Vulnerable Road Users Safety Action Plan

METROPLAN

SAFE STREETS **SAVE LIVES**

METROPLAN

GREATER FLAGSTAFF

Adopted by the MetroPlan Executive Board on November X, 2025 (PENDING)

Acknowledgments

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The Vulnerable Road Users Safety Action Plan is conducted by MetroPlan in partnership with member agencies within the Flagstaff Region. A big thank you to the community for sharing their stories, providing feedback, and supporting the creation of safe streets for everyone. **SAFE STREETS SAVE LIVES - WE CAN DO THIS TOGETHER!**

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April 3, 2025

A RESOLUTION OF THE EXECUTIVE BOARD OF THE FLAGSTAFF METROPOLITAN PLANNING ORGANIZATION (DBA. METROPLAN) APPROVING THE 2025 VISION ZERO RESOLUTION

Resolution Number: 2025-02

WHEREAS, MetroPlan is charged with the responsibility of providing for the continuing, cooperative and comprehensive transportation planning process for the Flagstaff Metropolitan Planning Area and

WHEREAS, MetroPlan Executive Board ("Policy Committee"), a committee of the MetroPlan, is the approval body for all transportation-related activities of MetroPlan for the Planning Area under applicable U.S. Department of Transportation regulations; and

WHEREAS, Vision Zero is the simple yet ambitious idea that there is no acceptable number of traffic deaths and serious injuries on our roadways; and

WHEREAS, the Executive Board recognizes that traffic deaths and serious injuries are not inevitable; and

WHEREAS, the 2025 Vison Zero Resolution is a required component of the Safe Streets and Roads for All (SS4A) federal grant and the Vulnerable Road Users Safety Action Plan; and

WHEREAS, this Vision Zero Resolution sets forth a goal of reducing serious and fatal crashes by 40% by the year 2045; and

WHEREAS, it is the desire of the Executive Board to authorize and approve certain actions as further set forth in this Resolution.

NOW, THEREFORE, BE IT RESOLVED, by the Executive Board of the MetroPlan as follows:

SECTION 1: That the 2025 Vision Zero Resolution is hereby approved.

SECTION 2: That any prior action taken by the Executive Director or any staff necessary in connection with the items approved herein is hereby ratified and adopted as actions on behalf of MetroPlan.

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Executive Summary

Vision Zero is an approach to transportation safety that aims to eliminate fatalities and life-changing injuries caused by traffic crashes. In April 2025, the MetroPlan Executive Board adopted a Vision Zero commitment of a **40% reduction in traffic fatalities and life-changing injuries on our regional transportation system by 2045.**

This Action Plan lays out an ambitious set of two to five-year actions to reach the goal of a 40% reduction in traffic fatalities and life-changing injuries on our regional transportation system by **2045.** These actions will be undertaken by MetroPlan with the support of our regional partners, the City of Flagstaff, Coconino County, the Arizona Department of Transportation, and in further cooperation with other agencies such as Flagstaff Unified School District (FUSD), Mountain Line Transit, and the University of Northern Arizona.

Vision Zero will also need the ongoing support and commitment of all of the region's residents who use our streets to walk, bike, roll, take transit, and drive. Achieving Vision Zero requires a true culture change—from one where lives lost or severely harmed are an accepted daily occurrence to one where deaths and life-changing injuries are unacceptable outcomes of simply using our streets.

Why Vision Zero, Why Now?

The Flagstaff region needs Vision Zero now because people continue to die and suffer life-changing injuries on our streets. From 2017 to 2023, 489 Vulnerable Road Users were involved in a traffic crash. Of those, 34 people were killed and 78 experienced life-changing injuries. These numbers do not reflect the full toll on our community; each victim's family, friends, coworkers, and acquaintances are also impacted by the loss of someone they knew and loved.

VISION ZERO is the strategy to eliminate traffic fatalities and severe injuries on all roadways. Vision Zero is built on the basis that traffic deaths and severe injuries are preventable. Vision Zero emphasizes a Safe Systems approach, which acknowledges that people make mistakes, and focuses on influencing system-wide practices, policies, and designs to lessen the severity of crashes.

Flagstaff is seeing an increase in pedestrian fatalities that trends with the nation and state. The state of Arizona is ranked #5 in the highest for pedestrian-related deaths and is continuing to experience this increase (Smart Growth America, 2024). The data in Dangerous by Design continues to demonstrate that the epidemic of preventable deaths and injuries for people walking is getting worse, not better. Using a different approach to street design and funding decisions that prioritizes safety over speed is critical to solving this problem.

Vulnerable Road Users Safety Snapshot, 2017-2023

489 Pedestrian and Bicycle Crashes in the Flagstaff Region
27 Pedestrian Fatalities
8 Bicyclist Fatalities
28% Pedestrian crashes resulted in a serious injury or fatality
18% Bicyclist crashes resulting in a fatality

Pedestrians and bicyclists frequently cross the street to access essential services, employment opportunities, public transportation, and schools. Crossing is a necessary part of walking and cycling. Unfortunately, in the Flagstaff Region, many crashes (36%) occur at a marked crosswalk at an intersection. Drivers not yielding at intersections or crosswalks is a critical factor in this crash type Speed is also a critical factor in determining the severity of a crash, and people walking, bicycling, or rolling are more vulnerable to greater harm from automobiles, even at relatively low speeds. Even when speeding is not indicated to be a cause of a crash, the normal driving speed of a street can contribute to a fatal or life-changing injury. This is also true for people in crashes involving only cars.

HOW WE ARE TAKING ACTION

MetroPlan is the regional organization that plans and programs federal transportation funds for highways, transit, non-motorized transportation, and other means of moving people and goods in the greater Flagstaff region. MetroPlan works within federal transportation requirements to guide the development of a multi-modal transportation system within the region - an area that includes both rural and urbanized areas that are expected to grow over the next 20 years.

MetroPlan's goal is to make the Flagstaff Region's streets safer for all who use them, especially those who are the most vulnerable – people who walk, bicycle, and roll. This plan builds on the safety work of the Regional Transportation Safety Plan, the Regional Transportation Plan, the Active Transportation Masterplan (City of Flagstaff), and the Statewide Transportation Safety Plan (ADOT).

ACTIONS FOR PARTNER AGENCIES AND JURISDICTION

This plan will further support MetroPlan's partners; the City of Flagstaff, Coconino County, Mountain Line, Arizona Department of Transportation (ADOT), and Northern Arizona University (NAU), by providing informed project information based on the current crash data and resources to their respective jurisdictions that can result in bicycle and pedestrian fatalities and life-changing injuries.

While this plan emphasizes 2 to 5-year programs and projects to reduce fatalities and severe crashes, we know this effort will take longer and will need the support of regional partners and the community. We will review our actions and progress to update this plan to ensure we are continuing on the path to zero deaths and life-changing injuries.

Fundamental Principles of a Meaningful Vision Zero Commitment

These principles are core to successful Vision Zero efforts:

1. Traffic deaths and severe injuries are acknowledged to be preventable.
2. Human life and health are prioritized within all aspects of transportation systems.
3. Acknowledgment that human error is inevitable, and transportation systems should be forgiving.
4. Safety work should focus on systems-level changes above influencing individual behavior.
5. Speed is recognized and prioritized as the fundamental factor in crash severity.

(Source: Vision Zero Network)

THE PURPOSE OF THIS ACTION PLAN

The purpose of this Vulnerable Road Users (VRU) Safety Action Plan is to document the extensive amount of safety-related work that has been done by the region already, conduct a systemic safety analysis that includes documentation of the High Injury Network (HIN) and Risk Exposure Assessment, policies and strategies for MetroPlan for improving safety throughout the region, and provide next steps that MetroPlan can take in improving transportation safety.

MetroPlan is uniquely positioned to advise and educate its jurisdictional partners on all transportation topics, including how to address traffic-related deaths and serious injuries. Resources will be provided to our partners to assist them in meeting not only the regional Vision Zero goals, but their respective agencies' safety goals as well.

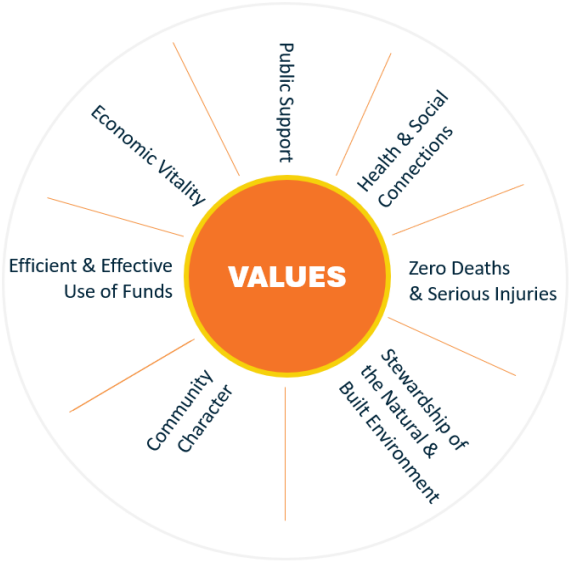
METROPLAN'S SAFETY COMMITMENT

Ensuring safe, accessible, and desirable transportation in the region is central to MetroPlan's mission. MetroPlan strives to support safety across its core programs and works to create a regional transportation system designed to safely and comfortably accommodate all users, of all ages and abilities.

METROPLAN'S VALUES

MetroPlan operates using its seven foundational values: Public Support, Health and Social Connections, Zero Deaths and Serious Injuries, Stewardship of the Natural and Built Environment, Community Character, Effective and Efficient Use of Funds, and Economic Vitality.

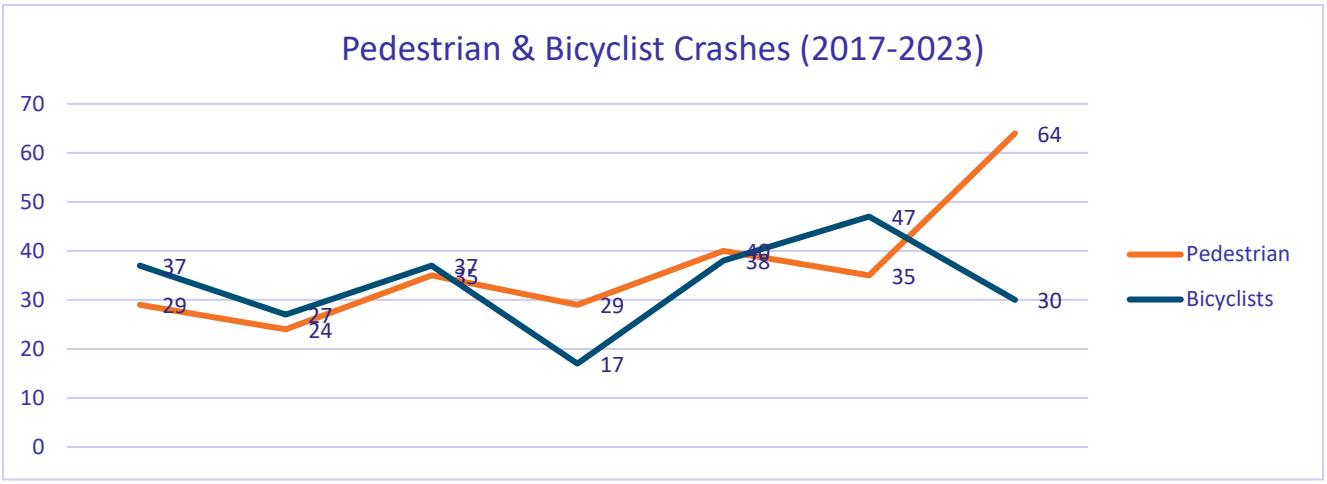
Figure 1: MetroPlan Values



These values help MetroPlan develop plans and programs that are guided by the MetroPlan Executive Board in cooperation with our state and Federal planning partners. The Executive Board is made up of elected officials from across the region who vote to approve all federally required MetroPlan actions. The ability to convene such influential stakeholders monthly has been instrumental in identifying and implementing safety strategies within the region.

THE NEED FOR SAFETY IMPROVEMENTS

MetroPlan conducted this crash analysis from 2017 to 2023 using the Arizona Crash Information System (ACIS) provided by the Arizona Department of Transportation (ADOT). From this data, 489 pedestrian and bicycle crashes were reported over this 7-year period. Pedestrians, like the state, continue to be disproportionately impacted by these crashes, making up 28% of the fatal and serious injuries.



Crash Causes

An extensive data analysis of the region's crashes from 2017 to 2023 revealed the following major contributors to life-changing and fatal traffic crashes for pedestrians and bicyclists in the Flagstaff region:

- Failure to yield
- Speeding
- Dangerous Behaviors

This Action Plan lays out a series of strategies intended to address each of these contributing factors, leading to a safer Flagstaff for all.

ACTION AREAS

Vision Zero requires bold action to reach a bold goal. **Eliminating or even reducing deaths and life-changing injuries on the transportation system is no small feat**. Reaching that goal will take actions not just from MetroPlan, but also our partners at agencies.

The five action areas presented here were drawn from data analysis, partner agencies, civic groups, and the community.

This plan will focus on MetroPlan's ability to support and implement actions that are within the organization's control. All other actions will be provided to our local agencies and partners to support the development of new standards and practices to reduce VRU crashes across the region. **(Appendix C)**

Reduce potential for conflict between users

Slow vehicle speeds

Encourage safer practices among people driving, walking, and bicycling

Improve data collection and analysis

Support an institutional commitment to Vision Zero

IN REMEMBRANCE TO THOSE LOST AND INJURED IN ROAD CRASHES

Erich Renz, 23, was killed in a hit-and-run collision on East Soliere Avenue. He was riding his bicycle in the bike lane when he was struck by a Jeep Cherokee.

7-year-old **Jack Ridgeway** was struck and killed by a truck while riding his bike with friends on Fourth Avenue.

Joanna Wheaton, 29, was killed when a tow truck driver ran a red light and struck a group of cyclists at the intersection of Butler Avenue and Beaver Street. Four other cyclists were injured.

Clinton Brown of Louisiana was struck and killed by a vehicle while crossing N Highway 89 and N Cummings St.

A 22-year-old, **Lily Tantillo**, was killed after being struck by a train.

SAFETY IN THE WAY WE DESIGN STREETS AND ROADS

Two methods will be referenced and recommended to local agency partners to reduce and eliminate serious injuries and fatalities on our regional roadways. This includes the concept of Complete Streets and the Federal Highway Administration (FHWA) Safety Systems Approach.

Complete Streets

The implementation of crash countermeasures typically results in what are commonly referred to as Complete Streets. The National Complete Streets Coalition defines Complete Streets as "an approach to planning, designing, building, operating, and maintaining streets that enables safe access for all people who need to use them, including pedestrians, bicyclists, motorists, and transit riders of all ages and abilities." Complete Streets is not a "one-size fits all" approach to improving safety. Instead, safety countermeasures are applied to the design of a street based on community context, traffic volumes, and roadway classification and characteristics.

Complete Streets countermeasures include but are not limited to the following: sidewalks, curb ramps, bike lanes, bus or transit lanes, accessible bus stops, crosswalks, medians, pedestrian refuge islands, pedestrian crossing signals, curb extensions, narrower vehicular travel lanes, streetscape enhancements, and roundabouts.

Figure 2: City of Santa Fe Complete Streets

Benefits of Complete Streets:

- **Increased Mobility Options:** By providing safe and accessible infrastructure for walking, biking, and transit, Complete Streets expand transportation choices and reduce reliance on cars.
- **Reduced Vehicular Travel:** When people have more convenient and appealing options for non-vehicular travel, they are more likely to choose them, leading to less traffic congestion and reduced greenhouse gas emissions.
- **Improved Safety:** Complete Streets prioritize the safety of all road users, including pedestrians and cyclists, through measures like traffic calming, improved pedestrian crossings, and dedicated bike lanes.
- **Greater Equity:** Complete Streets ensure that everyone, regardless of age, ability, or income, has access to safe and convenient transportation options.

When applied, these safety measures help to reduce the risk of crashes for all users of a street or road - including motorists - by slowing vehicle speeds and by providing safe and accessible spaces for pedestrians and bicyclists.

A National Transportation Safety Board report found that speeding increases the risk of crashes in two ways: (1) by increasing the likelihood of a crash and (2) by increasing the severity of injuries resulting from a crash. Slowing vehicle speeds has a positive impact on improving safety for vulnerable users in particular, as pedestrian fatalities and serious injuries increase rapidly at vehicle speeds of 30 mph and above.

Safe System Approach

The Safe System approach aims to eliminate fatal & serious injuries for all road users. It does so through a holistic view of the road system that first anticipates human mistakes and second keeps impact energy on the human body at tolerable levels. Safety is an ethical imperative of the designers and owners of the transportation system. (FHWA, 2020)

Safe System Principles Include:

	Death/Serious Injury is Unacceptable	While no crashes are desirable, the Safe System approach prioritizes crashes that result in death and serious injuries, since no one should experience either when using the transportation system.
	Humans Make Mistakes	People will inevitably make mistakes that can lead to crashes, but the transportation system can be designed and operated to accommodate human mistakes and injury tolerances and avoid death and serious injuries.
	Humans are Vulnerable	People have limits for tolerating crash forces before death and serious injury occur; therefore, it is critical to design and operate a transportation system that is human-centric and accommodates human vulnerabilities.
	Responsibility is Shared	All stakeholders (transportation system users and managers, vehicle manufacturers, etc.) must ensure that crashes don't lead to fatal or serious injuries.
	Safety is Proactive	Proactive tools should be used to identify and mitigate latent risks in the transportation system, rather than waiting for crashes to occur and reacting afterward.
	Redundancy is Crucial	Reducing risks requires that all parts of the transportation system are strengthened so that if one part fails, the other parts still protect people.

Design Strategies

Roadway design is a critical piece of Vision Zero and builds long-term solutions for all users, especially those who walk or bike. Design guidelines and regulations are one way to move the needle on reducing death and serious injury. Many design interventions effectively reduce the incidence of crashes within a community. These design strategies are most effective when layered with other countermeasures and policy interventions.

Countermeasures to combat serious injuries and fatalities are organized into four categories:

Temporary Approach: countermeasures that can be "tested" to determine success before finalizing the change (with various exceptions) – These are often known as Pilot or Demonstration Projects.

System-Wide Approach: countermeasures that are implemented at all locations (across the community)

Risk-Reduction Approach: countermeasures that are implemented at locations with the greatest risk (specific locations within the community)

Site-Specific Approach: countermeasures that are implemented based on crash data that support continual crashes at one specific site that needs to be addressed (one location within the community)

PRIOR PLANS AND STUDIES

The development of this Vulnerable Road Users Safety Action Plan has been a coordinated effort between MetroPlan, the Technical Advisory Committee (TAC), the Executive Board, and the public. This plan is heavily impacted by previous plans completed and publicly adopted by MetroPlan and partner agencies.

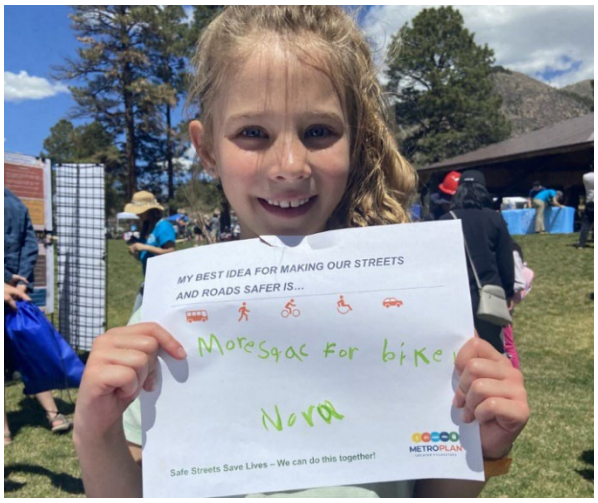
Metroplan and partner agencies' dedication to improving roadway safety for all users is documented in the following plans completed between 2017 and 2023. These plans contain substantial engagement, safety, and equity components and have been used to inform the VRU Action Plan's approach to public and stakeholder engagement, inform the project selection process, and set goals, in addition to other contributions.

TRIPS NEVER TAKEN: Traffic-related deaths and injuries, as demonstrated in this safety plan, along with the trauma experienced by those connected to these tragedies, dissuade people from walking and bicycling and foster a culture where these activities are perceived as risky. Therefore, potential walking/bicycling trips don't happen because of the very real dangers and inconveniences presented by the safety and quality of nearby streets. This makes it difficult to reach local and regional goals to encourage active modes to reduce emissions and greenhouse gases (GHG).

The most notable plans that impact the VRU Safety Plan include the 2023 Regional Strategic Transportation Safety Plan, 2022 Active Transportation Master Plan, and 2022 Regional Transportation Plan. Additionally, with the adoption of the City's Active Transportation Master Plan and the Carbon Neutrality Plan, there are goals and policies to encourage more walking, rolling, or bicycling—as a method to reduce Vehicle Miles Traveled and to improve the quality of life for the community.

PUBLIC ENGAGEMENT

Figure 3: Best idea for making our streets and roads safer

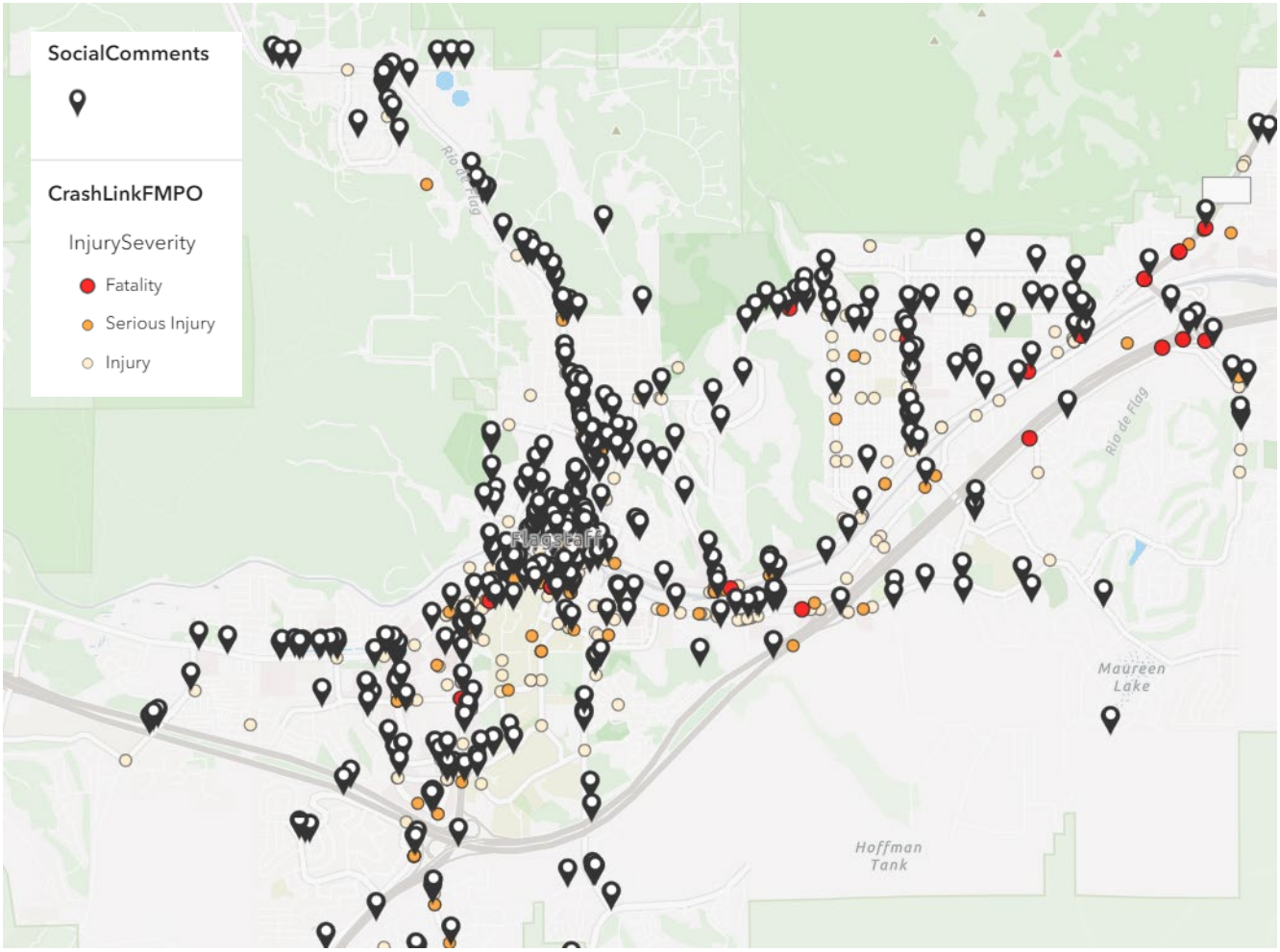


MetroPlan and partners have conducted extensive public outreach as part of the 2023 Regional Strategic Transportation Safety Plan, 2022 Active Transportation Master Plan, and 2022 Regional Transportation Plan. Community members voiced their concerns regarding travel safety across the region through a series of surveys, public events, and online mapping opportunities. Due to the significant results from these previous planning efforts, MetroPlan is taking a different approach by focusing efforts on reaching underserved communities and individuals who have not participated in the past and who rely on non-motorized modes. This includes working with local organizations and agencies that support people with disabilities, the unsheltered, seniors, and students.

Previous Public Engagement

Previous engagement, particularly around the most recent Regional Strategic Transportation Safety Plan (RTSP), has provided a foundation for community concerns. As part of the Vulnerable Road Users Safety Plan, we used the Social Pinpoint tool from the RTSP to integrate community-provided comments on biking and walking with documented bicycle and pedestrian crashes in our region (Figure 4). A total of 691 comments were received, with 479 (70%) relating to areas of concern for bicyclists and pedestrians. By connecting community concerns with crash data, we can identify trends and work toward solutions to enhance travel safety.

Figure 4: Public Comments & Crashes



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Vulnerable Road Users Safety Action Plan Outreach Summary

From April 2024 to January 2025, MetroPlan staff participated in 16 events and/or public meetings, including 9 community events and 1 dedicated focus group. These events reached a total of 409 participants. During public outreach activities, participants were asked what their transportation would look like if it met their needs and gave the following responses grouped into four main areas of concern:

Multi-modal	**Better connectivity (missing bike lanes)**
	Improve Bike Lanes (Buffers, landscaping, wider, etc.)
	Safer bike and pedestrian ways off of FUTS
	Well-maintained and clear sidewalks
	More Crosswalks (striped) and Signalized Crossing (Rapid Flashing Beacon)
	Clearly marked bike lanes
	Continued accessibility to walking/running trails
Driver Behavior	**Slower speeds**
	Education around schools for drivers
	Drivers need to yield to pedestrians
Transit	**All transit shelters should be safe and comfortable (with weather protection)**
	Safer crossings to transit stops
	Buses to have extended hours
	Transit service to Kachina/Mountainaire
Maintenance	**Snow maintenance. Participants stated that they are often homebound if sidewalks are not cleared.**
	Clear snow/cars/debris from sidewalks and bike lanes
	Maintained sidewalks – cracks, chips, crumbling, vegetation overgrowth

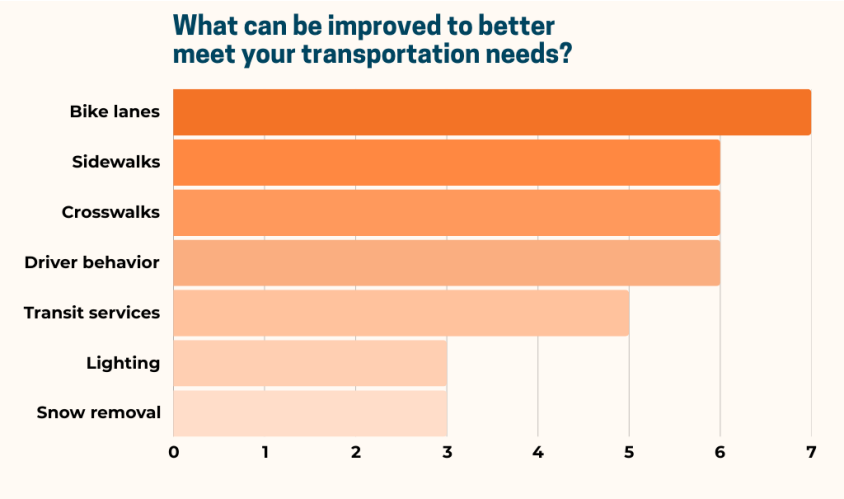
What we learned from the community:

For pedestrians, there were two main topics shown in Figure 6. There is a need for safer and more frequent crossings. Several of these comments were focused on roads owned by ADOT, which are major thoroughfares through the region and bisect many neighborhoods within the City of Flagstaff. Pedestrians also commented on the lack of sidewalks with proper facilities to access transit and provided concerns about the speeding and yielding of drivers. **(Appendix A)**

For bicyclists, several categories rose to the top: the need for more or complete bike lanes, the maintenance of bike lanes (mostly related to snow and debris removal), safer intersections and crossing connections, and lastly, the need for a complete bike network. Many comments stated that many bike lanes and the FUTS trail abruptly end, and place the individual in traffic.

Figure 5: Southside Accessibility Walk Audit Participants

Figure 6: Public Comments by Mode and Facility Type



Many of the public's concerns were on roadways owned and maintained by the Arizona Department of Transportation (ADOT). The VRU took a closer look at the roadways owned and maintained by the Arizona Department of Transportation. Smart Growth America, Dangerous by Design, 2024, stated that DOTs are in total control of many of the deadliest roads across the nation, and we see this locally as well.

As stated previously, ADOT roads are a significant part of the region. A total of 100+ comments were collected regarding the following four state-owned roads **(Figure 7).** Similar to the results above, pedestrians and bicyclists expressed the need for better or complete facilities, safer crossings, and safer speeds.

Figure 7: ADOT Owned Roads + Public Comments

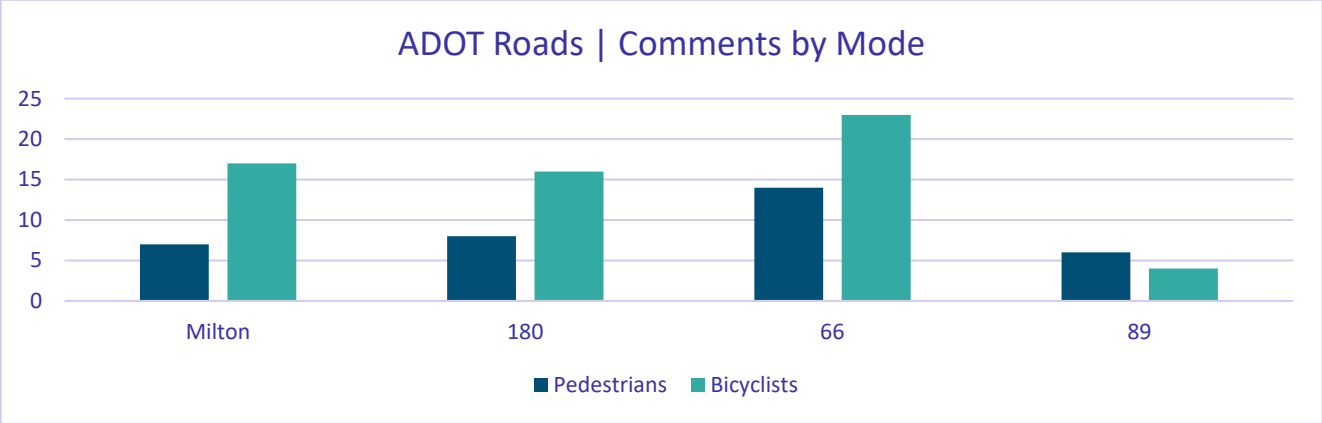
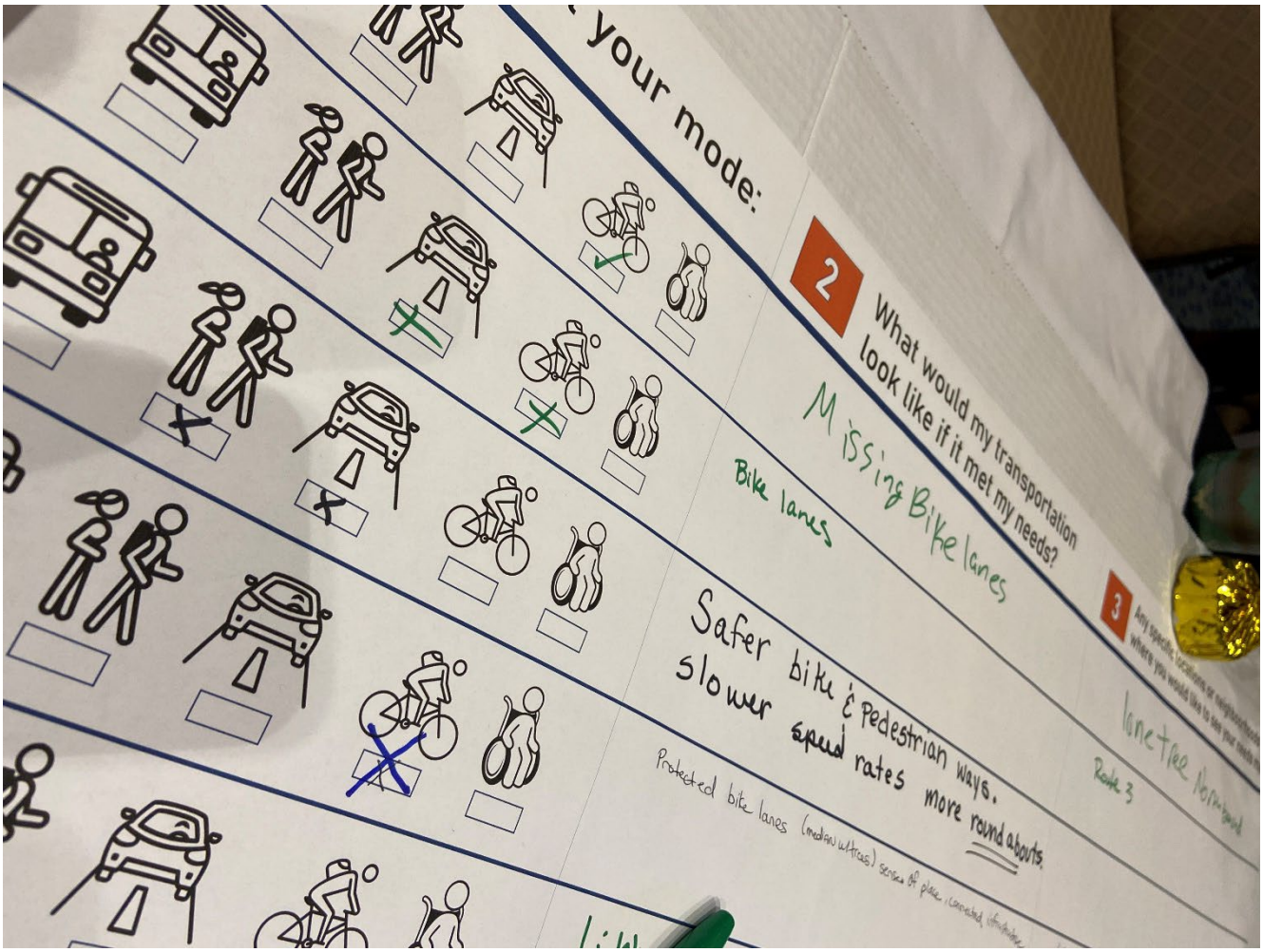


Figure 8: Public Input on Transportation Safety Needs



MOVING TO ACTION

MetroPlan's goal is to reach **a 40% reduction in fatalities and life-changing injuries by 2045**. To measure progress toward this goal, we will monitor the number of fatalities and seriously injured on the regional transportation system. On the way to our 2045 goal, MetroPlan has developed organizational policies that support vision zero, and developed implementable strategies that strategically prioritized safety projects with Vulnerable Road Users in mind using the Risk Exposure Assessment Tool.

Risk Exposure Assessment Tool

The Risk Exposure Assessment tool is a risk-prediction model designed to evaluate roadway attributes that contribute to crash risk, with a specific focus on vulnerable road users (VRU), identified as pedestrians and cyclists. The primary objective is to create a comprehensive risk map of the MetroPlan region to support:

- Project identification for safety improvements
- Prioritization of safety projects specific to Vulnerable Road Users
- A visual representation of VRU risk to guide data-driven decision-making
- Understand safety risks related to infrastructure and the geometry of design
- Understand the influences on exposure to crashes
- Determine if higher risks impact disadvantaged communities
- Offer predictive analysis of where crashes are most likely to occur

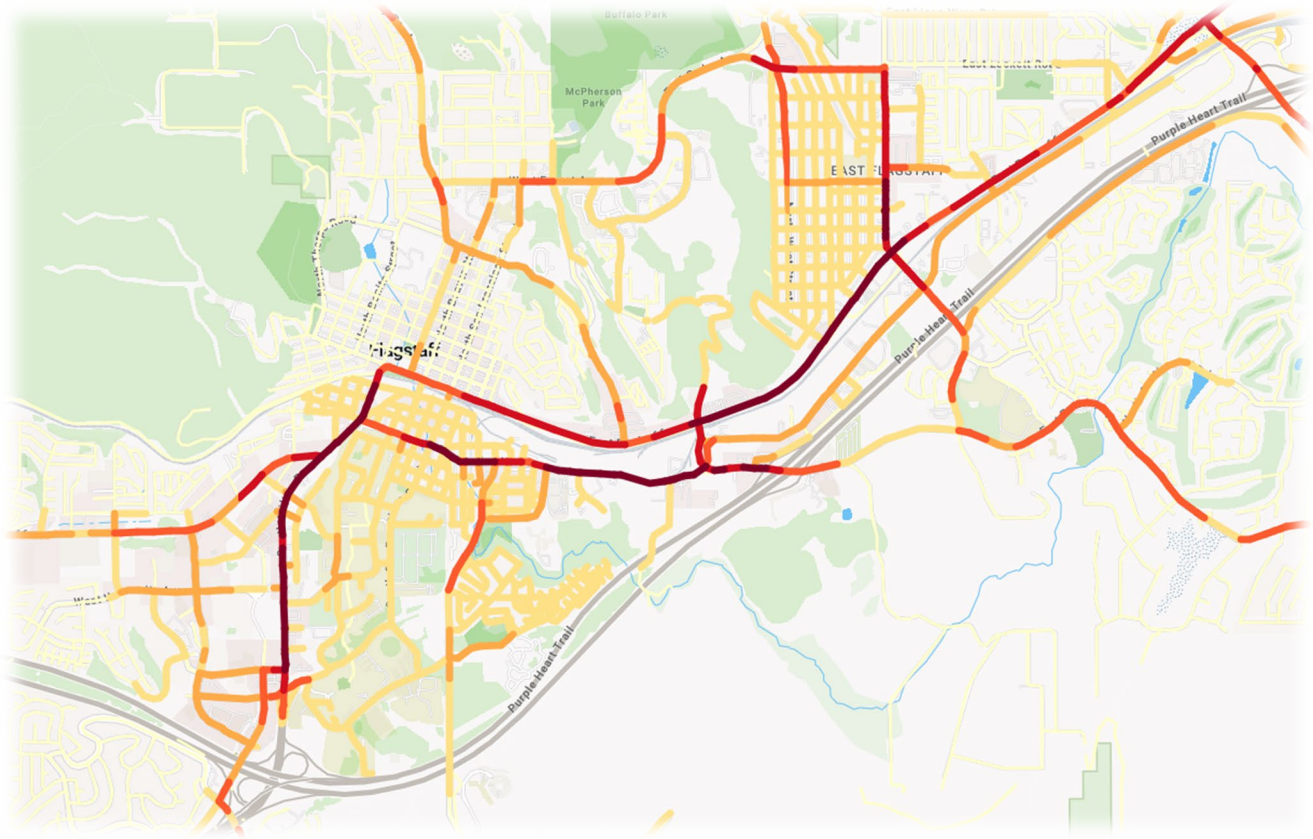
The analysis looked at the following higher-risk roadway attributes (Figure 9) to determine the risk score: Equity Area, Bike Facility Widths, Lanes, Left Turn, Speed Limits, and AADT. The total possible points for the Risk Score are 12 points. The Risk Score can be used to evaluate the relative safety of streets and roads in the MetroPlan region.

Figure 9: Risk Exposure Scoring

Risk Score

Attributes		Points
Equity Area	No	0
	Yes	2
Through Lanes	1-2	0
	3-4	1
	5-6	3
Right Turn	Not Dedicated	0
	Dedicated	1
Left Turn	Not Dedicated	0
	Dedicated	1
Bike Facility Width	Extra Width	0
	Narrow/ No Bike Lane	1
Median Type	TWLTL	1
	No Median	0
Speed Limit	Less than 30MPH	0
	30MPH+	1
Vehicle Volume	<10k	0
	10-20k	1
	20k+	2
Total Points Possible		12

Figure 10: Risk Exposure Assessment Tool Snapshot



As with the public comments above, the roadways of most public concern and with the highest risk scores are Milton, Route 66, Butler, and 4th St.

MetroPlan Policies

In order for MetroPlan to reach its Vision Zero commitment, MetroPlan policies needed to be developed to support the regional transportation safety goals. Based on the Vision Zero commitment, MetroPlan developed 10 new policies. These policies would be strictly to achieve MetroPlan's values and goals and will not limit opportunities for our partners' agencies.

Vision Zero Policies

1	**Apply Safe System principles across all planning, engineering, and policy decisions.**
2	**Maintain public awareness of the magnitude and cause of regional traffic injuries and fatalities.**
3	**Support and advance the implementation of transportation demonstration projects as a low-cost, short-term approach to test and evaluate potential long-term transportation improvements.**
4	**Integrate Speed Management into planning, programming, and policy decisions**
5	**Collaborate with schools, partners, and community organizations to coordinate planning and implementation of Safe Routes to School programming.**
6	**MetroPlan is committed to advancing a culture of safety through inclusive transportation education and encouragement campaigns.**
7	**MetroPlan will recognize the importance of proven transportation safety technologies**
8	**Support data-driven decision-making and access to technical assistance.**
9	**MetroPlan will collaborate with partners to meet local, regional, and state Vision Zero goals**
10	**Prioritize funding and grant-seeking projects that reduce serious injuries and fatalities for all road users, in alignment with Vision Zero goals.**

MetroPlan also recognizes that transportation safety goes beyond project recommendations and will work with our partner agencies to further our regional goals by:

- Influencing policy and legislation
- Changing MetroPlan's organizational practices
- Educating partners and the public
- Promoting community education
- Strengthening individual knowledge and skills

Project Recommendations

Within the Region, there have been many recent transportation safety plans that have identified potential projects that would improve safety and reduce serious injuries and fatalities for all modes. A consolidated list of recommendations can be found in Appendix E. Through the use of the Risk Exposure Assessment tool, these recommendations have led to additional prioritization that can holistically address street design and safety issues specific to Vulnerable Road Users. A total of 62 projects have previously been recommended within seven (7) plans, along with over 500 first-priority projects in the City's Active Transportation Master Plan.

Figure 11: Existing Safety Project Recommendations

A total of 62 projects have previously been recommended within 6 plans, along with over 500 first-priority projects in the City's Active Transportation Master Plan.

RECOMMENDATIONS COME FROM THE FOLLOWING PLANS:

- ADOT: ACTIVE TRANSPORTATION SAFETY PLAN (2024)
- ADOT: MILTON RD BIKE AND PEDESTRIAN ROAD SAFETY ASSESSMENT (2023)
- ADOT: STATE HIGHWAY RAIL CROSSING PLAN (2022)
- CITY OF FLAGSTAFF: ACTIVE TRANSPORTATION MASTER PLAN (2022)
- METROPLAN: STRATEGIC GRANTS PLAN (2024)
- METROPLAN: REGIONAL TRANSPORTATION SAFETY PLAN (2023)
- MOUNTAIN LINE: PEDESTRIAN CROSS STUDY

Upon reviewing the project recommendations and completed VRU analysis, no additional project recommendations are being made. Instead, using these existing safety recommendations, which have been previously vetted and supported by the community, MetroPlan is integrating the Risk Exposure Assessment tool to further prioritize these projects based on their risk factors related to people who walk, bike, and roll.

How to use the projects and associated REA score:

- Prioritize the consolidated recommendations list using the tool
- Guide our partner agencies in identifying and prioritizing projects
- Identify areas for bundling projects
- Provide guidance within the ADOT's Planning to Programming (P2P) nomination process, MetroPlan's Strategic Grants Plan, and the AZ Rural Transportation Advocacy Council.
- Identify overlapping project recommendations

The full list of scored projects can be found in Chapter 4: Project Recommendations.

IMPLAMENTATION

Implementation of the Vulnerable Road Users Safety Action Plan will be integrated into MetroPlan's Unified Planning Work Program (UPWP). The UPWP is a required annual document developed by MetroPlan that outlines transportation planning priorities, tasks, budgets, timelines, responsible parties, and funding sources for federal and state planning funds. It details all planned work for a given fiscal year, including long-term regional transportation plans, continuous planning activities, like safety planning, programs, data collection, and other special projects, to ensure comprehensive and cooperative transportation planning and to qualify for federal funding from the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA).

The integration of the VRU polices and supporting strategies in Chapter 2 has been divided into implementation years 1 through 5 to ensure resources are allocated appropriately per year in the UPWP.

Resources for continued Safety programs and projects

Funding strategies for Vision Zero policies and programs should involve leveraging federal grants. Federal programs in safety-specific grants like the Safe Streets and Roads for All (SS4A) program and the Highway Safety Improvement Program (HSIP). However, all major grant programs include priorities related to improving safety, and every regional application made should be tied back to that goal. MetroPlan has a history of successfully being awarded federal and state funds to support plans, programs, and projects. MetroPlan will continue to pursue grants to support our partners, maintain staff and programs in these critical roles, such as Transportation Demand Management, Safe Routes to Schools, and Data Collection.

Capital Improvement Projects

MetroPlan has no authority to implement infrastructure projects. However, based on the results from the project recommendations chapter, MetroPlan will advocate and encourage our partner agencies to prioritize these projects with Vulnerable Road Users in mind. As per our strategies, MetroPlan is creating an online screening and prioritization tool for our partners, which will include safety as a key component of scoring.

Chapter 1:
Crash Data Analysis

OVERVIEW OF VRU SAFETY PERFORMANCE

The historic crash data was obtained through ADOT's Arizona Crash Information System (ACIS) for the most recent 7-year period (2017-2023). Trends amongst people involved in Vulnerable Roadway Users (VRU) crashes, particularly serious injury and fatal crashes, were analyzed to inform our regional local jurisdictions of safety issues and trends related to VRUs and to encourage prioritizing Transportation Safety in our roadway network and project selection. This plan calls on us to think differently about traffic safety, and to reach beyond traditional silos to work together for a truly worthy outcome: the reduction or elimination of traffic deaths and life-changing injuries on our streets and roads. This is central to Vision Zero, the idea that people should not be killed or experience life-changing injuries as a consequence of simply using our streets. Vision Zero recognizes that we all make mistakes and that the transportation system should be designed to minimize the impacts of those errors. When crashes do occur, they should not result in death or life-changing injuries.

VRU Safety Snapshot, 2017-2023

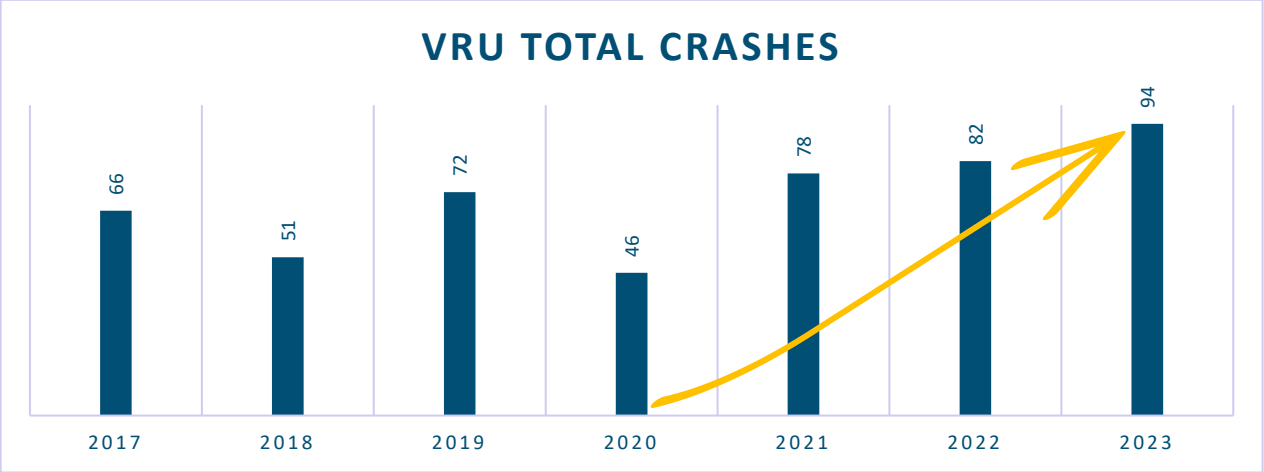
489 Pedestrian and Bicycle Crashes in the Flagstaff Region
27 Pedestrian Fatalities
8 Bicyclist Fatalities
28% Pedestrian crashes resulted in a serious injury or fatality
18% Bicyclist crashes resulting in a fatality

1. Photo credit: KNAU Public Radio

HISTORICAL SAFETY TRENDS

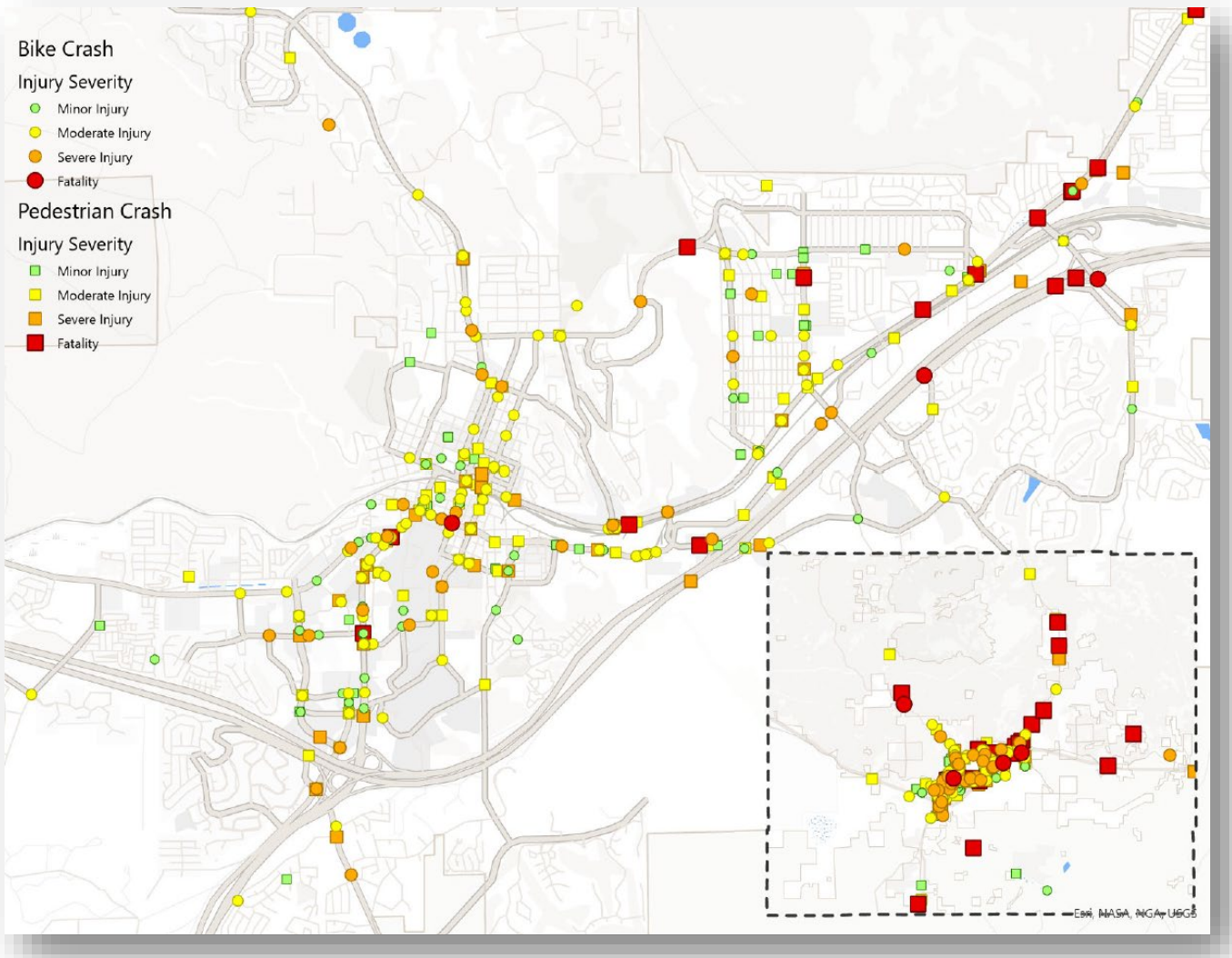
VRUs involved in crashes of any severity level for the past seven years in the Flagstaff Region are shown in **Figure 12.** Over the seven-year period, a total of 489 VRU crashes occurred, making up 3% of the total traffic crashes (vehicles, bikes, and pedestrians). The number of VRUs involved in crashes decreased in 2020 (when COVID-19 Pandemic restrictions were in effect), having the lowest number of VRUs involved in crashes. However, as with national trends, the region is experiencing an increase in VRU-related crashes since 2020.

Figure 12: VRU crashes over 7 years, 2017-2023



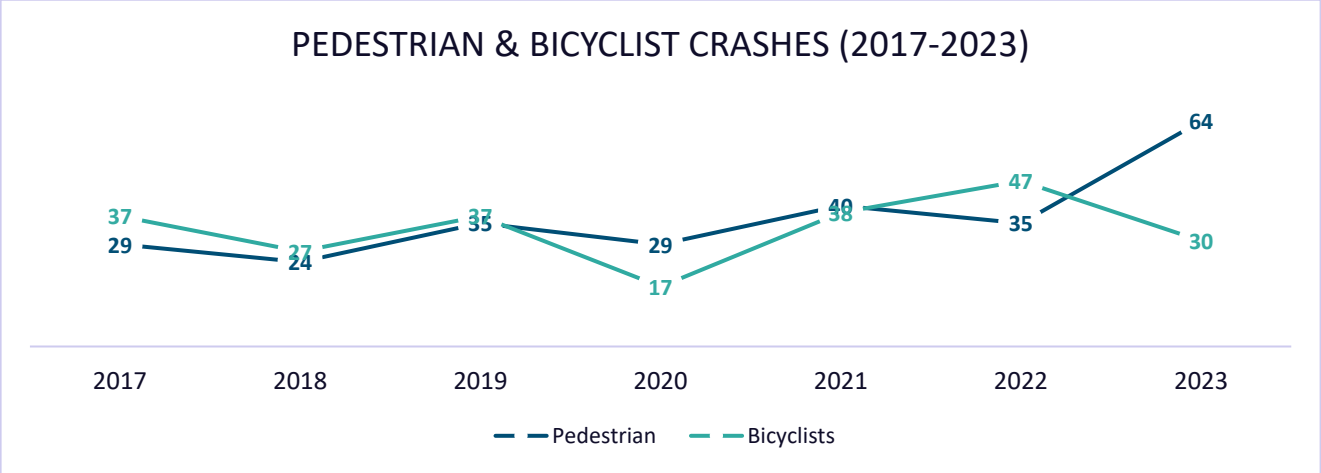
Within the region, most VRU crashes are centered within Flagstaff City limits **(Map 1).** These crashes range in severity depending on location, with most happening in the more urban areas of the city along Milton Rd./Northern Arizona University/Downtown. While there are more crashes in these urban areas, many result in moderate injury. However, the east side of the city and within the County experiences more fatalities, which could be due to the surrounding land uses, higher speed limits, and conditions that may feel unsafe to pedestrians and bicyclists.

Map 1: VRU Crashes by Severity



Crashes comparing bicyclists to pedestrians are shown in **Figure 13.** Here we see the trend of bicyclist crashes reducing since 2022, while pedestrian crashes have continued to increase, with the highest number of crashes (64) occurring in 2023. Pedestrian crashes account for 52% and bicyclists 48% of all VRU crashes.

Figure 13: VRU crashes over time



The severity of the crash dramatically impacts the chances for survival for all road users. Of the 256 pedestrian and 233 bicyclist crashes, 28% and 18% respectively, resulted in serious injury or fatality - a total of 113 people over the seven years.

Figure 14: Summary of injury severity

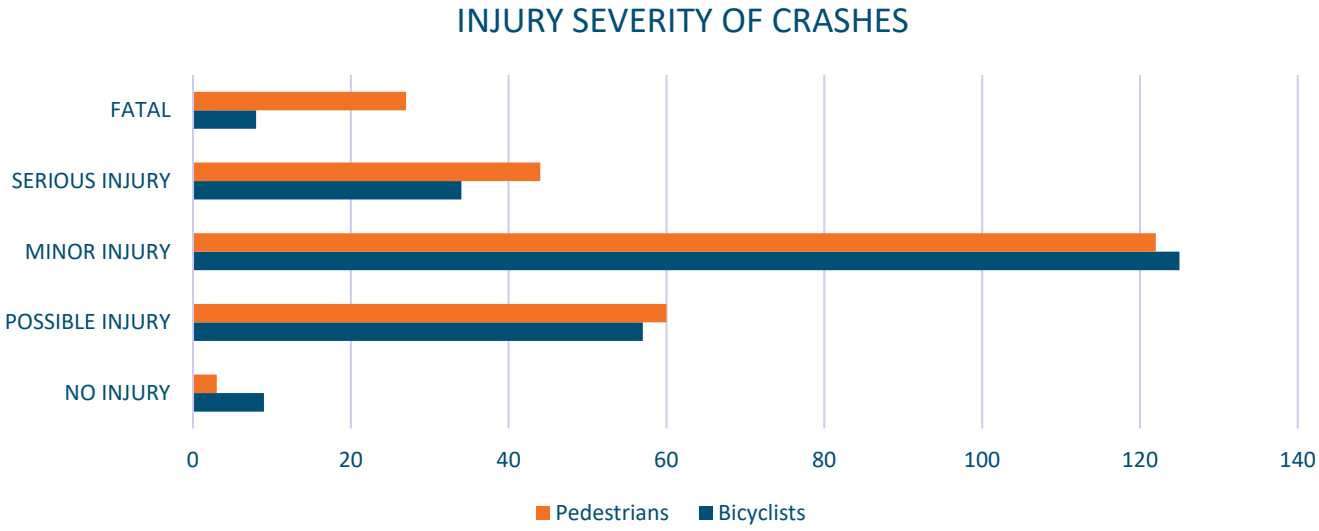


Figure 15 shows the separation of fatalities and serious injuries in the region over the 7-year period. While fatalities continued to peak from 2017 to 2022, we are beginning to see a reduction in 2023, similar to 2020 during COVID-19 levels. While fatalities are now on a downward trend, we are seeing serious injuries increase to nearly 2021 post-COVID numbers, which were historically high across the nation and state. The fatality rate **(Figure 16)** represents the proportion of people who have died from a fatal crash. The rate was calculated per 100,000 population and compared to both the state and the nation.

Figure 15: Pedestrian and bicycle fatalities and serious injuries

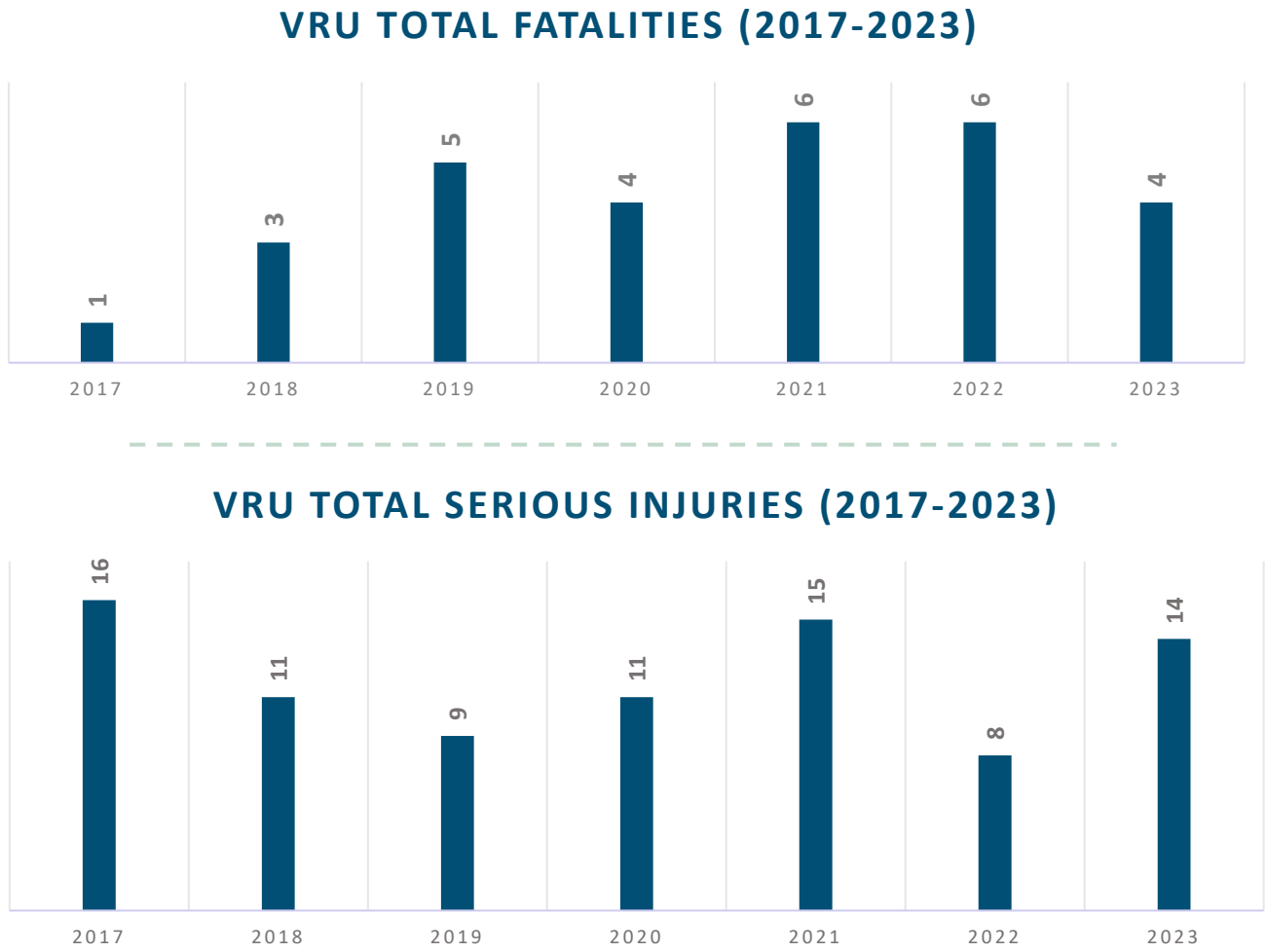
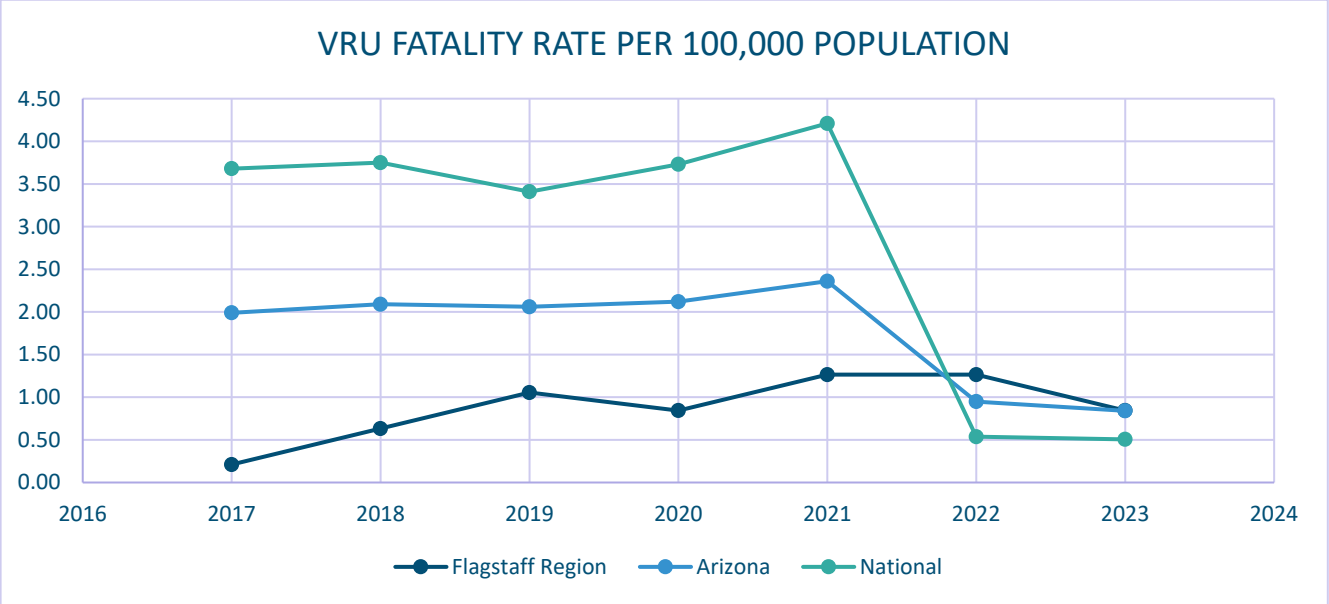


Figure 16: VRU Fatality Rate Comparison

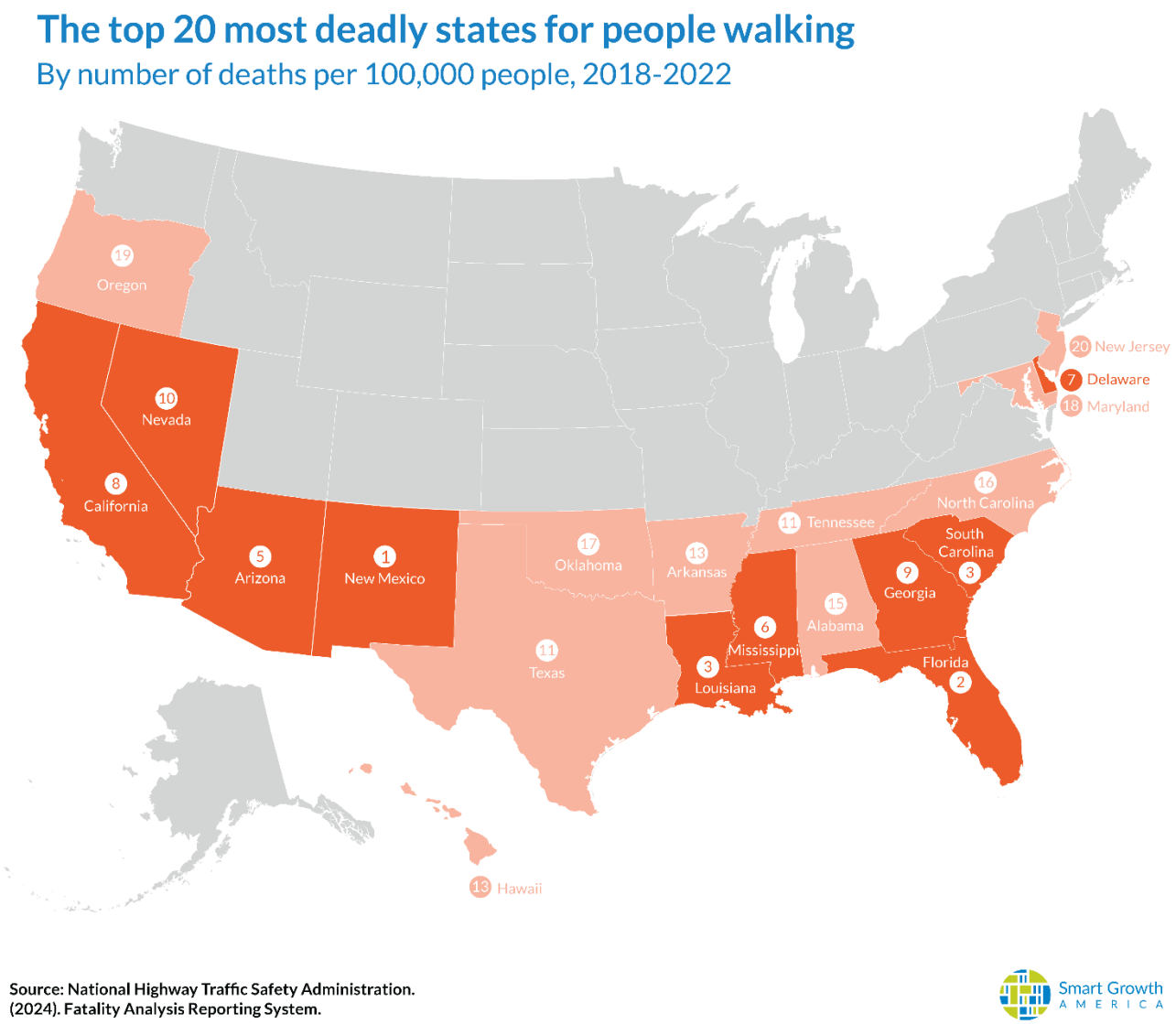


State and national fatality rates were provided by the Arizona Department of Transportation (ADOT) and Federal Highway Administration (FHWA) annual crash reports and statistics. The Flagstaff region showed an increase from 2017 to 2019; this was then followed by the lockdown effects of the COVID-19 pandemic in 2020, which reduced Flagstaff but rose at the state and national levels. In 2021, when lockdown restrictions were removed, there was a 33% increase in VRU fatalities. This held steady into 2022. Fortunately, in the region, we see the fatality rates declining by 33% in 2023. While overall fatalities rates for VRU's are dropping, pedestrians are being disproportionately impacted by crashes have continued to increase. There is still much work to do.

A NATIONAL LOOK AT VRU CRASHES

National trends continue to see a rise in pedestrian-related fatalities (Figure 17). The Governors Highway Safety Association and Smart Growth America have produced several reports on this epidemic that impacts families and our communities across the nation. Pedestrian deaths have increased 75% for people walking over a 10-year period from 2010 to 2020 (Smart Growth America). Of the top 20 deadliest states for people walking, Arizona is ranked #5. While Flagstaff is a small community compared to the larger metro areas such as Phoenix and Tucson.

Figure 17: Smart Growth America State of States



Source: National Highway Traffic Safety Administration. (2024). Fatality Analysis Reporting System.

Smart Growth AMERICA

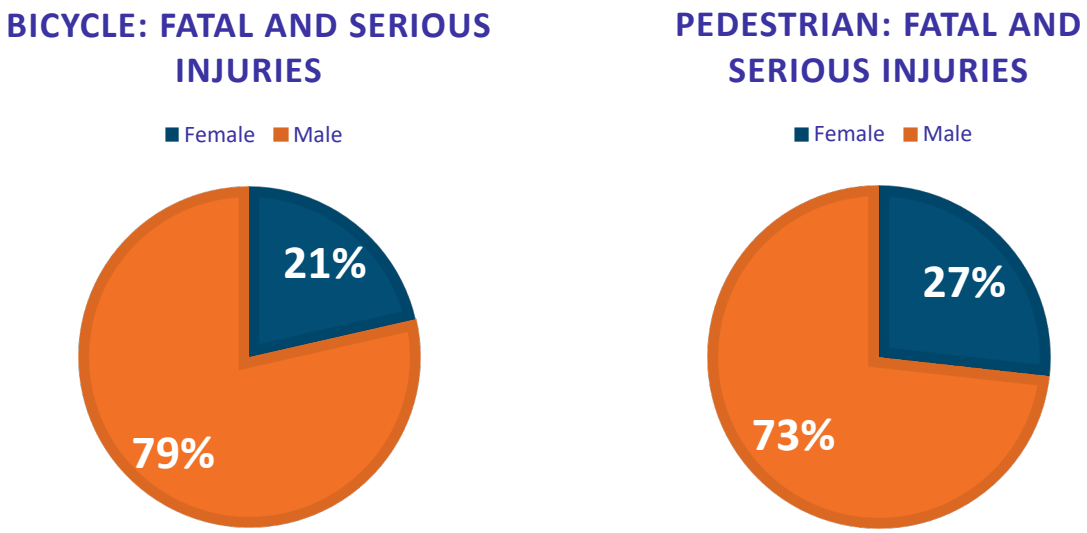
WHO IS IMPACTED BY THESE VRU CRASHES?

It's important to assess who is being impacted by crashes. This type of data provides guidance on safety education and outreach. Who to target and what behaviors to address. VRU fatalities by gender are shown in **Figure 18**. For both pedestrian and bicyclist crashes, males comprise the majority of VRU crashes, with females accounting for only 31% of all pedestrian crashes and 25% of all bicyclist crashes.

Figure 18: Total VRU Crashes, 2017-2023

When taking a closer look at just *fatalities and serious injuries by gender*, the trend is the same, with males comprising the majority of fatal and serious injury crashes **(Figure 19).**

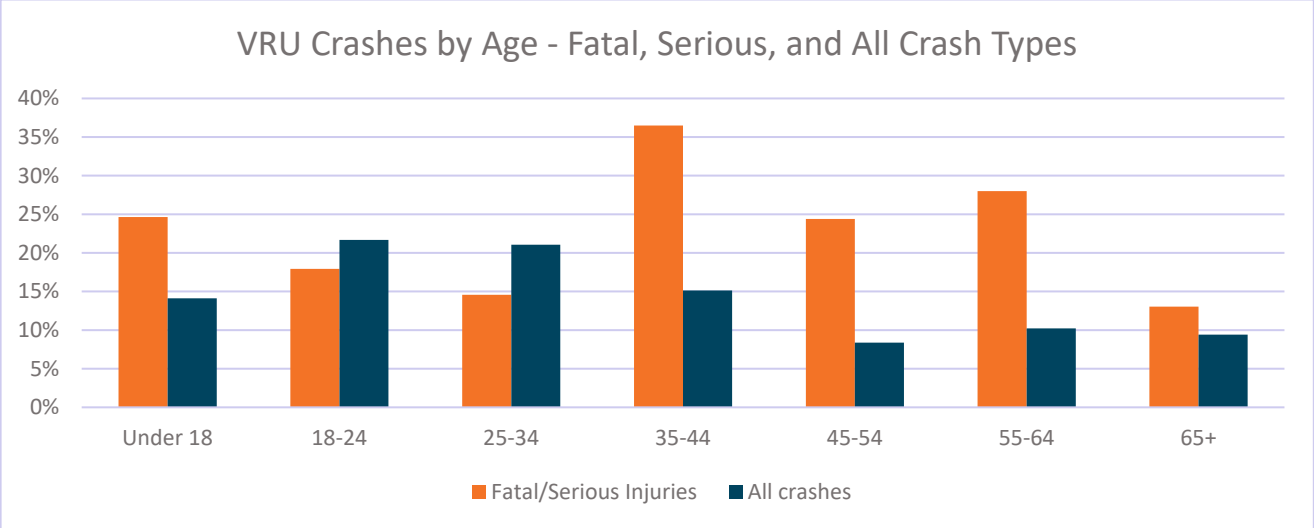
Figure 19: Fatal and Serious Injuries by Gender



Age is an important consideration, too. This allows us to understand who is at risk and to target specific groups to understand their behaviors. Most crashes occur for people ages 18-24, who make up 22% of the crashes, followed closely by 25–34-year-olds who make up 21% of total crashes

regardless of the severity. Of the 108 fatal and serious injuries, people ages 35-44 make up 36% of those crashes, or 6% of the total crashes regardless of severity.

Figure 20: Percent of VRU Crashes by Age Group



The following **(Table 2)** provides a breakdown of all crashes by the age group to give us a better idea of how crashes may disproportionately impact different age groups. Children and seniors represent the lowest percentage of crashes, while the 18-34 age group demonstrates the majority (9%) of crashes, followed by 35-54 (8%). Nationally, people 55+ are being disproportionately impacted, particularly as pedestrians. However, given that within Flagstaff sits a state college, we can assume that this is why our regional trends differ.

Table 2: VRU crashes by age

AGE GROUP	FATAL	SERIOUS INJURY	TOTAL F/SI	% OF F/SI	TOTAL - ALL SEVERITY #	% OF TOTAL
UNDER 18	14	3	17	25%	69	14%
18-24	15	4	19	18%	106	22%
25-34	14	1	15	15%	103	21%
35-44	19	8	27	36%	74	15%
45-54	6	4	10	24%	41	8%
55-64	8	6	14	28%	50	10%
65+	3	3	6	13%	46	9%
TOTAL	79	29	108		489	100%

CRASH TYPES & PRIMARY FACTORS

Pedestrians and bicyclists often cross the street to access essential services, employment opportunities, transit, and schools. Crossing is an essential part of walking and cycling. Unfortunately, in the Flagstaff Region, many crashes (36%) occur at a marked crosswalk at an intersection. **Table 3** demonstrates the top 5 areas where pedestrians and bicyclists are more likely to be involved in a crash. There are contributing factors based on the behaviors of both drivers, pedestrians, and bicyclists.

Table 3: Top 5 VRU Crashes by facility type (all crash types)

BICYCLIST		*TOTAL #*	*% OF TOTAL CRASHES*
1.	MARKED CROSSWALK AT INTERSECTION	76	16%
2.	BICYCLE LANE	45	9%
3.	SIDEWALK	20	4%
4.	AT INTERSECTION NOT IN CROSSWALK	20	4%
5.	NOT AT INTERSECTION ON ROADWAY NOT IN CROSSWALK	12	2%
		173	**35%**
PEDESTRIANS		*Total #*	*% of Total Crashes*
1.	MARKED CROSSWALK AT INTERSECTION	100	20%
2.	NOT AT INTERSECTION ON ROADWAY NOT IN CROSSWALK	54	11%
3.	AT INTERSECTION NOT IN CROSSWALK	18	4%
4.	AT INTERSECTION UNMARKED UNKNOWN IF MARKED	15	3%
5.	SIDEWALK	14	3%
		201	**41%**
PEDESTRIANS AND BICYCLISTS COMBINED		*Total #*	*% of Total Crashes*
1.	MARKED CROSSWALK AT INTERSECTION	176	36%
2.	NOT AT INTERSECTION ON ROADWAY NOT IN CROSSWALK	66	13%
3.	BICYCLE LANE	49	10%
4.	AT INTERSECTION NOT IN CROSSWALK	38	8%
5.	SIDEWALK	34	7%
		363	**74%**

CONTRIBUTING FACTORS

1) Vehicles not yielding at intersections and crosswalks.

2) Peds/Bikes crossing the roadway at unmarked/mid-block crossings.

3) Bikes being struck in a bike lane by vehicles OR due to riding wrong way on the roadway.

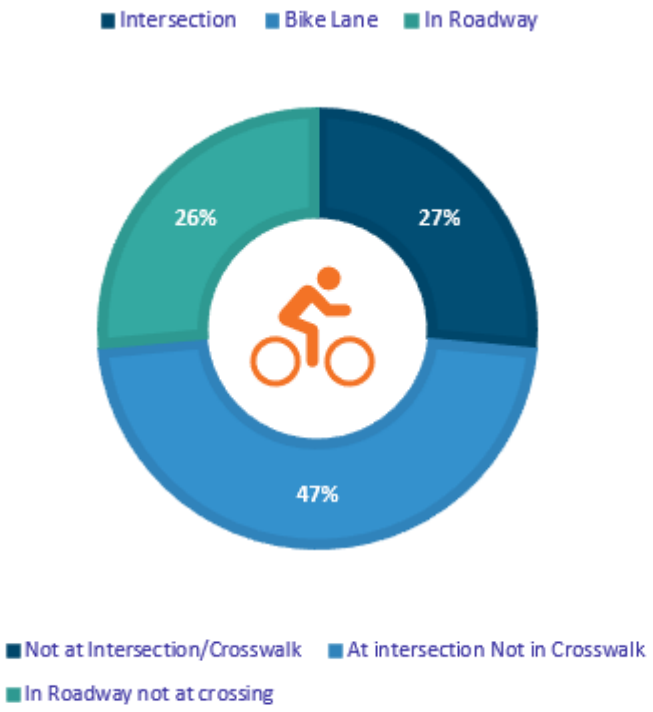
14% VRU crashes are a result of a *Hit and Run*

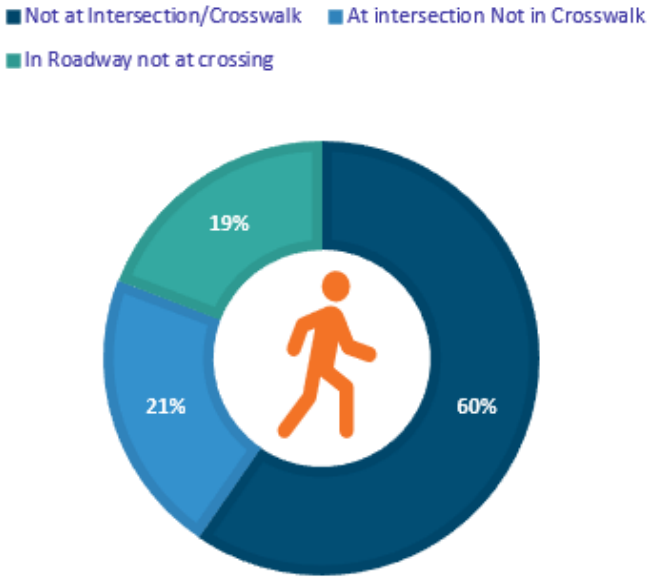
36% Happen in a marked crossing or intersection

10% Happen in a bike lane

Most notable in **Table 3 a**re the percentage of crashes (57%) that happen while people are trying to cross the road. Figure 13 breaks down the primary actions of both pedestrians and bicyclists that have led to a serious injury or fatality

Figure 21: VRU Serious Injuries and Fatalities by Roadway Location





SERIOUS AND FATAL CRASHES

47% of Bicyclists involved in a serious or fatal crash were often ***struck in a bike lane***. Followed by 27% at intersections where a crosswalk was *not* present.

60% of Pedestrians involved in serious injury and fatal crashes were most often struck when crossing the road – ***not in a crosswalk or at an intersection.*** Followed by 21% at an intersection without a crosswalk.

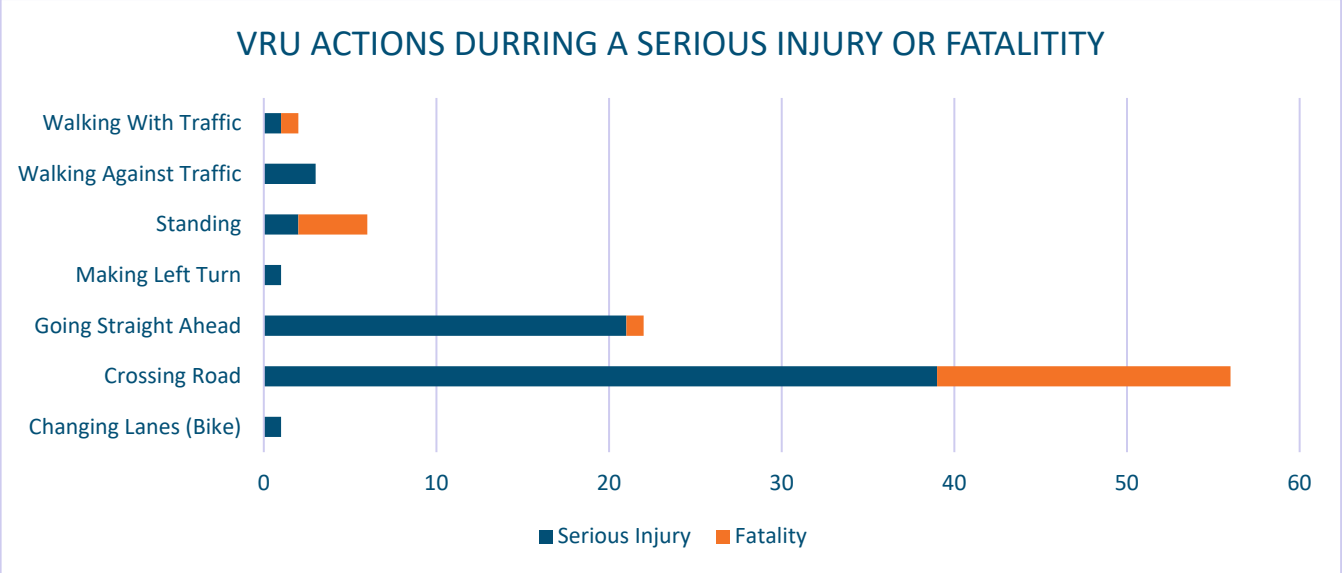
- **Four-way intersections** account for 7% of all VRU Crashes
- **"T" intersections** account for 3% of all VRU Crashes.
- **Roundabouts** over the 7-year period experienced zero VRU crashes.

Roundabouts are proven countermeasure to reduce VRU conflicts at intersections.

VRU ACTIONS AND BEHAVIORS

ADOT crash data analysis revealed that a few behaviors seem to be related to many serious and fatal crashes in the region. While vulnerable road users are disproportionately impacted by severe crashes, there are some behaviors and actions, more than others, that increase a person's risk. **This is a good reminder that road safety is the responsibility of everyone using our transportation system**. Many of the factors listed below are due to the failure to yield by drivers during regular pedestrian and bicyclist travel actions. There are some actions that may increase risk, such as walking with traffic when no sidewalks are available or changing lanes on your bike while vehicles are present. **Figure 22** demonstrates the actions and behaviors that the VRU was conducting during a serious injury or fatality crash. Most notable are the number of people who are involved in serious or fatal crashes while crossing the road.

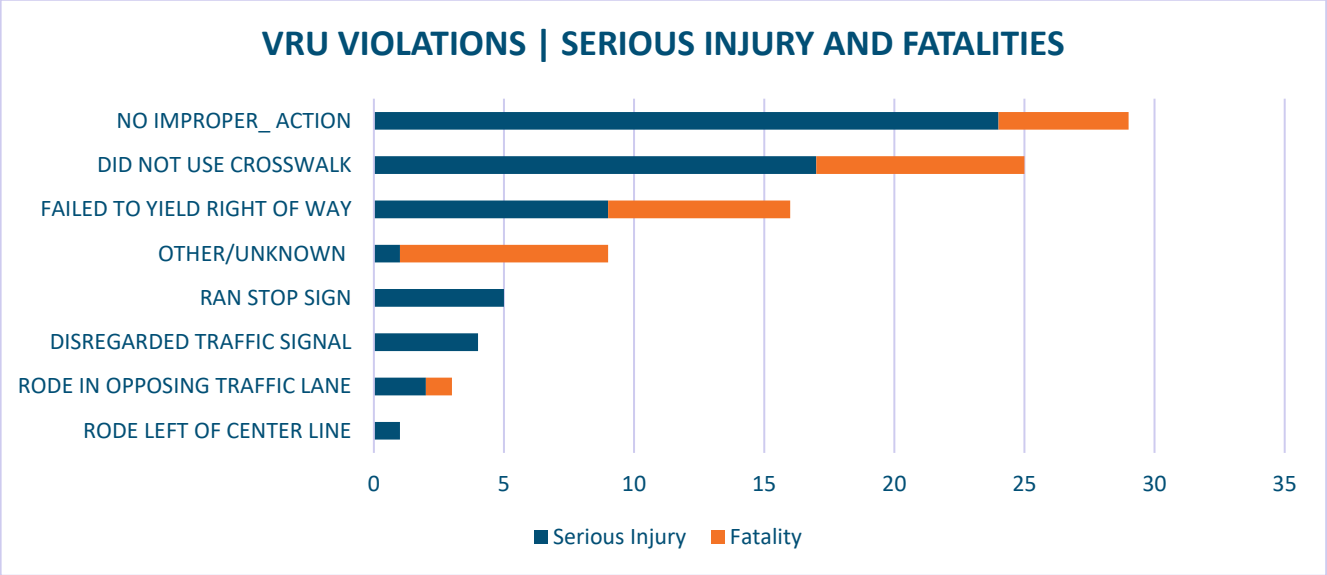
Figure 22: Actions leading to a serious injury or fatality



Life-threatening behaviors and actions are not just limited to drivers. The following **Figure 23** demonstrates some of the violations of bicyclists and pedestrians that lead to serious injury or fatality. For many serious injuries, there was no improper action by the VRU. However, 25 people were seriously injured or died when they did not use a crosswalk, which accounts for 27% of all serious injuries and fatalities. This is followed by failure to yield, accounting for 17% of violations that led to serious injuries and fatalities

Regardless of how you get around the region, we all fail to follow proper traffic laws at times. Our maneuvers while using the roadway can impact our risk of serious or fatal injuries.

Figure 23: VRU Violations



IMPAIRMENT

Driving, biking, or walking under the influence of alcohol or drugs is a temptation that some community members experience in their daily lives. Fatal and life-changing injury crashes that involve impairment negatively impact far too many of our community members. Approximately 15% of the total VRU crashes occurred due to pedestrian or bicyclist' impairment. Impairments consist of alcohol use, drug use, and medication use. Out of the impairments, alcohol use accounts for 14.5% and drug use 1% of crashes. The following demonstrates hows lighting conditions related to impairment. By reviewing this data, we can determine if and how impairment and lighting conditions impact each other. Lighting conditions related to impaired crashes show no significant trends.

LIGHTING CONDITIONS	TOTAL IMPAIRED	% TOTAL CRASHES (489)
DAYLIGHT	26	5%
DAWN	0	0%
DUSK	3	1%
DARK_LIGHTED	28	6%
DARK_NOT_LIGHTED	18	4%
DARK_UNKNOWN_LIGHTING	0	0%

Of the 75 crashes where a bicyclist or a pedestrian was under the influence, 27% were ages 35-44, and 84% were male.

Of the 233 bicyclists involved in a crash, only 24% were wearing a helmet.

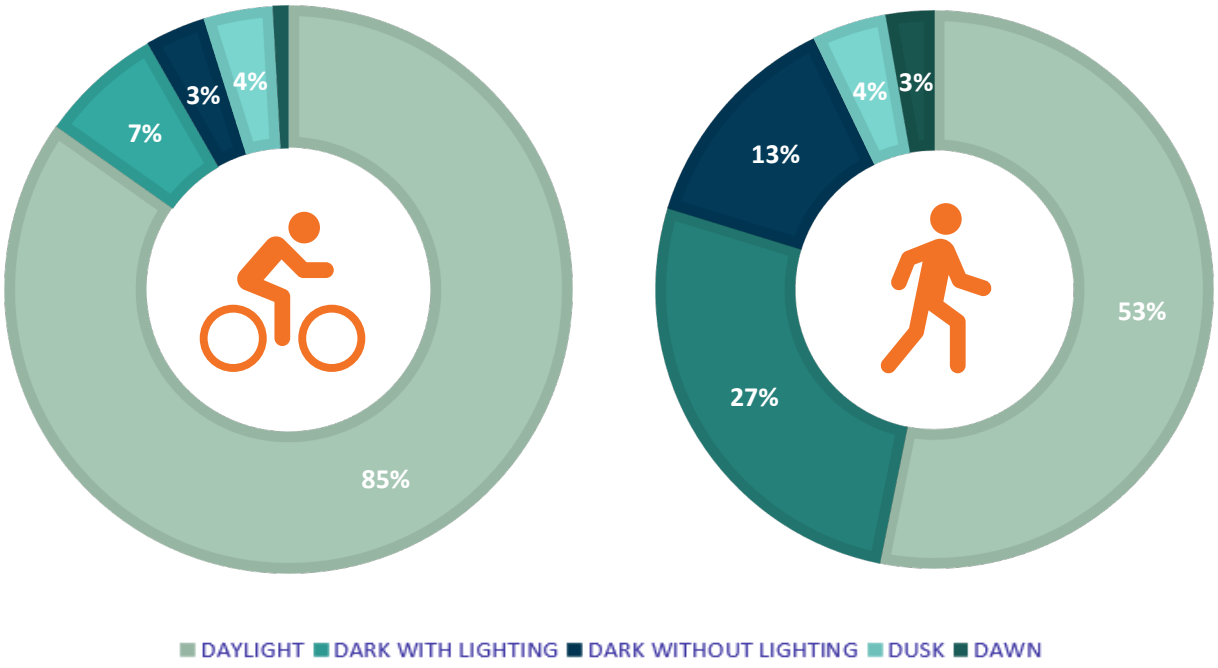
Helmets reduce the risk of head injury by 48%, traumatic brain injury by 53%, facial injury by 23%, and fatal injury by 34%
(American College of Surgeons)

VRUS INVOLVED IN CRASHES BY LIGHTING CONDITIONS

The City of Flagstaff is the world's first international Dark Sky city and has specific zoning codes and lighting standards to preserve the night sky to support the astronomy industry that includes Lowell Observatory, the U.S. Naval Observatory, the Navy Prototype Optical Interferometer, the National Undergraduate Research Observatory, the U.S. Geological Survey Astrogeology Center, and the Discovery Channel Telescope. Public support for protection of the night sky for both general enjoyment and professional deep space research has become an established element of community and regional identity (City of Flagstaff). While "Dark Sky" may invoke thoughts regarding unsafe walking and bicycling conditions, the special LED lighting used by many Dark Sky communities has been studied and shows people can see more of the roadway and their surroundings in the amber colored dark sky lighting (Street Lighting for Enhancing Dark Skies (SLEDS)).

Trends in VRU involvement in serious injury and fatal crashes by lighting conditions were analyzed to identify key safety indicators **(Figure 24).** Overall, the majority of crashes happen in daylight conditions. Daytime serious and fatal crashes account for 85% of bicycle crashes and 53% of pedestrian crashes. The most impacted by lighting conditions are people who walk, 40% of pedestrian serious injuries and fatalities occur in dark conditions, of which 13% happen in areas without lighting.

Figure 24: Lighting Conditions for Serious Injuries and Fatalities

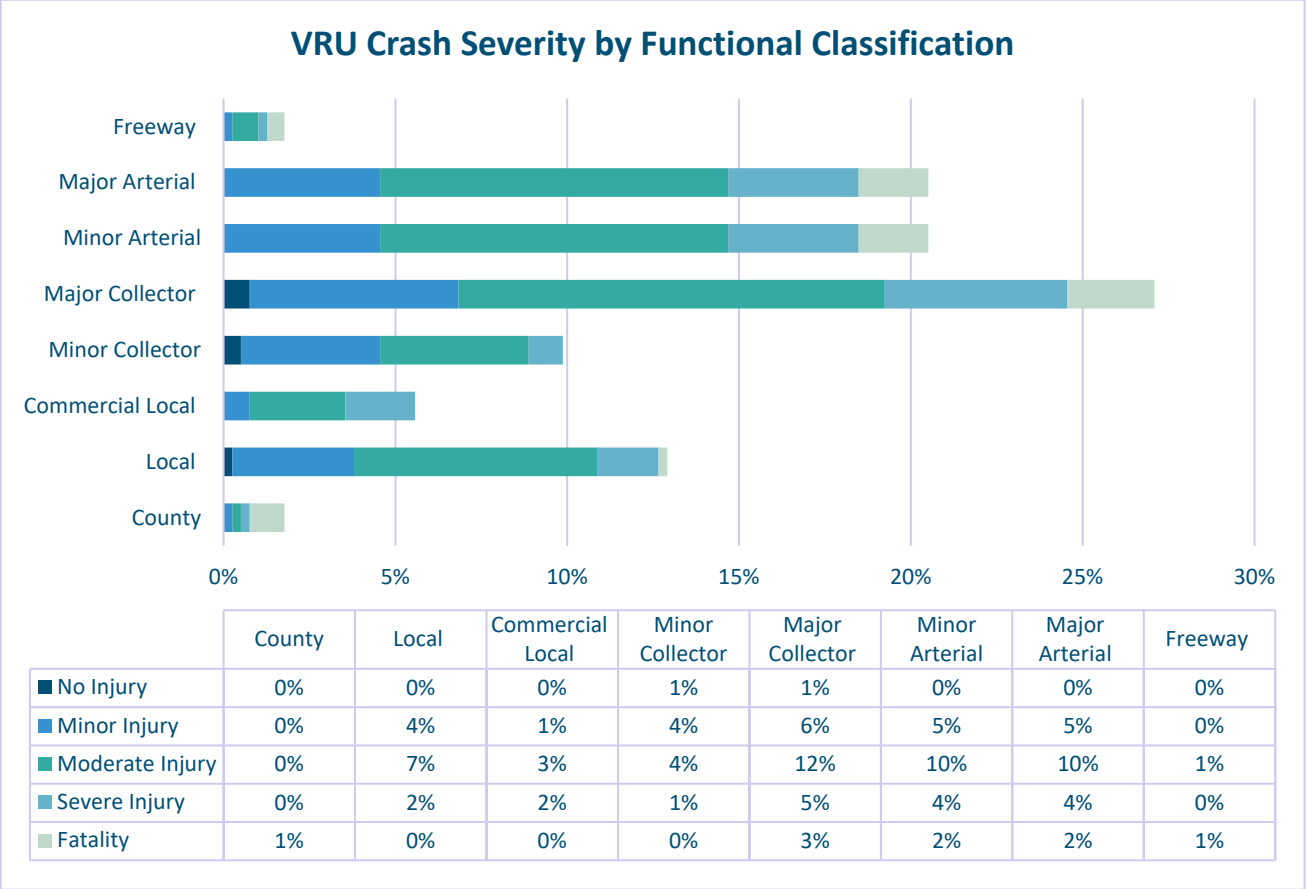


STREET DESIGN

A key aspect of Vision Zero is to design streets that are forgiving. While we each have a responsibility to behave safely on our streets, mistakes happen—and the result can be a life-changing injury or death while moving in and around the Flagstaff Region.

Unfortunately, our streets and roads are not always designed with this principle in mind. This is particularly true for our arterials and major collectors, on which **27% of fatal and severe injury VRU crashes occur in the region**. Many arterials and major collectors are built for carrying large amounts of fast-moving automobile traffic. Most have sidewalks, but infrequently safe crossings for people walking and bicycling. Some also have transit services, which increases the need for crossing the street. And some have bicycle facilities, but they may not be the safest design for the speed and volume of vehicular traffic on that street. People biking and walking are disproportionately at risk when traveling along these streets **(Figure 25)**. Regardless of VRU crash severity, **68% of all crashes happen on a major collector, minor arterial, or major arterial.** We cannot escape the conclusion that our arterials must be designed differently to save lives in our region.

Figure 25: VRU Crashes by Roadway Classification

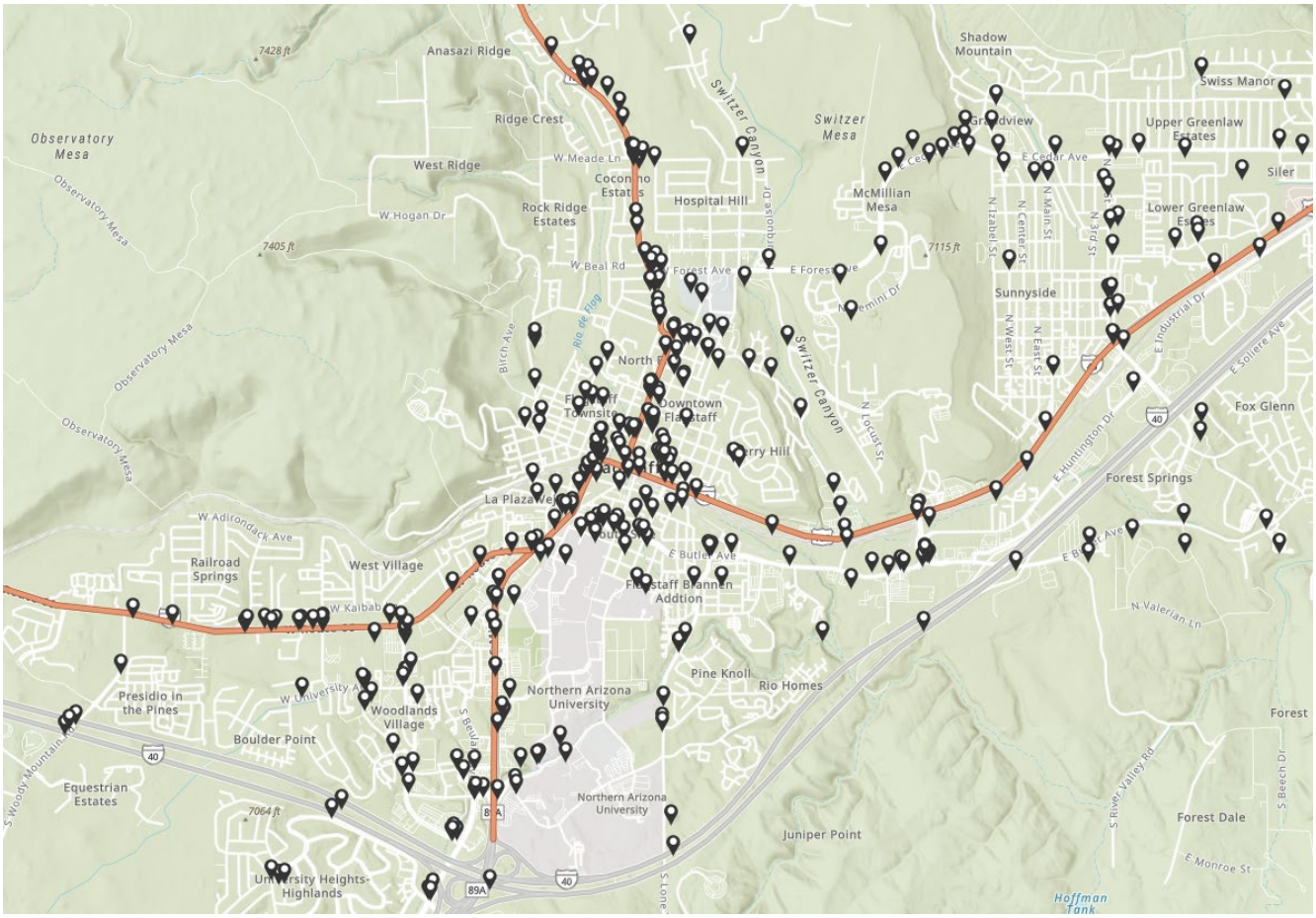


	County	Local	Commercial Local	Minor Collector	Major Collector	Minor Arterial	Major Arterial	Freeway
No Injury	0%	0%	0%	1%	1%	0%	0%	0%
Minor Injury	0%	4%	1%	4%	6%	5%	5%	0%
Moderate Injury	0%	7%	3%	4%	12%	10%	10%	1%
Severe Injury	0%	2%	2%	1%	5%	4%	4%	0%
Fatality	1%	0%	0%	0%	3%	2%	2%	1%

As part of the public outreach, we asked people to identify those areas that they felt were the most unsafe or at risk while walking and bicycling in the region through an online platform that allowed people to place a pin and comment describing their concerns and observations **(Figure 26)**. While the region received many comments, several comments were left along ADOT-owned roadways. ADOT maintains the state highway system. This includes portions of major highways like I-17 and I-40 that pass through or are located near Flagstaff, along with Milton Road/Route 66, Highway 180, and Highway 89. Flagstaff is unique in that it is bisected by these principal arterials.

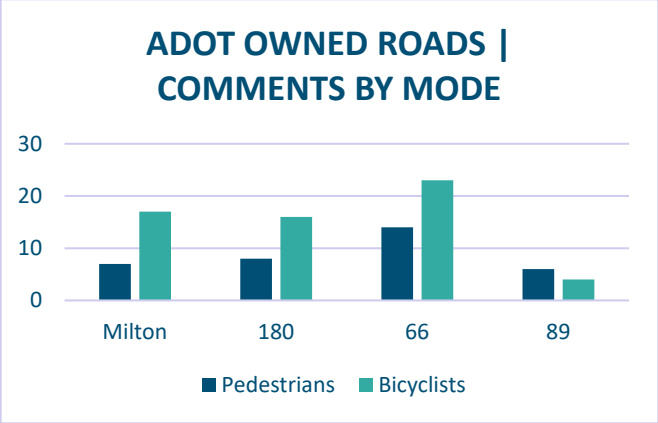
These highways aim to move large volumes of vehicular traffic through the community efficiently, but these roadways within City limits are often at higher speeds and create challenges for those walking and bicycling to cross to reach essential services. More on speeding and its impacts to come in the following section.

Figure 26: Public Comments + ADOT roadways



Of the comments received, many were focused on ADOT-owned roads, with bicyclists expressing most concerns along Route 66, followed by Milton Rd. and Highway 180. Pedestrian comments followed the same pattern as bicyclists.

Figure 27: Public comments related to ADOT-owned roads

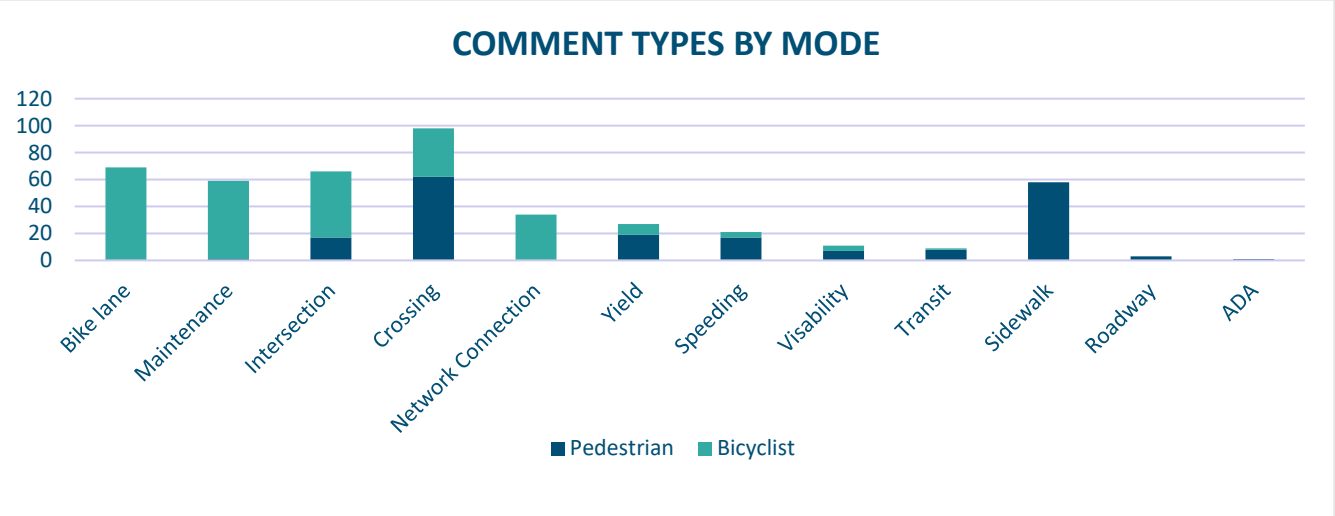


In total, 456 comments were collected from pedestrians and bicyclists for the whole region. The most common comments for pedestrians were related to safer crossings and new and/or well-maintained sidewalks. For bicyclists, comments focused on the bike lanes in terms of the need for more bike lanes, improved connectivity, maintenance, and safety/comfort **(Figure 28)**.

> *"Crossing 66 as both a pedestrian and bicyclist at this intersection feels very uncomfortable. It's so huge and the ped. light countdown is not sufficient for those who walk slowly or have a disability. I've seen cars not yield or slow for bikes/peds, I've also seen peds run across (during left turns for cars) to the center island to quicken their trip."*
> **(E. Route 66 at 4th St)**
>
> *"Many of the patients of the healthcare facility located here are dependent upon the metro buses to get here. Many of these patients are physically disabled and have to walk or otherwise make their way here from the nearest bus stop. This intersection needs a light and crosswalk"*
> **(HWY 89 at Trail's End Dr.)**
>
> *"So scary to cross with young kids that we just don't ever do it, and instead drive the half mile to Jim Cullen Park. A crosswalk with a light would make this so much better!"*
> **(HWY 180 at W. Forest Ave)**

Both the City of Flagstaff and ADOT have a commitment to reducing or eliminating traffic fatalities and serious injuries on our roadways. This community feedback and data demonstrate the region's areas of concern and offer an opportunity for the regional jurisdictions to work together to meet our shared goals around Vision Zero.

Figure 28: Comments by Areas of Concern

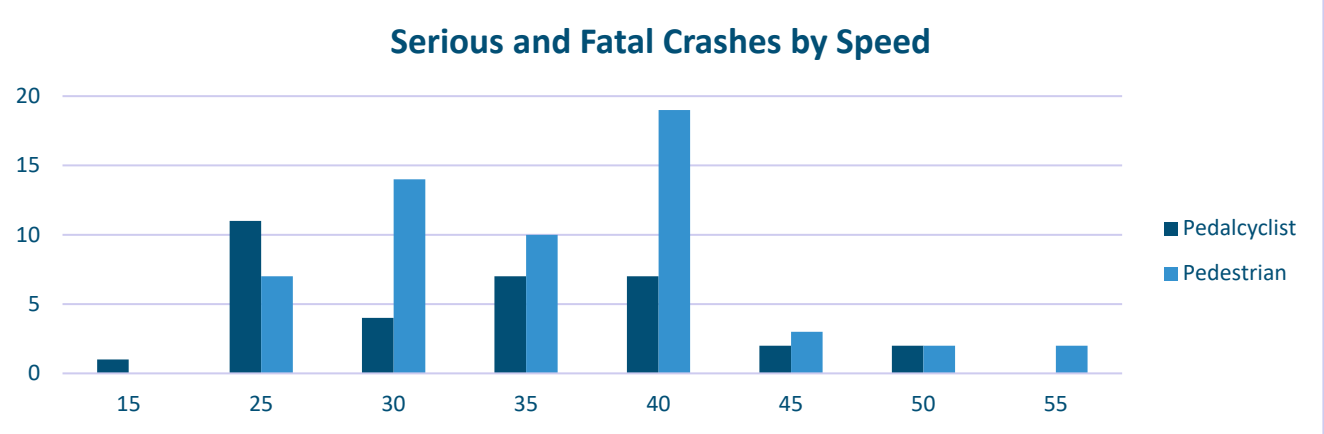


VEHICLE SPEEDS

Vehicle speeds are a major factor in crashes – the higher the speeds, the greater the likelihood of a severe injury or fatality. The designated speed of our streets needs to be addressed.

Recent studies suggest that even a modest reduction in average vehicle speed can result in significantly fewer and **less severe** bicyclist and pedestrian crashes. A comprehensive study by the AAA Foundation concluded that an adult pedestrian struck by a motor vehicle traveling at 25mph has a roughly 10% chance of suffering a serious or fatal injury. Yet if a driver hits an adult pedestrian at 40mph, there is a 75% chance that the pedestrian would incur a severe or fatal injury. **Figure 29** demonstrates a combination of both serious injuries and fatalities by speed limit in the region. Particularly noticeable are the disproportional impacts to pedestrians when a crash occurs at 30-45 miles per hour.

Figure 29: Serious and fatal crashes and speeds



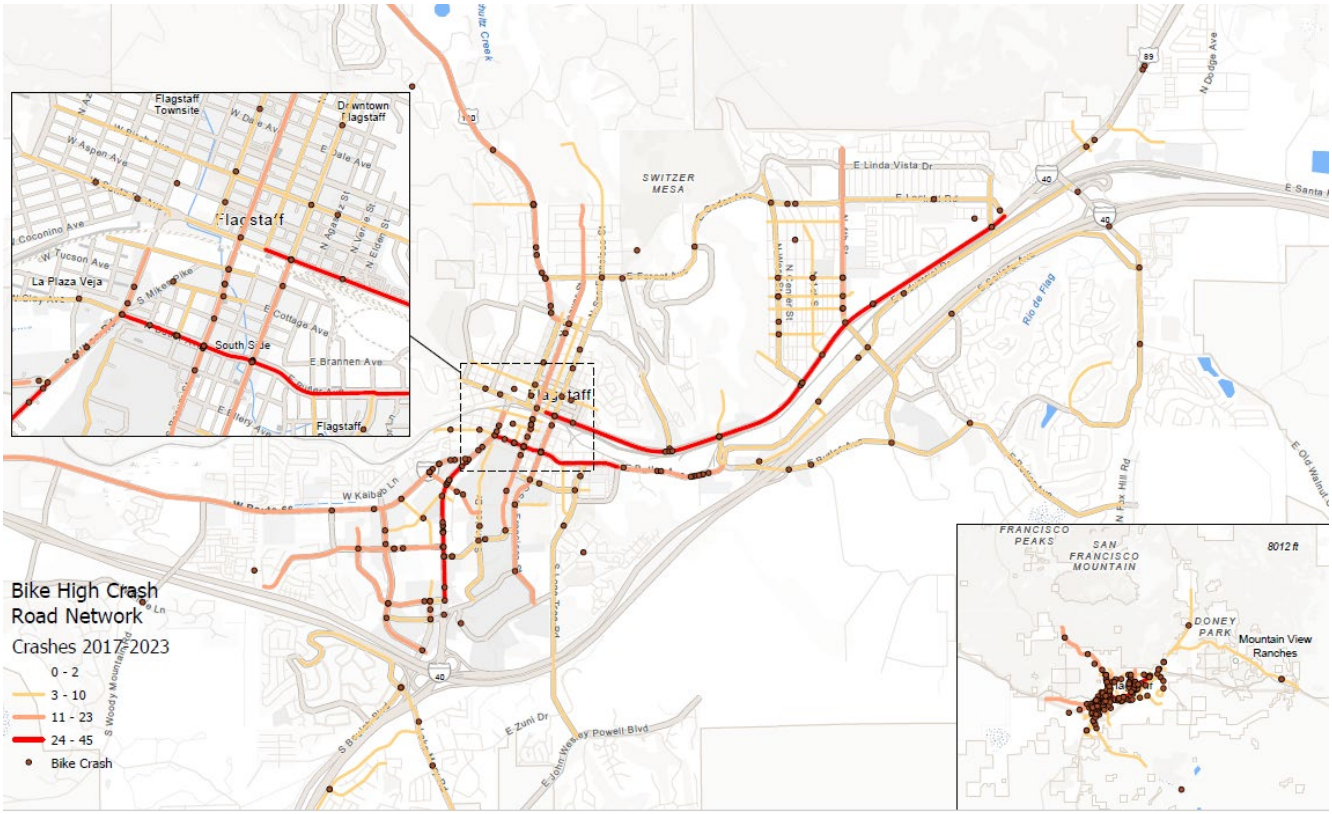
VRU HIGH INJURY NETWORK

A high injury network (HIN) is a way of identifying parts of a street network with higher rates of traffic injuries or fatalities, typically with a goal of prioritizing these streets for safety interventions.

HIN is a blend of analysis and judgment to provide a large enough share of the roadway network to be meaningful but not so large as to lack utility in prioritizing and communicating roadway safety needs to the public. Unlike intersection or segment hot spot analysis, HINs can identify entire corridors that have experienced patterns of crashes. **Map 2** focused on the Bicycle HIN with the top 3 roadways **(Table 4)** having the highest crashes that resulted in injury or fatality from 2017 to 2023.

Road	Segment	Segment Length	Functional Classification	Facility Owner
Milton Road	Forest Meadows to W. Route 66	1.0 miles	Major Arterial	ADOT
Butler Ave.	Milton Rd. to Sawmill Rd.	0.9 miles	Minor Arterial	City of Flagstaff
E. Route 66	N. Leroux St. to E. Lockett Rd.	3.8 miles	Major Arterial	ADOT

Map 2: Bicycle High Injury Network (HIN), 2017-2023

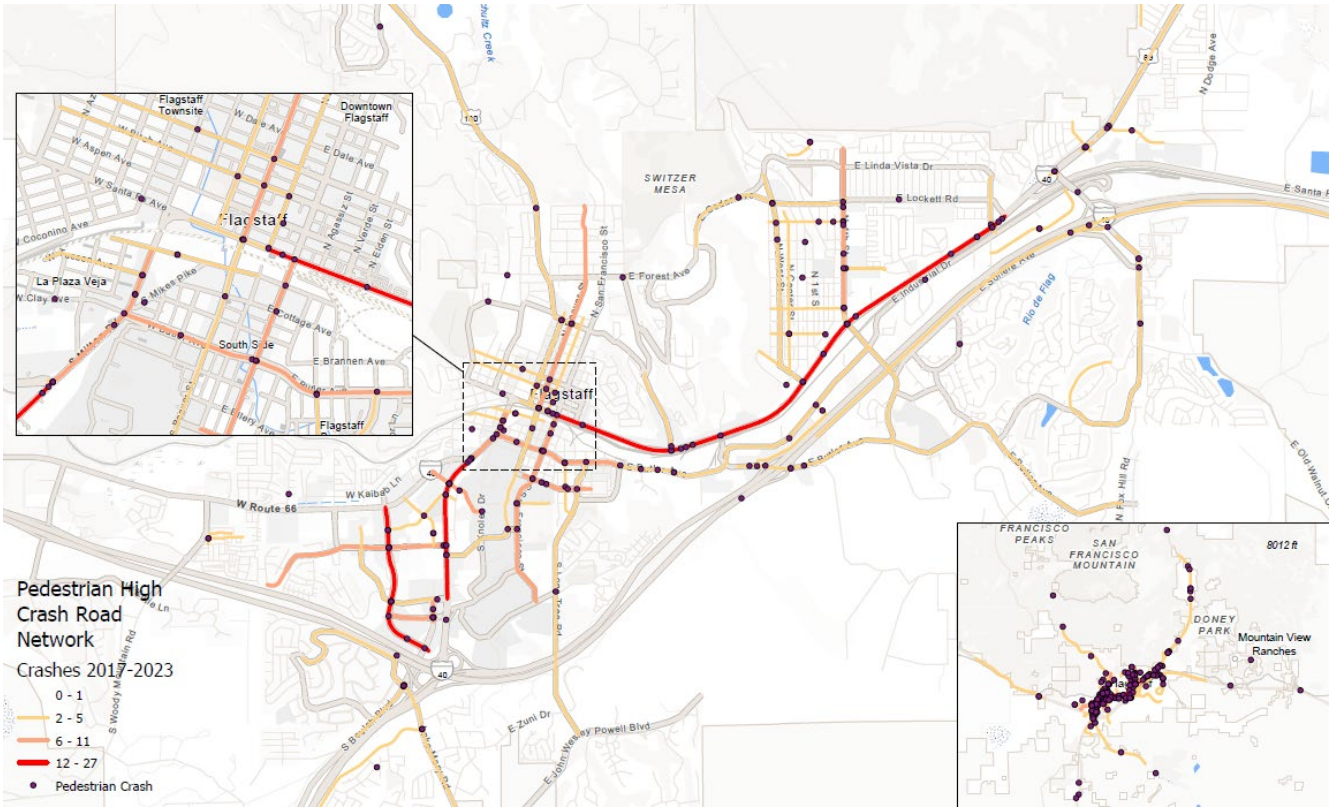


The Pedestrian HIN is demonstrated in **Map 3,** follows similar trends to the Bicycle HIN, with both Milton Road and E. Route 66 ranking high, and with the addition of Woodlands Village Blvd **(Table 5)**. Combined, these three segments make up nearly 6 miles of roadway that has substantial pedestrian traffic.

Table 5: Pedestrian High Injury Network (HIN), 2017-2023

Road	Segment	Segment Length	Functional Classification	Facility Owner
Milton Road	Forest Meadows to W. Route 66	1.0 miles	Major Arterial	ADOT
Woodland Village Blvd.	W. Route 66 to Beulah Blvd.	1.1 miles	Minor Arterial	City of Flagstaff
E. Route 66	N. Leroux St. to E. Lockett Rd.	3.8 miles	Major Arterial	ADOT

Map 3: Pedestrian High Injury Network (HIN), 20217-2023



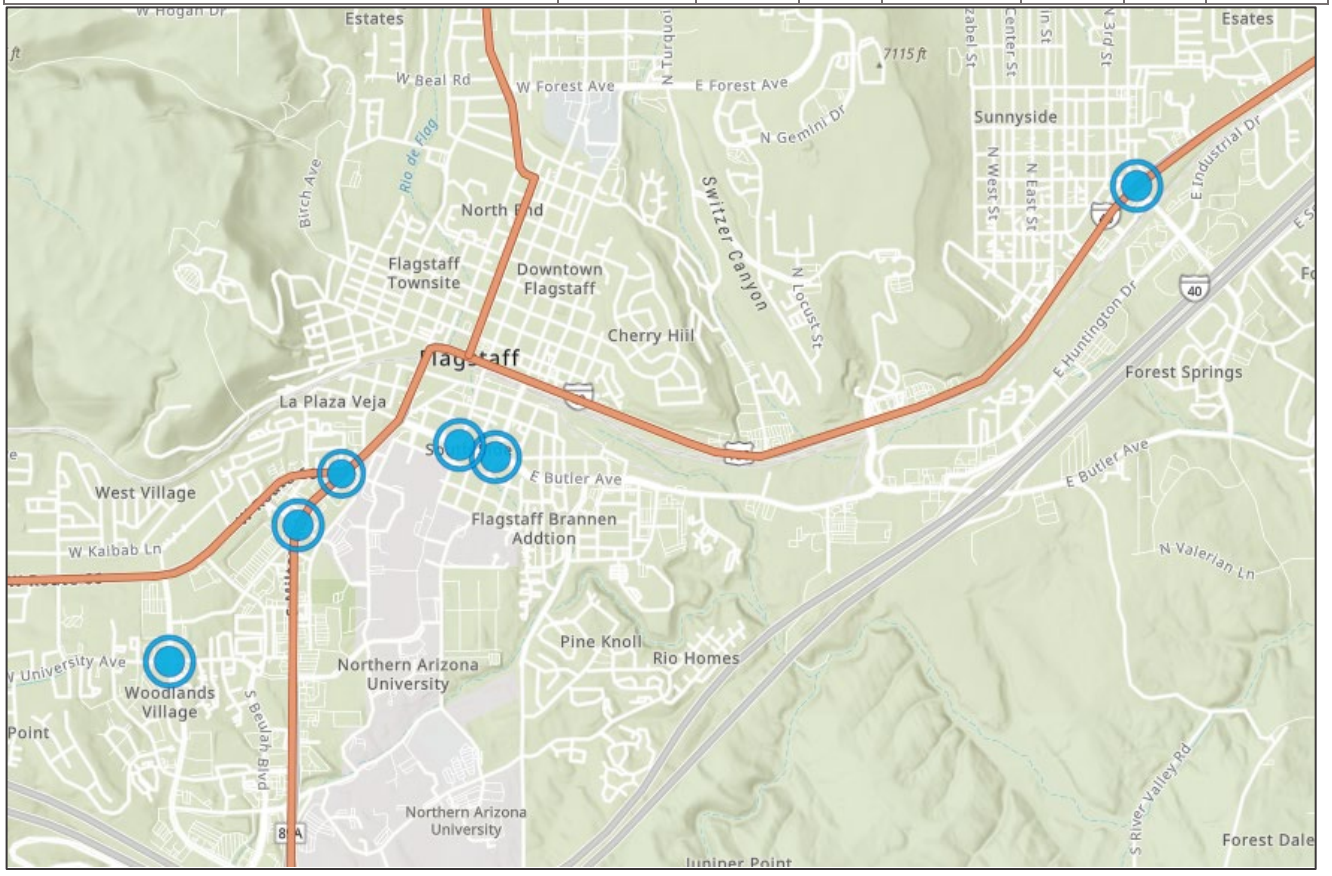
In addition to the bicycle and pedestrian HIN presented above, ADOT's Active Transportation Safety Action Plan (ATSAP) also identifies Milton Rd. and Route 66 as high-crash areas that warrant safety countermeasures that benefit all modes of transportation (**Appendix E)**

HIGH CRASH INTERSECTIONS

A key part of improving safety is to address our high-crash intersections and identify common features between those intersections that we can proactively address at other locations throughout the network. These are locations with higher numbers of crashes for pedestrians and cyclists. High crash intersections include places like Milton Rd. and Riordan Rd., where a major street meets in a wide intersection that also includes bike lanes and several driveways. This intersection is a major connection for people accessing the nearby University, Grocery Store, Pharmacy, and more.
The following intersections **(Table 6)** have been identified as having 5 to 10 crashes from 2017 to 2023.

Table 6: High Crash Intersections

High Crash Intersections	PEDESTRIAN			BICYCLISTS			Total
	Moderate	Severe	Fatal	Moderate	Severe	Fatal	
S Milton Rd - W Riordan Rd	5	1		3			9
S Woodlands Village Blvd - W University Ave	6	1					7
E Butler Ave - S San Francisco St		1		4			5
W Butler Ave - S Beaver St				4		1	5
N Fourth St - E Route 66	4			1			5
W Route 66 - S Milton Rd		3	1	1			5
	15	*6*	*1*	*13*	*0*	*1*	*36*



EQUITY REVIEW OF VRU'S

Why evaluate equity and crashes?

Equity in bicycle and pedestrian crash statistics is important because it can help ensure that all members of a community have access to opportunities and are treated fairly. Here are some examples of equity issues in bike and pedestrian traffic crashes from Smart Growth America.

- **Racial disparity:** According to a CDC study, Black and Native American people are more likely to be killed while walking than other racial groups.
- **Neighborhood income:** 30% of pedestrian deaths occur in low-income neighborhoods, even though these neighborhoods only make up 17% of the population.
- **Age:** Adults between the ages of 50-65 and adults over 75 are more likely to be killed while walking than other age groups.
- **Rural and tribal areas:** A 2021 study found that people in rural and tribal areas often use uncontrolled intersections instead of controlled crosswalks.

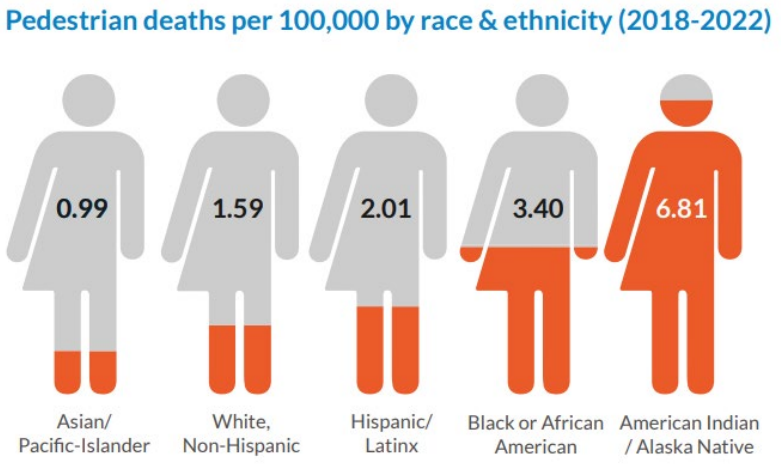


Image source: Smart Growth America, Dangerous by Design 2024 report

Identifying Communities of Concern helps the region become more aware of underserved and disadvantaged neighborhoods that may need and deserve more equitable transportation investments.

Compared to other neighborhoods, residents living in Communities of Concern may have fewer choices about how, when, and where they move around our region, putting them at a higher risk of danger as they use our streets.

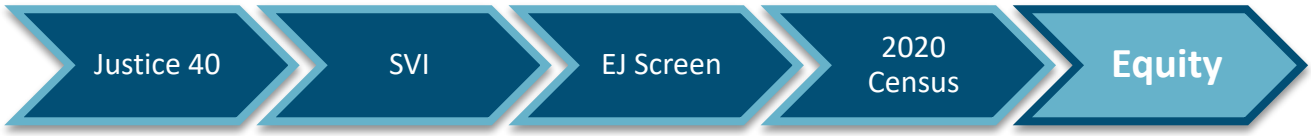
It is MetroPlan's intentions to identify safety investments in Communities of Concern. Our Vision Zero guiding tenets direct that both equity and safety data are used to identify and prioritize investment.

National trends show that underserved communities tend to be overlooked. Prioritizing safety improvements in high-crash areas that are also home to underserved populations will provide meaningful safety improvements for everyone.

EQUITY ANALYSIS

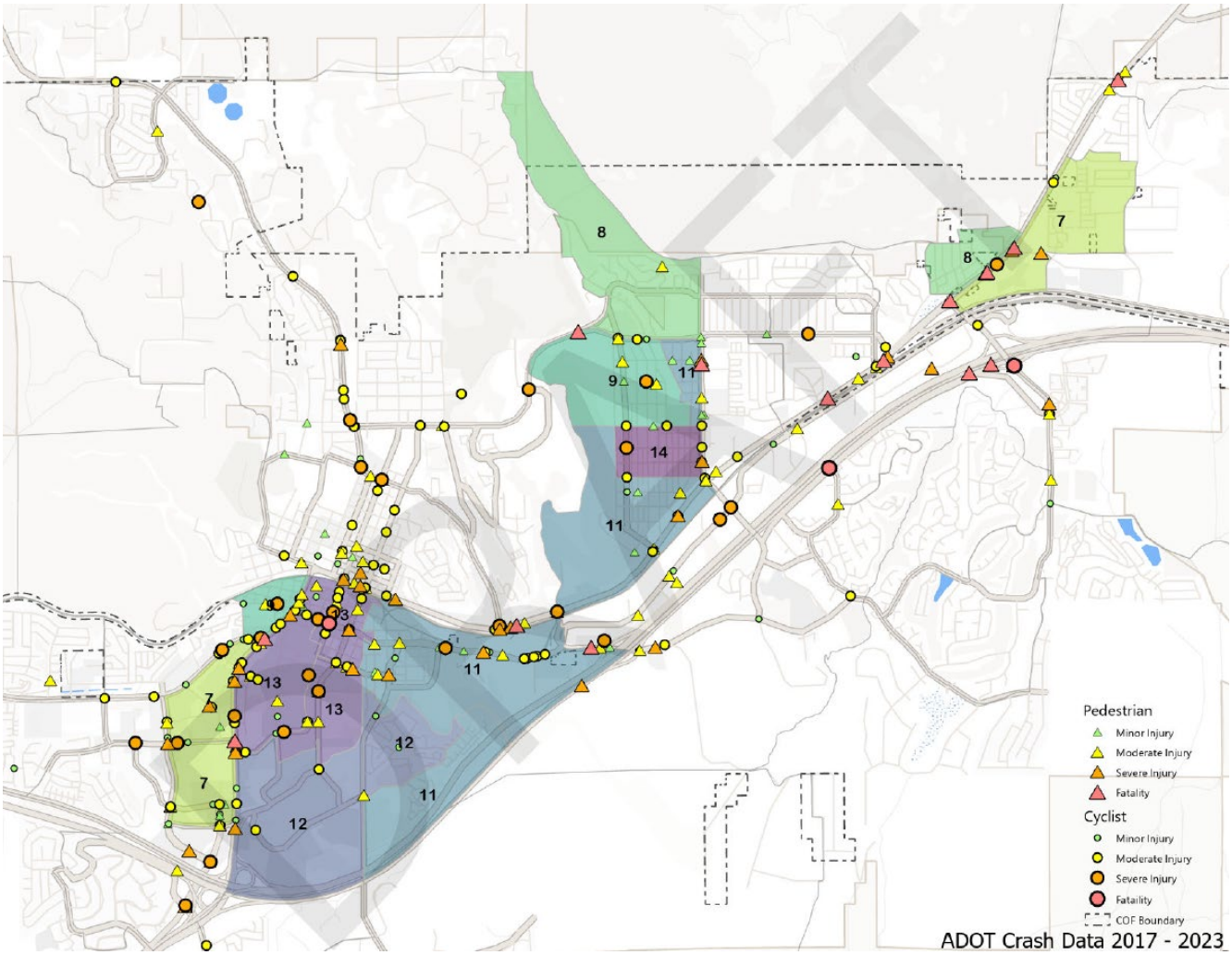
Data on demographics related to traffic crashes at a local level are not available. The Flagstaff Police Department uses a crash form provided by ADOT to record crash details. The only demographic components are age and gender. Therefore, to help identify equity areas in the Flagstaff Region, MetroPlan used ADOT's methodology as applied in the Arizona Vulnerable Road User Safety Assessment (2023).

"*This methodology was used to ensure the most comprehensive approach was taken to incorporate equity in crash analysis and safety improvements. Data from four different sources/tools were utilized in determining the overall equity of an area: Justice 40, the Social Vulnerability Index (SVI), EJScreen, and a proprietary Equity Needs Analysis using Census data. Each tool uses different measurements to display equity severity. This measurement was converted to a scoring system on a zero-to-five-point scale. Once each scale was overlayed statewide, the scores were then combined to establish a 20-point scale from the four sources to create a comprehensive lens to view equity in Arizona*."



Map 4 provides an overview of the equity scores within the City of Flagstaff. It should be noted that while a small part of Coconino County is within the Flagstaff Regional Boundary, no census blocks were identified as an "equity area". While the equity scores established a 20-point scale, with "20" having the highest equity impacts, the highest score in the region is 14 (Sunnyside Neighborhood), followed by 13 over three block groups (Southside Neighborhood and Northern Arizona University).

Map 4: ADOT Equity Scores and VRU Crashes, 2017-2023



Using this information along with crash data it gives an opportunity to explore and collect qualitative data through targeted outreach in these area**.** Using crash frequency, density, or rate helps determine high-crash areas while also incorporating the local demographics of high-crash areas.

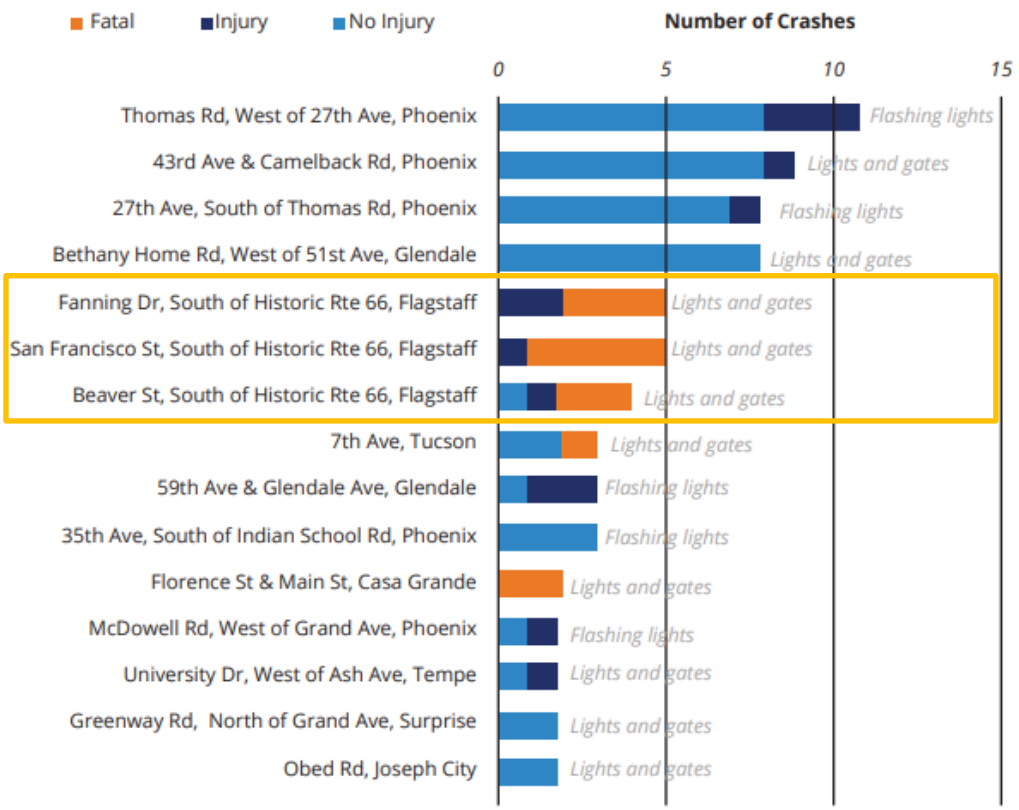
FEDERAL RAILROAD ADMINISTRATION (FRA) CRASH DATA

Flagstaff is bisected by the BNSF Railroad, which crosses many major streets and has important connections for all modes. The Arizona Department of Transportation (ADOT) conducted a State Highway-Rail Grade Crossing Action Plan (SHARP) that concluded in 2022. The analysis and findings from this action plan were conducted over a 5-year period from 2016 to 2020.

"*The purpose of Arizona's SHARP is to identify and develop strategic approaches that ADOT can use to improve safety and reduce fatal and other incidents at highway-rail grade crossings. This new Arizona SHRAP builds upon prior statewide efforts to enhance safety at the nearly 700 active and open public highway-rail grade crossings throughout Arizona*".

Within Arizona, Flagstaff represents 47% of all **fatal crashes** in the state due to the high frequency of freight and commercial trains. On average, 100 trains pass through Flagstaff each day (Arizona Daily Sun). Over the 5-year period, a total of 15 serious injuries or fatalities occurred. **The majority (87%) of Flagstaff's crashes involved pedestrians**.

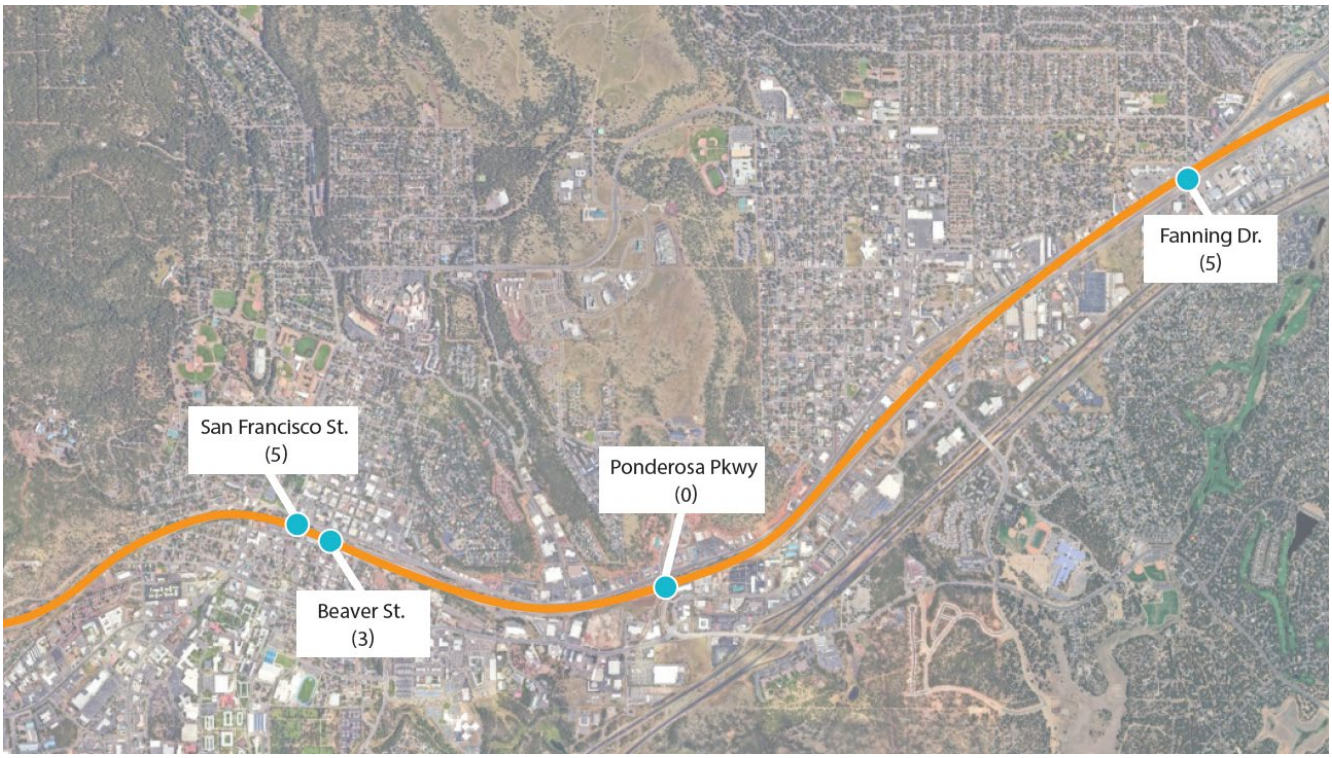
Figure 30: ADOT SHARP Crash Severity by Crossing



Within the Action Plan, four railroad crossings were prioritized for future improvements based on the crash data for all modes (vehicles, pedestrians, and bicyclists). **Figure 31** demonstrates how the railroad bisects Flagstaff within the city limits.

The four crossings in **Figure 31** demonstrate ADOT's priorities for future rail crossing safety improvements (funding has not been identified as of the development of the VRU). The numbers represent the pedestrians who have suffered serious injury or fatality. A total of 13 pedestrians were struck over the 5-year period. No bicyclists were involved in a rail-related crash.

Figure 31: Number of serious injuries or fatalities at crossings (ADOT 2016-2020)

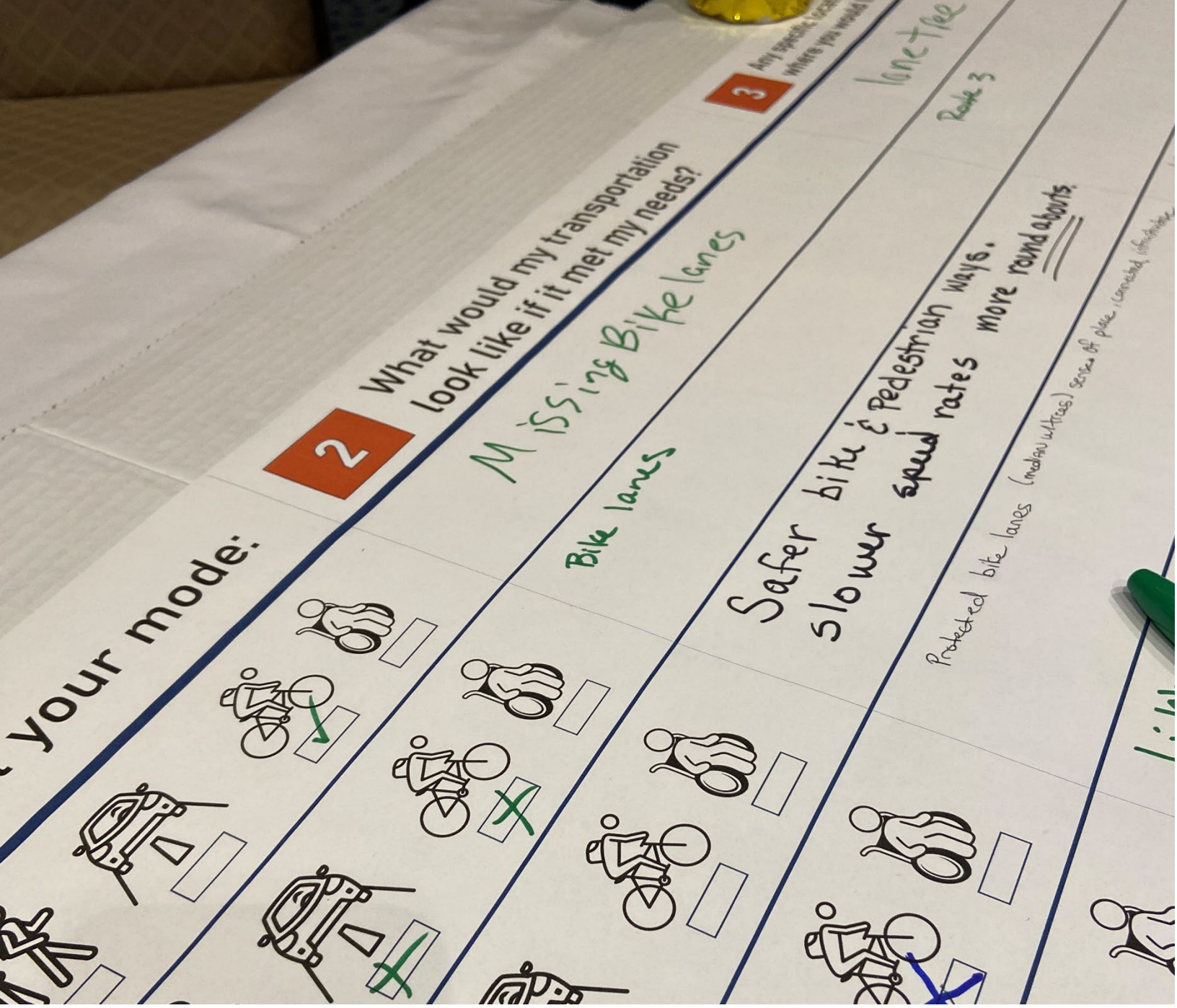


Pedestrian actions or behaviors that lead to a serious or fatal crash include going around or through gates as a train approaches.

Evaluating 2017-2023 Rail Crashes

As with the above analysis conducted by ADOT, we see similar trends looking over the most recent 7-year period. From 2017 to 2023, a total of 16 pedestrians were involved in a serious or fatal crash at rail crossings. Trends continue with the 4 crossings identified above as priority crash locations, with 56% of these crashes related to a person going around the rail crossing gate.

Photo 1: Image Credit AZFamily



Chapter 2:
Policies and Strategies

VISION ZERO POLICIES AND STRATEGIES

To reduce serious injuries and fatalities in the Metroplan Region

To formalize MetroPlan's commitment to traffic safety, MetroPlan adopted a Vision Zero Resolution that sets a clear, measurable goal: **Reduce serious injuries and fatalities on the regional transportation system by 40% by the year 2045**. This resolution reinforces the region's dedication to eliminating traffic injuries through data-driven, equitable, and system-level approaches that prioritize the safety of all road users, especially those walking, biking, and using transit. To achieve our Vision Zero resolution, MetroPlan developed policies and strategies to meet this commitment.

MetroPlan should institutionalize a consistent and transparent process for evaluating transportation safety outcomes and adjusting strategies accordingly. Policies that align with the resolution and FHWA's Safe Systems Approach will help ensure that Vision Zero implementation remains accountable, data-informed, and responsive to community needs and changing conditions.

Each of the ten (10) policies listed below responds to the following Action Areas, along with considerations of MetroPlan's ability to adopt and implement specific to the organization.

ACTION AREAS

There are five overarching strategies that MetroPlan will use to work toward a reduction in deaths and life-changing injuries. These strategies address the fundamental situations in the region that cause VRU crashes, make them more severe, challenge further analysis, and have the ability to prevent the region from moving as quickly as possible on actions. Actions presented in this plan grow out of these strategies to address the causes of crashes (street design and dangerous behaviors) and engagement and accountability, along with best practices **(Appendix B)** to reduce or eliminate serious injuries and fatalities for our most vulnerable road users.

Reduce potential for conflict between users

Decreasing the possibility that street users can come into conflict is the first line of defense against crashes. This means providing separate space for people walking, biking, driving, and taking transit along the street. At intersections, this may mean separating potentially conflicting movements by time so that two parties are not using the same space at the same time.

Slow vehicle speeds

When crashes do occur, they are less serious at slower speeds. Because not all crashes can be avoided, slowing speeds will decrease the severity of injuries and lead to fewer fatalities. Increased speed enforcement and changes to street designs can both help to decrease speeds in the region's roads and streets. Lowered speed limits may also address speeds, but must be paired with either enforcement or street design, ideally with both.

Encourage safer practices among people driving, walking, and bicycling

Many crashes result from choices made by street users. Disobeying traffic controls and laws, driving recklessly, and other behaviors may be best addressed through culture change in addition to changes to the streets themselves. Actions in this plan recognize, though, that some unsafe behaviors, such as walking in the street because there are no sidewalks, are the result of poor design that does not accommodate people walking.

Improve data collection and analysis

While this plan is the result of a data-driven process, additional analysis will help further refine and prioritize efforts in the future. Crash data analyzed in this plan only includes police-reported and citizen-reported crashes to the Arizona Department of Transportation (ADOT) and thus misses those crashes when no report was filed. Each report type results in different data collected, and though most fatal and life-changing injury crashes are reported by police, we cannot ensure full coverage. Other data limitations regarding the exact location of crashes (e.g., traveling on a sidewalk versus in the street) and street design features (e.g., number of lanes) prevent additional analyses that could tell a more complete story of the crash cause(s).

Support an institutional commitment to Vision Zero

Getting to zero deaths and life-changing injuries requires a major commitment by the MetroPlan Region and its partners. Actions in this category demonstrate institutional changes that will help the Flagstaff Region reach its goal. This institutional commitment can influence residents' support of the Vision Zero goal and actions to get to zero deaths and life-changing injuries. Public buy-in will be necessary to implement many of the actions listed in this plan.

METROPLAN POLICIES AND STRATEGIES

VZ-1	**Apply Safe System principles across all planning, engineering, and policy decisions.**
Purpose	To integrate Safe System principles into every stage of planning, engineering, and policymaking, ensuring transportation systems are proactively designed to anticipate human error, minimize crash severity, and protect all road users—especially the most vulnerable.
Strategies	• MetroPlan adopts a Vision Zero Resolution that sets forth a goal of reducing serious and fatal crashes by 40% by the year 2045. • Ensure that all long-range planning and project prioritization efforts include safety performance outcomes aligned with the Vision Zero resolution. • Work with partners to strategically prioritize projects with a focus on complete streets, vision zero, and transportation safety. • Annually review Capital Improvement Plans, maintenance, and preservation projects to identify opportunities for safety improvements with all users in mind. • Have the MetroPlan Technical Advisory Committee (TAC) serve as the Safety Committee. • Embed the 40% reduction target into the Regional Transportation Plan (RTP), Transportation Improvement Program (TIP), Safety Action Plan, and other MetroPlan regional planning documents.
VZ-2	**Maintain public awareness of the magnitude and cause of regional traffic injuries and fatalities.**
Purpose	To institutionalize a consistent and transparent process for evaluating transportation safety outcomes and adjusting strategies accordingly. The policy ensures that Vision Zero implementation remains accountable, data-informed, and responsive to community needs and changing conditions.
Strategies	• Establish, maintain, and report annually a review of Vision Zero targets, goals, and performance as a means of accountability. • Share findings with partners to support consistent safety messaging, funding prioritization, and policy alignment. • Incorporate the Regional Transportation Safety Action Plan into the Regional Transportation Plan (RTP) and integrate safety analysis into its development.

VZ-3	**Support and advance the implementation of transportation demonstration projects as a low-cost, short-term approach to test and evaluate potential long-term transportation improvements.**
Purpose	To provide a structured yet flexible framework for piloting innovative street designs, temporary infrastructure, and mobility enhancements that align with the region's goals for Vision Zero.
Strategies	• Identify potential demonstration projects with support from the City and County Engineering and Planning staff. • Develop a process for before and after studies of demonstration projects, resident engagement, and site prioritization. • Develop a toolkit to be used by partners for repeatable interventions across the region
VZ-4	**Integrate Speed Management into planning, programming, and policy decisions**
Purpose	Speed management is a core component of a Safe System approach, recognizing that vehicle speed directly influences both the likelihood and severity of crashes. This policy promotes setting and managing vehicle speeds that align with safety and the surrounding street context.
Strategies	• Support speed management training for MetroPlan staff and partners on behalf of the region. • Recommend countermeasures and speed management strategies explicitly in MetroPlan transportation plans and priorities. • Coordinate Road Safety Assessments (RSA)[1] on behalf of partners through the ADOT process.
VZ-5	**Collaborate with schools, partners, and community organizations to coordinate planning and implementation of Safe Routes to School programming.**
Purpose	This policy supports the development of safe, convenient, and accessible walking, biking, and transit routes for students traveling to and from school. It prioritizes traffic safety measures and education programs that reduce barriers, encourage active transportation, and protect children from traffic-related risks.
Strategies	• Collaborate with schools, local governments, law enforcement, and community organizations to coordinate Safe Routes to School planning and implementation. • Seek funding through state and federal Safe Routes to School programs.

[1] https://azdot.gov/planning/traffic-safety/road-safety-assessments

	• Collect and analyze data around schools to identify travel modes, speeds, and crashes. • Organize “Walk to School” and “Bike to School” days to encourage active transportation. • Work with partners and FUSD to ensure site planning for schools incorporates traffic safety review prior to siting/opening new, reconstructed, or relocated school(s). • Provide pedestrian and bicycle safety education in school curricula. • Work with local colleges/universities to create and implement a new walking, biking, driving, and transit riding safety campaign for students. • Conduct safety reviews of the transportation network in school zones.
VZ-6	**MetroPlan is committed to advancing a culture of safety through inclusive transportation education and encouragement campaigns.**
Purpose	These campaigns aim to inform, engage, and influence behavior among all road users—drivers, pedestrians, bicyclists, and transit riders—to reduce serious injuries and fatalities and support the region’s Vision Zero and Safe System goals. To ensure that transportation safety education is a core component of regional safety planning, complementing engineering and enforcement efforts.
Strategies	• Deploy pop-up education at community events, farmer’s markets, schools, and transit hubs. • Develop and provide Vision Zero messaging on an ongoing basis to be delivered to the public, neighborhood groups, and stakeholder group meetings. • Provide targeted outreach and training when adding new infrastructure to teach street users how to navigate a newly constructed facility. • Develop and implement a marketing campaign centered on people crossing and drivers yielding – a primary safety issue in the region. • Build upon and distribute educational materials related to intersection and crossing safety for all road users.

VZ-7	MetroPlan will recognize the importance of proven transportation safety technologies
Purpose	MetroPlan recognizes the critical role of proven safety technology in advancing regional transportation safety and achieving Vision Zero goals. Technologies such as automated speed enforcement, intelligent speed assistance, signal timing improvements, and real-time data monitoring have been shown to reduce traffic-related fatalities and serious injuries.[2]
Strategies	• Include proven technology projects in MetroPlan's funding strategies and grant applications (e.g., Safe Streets and Roads for All, HSIP). • Encourage the installation of automated enforcement cameras[3] for red light violations on the High Injury Network using crash data and analysis from the Vulnerable Road Users Safety Action Plan and the Regional Transportation Safety Plan. • Encourage the direction of revenue generated by traffic citations go directly to support prioritized transportation safety projects. • Encourage the use of safety technologies in locations and situations where data shows they can have the greatest impact in preventing crashes and saving lives.
VZ-8	**Support data-driven decision-making and access to technical assistance.**
Purpose	Through this policy, MetroPlan will coordinate with partners to obtain timely, accurate crash and safety data, analytical tools, and planning support for the region to advance Vision Zero goals. To ensure that the region has the data, tools, and guidance needed to identify safety issues, prioritize projects, and evaluate the impact of interventions in alignment with a Safe System approach.
Strategies	• Provide technical resources and assistance, data analysis, and planning support to partners by providing crash prediction models, traffic count programs, and bicycle and pedestrian count programs. • Maintain a database of information on street design features to enable systemic safety analysis. Perform systemic safety analysis to determine street factors associated with crash types for each mode, for the development of a Risk Exposure Assessment Tool. • Host an annual Transportation Safety Summit.

[2] Red light running cameras should only trigger when some other device depicts a probable violation, the data is stored locally with limited ability to share – both legal and technical, processed quickly, and destroyed upon adjudication. An independent auditor reviews the process annually. Strong policies would need to be put in place and legal protections against firms that deploy the equipment – including independent audits of their systems.

[3] https://www.azleg.gov/Briefs/Senate/PHOTO%20TRAFFIC%20ENFORCEMENT%202022.PDF

VZ-9	**MetroPlan will collaborate with partners to meet local, regional, and state Vision Zero goals**
Purpose	To create a unified, regional approach to traffic safety that builds on shared data, coordinated strategies, and equitable investment. Through regional leadership and interagency partnerships, MetroPlan aims to help all member agencies and stakeholders make measurable progress toward Vision Zero, while ensuring that strategies reflect local needs and community priorities.
Strategies	• Facilitate information sharing between jurisdictions to align safety goals and deployment strategies. Incorporate best practices. • Support partners in using data to prioritize projects, apply for funding, and evaluate safety interventions. • Share success stories and lessons learned from partner agencies to promote innovation and continuous improvement. • Support statewide policies and strategies that support Vision Zero. • Encourage the state to prioritize safety in project programming. • Collaborate with ADOT, FHWA, and other regional partners to ensure consistent performance metrics.
VZ-10	**Prioritize funding and grant-seeking projects that reduce serious injuries and fatalities for all road users, in alignment with Vision Zero goals.**
Purpose	To guide MetroPlan's funding strategies and grant applications toward projects that advance safer, more equitable multimodal transportation networks and to accelerate progress toward Vision Zero's target of eliminating traffic fatalities and serious injuries.
Strategies	• Develop a process that prioritizes regional projects around safety. • Identify a sustainable funding source for staffing, education efforts, and program management.

Chapter 3:
Risk Exposure Assessment

Introduction

The Risk Exposure Assessment is a risk-prediction model designed to evaluate roadway attributes that contribute to crash risk, with a specific focus on vulnerable road users (VRU), identified as pedestrians and cyclists. The primary objective is to create a comprehensive risk map of the MetroPlan region to support:

- Project identification
- Prioritizations of projects specific to VRU's
- A visualization of VRU risks
- Understanding risk related to existing infrastructure

Understand the influences on exposure to crashes
Determine if higher risks impact disadvantaged communities
Offer predictive analysis of where crashes are most likely to occur.

The analysis looked at the higher-risk roadway attributes (**Figure 32)** to determine the risk score: Equity Area, Bike Facility Widths, Lanes, Left Turn, Speed Limits, and AADT. The total possible points for the Risk Score are 12 points. The Risk Score can be used to evaluate the relative safety of streets and roads in the MetroPlan region.

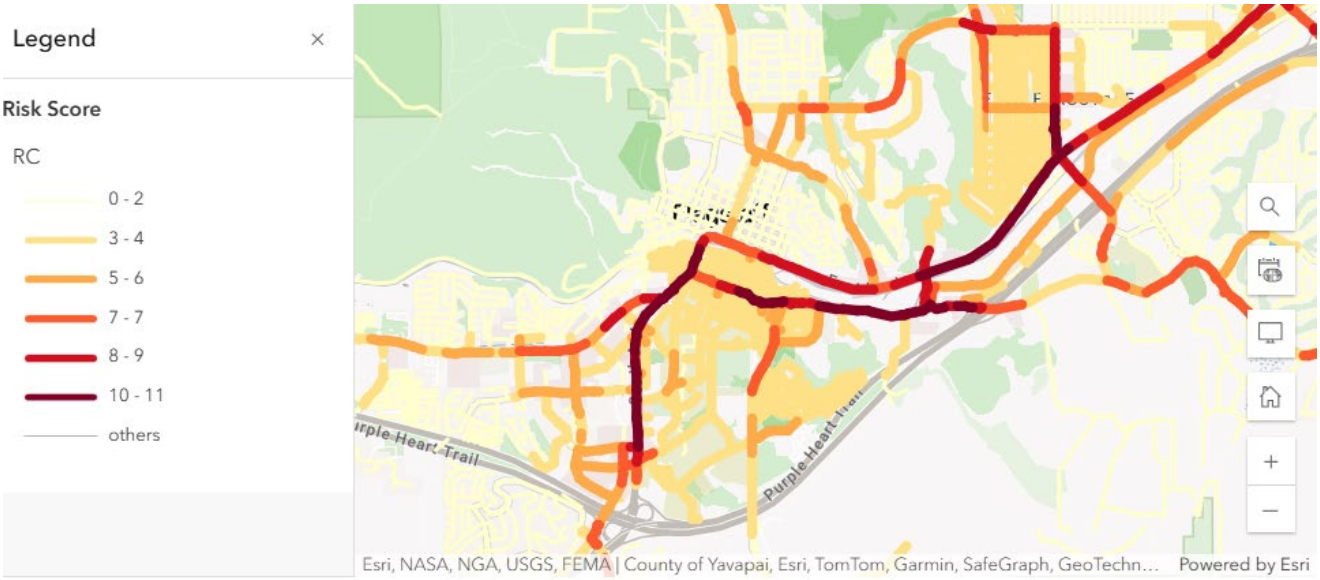
The full methodology can be found in **Appendix D**

Figure 32: Risk Exposure Scoring

Risk Score		
Attributes		**Points**
Equity Area	No	0
	Yes	2
Through Lanes	1-2	0
	3-4	1
	5-6	3
Right Turn	Not Dedicated	0
	Dedicated	1
Left Turn	Not Dedicated	0
	Dedicated	1
Bike Facility Width	Extra Width	0
	Narrow/ No Bike Lane	1
Median Type	TWLTL	1
	No Median	0
Speed Limit	Less than 30MPH	0
	30MPH+	1
Vehicle Volume	<10k	0
	10-20k	1
	20k+	2
Total Points Possible		12

Learn more about the tool on MetroPlan's website:
https://www.metroplanflg.org/safetyplandata

Figure 33: Risk Exposure Dashboard



https://www.metroplanflg.org/safetyplandata

MetroPlan defined risk factors and exposure as follows:

- **Risk factor** is a characteristic or behavior that increases the likelihood of a negative outcome. In this case, it is the physical design of the roadway. (ex. number of through lanes)
- **Exposure** is the condition of being exposed to something. In this case, vulnerable road users are exposed to risk factors (road attributes).

Roadways that scored 10-12 are represented in the darkest red and indicate the highest risk areas for pedestrians and cyclists. As with the public comments listed previously, the roadways of most public concern and with the highest risk scores are Milton, E. Route 66, Butler Ave., and 4th St.

DATA COLLECTION

Data for this analysis were sourced from multiple agencies, including the Arizona Department of Transportation (ADOT), the City of Flagstaff (COF), and MetroPlan's Traffic Model. Each dataset contributed specific attributes essential for the study.

Data preparation and processing were conducted using ArcGIS Pro, a geographic information system (GIS) tool that enables spatial and tabular analysis. The following steps were undertaken to standardize and integrate the datasets for analysis. **Table 7** provides an overview of the data that was reviewed and later defined in the attribute prioritization process with City staff.

Table 7: Data attributes reviewed

Arizona Department of Transportation (ADOT)	City of Flagstaff	MetroPlan
• Number of Through Lanes • Lane Width • Functional Classification Presence of Turn Lanes (Right and Left) • Median Type and Width • Annual Average Daily Traffic (AADT) • Speed Limit • Crosswalk Type • Turn Code • Number of Legs • Signalization • Bicycle Facility • Traffic Control	• Functional Classification • Speed Limit • Number of Lanes • Median Type • Presence and Width of Bicycle Facilities • Sidewalk Presence • On-Street Parking Availability	• Traffic volumes • Traffic Analysis Zones • VRU Activity levels

Equity and Safety Data

To incorporate an equity perspective, MetroPlan utilized ADOT's Vulnerable Road User Safety Assessment Merged Equity Data, which provides a calculated equity score at the U.S. Census Block Group level.

For safety analysis, crash data were obtained from ADOT's AZ Crash Information System (ACIS), covering the period from 2017 to 2023. This dataset includes:

- Precise crash locations
- Types of road users involved (vehicles, pedestrians, bicyclists)
- Injury severity levels
- Additional contributing factors

Each dataset was carefully reviewed and integrated to ensure consistency and reliability in the analysis.

HOW THE RISK EXPOSURE ASSESSMENT WILL BE USED

The tool has two (2) current functions related to this Safety Action Plan. Although we anticipate this tool to be used in other programmatic and project recommendations, it is expected to evolve over time. This is not a static tool; it will be updated as new data is provided.

1

UNDERSTANDING THE INFRASTRUCTURE IMPACTING RISK

- Provides a more complete and forward-looking understanding of transportation.
- Provides a more complete and forward-looking understanding of transportation.
- Supports data-driven decisions to reduce injuries and fatalities.

2

PROJECT PRIORITIZATION

- Supports further prioritization of existing project recommendations with an emphasis on vulnerable road users.
- Supports prioritization of future transportation projects in the region.

This tool can also be used by our jurisdictional partners in helping to prioritize safety in their Capital Improvement Plans and grant applications.

Chapter 4:

Project Review & Recommendations

BACKGROUND

Within the Region, there have been many recent transportation safety plans that have identified potential projects that would improve safety and reduce serious injuries and fatalities for all modes. A consolidated list of recommendations can be found in **Appendix E.** Through the use of the Risk Exposure Assessment tool, these recommendations have led to additional prioritization that can holistically address street design and safety issues specific to Vulnerable Road Users. A total of 62 projects have previously been recommended within seven (7) plans, along with over 500 first-priority projects in the City's Active Transportation Master Plan.

Upon reviewing the project recommendations and completed VRU analysis, no additional project recommendations are being made. Instead, using these existing safety recommendations, which have been previously vetted and supported by the community, MetroPlan is integrating the Risk Exposure Assessment tool to further prioritize these projects based on their risk factors related to people who walk, bike, and roll.

Step 1: MetroPlan developed the Risk Exposure Assessment tool (Chapter 3) to identify areas of high risk based on crash frequency, roadway features, and equity.

Step 2: MetroPlan consolidated a list of the existing project recommendations and mapped them to understand their distribution within the region. (Figure 34)

RECOMMENDATIONS COME FROM THE FOLLOWING PLANS:

- ADOT: ACTIVE TRANSPORTATION SAFETY PLAN (2024)
- ADOT: MILTON RD BIKE AND PEDESTRIAN ROAD SAFETY ASSESSMENT (2023)
- ADOT: STATE HIGHWAY RAIL CROSSING PLAN (2022)
- ADOT: ARIZONA ACTIVE TRANSPORTATION SAFETY ACTION PLAN
- CITY OF FLAGSTAFF: ACTIVE TRANSPORTATION MASTER PLAN (2022)
- METROPLAN: REGIONAL TRANSPORTATION SAFETY PLAN (2023)
- MOUNTAIN LINE: PEDESTRIAN CROSS STUDY

Step 3: Combining the results of the Risk Exposure Assessment with the project recommendations, we were able to identify opportunities to review the overlapping recommendations, potential for bundling projects, and create an associated risk score to prioritize the projects further. **(Figure 35)**

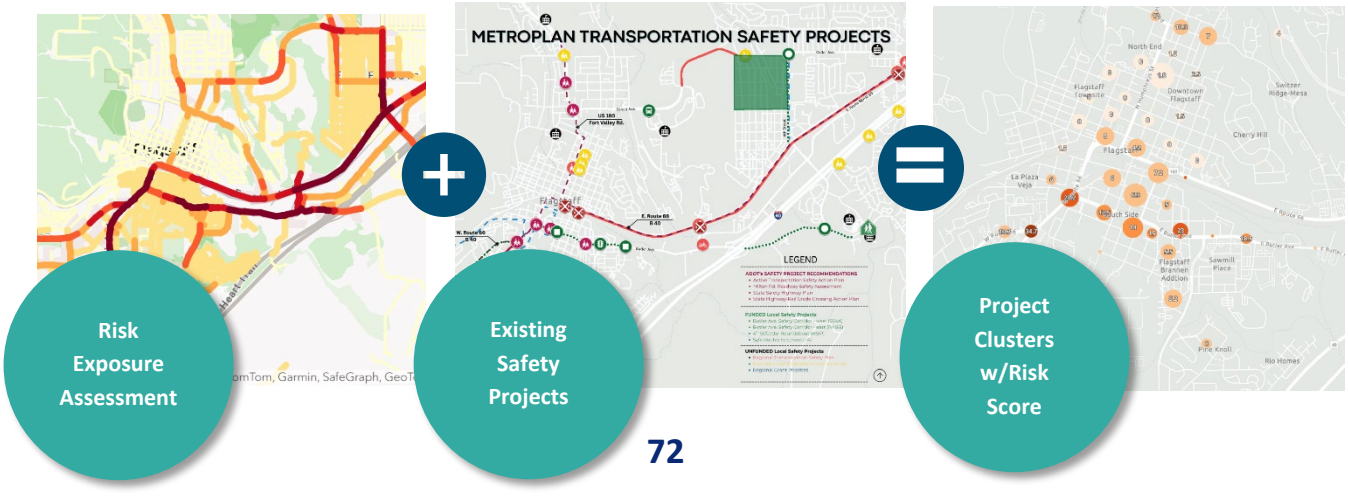
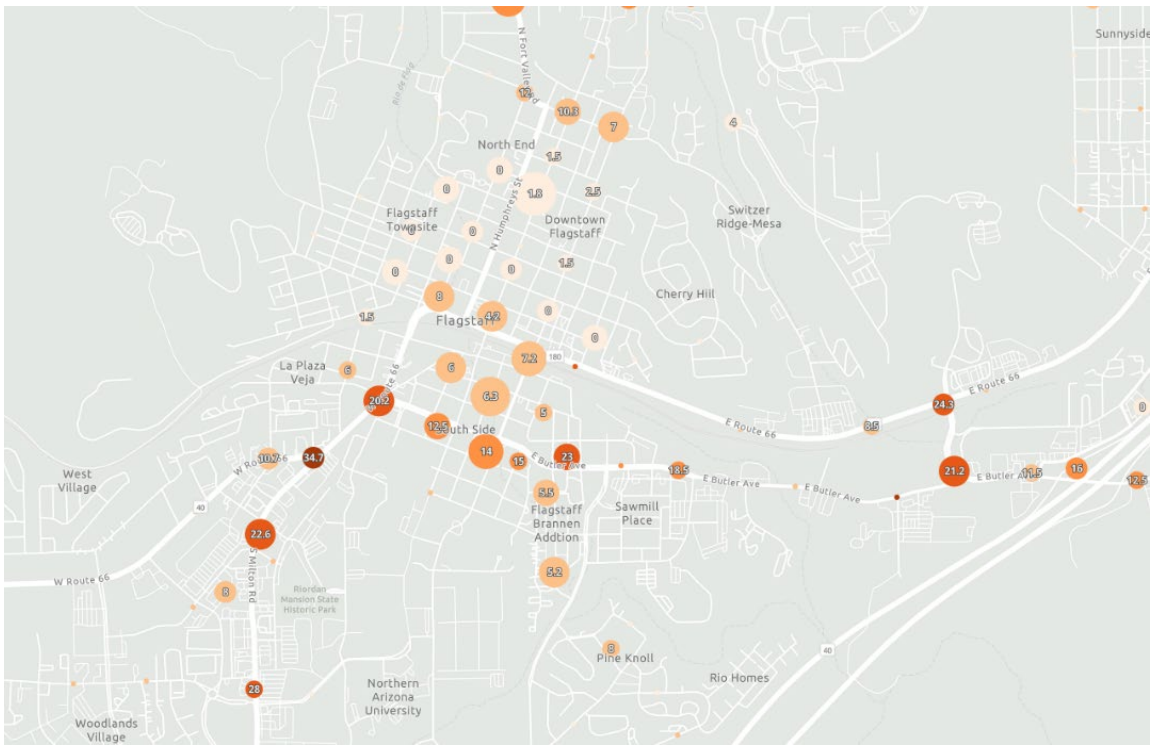


Figure 34: Existing Safety Project Recommendations

Figure 35: REA Prioritization of Projects



The prioritization of projects within the REA can be found at: https://arcg.is/11CCOq0

Project Prioritization by Clusters

Table 8 demonstrates projects that are clustered at or near intersections. The following project points are ranked from highest to lowest based on their average risk scores, calculated by grouping nearby project points and averaging the sum of nearby roadway risk scores within a 660' buffer. The full methodology can be found in **Appendix E.**

Figure 36: REA Project Scoring for Clusters

Table 8: Safety Projects by REA Score

REA Score (Sum of Cluster)	Approx. Location (within 1/8 mile) 660'	Referenced Plans	Agency	Recommendations
34.7	Milton/ Route 66	Active Transportation Master Plan	City of Flagstaff	Stripe Shoulders
		Milton Rd Bike/Ped RSA	ADOT	- Install countdown pedestrian signal heads for all approaches at this intersection. - Provide Leading Pedestrian Interval - Conduct Photometric analysis to evaluate existing lighting conditions and confirm light levels meet minimum foot-candle requirements - Provide High Visibility Crosswalks at intersections - Install "Turning Vehicles Yield to Pedestrians" (R10-15) signs at all intersections - Provide Instreet pedestrian signs at mid-block crossings
		Regional Transportation Safety Plan	MetroPlan	"Maintain turning sight distance (vegetation/tree removal), install enhanced pedestrian crosswalks, bicycle lanes to the intersection, and green bicycle lane crossing markings"
28.5	4th St./7th St	Active Transportation Master Plan	City of Flagstaff	Add two-stage left turn boxes Add cross bike marking
28	Milton Rd./University Ave.	Active Transportation Master Plan	City of Flagstaff	Brunnel
		Milton Rd Bike/Ped RSA	ADOT	Install countdown pedestrian signal heads for all approaches at this intersection. - Provide Leading Pedestrian Interval -Install retroreflective tape on vehicular signal heads. - Install pedestrian push buttons at appropriate locations as required by MUTCD and ADA

				guidelines. - Re-install directional pedestrian ramps with truncated domes that meet current ADA standards. - Conduct Photometric analysis to evaluate existing lighting conditions and confirm light levels meet minimum foot-candle requirements - Provide High Visibility Crosswalks at intersections - Install "Turning Vehicles Yield to Pedestrians" (R10-15) signs at all intersections - Provide Instreet pedestrian signs at mid-block crossings
24.3	E. Route 66/Ponderosa Parkway	Active Transportation Master Plan	City of Flagstaff	Stripe shoulders
		Regional Transportation Safety Plan	MetroPlan	Install high-visibility crosswalks, speed feedback signs, and protected bicycle lanes
		Railroad Crossing Plan	ADOT	(Priority 5) 025131A: Pre-signalization; improved lighting
23	Butler Ave./Brannen Ave.	Active Transportation Master Plan	City of Flagstaff	Designate bike route Bike Boulevard Install bike lane barriers Beacon crossing @ Oleary
23	Milton Ave./McConnel/Pine Knoll	Active Transportation Master Plan	City of Flagstaff	Convert shoulders to bike lanes Stripe bike lanes
		Milton Rd Bike/Ped RSA	ADOT	Install countdown pedestrian signal heads for all approaches at this intersection. - Provide Leading Pedestrian Interval -Install retroreflective tape on vehicular signal heads. - - Conduct Photometric analysis to evaluate existing lighting conditions and confirm light levels meet minimum foot-candle requirements - Provide High Visibility Crosswalks at intersections - Install "Turning Vehicles Yield to Pedestrians" (R10-15) signs at all intersections - Provide Instreet pedestrian signs at mid-block crossings
22.6	Milton Rd/ Riordan	Active Transportation Master Plan	City of Flagstaff	Stripe Bike Lanes Stripe bike lane/add shared lane markings
		Regional Transportation Safety Plan	MetroPlan	Improve traffic signal timing and coordination, left turn phasing evaluation/improvement, and high-visibility crosswalks
		Milton Rd Bike/Ped RSA	ADOT	Install countdown pedestrian signal heads for all approaches at this intersection. - Provide Leading Pedestrian Interval

				- - Conduct Photometric analysis to evaluate existing lighting conditions and confirm light levels meet minimum foot-candle requirements - Provide High Visibility Crosswalks at intersections - Install "Turning Vehicles Yield to Pedestrians" (R10-15) signs at all intersections - Provide Instreet pedestrian signs at mid-block crossings
21.2	Butler Ave./Ponderosa Parkway	Active Transportation Master Plan	City of Flagstaff	Convert bike lanes to buffered Construct a separated intersection Commute enhancements to existing FUTS
		Regional Transportation Safety Plan	MetroPlan	Install green bicycle lane crossing markings and reflective signal head tape
20.2	Milton Rd./ Butler Ave.	Regional Transportation Safety Plan	MetroPlan	Install green bicycle lane crossing markings, improve traffic signal timing and coordination, and reflective signal head tape
		Milton Rd Bike/Ped RSA	ADOT	Install retroreflective tape on vehicular signal heads. -Install countdown pedestrian signal heads for all approaches at this intersection. - Provide Leading Pedestrian Interval - Re-install directional pedestrian ramps with truncated domes that meet current ADA standards. - Install pedestrian push buttons at appropriate locations as required by MUTCD and ADA guidelines. - Conduct Photometric analysis to evaluate existing lighting conditions and confirm light levels meet minimum foot-candle requirements - Provide High Visibility Crosswalks at intersections - Install "Turning Vehicles Yield to Pedestrians" (R10-15) signs at all intersections - Provide Instreet pedestrian signs at mid-block crossings.
19	Forest Ave/Cedar Ave./Lockett	Active Transportation Master Plan	City of Flagstaff	Add two-stage left turn boxes Convert bike lanes to buffered Beacon Crossing
18.8	Fort Valley Rd./Forest Ave.	Active Transportation Master Plan	City of Flagstaff	Construct an enhanced crossing Commute enhancements to existing FUTS Crossing
		Regional Transportation Safety Plan	MetroPlan	Refresh/enhance pavement markings, maintain turning sight distance (vegetation/tree removal), and intersection consider traffic signal control.
		Mountain Line Pedestrian Crossing Study	Mountain Line	PHB with Center Median Refuge and advanced signage Warrants: yes (ADOT TGP 640)
		Arizona Active Transportation Safety Action Plan	ADOT	Pedestrian refuge island

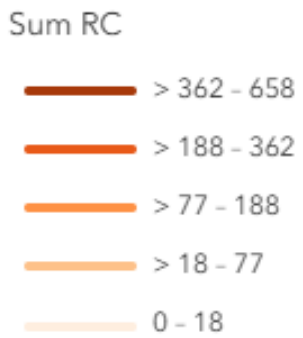
18.5	Fourth Ave./Third St	Active Transportation Master Plan	City of Flagstaff	Designate bike route Beacon Crossing
16.7	Country Club/Soliere Ave.	Active Transportation Master Plan	City of Flagstaff	Stripe buffered bike lanes Convert bike lanes to buffered Construct separated intersection
16	Bulter Ave./Luck Lane/I-40	Active Transportation Master Plan	City of Flagstaff	Designate bike route Stripe buffered bike lanes Add crossbike markings
16	Forest Ave./Turquoise	Active Transportation Master Plan	City of Flagstaff	Convert bike lanes to buffered Construct a separated intersection
15	Butler Ave./Dupont	Active Transportation Master Plan	City of Flagstaff	Install bike lane barriers Designate bike route
14.5	Cummings St./E. Route 66	Active Transportation Master Plan	City of Flagstaff	Designate bike route
		Regional Transportation Safety Plan	MetroPlan	Install enhanced crosswalks, a leading pedestrian interval, and reflective signal head tape
14	Lockette / E. Route 66	Active Transportation Master Plan	City of Flagstaff	Stripe bike lane/add shared lane markings
		Regional Transportation Safety Plan	MetroPlan	Install enhanced crosswalks, a leading pedestrian interval, and reflective signal head tape
14	Butler Ave./San Francisco	Active Transportation Master Plan	City of Flagstaff	Designate bike route Stripe bike lane/add shared lane markings Add shared lane markings Install bike lane barriers Construct separated intersection
13.7	Forest Ave./Forest	Active Transportation Master Plan	City of Flagstaff	Convert bike lanes to buffered Add two-stage left turn boxes
13	Beulah Blvd./University Hights	Active Transportation Master Plan	City of Flagstaff	Convert shoulders to bike lanes Stripe bike lanes
13	Lake Mary Rd./I-17	Active Transportation Master Plan	City of Flagstaff	Convert bike lanes to buffered Construct an enhanced crossing Commute enhancements to existing FUTS
13	W. Route 66 / Steves	Active Transportation Master Plan	City of Flagstaff	Stripe shoulders Commute enhancements to existing FUTS
13	3rd Str. And 4th St.	Active Transportation Master Plan	City of Flagstaff	Designate bike route Crossing (@rose)
13	Fort Valley Rd./Freemont	Active Transportation Master Plan	City of Flagstaff	Construct an enhanced crossing

		Regional Transportation Safety Plan	MetroPlan	Refresh/enhance pavement markings, install reflective signal head tape, install flashing yellow left turn phase
13	Marketplace and US89	Active Transportation Master Plan	City of Flagstaff	Add bike lanes/SLM at intersection Stripe bike lanes Commute enhancements to existing FUTS
13	Trails End Dr/ US89	Active Transportation Master Plan	City of Flagstaff	Designate bike route Beacon Crossing - Highway 89 @ Snowflake
		Regional Transportation Safety Plan	MetroPlan	Maintain intersection sight distance and install speed feedback signs at approaches.
12.5	Humphreys/Dupont	Active Transportation Master Plan	City of Flagstaff	Implement bike boulevard Install bike lane barriers Construct median island Construct separated intersection
12.5	Butler Ave. @Little America	Active Transportation Master Plan	City of Flagstaff	Stripe/convert buffered bike lanes Add crossbike markings
12	Kendrick St/Fort Valley/Navajo	Active Transportation Master Plan	City of Flagstaff	Designate bike route Construct enhanced crossing Fort Valley/Navajo
11.5	Forest Meadows/Beulah	Active Transportation Master Plan	City of Flagstaff	Stripe bike lane/add shared lane markings Construct separated bike lanes Construct separated intersection
11.5	Cedar/Aris St	Active Transportation Master Plan	City of Flagstaff	Convert bike lanes to buffered Crossing - Cedar Ave @ Aris/Rose
10.8	Route 66/Fourth St.	Active Transportation Master Plan	City of Flagstaff	Stripe shoulders Commute enhancements to existing FUTS
10.7	Blackbird Roost/W.Route 66	Active Transportation Master Plan	City of Flagstaff	Stripe bike lane/add shared lane markings

Corridor Segment Prioritization

The corridor segments are represented by the number of existing planning documents, along with their associated REA score, and are listed in Table 9. Unlike the scores presented in Table 8, the segment scores in Table 9 summarize total REA scores for Flagstaff corridors, focusing on the highest-scoring segment summations with an REA of 10 or more. Those with the highest REA score indicate greater risk and are prioritized accordingly in their respective tables.

Figure 37: REA Project Scoring for Corridors



Why a different methodology?

Certain corridors have many existing recommendations; however, the extent of the recommendations varies, making a “clustered” segment Risk Exposure score too broad and not as discreet as some of these projects' recommendations.

Compared to point-based projects (clusters), each individual point received a summed REA score based on roadway characteristics within 100 feet of the point. When multiple points were located within 660 feet (1/8 mile) of one another, they were grouped into a single project area. The final project score for these groups was calculated as the average of the REA scores of the included points.

For linear corridor projects, such as those that run along major roads, we could not group segments spatially using mapping tools in the same way. Instead, each segment within the corridor retained its individual REA score, and we summed the scores of all segments to produce the total project score.

As a result of these methods, linear projects typically have higher total scores than point-based projects. This is because corridor projects span longer distances and include more segments, which increases the total sum. In contrast, point projects address safety concerns on a more localized scale, such as intersections or crossings. Table 9 represents project corridor recommendations that scored 30 points or more

Table 9: REA Project Scores for Corridors

REA Score (Sum)	Approximate Extent	Referenced Plans	Agency	Recommendations
658	E. Route 66 (W.Route 66 to Fanning)	Arizona Active Transportation Safety Action Plan	ADOT Priority Corridor	Reduce curb radii to 30' at signalized intersection (11) -Install highway lighting -Install high-visibility crosswalks at midblock locations (2) -Install bike lanes
492	E. Route 66 (San Francisco to Country Club)	Regional Transportation Safety Plan	MetroPlan	Install speed feedback signs, green bicycle lane crossing markings, and improve traffic signal timing and coordination
362	Milton Rd (W.Route 66 to McConnell Dr)	Arizona Active Transportation Safety Action Plan	ADOT (Priority Corridor)	Install Retroreflective Tape on Vehicular Signal Heads (60) - Reduce Speed Limit to 25 MPH - Install Highway Lighting - Install Bike Lanes - Enhance Signal Operations with Leading Pedestrian Intervals (LPIs) (5)
345	Milton Rd (Butler Ave. to Forest Meadows	Milton Bike/Ped RSA	ADOT	Re-stripe Milton Rd to narrower vehicular lanes and a striped bike lane. A design deviation needs to be prepared to narrow the lane lines to install the bike lane within the existing pavement. - Reduce speed limit from 35mph to 25mph.
332	SR 89 (Country Club to Trails End)	Regional Transportation Safety Plan	MetroPlan	Install speed feedback signs and conduct targeted speed enforcement
281	Milton Rd (Forest Meadows to W. Route 66)	Regional Transportation Safety Plan	MetroPlan	Install speed feedback signs, improve traffic signal timing and coordination, and conduct targeted speed enforcement
266	W Route 66 (Milton to Woody Mt Rd)	Arizona Active Transportation Safety Action Plan	ADOT (Priority Corridor)	Reduce Curb Radii to 30’ at Signalized Intersections (3) - Enhance Signal Operations with Leading Pedestrian Intervals (LPIs) (2)
188	US 180/Fort Valley Rd. (E. Route 66 to Meade Ln.)	Arizona Active Transportation Safety Action Plan	ADOT (Priority Corridor)	Install Highway Lighting - Upgrade Existing Crosswalk to High-Visibility Crosswalk (3) - Increase Enforcement - Install Pedestrian Refuge Island (Fort Valley Rd/Forest Ave & Fort Valley Rd/Anderson Rd)

143	Milton Rd. (Forest Meadows to N. Chambers)	Milton Bike/Ped RSA	ADOT	Consolidate driveways to minimize the number of conflict points or install curb extensions for NB right-turn lanes. -Install RRFB (Rectangular Rapid Flashing Beacon) signal at Chambers Drive and Milton Road intersection.
121	4th St (E. Route 66 to 6th Ave.)	Active Transportation Master Plan	City of Flagstaff	Sidewalks
75	Cedar Ave. (Gemini to West)	Regional Transportation Safety Plan	MetroPlan	Install protected bicycle lanes, green bicycle lane crossing markings, HAWK/PHB mid-block crossing at trailhead, and additional roadway lighting
51	US180/Fort Valley Rd. (Forest to Navajo)	Active Transportation Master Plan	City of Flagstaff	Sidewalks
33	4th Ave (Felice to Dortha)	Active Transportation Master Plan	City of Flagstaff	Sidewalks
31	US180/Fort Valley Rd. (Beale to Meade)	Active Transportation Master Plan	City of Flagstaff	Sidewalks

A NEW RESOURCE!

Partners are encouraged to use these new tools:

- To evaluate the multiple plans and their recommendations at specific locations.
- Identify opportunities to bundle projects for holistic investments.
- To advocate for funding to support transportation safety.
- To consider in grant applications
- To prioritize these projects in capital improvement plans to better serve vulnerable road users in our community.

All resources can be found at: www.metroplanflg.org/safetyplandata

Vulnerable Road Users Safety Action Plan

VRU Risk Exposure Assessment

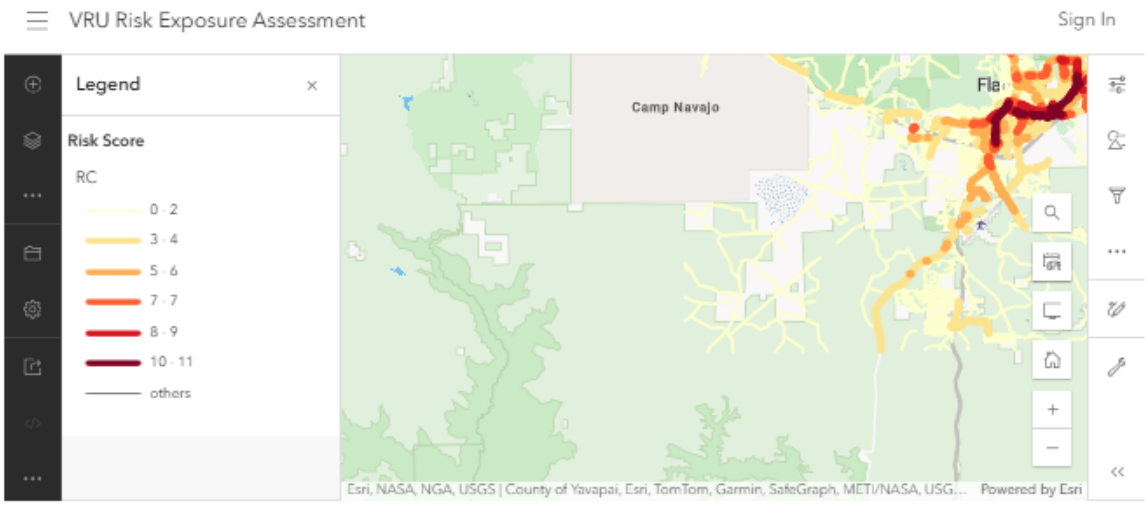
The Risk Exposure Assessment is a risk-prediction model designed to evaluate roadway attributes that contribute to crash risk, with a specific focus on vulnerable road users (VRU), identified as pedestrians and cyclists. The primary objective is to create a comprehensive risk map of the MetroPlan region to support:

- Project identification for safety improvements
- Prioritization of safety projects specific to Vulnerable Road Users
- A visual representation of VRU risk to guide data-driven decision-making
- Understand safety risks related to infrastructure and geometry of design
- Understand the influences on exposure to crashes
- Determine if higher risks impact disadvantaged communities
- Offer predictive analysis of where crashes are most likely to occur

The analysis looked at the following higher-risk roadway attributes to determine the risk score: Equity Area, Bike Facility Widths, Lanes, Left Turn, Speed Limits, and AADT. The total possible points for the Risk Score is 12 points. The Risk Score can be used to evaluate the relative safety of streets and roads in the MetroPlan region.

Click on the map below to explore or visit VRU Risk Exposure Assessment Map

Risk Exposure Methodology



VRU Social Pinpoint Viewer This tool integrates community-provided comments on biking and walking with documented bicycle and pedestrian crashes in our region. By connecting community concerns with crash data, we can identify trends and work towards solutions to enhance travel safety.

Click on the map below to explore or visit VRU Social Pinpoint/Crash Viewer (arcgis.com)

Chapter 5:
Implementation

INTRODUCTION

Implementation of the Vulnerable Road Users Safety Action Plan will be integrated into MetroPlan's Unified Planning Work Program (UPWP). The UPWP is a required annual document developed by MetroPlan that outlines transportation planning priorities, tasks, budgets, timelines, responsible parties, and funding sources for federal and state planning funds. It details all planned work for a given fiscal year, including long-term regional transportation plans, continuous planning activities (like safety and data), and special projects, to ensure comprehensive and cooperative transportation planning and to qualify for federal funding from the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA).

The integration of the VRU polices and supporting strategies in Chapter 2 has been divided into implementation years 1 through 5 to ensure resources are allocated appropriately per year in the UPWP.

Current and Ongoing Strategy Implementation

POLICY	STRATEGIES AND ACTIONS
VZ-1	• MetroPlan adopts a Vision Zero Resolution that sets forth a goal of reducing serious and fatal crashes by 40% by the year 2045. • Work with partners to strategically prioritize projects with a focus on complete streets, vision zero, and transportation safety.
VZ-2	• Share findings with partners to support consistent safety messaging, funding prioritization, and policy alignment.
VZ-5	• Collaborate with schools, local governments, law enforcement, and community organizations to coordinate Safe Routes to School planning and implementation. • Seek funding through state and federal Safe Routes to School programs. • Collect and analyze data around schools to identify travel modes, speeds, and crashes. • Support "Walk to School" and "Bike to School" days to encourage active transportation. • Work with partners and FUSD to ensure site planning for schools incorporates traffic safety review prior to siting/opening new, reconstructed, or relocated school (s). • Conduct safety reviews of the transportation network in school zones.

VZ-6	• Deploy pop-up education at community events, farmer's markets, schools, and transit hubs.
VZ-7	• Encourage the use of safety technologies in locations and situations where data shows they can have the greatest impact in preventing crashes and saving lives.
VZ-8	• Provide technical resources and assistance, data analysis, and planning support to partners by providing crash prediction models, traffic count programs, and bicycle and pedestrian count programs.
VZ-10	• Identify a sustainable funding source for staffing, education efforts, and program management.

Implementation Year 1

POLICY	STRATEGIES AND ACTIONS
VZ-1	• Have the MetroPlan Technical Advisory Committee (TAC) serve as the Safety Committee. • Embed the 40% reduction target into the Regional Transportation Plan (RTP), Transportation Improvement Program (TIP), Safety Action Plan, and other MetroPlan regional planning documents.
VZ-2	• Incorporate the Regional Transportation Safety Action Plan into the Regional Transportation Plan (RTP) and integrate safety analysis into its development.
VZ-3	• Develop a process for before and after studies of demonstration projects, resident engagement, and site prioritization.
VZ-4	• Recommend countermeasures and speed management strategies explicitly in MetroPlan transportation plans and priorities. • Coordinate Road Safety Assessments (RSA)[4] on behalf of partners through the ADOT process.

[4] https://azdot.gov/planning/traffic-safety/road-safety-assessments

VZ-6	• Develop and provide Vision Zero messaging on an ongoing basis to be delivered to the public, neighborhood groups, and stakeholder group meetings. • Provide targeted outreach and training when adding new infrastructure to teach street users how to navigate a newly constructed facility.
VZ-8	• Maintain a database of information on street design features to enable systemic safety analysis. Perform systemic safety analysis to determine street factors associated with crash types for each mode, for the continued use of a Risk Exposure Assessment Tool.
VZ-9	• Facilitate information sharing between jurisdictions to align safety goals and deployment strategies. Incorporate best practices. • Support partners in using data to prioritize projects, apply for funding, and evaluate safety interventions. • Support statewide policies and strategies that support Vision Zero.
VZ-10	• Develop a process that prioritizes regional projects around safety. • Identify a sustainable funding source for staffing, education efforts and program management.

Implementation Year 2

POLICY	STRATEGIES AND ACTIONS
VZ-1	• Ensure that all long-range planning and project prioritization efforts include safety performance outcomes aligned with the Vision Zero resolution. • Annually review Capital Improvement Plans, maintenance, and preservation projects to identify opportunities for safety improvements with all users in mind.
VZ-2	• Establish, maintain, and report annually a review of Vision Zero targets, goals, and performance as a means of accountability.
VZ-3	• Identify potential demonstration projects with support from the City and County Engineering and Planning staff.

VZ-4	• Support speed management training for MetroPlan staff and partners on behalf of the region.
VZ-5	• Work with schools to encourage pedestrian and bicycle safety education in school curricula.
VZ-6	• Develop and implement a marketing campaign centered on people crossing and drivers yielding – a primary safety issue in the region.
VZ-7	• Include proven technology projects in MetroPlan's funding strategies and grant applications (e.g., Safe Streets and Roads for All, HSIP).
VZ-9	• Share success stories and lessons learned from partner agencies to promote innovation and continuous improvement. • Encourage the state to prioritize safety in project programming.

Implementation Year 3

POLICY	STRATEGIES AND ACTIONS
VZ-3	• Develop a toolkit to be used by partners for repeatable interventions across the region
VZ-6	• Build upon and distribute educational materials related to intersection and crossing safety for all road users.
VZ-7	• Encourage the installation of automated enforcement cameras[5] for red light violations on the High Injury Network using crash data and analysis from the Vulnerable Road Users Safety Action Plan and the Regional Transportation Safety Plan. • Encourage the direction of revenue generated by traffic citations to go directly to support prioritized transportation safety projects.

[5] https://www.azleg.gov/Briefs/Senate/PHOTO%20TRAFFIC%20ENFORCEMENT%202022.PDF

	NOTE: *Red light cameras are triggered by an induction loop sensor embedded in the asphalt. They do not record continuously. FWHA states that red light cameras are effective in reducing the most severe right-angle (t-bone) crashes at intersections. They decrease the overall number of fatal crashes by 14-21%, improve driver behavior, which benefits all modes but particularly pedestrians at intersections.*
VZ-9	• Collaborate with ADOT, FHWA, and other regional partners to ensure consistent performance metrics.

Implementation Year 4

POLICY	STRATEGIES AND ACTIONS
VZ-5	• Work with local colleges/universities to create and implement a new walking, biking, driving, and transit riding safety campaign for students.

Implementation Year 5

POLICY	STRATEGIES AND ACTIONS
VZ-8	• Host an annual Transportation Safety Summit.

CAPITAL IMPROVEMENT PROJECTS

MetroPlan has no authority to implement infrastructure projects. However, based on the results from the project recommendations chapter, MetroPlan will advocate and encourage our partner agencies to prioritize these projects with Vulnerable Road Users in mind. As per our strategies, MetroPlan is creating an online screening and prioritization tool for our partners, which will include safety as a key component of scoring.

RESOURCE DEVELOPMENT

Funding strategies for Vision Zero policies and programs should involve leveraging federal grants. Federal programs in safety-specific grants like the Safe Streets and Roads for All (SS4A) program and the Highway Safety Improvement Program (HSIP). However, all major grant programs include priorities related to improving safety, and every regional application made should be tied back to that goal. MetroPlan has a history of successfully being awarded federal and state funds to support plans, programs, and projects. The following grant programs are specifically designed to support the reduction in severe crashes and fatalities on our region's roadways. At the local level, MetroPlan suggests capital planning processes should advance projects to address safety issues.

MetroPlan will continue to pursue grants to support maintaining staff in these critical roles, such as Transportation Demand Management, Safe Routes to Schools, and Data Collection.

Federal Funding

Safe Streets and Roads for All (SS4A)

The purpose of the Safe Streets and Roads for All (SS4A) grant program is to reduce and eliminate roadway fatalities and serious injuries for all users—motorists, pedestrians, bicyclists, and others—by providing funds for developing comprehensive safety action plans and implementing these plans through projects and strategies. The program supports both the creation of action plans, which are detailed safety strategies, and the implementation of those plans with funding for projects like crosswalk enhancements, traffic calming, and roadway shoulder improvements.
https://www.transportation.gov/grants/SS4A

Highway Safety Improvement Program (HSIP)

The purpose of Highway Safety Improvement Program (HSIP) funding is to reduce traffic fatalities and serious injuries on all public roads by implementing infrastructure-related safety improvements, guided by data-driven Strategic Highway Safety Plans (SHSPs) and performance-based goals. States use HSIP funds to identify and correct hazardous road locations or features, address specific safety problems, and implement a variety of safety-focused strategies, including railway-highway crossing improvements and pedestrian/bicyclist safety measures
https://highways.dot.gov/safety/hsip

Railway Highway Crossing Program

The purpose of the Railway-Highway Crossings Program (RHCP) is to eliminate or reduce hazards at railway-highway grade crossings to improve safety for motorists, cyclists, and pedestrians. It funds projects to upgrade or install protective devices, close or consolidate crossings, and improve signage, with the goal of reducing accidents, injuries, and fatalities at these locations.

https://highways.dot.gov/safety/hsip/xings/railway-highway-crossing-program-overview

State Funding

Transportation Alternatives (TA) Program

The purpose of the Transportation Alternatives (TA) Program funding is to support a diverse range of community-based projects and programs that enhance the quality of life for all transportation modes, focusing on non-motorized travel and improving safety and access. This includes funding for on- and off-road pedestrian and bicycle facilities, infrastructure projects that improve public transit access, community improvements, recreational trails, and Safe Routes to School programs. https://activetransportation.az.gov/transportation-alternatives-program

Carbon Reduction Program (CRP)

The primary purpose of the Carbon Reduction Program (CRP) is to reduce carbon dioxide (CO2) emissions from on-road highway transportation sources by funding projects that decrease vehicle miles traveled, promote alternative transportation, and support infrastructure for alternative fuel vehicles. https://azdot.gov/carbon-reduction-program

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Appx A. Outreach Events Summary.docx
Appx. B VRU Best Practices.docx
Appx. C. Partner Strategy Examples..docx
Appx. D. REA Methodology.docx
Appx: E. Project Prioritization Methodology (Coming soon)