APPENDIX K:

Local Road Safety Plan

This document looks at crashes that resulted in injury on the City of Vancouver's locally-controlled streets from 2016 through 2020, with a focus on crashes that resulted in a fatality or severe injury. It includes recommendations for countermeasures, policies, and programs that can reverse safety issues seen on Vancouver's streets.

Local Road Safety Plan 2022-2026

August 2022

CITY OF Vancouver WASHINGTON

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INTRODUCTION

The City of Vancouver last completed a Local Road Safety Plan in 2018. The plan drew from the 2018 City of Vancouver Transportation System Safety Analysis, which evaluated 2010-2016 crash data to identify trends, high priority location, countermeasures, and recommendations to integrate into the Transportation System Plan (TSP) update. Since that time, the City has advanced several Complete Streets corridor projects with a safety focus and commenced work on the TSP Update.

This 2022 Local Road Safety Plan looks at crashes that resulted in an injury on the City of Vancouver's locally-controlled streets from 2016 through 2020, with a focus on crashes that resulted in a fatality or severe injury. Property-damage-only crashes and crashes on interstate and state highways are not included. Crash data was downloaded from the City of Vancouver Collision Data Dashboard tool, which was created to support the TSP update and other multimodal transportation safety projects as well as regular updates to the City's Local Road Safety Plan. This tool takes data from the Washington State Department of Transportation (WSDOT) and performs post-processing tasks to add additional fields and overlay data about Vancouver's street network.

PUBLIC INVOLVEMENT

The City of Vancouver is committed to equitable and inclusive public engagement throughout all of 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 the City and across departments.

The City developed its first Local Road Safety Plan in 2018 as part of Safe Streets Vancouver, a citywide safety analysis that identified high crash intersections and roadway segments and recommended priority safety improvements. This updated Local Road Safety Plan was developed as part of a major update to the City's overall Transportation System Plan, which started in 2020 and is slated to be completed in 2023.

Updates to our Local Road Safety Plan included robust public engagement and many opportunities for community input on how to improve the safety and mobility in high crash locations around the City, with an emphasis on reaching equity-priority communities and vulnerable road users. This outreach included an interactive website, surveys, in-person and online open houses, social media engagement, focus groups, opportunities for public sharing of individual experiences with the transportation network, targeted text and email outreach, and regular reports to the City's Transportation and Mobility Commission, City Council, and partner agency boards and commissions.

The Local Road Safety Plan also reflects public involvement and engagement conducted as part of previous planning efforts, and represents the next step in a years and sometimes decades-long effort to improve safety in high crash locations. Some of the past planning efforts that it builds off of include: the Fourth Plain Corridor Subarea Plan (2008), Fruit Valley Subarea Plan (2010), 112th Avenue Corridor Plan (2011), Fourth Plain Forward Action Plan (2015), Westside Mobility Strategy (2016), and Evergreen and Grand Commercial Corridor Strategy (2021), among many others. While the City and our partners have made significant investment and some progress in addressing the many safety issues identified by the community through these planning efforts, there remains much work to do.

Transportation safety has also been identified as a significant priority through a citywide community visioning process that is currently underway. Transportation safety information gathered from community members through this process is integrated into the updated Local Road Safety Plan.

Lastly, the City of Vancouver engages with partners across the region in efforts to improve safety and mobility for all users, regardless of age, ability or mode of travel. This includes collaborative planning with our transit agency C-TRAN on several Bus Rapid Transit Corridor projects, with the explicit goal of working together to improve transit access through safety improvements and prioritizing transit access, speed and reliability on City streets. In addition, we coordinate regularly with the Washington Department of Transportation (WSDOT) to design and implement safety improvements on WSDOT roadways within the city, and with the Soutwest Washington Regional Transportation Council, our local Metropolitan Planning Organization (MPO), to ensure safety is embedded in county-wide planning processes and funding decisions. These are all public forums where the community has an opportunity to weigh in on specific projects as well as broader policy discussions focused on transportation safety and mobility.

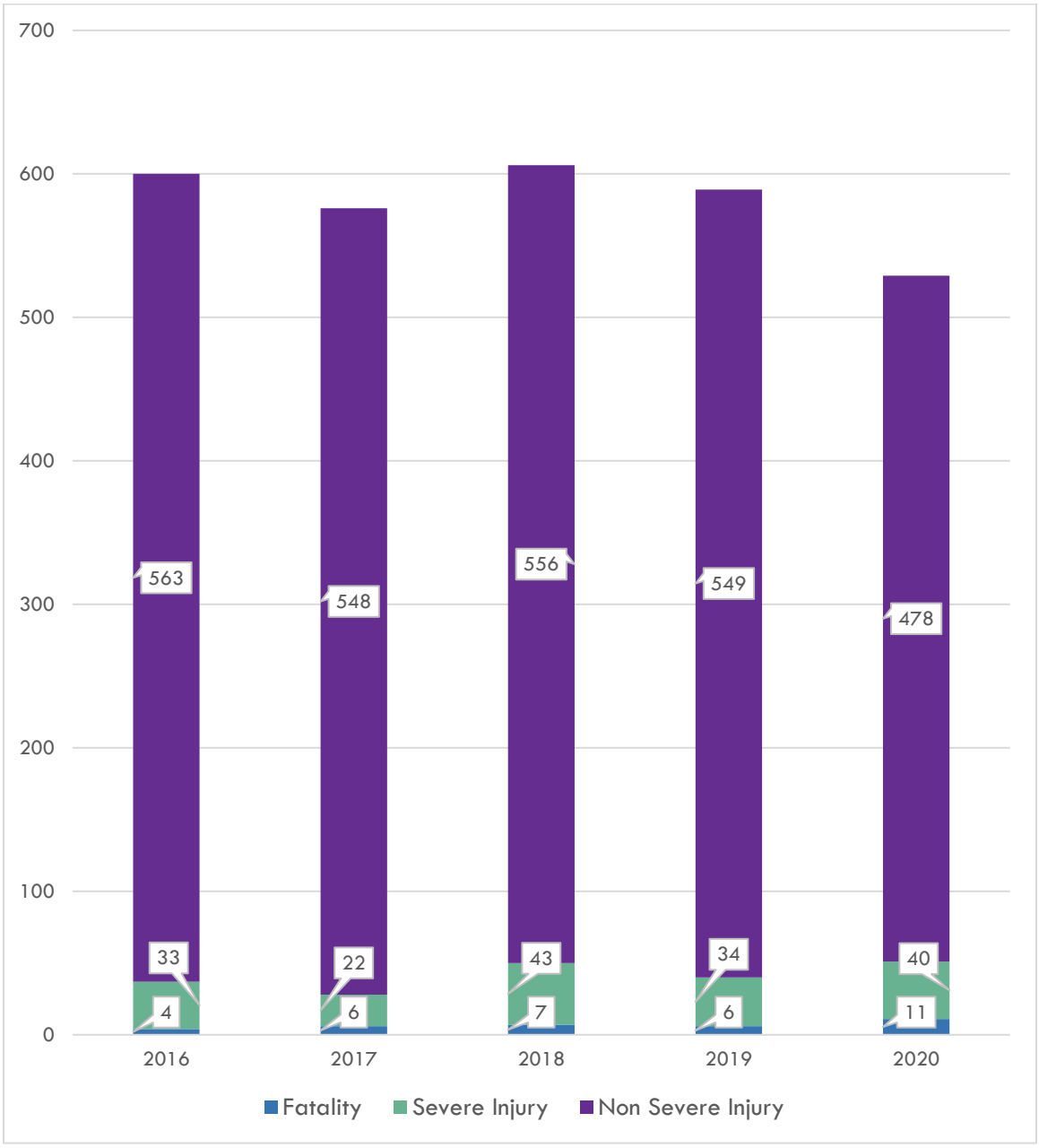
CRASH DATA SUMMARY

Overall Crash Trends

There were 34 fatal traffic crashes in Vancouver from 2016-2020, an average of almost seven per year. In the same time period, 172 crashes resulted in a severe injury. There were 76 fatal and severe injury crashes involving a pedestrian or bicyclist. Total crashes declined during the most recent three years (Figure 1), but the number of fatal and severe injury crashes was higher in more recent years (Figure 2). In 2020 there were more fatal and severe crashes than in any of the previous four years—51 total, making up more than

10% of total crashes in Vancouver that year. This trend is consistent with national trends during the COVID-19 pandemic.[1]

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 3). From 2016-2020 in Vancouver, 47% of fatal traffic crashes involved a pedestrian (Figure 4). Pedestrians include people walking and

[1] https://www.nhtsa.gov/press-releases/2020-fatality-data-show-increased-traffic-fatalities-during-pandemic

people on personal conveyance devices such as skateboards or wheelchairs. There were no bicyclist fatalities in the 2016–2020-time frame, but crashes involving people bicycling accounted for 13% of severe injuries.

Figure 2 Severity of Crashes by Mode

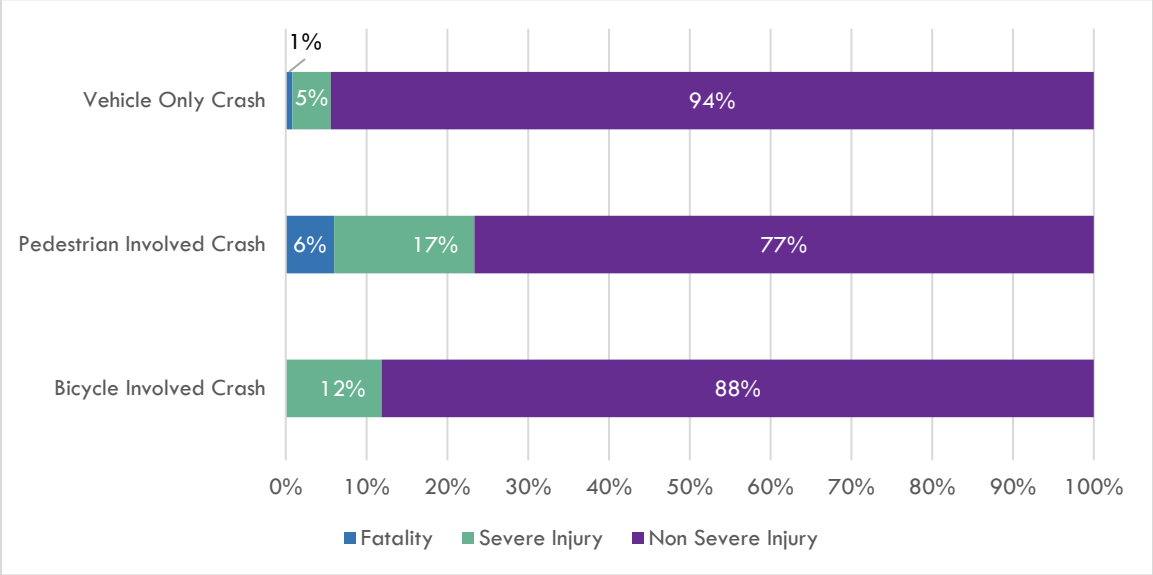
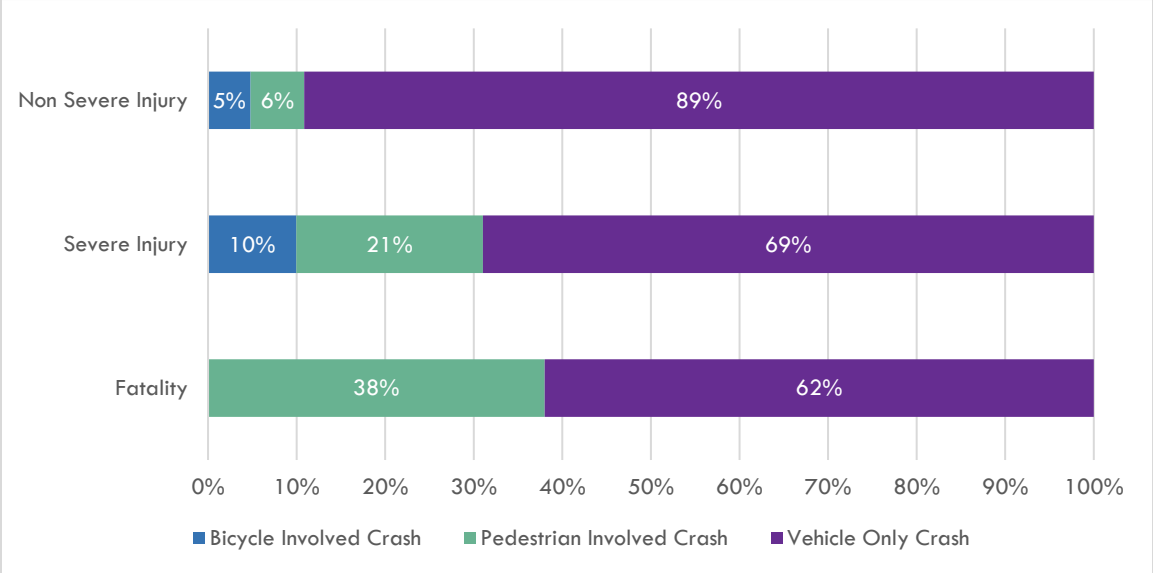


Figure 3 Mode of Crashes by Severity

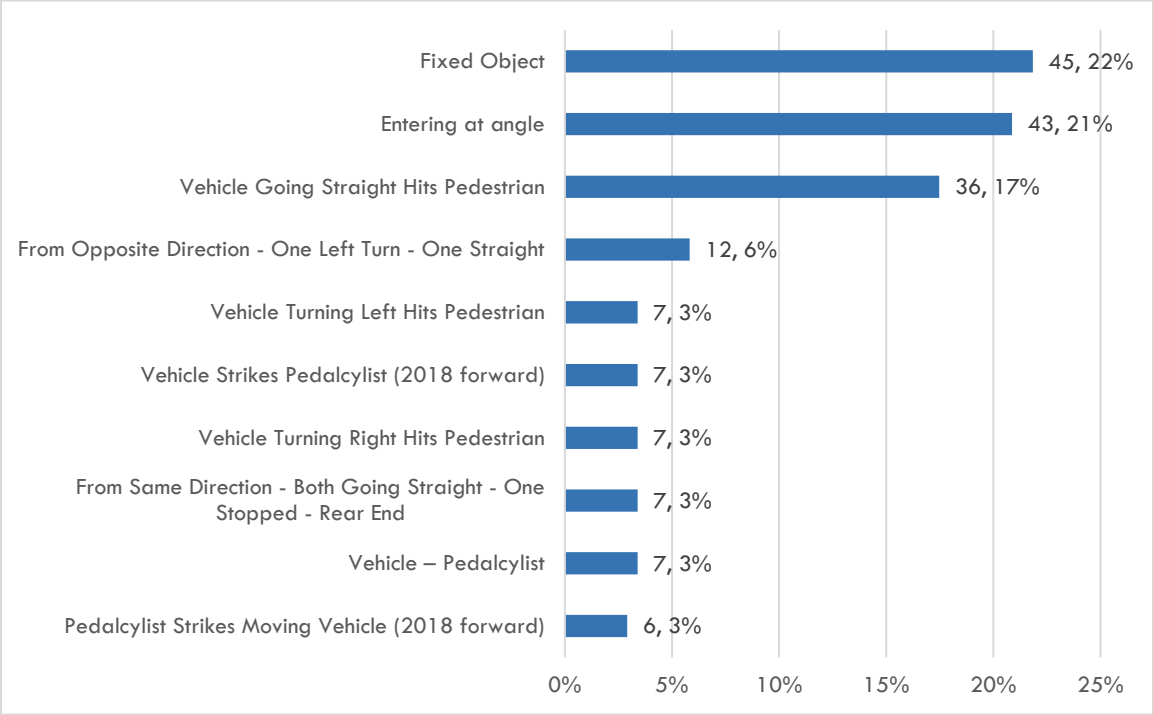


Fatal and Severe Crash Factors

This section looks at the most common human and environmental factors associated with fatal and severe crashes in Vancouver in the 2016-2020 time frame. The most common first collision type was fixed object, in which the vehicle collides with an object such as a

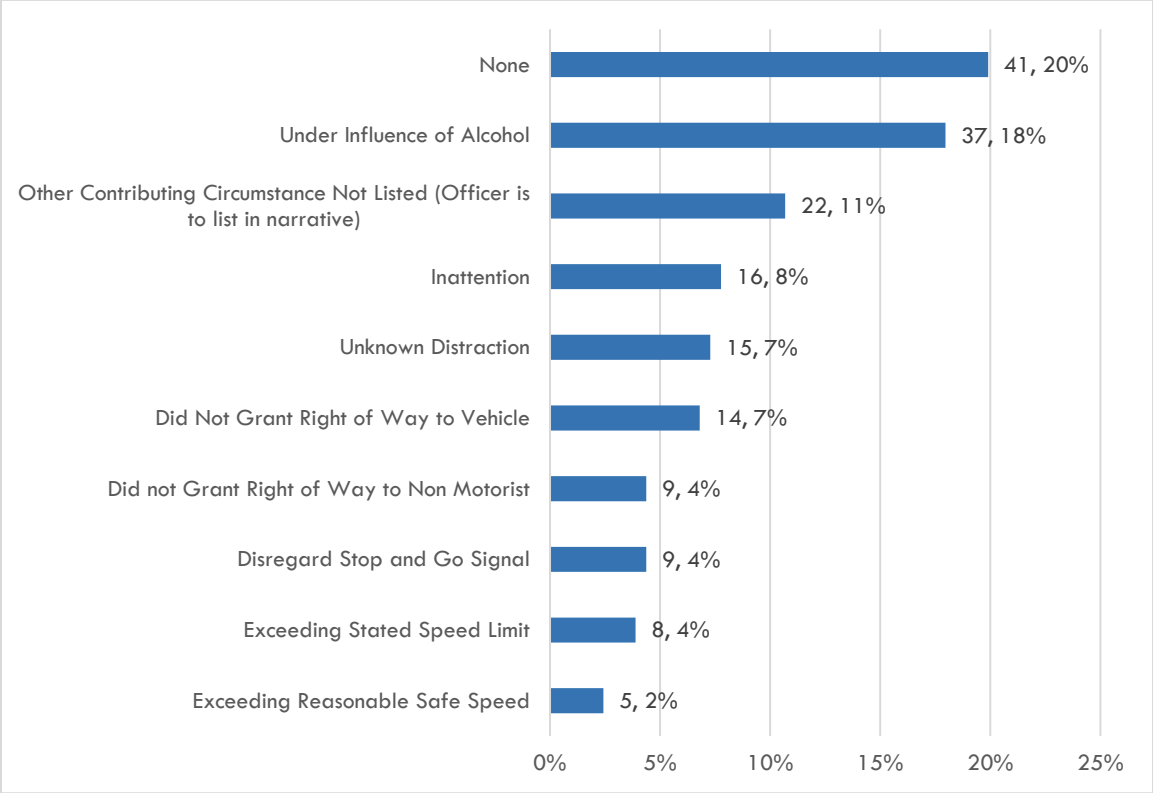
road sign, utility pole, or fence. The second most common was angle crashes, and the third was a vehicle going straight hitting a pedestrian. Due to differences in the crash data between different years, crashes involving someone bicycling are divided into three categories: vehicle strikes pedalcyclist, vehicle – pedalcyclist, and pedalcyclist strikes moving vehicle. Combined, these represent 9% of fatal and severe injury crashes. Figure 5 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.

Figure 4 First Collision Type of Fatal and Severe Crashes



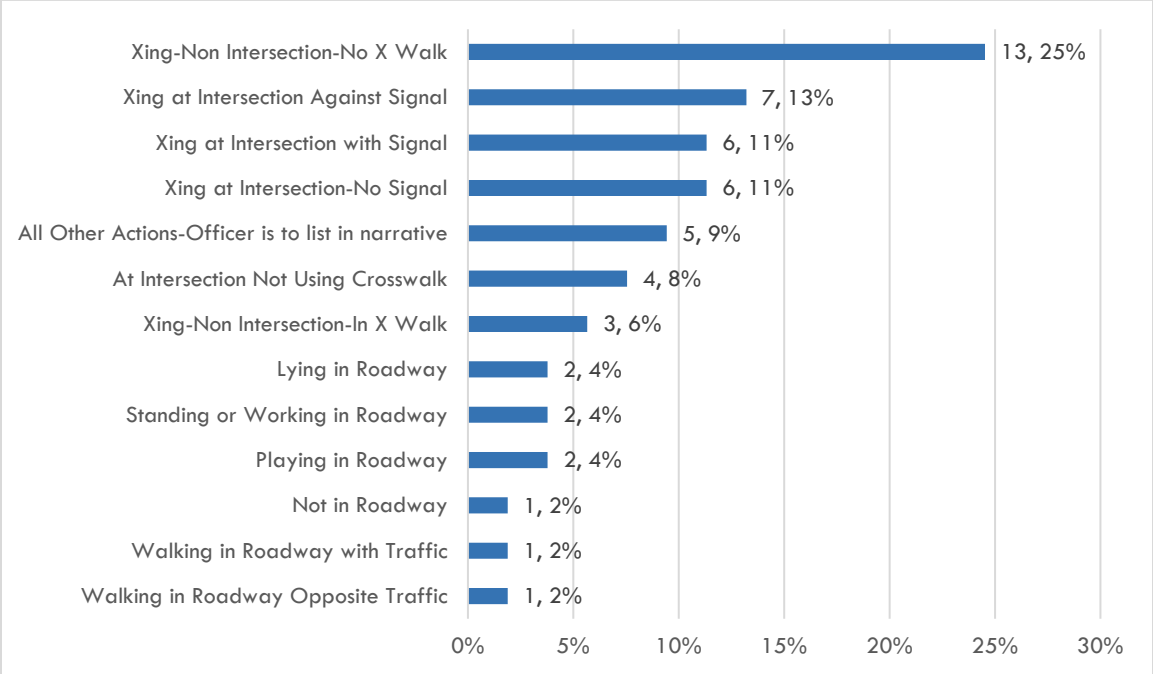
Alcohol was the most common contributing factor reported for drivers, present in 18% of fatal and severe crashes. Inattention (8%) or distraction (7%) were also among the top five. Figure 6 shows the top ten contributing circumstances for drivers involved in fatal and severe crashes, labeled with the total number of fatal and severe injury collisions and the percent of total in each category.

Figure 5 Driver Contributing Circumstances for Fatal and Severe Crashes



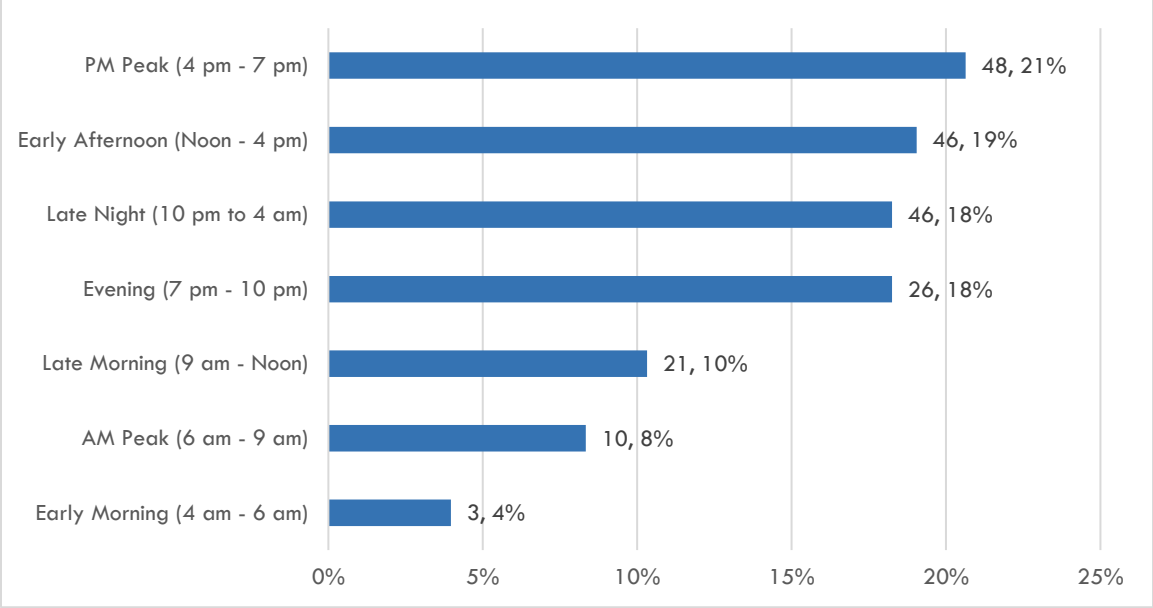
Nearly half of fatal crashes in Vancouver involved a pedestrian. Figure 7 shows the action of pedestrians involved in fatal and severe crashes, labeled with the total number of fatal and severe injury collisions and the percent of total in each category. The most common, at 25% of the total, was a pedestrian crossing at a non-intersection location with no crosswalk present. Nearly as many took place at a signalized intersection, with 13% involving a pedestrian crossing against the signal and 11% involving a pedestrian crossing with the signal.

Figure 6 Pedestrian Action in Fatal and Severe Crashes



Environmental factors available in the crash data include time of day, roadway surface conditions, weather conditions, and lighting conditions. Most fatal and severe crashes in Vancouver take place in clear weather and with dry roads. Just over half take place in daylight, with the PM Peak period being the most common time of day.

Figure 7 Time of Day of Fatal and Severe Crashes



Note: Three crashes were missing information on time of day and are not included in the chart.

Figure 8 Weather Conditions for Fatal and Severe Crashes

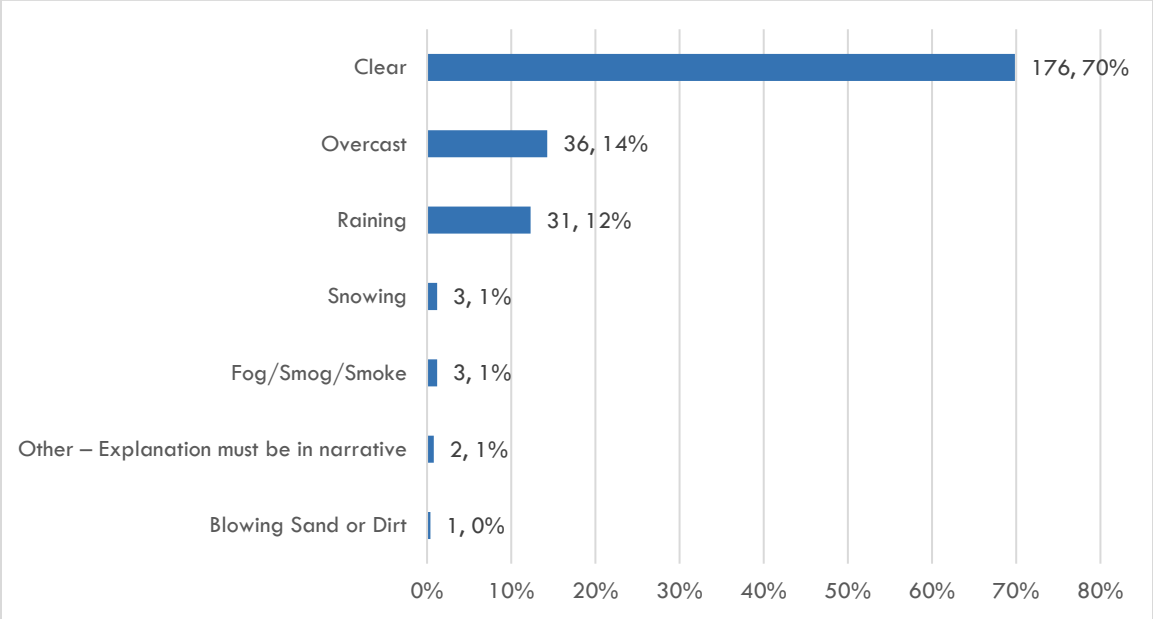
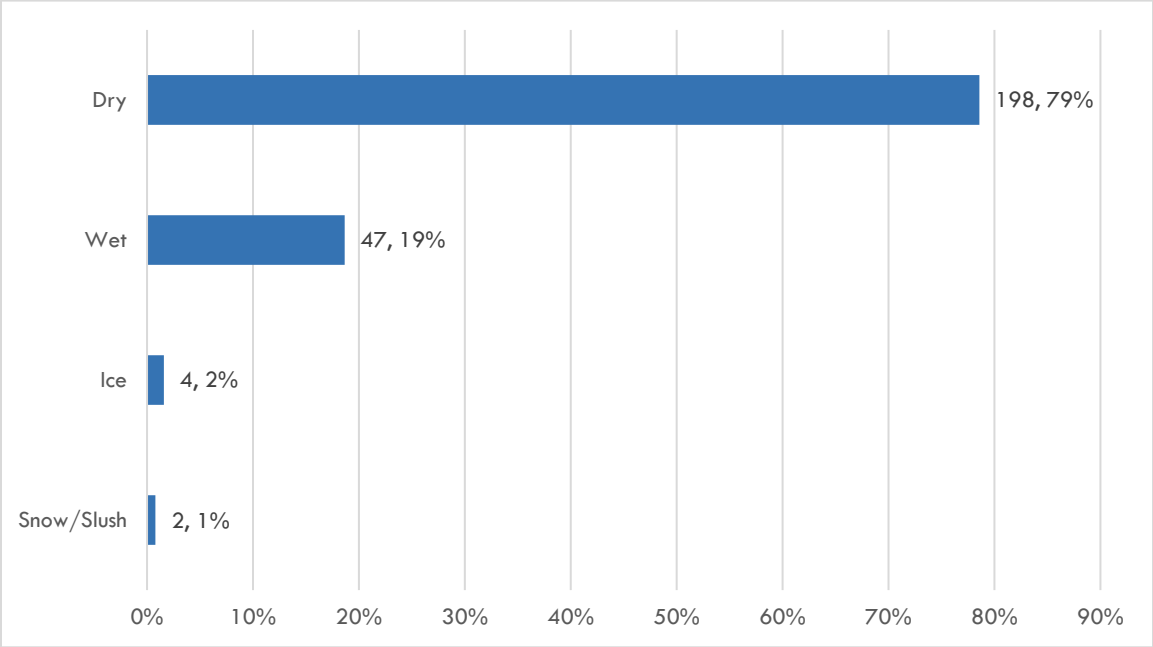
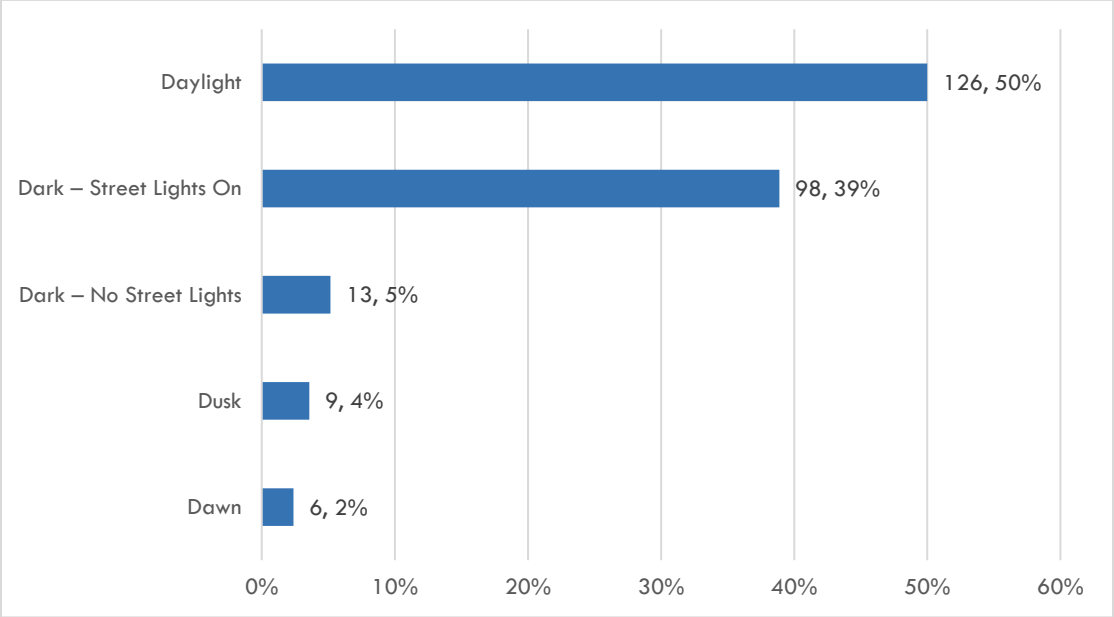


Figure 9 Roadway Surface Conditions for Fatal and Severe Crashes



Note: One crash was categorized as "other" and is not included in this chart.

Figure 10 Light Conditions for Fatal and Severe Crashes



Roadway Factors

This section looks at roadway characteristics including functional classification, posted or *prima facie* speed, number of lanes, and intersection relationship and control. The percent of all fatal and severe crashes occurring in each category is compared to the percent of non-severe injury crashes to assess which roadway factors are connected to more severe outcomes.

Streets

Functional classifications are federally defined.[2] Federal functional classifications of City of Vancouver streets include the following:

- Principal Arterials: These roadways serve major centers of metropolitan areas, provide a high degree of mobility and can also provide mobility through rural areas. They are not access controlled.
- Minor Arterials: Minor Arterials provide service for trips of moderate length, serve geographic areas that are smaller than their higher Arterial counterparts and offer connectivity to the higher Arterial system.
- Collectors: Collectors serve a critical role in the roadway network by gathering traffic from Local Roads and funneling them to the Arterial network.

[2] https://www.fhwa.dot.gov/planning%20/processes/statewide/related/highway_functional_classifications/section00.cfm

- Local Roads: Locally classified roads account for the largest percentage of all roadways in terms of mileage. They are not intended for use in long distance travel, except at the origin or destination end of the trip, due to their provision of direct access to abutting land.

Additionally, the City of Vancouver has a designation called a Neighborhood Circulator, which is not federally defined. Neighborhood Circulators fall between a Local Road and a Collector in terms of the trip purposes they serve and level of access to adjacent land use that they provide.

The majority of crashes in Vancouver take place on arterial streets. Fatal and severe crashes were more likely to take place on Principal Arterials, as seen in Figure 12. Principal Arterials make up about 31% of centerline miles in Vancouver. A comprehensive dataset of average daily traffic volumes on city streets by segment is not available, but arterials are generally the streets that carry the most traffic. Most crashes take place where the posted speed is 25 mph to 35 mph (see Figure 13). Streets with higher posted speeds, of 40 mph and above, saw a higher rate of fatal and severe injury crashes compared to the rate of other injury crashes. Streets with two lanes saw the majority of crashes and a higher rate of fatalities and severe injuries than of non-severe injuries (Figure 14).

Figure 11 Functional Classification

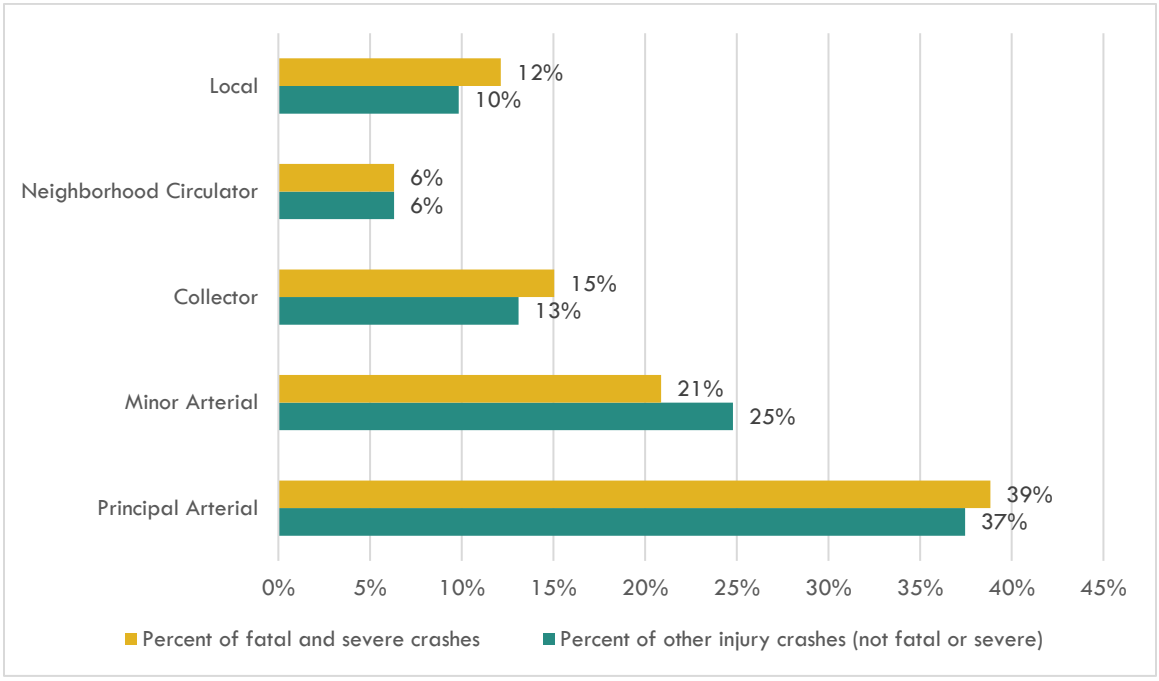


Figure 12 Posted or *Prima Facie* Speed

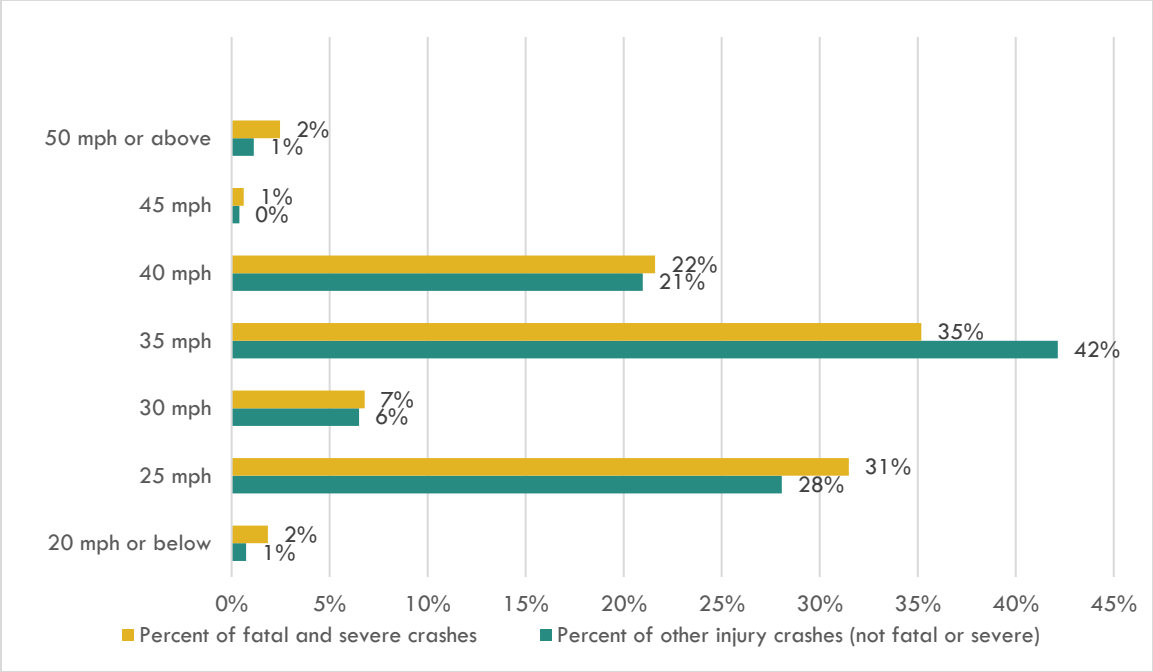
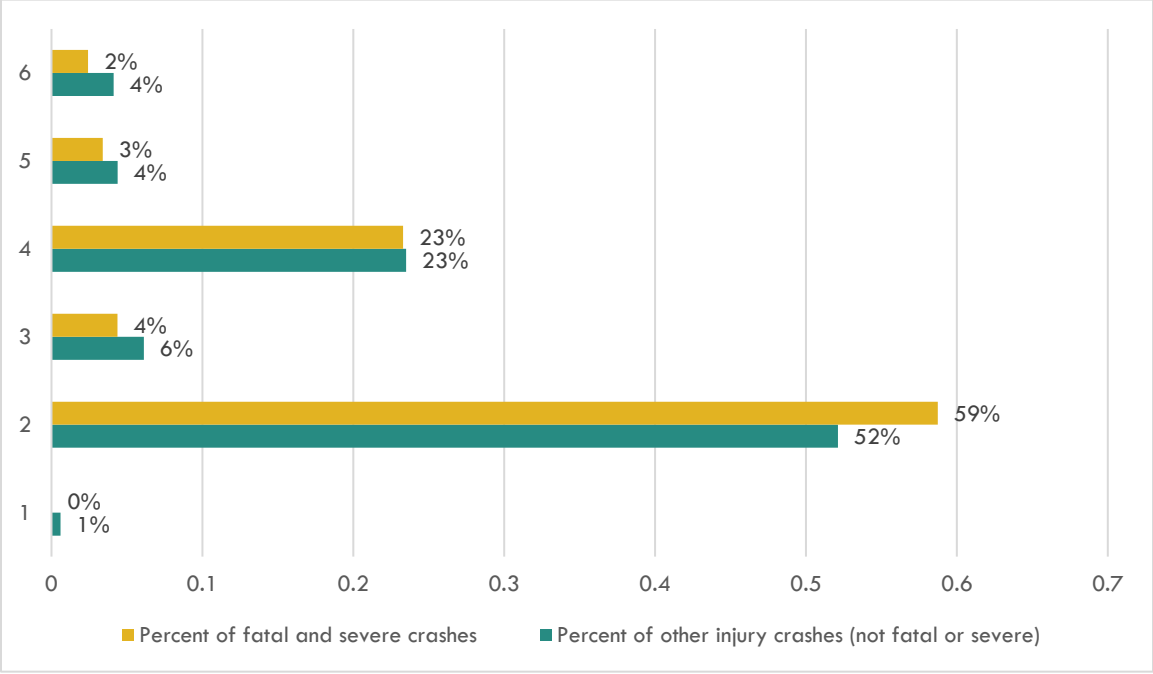


Figure 13 Number of Lanes



Intersections

Over half of all crashes took place at an intersection. However, crashes that were not at an intersection were more likely to result in a fatality or severe injury. This relates to the

finding that fatal and severe crashes involving pedestrians were most common at non-intersection locations. The most common control type for fatal and severe crashes was "no traffic control," while the most common for non-severe injury crashes was signal control (see Figure 16). There were no fatal or severe injury collisions at roundabouts.

Figure 14 Intersection Relationship

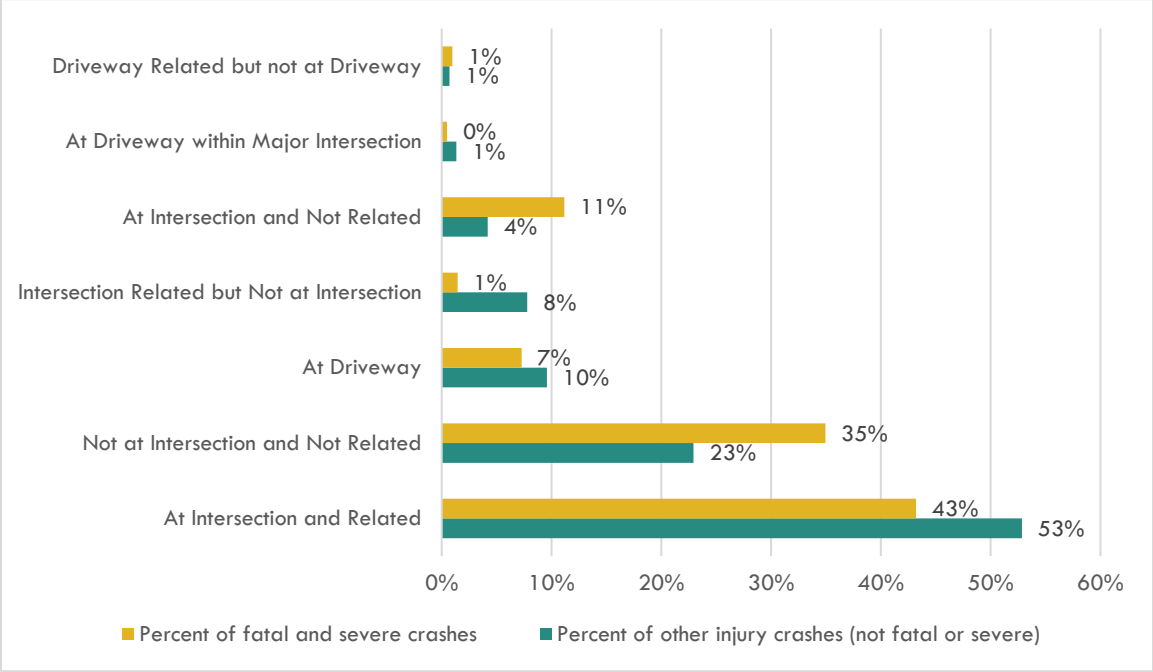
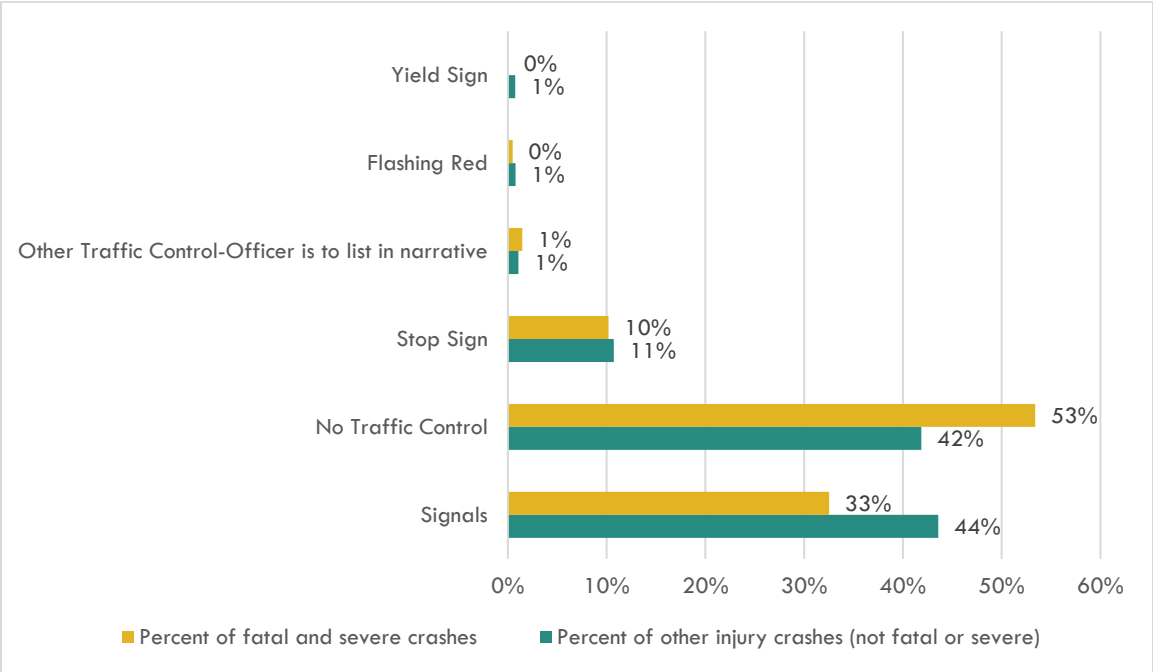


Figure 15 Intersection Control



Most common factors

- **Arterials and collectors:** Approximately 75% of fatal and severe crashes take place on arterial and collector streets; major arterials and collectors see a higher share of fatal and severe crashes than of other injury crashes.
- **Speed limit of 35 mph and above:** 49% of fatal and severe crashes take place on streets with speed limits of 35 mph and above, with crashes on streets with higher speed limits more likely to results in a fatality or severe injury.
- **Two-lane streets:** 59% of fatal and severe crashes take place on two-lane streets.
- **No traffic control:** 60% of fatal and severe crashes take place where there is no traffic control – this includes both non-intersection locations and uncontrolled intersections.
- **Not at intersection:** 55% of fatal and severe crashes do not take place at an intersection and are not intersection-related.
- **At intersection:** Crashes at intersections or classified as intersection-related make up 45% of fatal and severe crashes, but they are less likely to results in a fatality or severe injury than crashes at non-intersection and uncontrolled locations.

FOCUS AREAS

The Washington State Strategic Highway Safety Plan: Target Zero identifies the statewide highest priority crash factors. The 2019 Target Zero update identifies the top priorities in two tiers. Priority Level One factors occur in at last 25% of total fatalities. The Target Zero 2019 Level One priorities are:

- Impairment
- Distraction
- Speeding
- Lane departures
- Intersections
- Young Drivers

Pedestrians and bicyclists are a Level Two priority of the 2019 Target Zero plan.

Focus areas for Vancouver are identified using the same method. Local Road Safety Plan focus areas are oriented towards infrastructure solutions. While factors such as impairment and distraction can be directly addressed with programmatic rather than infrastructure solutions, roadway design that accommodates human mistakes and injury tolerances is effective in reducing fatalities and severe injuries for all crash types.[3]

[3] https://safety.fhwa.dot.gov/zerodeaths/docs/FHWA_SafeSystem_Brochure_V9_508_200717.pdf

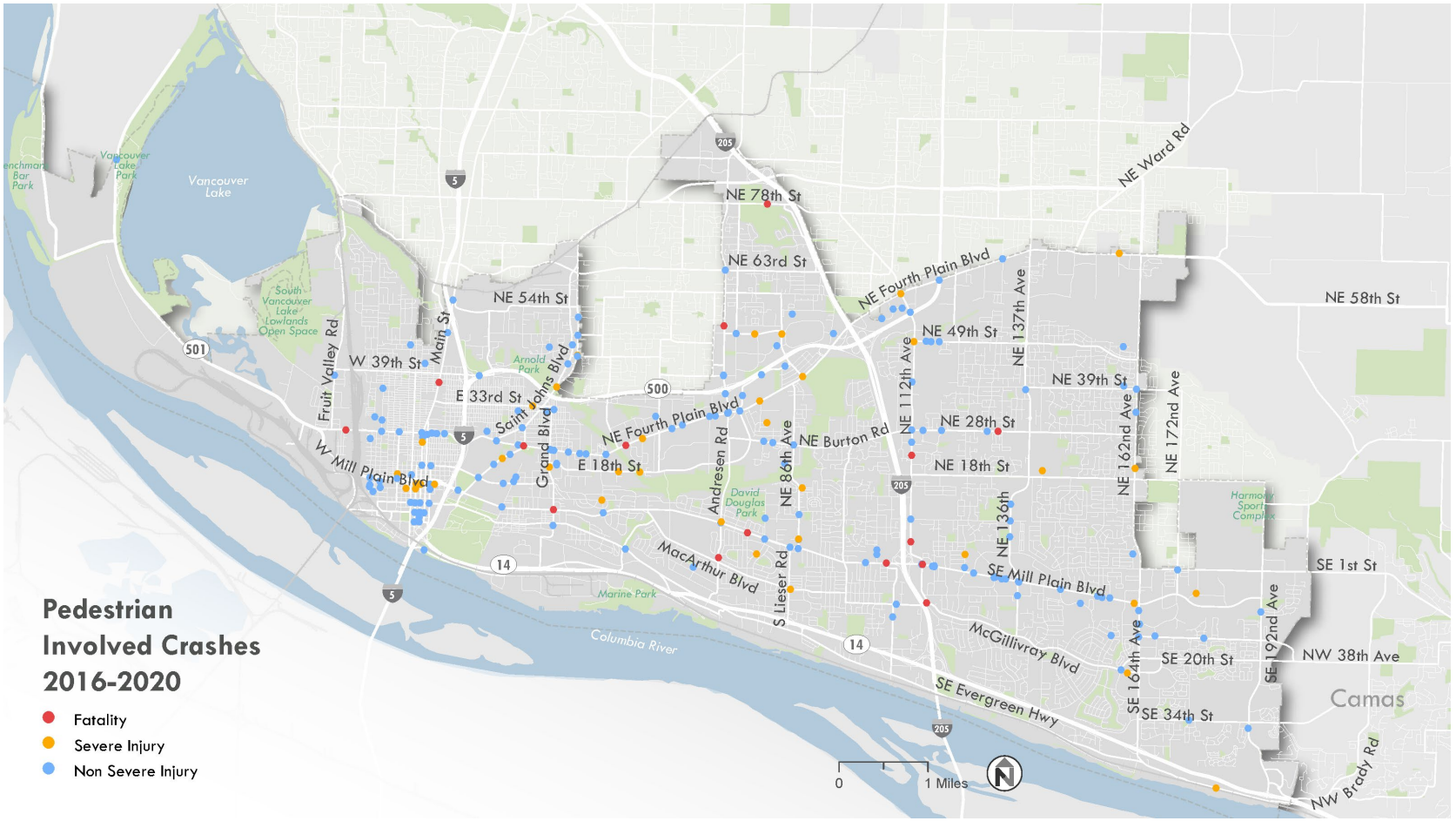
Crashes Involving Pedestrians

Pedestrians were involved in 245 crashes from 2016-2020, less than 10% of the total. Thirty-seven of those crashes resulted in a severe injury and 16 were fatal, making up nearly half (47%) of all traffic fatalities. The most common fatal or severe crash type for pedestrians was a person crossing the street at an uncontrolled non-intersection location with no crosswalk (25% of total). Nearly as many fatal and severe pedestrian crashes took place at signalized intersections (24% of total).

Roadway factors associated with a disproportionate rate of pedestrian fatalities and severe injuries include:

- **Principal Arterials:** the site of 27% of all pedestrian crashes, 47% of pedestrian fatalities, and 30% of pedestrian severe injuries
- **Streets with a posted speed of 35 mph:** the site of 20% of all pedestrian crashes, nearly half of all pedestrian fatalities, and 30% of pedestrian severe injuries
- **Non-intersection and uncontrolled locations:** the site of 43% of all pedestrian crashes, 63% of pedestrian fatalities, and 49% of pedestrian severe injuries

Figure 16 Map of Crashes Involving Pedestrians 2016-2020

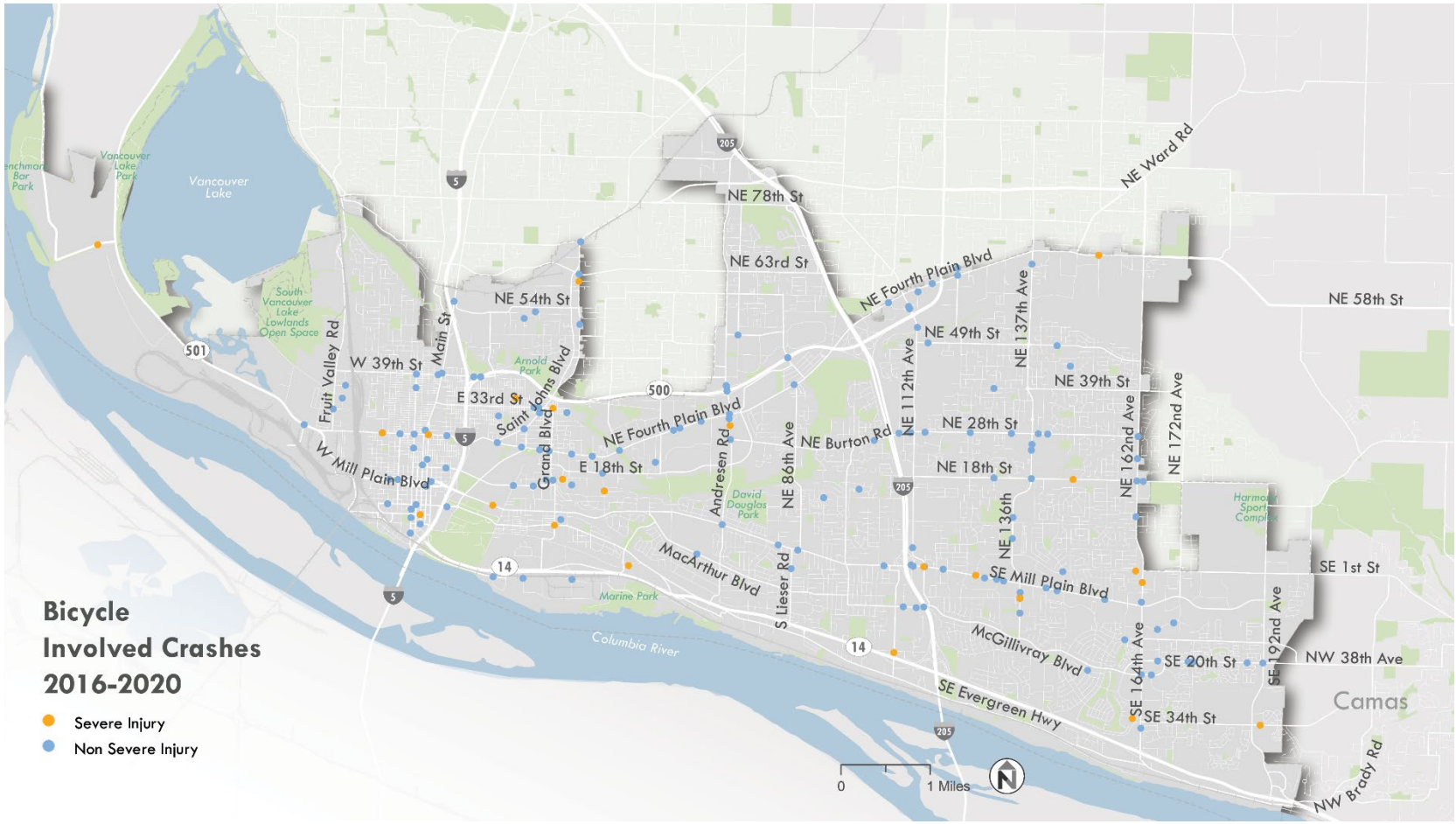


Crashes Involving Bicyclists

Crashes involving people bicycling accounted for 10% of severe injury crashes and had zero fatal crashes during the 2016-2020 period. They are a focus area for the City of Vancouver because bicycling is a vulnerable mode - the difference between a minor injury and a severe or fatal injury is often a matter of split-second timing for people who are not protected by a car. Crashes involving people bicycling are a second-tier focus area for WSDOT Target Zero. Roadway factors associated with crashes involving people bicycling include:

- **Arterials and Collectors:** 30% of bicycle-involved crashes took place on principal arterials and 27% took place on minor arterials. However, crashes on collectors were disproportionately likely to result in a severe injury, at 10% of all bicycle crashes and 22% of severe injury bicycle crashes.
- **Two-lane streets:** the site of over half of all bicycle crashes and nearly 75% of severe injury bicycle crashes.
- **Uncontrolled locations:** the site of 50% of all bicycle-involved crashes and 52% of severe bicycle crashes. This includes:
  - Driveways (24% of all bicycle collisions, 13% of severe injury bicycle crashes)
  - Uncontrolled intersections (17% of all bicycle collisions, 26% of severe injury bicycle crashes)
  - Non-intersection locations (9% of all bicycle collisions, 13% of severe injury bicycle crashes)

Figure 17 Map of Crashes Involving Bicyclists 2016-2020



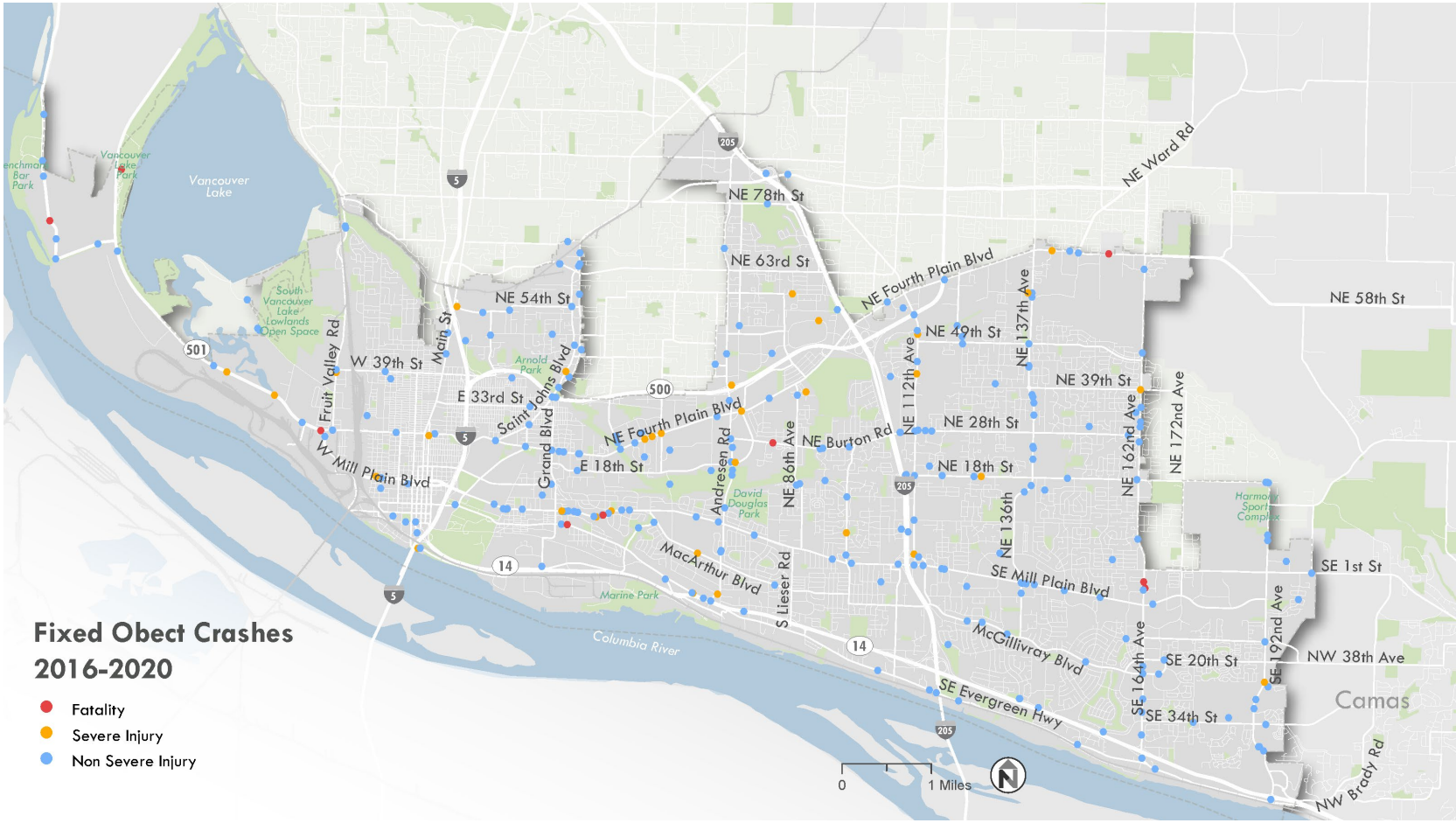
Fixed Object Crashes

Fixed object crashes were the most common fatal and severe crash type. A fixed object crash typically involves lane departure, which is one of the focus areas for WSDOT Target Zero. Fixed object crashes accounted for 26% of fatal crashes. 30% of fixed object crashes occur in rainy or overcast conditions, slightly higher than the overall crash rate in those conditions. Half of all fixed object crashes took place after dark. Of those crashes, 43% involved alcohol.

Roadway factors associated with a disproportionate rate of fixed object fatalities and severe injuries include:

- **Principal Arterials:** 41% of all fixed object crashes, 56% of fatal, and 47% of severe injury fixed object crashes.
- **Posted speed of 35 mph**: The most common speed limit for all fixed object crashes (31%) and for fatal (33%) and severe (42%) fixed object crashes.
- **Non-intersection locations:** 64% of all fixed object crashes occurred at non-intersection locations. Crashes at non-intersection locations also accounted for 56% of fatal fixed object crashes and 61% of crashes where severe injury occurred.

Figure 18 Map of Fixed Object crashes 2016-2020



Intersections

Pedestrian and fixed object crashes have a high rate of fatality at non-intersection locations. Crashes that are at intersections or are intersection-related are less likely to result in a fatality or severe injury in Vancouver than crashes between intersections, but they do account for 45% of fatal and severe crashes, and intersections are a Priority Level One in the 2019 Target Zero plan.

- The most common first collision type for all crashes at intersections was angle crashes (28%). It was also the most common first collision type for fatal and severe intersection crashes (27%).
- Among all fatal and severe crashes at intersections, 82% occurred at intersections with signals and 12% occurred at intersections with no traffic control.
- 46% of all fatal and severe crashes at intersections took place in the dark.
- The most common driver contributing circumstance for crashes at intersections was inattention (17%).

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 of Vancouver.

Method

Both intersections and street segments between intersections are included in the analysis, using the same geography and methods as the 2018 Transportation System Safety Analysis. 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.

Figure 19 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

Total weighted crashes for intersection and segment locations are shown on the maps in Figure 20 and Figure 21. On street segments, the total crash weight is normalized by the length of the street segment.

The City of Vancouver Equity Index is also shown on the maps. The Equity Index is based on the proportion of people of color, households that rent, adults without four-year degrees, low-income households, people age 65 and older, and households with children in each census tract.[4] Equity Index scores range from 5 to 20; census tracts with a higher score are places where greater concentrations of these equity focus populations live.

Locations from among the top ten intersections and segments were chosen for a more detailed look at crash history and potential countermeasures based on their location within a census tract with a high Equity Index score and their potential to align with ongoing and upcoming City projects, as described in the tables in Figure 22 and Figure 23. The top segment locations include only those that had more than one fatality or severe injury during the 2016-2020 period; shorter segments with only one fatality or severe injury were excluded.

[4] Data Sources: 2019 American Community Survey 5-year Estimates, HUD Comprehensive Housing Affordability Strategy

Figure 20 Weighted Crashes at Intersections, 2016-2020

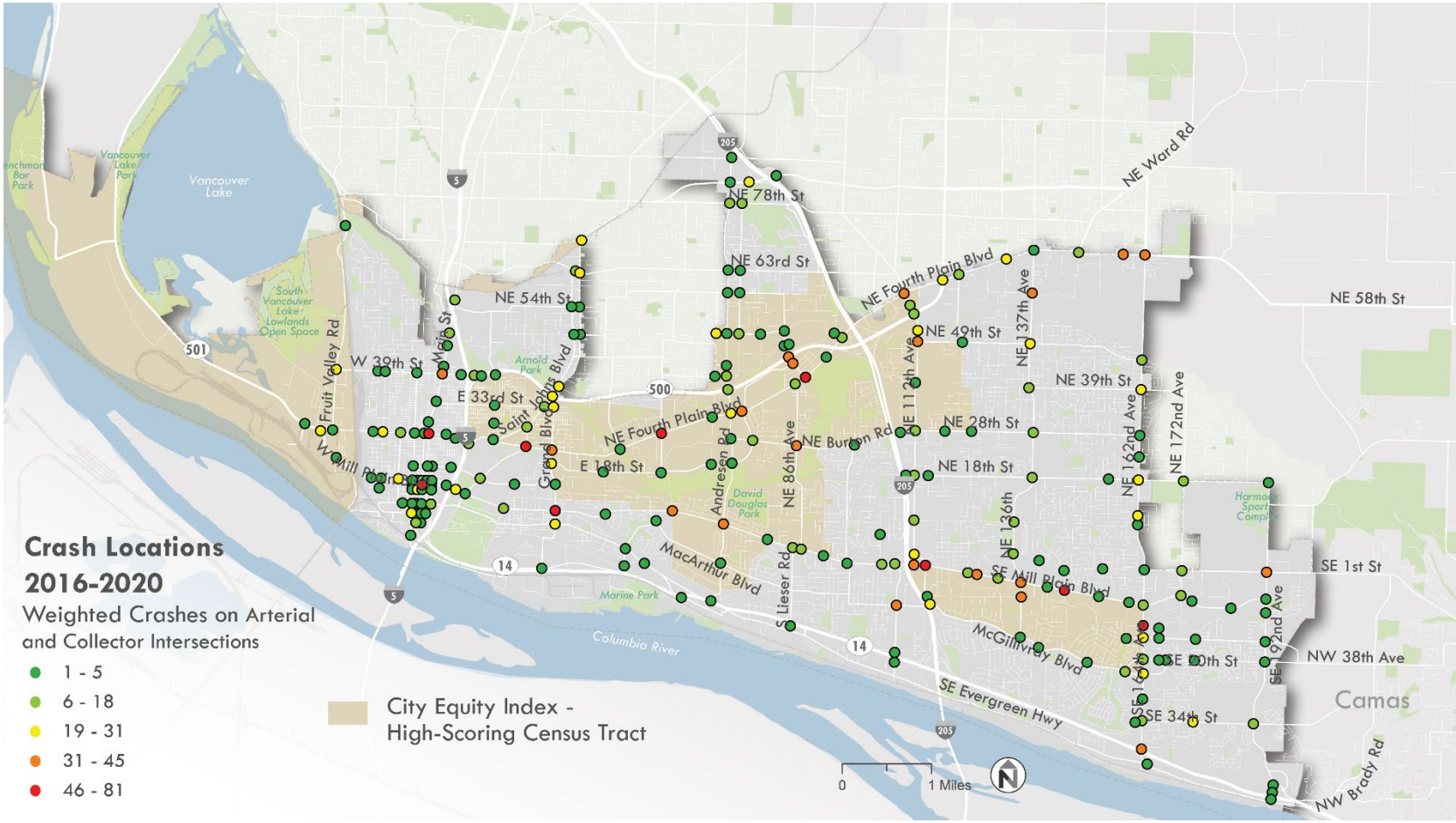


Figure 21 Weighted Crashes on Arterial and Collector Segments, 2016-2020

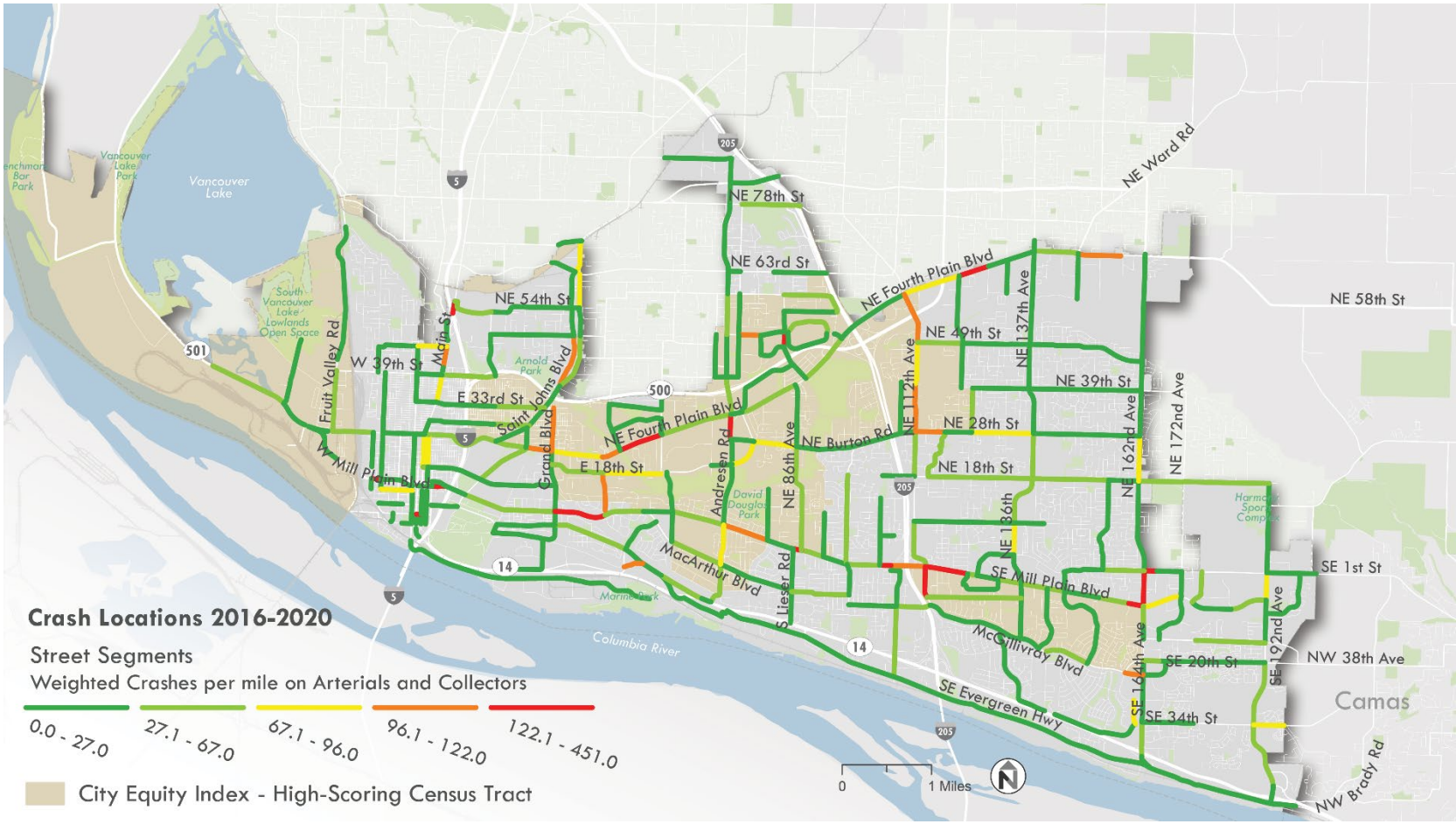


Figure 22 Top Ten Intersections by Crash Weight, 2016-2020

Rank	Intersection	Total Crash Weight	Equity Index Score	Existing City Project
1	Mill Plain & Hearthwood	81	13	None
2	Fourth Plain & Fort Vancouver Way	75	18	Fourth Plain Safety and Mobility Project (in progress)
3	Tech Center & 164th	64	18	None
4	Mill Plain & Chkalov	61	10	112th Complete Streets SE Mill Plain Blvd Improvement Project (complete)[5]
5	Fourth Plain & Stapleton	56	20	Fourth Plain Safety and Mobility Project (in progress)
6	Mill Plain & Grand	55	13	None
7	Fourth Plain & Broadway	51	6	None
8	Fourth Plain & Thurston	51	17	Fourth Plain Safety and Mobility Project (in progress)
9	Mill Plain & Main	49	9	Main Street improvements 5th - 15th
10	Mill Plain & 136th	45	15	None

Figure 23 Top Ten Segments by Crash Weight, 2016-2020

Rank	Segment	Total Crash Weight	Equity Index Score	Existing City Project
1	SE Chkalov Dr: SE Mill Plain – SE 7th	108 (312 per mile)	15	None
2	E Fourth Plain: Falk Rd – Stapleton Rd	113 (227 per mile)	19	Fourth Plain Safety and Mobility Project (in progress)
3	NE Fourth Plain: NE 121st – 127th	71 (206 per mile)	12	None

[5] SE Mill Plain Blvd Improvement Project73

Rank	Segment	Total Crash Weight	Equity Index Score	Existing City Project
4	SE 164th: SE 1st – SE Mill Plain	78 (198 per mile)	18	None
5	SE Mill Plain: Chkalov – 123rd	73 (152 per mile)	15	None
6	E Mill Plain: Grand - Brandt	83 (145 per mile)	13	None
7	NE 112th: 39th – 28th	60 (111 per mile)	20	Complete Streets Corridor (upcoming)
8	Grand Blvd: Fourth Plain – 33rd	53 (110 per mile)	18	None
9	E Mill Plain: Andresen Rd – Garrison Rd	56 (107 per mile)	16	None
10	NE St. James Rd: NE 49th - Petticoat	60 (99 per mile)	10	None

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.[6] Locations on the same corridor are grouped together into one project area, for a total of four project areas. For each project area, a table summarizes the types of crashes that took place there, including focus areas and other factors that are of interest when developing countermeasures, such as turning movements and lighting conditions. A second table lists potential countermeasures with: the Target Zero strategy number and description, or other source reference if applicable; the crash type addressed; whether the countermeasure is proven or recommended; the Crash Reduction Factor (CRF) when available.

Mill Plain Blvd and Hearthwood Blvd

Mill Plain Boulevard has three through-lanes per direction and double-left-turn lanes at the intersection with Hearthwood Boulevard, for a total of eight lanes. Hearthwood Boulevard has five motor-vehicle lanes at the intersection, including both left-turn and right-turn lanes, and has bike lanes. There is a protected left-turn phase on Mill Plain and protective/permissive left-turns on Hearthwood. Bike lane markings on Hearthwood Boulevard do not continue through the intersection and there is a 240-foot gap in the

[6] https://safety.fhwa.dot.gov/provencountermeasures/index.cfm

southbound bike lane on the south leg of the intersection. C-TRAN line 37 serves eastbound and westbound bus stops neat the intersection on Mill Plain Boulevard. Average daily traffic on Hearthwood Boulevard at this intersection was about 9,460 vehicles in 2021. Mill Plain Boulevard saw around 35,000 average daily traffic at the intersection in 2021.[7]

The intersection of SE Mill Plain Boulevard and SE Hearthwood Boulevard was the location of one fatal pedestrian crash and two vehicle-only crashes that resulted in severe injuries during the 2016-2020 period. Eight additional crashes resulted in injuries at this location, including one crash where a left-turning vehicle hit a pedestrian.

Figure 24 SE Mill Plain Boulevard and SE Hearthwood Boulevard

[7] https://www.rtc.wa.gov/data/traffic/

Figure 25 Mill Plain Blvd and Hearthwood Blvd Summary of Crash Types

FSI = factor in one or more fatal or severe injury crashes; OI = factor in other injury crash

Pedestrian or Bicyclist	Disregarding signal	Left-turning vehicle	Fixed object	Angle crash	After dark	Total FSI/Injury crashes
FSI	OI	OI	OI	FSI	FSI	3/11

Figure 26 Mill Plain Blvd and Hearthwood Blvd Potential Safety Countermeasures

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) *Consider converting Mill Plain Blvd from six to four through lanes*	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.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/disregarding signal	Proven, CRF 15%

Countermeasure / Target Zero Strategy	Crash Type Addressed	Proven/Recommended
FHWA: Install pavement markers and striping through intersections *Bike lanes*	Crashes at intersections	Proven, CRF 10%
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. *Shorten crossing distance of Mill Plain by converting one left-turn lane to a refuge island*	Crashes involving people walking or biking at intersections	Proven, Refuge island CRF 56%
NACTO: Intersection treatments such as bike boxes, bike conflict markings through intersection	Crashes involving people biking	Recommended
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 and biking	Recommended

SE 164th Avenue: SE 1st Street – SE Tech Center Drive

SE 164th Avenue is the site of two top priority locations, the segment between SE 1st Street and Mill Plain Boulevard and the intersection with SE Tech Center Drive/12th Street. It is a major arterial with three through lanes per direction and left-turn lanes alternating with a landscaped center median. At some intersections, including the high-crash intersection at SE Tech Center Drive, a right-turn only lane is added, for a total of eight lanes. There are bike lanes on 164th Avenue north of Mill Plain Blvd. The portion of 164th Avenue between SE 1st Street and SE Tech Center Drive is served by lines 30 and 37.

SE Tech Center Drive and SE 12th Street have one through per direction and left-turn lanes. Vehicles turning off of 164th Avenue have a protected left-turn phase, while left turns from Tech Center Drive/12th Street are permissive. In 2017, the most recent year available from the Regional Transportation Council, 164th Avenue saw 35,000 average daily traffic at this intersection and Tech Center Drive/12th Street saw 6,400 to 7,100 daily vehicles.[8]

There were three fatalities and two severe injuries in this portion of 164th Avenue, including one fatal motor-vehicle crash and one motor-vehicle crash resulting in a severe injury at the intersection of SE Tech Center Drive/SE 12th Street, and one severe injury to a bicyclist at the intersection of SE 4th Street. Pedestrian were injured in four crashes at the SE Tech Center Dr intersection.

Figure 27 164th Ave and Tech Center Dr

[8] https://www.rtc.wa.gov/data/traffic/

Figure 28 164th Ave Summary of Crash Types

FSI = factor in one or more fatal or severe injury crashes; OI = factor in other injury crash

Location	Pedestrian or Bicyclist	Disregarding signal	Left-turning vehicle	Excessive speed	Angle crash	After dark	Total FSI/Injury crashes
At Tech Center Dr	OI	FSI	FSI	OI	FSI	OI	2/15
At other intersection	FSI		OI				2/9
Between intersections	OI			FSI			1/7

Figure 29 164th Ave Potential Safety Countermeasures

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) *Consider converting SE 164th Ave from six to four through lanes*	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%

Countermeasure / Target Zero Strategy	Crash Type Addressed	Proven/Recommended
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.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/disregarding signal	Proven, CRF 15%
FHWA: Install pavement markers and striping through intersections	Crashes at intersections	Proven, CRF 10%
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 and biking	Recommended

SE Chkalov Dr: SE Mill Plain Boulevard to SE 7th Street

The intersection of SE Chkalov Drive and Mill Plain Boulevard had a greater number and severity of injury crashes than any other intersection in the 2016-2020 period. The segment of SE Chkalov Dr between SE Mill Plain Boulevard and SE 7th Street is also a high priority location. The Mill Plain Boulevard intersection is one block from an I-205 interchange. Mill Plain Boulevard is nine lanes wide on the west leg of the intersection,

including double left-turn lanes and dedicated right-turn lanes. Chkalov is seven lanes wide at the intersection and also includes double left-turn lanes and dedicated right-turn lanes. There are three commercial driveways within 200 feet of the intersection. C-TRAN route 37 stops on the southeast corner. Average daily traffic on Mill Plain Boulevard was 38,865 on the east leg of the intersection and 48,867 on the west leg in 2021. Average daily traffic on Chkalov Drive was 11,654 on the north leg and 17,355 on the south leg in 2021.[9]

SE Chkalov Drive south of the Mill Plain Boulevard intersection is a minor arterial with five lanes total: two through lanes per direction and a center turn lane. It is fronted by large commercial parking lots for grocery stores, dining, retail, and an urgent care center. In total there are thirteen commercial driveway entrances in a stretch that is just over a quarter mile in length. The entrance to the Fred Meyer and Cascade Parks Plaza parking lots is signalized. This signal has a protected left turn for vehicles turning from Chkalov but no protected left for vehicles turning on to Chkalov from either of the shopping centers. Sidewalks are narrow and are not buffered from the roadway.

At the intersection with Mill Plain Boulevard, there was one pedestrian fatality and one severe injury crash involving someone bicycling, which took place at one of the driveways at the intersection. Of the remaining thirteen injury crashes, one involved a bicyclist and two involved a pedestrian. All of the crashes on Chkalov between the Mill Plain intersection and SE 7th Street from 2016-2020 were motor-vehicle only. Four crashes resulted in a severe injury; all were angle crashes. About half of crashes took place at the signalized entrance to Fred Meyer and Cascade Parks Plaza. Four crashes, including one severe injury crash, took place at driveways.

[9] https://www.rtc.wa.gov/data/traffic/

Figure 30 SE Chkalov Dr and SE Mill Plain Blvd

Figure 31 SE Chkalov Dr Summary of Crash Types

FSI = factor in one or more fatal or severe injury crashes; OI = factor in other injury crash

Location	Pedestrian or Bicyclist	Disregarding signal	Left-turning vehicle	At driveway	Angle crash	After dark	Total FSI/Injury crashes
At Mill Plain	FSI	OI	OI	FSI	OI	FSI	2/15
Between Mill Plain and 7th		OI	OI	FSI	FSI	FSI	4/15

Figure 32 SE Chkalov Dr Potential Safety Countermeasures

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) *Consider narrowing Chkalov Dr*	Crashes at intersections	Proven, CRF 19-47%
INT.1.4: Convert permitted left turns to protected left turns at signals *At Fred Meyer Entrance*	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.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/disregarding signal	Proven, CRF 15%
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,	Crashes involving people walking and biking	Recommended

Countermeasure / Target Zero Strategy	Crash Type Addressed	Proven/Recommended
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.		
FHWA: Corridor access management	Crashes at driveways	Proven, CRF 25-31% for fatal and injury crashes along urban/suburban arterials

Fourth Plain Boulevard

Fourth Plain Boulevard is the site of several top priority locations. It is an arterial with two through lanes per direction, a center turn lane, and bike lanes in some segments but not others. The Vine, C-TRAN's rapid bus service, runs on Fourth Plain Blvd from downtown Vancouver to the Vancouver Mall on NE Thurston Way. Three of the top priority intersections on Fourth Plain see over 150 transit boardings every day. The intersections of Fourth Plain Blvd with Broadway, Fort Vancouver Way, Stapleton, and Thurston and the segments between Grand and Stapleton were reviewed for potential countermeasures. The Fourth Plain Safety and Mobility Project is looking at ways to redesign Fourth Plain Blvd between F Street and Andreson Blvd. Improvements may include:

- Repairing potholes and repaving the roads
- Intersection crossing enhancements and improved signal timing so that vehicle traffic flows better
- Improved conditions for people walking, biking, using mobility devices, or taking the bus, like sidewalks and bike lanes
- Potential changes to roadway lanes, called "lane reconfigurations," that change the amount of roadway space for driving to make it safer for people walking, cycling, or using the bus.

Figure 33 Fourth Plain Blvd and Fort Vancouver Way

Figure 34 Fourth Plain Blvd Summary of Crash Types

FSI = factor in one or more fatal or severe injury crashes; OI = factor in other injury crash

Location	Pedestrian or Bicyclist	Disregarding signal	Left-turning vehicle	Fixed object	Angle crash	After dark	Other: Mid-block crossing	Total FSI/Injury crashes
Broadway	FSI	OI	FSI					2/5
Fort Vancouver Way	FSI	FSI			FSI	FSI		3/5
Stapleton		OI	FSI	FSI	OI	FSI		2/10
Thurston	FSI	FSI	FSI					2/5
Grand-Stapleton	FSI	FSI	OI	FSI	FSI	FSI	FSI	5/57

Figure 35 Fourth Plain Blvd Potential Safety Countermeasures

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)	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

Countermeasure / Target Zero Strategy	Crash Type Addressed	Proven/Recommended
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/disregarding signal	Proven, CRF 15%
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. *Shorten crossing distance of Fourth Plain by removing RT lane*	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 and biking	Recommended
NACTO: Intersection treatments such as bike boxes, bike conflict markings 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%

NE St James Road and NE St Johns Road

NE St James and NE St Johns roads between NE 49th Street and NE Petticoat Lane are a one-way couplet with a bus route, bike lanes, and on-street parking. There are significant sidewalk gaps on both roads. The highest-crash segment is on St James Road, but both streets were considered because they function as a pair, with St James Road carrying southbound traffic and St Johns Road carrying northbound traffic. The average daily traffic on St Johns Road at NE 44th was 10,578 in 2019. The average daily traffic on St James Road at NE 44th was 12,363.

Figure 36 NE St James Rd and NE St Johns Rd at NE 44th St

Figure 37 NE St James/St Johns Summary of Crash Types

FSI = factor in one or more fatal or severe injury crashes; OI = factor in other injury crash

Location	Pedestrian or Bicyclist	Disregarding signal	Left-turning vehicle	Fixed object*	Angle crash	After dark	Other: Driveways	Total FSI/ Injury crashes
At intersections	OI	OI	OI	OI	OI			1/27
Between intersections	FSI			FSI		FSI	FSI	3/27

*Includes crashes with parked cars

Figure 38 NE St James/St Johns Potential Safety Countermeasures

Countermeasure / Target Zero Strategy	Crash Type Addressed	Proven/Recommended
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
PAB.2.2 Invest in and increase the use of rectangular rapid flashing beacons and pedestrian hybrid beacons where these crosswalk enhancements are needed. ▪ *At bus stops between intersections (e.g. north of 45th)* ▪ *At 44th on SB St Johns and/or at 42nd on NB St Johns*	Crashes involving people walking at uncontrolled crossing locations	Proven, CRF 47%

Countermeasure / Target Zero Strategy	Crash Type Addressed	Proven/Recommended
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 and biking	Recommended, NCHRP
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	Proven, CRF 65-89%
LDX.3.1 Install chevron signs, curve warning signs, and/or sequential flashing beacons in curves.		Proven Sequential dynamic chevrons: CRF 60% Curve warning: CRF 35-38%
LDX.3.2 Improve pavement friction using high friction surface treatments.	Fixed object	Proven, CRF 13-51%
LDX.3.6 Install wider edge lines.		Recommended, CMF

NE 112th Avenue

NE 112th Avenue is an arterial with two lanes per direction and a center turn lane. The highest-priority segment is between 28th and 39th streets. The study area was extended to Fourth Plain Boulevard to include more segments that have a similar density of severity-weighted crashes and are within the bounds of the City's upcoming Complete Streets project on the corridor. The average daily traffic on NE 112th Avenue ranges from 17,102 at Fourth Plain Boulevard (in 2018) to 33,985 at 49th Street (in 2021). AADT at 28th Street was around 22,500 in 2021.[10]

[10] AADT (2021): 33,985 - 25,346 at 49th St; 22,391 - 22,871 at 28th St; 17,102 -20,632 at Fourth Plain (2018 is most recent year) from https://www.rtc.wa.gov/data/traffic/

Figure 39 NE 112th Ave at NE 49th St

Figure 40 NE 112th Ave Summary of Crash Types

FSI = factor in one or more fatal or severe injury crashes; OI = factor in other injury crash

Location	Pedestrian or Bicyclist	Disregarding signal	Left-turning vehicle	Fixed object	Angle crash	After dark	Other: Driveways	Total FSI/ Injury crashes
Fourth Plain Blvd	FSI		OI		OI			1/9
49th St	FSI	FSI	OI			FSI		1/8
Minor intersections and mid-block	OI		FSI	FSI		FSI	OI	5/40

Figure 41 NE 112th Ave Potential Safety Countermeasures

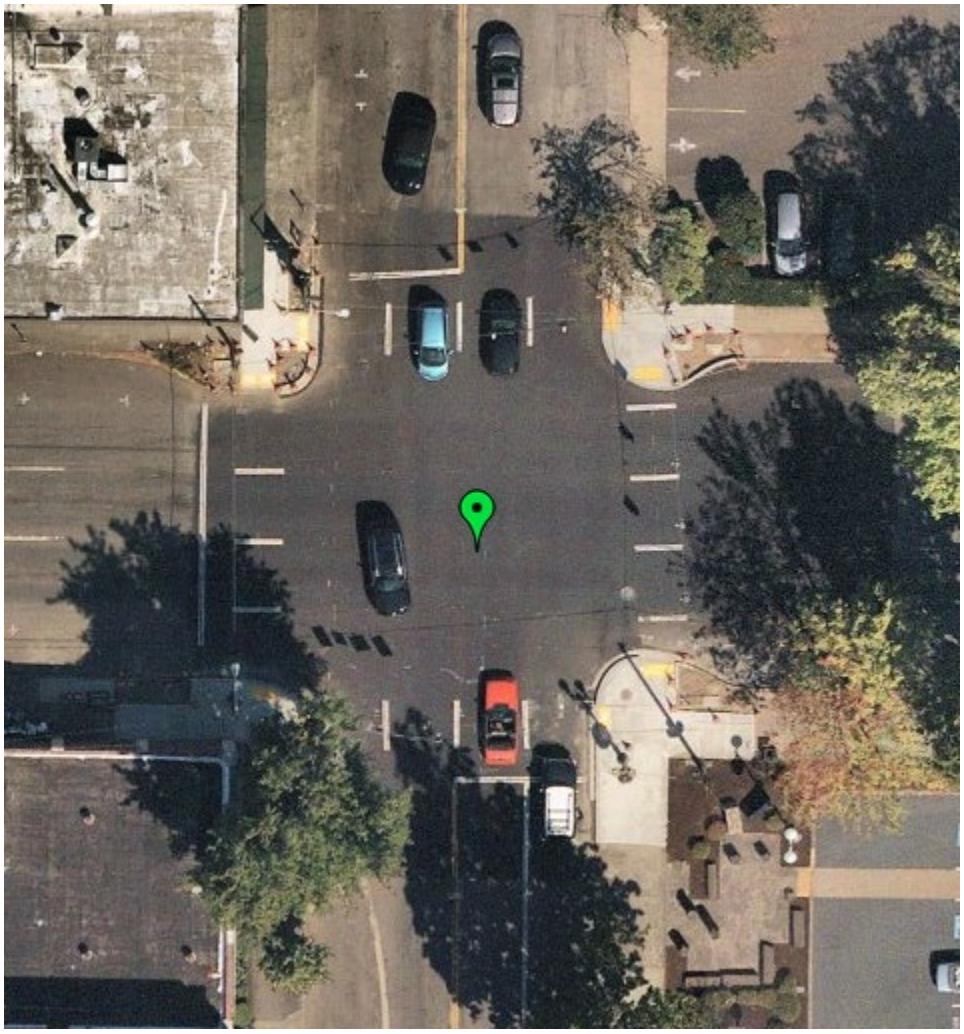
Countermeasure / Target Zero Strategy	Crash Type Addressed	Proven/Recommended
INT.1.2 Install or convert intersections to roundabouts	Crashes at intersections, particularly angle crashes	Proven, CRF of 50 - 100% for fatal and severe crashes
INT.1.3: Convert four-lane roadways to three-lane roadways with center turn lane (road diet)	Unsafe speed, pedestrian crossing	Proven, CRF 19-47%
INT.1.9: Modify signal phasing to implement a leading pedestrian interval	Crashes involving people walking 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
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. ▪ *Median/ped refuge island on S leg of intersection with 49th* ▪ *Curb extensions into shoulder at Fourth Plain* ▪ *Ped refuge on 112th/Gher at Fourth Plain, replacing one LT lane*	Crashes involving people walking at intersections	Proven, Refuge island CRF 56%

Countermeasure / Target Zero Strategy	Crash Type Addressed	Proven/Recommended
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 and biking	Recommended
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
LDX.3.5: Install edge lines, especially on curves, where adequate shoulders exist	Fixed object	Recommended
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%

Mill Plain Boulevard and Main Street

The intersection of Mill Plain Boulevard and Main Street is in downtown Vancouver. Both intersecting streets have on-street parking lanes. There has been recent work done at the intersection, including curb extensions, ramps, and crosswalk restriping. In 2015, the most

recent year available, the intersection saw 11,750 average daily traffic vehicles on Mill Plain and 5,224 average daily vehicles on Main Street.



Summary of Crashes

During 2016-2020 there were three total crashes at the Mill Plain and Main Intersection. Two involved serious injuries to pedestrians, leading to a relatively high weighted score for the intersection. In one case the person walking was crossing against the signal and in the other instance the pedestrian was not using the crosswalk. Both pedestrian-involved crashes were during daylight.

Figure 42 Mill Plain and Main Potential Safety Countermeasures

Countermeasure / Target Zero Strategy	Crash Type Addressed	Proven/Recommended
INT.1.9 Modify signal phasing to implement a leading pedestrian interval	Crashes involving people walking at intersections	Proven, CRF 13%
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 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 and biking	Recommended
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%

POLICY AND PROGRAM RECOMMENDATIONS

Policies, programs, and systemic projects that support safety and help reduce crashes in Vancouver.

Name	Policy or Program	Description
Vision Zero	Policy	Adopt a Vision Zero policy to eliminate traffic fatalities and serious injuries by 2040.
High-Crash Corridors	Program	Use collision analysis to identify high-crash corridors
Street User Education	Project	Develop a suite of programs geared toward all modes around safe use of the transportation network.
Automated Enforcement	Program	Enable automated enforcement. Set up detection along high-crash corridors.
Pedestrian-Scale Lighting	Project	Add pedestrian-scale, low-spectrum LEDs in places with identified lighting gaps, along transit routes, and along high-crash corridors.
Multimodal Safety Projects	Project	Develop ongoing project list for use of existing Multimodal Safety fund ($1M per year).
Neighborhood Traffic Calming	Program	Expand Neighborhood Traffic Calming program with additional funding to make streets feel safer for walking and bicycling.
Safe Routes to School	Program	Develop a Vancouver-specific SRTS program and a standing list of projects per school that fill sidewalk and bicycling gaps in designated school walk routes.
Complete Corridors	Policy	Create complete corridors throughout the city that connect growth areas, support business, serve transit, and increase safety. Corridors connect destinations - planning and design may identify parallel existing or future ways to make these connections.
Update Street Standards	Project	Update street standards to integrate the latest best practices from NACTO, WSDOT, AASHTO, and MUTCD in terms of facility selection and design, traffic control, and signage and striping. Adopt into standard plans and municipal code Title 11.

Name	Policy or Program	Description
Pedestrian Crossing Policy	Policy	Update pedestrian crossing policy. Make crossings plentiful, convenient, and safe. Establish maximum spacing between crossings, crossing protection needed based on street typology, and crossing design.
Signs and Striping	Program	Integrate best practices on visibility and safety in signs and striping from federal MUTCD update. Upgrade maintenance and operations equipment to meet new standards.
Access Management	Project	Update access management standards to require longer spacing between driveways. Increase corner clearance distance. Allow one driveway to service multiple frontages.
Low-Stress Bicycle Network	Policy	Adopt a city-wide low-stress long-term bike network overlaid onto the existing network. Follow density standards, aiming for a low-stress facility every X miles.
Bicycle Facility Selection	Project	Identify what facility types are needed on city streets based on the street typology, traffic volumes, and speed to accommodate "all ages and abilities" riders and "enthused and confident" riders.
Lower Posted Speeds	Policy	Enable lowering of speed limits on all street types as one step in reducing behaviors that lead to crashes and make walking and bicycling unpleasant.

IMPLEMENTATION AND MONITORING

This document is intended to be a 5-year plan, and priority projects identified in this plan are intended to be finished no later than 2026. In order to accomplish this, priority projects have been incorporated into City of Vancouver 6-year Transportation Improvement Program (TIP) and Transportation Grant Program, and in many cases assigned local funding for future years.

The Vancouver Transportation System Plan (TSP) Update will develop a framework based on the City's equity, safety, and climate goals to identify high-priority projects for the next twenty years. Safety projects to prevent fatal and severe crashes at the priority locations identified in this Local Road Safety Plan will be advanced through the TSP project

identification and prioritization process, as well as through planning and street design efforts that are currently underway (noted in Figure 22 and Figure 23).

The City of Vancouver is also developing a Complete Streets monitoring framework and process to measure the outcomes of multimodal street improvements using quantitative and qualitative data. Continued monitoring of safety and safety-related outcomes after projects are implemented is integral to the framework. Metrics include:

- Percent change in biking, walking, and transit trips
- Level of traffic stress and pedestrian environmental quality
- Fatal and injury crashes involving people walking, rolling, and biking
- Motor vehicle speed
- Climate impacts (air quality, stormwater management, and vehicle miles traveled)
- Equity population and trips
- Quantity of new facilities for walking and bicycling
- Impacts on the economy, goods delivery, and freight