Burien

Comprehensive Safety Action Plan (CSAP)

2025



Planning for a Safe System

Between 2019 and 2023, an average of 22 people were seriously injured or killed each year in traffic-related crashes in Burien.

This **Comprehensive Safety Action Plan (CSAP)** reflects Burien's commitment to eliminating all serious injury and fatal crashes by adopting a **Safe System Approach** to proactively address these tragedies.

This plan supports the City's Vision Zero goal and aligns with federal and state safety initiatives, including the U.S. Department of Transportation's Safe Streets and Roads for All (SS4A) program. This CSAP builds on Burien's updated Transportation Master Plan (TMP), recent safety project investments, and the City's broader efforts to make its streets safer for all users.

Burien incorporates the Federal Highway Administration (FHWA) Safe System Approach to safety planning, grounding the plan in principles including shared responsibility, proactive design, and creating a transportation network that accounts for human error and reduces crash forces.[1] It emphasizes equity, collaboration, and long-term planning.



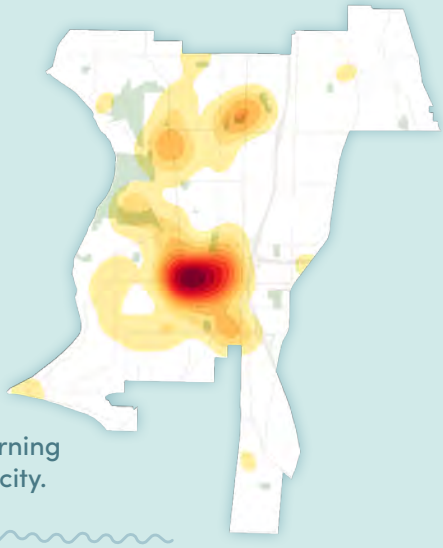
Image courtesy of https://targetzero.com/

Reaching Vision Zero

The City of Burien is committed to a 30% reduction in transportation-related fatalities and serious injuries by 2044, with an ultimate goal of eliminating all transportation-related fatalities and serious injuries. Burien will reevaluate progress towards this goal every 6 years.

3
Task Force meetings

545
Transportation-safety related comments concerning areas across the city.



67%
Of comments on the interactive mapping activity identified safety concerns for **vulnerable road users**.

Engaging the Community

Meaningful community and stakeholder engagement was essential to shaping the Burien CSAP.

The project team built on extensive outreach from the City's TMP Shape Your City initiative, and gathered additional feedback through an online survey and interactive map. The CSAP planning process resulted in the creation of the Burien CSAP Task Force, which was heavily involved in steering the direction of the plan.

Across these efforts, community members identified key safety concerns, which included **expanded sidewalk and bicycle lane coverage**, **enhanced crossings**, **traffic calming measures**, and **improved access to schools**, **parks**, and the **Burien Regional Growth Center**.

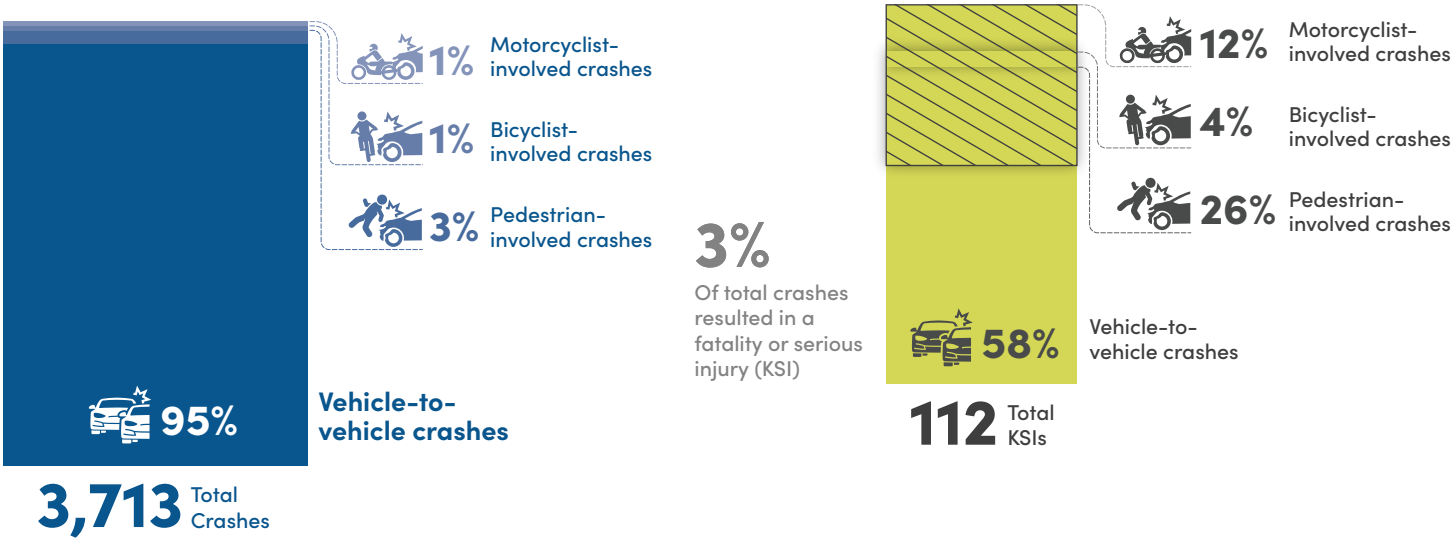
[1] https://highways.dot.gov/safety/zero-deaths

Analyzing Safety Data

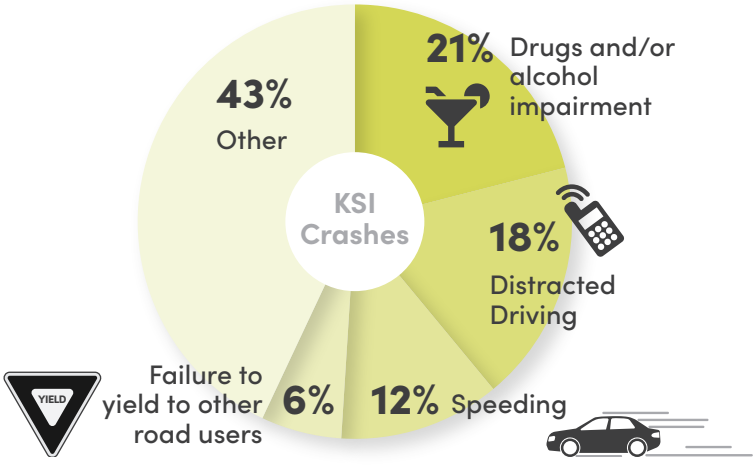
A data-driven approach and analysis of trends is central to the CSAP. To identify where safety improvements are most needed, the project team analyzed crash data from 2019 to 2023 alongside contextual roadway data. The key finding are summarized below.



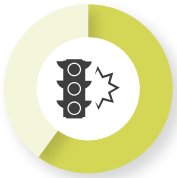
Mode-Based Trends



Circumstance-Based Trends



Other Trends



60%
of crashes were intersection-related.

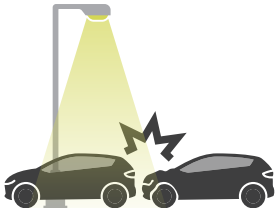


50%
of crashes occurred in low-light conditions at dark, dawn, or dusk.

Most KSI Crashes

occurred between:

- **5pm - 7pm**
- **10pm - 11pm**



Under 23 U.S. Code § 407 and 23 U.S. Code § 148, safety data, reports, surveys, schedules, lists compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or railway-highway crossings are not subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.

High Injury Network (HIN)

The CSAP identifies two key safety networks, the High Injury Network (HIN) and the High-Risk Network (HRN).



High Injury Network (HIN)

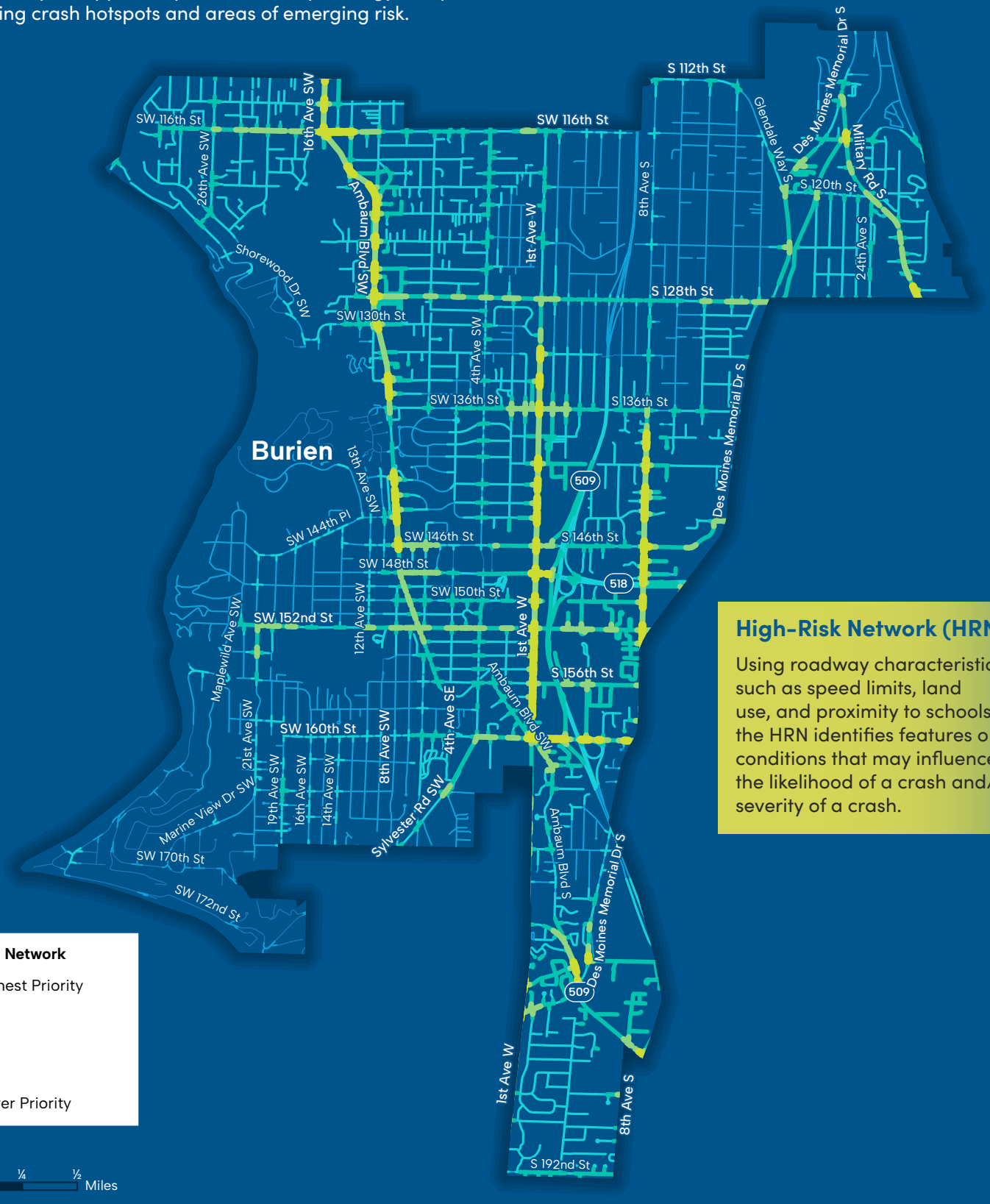
Analysis shows that **67%** of all KSI crashes occur on **6%** of Burien's streets. **74%** of bicycle and pedestrian KSIs occurred on just **4%** of streets helping pinpoint corridors for targeted investments.

High Risk Network (HRN)

High-Risk Network factors include:

- Arterials with speed limits of 35+mph.
- Downtown and commercial land uses.
- Within ½ mile of schools.
- Overburdened communities of Washington State.
- Major intersections.
- No bike facilities.

This analysis supports a proactive safety strategy that prioritizes both existing crash hotspots and areas of emerging risk.



High-Risk Network (HRN)

Using roadway characteristics such as speed limits, land use, and proximity to schools, the HRN identifies features or conditions that may influence the likelihood of a crash and/or severity of a crash.

Translating Results into Projects

To guide future investments, the City and Task Force developed a prioritization framework that responds to historic crash locations and proactively identifies areas where crash likelihood may be higher due to the combination of adjacent land use and roadway characteristics. The graphic below summarizes the six key steps for project identification.



Implementing the Plan

Burien is committed to implementing this plan through a detailed Safety Action Plan, which recommends strategies, policies, and infrastructure improvements grounded in the Safe System Approach and supported by proven safety countermeasures. These actions are designed to reduce severe crashes, especially in high-risk and high-injury areas.

Key Implementation Components Include:

Oversight and Accountability

Maintain a CSAP Task Force to guide, monitor, and support implementation.

Coordination and Communication

Facilitate partnership between city departments, schools, and first responders while maintaining clear and inclusive communication with the public.

Phasing and Sequencing

Prioritize near-, mid-, and long-term actions, ranging from quick, low-cost improvements to major infrastructure investments.

Funding Strategy

Identify and pursue federal, state, and local grant programs while aligning local resources to maximize competitiveness.

To track progress, Burien will regularly evaluate safety metrics such as the number of fatal and serious injury crashes and the share of crashes on the high injury network. A Safety Report Card will track annual progress with average performance assessed every six years to guide future actions.

[2] Overburdened Communities of Washington State data synthesizes information at a Census tract level on the locations of vulnerable populations who face environmental and health risks. The dataset is available at https://gis.ecology.wa.gov/portal/home/item.html?id=454c5efc20334dc4909405310b2dbfcb

Priority Project Locations

Priority project locations are highlighted on the map below. These 11 priority projects are actionable and represent the most critical safety needs in Burien. These projects all make up the priority project list, with no ordered priority within this list.



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Acknowledgements

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Elected Officials

Mayor Kevin Schilling
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Hugo Garcia, Councilmember
Linda Akey, Councilmember
Jimmy Matta, Councilmember
Alex Andrade, Councilmember
Stephanie Mora, Councilmember

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List of Key Acronyms and Terminology

ATIIP	Active Transportation Infrastructure Investment Program
ATP	Active Transportation Program
BUILD	Better Utilizing Investments to Leverage Development Grant Program
CDBG	Community Development Block Grant
CSAP	Comprehensive Safety Action Plan
CSP	Complete Streets Program
FHWA	Federal Highway Administration
HIN	High Injury Network
HRN	High Risk Network (Elevated Traffic Safety Conditions)
HSIP	Highway Safety Improvement Program
KSI	Killed or Serious Injury Crash
MSA	Metropolitan Statistical Area
PDO	Property Damage Only Crashes
RGC	Regional Growth Center
SRTS	Safe Routes to School
SS4A	Safe Streets for All Program
TIF	Transportation Impact Fees
TIP	Transportation Improvement Program
TMP	Transportation Master Plan
UAP	Urban Arterial Program
USDOT	United States Department of Transportation
VRU	Vulnerable Road User
WSDOT	Washington State Department of Transportation

For additional definitions of key terms, see **Appendix A. List of Definitions**.

Chapter 1: Background

Between 2019 and 2023, an average of 22 people were seriously injured or killed each year in traffic crashes on Burien's streets. The Burien Comprehensive Safety Action Plan (CSAP) adopts a **Safe System Approach** to proactively reduce and ultimately eliminate these traffic-related fatalities and serious injuries. This plan reflects Burien's commitment to prioritizing the safety of all road users and creating a community where every trip is a safe one.

What is a Comprehensive Safety Action Plan?

A CSAP is **a strategic roadmap** designed to reduce and ultimately eliminate serious injuries and death on the transportation network. This plan is tailored to address Burien's specific conditions and challenges.

This CSAP takes a **proactive** approach to safety by focusing not only on known locations with crash history but also on anticipating future crashes based on higher-risk roadway characteristics. In addition to guiding local safety improvements, this CSAP supports long-term capital planning and meets the requirements of the U.S. Department of Transportation's Safe Streets and Roads for All (SS4A) program and Highway Safety Improvement (HSIP) program, positioning Burien for future grant opportunities.

Safe System Approach

The City of Burien shares a common goal with FHWA and WSDOT to systematically reduce fatal and serious injury crashes on the transportation network through the Safe System Approach. This approach considers safety for all road users in the planning, design, construction, operation, and maintenance of transportation facilities. The Safe System Approach encompasses more than just government actions, and applies the following principles:



Figure 1. Safe System Approach Wheel
Source: WSDOT

- **Eliminate deaths and serious injuries:** While no crashes are desirable, eliminating crashes that result in fatalities and serious injuries is a priority.
- **Support safe road use:** Road users inevitably make mistakes that lead to crashes, and the transportation system and vehicles can be designed and operated to reduce injury outcomes from those errors. A forgiving system accommodates reasonable and predictable human limitations and behavior. Roads developed in this manner and that serve as "self-enforcing and self-explaining roads" make it less likely for human errors to occur, and when errors do occur, they result in fewer fatal and serious injury crashes.

- **Reduce large crash forces:** Road users have limits for tolerating crash forces before death or serious injury occurs. Therefore, it is important to adopt designs and operational elements that account for and reduce crash speeds and improve impact angles to be within survivable limits.
- **Responsibility is shared:** Eliminating fatal and serious injury crashes requires that all stakeholders (transportation system designers, managers, road users, vehicle manufacturers, policymakers, law enforcement, etc.) work together. The intent is to identify and address elements of road safety over which a given stakeholder has influence.
- **Strengthen all parts:** All parts of the transportation system are strengthened to reinforce each other so that if one part fails, the other parts still protect road users. In this way, redundancy is provided for elements that make up the Safe System.
- **Safety is proactive:** Proactive (systemic safety) approaches address context, contributing factors, and crash types to help reduce the potential or likelihood for fatal and serious injury crashes.

Vision Zero

Vision Zero is a global traffic safety movement founded on the belief that traffic-related deaths and serious injuries are preventable, and that even a single fatality is unacceptable. Its success depends on applying the Safe System Approach to create a transportation network that protects all users.[1]

In Washington State, this philosophy is echoed through the **Target Zero initiative**, which aims to eliminate all traffic fatalities and serious injuries on public roadways by 2030.[2] Burien reinforces this commitment through their own **Vision Zero Statement**:

> The City of Burien is committed to a 30% reduction in transportation-related fatalities and serious injuries by 2044, with an ultimate goal of eliminating all transportation-related fatalities and serious injuries. Burien will reevaluate progress towards this goal every 6 years.

Burien Profile

Burien is in south King County, bordered by unincorporated King County to the north, the Puget Sound to the west, the cities of SeaTac and Tukwila to the east, and the city of Normandy Park to the south. Seattle-Tacoma (Sea-Tac) International Airport is directly southeast of the City. Burien has approximately five miles of Puget Sound shoreline, offering several waterfront amenities. The City's built environment is predominantly suburban, with an auto-oriented street network connected by three major state highways: SR 509, SR 518, and SR 99/599. These routes link Burien to Seattle and the broader Puget Sound region. Burien is also connected to the regional transit network through several high frequency bus routes, many of which serve the Burien Transit Center. The transit center provides access to King County Metro's RapidRide F Line and H Line, as well as access to local routes and Sound Transit services. It also offers amenities such as bike lockers and a park-and-ride facility, supporting multimodal travel to destinations across the region.

Burien has invested in pedestrian and bicycle infrastructure, particularly in the Burien Regional Growth Center (RGC), where wide sidewalks, benches, landscaping, and historic-style lampposts

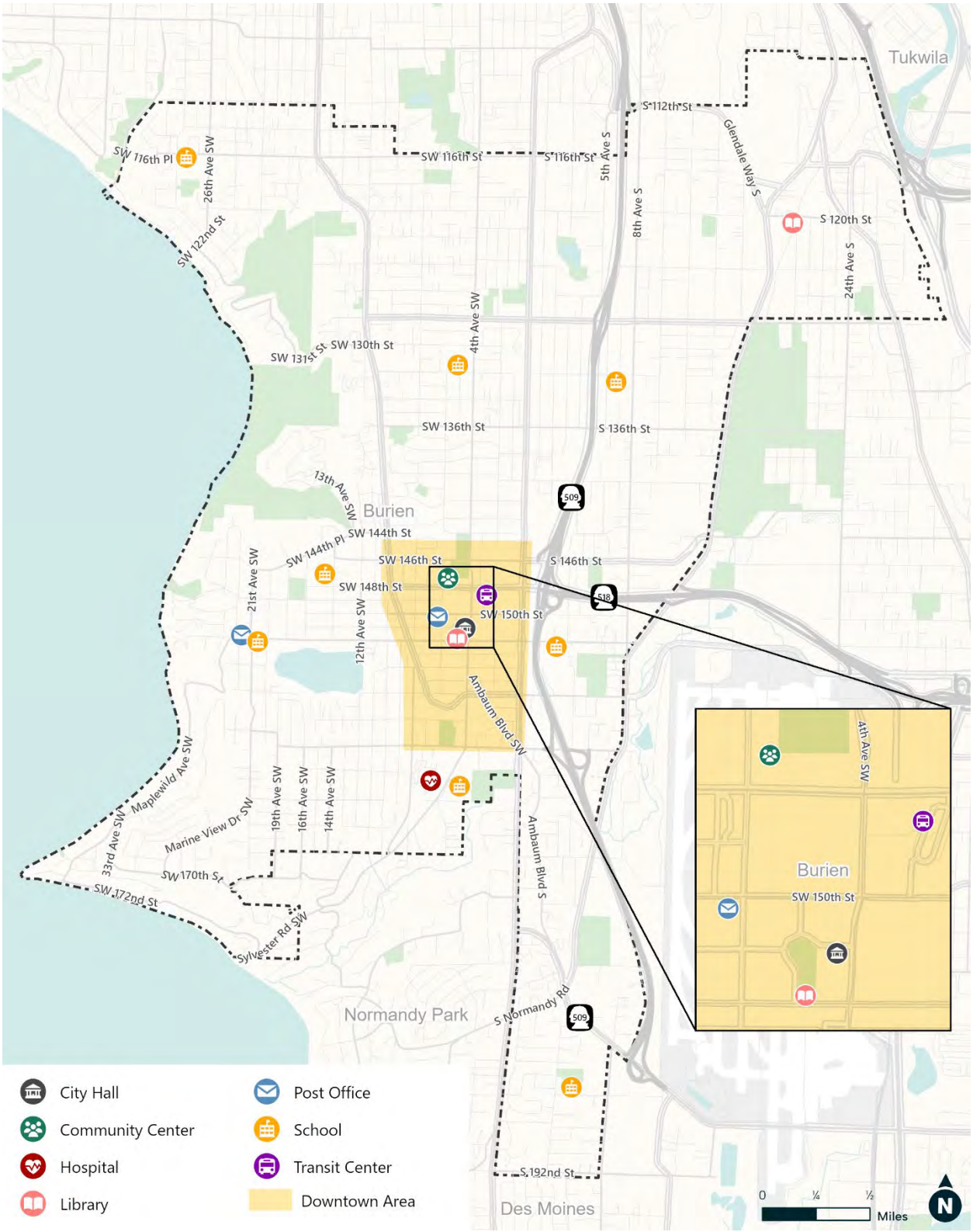
[1] https://highways.dot.gov/safety/zero-deaths
[2] https://targetzero.com/

enhance the pedestrian and bicycle networks. The RGC encompasses Burien Town Square, home to City Hall, the King County Library, a central park, and over 500 residential units. Town Square hosts community events year-round, including a weekly farmers market.

Just west of the RGC, Olde Burien serves as the city's historic core, offering shops and restaurants that draw visitors from across the Highline area. The city also includes over 365 acres of parks and open spaces, including Seahurst Park, Salmon Creek Ravine, Dottie Harper Park, and Moshier Park. North SeaTac Park lies just across the City's eastern border.

Burien's key destinations as well as the City Boundaries are mapped in **Figure 2**.

Figure 2. Key Destinations in Burien

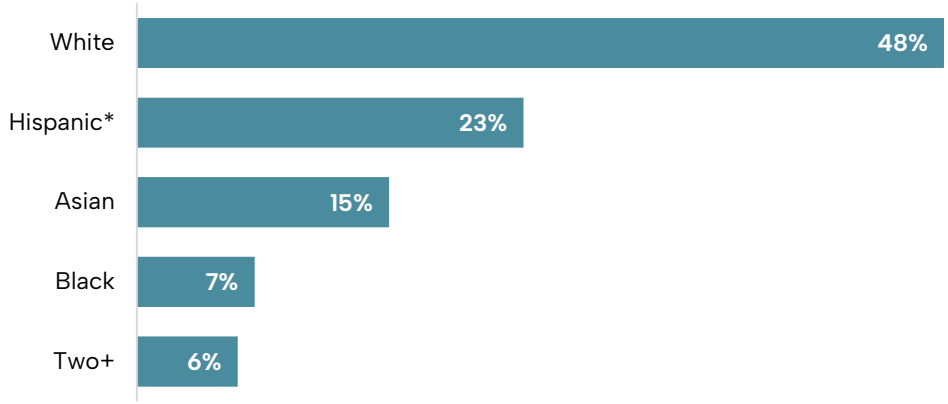


Source: Fehr & Peers, 2025.

Demographics

Burien is a diverse city of over 50,000 residents, with more than half identifying as Hispanic, Latino, or non-white (see **Figure 3**).[3] About 100 languages are spoken in the homes of students attending schools in the Highline School District, reflecting the City's cultural diversity.[4]

Figure 3. Race & Ethnicity of Burien Residents



* Hispanic includes respondents of any race. Other categories are non-Hispanic.

Source: U.S. Census Bureau, 2023. Fehr & Peers, 2025.

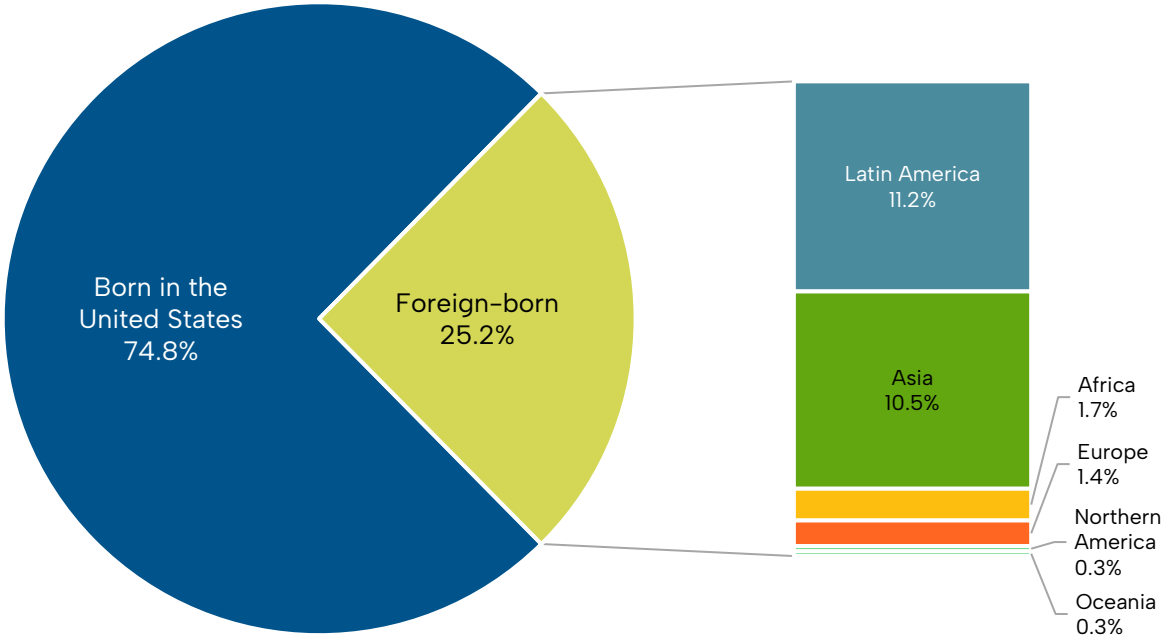
According to the U.S. Census, the median age in Burien is 40, and 64% of the population is between the ages of 18 and 64. Most adults have completed some form of higher education. About 25% of residents are foreign-born, with 44% of that group originating from Latin America and 42% from Asia.[5]

[3] U.S. Census Bureau, *2019–2023 American Community Survey 5-Year Estimates*, Table B03002 (Burien city, WA). Retrieved from https://data.census.gov.

[4] https://www.highlineschools.org/departments/language-learning/community-language-learning

[5] U.S. Census Bureau, *2019–2023 American Community Survey 5-Year Estimates*, Tables B01001, B15002, and B05006 (Burien city, WA). Retrieved from https://data.census.gov.

Figure 4. Place of Birth of Burien Residents



Source: U.S. Census Bureau, 2023. Fehr & Peers, 2025.

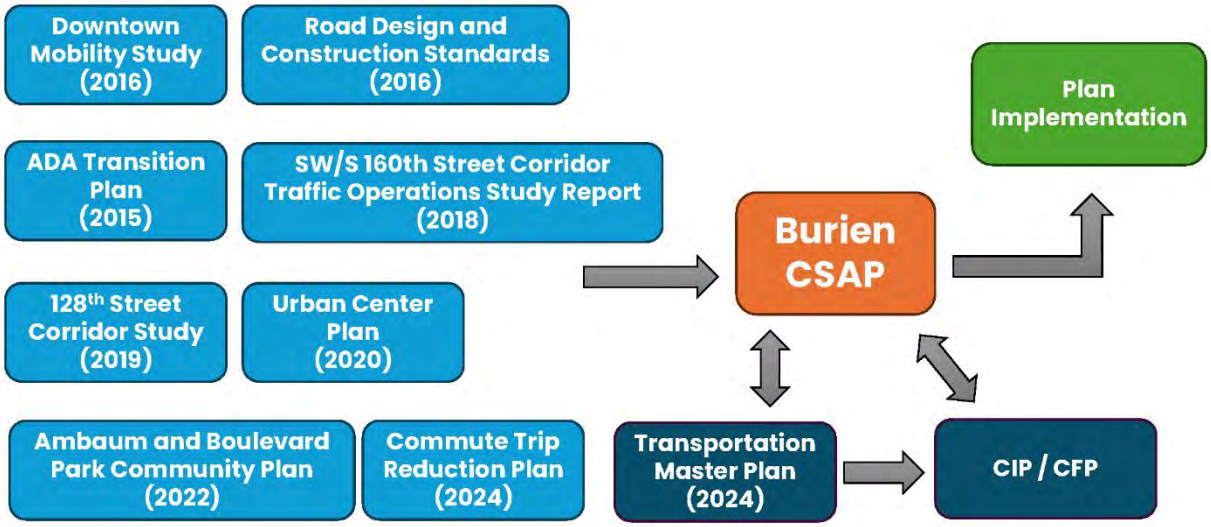
Approximately 10% of residents live below the poverty line, which is about 25% higher than the rate for the Seattle-Tacoma-Bellevue metropolitan statistical area (MSA). The City's median household income is $90,597, which is about 18% lower than the MSA median of $110,744.[6]

Safety Planning Context

Burien has a long history of investing in transportation safety. This CSAP builds on the foundation of transportation safety planning set by the adopted plans. **Figure 5** outlines how each planning effort interacts with the development of this CSAP. The following sections provide an overview of the recent and ongoing transportation safety efforts in the City.

[6] Source: U.S. Census Bureau, *2019–2023 American Community Survey 5-Year Estimates*, Tables B17001 and B19001 (Burien city, WA and Seattle-Tacoma-Bellevue, WA Metropolitan Statistical Area). Retrieved from https://data.census.gov.

Figure 5. Relationship Among Plans



Transportation Master Plan Update (2024)

The City of Burien adopted an updated Transportation Master Plan (TMP) in October 2024 as part of the Burien 2044 Comprehensive Plan effort. The TMP outlines a framework for transportation investments over the next 20 years. The plan is guided by the community's priorities for mobility and transportation. To ensure the TMP reflects the transportation needs in the City, the planning process involved an extensive community outreach and engagement effort. This CSAP builds off the recent TMP and incorporates feedback related to safety that was collected through the TMP outreach process.

The TMP addresses all modes of transportation and a wide range of transportation project types, including safety. **Four of the six TMP goals emphasize safety** or include safety-related objectives. In total, seven objectives specifically identify safety priorities, as outlined below:

Goal 1: Connectivity – Connect land uses in a safe and accessible way.

- **Objective 1.1** – Develop, maintain, and operate a balanced, safe, and efficient multimodal transportation system to serve all users and comply with the Regional Growth Strategy.
- **Objective 1.6** – Design and maintain designated truck routes to accommodate truck freight traffic and promote safe, sustainable, and efficient goods movement.
- **Objective 1.8** – Address safety issues in an organized, prioritized manner.
- **Objective 1.9** – Place high priority on the access needs of public safety vehicles.

Goal 2: Travel Options – Ensure that people can get around safely with or without a car.

- **Objective 2.6** – Create a safe and convenient environment for walking and bicycling integrated with roads and other transportation facilities.

Goal 3: Equity – Prioritize investments for those who have the least access.

- **Objective 3.2** – Ensure that transportation plans and policies support active living, healthful food access and safe use of the transportation system, including access to schools for all users including people walking, bicycling, persons who use a wheelchair or other ambulation devices, seniors, youth, people with low incomes, and residents of all ages and abilities.

Goal 5: Strategic Funding – Optimize limited funding and reduce ongoing maintenance and preservation costs.

- **Objective 5.3** – Implement demand management measures that relieve congestion and safety concerns on Burien roadways.

Each of the above objectives contains policies aimed at achieving the objective (see **Appendix B. Transportation Master Plan Safety Policies**). This CSAP will build on the TMP to address the shared goal of transportation safety.

Burien Transportation Improvement Program (2025-2030)

The Burien Transportation Improvement Program (TIP) is updated on an annual basis to outline medium-term projects that are planned in the City. Regular updates to the program ensure that the project list remains in line with the latest citywide goals and priorities. The 2024-2029 TIP has been coordinated with the TMP update to ensure consistency. The TIP includes both specific capital projects and broader citywide programs, with details such as project descriptions, segment lengths, estimated costs, funding sources, priority levels, and budget status. To support safety goals, TIP projects were reviewed alongside CSAP priority locations to identify overlap and explore opportunities to integrate safety improvements into already planned projects.

ADA Transition Plan (2015)

The City of Burien's Americans with Disabilities Act (ADA) Transition Plan plays an important role in the city's broader commitment to pedestrian safety and accessibility. The plan outlines policies and practices for improving pedestrian facilities in the public right-of-way to ensure they are safe, usable, and compliant with federal, state, and local accessibility standards. Rather than attempting a citywide inventory all at once, the plan focuses on selected geographic areas, known as pedestrian priority areas, identified through the public engagement process for the 2012 TMP. These areas include the downtown core, pedestrian activity centers, and transit priority corridors. This focused approach allows the City to identify and address all access barriers within a given area, rather than just isolated features like curb ramps. By fully upgrading pedestrian infrastructure within these priority zones, the ADA Transition Plan supports Burien's ongoing efforts to create a safer, more connected, and inclusive transportation network for all users.

The ADA Transition Plan was updated in 2025 to reflect input gathered from community groups and individuals who use public facilities in Burien. This outreach (conducted through stakeholder engagement and a public open house) helped the City identify the most critical areas needing accessibility improvements. These identified priority areas are guiding the City's ADA-related investments and improvements until the next plan update.

Commute Trip Reduction Plan (2024)

The City of Burien's Commute Trip Reduction (CTR) Plan, updated in 2024 for the 2025–2029 period, outlines how the CTR program will support the city's land use, transportation, and environmental goals. The plan sets performance targets and defines how progress will be measured, while also identifying services and strategies the City will provide to assist employers affected by the state's CTR law.

Although the primary focus of the CTR Plan is to reduce drive-alone commute trips and encourage alternatives such as transit, carpooling, biking, and walking, it also contributes to transportation safety. By reducing the number of vehicles on the road during peak travel times, the plan supports safer travel conditions, lowers the risk of crashes, and helps create a transportation system that better accommodates non-motorized users. The CTR program aligns with broader city efforts to create a more efficient, accessible, and safe transportation network for all.

Ambaum and Boulevard Park Community Plan (2022)

The Ambaum and Boulevard Park Community Plan supports Burien's ongoing commitment to safety by outlining a vision for creating safer and healthier communities in two key neighborhoods. One of the plan's three core goals, "Safer and Healthier Communities," focuses on addressing long-standing safety and health challenges experienced by residents. The plan includes specific strategies to improve safety for all users of the transportation system, including people driving, biking, walking, and using wheelchairs. Key actions include enhancing street lighting and adding pedestrian-scale lighting to increase visibility and comfort in public spaces. By targeting infrastructure improvements in historically underserved areas, the plan advances equitable safety outcomes as part of Burien's broader efforts to build a more inclusive and connected city.

Urban Center Plan (2020)

The Burien Urban Center Plan outlines a vision for accommodating 2,800 new housing units and 3,600 additional jobs by 2035 in the city's Regional Growth Center (Urban Center). As part of planning for this future growth, the plan includes strategies to improve transportation safety and connectivity. It identifies gaps in the street network, as well as key connectivity and safety challenges, and calls for improvements to make it easier and safer to get around by foot, bike, or transit.

The plan is organized around three core goals, one of which is creating a "Connected, Green, and Healthy" Urban Center. This goal envisions streets and public spaces that are clean, safe, and welcoming, with convenient connections to green parks and streetfronts. A key principle is to link community destinations through green, multimodal streets and to enhance intersections and gateways to improve safety and connectivity. Additional strategies in the plan support transportation safety as part of this broader vision. These include providing secure bicycle parking at key destinations (Strategy 6.3.2) and ensuring that bus stops are accessible and safe for pedestrians and other non-motorized users (Strategy 6.4.1).

128th Street Corridor Study (2019)

This study documents existing conditions along 128th Street from Ambaum Boulevard SW to Des Moines Memorial Drive S and identifies potential strategies to address operational and safety deficiencies. It includes an analysis of five years of crash data, along with a predictive safety assessment at each study intersection to estimate how proposed improvements could affect crash frequency, offering insight into their potential impact on overall corridor safety.

SW/S 160th Street Corridor Traffic Operations Study Report (2018)

This study documents existing conditions along SW/S 160th Street between 4th Avenue SW and Des Moines Memorial Drive S and identifies potential strategies to address operational and safety deficiencies. Key safety concerns were identified along the corridor, particularly related to pedestrian

safety at intersections. Proposed improvements include traffic signal timing adjustments, roadway reconfiguration, and rechannelization to enhance both traffic operations and overall corridor safety.

Road Design and Construction Standards (2016)

The City of Burien Road Design and Construction Standards form the foundation for how transportation infrastructure is built in Burien. These standards contribute to ongoing transportation safety efforts in Burien by establishing technical guidelines that ensure streets, sidewalks, intersections, and other public rights-of-way are designed and built to be safe, accessible, and consistent with best practices.

Downtown Mobility Study (2016)

The City of Burien's Downtown Mobility Study supports ongoing safety efforts by identifying strategies to improve walking, biking, and transit access throughout the downtown area. While the study's primary focus is on enhancing mobility and transportation options, safety is a key factor considered throughout its recommendations. The study evaluates potential projects and policy approaches based in part on their ability to create safer conditions for people of all ages and abilities, especially those walking and biking.

The study is guided by three main goals: improving multimodal connections within Burien, increasing Downtown's multigenerational appeal, and elevating Burien's position in the region. It emphasizes the importance of creating a downtown environment where slower vehicle speeds, safer crossings, and other treatments and facilities contribute to a safe and comfortable experience for all users.

Many of the recommended improvements are well suited for safety-focused funding programs such as Safe Routes to School, the WSDOT Pedestrian and Bicycle Program, the Transportation Improvement Board, and Federal Aid grants. In this way, the Downtown Mobility Study serves as both a long-term planning tool and an immediate opportunity to support Burien's commitment to safer streets.

Completed Safety Projects in Burien

Table 1 summarizes safety projects in Burien that have been recently completed or are scheduled for implementation in the near future.

Table 1. Recently Completed and Upcoming Safety Projects in Burien

Project	Year	Type
4th Avenue SW Sidewalk Improvements	2026	Sidewalk improvements on eastside corridor of 4th Avenue SW between SW 156th and SW 160th Streets. Redefining of existing bicycle lanes with dedicated bicycle lanes.
H-Line (Metro)	2024	Sidewalk improvements on Ambaum between SW 116th Street and SW 122nd Street. Various signal enhancements including several HAWK signals on Ambaum and SW 150th Street/5th Avenue SW. Addition of BAT lanes.
S 136th Street Sidewalk improvements	2024	Sidewalk improvements on S 136th between 1st Avenue S and Des Moines Memorial Drive including ADA upgrades.
1st Avenue S Overlay/Rehabilitation	2020	Overlay 1st Avenue S between S 140th to S 128th incl ADA ramp improvements at S 136th Street and S 128th Street. Pedestrian access route improvements (repaved shoulders)
5th Avenue S Traffic Calming	2020	Implementation of traffic calming measures between S 116th Street and S 128th Street
S 156th HAWK Signal	2020	HAWK signal installation at 4th Avenue S and S 156th St
ADA Barrier Mitigation	2019	Various ADA improvements: • 4th Avenue SW/SW 152nd (next to Dollar Tree) • SW 136th Street and 6th Avenue SW ADA ramps • SW 146th Street and 3rd Avenue SW ramps • Sharrow markings on 4th Avenue SW between SW 116th Street and SW 128th Street

Chapter 2: Engaging the Community

Stakeholder and community engagement are key elements in the development of a CSAP, ensuring that community members have ample opportunity to identify safety challenges and influence outcomes. This CSAP was built on the extensive outreach conducted through the Shape Your City initiative as part of the TMP and collected additional feedback specific to the CSAP through an online survey, an interactive map, and input from the Burien CSAP Task Force.

Leveraging Past Engagement Efforts: Burien TMP

A large community engagement effort was conducted through the **Shape Your City** initiative—a coordinated planning effort led by the City of Burien in collaboration with community stakeholders to reimagine Burien's long-term future by combining major updates to the Comprehensive Plan and other planning efforts such as the new TMP.[7] Outreach included interviews and meetings with residents, local businesses, community organizations, City staff, and targeted groups such as walk and bike advocates and high school students. Engagement formats included public open houses, online surveys, an interactive web map, and focused stakeholder discussions.

What We Heard: Shape Your City Initiative (Burien TMP)

Key community priorities and concerns related to safety and vulnerable road users were identified through the Shape Your City initiative. Common themes included the need for:

- Safe bicycle and pedestrian facilities for users of all ages and abilities, especially seniors and children
- Expanded sidewalk coverage across Burien, particularly along high-traffic corridors and near schools to support Safe Routes to School
- Improved lighting and maintenance of existing walking and biking infrastructure
- High visibility crossings, separated facilities, and traffic calming measures
- Better multimodal connections to Burien's RGC
- Policies that prioritize space for active transportation
- A focus on safety in transportation-related policy decisions

Areas of concern raised by the community include:

- Streets surrounding schools
- Park-to-park connections
- 1st Avenue S
- Military Road S
- 21st Avenue SW
- SW 160th Street
- SW 172nd Street
- Ambaum Boulevard

[7] https://connect.burienwa.gov/projects/shape-your-city/

For more details about these outreach events and community feedback, see the 2024 City of Burien TMP[8] and Burien 2044: Our Comprehensive Plan.[9]

Conducting Safety-Specific Outreach: CSAP Online Survey and Interactive Map

In addition to the extensive community engagement from the Shape Your City initiative, the CSAP project team launched a new online engagement effort to gather additional input on transportation safety in Burien. This effort included two components: an interactive map where community members could identify specific locations with transportation safety concerns, and a survey that collected additional details about key safety issues and demographic information.

What We Heard: Online Survey and Interactive Map (Burien CSAP)

> **67% of the comments from the mapping activities are related to safety concerns for vulnerable road users.**

Areas of concern identified through the mapping exercises include SW 152nd Street, SW 148th Street, SW 160th Street, Ambaum Boulevard SW, and areas near pedestrian and bicycle amenities such as parks, schools, and trails.

Based on analysis of the map comments, the **top areas of concern related to safety** included:

- **Expanded sidewalk coverage.**
- **Expanded bicycle lane coverage.**
- **Concerns about speeding vehicles**, particularly in school zones and residential areas.
- **Concerns about intersections** such as visibility, higher visibility crossings, and traffic control devices.
- **Concerns about crosswalks that are difficult for drivers to see**.

The survey results reflected similar themes, with more than 90% of respondents identifying the lack of sidewalks as a key transportation safety challenge they face in Burien. Respondents ranked a lack of dedicated walking paths, speeding, and inadequate pedestrian crossings as their three greatest safety concerns.

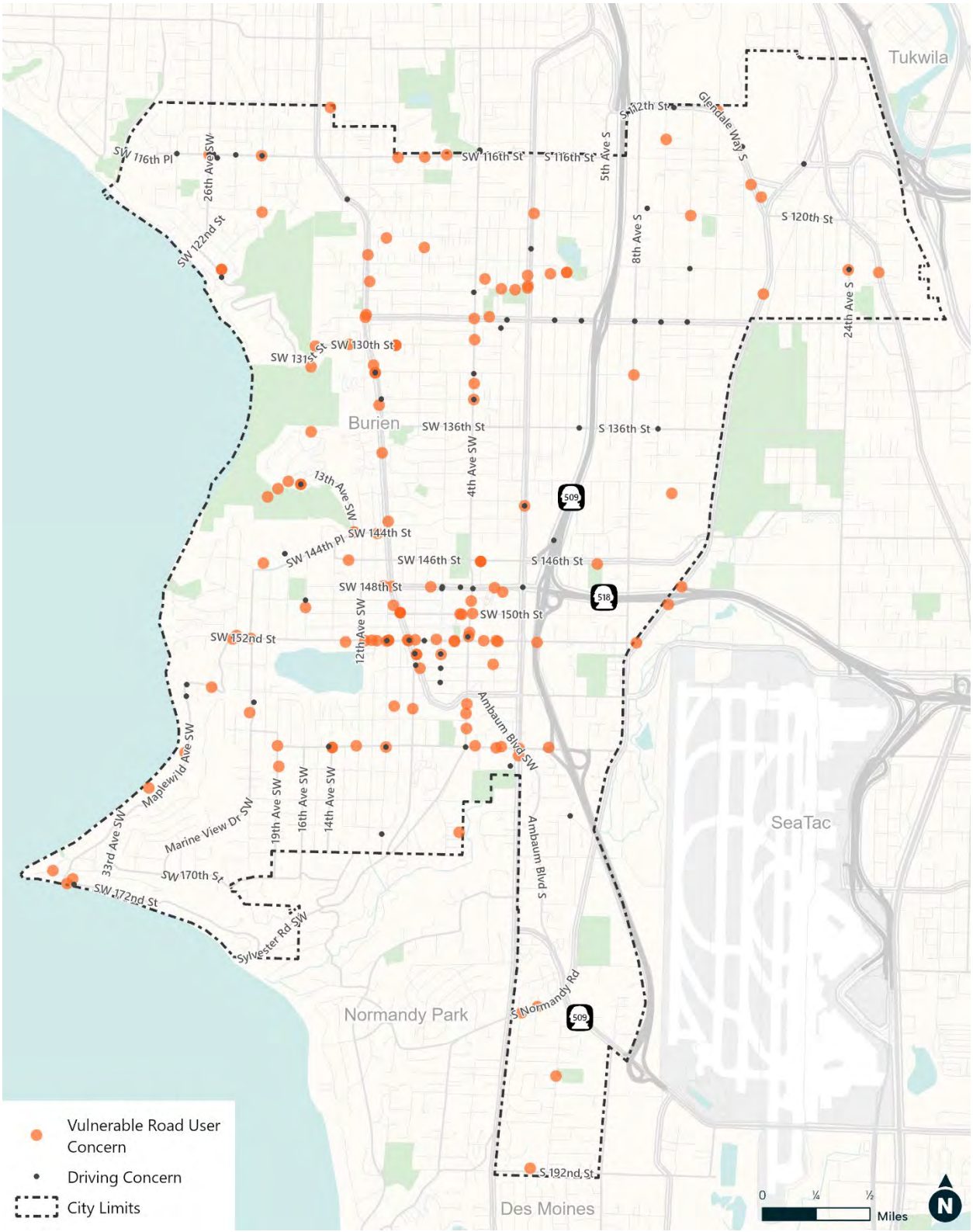
For a more detailed summary of the CSAP outreach process and responses, refer to **Appendix C. CSAP Community Engagement**.

Figure 6 shows transportation safety concerns identified by community members across Burien through the Shape Your City initiative, CSAP-specific outreach, and traffic complaints received by the City. It includes the locations broken out by vulnerable road users compared to driver concerns.

[8] https://connect.burienwa.gov/wp-content/uploads/2024/10/Web-6_Burien-TMP-09.09.2024_Clean_wAppx-Copy.pdf

[9] https://burienwa.civicweb.net/document/202870/Adoption%20of%20Ordinance%20No.%20847,%20Burien%202044%20Comp.pdf?handle=C06BC77A49764C6DB58687A1CECAD147

Figure 6. Community Identified Transportation Safety Concerns by Mode



Source: Fehr & Peers, 2025.

Burien CSAP Task Force

The project team collaborated with a group of stakeholders, known as the **Burien CSAP Task Force**, to help guide and shape this CSAP. The Task Force included community members, City staff, countywide safety representatives, and other key partners.

The Task Force met three times to discuss existing conditions in Burien, explore potential solutions and projects to address identified safety challenges, and review draft plan content.

- **Meeting 1**: The project team introduced the planning effort, explained the purpose of a CSAP, outlined the Safe System Approach, and shared findings from the crash data analysis. Task Force members provided input on how the data aligned with their lived experiences in Burien.
- **Meeting 2**: The project team presented a summary of community engagement findings and the results of the systemic safety analysis. Task Force members participated in a prioritization exercise to identify the most important criteria for selecting priority project locations. Results from this activity are included in **Appendix D. Task Force Meeting Content**.
- **Meeting 3**: The project team presented the draft report, including a review of the identified priority locations. Task Force members provided input on refining performance measures and the timeline for ongoing CSAP evaluation through the Safety Report Card.

For more information on Task Force Content, see **Appendix D. Task Force Meeting Content.**

Chapter 3: Analyzing Safety Data

A data-driven approach is central to the Burien CSAP. As part of the plan's development, local and regional crash data was analyzed to identify patterns and trends. The primary source for this analysis was WSDOT crash records from 2019 to 2023 on local streets within Burien.

The project team conducted the following steps to inform safety recommendations and identify priority locations:

1. **Regional Context**: plot and analyze regional trends on key metrics in King County before diving into the specifics of the City of Burien.
2. **Existing Conditions in Burien**: evaluate recent crash data to understand potential trends within the City.
3. **Identification of the High Injury Network**: identify trends for key corridors with high rates of fatal and serious injury crashes to serve as metrics in prioritizing locations for safety improvements.
4. **Identification of the High-Risk Network**: relate trends on roadway and crash characteristics to take a proactive approach to safety by considering risk of potential crashes, even if there is not a lengthy crash history at a location.

Additional content and findings from analyzing crash data in Burien can be found in **Appendix E. Existing Crash Data Analysis**.

WHAT IS A KSI CRASH?

A **fatal injury** is any injury that leads to death within 30 days of the motor vehicle crash in which it occurred. A **serious injury** is a non-fatal injury that results in one or more of the following:

- Severe laceration resulting in exposure of underlying tissues/ muscle/organs or resulting in significant loss of blood
- Broken or distorted extremity (arm or leg)
- Crush injuries
- Suspected skull, chest, or abdominal injury other than bruises or minor lacerations
- Significant burns (second and third degree burns over 10% or more of the body)
- Unconsciousness when taken from the crash scene
- Paralysis

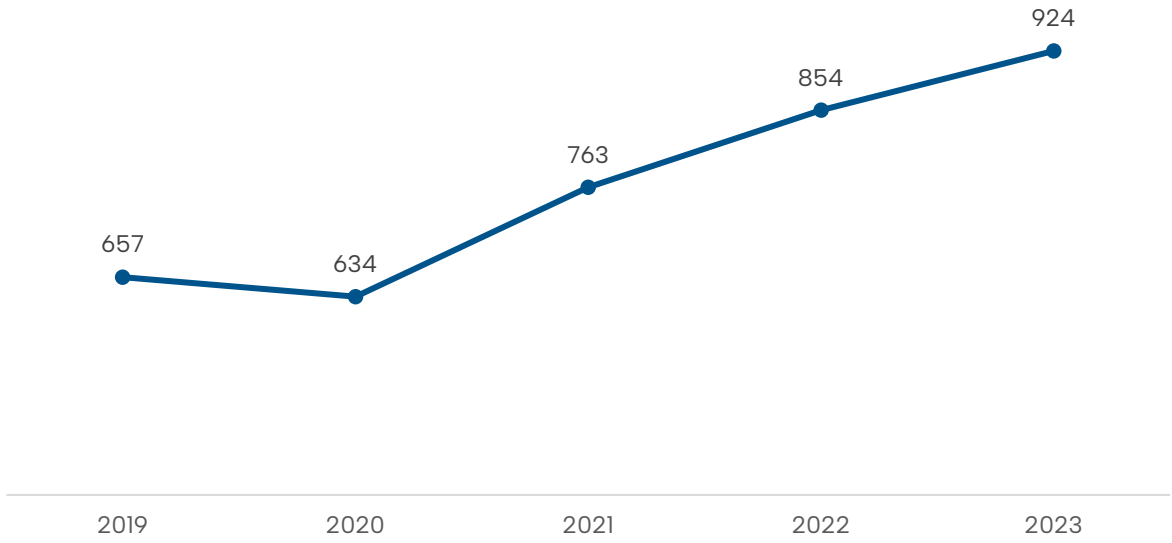
Source: https://highways.dot.gov/media/20131

Regional Context

Between 2019 and 2023, traffic fatalities and serious injuries on all roads in **King County** increased, as illustrated in **Figure 7**. Traffic deaths rose from 107 in 2019 to 168 in 2023, a 57% increase. Of the 3,832 KSI crashes reported over this 5-year period, a third of KSI crashes involved a bicyclist or pedestrian (**Figure 8**).[10]

[10] https://wtsc.wa.gov/dashboards/fatalities-dashboard/

Figure 7. KSI Crashes by Year in King County (2019 – 2023)



Source: 2019-2023 WSDOT Data, Fehr & Peers, 2025.

Figure 8. KSI Crashes by Mode in King County (2019 – 2023)



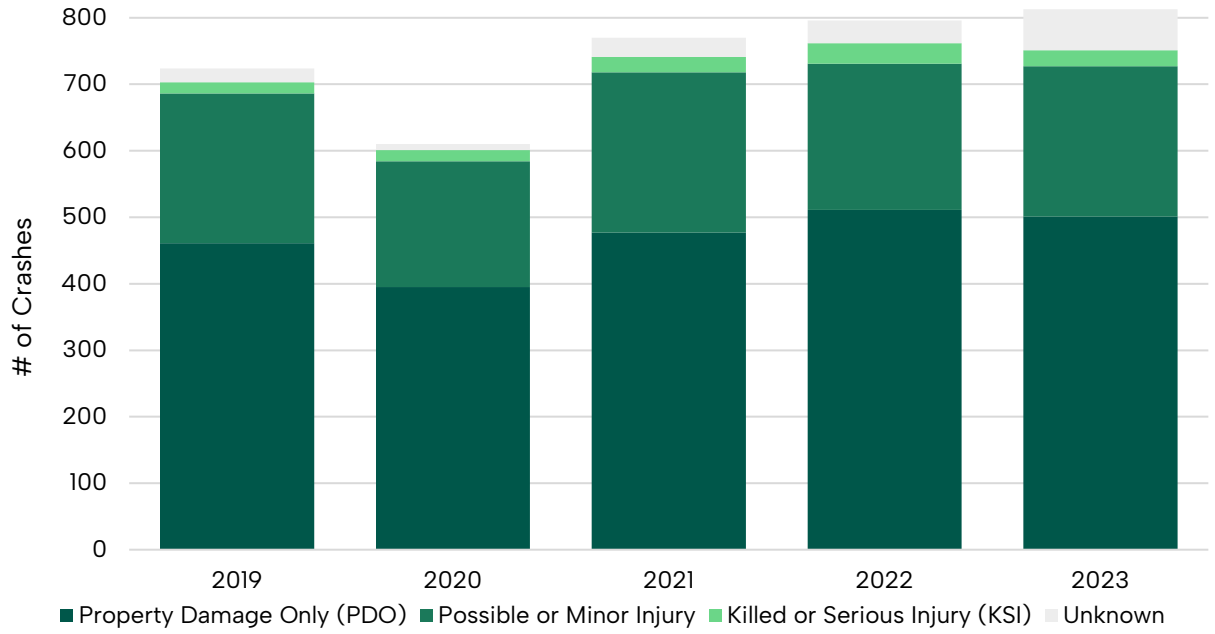
Source: 2019-2023 WSDOT Data, Fehr & Peers, 2025.

Existing Crash Conditions in Burien

Between 2019 and 2023, there were 3,713 crashes on Burien streets.[11] Of these, **112 crashes (3%) resulted in a fatality or serious injury (KSI)**. As shown in **Figure 9**, the number of crashes by severity varied each year, with a 12% increase in total crashes over the last five years and a 41% increase in KSI crashes over the same five-year period, matching countywide trends of increasing crashes and KSI crashes. In 2023 alone, there were 813 crashes, the highest annual total during this period.

[11] The project team analyzed the most recent five years of available crash data. As new data is released, trends may shift to reflect changing transportation conditions in the City.

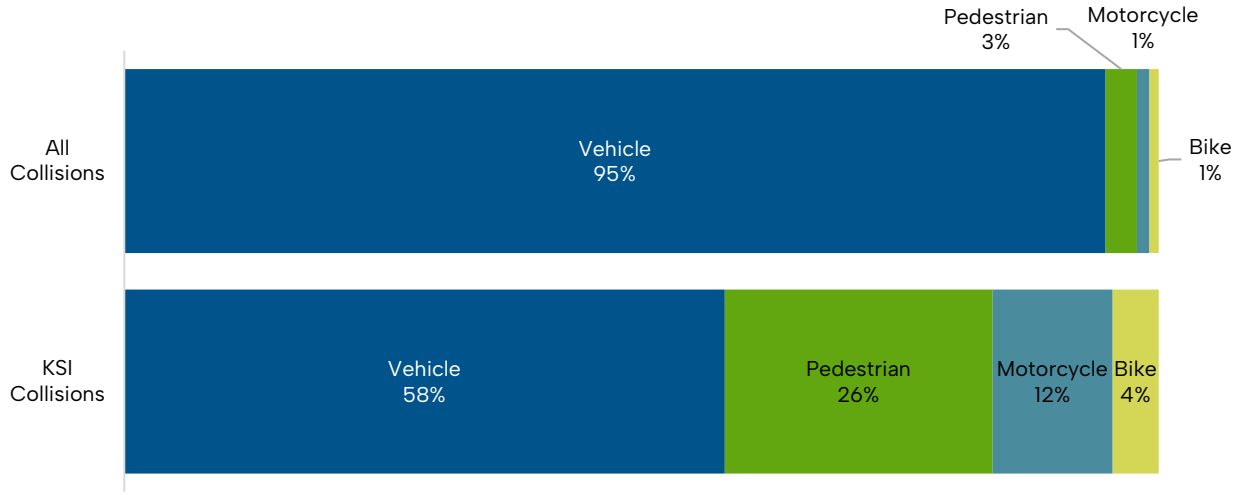
Figure 9. Crashes by Year and Severity in Burien (2019 – 2023)



Source: 2019-2023 WSDOT Data, Fehr & Peers, 2025.

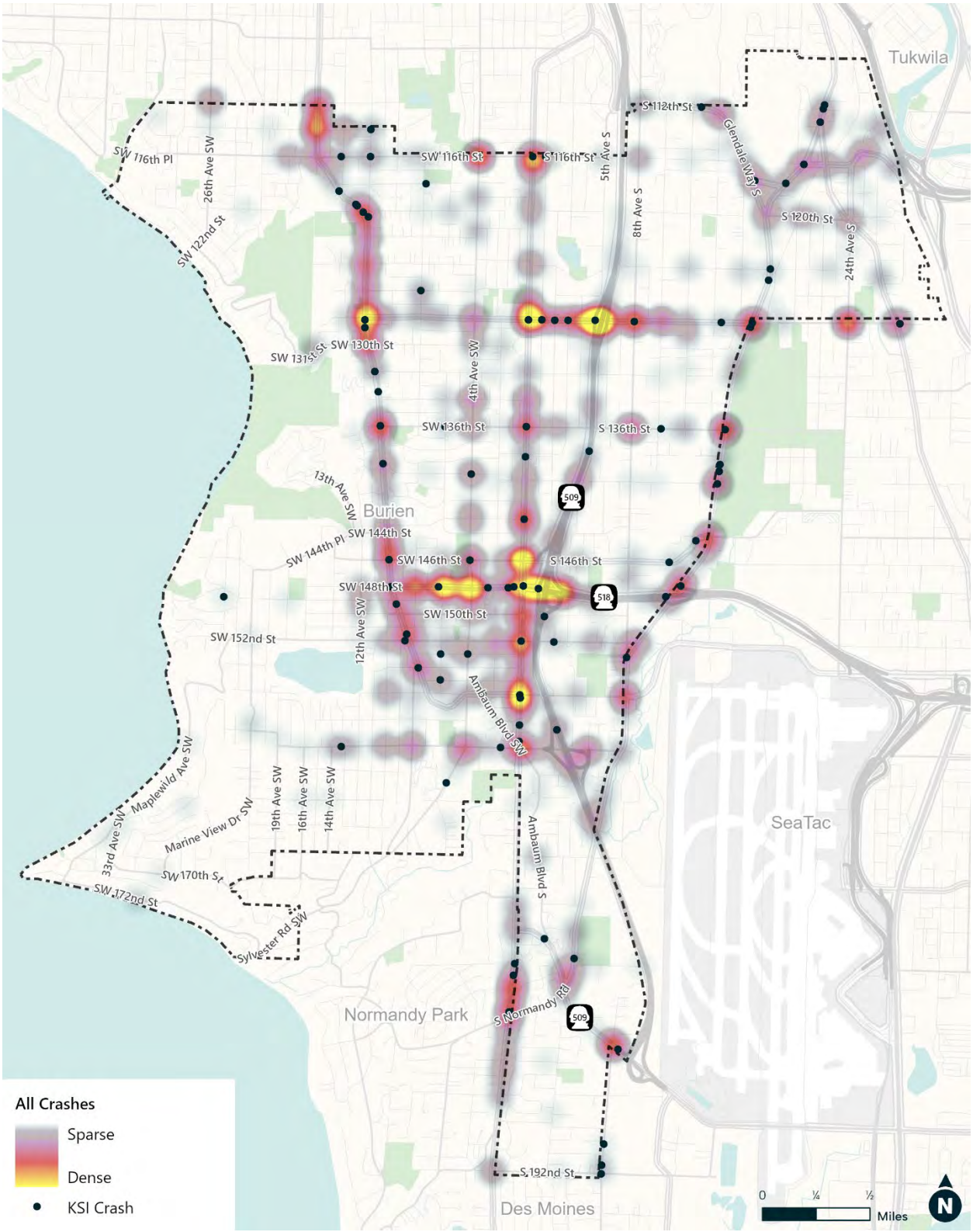
People walking, biking, and riding motorcycles were disproportionately represented in KSI crashes. While they were involved in just 5% of all crashes, they accounted for 42% of KSI crashes (see **Figure 10**). This pattern aligns with trends in other jurisdictions, where vulnerable road users face higher risks of severe injury. **Figure 11** highlights the locations where crashes involving injuries were most concentrated.

Figure 10. All Crashes vs. KSI Crashes by Mode in Burien (2019 – 2023)



Source: 2019-2023 WSDOT Data, Fehr & Peers, 2025.

Figure 11. All Crashes in Burien (2019 – 2023)



Source: 2019-2023 WSDOT Data, Fehr & Peers, 2025.

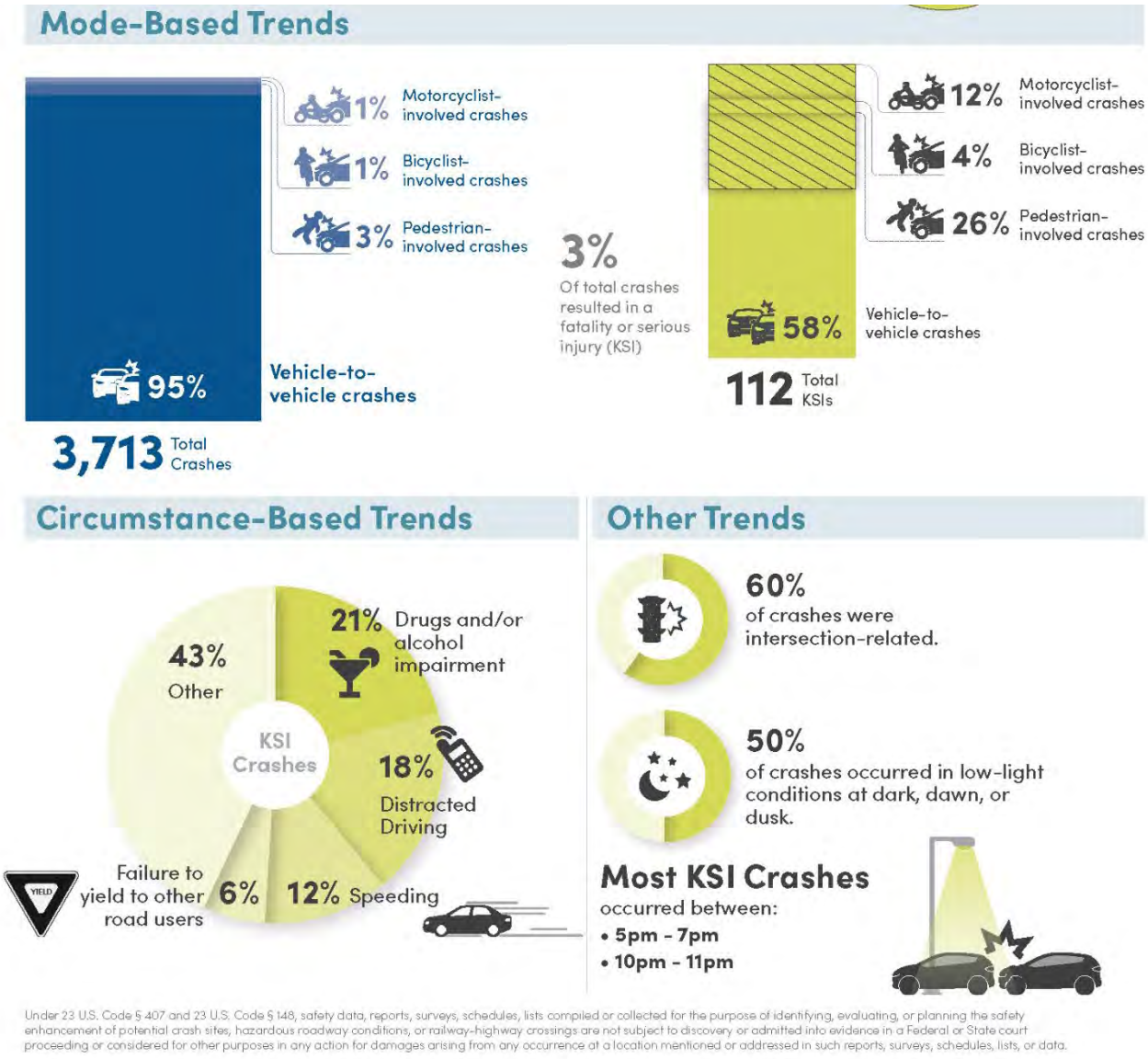
Analyzing recent crash trends helps inform the selection of project types that address recurring safety concerns. **Table 2** highlights key crash trends in Burien, and **Figure 12** highlights patterns among KSI crashes.

Table 2. Crash Trends in Burien (2019 – 2023)

Key Trends	Key Data
Mode-Based Trends	**Vehicle-to-vehicle** crashes comprised 95% of total crashes and 58% of KSI crashes.
	Pedestrians were involved in 3% of total crashes and 26% of KSI crashes.
	Bicyclists were involved in 1% of total crashes and 4% of KSI crashes.
	Motorcyclists were involved in 1% of crashes and 12% KSI crashes.
Circumstance-Based Trends	**Drugs and/or alcohol impairment** was a contributing circumstance in 21% of KSI crashes.
	Distracted driving was a contributing circumstance in 18% of KSI crashes.
	Speeding was a contributing circumstance in 12% of KSI crashes.
	Failure to yield/not granting right of way to other vehicles or non-motorists was a contributing circumstance in 6% of KSI crashes.
Crash Type Trends	A vehicle **entering at an angle** involved 25% of KSI crashes.
	Fixed object crashes accounted for 12% of KSI crashes.
Other Trends	At an **intersection and/or are intersection related** accounted for 60% of KSI crashes.
	Low-light conditions such as **dark, dawn, or dusk** accounted for 50% of KSI crashes.
	The highest rates of KSI crashes were between **10 pm and 11 pm** and between **5 pm and 7 pm**.

Source: 2019-2023 WSDOT Data, Fehr & Peers, 2025.

Figure 12. KSI Crash Metrics



Source: 2019–2023 WSDOT Data, Fehr & Peers, 2025.

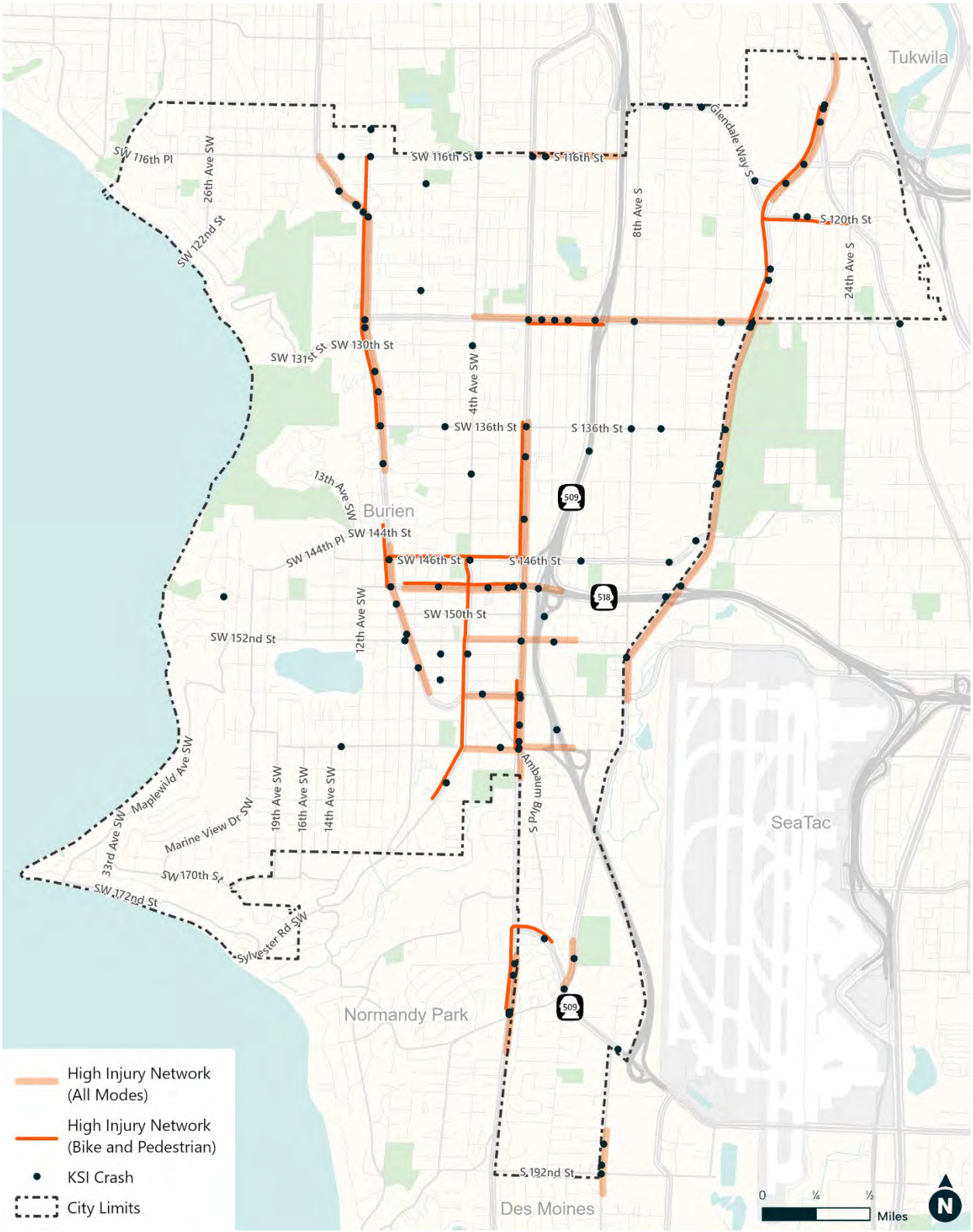
Identification of the High Injury Network

A **High Injury Network (HIN)** was developed, which identifies roadway segments with the highest concentration of KSI and injury crashes. Crashes were weighted by severity, with KSI crashes receiving the highest weight.

Burien's all-mode HIN identified that **67% of all KSI crashes occur on just 6% of city streets**, highlighting key corridors for targeted improvements. A separate non-motorized HIN was also developed, focusing specifically on crashes involving people walking and biking as these road users are especially vulnerable to severe outcomes. The pedestrian and bicycle HIN found **74% of pedestrian and bicycle KSI crashes occurred on just 4% of city streets**.

Figure 13 shows both the HIN based on all modes and the HIN specific to vulnerable road users across Burien.

Figure 13. All Modes and Vulnerable Road User High Injury Network



Source: Fehr & Peers, 2025.

Identification of the High-Risk Network

To reduce the likelihood of future crashes, it is helpful to understand the factors that influence crash occurrence and severity. In addition to reviewing historic trends, the CSAP process incorporates a proactive approach to safety through identifying a **High-Risk Network (HRN)**. The HRN merges contextual data, such as land use and roadway characteristics, with crash data to uncover street characteristics that are associated with higher rates and severity of crashes. Streets with the most factors present were identified as part of the high-risk network.

The following contextual variables were reviewed in the development of the HRN:

- Streets, including speed limit and functional classification
- Signalized intersections and traffic beacons
- Land use zoning
- Education facilities and school zones
- Sidewalks
- Bicycle facilities
- Park locations
- Intersection proximity
- Transit stops and stations

Table 3 presents crash likelihood factors in the HRN, including what modes are impacted by each factor as well as relevant crash and contextual information about each factor. These locations form the basis of the HRN shown in **Figure 14**. **Appendix F. Crash Likelihood Mapping** provides individual maps of each individual crash likelihood factor included in the HRN analysis.

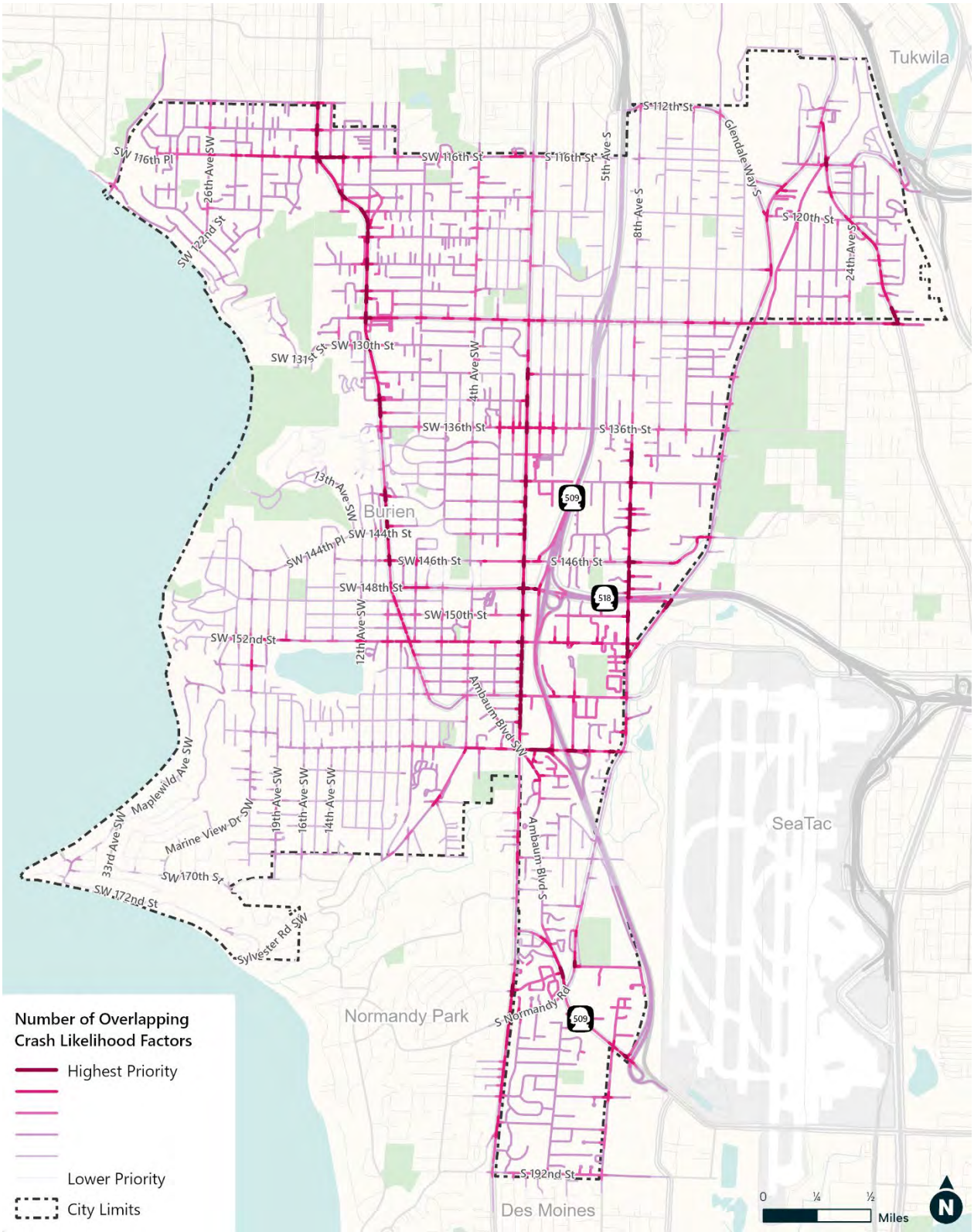
Table 3. Crash Likelihood Factors in the HRN

Factor	Mode	Crash Information	Contextual Information
Arterials with Speed Limits of 35+mph	All Modes	**61% of all KSIs** occur on arterials with 35+mph speed limit.	**11% of streets** in Burien are arterials with 35+mph speed limit.
Downtown and Commercial Land Uses	All Modes	**67% of KSIs** occur within commercial and downtown land uses.	**27% of streets** in Burien fall within commercial and downtown land uses.
Major Intersections	All Modes	**93% of all KSIs** that occur at an intersection are at major intersections.	**47% of intersections** in Burien are considered major intersections (non local-local intersections).
Darkness	All Modes	**48% of KSIs** occur during dark periods.	**33%** of all crashes in Burien occur during dark periods.
Overburdened Communities of WA	Vulnerable Road Users	**79% of Vulnerable Road User KSIs** occur within the Overburdened Communities of WA area.	**71% of streets** in Burien fall within the Overburdened Communities of WA area.
Within ½ Mile of Schools	Bicycles and Pedestrians	**76% of bike/pedestrian KSIs** occur within ½ mile of schools.	**69% of streets** in Burien fall within ½ mile of schools.
No Bike Facilities	Bicycles	**4 of the 5 bike KSIs** occur on streets without bike facilities and **24 of the 33 bike crashes** occur on streets without bike facilities.	**96% of streets** in Burien are missing bike facilities.

Source: Fehr & Peers, 2025.

Utilizing the factors identified above, streets were evaluated for the presence of each factor. Roadways were then symbolized based on the number of factors present along a given segment. A higher number corresponds to a higher presence of factors along a segment. Six of the seven crash likelihood factors are related to the street network, resulting in six being the maximum number of overlapping factors on a segment. Darkness applies to the entire street network at night and was therefore not included in the map. See **Figure 14** for a map of the Crash Likelihood Factors.

Figure 14. High Risk Network



Source: Fehr & Peers, 2025.

Chapter 4: Translating Results into Projects

One of the central objectives of a CSAP is to develop projects and programs to address priority safety locations. Prioritizing locations helps the City to focus its resources and better align with the prerequisites of several grant programs the City may pursue. Improvements that address priority locations complement past, current, and planned City and private development projects by adding systemic and site-specific improvements that address crash trends and crash risk factors identified in the CSAP. This chapter outlines the process used to develop the priority CSAP projects. The following section identifies the framework for identifying preliminary priority locations, screening and evaluating the locations, and establishes approaches to address safety concerns at each priority location. The steps taken for this assessment are as follows:

1. Preliminary priority location identification incorporating crash history, crash risk, presence in an overburdened community, and community input.
2. Screening of preliminary priority locations to determine which locations have recently completed, underway, or planned safety countermeasures.
3. Project and countermeasure identification, including countermeasures specifically targeted to support vulnerable road users.

Framework for Project Location Prioritization

To guide its investments, the City, in close coordination with the Task Force, identified a key prioritization framework to focus safety investments. This framework is based on criteria that accounts for both crash history (responsive) and crash potential (proactive) measured through the prioritization criteria identified in **Table 4**.

Table 4. Project Location Prioritization Criteria

All Modes Scoring Criteria	Bike & Pedestrian Scoring Criteria
All Crashes	Bicycle & Pedestrian Crashes
All KSI Crashes	Bicycle & Pedestrian KSI Crashes
All Modes HIN	Bicycle & Pedestrian HIN
HRN Overlap Count	HRN Overlap Count
Overburdened Communities	Overburdened Communities
All Safety-Related Comments	Bicycle & Pedestrian Safety Comments

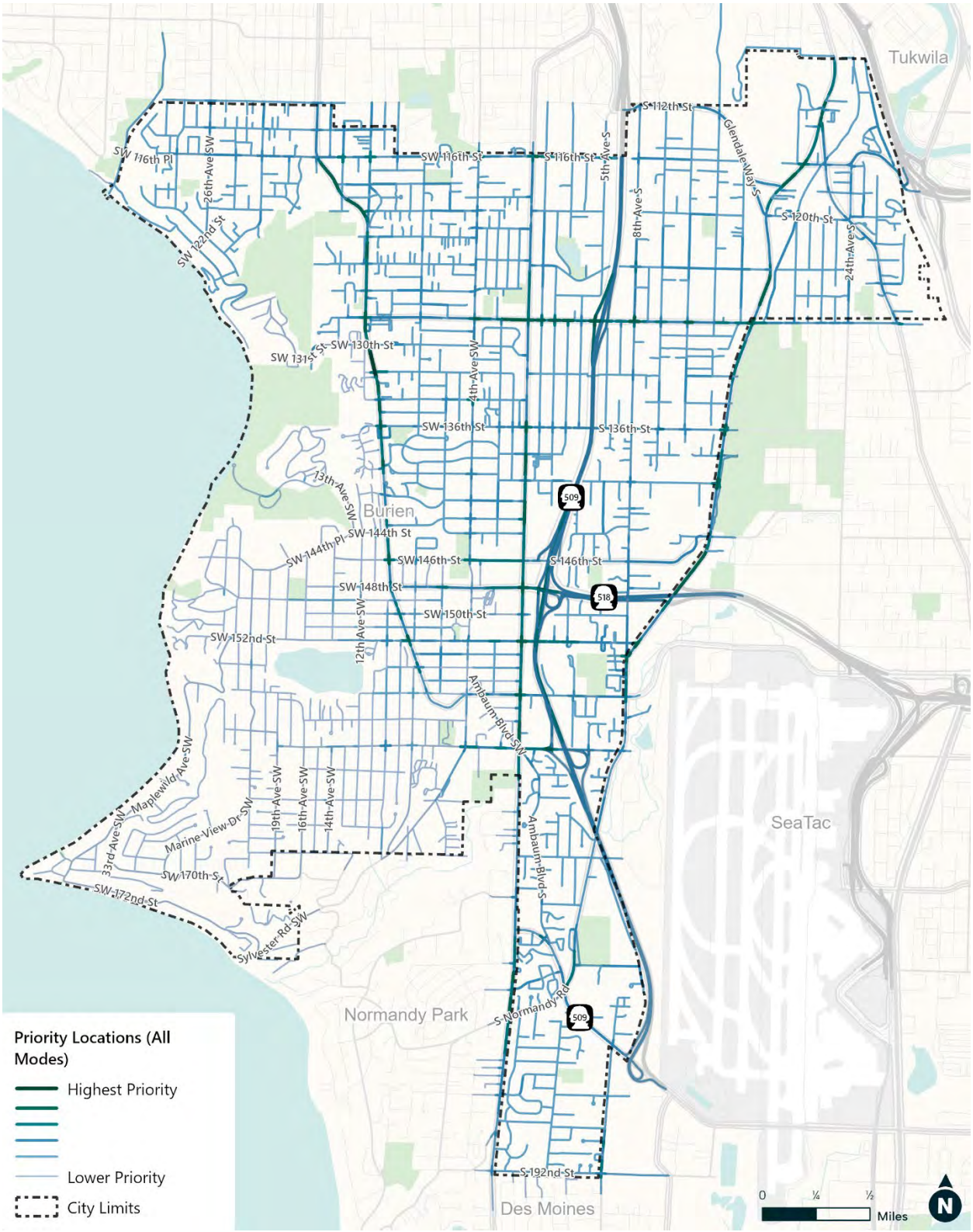
Source: Fehr & Peers, 2025.

Priority Locations

Street segments were analyzed separately for Vehicles and Bicycle/Pedestrian Users. Preliminary priority locations were identified on roadway segments with the presence of three or more crash likelihood factors present. These roadway segments were included as preliminary priority locations due to their potential greater need for safety improvements.

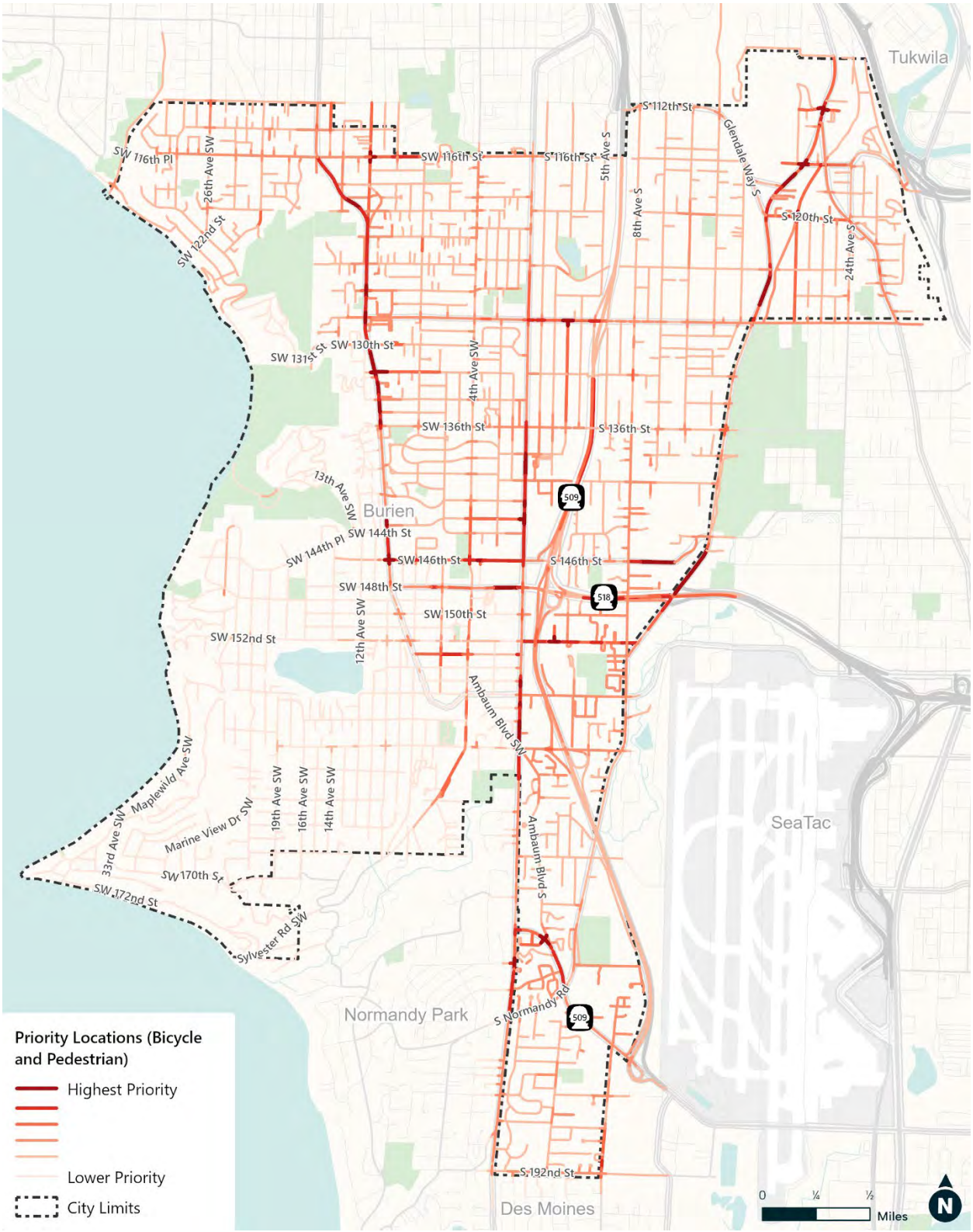
Figure 15 shows the priority level of each street in Burien for all modes while **Figure 16** shows the priority level of each street in Burien for bicyclists and pedestrians. In both maps, darker colors represent higher priority scores.

Figure 15. All Modes Priority Locations



Source: Fehr & Peers, 2025.

Figure 16. Bicycle and Pedestrian Priority Locations



Source: Fehr & Peers, 2025.

Project List

Each location was evaluated to determine what, if any, recently completed, underway, or planned City or private development projects may include safety countermeasures relevant to the identified safety concerns or risks. Streets bordering neighboring communities were not included in the recommended project list as further coordination with neighboring jurisdictions will be required for boundary streets.

The City's prioritization framework provides a rigorous yet flexible approach to advancing corridor and intersection safety projects across the City. Ultimately, ten safety projects were selected based on their potential to improve safety conditions in Burien. These projects are listed in **Table 5** and mapped in **Figure 17**, with no ordered priority within the list. In addition to identifying projects, countermeasures were identified, and high-level conceptual designs along each corridor and at each intersection were developed.

The suggested countermeasures identified in these concepts were selected to address the specific safety data and public feedback at the location, using both a proactive and reactive lens. The countermeasures are potential options that would be considered as safety improvement projects and programs are developed. There are countermeasures suggested in locations along the project corridor where there has not been a KSI crash, identified to proactively add safety enhancements along the entirety of the project corridor. A map outlining countermeasures recommended and additional safety context of each project are included in **Figure 18** through **Figure 28. Table 6** through **Table 16** list out key suggested countermeasures in the project area and how they can potentially address various crash types.

Detailed project descriptions are included in **Appendix G.**

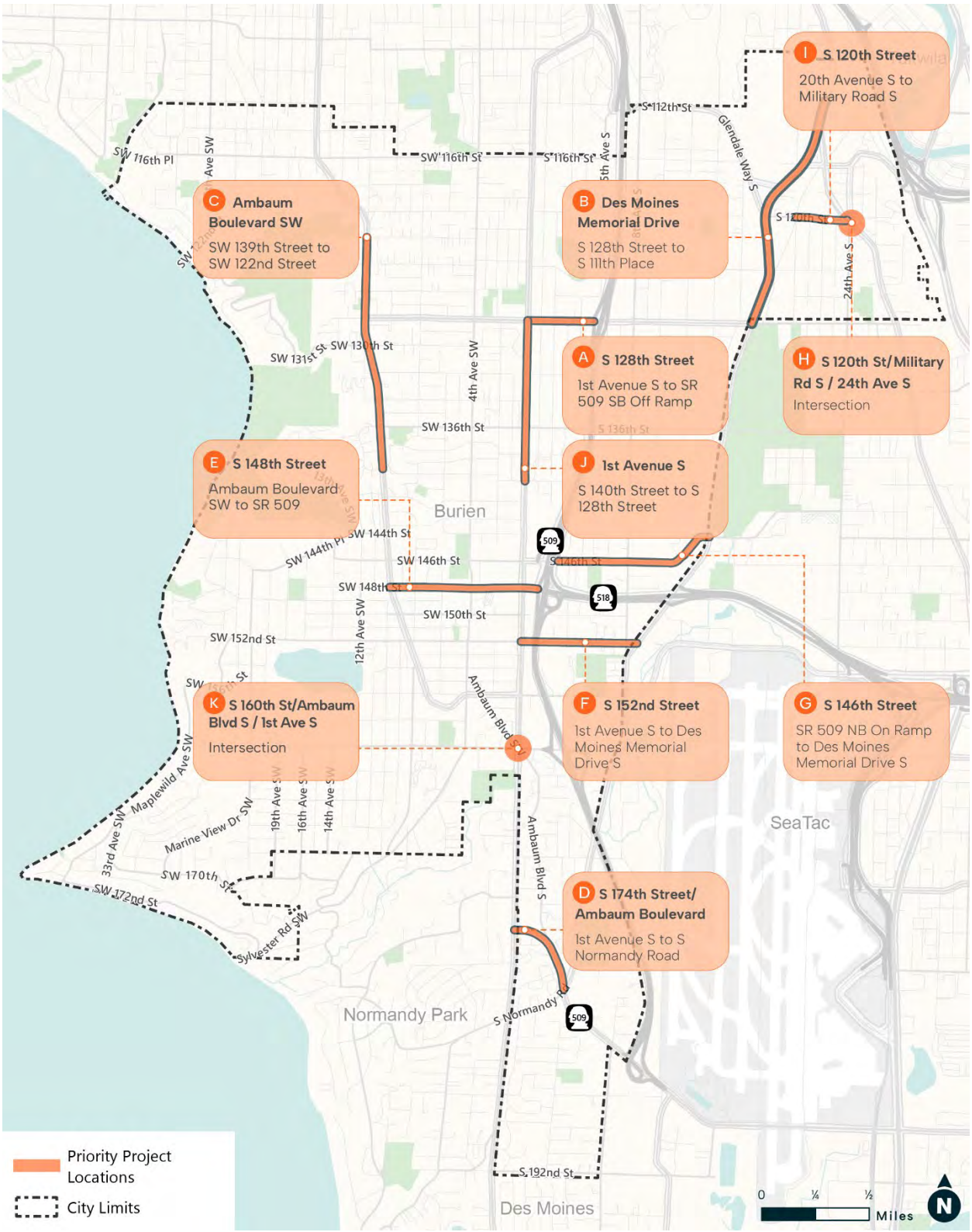
Table 5. Priority Project List

ID	Location	Description
A	S 128th Street (1st Avenue S to SR 509 SB Off Ramp)	Resurface and rechannelize S 128th St, narrowing to 10' and 11' lanes, to make room for the construction of new sidewalks on both sides of the roadway, with buffers where feasible. Construct new medians, ADA curb ramps, crosswalks, and modify signal timing to include LPIs. Establish dedicated space for transit users.
B	Des Moines Memorial Drive S (S 128th Street to S 111th Place)	Resurface and rechannelize Des Moines Memorial Dr S, narrowing to 10' and 11' lanes, to make room for the construction of new buffered bike lanes and sidewalks on both sides of the roadway. Construct new medians, ADA curb ramps, and single lane roundabouts at the S 118th St and at S 120th St/Glendale Way S intersections.
C	Ambaum Boulevard SW (SW 139th Street to SW 122nd Street)	Resurface and rechannelize Ambaum Blvd SW and construct new sidewalks on both sides of the roadway. Consolidate driveways and construct new medians and/or two-way left turn lanes as well as additional mid-block crossings, and ADA curb ramps. Replace existing RRFBs with a pedestrian hybrid signal (or half signal) at the SW 126th St intersection.
D	S 174th Street/Ambaum Boulevard S (1st Avenue S to S Normandy Road)	Resurface and rechannelize S 174th St/Ambaum Blvd S. Repurpose the existing shoulders to buffered bike lanes and construct new sidewalks on one or both sides of the roadway. Construct new medians and/or two-way left turn lanes, mid-block crossings, and a new multi-lane roundabout at the S Normandy Rd intersection. Extend the adjacent lake to Sound Trail through the roundabout and provide additional safety measures at the roundabout for bicycles and pedestrians.
E	S 148th Street (Ambaum Boulevard SW to SR 509)	Resurface and rechannelize S 148th St, including a dedicated bus only lane at the Burien Transit Center. Consolidate driveways and construct new sidewalks, medians and/or two-way left turn lanes, and a new traffic signal at the 6th Ave SW intersection (including LPIs and a C-curb).
F	S 152nd Street (1st Avenue S to Des Moines Memorial Drive S)	Resurface and rechannelize S 152nd St to include a new two-way cycle track on the south side with one travel lane in each direction or a bike lane on either side of the street. Consolidate driveways and construct new sidewalks on both sides, medians and/or two-way left turn lanes, and ADA curb ramps. Remove and replace existing RRFBs to improved crossing locations near the high school, with curb extensions, protected medians, and marked crosswalks. Consolidate the S 152nd St/Des Moines Memorial Dr/8th Ave S triangle to a single-lane roundabout with RRFBs at all marked pedestrian crossings.

ID	Location	Description
G	S 146th Street (SR 509 NB On Ramp to Des Moines Memorial Drive S)	Resurface and rechannelize S 146th St, narrowing to 11' lanes, to make room for buffered bike lanes. Consolidate driveways and construct new sidewalks on both sides of the roadway, medians and/or two-way left turn lanes, and ADA curb ramps. Construct a roundabout at the SR 509 on/off ramps, with RRFBs at all marked pedestrian crossings, and relocate the existing transit stop near 4th Ave S to the roundabout area. Add protected median crosswalks at the park entrance and at the Miller Creek trail.
H*	S 120th Street/Military Road S/24th Avenue S Intersection	Fully reconstruct the S 120th St/Military Rd S/24th Ave S intersection to include a peanut roundabout with RRFBs at all marked pedestrian crossings. Rechannelize the roadway and consolidate driveways. Construct new sidewalks on both sides of the roadway and ADA curb ramps.
I*	S 120th Street (20th Avenue S to Military Road S)	Resurface and rechannelize S 120th St, narrowing to 10' lanes, to make room for buffered bike lanes where space allows. Consolidate driveways and construct new sidewalks, ADA curb ramps, and RRFBs at the existing library crossing. Add transit stop improvements, including widened sidewalks, transit shelters, trash receptacles, and lighting.
J	1st Avenue S (S 140th Street to S 128th Street)	Resurface and rechannelize 1st Ave S, narrowing to 10' and 11' lanes. Consolidate driveways and construct new sidewalks, ADA curb ramps, a pedestrian hybrid signal or half signal at the SW 130th Pl intersection, and new medians and/or two-way left turn lanes. Add transit stop improvements, including widened sidewalks, transit shelters, trash receptacles, and lighting.
K	S 160th St/Ambaum Blvd S/1st Ave S Intersection	Resurface as needed and rechannelize the intersection, narrowing to 10' and 11' travel lanes. Consolidate driveways and construct new sidewalks and ADA curb ramps. Dead end each approach of S 160th St to Ambaum Blvd SW. Vehicle traffic will be rerouted to the Ambaum Cutoff S/SW. Provide pedestrian and bicycle improvements on the dead—end streets.

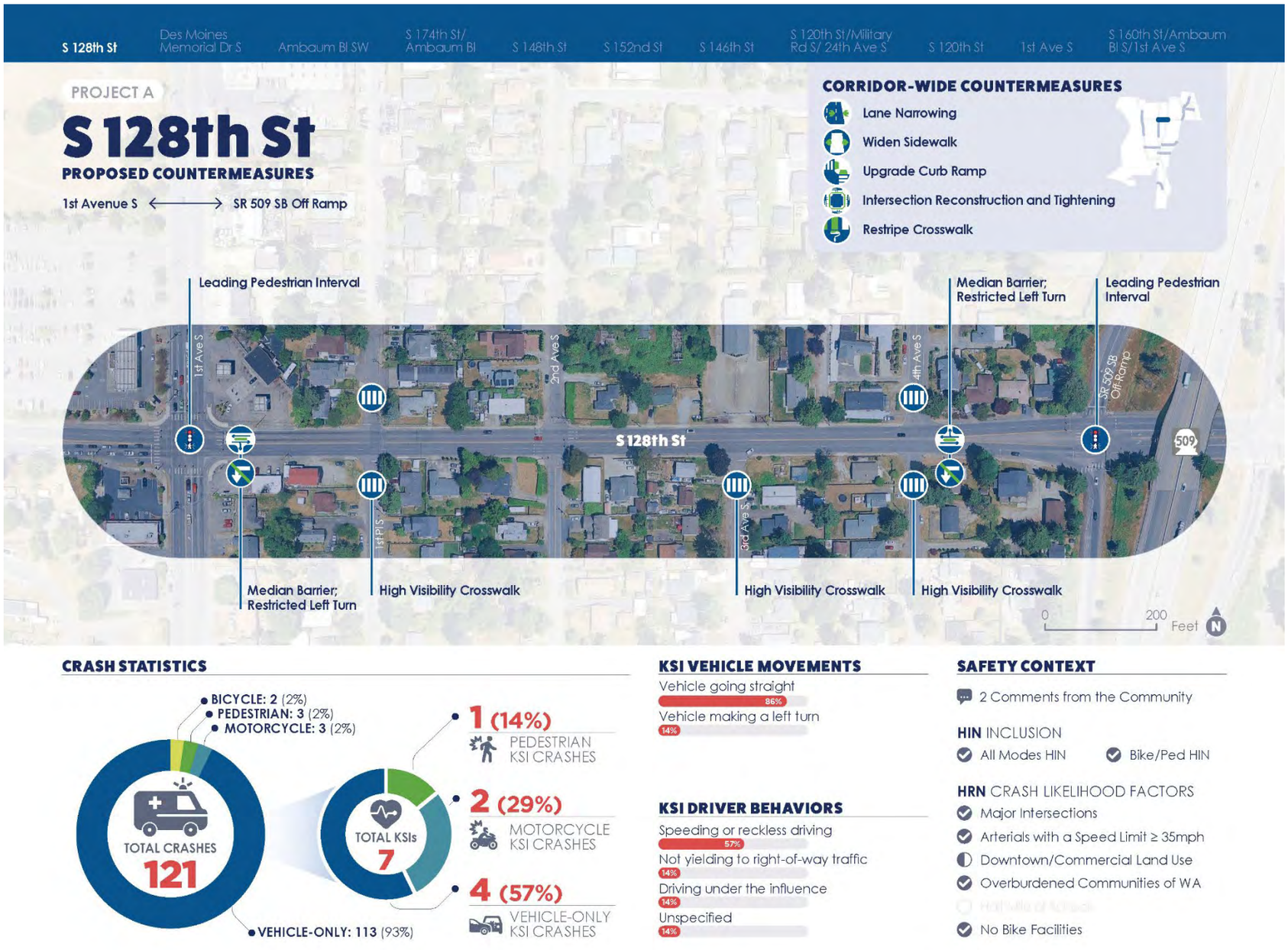
Source: Fehr & Peers, 2025.
* Projects H and I are within the same area and will be completed as one, the details of each are broken out separately in this table.
Note: The geographic extents identified for each priority project are illustrative and may be expanded or otherwise adjusted during subsequent phases of planning, design, and implementation to better align with safety objectives and contextual needs. Prior to final design of the identified projects, further analysis is required to understand the spillover of vehicular traffic on adjacent streets.

Figure 17. Priority Project Locations



Source: Fehr & Peers, 2025.

Figure 18. Project A Countermeasures: S 128th Street (1st Avenue S to SR 509 SB Off Ramp)



Source: Fehr & Peers, 2025.

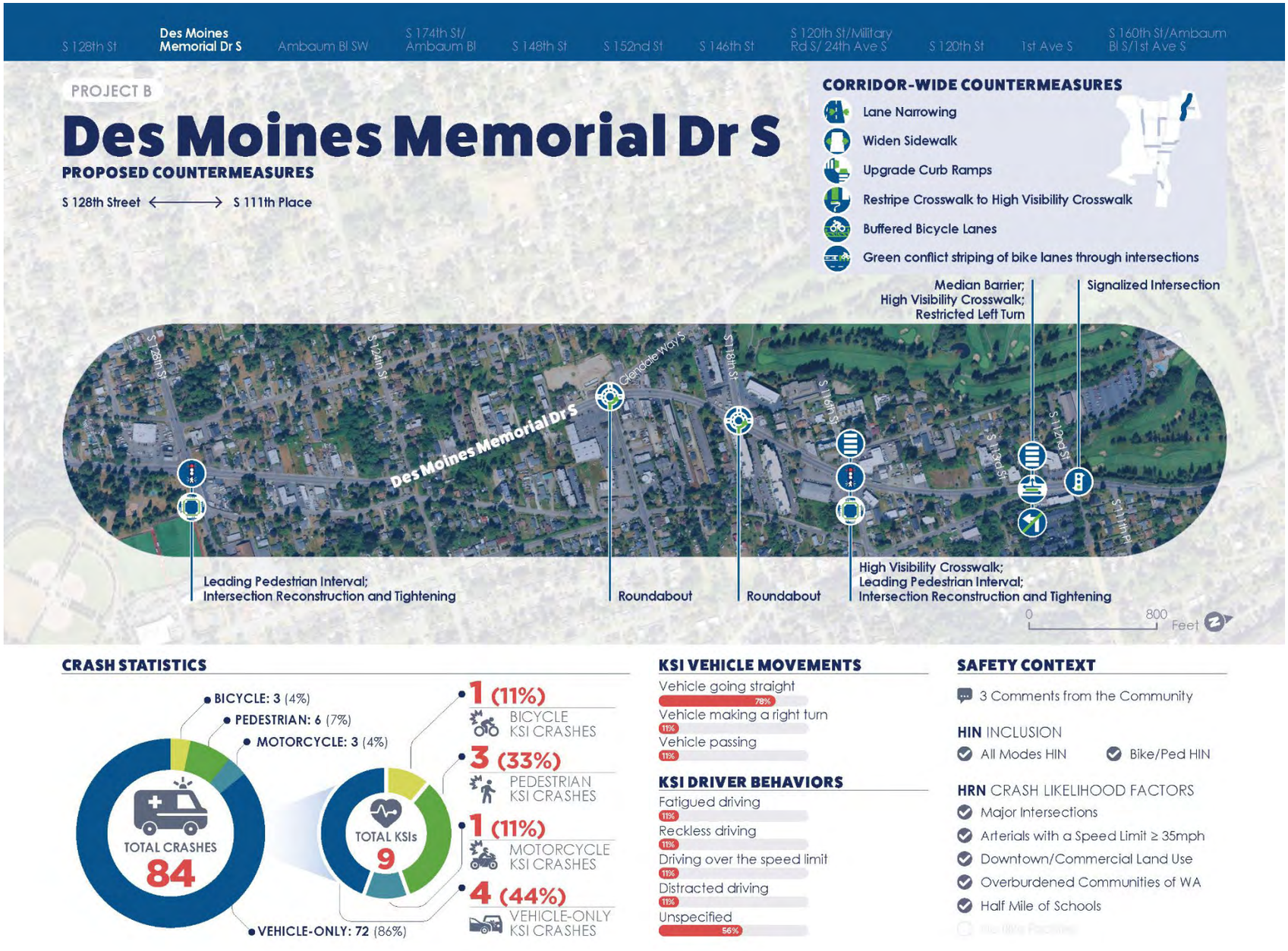
Table 6. Project A Countermeasures: S 128th Street (1st Avenue S to SR 509 SB Off Ramp)

Countermeasure	What could this countermeasure do for safety?	Crashes that this countermeasure may address*
Lane Narrowing	Lane narrowing reduces lane widths to encourage motorists to travel at slower speeds. Lane narrowing improves safety by lowering the risk of collisions among bicyclists, pedestrians, and other motorists.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Speeding-related contributing circumstance crashes
Widen Sidewalk	Widening sidewalks provides a more comfortable space for pedestrians, particularly in locations with high volumes of pedestrians, and provides space to accommodate people in wheelchairs. Widening sidewalks improves safety by minimizing collisions with pedestrians walking in the road.	• Vehicle hits pedestrian and/or pedalcyclist crash types
Upgrade Curb Ramp	Tactile warning devices must be detectable to visually impaired pedestrians. Curb ramps must follow the DIB 82-06 design guidelines.	• Vehicle hits pedestrian and/or pedalcyclist crash types
Intersection Reconstruction and Tightening	Irregular intersections can be overbuilt and confusing, presenting safety hazards to all users. "Squaring up" an intersection as close to 90 degrees as possible involves intersection reconstruction to provide better visibility for all road users, reducing high-speed turns and reducing pedestrian crossing length.	• Entering at angle crash type • Left turn crash types • Sideswipe crash types • Right turn crash types • Vehicle hits pedestrian and/or pedalcyclist crash types • Speeding-related contributing circumstance crashes • Crashes occurring at intersection and/or intersection-related crashes
High Visibility Crosswalk	A high visibility crosswalk has a striped pattern with ladder markings made of high visibility material, such as thermoplastic tape, instead of paint. A high visibility crosswalk improves safety by increasing the visibility of marked crosswalks and provides motorists a cue to slow down and yield to pedestrians.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Fail to yield/did not grant right of way contributing circumstance crashes

Countermeasure	What could this countermeasure do for safety?	Crashes that this countermeasure may address*
Leading Pedestrian Interval (LPI)	At intersection locations that have a high volume of turning vehicles and have high pedestrian vs. vehicle crashes, a leading pedestrian interval gives pedestrians the opportunity to enter an intersection 3–7 seconds before vehicles are given a green indication. With this head start, pedestrians can better establish their presence in the crosswalk before vehicles have priority to turn left or right.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Left turn crash types • Right turn crash types • Fail to yield/did not grant right of way contributing circumstance crashes • Crashes occurring at intersection and/or intersection-related crashes
Median Barrier	A median barrier is a barrier in the center of the roadway that physically separates opposing vehicular traffic. Median barriers can also help control access to and from side streets and driveways, reducing conflict points.	• Left turn crash types • Entering at angle crash types • Sideswipe crash types • Speeding-related contributing circumstance crashes • Fail to yield/did not grant right of way contributing circumstance crashes • Crashes occurring at driveways

Source: WSDOT 2019-2023 Crash Data; Fehr & Peers, 2025.
** The countermeasures identified along the project corridors are intended to address the crash types observed; however, they do not guarantee the elimination of crashes. Crash categories were defined using WSDOT crash data.*

Figure 19. Project B Countermeasures: Des Moines Memorial Drive S (S 128th Street to S 111th Place)



Source: Fehr & Peers, 2025.

Table 7. Project B Countermeasures: Des Moines Memorial Drive S (S 128th Street to S 111th Place)

Countermeasure	What could this countermeasure do for safety?	Crashes that this countermeasure may address*
Lane Narrowing	Lane narrowing reduces lane widths to encourage motorists to travel at slower speeds. Lane narrowing improves safety by lowering the risk of collisions among bicyclists, pedestrians, and other motorists.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Speeding-related contributing circumstance crashes
Widen Sidewalk	Widening sidewalks provides a more comfortable space for pedestrians, particularly in locations with high volumes of pedestrians, and provides space to accommodate people in wheelchairs. Widening sidewalks improves safety by minimizing collisions with pedestrians walking in the road.	• Vehicle hits pedestrian and/or pedalcyclist crash types
Upgrade Curb Ramps	Tactile warning devices must be detectable to visually impaired pedestrians. Curb ramps must follow the DIB 82-06 design guidelines.	• Vehicle hits pedestrian and/or pedalcyclist crash types
High Visibility Crosswalk	A high visibility crosswalk has a striped pattern with ladder markings made of high visibility material, such as thermoplastic tape, instead of paint. A high visibility crosswalk improves safety by increasing the visibility of marked crosswalks and provides motorists a cue to slow down and yield to pedestrians.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Fail to yield/did not grant right of way contributing circumstance crashes
Separated Bikeway	A separated bikeway provides dedicated street space, typically adjacent to outer vehicle travel lanes, with physical separation from vehicle traffic, designated lane markings, pavement legends, and signage. Physical separation may consist of plastic posts, parked vehicles, or a curb. Separated bikeways improve safety by reducing conflicts between bicycles and vehicles on the road and by creating a road-narrowing effect with buffers or vertical barriers, which may reduce vehicle speeds. A raised barrier of plastic posts and painted pavement is a low-cost/quick-build option.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Speeding-related contributing circumstance crashes • Fail to yield/did not grant right of way contributing circumstance crashes

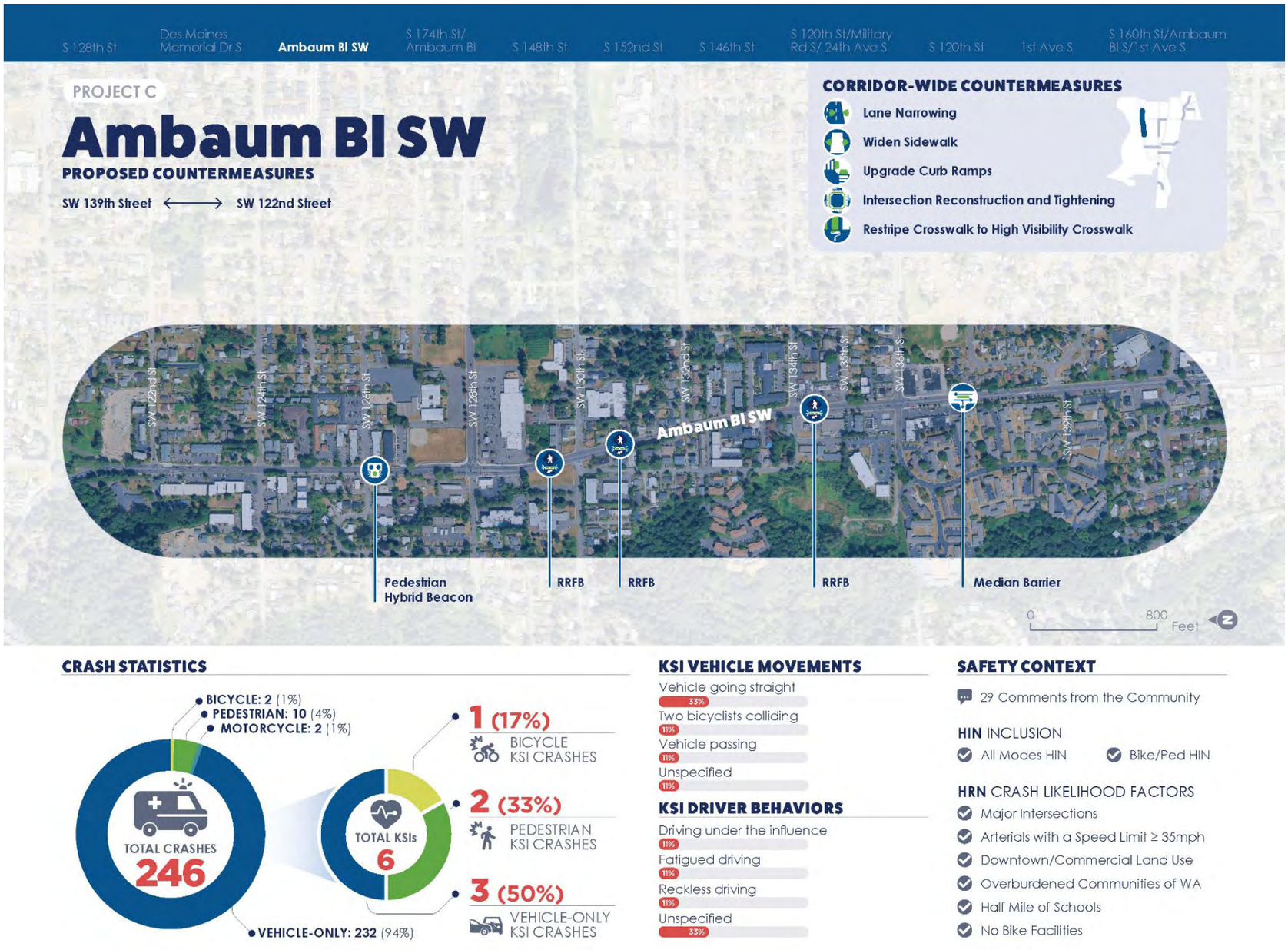
Countermeasure	What could this countermeasure do for safety?	Crashes that this countermeasure may address*
Green Conflict Striping	Green conflict striping is green markings painted in a dashed pattern on bike lanes approaching an intersection and/or going through an intersection. Green conflict striping improves safety by increasing the visibility of bicyclists and identifying potential conflict points so bicyclists and motorists use caution when traveling toward and through an intersection.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Fail to yield/did not grant right of way contributing circumstance crashes • Crashes occurring at intersection and/or intersection-related crashes
Leading Pedestrian Interval (LPI)	At intersection locations that have a high volume of turning vehicles and have high pedestrian vs. vehicle crashes, a leading pedestrian interval gives pedestrians the opportunity to enter an intersection 3–7 seconds before vehicles are given a green indication. With this head start, pedestrians can better establish their presence in the crosswalk before vehicles have priority to turn left or right.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Left turn crash types • Right turn crash types • Fail to yield/did not grant right of way contributing circumstance crashes • Crashes occurring at intersection and/or intersection-related crashes
Intersection Reconstruction and Tightening	Irregular intersections can be overbuilt and confusing, presenting safety hazards to all users. “Squaring up” an intersection as close to 90 degrees as possible involves intersection reconstruction to provide better visibility for all road users, reducing high-speed turns and reducing pedestrian crossing length.	• Entering at angle crash type • Left turn crash types • Sideswipe crash types • Right turn crash types • Vehicle hits pedestrian and/or pedalcyclist crash types • Speeding-related contributing circumstance crashes • Crashes occurring at intersection and/or intersection-related crashes

Countermeasure	What could this countermeasure do for safety?	Crashes that this countermeasure may address*
Roundabout	A roundabout is a type of circular intersection in which road traffic is permitted to flow in one direction around a central island, and priority is typically given to traffic already in the junction. The types of conflicts that occur at roundabouts are different from those occurring at conventional intersections; namely, conflicts from crossing and left-turn movements are not present in a roundabout. The geometry of a roundabout forces drivers to reduce speeds as they proceed through the intersection; the range of vehicle speeds is also narrowed, reducing the severity of crashes when they do occur. Pedestrians only have to cross one direction of traffic at a time at roundabouts, thus reducing the potential for vehicle/pedestrian conflicts.	• Rear-end crash types • Left turn crash types • Right turn crash types • Sideswipe crash types • Entering at angle crash type • Head-on crash types • Vehicle hits pedestrian and/or pedalcyclist crash types • Speeding-related contributing circumstance crashes • Fail to yield/did not grant right of way contributing circumstance crashes • Crashes occurring at intersection and/or intersection-related crashes
Median Barrier	A median barrier is a barrier in the center of the roadway that physically separates opposing vehicular traffic. Median barriers can also help control access to and from side streets and driveways, reducing conflict points.	• Left turn crash types • Entering at angle crash types • Sideswipe crash types • Speeding-related contributing circumstance crashes • Failure to yield/did not grant right of way contributing circumstance crashes • Crashes occurring at driveways

Countermeasure	What could this countermeasure do for safety?	Crashes that this countermeasure may address*
Signalized Intersection	A signalized intersection uses traffic signals to control the flow of traffic. Traffic signals have the potential to reduce the most severe types of crashes but may cause an increase in rear-end collisions. A reduction in overall injury severity is likely the largest benefit of traffic signal installation.	• Fail to yield/did not grant right of way crashes • Left turn crash types • Right turn crash types • Sideswipe crash types • Entering at angle crash type • Head-on crash types • Vehicle hits pedestrian and/or pedalcyclist crash types • Speeding-related contributing circumstance crashes • Crashes occurring at intersection and/or intersection-related crashes

Source: WSDOT 2019-2023 Crash Data; Fehr & Peers, 2025.
** The countermeasures identified along the project corridors are intended to address the crash types observed; however, they do not guarantee the elimination of crashes. Crash categories were defined using WSDOT crash data.*

Figure 20. Project C Countermeasures: Ambaum Boulevard SW (SW 139th Street to SW 122nd Street)



Source: Fehr & Peers, 2025.

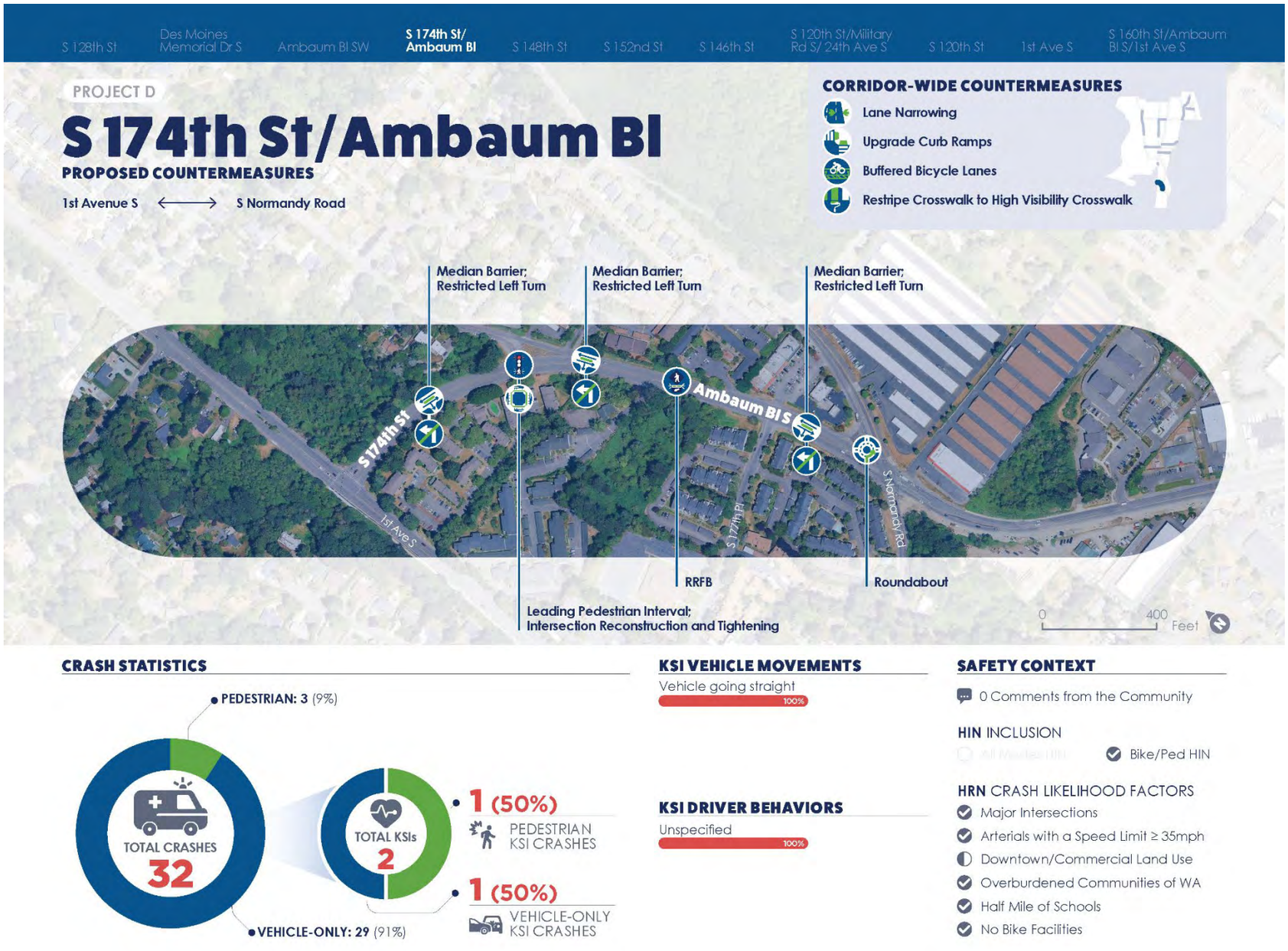
Table 8. Project C Safety Context: Ambaum Boulevard SW (SW 139th Street to SW 122nd Street)

Countermeasure	What does this countermeasure do for safety?	Crashes that this countermeasure may address*
Lane Narrowing	Lane narrowing reduces lane widths to encourage motorists to travel at slower speeds. Lane narrowing improves safety by lowering the risk of collisions among bicyclists, pedestrians, and other motorists.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Speeding-related contributing circumstance crashes
Widen Sidewalk	Widening sidewalks provides a more comfortable space for pedestrians, particularly in locations with high volumes of pedestrians, and provides space to accommodate people in wheelchairs. Widening sidewalks improves safety by minimizing collisions with pedestrians walking in the road.	• Vehicle hits pedestrian and/or pedalcyclist crash types
Upgrade Curb Ramps	Tactile warning devices must be detectable to visually impaired pedestrians. Curb ramps must follow the DIB 82-06 design guidelines.	• Vehicle hits pedestrian and/or pedalcyclist crash types
Intersection Reconstruction and Tightening	Irregular intersections can be overbuilt and confusing, presenting safety hazards to all users. "Squaring up" an intersection as close to 90 degrees as possible involves intersection reconstruction to provide better visibility for all road users, reducing high-speed turns and reducing pedestrian crossing length.	• Entering at angle crash type • Left turn crash types • Sideswipe crash types • Right turn crash types • Vehicle hits pedestrian and/or pedalcyclist crash types • Speeding-related contributing circumstance crashes • Crashes occurring at intersection and/or intersection-related crashes
High Visibility Crosswalk	A high visibility crosswalk has a striped pattern with ladder markings made of high visibility material, such as thermoplastic tape, instead of paint. A high visibility crosswalk improves safety by increasing the visibility of marked crosswalks and provides motorists a cue to slow down and yield to pedestrians.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Fail to yield/did not grant right of way contributing circumstance crashes

Countermeasure	What does this countermeasure do for safety?	Crashes that this countermeasure may address*
Pedestrian Hybrid Beacon (PHB)	A pedestrian hybrid beacon (PHB) is used at unsignalized intersections or mid-block crosswalks to notify oncoming motorists to stop with a series of red and yellow lights. Unlike a traffic signal, the PHB rests dark until a pedestrian activates it via pushbutton or other form of detection.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Fail to yield/did not grant right of way contributing circumstance crashes • Crashes occurring at intersection and/or intersection-related crashes
Rectangular Rapid Flashing Beacon (RRFB)	A rectangular rapid flashing beacon (RRFB) is a pedestrian-activated flashing light with additional signage to alert motorists of a pedestrian crossing. An RRFB improves safety by increasing the visibility of marked crosswalks and provides motorists a cue to slow down and yield to pedestrians.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Fail to yield/did not grant right of way contributing circumstance crashes
Median Barrier	A median barrier is a barrier in the center of the roadway that physically separates opposing vehicular traffic. Median barriers can also help control access to and from side streets and driveways, reducing conflict points.	• Left turn crash types • Entering at angle crash types • Sideswipe crash types • Speeding-related contributing circumstance crashes • Fail to yield/did not grant right of way contributing circumstance crashes • Crashes occurring at driveways

Source: WSDOT 2019-2023 Crash Data; Fehr & Peers, 2025.
** The countermeasures identified along the project corridors are intended to address the crash types observed; however, they do not guarantee the elimination of crashes. Crash categories were defined using WSDOT crash data.*

Figure 21. Project D Countermeasures: S 174th Street/Ambaum Boulevard (1st Avenue S to S Normandy Road)



Source: Fehr & Peers, 2025.

Table 9. Project D Countermeasures: S 174th Street/Ambaum Boulevard (1st Avenue S to S Normandy Road)

Countermeasure	What does this countermeasure do for safety?	Crashes that this countermeasure may address*
Lane Narrowing	Lane narrowing reduces lane widths to encourage motorists to travel at slower speeds. Lane narrowing improves safety by lowering the risk of collisions among bicyclists, pedestrians, and other motorists.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Speeding-related contributing circumstance crashes
Upgrade Curb Ramps	Tactile warning devices must be detectable to visually impaired pedestrians. Curb ramps must follow the DIB 82-06 design guidelines.	• Vehicle hits pedestrian and/or pedalcyclist crash types
High Visibility Crosswalk	A high visibility crosswalk has a striped pattern with ladder markings made of high visibility material, such as thermoplastic tape, instead of paint. A high visibility crosswalk improves safety by increasing the visibility of marked crosswalks and provides motorists a cue to slow down and yield to pedestrians.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Failure to yield/did not grant right of way contributing circumstance crashes
Separated Bikeway	A separated bikeway provides dedicated street space, typically adjacent to outer vehicle travel lanes, with physical separation from vehicle traffic, designated lane markings, pavement legends, and signage. Physical separation may consist of plastic posts, parked vehicles, or a curb. Separated bikeways improve safety by reducing conflicts between bicycles and vehicles on the road and by creating a road-narrowing effect with buffers or vertical barriers, which may reduce vehicle speeds. A raised barrier of plastic posts and painted pavement is a low-cost/quick-build option.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Speeding-related contributing circumstance crashes Fail to yield/did not grant right of way contributing circumstance crashes
Median Barrier	A median barrier is a barrier in the center of the roadway that physically separates opposing vehicular traffic. Median barriers can also help control access to and from side streets and driveways, reducing conflict points.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Left turn crash types • Right turn crash types • Fail to yield/did not grant right of way contributing circumstance crashes • Crashes occurring at intersection and/or intersection-related crashes

Countermeasure	What does this countermeasure do for safety?	Crashes that this countermeasure may address*
Leading Pedestrian Interval (LPI)	At intersection locations that have a high volume of turning vehicles and have high pedestrian vs. vehicle crashes, a leading pedestrian interval gives pedestrians the opportunity to enter an intersection 3–7 seconds before vehicles are given a green indication. With this head start, pedestrians can better establish their presence in the crosswalk before vehicles have priority to turn left or right.	• Left turn crash types • Entering at angle crash types • Sideswipe crash types • Speeding-related contributing circumstance crashes • Vehicle hits pedestrian and/or pedalcyclist crash types • Fail to yield/did not grant right of way contributing circumstance crashes • Crashes occurring at driveways
Intersection Reconstruction and Tightening	Irregular intersections can be overbuilt and confusing, presenting safety hazards to all users. "Squaring up" an intersection as close to 90 degrees as possible involves intersection reconstruction to provide better visibility for all road users, reducing high-speed turns and reducing pedestrian crossing length.	• Entering at angle crash type • Left turn crash types • Sideswipe crash types • Right turn crash types • Vehicle hits pedestrian and/or pedalcyclist crash types • Speeding-related contributing circumstance crashes • Crashes occurring at intersection and/or intersection-related crashes
Rectangular Rapid Flashing Beacon (RRFB)	A rectangular rapid flashing beacon (RRFB) is a pedestrian-activated flashing light with additional signage to alert motorists of a pedestrian crossing. An RRFB improves safety by increasing the visibility of marked crosswalks and provides motorists a cue to slow down and yield to pedestrians.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Fail to yield/did not grant right of way contributing circumstance crashes

Countermeasure	What does this countermeasure do for safety?	Crashes that this countermeasure may address*
Roundabout	A roundabout is a type of circular intersection in which road traffic is permitted to flow in one direction around a central island, and priority is typically given to traffic already in the junction. The types of conflicts that occur at roundabouts are different from those occurring at conventional intersections; namely, conflicts from crossing and left-turn movements are not present in a roundabout. The geometry of a roundabout forces drivers to reduce speeds as they proceed through the intersection; the range of vehicle speeds is also narrowed, reducing the severity of crashes when they do occur. Pedestrians only have to cross one direction of traffic at a time at roundabouts, thus reducing the potential for vehicle/pedestrian conflicts.	• Rear-end crash types • Left turn crash types • Right turn crash types • Sideswipe crash types • Entering at angle crash type • Head-on crash types • Vehicle hits pedestrian and/or pedalcyclist crash types • Speeding-related contributing circumstance crashes • Fail to yield/did not grant right of way contributing circumstance crashes • Crashes occurring at intersection and/or intersection-related crashes

Source: WSDOT 2019-2023 Crash Data; Fehr & Peers, 2025.
** The countermeasures identified along the project corridors are intended to address the crash types observed; however, they do not guarantee the elimination of crashes. Crash categories were defined using WSDOT crash data.*

Figure 22. Project E Countermeasures: S 148th Street (Ambaum Boulevard SW to SR 509)



Source: Fehr & Peers, 2025.

Table 10. Project E Countermeasures: S 148th Street (Ambaum Boulevard SW to SR 509)

Countermeasure	What does this countermeasure do for safety?	Crashes that this countermeasure may address*
Lane Narrowing	Lane narrowing reduces lane widths to encourage motorists to travel at slower speeds. Lane narrowing improves safety by lowering the risk of collisions among bicyclists, pedestrians, and other motorists.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Speeding-related contributing circumstance crashes
Widen Sidewalk	Widening sidewalks provides a more comfortable space for pedestrians, particularly in locations with high volumes of pedestrians, and provides space to accommodate people in wheelchairs. Widening sidewalks improves safety by minimizing collisions with pedestrians walking in the road.	• Vehicle hits pedestrian and/or pedalcyclist crash types
Upgrade Curb Ramps	Tactile warning devices must be detectable to visually impaired pedestrians. Curb ramps must follow the DIB 82-06 design guidelines.	• Vehicle hits pedestrian and/or pedalcyclist crash types
High Visibility Crosswalk	A high visibility crosswalk has a striped pattern with ladder markings made of high visibility material, such as thermoplastic tape, instead of paint. A high visibility crosswalk improves safety by increasing the visibility of marked crosswalks and provides motorists a cue to slow down and yield to pedestrians.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Fail to yield/did not grant right of way contributing circumstance crashes
Median Barrier	A median barrier is a barrier in the center of the roadway that physically separates opposing vehicular traffic. Median barriers can also help control access to and from side streets and driveways, reducing conflict points.	• Left turn crash types • Entering at angle crash types • Sideswipe crash types • Speeding-related contributing circumstance crashes • Fail to yield/did not grant right of way contributing circumstance crashes • Crashes occurring at driveways

Countermeasure	What does this countermeasure do for safety?	Crashes that this countermeasure may address*
Intersection Reconstruction and Tightening	Irregular intersections can be overbuilt and confusing, presenting safety hazards to all users. "Squaring up" an intersection as close to 90 degrees as possible involves intersection reconstruction to provide better visibility for all road users, reducing high-speed turns and reducing pedestrian crossing length.	• Entering at angle crash type • Left turn crash types • Sideswipe crash types • Right turn crash types • Vehicle hits pedestrian and/or pedalcyclist crash types • Speeding-related contributing circumstance crashes • Crashes occurring at intersection and/or intersection-related crashes
Signalized Intersection	A signalized intersection uses traffic signals to control the flow of traffic. Traffic signals have the potential to reduce the most severe types of crashes but may cause an increase in rear-end collisions. A reduction in overall injury severity is likely the largest benefit of traffic signal installation.	• Left turn crash types • Right turn crash types • Sideswipe crash types • Entering at angle crash type • Head-on crash types • Vehicle hits pedestrian and/or pedalcyclist crash types • Speeding-related contributing circumstance crashes • Fail to yield/did not grant right of way contributing circumstance crashes • Crashes occurring at intersection and/or intersection-related crashes
Access Management	Vehicles entering and exiting driveways may conflict with pedestrians and with vehicles on the main road, especially at driveways within 250 feet of intersections. Closing driveways near intersections with high collision rates related to driveways may reduce potential conflicts.	• Rear-end crash types • Left turn crash types • Right turn crash types • Sideswipe crash types • Entering at angle crash type • Vehicle hits pedestrian and/or pedalcyclist crash types • Speeding-related contributing circumstance crashes • Crashes occurring at driveways • Crashes occurring at intersection and/or intersection-related crashes

Source: WSDOT 2019-2023 Crash Data; Fehr & Peers, 2025.
** The countermeasures identified along the project corridors are intended to address the crash types observed; however, they do not guarantee the elimination of crashes. Crash categories were defined using WSDOT crash data.*

Figure 23. Project F Countermeasures: S 152nd Street (1st Avenue S to Des Moines Memorial Drive S)



Source: Fehr & Peers, 2025.

Table 11. Project F Countermeasures: S 152nd Street (1st Avenue S to Des Moines Memorial Drive S)

Countermeasure	What does this countermeasure do for safety?	Crashes that this countermeasure may address*
Lane Narrowing	Lane narrowing reduces lane widths to encourage motorists to travel at slower speeds. Lane narrowing improves safety by lowering the risk of collisions among bicyclists, pedestrians, and other motorists.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Speeding-related contributing circumstance crashes
Widen Sidewalk	Widening sidewalks provides a more comfortable space for pedestrians, particularly in locations with high volumes of pedestrians, and provides space to accommodate people in wheelchairs. Widening sidewalks improves safety by minimizing collisions with pedestrians walking in the road.	• Vehicle hits pedestrian and/or pedalcyclist crash types
Upgrade Curb Ramps	Tactile warning devices must be detectable to visually impaired pedestrians. Curb ramps must follow the DIB 82-06 design guidelines.	• Vehicle hits pedestrian and/or pedalcyclist crash types
Intersection Reconstruction and Tightening	Irregular intersections can be overbuilt and confusing, presenting safety hazards to all users. "Squaring up" an intersection as close to 90 degrees as possible involves intersection reconstruction to provide better visibility for all road users, reducing high-speed turns and reducing pedestrian crossing length.	• Entering at angle crash type • Left turn crash types • Sideswipe crash types • Right turn crash types • Vehicle hits pedestrian and/or pedalcyclist crash types • Speeding-related contributing circumstance crashes • Crashes occurring at intersection and/or intersection-related crashes
High Visibility Crosswalk	A high visibility crosswalk has a striped pattern with ladder markings made of high visibility material, such as thermoplastic tape, instead of paint. A high visibility crosswalk improves safety by increasing the visibility of marked crosswalks and provides motorists a cue to slow down and yield to pedestrians.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Fail to yield/did not grant right of way contributing circumstance crashes

Countermeasure	What does this countermeasure do for safety?	Crashes that this countermeasure may address*
Rectangular Rapid Flashing Beacon (RRFB)	A rectangular rapid flashing beacon (RRFB) is a pedestrian-activated flashing light with additional signage to alert motorists of a pedestrian crossing. An RRFB improves safety by increasing the visibility of marked crosswalks and provides motorists a cue to slow down and yield to pedestrians.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Fail to yield/did not grant right of way contributing circumstance crashes
Pedestrian Refuge Island	A pedestrian refuge island, or raised median, is a raised barrier in the center of the roadway that can restrict certain turning movements and provide a place for pedestrians to wait if they are unable to finish crossing the intersection. A pedestrian refuge island improves safety by reducing the number of potential conflict points with designated zones for vehicles to turn, and by reducing the exposure time for pedestrians crossing the intersection. Pedestrian refuge islands can be constructed from paint and plastic as part of a low-cost/quick-build project.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Left turn crash types • Entering at angle crash types • Sideswipe crash types • Speeding-related contributing circumstance crashes • Fail to yield/did not grant right of way contributing circumstance crashes • Crashes occurring at intersection and/or intersection-related crashes
Median Barrier	A median barrier is a barrier in the center of the roadway that physically separates opposing vehicular traffic. Median barriers can also help control access to and from side streets and driveways, reducing conflict points.	• Left turn crash types • Entering at angle crash types • Sideswipe crash types • Speeding-related contributing circumstance crashes • Fail to yield/did not grant right of way contributing circumstance crashes • Crashes occurring at driveways

Countermeasure	What does this countermeasure do for safety?	Crashes that this countermeasure may address*
Access Management	Vehicles entering and exiting driveways may conflict with pedestrians and with vehicles on the main road, especially at driveways within 250 feet of intersections. Closing driveways near intersections with high collision rates related to driveways may reduce potential conflicts.	• Rear-end crash type • Left turn crash type • Right turn crash type • Sideswipe crash type • Entering at angle crash type • Vehicle hits pedestrian and/or pedalcyclist crash type • Speeding-related contributing circumstance crashes • Crashes occurring at driveways • Crashes occurring at intersection and/or intersection-related crashes
Roundabout	A roundabout is a type of circular intersection in which road traffic is permitted to flow in one direction around a central island, and priority is typically given to traffic already in the junction. The types of conflicts that occur at roundabouts are different from those occurring at conventional intersections; namely, conflicts from crossing and left-turn movements are not present in a roundabout. The geometry of a roundabout forces drivers to reduce speeds as they proceed through the intersection; the range of vehicle speeds is also narrowed, reducing the severity of crashes when they do occur. Pedestrians only have to cross one direction of traffic at a time at roundabouts, thus reducing the potential for vehicle/pedestrian conflicts.	• Rear-end crash types • Left turn crash types • Right turn crash types • Sideswipe crash types • Entering at angle crash type • Head-on crash types • Vehicle hits pedestrian and/or pedalcyclist crash types • Speeding-related contributing circumstance crashes • Fail to yield/did not grant right of way contributing circumstance crashes • Crashes occurring at intersection and/or intersection-related crashes

Source: WSDOT 2019-2023 Crash Data; Fehr & Peers, 2025.
** The countermeasures identified along the project corridors are intended to address the crash types observed; however, they do not guarantee the elimination of crashes. Crash categories were defined using WSDOT crash data.*

Figure 24. Project G Countermeasures: S 146th Street (SR 509 NB On Ramp to Des Moines Memorial Drive S)



Source: Fehr & Peers, 2025.

Table 12. Project G Countermeasures: S 146th Street (SR 509 NB On Ramp to Des Moines Memorial Drive S)

Countermeasure	What does this countermeasure do for safety?	Crashes that this countermeasure may address*
Lane Narrowing	Lane narrowing reduces lane widths to encourage motorists to travel at slower speeds. Lane narrowing improves safety by lowering the risk of collisions among bicyclists, pedestrians, and other motorists.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Speeding-related contributing circumstance crashes
Widen Sidewalk	Widening sidewalks provides a more comfortable space for pedestrians, particularly in locations with high volumes of pedestrians, and provides space to accommodate people in wheelchairs. Widening sidewalks improves safety by minimizing collisions with pedestrians walking in the road.	• Vehicle hits pedestrian and/or pedalcyclist crash types
Upgrade Curb Ramps	Tactile warning devices must be detectable to visually impaired pedestrians. Curb ramps must follow the DIB 82-06 design guidelines.	• Vehicle hits pedestrian and/or pedalcyclist crash types
Intersection Reconstruction and Tightening	Irregular intersections can be overbuilt and confusing, presenting safety hazards to all users. "Squaring up" an intersection as close to 90 degrees as possible involves intersection reconstruction to provide better visibility for all road users, reducing high-speed turns and reducing pedestrian crossing length.	• Entering at angle crash type • Left turn crash types • Sideswipe crash types • Right turn crash types • Vehicle hits pedestrian and/or pedalcyclist crash types • Speeding-related contributing circumstance crashes • Crashes occurring at intersection and/or intersection-related crashes
High Visibility Crosswalk	A high visibility crosswalk has a striped pattern with ladder markings made of high visibility material, such as thermoplastic tape, instead of paint. A high visibility crosswalk improves safety by increasing the visibility of marked crosswalks and provides motorists a cue to slow down and yield to pedestrians.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Fail to yield/did not grant right of way contributing circumstance crashes

Countermeasure	What does this countermeasure do for safety?	Crashes that this countermeasure may address*
Separated Bikeway	A separated bikeway provides dedicated street space, typically adjacent to outer vehicle travel lanes, with physical separation from vehicle traffic, designated lane markings, pavement legends, and signage. Physical separation may consist of plastic posts, parked vehicles, or a curb. Separated bikeways improve safety by reducing conflicts between bicycles and vehicles on the road and by creating a road-narrowing effect with buffers or vertical barriers, which may reduce vehicle speeds. A raised barrier of plastic posts and painted pavement is a low-cost/quick-build option.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Speeding-related contributing circumstance crashes • Fail to yield/did not grant right of way contributing circumstance crashes
Green Conflict Striping	Green conflict striping is green markings painted in a dashed pattern on bike lanes approaching an intersection and/or going through an intersection. Green conflict striping improves safety by increasing the visibility of bicyclists and identifying potential conflict points so bicyclists and motorists use caution when traveling toward and through an intersection.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Fail to yield/did not grant right of way contributing circumstance crashes • Crashes occurring at intersection and/or intersection-related crashes
Leading Pedestrian Interval (LPI)	At intersection locations that have a high volume of turning vehicles and have high pedestrian vs. vehicle crashes, a leading pedestrian interval gives pedestrians the opportunity to enter an intersection 3–7 seconds before vehicles are given a green indication. With this head start, pedestrians can better establish their presence in the crosswalk before vehicles have priority to turn left or right.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Left turn crash types • Right turn crash types • Fail to yield/did not grant right of way contributing circumstance crashes • Crashes occurring at intersection and/or intersection-related crashes
Rectangular Rapid Flashing Beacon (RRFB)	A rectangular rapid flashing beacon (RRFB) is a pedestrian-activated flashing light with additional signage to alert motorists of a pedestrian crossing. An RRFB improves safety by increasing the visibility of marked crosswalks and provides motorists a cue to slow down and yield to pedestrians.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Fail to yield/did not grant right of way crashes

Countermeasure	What does this countermeasure do for safety?	Crashes that this countermeasure may address*
Pedestrian Refuge Island	A pedestrian refuge island, or raised median, is a raised barrier in the center of the roadway that can restrict certain turning movements and provide a place for pedestrians to wait if they are unable to finish crossing the intersection. A pedestrian refuge island improves safety by reducing the number of potential conflict points with designated zones for vehicles to turn, and by reducing the exposure time for pedestrians crossing the intersection. Pedestrian refuge islands can be constructed from paint and plastic as part of a low-cost/quick-build project.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Left turn crash types • Entering at angle crash types • Sideswipe crash types • Speeding-related contributing circumstance crashes • Fail to yield/did not grant right of way contributing circumstance crashes
Roundabout	A roundabout is a type of circular intersection in which road traffic is permitted to flow in one direction around a central island, and priority is typically given to traffic already in the junction. The types of conflicts that occur at roundabouts are different from those occurring at conventional intersections; namely, conflicts from crossing and left-turn movements are not present in a roundabout. The geometry of a roundabout forces drivers to reduce speeds as they proceed through the intersection; the range of vehicle speeds is also narrowed, reducing the severity of crashes when they do occur. Pedestrians only have to cross one direction of traffic at a time at roundabouts, thus reducing the potential for vehicle/pedestrian conflicts.	• Rear-end crash types • Left turn crash types • Right turn crash types • Sideswipe crash types • Entering at angle crash type • Head-on crash types • Vehicle hits pedestrian and/or pedalcyclist crash types • Speeding-related contributing circumstance crashes • Fail to yield/did not grant right of way contributing circumstance crashes • Crashes occurring at intersection and/or intersection-related crashes

Source: WSDOT 2019-2023 Crash Data; Fehr & Peers, 2025.
** The countermeasures identified along the project corridors are intended to address the crash types observed; however, they do not guarantee the elimination of crashes. Crash categories were defined using WSDOT crash data.*

Figure 25. Project H* Countermeasures: S 120th Street/Military Road S/ 24th Avenue S Intersection



Source: Fehr & Peers, 2025.
** Projects H and I are within the same area and will be completed as one, the details of each are broken out separately in this table.*

Table 13. Project H* Safety Countermeasures: S 120th Street/Military Road S/ 24th Avenue S Intersection

Countermeasure	What does this countermeasure do for safety?	Crashes that this countermeasure may address**
Lane Narrowing	Lane narrowing reduces lane widths to encourage motorists to travel at slower speeds. Lane narrowing improves safety by lowering the risk of collisions among bicyclists, pedestrians, and other motorists.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Speeding-related contributing circumstance crashes
Widen Sidewalk	Widening sidewalks provides a more comfortable space for pedestrians, particularly in locations with high volumes of pedestrians, and provides space to accommodate people in wheelchairs. Widening sidewalks improves safety by minimizing collisions with pedestrians walking in the road.	• Vehicle hits pedestrian and/or pedalcyclist crash types
Upgrade Curb Ramps	Tactile warning devices must be detectable to visually impaired pedestrians. Curb ramps must follow the DIB 82-06 design guidelines.	• Vehicle hits pedestrian and/or pedalcyclist crash types
Intersection Reconstruction and Tightening	Irregular intersections can be overbuilt and confusing, presenting safety hazards to all users. "Squaring up" an intersection as close to 90 degrees as possible involves intersection reconstruction to provide better visibility for all road users, reducing high-speed turns and reducing pedestrian crossing length.	• Entering at angle crash type • Left turn crash types • Sideswipe crash types • Right turn crash types • Vehicle hits pedestrian and/or pedalcyclist crash types • Speeding-related contributing circumstance crashes • Crashes occurring at intersection and/or intersection-related crashes
Access Management	Vehicles entering and exiting driveways may conflict with pedestrians and with vehicles on the main road, especially at driveways within 250 feet of intersections. Closing driveways near intersections with high collision rates related to driveways may reduce potential conflicts.	• Rear-end crash types • Left turn crash types • Right turn crash types • Sideswipe crash types • Entering at angle crash type • Vehicle hits pedestrian and/or pedalcyclist crash types • Speeding-related contributing circumstance crashes • Crashes occurring at driveways • Crashes occurring at intersection and/or intersection-related crashes

Countermeasure	What does this countermeasure do for safety?	Crashes that this countermeasure may address**
High Visibility Crosswalk	A high visibility crosswalk has a striped pattern with ladder markings made of high visibility material, such as thermoplastic tape, instead of paint. A high visibility crosswalk improves safety by increasing the visibility of marked crosswalks and provides motorists a cue to slow down and yield to pedestrians.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Fail to yield/did not grant right of way contributing circumstance crashes
Roundabout	A roundabout is a type of circular intersection in which road traffic is permitted to flow in one direction around a central island, and priority is typically given to traffic already in the junction. The types of conflicts that occur at roundabouts are different from those occurring at conventional intersections; namely, conflicts from crossing and left-turn movements are not present in a roundabout. The geometry of a roundabout forces drivers to reduce speeds as they proceed through the intersection; the range of vehicle speeds is also narrowed, reducing the severity of crashes when they do occur. Pedestrians only have to cross one direction of traffic at a time at roundabouts, thus reducing the potential for vehicle/pedestrian conflicts.	• Rear-end crash types • Left turn crash types • Right turn crash types • Sideswipe crash types • Entering at angle crash type • Head-on crash types • Vehicle hits pedestrian and/or pedalcyclist crash types • Speeding-related contributing circumstance crashes • Fail to yield/did not grant right of way contributing circumstance crashes • Crashes occurring at intersection and/or intersection-related crashes
Pedestrian Refuge Island	A pedestrian refuge island, or raised median, is a raised barrier in the center of the roadway that can restrict certain turning movements and provide a place for pedestrians to wait if they are unable to finish crossing the intersection. A pedestrian refuge island improves safety by reducing the number of potential conflict points with designated zones for vehicles to turn, and by reducing the exposure time for pedestrians crossing the intersection. Pedestrian refuge islands can be constructed from paint and plastic as part of a low-cost/quick-build project.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Left turn crash types • Entering at angle crash types • Sideswipe crash types • Speeding-related contributing circumstance crashes • Fail to yield/did not grant right of way crashes

Source: WSDOT 2019-2023 Crash Data; Fehr & Peers, 2025.
** Projects H and I are within the same area and will be completed as one, the details of each are broken out separately in this table.*
*** The countermeasures identified along the project corridors are intended to address the crash types observed; however, they do not guarantee the elimination of crashes. Crash categories were defined using WSDOT crash data.*

Figure 26. Project I* Countermeasures: S 120th Street (20th Avenue S to Military Road S)



Source: Fehr & Peers, 2025.
** Projects H and I are within the same area and will be completed as one, the details of each are broken out separately in this table.*

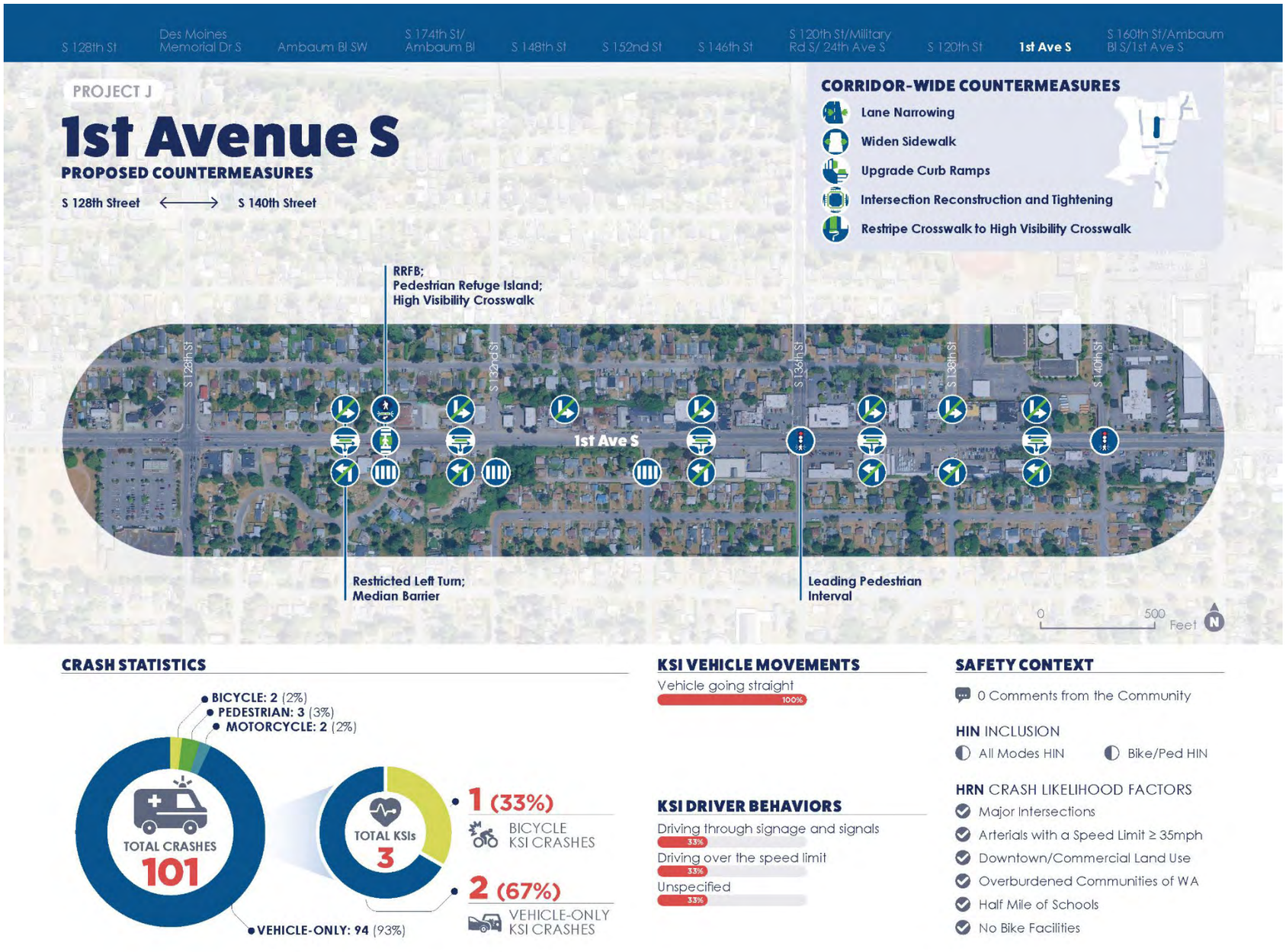
Table 14. Project I* Safety Countermeasures: S 120th Street (20th Avenue S to Military Road S)

Countermeasure	What does this countermeasure do for safety?	Crashes that this countermeasure may address**
Lane Narrowing	Lane narrowing reduces lane widths to encourage motorists to travel at slower speeds. Lane narrowing improves safety by lowering the risk of collisions among bicyclists, pedestrians, and other motorists.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Speeding-related contributing circumstance crashes
Widen Sidewalk	Widening sidewalks provides a more comfortable space for pedestrians, particularly in locations with high volumes of pedestrians, and provides space to accommodate people in wheelchairs. Widening sidewalks improves safety by minimizing collisions with pedestrians walking in the road.	• Vehicle hits pedestrian and/or pedalcyclist crash types
Upgrade Curb Ramps	Tactile warning devices must be detectable to visually impaired pedestrians. Curb ramps must follow the DIB 82-06 design guidelines.	• Vehicle hits pedestrian and/or pedalcyclist crash types
Intersection Reconstruction and Tightening	Irregular intersections can be overbuilt and confusing, presenting safety hazards to all users. "Squaring up" an intersection as close to 90 degrees as possible involves intersection reconstruction to provide better visibility for all road users, reducing high-speed turns and reducing pedestrian crossing length.	• Entering at angle crash type • Left turn crash types • Sideswipe crash types • Right turn crash types • Vehicle hits pedestrian and/or pedalcyclist crash types • Speeding-related contributing circumstance crashes • Crashes occurring at intersection and/or intersection-related crashes
High Visibility Crosswalk	A high visibility crosswalk has a striped pattern with ladder markings made of high visibility material, such as thermoplastic tape, instead of paint. A high visibility crosswalk improves safety by increasing the visibility of marked crosswalks and provides motorists a cue to slow down and yield to pedestrians.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Fail to yield/did not grant right of way contributing circumstance crashes

Countermeasure	What does this countermeasure do for safety?	Crashes that this countermeasure may address**
Separated Bikeway	A separated bikeway provides dedicated street space, typically adjacent to outer vehicle travel lanes, with physical separation from vehicle traffic, designated lane markings, pavement legends, and signage. Physical separation may consist of plastic posts, parked vehicles, or a curb. Separated bikeways improve safety by reducing conflicts between bicycles and vehicles on the road and by creating a road-narrowing effect with buffers or vertical barriers, which may reduce vehicle speeds. A raised barrier of plastic posts and painted pavement is a low-cost/quick-build option.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Speeding-related contributing circumstance crashes • Fail to yield/did not grant right of way contributing circumstance crashes
Green Conflict Striping	Green conflict striping is green markings painted in a dashed pattern on bike lanes approaching an intersection and/or going through an intersection. Green conflict striping improves safety by increasing the visibility of bicyclists and identifying potential conflict points so bicyclists and motorists use caution when traveling toward and through an intersection.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Fail to yield/did not grant right of way contributing circumstance crashes • Crashes occurring at intersection and/or intersection-related crashes
Rectangular Rapid Flashing Beacon (RRFB)	A rectangular rapid flashing beacon (RRFB) is a pedestrian-activated flashing light with additional signage to alert motorists of a pedestrian crossing. An RRFB improves safety by increasing the visibility of marked crosswalks and provides motorists a cue to slow down and yield to pedestrians.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Fail to yield/did not grant right of way crashes

Source: WSDOT 2019-2023 Crash Data; Fehr & Peers, 2025.
** Projects H and I are within the same area and will be completed as one, the details of each are broken out separately in this table.*
*** The countermeasures identified along the project corridors are intended to address the crash types observed; however, they do not guarantee the elimination of crashes. Crash categories were defined using WSDOT crash data.*

Figure 27. Project J Countermeasures: 1st Avenue S (S 140th Street to S 128th Street)



Source: Fehr & Peers, 2025.

Table 15. Project J Countermeasures: 1st Avenue S (S 140th Street to S 128th Street)

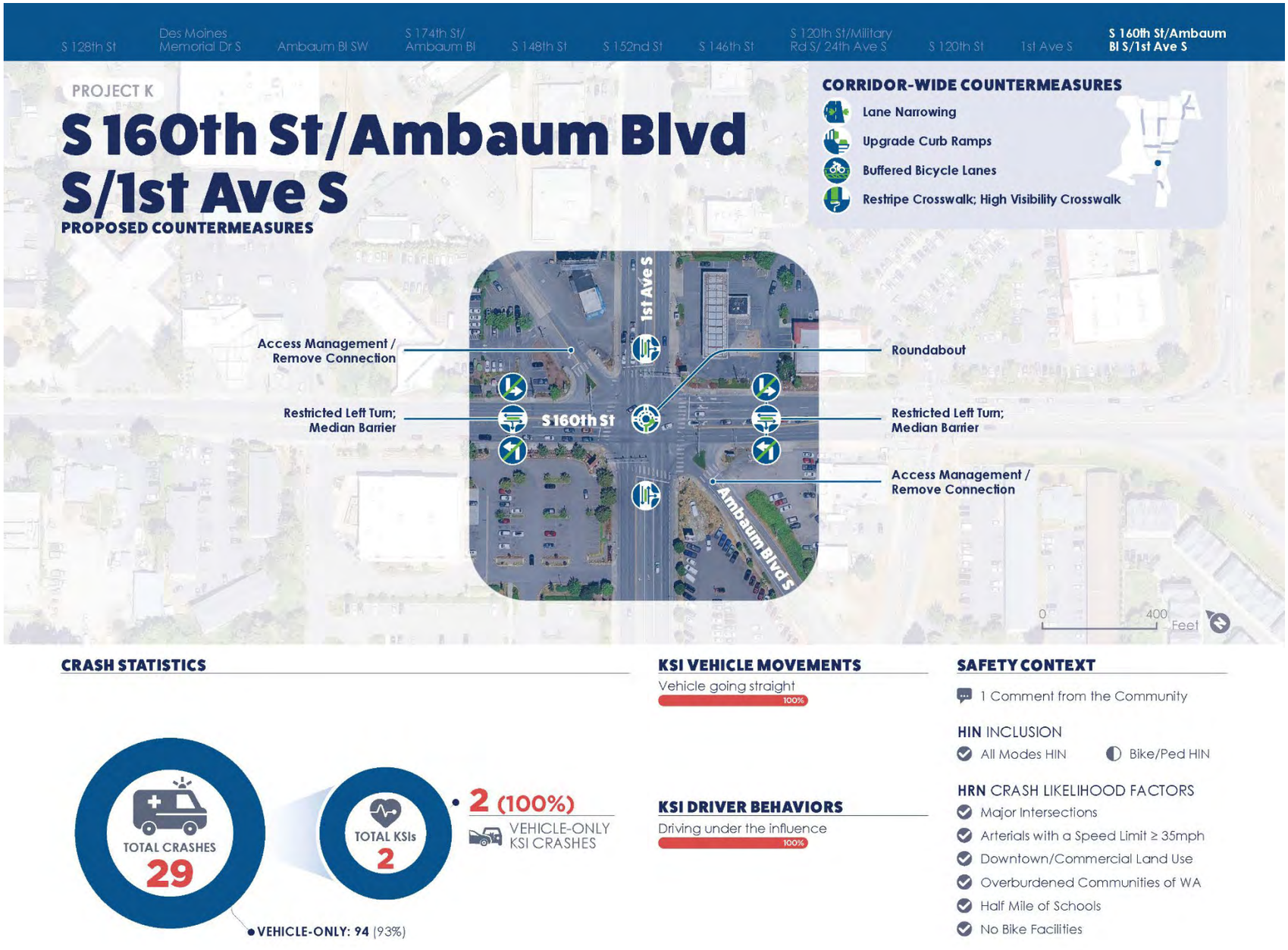
Countermeasure	What does this countermeasure do for safety?	Crashes that this countermeasure may address*
Lane Narrowing	Lane narrowing reduces lane widths to encourage motorists to travel at slower speeds. Lane narrowing improves safety by lowering the risk of collisions among bicyclists, pedestrians, and other motorists.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Speeding-related contributing circumstance crashes
Widen Sidewalk	Widening sidewalks provides a more comfortable space for pedestrians, particularly in locations with high volumes of pedestrians, and provides space to accommodate people in wheelchairs. Widening sidewalks improves safety by minimizing collisions with pedestrians walking in the road.	• Vehicle hits pedestrian and/or pedalcyclist crash types
Upgrade Curb Ramps	Tactile warning devices must be detectable to visually impaired pedestrians. Curb ramps must follow the DIB 82-06 design guidelines.	• Vehicle hits pedestrian and/or pedalcyclist crash types
Intersection Reconstruction and Tightening	Irregular intersections can be overbuilt and confusing, presenting safety hazards to all users. "Squaring up" an intersection as close to 90 degrees as possible involves intersection reconstruction to provide better visibility for all road users, reducing high-speed turns and reducing pedestrian crossing length.	• Entering at angle crash type • Left turn crash types • Sideswipe crash types • Right turn crash types • Vehicle hits pedestrian and/or pedalcyclist crash types • Speeding-related contributing circumstance crashes • Crashes occurring at intersection and/or intersection-related crashes
High Visibility Crosswalk	A high visibility crosswalk has a striped pattern with ladder markings made of high visibility material, such as thermoplastic tape, instead of paint. A high visibility crosswalk improves safety by increasing the visibility of marked crosswalks and provides motorists a cue to slow down and yield to pedestrians.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Fail to yield/did not grant right of way contributing circumstance crashes

Countermeasure	What does this countermeasure do for safety?	Crashes that this countermeasure may address*
Median Barrier	A median barrier is a barrier in the center of the roadway that physically separates opposing vehicular traffic. Median barriers can also help control access to and from side streets and driveways, reducing conflict points.	• Left turn crash types • Entering at angle crash types • Sideswipe crash types • Speeding-related contributing circumstance crashes • Fail to yield/did not grant right of way contributing circumstance crashes • Crashes occurring at driveways
Leading Pedestrian Interval (LPI)	At intersection locations that have a high volume of turning vehicles and have high pedestrian vs. vehicle crashes, a leading pedestrian interval gives pedestrians the opportunity to enter an intersection 3–7 seconds before vehicles are given a green indication. With this head start, pedestrians can better establish their presence in the crosswalk before vehicles have priority to turn left or right.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Left turn crash types • Right turn crash types • Fail to yield/did not grant right of way contributing circumstance crashes • Crashes occurring at intersection and/or intersection-related crashes
Rectangular Rapid Flashing Beacon (RRFB)	A rectangular rapid flashing beacon (RRFB) is a pedestrian-activated flashing light with additional signage to alert motorists of a pedestrian crossing. An RRFB improves safety by increasing the visibility of marked crosswalks and provides motorists a cue to slow down and yield to pedestrians.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Fail to yield/did not grant right of way contributing circumstance crashes

Countermeasure	What does this countermeasure do for safety?	Crashes that this countermeasure may address*
Pedestrian Refuge Island	A pedestrian refuge island, or raised median, is a raised barrier in the center of the roadway that can restrict certain turning movements and provide a place for pedestrians to wait if they are unable to finish crossing the intersection. A pedestrian refuge island improves safety by reducing the number of potential conflict points with designated zones for vehicles to turn, and by reducing the exposure time for pedestrians crossing the intersection. Pedestrian refuge islands can be constructed from paint and plastic as part of a low-cost/quick-build project.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Left turn crash types • Entering at angle crash types • Sideswipe crash types • Speeding-related contributing circumstance crashes • Fail to yield/did not grant right of way contributing circumstance crashes

Source: WSDOT 2019-2023 Crash Data; Fehr & Peers, 2025.
** The countermeasures identified along the project corridors are intended to address the crash types observed; however, they do not guarantee the elimination of crashes. Crash categories were defined using WSDOT crash data.*

Figure 28. Project K Countermeasures: S 160th St/Ambaum Blvd S/1st Ave S Intersection



Source: Fehr & Peers, 2025.

Table 16. Project K Countermeasures: S 160th St/Ambaum Blvd S/1st Ave S Intersection

Countermeasure	What does this countermeasure do for safety?	Crashes that this countermeasure may address*
Lane Narrowing	Lane narrowing reduces lane widths to encourage motorists to travel at slower speeds. Lane narrowing improves safety by lowering the risk of collisions among bicyclists, pedestrians, and other motorists.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Speeding-related contributing circumstance crashes
Upgrade Curb Ramps	Tactile warning devices must be detectable to visually impaired pedestrians. Curb ramps must follow the DIB 82-06 design guidelines.	• Vehicle hits pedestrian and/or pedalcyclist crash types
High Visibility Crosswalk	A high visibility crosswalk has a striped pattern with ladder markings made of high visibility material, such as thermoplastic tape, instead of paint. A high visibility crosswalk improves safety by increasing the visibility of marked crosswalks and provides motorists a cue to slow down and yield to pedestrians.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Fail to yield/did not grant right of way contributing circumstance crashes
Separated Bikeway	A separated bikeway provides dedicated street space, typically adjacent to outer vehicle travel lanes, with physical separation from vehicle traffic, designated lane markings, pavement legends, and signage. Physical separation may consist of plastic posts, parked vehicles, or a curb. Separated bikeways improve safety by reducing conflicts between bicycles and vehicles on the road and by creating a road-narrowing effect with buffers or vertical barriers, which may reduce vehicle speeds. A raised barrier of plastic posts and painted pavement is a low-cost/quick-build option.	• Vehicle hits pedestrian and/or pedalcyclist crash types • Speeding-related contributing circumstance crashes • Fail to yield/did not grant right of way contributing circumstance crashes
Median Barrier	A median barrier is a barrier in the center of the roadway that physically separates opposing vehicular traffic. Median barriers can also help control access to and from side streets and driveways, reducing conflict points.	• Left turn crash types • Entering at angle crash types • Sideswipe crash types • Speeding-related contributing circumstance crashes • Fail to yield/did not grant right of way contributing circumstance crashes • Crashes occurring at driveways

Countermeasure	What does this countermeasure do for safety?	Crashes that this countermeasure may address*
Roundabout	A roundabout is a type of circular intersection in which road traffic is permitted to flow in one direction around a central island, and priority is typically given to traffic already in the junction. The types of conflicts that occur at roundabouts are different from those occurring at conventional intersections; namely, conflicts from crossing and left-turn movements are not present in a roundabout. The geometry of a roundabout forces drivers to reduce speeds as they proceed through the intersection; the range of vehicle speeds is also narrowed, reducing the severity of crashes when they do occur. Pedestrians only have to cross one direction of traffic at a time at roundabouts, thus reducing the potential for vehicle/pedestrian conflicts.	• Rear-end crash types • Left turn crash types • Right turn crash types • Sideswipe crash types • Entering at angle crash type • Head-on crash types • Vehicle hits pedestrian and/or pedalcyclist crash types • Speeding-related contributing circumstance crashes • Fail to yield/did not grant right of way contributing circumstance crashes • Crashes occurring at intersection and/or intersection-related crashes
Access Management	Vehicles entering and exiting driveways may conflict with pedestrians and with vehicles on the main road, especially at driveways within 250 feet of intersections. Closing driveways near intersections with high collision rates related to driveways may reduce potential conflicts.	• Rear-end crash types • Left turn crash types • Right turn crash types • Sideswipe crash types • Entering at angle crash type • Vehicle hits pedestrian and/or pedalcyclist crash types • Speeding-related contributing circumstance crashes • Crashes occurring at driveways • Crashes occurring at intersection and/or intersection-related crashes

Source: WSDOT 2019-2023 Crash Data; Fehr & Peers, 2025.
** The countermeasures identified along the project corridors are intended to address the crash types observed; however, they do not guarantee the elimination of crashes. Crash categories were defined using WSDOT crash data.*

Chapter 5: Implementing the Plan

This chapter outlines the strategies and actions Burien can take to improve safety through an action plan, steps for successful implementation, and a framework for monitoring and evaluating progress.

Action Plan

The following safety action plan presents strategies and actions that the Burien can take to advance safety goals into policies, programs, and operations. Grounded in the Safe System Approach[12] and FHWA proven safety countermeasures,[13] these recommendations reflect best practices from across North America and beyond. Each of the actions is also tied to one of the three Council goals:

Public Safety: Provide for public safety through a community-based approach that focuses on prevention of problems and a timely response.

- Ensure that all those who live, work and play in Burien are safe.

Dependable Infrastructure: Maintain levels of service commensurate with growing community requirements at optimum life-cycle costs.

- Burien has a well-maintained and sustainable infrastructure that meets the functional needs of the community.

Balanced Transportation: Reduce reliance on single occupancy vehicles and improve connectivity and multimodal mobility in Burien in ways that maintain and enhance travel times, safety, health and transportation choices

- Burien values an integrated multimodal system of transportation choices.

[12] https://highways.dot.gov/sites/fhwa.dot.gov/files/2022-06/FHWA_SafeSystem_Brochure_V9_508_200717.pdf
[13] https://highways.dot.gov/safety/proven-safety-countermeasures

Table 17. Safety Action Plan

WSDOT Safe System Element	Recommended Action	Time Frame*	Mode of Focus	Council Goal	Lead Department	Metrics
Safer Road Users	**Improving Road User Behavior Campaign:** Conduct and outreach and education campaign that focuses on the behaviors and target audiences most linked to fatalities and serious injuries, including substance use, improper turning, obeying traffic signs and signals, and high speeds. Leverage partnerships with community-based organizations and advocacy groups to publicize outreach events and educational opportunities such that attendance includes a wide range of Burien community members.	Short	All Modes	Public Safety	Communications	• Outreach Plan • Number of trainings • Number of people reached
	Vulnerable Road User Outreach and Education: Facilitate outreach and educational opportunities to encourage safe behavior and informed riding among vulnerable road users, including pedestrians bicyclists, and motorcycle riders. Leverage partnerships with community-based organizations and advocacy groups to publicize outreach events and educational opportunities such that attendance includes a wide range of Burien community members.	Medium	Vulnerable Road Users	Public Safety	Communications	• Outreach Plan • Number of trainings • Number of people reached
	Implement a SRTS Program: Develop and implement a SRTS program partnership with school districts in Burien to implement safe walking and biking curriculum for elementary school and middle school students in Burien.	Ongoing	Bicycle and Pedestrian	Public Safety	Public Works	• SRTS Plan • Number of programs launched • Change in mode share
	Youth Leadership: Conduct engagement tailored to middle and high school students and families, with a focus on empowering youth leadership to promote safe transportation in their school communities.	Long	All Modes	Public Safety	Communications	• Number of trainings • Number of student participants
	Educational Messaging around the High Injury Network: Provide clear safety education messaging and public awareness along the all modes and bike/pedestrian High Injury Networks to increase awareness among travelers. Leverage partnerships with community-based organizations and advocacy groups to publicize outreach events and educational opportunities such that attendance includes a wide range of Burien community members.	Medium	All Modes	Public Safety	Communications	• Outreach Plan • Number of trainings • Number of people reached

WSDOT Safe System Element	Recommended Action	Time Frame*	Mode of Focus	Council Goal	Lead Department	Metrics
Safer Land Use	**Revise Zoning Codes:** Allow mixed uses in residential zones to reduce the need to drive and provide greater access for people walking and biking to everyday destinations. In turn, this will reduce vehicle traffic volumes and conflicts between vehicles and vulnerable road users.	Medium	Bicycle and Pedestrian	Balanced Transportation	Public Works Council	• Zoning code updated • Reduce or eliminate parking minimums • Number of short trips by motor vehicle, pedestrians, and bicyclists.
Safer Vehicles	**Emerging Trends:** Review, update, and maintain local ordinances regarding the appropriate use of emerging micromobility technologies such as e-scooters and e-bikes.	Long	All Modes	Dependable Infrastructure	Public Works Council	• Modernized and forward-compatible ordinances
	Inspections and Registration: Support legislative efforts to require periodic inspection of motor vehicles and trailers to ensure that they have adequate lighting, stopping, and safety features in working order.	Long	Vehicle	Dependable Infrastructure	Police Department	• Number of vehicles inspected
Safer Speeds	**Safe Speed Design Standards:** Update citywide design standards and details to reference target speeds, speed management, and provision of low-stress facilities for people walking and biking (e.g., roadway geometries are designed for context appropriate speeds).	Long	Vehicle	Dependable Infrastructure	Public Works	• Design standards updated
	Speed Photo Enforcement: Establish photo enforcement within school zones and into non-school zones as allowed by state law and authorized by city council.	Medium	Vehicle	Public Safety	Police Department Public Works	• Reduction in average motor vehicle speeds at locations where ATE cameras are installed. • Number of speed management projects financed from ATE camera revenue.
	Speed Feedback Signs: Develop and implement a program to install rotating speed feedback sign locations and ensure accuracy and maintenance of signage.	Ongoing	Vehicle	Public Safety	Public Works	• Number of speed feedback signs

WSDOT Safe System Element	Recommended Action	Time Frame*	Mode of Focus	Council Goal	Lead Department	Metrics
Safer Speeds	**Speed Management and Traffic Calming:** Develop a system-wide Speed Management Plan and traffic calming program with the goal of slowing vehicle speeds using tools such as speed limit reductions, traffic signal re-timing, installing traffic calming devices, and re-channelizing travel lanes.	Long	Vehicle	Public Safety	Public Works	• Speed management plan • Number of roads with revised/new speed limits
	Speed Setting: Set target speed limits to prioritize the safety of all roadway users with specific consideration given to the severity of potential conflicts (i.e., amount of potential kinetic energy transfer) between vulnerable road users (e.g., people walking, biking) and motor vehicles.	Long	Vehicle	Public Safety	Public Works	• Percentage of reviewed policies • Number of stakeholder meetings • Number of updated policies
Safer Roads	**Project Evaluation Framework:** Develop a project evaluation framework that prioritizes funding based on KSI crash reduction opportunities or locations along the High Injury Network, especially for under-resourced and underserved populations.	Medium	All Modes	Balanced Transportation	Public Works	• Develop project evaluation framework
	Incorporate Safety Design Strategies in Capital Projects: Continue to incorporate design elements with proven crash modification factors into transportation capital improvement projects.	Ongoing	All Modes	Dependable Infrastructure	Public Works	• Number of capital projects with safety design strategies included
	Allocate Funding for Safety Projects: Allocate a percentage of all transportation funding to address safety needs, balanced against the funds needed to maintain the existing infrastructure.	Ongoing	All Modes	Dependable Infrastructure	Public Works Council	• Total funding percentage allocated to safety projects.
	Overburdened Communities in Plans and Projects: Set goals based on project needs related to safety improvements for populations that have been traditionally under-resourced and underserved. Incorporate these considerations into project planning, design, implementation, and assessment.	Ongoing	All Modes	Balanced Transportation	Public Works	• Number of projects in the Overburdened Communities of WA area
	Non-Motorized Transportation Network: Build transportation facilities that provide high-quality and low-stress access to key destinations, including schools, libraries, and community centers, via non-motorized modes. The non-motorized network can support an all ages and abilities friendly environment.	Long	Bicycle and Pedestrian	Balanced Transportation	Public Works	• Track length of new sidewalk facilities • Track length of new bicycle facilities

WSDOT Safe System Element	Recommended Action	Time Frame*	Mode of Focus	Council Goal	Lead Department	Metrics
Safer Roads	**Priority Safety Projects:** Review roadway design standards to integrate with the Safe System Roadway Design Hierarchy.	Medium	All Modes	Dependable Infrastructure	Public Works	• Roadway design standards updated
	Crosswalk policy: Update the citywide crosswalk policy to enhance the safety of pedestrian crossings, reduce distances between higher visibility crossings on multilane arterials, and provide similar crossings near transit stops. Crosswalk treatments may also include the addition of RRFBs.	Medium	Pedestrian	Dependable Infrastructure	Public Works	• Crosswalk policy updated
	Intersection Design: Evaluate intersection design and control decisions in the planning or scoping stage of projects for opportunities to better prioritize using design and control strategies that separate users in time and space.	Medium	All Modes	Dependable Infrastructure	Public Works	• Intersection design and control safety evaluation
	Kinetic Transfer: Plan, design, and implement transportation system improvements to minimize or eliminate the potential kinetic energy transfer that a person would experience if a collision were to occur.	Long	All Modes	Dependable Infrastructure	Public Works	• Posted speed limits set to prioritize severity of potential conflicts
	Rectangular Rapid Flashing Beacon (RRFB) Program: Develop and implement a program to site and install RRFBs at key crossings in Burien.	Medium	Pedestrian	Dependable Infrastructure	Public Works	• Track number of RRFBs installed at appropriate locations
	Quick Builds: Systematically apply low-cost and short-term safety countermeasures citywide, including the adoption of policies to streamline and expedite project delivery.	Medium	All Modes	Dependable Infrastructure	Public Works	• Track umber of quick build projects implemented
Post Crash Care	**Data Sharing:** Share data across agencies and organizations, including first responders and hospitals, to develop a holistic understanding of the safety landscape and improve data accuracy to reduce the likelihood of crash underreporting.	Long	All Modes	Public Safety	GIS Team	• Data shared across stakeholder agencies
	Maintaining Emergency Preemption: Regularly check and update signal preemption for emergency vehicles.	Ongoing	Vehicle	Dependable Infrastructure	Maintenance Public Works	• Signal preemption reviewed annually

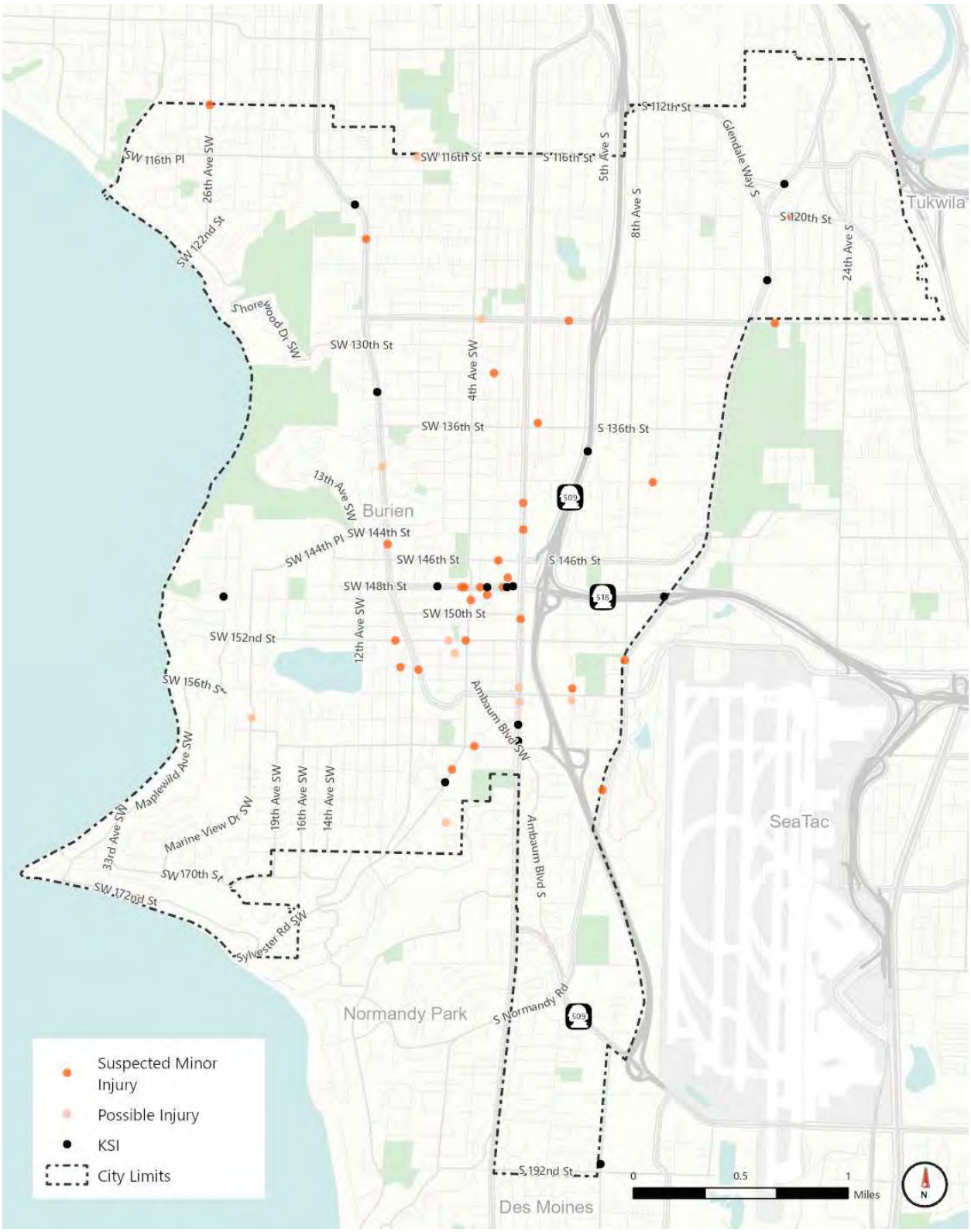
* Timeframes are defined as short-term (implement within 1 to 3 years as resources allow), medium-term (implement within 4 to 7 years as resources allow), or long-term (implement in 8 or more years as resources allow).
Source: Fehr & Peers, 2025.

RRFB Program and Neighborhood Traffic Calming

This section supports the RRFB Program action described above by providing a data-driven basis for future installations. As part of the CSAP, the project team conducted a systemic review to identify potential locations for RRFBs by focusing on mid-block pedestrian crashes that resulted in injury. Between 2019 and 2023, there were 57 such crashes in Burien, including 15 KSI crashes. **Figure 29** maps the locations of these mid-block pedestrian crashes to help inform siting decisions for RRFBs at high-priority crossings.

The City of Burien also recognizes the importance of integrating smaller-scale neighborhood traffic calming projects into its broader transportation safety strategy, even when such projects are not explicitly identified in the CSAP. These localized interventions—such as speed humps, curb extensions, chicanes, raised crossings, and traffic circles—play a critical role in enhancing pedestrian and bicycle safety, particularly in areas near schools, parks, and transit stops. Where appropriate and feasible, Burien will consider these types of projects as part of a comprehensive, context-sensitive approach to transportation safety, ensuring they complement larger infrastructure investments and reflect community needs.

Figure 29. Mid-Block Pedestrian Injury Crashes (2019-2023)



Source: 2019-2023 WSDOT Data, Fehr & Peers, 2025.

Proven Safety Countermeasures

Engineering countermeasures are physical, infrastructure-based improvements to make roadways safer by design. Engineering countermeasures help address the Safe Roads and Safe Speeds elements of the Safe System Approach. These countermeasures can be applied to address safety concerns on the HIN as well as at intersections and corridors that contain elements that increase crash likelihood, even if the location does not have a current history of crashes.

A toolbox of engineering countermeasures is included in **Appendix H. Countermeasures Toolbox.** These countermeasures can serve as a menu of options to help address crash likelihood factors and crash trends identified in **Chapter 3: Analyzing Safety Data**. **Figure 30** provides an example of what information is included in the toolbox for each countermeasure. Most of the countermeasures have been identified by FHWA as "Proven Safety Countermeasures" and can be advantageous for use in Highway Safety Improvement Program (HSIP) grant funding applications. There are also many effective safety countermeasures beyond those listed in FHWA, several of which are included in the toolbox.

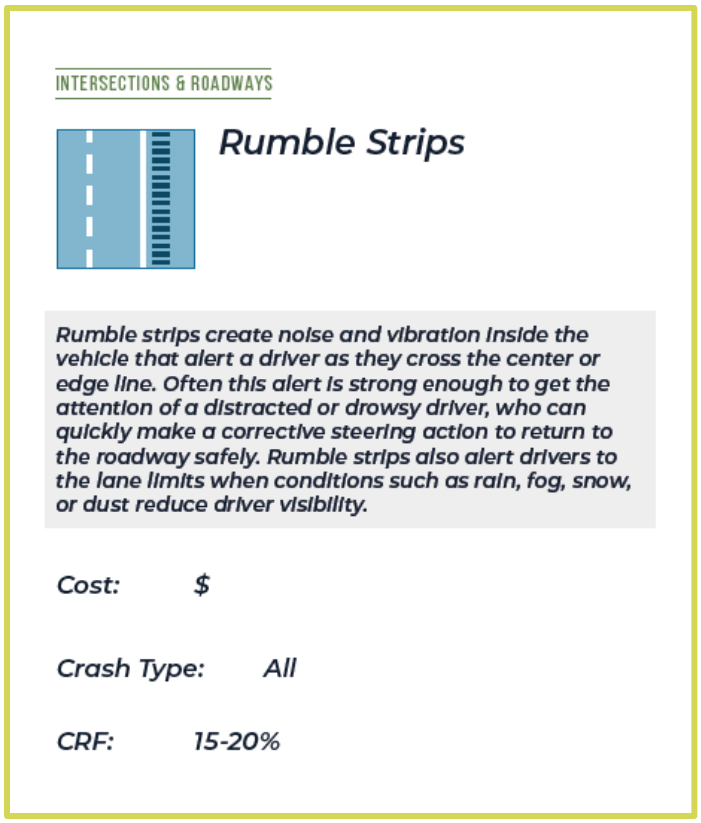


Figure 30. FHWA Countermeasures Toolbox Example

Implementation

Defining projects, countermeasures, actions, and strategies is essential, but a coordinated implementation process is crucial to the success of this CSAP. Key considerations for effective implementation that align with SS4A grant requirements include:

- **Oversight and Accountability** – After CSAP adoption, maintain the existing Task Force, made up of stakeholders and community members, to serve in an ongoing role. The Task Force will help maintain sustained focus and success implementing projects and actions identified in the CSAP. Such a committee would meet regularly to discuss delivery of projects, status of action items, and provide general support to advancing CSAP implementation.
- **Coordination and Partnerships** – Provide regular updates on action plan progress and coordinating with agency partners, such as Public Works and representatives from police, fire, and schools. Regular communication with agency partners helps create sustained support, creates opportunities to bundle safety projects or initiatives with other related ongoing efforts, and facilitates CSAP implementation.

- **Communication** – Continued communication with stakeholders and community members through the Task Force and regular community outreach builds trust and support for Burien's safety goals. Strategies include communication across diverse challenges, publication of fact sheets on action plan progress, and regular public conversation on the topic of safety.
- **Phasing and Sequencing** – To see meaningful progress in road safety performance, sustained commitment and investment is needed in the near-term, mid-term, and long-term:
    - **Short-term** implementation efforts may focus on successful completion of ongoing safety efforts and lower-cost improvements that can be constructed within three years.
    - **Medium-term** implementation efforts may target larger and more comprehensive safety infrastructure projects and more complex programmatic efforts that require extensive cross-department collaboration.
    - **Long-term** implementation efforts may focus on initiating significant shifts in Burien's approach to planning and design to incorporate the Safe System Approach.
- **Funding** – Funding can be a major hurdle in CSAP implementation. Staying up to date on relevant grant opportunities and proactively pursuing grant funding for the most competitive projects can help overcome funding hurdles. Burien can take advantage of a variety of regional, state, and federal funding sources to finance safety project planning, design, and construction in Burien. Funding, including required matches, and resources generally must be available from the City to provide a successful grant application. See **Table 18** for potential funding resources to consider.

Table 18. Transportation Safety Funding Sources

Program Name	Program Purpose
Federal Sources	
Community Development Block Grant (CDBG) Program	The Community Development Block Grant (CDBG) program is a flexible program that provides communities with resources to address a wide range of unique community development needs. Communities often use CDBG funds to construct and repair streets and sidewalks.
Safe Streets and Roads for All (SS4A) Grant Program	The Safe Streets & Roads for All (SS4A) grant program is a federal grant program established by the Bipartisan Infrastructure Law centered around the USDOT's National Roadway Safety Strategy and its goal of zero deaths and serious injuries on America's roadways. It will provide $5 billion in grant funding over 5 years to implement safety projects.
Better Utilizing Investments to Leverage Development (BUILD) Grant Program	The Better Utilizing Investments to Leverage Development (BUILD) Grant Program provides grants for surface transportation infrastructure projects with significant local or regional impact. The BUILD program can fund the surface transportation infrastructure elements of a project that may also include housing, employment opportunities, and economic development strategies.

Program Name	Program Purpose
Active Transportation Infrastructure Investment Program (ATIIP)	The Active Transportation Infrastructure Investment Program (ATIIP), funded by FHWA, awards planning and design grants and construction grants for eligible applicants to develop plans for active transportation networks and spines. One goal of both types of ATIIP grants is to integrate active transportation facilities with transit services, where available, to improve access to public transportation.
Transportation Alternatives Program (TAP)	The Federal Transportation Alternatives (TA) Program provides funding for programs and projects defined as transportation alternatives, including on- and off- road pedestrian and bicycle facilities, infrastructure projects for improving non-driver access to public transportation and improved mobility, community improvement activities and environmental remediation; recreational trail program projects; and safe routes to school projects.
State Sources	
Urban Arterial Program (UAP)	The Urban Arterial Program provides funding for projects that improve arterial safety, support growth and development, and enhance both mobility and roadway conditions. The Transportation Improvement Board (TIB) also evaluates projects based on their sustainability and constructability.
Active Transportation Program (ATP)	The Active Transportation Program (ATP) provides funding for projects that enhance pedestrian and cyclist safety, improve mobility and connectivity, or upgrade existing facilities. Each project must serve a transportation-related purpose and be located on a federally classified route.
Pedestrian & Bicycle Program	WSDOT offers funding to improve the transportation system to enhance safety and mobility for people who choose to walk or bike. The purpose of the program is to eliminate pedestrian and bicyclist fatal and serious injury traffic crashes, increase the availability of pedestrian and bicycle facilities that provide low traffic stress and serve all ages and abilities, and increase the number of people that choose to walk and bike for transportation.
Complete Streets Program (CSP)	Financed by the Transportation Improvement Board (TIB), the Complete Streets Program is a funding opportunity for cities and counties that have an adopted complete streets ordinance.
Highway Safety Improvement Program (HSIP)	The Highway Safety Improvement Program (HSIP) focuses on infrastructure projects with nationally recognized crash reduction factors (CRFs). Local HSIP projects must be identified on the basis of crash experience, crash potential, crash rate, or other data-supported means.

Program Name	Program Purpose
Safe Routes to School Program (SRTS)	The Safe Routes to School Program aims to enhance safety and mobility for children by encouraging walking and biking to school. Funding supports projects located within two miles of primary, middle, and high schools (K–12), and is provided through both federal and state sources.
Local and Regional Sources	
Transportation Impact Fees (TIF)	Burien has an adopted transportation impact fee (TIF) program to facilitate transportation and promote economic well-being within the City. TIF funds are for capacity projects but can include safety elements. TIF funds can only be spent on projects identified in the current TIF rate study.
Citywide Transportation Funding	Burien plans to allocate a percentage of all transportation funding to address safety needs, balanced against the funds needed to maintain the existing infrastructure.

Source: Fehr & Peers, 2025.

Ongoing Evaluation

Ongoing evaluation of progress in implementing the safety action plan is essential for tracking progress toward safety goals, informing future investment decisions, and meeting grant funding requirements. To support this, several performance measures are recommended for review every six years.

The target performance measures will be evaluated and reported using the Safety Report Card, which will be updated every six years. The Safety Report Card will highlight successes and identify areas in need of additional attention and resources. The initial Safety Report Card is shown in **Table 19**. The table includes performance measures documented for 2019 to 2023. Future CSAP Safety Report Card updates will include a comparison of previous and current metrics to evaluate how the performance measures track toward the safety goal.

Table 19. Initial Safety Report Card

Performance Measure	2019	2020	2021	2022	2023	Average (2019-2023)	2024	2025	2026	2027	2028	2029	Average (2024-2029)
Total KSIs	17	17	23	31	24	**22**							
Total KSI Rate (% of all crashes)	2%	3%	3%	4%	3%	**3.0%**							
VRU KSIs	6	7	8	16	10	**9**							
VRU KSI Rate (% of all VRU crashes)	18%	25%	21%	37%	21%	**24%**							
KSIs on All Modes HIN	8	13	19	21	14	**15**							
Bike/Ped KSIs on Bike/Ped HIN	0	5	5	10	5	**5**							
Top Contributing Circumstances	Driver Distraction; Asleep or Ill					**Driver Distraction; Asleep or Ill**							
Total Speed-Related Crashes	69	74	66	68	53	**66**							
Total DUI-Related Crashes	59	45	59	57	47	**53**							
% of Transportation Funding Allocated to Safety Projects	No Data	No Data	No Data	No Data	No Data	**No Data**							
Lane Miles of Safety Projects Completed	No Data	No Data	No Data	No Data	No Data	**No Data**							

Source: 2019-2023 WSDOT Data, Fehr & Peers, 2025.

Appendices

Appendix A. List of Definitions
Appendix B. Transportation Master Plan Safety Policies
Appendix C. CSAP Community Engagement
Appendix D. Task Force Meeting Content
Appendix E. Existing Crash Data Analysis
Appendix F. Crash Likelihood **Mapping**
Appendix G. Detailed Project Descriptions and Pedestrian/Cyclist Crash Data
Appendix H. Countermeasures Toolbox

Appendix A. List of Definitions

Definitions of Key CSAP Terminology

Crash Likelihood Factors
Characteristics or circumstances that increase the probability of a vehicle collision. These factors can relate to the driver, the vehicle, the road environment, or external conditions. For Burien's CSAP, crash likelihood factors were identified through the existing conditions analysis and include patterns such as high vehicle speeds and major intersections.

High Injury Network (HIN)
The roadway segments with the highest concentration of fatal and serious injury crashes. Identifying the HIN helps communities focus on safety improvements where they will have the greatest impact. This analysis uses street network and crash data to prioritize locations with a documented crash history, allowing targeted investments in the most critical corridors.

High Risk Network (HRN) or Elevated Traffic Safety Conditions
The roadway segments where traffic patterns, speeds, and other factors make crashes more likely to occur—even in places with few or no recorded crashes. The HRN combines crash history with contextual information such as land use and roadway characteristics to identify system-wide safety concerns and street features associated with higher crash likelihood and severity.

Killed or Serious Injury (KSI) Crash
A traffic crash in which at least one person dies or suffers injuries severe enough to require hospitalization or result in long-term impairment. Fatal injuries are those that lead to death within 30 days of the crash. Serious injuries may include:

- Severe lacerations with significant blood loss or exposure of underlying tissues, muscle, or organs
- Broken or distorted extremities
- Crush injuries
- Suspected skull, chest, or abdominal injuries (beyond minor bruises or cuts)
- Significant burns (second- or third-degree over 10% or more of the body)
- Unconsciousness at the scene
- Paralysis[1]

Overburdened Communities of WA
Neighborhoods in Washington State experiencing greater environmental health risks and socioeconomic challenges, as identified by tools such as the Washington Environmental Health Disparities Map. These areas often face higher transportation safety risks. The Overburdened Communities dataset[2] combines census tracts ranked 9 or 10 in the EHD Map, tracts identified as "disadvantaged" by the federal Climate and Economic Justice Screening Tool (CEJST), and tracts overlapping Tribal reservations recognized by the Bureau of Indian Affairs.

Safe System Approach
A roadway safety strategy that accepts human mistakes will occur but designs the transportation

[1] https://highways.dot.gov/media/20131
[2] https://gis.ecology.wa.gov/portal/home/item.html?id=454c5efc20334dc4909405310b2dbfcb

system such that mistakes do not result in death or serious injury. It focuses on creating safer roads, managing speeds, improving vehicle safety, and supporting safe behaviors among road users.[3]

The FHWA visualizes the Safe System Approach in a wheel that contains five objectives (Figure 1):

- Safer People
- Safer Roads
- Safer Vehicles
- Safer Speeds
- Post-Crash Care

Washington State adds an additional objective to this wheel (Figure 2):

- Safer Land Use



Figure 1: FHWA Safe System Approach Wheel

Source: https://www.transportation.gov/safe-system-approach



Figure 2: Washington State Safe System Approach Wheel

Source: https://targetzero.com/

Safety Countermeasure

A specific action or design change that reduces the risk or severity of crashes—such as adding crosswalks, improving lighting, narrowing lanes, or installing roundabouts. FHWA's Proven Safety Countermeasures initiative identifies 28 strategies effective in reducing fatalities and serious injuries on roads of all types. These countermeasures address at least one safety focus area—speed management, intersections, roadway departures, or pedestrians/bicyclists—and many address multiple areas. [4]

[3] https://www.transportation.gov/safe-system-approach
[4] https://highways.dot.gov/safety/proven-safety-countermeasures

Vision Zero
A strategy to eliminate all traffic deaths and serious injuries while increasing safe, healthy, and equitable mobility for everyone. Communities adopting Vision Zero commit to a target year for achieving zero deaths and implement policies and projects to redesign streets, manage speeds, and improve transportation safety for all users.[5]

Vulnerable Road User (VRU)
A person who is more likely to be seriously injured or killed in a crash because they have little or no physical protection. This group includes people walking, biking, using wheelchairs, or riding motorcycles, mopeds, or scooters.

[5] https://highways.dot.gov/safety/zero-deaths

Appendix B. Transportation Master Plan Safety Policies

The TMP takes a comprehensive approach to all modes of transportation and a broad range of project types, with a strong emphasis on safety. **Four of the six TMP goals** emphasize safety or include safety-related objectives. In total, **seven objectives** specifically identify safety priorities. **Each objective is paired with targeted policies** designed to help achieve these outcomes, as listed below:

Goal 1: Connectivity – Connect land uses in a safe and accessible way.

- **Objective 1.1** – Develop, maintain, and operate a balanced, safe, and efficient multimodal transportation system to serve all users and comply with the Regional Growth Strategy.
- **Objective 1.6** – Design and maintain designated truck routes to accommodate truck freight traffic and promote safe, sustainable, and efficient goods movement.
    - **Policy 1.12** – Evaluate and strive to mitigate conflicts between active transportation modes and freight mobility during the planning and execution of transportation improvement projects along designated truck routes.
    - **Policy 1.13** – Coordinate the allocation of curb space designations based on how development will change demand for the curb in the Burien Regional Growth Center (RGC) and Olde Town.
    - **Policy 1.14** – Protect the mobility and reliability of T–1 and T–2 Freight and Goods Transportation System (FGTS) routes; design all other streets to accommodate only first/last mile freight movements through utilizing engineering standards that are based on smaller design vehicles.
- **Objective 1.8** – Address safety issues in an organized, prioritized manner.
    - **Policy 1.17** – Conduct an annual review of collisions and crash locations in Burien, and place a high priority on those locations with relatively higher numbers of vehicle or pedestrian/bicycle collisions.
    - **Policy 1.18** – Develop a Local Road Safety Plan to identify systemic safety conditions in Burien, develop a list of action items to improve safety, pursue grant funding for safety projects, and regularly update the plan.
    - **Policy 1.19** – The City will integrate the Safe System Approach into roadway design standards and related policies, and project development processes and be consistent with industry best practice.
    - **Policy 1.20** – Roadway design shall consider safety and multi–modal level of service standards to meet both transportation level of service goals and safety goals to the greatest extent feasible. However, safety of active transportation users shall be prioritized over vehicle level of service standards.
    - **Policy 1.21** – Safety countermeasures will be incorporated into roadways as recommended by the Federal Highway Administration and as appropriate to City roadways as funding allows to potentially reduce roadway fatalities and serious injuries.
- **Objective 1.9** – Place high priority on the access needs of public safety vehicles.
    - **Policy 1.22** – Maintain and improve convenient access for emergency vehicles.
    - **Policy 1.23** – Maintain the transportation system to support entities providing emergency response services.
    - **Policy 1.24** – Prioritize emergency vehicle routes and access to hospitals and trauma care centers.

- **Policy 1.25** – Actions will be taken, as applicable, after crashes involving serious injury or fatality, to reduce or eliminate the possibility of repeat crashes at the location due to malfunctioning or failing traffic control devices.
- **Policy 1.26** – Coordinate transportation improvements and plans with the Burien Fire Department and Burien Police Services.

Goal 2: Travel Options – Ensure that people can get around safely with or without a car.

- **Objective 2.6** – Create a safe and convenient environment for walking and bicycling integrated with roads and other transportation facilities.
    - **Policy 2.22** – Encourage pedestrian walk lights, pedestrian leading intervals, limiting right turn on red, and bicycle activated signal detection at traffic control signals.
    - **Policy 2.23** – Work with the Highline School District to implement safe routes to school, to assure that safety and crash prevention for pedestrian and bicycle travel to school receives the highest consideration. The safest routes to school should include transportation facilities that:
        - Provide pedestrian pathways on streets connecting to, or within, the school zone, and pedestrian facilities that are physically separated from vehicle and bicycle traffic;
        - Locate appropriate signs to alert motorists entering school zones;
        - Install adequate lighting along roadways and pathways;
        - Use appropriate traffic–calming devices in school zones;
        - Establish crosswalks in areas of good sign visibility, lighting and proximity to connecting modes; and
        - Promote safe and convenient pedestrian and non–motorized access to bus transportation. (Amended, Ord. 445, 2005)
    - **Policy 2.24** – Encourage bicycle and pedestrian travel within the City by:
        - Providing and promoting the development of pedestrian and bicycle paths between neighborhoods and other activity centers, such as schools, parks, transit and the Burien Regional Growth Center (RGC);
        - Enforcing development standards pertaining to building setbacks, location of parking, parking standards, as well as amenities for people walking and bicycling.
        - Encouraging the location of bicycle racks at appropriate destination points, such as outside of commercial businesses, City Hall, parks, schools, and transit facilities;
        - Minimizing potential conflicts between pedestrian, bicycle and automobile traffic by providing signage at intersections of trails and paths with roadways; and
        - Accommodating bicycles and pedestrians safely in the management and design of the City street network.
    - **Policy 2.25** – Require new development and redevelopment to incorporate pedestrian supportive measures such as:
        - Providing secure and attractive pedestrian spaces;
        - Providing adequate sidewalks, bikeways, pathways and crosswalks;
        - Minimizing walking distances between buildings and street, sidewalks and transit stops;
        - Clustering buildings near each other, near streets, sidewalks and transit stops;
        - Preserving the connectivity of the pedestrian, bicycle and street system;

        - Reducing vehicle speeds, walkway crossing distances and improving visual character of neighborhood streets (through measures such as reduced street widths); and
        - Designing transit access into large developments, considering bus lanes, stops and shelters as part of the project. Where the pedestrian facilities are required and additional facilities are needed to complete a system of facilities, actual construction of the required pedestrian facilities may be delayed through agreement that they would be constructed along with adjacent facilities at a later date.

- **Policy 2.26** – Design and manage the street network to improve the attractiveness of existing street corridors to pedestrians, and shall incorporate high standards of design when developing new streets, including sidewalk construction where appropriate. Implement landscaping measures to enhance the walking experience. To the extent feasible without impairing street capacity, safety, or structural integrity, preserve existing trees along street rights–of–way.
- **Policy 2.27** – Optimize the ability of pedestrians to travel on arterial and non–arterial roadways in residential areas and emphasize personal safety and connectivity to other activity areas. Pedestrian facilities should be:
    - Required along arterials, where there is a need for enhanced pedestrian safety because of the larger traffic volumes and higher densities of development;
    - Encouraged along roadways serving multifamily areas, and encouraged to link these areas to other activity centers and pedestrian oriented areas within the City;
    - Encouraged along roadways within a one–half mile radius of schools, to provide safe pedestrian connections to residential areas for children.

- **Policy 2.28** – Whenever the City contemplates reconstruction or major maintenance work on a City street not having sidewalks, fully explore the ability to provide sidewalks and implement if consistent with the plan. This may include the identification of potential funding sources; aggressive promotion of a LID to finance the sidewalk portion of the work; and the consideration of sidewalks as an "alternate" in construction bid documents. Install sidewalks on both sides abutting multifamily and commercial development and where planned single–family residential densities are greater than five units per acre. (Amended, Ord. 445, 2005)
- **Policy 2.29** – Plan and construct pedestrian crossings consistent with the City's adopted crosswalk policy. These guidelines provide guidance on the appropriate types of crossing treatments to install based on roadway characteristics like vehicle volumes, speeds, and the number of lanes. The guidelines also include design suggestions for selecting pedestrian–oriented geometric roadway treatments, signing and striping of pedestrian crossings, and beacon and signal treatments.

Goal 3: Equity – Prioritize investments for those who have the least access.

- **Objective 3.2** – Ensure that transportation plans and policies support active living, healthful food access and safe use of the transportation system, including access to schools for all users including people walking, bicycling, persons who use a wheelchair or other ambulation devices, seniors, youth, people with low incomes, and residents of all ages and abilities.

    - **Policy 3.6** – Emphasize on active living and healthful food access components when considering transportation project funding priorities.

Goal 5: Strategic Funding – Optimize limited funding and reduce ongoing maintenance and preservation costs.

- **Objective 5.3** – Implement demand management measures that relieve congestion and safety concerns on Burien roadways.

Policy 5.6 – Coordinate with the County and neighboring jurisdictions to implement concurrency strategies and provide for mitigation of shared traffic impacts through street improvements, signal improvements, intelligent transportation systems improvements, transit system improvements, or transportation demand management strategies

Appendix C. CSAP Community Engagement

Outreach Overview

Building on the extensive community engagement from the Shape Your City initiative, the project team launched an online engagement effort to gather input on transportation safety for the CSAP. This effort included two components: an interactive map where community members could identify specific locations with safety concerns, and a survey that collected additional details about key safety issues and demographic information. The City of Burien's Communications Department promoted the engagement activities, which were open from February 24th to April 21st, 2025, through the City's newsletter, website, and online engagement hub.

Interactive Map

The project team designed an interactive map to let community members pinpoint locations where they experience transportation safety concerns. Participants dropped markers on the map to highlight areas where they felt unsafe walking or rolling, biking, driving, or using other travel modes. They then added written descriptions of the issues at each location. Participants could place multiple markers and upvote locations and concerns identified by others.

Results

A total of 36 contributors engaged with the interactive map, resulting in 140 combined contributions and upvotes—referred to collectively as comments.[1] As shown in **Figure 1,** contributors marked 56% of comments as walking or rolling concerns, 24% as driving concerns, 19% as biking concerns, and 1% as other transportation safety issues.

Figure 1. CSAP Interactive Map Comments by Mode

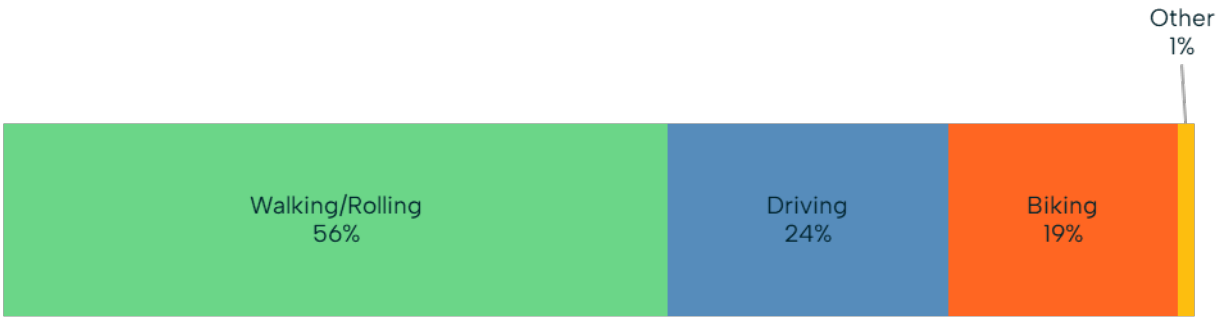
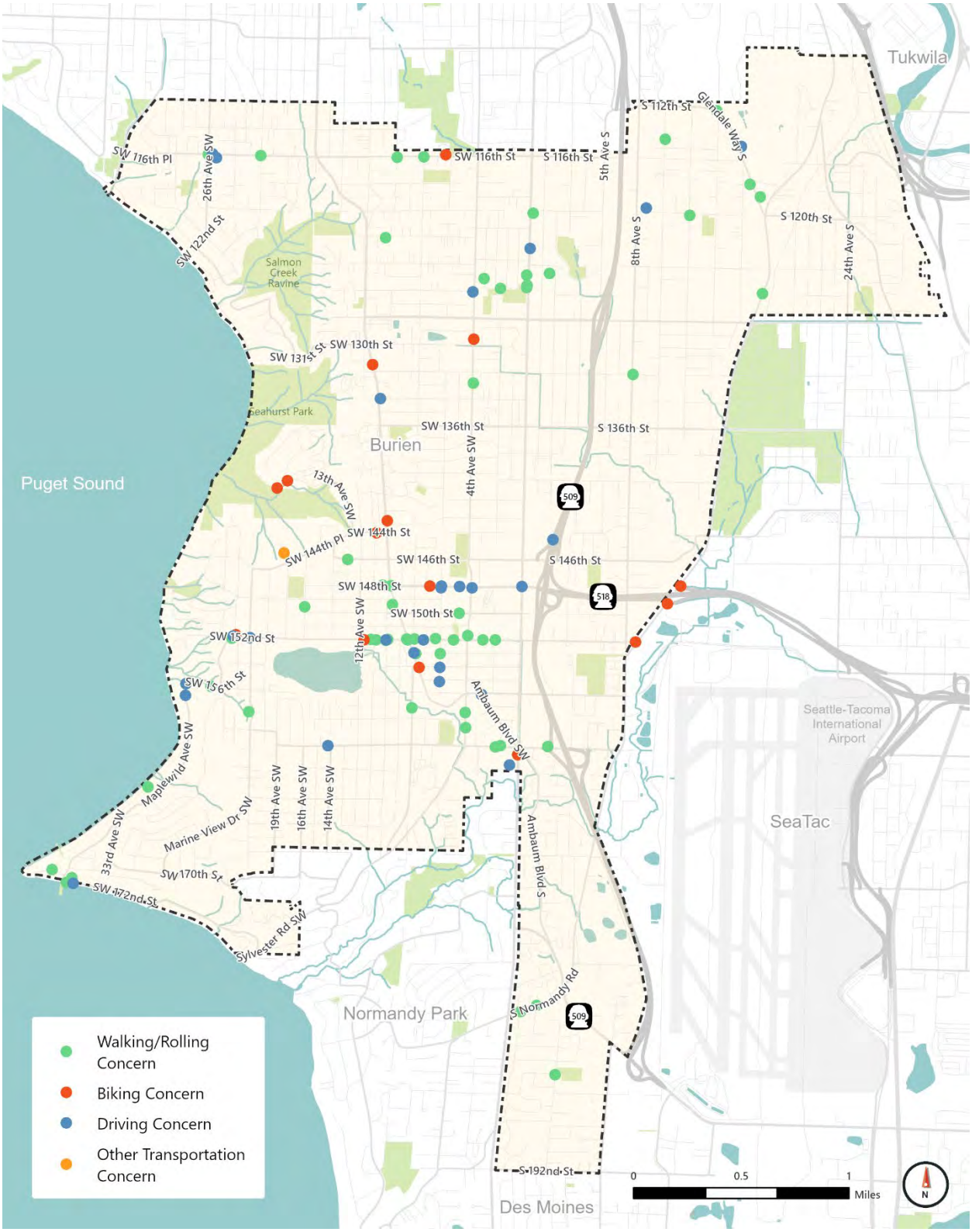


Figure 2 displays the location of comments, symbolized by mode.

[1] "Contributors" refers to unique individuals who submitted comments. "Contributions" are the individual comments provided by contributors. "Upvotes" represent comments that were liked or endorsed by other contributors. For reporting purposes, each contribution was counted as one comment, and each upvote was also counted as an additional comment. The TMP data was analyzed in the same way.

Figure 2: CSAP Interactive Map Comment Locations by Mode



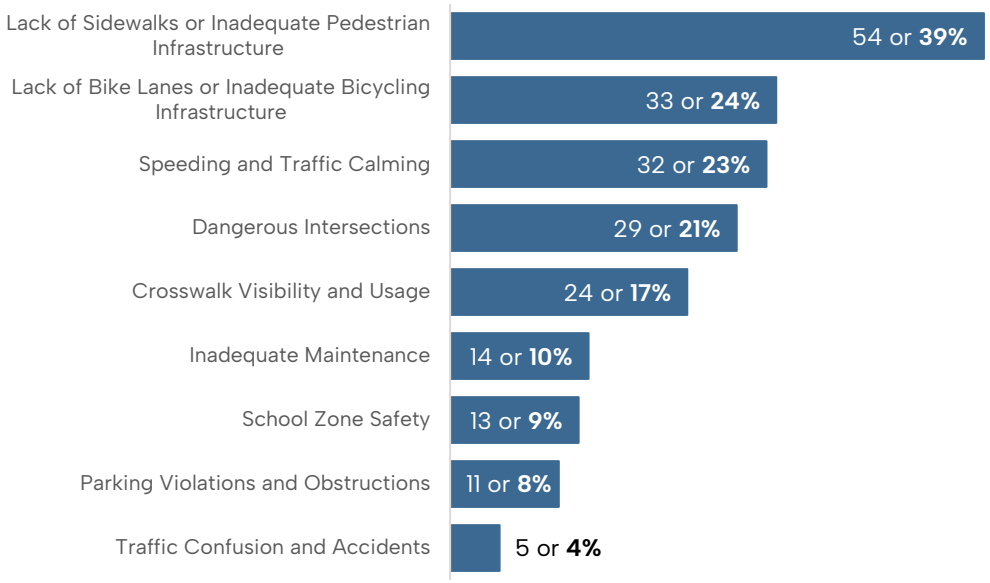
Source: Fehr & Peers, 2025.

Based on analysis of the comments, the top areas of concern related to safety included:

- **Expanded sidewalk coverage.**
- **Expanded bicycle lane coverage.**
- **Concerns about speeding vehicles**, particularly in school zones and residential areas.
- **Concerns about intersections** such as visibility, higher visibility crossings, and traffic control devices.
- **Concerns about crosswalks that are difficult for drivers to see**.

Individual comments could fall under multiple themes. **Figure 3** shows the distribution of comments across each theme.

Figure 3: Distribution of Map Activity Comments Across Key Themes



Survey

The project team developed a survey to gather more information about key transportation safety challenges faced by community members, as well as to better understand the demographics of those who participated in the outreach activities.

Results

The survey received 28 responses. Results for each question are summarized below.

Figure 4: How do you primarily travel around Burien? (Select all that apply)

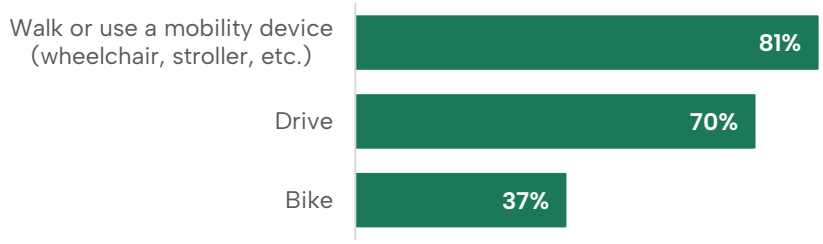


Figure 5: What safety challenges do you face when traveling around Burien? (Select all that apply)

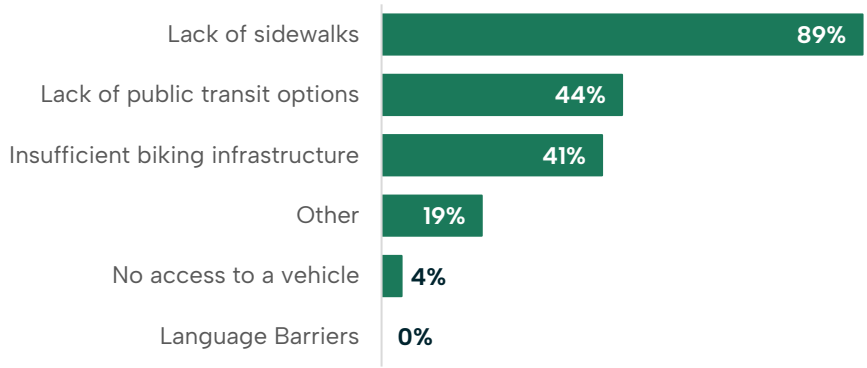
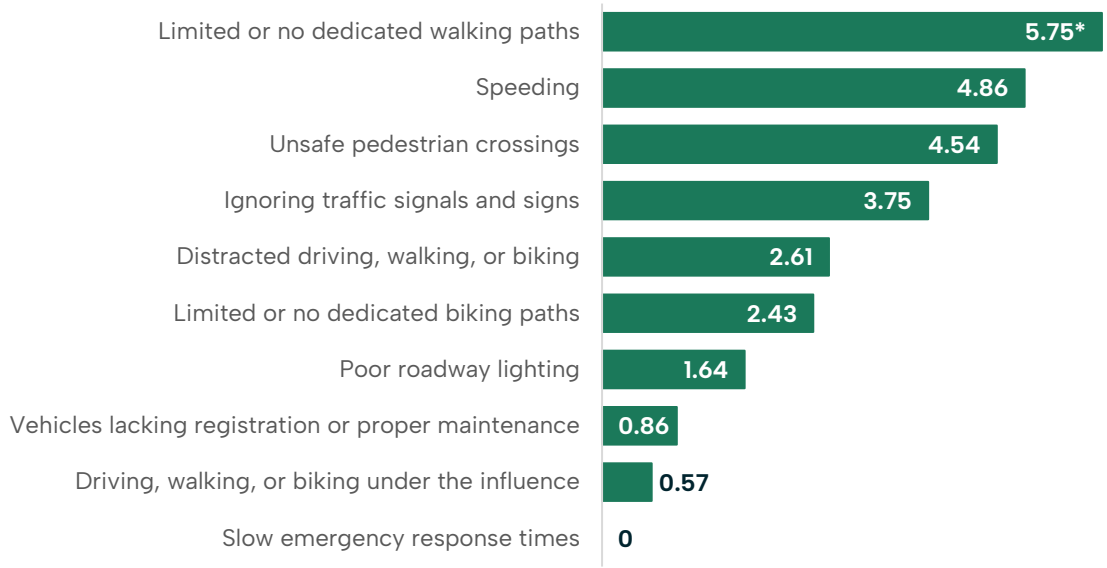


Figure 6: What are your three greatest transportation safety concerns?



*Scores are the sum of the weight of each ranked position, multiplied by the response count for each position choice, divided by the total contributions. Weights are inverse to ranked positions.

Figure 7: What is your age?

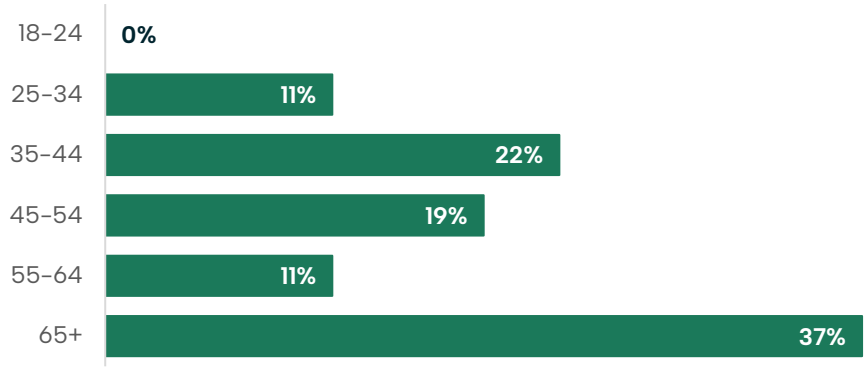


Figure 8: What is your gender?

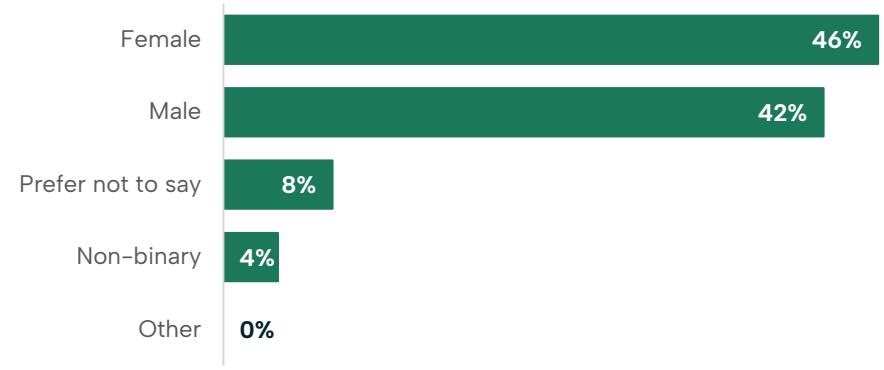


Figure 9: Which of the following best describes your race and ethnicity? (Select all that apply)

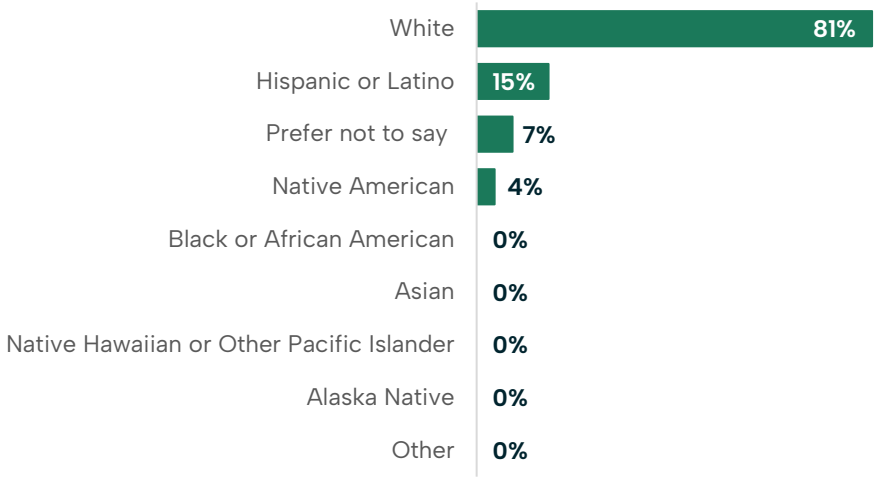
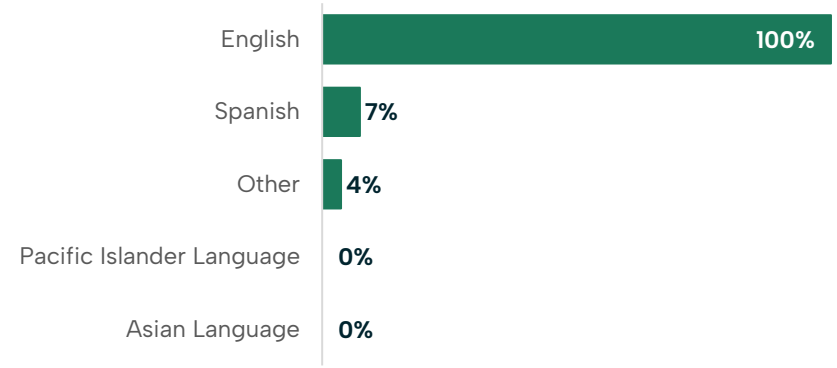


Figure 10: What languages do you speak at home? (Select all that apply)



Appendix D. Task Force Meeting Content









Burien

Comprehensive Safety Action Plan

Task Force Meeting #1

FEHR & PEERS

May 13th, 2025

Agenda

- Introductions
- Burien CSAP Overview
- Existing Conditions Crash Data Review
- Group Discussion
- Next Steps



Introductions

Role of the Task Force

- Advise and shape what goes into the CSAP
- Not a voting body
- Meet three times:
  - **Today**: Introduction and Existing Conditions
  - **Meeting 2**: Solutions and Projects
  - **Meeting 3**: Plan Content Review



Vocabulary

- **Comprehensive Safety Action Plan** – prioritized work plan to reach zero fatalities and serious injuries on the transportation network
- **Crashes or Collisions** not accidents
- **KSI** – Killed or Serious Injury Crashes
- **Systemic Safety** – Applying changes to a system based on risk, not just history
- **Vulnerable Road Users** – Non-motorists (pedestrians, bicyclists, or wheelchair users.)

Key Steps in the Plan



THE SAFE SYSTEM

APPROACH

Zero is our goal. A Safe System is how we will get there.

Imagine a world where nobody has to die from vehicle crashes. 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. Here's what you need to know to bring the Safe System approach to your community.



Overview of Crash Data (2019–2023)

3,713 Total crashes

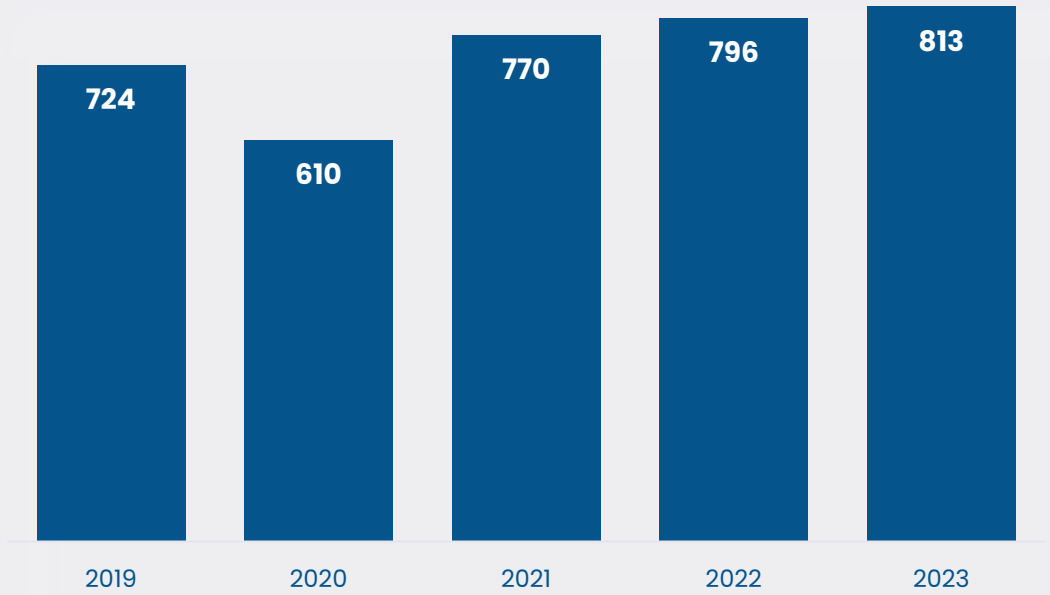
112 crashes resulted in serious injury or death (KSI)

4 modes

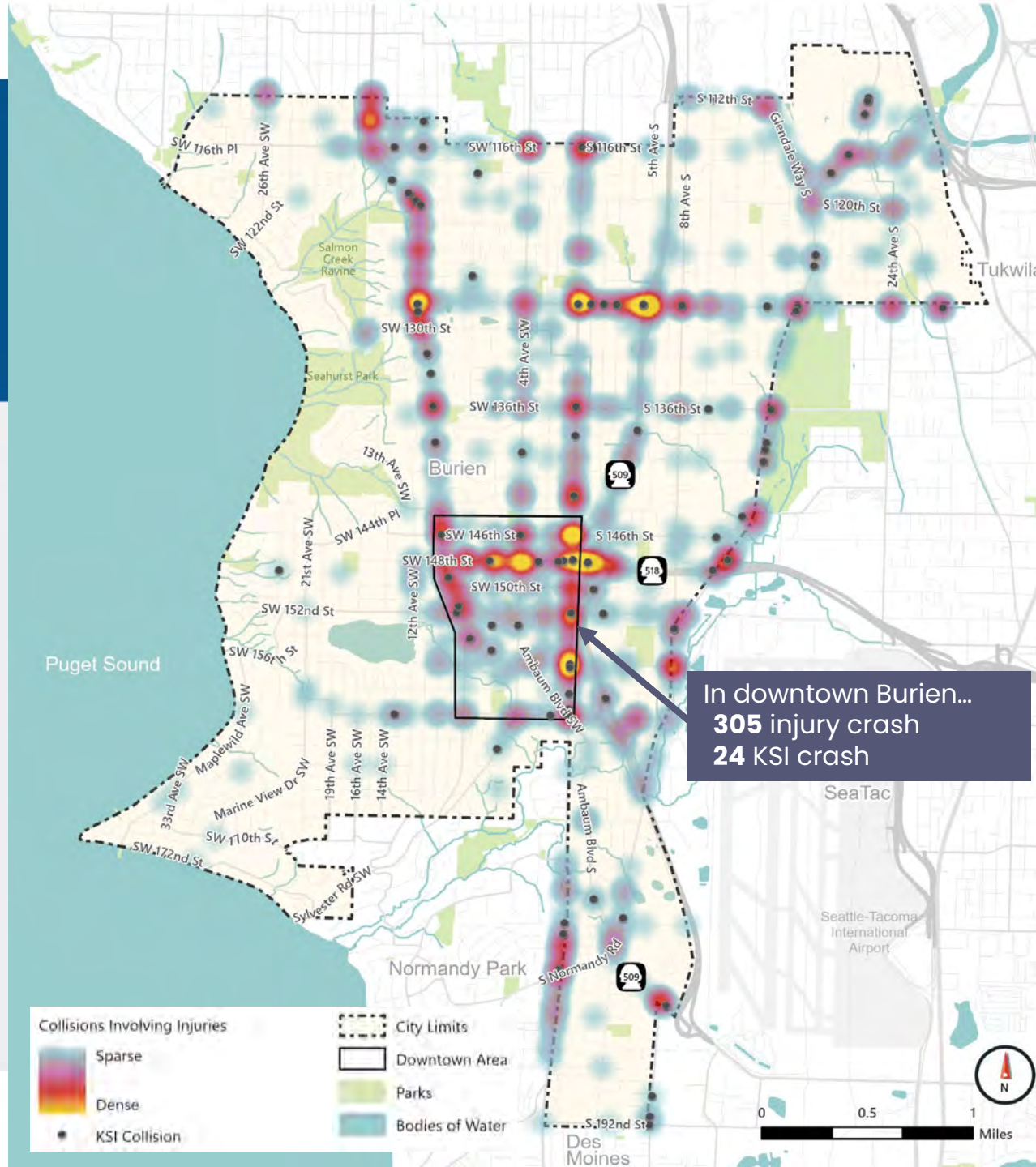
- Vehicle only
- Pedestrians
- Bicyclists
- Motorcyclists

The data includes all reported roadway crashes in the City of Burien from 2019 to 2023, including city-owned roadways, state routes, and border streets.

Crash Overview



All Crashes (2019 – 2023)

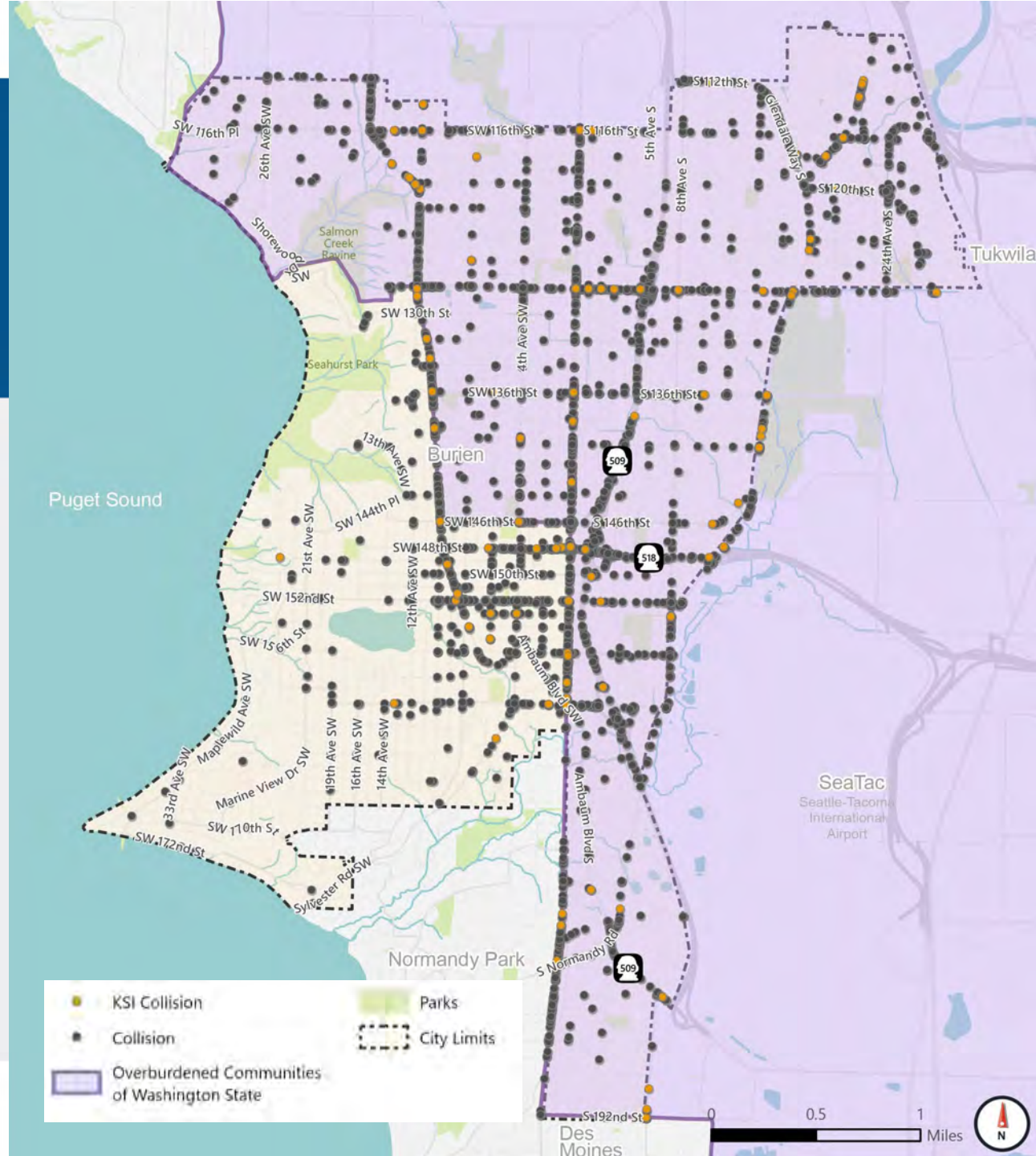


Overburdened Communities of Washington State

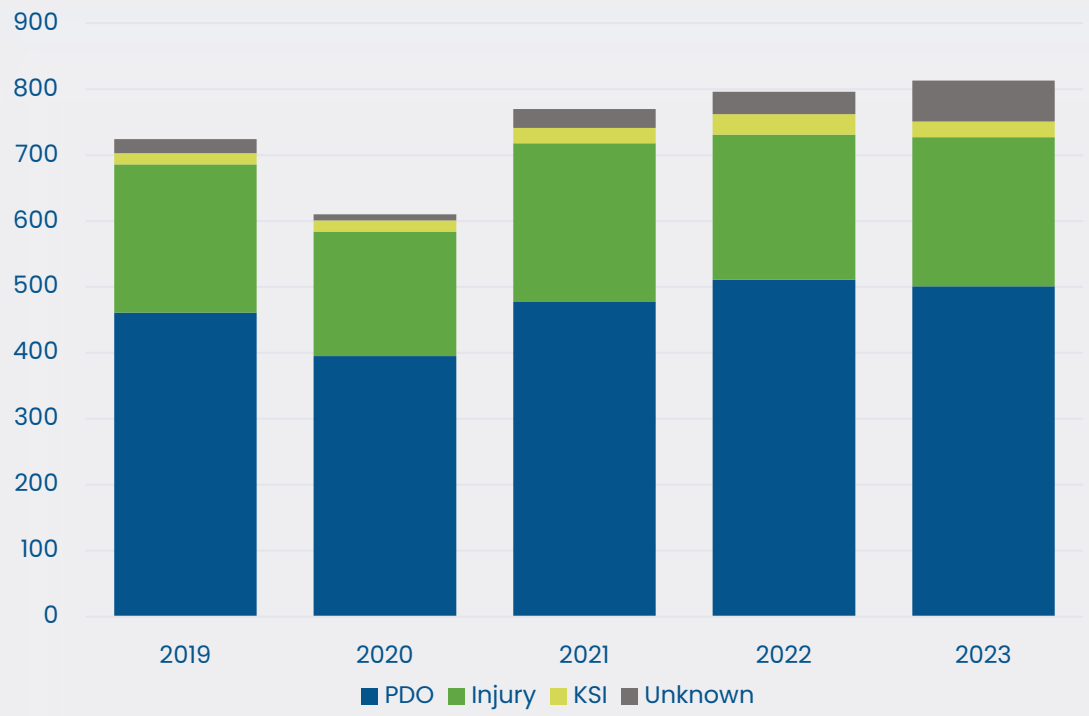
66% of Burien's total land area is within an overburdened census tract.

Burien's overburdened census tracts accounts for...

- **82%** of all crashes
- **85%** of KSI crashes



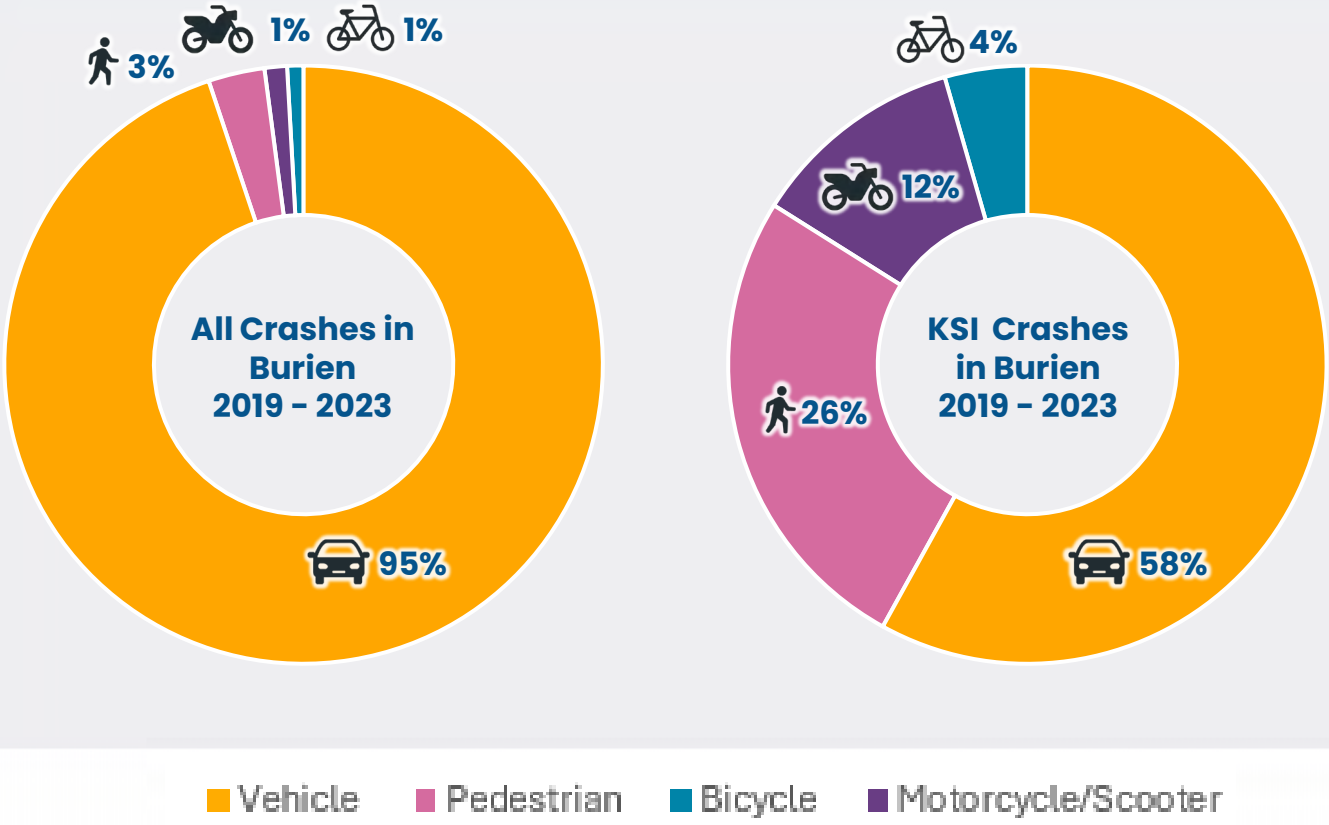
Crashes by Year & Injury Type



Between 2019 and 2023...

- **12% increase** in the total number of crashes
- **41% increase** in the number of KSI crashes

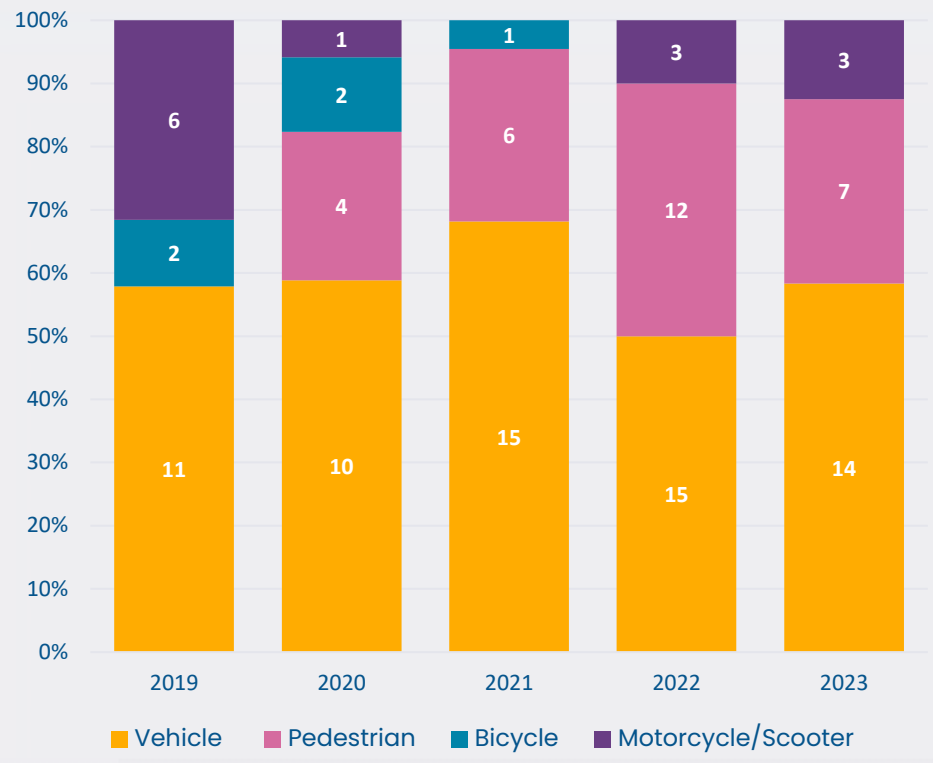
All Crashes vs. KSI Crashes by Mode

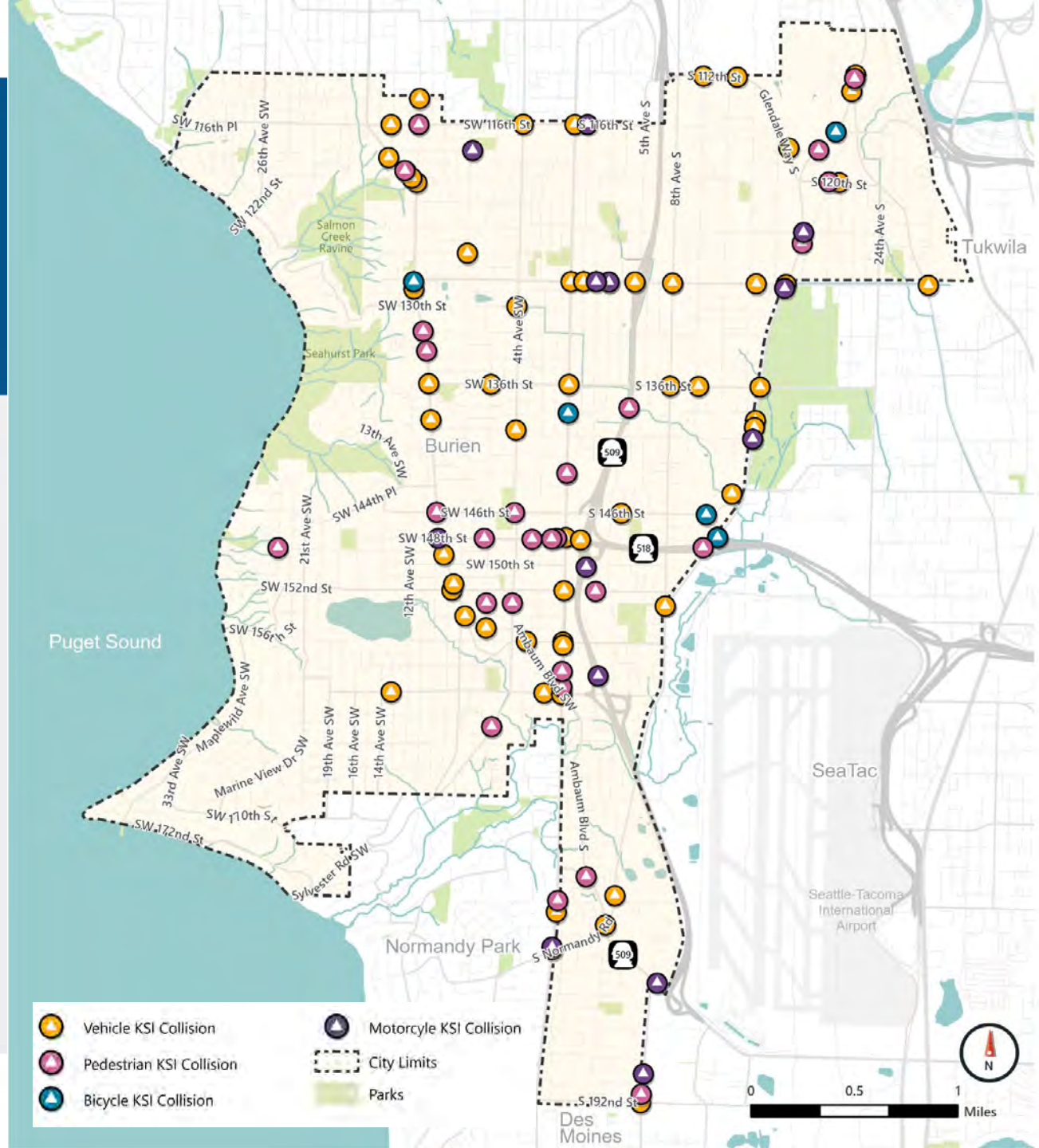


Vulnerable road user crashes account for…

- **5%** of all crashes
- **42%** of KSI crashes

KSI Crashes by Mode





Draft High Injury Network: All Modes

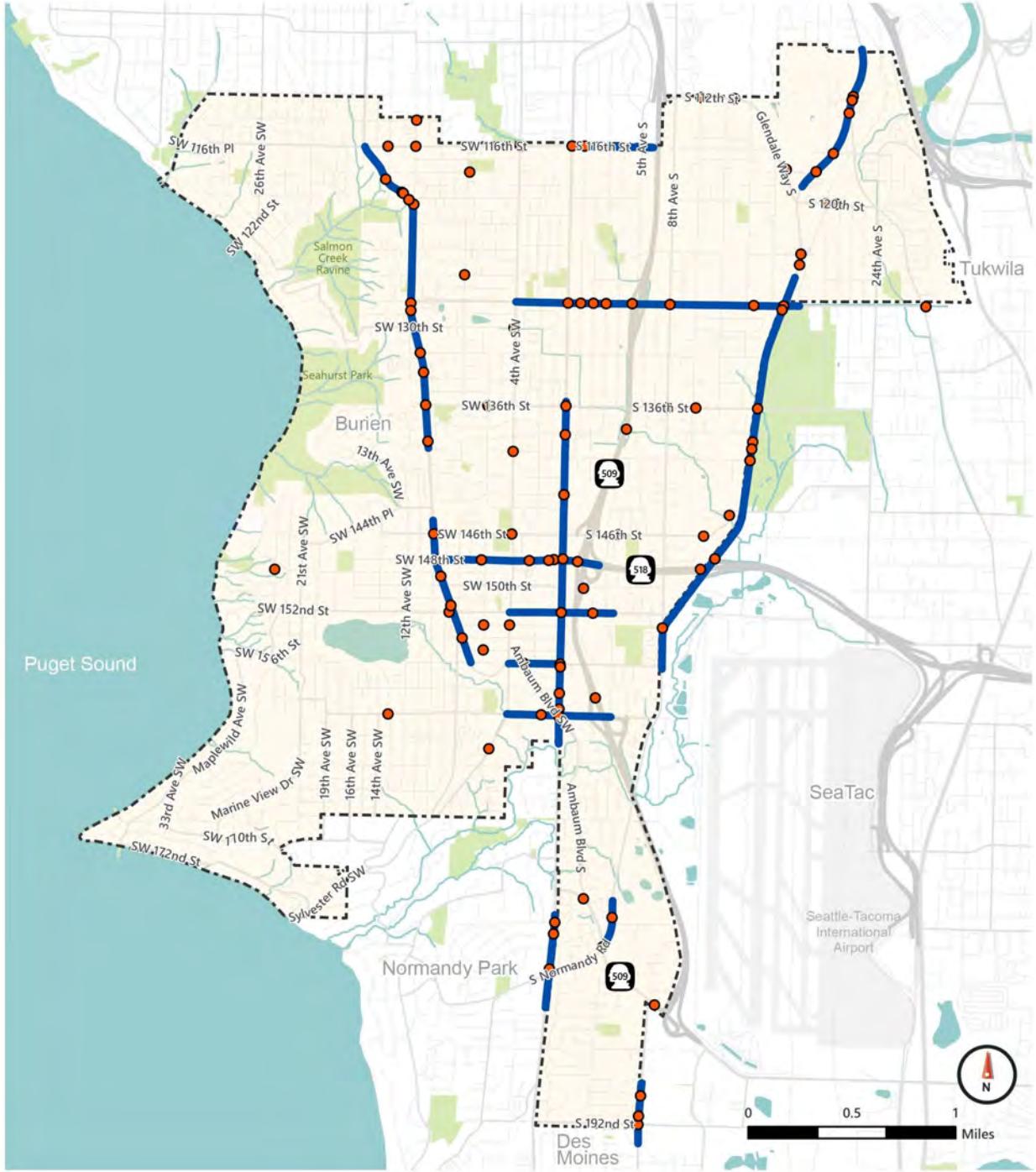
All Modes HIN = **6%** of Burien Streets

- **48%** of All Crashes
- **67%** of All KSI Crashes

City Limits

High Injury Network (all modes)

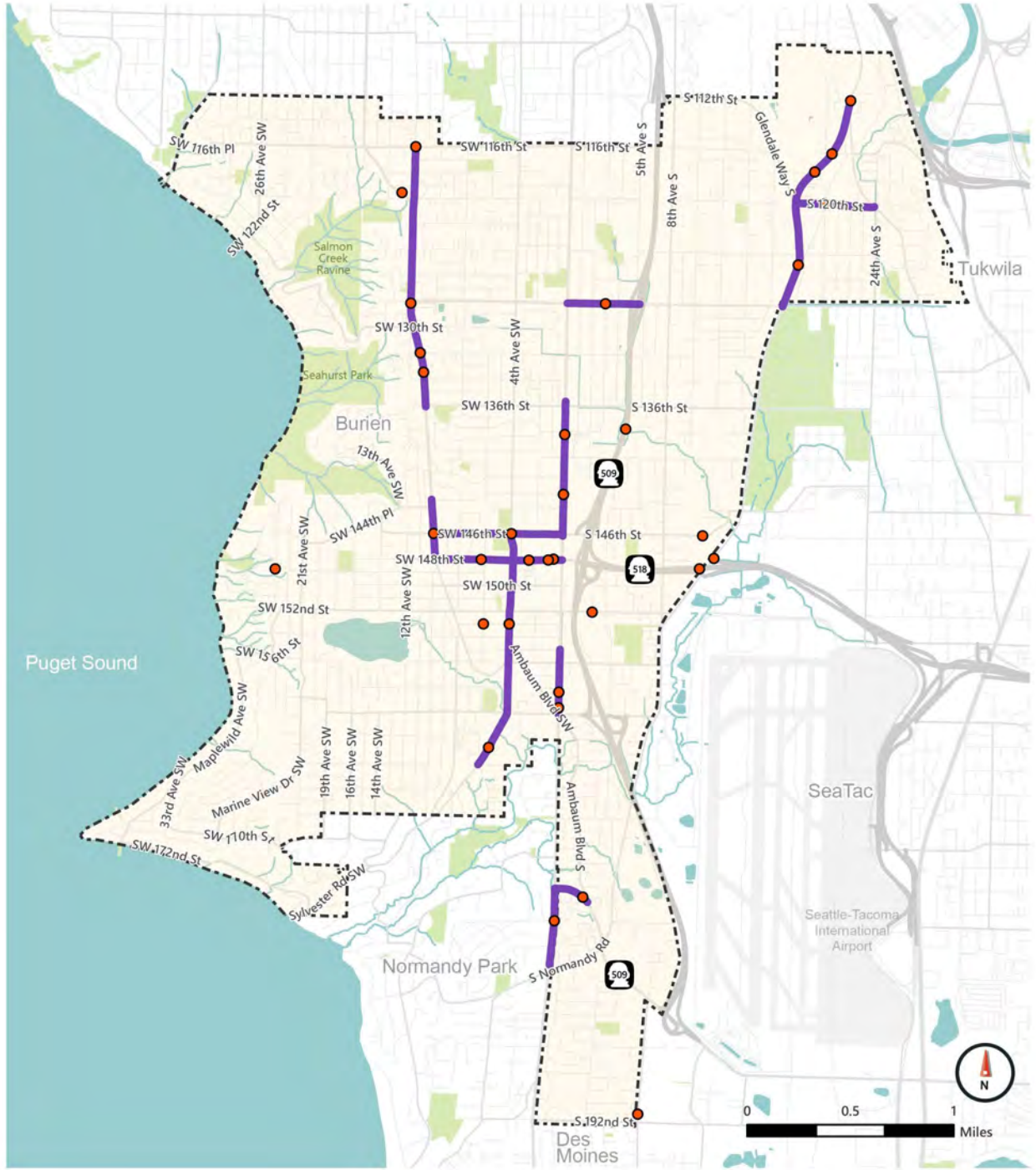
KSI (all modes)



Draft High Injury Network: Bike/Ped

Bike/Ped HIN = **4%** of Burien Streets

- **50%** of Bike/Ped Crashes
- **74%** of Bike/Ped KSI Crashes



Discussion

What are your greatest transportation safety concerns in Burien?

What kinds of things would you like to be considered in this plan?

What surprises you about the data or findings? What resonates with you?

What do you think would be the biggest challenges to navigate for improving safety in Burien?

Milestones

Advisory Group Meeting #1
Today

Data
Report Back

Advisory Group Meeting #2
End of April/Early May

Priority Safety Project Development

Advisory Group Meeting #3
Beginning of June

Draft Safety Projects/Solutions

Next Steps

- Compile feedback
- Identify crash trends
- Develop prioritization metrics
- Identify priority locations











Burien

Comprehensive Safety Action Plan

Task Force Meeting #2

FEHR & PEERS

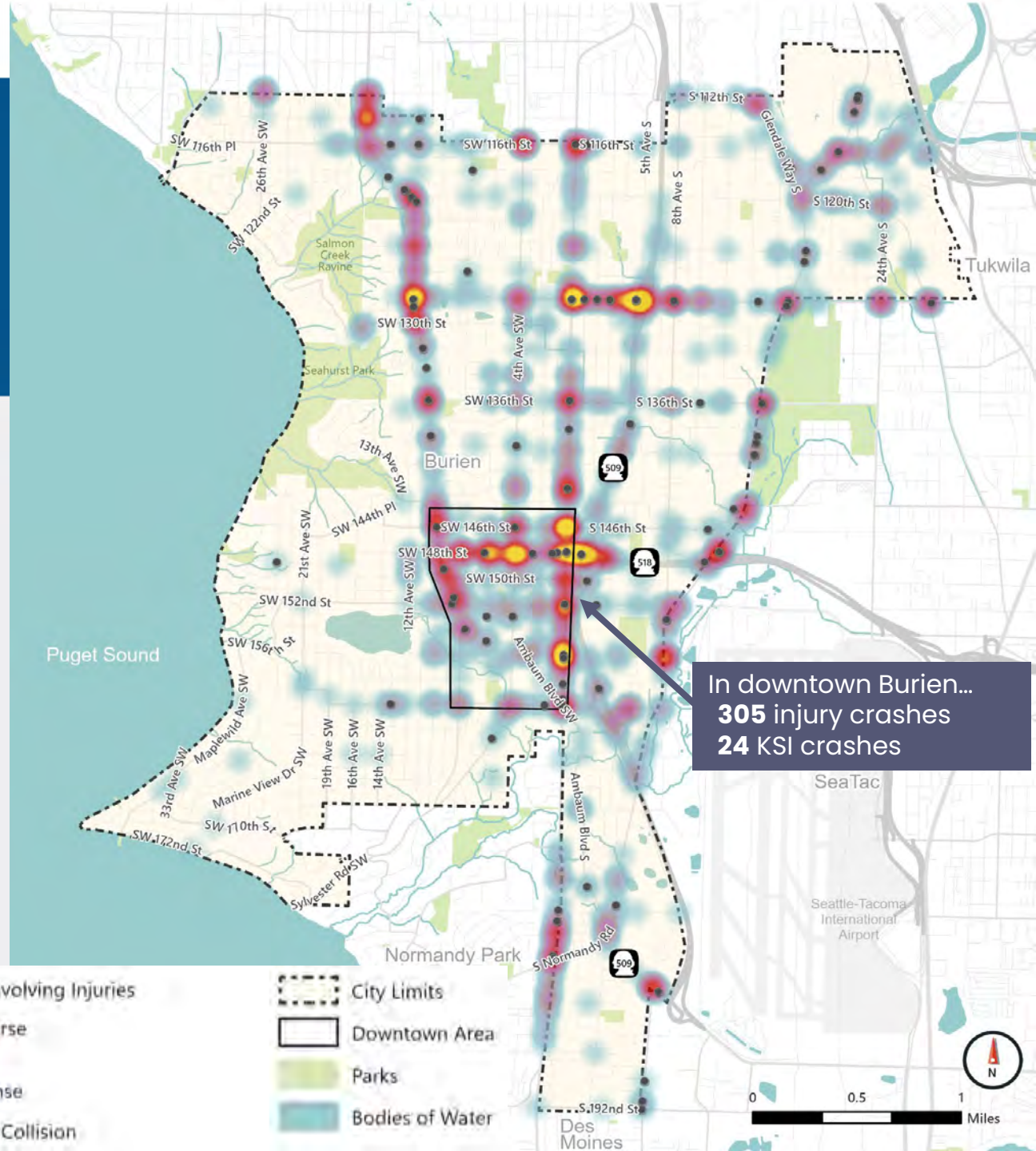
April 30th, 2025

Agenda

1. Recap of Meeting 1
2. Community Engagement Summary
3. Systemic Analysis
4. Project Prioritization Exercise
5. Next Steps

Recap of Meeting 1

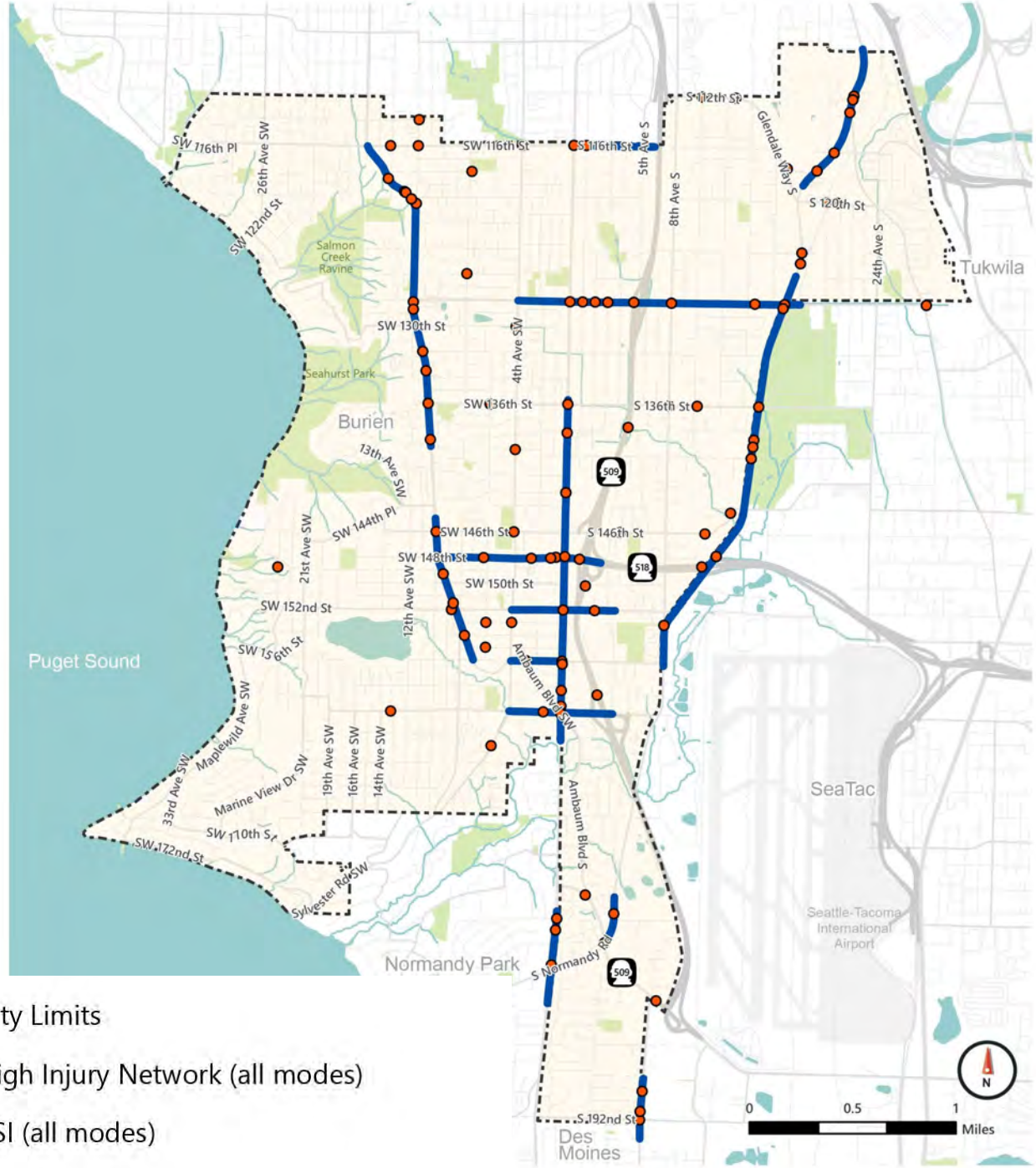
- Review of Task Force
- Review of existing conditions
  - Crash locations
  - KSI crash locations
  - Overburdened Communities
  - Public Comments
- Discussion of safety concerns



Draft High Injury Network: All Modes

All Modes HIN = **6%** of Burien Streets

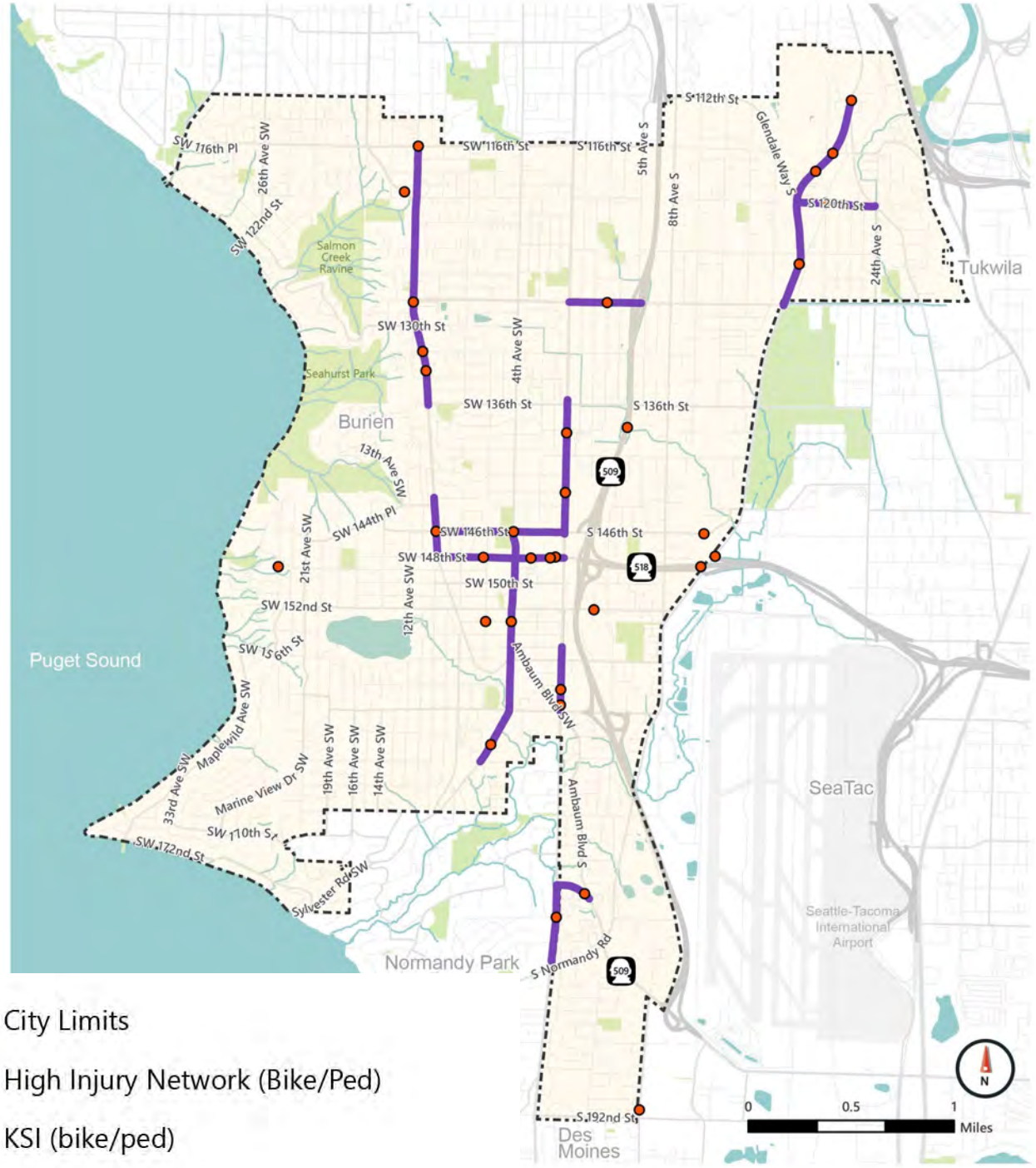
- **48%** of All Crashes
- **67%** of All KSI Crashes



Draft High Injury Network: Bike/Ped

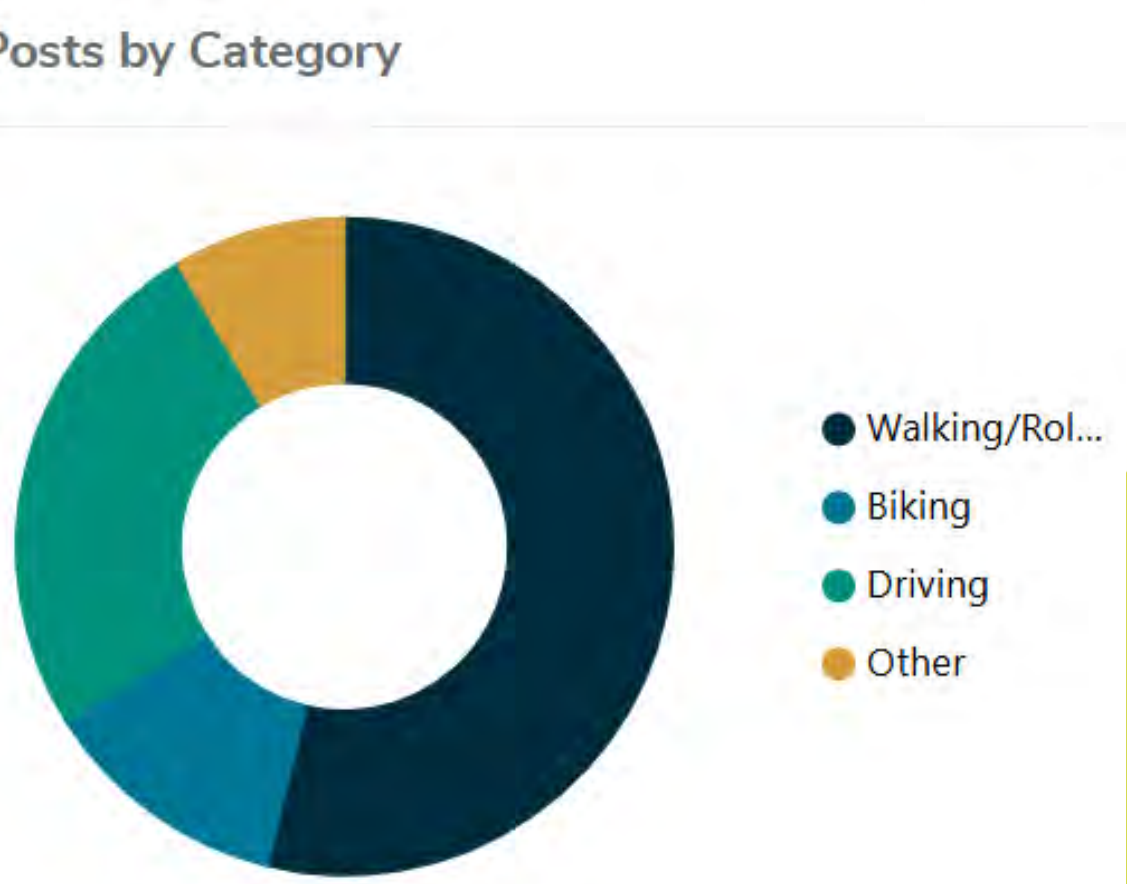
Bike/Ped HIN = **4%** of Burien Streets

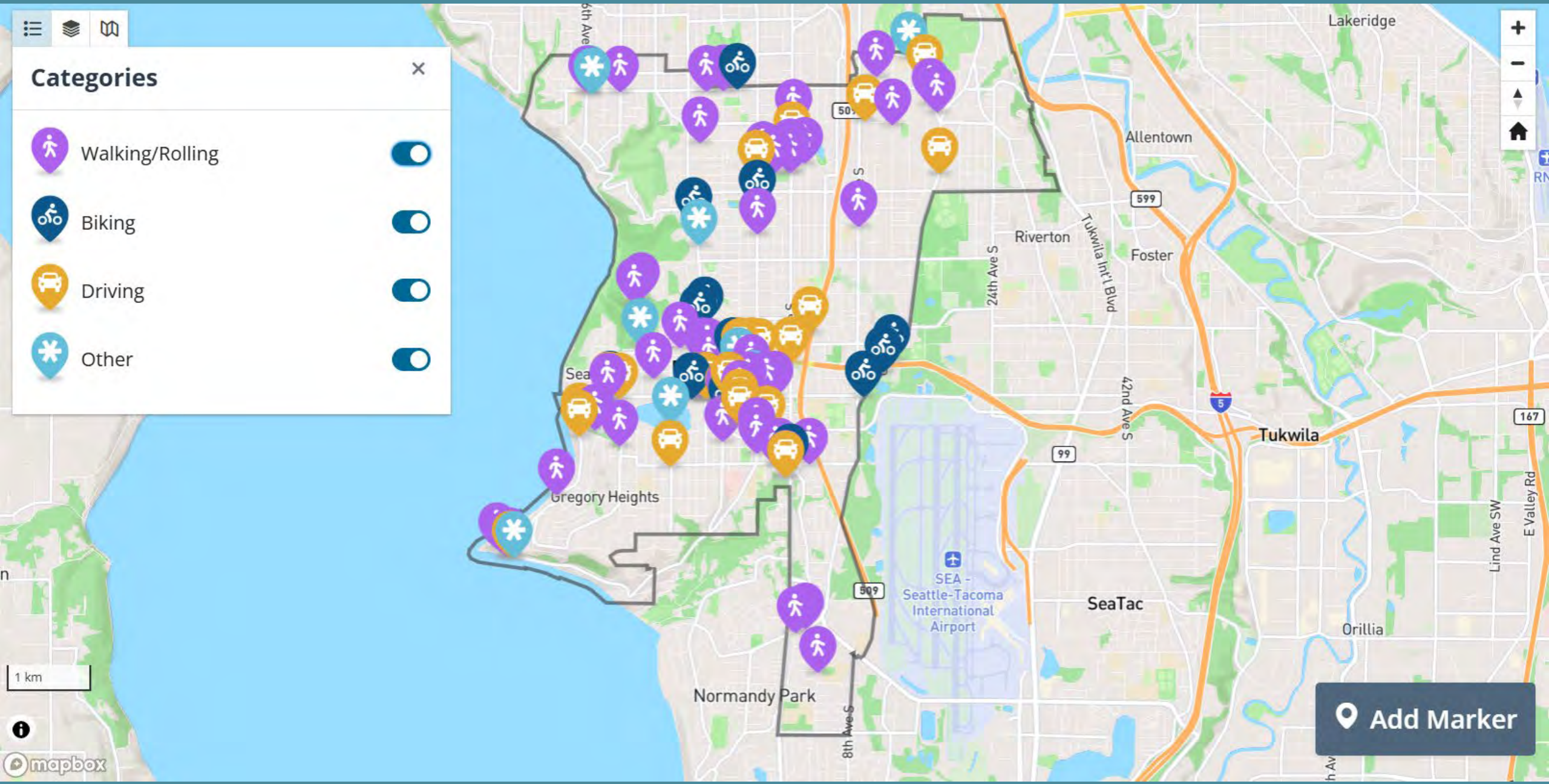
- **50%** of Bike/Ped Crashes
- **74%** of Bike/Ped KSI Crashes



Social Pinpoint Outreach Summary

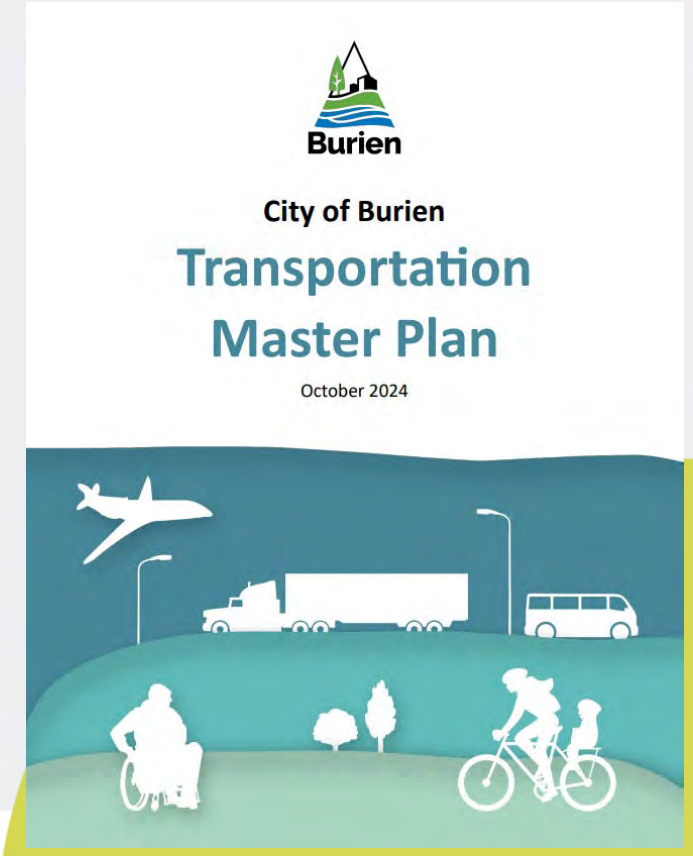
- **133 contributions** from **40 contributors**
- Most map comments discuss **walking/rolling** or **driving**
  - Aligns with survey results: most people primarily get around Burien by **walking/rolling or driving**
- Majority of people listed **lack of sidewalks** as a **safety challenge**
- Respondents skew **older**, with the majority being **white** and **English**-speaking




Categories
Walking/Rolling
Biking
Driving
Other
Lakeridge
Allentown
Riverton
Foster
Tukwila
SeaTac
Orillia
Normandy Park
Gregory Heights
SEA - Seattle-Tacoma International Airport
599
99
509
5
167
24th Ave S
42nd Ave S
Tukwila Int'l Blvd
Lind Ave SW
E Valley Rd
8th Ave S
1 km
mapbox
Add Marker

Community Engagement in TMP Update

- Extensive community engagement efforts were conducted through the **SHAPE YOUR CITY Comprehensive Plan Update** and **2024 Transportation Master Plan (TMP)**.
- The project team conducted **interviews** and **outreach** with **residents**, **businesses**, **community organizations**, and **City staff,** including:
  - Two public open houses
  - Multiple online surveys and a webmap
  - Meetings with local walk and bike advocates, high school students, and other community members



What did the Community say about safety?





Community Needs & Desires

- ✓ **Safe bicycle and pedestrian facilities** for **all ages and abilities**, especially seniors and children.
- ✓ **More sidewalks** throughout Burien, especially in places with higher traffic volumes and near schools **to provide safe routes to schools**.
- ✓ **Improved lighting and maintenance** on existing **bicycle and pedestrian** facilities.
- ✓ High visibility **crossings**, **separated** bicycle and pedestrian **facilities**, traffic **calming**.
- ✓ **Improved multimodal access** to the **Burien Regional Growth Center** (RGC) from surrounding areas.
- ✓ Preference for **policies that make space for active transportation** projects.
- ✓ Preference for **safety themes in policy** ideas.

Areas of Particular Concern

- Streets around schools
- Connections between parks
- 1st Avenue S
- Military Road S
- 21st Avenue SW
- SW 160th Street
- SW 172nd Street
- Ambaum Boulevard



Systemic Analysis Overview

What is a systemic analysis?

Process for identifying contextual transportation trends in crash data that we can extrapolate to other locations with similar conditions.

Purpose: proactively address transportation safety concerns

What data did we review?

- Modes
- Speed
- Functional Class
- Land Use
- Overburdened Communities of WA
- Transit stops/stations
- Schools
- Intersections (major vs. local)
- Bike Facilities
- Lighting
- Crosswalks
- Signalization
- Sidewalk presence
- Freight Routes

Systemic Analysis Statistics

- **Arterials:** 61% of all KSIs occur on arterials with 35+mph speed limit.
- **Land Use:** 67% of KSIs occur within commercial and downtown land uses.
- **Overburdened Communities:** 79% of Vulnerable Road User KSIs occur within Overburdened Communities.
- **Schools:** 76% of bicycle and pedestrian KSIs occur within ½ mile of schools.
- **Missing Bike Facilities:** 24 of the 33 total bicycle crashes occur on streets without bicycle facilities.
- **Intersections:** 93% of all KSI crashes that occurred at an intersection are at major intersections.
- **Darkness:** 48% of KSIs occur during dark periods.

Arterials with a Speed Limit of 35+ mph

All Modes

- ***11% of streets*** *in Burien are arterials with 35+mph speed limit*
- ***61% of all KSIs*** *occur on arterials with 35+mph speed limit*

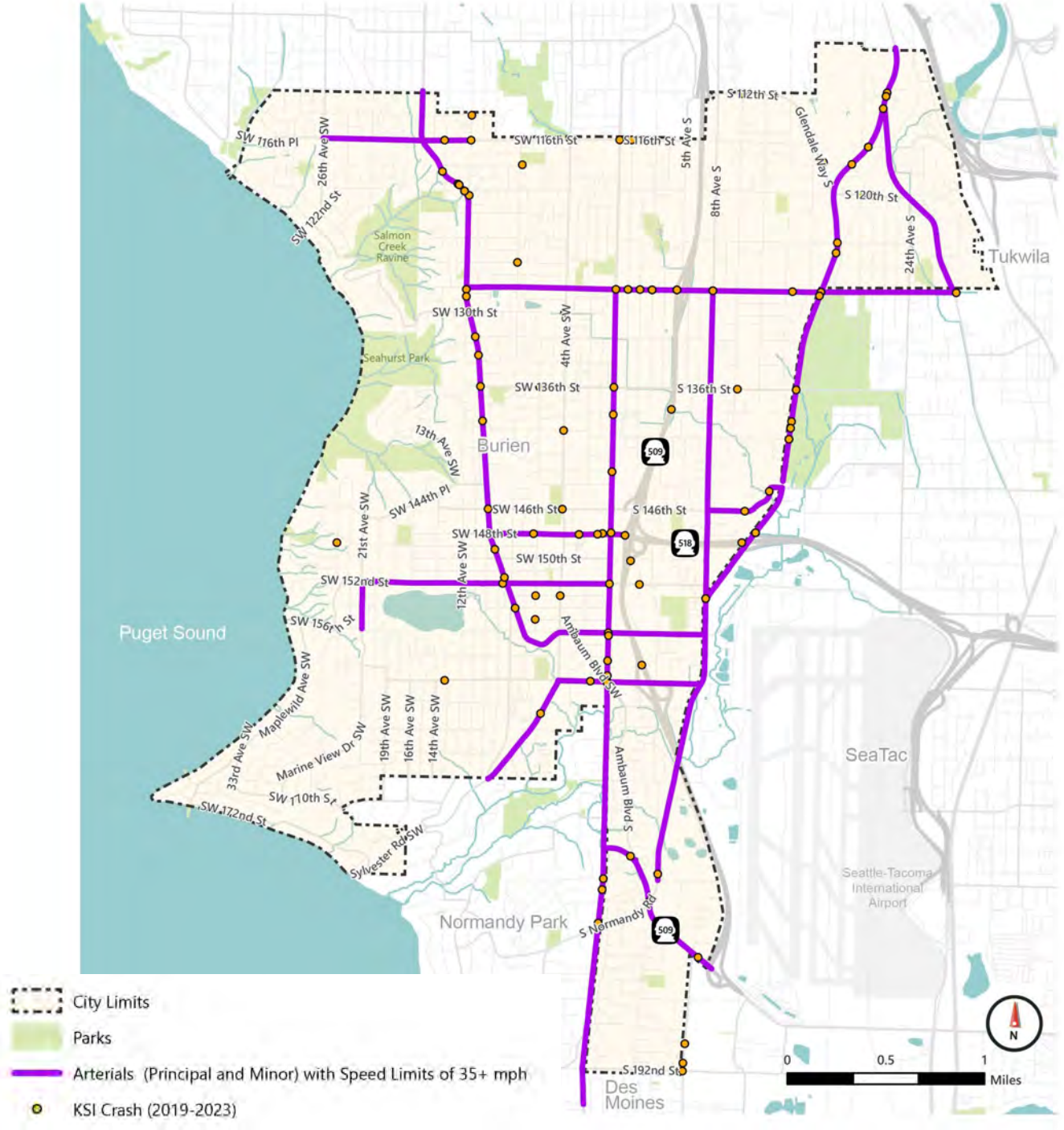
Top Crash Circumstances:

KSI: ***Under the Influence*** *of Alcohol*

All: ***Did not Grant Right of Way*** *and* ***Improper Turn/Merge***

Top Crash Types:

All and KSI: ***Going Straight Ahead***



Downtown & Commercial Land Uses

All Modes

- ***27% of streets*** *in Burien fall within commercial and downtown land uses*
- ***67% of KSIs*** *occur within commercial and downtown land uses*

Top Crash Circumstances:

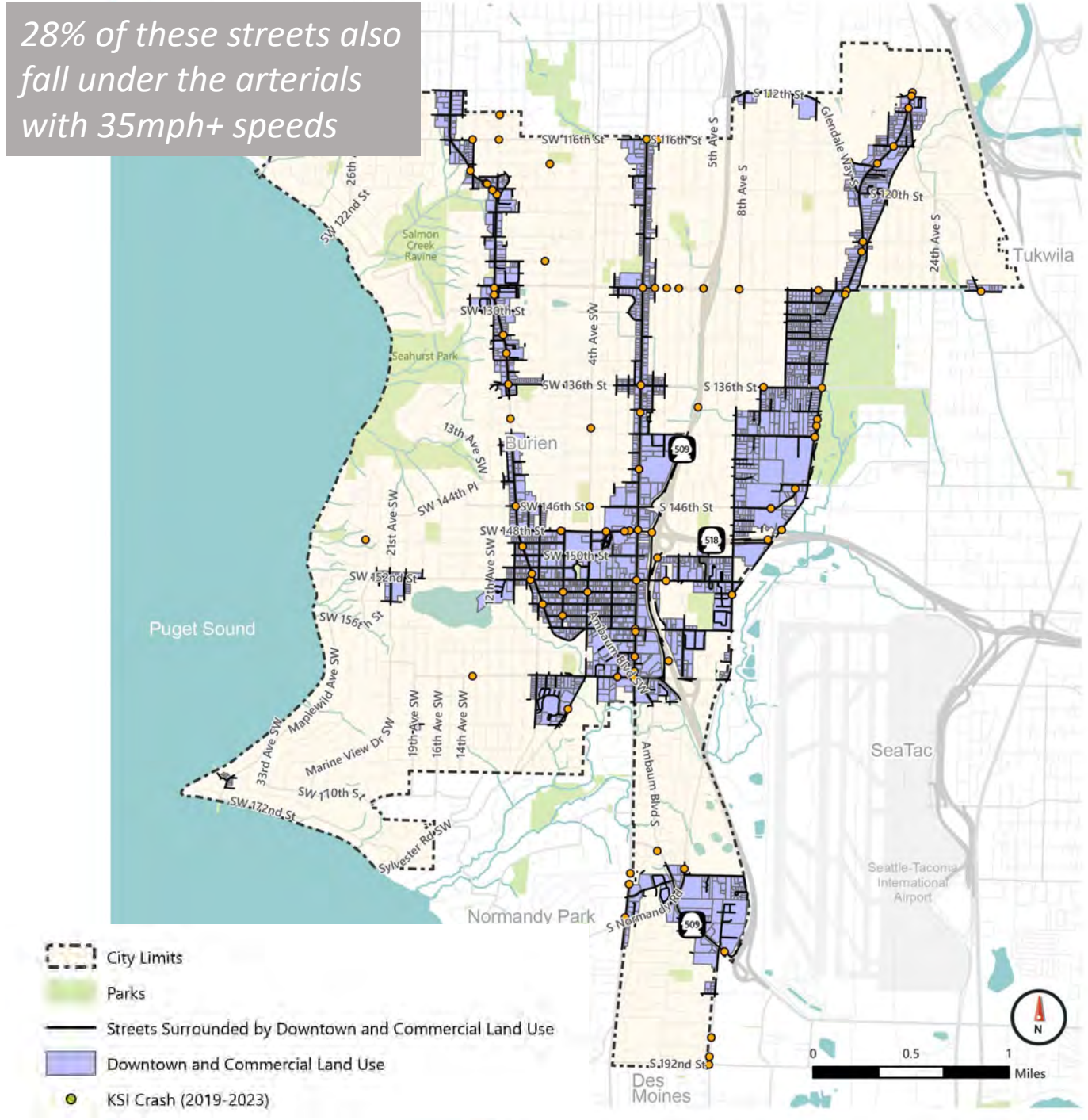
KSI: ***Under the Influence*** *of Alcohol and* ***Disregard Traffic Sign and Signals***

All: ***Did not Grant Right of Way*** *and* ***Improper Turn/Merge***

Top Crash Types:

All and KSI: ***Going Straight Ahead*** *and* ***Making a Left Turn***

28% of these streets also fall under the arterials with 35mph+ speeds



Overburdened Communities

Vulnerable Road Users

- ***71% of streets*** *in Burien fall within the Overburdened Communities of WA area*
- ***79% of Vulnerable Road User KSIs*** *occur within the Overburdened Communities of WA area*

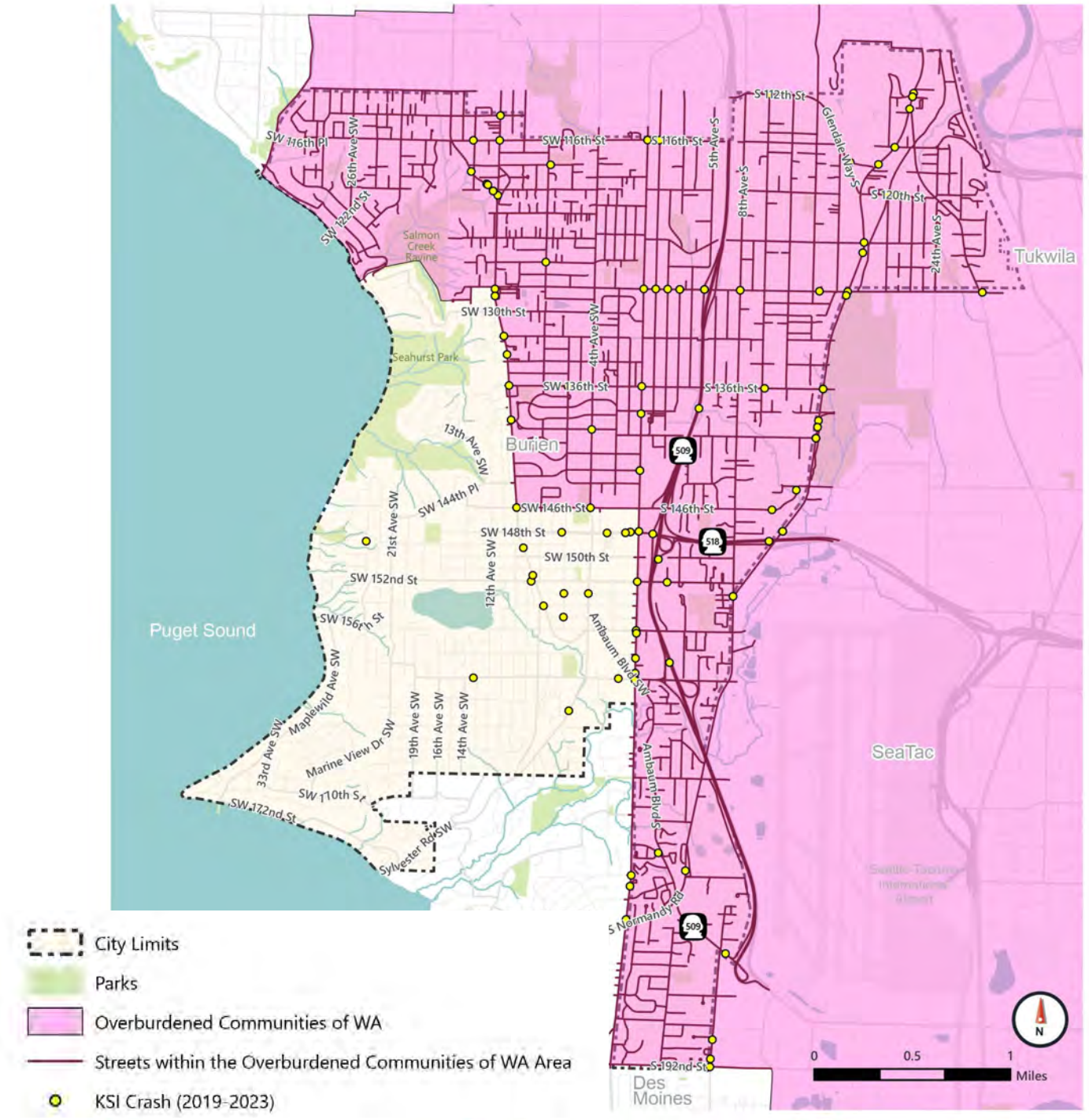
Top Crash Circumstances:

KSI: ***Exceeding Reas. Safe Speed***

All: ***Did not Grant Right of Way***

Top Crash Types:

All and KSI: ***Going Straight Ahead*** *and* ***Making a Left Turn***



Within ½ Mile of Schools

Non-Motorized Modes

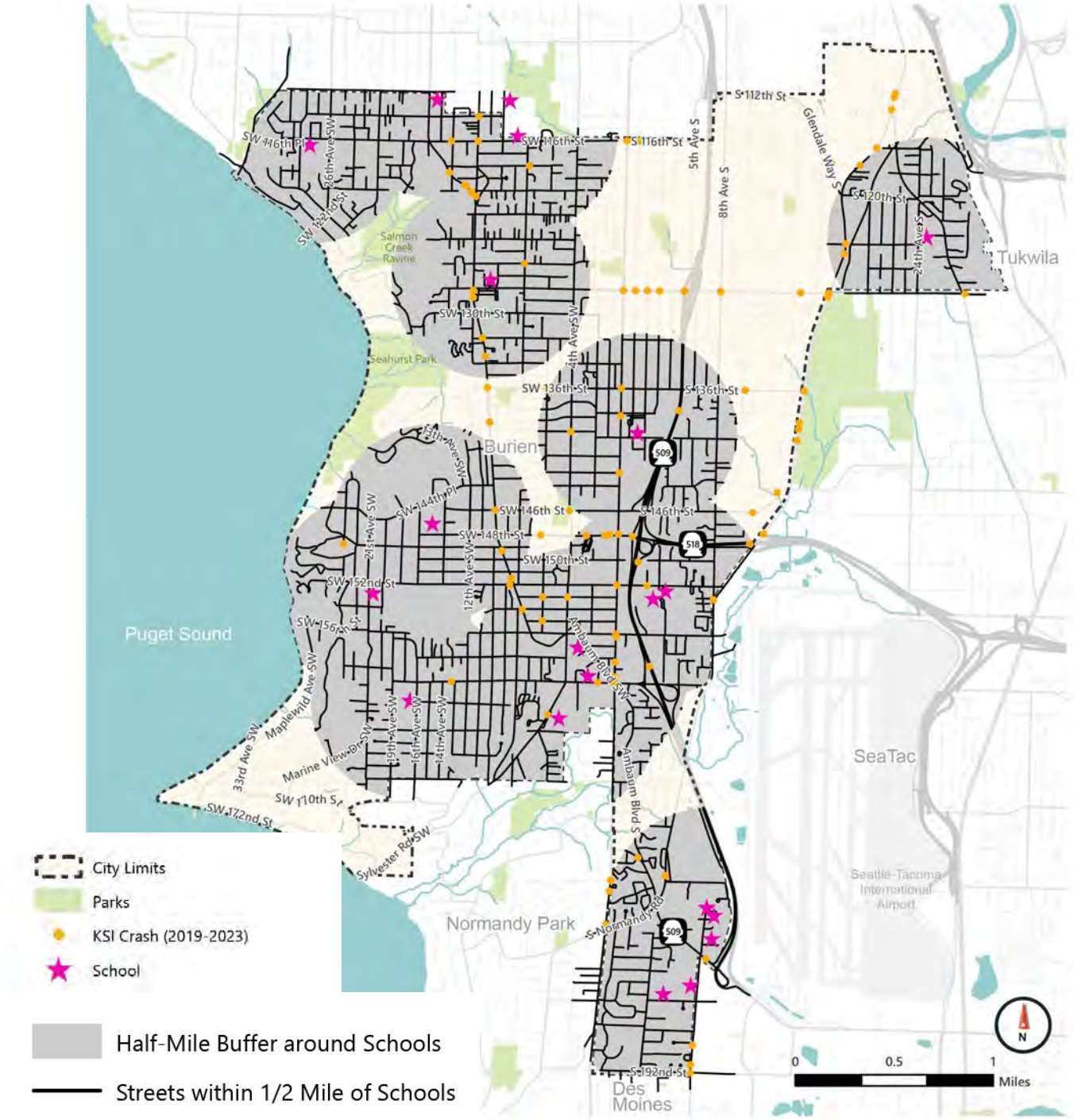
- ***69% of streets*** *in Burien fall within ½ mile of schools*
- ***76% of bike/pedestrian KSIs*** *occur within ½ mile of schools*

Top Crash Circumstances:

All and KSI: ***Did not Grant Right of Way***

Top Crash Types:

All and KSI: ***Going Straight Ahead*** *and* ***Making a Left Turn***



No Bike Facilities

Bicyclists

- ***96% of streets*** *in Burien are missing bike facilities*
- ***4 of the 5 bike KSIs*** *occur on streets without bike facilities AND* ***24 of the 33 all bike crashes*** *occur on streets without bike facilities*

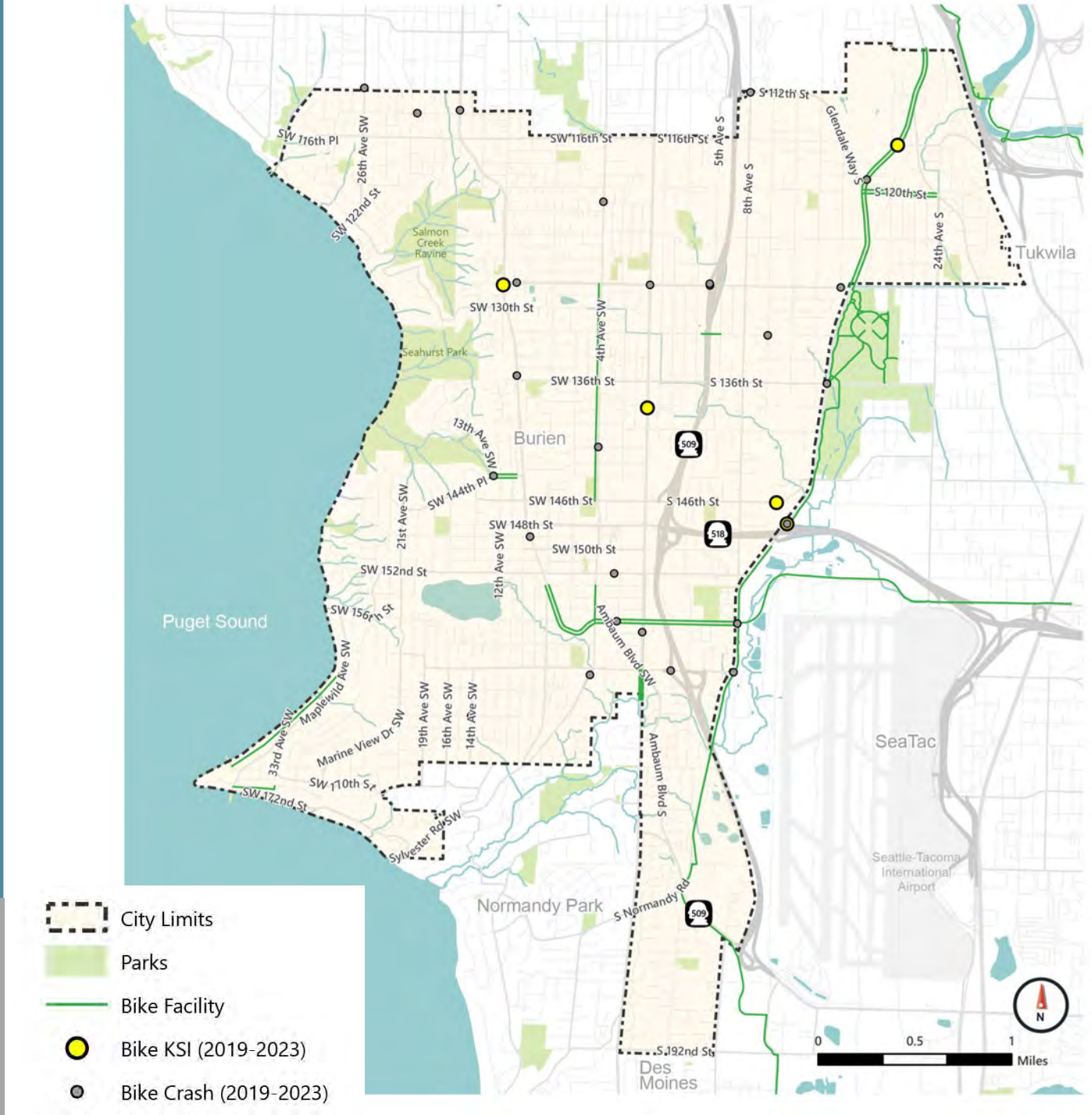
Top Crash Circumstances:

KSI: ***Disregard Traffic Sign and Signals***

All: ***Did not Grant Right of Way***

Top Crash Types:

KSI: ***Going Straight Ahead***



Major Intersections

All Modes

- ***47% of intersections*** *in Burien are considered major intersections (non local-local intersections).*
- ***93% of all KSI crashes*** *that occurred at an intersection are at major intersections.*

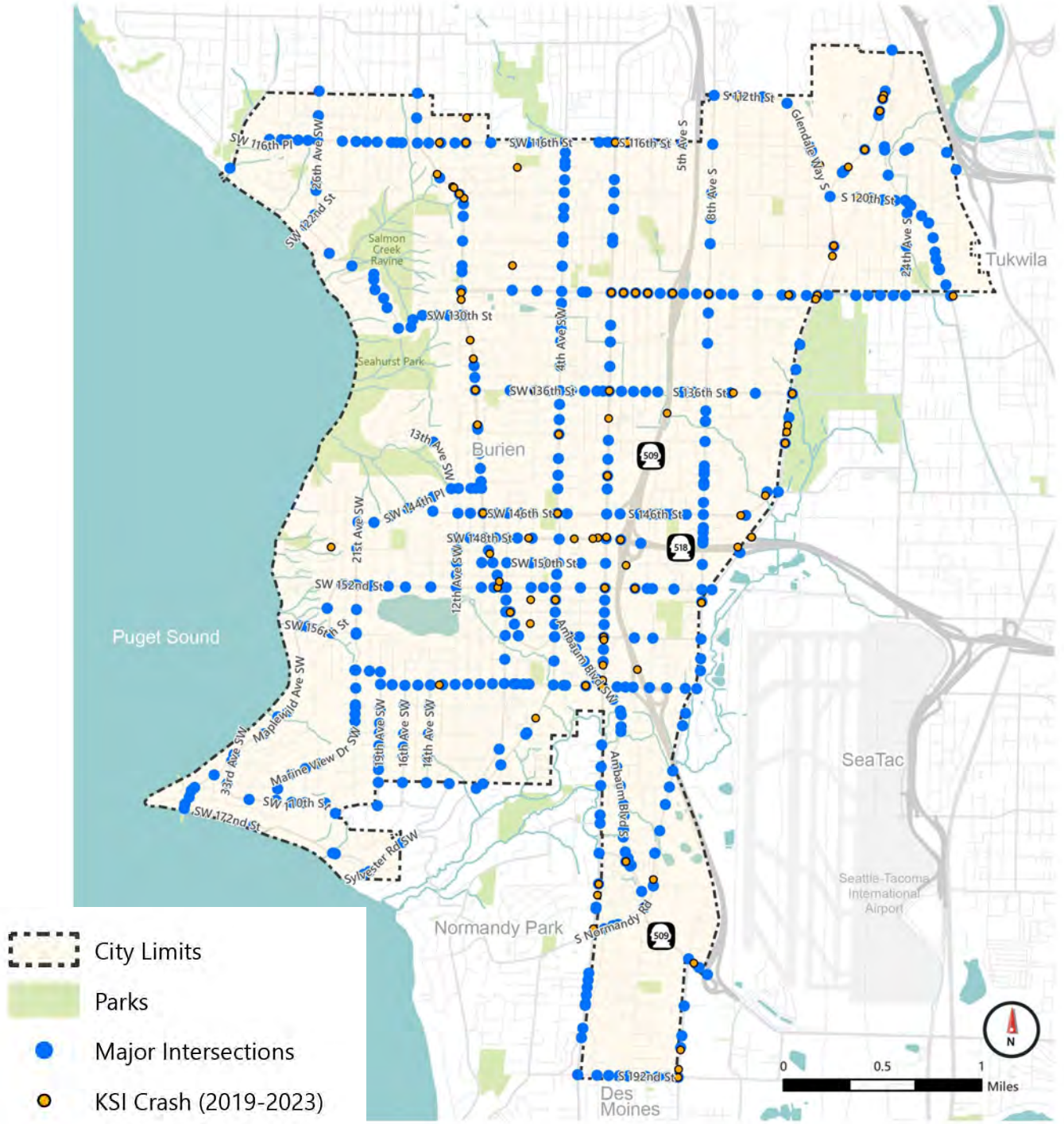
Top Crash Circumstances:

KSI: ***Under the Influence*** *of Alcohol*

All: ***Did not Grant Right of Way***

Top Crash Types:

All and KSI: ***Going Straight Ahead*** *and* ***Making a Left Turn***



Darkness

All Modes

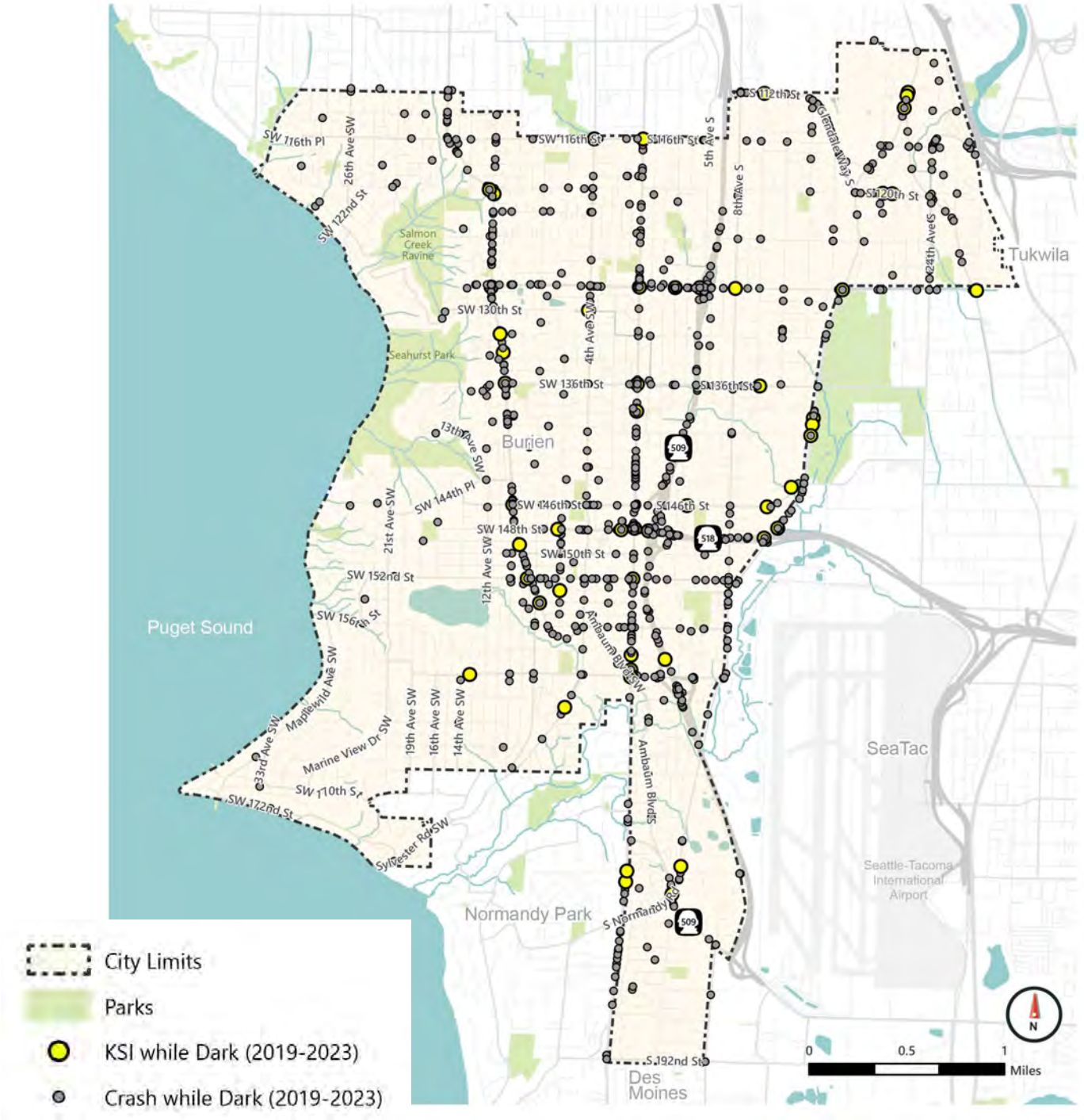
- ***48% of KSIs*** *occur during dark periods.*

Top Crash Circumstances:

All and KSI: ***Under the Influence*** *of Alcohol*

Top Crash Types:

All and KSI: ***Going Straight Ahead*** *and* ***Making a Left Turn***



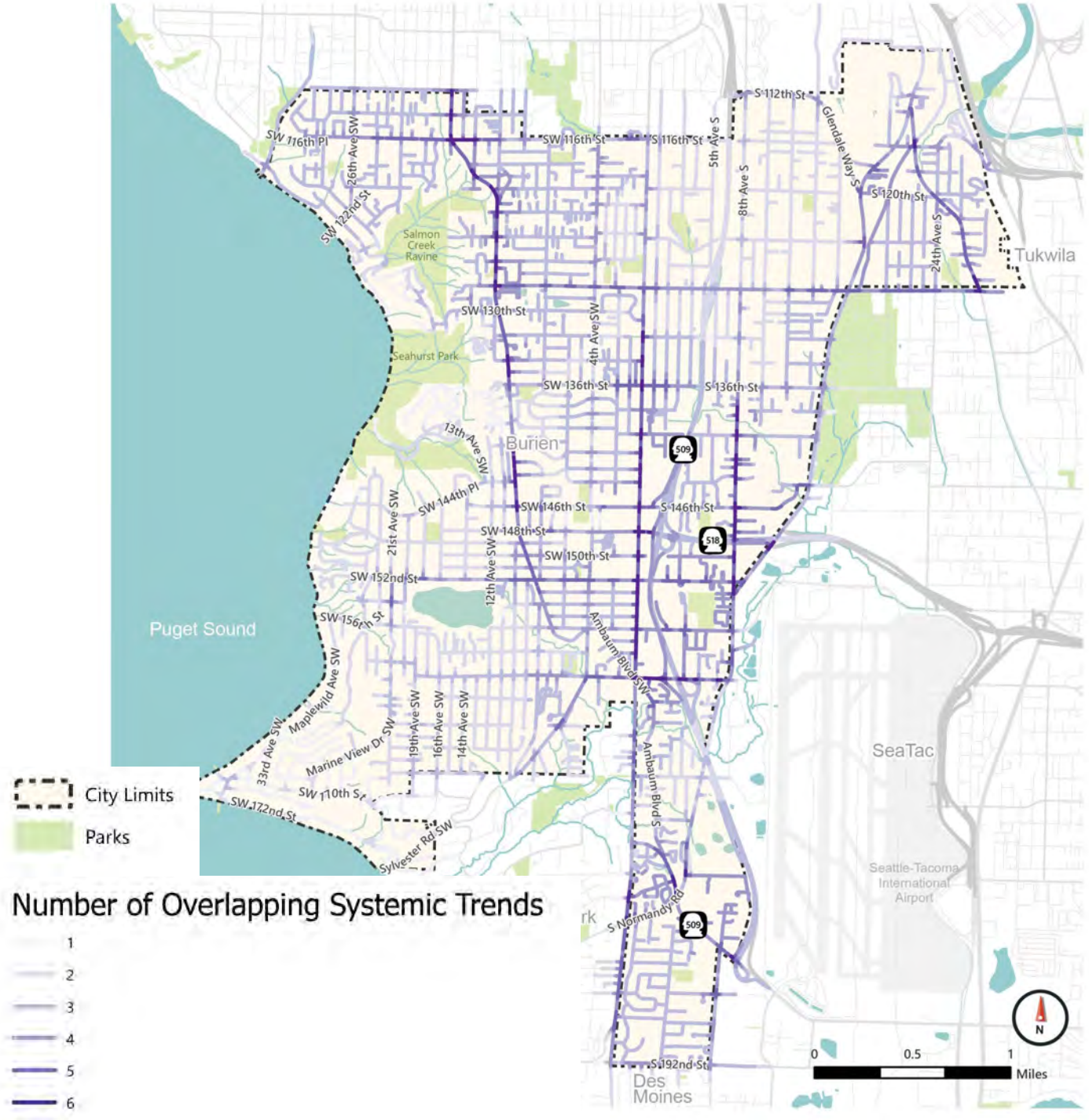
High Risk Network

All Modes

- *Maximum Score: 6*
  - *Arterials 35+mph*
  - *Downtown/Commercial*
  - *Overburdened Communities*
  - *Schools (1/2 mile)*
  - *No bike Facilities*
  - *Major Intersections*

Highest Scoring Corridors:

- *1st Ave S*
- *Ambaum Blvd SW*
- *8th Ave S*
- *S 160th St*



Prioritization Ranking Activity

How will we identify priority project locations?

- Select the criteria that are most critical to consider
- Weight criteria based on priority level
- Apply criteria to the street network
- Identify top priority projects

Help us identify key criteria



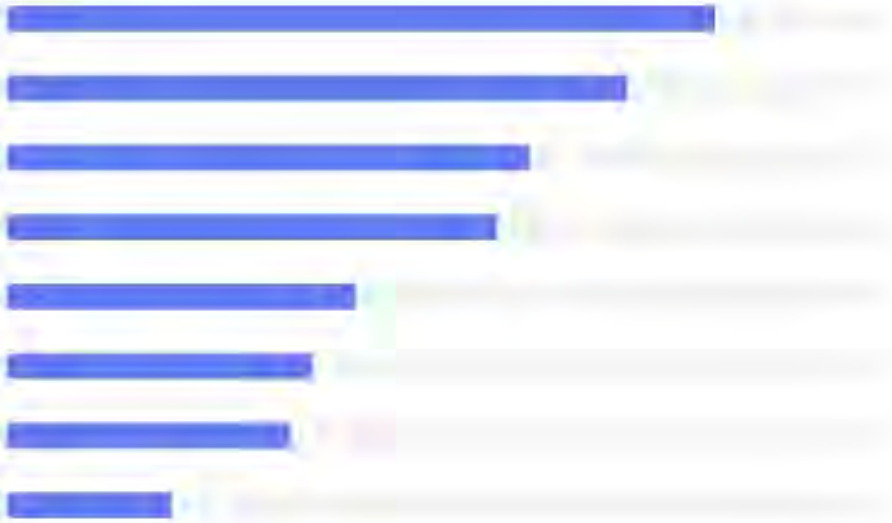
https://forms.office.com/r/FnEK1HmdRj

Prioritization Ranking Activity: RESULTS

1. Choose your top four elements to consider in prioritizing projects.

More details

1	Number of killed or seriously injured crashes
2	Number of total crashes
3	Presence on the overall High Injury Network (HIN)
4	Presence on the vulnerable road user High Injury Network (HIN)
5	Presence of High Risk Network
6	Overburdened Communities of WA
7	Proximity to vulnerable road user destinations
8	Number of public comments regarding safety



Prioritization Ranking Activity

- Number of total crashes
- Number of killed or serious injury (KSI) crashes
- Presence on the overall High Injury Network (HIN)
- Presence on the Vulnerable Road User HIN
- Presence of High-Risk Network
- Overburdened Communities of WA
- Number of public comments regarding safety
- Proximity to vulnerable road user destinations

Anything not listed that we should include?

Next Steps

- Incorporate input from today's meeting to develop prioritization factors and weights
- Run prioritization analysis to identify priority project locations
- Work with City to review any qualitative factors with results









Burien

Comprehensive Safety Action Plan

Task Force Meeting #3

FEHR & PEERS

August 13th, 2025

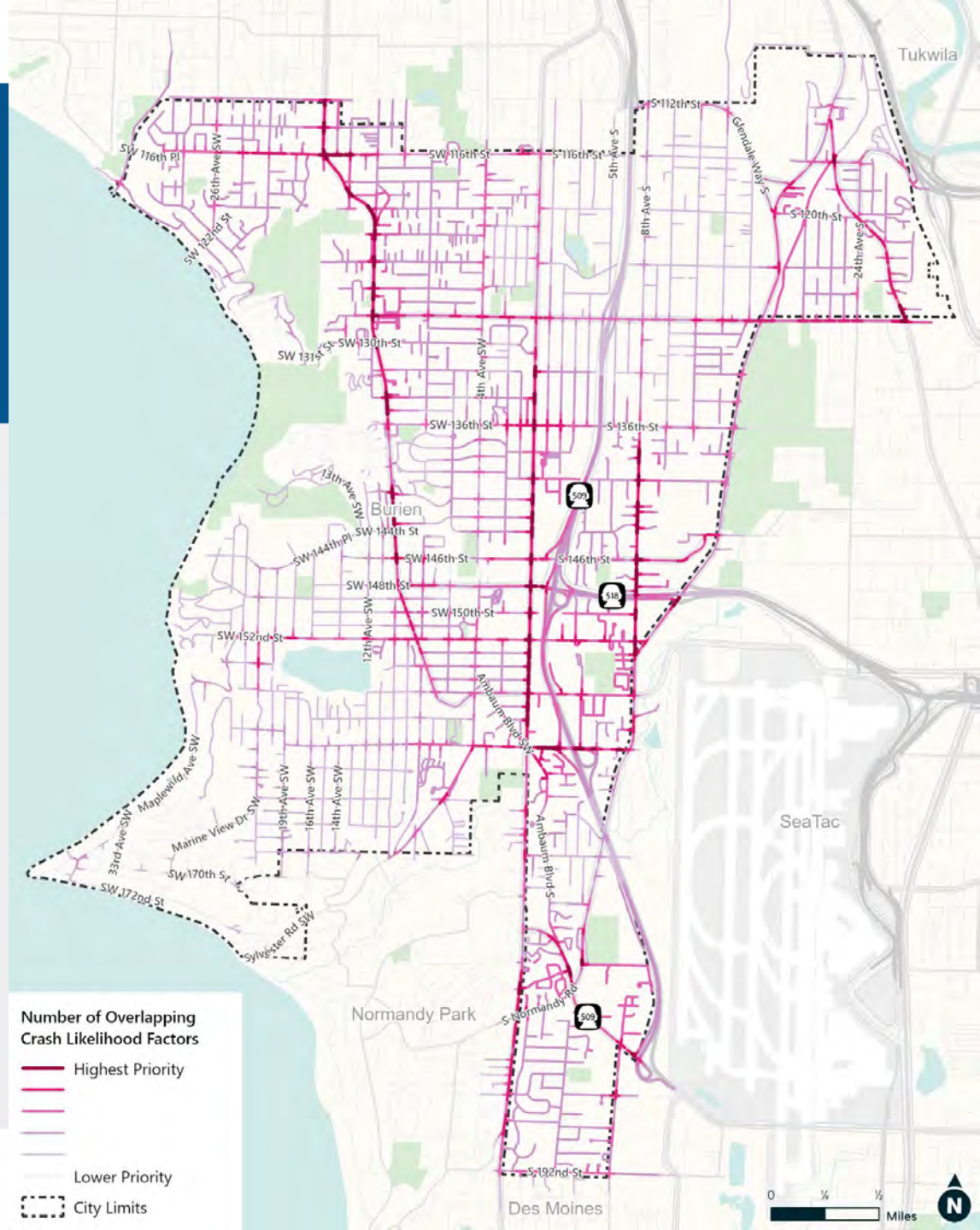
Agenda

1. Recap of Meeting 2
2. Draft Plan Highlights
3. Projects
4. Next Steps

Recap of Meeting 2

- Community Engagement Summary
- High Risk Network (Map)
- Project Prioritization Exercise





Draft Plan Highlights

Plan Overview

CHAPTER 1: BACKGROUND

CHAPTER 2: ENGAGING THE COMMUNITY

CHAPTER 3: ANALYZING SAFETY DATA

CHAPTER 4: TRANSLATING RESULTS INTO PROJECTS

CHAPTER 5: IMPLEMENTING THE PLAN

Chapter 1: Background

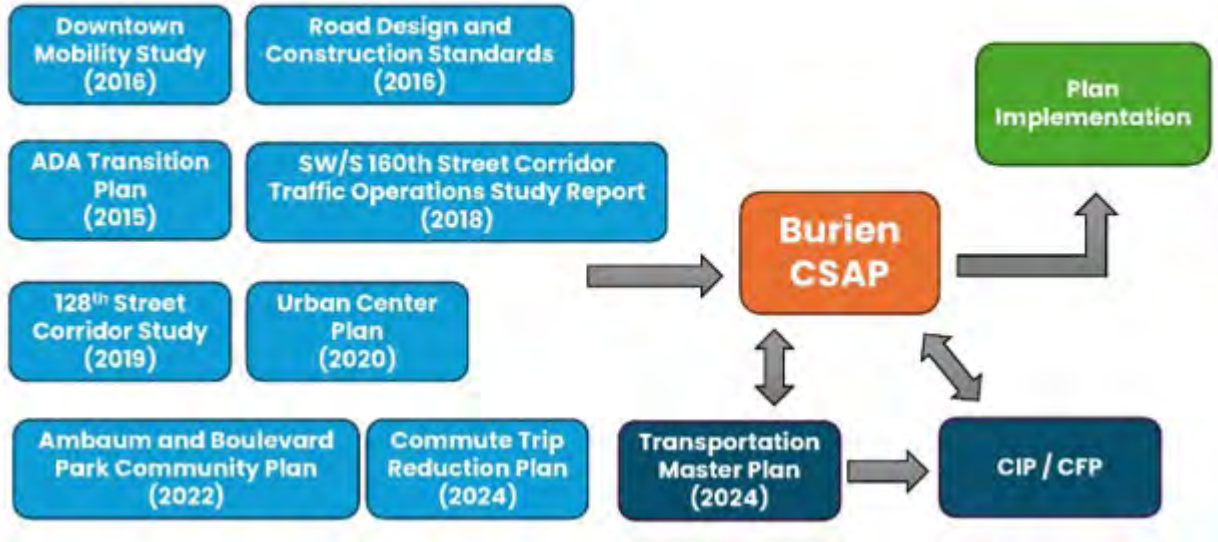
- What is a CSAP?
- Safe System Approach Overview
- Vision Zero Statement
- Burien Profile
  - Demographics
- Planning Context

Figure 2. Safe System Approach Wheel

Source: WSDOT



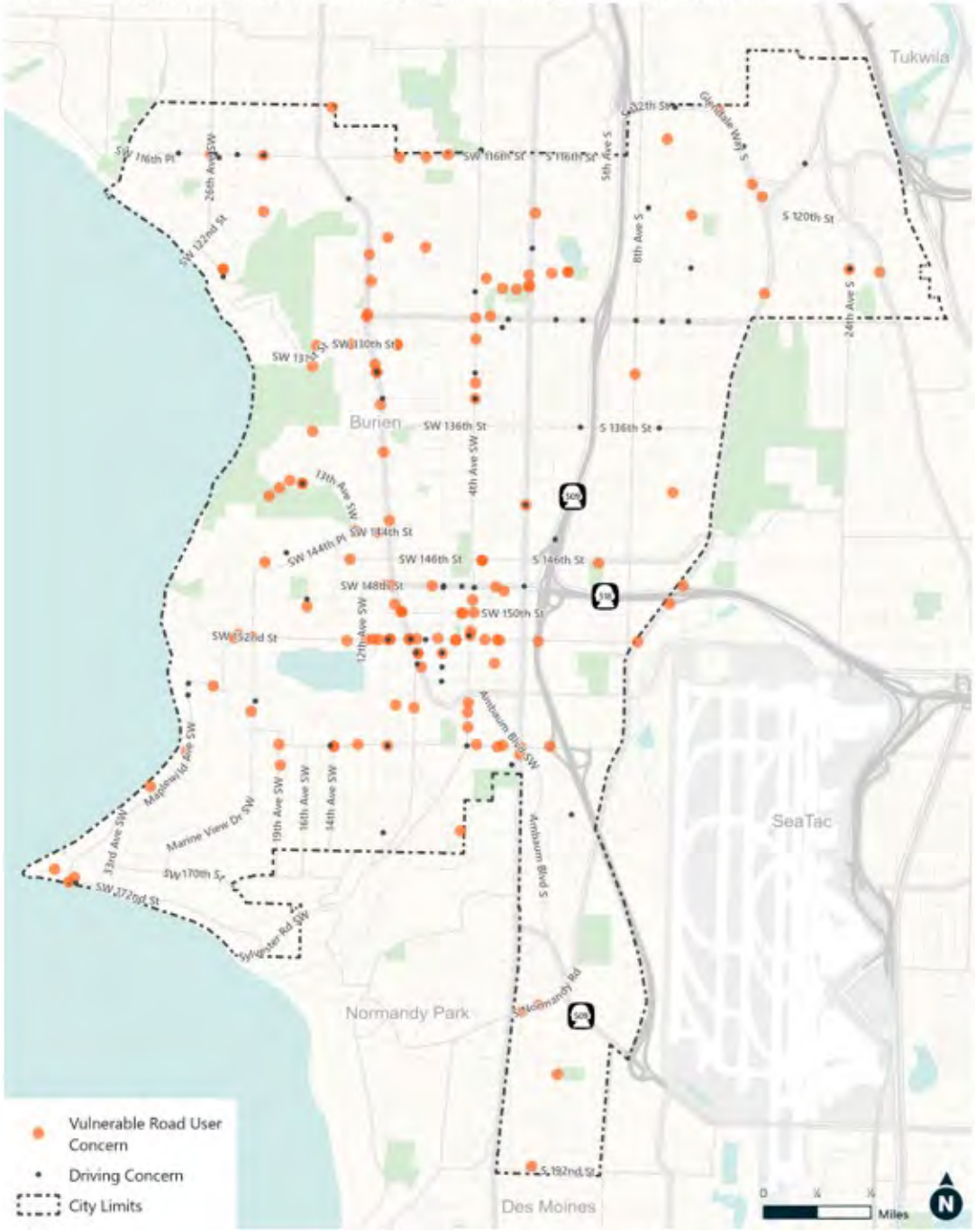
Figure 6. Relationship Among Plans



Chapter 2: Engaging the Community

- Summary of Past Engagement Efforts & Results
- Summary of CSAP Online Survey and Interactive Map Effort & Results
- About the Burien CSAP Task Force

Figure 7. Community Identified Transportation Safety Concerns by Mode



Chapter 3: Analyzing Safety Data

- Regional Context
- Existing Conditions in Burien
- Identification of High Injury Network (HIN)
- Identification of High Risk Network (HRN)

Figure 10. Crashes by Year and Severity in Burien (2019 – 2023)

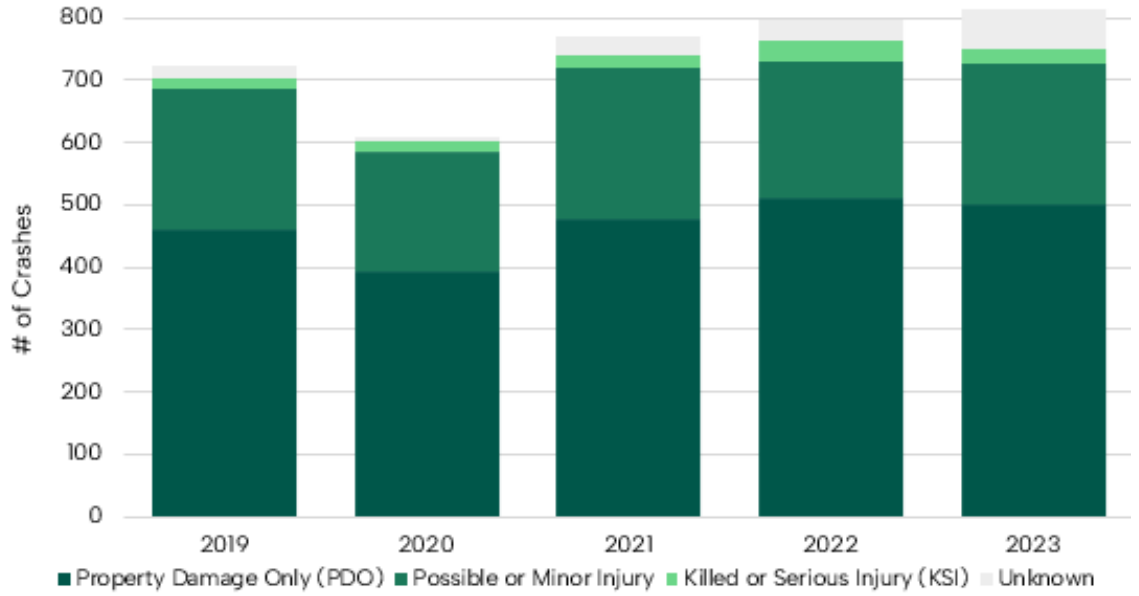
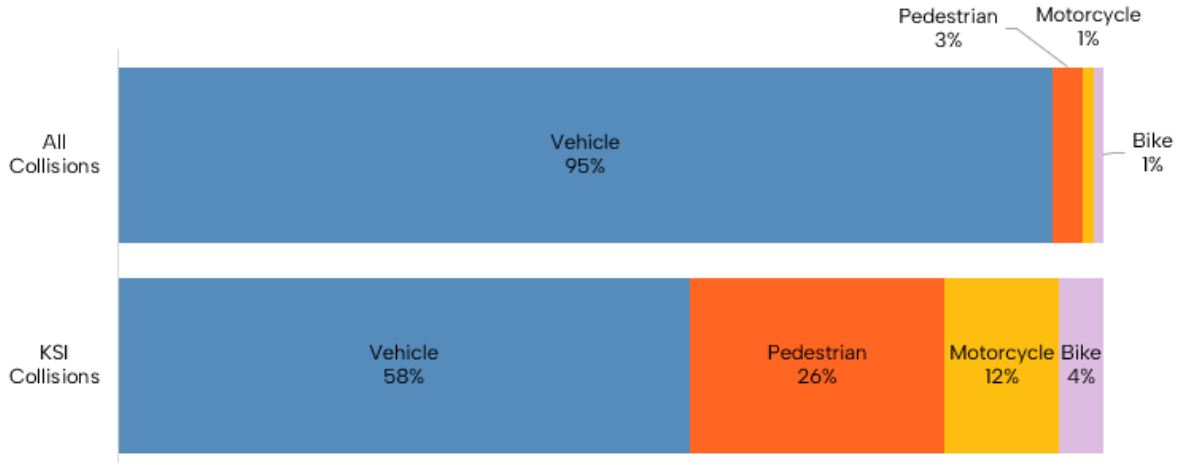


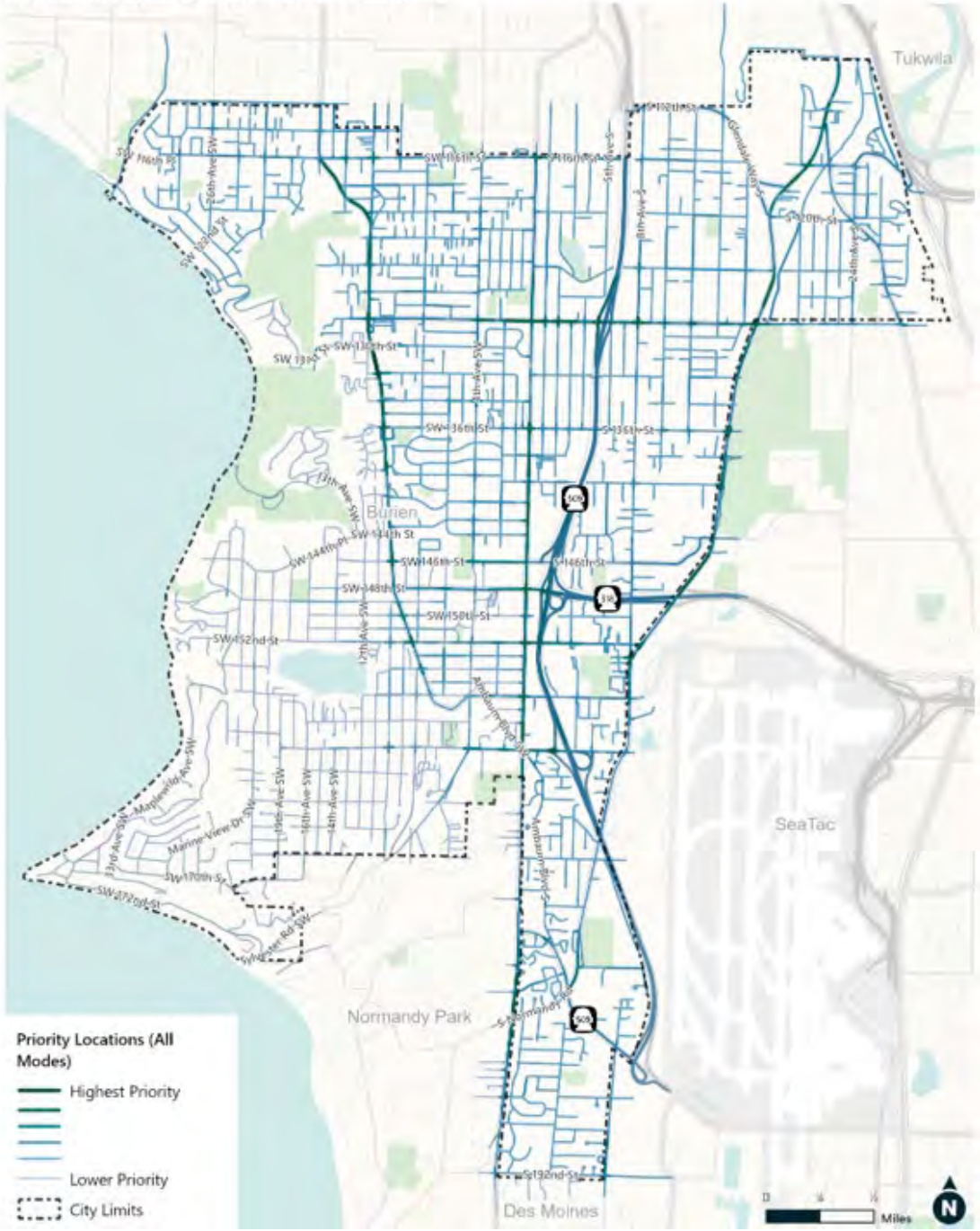
Figure 11. All Crashes vs. KSI Crashes by Mode in Burien (2019 – 2023)



Chapter 4: Translating Results into Projects

- Framework for Project Location Prioritization
  - Priority Locations – All Modes
  - Priority Locations – Bicycle/Pedestrian
- Project List (more on this later)

Figure 16. All Modes Priority Locations



Chapter 5: Implementing the Plan

- Action Plan
- Implementation
- Ongoing Evaluation
  - Safety Report Card

Funding

SS4A funding prioritizes projects along **HIN** and **systemic** projects**.**

HSIP funding prioritizes projects in places with historic **KSI crashes.**

Phasing and Sequencing

Projects can be split into multiple parts (near-term to long-term) to **align implementation with funding**.

Target Metrics and Tracking

Report card and action plan provide opportunity to **compare results** over time as projects/actions are implemented.

Proven Safety Solutions

The prioritization process and report card provide a **data-driven approach** to **proactive safety planning.**

Chapter 5: Implementing the Plan

- Ongoing Evaluation
  - Safety Report Card

- Target performance measures will be evaluated and reported every **six years**

- **Purpose:** ongoing evaluation of progress
  - Track outcomes,
  - Identify trends
  - Adjust strategies over time
  - Ensure accountability
  - Refine safety efforts

- **Discussion question:** Are there any metrics you would like to track that are not already on the list? (see next slide)

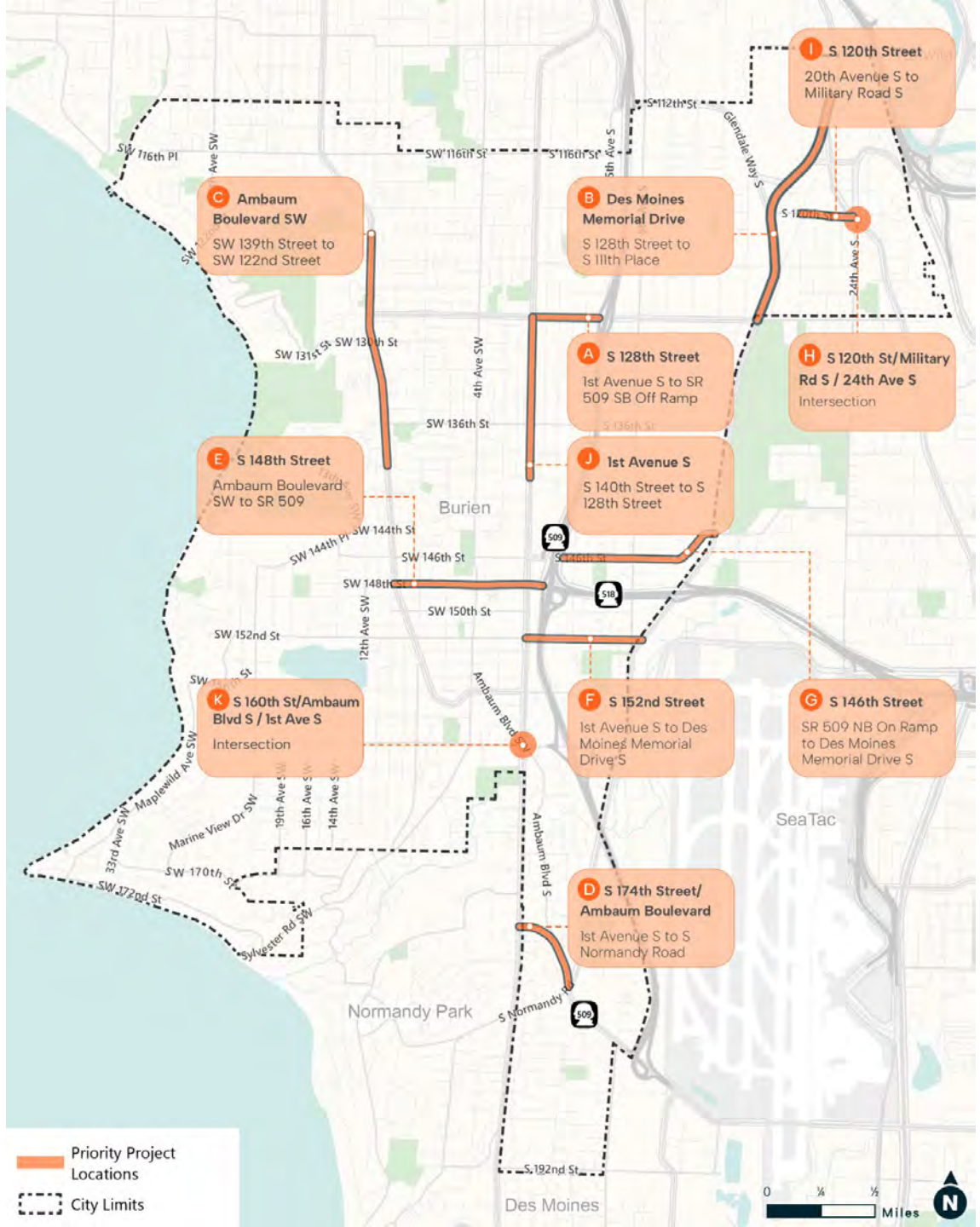
Draft Safety Report Card

Performance Measure	2019	2020	2021	2022	2023	Average	2029	2035
Total KSIs	17	17	23	31	24	**22**		
Total KSI Rate (% of all crashes)	2%	3%	3%	4%	3%	**3.0%**		
VRU KSIs	6	7	8	16	10	**9**		
VRU KSI Rate (% of all VRU crashes)	18%	25%	21%	37%	21%	**24%**		
KSIs on All Modes HIN	8	13	19	21	14	**15**		
Bike/Ped KSIs on Bike/Ped HIN	0	5	5	10	5	**5**		
% of Transportation Funding Allocated to Safety Projects	No Data	No Data	No Data	No Data	No Data	**No Data**		
Lane Miles of Safety Projects Completed	No Data	No Data	No Data	No Data	No Data	**No Data**		

Projects

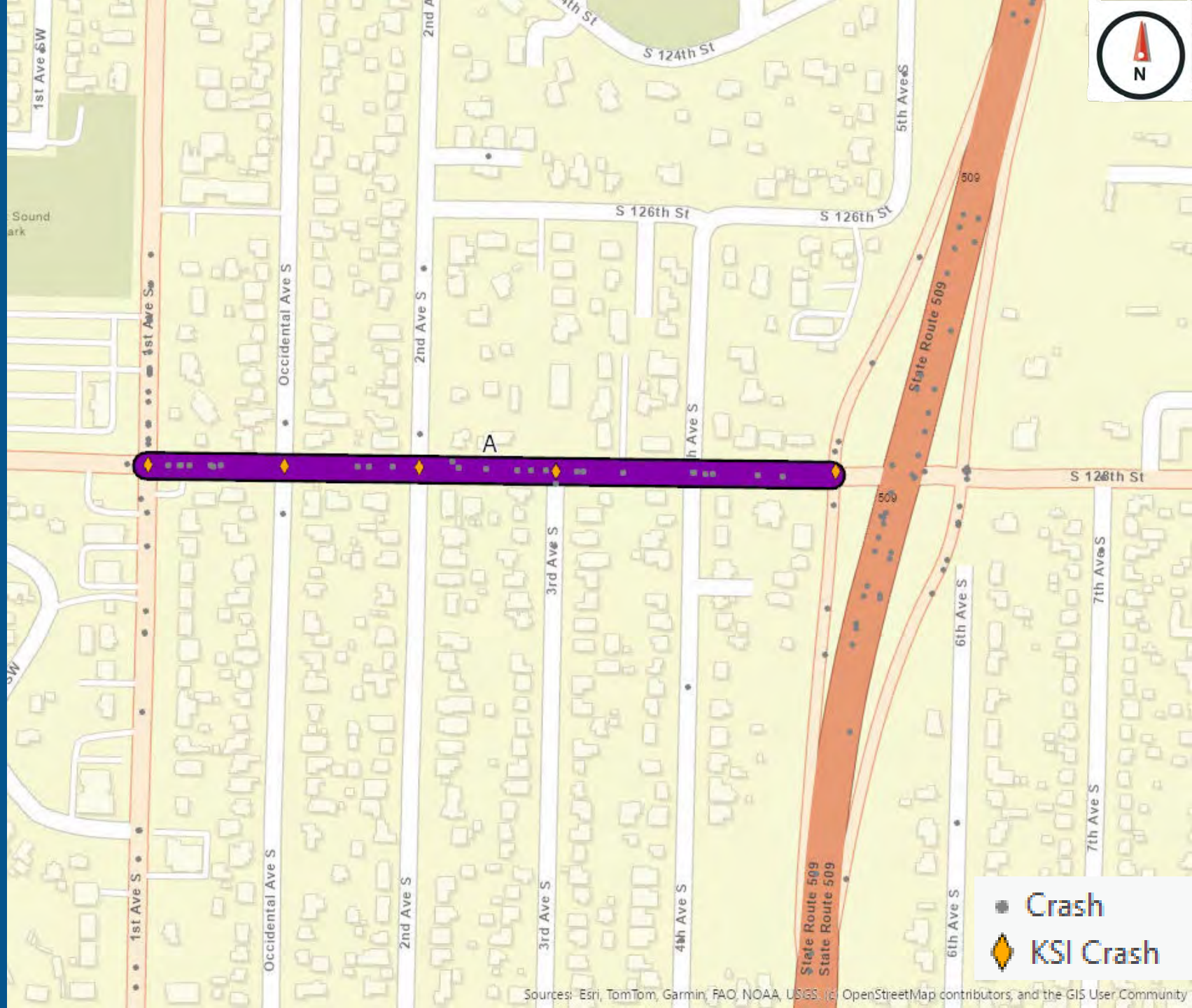
Priority Project Locations

- Projects selected based on their potential to significantly improve safety conditions in Burien.
- For each project, the team has:
  - Identified countermeasures
  - Developed high-level conceptual designs



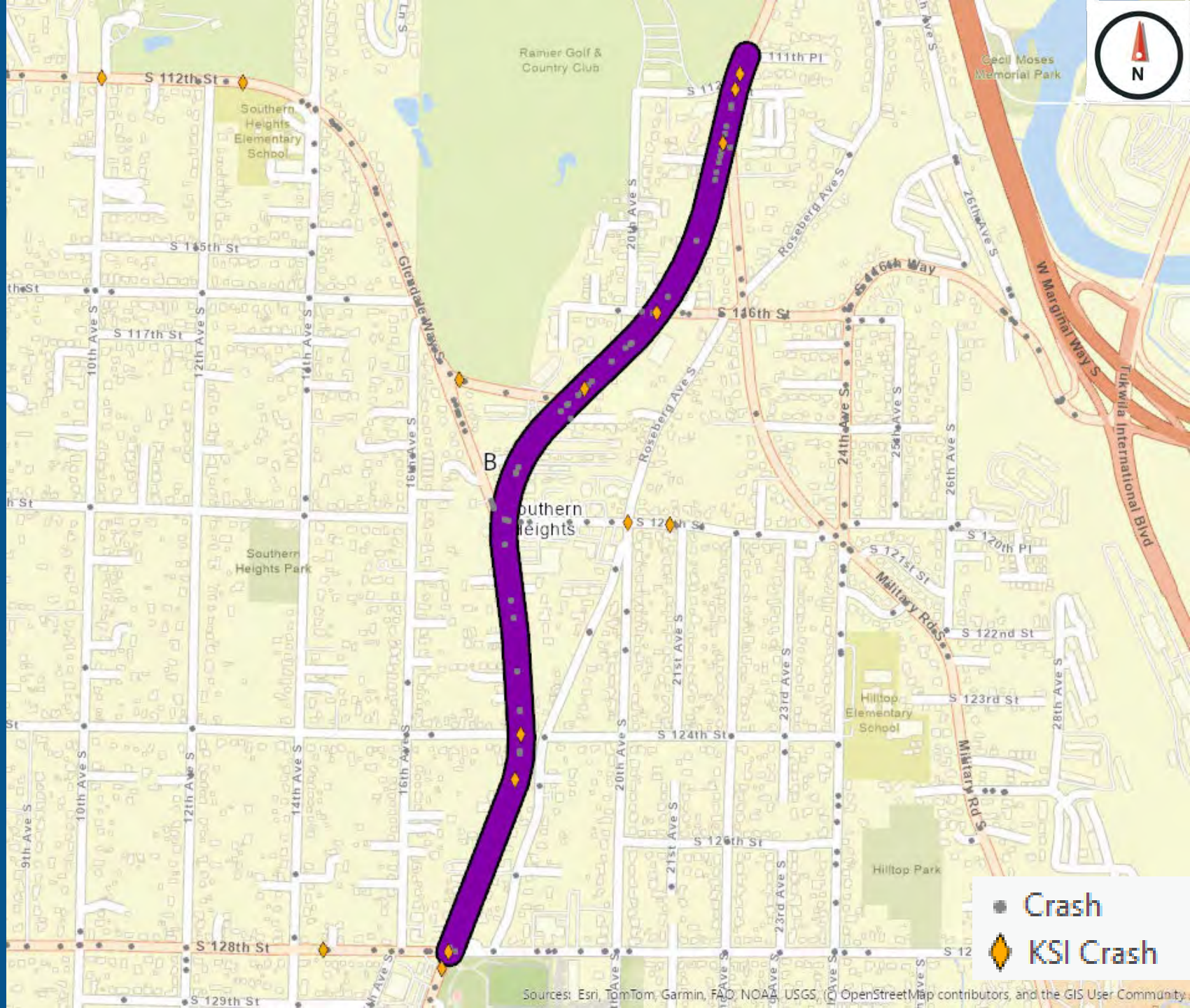
Project A: S 128th St

Total Crashes	121
# KSI Crashes	7
# Bike/Ped KSIs	1
All Modes HIN	Yes
Bike/Ped HIN	Yes
Overburdened Communities of WA	Yes
Public Comments	2
Average # Crash Likelihood Factors	3.9/6



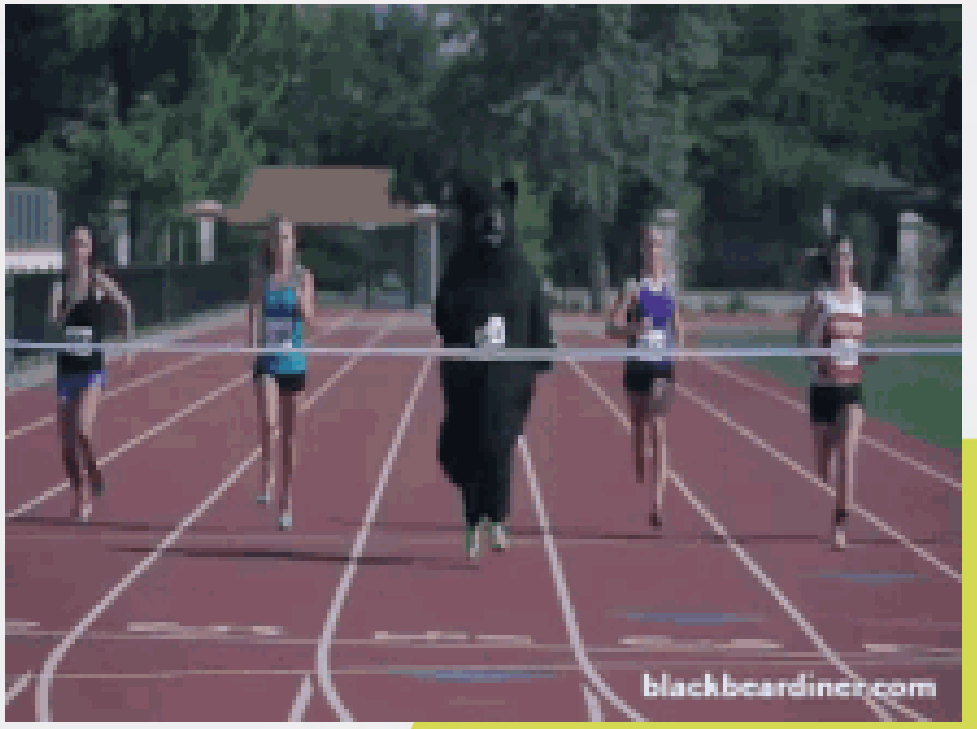
Project B: Des Moines Memorial Dr S

Total Crashes	84
# KSI Crashes	9
# Bike/Ped KSIs	4
All Modes HIN	Partial
Bike/Ped HIN	Yes
Overburdened Communities of WA	Yes
Public Comments	3
Average # Crash Likelihood Factors	4.1/6



Next Steps

- Finalize Report Card Inputs
- Wrap up plan and bring to City Council



Appendix E. Existing Crash Data Analysis

Overview of Crash Data (2019–2023)

3,713 Total crashes

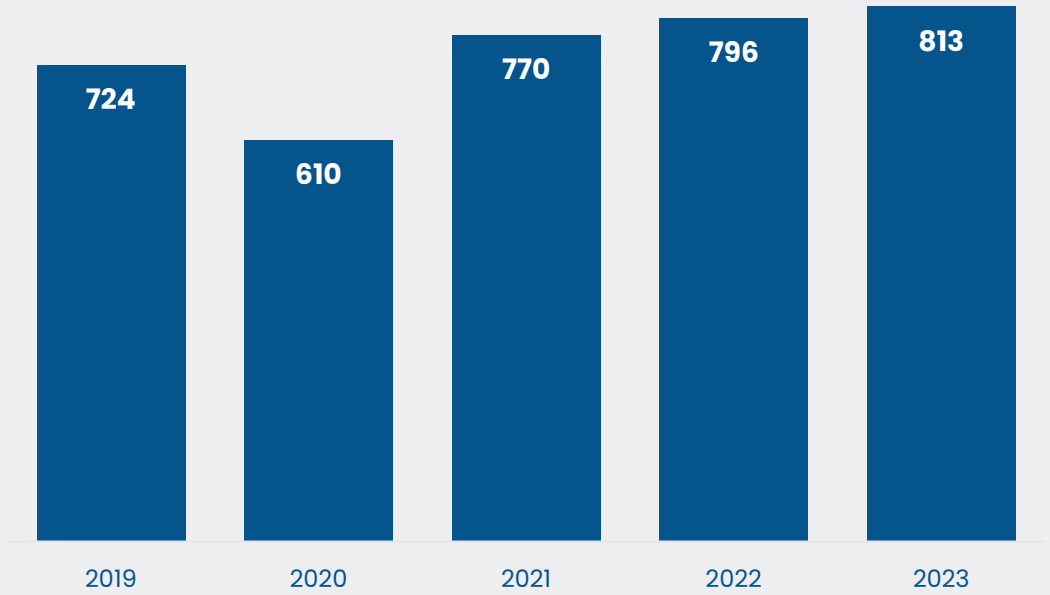
112 crashes resulted in serious injury or death (KSI)

4 modes

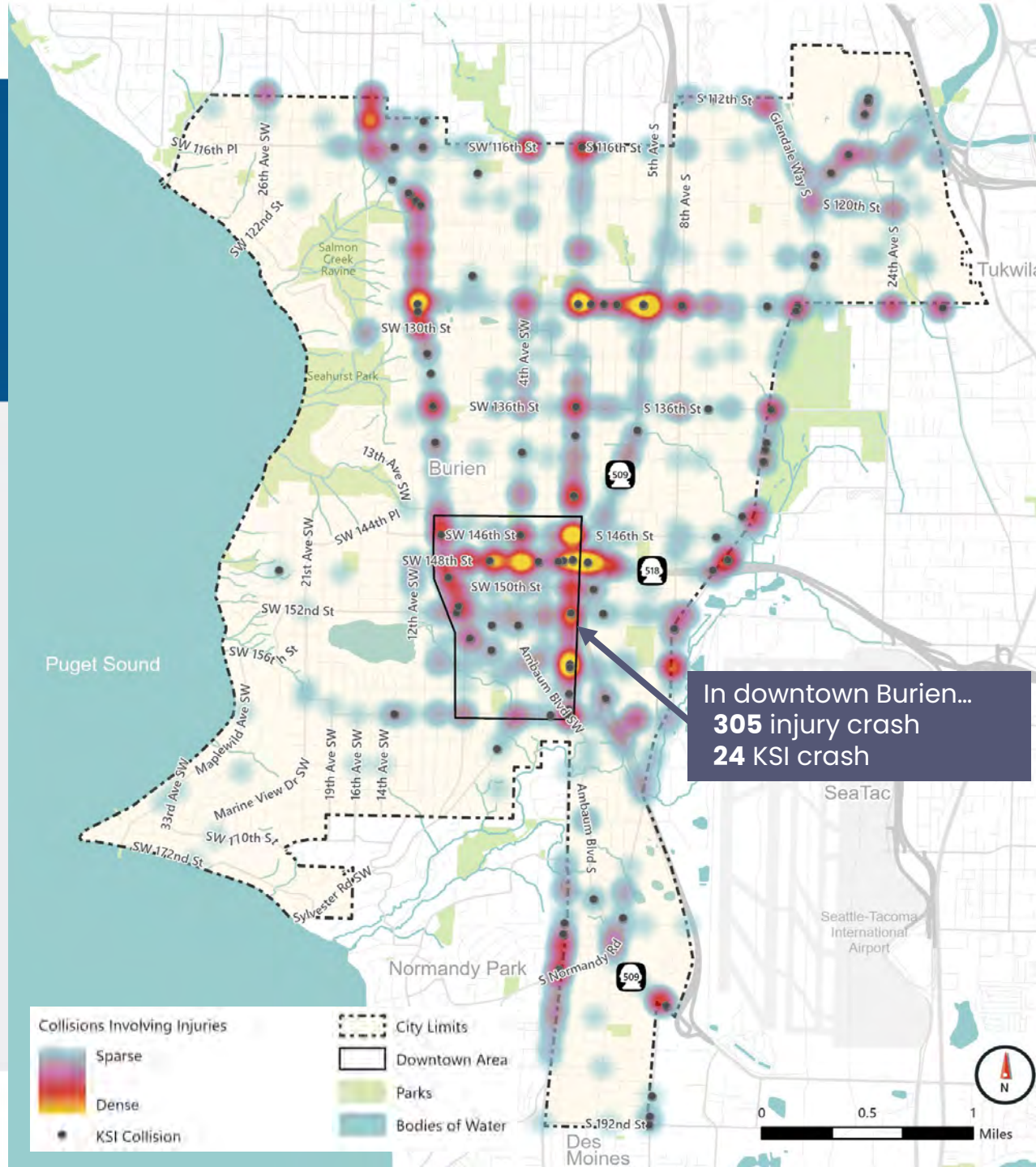
- Vehicle only
- Pedestrians
- Bicyclists
- Motorcyclists

The data includes all reported roadway crashes in the City of Burien from 2019 to 2023, including city-owned roadways, state routes, and border streets.

Crash Overview



All Crashes (2019 – 2023)

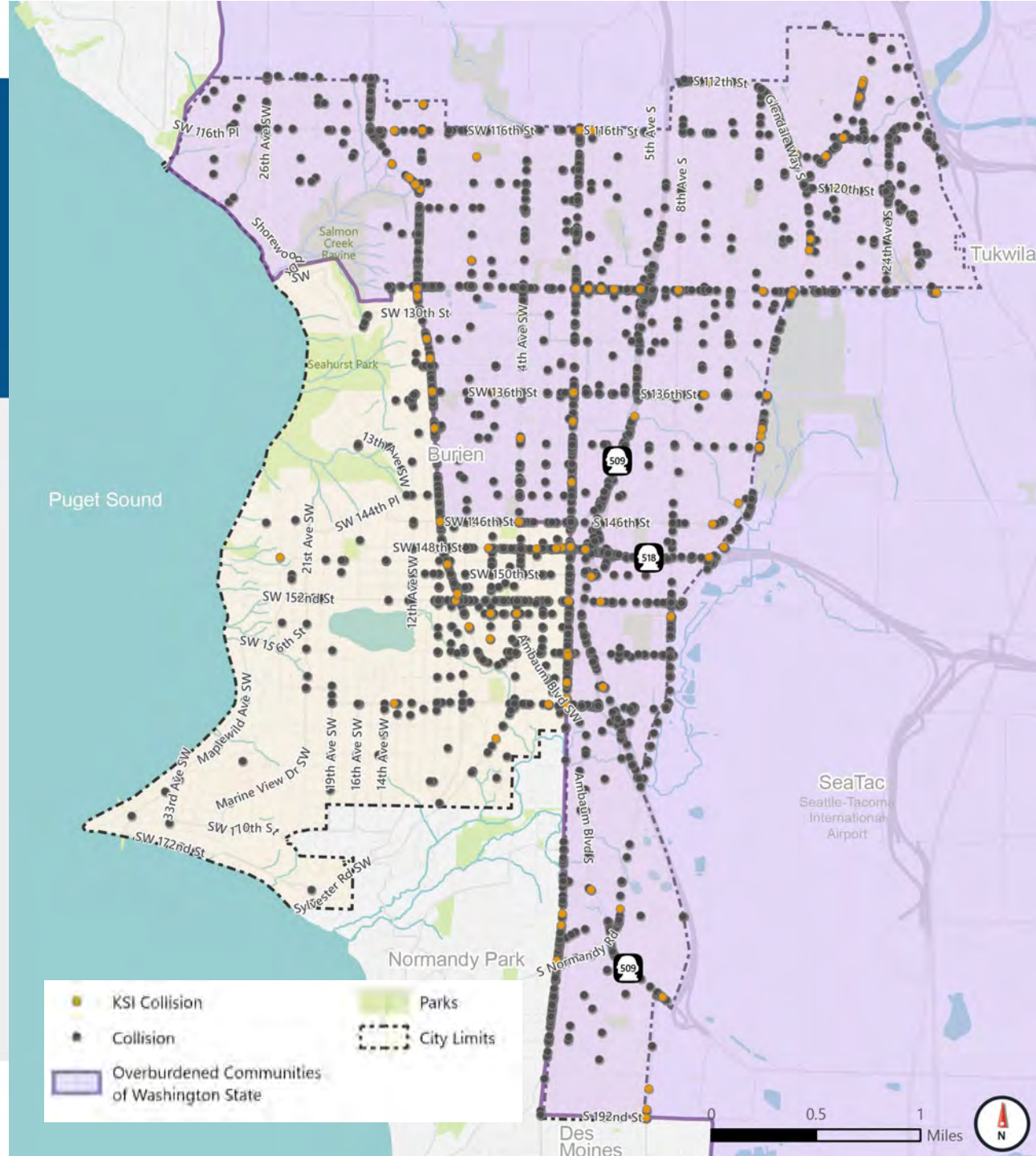


Overburdened Communities of Washington State

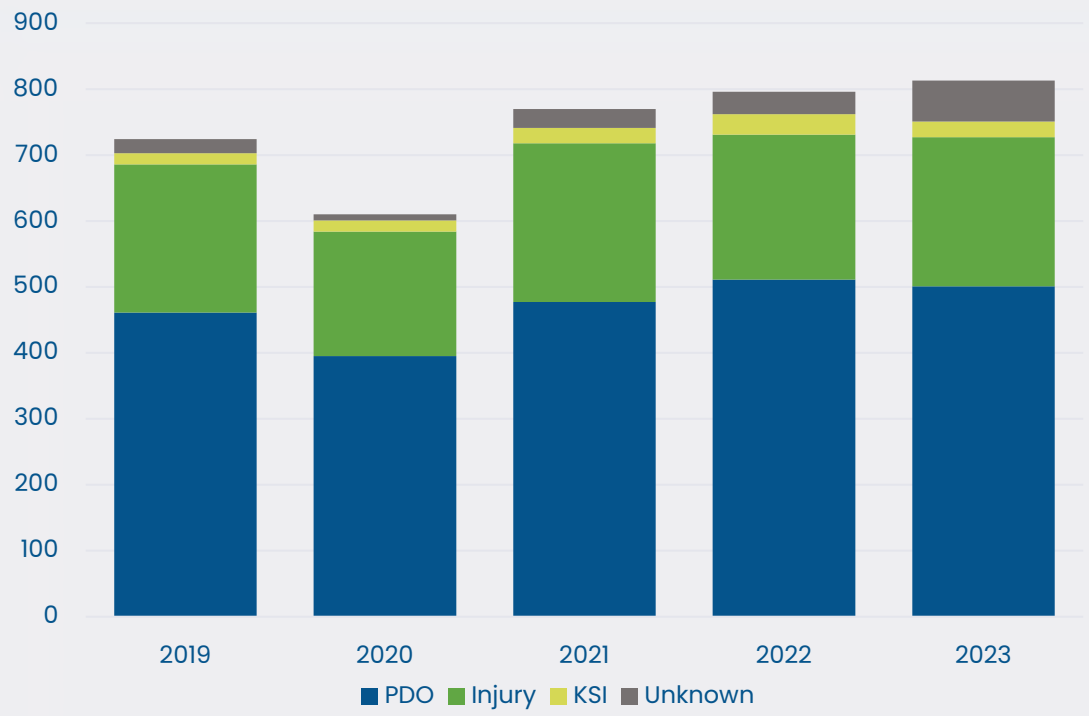
66% of Burien's total land area is within an overburdened census tract.

Burien's overburdened census tracts accounts for...

- **82%** of all crashes
- **85%** of KSI crashes



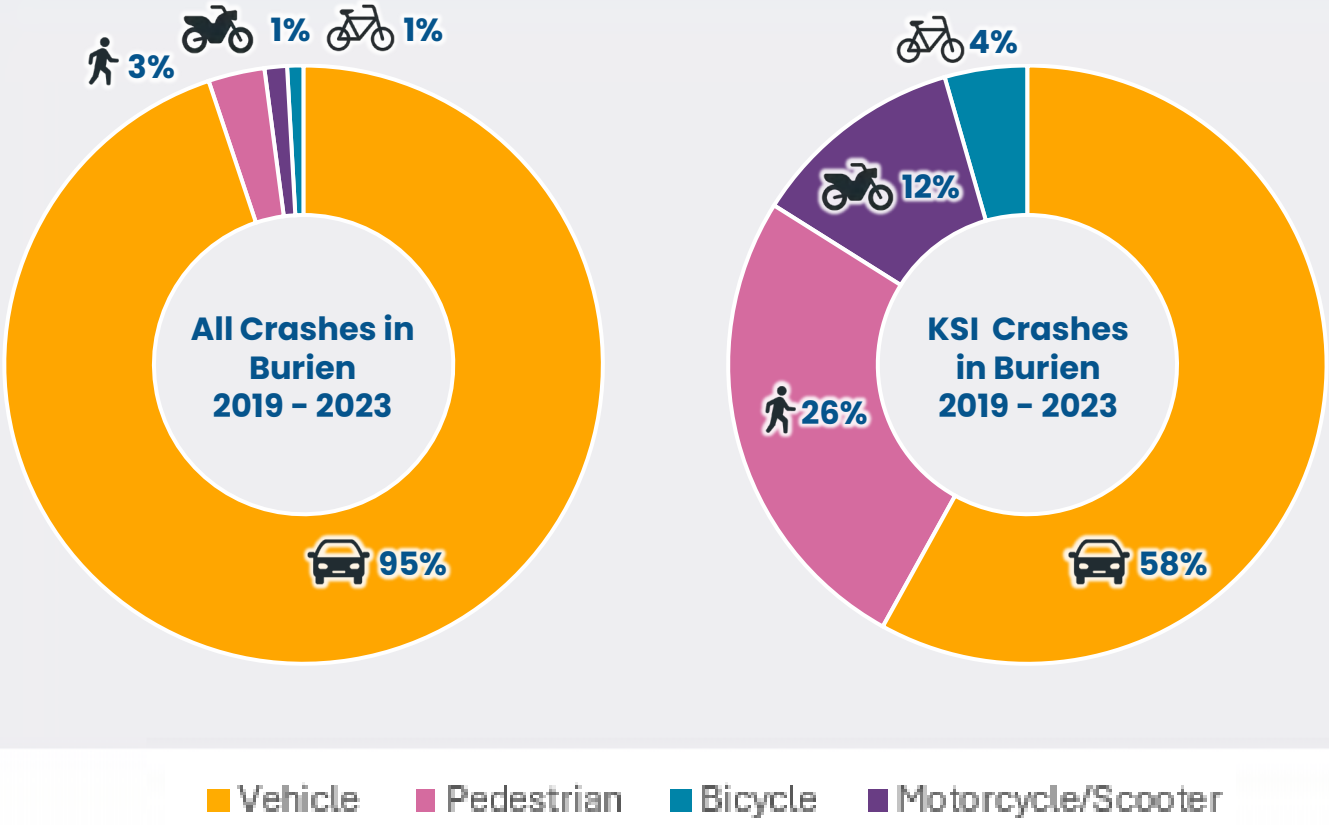
Crashes by Year & Injury Type



Between 2019 and 2023...

- **12% increase** in the total number of crashes
- **41% increase** in the number of KSI crashes

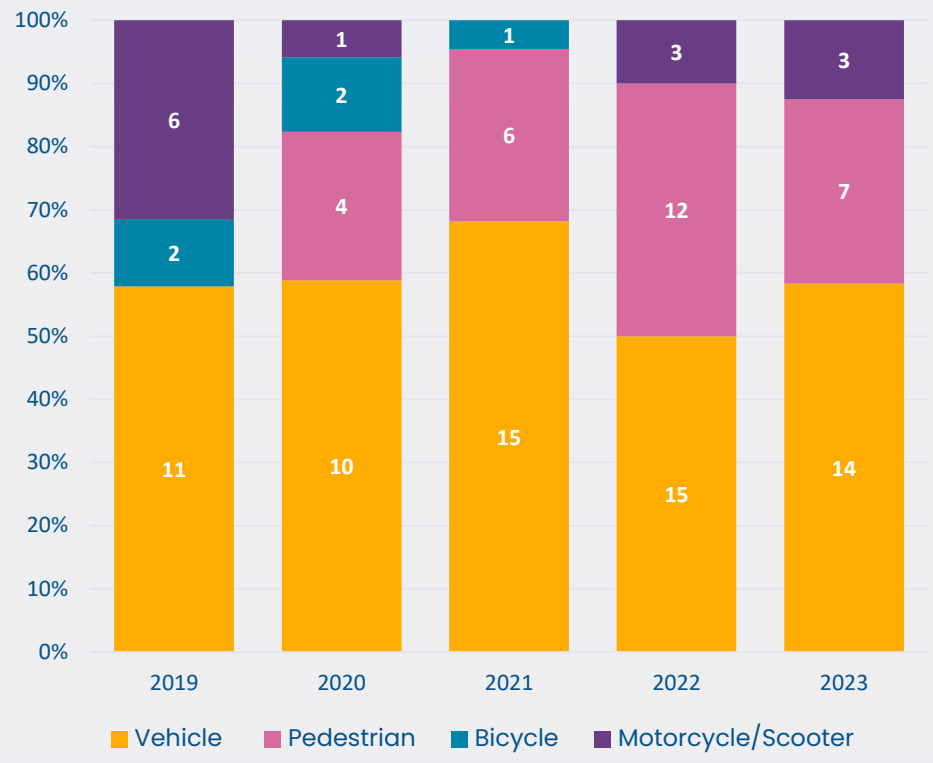
All Crashes vs. KSI Crashes by Mode

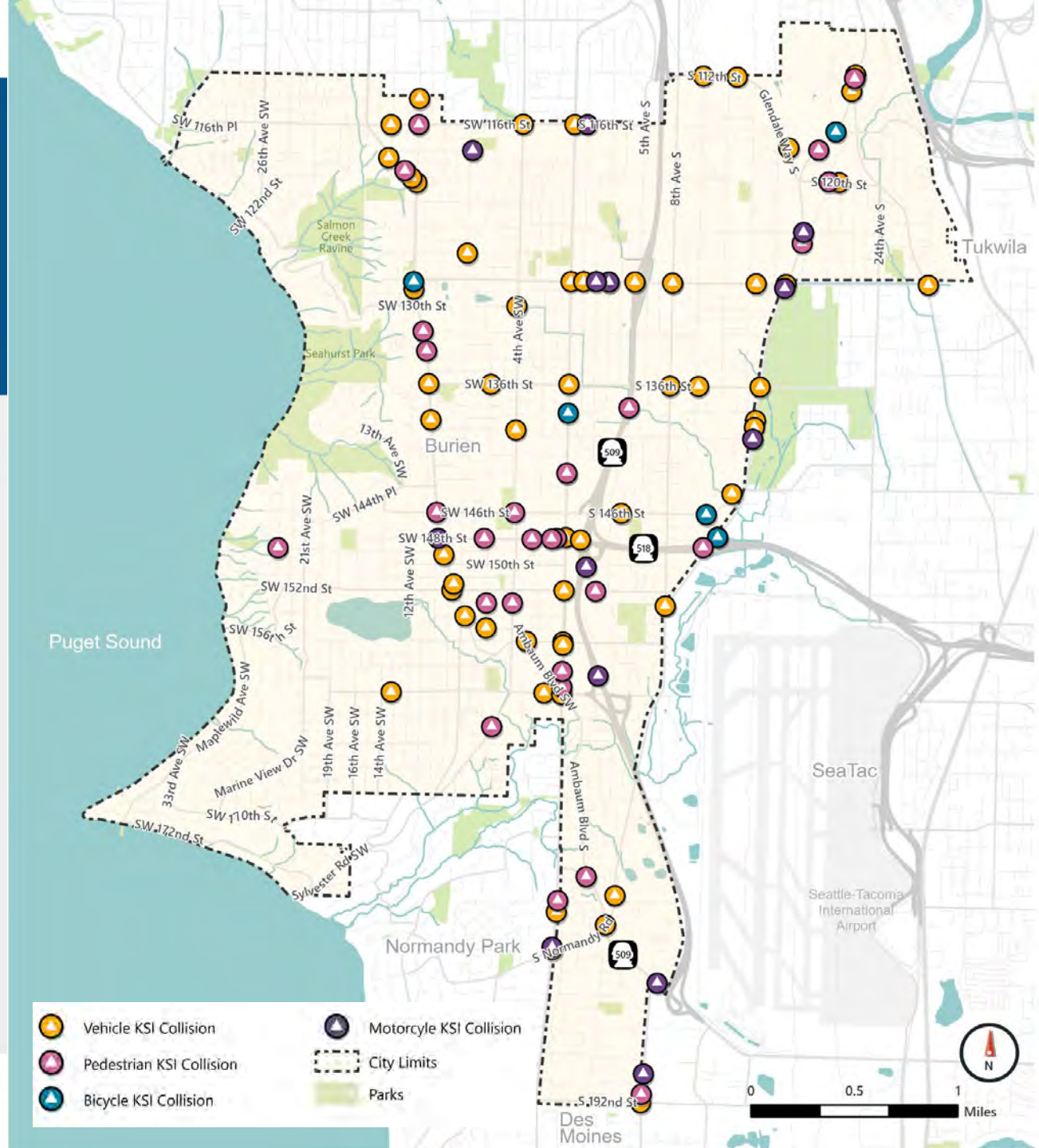


Vulnerable road user crashes account for…

- **5%** of all crashes
- **42%** of KSI crashes

KSI Crashes by Mode





Draft High Injury Network: All Modes

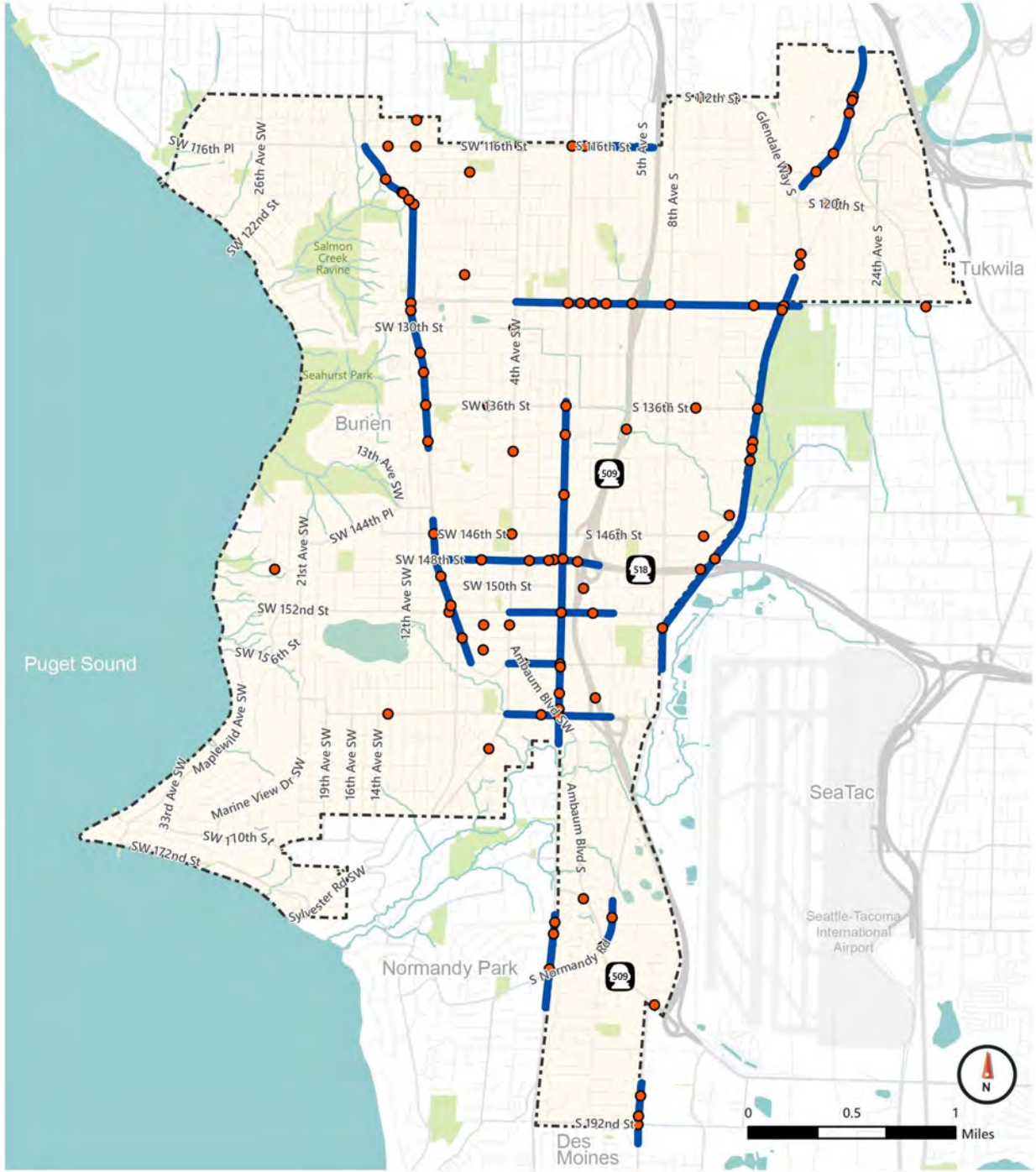
All Modes HIN = **6%** of Burien Streets

- **48%** of All Crashes
- **67%** of All KSI Crashes

City Limits

High Injury Network (all modes)

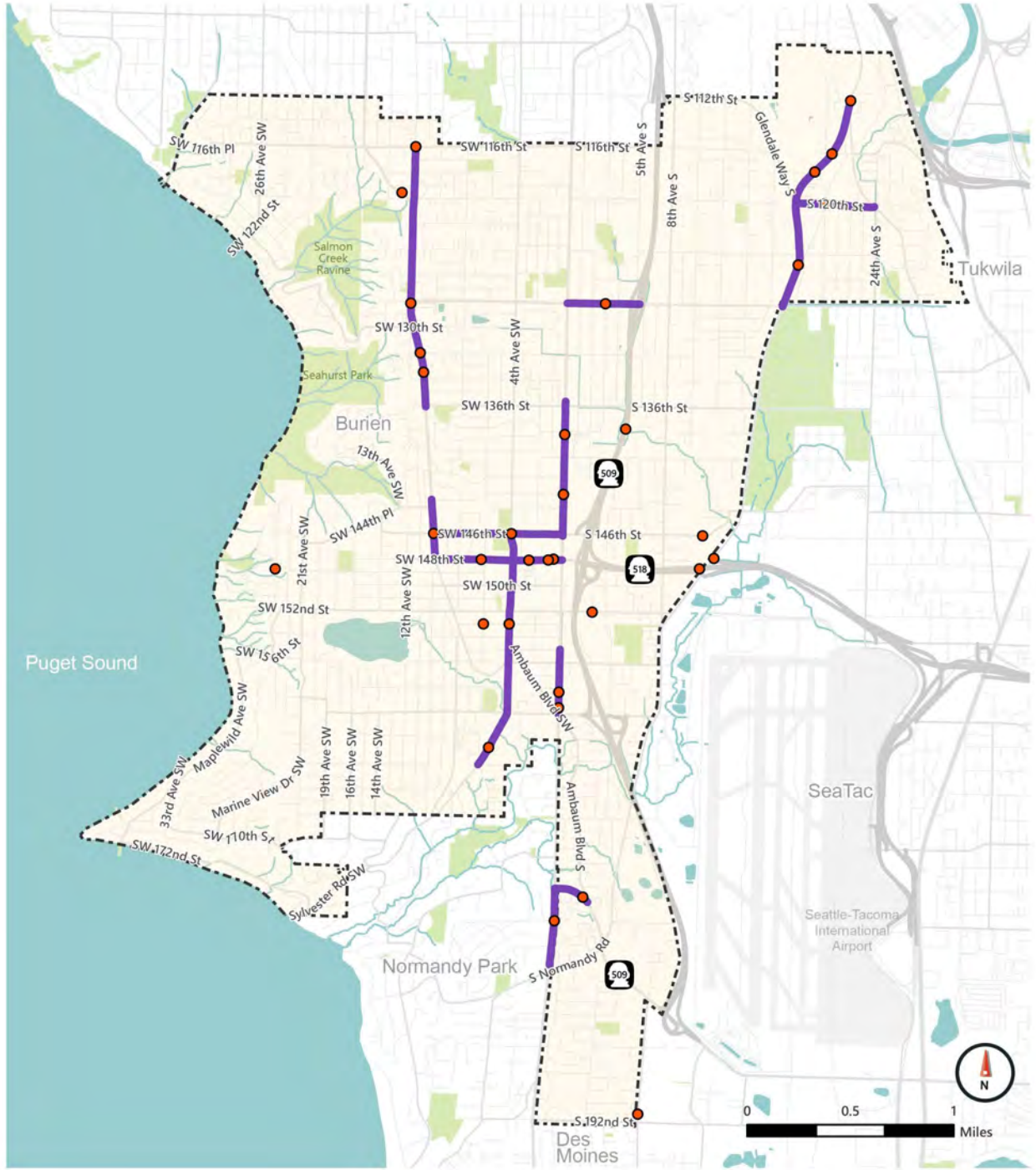
KSI (all modes)



Draft High Injury Network: Bike/Ped

Bike/Ped HIN = **4%** of Burien Streets

- **50%** of Bike/Ped Crashes
- **74%** of Bike/Ped KSI Crashes



KSI Crashes Statistics

Crash Type

Entering at an Angle

A vehicle was entering at an angle in **25%** of KSI crashes.

Hit Pedestrian

A vehicle hit a pedestrian in **25%** of KSI crashes.

Hit Fixed Object

A vehicle hit a fixed object in **12%** of KSI crashes.

Contributing Circumstance

Under the Influence

Drugs and alcohol were a contributing circumstance in **21%** of KSI crashes.

Driver Distraction/ Inattention

Distracted driving was a contributing circumstance in **18%** of KSI crashes.

Speeding

Speeding was a contributing circumstance in **12%** of KSI crashes.

Other

Time of Day

The highest rates of KSI crashes were between **10-11pm** and between **5-7pm.**

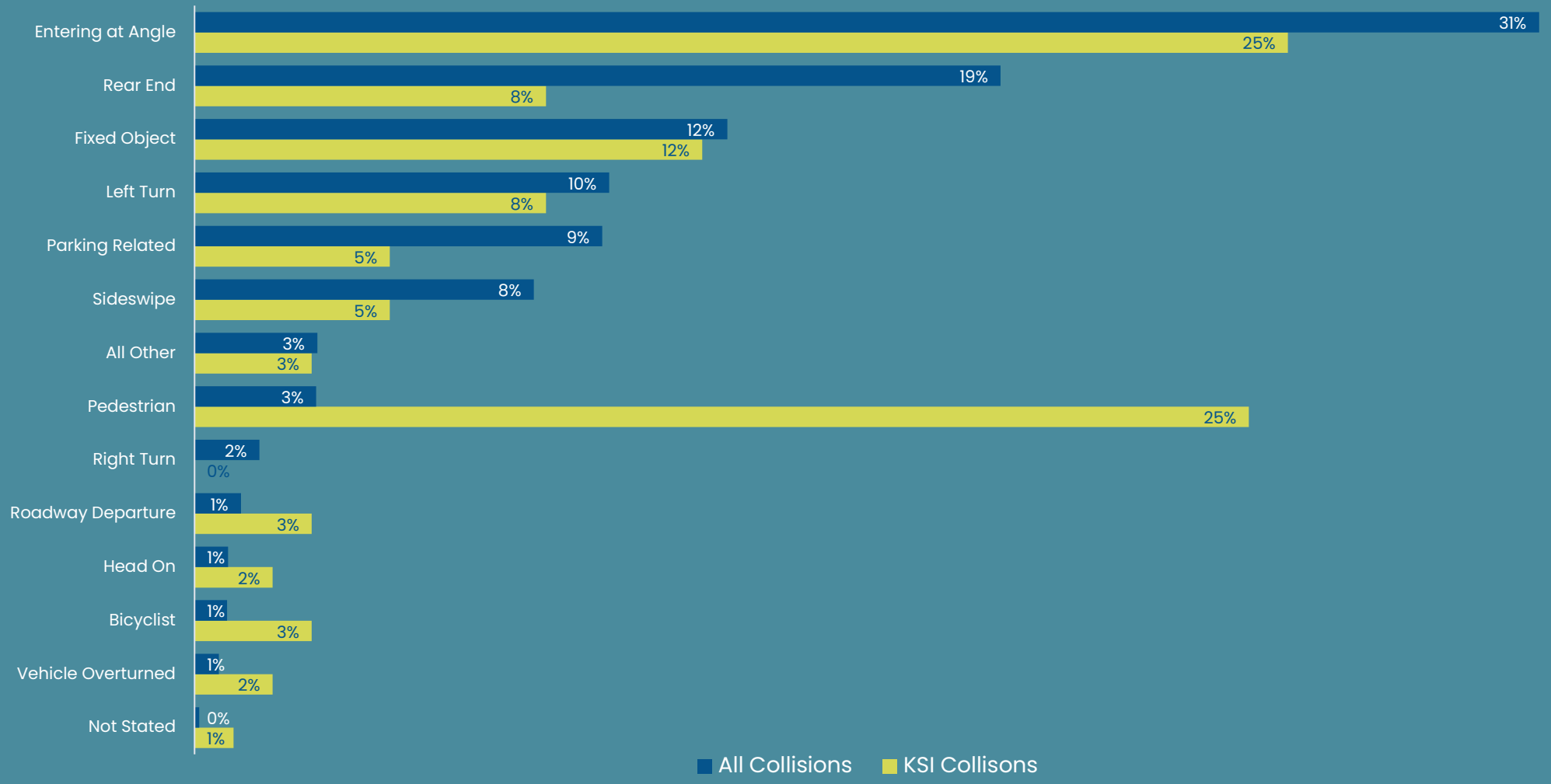
Lighting Condition

50% of KSI crashes occurred in dark, dawn, or dusk.

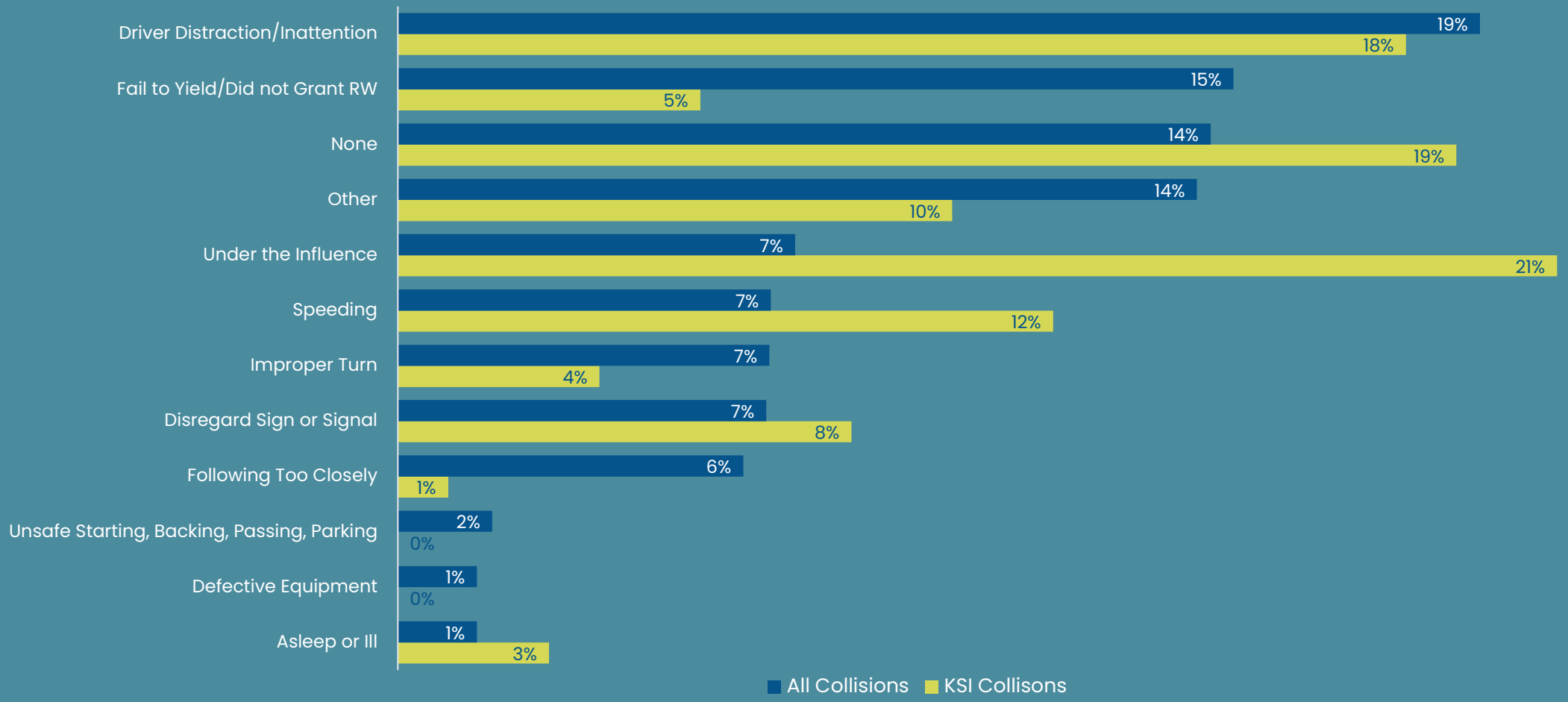
Intersections

53% of KSI crashes were intersection related.

All Crashes vs. KSI Crashes : Crash Type

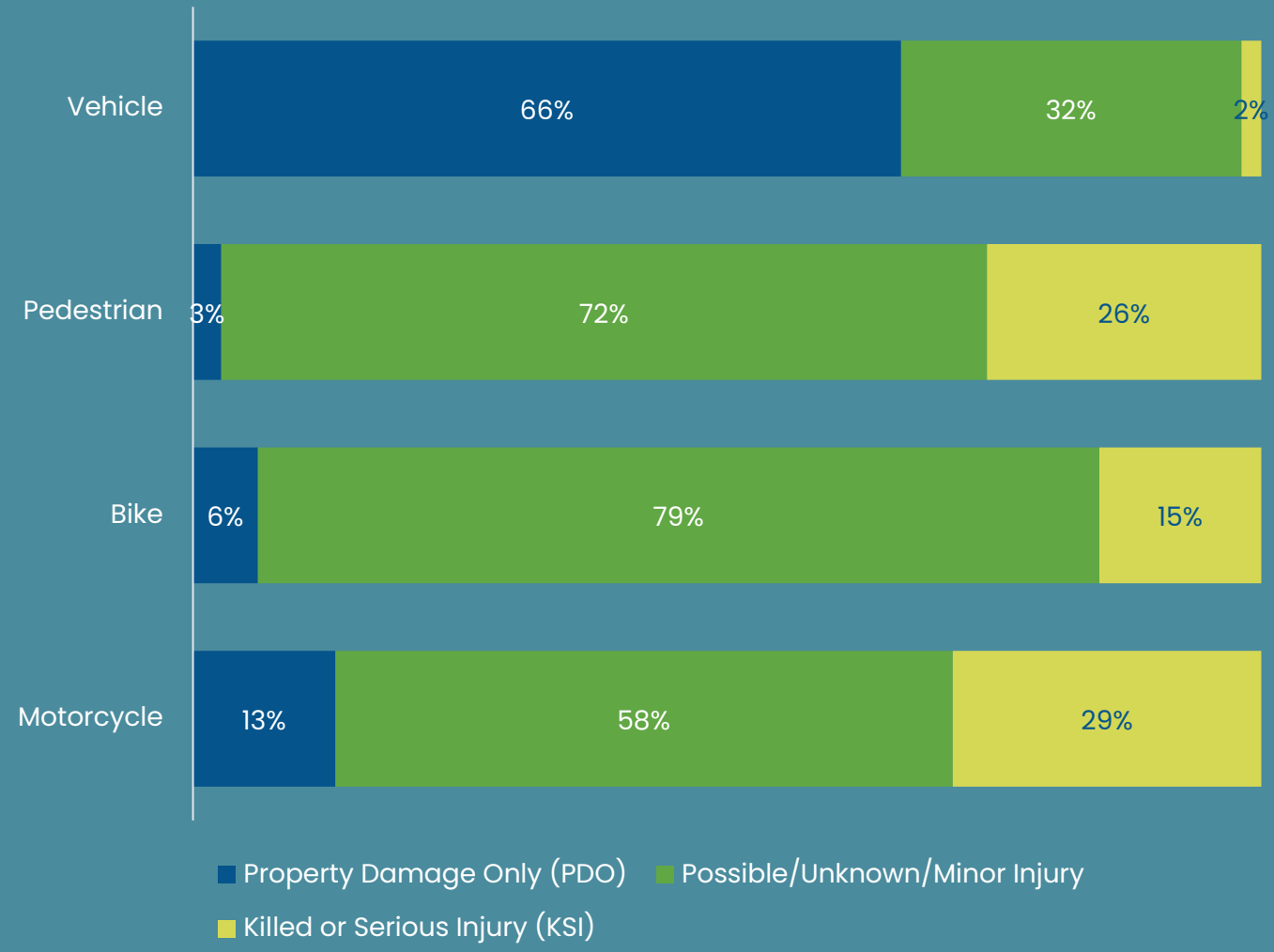


All Crashes vs. KSI Crashes: Contributing Circumstances

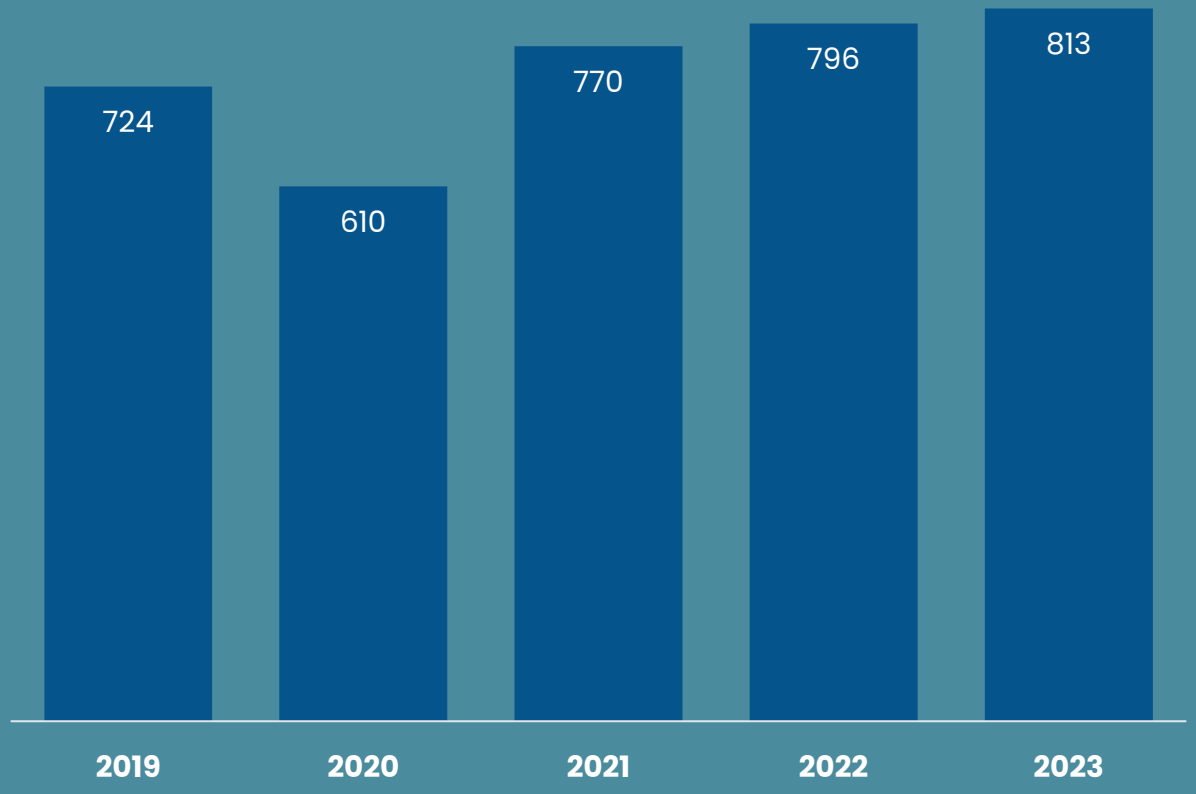


Crashes by Mode & Injury Type

- Pedestrian crashes were 13 times more likely to result in serious injury or death compared to vehicle-only crashes.
- Bicycle crashes were 7.5 times more likely, and motorcycle crashes were 14.5 times more likely than vehicle-only crashes to result in severe outcomes.
- 26% of pedestrian crashes were KSI crashes.
  - About 1 in every 4 pedestrian crashes resulted in serious injury or death.

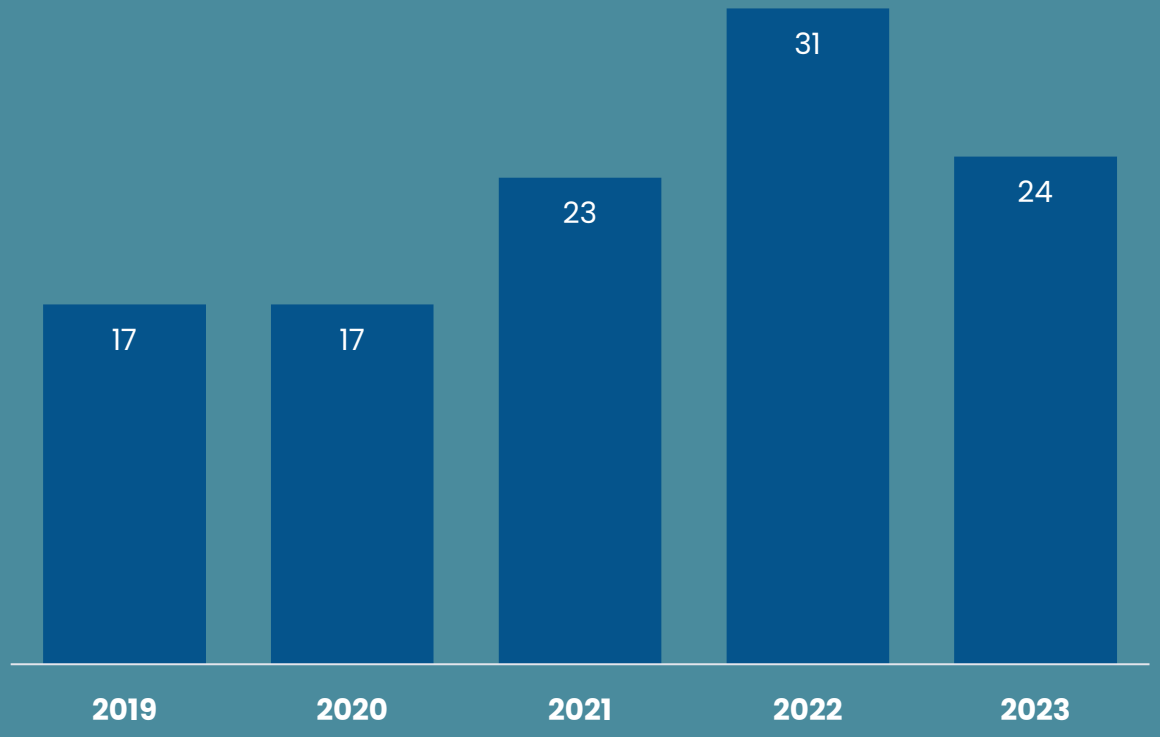


Crashes by Year: All Crashes



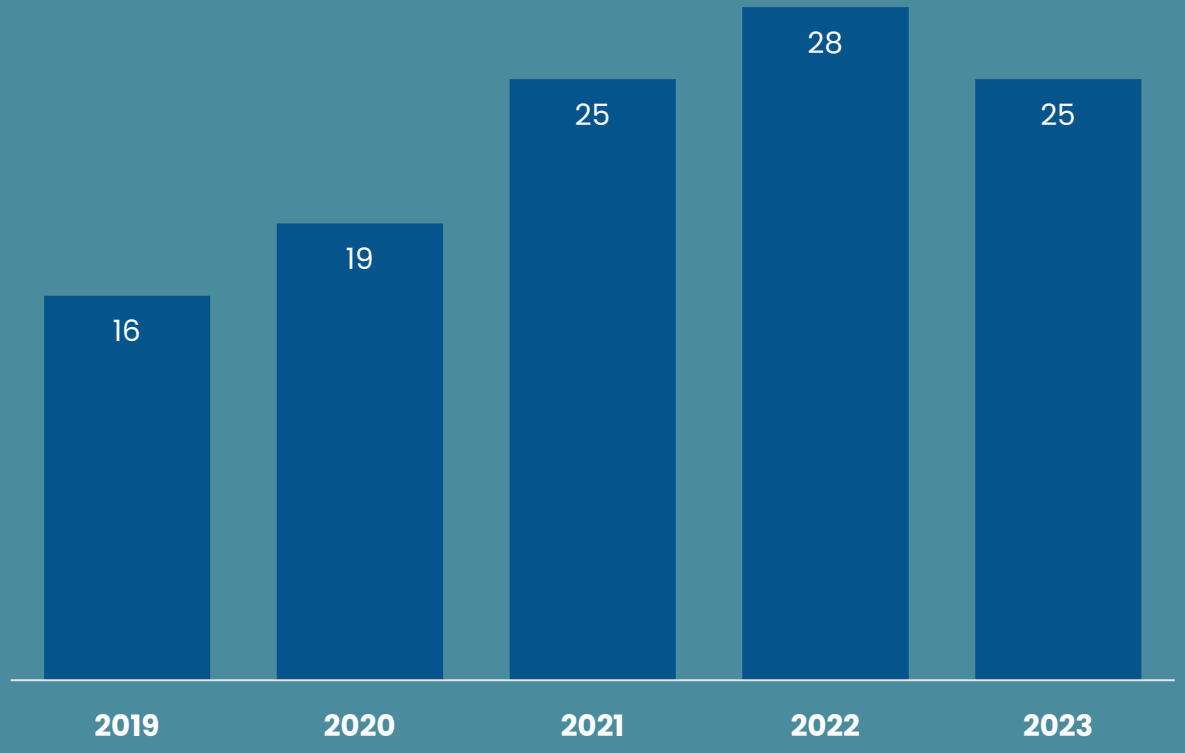
- **Between 2019 and 2023**, there was a **12% increase** in the total number of crashes.

Crashes by Year: KSI



- **Between 2019 and 2023**, there was an **increase** in KSI crashes.

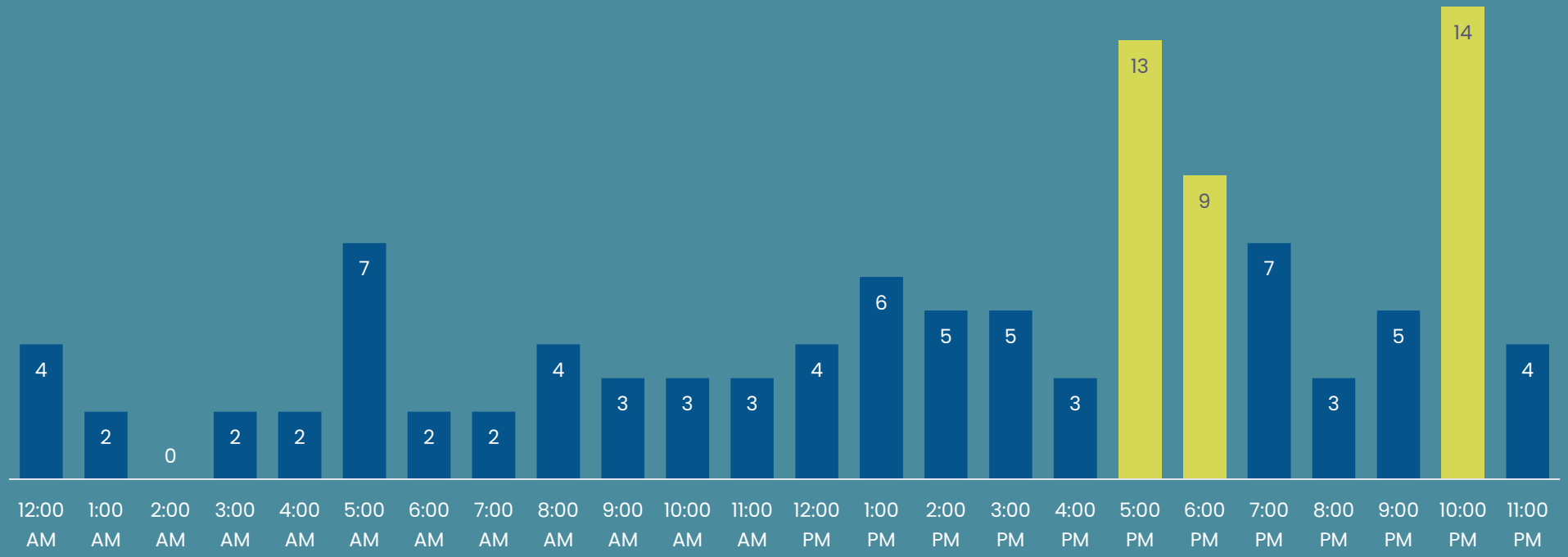
Crashes by Year: Pedestrian



- **Between 2019 and 2023**, there was an **increase** in pedestrian crashes.

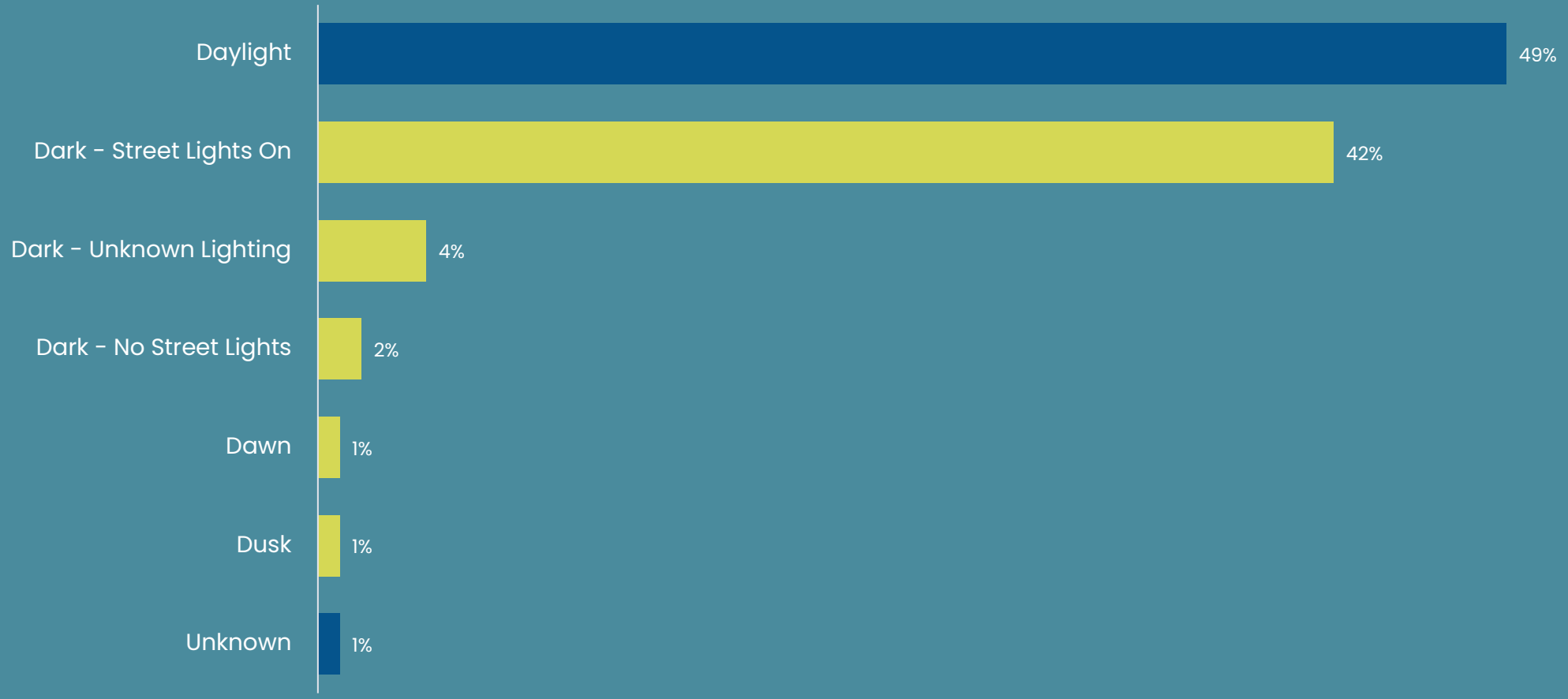
KSI Crashes: Time of Day

KSI crashes most often occurred between 10 pm and 11 pm and between 5 pm and 7 pm.



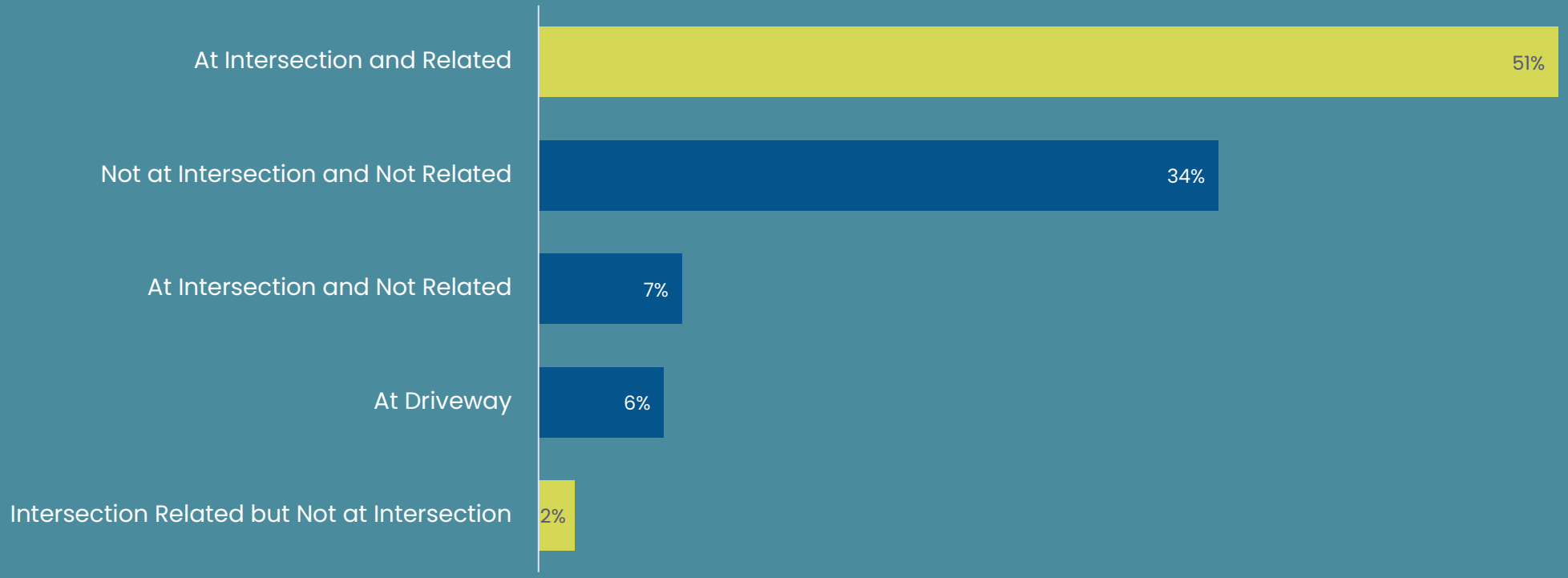
KSI Crashes: Lighting Conditions

50% of KSI crashes occurred in dark, dawn, or dusk conditions.

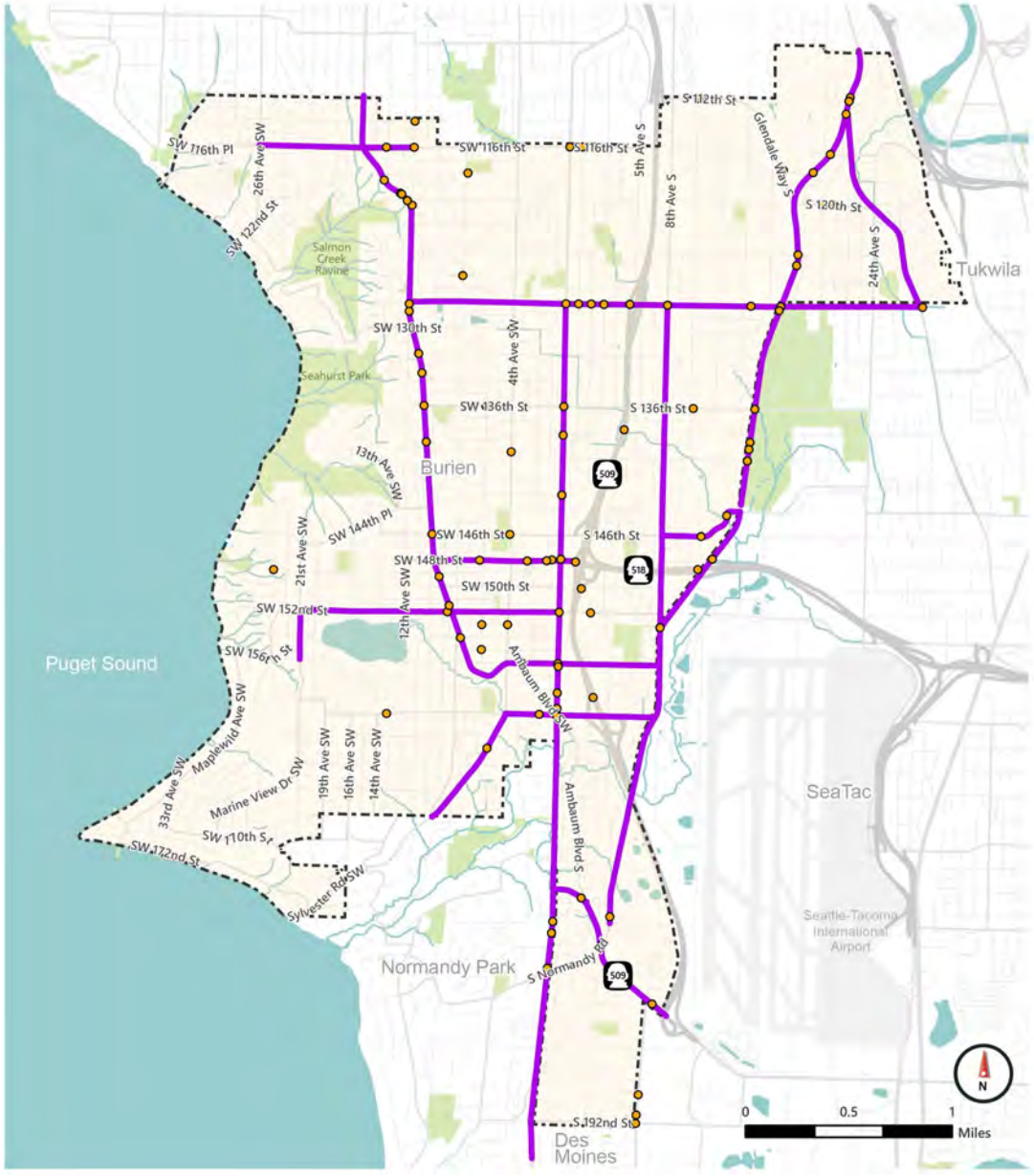


KSI Crashes: Junction Relationship

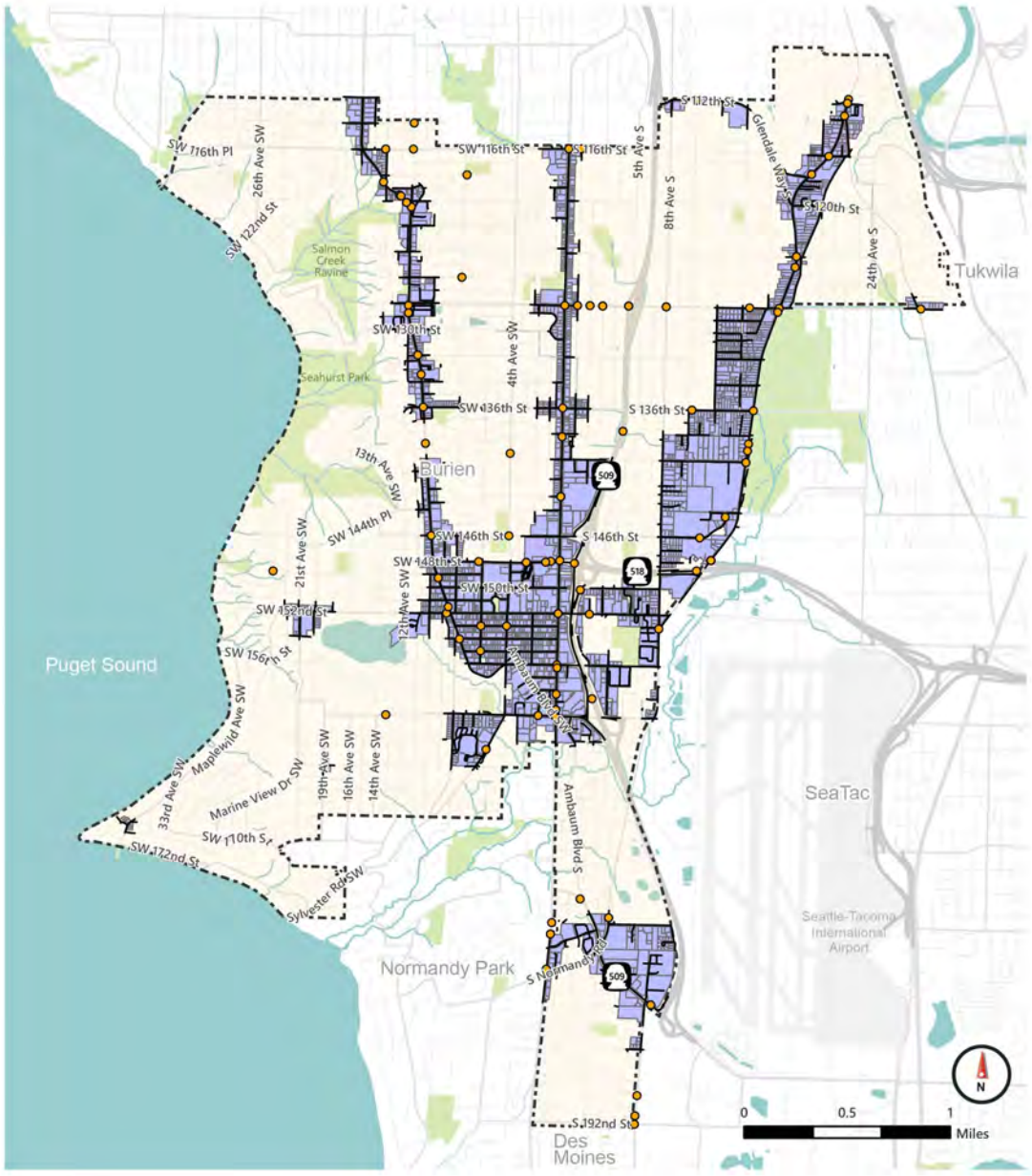
53% of KSI crashes were intersection related.



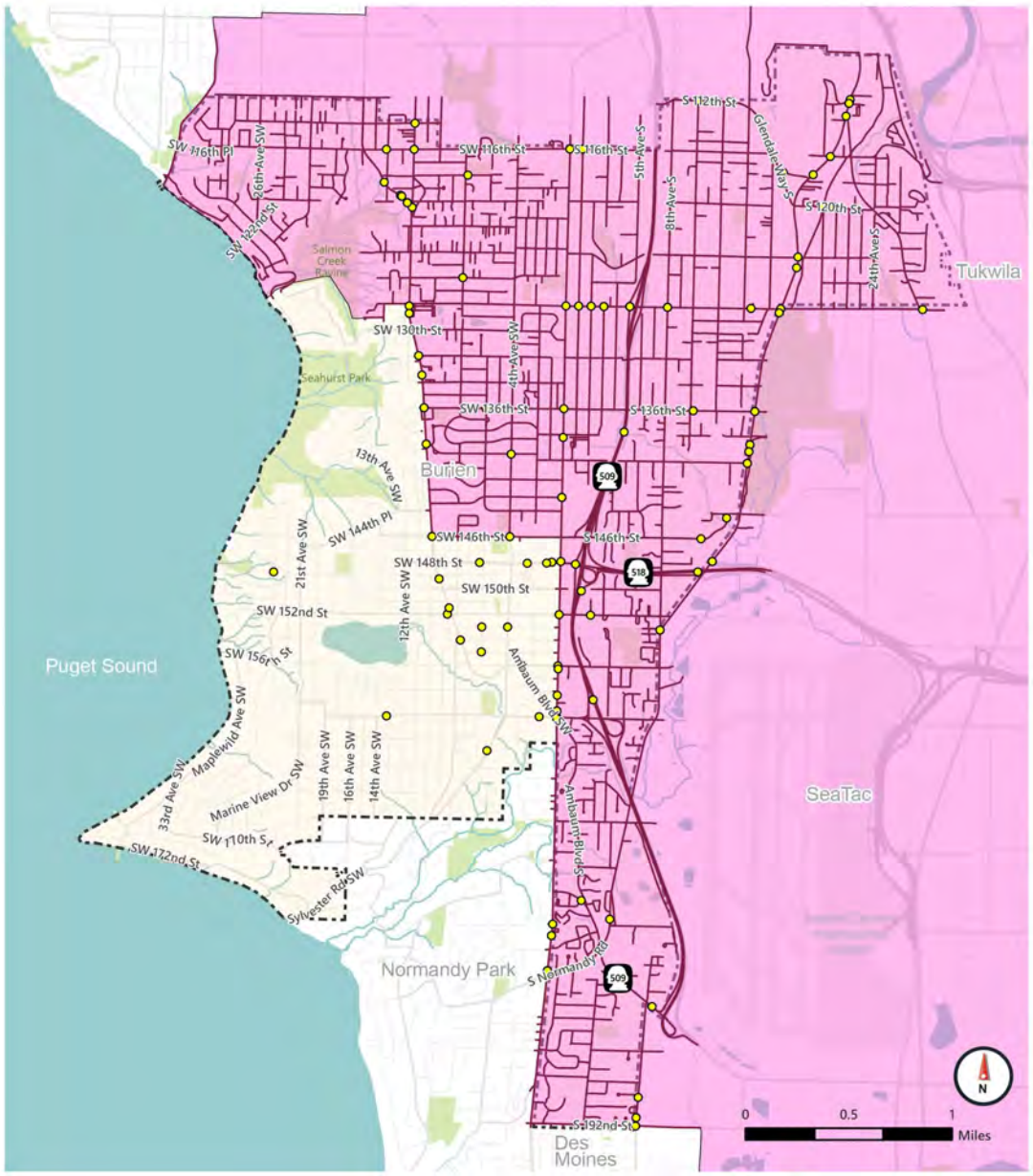
Appendix F. Crash Likelihood Mapping



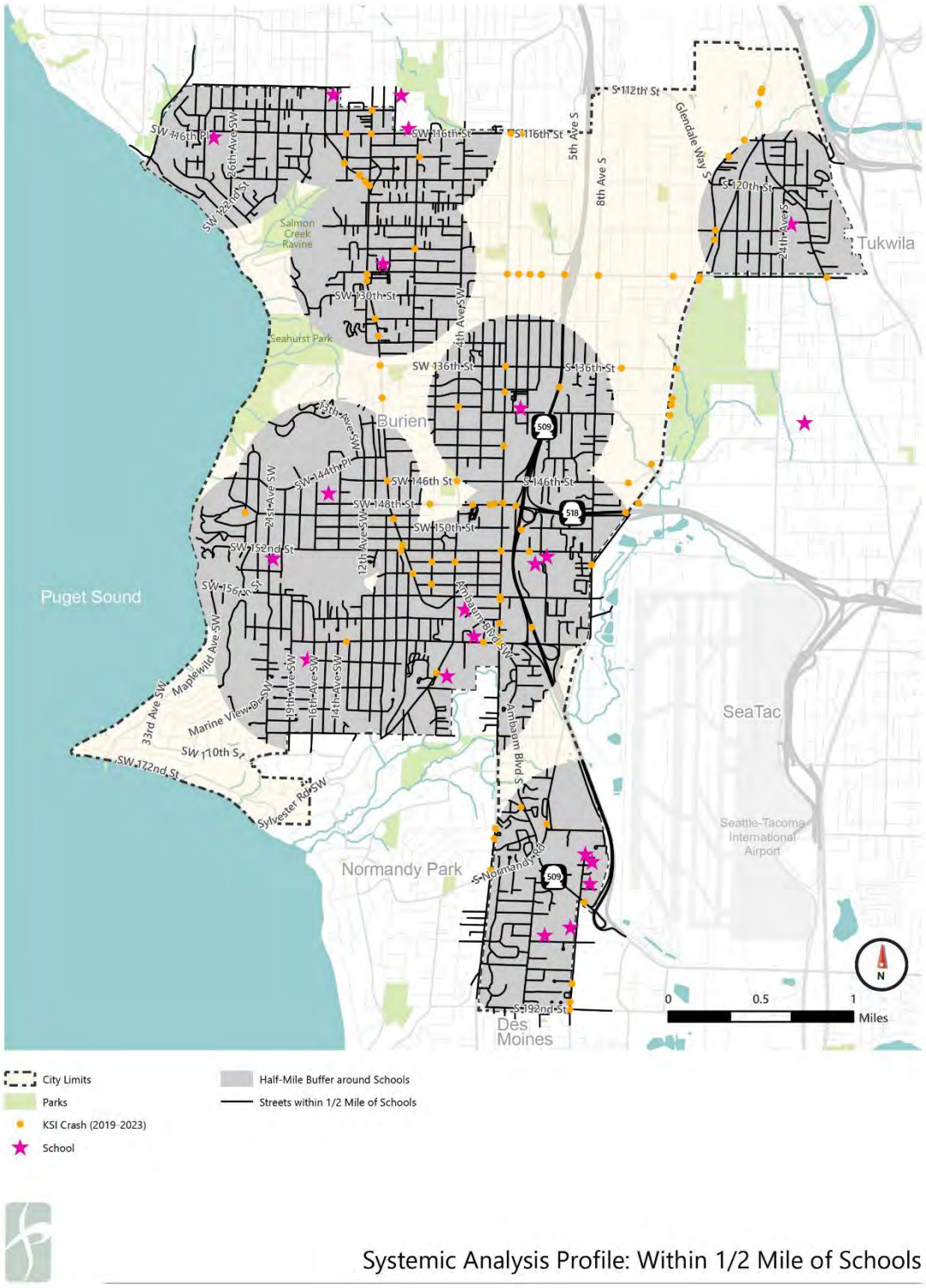
Systemic Analysis Profile: Arterials with Speed Limits of 35+mph



Systemic Analysis Profile: Commercial and Downtown Land Use



Systemic Analysis Profile: Overburdened Communities of WA



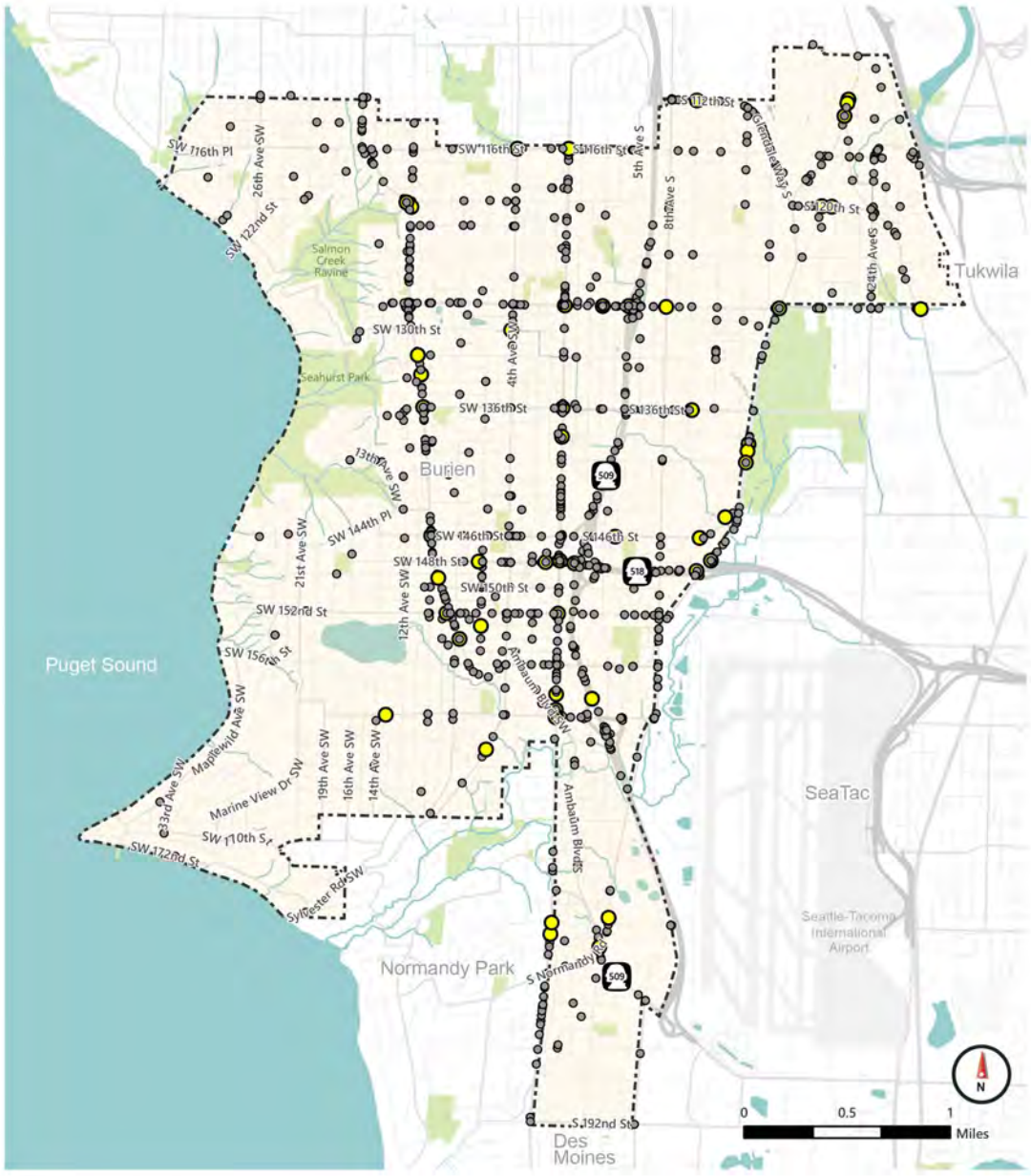
Systemic Analysis Profile: Within 1/2 Mile of Schools



Systemic Analysis Profile: No Bike Facilities



Systematic Analysis Profile: Major Intersections



Systemic Analysis Profile: Darkness

Appendix G. Detailed Project Descriptions and Pedestrian/Cyclist Crash Data

1. Project A – S 128th St (1st Ave S – SR 509 Off Ramp)

Purpose

The S 128th St corridor has been identified as a high priority corridor for safety improvements based on crash history, HIN analysis, HRN analysis, presence in the Overburdened Communities of WA area, and community/stakeholder input. This segment is located on both the All Modes and Bike/Ped HINs, with 121 total crashes, 7 of which are classified as KSI. Vehicles exiting SR 509 are maintaining high speeds through the corridor, in many cases exceeding the posted speed limit. A significant number of crashes are occurring from nearby side streets where cars are unable to navigate the space with high speed vehicles and the large number of conflicts to manage. Pedestrians and cyclists have been severely injured as a result, creating a need to scope safety improvements on the corridor.

Proposed Scope of Work

The proposed scope of work includes a 2" mill/asphalt overlay, re-channelization of the roadway by narrowing existing lanes to 10' or 11', constructing new sidewalks with buffers where feasible on both sides of the roadway, new medians to restrict vehicle access to/from side streets, new ADA curb ramps, pedestrian and other signal modifications to include Leading Pedestrian Intervals (LPI), transit stop improvements such as widening and establishing dedicated space for transit users, crosswalks and other roadway striping.

The primary countermeasures for this corridor include access management to separate and restrict vehicle movements where a high number of crashes are occurring (e.g. S 128th St & 4th Ave S), reconstruction of intersections including tightening curb radii and other geometry changes to slow turning vehicles, lane markings, and restriping existing and adding new high visibility crosswalks to encourage more visible and safer spaces for pedestrians to cross intersections, wider and/or buffered sidewalks to help separate pedestrians from vehicle lanes providing a more comfortable and safe facility, and other safety elements to help reduce vehicle speeds.

Pedestrian and Cyclist Crash Data – Project A

Project	Primary Trafficway	Intersecting TrafficWay	Most Severe Injury Type	Vehicles	Peds	Bikes	Vehicle Type	Notes	Contributing Circumstance
A	S 128TH ST	3RD AVE S	Suspected Serious Injury	3	1	0	Passenger Car	From same direction – both going straight – one stopped – rear-end	Exceeding Reas. Safe Speed
	S 128TH ST		Suspected Minor Injury	1	1	0	Pickup,Panel Truck or Vanette under 10,000 lb	Vehicle going straight hits pedestrian	Unknown Distraction
	S 128TH ST	1ST AVE S	Suspected Minor Injury	1	1	0	Pickup,Panel Truck or Vanette under 10,000 lb	Vehicle going straight hits pedestrian	Other Contributing Circ Not Listed
	509S102663		Possible Injury	1	0	1	Passenger Car	Vehicle Strikes Pedalcyclist	Did Not Grant R/W to Non Motorist
	S 128TH ST	1ST AVE S	Suspected Minor Injury	1	0	2	Pickup,Panel Truck or Vanette under 10,000 lb	Vehicle Strikes Pedalcyclist	Did Not Grant R/W to Non Motorist

2. Project B – Des Moines Memorial Dr S (S 128th St – S 111th Pl)

Purpose

The Des Moines Memorial Dr S (DMMD) corridor has been identified as a high priority corridor for safety improvements based on crash history, HIN analysis, HRN analysis, presence in the Overburdened Communities of WA area, and community/stakeholder input. This segment is located either partially or entirely on the All Modes and Bike/Ped HINs, with 84 total crashes, 9 of which are classified as KSI. One pedestrian fatality has also occurred near the DMMD/124th St S intersection due to excessive speeding. Existing intersection geometry at a number of locations is creating unsafe conditions for both pedestrians and cyclists due to excessive turning angles, unmarked and dark crossings, and wide vehicle lanes. As shown in the crash data table below, a total of 4 peds/cyclists have been severely injured or died as a result of existing roadway conditions and unsafe drivers.

Proposed Scope of Work

The proposed scope of work includes a 2" mill/asphalt overlay, re-channelization of the roadway by narrowing existing lanes to 10' or 11' creating existing roadway space for the addition of buffered bike lanes, constructing new sidewalks both sides of the roadway, new medians to restrict vehicle access to/from side streets establishing right in right out (RIRO) access at the DMMD/Military Rd S intersection, new ADA curb ramps, and single lane roundabouts at S 118th St and S 120th St/Glendale Way S intersections.

The primary countermeasures for this corridor include access and speed management to separate and restrict vehicle movements where a high number of crashes are occurring (e.g., DMMD and S 116th St) including narrowing of existing lanes. This change allows for the addition of buffered spaced between the bike and vehicle lanes, providing a safer environment for all users. Other countermeasures include reconstruction of intersections including tightening curb radii and other geometry changes to slow turning vehicles, traffic signal reconstruction and modifications, streetlights, lane markings, and restriping existing and adding new high visibility crosswalks to encourage more visible and safer spaces for pedestrians to cross intersections, construction of two single lane roundabouts at two intersections, and other safety elements to help reduce vehicle speeds. The addition of Rectangular Rapid Flashing Beacons is recommended at all marked pedestrian crossings at each roundabout. Construction of new sidewalks and ADA curb ramps and will promote more visible and safe crossings, alerting drivers of pedestrians in the roadway.

Pedestrian and Cyclist Crash Data – Project B

Project	Primary Trafficway	Intersecting TrafficWay	Most Severe Injury Type	Vehicles	Peds	Bikes	Vehicle Type	Notes	Contributing Circumstance
B	DES MOINES MEMORIAL DR S	MILITARY RD S	Suspected Minor Injury	1	1	0	Pickup,Panel Truck or Vanette under 10,000 lb	Vehicle going straight hits pedestrian	Other Contributing Circ Not Listed
	DES MOINES MEMORIAL DR S	S 124^{tH} ST	Suspected Serious Injury	1	1	0	Pickup,Panel Truck or Vanette under 10,000 lb	Vehicle going straight hits pedestrian	None
	DES MOINES MEMORIAL DR S	S 124^{tH} ST	Dead at Scene	1	1	0	Pickup,Panel Truck or Vanette under 10,000 lb	Vehicle going straight hits pedestrian	Other Contributing Circ Not Listed
	DES MOINES MEMORIAL DR S	S 112TH ST	Suspected Serious Injury	1	1	0	Passenger Car	Vehicle going straight hits pedestrian	Other Contributing Circ Not Listed
	S 116TH ST	DES MOINES MEMORIAL DR S	Suspected Minor Injury	1	1	0	Passenger Car	Vehicle turning left hits pedestrian	Did Not Grant R/W to Non Motorist
	S 128TH ST	DES MOINES MEMORIAL DR S	Possible Injury	1	1	0	Pickup,Panel Truck or Vanette under 10,000 lb	Vehicle turning right hits pedestrian	Did Not Grant R/W to Non Motorist
	DES MOINES MEMORIAL DR S	S 116TH ST	Suspected Minor Injury	1	0	1	Passenger Car	Vehicle Strikes Pedalcyclist	Did Not Grant RW to Vehicle

	DES MOINES MEMORIAL DR S	S 116TH ST	Suspected Serious Injury	1	0	1	Passenger Car	Pedalcyclist Strikes Moving Vehicle	None
	DES MOINES MEMORIAL DR S	S 120TH ST	Suspected Minor Injury	0	0	1		Pedalcyclist All Other Involvements "ONE UNIT – PEDALCYCLIST ONLY or PEDALCYCLIST STRIKES PARKED VEHICLE"	

3. Project C – Ambaum Blvd SW (SW 122nd St – SW 139th St)

Purpose

The Ambaum Blvd SW corridor has been identified as a high priority corridor for safety improvements based on crash history, HIN analysis, HRN analysis, presence in the Overburdened Communities of WA area, and community/stakeholder input. This segment is located entirely on the All Modes and Bike/Ped HINs, with 246 total crashes, 6 of which are classified as KSI. One pedestrian fatality has also occurred at the Ambaum Blvd SW/SW 132nd St intersection. Existing intersection geometry at a number of locations is creating unsafe conditions for both pedestrians and cyclists due to excessive turning angles, unmarked and dark crossings, and wide vehicle lanes. As shown in the crash data table below, a total of 3 peds/cyclists have been severely injured or died as a result of existing roadway conditions and unsafe drivers.

Proposed Scope of Work

The proposed scope of work includes a 2" mill/asphalt overlay, re-channelization of the vehicle lanes, constructing new sidewalks both sides of the roadway, consolidating driveways to reduce vehicle/pedestrian conflicts, new medians to restrict vehicle access to/from side streets establishing right in right out (RIRO) access, a two-way left turn lane, additional mid-block crossings to shorten distances between safe crossings for pedestrians along the corridor, replacement of the RRFB with a pedestrian hybrid signal (or half signal) at the Ambaum Blvd SW/SW 126th St intersection, and new ADA curb ramps.

The primary countermeasures for this corridor include access management to separate and restrict vehicle movements where a high number of crashes are occurring. Other countermeasures include reconstruction of intersections including tightening curb radii and other geometry changes to slow turning vehicles, traffic signal reconstruction and modifications, pedestrian hybrid or half signal crossings for safer pedestrian crossing facilities, lane markings, and restriping existing and adding new high visibility crosswalks to encourage more visible and safer spaces for pedestrians to cross.

Pedestrian and Cyclist Crash Data – Project C

Project	Primary Trafficway	Intersecting TrafficWay	Most Severe Injury Type	Vehicles	Peds	Bikes	Vehicle Type	Notes	Contributing Circumstance
C	AMBAUM BLVD SW	SW 130TH ST	Possible Injury	1	1	0	Not Stated	Vehicle turning left hits pedestrian	Unknown Distraction
	AMBAUM BLVD SW	SW 126TH ST	Suspected Minor Injury	1	1	0	Not Stated	Vehicle going straight hits pedestrian	Other Contributing Circ Not Listed
	AMBAUM BLVD SW	SW 136TH ST	No Apparent Injury	2	1	0	Pickup,Panel Truck or Vanette under 10,000 lb	From same direction – one right turn – one straight	Follow Too Closely
	AMBAUM BLVD SW	SW 139TH ST	Possible Injury	1	1	0	Pickup,Panel Truck or Vanette under 10,000 lb	Vehicle going straight hits pedestrian	None
	SW 126TH ST	AMBAUM BLVD SW	Suspected Minor Injury	1	1	0	Passenger Car	Vehicle turning right hits pedestrian	Other Contributing Circ Not Listed
	AMBAUM BLVD SW	S 132ND ST	Dead at Scene	1	1	0	Bus or Motor Stage	Vehicle going straight hits pedestrian	None
	AMBAUM BLVD SW	SW 122ND ST	Suspected Minor Injury	1	1	0	Pickup,Panel Truck or Vanette under 10,000 lb	Vehicle going straight hits pedestrian	None
	AMBAUM BLVD SW	SW 126TH ST	Possible Injury	1	1	0	Passenger Car	Vehicle going straight hits pedestrian	Distractions Outside Vehicle
	AMBAUM BLVD SW	SW 132ND ST	Suspected Serious Injury	1	1	0	Passenger Car	Vehicle going straight hits pedestrian	None

	SW 136TH ST	AMBAUM BLVD SW	Suspected Minor Injury	1	1	0	Passenger Car	Vehicle turning left hits pedestrian	None
	AMBAUM BLVD SW	SW 128TH ST	Suspected Serious Injury	0	0	2		Pedalcyclist Strikes Pedalcyclist or Pedestrian	None
	AMBAUM BLVD SW	SW 136TH ST	Suspected Minor Injury	1	0	1	Passenger Car	Pedalcyclist Strikes Moving Vehicle	Did Not Grant RW to Vehicle

4. Project D – S 174th St/Ambaum Blvd S (1st Ave S – S Normandy Rd)

Purpose

The S 174th St/Ambaum Blvd S corridor has been identified as a high priority corridor for safety improvements based on crash history, HIN analysis, HRN analysis, presence in the Overburdened Communities of WA area, and community/stakeholder input. This segment is located entirely on the All Modes HIN, with 32 total crashes, 2 of which are classified as KSI. One pedestrian fatality has also occurred at mile post 23.61 due to a vehicle not aware of a pedestrian crossing the street. The S 174th St Ambaum Blvd S corridor is also known as SR 509 and operates today utilizing a legacy roadway cross-section with wide travel lanes and shoulders on both sides. Currently, there are minimal to no facilities for pedestrians and cyclists, including sidewalks and ADA curb ramps. The desire for active transportation facilities has been expressed by the local community in the city's TMP and long-range planning documents. By repurposing the existing shoulders, there is adequate space to place buffered bike lanes on either side that will connect the Lake to Sound Trail from the south the 1st Ave S to the north, creating a better connected network. The lack of mid-block crossings for pedestrians also creates a hazard due to lengthy distances between safe crossings that exist at intersecting side streets.

Proposed Scope of Work

The proposed scope of work includes a 2" mill/asphalt overlay, re-channelization of the vehicle lanes to include repurposing the existing shoulders to buffered bike lanes, constructing new sidewalks both sides of the roadways, new medians to restrict vehicle access from side streets establishing right in right out (RIRO) access, a two-way left turn lane, additional mid-block crossings to shorten distances between safe crossings for pedestrians along the corridor, a new multi-lane roundabout at the Ambaum Blvd S/S Normandy Rd intersection including extending the adjacent Lake to Sound Trail through the roundabout, and other safety measures to provide safe and accessible facilities for pedestrians and cyclists.

The primary countermeasures for this corridor include access and speed management to separate and restrict vehicle movements where a high number of crashes are occurring and by narrowing of vehicle lanes. Other countermeasures include reconstruction of intersections including tightening curb radii and other geometry changes to slow turning vehicles, traffic signal reconstruction and modifications, pedestrian hybrid or half signal crossings for safer pedestrian crossing facilities, lane markings, and restriping existing and adding new high visibility crosswalks to encourage more visible and safer spaces for pedestrians to cross. The intersection of S 174th St/Ambaum Blvd S is proposed to be fully reconstructed and will eliminate the slip lane coming from the south, re-orient Ambaum Blvd S to a perpendicular connect point with S 174th St and provide safe and accessible sidewalks for pedestrians. The addition of Rectangular Rapid Flashing Beacons is recommended at the marked pedestrian crossings at the mid-block crossings and the roundabout. The construction of new sidewalks and ADA curb ramps and will promote more visible and safe crossings, alerting drivers of pedestrians and cyclists in the roadway utilizing the Lake to Sound Trail.

Pedestrian and Cyclist Crash Data – Project D

Project	Primary Trafficway	Intersecting TrafficWay	Most Severe Injury Type	Vehicles	Peds	Bikes	Vehicle Type	Notes	Contributing Circumstance
D	509	23.48 MP	Possible Injury	1	1	0	Pickup,Panel Truck or Vanette under 10,000 lb	Vehicle turning right hits pedestrian	Improper Turn/Merge
	509	23.47 MP	Suspected Minor Injury	1	1	0	Pickup,Panel Truck or Vanette under 10,000 lb	Vehicle turning right hits pedestrian	Did Not Grant R/W to Non Motorist
	509	23.61 MP	Dead at Scene	1	1	0	Pickup,Panel Truck or Vanette under 10,000 lb	Vehicle going straight hits pedestrian	Other Contributing Circ Not Listed

5. Project E – S 148th St (Ambaum Blvd SW – SR 509)

Purpose

The S 148th St corridor has been identified as a high priority corridor for safety improvements based on crash history, HIN analysis, HRN analysis, presence in the Overburdened Communities of WA area, and community/stakeholder input. This segment is located entirely on the All Modes and Bike/Ped HINs, with 246 total crashes, 7 of which are classified as KSI. A total of four crashes has involved a pedestrian injury. Existing intersection geometry at a number of locations is creating unsafe conditions for both pedestrians and cyclists due to excessive turning angles, unmarked and dark crossings, and wide vehicle lanes. In particular, the existing intersection at the Burien Transit Center has challenges creating unsafe crossings for pedestrians due to a large number of travel lanes required to cross and sight distances. It is recommended that this intersection be the priority for this corridor due to the high pedestrian volumes utilizing this crossing to access the transit center.

Proposed Scope of Work

The proposed scope of work includes a 2" mill/asphalt overlay, re-channelization of the vehicle lanes including a dedicated bus only lane at the Burien Transit Center, constructing new sidewalks, consolidating driveways to reduce vehicle/pedestrian conflicts, new medians to restrict vehicle access from side streets establishing right in right out (RIRO) access, a two-way left turn lane, a new traffic signal at the SW 148th/6th Ave SW intersection, traffic signal modifications to include Leading Pedestrian Intervals (LPI), C-curb construction to separate opposing traffic directions,

The primary countermeasures for this corridor include access management to separate and restrict vehicle movements where a high number of crashes are occurring. Other countermeasures include reconstruction of intersections including tightening curb radii and other geometry changes to slow turning vehicles, traffic signal reconstruction and modifications, dedicated bus lanes at the transit center to reduce improper vehicle use and driver confusion, LPI pedestrian phasing to allow first and safe crossing phasing, lane markings, and restriping existing and adding new high visibility crosswalks to encourage more visible and safer spaces for pedestrians to cross.

Pedestrian and Cyclist Crash Data – Project E

Project	Primary Trafficway	Intersecting TrafficWay	Most Severe Injury Type	Vehicles	Peds	Bikes	Vehicle Type	Notes	Contributing Circumstance
E	SW 148TH ST	1ST AVE S	Possible Injury	1	1	0	Pickup,Panel Truck or Vanette under 10,000 lb	Vehicle going straight hits pedestrian	None
	SW 148TH ST	4TH AVE SW	Possible Injury	1	1	0	Passenger Car	Vehicle turning right hits pedestrian	None
	SW 148TH ST	4TH AVE SW	Suspected Minor Injury	1	1	0	Passenger Car	Vehicle turning left hits pedestrian	Other Distractions
	509LX02560		Possible Injury	1	1	0	Passenger Car	Vehicle going straight hits pedestrian	None
	6TH AVE SW	SW 148TH ST	Suspected Minor Injury	1	1	0	Passenger Car	Vehicle turning right hits pedestrian	Did Not Grant R/W to Non Motorist
	SW 148TH ST	1ST AVE S	Suspected Serious Injury	1	1	0	Pickup,Panel Truck or Vanette under 10,000 lb	Vehicle going straight hits pedestrian	Other Distractions
	SW 148TH ST	1ST AVE S	Suspected Minor Injury	1	1	0	Passenger Car	Vehicle turning right hits pedestrian	Unknown Distraction
	SW 148TH ST	1ST AVE S	Suspected Serious Injury	1	1	0	Passenger Car	Vehicle turning	Unknown Distraction

								right hits pedestrian	
	SW 148TH ST	4TH AVE SW	Suspected Minor Injury	1	1	0	Passenger Car	Vehicle going straight hits pedestrian	None
	SW 148TH ST	4TH AVE SW	Suspected Serious Injury	1	1	0	Pickup,Panel Truck or Vanette under 10,000 lb	Vehicle going straight hits pedestrian	None
	SW 148TH ST	6TH AVE SW	Suspected Serious Injury	1	1	0	Pickup,Panel Truck or Vanette under 10,000 lb	Vehicle going straight hits pedestrian	None
	SW 148TH ST	4TH AVE SW	Suspected Minor Injury	1	1	0	Passenger Car	Vehicle going straight hits pedestrian	Other Contributing Circ Not Listed

6. Project F – S 152nd St (1st Ave S – Des Moines Memorial Dr S)

Purpose

The S 152nd St corridor has been identified as a high priority corridor for safety improvements based on crash history, HIN analysis, HRN analysis, presence in the Overburdened Communities of WA area, and community/stakeholder input. This segment is located entirely on the All Modes HIN, with 58 total crashes, 2 of which are classified as KSI. One crash has involved a pedestrian that was injured. The Highline High School is located on this corridor and creates a higher number of pedestrian crossings from the adjacent neighborhoods as well as increased vehicular volumes that are dropping off/picking up students attending the school. This increased volume creates a higher risk environment for all modes, creating a need to provide safe and dedicated facilities for vehicles, pedestrians, and cyclists.

Proposed Scope of Work

The proposed scope of work includes a 2" mill/asphalt overlay, reconstruction of the roadway to include a new two-way cycle track on the south side, constructing new sidewalks on both sides, consolidating driveways to reduce vehicle/pedestrian conflicts, new medians to restrict vehicle access from side streets establishing right in right out (RIRO) access, a two-way left turn lane, removal and replacement of existing RRFBs to improved, safer crossing locations by the high school that will include curb extensions, protected medians, and marked crosswalks, consolidation of the S 152nd St /DMMD/8th Ave S triangle into a single-lane roundabout. The addition of Rectangular Rapid Flashing Beacons is recommended at all marked pedestrian crossings at the roundabout. Construction of new sidewalks and ADA curb ramps and will promote more visible and safe crossings, alerting drivers of pedestrians in the roadway.

The primary countermeasures for this corridor include access management to separate and restrict vehicle movements where a high number of crashes are occurring. Other countermeasures include reconstruction of intersections including tightening curb radii and other geometry changes to slow turning vehicles, construction of a roundabout for safer access to all modes and to assist in the transition from a two-way cycle track to shared use bike paths on the east side of the corridor, RRFBs to provide safe crossings in front of the school, and other safety improvements such as marked crossings, green paint for bike/vehicle conflict zones, etc.

Pedestrian and Cyclist Crash Data – Project F

Project	Primary Trafficway	Intersecting TrafficWay	Most Severe Injury Type	Vehicles	Peds	Bikes	Vehicle Type	Notes	Contributing Circumstance
F	VILLAGE LN	S 152ND ST	Suspected Serious Injury	1	1	0	Pickup,Panel Truck or Vanette under 10,000 lb	Vehicle turning left hits pedestrian	Did Not Grant R/W to Non Motorist

7. Project G – S 146th St (SR 509 NB On Ramp – Des Moines Memorial Dr S)

Purpose

The S 146th St corridor has been identified as a high priority corridor for safety improvements based on crash history, HIN analysis, HRN analysis, presence in the Overburdened Communities of WA area, and community/stakeholder input. A total of 33 crashes has occurred on this corridor with 3 crashes involving pedestrians and cyclists. Existing intersection geometry at a number of locations, including the SR 509 on/off ramps is creating unsafe conditions for both pedestrians and cyclists due to excessive turning angles, unmarked and dark crossings, and wide vehicle lanes. With increased volumes from the intersecting side streets, pedestrians are more vulnerable to accidents when crossing over S 146th into the park and when utilizing the shared use path on the northeast side of the corridor.

Proposed Scope of Work

The proposed scope of work includes a 2" mill/asphalt overlay, construction of a roundabout at the SR 509 on and off ramps, re-channelization of the roadway to two 11' travel lanes (one in each direction) and buffered bike lanes, relocating the existing transit stop near 4th Ave S closer to the roundabout for safer and more accessible pedestrian crossings, constructing new sidewalks on both sides, consolidating driveways to reduce vehicle/pedestrian conflicts, new medians to restrict vehicle access from side streets establishing right in right out (RIRO) access, protected median crosswalks at the park entrance and the Miller Creek trail. The addition of Rectangular Rapid Flashing Beacons is recommended at marked pedestrian crossings, at each roundabout, park entrance/5th Pl S, and the Miller Creek Trail Crossing. Construction of new sidewalks and ADA curb ramps and will promote more visible and safe crossings, alerting drivers of pedestrians in the roadway.

The primary countermeasures for this corridor include reconstruction of intersections including tightening curb radii and other geometry changes to slow turning vehicles, construction of roundabouts for safer access to all modes, buffered bike lanes to provide separation and comfort for cyclists, RRFBs to provide safe crossings in front of the park and at the trail crossing, and other safety improvements such as restriping existing and adding new high visibility crosswalks to encourage more visible and safer spaces for pedestrians to cross , green paint for bike/vehicle conflict zones, etc.

Pedestrian and Cyclist Crash Data – Project G

Project	Primary Trafficway	Intersecting TrafficWay	Most Severe Injury Type	Vehicles	Peds	Bikes	Vehicle Type	Notes	Contributing Circumstance
G	S 146TH ST	8TH AVE S	Suspected Serious Injury	1	0	1	Pickup,Panel Truck or Vanette under 10,000 lb	Pedalcyclist All Other Involvements "ONE UNIT – PEDALCYCLIST ONLY or PEDALCYCLIST STRIKES PARKED VEHICLE"	Unknown Distraction

8. Project H – S 120th St/Military Rd S/24th Ave S Intersection

Purpose

The S 120th St/Military Rd S/24th Ave S Intersection has been identified as a high priority location for safety improvements based on crash history, HIN analysis, HRN analysis, presence in the Overburdened Communities of WA area, and community/stakeholder input. A total of 18 crashes has occurred at this intersection. The side streets intersecting geometry with Military Rd S, the main arterial, is problematic and challenging for pedestrians to access safely. Pedestrians must navigate through a series of vehicle slip lanes and center island with only stop signs acting as stop control for vehicles. This, paired with the lack of sidewalks on either side of all roadways at the intersection prohibit pedestrian movements even further. The City has plans to widen Military Rd S to a 5-lane Principal Arterial and this intersection has the opportunity to significantly improve its function in conjunction with the widening project.

Proposed Scope of Work

The proposed scope of work includes full reconstruction of the entire intersection to include a peanut roundabout, re-channelization of the roadway and provide safer and more accessible pedestrian crossings, constructing new sidewalks on both sides, and consolidating driveways to reduce vehicle/pedestrian conflicts. The addition of Rectangular Rapid Flashing Beacons is recommended at all marked pedestrian crossings at the roundabout. Construction of new sidewalks and ADA curb ramps and will promote more visible and safe crossings, alerting drivers of pedestrians in the roadway.

The primary countermeasures for this corridor include reconstruction of the intersection to a peanut roundabout including tightening curb radii and other geometry changes to slow turning vehicles, and RRFBs to provide safe crossings and other safety improvements such as pedestrian refuge islands, medians, access management, etc.

Pedestrian and Cyclist Crash Data – Project H

Project	Primary Trafficway	Intersecting TrafficWay	Most Severe Injury Type	Vehicles	Peds	Bikes	Vehicle Type	Notes	Contributing Circumstance
H	MILITARY RD S	24TH AVE S	Possible Injury	1	1	0	Pickup,Panel Truck or Vanette under 10,000 lb	Vehicle turning right hits pedestrian	Did Not Grant R/W to Non Motorist
	MILITARY RD S	24TH AVE S	Suspected Minor Injury	1	1	0	Passenger Car	Vehicle turning right hits pedestrian	Other Contributing Circ Not Listed

9. Project I – S 120th St (20th Ave S – Military Rd S)

Purpose

The S 120th St corridor has been identified as a high priority corridor for safety improvements based on crash history, HIN analysis, HRN analysis, presence in the Overburdened Communities of WA area, and community/stakeholder input. This segment is located entirely on the Bike/Ped HIN, with 24 total crashes, 2 of which are classified as KSI. One crash has involved a pedestrian that died as a result of vehicle striking the person. The community library at the S 120th St/20th Ave S/Roseberg Ave S currently has a marked crosswalk on S 120th St, however, the lack of stop control for vehicles creates a hazardous situation for pedestrians utilizing this crossing. Existing transit service also has sub adequate facilities such as ADA accessible sidewalks, transit shelters, and other civil improvements needed to provide a safe space. This segment terminates at Project I at the intersection of S 120th St/Military Rd S/24th Ave S.

Proposed Scope of Work

The proposed scope of work includes a 2" mill/asphalt overlay, re-channelization of the vehicle lanes by narrowing, providing buffered bike lanes where space allows, constructing new sidewalks, consolidating driveways to reduce vehicle/pedestrian conflicts, transit stop improvements to include widened sidewalks, new transit shelters, trash receptacles, streetlights, and new ADA curb ramps, connection into the new peanut roundabout recommended for the S 120th St/Military Rd S/24th Ave S intersection, and RRFBs at the existing library crossing. Construction of new sidewalks and ADA curb ramps and will promote more visible and safe crossings, alerting drivers of pedestrians in the roadway.

The primary countermeasures for this corridor include reconstruction of intersections including tightening curb radii and other geometry changes to slow turning vehicles, lane markings, and restriping existing and adding new high visibility crosswalks to encourage more visible and safer spaces for pedestrians to cross, transit stop improvements to provide safe and visible stop locations for pedestrians, and RRFBs at the library crossing to provide stop control for vehicles to stop when pedestrians cross.

Pedestrian and Cyclist Crash Data – Project I

Project	Primary Trafficway	Intersecting TrafficWay	Most Severe Injury Type	Vehicles	Peds	Bikes	Vehicle Type	Notes	Contributing Circumstance
I	S 120TH ST	ROSEBERG AVE S	Died in Hospital	1	1	0	Passenger Car	Vehicle going straight hits pedestrian	Exceeding Stated Speed Limit
	S 120TH ST	22ND AVE S	Possible Injury	1	0	1	Passenger Car	Vehicle Strikes Pedalcyclist	Inattention

10. Project J – 1st Ave S (S 140th St – S 128th St)

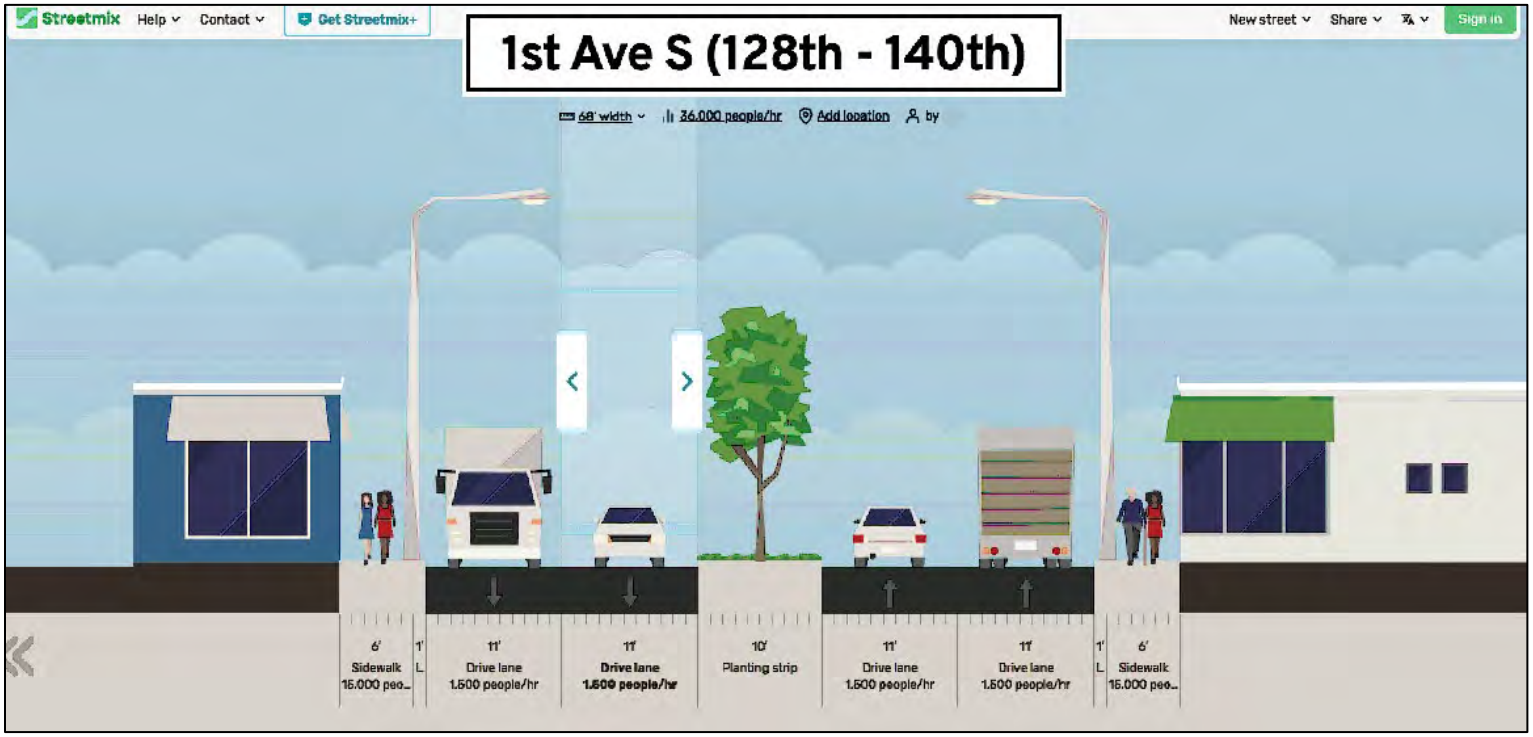
Purpose

The 1st Ave S corridor has been identified as a high priority corridor for safety improvements based on crash history, HIN analysis, HRN analysis, presence in the Overburdened Communities of WA area, and community/stakeholder input. This segment is partially located on the All Modes and Bike/Ped HINs, with 101 total crashes, 3 of which are classified as KSI. One crash has involved a cyclist that was injured. A large number of driveways have higher vehicle volumes accessing 1st Ave S from both directions and paired with a lack of safe and accessible crossings creates an unsafe condition for pedestrians attempting to cross over the corridor.

Proposed Scope of Work

The proposed scope of work includes a 2" mill/asphalt overlay where needed, re-channelization of the vehicle lanes by narrowing travel lanes, new sidewalks, consolidating driveways to reduce vehicle/pedestrian conflicts, transit stop improvements to include widened sidewalks, new transit shelters, trash receptacles, streetlights, and new ADA curb ramps, a new pedestrian hybrid signal or half signal at the 1st Ave S/SW 130th Pl intersection, new medians and center two-way left turn lanes where required for separation and protection for pedestrian crossings, and other safety work. Construction of new sidewalks and ADA curb ramps and will promote more visible and safe crossings, alerting drivers of pedestrians in the roadway.

Figure 1. A Recommended Roadway Cross-Section for 1st Ave S



The primary countermeasures for this corridor include access management to separate and restrict vehicle movements where a high number of crashes are occurring. Other countermeasures include reconstruction of intersections including tightening curb radii and other geometry changes to slow turning vehicles, traffic signal reconstruction and modifications, pedestrian hybrid or half signal crossings for safer pedestrian crossing facilities, lane markings, and restriping existing and adding new high visibility crosswalks to encourage more visible and safer spaces for pedestrians to cross.

Pedestrian and Cyclist Crash Data – Project J

Project	Primary Trafficway	Intersecting TrafficWay	Most Severe Injury Type	Vehicles	Peds	Bikes	Vehicle Type	Notes	Contributing Circumstance
J	1ST AVE S	S 140TH ST	No Apparent Injury	2	1	0	Pickup,Panel Truck or Vanette under 10,000 lb	From opposite direction - one left turn - one straight	Under Influence of Alcohol
	S 128TH ST	1ST AVE S	Suspected Minor Injury	1	1	0	Pickup,Panel Truck or Vanette under 10,000 lb	Vehicle going straight hits pedestrian	Other Contributing Circ Not Listed
	S 136TH ST	1ST AVE S	Possible Injury	1	1	0	Not Stated	Vehicle turning left hits pedestrian	Other Contributing Circ Not Listed
	1ST AVE S	SW 138TH ST	Suspected Serious Injury	1	0	1	Pickup,Panel Truck or Vanette under 10,000 lb	Vehicle Strikes Pedalcyclist	None
	S 128TH ST	1ST AVE S	Suspected Minor Injury	1	0	2	Pickup,Panel Truck or Vanette under 10,000 lb	Vehicle Strikes Pedalcyclist	Did Not Grant R/W to Non Motorist

11. Project K – S 160th St/Ambaum Blvd S/1st Ave S Intersection

Purpose

The S 160th St/Ambaum Blvd S/1st Ave S Intersection has been identified as a high priority location for safety improvements based on crash history, HIN analysis, HRN analysis, presence in the Overburdened Communities of WA area, and community/stakeholder input. This segment is partially located on the All Modes and Bike/Ped HINs, with 29 total crashes, 2 of which are classified as KSI. Improvements to the pedestrian and cyclist infrastructure has been expressed by the community in both the city's TMP planning documents as well as the nearby WSDOT SR 509 proposed improvements at the S 160th St interchange.

Proposed Scope of Work

The proposed scope of work includes removing access for Ambaum Blvd S/SW to the SW 160th St intersection by dead ending each approach of Ambaum Blvd SW. Vehicular traffic will be rerouted to the Ambaum Cutoff S/SW corridors to accommodate existing movements required. Access to all existing local businesses on Ambaum Blvd S/SW to remain. Pedestrian and bicycle facility improvements are recommended on the dead-end streets to provide a seamless connection to the main intersection at SW 160th St. Additional work includes a 2" mill/asphalt overlay where needed, re-channelization of the vehicle lanes and narrowing travel lanes, new sidewalks, consolidating driveways to reduce vehicle/pedestrian conflicts, and new ADA curb ramps. Connection to the newly proposed roundabout at SR 509 and S 160th St interchange is recommended.

The primary countermeasures for this corridor include reconstruction of the intersection to a roundabout including tightening curb radii and other geometry changes to clos turning vehicles, access and RRFBs to provide safe crossings and other safety improvements such as pedestrian refuge islands, medians, access management, etc.

Pedestrian and Cyclist Crash Data – Project K

Project	Primary Trafficway	Intersecting TrafficWay	Most Severe Injury Type	Vehicles	Peds	Bikes	Vehicle Type	Notes	Contributing Circumstance
K	NONE	NONE	NONE	0	0	0	NONE	NONE	NONE

Appendix H. Countermeasures Toolbox



Burien

Countermeasures Toolbox

2025

PRODUCED BY

Fehr & Peers

Introduction

This document provides a set of tools for improving pedestrian safety on the State Highway System. It was designed to be
used to address issues identified during traffic safety investigations conducted while evaluating high collision concentration locations and systemic safety locations. However, these tools may be used more generally to improve pedestrian safety.

This document should not provide the sole source of guidance when resolving a pedestrian safety issue.

Each location and situation is unique, and engineering judgment should be used when applying these tools and selecting the best solution for any location.



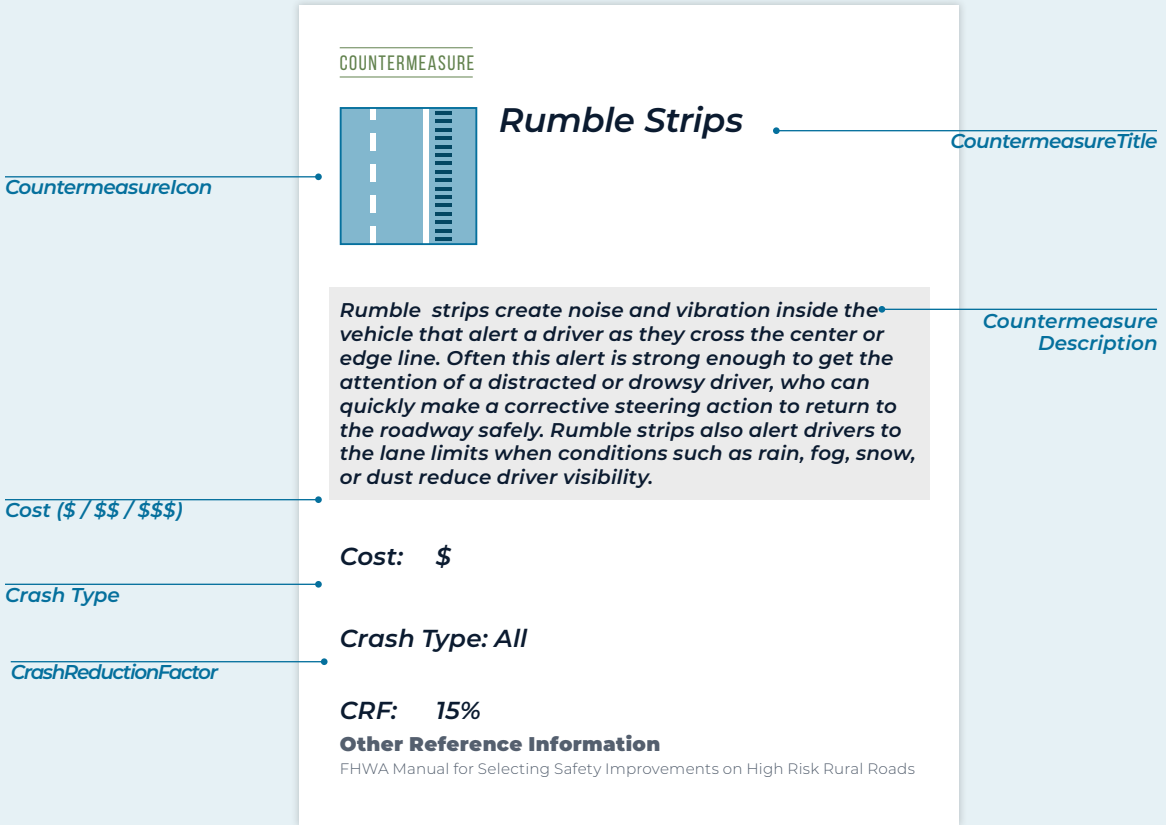
Countermeasure Toolbox

Summary

This Toolbox presents 43 safety countermeasures applicable in different roadway contexts.

Many of the countermeasures have an associated Crash Reduction Factor (CRF) and crash type (i.e., all modes, bicycle and pedestrian crashes only, etc.). The higher the CRF (1 being the highest), the greater the expected reduction in crashes. Countermeasures that are not proven by FHWA are scored on a "low-medium-high" research availability scale based on proven safety studies. The higher the rating, the greater the availability of rigorous research demonstrating proven safety benefits.

What You'll See in This Toolbox



Index of Countermeasures

BIKEWAYS

- Bicycle Crossing (Solid Green Paint)
- Bicycle Ramp
- Bicycle Signal/Exclusive Bike Phase
- Bike Box
- Bike Detection
- Bike-Friendly Drain
- Bike Lane
- Extend Bike Lane to Intersection
- Floating Transit Island
- Green Conflict Striping
- Separated Bikeway
- Mixing Zone
- Parking Buffer
- Shared Sidewalk Sign
- Two-Stage Turn Queue Bike Box
- Extend Green Time For Bikes
- Bicycles May Use Full Lane Sign

INTERSECTIONS & ROADWAYS

- Rumble Strips
- All-Way Stop Control
- Centerline Hardening
- Close Slip Lane
- Directional Median Openings to Restrict Left Turns
- Improved Pavement Friction
- Safety Edge
- Guardrail
- Median Barrier
- Roundabout
- Signal
- Superelevation at Horizontal Curve Locations
- Intersection Reconstruction and Tightening
- Lane Narrowing
- Left Turn Enhanced Daylighting/ Slow Turn Wedge
- Paint and Plastic Median
- Paint and Plastic Mini Circle
- Partial Closure/Diverter
- Protected Intersection
- Raised Crosswalk
- Raised Intersection
- Raised Median
- Refuge Island
- Reduced Left-Turn Conflict Intersection
- Right Turn Slip Lane
- Road Diet
- Speed Hump or Speed Table
- Splitter Island
- Straighten Crosswalk
- Widen/Pave Shoulder

OTHER

- Back-In Angled Parking
- Access Management/Close Driveway
- Intersection Lighting
- Segment Lighting
- Create or Increase Clear Zone
- Curbside Management
- Far-Side Bus Stop
- Delineators, Reflectors, and/or Object Markers
- Impact Attenuators
- Median Guardrail
- Speed Limit Reduction
- RelocateSelect Hazardous Utility Poles
- Remove Obstructions For Sightlines



- *Upgrade Lighting to LED*
- *Red Light Camera*

PEDESTRIAN FACILITIES

- *Audible Push Button Upgrade*
- *Add Sidewalk*
- *Install/Upgrade Pedestrian Crossing at Uncontrolled Locations (Signs and Markings Only)*
- *Co-Locate Bus Stops and Pedestrian Crossings*
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- *Extended Time Pushbutton*
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- *Restripe Crosswalk*
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SIGNALS

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- *Supplemental Signal Heads*
- *Advanced Dilemma Zone Detection*
- *Extend Pedestrian Crossing Time*
- *Extend Yellow and All Red Time*
- *Flashing Yellow Turn Phase*
- *Pedestrian Scramble*
- *Prohibit Left Turn*
- *Prohibit Turns During Pedestrian Phase*
- *Protected Left Turns*
- *Prohibit Right-Turn-on-Red*
- *Separate Right-Turn Phasing*
- *Shorten Cycle Length*
- *Signal Interconnectivity and Coordination / Green Wave*
- *Speed Sensitive Rest in Red Signal*
- *Upgrade Signal Head*

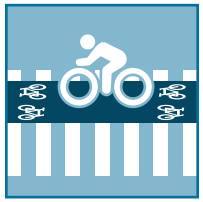
SIGNING & STRIPING

- *Advance Stop Bar*
- *Advance Yield Markings*
- *Curve Advance Warning Sign*
- *Flashing Beacon as Advance Warning*
- *Chevron Signs on Horizontal Curves*
- *LED-Enhanced Sign*
- *Painted Centerline and Raised Pavement Markers at Curves on Residential Streets*
- *Speed Feedback Sign*
- *Speed Legends on Pavement at Neighborhood Entries*
- *Striping Through Intersection*
- *Time-Based Turn Restriction*
- *Upgrade Intersection Pavement Markings*
- *Upgrade Signs with Fluorescent Sheeting*
- *Upgrade Striping*
- *Upgrade to Larger Warning Signs*
- *Wayfinding*
- *Yield To Pedestrians Sign*

NON-ENGINEERING

- *Improve Crash Data Collection*
- *Bicycle Safety Education Events*
- *Youth Education*
- *Education Campaigns for Vulnerable Groups*
- *Pilot Demonstration Safety Projects*
- *Public Information Campaigns*
- *Keep Roadways Clear of Debris*
- *Safe Routes to School*
- *Update City Policies and Standards*
- *Neighborhood Slow Zones*
- *Targeted Enforcement and Deterrence*

BIKEWAYS



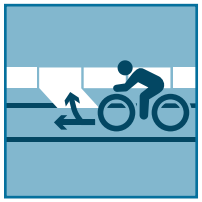
Bicycle Crossing (Solid Green Paint)

Solid green paint across an intersection that signifies the path of the bicycle crossing. Increases visibility and safety of bicyclists traveling through an intersection.

Cost: ***$***

Low Cost / Quick Build alternative available

BIKEWAYS



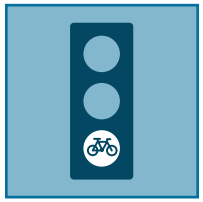
Bicycle Ramp

Connects bicyclists from the road to the sidewalk or a shared use path.

Cost: ***$***

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BIKEWAYS

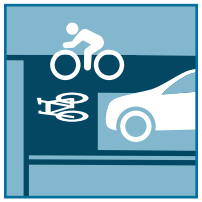


Bicycle Signal/Exclusive Bike Phase

A traffic signal directing bicycle traffic across an intersection. Separates bicycle movements from conflicting motor vehicle, streetcar, light rail, or pedestrian movements. May be applicable for Class IV facilities when the bikeway is brought up to the intersection.

Cost: ***$$$***

BIKEWAYS



Bike Box

A designated area at the head of a traffic lane at a signalized intersection that provides bicyclists with a safe and visible way to get ahead of queuing traffic during the red signal phase.

Cost: ***$***

Low Cost / Quick Build alternative available

Crash Type: ***All***

CRF: ***15%***

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BIKEWAYS



Bike Detection

Bike detection is used at signalized intersections, either through use of push-buttons, in-pavement loops, or by video or infrared cameras, to call a green light for bicyclists and reduce delay for bicycle travel. Discourages red light running by bicyclists and increases convenience of bicycling.

Cost: ***$$***

BIKEWAYS



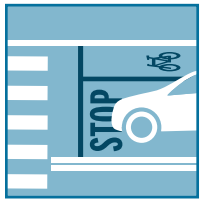
Bike-Friendly Drain

Bike friendly drains avoid placing grating in the right-of-way that may pose a hazard to bicyclists by increasing their risk of falling.

Cost: ***$$***

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BIKEWAYS



Bike Lane

A bike lane provides dedicated street space, typically adjacent to outer vehicle travel lanes, with designated lane markings, pavement legends, and signage. Bike lanes improve safety by reducing conflicts between bicycles and vehicles on the road and by creating a road-narrowing effect with buffers or vertical barriers, which may reduce vehicle speeds.

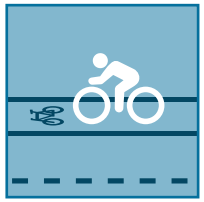
Cost: ***$$***

Low Cost / Quick Build alternative available

Crash Type: ***Ped and Bike***

CRF: ***35%***

BIKEWAYS



Extend Bike Lane to Intersection

In locations where a bike lane is dropped due to the addition of a right turn pocket, the intersection approach may be restriped to allow for bicyclists to move to the left side of right turning vehicles ahead of reaching the intersection.

Cost: ***$***

Low Cost / Quick Build alternative available

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BIKEWAYS



Floating Transit Island

An in-street transit boarding island is used in conjunction with a Class IV bike facility, separating transit traffic from bicycle traffic, reducing conflict between the two modes, and lowering the risk of collision.

Cost: ***$$***

Low Cost / Quick Build alternative available

BIKEWAYS



Green Conflict Striping

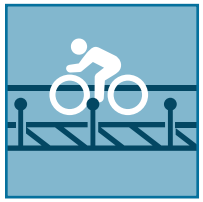
Green conflict striping is green markings painted in a dashed pattern on bike lanes approaching an intersection and/or going through an intersection. Green conflict striping improves safety by increasing the visibility bicyclists and identifying potential conflict points so bicyclists and motorists use caution when traveling toward and through an intersection.

Cost: ***$***

Low Cost / Quick Build alternative available

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BIKEWAYS



Separated Bikeway

A separated bikeway provides dedicated street space, typically adjacent to outer vehicle travel lanes, with physical separation from vehicle traffic, designated lane markings, pavement legends, and signage. Physical separation may consist of plastic posts, parked vehicles, or a curb. Separated bikeways improve safety by reducing conflicts between bicycles and vehicles on the road and by creating a road-narrowing effect with buffers or vertical barriers, which may reduce vehicle speeds. A raised barrier of plastic posts and painted pavement is a low-Cost:/quick build option.

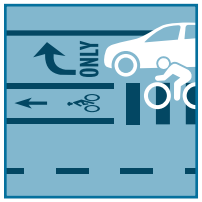
Cost: ***$$$***

Low Cost / Quick Build alternative available

Crash Type: ***Ped and Bike***

CRF: ***45%***

BIKEWAYS



Mixing Zone

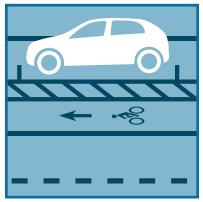
Places a suggested bike lane within the inside portion of a dedicated motor vehicle turn lane. Lane markings delineate space for bicyclists and motorists within the same lane and indicate the intended path for bicyclists to reduce conflict with turning motor vehicles.

Cost: ***$***

Low Cost / Quick Build alternative available

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BIKEWAYS



Parking Buffer

Pavement markings denoting door zone of parked vehicles to help bicyclists maintain safe positioning on the roadway.

Cost: ***$***

Low Cost / Quick Build alternative available

BIKEWAYS



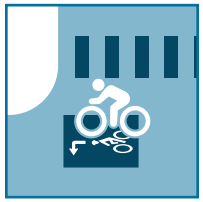
Shared Sidewalk Sign

Signs communicate to pedestrians that bicyclists may also use the sidewalk and that bicyclists must yield to pedestrians. ***Cost:*** ***$***

Low Cost / Quick Build alternative available

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BIKEWAYS



Two-Stage Turn Queue Bike Box

This roadway treatment provides bicyclists with a means of safely making a left turn at a multi-lane signalized intersection from a bike lane or cycle track on the far right side of the roadway. In this way, bicyclists are protected from the flow of traffic while waiting to turn. Usage could be mirrored for right-turns from a one-way street with a left-side bikeway.

Cost: ***$***

Low Cost / Quick Build alternative available

BIKEWAYS



Extend Green Time For Bikes

Prolongs the green phase when bicyclists are present to provide additional time for bicyclists to clear the intersection. Can occur automatically in the signal phasing or when prompted with bicycle detection. Topography should be considered in clearance time.

Cost: ***$***

Crash Type: ***All***

CRF: ***15%***

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BIKEWAYS



Bicycles May Use Full Lane Sign

A sign placed on roads with lanes that are too narrow to allow safe side-by-side passing to indicate that bicyclists may occupy the full lane. This discourages unsafe passing by motorists.

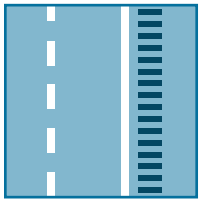
Cost: ***$***

Low Cost / Quick Build alternative available

Crash Type: ***All***

CRF: ***15%***

INTERSECTIONS & ROADWAYS



Rumble Strips

Rumble strips create noise and vibration inside the vehicle that alert a driver as they cross the center or edge line. Often this alert is strong enough to get the attention of a distracted or drowsy driver, who can quickly make a corrective steering action to return to the roadway safely. Rumble strips also alert drivers to the lane limits when conditions such as rain, fog, snow, or dust reduce driver visibility.

Cost: ***$***

Crash Type: ***All***

CRF: ***15-20%***

Other Reference Information

FHWA Manual for Selecting Safety Improvements on High Risk Rural Roads

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INTERSECTIONS & ROADWAYS



All-Way Stop Control

An all-way stop-controlled intersection requires all vehicles to stop before crossing the intersection. An all-way stop controlled intersection improves safety by removing the need for motorists, bicyclists, and pedestrians on a side-street stop-controlled intersection to cross free-flowing lanes of traffic, which reduces the risk of collision. An "ALL WAY" sign should be placed under the octagonal stop sign at all-way stop-controlled intersections as required by the California Manual on Uniform Traffic Control Devices (MUTCD).

Cost: ***$***

Crash Type: ***All***

CRF: ***50%***

INTERSECTIONS & ROADWAYS



Centerline Hardening

Centerline hardening is a technique to make intersections safer for pedestrians by encouraging drivers to make left turns at slower speeds.

Cost: ***$***

Low Cost / Quick Build alternative available

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INTERSECTIONS & ROADWAYS



Close Slip Lane

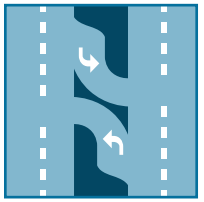
Modifies the corner of an intersection to remove the sweeping right turn lane for vehicles. Results in shorter crossings for pedestrians, reduced speed for turning vehicles, better sight lines, and space for landscaping and other amenities.

Cost: ***$$$***

Crash Type: ***All***

CRF: ***30%***

INTERSECTIONS & ROADWAYS



Directional Median Openings to Restrict Left Turns

A directional median opening restricts specific turning movements, such as allowing a left-turn from a major street but not from a minor street. A directional median opening to restrict left turn improves safety by reducing the number of conflict points.

Cost: ***$$***

Low Cost / Quick Build alternative available

Crash Type: ***All***

CRF: ***50%***

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INTERSECTIONS & ROADWAYS



Improved Pavement Friction

A roadway must have an appropriate level of pavement friction to ensure that drivers are able to keep their vehicles safely in the lane. Poor pavement conditions, especially wet pavement, have been identified as one of the major contributing factors in roadway departure crashes. When a pavement surface is wet, the level of pavement friction is reduced, and this may lead to skidding or hydroplaning. Pavement friction is critical for changing vehicle direction and ensuring the vehicle remains in its lane. Traditional friction courses or high friction surface treatments should be considered for curves with numerous wet weather crashes or severe curves with higher operating speeds.

Cost: *$$*

Crash Type: *All*

CRF: *55%*

Other Reference Information

FHWA Manual for Selecting Safety Improvements on High Risk Rural Roads

INTERSECTIONS & ROADWAYS



Safety Edge

When a vehicle leaves the traveled way and encounters a pavement-shoulder drop-off, it can be difficult for the driver to return safely to the roadway. A safety edge is a treatment intended to minimize drop-off-related crashes. With this treatment, the shoulder pavement edge is sloped at an angle (30-35 degrees) to make it easier for a driver to safely reenter the roadway after inadvertently driving onto the shoulder. This treatment is designed to be a standard policy for any overlay project.

Cost: *$*

Crash Type: *All*

CRF: *8-15%*

Other Reference Information

FHWA Manual for Selecting Safety Improvements on High Risk Rural Roads

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Guardrail

Guardrail redirects a vehicle away from embankment slopes or fixed objects and dissipates the energy of an errant vehicle. Guardrail is installed to reduce the severity of lane departure crashes. However, guardrail can reduce crash severity only for those conditions where striking the guardrail is less severe than going down an embankment or striking a fixed object.

Cost: ***$$***

Crash Type: ***All***

CRF: ***25%***

Other Reference Information

FHWA Manual for Selecting Safety Improvements on High Risk Rural Roads

INTERSECTIONS & ROADWAYS



Median Barrier

Barrier in the center of the roadway that physically separates opposing vehicular traffic. Median barriers can also help control access to and from side streets and driveways, reducing conflict points.

Cost: ***$$$***

Low Cost / Quick Build alternative available

Crash Type: ***All***

CRF: ***25%***

Other Reference Information

FHWA Manual for Selecting Safety Improvements on High Risk Rural Roads

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INTERSECTIONS & ROADWAYS



Roundabout

A roundabout is a type of circular intersection in which road traffic is permitted to flow in one direction around a central island, and priority is typically given to traffic already in the junction. The types of conflicts that occur at roundabouts are different from those occurring at conventional intersections; namely, conflicts from crossing and left-turn movements are not present in a roundabout. The geometry of a roundabout forces drivers to reduce speeds as they proceed through the intersection; the range of vehicle speeds is also narrowed, reducing the severity of crashes when they do occur. Pedestrians only have to cross one direction of traffic at a time at roundabouts, thus reducing the potential for vehicle/pedestrian conflicts.

Cost: ***$$$***

Low Cost / Quick Build alternative available

Crash Type: ***All***

CRF: ***Varies***

INTERSECTIONS & ROADWAYS



Signal

Traffic signals at intersections control the flow of traffic. Traffic signals have the potential to reduce the most severe type crashes but will likely cause an increase in rear-end collisions. A reduction in overall injury severity is likely the largest benefit of traffic signal installation.

Cost: ***$$$***

Crash Type: ***All***

CRF: ***30%***

Other Reference Information

Currently the CMF Clearinghouse has only one reference for ped/vehicle collisions which indicates an increase in crash likelihood. However, a majority of references for all crash types show a decrease in collisions. See additional reference: FHWA Manual for Selecting Safety Improvements on High Risk Rural Roads

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INTERSECTIONS & ROADWAYS



Superelevation at Horizontal Curve Locations

Superelevation is the rotation of the pavement on the approach to and through a horizontal curve and is intended to assist the driver in negotiating the curve by counteracting the lateral acceleration produced by tracking. In other words, the road is designed so that the pavement rises as it curves, offsetting the horizontal sideways momentum of the approaching vehicle.

Cost: ***$$***

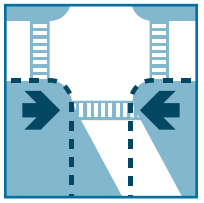
Crash Type: ***All***

CRF: ***40%***

Other Reference Information

FHWA Manual for Selecting Safety Improvements on High Risk Rural Roads

INTERSECTIONS & ROADWAYS



Intersection Reconstruction and Tightening

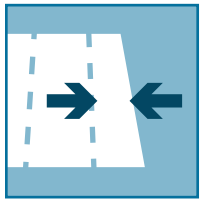
Irregular intersections can be overbuilt and confusing, presenting safety hazards to all users. "Squaring up" an intersection as close to 90 degrees as possible involves intersection reconstruction to provide better visibility for all road users, also reducing high speed turns and reducing pedestrian crossing length.

Cost: ***$$$***

Low Cost / Quick Build alternative available

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INTERSECTIONS & ROADWAYS

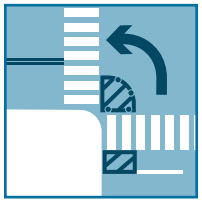


Lane Narrowing

Lane narrowing reduces lane widths to encourage motorists to travel at slower speeds. Lane Narrowing improves safety by lowering the risk of collision among bicyclists, pedestrians, and other motorists.

Cost: ***$***

INTERSECTIONS & ROADWAYS



Left Turn Enhanced Daylighting/Slow Turn Wedge

Uses paint and bollards to extend the curb and slow left turns at intersections of one-way to one-way or two-way streets. Widening the turning radii of left-turning vehicles expands the field of vision for drivers and increases the visibility of pedestrians.

Cost: ***$***

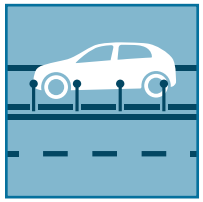
Low Cost / Quick Build alternative available

Crash Type: ***All***

CRF: ***10%***

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INTERSECTIONS & ROADWAYS



Paint and Plastic Median

A painted median with plastic posts between the two directions of travel. Reduces vehicular speeding and discourages risky turning movements, increasing pedestrian safety.

Cost: ***$***

Low Cost / Quick Build alternative available

INTERSECTIONS & ROADWAYS



Paint and Plastic Mini Circle

Mini circles use paint and soft hit posts to replace stop-controlled intersections with a circular design that slows traffic and eliminates left turns, also reducing conflict points with pedestrians. Also helps traffic flow more efficiently.

Cost: ***$***

Low Cost / Quick Build alternative available

Other Reference Information

FHWA Pedestrian Safety Guide and Countermeasure Selection System. http://www.pedbikesafe.org/PEDSAFE/countermeasures_detail.cfm?CM_NUM=34

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INTERSECTIONS & ROADWAYS



Partial Closure/Diverter

A roadway treatment that restricts through vehicle movements using physical diversion while allowing bicyclists and pedestrians to proceed through an intersection in all directions.

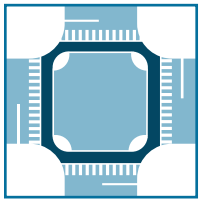
Cost: ***$***

Low Cost / Quick Build alternative available

Crash Type: ***All***

CRF: ***50%***

INTERSECTIONS & ROADWAYS



Protected Intersection

Protected intersections use corner islands, curb extensions, and colored paint to delineate bicycle and pedestrian movements across an intersection. Slower driving speeds and shorter crossing distance increase safety for pedestrians. Separates bicycles from pedestrians

Cost: ***$$$***

Low Cost / Quick Build alternative available

Other Reference Information

Evolution of the Protected Intersection, Alta Planning and Design, December 2015. https://altaplanning.com/wp-content/uploads/Evolution-of-the-Protected-Intersection_ALTA-2015.pdf

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INTERSECTIONS & ROADWAYS



Raised Crosswalk

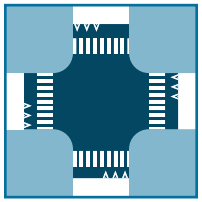
A Raised Crosswalk is a pedestrian crosswalk that is typically elevated 3-6 inches above the road or at sidewalk level. A Raised Crosswalk improves safety by increasing crosswalk and pedestrian visibility and slowing down motorists.

Cost: ***$$***

Crash Type: ***Ped and Bike***

CRF: ***35%***

INTERSECTIONS & ROADWAYS



Raised Intersection

Elevates the intersection to bring vehicles to the sidewalk level. Serves as a traffic calming measure by extending the sidewalk context across the road.

Cost: ***$$$***

Crash Type: ***Ped and Bike***

CRF: ***35%***

Other Reference Information

Note: some studies in CMF Clearinghouse show an increase in crashes. See additional source below showing decrease. (1) Perkins+Will Consultant Team. "Pedestrians at Multi-Modal Intersections." Better Market Street Existing Conditions & Best Practices, Part Two: Best Practices 36-58, City & County of San Francisco, San Francisco. http://www.bettermarketstreetsf.org/about-reports-existing-conditions.html (2) Bhatt, Shailen, Natalie Barnhart, Mark Luszcz, Tom Meyer, & Michael Sommers. "Delaware Traffic Calming Design Manual." Delaware Department of Transportation, State of Delaware, Dover, DE. https://nacto.org/wp-content/uploads/2015/04/DE-Trafc-Calming-Manual_2012.pdf (3) King, Michael R, Jon A Carnegie, and Reid Ewing. "Pedestrian Safety through a Raised Median and Redesigned Intersections." Journal of the Transportation Research Board 1828 (1), 56-66, Transportation Research Board, Washington, DC. https://trid.trb.org/view/663867 (4) Fitzpatrick, Kay, Mark D Wooldridge, and Joseph D Blaschke. "Urban Intersection Design Guide: Volume 1–Guidelines." Texas Transportation Institute, Texas A&M University System, Texas Department of Transportation, Austin, TX. https://static.tti.tamu.edu/tti.tamu.edu/documents/0-4365-P2.pdf

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INTERSECTIONS & ROADWAYS



Raised Median

Curbed sections in the center of the roadway that are physically separated from vehicular traffic. Raised medians can also help control access to and from side streets and driveways, reducing conflict points.

Cost: ***$$***

Low Cost / Quick Build alternative available

Crash Type: ***All***

CRF: ***25%***

INTERSECTIONS & ROADWAYS



Refuge Island

A Raised Median, or Refuge Island, is a raised barrier in the center of the roadway that can restrict certain turning movements and provide a place for pedestrians to wait if they are unable to finish crossing the intersection. A Raised Median improves safety by reducing the number of potential conflict points with designated zones for vehicles to turn, and a pedestrian refuge island improves safety by reducing the exposure time for pedestrians crossing the intersection. Pedestrian refuge areas constructed from paint and plastic may be implemented as part of a low-Cost:/ quick build project.

Cost: ***$$***

Low Cost / Quick Build alternative available

Crash Type: ***Ped and Bike***

CRF: ***45%***

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INTERSECTIONS & ROADWAYS



Reduced Left-Turn Conflict Intersection

Geometric designs that alter how left-turn movements occur can simplify decisions and minimize the potential for related crashes. Two highly effective designs that rely on U-turns to complete certain left-turn movements are known as the restricted crossing U-turn (RCUT) and the median U-turn (MUT).

Cost: ***$$$***

Crash Type: ***All***

CRF: ***50%***

INTERSECTIONS & ROADWAYS



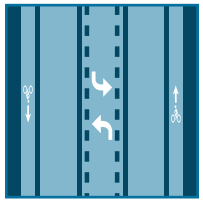
Right Turn Slip Lane

A right turn slip lane is a traffic lane provided at an intersection to allow vehicles to turn right without actually entering it and interfering with through traffic. Where the main intersection is controlled by traffic signals, a slip lane is often controlled by yield or stop sign.

Cost: ***$$$***

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INTERSECTIONS & ROADWAYS



Road Diet

A Road Diet reduces roadway space dedicated to vehicle travel lanes to create room for bicycle facilities, wider sidewalks, or center turn lanes. A Road Diet improves safety by reducing vehicle speeds and creating designated space for all road users.

Cost: ***$$***

Low Cost / Quick Build alternative available

Crash Type: ***All***

CRF: ***30%***

INTERSECTIONS & ROADWAYS



Speed Hump or Speed Table

These traffic calming devices use vertical defection to raise the entire wheelbase of a vehicle and encourage motorists to travel at slower speeds to avoid damage to the undercarriage of an automobile.

Cost: ***$***

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INTERSECTIONS & ROADWAYS



Splitter Island

A raised area that separates the two directions of travel on the minor street approach at an unsignalized intersection or roundabout. Helps channelize traffic in opposing directions of travel. Typically installed at skewed intersections or where speeds on minor roads are high. Provides a refuge for pedestrians.

Cost: ***$$***

Low Cost / Quick Build alternative available

Crash Type: ***All***

CRF: ***40%***

INTERSECTIONS & ROADWAYS



Straighten Crosswalk

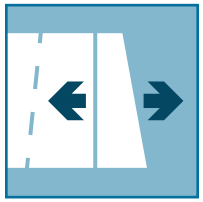
Straightening crosswalks improves sight lines, making pedestrians more visible to oncoming drivers, and may shorten the crossing distance, reducing the length of time required for pedestrians to cross an intersection.

Cost: ***$***

Low Cost / Quick Build alternative available

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INTERSECTIONS & ROADWAYS



Widen/Pave Shoulder

Widened and paved shoulders, which may also include flattening the slopes along the sides of the roadway, create a separated space for bicyclists and also provide motor vehicle safety benefits, such as space for inoperable vehicles to pull out of the travel lane. The addition of a paved shoulder to an existing road can help to reduce run-off-road crashes. Benefits can be realized for high risk rural roads without paved shoulders, regardless of existing lane pavement width. Adding paved shoulders within horizontal curve sections may help agencies maximize benefits of the treatment while minimizing Cost:s as opposed to adding paved shoulders to an entire corridor.

Cost: ***$$***

Crash Type: ***All***

CRF: ***30%***

Other Reference Information

FHWA Manual for Selecting Safety Improvements on High Risk Rural Roads

OTHER



Back-In Angled Parking

Back-In Angled Parking requires motorists to back into an angled on-street parking spot and to drive forward when exiting a parking spot. Back-in angled parking improves safety by increasing visibility of passing vehicles and bicycles while exiting a spot, particularly if large adjacent vehicles obstruct sight, and allows trunk unloading to happen on the curb instead of in the street.

Cost: ***$***

Low Cost / Quick Build alternative available

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OTHER



Access Management/ Close Driveway

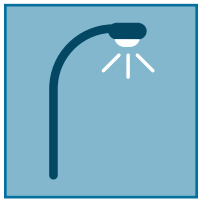
Vehicles entering and exiting driveways may conflict with pedestrians and with vehicles on the main road, especially at driveways within 250 feet of intersections. Closing driveways near intersections with high collision rates related to driveways may reduce potential conflicts.

Cost: ***$$***

Other Reference Information

The CMF Clearinghouse has limited research related to vehicle/pedestrian crashes. See additional reference: FHWA Pedestrian Safety Guide and Countermeasure Selection System. http://www.pedbikesafe.org/PEDSAFE/countermeasures_detail.cfm?CM_NUM=20

OTHER



Intersection Lighting

Lighting is added at an intersection. Adding intersection and/or pedestrian-scale lighting at intersections improves safety by increasing visibility of all road users. This countermeasure is most effective at reducing or preventing collisions at intersections at night.

Cost: ***$$***

Crash Type: ***Night***

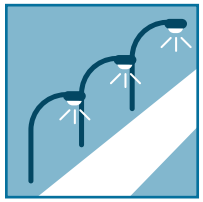
CRF: ***40%***

Other Reference Information

Pedestrian-Level Lighting: FHWA Pedestrian Safety Guide and Countermeasure Selection System. http://www.pedbikesafe.org/PEDSAFE/countermeasures_detail.cfm?CM_NUM=8

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OTHER



Segment Lighting

Providing roadway lighting improves safety during nighttime conditions by increasing driver awareness, increasing sight distance, and improving visibility of pedestrians and bicyclists.

Cost: ***$$***

Crash Type: ***Night***

CRF: ***35%***

OTHER



Create or Increase Clear Zone

A clear zone is an unobstructed, traversable roadside area that allows a driver to stop safely or regain control of a vehicle that has left the roadway. The width of the clear zone should be based on risk (also called exposure). Key factors in assessing risk include traffic volumes, speeds, and slopes. Clear roadsides reduce risk from fixed objects (such as utility poles) as well as terrain that may increase the likelihood of a rollover. Creating or increasing clear zones within horizontal curve sections may help agencies maximize benefits of the treatment while minimizing Cost:s, as opposed to providing a clear zone throughout an entire corridor.

Cost: ***$$***

Crash Type: ***All, KSI***

CRF: ***13-44%***

Other Reference Information

FHWA Manual for Selecting Safety Improvements on High Risk Rural Roads

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OTHER

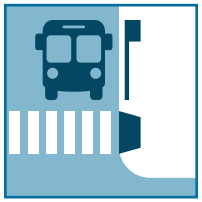


Curbside Management

Curbside management can better prioritize reliable transit and safe bicycling infrastructure, freight deliveries, passenger pick-ups/drop-offs, green stormwater infrastructure, public spaces, and parking management.

Cost: ***$***

OTHER



Far-Side Bus Stop

Far-side bus stops are located immediately after an intersection, allowing the bus to pass through the intersection before stopping for passenger loading and unloading. Far-side stops encourage pedestrians to cross behind the bus for greater visibility and can improve transit service reliability.

Cost: ***$***

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OTHER



Delineators, Reflectors, and/or Object Markers

Delineators, reflectors and/or object markers are intended to warn drivers of an approaching curve or fixed object that cannot easily be removed. They are generally less Cost:ly than Chevron Signs as they don't require posts to place along the roadside, avoiding an additional object with which an errant vehicle can crash into.

Cost: ***$***

Low Cost / Quick Build alternative available

Crash Type: ***All***

CRF: ***15%***

OTHER



Impact Attenuators

Impact attenuators bring an errant vehicle to a more-controlled stop or redirect the vehicle away from a rigid object. Impact attenuators are typically used to shield rigid roadside objects such as concrete barrier ends, steel guardrail ends and bridge pillars from oncoming automobiles. Attenuators should only be installed where it is impractical for the objects to be removed.

Cost: ***$$***

Crash Type: ***All***

CRF: ***25%***

Other Reference Information

FHWA Manual for Selecting Safety Improvements on High Risk Rural Roads

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OTHER



Median Guardrail

The installation of median guardrail is most suitable for use in traversable medians having no or little change in grade and cross slope. While these systems may not reduce the frequency of crashes due to roadway departure, they can help prevent a lane-departure crash from becoming a head-on collision.

Cost: *$$*

Crash Type: *KSI*

CRF: *30-43%*

OTHER



Speed Limit Reduction

Setting speed limits to reflect the surrounding context of the roadway and that meet with driver expectations can help improve driver respect for speed limits. Speed limits that appear inconsistent may be ignored by the majority of drivers and this may contribute to lack of respect for speed limit and other traffic laws.

Cost: *$*

Crash Type: *All*

CRF: *Varies*

Other Reference Information

TRB Study on Setting Speed Limits; also Richard, C. M., Magee, K., Bacon-Abdelmoteleb, P., & Brown, J. L. (2018, April). Countermeasures that work: A highway safety countermeasure guide for State Highway Safety Offices, Ninth edition (Report No. DOT HS 812 478). Washington, DC: National Highway Traffic Safety Administration.

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OTHER



Relocate Select Hazardous Utility Poles

Relocating or removing utility poles from within the clear zone alleviates the potential for fixed-object crashes. If utility poles cannot be completely eliminated from within the clear zone, efforts can be made to either relocate the poles to a greater offset from the road or delineated.

Cost: ***$$***

Crash Type: ***All***

CRF: ***29%***

Other Reference Information

FHWA Manual for Selecting Safety Improvements on High Risk Rural Roads

OTHER



Remove Obstructions For Sightlines

Remove objects that may prevent drivers and pedestrians from having a clear sightline. May include installing red curb at intersection approaches to remove parked vehicles (also called "daylighting"), trimming or removing landscaping, or removing or relocating large signs.

Cost: ***$***

Low Cost / Quick Build alternative available

Crash Type: ***All***

CRF: ***20%***

Other Reference Information

FHWA Manual for Selecting Safety Improvements on High Risk Rural Roads

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OTHER



Upgrade Lighting to LED

Upgrading Lighting to LED replaces high-pressure sodium light bulbs with LED light bulbs in street lights. Upgrading Lighting to LED improves safety by increasing the visibility of pedestrians in crosswalks through greater color contrast and larger areas of light distribution.

Cost: ***$$***

OTHER



Red Light Camera

A red light camera enforces traffic signal compliance by capturing the image of a vehicle that has entered an intersection in spite of the traffic signal indicating red. The automatic photographic evidence is used by authorities to enforce traffic laws and issue traffic violation tickets.

Cost: ***$$***

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PEDESTRIAN FACILITIES



Audible Push Button Upgrade

Push buttons must comply with the Americans with Disability Act (ADA) standards for accessibility. Pushbuttons should be visible and conveniently located for pedestrians waiting at a crosswalk. Accessible pedestrian signals, including audible push buttons, improve access for pedestrians who are blind or have low vision. DIB 82-06 includes accessibility design guidance.

Cost: *$*

Crash Type: *Ped and Bike*

CRF: *25%*

Other Reference Information

Audible Push Button Upgrade and Extended Time Pushbutton: FHWA Pedestrian Safety Guide and Countermeasure Selection System. http://www.pedbikesafe.org/PEDSAFE/countermeasures_detail.cfm?CM_NUM=52

PEDESTRIAN FACILITIES



Add Sidewalk

Adding sidewalks provides a separated and continuous facility for people to walk along the roadway. Adding sidewalks improves safety by minimizing collisions with pedestrians walking in the road.

Cost: *$$*

Crash Type: *Ped and Bike*

CRF: *80%*

Other Reference Information

Data in the CMF Clearinghouse is currently limited to bicycle/vehicle collisions. See additional reference: FHWA Pedestrian Safety Guide and Countermeasure Selection System. http://www.pedbikesafe.org/PEDSAFE/countermeasures_detail.cfm?CM_NUM=1

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PEDESTRIAN FACILITIES



Install/Upgrade Pedestrian Crossing at Uncontrolled Locations (Signs and Markings Only)

A pedestrian crossing at an intersection or on a segment provides a formalized location for people to cross the street, reducing the risk of people crossing outside crosswalks where drivers are not expecting them. Crosswalk striping, signs, and other enhanced safety features alert drivers that there may be a pedestrian crossing.

Cost: ***$***
Low Cost / Quick Build alternative available

Crash Type: ***Ped and Bike***

CRF: ***35%***

PEDESTRIAN FACILITIES



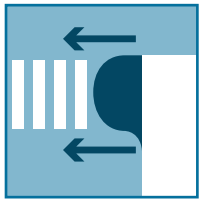
Co-Locate Bus Stops and Pedestrian Crossings

Place bus stops and pedestrian crossings in close proximity to allow transit riders to cross the street safely.

Cost: ***$***
Low Cost / Quick Build alternative available

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PEDESTRIAN FACILITIES



Curb Extensions

A curb extension is a traffic calming measure which widens the sidewalk for a short distance to enhance the pedestrian crossing. This reduces the crossing distance and allowing pedestrians and drivers to see each other when parked vehicles would otherwise block visibility. Paint and plastic curb extensions are a low-cot/quick build option.

Cost: ***$$***

Low Cost / Quick Build alternative available

Crash Type: ***Ped and Bike***

CRF: ***35%***

Other Reference Information

(1) Application of Pedestrian Crossing Treatments for Streets and Highways, NCHRP, 2016. https://www.nap.edu/catalog/24634/application-of-pedestrian-crossing-treatments-for-streets-and-highways (2) Development of Crash Modification Factors for Uncontrolled Pedestrian Crossing Treatments, NCHRP, 2017. https://www.nap.edu/catalog/24627/development-of-crash-modifcation-factors-for-uncontrolled-pedestrian-crossing-treatments (3) Evaluation of Pedestrian-Related Roadway Measures, Pedestrian and Bicycle Information Center, 2014. http://www.pedbikeinfo.org/cms/downloads/PedestrianLitReview_April2014.pdf

PEDESTRIAN FACILITIES



Extended Time Pushbutton

A pushbutton that can be pressed to request extra time for using the crosswalk, beyond the standard crossing time. Ideal near senior-serving land uses.

Cost: ***$***

Other Reference Information

Audible Push Button Upgrade and Extended Time Pushbutton: FHWA Pedestrian Safety Guide and Countermeasure Selection System. http://www.pedbikesafe.org/PEDSAFE/countermeasures_detail.cfm?CM_NUM=52

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PEDESTRIAN FACILITIES



High-Visibility Crosswalk

A high-visibility crosswalk has a striped pattern with ladder markings made of high-visibility material, such as thermoplastic tape, instead of paint. A high-visibility crosswalk improves safety by increasing the visibility of marked crosswalks and provides motorists a cue to slow down and yield to pedestrians.

Cost: ***$***

Low Cost / Quick Build alternative available

Crash Type: ***Ped and Bike***

CRF: ***25%***

PEDESTRIAN FACILITIES



Pedestrian Countdown Timer

Displays "countdown" of seconds remaining on the pedestrian signal. Countdown indications improve safety for all road users, and are required for all newly installed traffic signals where pedestrian signals are installed.

Cost: ***$$***

Crash Type: ***Ped and Bike***

CRF: ***25%***

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PEDESTRIAN FACILITIES



Pedestrian Hybrid Beacon

A pedestrian-hybrid beacon (PHB) is used at unsignalized intersections or mid-block crosswalks to notify oncoming motorists to stop with a series of red and yellow lights. Unlike a traffic signal, the PHB rests in dark until a pedestrian activates it via pushbutton or other form of detection.

Cost: ***$$$***

Crash Type: ***Ped and Bike***

CRF: ***55%***

PEDESTRIAN FACILITIES



Landscape Buffer

Separating drivers from bicyclists and pedestrians using landscaping provides more space between the modes and can produce a traffic calming effect by encouraging drivers to drive at slower speeds, lowering the risk of crashing.

Cost: ***$$***

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PEDESTRIAN FACILITIES



Leading Pedestrian Interval and Pedestrian Recall

At intersection locations that have a high volume of turning vehicle and have high pedestrian vs. vehicle crashes, a leading pedestrian interval gives pedestrians the opportunity to enter an intersection 3 - 7 seconds before vehicles are given a green indication. With this head start, pedestrians can better establish their presence in the crosswalk before vehicles have priority to turn left or right.

Cost: *$*

Crash Type: *Ped and Bike*

CRF: *60%*

Other Reference Information

Pedestrian Phase Recall: Evaluation of Pedestrian-Related Roadway Measures, Pedestrian and Bicycle Information Center, 2014. http://www.pedbikeinfo.org/cms/downloads/PedestrianLitReview_April2014.pdf

PEDESTRIAN FACILITIES



Pedestrian Detection

An intersection treatment that relies on sensors to detect when a pedestrian is waiting at a crosswalk and automatically triggers the pedestrian "WALK" phase. Reduces crossings at inappropriate times and ensures that pedestrians have enough time to safely cross the roadway.

Cost: *$$*

Crash Type: *Ped and Bike*

CRF: *25%*

Other Reference Information

FHWA Pedestrian Safety Guide and Countermeasure Selection System. http://www.pedbikesafe.org/PEDSAFE/countermeasures_detail.cfm?CM_NUM=11

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PEDESTRIAN FACILITIES



Remove Crossing Prohibition

Removes existing crossing prohibitions and provides marked crosswalk and other safety enhancements for pedestrians to cross the street.

Cost: ***$***

Low Cost / Quick Build alternative available

Crash Type: ***Ped and Bike***

CRF: ***25%***

PEDESTRIAN FACILITIES



Restripe Crosswalk

Periodic restriping of crosswalks is necessary to ensure the traffic markings are visible. Crosswalk may be restriped with high visibility markings.

Cost: ***$***

Low Cost / Quick Build alternative available

Other Reference Information

FHWA Pedestrian Safety Guide and Countermeasure Selection System. http://www.pedbikesafe.org/PEDSAFE/countermeasures_detail.cfm?CM_NUM=4

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PEDESTRIAN FACILITIES



Upgrade Curb Ramp

Tactile warning devices must be detectable to visually impaired pedestrians. Curb ramps must follow the DIB 82-06 design guidelines.

Cost: ***$$***

Other Reference Information

FHWA Pedestrian Safety Guide and Countermeasure Selection System. http://www.pedbikesafe.org/PEDSAFE/countermeasures_detail.cfm?CM_NUM=3

PEDESTRIAN FACILITIES



Widen Sidewalk

Widening sidewalks provides a more comfortable space for pedestrians, particularly in locations with high volumes of pedestrians, and provides space to accommodate people in wheelchairs. Widening sidewalks improves safety by minimizing collisions with pedestrians walking in the road.

Cost: ***$$***

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PEDESTRIAN FACILITIES



Rectangular Rapid Flashing Beacon

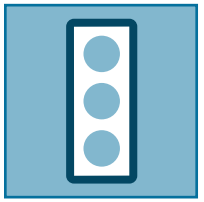
A rectangular rapid flashing beacon (RRFB) is a pedestrian-activated flashing light with additional signage to alert motorists of a pedestrian crossing. An RRFB improves safety by increasing the visibility of marked crosswalks and provides motorists a cue to slow down and yield to pedestrians.

Cost: ***$$***

Crash Type: ***Ped and Bike***

CRF: ***35%***

SIGNALS



Retroreflective Tape on Signals

Retroreflective borders enhance the visibility of traffic signals for aging and color vision impaired drivers enabling them to understand which signal indication is illuminated. Retroreflective borders may also alert drivers to signalized intersections during periods of power outages when the signals would otherwise be dark, and non–reflective signal heads and backplates would not be visible.

Cost: ***$***

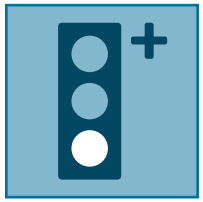
Low Cost / Quick Build alternative available

Crash Type: ***All***

CRF: ***15%***

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SIGNALS



Supplemental Signal Heads

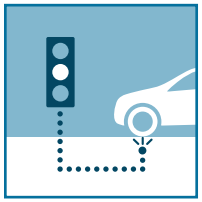
Additional signal heads allow drivers to anticipate signal changes farther away from intersections. Supplemental traffic signals may be placed on the near side of an intersection, far-left, far-right, or very high.

Cost: *$$*

Crash Type: *All*

CRF: *15%*

SIGNALS



Advanced Dilemma Zone Detection

The Advanced Dilemma-Zone Detection system adjusts the start time of the yellow-signal phase (i.e. earlier or later) based on observed vehicle locations and speeds. The Advanced Dilemma-Zone Detection system improves safety by minimizing the number of drivers that are faced with the dilemma of determining if they should stop at the intersection or drive through the intersection based on their speed and distance from the intersection.

Cost: *$$*

Crash Type: *All*

CRF: *40%*

Other Reference Information

FHWA Manual for Selecting Safety Improvements on High Risk Rural Roads

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SIGNALS



Extend Pedestrian Crossing Time

Increases time for pedestrian walk phases, especially to accommodate vulnerable populations, such as children and the elderly.

Cost: ***$***

Low Cost / Quick Build alternative available

Crash Type: ***All***

CRF: ***15%***

SIGNALS



Extend Yellow and All Red Time

Extending yellow and all red time increases the time allotted for the yellow and red lights during a signal phase. Extending yellow and all red time improves safety by allowing drivers and bicyclists to safely cross through a signalized intersection before conflicting traffic movements are permitted to enter the intersection.

Cost: ***$***

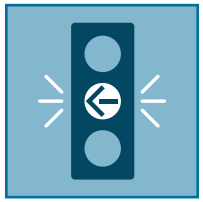
Low Cost / Quick Build alternative available

Crash Type: ***All***

CRF: ***15%***

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SIGNALS

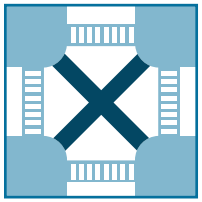


Flashing Yellow Turn Phase

Flashing yellow turn arrow alerts drivers to proceed with caution and decide if there is a sufficient gap in oncoming traffic to safely make a turn. To be used only when a pedestrian walk phase is not called. Protected-only phases should be used when pedestrians are present.

Cost: ***$$***

SIGNALS



Pedestrian Scramble

A form of pedestrian "WALK" phase at a signalized intersection in which all vehicular traffic is required to stop, allowing pedestrians to safely cross through the intersection in any direction, including diagonally.

Cost: ***$***

Crash Type: ***All***

CRF: ***15%***

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SIGNALS



Prohibit Left Turn

Prohibitions of left turns at locations where a turning vehicle may conflict with pedestrians in the crosswalk or where opposing traffic volume is high. Reduces pedestrian interaction with vehicles when crossing.

Cost: ***$***

Low Cost / Quick Build alternative available

Crash Type: ***All***

CRF: ***50%***

SIGNALS



Prohibit Turns During Pedestrian Phase

Restricts left or right turns during the pedestrian crossing phase at locations where a turning vehicle may conflict with pedestrians in the crosswalk. This restriction may be displayed with a blank-out sign.

Cost: ***$***

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SIGNALS



Protected Left Turns

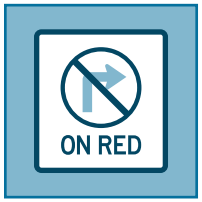
A protected left turn can be implemented at signalized intersections (with existing left turns pockets) that currently have a permissive left-turn or no left-turn protection that have a high frequency of angle crashes involving left turning, opposing through vehicles, and non-motorized road users. Left turns are widely recognized as the highest-risk movements at signalized intersections. Providing protected left-turn phases for signalized intersections significantly improve the safety for left-turn maneuvers by removing the need for the drivers to navigate through gaps in oncoming/opposing through vehicles.

Cost: ***$$***

Crash Type: ***All***

CRF: ***30-55%***

SIGNALS



Prohibit Right-Turn-on-Red

Prohibiting right-run-on-red movements should be considered at skewed intersections, or where exclusive pedestrian "WALK" phases, Leading Pedestrian Intervals (LPIs), sight distance issues, or high pedestrian volumes are present. Can help prevent crashes between vehicles turning right on red from one street and through vehicles on the cross street, and crashes involving pedestrians.

Cost: ***$***

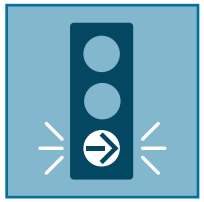
Low Cost / Quick Build alternative available

Other Reference Information

Currently the CMF Clearinghouse does not include specific studies; however, permitting right-turns-on-red shows an increase in ped/vehicle crashes. Additional information is available at the FHWA Pedestrian Safety Guide and Countermeasure Selection System. http://www.pedbikesafe.org/PEDSAFE/countermeasures_detail.cfm?CM_NUM=49

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SIGNALS



Separate Right-Turn Phasing

Provides a green arrow phase for right-turning vehicles. Avoids conflicts between right-turning traffic and bicyclists or pedestrians crossing the intersection on their right.

Cost: ***$$$***

Other Reference Information

(1) Evaluation of Pedestrian-Related Roadway Measures, Pedestrian and Bicycle Information Center, 2014. http://www.pedbikeinfo.org/cms/downloads/PedestrianLitReview_April2014.pdf (2) FHWA Manual for Selecting Safety Improvements on High Risk Rural Roads

SIGNALS



Shorten Cycle Length

Traffic signal cycle lengths have a significant impact on the quality of the urban realm and consequently, the opportunities for bicyclists, pedestrians, and transit vehicles to operate safely along a corridor. Long signal cycles, compounded over multiple intersections, can make crossing a street or walking even a short distance prohibitive and frustrating. Short cycle lengths of 60–90 seconds are ideal for urban areas.

Cost: ***$***

Low Cost / Quick Build alternative available

Other Reference Information

FHWA Pedestrian Safety Guide and Countermeasure Selection System. http://www.pedbikesafe.org/PEDSAFE/countermeasures_detail.cfm?CM_NUM=45

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SIGNALS



Signal Interconnectivity and Coordination / Green Wave

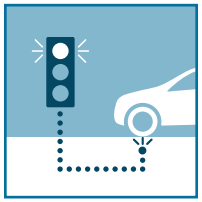
Certain timing, phasing, and control strategies can produce multiple safety benefits. Sometimes capacity improvements come along with the safety improvements and other times adverse effects on delay or capacity occur. The emphasis of improving signal coordination for this countermeasure is to provide an opportunity for slow speed signal coordination. Coordinating signals to allow for bicyclist progression, also known as a 'green wave,' gives bicyclists and pedestrians more time to safely cross through the 'green wave' intersections.

Cost: *$$*

Crash Type: *All*

CRF: *15%*

SIGNALS



Speed Sensitive Rest in Red Signal

At certain hours (e.g. late night) a signal remains red for all approaches or certain approaches until a vehicle arrives at the intersection. If the vehicle is going faster than the desired speed, the signal will not turn green until after vehicle stops. If the vehicle is going the desired speed the signal will change to green before the vehicle arrives. This signal timing provides operational benefit to drivers traveling at the desired speed limit. Can be paired with variable speed warning signs.

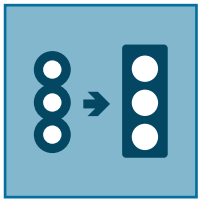
Cost: *$$*

Crash Type: *All*

CRF: *30%*

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SIGNALS



Upgrade Signal Head

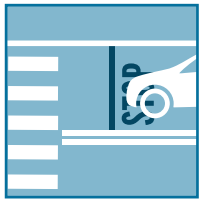
Upgrading Signal Heads replaces existing 8-inch signal heads with 12-inch signal heads to comply with the California MUTCD's 2014 guidelines. Upgrading signal heads improves safety by providing better visibility of intersection signals and by aiding drivers' advanced perception of upcoming intersections.

Cost: ***$***

Crash Type: ***All***

CRF: ***15%***

SIGNING & STRIPING



Advance Stop Bar

An advanced stop bar is a horizontal stripe painted ahead of the crosswalk at stop signs and signals to indicate where drivers should stop. An advanced stop bar improves safety by reducing instances of vehicles encroaching on the crosswalk. Creating a wider stop bar or setting the stop bar further back may be appropriate for locations with known crosswalk encroachment issues.

Cost: ***$***

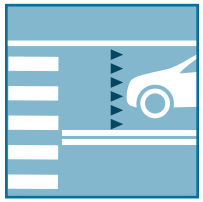
Low Cost / Quick Build alternative available

Crash Type: ***Ped and Bike***

CRF: ***15%***

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SIGNING & STRIPING



Advance Yield Markings

Yield lines are placed 20 to 50 feet in advance of multi-lane pedestrian crossings to increase visibility of pedestrians. They can reduce the likelihood of a multiple-threat crash.

Cost: ***$***

Low Cost / Quick Build alternative available

SIGNING & STRIPING



Curve Advance Warning Sign

A curve advance warning sign notifies drivers of an approaching curve and may include an advisory speed limit as drivers navigate around the curve. This warning sign is ideally combined with other infrastructure that alerts drivers of the curve, such as chevron signs, delineators, and flashing beacons. A curve advance warning sign improves safety by giving drivers additional time to slow down for the curve.

Cost: ***$***

Low Cost / Quick Build alternative available

Crash Type: ***All***

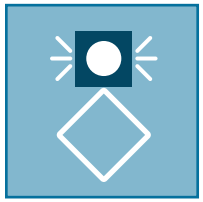
CRF: ***25%***

Other Reference Information

FHWA Manual for Selecting Safety Improvements on High Risk Rural Roads

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SIGNING & STRIPING



Flashing Beacon as Advance Warning

A flashing beacon as Advanced Warning is a blinking light with signage to notify motorists of an upcoming intersection or crosswalk. A flashing beacon improves safety by providing motorists more time to be aware of and slow down for an intersection or yield to pedestrians crossing a crosswalk.

Cost: ***$$***

Crash Type: ***All***

CRF: ***30%***

Other Reference Information

FHWA Manual for Selecting Safety Improvements on High Risk Rural Roads

SIGNING & STRIPING



Chevron Signs on Horizontal Curves

Post-mounted chevrons are intended to warn drivers of an approaching curve and provide tracking information and guidance to the drivers. They can be beneficial on roadways that have an unacceptable level of crashes on relatively sharp curves during periods of light and darkness.

Cost: ***$***

Low Cost / Quick Build alternative available

Crash Type: ***All***

CRF: ***40%***

Other Reference Information

FHWA Manual for Selecting Safety Improvements on High Risk Rural Roads

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SIGNING & STRIPING



LED-Enhanced Sign

An LED-Enhanced Sign has LED lights embedded in the sign to outline the sign itself or the words and symbols on the sign. The LEDs may be set to flash or operate in a steady mode. An LED-enhanced sign improves safety by improving the visibility of signs at locations with visibility limitations or with a documented history of drivers failing to see or obey the sign (e.g. at STOP signs).

Cost: ***$***

Low Cost / Quick Build alternative available

Crash Type: ***All***

CRF: ***15%***

SIGNING & STRIPING



Painted Centerline and Raised Pavement Markers at Curves on Residential Streets

A raised pavement marker is a small device attached to the road and used as a positioning guide for drivers.

Cost: ***$***

Low Cost / Quick Build alternative available

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SIGNING & STRIPING



Speed Feedback Sign

A speed feedback sign notifies drivers of their current speed, usually followed by a reminder of the posted speed limit. A speed feedback sign improves safety by providing a cue for drivers to check their speed and slow down, if necessary.

Cost: ***$***

Low Cost / Quick Build alternative available

CRF: ***10%***

SIGNING & STRIPING



Speed Legends on Pavement at Neighborhood Entries

Speed legends are numerals painted on the roadway indicating the current speed limit in miles per hour. They are usually placed near speed limit signposts.

Cost: ***$***

Low Cost / Quick Build alternative available

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SIGNING & STRIPING



Striping Through Intersection

Adding clear pavement markings can guide motorists through complex intersections. Intersections where the lane designations are not clearly visible to approaching motorists and/or intersections noted as being complex and experiencing crashes that could be attributed to a driver's unsuccessful attempt to navigate the intersection can benefit from this treatment.

Cost: ***$***

Low Cost / Quick Build alternative available

Crash Type: ***All***

CRF: ***10%***

SIGNING & STRIPING



Time-Based Turn Restriction

Restricts left-turns or right-turns during certain time periods when there may be increased potential for conflict (e.g., peak periods, school hours).

Cost: ***$***

Low Cost / Quick Build alternative available

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SIGNING & STRIPING



Upgrade Intersection Pavement Markings

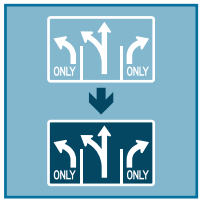
Upgrading intersection pavement marking can include "Stop Ahead" markings and the addition of centerlines and stop bars. Upgrading intersection pavement markings can improve safety by increasing the visibility of intersections for drivers approaching and at the intersection. ***Cost:*** ***$***

Low Cost / Quick Build alternative available

Crash Type: ***All***

CRF: ***25%***

SIGNING & STRIPING



Upgrade Signs with Fluorescent Sheeting

Upgrading signs with fluorescent sheeting replaces existing signs with new signs that can clearly display warnings by reflecting headlamp light back to vehicles. Upgrading signs with fluorescent sheeting improves safety by increasing visibility of signs to drivers at night.

Cost: ***$***

Low Cost / Quick Build alternative available

Crash Type: ***All***

CRF: ***15%***

Other Reference Information

FHWA Manual for Selecting Safety Improvements on High Risk Rural Roads

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SIGNING & STRIPING



Upgrade Striping

Restripe lanes with reflective striping to improve striping visibility and clarify lane assignment, especially where the number of lanes changes.

Cost: ***$***

Low Cost / Quick Build alternative available

SIGNING & STRIPING



Upgrade to Larger Warning Signs

Upgrading to larger warning signs replaces existing signs with physically larger signs with larger warning information. Upgrading to larger warning signs improves safety by increasing visibility of the information provided, particularly for older drivers.

Cost: ***$***

Low Cost / Quick Build alternative available

Crash Type: ***All***

CRF: ***15%***

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SIGNING & STRIPING



Wayfinding

A network of signs that highlight nearby pedestrian and bicycle facilities. Can help to reduce crossings at locations with poor sight distance or limited crossing enhancements.

Cost: ***$***

SIGNING & STRIPING



Yield To Pedestrians Sign

"Yield Here to Pedestrians" signs alert drivers about the presence of pedestrians. These signs are required with advance yield lines. Other sign types can be placed on the centerline in the roadway.

Cost: ***$***

Low Cost / Quick Build alternative available

Crash Type: ***All***

CRF: ***15%***

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NON-ENGINEERING: BETTER DATA



Improve Crash Data Collection

Improve the accuracy, breadth, and consistency of crash data by creating a near-miss and unreported crash database, developing a standardized electronic reporting form for all crashes, forming agreements with shared mobility operators to acquire crash data, and/or creating a multi-jurisdiction crash database that can be updated by paramedics, police, City staff, and hospitals.

Non-Engineering Countermeasure

NON-ENGINEERING: EDUCATION



Bicycle Safety Education Events

Partner with local bike shops and other partners to host events/fairs to educate residents on bicycle safety. For example, host rides to introduce residents to new bicycle facilities as they are opened; offer tune ups at safety fairs.

Non-Engineering Countermeasure

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NON-ENGINEERING: EDUCATION



Youth Education

Launch a countywide transportation safety education campaign targeting youth that covers a wide range of topics, such as alcohol and drug impairment, speeding, and potentially distracted driving. Local schools can also be partners in promoting safe driver behavior during school pick-up and drop offs. Educational campaigns that involve both students and parents can be more impactful as they involve parents, who are actually driving, and students, who may not only remind their parents but also retain safe driving behavior if they eventually drive.

Non-Engineering Countermeasure

NON-ENGINEERING: EDUCATION



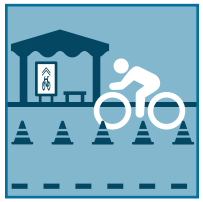
Education Campaigns for Vulnerable Groups

Launch targeted public education campaigns for seniors, non-English speaking populations, or other vulnerable groups.

Non-Engineering Countermeasure

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NON-ENGINEERING: EDUCATION



Pilot Demonstration Safety Projects

Implement pilot demonstration safety projects. Projects can either be implemented on a temporary basis (tactical urbanism) or permanent basis with room for modification (quick builds).

Non-Engineering Countermeasure

NON-ENGINEERING: EDUCATION



Public Information Campaigns

Launch public safety education campaigns. Example campaign topics include safe speeds, yielding to pedestrians, distracted driving, drinking and driving, awareness of bicyclists and pedestrians, appropriate crosswalk behavior, rail safety, moving over for EMS vehicles, etc. Campaigns may include yard signs, wall boards/posters in prime injury-corridor neighborhoods, ads on bus exteriors, radio ads, etc. Public education may also involve making safety and crash data publicly available on project websites, the local agency's data portal, social media, and other avenues as appropriate.

Non-Engineering Countermeasure

→ BacktoIndex

NON-ENGINEERING: MAINTENANCE



Keep Roadways Clear of Debris

A smoothly paved surface free of debris enhances safety for vehicles and bicyclists.

Non-Engineering Countermeasure

NON-ENGINEERING: PARTNERSHIPS



Safe Routes to School

Establish a Safe Routes to School (SRTS) program in partnership with school districts.

Non-Engineering Countermeasure

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NON-ENGINEERING: POLICIES AND PROGRAMS



Update City Policies and Standards

Update policies, standards, and guidelines on topics such as signal timing, street design, street lighting, complete streets, and pedestrian crossings to incorporate current best practices and improve safety for all modes.

Non-Engineering Countermeasure

NON-ENGINEERING: POLICIES AND PROGRAMS



Neighborhood Slow Zones

Develop a neighborhood slow zone program to allow neighborhoods to request treatments to slow motor vehicles to 15 to 20 mph using traffic calming features, signs, and markings. Selected locations are typically in areas serving children, seniors, public transit users, commercial activity, and pedestrian/bicycle activity.

Non-Engineering Countermeasure

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NON-ENGINEERING: POLICIES AND PROGRAMS



Targeted Enforcement and Deterrence

When developing a program of targeted enforcement and deterrence, use collision history and corridors on the High Injury Network as one criterion for where to concentrate enforcement efforts. Add extra patrols to look for distracted drivers as part of a statewide distracted driving campaign, with focus on where data indicates that the most traffic safety benefit can be realized. Implement deterrence policies that are highly visible, such as publicized sobriety checkpoints, saturation patrol, and other forms of high visibility enforcement that are effective for safety outcomes.

Non-Engineering Countermeasure

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