid-term, and long-term – and updating the recommended countermeasures toolbox to be more focused and relevant.

Overview of Vision Zero Plan

- *Stakeholder Engagement:* Collected feedback virtually via Mural. Virtual engagement was considered more successful than in-person events. The Regional Vision Zero Group has continued to meet since 2020, with monthly workshops for member governments, State DOT, and advocacy groups.
- *Existing Data Analysis:* An HIN of critical corridors and crash profiles was used in the development of a story map, and a list of 120 corridors in all counties is currently being created. An environmental justice lens was used to add an equity consideration of corridor analysis.
- *Strategy Development:* DRCOG has a tool that allows local governments to import or draw in their projects and then easily see what safety or other factor data could go into their TIP application. The TIP includes projects on the HIN or critical corridor and applies a score to them for prioritization purposes.
- *Implementation:* Local governments are currently using the plan, and two local governments have adopted a VZ plan and goal. In 2022, 9 member agencies received Safe Streets and Roads for All grants for their action plans. DRCOG is currently identifying target years for Vision Zero goals.

Key Takeaways

- DRCOG maintains a regional working group of around 50 members. They have found it most successful to have fewer, but longer meetings, as opposed to regular short meetings.
- TIP criteria have been refined to better emphasize safety.
- They have created a regional funding pool that is set aside for projects related to the safety plan.
- Critical Corridors are designated within each county so there is geographic diversity of where projects are prioritized, which helps distribute projects and obtain buy-in from member agencies.

MINNESOTA DEPARTMENT OF TRANSPORTATION (MNDOT)

Background

Unlike the other reviews, this one focused on a program, not a plan. MnDOT started the County Roadway Safety Plans (CRSP) program to help achieve the state's goal of reducing fatal and serious injury crashes. The DOT recognized that it was impossible to achieve its goal for the state without local agencies also addressing their roadways given that more than half of all fatal and serious injury crashes occur on the local system (Reference 15).

Overview of County Roadway Safety Plans Program

The program provides funding for consultant support in preparing a plan. The DOT also manages the process. All counties were required to complete a plan in the first round of plans. MnDOT provided 100% funding for these initial plans. They are now being updated and require a 20% contribution from the local agency.

The plans focus on low-cost, systemic countermeasures addressing the most common factors associated with fatal and serious injury crashes in each county. MnDOT has a pre-defined set of countermeasures that are used for the plans. They are primarily focused on rural areas.

Key Takeaways

- The program has been successful. According to MnDOT staff, about 70% of fatal and serious injury crashes were in rural areas before the program started and now about 50% of these crashes occur in rural areas.
- The plans provide valuable technical and funding guidance for County engineers who are stretched across multiple job requirements.
- Smaller agencies have had success in bundling projects together, or in joining with other adjacent counties, to create successful project packages that fit well within the federally funded Highway Safety Improvement Program (HSIP) process.
- Agencies also use the plans to incorporate low-cost improvements into capital maintenance projects.
- Counties are given latitude in deciding which projects to apply for. This has helped create buy-in and most counties prioritize implementing their plans.
- MnDOT has been working to educate elected officials about the systemic process and the benefits of treating areas with limited crash history.

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APPENDIX A: COMPASS MEMBER AGENCY SUMMARY

Agency	Safety Related Goals: Does the agency have goals?	Safety Related Goals: Notes	Existing Practices: Process for Identifying Projects	Existing Practices: Integration into other projects	Existing Practices: Crash data analysis process	Existing Practices: Safety focused staff	Existing Practices: Countermeasure resources	Successes	Challenges	Partner Organizations	Needs	Political Challenges
Ada County	Yes	Transportation Action Plan.	Nominate projects to ACHD.	N/A	Rely on ITD/ACHD.	No	No	Pathways improvements.	None	Neighboring cities, ACHD, VRT, ACSO, Fire, Paramedics.	N/A	N/A
ACHD	Yes	Present in several plans; Complete Streets Policy.	Review crash data (annual review), review citizen complaints, review neighborhood plans.	Has several initiatives underway; leverage development to accelerate projects.	High crash location analysis every year; consultant projects for alternatives analysis.	In-process of hiring new safety-specific staff.	No defined set	Range of perspectives in development; internal coordination; PHBs/RRBs; Commission support; PSAs/bike lights.	ROW limitations; competing priorities across modes, goals, and involved agencies and limited guidance on deciding what to prioritize; ability to maintain (quantity and types of treatments).	Land-use agencies, fire, police (share data and sometimes review).	N/A	Commission supportive of safety investments.
Boise	Yes	Vision Zero Plan	In the process of reworking this right now.	Contributes funds to enhance walking/biking safety on ACHD projects.	Access to police data, but otherwise rely on ACHD/ITD.	No, but have a traffic fatality review task force (with ACHD).	Education on priority areas and some enforcement.	Pathways; contributing funds to ACHD for behind the curb improvements; advocating to ACHD; e-scooter safety improvements.	Not having the authority to implement their vision on streets; speeding; not having a connected bike network; agencies with different priorities.	Police - hoping to test out effectiveness of education and enforcement campaign with police staff.	N/A	Council has set a goal of 50% fatal crash reduction in 10 years.
Eagle	Yes	Comprehensive Plan	Safety is a criterion in their 5-year capital plan; projects come from nominations.	Contributes funds to enhance walking/biking safety on ACHD projects.	Rely on ITD/ACHD	No	No	Walking and biking safety is supported; connectivity is a priority.	Large roads without regular pedestrian crossings; not having roadway authority; limited collector system; desire to maintain rural feel; competing against other cities for projects.	Fire, police, ACHD, ITD, VRT.	More walking/biking infrastructure; What can be done in the interim while waiting for capital projects?	Generally supportive; leadership wants to see implementation; aesthetics are important.
Caldwell	Yes	Transportation Master Plan; Capital Improvement Plan / TIF	Police department notes locations and trends; fire department provides input.	Integrates striping into maintenance projects.	Police department analyzes crash trends and conveys to transportation commission.	Someone in police department is directly responsible - sits on board	no	strong political support for projects; lack of internal conflict.	Large volume of projects to address - recent spike in failing intersections.	Police department; fire department; HDR; nearby agencies (Nampa, Middleton).	Staff resources and funding sources.	Very supportive.
Garden City	Yes	Comprehensive Plan, Transportation Needs Plan, Livable Streets	N/A	N/A	Reaches out to police department/ITD when they need data for a TIS.	No	No	Agency collaboration finding funding for State Street and Chinden; bike/ped improvements with ACHD; continuation of Greenbelt.	Land use development coordination; retroactive street improvement; design speeds are too high.	Local schools; Garden City Community Collaborative.	More agency collaboration; street trees and drainage included in designs.	None perceived.
Greenleaf	yes	Comprehensive Plan; Golden Gate Transportation Plan	N/A	N/A	Contact Wilder PD to look at crash data.	No	No	Stable council and good leadership; city is well plugged in and active on board.	HWY 19 as main street - several safety concerns but no agency/funding to address them.	Golden Gate HD; ITD; LHTAC; Wilder collaboration.	Funding	Very supportive.
Kuna	yes	Comprehensive plan, sidewalk gaps, regional pathways and trails plan	Review Regional Pathways and Trails / Greenbelt Master Pathways; analyze gaps in walking trails; community reaches out to provide input.	N/A	Contracts with JUB engineers.	No specific staff - gets contracted out.	No	Communication has been successful.	Transportation agencies need education on infrastructure implementation; no dedicated staff.	Steering committee for overpass feasibility; ACHD, FHWA, ITD, Fire, EMS, Police.	Funding	Elected officials are hesitant to keep growing.
Melba	yes	Transpo plan; Sign Replacement Map; Comprehensive Plan (being redone)	informal process; has a Capital Improvement Plan.	Informal plan for sidewalks and roadways.	Responsibility for planning and zoning department; contract out data analysis.	City clerk is responsible.	No	Child pedestrian sidewalk improvements; LHRP grant for signs.	Developments do not always integrate into sidewalk system/curb and gutter system - have to get funding to rebuild roads.	Nampa HWD; rural fire department; Canyon County law enforcement; school resource officer patrols town.	Working close with Mike Davis as he sends out the opportunity for more funding.	N/A

	Safety Related Goals		Existing Practices									
Agency	Does the agency have goals?	Notes	Process for Identifying Projects	Integration into other projects	Crash data analysis process	Safety focused staff	Countermeasure resources	Successes	Challenges	Partner Organizations	Needs	Political Challenges
Meridian	Yes	Defer to ACHD; Comprehensive plan; Pedestrian and Intersection Safety Task Force Report	Works with Parks Department for pathway segments.	N/A	Asks ACHD to provide data; data evaluated by transportation commission.	Transportation Commission (not technically city staff).	Transportation Commission suggests countermeasures to city.	N/A	Internal conflicting priorities; sometimes different goals from road authorities; roundabout education; pushback on lowering speed limit.	School districts; general safety meeting (ex-officio members); fire department; police.	Lack of local control.	N/A
Middleton	yes	Comprehensive Plan (being redone); Transportation Plan; Capital Plan; Corridor Study (2016)	Uses OSH grants for police to do strategic patrols; crosswalk improvements determined by council; traffic study on intersections being improved by ITD.	N/A	N/A	Police department monitoring; city council.	No	N/A	N/A	Police department.	Developments to extend pathways to link up in pathway network; funding and coordination.	N/A
Nampa	Yes	Transportation Plan; Pedestrian Crossing Policy; Local Road Safety Plan	Conducts a yearly crash review for priority intersections.	Conducts a road safety audit every year; has projects on CIP.	Use ITD data	Mostly responsibility of city council	Good internal knowledge but not formally recorded.	Sign conversions to 4-way stops; roundabouts accepted; street lighting to improve safety; LPI and Red on ped.	Pushback from public; council issues – auto-centric concerns; funding; red light running/ left-turn interactions; access management challenges.	COMPASS; LHTAC; ACHD; Caldwell; Hwy district (canyon and Nampa); police; ITD.	Something to stop red light running.	Travel time is sometimes prioritized over safety. There is limited support for transit.
Notus	Yes	Unified Work Program	Public Works identifies potential projects.	N/A	Relies on COMPASS / other entities.	N/A	No	Painting curb lines; chipseal project with LHTAC.	Struggles filling out funding applications; speeding; need drainage improvements; need sidewalk system/ped facilities.	School district; COMPASS; LHTAC; ITD; Notus-Parma jurisdiction; Black Canyon Irrigation District.	Dollar projections for improvements; improved markings for crosswalks; structural changes to process; street sweeper for city maintenance.	None perceived.
Parma	Yes	Transportation Plan (being updated); Comprehensive Plan (being updated)	N/A	N/A	Requires new developments to do impact statements.	Mayor; public works; police chief	No	N/A	Speeding.	Police; schools; fire department; communication with nearby cities.	Funding; partnerships with nearby cities.	N/A
Wilder	Yes	Comprehensive Plan (being updated); Transportation Plan	City Staff drive around to spot deficiencies.	N/A	Look at ITD crash data.	General responsibility of city staff.	No	Safe routes to school; pedestrian safety grant; sign grant (LHTAC).	Funding; working with ITD (difficult to get permit approval); crash data at high crash area (Hwy 19 junction) is not always complete; difficulty getting contractors for their projects (no bids).	COMPASS; ITD: ACHD: LHTAC: police department; fire; EMS.	Described in *Challenges*.	Strong support.
Highway District 4	Yes	Bring rebuilds up to AASHTO guidelines.	Focus on intersections with high crash rates	N/A	Use last five years of data - track locations with high crashes.	Few staff - general consideration of all staff.	Splitter islands, beacons, additional signage - identified during maintenance.	Roads have been widened and slopes have been flattened.	Right of way is the biggest challenge, alongside grant funding delays and the federal funding process.	Fire departments; exchange maintenance agreements with other jurisdictions.	Funding.	Strong Commission Support.

APPENDIX B:
PEER REVIEW NOTES

Agency Statistics and Characteristics

Agency Name: City of Fremont
Agency Type: City
Population: 227,514 (2021)
Planning Area Size: 90 square miles
Year of Plan: 2021
Number of Member Agencies: 1

Goals and Vision

- **Vision Zero – zero deaths / serious injuries**
  - **2025 to get to zero deaths/serious injuries**

Stakeholder Engagement

- Did they utilize a stakeholder committee or other advisory committee? **Mobility action plan task force.**
  - Outside of the usual engineering/planning groups, what members did it have (e.g., Fire, Police, non-profits/other community groups)? **Partnerships with traffic enforcement officers, fire department, major healthcare providers, and the Fremont school district.**
  - What were their goals for engagement with the committee and what were the key outcomes?
- How did they handle public engagement?
  - In-person vs. virtual? **Open City Hall survey, pop-up events**
  - What were their goals for the engagement and what were the key outcomes? **Identified top safety interest was more enforcement. Formation of a permanent Mobility Commission.**
  - How did they incorporate equity considerations? **Meetings to target participation from seniors, youth, and community leaders.**

Existing Data Analysis

- Did they identify hot spots or a high-injury network (HIN)? **Created a high injury network map.**
  - Did they focus on certain crash severities or all crashes? **Detailed crash reports** were **analyzed within 30 days of crash**
  - What measures did they use to define the HIN? **Location specific recommendations from Mobility Action Plan, Bicycle Master Plan, Pedestrian Master Plan, and Safe Routes to Schools Plans.**
- Did they identify systemic trends to be addressed? **Identified hot spots using historical data that share characteristics.**
  - How did they identify these trends (e.g., all crashes, fatal/severe only, consistency with State or other policy)?
- How did they incorporate equity into this stage? **Work with partner agencies to educate public on high-risk behaviors that disproportionately impact specific demographics. (Page 53)**

Strategy Development

- How did they identify projects and other strategies? **Pulled from other plans that provide location specific recommendations / identify priority projects.**
  - Did they develop new projects or were they coming from other plans/nominated by member agencies? **Projects came out of other plans.**
  - Did they develop systemic projects or just location-specific projects? Or did they just recommend a menu of treatments for different things? **An action plan that outlines systemic changes to improve safety in specific applications (allow lower speed limits, cameras, encourage regional partnerships, etc.)**
  - Did the plan identify non-infrastructure projects? **Education campaigns, legislation for safer speeds, traffic signal timing**
  - What is the key information they provided for projects (e.g., CRF/CMF, cost)? **No Information**

Implementation Plan

- Did they prioritize projects into timeframes? **"20 projects in 20 months" (pg 8)**
- What prioritization criteria were used? **Pedestrian/bicyclist vulnerability, Elderly/unhoused vulnerability, high crash rates on wide/fast streets**
- Did they identify funding sources for specific projects (or all projects)? Or did they just discuss sources generally? **Redirection of $2.5 million in city funding to develop action plan – generally mentions grant funding**
- How did they handle non-engineering items? Are they also included here with responsible orgs and timeframes? **No timeframes, but indicated what organizations would be involved.**
- What does their monitoring program look like? **No Information**
  - Are there performance measures? Other recommendations (i.e., before and after studies?) **No Information**
  - Is there a continuing workgroup? **Core staff (pg 17)**

Caltrans Road Safety Infrastructure Plans – Literature Review

Interview Questions

Plan Development Approach

1. What was the overall vision for the plan and reason for developing it? Why did you choose to do a Vision Zero Action Plan instead of a Local Road Safety Plan?

Safety and Demographic Data

2. The VZAP mentions that the Public Works staff coordinate closely with the Police Department and have access to detailed information about each major crash in Fremont. How did this come about? Is this generally feasible to do for other jurisdictions and agencies?
3. Were there challenges you faced with the data you had or any additional data that you wish would have been available to support analyses?
4. How did you decide demographic indicators (such as Gender, Age Group, and Race) of the community to be reviewed for the Plan?

Equity

5. The Plan includes data on Fatal and Severe Injuries categorized by Race, along with Crash narratives that have sensitive details like age group and gender. Can you provide insight into the origins of this approach, and was there any resistance from the staff/council regarding the inclusion of such information?

Community and Stakeholder Engagement

6. Were there opportunities for public input on the 2025 Action Plan? OR was it more of a focused update to the 2020 Action Plan? Moving forward, will there be an opportunity for the community to provide input in the next update?
7. How are you coordinating the Vision Zero engagement efforts with the other plans such as ATP?
8. Tell us more about the Engage Fremont initiative.

Recommendations and Prioritization

9. What did the jurisdiction consider when identifying countermeasures and prioritizing locations? (Sidenote – The Plan mentions High Injury Network but we were unable to find the map)
10. Were there any recommendations related to emerging technologies?

Implementation and Funding Opportunities

11. Tell us more about the behind-the-scenes implementation of the Vision Zero Action Plan. Do you dedicate staff and committee to ensure that the plan is strictly implemented?
12. Did you compete for an infrastructure/planning grant to help fund improvements identified in the safety plan?
    a. If yes, what source of funding – HSIP, OTS, AHSC, STEP, RAISE, SS4A, or others?
13. Your department actively monitors the safety performance measures in the plan, and you are sharing that information externally. Were there any concerns that this would provoke the community members if the City were not on the path to Vision Zero?

What would you recommend?

14. What would you do differently to update this Plan in the future?
15. What lessons were learned during the preparation and implementation of this plan?
16. If you were to have had more funding for your effort or received additional funding in the future, what more would you like to cover in this safety plan?
17. Does the City have dedicated funds to periodically update the Plan or does the City require grant funding?

Eric – Principal Transportation engineer/transportation manager

Lilian – Senior Transportation Engineer (support bike/ped pans & project, VZ)

- Fremont 7th City to adopt VZ policy (one of the first in CA)
- Development
  - Predates safety systems approach & SSAR
  - SSAR came out later as part of HSIP development
    - Provides details on how to address safety components
  - Mobility Action plan also developed
    - VZ & MAP go hand in hand to guide projects and policies
    - Focus on managing growth and mode shift in Fremont; object for City Council to embrace smart growth (no space to grow out, need to be efficient in how they expand transportation and land use)
- Why adopt VZ?
  - City Council wanted it
  - New City Manager used to work at San Jose and pushed VZ there – wanted it adopted in Fremont
  - Easy to get electives on board (sounds like a good idea), but the challenge is keeping momentum going and implementing projects for safety
- Why update the plan?
  - Lots of data driven documents are only as good if they are "fresh"
  - Things change over five years – initial hot spots have improvements, crashes change
  - Wanted to revisit the data and compare what had happened and what was currently happening
  - Vulnerable users were still the victims but saw that more senior residents and displaced individuals were involved in crashes
    - In some cases, seniors passed away from crashes after the crash occurred (e.g., days to weeks to months later)
  - Improvements at schools were an initial focus; once those areas were improved, senior and displaced user fatalities "rose to the top"
- Non-engineering countermeasures are more of a focus now

    - Working with human services and service programs to educate and raise awareness about potential users
- Overall decrease in high severity/fatal crashes
- Crossroads used for Fremont
    - Regular meetings with police department to discuss crash history
    - Fatal/severe crash alerts are sent to the City to keep track of collisions and aftermath
    - More updated than SWTIRS/TIMS – helps make more informed decisions
    - City gets redacted collision reports to also review and document narratives
        - Able to take out additional data that allows City to see that some of this is beyond City infrastructure
- How did the Task Force/collaboration work? Are groups generally interested or is it because of City VZ policy?
    - All departments have been interested in VZ policy and implementing the policy - they take it seriously
    - Unusual for a city to review the police reports In depth
    - Staff and financial resources can be limited, but a conscious effort is being made to prioritize VZ
- Partnerships with employers/health providers?
    - Regional health and social services are in town – easy to get them on board
        - City trying to get them accredited as a trauma center to address response times in crashes
- Safer vehicles – City works with Tesla to encourage safer vehicles on roadways
    - Lots of AV R&D in Fremont – City can work with them to provide input and build relationships
- Brochures and pamphlets passed out at medical offices
- Educational videos to educate community
- Any data challenges, or data you would like to have been available?
    - Police reports have most of the details that are needed
    - Time lag does still exist, there is a desire to mitigate it immediately and have consequences to the person at fault
        - Hard to respond to community that wants answers immediately
- Are the community residents supportive of VZ?
    - Those walking/biking are generally supportive; driving is still #1, especially those who like Tesla/technology in driving
        - Safety improvements not always accepted
        - Will use VZ as ammo to say VZ doesn't work because someone died in a crash
- Have you applied for any grants to help with safety improvements?
    - Apply to whatever we can
        - HSIP (a few grants awarded), Measure B/BB funds

        - ATP & SS4A not competitive – too focused on equity priority communities, which aren't in Fremont limits; or, focus is on agencies who have not developed safety plans and Fremont has several
        - Safe Routes to BART – awarded equity points in grant
    - Crash data, lack of equity areas, and previous planning efforts generally make Fremont ineligible for grant funding
    - Utilize maintenance/repaving projects to implement buffered bike lanes
- City prefers grade separated bikeways – bring curb out
- City looking at before/after crash data, collecting volume data to understand how implementation supports VZ
    - Hard to get the after data with the lag in data
    - Questions about operations – people want to know how their driving is affected
- Public engagement is to share knowledge of crashes/policies, educate public on what is going on
- HIN mentioned in the report, but not included in the VZ update
    - Reference to 2020 HIN
    - May refer to MTC HIN
- What would you do differently for the next update?
    - Forced to do more public outreach & engagement – will be focused on VZ project scope
    - Focus on operations/traffic signal technology – adding to the toolkit
        - Don't feel like they successively implemented speed management (aimed at road diets, narrow lanes – it isn't doing anything for speed management in the City)
        - AADT data may be helpful in understanding where people are driving
    - Incentives to get people to stop speeding
        - Signal timing changes to improve travel times and user experience
        - Reduce number of red lights people have to hit
        - Time for 35-440 mph even if the road is 45 mph
- Choose to include state highway system in the VZ, but have no agency over those roads
    - Lots of FSI crashes on state routes

Agency Statistics and Characteristics

Agency Name: Fresno COG
Agency Type: Regional Council of governments
Population: 544,000
Planning Area Size: No Information
Year of Plan: 2021
Number of Member Agencies: 16

Goals and Vision

- **A region of diverse partners sharing the resources and responsibility to improve roadway safety for all communities.**
  - **No key target dates**
- **Foster collaboration among partner agencies to help implement improvements / share resources / establish HIN database.**

Stakeholder Engagement

- Did they utilize a stakeholder committee or other advisory committee**? Consultant and COG staff hosted targeted events – established goals of events in advance. (pg 10)**
  - Outside of the usual engineering/planning groups, what members did it have (e.g., Fire, Police, non-profits/other community groups)? **Community-Based Organizations (CBO) (pg 10)**
  - What were their goals for engagement with the committee and what were the key outcomes? **Engage authentically, center equity, promote balance, support implementation (pg 10)**
- How did they handle public engagement? **Online public survey (pg 11)**
  - In-person vs. virtual? **Pandemic considerations – virtual (pg 11)**
  - What were their goals for the engagement and what were the key outcomes? **Specific travel concern % (pg 12)**
  - How did they incorporate equity considerations? **Center equity, multiple major languages, separate analysis of latino/x survey responses. (pg 12)**

Existing Data Analysis

- Did they identify hot spots or a high-injury network (HIN)? **Severity Score (pg 19)**
  - Did they focus on certain crash severities or all crashes? **All crashes (pg 16)**
  - What measures did they use to define the HIN? **Road user, severity, crash type, location, and collision factor / relative severity index (pgs 16-17)**
- Did they identify systemic trends to be addressed? **5 trends: veh-ped severity, faster speed=more severe, etc. (pg 18)**
  - How did they identify these trends (e.g., all crashes, fatal/severe only, consistency with State or other policy)? **Used relative severity index to quantify severity and compare across categories (pg 17/18)**
- How did they incorporate equity into this stage? **Social equity index (pg 39)**

Strategy Development

- How did they identify projects and other strategies? **Severity score locations more competitive for grants (pg 19)**
  - Did they develop new projects or were they coming from other plans/nominated by member agencies? **Developed countermeasures toolbox, with example locations. (pg 34-39)**
  - Did they develop systemic projects or just location-specific projects? Or did they just recommend a menu of treatments for different things? **Menu of items (pg 35-38)**
  - Did the plan identify non-infrastructure projects? **Education and promotion strategies / equitable enforcement strategies (pg 62 / 66)**
  - What is the key information they provided for projects (e.g., CRF/CMF, cost)? **CRF, cost, fed eligibility, application type. (pg 35)**

Implementation Plan

- Did they prioritize projects into timeframes? **No Information**
- What prioritization criteria was used? **No Information**
- Did they identify funding sources for specific projects (or all projects)? Or did they just discuss sources generally? **Specific funding sources (pg 69)**
- How did they handle non-engineering items? Are they also included here with responsible orgs and timeframes? **Implementation partners (pg 77)**
- What does their monitoring program look like? **Performance tracking with measure targets (pg 77-78)**
  - Are there performance measures? Other recommendations (i.e., before and after studies?) **COG provides brief annual update – suggested 3-year rotation of committee members.**
  - Is there a continuing workgroup? **Vision Zero steering committee**

PEER AGENCY INTERVIEW - FRESNO

Date/Time:

- 11-17-23, 1:00-1:30 pm (Interview w/ Matt Braughton)
- 12-04-23, 3:00-3:30 pm (Interview w/ Santosh Bhattarai)

ATTENDEES

- Fresno COG: Santosh Bhattarai
- COMPASS: Hunter Mulhall
- Kittelson: Nick Foster, Mark Heisinger, Matt Braughton, Matt Steele

NOTES: FRESNO RSP

Interview with Matt Braughton:

- What other general plans, policies, or practices does your agency have related to transportation safety?
    - Standard MPO plans – RTP, reporting federal requirements
    - First plan like this
- Plan Development
    - How did you handle a wide range of partner agencies (especially for MPOs with rural and urban agencies)?
        - Separated smaller and larger meetings during stakeholder meetings
    - To what extent did you use feedback from partner agencies in the plan?
        - Successfully identified projects that got funding (small agencies)
- Existing Conditions/Data Analysis
    - *Review existing conditions data analysis – identify any questions based on review*
    - Did you have any challenges in the existing conditions/crash data analysis?
        - Regional datasets hard to QAQC – differing quality for different jurisdictions
    - What components of the existing conditions/crash data analysis were most useful in the plan development?
        - Establishing HIN and priority locations
            - Helped with stakeholder engagement and getting buy-in for recommendations
            - Identifying general trends – emphasis areas (i.e., run off the road, bike/ped safety) – big picture vision
- Project/Strategy Identification
    - How did you decide to focus on/split resources between systemic and location-specific treatments?
        - Focus on location-specific (consistent with HSIP)
            - Kittelson identified a long list based on EPDO -> agencies provide additional context/feedback, some filtering based on representation
            - In RTP -> no big focus on the project for each jurisdiction

            - MLRSP -> jurisdiction-specific
        - Emphasis area/systemic was helpful for smaller jurisdictions with fewer crashes
    - What were the primary factors driving how you identify strategies?
        - EPDO, crash analysis for priority crash types, includes education campaigns
- Implementation
    - What is going well with respect to implementation so far?
        - Multiple jurisdictions were successful in getting funding
        - Fresno County got SS4A funds for action plan
        - Fresno is developing a Vision Zero action plan (RFP out)
    - What lessons have been learned from implementation?
- Next steps
    - What plans do you have related to future or ongoing monitoring of safety-related improvements?
        - Some guidelines in plan on this – web-based tool to do the analysis
            - **Are they still using this?**
- General Questions
    - If you were to go back, is there anything you would change in the plan development?
        - SS4a compliance – no equity or vision zero

<u>Interview with Santosh Bhattarai:</u>

- Almost 2 years into implementation plan
- Education campaign
    - A bit of a gap with coordination between MPO and local agencies
    - Health agency recently wanted to do a public display
    - Future plans include working with other agencies
    - Could not secure funding – funding was focused more on engineering projects
- Been using existing conditions reports for safety target development
- Recently shared the C SHSP findings
    - Was able to use countermeasures that were developed as part of data in the report
- Web-based tools is still being used
    - Agencies using this?
        - Not really – there are some other data sets that are being used instead for safety analysis
        - Data is old (2015-2019)
- MPO has a safety committee that meets once a year -> focuses on safety targets
    - Steering committee hasn't continued to meet.
- Recommendations
    - Easy to replicate web tool/analysis
- Have any of the processes/project prioritization methodologies changed at the MPO?
    - There are some funding mechanisms that they've been able to go after
- Developed concurrently with jurisdictional plans. Realized a couple agencies part of COG were missing implementation plans.

- Presented plan to sister agencies. They were also very interested. Able to convince SS4A qualifies. Education component as one of the strategies (countermeasure) – plan was to do demonstration projects to showcase safe systems – could not secure funds for the demonstration project, only funded engineering strategies/projects as opposed to behavioral projects. Using existing conditions report for safety target development, supposed to update safety targets every year – able to utilize some of the data to develop safety targets.
- Shared engineering strategies with strategic highway safety plan. Used to help develop vulnerable road users. Went into a larger statewide vulnerable road users report.
- Fresno is MPO – do high- level planning. Assist local agencies in development of plans. Local agency is responsible for executing physical projects. A gap between the MPO and the local agency. Unincorporated area department of health worked with a consultant to do a demonstration project. Education campaign funding was attempted by MPO, not successful. Local Road safety plan should be eligible for implementation funds – local agencies say it might not be enough for VZ funding – local agencies go for funding to develop vision zero plans this year.
- No continued discussion with steering committee since completion of the plans.
- Web-based tool created to do some of the analysis. Tool developed as part of the project. Have not made much use of that tool. City of Ridley doing some safety analysis, requested safety data set. Fresno has some other data sets (SSP and one other). Want to access more recent data, going forward it has to be updated every year to be usable – have not worked on this.
- Not much coordination has been done to understand the effect of the plan after the fact.
- In hindsight, make tool easier to access/efficient to update going forward/simple input of data files. Make the process easier to replicate.
- Have not made any changes based solely on this plan / would have liked to see some changes due to this plan. Have not made any policy changes. Not sure what they need to take away from this project to make some changes.
- Steering committee and community engagement did not face resistance from community leaders during the VZ approach.

Agency Statistics and Characteristics

Agency Name: Delaware Valley Regional Planning Commission
Agency Type: MPO - advisory
Population: 9-county region
Planning Area Size: see previous
Year of Plan: 2022
Number of Member Agencies: 9

Goals and Vision

- What is the overarching goal of the plan (i.e., zero fatalities/serious injuries)? **Vision Zero 2050**
  - Are there any key target dates or interim dates for reaching the goal (i.e., X% by Year Y?)
- Does the plan identify specific objectives? What are they generally? **reduce roadway crashes and eliminate serious injuries and fatalities from crashes in the Greater Philadelphia region**

Stakeholder Engagement

- Did they utilize a stakeholder committee or other advisory committee? **Regional Safety Task Force**
  - Outside of the usual engineering/planning groups, what members did it have (e.g., Fire, Police, non-profits/other community groups)? **"Interdisciplinary"**
  - What were their goals for engagement with the committee and what were the key outcomes?
  - No Information
- How did they handle public engagement? **No Information**
  - In-person vs. virtual? **No Information**
  - What were their goals for the engagement and what were the key outcomes? **No Information**
  - How did they incorporate equity considerations? **No Information**

Existing Data Analysis

- Did they identify hot spots or a high-injury network (HIN)? **Emphasis Areas**
  - Did they focus on certain crash severities or all crashes? **KSI**
  - What measures did they use to define the HIN? **Road user age, vehicle type, behavior, mode, location**
- Did they identify systemic trends to be addressed? **Many identified in Emphasis Areas**
  - How did they identify these trends (e.g., all crashes, fatal/severe only, consistency with State or other policy)? **See above**
- How did they incorporate equity into this stage? **KSI in census tract areas for communities of concern**

Strategy Development

- How did they identify projects and other strategies? **Strategies attached to systemic trends**
  - Did they develop new projects or were they coming from other plans/nominated by member agencies? **No specific projects identified**
  - Did they develop systemic projects or just location-specific projects? Or did they just recommend a menu of treatments for different things? **Recommended systemic menu**
  - Did the plan identify non-infrastructure projects? **Yes, different SSA groupings**
  - What is the key information they provided for projects (e.g., CRF/CMF, cost)? **Priority**

Implementation Plan

- Did they prioritize projects into timeframes? **No**
- What prioritization criteria was used? **Unclear, exclamation point scale**
- Did they identify funding sources for specific projects (or all projects)? Or did they just discuss sources generally? **No**
- How did they handle non-engineering items? Are they also included here with responsible orgs and timeframes? **Non-specific organizations attached to some systemic strategies**
- What does their monitoring program look like?
  - Are there performance measures? Other recommendations (i.e., before and after studies?) **Coordination among partners regional safety performance measure targets**
  - Is there a continuing workgroup?

PEER AGENCY INTERVIEW - DVRPC

Date/Time: 12-19-23, 13:30 pm

ATTENDEES

- DVRPC: Kevin Murphy
- COMPASS: Hunter Mulhall
- Kittelson: Nick Foster, Andrew Thompson, Matt Steele

NOTES: DVRPC CECIL B. MOORE VISION ZERO PLAN

- Safe Streets group has evolved to explore ways to advance goals of TSAP.
- Could bring in speakers to talk about emphasis areas.
- Now that they have a Vision Zero (VZ) plan, trying to make good on it
- Formally included into long-range plan.
- Establish regional safety targets.
    - Broke away from state's targets.
- Trying to develop VZ plus plan now.
    - Working with regional partners to make plan implementation at county level.
        - Create some branding around VZ effort that identifies county partners.
- Developing HIN network for the region
    - Counties need to sign off on it.
    - Meeting with DOT/FHWA partners
    - State has created a network screening list.
        - Looking at this to add more weight.
        - Making analysis complementary, not competitive.
- Do not consider this work to be a replacement for anything already done.
    - Asking counties to bring them studies/reports with safety analysis.
        - Looking for useful safety analysis.
        - Resolutions for recommendations.
        - HIN locations.
        - Not starting from scratch.
- Present information in a way where people see the value.
- Process to measure how TIP projects align with your long-range plan.
    - Safety was the highest rated criteria.
    - Microsoft Word - CO_23001_Final_FY2023PATIP (dvrpc.org)
    - Breaks down given that they are only implementation.
- Where something works in one spot should work for another.
    - Speed cameras on Roosevelt Boulevard are saving lives. Philly needs the program to continue and expand. | Office of the Mayor | City of Philadelphia
- Take HIN and additional analysis counties work with municipalities to set a list of priority projects

Agency Statistics and Characteristics

Agency Name: Space Coast Transportation Planning Organization
Agency Type: MPO
Population: 616,000 (2023)
Planning Area Size: No Information
Year of Plan: 2020
Number of Member Agencies: 10

Goals and Vision

- **Achieve zero traffic deaths and serious injuries directing TPO staff to coordinate the development of a Vision Zero Action Plan.**
- **Generally bring stakeholders together (pg 8)**

Stakeholder Engagement

- Did they utilize a stakeholder committee or other advisory committee? **Vision Zero Task Force (pg 12)**
  - Outside of the usual engineering/planning groups, what members did it have (e.g., Fire, Police, non-profits/other community groups)? **Local police departments, schools, tourist dev council (pg 12)**
  - What were their goals for engagement with the committee and what were the key outcomes? **Discover consensus on safety issues through group workshops – focus on walkability and single user vehicles (pg 12-13)**
- How did they handle public engagement? **Four vision zero task force workshops (pg 12)**
  - In-person vs. virtual? **No Information**
  - What were their goals for the engagement and what were the key outcomes? **Diverse Vision Zero task force membership (many nonprofits, too many to list here) (pg 12)**
  - How did they incorporate equity considerations? **(see above)**

Existing Data Analysis

- Did they identify hot spots or a high-injury network (HIN)? **Developed high injury network (pg 24)**
  - Did they focus on certain crash severities or all crashes? **All severity levels considered, fatal and severe focus (pg 24)**
  - What measures did they use to define the HIN? **Crash severity score: EPDO average crash frequency method (pg 24) Identified speed, daylight, lighting, driver behaviors, and ages (pgs 19-23)**
- Did they identify systemic trends to be addressed? **Higher severity score locations experiencing more crashes (pg 24)**
  - How did they identify these trends (e.g., all crashes, fatal/severe only, consistency with State or other policy)?
- How did they incorporate equity into this stage? **Crashes analyzed by census tract normalized per 1000 people (pg 17/18) Also developed separate car, motorcycle, bicycle, and ped HIN.**

Strategy Development

- How did they identify projects and other strategies? **4 focus areas: leadership, education, safer roadways, safer speeds, data driven approach (pg 34). ONLY STRATEGIES**
  - Did they develop new projects or were they coming from other plans/nominated by member agencies? **Developed new projects (pgs 35-40)**
  - Did they develop systemic projects or just location-specific projects? Or did they just recommend a menu of treatments for different things? **Systemic projects (pgs 35-40)**
  - Did the plan identify non-infrastructure projects? **Education campaigns/workshops, etc. (pgs 35-40)**
  - What is the key information they provided for projects (e.g., CRF/CMF, cost)? **No Information**

Implementation Plan

- Did they prioritize projects into timeframes? **Trainings, workshops, etc. per year (pgs 35-40)**
- What prioritization criteria was used? **Level of resources (pgs 35-40)**
- Did they identify funding sources for specific projects (or all projects)? Or did they just discuss sources generally? **No Information**
- How did they handle non-engineering items? Are they also included here with responsible orgs and timeframes? **Action Plan focus areas span non-infrastructure improvements with leads (pgs 35-40)**
- What does their monitoring program look like? **Performance metrics for every action plan item (pgs 35-40)**
  - Are there performance measures? Other recommendations (i.e., before and after studies?)
  - Is there a continuing workgroup? **Vision Zero Steering Committee.**

PEER AGENCY INTERVIEW - SPACE COAST TPO

Date/Time:

- 12-19-23, 1:00-1:30 pm

ATTENDEES

- Space Coast TPO: Shelby Villatoro, Laura Carter
- COMPASS: Hunter Mulhall
- Kittelson: Nick Foster, Matt Steele

NOTES: SPACE COAST VISION ZERO ACTION PLAN

- Successes with implementing the safety plan:
  - Started when VZ was new
  - More of an education campaign
    - All jurisdictions signed on
  - Doing an action plan now
    - Getting everyone on the same page
    - Getting everyone to agree to zero deaths
      - Some revision because too detailed
      - Being flexible was important
        - Smaller steps to get to ultimate goal
    - Updating their plan now to have actual projects
- Federal funds are unavailable
  - LAP
    - Requires all the same strings as federal funds
- Challenges
  - Political standpoint
    - Actions after resolutions not occurring
  - Implementation plan needed some rework
    - Not an implementing agency (what can they do, what can't they do, how can they be a resource to their member agencies)
- Continuing workgroup
  - Currently a leadership team with members from every muni and community partners
- Local entities need resources to develop their own implementation plan
  - Here's your HIN/Action Plan/Etc.
- Action plan toolkit for member agencies
- Master plan for each emphasis area within the vision zero plan.
  - State of the system report (very data driven)
    - Integrated into project planning
    - TIP requires project ticks of performance measure.

PEER AGENCY INTERVIEW - DRCOG

January 25, 2024

Peer Agency Conversation with Denver Regional Council of Governments (DRCOG) on Jan. 5, 2024

ATTENDEES

- DRCOG: Emily Kleinfelter, Safety/Regional Vision Zero Planner and Alvan-Bidal Sanchez, Program Manager
- COMPASS: Hunter Mulhall
- Kittelson: Nick Foster
- High Street Consulting Group: Rebecca Van Dyke, Yousef Dana, and Kevin Ford

NOTES: REGIONAL VISION ZERO PLAN

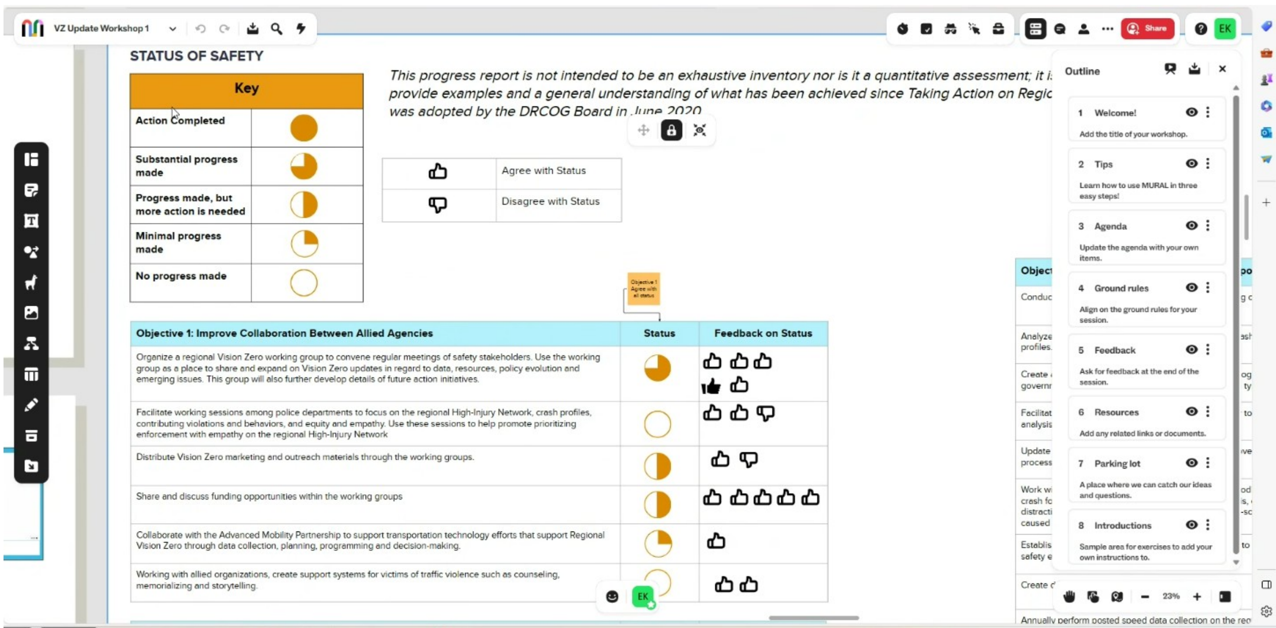
1. **Background and Context**
   - The first Vision Zero Plan was developed around 2019 by a consultant (they think Fehr and Peers).
   - DRCOG is updating the plan now; started update effort at the beginning of 2023.
   - Chapter 6 on Implementation is the only section being updated.
     - Needed to call out Safe System Approach (SSA) more.
     - It was more of a “to-do list” and needed more clarity on the impact and implementation.
     - They needed to understand the most important actions.
     - First step was looking at current actions, considering progress, and suggesting new actions.
     - Consulted stakeholders on what is most important, short-term, mid-term, long-term.
     - Removed actions that weren’t moving the needle.
     - Updating list of countermeasures to make it less detailed; using FHWA proven countermeasures instead.
     - Updated countermeasure list will include some that are not in FHWA’s guidance like Right Turn on Red.

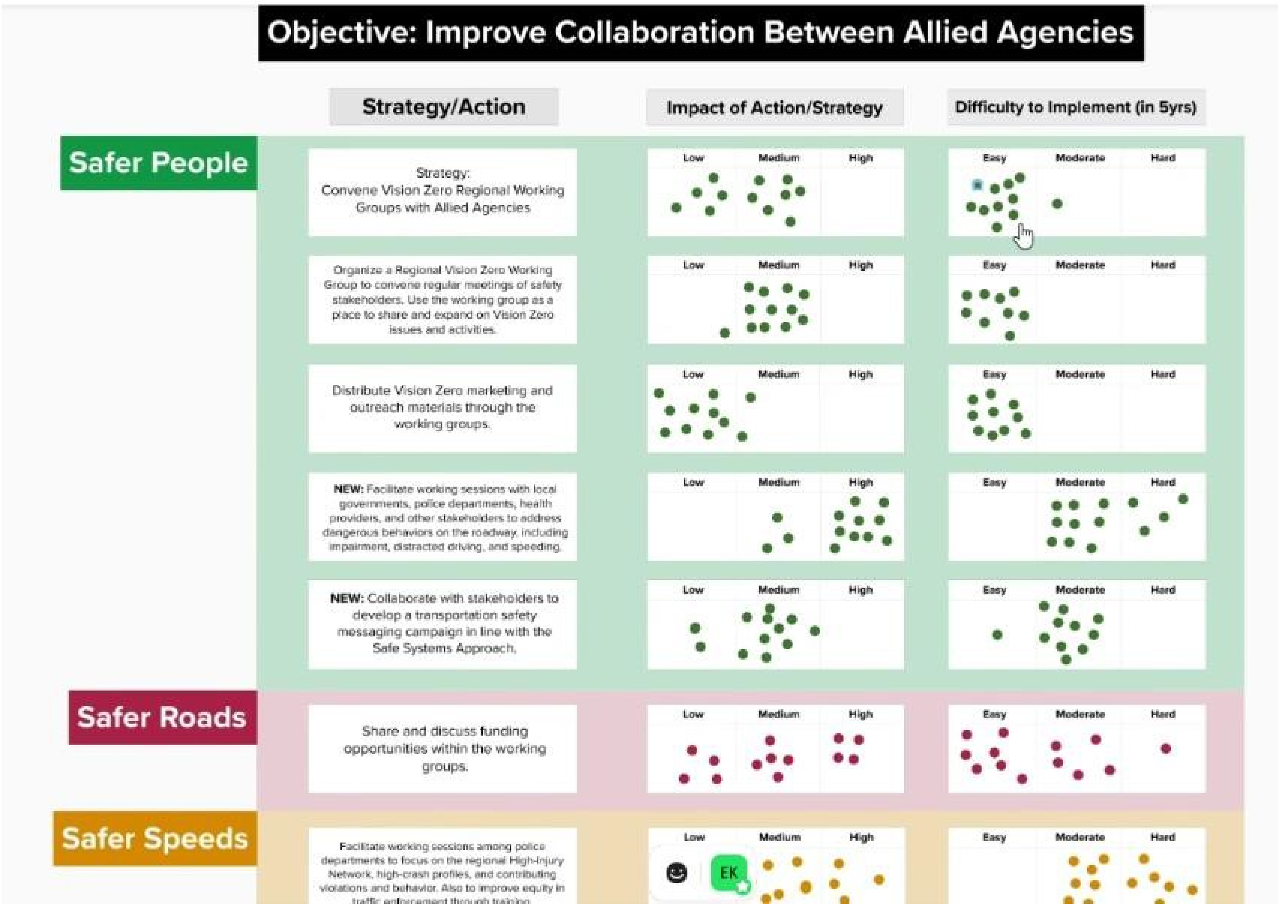
2. **Local Adoption of Regional Vision Zero Plan**
   - Local governments are using the plan.
   - DRCOT has a tool that allows governments to select where their project would be.
   - TIP considers projects on the high-injury network HIN or critical corridor. Applies to score: https://drcog.maps.arcgis.com/apps/webappviewer/index.html?id=438c8406070d4b34bc9e892b56146ed8
   - Two governments have adopted a vision zero plan and goal.
   - In 2022, nine SS4A recipients were awarded funding for their action plans.
   - By this time next year, DRCOG hopes to have 10 member governments.

- Region very supportive; sometimes board pushes them faster than they can keep up.
- They're also identifying target years for vision zero goals, which they didn't the first round. 2040/2045 for fatalities/serious injuries.

3. Stakeholder Engagement

- Used Mural for virtual meeting feedback on each action. (Next two screenshots are of Mural boards.)





- Mural engagement was better than in-person engagement, but weather may have had an impact.
- Regional Vision Zero Group continued to meet since 2020, mostly for resource sharing.
- Changed to monthly workshops; made up of member governments, state DOT, advocacy groups.
- Only 1 or 2 disengaged stakeholders that feel like they're not moving in the same direction as DRCOG.
- Tweaking the language for each member agency is important to get actions moved.
- Stakeholder interest in driving under the influence of substances.

4. High-injury Network (HIN)

- DRCOT took the HIN, network of critical corridors, and crash profiles and developed a story map: https://storymaps.arcgis.com/collections/1007942fed964b3596895462fa9e076a?item=7 (Developed internally, by Emily.)
- Now they're manually creating a list of 120 corridors in all counties.
- A lot of the HIN is interstates; relationship with the Colorado DOT is growing as they have their own safety priorities. They were involved in prioritization workshops.

5. Disadvantaged Communities

- Unsure of the extent of project implementation in underserved communities; would have to do a scan of projects.

- Seen interest in underserved communities in other, more recurring pipelines like the Community Based Transportation Plans
- Use environmental justice areas in critical corridor planning.
- Rely on a particular definition for EJ zones and address concerns through conversation. EJ zones are now a tighter region.
- Careful about using “geographic equity;” now talk more about balance. Main message is that we’re taking into consideration geographical context.

6. Resource Availability

- DRCOG is at the disposal of local governments as a resource.
- If local agencies can’t develop their own plan, the Regional Safety Action Plan can be used.
- Critical corridors exist in all counties for this reason.
- DRCOG is researching whether the Regional Action Plan counts as a local government’s action plan for funding requests.
- Currently piloting a technical assistance program; may be stepping into this area more.
- For some resource-strapped agencies, they remove some local match and handle some procurement.

7. Funding

- Just begun thinking about framework for a regional safety set-aside.
- They would be taking money off the top for every TIP.
- Another option is a regional funding pool.

PEER AGENCY INTERVIEW - MNDOT

January 25, 2024

Peer Agency Conversation with Minnesota Department of Transportation (MnDOT) on Jan. 4, 2024

ATTENDEES

- MnDOT: Derek Leuer
- COMPASS: Hunter Mulhall
- Kittelson: Nick Foster
- High Street Consulting Group: Rebecca Van Dyke, Yousef Dana, Kevin Ford

NOTES: COUNTY ROADWAY SAFETY PLANS (CRSP) PROGRAM

1. **Background and Context**
   - At the time the first program was developed, 50% of fatal and serious crashes occurred off of the main trunk.
     - MnDOT decided that to achieve Road to Zero, they needed to work with local partners.
     - The next major chunk of crashes were county roadways, mostly rural, and the next logical place to focus on.
   - Decided to open up funding.
     - Told locals that half the problems are on your network, so half the money is available to you. Asked locals to send safety projects.
     - Received expensive, ineffective projects like shoulder paving, highway reconstruction, and intersection rebuilds.
     - Reassessed and decided to tell locals the type of projects needed – low-cost, high-impact, and distributed across the state.
     - They still didn't get it – received the same type of projects. Often came down to one engineer doing all the planning.
     - Realized they needed to tell them what to do and where to do it or all 87 counties.
     - MnDOT doesn't do the analysis and work; they hire consultants and work closely with county engineers and staff.
     - Collaboration with the MnDOT State Aid Department, which gets money to counties. This partnership already existed, which helped a lot. They were the full project managers.
     - MnDOT doesn't recommend projects, they suggest the "right type."

2. **Local Reactions to CRSP Program**
   - Received some pushback, but county engineers often didn't fully appreciate the problems they had. They often didn't know what to do.

- This program was mostly a breath of fresh air, especially in less dense counties with less population and expertise.

3. **Plan Funding**
   - First round used internal state funding at 100%. Lots of political will at the time in 2008; commissioner was very enthusiastic about safety planning.
     - Received $3 million for 87 counties
   - One challenge was getting all 87 counties to do it. Significant peer pressure worked, especially at 100% funding.
   - For second round, they have used "164 funds" because MN doesn't have a DWI reoffender law.
     - This is about $18 million a year; 100% funded - no match required.
   - Received some complaints about "cookie cutter" process – applying same methods for all counties. Now there's an option to customize with 20% match requirement.
     - One Tribe approached and received a match exemption.

4. **Effectiveness**
   - At least 85% of counties have submitted for projects and gotten funding. Try to give little counties a leg up; big affluent counties are still submitting for more projects.
   - First CRSPs were intended to be primarily rural. Seen a recent change in the data across the state.
     - Now about 50% urban and 50% rural. Maybe that society is becoming more urban.
   - Hard to directly tie CRSPs to overall crash reductions; also difficult because of a new crash data system in 2018.
     - "A" went from incapacitating to suspected serious injuries; saw a 60-80% increase in "As."
   - A lot of agencies don't implement with HSIP because they don't want to go through the federal process.
     - Smaller counties are more likely to apply for HSIP funding.
   - County engineers are more politically connected on the ground and are therefore politically sensitive.
     - Rumble strips are hard to implement because of noise concerns. Received pushback on intersection lighting, too.
     - Striping is easy. Chevrons on curves are very popular.
     - Helps to get in front of county boards early and explain what and why they do what they do. Maybe no crashes yet, but that's what systemic planning is.

5. **Project Funding**
   - Try to encourage counties to "bundle" projects by intervention; example is applying chevrons on dangerous curves.
   - State Aid has helped counties streamline process.
   - Lack of Resources, desire, and expertise are all barriers to project submission.
   - Northwest corner of state – 13 counties got together got together and id curves that needed chevrons
     - $2M funding request
     - Broke up the work so that one county wasn't navigating the whole federal process.
   - Smaller agencies are concerned about maintenance afterwards.
     - Continues to be a challenge; try to frame it as "reconstruction."
   - The challenge with intersection lighting involves paying for power.

  - Locals have to pay for power costs, and they often don't want to, or they don't have staff to maintain.
  - MnDOT hasn't completely figured out a solution to this; one county approached the power coop to help maintain the lights and pay for the power.

6. **Prioritization Process**
  - MnDOT makes suggestions for projects; counties apply for funding.
  - Keep cost estimates at high-, planning-level; encourage counties to apply more accurate, updated data if available.
  - Identify risk factors based on characteristics of the roadway.
    - On curves, for example, characteristics might include vertical trap and intersection on roadway. If a curve meets criteria of a risky curve, it's a high-risk curve.

7. **Non-engineering Interventions**
  - First plans included some programs they could apply to, more as a "goodwill gesture" for public safety. Not sure how much they were used.
  - In second round, since the program geared toward county engineers, not as big about this. There are other programs for these types of interventions.

8. **Safe System Approach**
  - SSA approach has applied to the CRSPs all along.
  - New SHSP and other plans will talk more about it.
  - It's a good educational tool, especially around humans making mistakes. Better way of talking about traffic safety.

9. **Closing Thoughts**
  - MnDOT had this great effort 15 years ago; lots of excitement from county engineers. In 10-15 years, people retire, move on, etc. so there is a lost knowledge base.
  - In 2024 the department is doing a big outreach project to talk about traffic safety and the funding available for traffic safety infrastructure. They'll do 24 workshops across the state.
  - MnDOT strongly encourages counties to do this. Told them they need 100% participation to do this. No policy/legislation/state requirement.

HIGH STREET

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COMPASS Regional Safety Action Plan

TECHNICAL MEMORANDUM #3

October 8th, 2024 — Project #: 29061.0

To: Hunter Mulhall and Austin Miller, COMPASS

From: Yousef Dana, PE; Rebecca Van Dyke; Ashton Hicks; Kevin Ford, PE, PhD

RE: Regional Safety Action Plan – Existing Conditions

This technical memorandum presents the existing conditions analysis for the COMPASS Regional Safety Action Plan (RSAP). The analysis was developed based on a two-pronged approach to developing a high-injury network (HIN). The existing conditions has been refined based on feedback from the COMPASS Project Management Team (PMT) and the Safety Working Group meeting #2.

INTRODUCTION

The USDOT adopted a Safe System Approach (SSA) to roadway safety to address and mitigate the risks that are inherent in a complex transportation system. It is a shift from the conventional safety approach because it focuses on human mistakes and vulnerability with the goal of designing a system with multiple protective redundancies. Further, an effective safe system requires buy-in and shared responsibility across all stakeholders, including all levels of government, industry, non-profit/advocacy, researchers, and the general public.[1]

Using High-injury Networks (HINs) for traffic safety planning is an example of the Safe System Approach in practice. Before the most effective interventions are implemented, it is essential to understand the most critical areas of need in a region's transportation network.

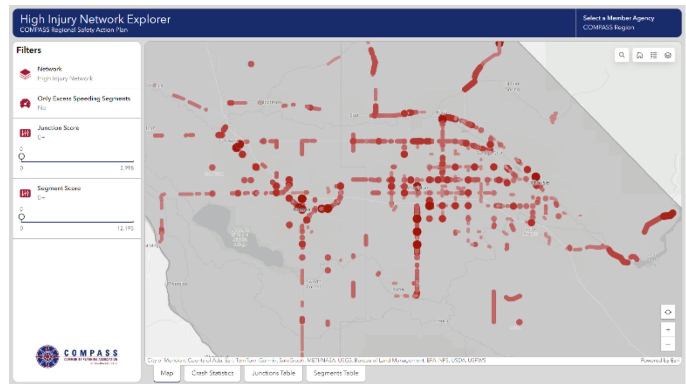
The COMPASS Regional Safety Action Plan (RSAP) includes a data-driven analysis of existing conditions and historical trends to establish a baseline understanding of safety performance on the region's multimodal roadway system. To accomplish this important task, the consultant team (High Street and Kittelson) conducted a fatal and serious injury analysis that resulted in a region-wide high-injury network (HIN). Moving towards a vision of zero deaths requires an understanding of where the most severe collisions are occurring (i.e., crashes resulting in fatalities and serious injuries). Additionally, there may be aspects of the network that correlate to more severe crashes as a result of specific roadway design features or risky driver behavior. A defensible and objective HIN highlighting the areas of the roadway system in the most need of safety improvements can help agencies continue making progress with limited resources.

[1] What Is a Safe System Approach?: https://www.transportation.gov/NRSS/SafeSystem

EXECUTIVE SUMMARY

This document presents a comprehensive analysis of existing conditions related to traffic safety in the COMPASS region, setting the groundwork for a targeted Regional Safety Action Plan. Our analysis, grounded in rigorous examination of 2018 – 2022 crash data through location and systemic analysis, underscores the critical areas where interventions can significantly enhance road safety and reduce fatal and serious injury crashes.

The results of the analysis show a High Injury Network (HIN) that prioritizes segments and junctions with fatal and serious injury crashes through a combination of need and risk. This network can be displayed via the link below to an interactable ESRI Dashboard hosted on the COMPASS ArcGIS Online Server:



https://compassidaho.maps.arcgis.com/apps/dashboards/aa2067339363456a9fcec94b0d9875fd

Key Findings:

- **Lane Departure:** Approximately 24% of all K (fatal) and A (serious injury) crashes are lane departure crashes—such as overturns, head- on, and sideswipe collisions—highlight the importance of addressing lane departure risks. Of those lane departure fatal and serious injury crashes, the large majority (76%) of them occur on segments rather than junctions. A comparative analysis between unincorporated and incorporated areas reveals that 60% of lane departure fatal and serious crashes occur in incorporated areas, with 74% of all KA crashes occurring in incorporated areas. This illustrates the spatial distribution and context-specific nature of these crashes.
- **Junction-Related Crashes:** Approximately 37% of all K and A crashes are angle or turning movement related. This underscores the need for strategic interventions at junctions to mitigate these high-risk incidents.
- **Speed and Crash Severity:** Speed is a critical factor influencing crash severity showing that 30% of the High Injury Network has average speeds above the posted speed limit. Systemic analysis findings reveal a strong correlation between speed, functional road classification, and crash outcomes. In particular, roads with speed limits of 35 miles per hour (MPH) and higher are correlated to the most fatal and serious crashes. This relationship emphasizes the need for speed management strategies across various road types to mitigate fatal and serious crashes.
- **Exposure:** The analysis identifies certain attributes in the roadway, such as the number of lanes on segments and the number of legs at junctions, as significant contributors to crash severity. Our model determined that multi-lane segments and intersections approaches correlate with fatal and serious injury crashes. These findings support the prioritization of interventions that reduce conflict points and exposure, particularly in high-risk areas.

Causation vs. Correlation

This analysis identifies features that are correlated with higher numbers of fatal and serious injury crashes. This does not necessarily mean that the presence of the characteristic is contributing to crashes. This may be particularly true of characteristics that are likely acting as proxies for other features (e.g., the presence of a sidewalk may be a surrogate for walking activity).

Crash Type vs. Contributing Factor

Crash Type describes how a crash happens (e.g., rear-end, angle), offering an objective classification based on observable evidence. Countermeasures can be identified to target specific crash types.

In contrast, Contributing Factor (e.g., distracted driving) involves subjective judgment about why a crash occurred, such as distracted driving or weather conditions, which can be unreliable due to reporting inaccuracies or cross-cutting across multiple crash types and not informative for strategy development.

Focusing on crash types allows the plan to identify countermeasures targeted to the most common crash patterns.

- **Vulnerable Road Users:** Despite various road safety measures, vulnerable road users remain at high risk. Detailed analysis sheds light on the specific vulnerabilities and informs targeted strategies to protect these road users effectively. 12.5% of all fatal and serious crashes involved a pedestrian or bicyclist. Motorcycles, Mopeds, and Scooter crashes account for 16% of fatal and serious crashes, but only 1.8% of all crashes, showing an increase in severity when they are involved in a crash.

- **Weather and Road Safety:** Weather conditions have not been a significant factor in crash occurrences in the region. This directs attention towards human and infrastructural factors in crash causation and prevention strategies.

- **Influence of Alcohol and Seatbelt Use:** Alcohol involvement and lack of seatbelt use emerge as significant behavioral factors in crash severity, highlighting the critical need for behavioral intervention programs to address these issues. 4.8% of occupants did not wear any protection device such as a seatbelt and 13.5% of drivers were under the influence of alcohol.

- **Demographic Correlations:** A noteworthy correlation exists between some Traffic Analysis Zones (TAZ) in the COMPASS region and KA crash occurrences, particularly in areas with high Equity Index scores with respect to the Community in Motion (CIM) 2050 Equity Index. Twelve-and-a-half percent (12.5%) of TAZs in the region have an Equity Index score of 7 or above on a 0-12 scale (higher scores indicate worse conditions on various measures of equity). Further, these TAZs represent about 9.4% of the population in the region. Meanwhile, the same TAZs contain 16.1% of KA crashes. This means that there is a disproportionately high number of KA crash types happening in areas with worse equity index scores (i.e., 7 or higher). There is also a notable correlation between unemployment rate and the people living in TAZs along the HIN. The HIN TAZs have a slightly higher average unemployment rate (0.3%) compared to TAZs that do not overlap with the HIN. These observations emphasize the importance of integrating social equity considerations into safety planning.

Recommended Emphasis Areas:

Building on these findings, the table below defines emphasis areas recommended for targeted interventions:

Emphasis Area	Details
Vulnerable Road Users	Crashes involving pedestrians, bicyclists, motorcyclists, and other non-motor vehicle road users.
Junction Crashes	Crashes occurring within 150 feet of a junction or intersection.
Lane Departure Crashes	Crashes involving a vehicle leaving the lane, including overturns, head-on, and sideswipes.
Seatbelt Use	Crashes where there is no use of restraint devices.
Impaired Driving	Crashes involving drivers under the influence of alcohol, drugs, or other impairing substances.

Table 1 - Recommended Emphasis Areas

Conclusion:

The existing conditions analysis provides a data-driven foundation for the Safety Action Plan, identifying critical areas for intervention. By focusing on the recommended emphasis areas and incorporating specific findings from this analysis, the plan aims to significantly reduce the incidence and severity of crashes in the region, thereby enhancing overall road safety for all users.

METHODOLOGY

This section describes the methodology of the analysis for understanding and reproducibility.

HIGH INJURY NETWORK (HIN) DEVELOPMENT

The High Injury Network (HIN) was constructed through a methodical process that integrates both location-specific and systemic analyses as shown in Figure 1. Interstates, ramps, and local roads were removed from the analysis due to the use of crash frequency and lack of data. Using crash counts, interstates and ramps would dominate the HIN . Crashes occurring on local roads are very difficult to determine cause and correlation with the datasets acquired. Crash data was analyzed in conjunction with roadway, junction, and crash attributes to identify areas of concern through two primary types of analysis:

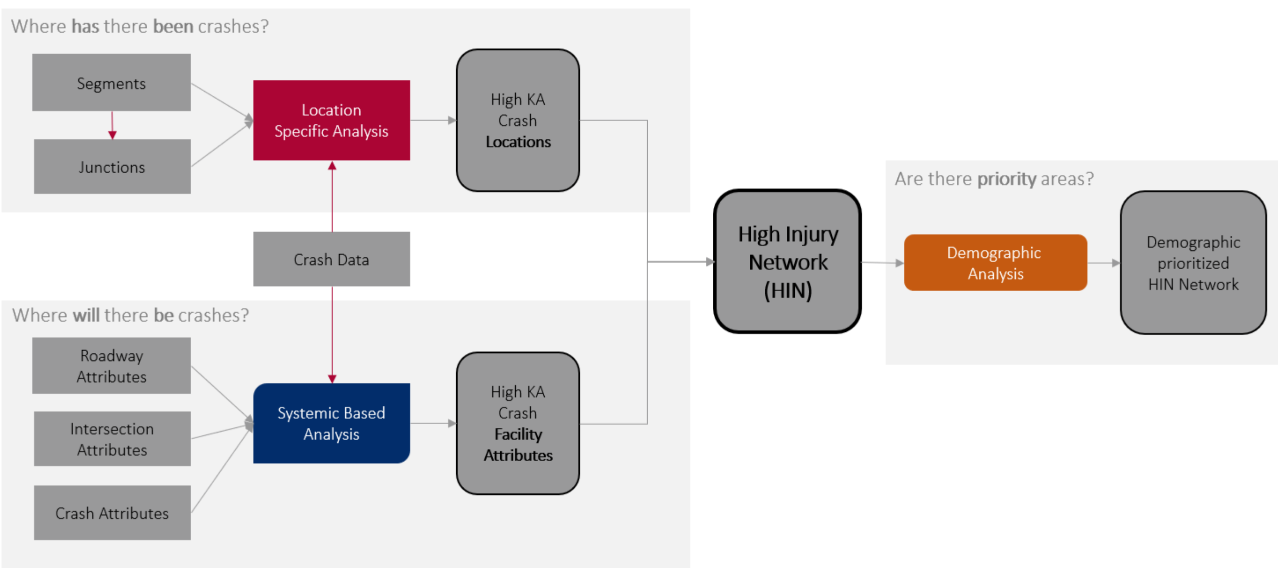


Figure 1 - Two-Prong Data Analysis Approach

1. **Location-Specific (Hot Spot) Analysis** reactively identifies roadway junctions and segments with higher concentrations of observed fatal (K) and serious injuries (A) crashes. This traditional "hot spot" analysis focuses investments at locations where a higher preponderance of severe crash events have occurred in the past five years. The resulting data layer shows high fatal and serious injury crash counts at junctions and segments and a "Location Score", which ranks features based on the number of KA crashes in the five-year period of 2018 to 2022.
2. **Systemic Based (Risk) Analysis** uses a machine learning model (random forest regression) that identifies features of the regional roadway and junction network that correlate with fatal and serious crashes regardless of whether such events have recently occurred at a site location. The goal is to flag infrastructure with roadway features (e.g., lane count), driver behaviors (e.g., speeding), or external conditions (e.g., low lighting) that may increase the likelihood of future severe incidents on the network. The resulting attribute of this work is a "Risk Score" that calls attention to particularly risky roadway and junction facilities.

The result of these two analyses was used to create a **high-injury network (HIN) score** that ranks COMPASS region's roadway segments and junctions through an identical score of features with the highest frequency of fatal and serious injury crashes and features with variables that contribute most to high risk (shown in Figure 2). More details on each of these scores can be found in their respective methodology sections. The creation of this HIN ensured that the network reflects both the granular details of specific crash sites and the broader systemic risks.

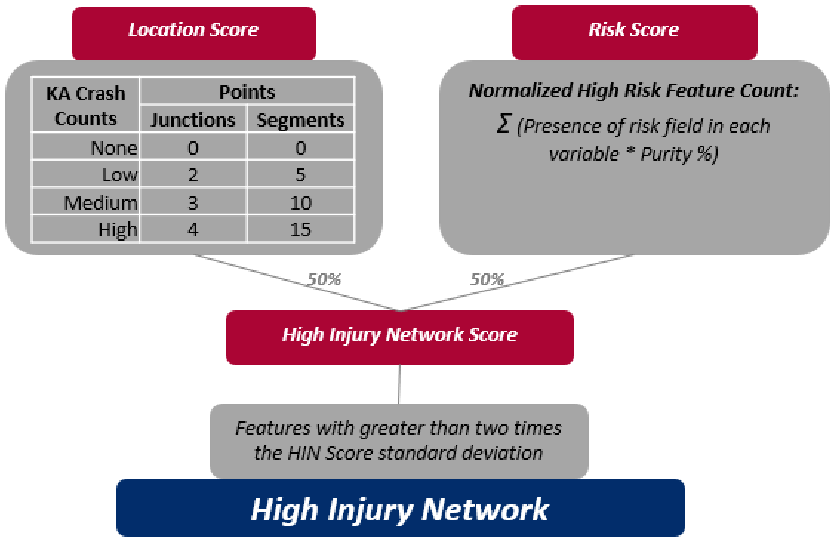


Figure 2 - High Injury Network Weighted Scoring

The HIN was further refined through a Demographic Analysis to ensure community impacts and needs were considered, leading to the creation of a **Demographic HIN Network**. The analysis examines the intersection of the HIN with spatial data about the people who live in the COMPASS region. The goal of this analysis is to discover any safety trends that may disproportionally impact certain groups of people who live close to the HIN. The analysis compares the HIN with the Community in Motion 2050 (CIM2050) Equity Index. The Equity Index utilizes data from the 2015-2019 American Community Survey 5-year summaries as well as COMPASS' transportation and population data and focuses on 23 measures with three categories: social, environmental, and transportation.[2] One limitation of the crash data is a lack of demographic information about the individuals involved in the crashes themselves. It is important to note that the information presented here does not mean that the individuals involved in the crashes used to designate the HIN correspond with the demographic characteristics of the Traffic Analysis Zone (TAZ). Rather, it applies to the people living within the closest proximity to the HIN.

In conclusion, the HIN was meticulously assembled using a dual-analysis approach, combining detailed crash site data with systemic risk factors and demographic considerations to create a prioritized network for safety enhancements. This method provides a robust, data-informed foundation for strategic planning and resource allocation to address critical safety concerns on the transportation network. The resulting HIN can be used by COMPASS to identify locations where resolving safety issues would result in the greatest safety impact.

[2] CIM 2050 Maps: https://compassidaho.maps.arcgis.com/apps/instant/portfolio/index.html?appid=6c1eebca233d49c4935825136f338fac

DATA COLLECTION

The consultant team integrated the Safe System Approach into the analysis by careful consideration of all available quality data that align with five SSA objectives of Safer People, Safer Vehicle, Safer Speeds, Safer Roads, and Post-Crash Care. Figure 3 shows the data elements the team used organized by SSA objective and Appendix A defines the data source credits and attributes used. Note that data for Safer Vehicles and Post-Crash Care are minimal compared to other regions. Example data in these categories that would enhance this analysis might include specific safety technology in the vehicles involved in serious injury and fatal crashes and emergency response time by crash for the entire region.

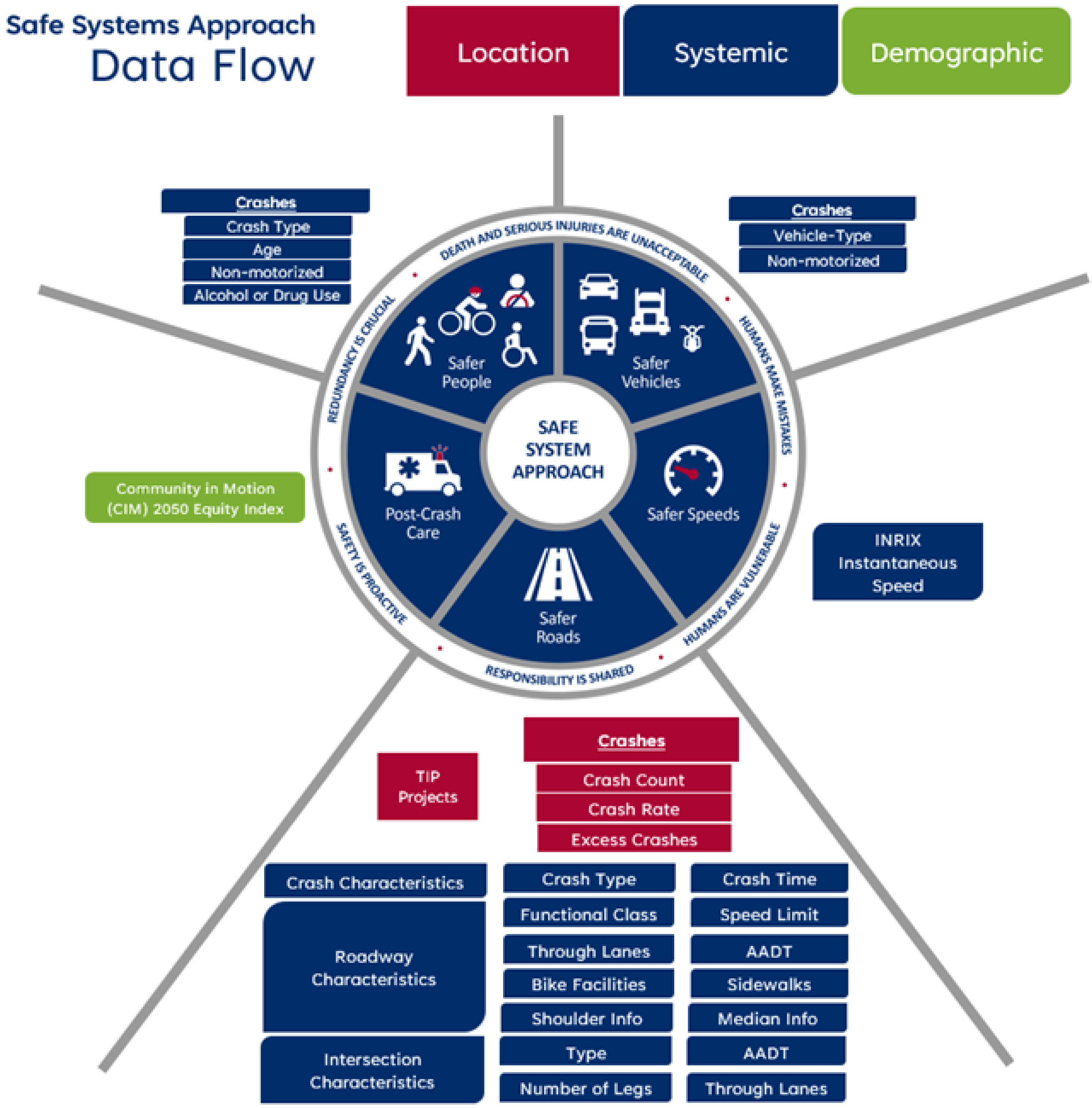


Figure 3 - Data used relative to Safe System Objectives

Additional Data to Consider Collecting

The data collection effort provided a solid foundation for understanding the existing conditions and identifying key areas for intervention within the region. The depth and breadth of the data utilized have allowed for a comprehensive and insightful analysis, rarely leaving us constrained by data limitations. To enhance this high standard of safety planning, we recommend considering the integration of additional data sources in future analyses. These sources can offer new dimensions of insight, further refining our understanding of traffic safety dynamics and enabling even more targeted and effective interventions.

Post Crash Care

- National Emergency Medical Services Information System (NEMSIS): Utilizing NEMSIS data can deepen understanding of the relationship between EMS response times, care quality, and crash outcome severity, guiding improvements in post-crash response protocols.
- Hospital Trauma Center Data: Detailed data from hospital trauma centers on patient outcomes can help evaluate the effectiveness of post-crash care and identify areas for medical intervention improvement, ultimately reducing fatalities and severe injuries.

Safer Speeds

- Connected Vehicle Data: Real-time data from connected vehicles can offer insights into prevailing speed patterns and hard breaking events across different road types and conditions, aiding in the identification of spots where speed management measures are most needed.

Safer Vehicles

- Department of Motor Vehicles (DMV) Records: Vehicle registration data can assist in determining which vehicles disproportionally are involved in severe crashes. Detailed DMV records on vehicle inspections and compliance with safety standards can identify trends in vehicle safety features' effectiveness and areas for policy intervention.
- Insurance Claim Data: Aggregated data from insurance claims can provide another layer of detail regarding the types of vehicles and safety features most commonly involved in crashes, offering a unique perspective on vehicle safety performance.

Safer Roads

- Junction/Intersection Data: More attributes of an intersection can help identify high risk attributes. Examples of that are the presence of turn lanes, left-turn phase, and other items noted in FHWA's MIRE elements[1].
- Land Use Data: Detailed zoning and land use patterns can help understand how the built environment influences traffic flow and safety. This can guide the design of safer roads that accommodate all users.
- Public Transportation Usage Data: Information on public transportation ridership and service coverage can highlight areas where enhancements in vulnerable road user safety can be most effective.

Safer People

- Mobile App Data: Analyzing anonymized data from traffic-focused mobile apps (such as Waze and Google Maps) can provide insights into public perceptions of road safety and hazardous locations.
- Health Department Records: Data on alcohol and drug consumption patterns from health departments can help identify correlations with crash occurrences, informing targeted interventions for impaired driving.

[1] https://safety.fhwa.dot.gov/tools/data_tools/mirereport/mire_elements.cfm

DATA VALIDATION

PROCESS

For each dataset, a series of data quality and assurance checks were performed as shown in Figure 4:

- **Spatial completeness** – Does the layer cover all of the COMPASS region? Are there gaps?
- **Percent of null column values** – What percentage of rows in the columns we plan to use are null?
- **Distribution of column values** – Are there outliers in the values of the columns we plan to use? Does the mean, median, max, and minimum value make logical sense? Is there evidence of default placeholder values?
- **Geocoding** – Do any points, lines, or polygons look geocoded incorrectly? If so, does this impact large amount of data or are there only a few instances?
- **Data structure** – Is the data in a wide format, meaning each attribute is in a separate column, or a long format, meaning each attribute is in a separate row? Are any transformations needed to join all of the data together and perform the analysis?

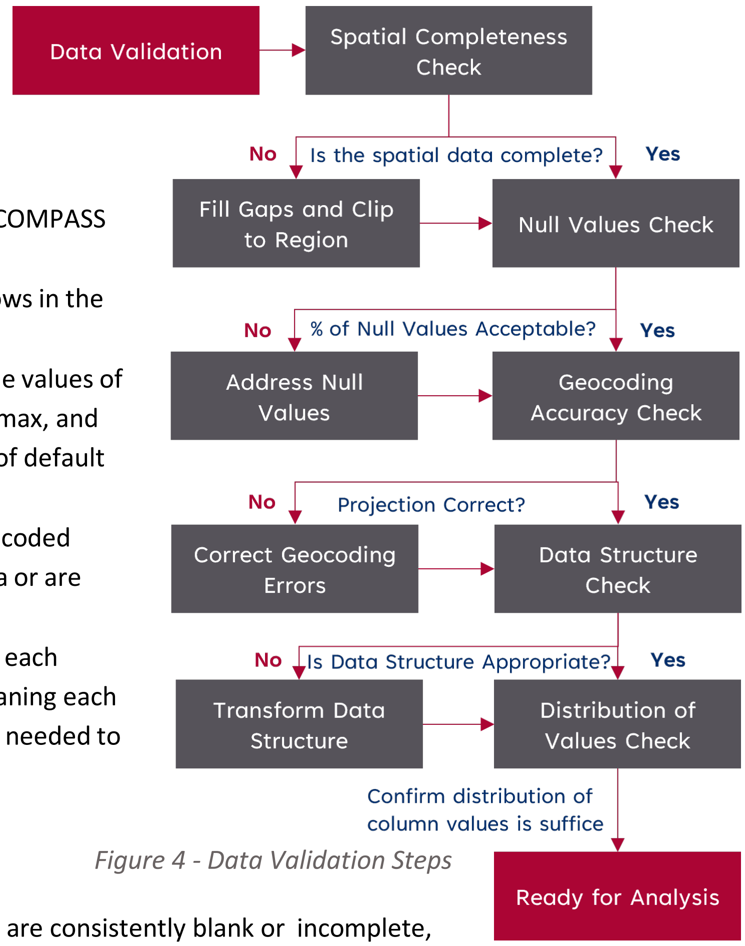


Figure 4 - Data Validation Steps

SUMMARY OF FINDINGS BY LAYER

- **Crash Data (2018 – 2022):** Identified several fields that are consistently blank or incomplete, such as Segment Code and Mile Point. Values in key columns used in the analysis such as 'Number of Fatalities' and 'Number of Serious Injuries' were checked to ensure value ranges made sense and from this check, no questionable outlier values were found. There were a few spatial data oddities, like points denoted as being within the COMPASS region via the 'County' field being geocoded outside of COMPASS boundaries. There is consistency across data each year in terms of how crashes are classified, the fields that are included, and data quality.
- **Emergency Response Data:** Investigated the fields that depict the amount of time between the emergency response call being received and the emergency response arrival to the scene. This field was blank approximately 44% of the time and varied widely in reported durations. Considered the possibility of excluding outliers based on the distribution.
- **Volume Data:** Observed that the data is in a long format meaning each different year of Annual Average Daily Traffic (AADT) for the same segment is stored in a different row rather than each year having its own column.
- **TIP Roadway Projects:** Approximately 4% of the roadway projects are identified as having a 'safety' project type in the 'Project Type' field.
- **TIP Intersection Projects:** Nearly half of the intersection projects are identified as having a 'safety' project type in the 'Project Type' field.

DATA ANALYSIS

LOCATION-SPECIFIC ANALYSIS

The location-specific analysis aimed to identify 'hotspots' of crash locations for both segments and junctions. The analysis output assigns a location score to segments and junctions within the COMPASS region based on the number of fatal and serious injury crashes. The following flowchart (Figure 5) illustrates the methodology used to perform this analysis at a high level. Specific details on each step are provided in Appendix C.

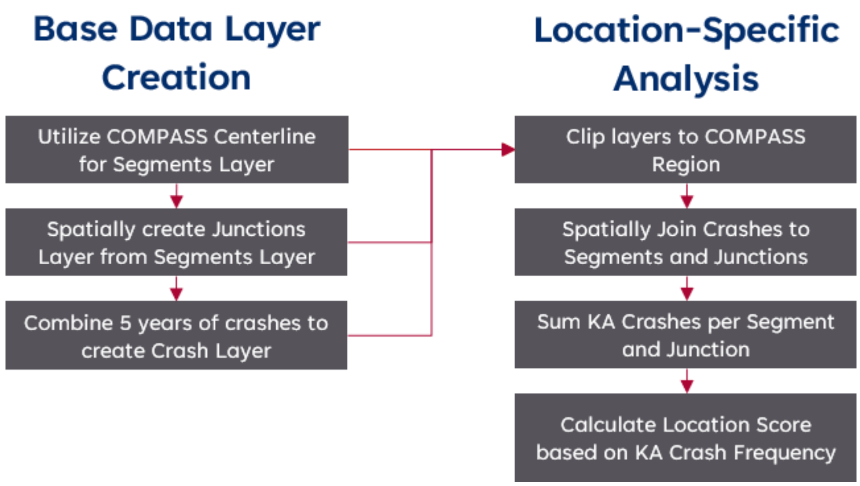


Figure 5 - Location-Specific Analysis Method Overview

The team based the analysis on the segment, junction, and crash layers. Utilizing an existing COMPASS segment layer with a functional classification filter, the analysis focused on segments of classification 'Collector' or higher. This layer served to spatially create a junction layer as a full junction layer for the COMPASS region did not exist. Junction points were created where two or more lines intersected. Attributes from any existing junction-related layers, such as the regional signals layers, non-signal intersections layer, and Ada and Canyon County Roundabouts layer, were incorporated by spatially joining these layers to the spatially created junction layer. The team used spatial joins to link 2018-2022 crashes to their nearest segment or junction. Junction-related crashes, defined as those within 150 feet of a junction per Highway Safety Manual Guidance, were exclusively joined to the junction layer. All other crashes were joined to the segment layer. This analysis calculated numerous crash-related attributes at the segment and junction level including overall crash counts and rates, serious injury crash counts and rates, fatal crash counts and rates, non-motorized crash counts, crash counts of various emphasis area types, and KA crash counts and rates. To calculate rates, COMPASS's latest AADT layer was spatially joined to the segments and junctions. This process resulted in a total of 1,904 fatal and serious injury crashes joined to segments and junctions. 148 fatal and serious injury crashes were removed from the analysis in the process due to reasons such as being on local roads or falling outside of the buffered segments or junctions. 17 of these were fatal crashes and the other 131 were serious injury crashes. Of the 148 crashes not included, 13 are potentially poorly geocoded, however most mention "private property" or "in a parking lot" as the event related to the roadway or junction so a geolocation far from any roadway segment could be correct. The rest of the 148 crashes were on local roadways.

The location score normalized the total fatal and serious injury crash count into a value of 0, 5, 10, or 15 for later use in the systemic analysis. Three cutoff values were calculated using the Jenks natural breaks in the total fatal and serious injury crash count to assign a value of 5, 10, or 15. Segments or junctions with no fatal or serious injury crashes were assigned a 0. This normalization ranks each segment or junction from the most to least number of KA crashes and assists in the creation of the High Injury Network.

The result of the location-based analysis is a segment layer and junction layer, each with a variety of crash attributes summarizing crashes over the last five years. The 'High' KA crash group segments and junctions are then further utilized to develop the HIN.

SYSTEMIC SAFETY ANALYSIS

The systemic analysis (also denoted as risk analysis) focused on interpreting the relationship between variables in the roadway or junction that correlate to fatal and serious injury crashes. The analysis examined how certain roadway and junction characteristics relate to severe traffic accidents. The flow methodology shown in Figure 6 describes how conflation, simple correlation, machine learning regression, and risk scores were used.

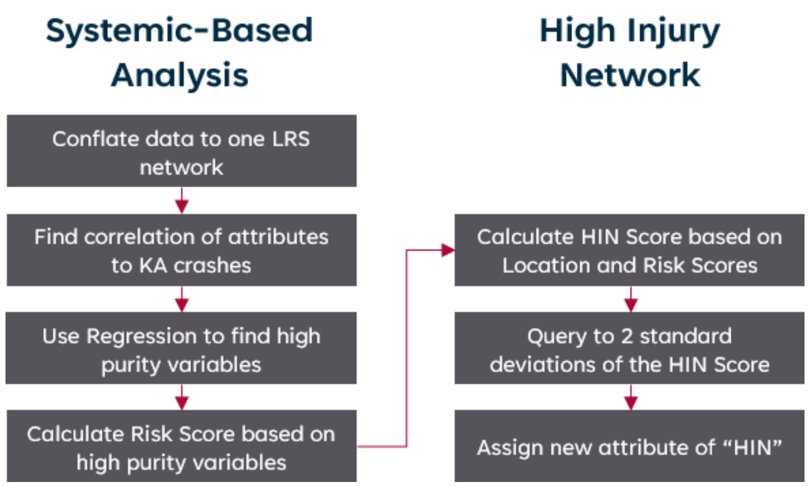


Figure 6 - Systemic Analysis Method Overview

Key to methodology was carefully preparing data on these variables for use in the correlation and machine learning regression analysis. This involved conflation, a sophisticated method of aligning datasets with differing formats, structures, or spatial references. Conflation aims to match fields across datasets and perform a spatial join, using a buffer zone to include nearby relevant features. This is essential because transportation datasets often use different Linear Referencing Systems (LRS) for locating roadway features. Without conflation, integrating these datasets would lead to inaccuracies, as they might use different reference points like state highways or local road mileposts. Conflation avoids these issues, enabling a more thorough analysis.

Our conflation process involved three key steps:

- **Identification of Matching Fields:** This initial phase involves a review of the datasets to determine common fields that can serve as anchors for integration. These fields can include geographic coordinates, road names, or unique identifiers assigned to roadway features. It was found *stname*, *milepost, and cardinal direction* attribute fields contributed the most by tabularly combining LRS data.

- **Spatial Join with Buffering:** Given the spatial nature of our datasets, a spatial join is employed when a matching field is not found. This technique not only aligns data based on location but also incorporates a buffer—a predefined area around each feature—to ensure the inclusion of spatially proximate data, as seen in Figure 7 where the roundabout linework alters between datasets. The size of the buffer is carefully selected to balance inclusivity with precision, aiming to capture all relevant data without introducing extraneous noise.
- **Resolution of Discrepancies:** Conflation is inherently complex, often surfacing discrepancies between datasets. These might include variations in the reported locations of the same feature or differing attributes for what should be identical entries. Resolving these discrepancies requires a combination of automated processes and expert review; ensuring that the final dataset represents a true, unified depiction of roadway and junction characteristics. This step involved manually removing and adding datasets that were not captured in the buffer or the tabular join.

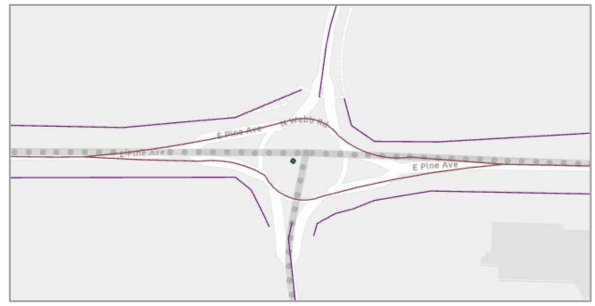


Figure 7 - Difficult roundabout conflation example

Figure 8 - Difficult junction conflation example

After the data was properly conflated to one LRS system, two tests were conducted to derive risk:

Regression Analysis: We employed regression analysis for a comprehensive understanding of how multiple factors simultaneously influence crash frequencies. This approach not only identifies associations but also quantifies the strength and direction of these relationships, enabling predictions and a deeper insight into the complex interplay of road safety variables. This involved exploring various types of regression models:

1. **Linear Regression** was tested to examine continuous data relationships, where we could predict the number of crashes based on linear combinations of road attributes.
2. **Logistic Regression** was considered for binary outcomes, especially useful in scenarios where the outcome is a crash occurrence (yes/no).
3. **Poisson Regression** was particularly apt for count data, which aligns well with crash frequency analysis, where the response variable is a count (number of crashes).
4. **Random Forest Regression** was considered to capture complex, non-linear relationships between road safety variables and crash frequencies by leveraging an ensemble of decision trees.

Correlation Analysis: We also identified correlations between various road attributes, such as the number of lanes and speed limits, and the number of KA crashes. This analysis is crucial for pinpointing single-to-single variable correlations to crash occurrences. By examining the relationships between these variables, we can better understand how certain road features may contribute to higher crash counts. Specific correlations with high variable importance from the regression analysis can be found in the analysis findings section. All other correlation plots can be found in Appendix E.

These models allowed us to integrate multiple variables (as seen in Figure 10) and assess their collective impact on KA crash frequencies. The most effective model was found to be **Random Forest Regression** and was utilized for the systemic based risk analysis. This method is a type of ensemble learning (a subset of machine learning), where multiple decision trees are combined to improve predictive accuracy and control over-fitting. Random Forest operates by constructing a multitude of decision trees during training and outputting the mean prediction of the individual trees. This technique is particularly beneficial in handling large datasets with numerous variables, as it can capture complex, non-linear relationships that traditional regression models might miss.

We developed five distinct Random Forest models to cater to different roadway systems and account for the diversity in vulnerable road user types. These models proved to be more robust and provided a better fit for our complex and varied data sets. This was particularly useful when having different coverages of datasets like shoulder and median widths, shown in Figure 10, were only available on ITD datasets. Lane widths were not considered in the analysis due to all lanes shown as 12 feet from ITD's dataset. All segments represented with 5 lanes include the center turn lane as a lane.

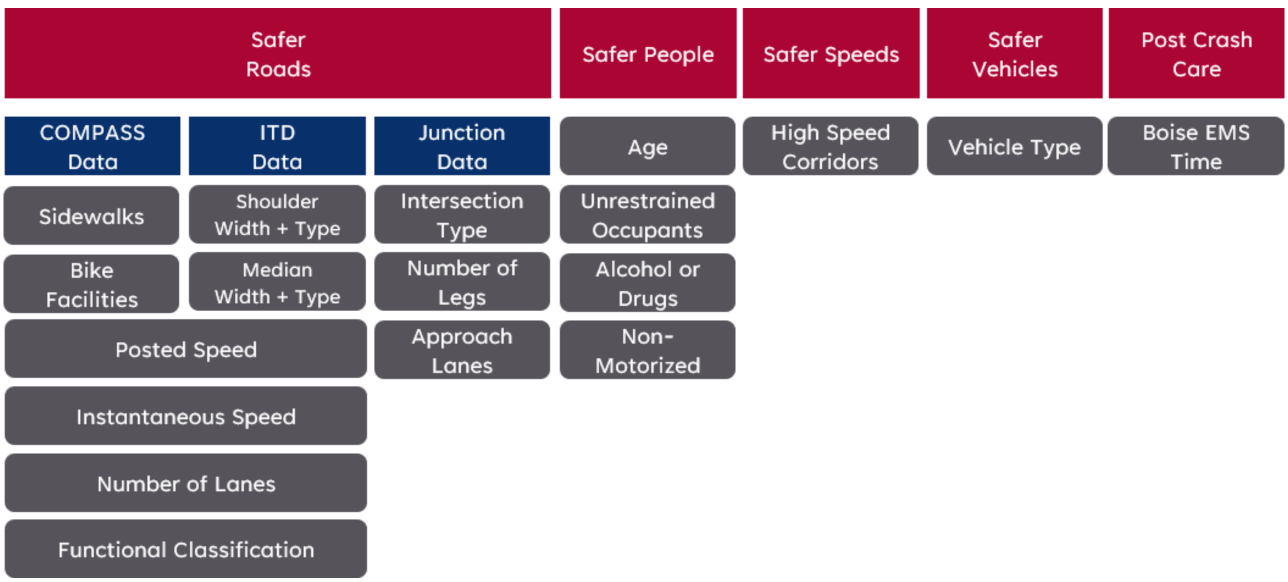


Figure 10 - Available roadway and junction variables.

Scoring and Selection

Segments and Junctions were calculated on both Need (Location) and Risk (Systemic). Non-Motorized Systemic Model used all crashes instead of fatal and serious injury crashes only. This is due to the smaller coverage of non-motorized fatal and serious injury crashes to produce an effective model. By expanding the variable in the model, we also included a weighted scoring system for the need and risk scores. The HSM Method of EPDO weighting was originally used for the location score; however, the network did not adequately reflect the need for non-motorized safety due to a heavy emphasis on fatalities. In the COMPASS area, over 50% of crashes involving non-motorized users resulted in a fatal or serious injury. Therefore, a larger HIN with different weighting was deemed necessary.

Need and Risk Scoring

Normal HIN

Location Score = Number of Fatal Crashes + Number of Serious Injury Crashes

Systemic Score = Presence of Risk Variables * Variable Importance Percentage

HIN Score = Normalized (0.5 * Location Score) + Normalized (0.5 * Systemic Score)

Non-Motorized

Location Score = (Number of Fatal Crashes * 10) + (Number of Serious Injury Crashes * 5) + All Other Crashes

Systemic Score = Presence of Risk Variables * Variable Importance Percentage

HIN Score = Normalized (0.5 * Location Score) + Normalized (0.5 * Systemic Score)

High Injury Network Selection

Segments and Junctions that made it into the High Injury Network had to pass a certain score based on the standard deviation of all scores. Anything higher than the 1st standard deviation of HIN scores was considered to be within the High Injury Network.

DEMOGRAPHIC AND AREA CHARACTERISTICS ANALYSIS

The demographic and area characteristic analysis involved overlaying the junctions and segments on the HIN with COMPASS' Community in Motion (CIM) 2050 Equity Index. The CIM2050 Equity Index aggregates 23 social, environmental, and transportation factors such as income, educational attainment, access to open space, vehicle ownership, bicycle and pedestrian injuries, and walkability to score and map the equity/inequity of a traffic analysis zone (TAZ) relative to the region as a whole on a 0-12 scale. Higher scores indicate more inequity.[3]

For this analysis the consultant team considered the TAZs with an Equity Index of seven or higher (7-12) as "high inequity." This definition of a "high equity score" is derived from COMPASS' project scoring and ranking methodology documentation.[4]

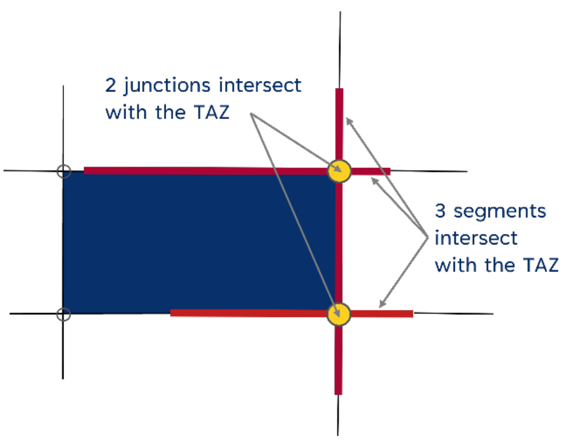


Figure 11 - High Equity Index Score TAZ and HIN Intersection

Most of this analysis focuses on the TAZs with a high Equity Index that intersects with or are immediately adjacent to HIN junctions and segments. To find the TAZs that overlap with the HIN, the team first applied a 200-foot buffer to each segment and junction on the HIN and performed a basic intersection analysis to extract the relevant TAZs. The team counted the TAZ if the buffered point (junction) or line (segment) intersected with a "high inequity" TAZ. Similarly, a junction or segment was counted if it overlapped with a "high inequity" TAZ. Figure 11 illustrates an example of a "counted" TAZ and the segments and junctions that intersect with it.

The team also analyzed the relationship between TAZs that overlap with the HIN and the following five variables considered in the Equity Index: graduation rate, unemployment rate, percentage of residents without a vehicle, percentage of residents without health insurance, and median rent as a percentage of income. The goal of this analysis was to uncover any specific characters that are significantly different about the people residing in TAZs that overlap with the HIN when compared to people residing in TAZs that do not overlap with the HIN.

[3] CIM 2050 Equity Index:
https://compassidaho.maps.arcgis.com/apps/mapviewer/index.html?webmap=a76f5dd73f6442129cf92761c8318707

[4] https://compassidaho.org/wp-content/uploads/I.Scoring_and_Ranking.pdf

ANALYSIS FINDINGS

This section describes the results of our analysis and conclusions that can be derived from it.

REGIONAL TRENDS

The COMPASS region has been making strides towards the performance measure target of 137 fatal and serious injury crashes (5-year average) as seen in Figure 12, but still has progress to be made. 1,904 total fatal and serious crashes that were identified in this analysis and joined to segments or junctions, the majority of crashes analyzed occurred on segments as seen in Figure 13.

Year	Fatal and Serious Injury Crash Count
2018	471
2019	383
2020	312
2021	378
2022	360

Target: 137

Figure 12 - Fatal and Serious Injury Crash County by Year

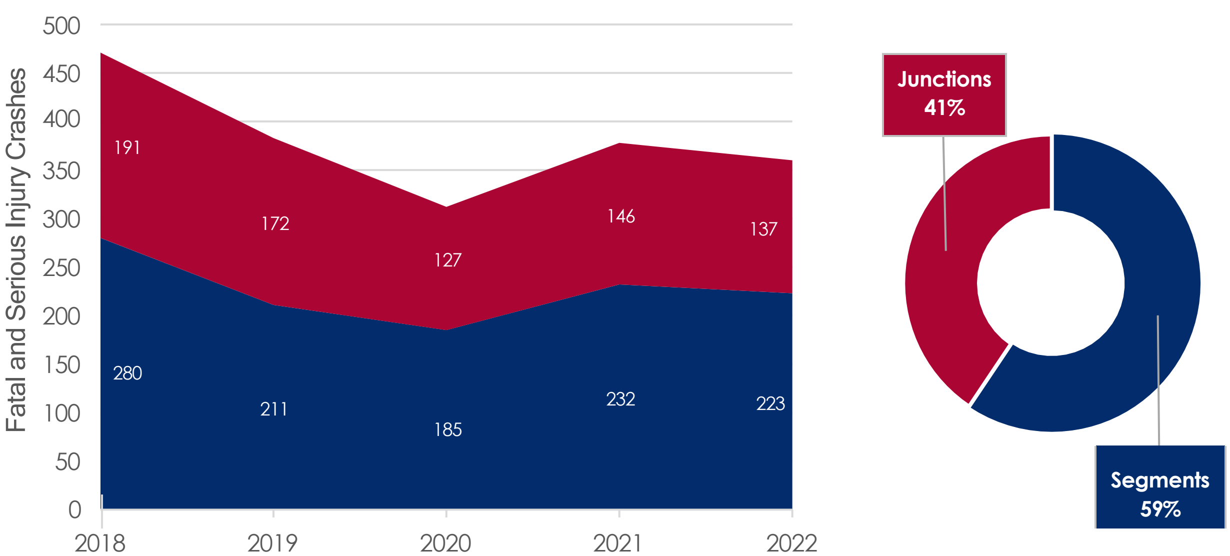


Figure 13 - Fatal and Serious Injury Crashes by feature type

Table 2 below showcases the count and percentage of fatal and serious injury crashes by top crash types. Notable observations include:

1) **36%** of KA crashes are angle or turning crash types where someone may not be following the traffic control, yielding right-of-way properly, and/or speeding without time to correct. The majority of these crashes occur at junctions.
2) **24%** of KA crashes are lane departure type crashes with the majority occurring on segments.
3) **13%** of KA crashes are related to pedestrians and bicyclists.
4) While rear-ends account for **17**% of KA crashes they account for **33%** of all crashes and shows that while some crashes may be severe, this type of crash is just the most frequent.

Crash Type	Segments KA Count	Junctions KA Count	Total KA Count	Percent
Angle (Angle, Angle-Turning, and Head On Turning)	257	444	701	36.8%
Lane Departure (Overturn, Head-On, Side Swipe Same, Side Swipe Opposite, and Fixed Object)	340	107	447	23.5%
Rear End	225	105	330	17.3%
Pedestrian	90	58	148	7.8%
Bicycle	53	37	90	4.7%
All Other Crash Types	166	22	188	9.9%
TOTAL	**1131**	**773**	**1904**	**100%**

Table 2 - Crash Types per feature type

Functional Class	Count	Percentage
Principal Arterial	360	37%
Minor Arterial	253	26%
State Highway	159	16%
Collector	131	14%
U.S. Highway	63	7%

Table 3 - KA Crashes by Functional Class

Lanes	Count	Length (Miles)	Crash Rate
1	0	35	0
2	464	1511	0.31
3	94	115	0.82
4	51	70.87	0.72
5+	357	155.19	2.30

Table 4 – KA Crashes and crash rates per number of lanes

Table 3 above showcases fatal and serious crash types and functional classes excluding interstates, ramps, and local roads. Table 4 has the distribution of crashes by number of lanes excluding interstates, ramps, and local roads. It shows that while 2 lane roadways account for 48% of KA crashes, they account for the majority of the roads in the region with a KA crash rate of 0.31 per mile. Multi-lane (5+ lane) roadways produce the 2nd most KA crashes and have a high KA crashes per mile (2.30), showcasing the high frequency and highest risk. 5 lane roads denote 4 through lanes and one Two-Way Left Turn Lane (TWTL).

Table 5 below breaks down the count of crashes by type occurring in and out of city limits (denoted as incorporated and unincorporated). The table also breaks down the percentage of KA crash types compared to the total number of KA crashes to find which crash types disproportionately occur relative to their jurisdiction. 60% of KA crashes occur in incorporated areas with rear-ends and pedestrian/bicyclist crashes disproportionately occurring. 40% of KA crashes occur in unincorporated areas with angle and lane departure crashes disproportionately occurring. However, from a count perspective the majority of crashes occur in incorporated areas as shown in Figure 14 below.

Crash Type	KA Crash Count		Percentage of KA Crash Count	
	Unincorporated	Incorporated	Unincorporated	Incorporated
Angle	267	434	**48%**	32%
Lane Departure	157	290	**28%**	21%
Rear-End	65	265	12%	**20%**
Ped/Bike	32	206	6%	**15%**
Other	31	157	6%	12%
Total	**552**	**1352**		

Table 5 - Unincorporated vs Incorporated KA Crash Count per Crash Type

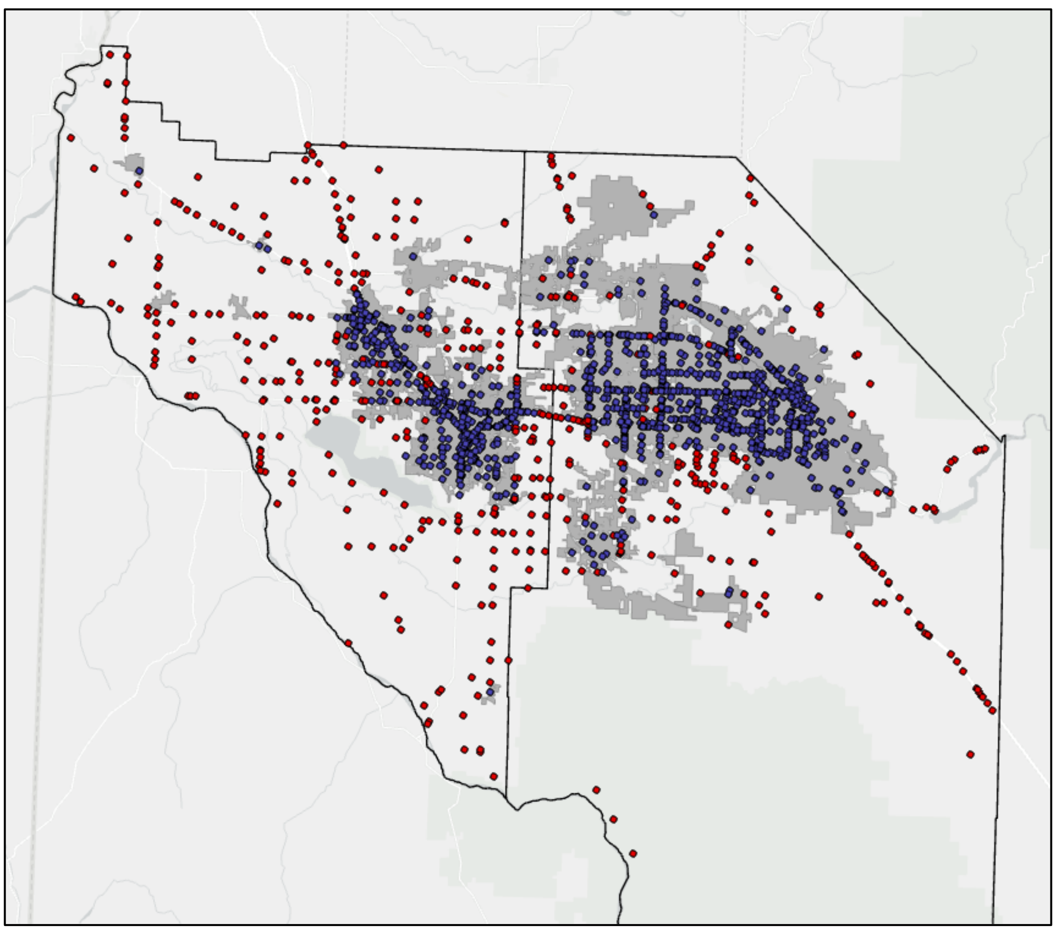


Figure 14 - Incorporated crashes in Blue and Unincorporated crashes in Red

The two figures (Figure 15 and 16) below denote a high number of KA crashes occurring in clear conditions with dry road surfaces, which is consistent with the area's semi-arid climate.

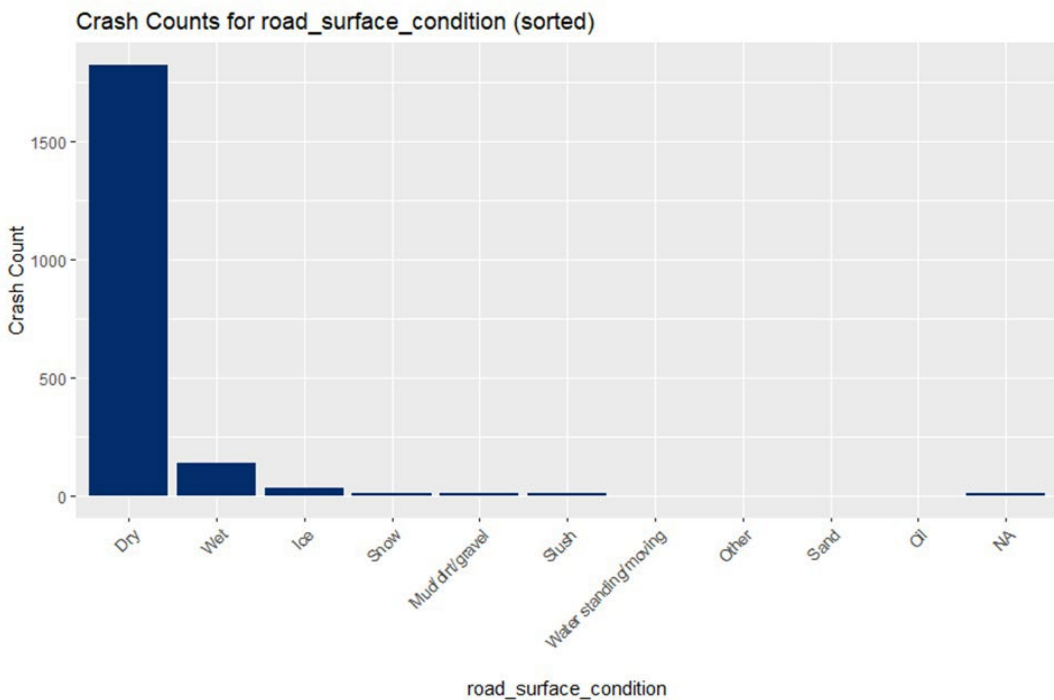


Figure 15 - Fatal and Serious Crash Count by Road Surface Condition

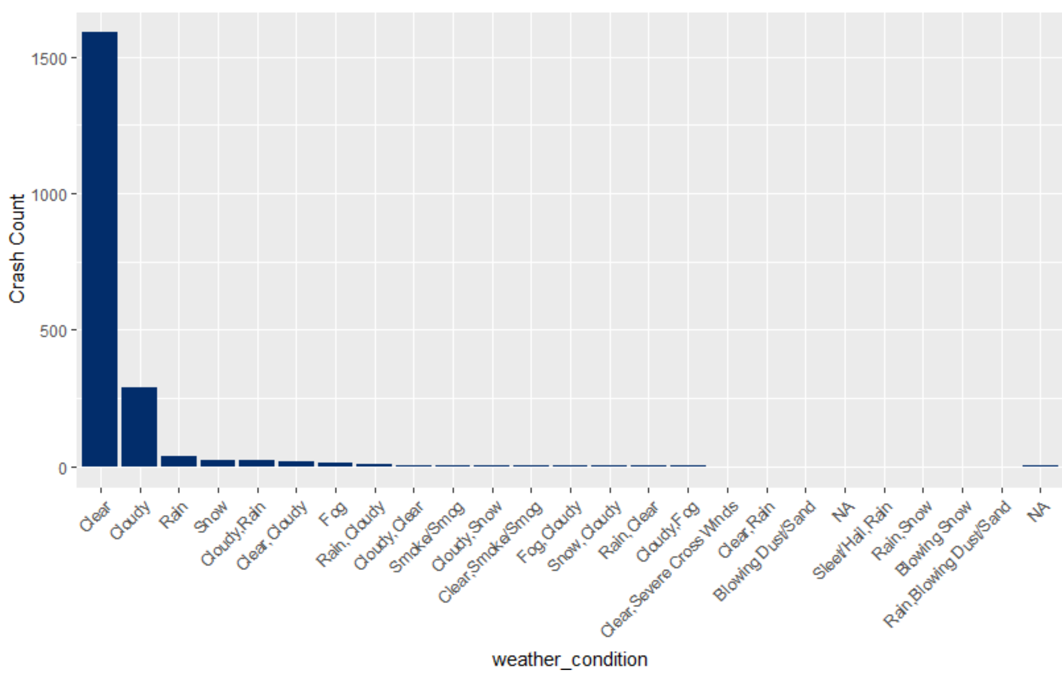


Figure 16 - Fatal and Serious Crash Count by Weather Condition

Figure 17 below denotes a high number of KA crashes occurring during the daytime.

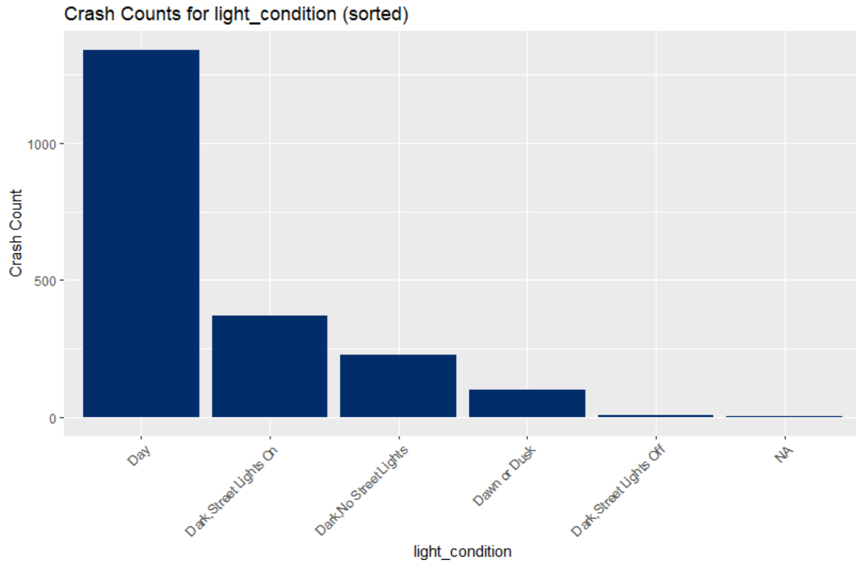


Figure 17 - Fatal and Serious Crash Count by Light Condition

Roadway Volume and Crash Count:
Figures 18 and 19 below show that higher motor vehicle traffic volumes are generally correlated with more total (i.e., all severities) crash counts. This remains true when zero crash locations and seeming outliers are removed.

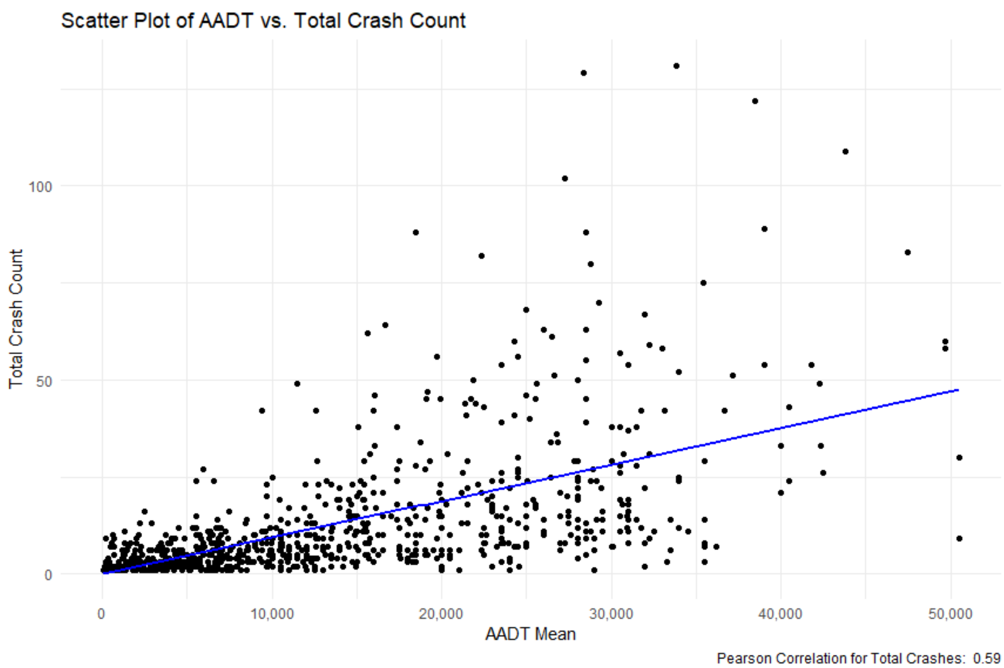


Figure 18 - Scatter Plot of AADT vs Total Crash Count

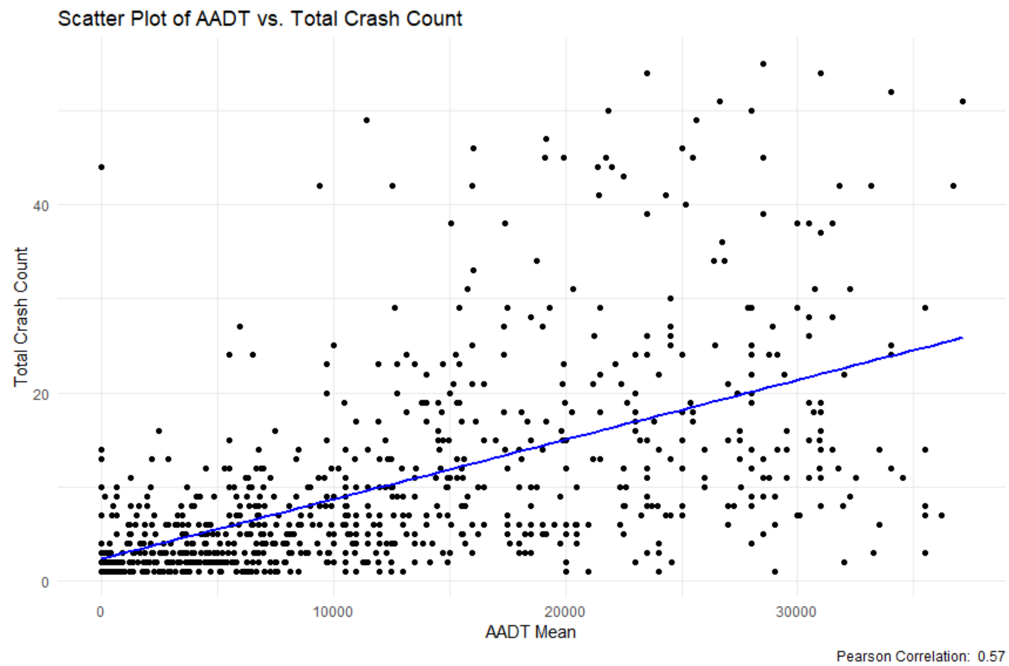


Figure 19 - Scatter Plot of AADT vs Total Crash Count with outliers removed

Figure 20 shows that there is not a strong relationship between crash severity and motor vehicle volumes, with a Pearson correlation of only 0.25. While correlation occurs between crash count and volume, higher volume roads do not correlate to a higher chance of severe crashes. The location analysis conducted in this analysis may generate high volume roads with more severe crashes, but the systemic analysis pulls the High Injury Network away from high volume roads with a normalized look at each correlating variable in the roadway or junction.

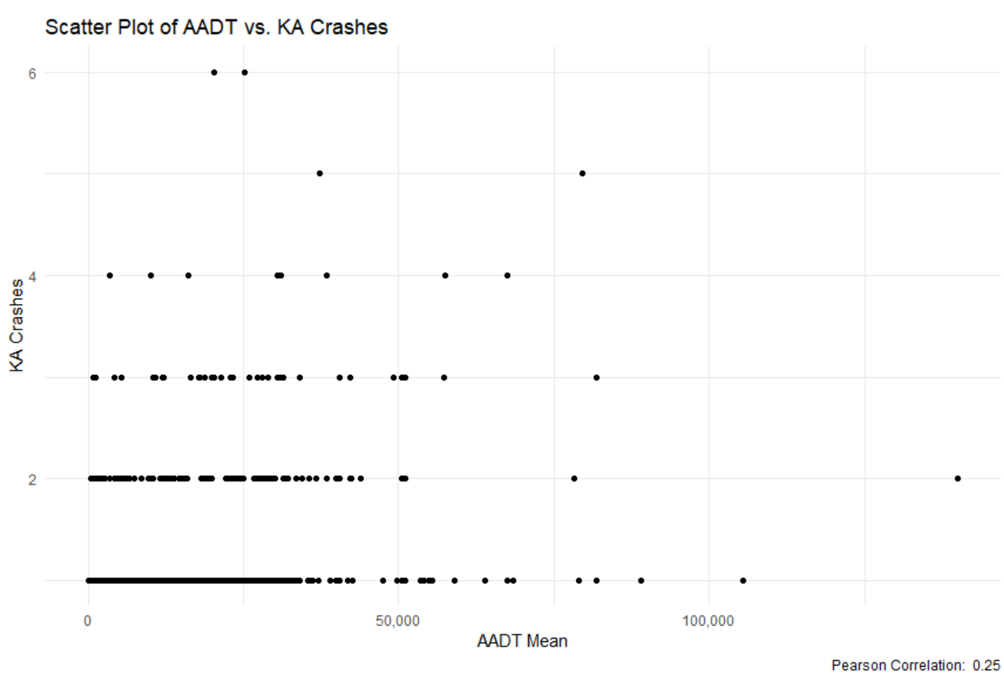
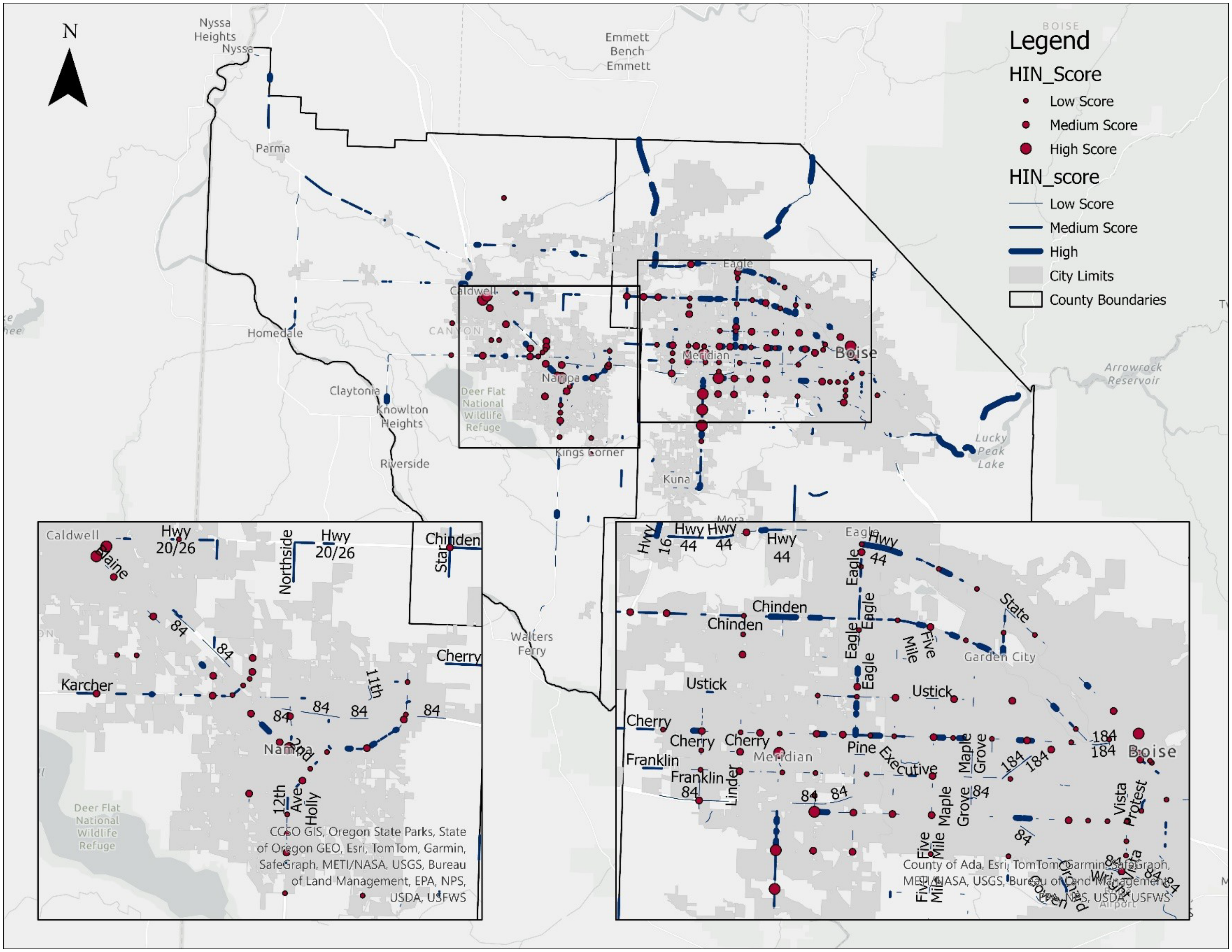


Figure 20 - Scatter Plot of AADT vs KA Crashes with 0 crashes removed

HIGH INJURY NETWORK



Highest Crashes & Highest Risk

The culmination of the analysis results in a High Injury Network (HIN) that prioritizes segments and junctions with fatal and serious injury crashes through a combination of need and risk. Iterations were made to the scoring of the HIN to prioritize segments and junctions that could be the most impactful. Our scoring method ensured that the HIN consisted of both high-crash locations and high-risk locations. Interstates were removed from the HIN determination due to their unique nature.

Highest attributes of the High Injury Network based on length:

57% of the HIN is on **State Highways**

23% is on **55 MPH** posted speed.
16% is on **35 MPH** posted speed.

49% is on segments with **2 lanes.**
31% is on segments with **5+ lanes.**

OVERLAPPING TIP PROJECTS

Using published TIP project data for the COMPASS region[5], the team compared the location of safety projects, pathway projects, and widening projects to the HIN. Projects were filtered to only include those in the current program – FY2024 – FY2030. The project type field was used to determine safety projects and pathway projects. The project description field was used to determine widening projects by searching for the keyword "widen". In the current TIP program, there are 5 safety projects, 19 paved pathway projects, and 28 widening projects. 17 HIN junctions and 48 HIN segments overlap with at least one of these projects. Figure 21 compares project locations to the HIN network and shows that these project locations and the HIN have a comparable geographic spread. Of the 52 safety, pathway, and widening TIP projects, the **22 projects** that are addressing a portion of the High Injury Network are shown below in the following map and Table 5. More details on those overlapping projects can be found in Appendix D.

FY 2024 - 2030 TIP SAFETY, PATHWAY, AND WIDENING PROJECT LOCATIONS VS HIGH INJURY NETWORK

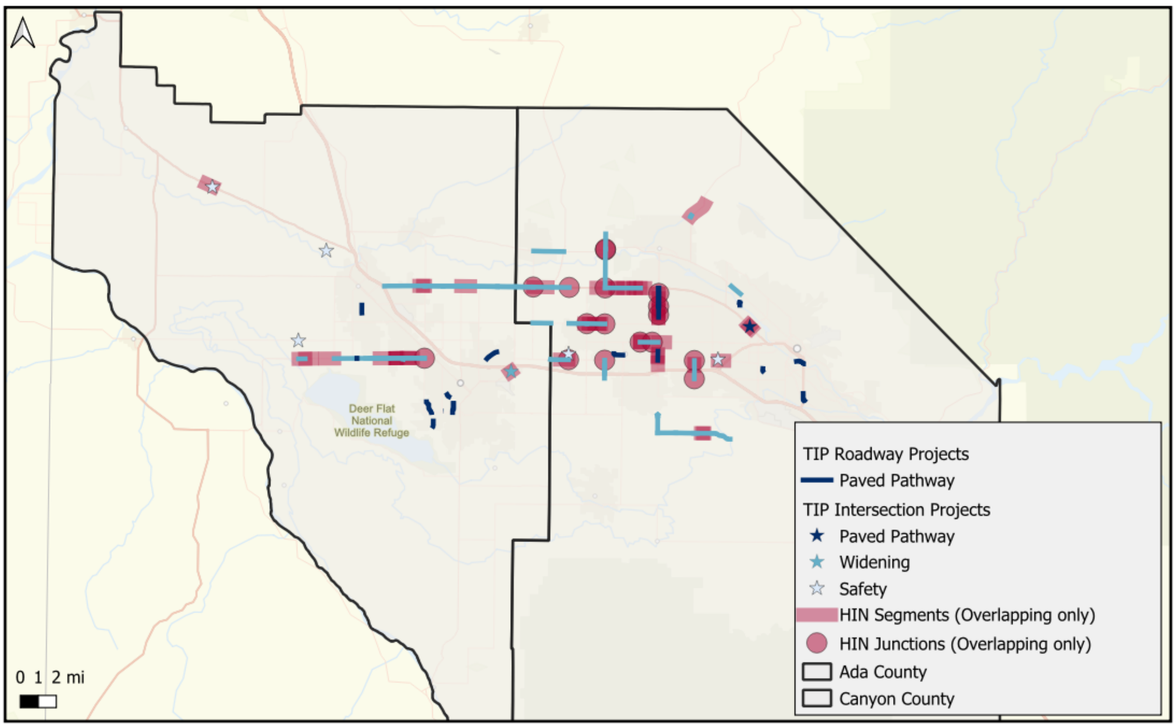


Figure 21 – TIP Safety Projects vs HIN Overlaps Only

[5] TIP Roadways https://share-open-data-compassidaho.hub.arcgis.com/datasets/compassidaho::tip-roadways/explore?location=43.540752%2C-116.390750%2C10.77 and TIP Intersections https://share-open-data-compassidaho.hub.arcgis.com/datasets/compassidaho::tip-intersections/explore?location=43.541975%2C-116.390750%2C10.77

TIP Project Type	TIP Project Name
Safety	Railroad Crossing, Lemp Lane, Canyon County
Safety	Railroad Crossing, Benjamin Lane, Boise
Paved Pathway	Pathway, SH-55 (Eagle Road), Franklin Road to Pine Ave, Meridian
Paved Pathway	Pathway, SH-55 (Eagle Road), Jasmine to McMillan, West Side, Boise
Paved Pathway	Pathway, SH-55 (Eagle Road), McMillan to US 20/26 (Chinden) West Side, Boise
Paved Pathway	Pedestrian Improvements, US 20/26 (Chinden) at 43rd St, Garden City
Widening	US 20/26, Middleton Rd to Star Rd, Eastbound & Westbound, Ada and Canyon Counties
Widening	US 20/26, I-84 to Middleton Road, Canyon County
Widening	SH-55 (Karcher Road), Farmway Rd to Middleton Rd, Canyon County
Widening	US 20/26 (Chinden), Phyllis Canal Bridge to SH-16, Ada County
Widening	Ustick Rd, McDermott Rd to Black Cat Rd
Widening	Linder Rd, SH-44 (State St) to Floating Feather Rd, Eagle
Widening	Linder Rd, US 20/26 (Chinden) to SH-44 (State), Ada County
Widening	US 20/26 (Chinden), Linder Rd to Locust Grove, Meridian, and Eagle
Widening	Ustick Road, Ten Mile Road to Linder Road, Meridian
Widening	Franklin Road, McDermott Road to Black Cat Road, Ada County
Widening	Linder Road Overpass, Overland Road to Franklin Road, Meridian
Widening	Fairview Avenue, Locust Grove Road to SH-55 (Eagle Road), Meridian
Widening	Lake Hazel Road, Five Mile Road to Maple Grove Road, Ada County
Widening	Five Mile Road Overpass and Widening, Boise
Widening	SH-55, Beacon Light Road to Brookside Lane, Ada County
Widening	I-84B (Garrity Boulevard) and Stamm Lane Intersection Improvements, Nampa

Table 5 - TIP Projects Overlapping the HIN

NETWORK LEVEL SYSTEMIC ANALYSIS

RANDOM FOREST MODELS AND SIGNIFICANT FIELDS

The network level systemic analysis conducted involves examining data across an entire roadway system, seeking patterns and trends that affect fatal and serious injury crashes in the region. In contrast, site analysis typically focuses on specific locations, like individual junctions or road segments, to identify localized issues and solutions that can improve safety and performance in those targeted areas. The team fit four random forest regression models to determine network-wide variable importance related to serious and fatal crash risk. Four models were needed due to the variation in the available data between COMPASS and ITD. Random forest regression models are highly beneficial in systemic safety, specifically in their ability to handle large datasets with numerous variables, making them ideal for uncovering complex, non-linear relationships between road characteristics and safety outcomes. Additionally, their inherent feature of random sampling and decision tree aggregation reduces the risk of overfitting, ensuring more robust and generalizable predictions for safety interventions across various road network scenarios. All Random Forest Model outputs can be found in Appendix D for more information.

As seen in Figure 22; ITD maintains geometric attributes to only some of the roadways within the region and while COMPASS maintains a separate roadway inventory, they both have unique attributes as seen earlier in Figure 10, but ITD only has coverage for 14% of the roadways by mileage in the region. We've accounted for this by fitting five different random forest models for each subset of data for segments, with one including the comparison of both. Due to many of the roadways maintained by ITD having a crash proxy of volume, we separated these models to determine risk, rather than volume. Additionally, non-motorized crashes are a subset of crashes that may lead to different geometric needs, and we've fit different models to account for them. In the following pages, we've outlined the variable importance and frequency of crashes per variable attribute field that came from the results of these five models described in the table below.

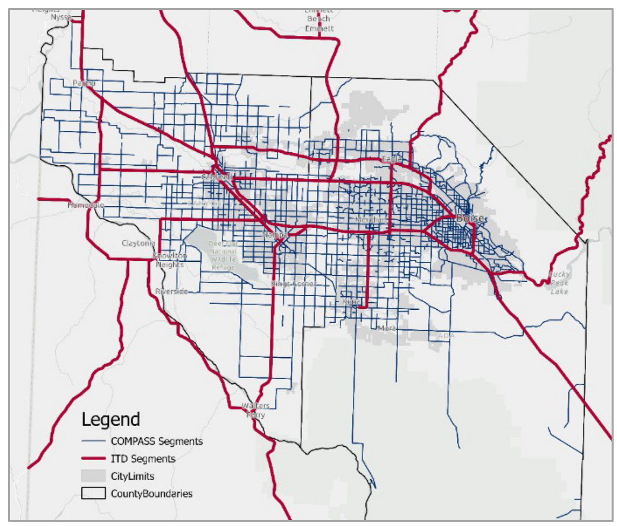


Figure 22 - ITD Data vs COMPASS Data

Random Forest Model Name	Description
Segments - ITD Data	Subset of data that only includes data from ITD
Segments - COMPASS Data	Subset of data that only includes data from COMPASS
Segments - Overlapping ITD/COMPASS	Subset of data that only includes overlapping data
Non-Motorized Crashes	Subset of data with dependent variable of non-motorized crashes
Junctions	Subset of junction data

Table 6 - Description of the five random forest machine learning models fitted to the data.

SAFER ROADS

The subsequent results shown in the Random Forest Models are informative to determine the fields and attributes in segments and junctions that predict a fatal and serious injury crash. As seen in Table 7, the higher the variable importance percentage tells us the variable that correlates the most to fatal and serious injury crashes. This variable importance derived gives us the ability to find the features with the most risk. Each significant field was determined by observing the largest amount of fatal and serious injury crashes for each variable's field. Figures for these can be found in Appendix D, showcasing a jitter plot distribution of crashes per variable field attribute for each of the 5 models used.

Segments Variables	Variable Importance Percentage	Most Significant Fields
Speeding Segment	29.3%	TRUE
Average Speed	27.6%	>= 30 Miles Per Hour
Functional Classification	12.4%	State or U.S. Highway
Number of Lanes	5.7%	5 Lanes
Posted Speed	5.4%	35 or 55 Miles Per Hour
Presence of a Sidewalk	4.4%	TRUE
Right Shoulder Width	4.3%	0, 8, 10 Feet
Road Terrian Type	3.8%	Flat
Shoulder Type	2.6%	Surfaced with Bituminous Material
Left Unpaved Shoulder Width	1.2%	0 Feet
Bike Facility Type	0.9%	No Bike Facility
Right Unpaved Shoulder Width	0.9%	0 Feet
Median Width	0.7%	0 Feet
Median Type	0.6%	None
Left Shoulder Width	0.1%	0 Feet

Table 7 - Segment Random Forest Variable Importance

Our analysis includes the comparison of average INRIX instantaneous speed to posted speed to find excess speeding segments. As seen in Table 2, speed is the primary driver of KA crashes **on segments**, followed by functional class, and number of lanes. With a smaller importance comes median and shoulder width geometric information. For segments, the results show that segments with the most risk correlate closely with speeding on state highways with a posted speed of 35 mph or 55 mph. **A focus on road features for multi-lane State Highways to manage speeds would be advisable.** State highways were found to have **disproportionately more** speeding segments and high-risk roadway features than non-state roadways as seen in Table 8.

Attribute	Count		Percentage of Segment Count	
	State	Non-State	State	Non-State
Speeding Corridor	77	27	**4%**	0.2%
Lanes > 4	566	1154	**29%**	9%
Average Speed > 30	1604	5471	**83%**	44%
Posted Speed > 30	826	3094	**43%**	25%
On the High Injury Network	305	226	**16%**	2%
Segment Count	1936	12514		

Table 8 - State vs Non-State Count of Risk Attributes

Junctions Variables	Variable Importance Percentage	Most Significant Fields
Lanes on Major Leg	35.3%	5 Lanes
Lanes on Minor Leg	28.9%	2 Lanes
Total Legs	28.6%	4 Legs
Intersection Type	7.1%	Signalized

Table 9 - Junction Random Forest Variable Importance

For junctions, there are a smaller number of attributes compared to segments to accurately identify the characteristics of the junction such as intersection angle, lighting, offset distance, left turn lane type, left/right turn prohibitions, and other attributes defined in FHWA's MIRE Elements[2]. Table 9 shows that **4-leg signalized junctions with 5 lanes** on the major approach and 2 lanes on the minor correlate the most to KA crashes. A look at the top crash types in Table 1 of Regional Trends section shows that certain crashes could occur at a junction; Angle Types and Rear-Ends contribute to 60% of all KA crashes. **A focus on junction features to mitigate all angle and rear-end type crashes at the intersection is recommended.**

SAFER PEOPLE

ITD's Strategic Highway Safety Plan[6] (SHSP) defines vulnerable road users as motorcyclists, pedestrians, bicyclists, youthful drivers, and mature drivers. The team also found correlations between fatal and serious injury crashes with certain ages, protection devices, and awareness states of the driver. We noted that **20%** of fatal and serious injury crashes occurred with drivers between the ages of 16-22 years old (as shown in Figure 23), **4.8%** of occupants did not wear any protection device such as a seatbelt, **13.5%** of drivers were under the influence of alcohol, and **5.7%** were under the influence of drugs.

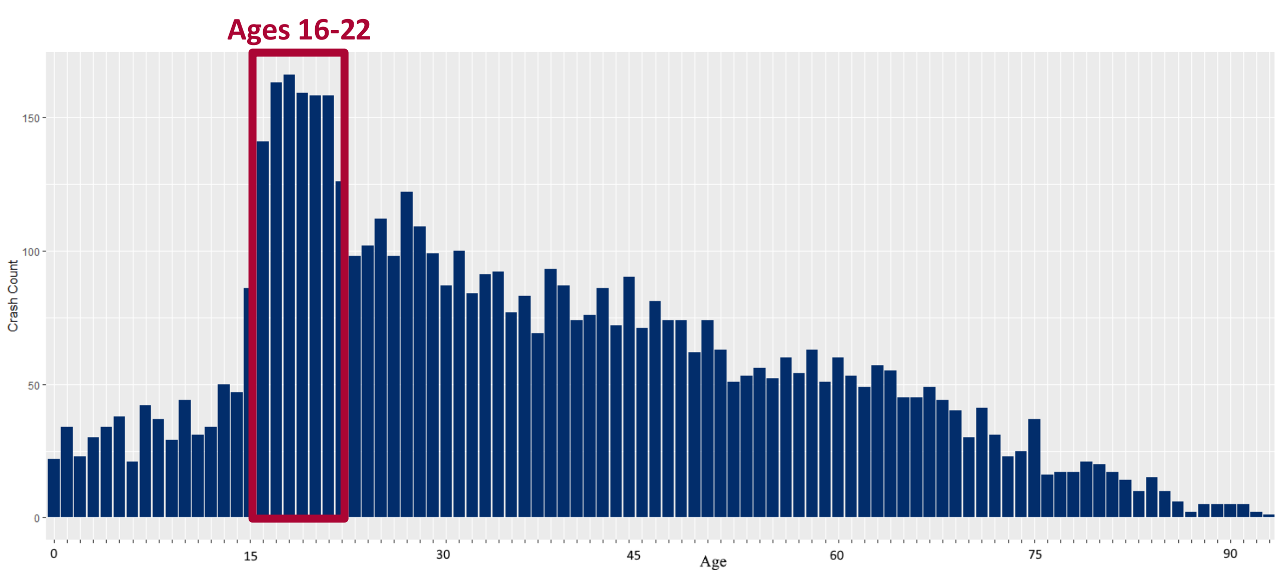


Figure 23 - KA Crashes by Age

[2] https://safety.fhwa.dot.gov/tools/data_tools/mirereport/mire_elements.cfm
[6] https://apps.itd.idaho.gov/Apps/OHS/Plan/SHSP_2021-2025.pdf

In our initial analysis, we found that pedestrians account for only **0.9%** of all crashes, but **7.8%** of all fatal and serious crashes. Deducing that it is less likely for a pedestrian to survive or leave a crash without a serious injury. Similarly, bicyclists account for only **1.2%** of all crashes, but **4.7%** of fatal and serious injury crashes. Due to the disproportionate impact, the project team also fitted a random forest model for all non-motorized crashes to find variables that correlate to pedestrians and bicyclists. All crashes were used instead of fatal and serious due to a small sample size. The team found that while speed and functional class remained one of the highest variables, the presence of a bike facility correlates to less KA crashes.

For Junctions, **4-leg multi-lane signalized intersections** correlate to the largest count of non-motorized crashes. For Segments, **multi-lane undivided principal arterials with no bike facilities** correlate to the most non-motorized crashes. Non-motorized crashes are more predominant at junctions than segments, with multi-laned intersection legs having the strongest correlation to non-motorized crashes. Speed is the biggest correlation to non-motorized crashes at segments, but instead of excess speed it's high average speed regardless of posted speed. The tables below define the importance of each variable and specific segment or intersection field that correlates to non-motorized crashes.

Segments Variables	Variable Importance Percentage	Most Significant Fields
Average Speed	63%	>= 30 Miles Per Hour
Functional Classification	16%	Principal Arterials
Posted Speed	8%	>= 35 Miles Per Hour
Shoulder Type	3%	Curbed Roadway
Shoulder Width	3%	None
Bicycle Facilities	3%	No Bike Facilities
Median Type	2%	No Median / Undivided
Number of Lanes	<2%	5 or More Lanes (Including TWLT)
Presence of a Sidewalk	<1%	Includes Sidewalks

Table 10 – Non-Motorized Correlated Segment Fields sorted on Random Forest Model based Variable Importance

Junctions Variables	Variable Importance Percentage	Most Significant Fields
Lanes on Minor Approach	33%	Two or More
Lanes on Major Approach	31%	Five or More
Intersection Type	28%	Signalized
Number of Intersection Legs	8%	4-Leg

Table 11 - Non-Motorized Correlated Junction Fields sorted on Random Forest Model based Variable Importance

More information, including the breakdown of each roadway attribute that correlated to non-motorized crashes, can be found in Appendix D, Random Forest Model 4.

SAFER SPEEDS

The project team used instantaneous speed data from INRIX and the posted speed limit on each road. Excess speeding segments were defined where the average speed was greater than the posted speed of the same segment. Excess speed was one of the variables used in the random forest regression models to determine risk. Figure 24 below showcases the excess speeding segments, and Table 12 shows **29%** of KA crashes occurred on **Principal Arterials** relative to total miles of speeding segments. The team utilized a length-weighted percentage that compared the frequency of crashes to the mileage of roadway to prioritize roads finding roads with high risk rather than high quantity/mileage. As seen in Figure 25, there is a rise in KA crashes on segments with a posted speed of **35 mph** or **55 mph**.

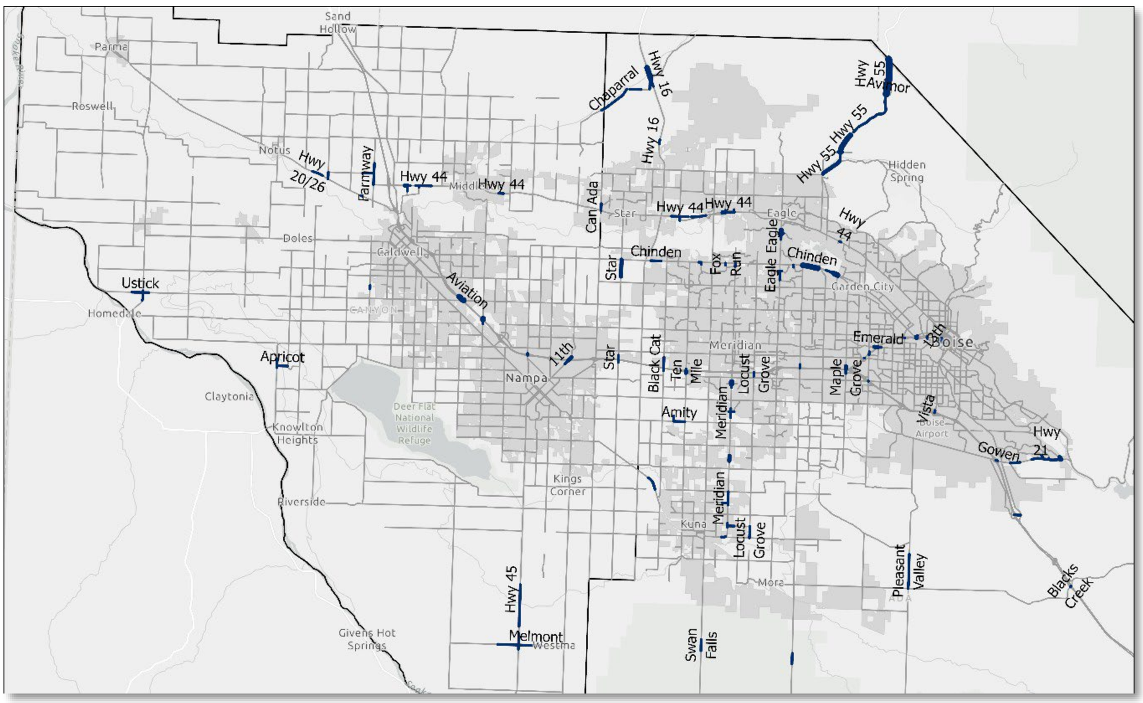


Figure 24 - Segments with average speeds above the posted speed limit

Functional Class	Sum of miles	Count of Excess Speeding Segments	Count of Segments over Mileage Percentage
Principal Arterial	3.41	41	29%
Minor Arterial	6.69	43	16%
U.S. Highway	2.55	13	12%
Ramp	11.26	55	12%
Collector	10.10	48	12%
State Highway	13.08	54	10%
Interstate	25.33	95	9%

Table 12 - Top Functional Classes with exceeding speeding segments

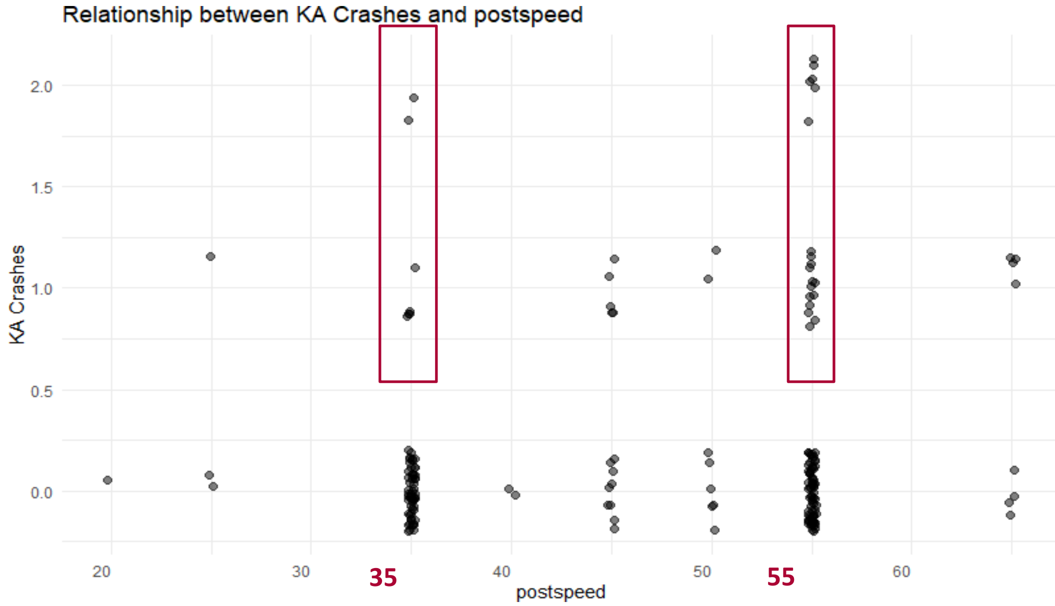


Figure 25 – Fatal and Serious Injury Crashes per posted speed.

SAFER VEHICLES

According to the 5-Year Census American Community Survey (ACS)[7], Idaho has one of the highest rates of car ownership nationwide with 96.2% of households reporting access to at least one vehicle in 2021. The project team found correlations between fatal and serious injury crashes with specific vehicle types. A rising discussion in transportation safety is the effect of heavier vehicles relative to KA crashes. However, while **42%** of fatal and serious injury crashes occurred with heavy vehicles (SUVs, Crossovers, Pickups, Vans), they still account for **54%** of all crashes as shown in Table 13. Commercial trucks account for **1.9%** of KA crashes but also **1.9%** of all crashes. Motorcycles, Mopeds, and Scooter crashes account for only **1.8%** of all crashes, but **16%** of all fatal and serious injury crashes. Similarly described in the Safer People section, Pedestrians and Pedal cyclists overrepresent KA crashes compared to all crashes of their respective types.

Vehicle Type	Percent of Fatal & Serious Injury Crashes	Percent of All Crashes
Heavy Vehicle	41.5%	53.8%
Car	26.6%	39.9%
Motorcycle/Moped/Scooter	16.0%	1.8%
Pedestrian	7.8%	0.9%
Pedal cycle	4.7%	1.2%
Commercial Vehicle	1.9%	1.9%
Other	1.5%	0.6%

Table 13 - Comparison of KA crashes to all crashes by Vehicle Type

POST CRASH CARE

The analysis of using EMS data to determine post-crash care will be evaluated for inclusion in the action plan.

[7] https://www.census.gov/newsroom/press-kits/2022/acs-5-year.html

DEMOGRAPHIC ANALYSIS RESULTS

When considering the complete HIN (i.e., both segments and junctions), about 28% of TAZs in the COMPASS region are geographically adjacent to the HIN (i.e., both segments and junctions). The majority of these TAZs (92%) have an Equity Index of 7 or below, accounting for about 91% of the population. These scores correspond with better (more desirable) levels of the equity measures used to calculate the Equity Index compared to TAZs with higher Equity Index scores (7 or above). Specifically, people living in the TAZs closest to the HIN generally have higher incomes and high school graduation rates, are more likely to have health insurance, and have better access to a personal vehicle when compared to people living in TAZs along the HIN with higher Equity Index scores. TAZs with lower Equity Index scores tend to score lower on auto crash density (i.e., the density of automobile crashes within the last five years) and have fewer bicycle and pedestrian injury-causing crashes. In terms of land use, the region adjacent to most of the HIN is generally more walkable and has better access to open spaces such as parks or reserves. It should be noted that TAZ boundaries are determined based upon Census geographies (e.g., block, block group, tract) and should be relatively homogenous. However, boundaries may change depending on shifts in population and land use.

The map in Figure 26 shows the HIN relative to the CIM2050 Equity Index for the entire COMPASS region. The darker the blue, the higher the Equity Index and, therefore, the higher the inequity.

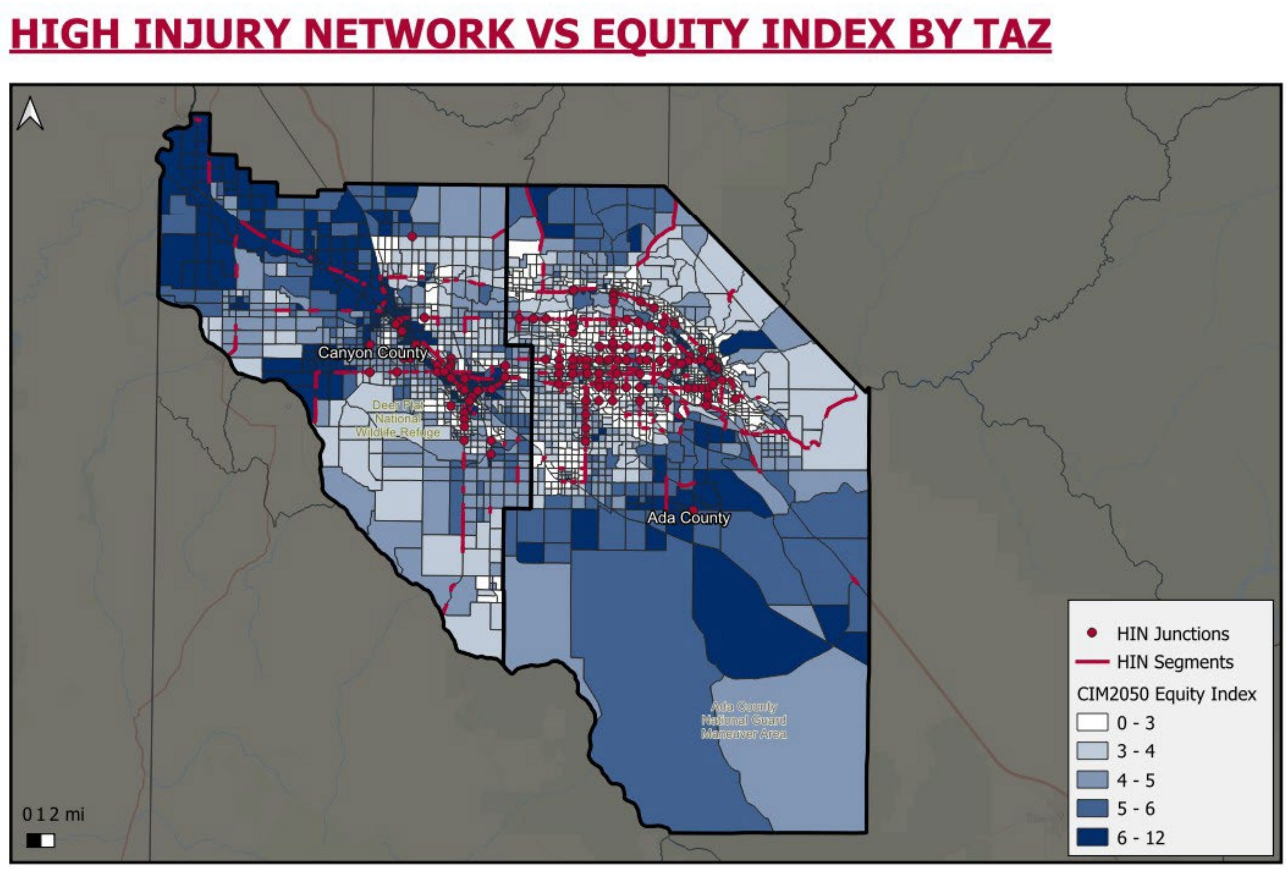


Figure 26 – CIM2050 Equity Index with HIN Overlay

Upon zooming in (Figure 27) it becomes clear that most of the HIN junctions lie within Ada County and the cities of Boise and Meridian; the majority of the TAZs within these cities have an Equity Index score of five or lower. There's also a cluster of HIN junctions in the Nampa area and this area has higher Equity Index scores compared to Boise and Meridian.

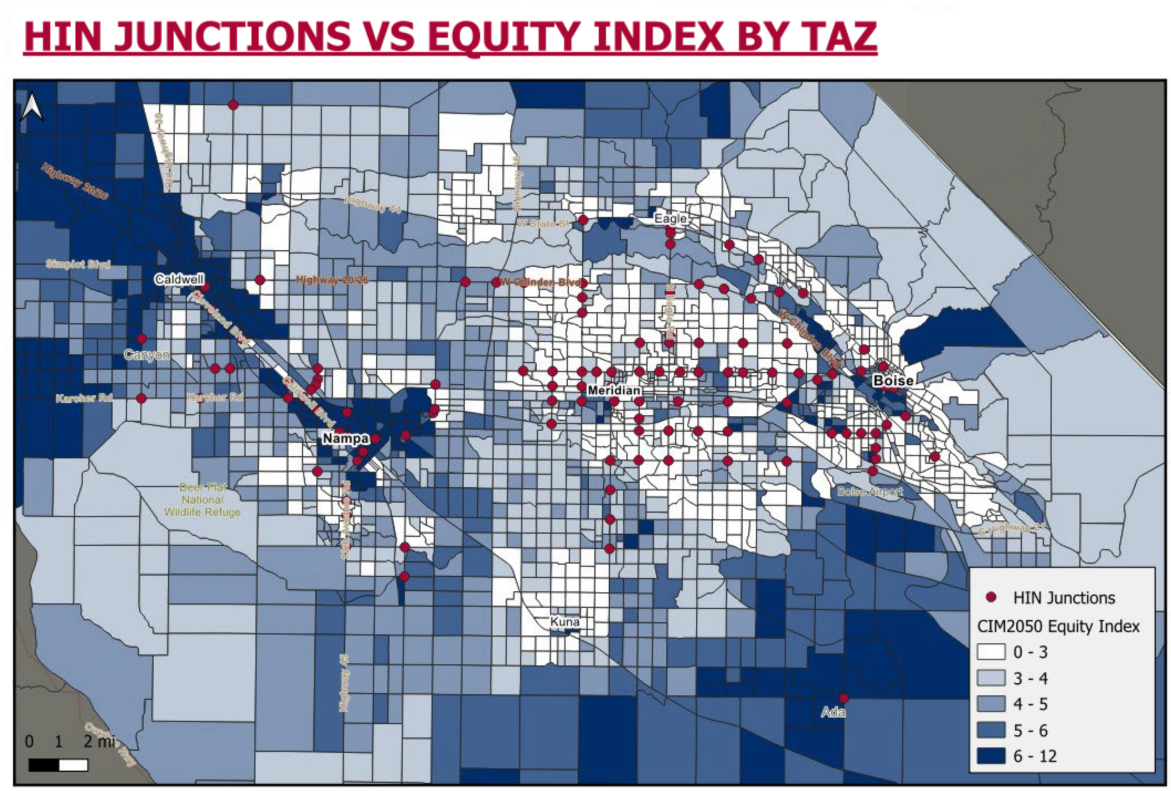


Figure 27 – CIM2050 Equity Index with HIN Junctions

Roadway segments on the HIN are more geographically dispersed as shown in Figure 29. While most of the HIN roadway network is still clustered in the more densely populated, urban areas of the two counties, there are some sections on the outer edges of each county in more rural parts of the region. TAZs that intersect with HIN segments in the southeast and foothill regions of Ada County have large percentages of farmland (11%-63%). The Equity Index scores for these TAZs range from 4 to 7. The more rural western region and northwest corner of Canyon County also contain portions of HIN roadway segments. TAZs along this portion of the HIN have Equity Index scores ranging from 4 to 9. The map below illustrates the urban and rural HIN roadway segment distribution.

HIN SEGMENTS VS EQUITY INDEX BY TAZ

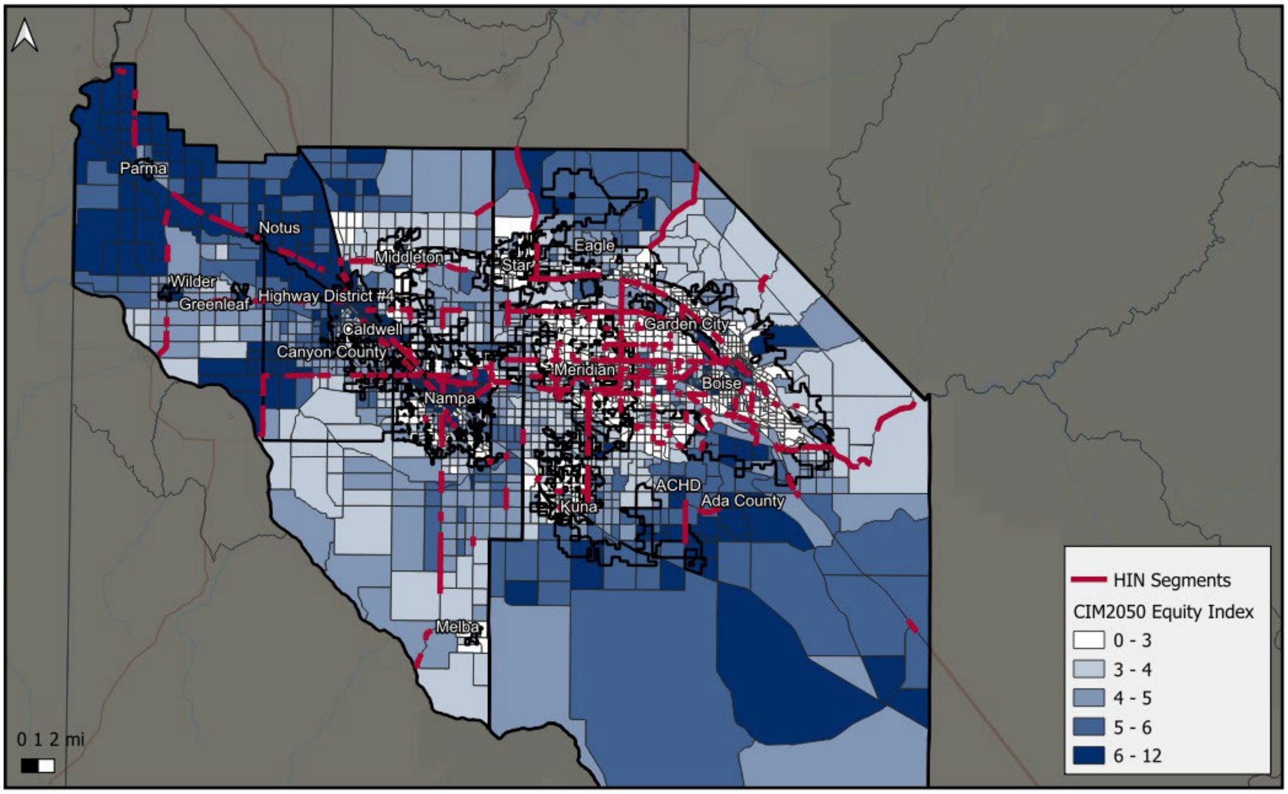


Figure 28 - CIM2050 Equity Index with HIN Segments

There are portions of the HIN that overlap with areas with high Equity Index scores. Specifically, within the cities of Nampa and Caldwell, there is a concentration of segments and junctions on the HIN that intersect with TAZs with an Equity Index of 7 or higher. These TAZs tend to be lower income households, have lower high school graduation rates, and residents may be less likely to have health insurance. People living in these TAZs may have less access to open spaces and fewer walkable destinations. The following map (Figure 29) shows the largest concentration of TAZs with high Equity Index scores along the HIN.

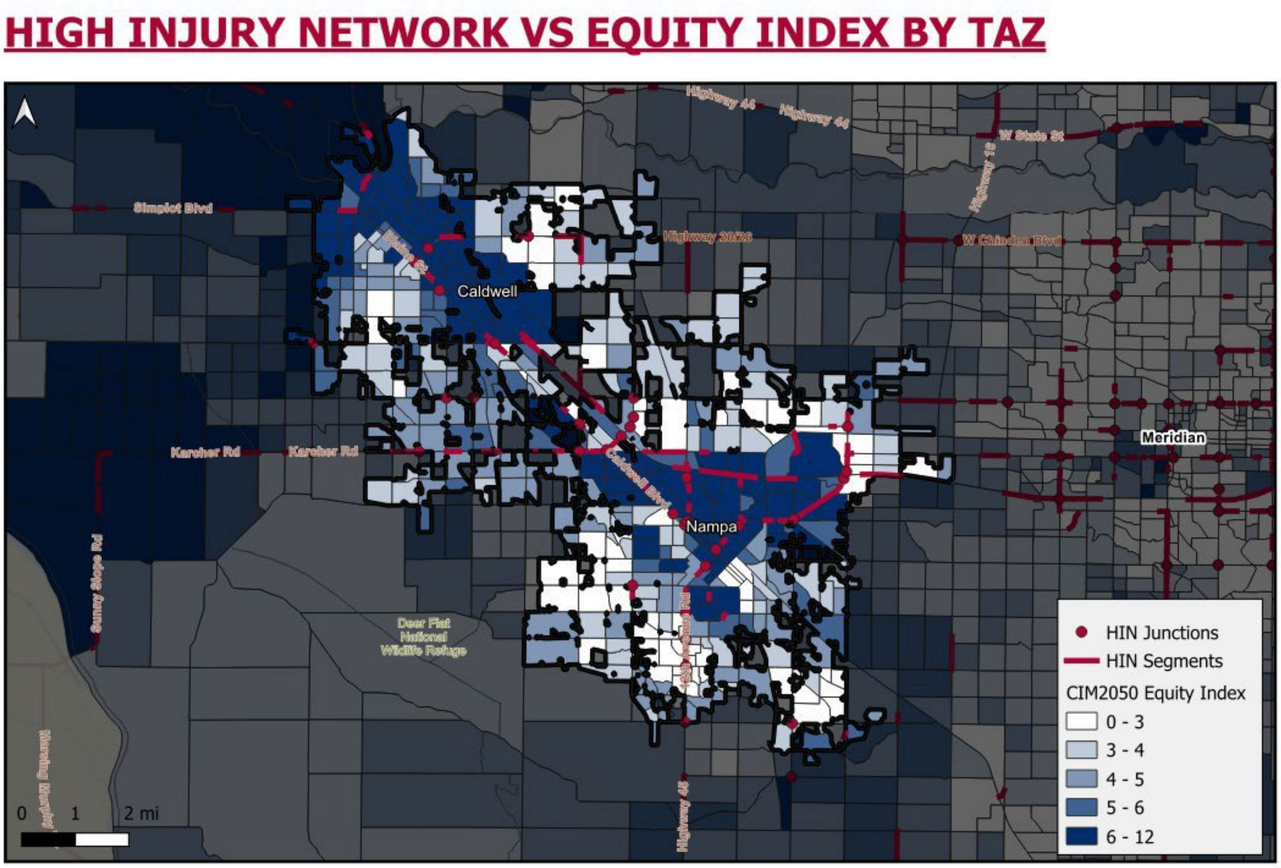


Figure 29 - CIM2050 High Equity Index Score TAZs Along the HIN

When the focus shifts to KA crash counts, the picture looks slightly different. Around 12.5% of the TAZs in the COMPASS region have an Equity Index of 7 or above, which corresponds with about 9.4% of the total population in the region. Meanwhile, these TAZs contain 16.1% of all KA crashes as is summarized in Table 14 below.

Equity Index	Number of TAZs	Population	Percent of Region by Population	Total Number of KA Crashes	Percent of Total KA Crashes
0	9	4,411	0.6%	7	0.4%
1	105	43,335	6.0%	88	4.6%
2	279	150,443	20.7%	205	10.8%
3	372	149,906	20.6%	260	13.7%
4	614	156,676	21.6%	399	21.0%
5	507	101,170	13.9%	376	19.8%
6	288	51,630	7.1%	258	13.6%
7	167	34,866	4.8%	136	7.2%
8	82	17,255	2.4%	86	4.5%
9	42	11,192	1.5%	28	2.0%
10	14	1,592	0.2%	34	1.8%
11	5	2,178	0.3%	1	0.1%
12	1	1,418	0.2%	10	0.5%
TOTAL	**2,485**	**726,072**	**100%**	**1,898***	**100%**

Table 14 - Crashes by Equity Index, Population, and Number of TAZs

** = This value is slightly lower than the total number of KA crashes in the region (1,904) due to a few crashes falling just outside of a TAZ boundary.*

In the final step of the analysis, the team conducted pair-wise t-tests to analyze the relationship between five specific variables within Equity Index and the presence of a TAZ on the HIN. Table summarizes the analysis results. Of the variables tested, only unemployment rate was significant at a 95% confidence level. TAZs adjacent to the HIN have a slightly higher unemployment rate (0.3%) compared to the TAZs outside of the HIN.

Equity Index Variable	HIN TAZ Mean	Non-HIN TAZ Mean	P-Value
Graduation Rate	90.2%	90.5%	0.1804
Unemployment Rate	**4.6%**	**4.3%**	**0.0364**
% No Car	4.2%	3.8%	0.1577
% No Health Insurance	10.9%	10.5%	0.0838
Median Rent as % of Income	29.2%	28.8%	0.2624

Table 15 - Correlation of Select Equity Index Variables vs. HIN

Figure 30 and Figure 31 compare the distribution of unemployment rates for TAZs that are not adjacent to the HIN versus those that are as a percentage of all TAZs in the region. Appendix F has comparison figures for all five variables.

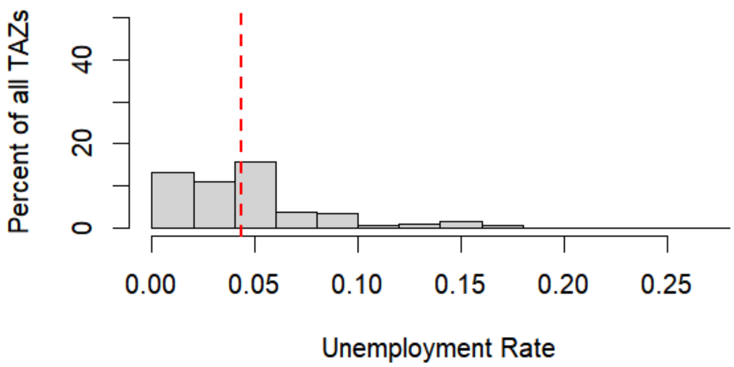


Figure 30 - Non-HIN TAZ Unemployment Rate Comparison

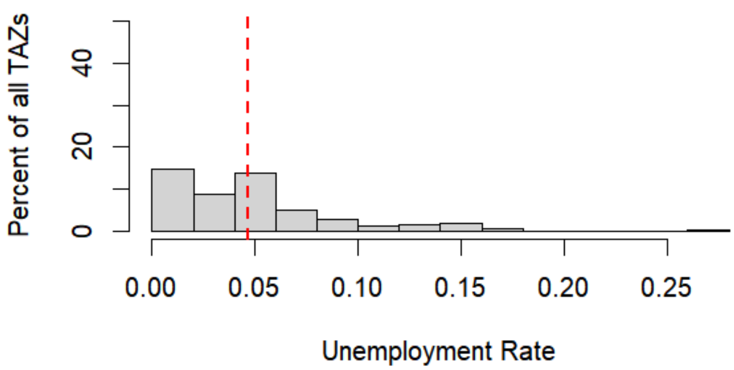


Figure 31 - HIN TAZ Unemployment Rate Comparison

SUMMARY STATISTICS

General Statistics

- The average Equity Index score in the region is 4.4.
- The average Equity Index score is 3.8 in Ada County and 5.4 in Canyon County.
- The average Equity Index score for the region adjacent to the HIN is 4.4.
- TAZs that overlap with the HIN have a slightly higher unemployment rate (0.3%) compared to TAZs not adjacent to the HIN.

HIN Segments

- 26% of the TAZs in the COMPASS region intersect with a segment on the HIN
    - Of these TAZs, 14% have an Equity Index score of 7 or above
- 40 miles of the HIN intersect with a TAZ that has an Equity Index score of 7 or above
    - This is the equivalent of 23% of the total miles on the HIN

HIN Junctions

- 4.7% of the TAZs in the COMPASS region intersect with a junction on the HIN
    - Of these TAZs, 11% have an Equity Index score of 7 or above
- 14 junctions on the HIN intersect with a TAZ that has an Equity Index score of 7 or above
    - This is the equivalent of 11% of all junctions on the HIN

LOCATION ANALYSIS – COMPASS MEMBER AGENCY FINDINGS

The following pages contain location-based analysis findings for each COMPASS member agency. Callout values show the total number of fatal crashes and serious injury crashes within the agency boundary. Note that these values are based on the locations of the segments and junctions the crashes were joined to, not the location of the crash itself. In most cases, the segment or junction and the crash lie within the same agency boundary. For segments that span more than one agency boundary, any crash along that segment is included for all the relevant agencies. A map shows the count of fatal and serious injury crashes at each analyzed segment and junction. The first table shows the count and percent of fatal and serious injury crashes by crash events (emphasis areas shown in the table 11 below) as well as a ranking of that member agency for that emphasis area. Rankings are based on the percent of total KA crashes with a ranking of 1 meaning the agency has the highest percentage of KA emphasis area crashes. Instances where the agency is ranked 1, 2, or 3 are in **bold**.

The second and third tables present the top five segments and junctions in the member agency based on HIN score. To give context on why the segment or junction scored high the location score and number of serious and fatal injury crashes are presented, as well as the risk score and the risk attributes contributing the most to risk score.

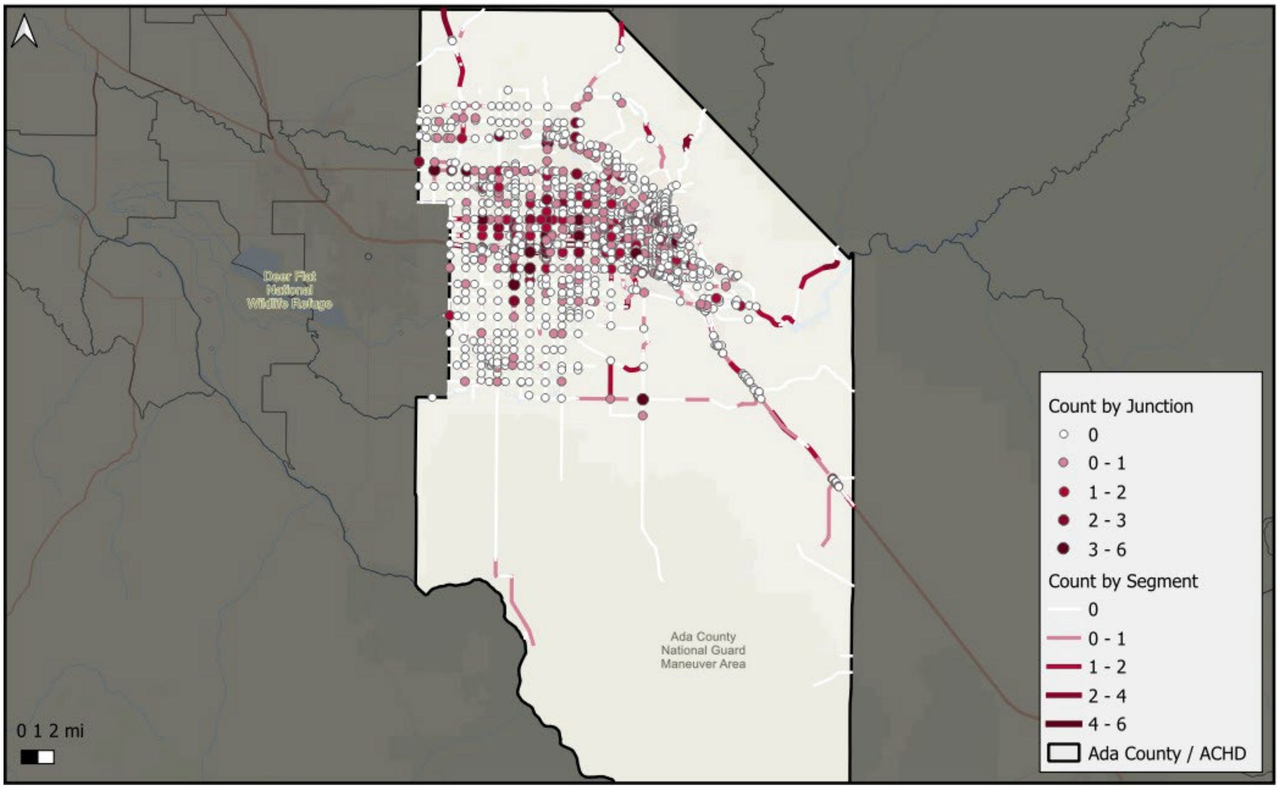
Table 16 - Crash Emphasis Areas

Crash Emphasis Area	Definition
Non-Motorized Involved	Vehicle Type field includes any non-motorized vehicle (pedestrian, pedal cycle, etc.)
Motorcycle-Involved	Vehicle Type field includes Motorcycle
Alcohol-Involved	Alcohol or Drug Involved field includes Alcohol or 'Both'
Drug-Involved	Alcohol or Drug Involved field includes Drugs or 'Both'
No Protection Device	Protection Device field is None
The rest of the Crash Emphasis Areas are based on the value of the Most Harmful Event field. These represent the top events amongst KA crashes in the COMPASS region	
Angle-Related Event	Most Harmful Event includes Angle
Rear-End-Related Event	Most Harmful Event includes Rear-End
Overturn-Related Event	Most Harmful Event includes Overturn
Angle Turning-Related Event	Most Harmful Event includes Angle Turning
Head-On Turning-Related Event	Most Harmful Event includes Head on Turning
Pedestrian-Related Event	Most Harmful Event includes Pedestrian
Head-On Related Event	Most Harmful Event includes Head-On
Bicycle-Related Event	Most Harmful Event includes Bicycle
Side Swipe Same-Related Event	Most Harmful Event includes Side Swipe Same

ADA COUNTY & ADA COUNTY HIGHWAY DISTRICT (ACHD)

100	1,013
Fatal Crash Count	Serious Injury Crash Count

2018 - 2022 FATAL AND SERIOUS INJURY CRASH COUNT



Crash Event Table

Crash Emphasis Area	KA Crash Count	Percent of Total KA Crashes	Member Agency Ranking
Non-Motorized-Involved	184	16.5%	6
Motorcycle-Involved	166	14.9%	6
Alcohol-Involved	145	13.0%	8
Drug-Involved	69	6.2%	6
No Protection Device	44	3.9%	5
Angle-Related Event	114	10.2%	8
Rear-End-Related Event	237	21.3%	4
Overturn-Related Event	139	12.5%	6
Angle Turning-Related Event	103	9.25%	8
Head-On Turning-Related Event	125	11.2%	4
Pedestrian-Related Event	101	9.1%	6
Head-On Related Event	51	4.6%	10
Bicycle-Related Event	74	6.6%	5
Side Swipe Same-Related Event	49	4.4%	6

Top Segments and Junctions

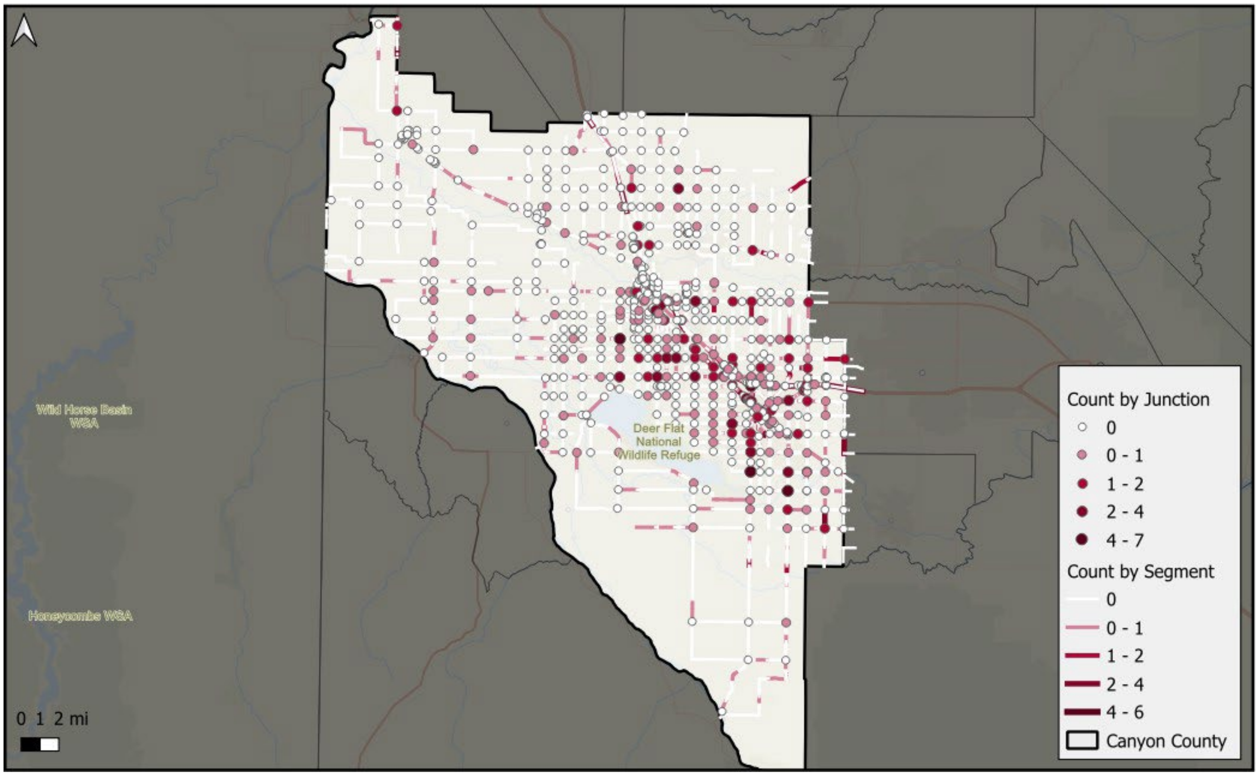
Segment	HIN Score	Location Score	KA Crash Count	Risk Score	Highest Risk Factor(s)
N Highway 55 exiting Boise County	11.78	10	2	13.56	Speeding, high average speed, functional classification
E Highway 21 South of mores Creek	11.0775	15	4	7.155	High average speed, functional classification
N Hwy 16 exiting Ada County	11.025	15	4	7.05	High average speed, functional classification
E Overland Rd between S Locust Grove Rd and S Millenium Way	10.3275	15	6	5.655	High average speed, multi-lane roadway
S Meridian Rd between E Rosalyn Dr and E Edmonds Dr	10.295	10	2	10.59	High average speed, functional classification, multi-lane roadway

Junction	HIN Score	Location Score	KA Crash Count	Risk Score	Highest Risk Factor(s)
W Amity Rd & S Meridian Rd	3.998	4	5	3.996	Multi-lane major, 2 lane minor, 4 legged, signalized
E Overland Rd & S Locus Grove Rd	3.998	4	4	3.996	Multi-lane major, 2 lane minor, 4 legged, signalized
W Lake Hazel Rd & S Meridian Rd	3.998	4	3	3.996	Multi-lane major, 2 lane minor, 4 legged, signalized
W Victory Rd & S Meridian Rd	3.998	4	3	3.996	Multi-lane major, 2 lane minor, 4 legged, signalized
W State St & N 15th St	3.998	4	3	3.996	Multi-lane major, 2 lane minor, 4 legged, signalized
W Pine Ave & N Meridian Road	3.998	4	3	3.996	Multi-lane major, 2 lane minor, 4 legged, signalized

CANYON COUNTY

100	695
Fatal Crash Count	Serious Injury Crash Count

2018 - 2022 FATAL AND SERIOUS INJURY CRASH COUNT



Crash Event Table

Crash Emphasis Area	KA Crash Count	Percent of Total KA Crashes	Member Agency Ranking
Non-Motorized-Involved	64	8.1%	10
Motorcycle-Involved	106	13.3%	7
Alcohol-Involved	113	14.2%	5
Drug-Involved	40	5.0%	7
No Protection Device	**48**	**6.0%**	**3**
Angle-Related Event	**182**	**22.9%**	**2**
Rear-End-Related Event	94	11.8%	7
Overturn-Related Event	113	14.2%	5
Angle Turning-Related Event	107	13.5%	5
Head-On Turning-Related Event	70	8.9%	7
Pedestrian-Related Event	48	6.0%	9
Head-On Related Event	61	7.7%	5
Bicycle-Related Event	15	1.9%	10
Side Swipe Same-Related Event	37	4.7%	5

Top Segments and Junctions

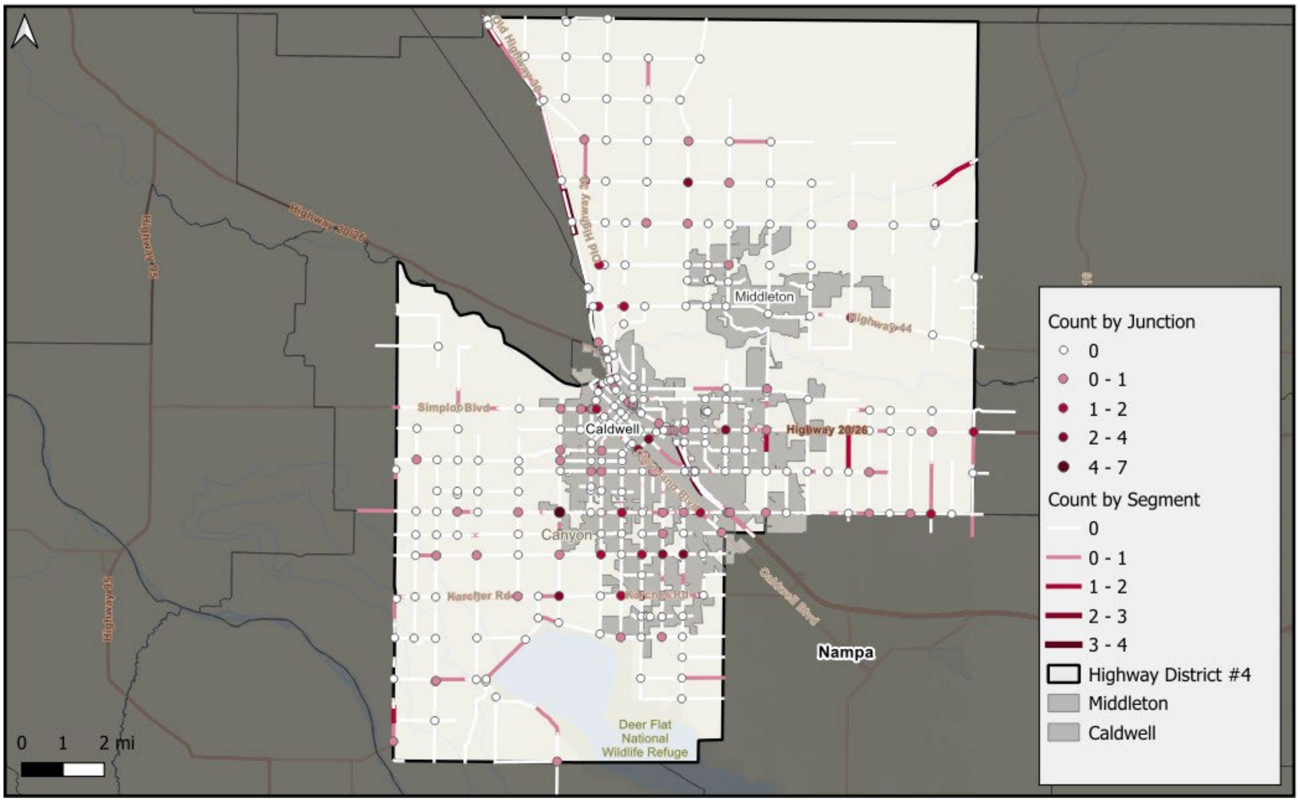
Segment	HIN Score	Location Score	KA Crash Count	Risk Score	Highest Risk Factor(s)
Garrity Blvd between N Sugar Ave and Carnation Dr	12.195	15	4	9.39	High average speed, functional classification, multi-lane roadway
Garrity Blvd between N Sister Catherine Way and N Jacob Allcott Way	9.695	10	3	9.39	High average speed, functional classification, multi-lane roadway
Garrity Blvd between Barger St and 42nd St North	9.695	10	2	9.39	High average speed, functional classification, multi-lane roadway
W Simplot Blvd between Kit Ave and Centennial Way	9.695	10	2	9.39	High average speed, functional classification, multi-lane roadway
Centennial Way between W Chicago St and W Freeport St	9.17	10	3	8.34	High average speed, functional classification, multi-lane roadway

Junction	HIN Score	Location Score	KA Crash Count	Risk Score	Highest Risk Factor(s)
Blaine St & S 21st Ave	3.998	4	4	3.996	Multi-lane major, 2 lane minor, 4 legged, signalized
E Chicago St & N 21st Ave	3.998	4	3	3.996	Multi-lane major, 2 lane minor, 4 legged, signalized
2nd St South & Northside Blvd	3.998	4	3	3.996	Multi-lane major, 2 lane minor, 4 legged, signalized
Cherry Lane & Midland Blvd	3.498	3	2	3.996	Multi-lane major, 2 lane minor, 4 legged, signalized
N Marketplace Blvd & Midland Blvd	3.498	3	2	3.996	Multi-lane major, 2 lane minor, 4 legged, signalized
Caldwell Blvd & N Middleton Rd	3.498	3	2	3.996	Multi-lane major, 2 lane minor, 4 legged, signalized

HIGHWAY DISTRICT #4

48	232
Fatal Crash Count	Serious Injury Crash Count

2018 - 2022 FATAL AND SERIOUS INJURY CRASH COUNT



Crash Event Table

Crash Emphasis Area	KA Crash Count	Percent of Total KA Crashes	Member Agency Ranking
Non-Motorized-Involved	20	7.1%	11
Motorcycle-Involved	35	12.5%	9
Alcohol-Involved	**57**	**20.4%**	**3**
Drug-Involved	14	5.0%	8
No Protection Device	**18**	**6.4%**	**2**
Angle-Related Event	**72**	**26.1%**	**1**
Rear-End-Related Event	25	8.9%	10
Overturn-Related Event	**55**	**19.6%**	**2**
Angle Turning-Related Event	**40**	**14.3%**	**2**
Head-On Turning-Related Event	20	7.1%	8
Pedestrian-Related Event	16	5.7%	10
Head-On Related Event	**24**	**8.6%**	**3**
Bicycle-Related Event	4	1.4%	11
Side Swipe Same-Related Event	8	2.9%	9

Top Segments and Junctions

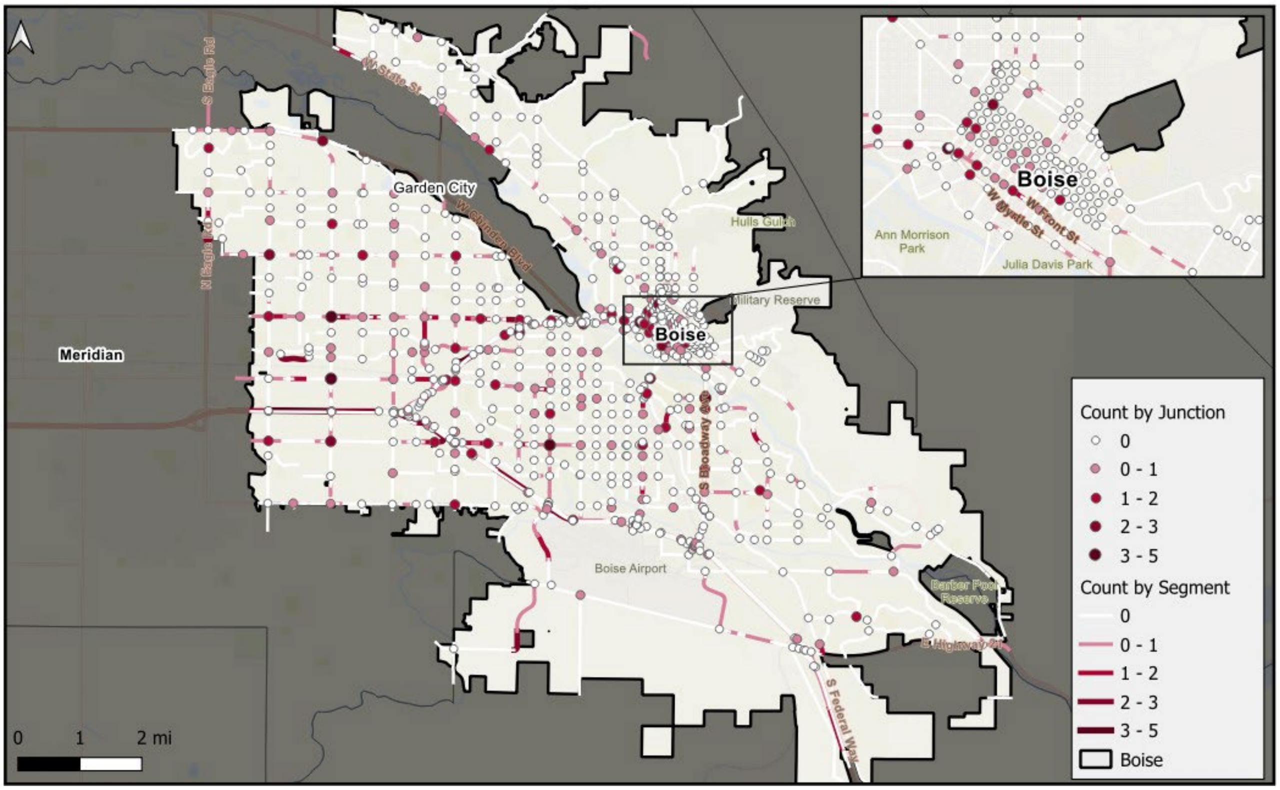
Segment	HIN Score	Location Score	KA Crash Count	Risk Score	Highest Risk Factor(s)
Hwy 19 between N Kit Ave and Centennial Way	9.695	10	2	9.39	High average speed, functional classification, multi-lane roadway
Centennial Way between W Chicago St and W Freeport St	9.17	10	3	8.34	High average speed, functional classification
Karcher Rd between Canyon View Way and Celeste Ave	9.14	10	2	8.28	High average speed, functional classification
Hwy 44 between Eel Lane and Stoffle Lane	9.1325	10	2	8.265	High average speed, functional classification
Hwy 44 between Stone Lane and River Road	8.83	5	1	12.66	Speeding, high average speed, functional classification

Junction	HIN Score	Location Score	KA Crash Count	Risk Score	Highest Risk Factor(s)
Blaine St & S 21st Ave	3.998	4	4	3.996	Multi-lane major, 2 lane minor, 4 legged, signalized
E Chicago St & N 21st Ave	3.998	4	3	3.996	Multi-lane major, 2 lane minor, 4 legged, signalized
E Ustick Rd & Cleveland Blvd	3.498	3	2	3.996	Multi-lane major, 2 lane minor, 4 legged, signalized
E Linden St & Cleveland Blvd	3.498	3	2	3.996	Multi-lane major, 2 lane minor, 4 legged, signalized
Karcher Rd & S Indiana Ave	3.292	4	3	2.584	2 lane minor, 4 legged, signalized

CITY OF BOISE

34	473
Fatal Crash Count	Serious Injury Crash Count

2018 - 2022 FATAL AND SERIOUS INJURY CRASH COUNT



Crash Event Table

Crash Emphasis Area	KA Crash Count	Percent of Total KA Crashes	Member Agency Ranking
Non-Motorized-Involved	**124**	**24.5%**	**3**
Motorcycle-Involved	78	15.4%	5
Alcohol-Involved	68	13.4%	7
Drug-Involved	33	6.5%	5
No Protection Device	16	3.2%	6
Angle-Related Event	52	10.3%	7
Rear-End-Related Event	101	19.9%	5
Overturn-Related Event	34	6.7%	11
Angle Turning-Related Event	47	9.3%	7
Head-On Turning-Related Event	48	9.5%	6
Pedestrian-Related Event	**66**	**13.0%**	**3**
Head-On Related Event	19	3.7%	12
Bicycle-Related Event	**52**	**10.3%**	**3**
Side Swipe Same-Related Event	**34**	**6.7%**	**2**

Top Segments and Junctions

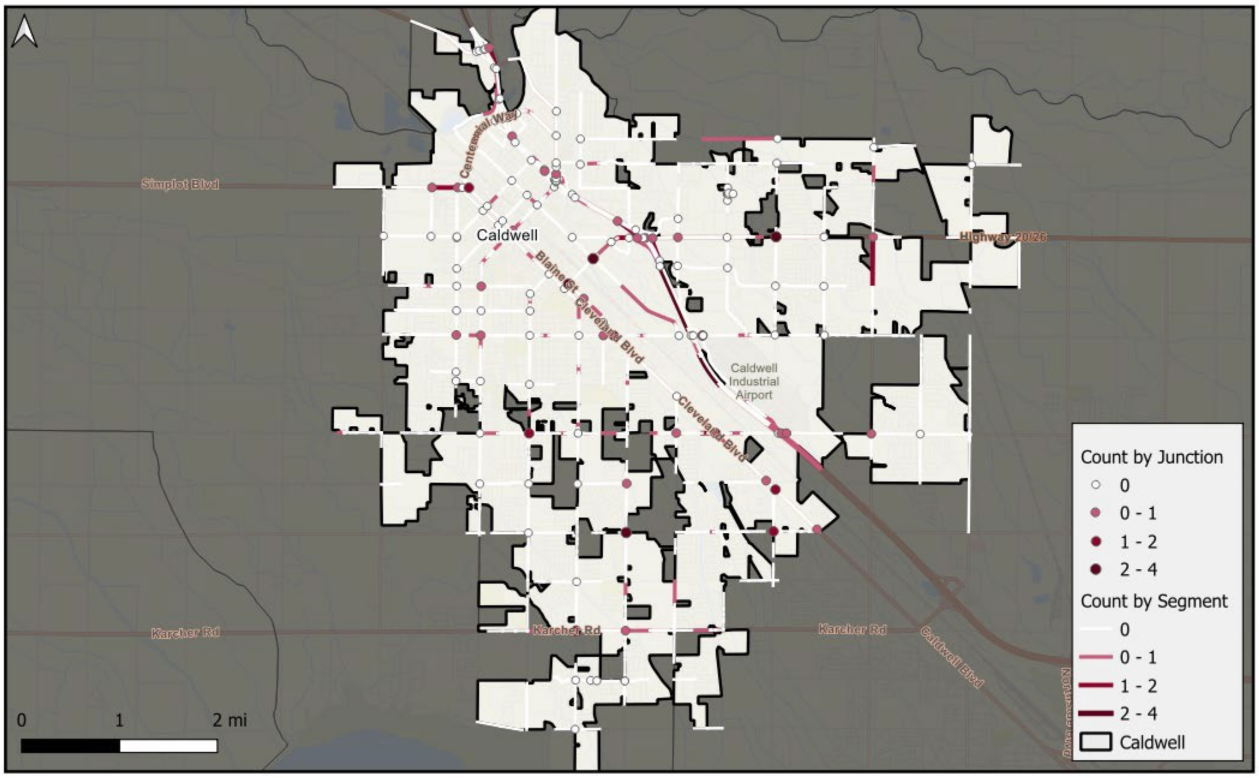
Segment	HIN Score	Location Score	KA Crash Count	Risk Score	Highest Risk Factor(s)
W Chinden Blvd between W Chinden Ridge Drive and N Five Mile Road	9.325	5	1	13.65	Speeding, high average speed, functional classification, multi-lane roadway
N Eagle Road between W Meadowdale St and W Wainwright Drive	9.0725	10	2	8.145	High average speed, multi-lane roadway
W Fairview St between N Five Mile Rd and N Kimball St	8.3	10	3	6.6	High average speed, multi-lane roadway
W Overland Rd between W Cedarwood Dr and S Brooklawn Dr	8.3	10	2	6.6	High average speed, multi-lane roadway
W Overland Rd between S Brooklawn Dr and S Raymond St	8.3	10	2	6.6	High average speed, multi-lane roadway
W Fairview St between N Fry St and N Raymond St	8.3	10	2	6.6	High average speed, multi-lane roadway

Junction	HIN Score	Location Score	KA Crash Count	Risk Score	Highest Risk Factor(s)
W State St & N 15th St	3.998	4	3	3.996	Multi-lane major, 2 lane minor, 4 legged, signalized
W Overland Rd & S Cloverdale Rd	3.498	3	2	3.996	Multi-lane major, 2 lane minor, 4 legged, signalized
W Ustick Rd & N Cole Rd	3.498	3	2	3.996	Multi-lane major, 2 lane minor, 4 legged, signalized
W State St & N 27th St	3.498	3	2	3.996	Multi-lane major, 2 lane minor, 4 legged, signalized
W Ustick Rd & N Mitchell St	3.498	3	2	3.996	Multi-lane major, 2 lane minor, 4 legged, signalized

CITY OF CALDWELL

22	124
Fatal Crash Count	Serious Injury Crash Count

2018 - 2022 FATAL AND SERIOUS INJURY CRASH COUNT



Crash Event Table

Crash Emphasis Area	KA Crash Count	Percent of Total KA Crashes	Member Agency Ranking
Non-Motorized-Involved	17	11.6%	7
Motorcycle-Involved	**26**	**17.8%**	**3**
Alcohol-Involved	**33**	**22.6%**	**1**
Drug-Involved	4	2.7%	12
No Protection Device	**11**	**7.5%**	**1**
Angle-Related Event	**28**	**19.2%**	**3**
Rear-End-Related Event	14	9.6%	9
Overturn-Related Event	21	14.4%	4
Angle Turning-Related Event	**23**	**15.7%**	**1**
Head-On Turning-Related Event	16	11.0%	5
Pedestrian-Related Event	14	9.6%	4
Head-On Related Event	11	7.5%	6
Bicycle-Related Event	3	2.1%	9
Side Swipe Same-Related Event	6	4.1%	7

Top Segments and Junctions

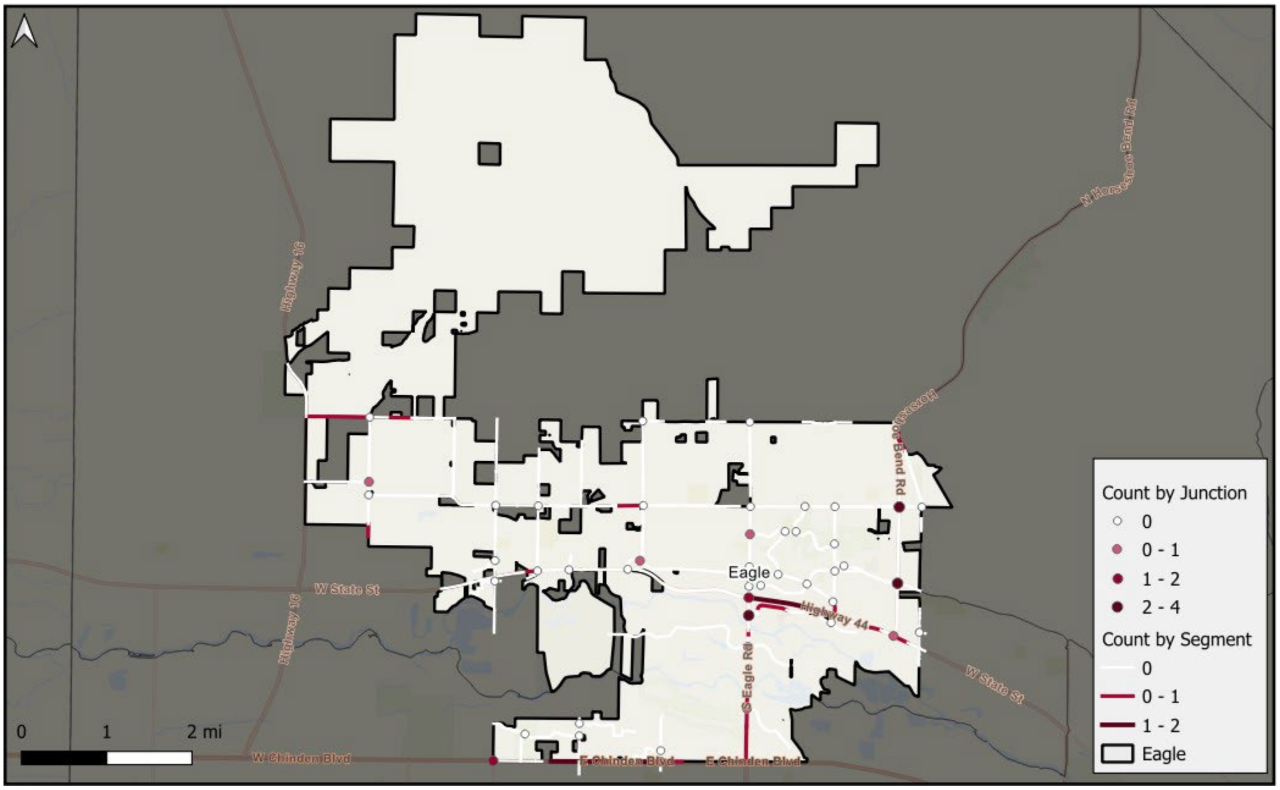
Segment	HIN Score	Location Score	KA Crash Count	Risk Score	Highest Risk Factor(s)
W Simplot Blvd between N Kit Ave and Paynter Ave	9.695	10	2	9.39	High average speed, functional classification, multi-lane roadway
Centennial Way between W Chicago St and W Freeport St	9.17	10	3	8.34	High average speed, functional classification
Karcher Rd between Canyon View Way and Celeste Ave	9.14	10	2	8.28	High average speed, functional classification
Middleton Rd between I 84 and Laster Lane	7.4675	10	2	4.935	High average speed
Middleton Rd between Skyway St and Hwy 20	7.4675	10	2	4.935	High average speed

Junction	HIN Score	Location Score	KA Crash Count	Risk Score	Highest Risk Factor(s)
Blaine St & S 21st Ave	3.998	4	4	3.996	Multi-lane major, 2 lane minor, 4 legged, signalized
E Chicago St & N 21st Ave	3.998	4	3	3.996	Multi-lane major, 2 lane minor, 4 legged, signalized
E Ustick Rd & Cleveland Blvd	3.498	3	2	3.996	Multi-lane major, 2 lane minor, 4 legged, signalized
E Linden St & Cleveland Blvd	3.498	3	2	3.996	Multi-lane major, 2 lane minor, 4 legged, signalized
Karcher Rd & S Indiana Ave	3.292	4	3	2.584	2 lane minor, 4 legged, signalized

CITY OF EAGLE

5	41
Fatal Crash Count	Serious Injury Crash Count

2018 - 2022 FATAL AND SERIOUS INJURY CRASH COUNT



Crash Event Table

Crash Emphasis Area	KA Crash Count	Percent of Total KA Crashes	Member Agency Ranking
Non-Motorized-Involved	2	4.3%	12
Motorcycle-Involved	2	4.3%	11
Alcohol-Involved	7	15.2%	4
Drug-Involved	3	6.5%	4
No Protection Device	0	0%	-
Angle-Related Event	7	15.2%	6
Rear-End-Related Event	**10**	**21.7%**	**3**
Overturn-Related Event	4	8.7%	7
Angle Turning-Related Event	4	8.7%	10
Head-On Turning-Related Event	**10**	**21.7%**	**1**
Pedestrian-Related Event	0	0%	-
Head-On Related Event	0	0%	-
Bicycle-Related Event	2	4.3%	6
Side Swipe Same-Related Event	1	2.1%	11

Top Segments and Junctions

Segment	HIN Score	Location Score	KA Crash Count	Risk Score	Highest Risk Factor(s)
E Hwy 44 between S Eagle Rd and S Edgewood Lane	10.295	10	2	10.59	High average speed, functional classification, multi-lane roadway
Hwy 44 between Linder Rd and N Park Lane	9.9925	5	1	14.985	Speeding, high average speed, functional classification, multi-lane roadway
Chinden Blvd between N Fox Run Way and N Locust Grove Rd	9.8675	10	2	9.735	High average speed, functional classification
Hwy 44 between Hwy 55 and N Horseshoe Bend Rd	7.795	5	1	10.59	High average speed, functional classification, multi-lane roadway
Hwy 44 between N park Lane and S Eagle Island Parkway	7.4925	0	0	14.985	Speeding, high average speed, functional classification, multi-lane roadway

Junction	HIN Score	Location Score	KA Crash Count	Risk Score	Highest Risk Factor(s)
E Riverside Dr & S Eagle Rd	3.426	4	4	2.852	Multi-lane major, 2 lane minor, signalized
E Island Wood Dr & S Eagle Rd	2.998	2	1	3.996	Multi-lane major, 2 lane minor, 4 legged, signalized
Hwy 44 & S Eagle Rd	2.92	3	2	2.84	Multi-lane major, 4 legged, signalized
W Chinden Blvd & N Linder Rd	2.92	3	2	2.84	Multi-lane major, 4 legged, signalized
State St & N Eagle Rd	2.792	3	2	2.584	2 lane minor, 4 legged, signalized

CITY OF GARDEN CITY

6

Fatal Crash Count

30

Serious Injury Crash Count

2018 - 2022 FATAL AND SERIOUS INJURY CRASH COUNT

Crash Event Table

Crash Emphasis Area	KA Crash Count	Percent of Total KA Crashes	Member Agency Ranking
Non-Motorized-Involved	**11**	**30.5%**	**2**
Motorcycle-Involved	6	16.7%	4
Alcohol-Involved	**8**	**22.2%**	**2**
Drug-Involved	**3**	**8.3%**	**2**
No Protection Device	1	2.8%	8
Angle-Related Event	2	5.6%	10
Rear-End-Related Event	4	11.1%	8
Overturn-Related Event	3	8.3%	8
Angle Turning-Related Event	4	11.1%	6
Head-On Turning-Related Event	2	5.6%	9
Pedestrian-Related Event	**5**	**13.9%**	**2**
Head-On Related Event	3	8.3%	4
Bicycle-Related Event	**6**	**16.7%**	**1**
Side Swipe Same-Related Event	1	2.8%	10

Top Segments and Junctions

Segment	HIN Score	Location Score	KA Crash Count	Risk Score	Highest Risk Factor(s)
W Chinden Blvd between 43rd St and 42nd St	10.1	10	2	10.2	High average speed, functional classification, multi-lane roadway
N Glenwood St between W Midway Drive and W Lorimer Lane	9.62	10	2	9.24	High average speed, functional classification, multi-lane roadway
W Chinden Blvd between N Millstone Dr and N Coffey St	9.5675	10	2	9.135	High average speed, functional classification, multi-lane roadway
W Chinden Blvd between 38th St and 37th St	8.03	10	2	6.06	Functional classification, multi-lane roadway
N Glenwood St between W State St and W Riverside Dr	7.6	5	1	10.2	High average speed, functional classification, multi-lane roadway

Junction	HIN Score	Location Score	KA Crash Count	Risk Score	Highest Risk Factor(s)
W Chinden Blvd & N Orchard St	2.998	2	1	3.996	Multi-lane major, 2 lane minor, 4 legged, signalized
W Chinden Blvd & N Maple Grove Rd	2.998	2	1	3.996	Multi-lane major, 2 lane minor, 4 legged, signalized
W Marigold St & N Glenwood St	2.926	3	2	2.852	Multi-lane major, 2 lane minor, signalized
W Chinden Blvd & N Kent Lane	2.426	2	1	2.852	Multi-lane major, 2 lane minor, signalized
W Riverside Dr & N Glenwood St	2.426	2	1	2.852	Multi-lane major, 2 lane minor, signalized

CITY OF GREENLEAF

0

Fatal Crash Count

0

Serious Injury Crash Count

2018 - 2022 FATAL AND SERIOUS INJURY CRASH COUNT

Crash Event Table

Crash Emphasis Area	KA Crash Count	Percent of Total KA Crashes	Member Agency Ranking
Non-Motorized-Involved	0	-	-
Motorcycle-Involved	0	-	-
Alcohol-Involved	0	-	-
Drug-Involved	0	-	-
No Protection Device	0	-	-
Angle-Related Event	0	-	-
Rear-End-Related Event	0	-	-
Overturn-Related Event	0	-	-
Angle Turning-Related Event	0	-	-
Head-On Turning-Related Event	0	-	-
Pedestrian-Related Event	0	-	-
Head-On Related Event	0	-	-
Bicycle-Related Event	0	-	-
Side Swipe Same-Related Event	0	-	-

Top Segments and Junctions

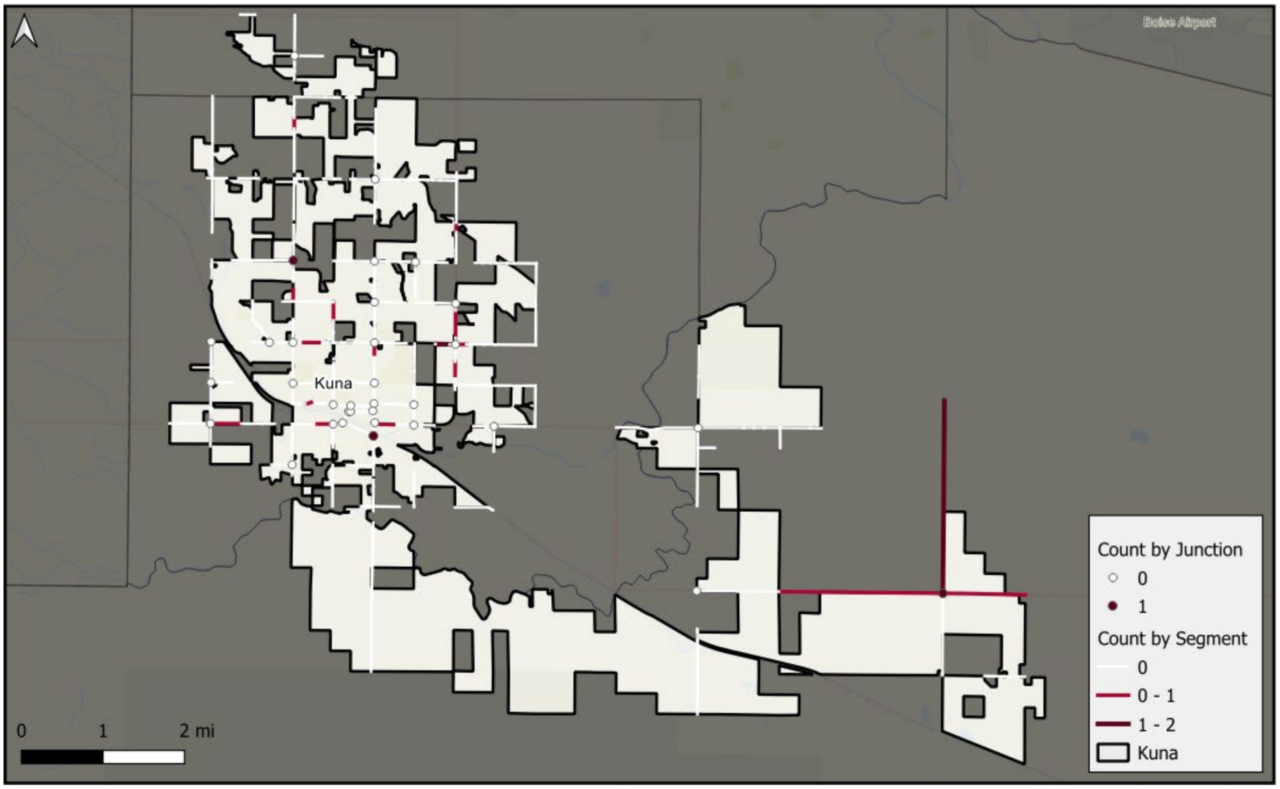
Segment	HIN Score	Location Score	KA Crash Count	Risk Score	Highest Risk Factor(s)
Main St between Academy Rd and Antrim Dr	4.2675	0	0	8.535	High average speed, functional classification
Main St between Tucker Rd and Top Rd	3.9375	0	0	7.875	High average speed, functional classification
Friends Rd between Greenleaf Friends Academy and Lower Pleasant Ridge Rd	2.1375	0	0	4.275	High average speed

Junction	HIN Score	Location Score	KA Crash Count	Risk Score	Highest Risk Factor(s)
Main St & Friends Rd	1.15	0	0	2.3	2 lane minor, 4 legged
Peckham Rd & Friends Rd	0.0578	0	0	1.156	2 lane minor

CITY OF KUNA

3	**19**
Fatal Crash Count	Serious Injury Crash Count

2018 - 2022 FATAL AND SERIOUS INJURY CRASH COUNT



Crash Event Table

Crash Emphasis Area	KA Crash Count	Percent of Total KA Crashes	Member Agency Ranking
Non-Motorized-Involved	5	22.7%	4
Motorcycle-Involved	**6**	**27.2%**	**2**
Alcohol-Involved	3	13.6%	6
Drug-Involved	1	4.5%	11
No Protection Device	0	0%	-
Angle-Related Event	4	18.2%	4
Rear-End-Related Event	0	0%	-
Overturn-Related Event	**4**	**18.2%**	**3**
Angle Turning-Related Event	2	9.1%	9
Head-On Turning-Related Event	1	4.5%	10
Pedestrian-Related Event	2	9.1%	5
Head-On Related Event	**2**	**9.1%**	**2**
Bicycle-Related Event	**3**	**13.6%**	**2**
Side Swipe Same-Related Event	0	0%	-

Top Segments and Junctions

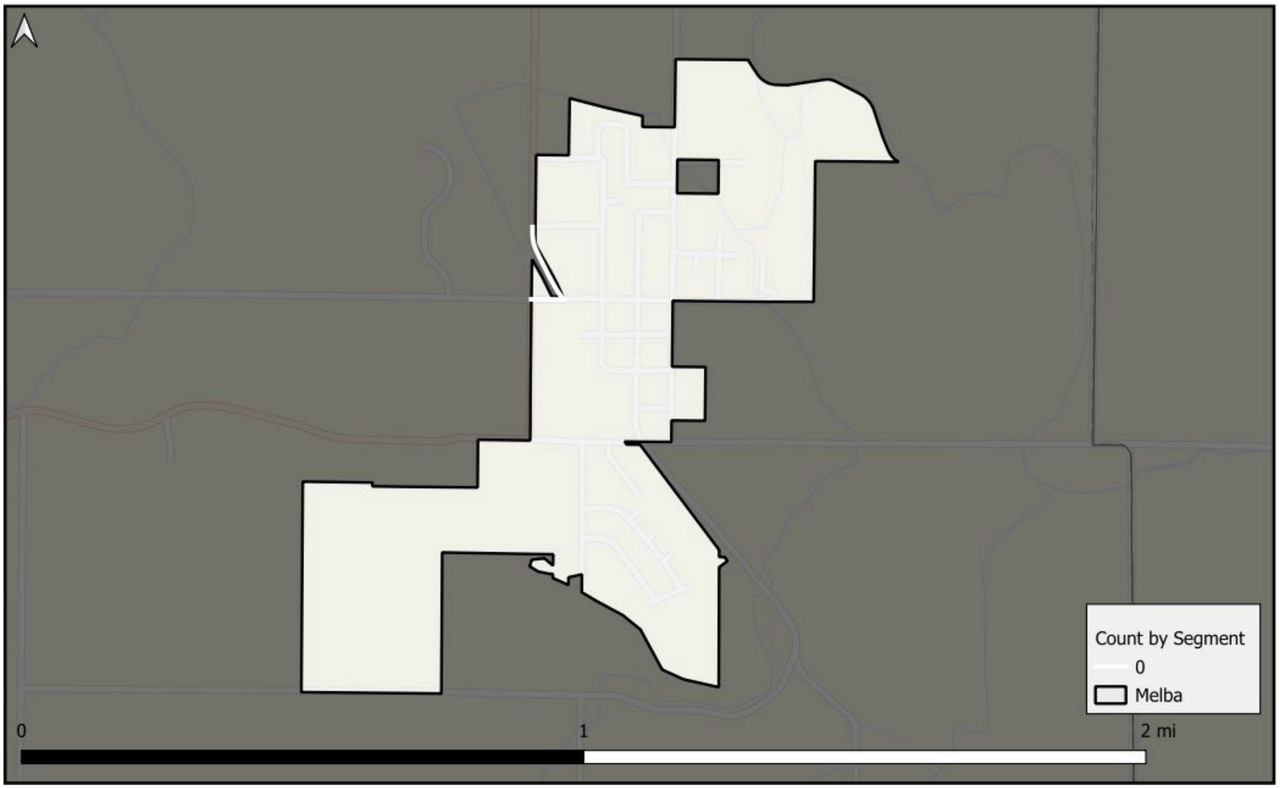
Segment	HIN Score	Location Score	KA Crash Count	Risk Score	Highest Risk Factor(s)
N Meridian Rd between E Profile Lane and E Meadow View Rd	7.795	5	1	10.59	High average speed, functional classification, multi-lane roadway
E Deer Flat Rd between N Sailer Way and N Abstein Lane	7.4675	10	2	4.935	High average speed
Meridian Rd between E Mason Creek Lane and E Deer Flat Rd	7.465	5	1	9.93	High average speed, functional classification, multi-lane roadway
S Cole Rd between W Tenmile Creek Rd and W Kuna Mora Rd	7.1375	10	2	4.275	High average speed
E Avalon St between S Swan Falls Rd and S Orchard Ave	5.965	5	1	6.93	High average speed

Junction	HIN Score	Location Score	KA Crash Count	Risk Score	Highest Risk Factor(s)
W Kuna Mora Rd & S Cole Rd	2.15	2	1	2.3	2 lane minor, 4 legged
W Hubbard Rd & S Ten Mile Rd	2.15	2	1	2.3	2 lane minor, 4 legged
E Deer Flat Rd & N Meridian Rd	1.998	0	0	3.996	Multi-lane major, 2 lane minor, 4 legged, signalized
W Shortline St & S Swan Falls Rd	1.578	2	1	1.156	2 lane minor
W Columbia Rd & S Linder Rd	1.292	0	0	2.584	2 lane minor, 4 legged, signalized

CITY OF MELBA

0	0
Fatal Crash Count	Serious Injury Crash Count

2018 - 2022 FATAL AND SERIOUS INJURY CRASH COUNT



No junctions within the City of Melba were included in the analysis.

Crash Event Table

Crash Emphasis Area	KA Crash Count	Percent of Total KA Crashes	Member Agency Ranking
Non-Motorized-Involved	0	-	-
Motorcycle-Involved	0	-	-
Alcohol-Involved	0	-	-
Drug-Involved	0	-	-
No Protection Device	0	-	-
Angle-Related Event	0	-	-
Rear-End-Related Event	0	-	-
Overturn-Related Event	0	-	-
Angle Turning-Related Event	0	-	-
Head-On Turning-Related Event	0	-	-
Pedestrian-Related Event	0	-	-
Head-On Related Event	0	-	-
Bicycle-Related Event	0	-	-
Side Swipe Same-Related Event	0	-	-

Top Segments and Junctions

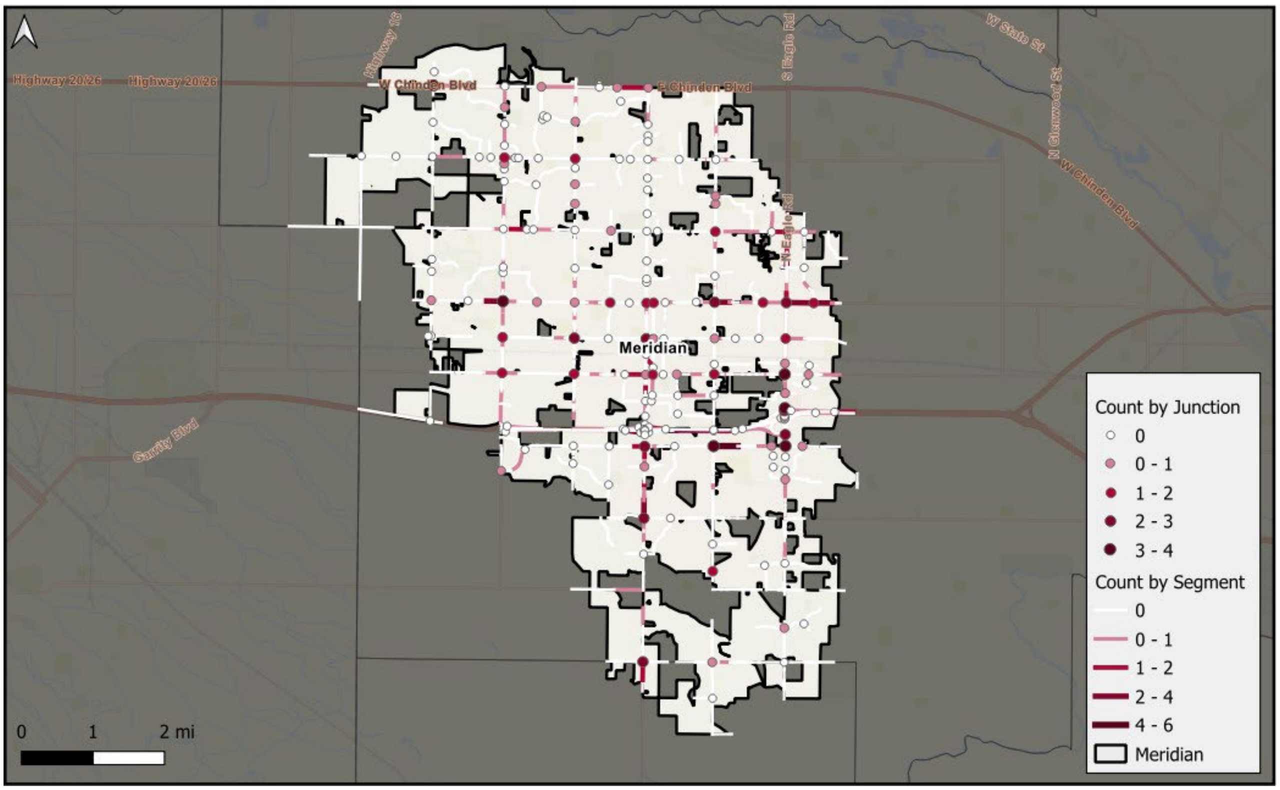
Segment	HIN Score	Location Score	KA Crash Count	Risk Score	Highest Risk Factor(s)
Murphy Rd between Potato Rd and Southside Blvd	4.6375	5	1	4.275	High average speed
Baseline Rd between S Powerline Rd and Potato Rd	4.6375	5	1	4.275	High average speed
Southside Blvd between Murphy Rd and Stokes Ave	2.1375	0	0	4.275	High average speed
Potato Rd between Baseline Rd and Murphy Rd	2.1375	0	0	4.275	High average speed

No junctions within the City of Melba were included in the analysis.

CITY OF MERIDIAN

18 Fatal Crash Count	**259** Serious Injury Crash Count

2018 - 2022 FATAL AND SERIOUS INJURY CRASH COUNT



Crash Event Table

Crash Emphasis Area	KA Crash Count	Percent of Total KA Crashes	Member Agency Ranking
Non-Motorized-Involved	26	9.4%	9
Motorcycle-Involved	32	11.6%	10
Alcohol-Involved	27	9.7%	10
Drug-Involved	13	4.7%	9
No Protection Device	8	2.9%	7
Angle-Related Event	27	9.7%	9
Rear-End-Related Event	**87**	**31.4%**	**2**
Overturn-Related Event	21	7.6%	10
Angle Turning-Related Event	38	13.7%	4
Head-On Turning-Related Event	**45**	**16.2%**	**2**
Pedestrian-Related Event	18	6.5%	8
Head-On Related Event	13	4.7%	8
Bicycle-Related Event	7	2.5%	8
Side Swipe Same-Related Event	8	2.9%	8

Top Segments and Junctions

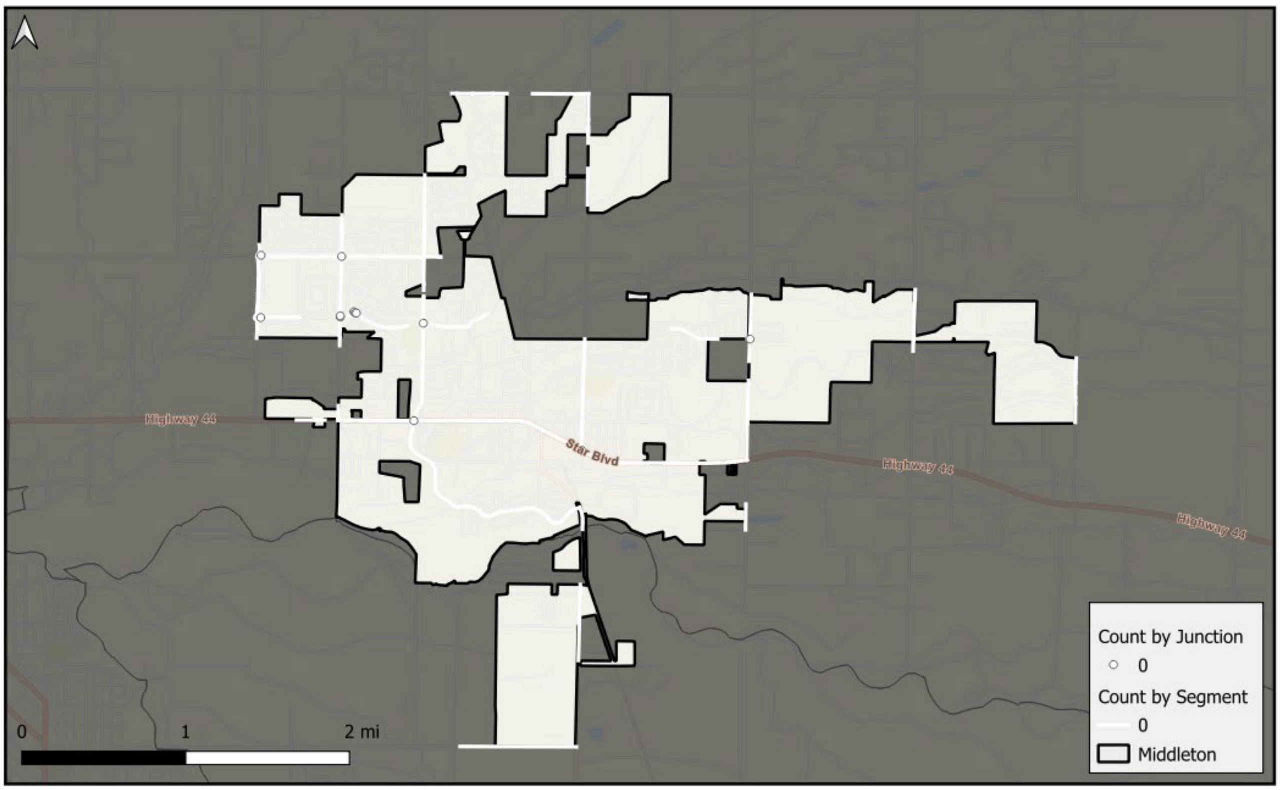
Segment	HIN Score	Location Score	KA Crash Count	Risk Score	Highest Risk Factor(s)
E Overland Rd between S Locust Grove Rd and S Millennium Way	10.3275	15	6	5.655	High average speed, multi-lane roadway
S Meridian Rd between E Rosalyn Dr and Victory Rd	10.295	10	3	10.59	High average speed, functional classification, multi-lane roadway
S Meridian Rd between Lake Hazel Rd and W Paint Horse Lane	9.965	10	2	9.93	High average speed, functional classification, multi-lane roadway
Chinden Blvd between N Fox Run Way and N Elk Ranch Lane	9.8675	10	2	9.735	High average speed, functional classification
S Meridian Dr between W Davenport Dr and W Calderwood St	9.5875	10	1	14.175	Speeding, high average speed, functional classification, multi-lane roadway

Junction	HIN Score	Location Score	KA Crash Count	Risk Score	Highest Risk Factor(s)
W Pine Ave & N Meridian Rd	3.998	4	3	3.996	Multi-lane major, 2 lane minor, 4 legged, signalized
W Lake Hazel Rd & S Meridian Rd	3.998	4	3	3.996	Multi-lane major, 2 lane minor, 4 legged, signalized
W Victory Rd & S Meridian Rd	3.998	4	3	3.996	Multi-lane major, 2 lane minor, 4 legged, signalized
E Overland Rd & S Locust Grove Rd	3.998	4	4	3.996	Multi-lane major, 2 lane minor, 4 legged, signalized
W Cherry Lane & Northwest 8th St	3.498	3	2	3.996	Multi-lane major, 2 lane minor, 4 legged, signalized
W Franklin Rd & Linder Rd	3.498	3	2	3.996	Multi-lane major, 2 lane minor, 4 legged, signalized
W McMillan Rd & Linder Rd	3.498	3	2	3.996	Multi-lane major, 2 lane minor, 4 legged, signalized

CITY OF MIDDLETON

0	0
Fatal Crash Count	Serious Injury Crash Count

2018 - 2022 FATAL AND SERIOUS INJURY CRASH COUNT



Crash Event Table

Crash Emphasis Area	KA Crash Count	Percent of Total KA Crashes	Member Agency Ranking
Non-Motorized-Involved	0	-	-
Motorcycle-Involved	0	-	-
Alcohol-Involved	0	-	-
Drug-Involved	0	-	-
No Protection Device	0	-	-
Angle-Related Event	0	-	-
Rear-End-Related Event	0	-	-
Overturn-Related Event	0	-	-
Angle Turning-Related Event	0	-	-
Head-On Turning-Related Event	0	-	-
Pedestrian-Related Event	0	-	-
Head-On Related Event	0	-	-
Bicycle-Related Event	0	-	-
Side Swipe Same-Related Event	0	-	-

Top Segments and Junctions

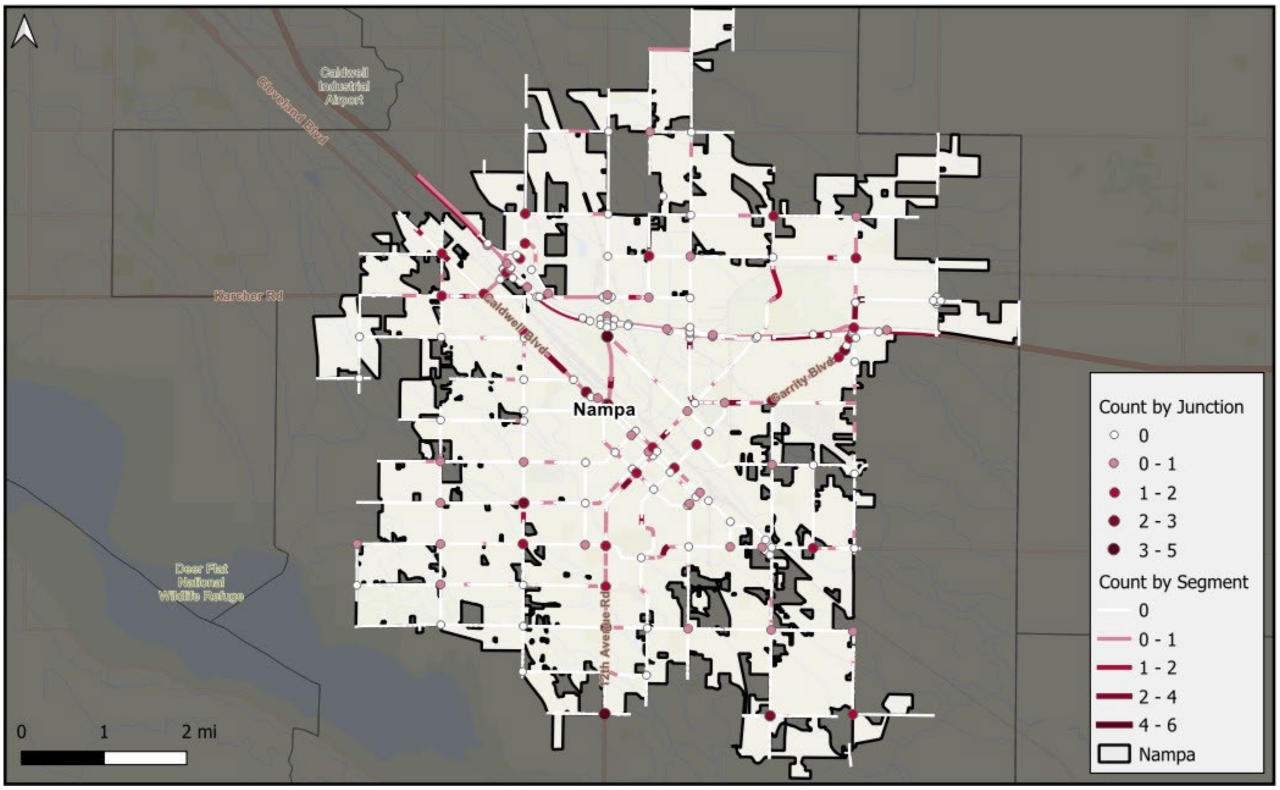
Segment	HIN Score	Location Score	KA Crash Count	Risk Score	Highest Risk Factor(s)
W Main St between Eaton Rd and Cemetery Rd	6.66	0	0	13.32	Speeding, high average speed, functional classification
Hwy 44 between Greenlinks Ave and Duff Lane	6.66	0	0	13.32	Speeding, high average speed, functional classification
W Main St between Hartley Lane and Eaton Rd	4.4625	0	0	8.925	High average speed, functional classification
Hwy 44 between N Middleton Rd and Greenlinks Ave	4.4625	0	0	8.925	High average speed, functional classification

Junction	HIN Score	Location Score	KA Crash Count	Risk Score	Highest Risk Factor(s)
Roundabout at W Highlands Parkway & 9^{th} St	1.15	0	0	2.3	2 lane minor, 4 legged
Willis Rd & Hartley Lane	1.15	0	0	2.3	2 lane minor, 4 legged
9^{th} St & Hartley Lane	0.578	0	0	1.156	2 lane minor
9^{th} St & Cemetery Rd	0.578	0	0	1.156	2 lane minor

CITY OF NAMPA

21	303
Fatal Crash Count	Serious Injury Crash Count

2018 - 2022 FATAL AND SERIOUS INJURY CRASH COUNT



Crash Event Table

Crash Emphasis Area	KA Crash Count	Percent of Total KA Crashes	Member Agency Ranking
Non-Motorized-Involved	37	11.4%	8
Motorcycle-Involved	42	12.9%	8
Alcohol-Involved	33	10.2%	9
Drug-Involved	15	4.6%	10
No Protection Device	14	4.3%	4
Angle-Related Event	58	17.9%	5
Rear-End-Related Event	57	17.6%	6
Overturn-Related Event	25	7.7%	9
Angle Turning-Related Event	**46**	**14.2%**	**3**
Head-On Turning-Related Event	**42**	**12.9%**	**3**
Pedestrian-Related Event	26	8.0%	7
Head-On Related Event	15	4.6%	9
Bicycle-Related Event	10	3.1%	7
Side Swipe Same-Related Event	21	6.5%	4

Top Segments and Junctions

Segment	HIN Score	Location Score	KA Crash Count	Risk Score	Highest Risk Factor(s)
Garrity Blvd between N Sugar Ave and Carnation Dr	12.195	15	4	9.39	High average speed, functional classification, multi-lane roadway
Garrity Blvd between Barger St and N Jacob Allcott Way	9.695	10	3	9.39	High average speed, functional classification, multi-lane roadway
Caldwell Blvd between Homedale Rd and Orchard Ave	8.765	10	3	7.53	High average speed, multi-lane roadway
Franklin Blvd between Industrial Rd and Garrity Blvd	7.895	10	3	5.79	High average speed, multi-lane roadway
W Karcher Rd between N Middleton Rd and N Cassia St	7.625	10	3	5.25	Functional classification, multi-lane roadway

Junction	HIN Score	Location Score	KA Crash Count	Risk Score	Highest Risk Factor(s)
2nd Street South & Northside Blvd	3.998	4	3	3.996	Multi-lane major, 2 lane minor, 4 legged, signalized
Cherry Lane & Midland Blvd	3.498	3	2	3.996	Multi-lane major, 2 lane minor, 4 legged, signalized
N Marketplace Blvd & Midland Blvd	3.498	3	2	3.996	Multi-lane major, 2 lane minor, 4 legged, signalized
Caldwell Blvd & N Middleton Rd	3.498	3	2	3.996	Multi-lane major, 2 lane minor, 4 legged, signalized
W Karcher Rd & N Middleton Rd	3.498	3	2	3.996	Multi-lane major, 2 lane minor, 4 legged, signalized
Caldwell Blvd & Yale St	3.498	3	2	3.996	Multi-lane major, 2 lane minor, 4 legged, signalized

CITY OF NOTUS

0

Fatal Crash Count

2

Serious Injury Crash Count

2018 - 2022 FATAL AND SERIOUS INJURY CRASH COUNT

Crash Event Table

Crash Emphasis Area	KA Crash Count	Percent of Total KA Crashes	Member Agency Ranking
Non-Motorized-Involved	0	0%	-
Motorcycle-Involved	0	0%	-
Alcohol-Involved	0	0%	-
Drug-Involved	0	0%	-
No Protection Device	0	0%	-
Angle-Related Event	0	0%	-
Rear-End-Related Event	0	0%	-
Overturn-Related Event	0	0%	-
Angle Turning-Related Event	0	0%	-
Head-On Turning-Related Event	0	0%	-
Pedestrian-Related Event	0	0%	-
Head-On Related Event	**1**	**50%**	**1**
Bicycle-Related Event	0	0%	-
Side Swipe Same-Related Event	**1**	**50%**	**1**

Top Segments and Junctions

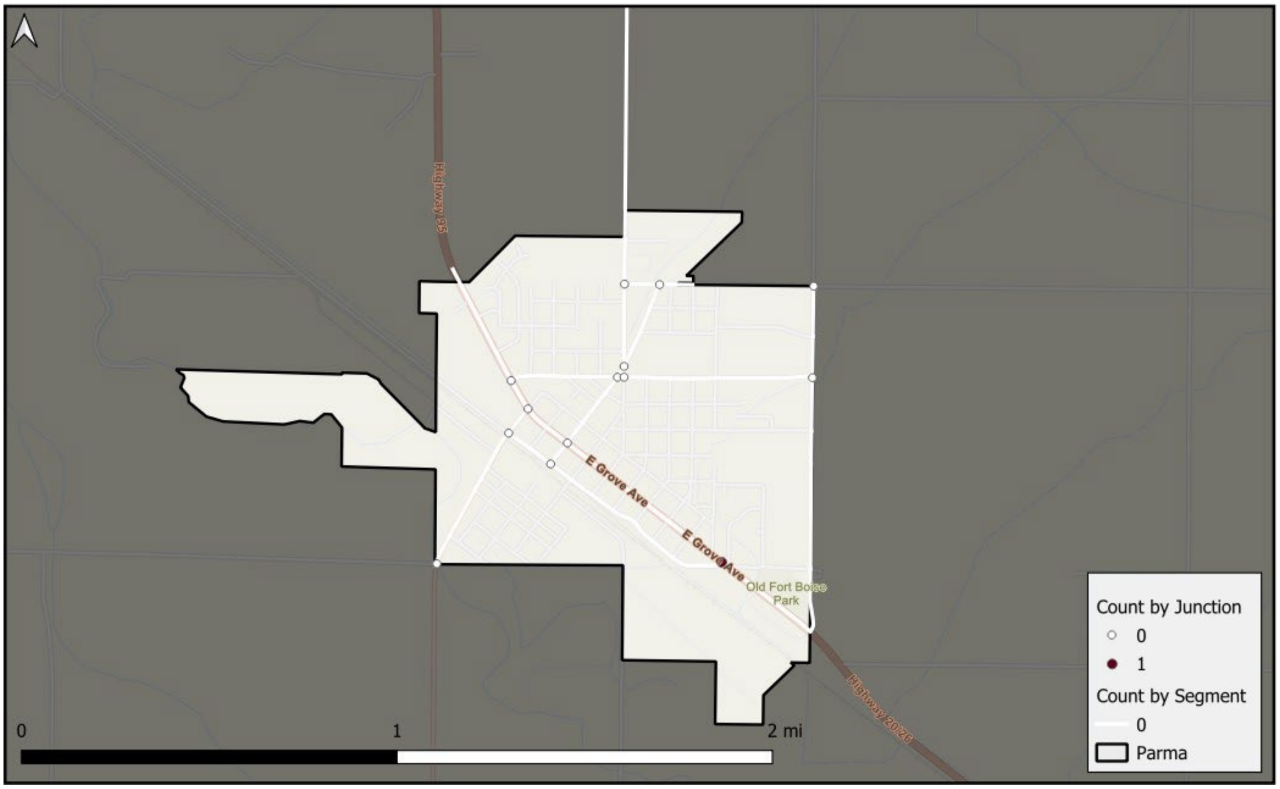
Segment	HIN Score	Location Score	KA Crash Count	Risk Score	Highest Risk Factor(s)
Hwy 20/26 between 3rd St and 2nd St	6.6325	5	1	8.265	High average speed, functional classification
Elgin Ave between Iverson Rd and Conway Rd	4.1325	0	0	8.265	High average speed, functional classification
Hwy 20/26 between Conway Rd and Hop Rd	3.81	0	0	7.62	High average speed, functional classification
Conway Rd between Elgin St and Kremmwood Dr	2.4675	0	0	4.935	High average speed
Notus Rd between Boise River and Elgin St	2.1375	0	0	4.275	High average speed

Junction	HIN Score	Location Score	KA Crash Count	Risk Score	Highest Risk Factor(s)
Elgin St & Conway Rd	1.578	2	1	1.156	2 lane minor
Elgin St & Notus Rd (North end)	0.578	0	0	1.156	2 lane minor
Elgin St & Notus Rd (South end)	0.578	0	0	1.156	2 lane minor
1st St & Notus Rd	0.578	0	0	1.156	2 lane minor
Jasper Ave & 3rd St West	0.578	0	0	1.156	2 lane minor

CITY OF PARMA

1	0
Fatal Crash Count	Serious Injury Crash Count

2018 - 2022 FATAL AND SERIOUS INJURY CRASH COUNT



Crash Event Table

Crash Emphasis Area	KA Crash Count	Percent of Total KA Crashes	Member Agency Ranking
Non-Motorized-Involved	**1**	**100%**	**1**
Motorcycle-Involved	0	0%	-
Alcohol-Involved	0	0%	-
Drug-Involved	**1**	**100%**	**1**
No Protection Device	0	0%	-
Angle-Related Event	0	0%	-
Rear-End-Related Event	0	0%	-
Overturn-Related Event	0	0%	-
Angle Turning-Related Event	0	0%	-
Head-On Turning-Related Event	0	0%	-
Pedestrian-Related Event	**1**	**100%**	**1**
Head-On Related Event	0	0%	-
Bicycle-Related Event	0	0%	-
Side Swipe Same-Related Event	0	0%	-

Top Segments and Junctions

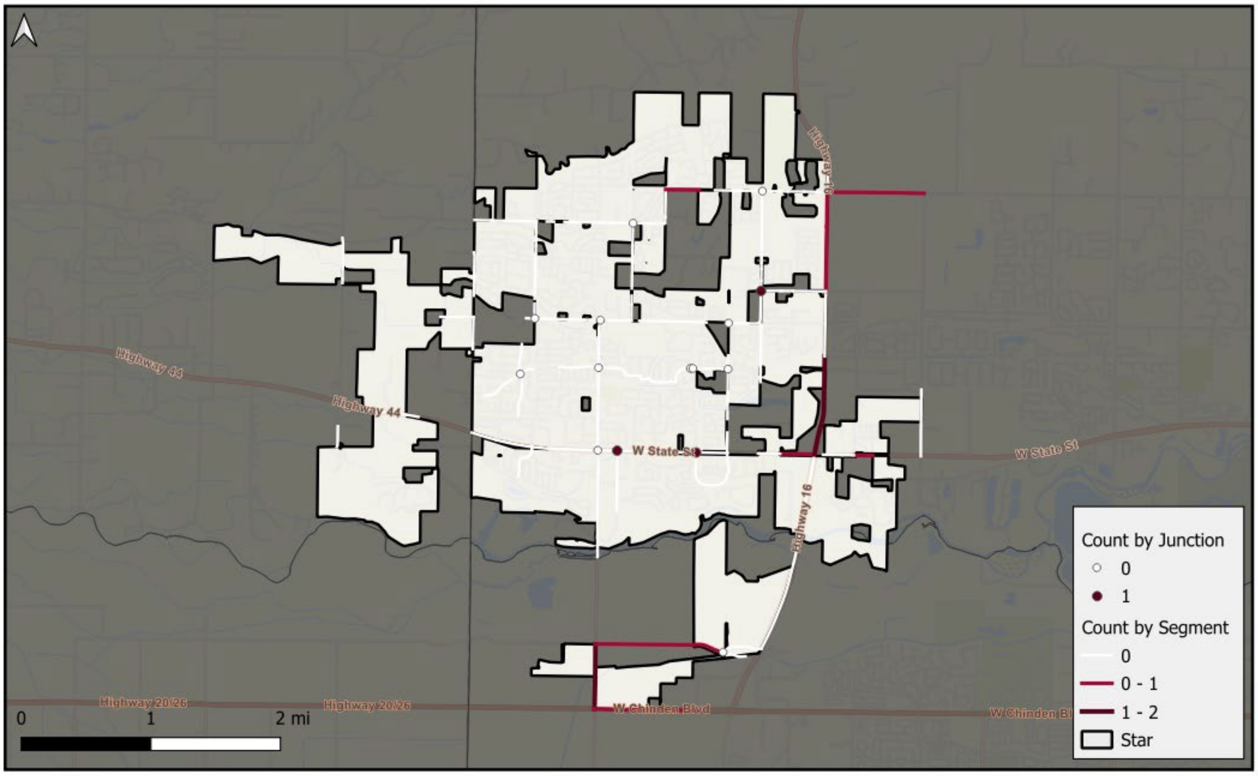
Segment	HIN Score	Location Score	KA Crash Count	Risk Score	Highest Risk Factor(s)
E Grove Ave / Hwy 95 between N 1st St and N 8th St	4.2675	0	0	8.535	High average speed, functional classification
W Grove Ave / Hwy 95 between Parma Cemetery and E McConnell Ave	4.1775	0	0	8.355	High average speed, functional classification

Junction	HIN Score	Location Score	KA Crash Count	Risk Score	Highest Risk Factor(s)
E Main St & E Grove Ave	1.578	2	1	1.156	2 lane minor
E Grove Ave & N 2nd St	1.15	0	0	2.3	2 lane minor, 4 legged
E McConnell Ave & N 2nd St	1.15	0	0	2.3	2 lane minor, 4 legged
E McConnell Ave & N Valley Rd	1.15	0	0	2.3	2 lane minor, 4 legged
Walker Rd & Parma Rd	0.578	0	0	1.156	2 lane minor

CITY OF STAR

1	14
Fatal Crash Count	Total Serious Injuries

2018 - 2022 FATAL AND SERIOUS INJURY CRASH COUNT



Crash Event Table

Crash Emphasis Area	KA Crash Count	Percent of Total KA Crashes	Member Agency Ranking
Non-Motorized-Involved	0	0%	-
Motorcycle-Involved	**6**	**40%**	**1**
Alcohol-Involved	1	6.7%	11
Drug-Involved	**1**	**6.7%**	**3**
No Protection Device	0	0%	-
Angle-Related Event	0	0%	-
Rear-End-Related Event	**6**	**40%**	**1**
Overturn-Related Event	**3**	**20%**	**1**
Angle Turning-Related Event	0	0%	-
Head-On Turning-Related Event	0	0%	-
Pedestrian-Related Event	0	0%	-
Head-On Related Event	1	6.7%	7
Bicycle-Related Event	0	0%	-
Side Swipe Same-Related Event	**1**	**6.7%**	**3**

Top Segments and Junctions

Segment	HIN Score	Location Score	KA Crash Count	Risk Score	Highest Risk Factor(s)
N Hwy 16 between Hwy 44 and W Floating Feather Rd	8.81	10	2	7.62	High average speed, functional classification
Hwy 44 between N Hamlin Ave and N Short Rd	7.3675	5	1	9.735	High average speed, functional classification
N Star Rd between W Chinden Blvd and W Joplin Rd	7.1375	10	2	4.275	High average speed
W Chinden Blvd between N Star Rd and N Mystic Creek Ave	7.0375	5	1	9.075	High average speed, functional classification
N Hwy 16 between W Broken Arrow St and W Beacon Light Rd	6.31	5	1	7.62	High average speed, functional classification

Junction	HIN Score	Location Score	KA Crash Count	Risk Score	Highest Risk Factor(s)
W State St & N Secena Springs Way	1.578	2	1	1.156	2 lane minor
W State St & N Main St	1.578	2	1	1.156	2 lane minor
W Broken Arrow Lane & N Pollard Lane	1.578	2	1	1.156	2 lane minor
W State St & N Star Rd	1.292	0	0	2.584	2 lane minor, 4 legged, signalized
W Hidden Brook Dr & N Deerhaven Way	1.15	0	0	2.3	2 lane minor, 4 legged

CITY OF WILDER

0	**0**
Fatal Crash Count	Serious Injury Crash Count

2018 - 2022 FATAL AND SERIOUS INJURY CRASH COUNT

Crash Event Table

Crash Emphasis Area	KA Crash Count	Percent of Total KA Crashes	Member Agency Ranking
Non-Motorized-Involved	0	-	-
Motorcycle-Involved	0	-	-
Alcohol-Involved	0	-	-
Drug-Involved	0	-	-
No Protection Device	0	-	-
Angle-Related Event	0	-	-
Rear-End-Related Event	0	-	-
Overturn-Related Event	0	-	-
Angle Turning-Related Event	0	-	-
Head-On Turning-Related Event	0	-	-
Pedestrian-Related Event	0	-	-
Head-On Related Event	0	-	-
Bicycle-Related Event	0	-	-
Side Swipe Same-Related Event	0	-	-

Segment	HIN Score	Location Score	KA Crash Count	Risk Score	Highest Risk Factor(s)
5th St / Hwy 95 between Patriot Way and Dove Lane	4.2675	0	0	8.535	High average speed, functional classification
Simplot Blvd between 5th St / Hwy 95 and Travis Rd	3.7875	0	0	7.575	High average speed, functional classification
5th St / Hwy 95 between Penny Lane and Patriot Way	3.525	0	0	7.05	High average speed, functional classification
Golden Gate Ave between 6th St and 4th St	2.4675	0	0	4.935	High average speed
Golden Gate Ave between Batt Corner Rd and 6th St	0.3975	0	0	0.795	Presence of a sidewalk

Junction	HIN Score	Location Score	KA Crash Count	Risk Score	Highest Risk Factor(s)
Golden Gate Ave & 5th St	1.15	0	0	2.3	2 lane minor, 4 legged

SUMMARY

Location Summary:
Fatal and serious injury crashes tend to cluster in more densely populated cities of the COMPASS region such as Boise, Meridian, and Nampa. Segments and junctions with the highest number of KA crashes are predominantly located on Principal Arterials, State, and U.S. Highways, especially those with higher AADT. Since crash counts were used to determine the high crash locations, this aligns with expectations as higher traffic volume typically correlates with higher crash frequency.

Risk / Systemic Summary:
High-Risk factors can be broken into two groups, roadway features and behavioral characteristics. Regardless of group, most crashes occur on multi-lane roads with a posted speed of 35 or 55 miles per hour. High- risk roadway features align with multi-lane State or U.S. Highways and typically host lane departure type crashes. High- risk junction features correlate with multi-lane 4-leg signalized junctions. Youthful drivers, Pedestrians, Cyclists, and Motorcycle fatal or serious crashes are disproportionately impacted compared to all crashes of the same types. Alcohol use, Drug Use, and no seatbelt usage was a high factor in the severity of the crash.

High Injury Network (HIN):
The HIN took a weighted percentage of both location and risk. Its key characteristics include a combo of excess speed and overall volume of users.

Recommended Emphasis Areas:
Using the results from the above, the project team recommends the following emphasis areas:

Emphasis Area	Details
Vulnerable Road Users	Crashes involving pedestrians, bicyclists, motorcyclists, and other non-vehicle road users.
Junction Crashes	Crashes occurring within 150 feet of a junction or intersection.
Lane Departure Crashes	Crashes involving a vehicle leaving the lane, including overturns, head-on, and sideswipes.
Seatbelt Use	Crashes where there is no use of restraint devices.
Impaired Driving	Crashes involving drivers under the influence of alcohol, drugs, or other impairing substances.

Table 12 - Recommended Emphasis Areas

FINAL LAYERS AND APPLICATION

ESRI DASHBOARD

The High Injury Network App assists each member agency by integrating the High Injury Network on the AGOL platform and allows the data to be filterable and jurisdiction specific. The application used was ESRI Dashboards as it allows filtering multiple layers. Use the left column to filter by attribute and the top right to filter by agency boundary. The hosted data and app are hosted on the ESRI COMPASS AGOL.

Click on the map or the below link to access:

https://compassidaho.maps.arcgis.com/apps/dashboards/aa2067339363456a9fcec94b0d9875fd

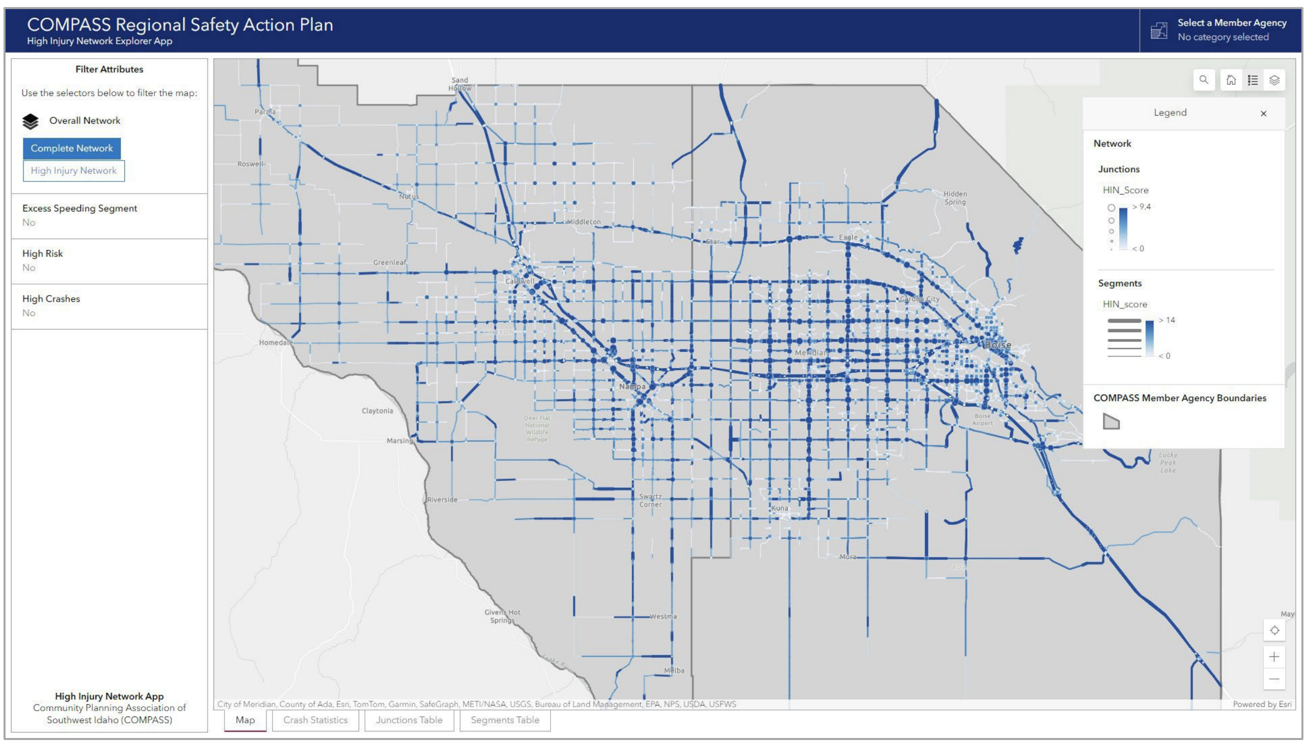


Figure 33 - Screenshot of the HIN App hosted using ESRI Dashboards

DATA SHARING

As an integral part of this memorandum, we include ArcGIS Online (AGOL) links to the key datasets used in our analysis. These datasets not only provide a comprehensive view of the data that informed our study but also provide an opportunity to build on conflated attributes and are presented for reference and further exploration.

1. **Junctions**: Link to Junctions AGOL Data
   This dataset contains the created junction layer which calculated 5-year crash frequency, crash rate, excess crashes, location score, risk score, HIN score, and demographic score.

2. **Segments**: Link to Segments AGOL Data
   This dataset contains conflated segment attributes that match the COMPASS LRS and calculated crash frequency, crash rate, excess crashes, location score, risk score, HIN score, and demographic score.

3. **Crashes**: Link to Crashes AGOL Data
   A dataset comprising incident and conflated person 2018-2022 point file records of traffic crashes, is essential for analyzing trends and identifying safety concerns.

These datasets are made available to complement the findings and discussions presented in this memorandum. They offer a detailed perspective of the data framework and support the conclusions drawn in our analysis.

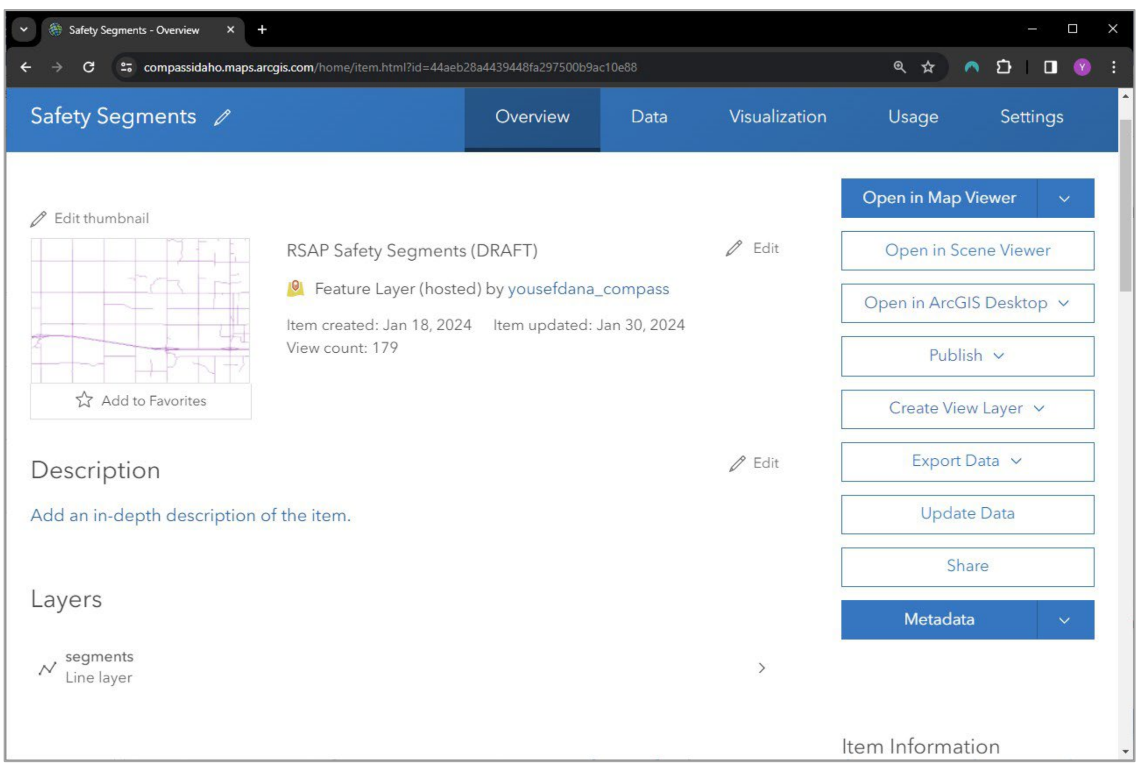


Figure 34 - Screenshot of the Segments layer hosted within COMPASS AGOL

APPENDIX

APPENDIX A: DATA SOURCES

The below table lists all of the data sources used in the analysis. The consultant team compiled and reviewed data sources related to crashes, roadways, junctions, measures of equity, and other common jurisdictional boundaries such as counties and cities. Most of the data sources are maintained in an Esri ArcGIS Online Portal and can be easily accessed through the Portal Item URL. This ensured that all sources were publicly available for use.

Name	Source Owner	Field(s) Used	Analyses Used In
ITD Crash Data 2018 – 2022	ITD	serial_number, Severity, Number_Of_Fatalities, Number_Of_Injuries, vehicle_type, contrib_circ, accident_time, road_surface_condition, other_road_conditions, weather_condition, light_condition, number_of_lanes, traffic_control_device, traffic_cntrl_function, speed_limit, work_zone_related, functional_class, road_type, road_surface, event_rel_to_rdwy, event_1_rel_to_jct, distracted_by, most_harmful_event, sex, age, protection_device, alcohol_drug_involve, vehicle_year, vehicle_make, vehicle_body_style	Location, Systemic
COMPASS Regional Centerline	COMPASS	All fields brought into final layer	Location, Systemic
County Boundaries	COMPASS	Only spatial property used	Location, Systemic
ITD Roadways	ITD	Terrain Type, Shoulder Type, Shoulder Width, Median Type, Median Width	Systemic
Instantaneous Speed	INRIX	Hourly Instantaneous Speed	Systemic
Intx_type_2022model	COMPASS	INT_TYPE	Location, Systemic
KAI_Roundabouts_Ada_Canyon_Counties	Kittelson	Type, Status, Control_Type, Other_Control_Type, Previous_Control_type, Approaches, Driveways, Functional_Class, Lane_Type, Year_Completed, ICD	Location, Systemic
Regional Signals – ITS	COMPASS	Its_device	Location, Systemic
Nonsignal Intersections – ITS	COMPASS	type	Location, Systemic

AADT2022	ITD	AADT	Location, Systemic
City boundaries	COMPASS	Only spatial property used	Location, Systemic
CIM2050 Equity Index	COMPASS	county, gencity, equityscore (considers several demographic, environmental, and transportation measures)	Demographics and Area Characteristics
Emergency Response Time	City of Boise	Average Response Time by Area	Demographics and Area Characteristics

APPENDIX B: DATA DICTIONARY

This section defines the attributes used in the posted data layers.

Segments

Attribute Name	Attribute Type	Description
OBJECTID	integer	A unique identifier for each record in the dataset.
RID_N	character	Linear Referencing System Route ID
stpredir	character	Street prefix directional (e.g., N, S, E, W).
stprefix	character	Street type prefix (e.g., Old, New).
stname	character	Street name.
stsuffix	character	Street type suffix (e.g., St, Rd, Ave).
stpostdir	character	Street postfix directional (e.g., N, S, E, W).
stpostmod	character	Additional modifiers for the street address post-directional (if applicable).
strtconcat	character	Concatenated street name including all prefixes, suffixes, and directionals.
postspeed	integer	Posted speed limit.
emergspeed	integer	Emergency vehicle speed limit.
oneway	character	Indicator if the road is one-way (and the direction if applicable).
funcclass	character	Functional classification of the road.
private	character	Indicator if the road is private.
county	character	County in which the road is located.
direction	character	General direction of the road (e.g., Northbound, Southbound).
state	integer	Identifier for state routes.
lanes	integer	Number of lanes.
city	character	City in which the road is located.
miles	numeric	Length of the road segment in miles.
AADT_mean	numeric	Annual Average Daily Traffic (not verified)
avg_speed	numeric	Average speed on segment from INRIX data
max_speed	numeric	Maximum speed on segment from INRIX data
POSTSPD	integer	Posted Speed Limit
bikefacility_type	character	Bike facility on road type
sidewalk_type	character	Presence of a sidewalk
excess_speed	numeric	Average miles per hour above posted speed limit
excess_speeding_corridor	character	Indicator of the segment having an average speed above the posted speed limit
ID_ASC_PAV_TYP_ID	integer	Pavement Type from ITD
ID_LANE_WID	integer	Lane Width from ITD
ID_MED_TYPE_NAME	character	Median Type from ITD
ID_MED_WIDTH	integer	Median Width from ITD
ID_SHLDR_TYPE_NAME	character	Shoulder Type from ITD
ID_LEFT_UNPAV_SHLDR_WID	integer	Left Unpaved Shoulder Width from ITD

L_SHOULDER_WIDTH	integer	Left Shoulder Width from ITD
ID_RGT_UNPAV_SHLDR_WID	integer	Right Unpaved Shoulder Width from ITD
R_SHOULDER_WIDTH	integer	Right Shoulder Width from ITD
ID_TERR_TYPE_NAME	character	Terrain Type from ITD
total_crash_count	integer	All crashes crash count.
total_crash_rate	numeric	All crashes crash rate. (not verified)
high_risk_low_crashes	integer	Feature has a high risk score but low historical fatal and serious crash count.
low_risk_high_crashes	integer	Feature has a low risk score but high historical fatal and serious crash count.
serious_injury_crash_count	integer	Total number of serious injury crash count.
si_non_motorized	integer	Total number of serious injury crashes involving non-motorized transportation modes (e.g., bicycles, walking).
si_motorcycle_involved	integer	Total number of serious injury crashes that involved at least one motorcycle.
si_alcohol_involved	integer	Total number of serious injury crashes where alcohol involvement by the driver was reported.
si_drug_involved	integer	Total number of serious injury crashes where drug involvement by the driver was reported.
si_alcohol_drug_involved	integer	Total number of serious injury crashes where either alcohol or drugs, or both, were involved.
si_no_protection_device	integer	Total number of serious injury crashes where no protective devices were used (e.g., seatbelts, helmets).
si_angle_event	integer	Total number of angle collision serious injury crashes.
si_rear_end_event	integer	Total number of rear-end collision serious injury crashes.
si_overturn_event	integer	Total number of serious injury crashes where a vehicle overturned.
si_angle_turning_event	integer	Total number of serious injury crashes involving angle collisions with turning vehicles.
si_head_on_turning_event	integer	Total number of serious injury crashes involving head-on collisions with turning vehicles.
si_pedestrian_event	integer	Total number of serious injury crashes involving a pedestrian.
si_head_on_event	integer	Total number of head-on collision serious injury crashes.
si_pedalcycle_event	integer	Total number of serious injury crashes involving a pedal cycle (bicycle).
si_side_swipe_same_event	integer	Total number of side-swipe serious injury crashes involving vehicles traveling in the same direction.
fatal_crash_count	integer	Total number of fatal crashes.
fatal_non_motorized	integer	Total number of fatal crashes involving non-motorized transportation modes (e.g., bicycles, walking).
fatal_motorcycle_involved	integer	Total number of fatal crashes that involved at least one motorcycle.

fatal_alcohol_involved	integer	Total number of fatal crashes where alcohol involvement by the driver was reported.
fatal_drug_involved	integer	Total number of fatal crashes where drug involvement by the driver was reported.
fatal_alcohol_drug_involved	integer	Total number of fatal crashes where either alcohol or drugs, or both, were involved.
fatal_no_protection_device	integer	Total number of fatal crashes where no protective devices were used (e.g., seatbelts, helmets).
fatal_angle_event	integer	Total number of angle collision fatal crashes.
fatal_rear_end_event	integer	Total number of rear-end collision fatal crashes.
fatal_overturn_event	integer	Total number of fatal crashes where a vehicle overturned.
fatal_angle_turning_event	integer	Total number of fatal crashes involving angle collisions with turning vehicles.
fatal_head_on_turning_event	integer	Total number of fatal crashes involving head-on collisions with turning vehicles.
fatal_pedestrian_event	integer	Total number of fatal crashes involving a pedestrian.
fatal_head_on_event	integer	Total number of head-on collision fatal crashes.
fatal_pedalcycle_event	integer	Total number of fatal crashes involving a pedal cycle (bicycle).
fatal_side_swipe_same_event	integer	Total number of side-swipe fatal crashes involving vehicles traveling in the same direction.
non_motorized_sum	integer	Total number of fatal and serious injury crashes involving non-motorized transportation modes (e.g., bicycles, walking).
motorcycle_involved_sum	integer	Total number of fatal and serious injury crashes that involved at least one motorcycle.
alcohol_involved_sum	integer	Total number of fatal and serious injury crashes where alcohol involvement by the driver was reported.
drug_involved_sum	integer	Total number of fatal and serious injury crashes where drug involvement by the driver was reported.
alcohol_drug_involved_sum	integer	Total number of fatal and serious injury crashes where either alcohol or drugs, or both, were involved.
no_protection_device_sum	integer	Total number of fatal and serious injury crashes where no protective devices were used (e.g., seatbelts, helmets).
angle_event_sum	integer	Total number of angle collision fatal and serious injury crashes.
rear_end_event_sum	integer	Total number of rear-end collision fatal and serious injury crashes.
overturn_event_sum	integer	Total number of fatal and serious injury crashes where a vehicle overturned.
angle_turning_event_sum	integer	Total number of fatal and serious injury crashes involving angle collisions with turning vehicles.
head_on_turning_event_sum	integer	Total number of fatal and serious injury crashes involving head-on collisions with turning vehicles.

pedestrian_event_sum	integer	Total number of fatal and serious injury crashes involving a pedestrian.
head_on_event_sum	integer	Total number of head-on collision fatal and serious injury crashes.
pedalcycle_event_sum	integer	Total number of fatal and serious injury crashes involving a pedal cycle (bicycle).
side_swipe_same_event_sum	integer	Total number of side-swipe fatal and serious injury crashes involving vehicles traveling in the same direction.
serious_injury_crash_rate	numeric	Fatal Crash Rate (no quality control conducted / not verified)
fatal_crash_rate	numeric	Serious Injury Crash Rate (no quality control conducted / not verified)
fatal_group	character	High, Medium, and Low classification of number of fatal crashes
injury_group	character	High, Medium, and Low classification of number of serious injury crashes
ka_crashes	integer	Total number of fatal and serious injury crashes
ka_crash_rate	numeric	Fatal and Serious Injury Crash Rate (no quality control conducted / not verified)
ka_group	character	High, Medium, and Low classification of number of fatal and serious injury crashes
expected_crashes	numeric	Average expected crashes based on functional classification
excess	numeric	Excess count of crashes based on expected crashes
excess_pct	numeric	Percent of excess crashes compared to expected crashes
location_score	integer	Location score depending on total amount of fatal and serious injury crashes
risk_attr_score1	numeric	Systemic score for the presence of Speeding Segment
risk_attr_score2	numeric	Systemic score for the presence of Average Speed is >=30 Miles Per Hour
risk_attr_score3	numeric	Systemic score for the presence of Functional Classification is State or U.S. Highway
risk_attr_score4	numeric	Systemic score for the presence of Number of Lanes is 5 Lanes or greater
risk_attr_score5	numeric	Systemic score for the presence of Posted Speed is 35 or 55 Miles Per Hour
risk_attr_score6	numeric	Systemic score for the presence of Presence of a Sidewalk
risk_attr_score7	numeric	Systemic score for the presence of Right Shoulder Width is 0, 8, 10 Feet
risk_attr_score8	numeric	Systemic score for the presence of Road Terrian Type is Flat
risk_attr_score9	numeric	Systemic score for the presence of Shoulder Type is Surfaced with Bituminous Material
risk_attr_score10	numeric	Systemic score for the presence of Left Unpaved Shoulder Width is 0 Feet

risk_attr_score11	numeric	Systemic score for the lack of bike facility presence
risk_attr_score12	numeric	Systemic score for the presence of Right Unpaved Shoulder Width is 0 Feet
risk_attr_score13	numeric	Systemic score for the presence of Median Width is 0 Feet
risk_attr_score14	numeric	Systemic score for the presence of Median Type is None
risk_attr_score15	numeric	Systemic score for the presence of Left Shoulder Width is 0 Feet
risk_score	numeric	Systemic / Risk Analysis Score
equityscore_max	integer	Max value of intersecting equity index score
HIN_score	numeric	High Injury Network score
HIN	integer	High Injury Network indicator
HIN_Demographic	integer	High Injury Network indicator focused on segments that intersect TAZ's with an Equity Index of 7 or greater
HIN_non_state	character	High Injury Network indicator focused on non-state segments
HIN_non_motorized	character	High Injury Network indicator focused on non-motorized crashes

Junctions

Attribute Name	Attribute Type	Description
OBJECTID	integer	A unique identifier for each record in the dataset.
funcclass	character	Functional classification of the highest intersecting road.
state	integer	Identifier if state routes intersect the junction.
int_type	character	Intersection Type
total_crash_count	integer	All crashes crash count.
AADT_mean	numeric	Mean Annual Average Daily Traffic (not verified)
AADT_minor	integer	Minor Leg Annual Average Daily Traffic (not verified)
AADT_major	integer	Major Leg Annual Average Daily Traffic (not verified)
lanes_minor	integer	Minor Leg Number of Lanes
lanes_major	integer	Major Leg Number of Lanes
legs	integer	Number of Legs
tpopcensus	integer	Population from Census
tazid_current	integer	TAZ ID
high_risk_low_crashes	integer	Feature has a high risk score but low historical fatal and serious crash count.
low_risk_high_crashes	integer	Feature has a low risk score but high historical fatal and serious crash count.
serious_injury_crash_count	integer	Total number of serious injury crash count.
si_non_motorized	integer	Total number of serious injury crashes involving non-motorized transportation modes (e.g., bicycles, walking).
si_motorcycle_involved	integer	Total number of serious injury crashes that involved at least one motorcycle.
si_alcohol_involved	integer	Total number of serious injury crashes where alcohol involvement by the driver was reported.
si_drug_involved	integer	Total number of serious injury crashes where drug involvement by the driver was reported.
si_alcohol_drug_involved	integer	Total number of serious injury crashes where either alcohol or drugs, or both, were involved.
si_no_protection_device	integer	Total number of serious injury crashes where no protective devices were used (e.g., seatbelts, helmets).
si_angle_event	integer	Total number of angle collision serious injury crashes.
si_rear_end_event	integer	Total number of rear-end collision serious injury crashes.
si_overturn_event	integer	Total number of serious injury crashes where a vehicle overturned.
si_angle_turning_event	integer	Total number of serious injury crashes involving angle collisions with turning vehicles.
si_head_on_turning_event	integer	Total number of serious injury crashes involving head-on collisions with turning vehicles.
si_pedestrian_event	integer	Total number of serious injury crashes involving a pedestrian.
si_head_on_event	integer	Total number of head-on collision serious injury crashes.

si_pedalcycle_event	integer	Total number of serious injury crashes involving a pedal cycle (bicycle).
si_side_swipe_same_event	integer	Total number of side-swipe serious injury crashes involving vehicles traveling in the same direction.
fatal_crash_count	integer	Total number of fatal crashes.
fatal_non_motorized	integer	Total number of fatal crashes involving non-motorized transportation modes (e.g., bicycles, walking).
fatal_motorcycle_involved	integer	Total number of fatal crashes that involved at least one motorcycle.
fatal_alcohol_involved	integer	Total number of fatal crashes where alcohol involvement by the driver was reported.
fatal_drug_involved	integer	Total number of fatal crashes where drug involvement by the driver was reported.
fatal_alcohol_drug_involved	integer	Total number of fatal crashes where either alcohol or drugs, or both, were involved.
fatal_no_protection_device	integer	Total number of fatal crashes where no protective devices were used (e.g., seatbelts, helmets).
fatal_angle_event	integer	Total number of angle collision fatal crashes.
fatal_rear_end_event	integer	Total number of rear-end collision fatal crashes.
fatal_overturn_event	integer	Total number of fatal crashes where a vehicle overturned.
fatal_angle_turning_event	integer	Total number of fatal crashes involving angle collisions with turning vehicles.
fatal_head_on_turning_event	integer	Total number of fatal crashes involving head-on collisions with turning vehicles.
fatal_pedestrian_event	integer	Total number of fatal crashes involving a pedestrian.
fatal_head_on_event	integer	Total number of head-on collision fatal crashes.
fatal_pedalcycle_event	integer	Total number of fatal crashes involving a pedal cycle (bicycle).
fatal_side_swipe_same_event	integer	Total number of side-swipe fatal crashes involving vehicles traveling in the same direction.
non_motorized_sum	integer	Total number of fatal and serious injury crashes involving non-motorized transportation modes (e.g., bicycles, walking).
motorcycle_involved_sum	integer	Total number of fatal and serious injury crashes that involved at least one motorcycle.
alcohol_involved_sum	integer	Total number of fatal and serious injury crashes where alcohol involvement by the driver was reported.
drug_involved_sum	integer	Total number of fatal and serious injury crashes where drug involvement by the driver was reported.
alcohol_drug_involved_sum	integer	Total number of fatal and serious injury crashes where either alcohol or drugs, or both, were involved.
no_protection_device_sum	integer	Total number of fatal and serious injury crashes where no protective devices were used (e.g., seatbelts, helmets).
angle_event_sum	integer	Total number of angle collision fatal and serious injury crashes.

rear_end_event_sum	integer	Total number of rear-end collision fatal and serious injury crashes.
overturn_event_sum	integer	Total number of fatal and serious injury crashes where a vehicle overturned.
angle_turning_event_sum	integer	Total number of fatal and serious injury crashes involving angle collisions with turning vehicles.
head_on_turning_event_sum	integer	Total number of fatal and serious injury crashes involving head-on collisions with turning vehicles.
pedestrian_event_sum	integer	Total number of fatal and serious injury crashes involving a pedestrian.
head_on_event_sum	integer	Total number of head-on collision fatal and serious injury crashes.
pedalcycle_event_sum	integer	Total number of fatal and serious injury crashes involving a pedal cycle (bicycle).
side_swipe_same_event_sum	integer	Total number of side-swipe fatal and serious injury crashes involving vehicles traveling in the same direction.
total_crash_rate	numeric	All crashes crash rate. (not verified)
serious_injury_crash_rate	numeric	Fatal Crash Rate (no quality control conducted / not verified)
fatal_crash_rate	numeric	Serious Injury Crash Rate (no quality control conducted / not verified)
fatal_group	character	High, Medium, and Low classification of number of fatal crashes
injury_group	character	High, Medium, and Low classification of number of serious injury crashes
ka_crashes	integer	Total number of fatal and serious injury crashes
ka_crash_rate	numeric	Fatal and Serious Injury Crash Rate (no quality control conducted / not verified)
ka_group	character	High, Medium, and Low classification of number of fatal and serious injury crashes
location_score	integer	Location score depending on total amount of fatal and serious injury crashes
risk_attr_score1	numeric	Systemic score for the presence of 5 or greater lanes on the major leg
risk_attr_score2	numeric	Systemic score for the presence of 2 lanes on the minor leg
risk_attr_score3	numeric	Systemic score for the presence of 4 legs
risk_attr_score4	numeric	Systemic score for the presence of signalization
risk_score	numeric	Systemic / Risk Analysis Score
equityscore_max	integer	Max value of intersecting equity index score
HIN_Score	numeric	High Injury Network score
HIN	integer	High Injury Network indicator
HIN_Demographic	integer	High Injury Network indicator focused on segments that intersect TAZ's with an Equity Index of 7 or greater
HIN_non_state	character	High Injury Network indicator focused on non-state segments
HIN_non_motorized	character	High Injury Network indicator focused on non-motorized crashes

APPENDIX C: DETAILED METHODOLOGY

LOCATION-SPECIFIC ANALYSIS

- The location-specific analysis involved creating three separate layers:
  - The combined and clean crash data layer covering the last five years,
  - The junction layer with junction-related fields and junction-related crashes joined to each junction, and
  - The segment layer with roadway-related fields and non-junction-related crashes joined to each segment.
- The following sections walk through the steps used to create each of these layers.
- Crashes
  - Row bind the ITD crash data from 2018, 2019, 2020, 2021, and 2022. Each year is a separate dataset.
  - For attributes that have multiple columns (i.e. contributing circumstance is broken out into contrib_circ_1, contrib_circ_2, and contrib_circ_3), combine together into a single column with each instance separated by a comma.
    - Columns where this was performed were contributing circumstances, weather conditions, and speed limits.
  - Ensure there is only one row per crash using the serial_number field.
  - Replace all “None’s”, “NA’s”, and “N/A” with a blank entry throughout the dataset.
  - Using the COMPASS area county boundaries, clip the crashes to only include those within the COMPASS boundary.
  - Create binary fields using the following crash field, denoting whether or not a crash was related to the relevant variable:
    - Non-motorized: vehicle_type includes ‘Pedestrian’ or ‘Pedal cycle’
    - Motorcycle-involved: vehicle_type includes ‘Motorcycle’
    - Alcohol-involved: alcohol_drug_involved includes ‘Alcohol’ or ‘Both’
    - Drug-involved: alcohol_drug_involved includes ‘Drugs’ or ‘Both’
    - Alcohol or drug-involved: alcohol_drug_involved ‘Alcohol’, ‘Drugs’, or ‘Both’
    - No protection device: protection_device includes ‘None’
    - Angle-related event: most_harmful_event includes ‘Angle’
    - Rear end-related event: most_harmful_event includes ‘Rear-End’
    - Overturn-related event: most_harmful_event includes ‘Overturn
    - Angle-related event: most_harmful_event includes ‘Angle’
    - Angle turning-related event: most_harmful_event includes ‘Angle Turning’
    - Head-on turning-related event: most_harmful_event includes ‘Head-On Turning
    - Pedestrian-related event: most_harmful_event includes ‘Pedestrian’
    - Head-on-related event: most_harmful_event includes ‘Head-On
    - Pedal cycle-related event: most_harmful_event includes ‘Pedal cycle
    - Side swipe same-related event: most_harmful_event includes ‘Side swipe same
- Junctions

- Creating the Junctions Layer
  - As the Intx_type_2022model layer seemed to have missing junctions, a full junctions layer was created spatially and then attributes from the various junction layers, including Intx_type_2022model, were joined to this created layer. The following steps were used to create the junction layer.
    - Start with a version of the roadway network (COMPASS Regional Centerline) filtered by functional class. Only include the following functional classifications: Collector, Interstate, Minor Arterial, Principal Arterial, Ramp, State Highway, U.S. and Highway.
    - Perform a complete dissolve of the roadway network (COMPASS Regional Centerline). This combines all individual line segments into one segment.
    - Run the 'Multipart to singleparts' tool on the dissolved roadway network. This splits back out the dissolved roadway network into individual segments but this time each segment is a full roadway rather than one roadway being broken out into many small segments. This step was needed so that junctions were not identified at each individual segment's beginning and end point along a roadway.
  - Run the 'Line intersections' tool which creates points at each instance of an intersection.
  - Clip the points layer created in the previous step to the COMPASS county boundaries layer.
  - Remove any duplicate geometries.
  - With the created junction layer, join attributes from the Intx_type_2022model layer by performing a 'Join to nearest' spatial join with a 500 ft cutoff. This means each point in the Intx_type_2022model layer gets joined to its closest created junction point, and if no Intx_type_2022model point exists within 500 ft of a created junction point then this junction does not have data in the Intx_type_2022model layer. The attributes brought over from Intx_type_2022model are listed in Table 1 of the memo.
  - Perform the same step above between the created junction layer and the roundabouts layer (KAI_Roundabouts_Ada_Canyon_Counties). The attributes brought over are listed in Table 1.
- Spatial Joining
  - Buffer the created junction layer by 150 feet following direction from Highway Safety Manual.
  - Perform a one-to-many spatial join between the buffered junctions and the crash data layer, summing up the crash data for each junction. Sum up the total number of crashes, the total number of serious injury crashes, the total number of fatal crashes, and the number of fatal and/or serious injury crashes involving a non-motorized vehicle, a motorcycle, alcohol, drugs, alcohol or drugs, no protection devices, angle event, rear end event, overturn event, angle turning event, head on turning event, pedestrian event, head-on event, pedal cycle event, and sideswipe same event.
  - Create a field that sums up the total number of serious injury crashes and fatal crashes to create a KA crash sum.
  - Clean up the roundabouts.
    - Each roundabout has multiple points per roundabout, one at each entry and exit point. To summarize crash data per roundabout vs per entry/exit point, perform the following steps.
      - Create a filtered version of the junction layer that just includes the roundabout points.

- Dissolve the points using the roundabout identifier fields. This will create one collection of points per roundabout.
- Find the centroid of each collection of dissolved roundabout points.
- Snap the centroid to the roadway network.
- Ensure crash attributes have been summarized at the roundabout level.
- Remove all previous roundabout rows from the junction layer, and then merge (row bind) the clean roundabout points.

- Perform a spatial join between the junctions buffered by 150 feet to the ITS signals and non-signals layers to pull in attributes where they exist. The attributes brought over are listed in Table 1.
- Buffer the AADT layer by 150 feet and join to junctions taking the average AADT. Calculate total, fatal, and serious injury crash rates by dividing the number of crashes by the AADT and multiplying by 1,000.

- Using the KA crash sum field, find four Jenks breaks in all of the non-zero values to create KA crash sum groups of 'Low', 'Medium', and 'High'. All junctions with zero KA crashes will have a value of 'None'.

- Roadway Segments
  - The junctions layer needed to be created first in order to identify all junction-related crashes. To join the roadway segments (COMPASS Regional Centerline layer) to the non-junction-related crashes the following steps were performed.
    - Clip the roadway network to the COMPASS boundary.
    - Using the junction layer buffered by 150 feet, find the spatial difference in the full crash layer and the buffered junctions. The resulting crash points will be those outside of the 150-foot buffer i.e. the non-junction-related crashes.
    - Buffer the non-junction related crashes by 150 ft just to ensure a large enough buffer to join the crash points to the segments.
    - Perform a one-to-many spatial join between the roadway network and the buffered crash points. Again summarizing the crash data fields at the segment level.
    - Create a field that sums up the total number of serious injuries and fatal crashes to create a KA crash sum.
    - Buffer the AADT layer by 150 feet and join to points taking the average AADT. Calculate total, fatal, and serious injury crash rates by dividing the number of crashes by the AADT and multiplying by 1,000.
  - Using the KA crash sum field, find four Jenks breaks in all of the non-zero, non-Interstate or Ramp values to create KA crash sum groups of 'Low', 'Medium', and 'High'. All segments with zero crashes will have a value of 'None'. All segments of functional classification 'Interstate' or 'Ramp' are assigned a value of 'Low' to ensure the 'High' group is not only made up of Interstate segments.
  - An excess number and percentage of KA crashes were also calculated for each segment.
      - An expected number of crashes was determined for each functional classification by first dividing the total number of KA crashes by the total mileage. This expected crashes per length was then multiplied by each segment's length to determine the expected number of crashes for that segment.
      - The excess number of crashes was found by subtracting the expected number of crashes from the actual number of KA crashes.
      - The percent of excess crashes was also found by dividing the number of excess crashes by the expected number of crashes.

SYSTEMIC-BASED ANALYSIS

Data Preparation

1. Data Loading and Initial Processing
    - Utilized sf to load spatial data for road segments and junctions.
    - Converted data frames to data. tables for efficient data manipulation.
2. Handling of Missing Values and Zero Values
    - Postspeed and lanes with zero values were set to NA to correctly handle missing or unrecorded data.
    - Attributes such as bikefacility_type and excess_speed with NA or zero values were replaced with 'no_bike_facility' and NA, respectively, to accurately represent their absence.
3. Subset and Variable Selection
    - Data were subsetted to exclude 'Interstate' from funcclass to focus on relevant road segments and junctions.
    - Selected variables for analysis based on their relevance to each model's focus.
4. Conversion to Factors
    - Categorical variables like funcclass, sidewalk, bikefacility_type, and various ID-based attributes were converted to factors to enable the Random Forest algorithm to properly interpret these as categorical features rather than numerical values.

Random Forest Model Configurations

1. All Attributes Combined for Segments Model
    - Variables: ka_crashes, postspeed, funcclass, lanes, sidewalk, bikefacility_type, avg_speed, excess_speed, and several ID-based geometric attributes.
    - NA Handling: Removed records with any NA in the selected variables.
    - Factor Conversion: For categorical variables such as funcclass, sidewalk, bikefacility_type, and ID-based attributes.
2. All Attributes Combined for Junctions Model
    - Variables: ka_crashes, int_type, legs, lanes_major, lanes_minor.
    - NA Handling: Excluded records with NA values.
    - Factor Conversion: type was converted to a factor.
3. COMPASS Data Only Model
    - Variables: Focused on ka_crashes, postspeed, funcclass, lanes, sidewalk, bikefacility_type, avg_speed, excess_speed.
    - NA Handling: Similar strategy of removing or converting NAs.
    - Factor Conversion: Applied to funcclass, sidewalk, and bikefacility_type.
4. ITD Data Only (Geometric Attributes) Model
    - Variables: Geometric attributes like ID_MED_TYPE_NAME, ID_MED_WIDTH, and shoulder-related variables.
    - NA Handling: Omitted records with missing values in these attributes.
    - Factor Conversion: Geometric attributes converted to factors.
5. Non-Motorized Crashes Model
    - Variables: Similar to the first model but focuses on non_motorized_sum instead of ka_crashes.
    - NA Handling: Employed the same strategy for handling NAs.
    - Factor Conversion: Same approach in converting categorical variables to factors.

Model Execution

- For each model, the **randomForest** function was used, specifying the dependent variable (e.g., **ka_crashes** or **non_motorized_sum**) and a series of independent variables based on the model's focus.
- The **importance = TRUE** parameter was included to identify the most significant predictors in each model.

Technical Notes

- The approach acknowledges the importance of preprocessing data for machine learning, especially in handling missing values and correctly treating categorical variables for Random Forest analysis.
- By differentiating the models based on data source and crash type focus, the methodology allows for a nuanced analysis of roadway safety, facilitating targeted interventions based on the identified predictors.

APPENDIX D: TIP PROJECTS OVERLAPPING THE HIN

STIP Project Type	STIP Project Name	STIP Project Description
Safety	Railroad Crossing, Lemp Lane, Canyon County	Install signals and gates at the Union Pacific railroad crossing at Lemp Lane in Canyon County between the Cities of Parma and Notus. Local match from State Rail Protection Account.
Safety	Railroad Crossing, Benjamin Lane, Boise	Install crossing signal, including constant warning detection, at the Boise Valley Railroad crossing at Benjamin Lane in the City of Boise. Local match from State Rail Protection Account.
Paved Pathway	Pathway, SH-55 (Eagle Road), Franklin Road to Pine Ave, Meridian	Construct a lighted ten-foot-wide concrete multi-use pathway along the east side of State Highway 55 (Eagle Road), from Franklin Road to Pine Avenue in the City of Meridian. Reconstruct the existing sidewalk adjacent to the Shell gas station to the ten-foot width. The project will include an eight-foot separation between the roadway and pathway where possible.
Paved Pathway	Pathway, SH-55 (Eagle Road), Jasmine to McMillan, West Side, Boise	Design and construct a ten-foot wide multi-use pathway adjacent to State Highway 55 (Eagle Road) on the west side between Jasmine Lane to McMillian Road. Improvements include widening existing pathway and filling gaps where a pathway is missing. The pathway will increase the safety of bicyclists and pedestrians along the corridor.
Paved Pathway	Pathway, SH-55 (Eagle Road), McMillan to US 20/26 (Chinden) West Side, Boise	Design and construct a ten-foot shared pedestrian and bicycle pathway on the west side of State Highway 55 (Eagle Road), from McMillan Road to US 20/26 (Chinden Boulevard) in the City of Boise.
Paved Pathway	Pedestrian Improvements, US 20/26 (Chinden) at 43rd St, Garden City	Install a Pedestrian Hybrid Beacon-controlled crossing on US 20/26 (Chinden Boulevard) at 43rd Street in the City of Garden City.
Widening	US 20/26, Middleton Rd to Star Rd, Eastbound & Westbound, Ada and Canyon Counties	Widen eastbound and westbound US 20 from Middleton Road near the City of Caldwell to Star Road near the City of Star. Improvements include two travel lanes in each direction and a center turn lane with two way left turns. Intersection improvements at the mile will include signalization.
Widening	US 20/26, I-84 to Middleton Road, Canyon County	Widen US 20/26 from Interstate 84 to Middleton Road to six lanes in the City of Caldwell. Work includes a continuous median traffic separator with u-turn opportunities, and installation of two additional traffic signals.

STIP Project Type	STIP Project Name	STIP Project Description
Safety	Railroad Crossing, Lemp Lane, Canyon County	Install signals and gates at the Union Pacific railroad crossing at Lemp Lane in Canyon County between the Cities of Parma and Notus. Local match from State Rail Protection Account.
Widening	SH-55 (Karcher Road), Farmway Rd to Middleton Rd, Canyon County	Widen State Highway 55 (Karcher Road) from Farmway Road to Middleton Road in Canyon County. The project will add one travel lane in each direction to improve mobility and reduce crashes along the corridor. Work includes a continuous median traffic separation, with signalizations intersections at each mile, and u-turn opportunities at the half-mile.
Widening	US 20/26 (Chinden), Phyllis Canal Bridge to SH-16, Ada County	Widen US 20/26 (Chinden Boulevard) from the Phyllis Canal Bridge (just west of Star Road) to State Highway 16 in Ada County. The project will add one additional lane in both directions and add bicycle and pedestrian facilities.
Widening	Ustick Rd, McDermott Rd to Black Cat Rd	Widen Ustick Road from two lanes to five lanes from McDermott Road to Black Cat Road in the City of Meridian including enhanced pedestrian and bicycle facilities on both sides of the roadway.
Widening	Linder Rd, SH-44 (State St) to Floating Feather Rd, Eagle	Widen Linder Road from State Highway 44 (State Street) to Floating Feather Road in the City of Eagle to five lanes with enhanced pedestrian and bicycle facilities on both sides of the roadway. Project includes removing and replacing two bridges (Middleton Canal and Foothills Ditch).
Widening	Linder Rd, US 20/26 (Chinden) to SH-44 (State), Ada County	Widen Linder Road from US 20/26 (Chinden Boulevard) to State Highway 44 (East State Street) in Ada County to five lanes with detached multi-use pathways on Linder Road from Chinden Boulevard to 1,000 feet north of Artesian Road. Right-of-way will be acquired for an ultimate seven-lane buildout. Project includes widening three bridges.
Widening	US 20/26 (Chinden), Linder Rd to Locust Grove, Meridian and Eagle	Widen US 20/26 (Chinden Boulevard) from Linder Road to Locust Grove Road in the Cities of Meridian and Eagle. An additional lane in both directions will improve congestion issues. Work also includes improvements to existing intersections. Project is funded and constructed by a private developer using State Tax Anticipated Revenue (STAR) funds.
Widening	Ustick Road, Ten Mile Road to Linder Road, Meridian	Widen Ustick Road from Ten Mile Road to Linder Road in the City of Meridian to five lanes. The project includes curb, gutter, sidewalk, and a level three bicycle facility. The concept-level design will further clarify the scope of the project.

STIP Project Type	STIP Project Name	STIP Project Description
Safety	Railroad Crossing, Lemp Lane, Canyon County	Install signals and gates at the Union Pacific railroad crossing at Lemp Lane in Canyon County between the Cities of Parma and Notus. Local match from State Rail Protection Account.
Widening	Franklin Road, McDermott Road to Black Cat Road, Ada County	Widen Franklin Road from McDermott Road to Black Cat Road in Ada County including enhanced pedestrian and bicycle facilities on both sides of the roadway.
Widening	Linder Road Overpass, Overland Road to Franklin Road, Meridian	Widen Linder Road from Franklin Road to Overland Road from two lanes to five lanes with curb, gutter, sidewalk, and multi-use pathways for pedestrians and bicyclists. This project will include two pedestrian hybrid beacons at the intersection of Linder Road and Waltman Street and Linder Road and Gander Drive. The Ten Mile Creek and Kennedy Lateral bridges will also be replaced. Work includes construction of a new Interstate Overpass which will include four travel lanes and a separated multi-use pathway.
Widening	Fairview Avenue, Locust Grove Road to SH-55 (Eagle Road), Meridian	Widen Fairview Avenue from Locust Grove Road to State Highway 55 (Eagle Road) to seven lanes in the City of Meridian. Project includes enhanced pedestrian and bicycle facilities on both sides of the roadway.
Widening	Lake Hazel Road, Five Mile Road to Maple Grove Road, Ada County	Widen Lake Hazel Road from Five Mile Road to Maple Grove Road in Ada County to five lanes including enhanced pedestrian and bicycle facilities on both sides of the roadway.
Widening	Five Mile Road Overpass and Widening, Boise	Widen the Five Mile Road overpass over Interstate 84, including widening the bridge from two lanes to four lanes, widening Five Mile Road from two lanes to five lanes from just north of Overland Road to Franklin Road in the City of Boise, and adding curb, gutter, sidewalks, and enhanced bike lanes on both sides of the roadway.
Widening	SH-55, Beacon Light Road to Brookside Lane, Ada County	Widen State Highway 55 from Beacon Light Road just north of the City of Eagle to Brookside Lane in Ada County. The project will reduce congestion and improve safety.
Widening	I-84B (Garrity Boulevard) and Stamm Lane Intersection Improvements, Nampa	Widen Interstate 84B (Garrity Boulevard) at the Stamm Lane intersection in the City of Nampa to improve safety and mobility.

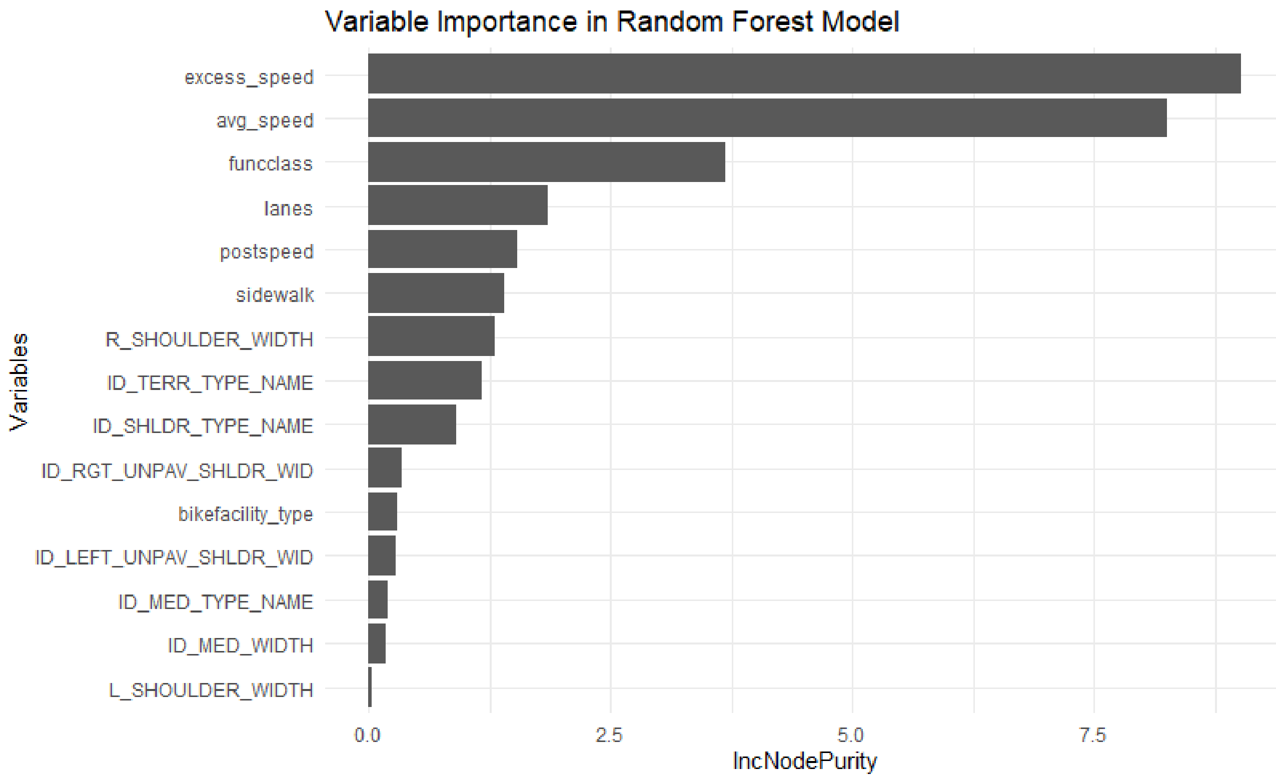
APPENDIX E: SYSTEMIC-BASED RISK ANALYSIS RANDOM FOREST MACHINE LEARNING MODELS

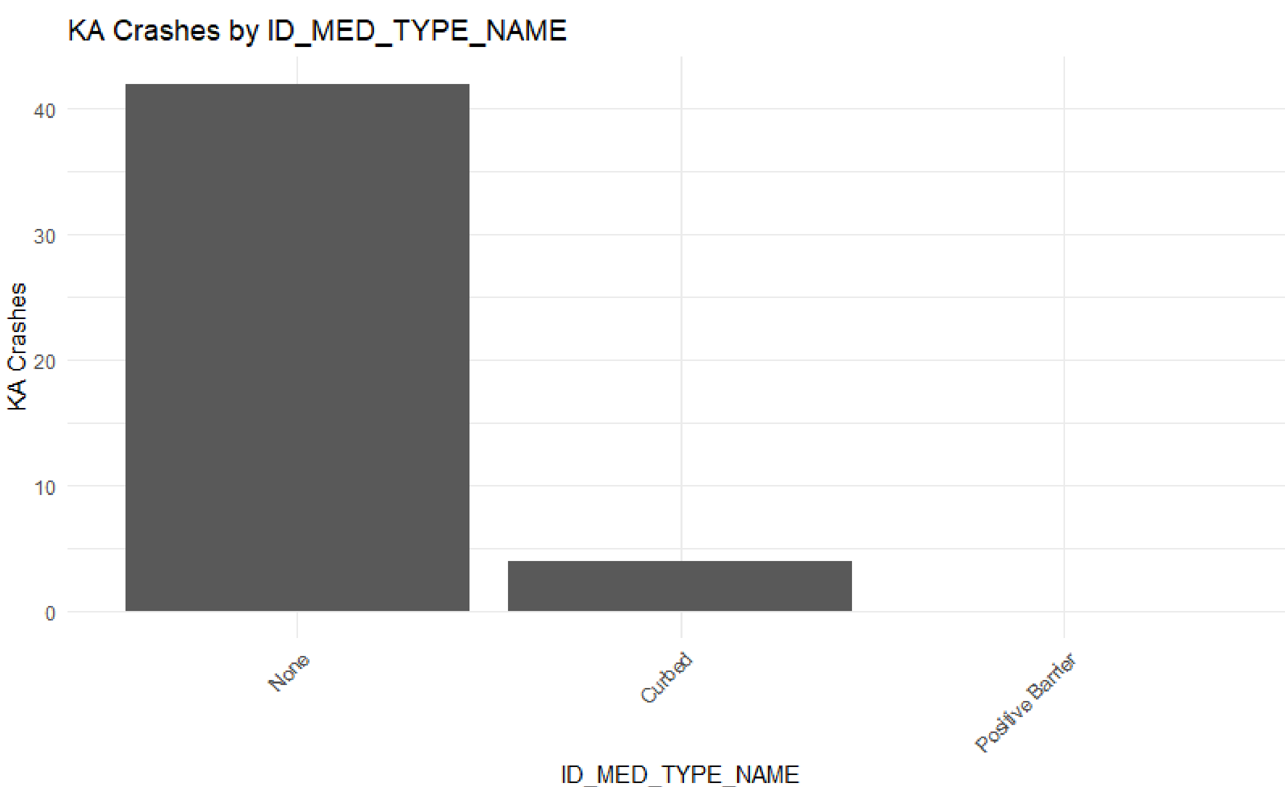
The following plots retained the field names in plot headers, please find the description of each below:

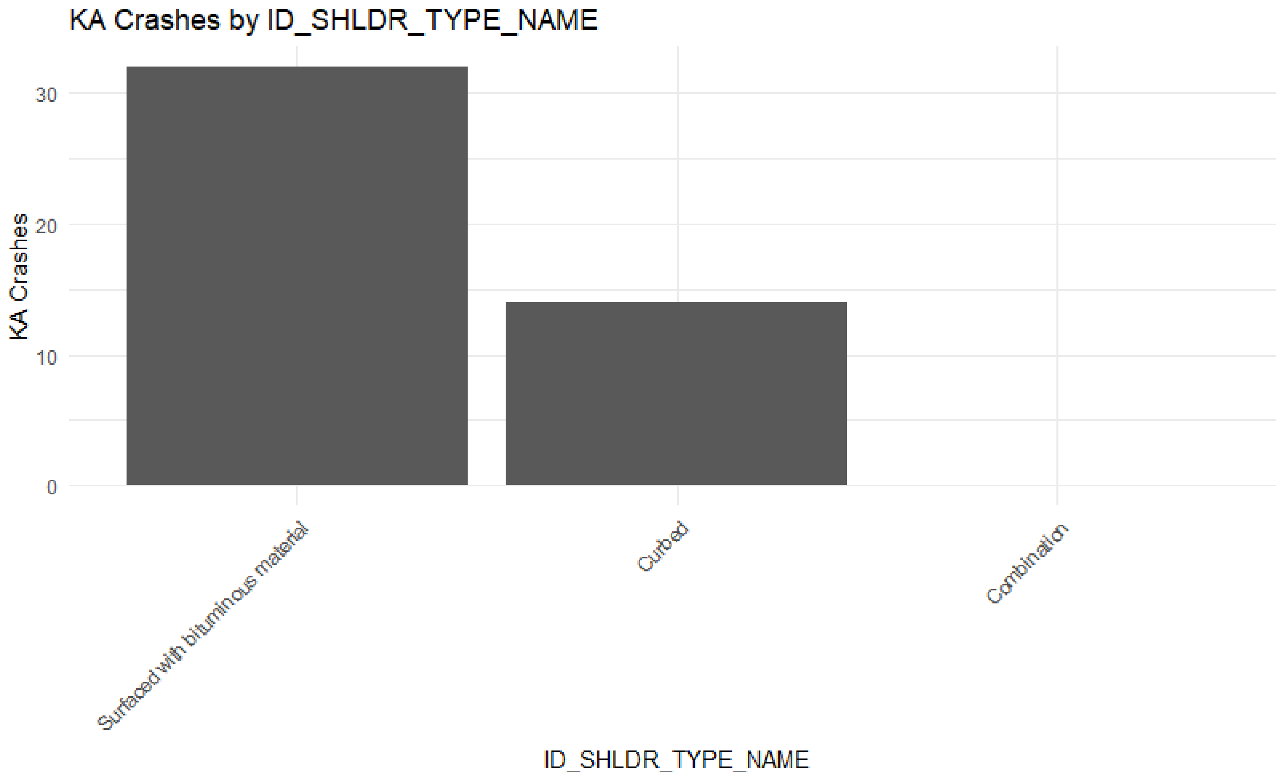
Field Name	Description
excess_speed	Average INRIX Speed is greater than the Posted Speed
avg_speed	Average INRIX Speed
funcclass	Functional Classification
lanes	Number of Lanes
postspeed	Posted Speed Limit
sidewalk	Presence of a sidewalk
bikefacility_type	Bike facility on street type
ID_TERR_TYPE_NAME	Roadway terrain type
ID_RIGHT_UNPAV_SHLDR_WID	Right unpaved shoulder width
ID_LEFT_UNPAV_SHLDR_WID	Left unpaved shoulder width
ID_MED_TYPE_NAME	Median Type
ID_MED_WIDTH	Median Width
L_SHOULDER_WIDTH	Left Shoulder Width
R_SHOULDER_WIDTH	Right Shoulder Width

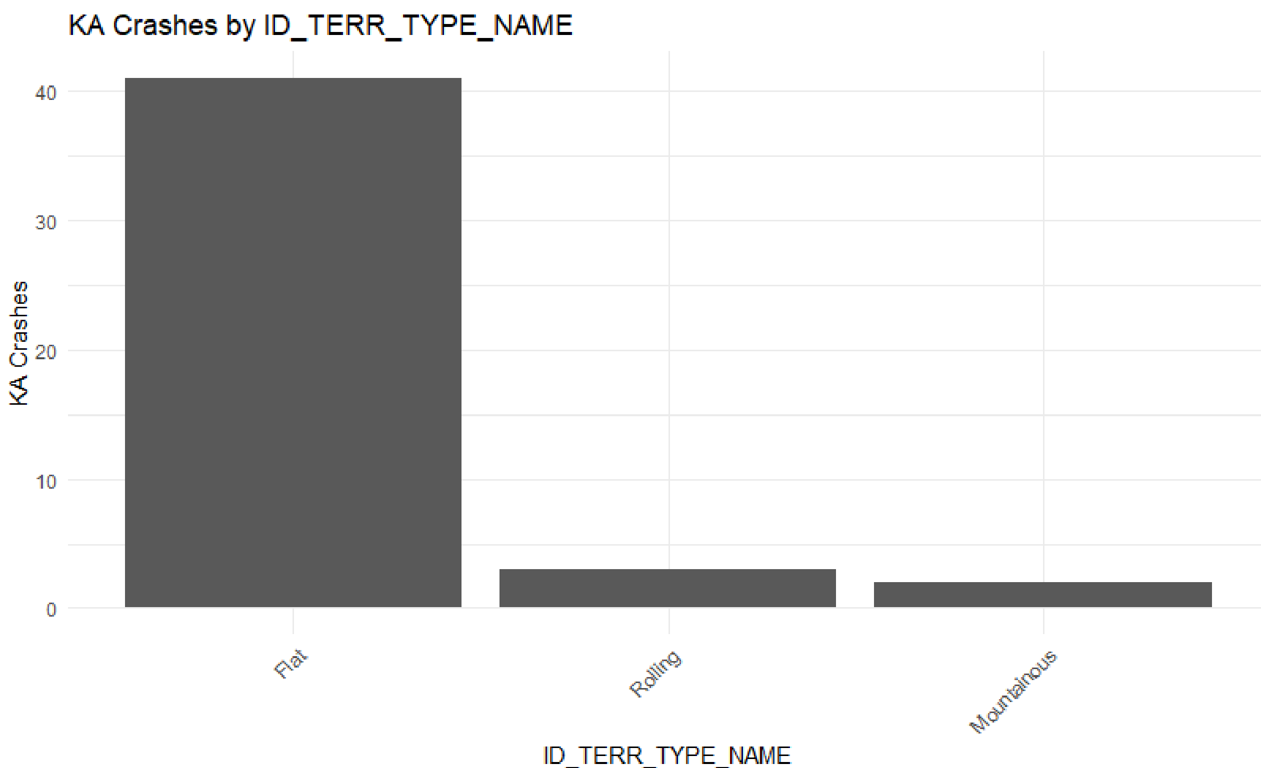
RANDOM FOREST MODEL 1 – COMBINED

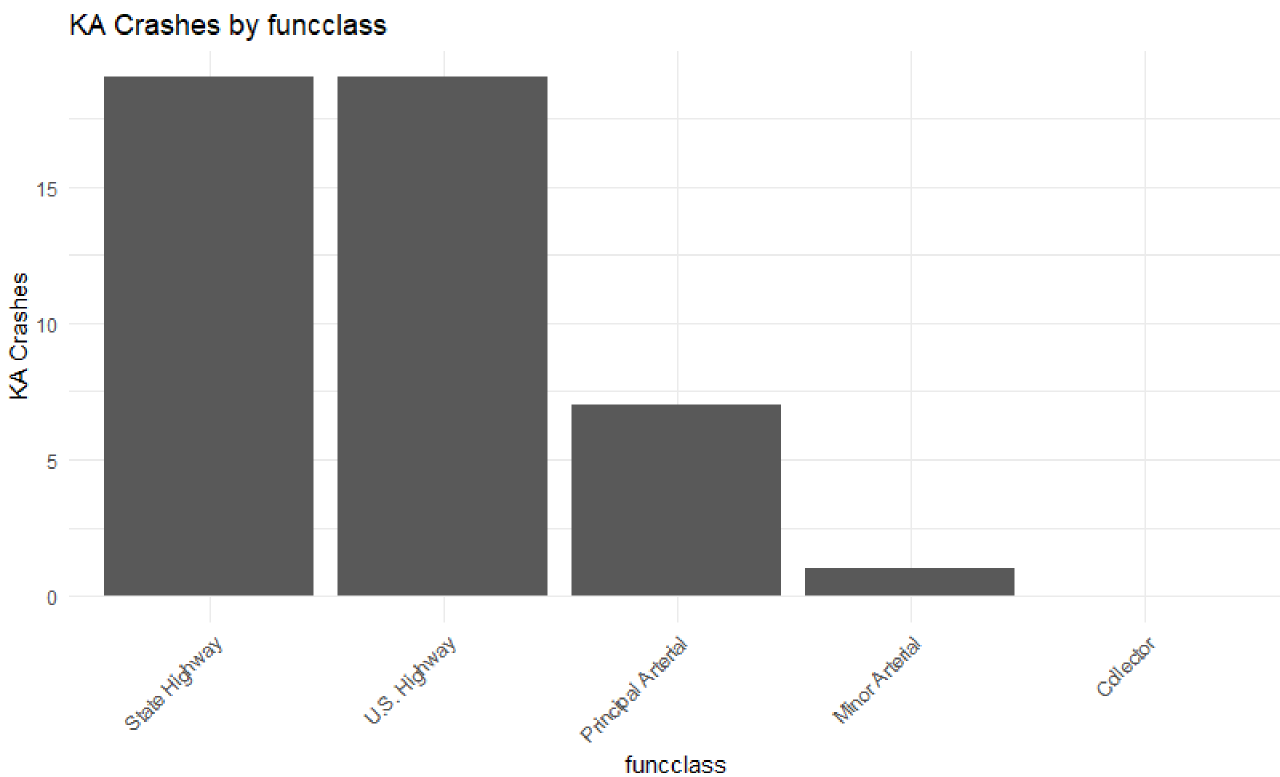
Segments

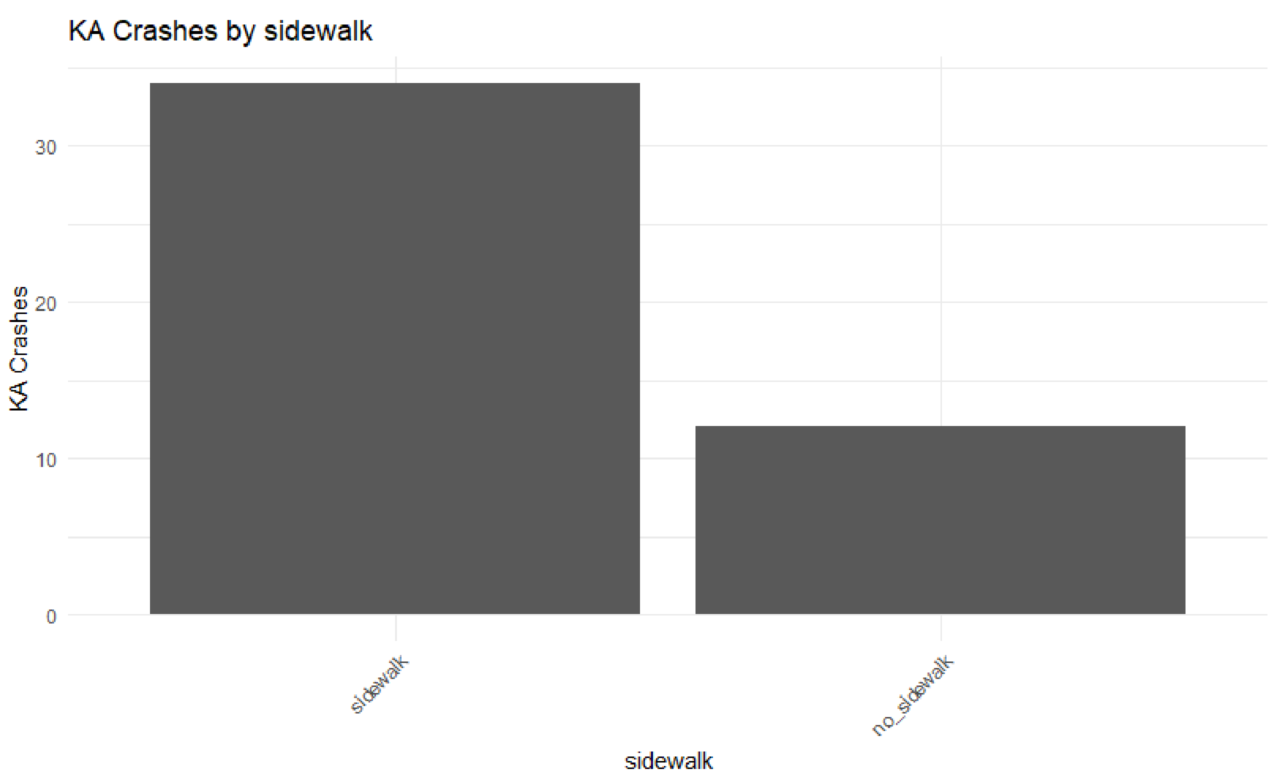


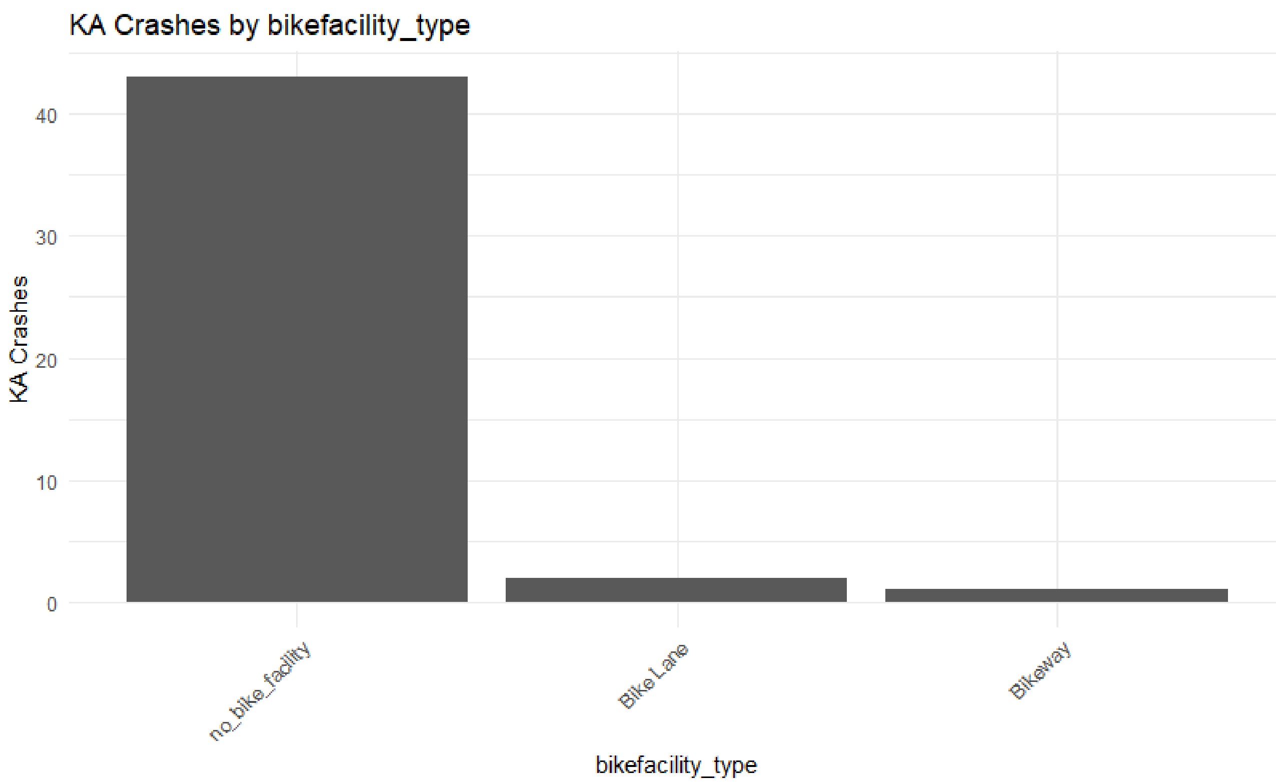


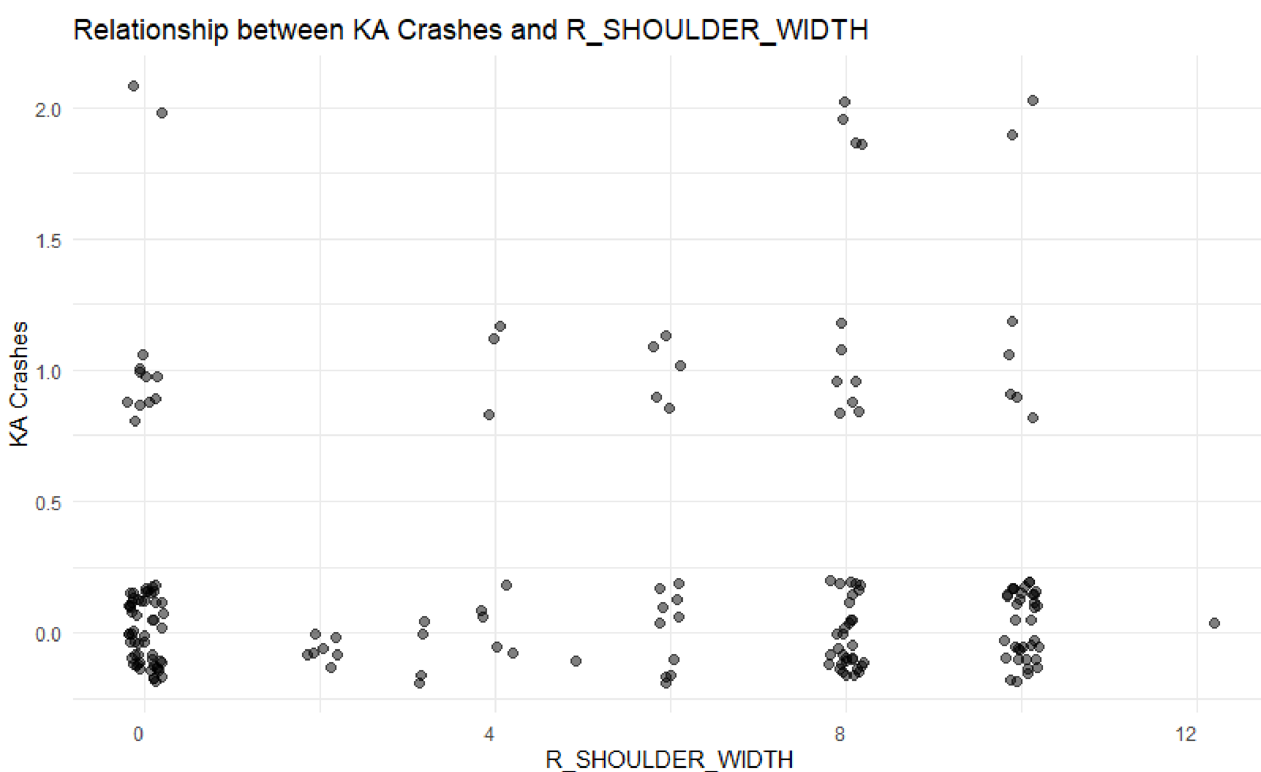

KA Crashes by ID_SHLDR_TYPE_NAME
KA Crashes
30
20
10
0
Surfaced with bituminous material
Curbed
Combination
ID_SHLDR_TYPE_NAME

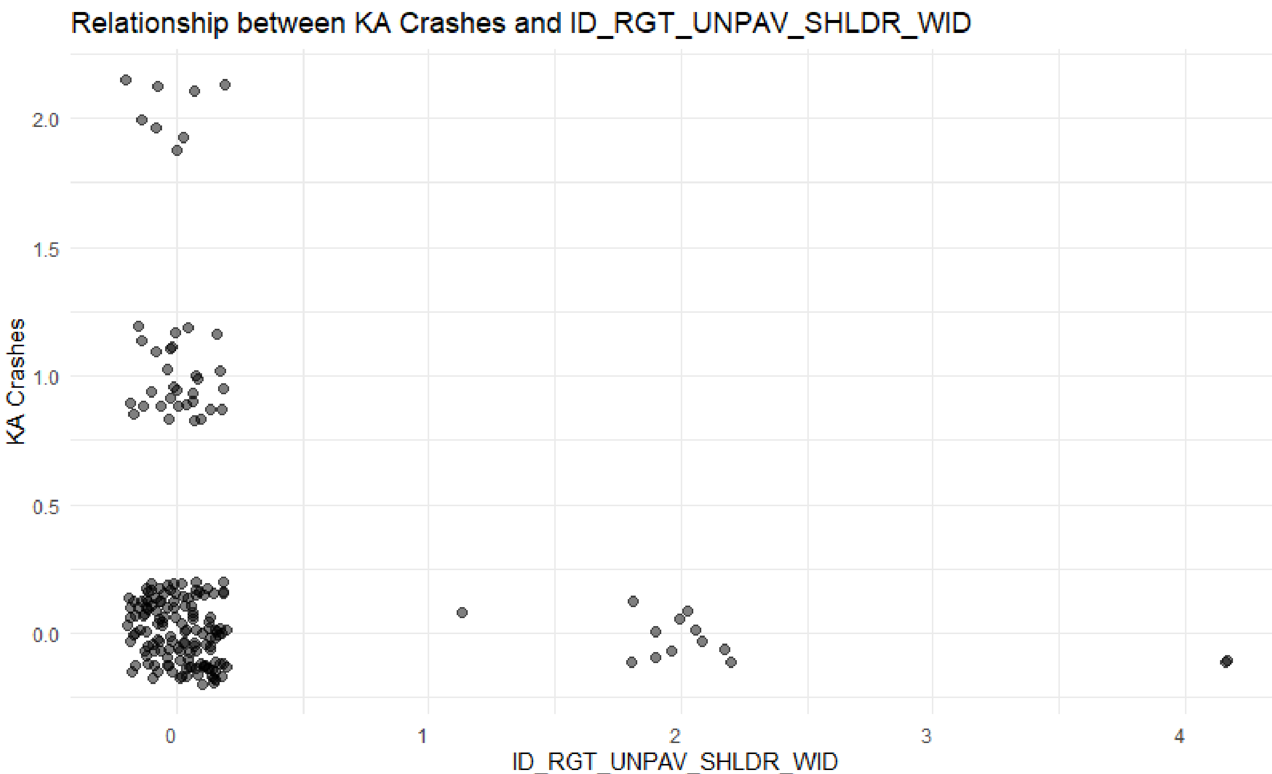

KA Crashes by ID_TERR_TYPE_NAME
KA Crashes
40
30
20
10
0
Flat
Rolling
Mountainous
ID_TERR_TYPE_NAME


KA Crashes by funcclass
KA Crashes
15
10
5
0
State Highway
U.S. Highway
Principal Arterial
Minor Arterial
Collector
funcclass


KA Crashes by sidewalk
KA Crashes
30
20
10
0
sidewalk
no_sidewalk
sidewalk


KA Crashes by bikefacility_type
KA Crashes
40
30
20
10
0
no_bike_facility
Bike Lane
Bikeway
bikefacility_type


Relationship between KA Crashes and R_SHOULDER_WIDTH
KA Crashes
2.0
1.5
1.0
0.5
0.0
0
4
8
12
R_SHOULDER_WIDTH


Relationship between KA Crashes and ID_RGT_UNPAV_SHLDR_WID
KA Crashes
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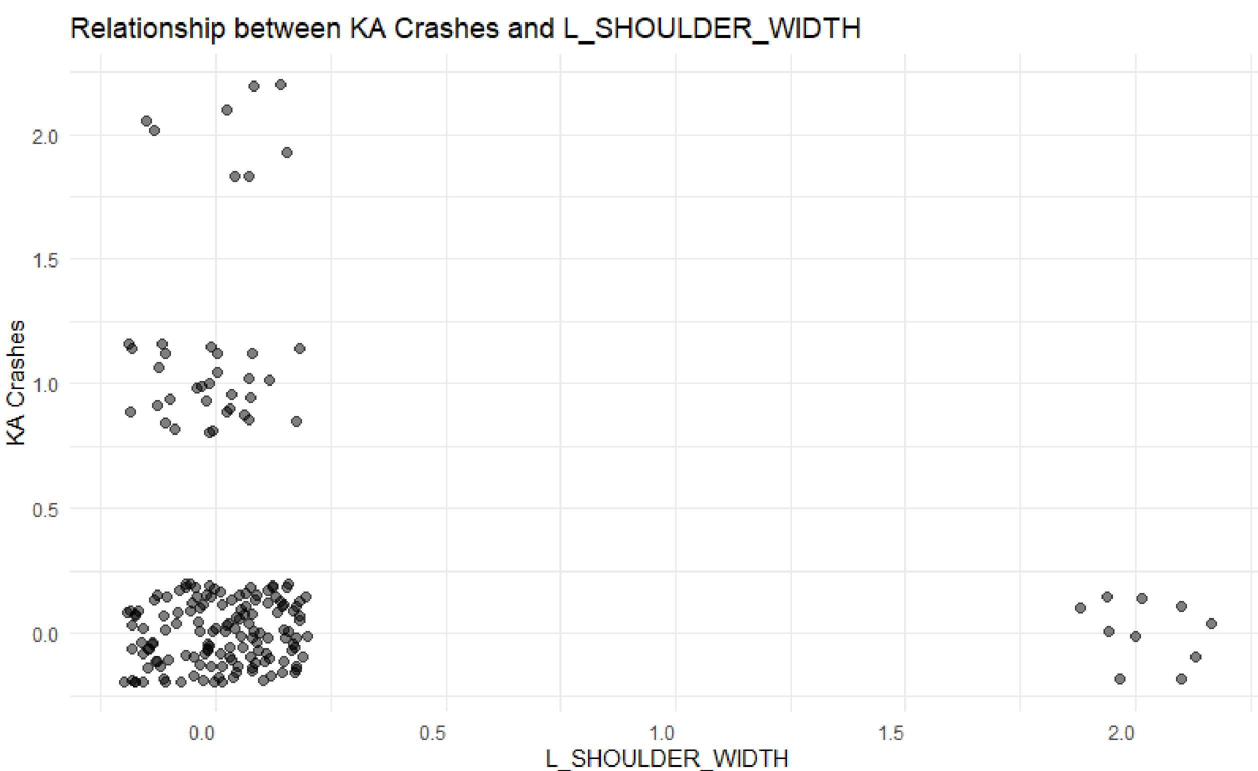
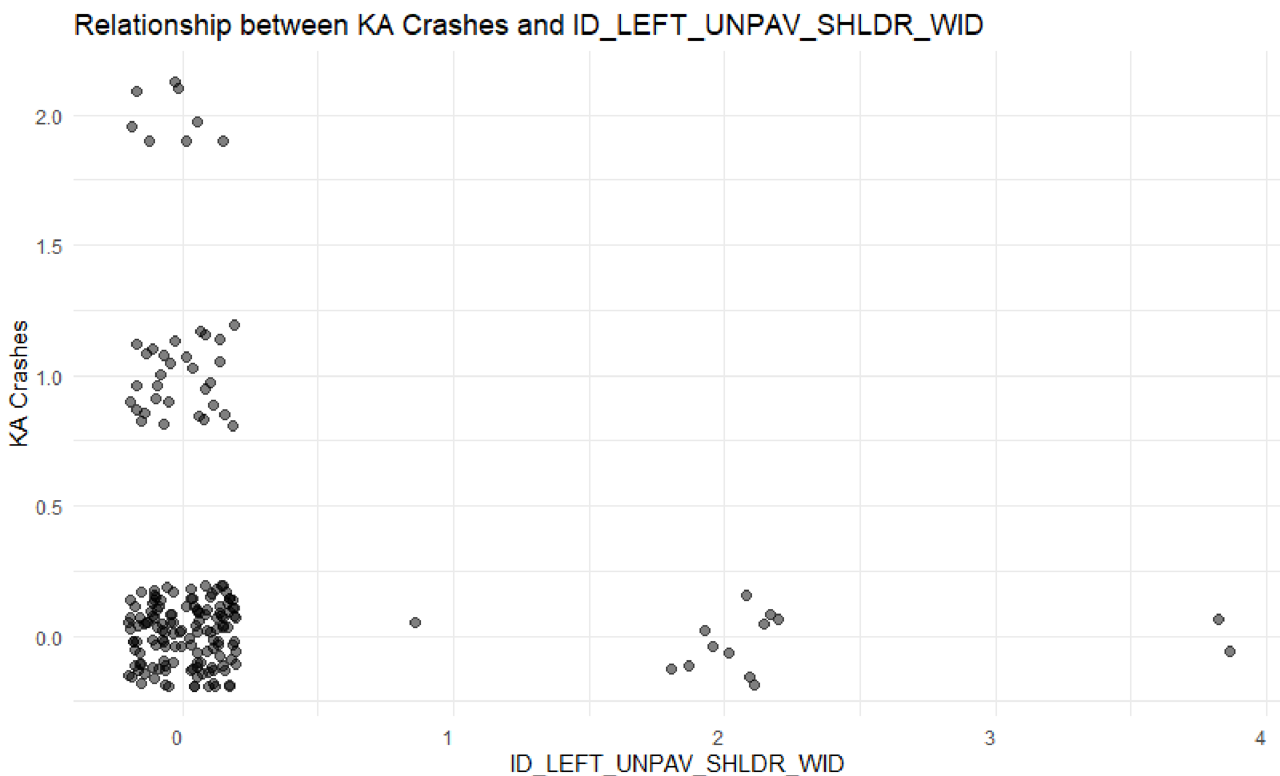
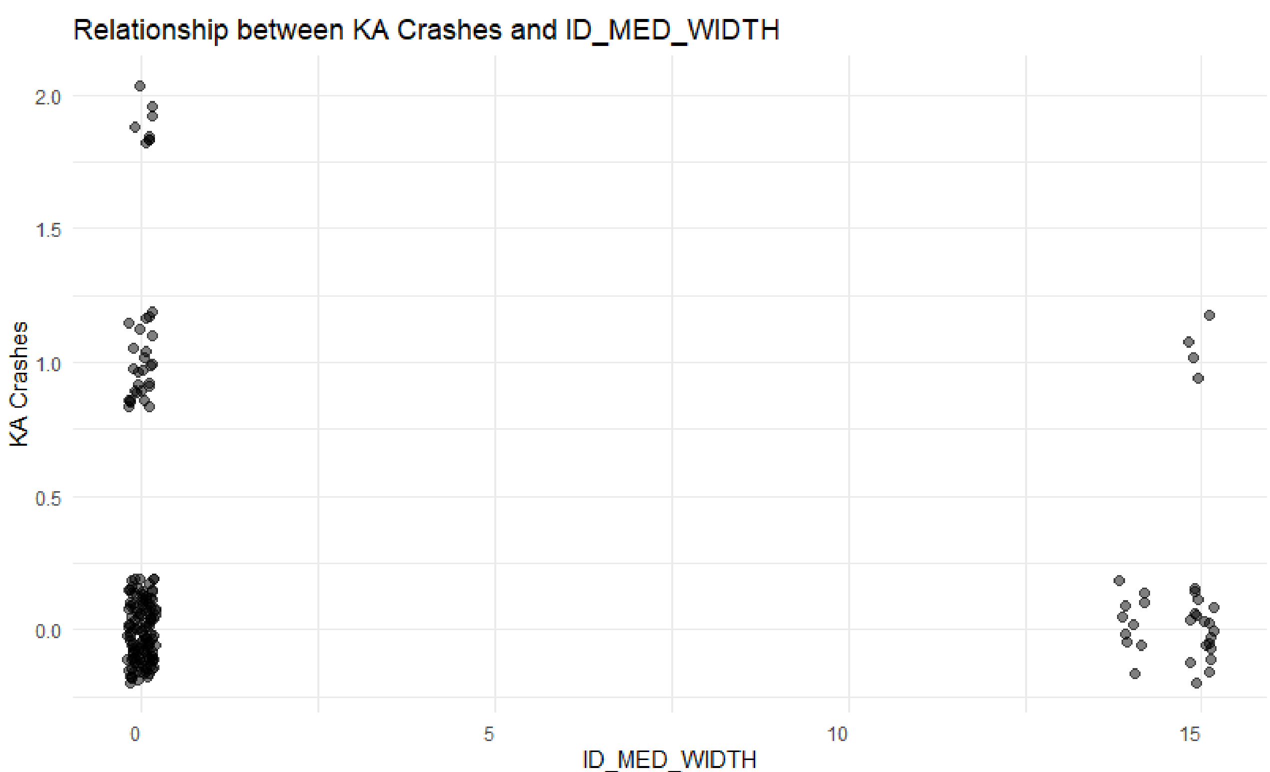
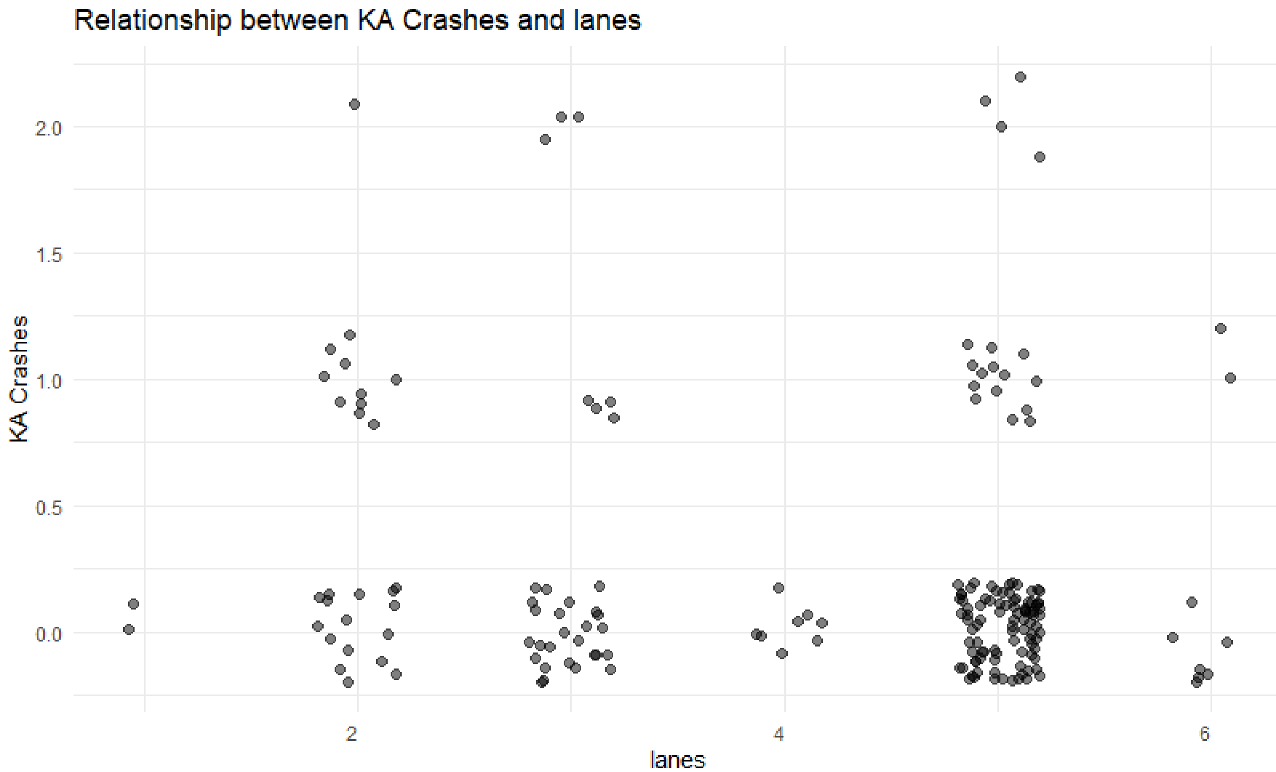
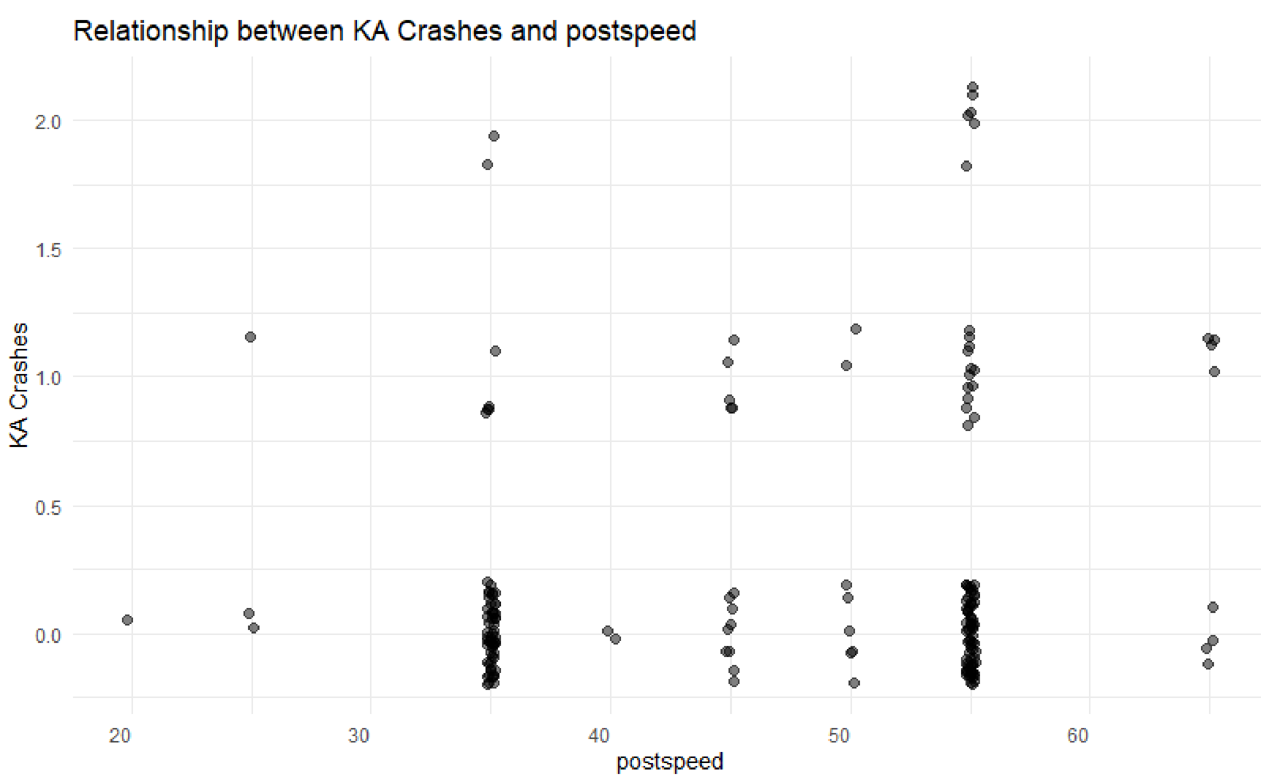
1.5
1.0
0.5
0.0
0
1
2
3
4
ID_RGT_UNPAV_SHLDR_WID

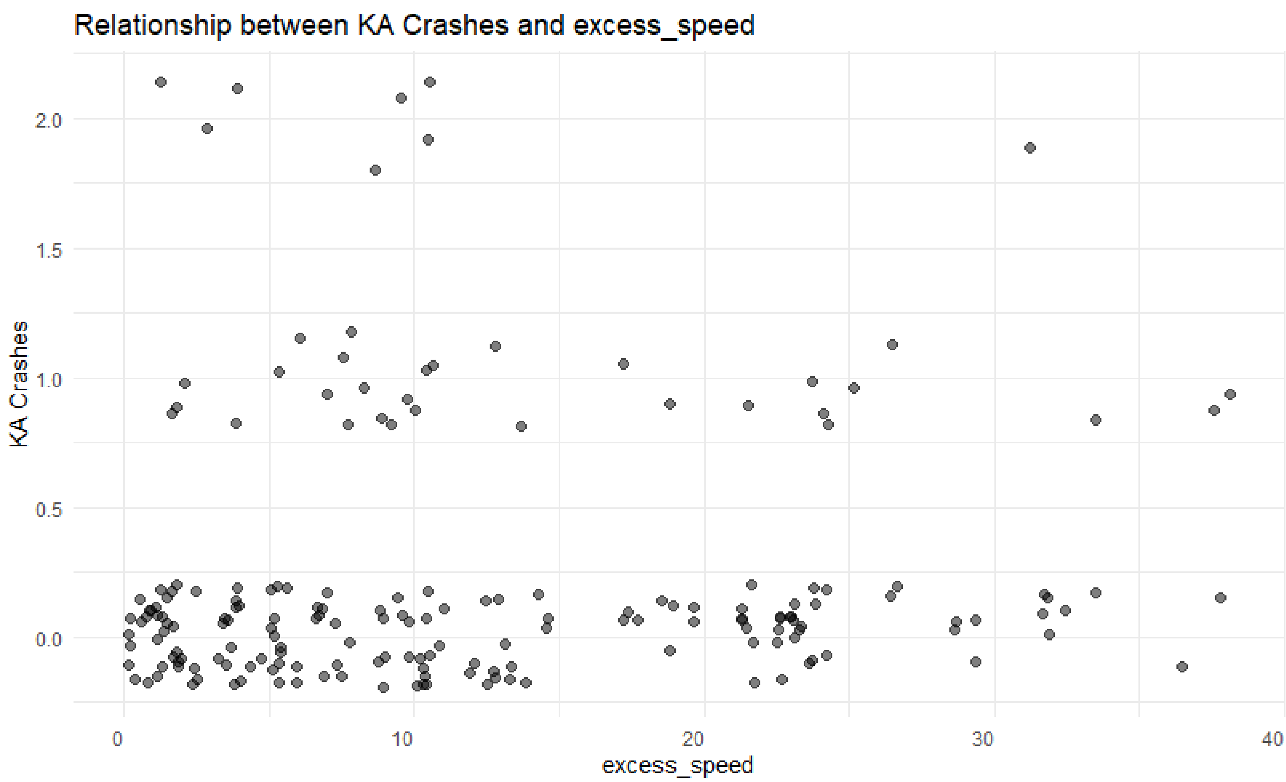

Relationship between KA Crashes and L_SHOULDER_WIDTH
KA Crashes
2.0
1.5
1.0
0.5
0.0
0.0
0.5
1.0
1.5
2.0
L_SHOULDER_WIDTH

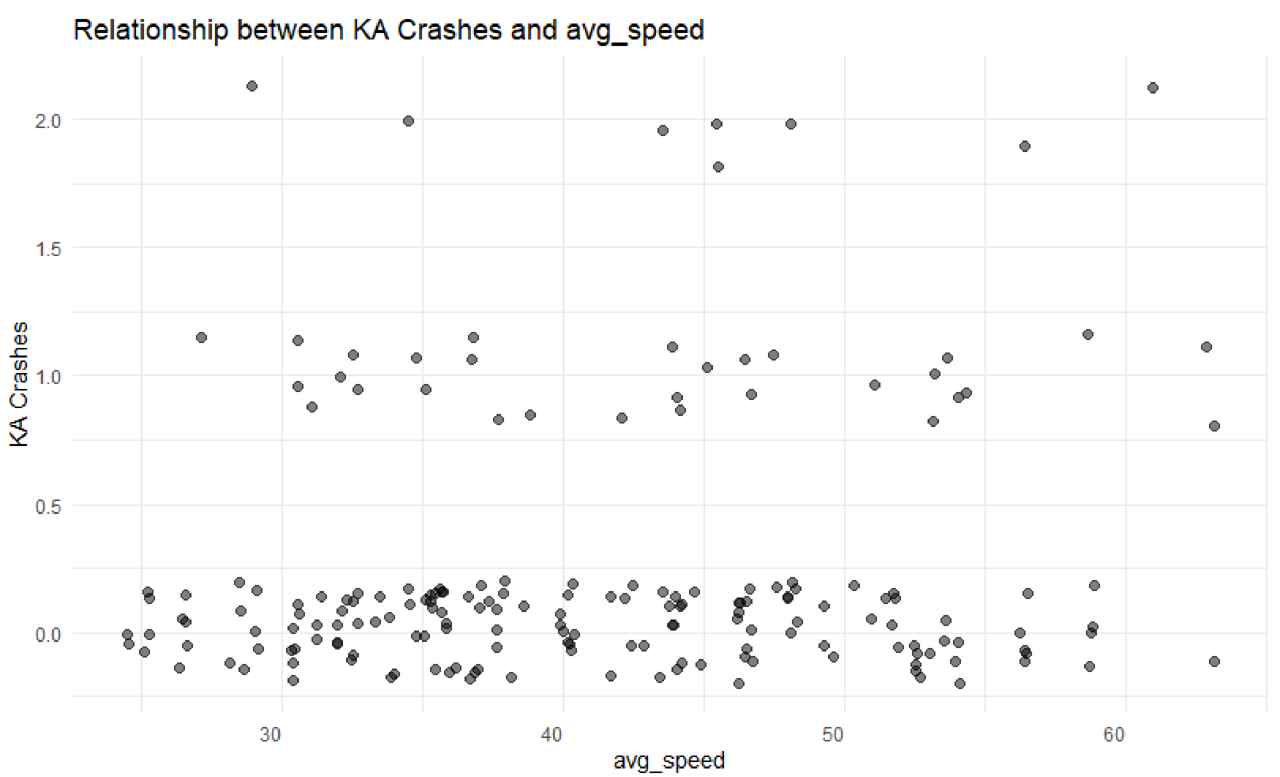

Relationship between KA Crashes and ID_LEFT_UNPAV_SHLDR_WID
KA Crashes
2.0
1.5
1.0
0.5
0.0
0
1
2
3
4
ID_LEFT_UNPAV_SHLDR_WID


Relationship between KA Crashes and ID_MED_WIDTH
KA Crashes
2.0
1.5
1.0
0.5
0.0
0
5
10
15
ID_MED_WIDTH

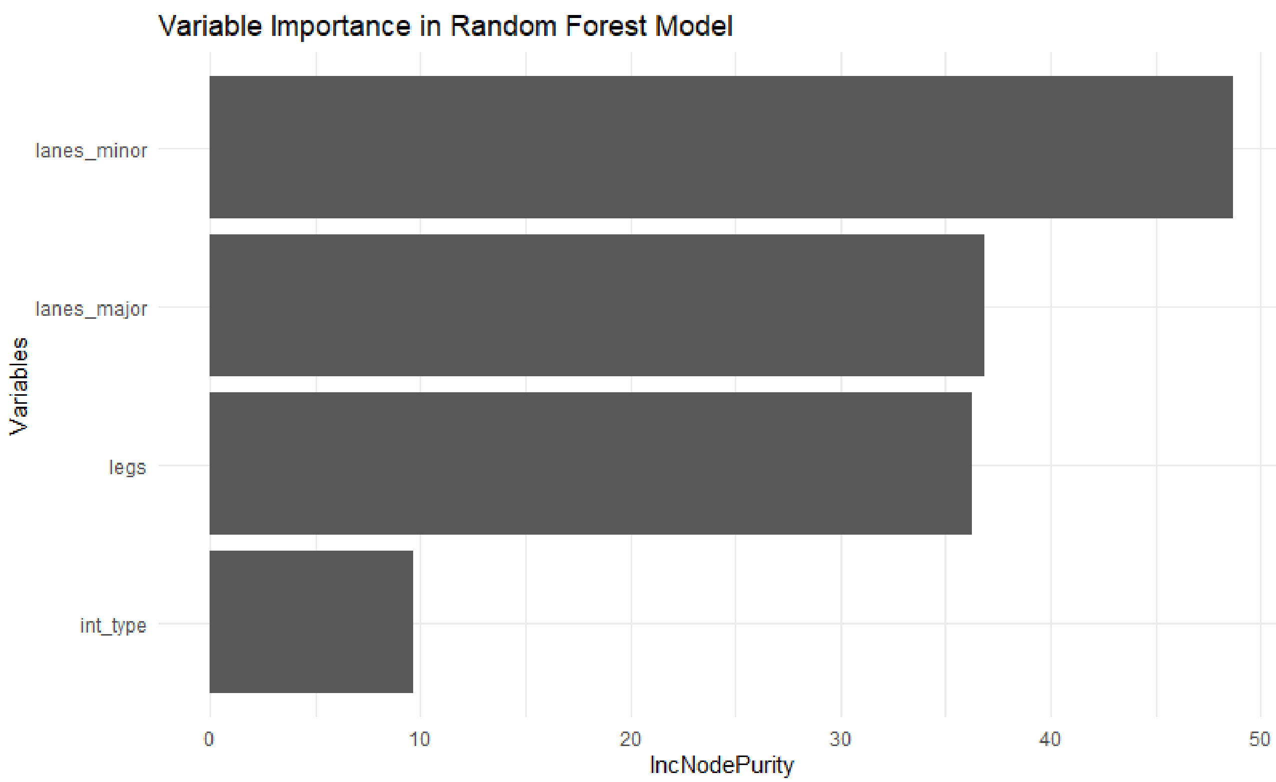

Relationship between KA Crashes and lanes
KA Crashes
0.0
0.5
1.0
1.5
2.0
2
4
6
lanes

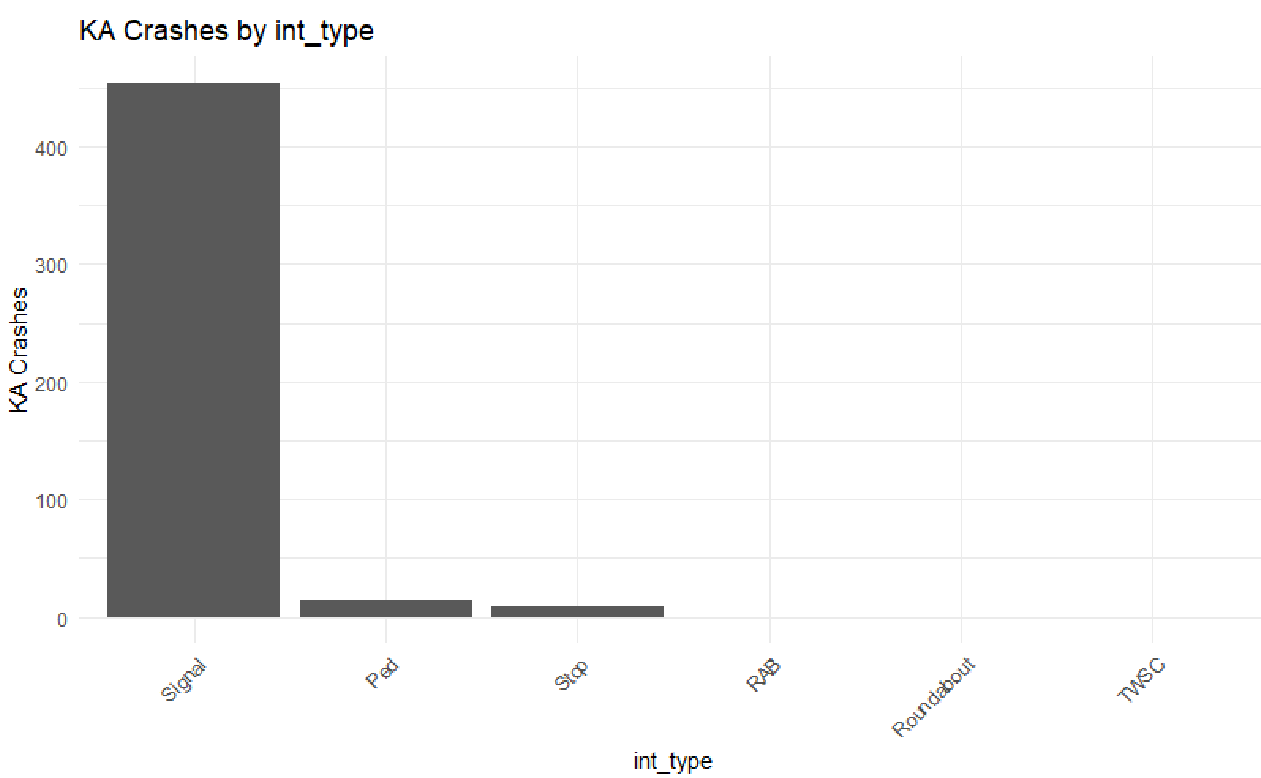

Relationship between KA Crashes and postspeed
KA Crashes
0.0
0.5
1.0
1.5
2.0
20
30
40
50
60
postspeed

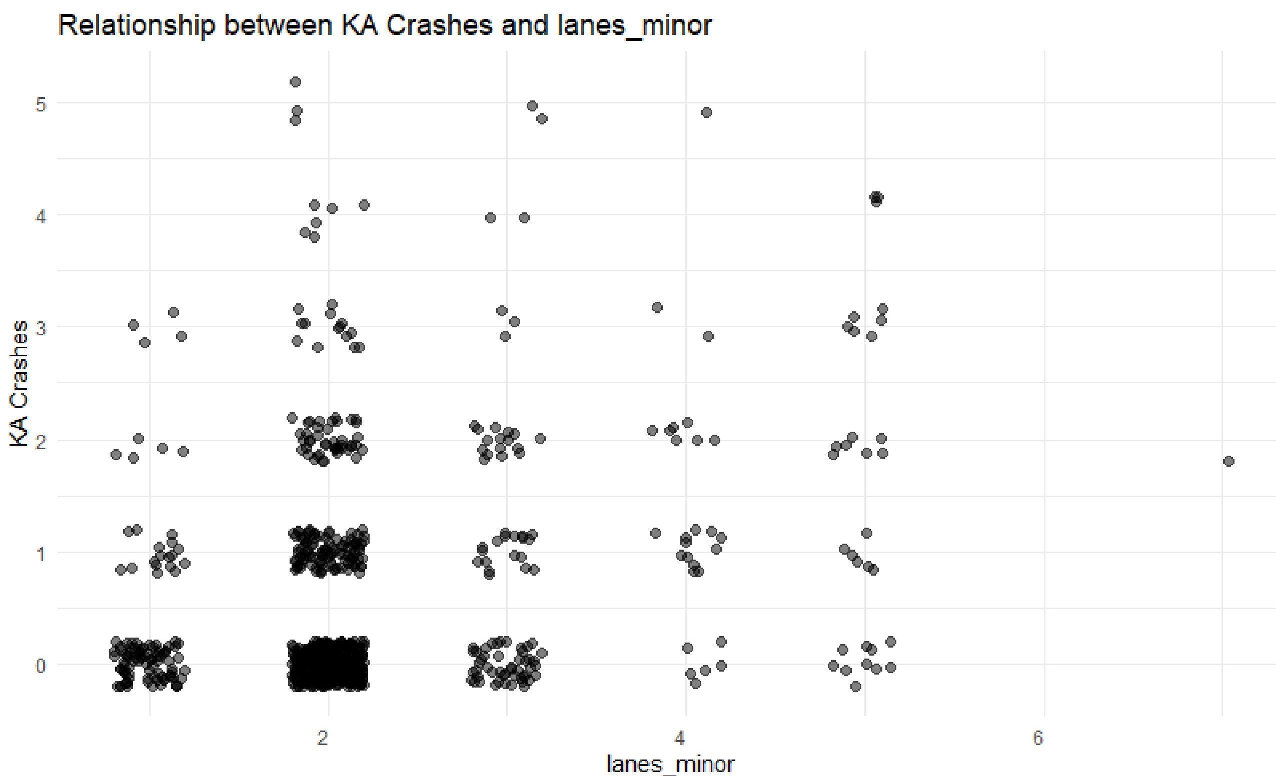

Relationship between KA Crashes and excess_speed
KA Crashes
2.0
1.5
1.0
0.5
0.0
0
10
20
30
40
excess_speed

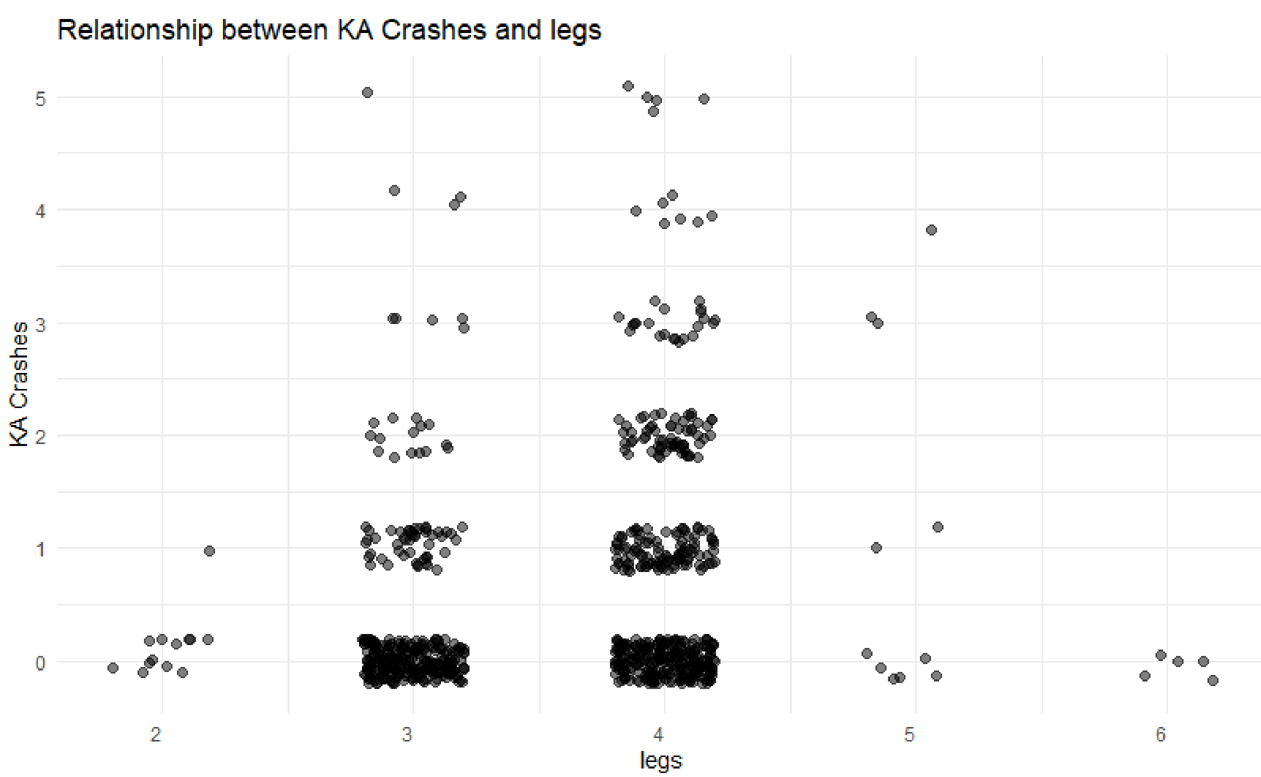

Relationship between KA Crashes and avg_speed
KA Crashes
2.0
1.5
1.0
0.5
0.0
30
40
50
60
avg_speed

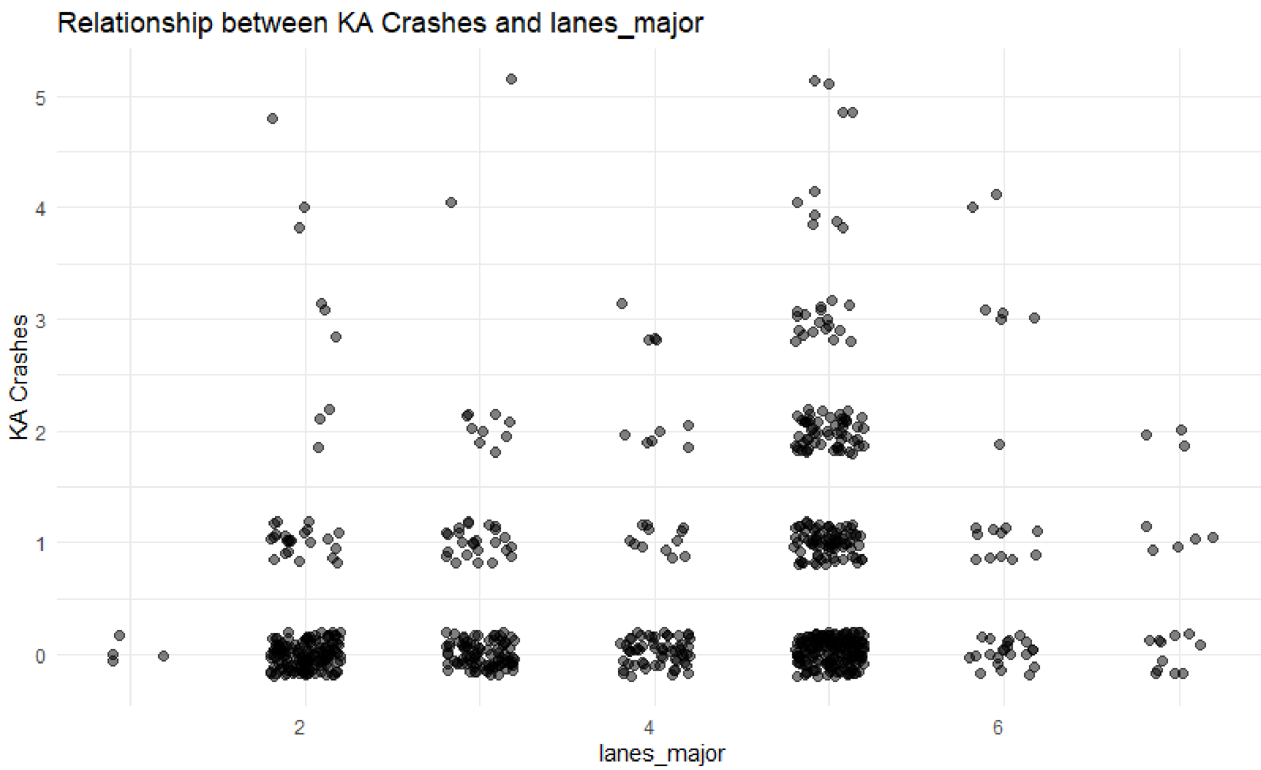
Junctions


Variable Importance in Random Forest Model
lanes_minor
lanes_major
legs
int_type
Variables
0
10
20
30
40
50
IncNodePurity

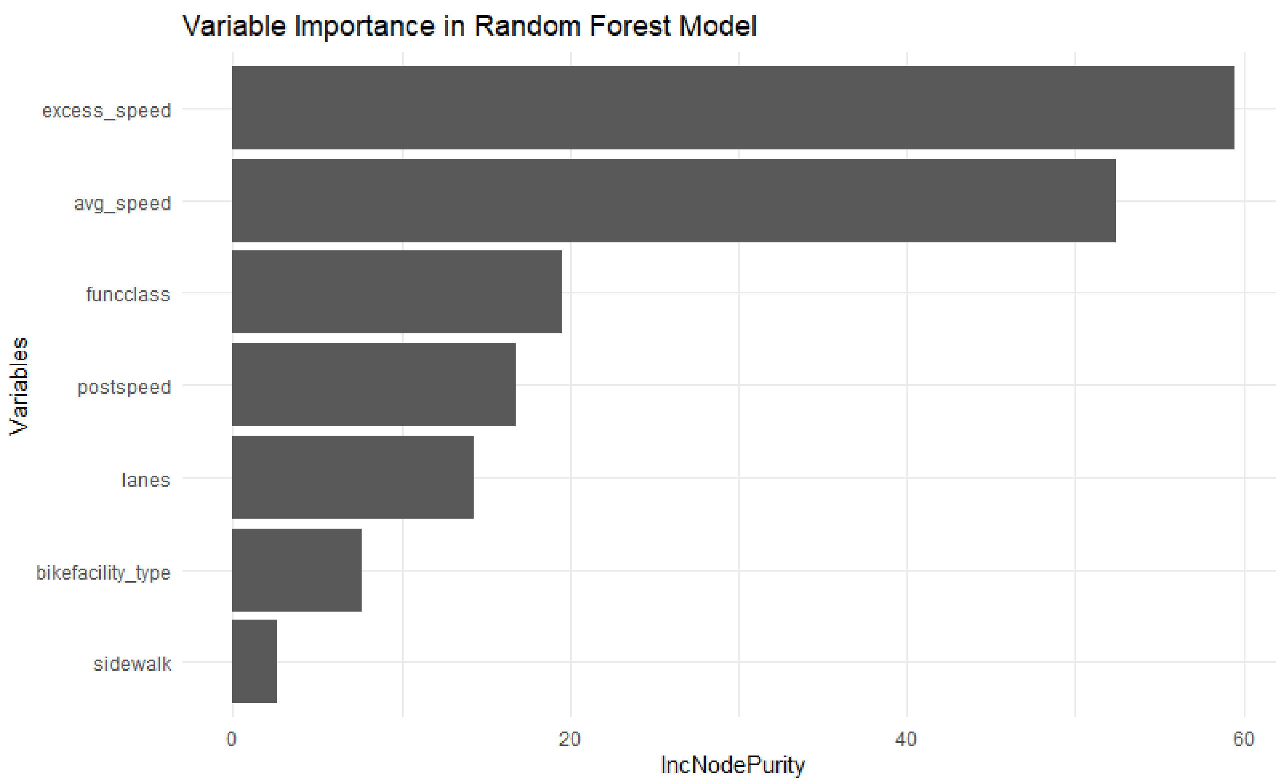

KA Crashes by int_type
400
300
200
100
0
KA Crashes
Signal
Ped
Stop
RAB
Roundabout
TWSC
int_type

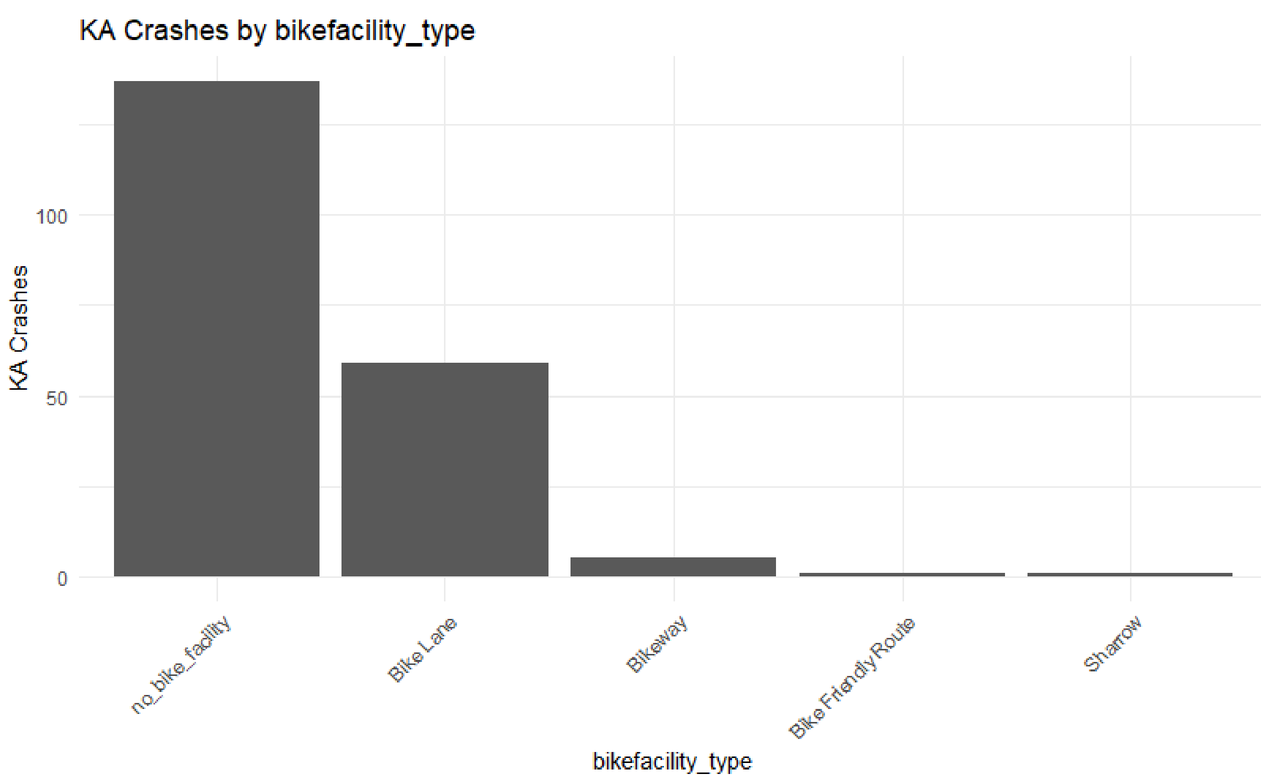

Relationship between KA Crashes and lanes_minor
KA Crashes
0
1
2
3
4
5
2
4
6
lanes_minor

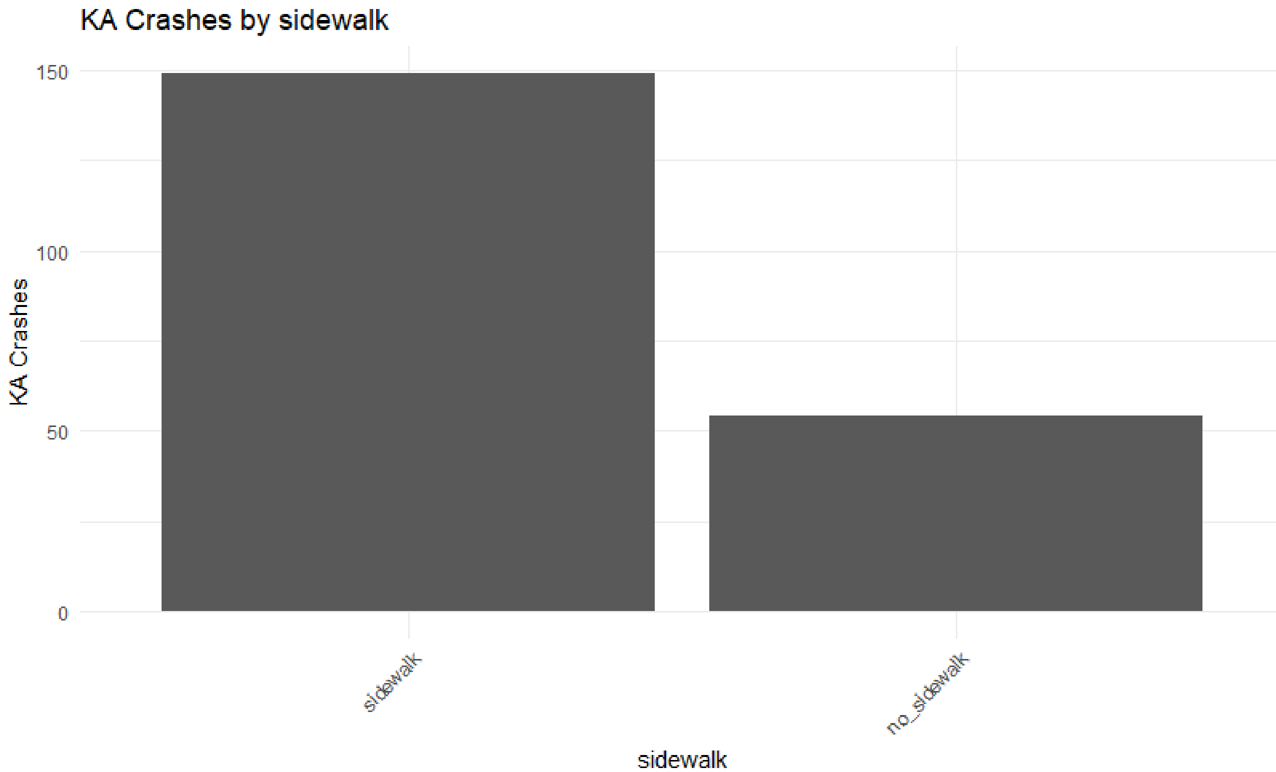

Relationship between KA Crashes and legs
KA Crashes
0
1
2
3
4
5
2
3
4
5
6
legs

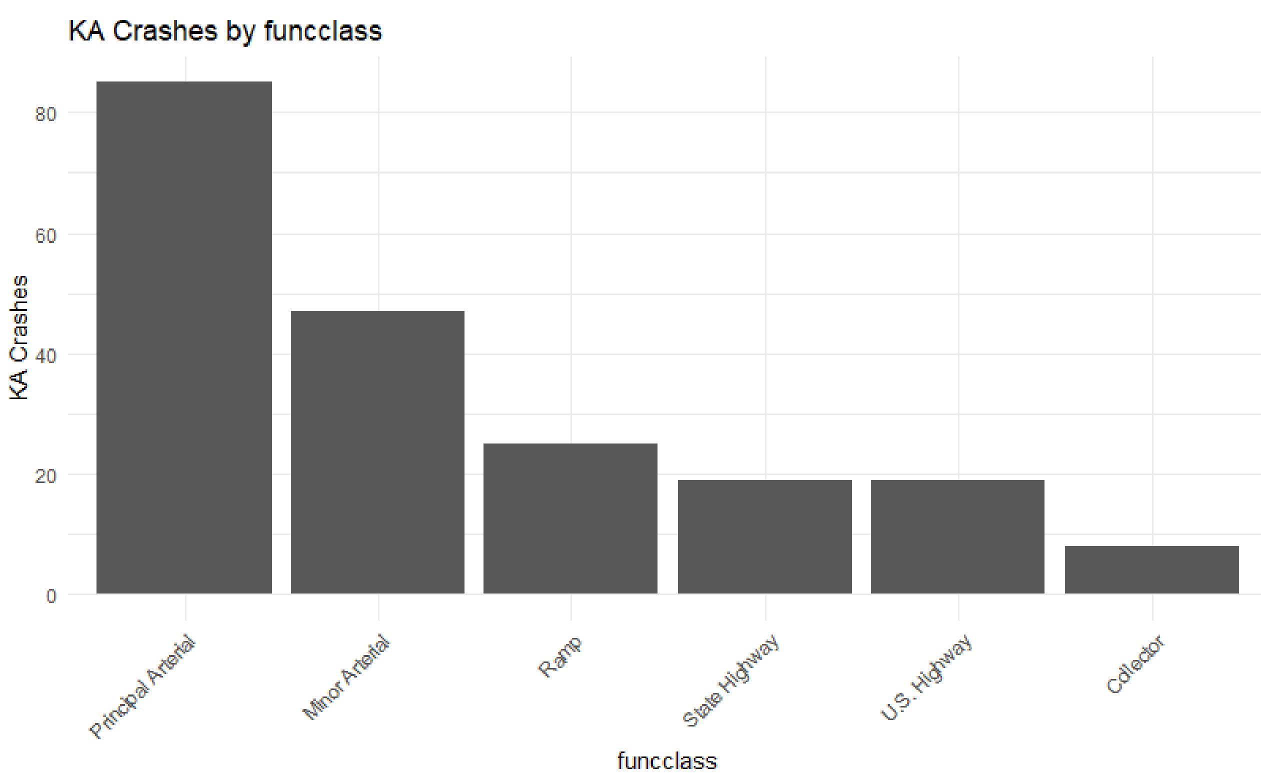

Relationship between KA Crashes and lanes_major
KA Crashes
0
1
2
3
4
5
2
4
6
lanes_major

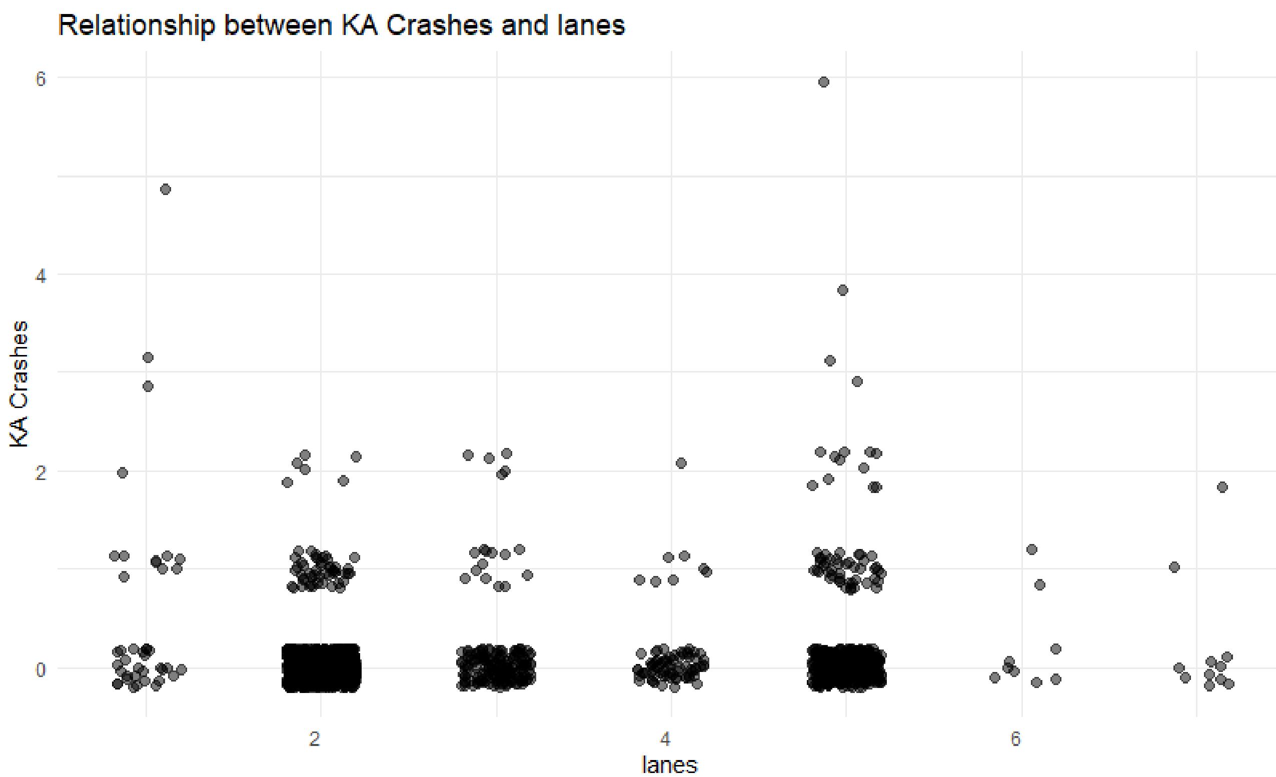
RANDOM FOREST MODEL 2 – COMPASS SEGMENT ATTRIBUTES

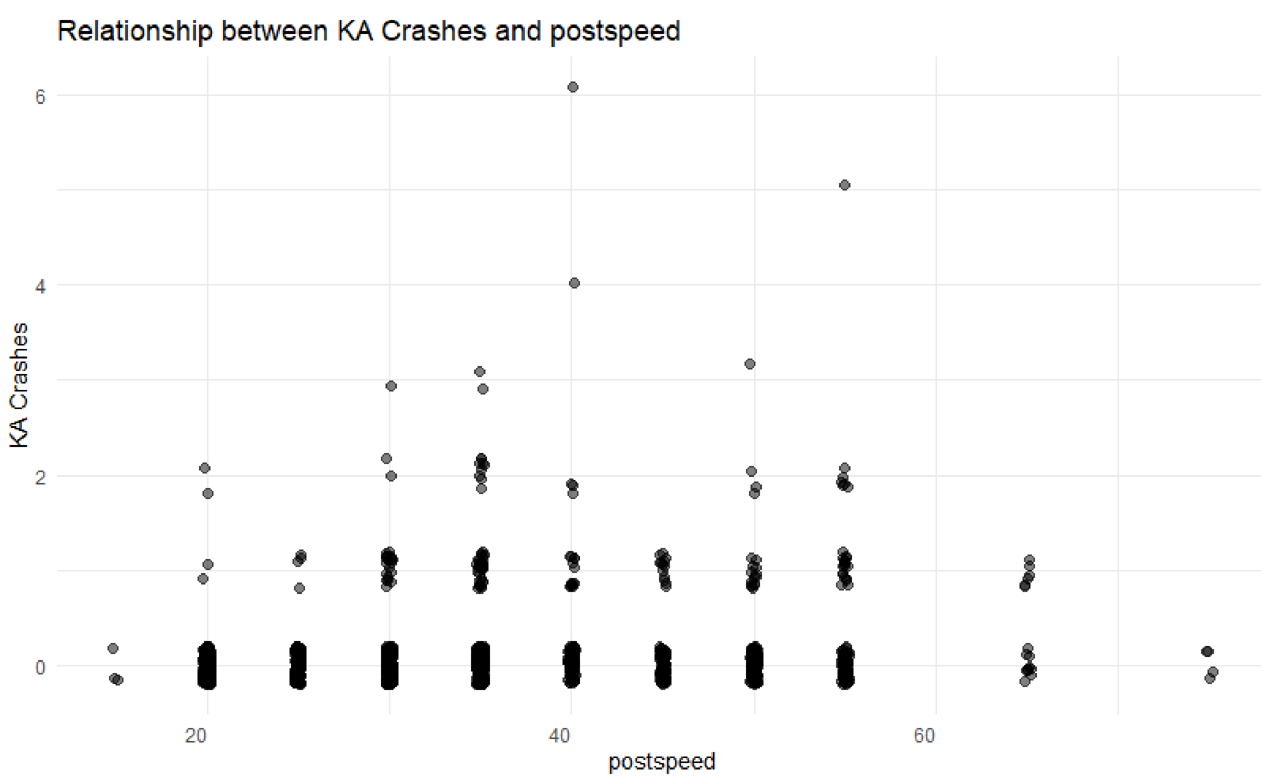


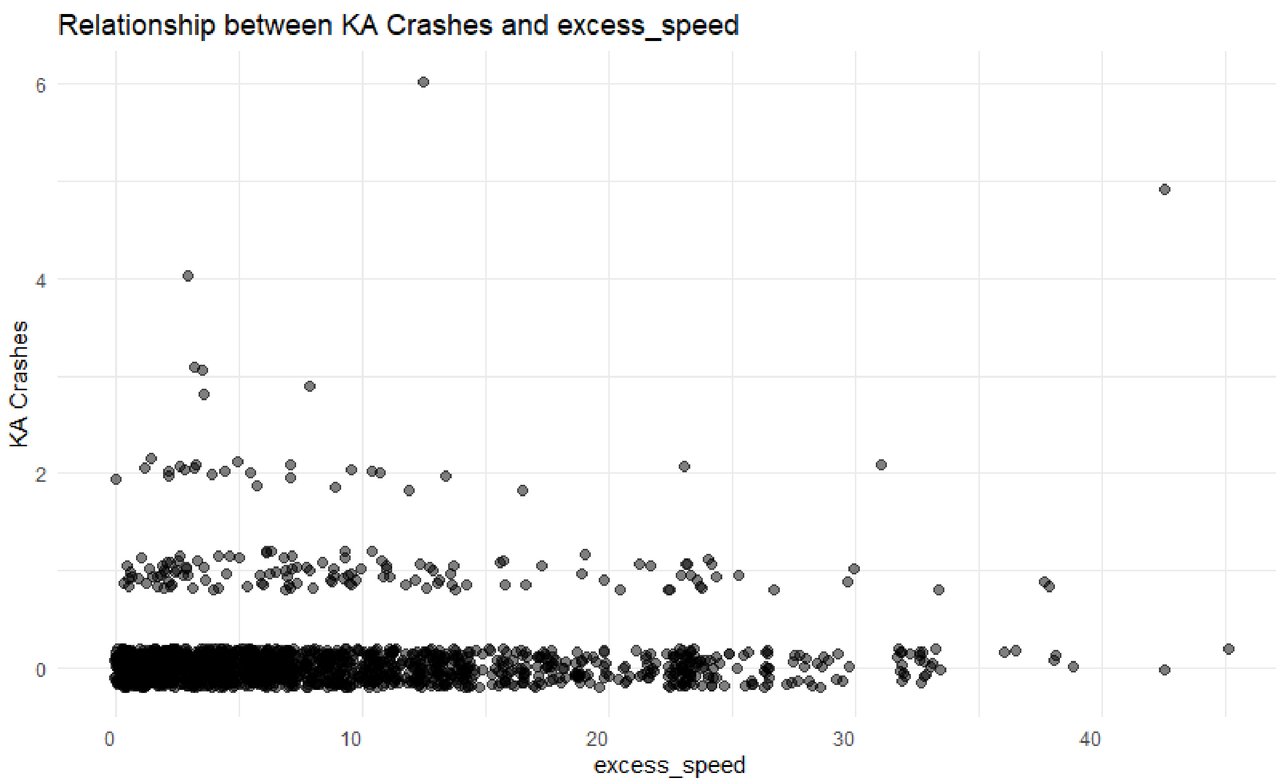


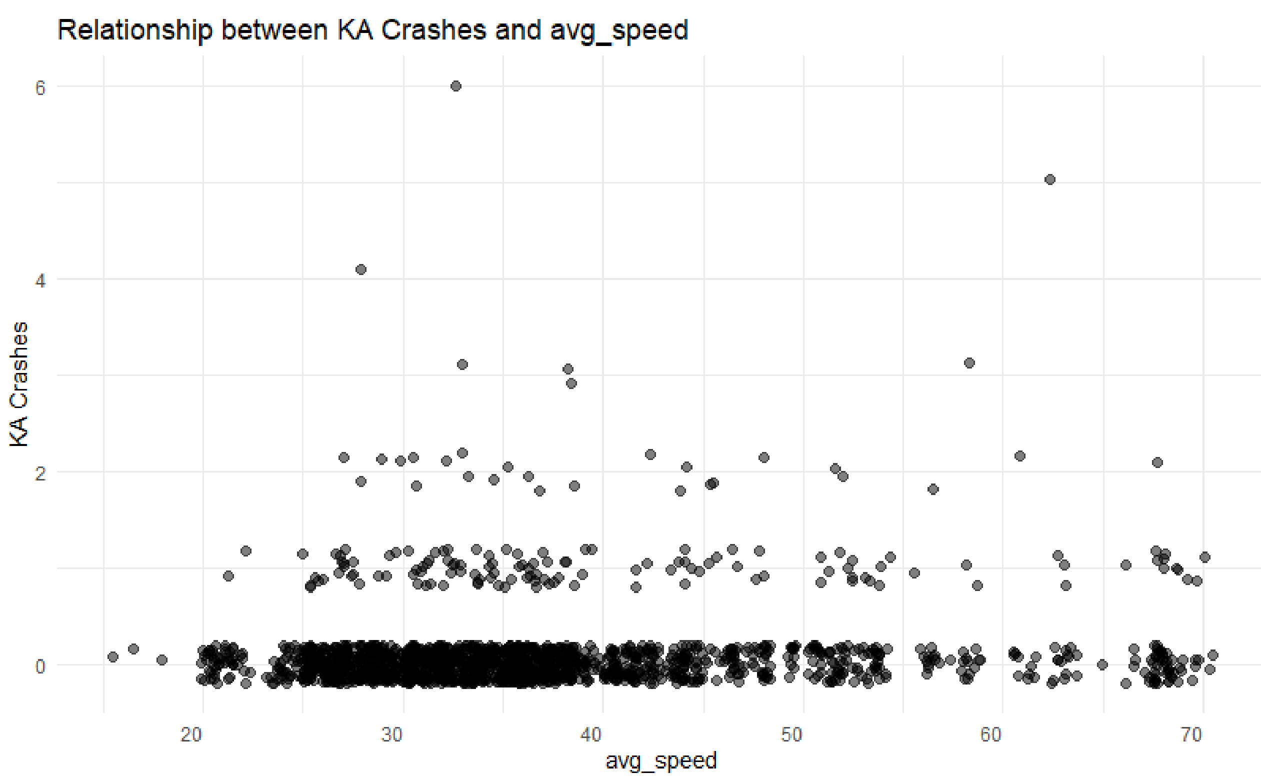

KA Crashes by sidewalk
KA Crashes
150
100
50
0
sidewalk
no_sidewalk
sidewalk


KA Crashes by funcclass
KA Crashes
80
60
40
20
0
Principal Arterial
Minor Arterial
Ramp
State Highway
U.S. Highway
Collector
funcclass

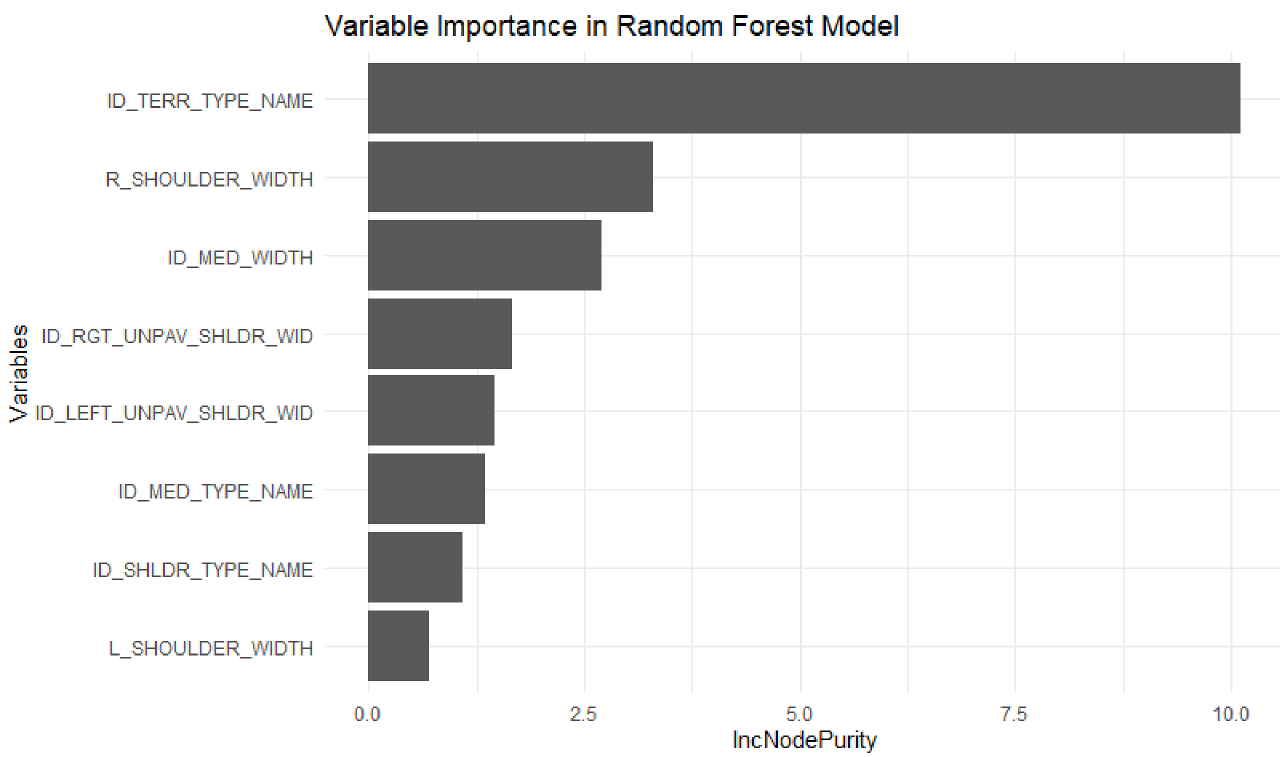

Relationship between KA Crashes and lanes
KA Crashes
0
2
4
6
2
4
6
lanes

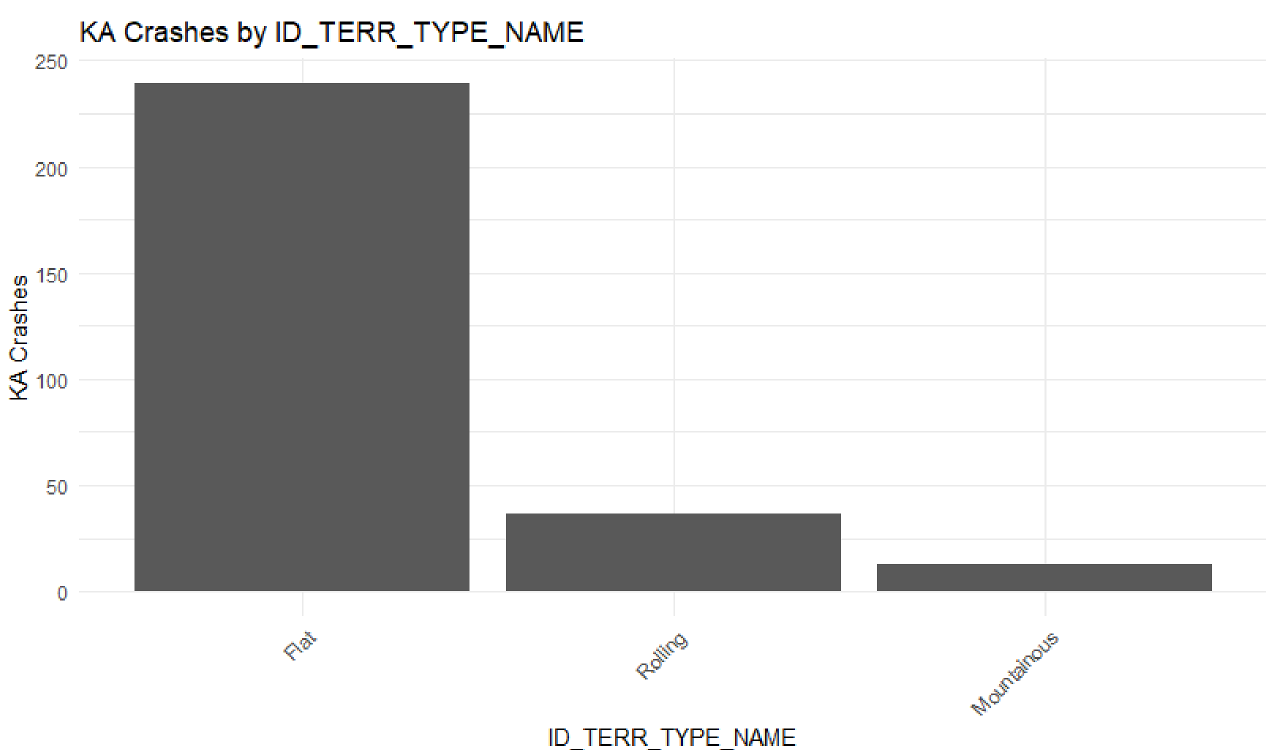

Relationship between KA Crashes and postspeed
KA Crashes
0
2
4
6
20
40
60
postspeed

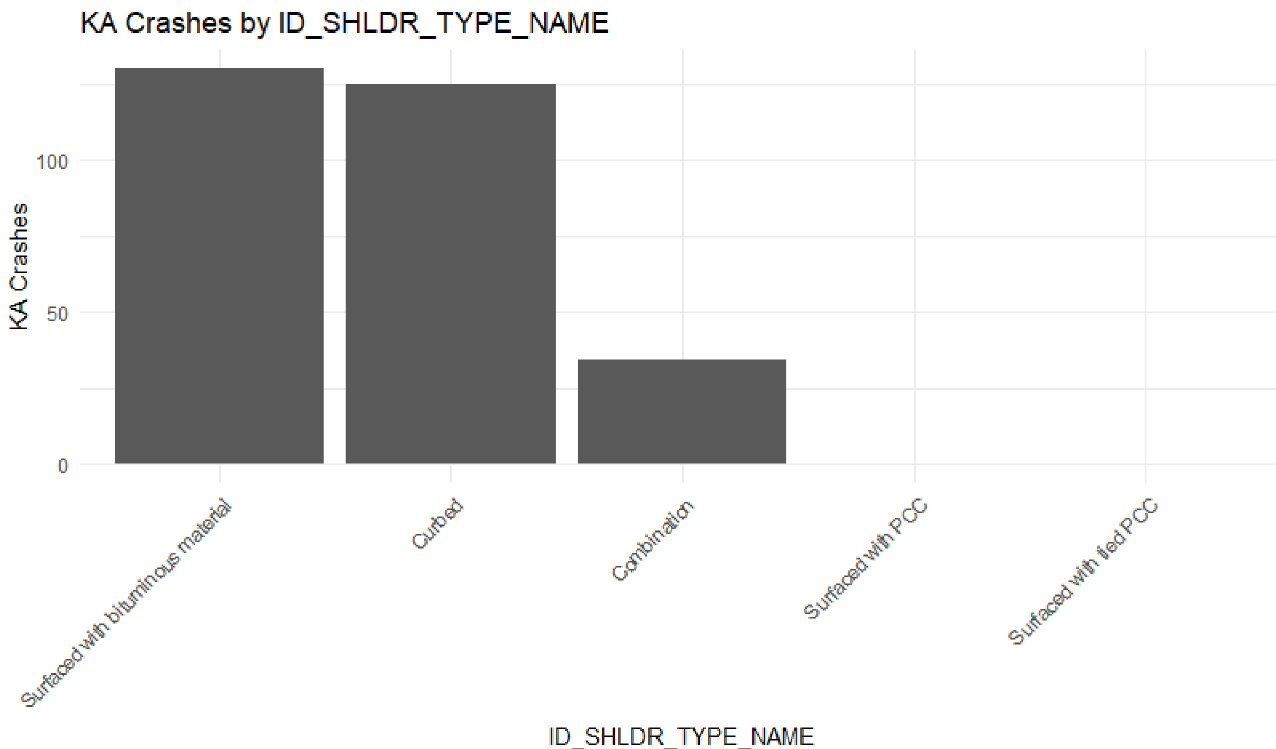

Relationship between KA Crashes and excess_speed
KA Crashes
6
4
2
0
0
10
20
30
40
excess_speed

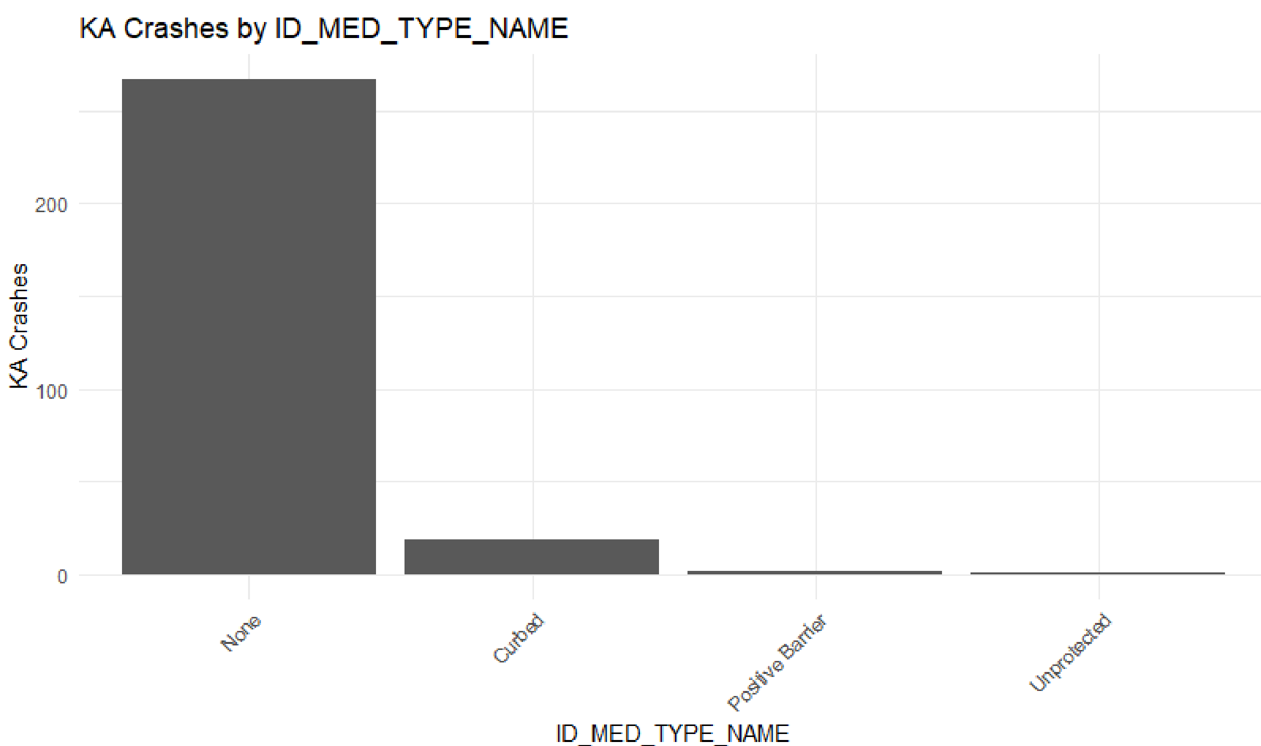

Relationship between KA Crashes and avg_speed
KA Crashes
6
4
2
0
20
30
40
50
60
70
avg_speed

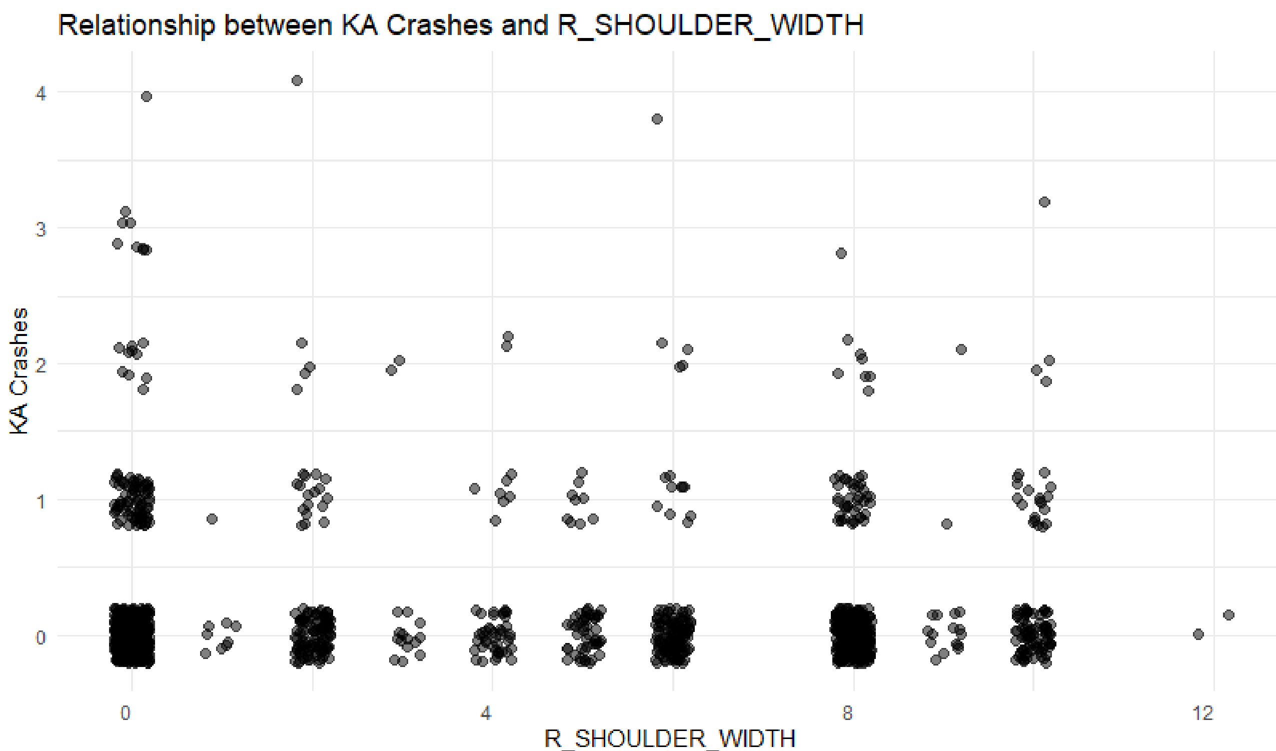
RANDOM FOREST MODEL 2 – ITD SEGMENT ATTRIBUTES

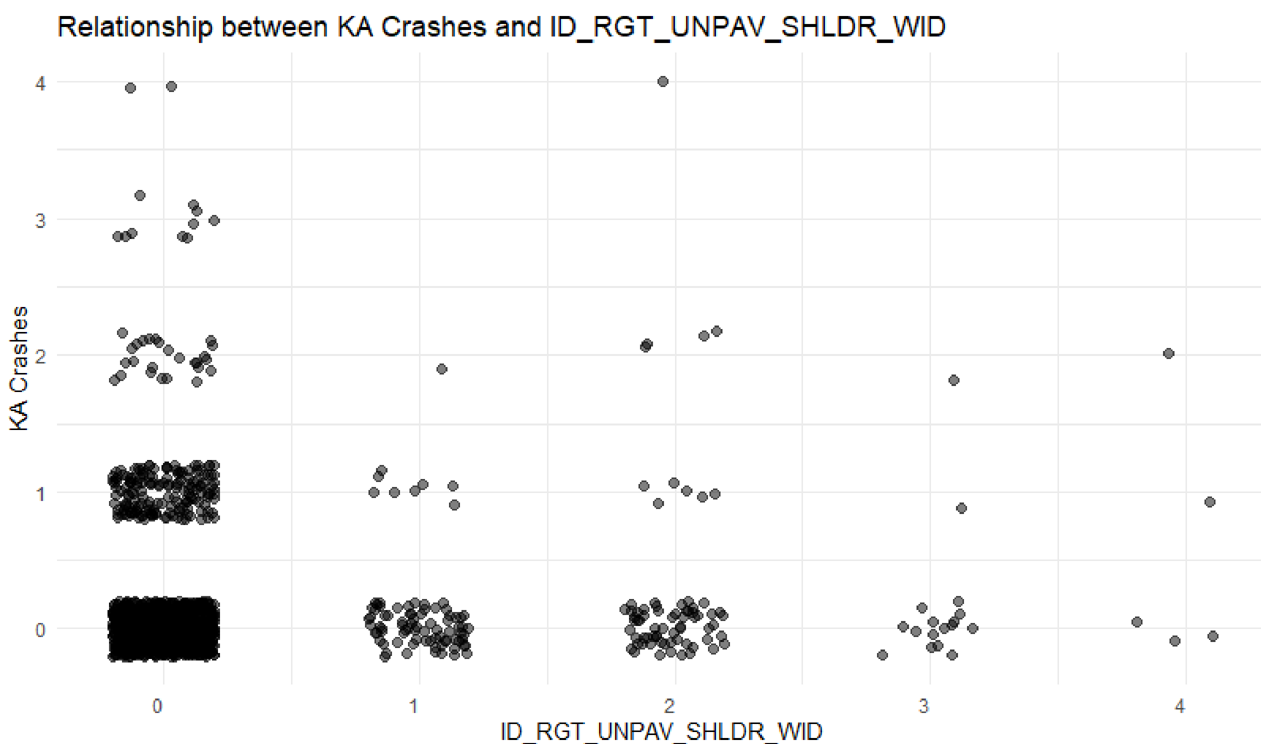


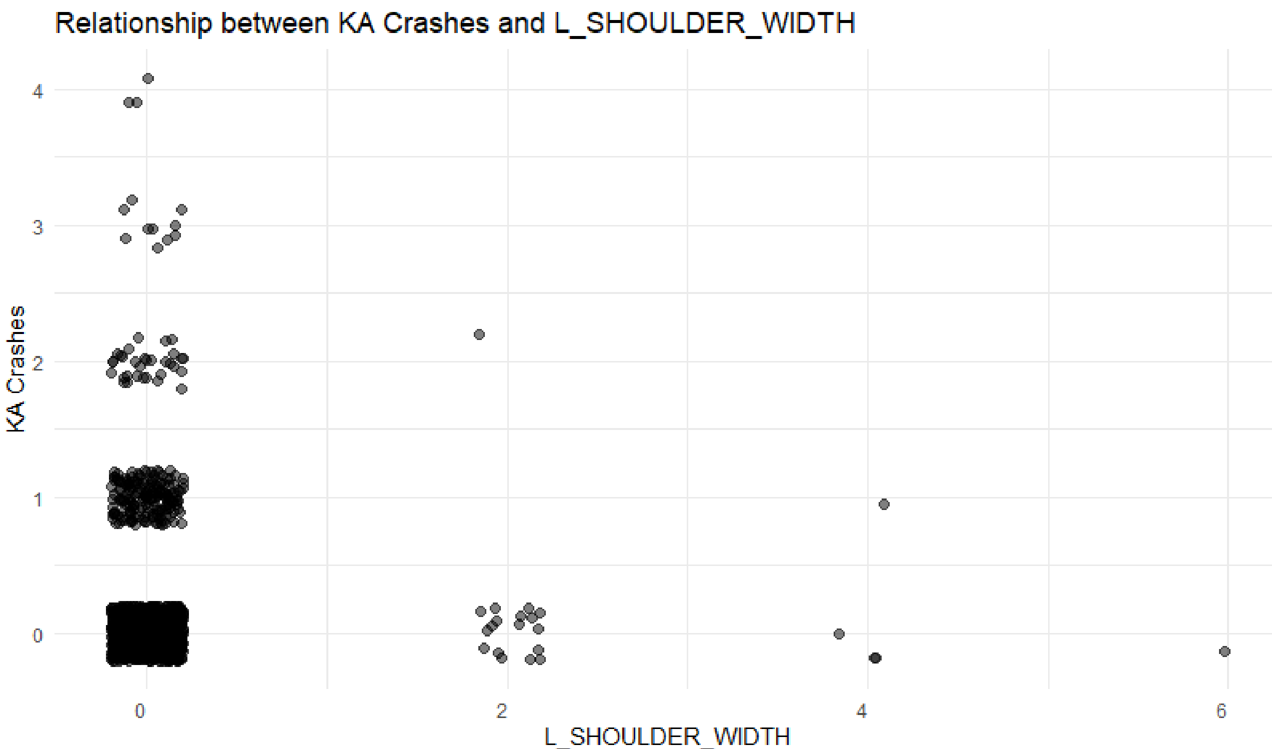


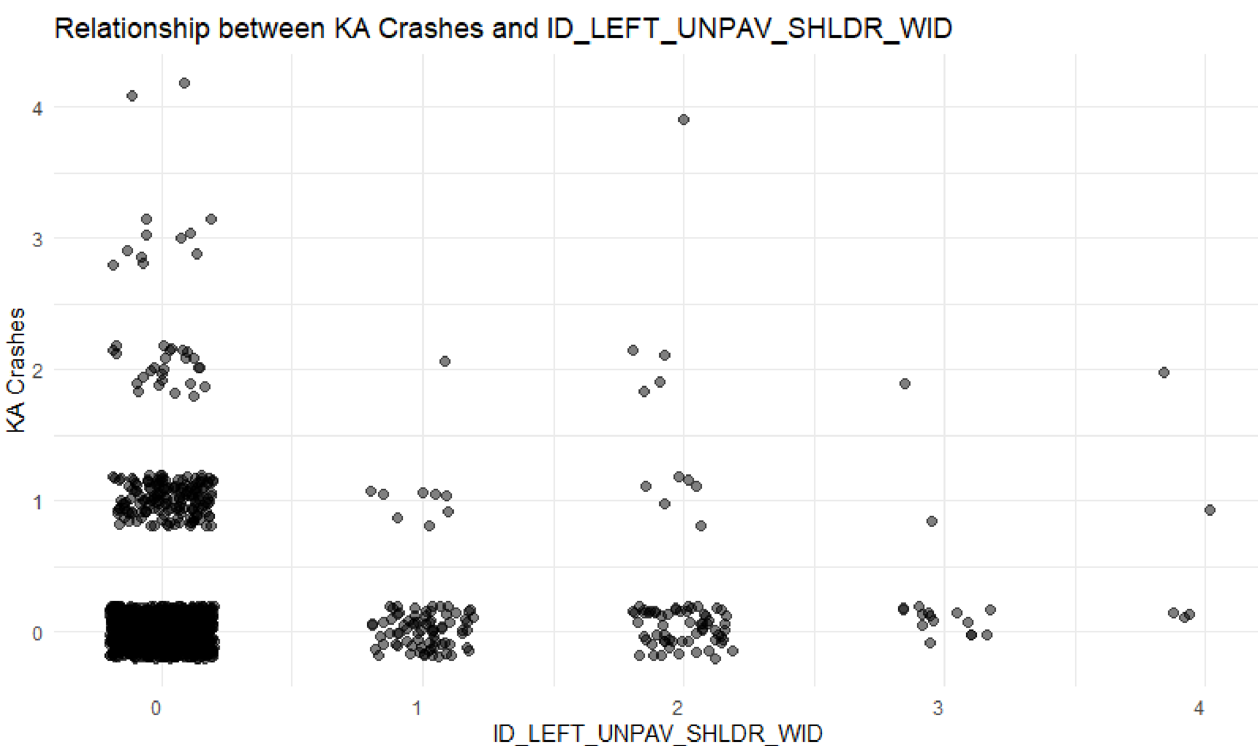

KA Crashes by ID_SHLDR_TYPE_NAME
KA Crashes
100
50
0
Surfaced with bituminous material
Curbed
Combination
Surfaced with PCC
Surfaced with tied PCC
ID_SHLDR_TYPE_NAME

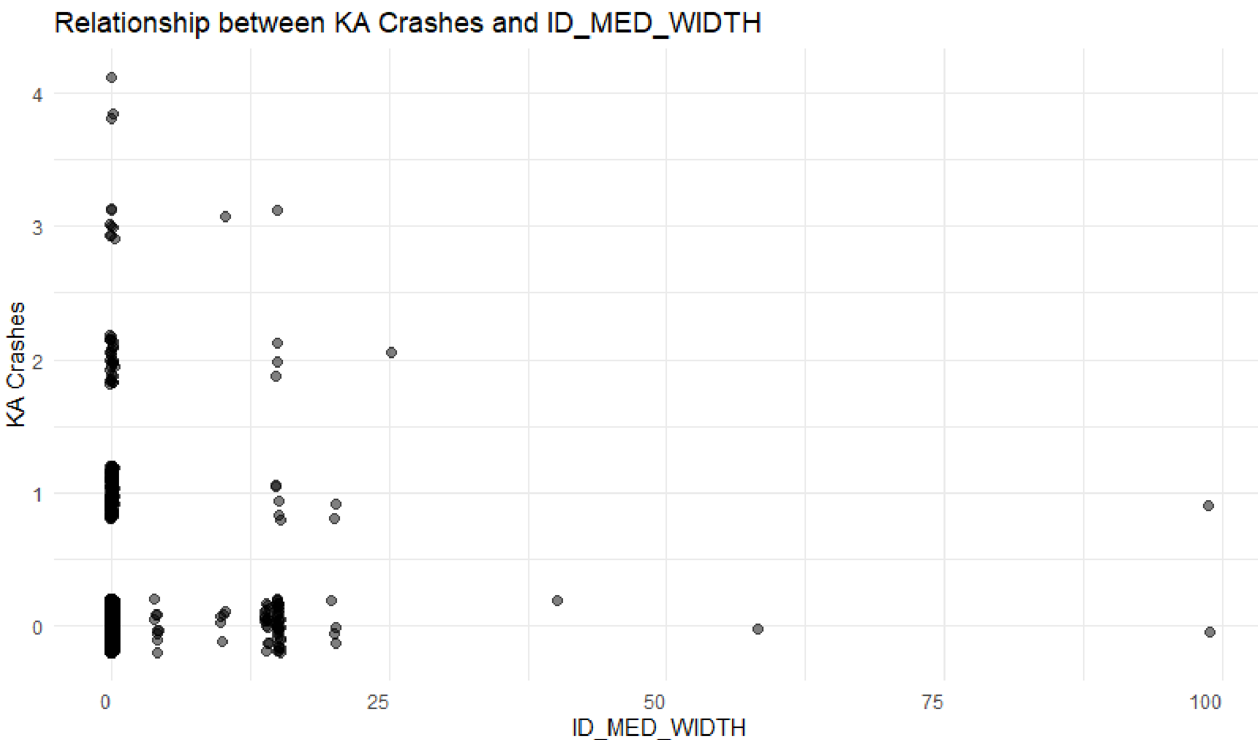

KA Crashes by ID_MED_TYPE_NAME
KA Crashes
200
100
0
None
Curbed
Positive Barrier
Unprotected
ID_MED_TYPE_NAME


Relationship between KA Crashes and R_SHOULDER_WIDTH
KA Crashes
0
1
2
3
4
0
4
8
12
R_SHOULDER_WIDTH

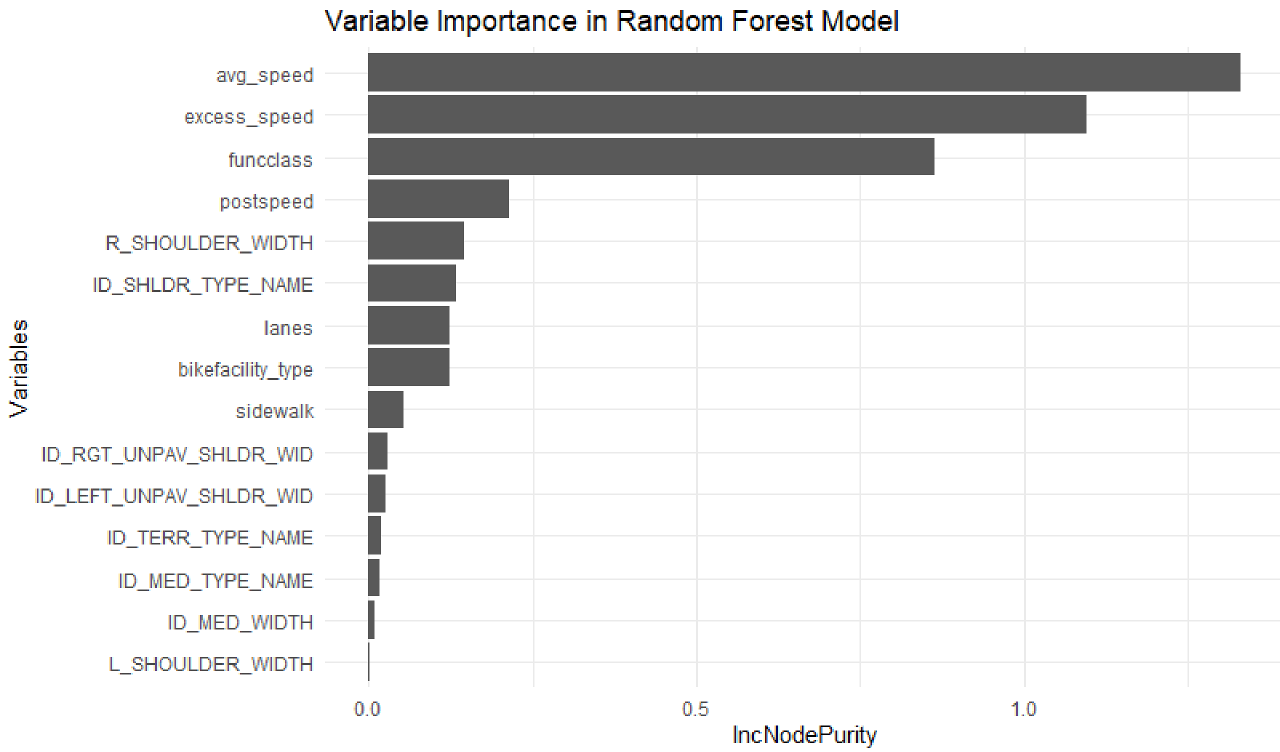

Relationship between KA Crashes and ID_RGT_UNPAV_SHLDR_WID
KA Crashes
0
1
2
3
4
0
1
2
3
4
ID_RGT_UNPAV_SHLDR_WID

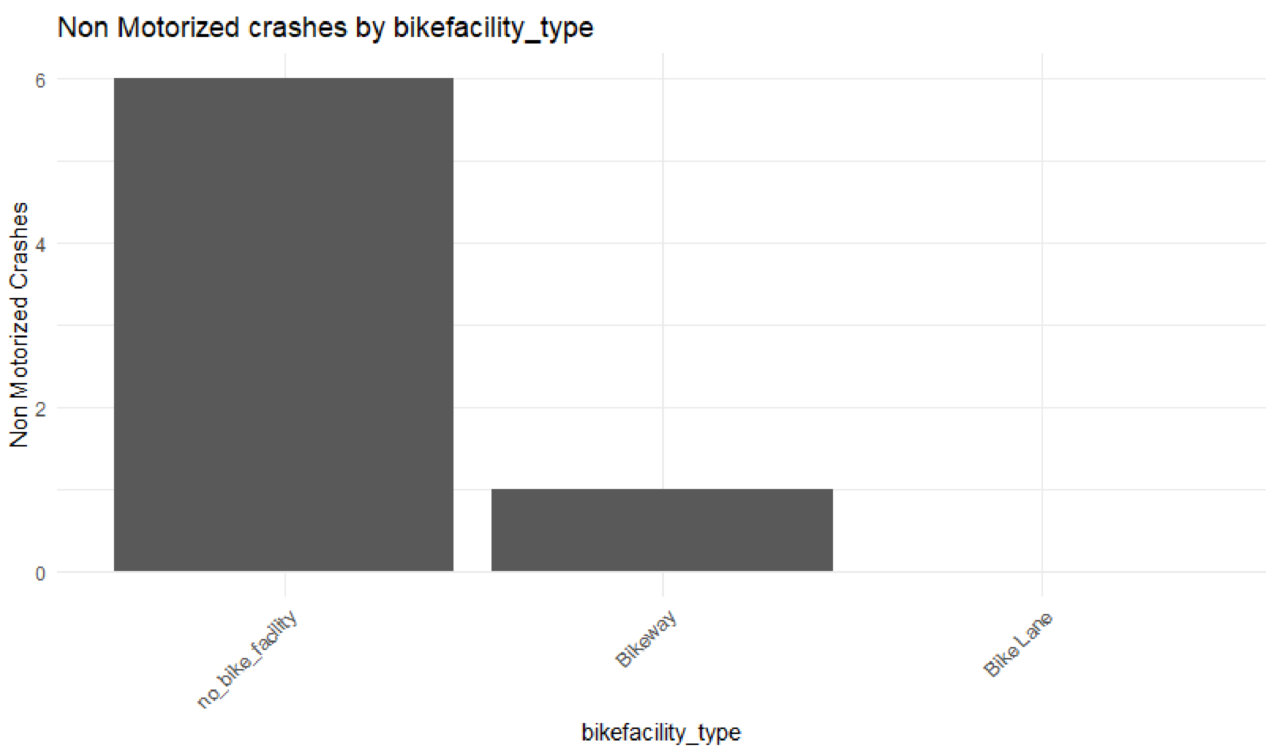

Relationship between KA Crashes and L_SHOULDER_WIDTH
KA Crashes
4
3
2
1
0
0
2
4
6
L_SHOULDER_WIDTH

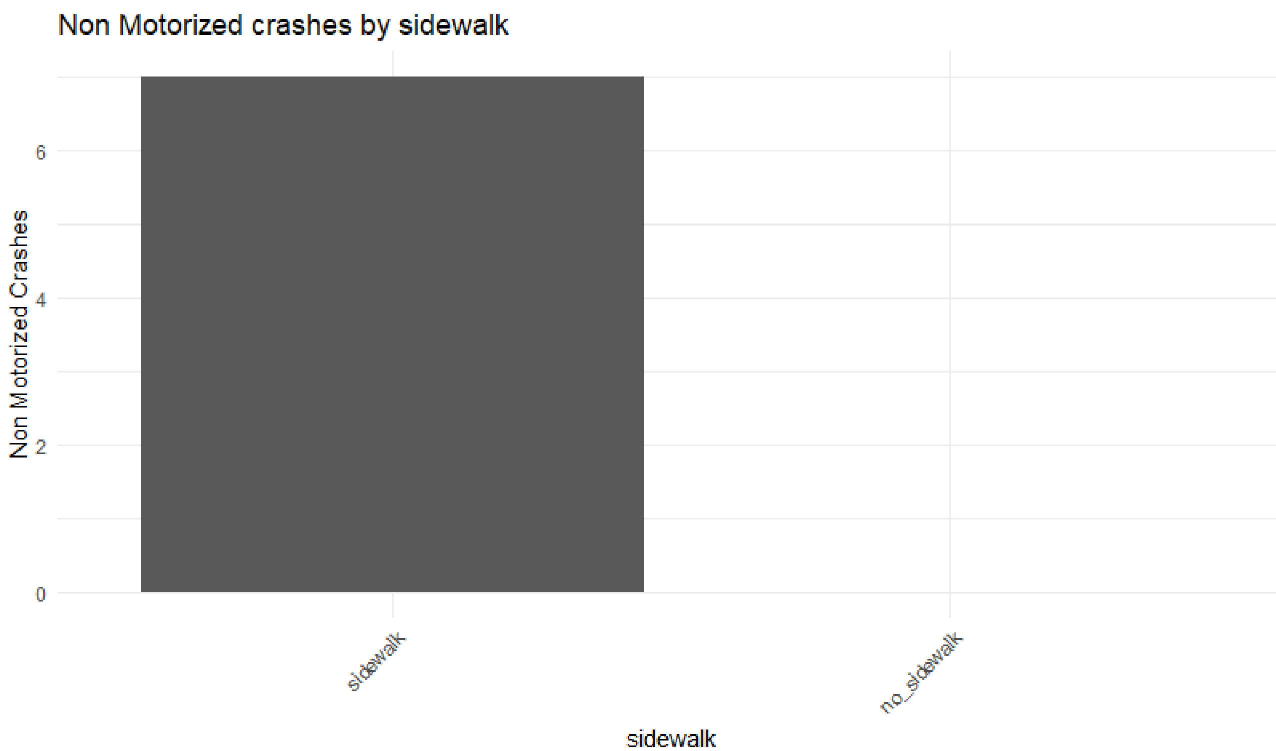

Relationship between KA Crashes and ID_LEFT_UNPAV_SHLDR_WID
KA Crashes
4
3
2
1
0
0
1
2
3
4
ID_LEFT_UNPAV_SHLDR_WID

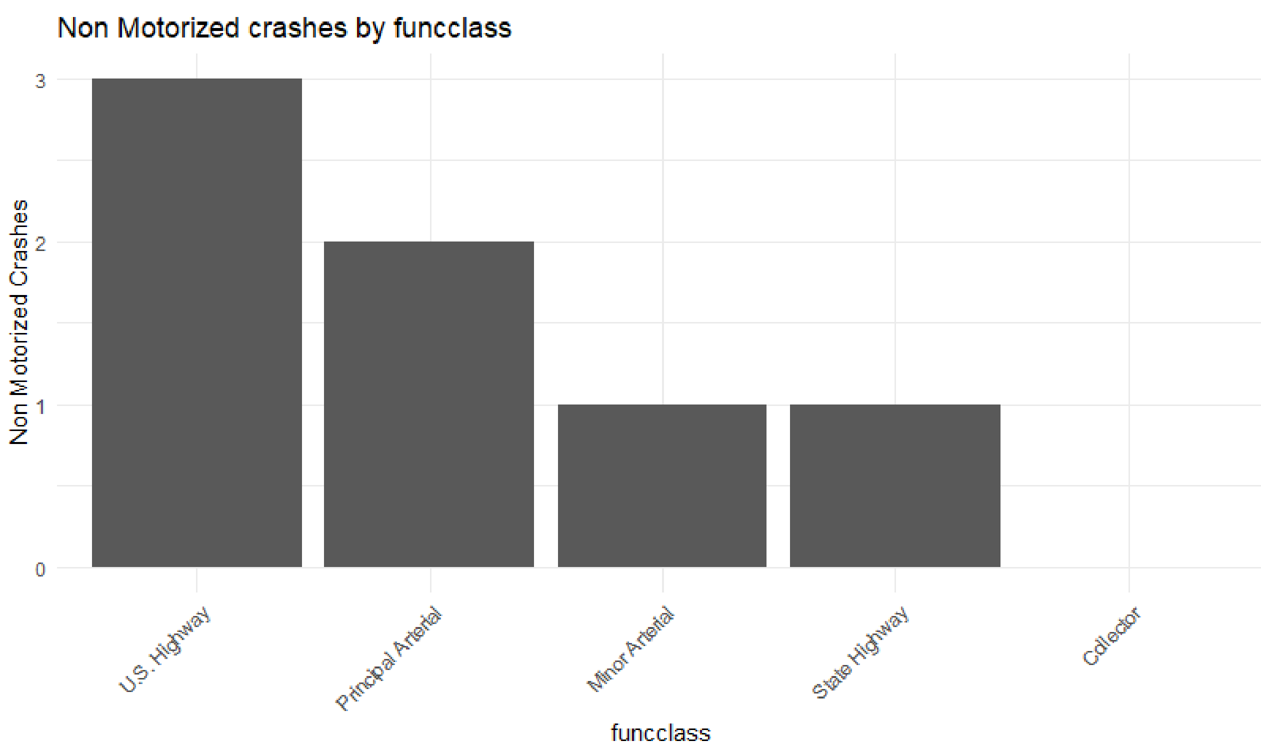

Relationship between KA Crashes and ID_MED_WIDTH
KA Crashes
0
1
2
3
4
ID_MED_WIDTH
0
25
50
75
100

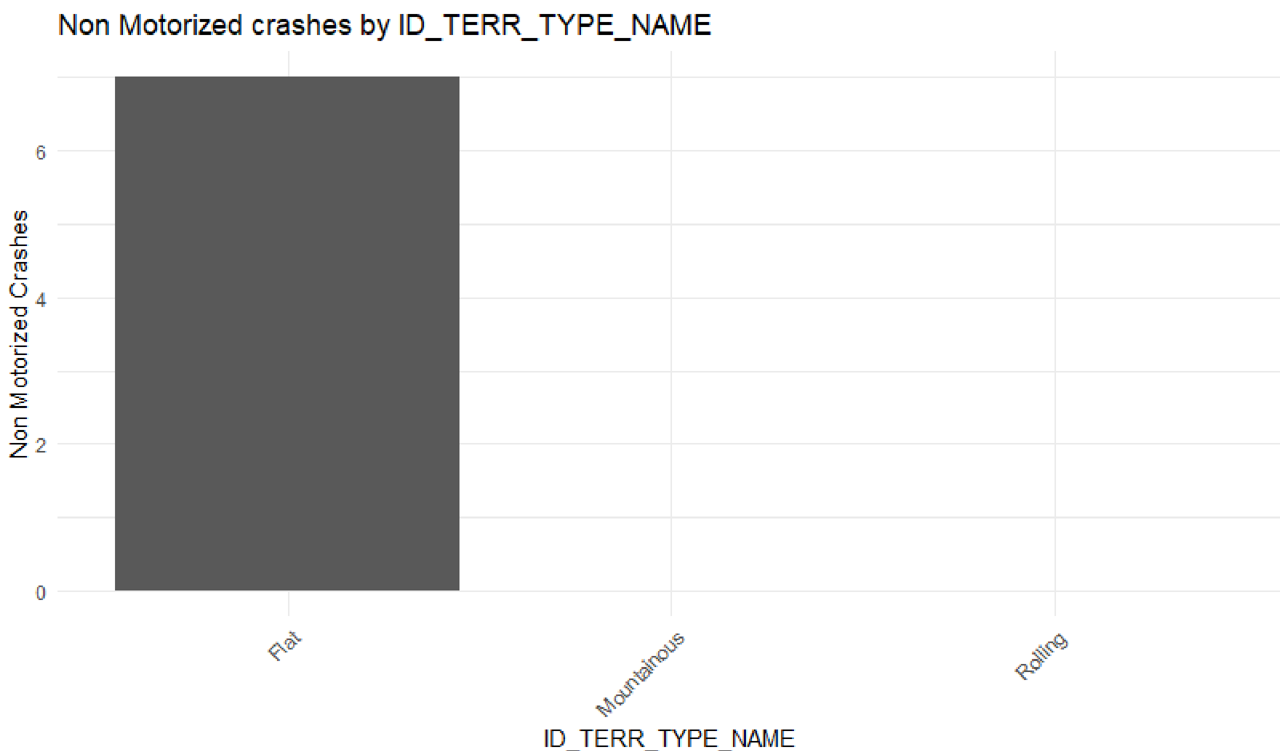
RANDOM FOREST MODEL 4 – NON-MOTORIZED ALL CRASHES

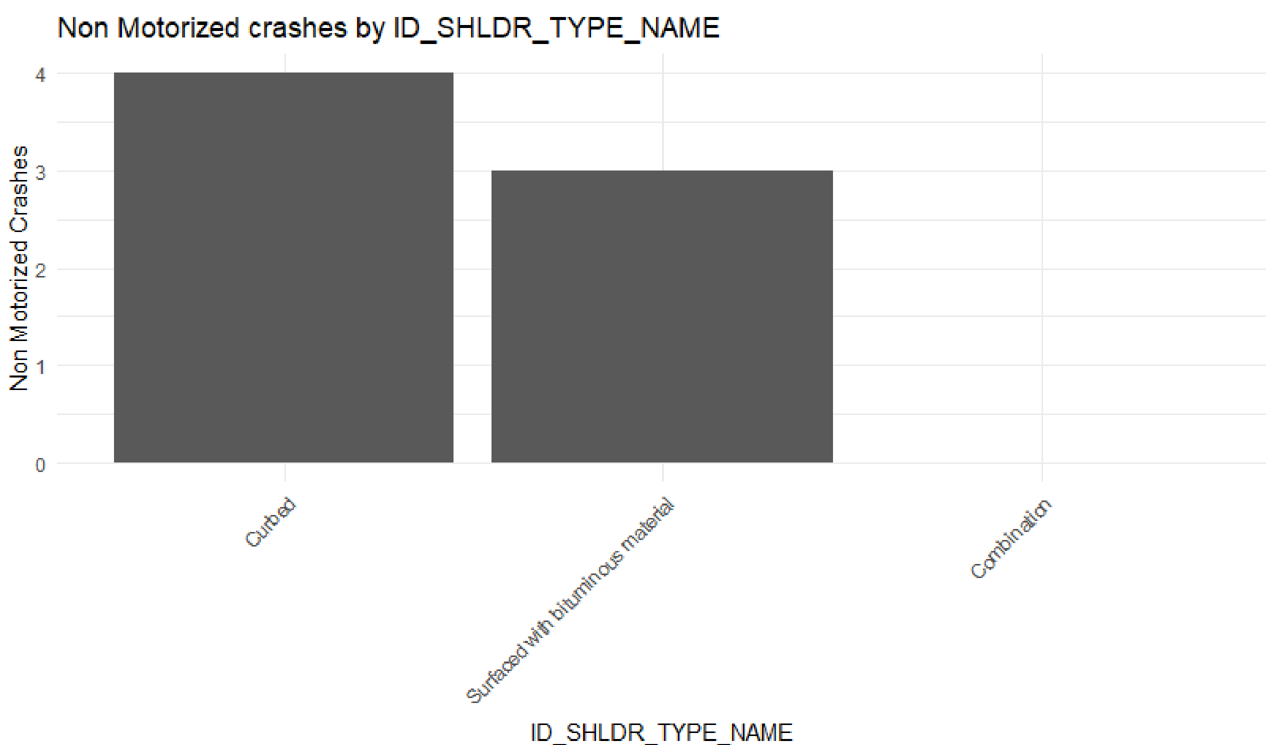


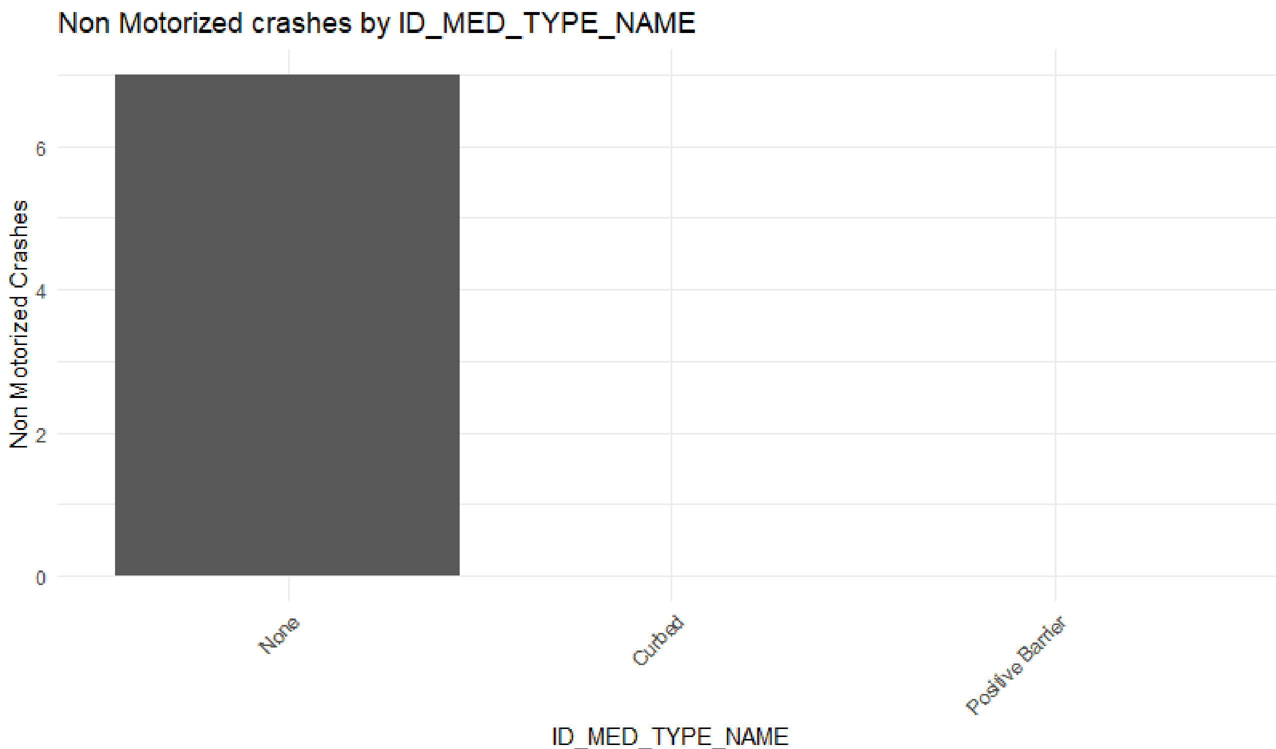


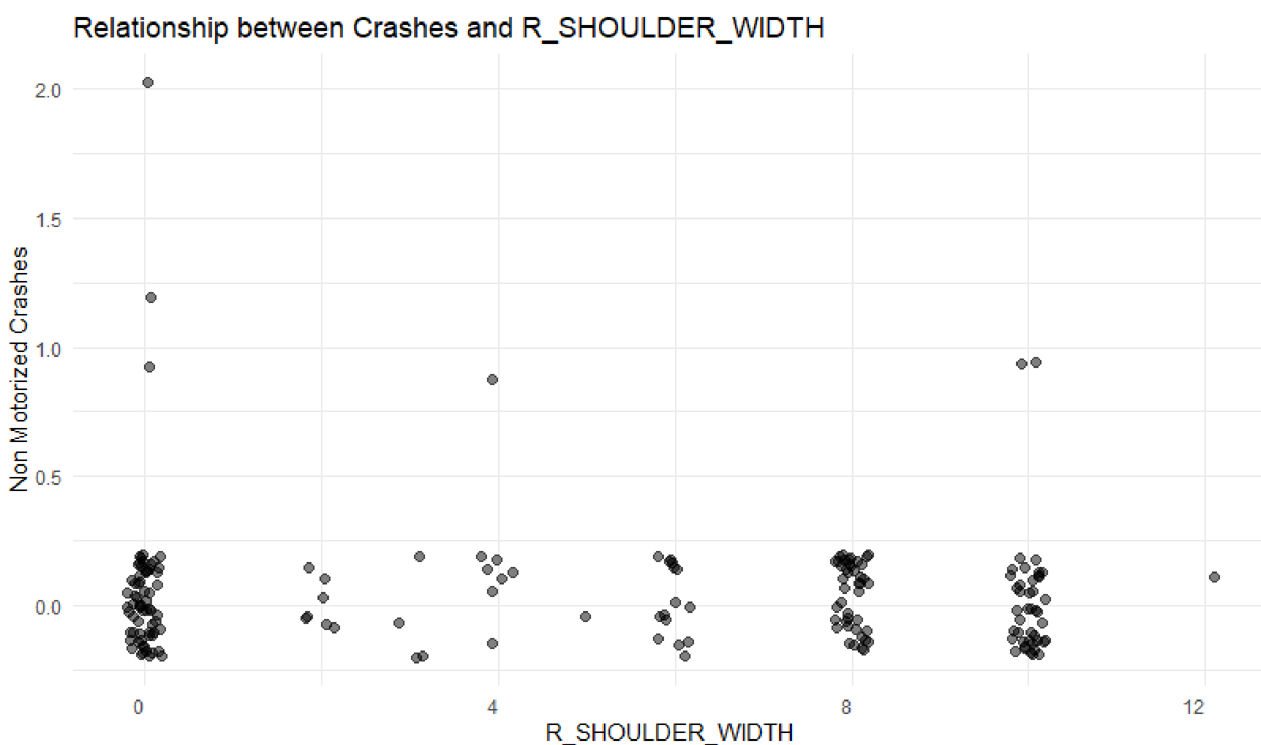

Non Motorized crashes by sidewalk
Non Motorized Crashes
0
2
4
6
sidewalk
no_sidewalk
sidewalk

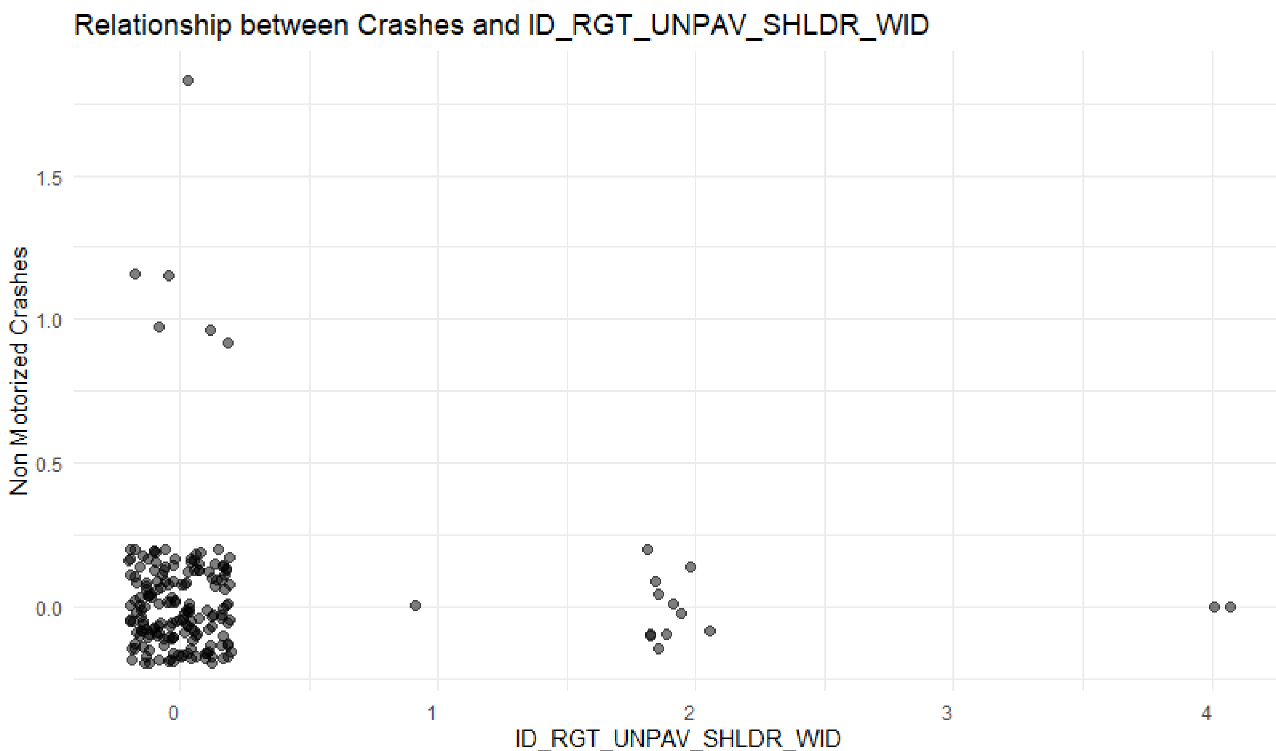

Non Motorized crashes by funcclass
Non Motorized Crashes
0
1
2
3
U.S. Highway
Principal Arterial
Minor Arterial
State Highway
Collector
funcclass

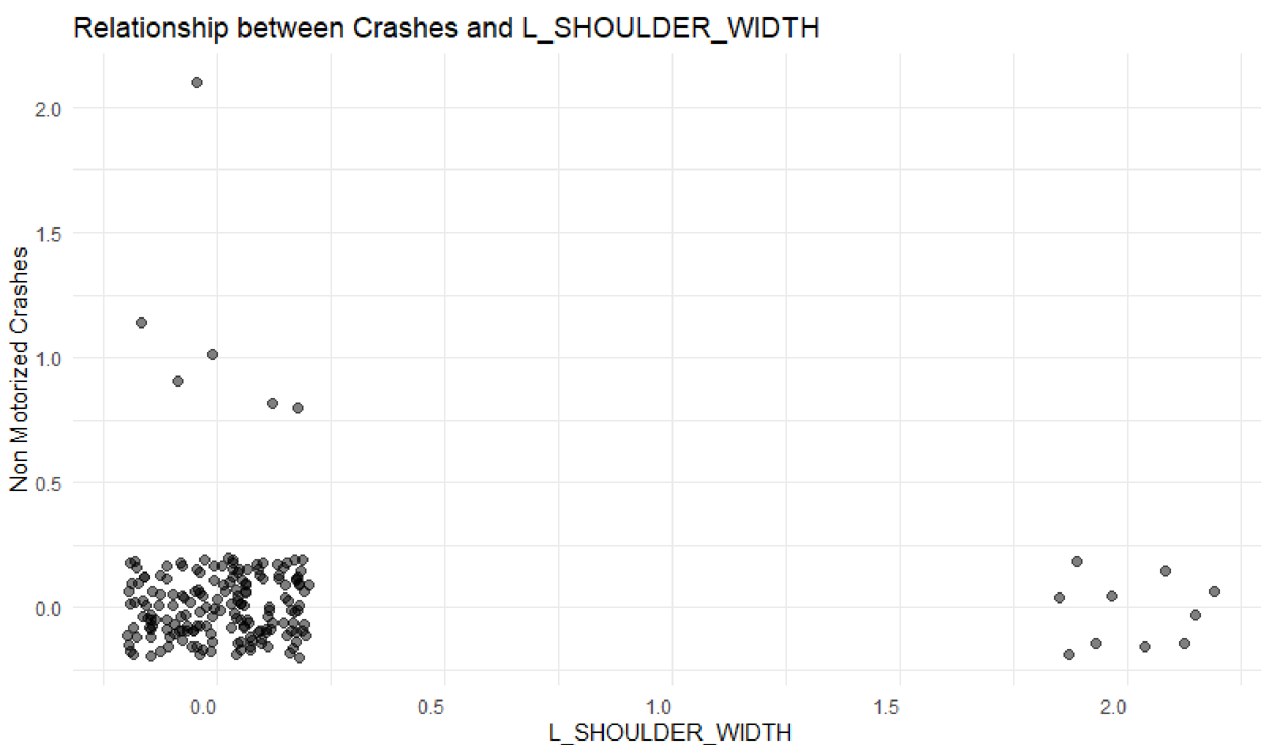

Non Motorized crashes by ID_TERR_TYPE_NAME
Non Motorized Crashes
0
2
4
6
Flat
Mountainous
Rolling
ID_TERR_TYPE_NAME

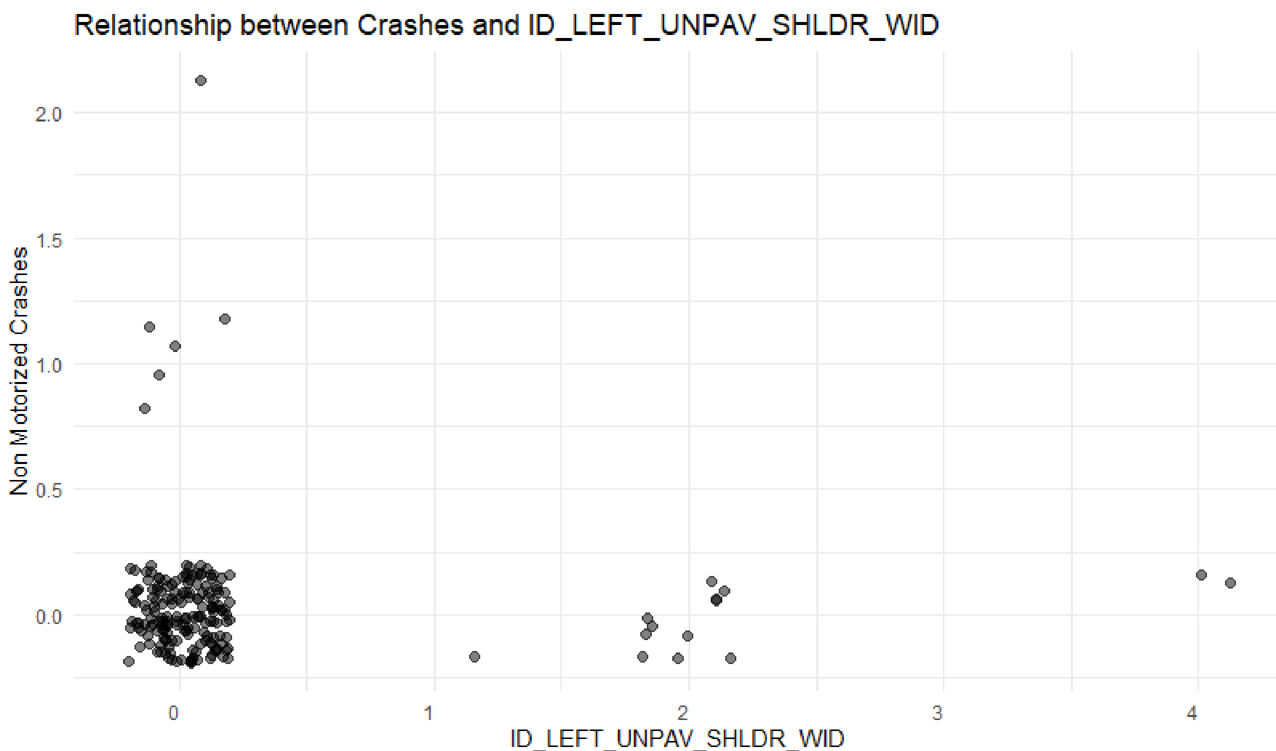

Non Motorized crashes by ID_SHLDR_TYPE_NAME
Non Motorized Crashes
0
1
2
3
4
Curbed
Surfaced with bituminous material
Combination
ID_SHLDR_TYPE_NAME

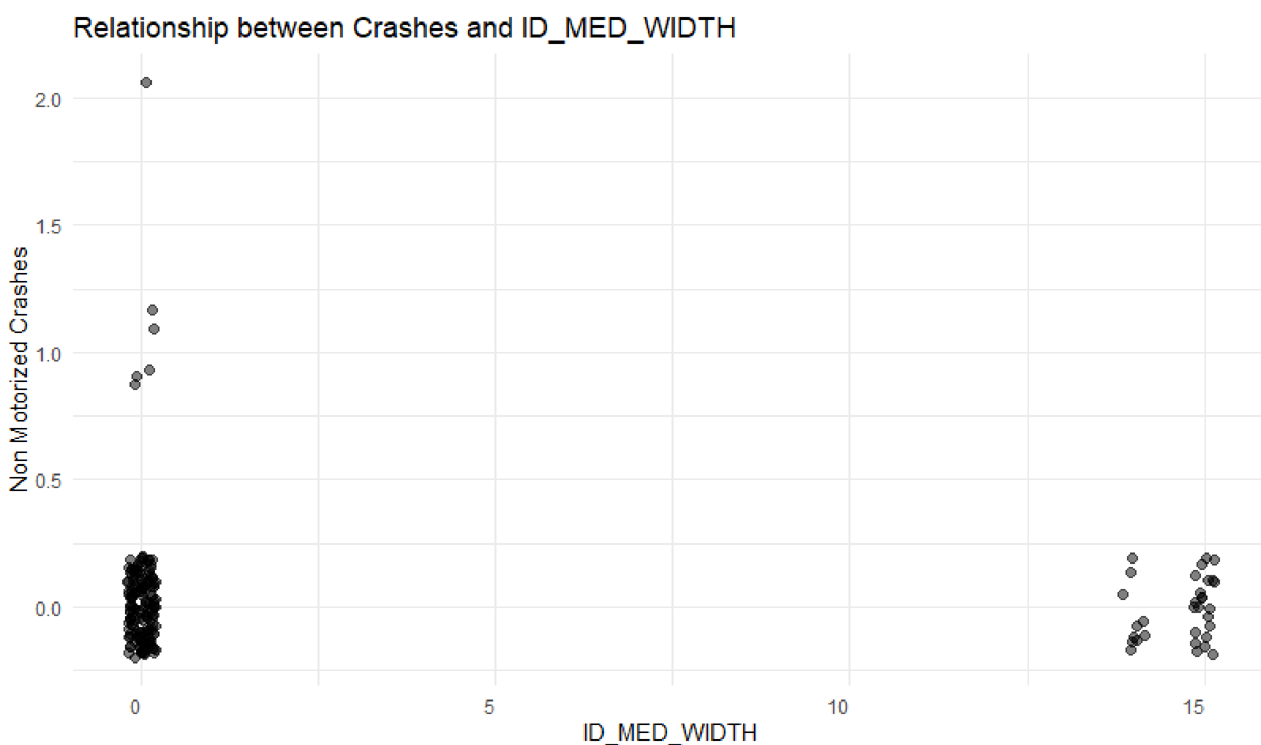

Non Motorized crashes by ID_MED_TYPE_NAME
Non Motorized Crashes
0
2
4
6
None
Curbed
Positive Barrier
ID_MED_TYPE_NAME

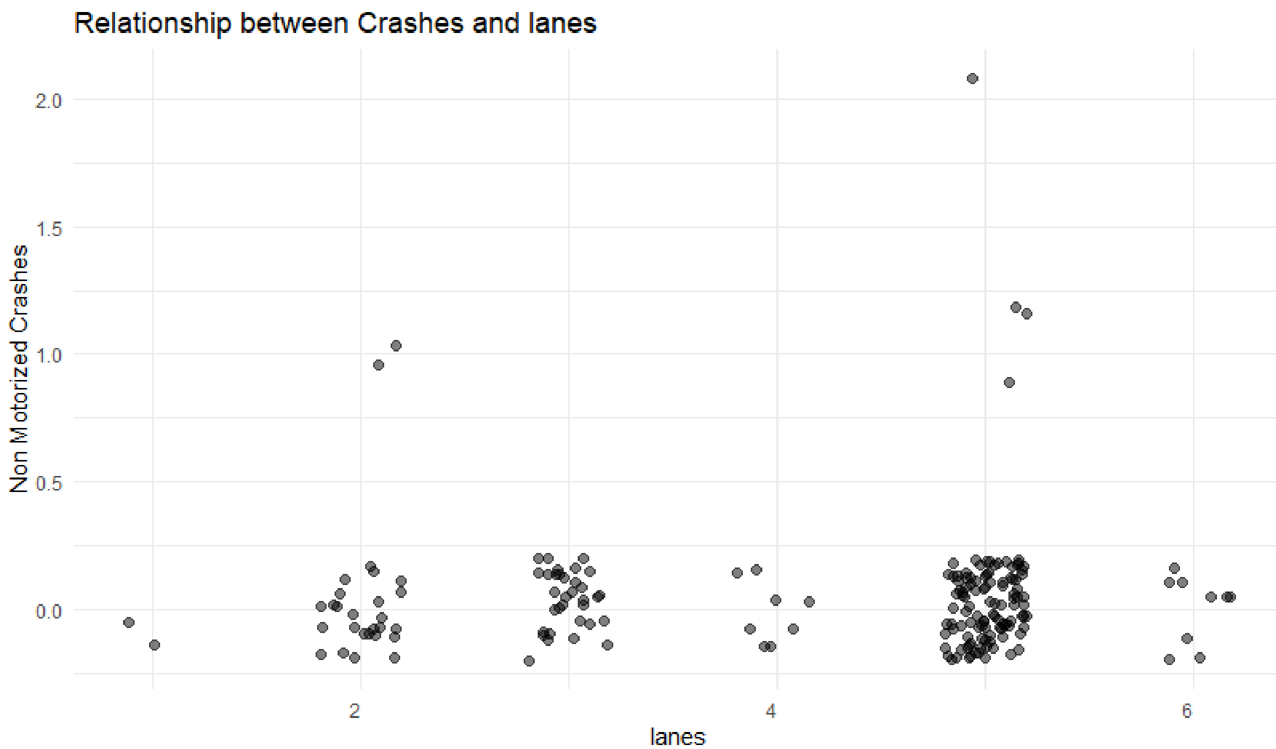

Relationship between Crashes and R_SHOULDER_WIDTH
Non Motorized Crashes
0.0
0.5
1.0
1.5
2.0
0
4
8
12
R_SHOULDER_WIDTH

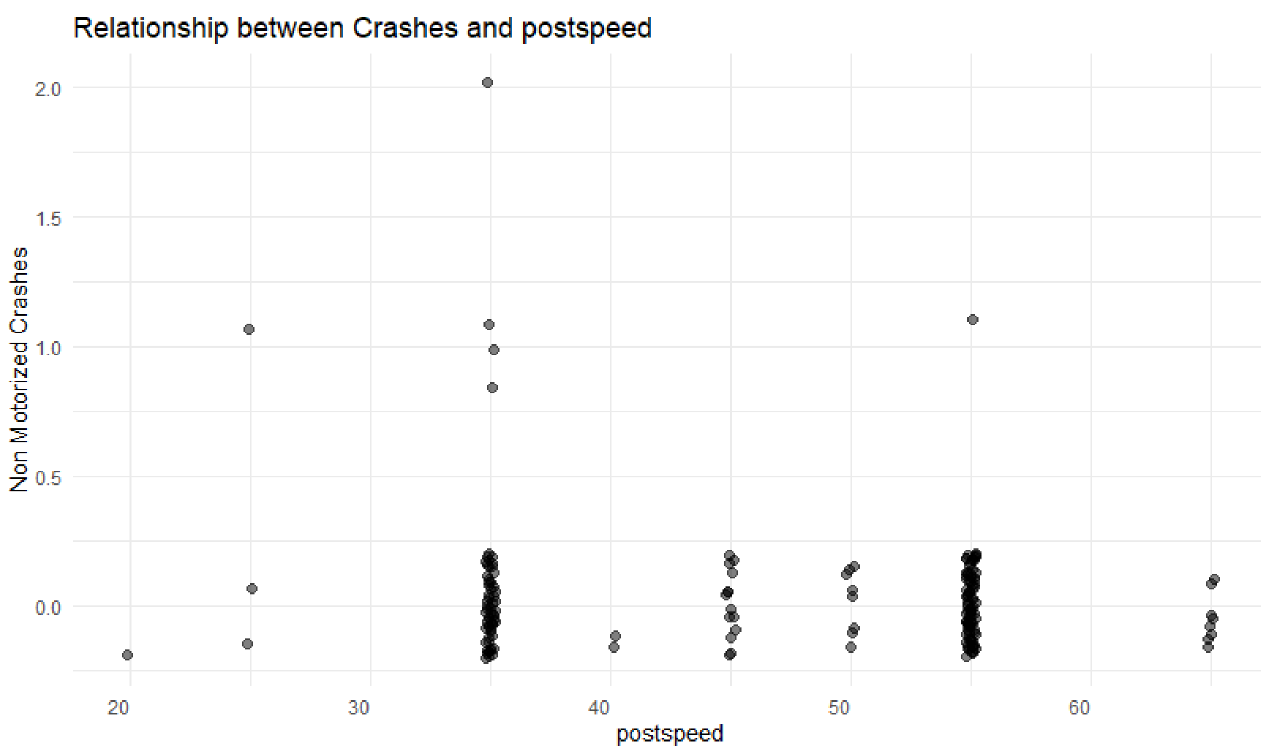

Relationship between Crashes and ID_RGT_UNPAV_SHLDR_WID
Non Motorized Crashes
1.5
1.0
0.5
0.0
0
1
2
3
4
ID_RGT_UNPAV_SHLDR_WID

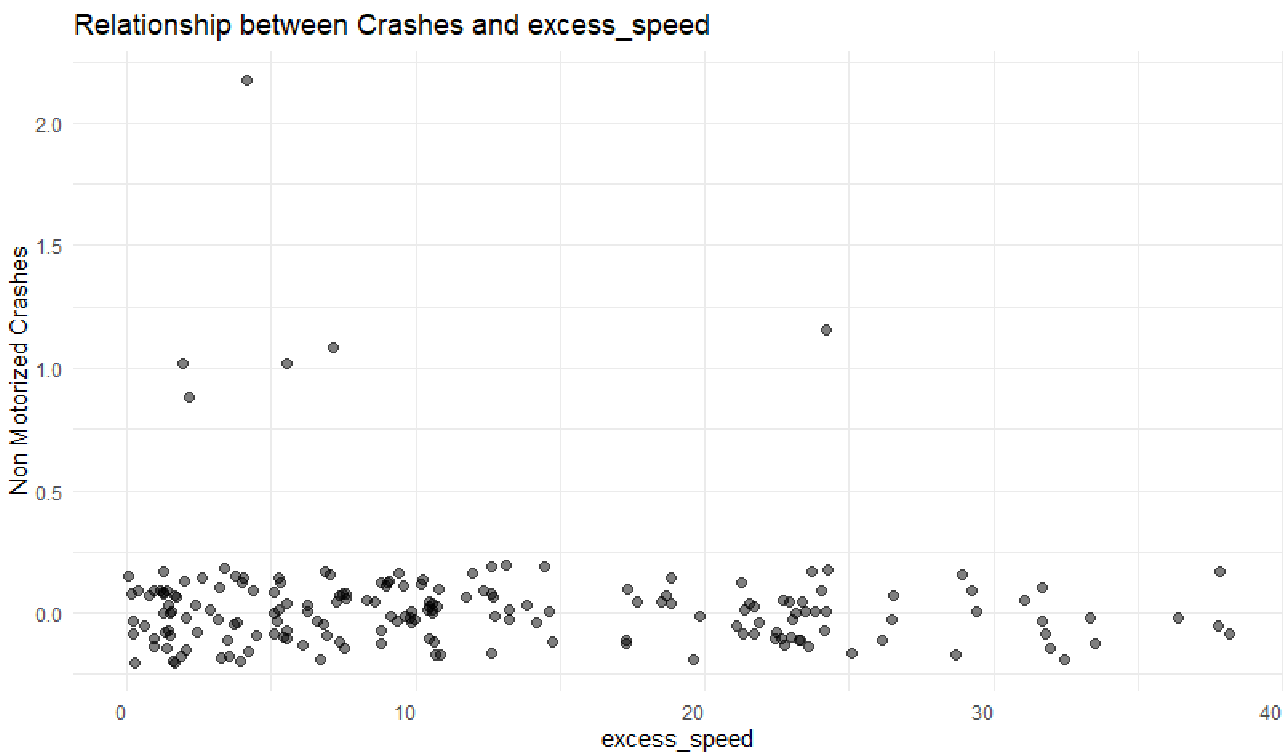

Relationship between Crashes and L_SHOULDER_WIDTH
Non Motorized Crashes
2.0
1.5
1.0
0.5
0.0
0.0
0.5
1.0
1.5
2.0
L_SHOULDER_WIDTH

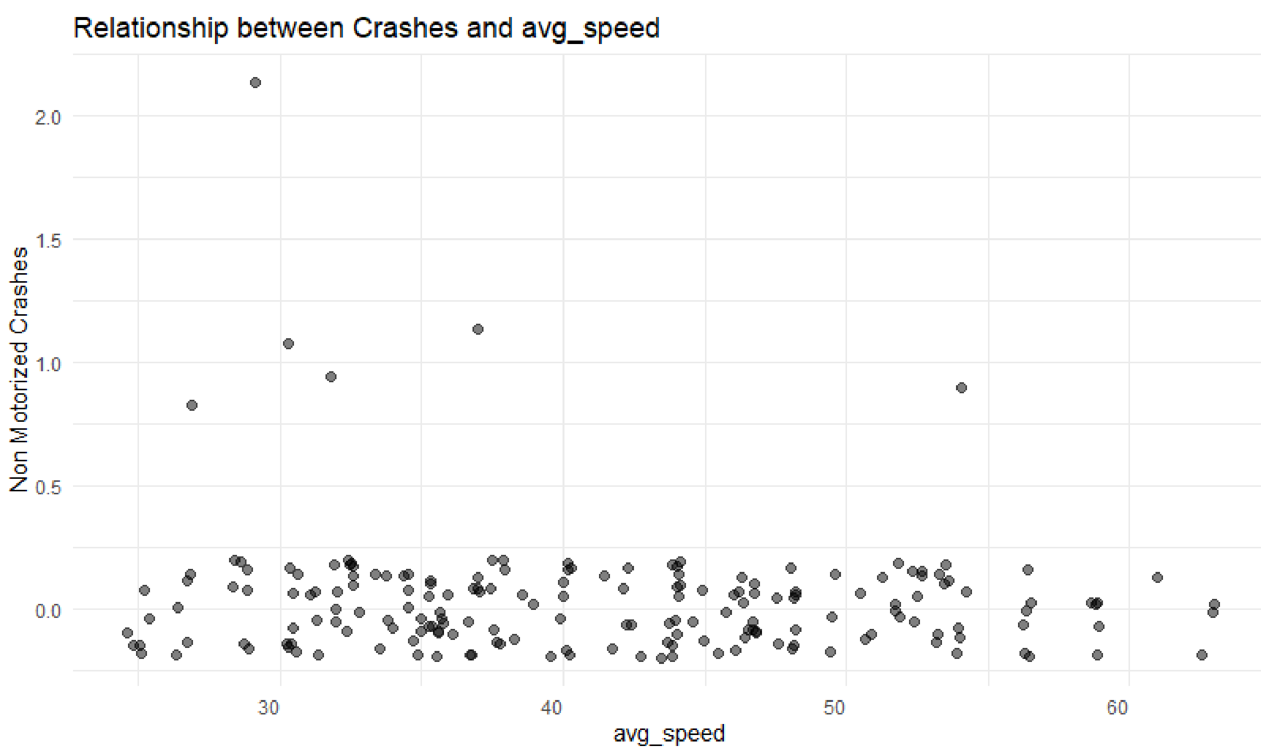

Relationship between Crashes and ID_LEFT_UNPAV_SHLDR_WID
Non Motorized Crashes
0.0
0.5
1.0
1.5
2.0
0
1
2
3
4
ID_LEFT_UNPAV_SHLDR_WID


Relationship between Crashes and ID_MED_WIDTH
Non Motorized Crashes
0.0
0.5
1.0
1.5
2.0
0
5
10
15
ID_MED_WIDTH


Relationship between Crashes and lanes
Non Motorized Crashes
2.0
1.5
1.0
0.5
0.0
2
4
6
lanes


Relationship between Crashes and postspeed
Non Motorized Crashes
2.0
1.5
1.0
0.5
0.0
20
30
40
50
60
postspeed


Relationship between Crashes and excess_speed
Non Motorized Crashes
2.0
1.5
1.0
0.5
0.0
0
10
20
30
40
excess_speed


Relationship between Crashes and avg_speed
Non Motorized Crashes
2.0
1.5
1.0
0.5
0.0
30
40
50
60
avg_speed

APPENDIX F: TESTING THE RELATIONSHIP BETWEEN SPECIFIC DEMOGRAPHICS VARIABLES AND TAZS IN THE HIN

PAIRED T-TEST RESULTS

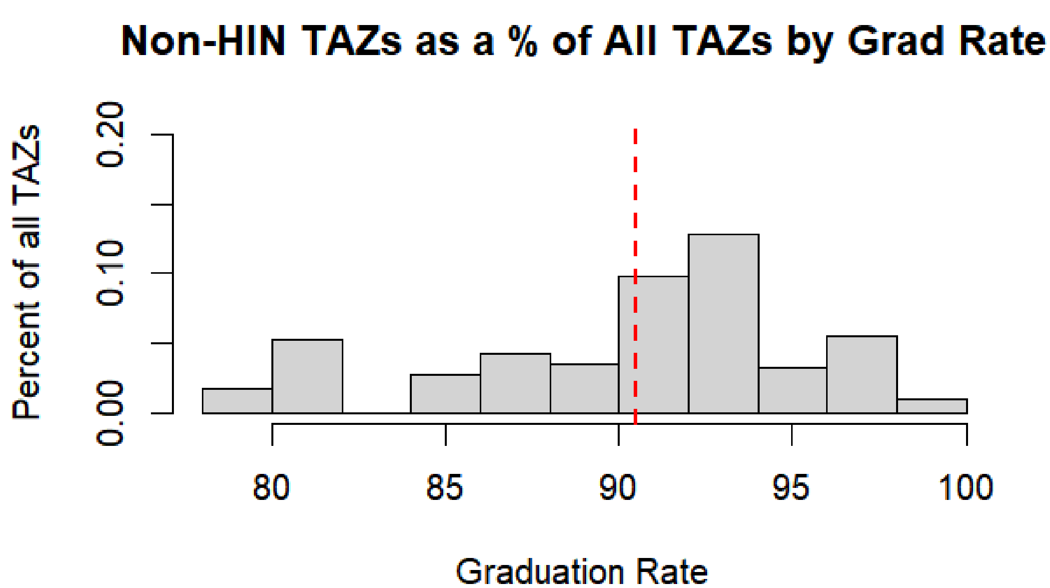
Of the five Equity Index variables tested, only the unemployment rate variable is significant at a 95% confidence level. TAZs that overlap with the HIN have a slightly higher unemployment rate (0.3%) compared to the TAZs outside of the HIN.

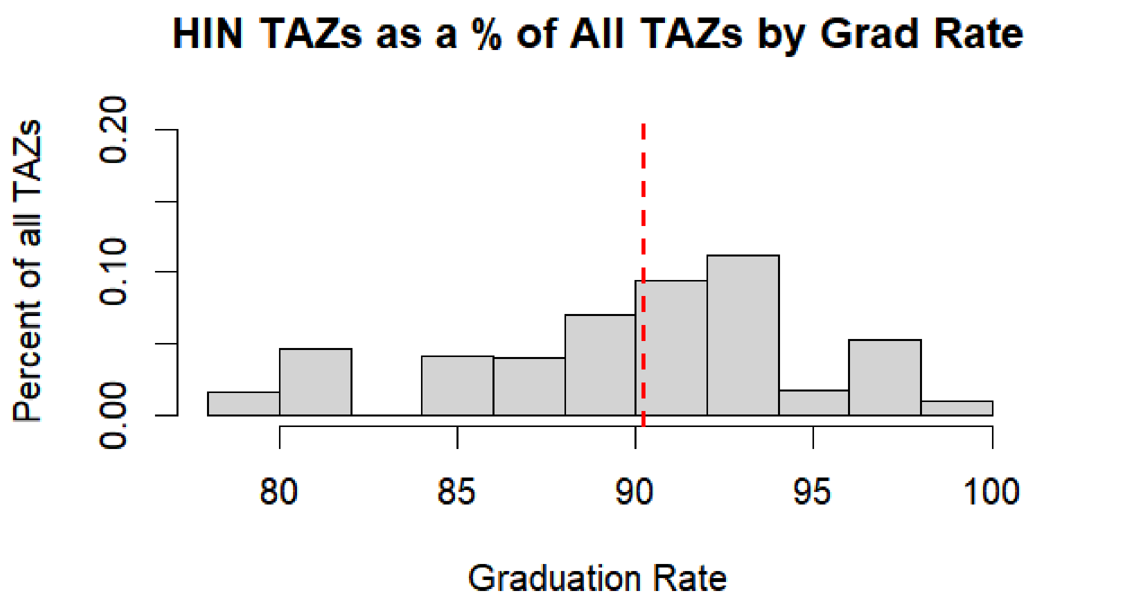
Equity Index Variable	HIN TAZ Mean	Non-HIN TAZ Mean	P-Value
Graduation Rate	90.2%	90.5%	0.1804
Unemployment Rate	**4.6%**	**4.3%**	**0.0364**
% No Car	4.2%	3.8%	0.1577
% No Health Insurance	10.9%	10.5%	0.0838
Median Rent as % of Income	29.2%	28.8%	0.2624

Variable Comparisons

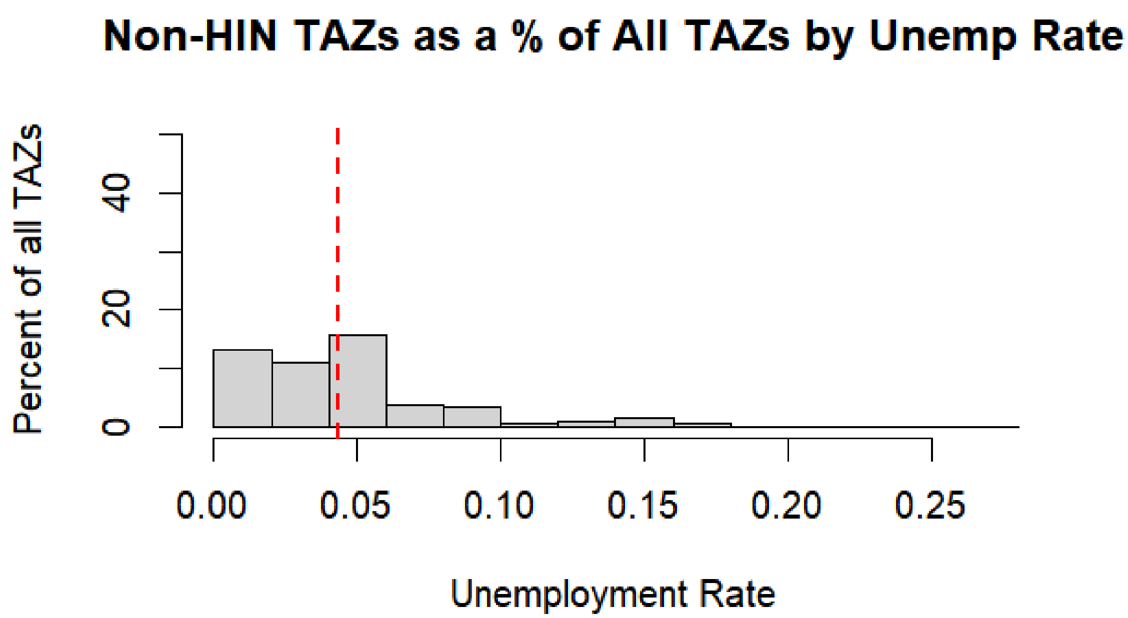
For each variable, there is a histogram that shows its distribution relative to percentage of total TAZs in the region for TAZs on the HIN and TAZs not on the HIN. The red dotted line represents the mean of the dataset.

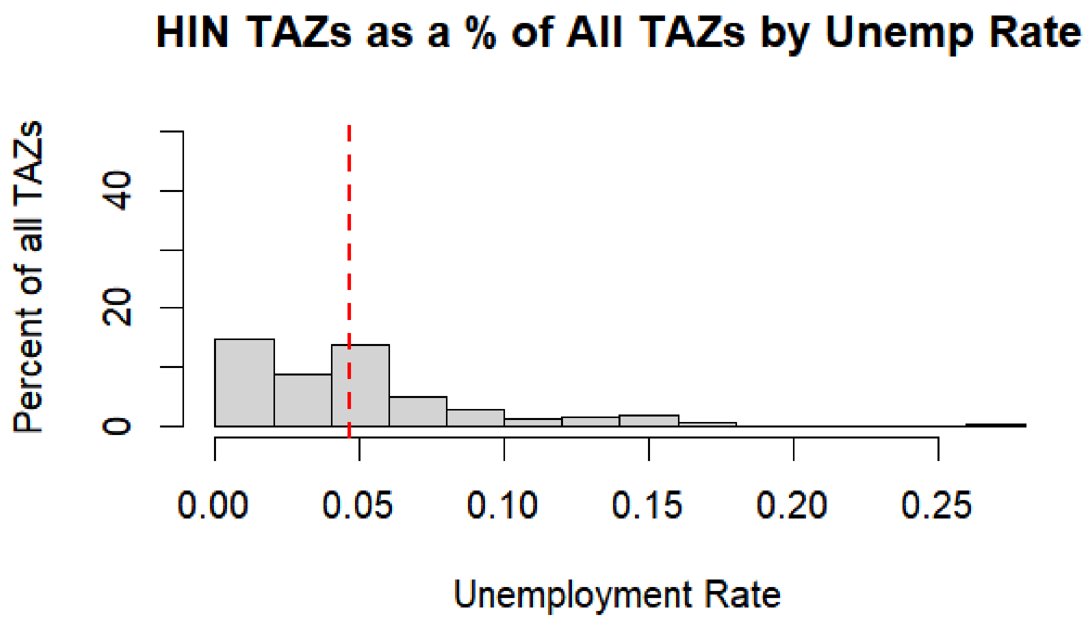
Graduation Rate



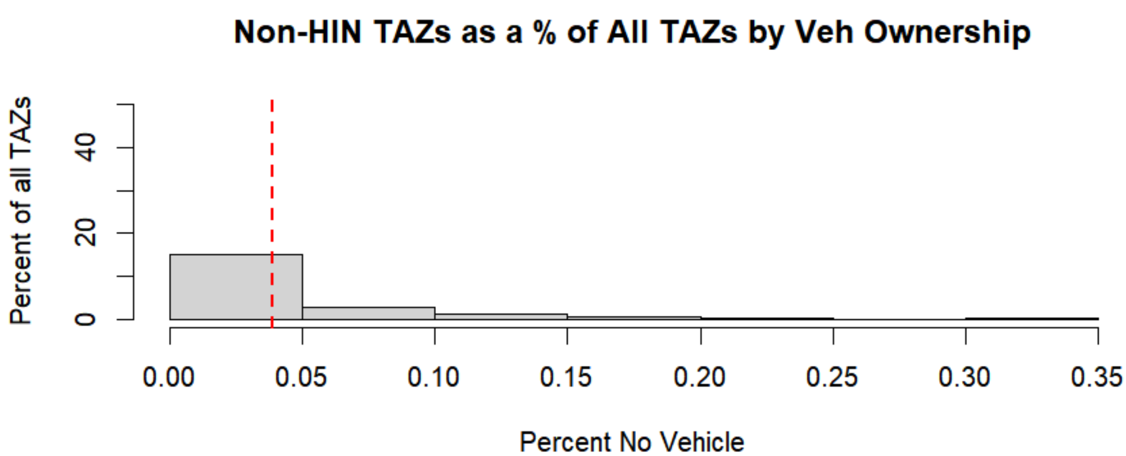


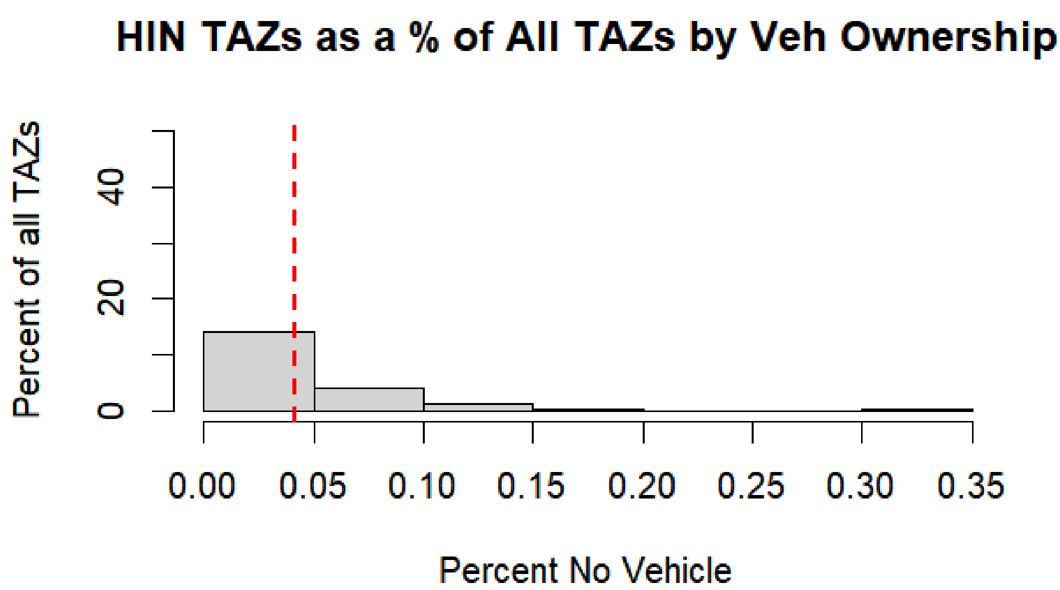
Unemployment Rate



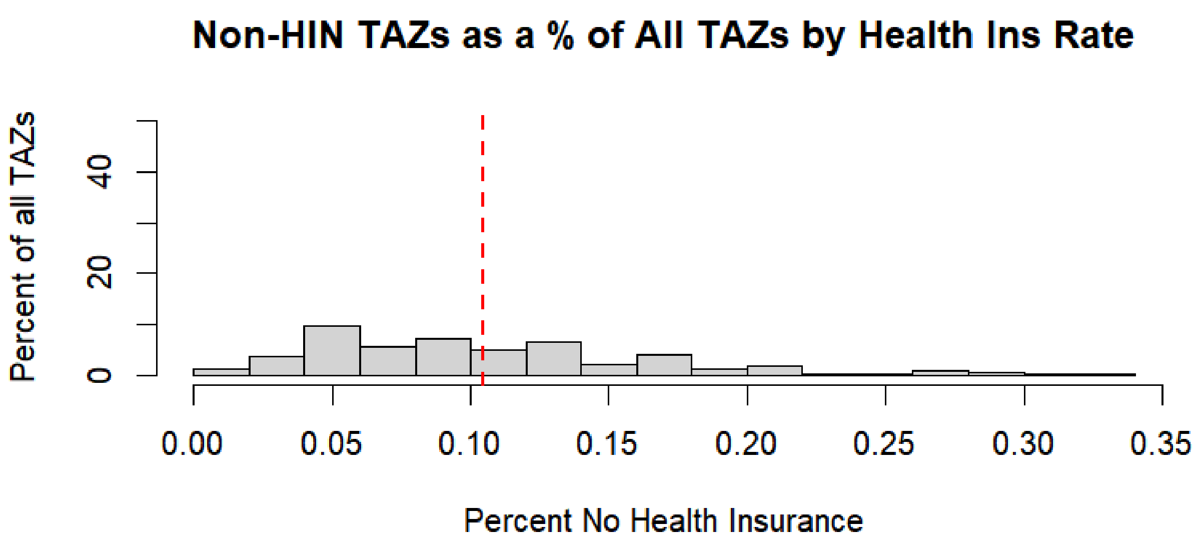


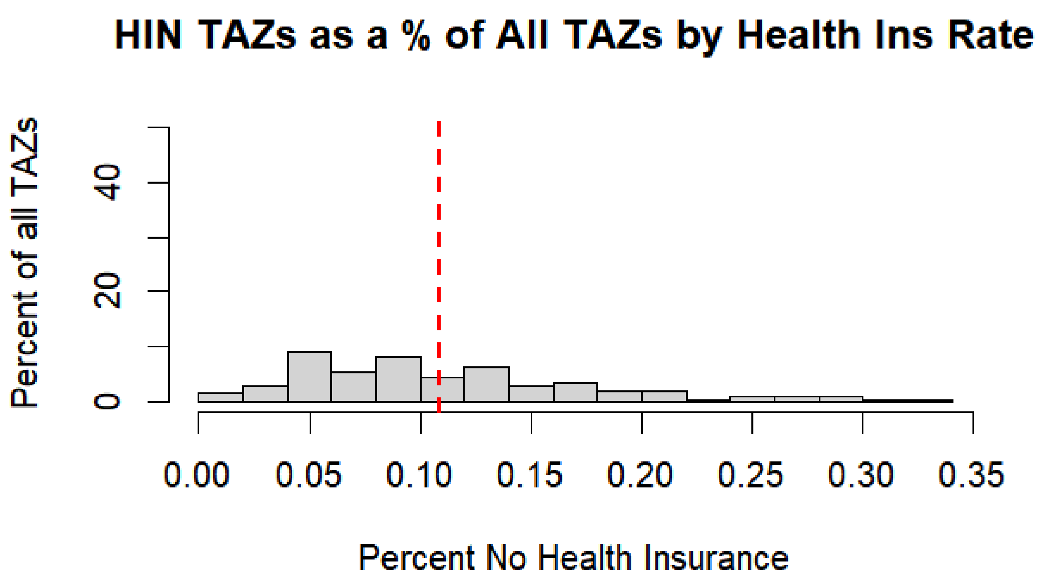
Percent No Car



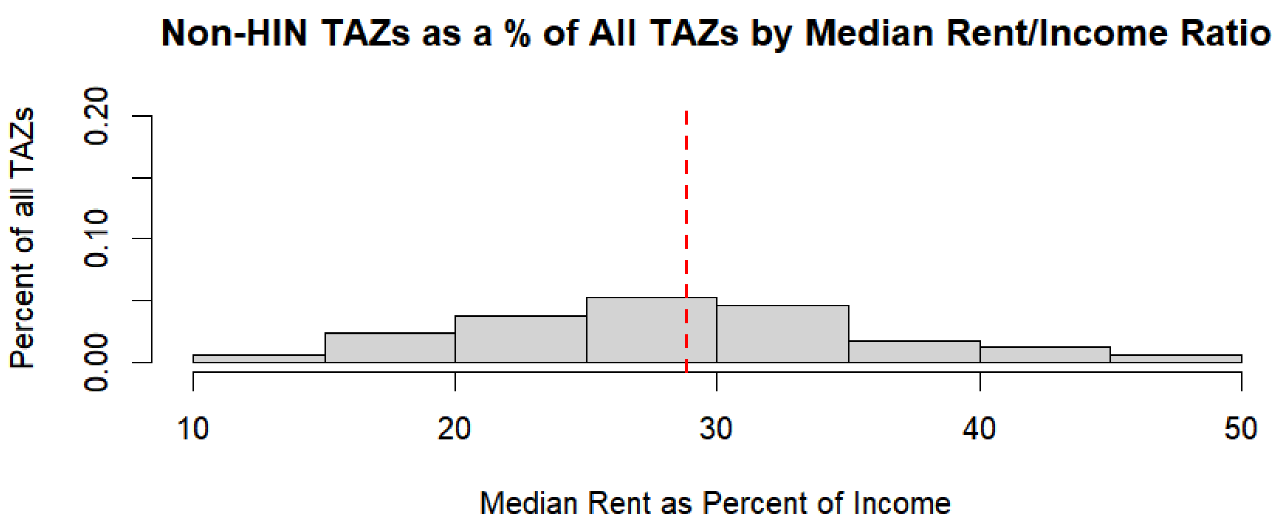


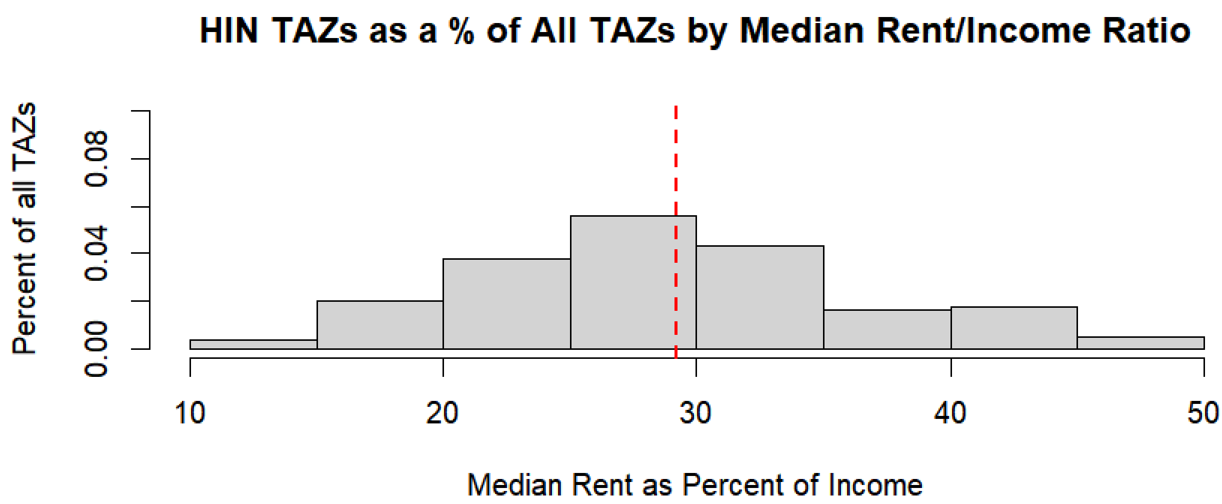
<u>**Percent No Health Insurance**</u>





Median Rent as Percent of Income




HIN TAZs as a % of All TAZs by Median Rent/Income Ratio
Percent of all TAZs
0.00
0.04
0.08
10
20
30
40
50
Median Rent as Percent of Income

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COMPASS
Regional Safety Action Plan

TECHNICAL MEMORANDUM #4

September 16, 2024 Project #: 29061.0

To: Hunter Mulhall and Austin Miller, COMPASS

From: Matt Steele; Chase Fuquay, PE, Mark Heisinger, PE; Nick Foster, AICP, RSP1; and Sonia Daleiden, PE, PTOE

CC: Project Management Team

RE: Strategy Development

The purpose of this memorandum is to identify relevant local strategies that address the emphasis areas identified from the High-Injury Network (HIN), the challenges faced by COMPASS and its member agencies, and transportation safety issues identified through community input. This memo contains the following:

- Introduction and Guiding Principles
- Systemic Infrastructure and Non-Infrastructure Strategy Toolbox
- Location and Jurisdiction-Specific Strategies
- Before and After Evaluation Guidance

Of the strategies identified in this document, one strategy per COMPASS member agency is planned for further development in the next phase of this project to provide sufficient detail that can be used for applications for Safe Streets and Roads for All (SS4A) discretionary grant funding.

INTRODUCTION AND GUIDING PRINCIPLES

This introduction describes the guiding principles used to identify strategies and key findings from previous work in the COMPASS RSAP development process.

SAFE SYSTEM APPROACH & DESIGN HIERARCHY

The strategies identified in this memo apply the principles of the Safe System Approach (SSA). The SSA is a mindset shift from *crash prevention* to *injury/fatality prevention* – putting less emphasis on improving behavior and more emphasis on *designing for the mistakes that people make so that those mistakes don't result in fatal or severe injury crashes.* The Safe System Approach (SSA) has been in use in countries around the world for decades to help them move towards a goal of zero roadway deaths and serious injuries. It has proven to be effective, with countries adopting the approach in a variety of contexts. In January 2022, the United States Department of Transportation released its National Roadway Safety Strategy (Reference 1) that adopted the SSA as its core strategy for achieving its goal.

Figure 1: Safe System Approach Principles and Objectives (Source: FHWA)

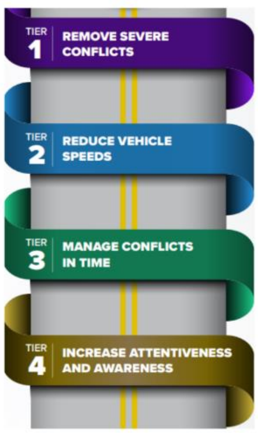


Figure 2: Safe System Roadway Design Hierarchy (Source: FHWA)

Figure 1 illustrates the six principles and five objectives of the SSA. The six SSA principles (shown in black text around the circle) encompass the fundamental beliefs the approach is built on. The five SSA objectives are conduits through which the approach is implemented. The strategies presented in this memo represent the facets of the SSA that are actionable by COMPASS and its member agencies. This memo presents strategies that address all SSA objectives.

To help agencies put the SSA into practice, FHWA recently published the *Safe System Roadway Design Hierarchy* (Reference 2). This guide is intended to help practitioners make project-specific decisions on treatments. It places strategies into four tiers with respect to their alignment with the SSA. Figure 2 illustrates this hierarchy. This hierarchy of strategy tiers was used to gauge the priority of strategies that are presented in this memo.

KEY FINDINGS FROM PREVIOUS WORK

This section describes key findings from previous COMPASS RSAP activities earlier in this project's process.

Emphasis Areas

The project team identified emphasis areas to address with strategies and countermeasures based on an analysis of the study area's historical crash types, locations, behavioral factors, and risk factors associated with fatal and serious injury crashes. Descriptions of the emphasis areas are shown in Figure 3. Additional details on the results of the crash analysis and the High-Injury Network can be found in *Technical Memorandum #3: Existing Conditions* (Reference 3). The High-Injury Network can also be viewed on an online ArcGIS server hosted by COMPASS on the following link: https://compassidaho.maps.arcgis.com/apps/dashboards/aa2067339363456a9fcec94b0d9875fd

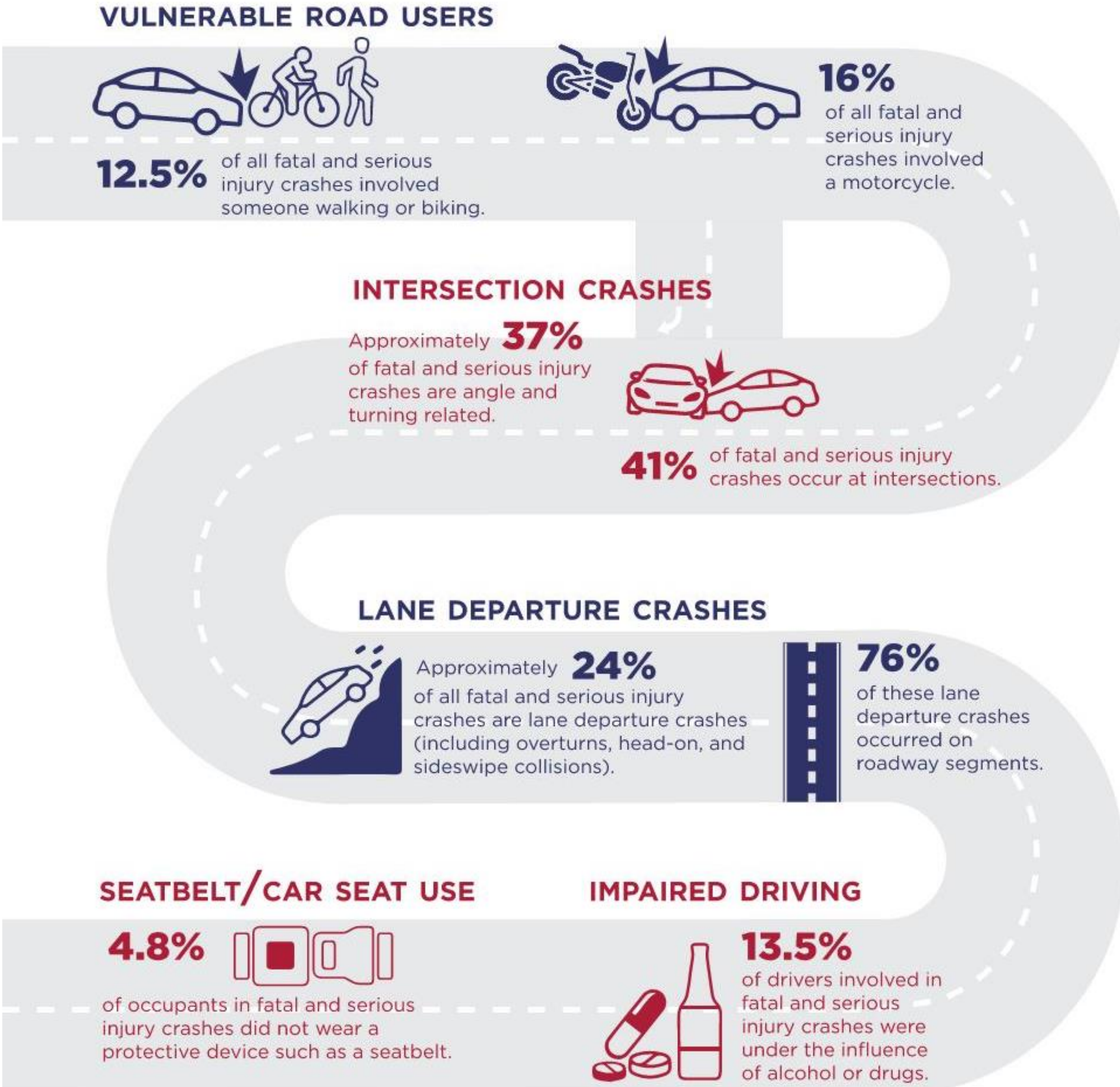


Figure 3: Emphasis Areas

Challenges and Successes of Member Agencies

COMPASS member agencies were interviewed individually to identify challenges faced and successes that each agency has had regarding transportation safety. The project team used these findings to identify jurisdiction-specific strategies in this memorandum. A summary of the successes and challenges of member agencies is illustrated in Figure 4. *Technical Memorandum #2: Existing Plans and Practices and Peer Review Summary* (Reference 4) provides detailed information and findings from the member agency interviews.

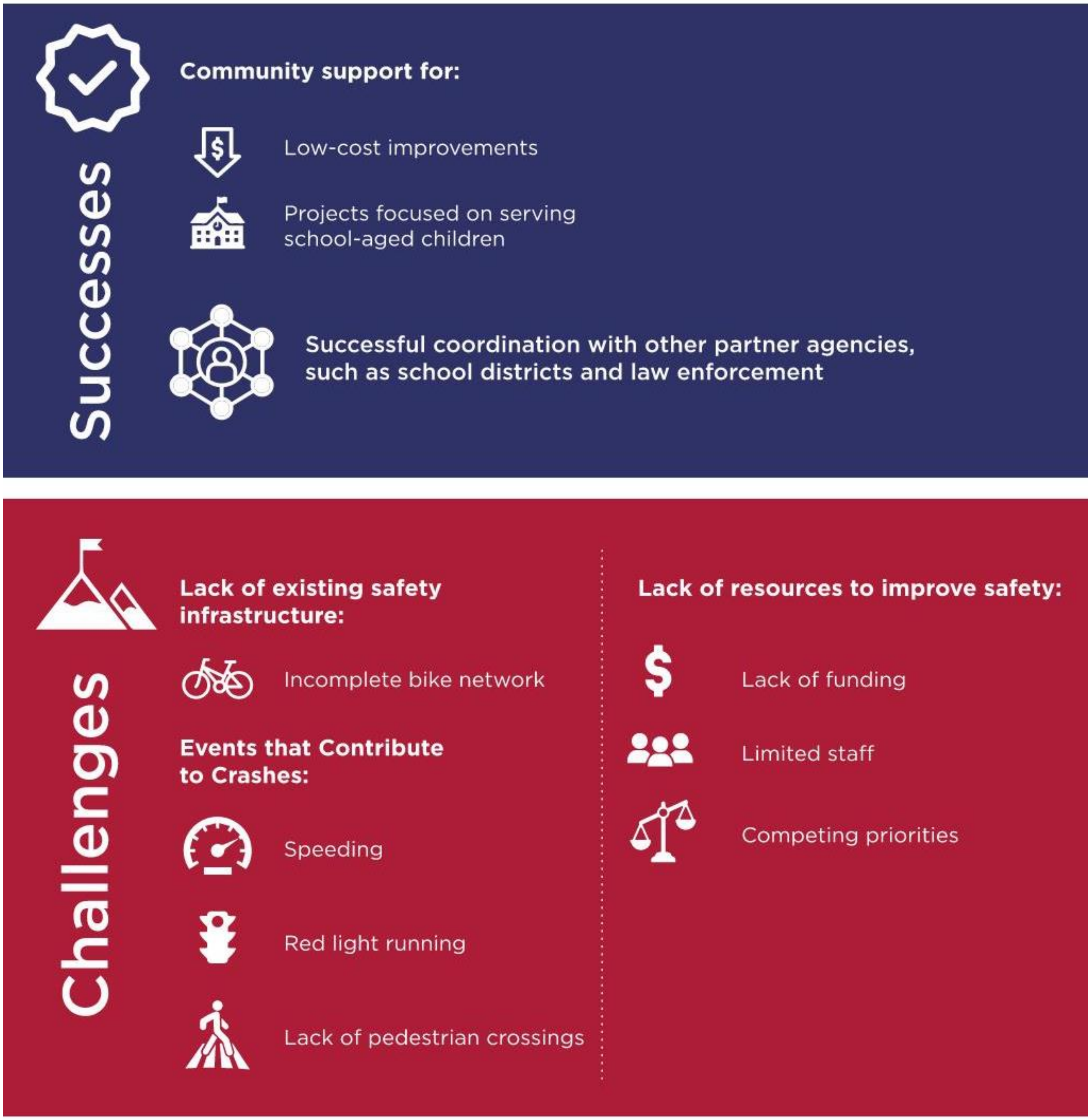
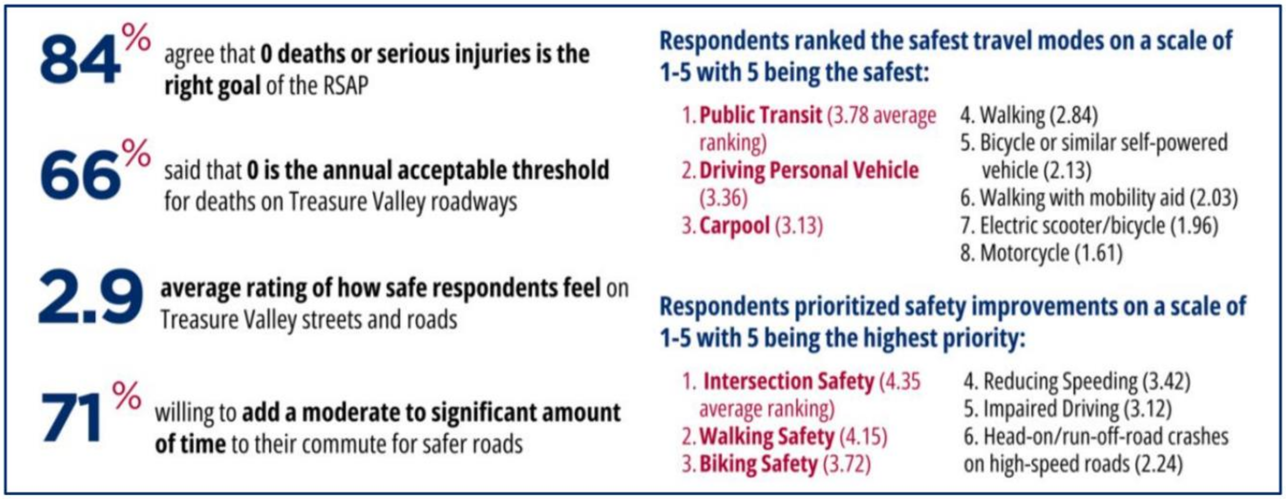


Figure 4: Member Agency Challenges and Successes

Public Outreach

To understand general public opinion and perception of transportation safety in the Treasure Valley, a transportation safety survey was conducted from March 5 to April 12, 2024 and received 423 responses. The survey asked community members how safe they feel traveling on regional streets and roads by various modes, what safety priorities matter most to them, and what other transportation safety concerns should be considered in the RSAP. A summary of the survey results is shown in Appendix A. Key findings from the survey are shown in the graphic below.



The findings from the survey were used for support the identification and prioritization of the strategies presented in this document.

STRATEGIES TOOLBOX

The project team developed a toolbox of strategies to address the COMPASS RSAP emphasis areas. This section presents an overview of high priority strategies from the toolbox that align with the emphasis areas. Strategies in the toolbox include the Federal Highway Administration's (FHWA's) proven safety countermeasures (Reference 5) and strategies identified in FHWA's Safe System Roadway Design Hierarchy. The toolbox provides the ability to identify strategies based on the following components:

- **Emphasis Area:** What emphasis area does the strategy address?
- **Area Type:** What area type (i.e., urban or rural) and road type (i.e., local road vs. highway) is the strategy applicable to?
- **Safe System Approach Objective:** Which Safe System Approach objective does the strategy address?
- **Safe System Roadway Design Hierarchy Tier:** Which tier of the FHWA Safe System Roadway Design Hierarchy does the strategy fall into? Strategies in Tiers 1, 2, and 3 are most in alignment with Safe System principles and expected to be more effective than strategies in Tier 4 since they rely less on people making the correct decision.
- **Cost:** High-level cost estimate to implement the strategy. Low-cost strategies may be more appropriate for systemic application, while high-cost strategies may be more appropriate for capital projects. However, many high-cost strategies could be implemented on a temporary, or interim, basis using quick-build materials.
- **Priority:** Priority tiers are based on the expected effectiveness of the strategy at reducing fatal and serious injury crashes (based on information from FHWA's Proven Safety Countermeasures or Roadway

Design Hierarchy), exposure within the Treasure Valley (e.g., how widespread could deployment be?), and resources required to implement.

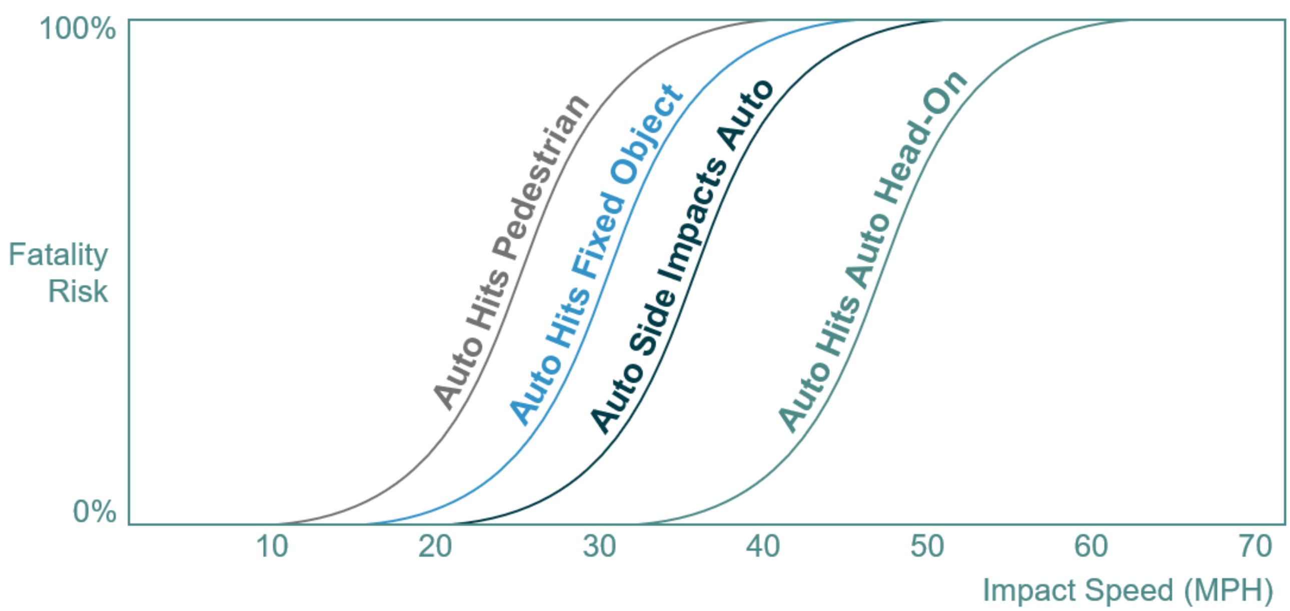
This section provides an overview of high-priority strategies by emphasis area. Some strategies address multiple emphasis areas and are referred to as cross-cutting. The complete toolbox of strategies is shown in Appendix B.

CROSS-CUTTING STRATEGIES

By their nature, certain strategies address fatal and serious injury crashes across multiple emphasis areas. Speed is directly related to crash severity for all crash types, as motor vehicles traveling at higher speeds carry more kinetic energy into a collision. Access management can reduce conflict points across all user types and locations. These cross-cutting strategies are described in this section.

Speed Management

There is a direct connection between vehicle speeds and a human's ability to survive a crash. Speed is a key variable in kinetic energy and kinetic energy is directly related to crash severity (Reference 6). This is illustrated in the graphic below, which relates the risk of fatality to the impact speed of a crash for different types of crashes (Reference 7):



Source: United States Department of Transportation, Safe System Approach

Speed management can reduce crash severity for most crash types and should be implemented through a combination of engineering, enforcement, and education techniques. This section primarily focuses on engineering solutions. Engineering solutions that change the built environment (i.e., installation of protected bike facilities or roundabouts) are typically more effective at reducing fatal and serious injury crashes than solutions that require individuals to make behavioral changes (i.e., enforcement or education efforts) (Reference 8).

Public Outreach Findings

71% of respondents to the COMPASS RSAP survey indicated that they would accept adding a moderate to significant amount of time to their commute for safer roads.

Setting appropriate speed limits is the first step for effective speed management. However, roads also must be designed in a way that reinforces drivers to travel the desired speed limit. For example, it may not feel natural for drivers to drive less than 30 mph on a straight, 5-lane roadway with limited intersection control. However, drivers may feel more inclined to drive less than 30 mph if the roadway has traffic calming elements like narrow lane widths, on street parking, chicanes, roundabouts at intersections, curb extensions, and/or mid-block crossings. High-priority strategies for speed management include:

- Road Design to Reinforce Desired Speed
- Setting Appropriate Speed Limits
- Traffic Calming Elements
    - Horizontal Deflection Elements: Chicanes, Roundabouts, or Traffic Circles
    - Vertical Deflection Elements: Speed Humps, Raised Crossings
    - Narrowing Elements: Curb Extensions, Presence of On-Street Parking or Protected Bike Facilities
- Dynamic Speed Feedback Signs

Dynamic Speed Feedback Signs: *Alerts drivers of their speed and indicates that their speeds are being monitored and enforcement may be present. Should be implemented in conjunction with other speed management strategies. Most effective when permanently installed and at locations with perceived need to slow. (e.g., school zones)*

Chicanes in Boise: *Chicanes are an alternating series of curb extensions along a roadway. They make drivers follow a curving pattern and discourage speeding. Quick-build options for chicanes may include bollards, planters, or materials with vertical separation.*

Roundabouts

Roundabouts are highly effective at reducing fatal and serious injury crashes at intersections for all roadway users. Roundabouts lower vehicle speeds on the approach to an intersection and reduce conflict points compared to other intersection control types (such as stop or signalized). Implementation of roundabouts is appropriate in rural and urban land-use contexts, addresses the vulnerable roadway user and intersection crashes emphasis areas, and helps with speed management. Roundabouts can also enhance intersection capacity and reduce motor vehicle delay in certain cases.

While data limitations exist for assessing bicycle and pedestrian crash reduction factors at roundabouts, national roundabout design guide provided by the NCHRP's *2023 Guide for Roundabouts* and its sources provide recommendations for improving vulnerable roadway users' safety including:

- Setting crosswalks back from the entrance of a roundabout.
- Installing RRFBs and/or raised crosswalks for single-lane roundabouts, or PHBs for multi-lane roundabouts.
- Separate bicycle users onto a shared-use path, separate from the travel lanes before entering the roundabout, or merge bike lanes into the vehicular travel lanes before entering the roundabout.

Single-Lane Roundabout at Linder and Main in Kuna

Example of Mini- Roundabout in Middleton: *Mini-roundabouts can provide many of the safety and operational benefits while having a lower-cost, particularly in constrained, urban environments. Mini-roundabouts can also be implemented with quick-build materials for demonstration purposes. (Source: Google Maps)*

Access Management

Many of the roads that make up the High-Injury Network in the Treasure Valley have four to five travel lanes and a high-density of driveways or intersections. In other words, limited access management. Access management refers to the design, application, and control of entry and exit points (and as a result conflict points) along a roadway. The strategy reduces, or removes, conflict points associated with turning and angle crashes, crashes involving people walking or biking along roadways or crossings, and lane-departure crashes that result in head-on collisions with the opposing direction of traffic.

Access management is easier to implement proactively through policies that require shared access and discourage direct access onto major streets. Within the Treasure Valley, the implementation of access management policies often requires coordination between separate land-use and roadway authority agencies (e.g., a project in the City of Boise would require coordination between the City of Boise and ACHD). Agencies should look to collaborate in the development and implementation of these policies.

On existing corridors, low-cost solutions can be implemented by restricting left-ins or left-outs through the construction of a raised median, extruded curb, or other form of vehicle delineation. Retrofits on major corridors is still possible but can be more challenging as businesses may be resistant to change and solutions may require the purchase of access rights or property, or implementing changes to parking and circulation on sites outside of the right-of-way to implement new access configurations.

Raised Medians and Channelization on Parkcenter Boulevard in Boise: *This treatment restricts left-turns from and channelized left-turns to adjacent side streets. Raised medians with larger buffer areas can provide a greater deterrent and are more visible than extruded curbs or other temporary treatments access management treatments. (Source: Google Maps)*

STRATEGIES FOR VULNERABLE ROAD USERS

Bicycle and pedestrian-related treatments seek to provide dedicated space for people walking and biking, reduce or eliminate conflict points between people walking/biking and vehicles, or raise awareness of drivers nearing potential conflict points with people walking and biking. Generally, these treatments can be categorized as walkways, bikeways, crossings, or intersection treatments.

Public Outreach Findings

Respondents to the COMPASS RSAP survey ranked walking and biking safety as the second and third highest priorities for improving safety in the Treasure Valley.

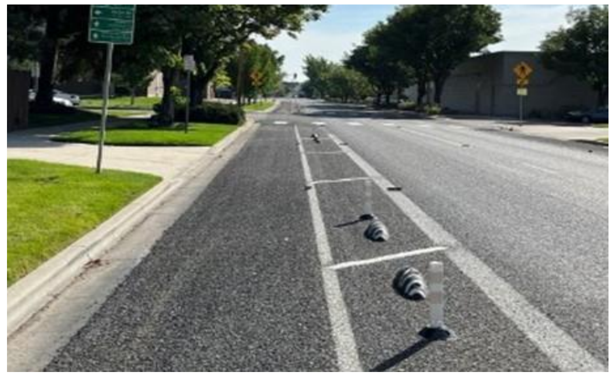
Walkways & Bikeways

A walkway includes any type of shared-use path, sidewalk, or other defined space for people walking or traveling by mobility device. Bikeways include any dedicated space for people biking and allow bicyclists to ride at a preferred speed with less interference from traffic conditions. Bike lanes or shared-use paths can also be utilized by people riding scooters. High-priority treatments in this category include:

- Sidewalks (Attached or Detached)
- Bike Lanes (Protected or Buffered)
- Raised Bike Lanes
- Shared-Use Paths

Implementation of these facilities should be prioritized in areas with a history of non-motorized crashes, on higher-speed, multi-lane roadways, in locations with attractors for people walking and biking (i.e., schools, community centers, or transit stops), and in areas with higher-proportions of transportation-disadvantaged populations. Many agencies in the Treasure Valley have already completed bicycle and pedestrian planning efforts to identify locations to implement these facilities based on the prioritization factors listed above.

Protected Bike Lane: *Vertical separation between the bike lane and travel lane provides a barrier between vehicles and people biking. This may be provided by curb, parking, or other vertical elements.*



Protected Bike Lane with Temporary Delineation: *Bollards or other vertical elements can be added to striping to provide a quick-build option for protected bike lanes.*

Shared-Use Path with Buffer Space
(Source: Google Maps)

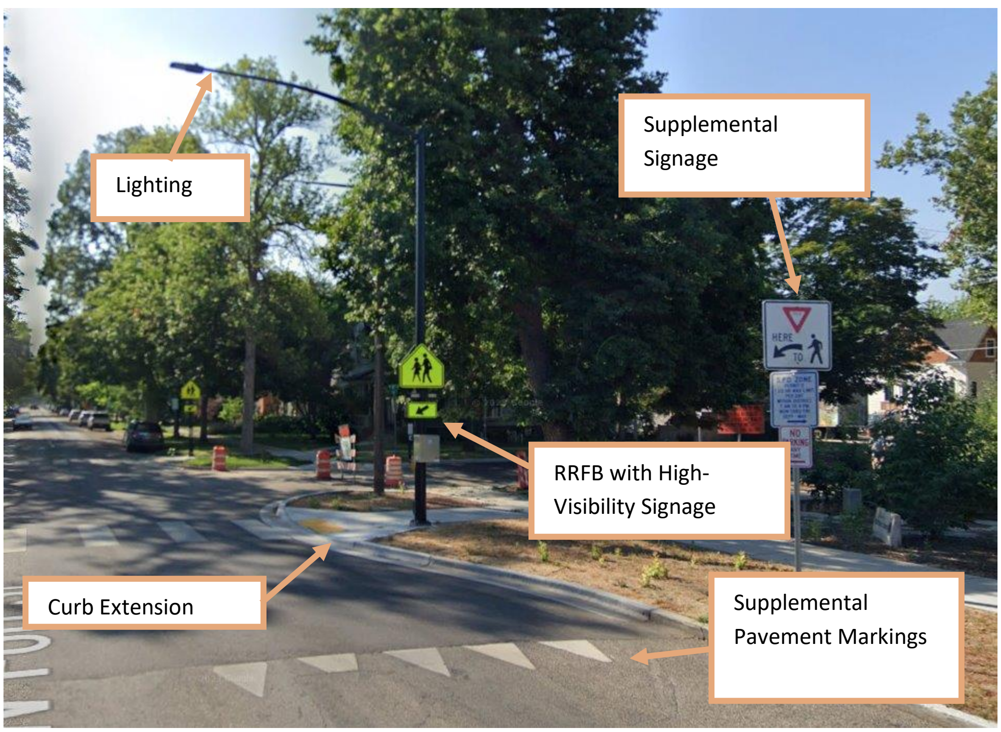
Flex Post SHUR CURB Separated Walkway: *Extruded curbs or materials may be used to provide separated walkways or pathways on an interim basis or when stormwater treatment does not allow for traditional curb and gutter.*

Unsignalized Intersections and Mid-Block Crossings

Crossing-related treatments seek to improve the visibility of people walking or biking across a roadway or at an unsignalized intersection, reduce the conflict zone between drivers and people using the crossing, and increase the awareness of drivers approaching a crossing location. High priority crossing treatments include:

- Actuated Crossings
  - Rectangular Rapid Flashing Beacon (RRFB)
  - Pedestrian Hybrid Beacon (PHB)
- Pedestrian Refuge Islands
- Crosswalk Visibility Enhancements
  - High-Visibility Crosswalks
  - Improved Lighting
  - Enhanced Signing and Pavement Markings
  - Curb Extensions/Bulb-Outs
- Raised Crosswalk

These treatments should be used in conjunction to improve visibility and awareness at crossing locations (see the picture below). Implementation should be prioritized at the crossing of major roadways on dedicated bicycle routes, near attractors for people walking and biking, and high-speed, multi-lane roadways. Agencies should also consider developing policies to identify and prioritize locations for implementation of these treatments.



Example of Crossing Treatment Elements on 2-Lane Collector Roadway: Crossing treatments may be used individually or in conjunction to improve safety for people walking or biking across roadways. *(Source: Google Maps)*

Raised Crossing – Permanent Installation vs. Quick-Build Application

Example of Raised Crossing at Boise Airport: *Raised crossings can increase awareness for drivers approaching a crossing and provide traffic calming benefits along a corridor, especially when placed at mid-block locations between roundabouts other traffic control devices. (Source: Google Maps)*

Example of Quick-Build Raised Crossing: *Temporary raised crossing constructed of rubber or similar material can be used as a quick, low-cost alternative to permanent raised crossings. (Source: Rosehill Highways)*

Signalized Intersection Treatments

Signalized intersection treatments are focused on increasing visibility for people walking and biking through an intersection, reducing vehicle speeds traveling through intersections, and increasing the likelihood of drivers yielding to people walking and biking. Treatments may include:

- Protected Intersections: Intersection configuration that provides physical barriers and separation between vehicles, bicycles, and pedestrian movements. Typically includes elements to shorten crossing distances, decrease vehicle speeds, and improve visibility of other intersection users. Generally provided on roadways with protected or buffered bike lanes.
- Bike Boxes
- Leading Pedestrian Interval (LPI)

Further intersection treatments related to signal timing and operations that provide benefit to vulnerable road users are summarized below and described in detail in later sections:

- Flashing Yellow Arrow with Time-of-Day and Pedestrian Call Restrictions
- Limiting Permissive Left-Turn Phasing
- Prohibit Right-Turn on Red

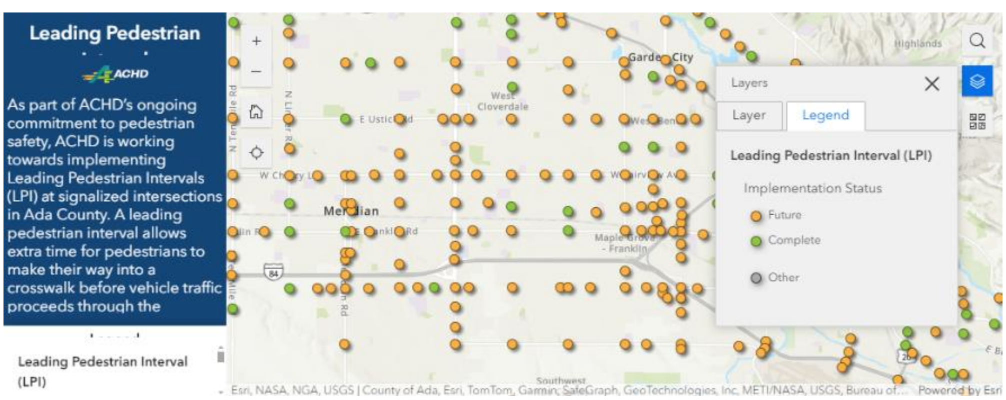
Example of Protected Intersection Elements: *Protected intersections improve the comfort and safety of people walking and biking by reducing vehicle-turning speeds, reducing the speeds of people biking, and further separating people walking and biking from turning motor vehicles. They are typically used in conjunction with protected bike lanes on one or both intersecting streets; however, certain elements (e.g., reduced turning radii) can be applied at other intersections.*

Example of Bike Box: *Bike boxes increases the visibility of bicyclists and help to prevent conflict being left and right-turning vehicles and bicyclists. They are most typically used at signalized intersections with high-amounts of right and left-turning vehicles and can be implemented at a relatively low cost.*

ACHD Leading Pedestrian Interval Implementation

A Leading Pedestrian Intervals (LPI) gives someone walking the opportunity to enter a crosswalk before conflicting left or right-turning vehicles are given a green indication in the corresponding direction. LPI's reduce fatal and serious injury crashes for people walking by increasing the visibility for people using the crossing and reducing the potential conflict between people driving and people walking. ACHD is currently working towards implementing LPI at all traffic signals in its jurisdiction. ACHD is tracking its progress on this publicly available dashboard:

https://experience.arcgis.com/experience/79ab458df39a48239a2d329125a1f8cd



ACHD LPI Implementation Map

MULTIMODAL MAIN STREET

In the Treasure Valley, there are multiple small towns (Star, Middleton, Greenleaf, Wilder, Parma, and Notus) that are bisected by a State Highway which serves as a "Main Street" for the communities. In these communities, the State Highway needs to balance competing needs and objectives. The State Highway is responsible for serving regional traffic passing through the community as well as providing direct access for community members to businesses, schools, parks, and other activity generators for people walking and biking. Treatments for these sections should focus on improving multimodal access to community members and speed management for vehicle traveling through the corridor, potential strategies include:

- Sidewalks or Shared-Use Paths
- Bike Lanes (Protected or Buffered)
- Crossing Improvements
    - RRFB or PHB
    - Pedestrian Refuge Islands
    - Visibility Enhancements
    - Improved Lighting
- Road Reconfiguration (Four-Lanes to Three-Lanes)

STRATEGIES FOR INTERSECTIONS

This section discusses strategies for reducing fatal and serious injury crashes at intersections. Strategies for intersections can generally be categorized as strategies for signalized or unsignalized intersections.

Public Outreach Findings

Respondents to the COMPASS RSAP survey indicated that improving safety specifically at intersections was the highest priority for improving safety in the Treasure Valley.

Signalized Intersection Strategies

Treatments at signalized intersections seek to improve the visibility of the intersection for approaching drivers, improve the visibility of other conflicting movements, reduce or eliminate conflicting movements, and/or reduce vehicle speeds for users navigating the intersection. Treatments can generally be categorized as signal timing adjustments, signal operations or phasing modifications, or physical changes to the intersection's configuration. A list of high priority treatments in these categories are as follows:

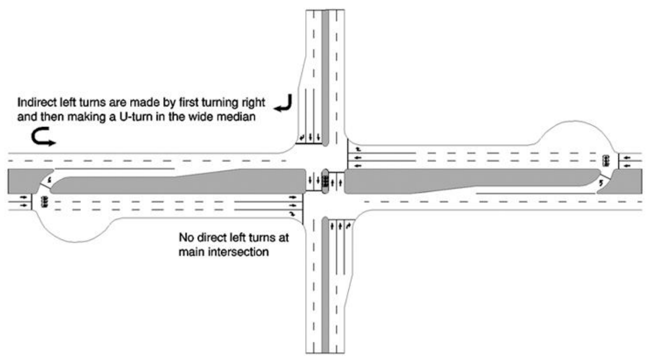
- Traffic Signal Timing, Operations, or Phasing Modifications
    - Flashing Yellow Arrow with Time-of-Day and Pedestrian Call Restrictions
    - Left-Turn Restrictions or Reduced Left-Turn Conflict Intersection Form (i.e., median U-turn or displaced left-turn)
    - Protected Left-Turn Phasing
    - Prohibit Right-Turn on Red
    - Coordinated Signal Timing (Lower Speeds)
- Traffic Signal Equipment
    - Backplates with Retroreflective Borders

  - Blank-out Signage or Turn-Lane Pedestrian Indicator: Crash modification factors are unavailable for these treatments due to lack of data-availability, but these are both treatments that seek to reinforce desired driver behavior.
- Removal of Vegetation, Parking, and Other Sight Distance Obstructions

Left-Turn Phasing Considerations

Many of the high-priority treatments are focused on limiting conflicts between left-turning vehicles and opposing through vehicles or people walking or biking across the intersection. These treatments range from lower-effort (conversion from permitted to protected phasing) to higher-effort (conversion of conventional traffic signal to a median u-turn intersection).

Protected Left-Turn Phasing: *If there is already a dedicated left-turn lane, converting left-turn signal phasing from permitted to protected can be a low-cost, effective treatment to reduce angle, turning, and non-motorized crashes at intersections. Flashing yellow arrows with time-of-day restrictions may also be implemented so that permitted left-turns are restricted during periods with high-levels of opposing vehicles traffic.*



Median U-Turn Intersection: *A Median U-Turn intersection is a form of reduced left-turn conflict intersection that moves the left-turn movement from the main intersection to a further downstream approach. Reduced left-turn conflict intersections have a higher cost to implement but can be effective at reducing turning-related crashes while maintaining or improving motor vehicle travel times. (Source: FHWA)*

Unsignalized Intersections

The High-Injury Network showed that unsignalized intersections with the highest amount of fatal and serious injury crashes were primarily in rural rather than urban settings in the Treasure Valley. In rural settings, unsignalized intersections often have lower traffic volumes, lack of turn lanes and lighting, and higher vehicle speeds. Fatal and serious injury crashes often involve high-speed turning, angle, or rear-end related crashes. There are lower-cost improvements that improve sight distance, driver awareness, and traffic control device visibility. High priority treatments for unsignalized intersections in rural settings include:

- Advanced Warning Signage
- Enhanced Approach Pavement Markings
- Retroreflective and/or Over-Sized Stop or Advanced Warning Signs
- Removal of Vegetation, Parking, and Other Sight Distance Obstructions
- Properly Painted Stop Bar
- Conversion from Two-Way Stop Control to All-Way Stop Control
- Conversion from Two-Way Stop Control to Roundabout

- Dedicated Left and Right-Turn Lanes (Most applicable on uncontrolled approach on high-speed roadways)
- Left-Turn Restrictions or Reduced Left-Turn Conflict Intersections (i.e., median U-turn or displaced left-turn)

High-Priority Countermeasures for Unsignalized Intersections

These countermeasures are typically most appropriate in rural settings and may be installed incrementally at lower cost. Examples are shown in the pictures below.

Advanced Warning Signage on Stop-Controlled Approach*.* *(Source: Google Maps)*

Advanced Warning Signage with Beacons on Through-Approach *(Source: Google Maps)*

Stop Ahead Pavement Markings *(Source: FHWA)*

Edge Line Markings at Intersection Approach *(Source: FHWA)*

In urban settings, strategies listed above such as removal of sight distance obstructions, conversion from two-way stop to all-way stop controlled or roundabout, and properly painted stop bars can be effective at addressing fatal and serious injury crashes at unsignalized intersections. Access management or speed management treatments can also reduce crashes at unsignalized intersections on a corridor-level. Additional treatments for non-motorized users at unsignalized intersections are listed in the *Strategies for Vulnerable Road Users* section of the memorandum.

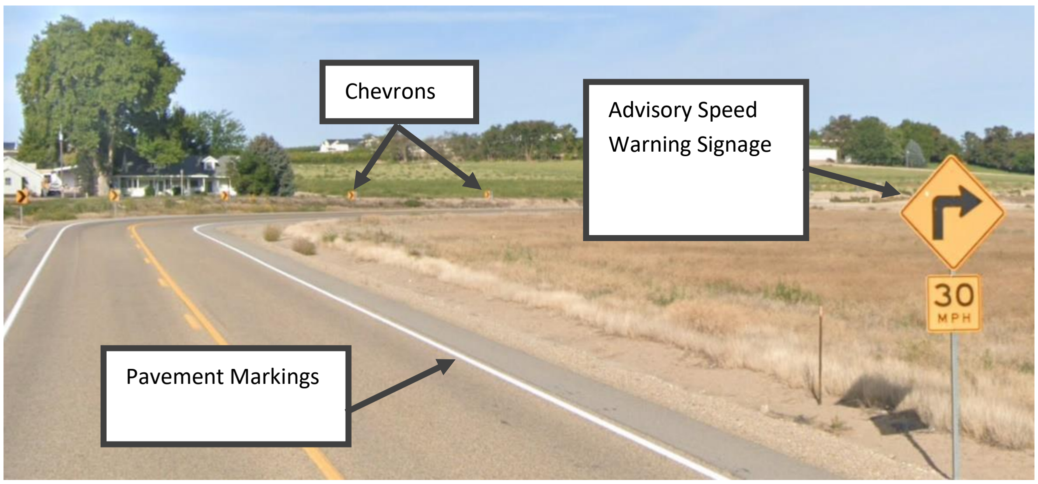
STRATEGIES FOR LANE-DEPARTURES

Lane departure crashes occur when a vehicle leaves their travel lane and collides with another vehicle or object or overturns. Strategies for lane-departures seek to improve the visibility of the roadway, provide physical barriers, and alert drivers of horizontal curves or other changes in the roadway. High-priority strategies that reduce serious injury and fatal crashes related to lane-departures include:

- Wider Edge Lines, Wider Shoulders, Enhanced Pavement Markings

- Median Buffer Area or Raised Median
- Enhanced Delineation at Horizontal Curves
- Rumble Strips (not applicable in urban areas)

In the Treasure Valley, lane departure crashes in unincorporated areas make up a larger percentage of fatal and serious injury crashes compared to incorporated areas (Reference 3). In rural areas on roadways with higher speeds, a large proportion of lane departure crashes occur at horizontal curves. Potential strategies to mitigate these crash types seek to enhance the delineation within and ahead of the horizontal curve. These strategies may include enhanced pavement marking, in-lane curve warning pavement markings, retroreflective strips, and chevron signs. These strategies may be applied separately or in combination with each other.



Example of Strategies for Enhanced Delineation at Horizontal Curves (Source: Google Maps)

SAFETY IMPROVEMENTS ON HIGH-CAPACITY ARTERIALS

Improving safety through speed management on high-capacity roads (e.g., arterials or roads designed to maintain high Level of Service targets for automobiles) may require a different set of treatments than collector or local roadways. Speed management on high-capacity arterial roads should focus on the following treatments:

- **Intersection Control**: Use of roundabouts at intersections or signal progression that encourage lower speeds.
- **Mid-Block Crossings:** Consistently spaced crossing elements (e.g., pedestrian hybrid beacon with curb extensions) that provide crossings opportunities for people walking and biking and require vehicles to stop.
- **Horizontal Deflection:** Horizontal deflection elements such as roundabouts, medians or pedestrian islands, curb extensions, or horizontal shifts in the alignment can lower driver speeds while still allowing emergency service access.

For some arterial roadways in the Treasure Valley, it may not be feasible to achieve lower speeds (less than 35 miles per hour) based on agency’s desire to maintain high-vehicle capacity levels and the existing design elements of roadways (e.g., many roads were built and designed for high-speeds, and opportunities to lower speeds may be limited based on limited right-of-way for horizontal deflection elements or roundabouts). To reduce fatal and serious crashes on these roadways, agencies should refer to Tier 1 treatments of the Safe System Roadway Design Hierarchy, which calls for treatments that remove conflicts between different users and between conflicting movements on a roadway. These treatments are highlighted throughout this document, but include the following:

- **Protected and/or Separated Bicycle and Pedestrian Facilities:** Includes shared-use paths, protected bike lane, and detached sidewalks. These treatments remove conflicts between people walking and biking and people driving along roadway segments.
- **Access Management:** Removes and consolidates right-turn and left-turn movements in areas with high access density. Raised medians can also eliminate potential lane-departure/head-on crashes.
- **Eliminating or Mitigating Left-Turn Conflicts at Intersections:** Eliminating the left-turn movement at intersections can remove the potential conflict between left-turns and on-coming traffic or bicycle/pedestrian crossings. Conversion to a restricted crossing u-turn or other reduced conflict intersection can improve safety and maintain vehicle delay on high-volume, high-capacity roadways. Converting a permitted left-turn to protected is also an effective method at improving safety, but less effective at reducing crashes than eliminating the movement (protected phasing is a Tier 3 treatment in the Safe System Roadway Design Hierarchy).

POLICIES, PROCESSES, AND OTHER STRATEGIES

There are several strategies focused on education, enforcement, agency coordination, and internal agency processes that COMPASS, its member agencies, and other partners should implement. This section highlights high priority, non-infrastructure strategies – organized by relevance to the implementation partners of the RSAP:

- Strategies that are applicable to all or most agencies
- Strategies that are applicable to COMPASS
- Strategies that are applicable to COMPASS member agencies
- Strategies that engage medical service partners
- Strategies that address motorcyclist crashes

For each set of strategies presented, each section's table identifies strategy type, SSA objective addressed, and strategy description. Among strategy types:

- **Agency coordination** engages member agencies to realize the strategy.
- **Education** strategies provide partners and community members with tools and knowledge to build a safer transportation network together.
- **Plans/Studies** update and adjust existing transportation planning documents to align with the goals, findings, and recommendations in this RSAP.
- **Agency Operations** strategies target the existing paradigms of project planning and implementation to facilitate the safety goals of COMPASS and its member agencies.

A toolbox with all non-infrastructure strategies, including medium and low priority strategies, is provided in Appendix C.

Strategies Applicable to All Agencies

The strategies in Table 1 below are implementable by all member agencies and are more effective as more agencies participate.

Table 1: High Priority Strategies Applicable to All Agencies

Strategy	Type of Strategy	Safe System Approach Objective	Description
Implement the Safe System Approach	Agency Coordination	Cross Cutting	All agencies commit to adopting the SSA objectives – ensuring projects implemented by member agencies align with the proven, national best practice of reducing fatal and serious injuries. The strategies outlined in this document provide a roadmap for meeting SSA objectives.
Continue the Safety Working Group	Agency Coordination	Cross Cutting	Continued communication and collaboration among member agencies ensure challenges are overcome, successes are identified, and goals and resources continue to be shared across agency boundaries. This could be accomplished through regularly scheduled meetings and information-sharing (e.g., regular email updates highlighting safety-related news in the Treasure Valley).
Public Health Stakeholder Engagement	Agency Coordination	Safer People	Create opportunities to engage with community health partners when planning and implementing transportation safety programs. This can help agencies improve post-crash care or identify and address behavioral factors associated with fatal and serious injury crashes.
High-Visibility Safety Education Campaigns	Education	Safer People	Conduct education campaigns to inform community members about necessary changes and updates to transportation system improvements – emphasizing high visibility of these campaigns is key to engaging and informing more of the community. An example education campaign may highlight the safety benefits provided by speed management.

COMPASS Strategies

Table 2 summarizes the recommended high priority strategies for COMPASS to implement.

Table 2 COMPASS High Priority Strategies

Strategy	Type of Strategy	Safe System Approach Objective	Description
Provide Grant Support to Member Agencies	Agency Coordination	Cross Cutting	COMPASS can assist member agencies in identifying projects that can be funded by grants, finding grant funding opportunities for already identified projects, and provide support for grant applications.
Crash Analysis Support	Agency Coordination	Cross Cutting	COMPASS can provide technical experience to guide agency staff towards solutions by collecting, analyzing, and making recommendations from crash data and other relevant data sets.
Incorporate Vision, Goals, Performance Measures, and Targets into the Next CIM Update	Plan/Study	Cross Cutting	Incorporate the vision, goals, performance measures, and targets recommended in this RSAP in COMPASS' next Communities in Motion Regional LRTP update.
Update Transportation Improvement Plan (TIP) & Communities in Motion (CIM) Prioritization to Reflect RSAP and Prioritize Safety	Plan/Study	Safer Roads	Incorporate safety as a primary facet of the transportation project prioritization used to program the Transportation Improvement Plan and Communities in Motion plan.
Update COMPASS' Complete Network Policy to Align with RSAP Outcomes	Agency Coordination	Safer Roads	Review COMPASS' Complete Network Policy to ensure alignment with the findings and priorities of the RSAP.
Create a Publicly Available Tracking Dashboard	Agency Coordination	Cross Cutting	Provide a publicly accessible dashboard that tracks the progress of safety improvements as a transparent means of reporting investment results. Dashboards can also be used to supplement the annual report on safety performance to meet SS4A program requirements.
Create an RSAP Update Checklist	Agency Coordination	Cross Cutting	Proactively create an evaluation checklist encompassing all facets of the RSAP – ensuring the recommended strategies stay relevant to present challenges. This strategy ensures the RSAP acts as a living document, adapting the strategies and recommendations as the Treasure Valley grows.

Strategy	Type of Strategy	Safe System Approach Objective	Description
Regularly Assess Implementation Successes and Challenges	Agency Coordination	Cross Cutting	Create a routine critical evaluation of implementation strategies and adapt strategies to community specific success factors.
Best Practices in Safety Analysis, Planning, Engineering Training	Education	Safer People	Invest in the training of member agency staff on transportation safety best practices through workshops and lectures.
Create Safe System Assessment Framework	Agency Coordination	Safer Roads	Create a Safet System Assessment Framework, which member agencies can use to assess how roadway designs align with SSA objectives.
Road Safety Audits	Plan/Study	Safer Roads	Conduct routine road safety audits of existing transportation facilities. These audits capture dynamic impressions of site safety deficiencies that may not be observable from crash data.

Member Agency Strategies

The strategies in Table 3 below can implemented by the individual member agencies of COMPASS to improve transportation safety across the Treasure Valley.

Emergency Medical Services Strategies

Engagement and coordination with emergency medical service partners is critical to meet the SSA objective of post-crash care. The ability to directly address this objective may be outside the purview of member agency staff. A high priority post-crash care strategy is engaging EMS partners to identify opportunities to improve crash response times. Based on conversations with representatives from the Boise Fire Department and Ada County Paramedics, the following strategies were also identified to improve crash response times and ultimately improve post-crash care:

- Improvements to the Computer-Aided Dispatch (CAD) process and software. Could include better coordination and data-sharing on road construction activities and quicker incorporation of road construction activities into CAD. EMS representatives indicated that there can be delays when incorporating road construction projects and associated road closures into CAD software.
- Public education campaigns focused on expectations for drivers when EMS is approaching or responding. Could include improved incorporation of these elements into Idaho Driver's License Test.
- Ensuring that EMS is considered in work zone planning. EMS representatives indicated that work zones can create median barriers on large highways sometimes requiring EMS to send redundant resources in multiple directions.
- Continue utilizing and implementing route preemption via GPS on traffic signals. Includes upgrades to signal controllers so that they are compatible with signal preemption systems (e.g., Smart Opticom).

- Coordinate with hospitals in the Treasure Valley to obtain post-crash care outcome and patient discharge data so that it can be linked to crash data and used as a performance measure. EMS representatives indicated that there should be conversations with the hospitals to discuss why the data is important and how it would be used by EMS.
- Evaluate usage of rail crossing sensors which could provide real-time information on rail crossing status and provide EMS responders with updating routing information for improved response times.

Collaboration with emergency medical service partners and other health care and public health providers can also build momentum and partnership with safety education campaigns for the SSA objective of safer people.

Motorcyclist Strategies

Public Outreach Findings

Respondents to the COMPASS RSAP survey ranked motorcycle as the travel mode that feels the least safe in the Treasure Valley.

Motorcycle, moped, and scooter-related crashes comprise 16.0% of all fatal and serious injury crashes within the COMPASS jurisdiction (Reference 3). As vulnerable road users, specific strategies aimed at reducing fatal and severe injury crashes involving motorcycles are critical to achieving the vision of zero roadway deaths in the Treasure Valley. Engagement with partner agencies in rider education is a potential means of reducing crash risk. One such avenue of motorcycle rider education is a local program, *STAR: Skills Training Advantage for Riders (*Reference 8). Per Idaho *STAR*:

> *"…a review of all 10,121 motorcycle crashes statewide from 1996-2014 indicated that STAR training is associated with a 79% reduced crash risk and an 89% reduction in the risk of a fatal crash"*

Encouraging community members who ride motorcycles to take and pass Idaho STAR training via a high-visibility media campaign is a recommended strategy directed at reducing fatal and severe injury crashes related to motorcyclists.

Other education campaigns (such as Look Twice for Motorcycles) can also be implemented through partnership across agencies to increase driver awareness or safer strategies related to these vulnerable road users.

Table 3: High Priority Strategies Applicable to COMPASS Member Agencies

Strategy	Type of Strategy	Safe System Approach Objective	Description
Incorporate Safety into Maintenance Projects	Agency Operations	Safer Roads	Use pavement maintenance projects as opportunities to improve the safety performance of facilities for all modes of transportation (e.g. restriping a road to provide bike lanes or a center turn lane).
Incorporate Safety into Capital Projects Development Processes	Agency Operations	Safer Roads	Require that projects identified in capital project development processes are programmed and planned to meet safety goals, alongside those other elements of the transportation system. A Safe System Assessment framework is a method that can accomplish this strategy.
Create Local Task Forces to Review Fatal and Serious Injury Crashes	Agency Coordination	Cross Cutting	Establish local task forces that review fatal and serious injury crash data on a regular basis to identify opportunities to prevent future occurrences.
Establish Dedicated Funding for Safety Projects	Agency Coordination	Safer Roads	Allocate incoming funding to safety-focused efforts, facilitating more rapid implementation of the strategy recommendations and projects presented in this plan – especially where communities only have funding ear-marked for maintenance and operations improvements.
Clearly Define Safety as a Priority in Project Development and Prioritization	Agency Operations	Safer Roads	Set a clear prioritization scale in the project development and prioritization phases that puts safety first.
Coordinate Across Jurisdictions on Smaller Projects to Improve Funding Opportunities and Contractor Bidding	Agency Coordination	Safer Roads	Bundle similar, small projects/strategies across multiple jurisdictions into a larger systemic project. This larger overall project cost can attract a wider range of contractor bids.
Road Safety Audits	Plan/Study	Safer Roads	Conduct routine road safety audits of existing transportation facilities. These audits capture dynamic impressions of site safety deficiencies that may not be observable from crash data.
Allow Developments to Implement Safety Improvements In lieu of Capacity Improvements	Agency Coordination	Safer Roads	Agencies can require development to invest in improving / maintaining sidewalk connectivity or bicycle facility creation in lieu of vehicular improvements – prioritizing infrastructure upgrades that are focused on improving safety instead of operations.

Enforcement Strategies

Enforcement strategies can improve roadway safety by targeting specific behaviors of roadway users, such as speeding or red light running. Compliance to speed limits and other traffic signals should be self-enforcing through the design and context of the roadway system, but enforcement strategies can be deployed in conjunction with other safety countermeasures to encourage compliance (Reference 10). The effectiveness of enforcement in ensuring speed limit compliance is dependent on a sustained enforcement campaign and can be difficult and often infeasible to deploy over a large area based on law enforcement resources. Law enforcement partners provided also feedback that if the design of the transportation system does not self-enforce safe speeds, then speeds revert to previous levels once the enforcement campaign is over. Agencies should make efforts to prioritize locations for enforcement based on available data related to speeding, red-light running, or other areas with higher rates of non-compliance.

Automated speed enforcement cameras and automated red-light running cameras are effective enforcement strategies that do not require the same level of resources as traditional enforcement efforts. Red light running cameras and speed enforcement cameras are currently not permitted in Idaho, and legislation would need to be passed before they could be implemented. If the implementation of these treatments is desired, COMPASS, COMPASS member agencies, and local law enforcement agencies should collaborate to support legislation to allow red light running camera and speed camera enforcement.

LOCATION AND JURISDICTION-SPECIFIC STRATEGIES

This section presents potential location-specific and systemic strategies for each COMPASS member agency. These strategies are defined below:

- **Location-Specific Strategies:** Improve safety at locations where high amounts of fatal and serious injury crashes have occurred. Strategies tend to be higher cost and effort but are highly effective at reducing fatalities and serious injuries. Some of these locations may have options for the implementation of lower-cost, interim strategies until a comprehensive strategy or project can be implemented.
- **Systemic Strategies:** These are strategies that proactively improve safety at locations which may not have high amounts of fatal and serious crashes, but share similar characteristics (i.e., number of lanes on roadway, intersection control-type) with locations that do have high amounts of fatal and serious crashes. These strategies tend to be lower effort and are most effective if applied systemically and proactively at multiple, similar locations across a jurisdiction or jurisdictions.

This section describes the initial screening process, presents a list of potential locations for location-specific projects, and identifies potential strategies (including location-specific and systemic) for each COMPASS member agency.

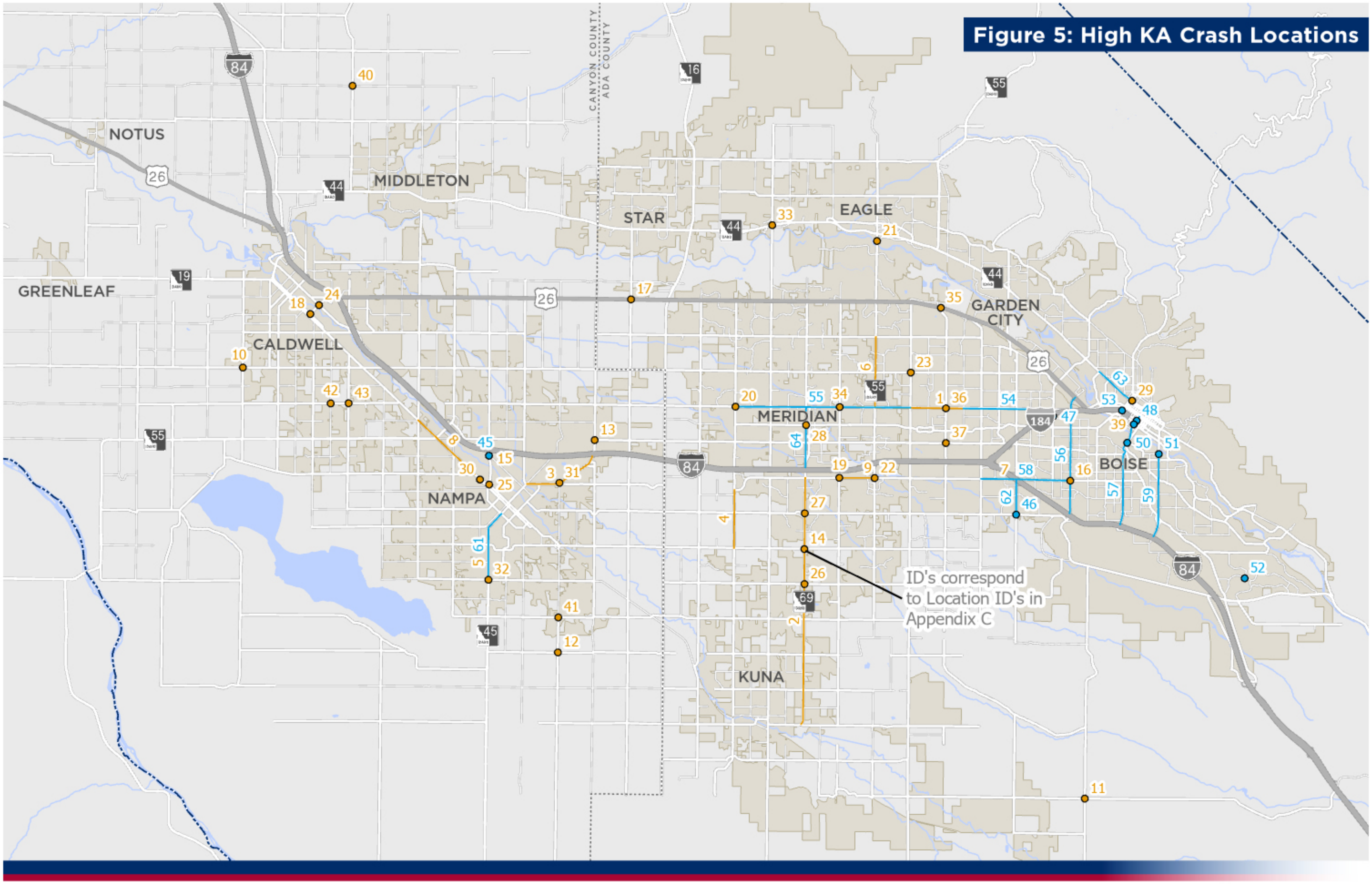
LOCATION-SPECIFIC STRATEGIES

The project team conducted an initial screening of the High-Injury Network to identify segments and intersections with the highest number of fatal and serious injury crashes within the study area. A separate review was also conducted for corridors and intersections with the highest amount of non-motorized fatal and serious injury crashes. These locations are shown in Figure 5. More information about these locations is provided in Appendix D.

After the initial screening of high-crash locations, 10 priority locations were identified based on the extent of fatal and serious injury crashes, the potential for improvement through the implementation of strategies (e.g., is there a proven safety countermeasure that addresses crashes at this location that has not been implemented yet?), the known-priorities of COMPASS member agencies, and input from the Safety Working Group. These locations, along with potential strategies to reduce fatal and serious injury crashes, are identified in Table 4.

Table 4 Location-Specific Strategies - Top 10 Locations

Location	Jurisdiction	KA Crashes	Potential Strategies
Farmway Road / Ustick Road Intersection	HD4	7	Roundabout
Northside Boulevard (6th Street to 2nd Street)	Nampa	12	Signalized Intersection Improvements, Improved Bike/Ped Facilities, Speed Management
SH-45 (Roosevelt Ave to Greenhurst Road)	Nampa / ITD	14	Signalized Intersection Improvements, Improved Bike/Ped Facilities, Speed Management, Access Management
Garrity Boulevard (I-84 to 11th Avenue	Nampa / ITD	21	Access Management, Speed Management, Signalized Intersection Improvements, Improved Bike/Ped Facilities
Idaho Center Boulevard (I-84 to Cherry Lane)	Nampa	13	Access Management, Speed Management, Improvements to Idaho Center Boulevard / Franklin Road intersection
Southside Boulevard / Lewis Lane Intersection	Canyon County / NHD	6	Roundabout, Interim Low-Cost Countermeasures for Stop-Controlled Intersections
Meridian Road / Amity Road Intersection	Meridian / ACHD / ITD	6	Signalized Intersection Improvements, Left-Turn Phasing
Fairview Avenue (Locust Grove Road to Curtis Road)	Boise / Meridian / ACHD	44	Access Management, Signalized Intersection Improvements, Improved Bike/Ped Facilities
US 20-26 Couplet (Front Street and Myrtle Street) from 13th Street to Broadway Avenue	Boise / ACHD / ITD	22	Dedicated Bike Facilities, Intersection Safety Improvements, Speed Management, Bike/Ped Crossings
Pleasant Valley Road / Kuna Mora Road Intersection	Ada County / ACHD	6	Roundabout, Interim Low-Cost Countermeasures for Stop-Controlled Intersections, All-Way Stop



High KA Crash Locations

- Segments
- Segments (Non-Motorized Crashes)
- Intersections
- Intersections (Non-Motorized Crashes)
- County Boundary
- COMPASS Boundary
- City Boundary

COMPASS Regional Safety Action Plan

0 5 Miles

Data Sources: Ada County, Canyon County, COMPASS

JURISDICTION-SPECIFIC STRATEGIES

Location-specific and systemic strategies to reduce fatal and serious injury crashes were identified for each COMPASS member agency. These strategies were identified based on:

- The location-specific screening of areas with historical crash activity.
- Areas identified in the HIN with high risk factors.
- The priorities of each member agency based on discussion at the Safety Working Group meetings, member agency interviews, and member agency's guiding documents, processes, and policies.

These strategies are shown in Appendix D.

Priority levels are also identified for each jurisdiction-strategy based on the following criteria:

- **Effectiveness:** What is the strategy's potential effectiveness for reducing fatal and severe injury crashes? A higher-priority was assigned to strategies with proven countermeasures, that address the COMPASS RSAP emphasis areas, and/or are implemented in locations with higher scores on the High-Injury Network.
- **Cost:** What is the approximate cost to implement the strategy? Strategies that could be implemented at lower costs were assigned a higher priority. Planning level cost ranges for each strategy are presented in the Strategy Toolbox in Appendix A.
- **Agency Support:** Does the strategy align with each COMPASS member agency's priorities? Strategies that aligned with member agency's priorities and likely to receive community and agency support were assigned a higher priority.

One strategy per COMPASS member agency is planned for further development in the next phase of this project.

BEFORE-AFTER EVALUATION GUIDANCE

Research has proven the effectiveness of many of the treatments recommended in this memorandum. However, there may be instances where COMPASS or its member agencies want to review the effectiveness of a treatment or set of treatments. Potential situations where COMPASS or its member agencies should consider performing a before-after study include:

1. To evaluate the effectiveness of a treatment for which a crash modification factor (CMF) has not been established.
2. Should COMPASS' safety monitoring efforts indicate progress towards its safety targets is not occurring, an evaluation of the treatments can determine which are, or are not, having the anticipated effect.
3. To build confidence among staff, elected officials, or the public with regards to the local efficacy of a treatment.

TYPES OF BEFORE-AFTER EVALUATIONS

Before-after studies use crash data pre- and post-treatment installation to determine the change in site safety performance. Before-after evaluations are made more reliable by:

1. Using large sample sizes (comprised of multiple evaluation sites)
    a. Location-specific projects can be served by analyzing a single site, while systemic treatments are better evaluated over many sites.
2. Lengthening the study period to capture the representative mean crash rate of the site.
    a. This is only possible if other significant changes do not occur in the before or after periods, including significant changes in traffic volumes.
3. Adjusting for changes in traffic volume that would otherwise misrepresent the typical incidence of crashes.

Evaluations are divided between two common methods: simple (or naïve), and the Empirical Bayes method. The simple method compares the crash value before treatment to the value after treatment, attributing all changes in safety performance to the treatment evaluated. This assumes that the safety performance of the site is purely the product of the treatment used and can produce inaccurate crash modification factor values. Alternatively, the Empirical Bayes method uses data related to crashes, traffic volumes, and geometric/operational characteristics before and after treatment to isolate the effect of the treatment more accurately. The Empirical Bayes method ultimately compares the crash frequency after treatment to the expected crash frequency in the same future condition without treatment.

RECOMMENDATIONS

When a before-after study is desired, COMPASS or its member agencies should consider performing the most statistically rigorous study possible. Given the size of the Treasure Valley, there may not be sufficient sites to perform an EB-based before-after study in some cases. When this occurs, grouping similar sites with the same treatment can provide a larger sample size to mitigate the effects of traffic volumes and regression to the mean bias of the simple before-after method. While the simple method is not as rigorous as the Empirical Bayes, a greater level of confidence can be attained by the results by applying the metrics outlined in *Observational Before-After Studies in Road Safety* (Reference 10).

Where sites have no crash history, the effect of the treatment is small, or the agency would like an expeditious before-after study conducted on a quick build treatment, it is recommended that video analytics be considered. Video analytics track individual users travelling through an intersection – as shown in Figure 6 - which provides information on the user (mode type, speed, movement type, signal compliance, and interactions with other intersection users). This data provides insight into the factors that contribute to crash rates which are often overlooked in both traditional crash data and field observations. It also provides a larger sample size in less time than a traditional crash-based study.

Figure 6: Example of Video Analytics

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APPENDIX A: PUBLIC OUTREACH SUMMARY

REGIONAL SAFETY ACTION PLAN SURVEY SUMMARY

May 23, 2024 Project #: 29061.0

To: Hunter Mulhall and Austin Miller, COMPASS

From: Doug Self and Natalie Haskell, Atlas Strategic Communications

CC: Project Management Team

RE: Regional Safety Action Plan Spring Survey Key Findings and Analysis

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Understanding public perception of transportation safety in the Treasure Valley is integral to the success of the COMPASS Regional Safety Action Plan (RSAP) and ensuring its strategies meet the needs of travelers in the region. To gauge opinion on the safety of the region's streets and roads, the RSAP Public and Stakeholder Involvement team conducted a transportation safety survey across Southwest Idaho from March 5 to April 12.

The survey asked community members how safe they feel traveling on regional streets and roads by various modes, what safety priorities matter most to them and other transportation safety concerns to consider in the RSAP. In total, 423 people responded to the survey from nearly every zip code in the Treasure Valley. The findings gleaned from the survey responses are explored further in the following summary, diving into survey highlights and key themes to integrate into the developing RSAP.

PERCEIVED TRANSPORTATION SAFETY IN THE TREASURE VALLEY

The following section highlights key findings of the survey and provides further analysis of the qualitative results to help inform the RSAP strategies.

KEY FINDINGS

The survey findings indicate broad support for the goal and purpose of the RSAP while underscoring the urgent need to improve transportation safety in the Treasure Valley. Roughly 50 percent of survey respondents reside in Boise and community members ages 25 to 54 comprise more than 50 percent of all respondents.

The vast majority agree that zero deaths or serious injuries is both the correct goal for the RSAP and the appropriate annual acceptable threshold on roadways in Ada and Canyon Counties. Most respondents support adding some amount of time to their regular commutes for safety enhancements. On average, respondents provided a 2.9 rating (1-5 rating, 1 = not safe, 5 = very safe) when asked how safe they feel on roadways and shared that they feel safest traveling via public transit, driving their personal vehicle and carpooling. Intersection safety, walking safety and biking safety were identified as the top three priorities for the RSAP, respectively.

84% agree that **0 deaths or serious injuries is the right goal** of the RSAP

66% said that **0 is the annual acceptable threshold** for deaths on Treasure Valley roadways

2.9 **average rating of how safe respondents feel** on Treasure Valley streets and roads

71% willing to **add a moderate to significant amount of time** to their commute for safer roads

Respondents ranked the safest travel modes on a scale of 1-5 with 5 being the safest:

1. **Public Transit** (3.78 average ranking)
2. **Driving Personal Vehicle** (3.36)
3. **Carpool** (3.13)
4. Walking (2.84)
5. Bicycle or similar self-powered vehicle (2.13)
6. Walking with mobility aid (2.03)
7. Electric scooter/bicycle (1.96)
8. Motorcycle (1.61)

Respondents prioritized safety improvements on a scale of 1-5 with 5 being the highest priority:

1. **Intersection Safety** (4.35 average ranking)
2. **Walking Safety** (4.15)
3. **Biking Safety** (3.72)
4. Reducing Speeding (3.42)
5. Impaired Driving (3.12)
6. Head-on/run-off-road crashes on high-speed roads (2.24)

DIVING DEEPER

The survey asked multiple open-ended questions and provided opportunities for additional commentary to gain a qualitative understanding of safety priorities and concerns that community members share in Southwest Idaho. The consensus demonstrates a clear recognition that there is both a significant desire and critical need to improve transportation safety in the Treasure Valley. However, safety priorities vary as some respondents place greater emphasis on the need for pedestrian and cyclist-friendly roadways while others focus on vehicle safety and driver behavior, with many falling somewhere in-between.

SAFETY CONCERNS

Additional safety concerns were raised in the survey responses – from the need for improved infrastructure planning to better accommodate transportation needs and regional growth to enhancing school zone safety and mitigating the impact of active construction projects. Several respondents specifically identified skateboards as a write-in mode of transportation where safety lacks significantly, and others noted traveling along the Greenbelt or walking with their children as areas of concern. Ada County residents expressed feeling safer traveling by personal vehicle, walking, and biking than Canyon County residents.

Many respondents emphasized that pedestrian and cyclist safety is essential, namely calling for additional sidewalks and bike lanes, better maintenance of existing bike lanes and educating drivers about the cyclist rules of the road. General maintenance of roadways and shoulders (e.g., regular cleaning/sweeping, fixing potholes, striping and effective snow removal) was also flagged as a key strategy to improving safety for cyclists and drivers alike. Driver education came up repeatedly as an integral element to transportation safety in the valley, specifically educating drivers about rules of the road for bicyclists and how to navigate roundabouts and four-way stop signs.

Respondents also frequently commented on intersection safety, specifically sharing instances of drivers frequently running red lights or not treading cautiously on yellow lights. Speeding and speed limit enforcement were often raised as concerns that must be addressed to effectively improve safety on regional streets and roads. Stricter enforcement of traffic laws in general and considering new policies to mitigate safety issues could also be critical to addressing poor driver behavior and enhancing overall transportation safety.

A few residents shared that school zone safety and accountability of contracted school (or youth camp/activities) bus services need to be top of mind when considering children's safety in transportation as well. Accessibility and ADA compliance in transportation infrastructure and an enhanced public transit system in the region are also crucial strategies respondents raised in their commentary. Construction impacts, access management, and visibility obstructions (e.g., overgrown vegetation and street parking) also require attention.

When asked about specific safety concerns to share with the project team, respondents noted the following roads and/or intersections as routinely challenging locations:

- Amity Road approaching Federal Way in Southeast Boise (speeding)
- 15th & Hill Road intersection (e-bikes and scooters obstructing roadways and sidewalks)
- Bergeson Avenue & Columbia Village (striping)
- Floating Feather between Horseshoe Bend and Eagle Road (bike lane maintenance)
- Glenwood Bridge to Riverside Drive (pedestrian safety)
- SH-44 & Fisher Parkway into Eagle Island State Park (pedestrian/cyclist crossing)
- Federal Way approaching Peace Valley Charter School (school zone safety/speeding)
- Federal Way & Victory Road (railroad crossing)
- Collister Road from Catalpa to State Street (speeding)
- Victory Road Southbound (pedestrian access)
- WB I-84 on ramp at Gowan
- 15th & State Street (congestion)
- Visibility impediments at stop signs along Amity Road and Victory Road
- Kuna Road & SH-69 (intersection safety / lighting)
- Designated right-hand turn lanes on E Amity Road at Meridian Road and S Eagle Rd at Victory Road
- Greenhurst Road at East Valley Middle School (pedestrian access)
- Eagle Road (speeding)
- Bergeson & Gekeler (water accumulation)
- Warm Springs to the foothills (speeding)
- Highway 20/26 from Middleton Road to I-84 (ongoing construction)
- Fairview Avenue / Franklin Road / Orchard Street / Overland Road / Chinden / Broadway / State Street (pedestrian access / sidewalk gaps)
- 12th Avenue at Nampa High School (pedestrian access)
- Caldwell Blvd. (congestion)
- Ustick & Indiana (bike access)

OTHER SAFETY PRIORITIES

In addition to the transportation priorities named in the survey, respondents highlighted a diverse array of other priorities that encompass both behavioral and infrastructure issues and reflect much of the safety concerns raised above.

Key issues include combating inattentive or distracted driving and addressing aggressive driving behaviors, ensuring safer school zones and child transportation, mitigating the impact of active construction projects, and coping with insufficient infrastructure. Roadway maintenance was often identified as a critical area for improvement – spanning from basic upkeep like street cleaning and pothole repair to ensuring proper signage and bike lane maintenance. Implementing a broader public transit system, thoughtful access management and promoting driver education opportunities were also regularly cited as essential strategies to safety. Strengthening enforcement and traffic laws, including cracking down on speeding, and enhancing accessibility rounded out the list of priorities respondents shared, highlighting the multifaceted nature of transportation safety challenges in the Treasure Valley.

COMMUTER TRAVEL

In discussing safer commutes, respondents who commute regularly acknowledged that safety is a critical priority and raised that improving transportation safety could reduce travel times and help ease commuter traffic. For example, adding a strategy to the RSAP like carpool lanes on the interstate could more efficiently move traffic and shorten commute time. When looking at the survey findings by counties, both Ada County and Canyon County residents expressed willingness to add a moderate to significant amount of time to their commutes for safety. Many retirees and remote workers commented on the question to affirm safety as a priority – both on thoroughfares and in residential communities – despite not regularly traveling during those high-traffic hours.

CONCLUSION

Despite varying opinions on where resources should focus, there is a clear understanding from survey respondents that transportation safety needs to be improved in the Treasure Valley. Throughout the survey, respondents demonstrated that regional transportation safety concerns are only worsening and that efforts need to be implemented now to prevent further tragedies on our streets and roads. The survey findings indicate wide support for the RSAP's goal and many of the strategies included in initial plan development. The findings also support an integrated community approach that allows for local municipalities and agencies to collaborate in identifying and executing the strategies that best work for their residents.

APPENDIX B: SYSTEMIC STRATEGIES TOOLBOX

#	Strategy	Category	Cost ($, $$, $$$)	Priority	Emphasis Area					Area Type								SSA Objective	Safe System Roadway Design Hierarchy Tier	More Information	Crash Modification Factor (if applicable)[1]	Estimated Reduction in Crashes[2]	Quick Build Option Available?
					Vulnerable Road Users	Intersection Crashes	Lane Departure Crashes	Seatbelt Use	Impaired Driving	Urban Local	Urban Collector	Urban Two-Lane Arterial	Urban Multi-Lane Arterial	Rural Local	Rural Collector	Rural Highway / Arterial	Interstate						
1	Bicycle Lanes (including Protected and Raised)	Bike	$$	High	X						X	X	X		X	X		Safer Roads	Tier 1	https://highways.dot.gov/safety/proven-saf	0.43 - 0.73	30% - 50%	Yes. Paint and vertical delineation (flex posts, concrete, rubber).
2	Bicycle Intersection Treatments (e.g., Bicycle boxes, Green Pavement Markings)	Bike	$	High	X	X					X	X	X		X	X		Safer Roads	Tier 4	https://highways.dot.gov/sites/fhwa.dot.go	NA	39%	Yes. Impovements are largely striping or flex post.
3	Protected Intersection	Bike	$$	High	X	X					X	X	X					Safer Roads	Tier 1	https://highways.dot.gov/sites/fhwa.dot.go	NA	26% - 56%	No. Most cases will require reconfiguration and drainage configuration.
4	Crosswalk Visibility Enhancements	Crossing	$	High	X	X				X	X	X	X	X	X	X		Safer Roads	Tier 4	https://highways.dot.gov/safety/proven-saf	x	x	Yes. Signage and striping.
5	Medians and Pedestrian Refuge Islands	Crossing	$$	High	X		X				X	X	X		X	X		Safer Roads	Tier 1, Tier 2	https://highways.dot.gov/safety/proven-saf	0.54	46% - 56%	Partial. Most cases will require reconfiguration. Interim treatment may be provided via vertical delineation and striping.
6	Pedestrian Hybrid Beacons	Crossing	$$	High	X						X	X	X		X	X		Safer Roads	Tier 3	https://highways.dot.gov/safety/proven-saf	0.55 - 0.88	15%-55%	No.
7	Rectangular Rapid Flashing Beacons	Crossing	$$	High	X					X	X	X		X	X	X		Safer Roads	Tier 3	https://highways.dot.gov/safety/proven-saf	0.3	47%	No. Though may be implemented at lower cost than PHB.
8	Raised Crosswalks	Crossing	$$	High	X					X	X			X	X			Safer Speeds	Tier 2	https://highways.dot.gov/sites/fhwa.dot.go	x	45%	Yes. Low cost quick installation options are available via rubber mat installations.
9	Emergency Vehicle Preemption	EMS	$	High							X	X	X			X		Post-Crash Care	Tier 3	https://highways.dot.gov/sites/fhwa.dot.go	x	x	Yes. Retrofit of existing infrastructre.
10	Speed Safety Cameras (Requires Legislation, See Related Strategy)	Enforcement	$$	Low	X	X	X				X	X	X					Safer Speeds	Tier 2	https://highways.dot.gov/safety/proven-saf	0.63	37% - 54%	No.
11	Red Light Running Cameras (Requires Legislation, See Related Strategy)	Enforcement	$	Medium	X	X					X	X	X					Safer Roads	Tier 1	https://www.fhwa.dot.gov/resourcecenter/	0.52 - 0.87	12% - 48%	No.
12	Backplates with Retroreflective Borders	Intersection	$	High		X					X	X	X		X	X		Safer Roads	Tier 4	https://highways.dot.gov/safety/proven-saf	0.85	15%	Yes. Retrofit of existing infrastructre.
13	Dedicated Left-Turn Lanes at Intersections	Intersection	$$	High		X						X	X		X	X		Safer Roads	Tier 1	https://highways.dot.gov/safety/proven-saf	0.52 - 0.72	28% - 48%	No. May require reconfiguration of road and signal.
14	Dedicated Right-Turn Lanes at Intersections	Intersection	$$	Medium		X						X	X		X	X		Safer Roads	Tier 1	https://highways.dot.gov/safety/proven-saf	0.73 - 0.86	14% - 26%	No. May require reconfiguration of road and signal.
15	Reduced Left-Turn Conflict Intersections	Intersection	$$$	High		X						X	X			X		Safer Roads	Tier 1	https://highways.dot.gov/safety/proven-saf	0.7	22% - 63%	No. Will require significant construction.
16	Roundabouts	Intersection	$$$	High		X					X	X	X		X	X		Safer Roads, Safer Speeds	Tier 1, Tier 2	https://highways.dot.gov/safety/proven-saf	0.18 - 0.22	78% - 82%	No. Will require significant construction for most locations. Mini-Roundabouts (e.g., traffic circles) are lower cost solutions for low-volume roads.
17	Intersection Conflict Warning System	Intersection	$$	Low		X									X	X		Safer Roads	Tier 4	https://highways.dot.gov/sites/fhwa.dot.go	0.70 - 0.74	25% - 30%	No.
18	All-way Stop Control	Intersection	$	High	X	X				X	X			X	X			Safer Roads, Safer Speeds	Tier 3	https://www.cmfclearinghouse.org/detail.pl	0.30	70%	Yes. Primarily signing and striping..
19	Systemic Application of Multiple Low-Cost Countermeasures at Stop-Controlled Intersections	Intersection	$	High	X	X				X	X			X	X			Safer Roads	Tier 4	https://highways.dot.gov/safety/proven-saf	0.73 - 0.89	10% - 27%	Yes. Components can be added incrementally and requires minimal construction.
20	Lighting	Intersection/Roadway	$$	Medium	X	X	X			X	X	X	X	X	X	X	X	Safer Roads	Tier 4	https://highways.dot.gov/safety/proven-saf	0.67	28% - 42%	No.
21	Walkways (i.e., Pathways, Sidewalks)	Pedestrian	$$	High	X					X	X	X	X	X	X	X		Safer Roads	Tier 1	https://highways.dot.gov/safety/proven-saf	0.6	65% - 89%	Yes. Design and construction work are common practice. Vertical delineation and striping may be provided as interim treatment.
22	Pedestrian Scramble	Pedestrian	$	Low	X						X	X						Safer Roads	Tier 3	https://highways.dot.gov/sites/fhwa.dot.go	x	x	Yes if existing signal controller has capabilities. Minor signal timing and paint alterations.
23	Road Reconfiguration	Roadway	$$	Medium	X								X			X		Safer Roads, Safer Speeds	Tier 1, Tier 2	https://highways.dot.gov/safety/proven-saf	0.53 - 0.81	19% - 47%	No. Requires significant design and construction elements.
24	Speed Management	Roadway	$$	High	X	X	X			X	X	X	X	X	X	X		Safer Speeds	Tier 2	https://highways.dot.gov/safety/proven-saf	x	26% (Citywide Speed Management Strategies)	Yes. Especially on collector and local roads, where horizontal or vertical deflection elements can be implemented.
25	Enhanced Delineation for Horizontal Curves (i.e., Signage, Striping)	Roadway	$	High			X								X	X	X	Safer Roads	Tier 4	https://highways.dot.gov/safety/proven-saf	0.61 - 0.85	15% - 60%	Yes. Signage and stirping components can be implmented incrementally.
26	Longitudinal Rumble Strips and Stripes on Two-Lane Roads	Roadway	$	Low			X									X		Safer Roads	Tier 4	https://highways.dot.gov/safety/proven-saf	0.36 - 0.56	13% - 64%	Yes. Minor alterations of roadway.
27	Tranverse Rumble Strips	Roadway	$	Low		X									X	X	X	Safer Speeds	Tier 4	https://highways.dot.gov/sites/fhwa.dot.go	x	x	Yes. Minor alterations of roadway.
28	Median Barriers	Roadway	$$	Medium			X					X	X			X	X	Safer Roads	Tier 1	https://highways.dot.gov/safety/proven-saf	x	8%	Yes. Quick installation devices available.
29	Roadside Design Improvements at Curves	Roadway	$$	Low			X							X	X	X	X	Safer Roads	Tier 1	https://highways.dot.gov/safety/proven-saf	0.56 - 0.92	8% - 44%	No. Requires significant design and construction elements.
30	SafetyEdge	Roadway	$$	Medium			X								X	X	X	Safer Roads	Tier 1	https://highways.dot.gov/safety/proven-saf	0.79 - 0.89	11% - 21%	No. Typically completed during initial construction.
31	Wider Edge Lines, Enhanced Pavement Markings	Roadway	$	High			X							X	X	X	X	Safer Roads	Tier 4	https://highways.dot.gov/safety/proven-saf	0.64	22% - 37%	Yes. Minor paint alterations.
32	Corridor Access Management	Roadway	$$$	High	X	X					X	X	X		X	X		Safer Roads	Tier 1	https://highways.dot.gov/safety/proven-saf	0.53 - 0.81 (CMF to replace TWLTL with raised median)	19% - 47%	Partial. Vertical delineation elements can restrict left-in/left-out movements.However, may require significant outreach and coordination with property owners and agencies.
33	Pavement Friction Management	Roadway	$$	Low			X								X	X	X	Safer Roads	Tier 1, Tier 2	https://highways.dot.gov/safety/proven-saf	0.37 - 0.80	20% - 63%	Yes if completed and coordinated with typical resurfacing.
34	Centerline Buffer Areas	Roadway	$$	Medium			X								X	X	X	Safer Roads	Tier 1	https://highways.dot.gov/sites/fhwa.dot.go	x	35% - 90%	Partial. May be implemented via striping changes if cross-sectional space available on roadway fore-striping.

#	Strategy	Category	Cost ($, $$, $$$)	Priority	Vulnerable Road Users	Intersection Crashes	Lane Departure Crashes	Seatbelt Use	Impaired Driving	Urban Local	Urban Collector	Urban Two-Lane Arterial	Urban Multi-Lane Arterial	Rural Local	Rural Collector	Rural Highway / Arterial	Interstate	SSA Objective	Safe System Roadway Design Hierarchy Tier	More Information	Crash Modification Factor (if applicable)[1]	Estimated Reduction in Crashes[2]	Quick Build Option Available?
35	Gateways (e.g., Advanced Warning Signage/Structure)	Roadway	$$	Medium	X	X						X	X			X		Safer Speeds	Tier 2	https://highways.dot.gov/sites/fhwa.dot.go	x	32%	Yes. Minimal design, and installation time.
36	Variable Speed Limits	Roadway	$	Low			X										X	Safer Speeds	Tier 2	https://highways.dot.gov/safety/proven-saf	x	34% - 65%	No.
37	Dynamic Speed Feedback Signs	Roadway	$$	High			X			X	X	X	X		X	X		Safer Speeds	Tier 2	https://highways.dot.gov/sites/fhwa.dot.go	0.93 - 0.95	5% - 7%	Yes. Trailer/tempory options available.
38	Yellow Change Intervals	Signal Timing/Operations	$	Medium		X					X	X	X	X	X	X		Safer Roads	Tier 3	https://highways.dot.gov/safety/proven-saf	x	x	Yes. Signal timing adjustment.
39	Leading Pedestrian Interval	Signal Timing/Operations	$	High	X	X					X	X	X					Safer Roads	Tier 3	https://highways.dot.gov/safety/proven-saf	0.87	13%	Yes. Signal timing adjustment. May trigger additional ADA improvements.
40	Left-Turn Phasing (Convert to Protected Phasing)	Signal Timing/Operations	$	High	X	X					X	X	X		X	X		Safer Roads	Tier 3	https://highways.dot.gov/sites/fhwa.dot.go	0.01 - 0.13	87%	Yes. Signal timing adjustment. Requires dedicated left-turn lane and left-turn signal-head.
41	Prohibit Right-Turn on Red	Signal Timing/Operations	$	Medium	X	X					X	X	X					Safer Roads	Tier 3	https://safety.fhwa.dot.gov/older_users/fhv	x	9%	Yes.
42	Coordinated Signal Timing (Lower Speeds)	Signal Timing/Operations	$$	Medium		X					X	X	X					Safer Speeds	Tier 2	https://highways.dot.gov/sites/fhwa.dot.go	x	7%	Yes. Signal timing adjustment.
43	Rest on Red	Signal Timing/Operations	$	Medium		X					X	X	X		X	X		Safer Roads, Safer Speeds	Tier 3	https://trid.trb.org/View/61088#:~:text=The	x	x	Yes. Signal timing adjustment.
44	Flashing Yellow Arrow with Time-of-Day and Pedestrian Call Restrictions	Signal Timing/Operations	$	High	X	X					X	X	X			X		Safer Roads	Tier 3	https://www.kivitv.com/news/new-upgrade	0.86 - 0.90	10% - 14%	Yes. Signal timing adjustment.
45	Dedicated Bike Signals	Signal Timing/Operations	$	Medium	X	X					X	X	X					Safer Roads	Tier 3	https://nacto.org/publication/urban-bikewa	x	x	Partial. Signal equipment/timing change. May require changes to intersection geometry.
47	Raised Intersections	Intersection	$$	Medium	X	X					X	X	X					Safer Roads, Safer Speeds	Tier 2	https://safety.fhwa.dot.gov/saferjourney1/l	x	x	No.

Notes

CMF should be reviewed before they are used to calcute expected change in crashes (i.e., may only be applicbale to certain site conditions or crash types).

s based on case studies or similar evaluation (primarily sourced from FHWA's proven safety countermeasures).

APPENDIX C: NON-INFRASTRUCTURE STRATEGIES TOOLBOX

#	Strategy	Category	Priority	Vulnerable Road Users	Intersection Crashes	Lane Departure Crashes	Seatbelt Use	Impaired Driving	Agency Responsible	SSA Objective	More Information
1	Continue Safety Working Group	Agency Coordination	High	X	X	X	X	X	COMPASS; Member Agencies	Cross Cutting	
2	Provide Grant Funding Support to Member Agencies	Agency Coordination	High	X	X	X	X	X	COMPASS	Cross Cutting	
3	Crash Analysis Support	Agency Coordination	High	X	X	X	X	X	COMPASS	Safer Roads	
4	Incorporate Vision, Goals, Performance Measures, and Targets into the Next CIM Update	Agency Coordination	High	X	X	X	X	X	COMPASS	Safer Roads	
5	Update TIP and CIM Prioritization to Better Incorporate Safety and This Plan	Agency Coordination	High	X	X	X	X	X	COMPASS	Safer Roads	
6	Update COMPASS' Complete Network Policy to Align with RSAP Outcomes	Agency Coordination	High	X	X	X	X	X	COMPASS	Safer Roads	
7	Improve How Safety is Incorporated into Maintenance Projects	Agency Coordination	High	X	X	X			Member Agencies	Safer Roads	a14091/
8	Improve How Safety is Incorporated into Capital Project Development Processes (e.g., Safe System Assessment)	Agency Coordination	High	X	X	X			Member Agencies	Safer Roads	assessment-framework
9	Create Local Task Forces to Review Fatal and Serious Injury Crashes	Agency Coordination	High	X	X	X			COMPASS; Member Agencies	Cross Cutting	
10	Establish Dedicated Funding for Safety Projects	Agency Coordination	High	X	X	X			COMPASS; Member Agencies	Safer Roads	
11	Clearly Define Safety as a Priority in Project Development and Prioritization	Agency Coordination	High	X	X	X	X	X	Member Agencies	Safer Roads	
12	Coordinate Across Jurisdictions on Smaller Projects to Improve Funding Opportunities and Contractor Bidding	Agency Coordination	High	X	X	X			COMPASS; Member Agencies	Safer Roads	
13	Implement the Safe System Approach	Agency Coordination	High	X	X	X	X	X	COMPASS; Member Agencies	Cross Cutting	
14	Public Health Stakeholder Engagement	Agency Coordination	High	X	X	X	X	X	COMPASS; Partner Agencies	Safer People	
15	Create a Publicly Available Tracking Dashboard	Agency Coordination	High	X	X	X	X	X	COMPASS	Cross Cutting	
16	Create an RSAP Update Checklist	Agency Coordination	High	X	X	X	X	X	COMPASS	Cross Cutting	
17	Implement Crash Prediction Analysis	Agency Coordination	Medium		X	X			COMPASS	Safer Roads	
18	Increase Transit Funding to Reduce Driving Trips	Agency Coordination	Medium	X		X		X	Member Agencies	Safer People	
19	Regularly Assess Implementation Successes and Challenges	Agency Coordination	High	X	X	X	X	X	COMPASS	Cross Cutting	
20	Regional Safe Routes to School Program	Education	Medium	X					COMPASS; Member Agencies	Safer People	
21	Support ITD in Data Driven Decision Making Surrounding Motorcycle Laws	Education	Low	X					Member Agencies	Safer People	
22	High-visibility Safety Education Campaign (i.e., Seatbelt-Usage, DUI, Motorcycle Safety)	Education	High	X	X	X	X	X	COMPASS; Member Agencies	Safer People	
23	Best Practices in Safety Analysis, Planning, Engineering Training	Education	High	X	X	X	X	X	COMPASS	Safer People	
24	Encourage Motorcycle Riders to Complete and Pass Idaho STAR Training	Education	High	X					Member Agencies	Safer People	12/countermeasures-that-work-11th-2023-tag_0.pdf
25	Foster Partnerships Between Motorcycle Community and Agency Partners	Education	Medium	X					COMPASS	Safer People	
27	EMS - Bystander Training Courses	EMS	Low	X	X	X	X	X	Partner Agencies	Post-Crash Care	
28	Improve EMS Response Times (e.g., improve incorporation of roadway construction projects into CAD software, public education campaign to provide expectations for drivers when EMS is approaching)	EMS	High	X	X	X	X	X	COMPASS; Partner Agencies	Post-Crash Care	
29	Alcohol-Impaired Motorcyclists: Detection, Enforcement, and Sanctions	Enforcement	Low	X				X	Member Agencies; Law Enforcement	Safer People	work/motorcycle-
30	Equitable Enforcement Strategies	Enforcement	Medium	X	X	X	X	X	Member Agencies; Law Enforcement	Safer Speeds	
31	Automated Speed Enforcement Legislation	Enforcement	Medium	X	X				Member Agencies; Law Enforcement	Safer Speeds	
32	Progressive Ticketing	Enforcement	Medium	X	X	X	X	X	Partner Agencies	Safer People	
33	Support Efforts Related to Motorcycle Helmet Use Laws	Legislation	Low	X			X		Member Agencies; Law Enforcement	Safer People	12/countermeasures-that-work-11th-2023-tag_0.pdf
34	Local Road Safety Plans	Plan/Study	Medium	X	X	X	X	X	Member Agencies	Safer Roads	countermeasures/local-road-safety-plans
35	Road Safety Audits	Plan/Study	High	X	X	X			COMPASS; Member Agencies	Safer Roads	countermeasures/road-safety-audit
36	Allow Developments to Implement Safety Improvements in Lieu of Capacity Improvements	Roadway (Policy)	High	X	X	X			Member Agencies	Safer Roads	
37	Make Safety Features a Priority in Fleet Vehicles	Vehicles	Medium	X	X	X			Member Agencies	Safer Vehicles	
38	Safe System Assessment	Agency Coordination	High	X	X	X	X	X	COMPASS; Member Agencies	Safer Roads	assessment-framework
39	Use Big Data or Traffic Signal Data to Prioritize Enforcement (e.g., Identify Areas with Speeding or Red Light Running)	Enforcement	Medium	X	X	X		X	COMPASS; Member Agencies; Law Enforcement	Safer People	
40	Adopt Ordinance that Require Motorists to Provide Space (e.g., at least 3 feet) when Passing Bicyclists	Legislation	Medium	X		X			Member Agencies; Law Enforcement	Safer People	

APPENDIX D: LOCATION SPECIFIC TOOLBOX

Location ID	Location	City/County	Road Ownership	Total KA Crashes	Approx. Distance (Miles)	KA Crashes/Mile	Notes
1	Fairview Ave (Locust Grove Rd to Curtis Rd)	Boise/Meridian	ACHD	44	6	7.3	14 crashes between Eagle and Cloverdale; also non-motorized
2	SH 69 (Overland Rd to Kuna Rd)	Kuna/Meridian	ITD	24	7	3.4	12 crashes Overland to Victory
3	Garrity Blvd (11th Ave to I-84)	Nampa	ITD	21	2.2	9.5	
4	Ten Mile Rd (Amity Rd to Overland Rd)	Meridian	ACHD	16	1.6	10	
5	SH 45 (Roosevelt Ave to Greenhurst Rd)	Nampa/Melba	ITD	14	1.5	9.3	Also non-motorized
6	Eagle Rd (Fairview Ave to McMillan Road)	Meridian/Eagle	ITD	13	2	6.5	
7	Overland Rd (Orchard Rd to Maple Grove Rd)	Boise	ACHD	12	2.5	4.8	Also non-motorized
8	Caldwell Blvd (Orchard Ave to Middleton Rd)	Nampa	ITD	11	2.2	5	
9	Overland Rd (Locust Grove to Eagle Rd)	Meridian	ACHD	8	1	8	6 crashes on half-mile block

Location ID	Location	City/County	Control Type	Major Road Ownership	KA Crashes	HIN Score	Notes
10	Farmway Rd / Ustick Rd	Canyon County	2-Way Stop	HD4	7	3.15	
11	Pleasant Valley Rd / Kuna Mora Rd	Ada County	2-Way Stop	ACHD	6	3.15	
12	Southside Blvd / Lewis Lane	Canyon County	All-Way Stop	NHD	6	3.15	
13	Idaho Center Blvd / Franklin Rd	Nampa	Signal	Nampa	6	0.85	0 KA crashes coded in junction, 6 KA crashes associated with short (<0.1 mile segment) directly east of signal, assumed intersection crashes
14	Meridian Rd (SH-69) / Amity Rd	Meridian	Signal	ITD	5	>3.5	
15	Northside Blvd / 6th St	Nampa	Signal	Nampa	5	3.43	Also top non-motorized HIN score
16	Orchard St / Overland Rd	Boise	Signal	ACHD	5	3.42	
17	Star Rd / US 20-26	Ada County	Signal	ITD	5	3.29	
18	Blaine St (I-84 Business) / 21st Ave	Caldwell	Signal	ITD	4	>3.5	
19	Locust Grove Road / Overland Rd	Meridian	Signal	ACHD	4	>3.5	
20	Ten Mile Rd / Cherry Ln	Meridian	Signal	ACHD	4	3.42	
21	Eagle Rd / Riverside Dr	Eagle	Signal	ITD	4	3.43	
22	Eagle Rd / Overland Rd	Meridian	Signal	ITD	4	3.43	
23	Ustick Rd / Cloverdale Rd	Boise	Signal	ACHD	4	3.43	
24	Chicago St / 21st Ave	Caldwell	Signal	Caldwell	3	>3.5	
25	Northside Blvd / 2nd St	Nampa	Signal	ITD	3	>3.5	
26	Meridian Rd (SH-69) / Lake Hazel Rd	Ada County	Signal	ITD	3	>3.5	
27	Meridian Rd (SH-69) / Victory Rd	Meridian	Signal	ITD	3	>3.5	
28	Meridian Rd / Pine Ave	Meridian	Signal	ACHD	3	>3.5	
29	State St / 15th St	Boise	Signal	ACHD	3	>3.5	
30	Caldwell Blvd (I-84 Business) / Canyon St	Nampa	Signal	ITD	3	3.43	
31	Garrity Blvd (I-84 Business) / Kings Rd	Nampa	Signal	ITD	3	3.43	
32	SH-45 / Greenhurst Rd	Nampa	Signal	ITD	3	3.42	
33	SH-44 / Linder Rd	Eagle	Signal	ITD	3	3.42	
34	Fairview Ave / Locust Grove Rd	Meridian	Signal	ACHD	3	3.42	
35	Five Mile Rd / Chinden Blvd	Garden City	Signal	ITD	3	3.43	
36	Five Mile Rd / Fairview Ave	Boise	Signal	ACHD	3	3.43	
37	Five Mile Rd / Franklin Rd	Boise	Signal	ACHD	3	3.43	
38	Curtis Rd / I-84 EB Ramp Terminal	Boise	Signal	ACHD	3	3.42	Also top non-motorized HIN score
39	9th St / Myrtle St	Boise	Signal	ITD	3	3.42	Also top non-motorized HIN score
40	Emmett Rd / Galloway Rd	Canyon County	2-Way Stop	HD4	3	3.15	
41	Galloway Rd / Emmett Rd	Canyon County	2-Way Stop	HD4	3	3.15	
42	Southside Blvd / Locust Ln	Nampa	All-Way Stop	Nampa	3	3.15	
43	Florida Ave / Homedale Rd	Caldwell	All-Way Stop	Caldwell	3	3.15	
44	Lake Ave / Homedale Rd	Caldwell	All-Way Stop	Caldwell	3	3.15	

Location-ID	Location	Jurisdiction	Control Type/Corridor	Road Ownership	Non-Motorized KA Crashes	Notes
45	Northside Blvd / 6th St	Nampa	Signal	Nampa	2	3 additional non-motorized KA crashes on Northside between railroad and 6th St
46	Cole Rd / Victory Rd	Boise	Signal	ACHD	2	
47	Curtis Rd / I-84 EB Ramp Terminal	Boise	Signal	ACHD	2	
48	9th St / Front St	Boise	Signal	ITD	2	
49	9th St / Myrtle St	Boise	Signal	ITD	3	3 additional non-motorized KA crashes on Myrtle between 8th and 9th
50	Capitol Blvd / University Dr	Boise	Signal	ACHD	2	
51	Broadway Ave / University Dr	Boise	Signal	ITD	3	
52	Lake Forest Dr / Mimosa Way	Boise	Stop control on minor approach	ACHD	2	
53	16th St / Front St	Boise	Stop control / ped crossing	ACHD	3	
54	Fairview Ave (Curtis to Mitchell)	Boise	Corridor	ACHD	5	
55	Fairview Ave (Cloverdale to Ten Mile)	Boise/Meridian	Corridor	ACHD	5	
56	Orchard St (I-84 to Chinden)	Boise/Garden City	Corridor	ACHD	5	
57	South Vista Ave (I-84 to Rose Hill)	Boise	Corridor	ACHD	4	
58	Overland Rd (Orchard to Maple Grove)	Boise	Corridor	ACHD	3	
59	Broadway St (University to I-84)	Boise	Corridor	ITD	7	
60	9th St (Idaho to Rose Hill)	Boise	Corridor	ACHD	8	
61	12th Ave/SH-45 (7th to Greenhurst)	Nampa	Corridor	ITD	8	
62	Cole Rd (Victory to Fairview)	Boise	Corridor	ACHD	7	
63	State St (15th to Whitewater Park)	Boise	Corridor	ACHD	4	
64	Meridian Rd (I-84 to Fairview Ave)	Meridian	Corridor	ACHD	4	

APPENDIX E: JURISDICTION-SPECIFIC STRATEGIES TOOLBOX

Land Use Agency	Roadway Agency	Location-Specific or Systemic?	Project	Item(s) to Address	Toolbox Strategy ID(s)	Potential Countermeasure(s)	Priority	Existing Project(s)?
Ada County	ACHD	Systemic	Sidewalk Gap Filling	Lack of connectivity for walking and biking between ongoing development and existing attractors.	1, 2, 3, 4, 5, 6, 7, 21	Install walking and biking facilities where development is unlikely to occur to fill existing gaps.	High	
Ada County	ACHD	Location-Specific	Kuna Mora Rd / S Pleasant Valley Rd	Two-way stop control, 6 KA crashes	16, 17, 18, 19	Convert to 4-way stop with advanced / enhanced signage, or roundabout.	N/A	ACHD pursuing advance enhanced signage improvements.
Ada County	ACHD	Systemic	Rural Collector Roads	Lack of pedestrian and bicycle connectivity	1, 21	Install "Visually Separated Facilities", such as paved shoulder or bike lane.	Low	
Ada County	ACHD	Location-Specific	Seamans Gulch/ Cartwright Road	5 KA crashes, including lane departures. Recreational bike route with limited shoulder space.	25, 26, 27, 28, 29, 30, 31, 33, 34	Lane departure and curve delineation treatments: signage, striping, rumble strips, median barrier/buffer area, SafetyEdge, wider edge lines. Bike lanes or wider shoulder.		
Ada County	ACHD	Location-Specific	Orchard Street Realignment	4 KA between Interstate and Gowen (along Orchard) Skewed intersection with W Gowen Road.	-	Realign N Orchard St to align with S Orchard St / W Gowen Rd - constructed to have each approach meet at right angles.		
Ada County, Canyon County	ACHD, ITD, Nampa, Caldwell, Middleton, HD4	Systemic	LPI Implementation	Bicycle and pedestrian crashes at signalized intersections.	39	Systemically implement leading pedestrian intervals and associated APS and ADA upgrades at signalized intersections.	High	
Boise	ITD	Location-Specific	US 20-26 (Front St and Myrtle St) 13th St/Broadway Ave	22 KA crashes	1, 2, 3, 4, 5, 6, 9, 12, 19, 24, 32, 35, 39, 40, 41, 42	Protected bike lanes, Intersection Safety Improvements, Speed Management, Gateway Features	High	
Boise	ACHD	Location-Specific	Fairview Ave N Garden St / Ten Mile Rd	>50 KA crashes, high access density, no bike facilities	1, 2,5,6, 15, 28, 32, 29, 40	Access Management: Consolidate driveways, add center median barrier, and eliminate left-turns. Consider quick-build applications for median barrier (i.e., extruded curb). Protected Bicycle Facilities: Shared-use path or protected bike lanes. Signal improvement package as described below.	High	
Boise	ITD	Location-Specific	SH-55 (Eagle Rd) Ustick Rd / US 20-26 (Chinden Blvd)	High KA crash rate, head-on / rear-end. High speed related crashes.	4, 5, 6, 7, 24, 31, 37, 42	Speed management techniques, including mid-block pedestrian crossings, dynamic speed feedback, lower speed limits, signal timing, enhanced pavement markings	Low	
Boise	ACHD	Systemic	Signalized Intersections (Arterials in Areas with High Bicycle/Pedestrian Activity)	Non-motorized KA crashes at signals. Turning crashes	2, 3, 4, 9, 12, 13, 39, 40, 41, 44	Signal timing package consisting of leading pedestrian interval/accessible pedestrian signal, no right-turn on red and protected left-turn phasing. Non-signal timing improvements such as bike boxes, protected intersection elements (raised curb islands), removal of channelized right-turns)	High	
Boise	ACHD	Systemic	Arterials without protected bike lanes (examples below, Overland, Orchard, Cole, 9th/Capitol/Vista, Vista, State, Broadway)	Non-motorized KA crashes	1, 2, 3, 4, 5, 6, 9, 12, 24, 32, 39, 40, 41, 42	Add protected bike lanes (permanent or quick-build). This could include converting existing bike lanes or adding where there are none today. Signalized intersection improvements along the corridor as described above. Access Management	High	

Land Use Agency	Roadway Agency	Location-Specific or Systemic?	Project	Item(s) to Address	Toolbox Strategy ID(s)	Potential Countermeasure(s)	Priority	Existing Project(s)?
Boise	ACHD	Location-Specific	15th St and 16th St State St/Shoreline Dr	16 KA Crashes, 9 bike/ped	1, 2, 3, 4, 8, 19, 24, 39, 40, 41, 42	Protected bike lanes, Intersection Safety Improvements, Enhanced Crossings, Speed Management	High	ACHD has recently implemented speed management treatments.
Boise	ACHD	Location-Specific	Five Mile Rd Overpass	Lack of pedestrian and bicycle facilities on connection over I-84.	1, 21	Protectected bike lanes, pathways, sidewalks	Medium	
Boise	ACHD	Location-Specific	Overland Rd Orchard St / Maple Grove Rd	12 KA crashes (3 non-motorized)	-	*Low-priority/further study required*	Low	ACHD designing from Vista to Orchard with sidewalks with signal improvements for bike/ped
Boise	ITD	Location-Specific	US20-26 (Broadway St) I-84 / University Dr	7 non-motorized KA crashes	-	*Low-priority/further study required*	Low	
Boise	ACHD	Location-Specific	S Vista Ave I-84 / Rose Hill St	4 non-motorized KA crashes	-	*Low-priority/further study required*	Low	
Boise	ACHD	Location-Specific	Cole Rd Victory Rd / Fairview Rd	7 non-motorized KA crashes	-	*Low-priority/further study required*	Low	
Boise	ACHD	Location-Specific	State St 15th St / Whitewater Park Blvd	4 non-motorized KA crashes	-	*Low-priority/further study required*	Low	
Boise	ACHD/ITD	Location-Specific	Curtis Rd / I-84 EB Ramp Terminal	3 KA crashes (2 non-motorized)	-	*Low-priority/further study required*	Low	
Boise	ACHD	Location-Specific	9th St/Capitol Blvd Idaho St / Rose Hill St	8 non-motorized KA crashes	-	*Low-priority/further study required*	Low	Yes
Boise	ACHD	Location-Specific	Franklin Street (Milwaukee St to Liberty St)	Inadequate ADA accessibility, key connection across I-84 connector, limited access to bus stops and bus routes. 7 KA crashes.	1, 2, 4, 37	Speed management. Fill sidewalk gaps. Protected bicycle facilities. Intersection treatments for bike/ped.	High	RAISE grant project.
Boise	ACHD	Location-Specific	Phillippi Street (Irving St / Malad St). Include Intersection of Phillippi/Overland	Sidewalk gaps, lack of bicycle facilities, lack of midblock crossings, non-ADA compliant facilities, 3 KA crashes. Adjacent to bike/ped generators.	1, 2, 4, 6, 7, 8, 21,	Fill sidewalk gaps. Bicycle lanes.Speed management. Enhanced pedestrian crossings. Intersection treatments for bike/ped.		RAISE grant project.
Boise	ACHD	Location-Specific	University Drive (Chrisway Drive to Lincoln Ave)	Lack of protected facilities for people biking and lack of enhacned crossings on corridor with high amount of bicycle and pedestrian actvity (corridor bisects Boise State University).	1, 2, 6, 22, 23, 24	Re-allocate 5 lane cross-section to 3 vehicle lanes with protecected bike facilities.Add PHB crossings. Pedestrian scramble at Lincoln/Unniversity intersection.	High	BSU concept: https://www.boisestate.edu/operations/campus-projects/university-drive/

Land Use Agency	Roadway Agency	Location-Specific or Systemic?	Project	Item(s) to Address	Toolbox Strategy ID(s)	Potential Countermeasure(s)	Priority	Existing Project(s)?
Boise	ACHD	Location-Specific	Eckert Road Bridge	River crossing and access to Barber Park for all modes. Conflict due to increased bike/ped and car traffic. 1 KA, bicycle related	1, 21	Protected Bike lanes, Walkway / Pathway, intersection treatments at Barber Park.	Medium	Study programmed into IFYWP.
Boise/Garden City	ACHD	Location-Specific	Orchard St I-84 / US20-26 (Chinden Blvd)	21 KA crashes (4 bike/ped), lack of protected bike lanes	1, 2, 3, 4, 5, 6, 7, 13, 21, 24, 31, 35, 39, 40, 41	Protected bike lanes, Intersection Safety Improvements, Speed Management	High	
Caldwell	Caldwell	Location-Specific	Caldwell Blvd Simplot Blvd / Homedale Rd	High KA crash rate, high driveway density. Lack of protected bike facilities and crossings in areas with high bike/ped activity in downtown area.	1, 2, 3, 4, 5, 6, 7, 9, 12, 19, 24, 31, 32, 39, 40, 41, 42	Access Management: Consolidate driveways, add center median barrier, and eliminate left-turns. Consider quick-build applications for median barrier (i.e., extruded curb). Signal improvements along corridor: Protected left-turn phasing, LPI, removal of right-turn channelization. Addition of mid-block crossings, protected bicycle facilities, and other bicycle/pedestrian improvements.	High	
Caldwell	Caldwell	Location-Specific	Ustick Rd Farmway Rd / I-84	Frequent KA crashes, rear-end, motorcycle, alcohol. Gaps in bicycle/pedestrian network.	1, 2, 3, 4, 5, 6, 7, 8, 9, 12, 18, 19, 24, 31, 39, 40, 41, 42	Intersection Improvements: Improve uncontrolled intersections to 4-way stop or roundabout. On signalized intersections (i.e., 10th Ave) implement signal timing package including leading pedestrian interval and no right-turn on red. Fill sidewalk and bicycle facility gaps along the corridor. Consider mid-block crossings near ped/bike attractors. Speed management: Lower speed limit, increase	High	
Caldwell	Caldwell	Systemic	Intradevelopment Locations	Lack of connectivity for walking and biking between ongoing development and existing attractors.	25, 26, 27, 28, 29, 30, 31, 33, 34	Perform connectivity analysis to identify gaps in walking and biking network not anticipated to be filled by development. Install walking and biking facilities in gaps such as, sidewalks, protected bike lanes, shared-use paths, and roadway crossings (with enhanced crossing treatments).	High	
Caldwell	Caldwell	Location-Specific	Homedale Rd 10th Ave / I-84-BUS (Caldwell Blvd)	Angle related event; 10th ave uncontrolled major movement. Gaps in bicycle/pedestrian network.	1, 2, 3, 4, 5, 6, 7, 9, 12, 16, 18, 19, 24, 31, 39, 40, 41, 42	Intersection Improvements: Improve uncontrolled intersections to 4-way stop or roundabout. If intersections are signalized implement signal timing package including leading pedestrian interval and no right-turn on red and consider protected intersection elements. Fill sidewalk and bicycle facility gaps along the corridor. Consider mid-block crossings near ped/bike attractors. Speed management: Lower speed limit, increase enforcement efforts.	Medium	
Canyon County	HD4	Location-Specific	Galloway Rd / Emmett Rd	3 KA crash, angle event	16, 17, 19	Convert to 4-way stop with advanced / enhanced signage, or roundabout.	High	

Land Use Agency	Roadway Agency	Location-Specific or Systemic?	Project	Item(s) to Address	Toolbox Strategy ID(s)	Potential Countermeasure(s)	Priority	Existing Project(s)?
Canyon County	HD4	Location-Specific	Farmway Rd / Ustick Rd	7 KA crashes, angle events	16	Roundabout planned	High	Yes, Roundabout
Canyon County	HD4	Systemic	Horizontal Curves	Lane departure crashes at horizontal curves	25, 26	Systemic package of enhanced delineation at horizontal curves	Medium	
Canyon County	HD4	Location-Specific	Old Hwy 30 / Galloway Rd	2 KA crashes, angle events	16, 17, 19	Convert to 4-way stop with advanced / enhanced signage, or roundabout.	Medium	
Canyon County	HD4	Location-Specific	Old Hwy 30 / Willis Rd	2 KA crashes, angle-turning events, skewed intersection	16, 17, 19	Convert to 4-way stop with advanced / enhanced signage, or roundabout.	Medium	
Canyon County	HD4	Location-Specific	Old Hwy 30 / SH-44	2 KA crashes, angle events	16, 17, 19	Convert to 4-way stop with advanced / enhanced signage, or roundabout. Consider traffic signal with protected left-turn phasing based on corridor-context.	Low	
Canyon County	HD4	Systemic	Rural Collector Roads	Lack of pedestrian and bicycle connectivity	1, 21	Install "Visually Separated Facilities", such as paved shoulder or bike lane.	Low	
Canyon County	NHD	Location-Specific	Southside Blvd / Lewis Ln	6 KA crashes, angle events	16, 17, 19	Convert to roundabout. Improve advanced warning signage and pavement markings (interim strategy).	High	
Canyon County	HD4	Systemic	Rural 2-Way stop controlled Intersections	High speed uncontrolled approaches, angle events	16, 17, 19	Consider conversion to 4-way stop with advanced / enhanced signage, or roundabout.	High	
Eagle	ITD	Location-Specific	SH-44-55 (State St) SH-55 / Eagle Rd	High KA crash rate, lack of crossing opportunities.	4, 5, 6, 7, 24, 31, 35, 37, 42	Gateways Speed management techniques, including mid-block pedestrian crossings, dynamic speed feedback, lower speed limits, signal timing, enhanced pavement markings	Medium	
Eagle	ACHD/ITD	Systemic	Arterials and Collectors with Gaps in Sidewalks/Bicycle Facilities (including Floating Feather Road, Beacon Light Road, Park Ln)	Lack of connectivity for walking and biking between ongoing development and existing attractors.Arterials with high vehicle speed around pedestrian/bicycle attractors.	1, 2, 3, 4, 5, 6, 7, 21, 37, 42	Fill in sidewalk gaps, protected bike facilities, Unsignalized and Signalized Intersection Treatments, Speed Management.	High	

Land Use Agency	Roadway Agency	Location-Specific or Systemic?	Project	Item(s) to Address	Toolbox Strategy ID(s)	Potential Countermeasure(s)	Priority	Existing Project(s)?
Eagle	ACHD/ITD	Systemic	State Highway Signalized Intersections	High KA crash rate. Angle, turning, alcohol related crashes	1, 21	Signal timing package consisting of leading pedestrian interval/accessible pedestrian signal, no right-turn on red and protected left-turn phasing. Non-signal timing improvements such as bike boxes, raised corner islands, removal of channelized right-turns	Medium	
Eagle	ACHD/ITD	Location-Specific	SH-55 (Eagle Rd) / Riverside Dr	4 KA crashes, angle related events, alcohol related event	40	Convert permitted to protected left-turn	Low	
Eagle	ACHD	Location-Specific	Floating Feather Road, Horseshoe Bend to HWY16	5 KA, 3 at Floating Feather & Hwy 55. key E-W connectivity between Hwy 16 and 55. Lack of pedestrian connectivity Floating Feather, no protected bike facilities. Many intersections that serve as neighborhood gateways	1, 3, 4, 6, 7, 8, 21, 24, 37	Speed management, roundabouts at intersections, protected bike facilities, enhanced crossings, fill sidewalk gaps		City of Eagle studying
Eagle	ACHD	Location-Specific	Park Lane, HWY 44 to Floating Feather	0 KA along Park Lane. Multiple bike/ped attractors. Sidewalk gaps ,north of Prickly Pear Dr, lack of protected bicycle facilities, few enhanced crossings.	1, 4, 6, 7, 8, 21, 24, 37	Fill sidewalk gaps, provide protected bike facilities, enhanced crossings, speed management		City of Eagle studying
Garden City	ITD	Location-Specific	US 20-26 (Chinden Blvd) Garrett St/N Maple Grove Rd / E 36th St	Sidewalk gaps and lack of dedicated bike facilities. Lack of pedestrian crossings to access ped/bike activity generators throughout the corridor.	1, 2, 3, 4, 5, 6, 9, 12, 13, 21, 39, 40, 41	Systemic signal package as described below. Implement recommendations from Chinden Boulevard Corridor Project Development (COMPASS, 2016)	High	
Garden City	ACHD	Location-Specific	Adams St N Kent Ln / 37th St	Cut-through route for traffic through neighborhoods. Parallel route for bike/ped travel from Chinden. KA crashes at Adams / VMP.	1, 2, 3, 4, 6, 7, 8, 13, 21, 24, 31, 37 39,40, 41	Signal package at Adams St / Veterans Memorial Pkwy Install speed management elements (e.g. dynamic speed limit signs, enhanced striping), protected bike facilities, and enhanced pedestrian crossings - facilitating bicycle and pedestrian traffic from Chinden to Adams.	High	
Garden City	ACHD/ITD	Systemic	Signalized Intersections (Arterial / Arterial, e.g., Chinden/Orchard)	High KA crash rate. Angle, turning, alcohol related crashes	1, 2, 3, 4, 5, 6, 7, 13, 21, 24, 31, 35, 39, 40, 41	Signal timing package consisting of leading pedestrian interval/accessible pedestrian signal, no right-turn on red and protected left-turn phasing. Non-signal timing improvements such as bike boxes, raised corner islands, removal of channelized right-turns	High	

Land Use Agency	Roadway Agency	Location-Specific or Systemic?	Project	Item(s) to Address	Toolbox Strategy ID(s)	Potential Countermeasure(s)	Priority	Existing Project(s)?
Greenleaf	ITD	Location-Specific	SH-19 / Notus Rd	1 KA crash, heavy freight and agriculture traffic from North and South.	14, 12	Dedicated right turn lane onto Notus Rd, advance signage, sigh distance improvements.	High	
Greenleaf	ITD	Location-Specific	SH-19 (Main St) Friends Rd / Top Rd	Highway as Main Street	1, 4, 5, 6, 7, 21, 23, 24, 31, 35, 37	Connectivity: Fill sidewalk gap along north of SH-19. Reallocate space to provide a Paved Shoulder or Sidepath on south side. Provide median enhanced crosswalks. Coordinate with Royal Ridge Development on the implementation of crossing improvement and improvements to other intersections on SH-19, including at Friends Rd. Speed Management: Reduce speed limit, add advanced warning signs. Add speed feedback signs.	High	
Greenleaf	Greenleaf	Systemic	Low Volume, Local and Collector Streets	Lack of pedestrian and bicycle connectivity	1, 21	Fill sidewalk gaps, and install "Mixed Traffic Facilities", such as yield roadway, bicycle boulevard, or advisory shoulder.	High	
Kuna	ACHD	Systemic	Intradevelopment Locations	Lack of connectivity for walking and biking between ongoing development and existing attractors. (e.g., Deer Flat Rd)	16, 17, 19	Perform connectivity analysis to identify gaps in walking and biking network not anticipated to be filled by development. Install walking and biking facilities in gaps such as, sidewalks, protected bike lanes, shared-use paths, and roadway crossings (with enhanced crossing treatments).	High	
Kuna	ACHD	Systemic	Arterials and Collectors with Attractors	Lack of pedestrian crossings	4, 5, 6, 7	Install pedestrian crossings	High	
Kuna	ITD	Location-Specific	SH-69 (Meridian Rd) Lake Hazel Rd / Kuna Rd	High KA crash rate at intersections with major roads and along segments		*Low-priority/further study required*	Low	
Kuna	ACHD	Location-Specific	Swan Falls (Avalon Ave / Sunbeam)	Key connection point/crossing of Indian Creek and railroad, lack of bike/ped facilities. 1 KA crashes, bike.	1, 4, 7, 8, 21, 20	Fill sidewalk gaps, dedicated bicycle facilities or shared-use path, add lighting, mid-block crossings		
Melba	Melba	Systemic	Low Volume, Local and Collector Streets	Lack of pedestrian and bicycle connectivity	1, 21	Fill sidewalk gaps, and install "Mixed Traffic Facilities", such as yield roadway, bicycle boulevard, or advisory shoulder.	High	
Meridian	ITD	Location-Specific	SH-55 (Eagle Rd) I-84 / Ustick Rd	High KA crash rate, head-on / rear-end. High speed related crashes.	4, 5, 6, 7, 24, 31, 37, 42	Speed management techniques, including mid-block pedestrian crossings, dynamic speed feedback, lower speed limits, signal timing, enhanced pavement markings	Medium	
Meridian	ITD	Location-Specific	SH-69 (Meridian Rd) I-84 / Lake Hazel Rd	High KA crash rate at intersections with major roads and along segments	-	*Low-priority/further study required*	Low	
Meridian	ITD	Location-Specific	SH-69 (Meridian Rd) I-84 / Fairview Ave	4 non-motorized KA crashes	-	*Low-priority/further study required*	Low	

Land Use Agency	Roadway Agency	Location-Specific or Systemic?	Project	Item(s) to Address	Toolbox Strategy ID(s)	Potential Countermeasure(s)	Priority	Existing Project(s)?
Meridian	ACHD	Location-Specific	Fairview Ave N Curtis Rd / Ten Mile Rd	High KA crash history along corridor and at intersections with major roads; angle related crashes	1, 21	Access Management: Consolidate driveways, add center median barrier, and eliminate left-turns. Consider quick-build applications for median barrier (i.e., extruded curb). Protected Bicycle Facilities: Shared-use path or protected bike lanes. Signal improvement package as described below.	High	
Meridian	ACHD/ITD	Systemic	Signalized Intersections (Arterials, e.g., intersections on Meridian Rd, Eagle Rd, Overland Rd, Ten Mile Rd, Fairview Ave)	High KA crash rate at signalized intersections of major roads.	16, 17, 19	Signal timing package consisting of leading pedestrian interval/accessible pedestrian signal, no right-turn on red and protected left-turn phasing. Non-signal timing improvements such as bike boxes, raised curb islands, removal of channelized right-turns	High	
Meridian	ACHD	Location-Specific	Overland Rd SH-55 / SH-69	22 KA crashes - 1 Ped KA. High access density especially between SH-69 and Locust Grove. Many angle-turning crashes, head-ons, and rear-ends. Lack of protected bike lanes.	1, 2, 3, 4, 5, 6, 9, 12, 19, 24, 32, 37, 39, 40, 41, 42	Access Management: Consolidate driveways, add center median barrier, and eliminate left-turns. Consider quick-build applications for median barrier (i.e., extruded curb). Protected Bicycle Facilities: Shared-use path or protected bike lanes. Signal improvement package.	High	
Meridian	ACHD/ITD	Systemic	Arterial Roadways	High KA crashes on arterial roadways and at arterial-arterial intersections	4, 5, 6, 7, 24, 31, 37, 42	Speed management techniques, including mid-block pedestrian crossings, dynamic speed feedback, lower speed limits, signal timing, enhanced pavement markings	Medium	
Meridian	ACHD	Location-Specific	Ten Mile Rd Amity Rd / Overland Rd	High risk characteristics, potential for future development	-	*Low-priority/further study required*	Low	
Meridian	ACHD	Location-Specific	Amity Corridor, Cloverdale to Locust Grove	1 KA crash at Amity&Cloverdale - drug related head-on. Sidewalk / path gaps, and lack of pedestrian crossings across Amity Corridor. Lack of protected bicycle facilities. Major corridor serving residential community, lack of pedestrian facilities to move across Amity.	1, 4, 6, 7, 8, 21, 24, 37	Speed management and Pedestrian/ Bicycle improvements: protected bicycle facilities, enhanced crossiings		
Middleton	Middleton	Systemic	Intradevelopment Locations	Lack of connectivity for walking and biking between ongoing development and existing attractors.	16, 17, 19	Perform connectivity analysis to identify gaps in walking and biking network not anticipated to be filled by development. Install walking and biking facilities in gaps such as, sidewalks, protected bike lanes, shared-use paths, and roadway crossings (with enhanced crossing treatments).	High	

Land Use Agency	Roadway Agency	Location-Specific or Systemic?	Project	Item(s) to Address	Toolbox Strategy ID(s)	Potential Countermeasure(s)	Priority	Existing Project(s)?
Middleton	ITD	Location-Specific	SH-44 (Main St) Hartley Ln / S Dewey Ave	Highway as Main Street	1, 4, 5, 6, 7, 21, 23, 24, 31, 35, 37	Connectivity: Fill sidewalk gaps along SH-44. Add protected bike facilities. Provide median enhanced crosswalks. Speed Management: Reduce speed limit. Add speed feedback signs.	High	
Middleton	Middleton	Systemic	Arterials and Collectors with Attractors	Lack of pedestrian crossings	4, 5, 6, 7	Install pedestrian crossings	High	
Middleton	Middleton	Location-Specific	Willis Rd / Cemetery Rd	1 KA crash, angle event	16	Roundabout	Low	
Nampa	ITD	Location-Specific	I-84-BUS (Garrity Blvd) 11th Ave / I-84	30 KA crashes. rear end, angle event, mixed industrial with residential access	1, 2, 3, 4, 5, 6, 7, 9, 12, 16, 18, 19, 24, 31, 39, 40, 41, 42	Access management; Speed Management. Safety improvements to traffic signals.	High	
Nampa	Nampa	Location-Specific	Northside Blvd 6th St to Rail Road	High KA crash, 6 non-motorized	1, 4, 5, 6, 7, 21	Fill sidewalk gaps and provide pedestrian crossings. Provide separate bicycle facilities. Signalized intersection improvements.	High	
Nampa	Nampa/ITD	Location-Specific	Idaho Center Blvd Cherry Ln / I-84	13 KA crashes; wide multi-lane road, head-on	4, 5, 6, 7, 9, 12, 16, 18, 19, 24, 31, 39, 40, 41, 42	Signalized Intersections: Implement signal timing package including protected left-turns, leading pedestrian interval and no right-turn on red. Consider quick build applications to remove channelized right turns at Franklin Rd / Idaho Center Blvd and access management on Franklin Rd to east of intersection. Consider access management and speed management along corridor.	High	
Nampa	Nampa	Systemic	Signalized Intersections	Non-motorized KA crashes	39	Install leading pedestrian interval and accessible pedestrian signals	High	
Nampa	Nampa	Systemic	Arterials / Collectors Near Schools	Lack of pedestrian crossings	4, 5, 6, 7	Install pedestrian crossings	High	
Nampa	Nampa	Location-Specific	Roosevelt Ave / Midland Blvd	3 KA crash, angle event, head-on, alcohol involved, non-motorized	39, 40, 41	Implement signal timing package including protected left-turns, leading pedestrian interval, and no-right turn on red.	Medium	
Nampa	Nampa/NHD	Location-Specific	Southside Blvd / Locust Ln	3 KA crash, angle event, overturn	16, 17, 19	Install advanced / enhanced warning signage, or roundabout	Medium	
Notus	Notus	Location-Specific	US 20-26 Notus Rd / 3rd St	Highway as Main Street	1, 4, 5, 6, 7, 21, 23, 24, 31, 35, 37	Connectivity: Fill sidewalk gaps on US 26. Enhanced crossings. Protected bike facilities Speed Management: Reduce speed limit, add advanced warning signs. Add speed feedback signs.	High	

Land Use Agency	Roadway Agency	Location-Specific or Systemic?	Project	Item(s) to Address	Toolbox Strategy ID(s)	Potential Countermeasure(s)	Priority	Existing Project(s)?
Notus	Notus	Systemic	Low Volume, Local and Collector Streets	Lack of pedestrian and bicycle connectivity	1, 21	Fill sidewalk gaps, and install "Mixed Traffic Facilities", such as yield roadway, bicycle boulevard, or advisory shoulder. Focus on connections to/from High School. Coordinate with RAISE grant package which includes improvements to 1st St, 3rd St, Notus St, and Jasper	High	RAISE Grant Project
Parma	ITD	Location-Specific	US 20-26 Parma Rd / Spur Ave	Highway as Main Street	1, 4, 5, 6, 7, 21, 23, 24, 31, 35, 37	Connectivity: Fill sidewalk gaps along corridor. Protected bike facilities. Provide median enhanced crosswalks. Lighting. Speed Management: Reduce speed limit, add advanced warning signs. Add speed feedback signs.	High	
Parma	Parma	Systemic	Low Volume, Local and Collector Streets	Lack of pedestrian and bicycle connectivity	1, 21	Fill sidewalk gaps, and install "Mixed Traffic Facilities", such as yield roadway, bicycle boulevard, or advisory shoulder.	High	
Star	ITD	Location-Specific	SH-44 (W State St) SH-16 / Can Ada Rd	Wide arterial with lack of bike facilities, gaps in sidewalk, and lack of crossing opportunities.	1, 2, 3, 4, 5, 6, 7, 9, 12, 13, 21, 24, 31, 35, 39, 40,41, 42	Install gateway features. Provide protected bike facilities (protected bike lanes or shared-use path) Install enhanced mid-block pedestrian crossings.	Medium	
Star	ACHD/ITD	Systemic	Intradevelopment Locations	Lack of connectivity for walking and biking between ongoing development and existing attractors.	4, 5, 6, 7, 24, 31, 37, 42	Perform connectivity analysis to identify gaps in walking and biking network not anticipated to be filled by development. Install walking and biking facilities in gaps such as, sidewalks, protected bike lanes, shared-use paths, and roadway crossings (with enhanced crossing treatments).	High	
Star	ACHD/ITD	Systemic	Arterials and Collectors with Attractors	Lack of pedestrian crossings	4, 5, 6, 7	Install pedestrian crossings	High	
Wilder	Wilder	Location-Specific	US 95 (5th St) Mercer Dr / D Ave	Highway as Main Street	1, 4, 5, 6, 7, 21, 23, 24, 31, 35, 37	Connectivity: Reallocate existing roadway space to provide a 3-lanes of motor vehicle traffic and buffered bike lanes. Provide median enhanced crosswalks. Lighting. Speed Management: Reduce speed limit, add advanced warning signs. Add speed feedback signs.	High	
Wilder	Wilder	Systemic	Low Volume, Local and Collector Streets	Lack of pedestrian and bicycle connectivity	1, 21	Fill sidewalk gaps, and install "Mixed Traffic Facilities", such as yield roadway, bicycle boulevard, or advisory shoulder.	High	

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COMPASS
Regional Safety Action Plan

TECHNICAL MEMORANDUM #5

December 6, 2024 | Project #: 29061.0

To: Hunter Mulhall and Austin Miller, COMPASS

From: Matt Steele, Justin Delgado, Chase Fuquay, PE, Mark Heisinger, PE, Nick Foster, ACIP, RSP_1, and Sonia Daleiden, PE, PTOE

CC: Project Management Team

RE: Implementation Plan

Technical Memorandum #4: Strategy Development (Reference 1) presented strategies to reduce fatal and serious injury crashes in the Treasure Valley. This memorandum builds upon that work by providing implementation guidance for high-priority strategies for COMPASS and its member agencies. Strategies covered in this memorandum include infrastructure projects, as well as non-infrastructure (e.g., policy, process) actions. It also provides high-level guidance on, and resources for, implementing safety treatments through quick-build treatments and funding considerations. It is organized as follows:

- Priority Projects
- Quick-Build Guidance
- Funding Considerations
- Non-Infrastructure Strategies

The recommendations in this memo will be incorporated into the COMPASS Regional Safety Action Plan.

Exhibit 1 shows how the different elements of this memo can be used by COMPASS and its member agencies to help achieve this Plan's goal of zero fatal and serious injury crashes.

Exhibit 1 Implementation Plan Summary

What Projects Should Agencies Prioritize?

The **Priority Project** section presents high-priority projects that each member agency can implement to improve safety in their jurisdiction. These projects will need to be further developed for implementation and serve as examples of the types of projects that are needed to meet the plan's goal of zero fatal and serious injury crashes. The section includes information on:

- Determining project locations
- Identifiying countermeasures
- A list of **Location-Specific Projects**, targeting individual corridors and intersections on the High-Injury Network.
- A list of **Systemic Projects**, seeking to proactively reduce the probability of a serious crash at locations with factors correlated with such crashes, but that may not have a history of them, yet.

What Planning and Policy Strategies Should Agencies Prioritize?

The **Non-Infrastructure Strategies** section presents implementation considerations for high-priority, non-infrastructure strategies, such as policies and plans or recommendations related to agency coordination or operations. This section includes guidance on the following considerations:

- *Lead Agency:* Which agency should lead implementation of the strategy?
- *Near-Term Action:* What next step should be taken to achieve the strategy?
- *Performance Metric:* How can COMPASS and other agencies measure the implementation progress of each strategy?

What Tools Are Available to my Agency to Implement Strategies and Projects Identified in this Plan?

The **Quick-Build Guidance** section provides information on best practices, resources, and implementation considerations for quick-build projects. Quick-build projects and processes can be useful tools for agencies to implement safety projects with limited budgets and on a compressed timeframe. Quick-build projects can also be helpful tools for trying new or experimental countermeasures as pilot programs prior to permanent installation.

The **Funding Considerations** section provides information on federal, state, and regional funding sources that may be used to implement the projects and strategies presented in this plan.

How do Agencies Evaluate the Effectiveness of the Strategies in This Plan on Improving Safety?

The **Performance Measures** section describes measures that can be used to help evaluate and understand the changes that implementing this plan has on transportation safety in the Treasure Valley.
This section includes:

- *Program Outcome Measures:* What quantitative metrics can be used to evaluate the success of the program in achieving its goals of eliminating fatalities and serious injuries?
- *Accountability:* What actions should be taken to encourage accountability and continued implementation of the strategies in this Plan?

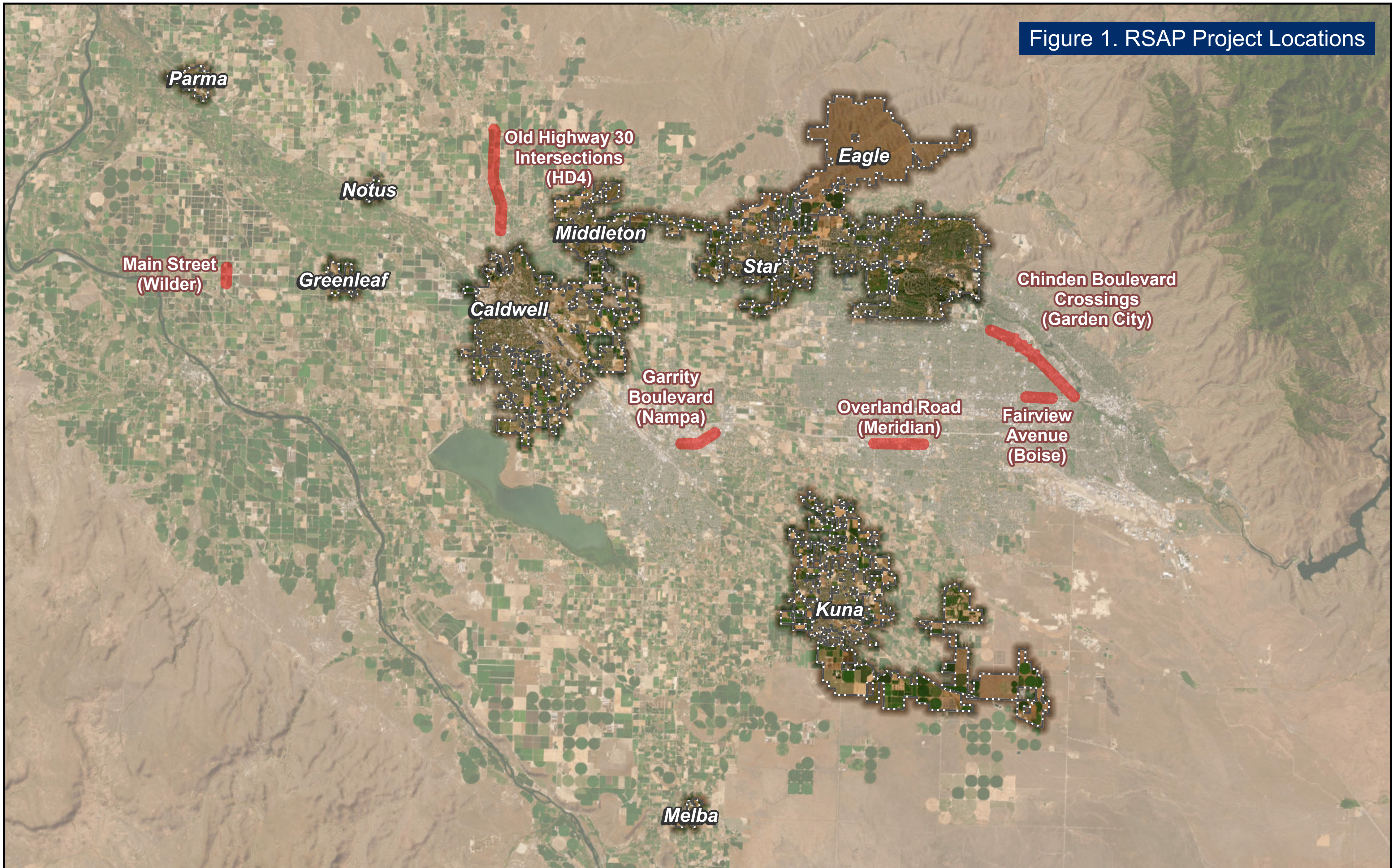
PRIORITY PROJECTS

The project team further developed priority projects for COMPASS member agencies from the jurisdiction-specific strategies described in *Technical Memorandum #4*. Each priority project implements location-specific or systemic strategies to reduce fatal and serious injury crashes. Location-specific projects typically focus on high-capacity arterials with historical fatal and serious crashes, and implement multiple strategies, such as speed management, access management, walkways & bikeways, and signalized intersection improvements. They also include roundabouts at high-crash intersections and multi-modal main streets. Systemic priority projects include jurisdiction-wide packages to fill gaps in the pedestrian and bicycle network by constructing walking and biking infrastructure, such as sidewalks, protected bike lanes, shared-use paths, and roadway crossings.

Appendix A contains a summary report for each member agency and their priority project. These summary reports are meant to serve as a starting point for further development for grant funding and can be used as examples of how countermeasures could be used for similar locations.

Next steps for each jurisdiction are recommended on their summary reports. General guidance includes understanding the financial capabilities of the jurisdiction, when and how to consider quick build alternatives, and collaborating with ITD on their roadways. Each project summary and next steps guidance is intended to prepare a jurisdiction to apply for Safe Streets and Roads for All (SS4A) grant or other sources of funding. Each member agency is encouraged to further develop these priority projects using COMPASS as a resource for identifying and applying for grant funding, as well as for interregional coordination.

The projects shown in Figure 1, and described further in subsequent sections, provide a sample of the types of projects that will be needed to meet the plan's goal of zero fatal and serious injury crashes throughout the COMPASS planning area. Meeting this goal will require continued investment by COMPASS member agencies in projects like these. Member agencies can identify and begin developing other projects using a similar process to what was used for these projects.



Regional Safety Action Plan Projects

Location Specific Project Corridors

Systemic Project Jurisdiction

COMPASS
Regional Safety Action Plan

0 5 10 Miles

Applying the Safe System Approach in Countermeasure Selection

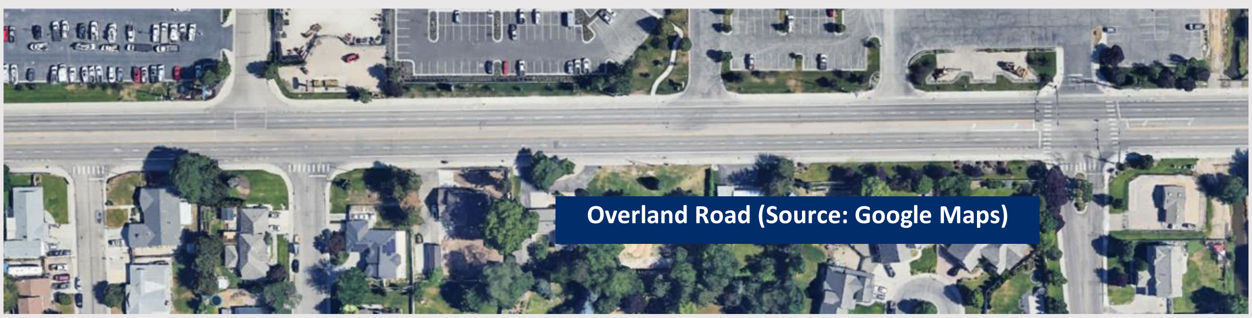
Once a project location has been identified, the task becomes to determine what treatments are appropriate and will be effective in reducing fatal and serious injury crashes given the roadway context. To help aid agencies across the US in implementing the Safe System Approach, FHWA has published the Safe System Roadway Design Hierarchy (Reference 2). This hierarchy can be used to assess how well aligned a treatment is with the Safe System Approach and its goal of reducing fatal and serious injury crashes.

Additional guidance on countermeasure selection, including a countermeasure toolbox, is included in Technical Memorandum #4. The toolbox includes treatments from the Safe System Roadway Design Hierarchy, as well as FHWA's Proven Safety Countermeasures (PSCs).

Example: Overland Road

One location identified in the plan is Overland Road, from Eagle Road to Meridian Road. Overland Road shows up on the HIN and is a multi-lane, high speed arterial with high access density. To identify appropriate treatments, the project team evaluated the menu of PSCs:

- ***Tier 1 – Remove Severe Conflicts***: PSCs that align with Tier 1 and fit the context of the roadway corridor are Bicycle Lanes, Medians and Pedestrian Refuge Islands, Walkways, Median Barriers, and Corridor Access Management.
- ***Tier 2 – Reduce Vehicle Speeds:*** Median and Pedestrian Refuge Islands
- ***Tier 3 – Manage Conflicts in Time:*** Pedestrian Hybrid Beacons, Yellow Change Intervals.
- ***Tier 4 – Increase Attentiveness and Awareness:*** Crosswalk visibility enhancements, Backplates with Reflective Borders.



Applying the Safe System Approach to Multi-Lane High Speed Arterials

Reducing kinetic energy through speed management in order to reduce crash severities is a key tenet of the Safe System Approach. In fact, roads with speed limits of 35 MPH and higher, especially multilane roads with higher speeds, are disproportionately represented on the HIN. Some of these roads are included in the priority location-specific projects in this section (e.g., Garrity Boulevard, Fairview Avenue, Overland Road). Reducing speeds to 25 MPH or slower on these roads would be politically challenging and potentially difficult to enforce.

For this reason, the strategies presented here for these roads focus on conflict removal and management, as well as increasing visibility and awareness (i.e., Tiers 1, 3, and 4 from FHWA's *Safe System Roadway Design Hierarchy)*. These strategies include:

- Access management (Tier 1 - removes severe conflicts)
- Separated walking and biking infrastructure (Tier 1 - removes severe conflicts)
- Enhanced crossings (Tiers 3 and 4 - manage conflicts in time/increases awareness)
- Signalized intersection treatments, such as protected left-turns and leading pedestrian intervals (Tier 3 - manage conflicts in time)
- Roundabouts (Tiers 1 and 2 - removes conflicts, manages speeds at the intersection)

Case Study: Whitewater Park Boulevard

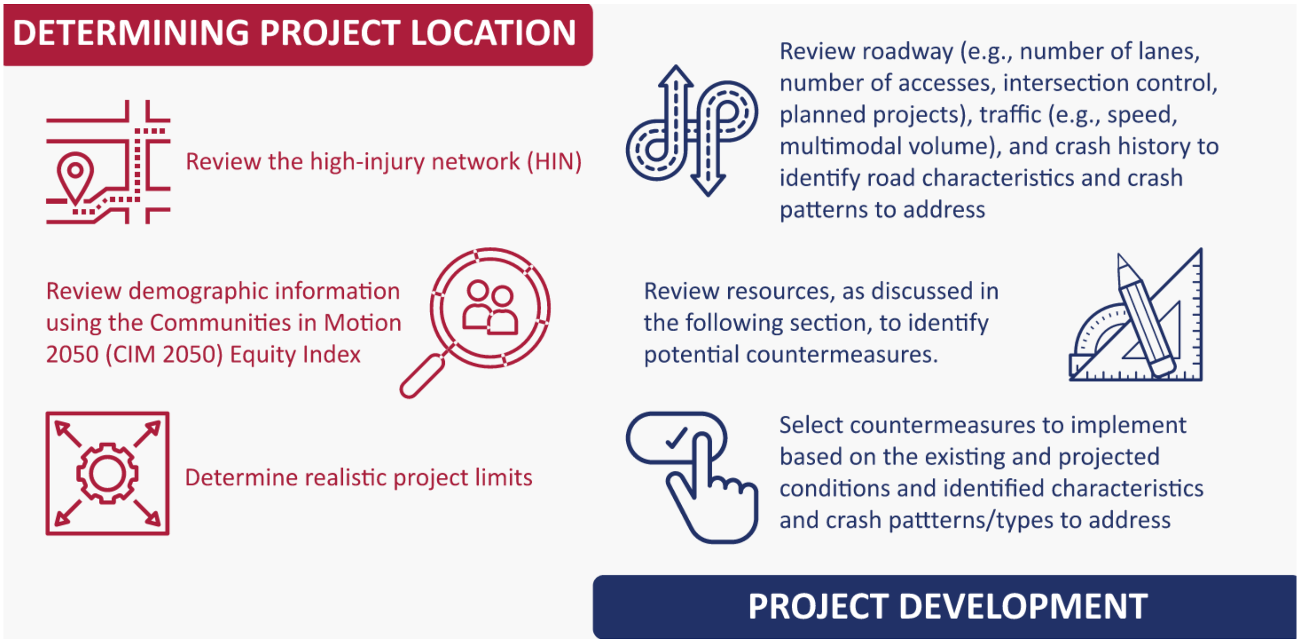
Whitewater Park Boulevard in Boise is a four-lane arterial with speeds as high as 35 MPH but does not appear on the HIN. Some of the strategies used on Whitewater Park Boulevard include:

- Raised median restricts accesses, where allowed, to right-in/right-out only and also reduces opportunities for head-on crashes.
- Limited access points to the road reduce conflict points.
- Roundabouts reduce conflict points and speeds at intersections.
- Sidewalks separated by landscaping from the street separate people walking from cars.
- Key crossings are controlled by pedestrian hybrid beacons (PHBs), including crossings to a regional park and an elementary school.

LOCATION-SPECIFIC PROJECTS

Location-specific projects were identified and developed using the process outlined in Exhibit 2.

Exhibit 2. Location-Specific Project Identification and Development Process



Ten member agencies identified a location-specific priority project to further develop from the jurisdiction-specific strategies outlined in *Technical Memorandum #4*. Each project is located on a corridor or intersection with fatal and serious injury crash history and identified in the high-injury network (HIN).

Table 1 shows the high priority location-specific projects identified for each member agency. Appendix A contains more information for each of these projects.

Table 1. Location-Specific Priority Projects

Member Agency	Roadway Agency	Priority Project	Countermeasure(s)
City of Boise	ACHD	Fairview Ave (Curtis Rd to Cole Rd)	Access Management, Speed Management, Signalized Intersection Treatments, Enhanced Bicycle/Pedestrian Facilities
Garden City	ACHD/ITD	Chinden Blvd Enhanced Crossings Package	Enhanced Bicycle / Pedestrian Facilities
City of Greenleaf	ITD	SH 19 (Friends Rd to Top Rd)	Multimodal Main Street, Enhanced Bicycle/Pedestrian Facilities, Speed Management
Highway District No. 4 (HD4)	HD4	Old Hwy 30 Road Intersection Improvements	Roundabout, Traffic Signal
City of Meridian	ACHD	Overland Rd (Meridian Rd to Eagle Rd)	Access Management, Speed Management, Signalized Intersection Treatments, Enhanced Bicycle/Pedestrian Facilities
City of Nampa	City of Nampa / ITD	Garrity Blvd (I-84B) (Stampede Dr to Sister Catherine Way)	Access Management, Speed Management, Signalized Intersection Treatments, Enhanced Bicycle/Pedestrian Facilities
City of Wilder	ITD	US 95 (Mercer Dr to D Ave)	Multimodal Main Street, Enhanced Bicycle/Pedestrian Facilities, Speed Management

SYSTEMIC PROJECTS

Jurisdictions with systemic projects differed in their prioritization process. Instead of starting with a location, the jurisdiction identified area-wide trends to address. Locations were most often selected based on their characteristics being similar to those of streets on the HIN, even if the location is not identified on the HIN itself. Identified countermeasures are generally lower cost and require less project development efforts than those found in location-specific projects.

The application of systemic treatments was based on a consideration of characteristics including but not limited to:

Crash History	• Severity, trends, characteristics
Road Characteristics	• RSAP risk factors, functional classifcation, connectivity
Equity	• Area of Persistent Poverty, Economically Disadvantaged Community, COMPASS equity score
Schools and Regional Attractors	• Distance, frequency, connectivity
Planning Documents	• Previous prioritization of project, repeated identification of location
Feasibilty	• Cost, environment, support (public, political, business)
Funding Competitiveness	• Compatibilty with grant intent

A weight is not assigned to any of the categories identified above. The assessment process a project undergoes will vary based on jurisdiction priorities. The six jurisdictions prioritizing systemic projects utilized a combination of these factors to prioritize locations within their jurisdiction for countermeasure implementation.

All jurisdictions that identified systemic projects as a priority used a combination of the criteria above to develop an initial list of priority areas for implementation. These initial locations are not comprehensive and additional locations within a jurisdiction's boundaries could benefit from the same treatments used at the initial priority locations.

Ten member agencies identified a systemic priority project to further develop from the jurisdiction-specific strategies outlined in *Technical Memorandum #4*. Systemic projects proactively treat locations to reduce the likelihood of future fatal and serious injury crashes. Selected locations may or may not have a history of fatal and serious injury crashes, but share similar characteristics (e.g., number of lanes, posted speed, surrounding land-use context, intersection control-type) with locations that do have fatal and serious injury crashes. These strategies tend to be lower effort, allowing them to be applied at multiple similar locations across an area.

Table 2 shows the systemic priority projects identified for each member agency. Appendix A contains more information for each of these projects.

Table 2 Systemic Projects

Member Agency	Roadway Agency	Priority Project	Countermeasure(s)
ACHD	ACHD	Systemic Bike/Ped	Pedestrian and bicycle infrastructure construction, improved crossings
Caldwell	Caldwell	Systemic Bike/Ped	Pedestrian and bicycle infrastructure construction, improved crossings
Canyon County Rural Communities (Greenleaf, Melba, Notus, and Parma)	Varies	Systemic Pedestrian	Sidewalk construction
Eagle	ACHD	Systemic Bike/Ped	Pedestrian and bicycle infrastructure construction, improved crossings
Kuna	ACHD	Systemic Bike/Ped	Pedestrian and bicycle infrastructure construction, improved crossings
Middleton	Middleton	Systemic Pedestrian	Sidewalk construction and improved crossings
Star	ACHD	Systemic Bike/Ped	Pedestrian and bicycle infrastructure construction, improved crossings

QUICK-BUILD GUIDANCE

This section discusses national best practices, resources, and implementation considerations for quick-build projects.

What Are Quick-Build Projects?

Quick-build projects generally have the following characteristics:

- Low-cost materials.
- Materials can be installed quickly.
- Materials can be easily changed, adapted, or replaced with more durable materials as needed.

Why Is Quick-Build Useful?

Quick-build projects and processes can be useful tools for agencies to implement safety projects with limited budgets and on a compressed timeframe, compared to traditional, capital projects. Quick-build projects can also be helpful tools trying new or experimental countermeasures or pilot programs prior to permanent installation.

This section presents best practices related to quick-build projects, a summary of current practices in the Treasure Valley, and recommended next steps for how agencies can best utilize quick-build projects to improve safety.

Exhibit 3 Quick-Build Implementation Process

1 PLANNING STAGE

Structure

Agencies should have an administrative framework in place for quick-build projects.

Includes: identification of key staff coordinators, an inventory of available resources, and a checklist of stakeholders that should be engaged with during the planning stage of the process.

Reference

Leverage existing planning efforts (e.g., this plan or other safety plans, active transportation plans) to identify locations for quick-build implementation.

Brainstorm

Include agency staff, community members, and other key stakeholders in initial conversations to understand the needs of the location, set expectations, and obtain initial buy-in for the project concept.

These conversations should make sure that future maintenance needs and emergency vehicle access are considered in the quick-build concept. Consider community pop-up meetings to communicate project ideas and obtain feedback.

Identify

Develop a data collection and evaluation plan (e.g., crash data, near-miss, speeds, or multimodal traffic counts) if a before-after evaluation is desired or needed.

2 INSTALLATION STAGE

Communicate

Continue pro-active communication with community members so that the installation date and project concept and purpose are advertised. Consider a project-opening event to raise awareness for the effort.

3 MONITORING & MODIFICATION

Engage

Continue engagement with community members and solicit feedback on the project.

Analyze

Collect and evaluate data to determine the project's effectiveness (especially if part of a demonstration activity).

Discover

Continue conversations with maintenance staff, emergency service providers, and other stakeholders to learn about successes and challenges associated with the project.

Adjust

Modify the project, as needed based on the feedback and data evaluation. Since quick-build projects are not built with permanent materials, there is the opportunity to modify and improve the design at a relatively low cost.

Evaluate

Determine if the project will continue with the same materials or if they will be replaced with more durable materials (e.g., replacing a curb bulb-out built with flext posts with a concrete bulb-out).

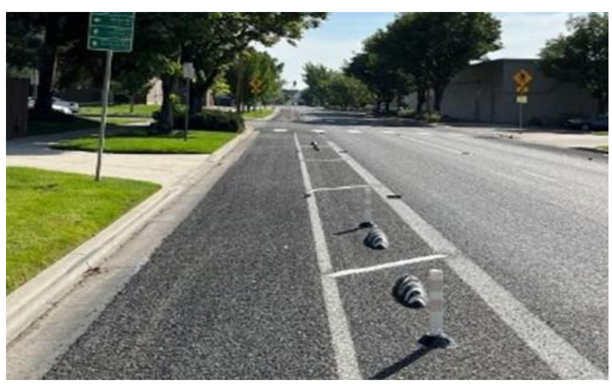
BEST PRACTICES AND PROCESS

Effective quick-build implementation should generally follow the process shown in Exhibit 3. The following references, including guidebooks for quick-build projects or example quick-build guides used by agencies across the nation. They may be used by agencies in the Treasure Valley to guide and inform quick-build project implementation.

- *Quick-Build Guide: How to Build Safer Streets Quickly and Affordably* (Reference 3)
    - Created by the California Bicycle Coalition in 2020.
    - Provides information for agencies and practitioners on how to plan-for, design, maintain, and implement quick-build projects. Focus is on active transportation infrastructure.
- *Quick Builds for Better Streets* (Reference 4)
    - Created by PeopleForBikes in 2016.
    - Provides a list of resources, considerations, and factors that can contribute to successful quick-build implementation.
- *City of Orlando Quick Build Guide* (Reference 5)
    - Created by the City of Orlando in 2023.
    - Provides a framework and process for quick-build implementation.
    - Provides a toolbox with list of quick-build project types with information on material options, design considerations, and additional resources.
- *Tactical Urbanism: A Guide for Street Activations and Demonstration Projects (Reference 6)*
    - Created by the Nashville Department of Transportation.
    - Provide a toolbox with suggestions on tool, materials, and methods for consideration in quick-build project implementation.
    - Provides an example of an agency's process for the identification, design, approval, and installation of quick-build projects.

CURRENT PRACTICES IN TREASURE VALLEY

Multiple agencies in the Treasure Valley currently construct quick-build projects to improve safety. Example applications are shown below:

Protected Bike Lane with Temporary Delineation: *Bollards or other vertical elements can be added to striping to provide a quick-build option for protected bike lanes.*

Access Management with Vertical Delineation: *Bollards or other vertical elements can be added to striping to provide a quick-build option for restricting access to and from local roads or driveways (Source: Google Maps).*

Flex Post SHUR CURB Separated Walkway: *Extruded curbs or materials may be used to provide separated walkways or pathways on an interim basis or when stormwater treatment does not allow for traditional curb and gutter.*

Through conversation with COMPASS and member agencies representatives, the agencies indicated that they do not have a formal process for implementing quick-build projects. Most quick-build projects are implemented on an ad-hoc basis through ongoing coordination with agency engineers, planners, and maintenance crews. Agencies indicated that the biggest challenges associated with quick-build implementation is related to maintenance (e.g., the need to constantly replace the quick-build material) and the expectations of roadway users (i.e., people using the roadway might have difficulty navigating or understanding new configurations to the roadway cross-section).

NEXT STEPS

Based on the best practices review and the current quick-build practices in the Treasure Valley, the following items should be taken into consideration by COMPASS and member agencies for implementing quick-build projects:

- **Continue Implementing Quick-Build Projects:** Especially at locations with an immediate need (e.g., locations on the High-Injury Network, near schools, other areas with higher crash activity) where improvements via capital projects are not anticipated in the near-term due to lack of funding or other constraints. Quick-build projects can also be used to demonstrate new treatments.
- **Develop Internal Agency Processes that Enable Effective and Efficient Quick-Build Implementation:** These may include dedicating agency staff to coordinating quick-build projects, developing a formal process (such as the City of Orlando's), inventorying available resources, and identifying key partners for implementation (e.g., maintenance staff, emergency service providers, neighborhood advocacy groups).
- **Constant and On-Going Communication:** Involve agency staff, community members, and other partners in conversations in all stages of the process. This can build buy-in before installation, set expectations for roadway users and members of the public, and allow agencies to learn lessons from project implementation.
    - **Maintenance Matters:** Maintenance needs should be a focus in the planning, design, and implementation stages. This includes monitoring of annual maintenance costs post-implementation.

FUNDING CONSIDERATIONS

COMPASS, member agencies, and partner agencies can consider federal, state, and local funding opportunities to implement the strategies identified in this document. A list of potential funding sources are shown below. Member agencies should also use COMPASS as a resource for help identifying potential funding sources for safety projects.

- Federal Funding
    - **Safe Streets and Roads for All (SS4A) Grant Program**: Funds initiatives through grants to prevent roadway deaths and serious injuries. Provides two types of grants (described below). Requires a local match of 20%.
        - **Planning and Demonstration Grants**: May be used to develop, complete, or supplement a Safety Action Plan (such as this plan). May also be used for supplementary planning activities (such as road safety audits, safety planning for a corridor or subarea, or community engagement) and demonstration activities (such as pilot programs or feasibility studies). Examples of demonstration grants include implementing low-cost/quick-build materials that can inform potential permanent projects (e.g., protected bike lanes), new technology pilot programs (e.g., use of GIS/GPS technology for signal preemption for emergency vehicles), or pilot training for law enforcement. It should be noted that most demonstration activities require the collection and analysis of before-and-after crash data related to the safety problems being addressed.
        - **Implementation Grants**: May be used to implement projects and strategies identified in a Safety Action Plan. Includes infrastructural, behavioral, and operational activities. May also include supplemental planning and demonstration activities.
    - **Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant**: Provides funds that can be used for a variety of transportation projects that have a significant local or regional impact, including impacts to safety. May include funds for planning, design, and/or construction of projects. Requires a local match of 20% for projects in urban areas.
    - **Active Transportation Infrastructure Investment Program (ATIIP):** Provides funds for projects that help communities plan, design, and construct safe active transportation systems. Requires a local match of 20%.

SS4A Planning and Demonstration Grants Received by Treasure Valley Agencies

- Regional Safety Action Plan (*COMPASS*)
- Nampa Vulnerable User Identification and Safety (VIS) Demonstration Project (*City of Nampa)*
- SPEARS: Safe Pedestrian Intersection Prioritization for Enhanced Road Safety (*COMPASS*)
- Safety Assessment of Northside Boulevard and 2nd Street South (*City of Nampa*)

  - **Reconnecting Communities Pilot (RCP) Program:** Provides funds for projects focused on improving disadvantage communities adversely-impacted by past infrastructure choices. Includes Capital Construction and Community Planning grant types.
  - **Local Highway Safety Improvement Program (LHSIP)**: Federally-funded program distributed by the Local Highway Technical Assistance Council (LHTAC) aimed at eliminating fatal and serious injury crashes on the roadway system.
  - **Surface Transportation Block Grant (STBG):** Federal formula program that may be applied to many types of roadway projects, including pedestrian and bicycle projects, transit capital projects, and maintenance. Administration of process and grant application process differs based on Rural, Urban, State, and Transportation Management Area (TMA) classifications.
    - **Transportation Alternatives Program**: Set-Aside from the STBG program that generally provides funding for smaller-scale projects, such sidewalks and pathways. Administered through LHTAC.
  - **Carbon Reduction Plan:** Federal formula program that can be used for projects that reduce transportation carbon dioxide emissions, including public transportation and pedestrian facility projects.
  - **Grants for Buses and Bus Facilities Formula Program (FTA 5339):** Funding that can be used for projects that improve bus-related facilities, including bus stop improvements or pedestrian improvements near bus stops. Includes formula and discretionary funding.
  - **Additional Discretionary Grant Programs**
- State Funding
  - **Child Pedestrian Safety Program:** Funds appropriated by the Idaho State Legislature and distributed by LHTAC that can be used to implement projects focused on improving safety for children walking to school or other destinations (e.g., sidewalks, pathways, crossings).
  - **Local Strategic Initiatives Program:** Funds appropriated by the Idaho State Legislature and distributed by LHTAC that can be used to implement a wide range of projects including bicycle and pedestrian infrastructure, ADA improvements, and intersection projects. This program is currently unfunded and would require future appropriation by the Idaho State Legislature.
- Regional Funding
  - **COMPASS Project Development Program:** Assists COMPASS member agencies in developing well-defined projects with cost estimates, purpose and need statements, environmental scans, and public involvement plans to ensure readiness for funding applications.
  - **COMPASS Communities in Motion Implementation Grant Program:** Assists COMPASS member agencies with local projects that further goals of Communities in Motion. Recent funded projects include sidewalk gap-filling, ADA-compliance improvements, and bicycle and pedestrian crossing plans.

In addition to the existing funding sources listed above, COMPASS and its member agencies are encouraged to set aside dedicated funding to improve safety within their jurisdictions. Additional information about funding sources available to COMPASS member agencies can be found on COMPASS's funding source fact sheet: https://compassidaho.org/wp-content/uploads/funding_source_factsheet_Final.pdf.

NON-INFRASTRUCTURE STRATEGIES

This section presents implementation considerations for high-priority, non-infrastructure strategies, such as policies and plans or recommendations related to agency coordination or operations. Implementation considerations include the following:

- **Lead Agency:** Which agency should lead implementation of the strategy? Some strategies may be lead and implemented by more than one agency.
- **Near-Term Action**: What next step should be taken to achieve the strategy? These actions should generally be started 1-2 years after this plan is adopted.
- **Performance Metric**: How can COMPASS and other agencies measure the implementation progress of each strategy?

The strategies are organized by the Safe System Approach objective that each strategy addresses. Further information about each strategy may be found in *Technical Memorandum #4*. Appendix B also presents a matrix showing which strategies relate to each COMPASS member agency.

CROSS-CUTTING STRATEGIES

Cross-cutting strategies target more than one Safe System Approach objective and are summarized in Table 3.

Table 3 Cross-Cutting Non-Infrastructure Strategies

Strategy	Lead Agency(s)	Near-Term Action	Performance Metric(s)
Continue Safety Working Group	COMPASS	Schedule and hold at least two meetings per year with SWG	Number of meetings per year
Provide Grant Funding Support to Member Agencies	COMPASS	Continue to provide grant funding support to member agencies and help agencies identify potential projects for funding.	Demonstrated progress beyond current activities
Create Local Task Forces to Review Fatal and Serious Injury Crashes	Member Agencies	Local agencies create task forces. Task forces could meet at SWG meeting or similar forum	Topic presented/discussed at SWG meeting or similar forum. Task forces created by local agencies.
Create a Publicly Available Tracking Dashboard	COMPASS	Create framework for Dashboard (e.g., what information will it show? How/when will it be updated?) and present to member agencies for feedback to determine what would be most useful	Topic presented/discussed at SWG meeting or similar forum
Create an RSAP Update Checklist	COMPASS	Create checklist for items to consider and revisit in updates to RSAP	Create checklist and identify when next update is needed
Regularly Assess Implementation Successes and Challenges	COMPASS, Member Agencies	COMPASS to obtain successes/challenges information from member agencies, create summary document, and present to member agencies annually at SWG meeting or similar forum	Assessment completed. Topic presented/discussed at SWG meeting or similar forum

SAFER ROADS

Strategies focused on safer roads aim to improve the design of roadways through better utilization of safety data, changes to project development or prioritization, and changes to agency processes or policies. Implementation considerations for these strategies are summarized in Table 4.

Table 4 Non-Infrastructure Strategies focused on Safer Roads

Strategy	Lead Agency(s)	Near-Term Action	Performance Metric
Crash Analysis Support	COMPASS	Identify data and analysis needs that would be most helpful to member agencies (e.g., Updated HIN network? Annual screening of crash data?). Coordinate discussion with member agencies at SWG meeting or similar forum.	Topic presented/discussed at SWG meeting or similar forum
Incorporate Vision, Goals, Performance Measures, and Targets into the Next CIM Update	COMPASS	Incorporate Vision, Goals, Performance Measures, and Targets into the Next CIM Update.	Incorporated into next CIM update
Update TIP and CIM Prioritization to Better Incorporate Safety and This Plan	COMPASS	Assess TIP and CIM prioritization criteria and scoring processes and identify ways to better incorporate this plan and the Safe System approach (e.g., Is there an opportunity to use the HIN as part of prioritization? Should projects with proven countermeasures be given higher scores?)	Assessment completed. Incorporated into next CIM update and subsequent TIP updates
Update COMPASS' Complete Network Policy to Align with RSAP Outcomes	COMPASS	Assess alignment of Complete Network Policy with this plan and the Safe System approach (e.g., Do safety principles and considerations change based on principles in this plan?)	Assessment completed. Complete Network Policy updated as needed
Improve How Safety is Incorporated into Maintenance Projects	COMPASS, ACHD, Nampa, Caldwell, ITD	Hold a regional forum/peer exchange with maintenance staff, planners, and engineers	Regional forum held
Improve How Safety is Incorporated into Capital Project Development Processes (e.g., Safe System Assessment)	COMPASS, ACHD, Nampa, Caldwell, ITD	Develop Safe System Assessment (see below strategy)	Safe System Assessment Developed (see below strategy)

Strategy	Lead Agency(s)	Near-Term Action	Performance Metric
Establish Dedicated Funding for Safety Projects	All	Member agencies and COMPASS to consider opportunities to dedicate funds for safety-focused projects.	Demonstrated progress beyond current activities
Clearly Define Safety as a Priority in Project Development and Prioritization	All	Member agencies review current processes and identify ways to incorporate safety as priority into project development and prioritization	Demonstrated progress beyond current activities
Coordinate Across Jurisdictions on Smaller Projects to Improve Funding Opportunities and Contractor Bidding	Greenleaf, Parma, Notus, Melba, Wilder, HD4, Middleton & COMPASS	Discuss annually at SWG meeting or similar forum	Topic presented/discussed at SWG meeting or similar forum
Road Safety Audits	COMPASS	Establish annual funding and program in next CIM update	Incorporated into CIM update.
Allow Developments to Implement Safety Improvements in Lieu of Capacity Improvements	ACHD, Nampa, Caldwell, Middleton, HD4	Member agencies review current processes and identify ways in incorporate changes in development approval process	Demonstrated progress
Safe System Assessment	COMPASS	Develop Safe System Assessment. COMPASS to provide initial framework, member agencies to tailor based on needs and local context.	Develop Safe System Assessment for agency review and implementation

***Case Study*: ACHD Livable Streets Performance Measures**

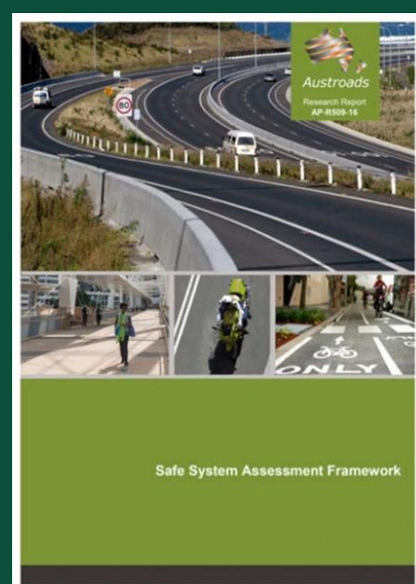
In 2021, ACHD adopted its Livable Streets Performance Measures, which provide multimodal performance measures and targets for ACHD roads. Notably, the measures include level of traffic stress (LTS) analysis guidelines that are used to identify appropriate walking and biking treatments on roadways and intersections based on factors such as posted speed and roadway cross-section. In line with the Safe System Approach, the guidance results in increasing separation between modes as potential conflicts, exposure, and speeds increase

Shared-Use Path on Locust Grove Road (Source: Google Maps): Constructed in conjunction with Locust Grove Road widening after ACHD adoption of Livable Streets Performance Measures.

***Strategy Spotlight*: Safe System Assessment**

Safe System Assessments are frameworks which agencies can use to assess how road designs align with Safe System Approach objectives. It provides guidance for assessing project objectives, determining project context, evaluating against safe system principles, and identifying countermeasures.

Austroads, an organization representing transportation agencies in Australia, developed a Safe System Assessment Framework in 2016 which may be used as an example for COMPASS and member agencies.



SAFER PEOPLE

Strategies focused on safer people aim to improve safety through behavioral changes for roadway users and practitioners. Implementation considerations for these strategies are summarized in Table 5.

Table 5 Non-Infrastructure Strategies focused on Safer People

Strategy	Lead Agency(s)	Near-Term Action	Performance Metric
Public Health Stakeholder Engagement	COMPASS	Hold joint meeting with public health officials at SWG meeting or similar forum.	Joint meeting held at SWG meeting or similar forum
High-visibility Safety Education Campaign (i.e., Seatbelt-Usage, DUI, Motorcycle Safety, Scooter/Micromobility Safety)	COMPASS, ITD, Member Agencies	Identify and implement education campaign	Campaign launched. Effectiveness evaluated annually.
Best Practices in Safety Analysis, Planning, Engineering Training	COMPASS	Provide member agencies with access to at least two lectures or education series per year related to safety best practices	Number of lecture series per year
Encourage Motorcycle Riders to Complete and Pass Idaho STAR Training	COMPASS, ITD, Member Agencies	Implement targeted education campaign	Campaign launched. Effectiveness evaluated annually.

POST-CRASH CARE

Strategies focused on post-crash care aim to improve safety by improving Emergency Medical Services' (EMS) ability to respond to and treat people in roadway crashes. Implementation considerations for these strategies are summarized in Table 6.

Table 6 Non-Infrastructure Strategies focused on Post-Crash Care

Strategy	Lead Agency(s)	Near-Term Action	Performance Metric
Improve EMS Response Times	COMPASS	Hold meeting with EMS agencies and identify highest priority for improvement (e.g., CAD improvements, education campaigns).	Joint meeting held at SWG meeting or similar forum.

SAFER SPEEDS

Strategies focused on safer speed aim to reduce vehicle speeds on roadways and reduce the likelihood of fatal and serious injury crashes. Implementation considerations for these strategies are summarized in Table 7.

Table 7 Non-Infrastructure Strategies focused on Safer Speeds

Strategy	Lead Agency(s)	Near-Term Action	Performance Metric
Develop or Improve Policy for Speed Management	Nampa, Caldwell, Middleton	Identify policy or program components and implement pilot program, if necessary.	Demonstrate progress
Evaluating Posted Speed Limits	All member agencies	Agencies evaluate agency-wide speed limits on annual basis. Identify locations where speed limits not appropriate based on recent land-use or other changes.	Evaluations completed.

In addition to the strategies presented in Table 7, multiple cross-cutting and safer roads non-infrastructure strategies encourage safer speeds. Education campaigns (under Safer People) can also target speed.

SAFER VEHICLES

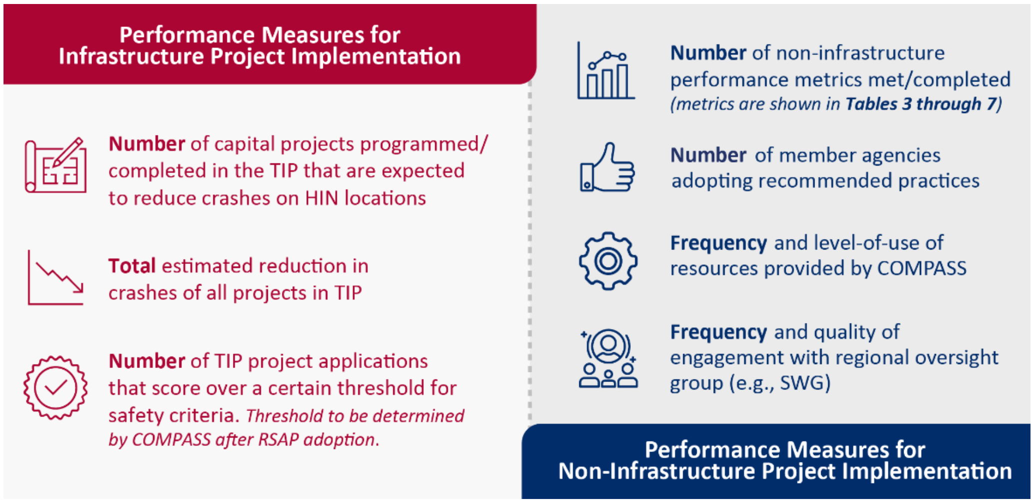
Strategies focused on safer vehicles aim to improve vehicle features which help to prevent crashes and minimize the impact of crashes. This plan does not identify any high-priority, non-infrastructure strategies focused on safer vehicles, as these strategies are primarily driven by federal regulations and standards on vehicle manufacturers.

PERFORMANCE MEASURES

This section describes performance measures and program outcomes that can be used to help evaluate and understand the changes that implementing this plan has on roadway safety in the Treasure Valley. The performance measures are generally used to evaluate progress made in implementing the strategies recommended in this plan. The program outcomes measure the success of the plan in achieving its goals (e.g., reducing fatalities and serious injuries).

Initial performance measure metrics were presented in *Technical Memorandum #1: Vision, Goals, Performance Measures, and Targets* (Reference 7) and are refined in this section to reflect the results of the crash analysis, identification of emphasis areas, and other components of this plan that have been developed since Technical Memorandum #1 was drafted. Exhibit 4 identifies performance measures that should be used to measure the level of implementation of the strategies in this plan.

Exhibit 4 Performance Measures



COMPASS should leverage existing data sources when possible to assess the performance measures. Potential data source or methodology options for the performance measures are listed below:

- **Infrastructure Projects:**
  - Number of projects and cost of projects with safety focus in Transportation Improvement Program, consider using crash modification factors when available to gauge impact of projects on safety.
  - Annual conversation with member agencies to inventory completed and planned safety projects, types of projects, level of funding towards these projects, and key takeaways from project implementation (e.g., what were the successes, challenges, and lessons learned?). This could take place at SWG meeting or similar forum.
- **Non-Infrastructure Projects**
  - Performance metrics in Tables 3-7 of this memorandum.
  - Number of safety-related requests from member agencies to COMPASS (e.g., grant support, crash data analysis).
  - Number of hours of COMPASS staff time being allocated towards safety projects or safety-related requests from member agencies.
  - Level of attendance at SWG meetings or COMPASS education events.

PROGRAM OUTCOME MEASURES

Program outcome measures provide quantitative metrics to evaluate the success of the program in achieving its goals of eliminating fatalities and serious injuries. The change in crashes should be measured over 4-5 year rolling averages and broken out by different categories such as emphasis areas, land-use context, or roadway ownership. Breaking out crashes by different agencies can help indicate which strategies are most effective and which areas might require a greater focus in the future.

Table 8 provides an example template for measuring program outcomes in future years. Table 9 provides an example template for measuring the federally required safety performance measures in future years. The total amount of fatal and serious injury crashes should be summarized on an annual basis to see if the number of crashes is trending towards the goal identified in this plan. Alternatively, program outcomes can be measured by the number of crash fatalities and serious injuries per total population instead of crash frequency.

Table 8 Example Program Outcome Summary Table

Category		Total Fatal and Serious Injury Crashes			
		2018 – 2022 (Baseline)		4-5 Year Rolling Average (e.g., 2022 – 2026)	Goal for Year 2035 (19% Reduction)
		#	%[1]		
Total		1904	N.A.	*To be evaluated in in future and compared to year 2035 goal.*	1542
Emphasis Area	Lane Departures	447	23%		362
	Intersection Crashes	748	39%		606
	Vulnerable Road Users	542	28%		439
	Seatbelt Use	88	5%		71
	Impaired Driving	340	18%		275
Land-Use Context	Urban (Incorporated)	1352	71%		1095
	Rural (Non-Incorporated)	552	29%		447
Roadway Ownership	State	775	41%		628
	Non-State	1129	49%		914

[1]Values in this column represent percent of total fatal and serious injury crashes within study area.

Table 9 Example Program Outcome Summary Table with Federal Performance Measures

Category	2019 – 2023 (5-Year Average, Baseline)	Future 5 Year Rolling Average	Goal for Year 2035 (19% Reduction)
Total Number of Fatalities	48.6	*To be evaluated in in future and compared to year 2035 goal.*	39.4
Total Number of Serious Injuries	406.8		330.0
Rate of Fatalities[2]	0.94		0.76
Rate of Serious Injuries[2]	7.87		6.4
Total Non-Motorized Fatalities and Serious Injuries	51.4		41.6

[2]The rate is calculated by total fatalities or serious injuries per 100,000,000 vehicle miles traveled in Ada and Canyon Counties.

ACCOUNTABILITY

To encourage member agencies to continue implementation of the strategies presented in this plan, it is recommended that COMPASS take the following actions:

- **Biennial Safety Reporting**: Present performance measures and program outcomes to the COMPASS Board of Directors on an biennial basis. This can inform Policy Board members on progress towards reaching the plan’s goals, provide an opportunity to share regional safety practices, and hold member agencies accountable in implementing high-priority strategies.
- **Public Facing Dashboard**: Create and maintain an online, public facing dashboard that displays COMPASS and member agencies’ progress on performance measures and program outcomes. Alternatively, provide regularly-updated documents with this information on COMPASS' website.

REFERENCES

1. Kittelson & Associates, Inc. *COMPASS Regional Safety Action Plan Technical Memorandum #4: Strategy Development*. August 2024.
2. United States Department of Transportation. *Safe System Roadway Design Hierarchy*. January 2024. https://highways.dot.gov/sites/fhwa.dot.gov/files/2024-1/Safe_System_Roadway_Design_Hierarchy.pdf
3. California Bicycle Coalition. *Quick-Build Guide: How to Build Safer Streets Quickly and Affordably*. 2020.
4. PeopleforBikes. *Quick Builds for Better Streets.* 2016.
5. City of Orlando. *City of Orlando Quick Build Guide*. 2023.
6. Nashville Department of Transportation. *Tactical Urbanism: A Guide for Street Activations and Demonstration Projects.* 2023.
7. Kittelson & Associates, Inc. *COMPASS Regional Safety Action Plan Technical Memorandum #1: Vision, Goals, Performance Measures, and Targets*. April 2024.

APPENDIX A: MEMBER AGENCY SUMMARY AND PRIORITY PROJECT SHEETS

APPENDIX B: NON-INFRASTRUCTURE STRATEGY MATRIX

Appendix E

Member Agency Executive Summaries & Priority Projects

Executive Summary

ACHD

Current Successes and Challenges

Successes

- PHB/RRFB implementation.
- Leveraging the development process to achieve objectives.
- Safety-focused team.
- Implementing safety features into maintenance and capital projects.

Challenges

- Making trade-offs due to ROW limitations – effecting capital projects and what can be accomplished through the development process.
- Balancing competing priorities between modes and partner agencies.

Fatal and Serious Injury Crash History (2018-2022)

100 Fatal Crashes

1,013 Serious-Injury Crashes

16.5% involved non-motorized road users

19.2% involved someone impaired

21.3% rear-end crashes

30.7% angle / turning crashes

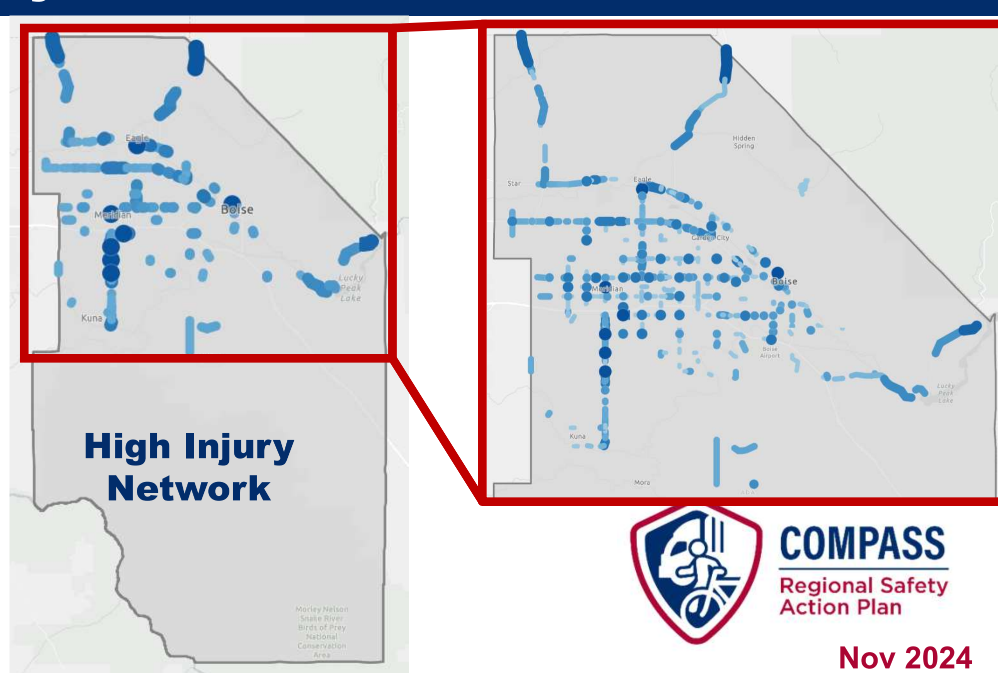
14.9% Motorcycle involved

Priority Areas for Treatment

Signalized Intersections

High-Speed, Multi-Lane Arterials

Sidewalk and Bike Facility Gaps (Especially Between New Development and Key Attractors)



COMPASS
Regional Safety Action Plan

High Priority Infrastructure Strategies*

LPI Implementation

- Systemically implement leading pedestrian intervals and associated APS and ADA upgrades at signalized intersections.

Pedestrian Crossings

- Install new, and enhance existing, pedestrian crossings across arterials and collectors as appropriate near attractors.

Signalized Intersection Improvements

- Convert permitted left-turn phasing to protected left-turn phasing. This could be done full-time, when pedestrian calls are placed, and/or during peak periods when conflicting traffic volumes are highest.
- Add protected intersection elements (e.g. corner islands, bike crossing markings) at intersections with bike lanes.
- Replace channelized right-tun lanes with standard right-turn lanes.

Fill Gaps in Sidewalk and Bicycle Network

- Install walking and biking facilities where development is unlikely to fill existing gaps in the near future.

Improvements to Multi-Lane Arterials

- Access management at driveways and local streets.
- Corridor level speed management.
- Install separated facilities for people walking and biking.

*See Tech Memo #4, Appendix E for a complete list of potential strategies

High Priority Non-Infrastructure Strategies

Engineering solutions are one part of a holistic approach to transportation safety. Other priority strategies for ACHD to consider are listed here and described further in the Countermeasures Toolbox.

- Continue safety working group participation.
- Develop Safe System Assessment to improve how safety is incorporated into Capital Projects.
- Participate in local task forces to review fatal and serious injury crashes.
- Establish dedicated funding for safety projects.
- Clearly define safety as a priority in project development and prioritization.
- High-visibility safety education campaigns.
- Work with EMS providers to identify opportunities to improve response times.

Ada County Safe Routes to School

Systemic Applications in ACHD's jurisdiction

ACHD owns and maintains local roadways for all of Ada County and its cities. As such, ACHD is challenged to meet the needs of different contexts within rapidly changing communities. In addition to the Cities and County, ACHD works with three school districts to improve the safety of multimodal transportation options to and from schools. Development patterns and old infrastructure result in gaps in the walking and biking networks near schools.

NON-MOTORIZED FATAL AND SERIOUS INJURY CRASH HISTORY SUMMARY (2018-2022)

Fatal Crashes: **27**
Serious Injury Crashes: **174**

61% occur at Intersections

Most Common Crash Types:

- Pedestrian: **122**
- Bicycle: **79**

39% occur along segments

RSAP RISK FACTORS

- Multi-lane arterial (5+ lanes)
- Average speeds >30 mph

ADDITIONAL ROADWAY SAFETY CONCERNS

- Pedestrian and cyclist infrastructure gaps, especially on routes connecting to schools

RESPONSIBLE AGENCIES

- ACHD

PROJECT DESCRIPTION

This project will reduce the potential for fatal and serious injury crashes through the following countermeasures:

SIDEWALKS

Description: Adds sidewalks to areas where there is currently none. Areas may have some sidewalks along a corridor and just need to fill in gaps, or the entire corridor may be lacking any pedestrian infrastructure at all. Where right-of-way allows, sidewalks may be buffered to increase separation from motor vehicles.

Purpose: Eliminates conflicts between pedestrians and vehicles along roadways.

BICYCLE FACILITIES

Description: Protected bike lanes provide complete separation from vehicle travel lanes. Bikeway treatments including signage, striping, and enhanced crossings on low stress (slow speed/low volume) roadways.

Purpose: Protected bike facilities reduce conflicts between vehicles and people biking along the road. Bikeways provide low stress alternatives to riding on collectors and arterial roadways.

SHARED-USE FACILITIES

Description: Multi-use pathways with complete separation from vehicle travel lanes. An interim solution could include expanding and protecting a roadway shoulder.

Purpose: Shared use facilities reduce conflicts between vehicles and people walking/biking along the roadway.

CROSSINGS

Description: Combination of treatments, including vertical streetscape elements (e.g., raised crosswalk), horizontal elements (e.g. curb bulb outs, protected intersection elements), visibility improvements (e.g. striping high visibility crosswalks, adding RRFBs or PHBs, improved signage).

Purpose: Reduce vehicle speeds and improve visibility of people crossing the street.

Factors Used to Prioritize Improvement Areas

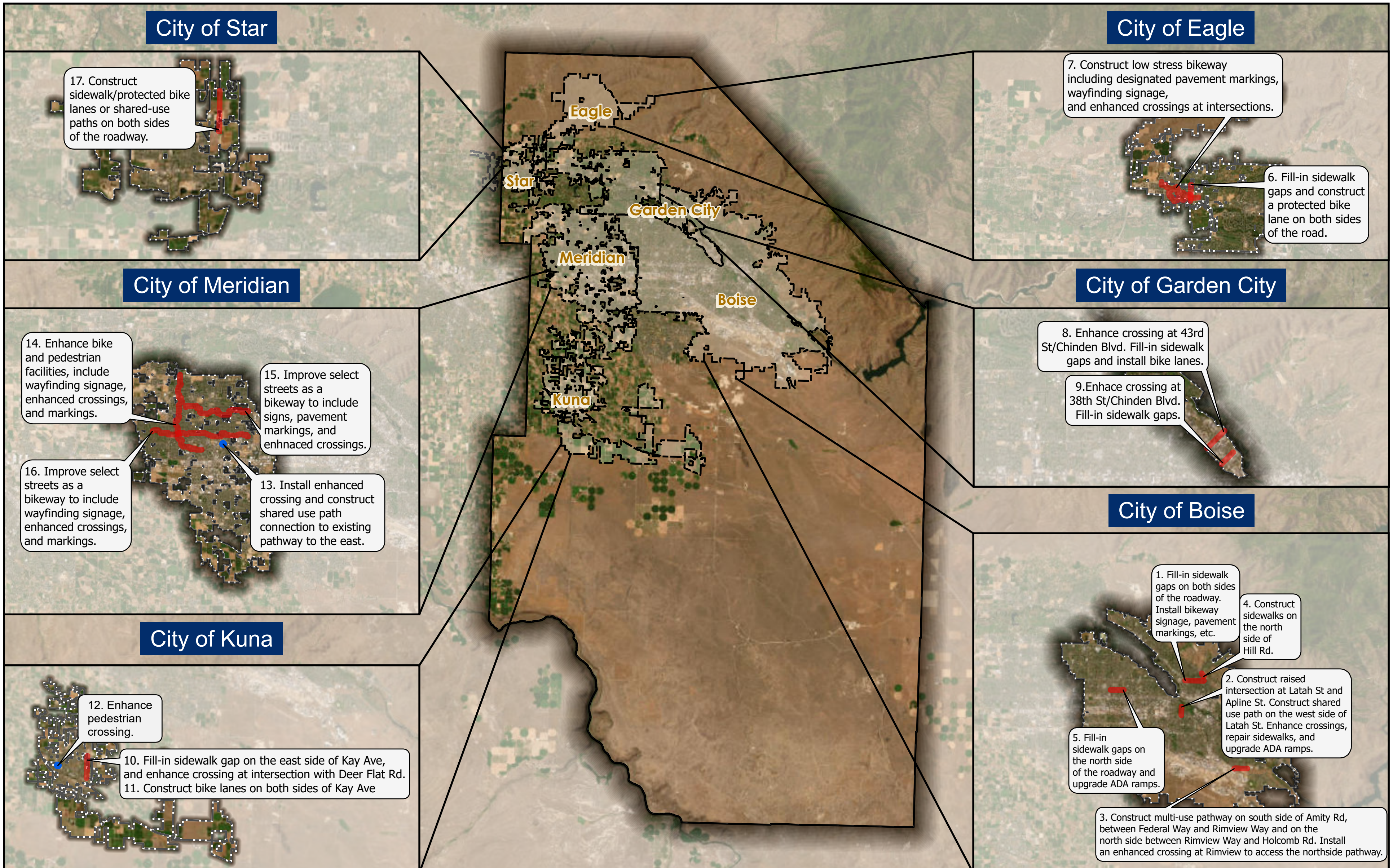
Crash History
The presence of fatal or serious injury pedestrian crashes may indicate that these types of crashes may continue to occur at these locations if a countermeasure is not installed.

Roadway Characteristics
High-speed, high-volume roadways are associated with higher incidences of fatal and serious injury pedestrian crashes. Greater volumes present more exposure to crash risk and higher speeds increase the severity of crashes.

Equity
Historically marginalized communities may see greater roadway safety risks due to a lack of previous investment in their community. Additionally, lower income communities often see higher rates of walking, increasing their exposure to these types of crashes.

School District Priority
The Boise School District and West Ada School District provided ACHD with a list of projects they believe should be evaluated. Projects ACHD has evaluated and/or are found in a neighborhood plan were prioritized.

Overlap with ACHD Neighborhood Plans
If projects identified by the school districts were screened by ACHD and included in any previous neighborhood plan, they were prioritized for inclusion in this package. A request list from the Kuna School District was not provided so projects near Kuna schools come from ACHD's Kuna Bicycle and Pedestrian plan.



Ada County Highway District Projects

Priority Intersections

Priority Segments

City Limits

Ada County

COMPASS Regional Safety Action Plan

0 5 10 Miles

Nov 2024

Safe Routes to School Improvements

Systemic Applications in ACHD's jurisdiction

Project Number / Location	Compass Equity Score	AOP*	HDC*	Quick Build Options	Cost Estimate	Crash Modification Factor
Boise						
1 – Lemp St (State Street to 22nd St)	~3	No	No	Widen and protect roadway shoulders	$520,000	0.60
2 – Latah Street (Americana Blvd to Alpine St)	~7	No	No	NA[1]	$1,270,000	0.43 - 0.70
3 – Amity Rd Bikeway (Federal Way to Holcomb)	~3	No	No	NA	$1,900,000	0.60
4 – Hill Rd (15th St to 13th Street)	~3	No	No	NA	$210,000	0.60
5 – Sunflower Lane (Hampton Rd to Maple Grove Rd)	NA[2]	No	No	Widen and protect roadway shoulders	$680,000	0.60
Eagle						
6 – Park Lane (State Street to Floating Feather Road)	~4.3	No	No	NA, a capital project is necessary to accommodate bike lanes, multiple pinch points exist.	$3,220,000	0.60
7 - Legacy Bikeway (Floating Feather Road "west extent" to Fisher Park Way "east extent")	NA	No	No	NA	$430,000	0.37
Garden City						
8 – 43rd Street (*ACHD Access to Opportunity*)	9.0	Yes	Yes	NA	$780,000[8]	0.43 – 0.88
9 – 38th Street (ACHD Access to Opportunity)	9.0	Yes	Yes	NA	$1,180,000[9]	0.60 - 0.88
Kuna						
10 – Kay Avenue (Trophy St to Limestone Street)	~3	No	No	Extend asphalt shoulder and add protective buffer to serve as temporary sidewalk	$994,000	0.60 0.55-0.88
11 - Kay Avenue (Deer Flat Road to Avalon Street)	~2	No	No	Add protection with temporary installations (I.e. flexposts, bike lane bollards, planters, etc.)	$3,840,000	0.43 – 0.70
12 - Ten Mile Road and Sego Prairie Street	~4	No	No	High visibility crosswalk striping, in-street signs, enhanced school zone signage	$350,000[7]	NA[3]

Safe Routes to School Improvements

Systemic Applications in ACHD's jurisdiction

Project Number / Location	Compass Equity Score	AOP*	HDC*	Quick Build Options	Cost Estimate	Crash Modification Factor
Meridian						
13 – Fairview Ave and Barbara Dr	~5	No	No	NA	$660,000	0.15-0.55
14 – Ten Mile-Linder Bikeway (8th St to Chinden Blvd)[4]	NA	No	No	NA	$1,290,000	0.43 – 0.73
15 – McMillan-Ustick Bikeway (Linder Rd to Eagle Rd)[5]	NA	No	No	NA	$750,000	0.43 – 0.73
16 – Ustick-Cherry Bikeway (Black Cat Rd to Hickory Way)[6]	NA	No	No	NA	$420,000	0.43 – 0.73
Star						
17 – Pollard Lane (Floating Feather Road to Beacon Light Road)	~3	No	No	Widen and protect roadway shoulders	$3,690,000	0.60, 0.43 – 0.73
ACHD TOTAL PROJECT PACKAGE COST					**$21,190,000**	

**AOP = Area of Persistent Poverty: https://usdot.maps.arcgis.com/apps/dashboards/75febe4d9e6345ddb2c3ab42a4aae85f*
**HDC = Historically Disadvantaged Community: https://usdot.maps.arcgis.com/apps/dashboards/75febe4d9e6345ddb2c3ab42a4aae85f*
[1] = The project as proposed and costed, already includes quick build elements.
[2] = NA indicates that the roadway has not been scored by COMPASS, most roads that are below the functional class of collector are not scored
[3] = A valid CMF is not available for the proposed project.
[4] = Includes enhanced crossings at Goddard Creek Way/McMillan Rd/Palatine Way, Ustick/Towerbridge Way, and Cherry Lane/Waterfall Ave. There is a PHB 650ft from the Cherry Lane/Waterfall Ave. Reroute of the bikeway could be evaluated.
[5] = Includes enhanced crossings at Ashton Dr/Meridian Rd and Leighfield/Locust Grove
[6] = Includes enhanced crossing at Muirfield/Ten Mile, however there is another PHB 1,200 feet from the proposed crossing. Reroute of bikeway could be evaluated.
[7]= Cost estimate assumes RRFB installation
[8 and 9] = Cost estimate assumes PHB installation

RECOMMENDED NEXT STEPS FOR IMPLEMENTATION

- Understand financial capabilities to implement projects and strategize ways to adapt projects into phases for implementation, where costs are too high for immediate and full completion.
- Implement quick build low-cost safety projects in the interim, where funding for permanent construction must be coupled with larger roadway reconstruction projects
- Consider opportunities to partner with agencies (ITD) on facilities under their jurisdiction.

ENVIRONMENTAL CONSIDERATIONS

Initial Screening found no projects would directly impact a National Register of Historic Places in Idaho location, or USGS mapped wetland area. No projects fall under a FEMA designated Special Flood Hazard Area (SFHA), however part of project 7 and most of Garden City is within a Zone X flood hazard area.

Executive Summary

ADA COUNTY

Current Successes and Challenges

Successes

- Pathway improvements

Challenges

- Right-of-Way constraints
- Competing priorities between modes and agencies
- Limited guidance

Fatal and Serious Injury Crash History (2018-2022)*

100 Fatal Crashes

1,013 Serious-Injury Crashes

16.5% involved non-motorized road users

19.2% involved someone impaired

21.3% rear-end crashes

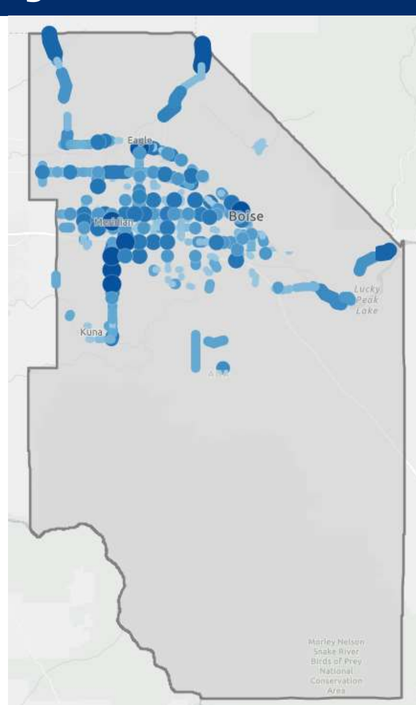
14.9% Motorcycle involved

30.7% Angle-related crashes

*County-wide statistics include crash data for incorporated and unincorporated areas

Priority Areas for Treatment**

Sidewalk and Bike Facility Gaps (Especially Between New Development and Key Attractors)



High-Speed Arterials and Highways Serving Local Routes

Two-Way Stop Controlled Intersections

**Priority Areas are for unincorporated Ada County

COMPASS Regional Safety Action Plan

High Priority Infrastructure Strategies*

Strategies are intended to be coordinated with ACHD and ITD to implement roadway infrastructure-based solutions.

Sidewalk Gap Filling

- Install walking and biking facilities where development is unlikely to occur to fill existing gaps

Rural Collector Bike/Ped Connectivity

- Install "visually separated facilities" such as: paved shoulders, bike lanes, and multi-use paths
- Install enhanced pedestrian crossings

Signal Improvements

- Implement leading pedestrian intervals and associated PS and ADA upgrades at signalized intersections

Example High-Priority Location-Specific Strategies

Location**	Items to Address	Strategies
Kuna Mora Rd / South Pleasant Valley Rd	6 KA crashes, currently a two-way stop control	Convert to four-way stop with advanced / enhanced signage ; convert stop-controlled intersection to a roundabout.
Seaman's Gulch Rd / Cartwright Rd	5 KA crashes, including lane departures. This is a recreational bike route with limited shoulder space.	Lane departure and curve delineation treatments, signing and striping improvements, rumble strips, median barrier / buffer area, SafetyEdge, wider edge lines. Bike Lanes or wider shoulders for bicycle traffic.
Orchard Street Realignment	4 KA crashes between Interstate and Gowen Rd	Realign N Orchard St to align with South Orchard St and W Gowen Rd – with each approach constructed to meet at right angles.

**See Tech Memo #4, Appendix E for a complete list of potential strategies*
*** The COMPASS RSAP focuses on identifying potential strategies for locally-owned roads. Projects on ITD highways in the High-Injury Network may not be included on this list.*
All strategies are for unincorporated Ada County

High Priority Non-Infrastructure Strategies

Engineering solutions are one part of a holistic approach to transportation safety. Other priority strategies for Ada County to consider are listed here and described further in the Countermeasures Toolbox

- Continue safety working group participation.
- Create local task forces to review fatal and serious injury crashes
- Establish dedicated funding for safety projects
- Clearly define safety as a priority in project development and prioritization
- Implement the Safe System Approach
- Engagement with public health stakeholders
- High-Visibility safety education campaign
- Improve EMS Response Times

Executive Summary

BOISE

Current Successes and Challenges

Successes

- Building pathway system
- Coordinating with ACHD to implement elements of the City's vision for transportation safety, including contributing funds for streetscape features
- E-scooter safety measures

Challenges

- Lack of local roadway control (sometimes differing priorities between City and road agencies)
- Incomplete low-stress bike network
- Speeding and red light running

Fatal and Serious Injury Crash History (2018-2022)

34

Fatal Crashes

473

Serious-Injury Crashes

24.5% involved non-motorized road users

19.9% involved someone impaired

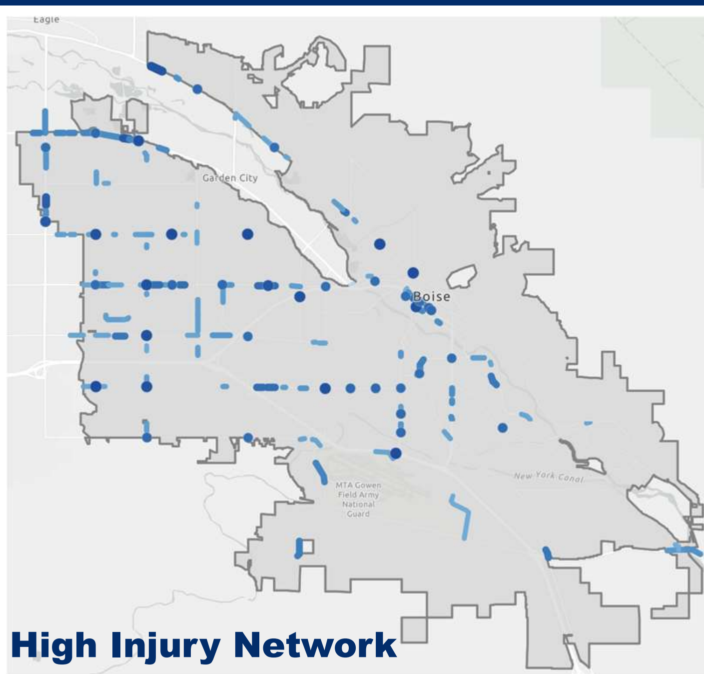
19.9% rear-end crashes

29.1% angle / turning crashes

15.4% Motorcycle crashes

Priority Areas for Treatments

Signalized Intersections (Focus on Intersections in Downtown-Core and on Multi-Lane Arterials)



High Injury Network

High-Speed, Multi-Lane Arterials (Focus on Arterials with Limited Access Management)

COMPASS Regional Safety Action Plan

High Priority Infrastructure Strategies*

Access Management

- Focus on 4/5-Lane arterials with high scores in HIN

Vulnerable Road User Infrastructure

- Low-stress bike network
- Enhanced crossings
- Sidewalk infill

Speed Management

- Identify areas to implement speed management

Signal Timing and Phasing Changes

- Convert permitted left-turn phasing to protected-only at signalized intersections. This could be done full-time, when pedestrian calls are placed, and/or during peak periods.
- Leading Pedestrian Intervals

Example High-Priority Location-Specific Strategies

Location**	Items to Address	Strategies
US 20-26 (Front St and Myrtle St): 13th to Broadway Ave	22 fatal / serious injury crashes	Protected bike lanes, intersection safety improvements, speed management, gateway features
Fairview Ave: N Garden St to Meridian Rd	>50 fatal / serious injury crashes, high access density, no bike facilities	Access management, protected bike lanes, signal improvements
15th St and 16th St: State St to Shoreline Dr	16 fatal / serious injury Crashes, 9 bike/ped	Protected bike lanes, intersection safety improvements, enhanced crossings, speed management
Franklin Street: Milwaukee St to Liberty St	Inadequate ADA accessibility, limited access to bus stops and routes, 7 fatal / serious injury crashes	Speed management, fill sidewalk gaps, protected bike lanes, bicycle and pedestrian intersection treatments
Orchard St: I-84 to US20-26 (Chinden Boulevard)	21 fatal / serious injury crashes (4 bike/ped), lack of protected bike lanes	Protected bike lanes, intersection safety improvements, speed management, road reconfiguration

**See Tech Memo #4, Appendix E for a complete list of potential strategies*
*** The COMPASS RSAP focuses on identifying potential strategies for locally-owned roads. Projects on ITD highways in the High-Injury Network may not be included on this list.*

High Priority Non-Infrastructure Strategies

Engineering solutions are one part of a holistic approach to transportation safety. Other priority strategies for Boise to consider are listed here and described further in the Countermeasures Toolbox

- Continue participating in COMPASS Safety Working Group
- Continue Traffic Fatality Review Task Force
- Continue contributing funds to projects for safety features
- Make safety a priority in ACHD Integrated Five-Year Work Plan request methodology
- Continue DUI enforcement and education efforts
- High-visibility safety education campaigns

COMPASS
Regional Safety Action Plan

Fairview Avenue

Cole Road to Curtis Road

Fairview Avenue from Cole Road to Curtis Road is a one-mile portion of a multi-lane arterial in Boise. This project was identified based on input from the City of Boise, the amount of historic crashes and presence of risk factors, particularly high speed and access density. Fairview Avenue connects motor vehicle traffic between downtown Boise, the West Boise Bench, and Meridian. It provides direct access to adjacent land uses, including industrial, commercial, and residential development, and is one of three “Best in Class” transit routes for the City of Boise and Valley Regional Transit.

PROJECT DESCRIPTION

This project will reduce fatal and serious injury crashes through the following countermeasures:

ACCESS MANAGEMENT

Description: Consolidate existing accesses, strategically plan for future access locations, and remove or reduce conflicts at accesses by restricting movements to right-in/right-out or right-in/right-out/left-in only. These strategies can be implemented using raised medians, cross over easements between properties, or temporary materials (i.e., extruded curbs or bollards).

Purpose: Eliminates conflicts between turning and through vehicles and between turning traffic and people walking and biking.

ENHANCED BICYCLE/PEDESTRIAN FACILITIES

Description: Multi-use pathways or protected (buffered) bike lanes with complete separation from vehicle travel lanes, and bike treatments at intersections and accesses (e.g., bike boxes and ladders). Improve existing sidewalk accessibility and fill sidewalk gaps. An interim solution could include providing temporary vertical separation for the existing bike lanes or providing parallel routes on lower stress roadways (i.e., Poplar St, Wesley Dr). Enhanced pedestrian crossings, such as PHBs and RRFBs, should also be considered to improve connectivity and safety. Upgrades to existing bus stops could also be considered.

Purpose: Separated bike facilities eliminates conflicts between vehicles and people biking along the roadway.

SPEED MANAGEMENT

Description: Combination of treatments, including vertical streetscape elements (e.g., raised medians, trees in landscape buffer or median), narrowed vehicle lanes, lower posted speeds, enforcement, dynamic speed-feedback signs, and protected intersection elements, for lower speeds. These changes must be applied at a corridor level to be effective.

Purpose: Reduce vehicle speeds to reduce severity of all crash types.

CRASH HISTORY SUMMARY (2018-2022)

Fatal Crashes: **1**
Serious Injury Crashes: **15**

15% of Crashes on Roadway Segments

Most Common Crash Types:

- Head-On / Angle Turning: **6**
- Pedestrian / Bicycle: **5**
- Rear-End: **3**

85% of Crashes at Intersections

RSAP RISK FACTORS (FOR FATAL & SERIOUS INJURY CRASHES)

- Multi-Lane Arterial (5+ Lanes)
- High Posted Speed (35 mph)
- 4-Leg Signalized Intersections

ADDITIONAL ROADWAY SAFETY CONCERNS

- High Access Density
- Lack of Protected Bike Facilities

RESPONSIBLE AGENCIES

- City of Boise
- Ada County Highway District (ACHD)

EQUITY CONSIDERATIONS

- Equity Score (out of 12) – 5.0, Top 58th Percentile
- Area of Persistent Poverty – No
- Historically Disadvantaged Community – No

SIGNALIZED INTERSECTION TREATMENTS

Protected Left-Turn Phasing
Convert left-turn phasing to protected-only to eliminate conflicts between left-turning vehicle and through-traffic or between turning vehicles and people walking and biking.

Ensure Sufficient Yellow & All-Red Times
Confirm that yellow and all-red times are reflective of vehicle speeds and crossing distances through intersection to reduce likelihood of rear-ends and crashes related to red-light running.

Leading Pedestrian Interval (LPI)
Incorporate LPI to increase visibility of people crossing by allowing them to enter the crosswalk in advance of turning vehicles (note that this may require corresponding ADA improvements).

Install Retroreflective Backplates
Increase awareness of upcoming signal to reduce rear-end crashes.

Add or Enhance Tracking Lines/Striping
Provide drivers with clear lane delineation during turning movements.

Fairview Avenue

Cole Road to Curtis Road

COUNTERMEASURE		COST ESTIMATE	CRASH MODIFICATION FACTOR
Access Management (Raised Median OR Temporary Bollards)	Private Driveway for Evaluation in Access Management Plan Public Road for Evaluation in Access Management Plan Signal (Maintain)	$1,600,000	0.53 – 0.81
Separated Bike Lane/Multi-Use Pathway OR Temporary Protected Bike Lane		$5,500,000	0.43 – 0.73
Speed Management	*corridor-level improvements*	NA	NA
Signalized Intersection Treatments (Includes Yellow/All-Red Timing, LPI, Retroflective Backplates, & Prot. Left-Turn Phasing)		$1,500,000	0.52 – 0.87
Enhanced Pedestrian Crossings (Potential Locations, Further Study Required)		$500,000	0.30 – 0.88
TOTAL COST (Includes 25% Contingency)		**$10,900,000**	

*Although a portion may be covered in the contingency, this cost estimate does not explicitly include right-of-way acquisition quantities or cost.

RECOMMENDED NEXT STEPS FOR IMPLEMENTATION

- Work with adjacent property owners and the public to develop an access management plan including near-term and long-term actions. Develop plan for future access approval and spacing.
- Consider corridor study to develop vision for corridor and allow opportunity for engagement with community members.
- **Potential Quick-Build Opportunities**: Consider a reduced speed limit. Protected bike lanes using temporary materials, signal timing and phasing adjustments, access management using temporary materials.

ENVIRONMENTAL SCAN

- **Floodplain:** No 100-yr or 500-yr floodplain
- **National Register of Historic Places:** No National Historic Places
- **Wetlands:** No wetlands

Executive Summary

CALDWELL

Current Successes and Challenges

Successes

- Leadership support for safety improvements
- Internal alignment on priorities
- Good relationships with partner agencies

Challenges

- Obtaining funding
- Keeping pace with growth
- Developing interim solutions while waiting for long-term projects

Fatal and Serious Injury Crash History (2018-2022)

22

Fatal Crashes

124

Serious-Injury Crashes

12.3% involved non-motorized road users

25.3% involved someone impaired

7.5% Seatbelt or car seat not used

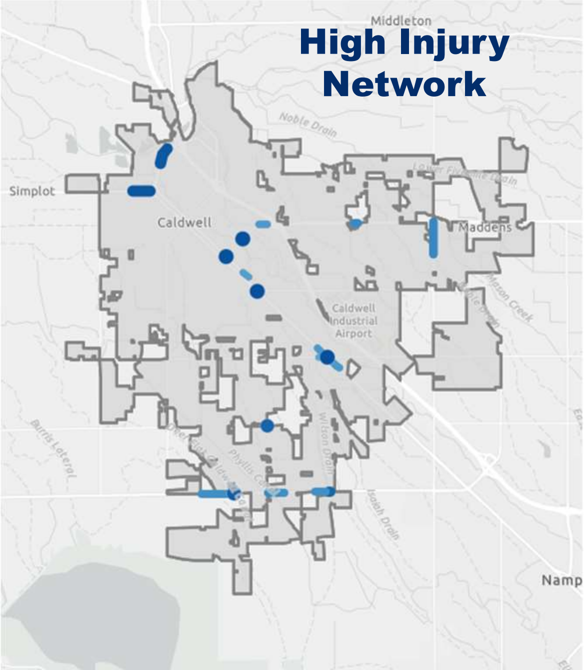
45.9% angle / turning crashes

17.8% Motorcycle crashes

Priority Areas for Treatment

Signalized Intersections (Focus on Multi-Lane Arterials)

Sidewalk and Bike Facility Gaps (Especially Between Residential Development and Key Attractors)



High-Speed, Multi-Lane Arterials

Stop-Controlled Intersections With High-Volumes

COMPASS Regional Safety Action Plan

High Priority Infrastructure Strategies*

Access Management	Vulnerable Road User Infrastructure	Speed Management	Intersection Improvements
• Focus on 4/5-Lane arterials with high scores in HIN	• Sidewalk/bike facility infill • Quick-build/temporary sidewalks • Enhanced crossings	• Speed management near pedestrian/bicycle attractors (e.g., schools)	• Convert stop-controlled intersections to roundabouts (all-way stop controlled can be interim treatment). • Convert permitted left-turn phasing to protected-only at signalized intersections. This could be done full-time, when pedestrian calls are placed, and/or during peak periods.

Example High-Priority Location-Specific Strategies

Location**	Items to Address	Strategies
Caldwell Blvd: Simplot Blvd to Homedale Rd	High fatal / serious injury crash rate, high driveway density. Lack of protected bike facilities and crossings in areas with high bike/ped activity in downtown area	Access management, signal improvements along corridor, midblock crossings, protected bike lanes
Ustick Rd: Farmway Rd to I-84	Frequent fatal / serious injury crashes, rear-end, motorcycle, alcohol, gaps in bike/ped network	Intersection improvements, fill sidewalk and bike lane gaps, midblock crossings near bike/ped attractors, speed management

**See Tech Memo #4, Appendix E for a complete list of potential strategies*
*** The COMPASS RSAP focuses on identifying potential strategies for locally-owned roads. Projects on ITD highways in the High-Injury Network may not be included on this list.*

High Priority Non-Infrastructure Strategies

Engineering solutions are one part of a holistic approach to transportation safety. Other priority strategies for Caldwell to consider are listed here and described further in the Countermeasures Toolbox

- Continue participating in COMPASS Safety Working Group
- Road safety audits
- Improve safety in maintenance and CIP development
- High visibility safety education campaigns – especially around DUI enforcement.
- Allow safety improvements in lieu of capacity improvements in the development approval process
- Establish dedicated funds for safety projects
- Develop traffic calming policy and program

COMPASS Regional Safety Action Plan

Bicycle and Pedestrian Improvements

Systemic Applications in Caldwell

Caldwell is growing fast, and the pace of this growth is resulting in gaps in walking and biking infrastructure, resulting in conflicts for people walking and biking. The City of Caldwell chose this as a priority project due to the number of fatal and serious injury crashes, and the presence of risk factors, particularly speed, and lack of dedicated infrastructure for people walking and biking. The areas identified as high priority in this systemic package were also identified as part of the Caldwell Area Transportation System Plan.

PROJECT DESCRIPTION

This project will reduce the potential for fatal and serious injury crashes through the following countermeasures:

SIDEWALKS

Description: Adds sidewalks to areas where there is currently none. Areas may have some sidewalks along a corridor and just need to fill in gaps, or the entire corridor may be lacking any pedestrian infrastructure at all. Where right-of-way allows, sidewalks may be buffered to increase separation from motor vehicles.

Purpose: Eliminates conflicts between pedestrians and vehicles along roadways.

BICYCLE FACILITIES

Description: Protected bike lanes with complete separation from vehicle travel lanes. A near-term solution could include reallocation of the existing road cross-section (e.g., narrowing vehicle-travel lanes to provide bike lane buffer space) or providing parallel routes.

Purpose: Protected bike facilities reduce conflicts between vehicles and people biking along the road.

SHARED-USE FACILITIES

Description: Multi-use pathways with complete separation from vehicle travel lanes. An interim solution could include expanding and protecting a roadway shoulder.

Purpose: Shared use facilities reduce conflicts between vehicles and people walking/biking along the roadway.

CROSSINGS

Description: Combination of treatments, including vertical streetscape elements (e.g., raised crosswalk), horizontal elements (e.g. curb bulb outs, protected intersection elements), visibility improvements (e.g. striping high visibility crosswalks, adding RRFBs or PHBs, improved signage).

Purpose: Reduce vehicle speeds and improve visibility of people crossing the street.

NON-MOTORIZED FATAL AND SERIOUS INJURY CRASH HISTORY SUMMARY (2018-2022)

Fatal Crashes: **4**
Serious Injury Crashes: **14**

Most Common Crash Types:
- Pedestrian: **15**
- Bicycle: **3**

50% of KA Crashes on Roadway Segments

33% of KA Crashes at Intersections

17% of KA Crashes at parking lots or driveways

RSAP RISK FACTORS

- Multi-Lane Arterial (5+ Lanes)
- High Posted Speed (40 mph)

ADDITIONAL ROADWAY SAFETY CONCERNS

- Impairment
- Bicycle and pedestrian infrastructure gaps, especially on high speed/volume roads

RESPONSIBLE AGENCIES

- City of Caldwell

Factors Used to Prioritize Areas for Systemic Improvements

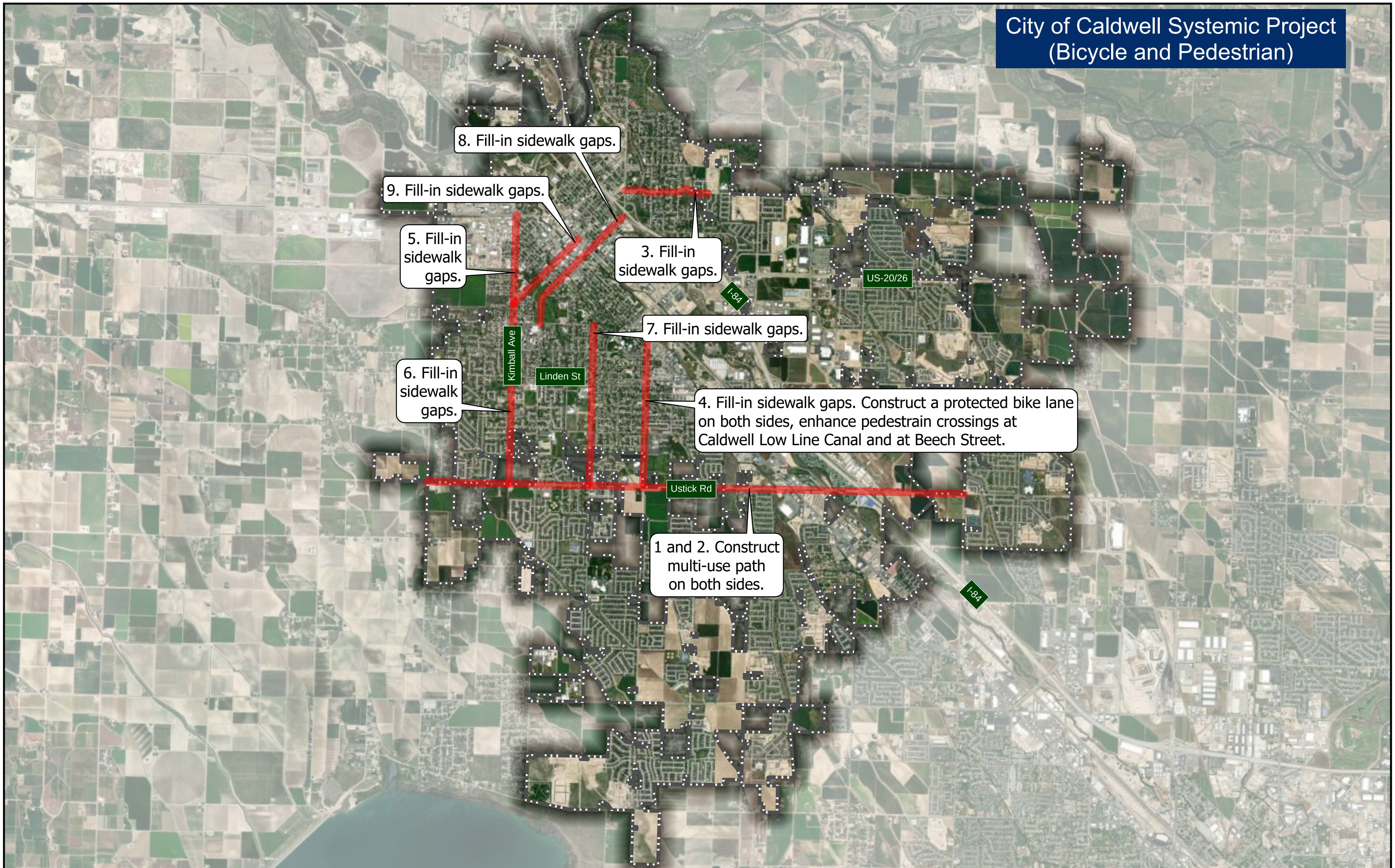
Crash History
The presence of fatal or serious injury pedestrian and bicycle crashes may indicate that these types of crashes may continue to occur at these locations if a countermeasure is not installed.

Roadway Characteristics
High-speed, high-volume roadways are associated with higher incidences of fatal and serious injury pedestrian and bicycle crashes. Greater volumes present more exposure to crash risk and higher speeds increase the severity of crashes.

Equity
Historically marginalized communities may see greater roadway safety risks due to a lack of previous investment in their community. Additionally, lower income communities often see higher rates of walking and biking, increasing their exposure to these types of crashes.

Proximity to Schools
Children are a particularly vulnerable group of road users and schools are often top generators of walking and biking activity.

Overlap with Caldwell Area Transportation System Plan / CIP
Significant analysis weighing different transportation risk factors and local government priorities took place in the creation of the CATS plan.



Caldwell Priority Projects

Priority Segments

Caldwell City Limits

COMPASS Regional Safety Action Plan

0 1 2 Miles

Nov 2024

Bicycle and Pedestrian Improvements

Systemic Applications in Caldwell

Project Number / Location	Compass Equity Score	AOP*	HDC*	Quick Build Options	Cost Estimate	Crash Modification Factor
1 and 2 - Ustick Road (1) Lake Ave to Midland Blvd (2) Farmway Rd to Lake Ave	1 - (~8.2) 2 - (~5.7)	No	Yes	Widen and protect roadway shoulders and or sidewalk infill	Fund with CIP identified roadway expansion[1]	0.60
3 – Marble Front Road (Illinois Ave to Bianco St)	~6.6	Yes	Yes	Widen and protect roadway shoulders, and target sidewalk infill in most difficult areas	$843,000	0.60
4 – Indiana Avenue (Cleveland Blvd to Ustick Rd)[2]	~6.5	Yes	Yes	Bike lane protection can be rubber, flex post, etc. rather than concrete.	$2,679,000	0.43 – 0.73
5 – Paynter Ave (Simplot Blvd to Kimball Ave)	~9	Yes	Yes	NA	$1,824,000	0.60
6 – Paynter Avenue (Kimball Ave to Ustick Rd)	~5.9	Yes	Yes	NA	$1,107,000	0.60
7 – Montana Avenue (Logan St to Ustick Rd)	~5.0	Yes	Yes	NA	$1,660,000	0.60
8 - 10th Avenue (I-84 Interchange to Logan St)[3]	~7.9	Yes	Yes	NA	$1,670,000	0.60
9 – Kimball Road (Railroad to Paynter Ave)	~7.8	Yes	Yes	NA	$945,000	0.60
				TOTAL COST	**$10,728,000**	

**AOP = Area of Persistent Poverty: https://usdot.maps.arcgis.com/apps/dashboards/75febe4d9e6345ddb2c3ab42a4aae85f*
**HDC = Historically Disadvantaged Community: https://usdot.maps.arcgis.com/apps/dashboards/75febe4d9e6345ddb2c3ab42a4aae85f*
[1] = If the CIP project is not expected to occur in the near term, immediate implementation of the quick build scenario is recommended
[2] = This section of Indiana Avenue was identified in the CIP as a continuous left turn lane project area
[3] = This section of Indiana Avenue was identified in the CIP as a continuous left turn lane project area

RECOMMENDED NEXT STEPS FOR IMPLEMENTATION

- Understand financial capabilities to implement projects and strategize ways to adapt projects into phases for implementation, where costs are too high for immediate and full completion.
- Implement quick build low-cost safety projects in the interim, where funding for permanent construction will have to be coupled with larger roadway reconstruction projects
- Consider opportunities to partner with agencies (ITD) on larger, more costly roadway re-imaginings.

ENVIRONMENTAL CONSIDERATIONS

Initial Screening found no projects would directly impact a USGS mapped wetland or National Register of Historic Places in Idaho location. Multiple projects fall under a FEMA Zone X but only the southern portion of 10th Avenue (near the Dixie Drain) and the eastern portion of Ustick Road (near Indian Creek) fall under a Special Flood Hazard Area.

GREENLEAF, MELBA, NOTUS, PARMA, AND WILDER

Current Successes and Challenges

Successes

- Obtaining grant funding
- Improving walking routes to schools

Challenges

- Lack of local ownership of main streets through town
- Integrating new developments into infrastructure
- Limited funding and difficulty attracting contractors
- Retrofitting roads with sidewalks and addressing gaps in sidewalk network

Fatal and Serious Injury Crash History (2018-2022)

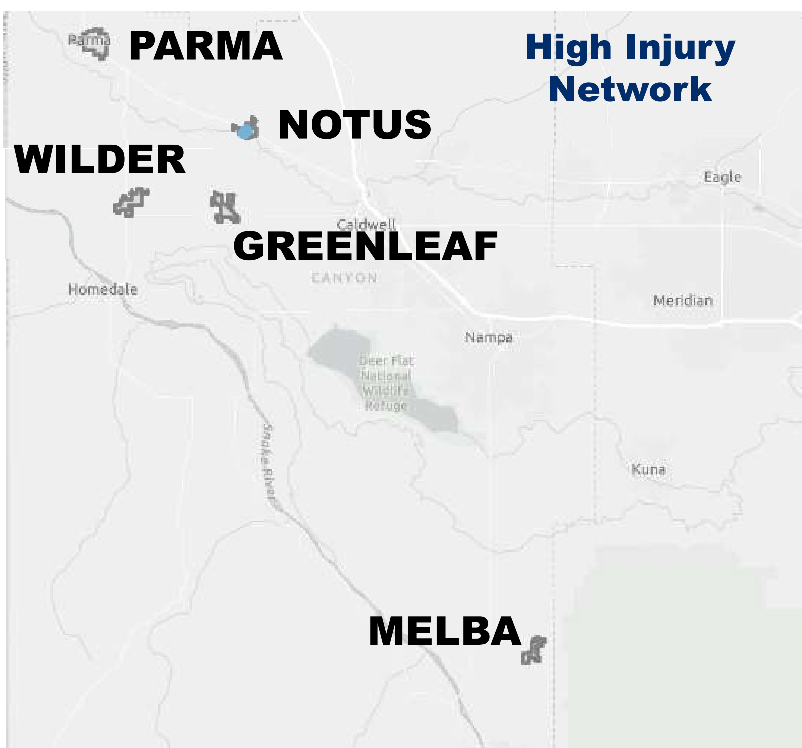
3

Fatal Crashes

2

Serious-Injury Crashes

Priority Areas for Treatment



Highway as a Main Street

Gaps in Sidewalks Near Schools, Parks, etc.

Lack of Bicycle and Pedestrian Connectivity

COMPASS Regional Safety Action Plan

High Priority Infrastructure Strategies*

Vulnerable Road User Infrastructure

- Fill sidewalk and bicycle gaps where developments are unlikely to build.
- Install “mixed traffic facilities” signs (e.g. yield roadway, bicycle boulevard, advisory shoulder)

Enhanced Pedestrian Crossings

- Install or enhance pedestrian crossings in proximity of attractors (e.g., schools, parks, health care facilities, businesses)

Speed Management

- Speed feedback signs leading into downtown

Example High-Priority Location-Specific Strategies

Location**	Items to Address	Strategies
(*Greenleaf*) SH-19 (Main St): Friends Rd / Top Rd	Highway as a Mainstreet	Fill sidewalk gaps; provide paved shoulder, bike lane, or sidepath on south side; median enhanced crosswalks; reduce speed limit; add advanced warning signs; add speed feedback signs.
(*Parma*) US 20-26: Parma Rd / Spur Ave	Highway as a Mainstreet	Fill sidewalk gaps, provide paved shoulder or bike lane, median enhanced crosswalks, reduce speed limit, add advanced warning signs, add speed feedback signs.
(*Wilder*) US 95 (5th St): Mercer Dr / D Ave	Highway as a Mainstreet	Reallocate existing roadway space to provide 3 lanes of motor vehicle traffic and buffered bike lanes. Provide median enhanced crosswalks, reduce speed limit, add advanced warning signs, add speed feedback signs.
(*Notus*) US 20-26: Notus Rd / 3rd St	Highway as a Mainstreet	Provide a paved shoulder within existing roadway space by adding enhanced longitudinal striping and edge line rumble strips, median enhanced sidewalks. Reduce speed limit, add advanced warning signs, add speed feedback signs.

**See Tech Memo #4, Appendix E for a complete list of potential strategies*
*** The COMPASS RSAP focuses on identifying potential strategies for locally-owned roads. Projects on ITD highways in the High-Injury Network may not be included on this list.*

High Priority Non-Infrastructure Strategies

Engineering solutions are one part of a holistic approach to transportation safety. Other priority strategies for these Canyon County cities to consider are listed here and described further in the Countermeasures Toolbox

- Participate in COMPASS Safety Working Group
- Advocate for safety in ITD projects
- Coordinate across jurisdictions to improve funding opportunities / contractor bidding for smaller projects
- Improve how safety is incorporated into maintenance projects and capital project development processes
- Allow developments to implement safety improvements in lieu of capacity improvements
- High-visibility safety education campaigns

COMPASS Regional Safety Action Plan

Pedestrian Improvements

Systemic Applications in Greenleaf, Melba, Notus, and Parma

Canyon County contains multiple small (<2,500 people) incorporated cities with similar transportation characteristics and challenges. Greenleaf, Melba, Notus, and Parma have critical gaps in their pedestrian infrastructure that disconnect residents from activity centers like downtown cores or schools. On their own, each of these cities may struggle to meet grant funding match requirements or obtain competitive contractor bids. To ensure a regional need is addressed in an equitable way, these cities have been packaged together addressing pedestrian infrastructure gaps in all the cities at once.

PROJECT DESCRIPTION

This project will reduce the potential for fatal and serious injury crashes through the following countermeasures:

SIDEWALKS

Description: Adds sidewalks to areas where there is currently none. Areas may have some sidewalks along a corridor and just need to fill in gaps, or the entire corridor may be lacking any pedestrian infrastructure at all. Where right-of-way allows, sidewalks may be buffered to increase separation from motor vehicles.

Purpose: Eliminates conflicts between pedestrians and vehicles along roadways.

RECOMMENDED NEXT STEPS FOR IMPLEMENTATION

- Understand financial capabilities to implement projects and strategize ways to adapt projects into phases for implementation, where costs are too high for immediate and full completion.
- Implement quick build low-cost safety projects in the interim, where funding for permanent construction will have to be coupled with larger roadway reconstruction projects
- Consider opportunities to partner with agencies (ITD or county) on facilities under their jurisdiction.

ENVIRONMENTAL CONSIDERATIONS

Initial Screening found no projects would directly impact a National Register of Historic Places in Idaho location. Project 16 may impact a freshwater emergent wetland (PEM1A). Multiple projects fall under a FEMA designated Special Flood Hazard Area (SFHA) including 5,8,9,10,11,and 12. Most of these projects only enter SFHA areas for a small part (river or canal crossing) of the full project segment.

NON-MOTORIZED FATAL AND SERIOUS INJURY CRASH HISTORY SUMMARY (2018-2022)

Fatal Crashes: **1**
Serious Injury Crashes: **1**

Most Common Crash Types:
- Pedestrian: **2**
- Bicycle: **0**

50% of Injury Crashes at Intersections

50% of Injury Crashes along segments

RSAP RISK FACTORS

- Arterial roadway
- High Posted Speed (40 mph)

ADDITIONAL ROADWAY SAFETY CONCERNS

- Drug impairment
- Inattention
- Pedestrian infrastructure gaps, especially on routes connecting to activity centers and schools

RESPONSIBLE AGENCIES

- Cities of Greenleaf, Melba, Notus and Parma
- ITD

Factors Used to Prioritize Improvement Areas

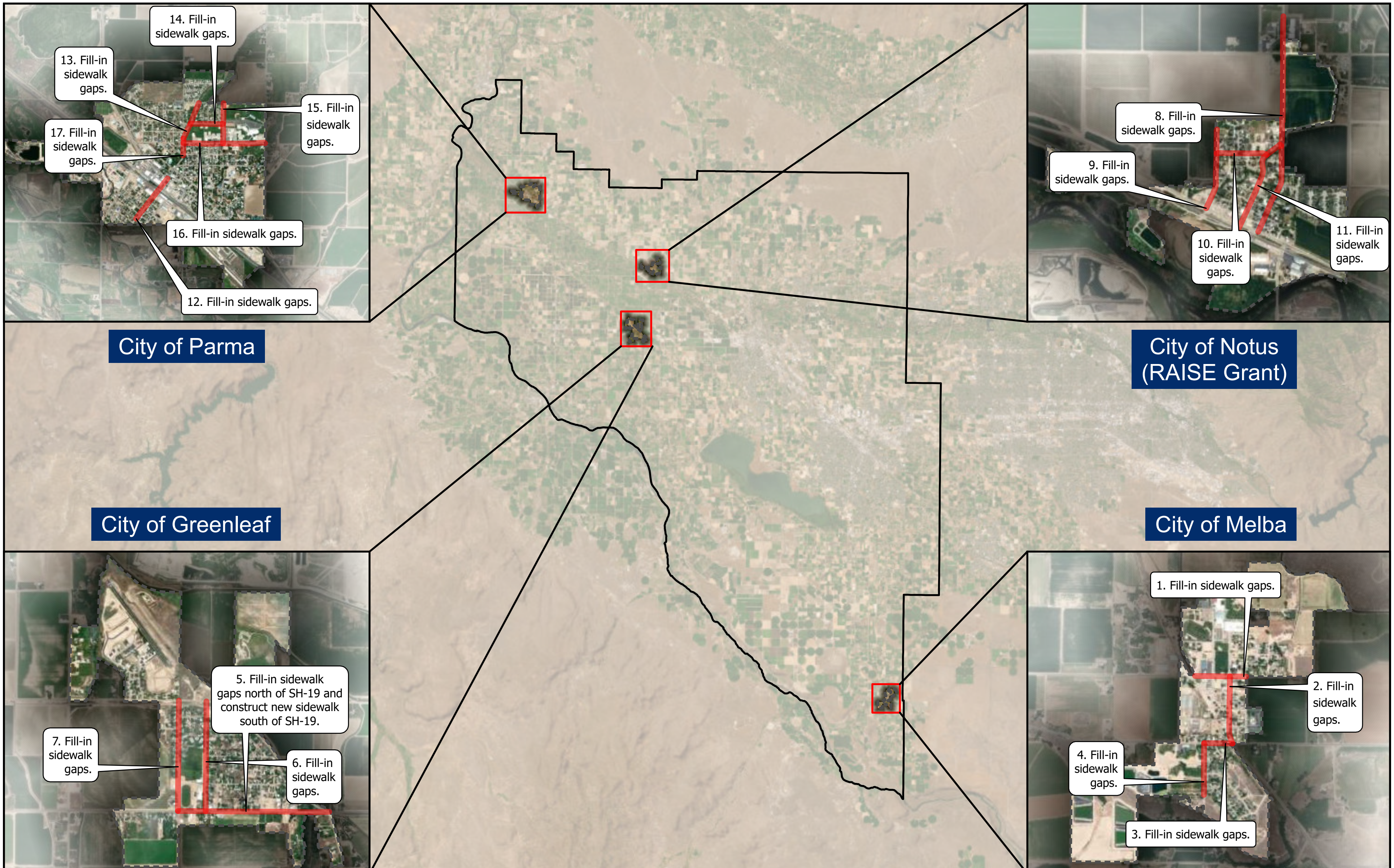
Crash History
The presence of fatal or serious injury pedestrian crashes may indicate that these types of crashes may continue to occur at these locations if a countermeasure is not installed.

Roadway Characteristics
High-speed, high-volume roadways are associated with higher incidences of fatal and serious injury pedestrian crashes. Greater volumes present more exposure to crash risk and higher speeds increase the severity of crashes.

Equity
Historically marginalized communities may see greater roadway safety risks due to a lack of previous investment in their community. Additionally, lower income communities often see higher rates of walking, increasing their exposure to these types of crashes.

Proximity and Connectivity to Activity Centers/Schools
Activity center s regularly draw community members, many of whom will choose to walk to them because of their proximity. Children are a particularly vulnerable group of road users and schools are often top generators of walking and biking activity.

Overlap with local Transportation Plans and the Notus RAISE Grant
Relevant planning documents were reviewed identify jurisdictional priorities, upcoming projects, and find opportunities to advance previously identified projects.



Canyon County Rural Communities Projects

Canyon County Boundary
City Limits
Priority Segments

0 5 10 Miles

COMPASS Regional Safety Action Plan

Pedestrian Improvements

Systemic Applications in Greenleaf, Melba, Notus, and Parma

Project Number / Location	Compass Equity Score[1]	AOP*	HDC*	Quick Build Options	Cost Estimate	Crash Modification Factor
City of Melba						
1 – Murphy Road (Potato Road to Randolph Drive)	NA	No	Yes	Widen and protect roadway shoulders	$477,000	0.60
2 – Southside Boulevard (Murphy Road to Hill Road)	NA	No	Yes	Widen and protect roadway shoulders	$327,000	0.60
3 – Base Line Road (Southside Boulevard to Charlotte Road)	NA	No	Yes	Widen and protect roadway shoulders	$203,000	0.60
4 – Charlotte Drive (Hill Road to the southern end of Melba Park)	NA	No	Yes	NA	$354,000	0.60
City of Greenleaf						
5 – Main Street (Friends Road to Top Road)[2]	~7	No	Yes	Widen and protect roadway shoulders	$1,136,000	0.60
6 – Academy Road (Main Street to Peckham Road)	NA	No	Yes	NA	$497,000	0.60
7 – Friends Road (Main Street to Peckham Road)	~7	No	Yes	NA	$938,000	0.60
MELBA AND GREENLEAF TOTAL COST					**$3,932,000**	

**AOP = Area of Persistent Poverty: https://usdot.maps.arcgis.com/apps/dashboards/75febe4d9e6345ddb2c3ab42a4aae85f*
**HDC = Historically Disadvantaged Community: https://usdot.maps.arcgis.com/apps/dashboards/75febe4d9e6345ddb2c3ab42a4aae85f*
1 = Where the value "NA" is present for a Compass equity score, Compass has not analyzed the roadway or intersection. This may be due to the road's classification (most local roads are not scored), age of construction (new construction), or other unidentified reason.
2 = Main Street or Simplot Boulevard or SH-19 is an ITD owned and managed roadway, communication with ITD will be necessary to determine the feasibility of any recommended improvements that impact their facilities or right-of-way

GREENLEAF CONSIDERATIONS

Greenleaf city staff identified several project opportunities that require consideration beyond the systemic project package. Along SH-19 city staff identified median enhanced crosswalks, crossing/ intersection improvements, bike/pedestrian facilities including ADA sidewalk east of Greenleaf the J.R. Simplot Plant, and west of Greenleaf to the City of Wilder. Greenleaf is also interested in exploring a shared-use pathway with the Boise Valley Railroad / Union Pacific Railroad east of Greenleaf adjacent to SH-19 toward Caldwell, and west of Greenleaf adjacent to Peckham Road toward Wilder. Other general project considerations include speed management applications throughout the city.

Given the constraints of this Safety Action Plan, a desire to maintain a consistent project package, and a recognition of jurisdiction and finance challenges, the projects identified above have not been identified as priority projects. Collaboration with ITD on any work within their right-of-way on SH-19 will be necessary to facilitate the development of projects along the SH-19 corridor.

Pedestrian Improvements

Systemic Applications in Greenleaf, Melba, Notus, and Parma

Project Number / Location	Compass Equity Score	AOP*	HDC*	Quick Build Options	Cost Estimate	Crash Modification Factor
City of Notus						
8 – Notus Road (US 20-26 to Notus Senior High School)	~7	Yes	Yes	NA	$1,010,000 ($1,350,000)[1]	0.60
9 – 3rd Street (US 20-26 to Tuttle Lane	~7	Yes	Yes	NA	$410,000 ($570,000)[1]	0.60
10 – Jasper Avenue (3rd Street to 1st Street)	~7	Yes	Yes	NA	$250,000 ($350,000)[1]	0.60
11 – 1st Street (US 20-26 to Notus Road)	NA	Yes	Yes	NA	$470,000 (($640,000)[1]	0.60
City of Parma						
12 – 3rd Street (Wendle Avenue to US 20-26)	NA	No	Yes	NA	$411,000	0.60
13 – 2nd Street (4th Street to Walker Road)	~5	No	Yes	NA	$436,000	0.60
14 – Locust Avenue (2nd Street to 8th Street)	NA	No	Yes	NA	$346,000	0.60
15 – 8th Street (Walker Road to McConnell Ave)	NA	No	Yes	NA	$452,000	0.60
16 – McConnell Avenue (4th Street to Parma Road)	~6	No	Yes	NA	$260,000	0.60
17 – 4th Street (2nd Street to Curtis Avenue)	NA	No	Yes	NA	$183,000	0.60
NOTUS AND PARMA TOTAL COST (MELBA, GREENLEAF, NOTUS, AND PARMA TOTAL COST)					**$4,228,000 ($8,160,000)**	

**AOP = Area of Persistent Poverty: https://usdot.maps.arcgis.com/apps/dashboards/75febe4d9e6345ddb2c3ab42a4aae85f*
**HDC = Historically Disadvantaged Community: https://usdot.maps.arcgis.com/apps/dashboards/75febe4d9e6345ddb2c3ab42a4aae85f*
[1] = Project costs identified in parentheses relate to the estimated cost for pavement reconstruction. These costs are not eligible for funding through the Safe Streets For All program. They are broken out separately and do not factor into the Total Cost estimate for the sheet or project package.

NOTUS CONSIDERATIONS

Notus was the recipient of a RAISE grant in June of 2024. This grant of $1,402,000 will fund “the comprehensive design for full-depth reconstruction of four collector streets. The focus of the project encompasses the engineering, design, environmental analysis, and pre-construction planning to prepare the project for the construction and revitalization of the four worst-condition collector streets: Notus Road, Jasper Avenue, 1st Street, and 3rd Street” (U.S. DOT, 2024).

The projects identified in this sheet that apply to Notus, mirror the corridors identified in the RAISE grant. Notus may then apply for implementation funding based on the project designs that are created through the RAISE grant.

5th Street (US 95) Roadway Reconfiguration

Simplot Boulevard to Avenue D

5th Street (US 95) from Simplot Boulevard to Avenue D is a 0.75-mile state highway that serves as 'Main Street' for the City of Wilder, a small farming community in western Canyon County. 5th Street is a 4-lane, high speed road that runs north to south, bisecting the community and separating the newer residential development on the west from the historic grid, businesses, churches, and school on the east, while also providing access to homes and businesses.

CRASH HISTORY SUMMARY (2018-2022)

Fatal Crashes: **0**
Serious Injury Crashes: **1**

Serious injury crash at US 95 and Simplot Blvd

Most Common Crash Types:
- Angle Turning: **1**

RSAP RISK FACTORS (FOR FATAL & SERIOUS INJURY CRASHES)

- Multi-Lane Arterial (4 lanes)
- High Posted Speed (35 mph)
- Highway as a Main Street

ADDITIONAL ROADWAY SAFETY CONCERNS

- Lack of Protected Bike Facilities

RESPONSIBLE AGENCIES

- City of Wilder
- Idaho Transportation Department (ITD)

EQUITY CONSIDERATIONS

- Equity Score (out of 12) – 8.0, Top 10th Percentile
- Area of Persistent Poverty – No
- Historically Disadvantaged Community – Yes

PROJECT DESCRIPTION

This project will reduce fatal and serious injury crashes through the following countermeasures:

ROAD RECONFIGURATION / MULTI-MODAL MAIN STREET

Description: 5th Street will be converted from its existing four-lane, undivided roadway section to a three-lane roadway section consisting of two through lanes, a center two-way left-turn lane (TWLTL), on-street parking, and bike lanes.

Purpose: Converting a four-lane road to a three-lane road has many benefits, which include:
- The presence of a dedicated left-turn lane can reduce rear-end and left-turn crashes. The reduced number of overall lanes can decrease right-angle crashes
- There are fewer lanes for pedestrians to cross, and the center TWLTL provides space for pedestrian refuge islands
- Traffic calming and more consistent speeds
- The presence of bike lanes and sidewalks provides separate space for motorists and people walking and biking.

MARKED CROSSWALKS WITH BULB-OUTS

Description: Marked crosswalks with pedestrian crossing signs and high-visibility crosswalk markings. Extend curb (bulb-out) to edge of bike lane on either side of roadway at crossings.

Purpose: High-visibility crosswalks and pedestrian crossing signs alert motorists to crossing locations and can concentrate pedestrian crossing locations along a corridor. Curb bulb-outs increase visibility of pedestrians by bringing them closer to the traveled way and decrease the distance needed to cross the road.

SPEED MANAGEMENT

Description: The speed management strategies appropriate for 5th Street are considering lowering the speed limit and introducing traffic calming elements such as narrowing elements (i.e., curb extensions and presence of on-street parking).

Purpose: Reduce vehicle speeds to reduce severity of all crash types.

MULTIPLE LOW-COST COUNTERMEASURES AT STOP-CONTROLLED INTERSECTION

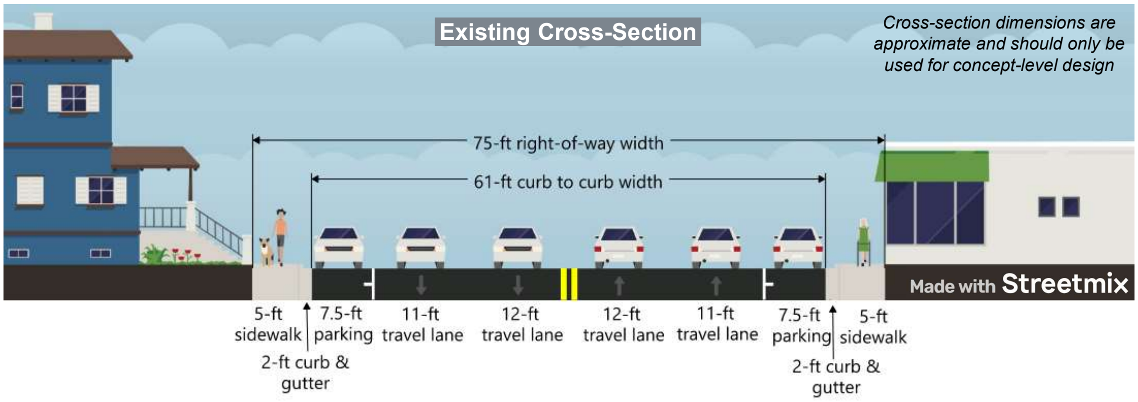
The following strategies could be implemented at 5th St and Simplot Blvd:

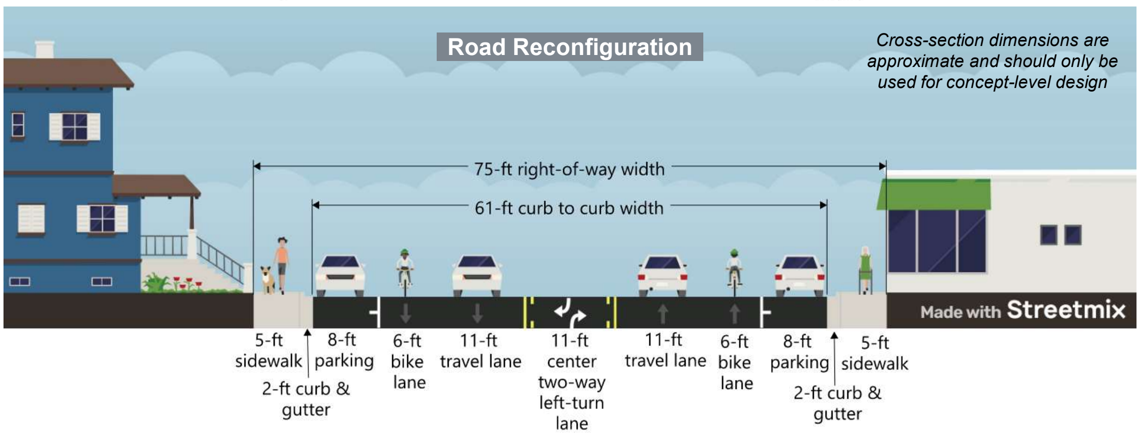
5th St Approaches
Place oversize advanced intersection warning signs with supplemental street name plaques (can also include flashing beacon). Add retroreflective sheeting on signposts. Add enhanced pavement markings that delineate the through lane edge lines.

Simplot Blvd / Stewart Ln Approach
Place oversize advanced "Stop Ahead" intersection warning signs (can also include flashing beacon). Add oversized stop signs. Add retroreflective sheeting on signposts. Double arrow warning sign. Ensure proper sight distance can be attained.

5th Street (US 95) Roadway Reconfiguration

Simplot Boulevard to Avenue D





COUNTERMEASURE		COST ESTIMATE	CRASH MODIFICATION FACTOR
Road Reconfiguration / Multi-modal Main Street	*See Cross-Sections Above*	$500,000*	0.53 – 0.81
Marked Crossing with Bulb-outs		$100,000	NA
Multiple Low-Cost Countermeasures at Stop-Controlled Intersections		$10,000	0.73 – 0.89
Speed Management	*Corridor level improvements*	NA	NA
TOTAL COST (Includes 25% Contingency)		**$690,000**	

** Assumes road reconfiguration occurs with asphalt mill and overlay. This could occur with regular ITD maintenance.*

RECOMMENDED NEXT STEPS FOR IMPLEMENTATION

- Work with ITD to evaluate roadway cross section reallocation
- Consider corridor study to develop vision for corridor and allow opportunity for engagement with community members.
- Phasing - Phase 1 includes the reconfiguration (i.e., no moving curbs) and Phase 2 includes bulb-outs and potential widening of sidewalk).
- **Quick-Build Opportunities**: Reduce speed limit to 25 mph. Implement re-allocation using temporary materials.

ENVIRONMENTAL SCAN

- **Floodplain:** No 100-yr or 500-yr floodplain
- **National Register of Historic Places:** No National Historic Places
- **Wetlands:** Golden Gate Canal

Executive Summary

CANYON COUNTY

Current Successes and Challenges

Successes

- Local road safety plan in place for part of the county
- Roundabouts are used in much of the county

Challenges

- Lack of roadway authority requires extra coordination in the development review process
- Rural roads with increasing traffic volumes
- Keeping pace with growth

Fatal and Serious Injury Crash History (2018-2022)

100

Fatal Crashes

695

Serious-Injury Crashes

8.1% involved non-motorized road users

19.2% involved someone impaired

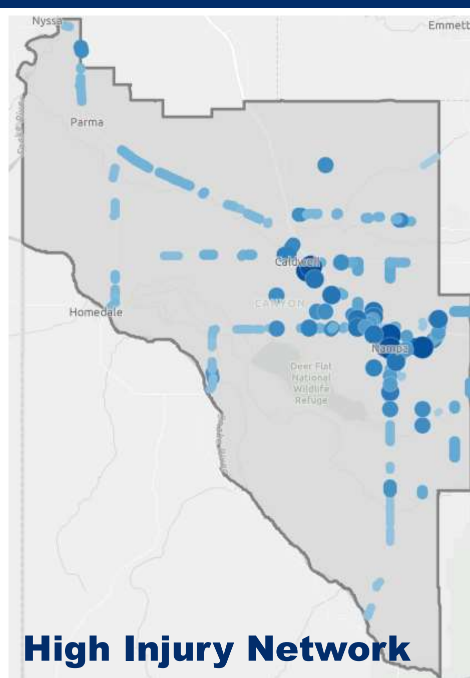
13.3% Motorcycle involved

45.3% angle / turning crashes

6% Seatbelt or car seat not used

Priority Areas for Treatment

Sidewalk and Bike Facility Gaps (Especially Between New Development and Key Attractors)



High Injury Network

Rural Two-Way Stop Controlled Intersections

High-Speed, Multi-Lane Arterials & Highways

COMPASS Regional Safety Action Plan

High Priority Infrastructure Strategies*

Rural 2-Way Stop Controlled Intersections	Signage at Horizontal Curves	Rural Collector Roads

Rural 2-Way Stop Controlled Intersections

- Convert rural 2-way stop-controlled intersections to 4-way stops, with advance and enhanced signage.
- Convert rural 2-way stop-controlled intersections to roundabouts.

Signage at Horizontal Curves

- Install enhanced delineation at horizontal curves
- Install dynamic speed feedback signs in advance of curves

Rural Collector Roads

- Install "visually separated facilities" (i.e. paved shoulders, bike lanes).

Example High-Priority Location-Specific Strategies

Location**	Items to Address	Strategies
Gallowway Rd / Emmett Rd	3 fatal / serious injury crashes (angle event)	Convert to a 4-way stop with advanced / enhanced signage Alternatively, convert to a roundabout
Farmway Rd / Ustick Rd	7 fatal / serious injury crashes (angle events)	A roundabout is planned for this location
Old Hwy 30 / Galloway Rd	2 fatal / serious injury crashes (angle events)	Convert to 4-way stop with advanced / enhanced signage. Alternatively, convert to a roundabout
Southside Blvd / Lewis Ln	6 Fatal / Serious injury crashes (angle events)	Convert to a roundabout; Improve advanced warning signage and pavement markings as an interim strategy.

**See Tech Memo #4, Appendix E for a complete list of potential strategies*
*** The COMPASS RSAP focuses on identifying potential strategies for locally-owned roads. Projects on ITD highways in the High-Injury Network may not be included on this list.*

High Priority Non-Infrastructure Strategies

Engineering solutions are one part of a holistic approach to transportation safety. Other priority strategies for Canyon County to consider are listed here and described further in the Countermeasures Toolbox

- Participate in COMPASS Safety Working Group
- Advocate for safety in partnering with transportation agencies
- Allow developments to implement safety improvements in lieu of capacity improvements
- High-visibility safety education campaigns
- Engage EMS and Rail partners to identify opportunities to improve emergency vehicle travel over rail crossings

COMPASS Regional Safety Action Plan

Executive Summary

EAGLE

Current Successes and Challenges

Successes

- Leadership support for improving safety, especially for people walking and biking
- Increasing local road connectivity is a priority
- Set aside funding to enhance walking and biking safety elements in ACHD projects

Challenges

- Wide roads without regular crossings
- Lack of local roadway control (sometimes differing priorities between City and road agencies)
- Balancing desire for rural feel with the needs of a growing community

Fatal and Serious Injury Crash History (2018-2022)

5 Fatal Crashes

41 Serious-Injury Crashes

6.5% involved non-motorized road users

21.7% involved someone impaired

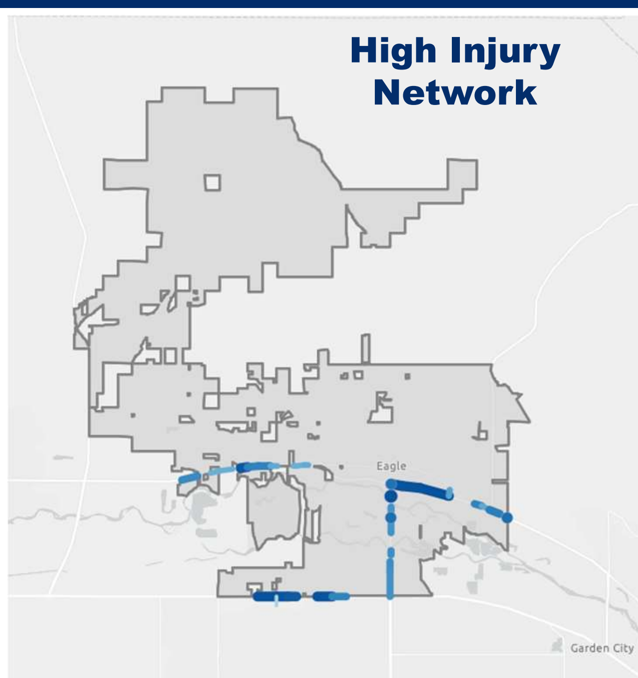
21.7% rear-end crashes

45.6% angle / turning crashes

8.7% Overturn

Priority Areas for Treatment

Sidewalk and Bike Facility Gaps (Especially Between New Development and Key Attractors)



Signalized Intersections

High-Speed, Multi-Lane Arterials & Highways

COMPASS Regional Safety Action Plan

High Priority Infrastructure Strategies*

Access Management

- Develop and implement Access Management Plans on roadways with anticipated development

Intersection Improvements

- Convert stop-controlled intersections to roundabouts (all-way stop controlled can be interim treatment if MUTCD warrants are met).
- Convert permitted left-turn phasing to protected-only at signalized intersections. This could be done full-time, when pedestrian calls are placed, and/or during peak periods.

Vulnerable Road User Infrastructure

- Fill-in gaps in the walking and biking network with appropriate infrastructure (e.g., sidewalks, protected bike lanes, shared-use paths, enhanced crossings).
- Quick-build/temporary sidewalks
- Install or enhanced pedestrian crossings along arterial and collector streets with attractors

Speed Management

- Speed management near pedestrian/bicycle attractors (e.g., schools)

Example High-Priority Location-Specific Strategies

Location**	Items to Address	Strategies
Eagle Rd & Riverside Dr Intersection	High fatal / serious injury crash rate, permitted left-turns	Convert from permitted to protected left-turn (full-time, when pedestrian calls are placed, and/or during peak periods).
SH-44 (State St): SH-55 to Eagle Rd	High fatal / serious injury crash rate, lack of crossing opportunities	Gateways, speed management techniques (mid-block pedestrian crossings, dynamic speed feedback, lower speed limits, signal timing, enhanced pavement markings)

**See Tech Memo #4, Appendix E for a complete list of potential strategies*
*** The COMPASS RSAP focuses on identifying potential strategies for locally-owned roads. Projects on ITD highways in the High-Injury Network may not be included on this list.*

High Priority Non-Infrastructure Strategies

Engineering solutions are one part of a holistic approach to transportation safety. Other priority strategies for Eagle to consider are listed here and described further in the Countermeasures Toolbox

- Continue participating in COMPASS safety working group
- Continue dedicating funds for walking and biking safety features in projects
- Continue prioritizing safety in ACHD IFWYP requests
- High-visibility safety education campaigns
- Road safety audits
- Work with transportation partner agencies to regularly review fatal and serious injury crash locations and causes

Bicycle and Pedestrian Improvements

Systemic Applications in Eagle

The City of Eagle is served by three state highways and three ACHD arterials which move most of the vehicular traffic through the city. The collector and local roadway network provide limited connectivity apart form these major roads, requiring them to be used for local circulation and access, in addition to carrying regional traffic. Project prioritization guidance was taken from the Eagle Neighborhood Bicycle and Pedestrian Plan.

PROJECT DESCRIPTION

This project will reduce the potential for fatal and serious injury crashes through the following countermeasures:

SIDEWALKS

Description: Adds sidewalks to areas where there is currently none. Areas may have some sidewalks along a corridor and just need to fill in gaps, or the entire corridor may be lacking any pedestrian infrastructure at all. Where right-of-way allows, sidewalks may be buffered to enhance the pedestrian experience and feeling of safety.

Purpose: Eliminates conflicts between pedestrians and vehicles along roadways.

BICYCLE FACILITIES

Description: Protected bike lanes with complete separation from vehicle travel lanes. A near-term solution could include reallocation of the existing road cross-section (e.g., narrowing vehicle-travel lanes to provide bike lane buffer space) or providing parallel routes.

Purpose: Protected bike facilities reduce conflicts between vehicles and people biking along the road.

SHARED-USE FACILITIES

Description: Multi-use pathways with complete separation from vehicle travel lanes. An interim solution could include expanding and protecting a roadway shoulder.

Purpose: Shared use facilities reduce conflicts between vehicles and people walking/biking along the roadway.

CROSSINGS

Description: Combination of treatments, including vertical streetscape elements (e.g., raised crosswalk), horizontal elements (e.g. curb bulb outs, protected intersection elements), visibility improvements (e.g. striping high visibility crosswalks, adding RRFBs or PHBs, improved signage).

Purpose: Reduce vehicle speeds and improve visibility of people crossing the street.

NON-MOTORIZED CRASH HISTORY SUMMARY (2018-2022)

Fatal Crashes: **2**
Serious Injury Crashes: **1**
Other Injury Crashes: **16**

Most Common Crash Types:

- Pedestrian: **5**
- Bicycle: **14**

68% of Injury Crashes at Intersections

21% of Injury Crashes at Driveway, Alley, or Parking Lot

RSAP RISK FACTORS

- High Posted Speed (40 mph)

ADDITIONAL ROADWAY SAFETY CONCERNS

- Distraction or impairment
- Vision obstructions (parked cars, vegetation, etc.)
- Bicycle and pedestrian infrastructure gaps, especially on high speed/volume roads

RESPONSIBLE AGENCIES

- City of Eagle
- Ada County Highway District
- ITD

Factors Used to Prioritize Improvement Areas

Crash History
The presence of fatal or serious injury pedestrian and bicycle crashes may indicate that these types of crashes may continue to occur at these locations if a countermeasure is not installed.

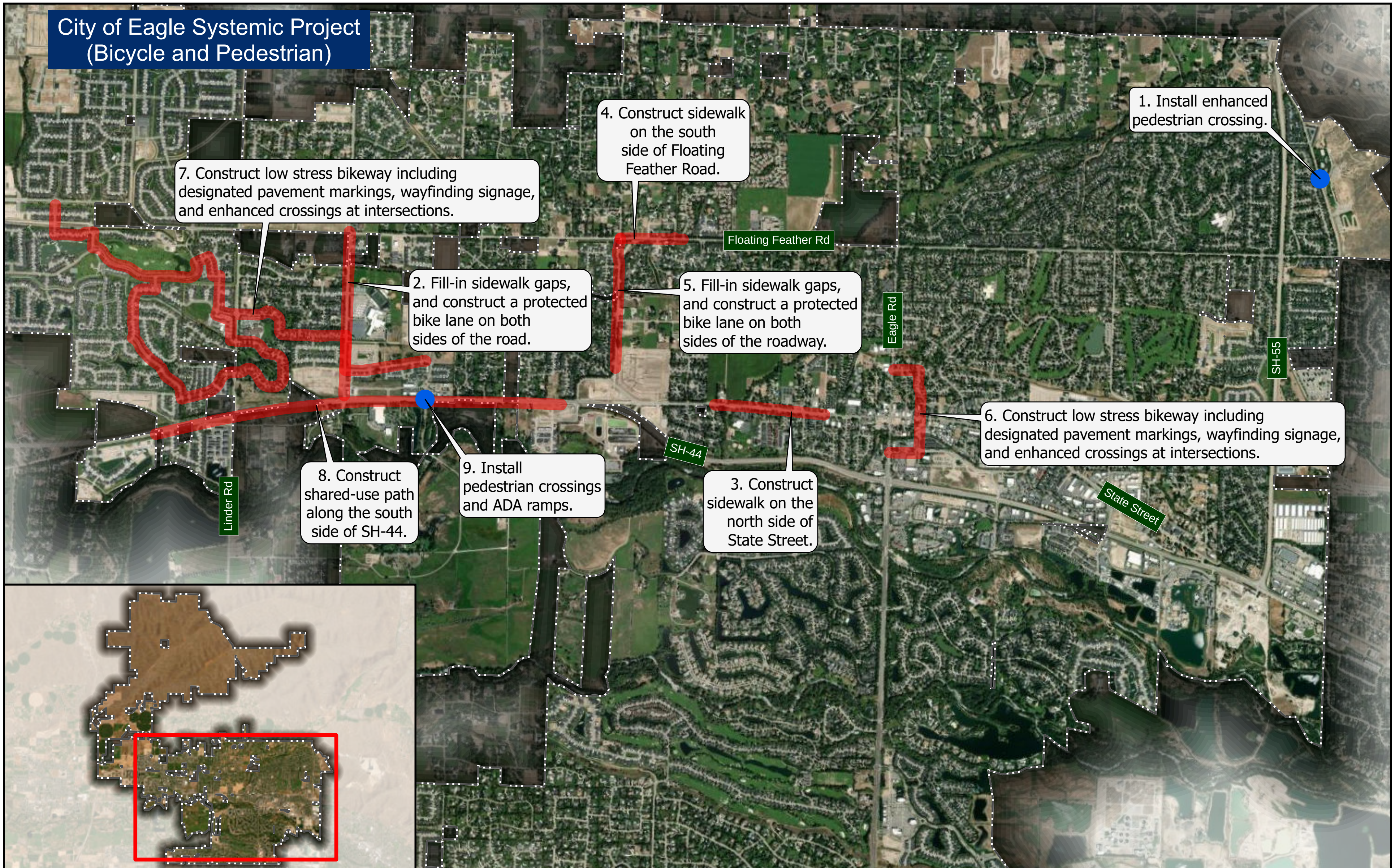
Roadway Characteristics
High-speed, high-volume roadways are associated with higher incidences of fatal and serious injury pedestrian and bicycle crashes. Greater volumes present more exposure to crash risk and higher speeds increase the severity of crashes.

Equity
Historically marginalized communities may see greater roadway safety risks due to a lack of previous investment in their community. Additionally, lower income communities often see higher rates of walking and biking, increasing their exposure to these types of crashes.

Proximity to Schools
Children are a particularly vulnerable group of road users and schools are often top generators of walking and biking activity.

Overlap with Eagle Neighborhood Bicycle and Pedestrian Plan
Projects identified in this plan were re-evaluated with additional considerations in this study.

ACHD CIP and Integrated Five Year Work Plan
This study reviewed ACHD's plans to avoid project duplication or find opportunities to advance ACHD timelines.



Eagle Priority Projects

Priority Intersections

Priority Segments

Eagle City Limits

COMPASS Regional Safety Action Plan

0 0.5 1 Miles

Nov 2024

Bicycle and Pedestrian Improvements

Systemic Applications in Eagle

Project Number / Location	Compass Equity Score	AOP* / HDC*	Quick Build Options	Countermeasure Cost Estimate	Crash Modification Factor
1 – Greenbrook Street and Horseshoe Bend Road	~4	No	NA	$269,000	NA[1]
2 – Park Lane (State Street to Floating Feather Road)	~4	No	Temporary bike lane protection (i.e. flex posts, bike lane bollards, etc.)	$3,224,000	0.60
3 – State Street (Riverview Street to Cobblestone Way)	~5	No	Extend asphalt shoulder and add protective buffer to serve as temporary sidewalk on north side.	$524,000	0.60
4 – Floating Feather Road (Ballantyne Lane to 1/4 mile East of Ballantyne Lane)	~5	No	NA	$115,000	0.60
5 – Ballantyne Lane (State Street to Floating Feather Road)	~5	No	Temporary bike lane protection (i.e. flex posts, bike lane bollards, etc.)	$3,468,000	0.60, 0.43 – 0.70
6 – 2nd Street and Plaza Drive, State Street and Eagle Road	~4	No	NA	$47,000	0.37
7– Legacy Bikeway (Floating Feather Road "west extent" to Fisher Park Way "east extent")	NA[2]	No	NA	$429,000	0.37
8 – SH-44 (Urban Gate Avenue to 400ft west of River Creek Avenue	~6	No	Asphalt pathway instead of concrete.[3]	$4,765,000	0.43-0.70
9 – SH-44 and Fisher Park Way[4]	~7	No	NA	$161,000	NA[5]
			TOTAL COST	**$13,002,000**	

**AOP = Area of Persistent Poverty: https://usdot.maps.arcgis.com/apps/dashboards/75febe4d9e6345ddb2c3ab42a4aae85f*
**HDC = Historically Disadvantaged Community: https://usdot.maps.arcgis.com/apps/dashboards/75febe4d9e6345ddb2c3ab42a4aae85f*
1 = A statistically valid CMF was not found. Further study is required before the project team is comfortable reporting a number.
2 = Compass has not analyzed the corridor. Their analysis does not cover most local roads.
3 = Project cost assumes a concrete pathway. A protected roadway shoulder or curb tight pathway on SH-44 should be avoided for users' safety and comfort.
4 = A pedestrian connection to Eagle Island State Park, either sidewalk or protected roadway shoulder, should be evaluated.
5 = A statistically valid CMF is not available for the proposed project.

RECOMMENDED NEXT STEPS FOR IMPLEMENTATION

- Understand financial capabilities to implement projects and strategize ways to adapt projects into phases for implementation, where costs are too high for immediate and full completion.
- Utilize quick build opportunities to save time and money on implementation but ensure that quick build projects are identified as temporary or aesthetically pleasing enough to feel permanent.
- ACHDs CIP and Integrated Five Year Work Plan identified a several projects that will improve safety in Eagle. Ensure that bicycle and pedestrian connectivity and safety are integrated into future planned projects.

ENVIRONMENTAL CONSIDERATIONS

Initial screening found the north end of the Ballantyne Lane (5) and central area of the State Street (3) projects may impact two National Register of Historic Places in Idaho locations. No project locations were found to impact a USGS mapped wetland area. The State Street project (3) falls under a FEMA designated Special Flood Hazard Area, and the 2nd Street and Plaza Drive, State Street and Eagle Road (6) is identified as Zone X.

Executive Summary

GARDEN CITY

Current Successes and Challenges

Successes

- Collaboration with partner organizations, including funding for projects on State Street and Chinden Boulevard, as well as walking and biking improvements
- Recent Greenbelt improvements

Challenges

- Retroactively improving streets to include features such as sidewalks and street trees, especially Chinden Boulevard
- Lack of local roadway control (sometimes differing priorities between City and road agencies)

Fatal and Serious Injury Crash History (2018-2022)

6

Fatal Crashes

30

Serious-Injury Crashes

27.8% involved non-motorized road users

30.5% involved someone impaired

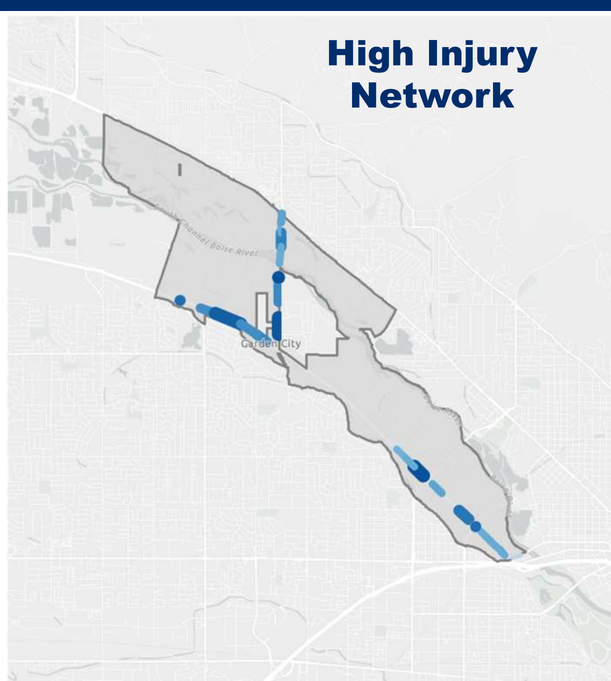
11.1% rear-end crashes

22.3% angle / turning crashes

16.7% Motorcycle involved

Priority Areas for Treatment

Sidewalk and Bike Facility Gaps (Especially Between New Development and Key Attractors)



Signalized Intersections

High-Speed, Multi-Lane Arterials & Highways (Chinden Blvd and Sh-44)

COMPASS Regional Safety Action Plan

High Priority Infrastructure Strategies*

Vulnerable Road User Infrastructure

- Sidewalk/bike facility infill where development is unlikely to fill
- Quick-build/temporary sidewalks
- Enhanced crossings

Speed Management

- Speed management around pedestrian attractors

Signal Timing and Phasing Changes

- Convert permitted left-turn phasing to protected-only at signalized intersections. This could be done full-time, when pedestrian calls are placed, and/or during peak periods.
- Leading Pedestrian Intervals

Intersection Improvements

- Convert stop-controlled intersections to roundabouts (all-way stop controlled can be interim treatment)
- No right-turn on red

Example High-Priority Location-Specific Strategies

Location**	Items to Address	Strategies
US 20/26 (Chinden Blvd): Garrett St / N Maple Grove Rd / E 36th St	Sidewalk gaps and lack of dedicated bike facilities; lack of pedestrian crossings to access ped/bike activity generators throughout the corridor.	Signal timing and phasing improvements (i.e., leading pedestrian interval, accessible pedestrian signals, protected left-turn phasing) and other recommendations from Chinden Boulevard Corridor Project Development (COMPASS, 2016)
Adams St: N Kent Ln / 37th St	Cut-through route for traffic through neighborhoods – parallel route bike/ped travel from Chinden. 1 Fatal crash at Adams & Veterans Memorial Parkway	Install speed management elements, protected bike lanes, and enhanced pedestrian crossings

**See Tech Memo #4, Appendix E for a complete list of potential strategies*
*** The COMPASS RSAP focuses on identifying potential strategies for locally-owned roads. Projects on ITD highways in the High-Injury Network may not be included on this list.*

High Priority Non-Infrastructure Strategies

Engineering solutions are one part of a holistic approach to transportation safety. Other priority strategies for Garden City to consider are listed here and described further in the Countermeasures Toolbox

- Continue participating in COMPASS Safety Working Group
- Continue prioritizing safety in ACHD Integrated Five-Year Work Plan request methodology and in requests to ITD
- Work with transportation partner agencies to regularly review fatal and serious injury crash locations and causes
- High-visibility safety education campaigns – especially around DUI enforcement
- Road safety audits

COMPASS Regional Safety Action Plan

Bicycle and Pedestrian Improvements

Enhanced Crossings on Chinden Boulevard in Garden City

Garden City is a fast-growing urban area surrounded by Boise on the north, east, and south and Eagle on the west. Chinden Blvd (US 20-26) runs southeast to northwest, bisecting the City and presenting a barrier to people walking and biking and separating the northwest side of the City, including the Boise River Greenbelt, from the southwest side of the City and the Boise West Bench neighborhood. The City and ACHD have identified multiple crossings of Chinden Blvd in the Garden City Neighborhood Plan and the Access to Opportunity RAISE Grant project.

NON-MOTORIZED KA CRASH HISTORY SUMMARY ALONG CHINDEN BOULEVARD (2018-2022)

Fatal Crashes: **2**
Serious Injury Crashes: **3**
Other Injury Crashes: **17**

40% of KA Crashes on Roadway Segments

Most Common Crash Types:

- Pedestrian: **7**
- Bicycle: **15**

60% of KA Crashes at Intersections

RSAP RISK FACTORS

- Multi-Lane Arterial (5+ Lanes)
- High Posted Speed (35 mph)

ADDITIONAL ROADWAY SAFETY CONCERNS

- Bicycle and pedestrian infrastructure gaps, especially on high speed/volume roads
- Lack of crossing opportunities for people

RESPONSIBLE AGENCIES

- ACHD
- Idaho Transportation Department (ITD)

PROJECT DESCRIPTION

This project will reduce the potential for fatal and serious injury crashes through the following countermeasures:

SIDEWALKS

Description: Adds sidewalks to areas where there is currently none. Areas may have some sidewalks along a corridor and just need to fill in gaps, or the entire corridor may be lacking any pedestrian infrastructure at all. Where right-of-way allows, sidewalks may be buffered to increase separation from motor vehicles.

Purpose: Eliminates conflicts between pedestrians and vehicles along roadways.

BICYCLE FACILITIES

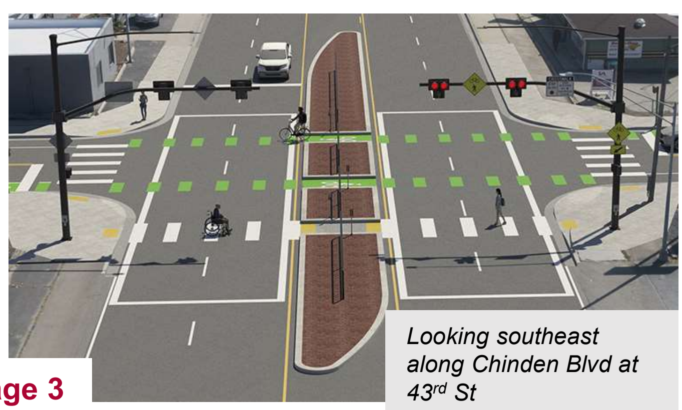
Description: Protected bike lanes with complete separation from vehicle travel lanes. A near-term solution could include reallocation of the existing road cross-section (e.g., narrowing vehicle-travel lanes to provide bike lane buffer space) or providing parallel routes.

Purpose: Protected bike facilities reduce conflicts between vehicles and people biking along the road.

CROSSINGS

Description: Combination of treatments, including striping high visibility crosswalks, a median refuge island, adding a PHB, and improved signage. See example at 43rd St / Chinden Blvd below.

Purpose: Reduce vehicle speeds, improve visibility of people crossing the street, and manage conflicts in time through providing a dedicated crossing phase for bikes and pedestrians.



Looking southeast along Chinden Blvd at 43rd St

Factors Used to Prioritize Areas for Systemic Improvements

Crash History
The presence of fatal or serious injury pedestrian and bicycle crashes may indicate that these types of crashes may continue to occur at these locations if a countermeasure is not installed.

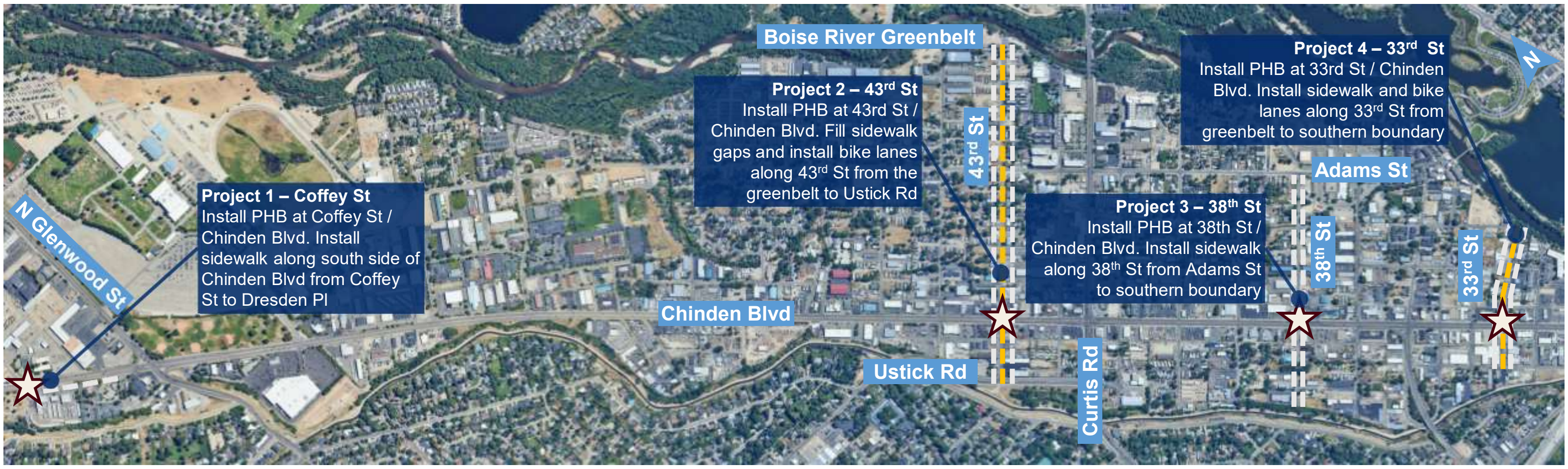
Roadway Characteristics
High-speed, high-volume roadways are associated with higher incidences of fatal and serious injury pedestrian and bicycle crashes. Greater volumes present more exposure to crash risk and higher speeds increase the severity of crashes.

Equity
Historically marginalized communities may see greater roadway safety risks due to a lack of previous investment in their community. Additionally, lower income communities often see higher rates of walking and biking, increasing their exposure to these types of crashes.

Overlap with the ACHD Garden City Bicycle and Pedestrian Plan and the ACHD Access to Opportunity RAISE Grant project.
ACHD identified community priorities for future bicycle and pedestrian projects which promote safe, effective, and convenient walking and biking facilities for community members. Access to Opportunity is a federally funded project which will design pedestrian, bicycle, and roadway improvements focused on improving access and connectivity.

Bicycle and Pedestrian Improvements

Enhanced Crossings on Chinden Boulevard in Garden City



Project Number / Location	Compass Equity Score	AOP*	EDC*	COST ESTIMATE	CRASH MODIFICATION FACTOR
1 – Coffey Street	6.0	No	No	$570,000	0.60 – 0.88
2 – 43rd Street (*ACHD Access to Opportunity*)	9.0	Yes	Yes	$780,000	0.43 – 0.88
3 – 38th Street (*ACHD Access to Opportunity*)	5.0	Yes	Yes	$1,180,000	0.60 – 0.88
4 – 33rd Street (*ACHD Neighborhood Plan*)	5.0	Yes	Yes	$980,000	0.43 – 0.88
			TOTAL COST	**$3,510,000**	

**AOP = Area of Persistent Poverty: https://usdot.maps.arcgis.com/apps/dashboards/75febe4d9e6345ddb2c3ab42a4aae85f*
**EDC = Economically Disadvantaged Community: https://usdot.maps.arcgis.com/apps/dashboards/75febe4d9e6345ddb2c3ab42a4aae85f*

RECOMMENDED NEXT STEPS FOR IMPLEMENTATION

- Understand financial capabilities to implement projects and strategize ways to adapt projects into phases for implementation, where costs are too high for immediate and full completion.
- Implement quick build low-cost safety projects in the interim, where funding for permanent construction will have to be coupled with larger roadway reconstruction projects.
- Coordinate with ITD.

ENVIRONMENTAL CONSIDERATIONS

Initial screening found no projects would directly impact a National Register of Historic Places in Idaho location. All projects except Coffey St will likely encounter a USGS mapped wetland. The northern section of all projects (except Coffey Street) will likely encounter Special or Other Areas of Flood Hazard.

Executive Summary

HIGHWAY DISTRICT 4

Current Successes and Challenges

Successes

- Identifying opportunities for safety improvements during maintenance project development
- Flattening slopes to provide more recoverable space
- Installing roundabouts and all-way stop control

Challenges

- Obtaining necessary right-of-way for projects
- Navigating funding delays and processing requirements

Fatal and Serious Injury Crash History (2018-2022)

26

Fatal Crashes

108

Serious-Injury Crashes

2.2% involved non-motorized road users

25.4% involved someone impaired

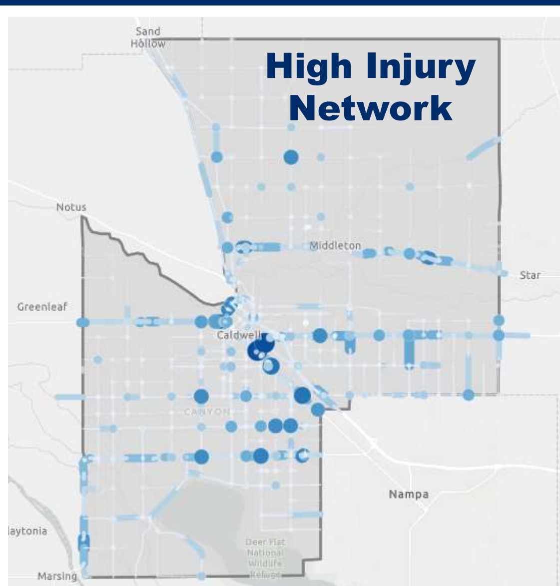
5.2% seatbelt or car seat not used

48.5% angle / turning crashes

25.4% overturn crashes

Priority Areas for Treatment

Sidewalk and Bike Facility Gaps (Especially Between New Development and Key Attractors, at the Borders of Caldwell and Middleton City Limits)



Rural Two-Way Stop Controlled Intersections

High-Speed, 2-Lane Rural Roads

COMPASS Regional Safety Action Plan

HD4 jurisdictional boundaries and crash statistics shown above do not include incorporated areas of City of Caldwell and City of Middleton

High Priority Infrastructure Strategies*

Rural 2-Way Stop Controlled Intersections

- Convert rural 2-way stop-controlled intersections to 4-way stops, with advance and enhanced signage.
- Convert rural 2-way stop-controlled intersections to roundabouts.

Horizontal Curves

- Install enhanced delineation at horizontal curves

Access Management

- Develop and implement access management plans on roadways with anticipated development

Rural Collector Roads

- Install "visually separated facilities" (i.e. paved shoulders, bike lanes).

Example High-Priority Location-Specific Strategies

Location**	Items to Address	Strategies
Galloway Rd / Emmett Rd	3 fatal / serious injury crashes, angle events	Convert to 4-way stop with advanced / enhanced signage or to a roundabout.
Farmway Rd / Ustick Rd	7 fatal / serious injury crashes, angle events	Continue moving forward with planned roundabout.
Old Hwy 30 / Galloway Rd	2 fatal / serious injury crashes, angle events	Convert to 4-way stop with advanced / enhanced signage or to a roundabout.

**See Tech Memo #4, Appendix E for a complete list of potential strategies*
*** The COMPASS RSAP focuses on identifying potential strategies for locally-owned roads. Projects on ITD highways in the High-Injury Network may not be included on this list.*

High Priority Non-Infrastructure Strategies

Engineering solutions are one part of a holistic approach to transportation safety. Other priority strategies for HD4 to consider are listed here and described further in the Countermeasures Toolbox

- Continue participating in COMPASS Safety Working Group
- Participate in regional forum on including safety in maintenance projects
- Create local task force to review fatal and serious injury crashes
- Clearly define safety as a priority in project development and prioritization
- Coordinate across jurisdictions on smaller projects to improve funding opportunities and contractor bidding
- Allow developments to implement safety improvements in lieu of capacity improvements.
- Establish dedicated funding for safety projects

COMPASS Regional Safety Action Plan

Intersection Improvements on Old Highway 30

SH-44 to Galloway Road

Old Highway 30 from SH-44 to Galloway Rd is a 3.1-mile portion of a two-lane, high-speed (55 mph posted speed) arterial running north-south, parallel to I-84, connecting rural communities throughout northern Canyon County. This project was identified based on input from Highway District No. 4, the review of historic crashes, and risk factors such as lack of stop-control along a high-speed rural road. The HD4 Mid-Star Service Area Capital Improvements Plan identifies Old Highway 30 to be widened to 4 lanes between SH-44 and Willis Rd.

PROJECT DESCRIPTION

This project will improve safety and reduce fatal and serious injury crashes through the following countermeasures:

Conversion from Two-Way Stop Control to Roundabout

Description: Install single-lane roundabouts at Galloway Rd, Purple Sage Rd, and Willis Rd. The roundabout centers will need to be shifted to the west to avoid a transmission power line that runs along the corridor. The roundabout installation will come with right-of-way, property, and drainage impacts. These roundabouts are all identified in the Mid-Star Service Area CIP.

Purpose: Roundabouts are highly effective at reducing fatal and serious injury crashes. Roundabouts lower vehicle speeds on the approach to an intersection and reduce conflict points compared to other intersection control types (such as stop or signalized).

Conversion from Two-Way Stop Control to Traffic Signal

Description: Install a new traffic signal at SH-44 with associated roadway widening / turn lanes. Pedestrian pads and APS infrastructure should be installed anticipating future sidewalk connections to the intersection. This traffic signal is identified in the HD4 Mid-Star Service Area CIP.

Purpose: Traffic signals can help reduce the frequency and severity of angle and turning crashes by providing clear, regulated traffic control for all road users.

Quick Build Opportunities

Description: Quick build opportunities include low-cost, interim improvements to reduce fatal and serious injury crashes prior to final implementation of the preferred treatment (roundabout). Conversion to All-Way Stop Control and / or applying multiple low-cost countermeasures are two quick build opportunities. The low-cost countermeasures could include advanced intersection warning or stop ahead signs (could include flashing beacons), retroflective sheeting on signposts, enhanced pavement markings, and removal of sight distance obstructions.

Purpose: Conversion to All-Way Stop Control reduces crashes by forcing all traffic entering the intersection to stop. Applying multiple low-cost countermeasures are a cost-effective way to increase driver awareness and recognition of the intersection.

CRASH HISTORY SUMMARY (2018-2022)

Old Highway 30 and Galloway Road:
- 2 Fatal and Serious Injury crashes
- 2 Angle

Old Highway 30 and Purple Sage Road:
- 0 KA Crashes

Old Highway 30 and Willis Road:
- 2 Fatal and Serious Injury crashes
- 2 Angle-Turning

Old Highway 30 and SH-44:
- 2 Fatal and Serious Injury crashes
- 2 Angle

RSAP RISK FACTORS (FOR FATAL & SERIOUS INJURY CRASHES)

- Rural Two-Way Stop-Controlled Intersections
- Skewed Intersections

RESPONSIBLE AGENCIES

- Highway District 4 (HD4)
- Idaho Transportation Department (ITD) – SH-44

EQUITY CONSIDERATIONS

- Equity Score (out of 12) – 5.0, Top 58th Percentile
- Area of Persistent Poverty – No
- Historically Disadvantaged Community – No

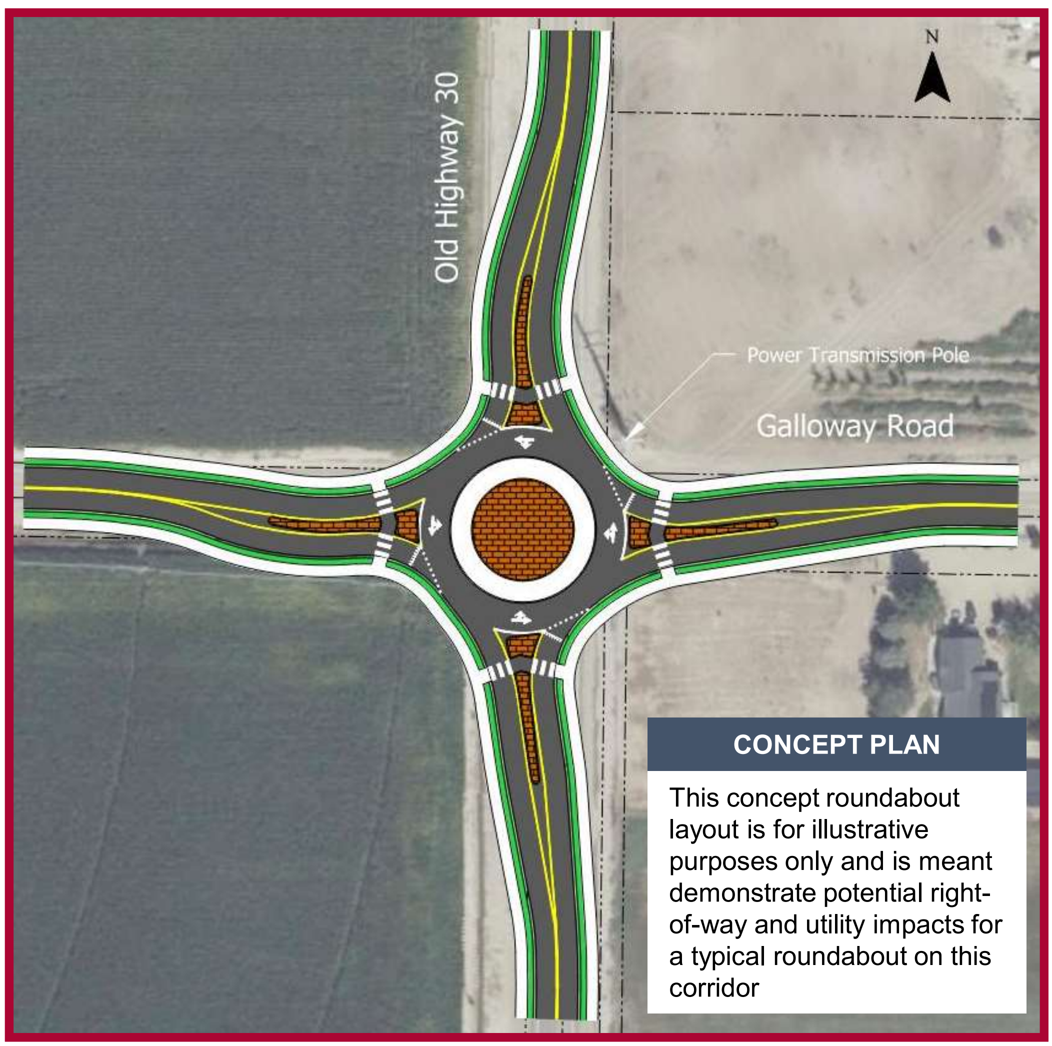
RECOMMENDED NEXT STEPS FOR IMPLEMENTATION

- Work with adjacent property owners to get early buy-in on potential right-of-way impacts.
- Work with local business owners and freight operators to ensure compatibility with all roadway users.
- Consider a before-after evaluation.
- **Quick-Build Opportunities**: Convert to All-Way Stop Control, Apply multiple low-cost countermeasures (i.e., oversized advanced intersection warning signs, enhanced pavement markings, etc.)
- **Floodplain:** No 100-yr floodplain or 500-yr floodplain
- **National Register of Historic Places:** No National Historic Places
- **Wetlands:** No wetlands

Intersection Improvements on Old Highway 30

SH-44 to Galloway Road

COUNTERMEASURE	COST ESTIMATE	CRASH MODIFICATION FACTOR
Roundabout, Galloway Rd	$2,500,000	0.18 – 0.22
Roundabout, Purple Sage Rd	$2,500,000	0.18 – 0.22
Roundabout, Willis Road	$3,000,000	0.18 – 0.22
Traffic Signal, SH-44	$1,500,000	0.56 (All) 0.33 (KA Angle) 1.58 (Rear End)
TOTAL COST (Includes 25% Contingency)	**$11,875,000**	



CONCEPT PLAN

This concept roundabout layout is for illustrative purposes only and is meant demonstrate potential right-of-way and utility impacts for a typical roundabout on this corridor

Executive Summary

KUNA

Current Successes and Challenges

Successes

- Good communication with partner organizations
- Kuna Crossing Feasibility and Implementation Plan
- Improving pedestrian crossings

Challenges

- Obtaining funding
- Keeping pace with growth
- Limited staff time and transportation safety expertise

Fatal and Serious Injury Crash History (2018-2022)

3
Fatal Crashes

19
Serious-Injury Crashes

18.2% involved non-motorized road users

18.1% involved someone impaired

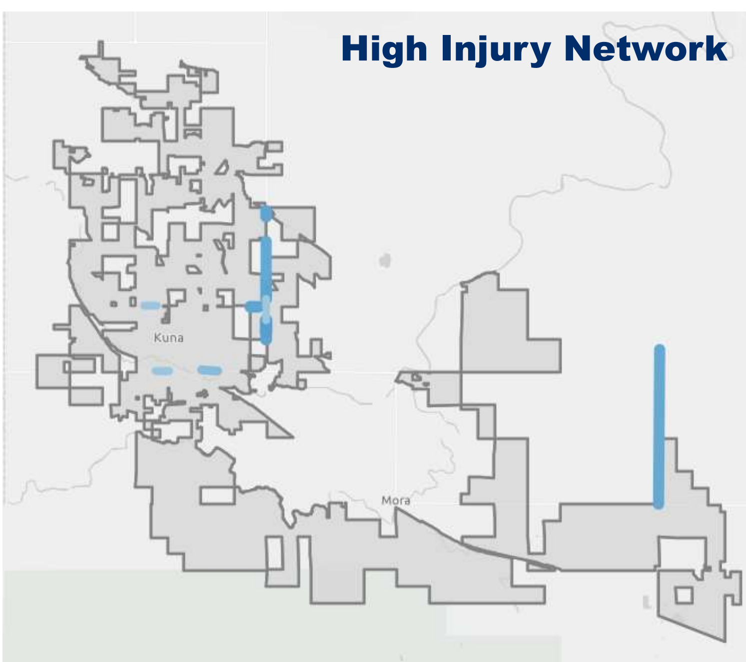
18.2% rear-end crashes

31.8% angle / turning crashes

27.2% Motorcycle crashes

Priority Areas for Treatment

Sidewalk and Bike Facility Gaps (Especially Between New Development and Key Attractors)



Signalized Intersections

High-Speed, Multi-Lane Arterials

COMPASS
Regional Safety Action Plan

High Priority Infrastructure Strategies*

Access Management	Vulnerable Road User Infrastructure	Speed Management	Signal Timing and Phasing Changes
• Develop and implement Access Management Plans on roadways with anticipated development	• Sidewalk/bike facility infill • Quick-build/temporary sidewalks • Enhanced crossings	• Speed management near pedestrian/bicycle attractors (e.g., schools)	• Convert permitted left-turn phasing to protected-only at signalized intersections. This could be done full-time, when pedestrian calls are placed, and/or during peak periods. • Leading Pedestrian Intervals

Example High-Priority Location-Specific Strategies

Location**	Items to Address	Strategies
SH-69 (Meridian Rd): Lake Hazel Rd to Kuna Rd	High fatal and serious injury crash rate at intersections with major roads and along segments	Develop and implement Access Management Plan; add protected bike lanes, or shared-use paths; Signal improvement package.
Swan Falls Rd: Avalon Ave to Sunbeam St	Key connection point of Indian Creek and railroad route – lacks pedestrian and bicycle facilities (1 fatal/serious injury involving a bicycle)	Construct sidewalks, protected bike lanes or a shared-use path, improve lighting, evaluate mid-block crossings.

**See Tech Memo #4, Appendix E for a complete list of potential strategies*
*** The COMPASS RSAP focuses on identifying potential strategies for locally-owned roads. Projects on ITD highways in the High-Injury Network may not be included on this list.*

High Priority Non-Infrastructure Strategies

Engineering solutions are one part of a holistic approach to transportation safety. Other priority strategies for Kuna to consider are here and described further in the Countermeasures Toolbox

- Continue participating in COMPASS safety working group
- Make safety a priority in ACHD Integrated Five-Year Work Plan request methodology
- High-visibility safety education campaigns – including DUI education and enforcement
- Road safety audits
- Work with transportation partner agencies to regularly review fatal and serious injury crash locations and causes

COMPASS Regional Safety Action Plan

Bicycle and Pedestrian Improvements

Systemic Applications in Kuna

The City of Kuna is one of the fastest growing communities in the Treasure Valley. The City of Kuna prioritized this project due to the number of non-motorized crashes, the presence of high-risk factors, a lack of dedicated infrastructure, and disconnected development patterns. Project prioritization guidance was taken from the Kuna Bicycle and Pedestrian Plan.

NON-MOTORIZED CRASH HISTORY SUMMARY (2018-2022)

Fatal Crashes: **0**
Serious Injury Crashes: **4**
Other Injury Crashes: **12**

69% of Injury Crashes at Intersections

Most Common Crash Types:

- Pedestrian: **8**
- Bicycle: **8**

21% of Injury Crashes on Roadway Segments

RSAP RISK FACTORS

- High Posted Speed (40 mph)

ADDITIONAL ROADWAY SAFETY CONCERNS

- Distraction and Impairment
- Bicycle and pedestrian infrastructure gaps, especially on high speed/volume roads

RESPONSIBLE AGENCIES

- City of Kuna
- Ada County Highway District

PROJECT DESCRIPTION

This project will reduce the potential for fatal and serious injury crashes through the following countermeasures:

SIDEWALKS

Description: Adds sidewalks to areas where there is currently none. Areas may have some sidewalks along a corridor and just need to fill in gaps, or the entire corridor may be lacking any pedestrian infrastructure at all. Where right-of-way allows, sidewalks may be buffered to increase separation from motor vehicles.

Purpose: Eliminates conflicts between pedestrians and vehicles along roadways.

BICYCLE FACILITIES

Description: Protected bike lanes with complete separation from vehicle travel lanes. A near-term solution could include reallocation of the existing road cross-section (e.g., narrowing vehicle-travel lanes to provide bike lane buffer space) or providing parallel routes.

Purpose: Protected bike facilities reduce conflicts between vehicles and people biking along the road.

SHARED-USE FACILITIES

Description: Multi-use pathways with complete separation from vehicle travel lanes. An interim solution could include expanding and protecting a roadway shoulder.

Purpose: Shared use facilities eliminates conflicts between vehicles and people walking/biking along the roadway.

CROSSINGS

Description: Combination of treatments, including vertical streetscape elements (e.g., raised crosswalk), horizontal elements (e.g. curb bulb outs, protected intersection elements), visibility improvements (e.g. striping high visibility crosswalks, adding RRFBs or PHBs, improved signage).

Purpose: Reduce vehicle speeds and improve visibility of people crossing the street.

Factors Used to Prioritize Improvement Areas

Crash History
The presence of fatal or serious injury pedestrian and bicycle crashes may indicate that these types of crashes may continue to occur at these locations if a countermeasure is not installed.

Roadway Characteristics
High-speed, high-volume roadways are associated with higher incidences of fatal and serious injury pedestrian and bicycle crashes. Greater volumes present more exposure to crash risk and higher speeds increase the severity of crashes.

Equity
Historically marginalized communities may see greater roadway safety risks due to a lack of previous investment in their community. Additionally, lower income communities often see higher rates of walking and biking, increasing their exposure to these types of crashes.

Proximity to Schools
Children are a particularly vulnerable group of road users and schools are often top generators of walking and biking activity.

Overlap with Kuna Bicycle and Pedestrian Plan
This project prioritized non-motorized transportation projects. Projects identified in this plan were re-evaluated with additional considerations in this study.

ACHD CIP and Integrated Five Year Work Plan
This study reviewed ACHD's plans to avoid project duplication or find opportunities to advance ACHD timelines.

Kuna Priority Projects

Priority Intersections   Priority Segments   Kuna City Limits

COMPASS Regional Safety Action Plan

0   0.25   0.5 Miles

Nov 2024

Bicycle and Pedestrian Improvements

Systemic Applications in Kuna

Project Number / Location	Compass Equity Score	AOP*	HDC*	Quick Build Options	Cost Estimate	Crash Modification Factor
1 – Kay Avenue (Trophy St to Limestone Street)	~3	No	No	Extend asphalt shoulder and add protective buffer to serve as temporary sidewalk	$994,000	0.60
2 - Kay Avenue (Deer Flat Road to Avalon Street)	~2	No	No	Add protection with temporary installations (I.e. flexposts, bike lane bollards, planters, etc.)	$3,843,000	0.43 – 0.70
3 - Ten Mile Road and Sego Prairie Street	~4	No	No	High visibility crosswalk striping, in-street signs, enhanced school zone signage	$350,000	NA
4 - 4th Street (N Avenue E to N Avenue A)	~8	No	No	NA	$203,000	0.60
5 - Main Street (N Avenue E to Bridge Avenue)	~8	No	No	NA	$58,000	0.60
6 - N Avenue A (2nd Street to Avenue A)	NA*	No	No	NA	$281,000	0.60
7 - Avalon Street and Bridge Street (Ten Mile Road to Main Street)	~6	No	No	Extend asphalt shoulders and add protective buffer to serve as temporary sidewalks	$1,089,000	0.60, 0.30
8 – Swan Falls Road (Avalon Street to King Road)	~5	No	No	Extend asphalt shoulders and add protective buffer to serve as temporary sidewalks or shared-use paths.	Further Study Required	Further Study Required
9 – Avalon Street (2nd Street and Kay Avenue)	~3	No	No	Extend asphalt shoulder and add protective buffer to serve as temporary sidewalk on south side.	$750,000	0.60
10 – Orchard Avenue (E 4th Street and Avalon Street)	NA	No	No	NA	$607,000	0.60
TOTAL COST					**$8,175,000**	

**AOP = Area of Persistent Poverty: https://usdot.maps.arcgis.com/apps/dashboards/75febe4d9e6345ddb2c3ab42a4aae85f*
**HDC = Historically Disadvantaged Community: https://usdot.maps.arcgis.com/apps/dashboards/75febe4d9e6345ddb2c3ab42a4aae85f*
**NA = Compass has not analyzed this corridor. Their analysis does not cover most local roads.*

RECOMMENDED NEXT STEPS FOR IMPLEMENTATION

- Understand financial capabilities to implement projects and strategize ways to adapt projects into phases for implementation where costs are too high for immediate and full completion.
- Use low-cost quick build opportunities to shorten implementation timelines/meet tight budgets, prioritizing quick builds that can function in the long-term.
- Consider alternative opportunities to partner with agencies on larger, more costly roadway re-imaginings.

ENVIRONMENTAL CONSIDERATIONS

Initial screening found that no projects would directly impact a USGS mapped wetland or National Register of Historic Places in Idaho location. Projects approaching Indian Creek (7,8) fall under a FEMA Special Flood Hazard Area, but other areas of the city are not FEMA identified as Hazard Areas.

Executive Summary

MERIDIAN

Current Successes and Challenges

Successes

- Interagency collaboration (e.g., Pedestrian and Intersection Safety Task Force report)
- Leadership support for improving safety, especially for people walking and at high-speed intersections
- Continuing to expand pathway system

Challenges

- Lack of local roadway control - differing priorities between City and road agencies (including differing priorities among internal parties).
- Maintaining sidewalk / bike network connectivity between tracts of new development
- Educating residents on newer features, including roundabouts

Fatal and Serious Injury Crash History (2018-2022)

18
Fatal Crashes

259
Serious-Injury Crashes

9.4% involved non-motorized road users

14.4% involved someone impaired

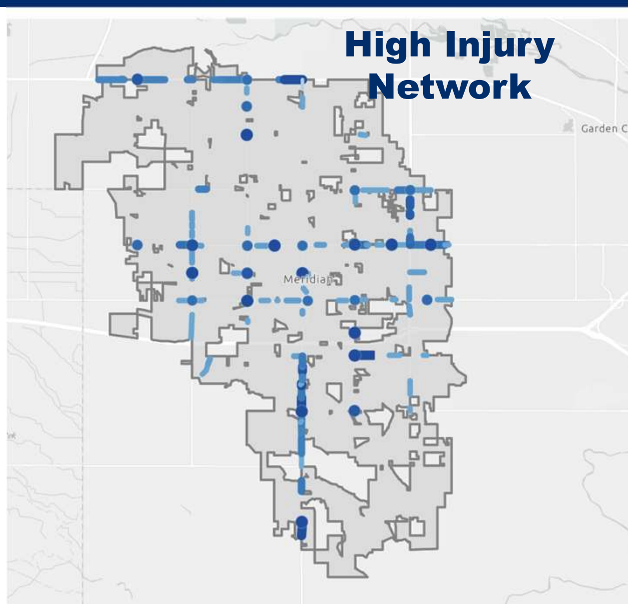
31.4% rear-end crashes

39.6% angle / turning crashes

11.6% Motorcycle crashes

Priority Areas for Treatments

Sidewalk and Bike Facility Gaps (Especially Between New Development and Key Attractors)



Signalized Intersections (Focus on Multi-Lane Arterials)

High-Speed, Multi-Lane Arterials

COMPASS Regional Safety Action Plan

High Priority Infrastructure Strategies*

Access Management

- Focus on 4/5-Lane arterials with high scores in HIN

Vulnerable Road User Infrastructure

- Low-stress bike network
- Mid-block crossings on arterials
- Sidewalk infill

Speed Management

- Identify areas to implement and prioritize speed management

Signal Timing and Phasing Changes

- Convert permitted left-turn phasing to protected-only at signalized intersections. This could be done full-time, when pedestrian calls are placed, and/or during peak periods.
- Leading Pedestrian Intervals

Example High-Priority Location-Specific Strategies

Location**	Items to Address	Strategies
Fairview Ave/Cherry Ln: Curtis Rd to Black Cat Rd	High KA along corridor and intersections, angle related crashes	Access management, protected bike lanes, signal improvement package
Overland Rd: SH-55 to SH-69	High KA crashes, high access density, lack of protected bike lanes	Access management, protected bike lanes, signal improvement package

**See Tech Memo #4, Appendix E for a complete list of potential strategies*
*** The COMPASS RSAP focuses on identifying potential strategies for locally-owned roads. Projects on ITD highways in the High-Injury Network may not be included on this list.*

High Priority Non-Infrastructure Strategies

Engineering solutions are one part of a holistic approach to transportation safety. Other priority strategies for Meridian to consider are listed here and described further in the Countermeasures Toolbox

- Continue participating in COMPASS Safety Working Group
- Coordinate with ACHD to prioritize safety in prioritizing and developing projects
- Work with transportation partner agencies to regularly review fatal and serious injury crash locations and causes
- Continue collaboration with EMS providers
- High visibility safety education campaigns

Overland Road

Meridian Road (SH-69) to Eagle Road

Overland Road from Meridian Rd (SH-69) to Eagle Rd is a two-mile portion of a multi-lane arterial in Meridian. This project was identified based on input from the City of Meridian and the number of historic crashes and presence of high-risk factors, particularly high speed and access density. Overland Road runs parallel to I-84, connects Meridian to City of Boise, and provides direct access to adjacent land-uses, including industrial, commercial, and residential development, as well as Mountain View High School via Millennium Way.

CRASH HISTORY SUMMARY (2018-2022)

Fatal Crashes: **0**
Serious Injury Crashes: **22**
Non-motorized Crashes: **1**
Most Common Crash Types:

- Head-On Turning: **9**
- Angle/Turning: **6**
- Rear-End: **5**

50% of Crashes on Roadway Segments

50% of Crashes at Intersections

RSAP RISK FACTORS (FOR FATAL & SERIOUS INJURY CRASHES)

- Multi-Lane Arterial (5+ Lanes)
- High Posted Speed (40 mph)
- Principal Arterial
- 4-Leg Signalized Intersections

ADDITIONAL ROADWAY SAFETY CONCERNS

- High Access Density
- Lack of Protected Bike Facilities

RESPONSIBLE AGENCIES

- City of Meridian
- Ada County Highway District (ACHD)
- Idaho Transportation Department (ITD) (intersection with Meridian Rd)

EQUITY CONSIDERATIONS

- Equity Score (out of 12) – 2.0, Bottom 50th Percentile
- Area of Persistent Poverty – No
- Historically Disadvantaged Community - No

PROJECT DESCRIPTION

This project will reduce serious injury crashes and the chance for fatal injury crashes through the following countermeasures:

ACCESS MANAGEMENT

Description: Consolidate existing accesses, strategically plan for future access locations, and remove or reduce conflicts at accesses by restricting movements to right-in/right-out or right-in/right-out/left-in only. These strategies can be implemented using raised medians, cross over easements between properties, or temporary materials (i.e., extruded curbs or bollards).

Purpose: Eliminates conflicts between turning and through vehicles and between turning traffic and people walking and biking.

ENHANCED BICYCLE/PEDESTRIAN FACILITIES

Description: Multi-use pathways or protected (buffered) bike lanes with complete separation from vehicle travel lanes along both sides of the entire corridor, and bike treatments at intersections and accesses (e.g., bike boxes and ladders). An interim solution could include installation of temporary vertical separation elements such as plastic bollards or asphalt curb. Enhanced pedestrian crossings, such as PHBs and RRFBs with pedestrian refuge islands (when coupled with speed reduction), should also be considered to improve connectivity and safety.

Purpose: Separated bike facilities reduce conflicts between vehicles and people biking along the road. Enhanced pedestrian crossings make crossers more visible to drivers and also consolidate crossings.

SPEED MANAGEMENT

Description: Combination of treatments, including vertical streetscape elements (e.g., raised medians, trees in landscape buffer or median), narrowed vehicle lanes, lower posted speeds, enforcement, dynamic speed-feedback signs, protected intersection elements, and coordinated signal timing for lower speeds. These changes must be applied at a corridor level to be effective.

Purpose: Reduce vehicle speeds to reduce severity of all crash types.

SIGNALIZED INTERSECTION TREATMENTS

Protected Left-Turn Phasing
Evaluate converting left-turn phasing from protected/permitted to protected-only to eliminate conflicts between left-turning vehicle and through-traffic or between turning vehicles and people walking and biking.

Ensure Sufficient Yellow & All-Red Times
Confirm that yellow and all-red times are reflective of vehicle speeds and crossing distances through intersection to reduce likelihood of rear-end and red-light running related crashes.

Leading Pedestrian Interval (LPI)
Incorporate LPI to increase visibility of people crossing by allowing them to enter the crosswalk in advance of turning vehicles (note that this may require corresponding ADA improvements).

Install Retroreflective Backplates
Increase awareness of upcoming signal to reduce rear-end crashes.

Add or Enhance Tracking Lines/Striping
Provide drivers with clear lane delineation during turning movements.

Overland Road

Meridian Road (SH-69) to Eagle Road

COUNTERMEASURE		COST ESTIMATE	CRASH MODIFICATION FACTOR
Access Management (Raised Median OR Temporary Bollards)	Private Driveway for Evaluation in Access Management Plan Public Road for Evaluation in Access Management Plan Signal (Maintain)	$3,100,000	0.53 – 0.81
Separated Bike Lane/Multi-Use Pathway OR Temporary Protected Bike Lane		$10,800,000	0.43 – 0.73
Speed Management	*corridor-level improvements*	NA	NA
Signalized Intersection Treatments (Includes Yellow/All-Red Timing, LPI, Retroflective Backplates, & Prot. Left-Turn Phasing)		$3,000,000	0.52 – 0.87
Enhanced Pedestrian Crossings (Potential Locations, Further Study Required)		$1,300,000	0.30 – 0.88
TOTAL COST (Includes 25% Contingency)*		**$21,700,000**	

*Although a portion may be covered in the contingency, this cost estimate does not explicitly include right-of-way acquisition quantities or cost.

RECOMMENDED NEXT STEPS FOR IMPLEMENTATION

- Work with adjacent property owners and the public to develop an access management plan including near-term and long-term actions. Develop plan for future access approval and spacing.
- Consider corridor study to develop vision for corridor and allow opportunity for engagement with the community and all users of the corridor. Freight use should be taken into account with corridor plan.
- Consider coordination with City of Boise to develop similar projects along Overland Road corridor.
- **Potential Quick-Build Opportunities**: Consider a reduced speed limit, protected bike lanes using temporary materials, signal timing and phasing adjustments, access management using temporary materials.

ENVIRONMENTAL SCAN

- **Floodplain:** No 100-yr floodplain or 500-yr floodplain
- **National Register of Historic Places:** No National Historic Places
- **Wetlands:** Four (4) linear wetlands have existing crossings under Overland Blvd (Ten Mile Creek, Hunter Lateral, and two unnamed wetlands)

Executive Summary

MIDDLETON

Current Successes and Challenges

Successes

- Improving crosswalks
- Obtaining strategic police patrol grant funding

Challenges

- Pathway connectivity
- Securing funding
- Trying to keep pace with growth

Fatal and Serious Injury Crash History (2018-2022)

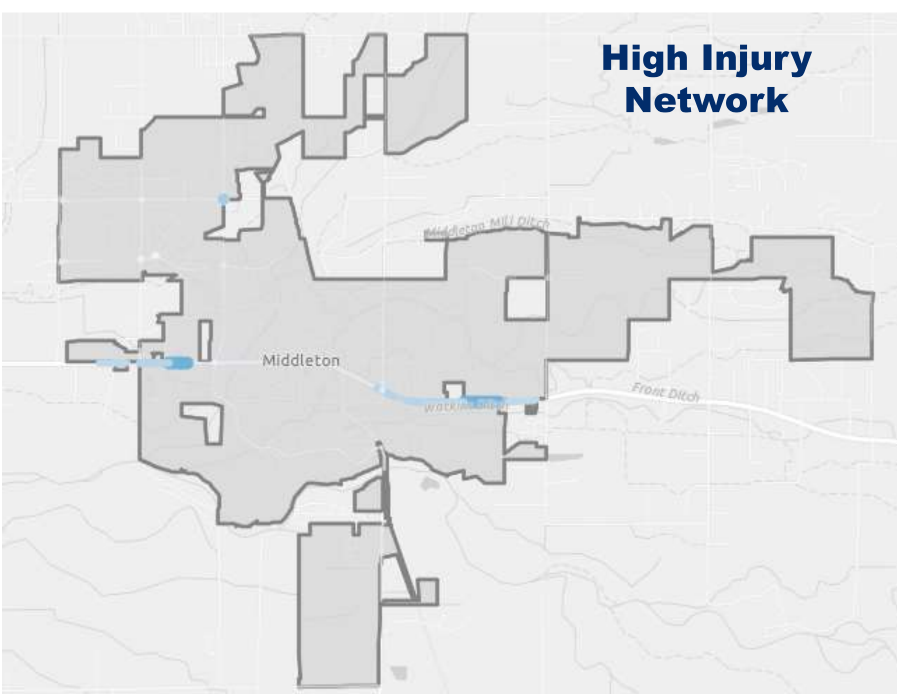
0

Fatal Crashes

1

Serious-Injury Crash (Willis Road & Cemetery Road)

Priority Areas for Treatment



Lack of Bicycle Facilities on High-Speed, High-Volume Roads

Gaps in Sidewalks Near Schools, Parks, etc.

Regional Highway Bisecting City Center

COMPASS Regional Safety Action Plan

High Priority Infrastructure Strategies*

Vulnerable Road User Infrastructure	Speed Management	Enhanced Pedestrian Crossings
• Perform a connectivity analysis to identify gaps in the walking and biking network not anticipated to be filled by a development. • Fill-in gaps in the walking and biking network with appropriate infrastructure (e.g., sidewalks, protected bike lanes, shared-use paths, enhanced crossings).	• Speed management near pedestrian/bicycle attractors (e.g., schools, parks, health care facilities)	• Install or enhance pedestrian crossings in proximity of attractors (e.g., schools, parks, health care facilities)

Example High-Priority Location-Specific Strategies

Location**	Items to Address	Strategies
Willis Rd / Cemetery Rd	Two-way stop control, one fatal / serious injury crash, angle event	Convert two-way stop control to roundabout
SH-44 (Main St): Hartley Ln / S Dewey Ave	Highway as Main Street	Fill sidewalk gaps along SH-44 and add protected bike facilities. Provide median-enhanced crosswalks. Add speed feedback signs, reduce speed limit

**See Tech Memo #4, Appendix E for a complete list of potential strategies*
*** The COMPASS RSAP focuses on identifying potential strategies for locally-owned roads. Projects on ITD highways in the High-Injury Network may not be included on this list.*

High Priority Non-Infrastructure Strategies

Engineering solutions are one part of a holistic approach to transportation safety. Other priority strategies for Middleton to consider are listed here and described further in the Countermeasures Toolbox

- Continue participating in COMPASS Safety Working Group
- Road safety audits
- Improve safety in maintenance and CIP development
- High visibility safety education campaigns
- Allow safety improvements in lieu of capacity improvements in the development approval process
- Establish dedicated funds for safety projects
- Coordinate across jurisdictions on smaller projects to improve funding

COMPASS Regional Safety Action Plan

Pedestrian Improvements

Systemic Applications in Middleton

Middleton's disconnected development patterns has created an incomplete walking and biking network with roads adjacent to new development being upgraded to urban standards while historical developments/areas with no development may still not have dedicated facilities for people walking and biking. SH-44 divides the city and is currently being studied for future projects. Guidance for project prioritization was taken from the Middleton Transportation Plan.

NON-MOTORIZED INJURY CRASH HISTORY SUMMARY (2018-2022)

Fatal Crashes: **0**
Serious Injury Crashes: **0**
Other Injury Crashes: **2***

100% of Injury Crashes at Intersections

Most Common Crash Types:

- Pedestrian: **0**
- Bicycle: **2***

RSAP RISK FACTORS

- Multi-Lane Arterial (5+ Lanes)
- High Posted Speed (40 mph)

ADDITIONAL ROADWAY SAFETY CONCERNS

- Distraction
- Bicycle and pedestrian infrastructure gaps, especially on high speed/volume roads

RESPONSIBLE AGENCIES

- City of Middleton

**Bicycle involved crashes occurred along SH-44 (an ITD) facility. For the purposes of this project, SH-44 was not looked at for improvements to avoid overlap with an ongoing ITD study.*

PROJECT DESCRIPTION

This project will reduce the potential for fatal and serious injury crashes through the following countermeasures:

SIDEWALKS

Description: Adds sidewalks to areas where there is currently none. Areas may have some sidewalks along a corridor and just need to fill in gaps, or the entire corridor may be lacking any pedestrian infrastructure at all. Where right-of-way allows, sidewalks may be buffered to increase separation from motor vehicles.

Purpose: Reduces conflicts between pedestrians and vehicles along roadways.

CROSSINGS

Description: Combination of treatments, including vertical streetscape elements (e.g., raised crosswalk), horizontal elements (e.g. curb bulb outs, protected intersection elements), and/or visibility improvements (e.g. striping high visibility crosswalks, adding RRFBs or PHBs, improved signage).

Purpose: Reduce vehicle speeds and improve visibility of people crossing the street.

Factors Used to Prioritize Improvement Areas

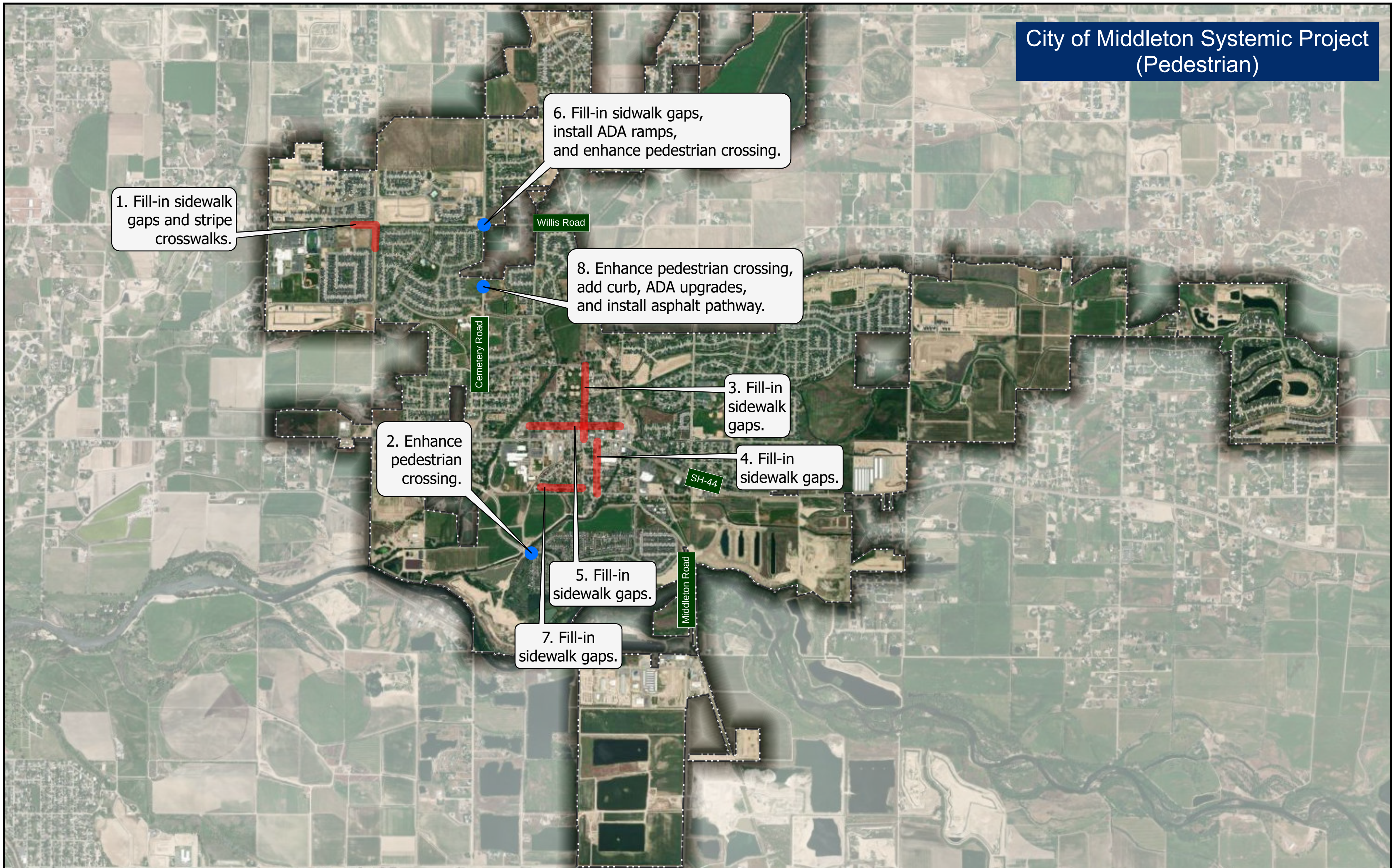
Crash History
The presence of fatal or serious injury pedestrian crashes may indicate that these types of crashes may continue to occur at these locations if a countermeasure is not installed.

Roadway Characteristics
High-speed, high-volume roadways are associated with higher incidences of fatal and serious injury pedestrian crashes. Greater volumes present more exposure to crash risk and higher speeds increase the severity of crashes.

Equity
Historically marginalized communities may see greater roadway safety risks due to a lack of previous investment in their community. Additionally, lower income communities often see higher rates of walking, increasing their exposure to these types of crashes.

Proximity and Connectivity to Activity Centers/Schools
Activity center s regularly draw community members, many of whom will choose to walk to them because of their close proximity. Children are a particularly vulnerable group of road users and schools are often top generators of walking activity.

Overlap with Middleton Transportation Plan and Mid-Star CIP
Plans were reviewed to assist in the prioritization of projects and locations.



Middleton Priority Projects

Priority Intersections
Priority Segments
Middleton City Limits

0 0.5 1 Miles

COMPASS Regional Safety Action Plan

Nov 2024

Pedestrian Improvements

Systemic Applications in Middleton

Project Number / Location	Compass Equity Score	AOP*	HDC*	Quick Build Options	Cost Estimate	Crash Modification Factor
1 – Willis Road (Edzell Avenue to Hartley Lane) and Hartley Lane (Development to Willis Road)	~4	No	No	Asphalt pathway instead of sidewalk	$216,000	0.60
2 – S Cemetery Road and Hebgon Lake Avenue	~3	No	No	Striping and signage	$237,000	0.30
3 – Hawthorne Drive (Main Street to Concord Street)	NA	No	No	NA	$249,000	0.60
4 – Paradise Avenue (1st Street to Boise Street)	NA	No	No	NA	$197,000	0.60
5 – 1st Street (4th Avenue to Dewey Ave)	NA	No	No	NA	$393,000	0.60
6 – Willis Road and Cemetery Road	~6	No	No	NA	$106,000	0.60
7 – Donna Drive (Barabara Drive to Hawthorne Drive)	NA	No	No	NA	$94,000	0.60
8 – Cemetery Road	NA	No	No	Add warning signage ahead of crossing location.	$491,000	NA[1]
				TOTAL COST	**$1,983,000**	

**AOP = Area of Persistent Poverty: https://usdot.maps.arcgis.com/apps/dashboards/75febe4d9e6345ddb2c3ab42a4aae85f*
**HDC = Historically Disadvantaged Community: https://usdot.maps.arcgis.com/apps/dashboards/75febe4d9e6345ddb2c3ab42a4aae85f*
[1] = A definitive CMF was not available for the proposed project

RECOMMENDED NEXT STEPS FOR IMPLEMENTATION

- Understand financial capabilities to implement projects and strategize ways to adapt projects into phases for implementation, where costs are too high for immediate and full completion.
- Implement quick build low-cost safety projects in the interim, where funding for permanent construction will have to be coupled with larger roadway reconstruction projects
- Consider opportunities to partner with agencies (ITD) on SH-44 projects.

ENVIRONMENTAL CONSIDERATIONS

Initial screening found project 2 would impact a USGS mapped freshwater emergent wetland (PEM1C). No project will impact a National Register of Historic Places in Idaho location. Projects 2 and 5 fall under a FEMA Special Flood Hazard Area designation.

Executive Summary

NAMPA

Current Successes and Challenges

Successes

- Roundabouts are increasingly common
- Signal timing strategies (e.g., leading pedestrian intervals, separating left-turns from pedestrian crossings)
- Installing four-way stops and lighting

Challenges

- Community often favors motor vehicle travel time over safety
- Red light running, crashes involving left-turning vehicles, access management
- Funding

Fatal and Serious Injury Crash History (2018-2022)

21

Fatal Crashes

303

Serious-Injury Crashes

11.4% involved non-motorized road users

14.8% involved someone impaired

17.6% rear-end crashes

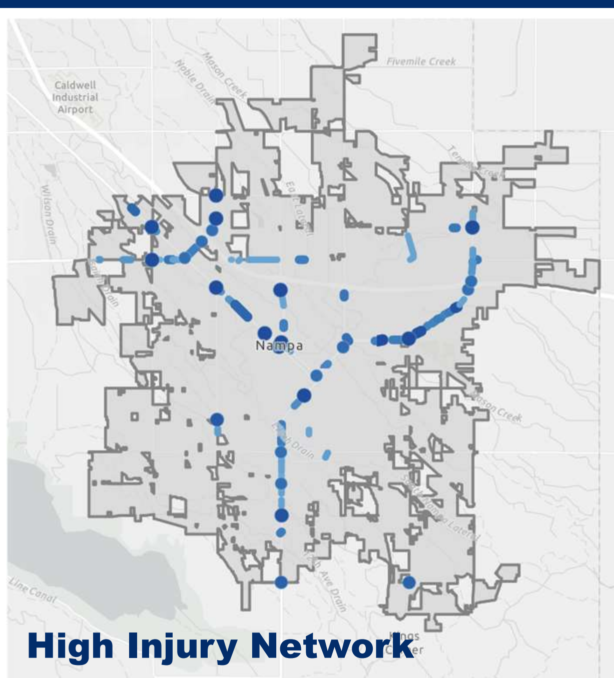
45% angle / turning crashes

12.9% Motorcycle crashes

Priority Areas for Treatment

Signalized Intersections (Focus on Multi-Lane Arterials)

Sidewalk and Bike Facility Gaps (Especially Between Residential Development and Key Attractors)



High Injury Network

High-Speed, Multi-Lane Arterials (Focus on High-Volume Roads near Interchanges)

Stop-Controlled Intersections With High-Volumes

COMPASS Regional Safety Action Plan

High Priority Infrastructure Strategies*

Access Management

- Focus on 4/5-Lane arterials with high scores in HIN

Vulnerable Road User Infrastructure

- Sidewalk/bike facility infill
- Protected bike facilities on 4/5 lane arterials
- Enhanced crossings

Speed Management

- Identify areas to prioritize speed management
- Consider areas near pedestrian/bicycle attractors (e.g., schools) and on HIN

Intersection Improvements

- Convert stop-controlled intersections to roundabouts (all-way stop controlled can be interim treatment)
- Convert permitted left-turn phasing to protected-only at signalized intersections. This could be done full-time, when pedestrian calls are placed, and/or during peak periods.

Example High-Priority Location-Specific Strategies

Location**	Items to Address	Strategies
I-84-BUS (Garrity Blvd): 11th Ave to Flamingo Ave	30 fatal / serious injury crashes (rear end, angle events), mixed industrial with residential access	Access management, speed management, signalized intersection improvements
Northside Blvd: 6th St to Rail Road	12 fatal / serious injury crash rate, 5 non-motorized	Fill sidewalk gaps, pedestrian crossings, protected bike lanes, signalized intersection improvements
Idaho Center Blvd: Cherry Ln to I-84	13 fatal / serious injury crashes, wide multi-laned road, head-on	Signalized intersection improvements, access management, speed management

**See Tech Memo #4, Appendix E for a complete list of potential strategies*
*** The COMPASS RSAP focuses on identifying potential strategies for locally-owned roads. Projects on ITD highways in the High-Injury Network may not be included on this list.*

High Priority Non-Infrastructure Strategies

Engineering solutions are one part of a holistic approach to transportation safety. Other priority strategies for Nampa to consider are listed here and described further in the Countermeasures Toolbox

- Continue participating in COMPASS Safety Working Group
- Continue completing road safety audits
- Improve safety in maintenance and CIP development
- High visibility safety education campaigns
- Allow safety improvements in lieu of capacity improvements in the development approval process
- Develop speed management policy and program for collector and arterial streets.

COMPASS Regional Safety Action Plan

Garrity Boulevard (I-84 Business)

Stampede Drive to Sister Catherine Way

Garrity Boulevard (I-84B) from Stampede Drive to Sister Catherine Way is a 1.5-mile multi-lane, principal arterial segment in Nampa. This project was identified based on input from the City of Nampa, the amount of historic crashes, presence of risk factors, particularly high speed and access density, and equity considerations. Garrity Boulevard connects motor vehicle traffic between downtown Nampa and I-84, and provides direct access to adjacent land-uses, including industrial, commercial, and residential development.

CRASH HISTORY SUMMARY (2018-2022)

Fatal Crashes: **1**
Serious Injury Crashes: **17**

30% of Crashes on Roadway Segments

70% of Crashes at Intersections

Most Common Crash Types:

- Rear-End: **7**
- Angle/ Angle Turning: **3**
- Pedestrian: **3**

RSAP RISK FACTORS (FOR FATAL & SERIOUS INJURY CRASHES)

- Multi-Lane U.S. Highway (5+ Lanes)
- High Posted Speed (45 mph)
- Principal Arterial
- 4-Leg Signalized Intersections

ADDITIONAL ROADWAY SAFETY CONCERNS

- High Access Density
- Lack of Protected Bike Facilities

RESPONSIBLE AGENCIES

- City of Nampa
- Idaho Transportation Department (ITD)

EQUITY CONSIDERATIONS

- Equity Score (out of 12) – 8.0, Top 10th Percentile
- Area of Persistent Poverty – Yes
- Historically Disadvantaged Community – Yes

PROJECT DESCRIPTION

This project will reduce fatal and serious injury crashes through the following countermeasures:

ACCESS MANAGEMENT

Description: Consolidate existing accesses, strategically plan for future access locations, and remove or reduce conflicts at accesses by restricting movements to right-in/right-out or right-in/right-out/left-in only. These strategies can be implemented using raised medians, cross over easements between properties, or temporary materials (i.e., extruded curbs or bollards).

Purpose: Eliminates conflicts between turning and through vehicles and between turning traffic and people walking and biking.

ENHANCED BICYCLE/PEDESTRIAN FACILITIES

Description: Multi-use pathways or protected (buffered) bike lanes with complete separation from vehicle travel lanes along both sides of the entire corridor as identified in the 2020 Bike and Pedestrian Master Plan, and bike treatments at intersections and accesses (e.g., bike boxes and ladders). An interim solution could include re-allocation of the existing cross-section (e.g., narrowing vehicle-travel lanes to provide bike lane buffer space), however this may not be feasible along the entire corridor due to existing roadway widths. Enhanced pedestrian crossings, such as PHBs and RRFBs (when coupled with speed reduction), should also be considered to improve connectivity and safety.

Purpose: Separated bike facilities reduce conflicts between vehicles and people biking along the road. Enhanced pedestrian crossings make crossers more visible to drivers and also consolidate crossings.

SPEED MANAGEMENT

Description: Combination of treatments, including vertical streetscape elements (e.g., raised medians, trees in landscape buffer or median), narrowed vehicle lanes, lower posted speeds, enforcement, dynamic speed-feedback signs, and protected intersection elements for lower speeds. These changes must be applied at a corridor level to be effective.

Purpose: Reduce vehicle speeds to reduce severity of all crash types.

SIGNALIZED INTERSECTION TREATMENTS

Protected Left-Turn Phasing
Convert left-turn phasing to protected-only to eliminate conflicts between left-turning vehicle and through-traffic or between turning vehicles and people walking and biking.

Ensure Sufficient Yellow & All-Red Times
Confirm that yellow and all-red times are reflective of vehicle speeds and crossing distances through intersection to reduce likelihood of rear-end and red-light running related crashes.

Leading Pedestrian Interval (LPI)
Incorporate LPI to increase visibility of people crossing by allowing them to enter the crosswalk in advance of turning vehicles (note that this may require corresponding ADA improvements).

Install Retroreflective Backplates
Increase awareness of upcoming signal to reduce rear-end crashes.

Add or Enhance Tracking Lines/Striping
Provide drivers with clear lane delineation during turning movements.

Garrity Boulevard (I-84 Business)

Stampede Drive to N Sister Catherine Way

COUNTERMEASURE		COST ESTIMATE	CRASH MODIFICATION FACTOR
Access Management (Raised Median OR Temporary Bollards)	Private Driveway for Evaluation in Access Management Plan Public Road for Evaluation in Access Management Plan Signal (Maintain)	$2,300,000	0.53 – 0.81
Separated Bike Lane/Multi-Use Pathway OR Temporary Protected Bike Lane		$8,100,000	0.43 – 0.73
Speed Management	*corridor-level improvements*	NA	NA
Signalized Intersection Treatments (Includes Yellow/All-Red Timing, LPI, Retroflective Backplates, & Prot. Left-Turn Phasing)		$1,500,000	0.52 – 0.87
Enhanced Pedestrian Crossings (Potential Locations, Further Study Required)		$1,000,000	0.30 – 0.88
TOTAL COST (Includes 25% Contingency)		**$15,500,000**	

*Although a portion may be covered in the contingency, this cost estimate does not explicitly include right-of-way acquisition quantities or cost.

RECOMMENDED NEXT STEPS FOR IMPLEMENTATION

- Work with adjacent property owners and the public to develop an access management plan including near-term and long-term actions. Develop plan for future access approval and spacing.
- Consider corridor study to develop vision for corridor and allow opportunity for engagement with community members.
- **Quick-Build Opportunities**: Consider a reduced speed limit, protected bike lanes using temporary materials, signal timing and phasing adjustments, access management using temporary materials.

ENVIRONMENTAL SCAN

- **Floodplain:** No 100-yr floodplain (500-yr encroaches at Garrity / Sugar)
- **National Register of Historic Places:** No National Historic Places
- **Wetlands:** Dewey lateral crosses under Garrity at Sister Catherine

Executive Summary

STAR

Current Successes and Challenges

Successes

- Star Riverwalk
- Pathway Masterplan

Challenges

- Obtaining funding
- Trying to keep pace with growth
- Lack of local roadway control (sometimes differing priorities between City and road agencies)

Fatal and Serious Injury Crash History (2018-2022)

1

Fatal Crash

14

Serious-Injury Crashes

40% motorcycle crashes

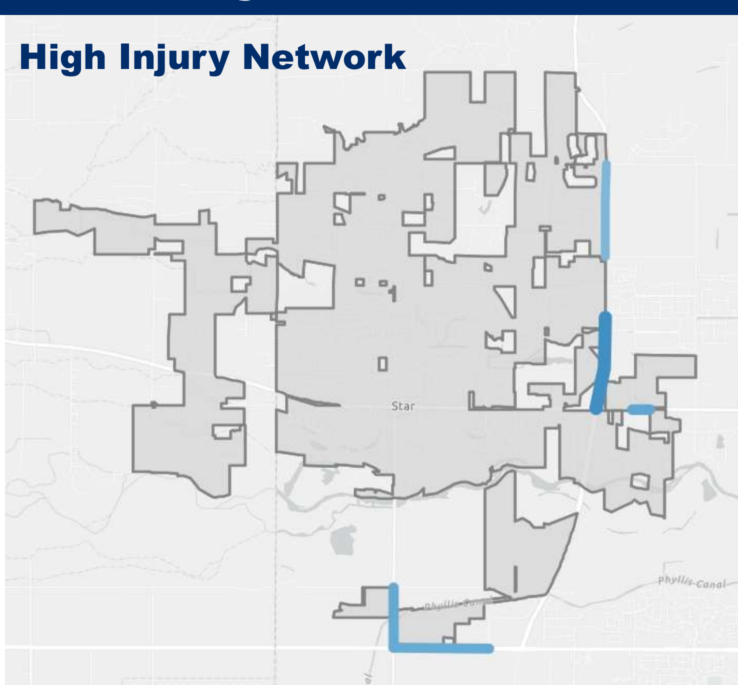
13.4% involved someone impaired

40% rear-end crashes

20% overturn crashes

Priority Areas for Treatment

Sidewalk and Bike Facility Gaps (Especially Between New Development and Key Attractors)



High-Speed, Multi-Lane Arterials & Highways (SH-16 & SH-44)

COMPASS
Regional Safety Action Plan

High Priority Infrastructure Strategies*

Vulnerable Road User Infrastructure	Enhanced Pedestrian Crossings	Speed Management
• Perform a connectivity analysis to identify gaps in walking and biking network not anticipated to be filled by developments. • Fill-in gaps in the walking and biking network with appropriate infrastructure (e.g., sidewalks, protected bike lanes, shared-use paths, enhanced crossings).	• Install or enhance pedestrian crossings along arterial and collector streets with attractors.	• Speed management near pedestrian/bicycle attractors (e.g., schools, parks, health care facilities)

Example High-Priority Location-Specific Strategies

Location**	Items to Address	Strategies
SH-44 (W State St): SH-16 / Can Ada Rd	Wide arterial with a lack of bike facilities, gaps in sidewalk, and a lack of crossing opportunities.	Install gateway features, provide protected bike lanes or shared-use paths, install enhanced mid-block pedestrian crossings, fill sidewalk gaps

**See Tech Memo #4, Appendix E for a complete list of potential strategies*
*** The COMPASS RSAP focuses on identifying potential strategies for locally-owned roads. Projects on ITD highways in the High-Injury Network may not be included on this list.*

High Priority Non-Infrastructure Strategies

Engineering solutions are one part of a holistic approach to transportation safety. Other priority strategies for Star to consider are listed here and described further in the Countermeasures Toolbox

- Participate in COMPASS safety working group
- Work with transportation partner agencies to regularly review fatal and serious injury crash locations and causes
- Dedicate funding for safety projects
- Clearly define safety as a priority in making ACHD IFYWP requests
- High-visibility safety education campaigns
- Road safety audits

COMPASS Regional Safety Action Plan

Bicycle and Pedestrian Improvements

Systemic Applications in Star

Star's development patterns have left significant gaps in bicycle and pedestrian infrastructure in key areas, including routes to schools or along important collectors and arterials. ACHD completed a neighborhood plan for Star and many recommended project still need to be completed or are reliant on new development to fill existing infrastructure gaps. Key corridors in Star have been identified for widening projects in ACHD's CIP and are considered in project development.

PROJECT DESCRIPTION

This project will reduce the potential for fatal and serious injury crashes through the following countermeasures:

SIDEWALKS

Description: Adds sidewalks to areas where there is currently none. Areas may have some sidewalks along a corridor and just need to fill in gaps, or the entire corridor may be lacking any pedestrian infrastructure at all. Where right-of-way allows, sidewalks may be buffered to increase separation from motor vehicles.

Purpose: Eliminates conflicts between pedestrians and vehicles along roadways.

BICYCLE FACILITIES

Description: Protected bike lanes with complete separation from vehicle travel lanes. A near-term solution could include reallocation of the existing road cross-section (e.g., narrowing vehicle-travel lanes to provide bike lane buffer space) or providing parallel routes.

Purpose: Protected bike facilities reduce conflicts between vehicles and people biking along the road.

SHARED-USE FACILITIES

Description: Multi-use pathways with complete separation from vehicle travel lanes. An interim solution could include expanding and protecting a roadway shoulder.

Purpose: Shared use facilities reduce conflicts between vehicles and people walking/biking along the roadway.

CROSSINGS

Description: Combination of treatments, including vertical streetscape elements (e.g., raised crosswalk), horizontal elements (e.g. curb bulb outs, protected intersection elements), visibility improvements (e.g. striping high visibility crosswalks, adding RRFBs or PHBs, improved signage).

Purpose: Reduce vehicle speeds and improve visibility of people crossing the street.

NON-MOTORIZED INJURY CRASH HISTORY SUMMARY (2018-2022)

Fatal Crashes: **0**
Serious Injury Crashes: **1**
Other Injury Crashes: **5**

100% of Injury Crashes at Intersections

Most Common Crash Types:

- Pedestrian: **2**
- Bicycle: **4**

RSAP RISK FACTORS

- Multi-Lane Arterial (5+ Lanes)
- High Posted Speed (40 mph)

ADDITIONAL ROADWAY SAFETY CONCERNS

- Distraction
- Bicycle and pedestrian infrastructure gaps, especially on high speed/volume roads

RESPONSIBLE AGENCIES

- City of Star
- ACHD

Factors Used to Prioritize Improvement Areas

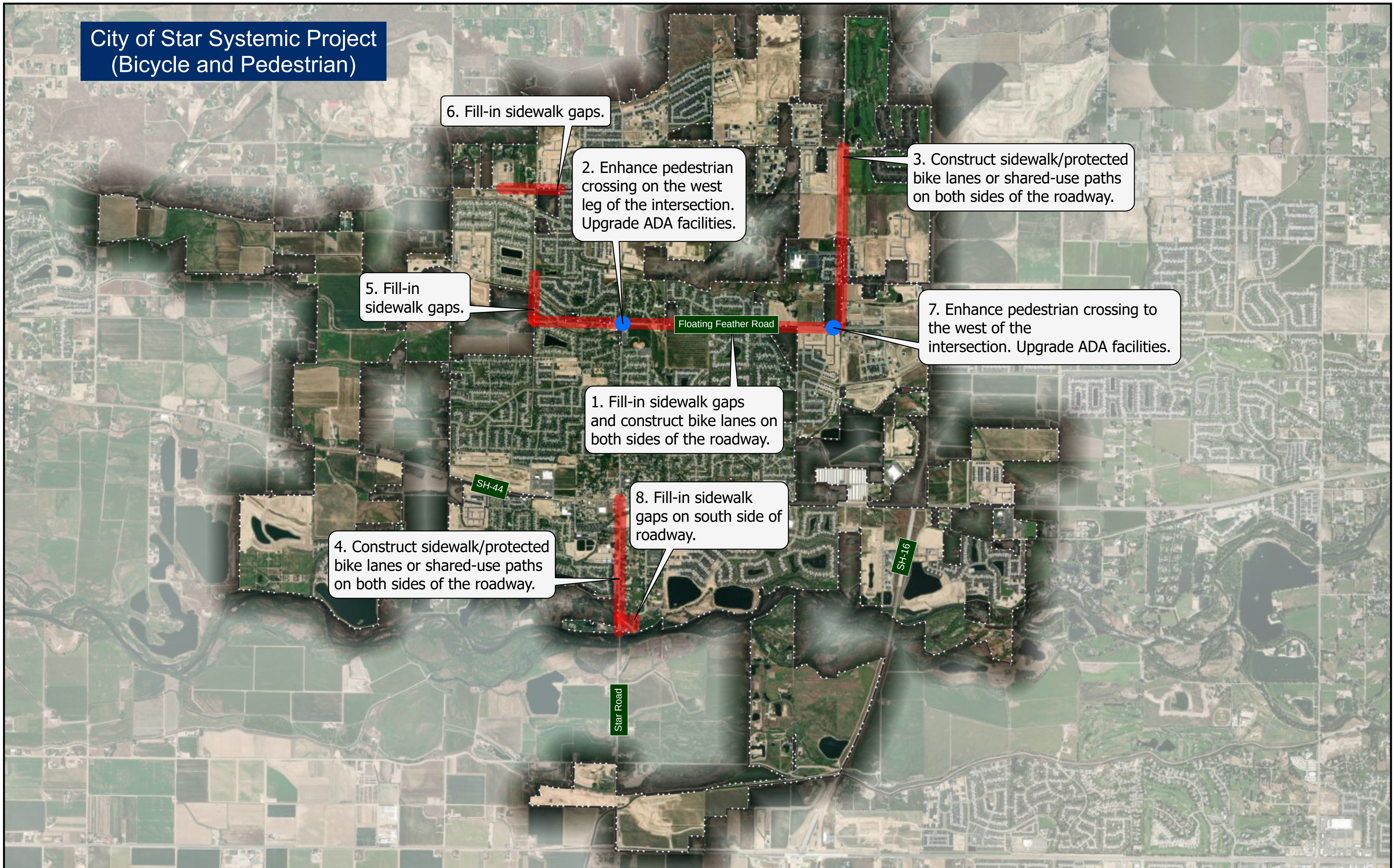
Crash History
The presence of fatal or serious injury pedestrian and bicycle crashes may indicate that these types of crashes may continue to occur at these locations if a countermeasure is not installed.

Roadway Characteristics
High-speed, high-volume roadways are associated with higher incidences of fatal and serious injury pedestrian and bicycle crashes. Greater volumes present more exposure to crash risk and higher speeds increase the severity of crashes.

Equity
Historically marginalized communities may see greater roadway safety risks due to a lack of previous investment in their community. Additionally, lower income communities often see higher rates of walking and biking, increasing their exposure to these types of crashes.

Proximity to Schools
Children are a particularly vulnerable group of road users and schools are often top generators of walking and biking activity.

Overlap with Star Neighborhood Plan, ACHD IFYWP and CIP
Project prioritization guidance was taken from the neighborhood plan, with additional consideration given to IFYWP and CIP projects to avoid overlap or find opportunities for advancement.



Star Priority Projects

Priority Intersections   Star City Limits   Priority Segments

COMPASS Regional Safety Action Plan

0   0.5   1 Miles

Nov 2024

Bicycle and Pedestrian Improvements

Systemic Applications in Star

Project Number / Location	Compass Equity Score	AOP*	HDC*	Quick Build Options	Cost Estimate	Crash Modification Factor
1 – Floating Feather Road (Munger Road to Pollard Lane)[1]	~3	No	No	Widen and protect roadway shoulders	Fund with CIP identified roadway expansion[3]	0.43 – 0.73
2 – Floating Feather Road and Star Road[1]	~3	No	No	NA	$316,000	0.30
3 – Pollard Lane (Floating Feather Road to Beacon Light Road)	~3	No	No	Widen and protect roadway shoulders	$3,692,000	0.60, 0.43 – 0.73
4 – Star Road (Main Street to State Street)[2]	~4.5	No	No	Widen and protect roadway shoulders	$2,915,000	0.60, 0.43 – 0.73
5 – Munger Road (Floating Feather Road to Shortcreek Street)	~4	No	No	Widen and protect roadway shoulders	$458,000	0.60
6 – New Hope Road (Penrose Avenue to Camas Lily Avenue)	~4	No	No	Widen and protect roadway shoulders	$247,000	0.60
7 – Floating Feather Road and Pollard Lane[1]	~4	No	No	NA	$316,000	0.30
8 – Main Street (Star Road to Star Riverwalk Park)	NA	No	No	Widen and protect roadway shoulders	$188,000	0.60
TOTAL COST					**$8,132,000**	

**AOP = Area of Persistent Poverty: https://usdot.maps.arcgis.com/apps/dashboards/75febe4d9e6345ddb2c3ab42a4aae85f*
**HDC = Historically Disadvantaged Community: https://usdot.maps.arcgis.com/apps/dashboards/75febe4d9e6345ddb2c3ab42a4aae85f*
[1] = Floating Feather Road is planned for widening, realignment, or new construction in the 2036-2040 period of ACHD's Capital Improvement Plan.
[2] = Star Road is planned for widening in the 2031-2035 period of ACHD's Capital Improvement Plan.
[3] = To accommodate sidewalk and bike lanes, widening of the roadway and bridge work would be necessary.

RECOMMENDED NEXT STEPS FOR IMPLEMENTATION

- Understand financial capabilities to implement projects and strategize ways to adapt projects into phases for implementation, where costs are too high for immediate and full completion.
- Implement quick build low-cost safety projects in the interim, where funding for permanent construction will have to be coupled with larger roadway reconstruction projects
- Ensure that project development on ACHD identified roadway widening candidates does not conflict with anticipated future construction. If conflict in the immediate term is inevitable, consider low-cost quick build options.

ENVIRONMENTAL CONSIDERATIONS

Initial Screening found no projects would directly impact a National Register of Historic Places in Idaho location. Project 1 may impact a USGS mapped wetland (PEM1C Freshwater Emergent Wetland). Projects 3, 4, and 8 fall in a FEMA designated Special Flood Hazard Area.