



Local Road Safety Plan

City of Bellingham, WA

Prepared for City of Bellingham
Prepared by Transpo Group

January 2024

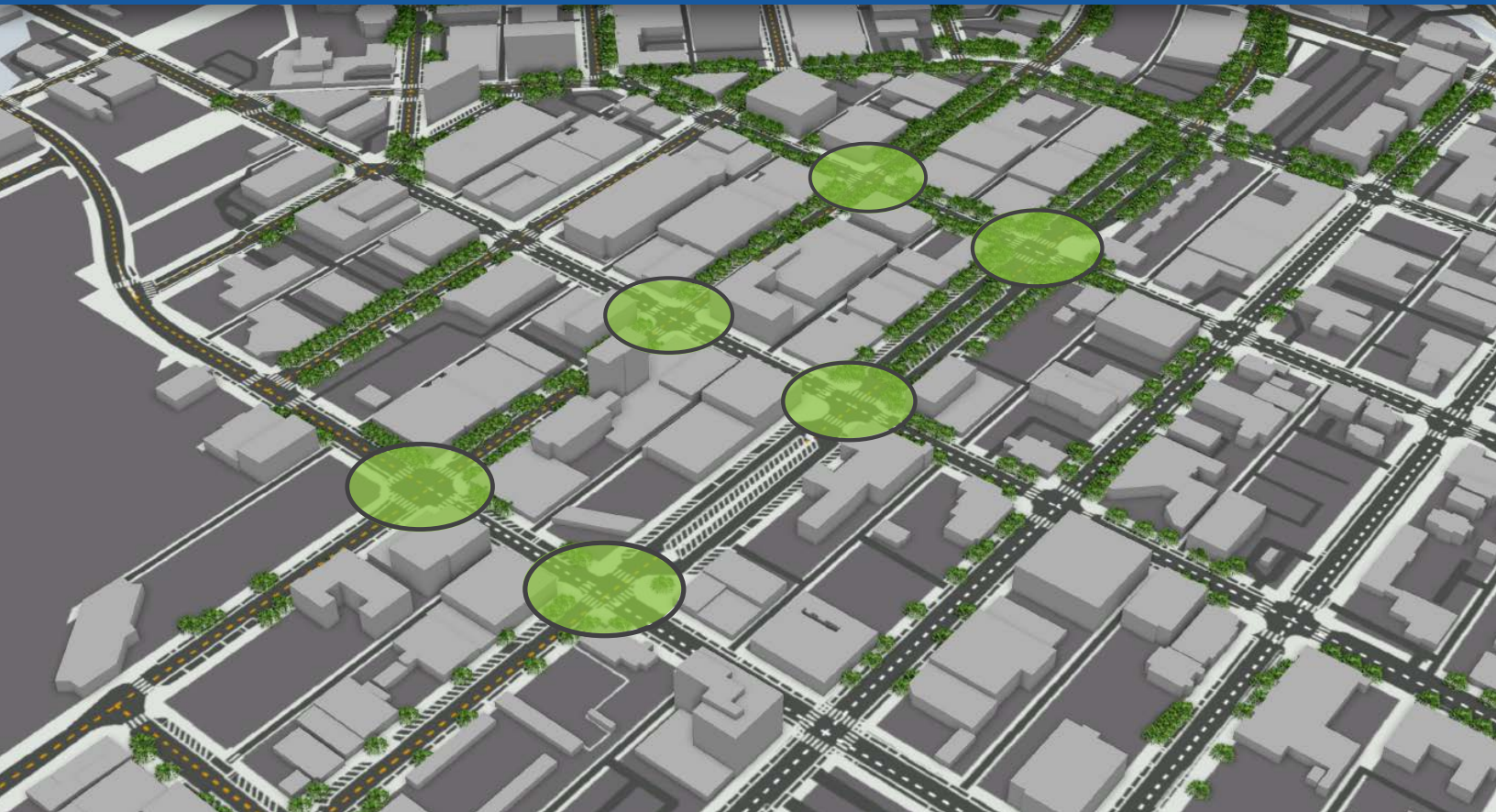


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Introduction

The City of Bellingham places a high priority on the safety of its multimodal transportation system and is committed to people-oriented travel, including vulnerable active transportation users of all ages and abilities. The City of Bellingham seeks to reduce the total number of crashes, as well as the risk of crashes throughout the city, especially those which involve severe injury or fatality. To address transportation safety more effectively, Bellingham has created a Local Road Safety Plan (LRSP) which uses a data-driven, proactive approach to identifying potential safety concerns. In addition to guiding spot treatments, the LRSP allows the City to focus on systemic improvements to the transportation network which can not only address reported and observed crashes, but also addresses specific conditions that introduce risk factors for potential crashes.

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Introduction

History of Safety Improvements and Plans

The City of Bellingham has a long history of working to improve the safety of the City's roadways and active transportation facilities. Bellingham's 2012 Pedestrian Master Plan (PMP), 2014 Bicycle Master Plan (BMP), 2016 Complete Networks program, 2020 and 2022 Local Road Safety Plans (LRSP), and annual Six-Year Transportation Improvement Program (TIP) are all focused on improving the safety of Bellingham's citywide multimodal transportation system. In 2024, the City is completing updates to the PMP and BMP and in 2024 the City will begin updating the Comprehensive Plan Transportation Element.

The City of Bellingham has also implemented several major corridor access management safety improvement projects (Figure 1), some of which have earned national recognition while also generating public controversy and opposition. Over time, all these projects have proven to be successful in reducing the number of total collisions and especially the number of fatal and injury collisions.

SR 539 Guide-Meridian (Interstate 5 to Kellogg Road):

SR 539, known locally as the Guide-Meridian is a Highway of Statewide Significance (HSS) connecting Interstate 5 in Bellingham to the U.S. - Canada border at Aldergrove just north of Lynden. By 2011, SR 539 had become known as a significant safety hazard with a high number of vehicle collisions occurring every year and local residents could be seen sporting T-shirts that read "I Survived the Guide!" In 2012, the City and WSDOT worked with businesses and neighborhoods on each side of SR 539 to implement access management measures with a raised center median to prevent left-turns across multiple lanes and strategically located left-turn pockets.

Alabama Street (Cornwall Ave to Electric Ave):

In 2012, WSDOT invited the City to apply for HSIP grant funds for Alabama Street because it had the second highest vehicle collision rate in Whatcom County behind SR 539 Guide Meridian. In 2014, the City completed a feasibility study and in 2015 implemented a road diet and bike lanes on the western third, access management on the central third, and rechannelization as a hybrid road diet on the eastern third. ADA upgrades were constructed on the entire corridor, 6 HAWK signals were installed at crossings for pedestrians, designated Bike Boulevards, and WTA transit shelters, and the speed limit was lowered from 35 to 30 mph. Alabama Street became a March 2016 ITE Journal case study and was awarded the 2016 ITE Complete Street Project of the Year.

West Bakerview Road (Interstate 5 to Palisade Way):

In 2018, the City of Bellingham worked with businesses and neighborhoods on each side of West Bakerview Road to implement access management measures in the form of a raised center median very similar to SR 539.

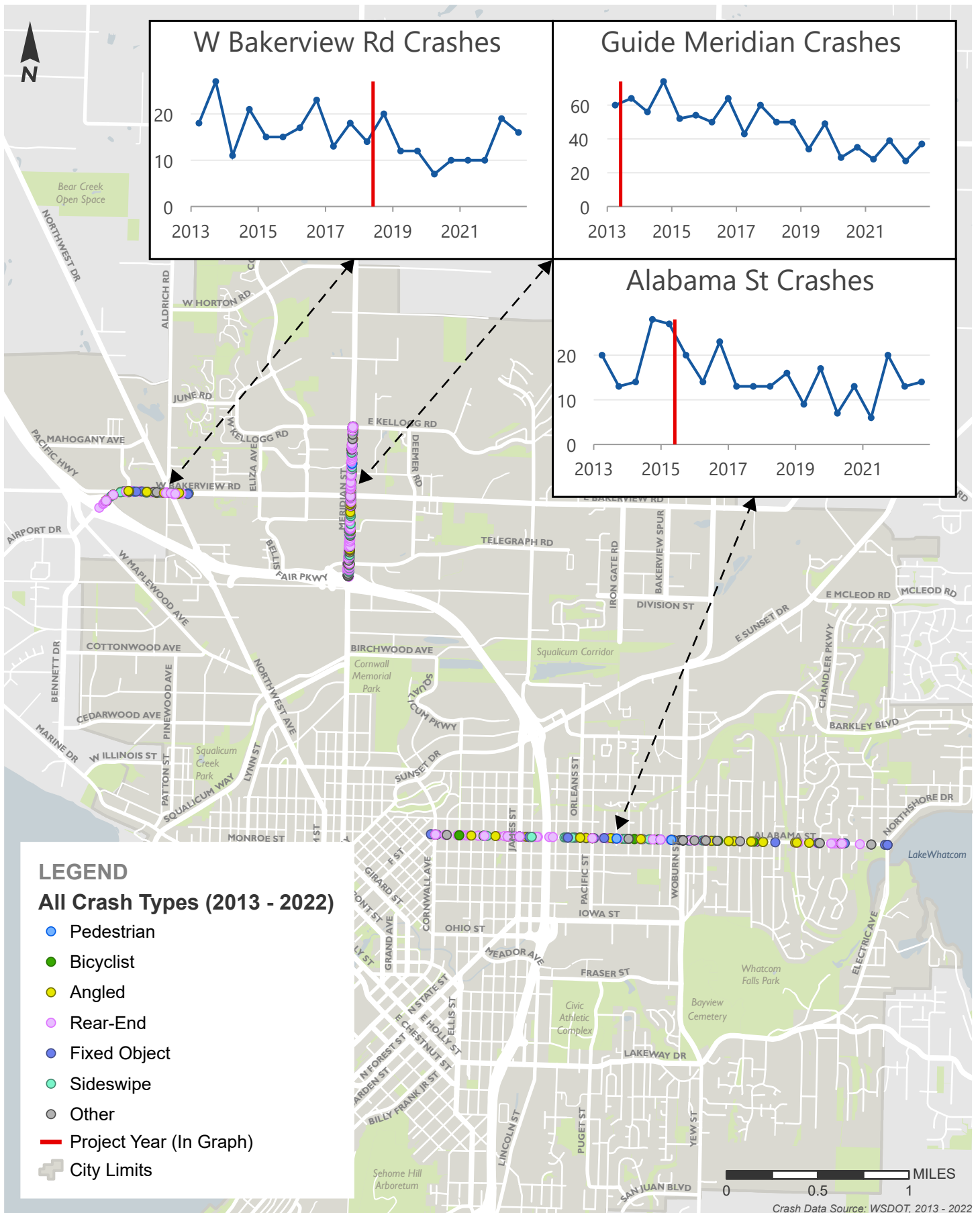


Figure 1. Crash Reduction from Access Management Projects

1 Introduction

Local Road Safety Plan Process

City Safety Program

The Federal Highway Administration (FHWA) designates Local Road Safety Plans (LRSP) as a proven safety countermeasure for reducing fatality, serious injury, and non-injury collisions. The City of Bellingham's 2024 LRSP follows a process developed by WSDOT for the City Safety Program, which awards Highway Safety Improvement grant funding to city safety projects every other year. Cities examine crash data, crash locations, risk factors, social equity issues, land use context, and targeted safety countermeasures to pro-actively and systemically reduce crashes, fatalities, and injuries. On behalf of the City of Bellingham, Transpo Group consultants analyzed crash data reports to identify risk factors throughout the city. Analysis includes a statistical look at the rate that certain contributing factors were cited in crashes, as well as a spatial examination of the locations and groupings of crashes. Crash locations are prioritized by the number of risk factors they present and their impact on historically underserved or vulnerable populations and compared to the City's transportation network and existing infrastructure to identify effective countermeasures and a program of prioritized improvements. Improvements listed in the LRSP are intended to be systemic, proactive, safety improvements and may be recommended for roadways or intersections with or without a history of crashes. When improvements for locations with no history of reported crashes are included, it is due to the similarity of risk factors to locations which do have reported crash history, thus proactive measures are warranted. The Local Road Safety Plan process includes plans for future updates on a biennial basis, aligned with the WSDOT funding cycle for HSIP funding. Future updates will document completed safety improvement projects and will repeat the analysis of future crash data to identify any changes from the current analysis and risk factors.

Data Sources

Data for the City of Bellingham's LRSP comes from WSDOT resources, which are coordinated with the Washington State Patrol and the local Bellingham Police Department through the SECTOR system. The data for the LRSP is limited to a 5-year study period, January 1, 2018, through December 31, 2022. WSDOT verifies and calibrates crash data on a calendar year basis, therefore only data through the end of 2022 is included in the plan. Future updates to the LRSP will include a revised 5-year window and a historical comparison to identify trends or changes in crash frequency or severity.

Existing Land Use - Transportation Integration

Street Network

The Bellingham Comprehensive Plan Multimodal Transportation Chapter describes the citywide surface street transportation system as a network of local arterial and residential streets mixed with three state highways (SR 11, SR 539, and SR 542) and bisected by the limited access freeway of Interstate 5. Some older parts of Bellingham have a grid street pattern while newer portions do not, and some streets have odd angles and intersections with other streets. This is largely due to four small towns (Fairhaven, Sehome, Whatcom, and Bellingham) merging into the City of Bellingham in 1904 as well as the emergence of environmental regulations in the 1960's, which limited the footprint, location, and impact of streets to protect wetlands, streams, and wildlife habitat.

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Introduction

Bellingham considers each street and its role or function within the context of the overall street network using a local functional classification system. This system identifies the role of each street along with its planned future size and profile. In addition to their specific functional classification, selected streets in Bellingham are designated as modal corridors, freight routes, or commercial streets to indicate their specific roles in the street network. Bellingham's roadway functional classifications include:

- ▶ State and Interstate Routes (I-5, SR 11, SR 539, and SR 542)
- ▶ Principal arterials
- ▶ Secondary arterials
- ▶ Collector arterials
- ▶ Residential streets including local access and shared streets.

WA State Routes 11, 539, and 542 pass through the Bellingham, as does Interstate 5 (I-5). SR 11 serves the south side of Bellingham, SR 539 serves the northcentral portion of Bellingham, and SR 542 serves the northeastern portion of Bellingham. I-5 generally runs north-south within the city limits, and can be accessed at; Old Fairhaven Parkway (SR 11), S Samish Way, Lakeway Drive, Iowa Street, E Sunset Drive (SR 542), Meridian Street (SR 539), Northwest Avenue, and W Bakerview Road.

Urban and Demographic Context

The Bellingham urban land use context includes seven compact, mixed-use Urban Villages, all connected by high-frequency (15-minute) transit service, surrounded by residential neighborhoods, with various commercial and industrial areas located throughout the city. Numerous parks are available and over 80 miles of recreational trails exist throughout the city, several of which are used regularly for active transportation trips.

Demographically, the Bellingham urban area has a population of about 100,000 residents with a future forecast of about 130,000 residents by 2045. Bellingham has a high percentage of younger residents due to the presence of Western Washington University (WWU), Whatcom Community College (WCC), Bellingham Technical College (BTC), Northwest Indian College (NWIC), as well as a high percentage of retirees and senior citizens. Cultural diversity is somewhat limited with approximately 85% of the population documented as white.

Bellingham is a desirable place to live and is the largest center for employment, shopping, recreation, entertainment, higher education, and medical and social support services in the Whatcom region. Owner-occupied housing is in high demand with constrained supply so prices are relatively high compared to other urban areas. Rental homes are also in high demand with vacancy rates somewhat below average compared to other urban areas so rents are also relatively high.

1 Introduction

Active Transportation and Transit

Bellingham has integrated land use and transportation planning, partners with regional public transit provider Whatcom Transportation Authority (WTA), and has been very pro-active in establishing active transportation networks and identifying facility improvements for people walking, biking, and rolling. All of Bellingham's Urban Villages are served by or are adjacent to WTA high-frequency (15-minute) GO lines and are well-connected with sidewalk, bikeway, and multiuse trail networks. In 2020 the League of American Bicyclists (LAB) recognized the City's commitment to fund and construct safe bicycle infrastructure and designated Bellingham as a Gold-level Bicycle Friendly Community (BFC) by - one of only two Gold BFCs in Washington and only 34 Gold BFCs in the United States.

The following active transportation, ADA, and transit plans have been adopted by Bellingham and WTA:

- ▶ 2012 Pedestrian Master Plan
- ▶ 2014 Bicycle Master Plan
- ▶ 2020 Mobility for All ADA Transition Plan
- ▶ 2021 WTA 2040: Long Range Transit Plan

In 2024, the Pedestrian and Bicycle Master Plans are being updated with adoption expected in 2024.

Bellingham's annual Six-Year Transportation Improvement Program (TIP) is the funding mechanism for programming local and grant funds for active transportation, ADA, transit, and multimodal transportation improvements projects.



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Data Analysis

Crash Data Summary

Table 1 shows that from 2018-2022, the total number of crashes on City streets was 5,130 or 10.2 percent more than the previous study period (2013-2017). It should also be noted that 609 (11.9 percent) of the total collisions from 2018-2022 occurred in Downtown Bellingham (Appendix Map 1).

- ▶ 97 (2 percent) of the total collisions resulted in a serious injury
- ▶ 14 (0.003 percent) of the total collisions resulted in a fatality

Table 1 and Figure A-2 in the Appendix show the annual Fatal/Serious (F/S) crashes from 2018-2022 compared to the total F/S crashes for 2013-2017 and the following observations are made:

- ▶ 2013-2017 averaged 1.2 fatalities per year while 2018-2022 averaged 2.8 fatalities per year, which is an increase of 133 percent
- ▶ There were only two fatal collisions in the first 3 years of the 2018-2022 period, but a spike in fatal collisions occurred in 2021 (7) and 2022 (5)
- ▶ 2013-2017 averaged 13.0 serious injuries per year while 2018-2022 averaged 19.4 serious injuries per year, which is an increase of 49.2 percent
- ▶ The 2018-2022 average of 19.4 serious injury collisions per year was relatively consistent with the exception of 2021, which had a 20.6 percent increase.

Table 1. Total Fatal and Serious Injury Crashes (2013-2017 and 2018-2022)

| | 2018-2022 | Percent of Total Crashes 2018-2022 | 2022 | 2021 | 2020 | 2019 | 2018 | 2013-2017 |
|------------------------|--------------|---------------------------------------|--------------|--------------|------------|------------|------------|--------------|
| Fatal Crashes | 14 | 0.03% | 5 | 7 | 1 | 0 | 2 | 6 |
| Serious Injury Crashes | 97 | 1.9% | 19 | 23 | 17 | 19 | 19 | 65 |
| Total Crashes | 5,130 | | 1,290 | 1,089 | 814 | 987 | 950 | 4,605 |

Crash Data Statistical Analysis

The summary data for all crashes on City roads was analyzed for statistical outliers where factors surrounding crashes were overrepresented compared to statewide, as well as western Washington cities. Contributing factors or conditions which were cited in a significant percentage of Fatal and Severe Injury (F/S) crashes within Bellingham have also been identified. Crash data allows for targeted research into the causes related to the transportation user (drivers, cyclists, and pedestrians) and the transportation environment (roadway geometry, characteristics, enhancements, etc.) that are contributing to crashes and could benefit from a systemic, prioritized approach of countermeasures. While the focus of the LRSP is on crashes involving fatalities and severe injuries, the data for all crashes was analyzed to avoid any statistical bias that could miss larger crash trends.

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Data Analysis

Most Frequent Types of F/S Crashes in Bellingham

**Most frequent F/S crash type: Hit Pedestrian
(28 crashes, 25 percent of F/S crashes)**

Compared to:

- ▶ City streets in WA: Hit Pedestrian
(2,009 crashes, 23 percent of F/S crashes) 2 percent higher
- ▶ Cities in Western WA: Hit Pedestrian
(1,032 crashes, 27 percent of F/S crashes) 2 percent lower
- ▶ All roads in WA: Hit Pedestrian
(2,261 crashes, 16 percent of F/S/ crashes) 9 percent higher

**2nd Most frequent F/S crash type: Hit Cyclist
(23 crashes, 21 percent of F/S crashes)**

Compared to:

- ▶ City streets in WA: Hit Cyclist
(586 crashes, 6 percent of F/S crashes) 15 percent higher
- ▶ Cities in Western WA: Hit Cyclist
(376 crashes, 10 percent of F/S crashes) 11 percent higher
- ▶ All roads in WA: Hit Cyclist
(670 crashes, 5 percent of F/S crashes) 16 percent higher

**3rd Most frequent F/S crash type: Hit Fixed Object
(19 crashes, 17 percent of F/S crashes)**

Compared to:

- ▶ City streets in WA: Hit Fixed Object
(2,435 crashes, 22.9 percent of F/S crashes) 6 percent lower
- ▶ Western WA cities: Hit Fixed Object
(711 crashes, 18.6 percent of F/S crashes) 1.6 percent lower
- ▶ All roads in WA: Hit Fixed Object
(3,871 crashes, 27.8 percent of F/S crashes) 10.8 percent lower

Vulnerable Users at Risk

In Bellingham, F/S crash outcomes disproportionately affect people walking, rolling, and riding, which are the network's most vulnerable users. While the number of pedestrian and bicycle crashes is small (28 and 23, respectively) compared to the total number of crashes (5,130) during the 2018-2022 period, F/S crashes involving pedestrians and cyclists represent the highest percentages (25.2 percent and 20.7 percent) and rank 1 and 2 for all crash categories in Bellingham.

Pedestrians

Crashes involving pedestrians in Bellingham are slightly lower (2%) than other cities in Western Washington, slightly higher (2%) than other cities in all of Washington, but significantly higher (9%) than pedestrian crashes throughout urban and rural Washington combined.

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Data Analysis

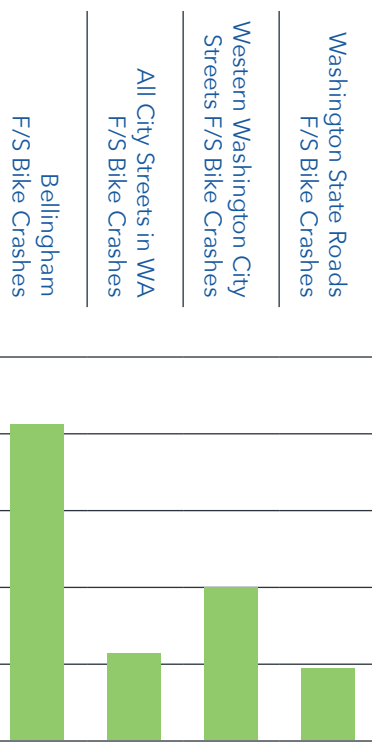


Figure 2. Proportional comparison of percentages of F/S Bike Crashes compared to other jurisdictions.

Bicyclists

Bellingham F/S crash rates involving cyclists are especially high compared to other cities and streets throughout Washington, as shown in Figure 2.

Fixed Objects

Bellingham's third most frequent F/S crash type, fixed object crashes, while high for the City, compares favorably to other jurisdictions.

Most Frequent All Crash Types

The top three most frequently occurring crash types of any severity in Bellingham are Rearend, Angle (T), and Angle (Left turn) collisions.

Most frequent All Crash types in Bellingham: Rearend (1,337 and 26.0 percent)

Compared to:

- ▶ City streets in WA: Rearend (41,071, 19.1 percent)
- ▶ Cities in Western WA: Rearend (30,847, 19.2 percent)
- ▶ All roads in WA: Rearend (138,835, 26.7 percent)

2nd Most frequent All Crash types in Bellingham: Angle (T) (1,228 and 23.9 percent)

Compared to:

- ▶ City streets in WA: Angle (T) (59,687, 27.8 percent)
- ▶ Cities in Western WA: Angle (T) (42,544, 26.5 percent)
- ▶ All roads in WA: Angle (T) (93,452, 18.0 percent)

3rd Most frequent All Crash types in Bellingham: Angle (Left turn) (612 and 11.9 percent)

Compared to:

- ▶ City streets in WA: Angle (Left turn) (20,578, 9.6 percent)
- ▶ Cities in Western WA: Angle (Left turn) (15,662, 9.8 percent)
- ▶ All roads in WA: Angle (Left turn) (36,916, 7.1 percent)

Compared to other jurisdictions, Bellingham rates are similar with the exception of Angle Left turn crashes, which were slightly higher than other city streets and nearly double the state percentage, especially in the downtown area. Angle T crashes were also higher than the state total percentage but lower than the rates of other cities. Rearend crashes in Bellingham were similar to other western Washington cities, and with the state total percentage, but higher than other city streets statewide.

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Data Analysis

Pedestrians and Bicyclist Crashes in Marked Crosswalks

The rate of pedestrians and cyclists being struck in marked crosswalks in Bellingham is high for both total crashes and for F/S crashes.

- ▶ For pedestrians, the rates are 56.9 percent of total crashes and 31.4 percent of F/S crashes.
- ▶ For bicyclists, the rates are 9.1 percent of total crashes and 15.8 percent of F/S collisions.

Contributing Circumstances

- ▶ Crashes where the driver of a vehicle failed to yield to a non-motorist accounted for 0.6 percent of total reported crashes and 5.4 percent of reported crashes with fatal or severe injury outcomes in the City of Bellingham.
- ▶ Crashes where the non-motorist failed to yield to the vehicle driver accounted for 8.9 percent of all, and 9.3 percent of severe outcome, crashes.

In Bellingham, the percentage of all crashes that involve pedestrians is below comparative averages for other locations in Washington (see Table 2), but the severity of the crashes makes pedestrian safety a priority. Compared to all F/S pedestrian crashes in Western Washington cities (27.0 percent), the City compares similarly, however compared to the statewide average (18.9 percent), F/S pedestrian crashes in Bellingham (25.2 percent) is quite high.

It should be noted that the majority of crashes occurred during daylight hours, as follows:

- ▶ 65 (58.6 percent) crashes occurred during daylight hours before dusk
- ▶ 39 (35.1 percent) crashes occurred during darkened hours, but with streetlights on
- ▶ 4 (3.6 percent) crashes occurred during darkened hours with no streetlights present.

Table 2. Statistical Analysis of Pedestrian Crashes

| | % of Total Crashes | | | % of Fatal/Serious Injury Crashes | | |
|--------------------|--------------------|-----------------------|------------------|-----------------------------------|-----------------------|------------------|
| | All WA City Roads | Western WA City Roads | Bellingham Roads | All WA City Roads | Western WA City Roads | Bellingham Roads |
| Pedestrian Crashes | 2.9% | 3.1% | 2.9% | 18.9% | 27.0% | 25.2% |

2

Data Analysis

Bicycle Crashes

The percentage of all bicycle crashes in the city is similar to the bicycle crash percentages of other localities, however the percentage of bicycle crashes resulting in serious injury or fatality was more than double that of all city streets in the state and in other cities in Western Washington. Contributing circumstances cited in Bellingham's F/S bicycle crashes include not granting the right-of-way to the vehicle, and vehicles not granting the right-of-way to the cyclist. Table 3 shows the statistical analysis of bicycle crashes.

Table 3. Statistical Analysis of Bicycle Crashes

| | % of Total Crashes | | | % of Fatal/Serious Injury Crashes | | |
|-----------------|--------------------|-----------------------|------------------|-----------------------------------|-----------------------|------------------|
| | All WA City Roads | Western WA City Roads | Bellingham Roads | All WA City Roads | Western WA City Roads | Bellingham Roads |
| Bicycle Crashes | 1.9% | 2.1% | 2.4% | 5.5% | 9.9% | 20.7% |

Rear End Crashes

The percentage of serious rear end crashes in the city was lower than comparison locations, however the overall rate of rear end crashes in Bellingham makes it a priority. Rear end crashes were reported in nearly a third of the city's crashes and represented the greatest share of all crash types. The primary contributing circumstances cited among rear end crashes were following too closely and inattention. Table 4 shows the statistical analysis of rear end crashes in Bellingham.

Table 4. Statistical Analysis of Rear End Crashes

| | % of Total Crashes | | | % of Fatal/Serious Injury Crashes | | |
|------------------|--------------------|-----------------------|------------------|-----------------------------------|-----------------------|------------------|
| | All WA City Roads | Western WA City Roads | Bellingham Roads | All WA City Roads | Western WA City Roads | Bellingham Roads |
| Rear End Crashes | 19.1% | 19.1% | 26.0% | 8.8% | 4.0% | 5.4% |

Fixed Object Crashes

Fixed object crash percentages in the city were lower than the rates of comparison locations, however they were the third most frequently reported severe crash type and accounted for nearly 20 percent of the city's fatal and serious crashes. The influence of alcohol was cited as a contributing circumstance in nearly 25 percent of the fixed object crashes. The statistical analysis of fixed object crashes is shown in Table 5.

Table 5. Statistical Analysis of Fixed Object Crashes

| | % of Total Crashes | | | % of Fatal/Serious Injury Crashes | | |
|----------------------|--------------------|-----------------------|------------------|-----------------------------------|-----------------------|------------------|
| | All WA City Roads | Western WA City Roads | Bellingham Roads | All WA City Roads | Western WA City Roads | Bellingham Roads |
| Fixed Object Crashes | 12.7% | 13.0% | 9.7% | 22.9% | 18.6% | 17.1% |

2

Data Analysis

Angle (T) Crashes

Angle (T) crash percentages in Bellingham were slightly lower than the rates of comparison locations, however they were the second most frequently reported of all crash types and accounted for 23.9 percent of Bellingham's total crashes. Not granting the right-of-way to the other vehicle and improper turning/merging were cited as the most frequently contributing circumstances in the angle (T) crashes. The statistical analysis of angle (T) crashes is shown in Table 6.

Table 6. Statistical Analysis of Angle (T) Crashes

| | % of Total Crashes | | | % of Fatal/Serious Injury Crashes | | |
|-------------------|--------------------|-----------------------|------------------|-----------------------------------|-----------------------|------------------|
| | All WA City Roads | Western WA City Roads | Bellingham Roads | All WA City Roads | Western WA City Roads | Bellingham Roads |
| Angle (T) Crashes | 27.8% | 26.5% | 23.9% | 13.0% | 14.8% | 13.5% |

Contributing Circumstances

Pedestrian Crashes

The most frequent contributing circumstances in pedestrian F/S crashes in Bellingham (other than 'none' at 60 percent) was failure to grant right-of-way to the vehicle, reported in 5 (19 percent) of the severe pedestrian crashes. The second most frequently contributing circumstances in severe pedestrian crashes were the influence of alcohol, and unknown distractions, each reported in two (5 percent) of the crashes. Other contributing circumstances, failure to use crosswalk; inattention, and non-motorist on the wrong side of the road, were all reported in individual severe pedestrian crashes. Pedestrian crashes that cite use of the "wrong side of the road" can indicate a gap in active mode facilities, in this case the "wrong side of the road" crash happened on Fraser Street, just east of the Puget Neighborhood Connectors trailhead. The only designated pedestrian facility in the vicinity is the limited access raised boardwalk on the south side of Fraser which runs from Puget Street to the Regency Park Apartments. The pedestrian was walking in the dedicated bike lane on the north side of the street instead of using the boardwalk on the south side.

Bicycle Crashes

The most frequent contributing circumstances in Cyclist F/S crashes in Bellingham (other than 'none' at 46 percent) was not granting the right-of-way to the vehicle, reported in 3 (12 percent) of the crashes. Unknown distractions and disregard for traffic sign and signals were reported as the second most frequently contributing circumstances, cited in 8 percent of the severe bike crashes. Other circumstances such as inattention, following too closely, and improper passing were cited in individual severe bike crashes. The most frequent contributing circumstances reported in F/S Hit Fixed Object crashes in Bellingham was driving under the influence of alcohol (21 percent), followed by unknown distractions (16 percent) and exceeding the stated speed limit (11 percent).

2

Data Analysis

Rear End Crashes
 The most frequent contributing circumstances in all Rearend crashes in Bellingham were following too closely (34 percent) and inattention (22 percent), however various kinds of other distractions and exceeding a reasonably safe speed were reported in up to 5 percent of the rear end crashes.

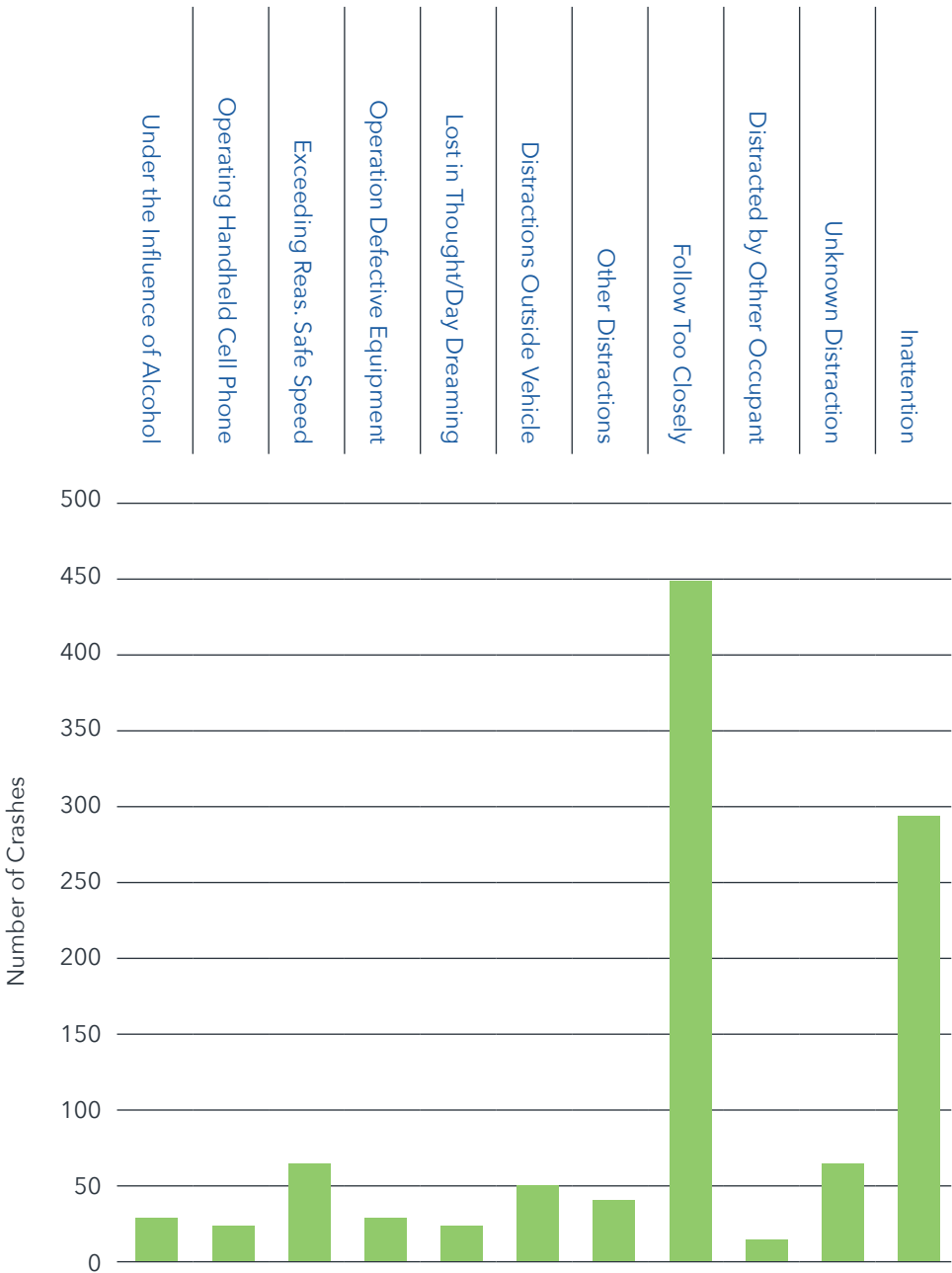


Figure 3. Contributing Factors in Rear End Crashes in Bellingham

2 Data Analysis

Angle Crashes

The most frequently reported contributing circumstances in all Angle (T) type crashes in Bellingham were not granting the right-of-way to the other vehicle (80 percent), following too closely (59 percent) and inattention (58 percent). Other notably contributing circumstances included improper turning/merging maneuvers and exceeding a reasonably safe speed. Figure 4 shows all contributing circumstances that contributed to 100 or more crashes during the study period.

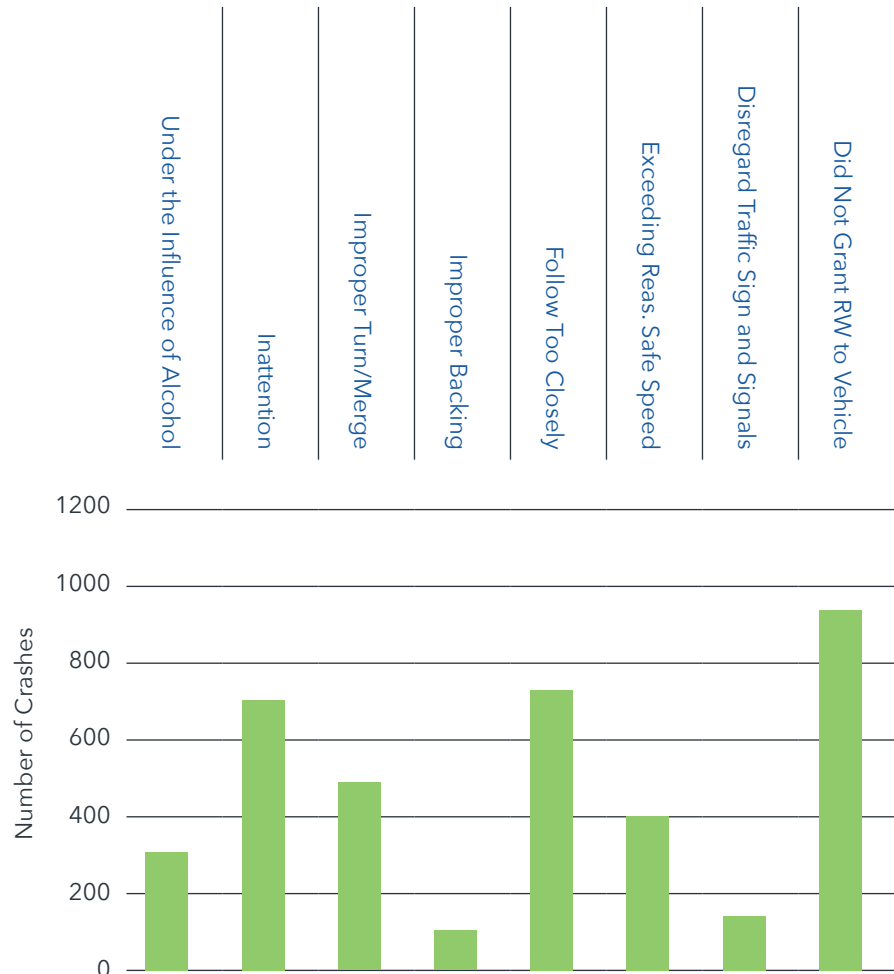


Figure 4. Top Contributing Circumstances in All Angle (T) Crashes in Bellingham

The most frequent contributing circumstances in all Angle (Left turn) type of crashes in Bellingham were not granting the right-of-way to the other vehicle (44 percent), followed by improper turning and merging (26 percent).

2

Data Analysis

Spatial and Demographic Analysis

Data was obtained for each reported crash in Bellingham, including coordinates to produce maps of reported contributing circumstances. Mapping of the crash data allows for identification of patterns by physical location and the roadway environment and produces a spatial analysis. The spatial analysis complements the statistical analysis and helps to identify specific risk factors for future crashes. A selection of the maps generated by this portion of the LRSP process are included in the Appendix. A discussion of the locations where spatial analysis revealed crash clusters follows.

Active Transportation Crashes

Analysis of crashes involving pedestrians and cyclists occurred more often downtown in the vicinity of the Farmer's Market Depot, particularly on Railroad Avenue, Chestnut Street, and Cornwall Avenue. Contributing factors in pedestrian crashes at the downtown location include not granting the right-of-way to the pedestrian, as well as use of alcohol. Left and right turns were more often associated with pedestrian crashes near the Farmer's Market than other vehicle movements.

Table 7. Pedestrians In Crossings Hit by Vehicles at Downtown Bellingham Intersections (2018-2022)

| | Downtown Intersection Crash Locations | Crash Report | Injury Level | Pedestrian Action | Vehicle Action |
|----|--|--------------|-----------------|-------------------|-----------------------|
| 1 | 1300 block Cornwall Avenue | EB80395 | Possible Injury | In crossing | Going straight ahead |
| 2 | Cornwall/Chestnut | EC89204 | Minor Injury | In crosswalk | Making right turn |
| 3 | Railroad/Farmer's Market Driveway | E796362 | Serious Injury | Driveway crossing | DUI-Making right turn |
| 4 | Railroad/Chestnut | E768949 | Possible Injury | In crosswalk | Making right turn |
| 5 | Railroad/Holly | 3605186 | Possible Injury | In crosswalk | Making right turn |
| 6 | Champion/State | EB35393 | Minor Injury | Disregard Signal | Going straight ahead |
| 7 | Chestnut/State | EB75552 | Minor Injury | In crosswalk | Making right turn |
| 8 | Forest/Chestnut | E805177 | Possible Injury | In crosswalk | Making left turn |
| 9 | Forest/Holly | EC89213 | Possible Injury | In crosswalk | Making left turn |
| 10 | Forest/Magnolia | E879804 | Serious Injury | In crosswalk | Making left turn |
| 11 | Holly/Garden | EB53941 | Minor Injury | In crosswalk | Making left turn |

Other locations where not granting the right-of-way to the pedestrian were correlated with pedestrian crashes included Bakerview Road from Northwest Avenue to Meridian Street where failure to use a crosswalk was also cited as a contributing circumstance to the pedestrian crashes in the vicinity. Other clusters of pedestrian crashes were observed on Barkley Boulevard from SR 542 to Woburn Street and on Lakeway Drive from Humboldt Street to Lincoln Street. Common contributing circumstances for the crashes on Barkley and Lakeway included not granting the right-of-way to pedestrians and vehicles. Many of the pedestrian crashes on Barkley and Lakeway Drive involved vehicular turning movements.

2

Data Analysis

Concentrations of cyclist involved crashes occurred on Northwest Avenue from E Maplewood Avenue to W/E Bakerview Road, on James Street from Birchwood Avenue to Telegraph Road, on Bill McDonald Parkway at Samish Way, and on E Holly Street from N Forest Street to Bay Street. Contributing circumstances included not granting the right-of-way to the vehicle and improper turning/merging.

Rear End Crashes

Rear-end crashes were concentrated in several locations throughout the City. Crashes on Meridian Street at W/E Bakerview Road, on Meridian Street at Telegraph Road, Meridian Street at E Bellis Fair Parkway, along SR 542 from James Street to Woburn Street, along Woburn Street from E Illinois Street to Iowa Street, and on Lakeway Drive from Ellis Street to Lincoln Street. The vast majority of the rear-end crashes cited following too closely or inattention, although operating a handheld cellphone was cited in a handful of rear-end crashes located at Lakeway Drive and Ellis Street.

Angle Crashes

Angle crashes in Bellingham tended to be clustered around driveways for popular businesses and services. Concentrations of Angle crashes were observed at the following locations: Downtown, Lincoln Street at both Whole Foods Driveways, James Street at Trader Joes Driveways and Texas Street, James Street at E Sunset Drive, on Orleans Street at the USPS Driveway, the intersection of SR 542 and Barkley Boulevard, Meridian Street at W/E Bakerview Road and the Walgreens Driveway, the intersection of Meridian Street and W Kellogg Road, and the W Kellogg and Cordata Parkway Roundabout. At each of the listed locations for angle crashes, not granting the right-of-way to the other vehicle was cited as a contributing circumstance in most of the crashes. Disregard for stop and go light, disregard for traffic signals, and improper turning/merging were also frequently cited contributing circumstances.

Signalized and Uncontrolled Intersections

Intersection collisions include angle-type crashes at intersections with no traffic control, stop sign control (2 or 4-way) and with signal control. These crashes may include disregard for, or misperception of, a posted stop sign or a red signal. The highest percentages of all types of crashes in Bellingham occurred at signalized (57.8 percent) intersections and uncontrolled (37.4 percent) intersections.

In Bellingham, 13 (50 percent) of F/S crashes occurred at signalized intersections and 13 (50 percent) occurred at intersections or driveways with no traffic control. The percent of crashes at signalized intersection in Bellingham is much higher than statewide (16.6 percent), city streets (26.9 percent), or western Washington cities (28.1 percent).

Angle (T) type crashes accounted for 23.4 percent of all crashes in the city, and 13.5 percent of F/S crashes in Bellingham. Angle (Left turn) type crashes accounted for 11.9 percent of all crashes in the city, and 6.3 percent of F/S crashes in Bellingham.

2

Data Analysis

Population Demographics and Social Equity Considerations

Population demographics and social equity are important factors when considering vulnerable users, spatial analysis, and the geographic distribution of crashes. The character and context of where people live, where they are traveling to, and how they choose to travel can factor into the risk for being involved in crashes.

A high-level social equity analysis was performed using 2021 American Community Survey (ACS) Census data for Bellingham. The five social equity factors listed below were aggregated and scored to produce five levels of priority for safety countermeasures:

- ▶ Percent of population with Limited English Proficiency (LEP)
- ▶ Percent of population with Physical Disabilities
- ▶ Percent of population living Below Poverty level
- ▶ Percent of population Over 65 Years of Age
- ▶ Percent of population self-reporting as Racial Minority (non-white)

Figure 5 on the next page, shows that Downtown Bellingham had the highest number of total collisions (609) and generated a social equity priority index score of 3 out of 5. While other locations in the north and southeast areas of Bellingham generated social equity priority index scores of 4 and 5, these areas also experienced significantly fewer crashes from 2018-2022 than the central Downtown area.

It should be noted that the 2020 ADA Transition Plan, the 2020 WTA Long-Range Transit Plan, and the 2023-2024 Pedestrian and Bicycle Master Plan updates also included examination of a wide variety of social equity issues. All of these transportation planning efforts and recommendations for project improvements have influenced the outcome of this 2024 Bellingham Local Road Safety Plan.

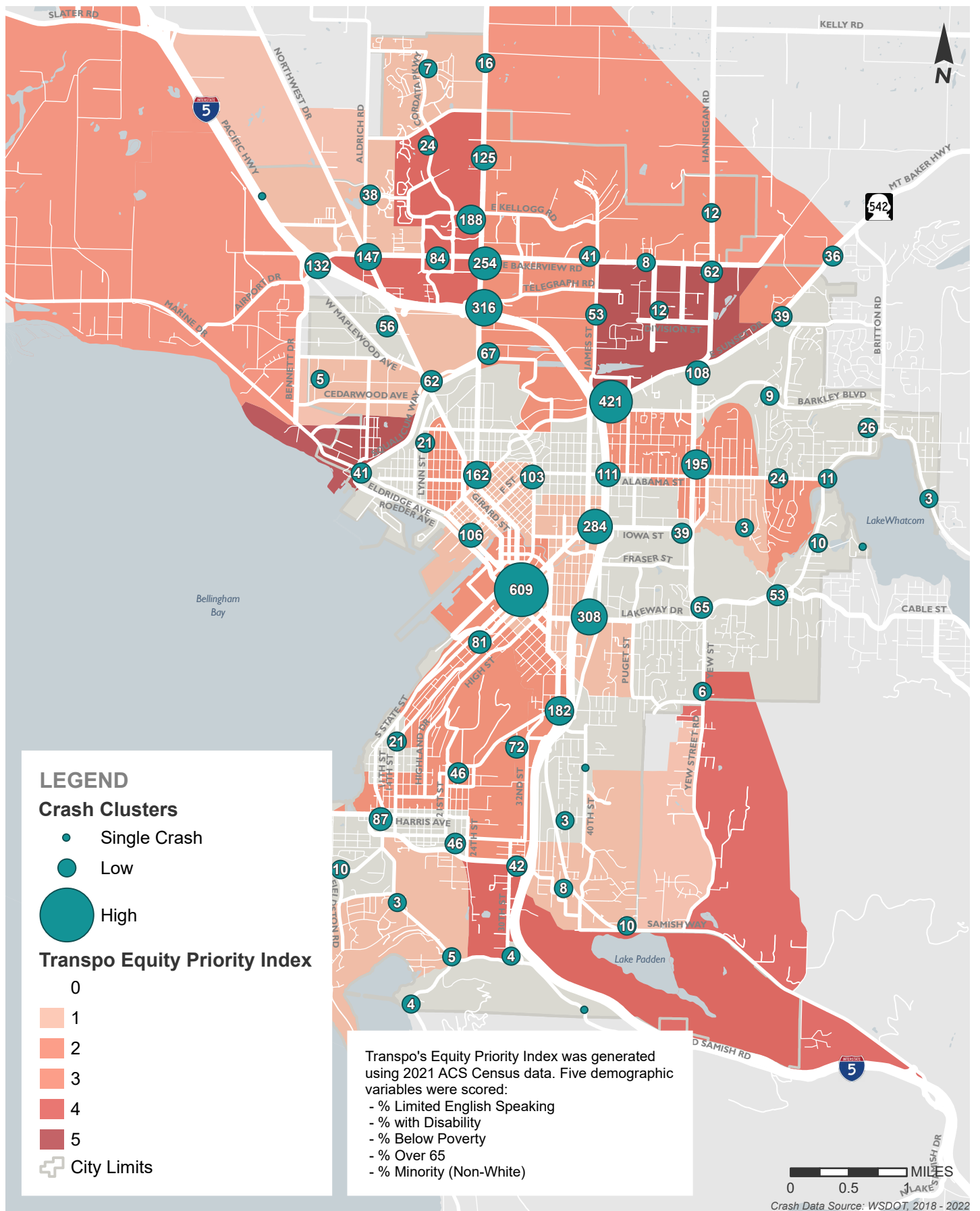


Figure 5: Equity Analysis of Crash Locations

3

Risk Factors

Based on a combination of the statistical and spatial analysis of the crash data for Bellingham, the following risk factors were identified and prioritized. These risk factors will provide guidance to the City's implementation of countermeasures in a focused effort to reduce the frequency and severity of future crashes. The following list of factors is not inclusive of all potential risks for future crashes but is a prioritized set of factors that can be addressed through systemic implementation of countermeasures city-wide. The use of a systemic approach to prioritized risk factors provides a higher potential safety benefit for investment ratio when compared to a more reactionary spot-treatment approach, or when attempting to spread limited resources to address all possible risk factors. The risk factors outlined below are presented in priority order.

1. Active Mode Facilities in Downtown and on high volume arterials in North Bellingham

Pedestrian crash risk factors are highest on the arterial streets in downtown with more residential, commercial and retail development, which drives demand for crossings, especially as the downtown residential population grows. Similar risk factors exist along arterials in the highly developed portions of the north Bellingham. Both Downtown and north Bellingham include arterial streets that are relatively wide with higher traffic volumes and vehicle travel speeds. The primary risk factors include:

- ▶ Conflict with left turning vehicles at intersection crosswalks
- ▶ Pedestrians crossing Downtown arterial streets between marked crosswalks
- ▶ Infrequent crosswalks along high volume arterials in north Bellingham, which leads to pedestrians taking risks to cross at unprotected mid-block locations.

2. Intersection Control, especially in Downtown

Intersection risk factors relate to intersection control and crash types such as angle crashes that occur at intersections. The primary risk factors include:

- ▶ High-density population correlated with increased user conflicts
- ▶ Protected/Permissive left turns at signalized intersections
- ▶ Right turns on red at signalized intersections
- ▶ Failure to yield the right of way to the appropriate user
- ▶ Elevated crossing risk to vulnerable users, such as pedestrians and cyclists at intersections

3. Following too Closely on High Volume Arterials

Following too closely is a driver behavior that can contribute to rear-end crash risk factors. This crash type was documented most frequently on arterial streets with frequent and closely-spaced driveway access points to commercial and retail businesses. Examples include, but are not limited to Lincoln Street, Bill McDonald Parkway, primary routes to and from I-5, and in close proximity to large student housing complexes on Forest Street, State Street, and Lincoln Street, as well as Western Washington University (WWU) parking lots on 21st Street, Bill McDonald Parkway, and Lincoln Street. The primary risk factors for this type of crash include:

- ▶ Driver inattention
- ▶ Exceeding the posted speed limit

4

Transportation Safety Countermeasures

Safety countermeasures are the actions, including engineering, enforcement, and education that Bellingham can take to proactively address the risk factors identified through the crash data analysis. To identify projects and programs that could address the risk factors for crashes, a full range of potential countermeasures was evaluated. The most broadly effective countermeasures which addressed the prioritized risk factors within reasonable resource constraints were selected for this LRSP and associated project list. Each of the listed countermeasures has proven effective in addressing the risk factors identified in Bellingham's transportation system. Effectiveness of the selected countermeasures was evaluated using:

- ▶ National Highway Traffic Safety Administration's Countermeasures That Work publication,
- ▶ Washington State's Target Zero plan, and
- ▶ FHWA's Crash Modification Factor (CMF) Clearinghouse website.

These resources help to identify appropriate projects and provide research backed documentation of the anticipated effectiveness of selected treatments on reducing crash rates.

The safety countermeasures proposed for this LRSP fall into five (5) general categories:

- ▶ Active Transportation Network improvements
- ▶ Crossing Enhancements (Mid-block & at intersections)
- ▶ Safety Improvements to Signalized Intersections
- ▶ Arterial Street Speed Reduction, and
- ▶ Education, Encouragement, Enforcement Programs

Each type of safety countermeasure proposed has been proven effective in addressing the type of risk factors identified at various locations on the City's multimodal transportation system. All proposed safety countermeasure improvements are in use in other similar sized western Washington agencies.

Safety Countermeasure:

Active Transportation Network improvements

The City of Bellingham adopted a Pedestrian Master Plan (PMP) in 2012, a Bicycle Master Plan (BMP) in 2014, and an ADA Transition Plan in 2020. These ADA and mode-specific plans created defined networks for local pedestrian and bicycle travel with network improvement lists prioritized by many criteria including, but not limited to safety, social equity, low-income housing, level of traffic stress, proximity to schools, parks, employment, shopping, entertainment, and medical service destinations.

Both the PMP and BMP are in the process of being updated with completion expected in Spring 2024. The 2024 Bellingham LRSP considered active transportation network improvements in both spot and systemic locations using the most current information from the Draft PMP and BMP work. Once these plans are adopted by the City Council, the City will continue to implement the plans and build out its citywide walkway and bikeway networks to improve safety for users of all ages and abilities.

4

Transportation Safety Countermeasures

Safety Countermeasure: Crossing Enhancements (Mid-block and at intersections)

Pedestrian crossing enhancements include upgrading existing mid-block or intersection crossings with marked crosswalks and/or Rectangular Rapid Flashing Beacons (RRFBs) on 2-3 lane two-way arterial streets, or Pedestrian Hybrid Beacons (aka High-intensity Activated Crosswalks or HAWK signals) on multi-lane arterial streets depending on traffic volumes and speeds. The CMF clearinghouse indicates that pedestrian crossing improvements can reduce crashes between vehicles and users of active modes by 40-60 percent.

While all intersections are legal crossing points for people walking, biking, or rolling, ADA-compliant marked and signed crosswalks indicate the preferred and recommended crossing location(s) along an arterial street. The CMF Clearinghouse research indicates that improvements to the visibility, signing and markings at controlled intersections can reduce total crashes by 10 to 20 percent .

- ▶ A RRFB on a 2-to-3 lane two-way arterial street allows a person walking, biking, or rolling to press a pushbutton to activate amber flashing lights prior to entering the crosswalk to alert drivers of their presence. RRFBs come in both solar powered and hardwired options providing flexibility for application.
- ▶ A HAWK signal on a multi-lane arterial street allows a person walking, biking, or rolling to press a pushbutton to activate both amber and red flashing lights prior to entering the crosswalk to alert drivers of their presence. HAWK signals come in both solar powered and hardwired options providing flexibility for application.

Additional physical crossing enhancements for marked crosswalks, RRFBs, or HAWK signals include curb extensions and center lane refuges to shorten the crossing distance for people walking, biking, and rolling while providing better visibility of people to drivers.

- ▶ Curb extensions provide additional benefit when used in conjunction with RRFBs. Stop lines with associated signage indicate to drivers the appropriate location to stop a vehicle ahead of the crossing for mid-block locations provide additional visibility, driver warning and safety for people walking, biking, and rolling.
- ▶ A center lane refuge is a concrete island constructed in the center lane that allow a person walking, biking, or rolling to reach the mid-point of the crossing distance, pause, and look to be sure that approaching vehicles are not posing a risk for them to continue crossing.
- ▶ Street lighting is also a very effective way to improve visibility and safety for all users at or near crosswalks and along arterial streets. Additional lighting can reduce nighttime injury crashes by up to 42 percent.

Other options for improving the safety of pedestrians at crossing locations include the installation of advanced signing which could include LED or flashing components, as well as active transportation network improvements, such as separated walkways, bikeways, or multiuse pathways.

4

Transportation Safety Countermeasures

Bellingham's 2023 Transportation Report on Annual Mobility (TRAM, page 30) reports that as of December 31, 2022, the City had constructed 49 amber flashing crosswalks (Overhead and side-mounted RRFBs) and 10 amber/red flashing HAWK signals throughout the city. In 2023-2024, the City of Bellingham is currently constructing RRFB crosswalk safety improvements in 22 locations throughout the city (see Figure 6). as part of larger transportation capital improvement projects, some of which are funded with state and federal grants.

Westside Non-motorized Improvements (Local TBD funds, 2023-2024):

1. Cordata Parkway and Tremont Avenue
2. Cordata Parkway mid-block between Sequoia Drive and Meadowbrook Court
3. West Horton Road and Ryzex Way
4. Northwest Avenue mid-block between Home Road and West Bakerview Road
5. Northwest Avenue and Victor Street
6. James Street mid-block between Woodstock Way and Orchard Drive/Birchwood Avenue
7. Orleans Street and East Illinois Street
8. Boulevard mid-block at East Pine Street trail crossing
9. Ohio Street and Ellis Street
10. Ohio Street and Grant Street
11. Woburn Street mid-block at Whatcom Falls Trail
12. Eldridge Avenue and Nequalicum Avenue
13. Eldridge Avenue and Lafayette Street
14. Eldridge Avenue and West Street
15. Eldridge Avenue and Victor Street

Lincoln St./E. Maple St. Signal & Lincoln St. Road Diet (Local and TIB UAP grant funds, 2023-2024):

16. Lincoln Street and Viking Circle

Parkview Elementary Safe Routes to School (Local and WSDOT SRTS grant funds, 2023-2024):

17. Vallette Street and West Illinois Street

W. Illinois St. Multi-Modal Improvements (Local and WSDOT PBS grant funds, 2024):

18. Meridian Street and North Street
19. Meridian Street and Oregon Street
20. Girard Street and H Street

12th St./Finnegan Wy. Signal and Multi-Modal Safety (Local and TIB UAP grant funds, 2024):

21. Finnegan Way and 11th Street
22. McKenzie Avenue and 12th Street

By the end of 2024, after construction is completed on all the crossing improvements listed above, there will be 71 amber flashing crosswalks (Overhead and side-mounted RRFBs) and 10 amber/red flashing HAWK signals providing user-activated safe street crossings throughout the city.



Figure 6: 2023 to 2024 Crossing Enhancement Locations

4

Transportation Safety Countermeasures

The 2023-2024 Draft Bellingham Pedestrian and Bicycle Master Plan updates include the following list of 37 crossing improvement locations, which have been prioritized using evaluation criteria including, but not limited to safety, social equity, low-income housing, level of traffic stress, proximity to schools, parks, employment, shopping, entertainment, and medical service destinations.

Prioritized Pedestrian, Bicycle, and Trail Crossing Improvements (PMP and BMP)

1. Laurel/Garden (WWU) - RRFB
2. Eliza/Westerly/Division St Trail (WCC) - RRFB
3. F St/Halleck (Whatcom MS) - RRFB
4. Bay/Chestnut (Downtown Waterfront) - RRFB
5. Barkley/Racine Trail - RRFB
6. Meridian/Monroe (Whatcom MS) - RRFB
7. Roeder/Central (Waterfront Granary Bldg-Waypoint Park) - RRFB
8. Cornwall/Kentucky (BHS-Assumption) - RRFB
9. Texas/Woburn (Bike Blvd) - RRFB x2
10. Elm/Monroe (Whatcom MS) - RRFB
11. Maple/Garden (WWU) - RRFB
12. Texas/Yew (Bike Blvd) - RRFB
13. Texas/Pacific (Bike Blvd) - RRFB
14. OFP/24th Street (Happy Valley ES) - ADA and RRFB
15. Cornwall/Whatcom Creek Trail (BHS) - RRFB
16. Eliza/E. Bellis Fair Pkwy (Low-Income Apts) - RRFB
17. Orleans/Safeway/MTA Gold Line - Move crosswalk; align with MTA Gold bus shelters; RRFB
18. Garden/Viking Union (WWU) - RRFB
19. 14th St/State-Boulevard (Boulevard Park) - RRFB
20. Barkley/Regal Theater fire lane (Trail) - RRFB
21. E. Bakerview/Kramer Lane (King Mtn ES) - RRFB
22. Woburn/Old Woburn (MTA-Whatcom Falls Park) - ADA and RRFB
23. Cornwall/South Park (Parkview ES) - RRFB
24. 24th St/Douglas (Happy Valley ES) - ADA upgrades
25. Prospect/Lottie/Dupont (USPS and Whatcom Creek Trail) - RRFB
26. Electric Ave/Bloedel Park South (Whatcom Falls Park) - RRFB
27. Electric Ave/Flynn St (Whatcom Falls Park) - RRFB
28. OFP/22nd St (Happy Valley Park) - RRFB
29. Boulevard at S. State St junction (MTA stop) - RRFB
30. Alderwood Ave/Bennett Drive (Alderwood ES-UGA) - RRFB
31. SR-11 Chuckanut Dr/Viewcrest (100-acre Wood) - RRFB
32. Samish Way/34th-36th (Montessori School) - ADA and RRFB
33. Samish Way/40th St (Senior Assisted Living Center) - RRFB
34. Marine Drive/W. Illinois (Little Squalicum Park-BTC) - RRFB
35. McLeod Rd/Magrath Rd (Squalicum HS) - RRFB
36. Barkley/Brandywine/Sussex (Trail) - Advanced Flashers & RRFB
37. Sterling Drive/Bellis Fair Pkwy - ADA ramps and RRFB

4

Transportation Safety Countermeasures

Safety Countermeasure: Signalized Intersection Crossing Improvements for Active Modes

Crossing improvements for active mode users at signalized intersections include a variety of potential applications. These types of safety countermeasures could prove extremely effective at signalized intersections in the Downtown area.

- ▶ Programming signals to provide increased walk phase times or leading pedestrian intervals, which give pedestrians several additional seconds to cross before the signal changes to green for vehicles, can result in up to a 13 percent reduction in pedestrian-vehicle crashes alone. The City of Bellingham could Incorporate Leading Pedestrian Interval (LPI) phases in traffic signal operations at targeted intersections, such as those in Urban Villages, on major WTA transit routes, or on walk and bike routes to local schools. This low-cost, high-benefit measure is a relatively simple adjustment to signal operations and has been employed in many cities across Washington and the U.S.
- ▶ 'Blank-out' signs can be added to the signal array and programmed to tell vehicle drivers not to turn for a portion of the signal phasing and can impart a 45 percent reduction in all crash types. Assessments of visibility including sight distance and lighting can also be beneficial countermeasures to improve the safety of active mode users at signalized intersections.

Safety Countermeasure: Signalized Intersection Operational Improvements

Improving safety at signalized intersections can be accomplished through application of the following countermeasures.

- ▶ Installation of flashing yellow arrows and protected left-turn arrows, or flashing yellow or red intersection control beacon can reduce all crash types for vehicles by up to 50 percent
- ▶ Adjustments to the visibility and lighting of signals can lead to a 10 - 48 percent reduction in crash rates.
- ▶ Reevaluating and making adjustment to the timing of the yellow-light phase of the signal can have a positive impact in terms of reducing crashes and incidence of red-light running.

The FHWA cites red-light running as a leading cause of severe crashes at signalized intersections, thus the yellow change interval must be appropriately timed. Too brief an interval may result in drivers being unable to stop safely and cause unintentional red-light running. Too long of an interval may result in drivers treating the yellow as an extension of the green phase and can invite intentional red-light running. Yellow change intervals, when appropriately timed can reduce the incidence of red-light running by up to 50 percent. The City of Bellingham could improve safety at its signalized intersections and reduce red-light running by reviewing and updating, as needed, their traffic signal timing policies and procedures concerning the yellow change interval.

4

Transportation Safety Countermeasures

Safety Countermeasure: Arterial Street Speed Reduction

Recommended safety countermeasures to address vehicle speeding along Bellingham's arterial streets could include:

- ▶ Targeted speed enforcement and education to raise awareness of the hazard that exceeding posted speeds represents.
- ▶ Installation of radar speed readers and variable message speed feedback signs.
- ▶ Implementation of variable speed limits on congested corridors, such as SR 539 and SR 542.
- ▶ Implementation of Road Diets on arterial street corridors.
- ▶ Citywide speed limit study and implementation of context-based appropriate speed limits for all road users.

The FHWA clearinghouse of proven safety measures recommends the application of Variable Speed Limits, which display differing limits depending on the level of demand present, for reducing congestion and rear end crashes. While particularly effective for urban roads with speed limits over 40 mph, with effectiveness rates of up to 51 percent reduction of the incidence of F/S crashes and 65 percent reduction in rear-end crashes. The city may want to evaluate if this alternative could provide additional benefit on select arterials with speed limits of 30 mph or higher.

An alternative method of slowing vehicle speeds along arterial streets, recommended by the FHWA's proven safety measures clearinghouse, is the implementation of Road Diets. This safety countermeasure can reduce multiple lanes that invite weaving, passing, and speeding to single lane roadways where speed is subject to the pace of the slowest vehicle. Additional benefits of this method could include a reduction in rear-end and left-turn crashes, a reduction in right-angle crashes as drivers on side streets cross fewer travel lanes, shorter pedestrian crossings, and the opportunity to install features such as pedestrian refuge islands, bicycle lanes, ADA accessibility improvements, on-street parking, or transit stops. Road diets provide traffic calming and more consistent speeds and create a more community-focused, Complete Streets environment that better accommodates the needs of all road users and aligns with Bellingham's vision of supporting people-oriented travel, including vulnerable active transportation users of all ages and abilities. Road diets may be a less costly solution when planned in conjunction with already slated projects such as pavement overlay. As documented in the City of Bellingham 2023 Transportation Report on Annual Mobility (TRAM, Appendix page A-4), over the past 20 years, the City has implemented 12 arterial street road diets that removed over 12 miles of vehicle travel lanes to install over 14 miles of dedicated bicycle lanes.

In 2023, Public Works staff recorded traffic volumes and speeds on all of Bellingham's arterial streets to compile the 2023 Traffic Flow Map. This data helps transportation planners and engineers understand traffic volume and speed issues on specific streets, as well as big-picture transportation circulation issues. The data is also used in the regional travel demand model maintained by the Whatcom Council of Governments (WCOG), which is used for long-range forecasts throughout the Whatcom region. This data could be used to assess posted vs. recorded travel speeds and, where necessary or appropriate, set appropriate speed limits for all road users.

4

Transportation Safety Countermeasures

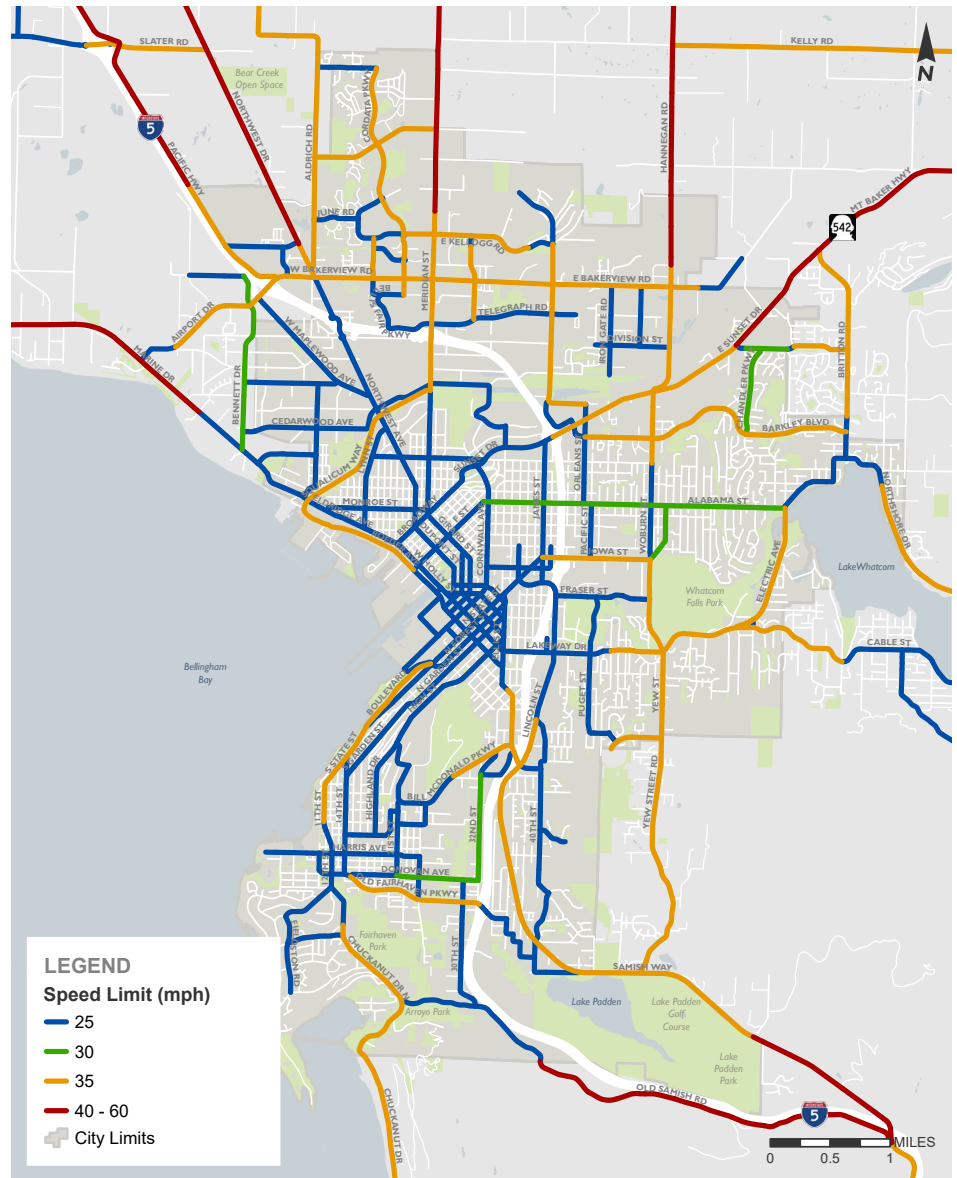


Figure 7: Posted Speed Limits on Arterials

As shown in Figure 7, above, Bellingham’s current posted speed limits on arterial streets are overwhelmingly on the lower end of the spectrum, as follows:

- ▶ 78.1% (242 miles) of posted speed limits are 25 mph;
- ▶ 13.7% (42.6 miles) of posted speed limits are 30 mph or 35 mph; and
- ▶ 8.2% (25.4 miles) of posted speed limits are more than 35* mph.

*Only 3 Principal Arterial major entry/exit points for vehicles have posted speeds of 35 mph+.

However, there are still some locations where, given the existing and planned land use context – especially in Urban Villages and around schools and universities – lower posted speed limits could help to reduce risk and to minimize severity of collision involving people walking, biking, and rolling, as well as vehicle drivers.

4

Transportation Safety Countermeasures

Education, Encouragement, and Enforcement Programs

Education and enforcement are two key components of transportation safety that, while non-engineering in nature, strongly complement engineering projects. Non-engineering programs are ineligible for funding through WSDOT's HSIP program. The Washington State Traffic Safety Commission (WTSC) Safety Grants program funds education and enforcement efforts and programs through the following grant opportunities:

- ▶ School Walk Route Improvement Projects Grants
- ▶ School Zone Crossing Guard Grants, and
- ▶ Law Enforcement Equipment Grants for School Zones.

Education and Encouragement Campaigns and Programs

The City of Bellingham can continue to promote public safety for all users through the multi-agency Protecting Mobility for All public safety campaign, including the following areas of emphasis:

- ▶ Educating and training Bellingham Police officers on new Washington state laws to protect safety for vulnerable users, including people walking, biking, and rolling on public streets;
- ▶ Community outreach in low-income neighborhood school zones and along walk and bike routes;
- ▶ Education and encouragement activities in and around low-income neighborhood school zones and along low-income neighborhood school walk and bike routes
- ▶ Documentation of collision locations recorded in 2018-2022 and potential mitigating measures listed in this 2024 Local Road Safety Plan for Multimodal Safety Improvements
- ▶ Encourage the Bellingham School District (BSD) to:
 1. Complete work to define and map all walk and bike routes to local public schools, to Start a local school crossing guard program, similar to other school districts in Washington
 2. Partner with the City in advance of construction/reconstruction of new or existing schools to ensure that infrastructure can be funded and completed prior to school occupancy.

Automated Speed Safety Camera (SSC) Enforcement

Automated Speed Safety Cameras (SSC) use automated speed measurement devices to detect speeding and capture photographic or video evidence of vehicles that are violating the posted speed limit and can also reduce the incidence of angle crashes. The City could consider changing the Bellingham Municipal Code (BMC) to allow the use of Automated Speed Safety Cameras (SSC) in school zones, along school walk routes, in the vicinity of parks and hospitals, at documented high crash locations, as well as at signalized intersections to prevent red-light running. Many cities in Washington already do this and research by the Active Transportation Safety Council documents both the efficiency and effectiveness of this technology. The City of Bellingham could deploy SSCs as an effective and reliable technology to supplement more traditional methods of enforcement, engineering measures, and education to alter the social norms of speeding. SSCs are proven safety countermeasures and can reduce total crashes by up to 54 percent on urban principal arterials and up to 47 percent for F/S injury crashes.

5

Transportation Planning and Engineering Safety Projects

After consideration of many things, including, but not limited to all the factors and variables listed below, the City of Bellingham has prioritized a list of transportation planning and engineering safety projects with the top project recommended to seek HSIP grant funding in 2024.

2018-2022 collision data analysis for:

- ▶ Collision types
- ▶ Contributing circumstances
- ▶ Risk factors
- ▶ Proven safety countermeasures

A citywide transportation planning focus on:

- ▶ Vulnerable users
- ▶ Social equity
- ▶ ADA compliance requests
- ▶ Active transportation plans

City priorities to revitalize downtown activity and waterfront development

- ▶ Programmed City transportation investments on Holly Street
- ▶ Planned WTA-City investments in Downtown Transit Station expansion
- ▶ Systemic safety improvement benefits to the greatest number of people

The four (4) projects listed below represent the safety countermeasure priorities that the City of Bellingham will seek to implement in the next few years using a mix of local, state, and federal funding. The City will continue to combine safety improvements into transportation capital improvement projects, as well as transportation resurfacing, maintenance, and repair projects, as opportunities arise.

The transportation planning and engineering safety projects and programs are listed in priority order.

1. Downtown Transportation Safety Improvements (Systemic)
2. Lincoln-Meador Multiuse Pathway and Traffic Signal (Spot Improvement)
3. Active Transportation Crossing Improvements (Systemic and Spot)
4. Citywide Arterial Speed Limit Study (Systemic)

5

Transportation Planning and Engineering Safety Projects

Cost Estimate:
\$3,476,000

Project 1: Downtown Intersection Safety Improvements

As discussed in the LRSP, the highest concentration of crashes in Bellingham from 2018-2022 occurred in Downtown with a total of 609 (11.9 percent) of the total 5,130 crashes. The City of Bellingham has received ADA requests from visually- and hearing-impaired residents, as well as residents with physical mobility challenges to upgrade existing traffic signals along Railroad Avenue and Cornwall Avenue. All of these residents are dependent on WTA transit bus or dial-a-ride service to get downtown, but after they arrive, their walking or rolling along Railroad Avenue or Cornwall Avenue is very challenging because the traffic signals are not equipped with Audio Pedestrian Signals (APS) and Detectable Warning Systems (DWS) are missing in some locations.

Whatcom Transportation Authority's (WTA) Downtown bus station is located at Railroad/Magnolia, retail stores and restaurants are located at Railroad/Holly, and the Bellingham Farmer's Market is located at Railroad/Chestnut. The historic Federal Building, U.S. Post Office, and a grocery store and pharmacy are located at Cornwall/Magnolia, retail stores and restaurants are located at Cornwall/Holly, and the intersection of Cornwall/Chestnut links Downtown to the Waterfront District. Railroad Avenue, Cornwall Avenue, Magnolia Street, Holly Street, and Chestnut Street are all heavily used for active transportation and have consistently produced the highest counts for pedestrian and bicycle travel over the past 20 years. Magnolia Street has a buffered bicycle lane, Chestnut Street has a separated/protected bike lane, and in May 2024, the City of Bellingham will remove one of three vehicle travel lanes on Holly Street to install a parking protected bike lane on Holly Street through Downtown.

Six (6) Downtown signalized intersections will be reconstructed to full ADA standards at:

HSIP grant funds

- ▶ Railroad Avenue/Magnolia Street
- ▶ Railroad Avenue/Holly Street
- ▶ Railroad Avenue/Chestnut Street

Bellingham Local Funds

- ▶ Cornwall Avenue/Magnolia Street
- ▶ Cornwall Avenue/Holly Street
- ▶ Cornwall Avenue/Chestnut Street

Crossing improvements for active mode users at signalized intersections already include a variety of safety applications such as curb extensions, high-visibility crossings, concrete bollards, bike lanes, and pedestrian numerical countdown signals. The City of Bellingham will incorporate Leading Pedestrian Interval (LPI) phases in these Downtown traffic signals. This low-cost, high-benefit measure is a relatively simple adjustment to signal operations and has been employed in many cities across Washington and the U.S. Programming signals with LPI can result in up to a 13 percent reduction in pedestrian-vehicle crashes alone. Enhancing Downtown traffic signals with ADA, APS, DWS, and LPI upgrades will prove extremely effective, add significant safety while reducing or eliminating the risk of fatal and serious injury for vulnerable and active transportation users.

This is a scalable project, but the City of Bellingham is applying for HSIP grant funding to reconstruct the three signalized intersection along Railroad Avenue and proposes to fund the three signalized intersections along Cornwall Avenue with the local Transportation Fund (Transportation Benefit District).

5

Project 1: Downtown Intersection Safety Improvements

Transportation Planning and Engineering Safety Projects



Figure 8. Downtown Intersection Safety Improvements on Railroad Avenue and Cornwall Avenue

5

Transportation Planning and Engineering Safety Projects

Cost Estimate:
\$1,853,000

Project 2: Lincoln-Meador Multiuse Pathway and Traffic Signal (Spot Improvement)

Interstate 5 (I-5) bisects the City of Bellingham in a north-south direction and carries over 100,000 vehicles per day. There are very few locations along I-5 where there are connected sidewalks and bicycle facilities underneath or over the top of I-5, which creates a significant mobility barrier for people walking, biking, and rolling. The Bellingham 2012 Pedestrian and 2014 Bicycle Master Plans identified several corridors where active transportation safety improvements are needed, but some of these locations are extremely complicated due to physical street space and environmental constraints. In 2021, the City of Bellingham, Washington State Department of Transportation (WSDOT), Whatcom Transportation Authority (WTA), and the Whatcom Council of Governments (WCOG) jointly funded and completed the Lincoln-Lakeway Multimodal Transportation Study with specific recommendations for safety improvements that were determined to be feasible, fundable, and constructable.

Lincoln Street is a north-south secondary arterial street on the east side of I-5 between Lakeway Drive and Fraser Street where it curves under the freeway and becomes Meador Avenue on the west side of I-5. This is a well-known and heavily used short-cut for local drivers who wish to avoid the heavy traffic congestion and traffic signals along Lakeway Drive underneath I-5. Lincoln Street is lined by low-income housing with high-demand on-street parking and five-foot-wide sidewalks along both sides of the street. In 2016, a southbound uphill bicycle climbing lane was installed along the west side of the corridor, but there is not enough physical space on the street to provide a dedicated bicycle facility for downhill northbound riders along the east side. People riding bicycles must share the lane with vehicles, which is not comfortable due to faster moving vehicles and elevates the risk for close calls or collisions.

Currently, the intersection at Lincoln/Fraser is stop controlled at westbound Fraser Street with uncontrolled through movements along Lincoln-Meador. A dedicated left-turn lane allows vehicles to stage for left-turns to Fraser Street and a dedicated left-turn lane on Fraser allows vehicles to stage for left-turns to Lincoln Street. Due to popularity as a short-cut route for local commuters, heavy use during peak hours, and fast-moving vehicles on north-south Lincoln, vehicle queues and delay for westbound Fraser left-turns to southbound Lincoln operates at LOS F.

The multi-agency Lincoln-Lakeway Study recommended:

- ▶ A 12-foot-wide multiuse pathway between Fraser Street and James Street within the existing sidewalk alignment along the northeast side of the Lincoln-Meador corridor.
- ▶ A traffic signal or roundabout at the Lincoln/Fraser intersection.

Public right-of-way is available to widen the sidewalk area, and this would allow people riding bikes to be off the street, which would eliminate safety risks between Fraser Street and James Street. Fraser Street and Meador Avenue west of James Street both currently have marked bike lanes, which will further enhance connectivity and safety. The City of Bellingham is opting for the construction of a traffic signal with a protected bicycle signal phase on the west leg of the intersection, which would significantly improve safety for people walking, biking, and rolling in this area.

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Transportation Planning and Engineering Safety Projects

Project 2: Lincoln-Meador Multiuse Pathway and Traffic Signal (Spot Improvement)



Figure 9: Lincoln-Meador Multiuse Pathway Safety Improvements

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Transportation Planning and Engineering Safety Projects

Cost Estimate:
\$1,000,000 to
\$1,250,000

Project 3: Active Transportation Crossing Safety Improvements (Systemic)

The 2023-2024 Draft Bellingham Pedestrian and Bicycle Master Plan updates include a list of crossing improvement locations, which have been prioritized using evaluation criteria including, but not limited to safety, social equity, low-income housing, level of traffic stress, proximity to schools, parks, employment, shopping, entertainment, and medical service destinations.

The list of crossing improvements below are locations at or near elementary, middle, and high schools; Western Washington University (WWU); Whatcom Community College (WCC); Low-Income and Senior Citizen apartments; the Waterfront District; the Texas Street Bicycle Boulevard; and City Parks.

Prioritized Pedestrian, Bicycle, and Trail Crossing Improvements

1. Laurel/Garden (WWU) - RRFB
2. Eliza/Westerly/Division St Trail (WCC) - RRFB
3. F St/Halleck (Whatcom MS) - RRFB
4. Bay/Chestnut (Downtown-Waterfront) - RRFB
5. Barkley/Racine Trail (Apartments & Townhomes) - RRFB
6. Meridian/Monroe (Whatcom MS) - RRFB
7. Roeder/Central (Waterfront Granary Bldg-Waypoint Park) - RRFB
8. Cornwall/Kentucky (BHS-Assumption) - RRFB
9. Texas/Woburn (Bike Blvd) - RRFB x2
10. Elm/Monroe (Whatcom MS) - RRFB
11. Maple/Garden (WWU) - RRFB
12. Texas/Yew (Bike Blvd) - RRFB
13. Texas/Pacific (Bike Blvd) - RRFB
14. OFP/24th Street (Happy Valley ES) - ADA and RRFB
15. Cornwall/Whatcom Creek Trail (BHS) - RRFB
16. Eliza/E. Bellis Fair Pkwy (Low-Income Apts) - RRFB
17. Orleans/Safeway/MTA Gold Line (Senior Citizen Apts) - RRFB
18. Garden/Viking Union (WWU) - RRFB
19. 14th St/State-Boulevard (Boulevard Park) - RRFB
20. Barkley/Regal Theater fire lane (Trail) - RRFB

These pedestrian and bicycle crossing safety improvements will include curb extensions and center lane refuges where needed, mid-block or intersection ADA-compliant marked and signed crosswalks and Rectangular Rapid Flashing Beacons (RRFBs) on 2-3 lane arterial streets throughout Bellingham. The overall project cost estimate is presented as a range because each site will have factors that influence the site-specific cost. The list could also be expanded to include some or all of the remaining 17 prioritized crossing improvement locations in the 2024 Bellingham Pedestrian and Bicycle Master Plans, which would increase the overall project cost estimate.

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Transportation Planning and Engineering Safety Projects

Project 3: Active Transportation Crossing Safety Improvements (Systemic)

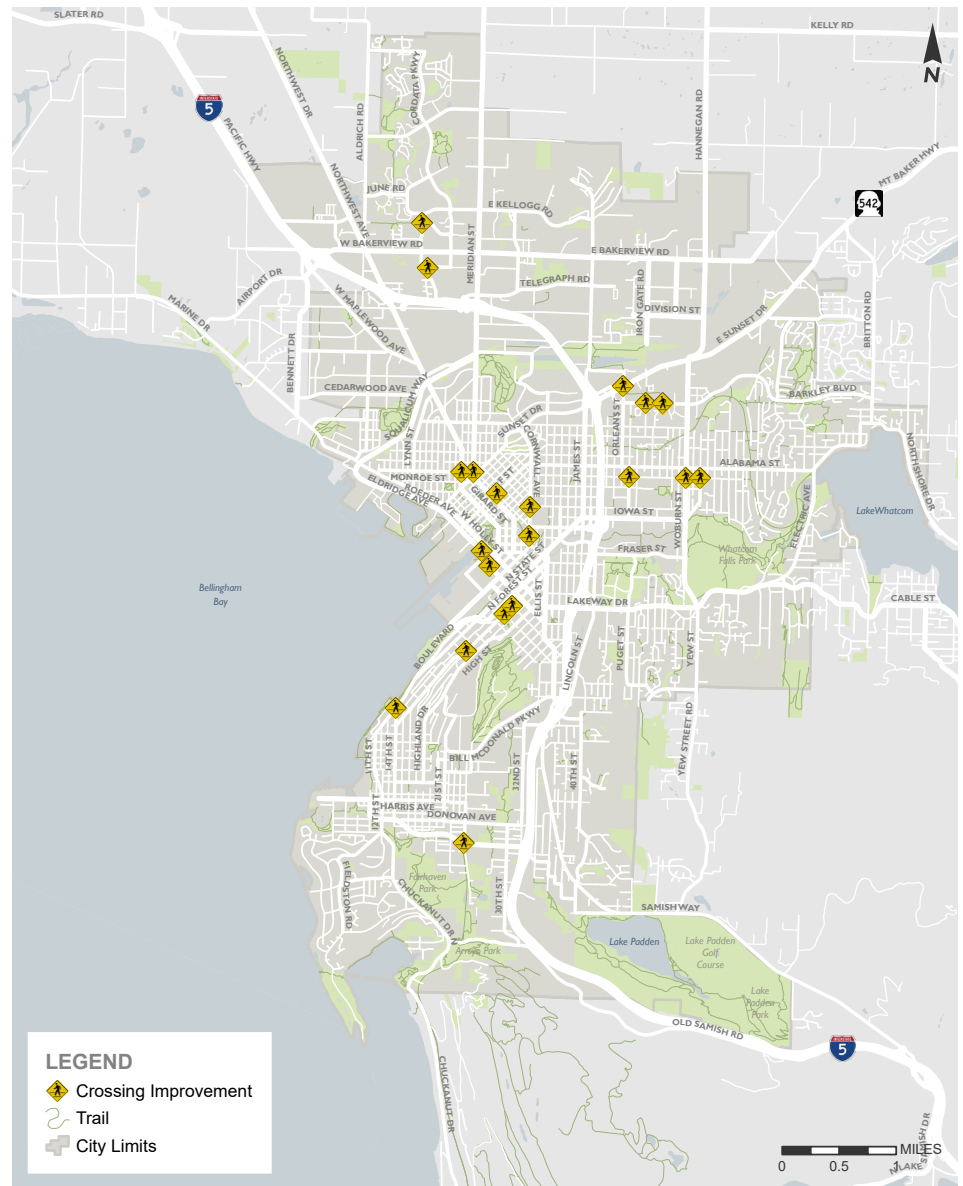


Figure 10: Active Transportation Crossing Safety Improvements

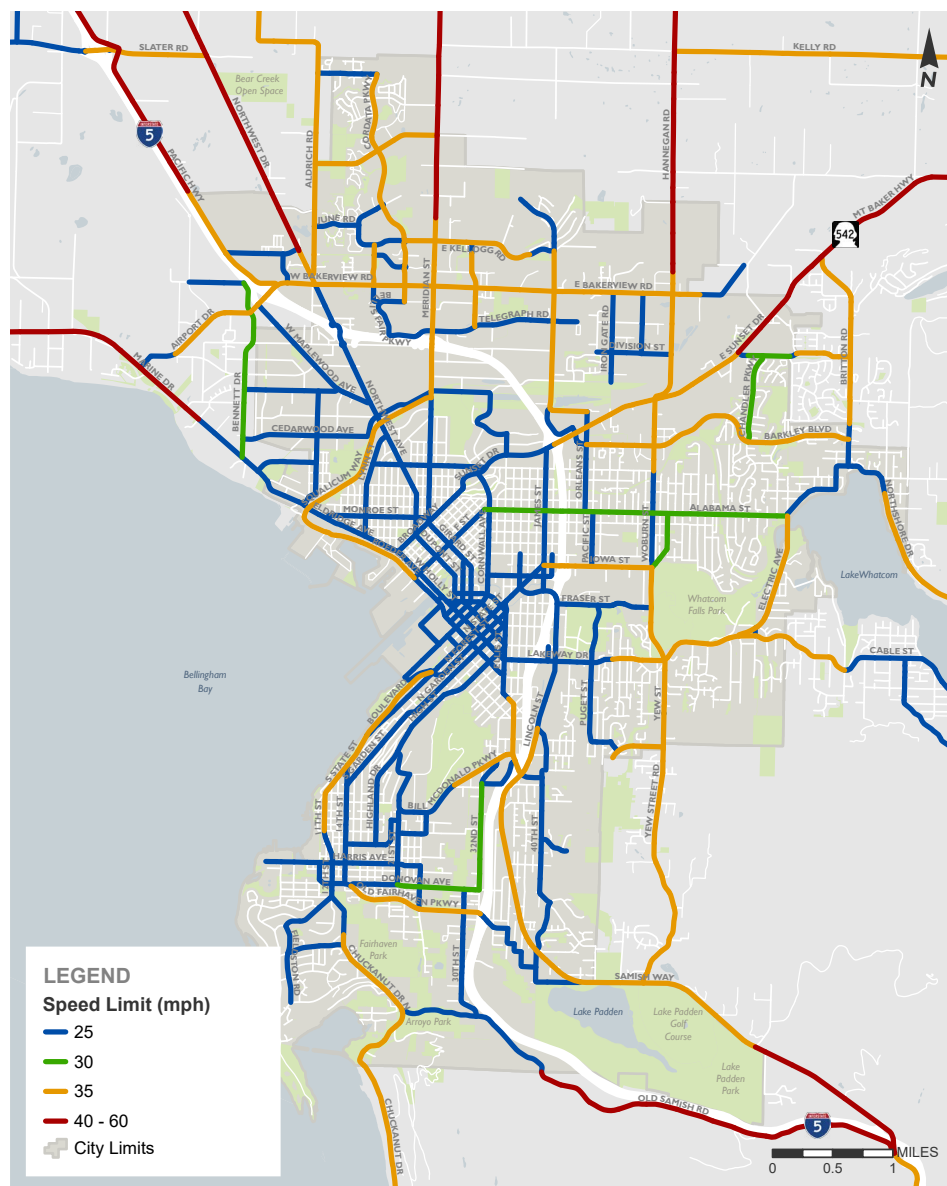
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Transportation Planning and Engineering Safety Projects

Cost Estimate:
\$100,000

Project 4: Citywide Arterial Speed Limit Study (Systemic)

As shown below, Bellingham's current posted speed limits on arterial streets are overwhelmingly on the lower end of the spectrum. However, there are still some arterial street corridors where, given the existing and planned land use context - especially in Urban Villages and around schools and universities - lower posted speed limits could help to reduce risk and to minimize severity of collision involving people walking, biking, and rolling, as well as vehicle drivers.



In 2023, Public Works staff recorded traffic volumes and speeds on all of Bellingham's arterial streets to compile the 2023 Traffic Flow Map. This data helps transportation planners and engineers understand traffic volume and speed issues on specific streets, as well as big-picture transportation circulation issues. The data is also used in the regional travel demand model maintained by the Whatcom Council of Governments (WCOG), which is used for long-range forecasts throughout the Whatcom region. This data could be used to assess posted vs. recorded travel speeds and, where necessary or appropriate, set appropriate speed limits for all road users. A citywide speed limit study would allow the City of Bellingham to better align land use goals and context with transportation safety and mobility.



Appendix

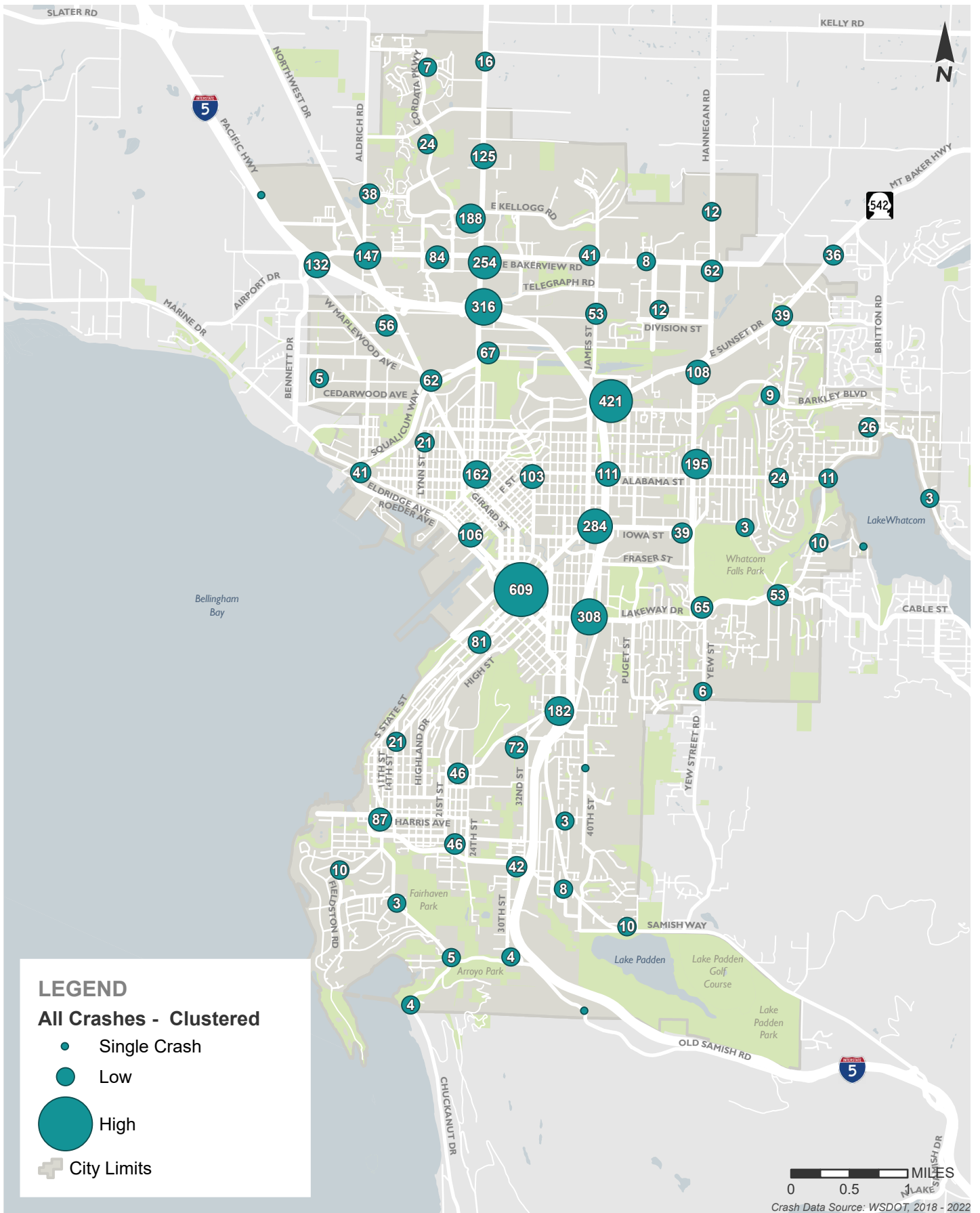


Figure A-1: Total Crashes (2018-2022)

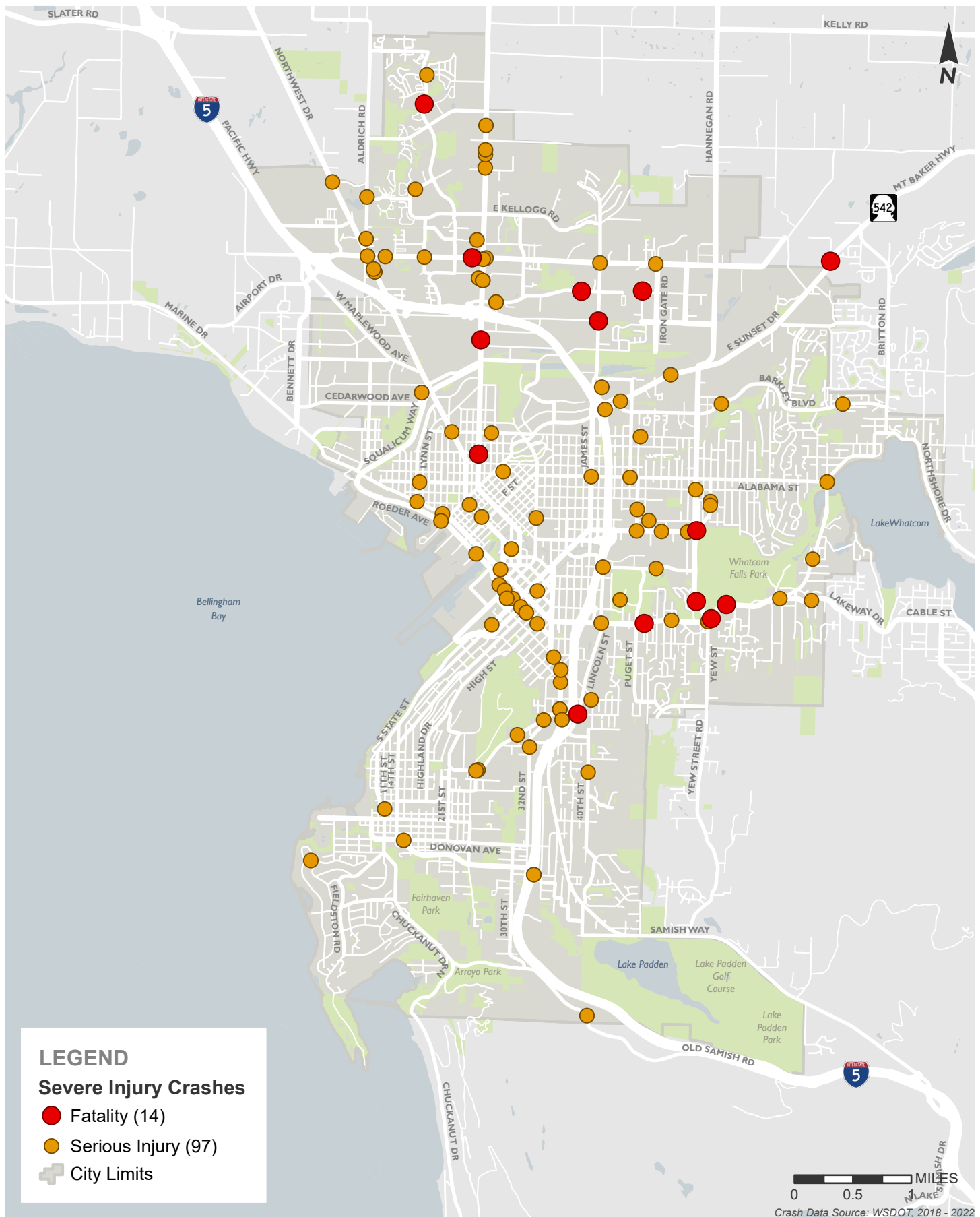


Figure A-2: Fatal and Serious Injury (F/S) Crashes (2018-2022)

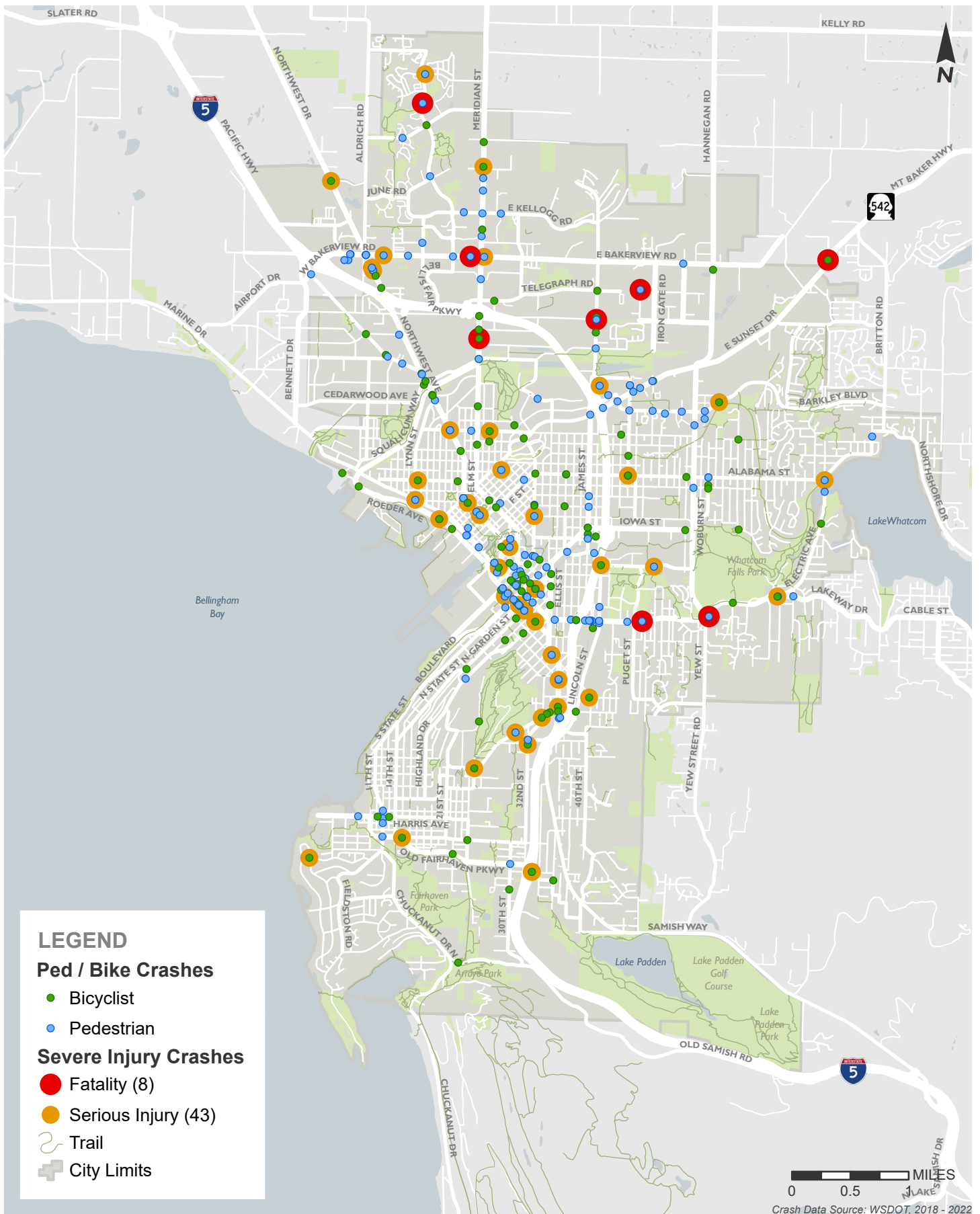


Figure A-3: Pedestrian and Bicycle Involved Crashes (2018-2022)

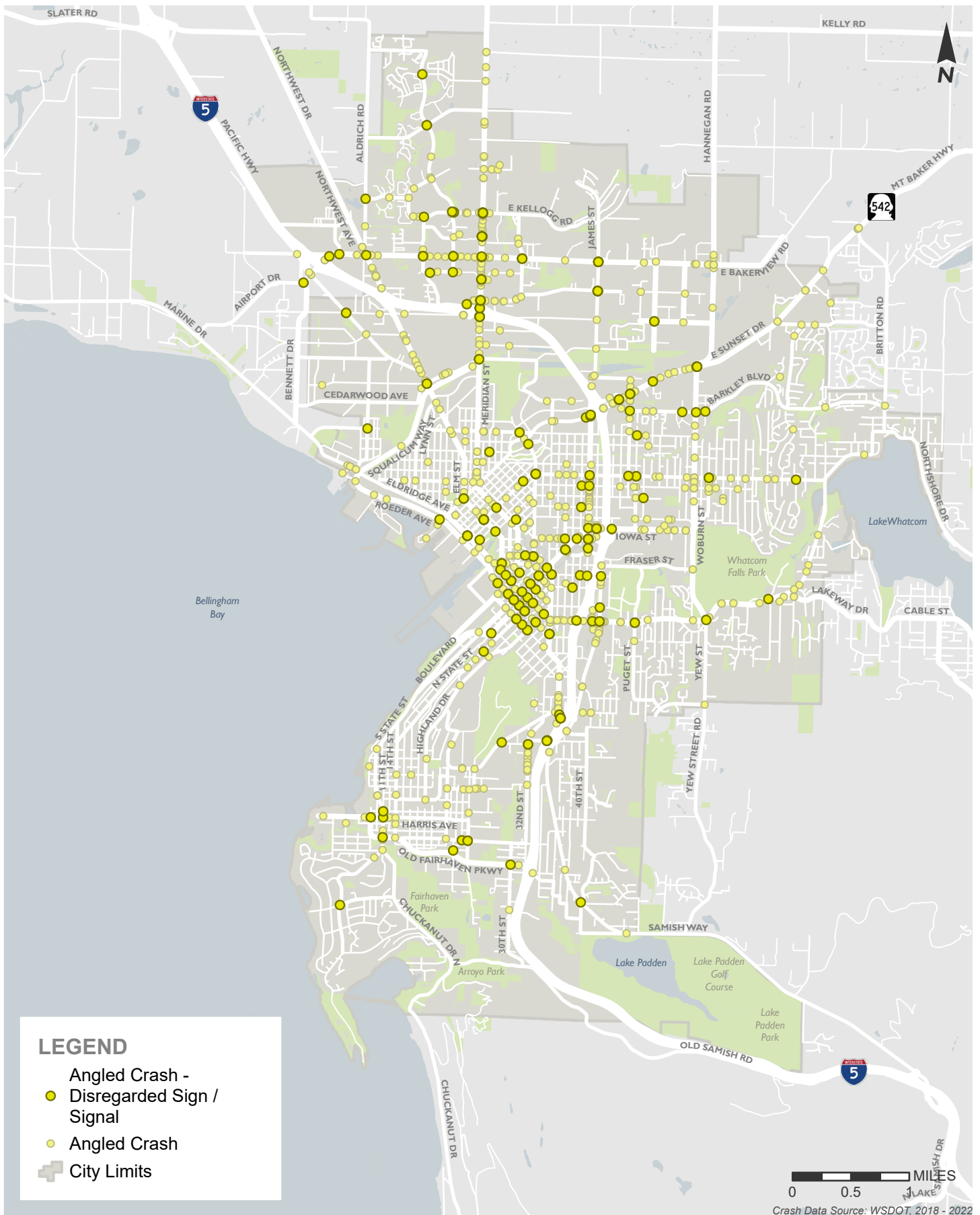


Figure A-4: Angle Crashes - Driver Disregarded Sign/Signal (2018-2022)

