

2024

Local Road Safety Plan



Long Range Planning - Transportation
Community Development Department
August 2024





Local Road Safety Plan 2024

Table of Contents

| | |
|---|-----------|
| Background and Introduction | 2 |
| Public Involvement | 2 |
| Transportation Focused Outreach..... | 3 |
| Transportation System Plan | 3 |
| Transportation and Mobility Commission..... | 3 |
| Community Engagement Efforts..... | 4 |
| Strategic Plan..... | 4 |
| City Council Outreach..... | 4 |
| Comprehensive Plan..... | 4 |
| Fourth Plain Boulevard | 5 |
| Crash Data Summary | 6 |
| Fatal and Severe Crash Factors..... | 8 |
| Environmental and Roadway Factors..... | 11 |
| Focus Areas | 13 |
| Priority Locations and Countermeasures | 13 |
| Methodology..... | 13 |
| Countermeasures | 18 |
| Priority Intersections..... | 18 |
| NE Burton Road and NE 86 th Avenue | 18 |
| E Fourth Plain Boulevard and Fort Vancouver Way..... | 22 |
| Priority Corridors..... | 25 |
| SE Chkalov Drive from SE Mill Plain Boulevard to SE 7 th Street..... | 25 |
| NE 112 th Ave from NE 39 th Street to NE 28 th Street..... | 29 |
| Implementation and Monitoring | 33 |

Background and Introduction

The City of Vancouver last completed a Local Road Safety Plan (LRSP) in 2022 which evaluated 2016-2020 crash data to identify trends, high priority locations, countermeasures, and recommendations. Since that time, the City has completed and advanced several projects focused on safety and mobility at these identified locations.

This LRSP 2024 update evaluates crashes on the City's locally controlled streets from 2018-2022, with a focus on crashes that resulted in a fatality or severe injury. The crash data was provided by the Washington Department of Transportation (WSDOT) and has been filtered to include only the roadways within the city. Property-damage-only crashes and crashes on interstate and state highways are not included in this evaluation.

This LRSP helps to advance the work of the [2024-2044 Transportation System Plan](#) (TSP), implement the 2017 [Complete Streets Policy](#) and support the [Transportation Improvement Program](#). These foundational documents set the stage for how the City prioritizes and evaluates transportation networks and multimodal transportation projects for funding and implementation.

Also, this LRSP update is required by the U.S. Department of Transportation's (USDOT) [Safe Streets and Roads for All](#) (SS4A) grant program. The City was successful in receiving SS4A funding for Fiscal Year 2023 for the Fourth Plain Safety and Mobility Improvement Project in the amount of \$5,696,000.

Public Involvement

The City is committed to equitable and inclusive public engagement throughout all our transportation programs and projects. This includes project-specific engagement related to roadway design changes and mobility improvements, as well as policy initiatives that apply broadly throughout City departments, and regarding the interconnectivity and accessibility of the transportation network for all users.

This work also includes strategic outreach during different City initiatives, programs, and projects to inquire about roadway safety and community transportation needs. Thus, for this LRSP, engagement has occurred during the past few years as part of the TSP update, community visioning process, Comprehensive Plan update, with ongoing Transportation and Mobility Commission workshops as well as during planning and capital transportation projects.

Transportation Focused Outreach

Transportation System Plan

The [2024-2044 Transportation System Plan](#) (TSP), adopted by the City Council in January 2024, was developed through extensive community engagement with an emphasis on reaching those who have not traditionally been involved in community planning. The TSP expanded its focus from auto-mobility focused projects to also identify and prioritize walking, rolling, biking and small mobility, transit and freight mobility and accessibility.

The Plan engagement centered on challenges and opportunities to getting around as well as the creation of modal networks and priorities specific to walking, rolling, bicycling, and transit. Outreach efforts used existing events to reach new people where they already gather, including events like the Multicultural Resource Fair at Clark College, the East Vancouver, and Downtown Farmer's Markets, and LULAC Grows Mercado on Fourth Plain Boulevard. In an effort to reduce barriers to participation, participants were provided with free transportation and a stipend for participation for attendees with low vision, people of color, people with disabilities, low-income individuals, and those living with limited housing options. The engagement process also utilized social media, City newsletters, flyers, videos, phone, and email communications with the goal of soliciting input from a broad array of people on their transportation needs and priorities.

Across all engagement activities, the community placed the highest priority on safety. The other top values for the transportation system included: earth-friendly, reliable travel times, regional connectivity, and affordability.

Transportation and Mobility Commission

The City created a new citizen oversight committee in 2020 to advise staff, City Council and the City Manager on transportation programs, policies, and projects. The [Transportation and Mobility Commission](#) (TMC) advises on transportation policy, programs, and project implementation and provides guidance on citywide transportation issues. The TMC is comprised of eleven commissioners with diverse backgrounds and experiences. At their monthly meetings, staff present on and seek feedback about transportation projects, plans, and programs. Commissioners provide input and raise transportation concerns in their neighborhoods and areas of experience. The public is invited to attend these meetings to provide testimony on general transportation topics during the Community Forum portion or as part of project public hearings.

Community Engagement Efforts

Strategic Plan

Vancouver's Strategic Plan helps the City prioritize and invest in community priorities. Every six years, a new plan is developed with community input for short- and long-term needs. The [2023-2029 Strategic Plan](#) identified transportation and mobility as a main focus area to ensure the city has a safe, future-ready and convenient transportation system that offers affordable, climate-friendly options for people to get where they need to be.

Community engagement was a core input in developing this plan, connecting with the community on a wide range of projects, programs, and initiatives. City staff asked community members about a number of topics, including housing, transportation, climate and safety. In these efforts, it was a priority for the City to bolster strategic engagement to ensure a broad range of services valued by underrepresented populations were included. A Strategic Plan Advisory Committee was created to improve communications between the City and a diversity of community members, as well as helping identify community needs, concerns, and opportunities in these main topic areas. The engagement efforts also included City Council workshops, meetings with community-based organizations, and activities with the public to learn more about their future priorities.

City Council Outreach

In an effort to make it easier for community members to communicate and connect with City Council, the Council developed a series of Community Forums in different neighborhoods throughout the city. These forums provide a venue for the public to have direct input with staff and interaction with elected officials to share concerns and learn about projects. Through small-group discussions, community members share their ideas, hear from other community members, and directly engage City Council members in conversation.

Comprehensive Plan

The [Comprehensive Plan](#), called "Our Vancouver 2045", is one of our community's most important tools to help plan for future growth. Engagement activities include public mapping workshops, community conversations, tabling, online story maps with commenting abilities, and community based organization and community engagement liaison led discussions. This will be ongoing throughout the Comprehensive Plan update process to ensure that the public has the opportunity to continuously provide input on transportation needs and priorities related to future growth.

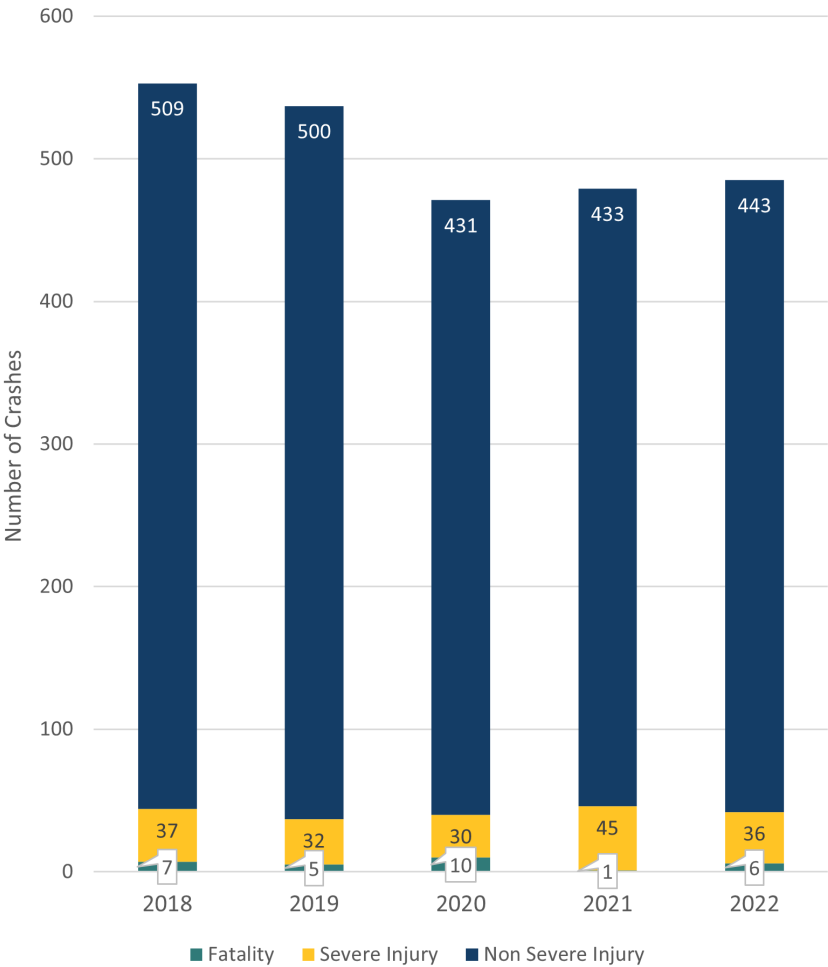
Fourth Plain Boulevard

The City is investing more than \$25 million into the central Vancouver neighborhoods near Fourth Plain Boulevard as part of the [Fourth Plain for All](#) (FPFA) Investment Strategy, with support from the American Rescue Plan Act (ARPA). For this, the City worked with community members to identify community needs and develop a list of potential investment options to address them. These efforts included community surveys, tabling at multicultural events, canvassing businesses along the corridor, attending neighborhood association meetings, business listening sessions, and creation of an Investment Strategy Committee. One of the main investment areas is transportation. The Committee prioritized projects that aim to improve safety by providing traffic calming on neighborhood streets, lighting, and pedestrian infrastructure on neighborhood streets.

Crash Data Summary

The data in this report reflect crashes on City of Vancouver streets from 2018 through 2022, with a focus on crashes that resulted in a fatality or severe injury. There were 29 fatal traffic crashes in Vancouver from 2018-2022, an average of almost six per year. In the same period, 180 crashes resulted in severe injury. Of these fatal and severe crashes, 79 involved a pedestrian or bicyclist. Total crashes were down over the most recent three years. Fatal crashes peaked in 2020. Severe injury crashes have remained relatively steady over the course of the five-year period.

Figure 1: Injury Crashes by Year and Most Severe Injury



Crashes involving pedestrians are more likely to result in a fatality or severe injury than crashes involving other modes (Figure 2). From 2018-2022, 41% of fatal traffic crashes involved a pedestrian (Figure 3). Pedestrians include people walking and people on person conveyance devices such as skateboards or wheelchairs. There were no bicycle fatalities in the 2018-2022 period, but crashes involving people bicycling or those on small mobility devices accounted for 12% of severe injuries.

Figure 2: Severity of Crashes by Mode

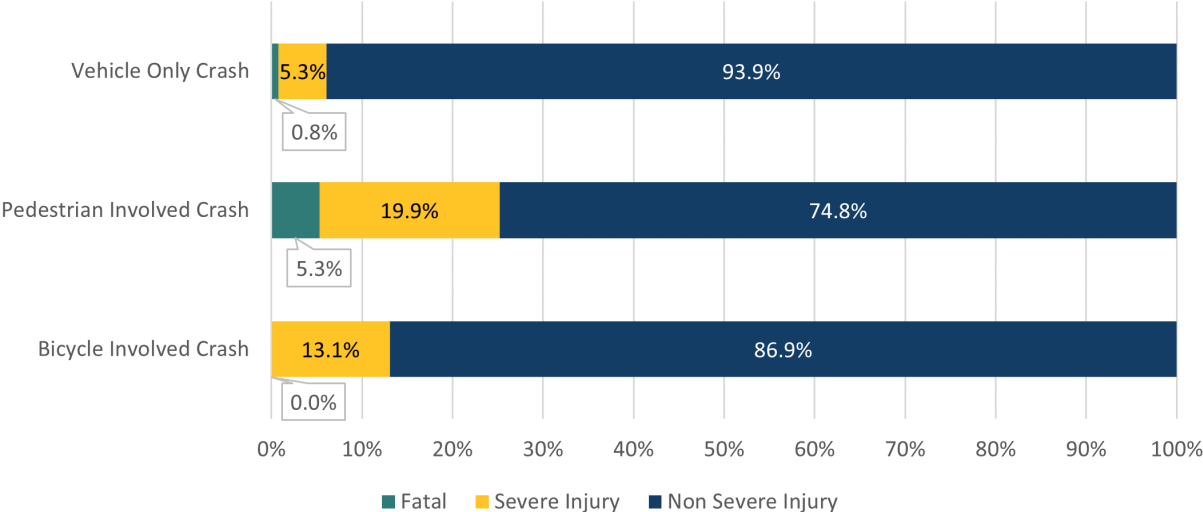
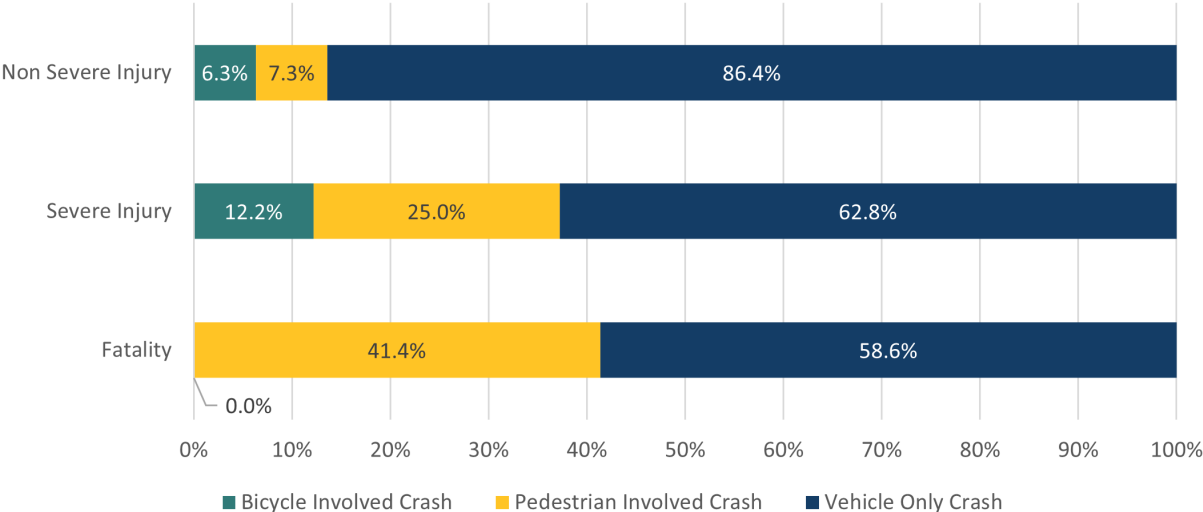


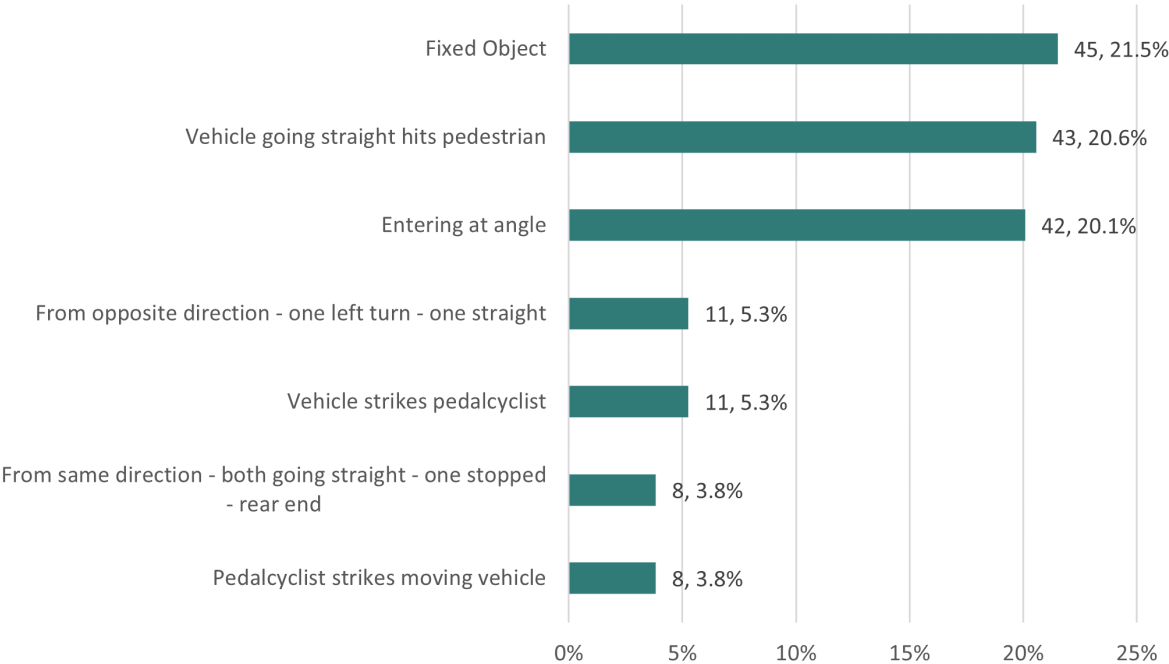
Figure 3: Mode of Crashes by Severity



Fatal and Severe Crash Factors

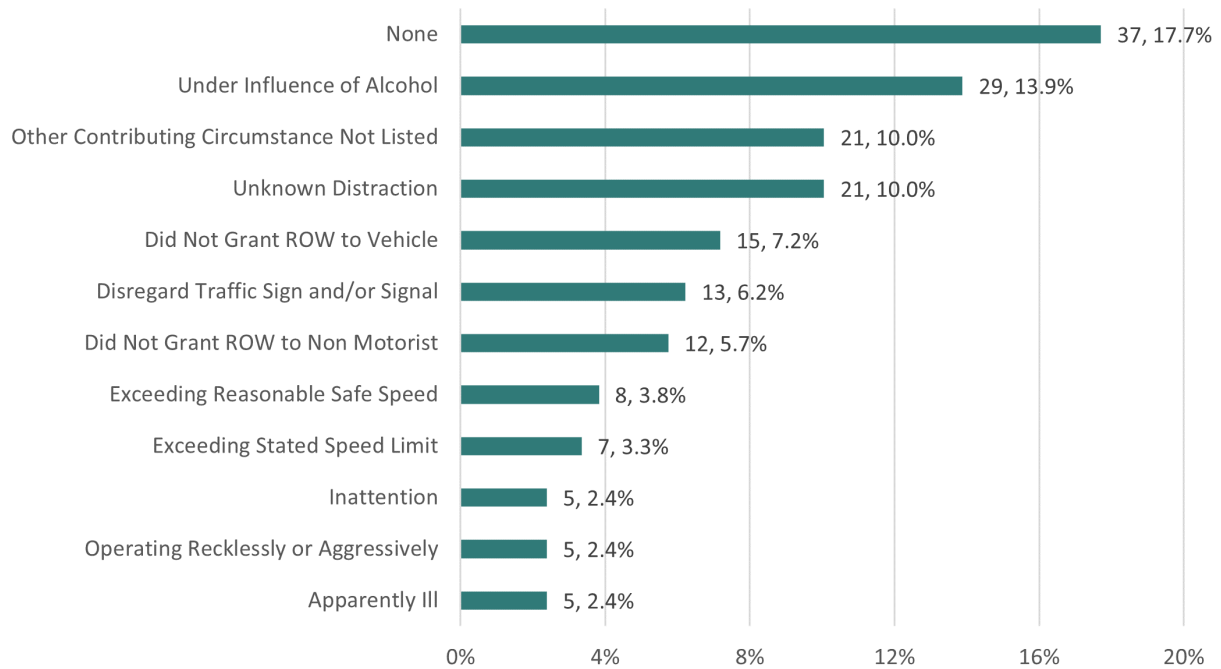
Many common human and environmental factors are associated with fatal and severe crashes. The most common collision type was fixed object, in which the vehicle collides with an object such as road sign, utility pole, or fence. The second most common was a vehicle going straight hitting a pedestrian, and the third was angle crashes. Other pedestrian crashes occurred when vehicles made turning movements, but this was not a top crash type. Figure 4 shows the top ten fatal and severe injury collision types, labeled with the total number of fatal and severe injury collisions, and the percent of total in each category. All categories reported in the following figures are taken from crash reports filled out by responding officers at crash scenes.

Figure 4: First Collision Type of Fatal and Severe Crashes



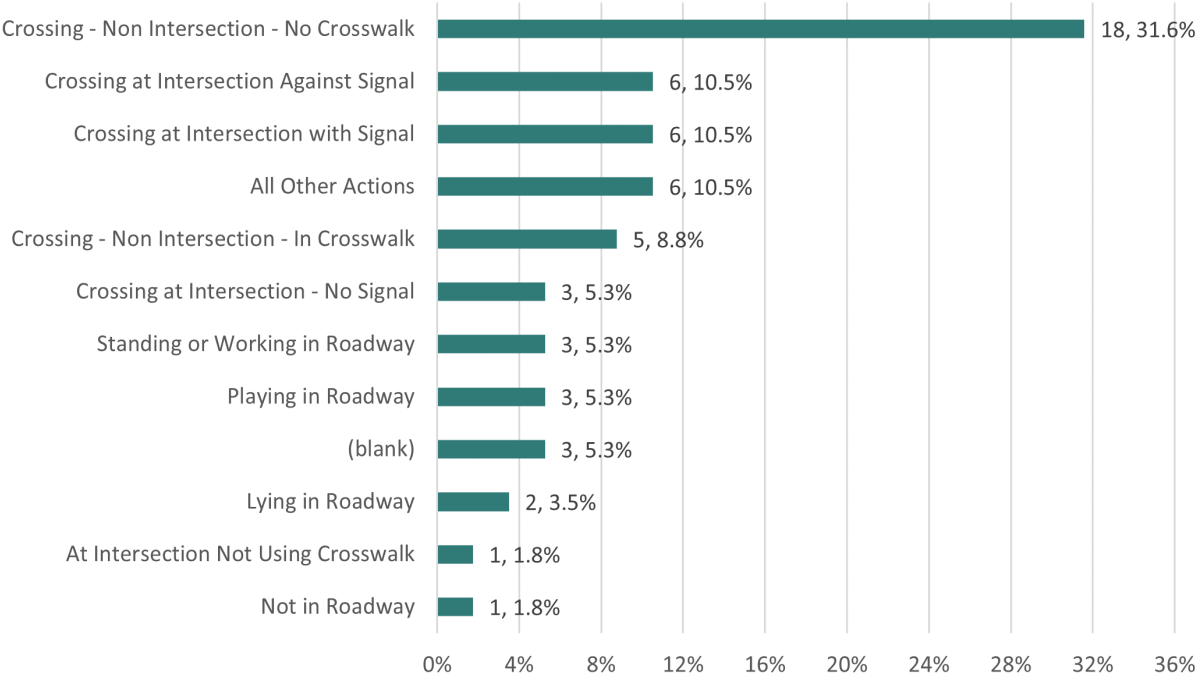
Alcohol was the most common contributing factor reported for drivers, present in 18% of fatal and severe crashes. Distraction (10%) was also among the top five. Figure 5 shows the top contributing circumstances for drivers involved in fatal and severe crashes, labeled with the total number of fatal and severe injury collisions, and percent of total in each category.

Figure 5: Driver Contributing Circumstances for Fatal and Severe Crashes



Nearly half of fatal crashes involved a pedestrian. Figure 6 shows the action of pedestrians involved in fatal and severe crashes, labeled with the total number of fatal and severe injury collisions and the percent of total in each category the most common. The most common, at almost 32%, was a pedestrian crossing at a non-intersection location with no crosswalk present. More than a 20% took place at a signalized intersection, with an equal split of pedestrians crossing with a signal and against it (11% each).

Figure 6: Pedestrian Action in Fatal and Severe Crashes



Environmental and Roadway Factors

Environmental factors in the crash data include roadway surface conditions, lighting conditions, and weather conditions. Most fatal and severe crashes in Vancouver took place in clear weather and on dry roads. More than half of the crashes took place at night with some degree of lighting present and nearly a third took place on wet roads.

Figure 7: Weather Conditions for Fatal and Severe Crashes

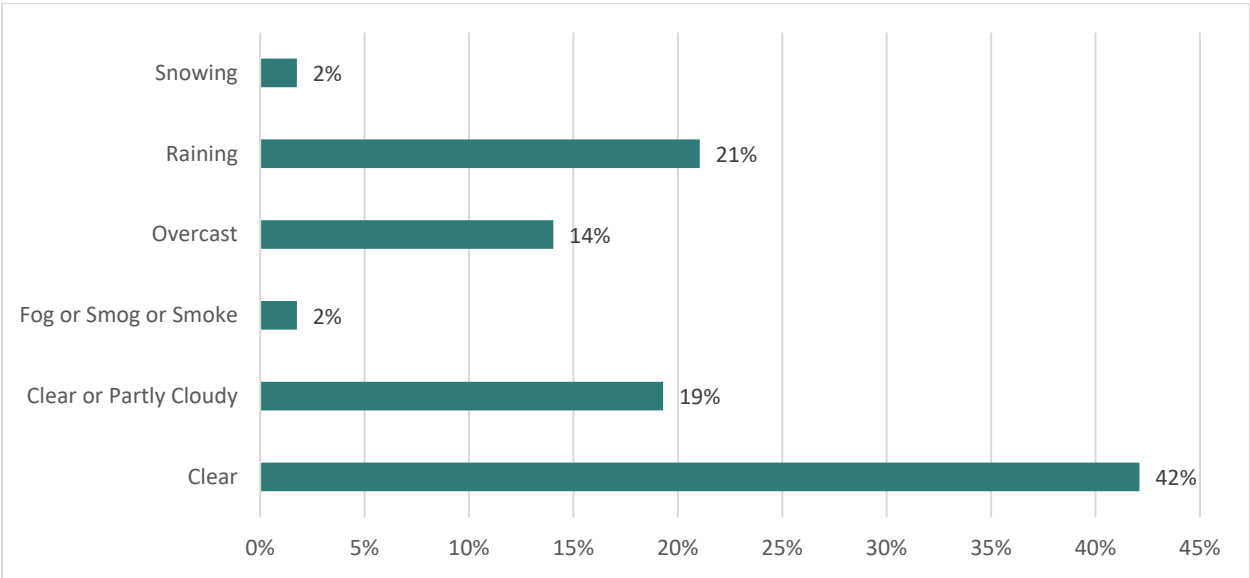


Figure 7: Roadway Surface Conditions for Fatal and Severe Crashes

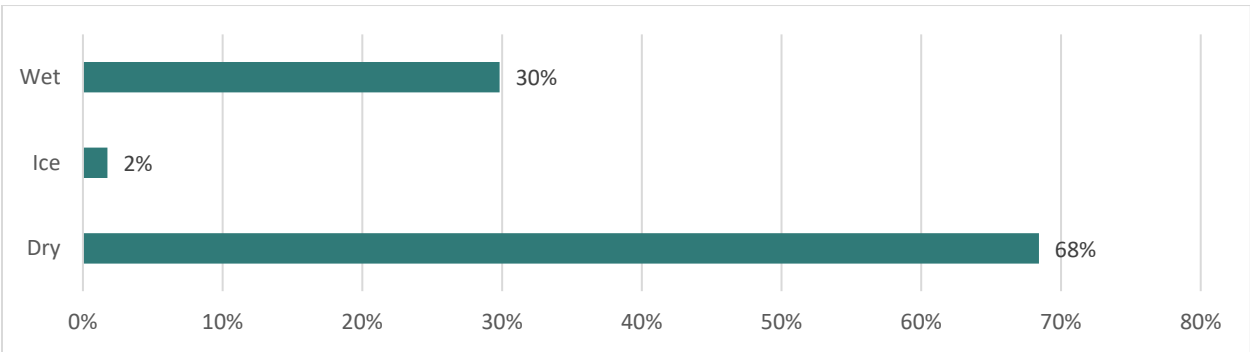
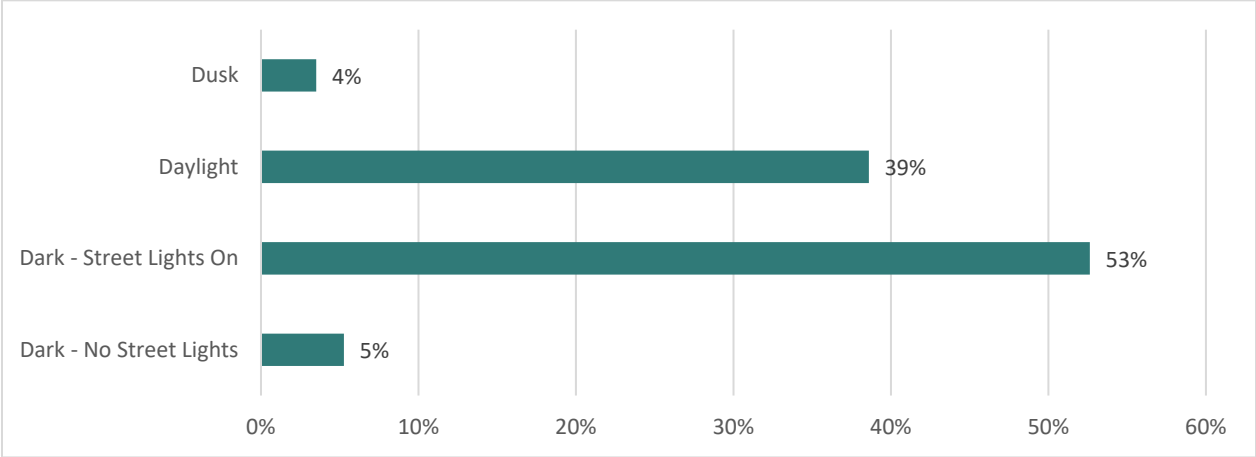


Figure 8: Light Conditions for Fatal and Severe Crashes



Focus Areas

The [Washington State Strategic Highway Safety Plan: Target Zero](#)¹ identifies the statewide highest priority crash factors. This report identifies the top priorities in two tiers. Priority Level One factors occur in at least 25% of total fatality and serious injury crashes, including impairment, distraction, speeding, lane departures, intersections, and young drivers. Priority Level Two factors occur in less than 25% of total fatality or serious injury crashes like heavy truck crashes and pedestrian and bicyclist crashes.

Focus areas for Vancouver are identified using the same method, which are oriented towards infrastructure solutions. Factors such as impairment and distraction can be more directly addressed with programmatic rather than infrastructure solutions. This Local Road Safety Plan focuses on infrastructure investment and uses the Safe System Approach to identify roadway design needs to accommodate for human mistakes and injury tolerances to effectively reduce fatalities and severe injuries for all crash types.

Priority Locations and Countermeasures

Priority locations for safety countermeasures were selected based on the functional class of the roadway, the number and severity of crashes, and the potential to coordinate future safety projects with ongoing and upcoming Complete Streets planning efforts in the city.

Methodology

Both intersections and street segments between intersections are included in this analysis, using the same geography and methods as the City of Vancouver's [2018 Transportation System Safety Analysis \(TSSA\)](#). The goals of the TSSA were to:

- Analyze citywide crashes along city-owned streets, understand overall performance and trends, and identify priority crash areas.
- Narrow the analysis to understand the major common characteristics of crashes in the priority crash areas.
- Identify intersections and roadway segments with potential for safety improvements, and identify improvements at these locations.
- Identify a toolbox of improvements (also known as countermeasures) to address the safety issues in Vancouver.

¹ Target Zero is a policy working to reduce all traffic deaths on roadways and specifically believes that here in Washington State, everyone should be able to use the roads without fear of being killed or seriously injured in a crash. The City will develop and adopt its own Vision Zero policy per the [2024-2044 Transportation System Plan](#), as a commitment to end traffic fatalities and serious injuries on Vancouver streets by 2040.

The analysis includes all segments of streets classified as collectors or arterials and all intersections where both streets are classified as collector or arterial. Local streets are not included because 75% of crashes on city streets take place on arterials or collectors. A crash is defined as an intersection crash if it occurred within 250 feet of an intersection outside of downtown, or within 100 feet in downtown. Each crash was either assigned to an intersection or a street segment.

Segment and intersections were given a weighted score based on the severity of the crashes that took place there. The crash weight is based on the relative values of the Washington State comprehensive person-injury unit cost by injury level from the [FHWA Crash Costs for Highway Safety Analysis Report](#).

Table 1: Recommended Crash Costs by Crash Severity for WA State (2018 Dollars)

| Crash Severity Level | Comprehensive Person-Injury Unit Cost (rounded to nearest \$100) | Crash Weight |
|-----------------------------|---|---------------------|
| K (Fatal) | \$3,423,400 | 24 |
| A (Severe Injury) | \$3,423,400 | 24 |
| B (Complaint of Pain) | \$237,400 | 2 |
| C (Other Visible Injury) | \$142,300 | 1 |
| O (Property Damage Only) | \$14,800 | 0 |

The top ten weighted intersection and segment locations are shown on the maps in Figure 7 and Figure 8 and listed in Table 2 and Table 3. The top crash intersections are mostly different than the previous analysis, while the top crash roadway segments are almost all the same from the Local Road Safety Plan analyzing crashes between 2016 to 2020.

Figure 9: Top Ten Intersections by Crash Weight, 2018-2022

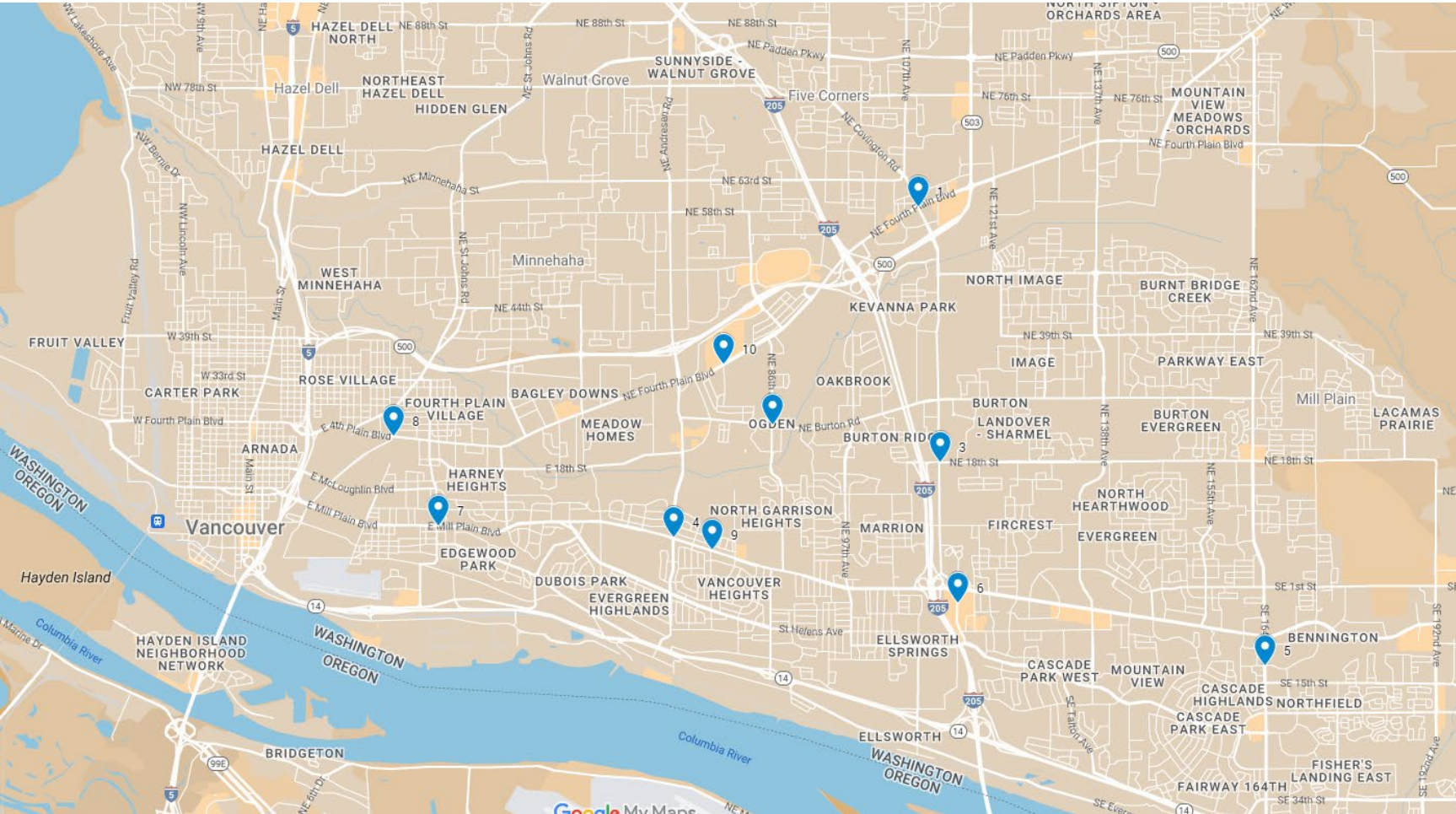


Figure 10: Top Ten Road Segments by Crash Weight, 2018-2022

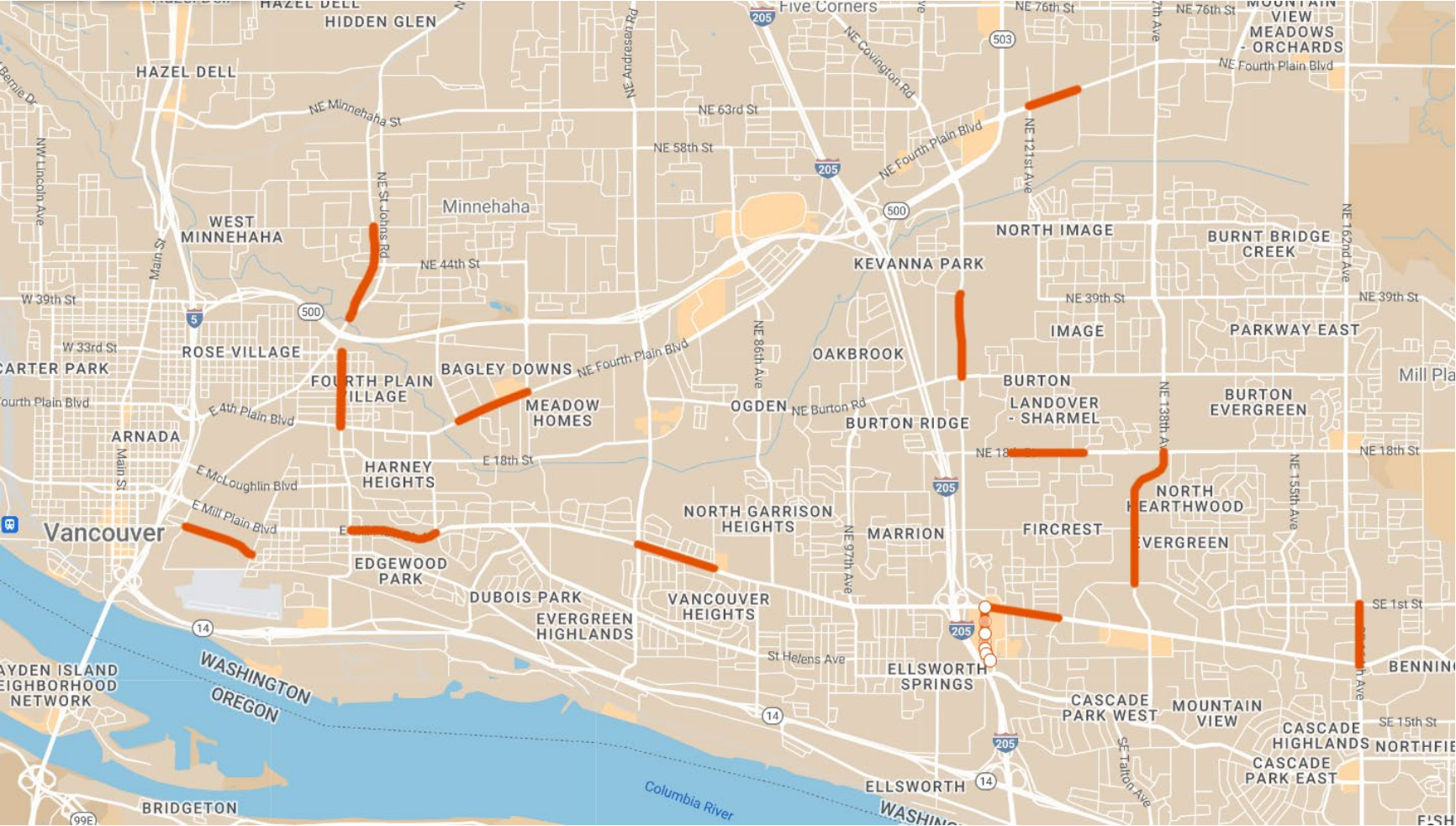


Table 2: Top 10 Intersections by Crash Weight, 2018-2022

| Rank | Segment | Total Crash Weight/Mile | In Previous LRSP Top 10? |
|------|---|-------------------------|--------------------------|
| 1 | NE Fourth Plain Blvd and NE Covington Rd/NE Gher Rd | 78 | No |
| 2 | NE Burton Rd and NE 86 th Ave | 63 | No |
| 3 | NE 18 th St and NE 112 th Ave | 61 | No |
| 4 | E Mill Plain Blvd and N Andresen Rd | 61 | No |
| 5 | SE 164 th Ave and SE 12 th St/SE Tech Center Dr | 58 | Yes |
| 6 | SE 3 rd St and SE Chkalov Dr | 56 | No |
| 7 | E Mill Plain Blvd and Grand Blvd | 55 | Yes |
| 8 | E Fourth Plain Blvd and Fort Vancouver Way | 53 | Yes |
| 9 | E Mill Plain Blvd and N Morrison Rd | 52 | No |
| 10 | NE Fourth Plain Blvd and NE 78 th Ave | 52 | No |

Table 3: Top Ten Road Segments by Crash Weight, 2018-2022

| Rank | Segment | Total Crash Weight/Mile | In Previous LRSP Top 10? |
|------|---|-------------------------|--------------------------|
| 1 | SE Chkalov Dr: SE Mill Plain Blvd to SE 7 th St | 375 | Yes |
| 2 | SE Mill Plain: Chkalov Dr to 123 rd Ave | 330 | Yes |
| 3 | Grand Blvd: Fourth Plain Blvd to 33 rd St | 303 | Yes |
| 4 | E Mill Plain Blvd: Andresen Rd to Garrison Rd | 291 | Yes |
| 5 | NE Fourth Plain Blvd: NE 121 st Ave to 127 th Ave | 289 | Yes |
| 6 | E Fourth Plain Blvd: Falk Rd to Stapleton Rd | 225 | Yes |
| 7 | E Mill Plain Blvd: Grand Blvd to Brandt Rd | 199 | Yes |
| 8 | NE 112 th Ave: 39 th St to 28 th St | 178 | Yes |
| 9 | 18 th St: 118 th Blvd to 129 th Blvd | 165 | No |
| 10 | SE 164 th Ave: SE 1 st St to SE Mill Plain Blvd | 156 | Yes |

Countermeasures

Countermeasures for the top priority locations are drawn from [WSDOT's 2019 Target Zero Plan](#) and the [Federal Highway Administration's Proven Safety Countermeasures](#). These countermeasures are used to determine how best to reduce fatalities and serious injuries on the roads in Vancouver. Four high crash locations (two intersections, two roadway segments) are detailed in this report with recommended countermeasures to reduce crashes given their specific characteristics and crash types. For each, a table lists potential countermeasures including:

- Target Zero strategy number and description, or other source reference if applicable.
- Crash type addressed.
- If the countermeasure is proven or recommended, and Crash Reduction Factor (CRF)² when available.

Priority Intersections

NE Burton Road and NE 86th Avenue

The intersection of NE Burton Road and NE 86th Avenue is the second highest ranked intersection with 86 crashes. Both NE Burton Road and NE 86th Avenue have three motor vehicle lanes (two travel lanes and a center turn lane), and bicycle lanes that do not continue through the intersection. In 2022 the annual daily traffic was 9,789 along NE 86th Avenue and 14,391 along NE Burton Road.³ C-TRAN route 30 runs along NE Burton Road and serves eastbound and westbound bus stops a few hundred feet from the northwest and southeast corners of the intersection. There are marked crosswalks across all four legs of the intersection but no leading pedestrian intervals (LPis). Two separate commercial driveways serve a small convenience store on the southeast corner of the intersection.

² The Crash Reduction Factor (CRF) details the likely impact of the countermeasure in reducing serious and fatal crashes.

³ AADT (2022) <https://www.rtc.wa.gov/data/traffic/>

Figure 11: Intersection of NE Burton Road and NE 82nd Avenue



Table 4: Countermeasures NE Burton Road and NE 86th Avenue Intersection

| Countermeasure Target Zero Strategy | Crash Type Addressed | Proven / Recommended |
|---|---|--|
| INT.1.2 Install or convert intersections to roundabouts | Crashes at intersections, particularly angle crashes | Proven, CRF of 50 – 100% for fatal and severe crashes |
| INT.1.9: Modify signal phasing to implement a leading pedestrian interval | Crashes involving people walking or biking at intersections | Proven, CRF 13% |
| INT.1.10: Install lighting | Crashes after dark | Recommended, CRF 42% for nighttime injury pedestrian crashes at intersections 33-38% for nighttime crashes at rural and urban intersections |
| INT.1.16 Implement systemic signing, marking, and visibility improvements at intersections | Crashes involving people walking at intersections | Recommended, CRF 5% |
| INT.2.1: Install red light cameras or automated enforcement cameras at locations with angle crashes | Disregarding signal | Proven, CRF 20-32% |
| INT.3.1: Add retroreflective borders to signal back plates | Crashes after dark / disregard signal | Proven, CRF 15% |
| INT.3.5 Increase visibility of signals and signs at intersections | Crashes involving people walking or biking | Recommended, CRF 29% |
| PAB 1.3 Revise design practices to emphasize context and target speed to reflect the needs of people walking and biking | Crashes involving people walking or biking | Recommended |
| PAB.2.1: Reduce crash exposure safety at pedestrian and bicyclist crossings by investing in and | Crashes involving people walking or biking | Proven, Refuge island CRF 56% |

| Countermeasure Target Zero Strategy | Crash Type Addressed | Proven / Recommended |
|--|---|------------------------------|
| installing refuge islands and raised crossings, and shortening crossing distances with bicycle friendly curb extensions where these crosswalk enhancements are needed | | |
| PAB.2.3: Increase sight distance and visibility at pedestrian and bicyclist crossings by clearing vegetation, extending crossing times, adding pedestrian and bicyclist leading intervals and/or adding pedestrian scale illumination. At mid-block locations, provide adequate distance between stop bars and the crossing. | Crashes involving people walking or biking | Recommended, CRF 5% |
| PAB.3.3 Invest in and construct more buffered bike lanes, protected separated bicycle lanes, and separated bicycle facilities or shared-use paths, especially in urban areas and adjacent to schools, bus stops, and school walk areas. | Crashes involving people walking or biking | Unknown |
| PAB.3.5 At traffic signals, use bicycle signal heads. At intersections install colored bicycle boxes. | Crashes involving people biking | Unknown |
| NACTO: Intersection treatments such as bike boxes , bike conflict marking through intersection | Crashes involving people biking | Recommended |
| FHWA: Install pavement markers and striping through intersections | Crashes at intersections | Proven, CRF 10% |
| FHWA: Crosswalk visibility enhancements including high-visibility crosswalks, advance stop marking, ped-scale lighting | Crashes involving people walking at intersections | Proven CRF of 40% and 42% |

E Fourth Plain Boulevard and Fort Vancouver Way

The intersection of Fourth Plain Boulevard and Fort Vancouver Way is the eighth highest ranked intersection with 53 crashes. Fourth Plain Boulevard is an arterial with two through lanes per direction, a center turn lane, and right turn pocket to turn north (from westbound) and south (from eastbound) onto Fort Vancouver Way. In 2023, the average daily traffic along Fourth Plain Boulevard at this intersection was 15,115, and the average daily traffic along Fort Vancouver Way was 8,208.⁴ C-TRAN operates the Vine BRT service on Fourth Plain Boulevard through the intersection with bus stops on the southwest and southeast corners, along with routes 6 and 25 with bus stops on the northwest and southeast corners. This corridor is home to several of the city's key destinations such as the Portland VA Medical Hospital, Clark College, and Fourth Plain International Business District.

The [Fourth Plain Boulevard and Fort Vancouver Way Safety and Mobility Project](#) is currently underway. This Project will repurpose a vehicle travel lane in each direction to a bus and right turn/business access (BAT) lanes and upgraded mobility lanes to increase separation and protection.

Figure 12: Intersection of E Fourth Plain Boulevard and Fort Vancouver Way



⁴ AADT (2023) <https://www.rtc.wa.gov/data/traffic/>

Table 5: Countermeasures E Fourth Plain Boulevard and Fort Vancouver Way Intersection

| Countermeasure Target Zero Strategy | Crash Type Addressed | Proven / Recommended |
|---|---|--|
| INT.1.2 Install or convert intersections to roundabouts | Crashes at intersections, particularly angle crashes | Proven, CRF of 50–100% for fatal and severe crashes |
| INT.1.3 Convert four-lane roadways to three-lane roadways with center turn lane (road reconfiguration) | Crashes involving people walking at intersections | Proven, CRF 19-47% |
| INT.1.4: Convert permitted left turns to protected left turns at signals | Left-turn crashes | Proven, CRF 30% |
| INT.1.9: Modify signal phasing to implement a leading pedestrian interval | Crashes involving people walking or biking at intersections | Proven, CRF 13% |
| INT.1.10: Install lighting | Crashes after dark | Recommended, CRF 42% for nighttime injury pedestrian crashes at intersections 33-38% for nighttime crashes at rural and urban intersections |
| INT.1.13 Optimize traffic signal clearance intervals | Crashes involving people walking at intersections | Recommended, CRF 37% |
| INT.1.16 Implement systemic signing, marking, and visibility improvements at intersections | Crashes involving people walking at intersections | Recommended, CRF 5% |
| INT.2.1: Install red light cameras or rat boxes (automated enforcement) at locations with angle crashes | Disregarding signal | Proven, CRF 20-32% |
| INT.3.1: Add retroreflective borders to signal back plates | Crashes after dark/disregard signal | Proven, CRF 15% |

| Countermeasure Target Zero Strategy | Crash Type Addressed | Proven / Recommended |
|---|---|-------------------------------|
| INT.3.5 Increase visibility of signals and signs at intersections. | Crashes involving people walking or biking | Recommended, CRF 29% |
| PAB.2.1: Reduce crash exposure safety at pedestrian and bicyclist crossings by investing in and installing refuge islands and raised crossings, and shortening crossing distances with bicycle friendly curb extensions where these crosswalk enhancements are needed | Crashes involving people walking or biking at intersections | Proven, Refuge island CRF 56% |
| PAB.2.3: Increase sight distance and visibility at pedestrian and bicyclist crossings by clearing vegetation, extending crossing times, adding pedestrian and bicyclist leading intervals and/or adding pedestrian scale illumination. At mid-block locations, provide adequate distance between stop bars and the crossing | Crashes involving people walking or biking | Recommended, CRF 5% |
| PAB.3.1 Invest in and construct separated pedestrian facilities (sidewalks and multi-use paths), especially in urban areas and adjacent to schools, bus stops, and school walk areas | Crashes involving people walking or biking | Proven, Sidewalk CRF 59% |
| PAB.3.3 Invest in and construct more buffered bike lanes, protected separated bicycle lanes, and separated bicycle facilities or shared-use paths, especially in urban areas and adjacent to schools, bus stops, and school walk areas | Crashes involving people walking or biking | Unknown |

| Countermeasure Target Zero Strategy | Crash Type Addressed | Proven / Recommended |
|--|--|------------------------|
| PAB.3.5 At traffic signals, use bicycle signal heads. At intersections install colored bicycle boxes | Crashes involving people biking | Unknown |
| NACTO: Intersection treatments such as bike boxes , bike conflict marking through intersection | Crashes involving people biking | Recommended |
| FHWA: Install pavement markers and striping through intersections | Crashes at intersections | Proven, CRF 10% |
| FHWA: Crosswalk visibility enhancements including high-visibility crosswalks, advance stop marking, ped-scale lighting | Crashing involving people walking at intersections | Proven, CRF of 40%-42% |

Priority Corridors

SE Chkalov Drive from SE Mill Plain Boulevard to SE 7th Street

The corridor on SE Chkalov Drive between SE Mill Plain Boulevard and SE 7th Street is the highest ranked segment with 375 crashes. Chkalov Drive is a minor arterial. The average daily traffic in 2021 on Chkalov Drive just south of the intersection with Mill Plain Boulevard was 17,355.⁵

The northern portion of Chkalov Drive closest to the intersection with Mill Plain Boulevard has seven lanes, including double left-turn lanes and a dedicated right turn lane onto Mill Plain Boulevard, and four through lanes. The Mill Plain Boulevard intersection at the north end is one block east from an I-205 interchange. C-TRAN's Vine bus has a stop on the southeast corner of the intersection on Mill Plain Boulevard.

There are thirteen commercial driveways on this quarter mile corridor. The intersection of SE 3rd Street and SE Chkalov Drive is signalized and has a commercial driveway to Fred Meyer to the west, a commercial driveway to a Cascade Parks Plaza to the east and is the sixth highest ranked intersection with 56 crashes. Sidewalks are narrow and not buffered from the roadway.

⁵ AADT (2021) <https://www.rtc.wa.gov/data/traffic/>

This segment is included in the [112th Avenue Safety and Mobility Project](#) that is looking at potential lane reconfiguration and other safety improvements. The project corridor extends from 51st Street in the north to the [McGillivray Boulevard Safety and Mobility Project](#) to the south.

Figure 13: Roadway on SE Chkalov Drive from SE Mill Plain Boulevard to SE 7th Street



Table 6: Countermeasures SE Chkalov Drive from SE Mill Plain Boulevard to SE 7th Street Segment

| Countermeasure Target Zero Strategy | Crash Type Addressed | Proven / Recommended |
|---|--|---|
| INT.1.2 Install or convert intersections to roundabouts | Crashes at intersections, particularly angle crashes | Proven, CRF of 50–100% for fatal and severe crashes |
| INT.1.3 Convert four-lane roadways to three-lane roadways with center turn lane (road diet) <i>Consider narrowing Chkalov Dr</i> | Crashes at intersections | Proven, CRF 19-47% |

| Countermeasure Target Zero Strategy | Crash Type Addressed | Proven / Recommended |
|---|---|--|
| INT.1.4: Convert permitted left turns to protected left turns at signals | Left-turn crashes | Proven, CRF 30% |
| INT.1.9: Modify signal phasing to implement a leading pedestrian interval | Crashes involving people walking or biking at intersections | Proven, CRF 13% |
| INT.1.10: Install lighting | Crashes after dark | Recommended, CRF 42% for nighttime injury pedestrian crashes at intersections 33-38% for nighttime crashes at rural and urban intersections |
| INT.1.16 Implement systemic signing, marking, and visibility improvements at intersections. | Crashes involving people walking at intersections | Recommended, CRF 5% |
| INT.2.1: Install red light cameras or rat boxes (automated enforcement) at locations with angle crashes | Disregarding signal | Proven, CRF 20-32% |
| INT.3.1: Add retroreflective borders to signal back plates | Crashes after dark / disregard signal | Proven, CRF 15% |
| INT.3.5 Increase visibility of signals and signs at intersections | Crashes involving people walking or biking | Recommended, CRF 29% |
| PAB.1.2 Invest in and construct roadway reconfigurations, roundabouts and other recommended FHWA safety countermeasures specific to pedestrian and bicyclist safety | Crashes involving people walking or biking at intersections | Recommended, Roundabout with cycle path 17% |
| PAB.2.1: Reduce crash exposure safety at pedestrian and bicyclist crossings by investing in and installing refuge islands and raised | Crashes involving people walking or biking at intersections | Proven, Refuge island CRF 56% |

| Countermeasure Target Zero Strategy | Crash Type Addressed | Proven / Recommended |
|---|--|--|
| crossings, and shortening crossing distances with bicycle friendly curb extensions where these crosswalk enhancements are needed | | |
| PAB.2.2 Invest in and increase the use of rectangular rapid flashing beacons and pedestrian hybrid beacons where these crosswalk enhancements are needed | Crashes involving people walking | Recommended, CRF 69% |
| PAB.2.3: Increase sight distance and visibility at pedestrian and bicyclist crossings by clearing vegetation, extending crossing times, adding pedestrian and bicyclist leading intervals and/or adding pedestrian scale illumination. At mid-block locations, provide adequate distance between stop bars and the crossing | Crashes involving people walking or biking | Recommended, CRF 5% |
| PAB.3.3 Invest in and construct more buffered bike lanes, protected separated bicycle lanes, and separated bicycle facilities or shared-use paths, especially in urban areas and adjacent to schools, bus stops, and school walk areas | Crashes involving people walking or biking | Unknown |
| PAB.3.5 At traffic signals, use bicycle signal heads. At intersections install colored bicycle boxes | Crashes involving people biking | Unknown |
| FHWA: Corridor access management | Crashes at driveways | Proven, CRF 25-31% for fatal and injury crashes along urban/suburban arterials |

NE 112th Ave from NE 39th Street to NE 28th Street

The corridor on NE 112th Avenue from NE 39th Street to NE 28th Street is the eighth highest ranked roadway segment with 178 crashes. NE 112th Avenue is a major arterial with two lanes per direction and a center turn lane. The average daily traffic (ADT) on NE 112th Avenue in both directions amounts to more than 23,500 vehicles.⁶

The intersection with NE 28th Street has dual turn left turn lanes. The mobility/bike lanes do not continue through the intersection. There are multiple commercial driveways along this corridor to access mostly industrial and commercial businesses. The C-TRAN Route 80 runs along this corridor and has three bus stops on 112th Avenue as well as two stops just north of the NE 39th Street intersection.

This segment is within the bounds of the [112th Avenue Safety and Mobility Project](#).

Figure 14: Roadway on NE 112th from NE 39th Street to NE 28th Street



⁶ AADT (2023) - 112th Ave Existing Conditions Report

Table 7: Countermeasures NE 112th Avenue from NE 39th Street to NE 28th Street Segment

| Countermeasure Target Zero Strategy | Crash Type Addressed | Proven / Recommended |
|--|---|--|
| INT.1.2 Install or convert intersections to roundabouts | Crashes at intersections, particularly angle crashes | Proven, CRF of 50 – 100% for fatal and severe crashes |
| INT.1.3 Convert four-lane roadways to three-lane roadways with center turn lane (<i>road diet</i>) | Unsafe speed, pedestrian crossing | Proven, CRF 19-47% |
| INT.1.9: Modify signal phasing to implement a leading pedestrian interval | Crashes involving people walking or biking at intersections | Proven, CRF 13% |
| INT.1.10: Install lighting / LDX.3.4 Install lighting | Crashes after dark | Recommended, CRF 42% for nighttime injury pedestrian crashes at intersections 33-38% for nighttime crashes at rural and urban intersections |
| INT.1.13 Optimize traffic signal clearance intervals | Crashes involving people walking at intersections | Recommended, CRF 37% |
| INT.1.15 Implement restricted access to properties/driveways adjacent to intersections using closures or turn restrictions | Crashes involving people walking or biking | Recommended |
| INT.1.16 Implement systemic signing, marking, and visibility improvements at intersections | Crashes involving people walking at intersections | Recommended, CRF 5% |
| INT.2.1 Install red light cameras (automated enforcement) at locations with angle crashes | Disregard signal, Crashing involving people walking | Proven, CRF 40% |
| INT.3.1 Add retroreflective borders to signal back plates | Disregard signal | Proven |

| Countermeasure Target Zero Strategy | Crash Type Addressed | Proven / Recommended |
|---|---|---|
| INT.3.4 Increase sight distance (visibility) of intersections on approaches | Crashes involving people walking or biking | Recommended |
| INT.3.5 Increase visibility of signals and signs at intersections | Crashes involving people walking or biking | Recommended, CRF 29% |
| PAB.1.2 Invest in and construct roadway reconfigurations, roundabouts and other recommended FHWA safety countermeasures specific to pedestrian and bicyclist safety | Crashes involving people walking or biking | Recommended, Roundabout with cycle path 17% |
| PAB 1.3 Revise design practices to emphasize context and target speed to reflect the needs of people walking and biking | Crashes involving people walking or biking | Recommended |
| PAB.2.1: Reduce crash exposure safety at pedestrian and bicyclist crossings by investing in and installing refuge islands and raised crossings, and shortening crossing distances with bicycle friendly curb extensions where these crosswalk enhancements are needed | Crashes involving people walking or biking at intersections | Proven, Refuge island CRF 56% |
| PAB.2.2 Invest in and increase the use of rectangular rapid flashing beacons and pedestrian hybrid beacons where these crosswalk enhancements are needed | Crashes involving people walking or biking | Recommended, CRF 69% |
| PAB.2.3: Increase sight distance and visibility at pedestrian and bicyclist crossings by clearing vegetation, extending crossing times, adding pedestrian and bicyclist leading | Crashes involving people walking or biking | Recommended, CRF 5% |

| Countermeasure Target Zero Strategy | Crash Type Addressed | Proven / Recommended |
|--|---|--|
| intervals and/or adding pedestrian scale illumination. At mid-block locations, provide adequate distance between stop bars and the crossing | | |
| PAB.3.1 Invest in and construct separated pedestrian facilities (sidewalks and multi-use paths), especially in urban areas and adjacent to schools, bus stops, and school walk areas | Crashes involving people walking or biking | Proven, Sidewalk CRF 59% |
| PAB.3.3 Invest in and construct more buffered bike lanes, protected separated bicycle lanes, and separated bicycle facilities or shared-use paths, especially in urban areas and adjacent to schools, bus stops, and school walk areas | Crashes involving people walking or biking | Unknown |
| PAB.3.5 At traffic signals, use bicycle signal heads. At intersections install colored bicycle boxes | Crashes involving people biking | Unknown |
| PAB.3.6: Remove permissive left turn signals that conflict with pedestrian/bicyclist movements and eliminate right turn on red at signals | Crashes involving people walking at intersections | Unknown |
| FHWA: Crosswalk visibility enhancements including high-visibility crosswalks, advance stop marking, ped-scale lighting | Crashes involving people walking at intersections | Proven CRF of 40% and 42% |
| FHWA: Corridor access management | Crashes at driveways | Proven, CRF 25-31% for fatal and injury crashes along urban/suburban arterials |

| Countermeasure Target Zero Strategy | Crash Type Addressed | Proven / Recommended |
|--|----------------------|---------------------------------------|
| LDX.3.5: Install edge lines, especially on curves, where adequate shoulders exist | Fixed object | Recommended, CRF 26% |
| AB.3.3: Invest in and construct more buffered bike lanes, protected separated bicycle lanes, and separated bicycle facilities or shared use paths, especially in urban areas and adjacent to schools, bus stops, and school walk areas | People biking | Proven, Bicycle lane CRF 30% - 49% |

Implementation and Monitoring

This report is intended to be a 5-year analysis to identify high crash locations and related countermeasures to address these intersections and roadway segments. The 2024-2044 Transportation System Plan (TSP) was adopted in January 2024 and future updates to the TSP will incorporate safety projects to prevent fatal and severe crashes at the priority locations and be included in the City's 6-year Transportation Improvement Program (TIP) and the Capital Facilities Plan (CFP).

Project implementation and monitoring will also occur through the City's Complete Streets Program, evaluating project investments to measure outcomes of multimodal street improvements using quantitative and qualitative data. City-wide, staff regularly monitor safety data and project outcomes to ensure that investments address crashes and improve safety for everyone who travels in and through Vancouver.